

Double Windrow Attachment (DWA) for M1-Series Self-Propelled Windrowers

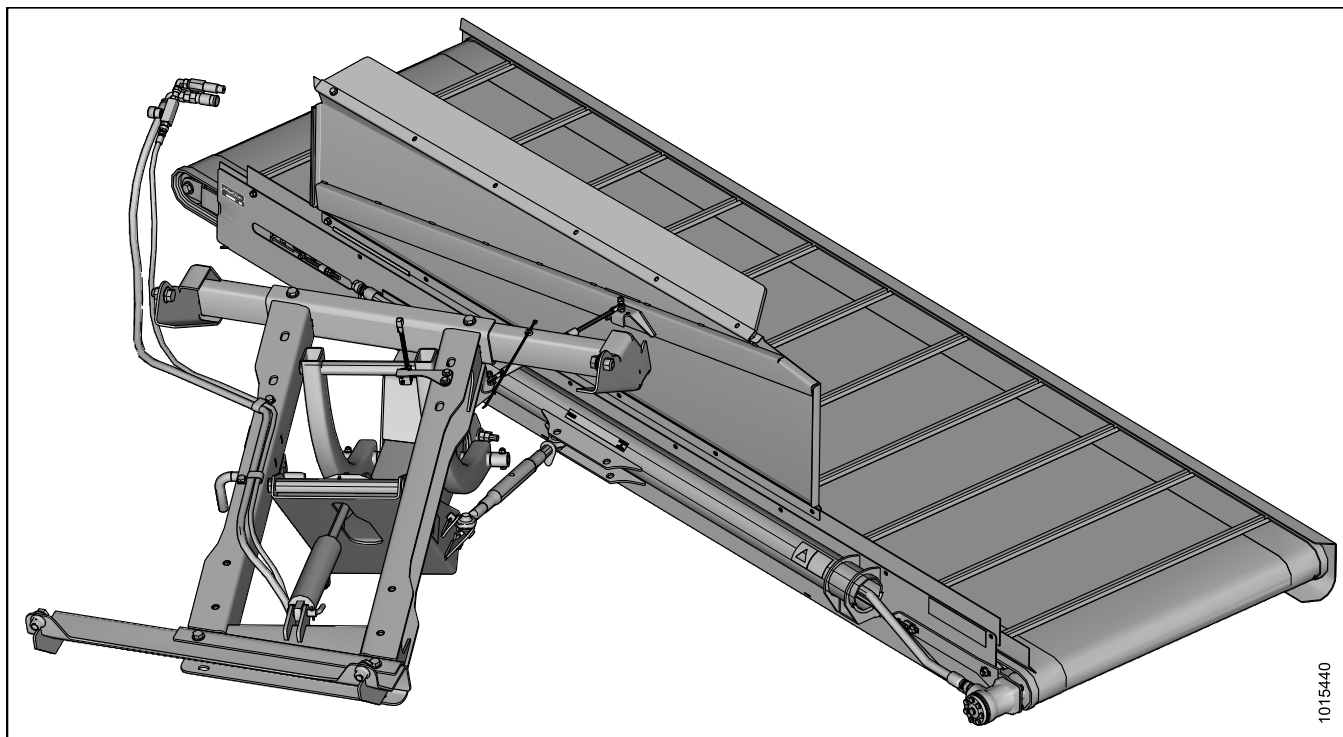
Setup, Operation, and Parts Manual

214048 Revision A

Model Year 2017

Original Instruction

This instruction contains the setup procedures, operation instructions, and parts lists for the MacDon Double Windrow Attachment (DWA) for M1-Series Self-Propelled Windrowers.



1015440

Published: September 2016

Introduction

The Double Windrow Attachment (DWA) provides the ability to place two windrows of conditioned material close together to be picked up by a forage chopper. The DWA can be mounted on the following MacDon Self-Propelled Windrowers:

- M1240

The DWA is for use with the following headers:

- A-Series Auger Headers
- R-Series Rotary Disc Header

When the DWA system is engaged, the conditioned crop is deposited onto the side draper and placed to the side of the windrower. Raising the side delivery disengages the DWA, allowing the crop to be deposited between the windrower's wheels.

When setting up the machine or making adjustments, review and follow the recommended machine settings in all relevant MacDon publications. Failure to do so may compromise machine function and machine life and may result in a hazardous situation.

MacDon provides warranty for Customers who operate and maintain their equipment as described in this manual. A copy of the MacDon Industries Limited Warranty Policy, which explains this warranty, should have been provided to you by your Dealer. Damage resulting from any of the following conditions will void the warranty:

- Accident
- Misuse
- Abuse
- Improper maintenance or neglect
- Abnormal or extraordinary use of the machine
- Failure to use the machine, equipment, component, or part in accordance with the manufacturer's instructions

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).

Serial Number Location

Record the serial number of the Double Windrow Attachment (DWA) in the space provided.

DWA serial number: _____

The serial number plate is located on the deck (A).

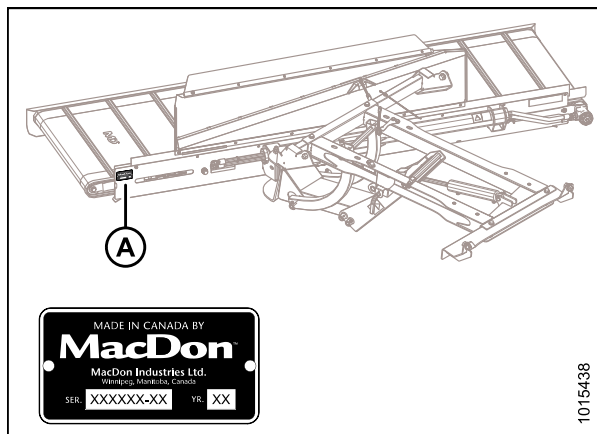


Figure 1: Serial Number Location

List of Revisions

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

Summary of Change	Location
Updated document introduction with Generic Statement and revised warranty message.	Introduction, page i
Updated topic to reflect new One-Touch-Return name for the header preset system.	2.6.1 Setting One-Touch-Return Buttons (A, B, C), page 22
Added washer part number and explained where to find washers for deck installation procedure.	2.3 Installing the Deck, page 14
Added subtopics for installing hydraulics for M1240 SP Windrowers configured for disc-only headers and configured for disc- and draper-ready headers.	2.4.1 M1240 Disc-Only Configuration, page 18
	2.4.2 M1240 Disc- and Draper-Ready Configuration, page 19
Added a note to the topic explaining about a potential issue during the DWA's first run up on the windrower where the deck may not turn despite the header being correctly engaged with the windrower.	3.4 Setting Draper Speed, page 30
Updated illustration to show correct installation of forming shield bracket for DWA.	3.9.3 Operating with an R-Series Rotary Disc Header, page 39
Added predelivery checklist.	Predelivery Checklist, page 87
Updated schematic.	4.3 Hydraulic Schematic, page 51
New parts list illustration #1018972 added.	5.1 Deck, Draper, and Rollers, page 54
Replaced part #120451 with part #220181. Updated repair parts list and repair parts list illustration.	
Added part #252525 to repair parts list and repair parts list illustration.	
New parts list illustration #1018966 added.	5.2 Linkage and Deck Support, page 60
Replaced part #176524 with part #176540. Updated repair parts list and repair parts list illustration.	
Updated DWA weldt support (part #176440) in repair parts list and repair parts list illustration.	

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1 Safety

1.1 Safety Alert Symbols

This 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. The appropriate signal word for each situation has been selected using the following guidelines:

DANGER

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

WARNING

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

CAUTION

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

1.3 General Safety

CAUTION

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for job at hand. Do **NOT** take chances. You may need the following:
 - Hard hat
 - Protective footwear with slip resistant soles
 - Protective glasses or goggles
 - Heavy gloves
 - Wet weather gear
 - Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as ear muffs or ear plugs to help protect against objectionable or loud noises.

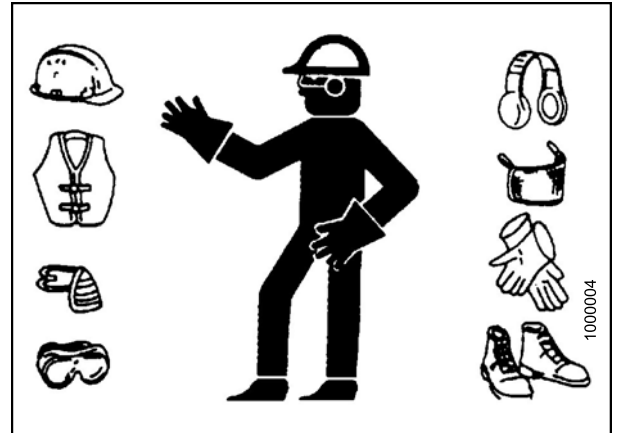


Figure 1.2: Safety Equipment

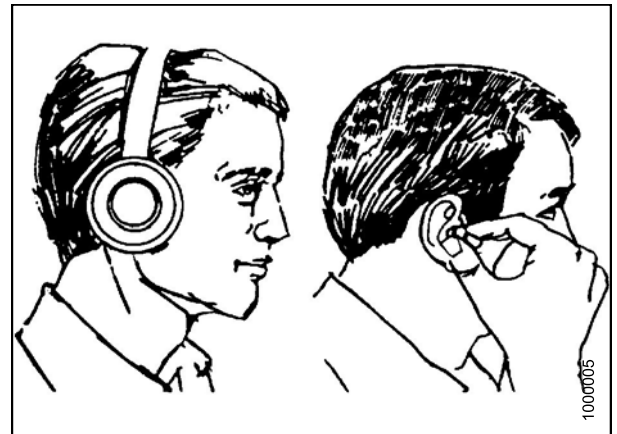


Figure 1.3: Safety Equipment

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

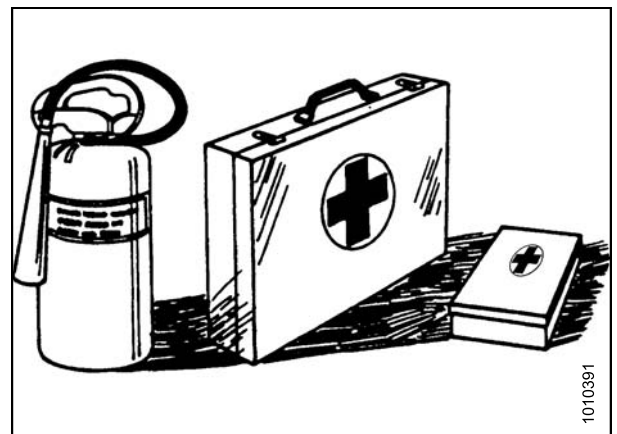


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

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

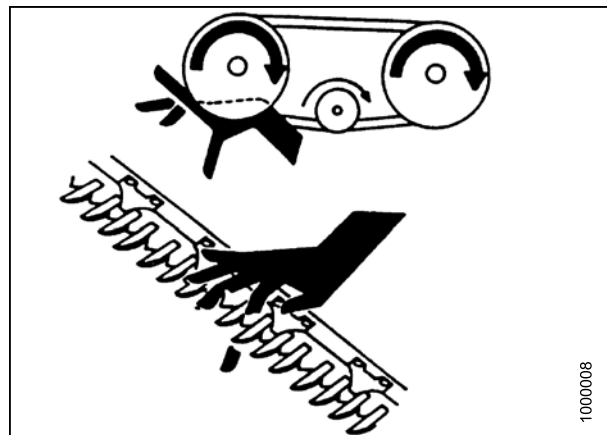


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

To ensure your safety while maintaining machine:

- Review operator's manual and all safety items before operation and/or maintenance of machine.
- Place all controls in Neutral, stop engine, set park brake, remove ignition key, and wait for all moving parts to stop before servicing, adjusting, and/or repairing.
- Follow good shop practices:
 - Keep service areas clean and dry
 - Be sure electrical outlets and tools are properly grounded
 - Use adequate lighting for job at hand
- Relieve pressure from hydraulic circuits before servicing and/or disconnecting machine.
- Make sure all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to hydraulic systems.
- Keep hands, feet, clothing, and hair away from all moving and/or rotating parts.
- Clear area of bystanders, especially children, when carrying out any maintenance, repairs or, adjustments.
- Install transport lock or place safety stands under frame before working under machine.
- If more than one person is servicing machine at same time, be aware that rotating a driveline or other mechanically-driven component by hand (for example, accessing a lube fitting) will cause drive components in other areas (belts, pulleys, and knives) to move. Stay clear of driven components at all times.
- Wear protective gear when working on machine.
- Wear heavy gloves when working on knife components.



Figure 1.8: Safety around Equipment

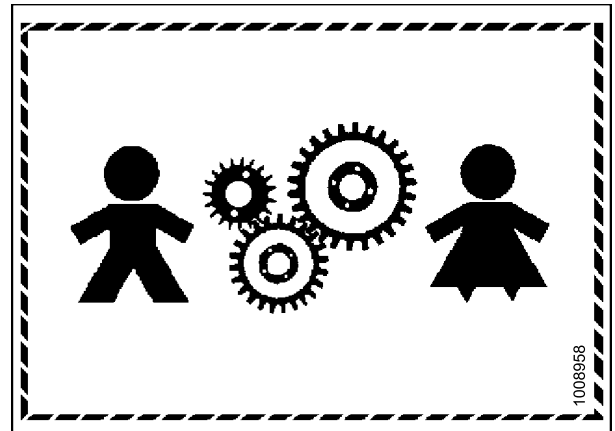


Figure 1.9: Equipment NOT Safe for Children

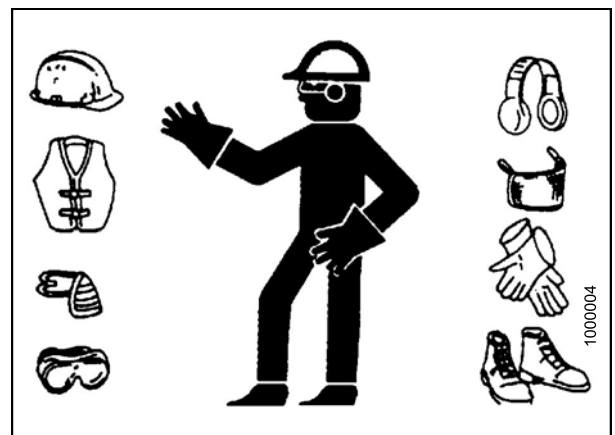


Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

- Always place all hydraulic controls in Neutral before dismounting.
- Make sure that all components in 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 will fail suddenly and create hazardous and unsafe conditions.

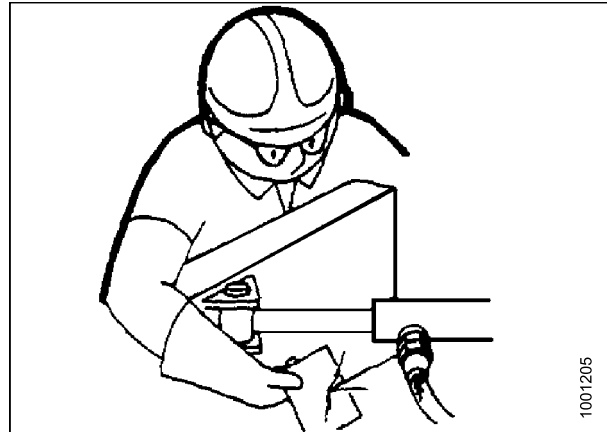


Figure 1.11: Testing for Hydraulic Leaks

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



Figure 1.12: Hydraulic Pressure Hazard

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

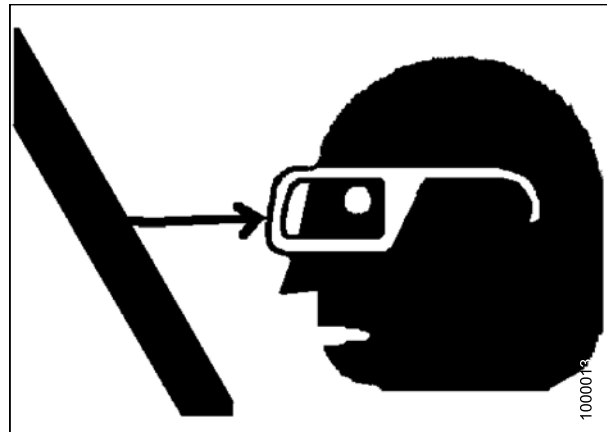


Figure 1.13: Safety around Equipment

1.6 Safety Signs

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

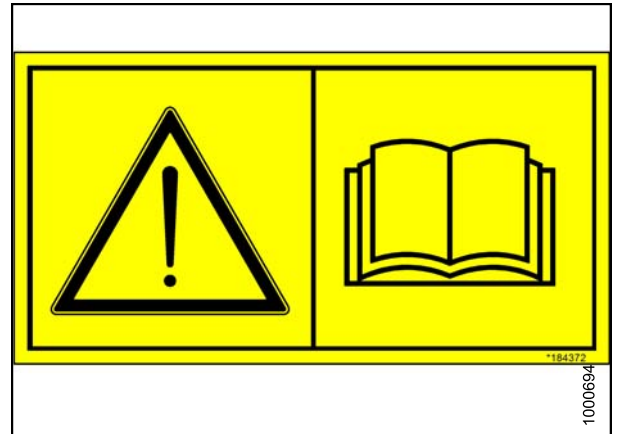


Figure 1.14: Operator's Manual Decal

1.6.1 Installing Safety Decals

1. Clean and dry installation area.
2. Decide on exact location before you remove decal backing paper.
3. Remove smaller portion of split backing paper.
4. Place sign in position and slowly peel back remaining paper, smoothing sign as it is applied.
5. Prick small air pockets with a pin and smooth out.

1.7 Safety Sign Decals

MD #166466

HIGH PRESSURE HYDRAULICS

DO NOT GO NEAR LEAKS

Located on deck

- High pressure oil easily punctures skin causing serious injury, gangrene or death
- If injured, seek emergency medical help. Immediate surgery is required to remove oil
- Do not use finger or skin to check for leaks
- Lower load or relieve hydraulic pressure before loosening fittings

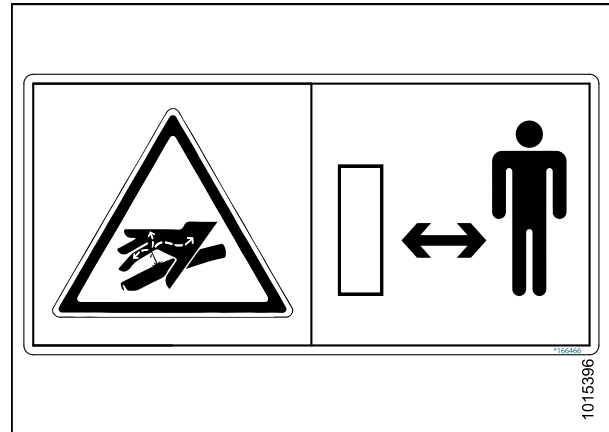


Figure 1.15: MD #166466

MD #174683

PINCH POINT - MOVING PARTS

STAND CLEAR

Located on linkage arm (both sides)

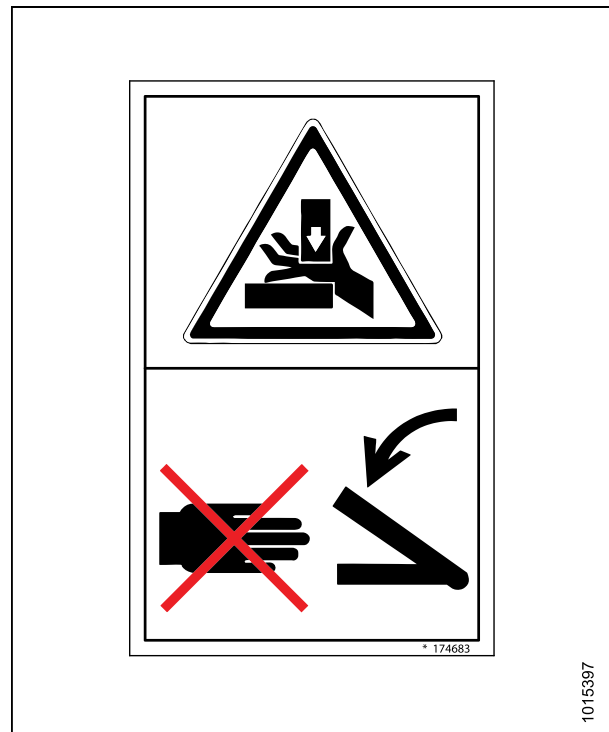


Figure 1.16: MD #174683

SAFETY

MD #176295

DECK LIFT LOCK

Located on deck linkage

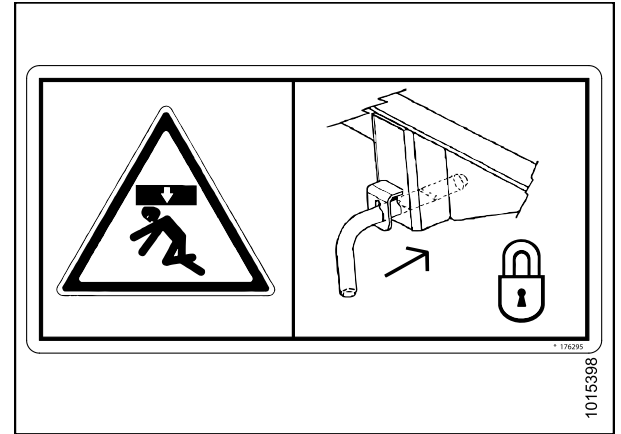


Figure 1.17: MD #176295

2 Assembly/Setup Instructions

NOTE:

The BNG 260 Double Windrow Attachment (DWA) will only fit windrower models listed in the [Introduction, page i](#).

2.1 Raising and Lowering the Right-Hand Stairs

The right-hand stairs need to be raised when installing or operating the Double Windrow Attachment (DWA) in either a lowered or raised position.

To raise and lock the stairs follow these steps:

1. Lift stairs (A) by hand until spring-loaded latch (B) locks steps in the upright position. Rubber bumper (C) stops the stairs from going past the upright position.

NOTE:

Stairs are held in the down position by the extension of the gas shock (D).

