

Double Windrow Attachment (DWA) for M1 Series Windrowers

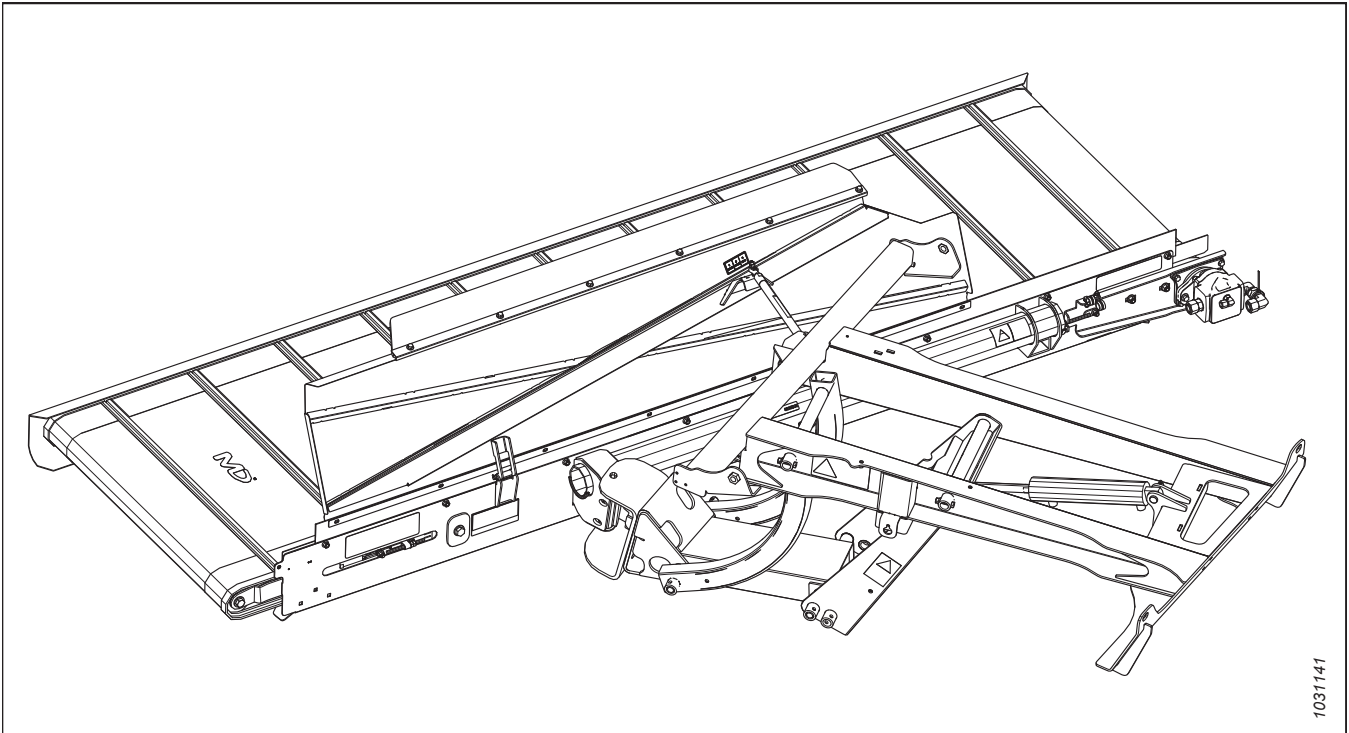
DWA Serial Number 371190 and Later

Setup, Operation, and Parts Manual

215937 Revision A

Original Instruction

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



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Introduction

Your Machine

This instructional manual contains information on the Double Windrow Attachment (DWA) serial number 371190 and later, mounted onto an M1 Series Windrower. If the DWA serial number is prior to 371190 and mounted onto an M1 Series Windrower, refer to manual MD #214763.

The DWA provides the ability to place two or three windrows of conditioned material close together. When the DWA system is engaged, conditioned crop is deposited onto the side draper and then delivered to the right side of the windrower. Raising the side delivery disengages the DWA, allowing the crop to be deposited between the windrower's wheels. The DWA can be mounted on the following MacDon windrowers:

- M1170
- M1240

The DWA is compatible with the following headers:

- A40DX Auger Headers (non-Grass Seed only)
- R85 Rotary Disc Headers
- R216 Rotary Disc Headers (non-Grass Seed only)

The DWA is incompatible with R1 Series Rotary Disc Headers.

