MacDon

R113/R116 Pull-Type Rotary Disc Mower Conditioner

Unloading and Assembly Instruction

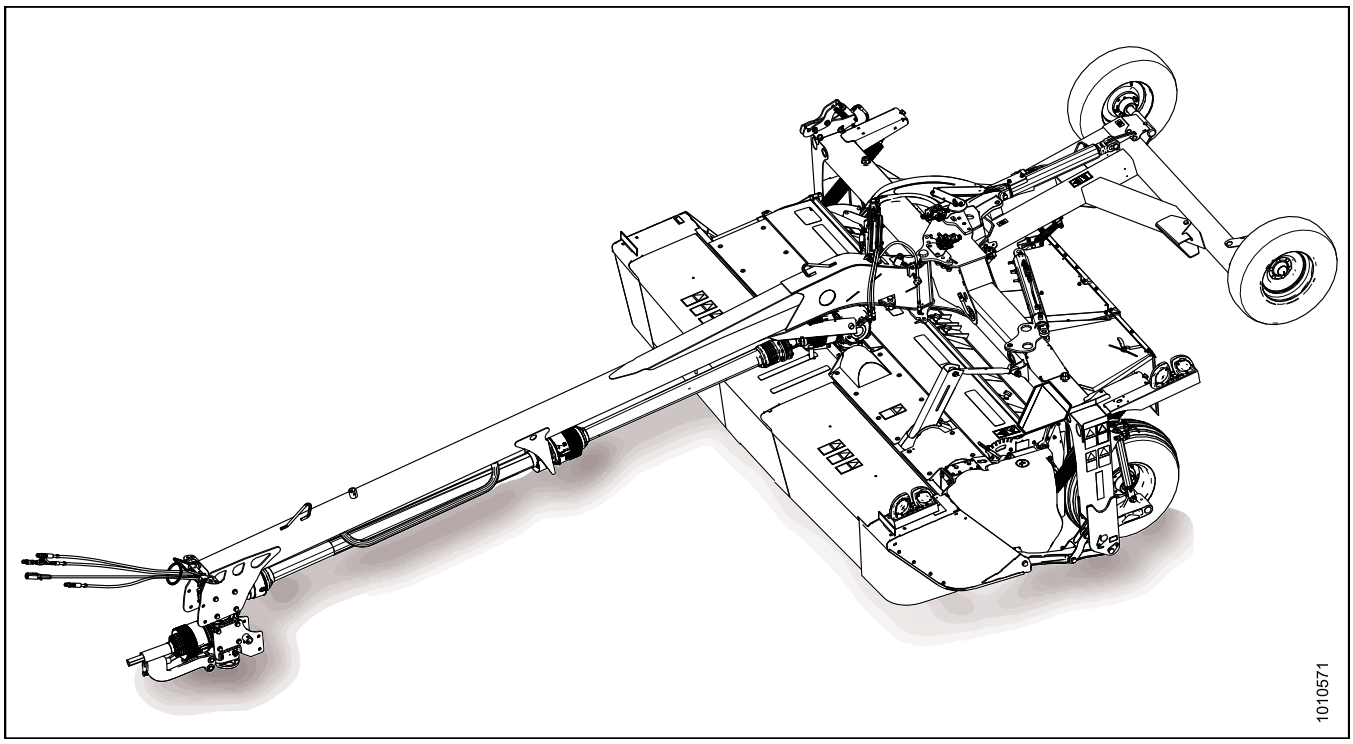
214019 Revision A

Model Year 2017

Original Instruction

The harvesting specialists.

R113/R116 Pull-Type Rotary Disc Mower Conditioner



Published: July, 2016

Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for the MacDon R113/R116 Pull-Type Rotary Disc Mower Conditioner.

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.

Retain this instruction for future reference.

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

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

This instruction is also available in French and can be ordered from MacDon, downloaded from our Dealer Portal, or from our International website (*http://www.macdon.com/world*).

List of Revisions

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

Summary of Change	Location
Added note that this document is available in French.	*Introduction, page i*
Removed Battery Safety topic from the Safety chapter.	*1 Safety, page 1*
Changes to Chapter Three: Assembling the Mower Conditioner (Dealer Installed Transport)	
Added note that Step 2 applies only to mowers with finger conditioners. Changed center-link anchor images to show cotter pin, washer, and shipping tag. Removed note after Step 9.	*4.1 Repositioning Center-Link Top Anchor, page 73*
Added the word "optional" to the heading.	• *3.7.2 Installing Hydraulic Center-Link (Optional), page 45* • *3.7.3 Installing Tall Crop Divider (Optional), page 45*
Added instructions and modified illustration to improve clarity.	*4.2 Attaching Hitch to Carrier, page 77*
Added note and updated the illustrations to show direction arrow on check valves.	*Installing Hydraulic Lines and Hoses, page 34*
Added 3-wire harness information.	*Installing Remote Control, page 43*
Changed images and instructions to show the spring assembly attached to the center forming shield.	*3.12.1 Setting up Forming Shields for Finger Conditioner, page 58*
Changes to Chapter Four: Assembling the Mower Conditioner (Factory Installed Transport)	
Removed the heading instructing the reader to install the cylinder. Added a new illustration.	*4.4 Installing Hitch Swing Cylinder, page 85*
Moved the Completing Road Friendly Transport System Installation topic out of the Installing Option section in Chapter 4.	*4.8 Completing Road Friendly Transport™ System Installation, page 91*
Added a note to ensure the O-ring is in place on hydraulic fitting. Reorganized steps for efficiency.	*4.8.2 Installing Hydraulic Lines and Hoses, page 92*
Corrected errors. Previous version did not include installing the wheels.	*4.14 Installing Road Friendly Transport™ Wheels, page 112*
Changed images and instructions to show the spring assembly attached to the center forming shield.	*4.15.1 Setting up Forming Shield for Finger Conditioner, page 114*
Added instruction to tighten the float springs before lifting the mower.	*3.16 Removing Mower Conditioner from Shipping Pallet (Transport Installed), page 71*

Summary of Change	Location
Added step to align the align the hitch to the tractor to balance weight before checking float.	*6.6 Checking Mower Conditioner Float, page 140*
Modified the steps for inspecting the roll timing.	*6.13 Checking Roll Timing, page 150*
Changed instructions and image to clarify where to check and fill lube level in gearbox.	*6.8 Checking and Adding Conditioner Drive Gearbox Lubricant, page 143*
Added step to set the mower on blocks before checking cutterbar lube. Added required socket size.	*6.11 Checking Cutterbar Lubricant, page 147*
Added note and updated the illustrations to show direction arrow on check valves.	*4.8.2 Installing Hydraulic Lines and Hoses, page 92*
Added 3-wire harness information.	*Installing Remote Control, page 43*
Changes to Both Transport Configurations	
Updated illustration to show pinch point decal on latch. Updated the instructions.	*6.19.1 Converting from Field to Transport Mode, page 156*
Updated the center-link image.	• *9.1 Separating Header from Carrier, page 189* • *9.4 Assembling Header and Carrier, page 198*
Updated the Checking Roll Gap topic.	*6.12 Checking Roll Gap, page 149*
Updated the Checking Roll Timing topic.	*6.13 Checking Roll Timing, page 150*
Added Tapered Pipe Thread Fittings to the Torque Specifications Chapter.	*10.2.8 Tapered Pipe Thread Fittings, page 216*

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. Do **NOT** take chances. You may need the following:
  - Hard hat
  - Protective footwear with slip resistant soles
  - Protective glasses or goggles
  - Heavy gloves
  - Wet weather gear
  - Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as ear muffs or ear plugs to help protect against objectionable or loud noises.

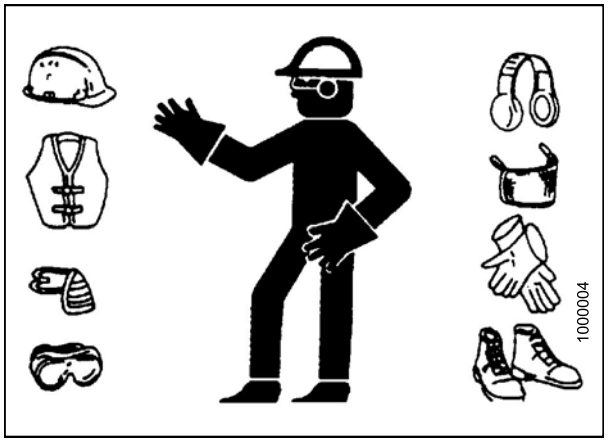


Figure 1.1: Safety Equipment

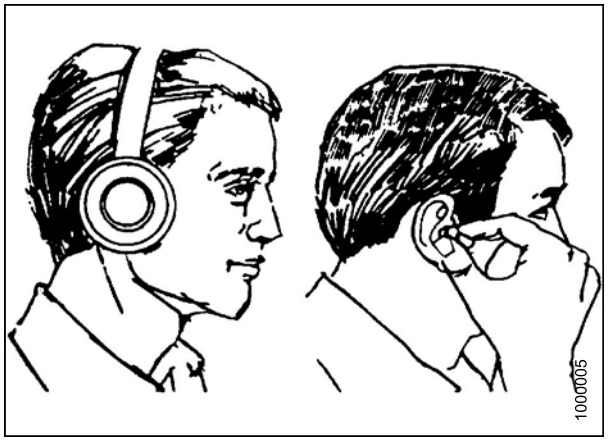


Figure 1.2: Safety Equipment

- 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.

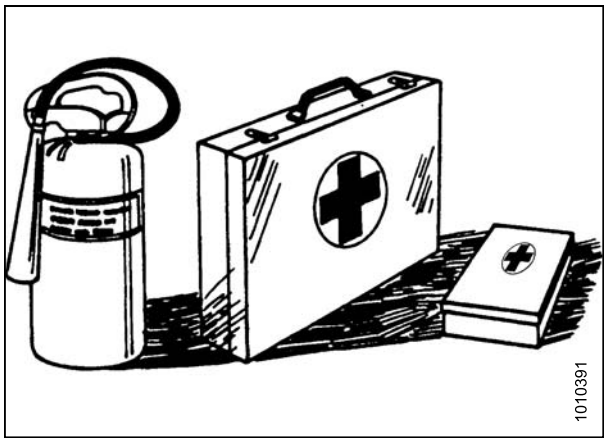


Figure 1.3: Safety Equipment

- 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.

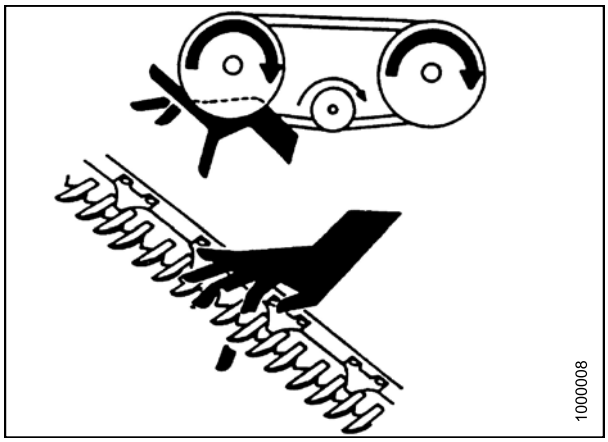


Figure 1.5: Safety around Equipment

- 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 your MacDon Dealer.

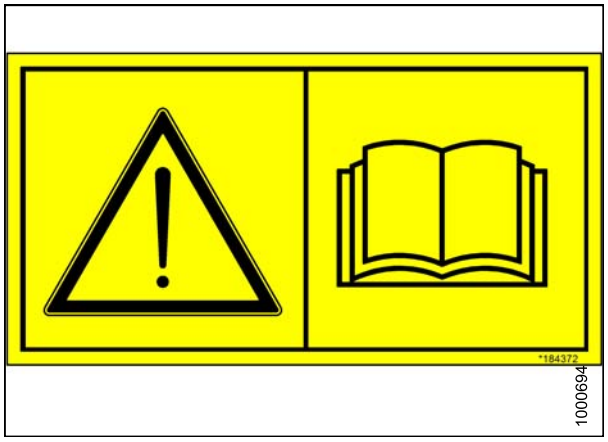


Figure 1.7: Operator's Manual Decal

2 Unloading Shipment

CAUTION

To avoid injury to bystanders from being struck by machinery, do NOT allow persons 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.

Lifting Vehicle	
Minimum Capacity	3630 kg (8000 lb.)
Minimum Height	4.5 m (15 ft.)

Chain	
Overhead Lifting Quality (1/2 inch)	2270 kg (5000 lb.) minimum working load

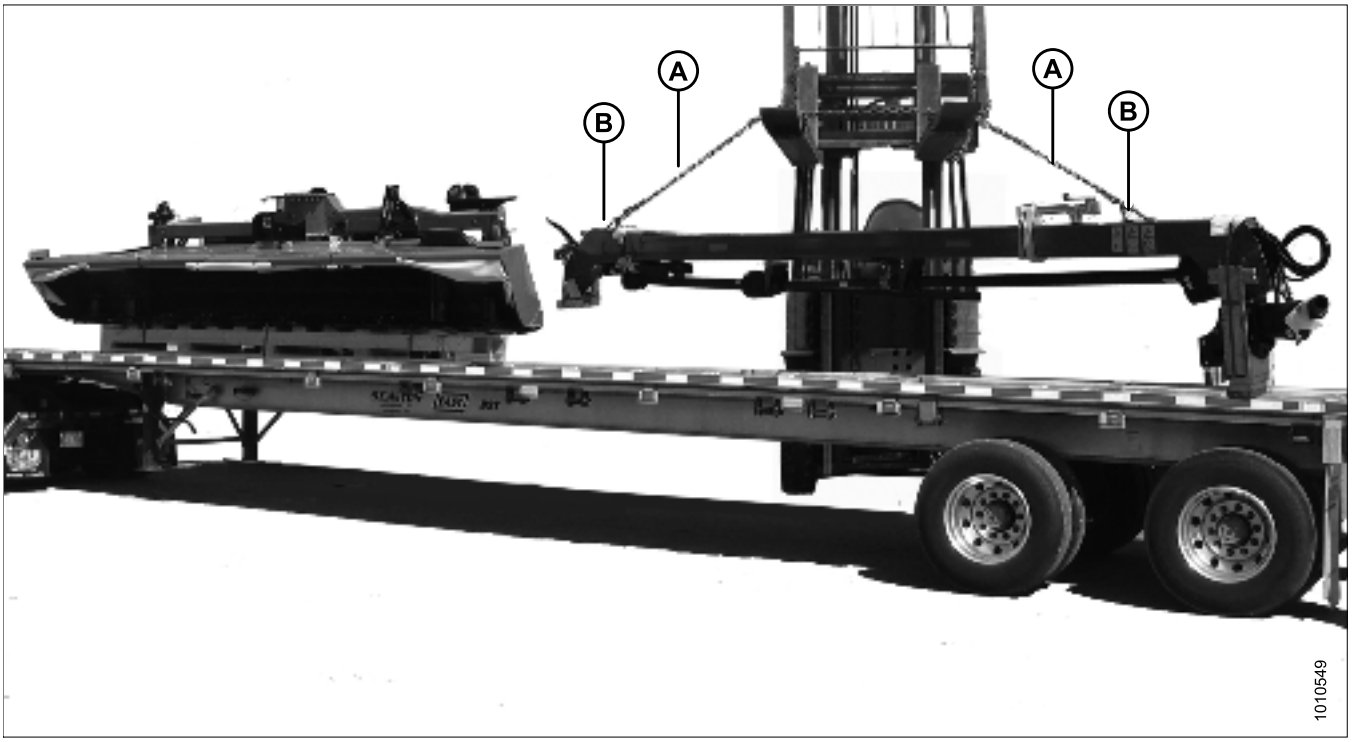


Figure 2.1: Unloading Hitch

1. Remove hauler's tie-down straps and chains.
2. Attach chain (A) to two brackets (B) on top of hitch as shown.
3. Adjust chain lengths so hitch is lifted evenly.
4. Raise hitch off deck, back up until unit clears trailer, and slowly lower to 150 mm (6 in.) from ground.

IMPORTANT:
Take care not to contact the other machine if load is two headers wide.

5. Take to storage or assembly area, and set hitch down securely on level ground.
6. Repeat for second hitch (if required).
7. Check for shipping damage and missing parts.

1. Approach mower conditioner (A) from back with forklift (B) as shown, and slide forks into pallet as far as possible.

NOTE:
Pallet is designed to be lifted from the backside only.

2. Raise mower conditioner off deck.

IMPORTANT:
Take care not to contact the other machine if load is two-wide.

3. Back up until unit clears trailer, and slowly lower to 150 mm (6 in.) from ground.
4. Take to storage or set-up area, and set machine down securely on level ground.

NOTE:
When possible, approach from the backside to minimize potential for contacting the unit.

5. Repeat for second mower conditioner (if required).
6. Check for shipping damage and missing parts.

IMPORTANT:
Do **NOT** remove header from pallet until instructed.

7. Unload remaining pallets and boxes, and take to assembly area.

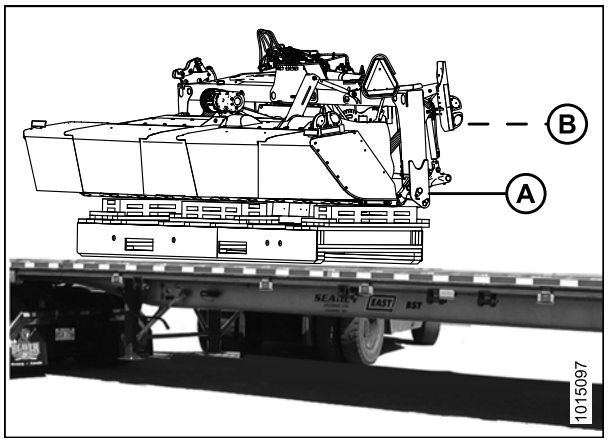


Figure 2.2: Unloading Header

3 Assembling the Mower Conditioner (Dealer-Installed Transport)

Perform the following procedures in the order provided to assemble the mower conditioner without the transport system, or when the Road Friendly Transport™ will be installed by the Dealer.

To assemble a mower conditioner with the factory-installed transport, refer to *4 Assembling the Mower Conditioner (Factory-Installed Transport), page 73*.

3.1 Repositioning Center-Link Top Anchor

Perform this procedure to reposition the center-link top anchor into working position.

1. Place forklift forks (B) under top beam and lift carrier frame (A) slightly until pin at base of center-link anchor is loose. Use a piece of wood (C) to protect paint on frame.

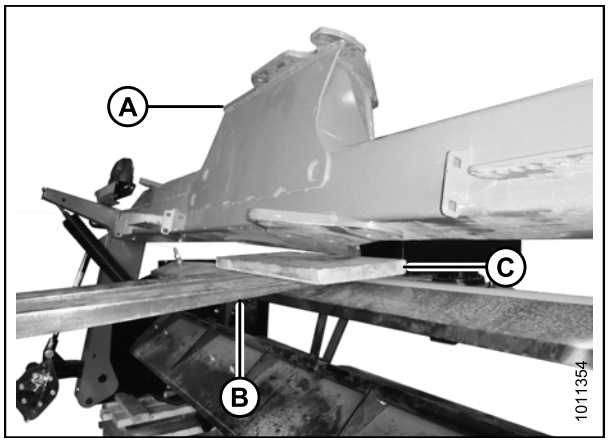


Figure 3.1: Carrier

2. Loosen jam nut (A) and fully loosen float springs (B).

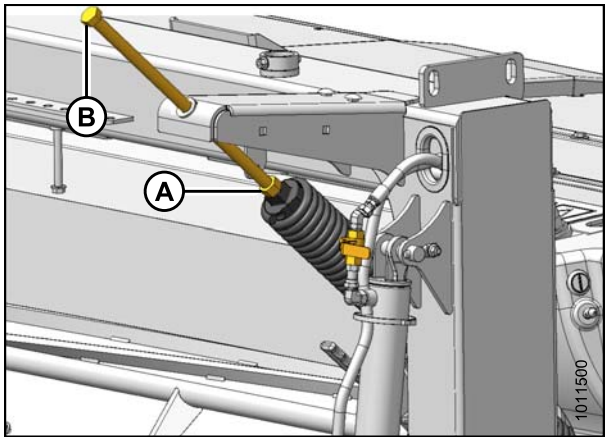


Figure 3.2: Float Spring

3. Remove four M10 hex head bolts (A) and flat washers, and remove top shield (B).

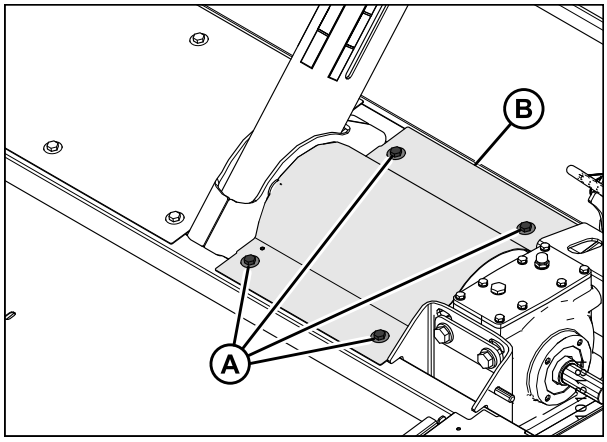


Figure 3.3: Top Shield (Left of Center-Link)

CAUTION

To avoid injury, keep fingers clear of opening at base of anchor.

4. Remove cotter pin (B), washer (C) and shipping tag (D).
5. Remove pin (A) from center location and lower forks on forklift.

   NOTE:
   Pin should slide out freely. Adjust forklift or move carrier until pin is loose. Avoid using a hammer to remove pin.

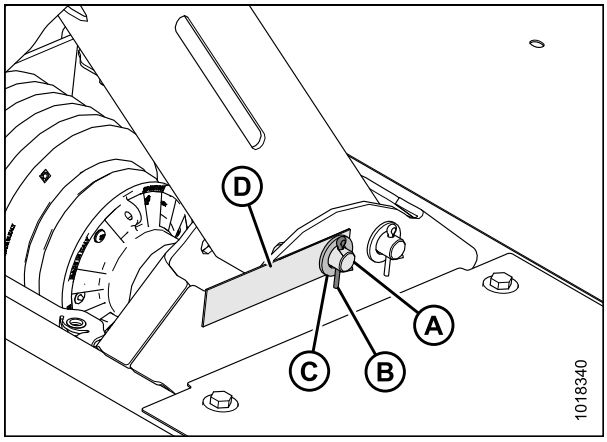


Figure 3.4: Center-Link Anchor (Right of Center-Link)

6. Install pin (A) and secure with washer (B) and cotter pin (C). Move the carrier and anchor so the pin can be installed in working location.

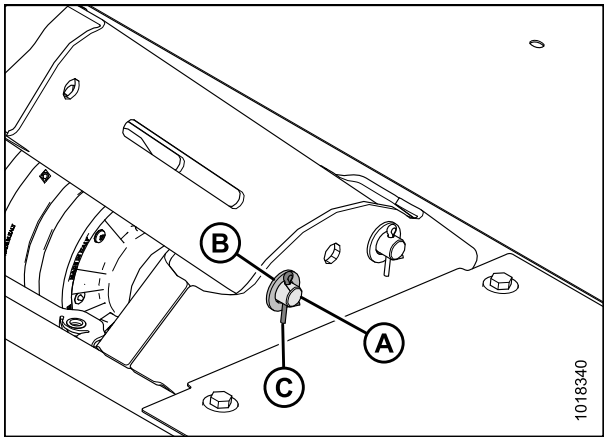


Figure 3.5: Center-Link Anchor (Right of Center-Link)

7. Install top shield (B) and secure with four M10 hex head bolts (A) and flat washers. Torque to 27–30 N·m (20–22 ft·lbf).

   NOTE:
   If transport is also being installed, leave bolts (A) loose. These bolts will be tightened when installing the lighting harness.

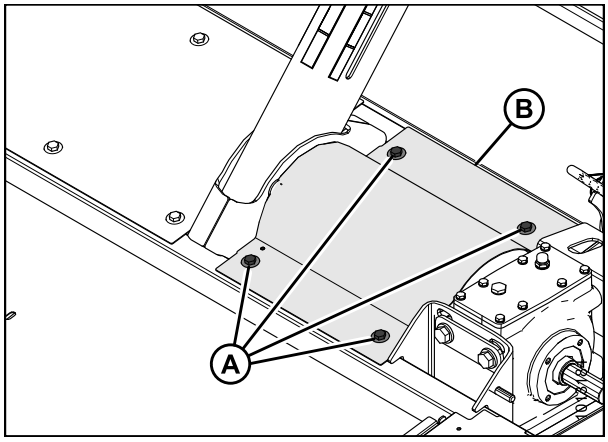


Figure 3.6: Top Shield (Left of Center-Link)

8. Close the mower conditioner's lift cylinder lock-out valve (A) on each lift cylinder by turning the handle to the horizontal position.
9. Loosen jam nut (B) away from the spring.
10. Turn the adjuster bolt (C) and set dimension (D) to 130 mm (5-1/8 in).
    - Turn bolt clockwise (towards spring) to increase float
    - Turn bolt counterclockwise (away from spring) to decrease float
11. Tighten jam nut (B) against spring.

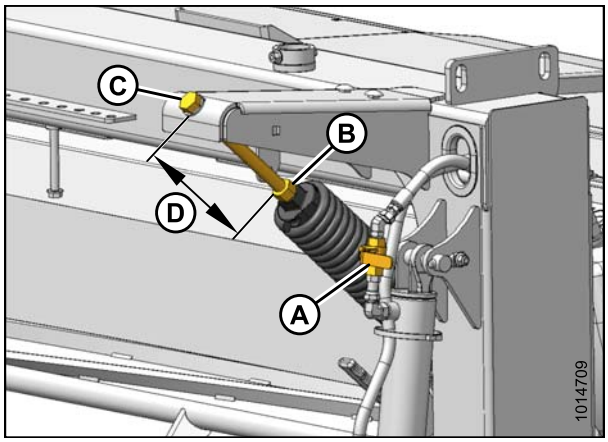


Figure 3.7: Lift Cylinder Lock-Out Valve, Jam Nut, and Adjuster Bolt

3.2 Attaching Hitch to Carrier

1. Remove M20 bolts (A), washers, and nuts from carrier at the hitch attachment location. Retain bolts, washers, and nuts.

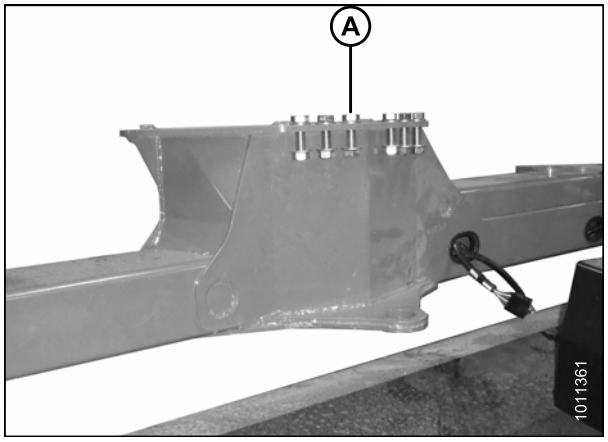


Figure 3.8: Carrier

2. Cut banding (A) securing wood supports, then remove supports (B).
3. Remove the two bolts securing wood support to hitch pin (C). Discard bolts.

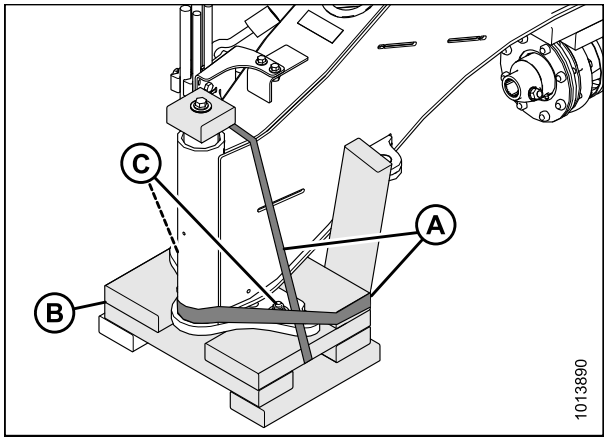


Figure 3.9: Hitch Packing

4. Place sling (A) around the hitch frame. Adjust sling position until hitch is balanced when lifting.
   - R113: Approximately 2700 mm (106 in.) from the edge of the tractor end of the hitch (B)
   - R116: Approximately 3500 mm (138 in.) from the edge of the tractor end of the hitch (B)
5. Raise the hitch approximately 610 mm (24 in.) off the ground.

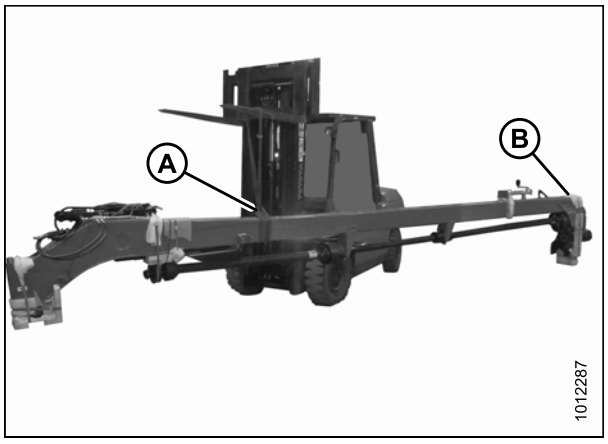


Figure 3.10: Lifting Hitch

NOTE:
Hitch pin (C) is heavy. Support it appropriately before removing bolt (A).

6. Support hitch pin (C), remove bolt (A) and wood block (B) from top of pin, and remove hitch pin (C).

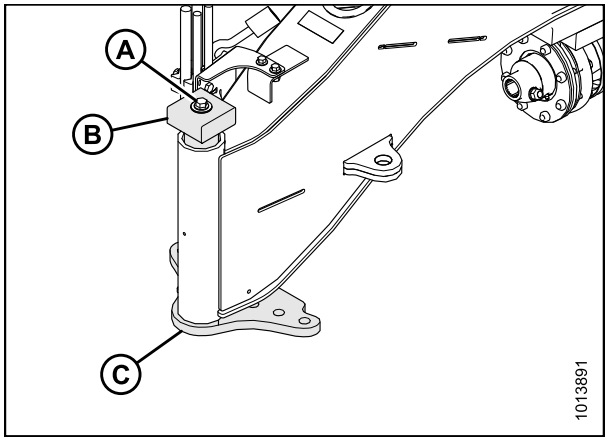


Figure 3.11: Hitch Packing

7. Install hitch pin (A) fully into hitch.

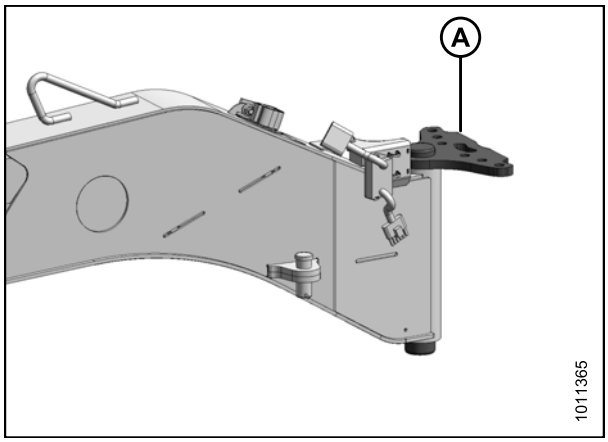


Figure 3.12: Hitch Pin

8. Pivot the gearbox (A) towards the right side of the header. This will increase the clearance to the driveline clutch when installing hitch onto carrier frame.

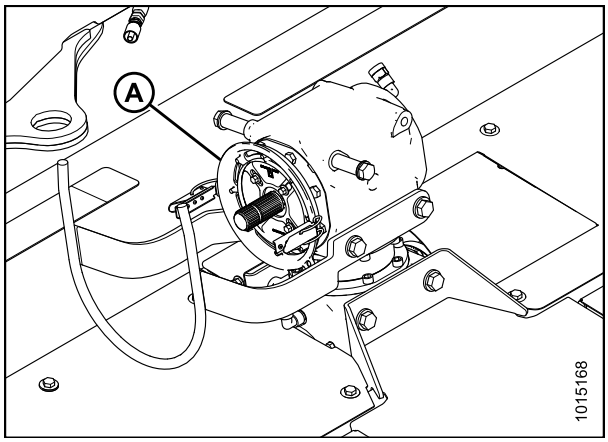


Figure 3.13: Gearbox

9. Maneuver hitch pivot (A) into attachment location (B) on carrier, and line up hitch pin with hole in carrier.

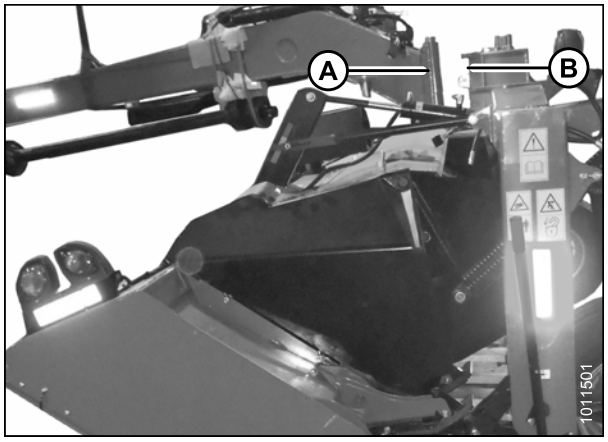


Figure 3.14: Hitch to Carrier

10. Slowly lower hitch (A) while maintaining pin alignment until hitch pin (B) is fully inserted. Use a large soft hammer if necessary to seat hitch pin.

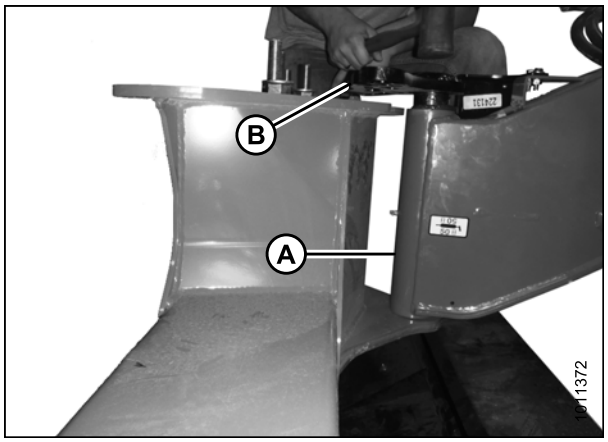


Figure 3.15: Hitch Pin

11. Line up holes in hitch pin (A) with holes in the carrier frame. Install six M20 x 65 bolts (B) with hardened washers under the bolt head and lock nuts (C).

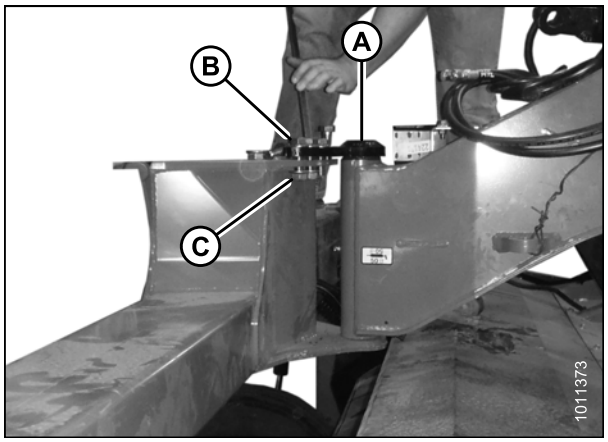


Figure 3.16: Hitch Pin

12. Tighten the outer bolts (A) first to draw the plate against the frame. Then tighten the inner bolts.
13. Torque bolts to 461 N·m (340 ft·lbf).

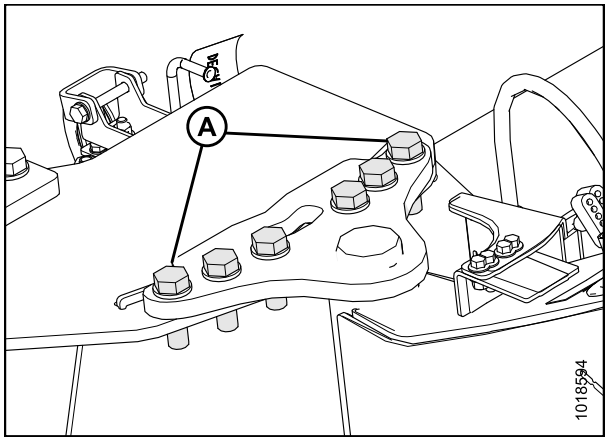


Figure 3.17: Hitch Pin

3.3 Installing Tractor Mating Hitch to Carrier Hitch

Depending on mower conditioner configuration, refer to the applicable installation procedure:

- *3.3.1 Installing Drawbar Hitch, page 14*
- *3.3.2 Installing Two-Point Hitch (Cat. II) Adapter, page 16*

3.3.1 Installing Drawbar Hitch

If attaching the mower conditioner to a tractor with a drawbar hitch, proceed as follows. If attaching the mower conditioner to a tractor with a two-point hitch, refer to *3.3.2 Installing Two-Point Hitch (Cat. II) Adapter, page 16*.

1. Remove shipping wire or banding (A) securing shipping blocks (B) at front of hitch, and remove blocks.

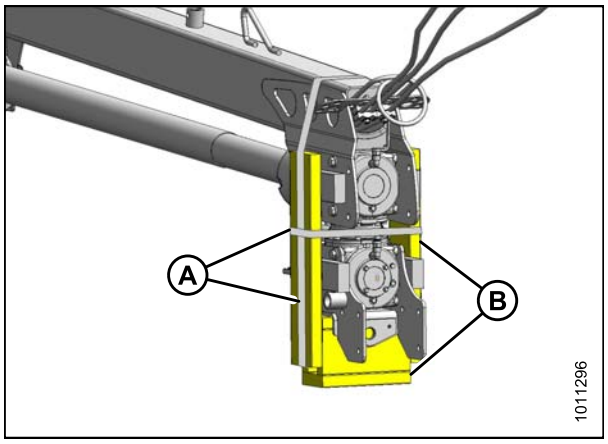


Figure 3.18: Hitch End Packing

2. Remove shipping wire (A) from jack (B) on drawbar hitch shipment, and then remove jack from pallet.

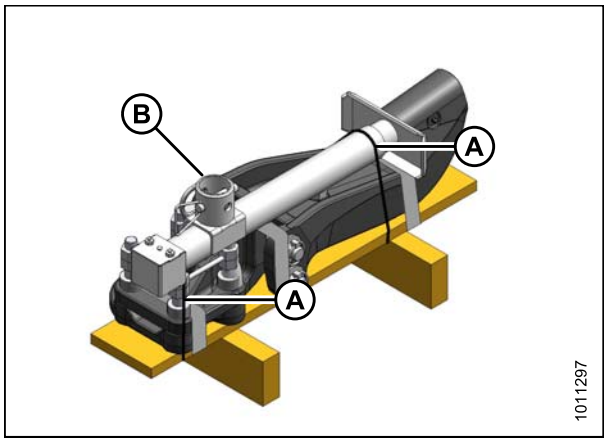


Figure 3.19: Jack Packing

3. Install at jack (A) at front of hitch, and secure with pin (B).
4. Swivel driveline and lower gearbox (C) so that driveline (D) is facing forward.
5. Lower forklift until hitch is resting on hitch jack (A).

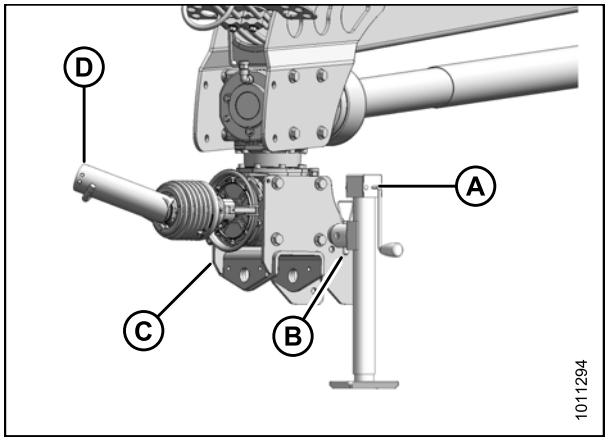


Figure 3.20: Hitch

6. Remove shipping wire (A) that secures pin (B) in casting. Do not remove other strapping.
7. Remove pin (B) from casting and remove bolt (C) and nut from pin.

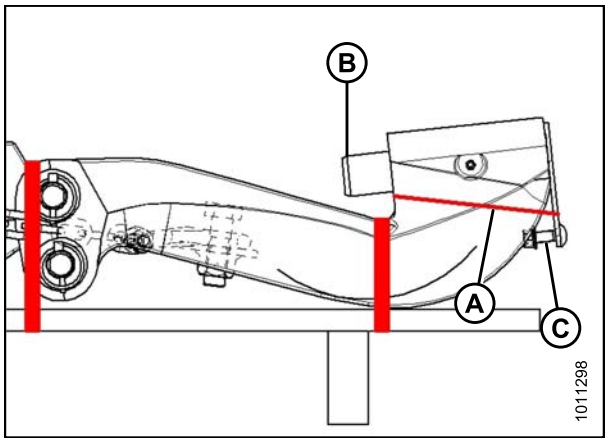


Figure 3.21: Hitch Casting

8. Using a floor jack or equivalent under pallet (A), raise hitch adapter (B) into position under the gearbox.
9. Maneuver hitch adapter (B) so that pin (C) can be installed to secure adapter to hitch.
10. Secure pin with bolt (D) and nut.
11. Remove floor jack, and if necessary, remove remaining strapping and pallet (A) from hitch adapter.

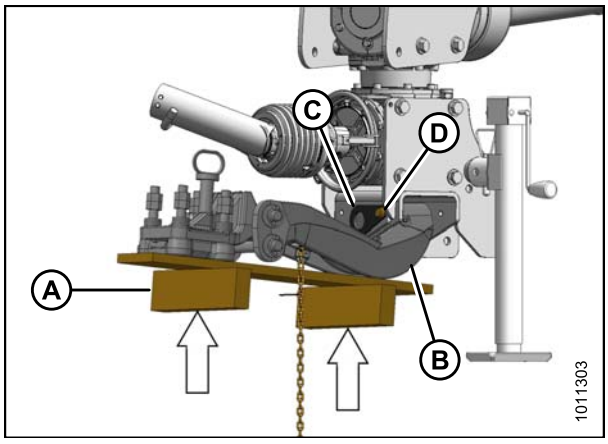


Figure 3.22: Drawbar Hitch

3.3.2 Installing Two-Point Hitch (Cat. II) Adapter

To set up the two-point hitch:

1. Remove shipping wire or banding (A) securing shipping blocks (B) at front of hitch, and remove blocks.
2. Swivel driveline and gearbox so that driveline is facing forward.

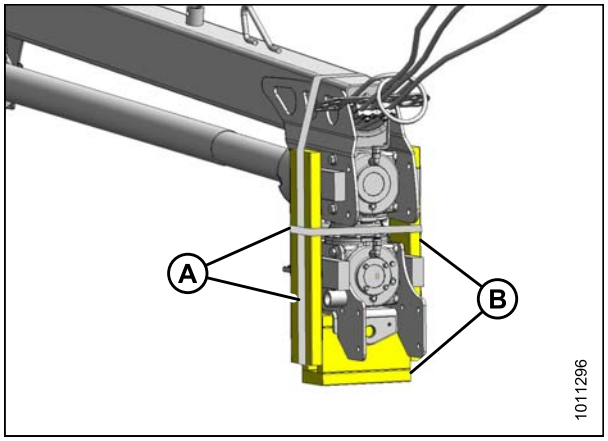


Figure 3.23: Hitch Packing

3. Retrieve two-point hitch adapter shipment.
4. Remove shipping wire (A) and material from stand (B) and remove stand from hitch adapter (C). Set aside for later installation.

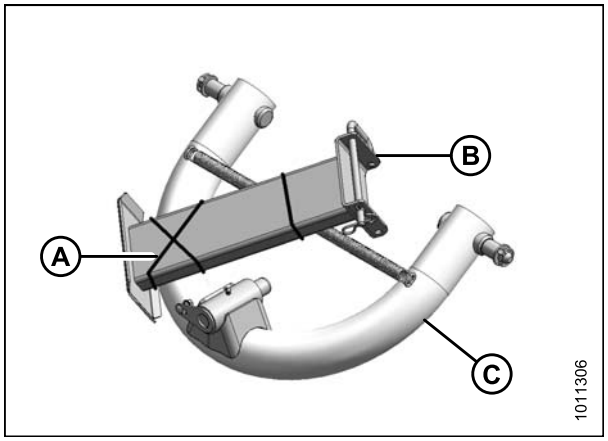


Figure 3.24: Two-Point Hitch Packing

5. Remove strapping that secures pin (A) to adapter (B). Do not remove other strapping.
6. Remove pin (A) from adapter, and remove bolt (C) and nut from pin (A).

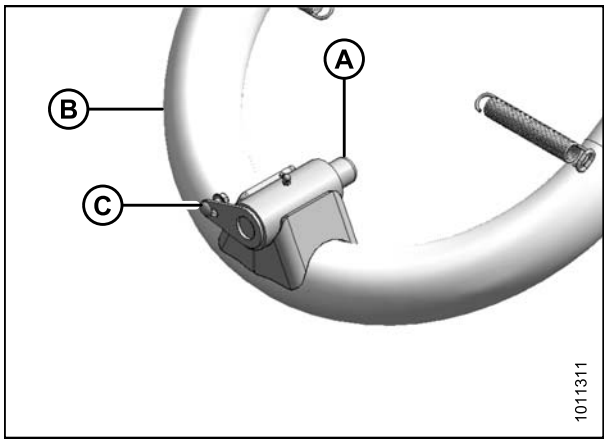


Figure 3.25: Two-Point Hitch Adapter

7. Using a floor jack or equivalent, raise two-point hitch adapter (A) into position under the gearbox.
8. Maneuver adapter (A) so that pin (B) can be installed to secure adapter to hitch.
9. Secure pin with bolt (C) and nut.
10. Remove floor jack, and remove remaining strapping and pallet from hitch adapter.

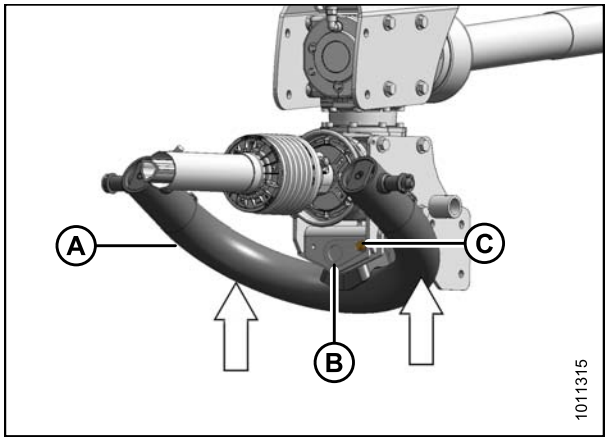


Figure 3.26: Two-Point Hitch Adapter

11. Install springs (A) as shown.
12. Assemble power take-off (PTO) driveline male half (B) onto female half on hitch gearbox. Push male half so that PTO shaft is at its fully compressed length.
13. Locate driveline on hook (C).

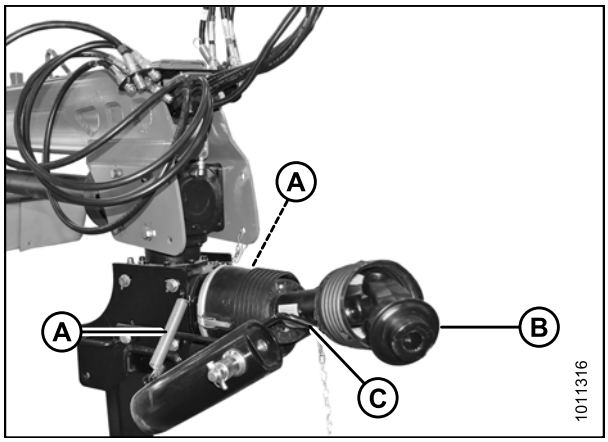


Figure 3.27: Driveline

14. Retrieve stand (A).
15. Position stand (A) under gearbox as shown, and install hitch pin (B) to secure stand.
16. Install hairpins (C) to secure hitch pin (B).
17. Lower hitch onto stand.

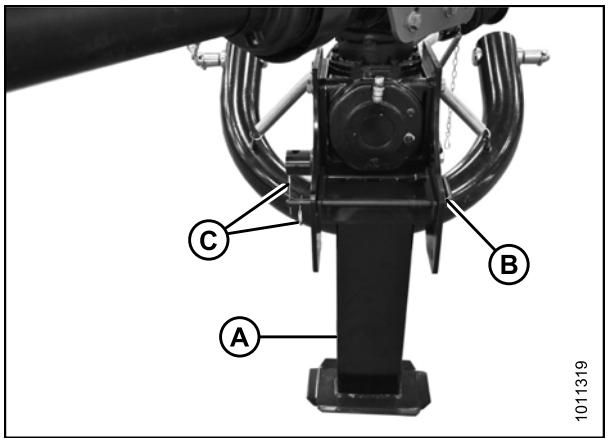


Figure 3.28: Stand

3.4 Installing Hitch Swing Cylinder

The hitch swing cylinder can be installed on either side of the hitch, depending on whether or not the Road Friendly Transport™ system will be installed. Be sure to follow the instructions carefully.

1. Remove the banding (A) securing the hitch swing cylinder (B) to the hitch.
2. Remove pin (C) securing cylinder (B) to hitch.

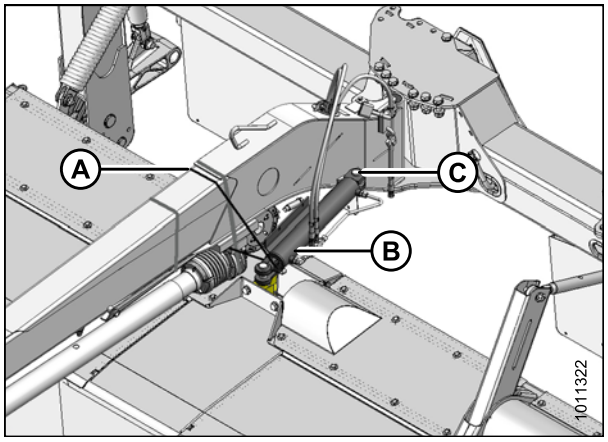


Figure 3.29: Steering Cylinder

To install cylinder on unit WITHOUT the Road Friendly Transport™ system, proceed as follows:

3. Reposition cylinder (A) at left side of hitch and attach rod end to carrier frame lug with pin at (B). Secure with cotter pin (C).
4. Remove pin at (D) from clevis end.

   NOTE:
   Place a container or rag under cylinder to catch oil.

5. Swing the hitch until clevis lines up with lug on hitch.
6. Install clevis pin at (D) and secure with cotter pin (E).
7. Tighten fittings on cylinder.

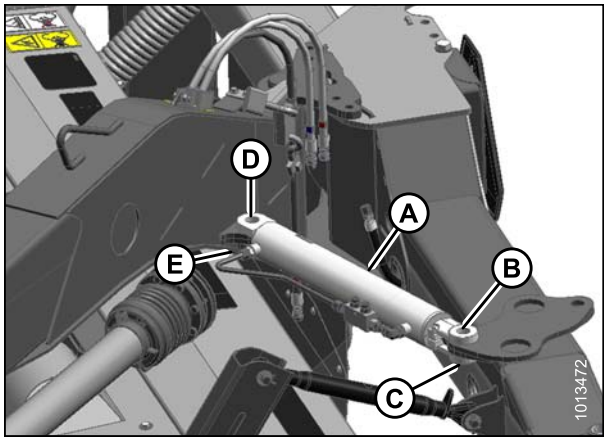


Figure 3.30: Hitch Swing Cylinder

To install cylinder on unit WITH the Road Friendly Transport™ system, proceed as follows:

8. Disconnect the hoses at the cylinder and cap off openings on cylinder and hoses.
9. Reposition cylinder (A) at right side of hitch and attach barrel end to lug (B) on hitch with pin (C). Secure with cotter pin (D).

   NOTE:
   Clevis end of cylinder will be attached to Road Friendly Transport™ system casting when the system is primed. Refer to *3.11 Priming the Hitch Swing Cylinder, page 56*.

10. Turn the valve on the hitch swing cylinder 180 degrees, so that fittings are pointing up.

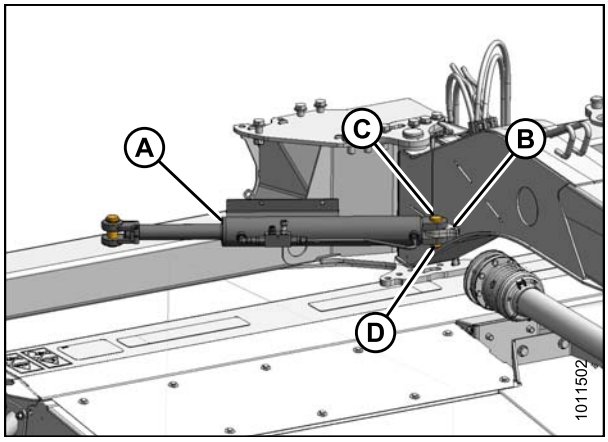


Figure 3.31: Hitch Swing Cylinder

3.5 Attaching Aft Driveline

This procedure describes the attachment of the driveline to the header drive gearbox.

IMPORTANT:
If a conditioner swap is required before delivery to the customer, do **NOT** perform this step at this time. Skip to *3.10 Installing Field Wheels, page 54*.

1. Support driveline and remove strapping (A) securing driveline (B) to hitch. Remove all packing material.

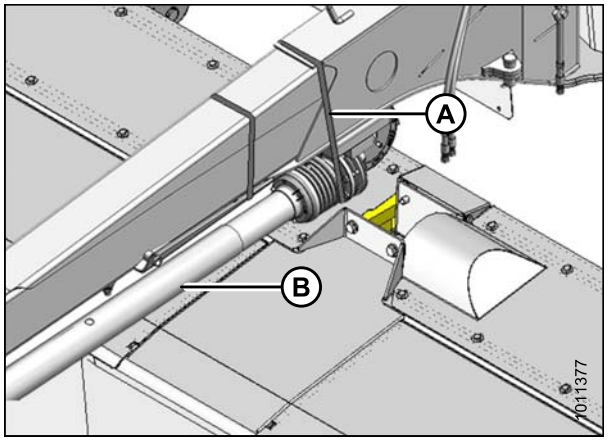


Figure 3.32: Driveline Strapping

2. Remove strapping (A) and packing material securing steering arm (B) to hitch. Pivot steering arm to the side for now.

   NOTE:
   Strapped contents may be under pressure.

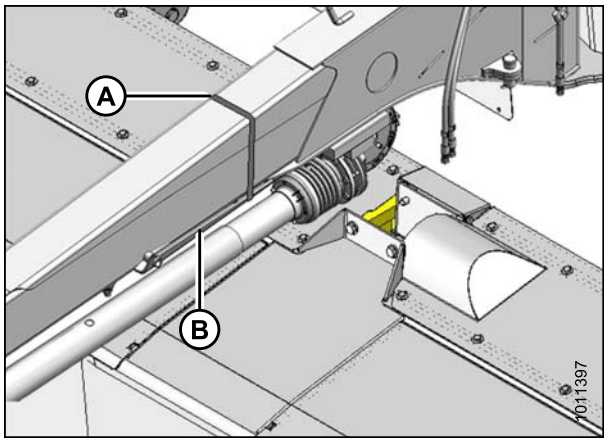


Figure 3.33: Steering Arm Strapping

3. Remove two bolts (A) with spacers (B) at top of aft gearbox. Retain hardware.
4. Undo latches (C) securing driveshield cone (D) to gearbox and remove cone. If necessary, use a screwdriver or equivalent to undo latches (C).
5. Rotate the gearbox until the input shaft is facing towards the driveline.

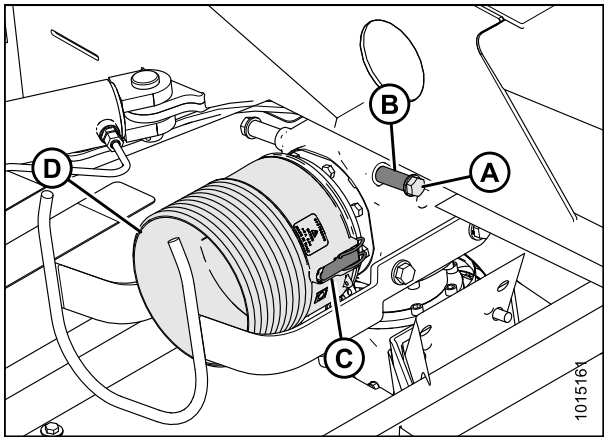


Figure 3.34: Driveline Shield

6. Slide cone (A) onto driveline with latches (B) towards the gearbox.
7. Remove nut (C) and washer (E) from tapered pin (D), and tap out pin from yoke with a hammer.

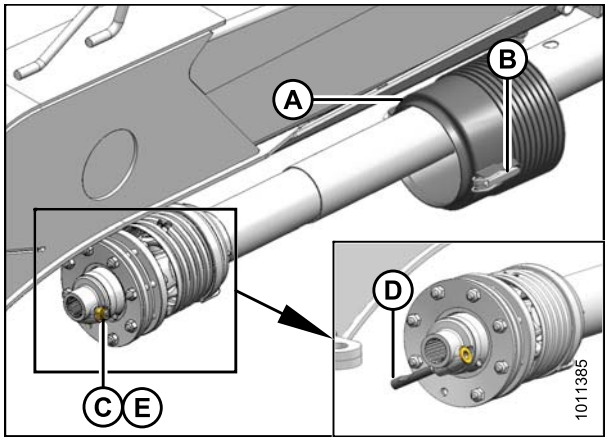


Figure 3.35: Clutch Driveline

8. Attach driveline (A) to gearbox shaft.

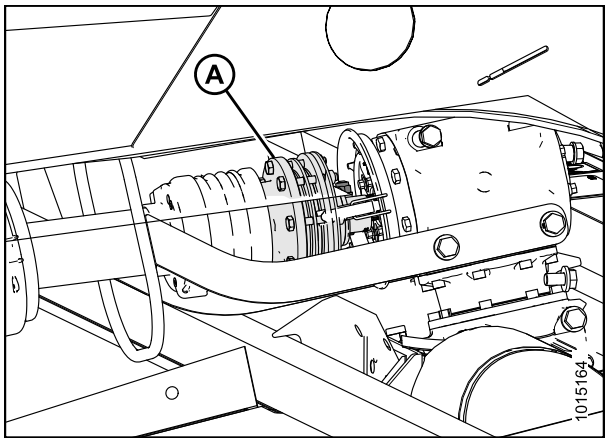


Figure 3.36: Clutch Driveline

9. Insert tapered pin (A) by hand. Ensure the pin lines up with groove in yoke and is fully inserted. The notch in the pin should be facing toward the shaft.
10. Clean the threads on pin (A) after it has been inserted.
11. Install washer (B) and nut (C) on tapered pin and torque to 149 N·m (110 ft·lbf). The end of the pin must be recessed approximately 0–2 mm (0–0.08 in.) (D).

    NOTE:
    Do NOT use an impact wrench to install or torque the nut.
12. Install the cone onto gearbox. Use the latches to secure it to the gearbox.

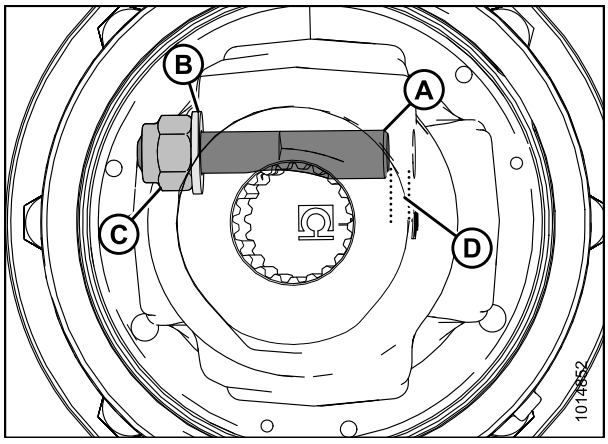


Figure 3.37: Clutch Driveline

3.6 Attaching Steering Arm

This procedure describes the attachment of the steering arm to the header drive gearbox.

IMPORTANT:
If a conditioner swap is required before delivery to the customer, do NOT perform this step at this time. Skip to *3.10 Installing Field Wheels, page 54*.

1. Lower arm (A) from under the hitch and slide the arm weldment (B) off arm.
2. Apply grease to arm (A).
3. Slide the arm weldment (C) onto arm (A) in opposite orientation.
4. Position arm weldment (C) onto gearbox (D).

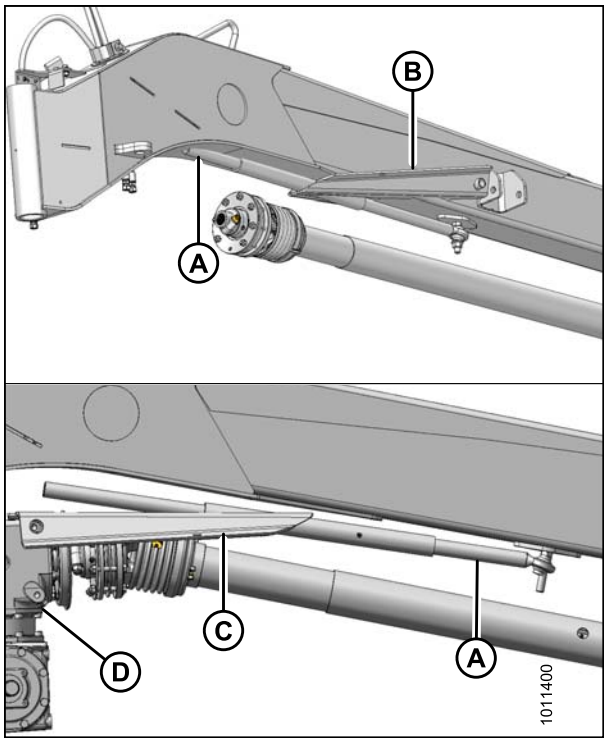


Figure 3.38: Steering Arm

5. Line up the two mounting holes in arm weldment with the forward threaded holes in the gearbox.
6. Install spacers (A) into arm weldment (B) and install M16 x 80 hex head bolts (C) with red Loctite® 262 and washers (D).
7. Torque bolts to 203 N·m (150 ft·lbf).

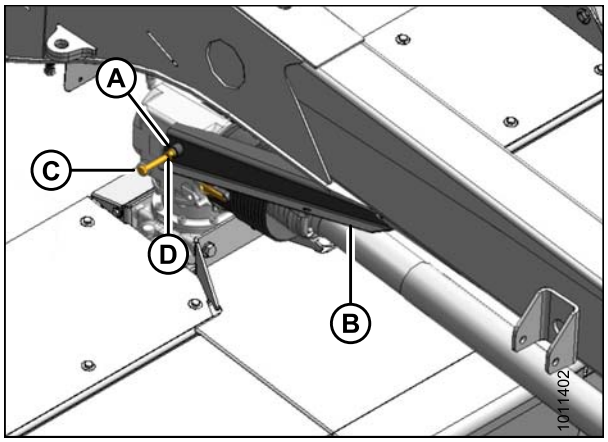


Figure 3.39: Steering Arm

8. Attach the safety chain (A) from driveshield cone to slotted hole in the arm weldment.

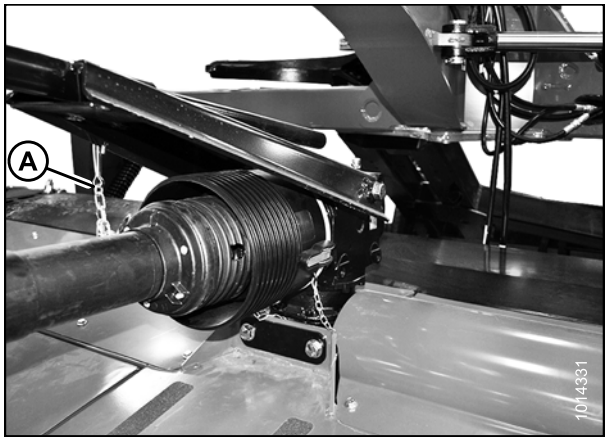


Figure 3.40: Driveline Shield

3.7 Installing Options

Install the following optional kits if they were supplied with your header.

3.7.1 Installing Road Friendly Transport™ System

This section describes the installation of the Road Friendly Transport™ system. The basic components are installed first, then the hydraulic systems are connected, and the lighting and signage are installed last.

Installing Components

This section describes the installation of the basic parts of the Road Friendly Transport™ system.

Installing Latch Assembly

1. Remove shipping banding and packing material from latch assembly (A) on transport pallet, and remove latch assembly.
2. Remove the two M20 mounting bolts, washers, and nuts (B) from the latch assembly, and retain for use later.

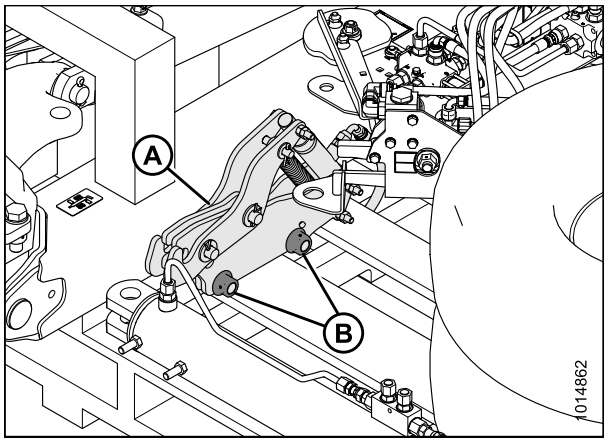


Figure 3.41: Latch Packing

3. Disconnect right-hand electrical connection (A).
4. Remove the two bolts (B) that secure the right-hand light bracket (C) to the carrier frame.
5. Remove the light bracket (C). Retain light assembly and hardware for installation later.

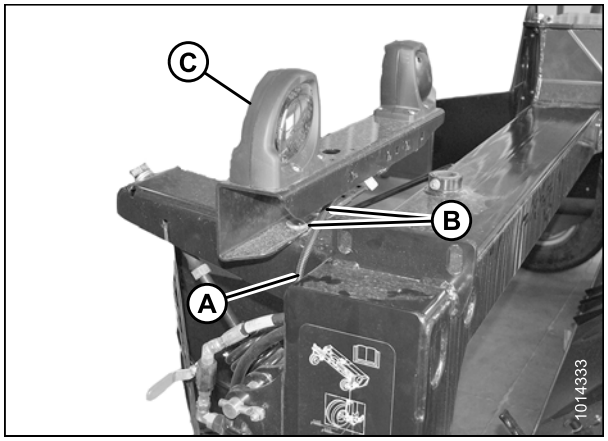


Figure 3.42: Light Bracket

6. Install latch assembly (A) onto carrier frame as shown, and secure with the M20 bolts, washers, and nuts (B) retained in Step *2., page 24*. Do not fully tighten bolts; adjust position of latch assembly may be necessary.