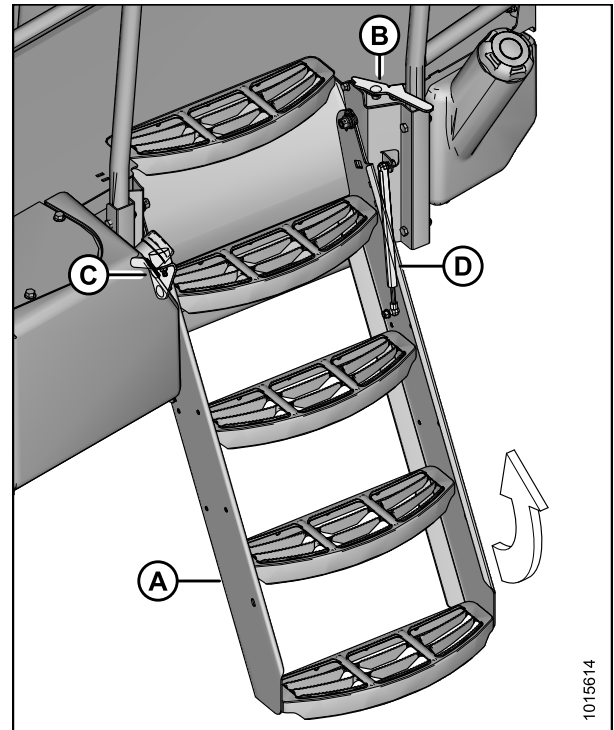


Figure 2.1: Right-Hand Stairs – Down Position

To lower stairs follow these steps:

2. Release stairs by pulling spring-loaded latch handle (A) to the left. Lower by hand.
3. Push stairs down until gas shock extension holds stairs in the down position.

NOTE:

DWA deck should not be used as a step or a platform.

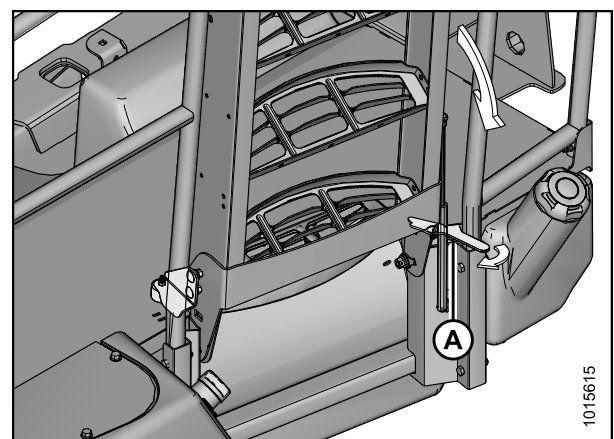


Figure 2.2: Right-Hand Stairs – Up Position

2.2 Installing the Linkage

To install the linkage on a M1240 windrower, follow these steps:

1. Remove four bolts (A), two washers (B) and two nuts (C) that are loosely installed on the DWA linkage. Keep hardware for mounting.

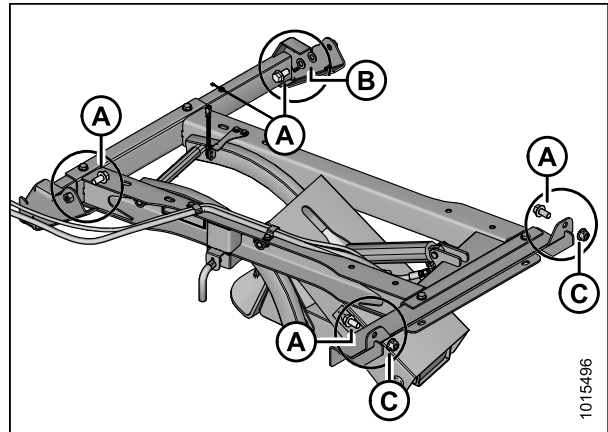


Figure 2.3: Linkage Support

2. Support linkage assembly (A) with a forklift (B) and lift into place under windrower.

NOTE:

Approach the windrower with the forklift from the right-hand cab-forward side. With the stairs lifted this will be the easiest to access. Make sure the forks do not lift against the cylinder fitting.

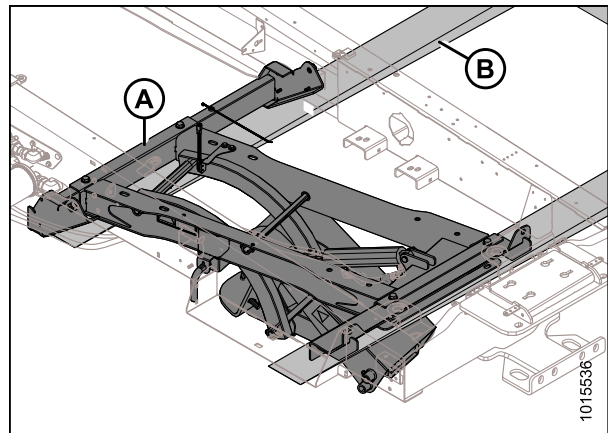


Figure 2.4: DWA Linkage

3. Line-up DWA linkage with windrower connection points.

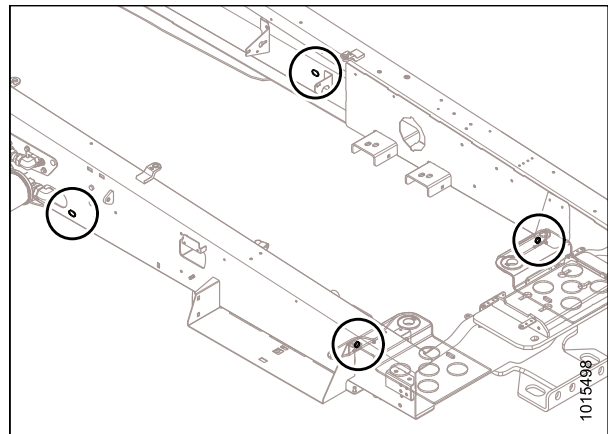


Figure 2.5: Windrower Connection Points

ASSEMBLY/SETUP INSTRUCTIONS

4. Install hardware (removed in Step 1, page 12) (A) to attach linkage assembly to windrower frame. Torque to 340 ft·lbf (461 N·m).
5. Torque four bolts (B) on DWA linkage to 107–118 ft·lbf (144–160 N·m).

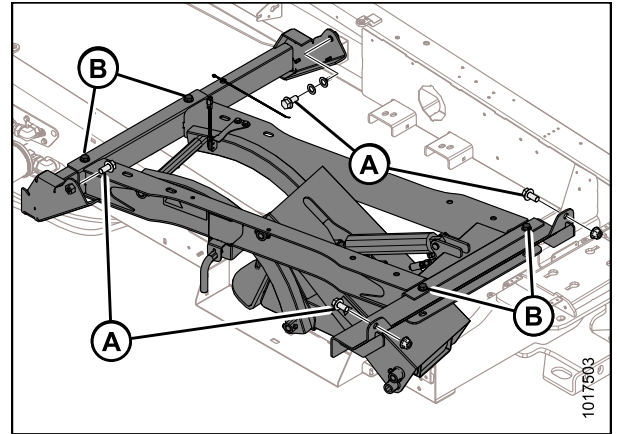


Figure 2.6: Linkage Support Under Windrower

NOTE:

Windrower not shown for clarity.

6. Lower linkage by pulling out safety pin (A) on the left-hand side of linkage. Allow frame to lower.
7. Replace safety pin (A).

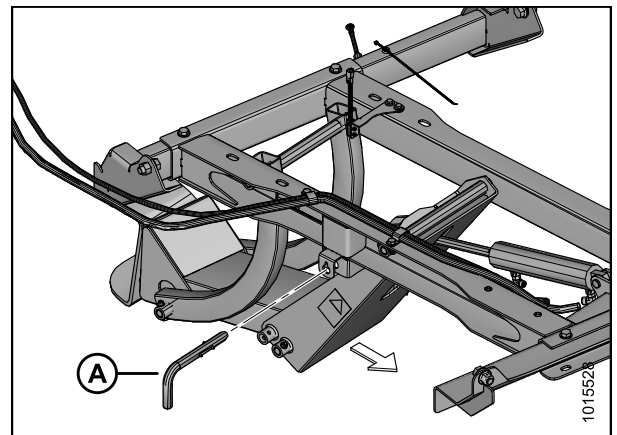


Figure 2.7: DWA Linkage

8. Secure the lift cylinder pivot (A) into the correct hole depending on header type:
 - For R-Series header: insert pin in the upper hole (B)
 - For A-Series header: insert pin in the lower hole (C)

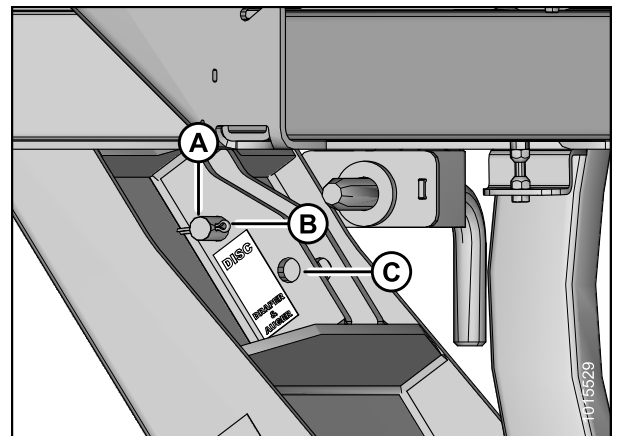


Figure 2.8: Lift Cylinder Pivot

2.3 Installing the Deck

To install the DWA deck, follow these steps:

1. Remove the shipping boards (A) by removing the transport banding (B) and discard.
2. Support the deck with a forklift. Forks (C) should be inboard of shipping stand (A).
3. Remove the two shipping stands (A) from the front of the deck by removing nut (B).
4. Reinstall nut (B) with a washer (MD #11695). Washers are included in the bag of assembly hardware.
5. Remove the shipping stand (A) from the rear of the deck by removing the two nuts (B) and washers (C).

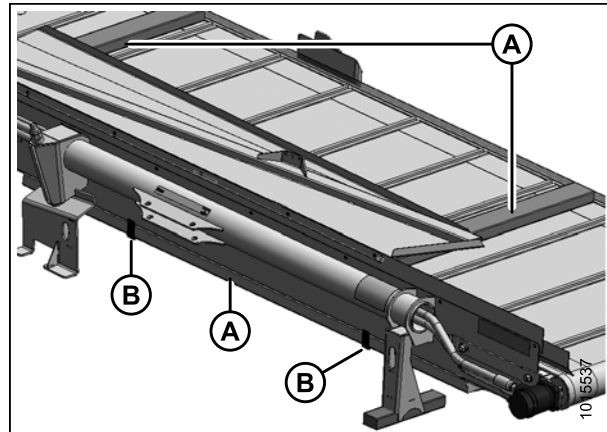


Figure 2.9: DWA Deck

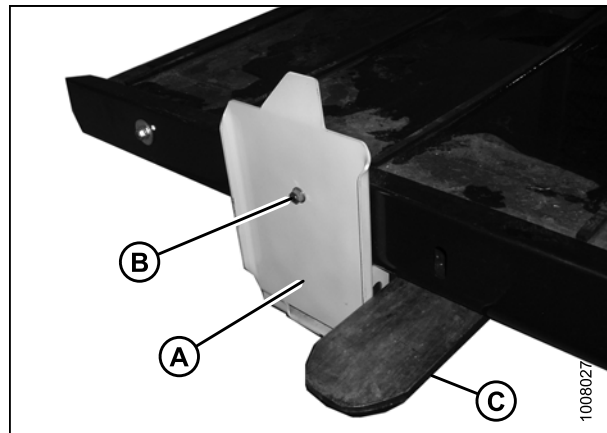


Figure 2.10: Deck Shipping Stand

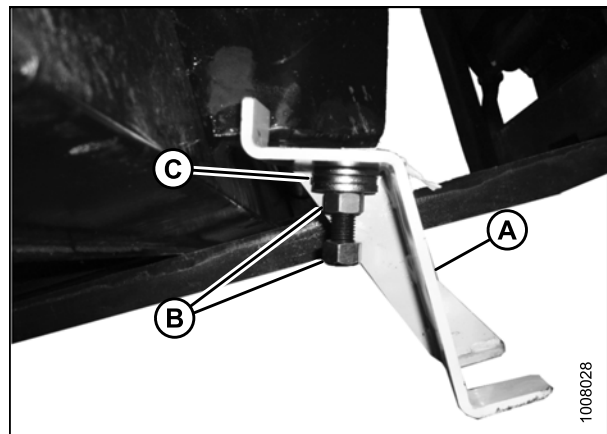


Figure 2.11: Deck Shipping Stand

ASSEMBLY/SETUP INSTRUCTIONS

6. Remove the shipping stand (A) by removing the transport wire (B).

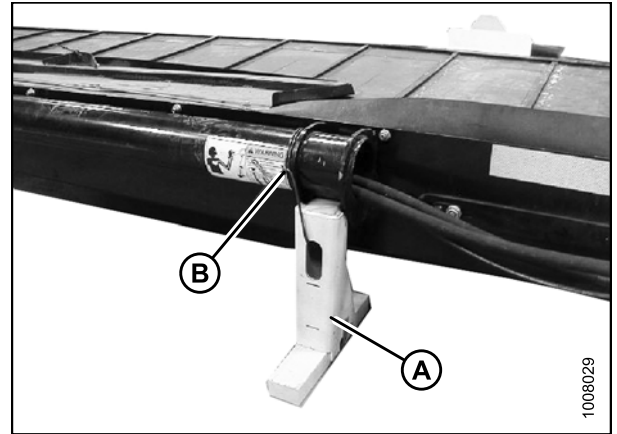


Figure 2.12: Deck Shipping Stand

The DWA deck is now ready to be assembled to the linkage underneath the windrower.

7. Position the DWA deck on the right-hand side of the windrower.
8. Support the deck with a floor jack (A) or a forklift (B) at each end.



Figure 2.13: DWA Deck Supported with Floor Jack

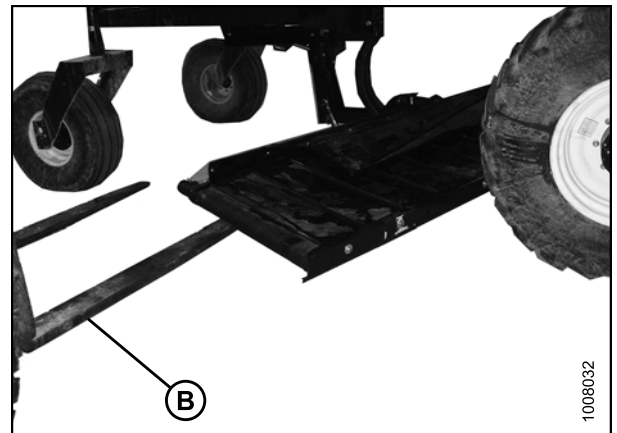


Figure 2.14: DWA Deck Supported with Forklift

ASSEMBLY/SETUP INSTRUCTIONS

9. Position the deck pivot (A) into the linkage clevis (B).

NOTE:

Make sure there is a loose bushing inside the deck pivot (A).

10. Align the deck pivot (A) with the holes in the clevis (B) by raising or lowering the floor jack, and insert shaft (C) with preinstalled hex nut (D) and lock nut (E) through the top.
11. Install a regular hex nut (D) to the bottom of the deck pivot shaft and torque the nut to 339 N·m (250 ft·lbf).
12. Install a lock nut (E), and tighten against nut (D).

IMPORTANT:

Apply proper torque to nuts.

13. Add grease to grease zerk (F).

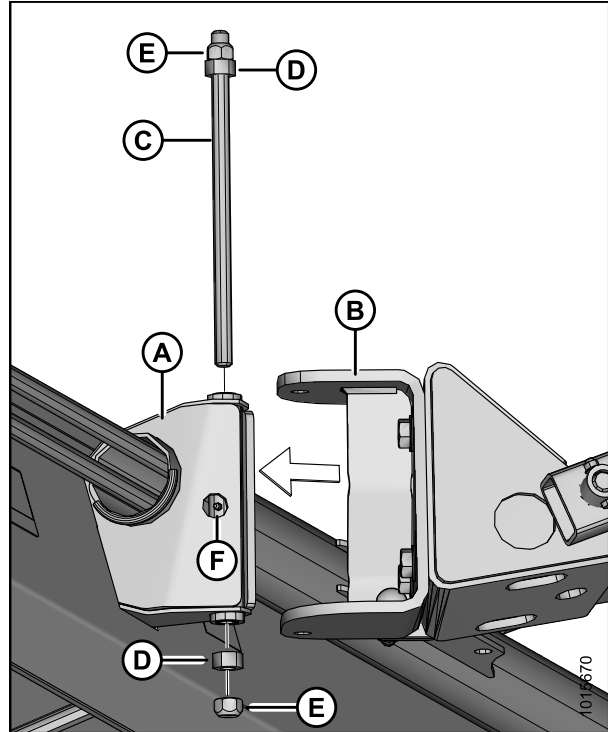


Figure 2.15: Deck Pivot and Linkage Clevis

14. Attach turnbuckle (A) from linkage to deck.
- If used with an R-Series Rotary Disc Header, use the inner pivot (B)
 - If used with an A-Series Auger, use the outer pivot (C)

NOTE:

The turnbuckle length should be approximately:

- 530 mm (21 in.) long for a R-Series Rotary Disc Header
- 630 mm (25 in.) long for a A-Series Auger Header

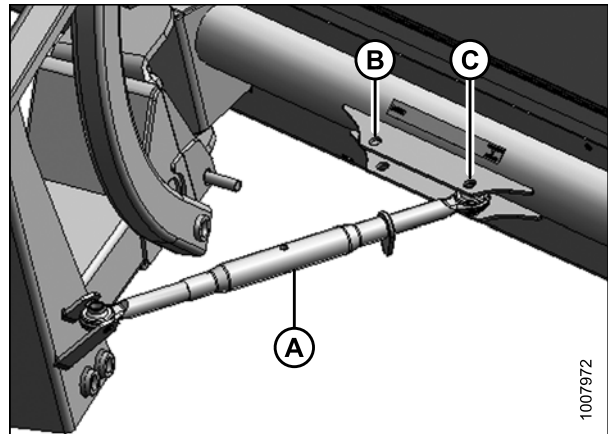


Figure 2.16: Adjustable Turnbuckle

ASSEMBLY/SETUP INSTRUCTIONS

- Adjust the turnbuckle length so the space (A) between the deck and the right-hand drive tire is approximately 100 mm (4 in.).

NOTE:

The single-acting lift cylinder is pressurized with the draper drive circuit. Therefore, when the deck is set up for the rotary disc headers, the windrower needs to be running for the deck to be in its most forward position. This adjustment can be fine-tuned when the hydraulics setup is complete.

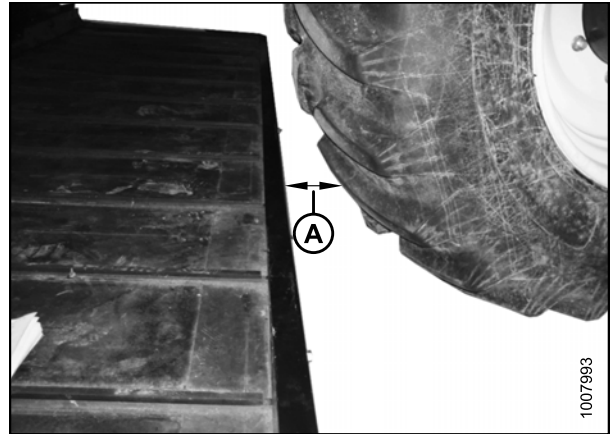


Figure 2.17: Deck and Right-Hand Drive Wheel

- Raise backsheet (A) on the deck and remove the top nut (B) and tapered nut (C).

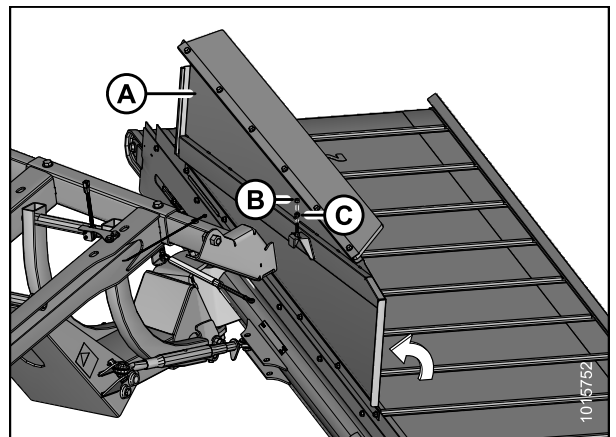


Figure 2.18: Backsheet

- Install the gas shock (D) onto the bolt on the backsheet. Install tapered nut (C) and torque the nut to 24–27 N·m (218–241 in·lbf). Install nut (B) and torque the nut to 24–27 N·m (218–241 in·lbf).

IMPORTANT:

Make sure the taper of nut (C) is facing the gas shock rod end as shown.

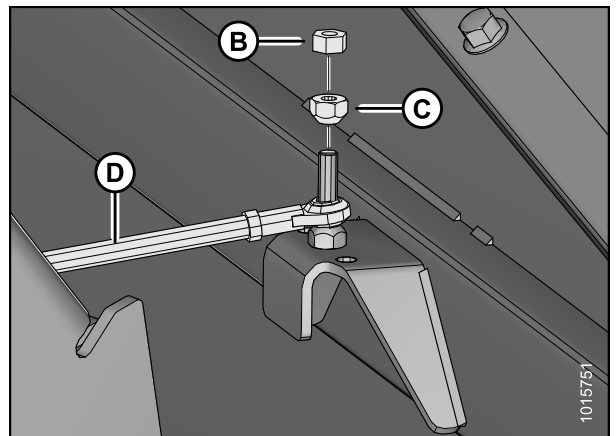


Figure 2.19: Gas Shock

2.4 Installing the Hydraulics to M1240 Windrower

2.4.1 M1240 Disc-Only Configuration

To install the DWA hydraulics to a M1240 Self-Propelled Windrower configured for disc-only headers, follow these steps:

Install the DWA linkage hydraulics to windrower.

1. Route hoses (A) underneath both filters as shown.
2. Connect linkage quick couplers (B) to quick couplers on windrower frame (C).

NOTE:

Linkage and windrower have quick couplers preinstalled for easy connection.