Your Warranty

Carefully read all the material provided before attempting to operate the machine.

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 handling of the machine
- Failure to operate the machine, equipment, component, or part in accordance with the manufacturer's instructions

Your Manual

The following conventions are used in this document:

- Right and left are determined from the operator's position, facing forward with the windrower in cab-forward position.
- Unless otherwise noted, use the standard torque values provided in Chapter [6.1 Torque Specifications, page 101](#) of this document.

NOTE:

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

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

Contact your MacDon Dealer if you need assistance, information, or additional copies of this manual.

This instruction is currently available in English only.

Summary of Changes

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.

Section	Summary of Change	Internal Use Only
<i>Introduction, page i</i>	Added email address in case Dealers need to contact MacDon if a machine was shipped with something damaged or missing.	Tech Pubs
<i>4.3 Hydraulic Schematic – Double Windrow Attachment on M1170, page 78</i>	Updated illustration from 1031265 to 1039581 to show the optional DWA shut-off valve.	Product Support
<i>4.4 Hydraulic Schematic – Double Windrow Attachment on M1240, page 79</i>	Updated illustration from 1031183 to 1039642 to show the optional DWA shut-off valve.	Product Support
<i>5.3 Deck, Draper, and Rollers, page 84</i>	Updated illustration from 1036342 to 1039528 to show where lubrication fitting (MD #30934) is installed.	ECN 62170
<i>5.4 Linkage and Deck Support, page 90</i>	Updated illustration from 1036341 to 1039481 to show where lubrication fitting (MD #18671) is installed.	ECN 62361
<i>5.6 Decals and Reflectors, page 96</i>	Added California proposition 65 decal (MD #302204).	ECN 61960

Serial Number Location

The serial number helps identify your machine and ensures that you receive accurate information quickly when working with MacDon for product support or parts.

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

DWA serial number: _____

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

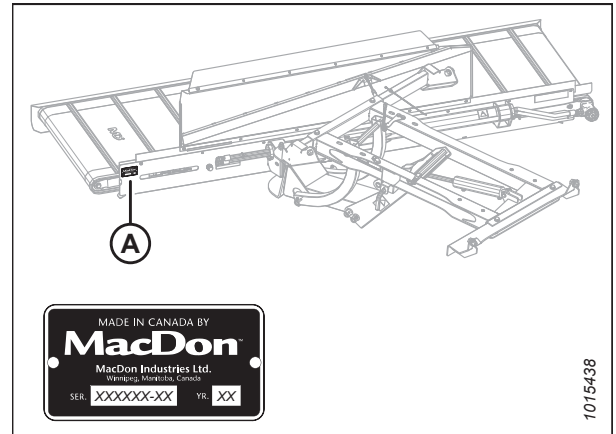


Figure 1: Serial Number Location

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Chapter 1: Safety

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

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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



Figure 1.1: Safety Symbol

1.2 Signal Words

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

Signal words are selected using the following guidelines:



DANGER

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



WARNING

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



CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.3 General Safety

Protect yourself when assembling, operating, and servicing machinery.

CAUTION

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

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

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

In addition, take the following precautions:

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



Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

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

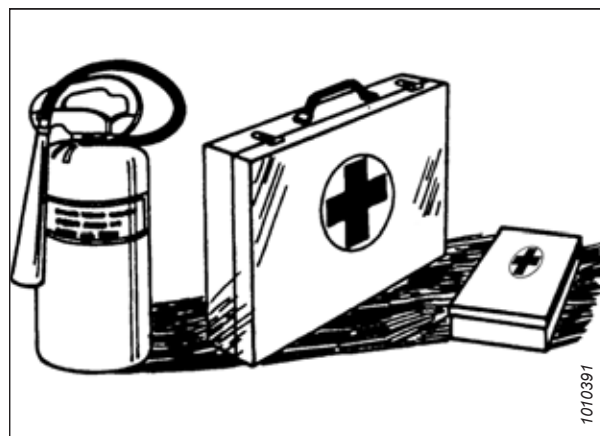


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

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

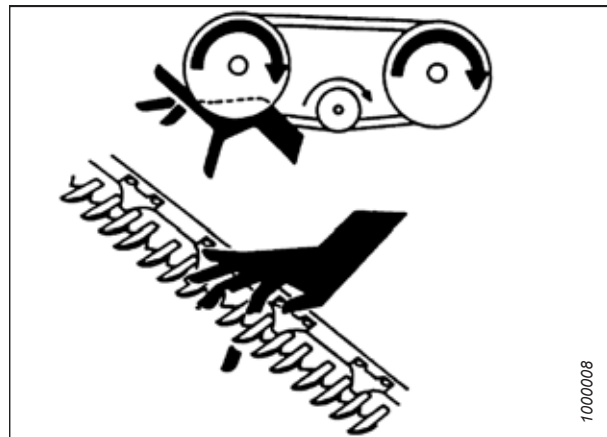


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

Protect yourself when maintaining machinery.

To ensure your safety while maintaining the machine:

- Review the operator's manual and all safety items before operating or performing maintenance on the machine.
- Place all controls in Neutral, stop the engine, set the parking brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, or repairing the machine.
- Follow good shop practices:
 - Keep service areas clean and dry
 - Ensure that electrical outlets and tools are properly grounded
 - Keep the work area well lit
- Relieve pressure from hydraulic circuits before servicing and/or disconnecting the machine.
- Ensure that 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 the area of bystanders, especially children, when carrying out any maintenance, repairs, or adjustments.
- Install the transport lock or place safety stands under the frame before working under the machine.
- If more than one person is servicing the machine at the same time, be aware that rotating a driveline or another mechanically driven component by hand (for example, accessing a lubricant 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 the machine.
- Wear heavy gloves when working on knife components.



Figure 1.8: Safety around Equipment

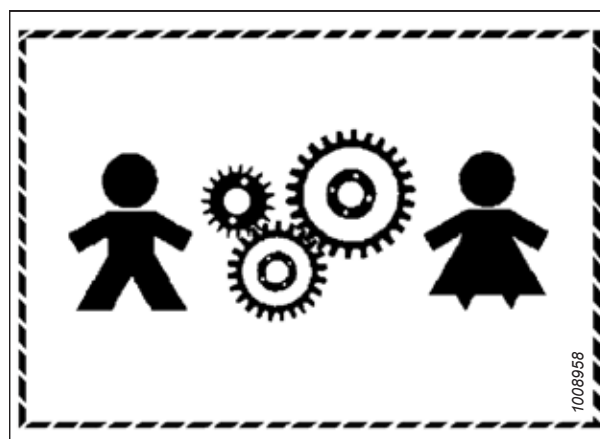


Figure 1.9: Equipment is NOT Safe for Children



Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

Protect yourself when assembling, operating, and servicing hydraulic components.

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

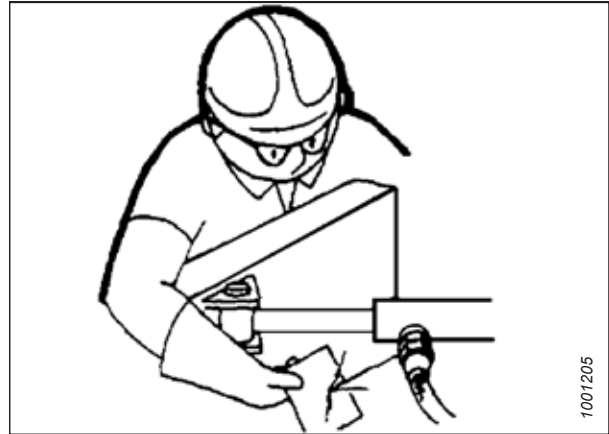


Figure 1.11: Testing for Hydraulic Leaks

- Wear proper hand and eye protection when searching for high-pressure hydraulic fluid leaks. Use a piece of cardboard as a backstop instead of your hands to isolate and identify a leak.
- If 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

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

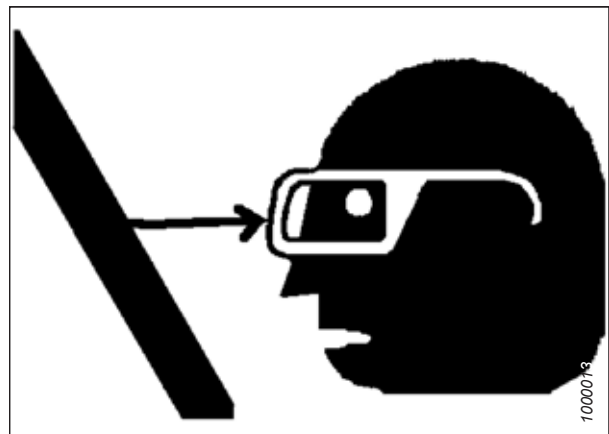


Figure 1.13: Safety around Equipment

1.6 Welding Precaution

Understand these critical precautions before attempting to weld anything on the windrower.

