MacDon

R113/R116
Rotary Disc Pull-Type

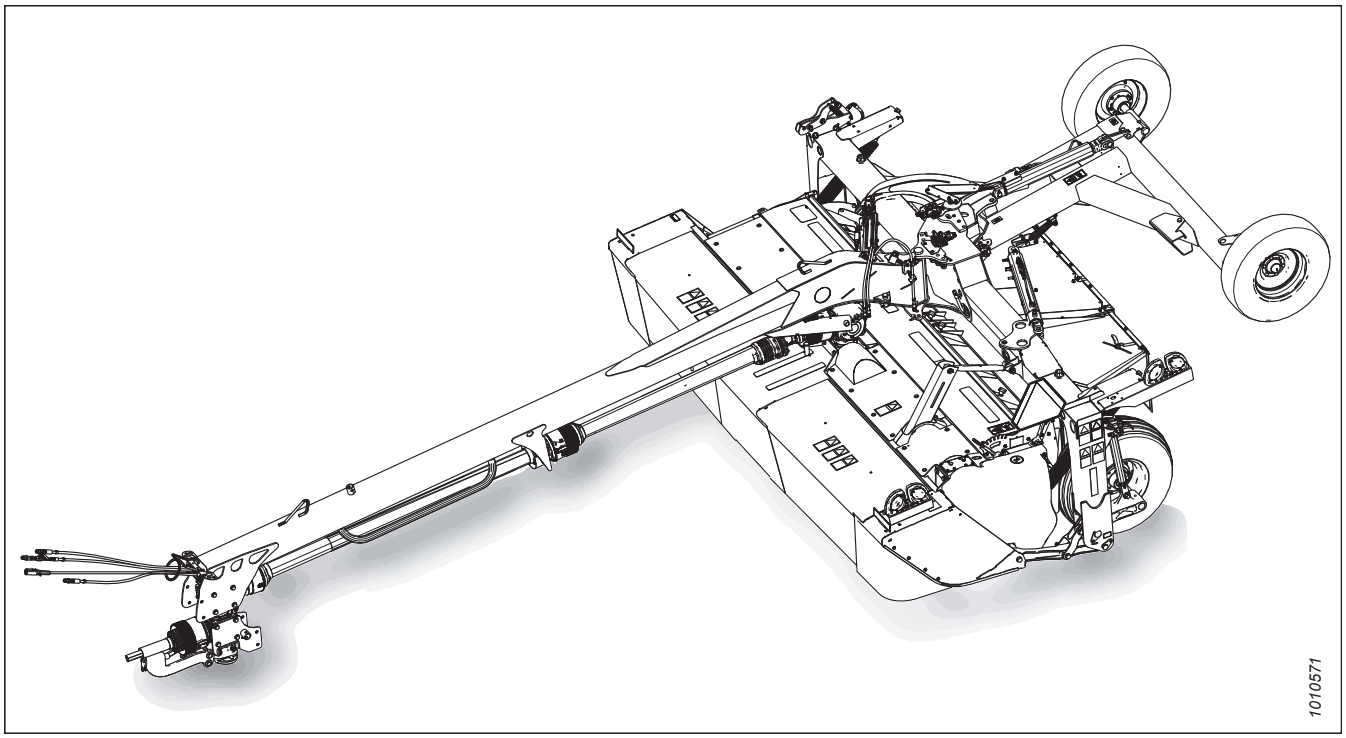
Unloading and Assembly Instruction (North America)

262637 Revision A

Original Instruction

The Harvesting Specialists.

R1 Series Rotary Disc Pull-Type



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Introduction

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

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

Retain this instruction for future reference.

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

Conventions

The following conventions are followed in this document:

- Right and left are determined from the operator's position, facing the direction of travel.
- Unless otherwise noted, use the standard torque values provided in this manual. When torque values of 30 Nm or less are listed, their equivalents will be provided in both foot-pounds (lbf·ft) and inch-pounds (lbf·in).

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).

If the shipment is damaged or is missing parts, contact *shortageanddamage@macdon.com*.

This instruction is available in English and French.

Summary of Changes

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

Section	Summary of Change	Internal Use Only
Installing Slow Moving Vehicle Sign, page 61	Corrected slow-moving vehicle (SMV) decal retrieval information.	ECN 57755
4.7 Preparing Slow Moving Vehicle Sign, page 89	Corrected slow-moving vehicle (SMV) parts retrieval and installation information.	ECN 57755
5.2 Installing Drawbar Hitch Adapter, page 104	Updated the Category 3 drawbar hitch adapter. Added the Category 4 drawbar hitch adapter.	ECN 62450
5.3.1 Attaching with Drawbar Hitch, page 105	Updated illustrations to show the new jack.	ECN 64342
All tasks listed under *8 Predelivery Checks, page 143*	• Shortened predelivery procedures. • Removed procedure "Checking and Removing Clear Vinyl Decal Protectors" – this procedure is now only a row item on the predelivery checklist.	Technical Publications Product Support
8.1.7 Checking and Adding Lubricant – Conditioner Roll Timing Gearbox, page 147	• Removed steps for opening cutterbar doors. • Removed the requirement to warm up the hydraulic oil before checking the oil level. • Illustration 1044811 replaces 1018371 because the gearbox sight glass has moved.	Technical Publications ECN 65369
8.1.8 Checking and Adding Lubricant – Drive Gearbox, page 147	Added step that applies to new gearboxes or gearboxes that had an oil change.	Engineering
8.1.9 Checking and Adding Lubricant – Forward and Rear Swivel Gearboxes, page 148	Removed the requirement to warm up the hydraulic oil before checking the oil level.	Technical Publications
8.1.18 Running up Machine, page 154	Revised the run-up procedure as follows: • Added IMPORTANTs concerning the swivel gearbox bearings. • Specified the speed at which the power take-off (PTO) shaft should be when running up the machine.	ECN 64810 Engineering
8.1.19 Checking and Adding Lubricant – Cutterbar, page 155	Added the requirement to warm up the hydraulic oil before checking the oil level.	Technical Publications
9.1 Preparing Rotary Disc Pull-Type for Transport, page 157	Updated illustrations to show the new jack.	ECN 64342
10.1 Adjusting Float, page 175	Moved topic to the reference section.	Technical Publications
10.4 Torque Specifications, page 180	Removed SAE bolt specifications.	Technical Publications
Predelivery Checklist, page 193	Added "Check skid shoes" to the checklist because this topic was in the predelivery chapter, but not on the list.	Technical Publications
Recommended Lubricants	Moved information to the inside back cover.	Technical Publications

Chapter 1: Safety

Understanding and consistently following these safety procedures will help to ensure the safety of those operating the machine and of bystanders.

1.1 Safety Alert Symbols

The safety alert symbol indicates important safety messages in this manual and on safety signs on the machine.

This symbol means:

- **ATTENTION!**
- **BECOME ALERT!**
- **YOUR SAFETY IS INVOLVED!**

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

- Accidents disable and kill
- Accidents cost
- Accidents can be avoided

Figure 1.1: Safety Symbol

1.2 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information.

Signal words are selected using the following guidelines:

DANGER

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

WARNING

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

CAUTION

Indicates a potentially hazardous situation that, if it is not prevented, may result in minor or moderate injury. It may also be used to alert you to unsafe practices.

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.3 General Safety

Operating, servicing, and assembling machinery presents several safety risks. These risks can be reduced or eliminated by following the relevant safety procedures and wearing the appropriate personal protective equipment.

CAUTION

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

Wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask

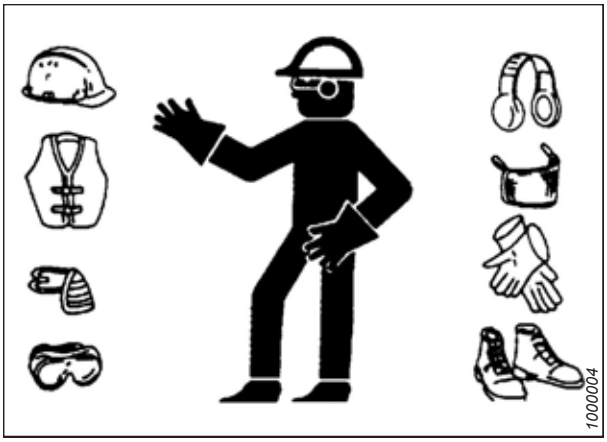


Figure 1.2: Safety Equipment

In addition, take the following precautions:

- Be aware that exposure to loud noises can cause hearing impairment. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.

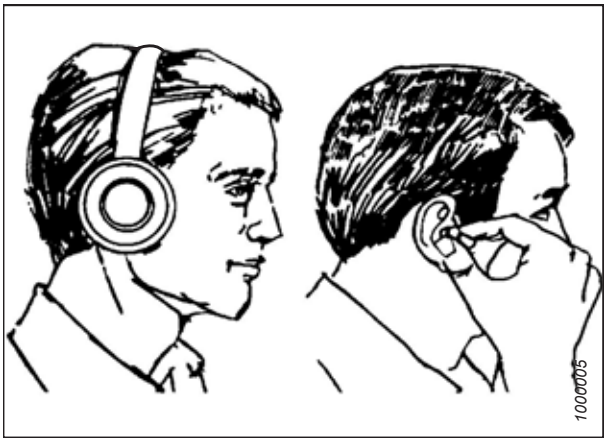


Figure 1.3: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. **NEVER** ignore the signs of fatigue.

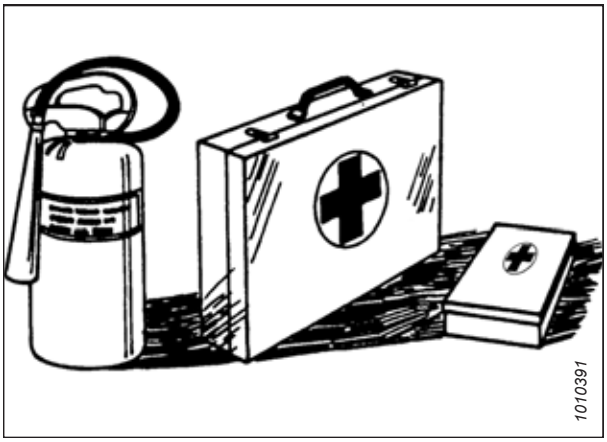


Figure 1.4: Safety Equipment

- Wear close-fitting clothing and cover long hair. **NEVER** wear dangling items such as hoodies, scarves, or bracelets.
- Keep all shields in place. **NEVER** alter or remove safety equipment. Ensure that the driveline guards can rotate independently of their shaft, and that they can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Parts from other manufacturers may not meet the correct strength, design, or safety requirements.

Figure 1.5: Safety around Equipment

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

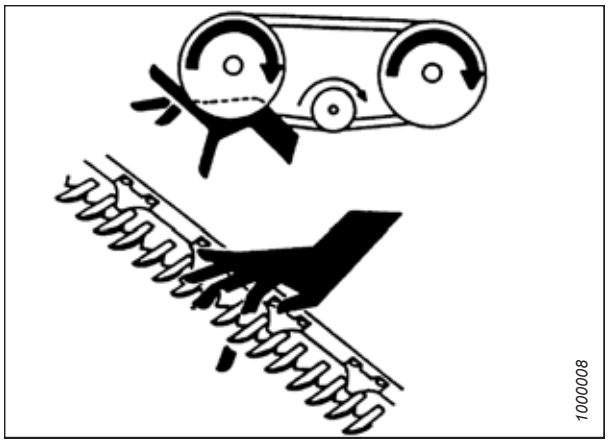


Figure 1.6: Safety around Equipment

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

Figure 1.7: Safety around Equipment

1.4 Hydraulic Safety

Because hydraulic fluid is under extreme pressure, hydraulic fluid leaks can be very dangerous. Follow the proper safety procedures when inspecting hydraulic fluid leaks and servicing hydraulic equipment.

- Always place all hydraulic controls in **NEUTRAL** before leaving the operator's seat.
- Ensure that all of the components in the hydraulic system are kept clean and in good condition.
- Replace any worn, cut, abraded, flattened, or crimped hoses and steel lines.
- Do **NOT** attempt any makeshift repairs to hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Makeshift repairs can fail suddenly and create hazardous conditions.

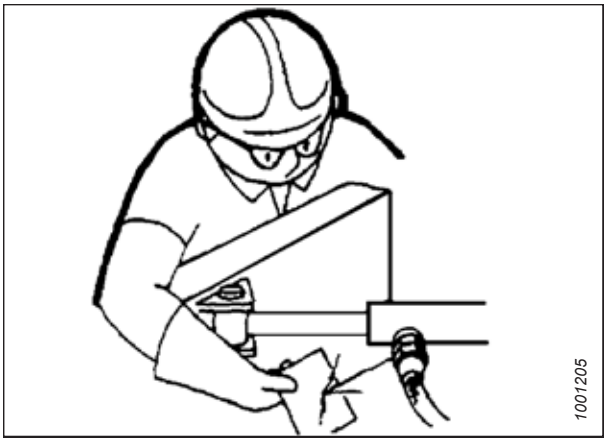


Figure 1.8: Testing for Hydraulic Leaks

- Wear proper hand and eye protection when searching for high-pressure hydraulic fluid leaks. Use a piece of cardboard as a backstop instead of your hands to isolate and identify a leak.
- If you are injured by a concentrated, high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or a toxic reaction can develop from hydraulic fluid piercing the skin.

Figure 1.9: Hydraulic Pressure Hazard

- Ensure that all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to a hydraulic system.

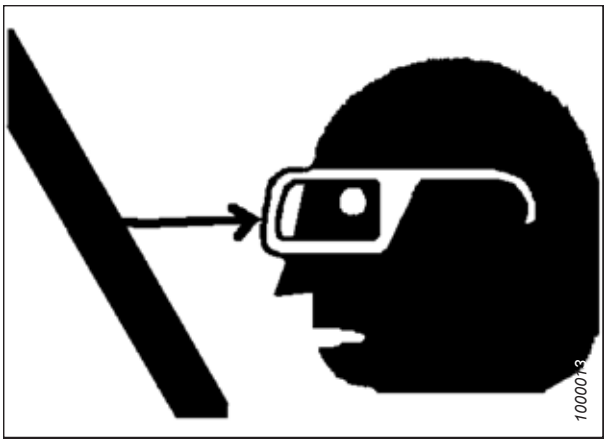


Figure 1.10: Safety around Equipment

1.5 Tire Safety

Understand the risks of handling tires before performing maintenance tasks.

WARNING

- **A tire can explode during inflation, causing serious injury or death.**
- **Follow the proper procedures when mounting a tire. Failure to do so can produce an explosion, causing serious injury or death.**

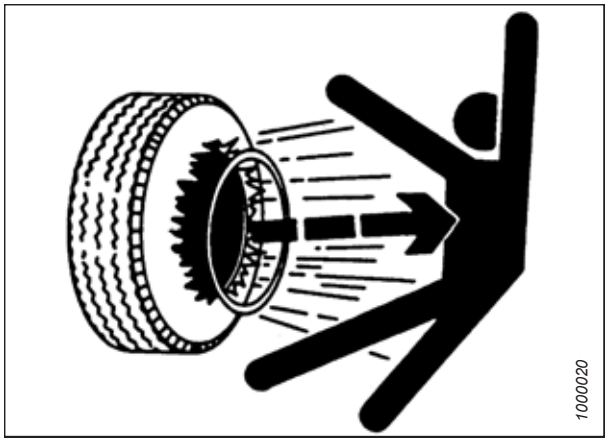


Figure 1.11: Overinflated Tire

WARNING

- **Do NOT remove, install, or repair a tire on a rim unless you have the proper equipment and experience to perform the task. Take the tire and rim to a qualified tire repair shop if necessary.**
- **Ensure that the tire is correctly seated on the rim before inflating it. If the tire is not correctly positioned on the rim or is overinflated, the tire bead can loosen on one side causing air to escape at high speed and with great force. An air leak of this nature can thrust the tire in any direction, endangering anyone in the area.**
- **Do NOT stand over the tire when inflating it. Use a clip-on chuck and extension hose when inflating a tire.**
- **Do NOT exceed the maximum inflation pressure indicated on the tire label.**

Figure 1.12: Safely Inflating Tire

- **Never use force on an inflated or partially-inflated tire.**
- **Ensure that all air is removed from the tire before removing the tire from the rim.**
- **Never weld a wheel rim.**
- **Replace tires that have defects. Replace wheel rims that are cracked, worn, or severely rusted.**

1.6 Safety Signs

Safety signs are decals placed on the machine where there is a risk of personal injury, or where the Operator should take extra precautions before operating the controls. They are usually yellow.

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

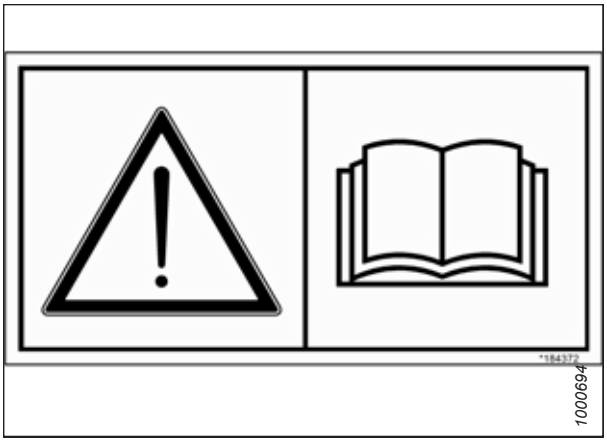


Figure 1.13: Operator's Manual Decal

Chapter 2: Unloading Truck Shipment

To unload machines from a truck shipment safely and without damage, understand the weights and lifting requirements, and familiarize yourself with the procedure.

DANGER

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

DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, or bodily harm to operators or bystanders.

DANGER

Ensure that all bystanders have cleared the area.

Lifting Vehicle Requirements	
Minimum capacity	3630 kg (8000 lb.)
Minimum height	4.5 m (15 ft.)

Chain Requirements	
Overhead lifting quality 12.7 mm (1/2 in.)	2270 kg (5000 lb.) minimum working load

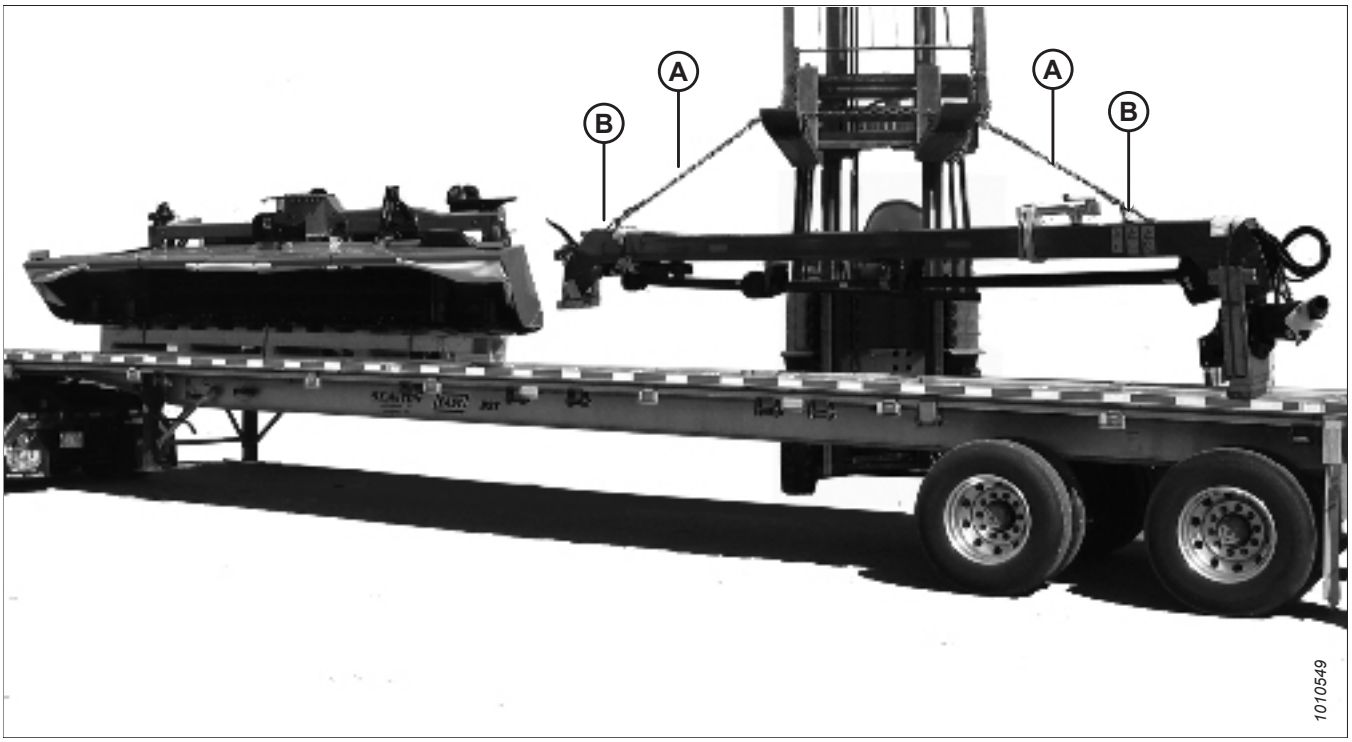


Figure 2.1: Unloading Hitch

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

   IMPORTANT:

   Take care not to contact the other machine if the load is two-machines wide.
5. Take the hitch to the storage or assembly area, and set the hitch down securely on level ground.
6. Repeat Step *1, page 10* to Step *5, page 10* for the second hitch (if required).
7. Check for shipping damage and missing parts.
8. Approach rotary disc pull-type (A) from the back with forklift (B) as shown, and slide the forks as far as possible into the pallet.

   NOTE:

   The pallet is designed to be lifted from the backside only.
9. Raise the rotary disc pull-type off the deck.

   IMPORTANT:

   If the load is two-machines wide, take care not to contact the other machine.
10. Back up until the machine clears the trailer, and slowly lower the machine to 150 mm (6 in.) from the ground.
11. Take the machine to a storage or set-up area, and set the machine down securely on level ground.

    NOTE:

    When possible, approach the machine from the back to minimize the potential for contacting the unit.

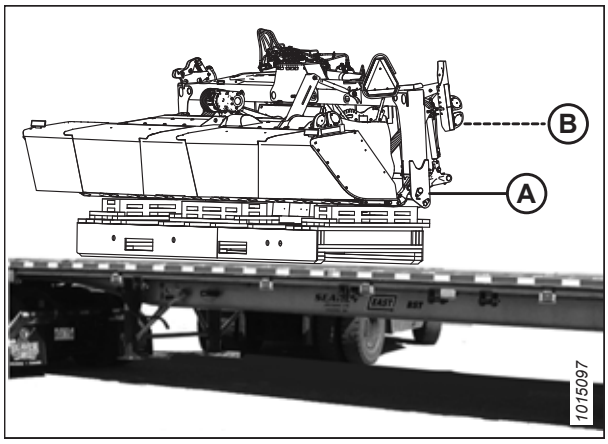


Figure 2.2: Unloading Rotary Disc Pull-Type

12. Repeat Step *1, page 10* to Step *11, page 10* for the second rotary disc pull-type (if required).
13. Check for shipping damage and missing parts.

    IMPORTANT:

    Do **NOT** remove the rotary disc pull-type from the pallet until instructed.
14. Unload the remaining pallets and boxes, and take them to the assembly area.

Chapter 3: Assembling Rotary Disc Pull-Type – With or Without Dealer-Installed Transport

Perform the following procedures in the order provided to assemble the rotary disc pull-type without the transport system, or when the transport will be installed by the Dealer.

To assemble a rotary disc pull-type with the factory-installed transport, refer to *4 Assembling Rotary Disc Pull-Type – Factory-Installed Transport, page 65*.

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 the pin at the base of the center-link anchor is loose. Use piece of wood (C) to protect the paint on the frame.

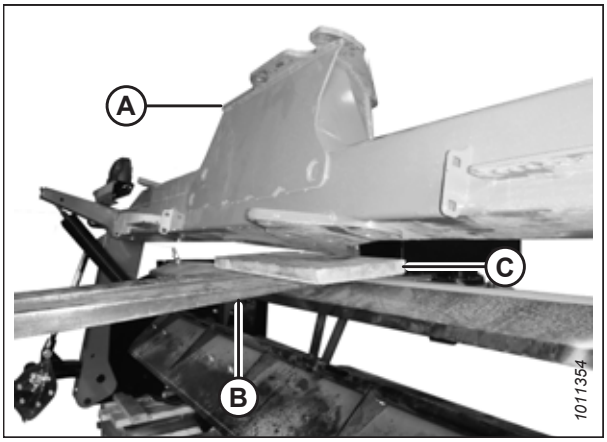


Figure 3.1: Carrier

2. Loosen retaining bolt (A) and rotate cover plate (B) away from float spring bolt (C). Repeat this step on the opposite side.
3. Fully loosen float spring bolt (C). Repeat this step on the opposite side.

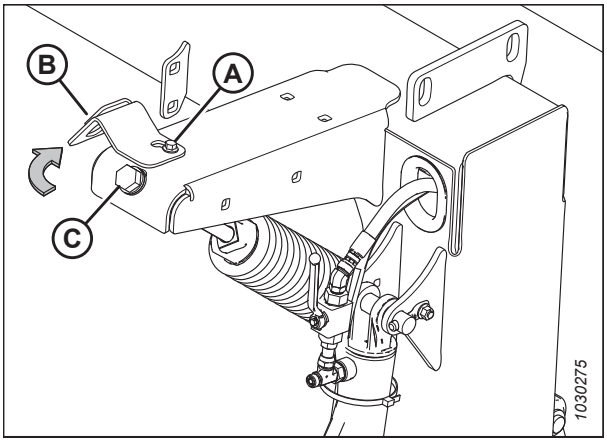


Figure 3.2: Float Spring – Right Side

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

CAUTION

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

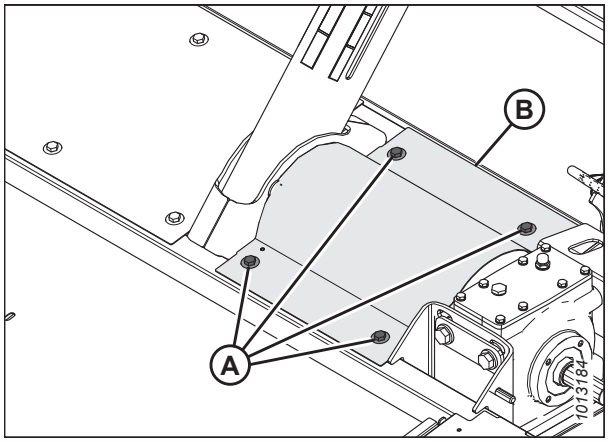


Figure 3.3: Top Shield – Left of Center-Link

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

   NOTE:

   The pin should slide out freely. Adjust the forklift fork or move the carrier frame until the pin is loose. Do **NOT** use a hammer to remove the pin.

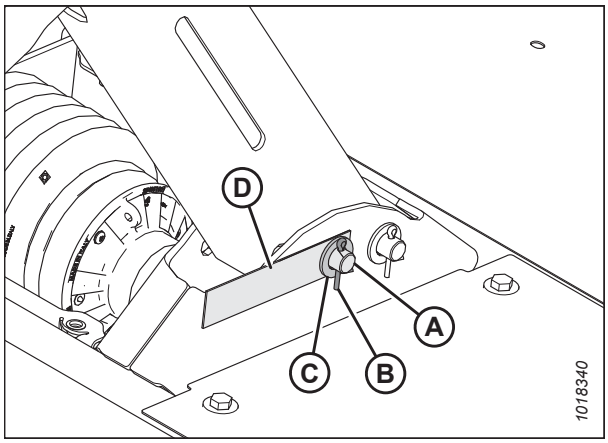


Figure 3.4: Center-Link Anchor – Right of Center-Link

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

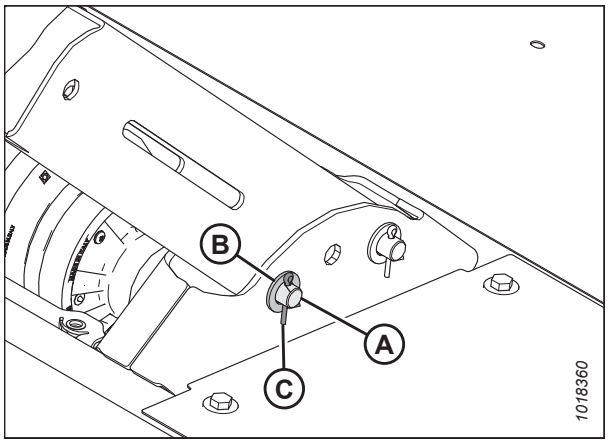


Figure 3.5: Center-Link Anchor – Right of Center-Link

8. Install top shield (B) and secure it with four M10 hex head bolts (A) and flat washers. Torque the bolts to 28 Nm (21 lbf·ft [248 lbf·in]).

   NOTE:

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

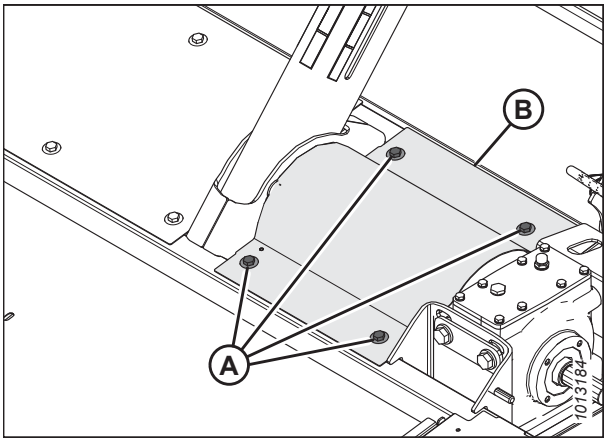


Figure 3.6: Top Shield – Left of Center-Link

9. Close lock-out valve (A) on each rotary disc pull-type lift cylinder by turning the handle to the horizontal position. Repeat this step on the opposite side.

10. Turn adjuster bolt (B) to set dimension (C) to 130 mm (5 1/8 in.). Repeat this step on the opposite side.

    - Turn the bolt clockwise (towards the spring) to increase float
    - Turn the bolt counterclockwise (away from the spring) to decrease float

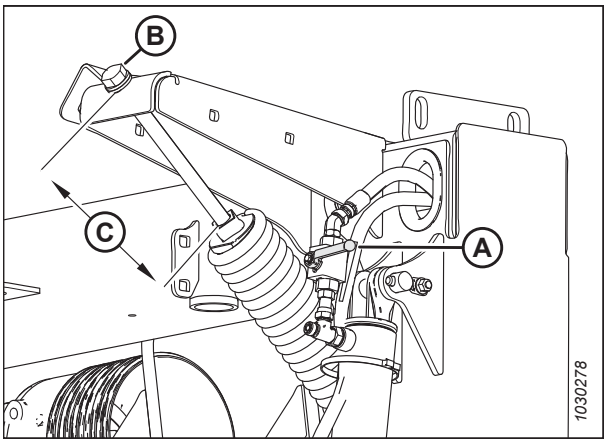


Figure 3.7: Lift Cylinder Lock-Out Valve and Adjuster Bolt

11. Reposition cover plate (A) over the float spring adjuster bolt as shown. Secure cover plate (A) by tightening bolt (B). Repeat this step on the opposite side.

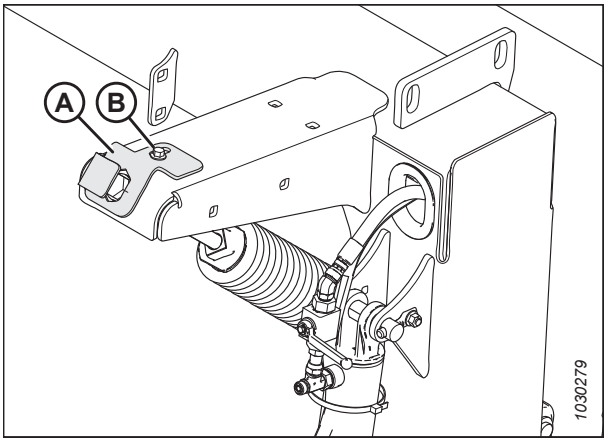


Figure 3.8: Adjuster Bolt Cover Plate

3.2 Attaching Hitch to Carrier Frame

The connection point on the carrier frame secures the hitch to the frame and allows the pull-type to pivot.

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

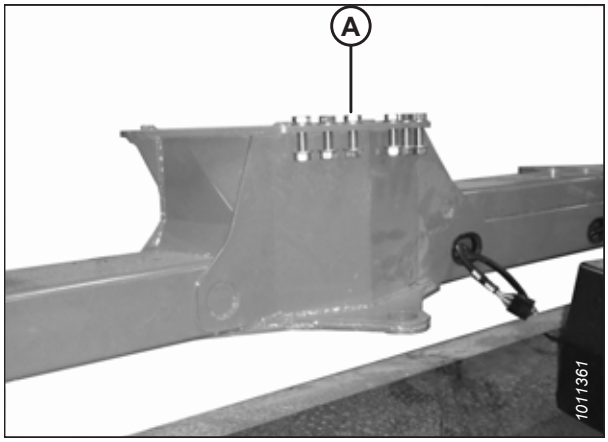


Figure 3.9: Carrier Frame

2. Place sling (A) around the hitch frame. Adjust the sling position until the hitch is balanced when lifting.
   - **R113 PT**: Approximately 2.7 m (106 in.) from the edge of tractor end (B) of the hitch
   - **R116 PT**: Approximately 3.5 m (138 in.) from the edge of tractor end (B) of the hitch
3. Raise the hitch approximately 610 mm (24 in.) off the ground.

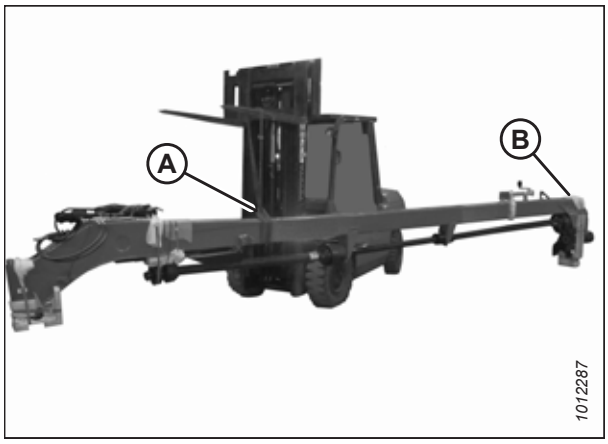


Figure 3.10: Lifting Hitch

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

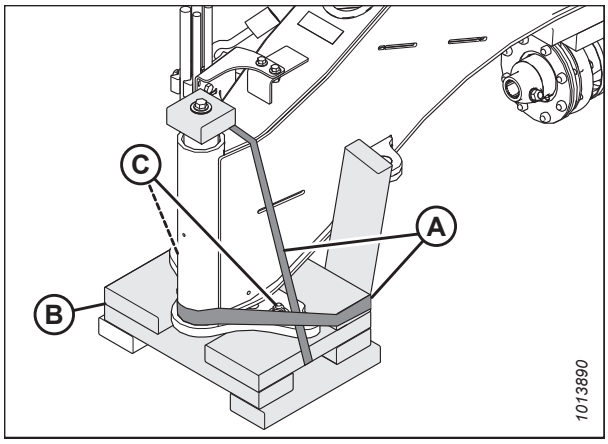


Figure 3.11: Hitch Packing

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 the top of the pin, and remove hitch pin (C).

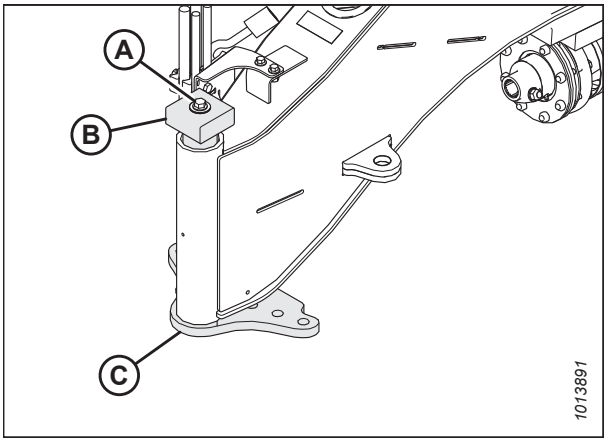


Figure 3.12: Hitch Packing

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

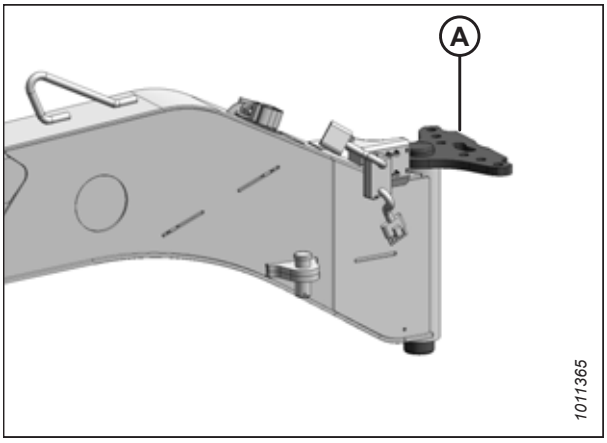


Figure 3.13: Hitch Pin

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

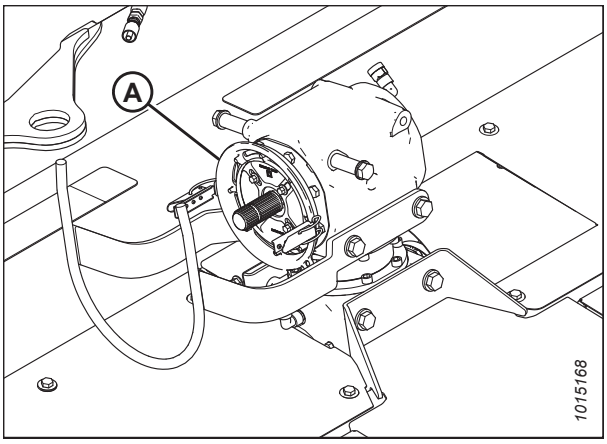


Figure 3.14: Gearbox

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

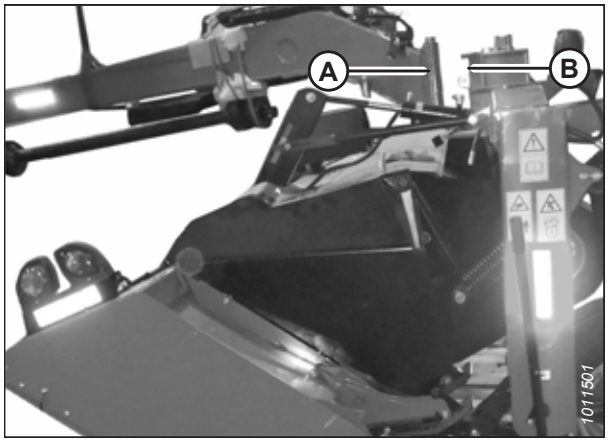


Figure 3.15: Hitch to Carrier Frame

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

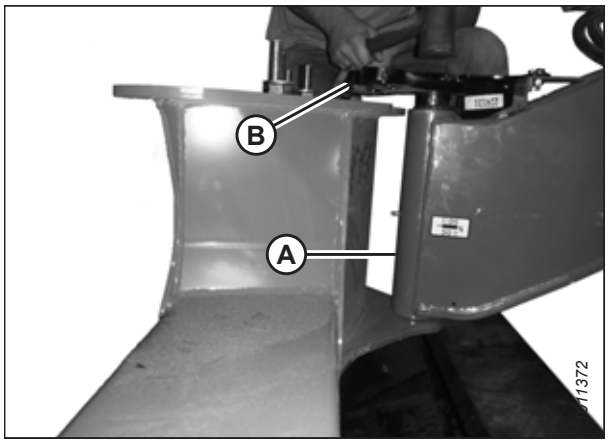


Figure 3.16: Hitch Pin

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

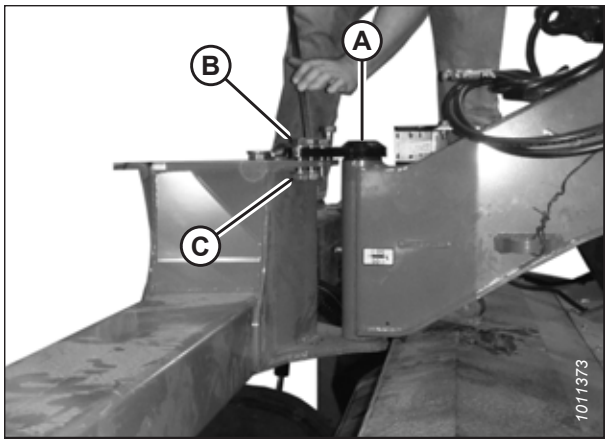


Figure 3.17: Hitch Pin

12. Tighten outer bolts (A) first to draw the plate against the frame, and then tighten the inner bolts.

13. Torque the bolts to 461 Nm (340 lbf·ft).

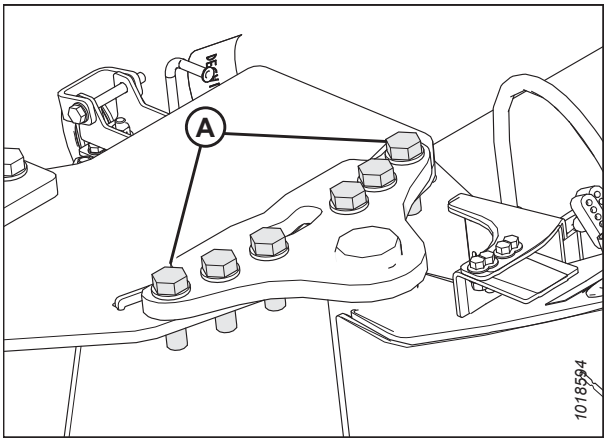


Figure 3.18: Hitch Pin

3.3 Installing Tractor Mating Hitch to Carrier Hitch

The tractor mating hitch connects the carrier hitch to the style of hitch on the tractor.

Depending on hitch type, refer to the related installation procedure:

- *3.3.1 Installing Drawbar Hitch, page 18*
- *3.3.2 Installing Two-Point Hitch (Cat. II) Adapter, page 23*

3.3.1 Installing Drawbar Hitch

The drawbar swivel hitch allows the pull-type to connect to a single-point hitch connection and swing behind the tractor without sacrificing turning range.

If attaching the rotary disc pull-type to a tractor with a drawbar hitch, proceed as follows. If attaching the rotary disc pull-type to a tractor with a two-point hitch, refer to *3.3.2 Installing Two-Point Hitch (Cat. II) Adapter, page 23*.

1. Remove shipping wire or banding (A) securing shipping blocks (B) at the front of the hitch, and remove the blocks.
2. Swivel the lower gearbox until the input shaft is facing forward.

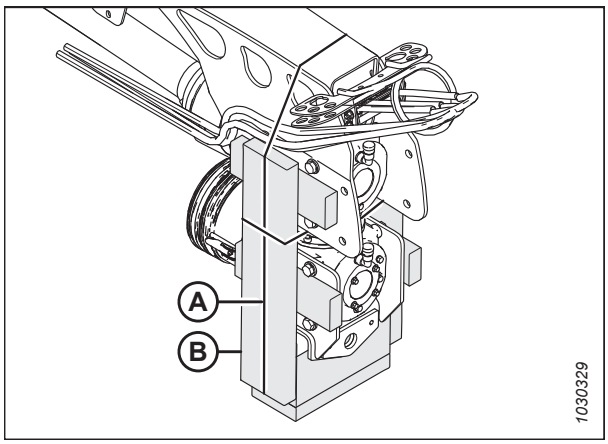


Figure 3.19: Hitch End Packing

3. Remove shipping wire (A) from jack (B), toolbox (C), and jack stand support (D).
4. Remove jack (B), toolbox (C), and jack stand support (D) from the pallet. Leave drawbar hitch (E) attached to the pallet.
5. Remove the hardware bag from the jack stand support.

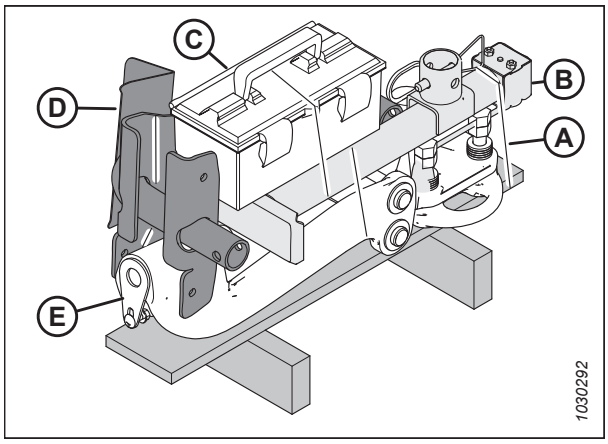


Figure 3.20: Jack and Drawbar Hitch Packing

6. Install jack support stand (A) as shown. Secure it with two M12 x 1.75 x 40 bolts (B), M12 washers, and M12 center lock nuts per side. Torque the hardware to 69 Nm (51 lbf·ft).

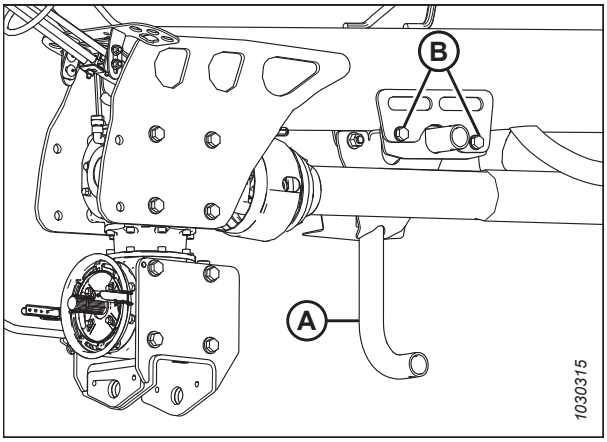


Figure 3.21: Jack Stand Support

7. Install jack (A) at the front of the hitch, and secure it with pin (B).
8. Lower the forklift until the hitch is resting on jack (A).

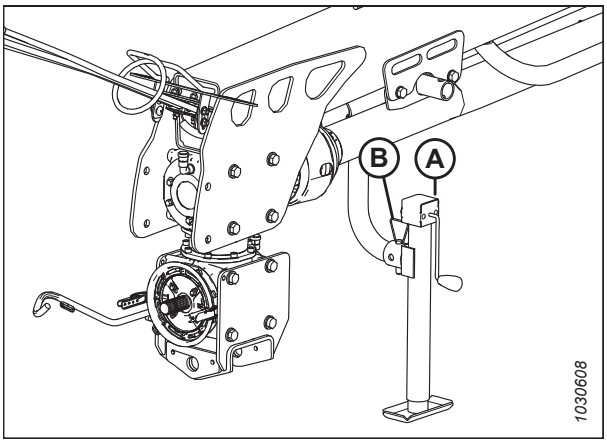


Figure 3.22: Jack Stand

9. Remove shipping wire (A) that secures pin (B) in the casting. Do **NOT** remove the other strapping.
10. Remove pin (B) from the casting, and remove bolt (C) and nut from pin.

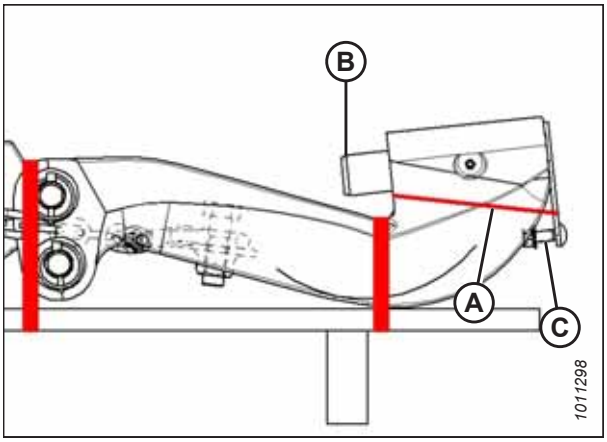


Figure 3.23: Hitch Casting

11. Using a floor jack or equivalent under pallet (A), raise drawbar hitch (B) into position under the gearbox.
12. Move drawbar hitch (B) so pin (C) can be installed.
13. Secure the pin with bolt (D) and nut.
14. Remove any remaining strapping from pallet (A). Lower the pallet. Remove the floor jack and the pallet.

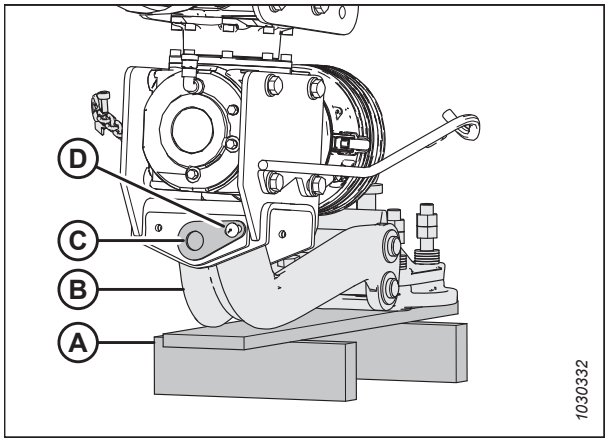


Figure 3.24: Drawbar Hitch

15. Remove cone shield (A).

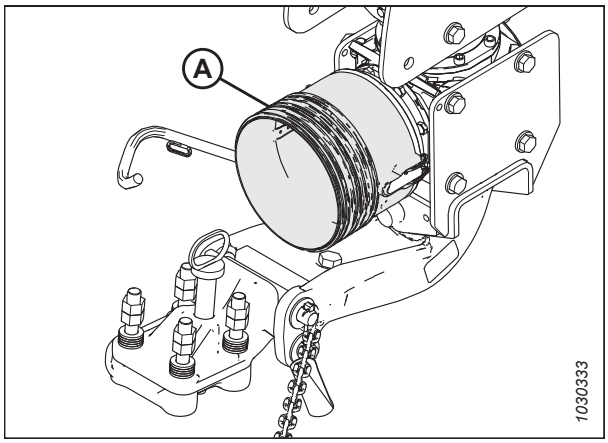


Figure 3.25: Cone Shield

16. Retrieve primary driveline (D) from the shipping location.
17. Remove nut (C), washer (B), and pin (A) from the rotary disc pull-type end of primary driveline (D).

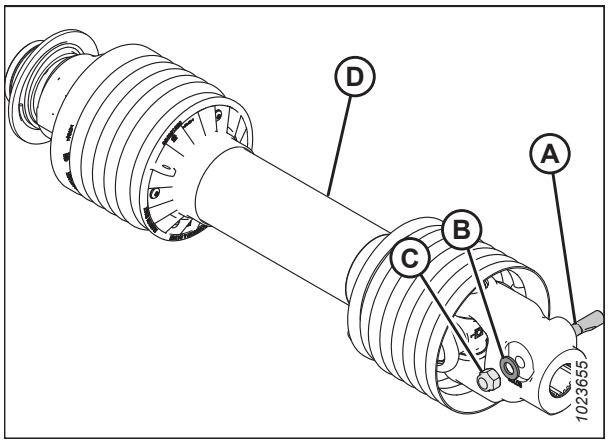


Figure 3.26: Primary Driveline

18. Slide primary driveline (A) onto the gearbox input shaft. Align pinhole (B) in the yoke with the groove on the input shaft.

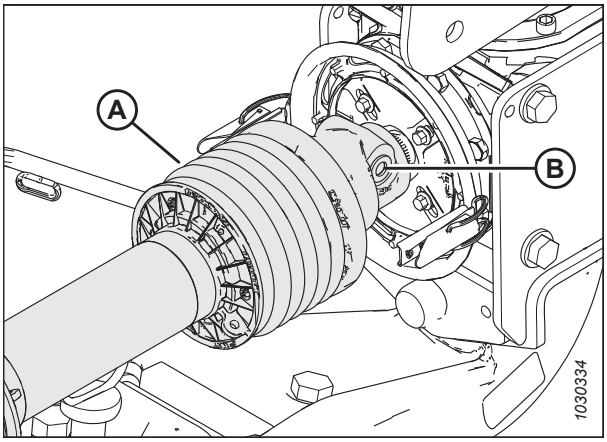


Figure 3.27: Primary Driveline

19. Insert tapered pin (A) by hand. Ensure the pin lines up with the groove in the yoke and is fully inserted. The notch in the pin should be facing toward the shaft.
20. Clean the threads on pin (A) after inserting the pin.
21. Install washer (B) and nut (C) on the tapered pin and torque the nut to 149 Nm (110 lbf·ft). The end of the pin must be recessed approximately 9–11 mm (3/8–7/16 in.) (D).

    NOTE:

    Do **NOT** use an impact wrench to install or torque the nut.

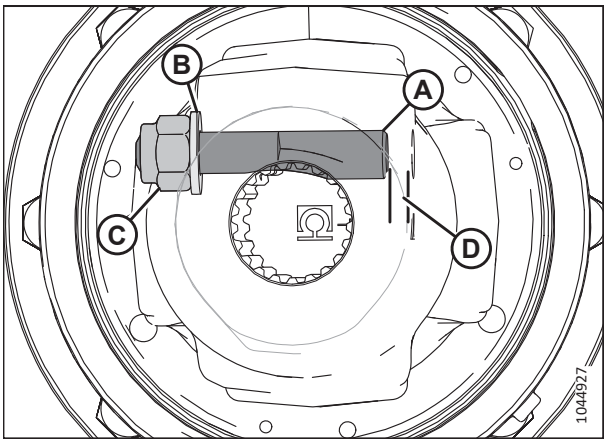


Figure 3.28: Primary Driveline

22. Install cone shield (A) over primary driveline (B). Use the latches to secure it to the gearbox.
23. Place primary driveline (B) on driveline support (C).

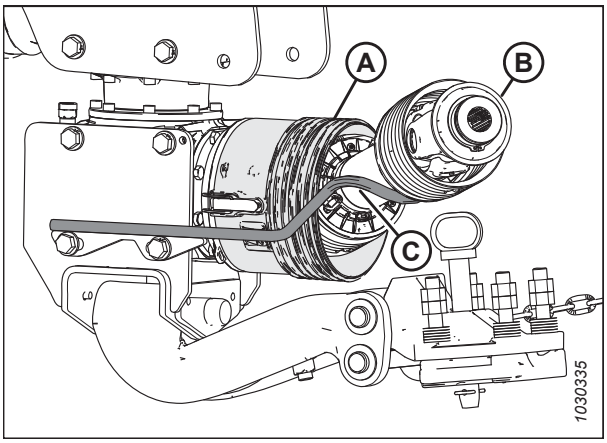


Figure 3.29: Cone Shield

24. Place toolbox groove (A) onto jack stand bracket (B) as shown.

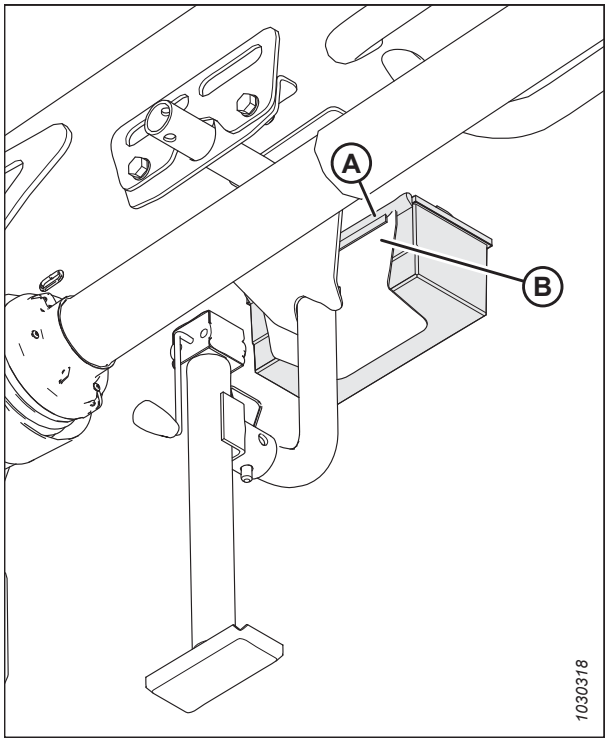


Figure 3.30: Toolbox Mounted on Jack Stand Bracket

25. Insert bracket tab (B) through the slot in the rear of toolbox (A).

26. Retrieve lynch pin (C) from the bag of hardware supplied with the jack. Secure toolbox (A) by inserting lynch pin (C) into tab (B).

27. Once the drawbar hitch is installed, install the hitch swing cylinder. For instructions, refer to *3.4 Installing Hitch Swing Cylinder, page 28*.

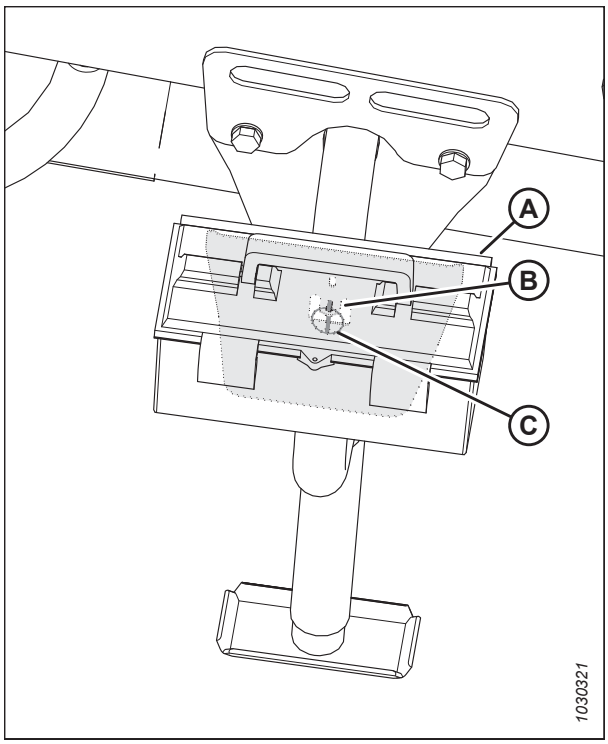


Figure 3.31: Toolbox Mounted on Jack Stand Bracket

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

The two-point hitch adapter allows the pull-type to connect to an existing two-point hitch connection.

1. Remove shipping wire or banding (A) securing shipping blocks (B) at the front of the hitch, and remove the blocks.
2. Swivel the lower gearbox until the input shaft is facing forward.

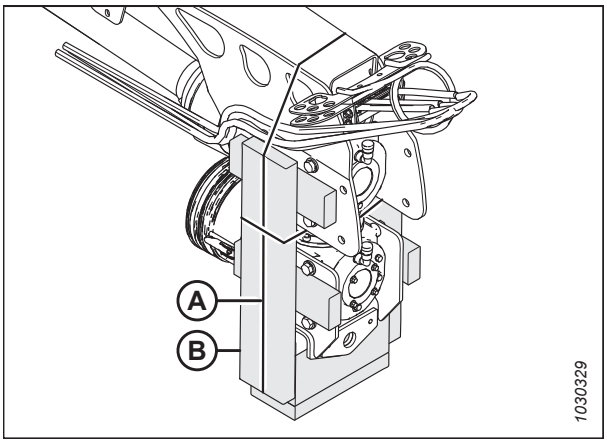


Figure 3.32: Hitch End Packing

3. Retrieve the two-point hitch adapter shipment.

   NOTE:

   Do **NOT** remove any strapping that secures hitch adapter (A) to pallet (B).

4. Remove the strapping that secures pin (C) to adapter (A).
5. Remove pin (C) from the adapter, and remove bolt (D) and nut from pin (C).
6. Remove the strapping from toolbox (E), jack stand support (F), and jack (G). Remove these parts from the pallet.
7. Remove the hardware bag from the jack stand support.

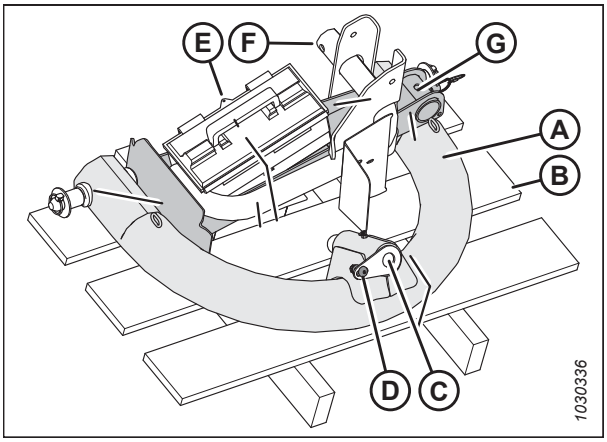


Figure 3.33: Two-Point Hitch Packing

8. Install jack support stand (A) as shown. Secure it with two M12 x 1.75 x 40 bolts (B), M12 washers, and M12 center lock nuts per side. Torque the hardware to 69 Nm (51 lbf·ft).