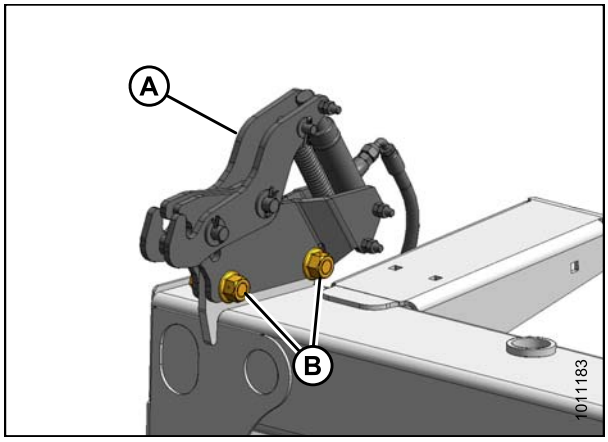


Figure 3.43: Latch Assembly

7. Ensure lift cylinder lock-out valve (A) is closed.
8. Disconnect hose (B) from 45° fitting (C) at lift cylinder.
9. Remove plug and cap from tee (D) on hose (E).
10. Connect tee (D) to 45° fitting (C) and connect hose (B) to tee (D).
11. Tighten fittings.

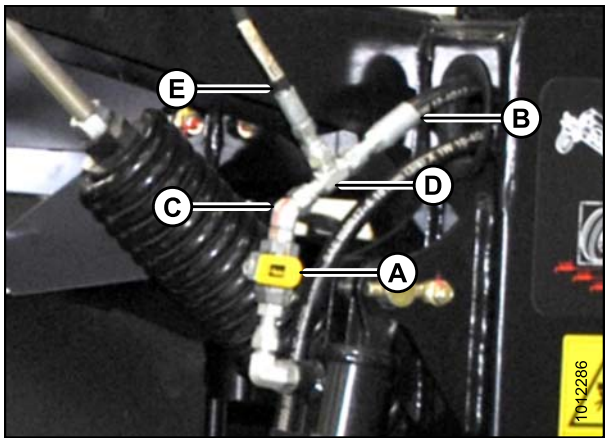


Figure 3.44: Latch Plumbing (Connections Complete)

12. Retrieve clevis pin (A) and cotter pin (B) from shipping bag and install onto hitch bracket at side of hitch.

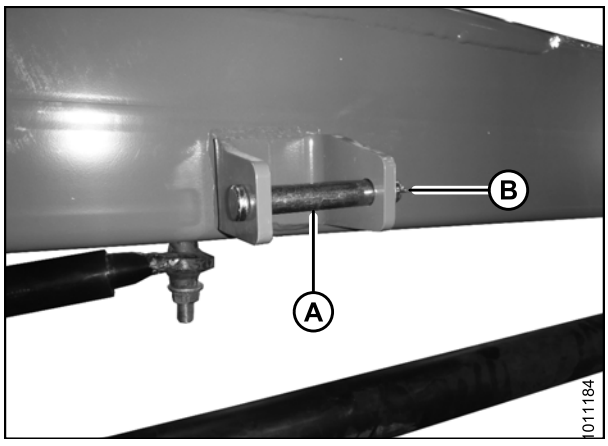


Figure 3.45: Latch Pin

Installing Transport Assembly

1. Remove bolt (A), hardened washer, and nut securing slow moving vehicle (SMV) sign (B) to carrier frame and remove sign. Retain sign and hardware for reinstallation.

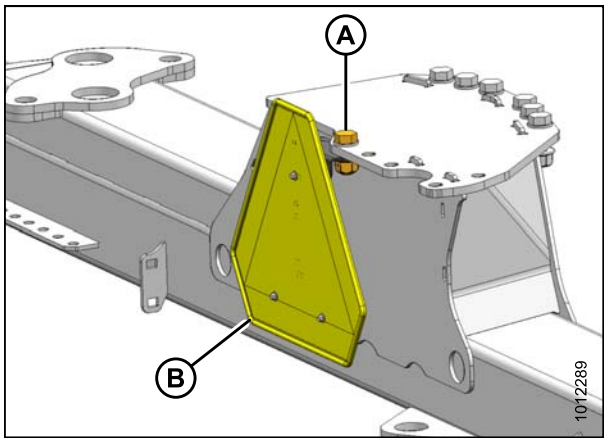


Figure 3.46: SMV Sign Attached to Carrier Frame

2. Remove transport wheels (A) from pallet.
3. Remove the five M20 hex head bolts (B) washers, and nuts in transport assembly pin (C). Do not remove pin.

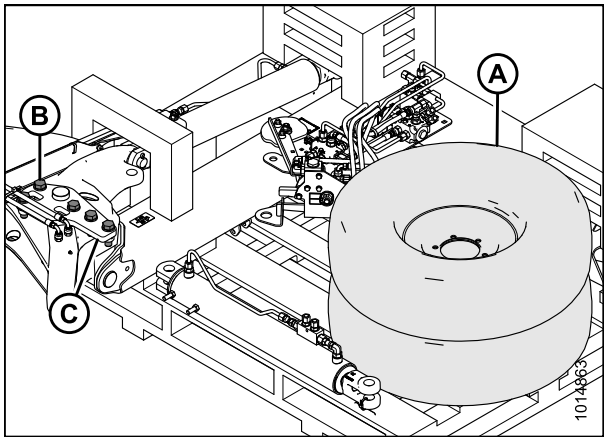


Figure 3.47: Transport Packing

4. Using a forklift, pick up pallet with transport assembly (A) and approach the rear of the mower conditioner.
5. Position assembly up to frame and align pin (B) in transport assembly with hole (C) in carrier, and use a soft hammer or equivalent to fully insert pin.

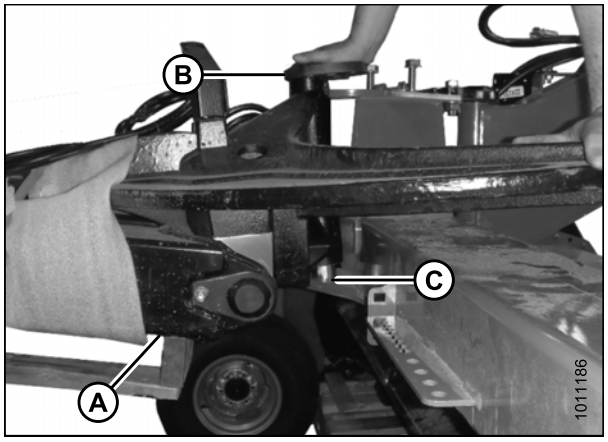


Figure 3.48: Road Friendly Transport™

6. Install three M20 x 65 bolts (A), hardened washers, and nuts.
7. Temporarily install bolts (B) to help align the assembly while torquing bolts (A).
8. Torque bolts (A) to 461 N·m (340 ft·lbf).
9. Remove bolts (B).

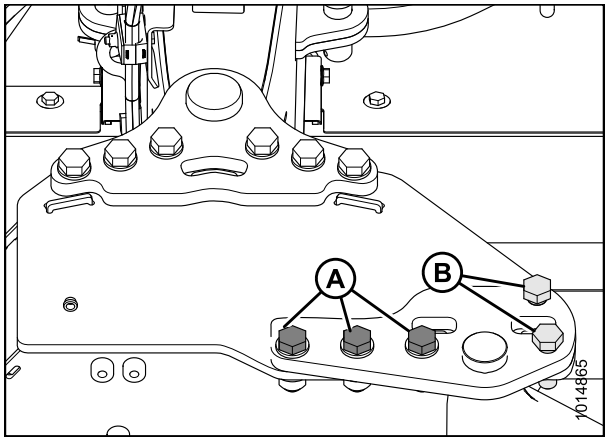


Figure 3.49: Road Friendly Transport™

Installing Transport Valve

1. Retrieve valve assembly (A) from the pallet.
2. Position valve assembly (A) on the carrier hitch pin as shown.
3. Install two M20 x 65 bolts (B) with hardened washers and nuts.

   NOTE:
   Install bolts at location (C) with threads facing up before torquing bolts (B).
4. Torque bolts (B) to 461 N·m (340 ft·lbf).

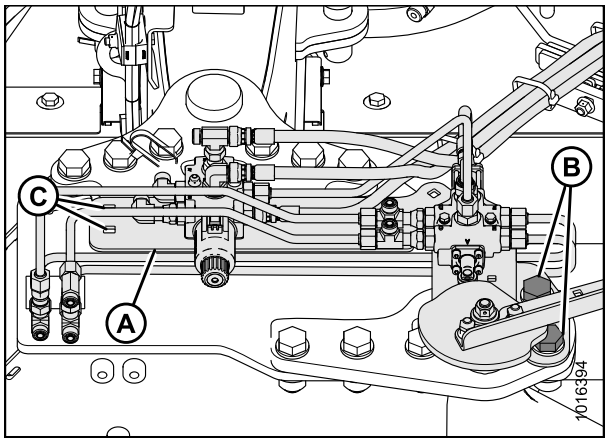


Figure 3.50: Selector Valve

5. Install support plate (A) and secure it with bolts (B).
6. Install bolts (C), but do not tighten.

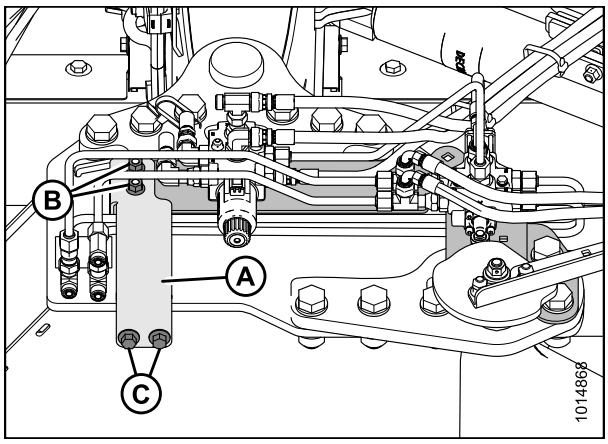


Figure 3.51: Support Plate

7. Remove nut (A) from support (D).
8. Install bolt (B) through support (D) and support (C), and then reinstall nut (A).

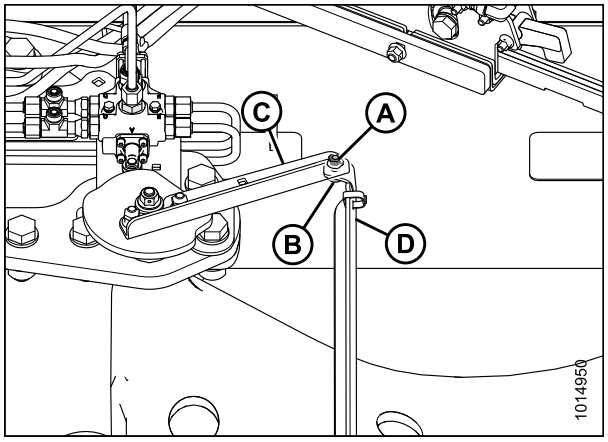


Figure 3.52: Support Plate

Installing Transport Swing Cylinder

1. Remove shipping bag from pallet.
2. Retrieve clevis pin from shipping bag.
3. Support the transport swing cylinder (A). Cut straps securing the cylinder to the pallet.

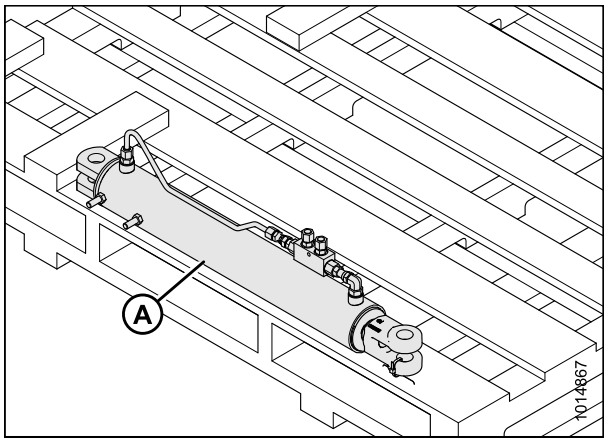


Figure 3.53: Transport Swing Cylinder

IMPORTANT:
Transport swing cylinder (A) must be primed before installing it on the carrier frame.

4. Using a hydraulic power pack or tractor hydraulics, extend and retract the transport swing cylinder (A) until all the air has been removed.
5. Extend transport cylinder (A) to approximately 1420 mm (56 in.) between pins.

NOTE:
If cylinder length adjustment is required, remove the bolt (C) that secures the clevis end. Rotate the clevis to lengthen or shorten the distance between pins (B). Once correct measurement is achieved, reinstall bolt (C) to secure the clevis end.

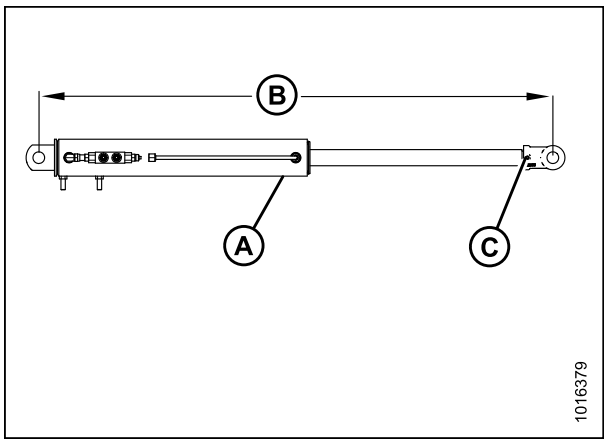


Figure 3.54: Transport Swing Cylinder

6. Install barrel end of the transport swing cylinder (A) onto carrier frame with clevis pin (B). Secure clevis pin with cotter pin (C).

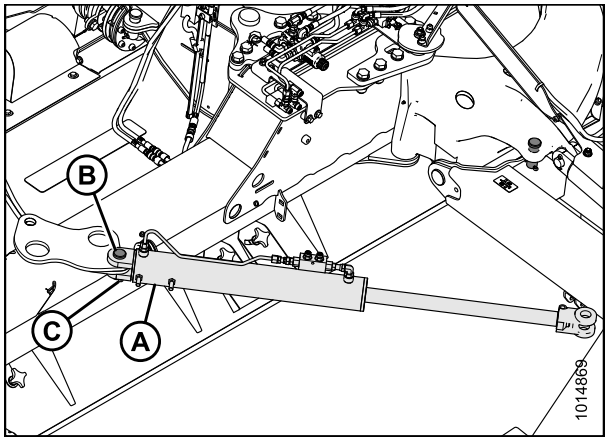


Figure 3.55: Transport Swing Cylinder

7. Connect clevis end (B) to transport casting. Align holes and install clevis pin (C). Secure with cotter pin (D).

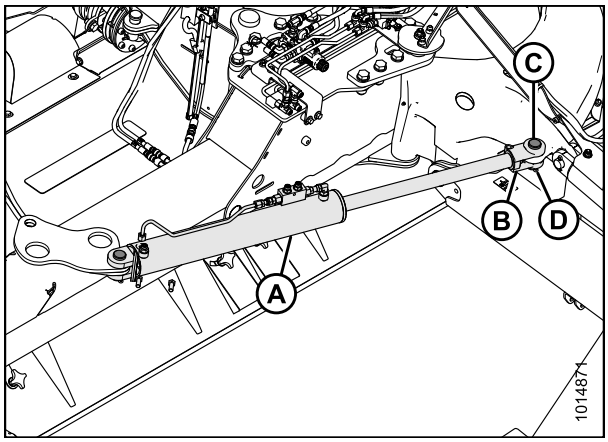


Figure 3.56: Swing Cylinder (Rear Left-Hand View)

Installing Transport Wheels

1. Cut straps securing transport assembly to pallet.
2. Slowly lower forklift until transport assembly wheel spindles (A) are approximately 305 mm (12 in.) off the ground.
3. Remove wheel bolts (B) from the hub (A) on the left-hand side.

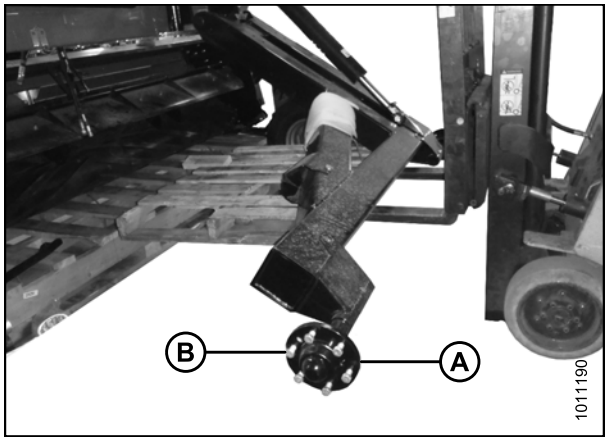


Figure 3.57: Transport Wheel

4. Remove bolt (B) holding the axle assembly (A) in place.
5. Slide axle assembly (A) out of the support.

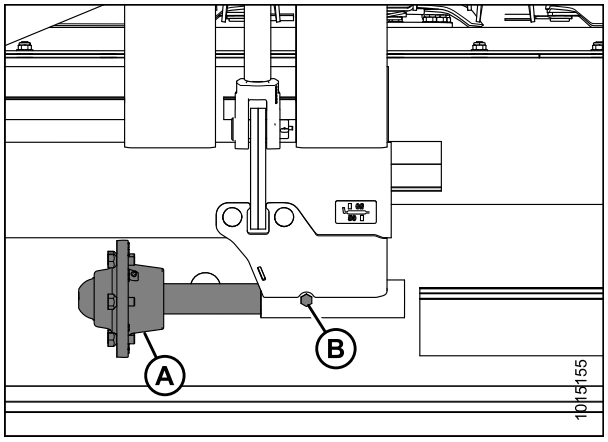


Figure 3.58: Axle Assembly Relocation

6. Install the axle assembly (A) into the support.
7. Install bolt (B) with nut and torque to 68 N·m (50 ft·lbf).
8. Remove wheel bolts from the hub (A).

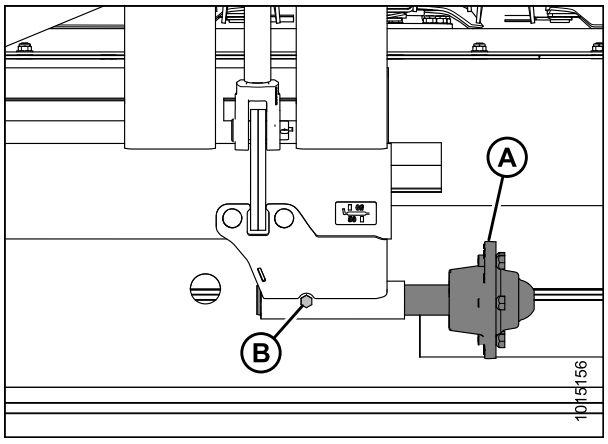


Figure 3.59: Axle Assembly Relocation

⚠ CAUTION

When installing wheel, be sure to match countersunk holes with bolt head profiles. Holes that are not countersunk do NOT correctly seat the bolts.

9. Retrieve transport wheels and install with wheel bolts. Ensure valve stem faces outboard. Do not fully tighten bolts.
10. Lower wheels to the ground and back forklift away.
11. Torque wheel bolts to 160 N·m (120 ft·lbf) following the tightening sequence shown.

    NOTE:
    Whenever a wheel is installed, check torque after one hour of operation.

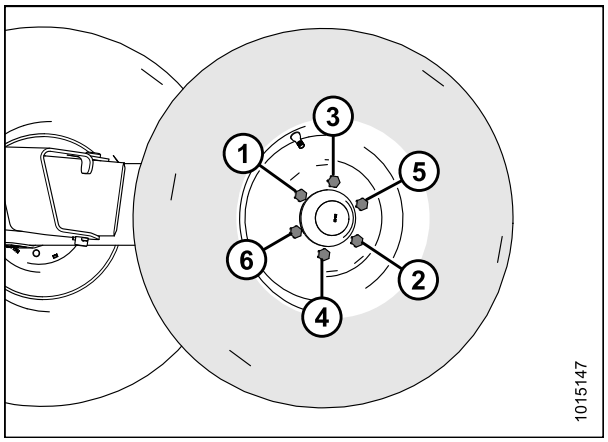


Figure 3.60: Tightening Sequence

Installing Transport Alignment Control

1. Remove the cam assembly (A), from the shipping support (B).
2. Remove nuts (C) from the cam assembly.

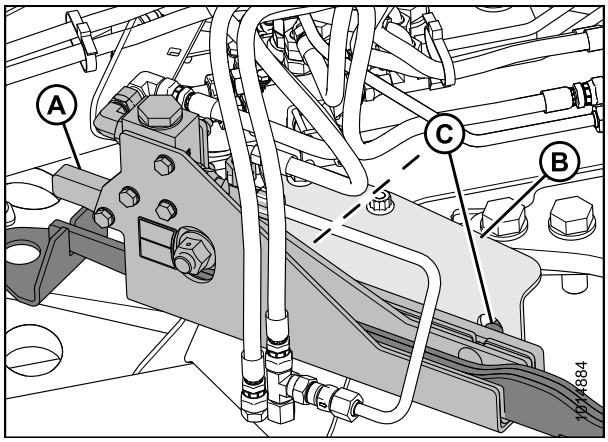


Figure 3.61: Alignment Controls (Front Right-Hand View)

3. Secure the cam assembly (A) onto the hitch swing cylinder plate (B) with bolts and nuts (C). Torque nuts (C) to 55–60 N·m (40–45 ft·lbf).

   NOTE:
   When installing the cam assembly (A), check for hose twisting. If required, loosen hose fitting to allow hose to untwist. Torque fitting when complete.

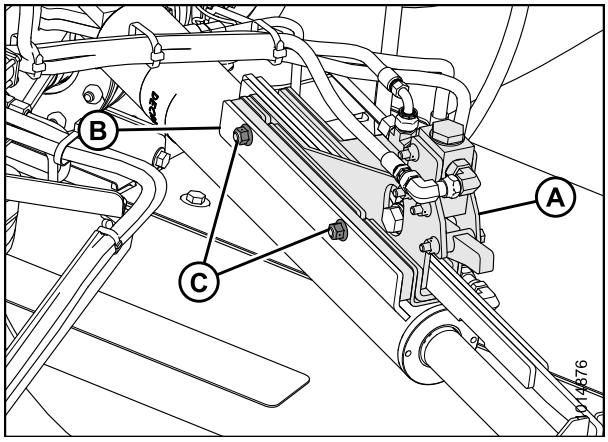


Figure 3.62: Alignment Control (Rear Right-Hand View)

4. Remove bolt (B), then remove the shipping support (A) and discard.

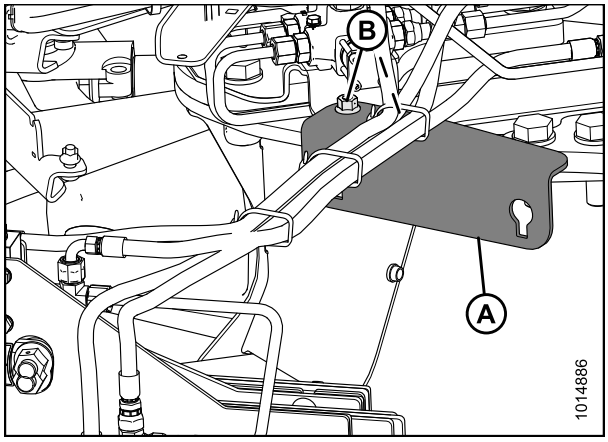


Figure 3.63: Shipping Support (Front Right-Hand View)

5. Check the travel of the cam arm (A) by sliding it in and out of the cam assembly (B).

   NOTE:
   If the cam arm does not slide easily, loosen valve mounting bolts (C) and position valve (B) at the top of the mounting holes. Retighten valve mounting bolts (C).

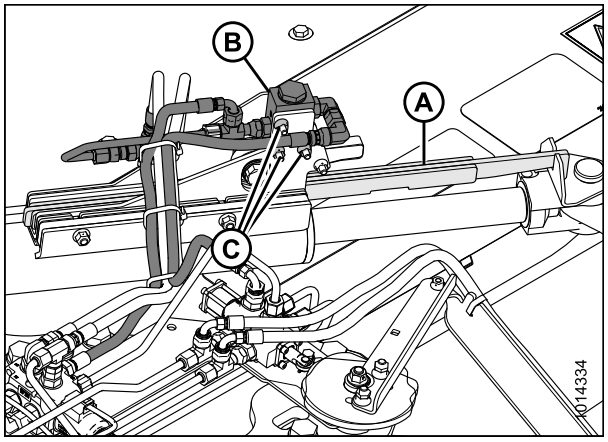


Figure 3.64: Alignment Control (Rear Right-Hand View)

6. Align the hole in the cam arm (A) with the hole in the cylinder clevis (B).

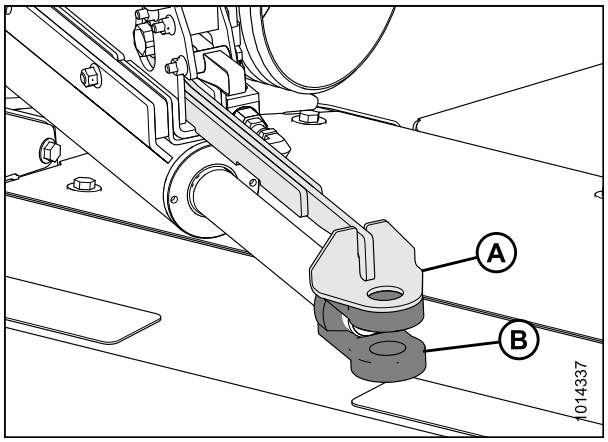


Figure 3.65: Alignment Control (Rear Right-Hand View)

7. Ensure the end of the cam arm (A) is parallel with the clevis end (B) of the cylinder. If adjustment is required, use a bar to turn the clevis until the clevis is parallel with the cam arm (A).

   NOTE:
   Clevis end of cylinder will be attached to Road Friendly Transport™ system casting when the system is primed. Refer to *4.13 Priming the Hitch Swing Cylinder, page 110*.

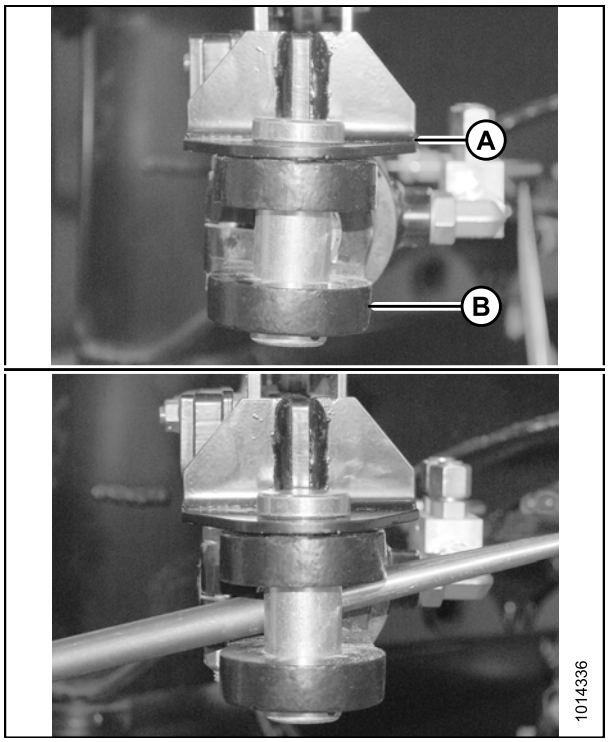


Figure 3.66: Cam Arm Alignment

8. Retrieve completion valve assembly (A) and one M12 x 25 flanged hex head bolt from shipping bag A.
9. Remove bolts (B) from the standoffs on rear of carrier. Install valve assembly (A) behind support plate (C) and secure it to the standoffs using the three M12 x 25 flanged hex head bolts (B).

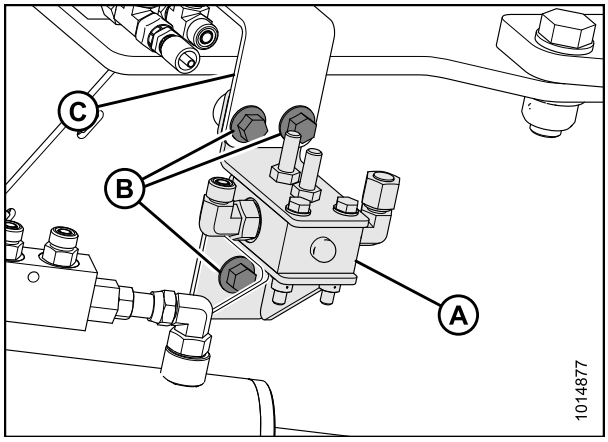


Figure 3.67: Control Valve

10. Retrieve paddle assembly (B) from shipping bag.
11. Install washers (A) onto bolts welded to the completion valve assembly.
12. Install lever assembly onto the welded bolts and secure with nuts (C).

NOTE:
Make sure that paddle (B) is centered on valve.

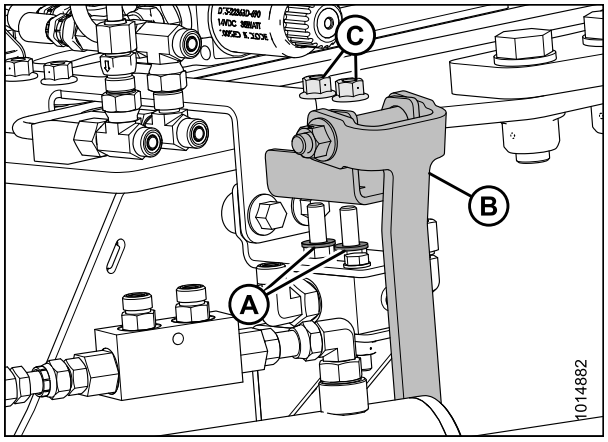


Figure 3.68: Control Valve

Installing Hydraulics

This section describes the installation of the transport hydraulic control system.

Installing Hydraulic Lines and Hoses

NOTE:
Refer to *10.2 Torque Specifications, page 204* for hydraulic fitting installation details.

1. Retrieve steel lines and hoses from shipping bag.
2. Place a container or rag under fitting on hitch swing cylinder.
3. Remove existing fitting from location (A) from the block.
4. Remove cap from tee fitting (C).
5. Retrieve ORFS-6 x ORB-6 connector (B) from shipping bag A and install into location (A).

NOTE:
Ensure that direction arrow on check valve (D) points away from tee fitting (C).

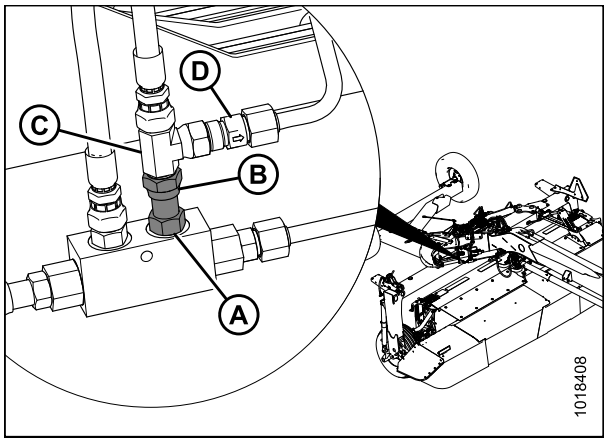


Figure 3.69: Alignment Valve Fitting

6. Remove cap from fitting (A).
7. Remove plug from hose (B). Install hose to fitting at location (A).

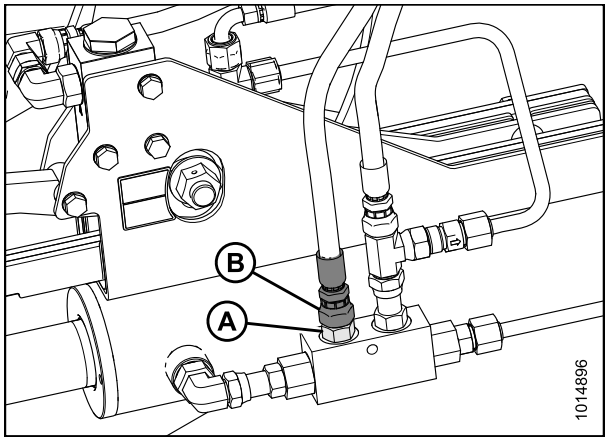


Figure 3.70: Alignment Valve Fitting

8. Install steel line (MD #246954) (A) from port A on the completion assembly to tee fitting.
9. Install steel line (MD #247335) (B) from port B on the completion assembly to tee fitting.

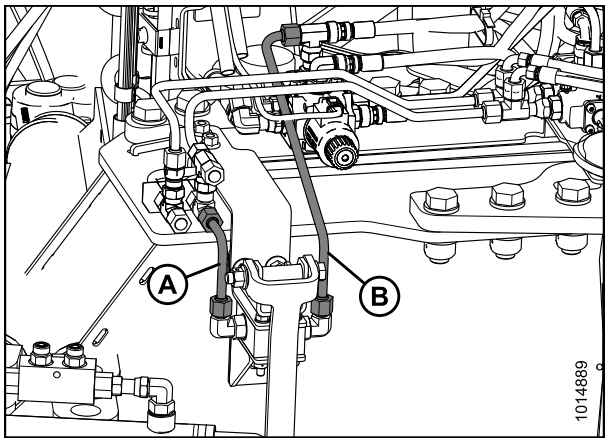


Figure 3.71: Completion Assembly Plumbing

10. Install hose (A) to steel line connecting to port C of transport swing control.
11. Install hose (B) to steel line connecting to port D of transport swing control.
12. Use a cable tie and tie hoses (A) and (B) together.

    NOTE:
    Ensure that direction arrow on check valve (F) points toward tee fitting.

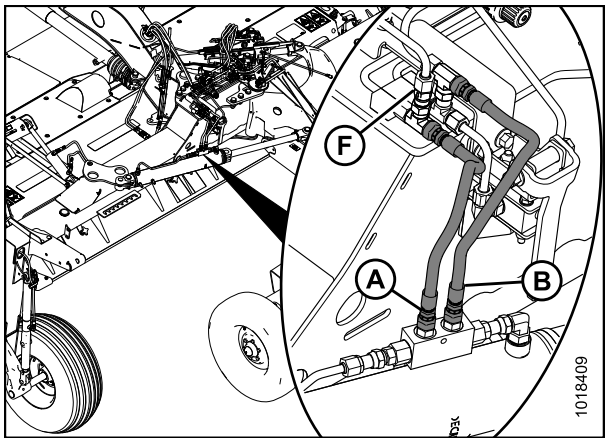


Figure 3.72: Transport Swing Cylinder

13. Install hose (A) from outer port (rod end) on transport cylinder block to tee fitting (D) in port D of transport swing control.
14. Install hose (B) from inner port (base end) on transport cylinder block to tee fitting (C) in port C of transport swing control.

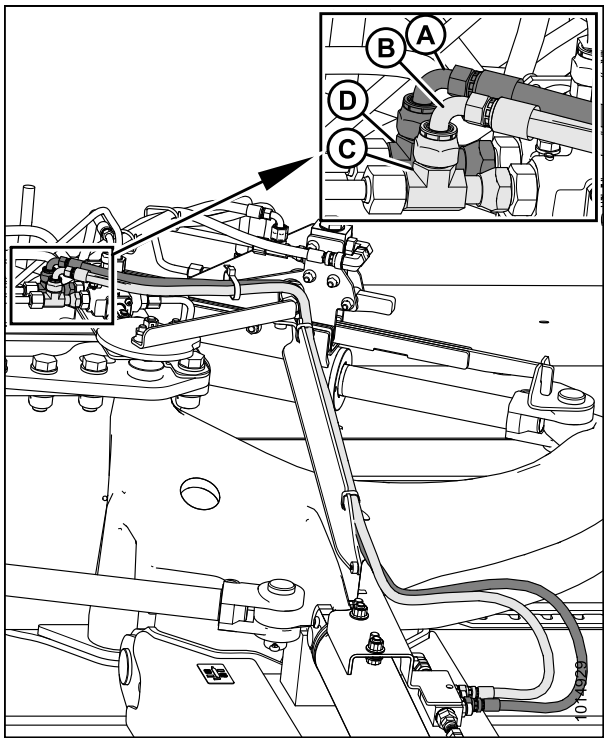


Figure 3.73: Transport Swing Control

15. Connect hose (red collar #2) (B) to fitting in port A1 on selector valve (C).
16. Connect hose (blue collar #2) (A) to fitting in port A2 of the selector valve (C).
17. Use a cable tie and tie hoses (A) and (B) together.

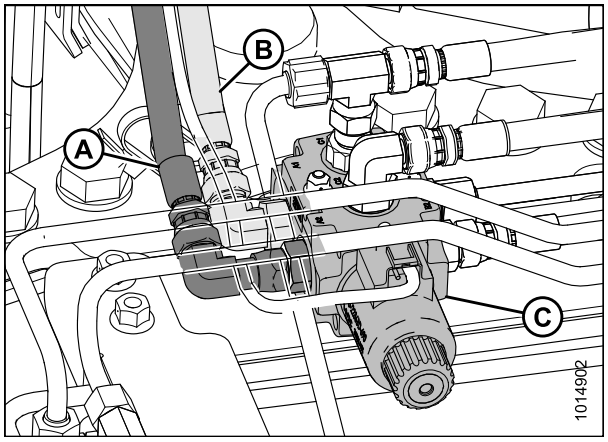


Figure 3.74: Selector Valve Supply

Installing Secondary Lift Hose for Field Wheels

NOTE:
The secondary lift hose is required to lift the field wheels fully into storage position when the mower conditioner is in transport mode.

18. Retrieve the following secondary lift hose from shipping bag according to your mower conditioner size:
    - **13-foot headers:** Use hose MD #224160
    - **16-foot headers:** Use hose MD #224162
19. Retrieve the blue collars with the number one (blue collar #1) on them from the shipping bag. Place one collar on both ends of the secondary lift hose (B).
20. Undo adjustable strap (A) around hoses at aft end of hitch.
21. Feed male orb end of hose (B) into access hole (C) at rear of hitch through hitch to opening at front.

NOTE:
If you are installing a hydraulic center-link (MD #B5810), pull the hydraulic hoses through the hitch at the same time as the lift hose.

NOTE:
There is a green wire preinstalled in the hitch for pulling hoses through the hitch.

22. Position long hose (A) so that the exposed length at front of hitch matches existing hose (B). Route hose through guide (C).
23. At front of hitch, loosen nut (D) on hose clamp (E) until hose (A) can be positioned in clamp.
24. Tighten nut (D).

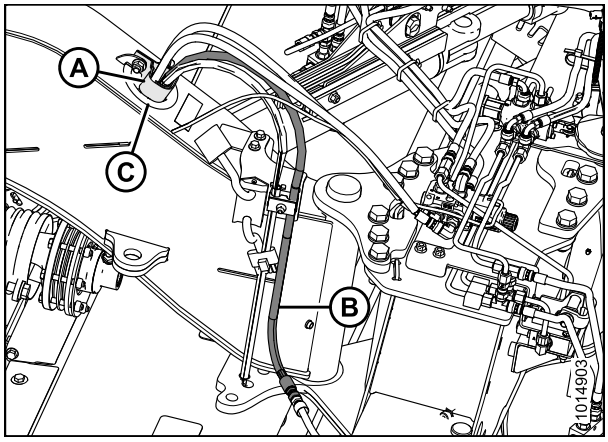


Figure 3.75: Lift Hoses

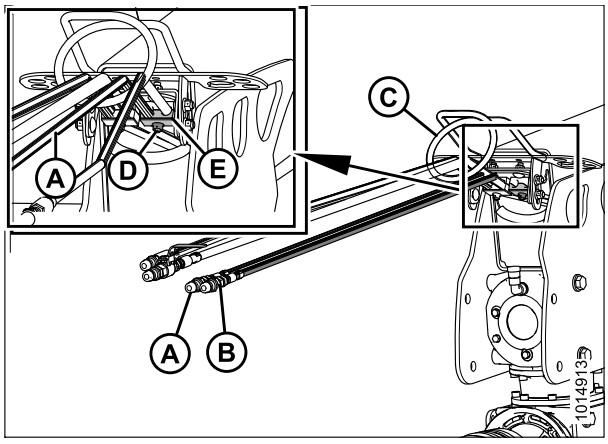


Figure 3.76: Lift Hoses

25. Retrieve ORB-8 coupler (A) and plastic cap (B) from hardware bag.
26. At forward end of hitch, install coupling (A) and plastic cap (B) onto secondary lift hose (C). Do **NOT** attach hoses to tractor at this time.

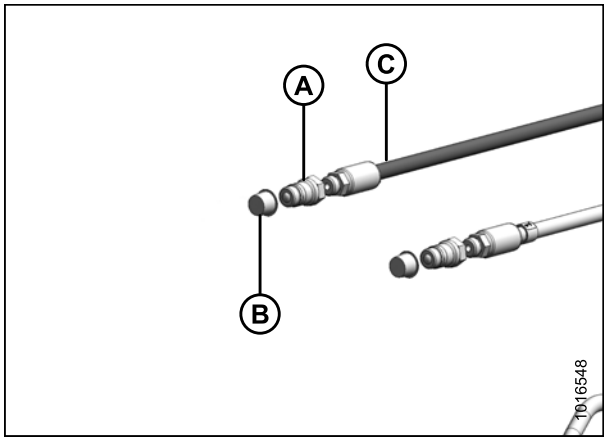


Figure 3.77: Lift Hose Fittings

27. At rear of hitch, secure hoses with adjustable strap (A).

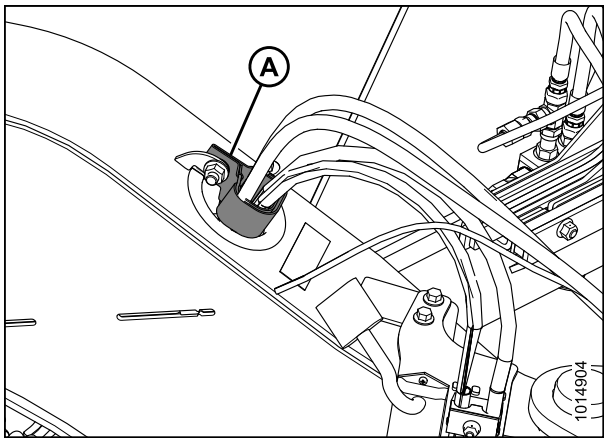


Figure 3.78: Lift Hose

28. Route hose (MD #247106) (A) through opening (E) at the rear of frame.
29. Feed shortest hose (A) through opening (B) in carrier frame as shown with male end (C) at hitch pivot.
30. Connect hoses (MD #247106) (A) and (MD #224160 or MD #224162) (D) at the hitch pivot.

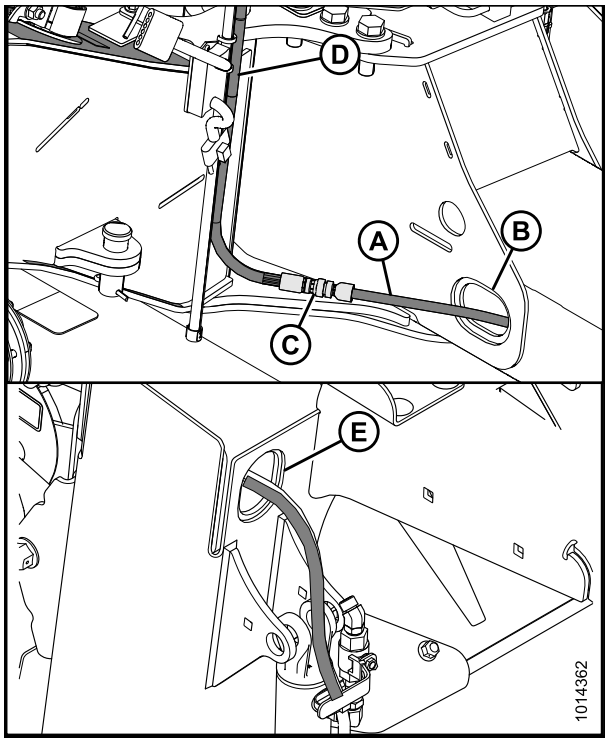


Figure 3.79: Lift Hose

31. Retrieve ORFS-6 x ORB-8 elbow from hardware bag.
32. Remove plug at base of lift cylinder and install elbow (A) as shown.
33. Connect hose (B) to elbow and tighten.
34. Tighten remaining connections.
35. Secure hose to cylinder with cable tie (C).

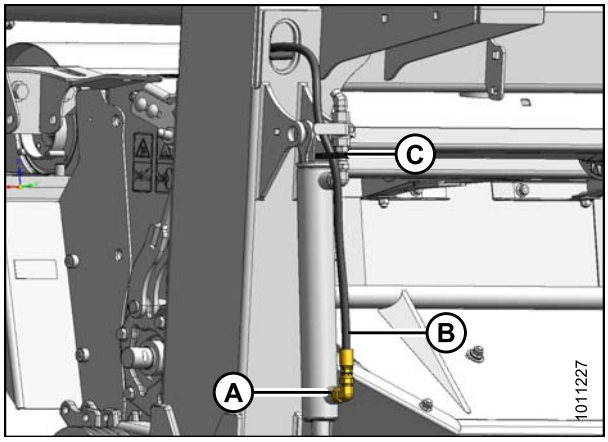


Figure 3.80: Lift Cylinder

Installing Electrical Components

Connecting Selector Valve

1. Connect the selector valve harness (A) to the selector valve.

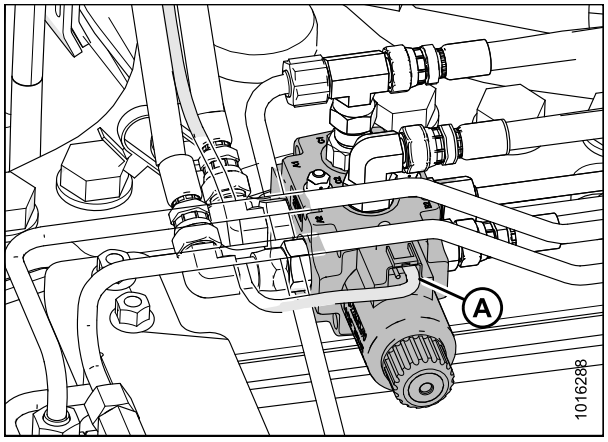


Figure 3.81: Selector Valve Supply

Installing Light Assemblies

1. Disconnect the wiring harnesses at the left-hand light assembly; there are two connectors per assembly.
2. Remove the left light assembly (A).

   NOTE:
   Right-hand side was removed earlier. Refer to *Installing Latch Assembly, page 24*.

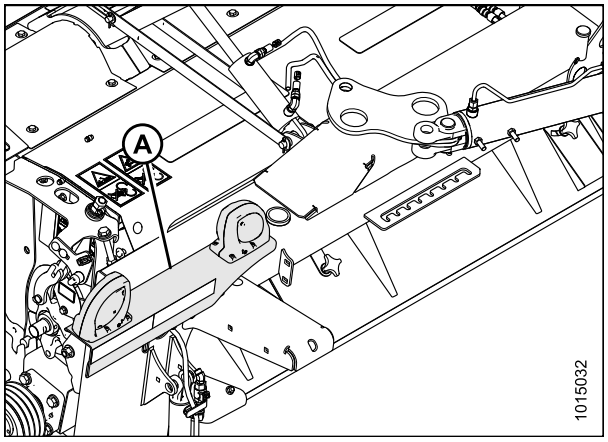


Figure 3.82: Transport Lighting

3. Locate the right-hand light assembly that was removed earlier. Remove the red lamp (C) and install into predrilled holes next to amber lamp with existing hardware, as shown.
4. Install the right-hand light assembly (A) on left float spring mount using bolts (B) removed in Step *2., page 40*. The red (C) light should be towards rear of machine when in transport mode.

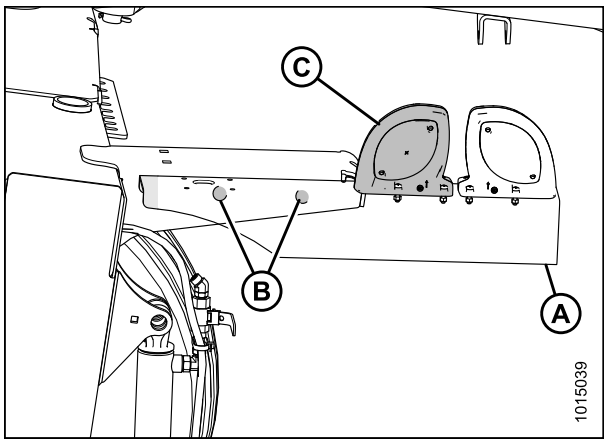


Figure 3.83: Left Side of Carrier

5. Retrieve new light bracket (C) from shipment.
6. Install amber lamp (A) and red lamp (B) onto new bracket (C) as shown with hardware provided.

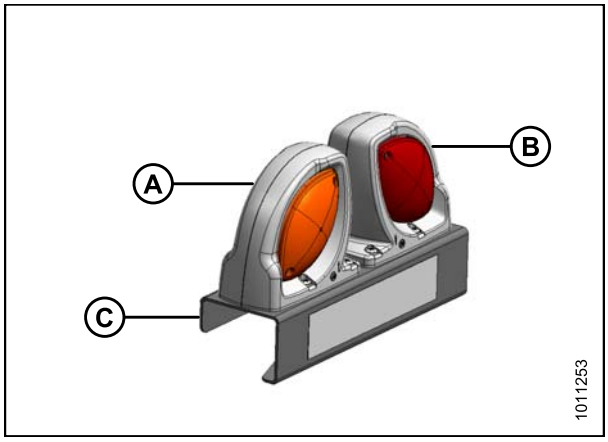


Figure 3.84: Light Assembly

7. Install the light assembly (A) onto header left end with two M10 x 20 carriage bolts (B) and lock nuts from shipping bag (A). Ensure amber lamp is toward front of header and reflector faces outboard.

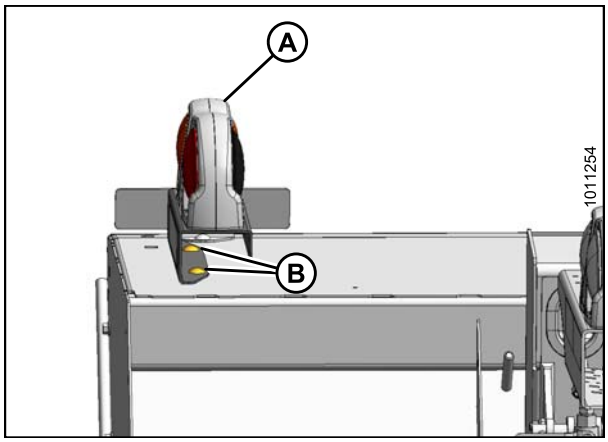


Figure 3.85: Header Left Side Lighting

Installing Left-Hand Electrical Harness

1. Retrieve electrical harness (MD #247884) from shipping bag.
2. Use a draw tape or equivalent to route connectors P3 and P4 through opening (B) at front of carrier to opening (C) adjacent to center-link.

   NOTE:
   Check harness label before routing it through the carrier frame.

3. Pull harness (A) with connectors P3 and P4 until they reach the left-hand light assembly on the header.
4. Disconnect the carrier frame harness receptacle P1 from the transport lighting module (D).
5. Connect existing harness receptacle P1 to plug P2 on the new harness (MD #247884).
6. Place the existing harness into opening (B) at front of the carrier.
7. Connect the new harness (MD #247884) receptacle P1 to the transport lighting module (D).
8. Route harness (A) to light (B) on header as shown.
9. Retrieve P-clips, plastic clamps, and cable ties from shipping bag.
10. Remove bolts (C) on header at locations shown.
11. Secure harness (A) with P-clips, existing bolts (C), and plastic clamp (D) into existing hole.

    NOTE:
    Harness for 13-foot mower conditioner is secured with one plastic clamp (D).

    NOTE:
    Harness for 16-foot mower conditioner is secured with two plastic clamps (D).

12. Secure harness (A) to light bracket with two cable ties (E).
13. Push excess harness into carrier frame.
14. Connect plug P3 and P4 into the light (B).

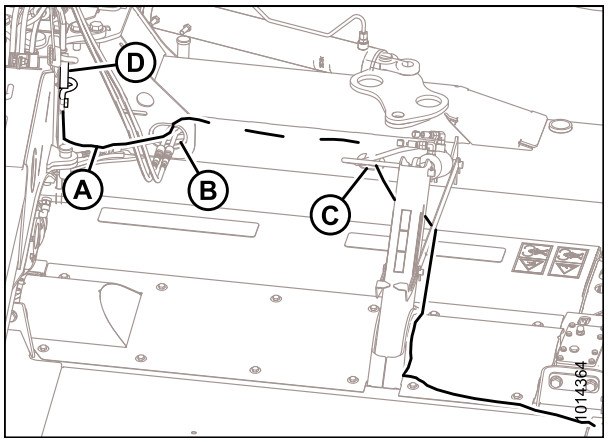


Figure 3.86: Harness Routing

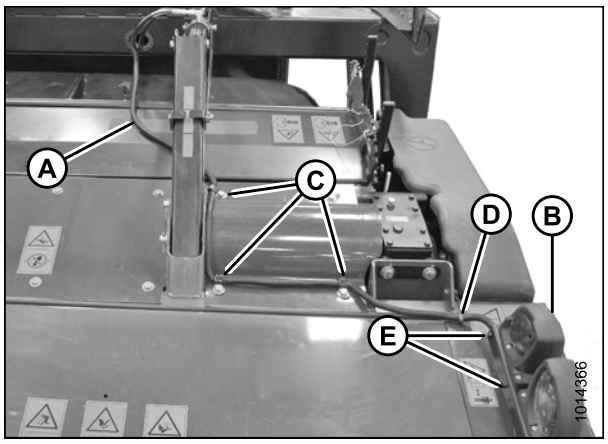


Figure 3.87: Harness Routing

Connecting Right-Hand Electrical Harness

1. Route harness (A) from opening into light bracket (B) and plug into light connectors.
2. Secure harness (A) to light bracket with two cable ties (C).
3. Push excess harness into carrier frame.

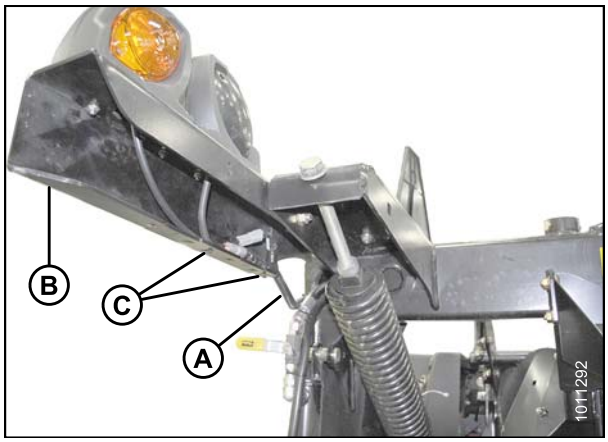


Figure 3.88: Transport Light

Installing Remote Control

1. Retrieve remote control (A) with wiring harness.
2. Place remote control (A) on hitch temporarily.

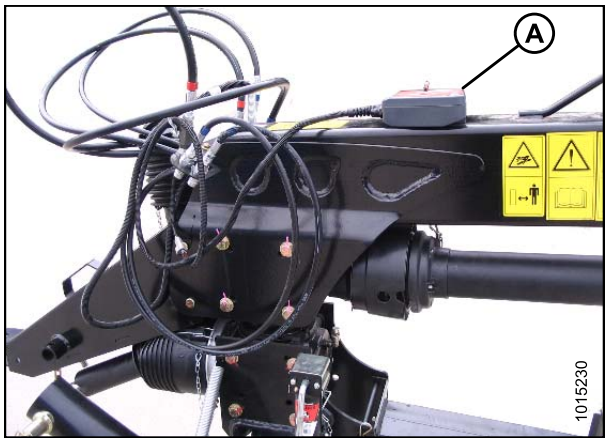


Figure 3.89: Remote Control on Top of Hitch

3. Locate the connector (C) that branches off the seven-pole trailer plug (A) and attach it to the remote wiring harness (B).

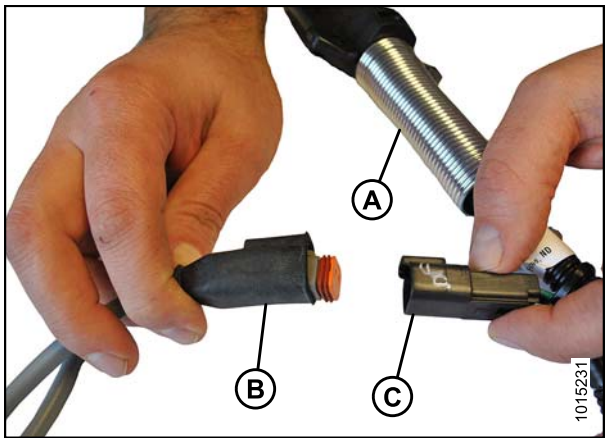


Figure 3.90: Transport Harness

If your tractor has a three-pin auxiliary power connection (A):

4. Connect the two wires (B) from the three-pin auxiliary connector to the power wires (C) on the remote control, wrap connections with electrical tape, and skip to Step *6., page 44*.

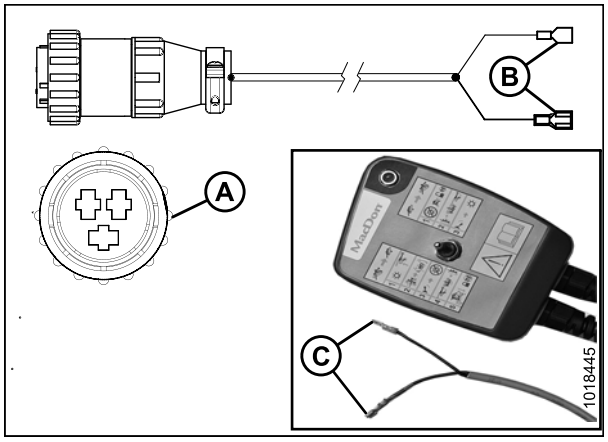


Figure 3.91: Three-Pin Auxiliary Connector

If your tractor does NOT have a three-pin auxiliary power connection:

5. Connect the remote control power wire (B) to the tractor's power supply:
   - Connect wire (C) with no tag to tractor ground
   - Connect wire (D) with the red tag to tractor power

   NOTE:
   If the red tag is missing, identify the power by locating the wire with the number one printed on it. The ground wire has a number two printed on it.

6. Place the remote control inside the tractor cab.

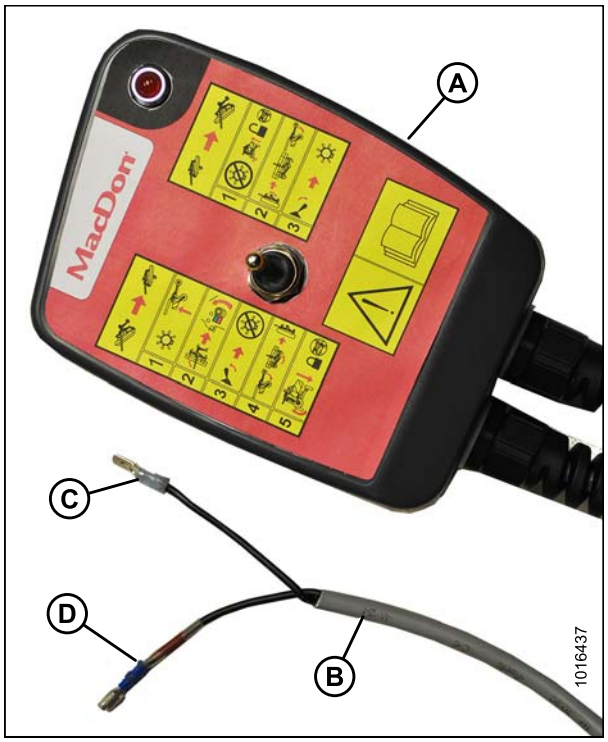


Figure 3.92: Remote Control

Installing Slow Moving Vehicle (SMV) Sign

1. Retrieve SMV sign that was previously removed.
2. Remove existing bracket (A) from SMV sign and discard.

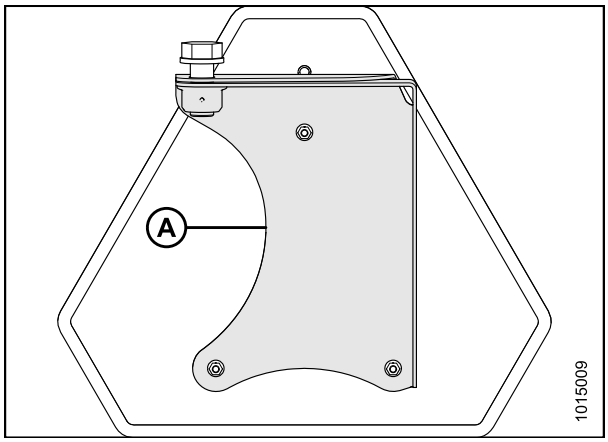


Figure 3.93: SMV Sign

3. Retrieve new bracket (A), two M12 x 30 bolts, and two M12 nuts from shipment bag.
4. Attach bracket (A) to left end float spring member with M12 bolts (B) and nuts.
5. Attach sign (C) to bracket and secure with three M6 lock nuts (D) provided in shipment bag.

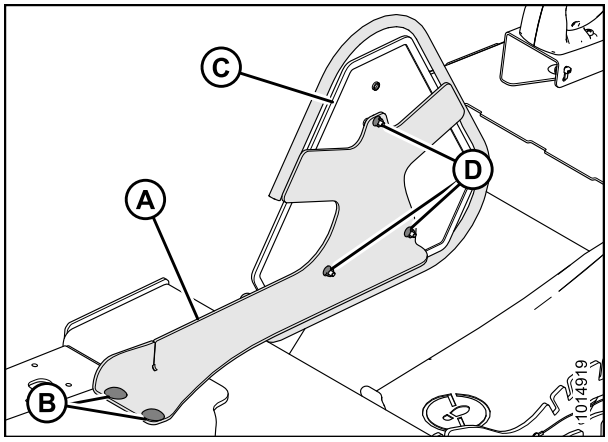


Figure 3.94: SMV Sign

3.7.2 Installing Hydraulic Center-Link (Optional)

The hydraulic center-link option is supplied in a separate shipment. Refer to the installation instructions supplied with the kit.

3.7.3 Installing Tall Crop Divider (Optional)

IMPORTANT:
If header will be transported on public roads in the Road Friendly Transport™ mode, do not install the tall crop dividers. Install the dividers after the machine is delivered to the customer.

3.8 Setting up the Tractor

3.8.1 Adjusting the Drawbar

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Adjust tractor drawbar to meet the specifications listed in Table *3.1 ASAE Standard A482 Specifications, page 46*.
2. Secure the tractor drawbar so the hitch pin hole is directly below the driveline.

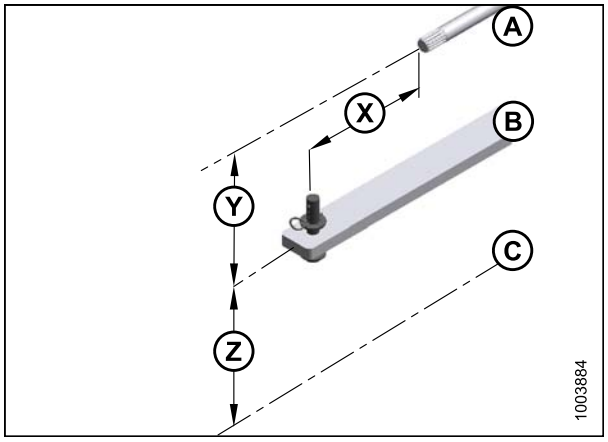


Figure 3.95: Tractor Drawbar Adjustments

A - PTO B - Tractor Drawbar C - Ground
X - Dimension X Y - Dimension Y Z - Dimension Z

Table 3.1 ASAE Standard A482 Specifications

Dimension	1000 rpm Power Take-Off	
	1-3/8 in. Diameter	**1-3/4 in. Diameter**
X	406 mm (16 in.)	508 mm (20 in.)
Y	200–350 mm (7-7/8–13-3/4 in.) **203 mm (8 in.) recommended**	
Z	330–432 mm (13–17 in.) **406 mm (16 in.) recommended**	

3.8.2 Installing Drawbar Hitch Adapter

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Remove hairpin (A) and pin (B).
2. If necessary, loosen four jam nuts (C), and then loosen four nuts (D) so that hitch adapter (E) will slide onto tractor drawbar (F).
3. Align hole in adapter (E) with hole in drawbar (F) and install pin (B). Secure with hairpin (A).
4. Gradually tighten the four nuts (D) to 540 N·m (400 ft·lbf).

   NOTE:
   Ensure hardened washers and Class 10 nuts (supplied with adapter) are used.
5. Tighten four jam nuts (C).

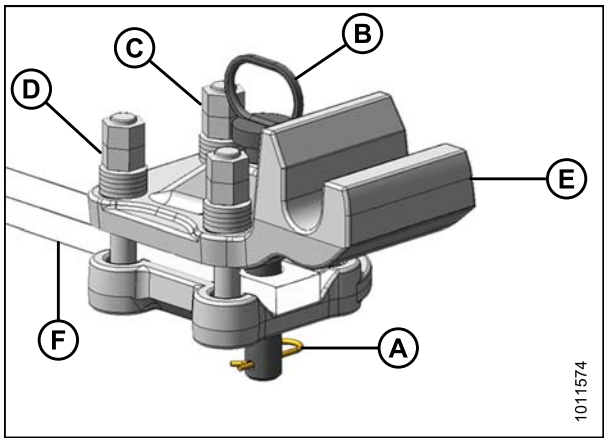


Figure 3.96: Drawbar Hitch Adapter

3.9 Attaching Mower Conditioner to the Tractor

Depending on tractor configuration, refer to the applicable attaching procedure:

- *3.9.1 Attaching with Drawbar Hitch, page 47*
- *3.9.2 Attaching with Two-Point Hitch, page 49*

3.9.1 Attaching with Drawbar Hitch

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Remove lynch pin (A) from clevis pin (B), and remove clevis pin from mower conditioner hitch.

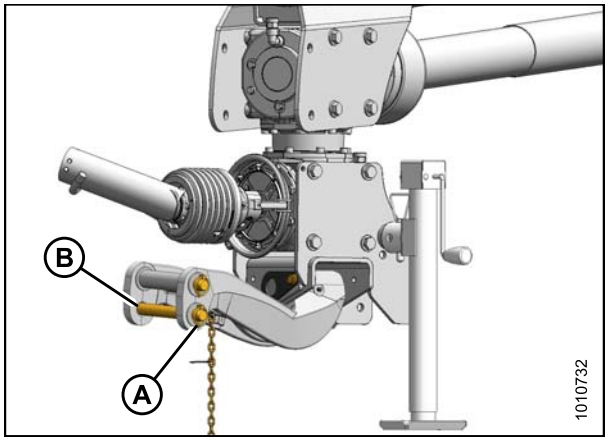


Figure 3.97: Mower Conditioner Hitch

2. Move tractor to position drawbar hitch adapter (A) under pin (B) in mower conditioner hitch. Adjust height as necessary with jack (C).
3. Shut down tractor and remove key from ignition.