IMPORTANT:

If the procedures below are not followed, damage to the windrower's electronic components may result. Some components may only be partially damaged, which would result in some electrical components failing in an intermittent way. Such faults are very difficult to diagnose reliably.

The windrower is equipped with several sensitive electronic components. Therefore, components to be welded should be removed from the windrower whenever possible rather than welded in place.

When welding needs to be performed on a header, disconnect the header completely from the windrower before beginning. These same guidelines apply to plasma cutting, or any other high-current electrical operation performed on the machine.

IMPORTANT:

Ensure that the windrower is parked on a level surface, the ignition is turned off, and the key is removed before disconnecting anything.

The following items need to be disconnected:

- Negative battery terminals (A) (two connections)

IMPORTANT:

Always disconnect the battery terminals first, and reconnect them last.

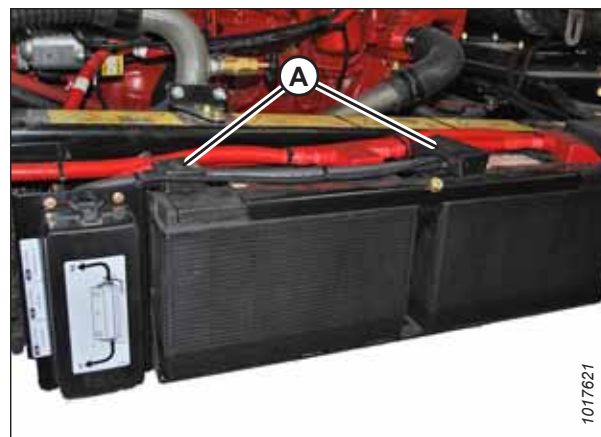


Figure 1.14: Negative Terminals

- Master controller (A)
Four connectors: P231, P232, P233, and P234

Location: Behind the cab, near the header lift/fan manifold

To disconnect the connectors, press the two outer tabs, and pull the connector away from the master controller.

IMPORTANT:

When reconnecting these connectors, ensure that the connectors are fully seated into the master controller, and that the two locking tabs on each end of all four connectors have popped outward. If the tabs are not popped outward, the connector is not fully seated.

IMPORTANT:

Do **NOT** power up or operate the windrower until these connectors are locked into place.



Figure 1.15: Master Controller

SAFETY

- Firewall extension module (A)
Two connectors: P235 and P236

Location: Behind the cab, near the header lift/fan manifold

To disconnect the connectors, insert the end of a small 3–6 mm (1/8–1/4 in.) blade screwdriver into the connector's locking tab. Gently pry upward (no more than 6 mm [1/4 in.]) to unlock the connector tab, and then pull the connector away from the module.



Figure 1.16: Firewall Extension Module

- Chassis extension module (A)
Two connectors: P247 and P248

Location: Under the cab, inside the left frame rail

To disconnect the connectors, insert the end of a small 3–6 mm (1/8–1/4 in.) blade screwdriver into the connector's locking tab. Gently pry upward (no more than 6 mm [1/4 in.]) to unlock the connector tab, and then pull the connector away from the module.

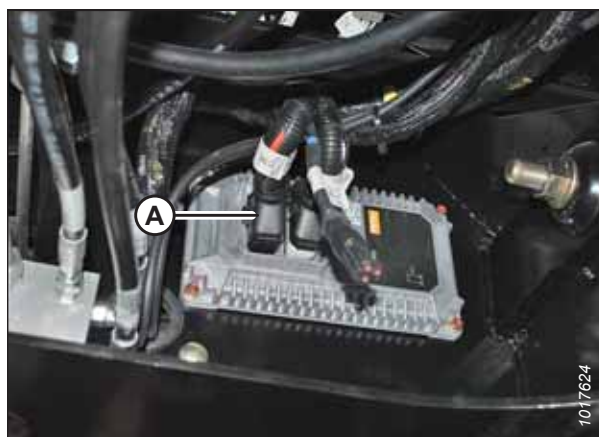


Figure 1.17: Chassis Extension Module

- Engine Control Module (ECM)
Two connectors for Cummins: P100 (A) and J1 Cummins Proprietary ECM Connector (B)

Location: On the engine

To disconnect the connectors, pull the rubber boot off of the cover, unlock the latch, and undo the main over-center latch. Remove strain relief bolts (C) so that the connectors can be pulled away from the ECM.