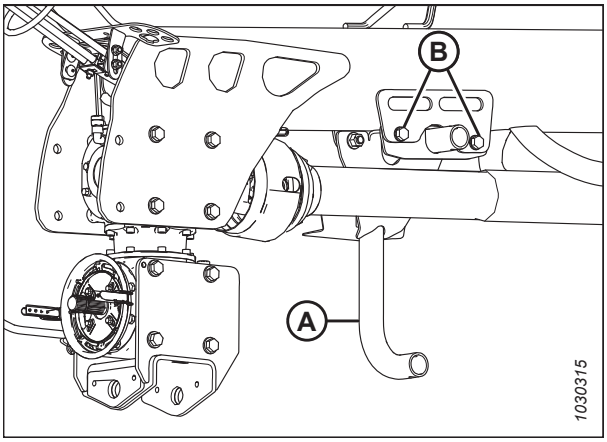


Figure 3.34: Jack Stand Support

9. Insert jack (A) onto the jack stand support and secure it with pin (B).

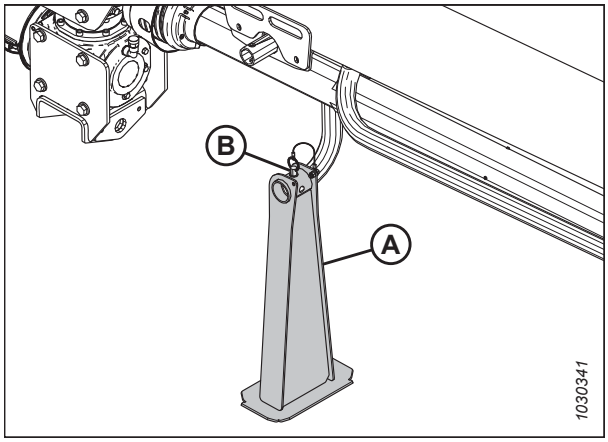


Figure 3.35: Jack – Working Position

10. Using a floor jack or equivalent, raise two-point hitch adapter (A) into position under the gearbox.
11. Maneuver adapter (A) so that pin (B) can be installed to secure the adapter to the hitch.
12. Secure the pin with bolt (C) and the nut.
13. Remove any remaining strapping from the pallet. Lower the pallet. Remove the jack and the pallet.
14. Lower the hitch and stand to the ground.

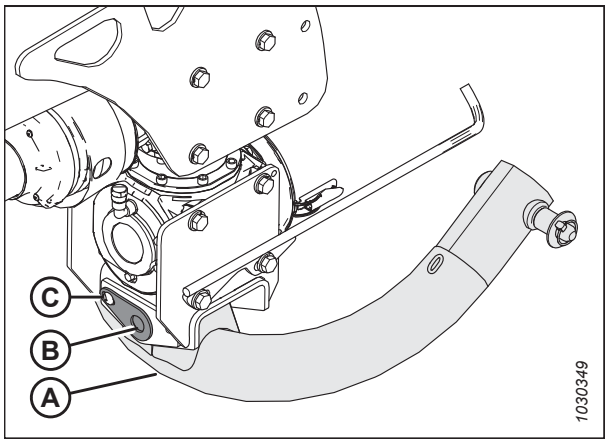


Figure 3.36: Two-Point Hitch Adapter

15. Install springs (A) into hooks (B).
16. Remove cone shield (C).

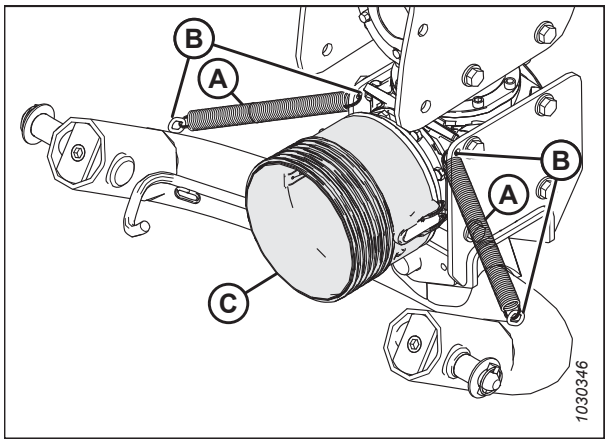


Figure 3.37: Springs

17. Retrieve primary driveline (D) from the shipping location.

18. Remove nut (C), washer (B), and pin (A) from the rotary disc pull-type end of primary driveline (D).

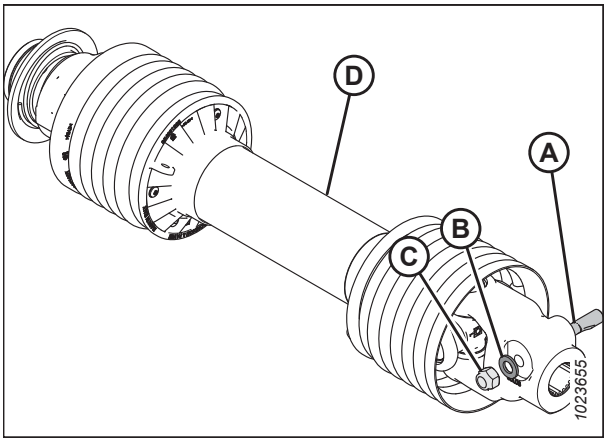


Figure 3.38: Primary Driveline

19. Slide driveline (A) onto gearbox input shaft (B). Align pinhole (C) in the yoke with the groove on the input shaft.

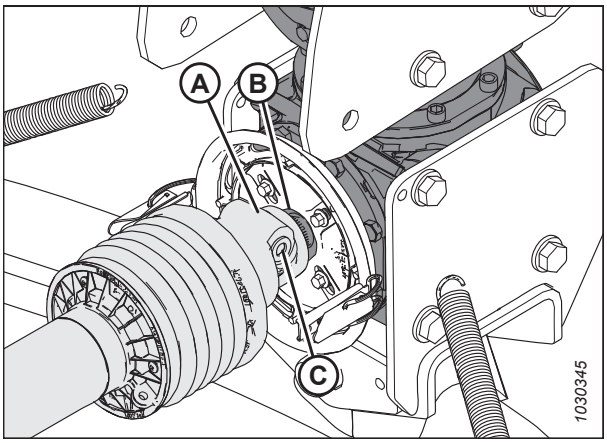


Figure 3.39: Primary Driveline

20. Insert tapered pin (A) by hand. Ensure the pin lines up with the groove in the yoke and is fully inserted. The notch in the pin should be facing toward the shaft.

21. Clean the threads on pin (A) after inserting the pin.

22. Install washer (B) and nut (C) on the tapered pin and torque to nut 149 Nm (110 lbf·ft). The end of the pin must be recessed 9–11 mm (3/8–7/16 in.) (D).

    NOTE:

    Do **NOT** use an impact wrench to install or torque the nut.

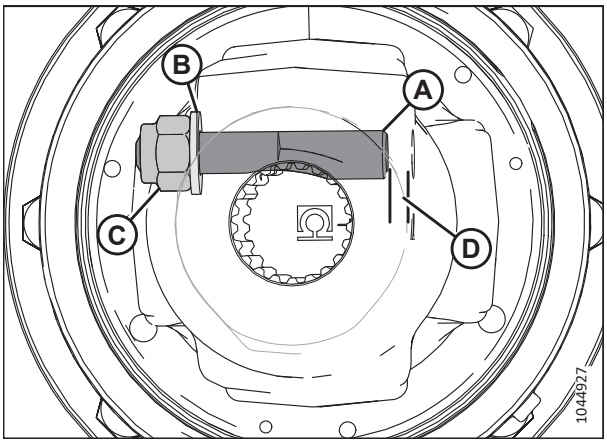


Figure 3.40: Primary Driveline

23. Install cone shield (A) over the primary driveline. Place driveline (B) on driveline support (C).

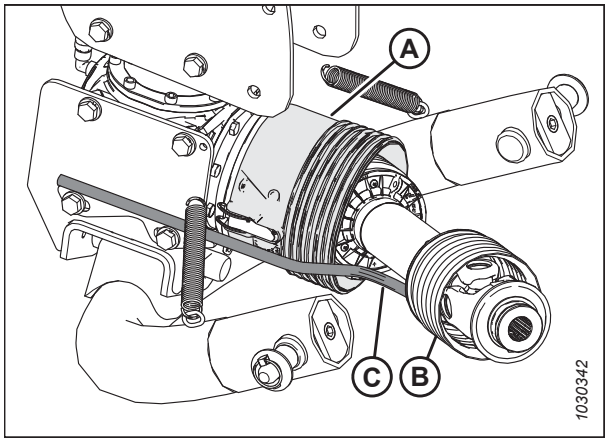


Figure 3.41: Cone Shield

24. Place toolbox groove (A) onto jack stand bracket (B) as shown.

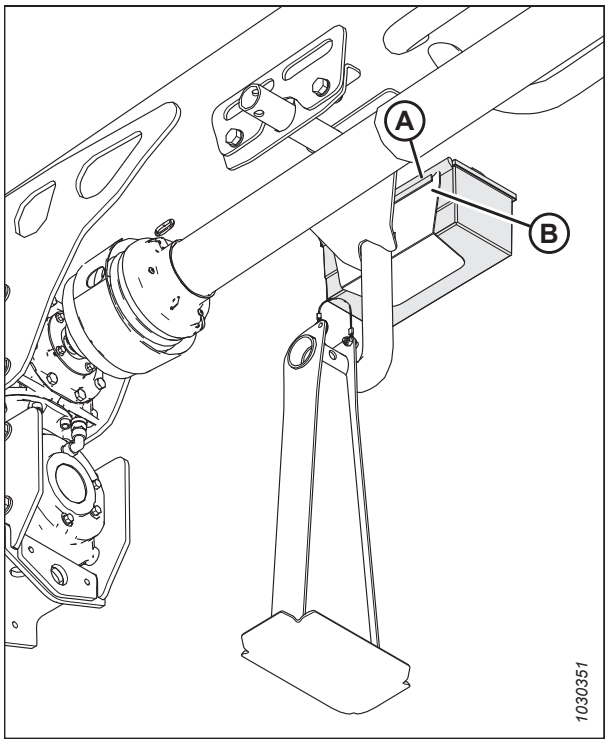


Figure 3.42: Toolbox Mounted on Jack Stand Bracket

25. Insert bracket tab (B) through the slot in the rear of toolbox (A).

26. Retrieve lynch pin (C) from the bag of hardware supplied with the jack. Secure toolbox (A) by inserting lynch pin (C) into tab (B).

27. Install the hitch swing cylinder. For instructions, refer to *3.4 Installing Hitch Swing Cylinder, page 28*.

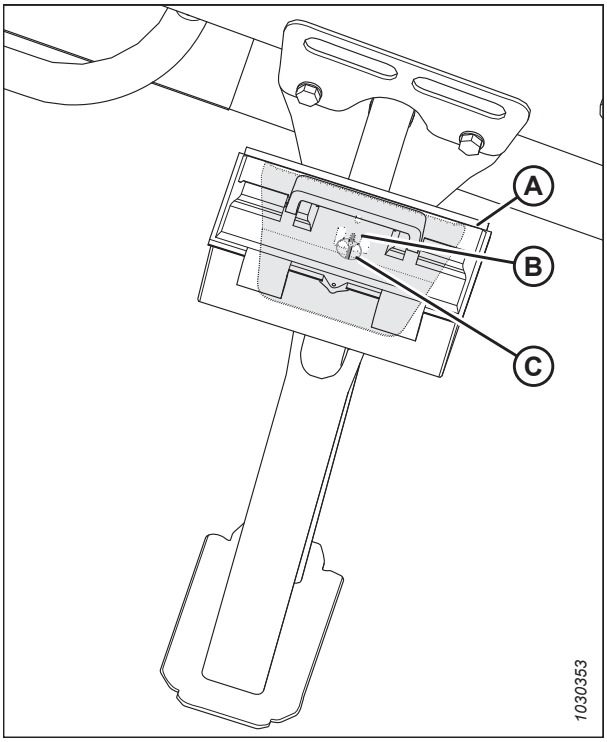


Figure 3.43: Toolbox Mounted on Jack Stand Bracket

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 transport system will be installed. Be sure to follow the instructions carefully.

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

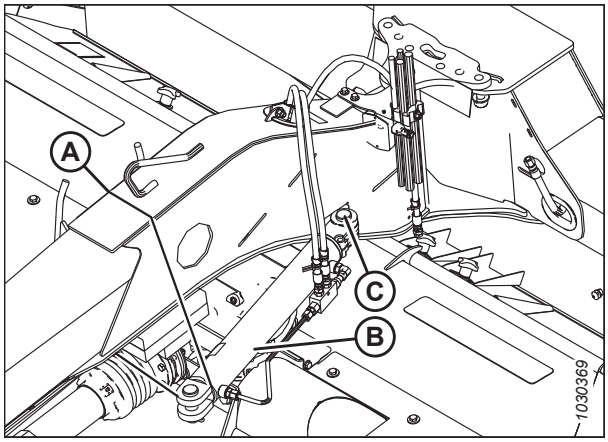


Figure 3.44: Steering Cylinder

To install cylinder on unit WITHOUT the transport system, proceed as follows:

1. Reposition cylinder (A) at the left side of the hitch and attach the rod end to the carrier frame lug with the pin at location (B). Secure it with cotter pin (C).
2. Place a container or rag under the cylinder to catch the oil.
3. Remove the pin from location (D) at the clevis end of the cylinder.
4. Swing the hitch until the clevis lines up with the lug on the hitch.
5. Install the clevis pin at location (D) and secure it with cotter pin (E).

   NOTE:

   If assistance is required to align the clevis and the lug, loosen the hydraulic fittings.
6. If loosened, tighten the fittings on the cylinder.

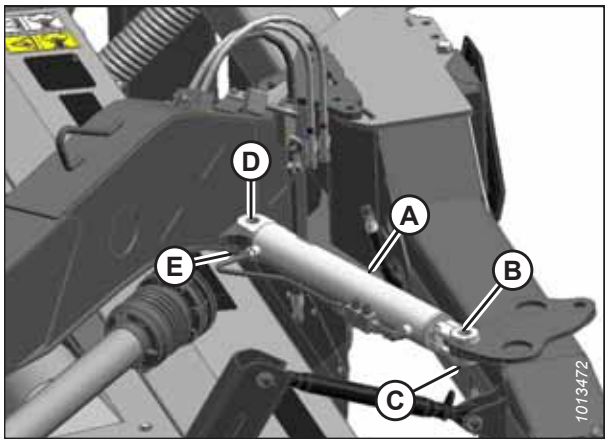


Figure 3.45: Hitch Swing Cylinder

To install cylinder on unit WITH the transport system, proceed as follows:

1. Disconnect the hoses from the cylinder and cap off the openings on the cylinder and the hoses.

2. Reposition cylinder (A) at the right side of the hitch. Use pin (C) to attach the barrel end to lug (B). Secure it with cotter pin (D).

   NOTE:

   The rod end of the cylinder will be attached to the transport system casting after the system is primed. For instructions, refer to *6.2 Priming Hitch Swing Cylinder, page 115*.

3. Turn valve (E) on the hitch swing cylinder 180° so that the fittings are pointing up.

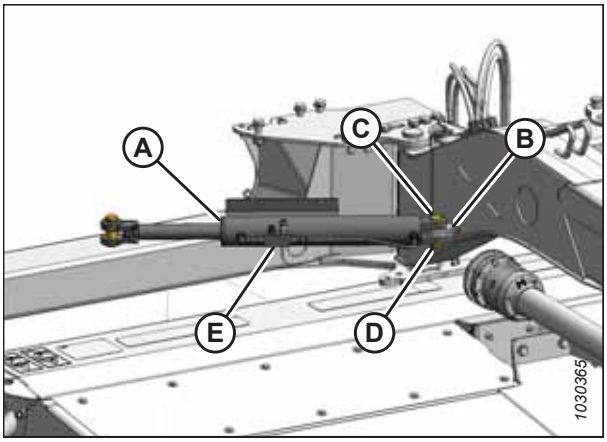


Figure 3.46: Hitch Swing Cylinder

3.5 Attaching Clutch Driveline

The clutch driveline on the carrier hitch connects to the rotary disc pull-type drive gearbox.

IMPORTANT:

If a conditioner swap is required before delivery to the customer, swap the conditioner **BEFORE** attaching the clutch driveline. For conditioner swap instructions, refer to the pull-type technical manual. After swapping the conditioner, attach the clutch driveline then follow the remaining chapters in these instructions in sequential order to complete the setup.

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

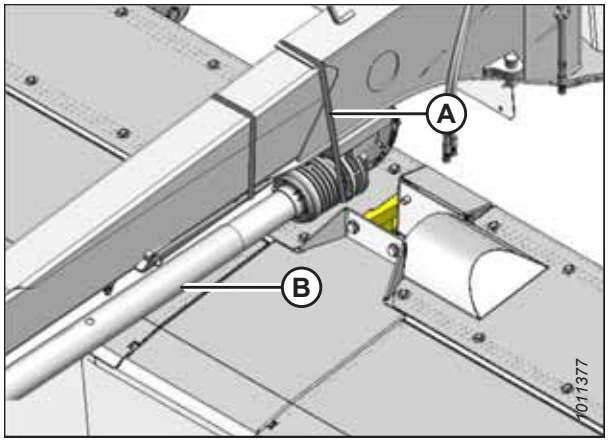


Figure 3.47: Driveline Strapping

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

   NOTE:

   Strapped contents may be under pressure.

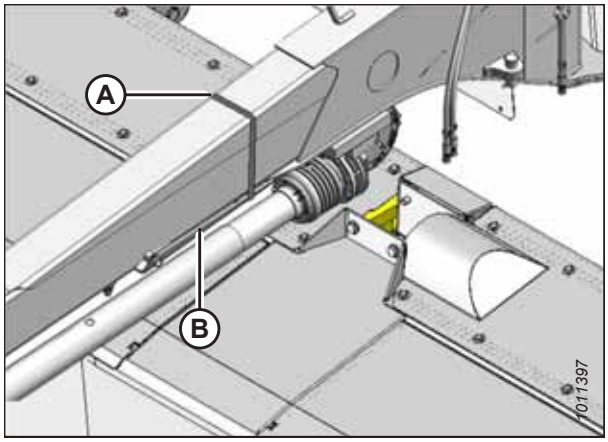


Figure 3.48: Steering Arm Strapping

3. At the top of the upper rear swivel gearbox, remove two bolts (A) with washers (B) and spacers (C). Retain the hardware.
4. Undo latches (D) securing driveline shield (E) to the upper rear swivel gearbox and remove the shield. If necessary, use a screwdriver or equivalent to undo latches (D).
5. Rotate the upper rear swivel gearbox until the input shaft is facing towards the driveline.

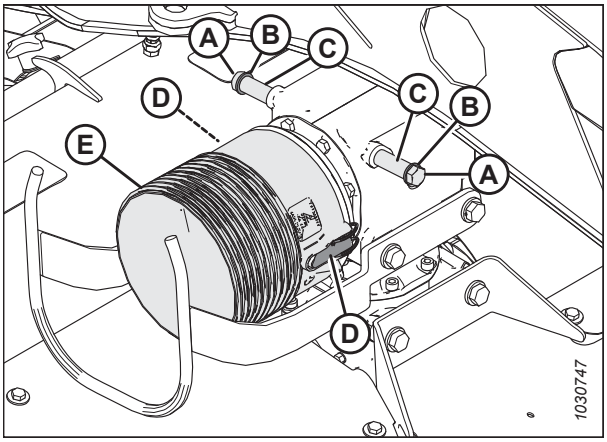


Figure 3.49: Driveline Shield

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

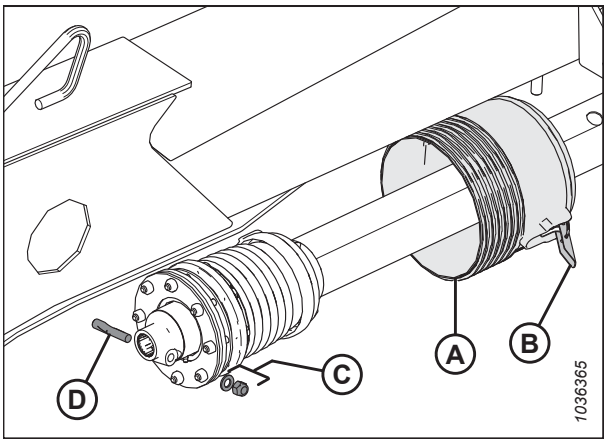


Figure 3.50: Clutch Driveline

8. Attach driveline (A) to the upper rear swivel gearbox shaft.

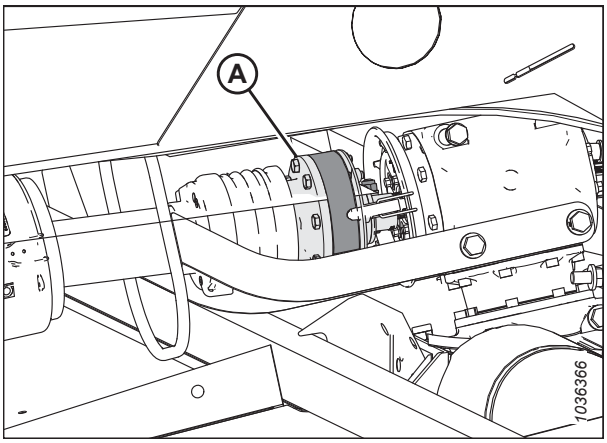


Figure 3.51: Clutch Driveline

9. Insert tapered pin (A) by hand. Ensure the pin lines up with the groove in the yoke and is fully inserted. The notch in the pin should be facing toward the shaft.

10. Clean the threads on pin (A) after inserting the pin.

11. Install washer (B) and nut (C) on the tapered pin, and then torque the nut to 149 Nm (110 lbf·ft). The end of the pin must be recessed 0–2 mm (0–0.08 in.) (D).

    NOTE:

    Do **NOT** use an impact wrench to install or torque the nut.

12. Install the shield onto the upper rear swivel gearbox. Use the latches to secure it.

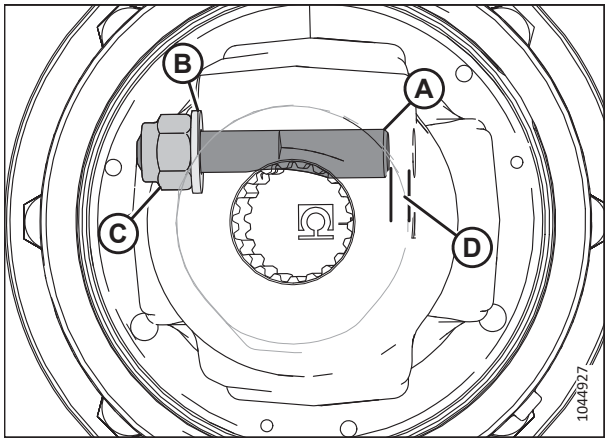


Figure 3.52: Clutch Driveline

3.6 Attaching Steering Arm

The steering arm connects to the header drive gearbox.

1. Install the steering arm as follows:
   a. Lower rod (A) from under the hitch and slide steering arm (B) off the rod.
   b. Grease rod (A).
   c. Reposition steering arm (C) as shown and slide it onto rod (A).
   d. Position steering arm (C) onto gearbox (D).

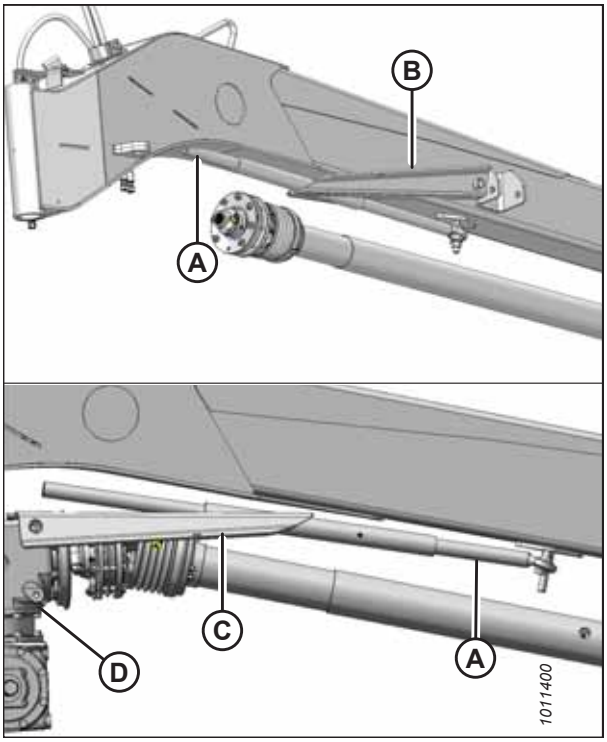


Figure 3.53: Steering Arm

2. Line up the two mounting holes in the arm with the forward threaded holes in the upper rear swivel gearbox.
3. Install spacers (A) into steering arm (B).
4. Install washer (D) onto the M16 x 80 hex head bolts (C). Apply high-strength threadlocker (Loctite® 262 or equivalent) onto the bolt threads.
5. Torque the bolts to 203 Nm (150 lbf·ft).

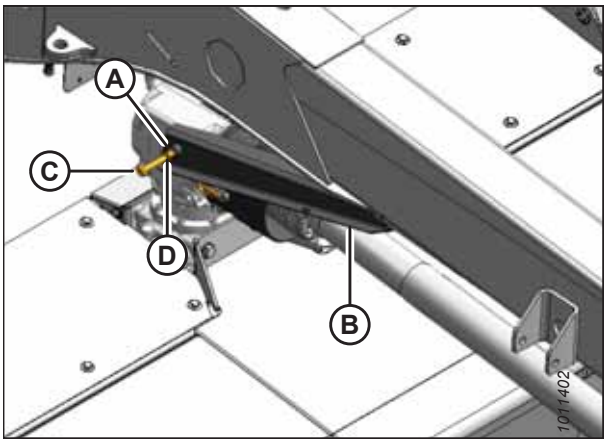


Figure 3.54: Steering Arm

6. Attach safety chain (A) from the driveline shield to the slotted hole in the steering arm.

   NOTE:

   Ensure the chain is shortened to prevent any driveline wrapping.

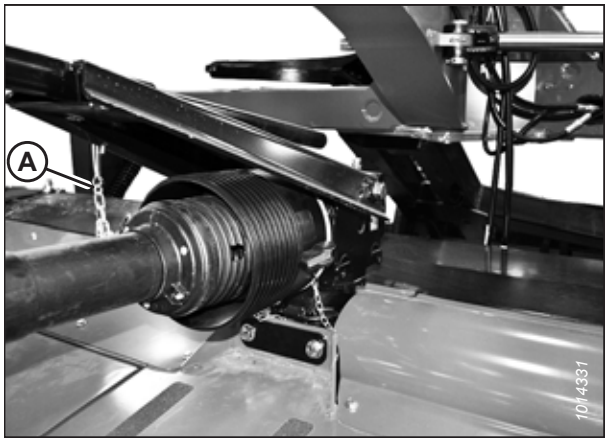


Figure 3.55: Driveline Shield

3.7 Connecting Transport Lighting Module – Without Dealer-Installed Transport

The hitch assembly lighting harness must be connected to the lighting module on the machine.

NOTE:

Follow these instructions if **NOT** installing the Dealer-installed transport kit.

1. Remove plug (A) from the upper input receptacle on the transport lighting module.

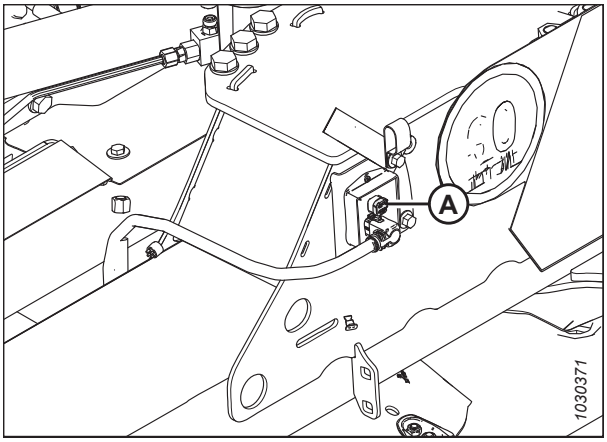


Figure 3.56: Lighting Module Plug

2. Locate the plug P102 on trailer harness (A) at the machine end of the hitch. Route the plug P102 towards the transport lighting module.
3. Secure the trailer harness with existing P-clip (D).
4. Connect plug P102 (B) to the upper input receptacle on transport lighting module (C).

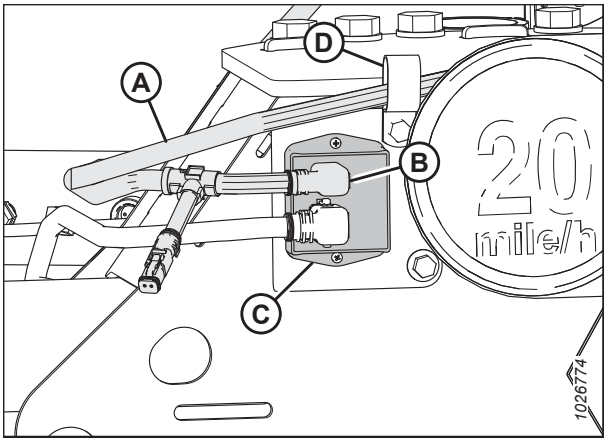


Figure 3.57: Trailer Harness

3.8 Installing Options

Install the following optional kits if they were supplied with your rotary disc pull-type.

3.8.1 Installing Transport System

When installing the transport system (C2002), the main mechanical components are installed first, then the hydraulic systems, and then the lighting systems and signage.

Installing Components

This section explains how to install the basic parts of the transport system.

Installing Latch Assembly

1. Disconnect right light electrical connection (A).
2. Remove two bolts (B) that secure right light assembly (C) to the carrier frame.
3. Remove light assembly (C). Retain the light assembly and hardware for reinstallation.

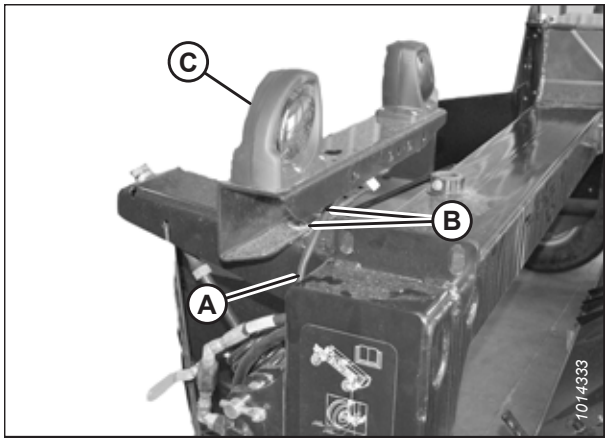


Figure 3.58: Light Bracket

4. Cap the right light connector P406 with cap (A).
5. Cap the right light connector P403 with cap (B).
6. Tuck the connectors P406 and P403 into frame (C).
7. Remove cap (D) from tee fitting (E).

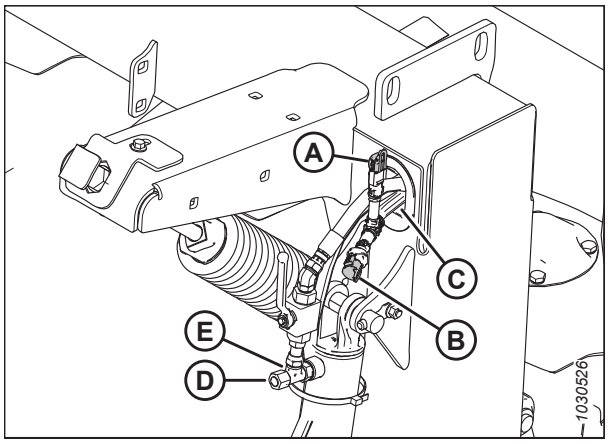


Figure 3.59: Capped Connectors

8. On the transport pallet, remove the shipping banding and packing material from latch assembly (A). Remove the latch assembly.

9. Remove two M20 mounting bolts, washers, and nuts (B) from the latch assembly, and retain them for reinstallation later.

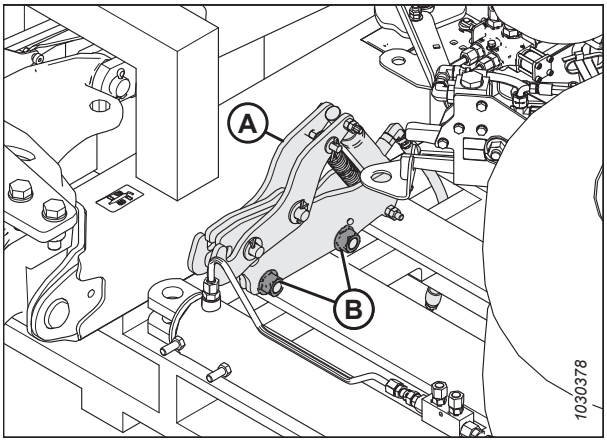


Figure 3.60: Latch Packing

10. Install latch assembly (A) onto the carrier frame as shown, and secure it with the M20 bolts, washers, and nuts (B) retained in Step *9, page 37*. Do **NOT** fully tighten the bolts; adjustment of the latch assembly may be necessary.

11. Attach hydraulic hose (C) from the latch assembly to tee fitting (D) as shown.

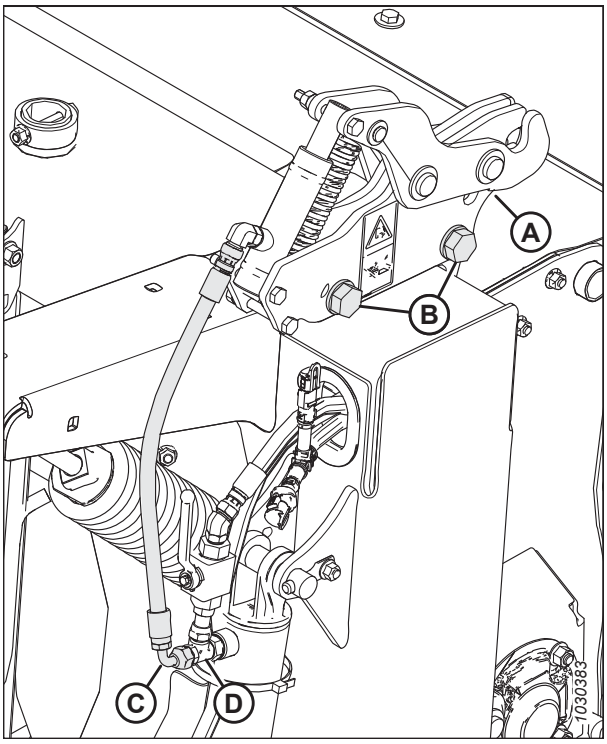


Figure 3.61: Latch Assembly

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

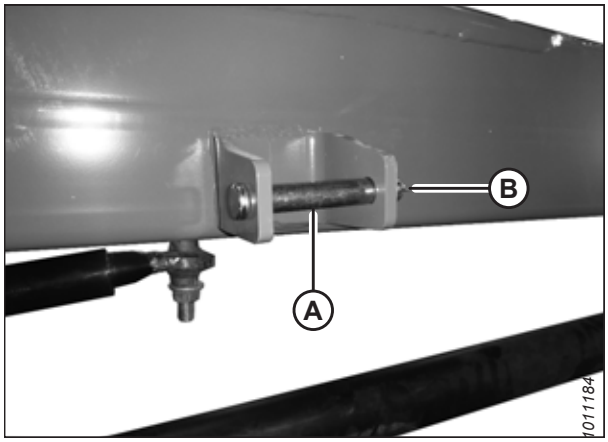


Figure 3.62: Latch Pin

Installing Transport Assembly

1. Remove bolts (A), hardened washers, and nuts securing slow moving vehicle (SMV) sign (B) to the carrier frame. Remove and retain the sign for reinstallation. Discard the two bolts, washers, and nuts.

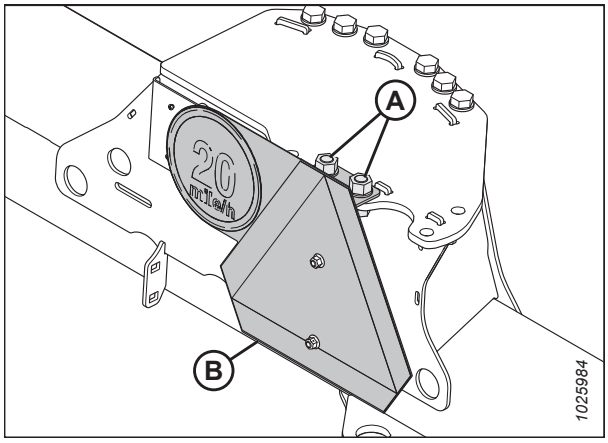


Figure 3.63: SMV Sign Attached to Carrier Frame

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

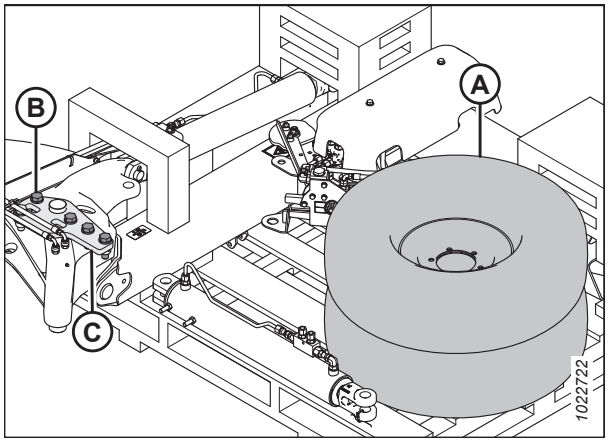


Figure 3.64: Transport Packing

4. Using a forklift, pick up the pallet holding transport assembly (A) and align it with the rear of the rotary disc pull-type.

5. Position the assembly close behind the frame and align pin (B) in the transport assembly with hole (C) in the carrier. Use a soft hammer or equivalent to fully insert pin (B).

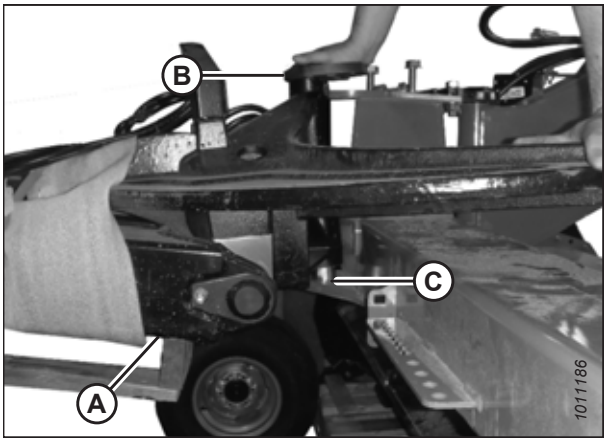


Figure 3.65: Transport System

6. Install two M20 x 65 bolts (A), hardened washers, and nuts.

7. Temporarily install bolts (B) to help align the assembly.

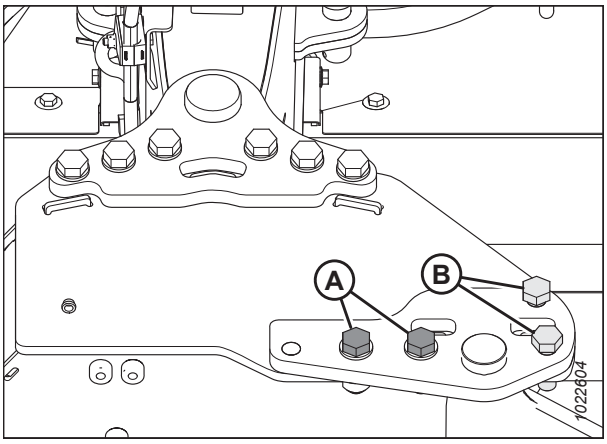


Figure 3.66: Pin Support

8. Rotate pin (A) until the hole in the pin aligns with the holes in welded collar (B). Insert pin (C) through the collar and pin.

9. Insert cotter pin (D) and bend it over the legs to secure it.

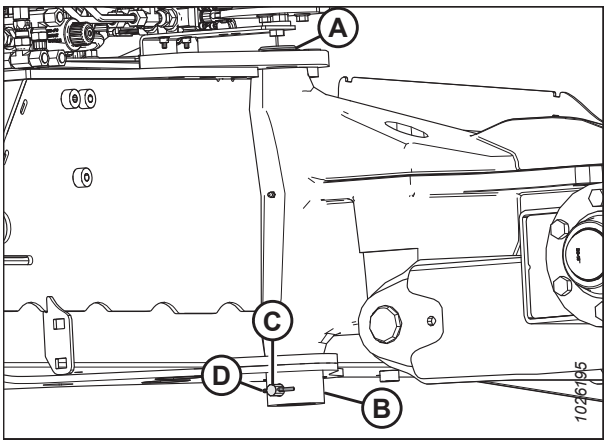


Figure 3.67: Pin Installation

10. Retrieve cover assembly (B) from the shipping location.
11. Remove two bolts (A) from cover assembly (B). Retain the bolts and cover for reinstallation.

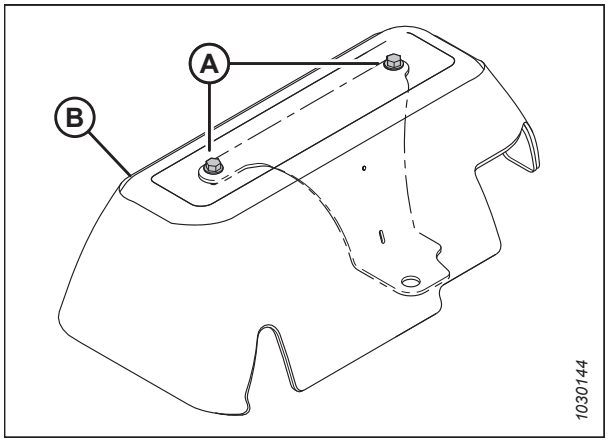


Figure 3.68: Cover Assembly

12. Disconnect P301 (A) from the transport lighting module.
13. Remove bolts (B) and remove the transport lighting module, complete with support bracket (C).
14. Discard P-clip (D) and tag (E).

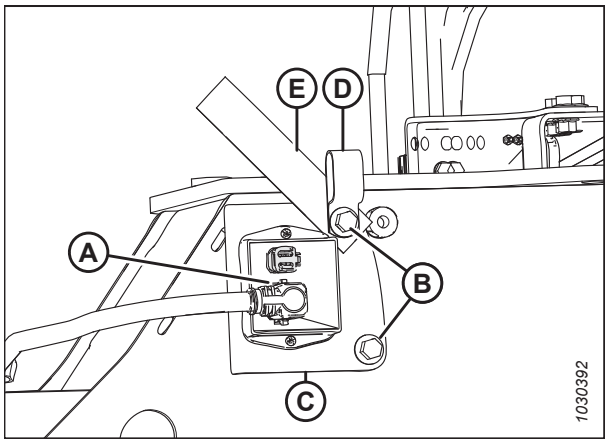


Figure 3.69: Lighting Module Harness

15. Remove two screws (A) and nuts attaching module (B) to bracket (C). Retain module (B). Discard two screws (A) and nuts.

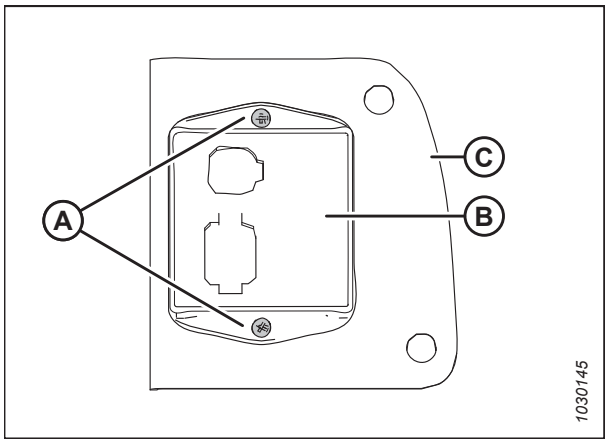


Figure 3.70: Lighting Module Attached to Bracket

16. Attach module (A) to cover assembly bracket (B) using two M4 x 16 screws (C) and M4 nuts supplied with the kit. Torque the hardware to 3 Nm (2 lbf·ft [27 lbf·in]).

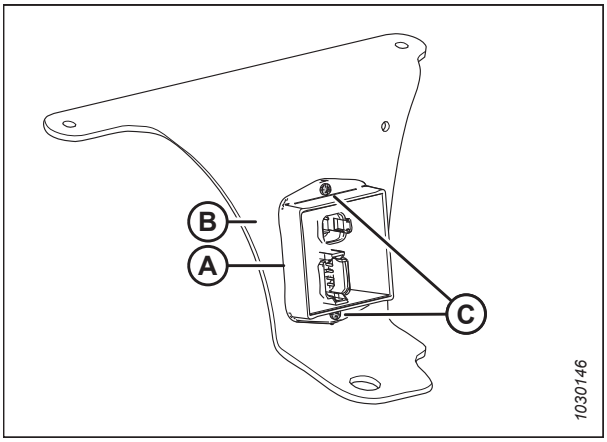


Figure 3.71: Lighting Module Attached to Bracket

17. Install cover support (B).
18. Secure cover support (B) in place with one M20 x 65 bolt (A), hardened washer, and nut.

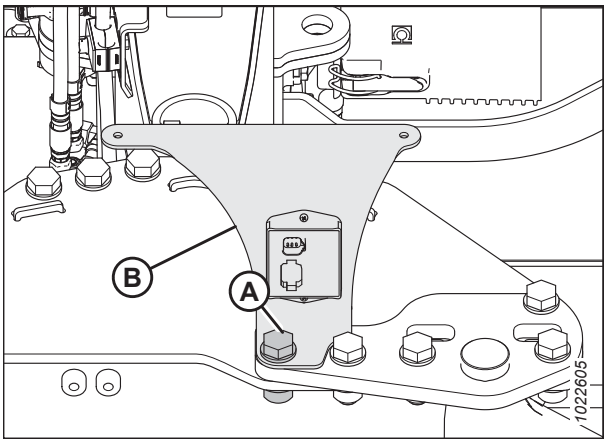


Figure 3.72: Cover Support

19. Torque bolts (A) to 461 Nm (340 lbf·ft).
20. Remove and retain bolts (B).

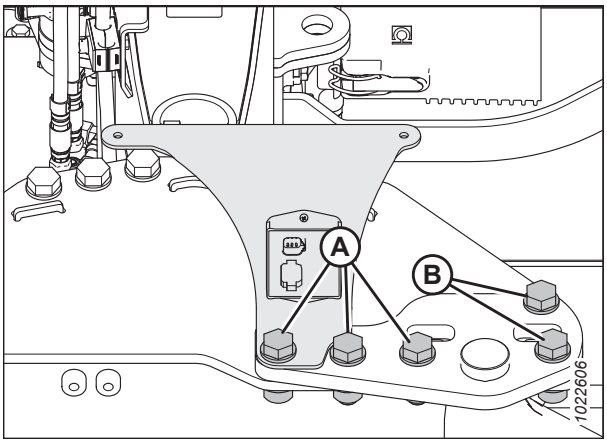


Figure 3.73: Cover Support

Installing Transport Valve

NOTE:

The cover support bracket removed from the illustrations for clarity.

1. Retrieve valve assembly (A) from the pallet.
2. Position valve assembly (A) on the carrier hitch pin plate as shown.
3. Install two M20 x 65 bolts (B), hardened washers, and nuts.
4. Retrieve two M10 x 20 bolts from the shipping bag and install bolts at location (C) with the threads facing up. Install the nuts, but do **NOT** tighten them.
5. Torque bolts (B) to 461 Nm (340 lbf·ft).

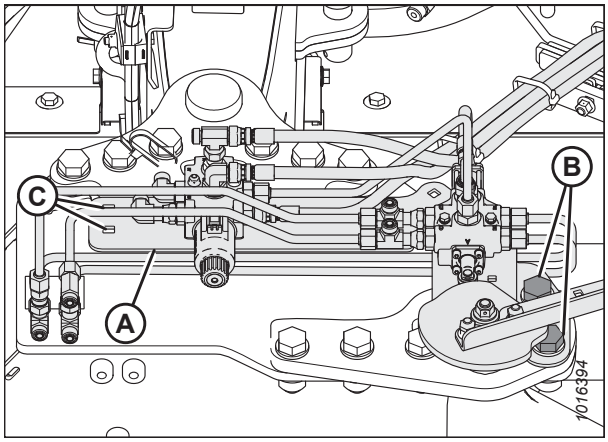


Figure 3.74: Selector Valve

6. Install support plate (A) and secure it with bolts (B).
7. Install bolts (C), but do **NOT** tighten them.

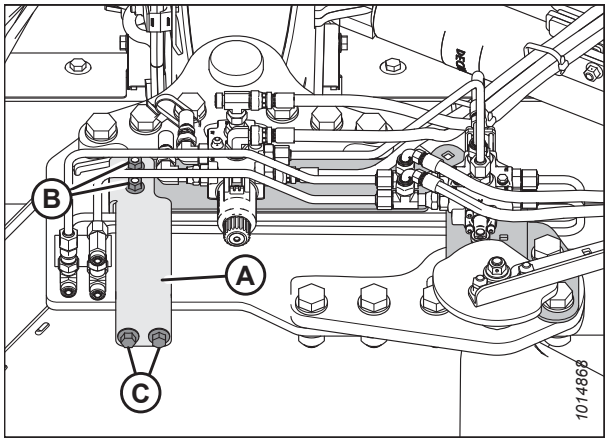


Figure 3.75: Support Plate

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

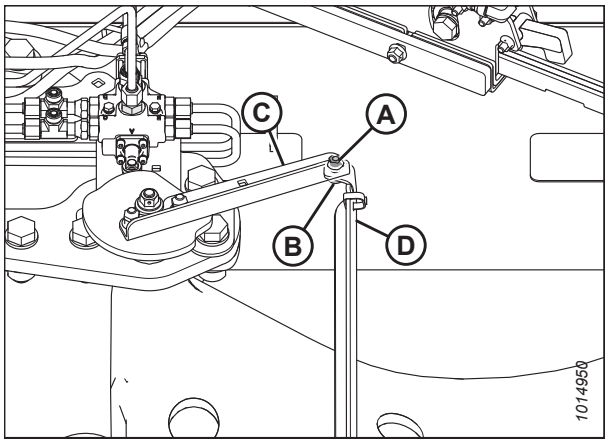


Figure 3.76: Support Plate

Installing Transport Swing Cylinder

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

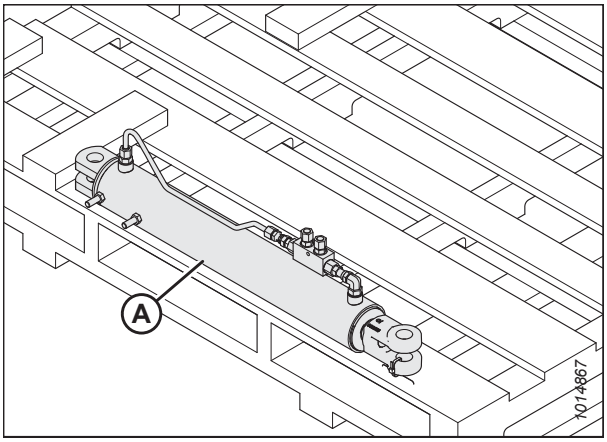


Figure 3.77: Transport Swing Cylinder

IMPORTANT:

Prime transport swing cylinder (A) **BEFORE** installing it on the carrier frame.

4. To prime the cylinder, use a hydraulic power pack or tractor hydraulics. Extend and retract transport swing cylinder (A) until all the air has been removed. Extend transport cylinder (A) to dimension (B) of 142 cm (56 in.) between center of pins.

NOTE:

If you need to adjust the cylinder length, remove bolt (C) that secures the clevis end. Rotate the clevis to lengthen or shorten the distance between pins (B). When the cylinder length is correct, reinstall bolt (C) to secure the clevis end.

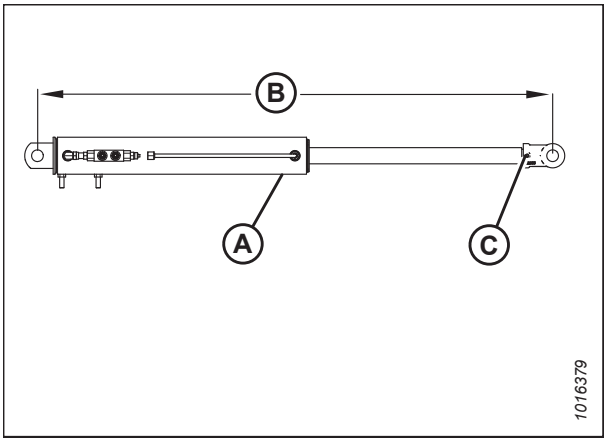


Figure 3.78: Transport Swing Cylinder

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

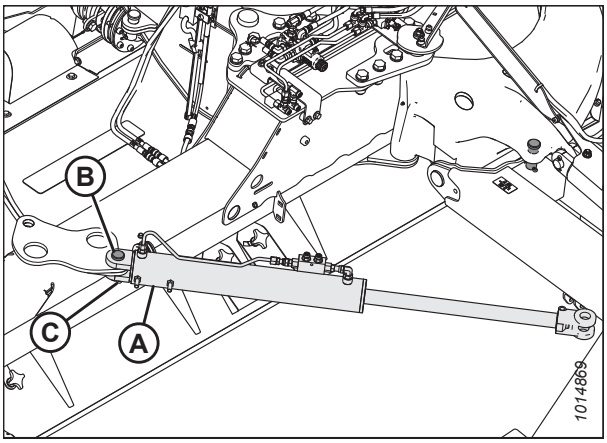


Figure 3.79: Transport Swing Cylinder

6. Connect rod end (B) of transport swing cylinder (A) to the transport casting.
7. Align the holes and install clevis pin (C).
8. Secure it with cotter pin (D).

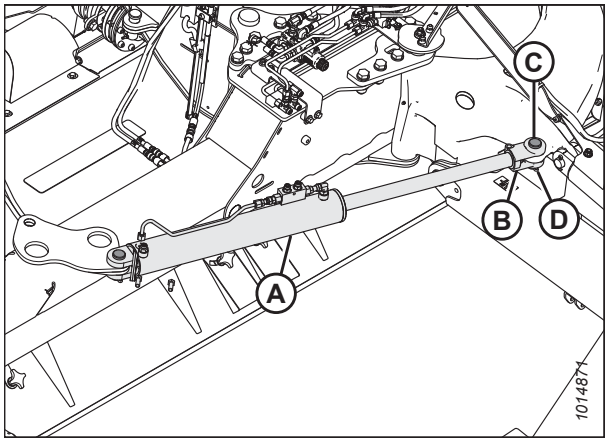


Figure 3.80: Swing Cylinder – Rear Left View

Installing Transport Wheels

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

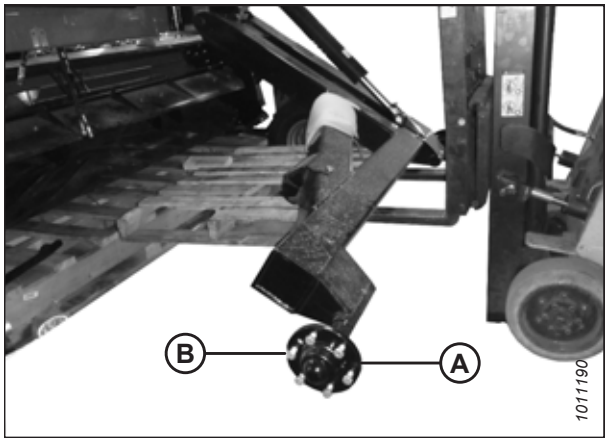


Figure 3.81: Transport Wheel

CAUTION

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

4. Retrieve the transport wheels and install them with the wheel bolts. Ensure the valve stem faces outboard. Do **NOT** fully tighten the bolts.
5. Lower the wheels to the ground and back the forklift away.
6. Torque the wheel bolts to 160 Nm (120 lbf·ft) following the tightening sequence shown.

   IMPORTANT:

   Whenever a wheel is installed, check the torque after 1 hour of operation.

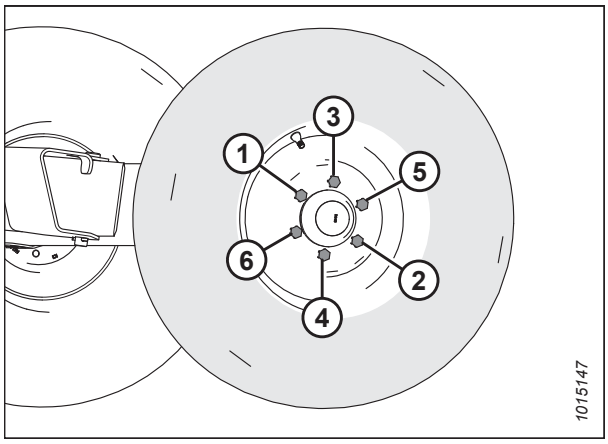


Figure 3.82: Tightening Sequence

7. Check tire pressure and adjust as required.
   - For safety measures, refer to *1.5 Tire Safety, page 6*.
   - For instructions on checking tire pressure, refer to *8.1.2 Checking Tire Pressure, page 144*.

Installing Transport Alignment Control

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

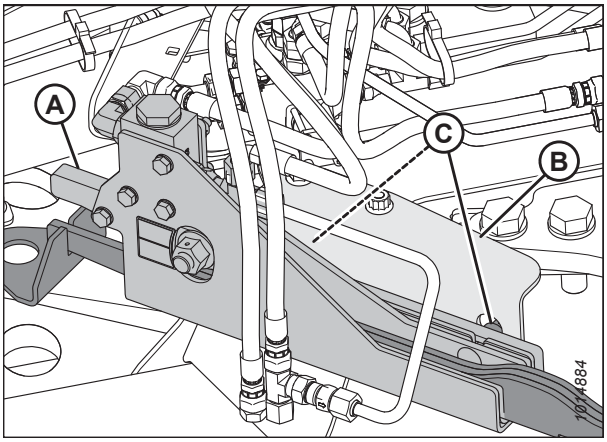


Figure 3.83: Alignment Controls – Front Right View

3. Secure cam assembly (A) onto hitch swing cylinder plate (B) with bolts and nuts (C). Torque nuts (C) to 58 Nm (43 lbf·ft).

   NOTE:

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

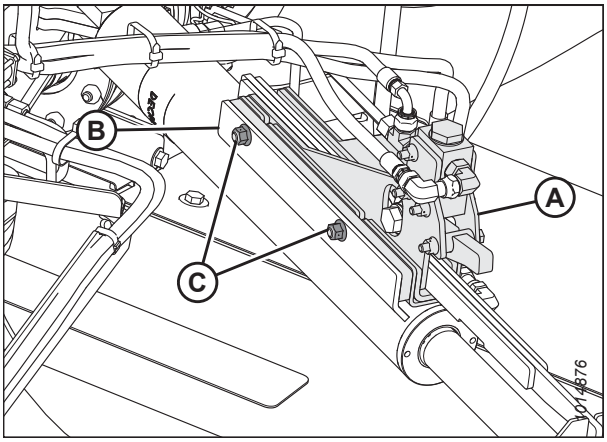


Figure 3.84: Alignment Control – Rear Right View

4. Check travel of cam arm (A) by sliding it in and out of 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).

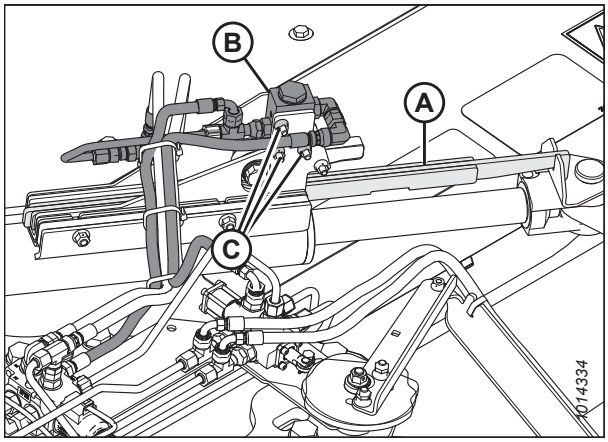


Figure 3.85: Alignment Control – Rear Right View

5. Align hole in cam arm (A) with hole in clevis (B) on the rod end of the cylinder.

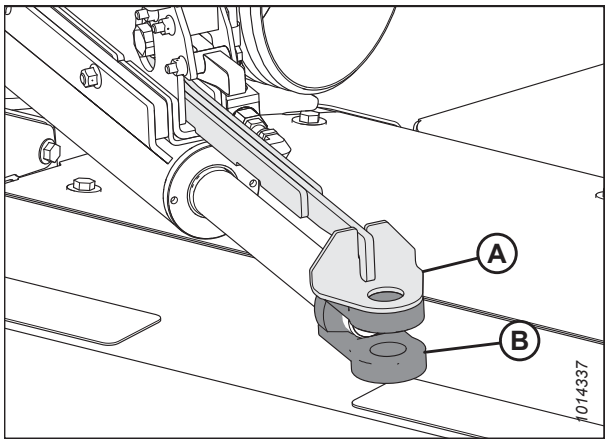


Figure 3.86: Alignment Control – Rear Right View

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

   NOTE:

   The rod end of the cylinder will be attached to the transport casting after the system is primed. For instructions, refer to *6.2 Priming Hitch Swing Cylinder, page 115*.