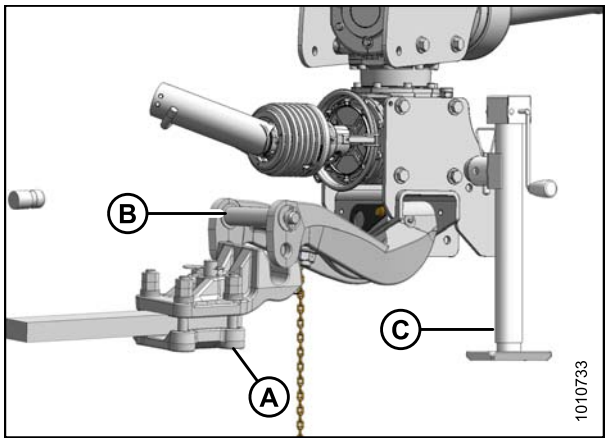


Figure 3.98: Mower Conditioner Hitch

4. Lower hitch with jack (A) so that pin (B) engages drawbar hitch adapter (C).
5. Install clevis pin (D) and secure with lynch pin (E).

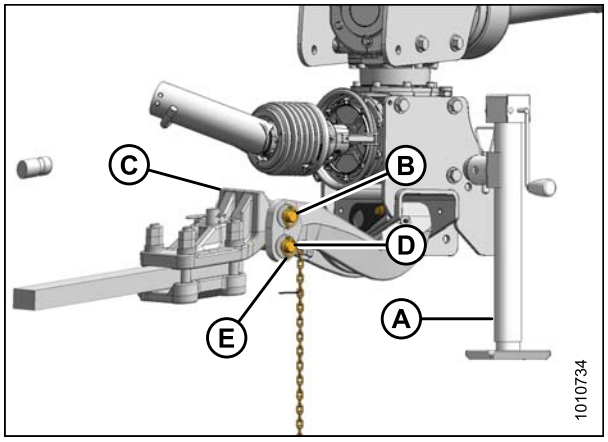


Figure 3.99: Mower Conditioner Hitch

6. Position driveline (A) onto tractor power take-off (PTO).
7. Pull back collar (B) on driveline (A), and push driveline until it locks. Release collar.
8. Route safety chain (C) from mower conditioner through chain support (D) on drawbar hitch adapter and around tractor drawbar support. Lock hook on chain.

   IMPORTANT:
   If the tractor has a three-point hitch, lift the links as far as possible to prevent damage to the hitch.

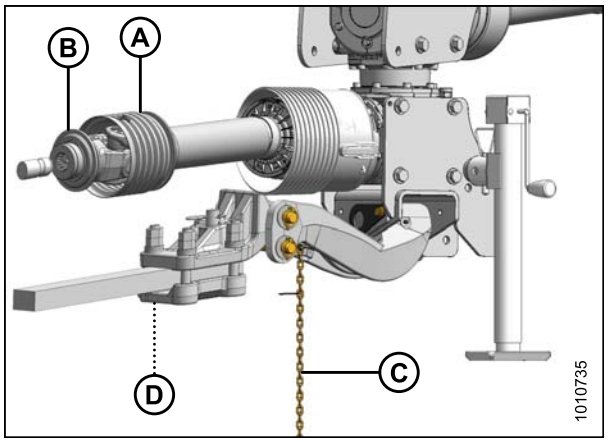


Figure 3.100: PTO Driveline

9. Raise jack (A), and remove pin (B).

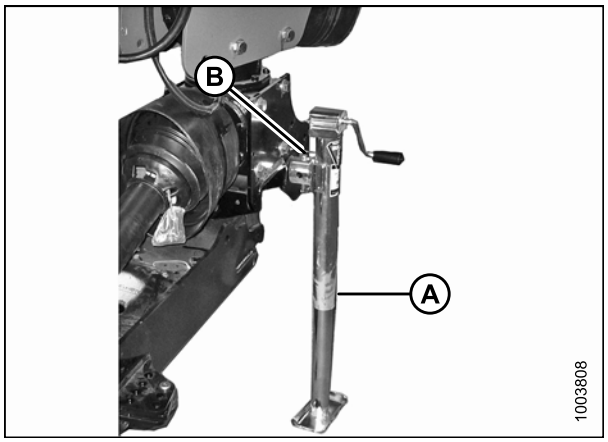


Figure 3.101: Hitch Jack

10. Move jack (A) to storage position on top of hitch, and secure with pin (B).
11. Proceed to *3.9.3 Connecting Hydraulics, page 51*.

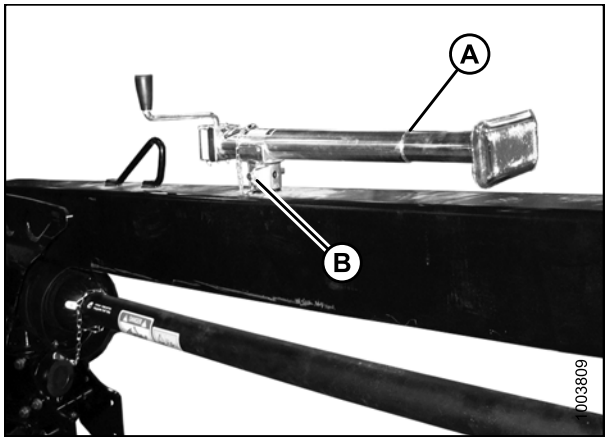


Figure 3.102: Jack Storage

3.9.2 Attaching with Two-Point Hitch

Follow these steps to attach Category II, IIIN, and III two-point hitches:

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Position tractor and align tractor hitch arms (A) with hitch adapter (B).
2. Shut off tractor and remove key.
3. Remove lynch pins (C) and washers from hitch adapter.

   IMPORTANT:
   If tractor is equipped with a Category III hitch, use a bushing (MD #224322) on each hitch pin (D).
4. Secure arms (A) onto adapter pins (D) with lynch pins (C).
5. Install anti-sway bars (not shown) on tractor hitch to stabilize lateral movement of hitch arms (A). Refer to your tractor operator's manual.

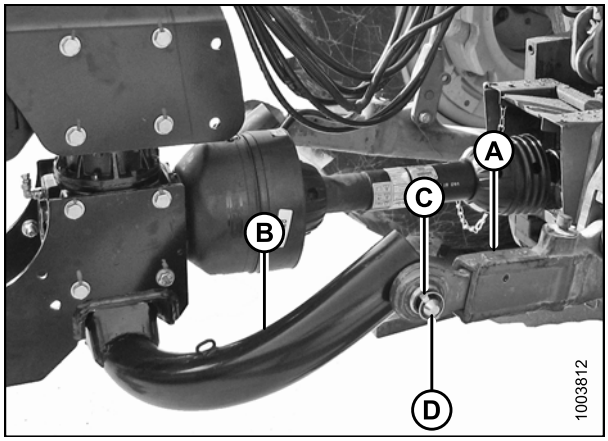


Figure 3.103: Two-Point Hitch Configuration

6. Check distance (C) between tractor power take-off (PTO) shaft (A) and mower conditioner hitch gearbox shaft (B) (without the front half of the driveline attached).
7. Ensure that measurement does NOT exceed the dimensions listed in Table *3.2 Distance between Hitch Gearbox and Tractor PTO, page 50*.

Table 3.2 Distance between Hitch Gearbox and Tractor PTO

Driveline Shaft Size	Distance (C)
34 mm (1-3/8 in.)	750 mm (27 in.)
43 mm (1-3/4 in.)	800 mm (31 in.)

8. Position driveline (A) onto tractor PTO shaft making sure that driveline is approximately level.
9. Pull back collar on driveline (A) and push driveline until it locks. Release collar.

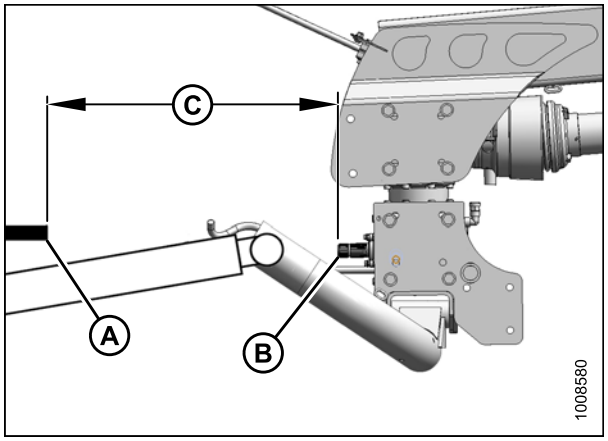


Figure 3.104: Allowable Driveline Length

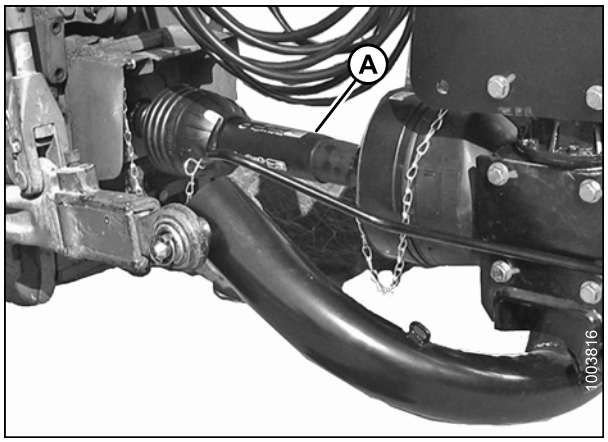


Figure 3.105: Mower Conditioner Driveline Attached to Tractor PTO

10. Start tractor and raise hitch so that stand (A) is off the ground. Shut down tractor and remove key from ignition.
11. Remove inner hairpin (B) and pull lock (C) to release stand.

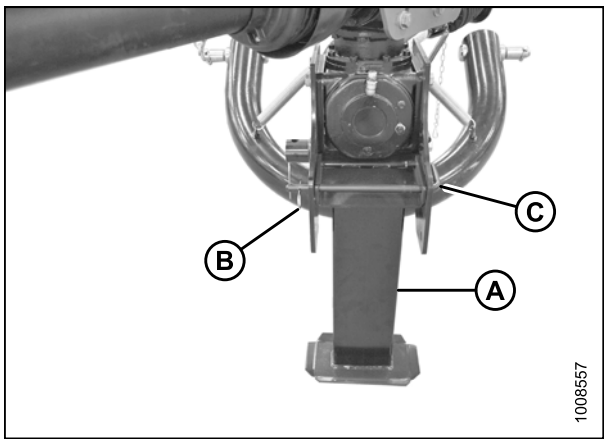


Figure 3.106: Hitch Stand

12. Raise stand (A), rotate lock (B) clockwise to vertical position, and re-engage lock (B) to hold the stand in the storage location.

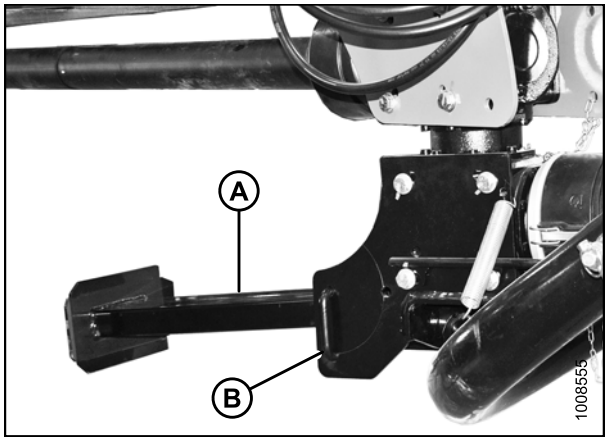


Figure 3.107: Hitch Stand

13. Secure lock with lynch pin (A).

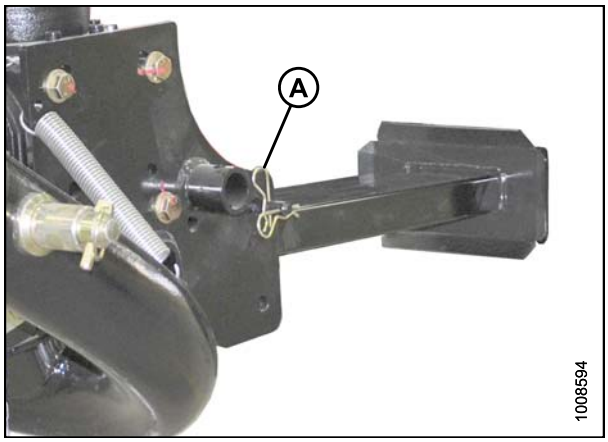


Figure 3.108: Hitch Stand

3.9.3 Connecting Hydraulics

WARNING

Do NOT use remote hydraulic system pressures over 20,684 kPa (3000 psi). Check your tractor operator's manual for remote system pressure.

NOTE:
Refer to numbered/colored bands on hoses to identify lift, swing/transport, and tilt hose sets.

Table 3.3 Hydraulic System Hoses

System	Hose Identification	Tractor Hydraulics
Lift (A)	Red #1 - pressure Blue #1 - return (only with Road Friendly Transport™ system installed)	Control 1
Swing/ Transport (B)	Red #2 - pressure Blue #2 - return	Control 2
Tilt (C)[1]	Red #3 - pressure Blue #3 - return	Control 3

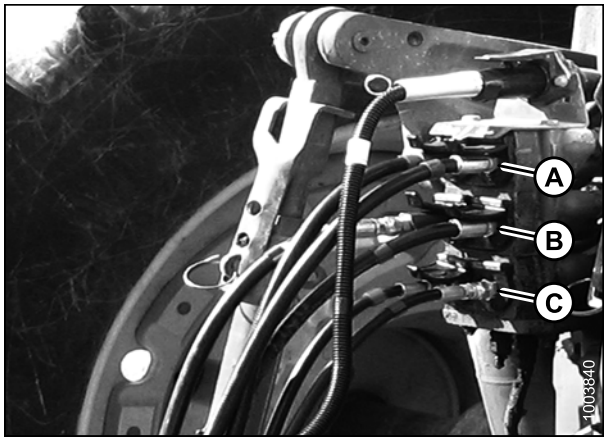


Figure 3.109: Hydraulic Connections

1. Connect the lift cylinder hose (red label with #1) to the tractor's hydraulic receptacle. The second hose (blue #1) is required only when the Road Friendly Transport™ system is installed. Refer to Table *3.4 Lift System, page 52* to confirm system is functioning correctly.

Table 3.4 Lift System

Control Lever Position	Cylinder Movement	Mower Conditioner Movement
Forward	Retract	Lower
Backward	Extend	Raise

2. Connect the two hitch swing cylinder hoses (labelled #2) to the tractor hydraulic receptacles. Refer to Table *3.5 Hitch Swing and Transport System, page 52* to confirm system is functioning correctly.

Table 3.5 Hitch Swing and Transport System

Control Lever Position	Cylinder Movement	Mower Conditioner Direction
Forward	Extend	Right
Backward	Retract	Left

3. For machines with hydraulic center-link only, connect the two mower conditioner tilt cylinder hoses (labelled #3) to the tractor hydraulic receptacles. Refer to Table *3.6 Mower Conditioner Tilt System, page 52* to confirm system is functioning correctly.

Table 3.6 Mower Conditioner Tilt System

Control Lever Position	Cylinder Movement	Mower Conditioner Movement
Forward	Retract	Lower
Backward	Extend	Raise

1. Available with hydraulic tilt option installed.

3.9.4 Connecting Electrical Wiring Harness

1. Ensure that Pin #4 (A) in the tractor receptacle is **NOT** continuously energized (refer to your tractor operator's manual). If necessary, remove the appropriate fuse.

   IMPORTANT:
   Older model tractors may have Pin #4 (A) energized as an accessory circuit; however, pin position (B) is used to supply power to the mower conditioner's brake lights.

2. Connect the mower conditioner wiring harness connector (C) to the tractor receptacle.

   NOTE:
   The connector is designed to fit tractors equipped with a round seven-pin receptacle (SAE J560).

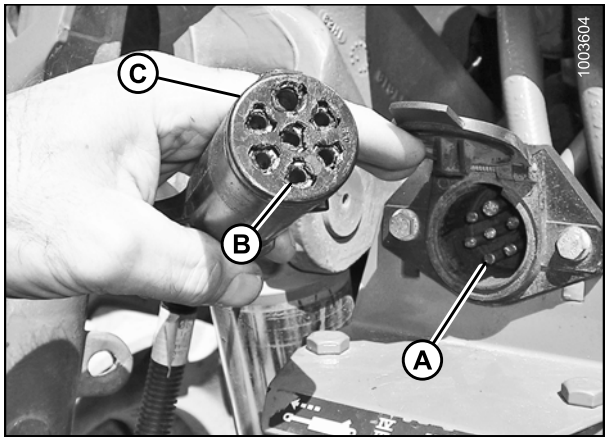


Figure 3.110: Electrical Wiring Harness and Receptacle

3.10 Installing Field Wheels

1. Remove the shipping strap (B) from the wheel spindle (A). Do this to each side.

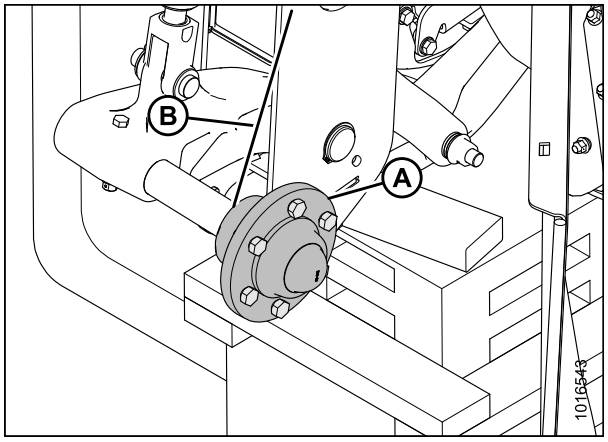


Figure 3.111: Wheel Spindle

2. Remove wheel bolts (A) from spindle (B).

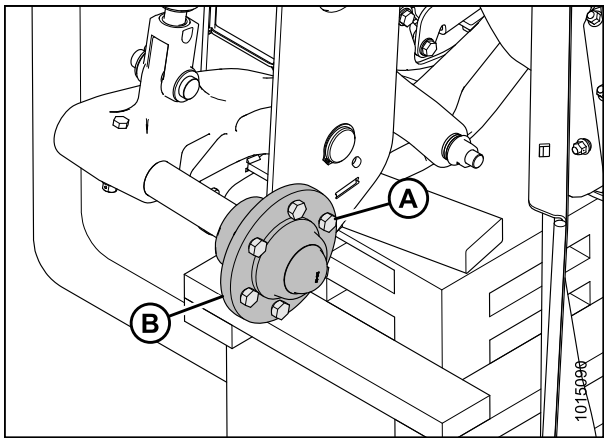


Figure 3.112: Wheel Spindle

CAUTION

When installing wheel, be sure to match countersunk holes with bolt head profiles. Holes that are not countersunk do NOT correctly seat the bolts.

3. Position wheel (A) on spindle, install bolts (B), and partially tighten.

   IMPORTANT:
   Be sure valve stem (C) points away from wheel support.

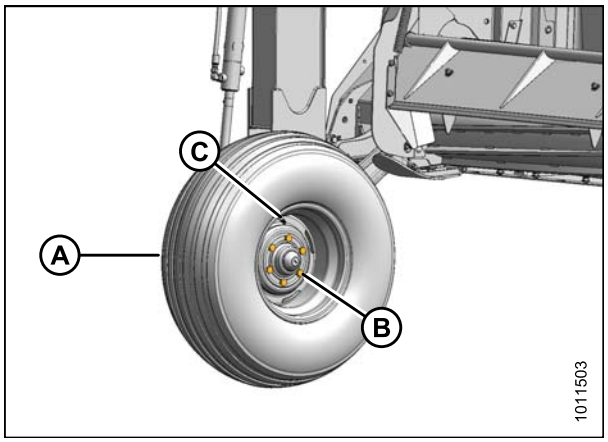


Figure 3.113: Installing Wheel Bolts

4. Lower wheels to the ground and torque wheel bolts to 160 N·m (120 ft·lbf) using the tightening sequence shown.

   IMPORTANT:
   Whenever a wheel is installed, check torque after one hour of operation.

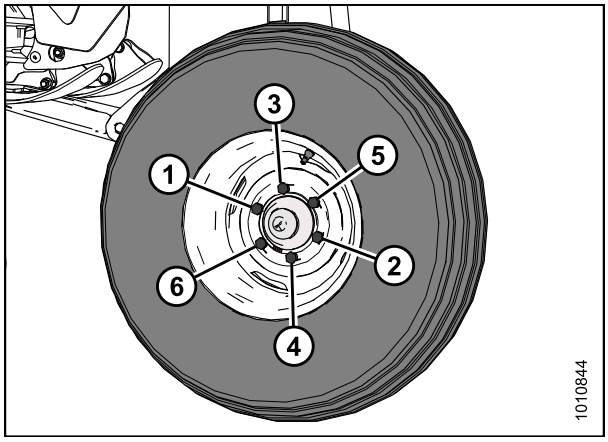


Figure 3.114: Tightening Sequence

3.11 Priming the Hitch Swing Cylinder

1. Move the transport switch on the remote control to the lower position (B) and ensure that light (A) is illuminated. The hitch swing circuit will now be active.

Figure 3.115: Remote Control

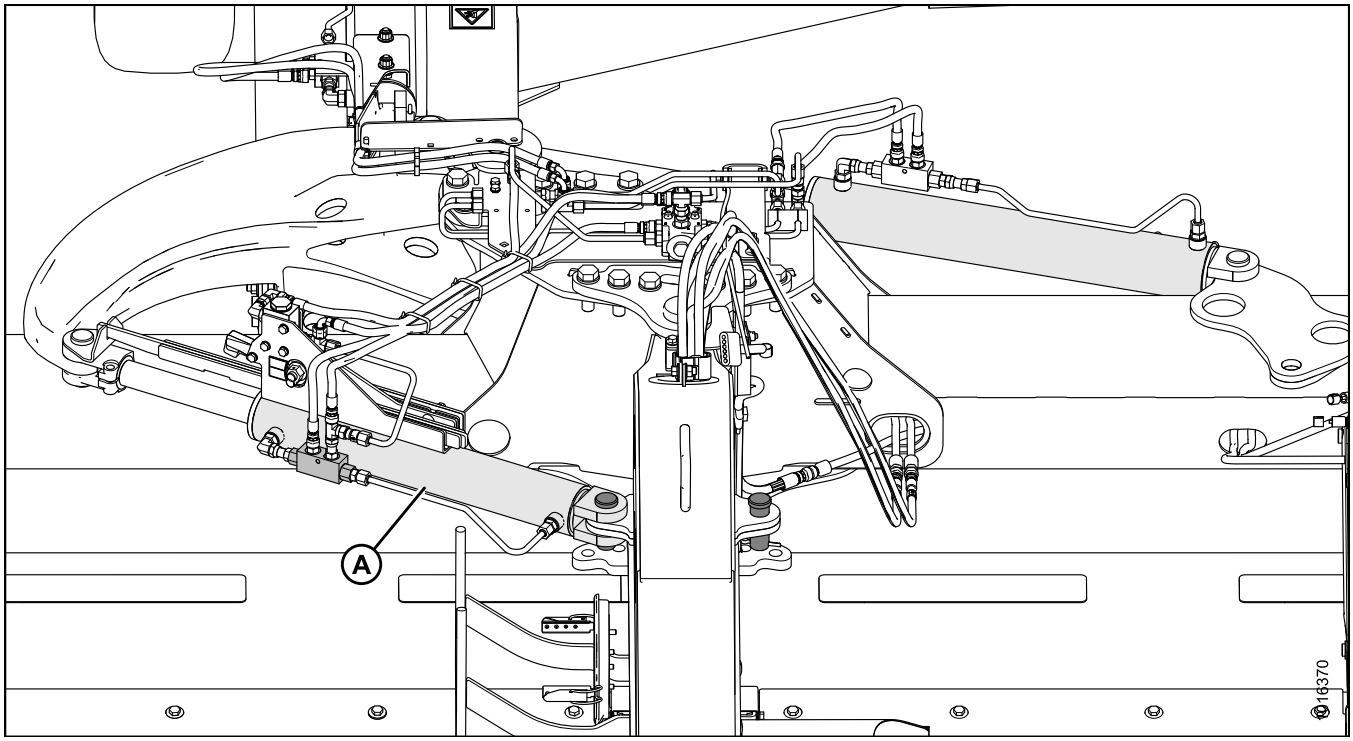


Figure 3.116: Hydraulic System

2. Using the tractor's hydraulics, extend and retract the swing cylinder (A) several times to purge any air in the cylinder.

NOTE:
Ensure there is no contact with the rear link arm when the hitch swing cylinder extends.

3. Align the clevis pin hole in the cylinder clevis (B), cam arm (C), and rear link arm (D). Install clevis pin (D) and secure with a cotter pin (E).

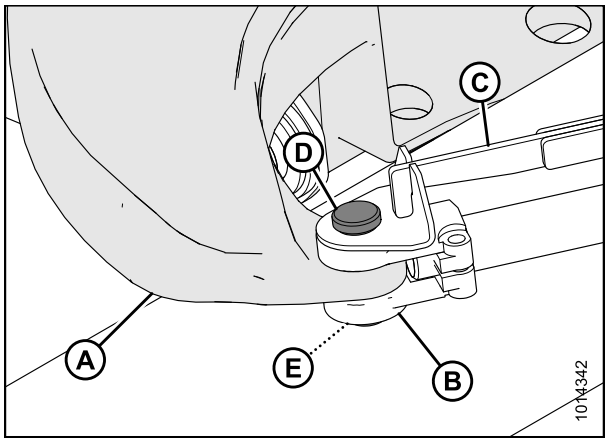


Figure 3.117: Rear Arm Link

3.12 Setting up Forming Shields

Each type of conditioner uses a different configuration for the swath forming shield. Refer to the applicable instruction for the conditioner supplied with the machine.

If a finger conditioner is installed, continue to *3.12.1 Setting up Forming Shields for Finger Conditioner, page 58*.

If a roll conditioner is installed, continue to *3.12.2 Setting up Forming Shields for Roll Conditioner, page 63*.

If a conditioner is not installed, continue to *3.14 Discharge Shield (No Conditioner), page 66*.

3.12.1 Setting up Forming Shields for Finger Conditioner

NOTE:
Transport not shown in illustrations for clarity.

1. Before setting up the forming shields, convert the header to field mode. Refer to *6.19.2 Converting from Transport to Field Mode, page 160*.
2. Remove shipping wires (A) securing forming shield covers (B) to pallet.

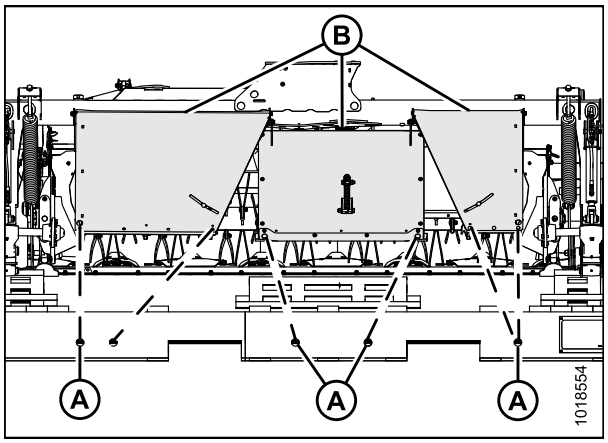


Figure 3.118: Forming Shields Strapped to Pallet

3. Support shield (C), remove two bolts at (A and B), and remove the shield.

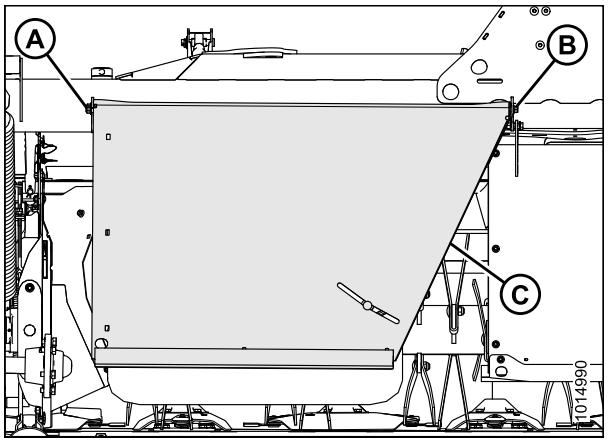


Figure 3.119: Outboard Top Cover

4. Support shield (C), remove two bolts at (A and B), and remove the shield.

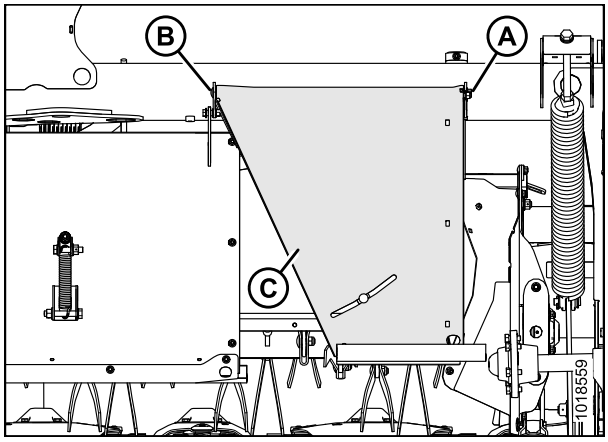


Figure 3.120: Outboard Top Cover

5. Remove nuts (A) from center shield (B). Do not remove the bolts.

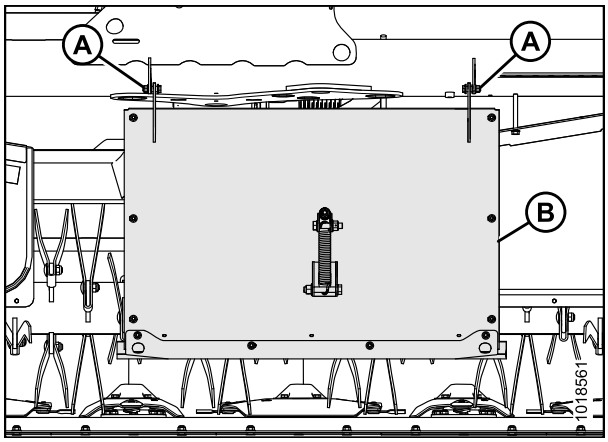


Figure 3.121: Center Shield

6. Flip right forming shield over so the adjustment handle is facing up and install it as follows:

   a. Position shield (A) onto hex head bolt (B). Loosely install nut to hold shield in place.

      NOTE:
      If installing the Road Friendly Transport™ system, install shield (A) after transport assembly is in place.

   b. Install carriage bolts (C) with heads facing towards center of shield. Install nuts and tighten.

   c. Repeat for the left side forming shield.

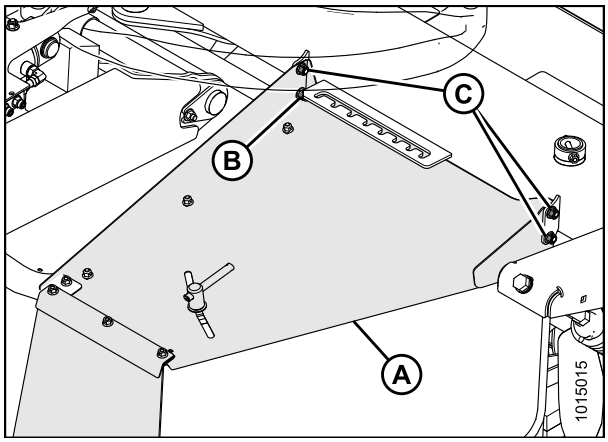


Figure 3.122: Forming Shield (Right-Hand Side)

IMPORTANT:
For mower conditioners without the Road Friendly Transport system, proceed to Step *.9., page 60*

7. Remove nut, bolt, and washer (A) securing the spring assembly (B) onto the center shield. Retain nut, bolt, and washer for attaching to transport.

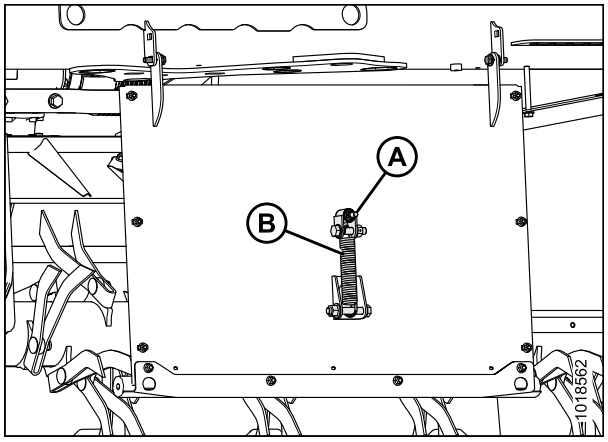


Figure 3.123: Spring on Center Shield

8. Lift center shield and attach spring assembly (A) to link bracket (B) on transport with existing bolt, nut, and washer (C) removed in Step *7., page 60*.

IMPORTANT:
Do **NOT** bolt center shield to the left and right shields. If the hardware to attach the center shield to side shields is installed, remove it and discard.

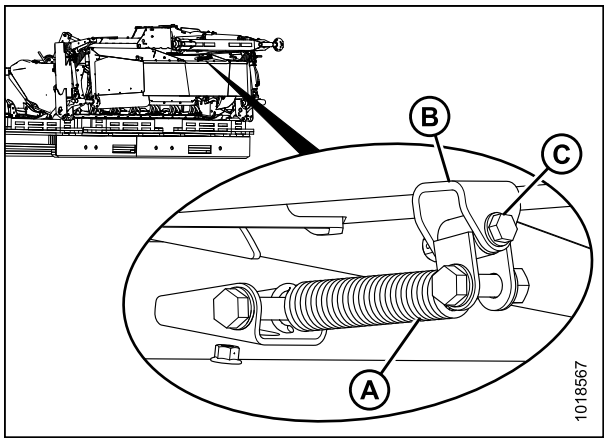


Figure 3.124: Spring Attached to Transport

IMPORTANT:
Only perform this step if **NOT** installing the Road Friendly Transport™ system.

9. Lift center shield (A) and install six M10 x 20 carriage bolts and lock nuts (B) (three per side) to secure center shield (A) to the outboard shields (C). Tighten bolts.

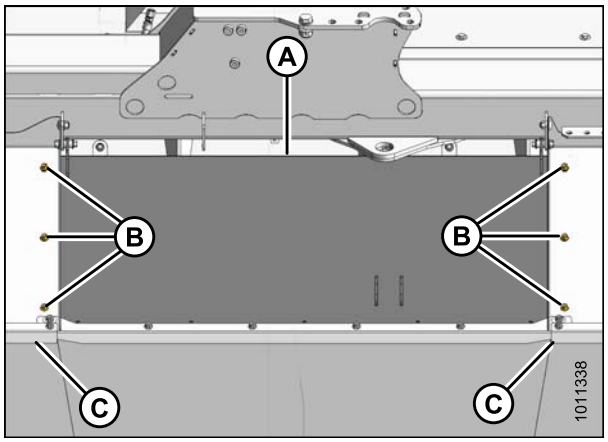


Figure 3.125: Center Cover Assembly

10. Remove and discard bolt (A) securing deflector (B) to frame.

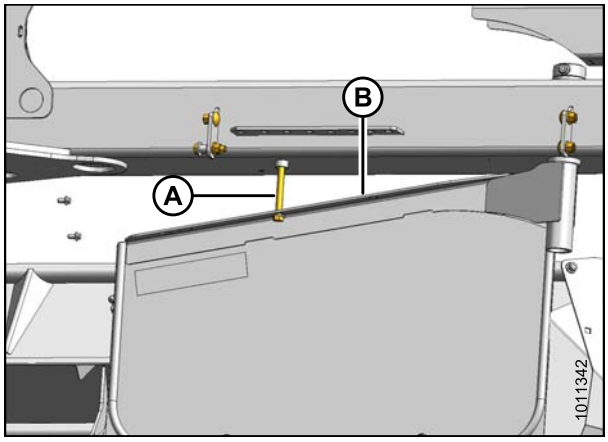


Figure 3.126: Side Deflector Assembly

11. Remove handle (A), washers, and bolt from shield (B).
12. Swing deflector (C) under outboard shield (B) so that handle can be installed into deflector and shield.

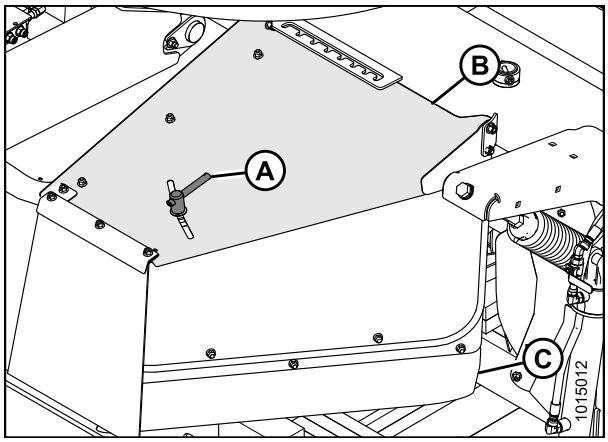


Figure 3.127: Side Deflector Assembly

13. Install carriage bolt (A), washer (B), spring washer (C), and handle (D) as shown.
14. Position deflector so handle (D) is approximately centered in slot, and tighten handle.

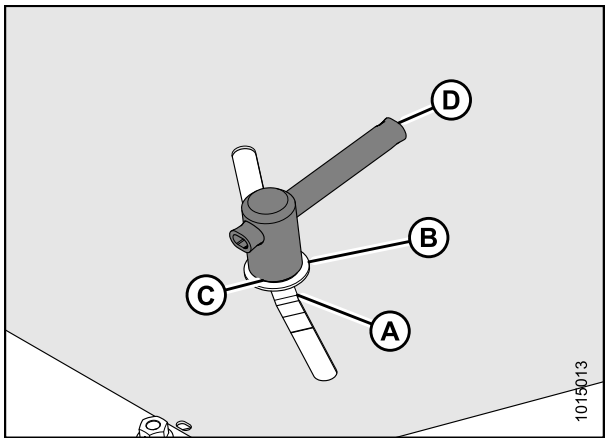


Figure 3.128: Deflector Adjustment

15. Remove two M10 carriage bolts (A) securing left-hand deflector in shipping position. Repeat for opposite deflector.

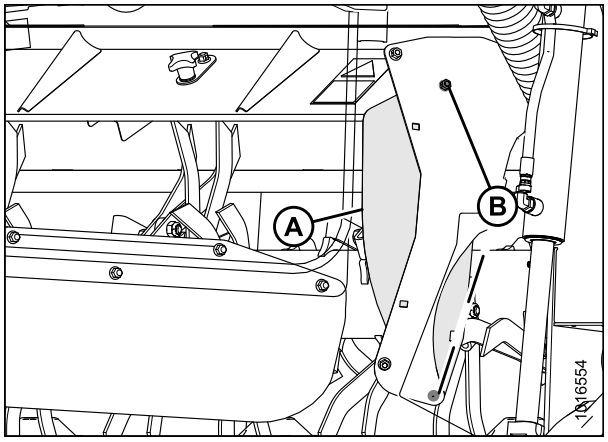


Figure 3.129: Right-Hand Deflector Shield Shown – Left-Hand Deflector Shield Opposite

16. Reposition deflector (A) so that holes align with the fixed shield, and secure with four M10 carriage bolts (B) and hex head flange nuts.

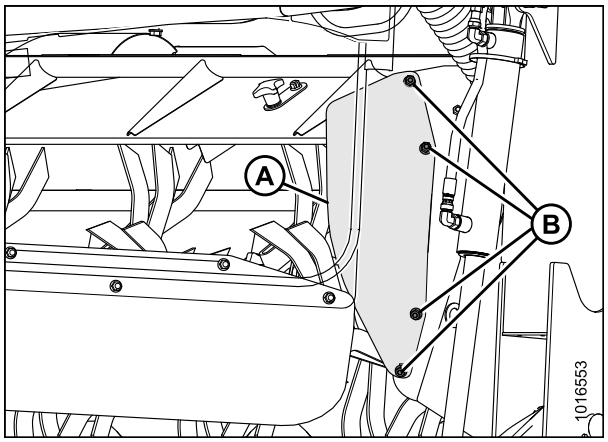


Figure 3.130: Right-Hand Deflector Shield Shown – Left-Hand Deflector Shield Opposite

17. Remove shipping wires (A) securing curtains (B) to covers (C) and, allow curtains to unfold before operating machine.

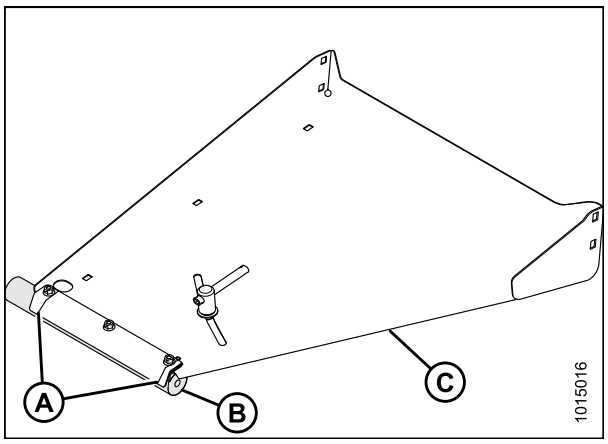


Figure 3.131: Forming Shield Curtain

3.12.2 Setting up Forming Shields for Roll Conditioner

Use these instructions to set up the forming shields on a machine with a roll conditioner.

1. Remove and discard bolt (A) securing forming shield (B) to frame.
2. Swivel shield (B) to the open position.

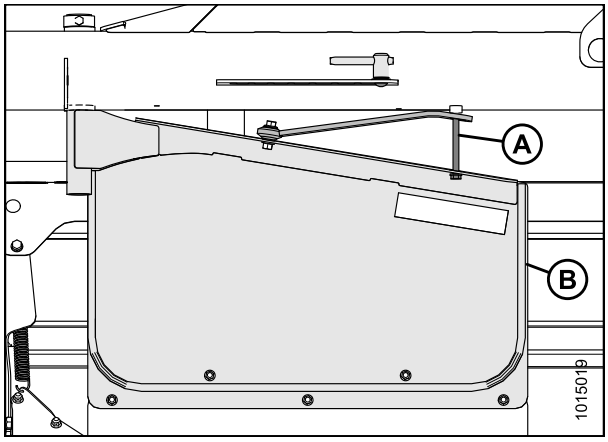


Figure 3.132: Left Side Forming Shield

3. Rotate clamp (B) until you can remove bolt (C).
4. Swing adjuster bar (A) and align with a hole on carrier plate (D).
5. Install bolt through adjuster bar (A) and carrier plate (D). Install clamp (B) onto bolt. Tighten clamp until shield does not move.
6. Repeat above steps for opposite shield.

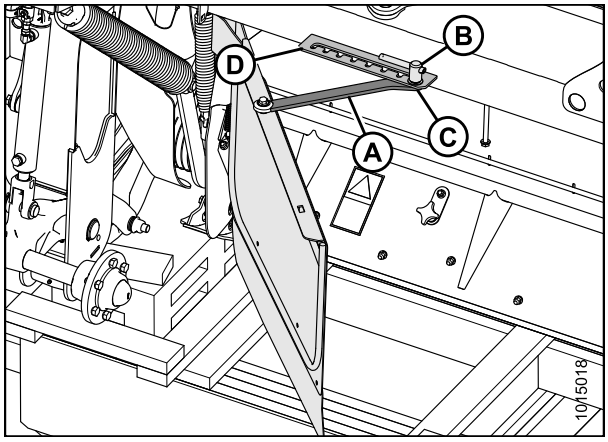


Figure 3.133: Adjuster Bar

3.13 Unpacking Curtains

1. Remove two M10 hex head bolts (A) and center lock flange nuts securing cutterbar door supports to center channel frame.

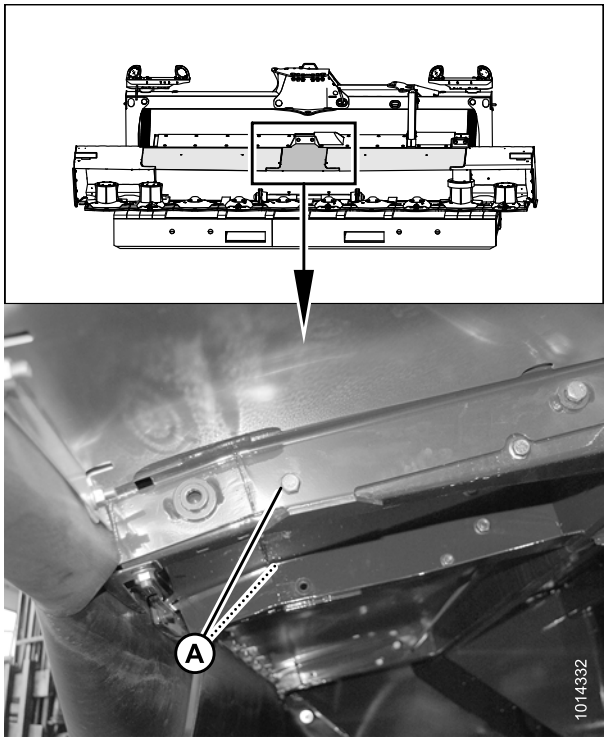


Figure 3.134: Underside of Cutterbar Doors

2. Remove shipping wire (A) from cutterbar door curtains and forming shield covers and pull down.

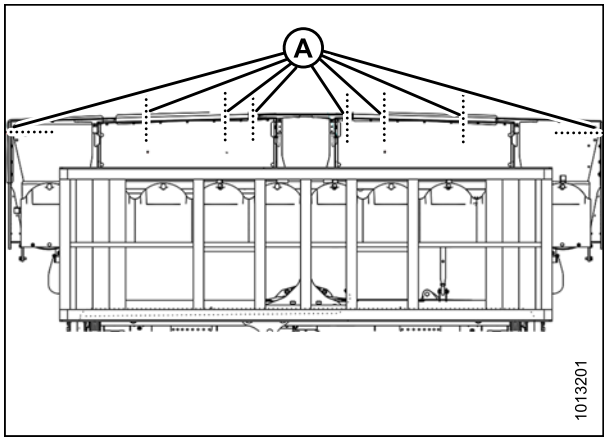


Figure 3.135: Underside of Mower Conditioner

3. Straighten cutterbar door curtains (A) and remove folds or creases (minor creases will eventually straighten out).

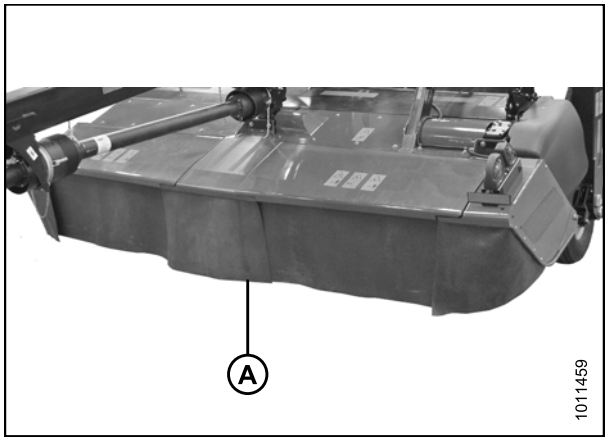


Figure 3.136: Cutterbar Door Curtains

4. If forming shields are installed, straighten forming shield curtains (B) and remove folds or creases (minor creases will eventually straighten out).

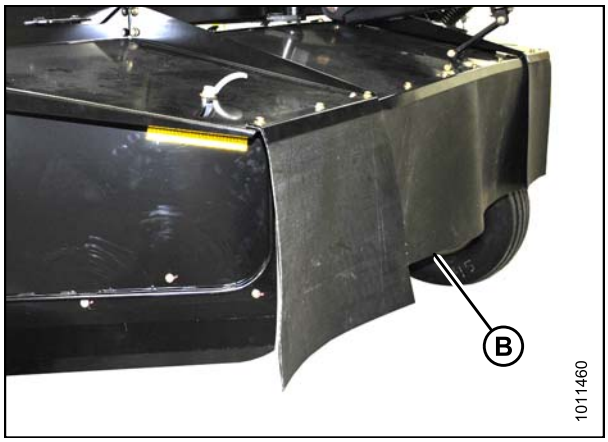


Figure 3.137: Forming Shield Curtains

5. Ensure cutterbar door curtains and forming shield covers hang properly and completely enclose cutterbar area.

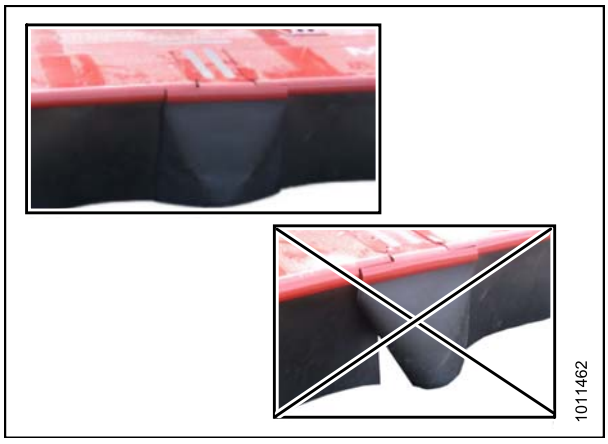


Figure 3.138: Cutterbar Door Curtains

3.14 Discharge Shield (No Conditioner)

3.14.1 Removing Shield (No Conditioner)

Follow these steps to remove the shielding installed on a mower configured without a conditioner:

DANGER

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

1. Raise the mower fully and extend the center-link to maximize the space between the shield (A) and the carrier frame (B).

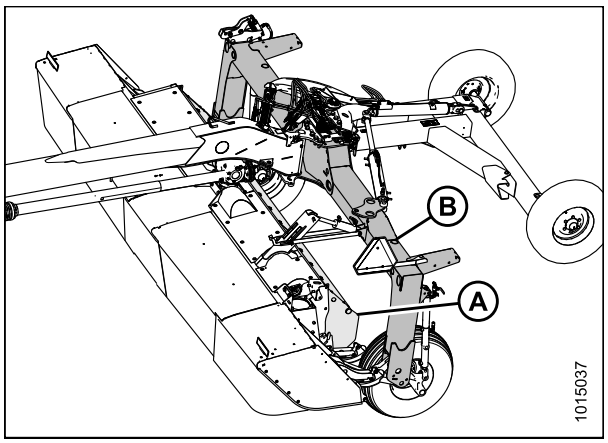


Figure 3.139: Mower with Transport

2. Close the lift cylinder lock-out valves (A) on both sides of the mower. Valve handles should be in the horizontal position.

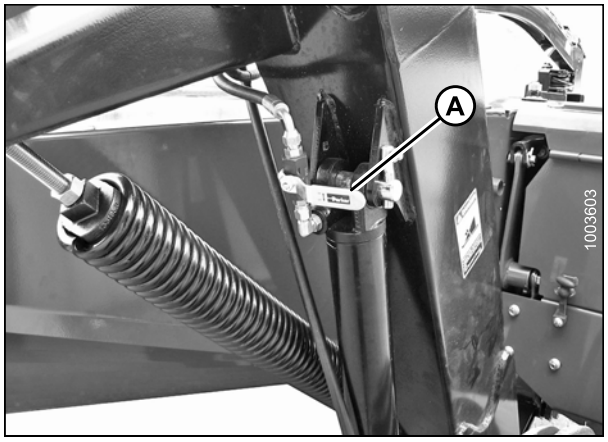


Figure 3.140: Lift Cylinder Lock-Out Valves

3. Remove four M16 hex head bolts (A), nuts, and flat washers securing the shield (B) to the panel on mower (C).

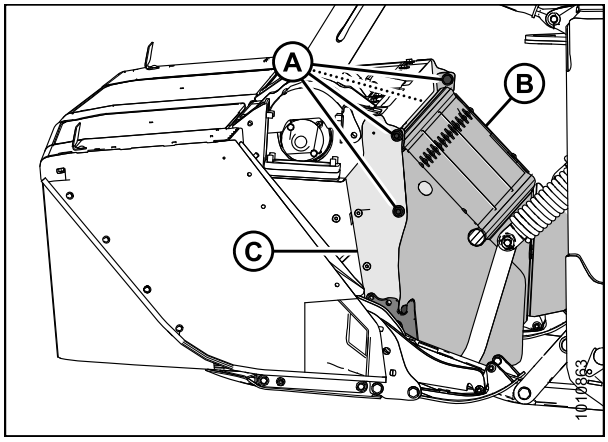


Figure 3.141: Mower (Left Side View)

4. Lift the shield (A) until pins (B) disengage from slots in support (C) and shield on panel (D).

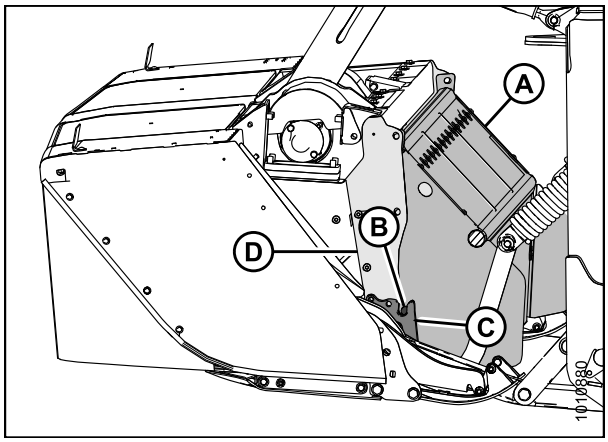


Figure 3.142: Mower (Left Side View)

5. Rotate the shield (A) 90 degrees and move it away from the carrier frame.

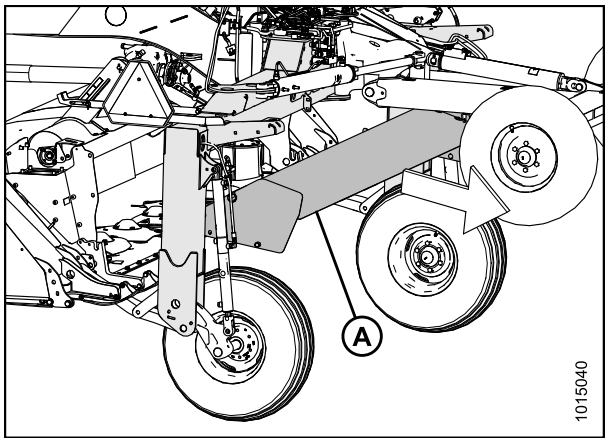


Figure 3.143: Shield Rotated

3.14.2 Installing Shield (No Conditioner)

Follow these steps to install the shielding on a mower configured without a conditioner:

DANGER

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

1. Raise the mower fully and extend the center-link to maximize the space between the field wheels (A) and the carrier frame (B).

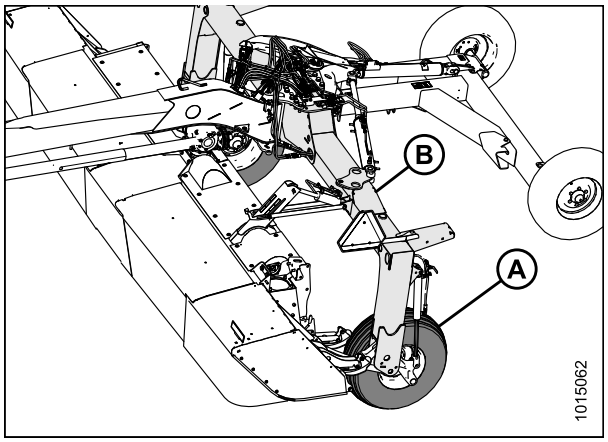


Figure 3.144: Mower with Transport

2. Close the lift cylinder lock-out valves (A) on both sides of the mower. Valve handles should be in the horizontal position.

Figure 3.145: Lift Cylinder Lock-Out Valves

3. Rotate the shield (A) and pass it between the field wheels and the carrier frame toward the mower.

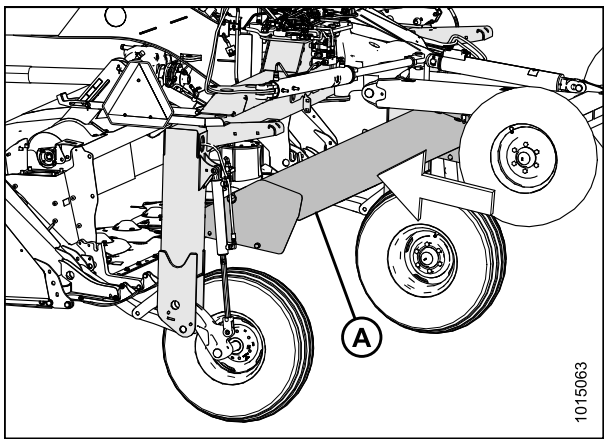


Figure 3.146: Shield Rotated

4. Position shielding (A) until pins (B) engage the slots in cutterbar support (C) and the bolt holes align with panel (D).

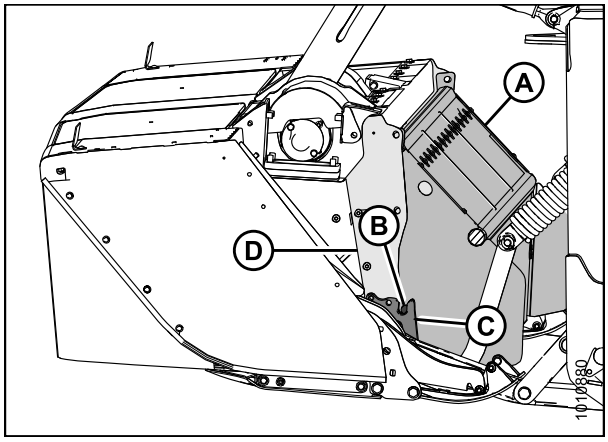


Figure 3.147: Positioning the Shield on Mower

5. Install four M16 hex head bolts (A), nuts, and flat washers to secure shield (B) to the panel (C). Ensure bolt heads face inboard.

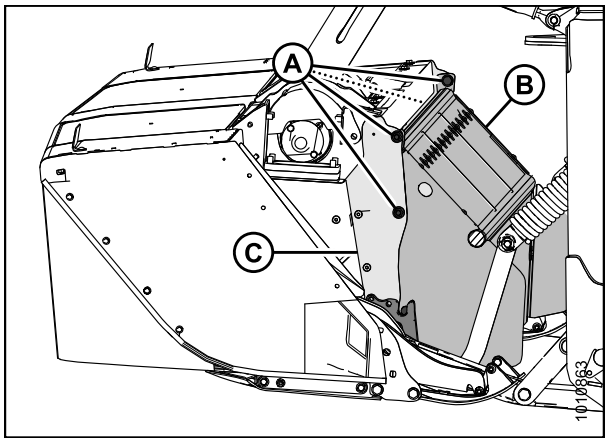


Figure 3.148: Shield (No Conditioner)

3.15 Removing Mower Conditioner from Shipping Pallet (No Transport Installed)

NOTE:
If you have the Road Friendly Transport™ system, refer to *3.16 Removing Mower Conditioner from Shipping Pallet (Transport Installed), page 71*.

1. Cut strapping (B) securing cutterbar to pallet (C).
2. Place forks from lifting device at openings (A). Spread them as a far apart as possible to spread the load out.
3. Lift header high enough that the pallet can be removed.

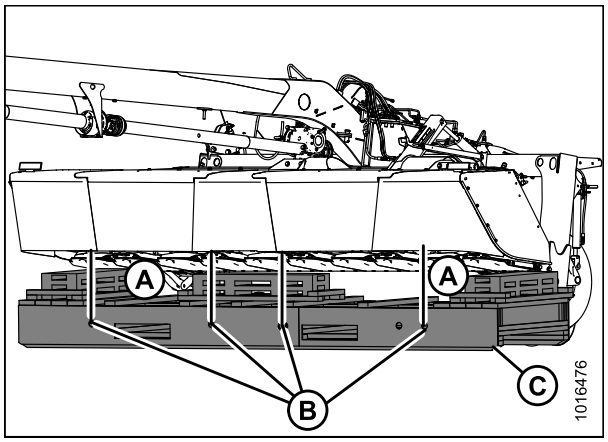


Figure 3.149: Strapping

4. Use a chain or forklift to remove shipping pallet (A) from underneath the mower conditioner.
5. Lower header to the ground.

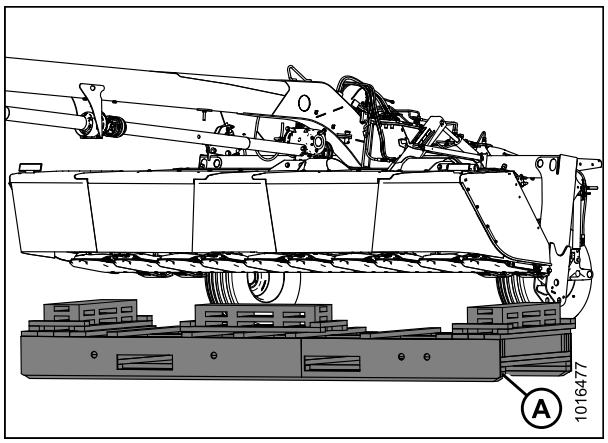


Figure 3.150: Removing Shipping Pallet

3.16 Removing Mower Conditioner from Shipping Pallet (Transport Installed)

1. Cut strapping (B) securing cutterbar to pallet (A).

   NOTE:
   To prevent the mower from dropping, ensure float springs were retensioned after repositioning the center-link top anchor. Refer to *4.1 Repositioning Center-Link Top Anchor, page 73*.

2. Use the transport to lift the header high enough that the pallet can be removed.

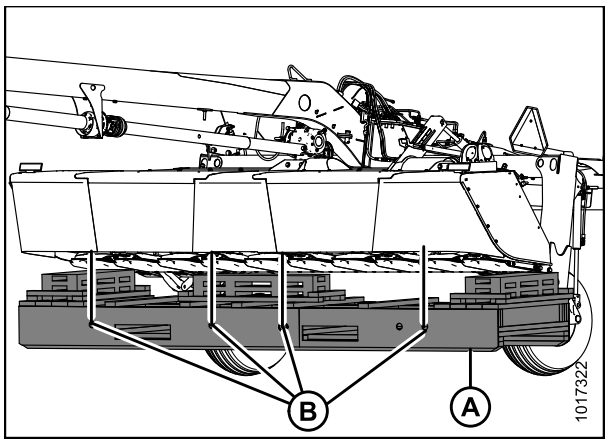


Figure 3.151: Strapping

3. Use a chain or forklift to remove shipping pallet (A) from underneath the mower conditioner.
4. Lower mower to the ground.

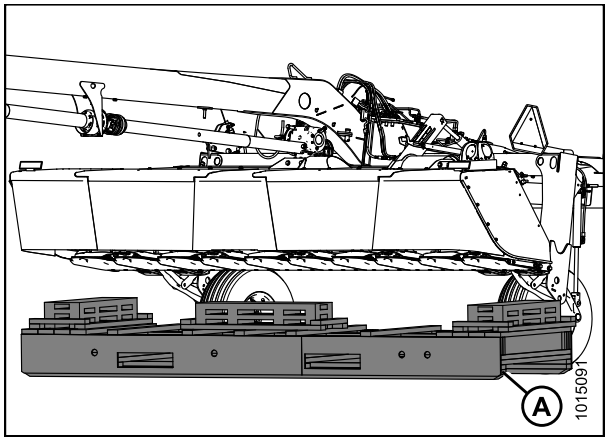


Figure 3.152: Removing Shipping Pallet

4 Assembling the Mower Conditioner (Factory-Installed Transport)

Perform the following procedures in the proper order when assembling a mower conditioner with the Road Friendly Transport system™ installed from the factory.

4.1 Repositioning Center-Link Top Anchor

Perform this procedure to reposition the center-link top anchor into working position.

1. Cut straps (C) securing transport assembly (A) to pallet (B).

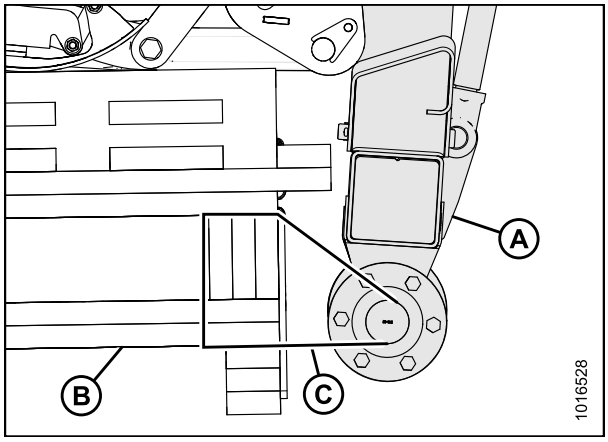


Figure 4.1: Transport Assembly

2. **For mower conditioners with finger conditioners only:** remove the bolt (A) securing the center shield (B) to the frame. Lower the shield.

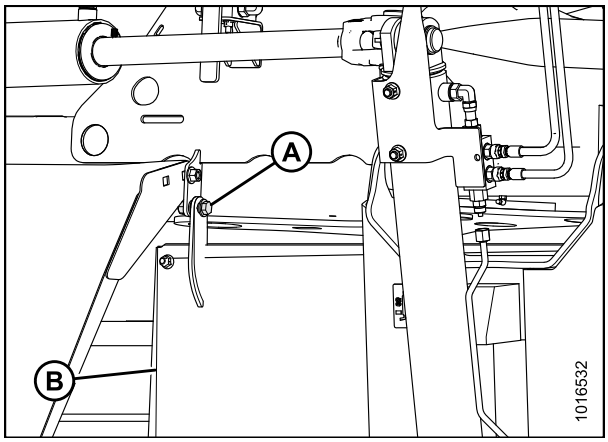


Figure 4.2: Center Shield (Finger Conditioners Only)

3. Place forklift forks under top beam (A) at opening (B). Lift carrier frame slightly until pin at base of center-link anchor is loose. Use a piece of wood to protect paint on frame.