IMPORTANT:

Be sure to disconnect both connectors. Note the connector locations for reinstallation.

IMPORTANT:

Be sure to reconnect the connectors in the proper locations. Do **NOT** cross connect the connectors.

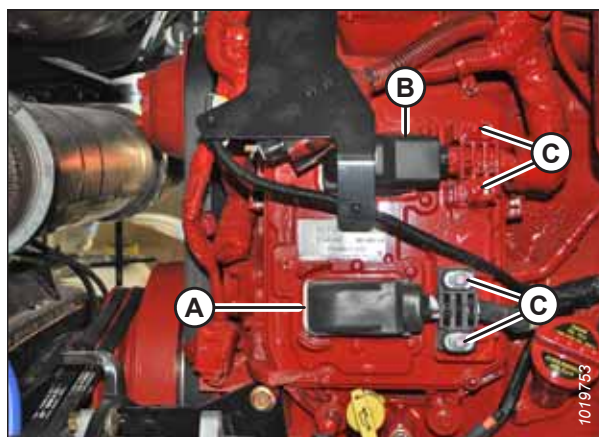


Figure 1.18: Engine Control Module

NOTE:

To disconnect the remaining circular Deutsch connectors, rotate the outer collar counterclockwise.

- Cab connectors (A)
Two round connectors: C1 and C2

Location: Under the cab

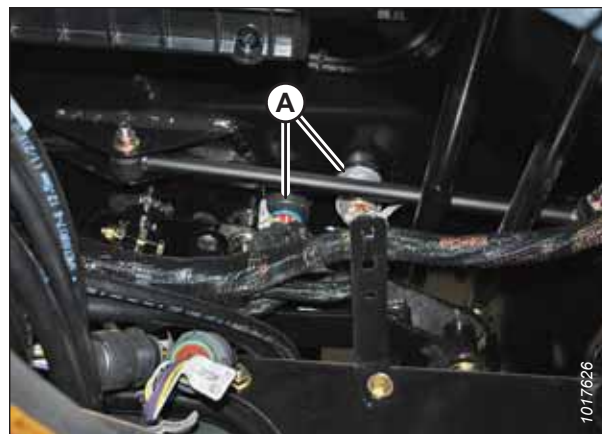


Figure 1.19: Cab Connectors

- Roof connectors (A)
Four connectors: C10, C12, C13, and C14

Location: Under the cab at the base of the left cab post

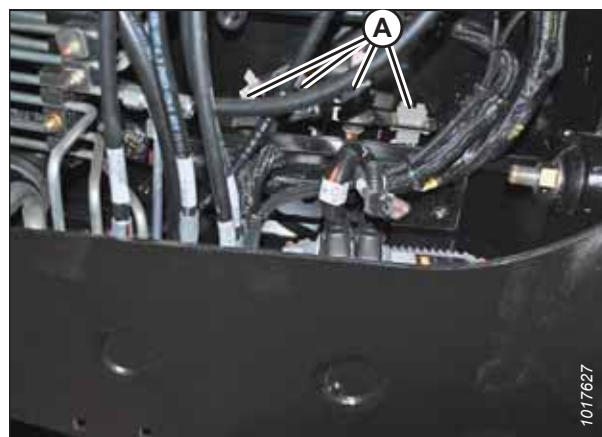


Figure 1.20: Roof Connectors

- Chassis relay module (A)
Three connectors: P240, P241, and P242

Location: Outside the left frame rail near the batteries



Figure 1.21: Chassis Relay Module

SAFETY

- Engine harness (A)
Two round connectors: C30 and C31
Location: Inside the left frame rail, at the rear of the windrower