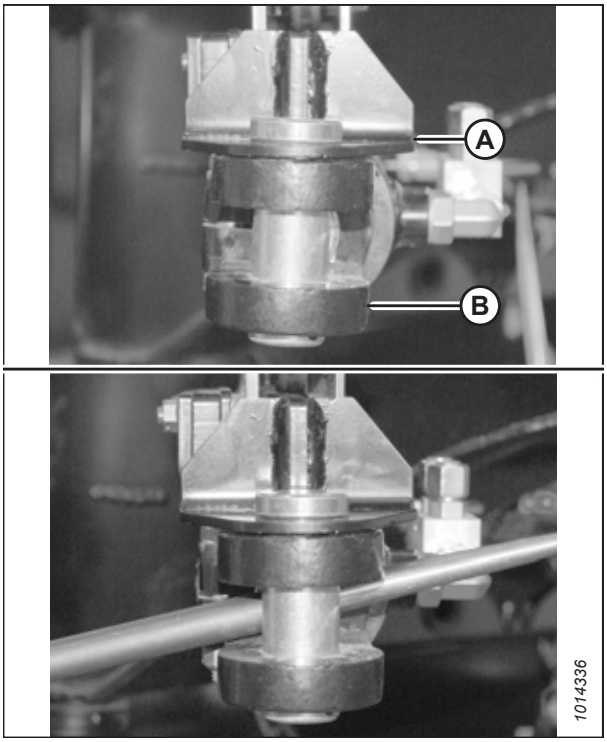


Figure 3.87: Cam Arm Alignment

7. Retrieve completion valve assembly (A) and one M12 x 25 flanged hex head bolt from the shipping bag.

8. Remove bolts (B) from the standoffs on the rear of the carrier. Install valve assembly (A) behind support plate (C). Secure it to the standoffs using three M12 x 25 flanged hex head bolts (B).

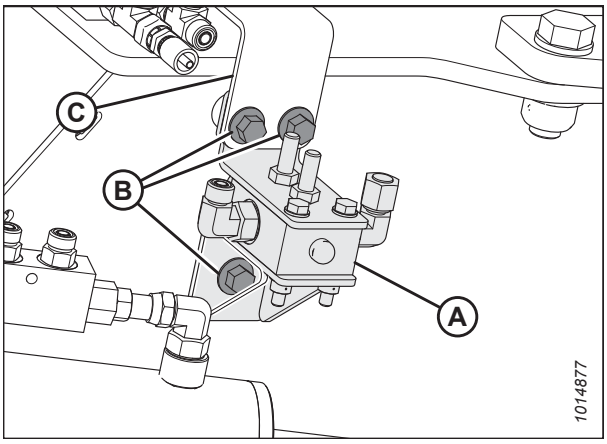


Figure 3.88: Control Valve

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

    NOTE:

    Make sure that paddle (B) is centered on the valve and moves freely.

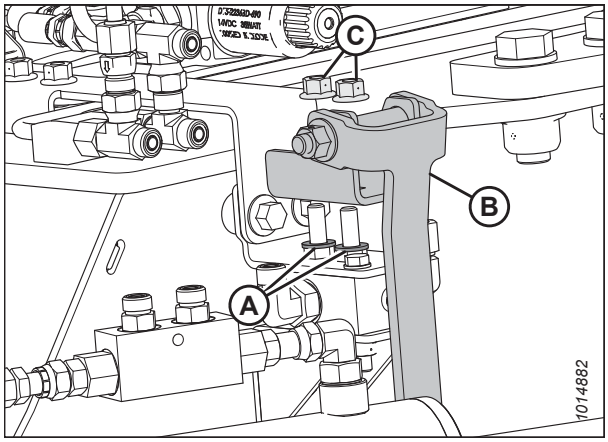


Figure 3.89: Control Valve

Installing Hydraulics

This section explains how to install the transport hydraulic control system.

Installing Hydraulic Lines and Hoses

Hydraulic hoses and lines distribute hydraulic fluid to the various components on the pull-type.

NOTE:

The cover support bracket has been removed from the illustrations for clarity.

NOTE:

Refer to *10.4 Torque Specifications, page 180* for torque details.

1. Retrieve the steel lines and hoses from the shipping bag.
2. Place a container or rag under the fitting on the hitch swing cylinder to catch the oil.
3. Remove existing fitting (A) from the block.
4. Remove cap (B) from tee fitting.

    IMPORTANT:

    Ensure that the O-ring is in place.

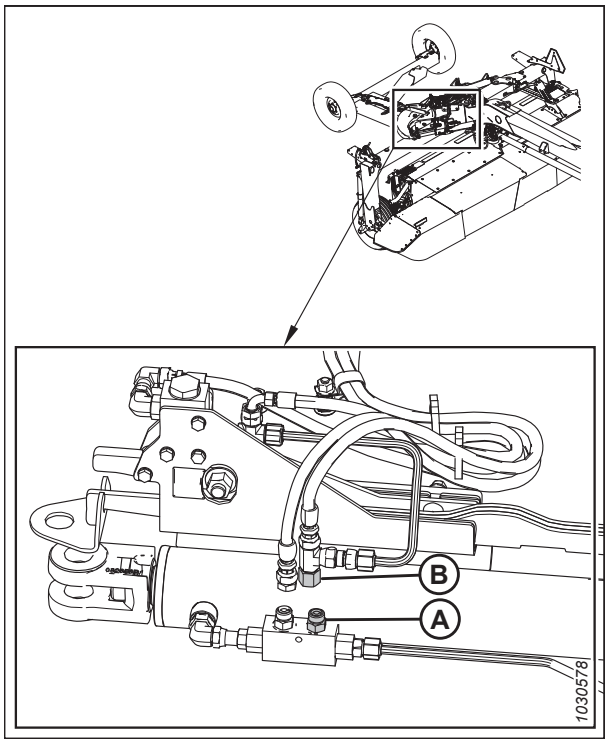


Figure 3.90: Alignment Valve Fitting

5. Retrieve ORFS-6 x ORB-6 connector (B) from the shipping bag and install it at location (A).

   NOTE:

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

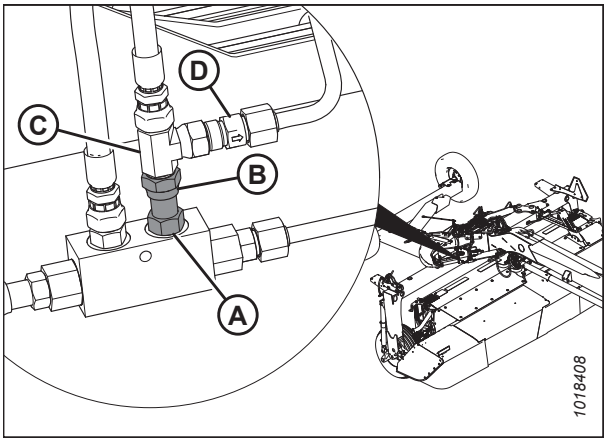


Figure 3.91: Alignment Valve Fitting

6. Remove the cap from fitting (A).
7. Remove the plug from hose (B). Install the hose to fitting (A) as shown.

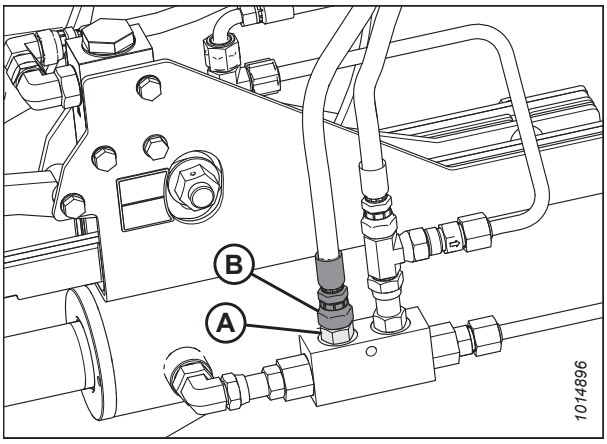


Figure 3.92: Alignment Valve Fitting

8. Install steel line (A) from port A on the completion assembly to tee fitting (D).
9. Install steel line (B) from port B on the completion assembly to tee fitting (C).

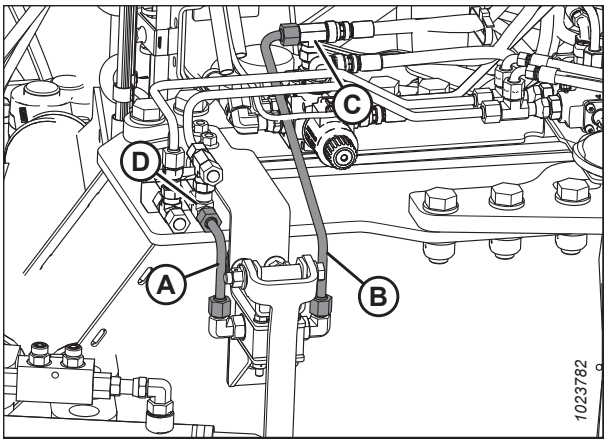


Figure 3.93: Completion Assembly Plumbing

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

    NOTE:

    Ensure that the direction arrow on check valve (C) points toward the tee fitting.

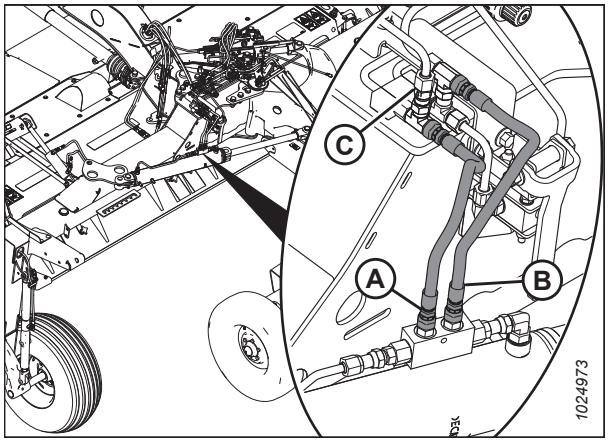


Figure 3.94: Transport Swing Cylinder

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

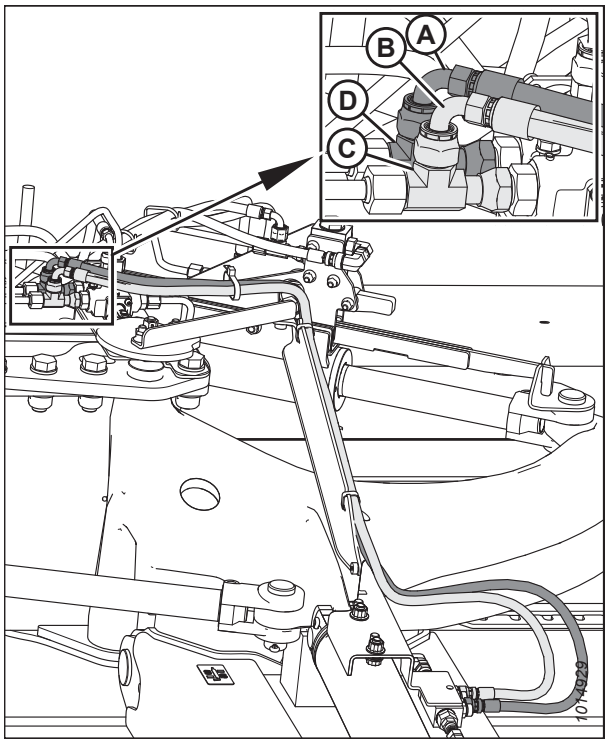


Figure 3.95: Transport Swing Control

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

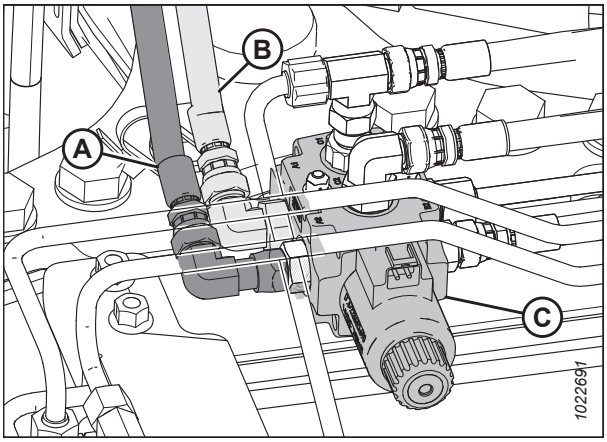


Figure 3.96: Selector Valve Supply

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 rotary disc pull-type is in transport mode.

Retrieve the following secondary lift hose from the shipping bag:

- **R113 PT:** Use hose MD #224160.
- **R116 PT:** Use hose MD #224162.

18. Retrieve the blue collars with the number one (blue collar #1) on them from the shipping bag. Place one collar on each end of secondary lift hose (B).
19. Undo adjustable strap (A) around the hoses at the aft end of the hitch.
20. Locate the green wire preinstalled in the hitch for pulling the hoses through the hitch.

    NOTE:

    If you are installing a hydraulic center-link, pull the hydraulic hoses through the hitch at the same time as the lift hose.

21. At the rear of the hitch, feed the male ORB end of hose (B) into access hole (C). Route the hose through the hitch to the opening at the front.
22. Position long hose (A) so that the exposed length at the front of the hitch matches existing hose (B). Route the hose through guide (C).
23. At the front of the hitch, loosen nut (D) on hose clamp (E) until hose (A) can be positioned in the clamp.
24. Tighten nut (D).

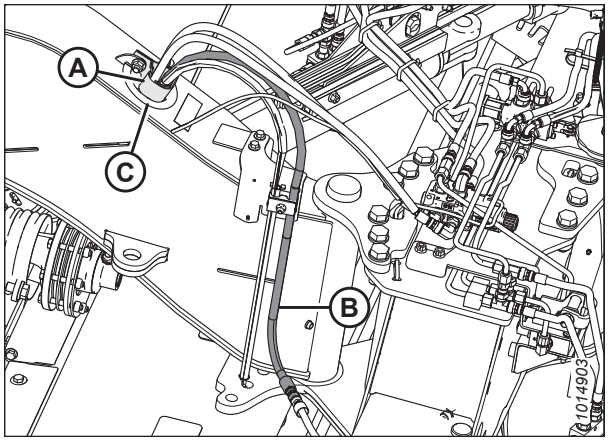


Figure 3.97: Lift Hoses

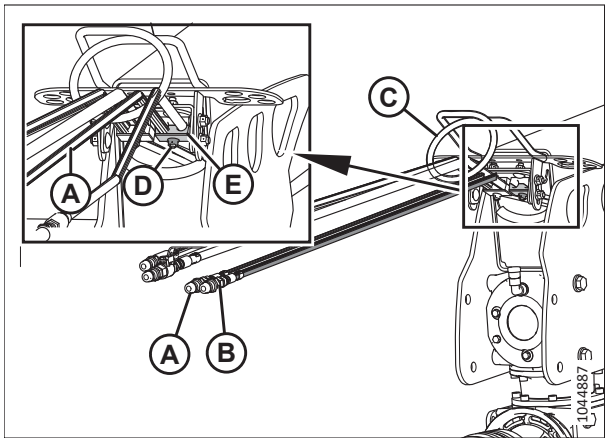


Figure 3.98: Lift Hoses — Hydraulic Hose Cover Removed for Clarity

25. Retrieve ORB-8 coupler (A) and plastic cap (B) from the hardware bag.

26. At the forward end of the hitch, install coupling (A) and plastic cap (B) onto secondary lift hose (C). Do **NOT** attach the hoses to the tractor at this time.

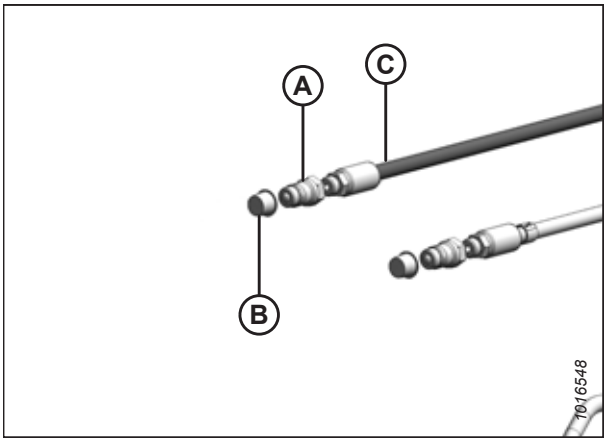


Figure 3.99: Lift Hose Fittings

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

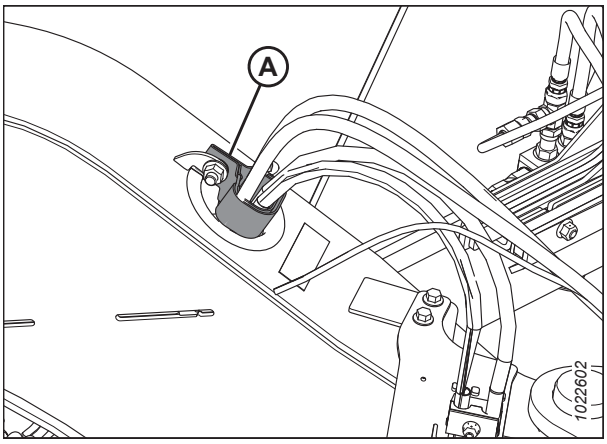


Figure 3.100: Lift Hoses

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

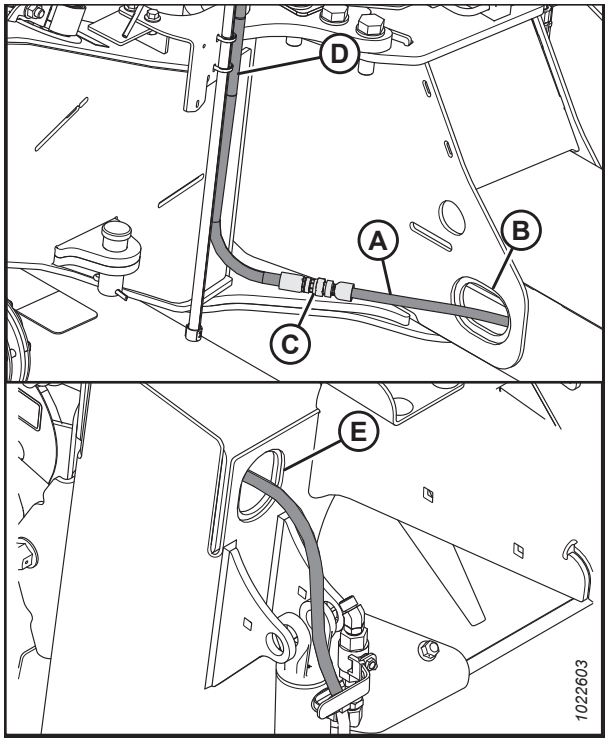


Figure 3.101: Lift Hose

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

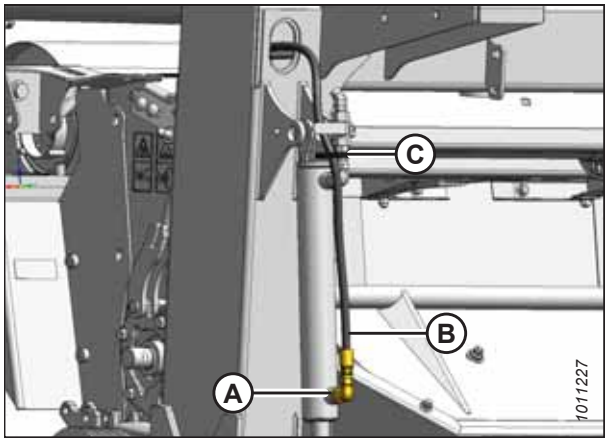


Figure 3.102: Lift Cylinder

Installing Electrical Components

Wiring harnesses, lighting assemblies, the selector valve, the lighting module, and the remote control are components of the electrical system.

Installing Light Assemblies

Light assemblies provide position, hazard, turning direction, and braking information.

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

   NOTE:

   The right light assembly was removed earlier.
3. Remove lamps (B). Retain the lamps and hardware for installation.

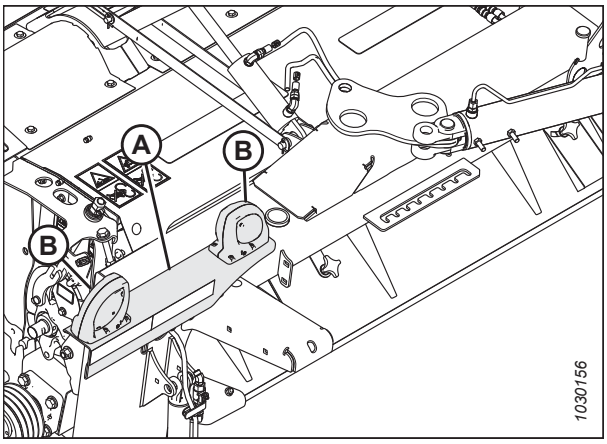


Figure 3.103: Transport Lighting

4. Remove red lamp (C) from the right light assembly (removed in an earlier procedure). Align red lamp (C) with the predrilled holes in the right lamp bracket, next to amber lamp. Secure the red lamp with existing hardware, as shown.
5. Install right light assembly (A) on the left float spring mount using two nuts (B) and two bolts from the shipping bag.

   NOTE:

   Red lamp (C) should be towards the rear of the machine when in transport mode.

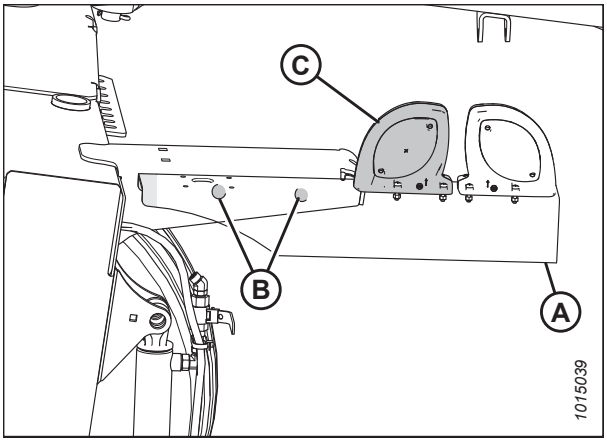


Figure 3.104: Left Side of Carrier

6. Retrieve new light bracket (C) from the shipment.

7. Install amber lamp (A) and red lamp (B) onto new bracket (C), previously removed from the left lamp bracket, with hardware provided.

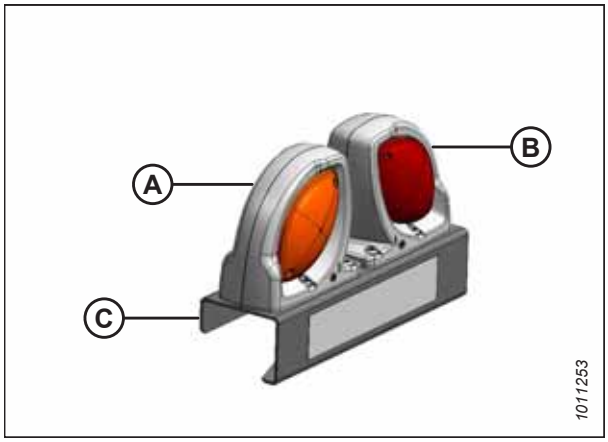


Figure 3.105: Light Assembly

8. Install light assembly (A) onto the machine left end with two M10 x 20 carriage bolts (B) and lock nuts from the shipping bag.

   NOTE:

   Ensure the amber lamp faces the front of machine and reflector faces outboard.

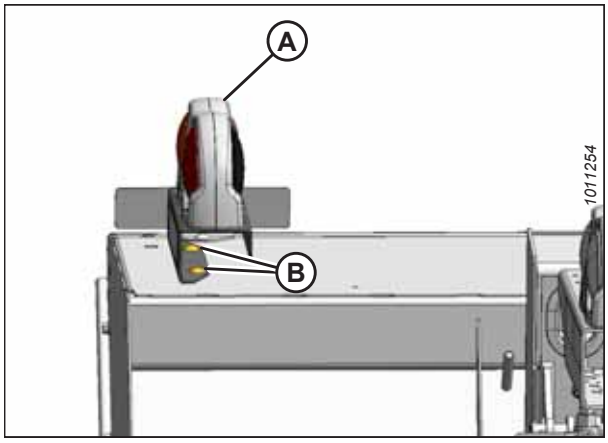


Figure 3.106: Machine Lighting – Left Side

Installing Left Transport Harness

1. Retrieve transport harness (A) from the shipping bag.

2. Route connectors P201 and P202 on the end of harness (A) to cover support (D).

3. Using a draw tape or equivalent, route connectors P401 and P404 on the other end of harness (A) through opening (B) at the front of the carrier to opening (C) adjacent to the center-link.

4. Route the harness until the plugs reach left light assembly (E) on the machine.

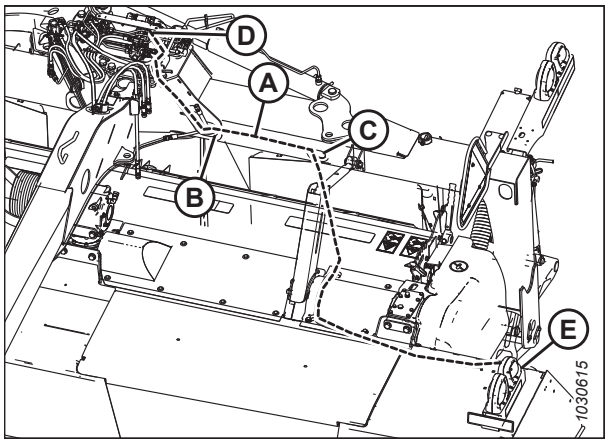


Figure 3.107: Harness Routing

5. Connect plug P301 (A) from harness (B) to receptacle P202 (C) on harness (D) (supplied with the kit).

   NOTE:

   Plug P301 (A) was disconnected from the lighting module.

6. Connect plug P201 (E) on harness (D) (supplied with the kit) into the lower output receptacle on the lighting module.

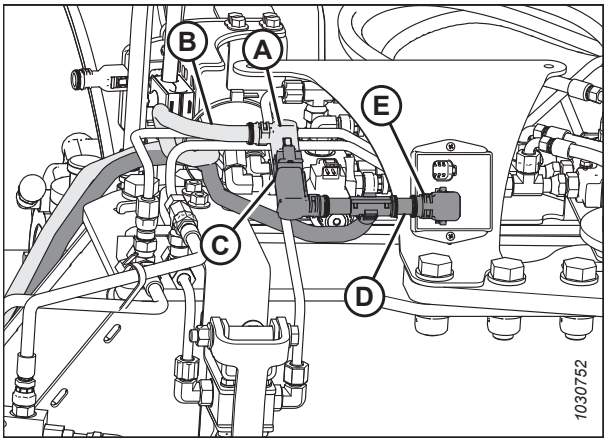


Figure 3.108: Harness Connection

7. Route harness (A) to light (B) on the machine as shown.
8. Retrieve P-clips, plastic clamps, and cable ties from the shipping bag.
9. Remove bolts (C) on the machine at locations shown.
10. Secure harness (A) with p-clips, existing bolts (C), and plastic clamp (D) into the existing holes.

    NOTE:

    R113 PT: The harness for the rotary disc pull-type is secured with one plastic clamp (D).

    NOTE:

    R116 PT: The harness for the rotary disc pull-type is secured with two plastic clamps.

11. Secure harness (A) to the light bracket with two cable ties (E).
12. Push any excess harness into the carrier frame.
13. Connect plug P401 and P404 into light (B).

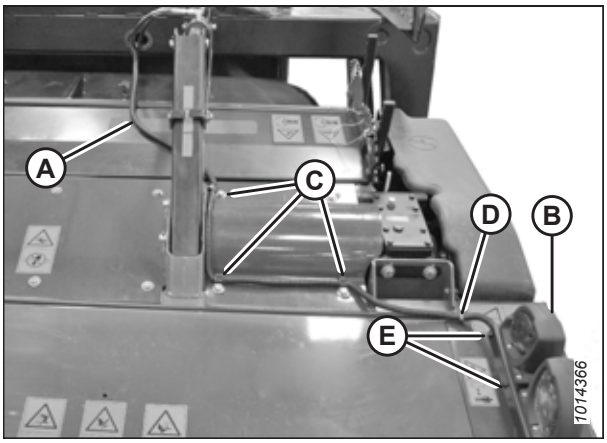


Figure 3.109: Harness Routing – R113 PT Shown, R116 PT Similar

Connecting Right Transport Harness

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

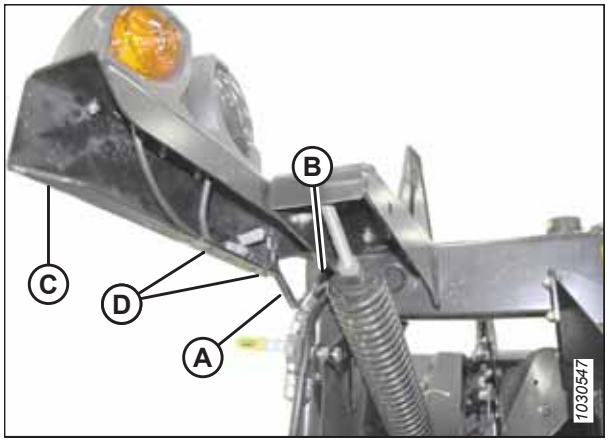


Figure 3.110: Transport Light

Connecting Selector Valve and Transport Lighting Module

The electronically controlled selector valve manages the hydraulics for the transport system; the lighting module is the hub for signal and hazard lighting.

1. Remove valve connector plug (A) and module connector plug (B).

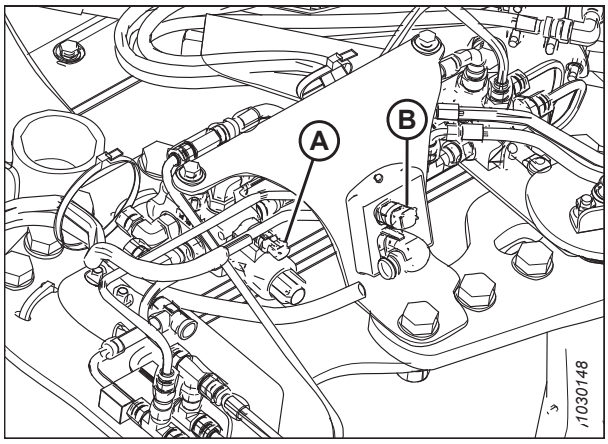


Figure 3.111: Connector Plugs

2. Locate plugs P102 (A) and P502 (B) on the transport harness at the machine end of the hitch. Route plugs P102 (A) and P502 (B) towards selector valve (C).
3. Connect plug P502 (B) to the receptacle on selector valve (C).
4. Connect plug P102 (A) to the upper input receptacle on transport lighting module (D).

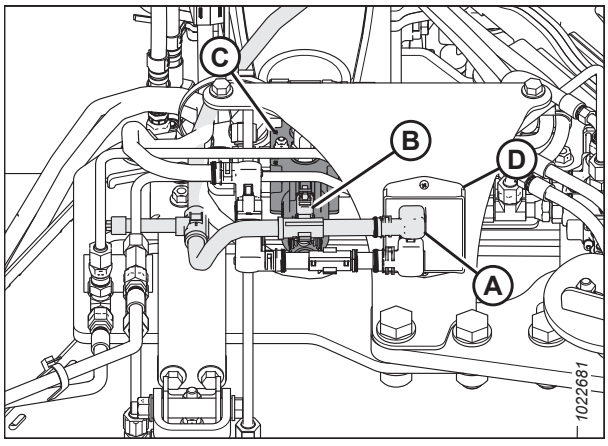


Figure 3.112: Selector Valve Supply

Installing Remote Control

The remote control allows the operator to convert the pull-type from field to road mode from within the tractor cab.

1. Retrieve remote control (A) connected to a wiring harness.
2. Place remote control (A) on the hitch temporarily.

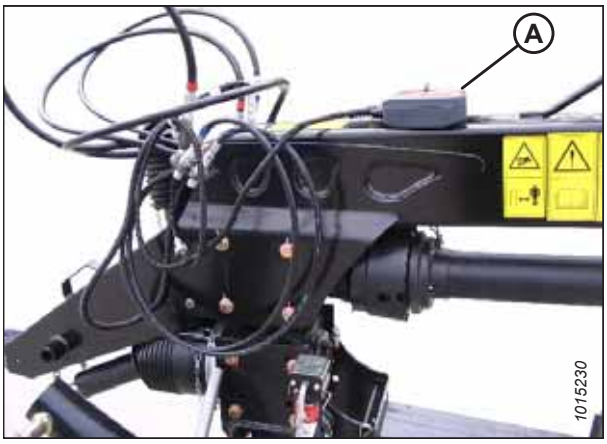


Figure 3.113: Remote Control on Top of Hitch

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

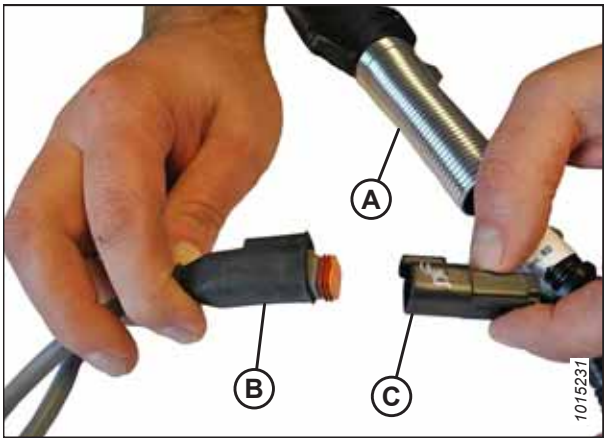


Figure 3.114: Transport Harness

4. ***Tractors with three-pin auxiliary power connections:***

   NOTE:

   The remote control has internal protection which prevents damage caused by incorrect wiring, short circuits, or overload conditions.

   Connect two wires (B) from three-pin auxiliary connector (A) to remote control wires (C) on the remote control, wrap connections with electrical tape, and proceed to Step *6, page 61*.

   - The wire with no tag connects to tractor ground.
   - The wire with the red tag connects to tractor power.

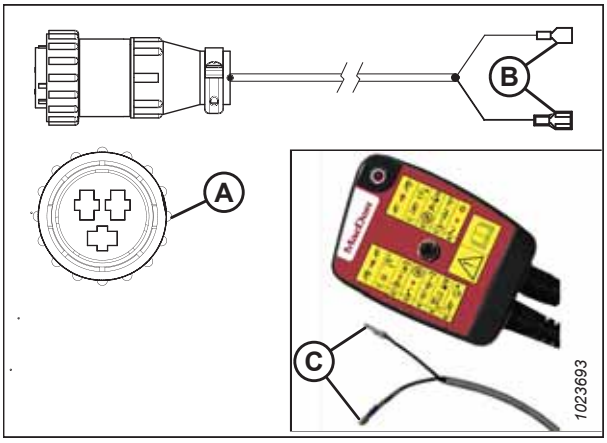


Figure 3.115: Three-Pin Auxiliary Connector

NOTE:

If the connections are reversed, the lamp will not illuminate when the toggle switch is in field mode. Try the following to correct the issue:

- Check if 10 amp fuse (A) located inside the transport control box has blown.
- Check for a short in the wires to the solenoid valve on the machine.
- Check for incorrect wire connections (reversed) at the power supply or the solenoid valve.

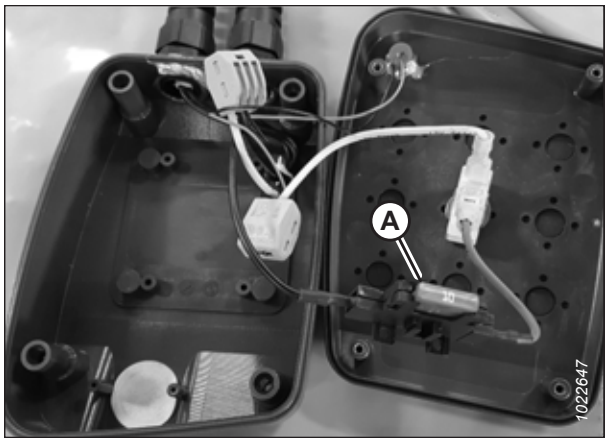


Figure 3.116: Control Box Interior

5. ***Tractors without three-pin auxiliary power connections:***

NOTE:

The remote control has internal protection which prevents damage caused by incorrect wiring, short circuits, or overload conditions.

Connect remote control wires (A) to the tractor's power supply as follows:

- Connect wire (B) with no tag to tractor ground.
- Connect wire (C) with the red tag to tractor power.

NOTE:

If the red tag is missing, identify the power wire by locating the wire with the number 1 printed on it. The ground wire has a number 2 printed on it.

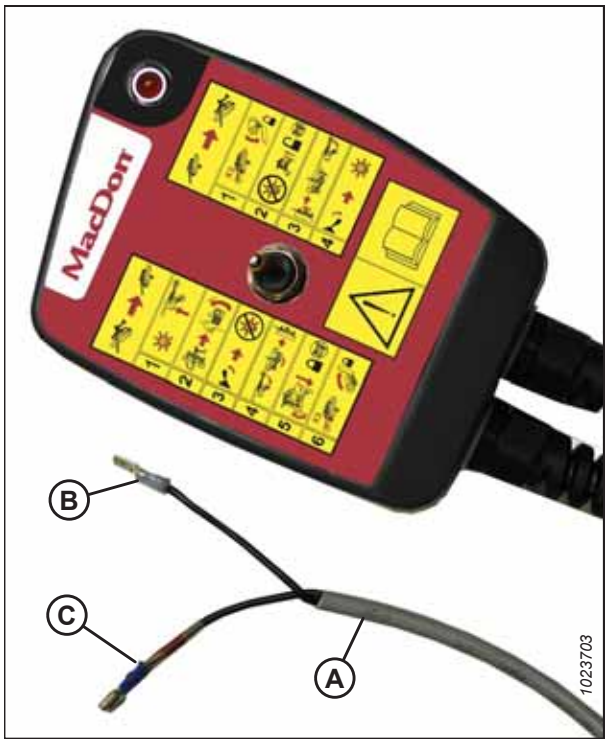


Figure 3.117: Remote Control

NOTE:

If the connections are reversed, the lamp will not illuminate when the toggle switch is in field mode. Try the following to correct the issue:

- Check if 10 amp fuse (A) located inside the transport control box has blown.
- Check for a short in the wires to the solenoid valve on the header.
- Check for incorrect wire connections (reversed) at the power supply or a solenoid valve.

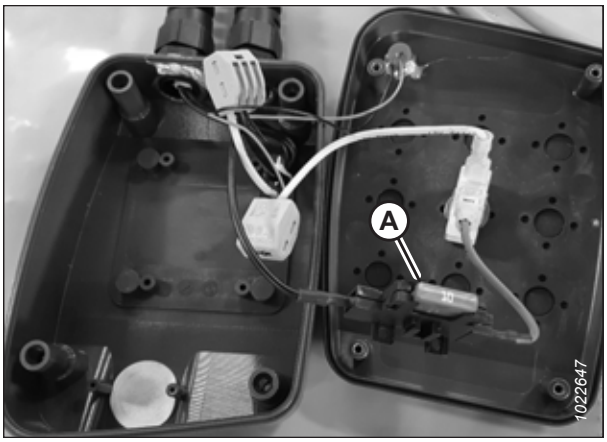


Figure 3.118: Control Box Interior

6. Place the remote control inside the tractor cab.

Installing Slow Moving Vehicle Sign

The slow moving vehicle (SMV) sign warns road users that your vehicle is moving 40 km/h (25 mph) or slower.

1. Retrieve the SMV sign that was previously removed.
2. Remove bolts (A), and discard existing bracket (B). Retain the two bolts, nuts, and washers.

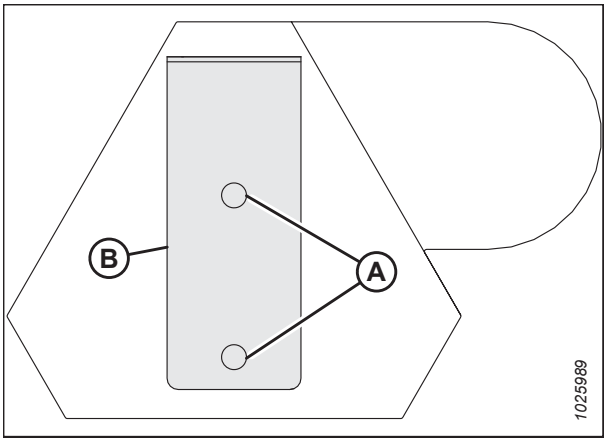


Figure 3.119: SMV Sign

3. Retrieve bracket (A).
4. Attach bracket (A) to left end float spring member with M12 bolts (B) and nuts retrieved from the shipping bag.
5. Attach sign (C) to bracket (A) and secure with two bolts (D), washers (E), and nuts (F).
6. Torque nuts (F) to 20 Nm (15 lbf·ft [177 lbf·in]). Do **NOT** overtighten the nuts.

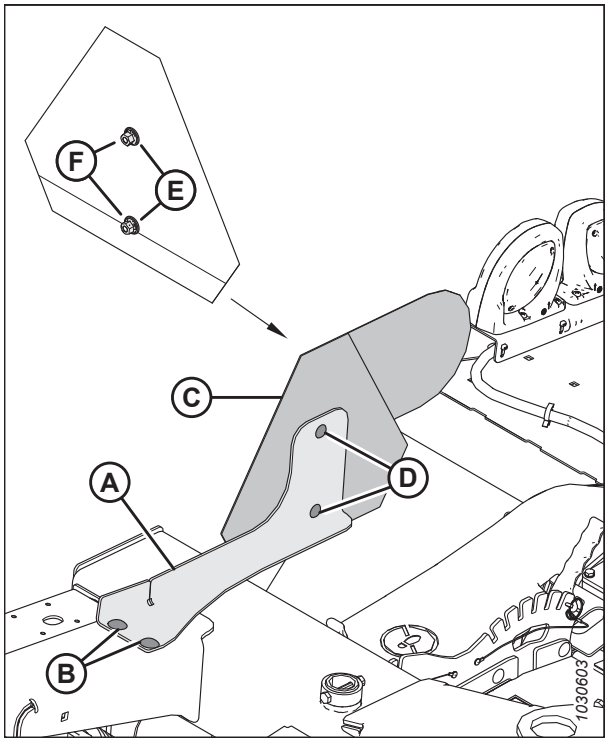


Figure 3.120: SMV Sign

7. Retrieve speed decals (C) and (D) that are shipped in manual case (B).
8. Choose appropriate speed decal (C) or (D) depending on the region. Orient the decal as shown (E) when installing it on SMV bracket (A).

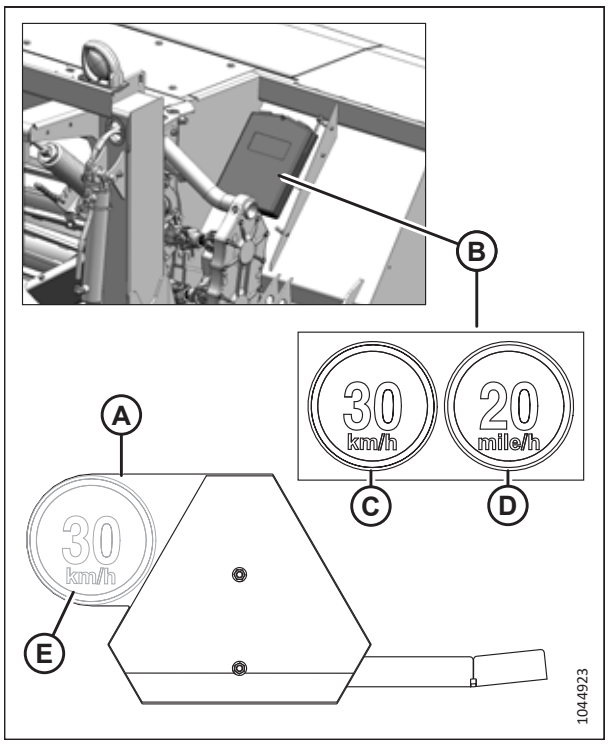


Figure 3.121: SMV Decals

Installing Cover

The transport cover protects the hydraulic valves and electrical components from debris.

1. Install cover (A) onto the cover support.
2. Install bolts (B). Torque the bolts to 60 Nm (45 lbf·ft).

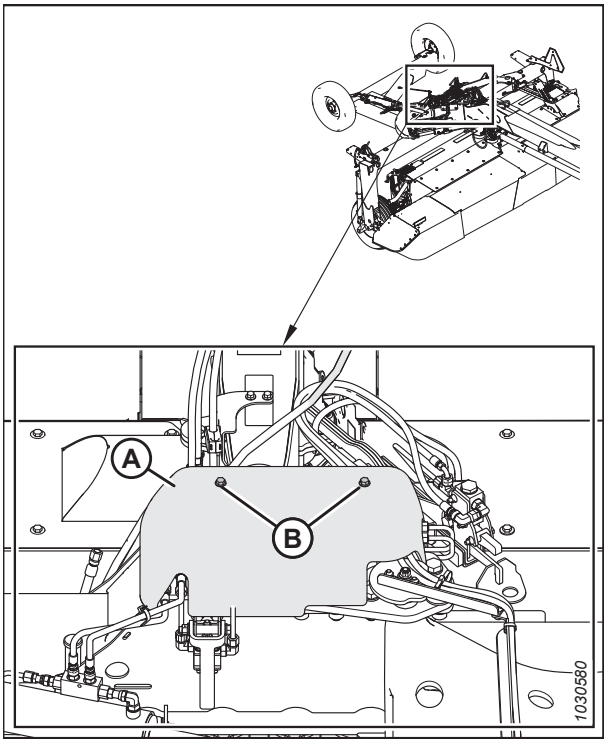


Figure 3.122: Cover

3.8.2 Installing Hydraulic Center-Link – Optional

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

3.8.3 Installing Tall Crop Divider – Optional

The tall crop divider is supplied in a separate shipment. For instructions, refer to the installation instructions supplied with the kit.

DANGER

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

IMPORTANT:

If the rotary disc pull-type will be transported on public roads in transport mode, do **NOT** install the tall crop dividers. Install the dividers after the machine is delivered to the customer.

Chapter 4: Assembling Rotary Disc Pull-Type – Factory-Installed Transport

Perform the following procedures in order when assembling a rotary disc pull-type with a factory-installed transport.

4.1 Repositioning Center-Link Top Anchor

The center-link top anchor must be repositioned into working position.

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

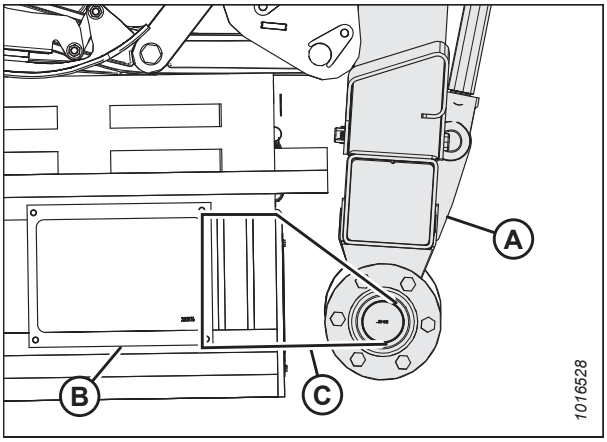


Figure 4.1: Transport Assembly

2. **Machines with finger conditioners:** Remove bolt (A) securing center shield (B) to the frame. Lower the shield.

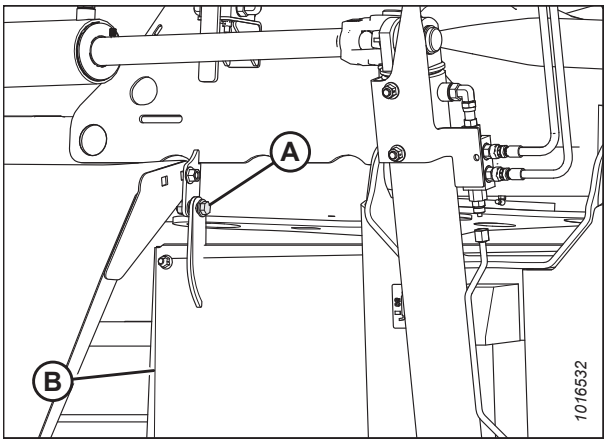


Figure 4.2: Center Shield – Finger Conditioners Only

3. Loosen retaining bolt (A) and rotate cover plate (B) away from float spring bolt (C). Repeat this step on the opposite side.

4. Fully loosen float spring bolt (C). Repeat this step on the opposite side.

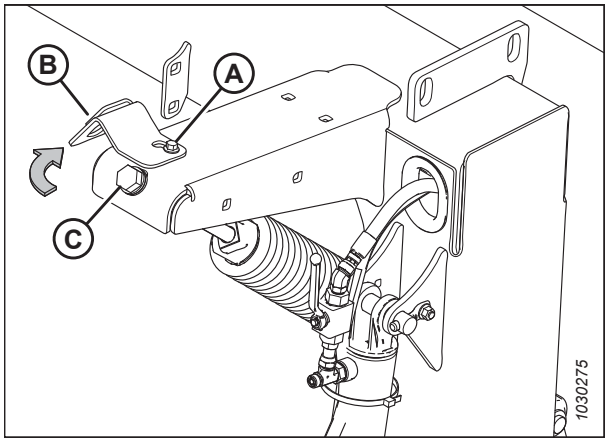


Figure 4.3: Float Spring – Right Side

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

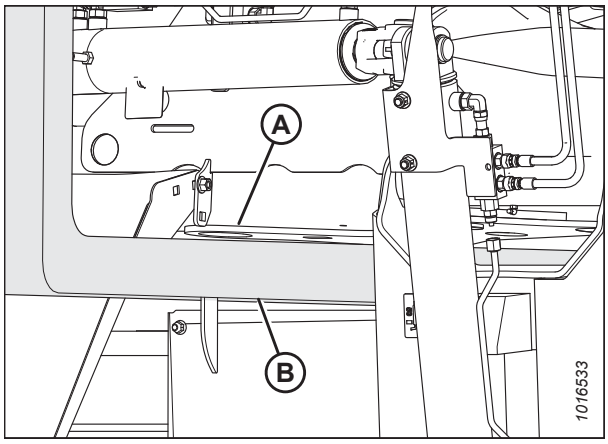


Figure 4.4: Carrier Frame

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

CAUTION

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

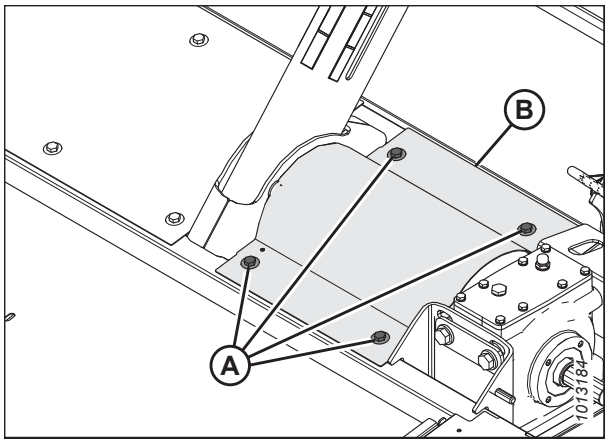


Figure 4.5: Top Shield – Left of Center-Link

7. Remove cotter pin (B), washer (C), and shipping tag (D) from pin (A).

   NOTE:

   Pin (A) should slide out freely. Do **NOT** use a hammer to remove pin (A).

8. Adjust the center-link and/or forklift until pin (A) is loose.

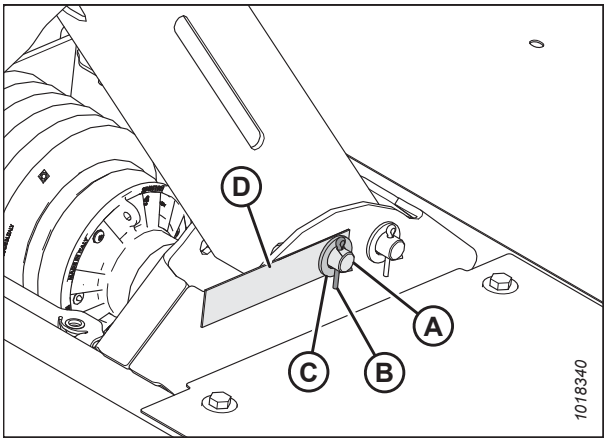


Figure 4.6: Center-Link Anchor – Right of Center-Link

9. Adjust the carrier frame so the pin can be installed in the working location. Install pin (A) and secure it with washer (B) and cotter pin (C).

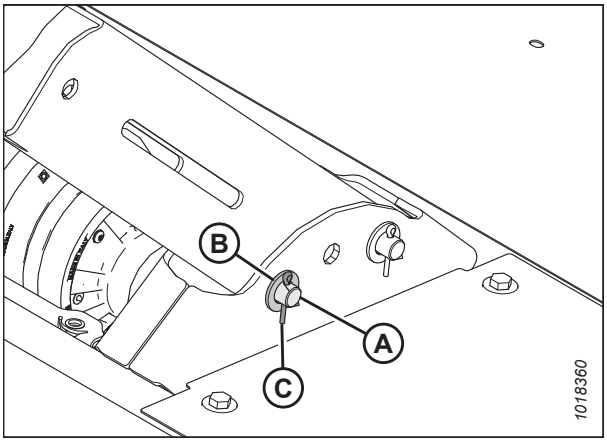


Figure 4.7: Center-Link Anchor – Right of Center-Link

10. Install top shield (B) and secure it with four M10 hex head bolts (A) and flat washers. Torque the hardware to 28.5 Nm (21 lbf·ft [252 lbf·in]).

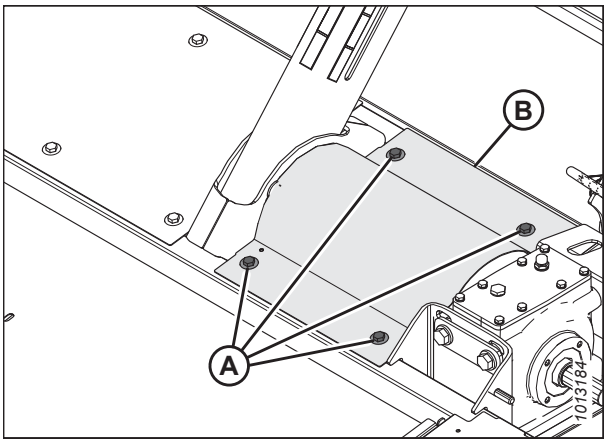


Figure 4.8: Top Shield – Left of Center-Link

11. Close lock-out valve (A) on each rotary disc pull-type lift cylinder by turning the handle to the horizontal position. Repeat this step on the opposite side.

12. Turn adjuster bolt (B) to set dimension (C) to 130 mm (5 1/8 in.). Repeat this step on the opposite side.

    - Turn the bolt clockwise (towards the spring) to increase float
    - Turn the bolt counterclockwise (away from the spring) to decrease float

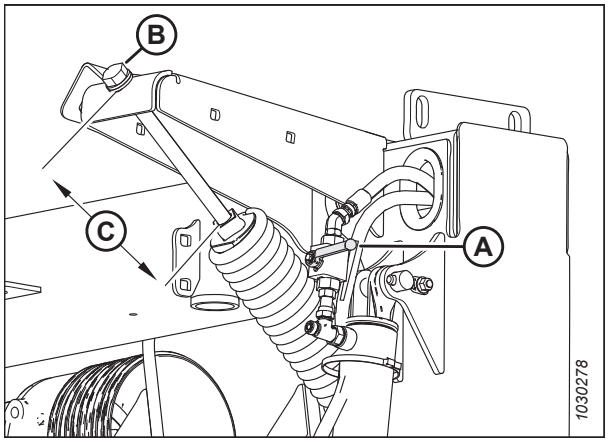


Figure 4.9: Lift Cylinder Lock-Out Valve and Adjuster Bolt

13. Reposition cover plate (A) over the float spring adjuster bolt as shown. Secure cover plate (A) by tightening bolt (B). Repeat this step on the opposite side.

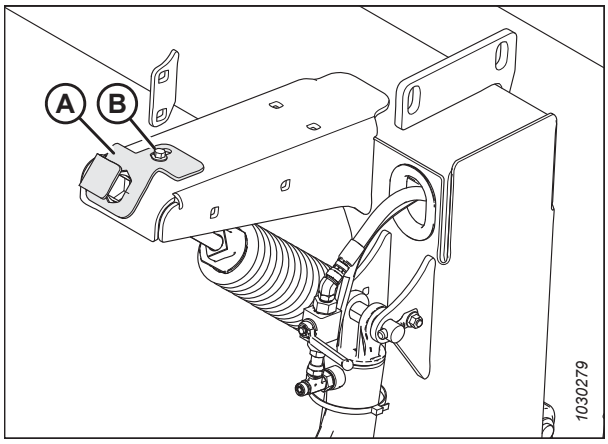


Figure 4.10: Adjuster Bolt Cover Plate

4.2 Attaching Hitch to Carrier

The connection point on the carrier frame secures the hitch to the frame and allows the pull-type to pivot.

1. Remove cam assembly (A) from 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.

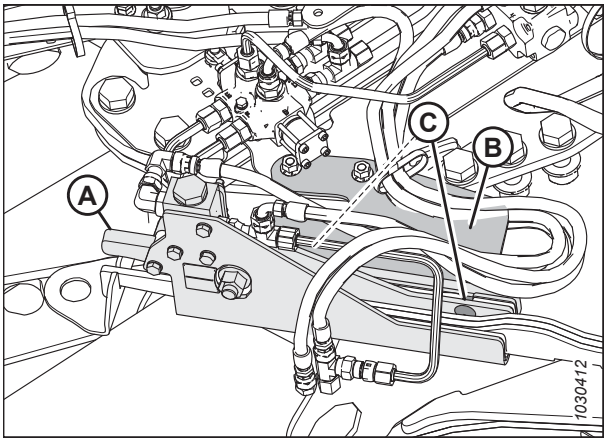


Figure 4.11: Alignment Controls – Front Right View

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

   NOTE:

   You may need to pry up the shipping support to remove the hardware.

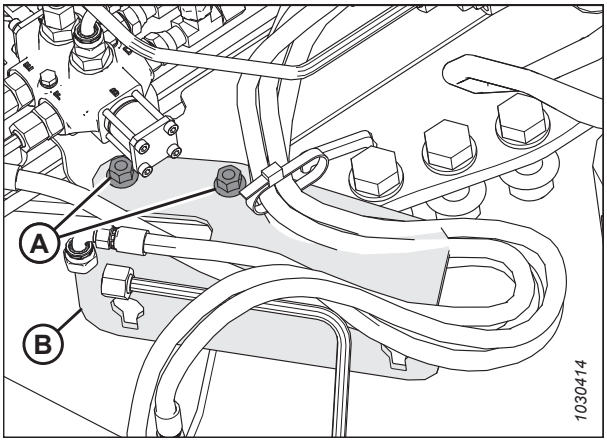


Figure 4.12: Shipping Support – Front Right View

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

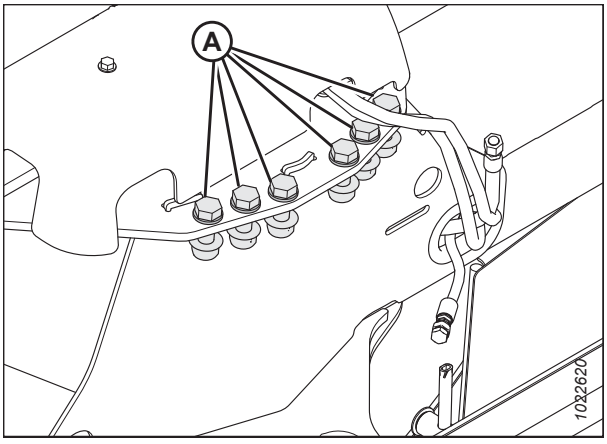


Figure 4.13: Carrier Frame

5. Place sling (A) around the hitch frame. Adjust sling position until the hitch is balanced when lifting.
   - **R113 PT**: Approximately 270 cm (106 in.) from the edge of tractor end (B) of the hitch
   - **R116 PT**: Approximately 350 cm (138 in.) from the edge of tractor end (B) of the hitch
6. Raise the hitch approximately 610 mm (24 in.) off the ground.