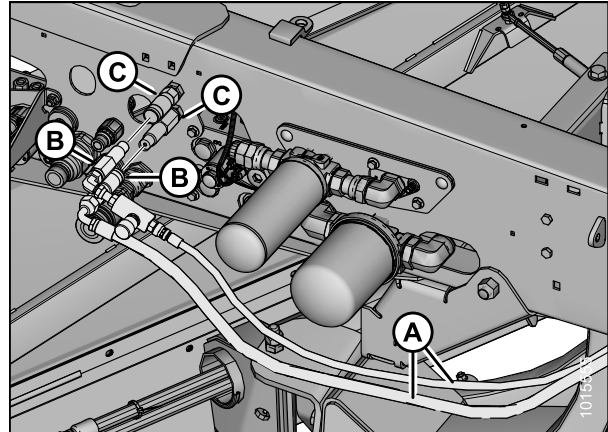


Figure 2.20: DWA Linkage Hydraulics (Multicoupler Hidden for Clarity)

Install the DWA deck hydraulics to windrower.

3. Install 45° fittings (A) and torque to 125 N·m (90 ft·lbf).

NOTE:

Fittings need to be oriented at 60 degrees to the frame as shown.

4. Install hoses (B) to 45° fittings ensuring that hose with cable tie (C) is installed on the top fitting. Torque to 85 N·m (63 ft·lbf).

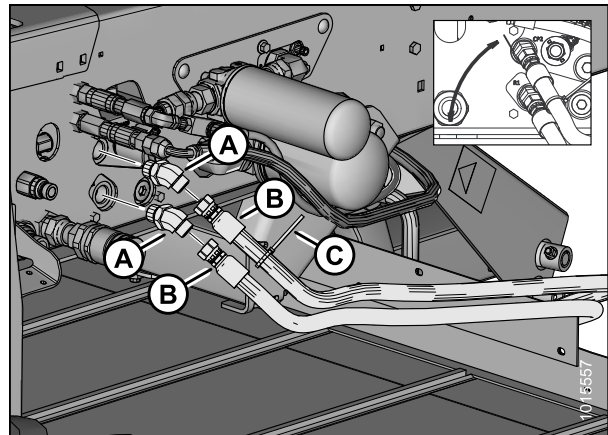


Figure 2.21: DWA Deck Hydraulics to M1240 (Multicoupler Hidden for Clarity)

2.4.2 M1240 Disc- and Draper-Ready Configuration

In addition to the hardware used for connecting to disc headers, an M1240 Self-Propelled Windrower will also have a four point multicoupler installed to allow for connecting to draper headers. To install the DWA hydraulics to a M1240 Self-Propelled Windrower configured for disc- and draper-ready headers, follow these steps:

Install the DWA linkage hydraulics to the windrower.

1. Route hoses (A) underneath both filters as shown.
2. Connect linkage quick couplers (B) to quick couplers on windrower frame (C).

NOTE:

Linkage and windrower have quick couplers preinstalled for easy connection.

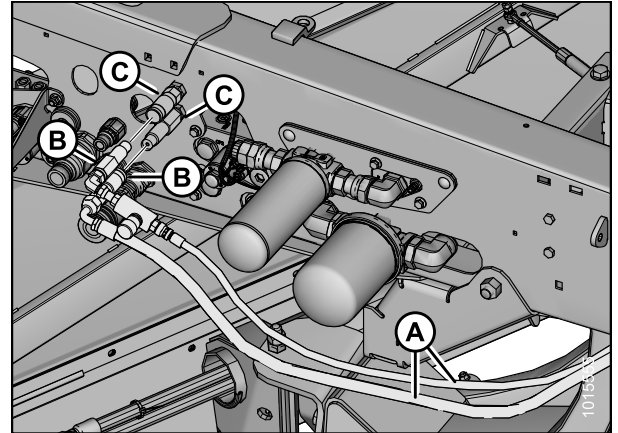


Figure 2.22: DWA Linkage Hydraulics Shown (Multicoupler Hidden for Clarity)

Install the DWA deck hydraulics to windrower.

3. Remove shipping plugs (MD #136266) (A) from deck hydraulic hoses (MD #176534) (B).

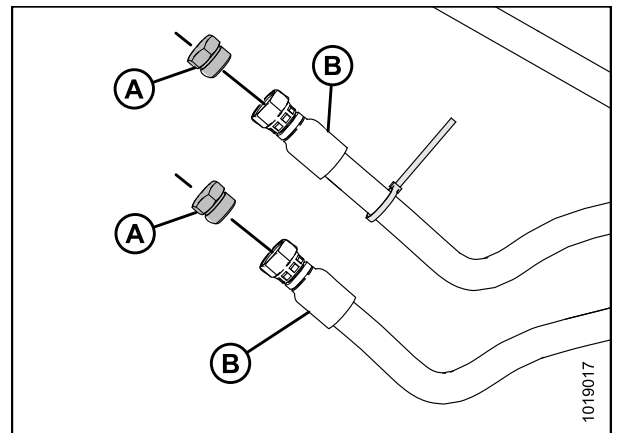


Figure 2.23: Deck Hydraulic Hoses and Protective Shipping Plugs

ASSEMBLY/SETUP INSTRUCTIONS

4. Connect the hydraulic hose (A) with the blue fastener (MD #135266) (B) to the reducer (C) on the multicoupler bulkhead fitting closest to the windrower.
5. Connect the other hydraulic hose (D) to the remaining reducer (E) on the multicoupler bulkhead fitting.

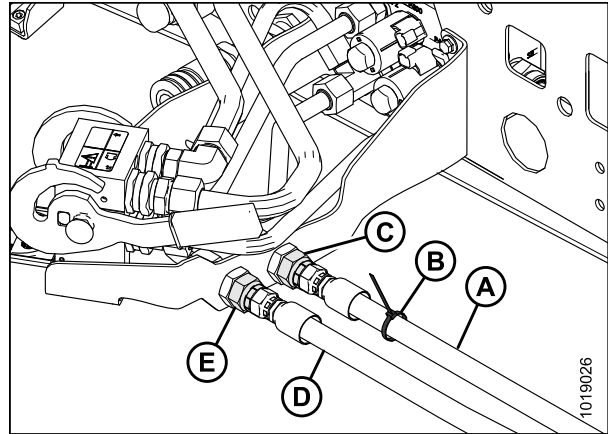


Figure 2.24: Deck Hydraulic Hoses and Multicoupler Connections (Parts Removed for Clarity)

2.5 Connecting the Proximity Sensor

To connect the proximity sensor for the Double Windrow Attachment (DWA), follow these steps:

NOTE:

The proximity sensor comes preinstalled on the DWA linkage.

1. Remove the cable tie binding the DWA extension (A) to the chassis harness (B) from windrower.
2. Connect DWA extension (A) to DWA proximity sensor (C) and secure to linkage with fir tree cable tie (D).

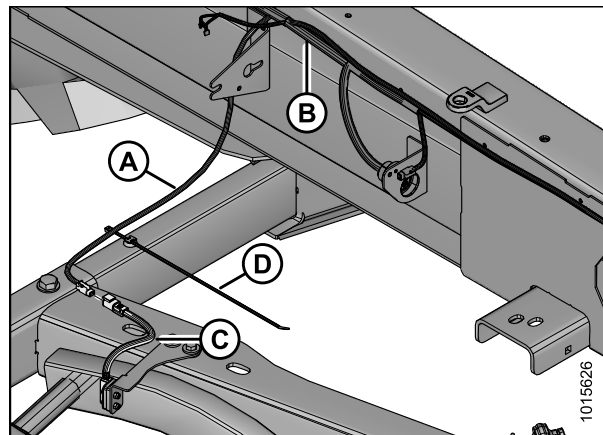


Figure 2.25: DWA extension to DWA proximity sensor

2.6 Activating the Double Windrow Attachment (DWA)

NOTE:

DWA is associated with the header ID setup. For more information on header setup see your header or windrower manual.

To activate the DWA, follow these steps:

1. During header setup, scroll down and select attachments (A).
2. Select DWA and the display will show an image of the buttons to be used to control the DWA with each particular header. DWA is now activated.

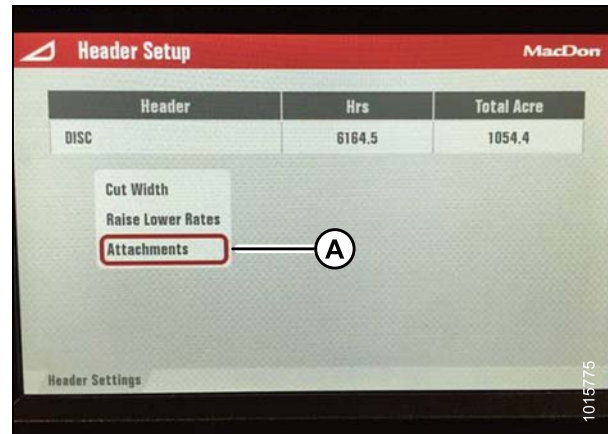


Figure 2.26: Header Setup – Attachments

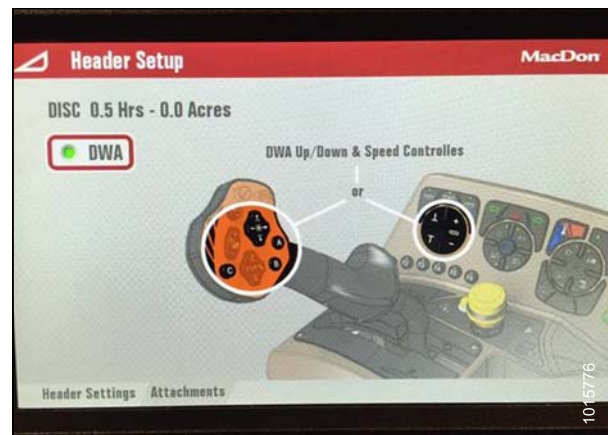


Figure 2.27: Selecting DWA

2.6.1 Setting One-Touch-Return Buttons (A, B, C)

One-Touch-Return buttons ("A", "B", and "C" on the ground speed lever [GSL] handle) allows you to choose and apply three presets.

Open the main menu, follow these steps:

1. Press soft key 5 (A) to open the main menu.
2. Use the Harvest Performance Tracker (HPT) scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown) to place the red cursor over the Settings icon (C).
3. Press the HPT scroll knob (B) or the GSL select button (not shown) to select the highlighted icon.

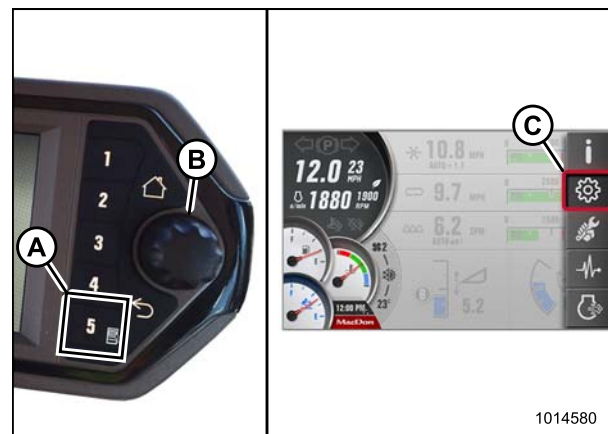


Figure 2.28: Opening the Main Menu

ASSEMBLY/SETUP INSTRUCTIONS

4. Scroll to the One-Touch-Return icon (A), press the HPT scroll knob (B) or the GSL select button (not shown) to open the headland management menu list (B).

NOTE:

The F2 shortcut button on the operator's console also will open the One-Touch-Return menu list (B).

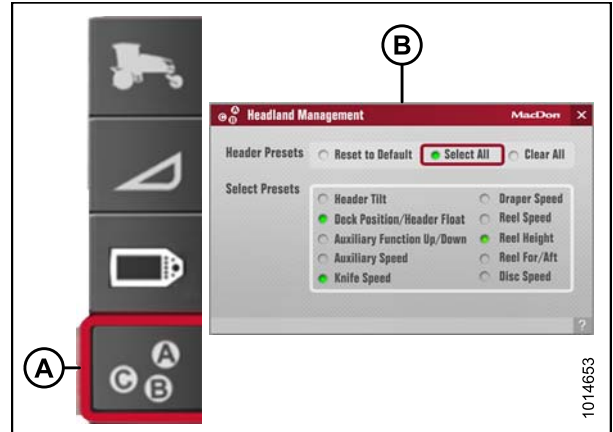


Figure 2.29: One-Touch-Return Icon and One-Touch-Return Menu List

To program the One-Touch-Return buttons, press and hold button "A", "B", or "C" on the GSL handle for 3 seconds until an audible tone is heard, indicating the current header settings are saved to that button.

The One-Touch-Return buttons will always save header height settings, but you can also save the following settings for the DWA:

- DWA up/down
- DWA speed

Refer to your windrower operator's manual for more detailed One-Touch-Return information.



Figure 2.30: One-Touch-Return Buttons on the GSL

2.6.2 Setting Draper Pressure Alarm

1. Press the scroll knob (A) on the Harvest Performance Tracker (HPT) or the select button (B) on the ground speed lever (GSL) while in any run screen to open the QuickMenu system.

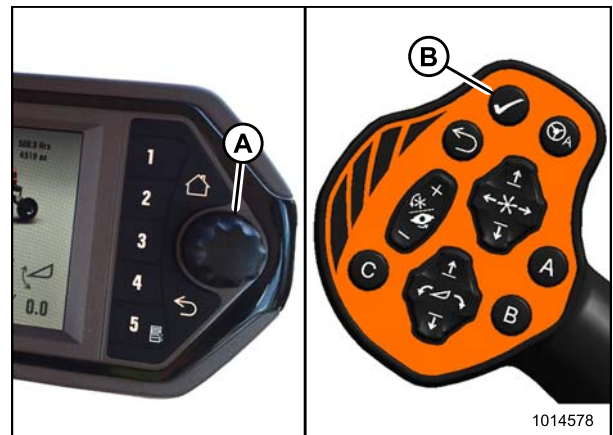


Figure 2.31: HPT Scroll Knob and GSL Select Button

ASSEMBLY/SETUP INSTRUCTIONS

2. Scroll to place the red cursor over the DWA draper pressure icon (A).



Figure 2.32: QuickMenu / Draper Pressure Alarm

3. Adjust alarm setpoint (B) to desired value by scrolling until the pressure reaches the desired alarm point. Alarm can also be turned off completely by scrolling to the right-hand end of the pressure graph. The display replaces the digital value with three dashed lines, indicating that it's possible to adjust the alarm setpoint value.

Refer to your windrower manual for more detailed alarm setting information.



Figure 2.33: QuickMenu / Draper Pressure Alarm

3 Operation

3.1 Operational Safety

CAUTION

To avoid bodily injury:

- Review the safety sections of your windrower and header operator's manuals.
- Keep all shields in place.
- Engage the deck safety pin when deck is raised fully for transport, service, and storage—or before going under deck for any reason.
- Keep away from moving draper and rollers.
- Keep clear of the deck while it is being raised or lowered.

3.2 Engaging the Deck Safety Pin

Engage the deck safety pin as follows:

1. Raise the Double Windrow Attachment (DWA) deck.
2. Push pin (A) inward until both roll pins (B) are inside the channel. Rotate the pin (A) 90 degrees.

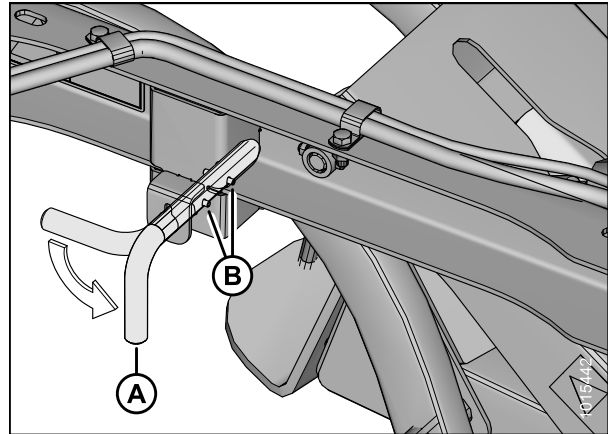


Figure 3.1: DWA Deck Safety Pin

3.3 Raising and Lowering the Deck

NOTE:

Use extra caution when raising the deck for the first time. The deck rotates as it rises and lowers, and the backsheet folds onto the deck. Make sure the deck and backsheet are not interfering with windrower parts or the forming shield. If interference does occur the proximity sensor will need to be adjusted. Refer to Section [3.3.2 Adjusting the Proximity Sensor, page 29](#).

DWA raise and lower can be controlled in three ways:

1. Raise and lower the DWA deck by using the reel raise button (A) and the reel lower button (B) respectively on the ground speed lever (GSL). The operator can interrupt the raising and lowering of the deck by letting go of the buttons.
2. Raise the DWA deck by pressing button (A) or lower the deck by pressing button (B) on the operator's console. The operator can interrupt the raising and lowering of the deck by letting go of the buttons. The operator can interrupt the raising and lowering of the deck by letting go of the buttons.

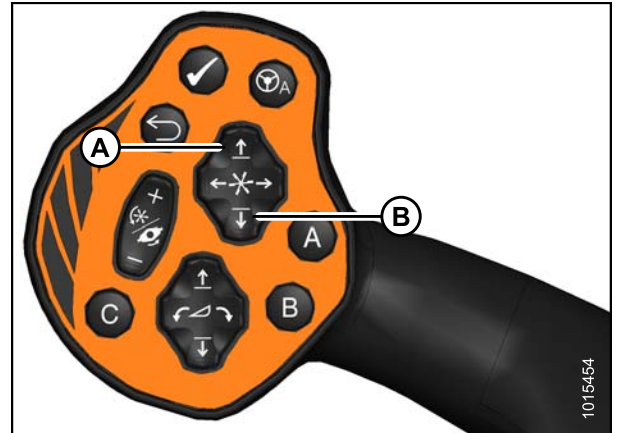


Figure 3.2: GSL

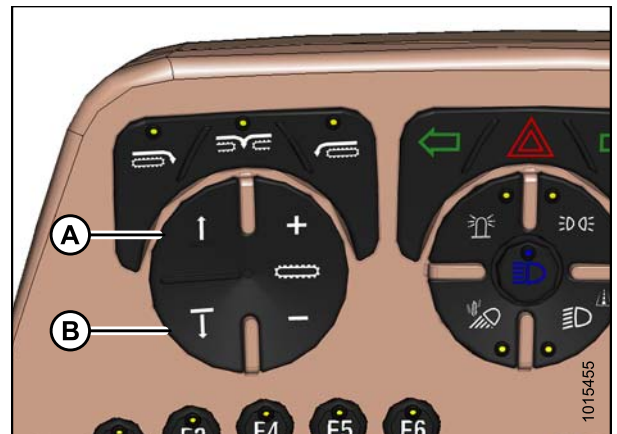


Figure 3.3: Operator's Console

OPERATION

3. Raise and lower can be controlled with the GSL buttons A, B, and C. Unlike the control through GSL or console, up and down will be express, meaning completely up or down. Refer to Section [2.6.1 Setting One-Touch-Return Buttons \(A, B, C\)](#), page 22.



Figure 3.4: GSL – One-Touch-Return

The DWA's deck height is displayed on the Harvest Performance Tracker (HPT) as shown. The DWA is normally either up or down, so only one of these will show on screen at any given time. It is possible to stop raising or lowering the deck by letting go of the buttons. In this case, the DWA defines up or down as disengaged or engaged respectively.



Figure 3.5: Harvest Performance Tracker (HPT)

3.3.1 Adjusting the Deck Lift Speed

Finding the proper Double Windrow Attachment (DWA) deck lift speed is essential to its proper operation. The deck must lift fast enough to clear a windrow, and slow enough not to stop abruptly against the bottom of the windrower.

The deck lift valve uses an hex socket screw (A) to lock the adjusting knob into position. Loosen locking screw enough to allow the adjustment valve knob (B) to turn. Do **NOT** remove screw. Tighten screw after adjustments.

Refer to the following to adjust the deck lift speed:

- If the deck lift speed is too fast, turn the adjuster valve knob (B) to the right.
- If the deck lift speed is too slow, turn the adjuster valve knob (B) to the left.

NOTE:

The lift valve only restricts the lift speed of the DWA. The DWA deck drop speed remains constant.

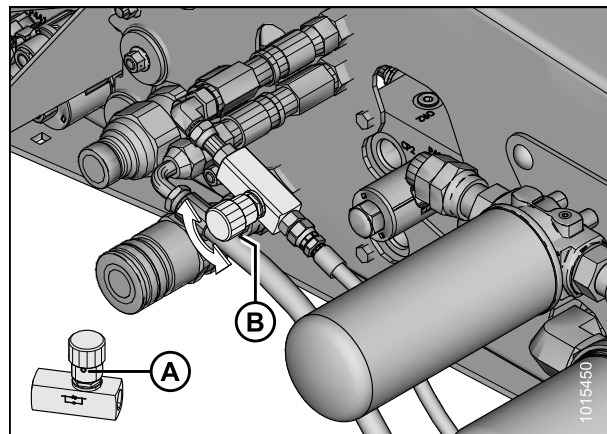


Figure 3.6: Deck Lift Speed Valve

3.3.2 Adjusting the Proximity Sensor

To adjust the proximity sensor, follow these steps:

The draper shuts off automatically when the deck is raised about 2/3 of the way. If the deck does not shut off soon enough (resulting in backsheet touching draper before it shuts off), the proximity sensor (A) at the linkage needs to be lowered:

NOTE:

Carefully adjust the proximity sensor when running up the DWA for the first time.

1. Loosen screws (B) to lower the switch.
2. Tighten screws (B) when the adjustment is complete.

NOTE:

Do not overtighten the screws or the sensor will not work.

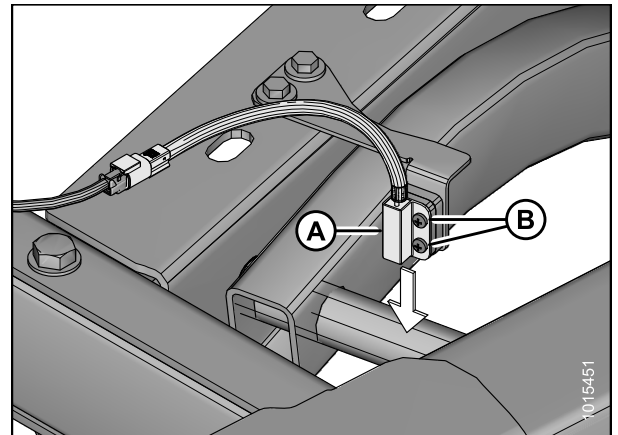


Figure 3.7: Proximity Sensor

3.4 Setting Draper Speed

NOTE:

The first time the Double Windrower Attachment (DWA) is run up on the windrower, it is likely that the default speed will be zero. This means the header may be engaged, but the DWA deck may not be turning. Increase the speed, and check that the deck has started to turn.