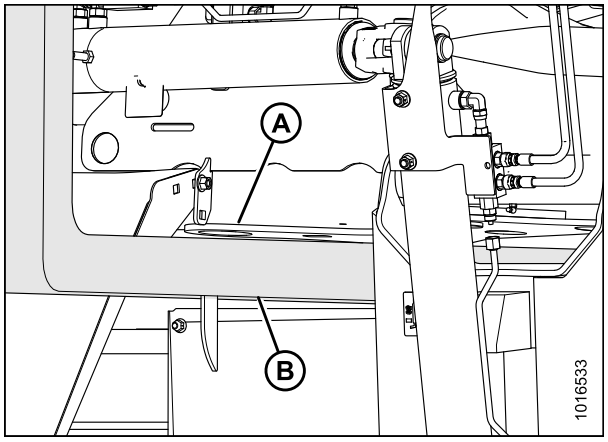


Figure 4.3: Carrier Frame

4. Loosen jam nut (A) and fully loosen float springs (B).

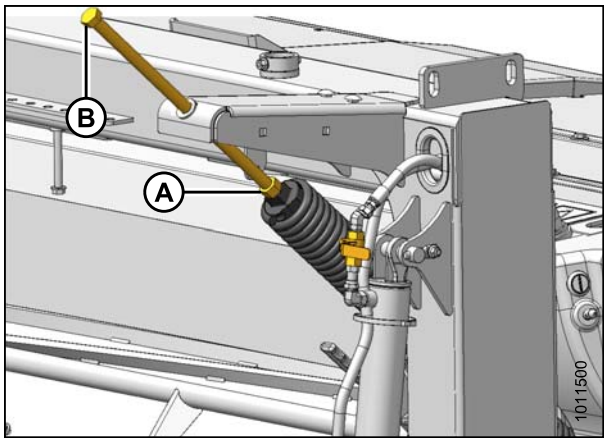


Figure 4.4: Float Spring

5. Remove four M10 hex head bolts (A) and flat washers, and remove top shield (B).

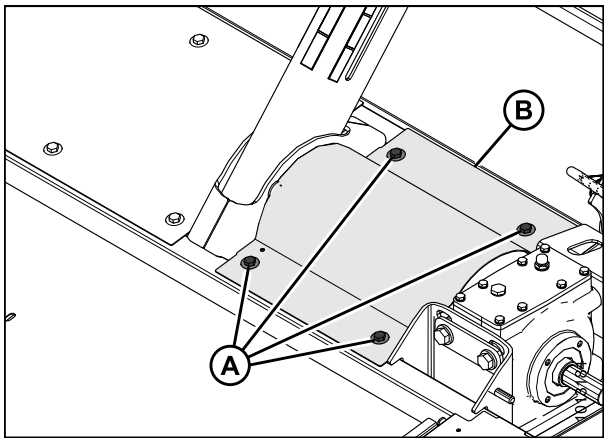


Figure 4.5: Top Shield (Left of Center-Link)

CAUTION

To avoid injury, keep fingers clear of opening at base of anchor.

6. Remove cotter pin (B), washer (C), and shipping tag (D).
7. Remove pin (A) from center location and lower forks on forklift.

   NOTE:
   Pin should slide out freely. Adjust forklift or move carrier until pin is loose. Avoid using a hammer to remove pin.

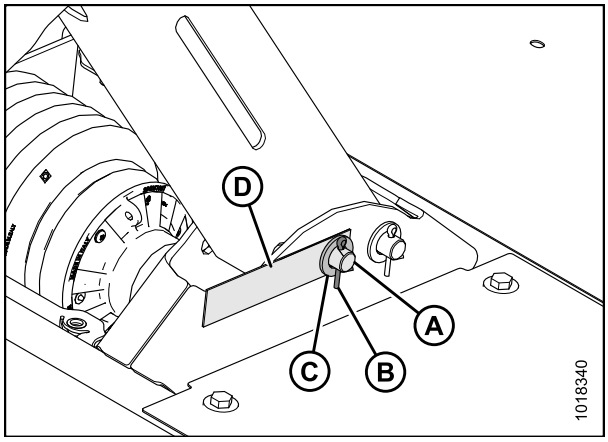


Figure 4.6: Center-Link Anchor (Right of Center-Link)

8. Move the carrier and anchor so the pin can be installed in working location. Install pin (A) and secure with washer (B) and cotter pin (C).

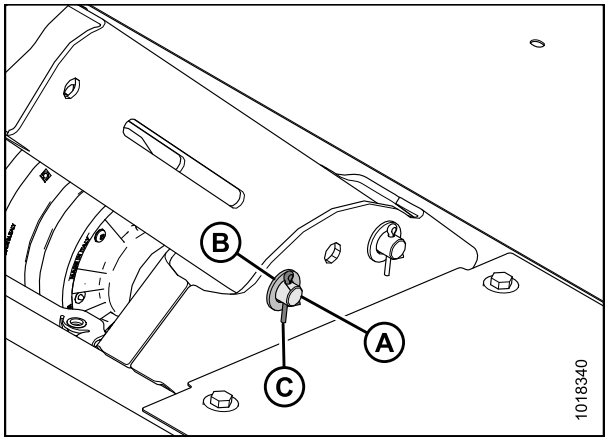


Figure 4.7: Center-Link Anchor (Right of Center-Link)

9. Install top shield (B) and secure with four M10 hex head bolts (A) and flat washers. Torque to 27–30 N·m (20–22 ft·lbf).

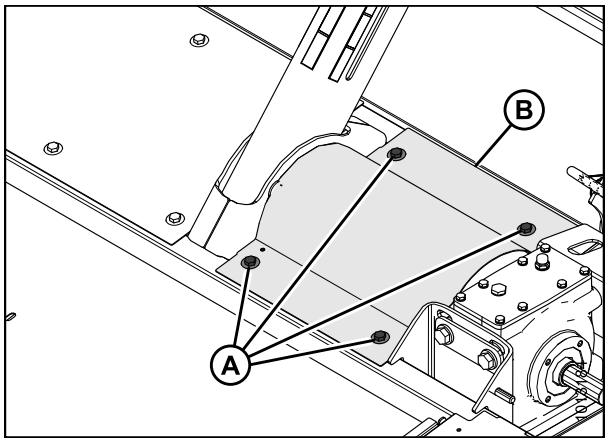


Figure 4.8: Top Shield (Left of Center-Link)

10. Close the mower conditioner's lift cylinder lock-out valve (A) on each lift cylinder by turning the handle to the horizontal position.
11. Loosen jam nut (B) away from the spring.
12. Turn the adjuster bolt (C) and set dimension (D) to 130 mm (5-1/8 in).
    - Turn bolt clockwise (towards spring) to increase float
    - Turn bolt counterclockwise (away from spring) to decrease float
13. Tighten jam nut (B) against spring.

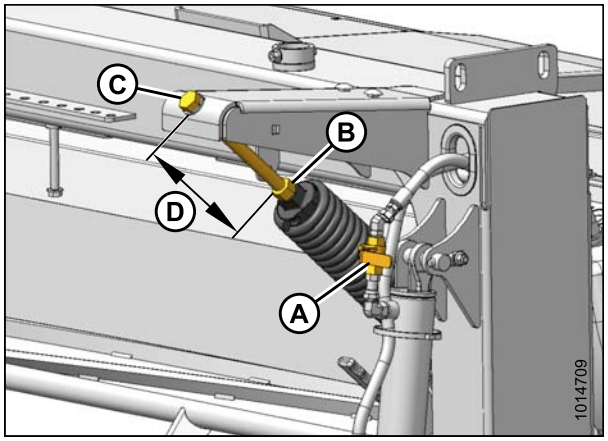


Figure 4.9: Lift Cylinder Lock-Out Valve, Jam Nut, and Adjuster Bolt

4.2 Attaching Hitch to Carrier

1. Remove the cam assembly (A) from the shipping support (B) by loosening nuts (C) and sliding the cam assembly off of the shipping support.
2. Rest the cam assembly on the carrier hydraulics.

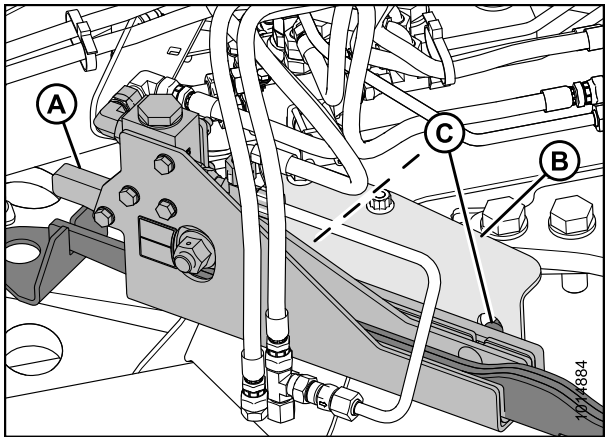


Figure 4.10: Alignment Controls (Front Right-Hand View)

3. Remove bolts (B) and shipping support (A), and then discard.

   NOTE:
   You may need to pry up the plate to remove the hardware.

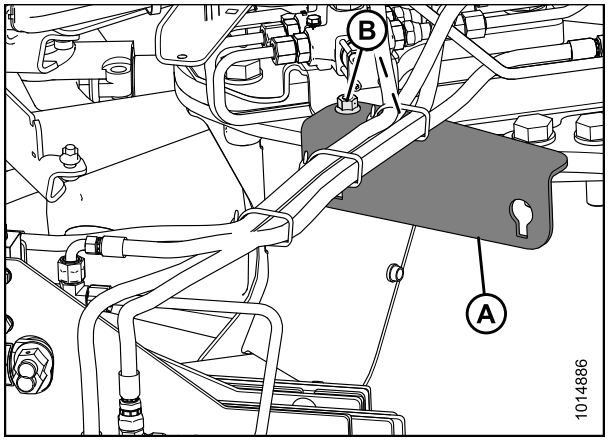


Figure 4.11: Shipping Support (Front Right-Hand View)

4. Remove six M20 bolts (A), washers, and nuts from carrier at the hitch attachment location. Retain bolts washers, and nuts.

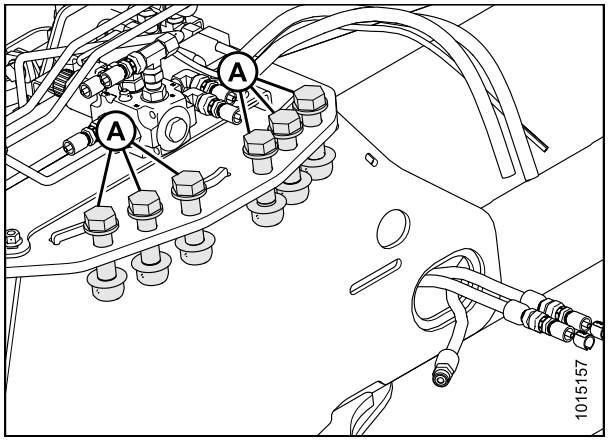


Figure 4.12: Carrier

5. Cut banding (A) securing wood supports, then remove supports (B).
6. Remove the two bolts (C) securing wood support to hitch pin. Discard bolts.

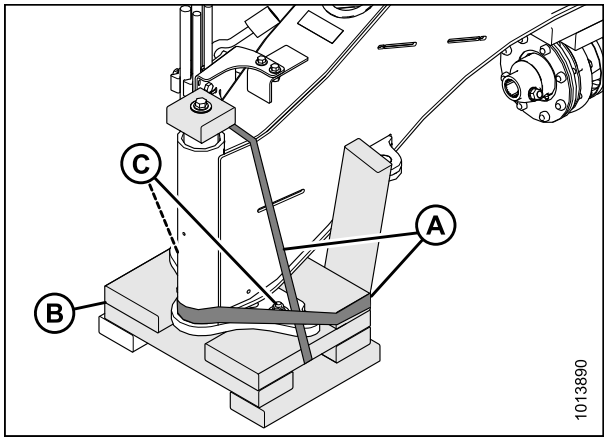


Figure 4.13: Hitch Packing

7. Place sling (A) around the hitch frame. Adjust sling position until hitch is balanced when lifting.
   - **R113**: Approximately 2700 mm (106 in.) from the edge of the tractor end of the hitch
   - **R116**: Approximately 3500 mm (138 in.) from the edge of the tractor end of the hitch (B)
8. Raise the hitch approximately 610 mm (24 in.) off the ground.

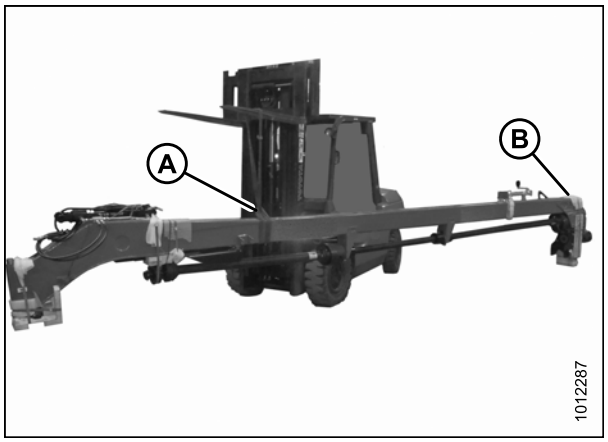


Figure 4.14: Lifting Hitch

NOTE:
Pin (C) is heavy, support it appropriately before removing bolt (A).

9. Support pin (C), remove bolt (A) and wood block (B) from top of pin, and then remove pin (C).

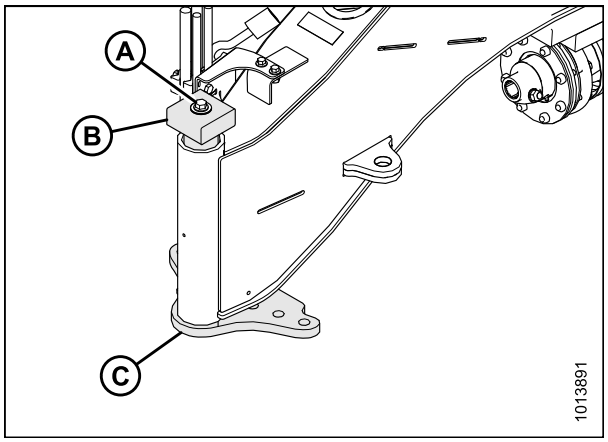


Figure 4.15: Hitch Packing

10. Install hitch pin (A) fully into hitch.

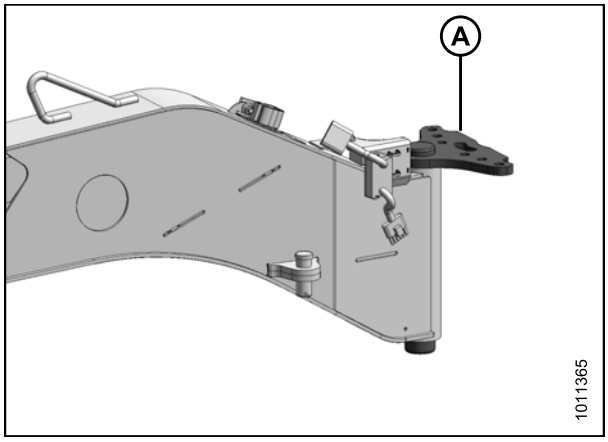


Figure 4.16: Pivot Pin

11. Pivot the gearbox (A) towards the right side of the header. This will increase the clearance to the driveline clutch, when installing hitch onto carrier frame.

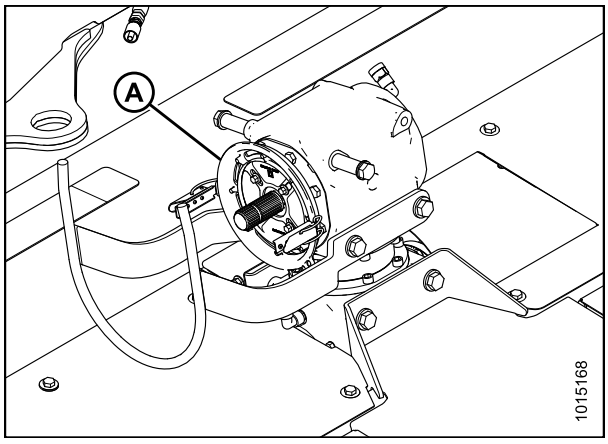


Figure 4.17: Driveline Shield

12. Maneuver hitch pivot (A) into attachment location (B) on carrier and line up pin with hole in carrier.

    NOTE:
    Align hitch pivot at a slight angle when installing. If not the driveline will contact the header drive gearbox.

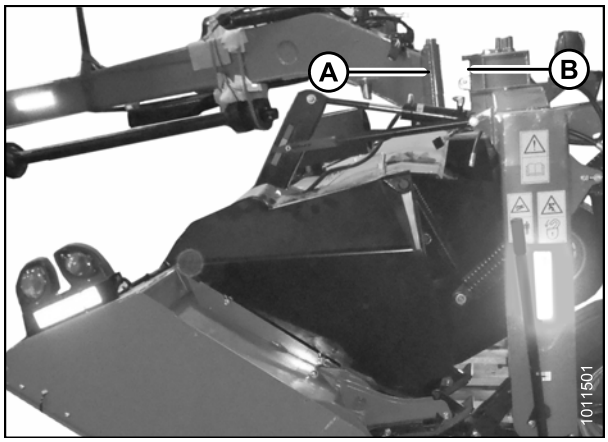


Figure 4.18: Hitch to Carrier

13. Slowly lower hitch (A) while maintaining pin alignment until pin (B) is fully inserted. If necessary, use a large soft hammer to seat pin.

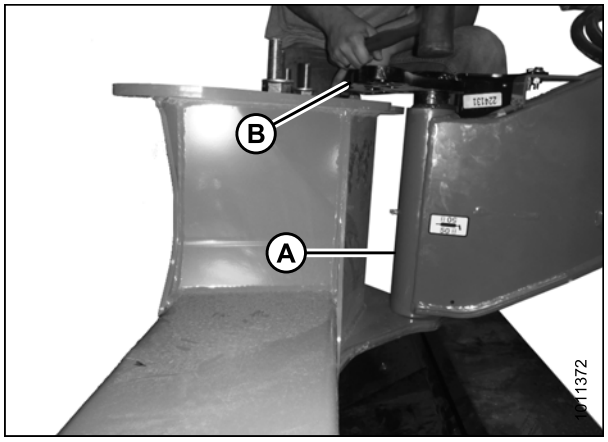


Figure 4.19: Pivot Pin

14. Line up holes in pin (A) with holes in the carrier frame. Install six M20 x 65 bolts (B) with hardened washers under the bolt head and lock nuts (C).

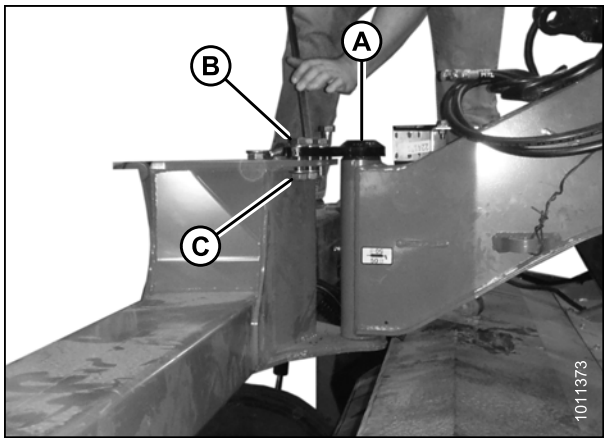


Figure 4.20: Pivot Pin

15. Tighten the outer bolts (A) first to draw the plate against the frame. Then tighten the inner bolts.
16. Torque bolts to 461 N·m (340 ft·lbf).

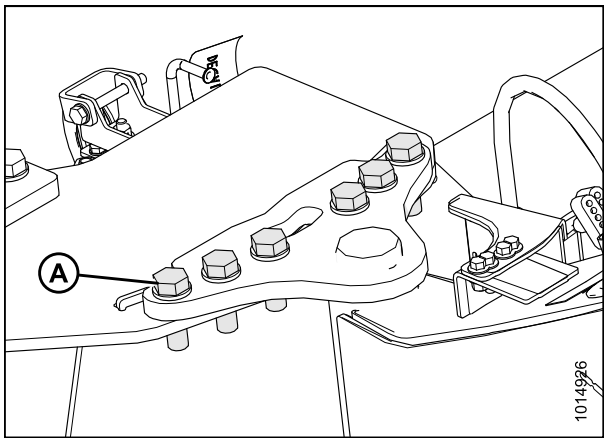


Figure 4.21: Pivot Pin

4.3 Installing Tractor Mating Hitch to Carrier Hitch

Depending on mower conditioner configuration, refer to the applicable installation procedure:

- *4.3.1 Installing Drawbar Hitch, page 81*
- *4.3.2 Installing Two-Point Hitch (Cat. II) Adapter, page 83*

4.3.1 Installing Drawbar Hitch

If attaching the mower conditioner to a tractor with a drawbar hitch, proceed as follows. If attaching the mower conditioner to a tractor with a two-point hitch, refer to *4.3.2 Installing Two-Point Hitch (Cat. II) Adapter, page 83*.

1. Remove shipping wire or banding (A) securing shipping blocks (B) at front of hitch, and remove blocks.

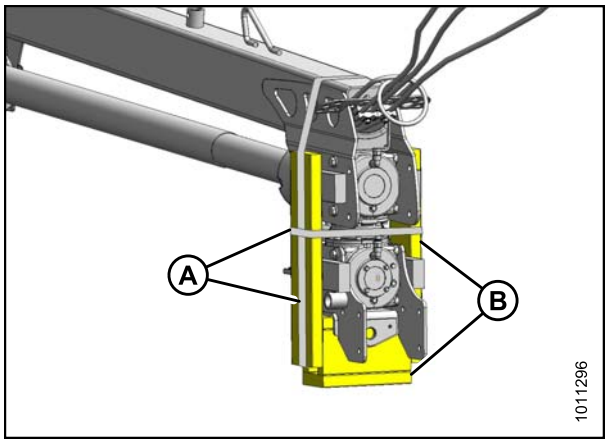


Figure 4.22: Hitch End Packing

2. Remove shipping wire (A) from jack (B) on drawbar hitch shipment, and then remove jack from pallet.

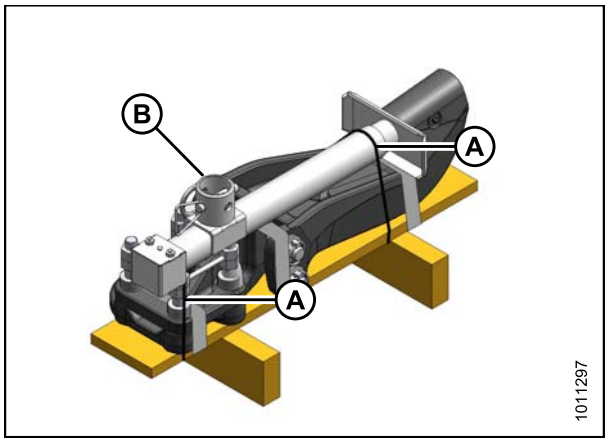


Figure 4.23: Jack Packing

3. Install at jack (A) at front of hitch, and secure with pin (B).
4. Swivel driveline and lower gearbox (C) so that driveline (D) is facing forward.
5. Lower forklift until hitch is resting on hitch jack (A).

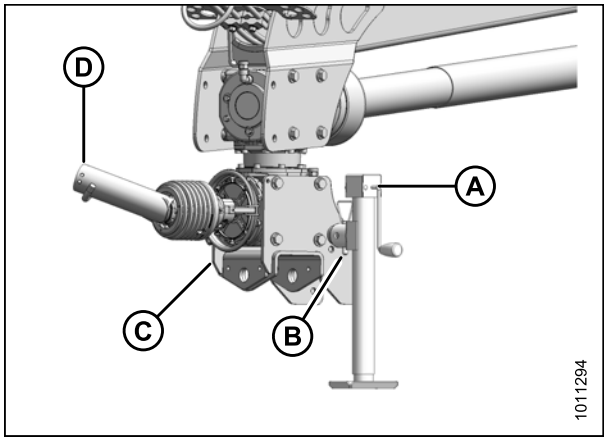


Figure 4.24: Hitch

6. Remove shipping wire (A) that secures pin (B) in casting. Do not remove other strapping.
7. Remove pin (B) from casting and remove bolt (C) and nut from pin.

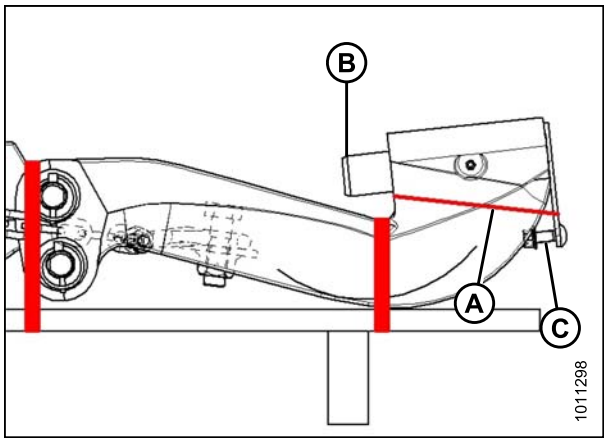


Figure 4.25: Hitch Casting

8. Using a floor jack or equivalent under pallet (A), raise hitch adapter (B) into position under the gearbox.
9. Maneuver hitch adapter (B) so that pin (C) can be installed to secure adapter to hitch.
10. Secure pin with bolt (D) and nut.
11. Remove floor jack, and if necessary, remove remaining strapping and pallet (A) from hitch adapter.

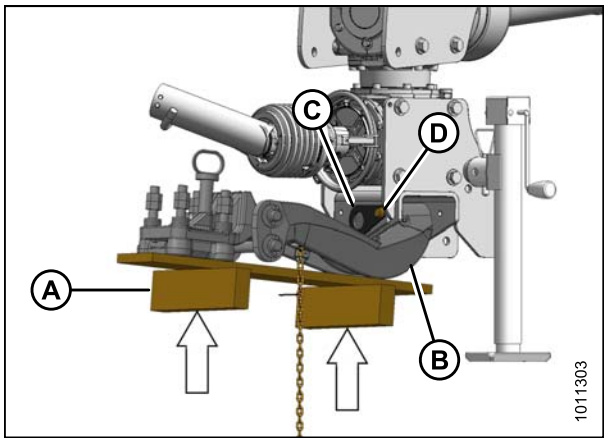


Figure 4.26: Drawbar Hitch

4.3.2 Installing Two-Point Hitch (Cat. II) Adapter

To set up the two-point hitch:

1. Remove shipping wire or banding (A) securing shipping blocks (B) at front of hitch, and remove blocks.
2. Swivel driveline and gearbox so that driveline is facing forward.

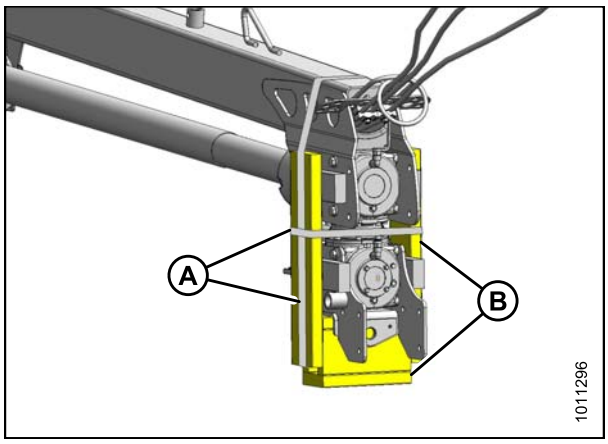


Figure 4.27: Hitch Packing

3. Retrieve two-point hitch adapter shipment.
4. Remove shipping wire (A) and material from stand (B) and remove stand from hitch adapter (C). Set aside for later installation.

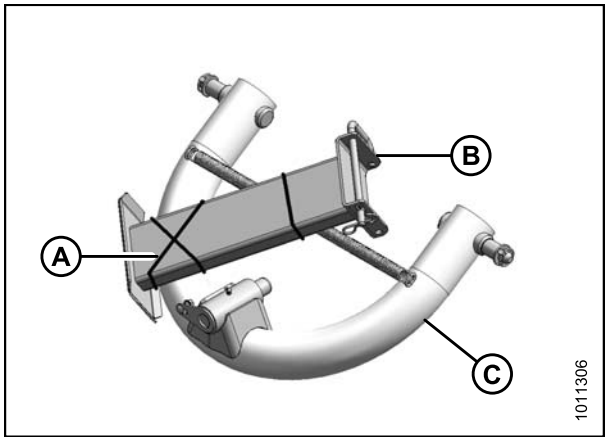


Figure 4.28: Two-Point Hitch Packing

5. Remove strapping that secures pin (A) to adapter (B). Do not remove other strapping.
6. Remove pin (A) from adapter, and remove bolt (C) and nut from pin (A).

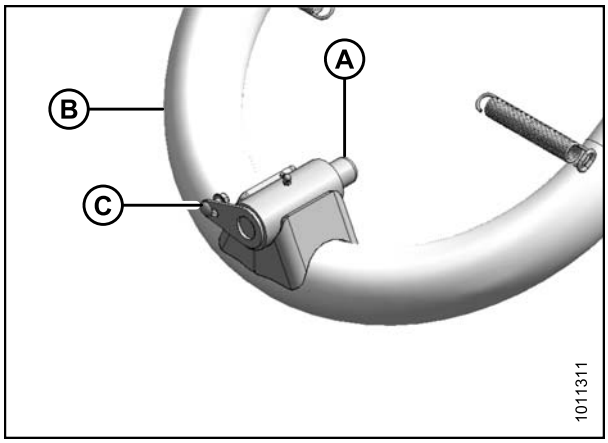


Figure 4.29: Two-Point Hitch Adapter

7. Using a floor jack or equivalent, raise two-point hitch adapter (A) into position under the gearbox.
8. Maneuver adapter (A) so that pin (B) can be installed to secure adapter to hitch.
9. Secure pin with bolt (C) and nut.
10. Remove floor jack, and remove remaining strapping and pallet from hitch adapter.

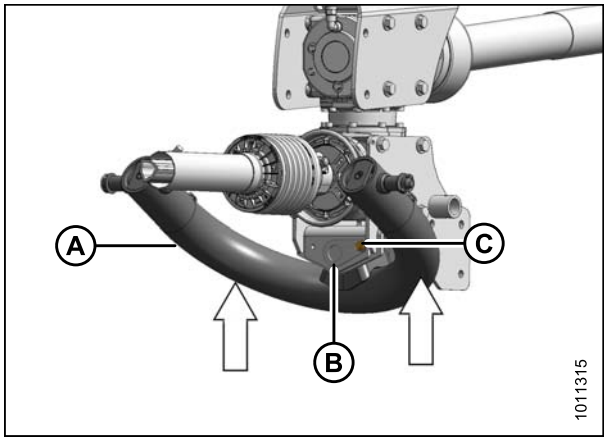


Figure 4.30: Two-Point Hitch Adapter

11. Install springs (A) as shown.
12. Assemble power take-off (PTO) driveline male half (B) onto female half on hitch gearbox. Push male half so that PTO shaft is at its fully compressed length.
13. Locate driveline on hook (C).

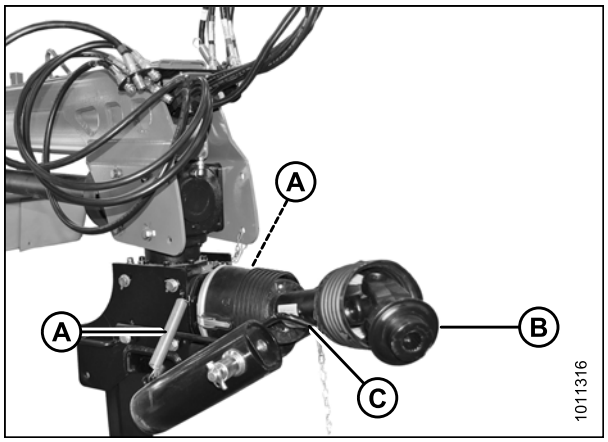


Figure 4.31: Driveline

14. Retrieve stand (A).
15. Position stand (A) under gearbox as shown, and install hitch pin (B) to secure stand.
16. Install hairpins (C) to secure hitch pin (B).
17. Lower hitch onto stand.

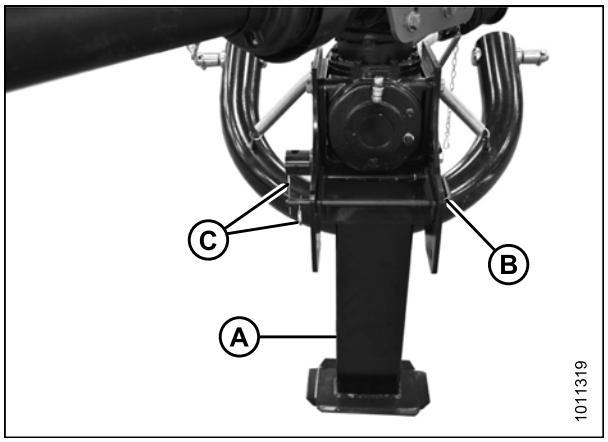


Figure 4.32: Stand

4.4 Installing Hitch Swing Cylinder

The hitch swing cylinder can be installed on either side of the hitch, depending on whether or not the Road Friendly Transport™ system will be installed. Be sure to follow the instructions carefully.

1. Remove the banding (A) securing the hitch swing cylinder (B) to the hitch.
2. Remove pin (C) securing cylinder (B) to hitch.

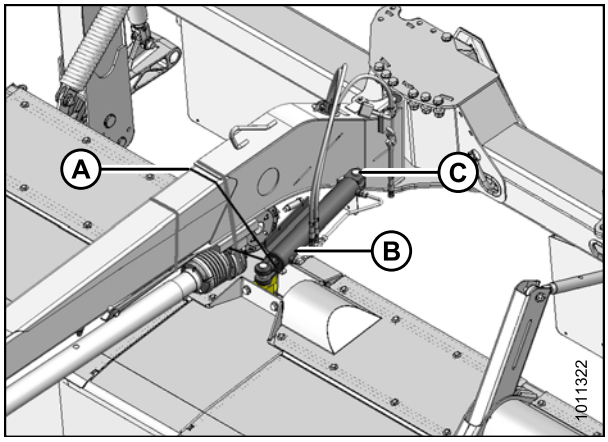


Figure 4.33: Hitch Swing Cylinder

3. Disconnect the hoses at the cylinder and cap off openings on cylinder and hoses.
4. Reposition cylinder (A) at right side of hitch and attach barrel end to lug (B) on hitch with pin (C). Secure with cotter pin (D).

   NOTE:
   Clevis end of cylinder will be attached to Road Friendly Transport™ system casting when the system is primed. Refer to *4.13 Priming the Hitch Swing Cylinder, page 110*.

5. Turn valve (E) 180 degrees, so that the fittings are pointing up.

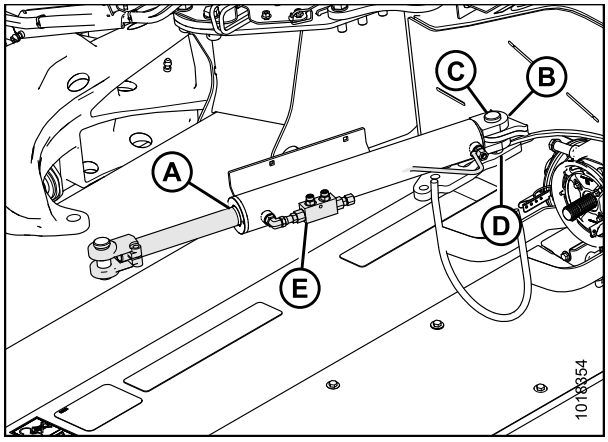


Figure 4.34: Hitch Swing Cylinder

4.5 Attaching Aft Driveline

This procedure describes the attachment of the driveline to the header drive gearbox.

IMPORTANT:
If a conditioner swap is required before delivery to the customer, do **NOT** perform this step at this time. Skip to *4.12 Installing Field Wheels, page 108*.

1. Support driveline and remove strapping (A) securing driveline (B) to hitch. Remove all packing material.

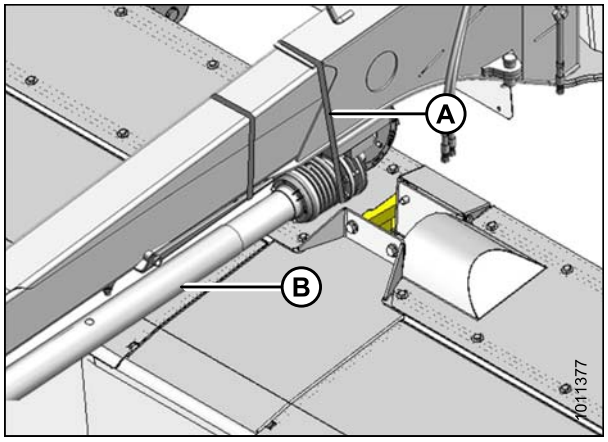


Figure 4.35: Driveline Strapping

2. Remove strapping (A) and packing material securing steering arm (B) to hitch. Pivot steering arm to the side for now.

   NOTE:
   Strapped contents may be under pressure.

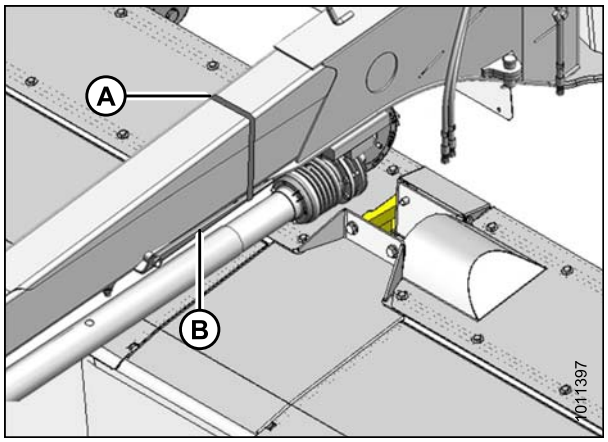


Figure 4.36: Steering Arm Strapping

3. Remove two bolts (A) with spacers (B) at top of aft gearbox. Retain hardware.
4. Undo latches (C) securing driveshield cone (D) to gearbox and remove cone. If necessary, use a screwdriver or equivalent to undo latches (C).
5. Rotate the gearbox until the input shaft is facing towards the driveline.

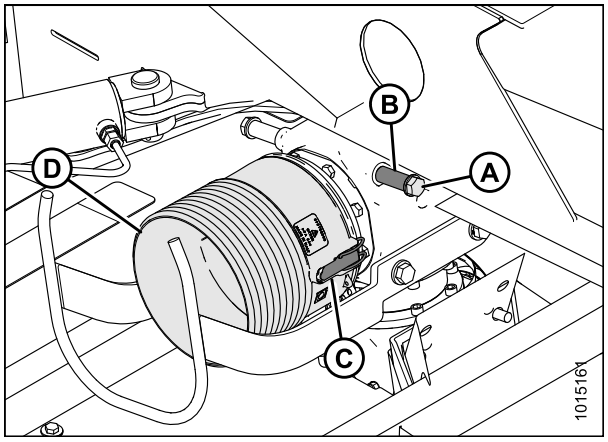


Figure 4.37: Driveline Shield

6. Slide cone (A) onto driveline with latches (B) towards the gearbox.
7. Remove nut (C) and washer (E) from tapered pin (D), and tap out pin from yoke with a hammer.

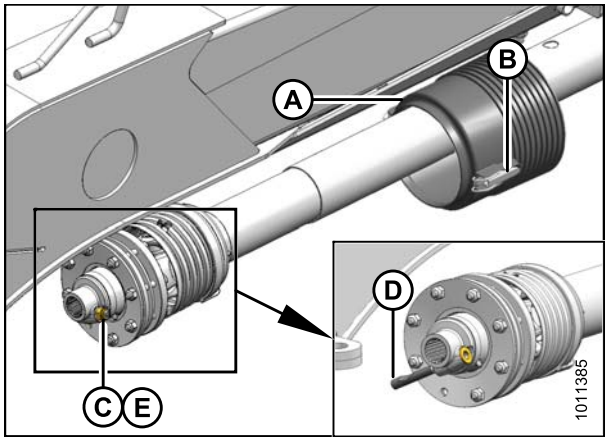


Figure 4.38: Clutch Driveline

8. Attach driveline (A) to gearbox shaft.

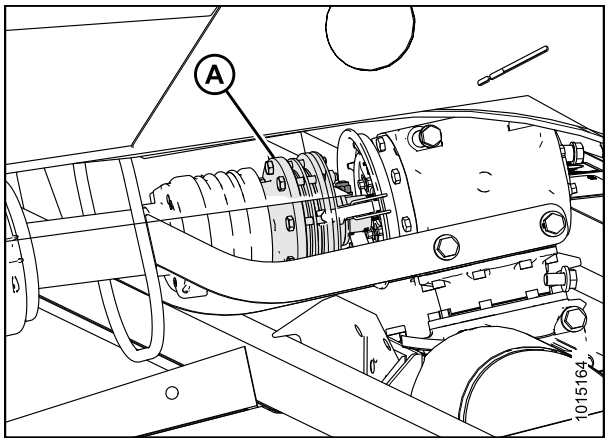


Figure 4.39: Clutch Driveline

9. Insert tapered pin (A) by hand. Ensure the pin lines up with groove in yoke and is fully inserted. The notch in the pin should be facing toward the shaft.
10. Clean the threads on pin (A) after it has been inserted.
11. Install washer (B) and nut (C) on tapered pin and torque to 149 N·m (110 ft·lbf). The end of the pin must be recessed approximately 0–2 mm (0–0.08 in.) (D).

    NOTE:
    Do NOT use an impact wrench to install or torque the nut.
12. Install the cone onto gearbox. Use the latches to secure it to the gearbox.

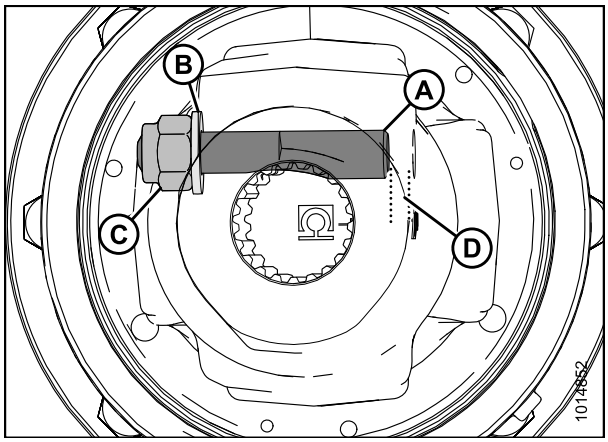


Figure 4.40: Clutch Driveline

4.6 Attaching Steering Arm

This procedure describes the attachment of the steering arm to the header drive gearbox.

IMPORTANT:
If a conditioner swap is required before delivery to the customer, do NOT perform this step at this time. Skip to *4.12 Installing Field Wheels, page 108*.

1. Lower arm (A) from under the hitch and slide the arm weldment (B) off arm.
2. Apply grease to arm (A).
3. Slide the arm weldment (C) onto arm (A) in opposite orientation.
4. Position arm weldment (C) onto gearbox (D).

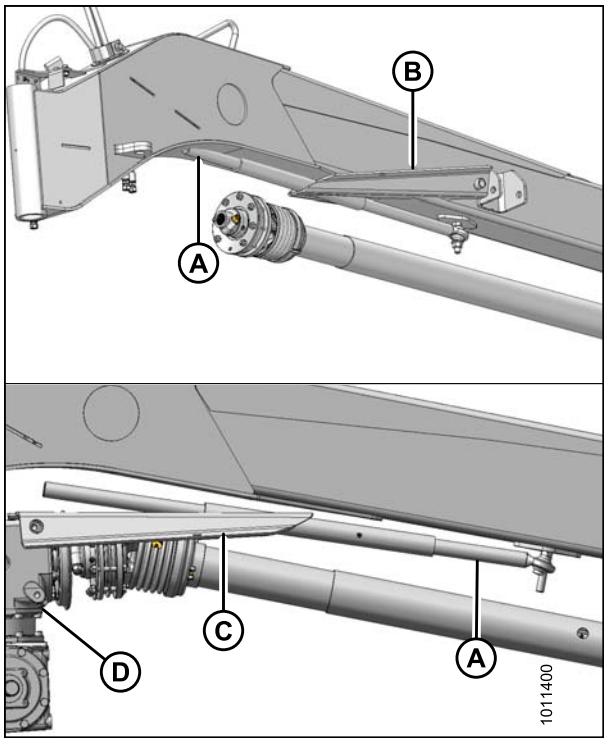


Figure 4.41: Steering Arm

5. Line up the two mounting holes in arm weldment with the forward threaded holes in the gearbox.
6. Install spacers (A) into arm weldment (B) and install M16 x 80 hex head bolts (C) with red Loctite® 262, and washers (D).
7. Torque bolts to 203 N·m (150 ft·lbf).

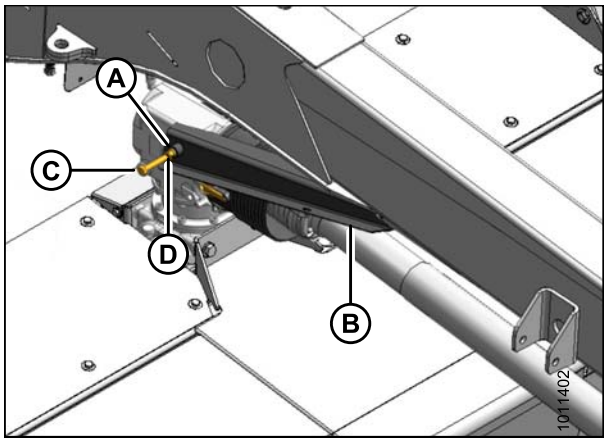


Figure 4.42: Steering Arm

8. Attach the safety chain (A) from driveshield cone to slotted hole in the arm weldment.

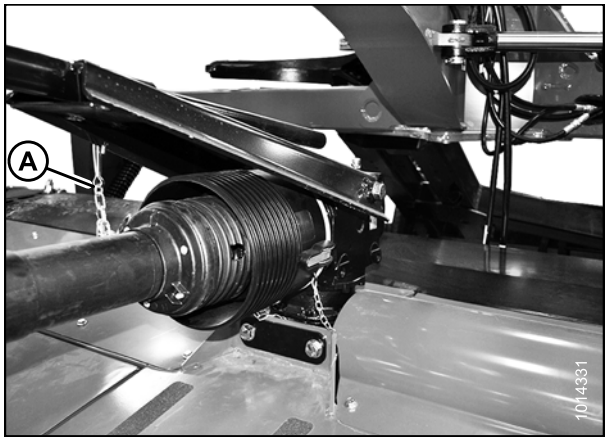


Figure 4.43: Driveline Shield

4.7 Removing Slow Moving Vehicle Sign (SMV) Covering

1. Remove the covering from the SMV sign (A).

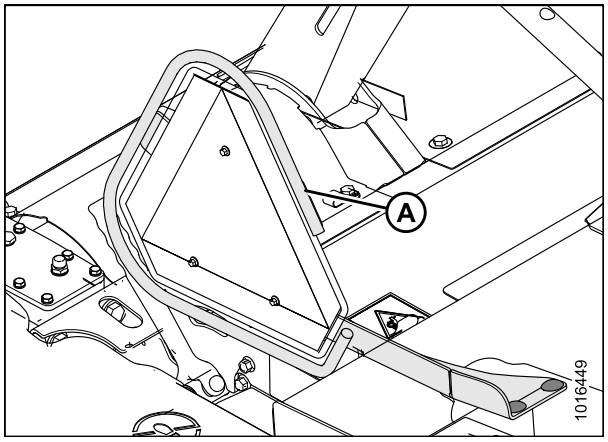


Figure 4.44: SMV Sign

4.8 Completing Road Friendly Transport™ System Installation

This section describes the installation of the base components, the hydraulic lines and hoses, and the electrical connections for the Road Friendly Transport™ system.

4.8.1 Installing Transport Alignment Control

This section describes the installation of the base components of the Road Friendly Transport™ system.

1. Install cam assembly (A) onto swing cylinder plate (B) with bolts using existing holes in plate. Install nuts (C) and torque to 55–60 N·m (40–45 ft·lbf).

   NOTE:
   When installing the cam assembly (A), check for hose twisting. If required, loosen hose fitting to allow hose to untwist. Torque fitting once complete.

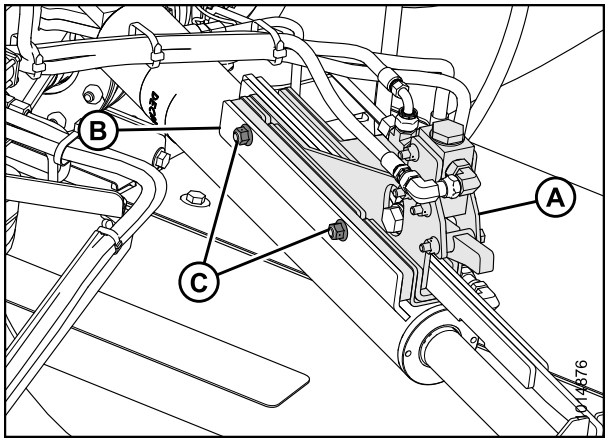


Figure 4.45: Alignment Control (Rear Right-Hand View)

2. Check the travel of the cam arm (A) by sliding it in and out of the cam assembly (B).

   NOTE:
   If the cam arm does not slide easily, loosen valve mounting bolts (C), and slide the valve (B) up to the top of the mounting holes. Retighten valve mounting bolts (C).

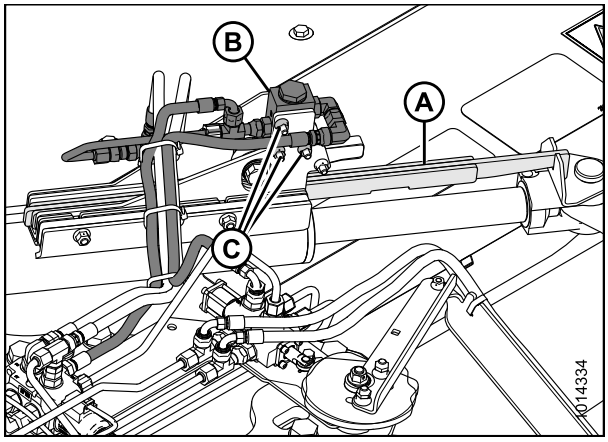


Figure 4.46: Alignment Control (Rear Right-Hand View)

3. Align the hole in the cam arm (A) with the hole in the cylinder clevis (B).

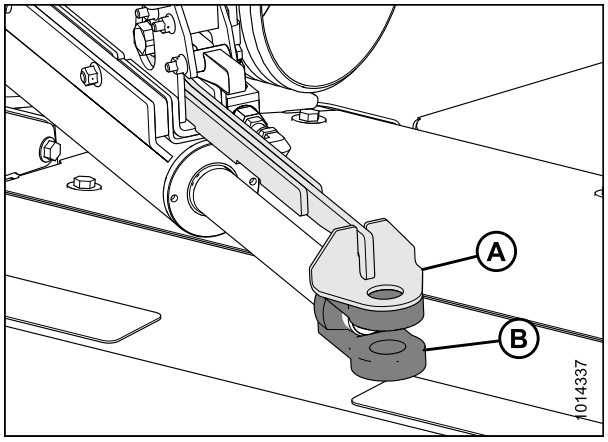


Figure 4.47: Alignment Control (Rear Right-Hand View)

4. Ensure the end of the cam arm (A) is parallel with the clevis end (B) of the cylinder. If adjustment is required, use a bar and turn the clevis until the clevis is parallel with the cam arm (A).

   NOTE:
   Clevis end of cylinder will be attached to Road Friendly Transport™ system casting when the system is primed.

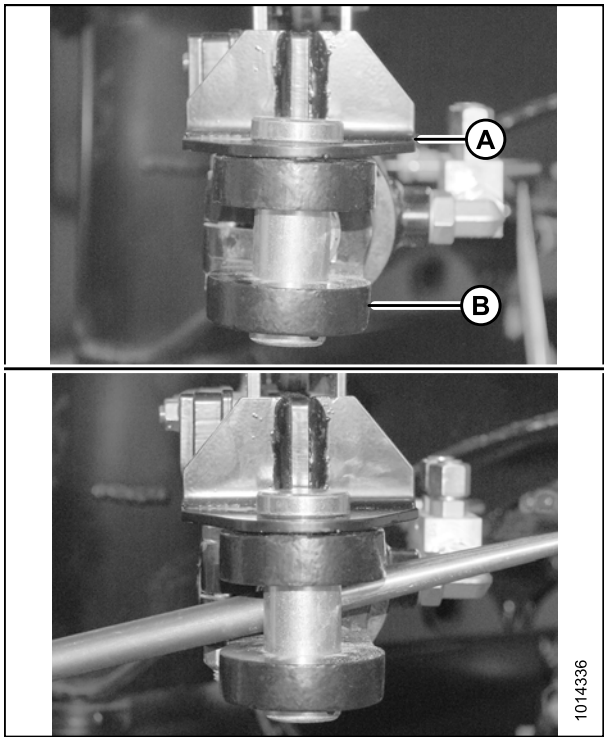


Figure 4.48: Cam Arm Alignment

4.8.2 Installing Hydraulic Lines and Hoses

This section describes the installation of the transport hydraulic control system.

NOTE:
For hydraulic fitting installation details, refer to *10.2 Torque Specifications, page 204*.

1. Place a container or rag under fitting on hitch swing cylinder.
2. Remove existing fitting at location (A) from the block.
3. Remove cap from fitting (C).

   IMPORTANT:
   Ensure O-ring is in place.

4. Retrieve ORFS-6 x ORB-6 connector (B) from shipping bag A and install into location (A).

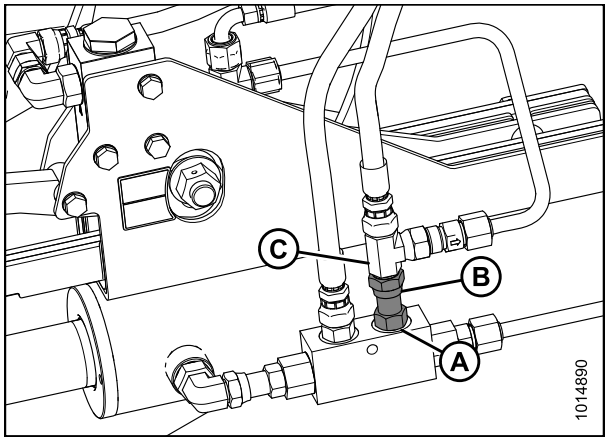


Figure 4.49: Alignment Valve Fitting

5. Remove cap from fitting (A).
6. Remove plug from hose (B). Install hose to fitting at location (A).

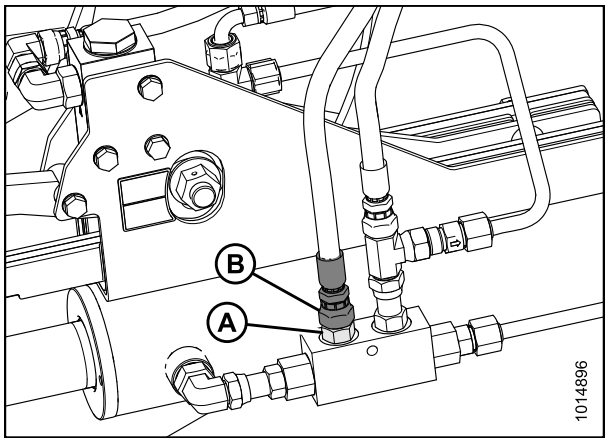


Figure 4.50: Alignment Valve Fitting

7. Connect hose (red collar #2) (B) to fitting in port A1 on selector valve (C).
8. Connect hose (blue collar #2) (A) to fitting in port A2 of the selector valve (C).
9. Use a cable tie and secure hoses (A) and (B) together.

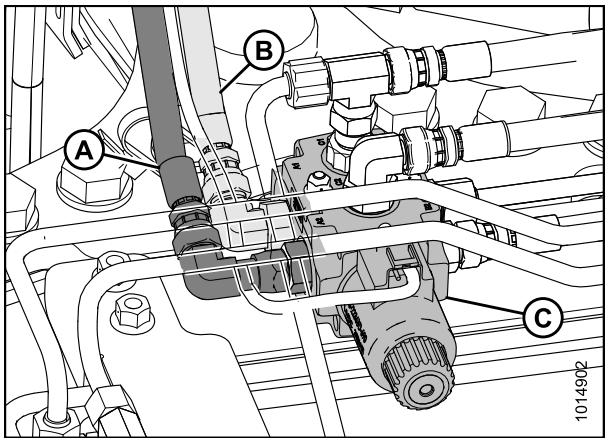


Figure 4.51: Selector Valve Supply

Installing Secondary Lift Hose for Field Wheels

NOTE:
The secondary lift hose is required to lift the field wheels fully into storage position when the mower conditioner is in transport mode.

10. Retrieve the following secondary lift hoses from shipping bag according to your mower size:
    - **13-Foot Headers:** Use hose MD #224160
    - **16-Foot Headers:** Use hose MD #224162
11. Retrieve the blue collars with the number one (blue collar #1) on them from the shipping bag. Place one collar on both ends of the secondary lift hose (B).
12. Undo adjustable strap (A) around hoses at aft end of hitch.
13. Feed male orb end of hose (B) into access hole (C) at rear of hitch through hitch to opening at front.

NOTE:
If you are installing a hydraulic center-link (MD #B5760), install hydraulic hoses at this time.

NOTE:
There is a green wire preinstalled in the hitch for pulling hoses through the hitch.

14. Position long hose (A) so that the exposed length at front of hitch matches existing hose (B). Route hose through guide (C).
15. At front of hitch, loosen nut (D) on hose clamp (E) until hose (A) can be positioned in clamp.
16. Tighten nut (D).

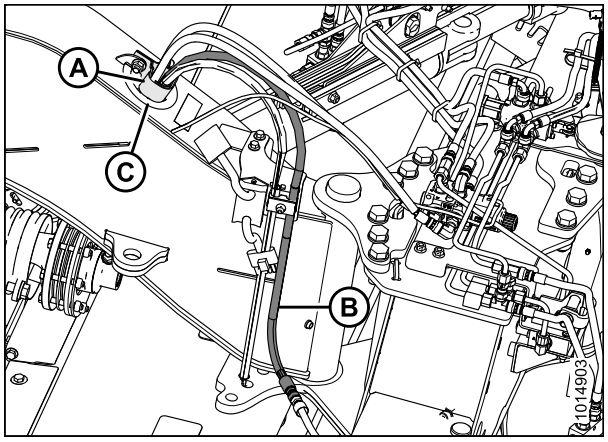


Figure 4.52: Lift Hoses

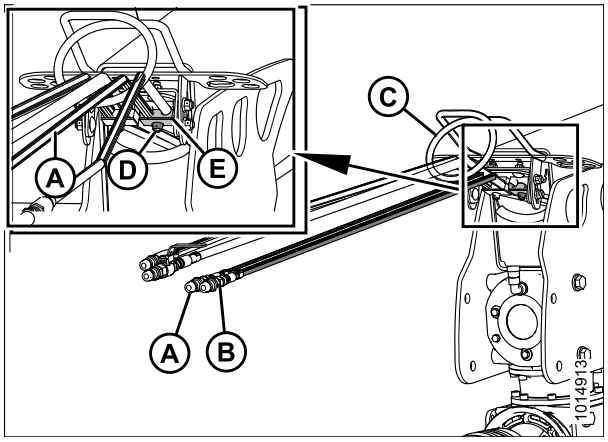


Figure 4.53: Lift Hoses

17. Retrieve ORB-8 coupler (A), and plastic cap (B) from hardware bag.
18. At forward end of hitch, install coupling (A) and plastic cap (B) onto secondary lift hose (C). Do **NOT** attach hoses to tractor at this time.

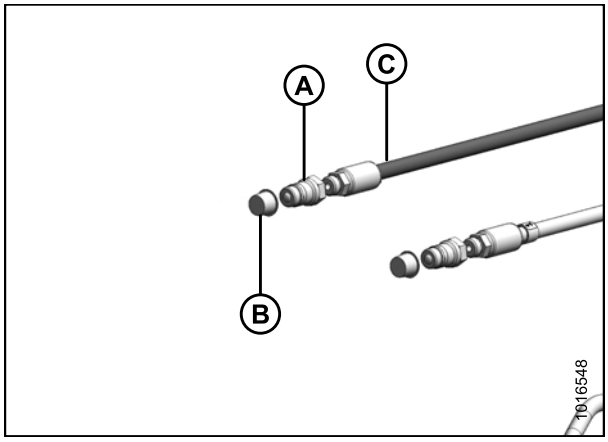


Figure 4.54: Lift Hose Fittings

19. At rear of hitch, secure hoses with adjustable strap (A).

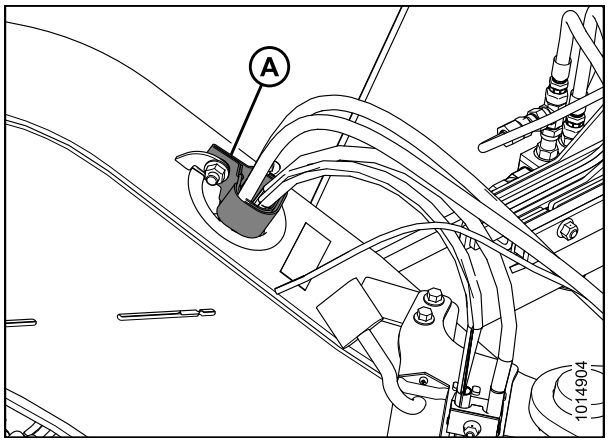


Figure 4.55: Rear of Hitch

20. Connect hoses from left-hand lift cylinder (MD #247106) (A) and (MD #224160 or MD #224162) (B) at the hitch pivot.

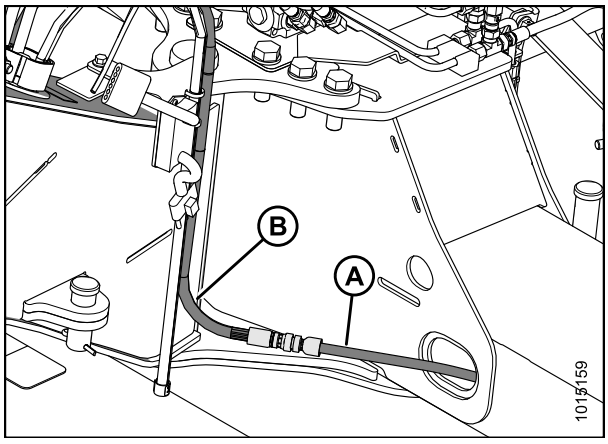


Figure 4.56: Lift Hose

4.8.3 Installing Electrical Components

Connecting Selector Valve

1. Connect the selector valve harness (A) to the selector valve.

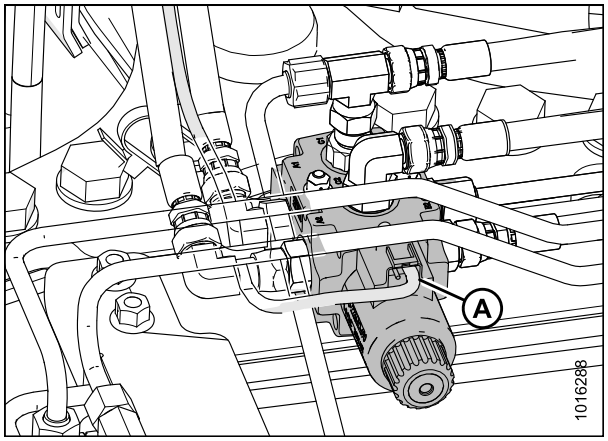


Figure 4.57: Selector Valve Supply

Installing Light Assembly

1. Locate the right-hand light assembly (A).

   NOTE:
   When the mower is in field position, the right-hand light assembly is located on the left, rear side of the mower. When the machine is being towed, it will be in the right-hand position.

2. Loosen bolt (C). Rotate the light assembly (A) up to position shown at right.
3. Install bolt (B).

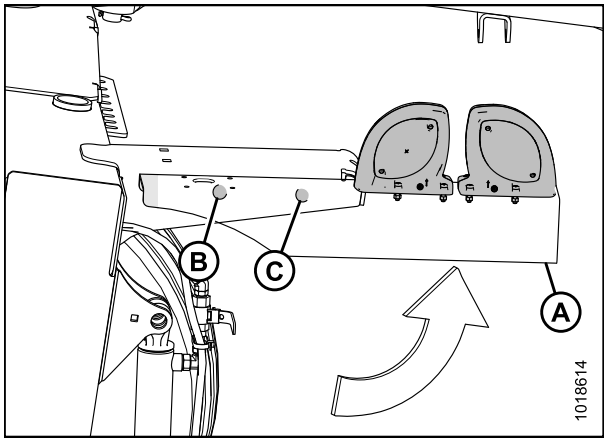


Figure 4.58: Left, Rear End of Mower

Connecting Transport Lighting Module

1. Connect harness (A) to transport lighting module (B).

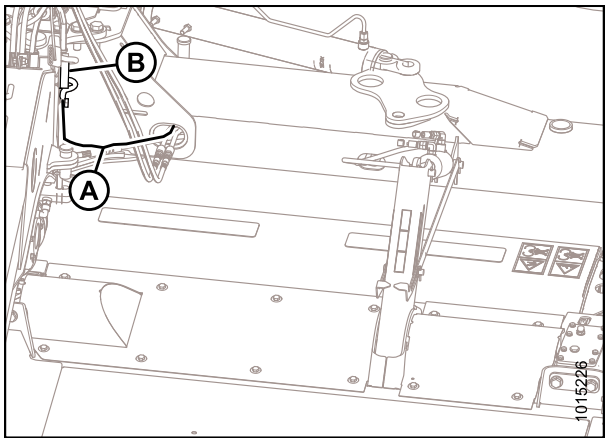


Figure 4.59: Transport Lighting Module

Installing Remote Control

1. Retrieve remote control (A) with wiring harness.
2. Place remote control (A) on hitch temporarily.

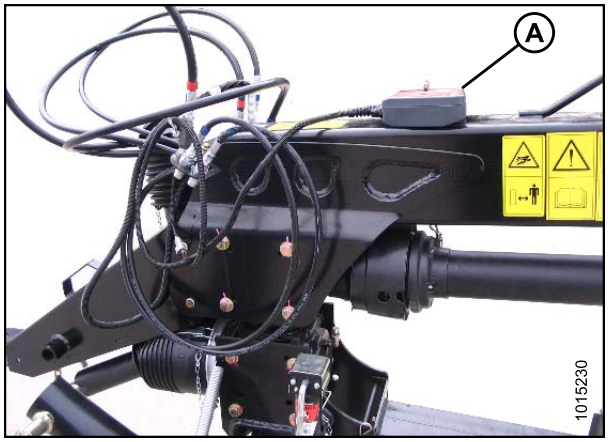


Figure 4.60: Remote Control on Top of Hitch

3. Locate the connector (C) that branches off the seven-pole trailer plug (A) and attach it to the remote wiring harness (B).

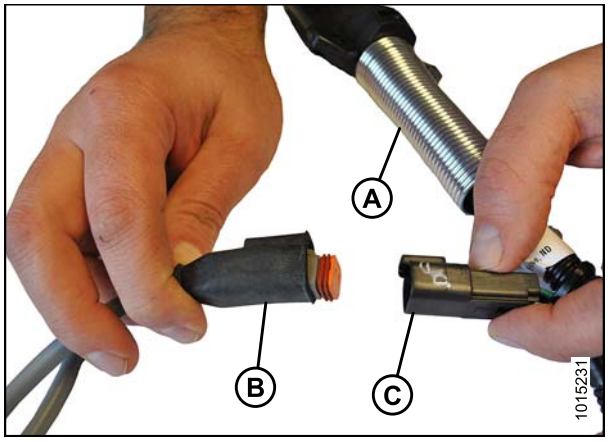


Figure 4.61: Transport Harness

If your tractor has a three-pin auxiliary power connection (A):

4. Connect the two wires (B) from the three-pin auxiliary connector to the power wires (C) on the remote control, wrap connections with electrical tape, and skip to Step *6., page 98*.