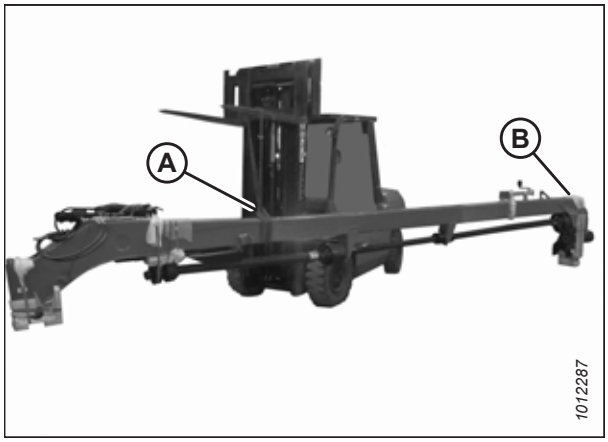


Figure 4.14: Lifting Hitch

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

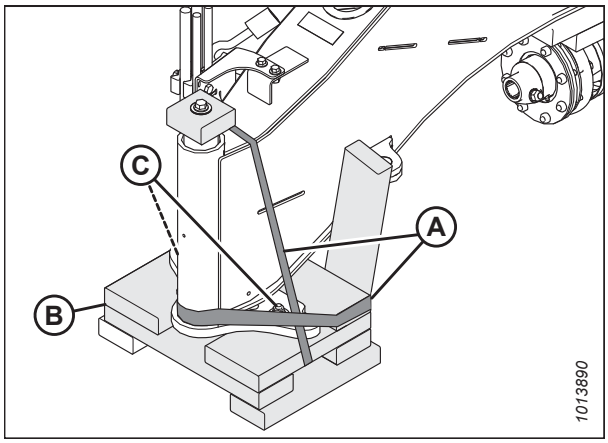


Figure 4.15: Hitch Packing

NOTE:

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

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

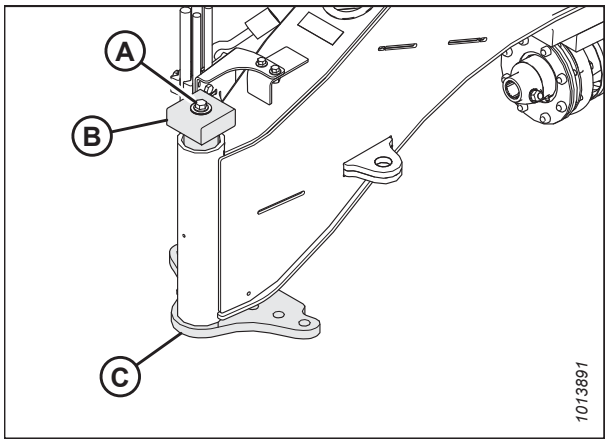


Figure 4.16: Hitch Packing

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

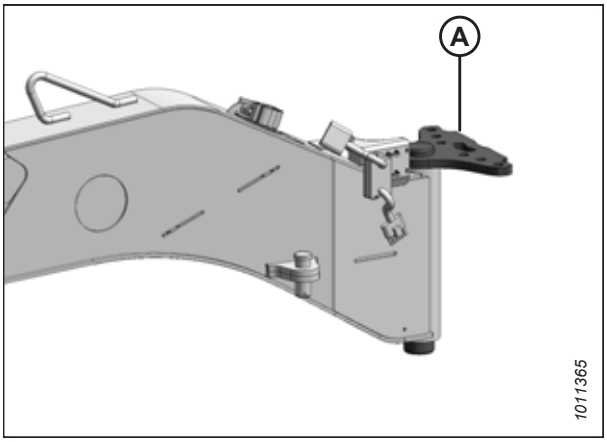


Figure 4.17: Pivot Pin

11. Pivot gearbox (A) towards the right side of the rotary disc pull-type. This will increase the clearance to the driveline clutch when installing the hitch onto the carrier frame.

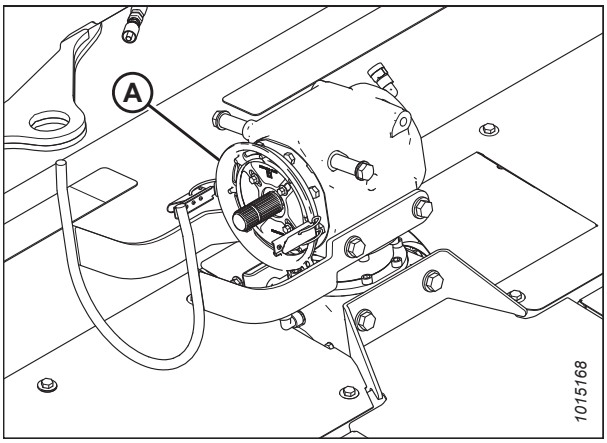


Figure 4.18: Driveline Shield

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

    NOTE:

    Align the hitch pivot at a slight angle when installing it to prevent the driveline from contacting the header drive gearbox.

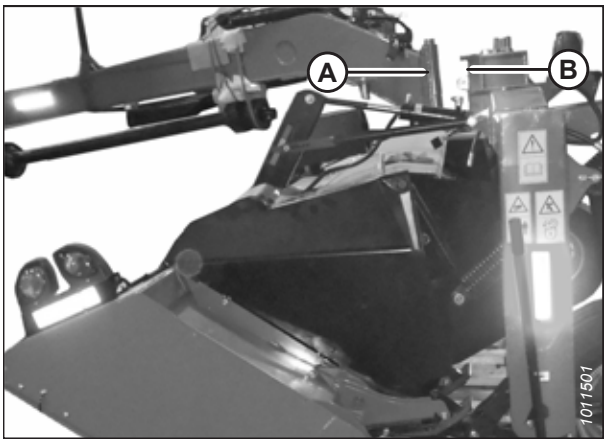


Figure 4.19: Hitch to Carrier

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

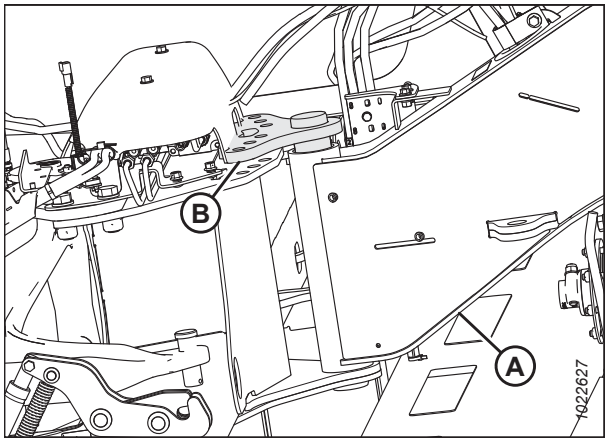


Figure 4.20: Pivot Pin

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 secure it with lock nuts (C).

15. Tighten outer bolts (B) first to draw the plate against the frame, then tighten the inner bolts. Torque bolts to 461 Nm (340 lbf·ft).

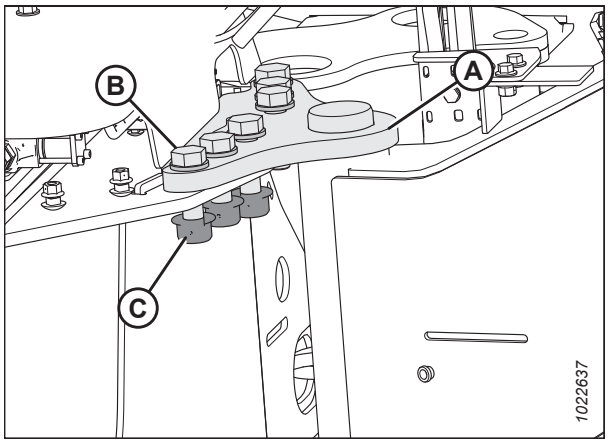


Figure 4.21: Pivot Pin

4.3 Installing Tractor Mating Hitch to Carrier Hitch

The tractor mating hitch connects the carrier hitch to the style of hitch on the tractor.

Depending on rotary disc pull-type configuration, refer to the applicable installation procedure:

- *4.3.1 Installing Drawbar Hitch, page 73*
- *4.3.2 Installing Two-Point Hitch (Cat. II) Adapter, page 78*

4.3.1 Installing Drawbar Hitch

The drawbar swivel hitch allows the pull-type to connect to a single-point hitch connection and swing behind the tractor without sacrificing turning range.

1. Remove shipping wire or banding (A) securing shipping blocks (B) at the front of the hitch, and remove the blocks.
2. Swivel the lower gearbox until the input shaft is facing forward.

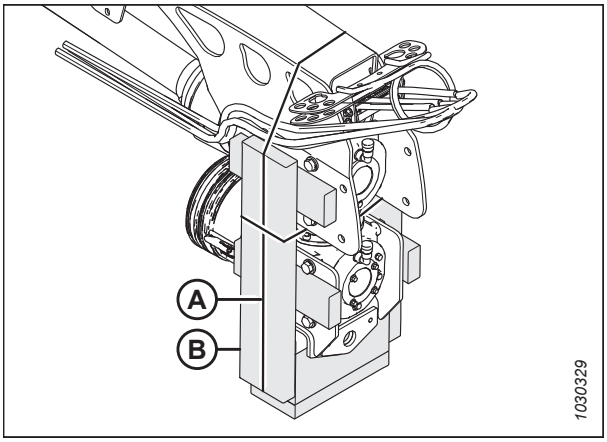


Figure 4.22: Hitch End Packing

3. Remove shipping wire (A) from jack (B), toolbox (C), and jack stand support (D).
4. Remove jack (B), toolbox (C), and jack stand support (D) from the pallet. Leave drawbar hitch (E) attached to the pallet.
5. Remove the hardware bag from the jack stand support.

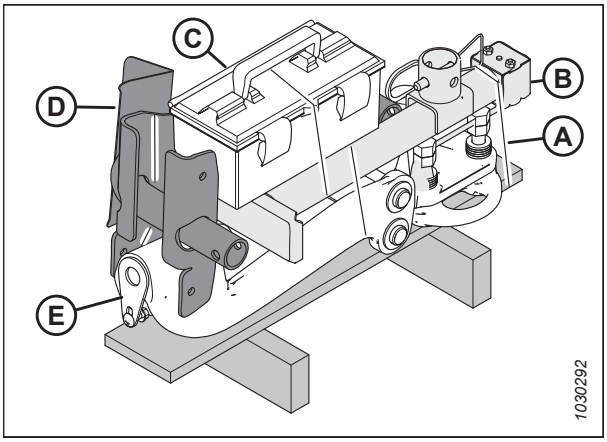


Figure 4.23: Jack and Drawbar Hitch Packing

6. Install jack support stand (A) as shown. Secure it with two M12 x 1.75 x 40 bolts (B), M12 washers, and M12 center lock nuts per side. Torque the hardware to 69 Nm (51 lbf·ft).

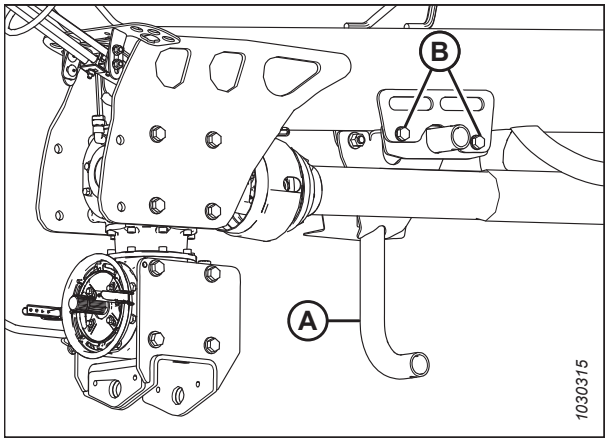


Figure 4.24: Jack Stand Support

7. Install jack (A) at the front of the hitch, and secure it with pin (B).
8. Lower the forklift until the hitch is resting on jack (A).

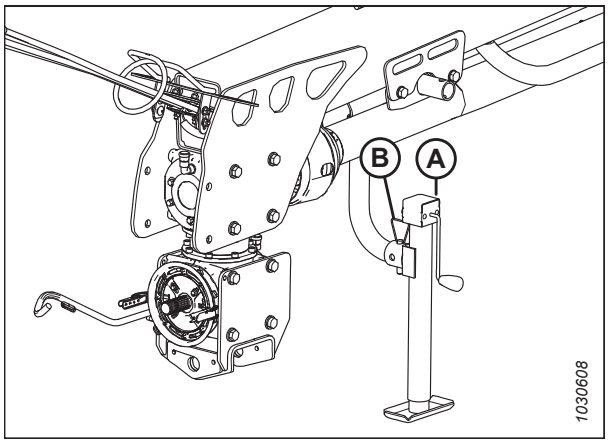


Figure 4.25: Jack Stand

9. Remove shipping wire (A) that secures pin (B) in the casting. Do **NOT** remove the other strapping.
10. Remove pin (B) from the casting, and remove bolt (C) and nut from pin.

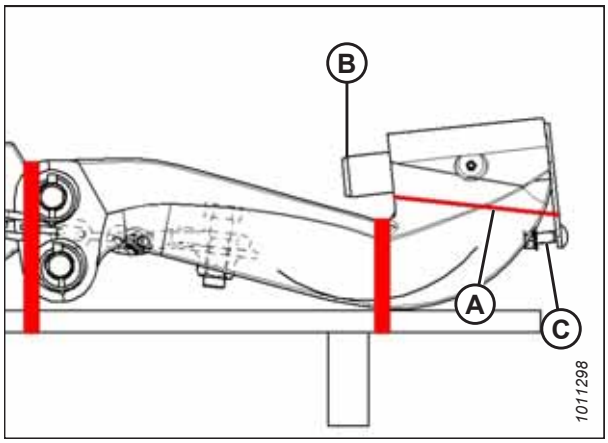


Figure 4.26: Hitch Casting

11. Using a floor jack or equivalent under pallet (A), raise drawbar hitch (B) into position under the gearbox.
12. Move drawbar hitch (B) so pin (C) can be installed.
13. Secure the pin with bolt (D) and nut.
14. Remove any remaining strapping from pallet (A). Lower the pallet. Remove the floor jack and the pallet.

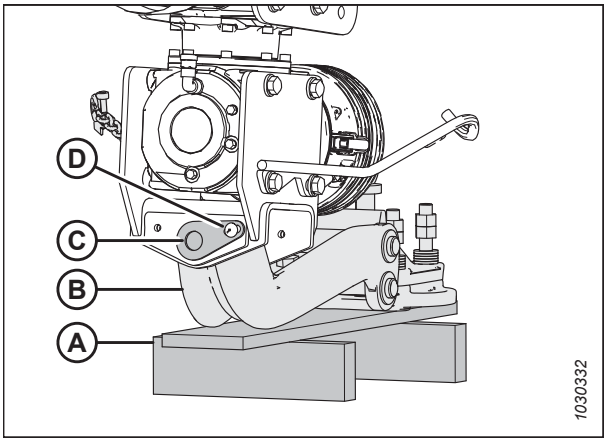


Figure 4.27: Drawbar Hitch

15. Remove cone shield (A).

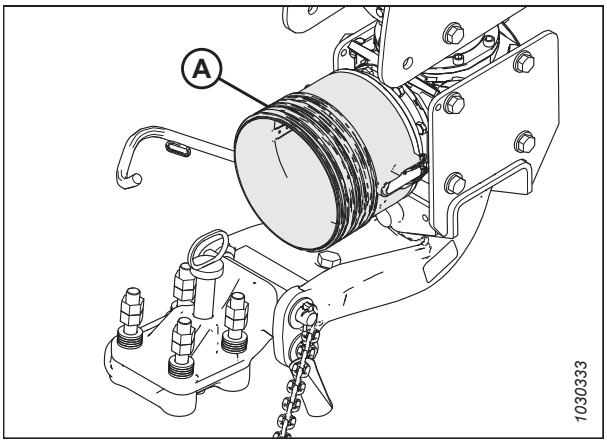


Figure 4.28: Cone Shield

16. Retrieve primary driveline (D) from the shipping location.
17. Remove nut (C), washer (B), and pin (A) from the rotary disc pull-type end of primary driveline (D).

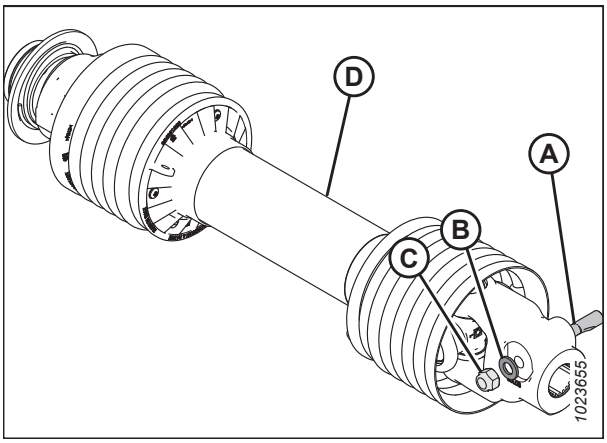


Figure 4.29: Primary Driveline

18. Slide primary driveline (A) onto the gearbox input shaft. Align pinhole (B) in the yoke with the groove on the input shaft.

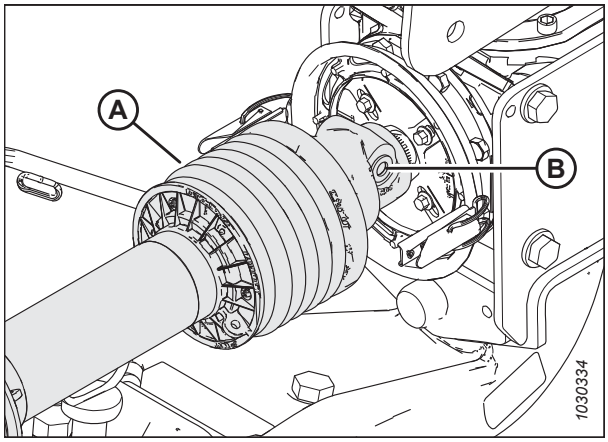


Figure 4.30: Primary Driveline

19. Insert tapered pin (A) by hand. Ensure the pin lines up with the groove in the yoke and is fully inserted. The notch in the pin should be facing toward the shaft.
20. Clean the threads on pin (A) after inserting the pin.
21. Install washer (B) and nut (C) on the tapered pin and torque the nut to 149 Nm (110 lbf·ft). The end of the pin must be recessed approximately 9–11 mm (3/8–7/16 in.) (D).

    NOTE:

    Do **NOT** use an impact wrench to install or torque the nut.

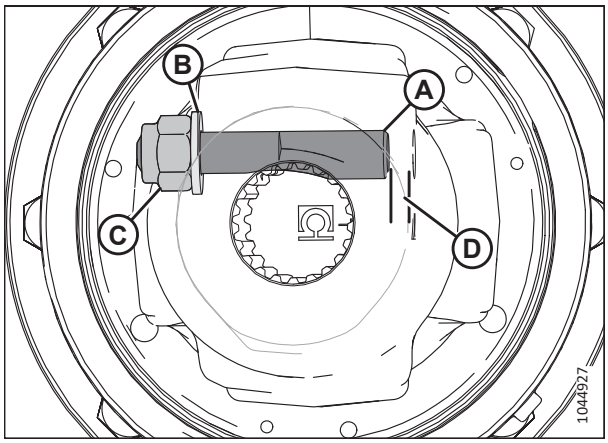


Figure 4.31: Primary Driveline

22. Install cone shield (A) over primary driveline (B). Use the latches to secure it to the gearbox.
23. Place primary driveline (B) on driveline support (C).

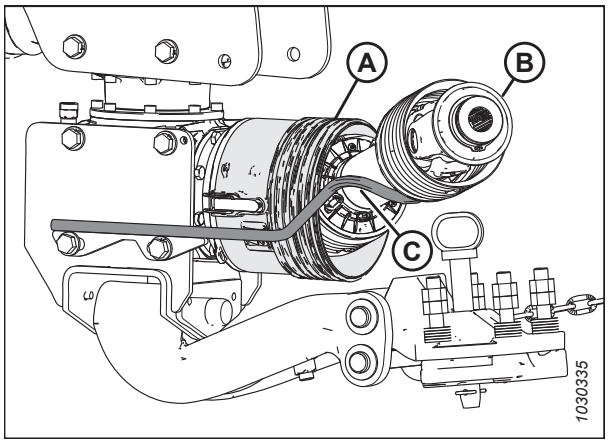


Figure 4.32: Cone Shield

24. Place toolbox groove (A) onto jack stand bracket (B) as shown.

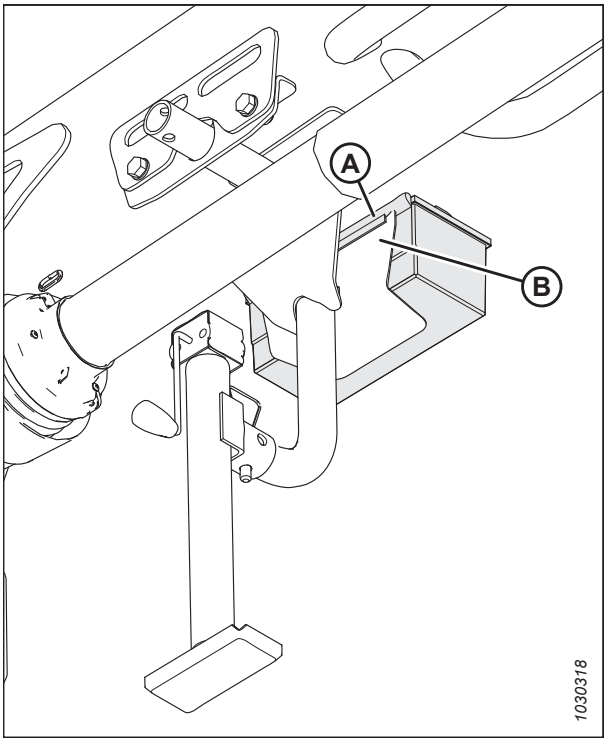


Figure 4.33: Toolbox Mounted on Jack Stand Bracket

25. Insert bracket tab (B) through the slot in the rear of toolbox (A).
26. Retrieve lynch pin (C) from the bag of hardware supplied with the jack. Secure toolbox (A) by inserting lynch pin (C) into tab (B).
27. Install the hitch swing cylinder. For instructions, refer to *4.4 Installing Hitch Swing Cylinder, page 83*.

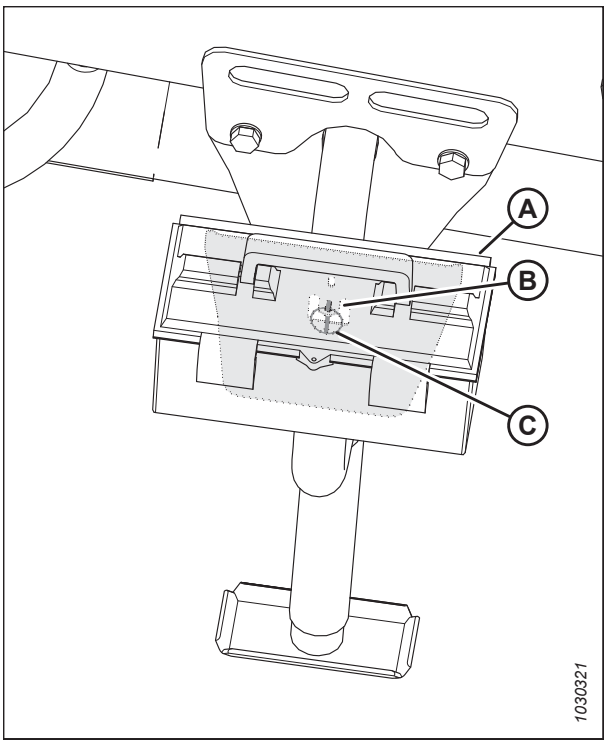


Figure 4.34: Toolbox Mounted on Jack Stand Bracket

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

The two-point hitch adapter allows the pull-type to connect to an existing two-point hitch connection.

1. Remove shipping wire or banding (A) securing shipping blocks (B) at the front of the hitch, and remove the blocks.
2. Swivel the lower gearbox until the input shaft is facing forward.

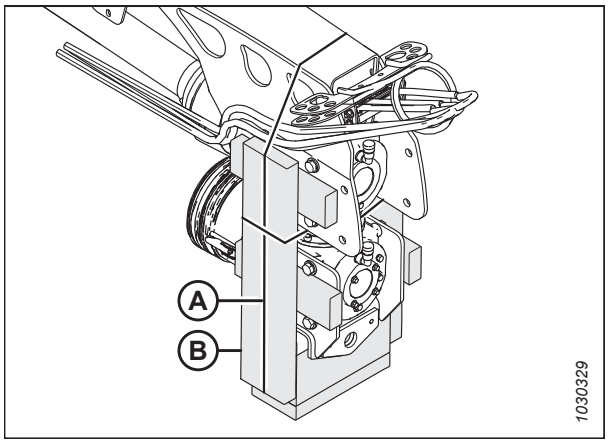


Figure 4.35: Hitch End Packing

3. Retrieve the two-point hitch adapter shipment.

   NOTE:

   Do **NOT** remove any strapping that secures hitch adapter (A) to pallet (B).

4. Remove the strapping that secures pin (C) to adapter (A).
5. Remove pin (C) from the adapter, and remove bolt (D) and nut from pin (C).
6. Remove the strapping from toolbox (E), jack stand support (F), and jack (G). Remove these parts from the pallet.
7. Remove the hardware bag from the jack stand support.

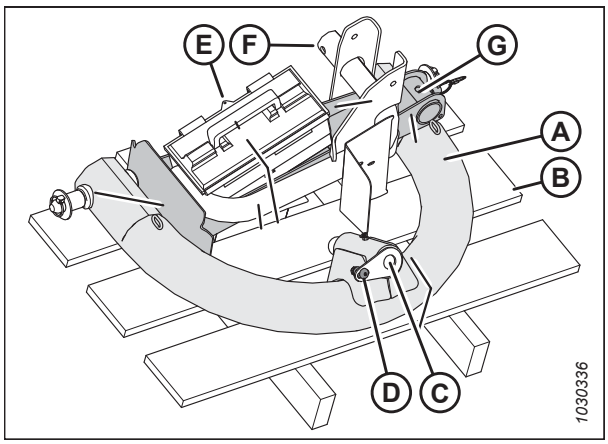


Figure 4.36: Two-Point Hitch Packing

8. Install jack support stand (A) as shown. Secure it with two M12 x 1.75 x 40 bolts (B), M12 washers, and M12 center lock nuts per side. Torque the hardware to 69 Nm (51 lbf·ft).

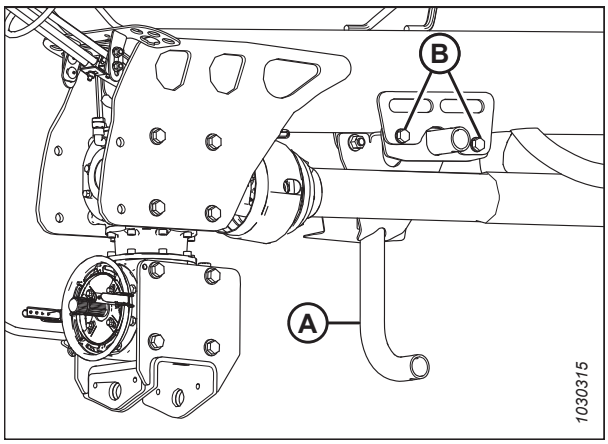


Figure 4.37: Jack Stand Support

9. Insert jack (A) onto the jack stand support and secure it with pin (B).

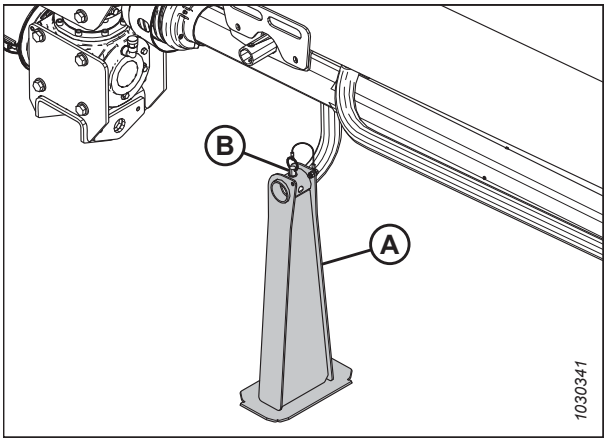


Figure 4.38: Jack – Working Position

10. Using a floor jack or equivalent, raise two-point hitch adapter (A) into position under the gearbox.
11. Maneuver adapter (A) so that pin (B) can be installed to secure the adapter to the hitch.
12. Secure the pin with bolt (C) and the nut.
13. Remove any remaining strapping from the pallet. Lower the pallet. Remove the jack and the pallet.
14. Lower the hitch and stand to the ground.

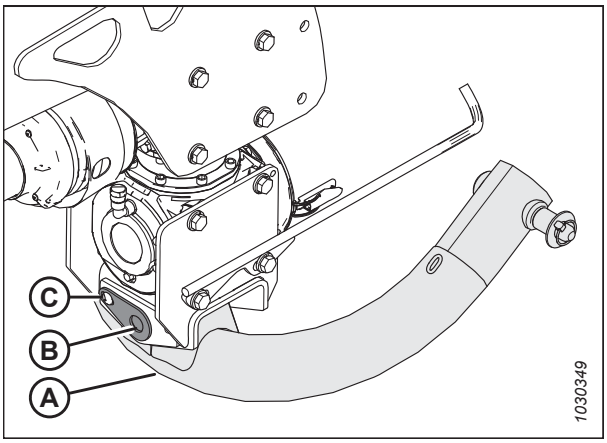


Figure 4.39: Two-Point Hitch Adapter

15. Install springs (A) into hooks (B).
16. Remove cone shield (C).

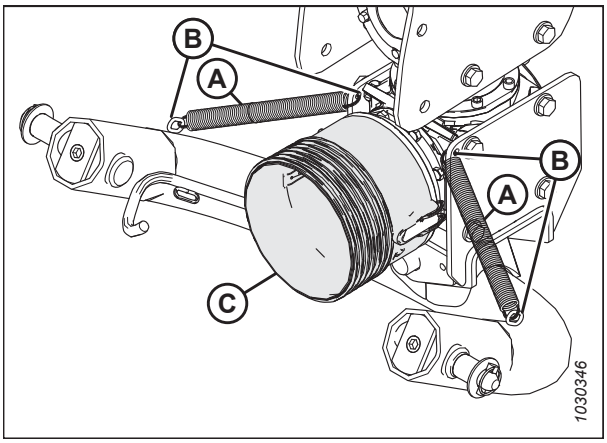


Figure 4.40: Springs

17. Retrieve primary driveline (D) from the shipping location.

18. Remove nut (C), washer (B), and pin (A) from the rotary disc pull-type end of primary driveline (D).

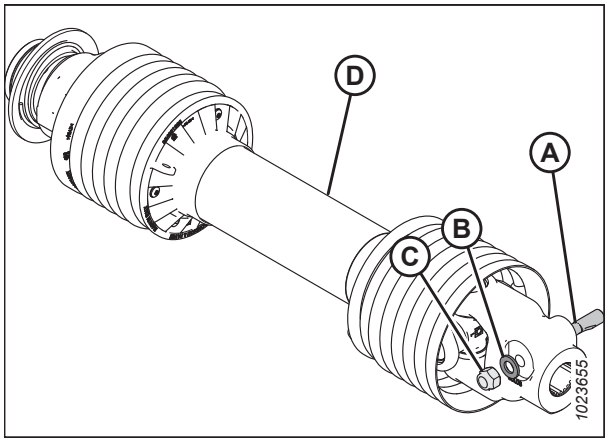


Figure 4.41: Primary Driveline

19. Slide driveline (A) onto gearbox input shaft (B). Align pinhole (C) in the yoke with the groove on the input shaft.

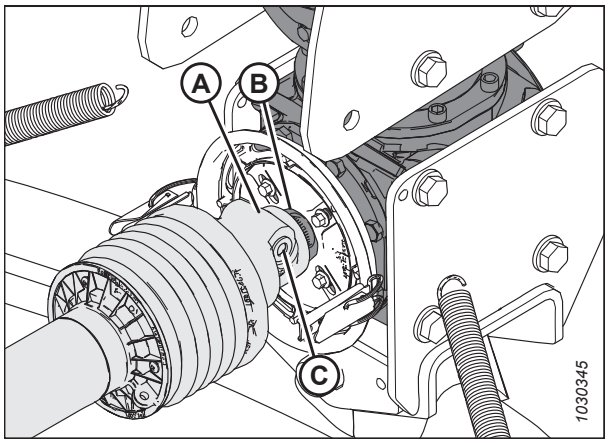


Figure 4.42: Primary Driveline

20. Insert tapered pin (A) by hand. Ensure the pin lines up with the groove in the yoke and is fully inserted. The notch in the pin should be facing toward the shaft.

21. Clean the threads on pin (A) after inserting the pin.

22. Install washer (B) and nut (C) on the tapered pin and torque to nut 149 Nm (110 lbf·ft). The end of the pin must be recessed 9–11 mm (3/8–7/16 in.) (D).

    NOTE:

    Do **NOT** use an impact wrench to install or torque the nut.

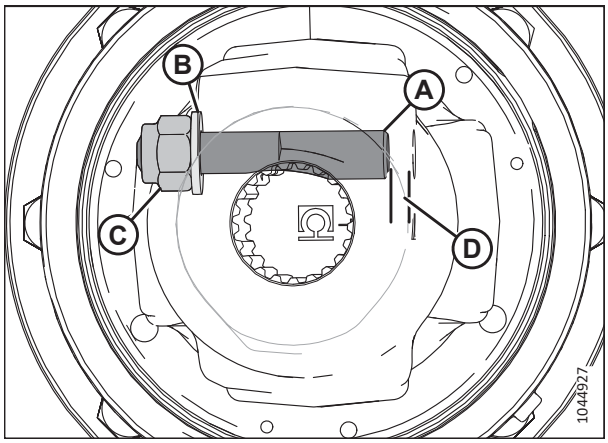


Figure 4.43: Primary Driveline

23. Install cone shield (A) over the primary driveline. Place driveline (B) on driveline support (C).

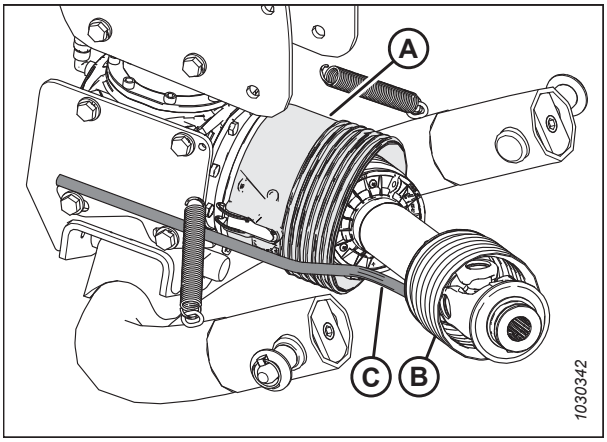


Figure 4.44: Cone Shield

24. Place toolbox groove (A) onto jack stand bracket (B) as shown.

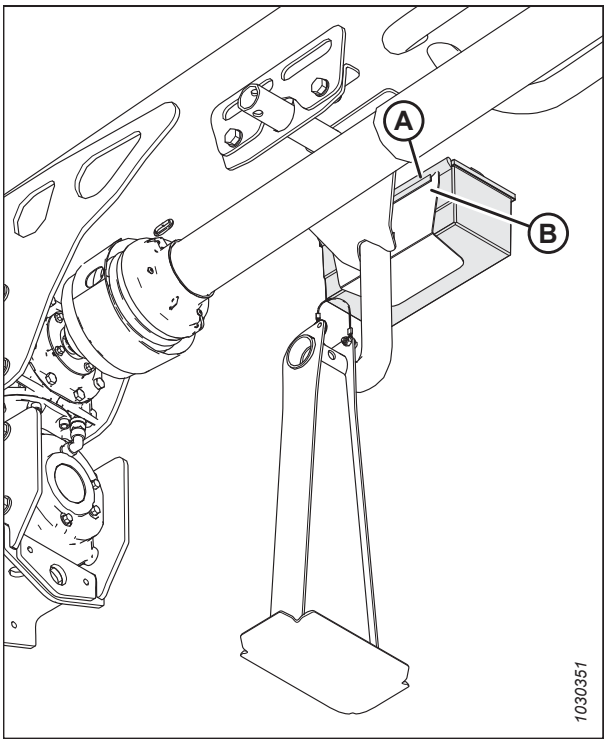


Figure 4.45: Toolbox Mounted on Jack Stand Bracket

25. Insert bracket tab (B) through the slot in the rear of toolbox (A).

26. Retrieve lynch pin (C) from the bag of hardware supplied with the jack. Secure toolbox (A) by inserting lynch pin (C) into tab (B).

27. Install the hitch swing cylinder. For instructions, refer to *4.4 Installing Hitch Swing Cylinder, page 83*.

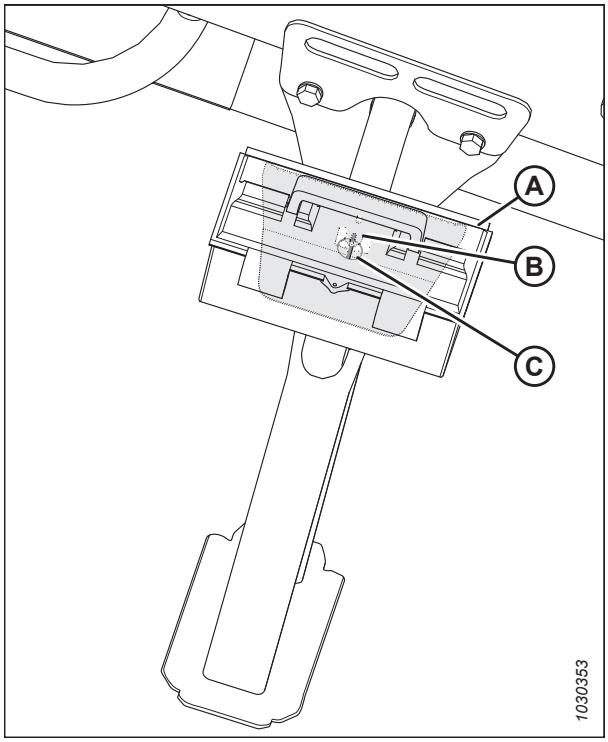


Figure 4.46: Toolbox Mounted on Jack Stand Bracket

4.4 Installing Hitch Swing Cylinder

The hitch swing cylinder is used to steer and rotate the pull-type between field and transport positions. The hitch swing cylinder can be installed on either side of the hitch, depending on whether or not the transport system will be installed. Be sure to follow the instructions carefully.

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

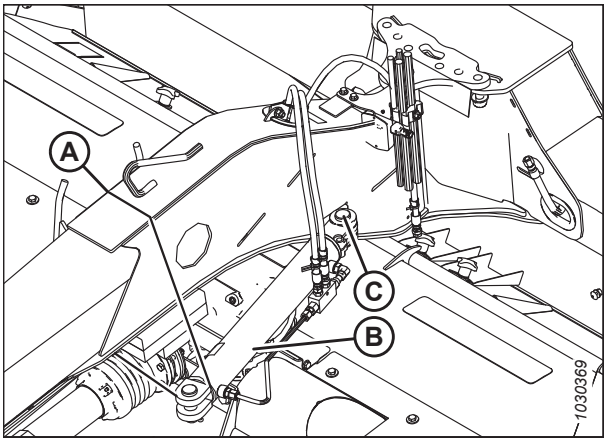


Figure 4.47: Steering Cylinder

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

   NOTE:

   The rod end of the cylinder will be attached to the transport system casting after the system is primed. For instructions, refer to *6.2 Priming Hitch Swing Cylinder, page 115*.
5. Turn valve (E) on the hitch swing cylinder 180° so that the fittings are pointing up.

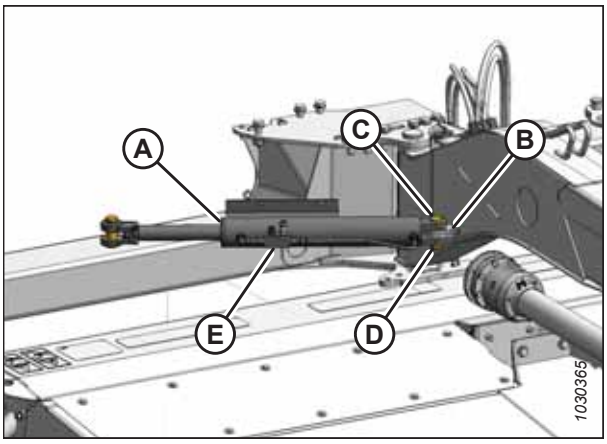


Figure 4.48: Hitch Swing Cylinder

4.5 Attaching Clutch Driveline

The clutch driveline on the carrier hitch connects to the rotary disc pull-type drive gearbox.

IMPORTANT:

If a conditioner swap is required before delivery to the customer, swap the conditioner **BEFORE** attaching the clutch driveline. For conditioner swap instructions, refer to the pull-type technical manual. After swapping the conditioner, attach the clutch driveline then follow the remaining chapters in these instructions in sequential order to complete the setup.

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

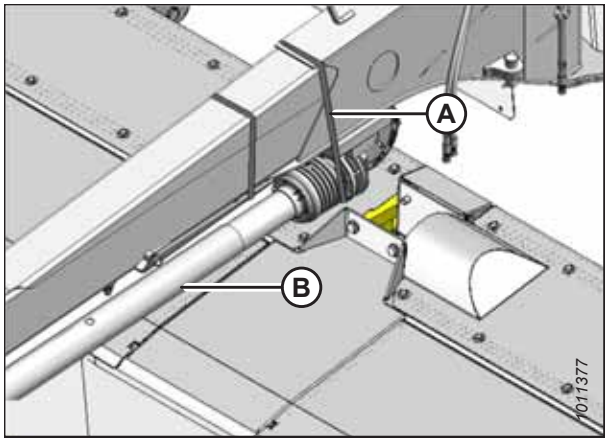


Figure 4.49: Driveline Strapping

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

   NOTE:

   Strapped contents may be under pressure.

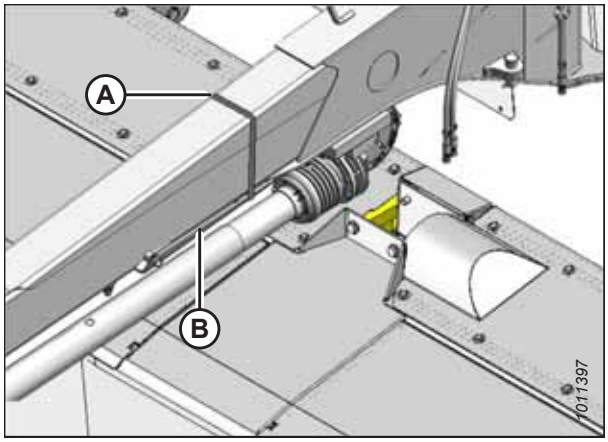


Figure 4.50: Steering Arm Strapping

3. At the top of the upper rear swivel gearbox, remove two bolts (A) with washers (B) and spacers (C). Retain the hardware.
4. Undo latches (D) securing driveline shield (E) to the upper rear swivel gearbox and remove the shield. If necessary, use a screwdriver or equivalent to undo latches (D).
5. Rotate the upper rear swivel gearbox until the input shaft is facing towards the driveline.

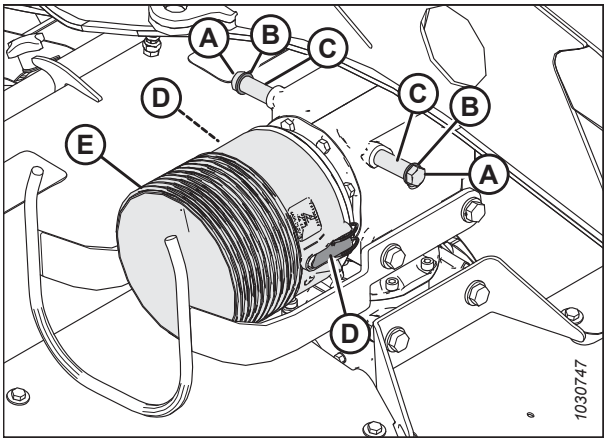


Figure 4.51: Driveline Shield

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

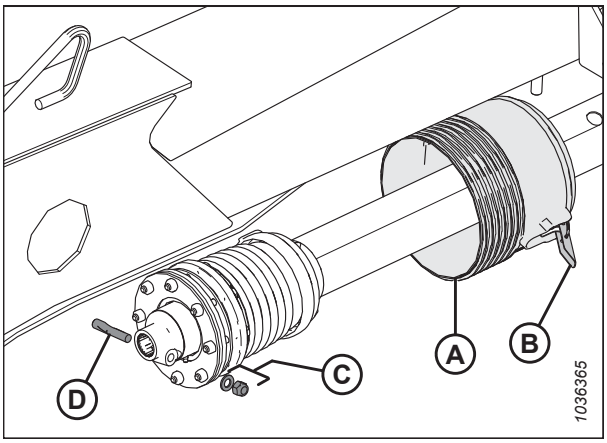


Figure 4.52: Clutch Driveline

8. Attach driveline (A) to the upper rear swivel gearbox shaft.

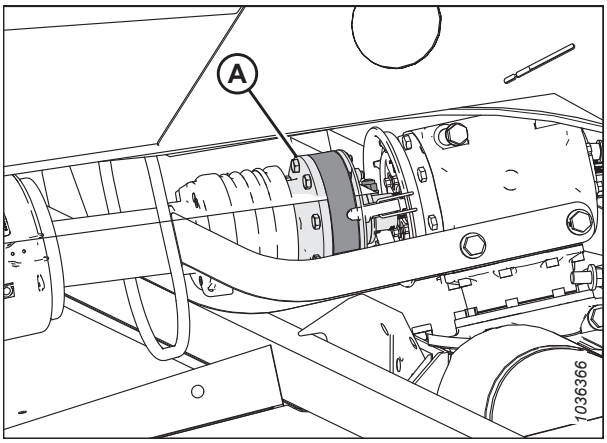


Figure 4.53: Clutch Driveline

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

    NOTE:

    Do **NOT** use an impact wrench to install or torque the nut.
12. Install the shield onto the upper rear swivel gearbox. Use the latches to secure it.

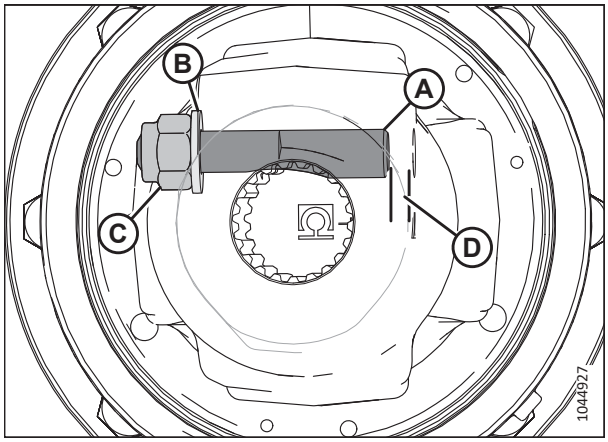


Figure 4.54: Clutch Driveline

4.6 Attaching Steering Arm

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

1. Install the steering arm as follows:
   a. Lower rod (A) from under the hitch and slide steering arm (B) off the rod.
   b. Grease rod (A).
   c. Reposition steering arm (C) as shown and slide it onto rod (A).
   d. Position steering arm (C) onto gearbox (D).

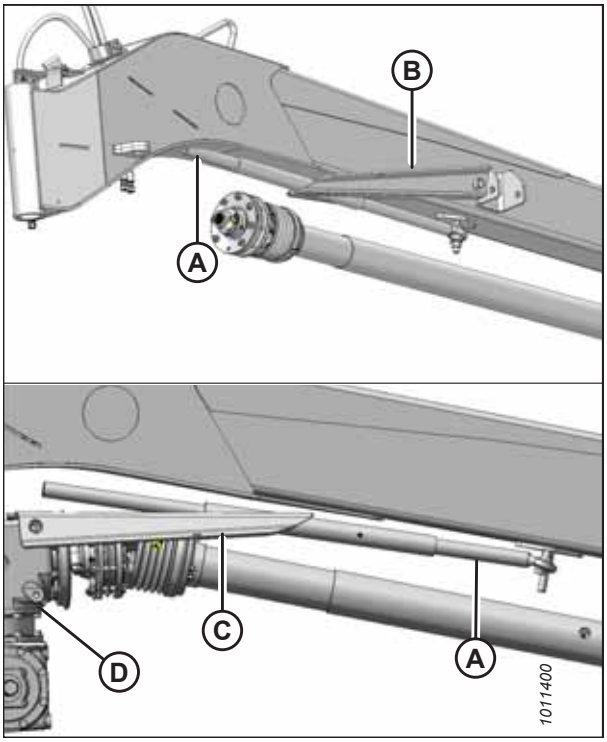


Figure 4.55: Steering Arm

2. Line up the two mounting holes in the arm with the forward threaded holes in the upper rear swivel gearbox.
3. Install spacers (A) into steering arm (B).
4. Install washer (D) onto the M16 x 80 hex head bolts (C). Apply high-strength threadlocker (Loctite® 262 or equivalent) onto the bolt threads.
5. Torque the bolts to 203 Nm (150 lbf·ft).

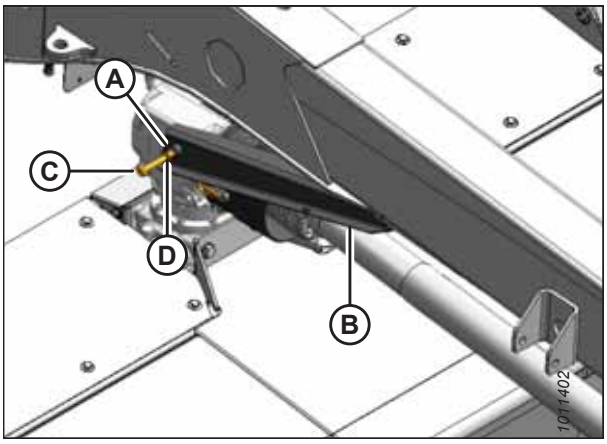


Figure 4.56: Steering Arm

6. Attach safety chain (A) from the driveline shield to the slotted hole in the steering arm.

   NOTE:

   Ensure the chain is shortened to prevent any driveline wrapping.

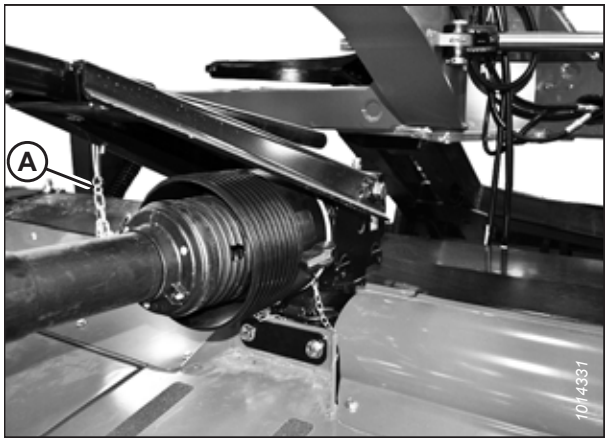


Figure 4.57: Driveline Shield

4.7 Preparing Slow Moving Vehicle Sign

The slow moving vehicle (SMV) sign includes decals for km/h and mph.

1. Retrieve the following:
   - SMV sign (A)
   - Speed decals (C) and (D), which are shipped in manual case (B)
2. Choose appropriate speed decal (C) or (D) depending on the region. Orient the decal as shown (E) when installing it on the SMV bracket.

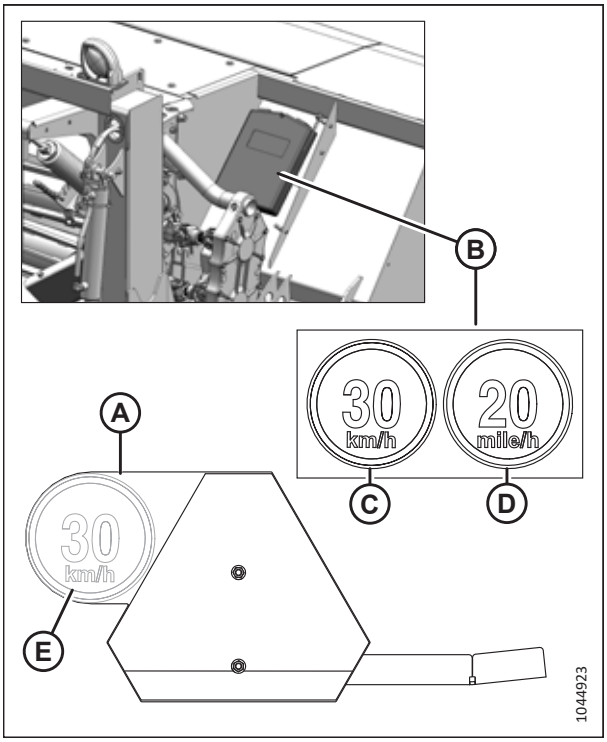


Figure 4.58: SMV and Decals

3. Attach SMV bracket (A) to frame (B) using two carriage head nuts and bolts (C).

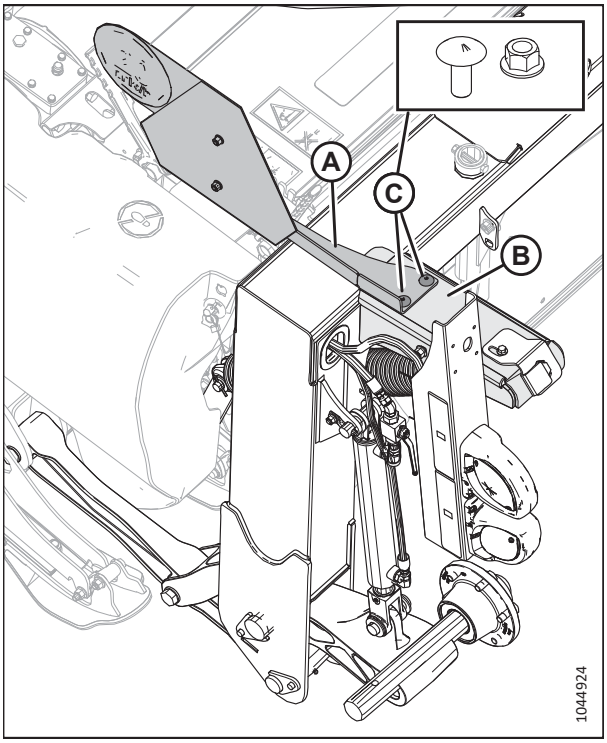


Figure 4.59: SMV Sign

4.8 Completing Transport System Installation

This section describes the installation of the base components, the hydraulic lines and hoses, and the electrical connections for the transport system.

4.8.1 Removing Cover

1. Remove bolts (B) from cover (A).
2. Remove cover (A).

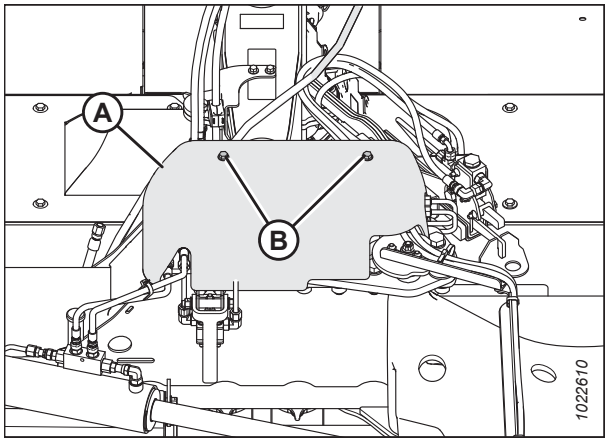


Figure 4.60: Cover – Top View

4.8.2 Installing Transport Alignment Control

The transport alignment control ensures that the pull-type can only go into or out of transport mode from a specific position.

1. Secure cam assembly (A) onto hitch swing cylinder plate (B) with bolts and nuts (C). Torque nuts (C) to 58 Nm (43 lbf·ft).

   NOTE:

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

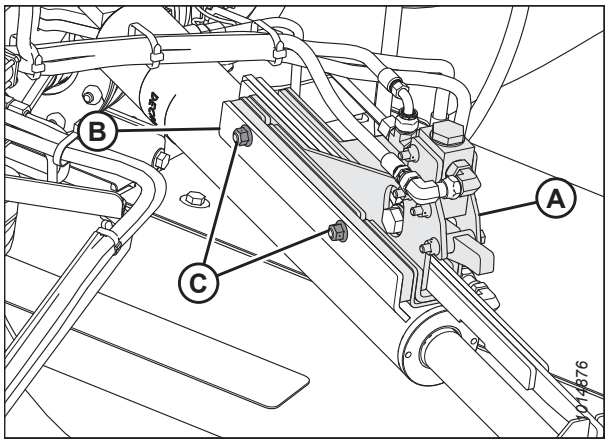


Figure 4.61: Alignment Control – Rear Right View

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

   NOTE:

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

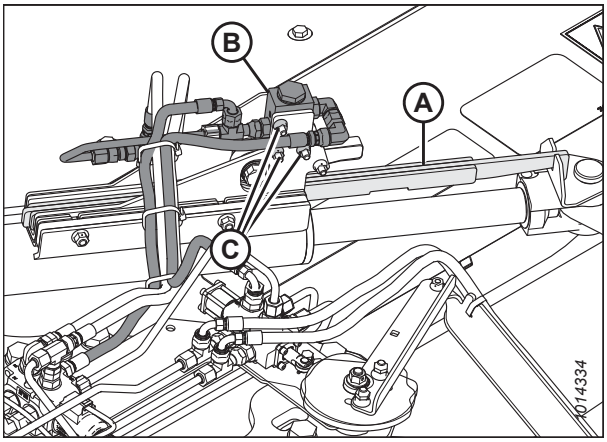


Figure 4.62: Alignment Control – Rear Right View

3. Align hole in cam arm (A) with hole in clevis (B) at the rod end of the cylinder.

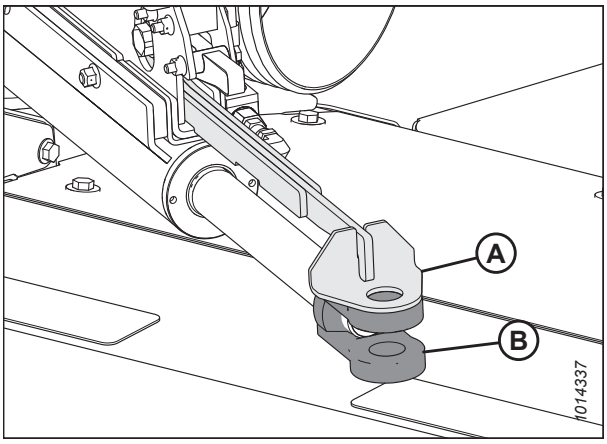


Figure 4.63: Alignment Control – Rear Right View

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

   NOTE:

   The rod end of cylinder will be attached to the transport system casting after the system is primed. For instructions, refer to *6.2 Priming Hitch Swing Cylinder, page 115*.

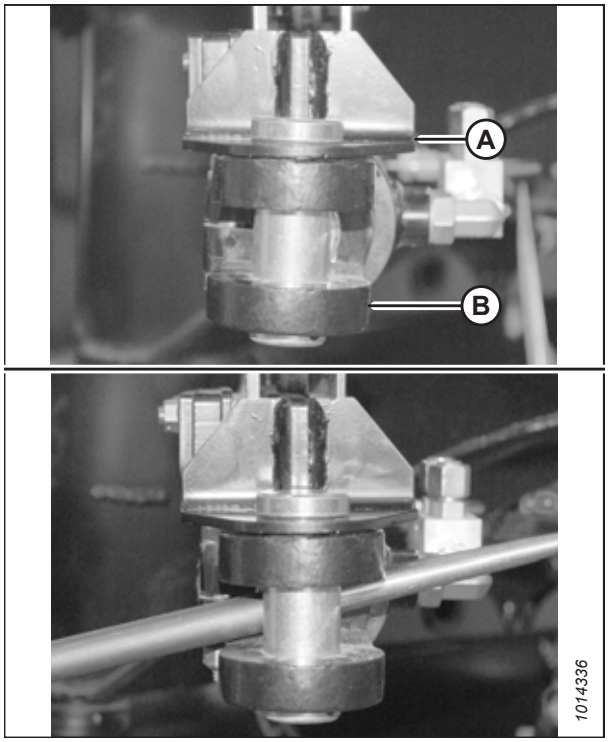


Figure 4.64: Cam Arm Alignment

4.8.3 Installing Hydraulic Lines and Hoses

Hydraulic hoses distribute hydraulic fluid to the various components on the pull-type.