DWA draper speed can be controlled in three ways:

1. Adjust draper speed by using the reel fore/aft buttons on the GSL. Press the reel fore button (A) to increase speed and the reel aft button (B) to decrease speed.
2. Adjust draper speed from the operator's console by pressing button (A) to increase the speed or pressing button (B) to decrease the speed.
3. Speed can be controlled with the GSL buttons A, B, and C. Refer to [Section 2.6.1 Setting One-Touch-Return Buttons \(A, B, C\), page 22](#).

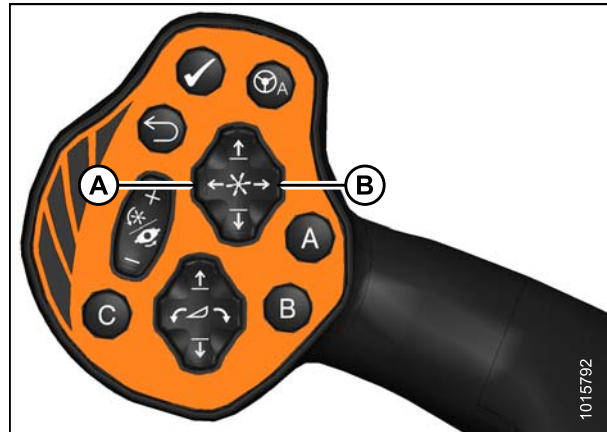


Figure 3.8: GSL

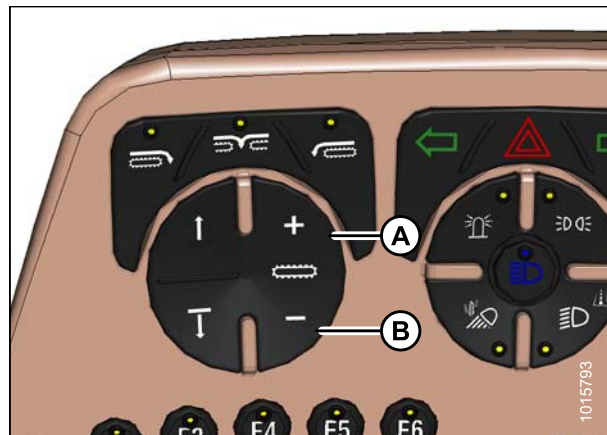


Figure 3.9: Operator's Console



Figure 3.10: GSL – Headland Management

OPERATION

4. The DWA's draper speed is displayed on the Harvest Performance Tracker (HPT) as shown.



Figure 3.11: Harvest Performance Tracker (HPT)

3.5 Adjusting Deck Angle

The Double Windrow Attachment (DWA) deck angle can be adjusted to maximize performance and prevent contact with the windrower.

To adjust the deck angle relative to the right drive tire, refer to [3.5.1 Adjusting Deck Angle Relative to the Drive Tire, page 32](#).

To adjust the deck angle relative to the ground, refer to [3.5.2 Adjusting Deck Angle Relative to the Ground, page 33](#).

NOTE:

If set up with an R-Series Rotary Disc Header, the DWA deck will only be in its most forward position when the windrower is running. The lift cylinder is single acting and not pressurized when the windrower is shut off. When the windrower is running, a supply of low pressure oil moves the deck forward.

3.5.1 Adjusting Deck Angle Relative to the Drive Tire

The deck angle, relative to the right-hand drive tire, is adjustable with turnbuckle (A).

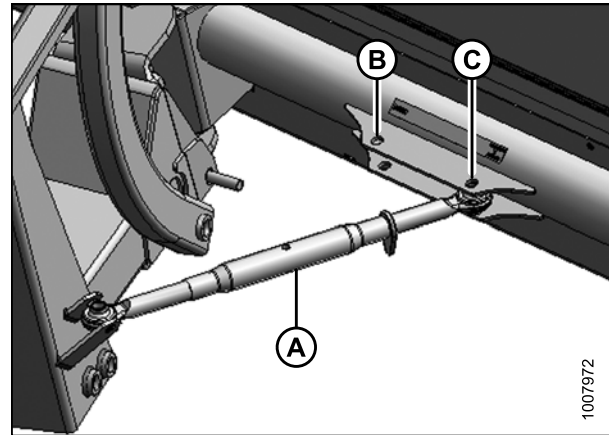


Figure 3.12: Deck Angle Turnbuckle

A - Turnbuckle

B - Use for R-Series Header

C - Use for A-Series

1. Adjust the turnbuckle length so the space (A) between the deck and the right-hand drive tire is approximately 100 mm (4 in.).

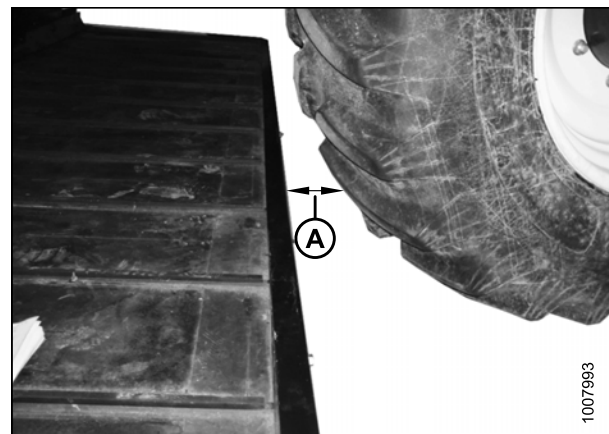


Figure 3.13: Distance from Deck to Tire

OPERATION

To adjust the deck angle relative to the right-hand drive tire, follow these steps:

2. Loosen the locking tab (B) on the adjustable turnbuckle.
3. Rotate the center tube (A) to the desired length.

NOTE:

The turnbuckle length should be approximately:

- 530 mm (21 in.) long for an R-Series Rotary Disc Header
- 630 mm (25 in.) long for an A-Series Auger Header

4. Retighten the locking tab against the center tube.

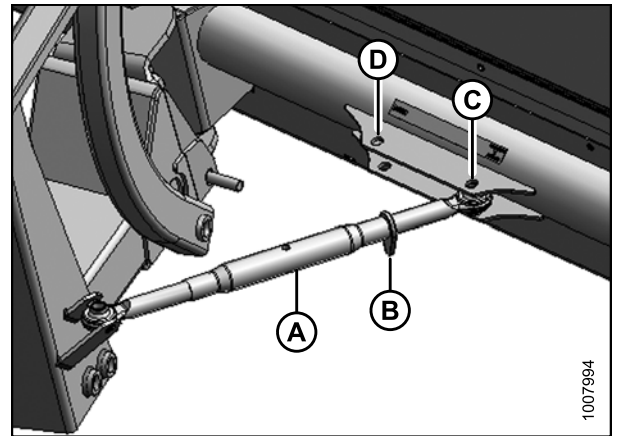


Figure 3.14: Adjust Turnbuckle

A - Center Tube
B - Locking Tab
C - Connection Point for A-Series Header
D - Connection Point for R-Series Disc Header

3.5.2 Adjusting Deck Angle Relative to the Ground

The deck angle should be horizontal or at a slight incline relative to the ground. Distance (A) should be equal to or greater than distance (B).

- If used with an R-Series Rotary Disc Header in lighter crop, distance (A) should be equal to distance (B).
- If the crop needs to be thrown farther, increase distance (A).

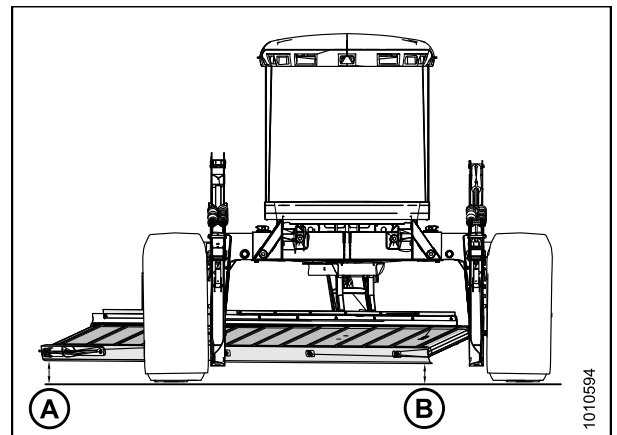


Figure 3.15: DWA Deck

To adjust deck angle:

1. Loosen the four 3/4 in. bolts (A).
2. Loosen jam nut (C).
3. To increase distance between the ground and the deck, tighten nut (B).
4. To decrease distance between the ground and the deck, loosen nut (B).
5. After adjustment, tighten jam nut (C).
6. Torque the four 3/4 in. bolts (A) to 332 N·m (245 ft·lbf).

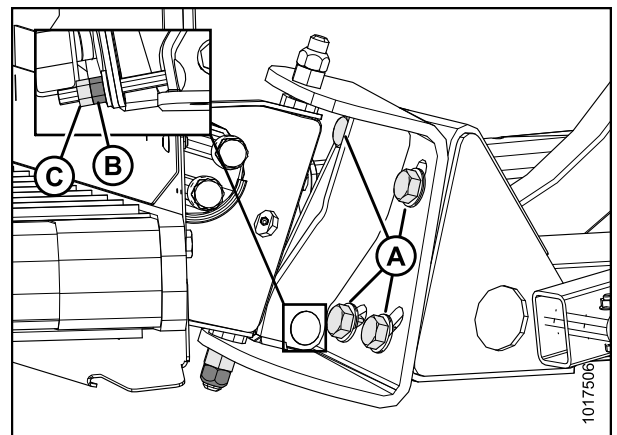


Figure 3.16: Deck Pivot

3.6 Adjusting Deck Height

The deck should never touch the ground or excessive wear could occur to some deck components.

If the deck is too low to the ground, raise it as follows:

1. Lower linkage by fully extending cylinder.
2. Move bottom pivot pin to lower position (A).

This will raise the front of the deck approximately 100 mm (4 in.).

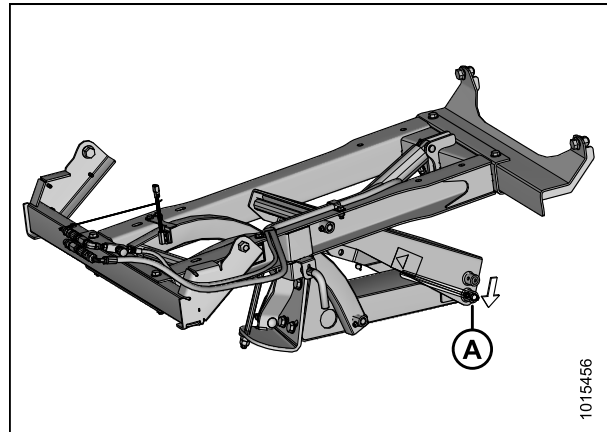


Figure 3.17: DWA Linkage

3.7 Positioning the Conditioner Forming Shield

To adjust the position of the conditioner forming shields, follow these steps:

Make sure the forming shield (B) is high enough to clear the deck when it is lowered (A).

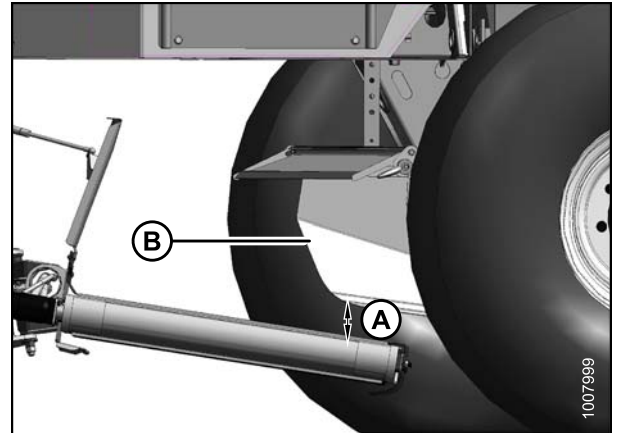


Figure 3.18: Deck Lowered

A - Distance between Forming Shield (B) and the Deck

1. Remove the hairpin (A).
2. Adjust strap (B) to achieve the ideal position.

NOTE:

The forming shield should be as low as possible without interfering with deck.

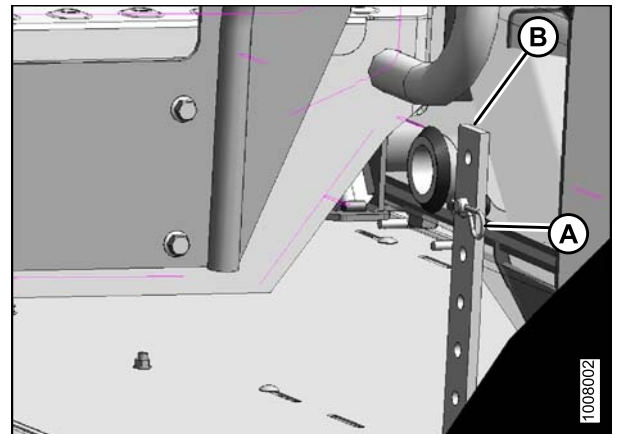


Figure 3.19: Forming Shield

3. Adjust the left-hand side deflector (B) to direct crop towards the inboard side of the DWA back sheet (C).

NOTE:

If center delivering, the left-hand deflector (B) can be moved inward to form a narrower windrow.

4. Adjust the right-hand side deflector to the widest position without affecting crop flow. This is where the deck is farthest from the conditioner rolls.

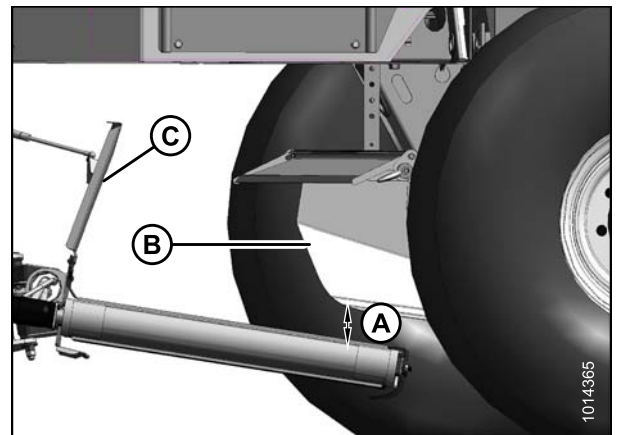


Figure 3.20: Deck Lowered

OPERATION

5. Adjust the rear deflector baffle (A) so crop flow (B) does not interfere with the deck when fully raised.

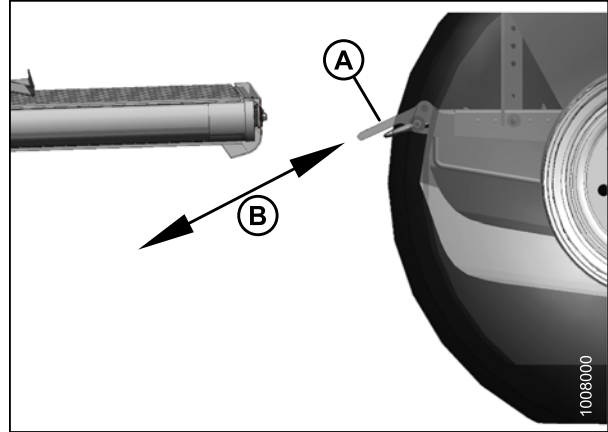


Figure 3.21: Deck Raised

NOTE:

The fins (B) under the forming shield can interfere with crop flow, especially with an R-Series Header in light crop. If necessary remove fins (B).

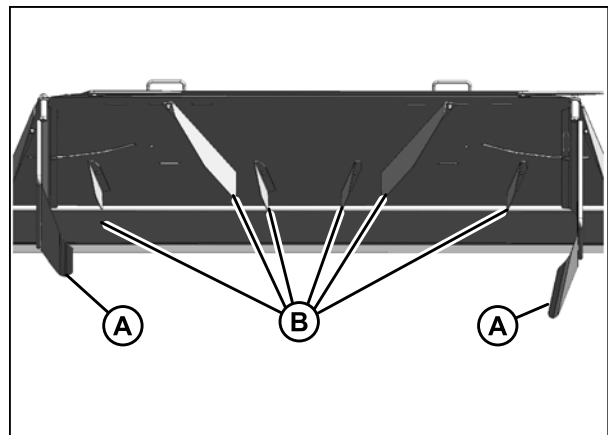


Figure 3.22: Fins Under Forming Shield

A - Side Deflector

B - Fins Under Forming Shield

3.8 Positioning the Conditioner Rolls

The gap between the conditioner rolls needs to be small enough to properly throw the crop onto the Double Windrow Attachment.

The gap size depends on the crop type and yield.

- A gap that is too small for a heavy crop will use excessive engine power and be hard on affected components.
- A gap that is too large will not throw the crop with enough velocity to reach the side delivery deck.

Refer to the conditioner roll adjustment procedure in your A-Series or R-Series operator's manual.

3.9 Operating Recommendations

3.9.1 Operating with 15-, 16-, 18-, 20-Foot Headers

Refer to the following operating recommendations when using the Double Windrow Attachment (DWA) with 15–20 ft. headers:

- On the first pass, raise the side delivery system and deposit the crop between the wheels of the windrower.
- On the return pass, lower the side delivery system and deposit the crop beside the previously laid windrow.
- With a center-delivered crop, the position of the crop can be adjusted by using the side deflectors on the forming shields.
- With a side-delivered crop, the position of the crop can be adjusted by adjusting the draper speed (faster draper speeds will throw the crop farther).

3.9.2 Operating with 25- and 30-Foot Headers

Refer to the following operating recommendations when using the Double Windrow Attachment (DWA) with 25–30 ft. headers:

- When using 25- and 30-foot headers on light crop, the side delivery system can be used to lay windrows side by side.

NOTE:

Adjust the position of a side delivered crop by varying the draper speed.

- When using 25- and 30-foot headers on heavy crop, double windrowing may not be desired. Raise the DWA deck to lay single windrows between the windrower's wheels.

3.9.3 Operating with an R-Series Rotary Disc Header

Because the conditioner rolls on an R-Series Header are farther ahead than all other headers, delivering light crop from the conditioner rolls to the side delivery deck on the Double Windrow Attachment (DWA) may require special attention.

The following three areas can affect crop flow to the deck:

Crop flow from the cutterbar to the rolls

- Header cut width must be kept as full as possible on the right-hand side. Any less than 75% may have adverse effects on feeding.
- Feed plates must be installed for appropriate crop. They are required for forage but not for alfalfa (refer to the header operator's manual).
- Higher ground speeds will usually result in better crop flow from the conditioner rolls to the deck. Ground speed should be a minimum of 10 km/hr (6 mph) for light crops.
- Disc speed must be within the recommended range for the specific crop/yield (refer to the header operator's manual).

Crop flow from the conditioner rolls to the forming shield

- The rear baffle on the R-Series Header should be in the uppermost position. However, it may need to be lowered for center windrowing.
- Remove the fins on the rear baffle to prevent interference with the crop flow.
- The crop trajectory arc is higher with a steeper header angle. Header angle should be set such that the crop is projected at a maximum arc height without excessive contact with the top forming shield.
- It may be possible to shoot crop above the forming shield with extreme header angle and rear baffle positions.
- In rocky conditions where a DWA is necessary, a high skid shoe kit or adjustment to gauge rollers may be required to achieve correct stubble height while maintaining proper crop trajectory.
- Header height affects the header angle. Ideally the lift linkage should be fully down at all times.
- The roll gap should be small enough to properly grab the crop and throw it.
- The roll speed is mechanically tied to the disc speed and can affect how fast the crop is projected. Roll speed should be in the recommended range.

Forming shield settings

- Make sure forming shield (A) is installed correctly with bracket (B).
- Buildup of sticky crop residue on deflector sliding surfaces should be periodically removed.
- Refer to [3.7 Positioning the Conditioner Forming Shield, page 35](#).

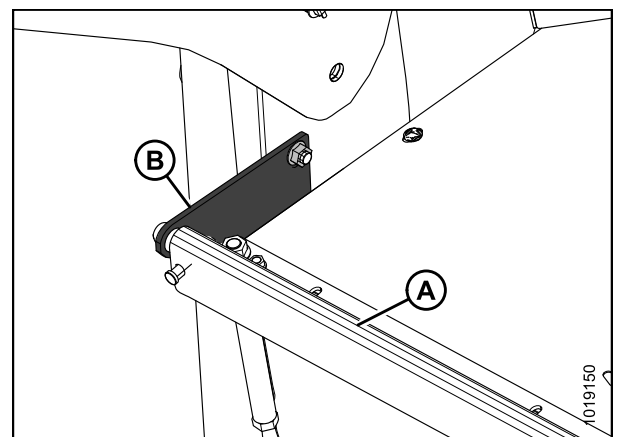


Figure 3.23: Forming Shield

4 Maintenance and Servicing

4.1 Draper Maintenance

4.1.1 Adjusting Draper Tension

Adjust the draper tension enough to prevent slipping and eliminate sagging.

Set draper tension as follows:

1. Check that draper guide (rubber track on underside of draper) is properly engaged in groove of drive roller, and that idler roller is between the guides.
2. Turn bolt (A) clockwise (tighten).

NOTE:

The white indicator bar (B) will move to the right, indicating the draper is tightening. Tighten until the white indicator sits halfway within the window.

IMPORTANT:

To avoid premature failure of the draper, draper rollers, and/or tightener components, do not operate when the white tension indicator bar is not visible.

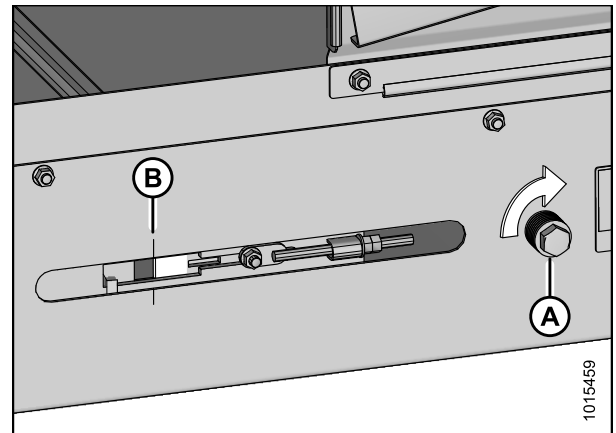


Figure 4.1: Draper Tension

4.1.2 Checking the Draper Tracking

Draper tracking needs to be checked when the draper is first run up otherwise damage to the draper can occur. Refer to [4.1.3 Adjusting Draper Tracking, page 41](#) to adjust the tracking.