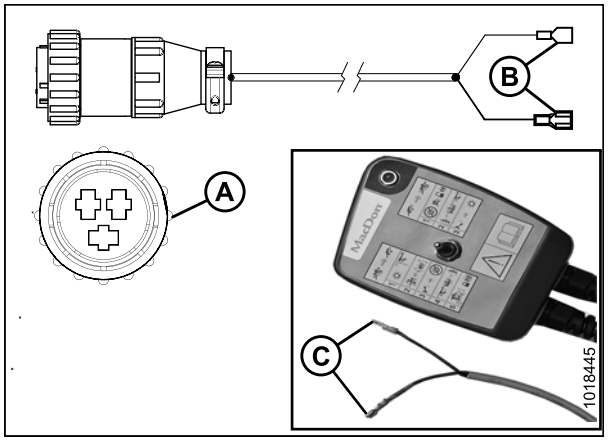


Figure 4.62: Three-Pin Auxiliary Connector

If your tractor does NOT have a three-pin auxiliary power connection:

5. Connect the remote control power wire (B) to the tractor's power supply:
   - Connect wire (C) with no tag to tractor ground
   - Connect wire (D) with the red tag to tractor power

   NOTE:
   If the red tag is missing, identify the power by locating the wire with the number one printed on it. The ground wire has a number two printed on it.

6. Place the remote control inside the tractor cab.

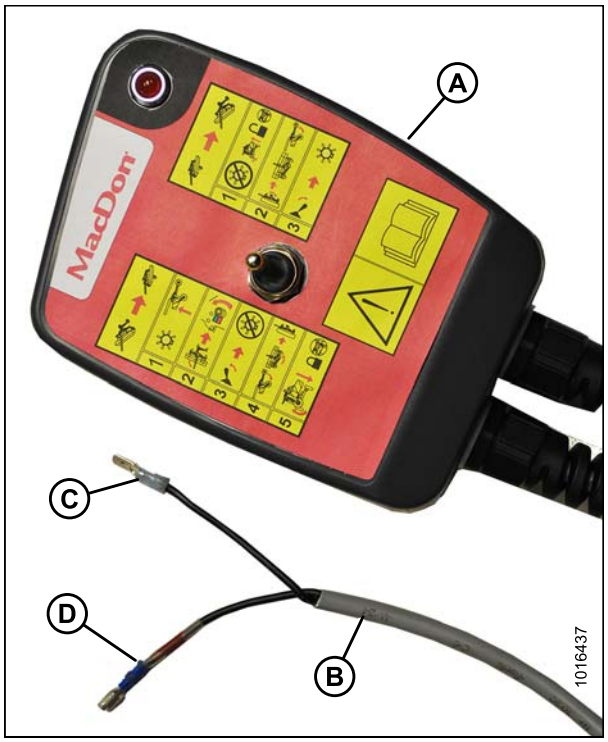


Figure 4.63: Remote Control

4.9 Installing Options

Install the following optional kits if they were supplied with your header.

4.9.1 Installing Hydraulic Center-Link (Optional)

The hydraulic center-link option is supplied in a separate shipment. Refer to the installation instructions supplied with the kit.

4.9.2 Installing Tall Crop Divider (Optional)

IMPORTANT:
If header will be transported on public roads in the Road Friendly Transport™ mode, do not install the tall crop dividers. Install the dividers after the machine is delivered to the customer.

4.10 Setting up the Tractor

4.10.1 Adjusting the Drawbar

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Adjust tractor drawbar to meet the specifications listed in Table *4.1 ASAE Standard A482 Specifications, page 100*.
2. Secure the tractor drawbar so the hitch pin hole is directly below the driveline.

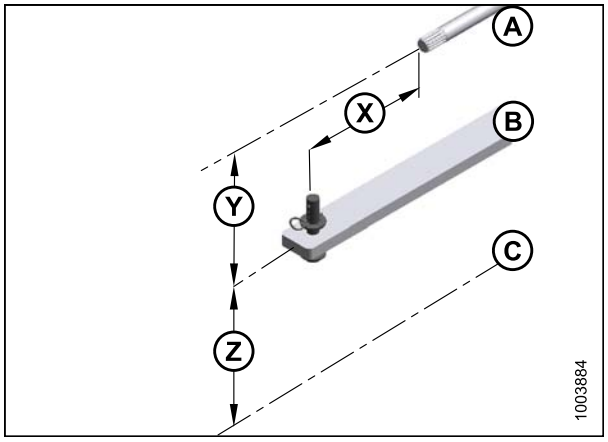


Figure 4.64: Tractor Drawbar Adjustments

A - PTO B - Tractor Drawbar C - Ground
X - Dimension X Y - Dimension Y Z - Dimension Z

Table 4.1 ASAE Standard A482 Specifications

Dimension	1000 rpm Power Take-Off	
	1-3/8 in. Diameter	**1-3/4 in. Diameter**
X	406 mm (16 in.)	508 mm (20 in.)
Y	200–350 mm (7-7/8–13-3/4 in.) **203 mm (8 in.) recommended**	
Z	330–432 mm (13–17 in.) **406 mm (16 in.) recommended**	

4.10.2 Installing Drawbar Hitch Adapter

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Remove hairpin (A) and pin (B).
2. If necessary, loosen four jam nuts (C), and then loosen four nuts (D) so that hitch adapter (E) will slide onto tractor drawbar (F).
3. Align hole in adapter (E) with hole in drawbar (F) and install pin (B). Secure with hairpin (A).
4. Gradually tighten the four nuts (D) to 540 N·m (400 ft·lbf).

   NOTE:
   Ensure hardened washers and Class 10 nuts (supplied with adapter) are used.
5. Tighten four jam nuts (C).

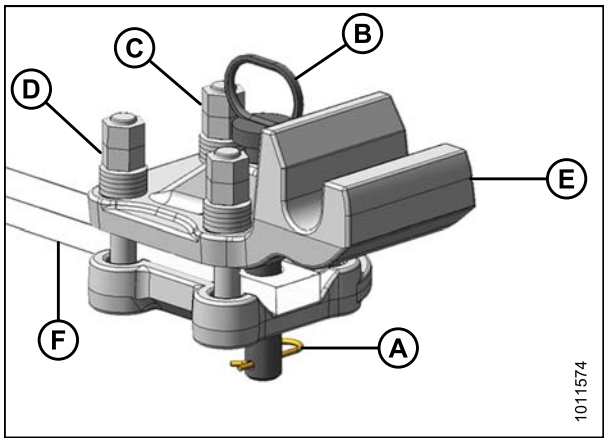


Figure 4.65: Drawbar Hitch Adapter

4.11 Attaching Mower Conditioner to the Tractor

Depending on tractor configuration, refer to the applicable attaching procedure:

- *4.11.1 Attaching with Drawbar Hitch, page 101*
- *4.11.2 Attaching with Two-Point Hitch, page 103*

4.11.1 Attaching with Drawbar Hitch

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Remove lynch pin (A) from clevis pin (B), and remove clevis pin from mower conditioner hitch.

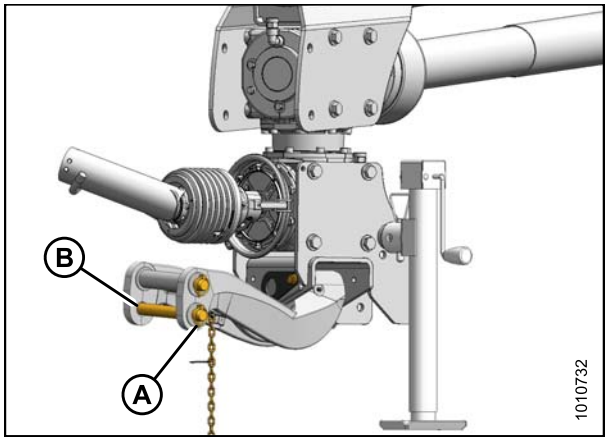


Figure 4.66: Mower Conditioner Hitch

2. Move tractor to position drawbar hitch adapter (A) under pin (B) in mower conditioner hitch. Adjust height as necessary with jack (C).
3. Shut down tractor and remove key from ignition.

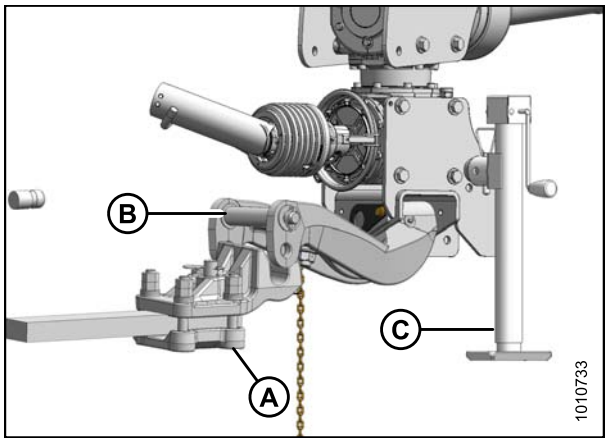


Figure 4.67: Mower Conditioner Hitch

4. Lower hitch with jack (A) so that pin (B) engages drawbar hitch adapter (C).
5. Install clevis pin (D) and secure with lynch pin (E).

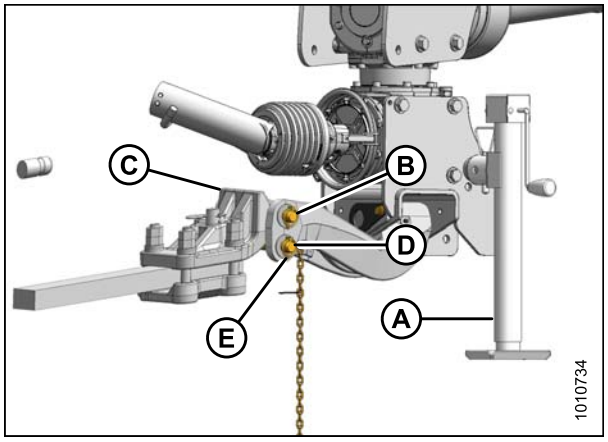


Figure 4.68: Mower Conditioner Hitch

6. Position driveline (A) onto tractor power take-off (PTO).
7. Pull back collar (B) on driveline (A), and push driveline until it locks. Release collar.
8. Route safety chain (C) from mower conditioner through chain support (D) on drawbar hitch adapter and around tractor drawbar support. Lock hook on chain.

   NOTE:
   If the tractor has a three-point hitch, lift the links as far as possible to prevent damage to the hitch.

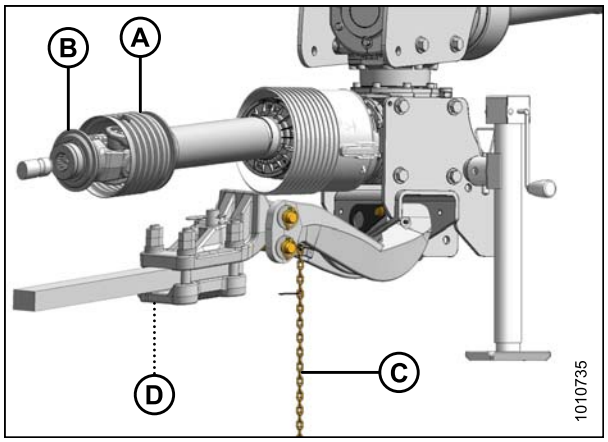


Figure 4.69: PTO Driveline

9. Raise jack (A), and remove pin (B).

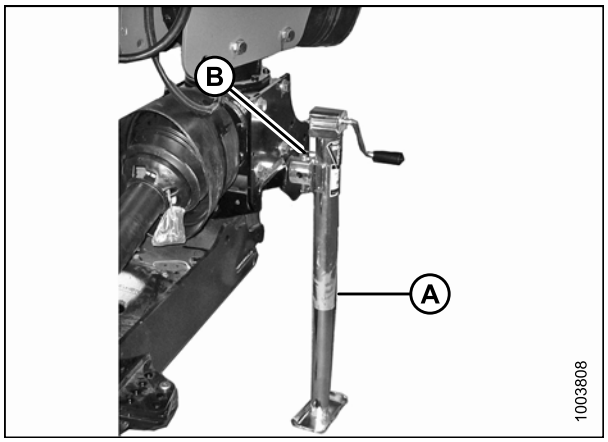


Figure 4.70: Hitch Jack

10. Move jack (A) to storage position on top of hitch, and secure with pin (B).
11. Proceed to *4.11.3 Connecting Hydraulics, page 105*.

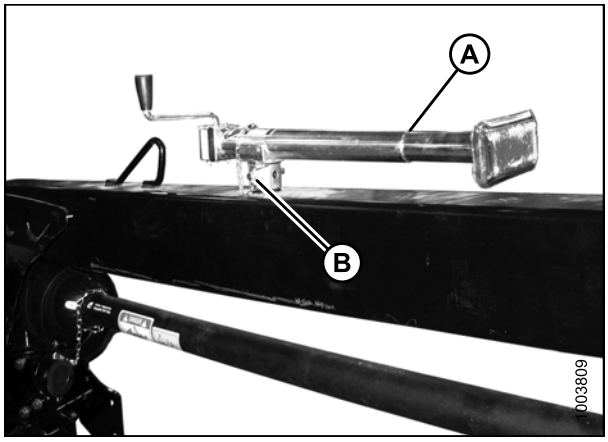


Figure 4.71: Jack Storage

4.11.2 Attaching with Two-Point Hitch

Follow these steps to attach Category II, IIIN, and III two-point hitches:

CAUTION

Shut off tractor, engage parking brake, and remove key before working around hitch.

1. Position tractor and align tractor hitch arms (A) with hitch adapter (B).
2. Shut off tractor and remove key.
3. Remove lynch pins (C) and washers from hitch adapter.

   NOTE:
   If tractor is equipped with a Category III hitch, use a bushing (MD #224322) on each hitch pin (D).
4. Secure arms (A) onto adapter pins (D) with lynch pins (C).
5. Install anti-sway bars (not shown) on tractor hitch to stabilize lateral movement of hitch arms (A). Refer to your tractor operator's manual.

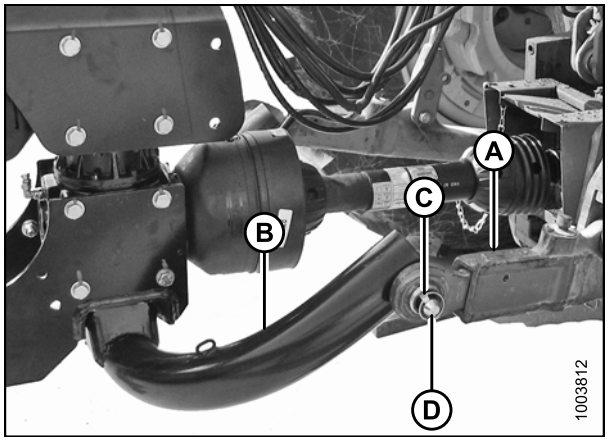


Figure 4.72: Two-Point Hitch Configuration

6. Check distance (C) between tractor power take-off (PTO) shaft (A) and mower conditioner hitch gearbox shaft (B) (without the front half of the driveline attached).
7. Ensure that measurement does NOT exceed the dimensions listed in Table *4.2 Distance between Hitch Gearbox and Tractor PTO, page 104*.

Table 4.2 Distance between Hitch Gearbox and Tractor PTO

Driveline Shaft Size	Distance (C)
34 mm (1-3/8 in.)	750 mm (27 in.)
43 mm (1-3/4 in.)	800 mm (31 in.)

8. Position driveline (A) onto tractor PTO shaft making sure that driveline is approximately level.
9. Pull back collar on driveline (A) and push driveline until it locks. Release collar.

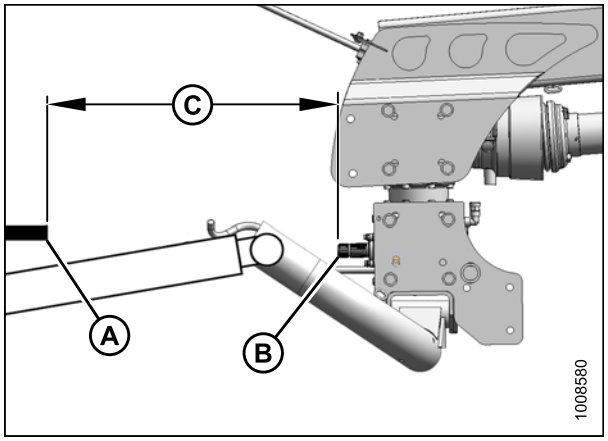


Figure 4.73: Allowable Driveline Length

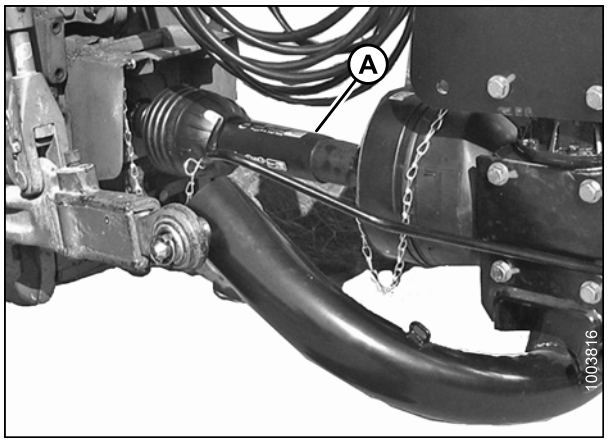


Figure 4.74: Mower Conditioner Driveline Attached to Tractor PTO

10. Start tractor and raise hitch so that stand (A) is off the ground. Shut down tractor and remove key from ignition.
11. Remove inner hairpin (B) and pull lock (C) to release stand.

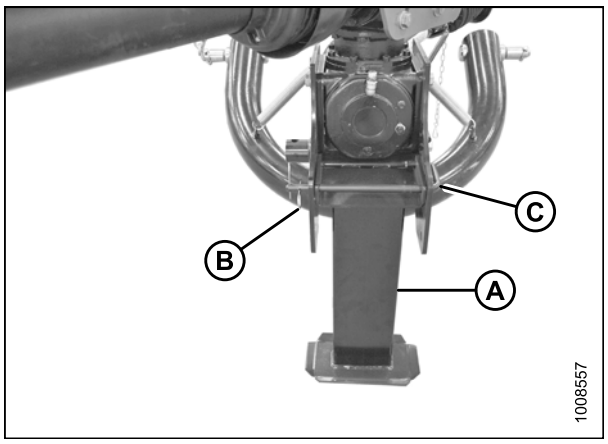


Figure 4.75: Hitch Stand

12. Raise stand (A), rotate lock (B) clockwise to vertical position, and re-engage lock (B) to hold the stand in the storage location.

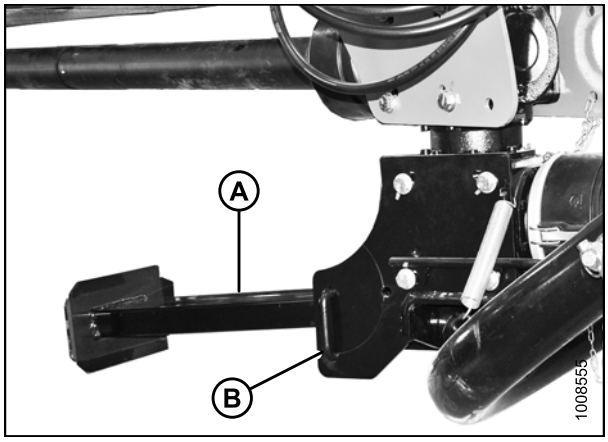


Figure 4.76: Hitch Stand

13. Secure lock with lynch pin (A).

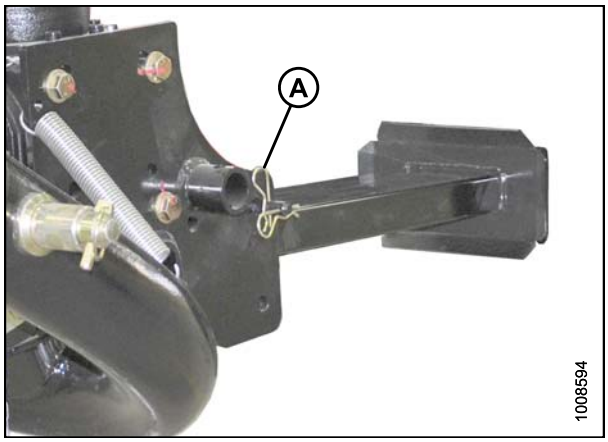


Figure 4.77: Hitch Stand

4.11.3 Connecting Hydraulics

WARNING

Do NOT use remote hydraulic system pressures over 20,684 kPa (3000 psi). Check your tractor operator's manual for remote system pressure.

NOTE:
Refer to numbered/colored bands on hoses to identify lift, swing/transport, and tilt hose sets.

Table 4.3 Hydraulic System Hoses

System	Hose Identification	Tractor Hydraulics
Lift (A)	Red #1 - pressure Blue #1 - return (only with Road Friendly Transport™ system installed)	Control 1
Swing/ Transport (B)	Red #2 - pressure Blue #2 - return	Control 2
Tilt (C)[2]	Red #3 - pressure Blue #3 - return	Control 3

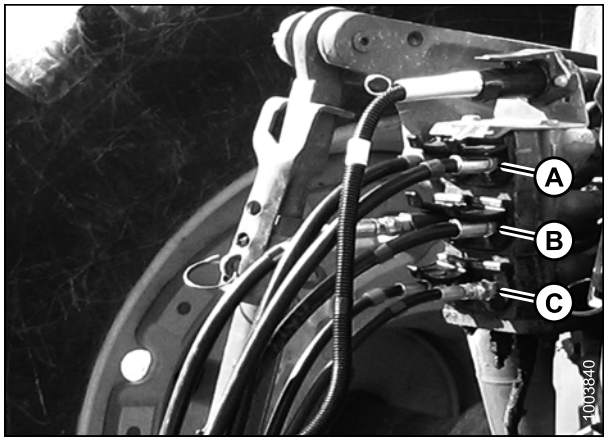


Figure 4.78: Hydraulic Connections

1. Connect the lift cylinder hose (red label with #1) to the tractor's hydraulic receptacle. The second hose (blue #1) is required only when the Road Friendly Transport™ system installed. Refer to Table *4.4 Lift System, page 106* to confirm system is functioning correctly.

Table 4.4 Lift System

Control Lever Position	Cylinder Movement	Mower Conditioner Movement
Forward	Retract	Lower
Backward	Extend	Raise

2. Connect the two hitch swing cylinder hoses (labelled #2) to the tractor hydraulic receptacles. Refer to Table *4.5 Hitch Swing and Transport System, page 106* to confirm system is functioning correctly.

Table 4.5 Hitch Swing and Transport System

Control Lever Position	Cylinder Movement	Mower Conditioner Direction
Forward	Extend	Right
Backward	Retract	Left

3. For machines with hydraulic center-link only, connect the two mower conditioner tilt cylinder hoses (labelled #3) to the tractor hydraulic receptacles. Refer to Table *4.6 Mower Conditioner Tilt System, page 106* to confirm system is functioning correctly.

Table 4.6 Mower Conditioner Tilt System

Control Lever Position	Cylinder Movement	Mower Conditioner Movement
Forward	Retract	Lower
Backward	Extend	Raise

2. Available with hydraulic tilt option installed.

4.11.4 Connecting Electrical Wiring Harness

1. Ensure that Pin #4 (A) in the tractor receptacle is **NOT** continuously energized (refer to your tractor operator's manual). If necessary, remove the appropriate fuse.

   IMPORTANT:
   Older model tractors may have Pin #4 (A) energized as an accessory circuit; however, pin position (B) is used to supply power to the mower conditioner's brake lights.

2. Connect the mower conditioner wiring harness connector (C) to the tractor receptacle.

   NOTE:
   The connector is designed to fit tractors equipped with a round seven-pin receptacle (SAE J560).

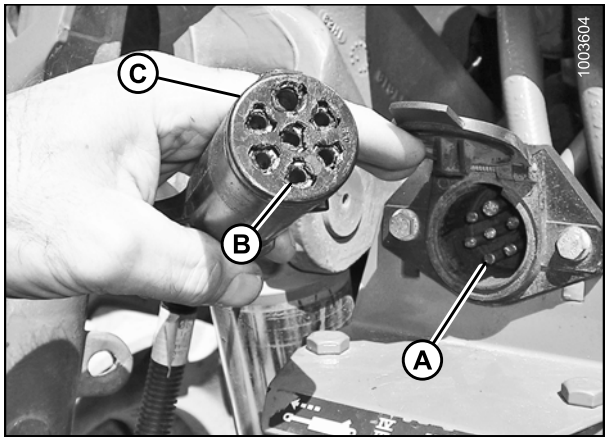


Figure 4.79: Electrical Wiring Harness and Receptacle

4.12 Installing Field Wheels

1. Remove the shipping strap (B) from the wheel spindle (A). Do this to each side.

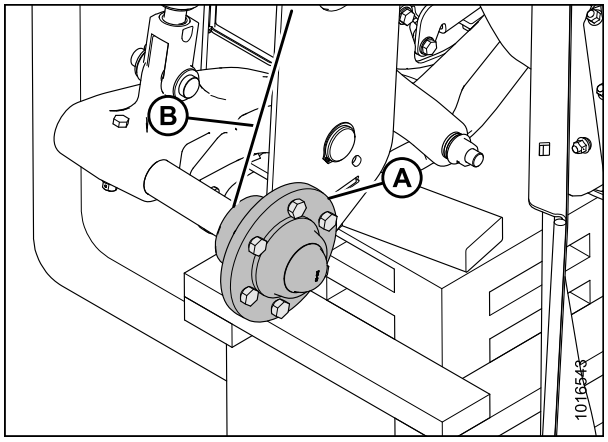


Figure 4.80: Wheel Spindle

2. Remove wheel bolts (A) from spindle (B).

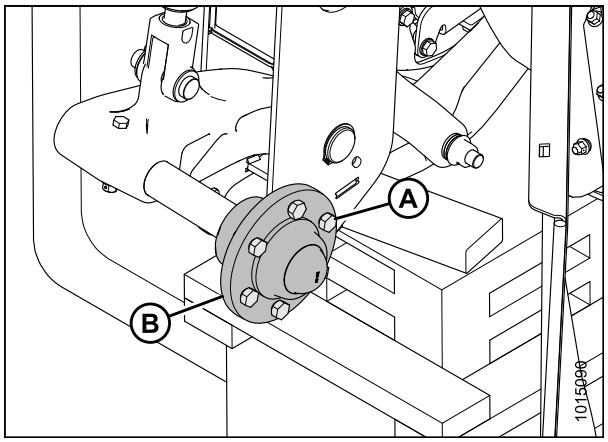


Figure 4.81: Wheel Spindle

⚠ CAUTION

When installing wheel, be sure to match countersunk holes with bolt head profiles. Holes that are not countersunk do NOT correctly seat the bolts.

3. Position wheel (A) on spindle, install bolts (B), and partially tighten.

   IMPORTANT:
   Be sure valve stem (C) points away from wheel support.

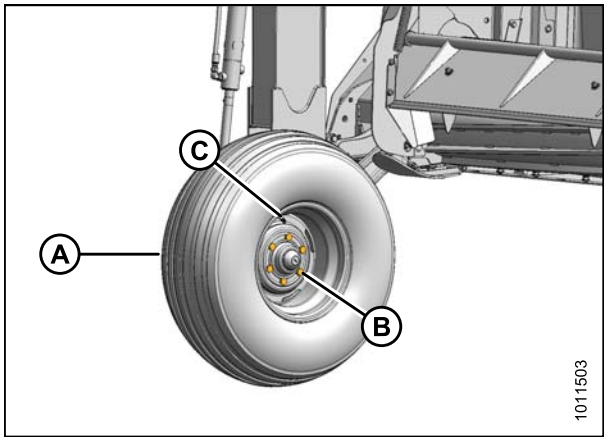


Figure 4.82: Installing Wheel Bolts

4. Lower wheels to the ground and torque wheel bolts to 160 N·m (120 ft·lbf) using the tightening sequence shown.

   NOTE:
   Whenever a wheel is installed, check torque after one hour of operation.

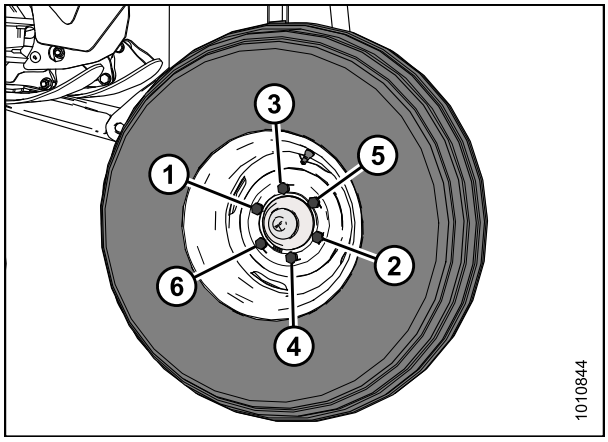


Figure 4.83: Tightening Sequence

4.13 Priming the Hitch Swing Cylinder

1. On the remote control, move the transport switch to the lower position (B) and ensure that light (A) is illuminated. The hitch swing circuit will now be active.

Figure 4.84: Transport Remote Control

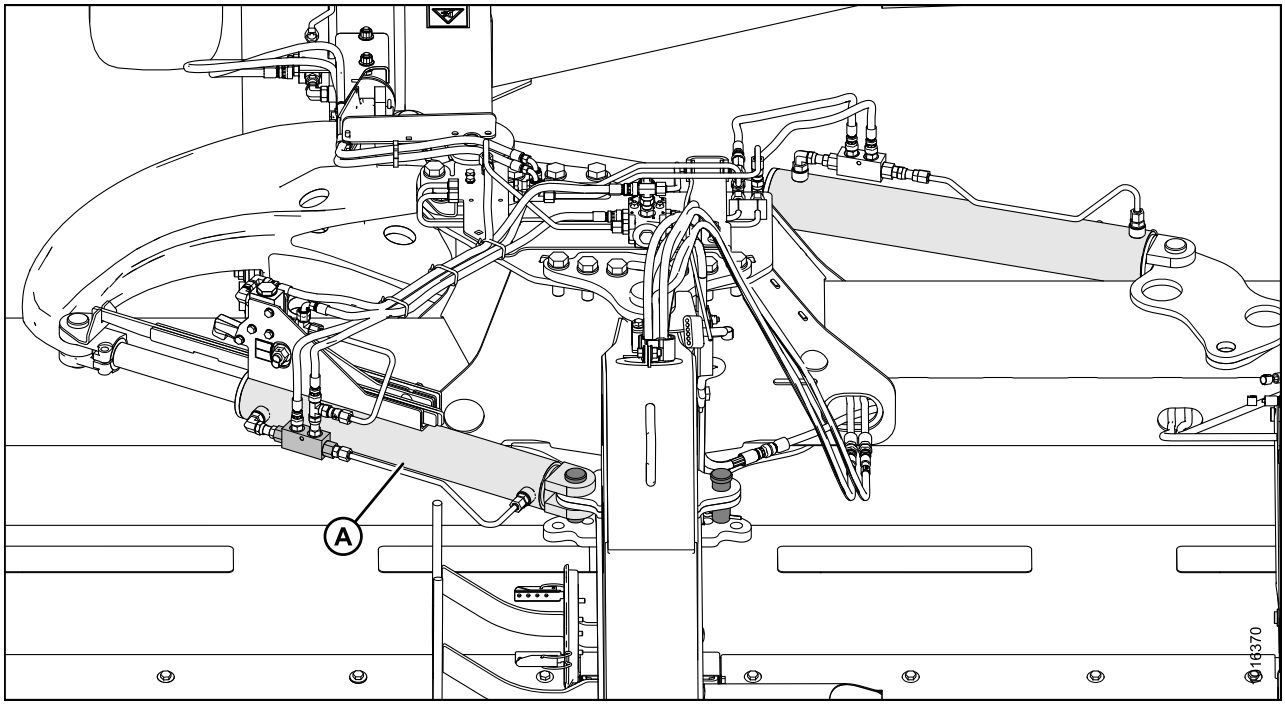


Figure 4.85: Hydraulic System

2. Using the tractor's hydraulics, extend and retract the swing cylinder (A) several times to purge the cylinder.

   NOTE:
   Ensure there is no contact with the rear link arm when the hitch swing cylinder extends.

3. Align the clevis pin hole in the cylinder clevis (B), cam arm (C), and rear link arm (D). Install clevis pin (D) and secure with a cotter pin (E).

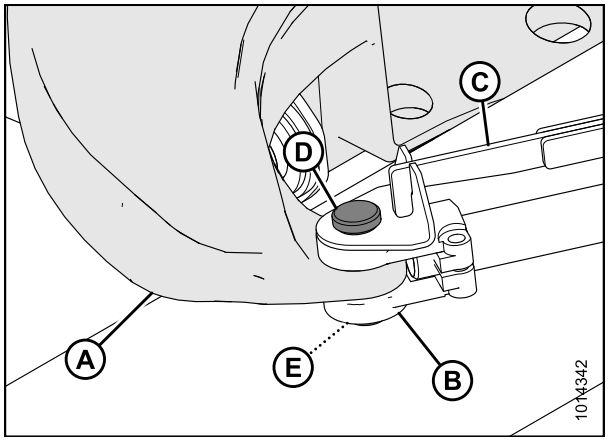


Figure 4.86: Rear Arm Link

4.14 Installing Road Friendly Transport™ Wheels

1. Retrieve clevis pin (A) and cotter pin (B) from shipping bag and install onto hitch bracket at side of hitch.

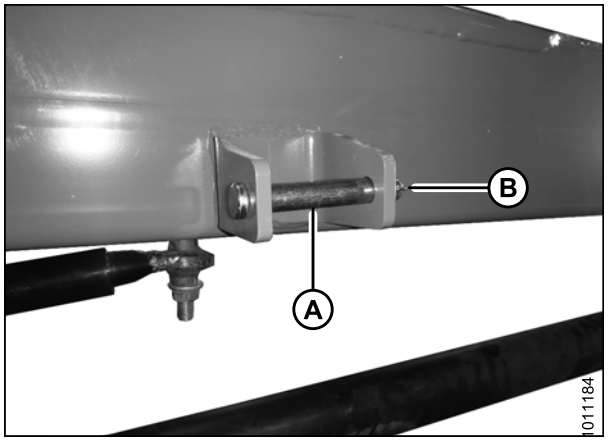


Figure 4.87: Latch Pin

2. Remove bolt (B) holding the axle assembly (A) in place.
3. Slide axle assembly (S) out of the support.

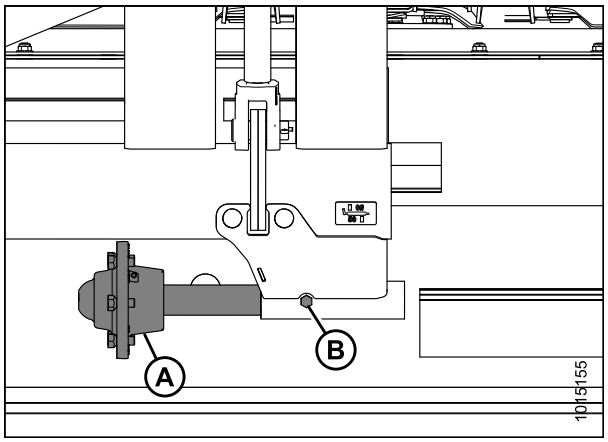


Figure 4.88: Axle Assembly Relocation

4. Install the axle assembly (A) into the support.
5. Install bolt (B) and nut to secure it. Torque to 50 ft·lbf (68 N·m).
6. Remove wheel bolts from the hub (A).

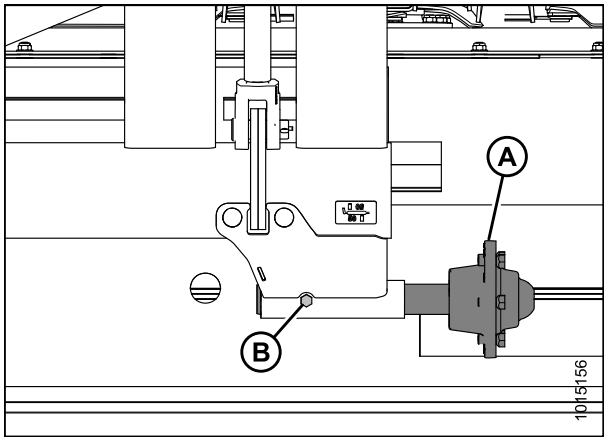


Figure 4.89: Axle Assembly Relocation

7. In the cab, move transport switch to the upper position (B) and ensure that light (A) is NOT illuminated. The hitch swing circuit is now deactivated and the transport circuit is active.
8. Using tractor's hydraulics, raise the transport assembly high enough to install the wheels.

Figure 4.90: Transport Remote Control

CAUTION

When installing wheel, be sure to match countersunk holes with bolt head profiles. Holes that are not countersunk do NOT correctly seat the bolts.

9. Retrieve transport wheels and install wheels with wheel bolts. Ensure valve stem faces outboard. Do not fully tighten bolts.
10. Lower wheels to the ground.
11. Torque wheel bolts to 160 N·m (120 ft·lbf) following the tightening sequence shown.

    NOTE:
    Whenever a wheel is installed, check torque after one hour of operation.
12. Check tire pressure.

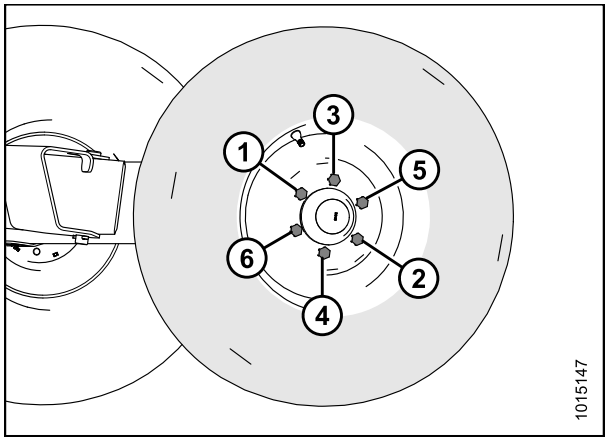


Figure 4.91: Tightening Sequence

4.15 Setting up Forming Shields

Each type of conditioner uses a different configuration for the swath forming shield. Refer to the applicable instruction for the conditioner supplied with the machine.

NOTE:
Before setting up the forming shields, convert the header to field mode. Refer to *6.19.2 Converting from Transport to Field Mode, page 160*.

If a finger conditioner is installed, continue to *4.15.1 Setting up Forming Shield for Finger Conditioner, page 114*.

If a roll conditioner is installed, continue to *4.15.2 Setting up Forming Shields for Roll Conditioner, page 118*.

If a conditioner is not installed, continue to *4.17 Discharge Shield (No Conditioner), page 122*.

4.15.1 Setting up Forming Shield for Finger Conditioner

NOTE:
Transport not shown in illustrations for clarity.

NOTE:
Before setting up the forming shields, convert the header to field mode. Refer to *6.19.2 Converting from Transport to Field Mode, page 160*.

1. Remove shipping wires (A) securing forming shield covers (B) to pallet.

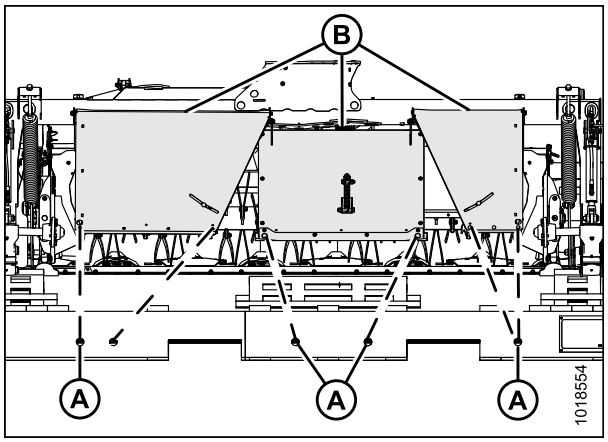


Figure 4.92: Header Strapping

2. Support shield (C), remove two bolts at (A and B), and remove the shield.

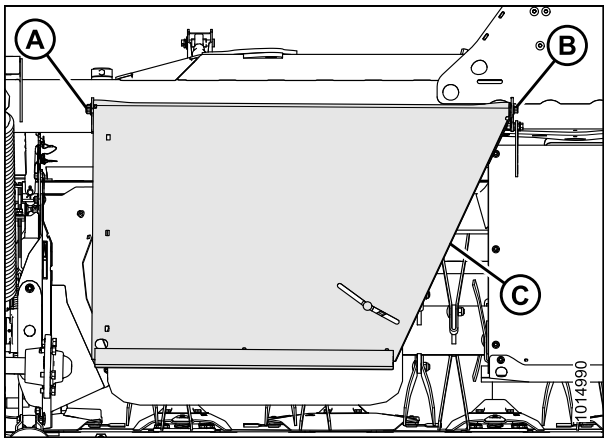


Figure 4.93: Outboard Top Cover

3. Support shield (C), remove two bolts at (A and B), and remove the shield.

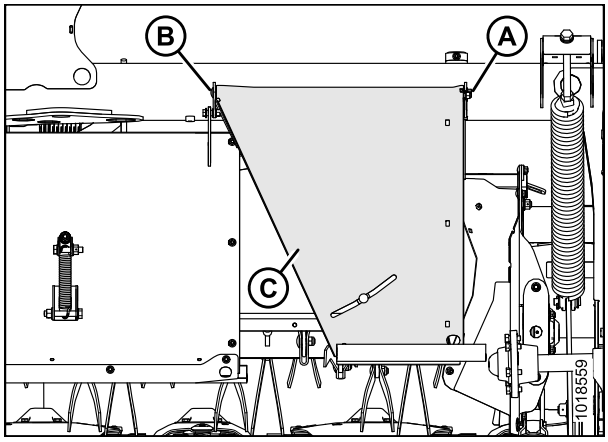


Figure 4.94: Outboard Top Cover

4. Remove nuts (A) from center shield (B). Do not remove the bolts.

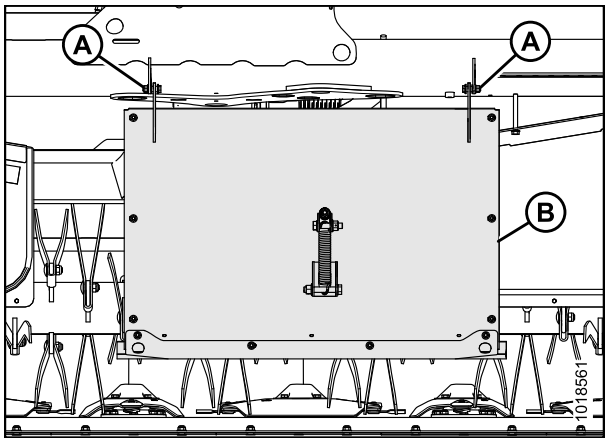


Figure 4.95: Center Shield

5. Flip right forming shield over so the adjustment handle is facing up and install it as follows:
   a. Position shield (A) onto hex head bolt (B). Loosely install nut to hold shield in place.
   b. Install carriage bolts (C) with heads facing towards center of shield. Install nuts and tighten.
   c. Repeat for the left side forming shield.

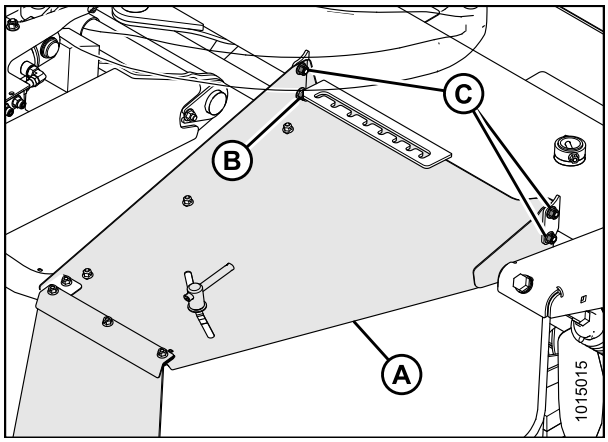


Figure 4.96: Outboard Top Cover (Right-Hand Side)

6. Remove nut, bolt, and washer (A) securing the spring assembly (B) onto the center shield. Retain nut, bolt, and washer for attaching to transport.

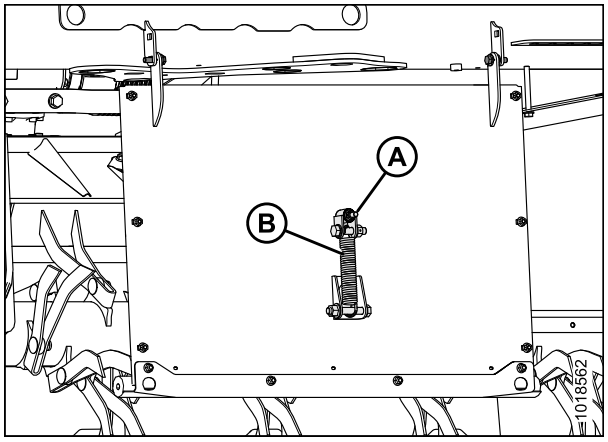


Figure 4.97: Spring on Center Shield

7. Lift center shield and attach spring assembly (A) to link bracket (B) on transport with existing bolt, nut, and washer (C) removed in Step *6., page 116*.

   IMPORTANT:
   Do **NOT** bolt center shield to the left and right shields. If the hardware to attach the center shield to side shields is installed, remove it and discard.

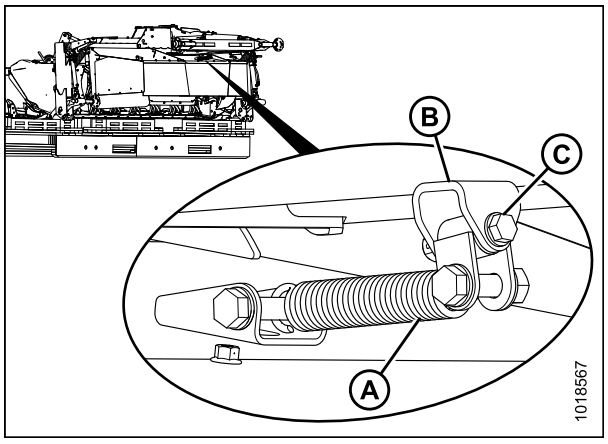


Figure 4.98: Spring Attached to Transport

8. Remove and discard bolt (A) securing deflector (B) to frame.

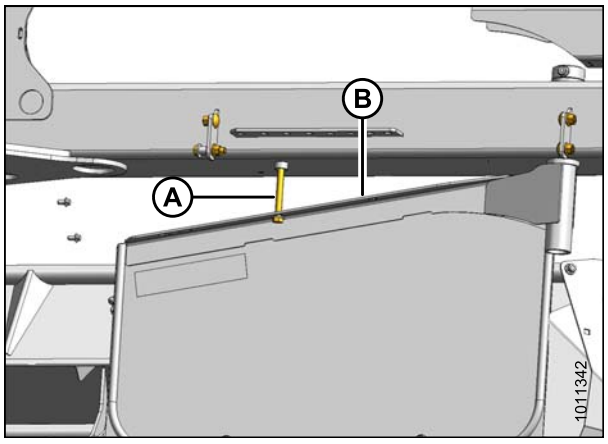


Figure 4.99: Side Deflector Assembly

9. Remove handle (A), washers, and bolt from shield (B).
10. Swing deflector (C) under outboard shield (B) so that handle can be installed into deflector and shield.

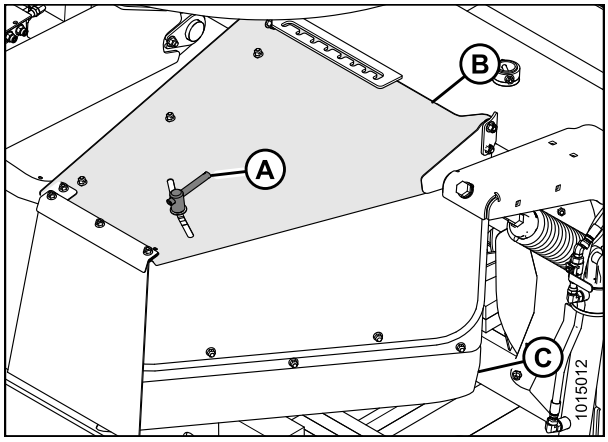


Figure 4.100: Side Deflector Assembly

11. Install carriage bolt (A), washer (B), spring washer (C), and handle (D) as shown.
12. Position deflector so handle (D) is approximately centered in slot, and tighten handle.

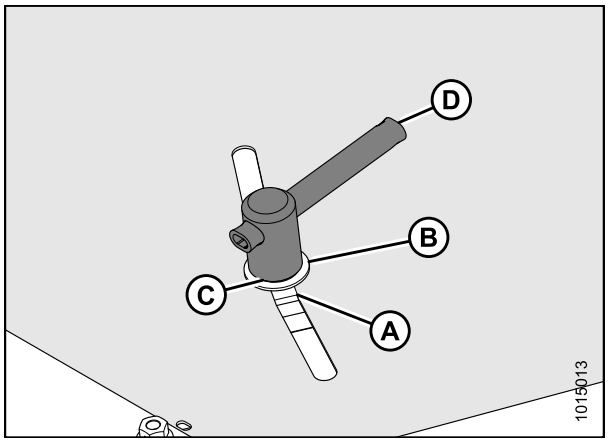


Figure 4.101: Deflector Adjustment

13. Remove two M10 carriage bolts (A) securing left-hand deflector in shipping position. Repeat for opposite deflector.

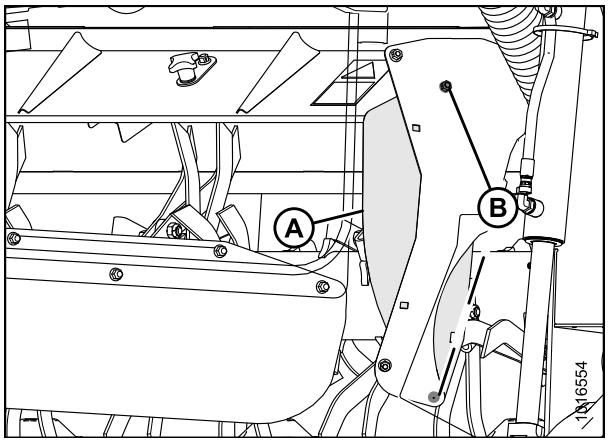


Figure 4.102: Right-Hand Deflector Shield Shown – Left-Hand Deflector Shield Opposite

14. Reposition deflector (A) so that holes align with the fixed shield, and secure with four M10 carriage bolts (B) and hex head flange nuts.

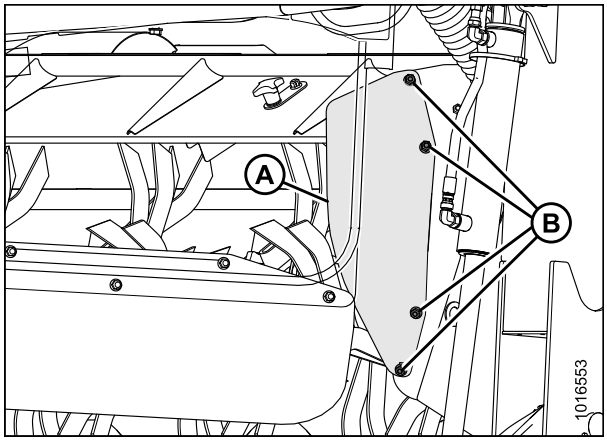


Figure 4.103: Right-Hand Deflector Shield Shown – Left-Hand Deflector Shield Opposite

15. Remove shipping wires (A) securing curtains (B) to covers (C) and, allow curtains to unfold before operating machine.

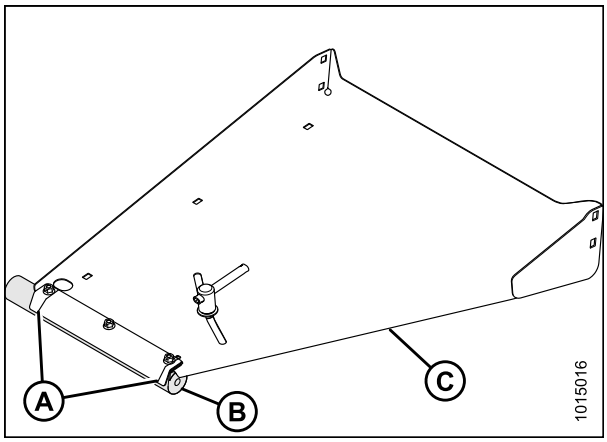


Figure 4.104: Forming Shield Curtain

4.15.2 Setting up Forming Shields for Roll Conditioner

Use these instructions to set up the forming shields on a machine with a roll conditioner.

1. Remove and discard bolt (A) securing forming shield (B) to frame.
2. Swivel shield (B) to the open position.

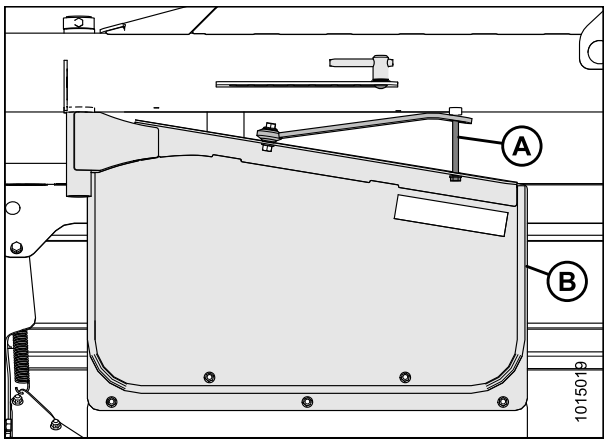


Figure 4.105: Left Side Forming Shield

3. Rotate clamp (B) until you can remove bolt (C).
4. Swing adjuster bar (A) and align with a hole on carrier plate (D).
5. Install bolt through adjuster bar (A) and carrier plate (D). Install clamp (B) onto bolt. Tighten clamp until shield does not move.
6. Repeat above steps for opposite shield.

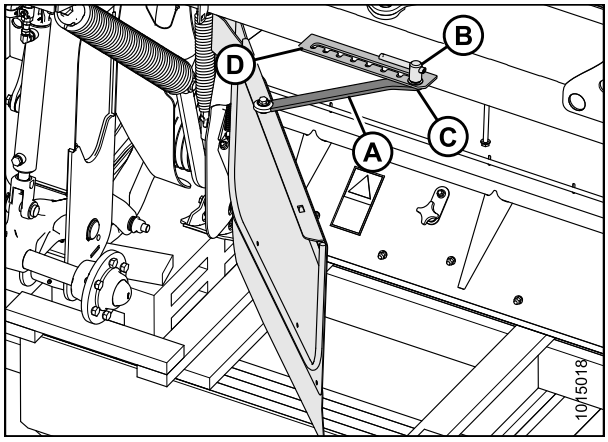


Figure 4.106: Adjuster Bar

4.16 Unpacking Curtains

1. Remove two M10 hex head bolts (A) and center lock flange nuts securing cutterbar door supports to center channel frame.

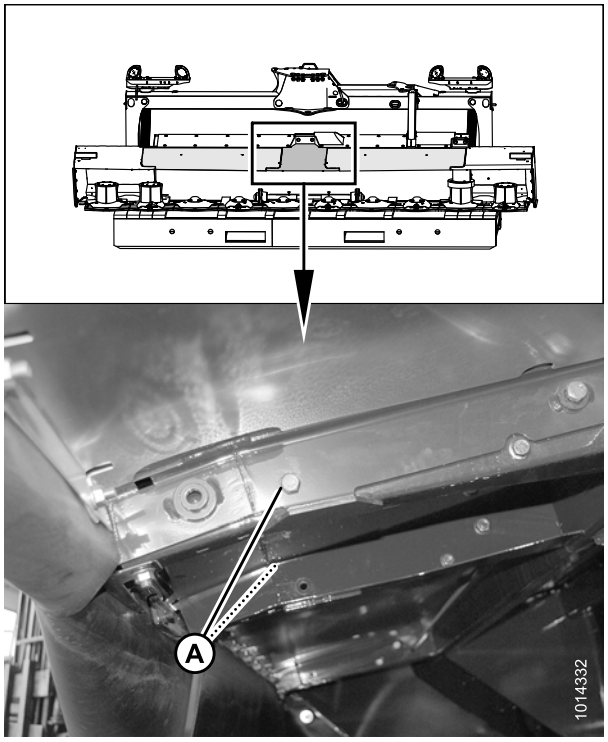


Figure 4.107: Underside of Cutterbar Doors

2. Remove shipping wire (A) from cutterbar door curtains and forming shield covers and pull down.

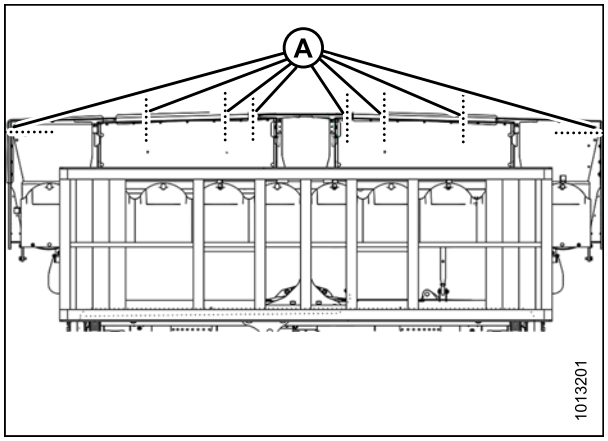


Figure 4.108: Underside of Mower Conditioner

3. Straighten cutterbar door curtains (A) and remove folds or creases (minor creases will eventually straighten out).

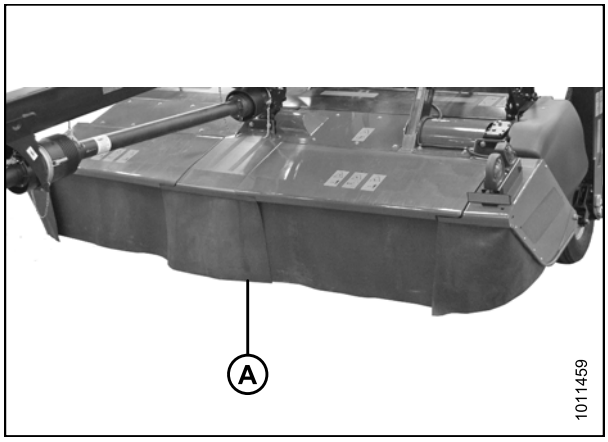


Figure 4.109: Cutterbar Door Curtains

4. If forming shields are installed, straighten forming shield curtains (B) and remove folds or creases (minor creases will eventually straighten out).

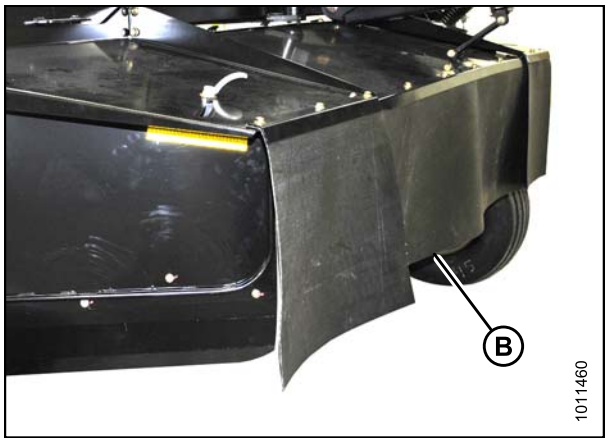


Figure 4.110: Forming Shield Curtains

5. Ensure cutterbar door curtains and forming shield covers hang properly and completely enclose cutterbar area.

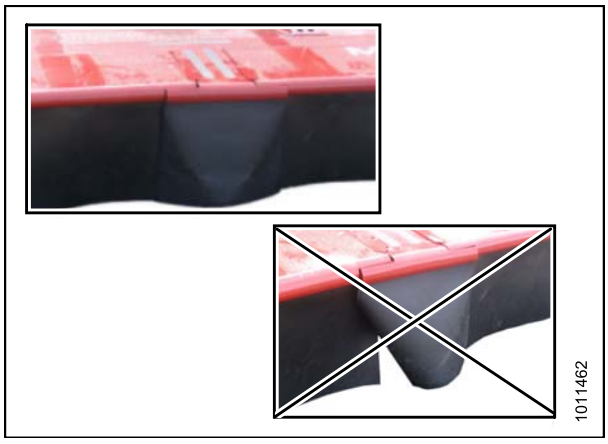


Figure 4.111: Cutterbar Door Curtains

4.17 Discharge Shield (No Conditioner)

4.17.1 Removing Shield (No Conditioner)

Follow these steps to remove the shielding installed on a mower configured without a conditioner:

DANGER

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

1. Raise the mower fully and extend the center-link to maximize the space between the shield (A) and the carrier frame (B).

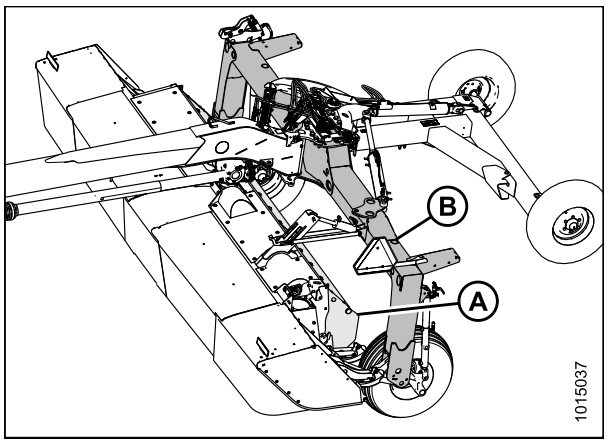


Figure 4.112: Mower with Transport

2. Close the lift cylinder lock-out valves (A) on both sides of the mower. Valve handles should be in the horizontal position.

Figure 4.113: Lift Cylinder Lock-Out Valves

3. Remove four M16 hex head bolts (A), nuts, and flat washers securing the shield (B) to the panel on mower (C).

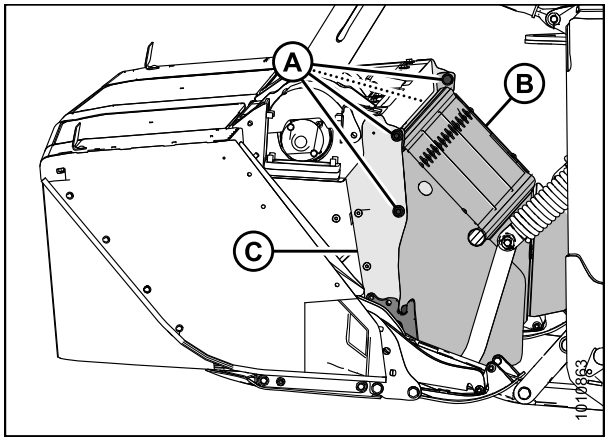


Figure 4.114: Mower (Left Side View)

4. Lift the shield (A) until pins (B) disengage from slots in support (C) and shield on panel (D).

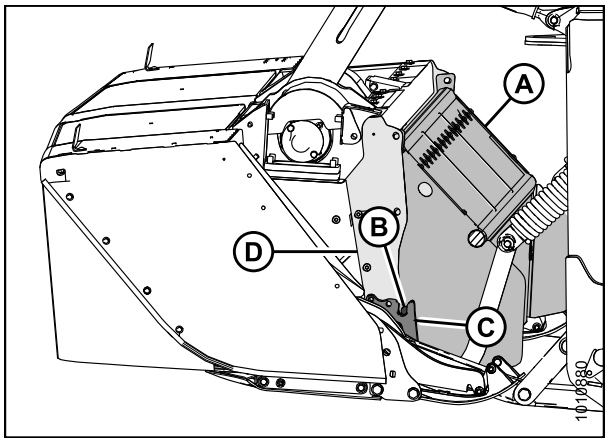


Figure 4.115: Mower (Left Side View)

5. Rotate the shield (A) 90 degrees and move it away from the carrier frame.

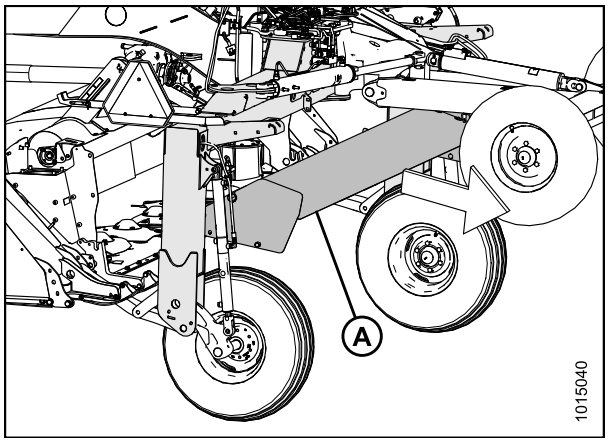


Figure 4.116: Shield Rotated

4.17.2 Installing Shield (No Conditioner)

Follow these steps to install the shielding on a mower configured without a conditioner:

DANGER

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

1. Raise the mower fully and extend the center-link to maximize the space between the field wheels (A) and the carrier frame (B).

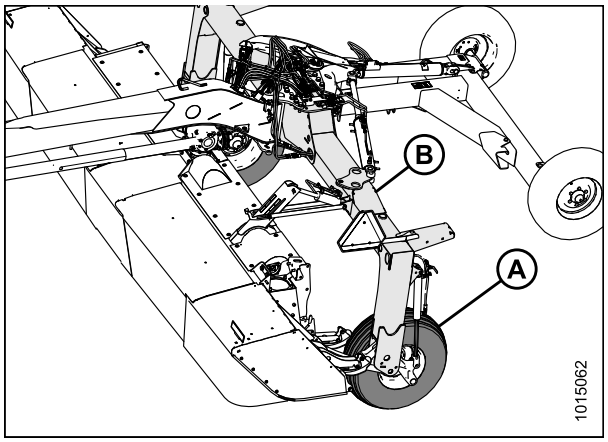


Figure 4.117: Mower with Transport

2. Close the lift cylinder lock-out valves (A) on both sides of the mower. Valve handles should be in the horizontal position.

Figure 4.118: Lift Cylinder Lock-Out Valves

3. Rotate the shield (A) and pass it between the field wheels and the carrier frame toward the mower.

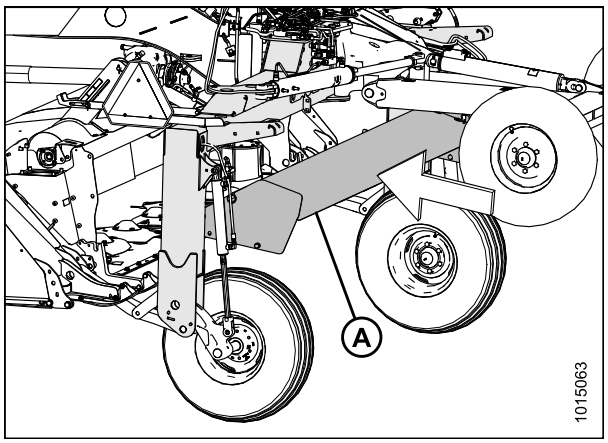


Figure 4.119: Shield Rotated

4. Position shielding (A) until pins (B) engage the slots in cutterbar support (C) and the bolt holes align with panel (D).