NOTE:

Refer to *10.4 Torque Specifications, page 180* for torque details.

1. Retrieve the steel lines and hoses from the shipping bag.
2. Place a container or rag under the fitting on the hitch swing cylinder to catch the oil.
3. Remove existing fitting (A) from the block.
4. Remove cap (B) from tee fitting.

   IMPORTANT:

   Ensure that the O-ring is in place.

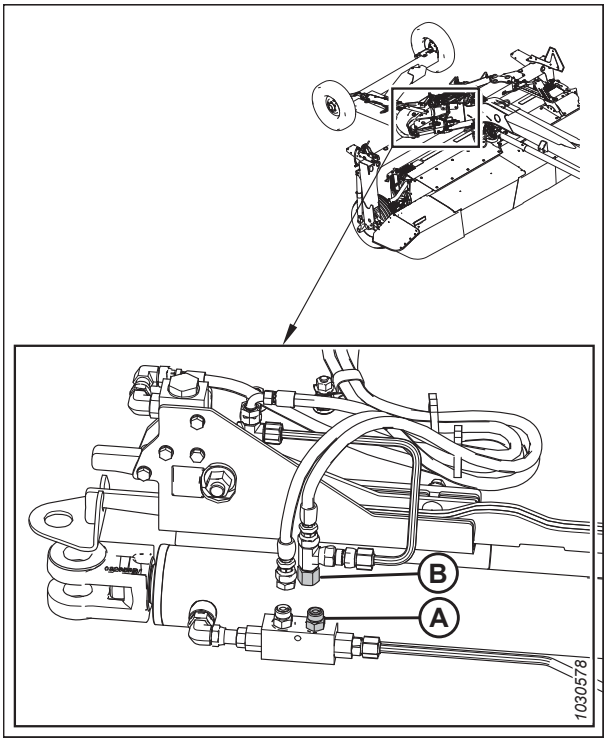


Figure 4.65: Alignment Valve Fitting

5. Retrieve ORFS-6 x ORB-6 connector (B) from the shipping bag and install it at location (A).

   NOTE:

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

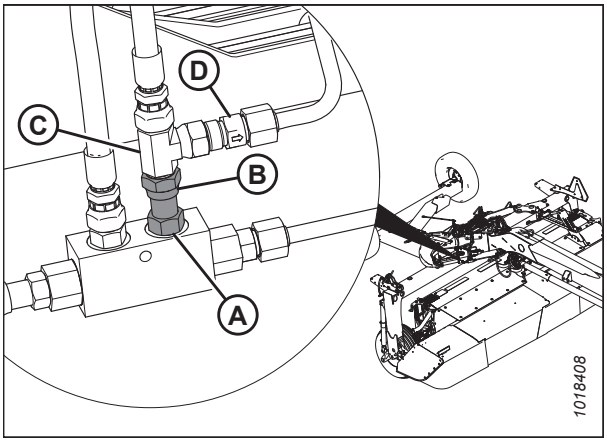


Figure 4.66: Alignment Valve Fitting

6. Remove the cap from fitting (A).
7. Remove the plug from hose (B). Install the hose to fitting (A) as shown.

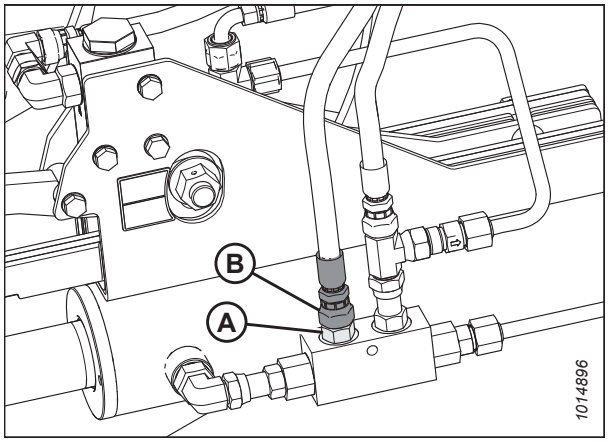


Figure 4.67: Alignment Valve Fitting

8. Connect hose (B) (with red collar #2), from the rear of the hitch, to the fitting in port A1 on selector valve (C).
9. Connect hose (A) (with blue collar #2), from the rear of the hitch, to the fitting in port A2 of selector valve (C).
10. Secure hoses (A) and (B) together with a cable tie.

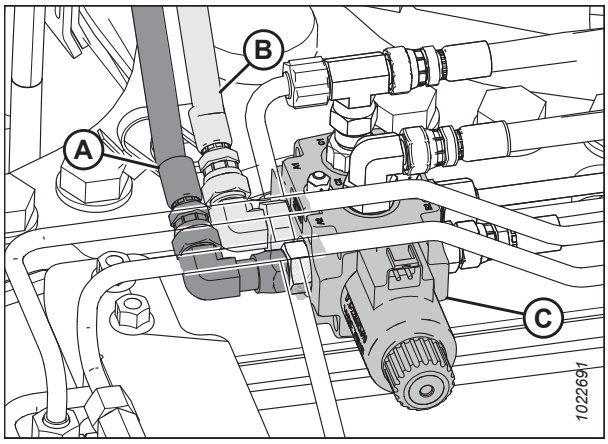


Figure 4.68: Selector Valve Supply

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 rotary disc pull-type is in transport mode.

Retrieve the following secondary lift hose from the shipping bag:

- **R113 PT:** Use hose MD #224160.
- **R116 PT:** 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 each end of secondary lift hose (B).
12. Undo adjustable strap (A) around the hoses at the aft end of the hitch.
13. Locate the green wire preinstalled in the hitch for pulling the hoses through the hitch.

    NOTE:

    If you are installing a hydraulic center-link, pull the hydraulic hoses through the hitch at the same time as the lift hose.

14. At the rear of the hitch, feed the male ORB end of hose (B) into access hole (C). Route the hose through the hitch to the opening at the front.
15. Position long hose (A) so that the exposed length at the front of the hitch matches existing hose (B). Route the hose through guide (C).
16. At the front of the hitch, loosen nut (D) on hose clamp (E) until hose (A) can be positioned in the clamp.
17. Tighten nut (D).

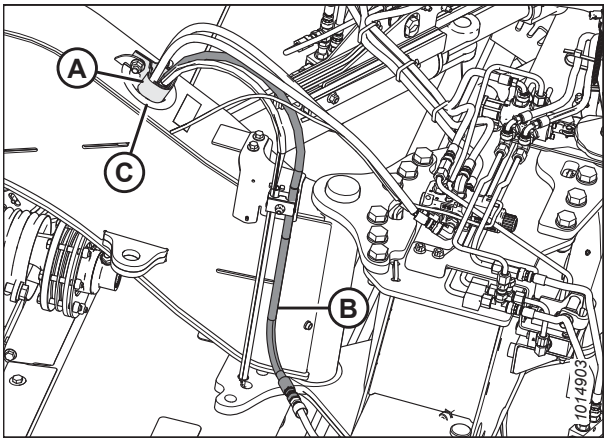


Figure 4.69: Lift Hoses

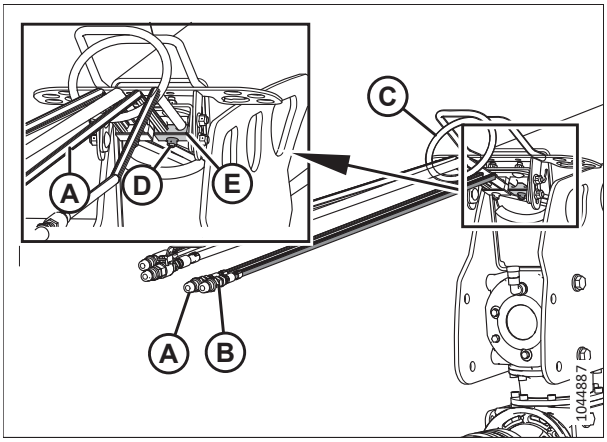


Figure 4.70: Lift Hoses — Hydraulic Hose Cover Removed for Clarity

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

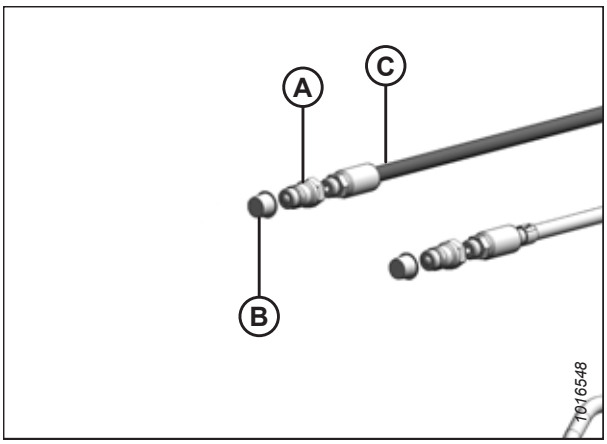


Figure 4.71: Lift Hose Fittings

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

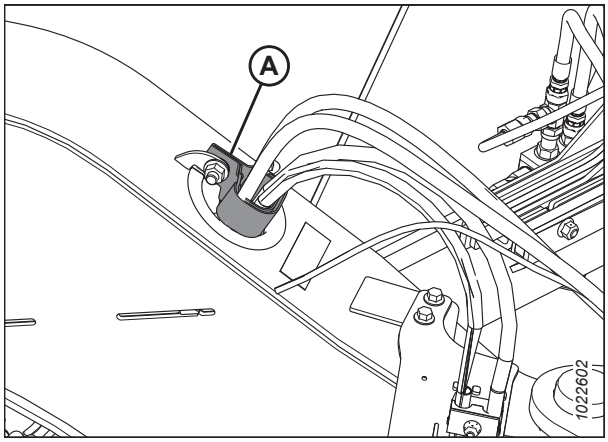


Figure 4.72: Lift Hoses

21. Connect hose (A) from left lift cylinder and hose (B) (MD #224160 or MD #224162) at the hitch pivot.

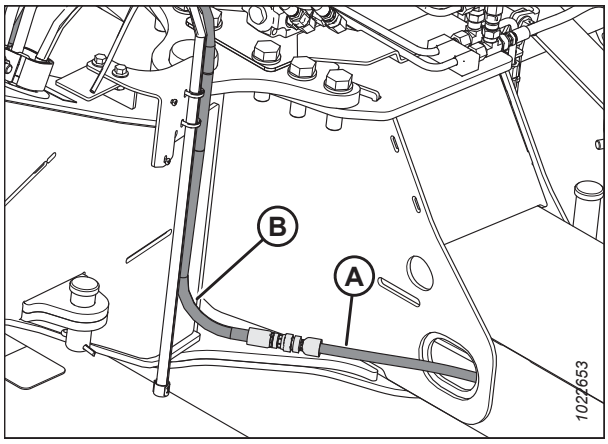


Figure 4.73: Lift Hoses

4.8.4 Installing Electrical Components

Wiring harnesses, lighting assemblies, the selector valve, the lighting module, and the remote control are components of the electrical system.

Connecting Selector Valve and Transport Lighting Module

The electronically controlled selector valve manages the hydraulics for the transport system; the lighting module is the hub for signal and hazard lighting.

1. Remove valve connector plug (A) and module connector plug (B).

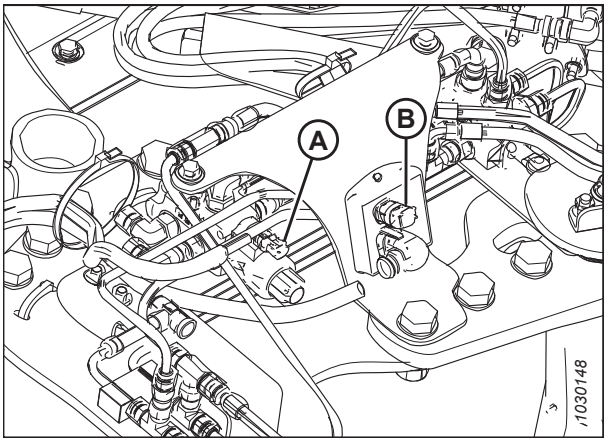


Figure 4.74: Connector Plugs

2. Locate plugs P102 (A) and P502 (B) on the transport harness at the machine end of the hitch. Route plugs P102 (A) and P502 (B) towards selector valve (C).
3. Connect plug P502 (B) to the receptacle on selector valve (C).
4. Connect plug P102 (A) to the upper input receptacle on transport lighting module (D).

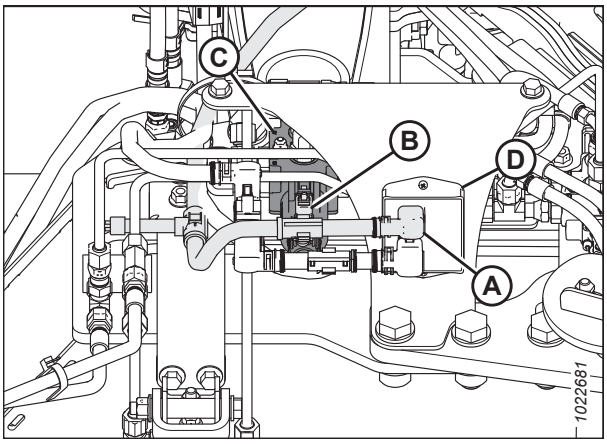


Figure 4.75: Selector Valve Supply

Installing Light Assembly

Light assemblies provide position, hazard, turning direction, and braking information.

1. Locate right light assembly (A).

   NOTE:

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

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

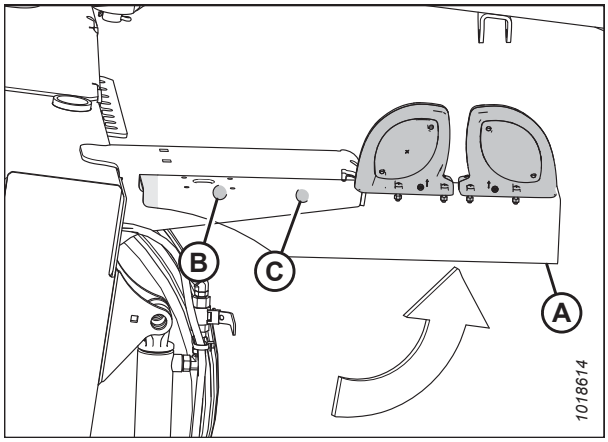


Figure 4.76: Left, Rear End of Pull-Type

Connecting Transport Lighting Module

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

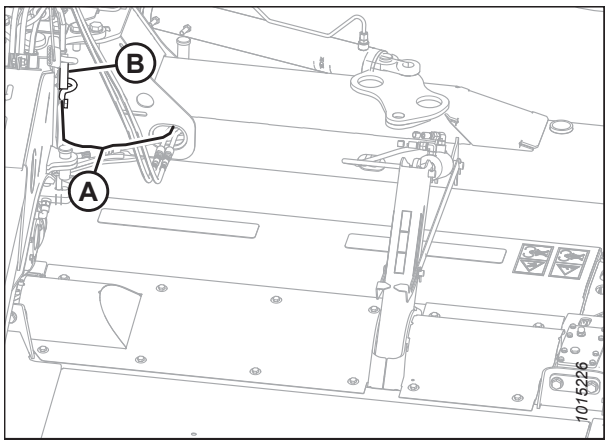


Figure 4.77: Transport Lighting Module

Installing Remote Control

The remote control allows the operator to convert the pull-type from field to road mode from within the tractor cab.

1. Retrieve remote control (A) connected to a wiring harness.
2. Place remote control (A) on the hitch temporarily.

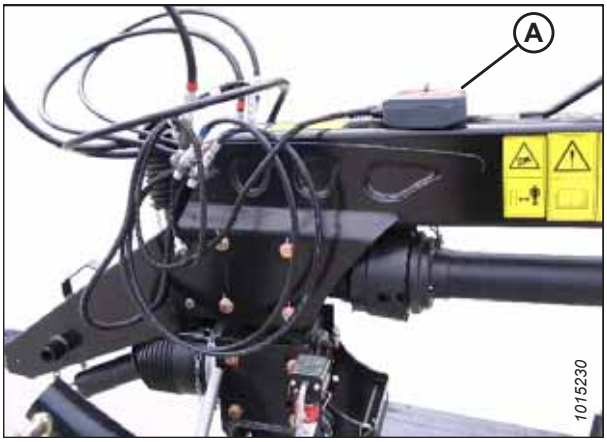


Figure 4.78: Remote Control on Top of Hitch

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

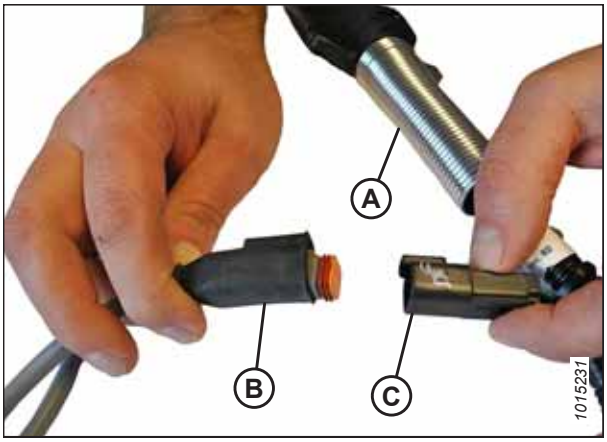


Figure 4.79: Transport Harness

4. ***Tractors with three-pin auxiliary power connections:***

   NOTE:

   The remote control has internal protection which prevents damage caused by incorrect wiring, short circuits, or overload conditions.

   Connect two wires (B) from three-pin auxiliary connector (A) to remote control wires (C) on the remote control, wrap connections with electrical tape, and proceed to Step *6, page 101*.

   - The wire with no tag connects to tractor ground.
   - The wire with the red tag connects to tractor power.

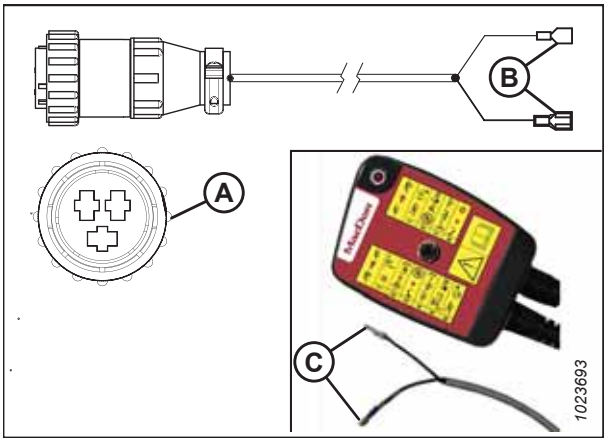


Figure 4.80: Three-Pin Auxiliary Connector

NOTE:

If the connections are reversed, the lamp will not illuminate when the toggle switch is in field mode. Try the following to correct the issue:

- Check if 10 amp fuse (A) located inside the transport control box has blown.
- Check for a short in the wires to the solenoid valve on the machine.
- Check for incorrect wire connections (reversed) at the power supply or the solenoid valve.

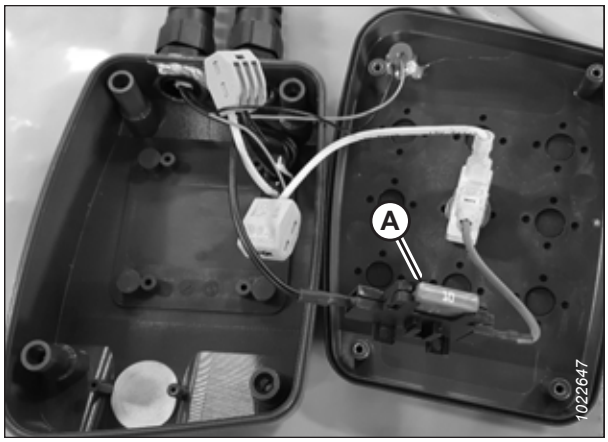


Figure 4.81: Control Box Interior

5. ***Tractors without three-pin auxiliary power connections:***

NOTE:

The remote control has internal protection which prevents damage caused by incorrect wiring, short circuits, or overload conditions.

Connect remote control wires (A) to the tractor's power supply as follows:

- Connect wire (B) with no tag to tractor ground.
- Connect wire (C) with the red tag to tractor power.

NOTE:

If the red tag is missing, identify the power wire by locating the wire with the number 1 printed on it. The ground wire has a number 2 printed on it.

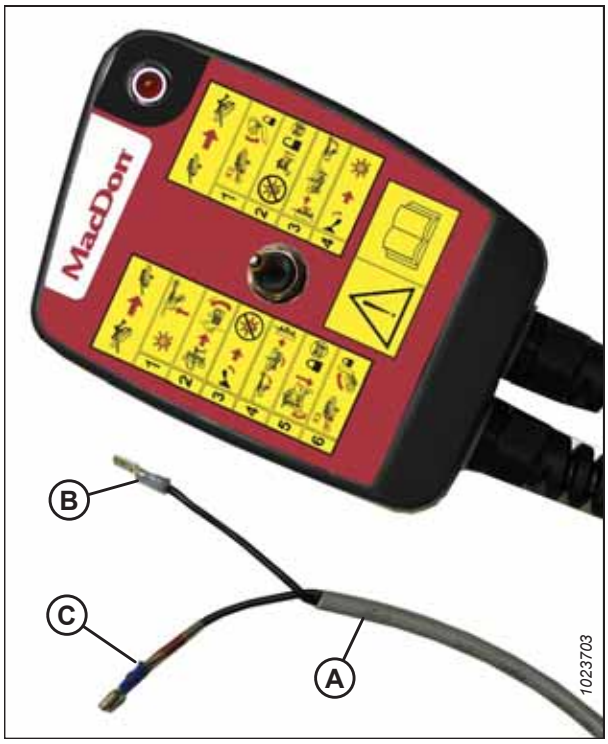


Figure 4.82: Remote Control

NOTE:

If the connections are reversed, the lamp will not illuminate when the toggle switch is in field mode. Try the following to correct the issue:

- Check if 10 amp fuse (A) located inside the transport control box has blown.
- Check for a short in the wires to the solenoid valve on the header.
- Check for incorrect wire connections (reversed) at the power supply or a solenoid valve.

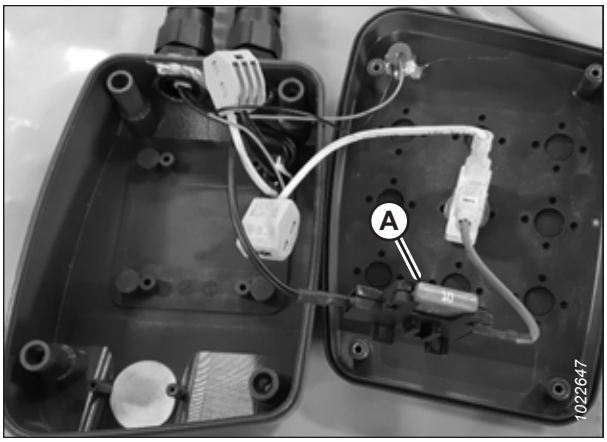


Figure 4.83: Control Box Interior

6. Place the remote control inside the tractor cab.

4.8.5 Installing Cover

The transport cover protects the hydraulic valves and electrical components from debris.

1. Install cover (A) onto the cover support.
2. Install bolts (B). Torque the bolts to 60 Nm (45 lbf·ft).

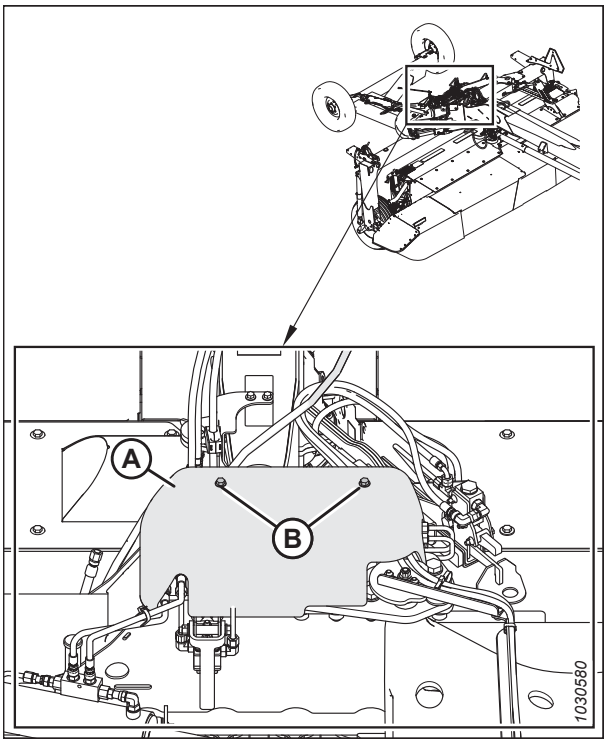


Figure 4.84: Cover

Chapter 5: Connecting Tractor to Rotary Disc Pull-Type

Connecting the pull-type to the tractor involves connecting the hydraulic and electrical systems, and may also require adjusting the length of the drawbar hitch.

5.1 Adjusting Drawbar

When attaching the rotary disc pull-type to a tractor with a drawbar type connection, the distance between the PTO shaft and the hitch connection must be adjusted.

DANGER

To prevent injury or death from the unexpected startup of the machine, stop the engine and remove the key from the ignition before you make adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Adjust the tractor drawbar to meet the specifications listed in Table *5.1, page 103*.
3. Secure the tractor drawbar so the hitch pinhole is directly below the driveline.

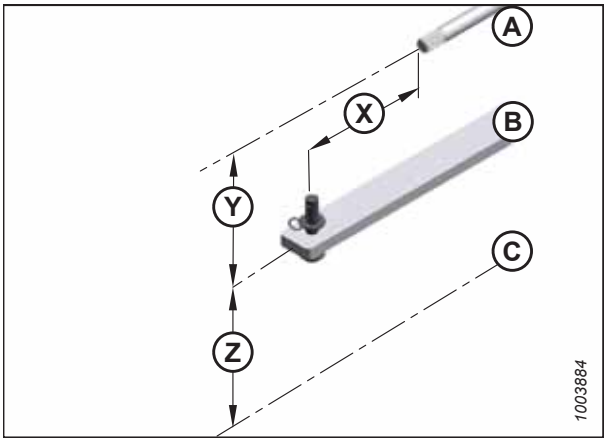


Figure 5.1: Tractor Drawbar Adjustments

A - Power Take-Off (PTO) **B - Tractor Drawbar**
C - Ground **X - Dimension X**
Y - Dimension Y **Z - Dimension Z**

Table 5.1 SAE Standard A482 Specifications

	1000 rpm Power Take-Off (PTO)	
Dimension	**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**	

5.2 Installing Drawbar Hitch Adapter

The hitch adapter allows the drawbar to connect with the hitch casting.

IMPORTANT:

The hitch adapter is compatible with Category 2, 3, and 4 hitches only. Do **NOT** attempt to modify any other type of hitch and hitch adapter to make them fit together.

1. To install Category 3 drawbar hitch adapters:
   a. Remove hairpin (A) and pin (B).
   b. If necessary, loosen four top jam nuts (C), and then loosen four lower nuts (D) so that hitch adapter (E) will slide onto tractor drawbar (F).
   c. Align the hole in adapter (E) with the hole in drawbar (F) and install pin (B).
   d. Secure the pin with hairpin (A).
   e. Gradually tighten four nuts (D) to 540 Nm (400 lbf·ft).

      NOTE:

      Ensure hardened washers and Class 10 nuts (supplied with the adapter) are used.

   f. Tighten four jam nuts (C).

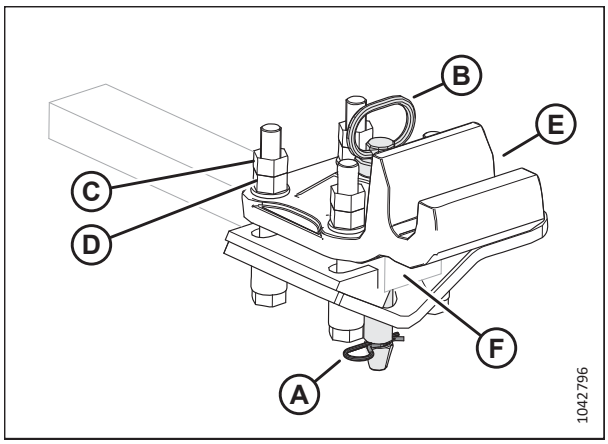


Figure 5.2: Category 3 Drawbar Hitch Adapter

2. To install Category 4 drawbar hitch adapters:
   a. Remove hairpin (A) and pin (B).
   b. If necessary, loosen four nuts (C) so that hitch adapter (D) will slide onto tractor drawbar (E).
   c. Align the hole in adapter (D) with the hole in drawbar (E) and install pin (B).
   d. Secure pin (B) with hairpin (A).
   e. Tighten four nuts (C) to 540 Nm (400 lbf·ft).

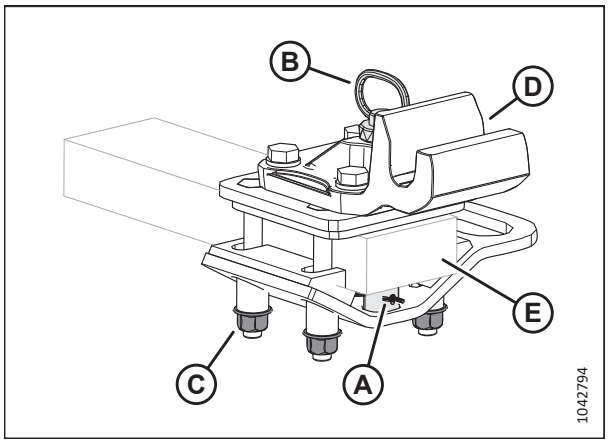


Figure 5.3: Category 4 Drawbar Hitch Adapter

5.3 Attaching Rotary Disc Pull-Type to Tractor

The rotary disc pull-type can be attached to the tractor with a drawbar hitch or a two-point hitch.

Refer to the attachment procedure that applies to your tractor:

- *5.3.2 Attaching with Two-Point Hitch, page 107*
- *5.3.1 Attaching with Drawbar Hitch, page 105*

5.3.1 Attaching with Drawbar Hitch

If the rotary disc pull-type was configured for a tractor with a drawbar hitch, and the tractor's hitch has been adjusted correctly, then the rotary disc pull-type can now be attached to the tractor.

DANGER

To prevent injury or death from the unexpected startup of the machine, stop the engine and remove the key from the ignition before you make adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Shut down the engine, and remove the key from the ignition.
2. Remove lynch pin (A) from clevis pin (B), and remove the clevis pin from the rotary disc pull-type hitch.

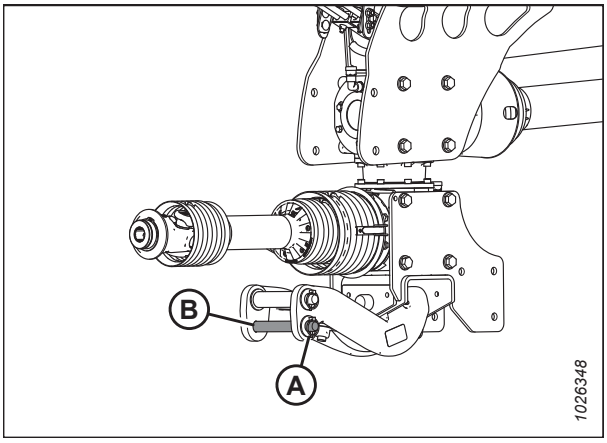


Figure 5.4: Rotary Disc Pull-Type Hitch

3. Move the tractor to position drawbar hitch adapter (A) under pin (B) in the hitch.
4. Shut down the engine, and remove the key from the ignition.
5. Adjust the hitch height as necessary with the jack.

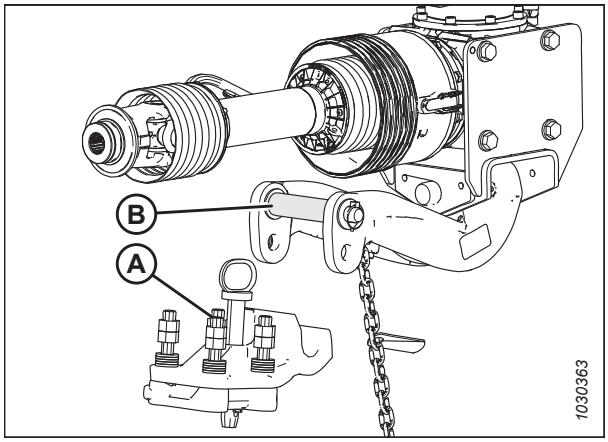


Figure 5.5: Rotary Disc Pull-Type Hitch

6. Lower the hitch with the jack so that pin (A) engages drawbar hitch adapter (B).
7. Install clevis pin (C) and secure it with lynch pin (D).

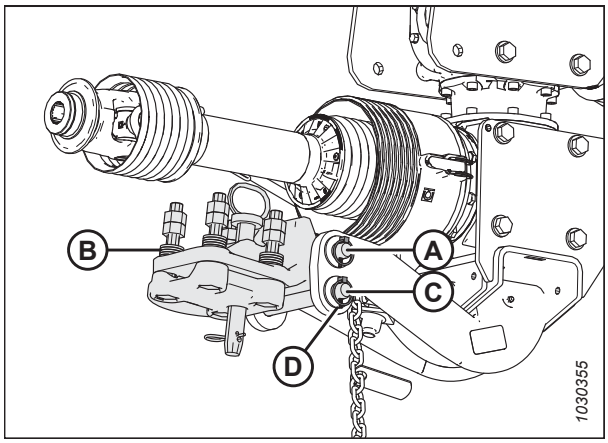


Figure 5.6: Rotary Disc Pull-Type Hitch

8. Position primary driveline (A) onto the tractor power take-off (PTO).
9. Pull back collar (B) on primary driveline (A), and push the primary driveline until it locks. Release the collar.
10. Route safety chain (C) from the rotary disc pull-type through chain support (D) on the drawbar hitch adapter and around the tractor drawbar support. Lock the hook on the chain.

    IMPORTANT:

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

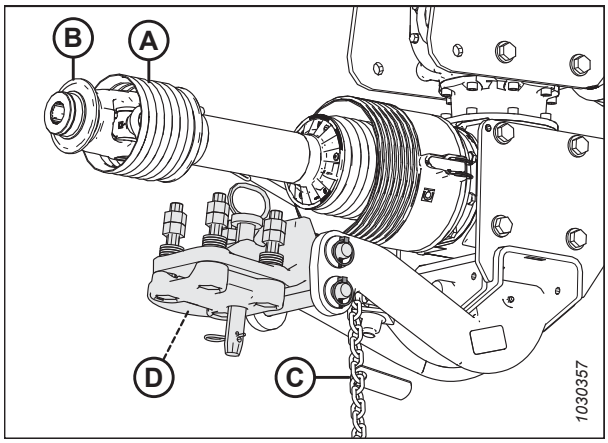


Figure 5.7: Primary Driveline

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

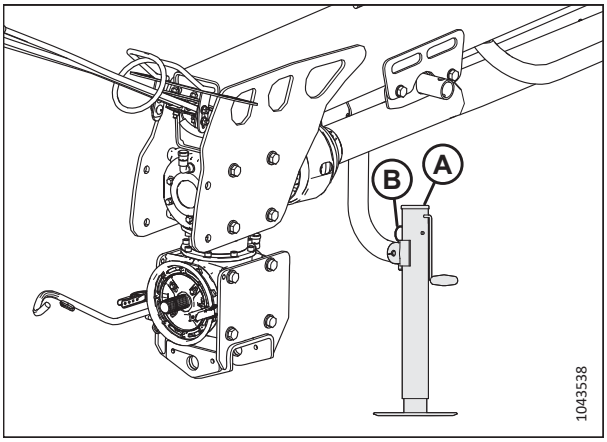


Figure 5.8: Hitch Jack

12. Move jack (A) to the storage position on top of the hitch, and secure it with pin (B).
13. Proceed to *5.3.3 Connecting Hydraulics, page 111*.

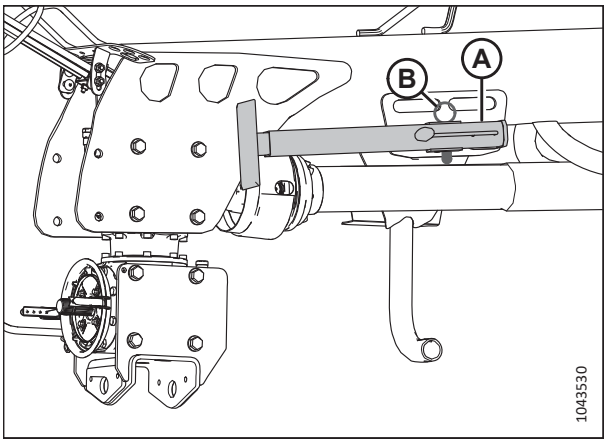


Figure 5.9: Drawbar Jack Storage

5.3.2 Attaching with Two-Point Hitch

If the rotary disc pull-type was configured for a tractor with a two-point hitch, then the rotary disc pull-type can now be attached to the tractor.

DANGER

To prevent injury or death from the unexpected startup of the machine, stop the engine and remove the key from the ignition before you make adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

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

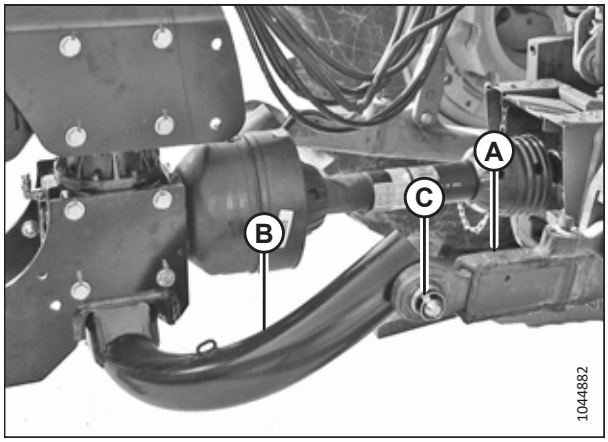


Figure 5.10: Two-Point Hitch Configuration

4. Secure hitch arms (A) onto adapter pins (B) with lynch pins (C).

   NOTE:

   If the tractor is equipped with a Category 3 hitch, use a bushing (MD #224322) on each hitch pin (B). Two bushings (MD #224322) are included with the two-point hitch assembly.

   NOTE:

   If the tractor is equipped with a Category 4 hitch, use the hitch pins (MD #259031) and bushings (MD #239059) provided in kit B6998 instead of the bushings and pins included with the two-point hitch assembly. Use a bushing on each hitch pin (B).

   NOTE:

   If using a Category 3 or Category 4 hitch, a longer driveshaft may be required.

5. Install anti-sway bars (not shown) on the tractor hitch to stabilize lateral movement of hitch arms (A). For instructions, refer to your tractor operator's manual.

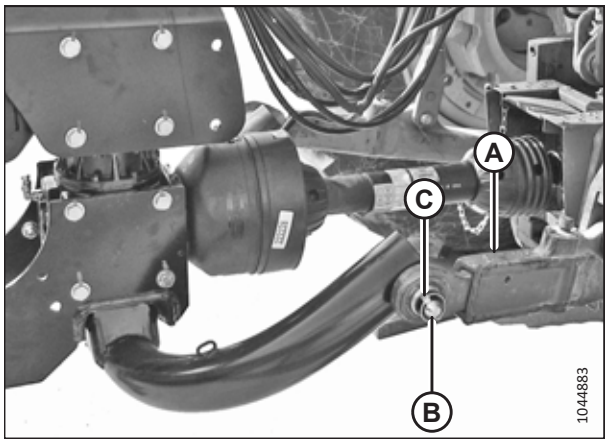


Figure 5.11: Two-Point Hitch Configuration

6. Check distance (C) between tractor primary power take-off (PTO) shaft (A) and rotary disc pull-type hitch gearbox shaft (B) without the front half of the driveline attached.

7. Ensure that distance (C) does **NOT** exceed the dimensions listed in Table *5.2, page 109*.

Table 5.2 Distance between Hitch Gearbox and Tractor PTO

Driveline Shaft Size	Distance (C)[1]
34 mm (1 3/8 in.)	650 mm (25 9/16 in.)
43 mm (1 3/4 in.)	750 mm (29 1/2 in.)

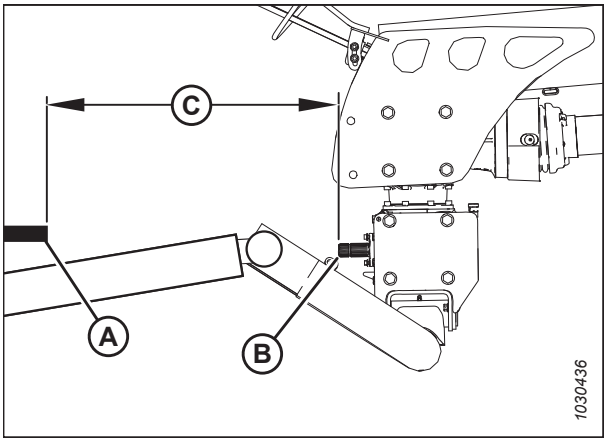


Figure 5.12: Allowable Driveline Length

8. Position primary driveline (A) onto the tractor's PTO shaft, making sure that the driveline is approximately level.

9. Pull back collar (A) on the driveline and push the driveline until it locks. Release the collar.

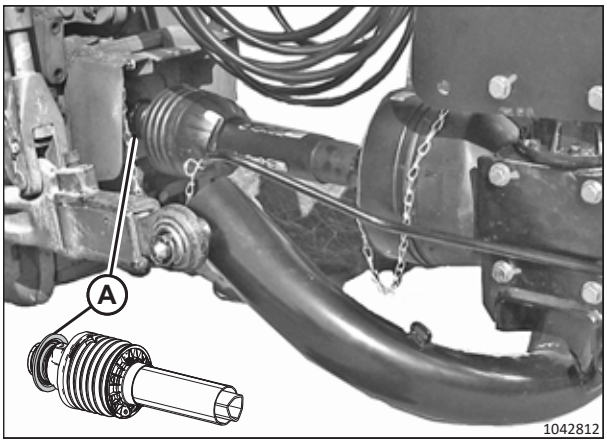


Figure 5.13: Driveline Attached to Tractor PTO

10. Clear bystanders from the area and start the tractor. Do **NOT** operate the rotary disc pull-type.

11. Raise the hitch so that stand (A) is off the ground.

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

13. Remove inner hairpin (B) to release stand (A).

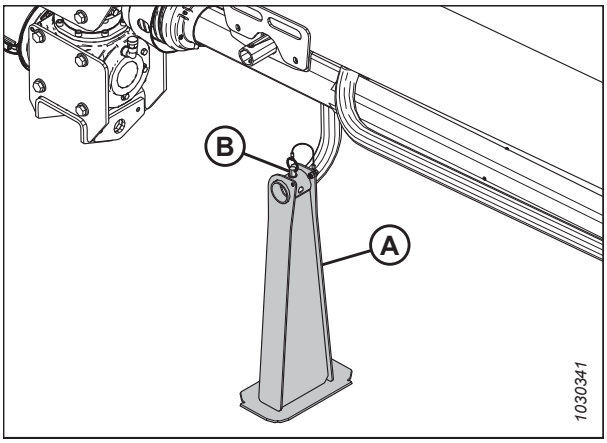


Figure 5.14: Hitch Stand in Working Position

1. If distance (C) is greater than the values shown, a longer driveline is required. Refer to the rotary disc pull-type operator's manual, options and attachments section, for ordering information.

14. Rotate stand (A) upward and into the storage position.

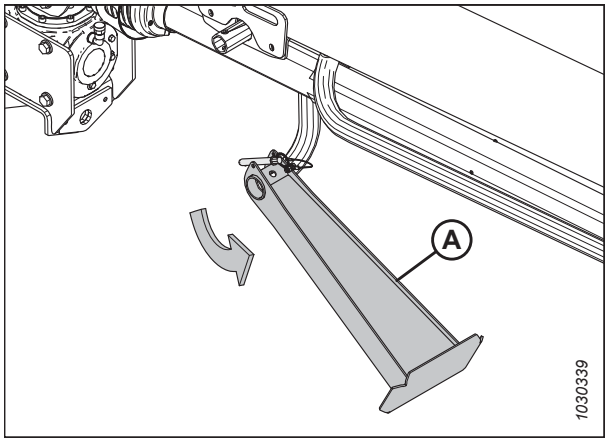


Figure 5.15: Repositioning Hitch Stand

15. Insert pin (A) and secure stand (B) in the storage position.

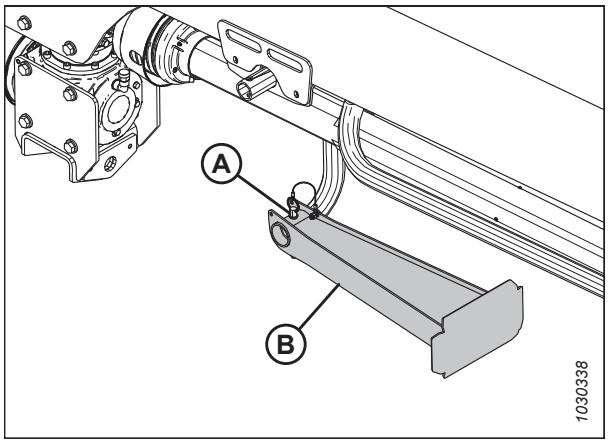


Figure 5.16: Hitch Stand in Storage Position

5.3.3 Connecting Hydraulics

Hydraulic hoses and lines distribute hydraulic fluid to the various components on the rotary disc pull-type.

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

Table 5.3 Hydraulic System Hoses

System	Hose Identification	Tractor Hydraulics
Lift (A)	Red #1 - pressure Blue #1 - return (only with transport 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

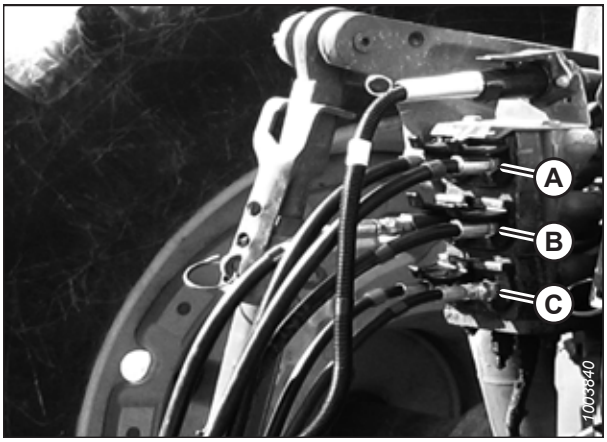


Figure 5.17: Hydraulic Connections

1. Connect the lift cylinder hose (red collar with #1) to the tractor's hydraulic receptacle. Connect the second hose (blue collar with #1) only when the transport is installed. Refer to Table *5.4, page 111* to confirm the system is functioning correctly.

2. Connect the two hitch swing cylinder hoses (collars with #2) to the tractor hydraulic receptacles. Refer to Table *5.5, page 111* to confirm the system is functioning correctly.

3. For machines with a hydraulic center-link only, connect the two tilt cylinder hoses (collars with #3) to the tractor hydraulic receptacles. Refer to Table *5.6, page 111* to confirm the system is functioning correctly.

Table 5.4 Lift System

Control Lever Position	Cylinder Movement	Rotary Disc Pull-Type Movement
Forward	Retract	Lower
Backward	Extend	Raise

Table 5.5 Hitch Swing and Transport System

Control Lever Position	Cylinder Movement	Rotary Disc Pull-Type Direction
Forward	Extend	Right
Backward	Retract	Left

Table 5.6 Tilt System

Control Lever Position	Cylinder Movement	Rotary Disc Pull-Type Movement
Forward	Retract	Lower
Backward	Extend	Raise

2. Available with hydraulic tilt option installed.

5.3.4 Connecting Electrical Wiring Harness

The electrical wiring harness allows the tractor to control the rotary disc pull-type's electrical components.

1. Ensure that pin #4 (A) in the tractor receptacle is **NOT** continuously energized (for instructions, 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 rotary disc pull-type brake lights.

2. Connect rotary disc pull-type 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).

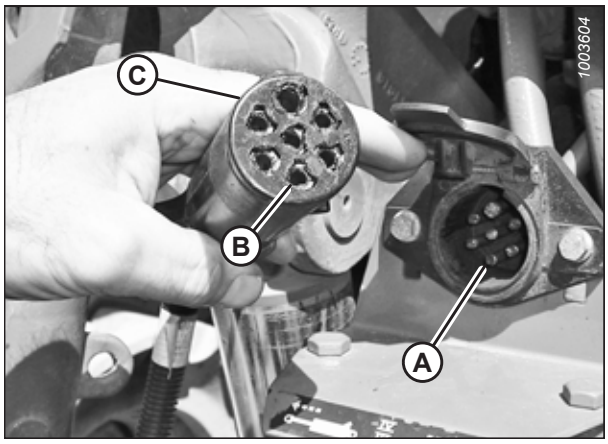


Figure 5.18: Electrical Wiring Harness and Receptacle

Chapter 6: Completing Rotary Disc Pull-Type Assembly

6.1 Installing Field Wheels

The rotary disc pull-type rolls on the field wheels when in the field position. When the transport is deployed (if equipped), the field wheels are raised off the road.

1. Remove shipping strap (B) from wheel spindle (A). Repeat this step on the opposite side.

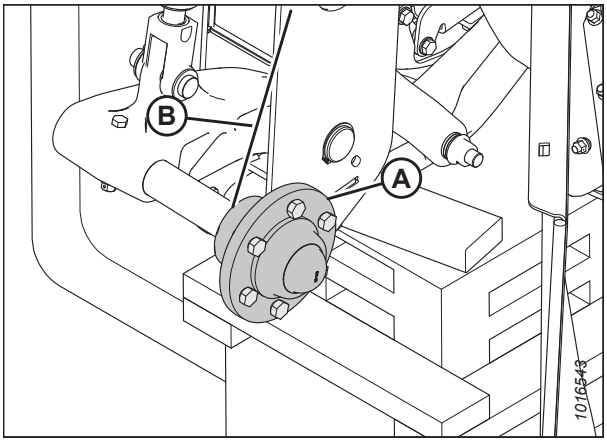


Figure 6.1: Wheel Spindle

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

CAUTION

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

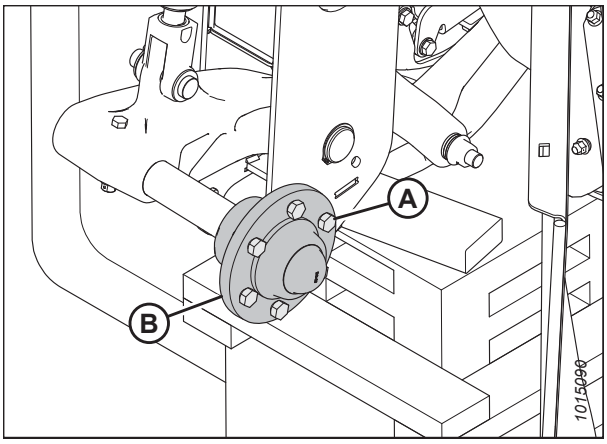


Figure 6.2: Wheel Spindle

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

   IMPORTANT:

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

   NOTE:

   The field wheels must be installed inboard on the carrier frame.

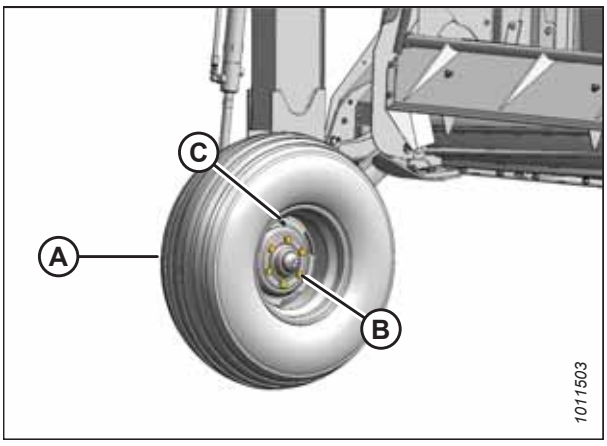


Figure 6.3: Installing Wheel Bolts

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

   IMPORTANT:

   Whenever a wheel is installed, check the wheel bolt torque after 1 hour of operation.

5. Check the tire pressure and adjust it as required.

   - For safety measures, refer to *1.5 Tire Safety, page 6*.
   - For instructions on checking tire pressure, refer to *8.1.2 Checking Tire Pressure, page 144*.

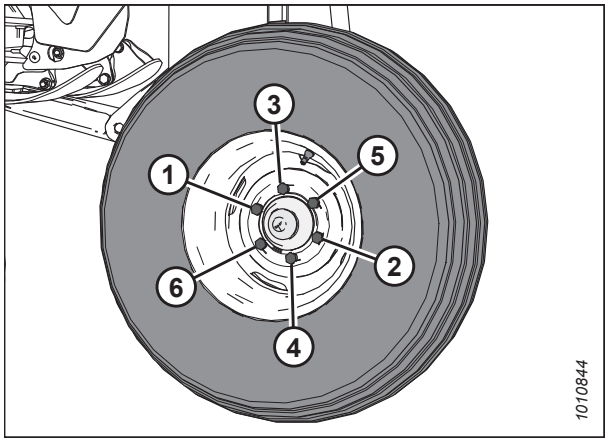


Figure 6.4: Tightening Sequence

6.2 Priming Hitch Swing Cylinder

The hitch swing cylinder must be primed before it is connected to the rear arm link.

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

Figure 6.5: Remote Control

NOTE:

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

2. With the cylinder disconnected from the rear arm link, using the tractor's hydraulics, extend and retract swing cylinder (A) several times to purge any air in the cylinder.

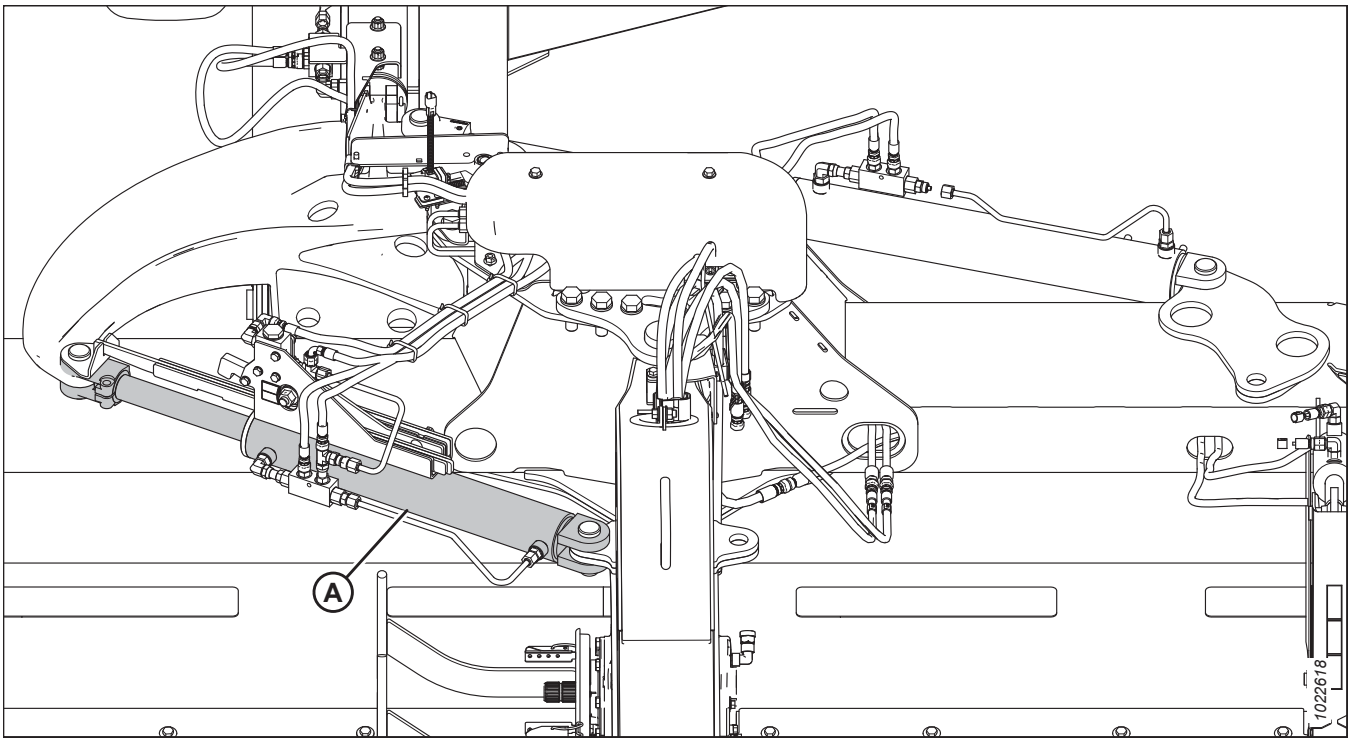


Figure 6.6: Hydraulic System

3. Align the clevis pinholes in cylinder clevis (B), cam arm (C), and rear link arm (A).

4. Install clevis pin (D) and secure it with cotter pin (E) (not shown).

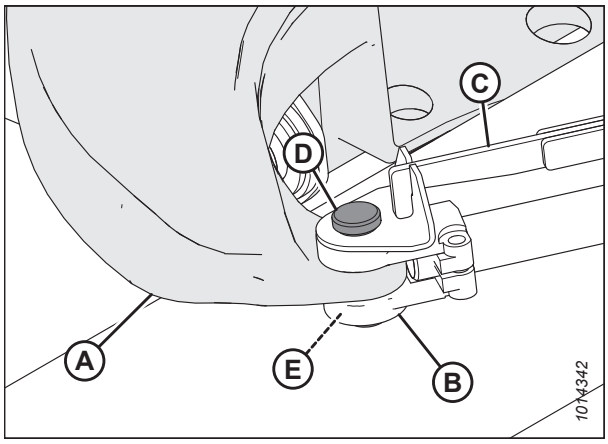


Figure 6.7: Rear Arm Link

6.3 Installing Transport Wheels – Factory-Installed Transport

The pull-type rolls on the transport wheels when the transport is deployed into road mode. The transport wheels are also used to convert the pull-type between field and road mode.

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

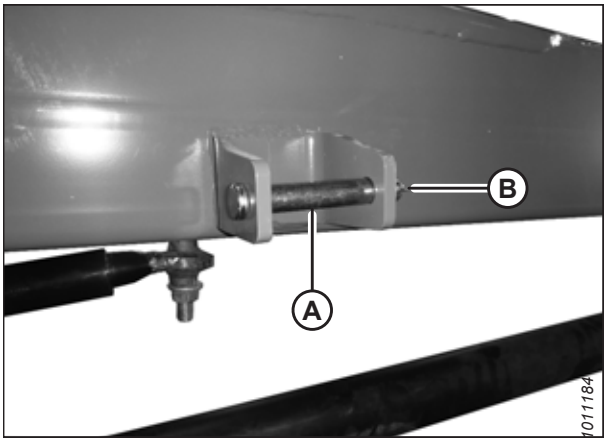


Figure 6.8: Latch Pin

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

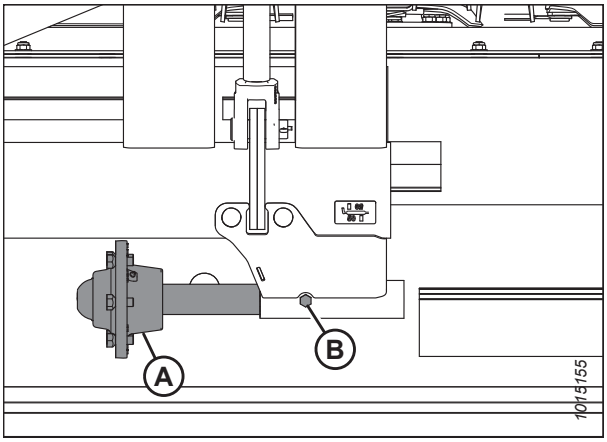


Figure 6.9: Axle Assembly Relocation

4. Install axle assembly (A) into the opposite side of the support as shown.
5. Install bolt (B) and nut to secure it. Torque the nut to 68 Nm (50 lbf·ft).
6. Remove and retain the wheel bolts from hub (A).