4.1.3 Adjusting Draper Tracking

The draper deck has one fixed drive roller and one spring-loaded idler roller. The spring loaded idler roller is located at the same end of the deck as the draper tensioner. Both rollers can be aligned with adjuster rods to adjust draper tracking.



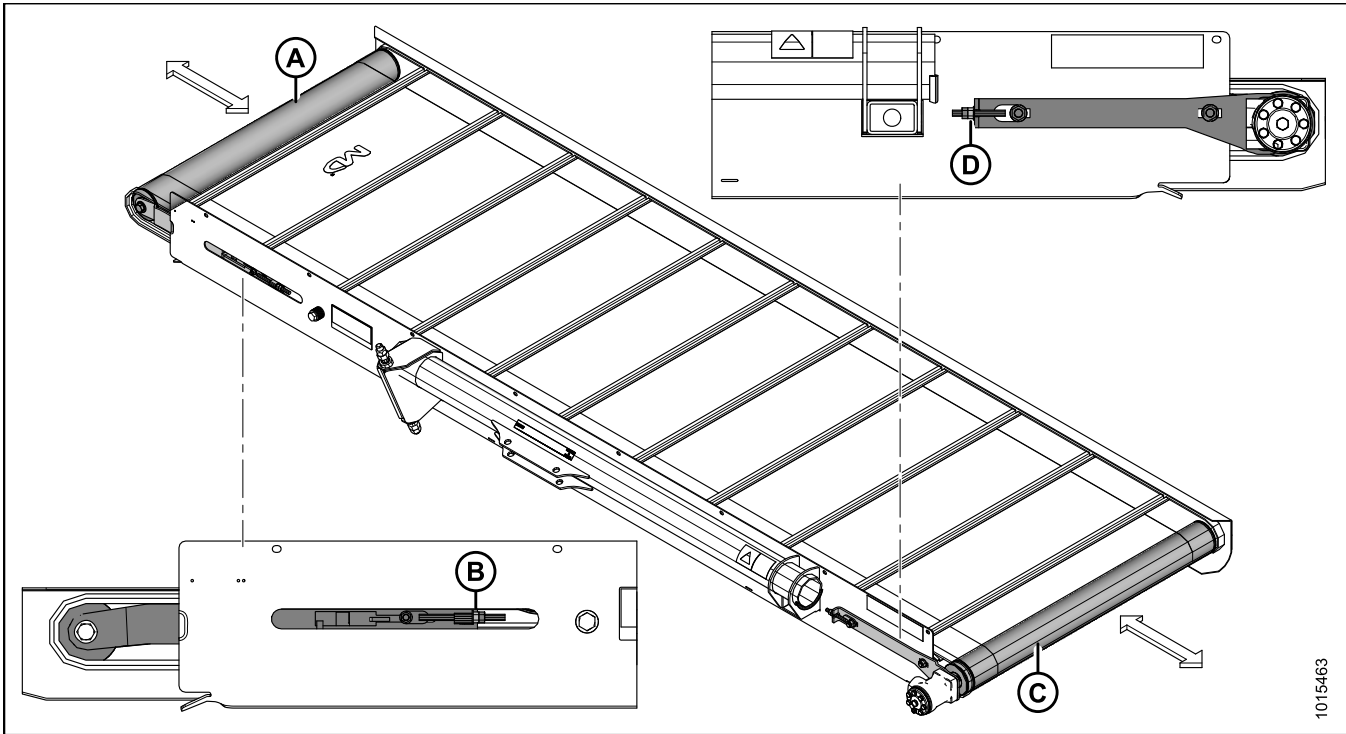
DANGER

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

If the draper is tracking incorrectly, use the following table to adjust the rollers:

MAINTENANCE AND SERVICING

Table 4.1 Draper Tracking Adjustments



Tracking	At Location	Adjustment	Method
Rearward	Idler roller	Move roller (A) outward	Tighten nut (B)
Forward		Move roller (A) inward	Loosen nut (B)
Rearward	Drive roller	Move roller (C) outward	Tighten nut (D)
Forward		Move roller (C) inward	Loosen nut (D)

To adjust tracking on the idler roller side:

1. Loosen the two nuts (A).
2. Adjust nut (B) according to Table [4.1 Draper Tracking Adjustments, page 42](#).
3. Secure the idler roller by tightening the two nuts (A).
4. After adjusting draper tracking, readjust the draper tension. Refer to [4.1.1 Adjusting Draper Tension, page 41](#).

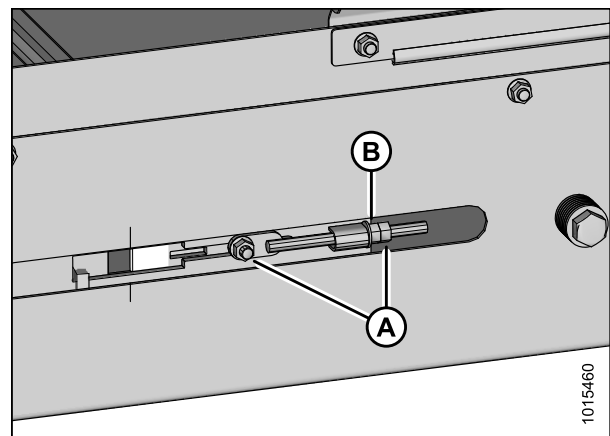


Figure 4.2: Idler Roller

To adjust tracking on the drive roller side:

1. Loosen the three locking nuts (A).
2. Adjust nut (D) according to Table [4.1 Draper Tracking Adjustments, page 42](#).
3. Tighten the three nuts (A) to secure the drive roller.
4. After adjusting draper tracking, adjust the draper tension. Refer to [4.1.1 Adjusting Draper Tension, page 41](#).

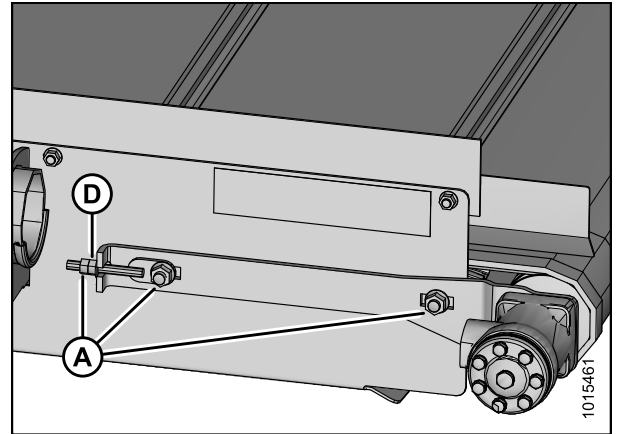


Figure 4.3: Drive Roller

4.1.4 Replacing Draper

DANGER

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

1. Raise the deck up enough to increase the space between the deck and the right-hand drive tire.
2. Remove the front skid (A) by removing five nuts (B).
3. Loosen the draper tension, and push the idler roller inward as far as possible.

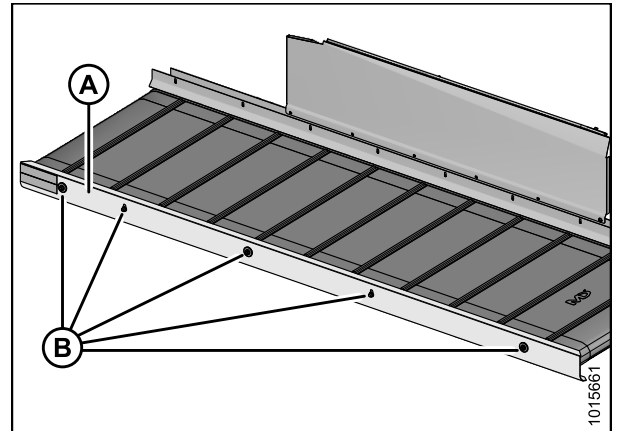


Figure 4.4: Front Skid

4. Disconnect turnbuckle (A) and allow the deck to rotate rearward to increase the space between the deck and tire.
5. Pull off the old draper and slide on the new one. The draper is bidirectional so orientation does not matter.
6. Tension the draper. Refer to [4.1.1 Adjusting Draper Tension, page 41](#).
7. Reinstall turnbuckle (A) and the front skid.
8. Adjust the front skid to achieve a 1.5–3.0 mm (1/16–1/8 in.) gap to draper.
9. Run the new draper and check alignment. Adjust alignment if necessary.
10. Recheck draper tension after it has run for a few hours.

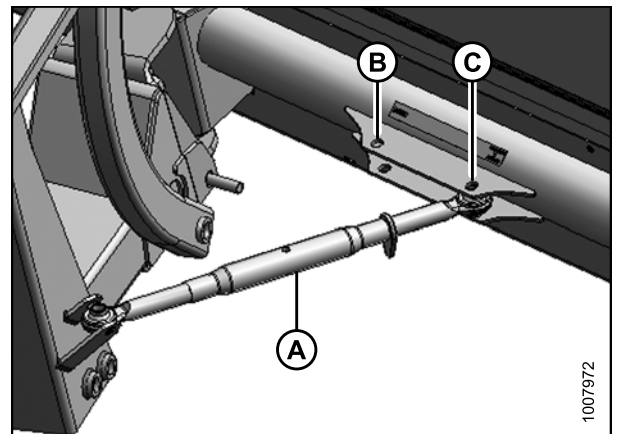


Figure 4.5: Deck Angle Turnbuckle

4.1.5 Adjusting Front Skid

To adjust the front skid (A) follow these steps:

1. Loosen five nuts (B) on the front of the skid.

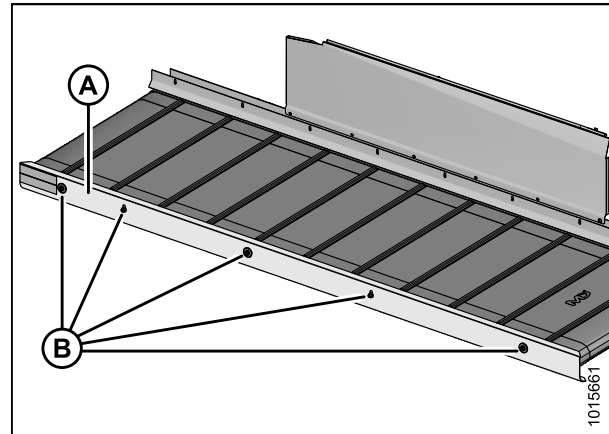


Figure 4.6: Draper Deck Front Skid

2. Adjust the front skid (A) so skid height (C) is 1.5–3 mm (1/16–1/8 in.) above the draper.

NOTE:

Improper skid height can result in draper wear or excessive crop build up.

- Constant contact between the skid and draper will cause excessive heat and melt the draper.
- If gap is too large, crop can enter the draper.

3. Tighten nuts (B).

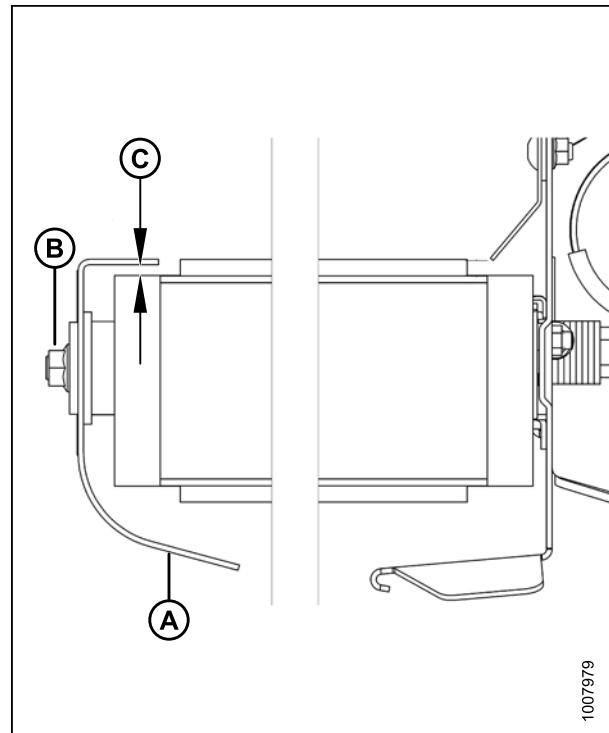


Figure 4.7: Draper Deck Cross Section

4.1.6 Adjusting Rear Deflector

The rear deflector (A) prevents crop from entering inside draper. To adjust the rear deflector, follow these steps:

1. Loosen all eight nuts (B) along the length of the deck.
2. Set the deflector height (C) to be 1.5–8 mm (1/16–5/16 in.) above the draper.
3. Tighten nuts (B).

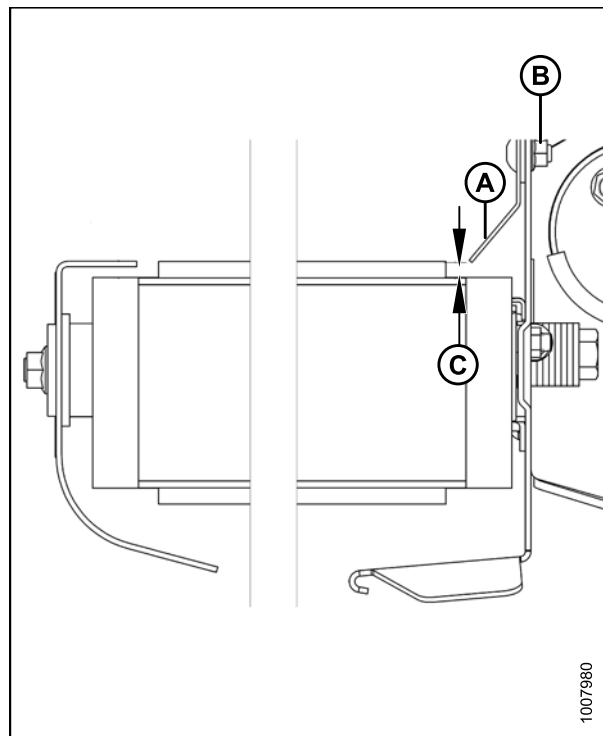


Figure 4.8: Draper Deck Cross Section

4.1.7 Maintaining the Draper Roller

The draper rollers have non-greaseable bearings. The external seal should be checked every 200 hours or more frequently in sandy conditions to obtain the maximum bearing life. Remove front skid to inspect seals.

Removing and Reinstalling the Drive Roller



DANGER

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

MAINTENANCE AND SERVICING

To remove the drive roller from the deck, follow these steps:

1. Raise deck, and engage safety pin (A).
2. Remove front skid, loosen and remove draper. Refer to [4.1.5 Adjusting Front Skid, page 44](#).

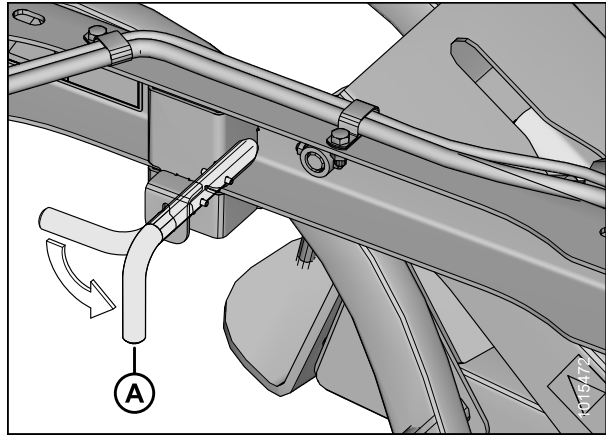


Figure 4.9: Safety Pin

3. Loosen the two jam nuts (A) and two set screws (B).

NOTE:

The second jam nut and set screw are on the opposite side and are not visible in this illustration.

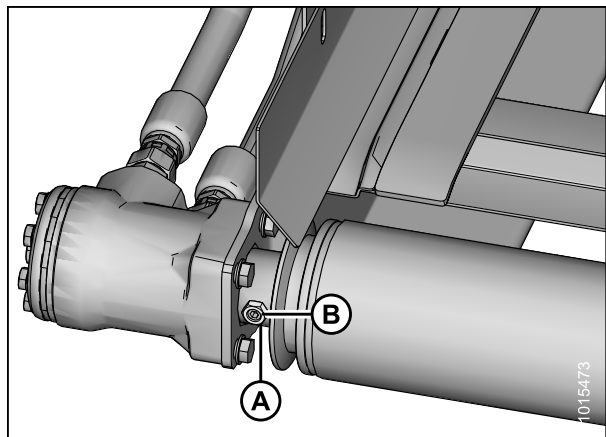


Figure 4.10: Draper Drive Roller

4. Remove the drive roller (A) by removing bolt and washer (B) at end of the roller.
5. Slide the drive roller off the motor shaft.
6. If you need to repair the bearing or seal, refer to [4.1.8 Replacing Draper Roller Bearing/Seal, page 48](#).

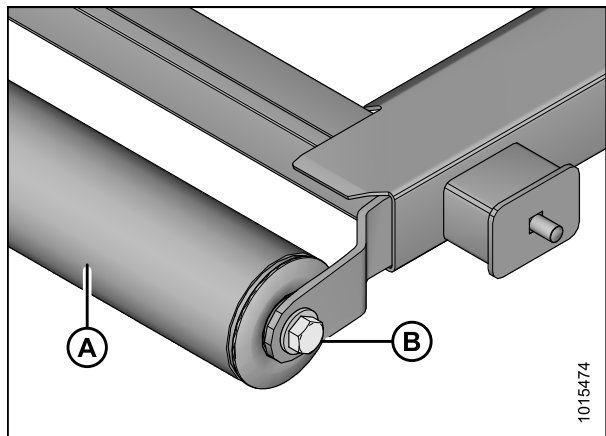


Figure 4.11: Draper Drive Roller

MAINTENANCE AND SERVICING

To reinstall the drive roller on the deck, follow these steps:

1. Slide the drive roller onto the motor shaft. Make sure it is fully engaged.

NOTE:

The drive roller should be 33 mm (1-1/3 in.) (A) from the face of the motor.

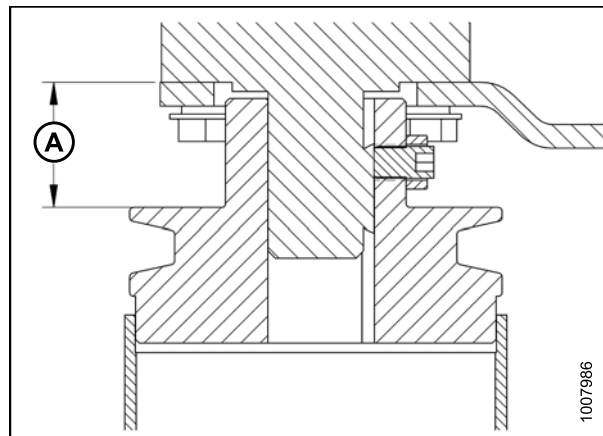


Figure 4.12: Drive Roller Cross Section

2. Install the two set screws (B) and torque to 27 N·m (20 ft·lbf).
3. Install the two jam nuts (A).

NOTE:

The second jam nut and set screw are on the opposite side and are not visible in this illustration.

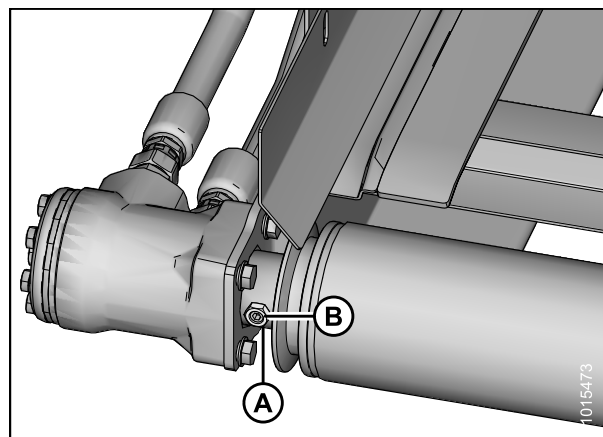


Figure 4.13: Draper Drive Roller

4. Install washer and bolt (B) into drive roller (A) and torque to 95 N·m (70 ft·lbf).

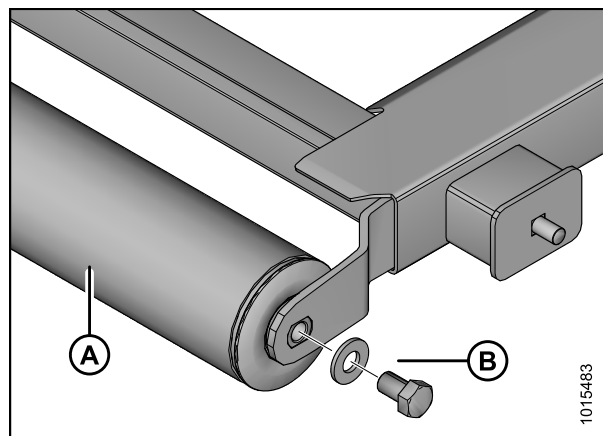


Figure 4.14: Draper Drive Roller

Removing and Reinstalling the Idler Roller



DANGER

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

MAINTENANCE AND SERVICING

To remove the idler roller follow these steps:

1. Raise the deck and engage the safety pin (A).
2. Remove the front skid. Refer to [4.1.5 Adjusting Front Skid, page 44](#).

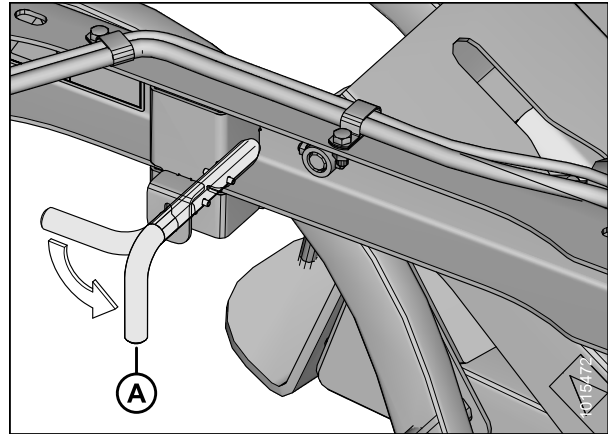


Figure 4.15: Safety Pin

3. Loosen the draper.

NOTE:

Draper does not need to be removed, but removal will ease roller disassembly. Roller removed in illustration.