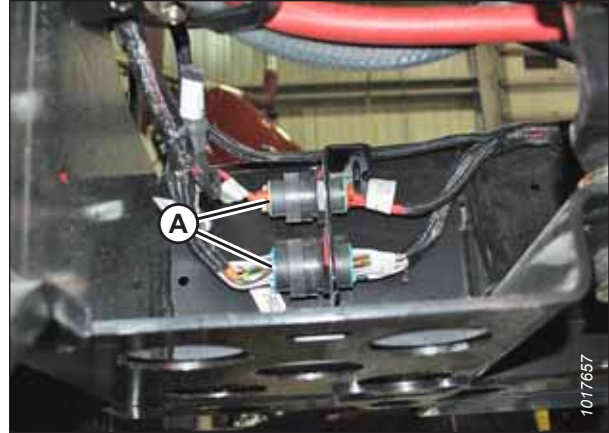


Figure 1.22: Engine Harness

- Air conditioning (A/C) box connectors (A)
Two connectors: C15 and C16
Location: Rear of the A/C box

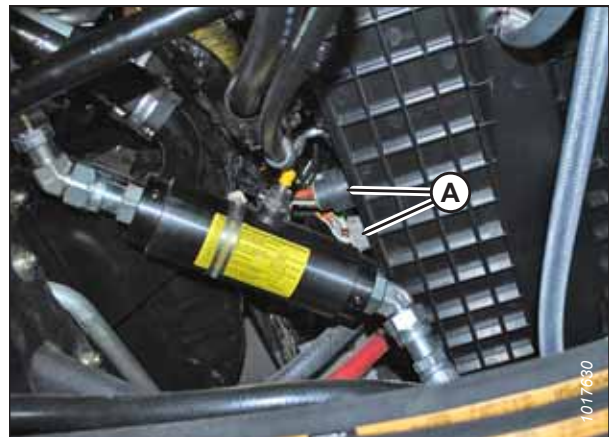


Figure 1.23: A/C Box Connectors

- Wheel motor connectors (A)
Two round connectors: C25 and C26
Location: Under the center of the frame, just behind the front cross member
IMPORTANT:
To connect the circular Deutsch connectors without bending the pins, fully align the plug with the receptacle before pressing the connector in.

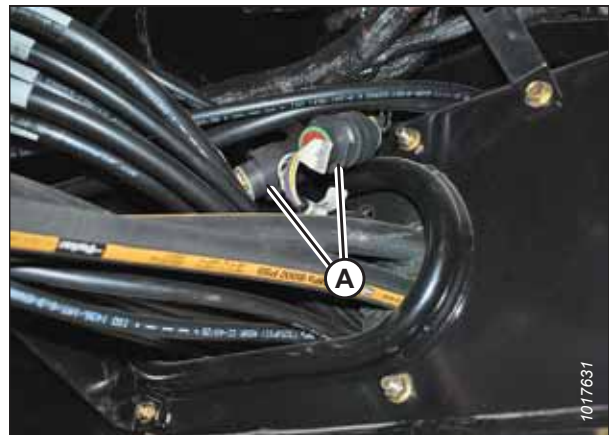


Figure 1.24: Wheel Motor Connectors

To align the connectors:

1. Observe the channel cuts and mating channel protrusions on the inner part of the circular walls of the connectors.
2. Face the mating connectors towards each other, and rotate the connectors so that the channels are aligned.
3. Press the connectors together while turning the outer connector clockwise until the collar locks.

1.7 Safety Signs

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

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

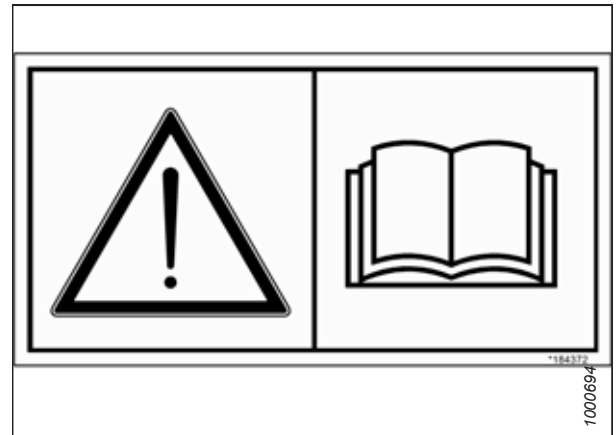


Figure 1.25: Operator's Manual Decal

1.7.1 Installing Safety Decals

Replace any safety decals that are worn or damaged.