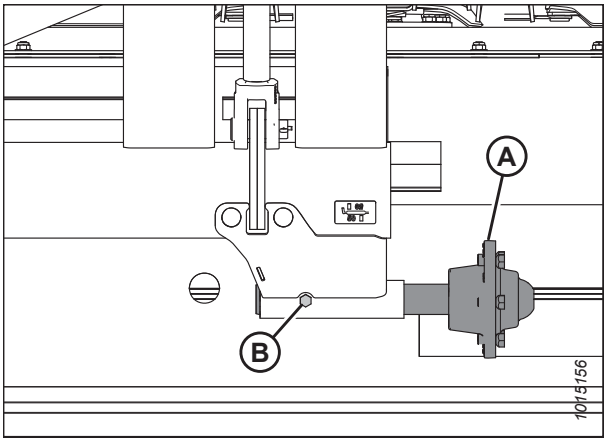


Figure 6.10: Axle Assembly Relocation

7. In the cab, move the transport switch to 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 the tractor's hydraulics, raise the transport assembly high enough to install the wheels.

CAUTION

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

Figure 6.11: Transport Remote Control

9. Retrieve the transport wheels and install the wheels with the wheel bolts. Ensure the valve stem faces outboard. Do **NOT** fully tighten the bolts.

10. Lower the wheels to the ground.

11. Torque the wheel bolts to 160 Nm (120 lbf·ft) following the tightening sequence shown.

    IMPORTANT:

    Whenever a wheel is installed, check the wheel bolt torque after 1 hour of operation.

12. Check tire pressure and adjust as required.

    - For safety measures, refer to *1.5 Tire Safety, page 6*.
    - For instructions on checking tire pressure, refer to *8.1.2 Checking Tire Pressure, page 144*.

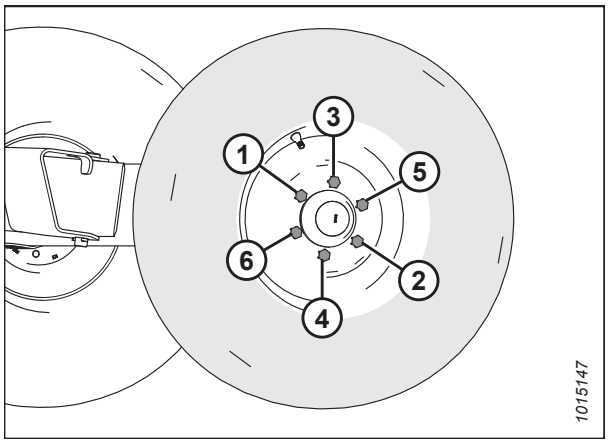


Figure 6.12: Tightening Sequence

6.4 Setting up Forming Shields

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

If a finger conditioner is installed, refer to *6.4.1 Setting up Forming Shields for Finger Conditioner, page 119*.

If a roll conditioner is installed, refer to *6.4.2 Setting up Forming Shields for Roll Conditioner, page 124*.

If no conditioner is installed, refer to *6.6 Discharge Shield – No Conditioner, page 127*.

6.4.1 Setting up Forming Shields for Finger Conditioner

On a machine equipped with a finger conditioner, the shields provide an enclosure for the fingers to flail the crop and control distribution onto the field.

NOTE:

Transport not shown in the illustrations for clarity.

1. Before setting up the forming shields, convert the machine to field mode. For instructions, refer to *9.2.2 Converting from Transport to Field Mode – with Transport, page 168*.
2. Remove shipping wires (A) securing forming shield covers (B) to the pallet.

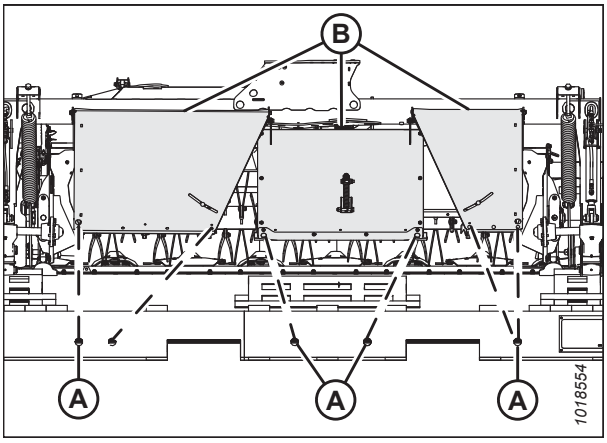


Figure 6.13: Forming Shields Strapped to Pallet

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

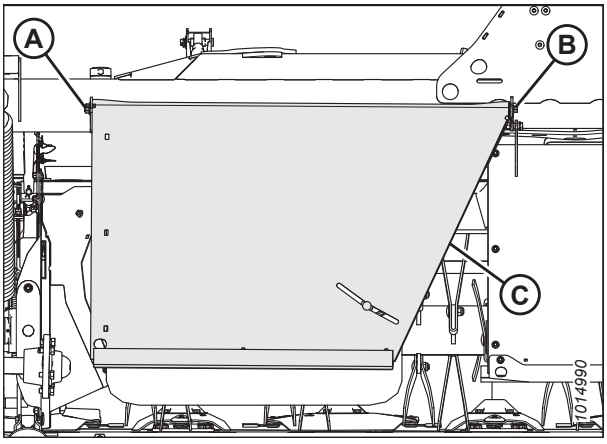


Figure 6.14: Outboard Top Cover

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

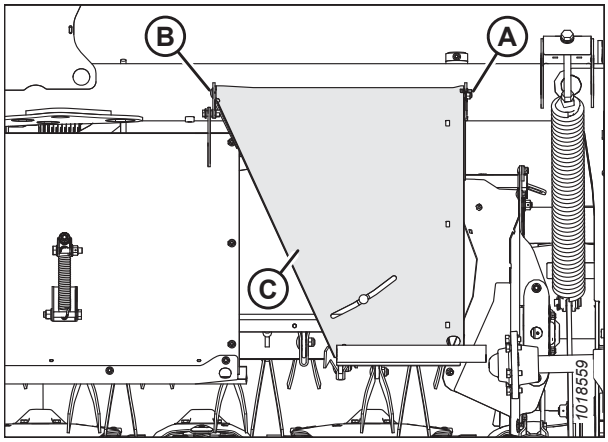


Figure 6.15: Outboard Top Cover

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

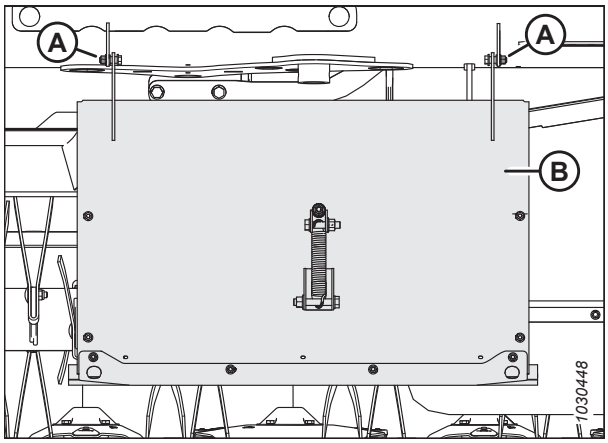


Figure 6.16: Center Shield

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

   NOTE:

   If installing the transport system, install shield (A) after the transport assembly is in place.

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

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

   c. Tighten the nuts on bolts (B) and (C).

   d. Repeat this step for the left forming shield.

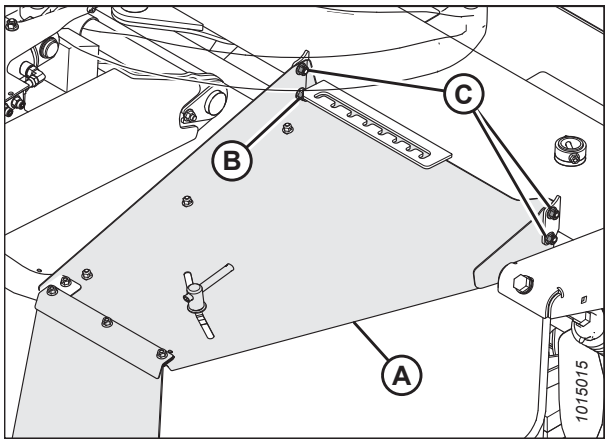


Figure 6.17: Forming Shield – Right Side

IMPORTANT:

For rotary disc pull-types without the transport system, proceed to Step *9, page 121*.

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

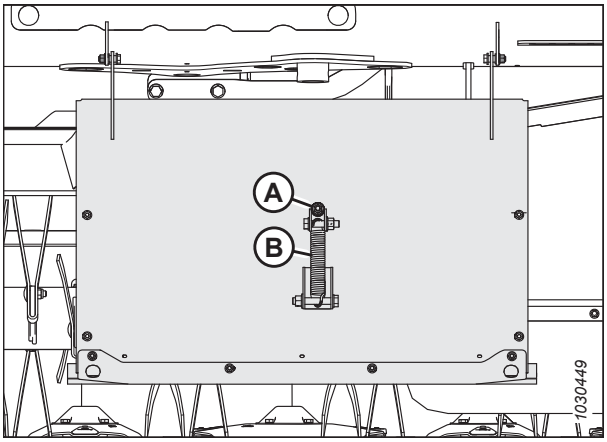


Figure 6.18: Spring on Center Shield

8. Lift the center shield and attach spring assembly (A) to link bracket (B) on the transport with existing bolt, nut, and washer (C) removed in Step *7, page 121*.

IMPORTANT:

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

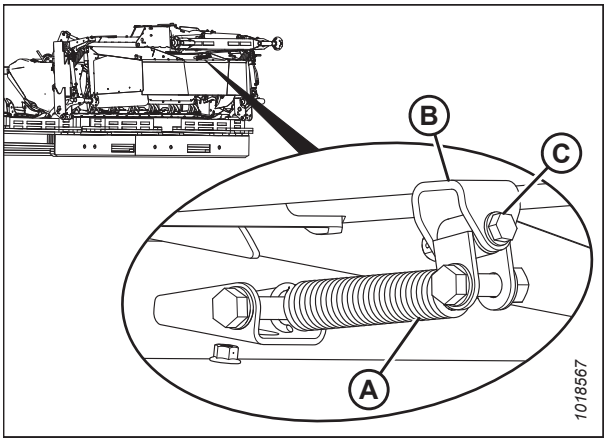


Figure 6.19: Spring Attached to Transport

IMPORTANT:

Only perform this step if **NOT** installing the transport system.

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

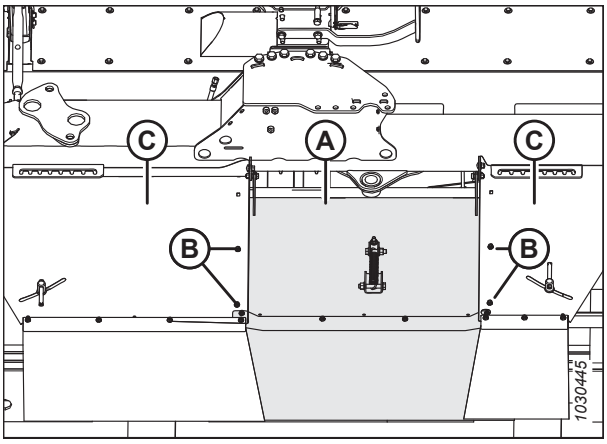


Figure 6.20: Center Cover Assembly

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

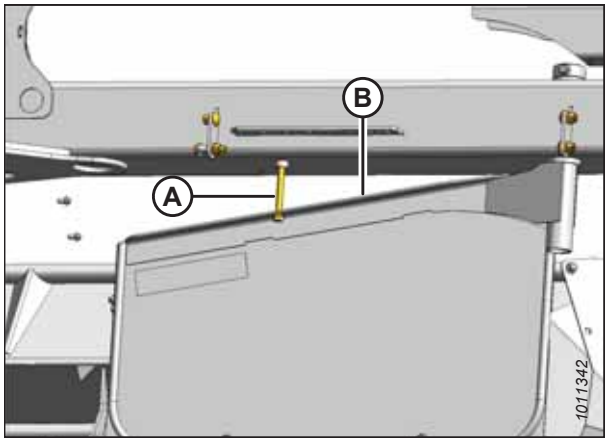


Figure 6.21: Side Deflector Assembly

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

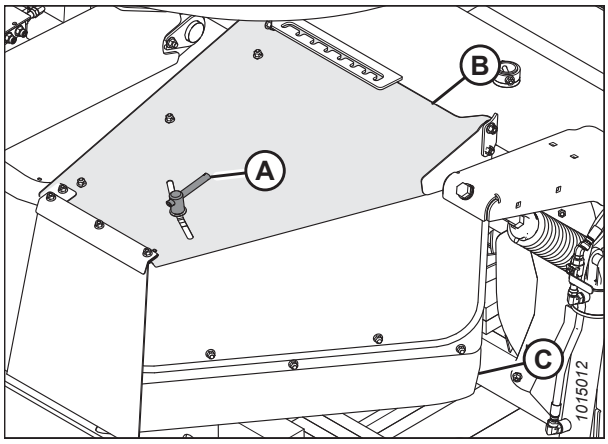


Figure 6.22: Side Deflector Assembly

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

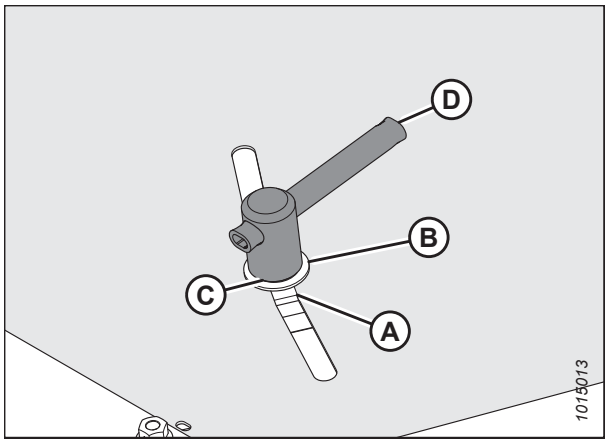


Figure 6.23: Deflector Adjustment

15. Remove two M10 carriage bolts (B) securing left deflector (A) in the shipping position. Repeat this step for the opposite deflector.

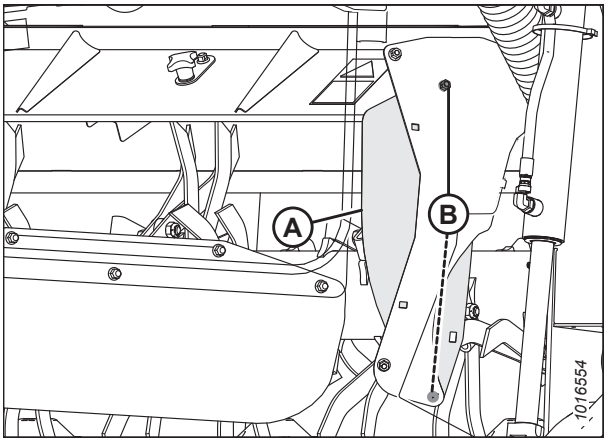


Figure 6.24: Right Deflector Shield Shown – Left Deflector Shield Opposite

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

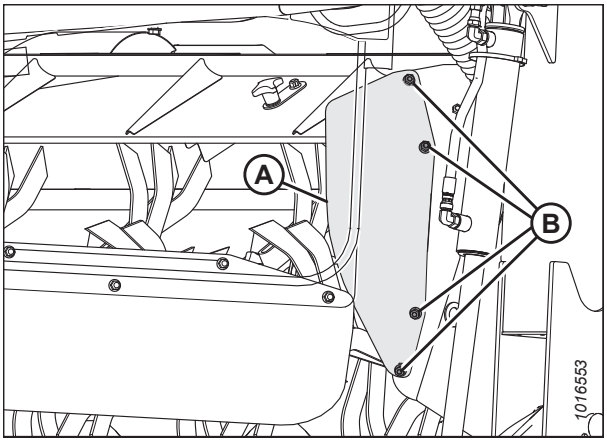


Figure 6.25: Right Deflector Shield Shown – Left Deflector Shield Opposite

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

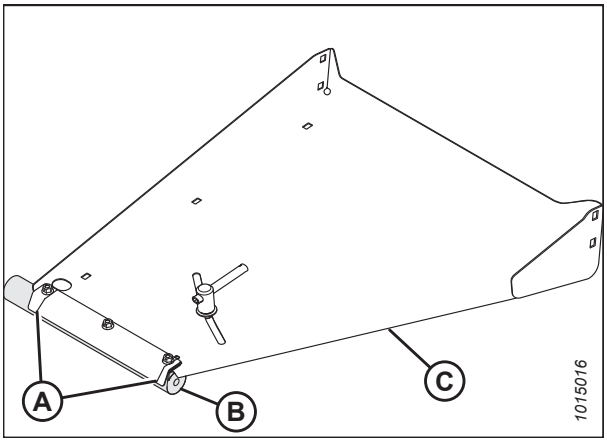


Figure 6.26: Forming Shield Curtain

6.4.2 Setting up Forming Shields for Roll Conditioner

On a machine equipped with a roll conditioner, the forming shields shape and control the distribution of conditioned crop.

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

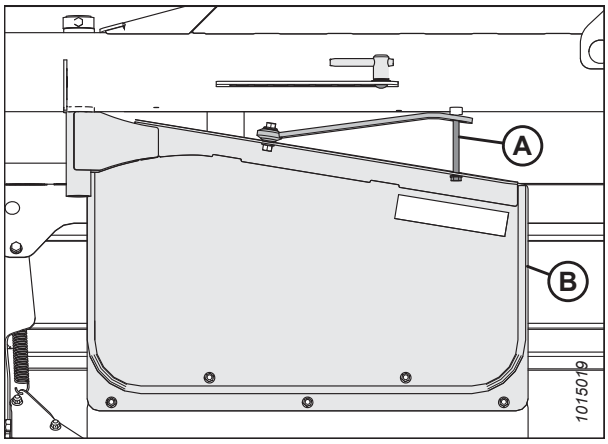


Figure 6.27: Left Forming Shield

3. Rotate clamp (B) until you can remove bolt (C).
4. Swing adjuster bar (A) and align it with a hole on carrier plate (D).
5. Install the bolt through adjuster bar (A) and carrier plate (D). Install clamp (B) onto the bolt. Tighten the clamp until the shield does not move.
6. Repeat Steps *1, page 124* to *5, page 124* for the opposite shield.

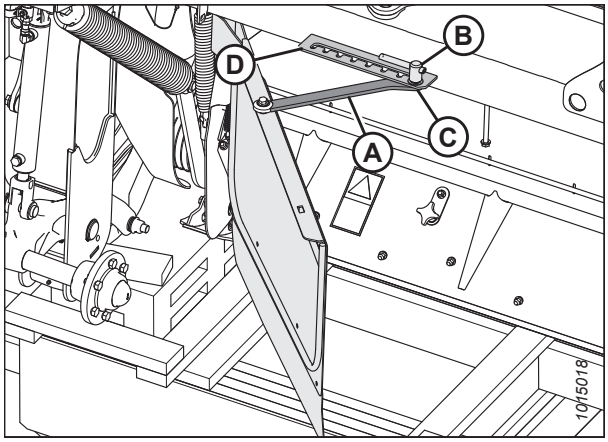


Figure 6.28: Adjuster Bar

6.5 Unpacking Curtains

Curtains provide protection from objects and debris thrown at high velocity from the cutterbar.

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

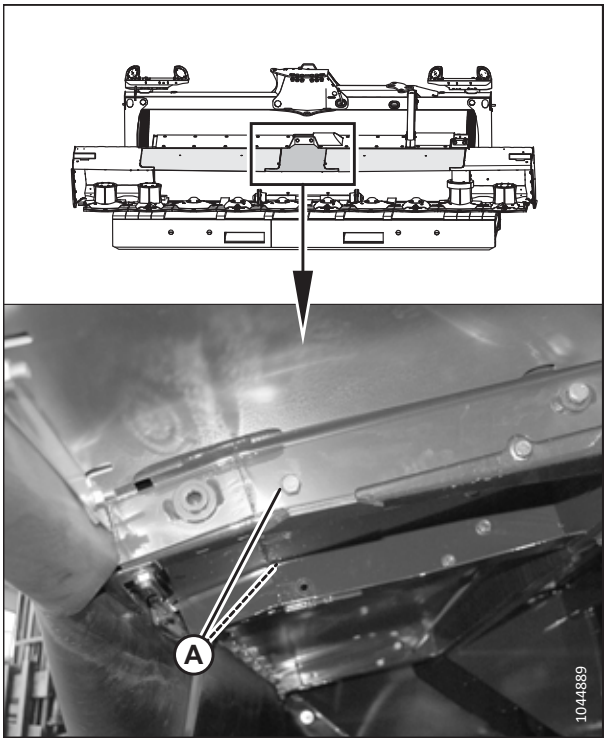


Figure 6.29: Underside of Cutterbar Doors

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

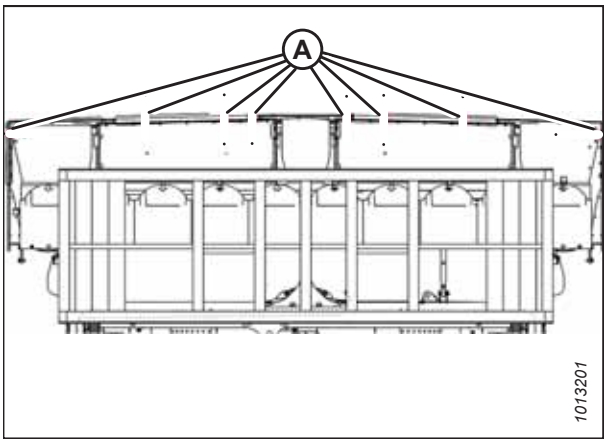


Figure 6.30: Underside of Machine

3. Straighten cutterbar door curtains (A) and remove any folds or creases.

   NOTE:

   Minor creases will eventually straighten out.

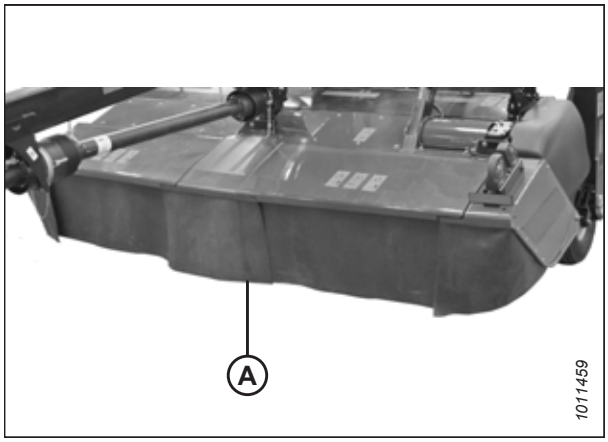


Figure 6.31: Cutterbar Door Curtains

4. If the forming shields are installed, straighten forming shield curtains (A) and remove any folds or creases.

   NOTE:

   Minor creases will eventually straighten out.

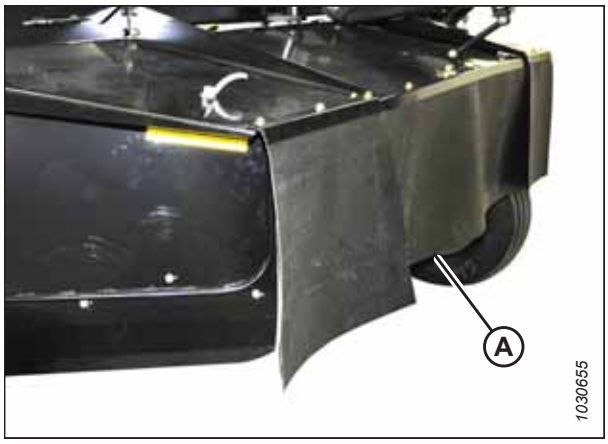


Figure 6.32: Forming Shield Curtains

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

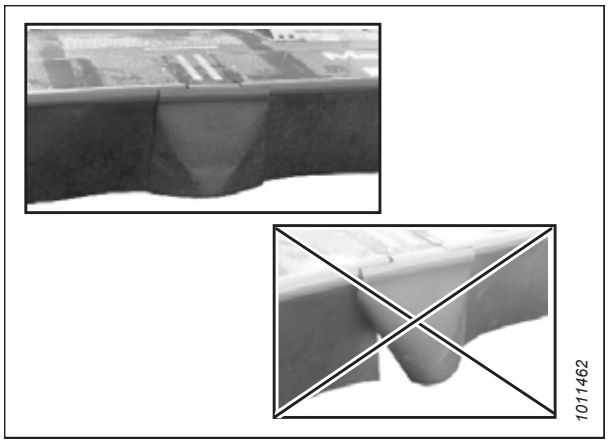


Figure 6.33: Cutterbar Door Curtains

6.6 Discharge Shield – No Conditioner

Discharge shields control the distribution of unconditioned crop when no conditioner is installed.

- If a conditioner is being installed, the discharge shield needs to be removed. For instructions, refer to *6.6.1 Removing Discharge Shield – No Conditioner, page 127*.
- If a conditioner is being removed, the discharge shield needs to be installed. For instructions, refer to *6.6.2 Installing Discharge Shield – No Conditioner, page 128*.

6.6.1 Removing Discharge Shield – No Conditioner

The discharge shields on a rotary disc pull-type may occasionally need to be removed for machine service.

IMPORTANT:

The discharge shield must be installed if operating the machine without a conditioner.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

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

1. Raise the rotary disc pull-type fully and extend the center-link to maximize the space between shield (A) and carrier frame (B).
2. Shut down the engine, and remove the key from the ignition.

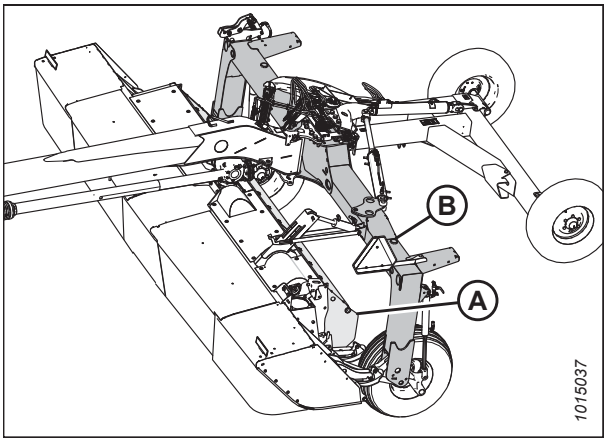


Figure 6.34: Rotary Disc Pull-Type with Transport

3. Close lift cylinder lock-out valves (A) on both sides of the rotary disc pull-type. Valve handles should be in the closed position (90° angle to the hose).

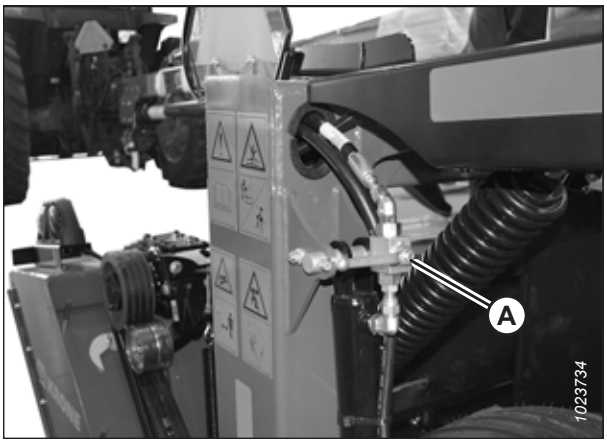


Figure 6.35: Lift Cylinder Lock-Out Valves

4. Remove four M16 hex head bolts (A), nuts, and flat washers securing shield (B) to panel (C) on the rotary disc pull-type.

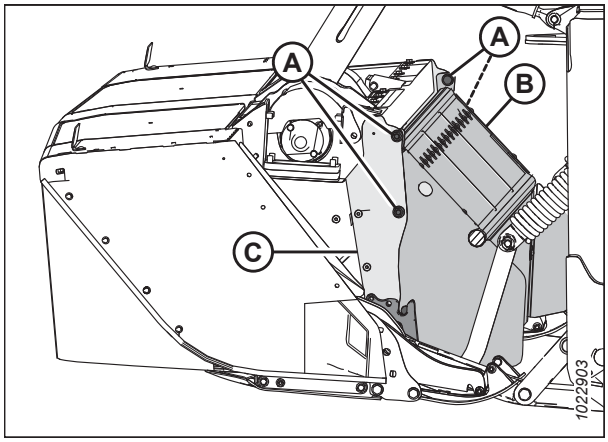


Figure 6.36: Machine – View from Left

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

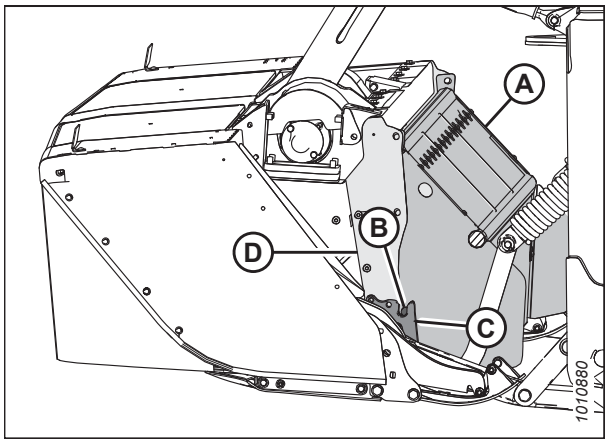


Figure 6.37: Machine – View from Left

6. Rotate shield (A) 90° and move it away from the carrier frame.

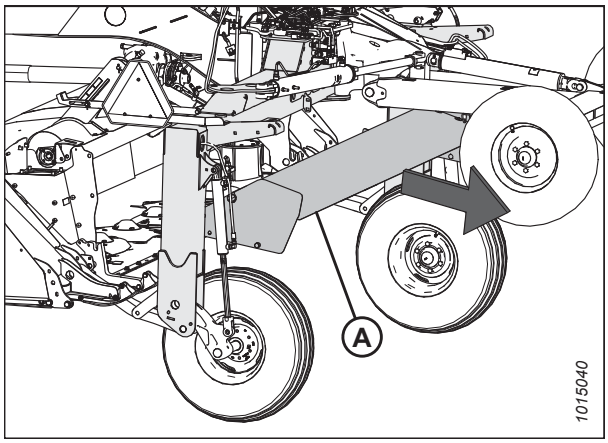


Figure 6.38: Shield Rotated

6.6.2 Installing Discharge Shield – No Conditioner

The discharge shields on a rotary disc pull-type may occasionally need to be removed for machine service.

IMPORTANT:

The discharge shield must be installed if operating the machine without a conditioner.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

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

1. Raise the rotary disc pull-type fully and extend the center-link to maximize the space between field wheels (A) and carrier frame (B).
2. Shut down the engine, and remove the key from the ignition.

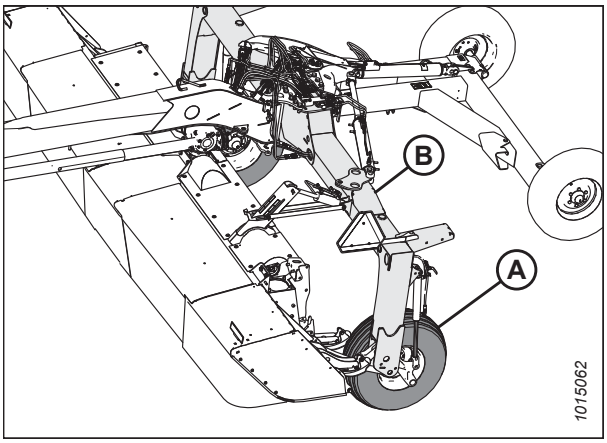


Figure 6.39: Rotary Disc Pull-Type with Transport

3. Close lift cylinder lock-out valves (A) on both sides of the rotary disc pull-type. The valve handles should be in the closed position (90° angle to the hose).

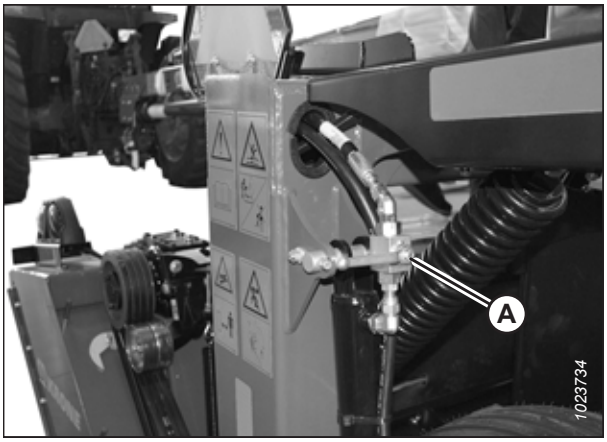


Figure 6.40: Lift Cylinder Lock-Out Valves – Closed Position

4. Rotate shield (A) and pass it between the field wheels and the carrier frame toward the rotary disc pull-type.

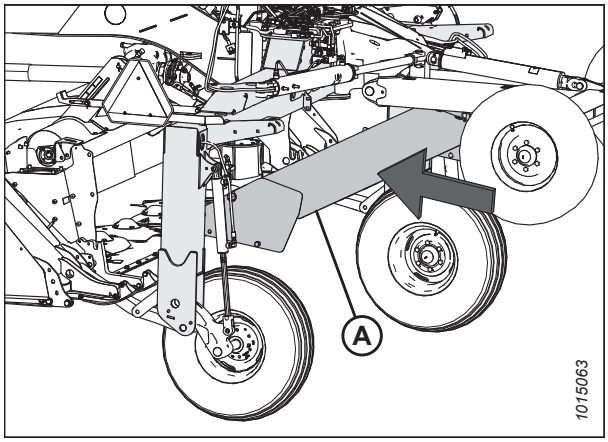


Figure 6.41: Shield Rotated

5. Position shield (A) so that pins (B) (one on each side) engage the slots in cutterbar support (C) and the bolt holes align with panel (D).

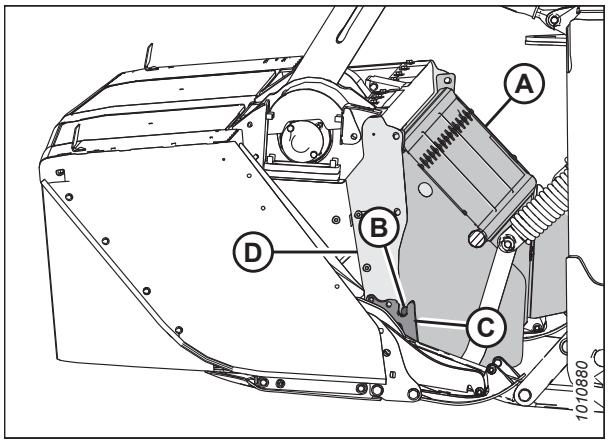


Figure 6.42: Left Side of Machine – Right Opposite

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

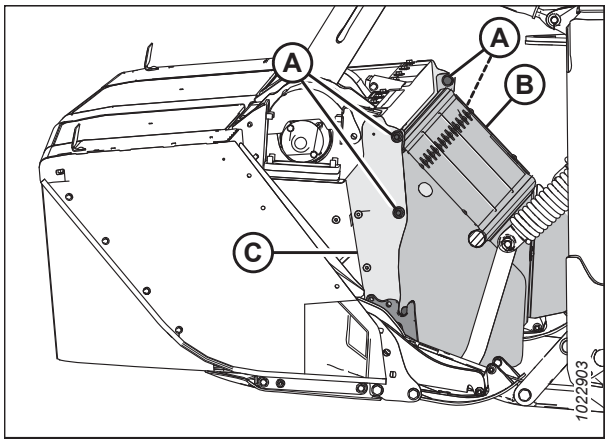


Figure 6.43: Left Side of Machine – Right Opposite

7. Open lift cylinder lock-out valves (A) on both sides of the rotary disc pull-type. The valve handles should be in the open position (in line with the hose).

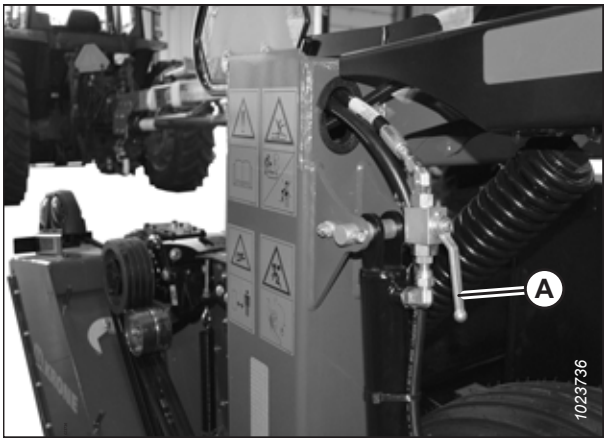


Figure 6.44: Lift Cylinder Lock-Out Valves – Open Position

6.7 Removing Rotary Disc Pull-Type from Shipping Pallet – No Transport Installed

A shipping pallet is strapped to the pull-type and must be removed before delivery to the customer.

NOTE:

If you have the transport system, refer to *6.8 Removing Rotary Disc Pull-Type from Shipping Pallet – Transport Installed, page 133* for instructions.

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

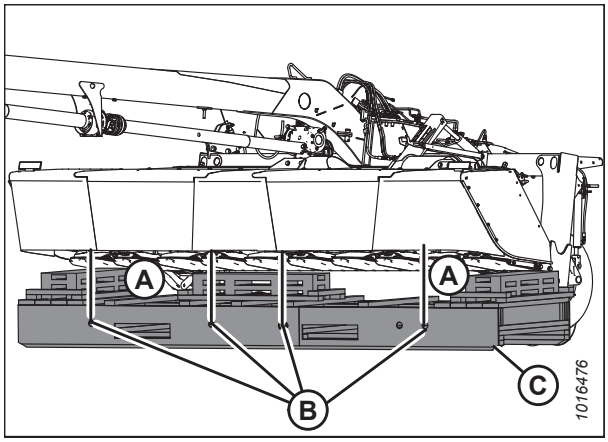


Figure 6.45: Strapping

4. Use a chain or forklift to remove shipping pallet (A) from underneath the rotary disc pull-type.
5. Lower the rotary disc pull-type to the ground.

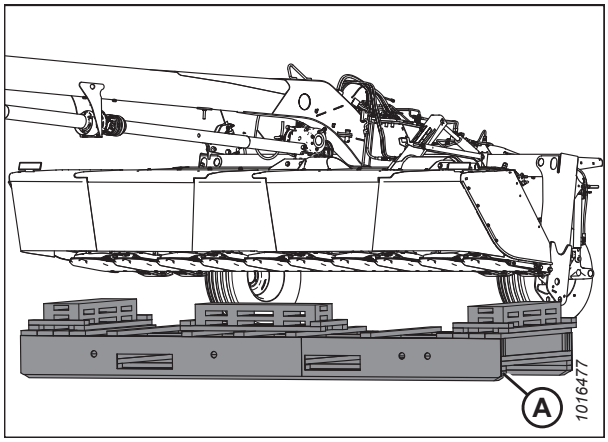


Figure 6.46: Removing Shipping Pallet

6.8 Removing Rotary Disc Pull-Type from Shipping Pallet – Transport Installed

A shipping pallet is strapped to the pull-type and must be removed before delivery to the customer.

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

   IMPORTANT:

   To prevent the pull-type from dropping, ensure that the float springs were retensioned after repositioning the center-link top anchor. For instructions, refer to Step *11, page 68* to Step *13, page 68*.

2. Use the transport wheels to lift the rotary disc pull-type high enough that the pallet can be removed.

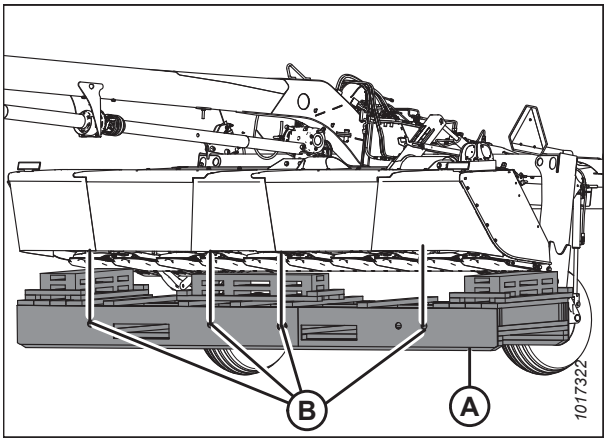


Figure 6.47: Strapping

3. Use a chain or forklift to remove shipping pallet (A) from underneath the rotary disc pull-type.

4. Lower the pull-type to the ground.

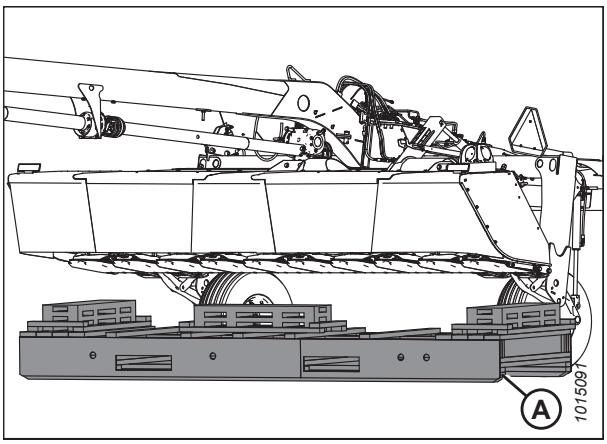


Figure 6.48: Removing Shipping Pallet

Chapter 7: Lubricating Rotary Disc Pull-Type

The rotary disc pull-type has been lubricated at the factory; however, you should lubricate the rotary disc pull-type prior to delivery to offset the effects of weather during outside storage and transport.

DANGER

To prevent bodily injury or death from the 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.

7.1 Opening Driveshields

The driveshields offer protection from moving components. Open them only when you intend to service the machine.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

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

NOTE:

The illustrations in this procedure show the left driveshield; the right driveshield is similar.

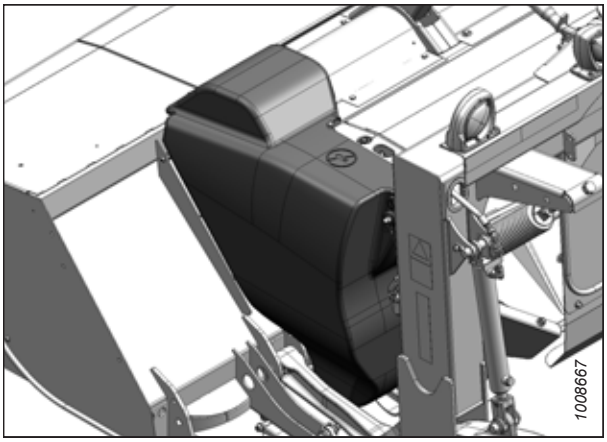


Figure 7.1: Left Driveshield

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

2. Remove lynch pin (A) and tool (B) from pin (C).

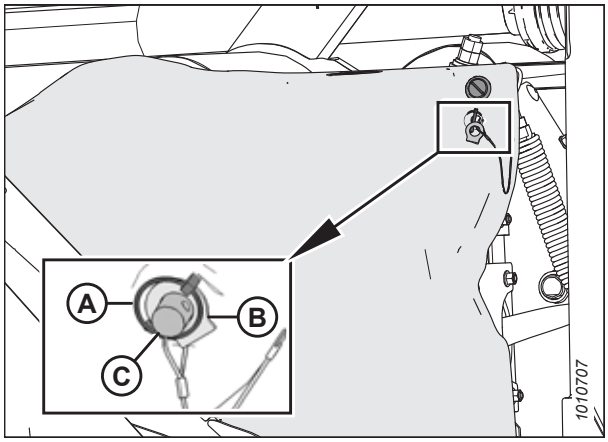


Figure 7.2: Left Driveshield

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

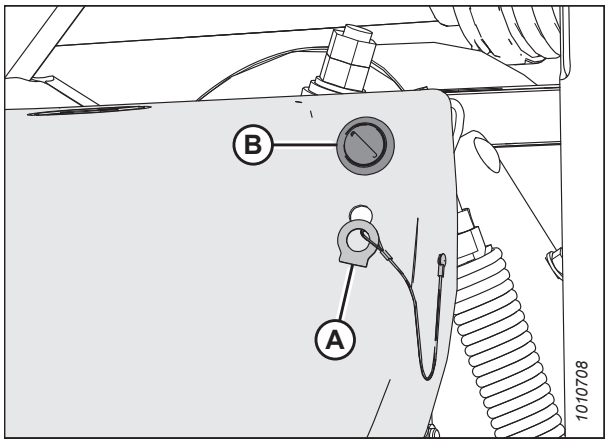


Figure 7.3: Driveshield Latch

4. Pull the top of driveshield (A) away from the machine to open it.

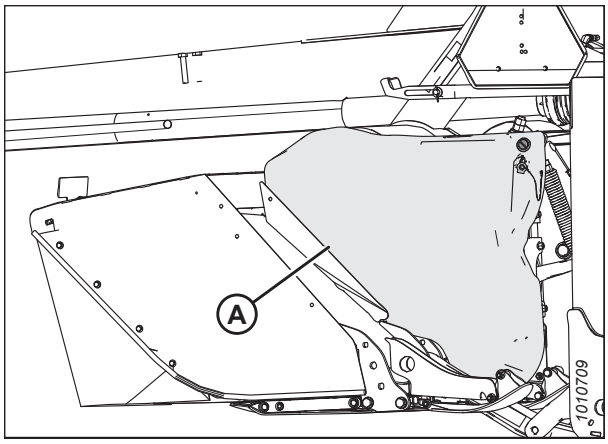


Figure 7.4: Driveshield

7.2 Lubrication Points

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

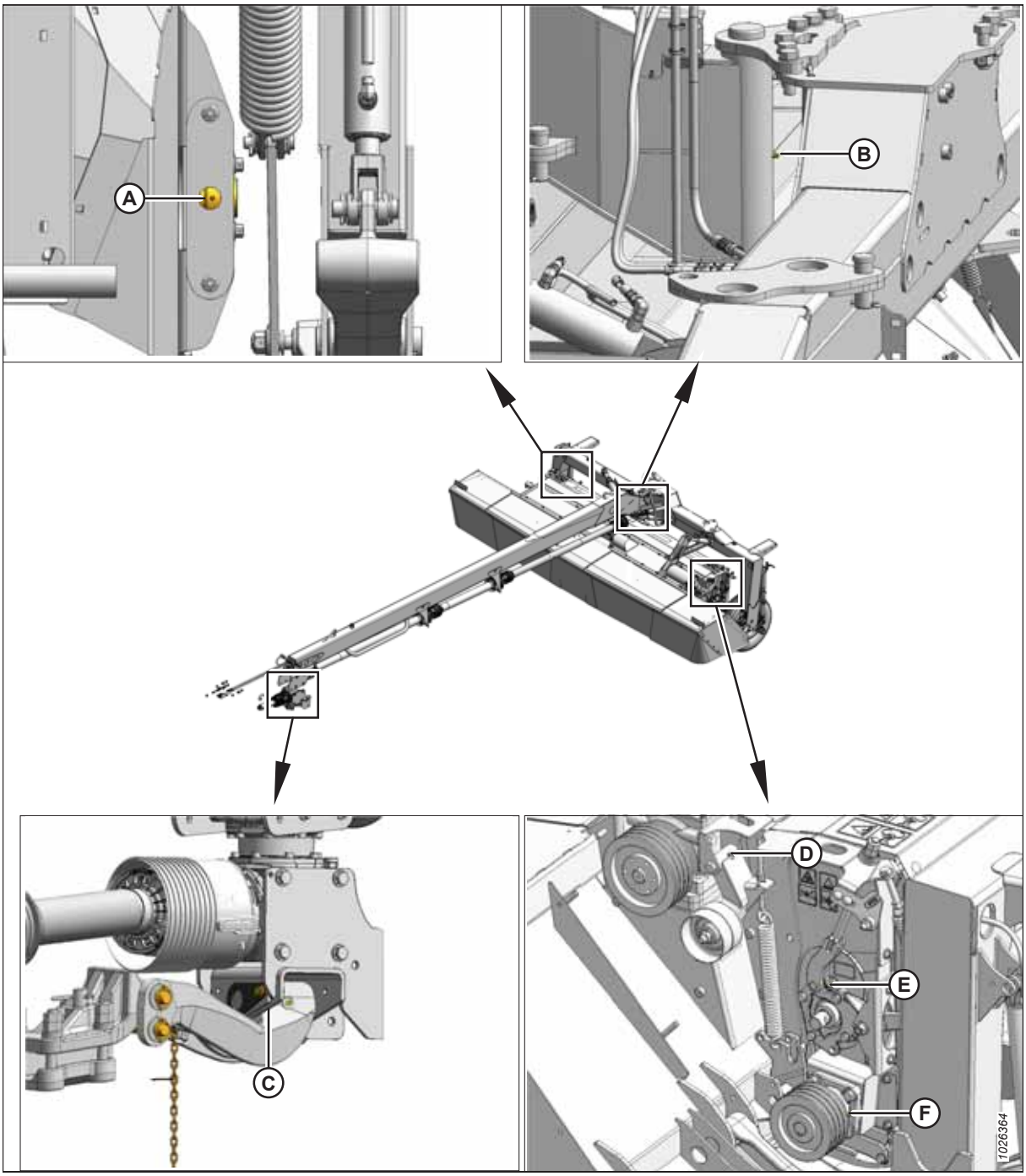


Figure 7.5: Lubrication Points

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

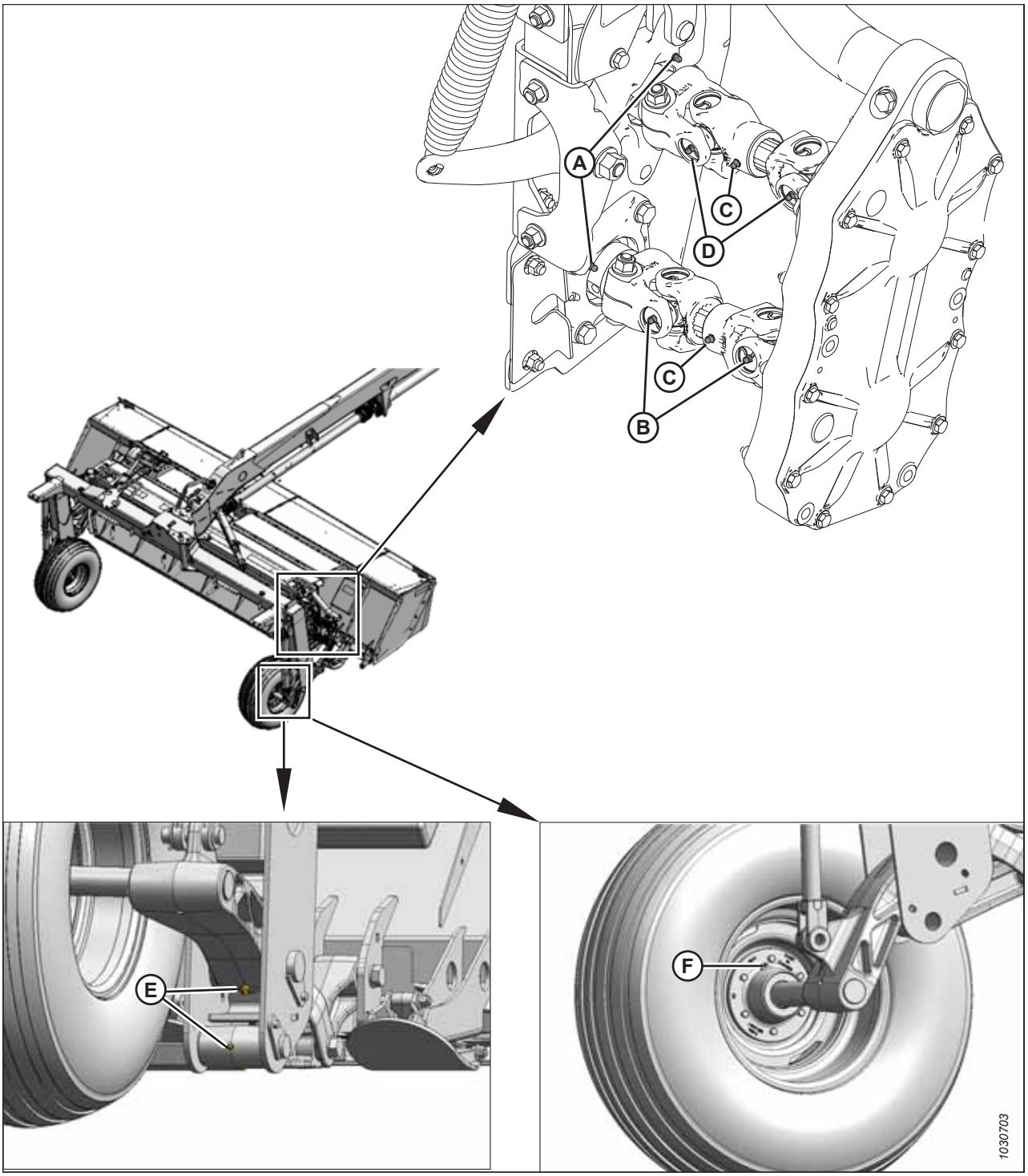


Figure 7.6: Lubrication Points

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

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

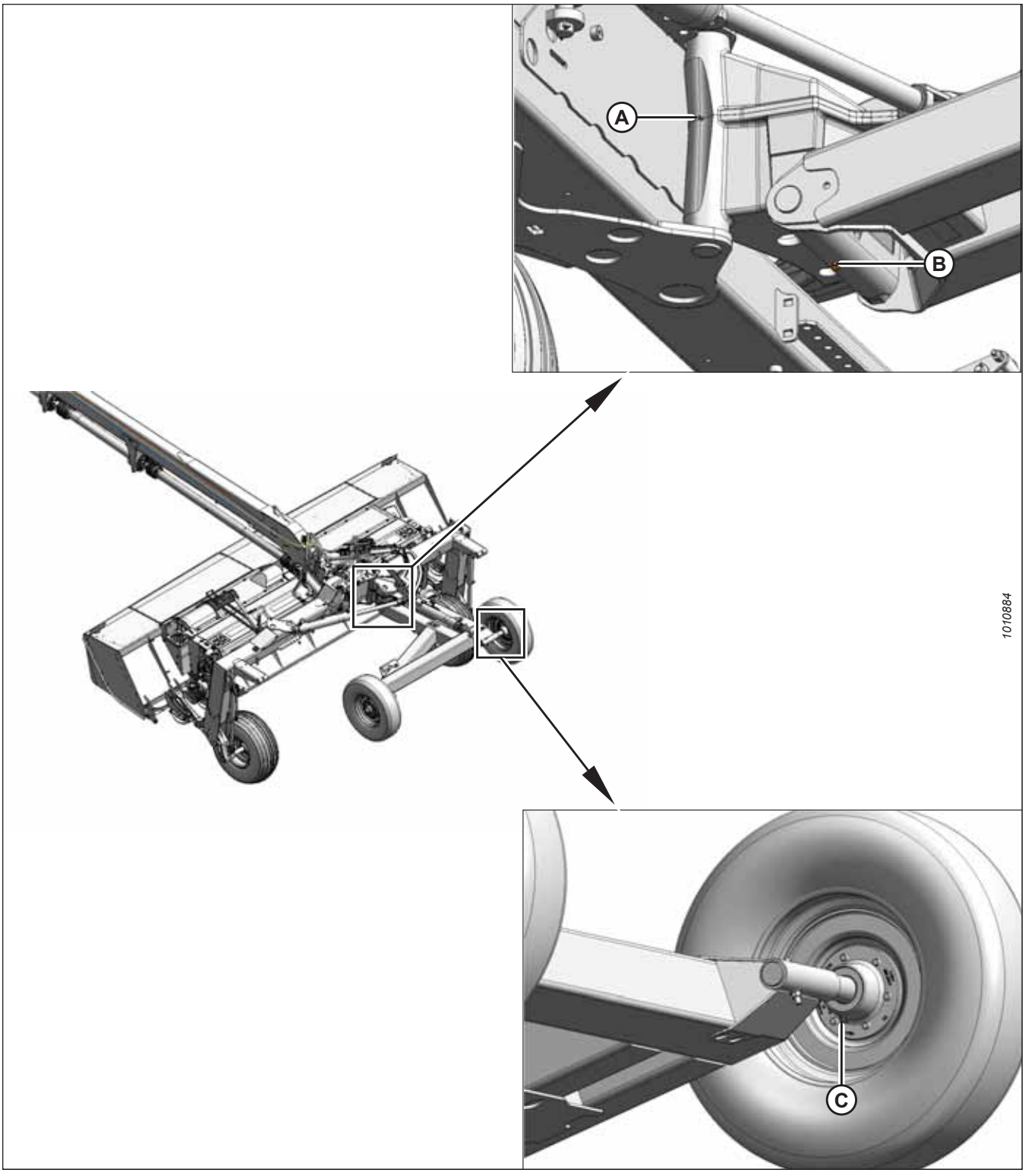


Figure 7.7: Lubrication Points

A - Vertical Pivot, Transport

B - Horizontal Pivot, Transport

C - Bearing, Transport Wheel (Two Places)

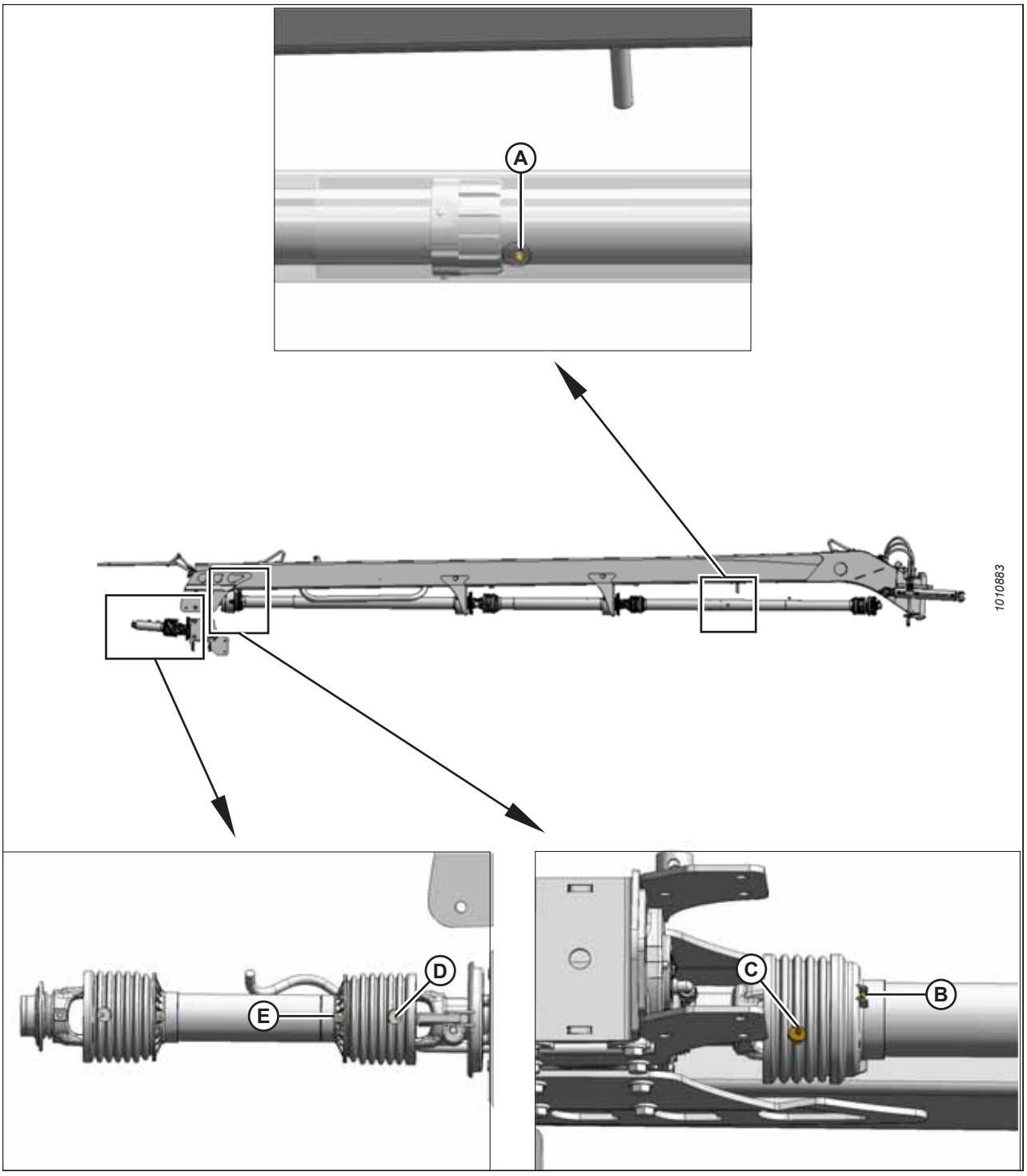


Figure 7.8: Lubrication Points

A - Slip Joint, Drivelines (R113 PT, Two Places) (R116 PT, Three Places)[4]
B - Guard, Driveline
C - U-Joint, Main Driveline
D - U-Joint, Primary Driveline (Two Places)
E - Guard, Primary Driveline (Two Places)

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

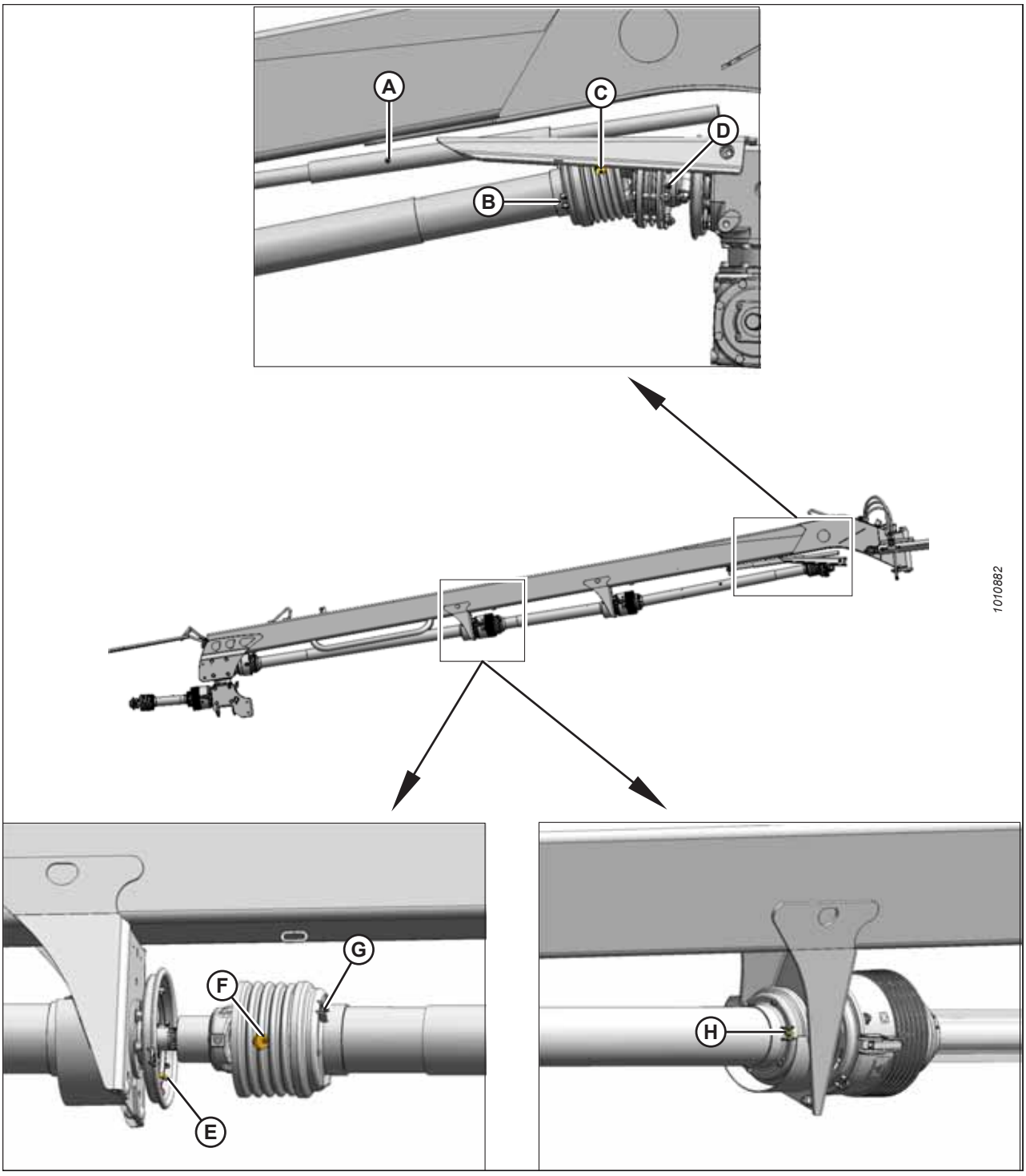


Figure 7.9: Lubrication Points

A - Slip Joint, Steering Link
B - Guard, Clutch Driveline
C - U-Joint, Clutch Driveline
D - Clutch
E - Bearing, Driveline (R113 PT, One Place) (R116 PT, Two Places)
F - U-Joint, Driveline (R113 PT, One Place) (R116 PT, Two Places)
G - Guard (R113 PT, One Place) (R116 PT, Two Places)
H - Guard (R113 PT, One Place) (R116 PT, Two Places)

7.3 Closing Driveshields

Close the driveshields when your maintenance or repair tasks are complete.