4. Remove the idler roller (A) by removing bolt and washer (B) at each end of the roller.

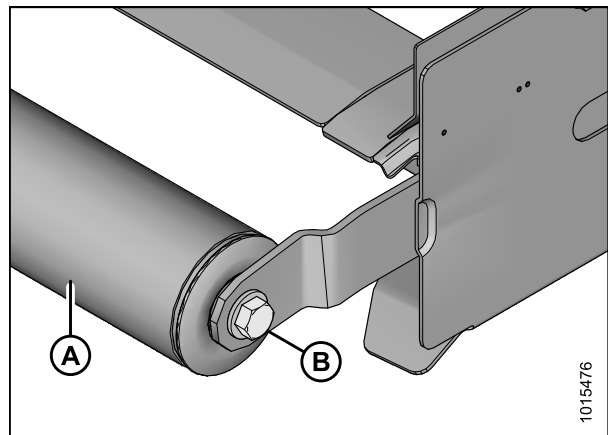


Figure 4.16: Idler Roller

To reinstall the idler roller (A), follow these steps:

1. Reattach bolt and washer (B) at each end of the idler roller (A). Torque bolts to 95 N·m (70 ft·lbf).
2. Tighten the draper. Refer to [4.1.1 Adjusting Draper Tension, page 41](#).
3. Reattach the front skid. Refer to [4.1.5 Adjusting Front Skid, page 44](#).

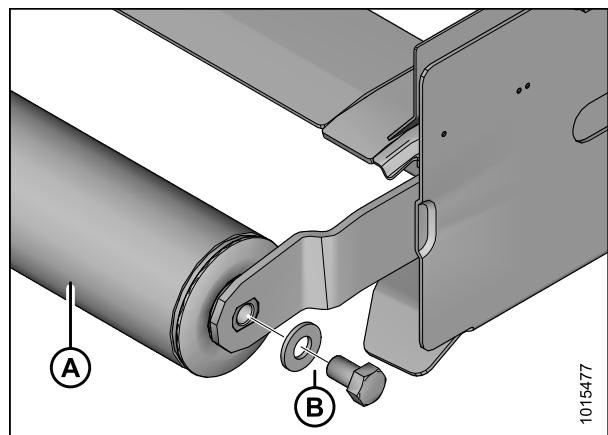


Figure 4.17: Idler Roller

4.1.8 Replacing Draper Roller Bearing/Seal

To replace the draper roller bearing and seal, follow these steps:

1. Remove the roller assembly. Refer to [4.1.7 Maintaining the Draper Roller, page 45](#).

MAINTENANCE AND SERVICING

2. Remove bearing assembly (B) and seal (A) from roller tube (C) as follows:
 - a. Attach a slide hammer (D) to threaded shaft.
 - b. Tap out the bearing assembly.
3. Clean inside the roller tube (C) and check for wear or damage. Replace if necessary.

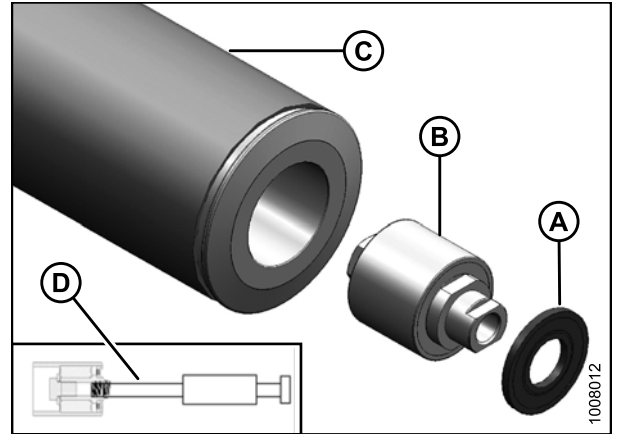


Figure 4.18: Roller Bearing

4. Install the bearing assembly (B) into roller by pushing on the outer race of bearing.

NOTE:

The bearing is fully positioned when the 14 mm (0.55 in.) dimension (D) is achieved.

5. Apply grease in front of the bearing.
6. Install seal (A) into roller by pushing on the outer and inner race of the seal.

NOTE:

The seal is fully positioned when the 3 mm (0.12 in.) dimension (C) is achieved. A flat washer (1.0 in. ID x 2.0 in. OD) works well to push against the seal.

7. Ensure the bearing and seal turn freely.
8. Reinstall roller assembly in to deck.

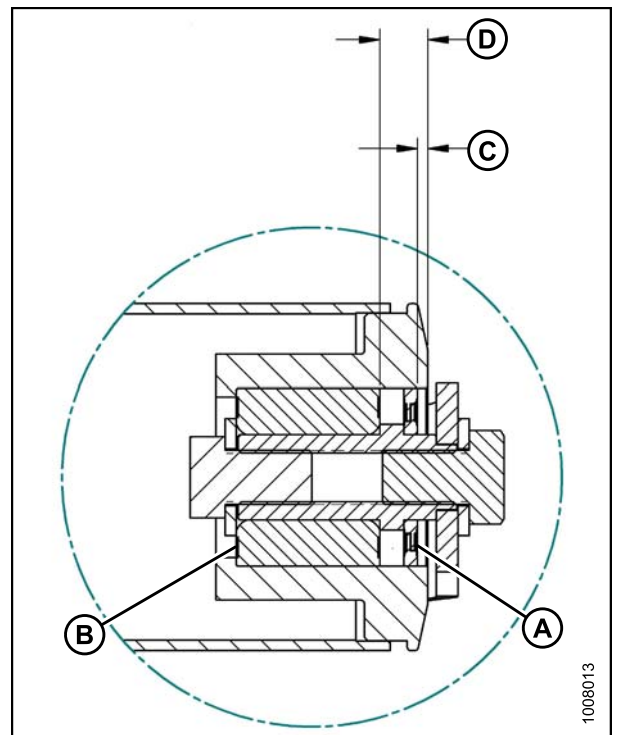


Figure 4.19: Roller Bearing Cross Section

4.2 Lubrication

Grease the following five pivot points (A) every 250 hours and/or at the end of each season.

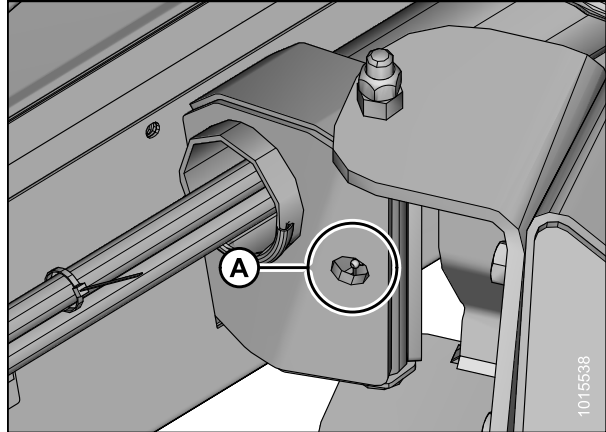


Figure 4.20: Deck Pivot

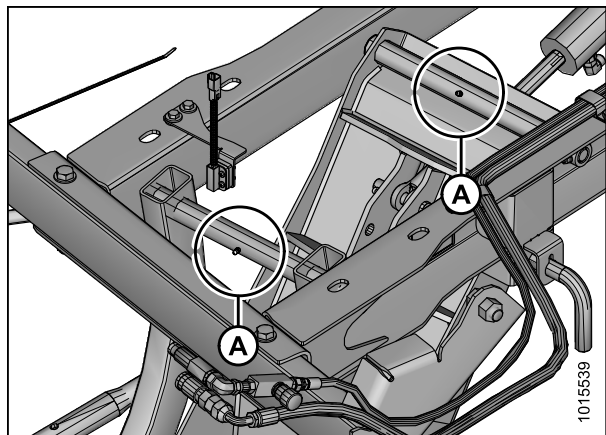


Figure 4.21: Linkage Pivot

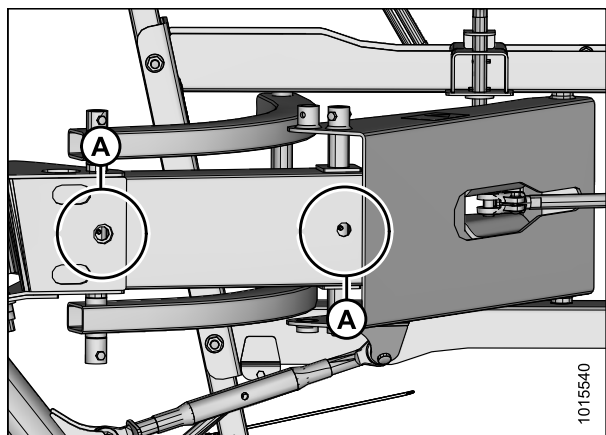


Figure 4.22: Linkage Pivot: Bottom View of DWA

4.3 Hydraulic Schematic

For detailed hydraulic schematics, refer to your windrower technical manual.

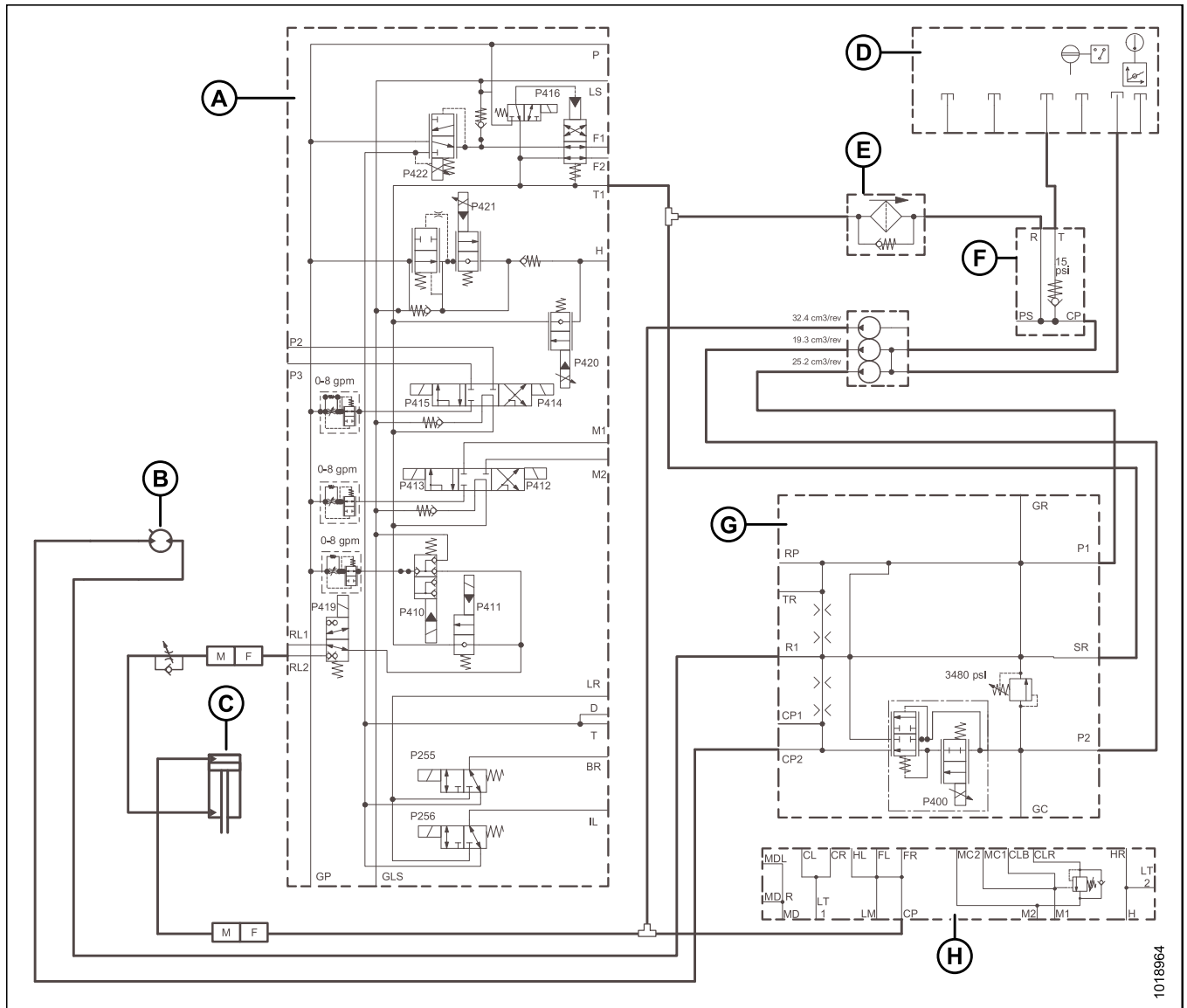


Figure 4.23: DWA Hydraulic Schematic

- A - Lift Manifold
C - DWA Lift Cylinder
E - Hydraulic Filter Element
G - Drive Manifold

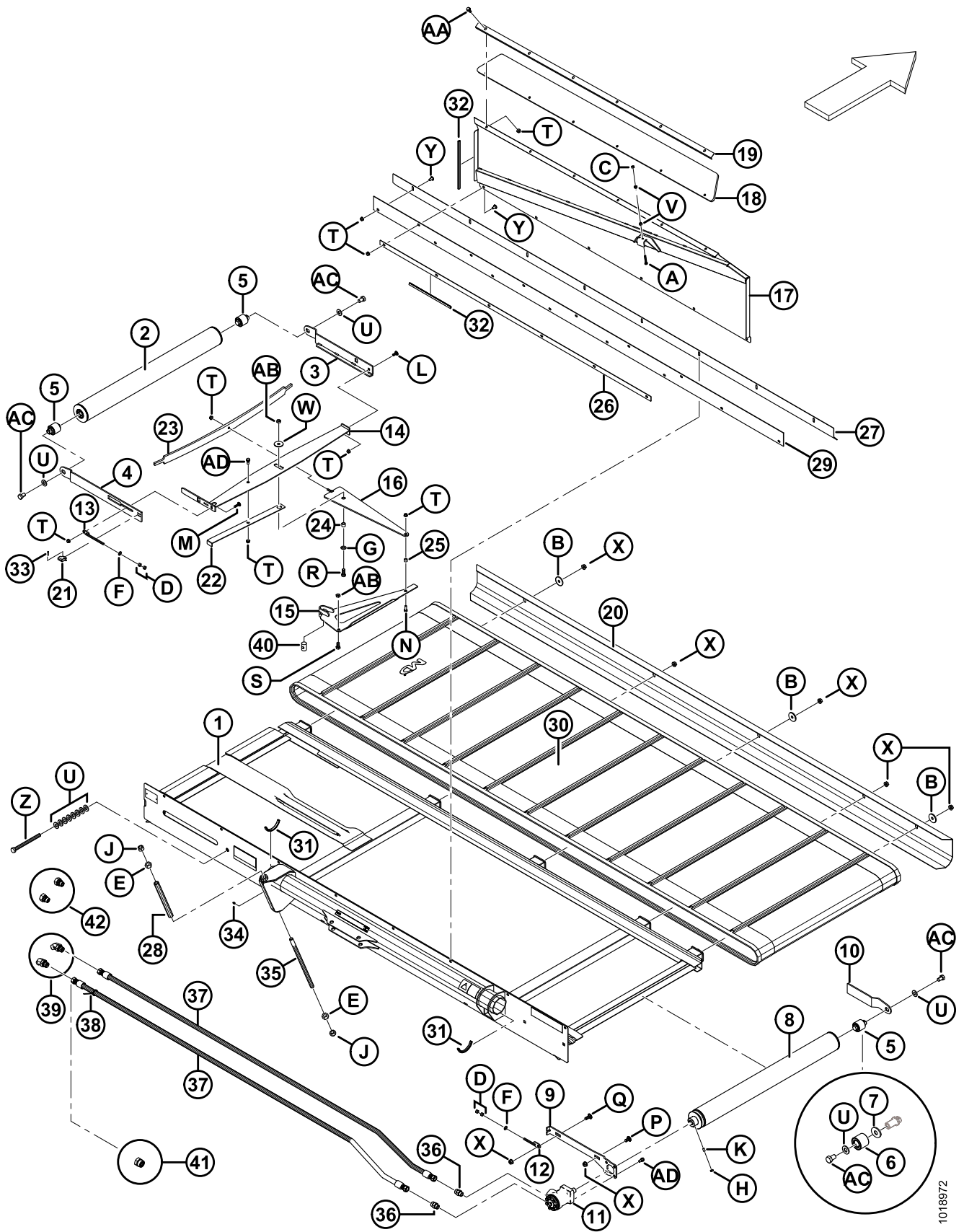
- B - DWA Drive Motor**
D - Hydraulic Tank
F - Inlet Manifold
H - Junction Manifold

5 Repair Parts

This section lists all the replacement parts that can be ordered for a Double Windrow Attachment (DWA) for M1-Series Self-Propelled Windrowers.

When ordering, be sure the complete and proper part number is given.

5.1 Deck, Draper, and Rollers

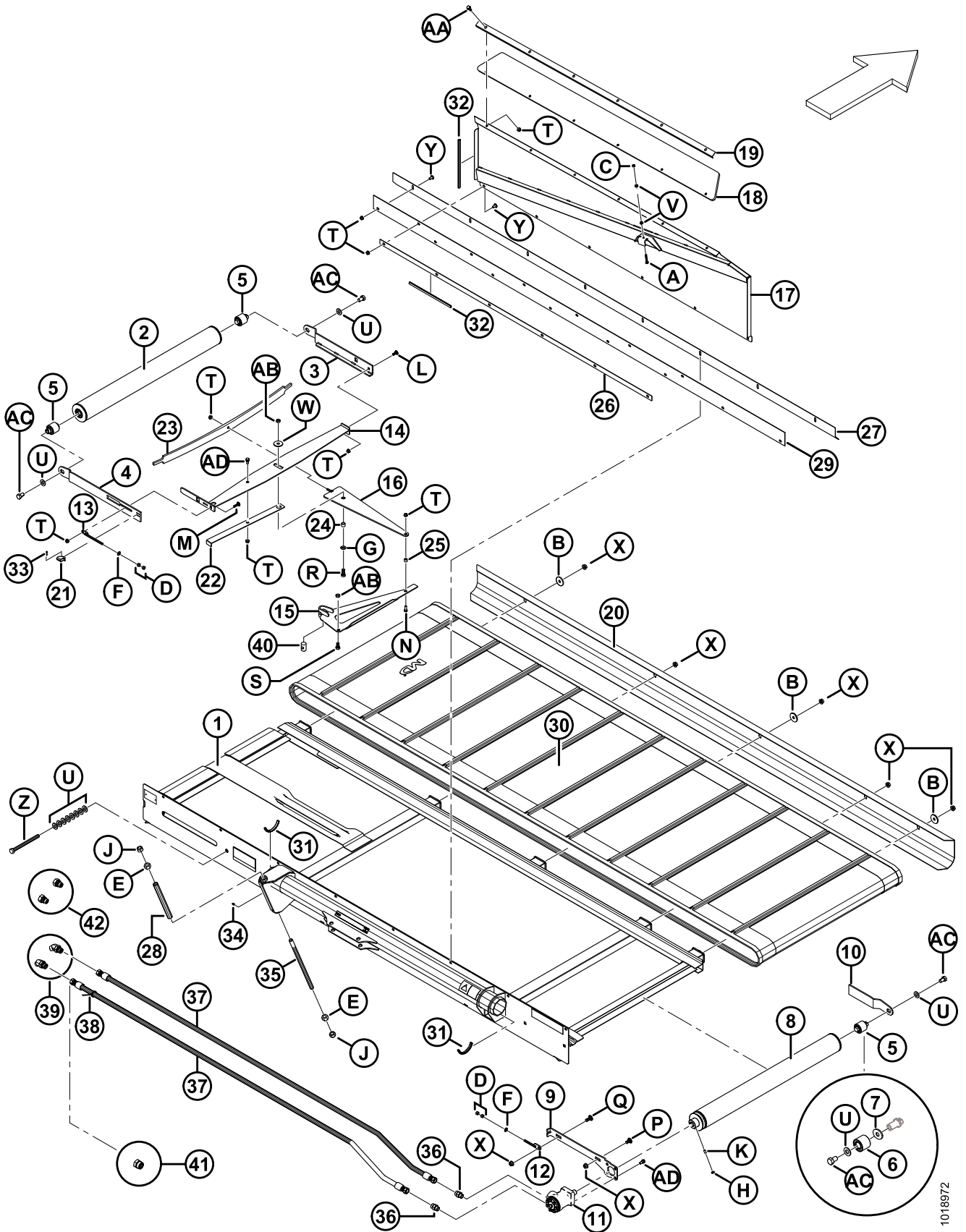


1018972

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	172730	DECK – C/W DECALS	1	
2	144833	ROLLER – IDLER WELDT	1	
3	176000	ARM SUPPORT WELDT FRONT	1	
4	144837	ARM SUPPORT REAR	1	
5	165735	PIN ASSY – DRAPER ROLLER	3	
6	132607	BEARING – DOUBLE ROW BALL 52 OD X 25 BORE	3	
7	120845	SEAL – NILOS LSTO STEEL DISK	3	
8	144494	ROLLER – DRIVE WELDT	1	
9	144501	ARM – SUPPORT, REAR	1	
10	144499	ARM – ROLLER SUPPORT, FRONT	1	
11	176508	MOTOR – HYD DANFOSS	1	
12	145593	ROD – ADJUSTER WELDT	1	
13	145345	ROD – ADJUSTER WELDT	1	
14	120449	MEMBER – LH STABILIZER WELDT	1	
15	220181	BELL CRANK WELDT – LH	1	
16	120462	MEMBER – COMPRESSION WELDT	1	
17	176520	PANEL – REAR WELDT	1	
18	176523	SHIELD – DUST	1	
19	176532	FLANGE	1	
20	172747	SKID – ASSY, C/W DECALS	1	
21	145357	BRACKET – IDLER ARM	1	
22	145428	INDICATOR	1	
23	145548	SPRING – LEAF (TENSIONER)	1	
24	132531	SPACER	1	
25	132532	SPACER	1	
26	144652	BAR – STIFFENER	1	
27	144851	DEFLECTOR – SEAL	1	
28	144558	BUSHING – STEEL	1	
29	144597	SEAL – BACKSHEET	1	
30	165304	DRAPER – ENDLESS 30 FT	1	
31	109791	MOULDING	2	
32	37687	MOULDING	2	
33	18604	PIN – COTTER 3/32 DIA X 3/4 ZP	1	