1. Decide exactly where you are going to place the decal.
2. Clean and dry the installation area.
3. Remove the smaller portion of the split backing paper.
4. Place the decal in position and slowly peel back the remaining paper, smoothing the decal as it is applied.
5. Prick small air pockets with a pin and smooth them out.

1.8 Safety Decal Locations

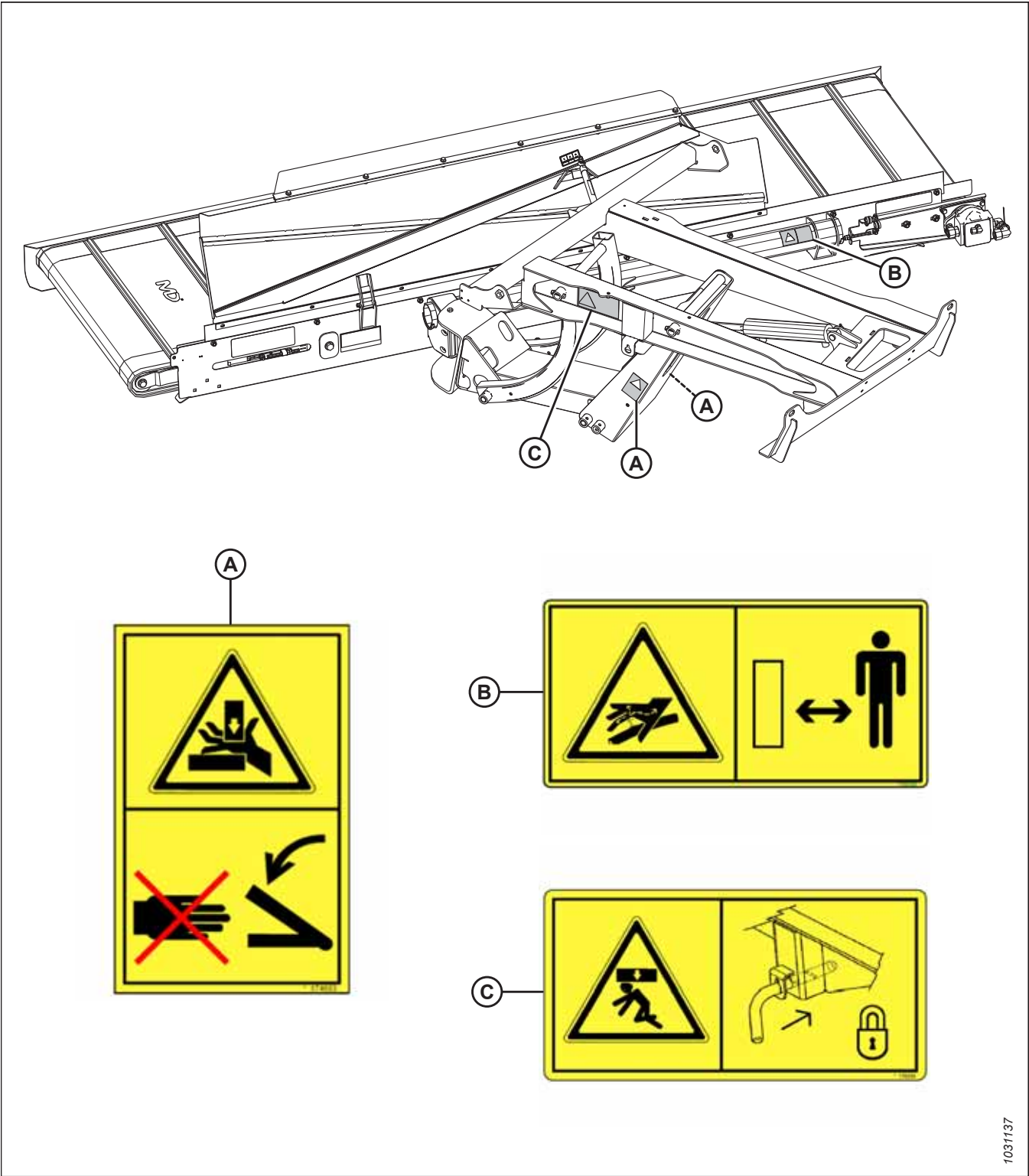


Figure 1.26: DWA Safety Decal Locations

A - MD #174683 – Pinch Point (2 Places)

B - MD #166466 – High Pressure Hydraulics

C - MD #176295 – Deck Lift Lock

1.9 Understanding Safety Signs

Refer to this topic to learn the hazards that each type of safety decal denotes.