WARNING

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

NOTE:

The illustrations shown in this procedure apply to the left driveshield; the right driveshield is similar.

1. Position the driveshield onto the pins, if necessary.
2. Push driveshield (A) to engage latch (B).
3. Ensure that the driveshield is properly secured.

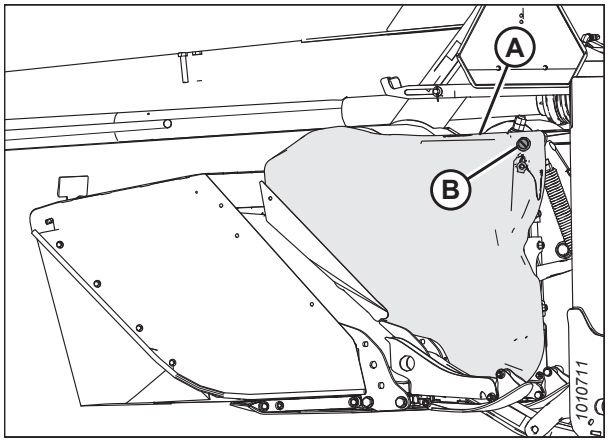


Figure 7.10: Driveshield and Latch

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

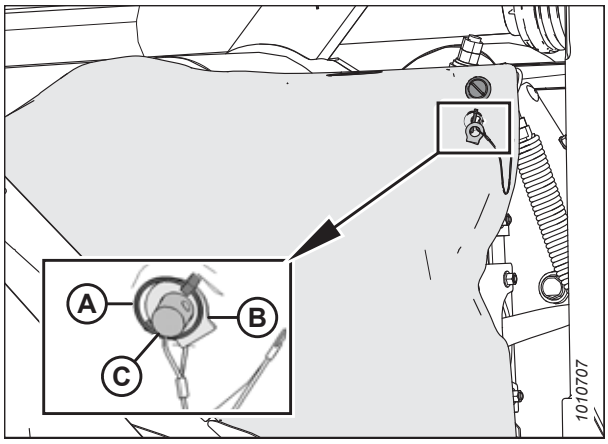


Figure 7.11: Left Driveshield

Chapter 8: Predelivery Checks

8.1 Performing Predelivery Checks

Perform the final checks and adjustments as listed on the Predelivery Checklist (yellow sheet inside the back cover 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 193*. The completed Checklist should be retained either by the Operator or the Dealer.

DANGER

Follow these safety guidelines during predelivery checks to prevent bodily injury or death:

- **Always shut off the engine and remove the key from the ignition before adjusting or inspecting the machine, or leaving the operator's seat for any reason.**
- **If the machine is raised, always place blocks under each end of the cutterbar, and close the lock-out valves. Never work on or beneath an unsupported machine.**
- **Block the machine wheels before detaching it from the tractor.**
- **Clear the area of bystanders.**

WARNING

Follow these safety guidelines during predelivery checks to prevent bodily injury or death:

- **Install all machine shields and covers before operating the machine.**
- **Wear close-fitting clothing and cover long hair. NEVER wear dangling items such as hoodies, scarves, or bracelets.**
- **Wait for shafts and other parts to stop moving before approaching them.**
- **Wear safety glasses and safety gloves when working near the cutterbar.**
- **Never exceed the maximum inflation pressure indicated on the tire label.**

IMPORTANT:

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

IMPORTANT:

Set the hydraulic flow rate to between 10–15 percent to provide optimal flow to the auxiliary lift cylinder control valve.

NOTE:

For recommended fluids and lubricants, refer to the chart on the inside back cover.

8.1.1 Checking Wheel Bolts

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

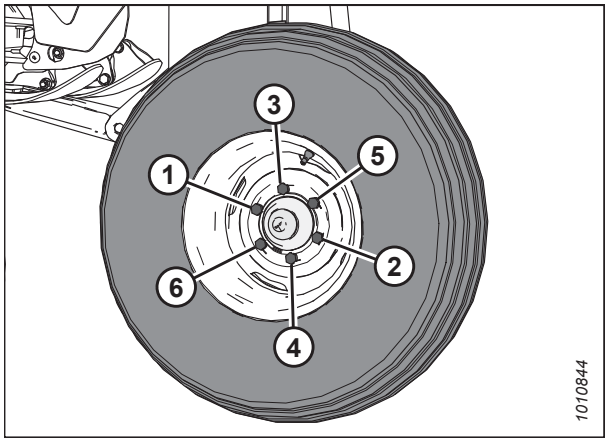


Figure 8.1: Tightening Sequence

8.1.2 Checking Tire Pressure

Check the proper inflation of the field and optional transport tires as follows:

- The maximum pressure is 310 kPa (45 psi) for field wheels (A).
- The maximum pressure is 552 kPa (80 psi) for optional transport wheels (B).

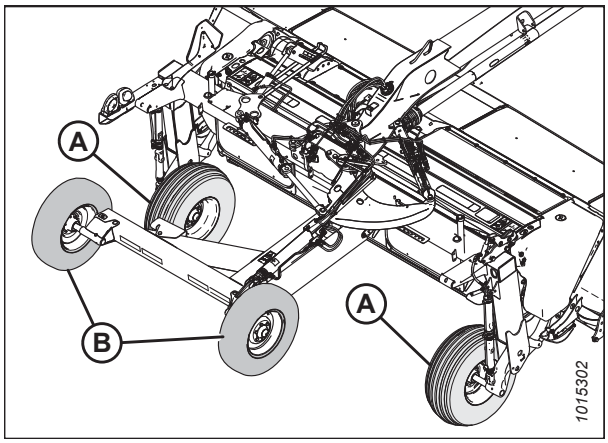


Figure 8.2: Field and Transport Wheels

8.1.3 Checking and Adjusting Conditioner Drive Belt

1. Check that belt (A) is properly tensioned and positioned on the pulleys. Overall spring length (B) should be 365 mm (14 3/8 in.). To adjust the spring length, do the following:
   a. Turn jam nut (C) counterclockwise to unlock the tension adjustment.
   b. To increase the spring length (tension), turn adjuster nut (D) clockwise. To decrease the spring length (relax), turn adjuster nut (D) counterclockwise.
2. Check that jam nut (C) and adjuster nut (D) are tight.

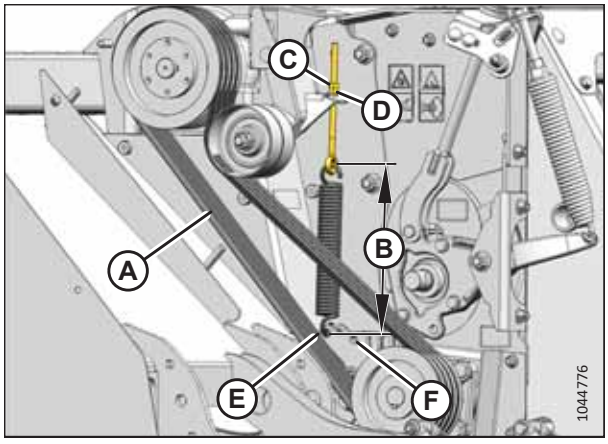


Figure 8.3: Conditioner Drive Belt

3. Check that the spring is hooked at the correct location:
   - Hole (E) for a roll conditioner
   - Hole (F) for a finger conditioner

8.1.4 Checking Cutting Angle

Ensure the cutting angle is not set to an extreme position that could affect performance.

For a rotary disc pull-type equipped with hydraulic center-link (A), the mid-point for the cutting angle is indicated with indicator bars (B) in the center (orange) of the indicator decal.

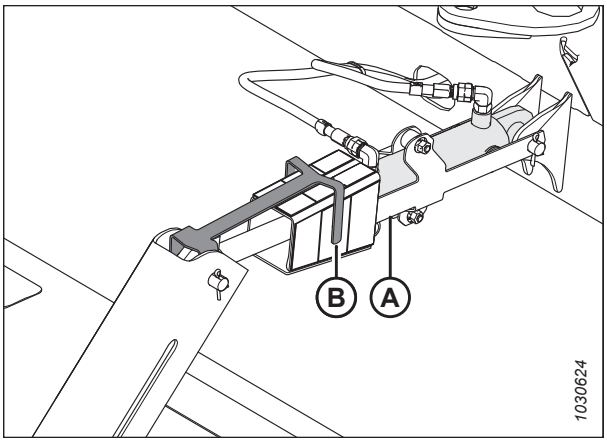


Figure 8.4: Hydraulic Center-Link

For a rotary disc pull-type equipped with mechanical center-link (A), the mid-point for the cutting angle is the middle of the adjustment range on the link.

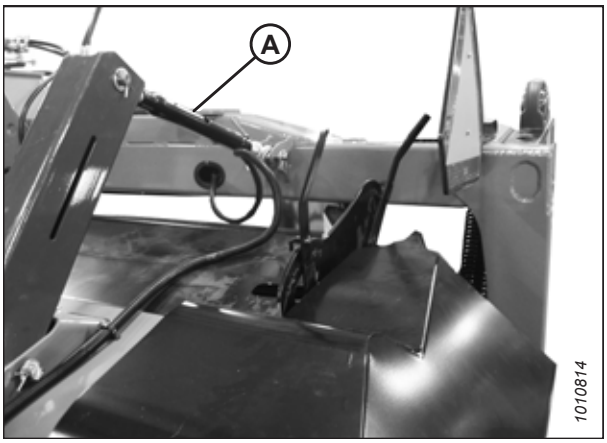


Figure 8.5: Mechanical Center-Link

8.1.5 Checking Skid Shoes

All skid shoes (A) should be at the same position, either up (shown at right) or down. If adjustment is required, refer to the machine's operator's manual.

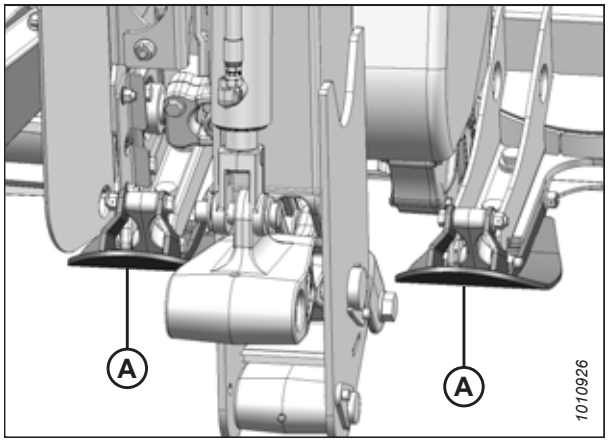


Figure 8.6: Skid Shoes – R116 PT (R113 PT Similar)

8.1.6 Checking Rotary Disc Pull-Type Float

1. Center the rotary disc pull-type directly behind the tractor.
2. Lower the rotary disc pull-type to the ground.
3. Grasp the front corner of the rotary disc pull-type and lift; the weight should feel approximately like 45 kg (100 lb.) at both ends. If adjustment is required, refer to *10.1 Adjusting Float, page 175*.

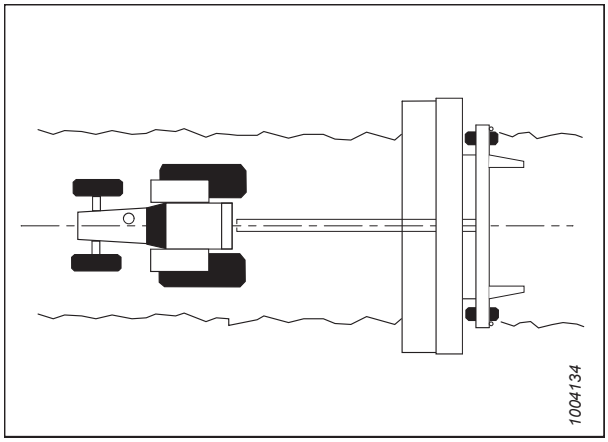


Figure 8.7: Rotary Disc Pull-Type Centered behind Tractor

8.1.7 Checking and Adding Lubricant – Conditioner Roll Timing Gearbox

1. Lower the machine to the ground.
2. Adjust the cutting angle with the center-link so that the cutterbar is level.
3. Use a spirit (bubble) level and check that cutterbar is level in fore-aft direction. Adjust the cutting angle as required.
4. Clean around lubricant sight glass (A) and breather plug (B) on the conditioner roll timing gearbox.
5. Ensure that the lubricant level is at the top of the sight glass. If necessary, add lubricant through plug (B), then reinstall the plug.

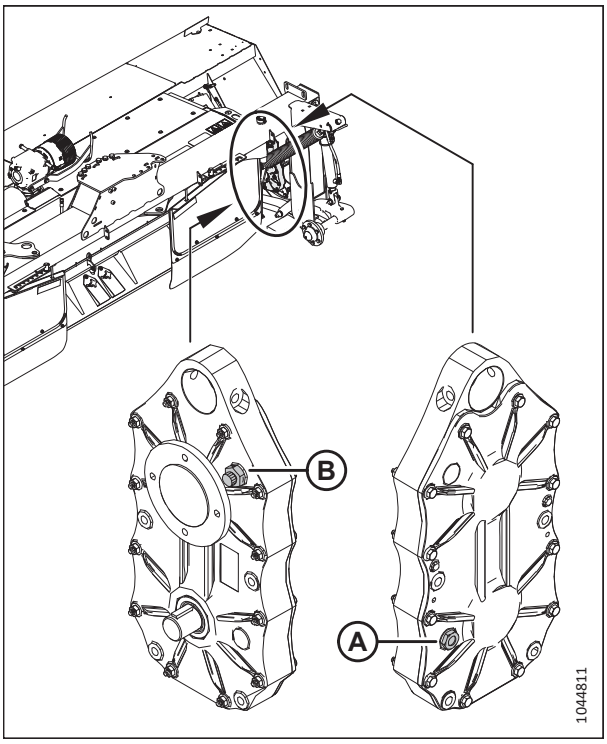


Figure 8.8: Roll Timing Gearbox

8.1.8 Checking and Adding Lubricant – Drive Gearbox

1. Set the skid shoes in the fully raised position. For instructions, refer to the machine operator's manual.
2. Detach the tractor from the hitch. For instructions, refer to the machine operator's manual.

3. **New gearboxes or gearboxes after an oil change:** To ensure that the gearbox oil level is accurate, rotate cutterbar drum (A) a few turns. This will allow the oil to run into all gearbox cavities, such as the bottom bearings.

   NOTE:

   A new gearbox is a gearbox that been filled with oil for the first time, but has not been operated yet.

4. Clean the area around dipstick (B).
5. Remove dipstick using a 22 mm socket.
6. Ensure the lubricant level is to the full line on the dipstick.
7. If necessary, add gear lubricant through dipstick hole (B).
8. Reinstall the dipstick and tighten it.

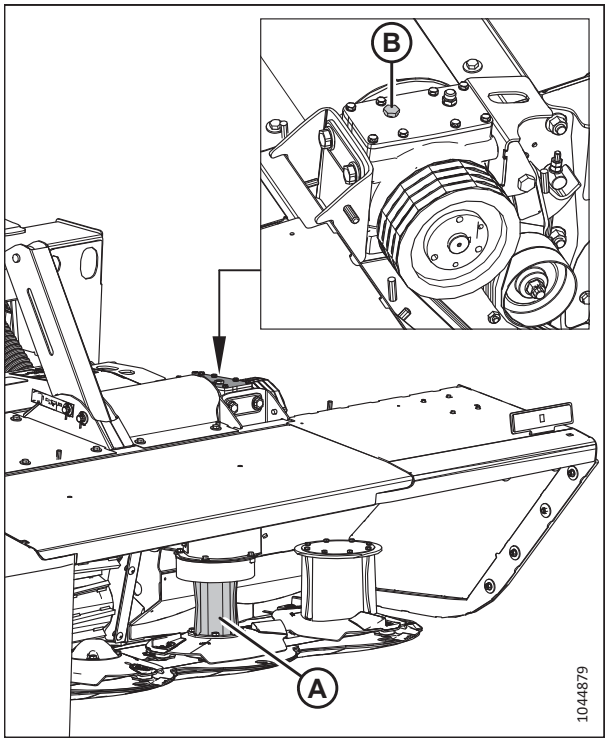


Figure 8.9: Left Side of Rotary Disc Pull-Type

8.1.9 Checking and Adding Lubricant – Forward and Rear Swivel Gearboxes

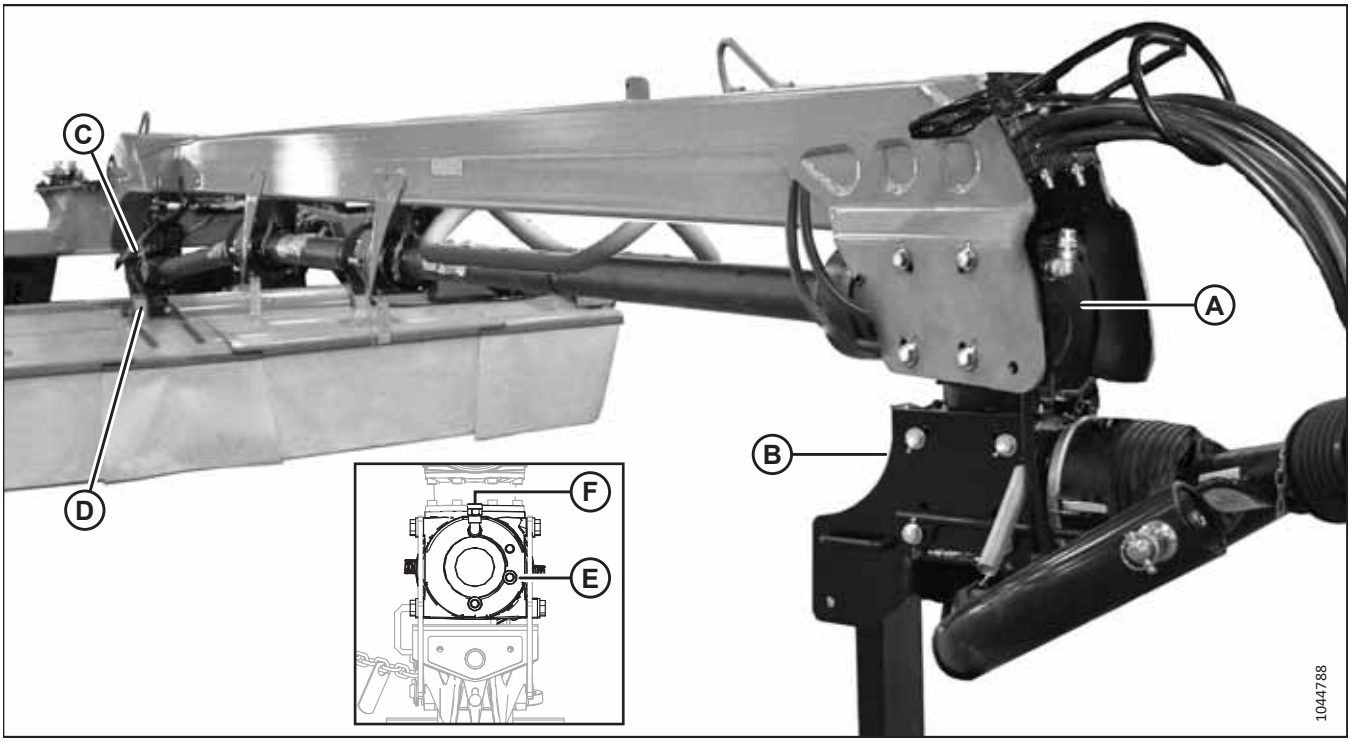


Figure 8.10: Forward and Rear Swivel Gearboxes

Check the lubricant level on upper gearboxes (A) and (C) and lower gearboxes (B) and (D) as follows:

1. Adjust the height and angle of the hitch until the upper and lower gearboxes are parallel to the ground.
2. Clean the area around check plug (E).
3. Remove the check plug using a 13 mm socket.
4. Check the lubricant level and ensure the lubricant is visible or slightly draining from the port.
5. If necessary, add gear oil to the gearboxes through breather/filler plug (F).
6. Reinstall check plug (E) and breather/filler plug (F) and tighten them.

8.1.10 Checking and Adjusting Roll Gap

1. Lower the machine to the ground.
2. **Steel rolls:** Ensure that the roll gap is set to 6 mm (1/4 in.) (factory setting) as follows:

   NOTE:

   The length of thread (A) extending above the jam nut on the adjustment rods can be used as an approximation of roll gap, but does **NOT** provide consistent roll gap measurements.

   a. Loosen jam nut (B) on both sides of the conditioner.

   b. Turn lower nut (C) counterclockwise until the upper roll rests on the lower roll. Ensure the rolls intermesh.

   c. Turn lower nut (C) two and a half full turns clockwise to raise the upper roll and achieve a 6 mm (1/4 in.) roll gap.

   d. Hold nut (C) and tighten jam nut (B) on both sides of the conditioner.

   IMPORTANT:

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

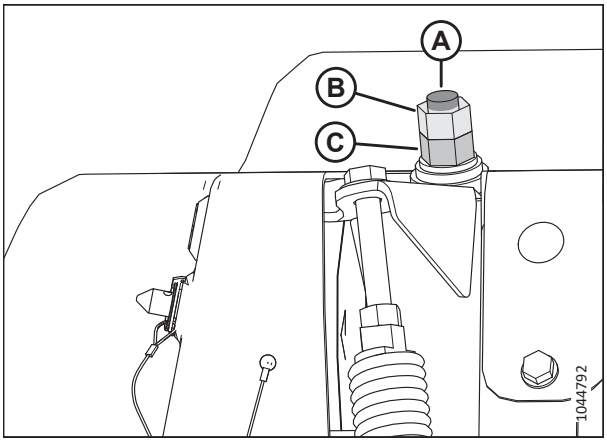


Figure 8.11: Roll Gap Adjustment

3. **Polyurethane rolls:** Insert a feeler gauge between the rolls from either front or rear of the machine and check that the roll gap is 3 mm (1/8 in.) (factory setting).

   If adjustments are required, do the following:

   a. Loosen jam nut (B) on both sides of the conditioner.

   b. Turn lower nut (C) counterclockwise until the upper roll rests on the lower roll. Ensure the rolls intermesh.

   c. Turn lower nut (C) two and a half full turns clockwise to raise the upper roll and achieve a 3 mm (1/4 in.) roll gap.

   d. Hold nut (C) and tighten jam nut (B) on both sides of the conditioner.

      IMPORTANT:

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

   e. Rotate the rolls manually and use a feeler gauge at the ends of the rolls to check that the actual gap is no less than 2 mm (1/16 in.) and no more than 4 mm (5/32 in.).

8.1.11 Checking Roll Timing

The roll timing is factory-set and should not require adjustment; however, if there is excessive noise coming from the conditioner rolls, the timing will need to be adjusted. Listen to the rollers. Excessive noise may come from dirt build up, or the rollers being out of time and would require adjustment. For instructions, refer to the rotary disc pull-type operator's manual.

8.1.12 Checking and Adjusting Roll Tension

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 roll conditioners.

2. If the tension requires adjusting, do the following:

   a. Loosen jam nut (C) on both sides of the conditioner.

   b. Adjust dimension (B) as follows:

      - To increase the dimension, turn bolt (A) clockwise.
      - To decrease the dimension, turn bolt (A) counterclockwise.

      IMPORTANT:

      Turn each bolt equally.

   c. Tighten jam nuts (A) on each end of the conditioner.

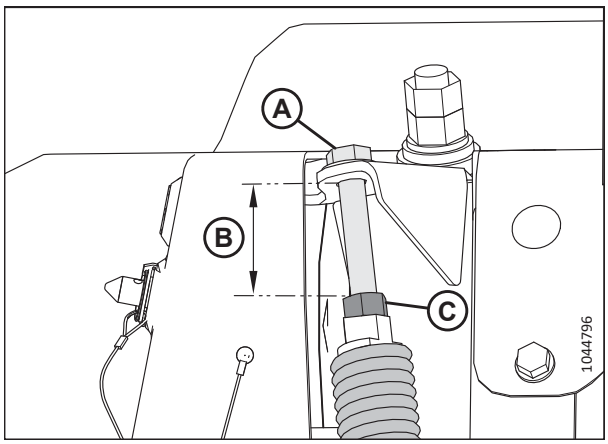


Figure 8.12: Roll Tension Adjuster

8.1.13 Adjusting Conditioner Baffle Position

1. **Finger conditioners:** Move baffle adjustment handles (A) and (B) to middle positions (C) and (D) on the adjustment plates.

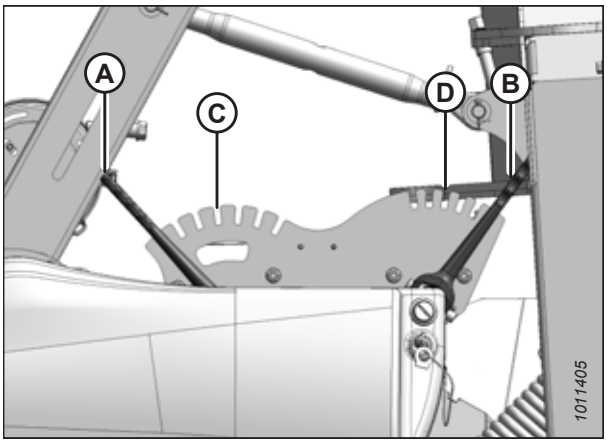


Figure 8.13: Baffle Adjusters – Finger Conditioners

2. **Roll conditioners:** Move baffle adjustment handle (A) to middle position (B) on the adjustment plate.

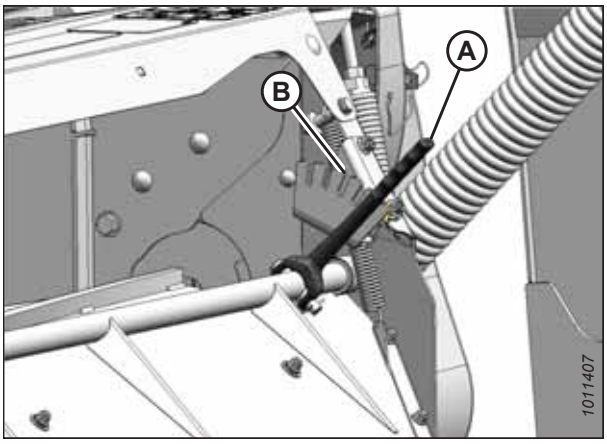


Figure 8.14: Baffle Adjuster – Roll Conditioners

8.1.14 Checking Lights

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

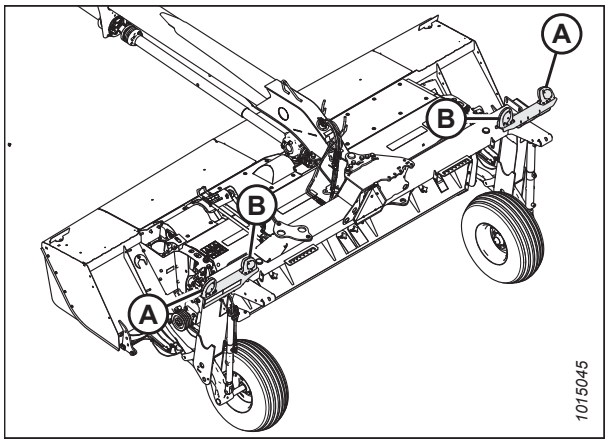


Figure 8.15: Standard Configuration

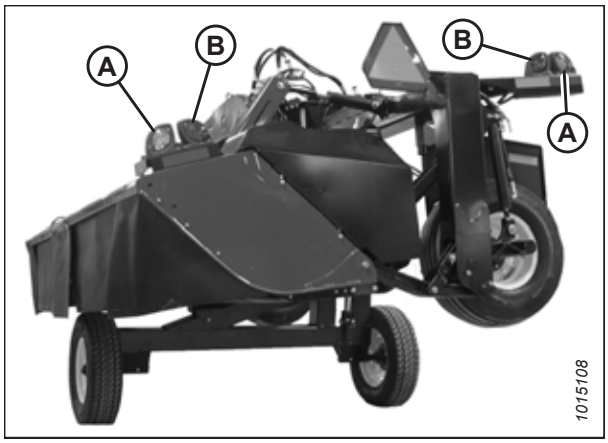


Figure 8.16: Transport Configuration

8.1.15 Checking Manuals

Confirm the following are stored in manual storage case (A):

- Operator's Manual
- Parts Catalog
- Quick Card

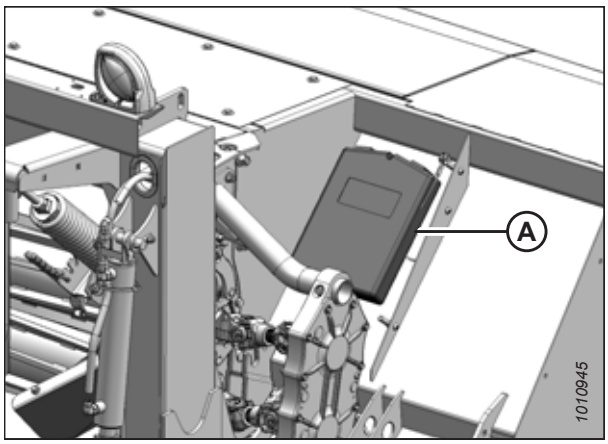


Figure 8.17: Manual Case

8.1.16 Checking Clutch Operation

The driveline clutch requires an initial break-in procedure. Otherwise, the clutch may slip prematurely.

1. Release two lever clamps (A) on the shield cone installed at the header swivel gearbox.
2. Slide the shield away from the gearbox.

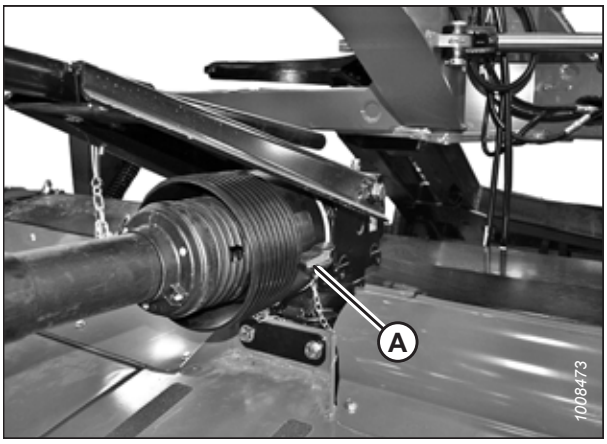


Figure 8.18: Driveline Shield Cone

3. Back off all pressure plate tensioning nuts (A) one and a half revolutions.

   NOTE:

   Spring (B) should separate from clutch shield (C).

4. Note the position of nut (D).

   NOTE:

   Once the tractor's power-off (PTO) is engaged, the clutch should slip slightly, causing the gearbox shaft to rotate slightly. Comparing the position of this nut before and after PTO engagement can be used to assess whether there was an acceptable amount of clutch slippage.

5. Reattach the shield cone to the header swivel gearbox.
6. Start the tractor and adjust the engine speed to 1000 rpm.
7. Engage the tractor's power take-off (PTO) for 3–5 seconds. Repeat this step three times.
8. Check the position of nut (D).

   NOTE:

   If the nut is in a slightly different position than where it was before PTO engagement, this is a symptom of acceptable clutch slippage. Tighten all pressure plate tensioning nuts (A) in a criss-cross sequence until there no gap between spring (B) and clutch shield (C), and then back off the nuts by one-quarter of a turn.

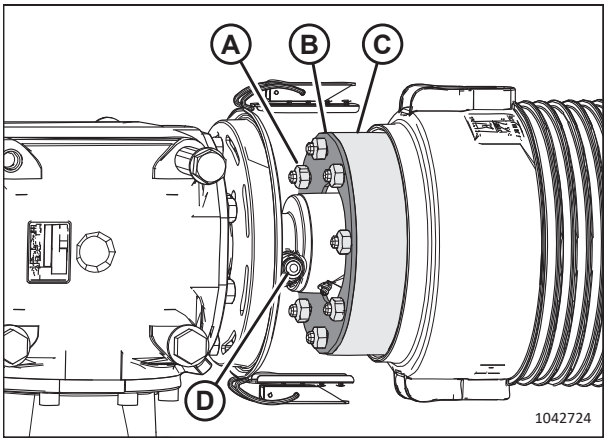


Figure 8.19: Driveline and Gearbox

8.1.17 Checking Disc Timing Tool

Confirm that disc timing tool (A) is stored on the left of the machine.

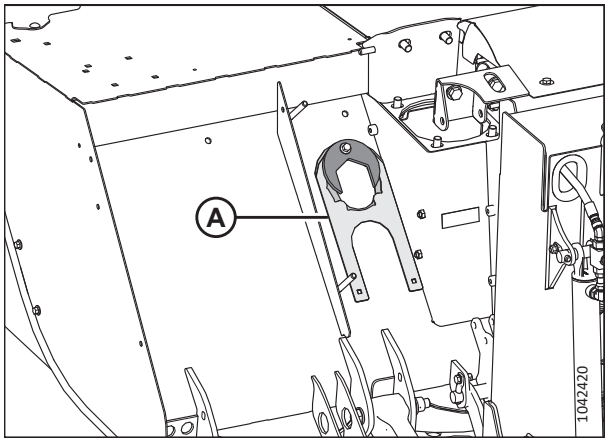


Figure 8.20: Disc Timing Tool

8.1.18 Running up Machine

WARNING

- **Ensure that bystanders remain at least 100 m (330 ft.) from the pull-type while it is operating. Stones and other objects can be ejected from the pull-type with great force.**
- **Inspect the cutterbar area carefully for loose hardware. These objects can be ejected with great force when the pull-type is engaged, resulting in serious injury or damage.**
- **Cutterbar curtains reduce the potential for thrown objects. Always keep the curtain down when operating the pull-type. Replace the curtains if they become worn or damaged.**

IMPORTANT:

Run-up the machine if it is new, or if it has been idle for an extended period of time. Running up the machine correctly will ensure that oil lubricates the internal bearings of the swivel gearbox.

NOTE:

A higher engine rpm may be required to engage the machine. Do **NOT** exceed 1800 rpm.

1. Set the machine 152–305 mm (6–12 in.) above the ground and adjust the center-link to mid-position.
2. Run the machine up to a power take-off (PTO) input shaft speed of 1000 rpm over 30 seconds, and continue operating the machine at this speed for 15 minutes. Listen for any unusual sounds or abnormal vibration.

   IMPORTANT:

   Do **NOT** run the machine at a slower speed for an extended period before this run-up is complete, otherwise the swivel gearbox bearings will be worn down prematurely.
3. Perform the run-up check as listed on the Predelivery Checklist (the yellow sheet inside the back cover of this instruction) to ensure that the machine is field-ready.
4. Retain the Predelivery Checklist and this instruction for future reference.

8.1.19 Checking and Adding Lubricant – Cutterbar

IMPORTANT:

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

1. Lower the machine onto 25 cm (10 in.) blocks under both ends of the cutterbar.
2. Use spirit level (A) to ensure that the cutterbar is level in both directions. Adjust the cutterbar position accordingly.

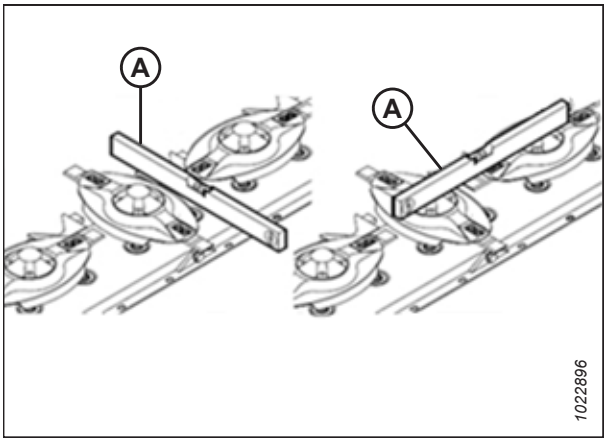


Figure 8.21: Spirit Level on Cutterbar

3. Clean the area around plug (A). Place a 5 liter (5.2 US qts) capacity container under the plug.
4. Remove plug (A) and O-ring (B) from the cutterbar. The oil level must be up to the inspection plug hole. If additional lubricant is required, do the following:
   a. Reinstall the inspection plug.
   b. Raise the machine fully.
   c. Remove the inspection plug, and add some oil. Loosely install the inspection plug.

      IMPORTANT:

      Do **NOT** overfill the cutterbar. Overfilling can cause overheating, damage, and failure of the cutterbar components.

   d. Recheck the oil level (repeat Step *1, page 155* to Step *4, page 155*).

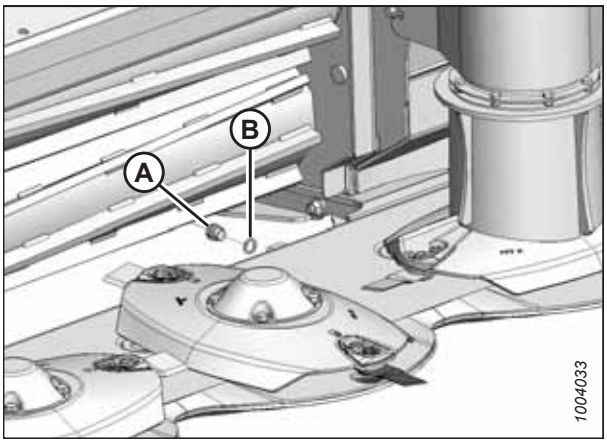


Figure 8.22: Cutterbar Oil Inspection Plug

5. Check O-ring (B) for breaks or cracks, and replace it if necessary.
6. Install plug (A) and O-ring (B).

8.1.20 Checking and Adjusting Cam on Transport Deploy / Swing Mechanism

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 transport does **NOT** properly deploy. When the system is functioning properly, the machine should start to rotate as the transport wheels reach the end of their travel (beneath the machine).

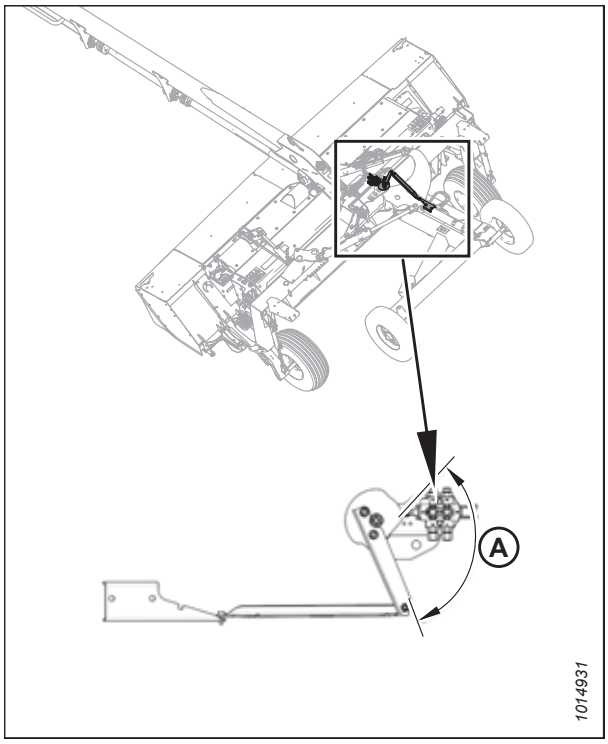


Figure 8.23: Transport Deploy / Swing Mechanism Assembly

1. Loosen two M10 jam nuts (A), two M10 hex flange nuts (B), and rotate cam plate (C) to achieve the proper angle. Reposition the cam as follows:
   - Rotate the cam plate **COUNTERCLOCKWISE** if the transport tires deploy too close to the machine tires, before the transport wheels are fully under the machine.
   - Rotate the cam plate **CLOCKWISE** if the tires go underneath the machine, but the machine does not begin to rotate.
2. Tighten two M10 hex flange nuts (B) and two M10 jam nuts (A).
3. To test the transport deploy/swing mechanism, refer to:
   - *9.2.1 Converting from Field to Transport Mode – with Transport, page 163*
   - *9.2.2 Converting from Transport to Field Mode – with Transport, page 168*

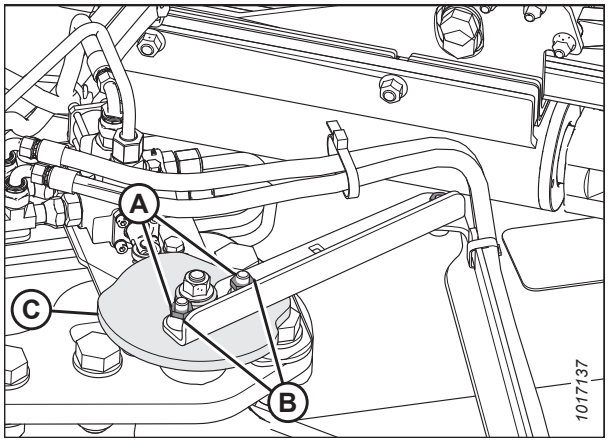


Figure 8.24: Transport Deploy / Swing Mechanism Assembly

Chapter 9: Transporting Rotary Disc Pull-Type

You can transport the rotary disc pull-type using a tractor in either field mode or transport mode.

- To prepare a rotary disc pull-type for towing with a tractor in field mode without using the transport option, refer to *9.1 Preparing Rotary Disc Pull-Type for Transport, page 157*.
- To prepare a rotary disc pull-type for towing with a tractor using the transport option, refer to *9.2.1 Converting from Field to Transport Mode – with Transport, page 163*.

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 rotary disc pull-type flashing amber and red taillights when transporting on roads in order to provide adequate warning to operators of other vehicles.**
- **Do NOT transport the rotary disc pull-type on a road or highway at night or in reduced visibility conditions such as rain or fog.**
- **Ensure that the hitch on the transporting vehicle is capable of handling a 907 kg (2000 lb.) static vertical load.**
- **Do NOT tow with any highway-capable vehicle. Use only an agricultural tractor with a sufficient weight such that the fully loaded implement weighs no more than 1.5 times the weight of the tractor.**

9.1 Preparing Rotary Disc Pull-Type for Transport

The rotary disc pull-type can be transported without deploying the optional transport system.

DANGER

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

DANGER

Ensure that all bystanders have cleared the area.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Connect the rotary disc pull-type hitch to the tractor. For instructions, refer to the rotary disc pull-type operator's manual.

3. **If equipped with a drawbar hitch:** Turn the handle on jack stand (A) to raise the stand. Remove pin (B) and stand (A).

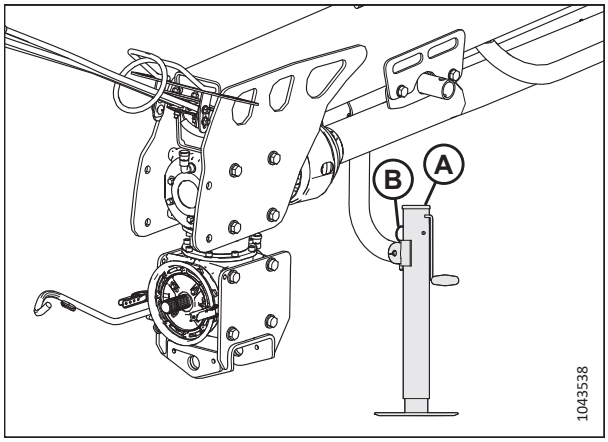


Figure 9.1: Drawbar Jack in Working Position

4. **If equipped with a drawbar hitch:** Move jack (A) to the storage position on the side of the hitch, align the mounting holes, and secure the jack with pin (B).

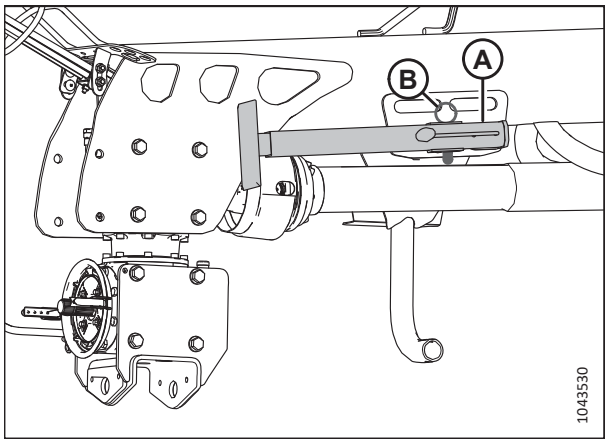


Figure 9.2: Drawbar Jack in Storage Position

5. **If equipped with a two-point hitch:** Raise the rotary disc pull-type slightly off the ground using the tractor. Remove pin (B) and stand (A).

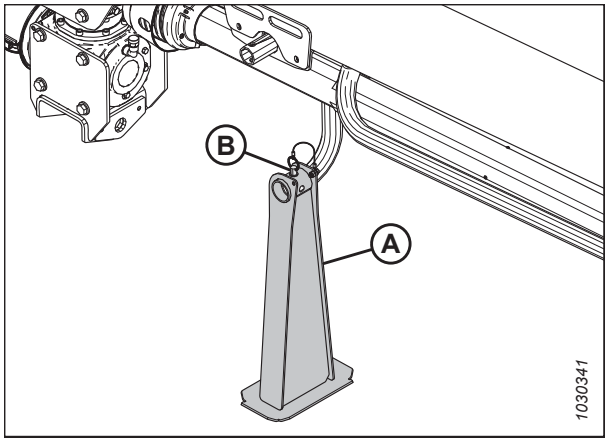


Figure 9.3: Two-Point Hitch Jack in Working Position

6. **If equipped with a two-point hitch:** Insert pin (A) and secure stand (B) in the storage position.

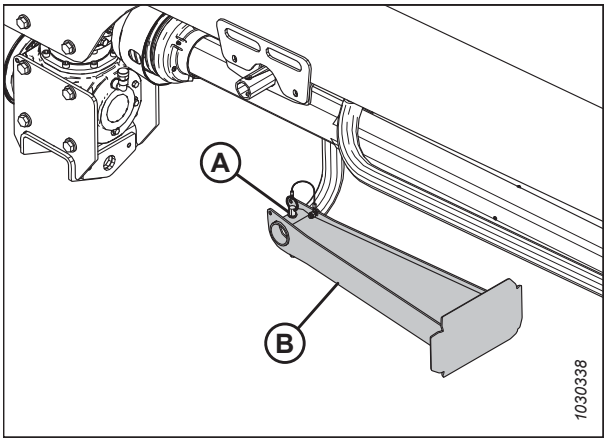


Figure 9.4: Two-Point Hitch Jack in Storage Position

7. Connect the hitch swing cylinder hoses (collars with #2) to tractor's hydraulic circuit (A). For instructions, refer to *5.3.3 Connecting Hydraulics, page 111*.
8. Raise the rotary disc pull-type fully.
9. Shut down the engine, and remove the key from the ignition.

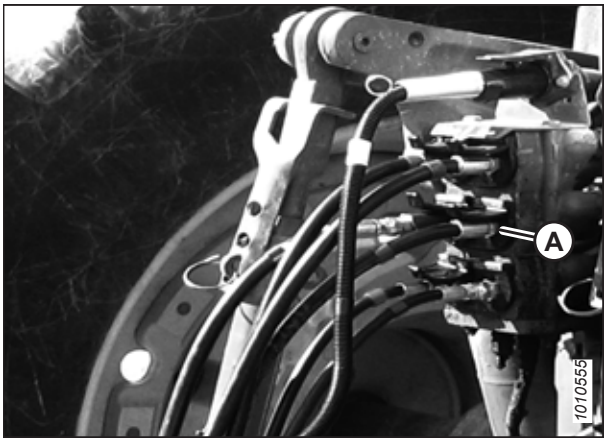


Figure 9.5: Hydraulic Connection

10. Close the lift cylinder lock-out valve by turning handle (A) to the closed position (90° to the hose). Repeat this step on the opposite side of the rotary disc pull-type.
11. Swing the rotary disc pull-type completely to the left, then completely to the right. Repeat this step three or four times to charge the hitch swing circuit.
12. Swing the rotary disc pull-type so that it is centered behind the tractor.

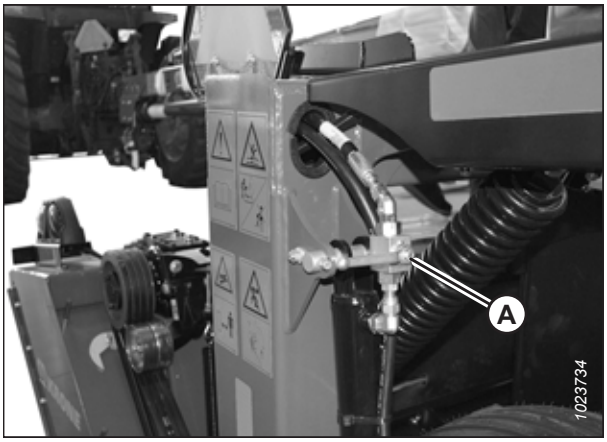


Figure 9.6: Cylinder Lock-Out Valve in Closed Position

13. Shut down the engine, and remove the key from the ignition.
14. Close the hitch swing lock-out valve by turning handle (A) to the closed position (90° angle to the hose).
15. Ensure that the hydraulic hoses are securely stored on the hitch.

    NOTE:

    The primary driveline and hydraulic hoses do **NOT** need to be attached to the tractor for towing.

16. Ensure that the tires are properly inflated.

    IMPORTANT:

    Do **NOT** exceed 32 km/h (20 mph).

17. Ensure the slow moving vehicle (SMV) sign, reflectors, and the lights are clean and visible at the rear of the rotary disc pull-type.

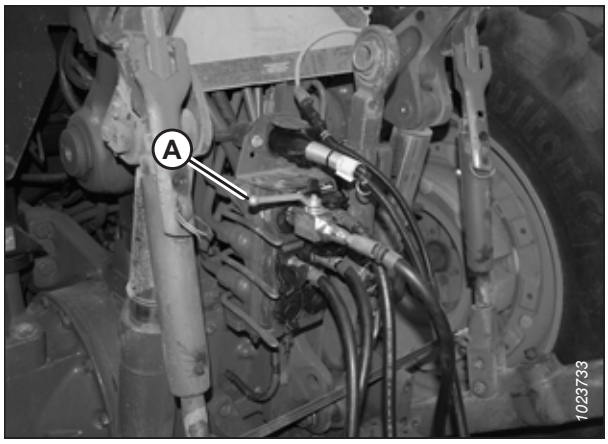


Figure 9.7: Hitch Swing Lock-Out Valve Shown in Closed Position

9.1.1 Converting from Transport to Field Mode – without Transport

Before operating in the field, the hydraulic steering and lift cylinders must be enabled.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Connect all hydraulic hoses (refer to *5.3.3 Connecting Hydraulics, page 111* for instructions), and connect the electrical wiring harness.
3. Open the steering lock-out valve by turning handle (A) to the open position (in line with the hose).

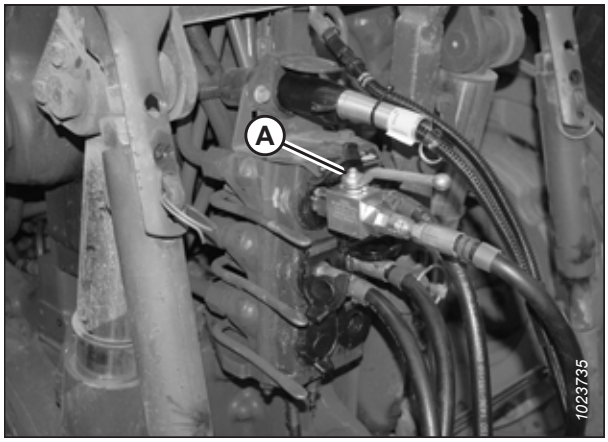


Figure 9.8: Steering Lock-Out Valve in Open Position

4. Open lock-out valve (A) on each lift cylinder by turning the handle to the open position (in line with the hose).

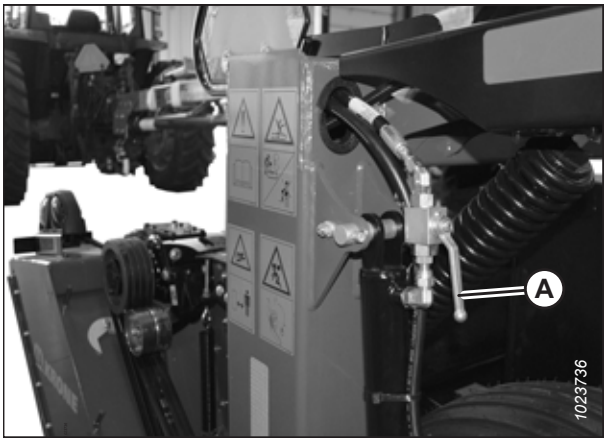


Figure 9.9: Lift Cylinder Lock-Out Valve in Open Position

9.1.2 Converting from Field to Transport Mode – without Transport

Before operating on the road, the hydraulic steering and lift cylinders must be disabled.

DANGER

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

DANGER

Ensure that all bystanders have cleared the area.

1. Raise the rotary disc pull-type.
2. Move the rotary disc pull-type fully to the left, then fully to the right. Repeat this step this a couple times.
3. Center the rotary disc pull-type.
4. Shut down the engine, and remove the key from the ignition.
5. Close the steering lock-out valve by turning handle (A) to the closed position (90° angle to the hose).

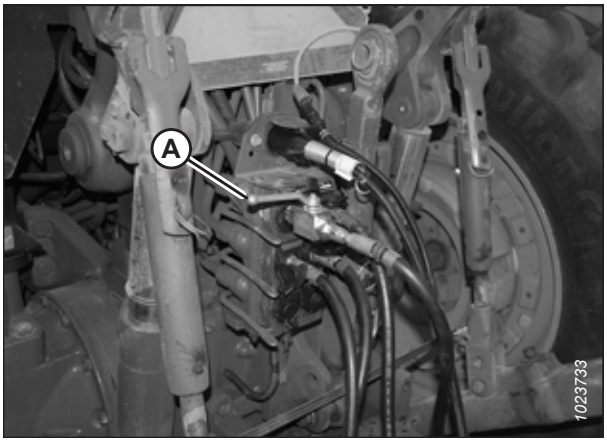


Figure 9.10: Steering Lock-Out Valve in Closed Position

6. Close the lift cylinder lock-out valve by turning handle (A) to the closed position (90° angle to the hose). Repeat this step on the opposite side.

7. Disconnect all hydraulic hoses (refer to *5.3.3 Connecting Hydraulics, page 111* for instructions), and disconnect the electrical wiring harness.

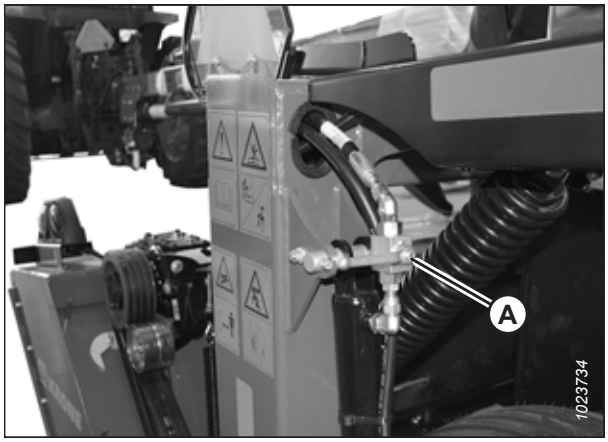


Figure 9.11: Lift Cylinder Lock-Out Valve in Closed Position

9.2 Transport Option

The optional transport system allows the rotary disc pull-type to be towed while remaining within the legal width restrictions on most roads and highways.

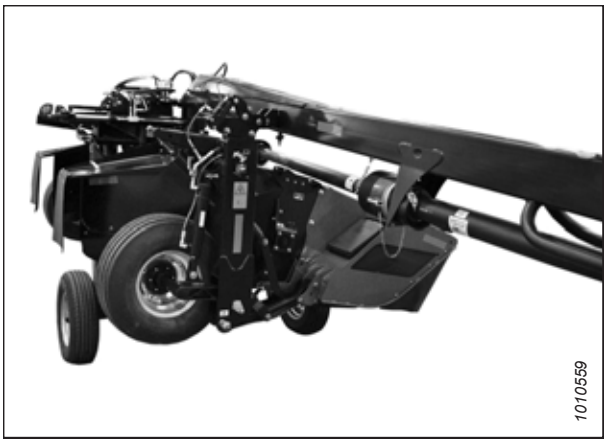


Figure 9.12: Transport System

9.2.1 Converting from Field to Transport Mode – with Transport

In transport mode, the rotary disc pull-type is rotated into its narrowest position to comply with road width restrictions. Steering and lift functions are disabled.