REPAIR PARTS

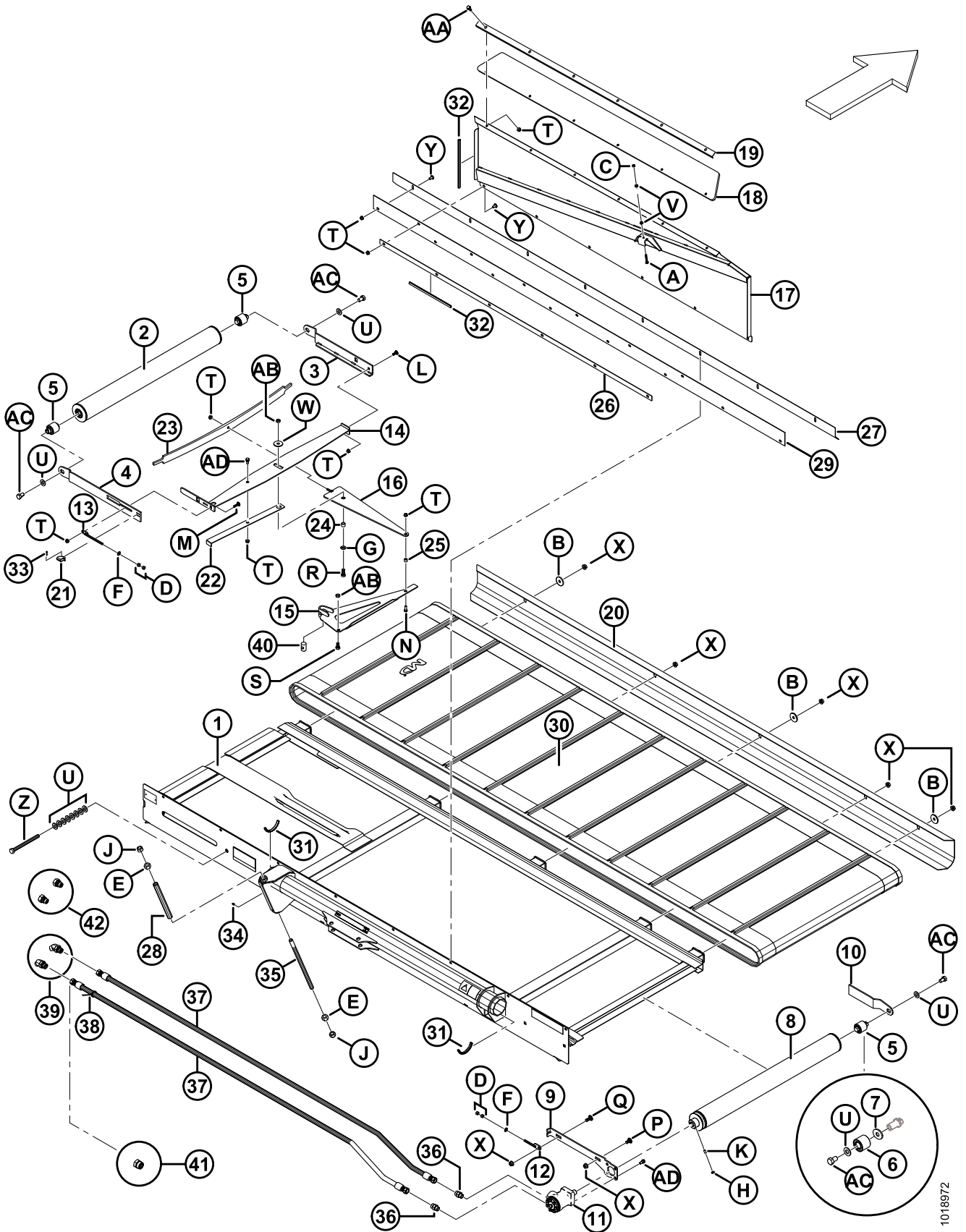


1018972

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
34	18671	FITTING – LUBE 1/4 - 28 UNF	1	
35	176063	SHAFT	1	
36	184461	FITTING – ADAPTER 10 MORFS X 10 MORB	2	
37	176534	HOSE – HYDRAULIC	2	
38	135266	FASTENER – CABLE TIE (LIGHT BLUE)	1	
39	136458	FITTING – ELBOW 45° HYD (M1240 ONLY)	2	
40	145361	NUT – SPECIAL	1	
41	136266	PLUG – HYD SAE, 10 ORFS (SHIPPING ONLY)	2	
42	252525	FITTING – ADAPTER HYD	2	
A	176067	BOLT – HH 5/16 NC X 1.75 TFL GR5 ZP		
B	11695	WASHER – FLAT		
C	18589	NUT – HEX 5/16 - 18 UNC GR5 ZP		
D	18590	NUT – HEX 3/8 - 16 UNC GR5 ZP		
E	18593	NUT – HEX 3/4 - 10 UNC GR5 ZP		
F	18598	WASHER – SAE FLAT 13/32 ID X 13/16 IN OD ZP		
G	18599	WASHER – SAE FLAT 17/32 ID X 1 1/16 IN OD ZP		
H	18664	NUT – HEX JAM 3/8 - 16 UNC GR5 ZP		
J	18689	NUT – HEX LOCK DT .750-10 UNC		
K	18709	SCREW – SET HEX SOC CUP PT 3/8 NC X 5/8 LG		
L	19965	BOLT – RHSN 3/8 NC X 1.0 GR5 ZP		
M	19966	BOLT – RHSN 3/8 NC X 1.25 LG GR5 ZP		
N	20077	BOLT – HEX HD 3/8 NC X 1.0 LG GR5 ZP		
P	21066	BOLT – RHSN 1/2 NC X 1 GR5 ZP		
Q	21471	BOLT – RHSN 1/2 NC X 1.25 GR5 ZP		
R	21491	BOLT – HH 1/2 NC X 1.25 LG GR5 ZP		
S	21575	BOLT – HH 1/2 NC X 1.0 GR 5 ZP		
T	30228	NUT – FLANGE DT SMOOTH FACE 0.375-16 UNC		
U	30441	WASHER – HARDENED		
V	35689	NUT – SPECIAL		
W	42592	WASHER – FLAT		

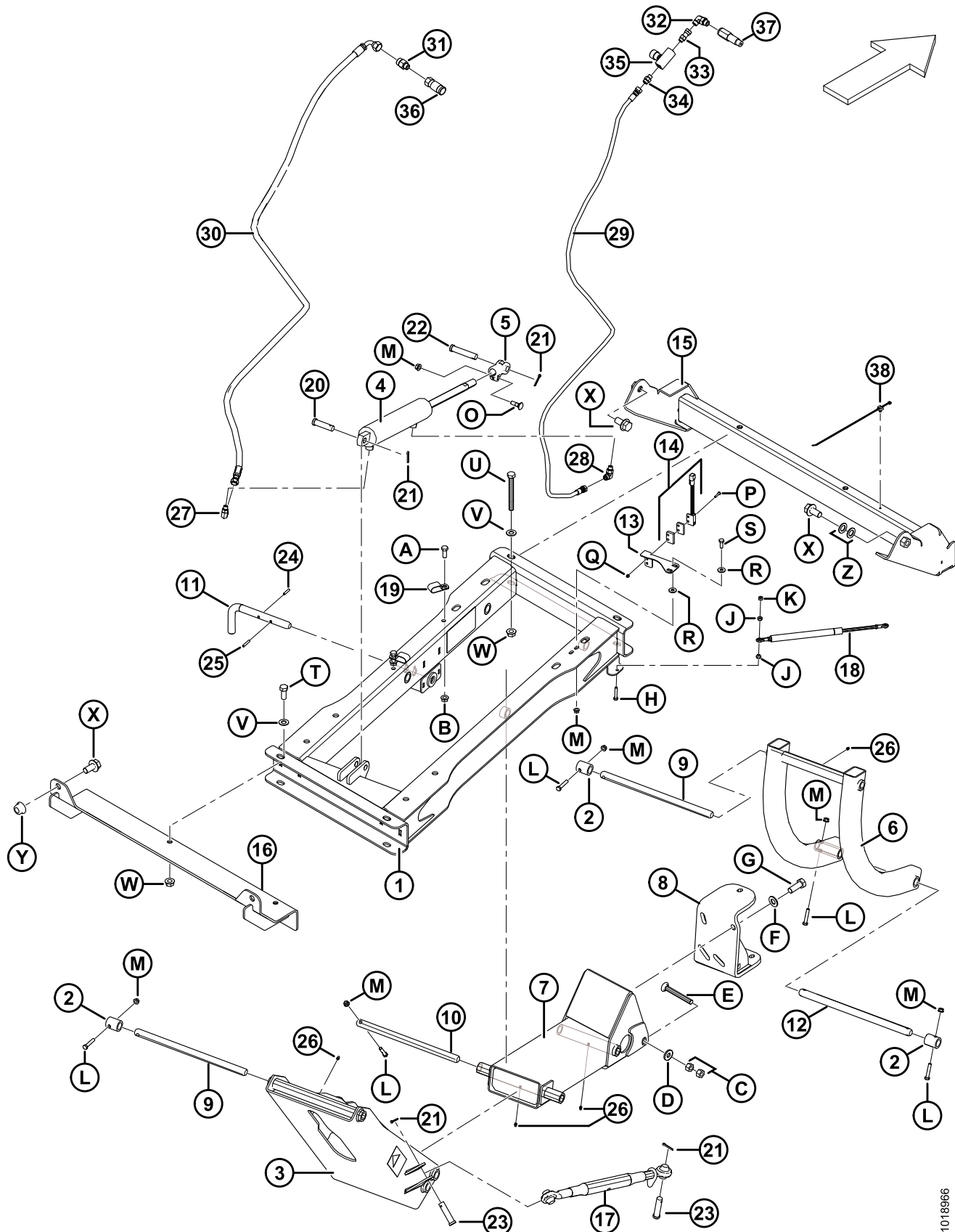
REPAIR PARTS



REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
X	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13 UNC GR5		
Y	135157	SCREW – MACHINE		
Z	135906	BOLT – HH 5/8 NC X 7.5 LG TFL GR 5 ZP		
AA	135966	BOLT – HH FLG (SM FACE) 3/8 NC X 1.0 GR5 ZP		
AB	137727	NUT – HEX JAM - DIST THD. 1/2-13 UNC GR5 ZP		
AC	145249	BOLT – HH 5/8 NF X 1.0 LG GR5 ZP		
AD	172259	BOLT – SHOULDER .375-16 UNC		

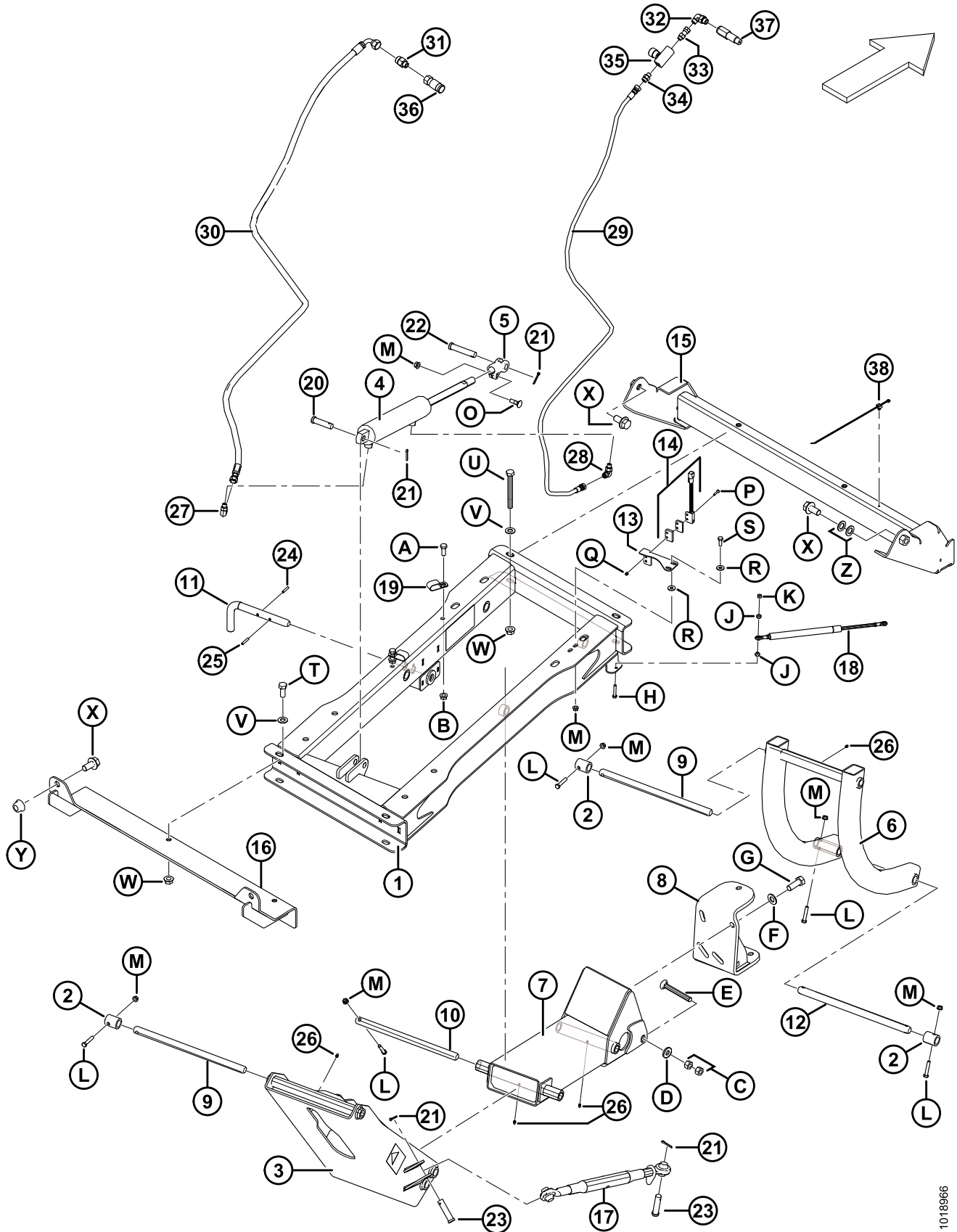
5.2 Linkage and Deck Support



REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	176440	SUPPORT – DWA WELDT	1	
2	172903	TUBE	3	
3	172746	ARM – ASSY, C/W DECALS	1	
4	208966	CYLINDER – HYD	1	
	176031	SEAL KIT		
5	172664	CLEVIS	1	
6	144592	ARM – FRONT WELDT	1	
7	144593	ARM – BOTTOM WELDT	1	
8	144594	CLEVIS – WELDT	1	
9	172910	SHAFT – 25 MM OD, 450 MM LG	2	
10	176018	SHAFT – 25 MM OD, 420 MM LG	1	
11	176016	PIN – L	1	
12	176023	SHAFT – 25 MM OD, 420 MM LG	1	
13	176540	SUPPORT – DWA PROXIMITY SWITCH	1	
14	200974	SWITCH – PROXIMITY, C/W SPACERS	1	
15	176462	SUPPORT – FRONT WELDT	1	
16	176509	SUPPORT – REAR WELDT, DWA	1	
17	144996	JOINT ASSEMBLY	1	
18	176066	CYLINDER – GAS SPRING	1	
19	103738	CLAMP – PVC INSULATED 13/16 IN. TUBE SIZE	2	
20	30463	PIN – CLEVIS, 18.89 MM - 58 MM	1	
21	18648	PIN – COTTER 3/16 DIA X 1.25 ZP	4	
22	20312	PIN – CLEVIS, 18.89 MM - 82 MM	1	
23	18627	PIN – CLEVIS, 18.89 MM - 64 MM	2	
24	16266	PIN – SPRING 1/4 DIA X 1.25 LG	1	
25	2147	PIN – SPRING 1/4 DIA X 1.5 LG	1	
26	18671	FITTING – LUBE 1/4 - 28 UNF	4	
27	136238	FITTING – ELBOW 90° HYD	1	
28	136095	FITTING – ELBOW 90° HYD	1	
	50219	O-RING – #6 ORB		
	135865	O-RING – #12 ORB		
29	176498	HOSE – HYD, 1/4 IN ID, 2050 MM LG	1	
30	176497	HOSE – HYD, 1/2 IN ID, 2100 MM LG	1	

REPAIR PARTS

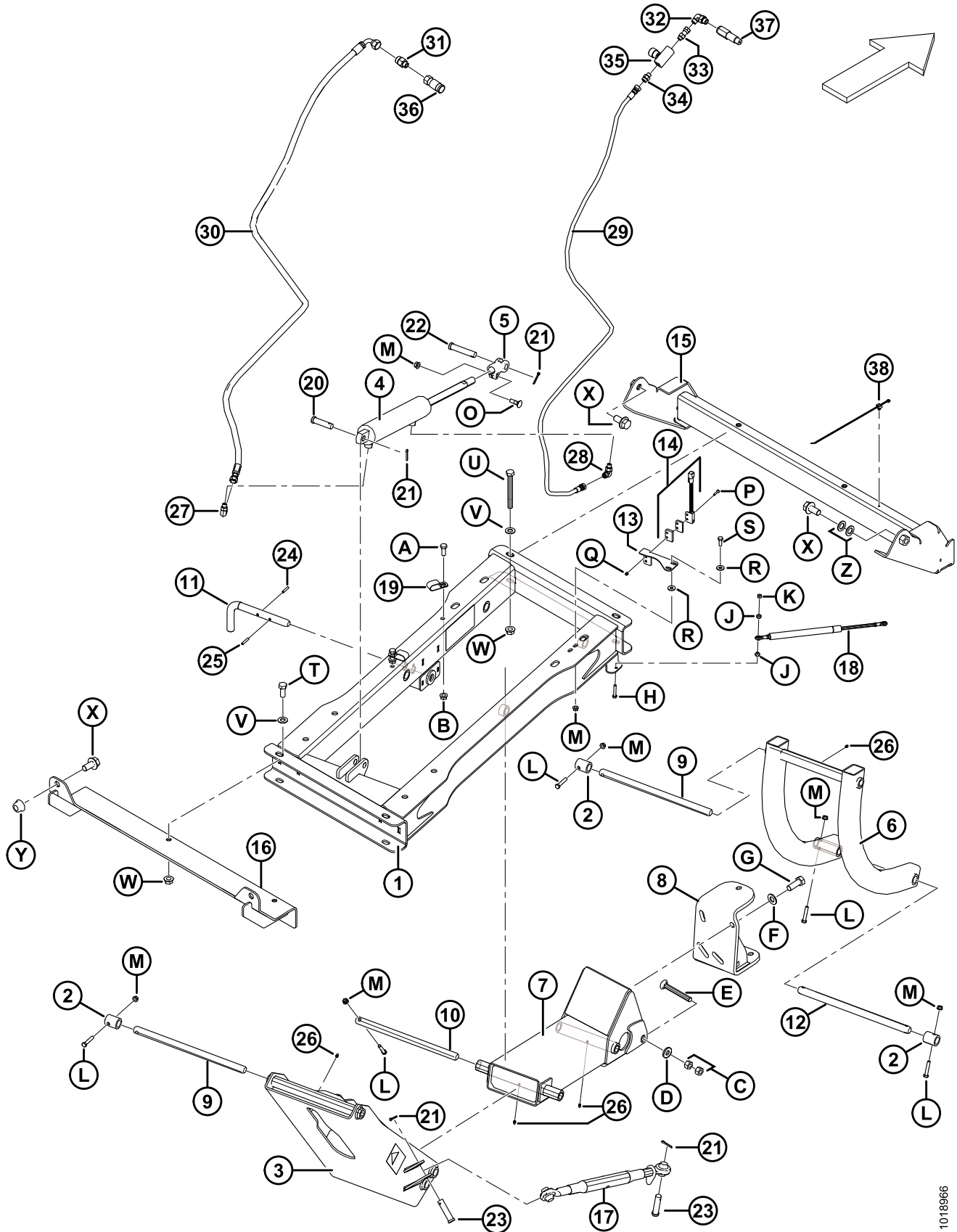


1018966

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
31	135781	FITTING – ADAPTER	1	
	44209	O-RING – #8 ORB		
	135867	O-RING – #10 ORFS		
32	136149	FITTING – ELBOW 90° HYD C/W O-RINGS	1	
	50219	O-RING – #6 ORB		
	135865	O-RING – #12 ORB		
33	136147	FITTING – CONNECTOR HYD	1	
	50219	O-RING – #6 ORB		
34	135778	FITTING – ADAPTER	1	
	50219	O-RING – #6 ORB		
	135865	O-RING – #12 ORB		
35	183211	VALVE – HYD FLOW CONTROL	1	
36	135312	COUPLER – FEMALE HYD. 3/8 IN. FLAT FACE	1	
37	135386	COUPLER – MALE HYD. 3/8 IN. FLAT FACE	1	
38	136655	FASTENER – FIR TREE MOUNT, W/ CABLE TIE	1	
A	21491	BOLT – HH 1/2 NC X 1.25 LG GR5 ZP		
B	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13 UNC GR5		
C	18592	NUT – HEX 5/8 - 11 UNC GR5 ZP		
D	22072	WASHER – FLAT		
E	30816	BOLT – RHSN TFL 5/8-11 X 5-GR5-ZP		
F	176009	WASHER – NORDLOCK 3/4 IN. SP		
G	30512	BOLT – HH 3/4 NC X 2.0 LG GR5 ZP		
H	176067	BOLT – HH 5/16 NC X 1.75 TFL GR5 ZP		
J	35689	NUT – SPECIAL		
K	18589	NUT – HEX 5/16-18 UNC GR5 ZP		
L	21354	BOLT – HH 3/8 NC X 2.0 LG GR5 ZP		
M	30228	NUT – FLANGE DT SMOOTH FACE 0.375-16 UNC		
N	19966	BOLT – RHSN 3/8 NC X 1.25 LG GR5 ZP		
P	252183	SCREW – PAN HD ISO 7045 M5 X 0.8 X 25-4.8-A2L		
Q	197230	NUT – HEX NYLOC M5 X 0.8-8-A2L		
R	20535	WASHER – FLAT		
S	20077	BOLT – HEX HD 3/8 NC X 1.0 LG GR5 ZP		
T	21594	BOLT – HEX HD 0.625 -11 UNC X 1.50		