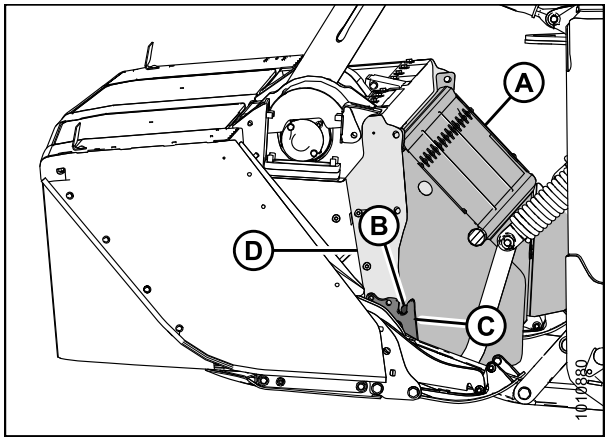


Figure 4.120: Positioning the Shield on Mower

5. Install four M16 hex head bolts (A), nuts, and flat washers to secure shield (B) to the panel (C). Ensure bolt heads face inboard.

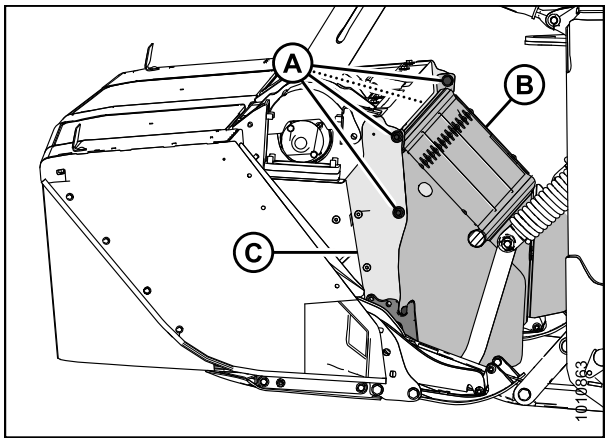


Figure 4.121: Shield (No Conditioner)

4.18 Removing Mower Conditioner from Shipping Pallet (Transport Installed)

1. Cut strapping (B) securing cutterbar to pallet (A).

   NOTE:
   To prevent the mower from dropping, ensure float springs were retensioned after repositioning the center-link top anchor. Refer to *4.1 Repositioning Center-Link Top Anchor, page 73*.

2. Use the transport to lift the header high enough that the pallet can be removed.

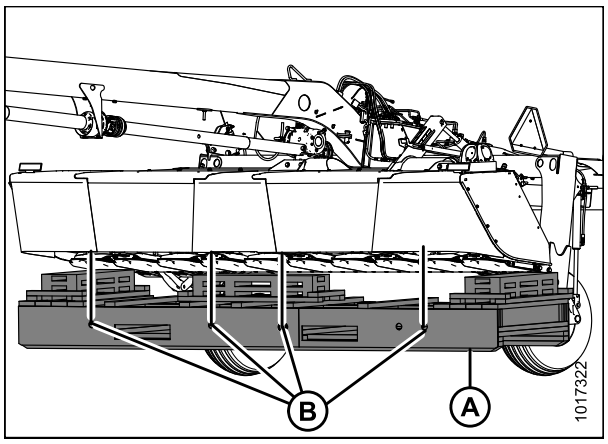


Figure 4.122: Strapping

3. Use a chain or forklift to remove shipping pallet (A) from underneath the mower conditioner.
4. Lower mower to the ground.

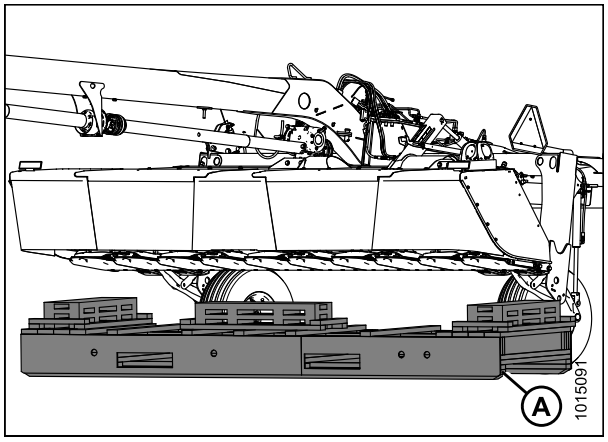


Figure 4.123: Removing Shipping Pallet

5 Lubricating the Mower Conditioner

WARNING

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

The mower conditioner has been lubricated at the factory. However, you should lubricate the mower conditioner prior to delivery to offset the effects of weather during outside storage and transport, and to familiarize yourself with the machine.

5.1 Opening Driveshields

CAUTION

Do NOT operate the machine without the driveshields in place and secured.

NOTE:
Images shown are for left side driveshield—right side driveshield is similar.

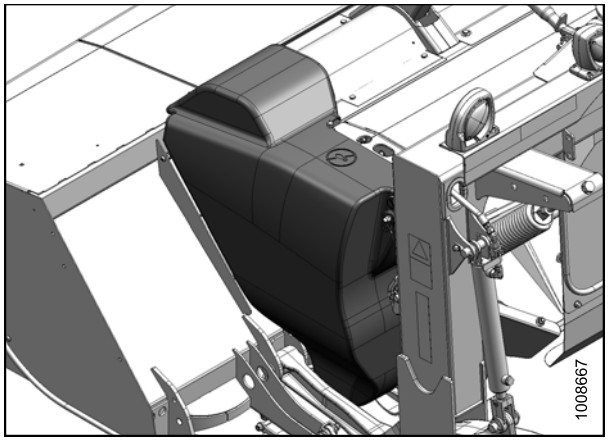


Figure 5.1: Left-Hand Driveshield

1. Remove linch pin (A) and tool (B) from pin (C).

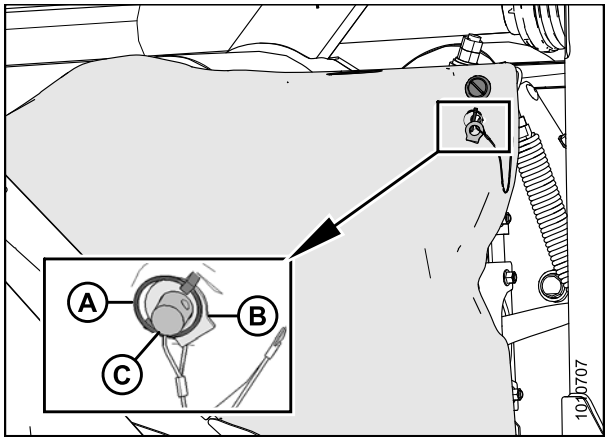


Figure 5.2: Driveshield

2. Insert flat end of tool (A) into latch (B) and turn it counterclockwise to unlock.

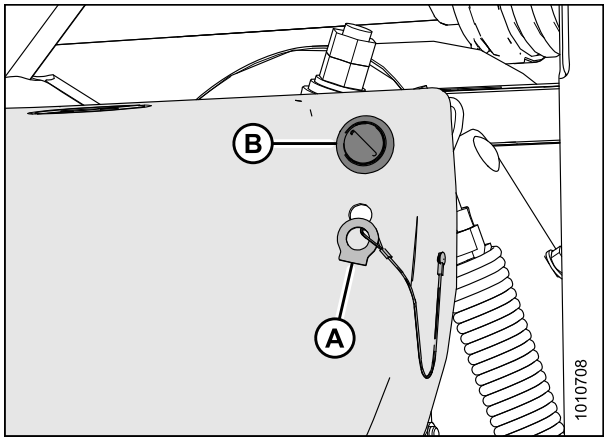


Figure 5.3: Driveshield Latch

3. Pull top of driveshield (A) away from mower conditioner to open.

   NOTE:
   For improved access, lift driveshield off the pins at the base of the shield, and lay the shield on the mower conditioner.

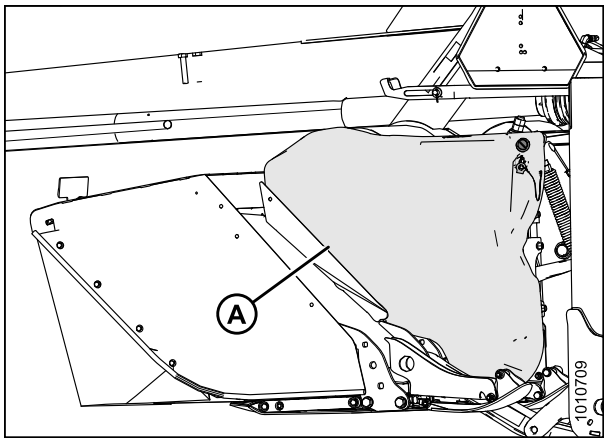


Figure 5.4: Driveshield

5.2 Lubrication Sites

Unless otherwise specified, use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI grade 2) lithium base grease.

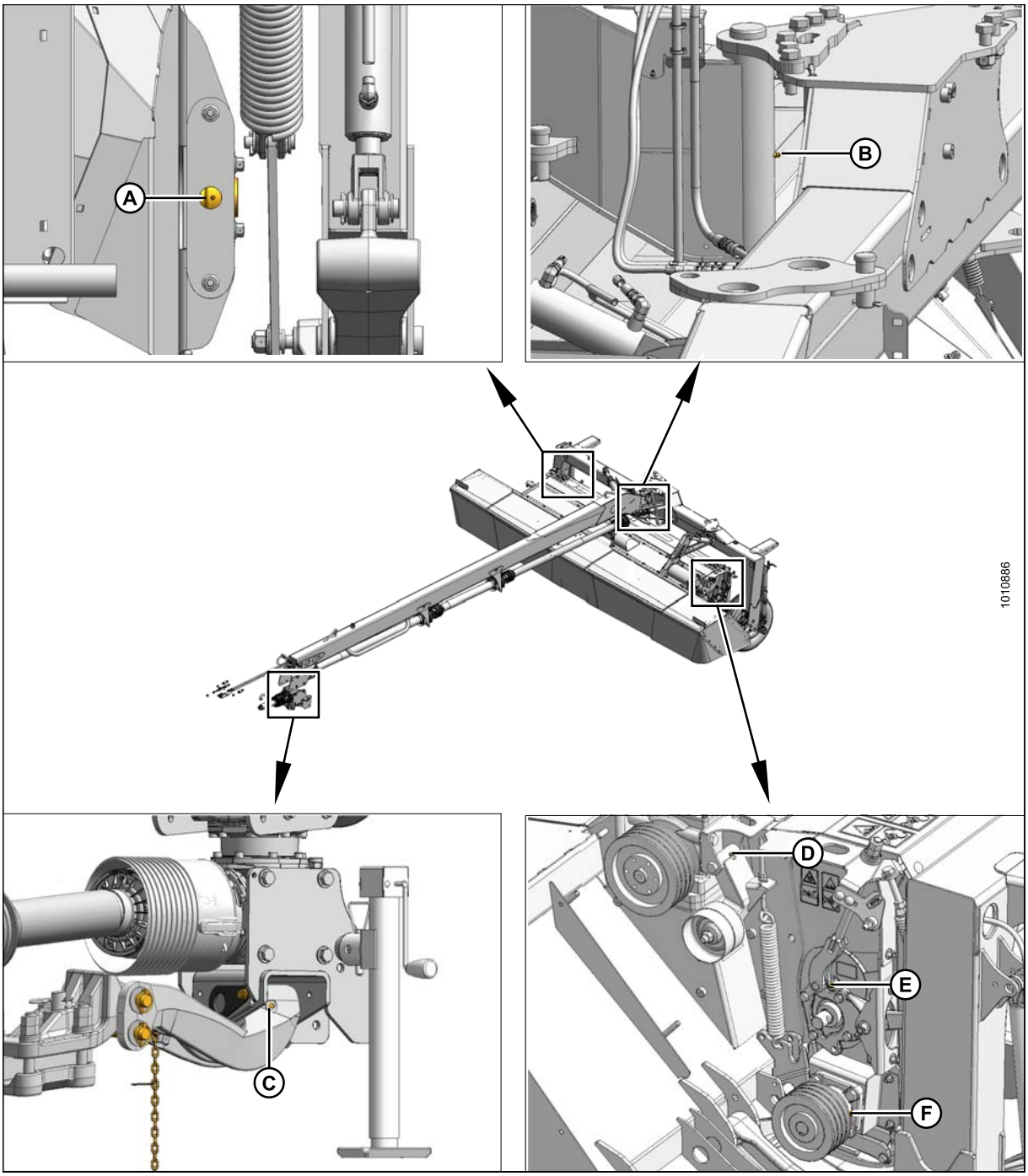


Figure 5.5: Lubrication

A - Bearing, Finger Conditioner
B - Hitch Pivot
C - Hitch Swivel
D - Idler Pivot
E - Bearing, Roller Conditioner
F - Bearing, Roller Conditioner

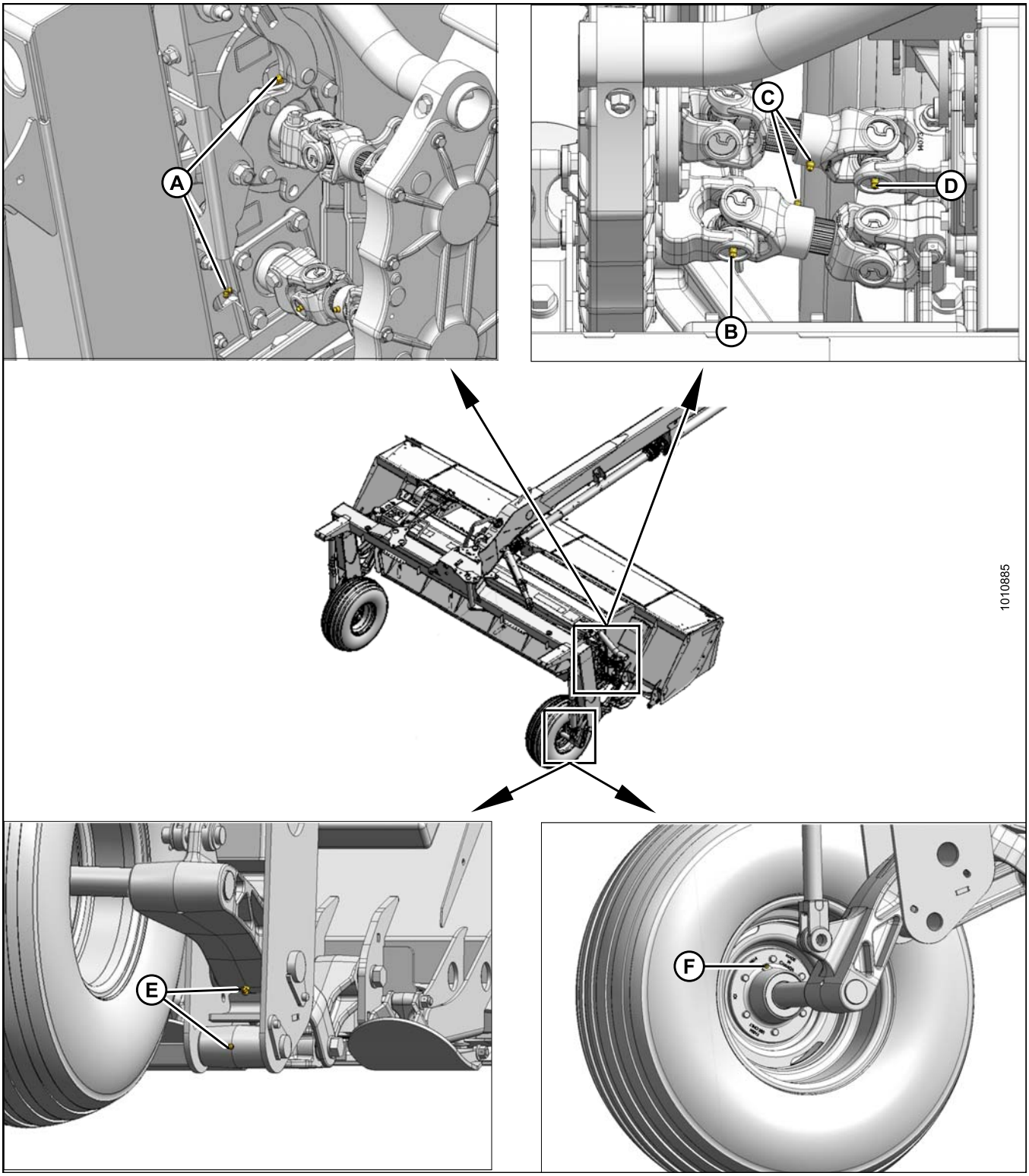


Figure 5.6: Lubrication

A - Bearings, Roller Conditioner
B - U-Joint, Lower Driveline (2 Places)
C - Slip Joints, Conditioner Drivelines[3]
D - U-Joint, Upper Driveline (2 Places)
E - Lift Linkage (Both Sides)
F - Bearing, Field Wheel (2 Places)

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

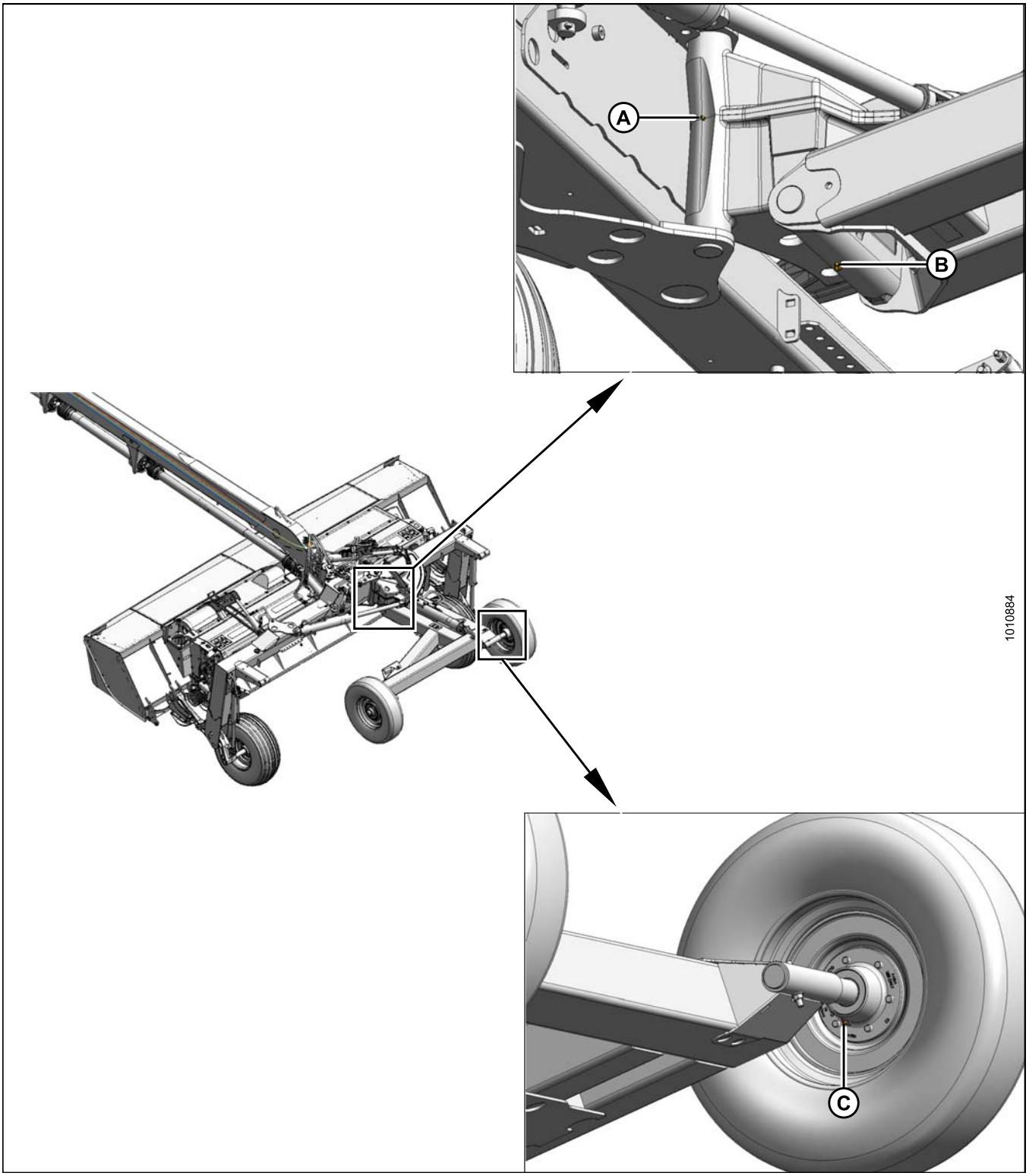


Figure 5.7: Lubrication

A - Vertical Pivot, Road Friendly Transport™ **B - Horizontal Pivot, Road Friendly Transport™** **C - Bearing, Transport Wheel (2 Places)**

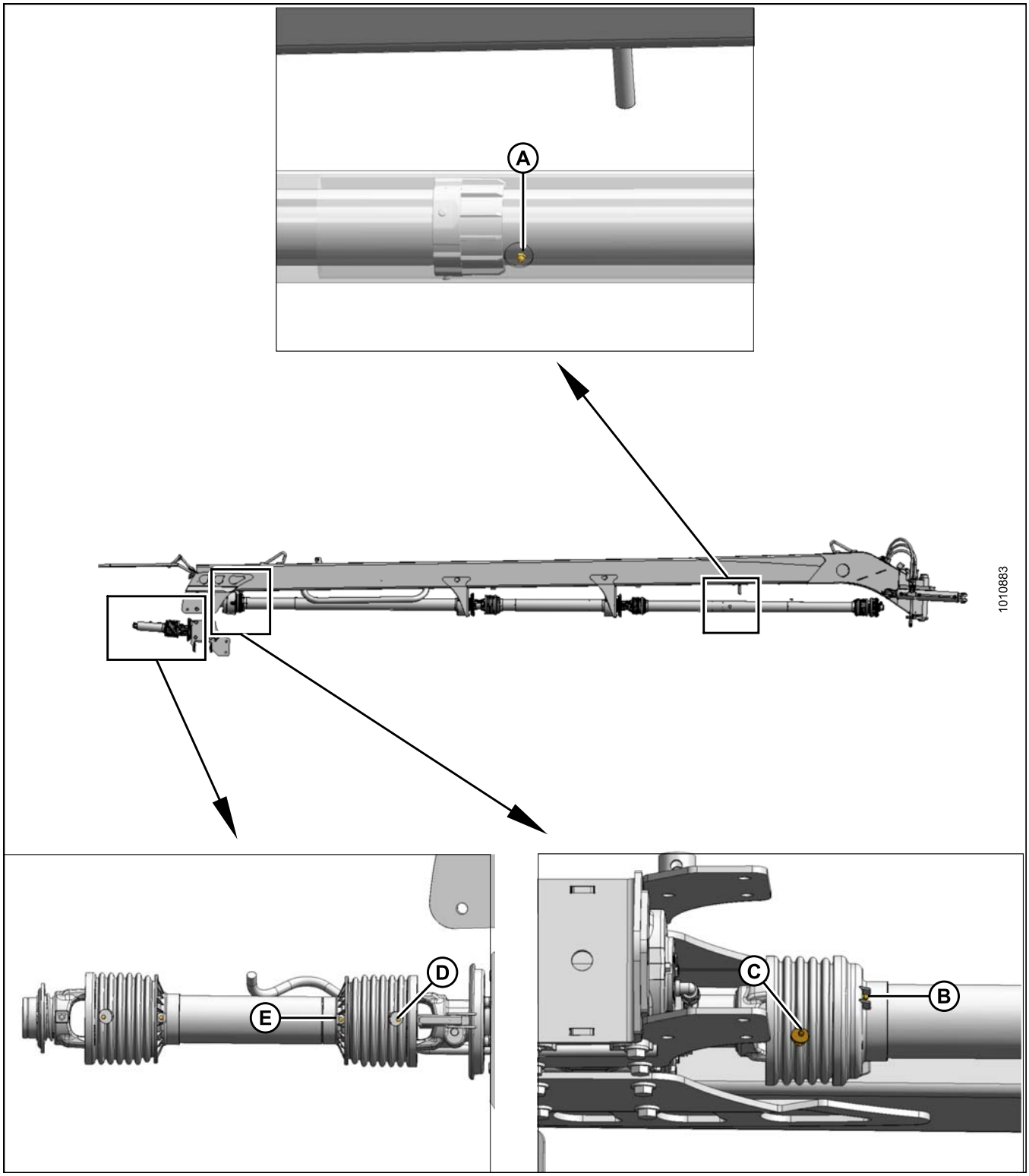


Figure 5.8: Lubrication

A - Slip Joint, Drivelines (13 ft 2 Places) (16 ft 3 Places)[4] B - Guard, Driveline C - U-Joint, Main Driveline
D - U-Joint, Primary Driveline (2 Places) E - Guard, Primary Driveline (2 Places)

4. Use High Temperature Extreme Pressure (EP2) Performance with 10% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base

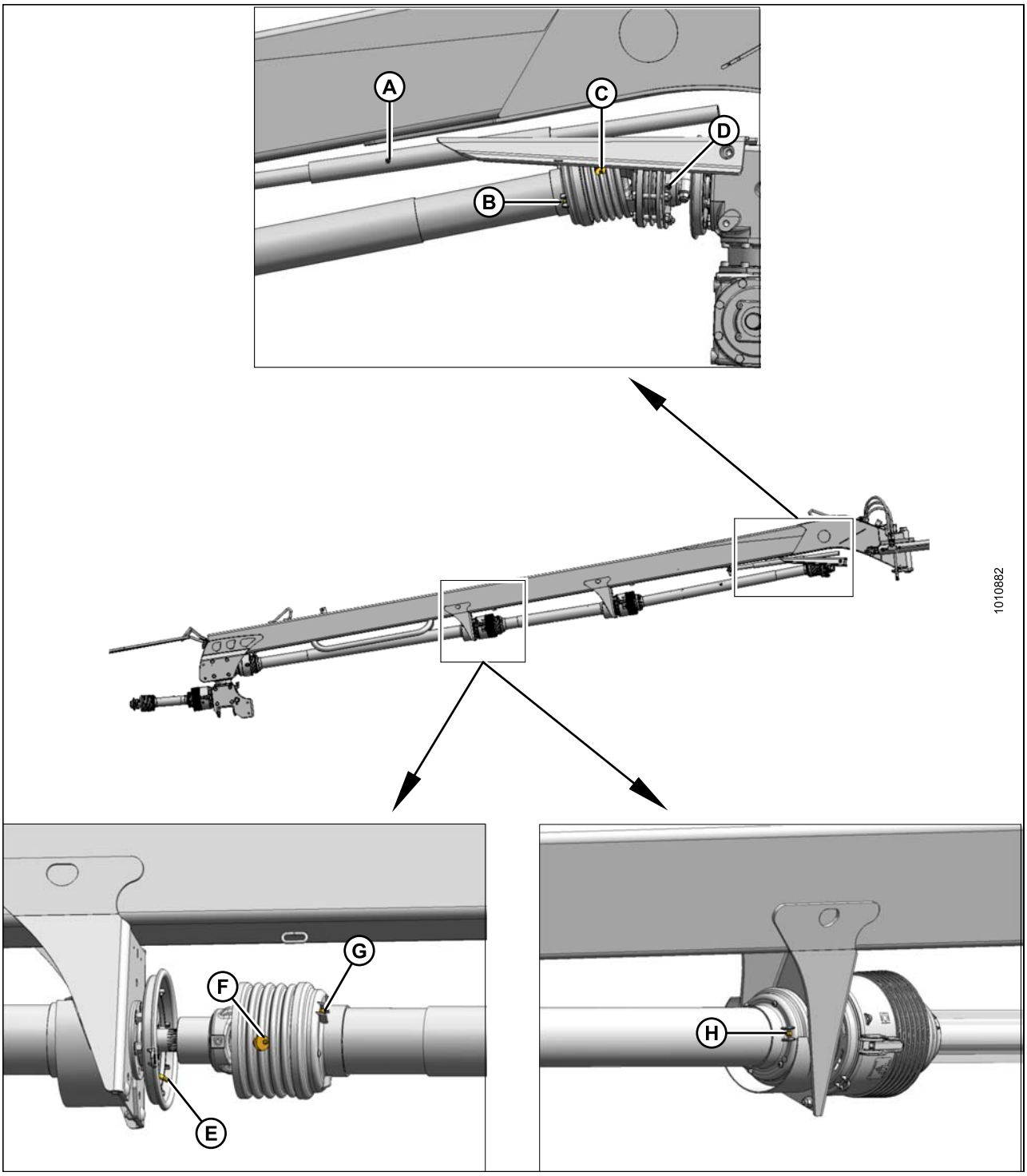


Figure 5.9: Lubrication

A - Slip Joint, Steering Link
B - Guard, Clutch Driveline
C - U-Joint, Clutch Driveline
D - Clutch
E - Bearing, Driveline (13 ft 1 Place) (16 ft 2 Places)
F - U-Joint, Driveline (13 ft 1 Place) (16 ft 2 Places)
G - Guard (13 ft 1 Place) (16 ft 2 Places)
H - Guard (13 ft 1 Place) (16 ft 2 Places)

5.3 Closing Driveshields

CAUTION

Do NOT operate the machine without the driveshields in place and secured.

NOTE:
Images shown are for left side driveshield—right side driveshield is similar.

1. Position driveshield onto pins at base of driveshield (if necessary).
2. Push driveshield (A) to engage latch (B).
3. Check that driveshield is properly secured.

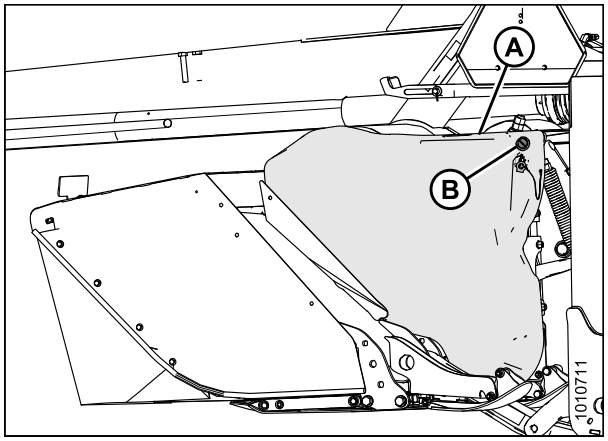


Figure 5.10: Driveshield and Latch

4. Replace tool (B) and lynch pin (A) on pin (C).

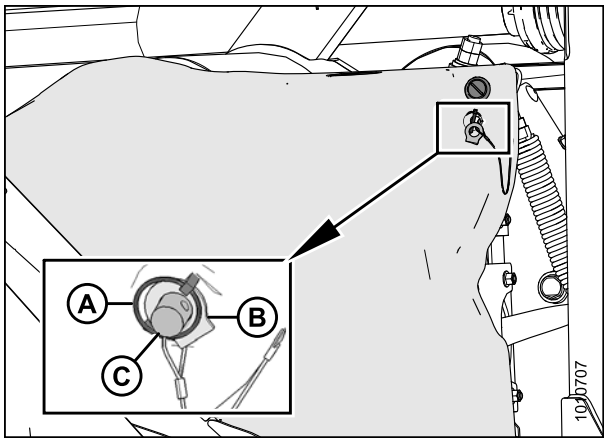


Figure 5.11: Tool to Unlock Driveshield

6 Performing Predelivery Checks

WARNING

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

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

1. Perform the final checks and adjustments as listed on the Predelivery Checklist (yellow sheet attached to back of this instruction) to ensure the machine is field-ready. Refer to the following pages for detailed instructions as indicated on the *Predelivery Checklist, page 221*.
2. The completed Checklist should be retained either by the Operator or the Dealer.

   NOTE:
   The majority of checks and adjustments are performed during the setup procedures. The following additional inspections should be performed after the setup is complete.

6.1 Checking Wheel Bolts

DANGER

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

IMPORTANT:
Check and tighten field wheel bolts and transport system wheel bolts (if installed) after the first hour of operation and every 100 hours thereafter.

1. Torque wheel bolts to 160 N·m (120 ft·lbf) using the tightening sequence shown.

   IMPORTANT:
   Whenever a wheel is installed, check torque after one hour of operation.

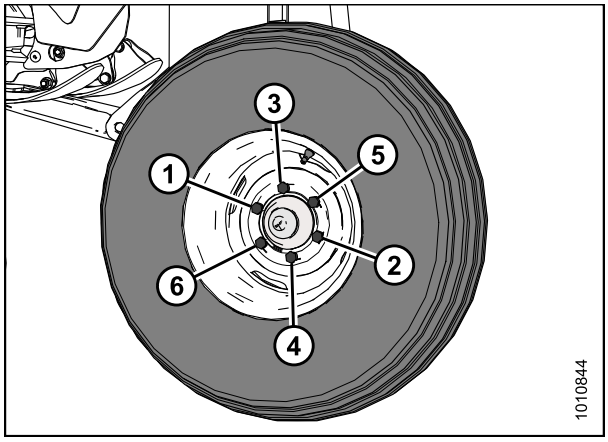


Figure 6.1: Tightening Sequence

6.2 Checking Tire Pressure

WARNING

- **Service tires safely.**
- **A tire can explode during inflation which could cause serious injury or death.**

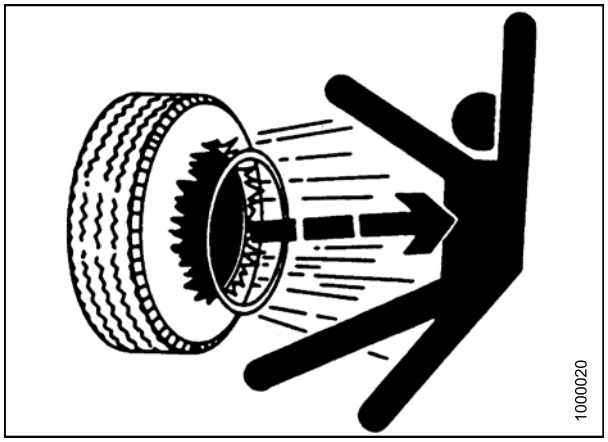


Figure 6.2: Overinflated Tire

Check tire pressure daily.

- Maintain pressure at 207 kPa (30 psi) for field wheels (A)
- Maintain pressure at 552 kPa (80 psi) for optional Road Friendly Transport wheels (B)

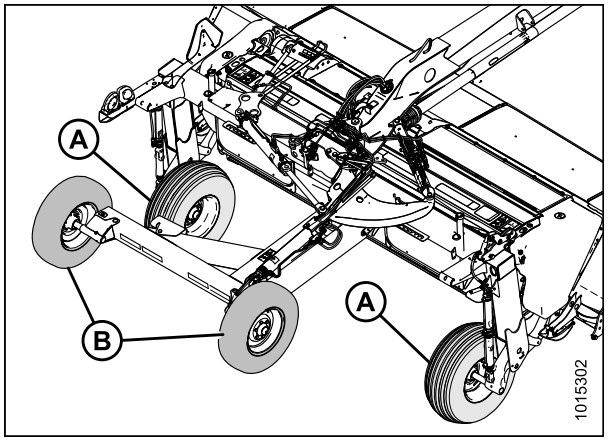


Figure 6.3: Field and Transport Wheels

6.3 Checking Conditioner Drive Belt

1. Open the left driveshield. For instructions, refer to *5.1 Opening Driveshields, page 127*.
2. Check that the belt (A) is properly located on the pulleys and tensioned. Overall spring length (B) should be 365 mm (14-3/8 in.). If adjustment is required, refer to *Adjusting Conditioner Drive Belt*.
3. Check that the adjuster nuts (C) are tight.
4. Check that spring is hooked at the correct location:
   - Hole (D) for roll conditioner
   - Hole (E) for finger conditioner
5. Close driveshield. For instructions, refer to *5.3 Closing Driveshields, page 134*.

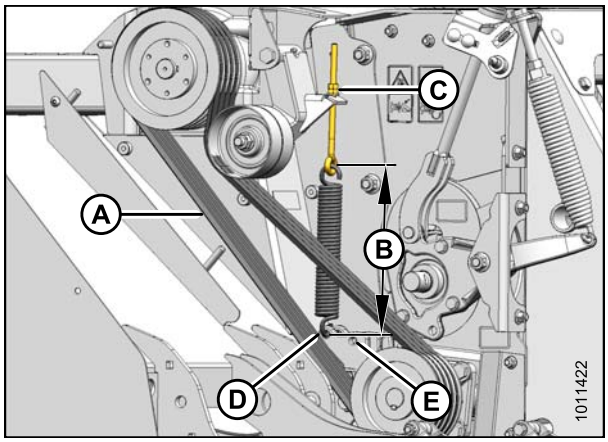


Figure 6.4: Conditioner Belt

6.4 Checking Cutting Angle

For mower conditioners equipped with a hydraulic center-link (A), the mid-point for header angle is indicated with the indicator bars (B) in the center (orange) of the indicator decal.

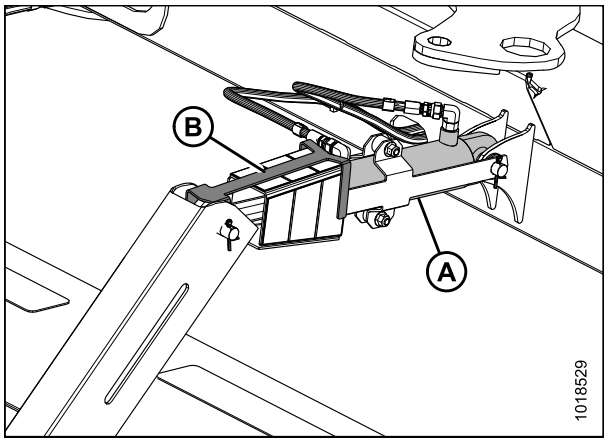


Figure 6.5: Hydraulic Center-Link

For mower conditioners equipped with a mechanical center-link (A), the mid-point for header angle is the middle of the adjustment range on the link.

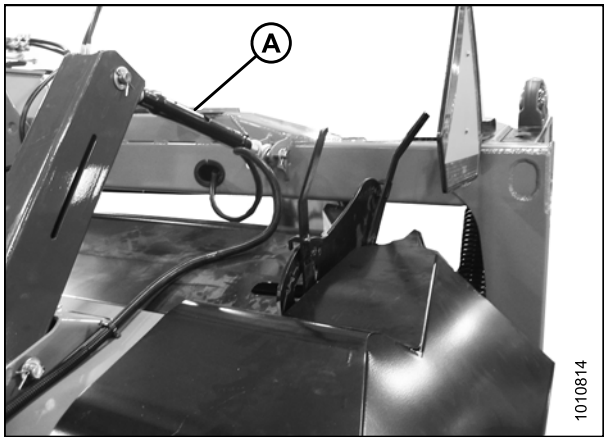


Figure 6.6: Mechanical Center-Link

6.5 Checking Skid Shoes

All skid shoes (A) should be at the same position, either up (shown) or down.

NOTE:
The 13-foot mower conditioner is equipped with one skid shoe at each end, and the 16-foot. machine has two at each end.

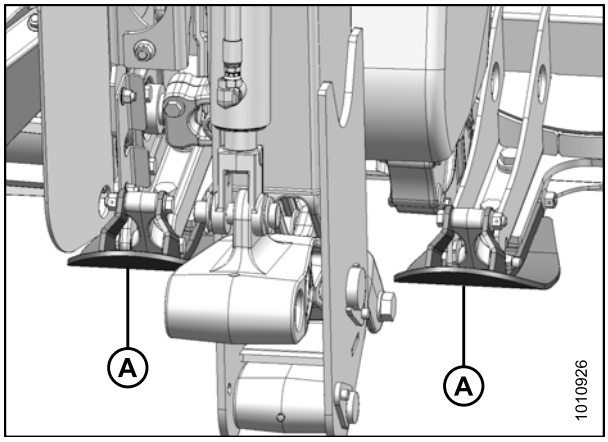


Figure 6.7: Skid Shoes

6.6 Checking Mower Conditioner Float

1. Center the mower conditioner directly behind the tractor.
2. Lower the mower conditioner fully, shut down the tractor, and remove key from ignition.
3. Grasp the front corner of mower conditioner and lift; the weight should feel approximately like 45 kg (100 lb.) at both ends. If adjustment is required, refer to *6.7 Adjusting Mower Conditioner Float, page 141*.

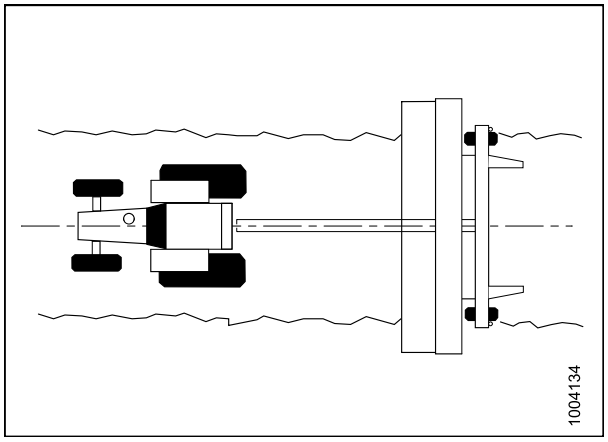


Figure 6.8: Mower Conditioner Centered behind the Tractor

6.7 Adjusting Mower Conditioner Float

The float setting (or lifting force) changes depending on the conditioner type and options. The setting must be equal at both ends of the mower conditioner. Follow these steps to adjust float:

WARNING

To avoid bodily injury or death from unexpected start-up or fall of raised machine: stop engine, remove key, and engage lift cylinder lock-out valves before going under machine.

NOTE:
Changes to the mower conditioner operating position can affect the float settings. After adjusting cutting height or the cutting angle, check float and adjust as necessary.

1. Center the mower conditioner directly behind the tractor.

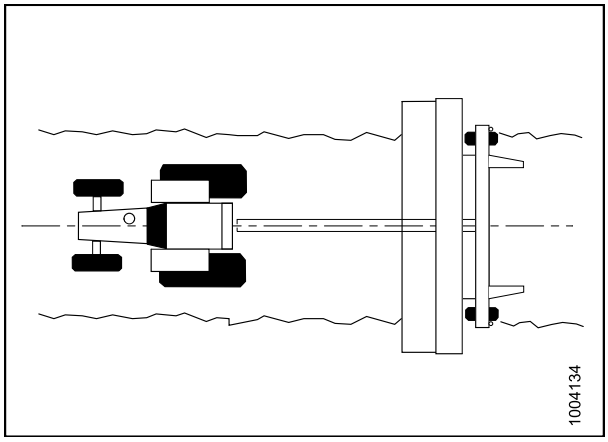


Figure 6.9: Mower Conditioner Centered behind Tractor

2. Raise the mower conditioner fully, shut off engine, and remove key.
3. Close the mower conditioner's lift cylinder lock-out valve (A) on each lift cylinder by turning the handle to the horizontal position.
4. Loosen jam nut (B) away from the spring.
5. Turn the adjuster bolt (C) to achieve the recommended measurement (D) for the conditioner type.
   - Turn bolt clockwise (towards spring) to increase float
   - Turn bolt counterclockwise (away from spring) to decrease float
6. Tighten jam nut (B) against spring.
7. Measure the length of exposed thread (D) on the float spring tension bolts. Refer to Table *6.1 Starting Point Float Settings, page 142*.
8. Repeat Steps *4, page 142* to *7, page 142* on the opposite side of the mower conditioner.
9. To check float, lower the mower to cutting position, grasp the front corner of mower and lift; the weight should feel like approximately 45 kg (100 lb.) at both ends.
10. Repeat adjustment procedures until the desired weight is achieved at both ends of the mower conditioner.
11. Open the cylinder lock-out valve (A) on each lift cylinder by turning the handle to the vertical position.

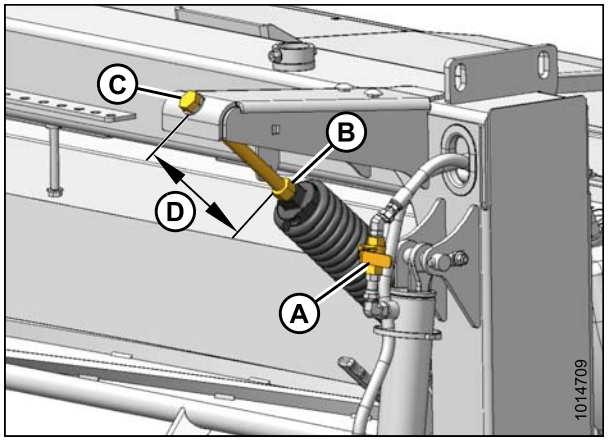


Figure 6.10: Lift Cylinder Lock-Out Valve, Jam Nut, and Adjuster Bolt

Table 6.1 Starting Point Float Settings

Header Size	Conditioner Type	Length of Exposed Thread
13 foot	No conditioner	280–290 mm (11–11-5/32 in.)
	Roll conditioner	120–130 mm (4-3/4–5-1/8 in.)
	Finger conditioner	Right side: 145–155 mm (5-3/4–6-1/8 in.)
		Left side: 15–125 mm (4-1/2–4-15/16 in.)
16 foot	No conditioner	230–240 mm (9–9-1/2 in.)
	Roll conditioner	70–80 mm (2-3/4–3-1/8 in.)
	Finger conditioner	Right side: 95–105 mm (3-3/4–4-1/8 in.)
		Left side: 65–75 mm (2-1/2–3 in.)

6.8 Checking and Adding Conditioner Drive Gearbox Lubricant

The conditioner drive gearbox is located inside the drive compartment at the right side of the mower conditioner.

DANGER

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

IMPORTANT:
Check the conditioner drive gearbox lubricant level when the lubricant is warm. If the lubricant is cold, idle the machine for approximately 10 minutes prior to checking.

1. Lower mower conditioner to the ground, fully retract the header, turn off engine, and remove key.
2. Open the right driveshield (A). For instructions refer to *5.1 Opening Driveshields, page 127*.
3. Clean around lubricant sight glass (A) and breather plug (B) on inboard side of the conditioner drive gearbox.
4. Ensure that the lubricant level is at the top of the sight glass. If necessary, add SAE 85W-140 gear oil through plug (B).
5. Replace plug (B) and tighten.
6. Close right driveshield. For instructions refer to *5.3 Closing Driveshields, page 134*.

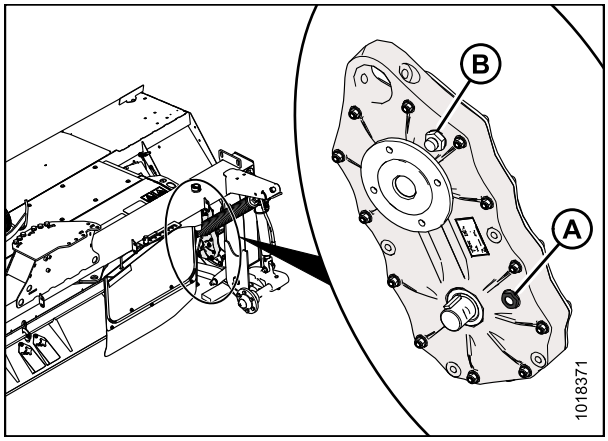


Figure 6.11: Oil Level Plug

6.9 Checking and Adding Mower Conditioner Drive Gearbox Lubricant

The mower conditioner drive gearbox is located inside the drive compartment at the left side of the mower conditioner.

DANGER

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

1. Retract the center-link completely.
2. Lower mower conditioner, turn off engine, and remove key.
3. Detach the tractor from the hitch. Refer to the mower conditioner Operator's Manual.
4. Open the left driveshield (A). For instructions refer to *5.1 Opening Driveshields, page 127*.
5. Adjust the hitch jack (A) until the drive gearbox is parallel to the ground.

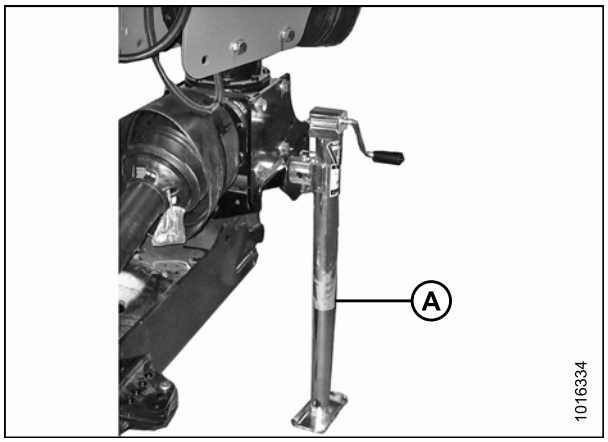


Figure 6.12: Hitch Jack

6. Clean area around dipstick (A).
7. Remove dipstick (A) using a 22 mm socket.
8. Ensure lubricant level is to the line on dipstick.
9. If necessary, add gear lubricant to gearbox through dipstick hole (A). For lubricant capacities, refer to *10.1 Recommended Lubricants, page 203*.
10. Reinstall dipstick and tighten.
11. Close left driveshield. For instructions refer to *5.3 Closing Driveshields, page 134*.

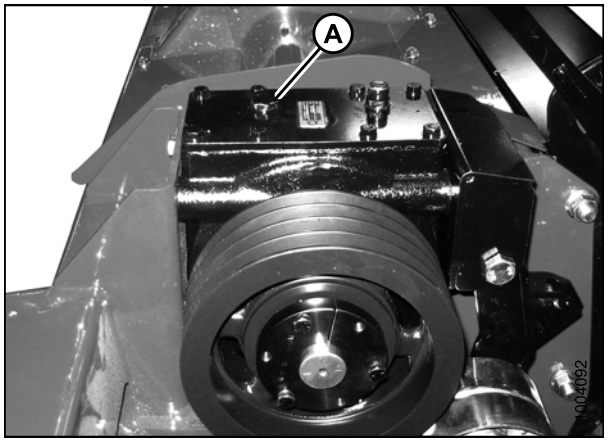


Figure 6.13: Left Side of Mower Conditioner

6.10 Checking and Lubricating Forward and Rear Swivel Gearboxes

There are two swivel gearboxes located on the mower conditioner. Each swivel gearbox consists of an upper and lower gearbox. Oil check plugs are located at the same position on each gearbox and need to be removed in order to check the lubricant level.

DANGER

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

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

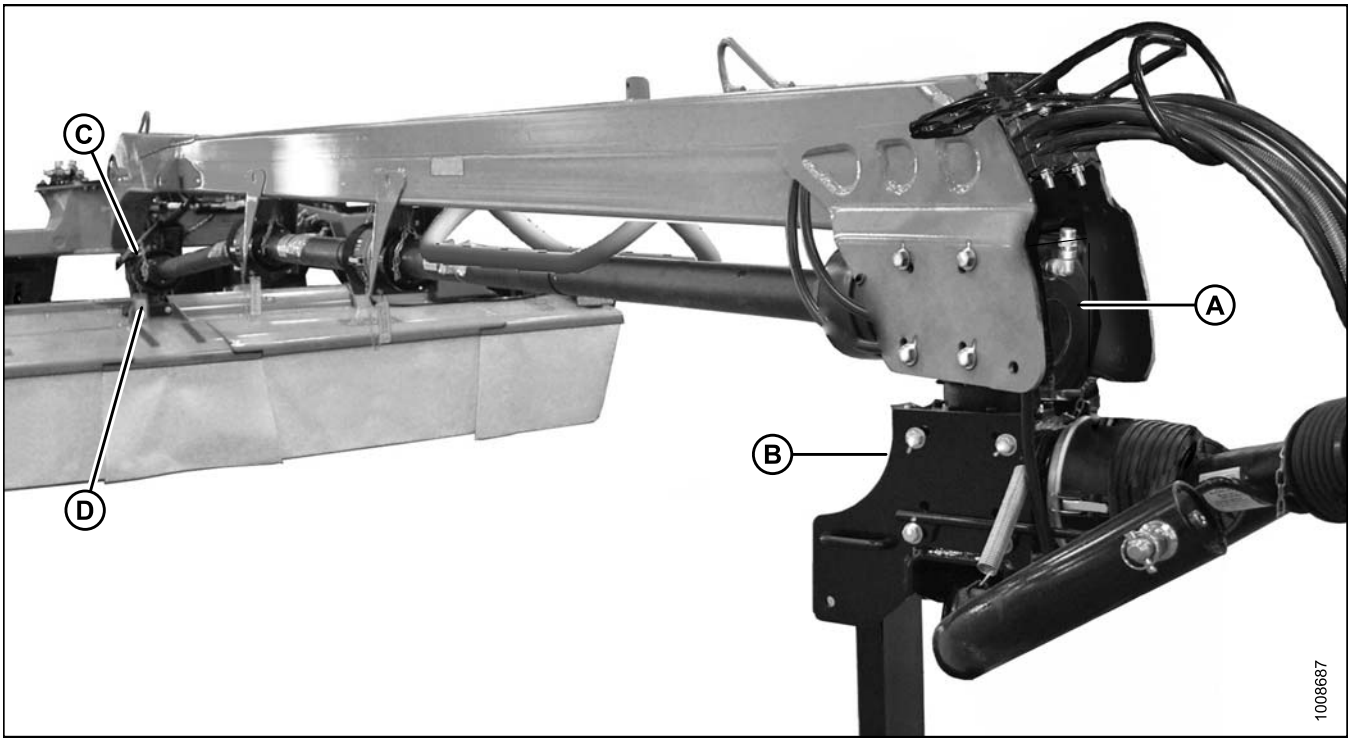


Figure 6.14: Forward and Rear Swivel Gearboxes

A - Upper Forward Gearbox **B - Lower Forward Gearbox** **C - Upper Rear Gearbox** **D - Lower Rear Gearbox**

Perform this procedure on both upper and lower gearboxes.

1. Raise or lower the hitch until the top of the gearbox is parallel with the ground.
2. Retract the mower until the top of the gearbox is parallel with the ground.
3. Turn off engine and remove key.
4. Clean area around check plug (A).
5. Remove check plug using a 13 mm socket.
6. Check lubricant level and ensure lubricant is visible or slightly draining form the port.
7. If necessary, add SAE 85W-140 gear oil to gearboxes through breather/filler plug (B).
8. Reinstall check plug (A) and breather/filler plug (B) and tighten.

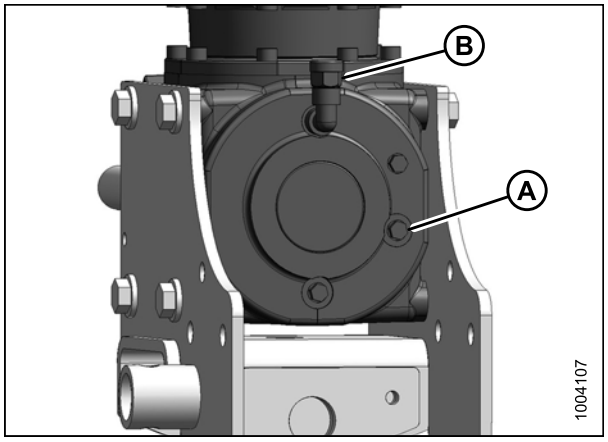


Figure 6.15: Swivel Gearbox

6.11 Checking Cutterbar Lubricant

DANGER

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

1. Lower the mower conditioner onto level ground with 25 cm (10 in.) blocks under the cutterbar.

   NOTE:
   The blocks with improve access to the lubricant plug.

2. Position header so the cutterbar is approximately level.
3. Shut down the and remove key.
4. Open the cutterbar doors. Refer to *Opening Cutterbar Doors*.

CAUTION

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

5. Use a level to ensure the cutterbar is level in both directions. Raise or lower mower conditioner accordingly.

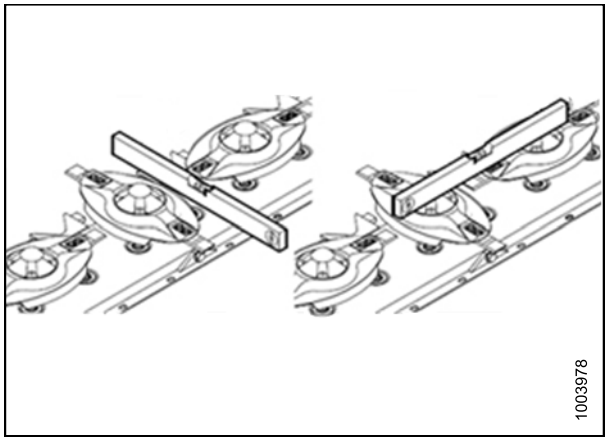


Figure 6.16: Spirit Level on Cutterbar

6. Use a 17 mm socket to remove oil level inspection plug (A) and O-ring (B) from the cutterbar.
7. Check that lubricant level is even with the bore hole.
8. Replace oil level inspection plug (A) and O-ring (B).

   NOTE:
   If lubricant is required, refer to *6.11.1 Adding Cutterbar Lubricant, page 148*.

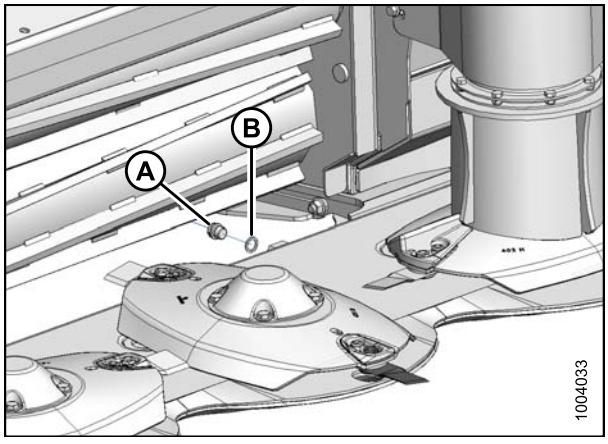


Figure 6.17: Inspection Plug and O-ring

6.11.1 Adding Cutterbar Lubricant

DANGER

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

1. Park the mower conditioner on level ground.
2. Position the mower conditioner, so the cutterbar is approximately level.
3. Shut down the mower conditioner and remove key.
4. Start the tractor and raise mower conditioner.
5. Place a block under the side of the mower conditioner with the M18 cutterbar breather (A) so it is higher than the opposite side.
6. Lower the mower conditioner onto block, shut down the tractor, and remove key.
7. Clean area around M18 cutterbar breather (A) and remove breather.

   IMPORTANT:
   Do NOT remove M10 hex head bolts (B) securing cutterbar end plate (C) to cutterbar or lubricant leaks could result.

8. Add SAE 90 lubricant until the lubricant level is even with the bore hole (if necessary).

   IMPORTANT:
   Do NOT overfill the cutterbar. Overfilling can cause overheating and damage to, or failure of, cutterbar components.

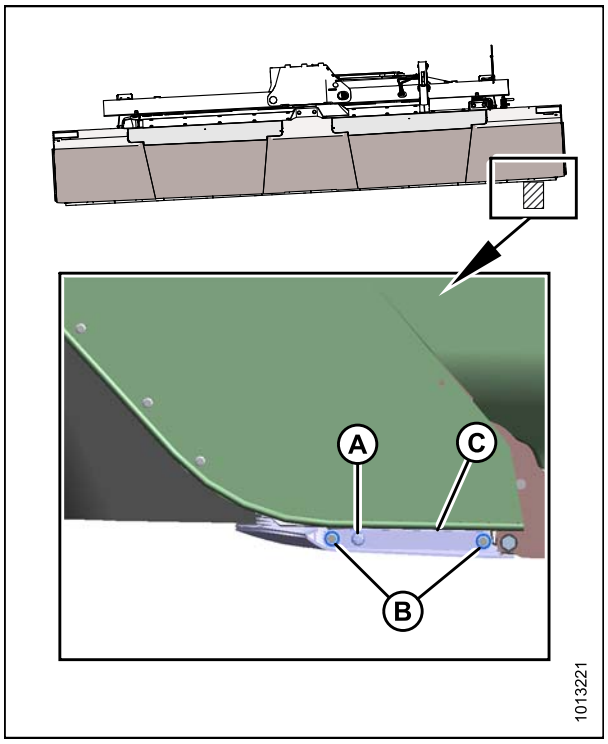


Figure 6.18: Left Side Shown – Right Side Similar

9. Install M18 cutterbar breather (A).
10. Start the tractor and raise the mower conditioner.
11. Stop the tractor, remove key, and engage the mower conditioner lift cylinder lock-outs.
12. Remove blocks.
13. Start the tractor and raise the mower conditioner.
14. Stop the tractor, remove key, and disengage the mower conditioner lift cylinder lock-outs.
15. Recheck lubricant level. Refer to *6.11 Checking Cutterbar Lubricant, page 147*.

6.12 Checking Roll Gap

Check roll gap if the crop is not being crimped enough by the conditioner rolls.

NOTE:
Roll gap is factory-set to 3 mm (1/8 in.). Depending on crop conditions the roll gap may need to be adjusted. Refer to the mower conditioner operator's manual.

6.13 Checking Roll Timing

Check roll timing if excessive noise is coming from the conditioner rolls.

DANGER

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

Roll timing is factory-set and should not require adjustment. If there is excessive noise coming from the conditioner rolls, the timing will need to be adjusted. Refer to the mower conditioner operator’s manual.

6.14 Checking Roll Tension

Roll tension is indicated by the exposed thread on the roll tension adjuster bolt. Not applicable to finger conditioners.

1. Measure the amount of exposed thread on the roll tension adjuster bolt (A) at each end of the conditioner. Measurement (B) should be 12–15 mm (1/2–9/16 in) for both polyurethane and steel roll conditioners.

   NOTE:
   If adjustment is required, refer to the R113/R116 Pull-Type Rotary Disc Mower Conditioner Operator's Manual.

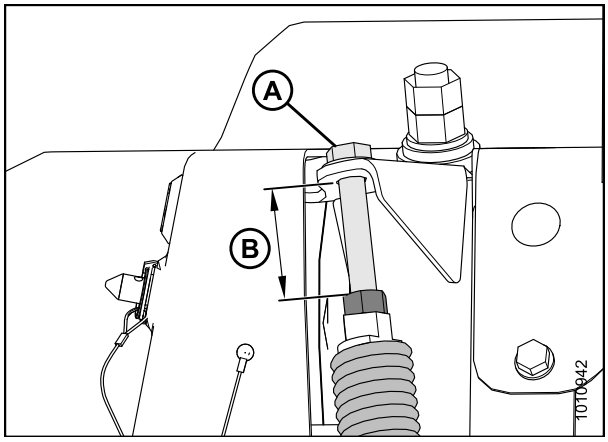


Figure 6.19: Roll Tension Adjuster

6.15 Checking Conditioner Baffle Settings

On finger conditioners, move the baffle adjustment handles (A) and (B) to the middle positions (C) and (D) on adjustment plates.

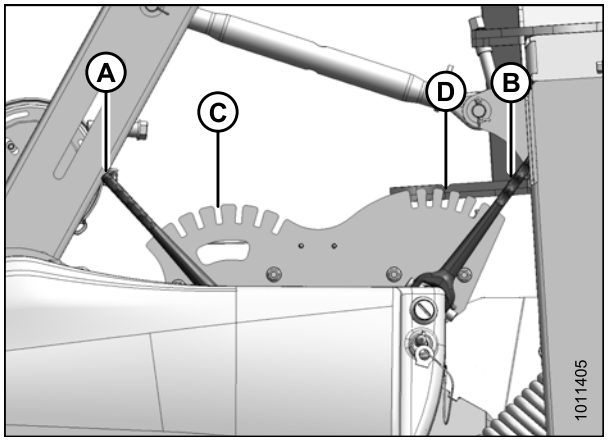


Figure 6.20: Baffle Adjusters (Finger Conditioners)

On roll conditioners, move baffle adjustment handle (A) to the middle position (B) on adjustment plate.

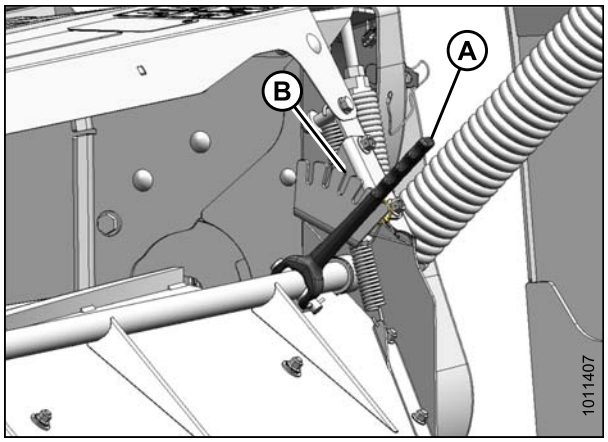


Figure 6.21: Baffle Adjuster (Roll Conditioners)

6.16 Checking Lights

1. Check that lights (A) and (B) are properly located on the mower conditioner to suit the setup configuration.
2. Check light mountings for security and damage.
3. Check operation of hazard lights (A) and brake lights (B) during machine run-up.

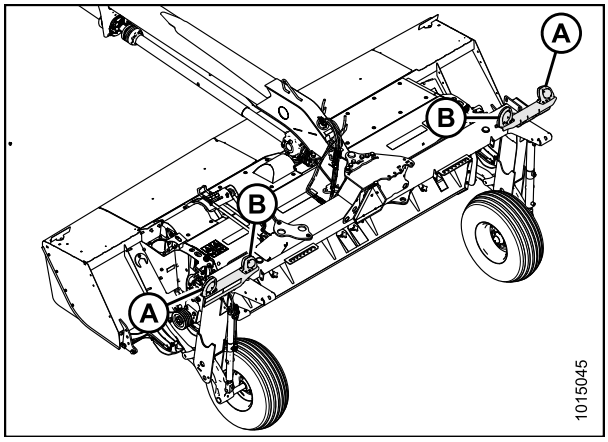


Figure 6.22: Standard Configuration

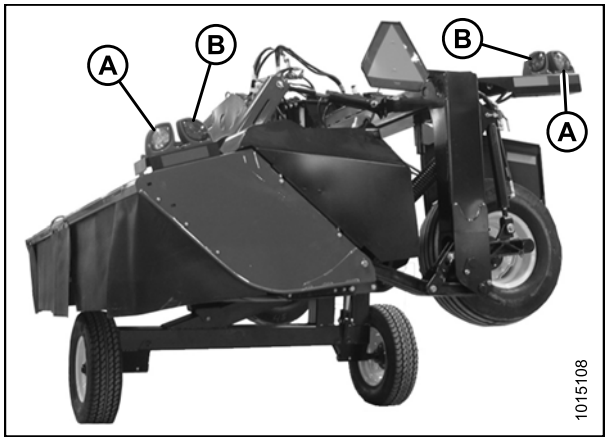


Figure 6.23: Road Friendly Transport™ Configuration

6.17 Checking Manuals

The following manuals should be stored in the manual storage case (A) at the right end of the mower conditioner:

- R133/R116 Pull-Type Rotary Disc Mower Conditioner Operator's Manual
- R133/R116 Pull-Type Rotary Disc Mower Conditioner Parts Catalog

Open the right driveshield to access the case.