DANGER

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

DANGER

To prevent serious injury or death, do NOT convert the machine into, or from, transport mode until all people, animals, and objects are clear of the unit's rotational range.

DANGER

Stop the power take-off (PTO) before converting the unit into transport mode. The cutting discs continue to spin after the drive is turned off.

CAUTION

To prevent injury or equipment damage, ensure the cutterbar doors are properly closed before converting the machine from field to transport mode.

IMPORTANT:

In some jurisdictions, having tall crop dividers installed can make the rotary disc pull-type too wide for public roads when in transport mode. If necessary, remove the dividers, and reinstall them after the machine is transported. For instructions, refer to the rotary disc pull-type operator's manual.

1. If tightened, loosen bolts (B) on transport latch (A).

   NOTE:

   This step only needs to be completed the first time the machine is converted from field to transport.

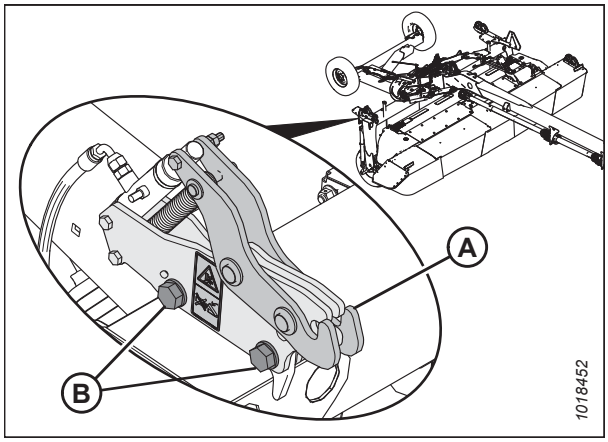


Figure 9.13: Transport Latch

2. Clear all bystanders from the area and start the tractor. Do **NOT** operate the rotary disc pull-type.

3. Following the steps on field-to-transport decal (A), move the transport switch to lower position (C) and ensure that light (B) is illuminated.

Figure 9.14: Control Box

4. While the light is illuminated, raise the rotary disc pull-type fully by extending the field wheel cylinders.

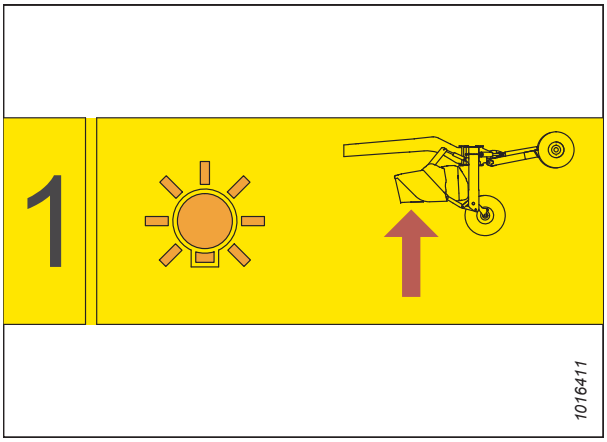


Figure 9.15: Raising Rotary Disc Pull-Type

5. Operate the hitch swing control lever to rotate the rotary disc pull-type to the right until the cam bearing nut is aligned with the green section of the transport alignment gauge decal.

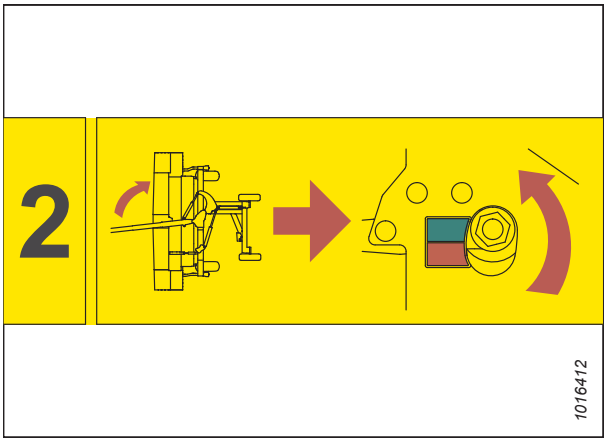


Figure 9.16: Rotary Disc Pull-Type Rotation

6. Move the 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.

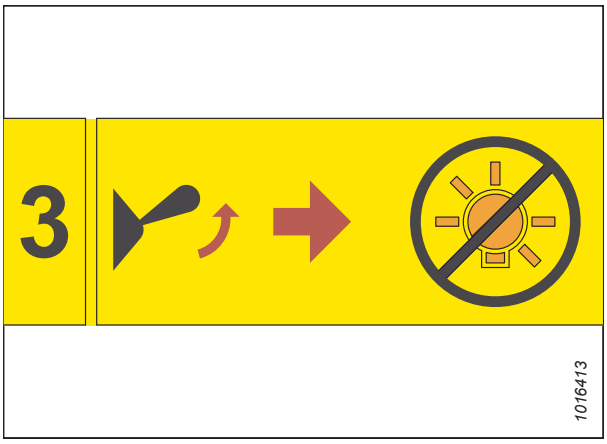


Figure 9.17: Transport Switch

7. Operate the hitch swing control lever to lower transport wheels as seen in image (A) and hold the lever until the rotary disc pull-type is lifted off the ground.
8. Continue to hold the hitch swing control lever while rotary disc pull-type as seen in image (B) rotates to the left and under the hitch.
9. Release the hitch swing control lever when rotary disc pull-type as seen in image (C) stops rotating.

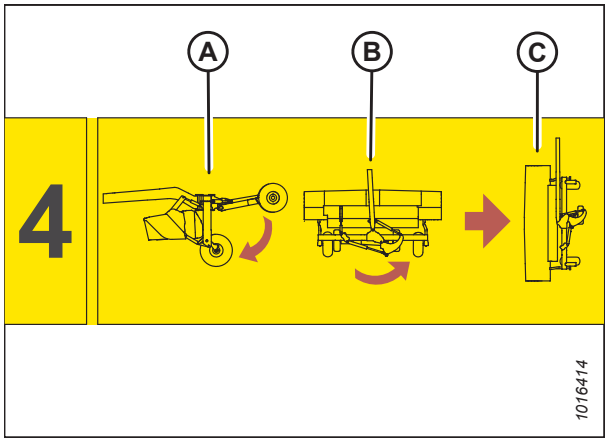


Figure 9.18: Transport Assembly Rotation

10. Operate the lift control lever to lower the rotary disc pull-type onto the transport assembly, raise the field wheels, and engage the transport latch onto the hitch.

    IMPORTANT:

    Once the latch has engaged, do **NOT** operate any hydraulic circuits.

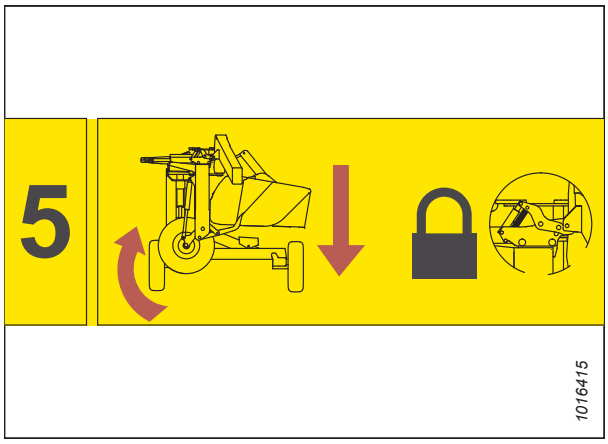


Figure 9.19: Transport Assembly Lowering

11. Shut down the engine, and remove the key from the ignition.
12. Close the steering lock-out valve and the two lift cylinder lock-out valves by turning the handles to the closed position. For instructions, refer to Figure *9.21, page 167* and Figure *9.22, page 167*.

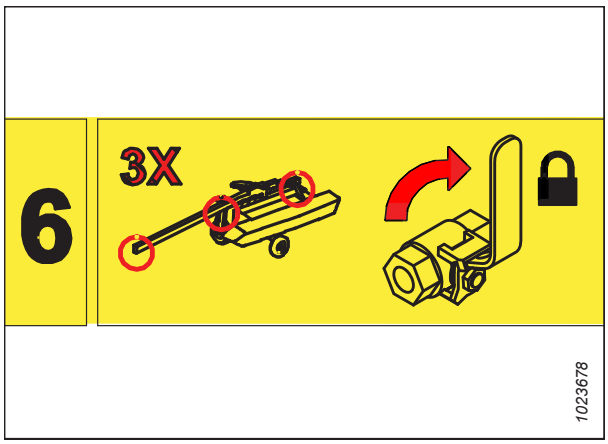


Figure 9.20: Hydraulic Lockout

Steering lock-out: Close the valve by turning handle (A) to the closed position (90° to the hose).

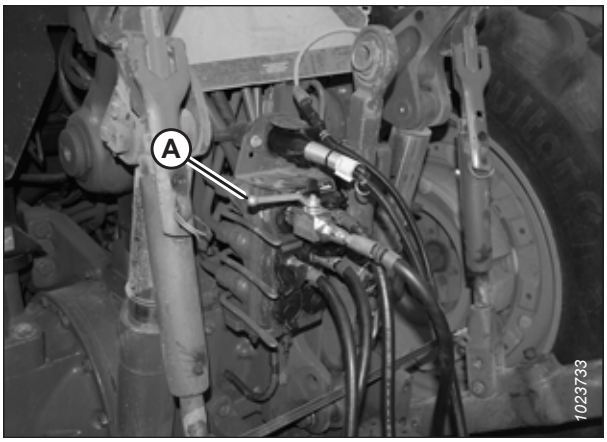


Figure 9.21: Steering Lock-Out Valve

Lift cylinder lock-out: Close the valve by turning handle (A) to the closed position (90° to the hose). Repeat this step on the opposite side.

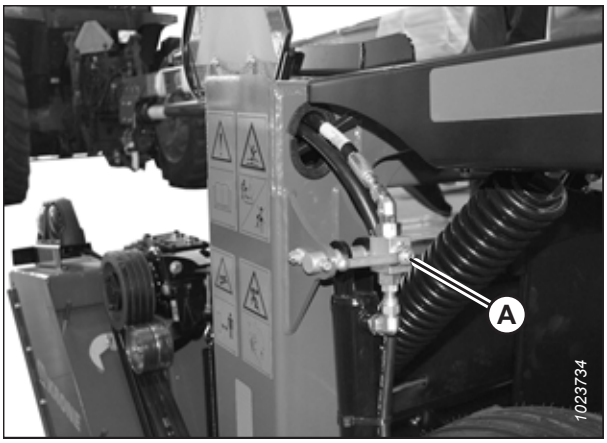


Figure 9.22: Lift Cylinder Lock-Out Valve

13. Torque bolts (B) on transport latch (A) to 460 Nm (340 lbf·ft).

    NOTE:

    This step only needs to be completed the first time the machine is converted from field to transport.

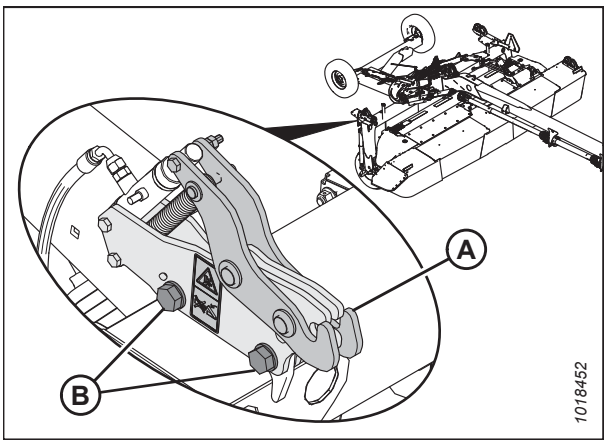


Figure 9.23: Transport Latch

14. Activate hazard lights (A) on the rotary disc pull-type. Ensure all lights are working.

15. Ensure that slow moving vehicle sign (B) is visible from behind the rotary disc pull-type.

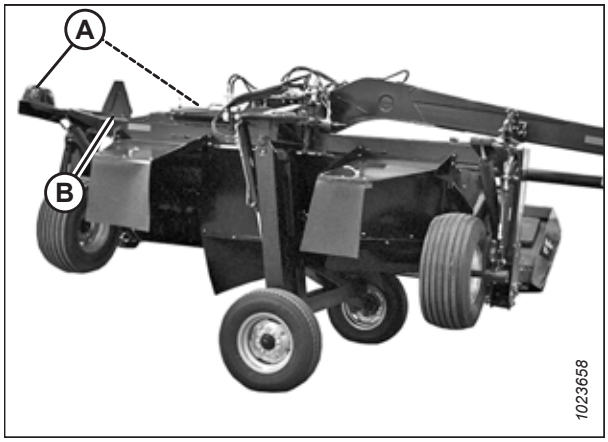


Figure 9.24: Transport Mode

16. Once field-to-transport conversion as shown on decal (A) is complete, leave the switch in upper position (C). Ensure that light (B) is **NOT** illuminated.

Figure 9.25: Control Box

9.2.2 Converting from Transport to Field Mode – with Transport

In field mode, the rotary disc pull-type is rotated from the narrow road position to full width field position. Steering and lift functions are operational.

DANGER

To prevent serious injury or death, do NOT convert the machine into, or from transport mode until all people, animals, and objects are clear of the unit's rotational range.

CAUTION

To prevent injury or equipment damage, ensure the cutterbar doors are properly closed before converting the machine from field to transport mode.

1. Clear bystanders from the area and start the tractor. Do **NOT** operate the rotary disc pull-type.

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

Figure 9.26: Control Box

3. Open the steering lock-out valve and the two lift cylinder lock-out valves by turning the handles to the open position.

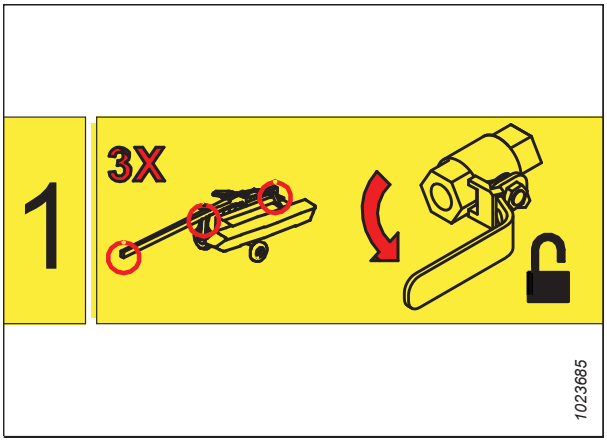


Figure 9.27: Hydraulic Lockout

Steering lock-out: Open the valve by turning handle (A) to the open position (in line with the hose).

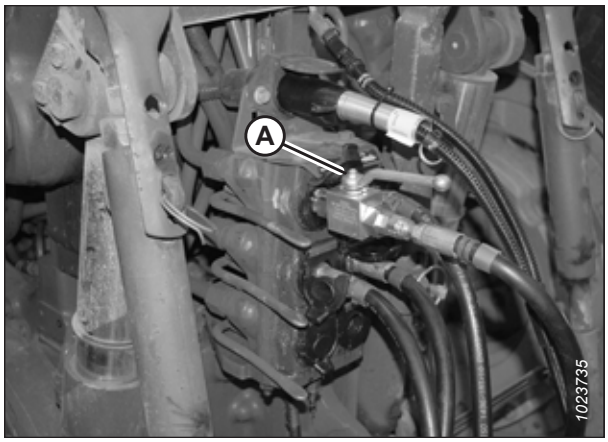


Figure 9.28: Steering Lock-Out Valve

Lift cylinder lock-out: Open the valve by turning handle (A) to the open position (in line with the hose). Repeat this step on the opposite side.

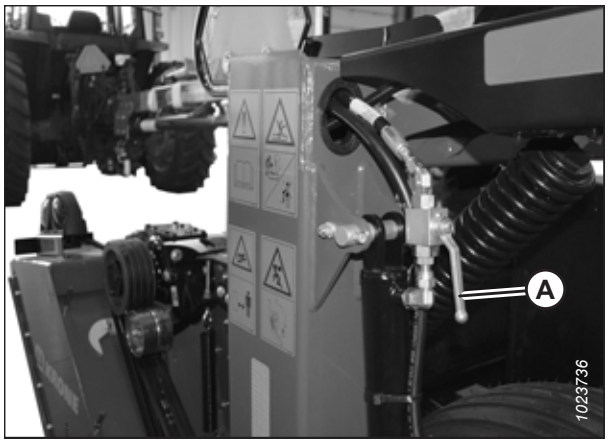


Figure 9.29: Lift Cylinder Lock-Out Valve

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

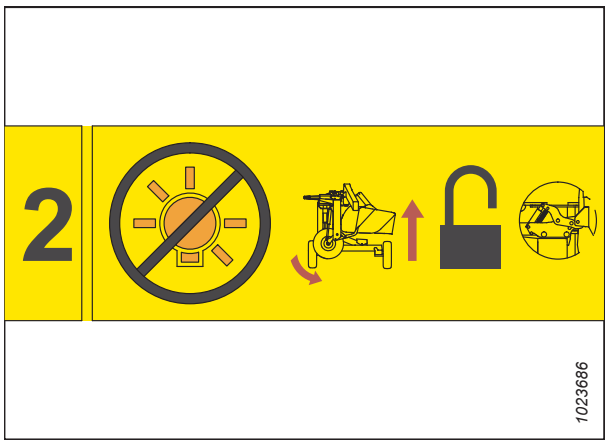


Figure 9.30: Raising Rotary Disc Pull-Type

5. Operate the hitch swing control lever to rotate the rotary disc pull-type to the right. The rotary disc pull-type will stop when it reaches operating position.

   NOTE:

   A sequenced movement transitions the rotary disc pull-type from transport to field mode. This is accomplished by the rear transport swing cylinder, and the transport deploy cylinder. During the transition, continue to hold the hitch swing lever in the active position to allow oil to be supplied to the two cylinders sequentially.

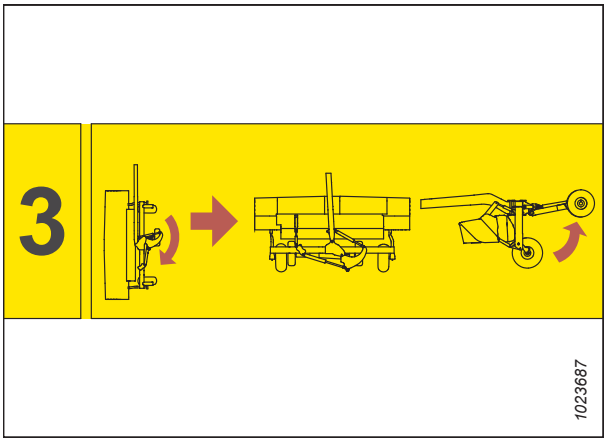


Figure 9.31: Rotary Disc Pull-Type Rotation

6. Continue operating the hitch swing control lever to fully raise the transport assembly and lower the rotary disc pull-type onto the field wheels.

7. Move transport switch to the lower position and ensure that the light on the control box is illuminated. Transport conversion is now complete and the hitch swing circuit is active.

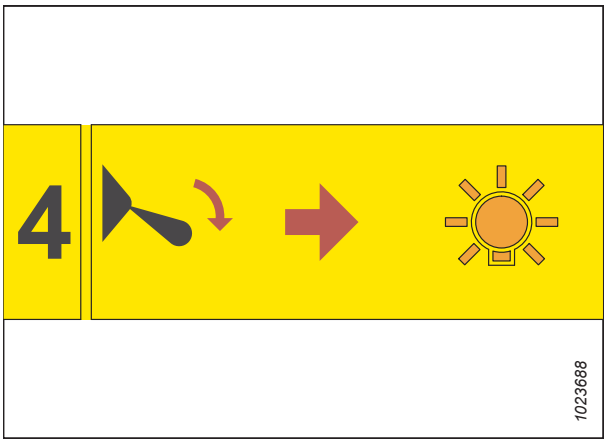


Figure 9.32: Transport Switch

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

Figure 9.33: Control Box

9.3 Transport Lighting

Light assemblies provide position, hazard, turning direction, and braking information.

9.3.1 Lighting – with Transport Option

When the optional transport system is installed, the lights mount to the left side of the machine.

The rotary disc pull-type is equipped with two bidirectional amber lights (A) that function as flashing hazard lights and turn signals.

Red lights (B) located on the inboard side of the amber lights function as both tail and brake lights. Refer to the rotary disc pull-type operator's manual for information about connecting the electrical harness to the tractor.

Amber reflective tape is applied to various locations on the front and sides of the rotary disc pull-type, hitch, and carrier frame. Red reflective tape is applied to the rear of the rotary disc pull-type.

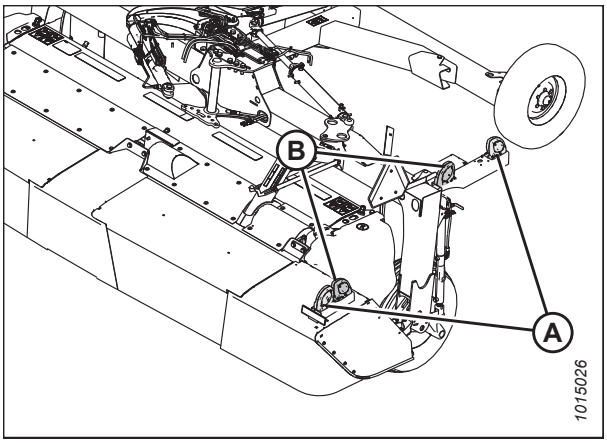


Figure 9.34: Lighting Locations – with Transport

9.3.2 Lighting – without Transport Option

When no optional transport system is installed, the lights mount to the left and right corners of the carrier frame.

The rotary disc pull-type is equipped with two bidirectional amber lights (A) located on the outboard edges of the carrier frame that function as flashing hazard lights and turn signals.

Red lights (B) located on the inboard side of the amber lights function as both tail and brake lights. Refer to the rotary disc pull-type operator's manual for information about connecting the electrical harness to the tractor.

Amber reflective tape is applied to various locations on the front and sides of the rotary disc pull-type, hitch, and carrier frame. Red reflective tape is applied to various locations on the rotary disc pull-type.

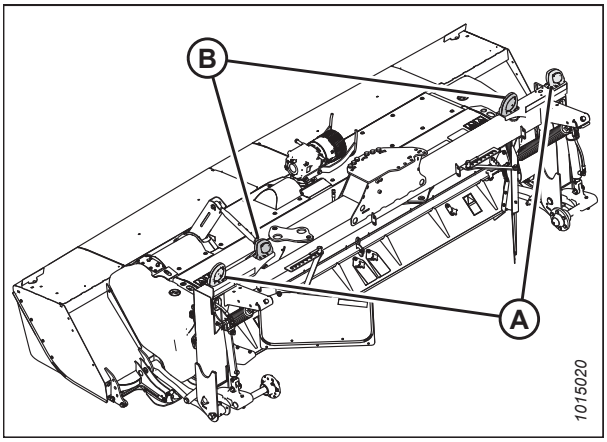


Figure 9.35: Lighting Locations

Chapter 10: Reference

Additional information and commonly repeated procedures are included in the reference chapter.

10.1 Adjusting Float

The float setting (or lifting force) changes depending on the conditioner type and options. The setting must be the same at both ends of the rotary disc pull-type.

DANGER

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

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes to the rotary disc pull-type operating position can affect the float settings. After adjusting the cutting height or the cutterbar angle, check the float and adjust as necessary.

1. Center the rotary disc pull-type directly behind the tractor and set the cutterbar to an appropriate orientation and tilt for the crop type and cutting conditions. Refer to the rotary disc pull-type operator's manual for the cutterbar angle adjustment.

   NOTE:

   Ensure that the skid shoes are in correct the position before setting the rotary disc pull-type angle, float, and tilt.

2. Raise the machine fully.

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

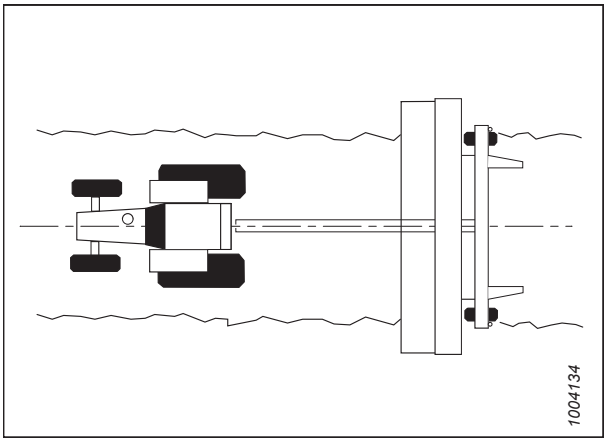


Figure 10.1: Rotary Disc Pull-Type Centered behind Tractor

4. Close the rotary disc pull-type's lift cylinder lock-out valve (A) on each lift cylinder by turning the handle to the horizontal position (90° angle to the hose). Repeat this step on the opposite side.

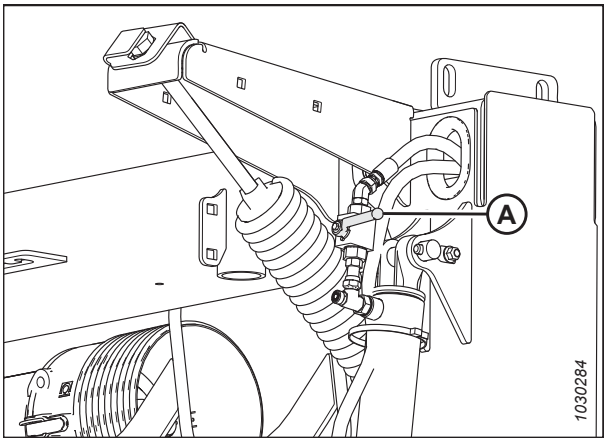


Figure 10.2: Cylinder Lock-Out Valve – Closed Position

5. Loosen retaining bolt (A) and rotate cover plate (B) away from float spring bolt (C). Repeat this step on the opposite side.

6. Fully loosen float spring bolt (C). Repeat this step on the opposite side.

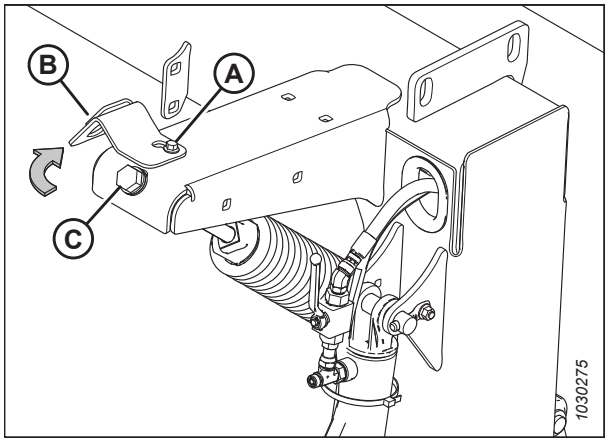


Figure 10.3: Float Spring – Right Side

7. Turn adjuster bolt (A) to achieve the recommended measurement (B) for the conditioner type. Refer to Table *10.1, page 176* for measurements.

   NOTE:

   Float settings indicated in the table are starting points only. Float force should be checked with the rotary disc pull-type's float and cutting angle set as planned for use in the field.

   - Turn bolt (A) clockwise (towards the spring) to increase float.
   - Turn bolt (A) counterclockwise (away from the spring) to decrease float.

   Repeat this step on the opposite side.

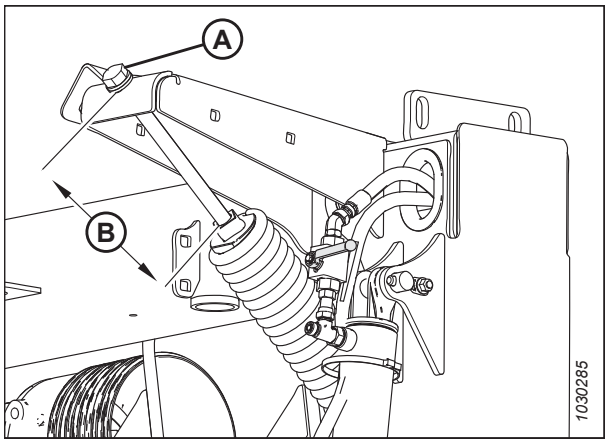


Figure 10.4: Adjuster Bolt

Table 10.1 Float Setting Starting Point

Model	Conditioner Type	Length of Exposed Thread
R113 PT	None	280–290 mm (11–11 5/32 in.)
	Roll	120–130 mm (4 3/4–5 1/8 in.)
	Finger	Right: 145–155 mm (5 3/4–6 1/8 in.)
	Finger	Left: 15–125 mm (4 1/2–4 15/16 in.)
R116 PT	None	230–240 mm (9–9 1/2 in.)
	Roll	70–80 mm (2 3/4–3 1/8 in.)
	Finger	Right: 95–105 mm (3 3/4–4 1/8 in.)
	Finger	Left: 65–75 mm (2 1/2–3 in.)

8. Reposition cover plate (A) over the float spring adjuster bolt as shown. Secure cover plate (A) by tightening bolt (B). Repeat this step on the opposite side.

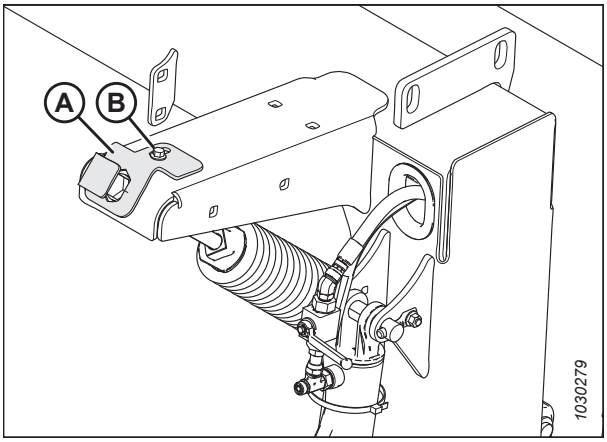


Figure 10.5: Adjuster Bolt Cover Plate

9. Open lift cylinder lock-out valve (A) on each cylinder by turning the handle to the open position (in line with the hose).

10. To check the float, lower the rotary disc pull-type to cutting position, grasp the front corner of the rotary disc pull-type, and lift; the weight should feel like approximately 45 kg (100 lb.) at both ends.

    NOTE:

    In rough or stony conditions, it may be preferable to apply less force in order to protect the cutting components.

    NOTE:

    When the float setting is light, it may be necessary to reduce the ground speed to prevent excessive bouncing and leaving a ragged cut.

11. Repeat the adjustment procedures until the desired weight is achieved at both ends of the rotary disc pull-type.

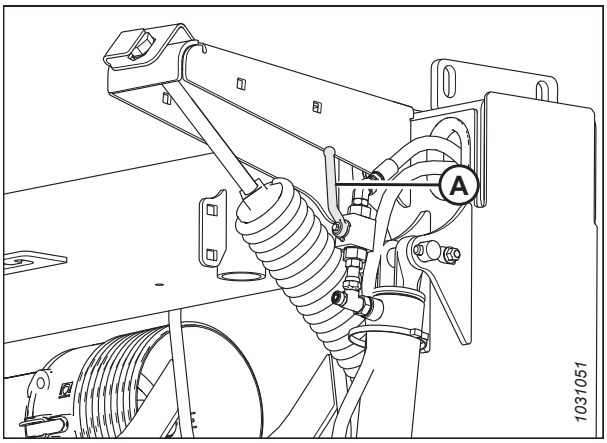


Figure 10.6: Cylinder Lock-Out Valve – Open Position

10.2 Engaging Locks

Hydraulic lock-out are valves provided to safely transport and service the machine.

DANGER

To prevent injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before leaving the operator's seat or making adjustments to the machine. If the rotary disc pull-type is raised, always close the lock-out valves, and place blocks under the rotary disc pull-type. Never work on or beneath an unsupported rotary disc pull-type.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Connect hoses so that moving the cylinder control lever backward raises the rotary disc pull-type, and moving the cylinder control lever forward lowers the rotary disc pull-type. Refer to *5.3.3 Connecting Hydraulics, page 111* for more information.

1. Move lift control lever (A) backward to position (B) to fully raise the machine.
2. Shut down the engine, and remove the key from the ignition.

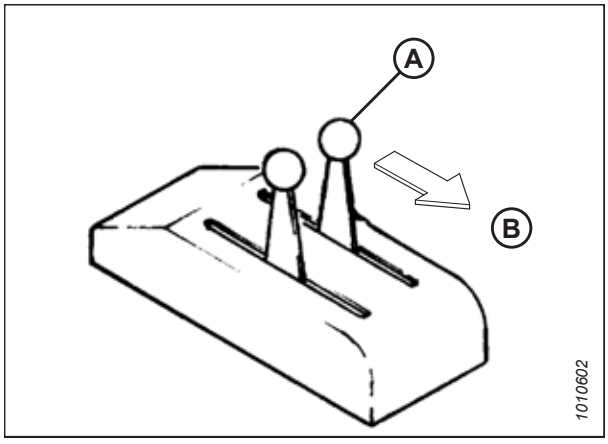


Figure 10.7: Tractor Control Lever

3. Close lock-out valve (A) on each auxiliary lift cylinder by turning the handle to the closed position (90° angle to the hose).

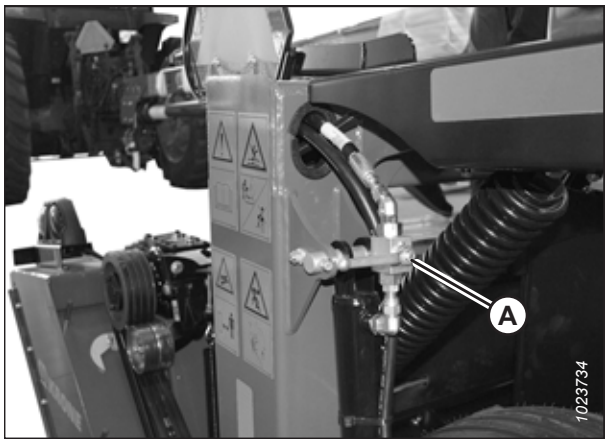


Figure 10.8: Lift Cylinder Lock-Out Valve in Closed Position

10.3 Disengaging Locks

Engage the hydraulic lock-out valves when you are transporting or servicing the machine.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Shut down the engine, and remove the key from the ignition.
2. Open lock-out valve (A) on each lift cylinder by turning the handle to the open position (in line with the hose).

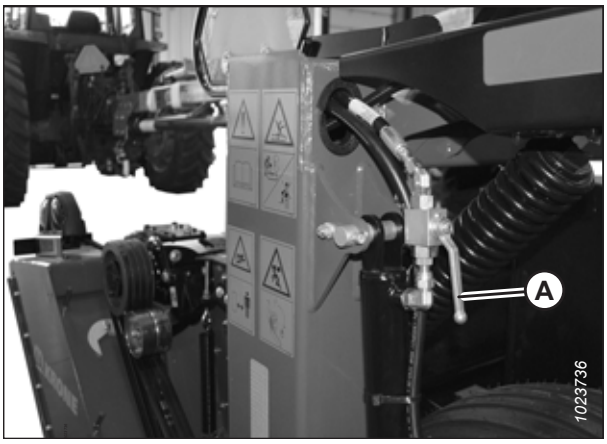


Figure 10.9: Lift Cylinder Lock-Out Valve in Open Position

3. Move cylinder control lever (A) forward to position (B) to lower the machine.

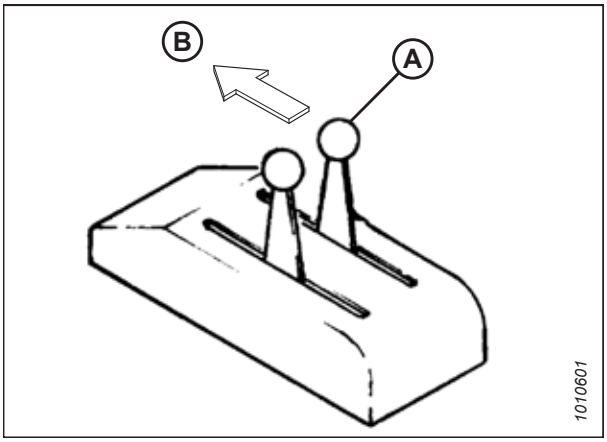


Figure 10.10: Tractor Cylinder Control Lever

10.4 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Refer to these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Refer to the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Refer to the standard torque values when installing the self-tapping screws. Do **NOT** install the self-tapping screws on structural or otherwise critical joints.

10.4.1 Metric Bolt Specifications

Specifications are provided for the appropriate final torque values to secure various sizes of metric bolts.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 10.2 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

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

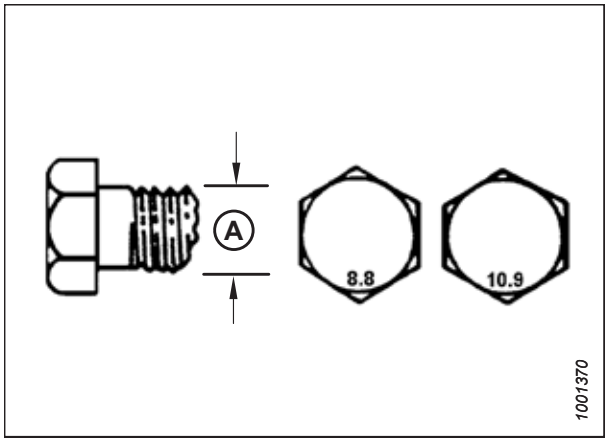


Figure 10.11: Bolt Grades

Table 10.3 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

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

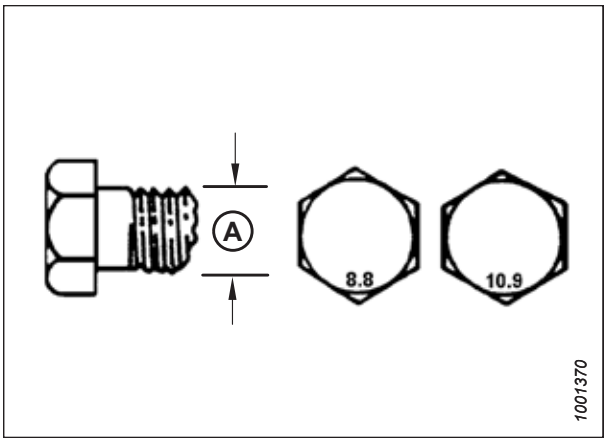


Figure 10.12: Bolt Grades

Table 10.4 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

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

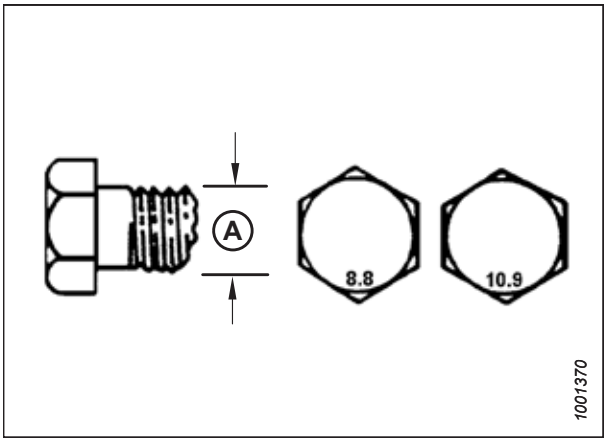


Figure 10.13: Bolt Grades

Table 10.5 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

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

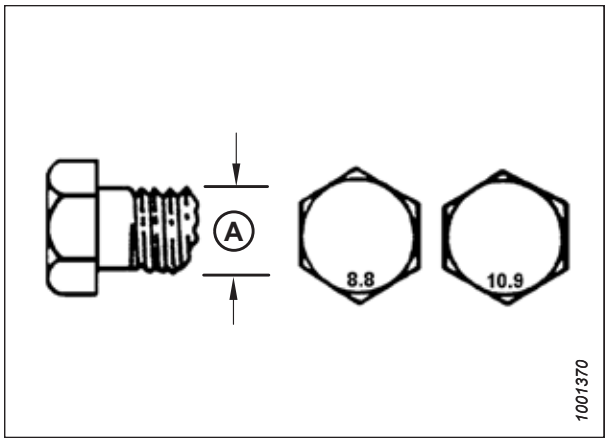


Figure 10.14: Bolt Grades

10.4.2 Metric Bolt Specifications – Cast Aluminum

Specifications are provided for the appropriate final torque values for various sizes of metric bolts in cast aluminum.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 10.6 Metric Bolt Bolting into Cast Aluminum

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

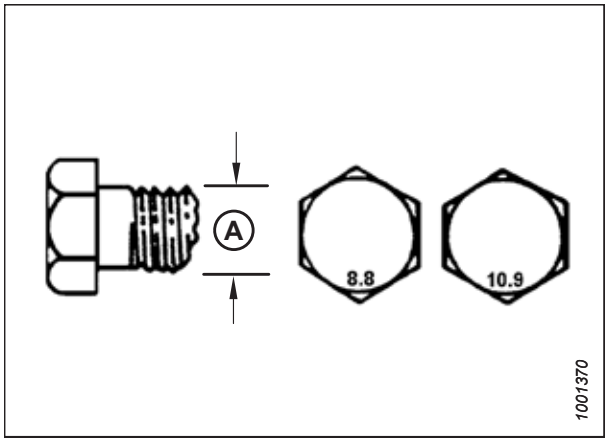


Figure 10.15: Bolt Grades

10.4.3 Flare-Type Hydraulic Fittings

The standard torque values are provided for flare-type hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

1. Inspect flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto the fitting without lubrication until contact is made between the flared surfaces.
3. Torque fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value in Table *10.7, page 183*.
4. Secure fitting (D) with two wrenches. Place one wrench on fitting body (D), and tighten nut (E) with the other wrench to the torque value shown in Table *10.7, page 183*.
5. Verify the final condition of connection.

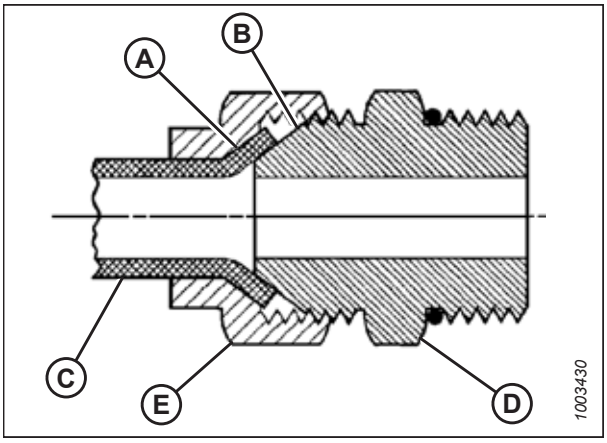


Figure 10.16: Hydraulic Fitting

Table 10.7 Flare-Type Hydraulic Tube Fittings

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

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

10.4.4 O-Ring Boss Hydraulic Fittings – Adjustable

The standard torque values are provided for adjustable hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

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

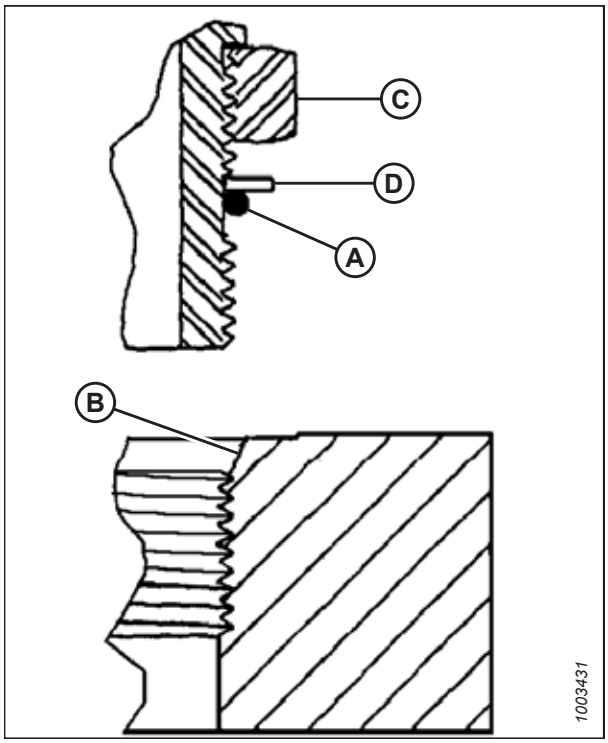


Figure 10.17: Hydraulic Fitting

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

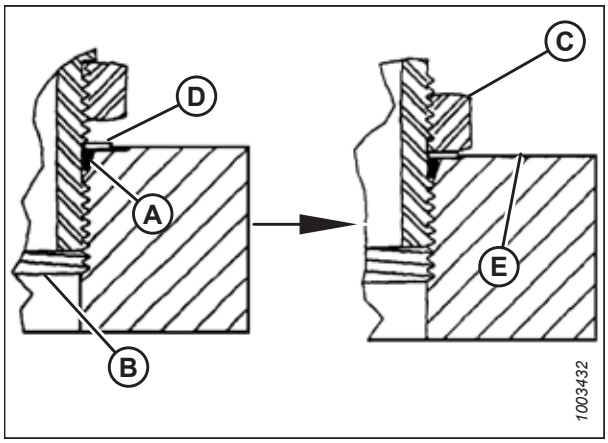


Figure 10.18: Hydraulic Fitting

Table 10.8 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[6]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	10–11	*89–97
-3	3/8–24	18–20	*159–177
-4	7/16–20	29–32	21–24
-5	1/2–20	32–35	24–26
-6	9/16–18	40–44	30–32
-8	3/4–16	70–77	52–57
-10	7/8–14	115–127	85–94
-12	1 1/16–12	183–201	135–148
-14	1 3/16–12	237–261	175–193
-16	1 5/16–12	271–298	200–220
-20	1 5/8–12	339–373	250–275
-24	1 7/8–12	414–455	305–336
-32	2 1/2–12	509–560	375–413

10.4.5 O-Ring Boss Hydraulic Fittings – Non-Adjustable

The standard torque values for non-adjustable hydraulic fittings are provided. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table *10.9, page 185*.
6. Verify the final condition of the fitting.

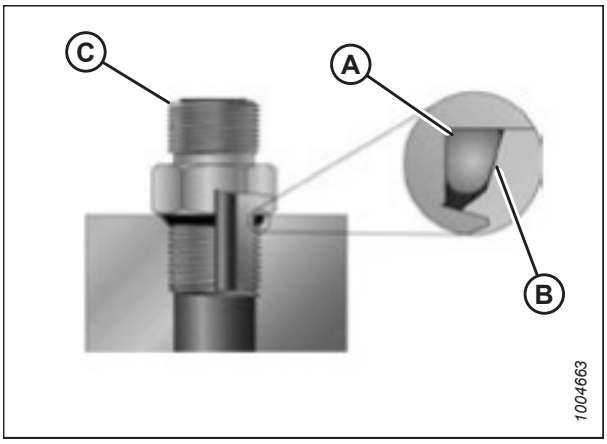


Figure 10.19: Hydraulic Fitting

Table 10.9 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[6]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	10–11	*89–97
-3	3/8–24	18–20	*159–177
-4	7/16–20	29–32	21–24
-5	1/2–20	32–35	24–26

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

Table 10.9 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value[7]	
		Nm	lbf·ft (*lbf·in)
-6	9/16–18	40–44	30–32
-8	3/4–16	70–77	52–57
-10	7/8–14	115–127	85–94
-12	1 1/16–12	183–201	135–148
-14	1 3/16–12	237–261	175–193
-16	1 5/16–12	271–298	200–220
-20	1 5/8–12	339–373	250–275
-24	1 7/8–12	414–455	305–336
-32	2 1/2–12	509–560	375–413

10.4.6 O-Ring Face Seal Hydraulic Fittings

The standard torque values are provided for O-ring face seal hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Torque values are shown in the Table *10.10, page 187*.

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.

Figure 10.20: Hydraulic Fitting

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

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table *10.10, page 187*.

   NOTE:

   If applicable, hold the hex flange on fitting body (E) to prevent the rotation of the fitting body and the hose when tightening fitting nut (D).
6. Use three wrenches when assembling unions or joining two hoses together.
7. Verify the final condition of the fitting.

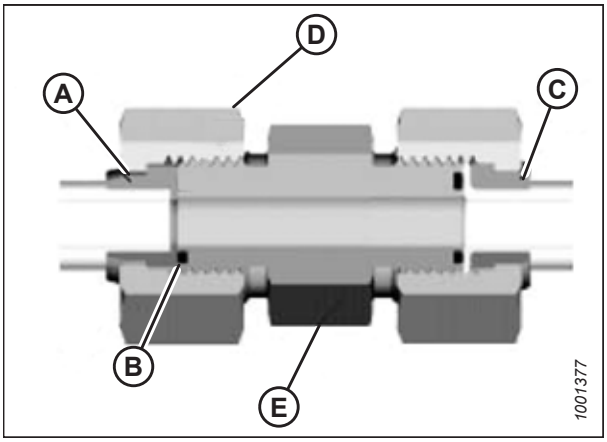


Figure 10.21: Hydraulic Fitting

Table 10.10 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[8]	
			Nm	lbf·ft
-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	30–32
-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	2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

10.4.7 Tapered Pipe Thread Fittings

The standard torque values are provided for tapered pipe thread fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.

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.

4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table *10.11, page 188*. Ensure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never loosen the threaded connectors to achieve alignment.

5. Clean all residue and any excess thread conditioner with an appropriate cleaner.

6. Inspect the final condition of the fitting. Pay special attention to the possibility of cracks in the port opening.

7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

   NOTE:

   The failure of fittings due to over-torquing may not be evident until the fittings are disassembled and inspected.

Table 10.11 Hydraulic Fitting Pipe Thread

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

10.5 Conversion Chart

This manual uses both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 10.12 Conversion Chart

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

10.6 Definitions

The following terms, abbreviations, and acronyms are used in this instruction.

Table 10.13 Definitions

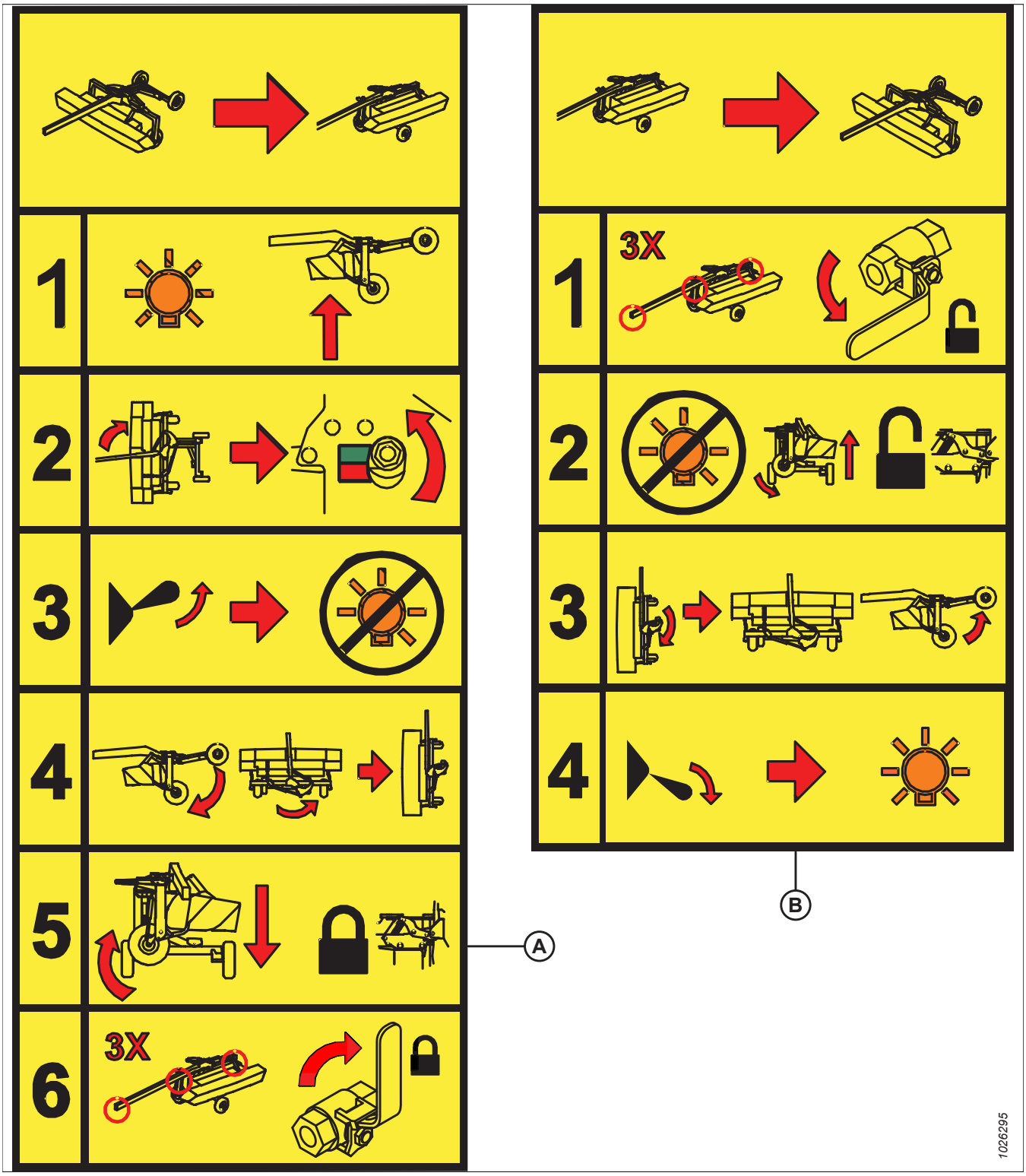
Term	Definition
API	American Petroleum Institute
APT	Articulated Power Turn
Bolt	A headed and externally threaded fastener designed to be paired with a nut
Center-link	A hydraulic cylinder or manually adjustable turnbuckle type connection between the header and the vehicle, which is used to change the angle of the header relative to the vehicle
CGVW	Combined gross vehicle weight
Export rotary disc pull-type	The machine configuration typical outside North America
FFFT	Flats from finger tight
Finger tight	A reference position in which the given sealing surfaces or components are making contact with each other. The fitting has been tightened by hand to a point where the fitting is no longer loose and cannot be tightened further by hand
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header or rotary header	The part of the rotary disc pull-type that cuts and conditions the crop
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive); also known as an Allen key
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for the original 37° flared fitting
n/a	Not applicable
North American rotary disc pull-type	Rotary disc pull-type configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-Ring Seal
PTO	Power take-off
R1 PT Series	R113 and R116 Rotary Disc Pull-Types
RFT	Road Friendly Transport™
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)
Rotary disc pull-type	A machine that cuts and conditions hay and is pulled by an agricultural tractor
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread when it is inserted into a mating part
Soft joint	A flexible joint made by use of a fastener in which the joining materials compress or relax over a period of time

Table 10.13 Definitions (continued)

Term	Definition
Tension	An axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.). This term can also be used to describe the force a belt exerts on a pulley or sprocket
TFFT	Turns from finger tight
Torque	The product of a force * the length of a lever arm, usually measured in Newton-meters (Nm), foot-pounds (lbf·ft), or inch-pounds (lbf·in)
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw
Tractor	Agricultural-type power unit which provides motive force to a pull-type header
Washer	A thin cylinder with a hole or a slot located in the center, used as a spacer, a load distribution element, or a locking mechanism

10.7 Transport Decal

The transport decal on the remote control provides a pictorial instruction for operating the optional transport system.



A - Converting From Field to Transport

B - Converting From Transport to Field

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.

Rotary Disc Pull-Type Serial Number: **Hitch Serial Number:**

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten the hardware to required torque if applicable.	*10.4 Torque Specifications, page 180*
	Check cutterbar area carefully for loose parts and hardware on the cutterbar. **WARNING** **These objects can be ejected with considerable force when the machine is started, and may result in serious injury or machine damage.**	—
	Check that hydraulic hoses have adequate slack before rotating header.	—
	Check that tall crop dividers are not installed for road transport.	*3.8.3 Installing Tall Crop Divider – Optional, page 63*
	Check that cutterbar doors are unbolted from center channel frame, shipping wire is removed from cutterbar curtains, and cutterbar curtains are hanging properly.	*6.5 Unpacking Curtains, page 125*
	Grease all bearings and drivelines.	*7.2 Lubrication Points, page 137*
	Check side forming shields evenly set to desired position.	*6.4 Setting up Forming Shields, page 119*
	Ensure wheel bolts are torqued to 160 Nm (120 lbf·ft).	*8.1.1 Checking Wheel Bolts, page 144*
	Check tire pressure.	*8.1.2 Checking Tire Pressure, page 144*
	Check conditioner drive belt.	*8.1.3 Checking and Adjusting Conditioner Drive Belt, page 144*
	Check cutting angle. Set center-link to middle of adjustment range.	*8.1.4 Checking Cutting Angle, page 145*
	Check skid shoes.	*8.1.5 Checking Skid Shoes, page 146*
	Check header float.	*8.1.6 Checking Rotary Disc Pull-Type Float, page 146*
	Check conditioner roll timing gearbox lubricant.	*8.1.7 Checking and Adding Lubricant – Conditioner Roll Timing Gearbox, page 147*

✓	Item	Reference
	Check conditioner drive gearbox lubricant.	*8.1.8 Checking and Adding Lubricant – Drive Gearbox, page 147*
	Check forward and rear swivel gearbox lubricant.	*8.1.9 Checking and Adding Lubricant – Forward and Rear Swivel Gearboxes, page 148*
	Check conditioner roll gap (roll conditioner).	*8.1.10 Checking and Adjusting Roll Gap, page 149*
	Check conditioner roll timing hardware is securely tightened (roll conditioner).	*8.1.11 Checking Roll Timing, page 150*
	Check conditioner roll tension (roll conditioner).	*8.1.12 Checking and Adjusting Roll Tension, page 150*
	Check rear baffle is about mid-position (roll conditioner).	*8.1.13 Adjusting Conditioner Baffle Position, page 151*
	Check forward baffle lever is set to approximate mid-position (finger conditioner).	*8.1.13 Adjusting Conditioner Baffle Position, page 151*
	Check rear baffle lever is set to approximate mid-position (finger conditioner).	*8.1.13 Adjusting Conditioner Baffle Position, page 151*
	Check that tail lights and hazard lights are functional.	*8.1.14 Checking Lights, page 152*
	Check that header manuals are in storage compartment.	*8.1.15 Checking Manuals, page 152*
	Check clutch operation.	*8.1.16 Checking Clutch Operation, page 153*
	Check that the disc timing tool is in place.	*8.1.17 Checking Disc Timing Tool, page 154*
Run-Up Procedure		*8.1.18 Running up Machine, page 154*
	Check hydraulic hose and wiring harness routing to ensure adequate clearance when raising, lowering or swinging the header.	—
Post Run-Up Check – Stop Engine		
	Check for hydraulic leaks.	—
	Check conditioner belt drive for proper idler alignment and overheating bearings.	—
	Check cutterbar lubricant.	*8.1.19 Checking and Adding Lubricant – Cutterbar, page 155*
	Check the cam on the transport deploy / swing mechanism.	*8.1.20 Checking and Adjusting Cam on Transport Deploy / Swing Mechanism, page 156*
	Check and remove protective film on top surface of the header. **NOTE:** Remove the protective film when ambient temperature is 10°C (50°F) or higher. Lower temperatures may cause the film to become brittle, making it challenging to remove in one piece.	—

Date Checked: **Checked by:**

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 the cutterbar components.

Table: Recommended Lubricants

Specification	Description	Use	Capacities
Lubricant: Grease			
SAE Multipurpose	High temperature, extreme pressure (EP) performance with 1% max. molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
SAE Multipurpose	High temperature, extreme pressure (EP) performance with 10% max. molybdenum disulphide (NLGI Grade 2) lithium base	Driveline slip-joints	—
Lubricant: Gear Lubricant			
SAE 80W-90	High thermal and oxidation stability API service class GL-5	R113 Cutterbar	8 L (8.5 qts [US])
SAE 80W-90	High thermal and oxidation stability API service class GL-5	R116 Cutterbar	10 L (10.5 qts [US])
SAE 85W-140	Gear lubricant API service class GL-5	Conditioner roll timing gearbox	0.7 L (0.75 qts [US])
SAE 85W-140	Gear lubricant API service class GL-5	Cutterbar and conditioner drive gearbox	1.8 L (1.9 qts [US])
SAE 85W-140	Gear lubricant API service class GL-5	Hitch (front) swivel gearbox	• Upper: 1.2 L (1.3 qts [US]) • Lower: 1.7 L (1.8 qts [US])
SAE 85W-140	Gear lubricant API service class GL-5	Header (rear) swivel gearbox	• Upper: 1.2 L (1.3 qts [US]) • Lower: 1.7 L (1.8 qts [US])

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