REPAIR PARTS

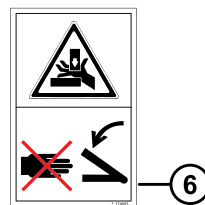
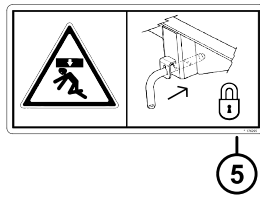
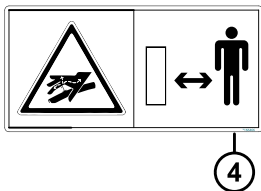
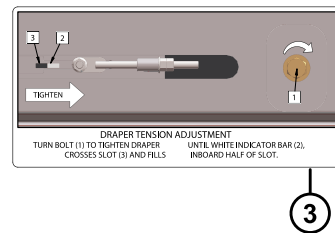
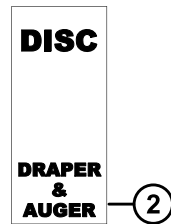
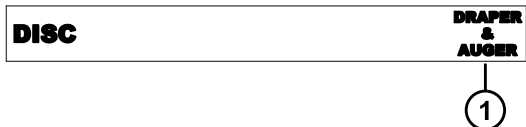
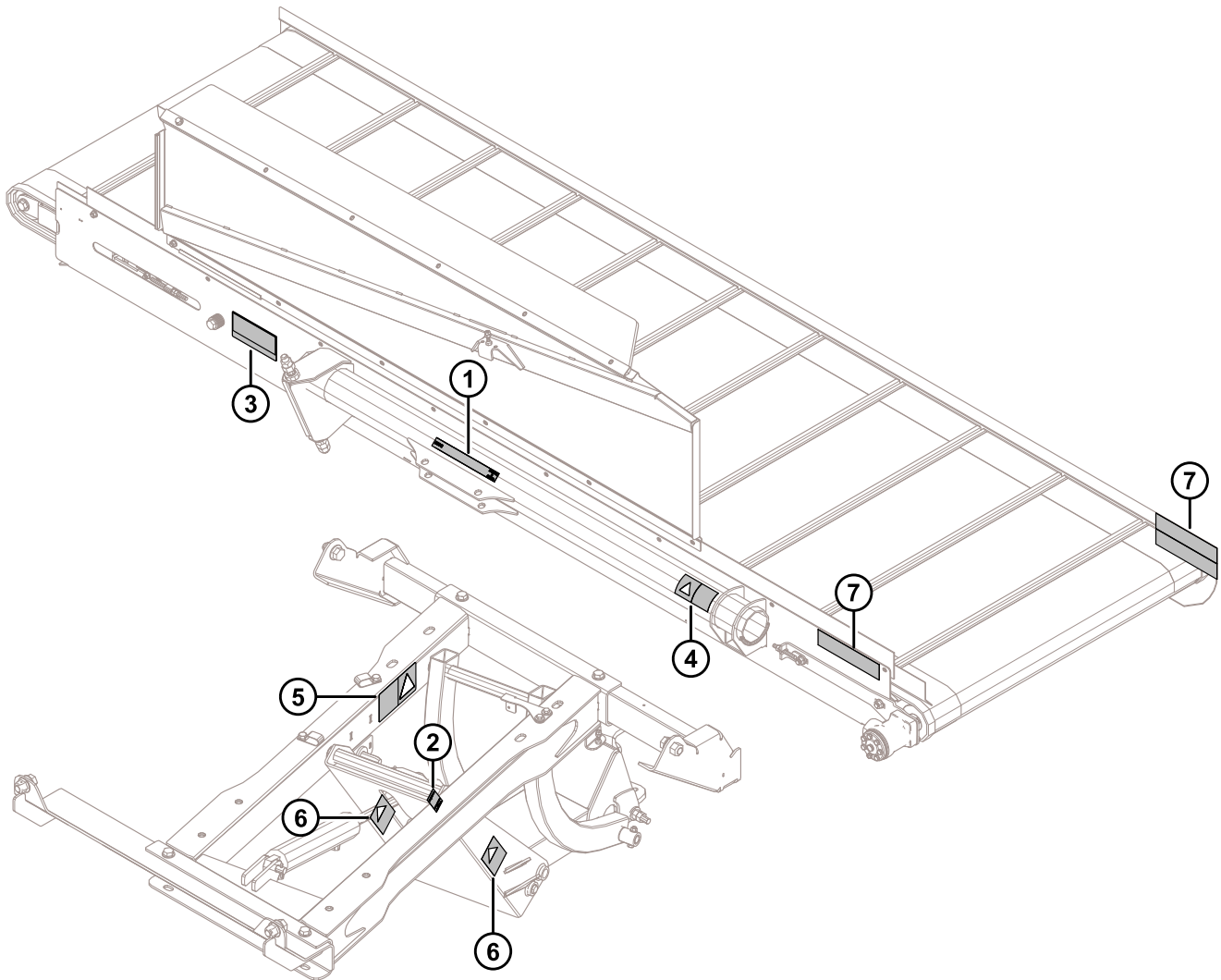


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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
U	50163	BOLT – HH 5/8 NC X 5.5 LG GR5 ZP		
V	18600	WASHER – SAE FLAT 21/32 ID X 15/16 IN OD ZP		
W	50225	NUT – FLANGE DT SMOOTH FACE .625-11 UNC		
X	136133	BOLT – HEX FLG HD TFL M20 X 40-10.9-A3L ASTM568M		
Y	136122	NUT – HEX FLG CTR LOC M20 X 2.5-10-A3L		
Z	136477	WASHER – FLAT REG M20-200HV-A3L		

5.3 Decals and Reflectors



REPAIR PARTS

Ref	Part Number	DESCRIPTION	Qty	Serial Number
1	176071	DECAL – HEADER POSITION, HORIZONTAL FORMAT		
2	176072	DECAL – HEADER POSITION, VERTICAL FORMAT		
3	220084	DECAL – DRAPER TENSION		
4	166466	DECAL – WARNING, HIGH PRESSURE HYDRAULICS		
5	176295	DECAL – DECK LIFT LOCK		
6	174683	DECAL – WARNING DWA LINKAGE PINCH POINT		
7	115145	REFLECTOR – FLUORESCENT RED-ORANGE		
	115146	REFLECTOR – AMBER		
	115147	REFLECTOR – RED		

6 Reference

6.1 Torque Specifications

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

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

6.1.1 SAE Bolt Torque Specifications

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

Table 6.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

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

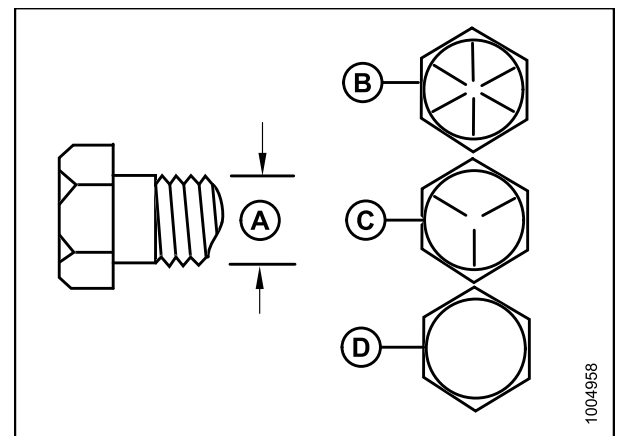


Figure 6.1: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

REFERENCE

Table 6.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

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

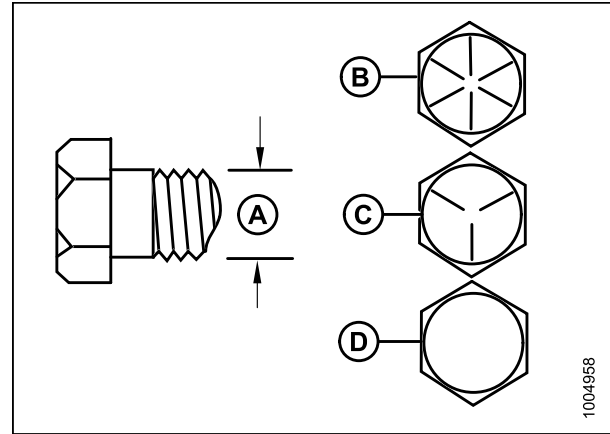


Figure 6.2: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

Table 6.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

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

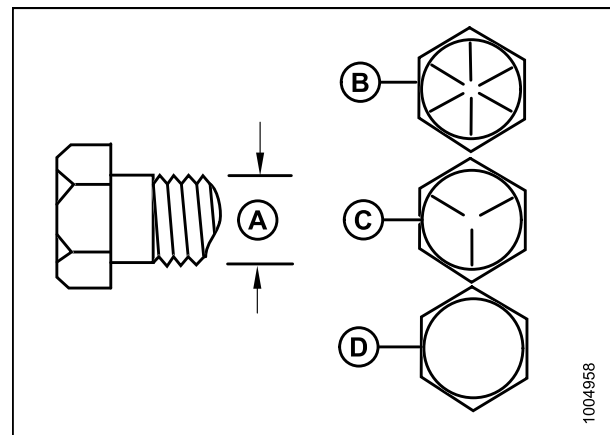


Figure 6.3: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

REFERENCE

Table 6.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

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

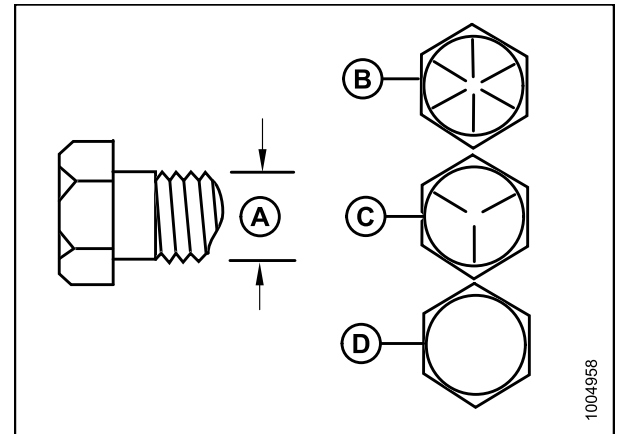


Figure 6.4: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

6.1.2 Metric Bolt Specifications

Table 6.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

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

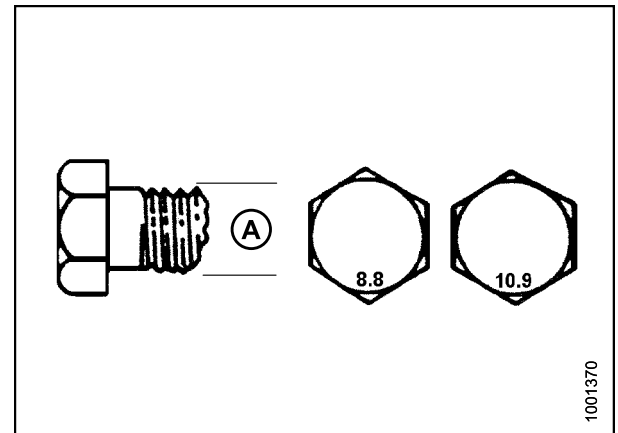


Figure 6.5: Bolt Grades

REFERENCE

Table 6.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

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

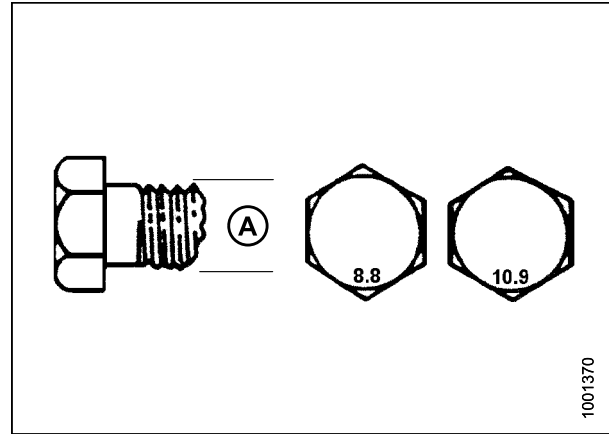


Figure 6.6: Bolt Grades

Table 6.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

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

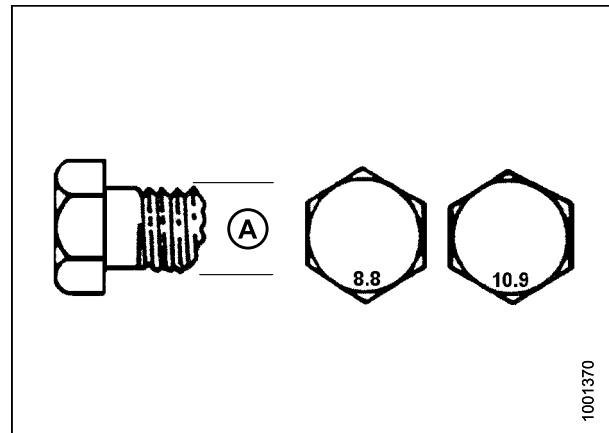


Figure 6.7: Bolt Grades

REFERENCE

Table 6.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

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

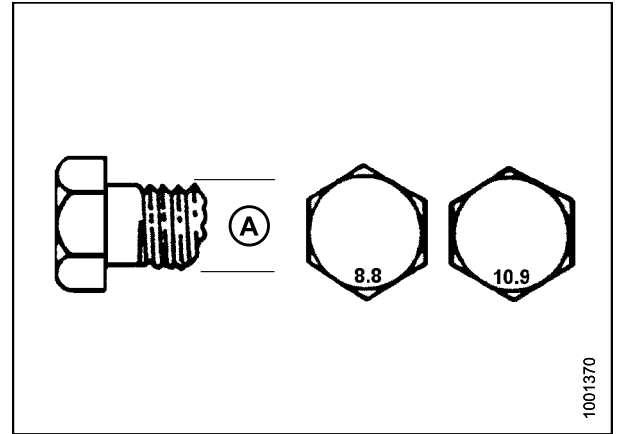


Figure 6.8: Bolt Grades

6.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 6.9 Metric Bolt Bolting into Cast Aluminum

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

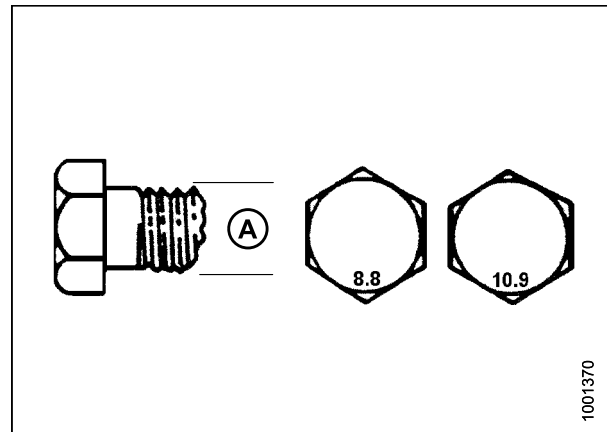


Figure 6.9: Bolt Grades

6.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in [Table 6.10 Flare-Type Hydraulic Tube Fittings, page 75](#).
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

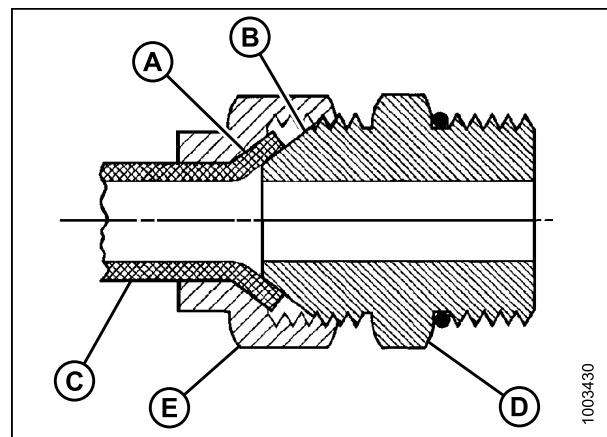


Figure 6.10: Hydraulic Fitting

REFERENCE

Table 6.10 Flare-Type Hydraulic Tube Fittings

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

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

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

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

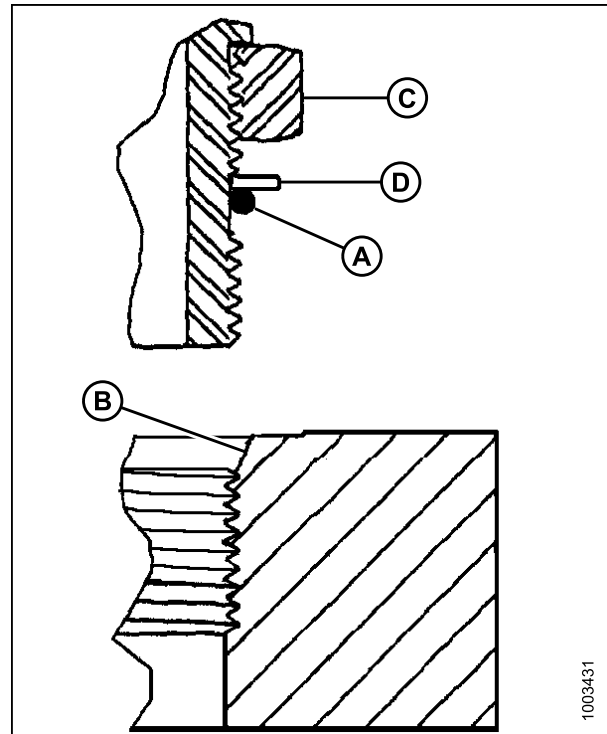


Figure 6.11: Hydraulic Fitting

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

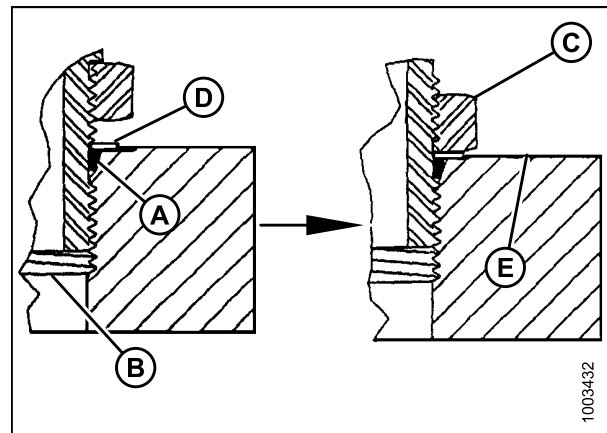


Figure 6.12: Hydraulic Fitting

REFERENCE

Table 6.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

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

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

REFERENCE

6.1.6 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to values in Table 6.12 *O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)*, page 78.
6. Check final condition of fitting.

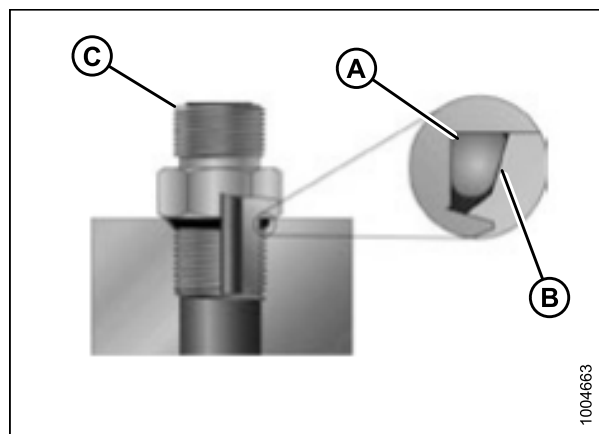


Figure 6.13: Hydraulic Fitting

Table 6.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

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

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

6.1.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

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



Figure 6.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table 6.13 *O-Ring Face Seal (ORFS) Hydraulic Fittings*, page 80.

NOTE:

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

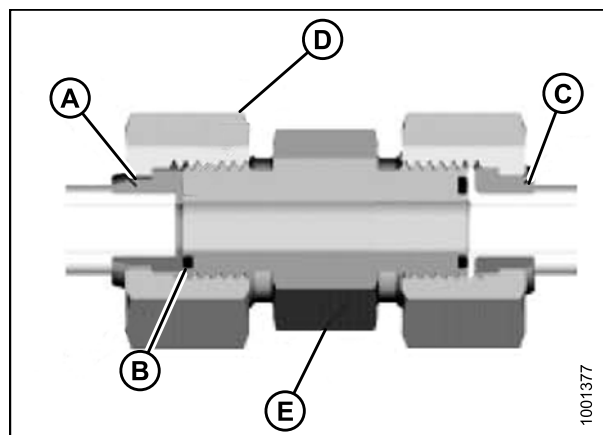


Figure 6.15: Hydraulic Fitting

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

REFERENCE

Table 6.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

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

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

6.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The Turns From Finger Tight (TFFT) values are shown in Table [6.14 Hydraulic Fitting Pipe Thread, page 81](#). Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

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

Table 6.14 Hydraulic Fitting Pipe Thread

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

6.2 Conversion Chart

Table 6.15 Conversion Chart

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

Index

2147	61	132532	55
11695	57	132607	55
16266	61	135157	59
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Predelivery Checklist

Perform these checks and adjustments prior to delivery to your Customer. The completed checklist should be retained by either the Operator or the Dealer.

CAUTION

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

DWA Serial Number:

Table 1 DWA for M1-Series Self-Propelled Windrower Predelivery Checklist

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque.	6.1 Torque Specifications, page 69
	Check that shipping stands have been correctly installed on the header.	2.3 Installing the Deck, page 14
	Check and adjust front skid to correct height above the draper. Tighten securing nuts.	4.1.5 Adjusting Front Skid, page 44
	Check and adjust rear deflector to correct height above the draper. Tighten securing nuts.	4.1.6 Adjusting Rear Deflector, page 45
	Check external draper roller seal condition. Seal should be secure and without gaps.	4.1.7 Maintaining the Draper Roller, page 45
	Check that draper pivot points are properly greased.	4.2 Lubrication, page 50

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