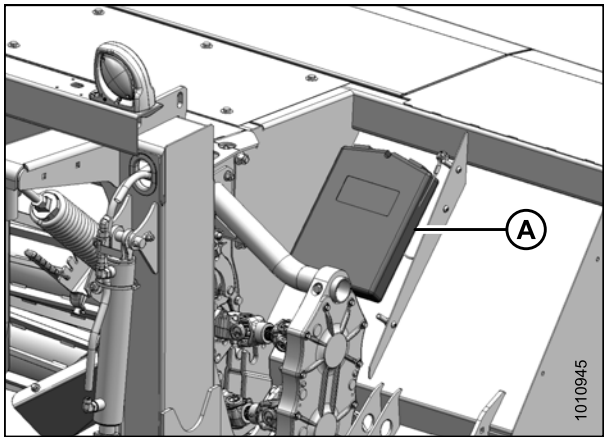


Figure 6.24: Manual Case

6.18 Running up the Mower Conditioner

DANGER

- **Keep everyone several hundred feet away from your operation. Ensure bystanders are never in line with the front or rear of the machine. Stones or other foreign objects can be ejected from either end with force.**
- **Take extreme care to avoid injury from thrown objects. Do NOT, under any circumstances, operate the mower conditioner when other people are in the vicinity. Stones and other objects can be thrown great distances by the rotating cutting blades.**
- **Check cutterbar area carefully for loose parts and hardware on the cutterbar. These objects can be ejected with considerable force when the machine is started, and may result in serious injury or machine damage.**
- **The cutterbar curtains are very important to reduce the potential for thrown objects. Always keep these curtains down when operating the mower conditioner. Replace the curtains if they should become worn or damaged.**

DANGER

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

CAUTION

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

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

1. Start the tractor.
2. Set header 152–305 mm (6–12 in.) above the ground and adjust center-link to mid-position.
3. Run the machine slowly for 5 minutes, watching, and listening FROM **THE OPERATOR'S SEAT** for binding or interfering parts.
4. Run the machine at operating speed for 15 minutes. Listen for any unusual sounds or abnormal vibration.
5. Perform the run-up check as listed on the *Predelivery Checklist, page 221* (yellow sheet attached to this instruction) to ensure the machine is field-ready.
6. Retain the Checklist and if desired, retain this instruction for future reference.

6.19 Checking and Adjusting the Cam on the Transport Deploy/Swing Mechanism

The cam angle (A) on the transport deploy/swing mechanism assembly is factory-set to 112°. It may be necessary to adjust the cam angle if the Road Friendly Transport™ system does not properly deploy. When the system is functioning properly the header should start to rotate as the transport wheels reach the end of their travel (just past center).

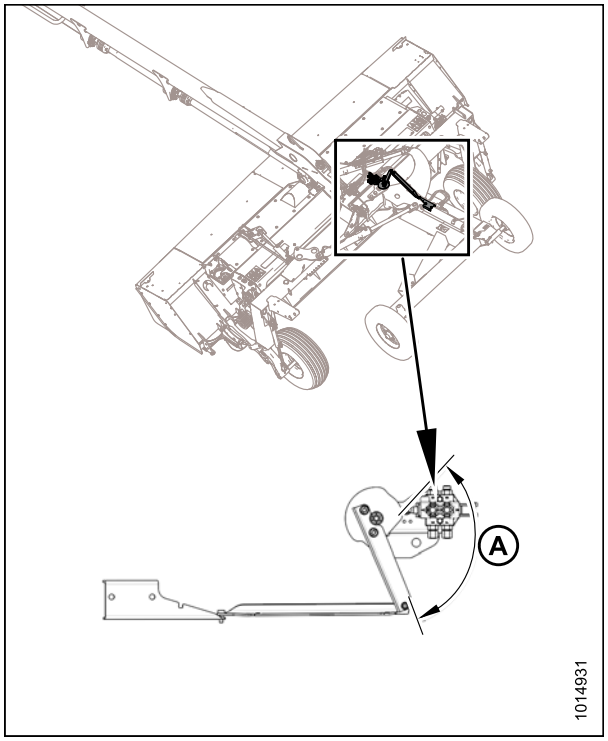


Figure 6.25: Transport Deploy/Swing Mechanism Assembly

1. Loosen two M10 jam nuts (A), two M10 hex flange nuts (B), and rotate the cam plate (C) to achieve the proper angle. Reposition cam as follows:
   - Rotate **counterclockwise** if the transport tires deploy too close to the header tires.
   - Rotate **clockwise** if the tires go underneath the header, but the header does not begin to rotate.
2. Tighten two M10 hex flange nuts (B) and two M10 jam nuts (A).

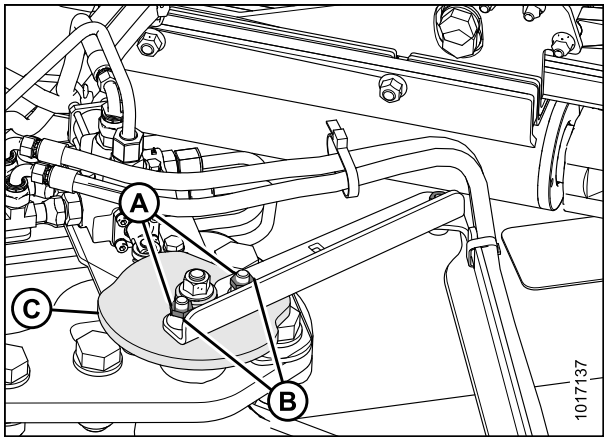


Figure 6.26: Transport Deploy/Swing Mechanism Assembly

6.19.1 Converting from Field to Transport Mode

⚠ DANGER

Do not convert the machine into, or from, transport mode until you are certain that all people, animals, and objects are clear of the unit's rotational range.

WARNING

Ensure cutterbar doors are properly closed before converting the machine from field to transport mode to prevent equipment damage.

1. Loosen bolts (B) on the transport latch (A).

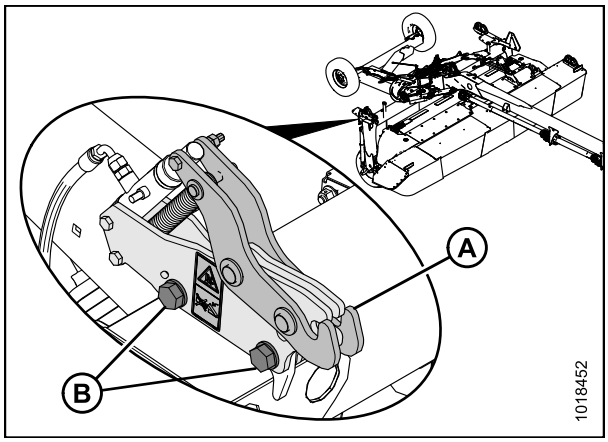


Figure 6.27: Transport Latch

2. Start tractor if not running. Do **NOT** operate the mower conditioner.
3. Following the field to transport decal (A), move transport switch to the lower position (C) and ensure that light (B) is illuminated.

Figure 6.28: Remote Control

4. While light is illuminated, raise the mower conditioner fully.

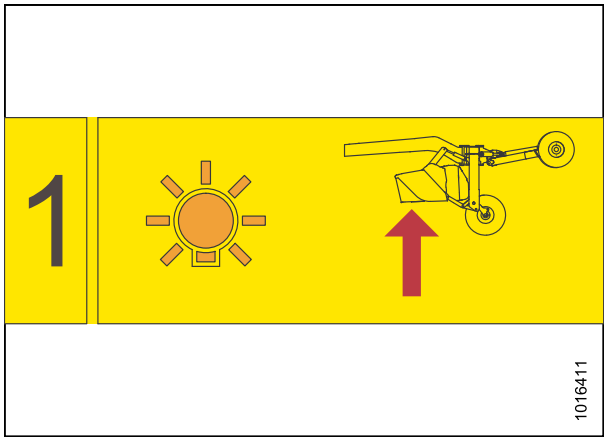


Figure 6.29: Raising Mower Conditioner

5. Operate the hitch swing control lever to rotate the mower conditioner to the right until cam bearing nut is aligned with the green section of the transport alignment gauge decal.

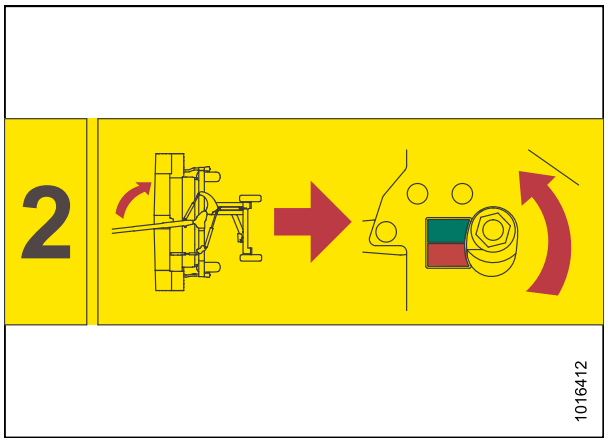


Figure 6.30: Mower Conditioner Rotation

6. Move transport switch to the upper position and ensure that the light is **NOT** illuminated. The hitch swing circuit is now deactivated and the transport circuit is active.

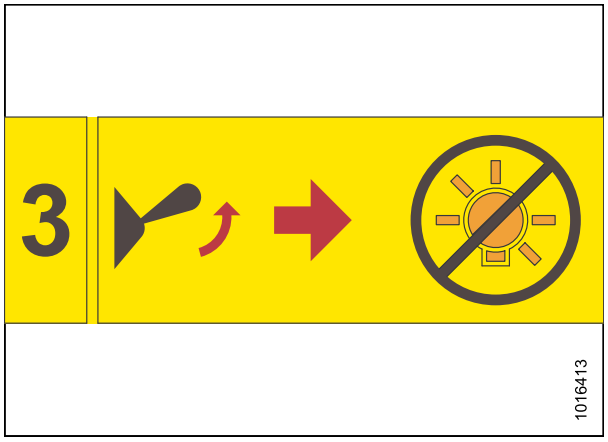


Figure 6.31: Transport Switch

7. Operate hitch swing control lever to lower transport wheels (A) and hold lever until mower conditioner is lifted off the ground.
8. Continue to hold the hitch swing control lever so that the mower conditioner (B) rotates to the left and under the hitch.
9. Release hitch swing control lever when mower conditioner (C) stops rotating.

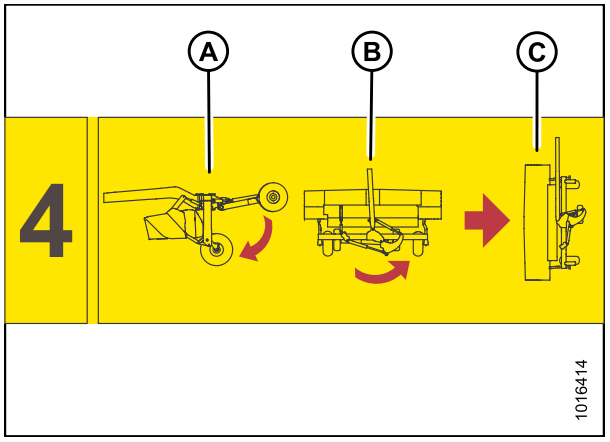


Figure 6.32: Transport Assembly Rotation

10. Operate the lift control lever to lower the mower conditioner onto the transport assembly, to raise the field wheels, and to engage transport latch onto hitch.

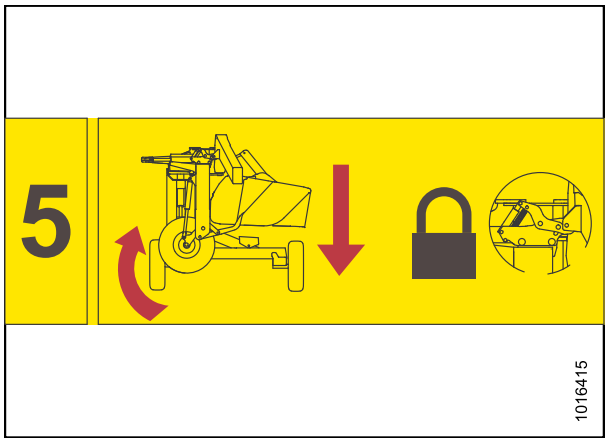


Figure 6.33: Transport Assembly Lowering

11. Torque bolts (B) on transport latch (A) to 460 N·m (340 ft·lbf).

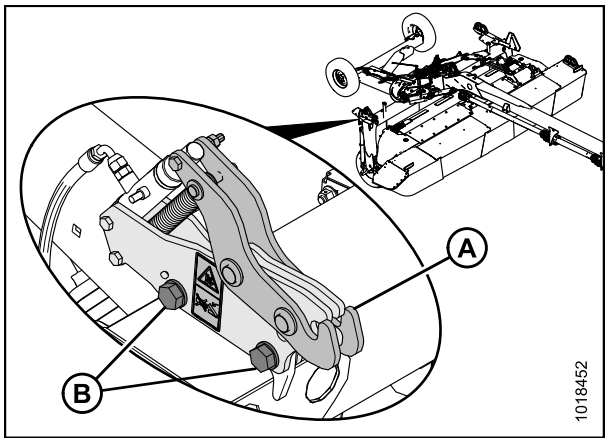


Figure 6.34: Transport Latch

12. Operate the hitch swing control lever to ensure the carrier frame (A) and hitch (B) are locked together.
13. Activate the hazard lights (C) on the mower conditioner. Check that all lights are working.
14. Ensure that the slow moving vehicle sign (D) is visible from behind the mower conditioner.

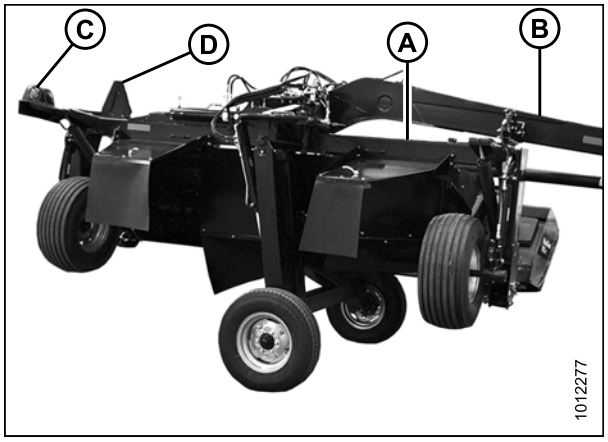


Figure 6.35: Transport Mode

15. Once the field to transport conversion (A) is complete, leave the switch in the upper position (C). Ensure that light (B) is **NOT** illuminated.

    To review the remote control decal, refer to *10.5 Converting Road Friendly Transport™ Decal, page 220*.

Figure 6.36: Remote Control

6.19.2 Converting from Transport to Field Mode

DANGER

Do not convert the machine into, or from, transport mode until you are certain that all people, animals, and objects are clear of the unit's rotational range.

WARNING

Ensure cutterbar doors are properly closed before converting the machine from field to transport mode to prevent equipment damage.

1. Following the transport to field decal (A), move transport switch to the upper position (C) and ensure that light (B) is **NOT** illuminated.

Figure 6.37: Remote Control

2. While the light is **NOT** illuminated, operate the lift control lever (as if raising the mower conditioner) to fully extend the lift cylinders and raise the cutterbar off the transport assembly support. The carrier frame latch will automatically open.

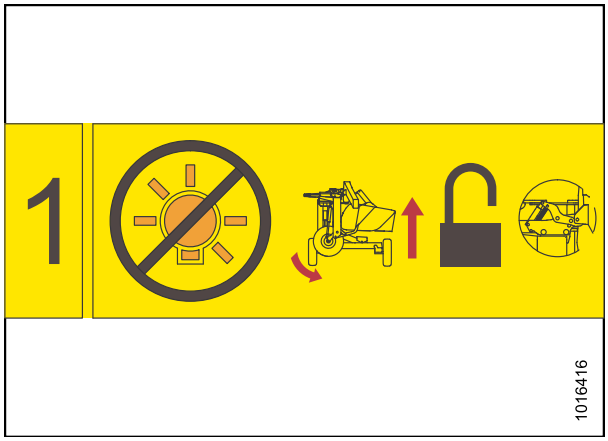


Figure 6.38: Raising Mower Conditioner

3. Operate the hitch swing control lever to rotate the mower conditioner to the right. The mower conditioner will stop when it reaches operating position.

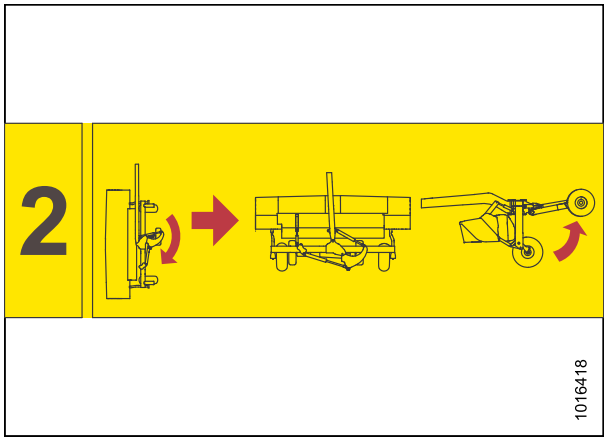


Figure 6.39: Mower Conditioner Rotation

4. Continue operating the hitch swing control lever to fully raise the transport assembly and lower the mower conditioner onto the field wheels.
5. Move transport switch to the lower position and ensure that the light on the remote control is illuminated. Transport conversion is now complete and the hitch swing circuit is active.

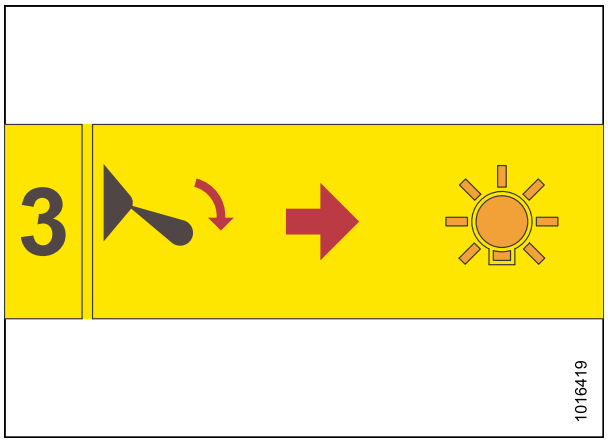


Figure 6.40: Transport Switch

6. Once the transport to field conversion (A) is complete, leave the switch in lower position (C). Ensure that light (B) is illuminated.

   To review the remote control decal, refer to *10.5 Converting Road Friendly Transport™ Decal, page 220*.

Figure 6.41: Remote Control

7 Transporting the Mower Conditioner

You can tow the mower conditioner on public roads in either normal field mode or Road Friendly Transport™ mode.

- To prepare a mower conditioner for towing with a tractor or a truck without using the Road Friendly Transport™ option, refer to *7.1 Preparing Mower Conditioner for Transport, page 165*.
- To prepare a mower conditioner for towing with the Road Friendly Transport™ option, refer to *6.19.1 Converting from Field to Transport Mode, page 156*.

CAUTION

- **Obey all highway traffic regulations in your area when transporting on public roads. Use flashing amber lights unless prohibited by law**
- **Be aware of roadside obstructions, oncoming traffic, and bridges.**
- **Travel at safe speeds to ensure complete machine control and stability at all times. Do NOT exceed 32 km/h (20 mph). Reduce speed for corners and slippery conditions.**
- **Use tractor lights and mower conditioner flashing amber and red taillights when transporting on roads in order to provide adequate warning to operators of other vehicles.**
- **Do NOT transport the mower conditioner on a road or highway at night or in reduced visibility conditions such as rain or fog.**
- **Ensure that hitch on transporting vehicle is capable of handling a 907 kg (2000 lb.) static vertical load.**

7.1 Preparing Mower Conditioner for Transport

Follow these instructions to prepare the mower conditioner for transport without deploying the optional Road Friendly Transport™ system.

DANGER

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

WARNING

Do NOT tow unless the hitch swing cylinder is fully charged. If hitch swing cylinder is not fully charged, loss of control, injury, or death could result.

1. Connect the mower conditioner hitch to the tractor. Refer to *3.9 Attaching Mower Conditioner to the Tractor, page 47*.
2. Move jack (A) to storage position on side of hitch, and secure with pin (B).

   NOTE:
   If unit is equipped with a two-point hitch, rotate the hitch stand to the storage position.

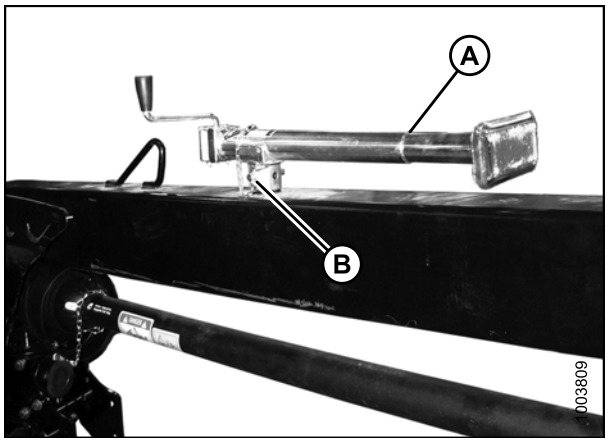


Figure 7.1: Jack in Storage Position

3. Connect the hitch swing cylinder hoses (labelled red #2 and blue #2) to the tractor's hydraulic circuit (A). Refer to *3.9.3 Connecting Hydraulics, page 51*.
4. Swing the mower conditioner completely to the left, then completely to the right. Repeat three or four times to charge the hitch swing circuit.
5. Swing the mower conditioner so that it is centered behind the towing vehicle.

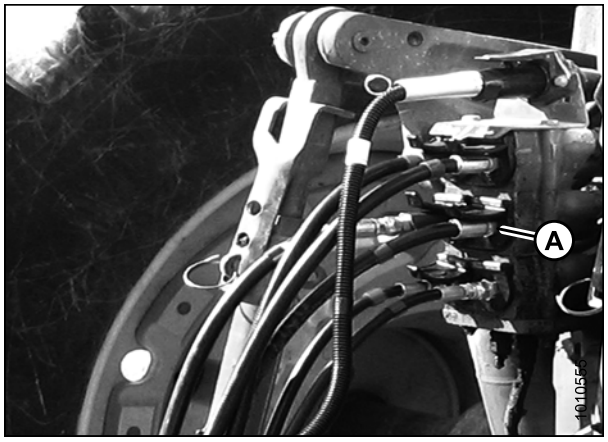


Figure 7.2: Hydraulic Connection

6. Close the hitch swing lock-out valve (A) by turning the handle to the closed (vertical) position.

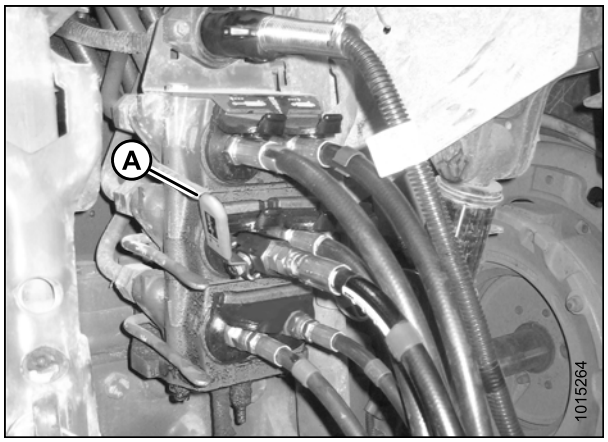


Figure 7.3: Hitch Swing Lock-Out Valve Shown in Closed Position

7. Raise the mower conditioner fully and close the lift cylinder lock-out valve (A) on each lift cylinder by turning the handle to the closed position.
8. Ensure tires are properly inflated.
9. Ensure the slow moving vehicle (SMV) sign, reflectors, and lights are clean and visible at rear of mower conditioner.

Figure 7.4: Cylinder Lock-Out Valve

10. Proceed to the procedure relevant to your equipment.
    - If towing the mower conditioner with a tractor, refer to *7.2 Transporting with a Tractor, page 167*.
    - If towing the mower conditioner with a truck, refer to *7.3 Transporting with a Truck, page 168*.

7.2 Transporting with a Tractor

If towing endwise with the optional Road Friendly Transport™ system, refer to *6.19.1 Converting from Field to Transport Mode, page 156*.

1. Before proceeding to transport the mower conditioner with a tractor, ensure the machine is prepared for transport. Refer to *7.1 Preparing Mower Conditioner for Transport, page 165*.
2. Ensure that hitch safety chain is properly attached to towing tractor. Provide only enough slack in chain to permit turning.
3. Move jack (A) to storage position on side of hitch, and secure with pin (B).

   NOTE:
   If unit is equipped with a two-point hitch, rotate the stand to the storage position.
4. Keep the slow moving vehicle (SMV) sign, reflectors, and lights clean and visible at rear of mower conditioner.
5. Ensure tires are properly inflated.
6. Do NOT exceed 32 km/h (20 mph).

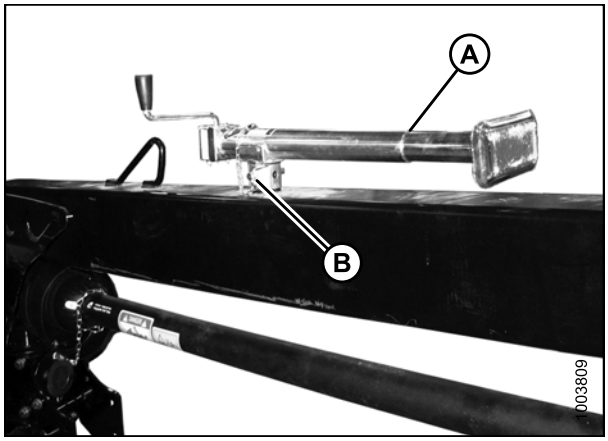


Figure 7.5: Jack in Storage Position

7.3 Transporting with a Truck

Follow these instructions if the machine will be transported from the Dealer to the end user with a truck.

CAUTION

Do NOT tow with a vehicle weighing less than 3400 kg (7500 lb.). Ensure that the capacity of the towing vehicle is sufficient to maintain control.

If towing endwise with the optional Road Friendly Transport™ system, refer to *6.19.2 Converting from Transport to Field Mode, page 160*.

1. Before proceeding to transport the mower conditioner with a truck, ensure the machine is prepared for transport. Refer to *7.1 Preparing Mower Conditioner for Transport, page 165*.
2. Ensure the hydraulic hoses (A) are securely stored on the hitch.

   NOTE:
   Hydraulic hoses do not need to be attached to the tractor for towing.

3. Remove the forward half (B) of driveline and store in the cab for transport.
4. Store driveline (C) on hook (D) (if power take-off [PTO] driveline is not attached).

   NOTE:
   The PTO driveline (C) does not need to be attached for towing purposes.

5. Remove pins (A) from transport hitch (B).

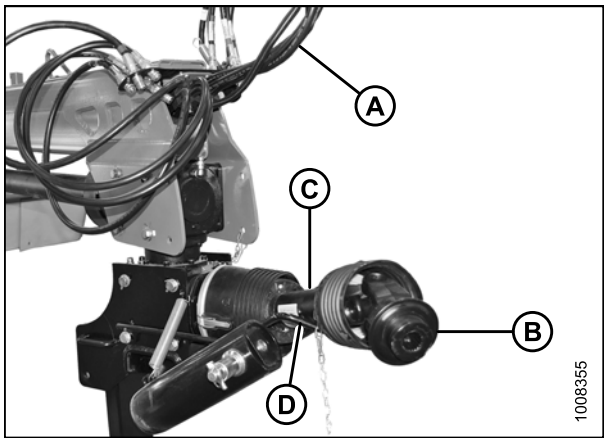


Figure 7.6: Mower Conditioner Hitch

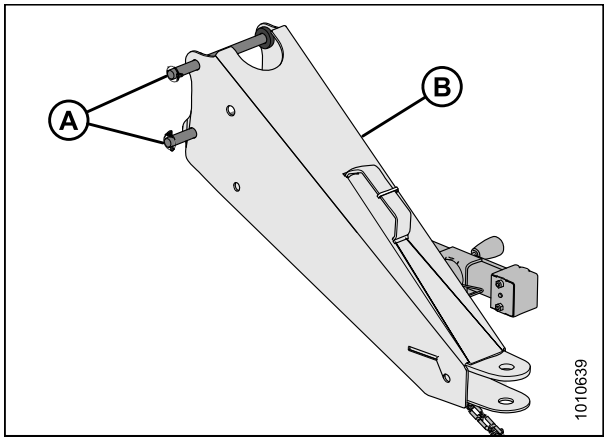


Figure 7.7: Transport Hitch

6. Position transport hitch (A) on mower conditioner hitch, install pins (B), and secure with lynch pins.
7. Lift the mower conditioner hitch with jack (C) and attach mower conditioner to truck.

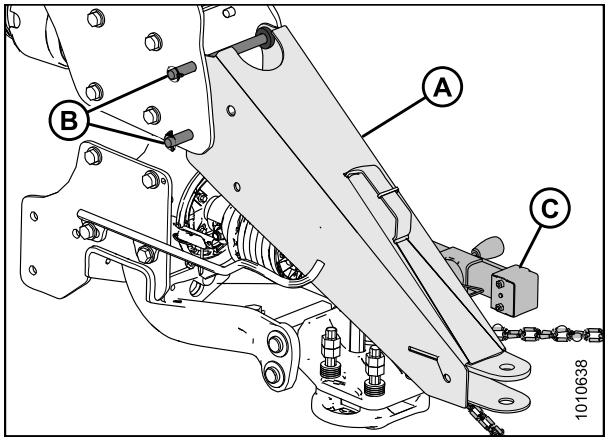


Figure 7.8: Transport Hitch Installed

8. Move jack (A) to storage position on side of hitch, and secure with pin (B).

   NOTE:
   If unit is equipped with a two-point hitch, rotate the stand to the storage position.

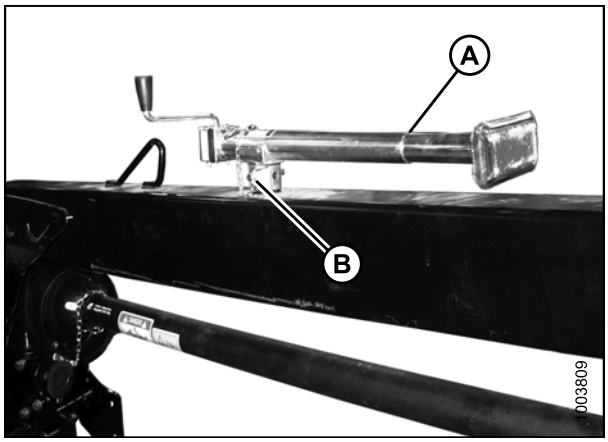


Figure 7.9: Jack in Storage Position

9. Wrap safety chain (A) around hitch and attach to truck frame. Provide only enough slack in chain to permit turning.
10. Connect electrical harness (B).
11. Keep the slow moving vehicle (SMV) sign, reflectors, and lights clean and visible at rear of mower conditioner.
12. Ensure tires are properly inflated.
13. Do NOT exceed 32 km/h (20 mph).

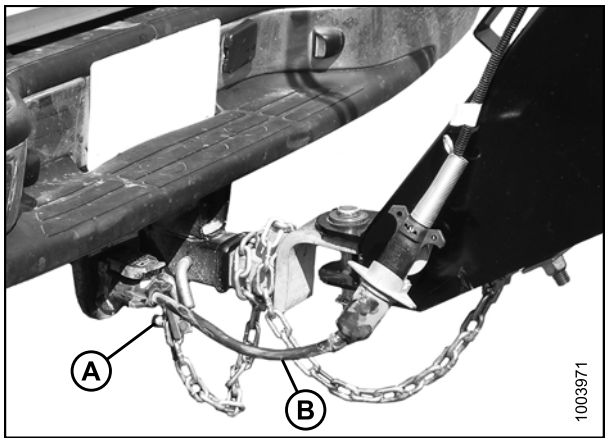


Figure 7.10: Safety Chain and Electrical Harness

8 Hydraulic Schematics

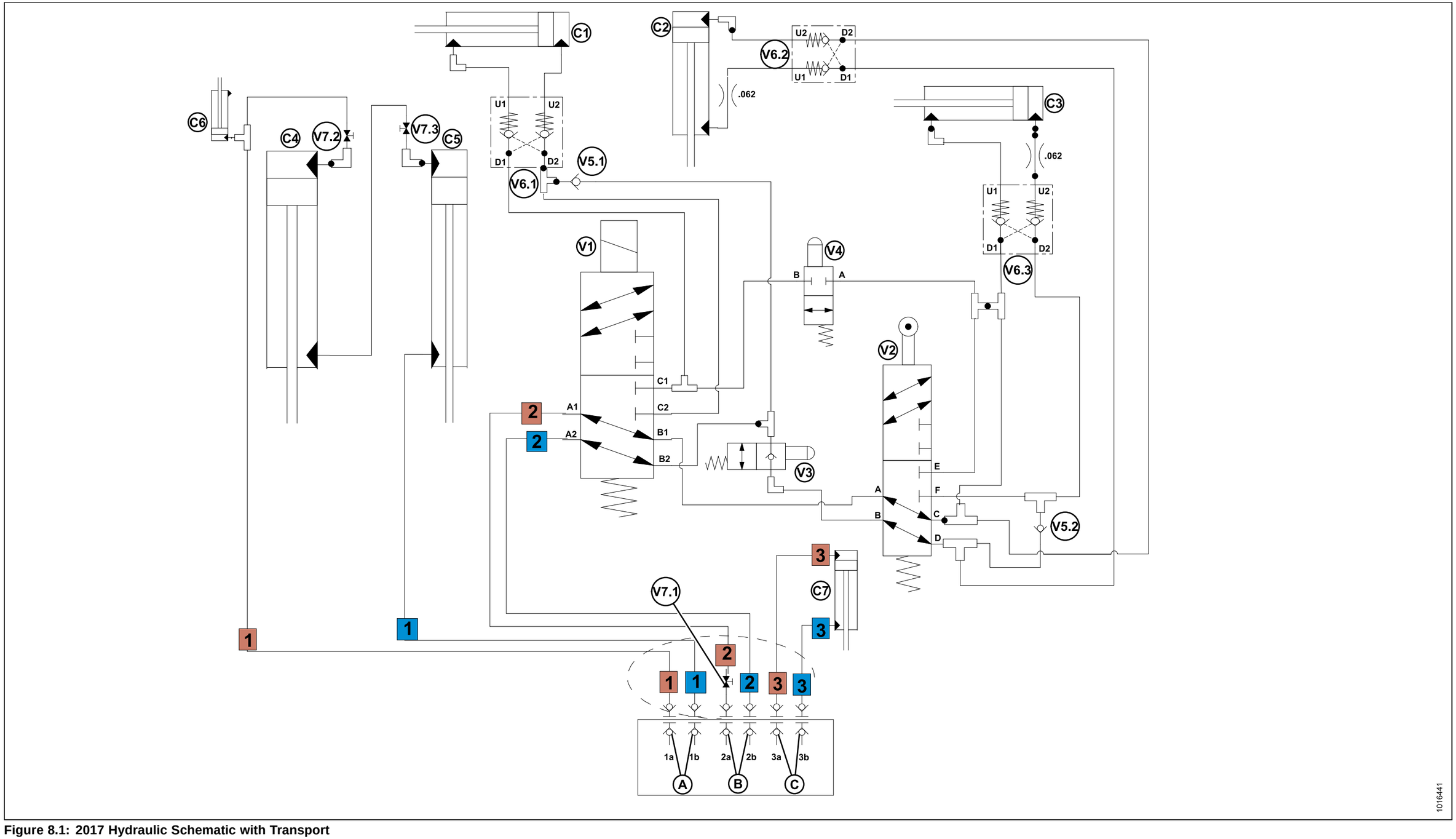


Figure 8.1: 2017 Hydraulic Schematic with Transport

Table 8.1 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C2 - Transport Deploy Cylinder (Located on Transport Frame)
C3 - Transport Swing Cylinder (Located Between Carrier Frame and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C6 - Transport Lock Cylinder (Located on Transport Lock Mechanism)
C7 - Tilt Cylinder (Option) (Located Between Carrier Frame and Header)

Table 8.2 Valve Legend

V1 - Six-Way Solenoid Valve (Located Top of Hitch Mount) (Non-Energized for Transport)
V2 - Six-Way Mechanical Valve cam actuated (Located on Top of Transport Casting Mount)
V3 - Two-Way NC directional valve with check. (Red/Green Indicator) (Located on Hitch Alignment Mechanism)
V4 - Two-Way NC Directional Valve with Mechanical Paddle Actuator (Located on Back of Carrier Frame)
V5.1, 5,2 - In-Line Check Valve
V6.1, 6.2, 6.3 - Pressure Balance Valves C1, C2, C3
V7.1, 7.2, 7.3 - Shut-Off Valves for Lift and Swing Cylinder Circuit

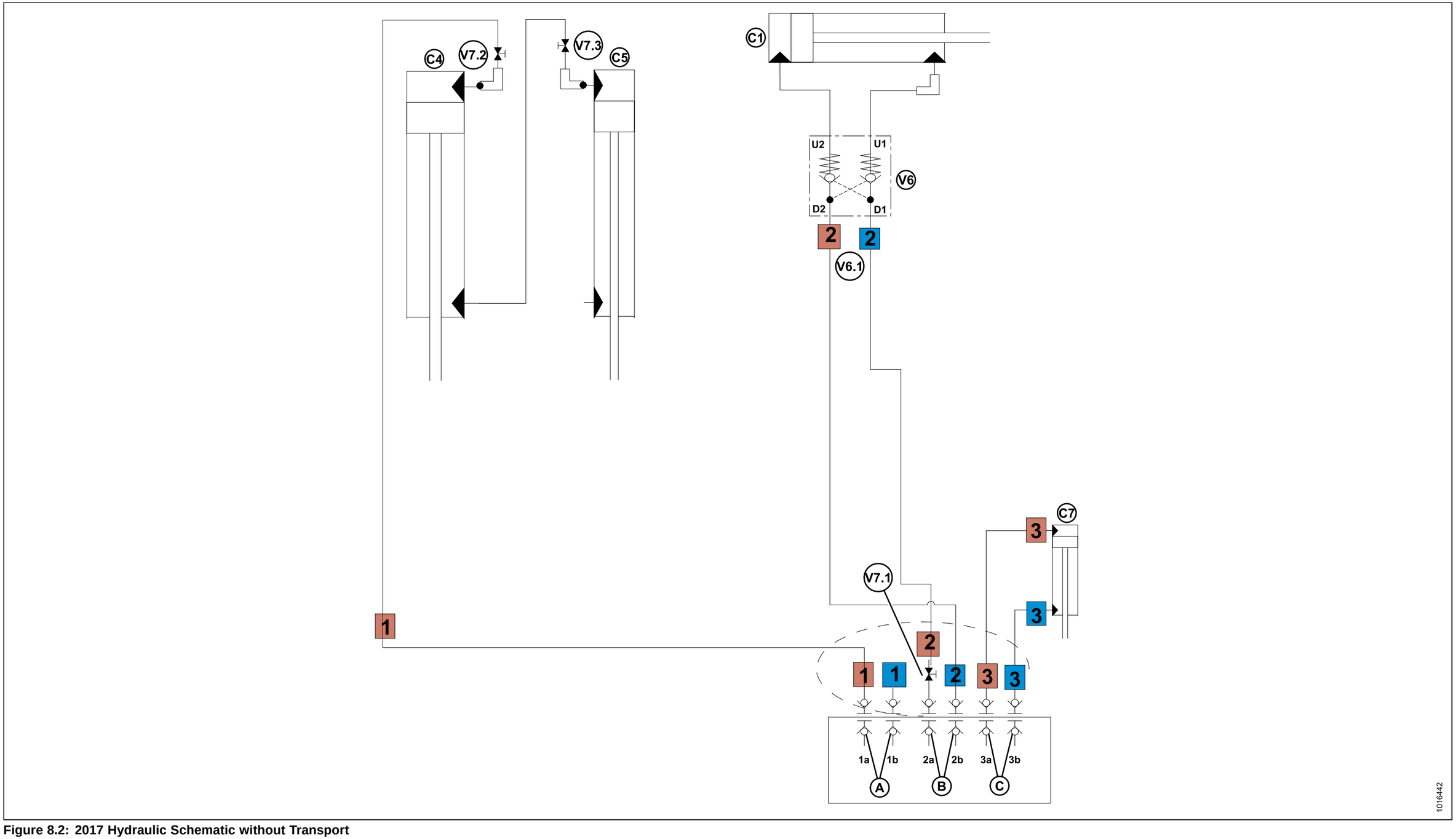


Figure 8.2: 2017 Hydraulic Schematic without Transport

Table 8.3 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C7 - Tilt Cylinder (Optional) (Located Between Carrier Frame and Header)

Table 8.4 Valve Legend

V6 - Pressure Balance Valves (3) at C1, C2, C3
V7 - Shut-Off Valves (3) (Lift and Swing Cylinder Circuit)

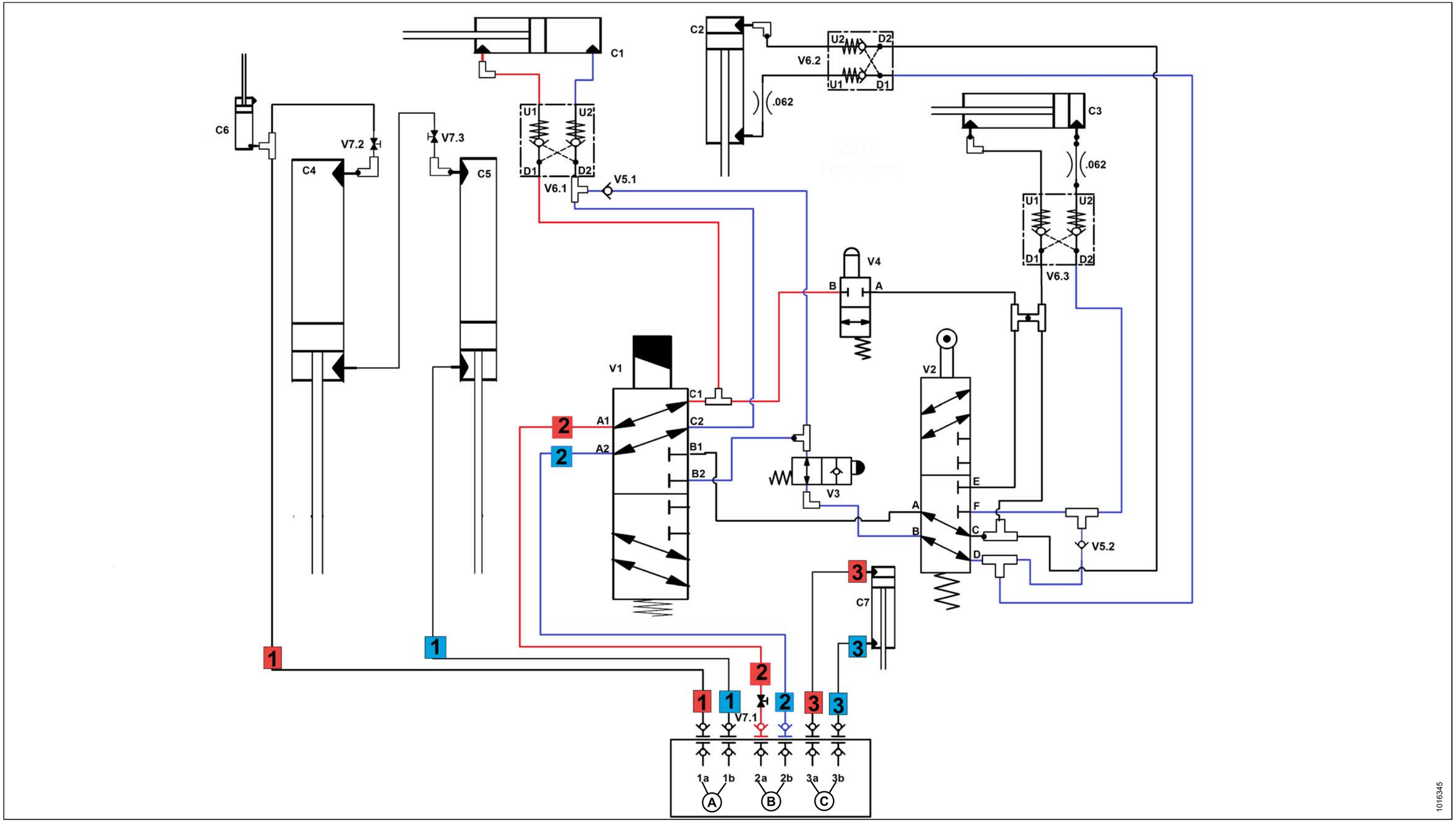


Figure 8.3: 2017 Hydraulic Schematic – Header Swing

Table 8.5 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C2 - Transport Deploy Cylinder (Located on Transport Frame)
C3 - Transport Swing Cylinder (Located Between Carrier Frame and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C6 - Transport Lock Cylinder (Located on Transport Lock Mechanism)
C7 - Tilt Cylinder (Option) (Located Between Carrier Frame and Header)

Table 8.6 Valve Legend

V1 - Six-Way Solenoid Valve (Located Top of Hitch Mount) (Non-Energized for Transport)
V2 - Six-Way Mechanical Valve cam actuated (Located on Top of Transport Casting Mount)
V3 - Two-Way NC directional valve with check. (Red/Green Indicator) (Located on Hitch Alignment Mechanism)
V4 - Two-Way NC Directional Valve with Mechanical Paddle Actuator (Located on Back of Carrier Frame)
V5.1, 5,2 - In-Line Check Valve
V6.1, 6.2, 6.3 - Pressure Balance Valves C1, C2, C3
V7.1, 7.2, 7.3 - Shut-Off Valves for Lift and Swing Cylinder Circuit

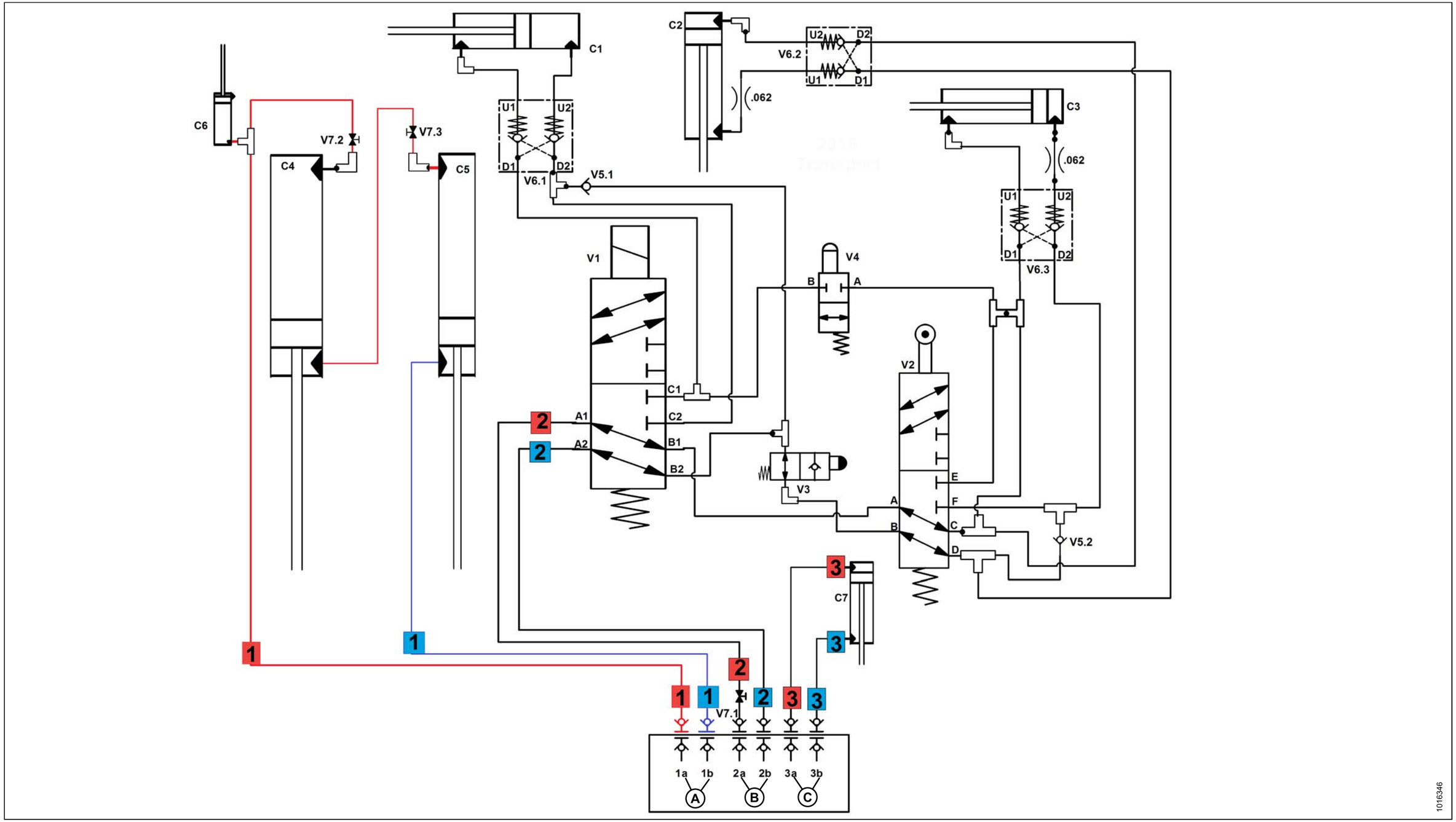


Figure 8.4: 2016 Hydraulic Schematic – Header Raise

Table 8.7 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C2 - Transport Deploy Cylinder (Located on Transport Frame)
C3 - Transport Swing Cylinder (Located Between Carrier Frame and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C6 - Transport Lock Cylinder (Located on Transport Lock Mechanism)
C7 - Tilt Cylinder (Option) (Located Between Carrier Frame and Header)

Table 8.8 Valve Legend

V1 - Six-Way Solenoid Valve (Located Top of Hitch Mount) (Non-Energized for Transport)
V2 - Six-Way Mechanical Valve cam actuated (Located on Top of Transport Casting Mount)
V3 - Two-Way NC directional valve with check. (Red/Green Indicator) (Located on Hitch Alignment Mechanism)
V4 - Two-Way NC Directional Valve with Mechanical Paddle Actuator (Located on Back of Carrier Frame)
V5.1, 5,2 - In-Line Check Valve
V6.1, 6.2, 6.3 - Pressure Balance Valves C1, C2, C3
V7.1, 7.2, 7.3 - Shut-Off Valves for Lift and Swing Cylinder Circuit

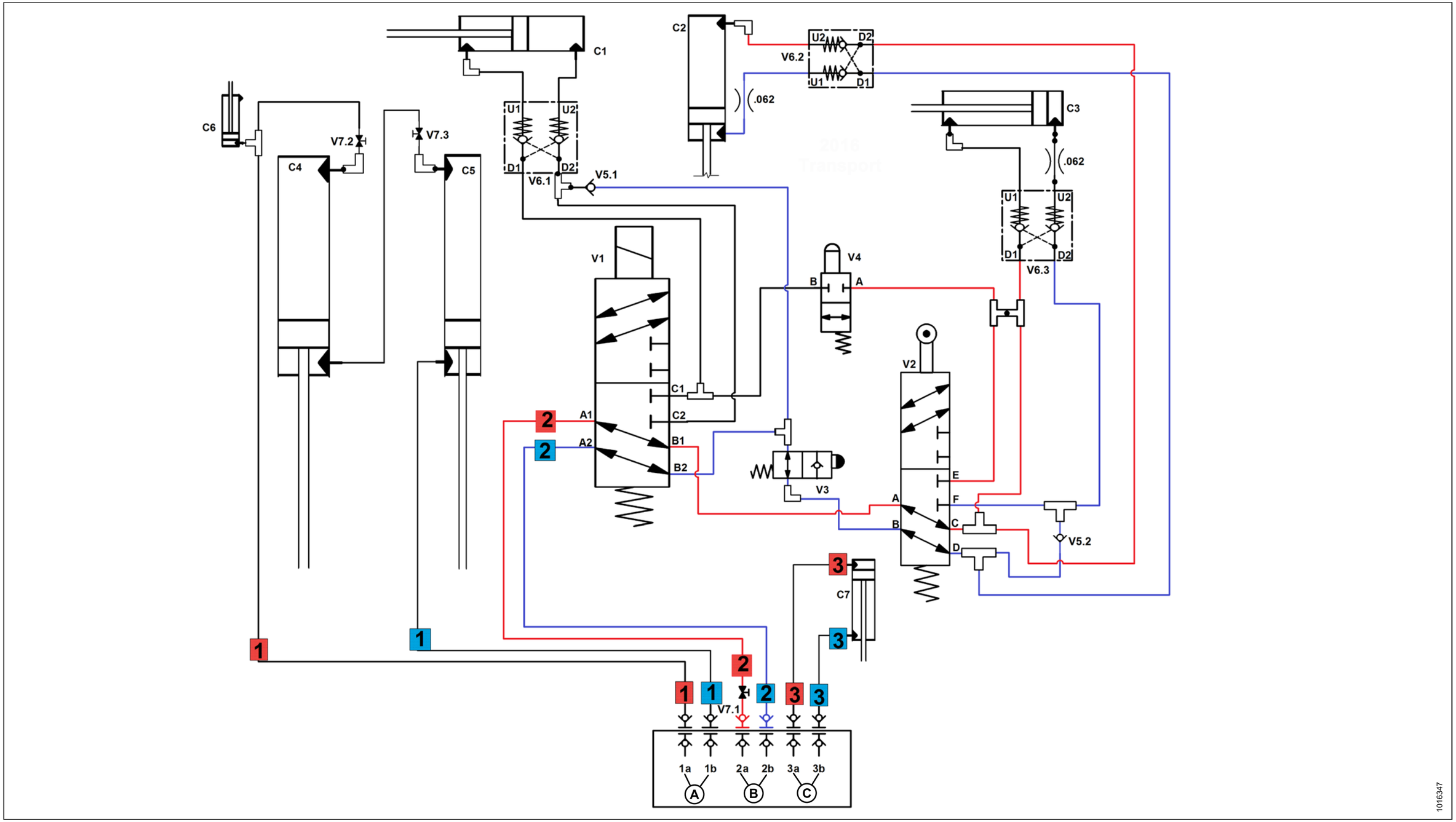


Figure 8.5: 2017 Hydraulic Schematic – Header Transport Deploy

Table 8.9 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C2 - Transport Deploy Cylinder (Located on Transport Frame)
C3 - Transport Swing Cylinder (Located Between Carrier Frame and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C6 - Transport Lock Cylinder (Located on Transport Lock Mechanism)
C7 - Tilt Cylinder (Option) (Located Between Carrier Frame and Header)

Table 8.10 Valve Legend

V1 - Six-Way Solenoid Valve (Located Top of Hitch Mount) (Non-Energized for Transport)
V2 - Six-Way Mechanical Valve cam actuated (Located on Top of Transport Casting Mount)
V3 - Two-Way NC directional valve with check. (Red/Green Indicator) (Located on Hitch Alignment Mechanism)
V4 - Two-Way NC Directional Valve with Mechanical Paddle Actuator (Located on Back of Carrier Frame)
V5.1, 5,2 - In-Line Check Valve
V6.1, 6.2, 6.3 - Pressure Balance Valves C1, C2, C3
V7.1, 7.2, 7.3 - Shut-Off Valves for Lift and Swing Cylinder Circuit

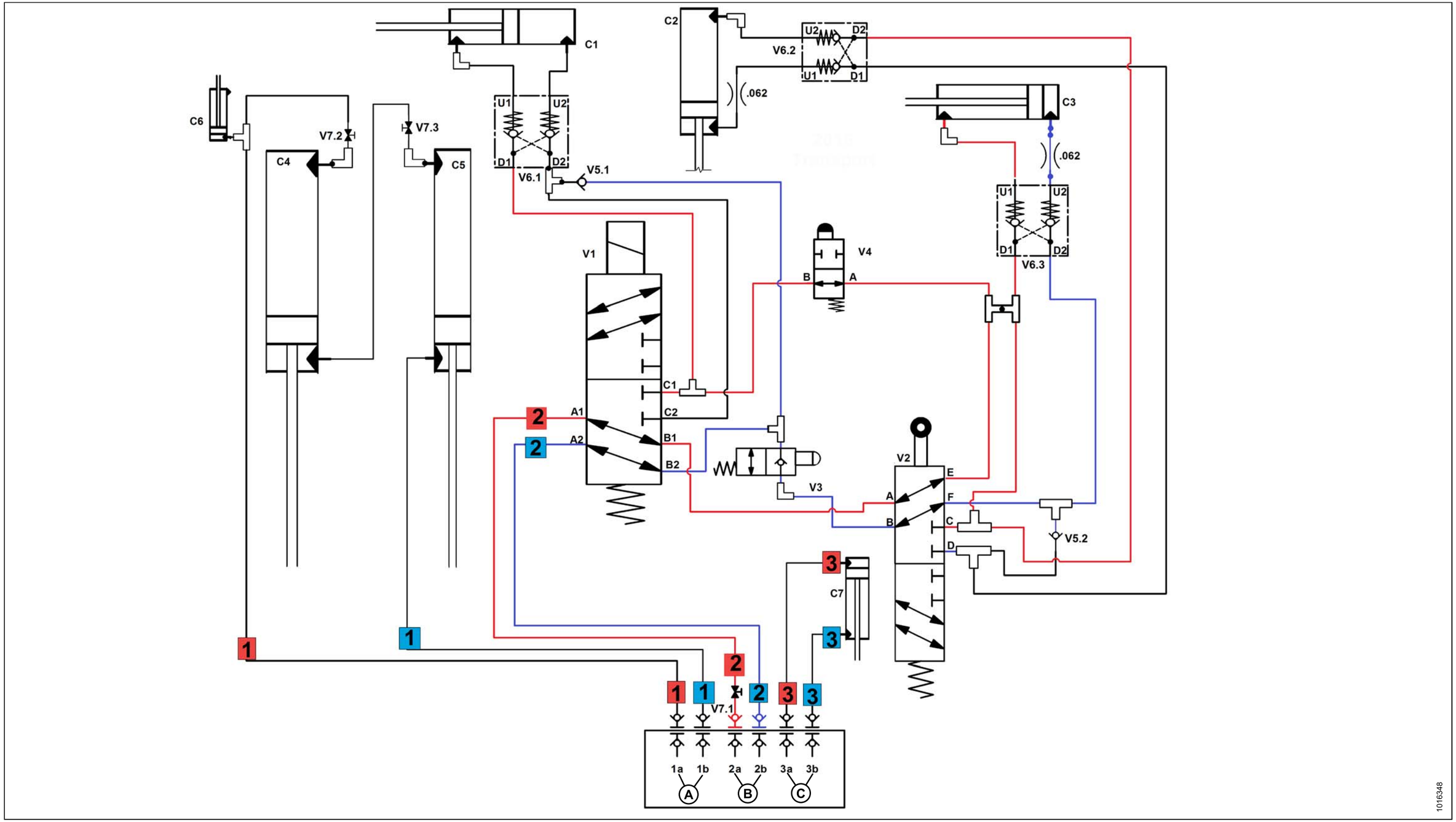


Figure 8.6: 2017 Hydraulic Schematic – Header Transport Swing

Table 8.11 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C2 - Transport Deploy Cylinder (Located on Transport Frame)
C3 - Transport Swing Cylinder (Located Between Carrier Frame and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C6 - Transport Lock Cylinder (Located on Transport Lock Mechanism)
C7 - Tilt Cylinder (Option) (Located Between Carrier Frame and Header)

Table 8.12 Valve Legend

V1 - Six-Way Solenoid Valve (Located Top of Hitch Mount) (Non-Energized for Transport)
V2 - Six-Way Mechanical Valve cam actuated (Located on Top of Transport Casting Mount)
V3 - Two-Way NC directional valve with check. (Red/Green Indicator) (Located on Hitch Alignment Mechanism)
V4 - Two-Way NC Directional Valve with Mechanical Paddle Actuator (Located on Back of Carrier Frame)
V5.1, 5,2 - In-Line Check Valve
V6.1, 6.2, 6.3 - Pressure Balance Valves C1, C2, C3
V7.1, 7.2, 7.3 - Shut-Off Valves for Lift and Swing Cylinder Circuit

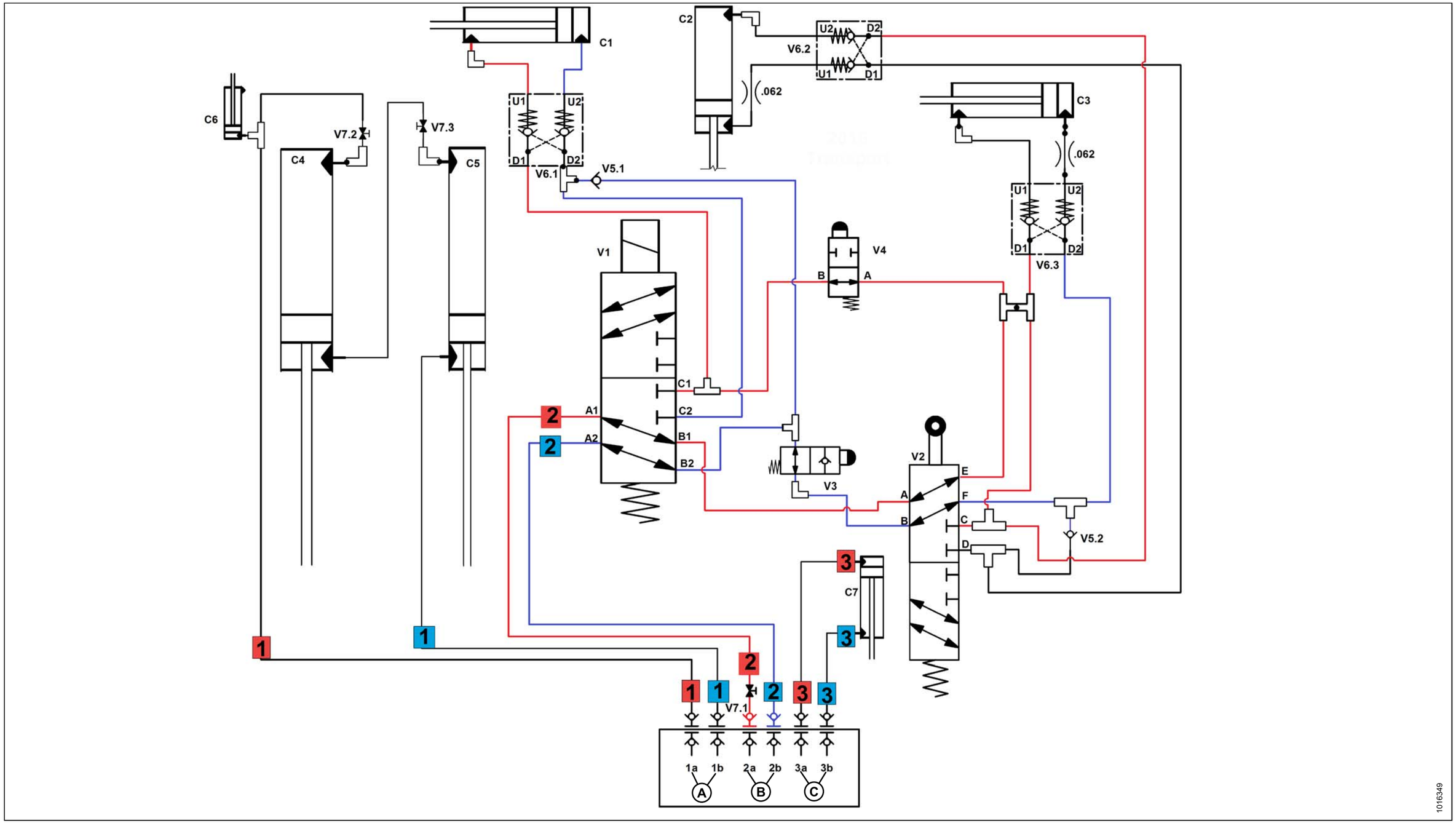


Figure 8.7: 2017 Hydraulic Schematic – Header Transport Swing Complete

Table 8.13 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C2 - Transport Deploy Cylinder (Located on Transport Frame)
C3 - Transport Swing Cylinder (Located Between Carrier Frame and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C6 - Transport Lock Cylinder (Located on Transport Lock Mechanism)
C7 - Tilt Cylinder (Option) (Located Between Carrier Frame and Header)

Table 8.14 Valve Legend

V1 - Six-Way Solenoid Valve (Located Top of Hitch Mount) (Non-Energized for Transport)
V2 - Six-Way Mechanical Valve cam actuated (Located on Top of Transport Casting Mount)
V3 - Two-Way NC directional valve with check. (Red/Green Indicator) (Located on Hitch Alignment Mechanism)
V4 - Two-Way NC Directional Valve with Mechanical Paddle Actuator (Located on Back of Carrier Frame)
V5.1, 5,2 - In-Line Check Valve
V6.1, 6.2, 6.3 - Pressure Balance Valves C1, C2, C3
V7.1, 7.2, 7.3 - Shut-Off Valves for Lift and Swing Cylinder Circuit

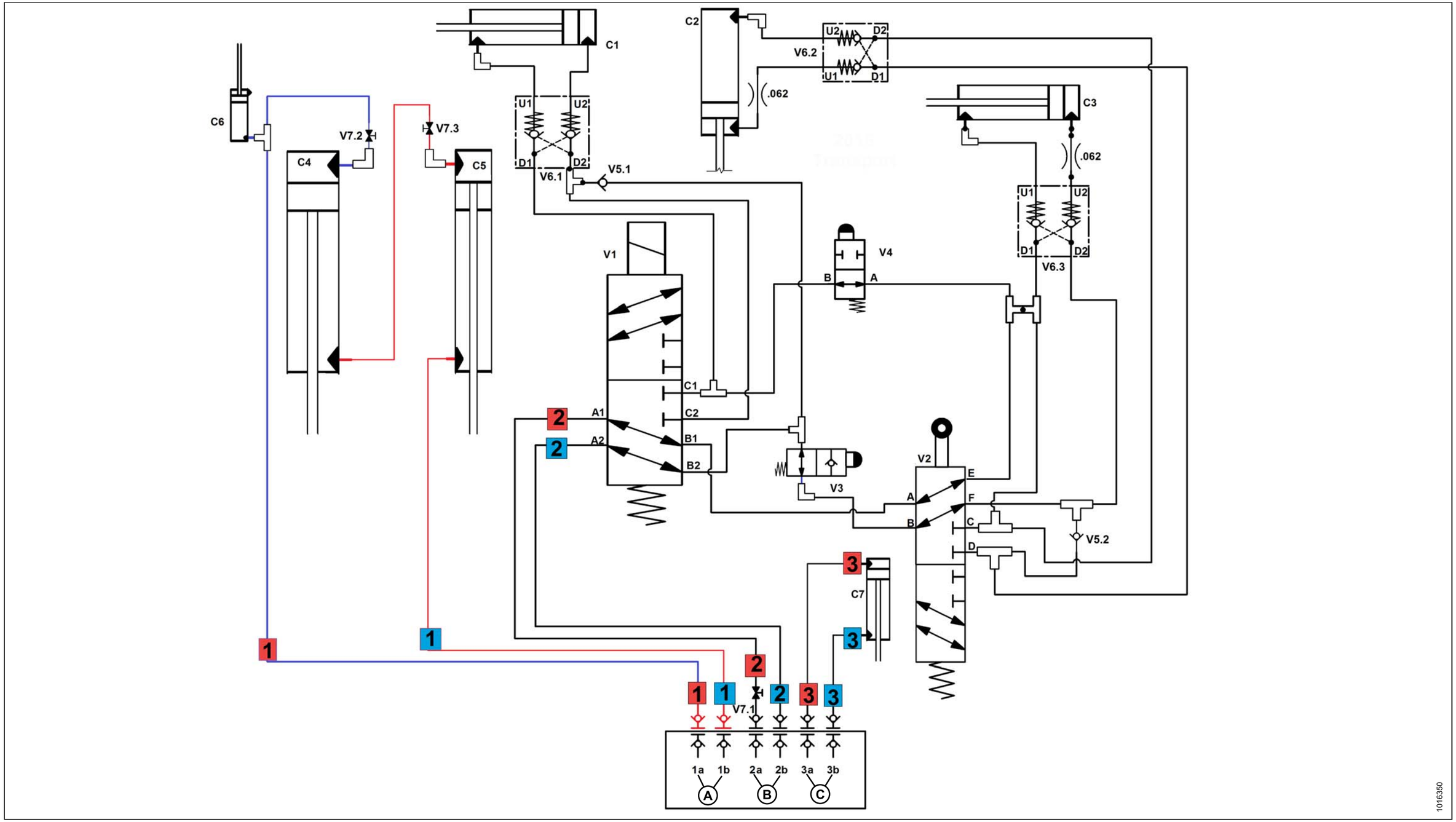


Figure 8.8: 2017 Hydraulic Schematic – Header Transport Lock

Table 8.15 Cylinder Legend

C1 - Hitch Swing Cylinder (Located Between Hitch and Transport Casting)
C2 - Transport Deploy Cylinder (Located on Transport Frame)
C3 - Transport Swing Cylinder (Located Between Carrier Frame and Transport Casting)
C4 - Master Lift Cylinder (Located on RH Side of Carrier Frame)
C5 - Slave Lift Cylinder (Located on LH Side of Carrier Frame)
C6 - Transport Lock Cylinder (Located on Transport Lock Mechanism)
C7 - Tilt Cylinder (Option) (Located Between Carrier Frame and Header)

Table 8.16 Valve Legend

V1 - Six-Way Solenoid Valve (Located Top of Hitch Mount) (Non-Energized for Transport)
V2 - Six-Way Mechanical Valve cam actuated (Located on Top of Transport Casting Mount)
V3 - Two-Way NC directional valve with check. (Red/Green Indicator) (Located on Hitch Alignment Mechanism)
V4 - Two-Way NC Directional Valve with Mechanical Paddle Actuator (Located on Back of Carrier Frame)
V5.1, 5,2 - In-Line Check Valve
V6.1, 6.2, 6.3 - Pressure Balance Valves C1, C2, C3
V7.1, 7.2, 7.3 - Shut-Off Valves for Lift and Swing Cylinder Circuit

9 Changing the Conditioner

NOTE:
This section applies only to machines that require a conditioner change prior to delivery to the customer. If the change is not required, proceed to *9.4 Assembling Header and Carrier, page 198*.

R113/R116 Pull-Type Rotary Disc Mower Conditioners can be equipped with either a finger conditioner, a polyurethane roll conditioner, or a steel roll conditioner. Follow these instructions to change conditioners (disregard this if the mower conditioner will be delivered to the customer as is).

These instructions apply to all conditioners. Exceptions are identified where applicable.

9.1 Separating Header from Carrier

DANGER

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

The mower conditioner includes a header and conditioner attached to a carrier frame. Before removing or installing the conditioner, the mower conditioner and carrier must be separated

1. Connect the mower conditioner to the tractor. Refer to *3.9 Attaching Mower Conditioner to the Tractor, page 47*.
2. Start tractor and center mower conditioner behind tractor.
3. Raise mower conditioner fully, set center-link to mid-position, and shut down the tractor. Remove key from ignition.

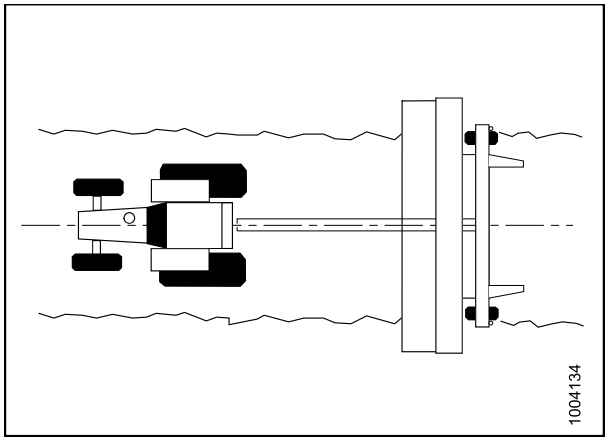


Figure 9.1: Mower Conditioner Centered Behind Tractor

NOTE:
The float adjuster bolt is easier to turn when the mower conditioner is in the raised position.

4. Close mower conditioner lift cylinder lock-out valves (A).
5. Loosen jam nut (B) on adjuster bolt.
6. Turn out adjuster bolt (C) on each float spring until 400 mm (17-3/4 in.) of thread (D) is exposed.

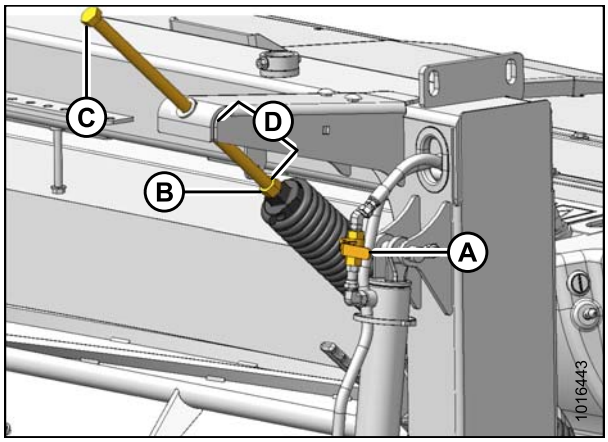


Figure 9.2: Right Side Float Adjuster – Left Side Similar

7. Open lift cylinder lock-out valves (A) (handle is vertical).
8. Start tractor and fully lower mower conditioner.
9. Shut down tractor and remove key from ignition.
10. Check that float adjuster bolts (B) are loose. Back off adjuster bolts as required.
11. Remove float adjuster bolt (B) from spring on **LEFT** side only. Keep spring from dropping when bolt is removed.

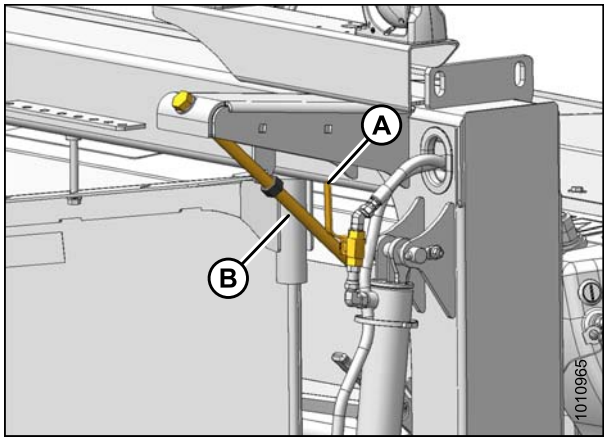


Figure 9.3: Right Side Float Adjuster – Left Side Similar

12. Remove left and right driveshields (A). For instructions refer to *5.1 Opening Driveshields, page 127*.

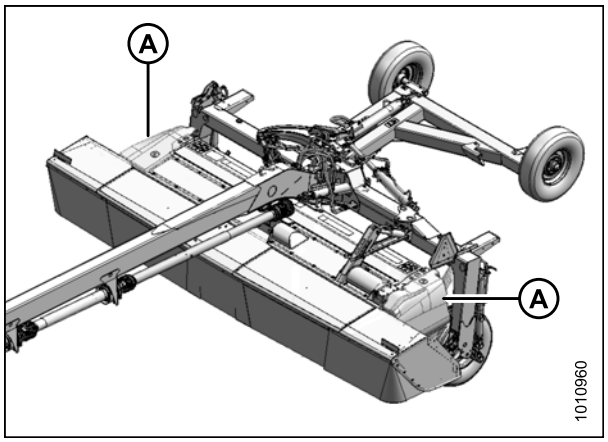


Figure 9.4: Driveshields

13. On the left-hand side of the mower conditioner, remove the conditioner drive belt as follows:
    a. Back off jam nut and tensioner nut (B) on belt idler until belts (A) are loose and can be removed.
    b. Remove the four belts.

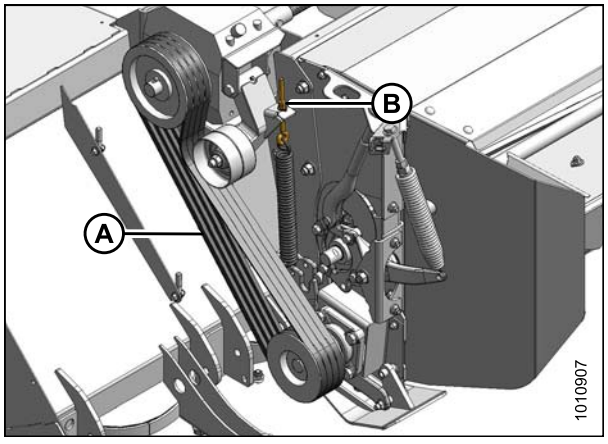


Figure 9.5: Conditioner Drive

14. On the right-hand side of the mower conditioner, remove the M20 nut (A), washers, and hex head bolt (B) securing the carrier leg (C) and float spring arm (D) to the mower conditioner.
15. Move float spring arm (D) clear of conditioner.

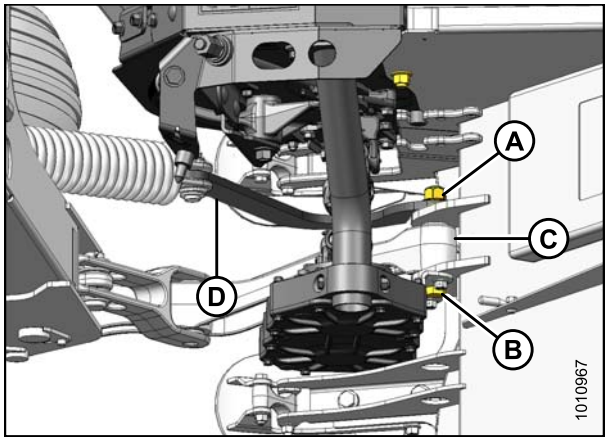


Figure 9.6: Right Side of Carrier

16. Remove the M20 nut (A), washers, and hex head bolt (B) securing carrier leg (C) to the left end of the mower conditioner.

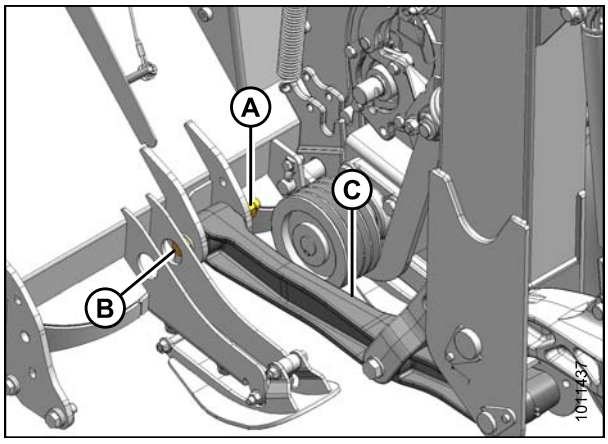


Figure 9.7: Left Side of Conditioner

17. Remove clevis pin (A) connecting center-link (B) to anchor (C) and separate center-link from anchor. Reinstall pin in anchor to store.
18. Secure center-link (B) and indicator (D) to carrier frame with a strap or wire to prevent them from contacting the mower conditioner during separation.

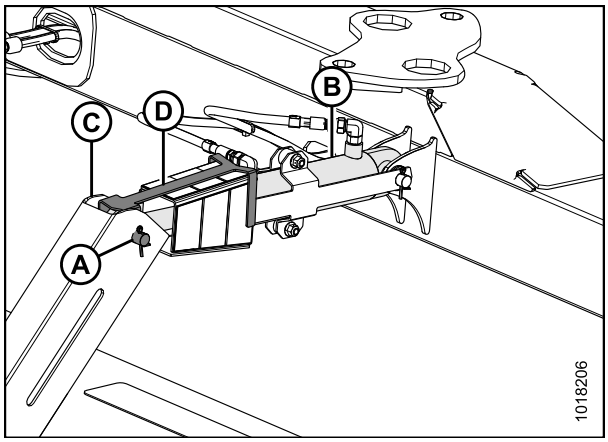


Figure 9.8: Center-Link and Indicator

19. Start tractor, slowly back carrier (A) off header (B), and maneuver carrier away from header.

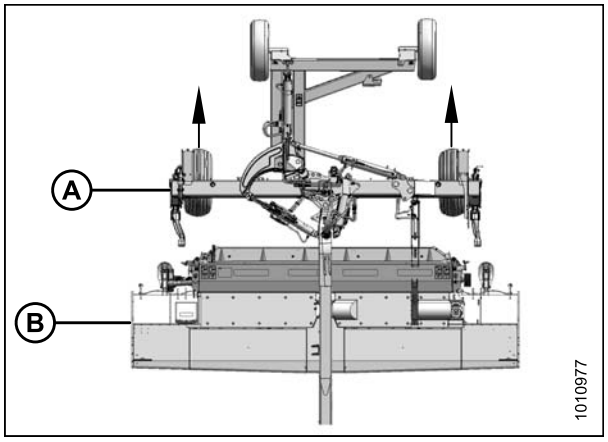


Figure 9.9: Carrier Removed from Header

9.2 Removing the Conditioner

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast while detaching the conditioner from the mower.

1. Attach a spreader bar (A) to a forklift or equivalent, and attach chains to lugs (B) on conditioner. Use a chain rated for overhead lifting with a minimum working load of 1135 kg (2500 lb.).

DANGER

To prevent the conditioner from falling backward, ensure lifting chains are secure and tight. Failure to do so may result in death or serious injury.

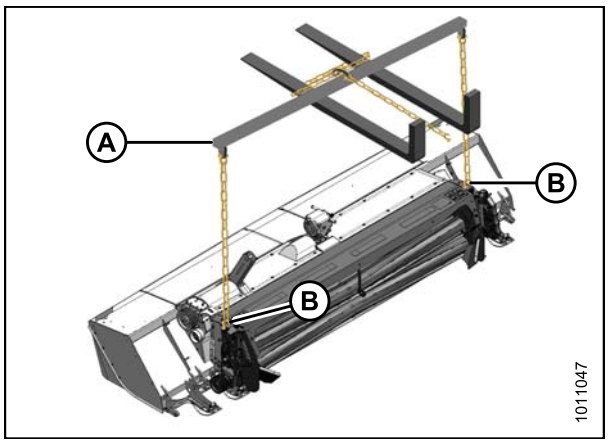


Figure 9.10: Spreader Bar

2. Move forward baffle adjustment handle (A) to fully lowered position as shown.
3. Move rear baffle adjustment handle (B) to fully raised position as shown.

   NOTE:
   Access to upper bolts (C) is easiest from the rear of the conditioner.

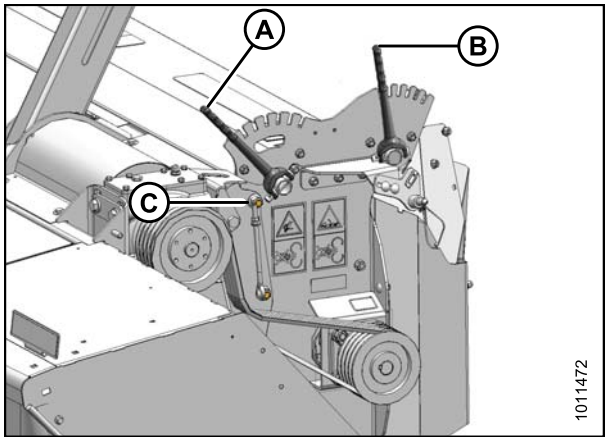


Figure 9.11: Left Side of Conditioner

4. Lift conditioner slightly forward to take load off bolts (A) and to hold the conditioner after the bolts are removed. Retain hardware for reinstallation.

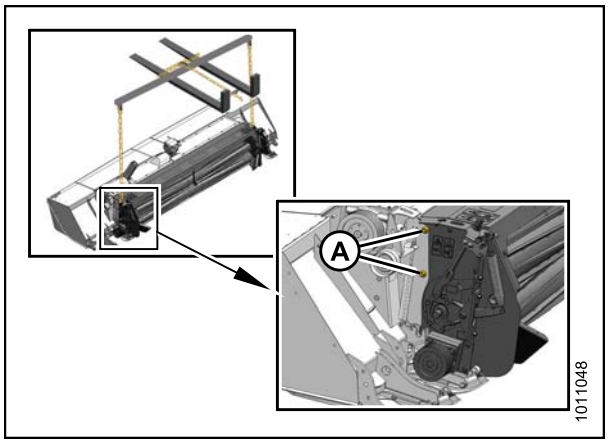


Figure 9.12: Left Side of Conditioner – Right Side Similar

5. Remove two M16 hex head bolts (A) from each side of conditioner that secure it to mower.

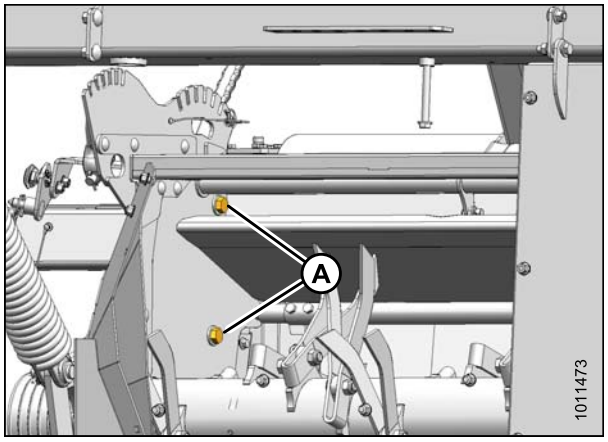


Figure 9.13: Left Side of Conditioner – Right Side Similar

CAUTION

Stand clear when detaching the conditioner.

6. Lift conditioner (A) off mower (B), and move it away from work area.

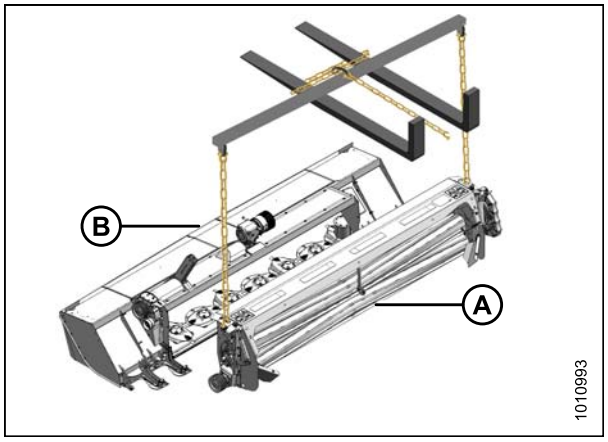


Figure 9.14: Conditioner Lift

9.3 Installing the Conditioner

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast while detaching the conditioner from the mower.

1. Attach a spreader bar (A) to a forklift or equivalent and attach chains to lugs (B) on conditioner. Use a chain rated for overhead lifting with a minimum working load of 1135 kg. (2500 lb.).
2. Lift conditioner (A) and position it into mower opening.

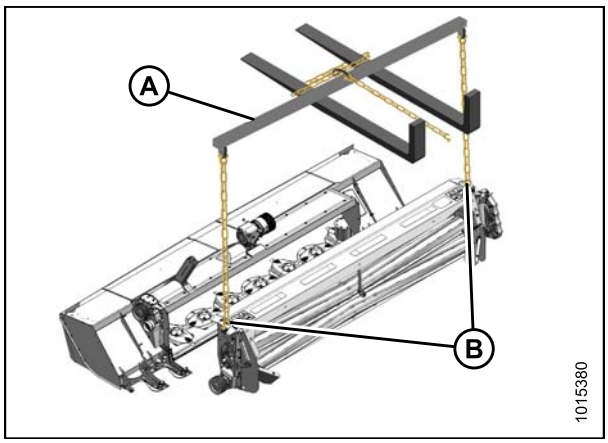


Figure 9.15: Conditioner Lift

3. Carefully align pin (A) at each end of conditioner with lug (B) on mower, and lower conditioner so that pins (A) engage lugs (B) on mower.

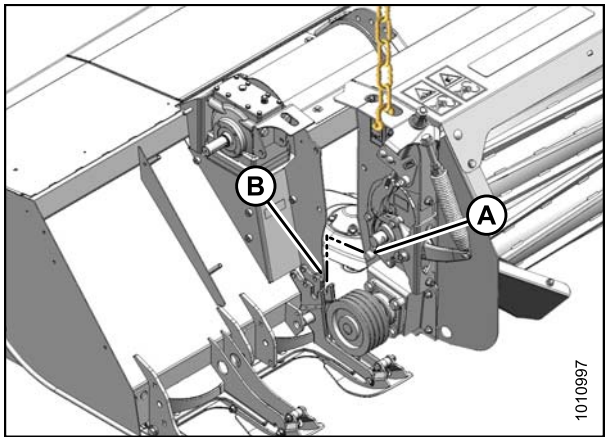


Figure 9.16: Conditioner Pins

4. Align mounting holes and install four M16 x 40 hex head bolts (A) with heads facing inboard (two per side). Secure with M16 center lock flanged nuts and torque to 170 N·m (126 ft·lbf).
5. Remove lifting chains from conditioner and move lifting device clear of work area.
6. If necessary, install conditioner drive components. Refer to *9.3.1 Installing Conditioner Drive, page 196*.

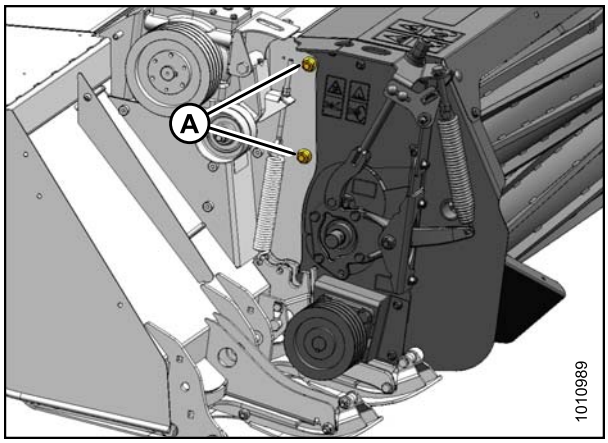


Figure 9.17: Left Side of Conditioner – Right Side Similar

9.3.1 Installing Conditioner Drive

This procedure describes the installation of conditioner drive components on a machine that was originally supplied with no conditioner.

1. Retrieve bag from conditioner shipment containing the following parts:

   - Shaft key
   - Pulley
   - Bushing with three M10 bolts
   - Tensioner assembly
   - M16 hex head bolt
   - M16 nut
   - Two M10 nuts
   - Eye bolt
   - Hardened washer
   - Spring

2. Remove two screws (A) from cover (B) and remove cover from gearbox shaft. Retain parts for future use.

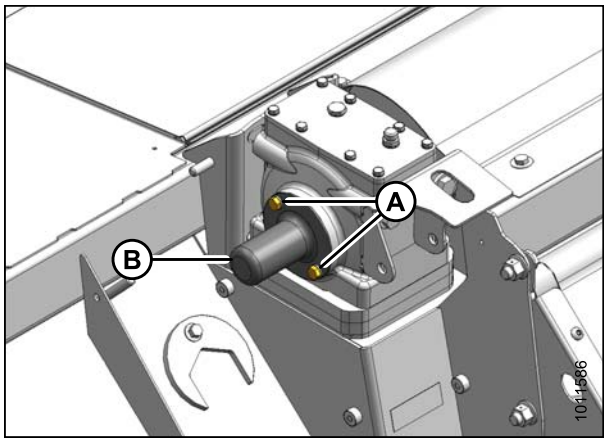


Figure 9.18: Shaft Cover

3. Assemble pulley (A) and bushing (B) onto gearbox shaft with key (C).
4. Install three M10 hex head bolts (D) through bushing (B) into pulley (A).

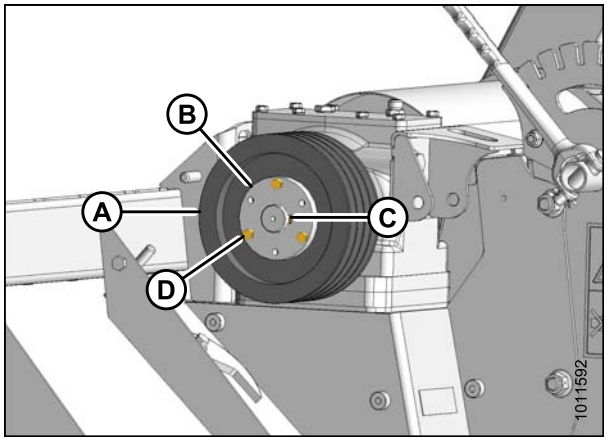


Figure 9.19: Drive Pulley

5. Tighten the three M10 bolts while maintaining 11 mm (7/16 in.) dimension (E) between pulley (A) and gearbox (F). Torque bolts to 34–39 N·m (25–29 ft·lbf).

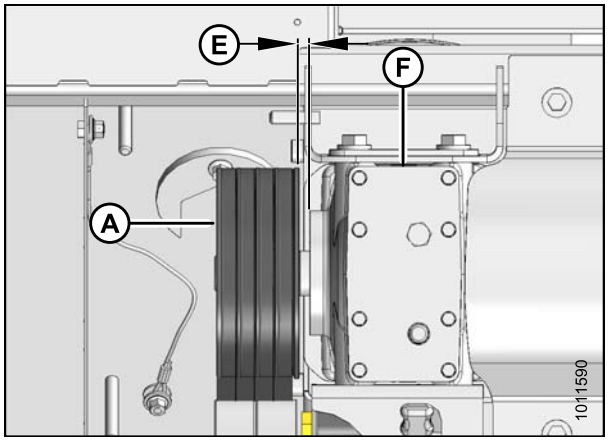


Figure 9.20: Drive Pulley

6. Position tensioner assembly (A) as shown and secure with M16 x 120 bolt (B) and nut (C). Torque nut to 47–54 N·m (35–40 ft·lbf).

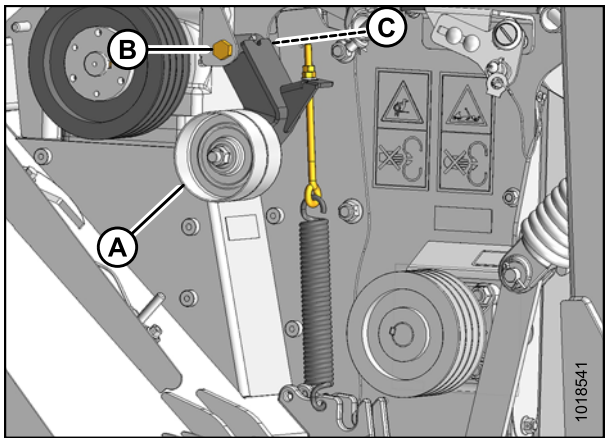


Figure 9.21: Tensioner

7. Install spring (A) onto frame—rear hole (B) for finger conditioner, and forward hole (C) for roll conditioner.
8. Install eyebolt (D) onto tensioner (E) and spring (A). Secure eyebolt with hardened washer (F) and two M10 nuts (G).

   NOTE:
   Install conditioner drive belt after reattaching the carrier and header.

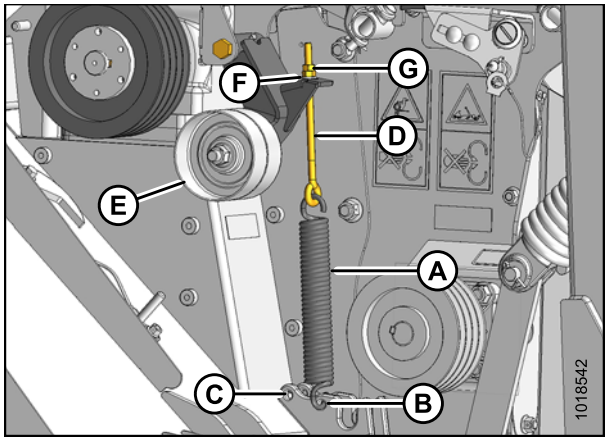


Figure 9.22: Tensioner

9.4 Assembling Header and Carrier

The carrier must be attached to a tractor for the header and carrier to be assembled.

DANGER

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

1. Start tractor and maneuver carrier (A) directly behind the mower conditioner (B) so carrier legs line up with the header attachment points.
2. Drive slowly forward to engage the carrier legs (C) into the header attachment brackets.

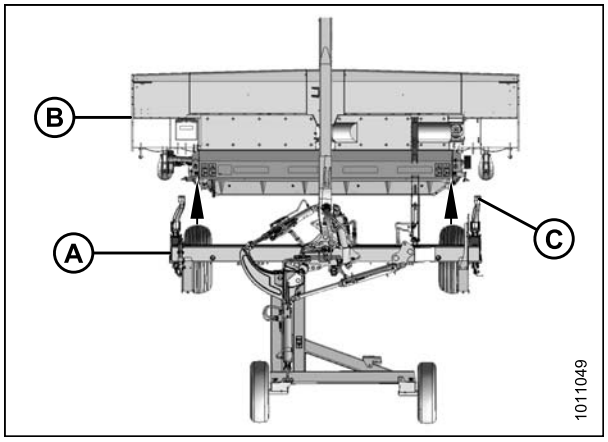


Figure 9.23: Carrier Aligned with Mower Conditioner

3. Inspect carrier leg (A) for excess gap between inner steel sleeve of the bushing and the header brackets. If there is a gap, install washer (MD #5113, 1.2 mm thick [0.047 in.]) to both sides of the carrier leg to minimize the gap.
4. Align left side carrier leg (A) with header brackets, and install M20 x 40 bolt (B) with hardened washer (C).
5. Install three hardened washers (D) and flanged lock nut (E) on bolt (B).
6. Torque bolt (B) to 339 N·m (250 ft·lbf).

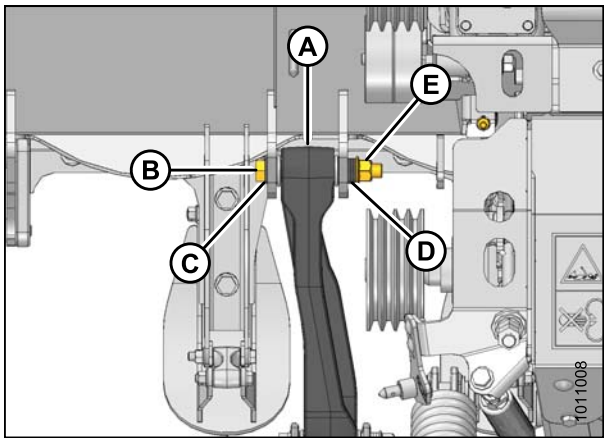


Figure 9.24: Left Leg

7. Inspect carrier leg (A) for excess gap between inner steel sleeve of the bushing and the header brackets. If there is a gap, install washer (MD #5113, 1.2 mm thick [0.047 in]) to both sides of the carrier leg to minimize the gap.
8. Align right side carrier leg (A) with header brackets, and install M20 x 40 bolt (B) with hardened washer (C).
9. Install hardened washer (D), spacer (E), float tension arm (F), and flanged lock nut (G) on bolt (B).
10. Torque bolt (B) to 339 N·m (250 ft·lbf).

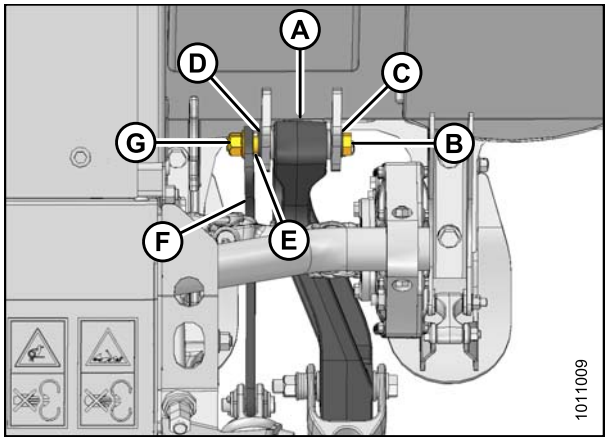


Figure 9.25: Right Leg

11. Undo strapping or wire supporting driveline to hitch (D), and connect driveline (E) to header drive gearbox. Refer to *3.5 Attaching Aft Driveline, page 20*.
12. Remove hex head bolts (A) and spacers (B) from gearbox.
13. Undo strapping or wire supporting steering arm to hitch, and position steering arm weldment (C) on gearbox.
14. Secure steering arm to gearbox with spacers (B) and hex head bolts (A). Apply red Loctite® to front holes and torque bolts to 203 N·m (150 ft·lbf).

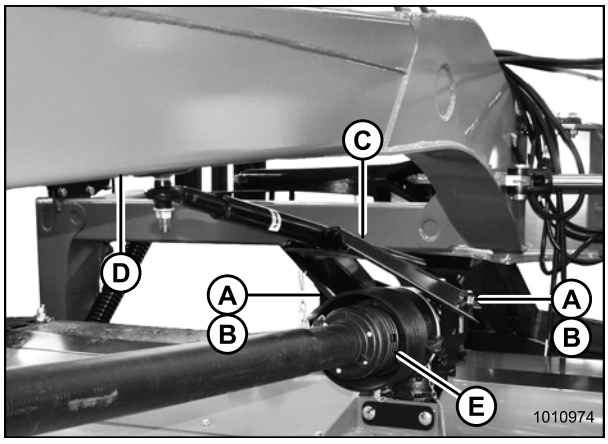


Figure 9.26: Aft Driveline and Steering Arm

15. Undo strapping or wire securing center-link (B) and indicator (D) to carrier frame.
16. Remove pins and hardware from anchor (C).
17. Attach center-link (B) and indicator (D) to anchor (C) with clevis pin (A) and secure with cotter pin.

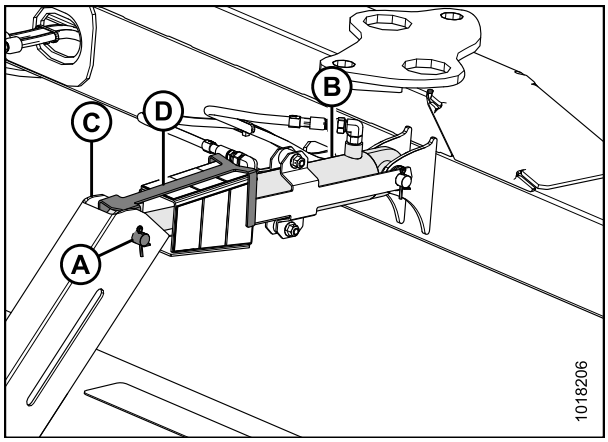


Figure 9.27: Center-Link and Indicator Links

NOTE:
Ensure proper pulley configuration installation—large pulley installed onto gearbox for roll conditioner, and small pulley installed onto gearbox for finger conditioner.

18. Install conditioner drive belts (A) onto pulleys.
19. Check that tensioner spring is installed at correct location:
    - Hole (D) for roll conditioner
    - Hole (E) for finger conditioner
20. Tighten idler tensioner nut (C) until spring length (B) measures 365 mm (14-3/8 in.).
21. Tighten jam nut.
22. Check that lift cylinder lock-out valves (A) are open.
23. Start tractor and fully raise header.
24. Shut down tractor and remove key from ignition.
25. Close both lift cylinder lock-out valves (A).
26. At left side of carrier, install tensioner bolt (B) into spring.
27. Turn in both float spring tensioner bolts (B) to achieve the following exposed thread (C) measurements:
    - 145–155 mm (5-11/16 – 6-1/8 in.) for 13-foot
    - 95–105 mm (3-3/4 – 4-1/8 in.) for 16-foot
28. Replace the driveshields. Refer to *5.3 Closing Driveshields, page 134*.

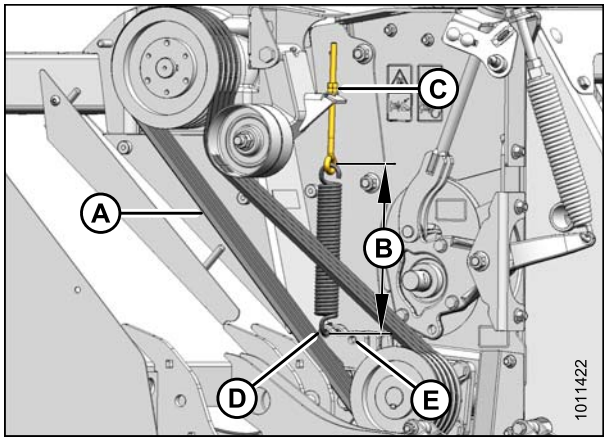


Figure 9.28: Conditioner Drive

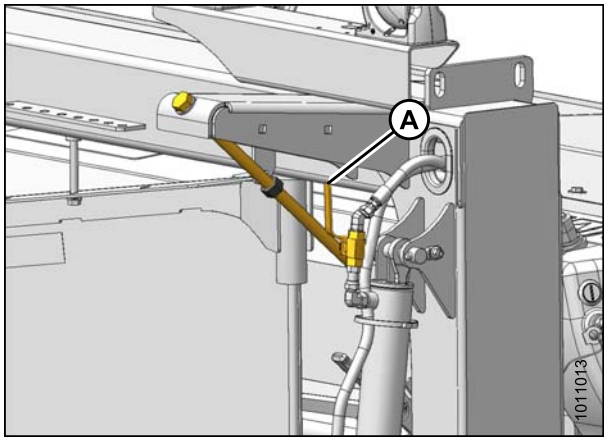


Figure 9.29: Lift Cylinder Lock-Out Valve

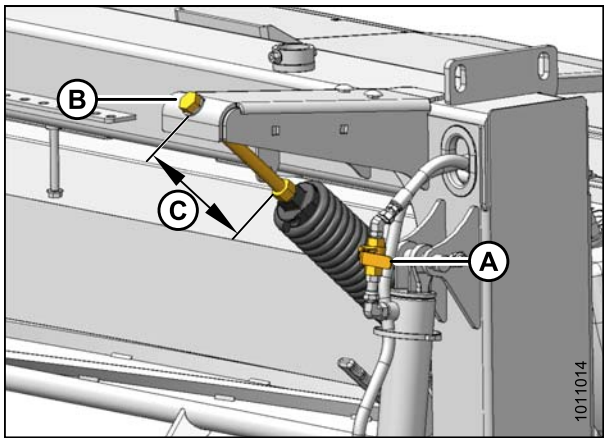


Figure 9.30: Right Side Shown – Left Side Similar

29. If Road Friendly Transport™ system is installed, reconnect electrical harness (A) to the lights (B) and secure harness to shielding using existing clips (C) and (D).
30. Secure harness to light bracket with cable ties (E).

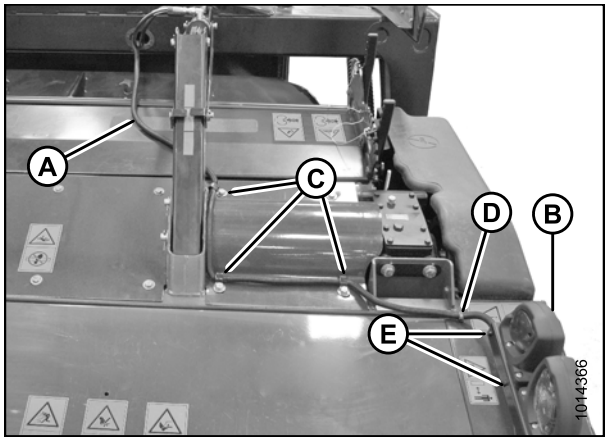


Figure 9.31: Electrical Harness

31. Tighten the four M10 hex head bolts (A) and flat washers. Torque to 27–30 N·m (20–22 ft·lbf).

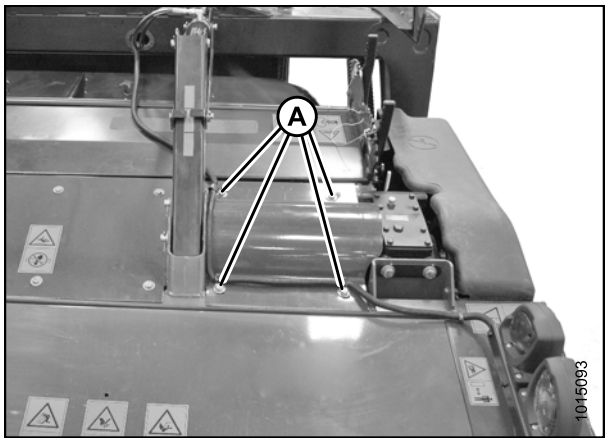


Figure 9.32: Electrical Harness

10 Reference

10.1 Recommended Lubricants

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

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

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

Table 10.1 Recommended Lubricants

Lubricant	Specification	Description	Use	Capacities
Grease	SAE Multipurpose	High temperature extreme pressure (EP) 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	—
Gear Lubricant	SAE 80W-90	High thermal and oxidation stability API service class GL-5	Cutterbar	13-foot: 8 liters (8.5 qts [US])
				16-foot: 10 liters (10.5 qts [US])
	SAE 85W-140	Gear lubricant API service class GL-5	Conditioner drive gearbox	0.7 liters (0.75 qts [US])
			Mower conditioner drive gearbox	1.8 liters (1.9 qts [US])
			Front and rear swivel gearbox	Upper: 1.3 liters (1.3 qts [US])
				Lower: 1.9 liters (2 qts [US])

10.2 Torque Specifications

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

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

10.2.1 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 10.2 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

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

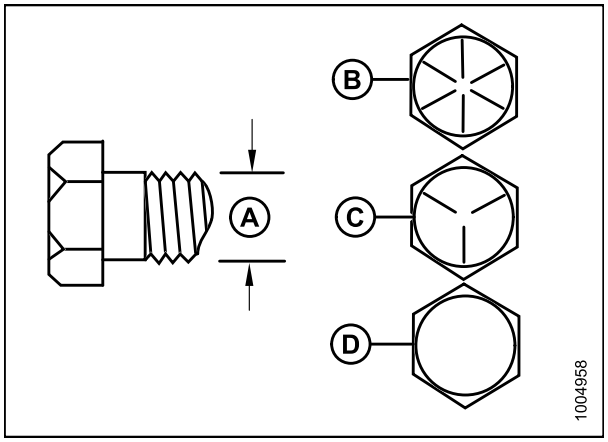


Figure 10.1: Bolt Grades

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

Table 10.3 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

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

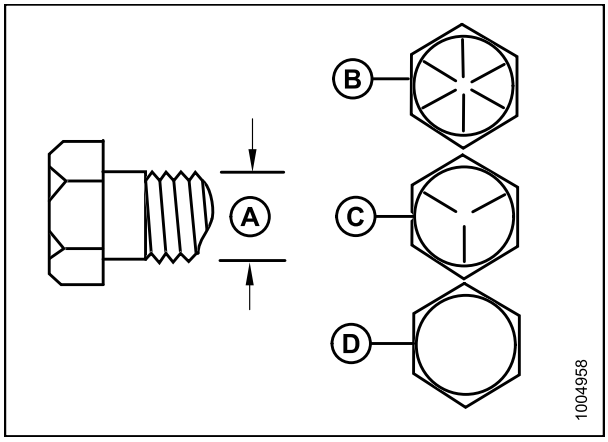


Figure 10.2: Bolt Grades

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

Table 10.4 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

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

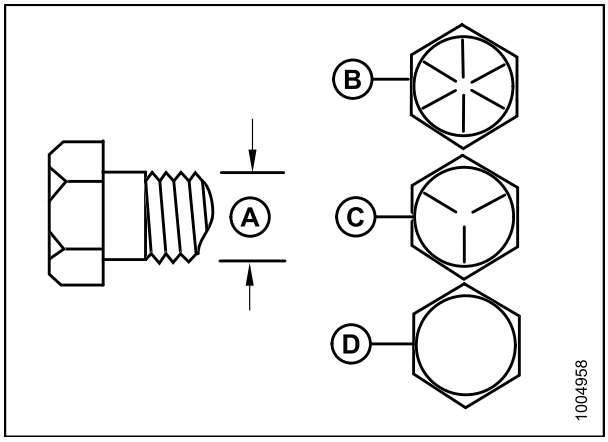


Figure 10.3: Bolt Grades

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

Table 10.5 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

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

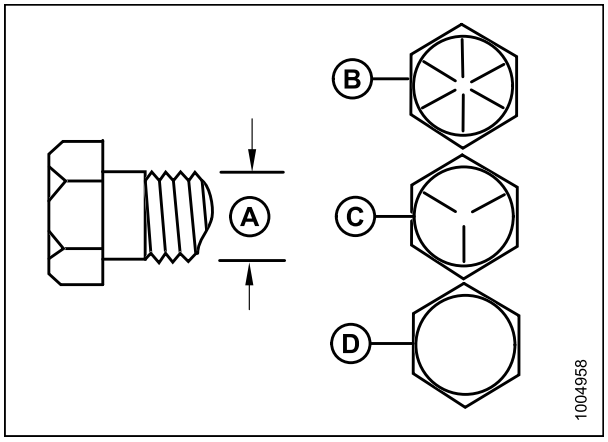


Figure 10.4: Bolt Grades

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

10.2.2 Metric Bolt Specifications

Table 10.6 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

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

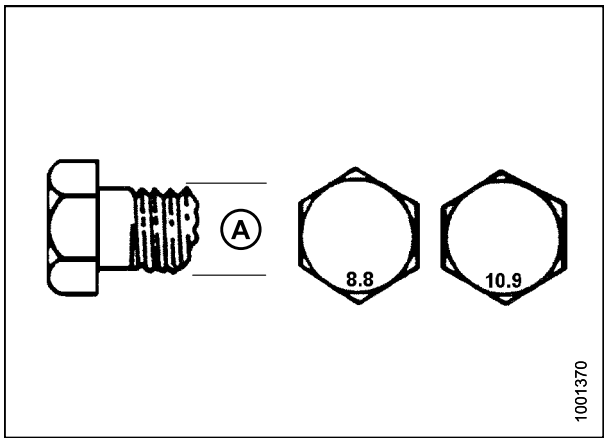


Figure 10.5: Bolt Grades

Table 10.7 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

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

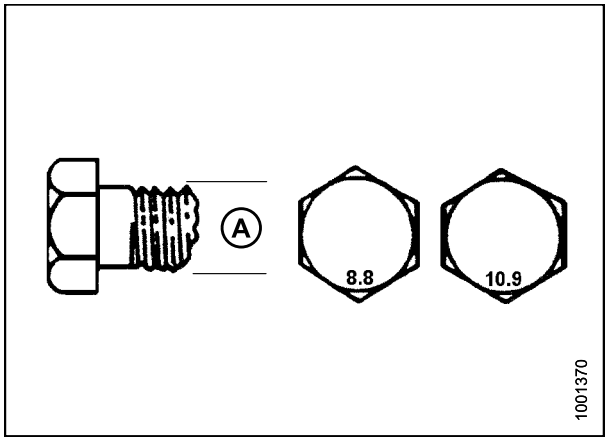


Figure 10.6: Bolt Grades

Table 10.8 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

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

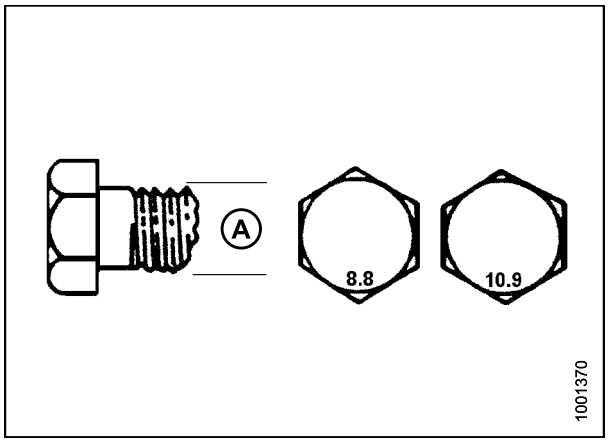


Figure 10.7: Bolt Grades

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

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

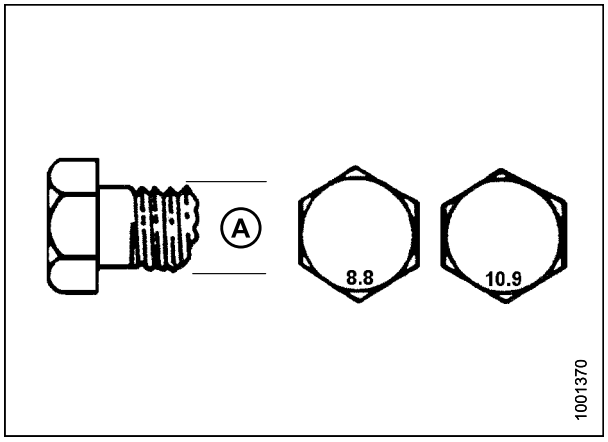


Figure 10.8: Bolt Grades

10.2.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 10.10 Metric Bolt Bolting into Cast Aluminum

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

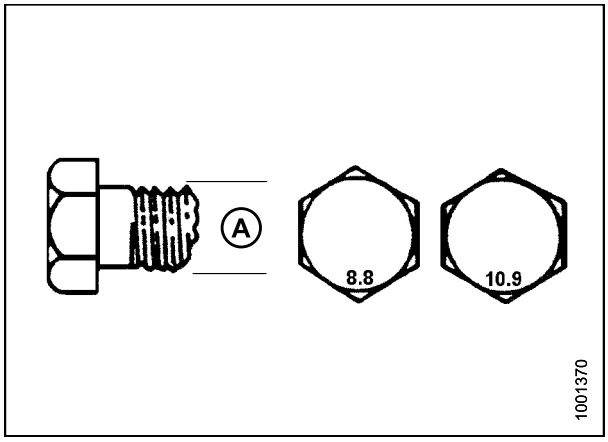


Figure 10.9: Bolt Grades

10.2.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table *10.11 Flare-Type Hydraulic Tube Fittings, page 210*.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

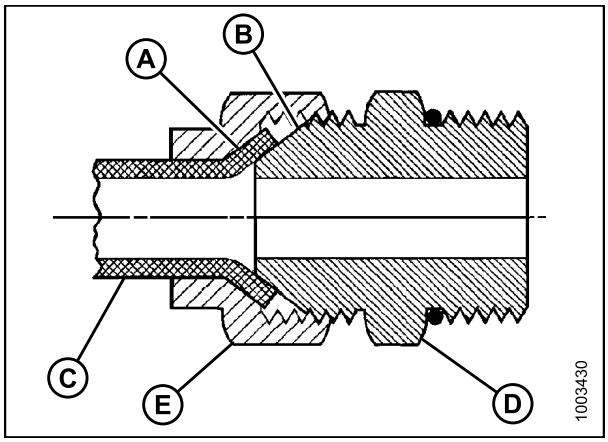


Figure 10.10: Hydraulic Fitting

Table 10.11 Flare-Type Hydraulic Tube Fittings

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

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

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

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

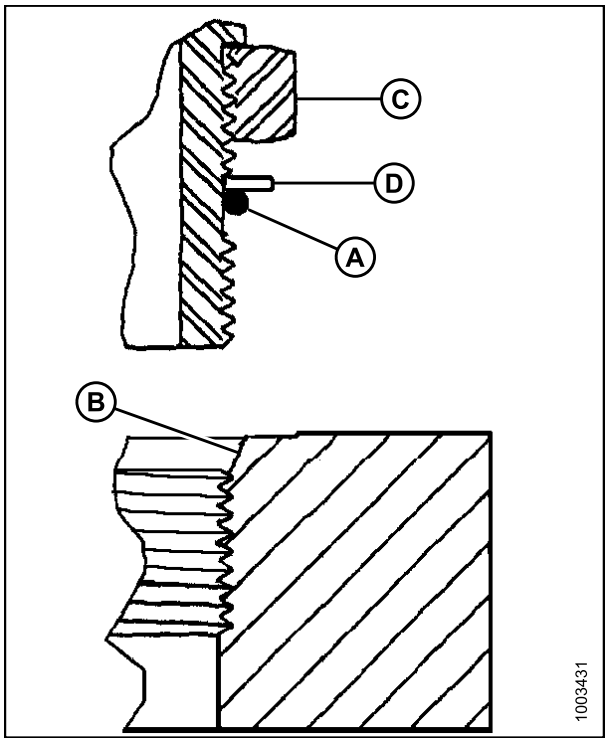


Figure 10.11: Hydraulic Fitting

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

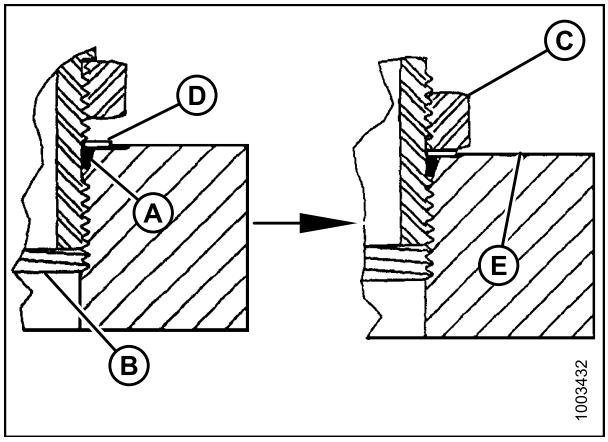


Figure 10.12: Hydraulic Fitting

Table 10.12 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

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

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

10.2.6 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 threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to values in Table *10.13 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable), page 213*.
6. Check final condition of fitting.

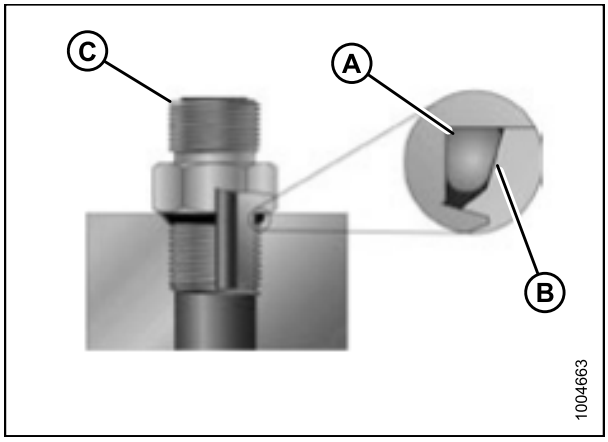


Figure 10.13: Hydraulic Fitting

Table 10.13 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

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

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

10.2.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

Figure 10.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table *10.14 O-Ring Face Seal (ORFS) Hydraulic Fittings, page 215*.

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

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

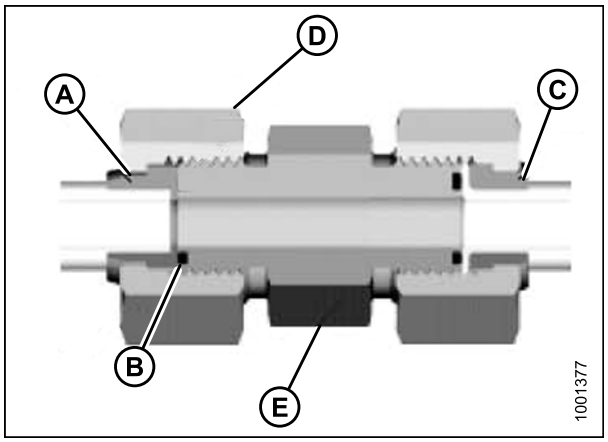


Figure 10.15: Hydraulic Fitting

Table 10.14 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

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

10.2.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The Turns From Finger Tight (TFFT) values are shown in Table *10.15 Hydraulic Fitting Pipe Thread, page 216*. Make sure that tube end of a shaped connector (typically 45º or 90º) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:
Over-torque failure of fittings may not be evident until fittings are disassembled.

Table 10.15 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended T.F.F.T	Recommended F.F.F.T
1/8–27	2–3	12–18
1/4–18	2–3	12–18
3/8–18	2–3	12–18
1/2–14	2–3	12–18
3/4–14	1.5–2.5	12–18
1–11 1/2	1.5–2.5	9–15
1 1/4–11 1/2	1.5–2.5	9–15
1 1/2–11 1/2	1.5–2.5	9–15
2–11 1/2	1.5–2.5	9–15

10.3 Conversion Chart

Table 10.16 Conversion Chart

Quantity	SI Units (Metric)		Factor	Inch-Pound Units	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectares	ha	x 0.4047 =	acres	acres
Flow	liters per minute	L/min	x 3.7854 =	US gallons per minute	gpm
Force	Newtons	N	x 4.4482 =	pounds force	lbf
Length	millimeters	mm	x 25.4 =	inch	in.
	meters	m	x 0.305 =	foot	ft.
Power	kilowatts	kW	x 0.7457 =	horsepower	hp
Pressure	kilopascals	kPa	x 6.8948 =	pounds per square inch	psi
	megapascals	MPa	x .00689 =		
	bar (Non-SI)	bar	÷ 14.5038 =		
Torque	Newton meters	N·m	x 1.3558 =	pound feet or foot pounds	ft·lbf
	Newton meters	N·m	x 0.1129 =	pound inches or inch pounds	in·lbf
Temperature	Celsius	˚C	(˚F-32) x 0.56 =	degrees Fahrenheit	˚F
Velocity	meters per minute	m/min	x 0.3048 =	feet per minute	ft/min
	meters per second	m/s	x 0.3048 =	feet per second	ft/s
	kilometers per hour	km/h	x 1.6063 =	miles per hour	mph
Volume	liters	L	x 3.7854 =	US gallons	US gal
	milliliters	ml	x 29.5735 =	ounces	oz.
	cubic centimeters	cm^3 or cc	x 16.3871 =	cubic inches	$in.^3$
Weight	kilograms	kg	x 0.4536 =	pounds	lb.

10.4 Definitions

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

Term	Definition
API	American Petroleum Institute
APT	Articulated Power Turn
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Center-link	A hydraulic cylinder link between header and machine to which it is attached: It is used to change header angle
CGVW	Combined vehicle gross weight
Export mower conditioner	Machine 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 fitting has been tightened to a point where 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 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 head (internal-wrenching hexagon drive)
hp	Horsepower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
Mower conditioner	A machine that cuts and conditions hay and is pulled by an agricultural tractor
n/a	Not applicable
Nut	An internally threaded fastener that is designed to be paired with a bolt
North American mower conditioner	Machine 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
PTO	Power take-off
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
SAE	Society of Automotive Engineers

Term	Definition
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of mating parts
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
Tractor	Agricultural type tractor
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in Newton-meters (N·m) or foot-pounds (ft·lbf)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned further a number of degrees or a number of flats to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or a locking mechanism

10.5 Converting Road Friendly Transport™ Decal

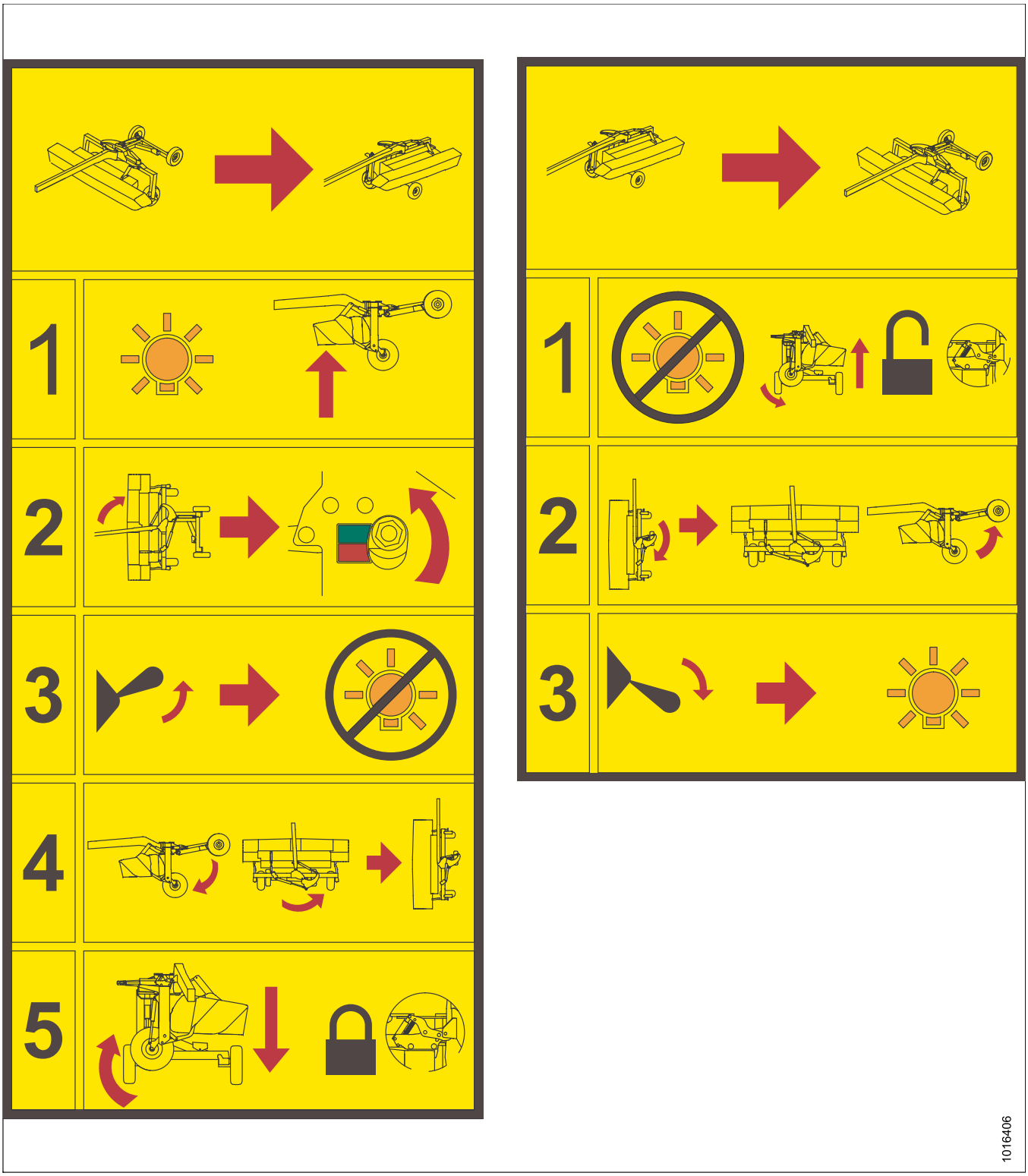


Figure 10.16: Converting Road Friendly Transport™ Decal

Predelivery Checklist

Perform these checks and adjustments before delivering the machine to your Customer. If adjustments are required, refer to the appropriate page number in this manual. The completed Checklist should be retained by either the Operator or the Dealer.

WARNING

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

CAUTION

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

Mower Conditioner Serial Number: **Hitch Serial Number:**

Table 1 R113/R116 Pull-Type Rotary Disc Mower Conditioner Predelivery Checklist

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque if applicable.	*10.2 Torque Specifications, page 204*
	Check that hydraulic hoses have adequate slack before rotating header.	—
	Check main drive belt tension.	*6.3 Checking Conditioner Drive Belt, page 137*
	Check header angle to middle of adjustment range.	*6.4 Checking Cutting Angle, page 138*
	Check header float.	*6.6 Checking Mower Conditioner Float, page 140*
	Check tire pressure: field tires – 207 kPa (30 psi), optional transport tires – 552 kPa (80 psi)	—
	Check wheel bolts are torqued to 160 N·m (120 ft·lbf).	*6.1 Checking Wheel Bolts, page 135*
	Check side forming shields evenly set to desired position.	*3.12 Setting up Forming Shields, page 58*
	Check rear baffle is about mid-position (roll conditioner).	*6.15 Checking Conditioner Baffle Settings, page 152*
	Check forward baffle lever is set to approximate mid-position (finger conditioner).	
	Check rear baffle lever is set to approximate mid-position (finger conditioner).	
	Check conditioner roll gap (roll conditioner).	*6.12 Checking Roll Gap, page 149*
	Check conditioner roll tension (roll conditioner).	
	Check conditioner roll timing hardware is securely tightened (roll conditioner).	*6.13 Checking Roll Timing, page 150*

PREDELIVERY CHECKLIST

✓	Item	Reference
	Check that tall crop dividers are not installed for road transport.	*4.9.2 Installing Tall Crop Divider (Optional), page 99*
	Check that cutterbar doors are unbolted from centre channel frame, shipping wire is removed from cutterbar curtains, and cutterbar curtains are hanging properly.	*4.16 Unpacking Curtains, page 120*
	Grease all bearings and drivelines.	*5.2 Lubrication Sites, page 129*
	Check conditioner drive gearbox lubricant.	*6.8 Checking and Adding Conditioner Drive Gearbox Lubricant, page 143*
	Check mower conditioner drive gearbox lubricant.	*6.9 Checking and Adding Mower Conditioner Drive Gearbox Lubricant, page 144*
	Check forward and rear swivel gearbox lubricant.	*6.10 Checking and Lubricating Forward and Rear Swivel Gearboxes, page 145*
	Check cutterbar lubricant.	*6.11 Checking Cutterbar Lubricant, page 147*
	Check cutterbar area carefully for loose parts and hardware on the cutterbar. **WARNING** **Objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.**	—
Run-Up Procedure		*6.18 Running up the Mower Conditioner, page 155*
	Check hydraulic hose and wiring harness routing to ensure adequate clearance when raising, lowering or swinging the header.	—
	Check that tail lights and hazard lights are functional.	*6.16 Checking Lights, page 153*
Post Run-Up Check – Stop Engine		
	Check belt drive for proper idler alignment and overheating bearings.	*6.3 Checking Conditioner Drive Belt, page 137*
	Check for hydraulic leaks.	—
	Check that header manuals are in storage compartment.	*6.17 Checking Manuals, page 154*

Date Checked: **Checked by:**

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