MD #166466

High-pressure oil hazard

WARNING

To prevent serious injury, gangrene, or death:

- Do **NOT** go near leaks.
- Do **NOT** use finger or skin to check for leaks.
- Lower load or relieve hydraulic pressure before loosening fittings.
- High-pressure oil can easily puncture skin, and can cause serious injury, gangrene, or death.
- If injured, seek emergency medical help. Immediate surgery is required to remove oil.



Figure 1.27: MD #166466

MD #174683

Pinch point hazard

CAUTION

To prevent injury:

- Do **NOT** reach into pinch area.



Figure 1.28: MD #174683

SAFETY

MD #176295

Deck crushing hazard

DANGER

To avoid injury or death from fall of raised deck:

- Fully raise deck, stop engine, remove key, and engage mechanical safety lock (red pin) before going under deck.



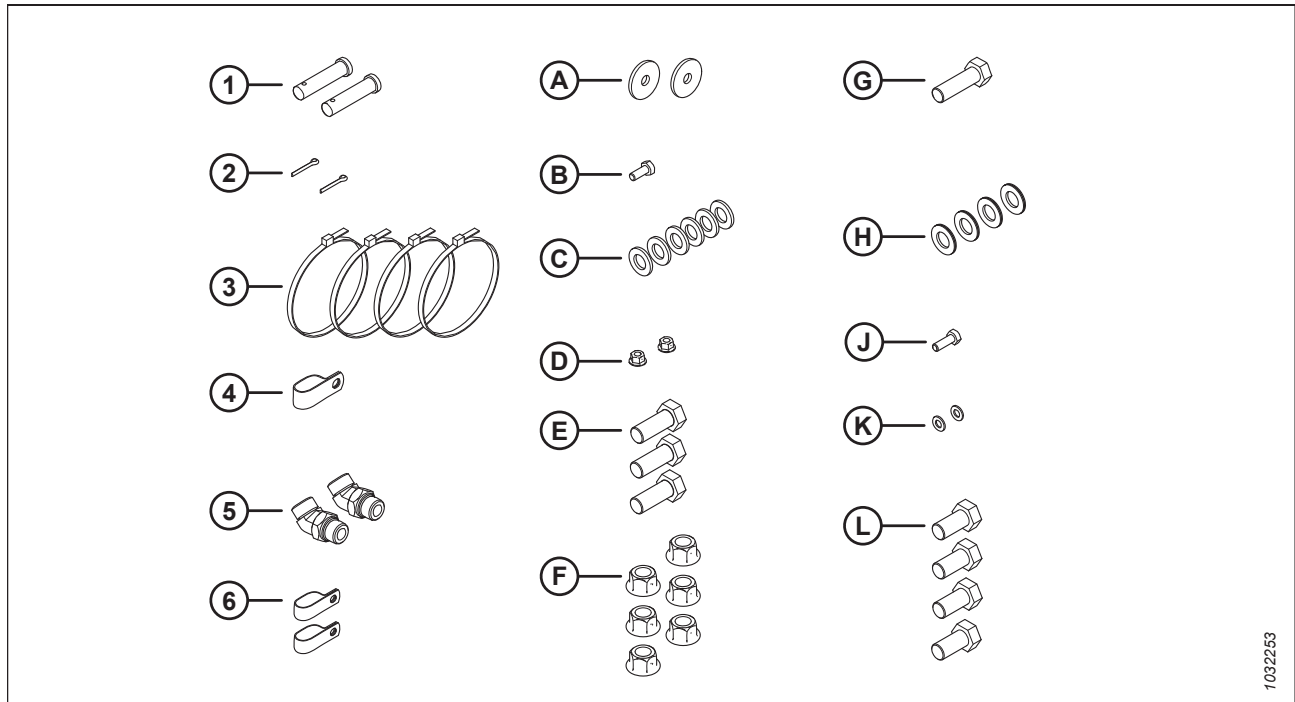
Figure 1.29: MD #176295

Chapter 2: Installation Instructions

Safely operating your machine requires proper installation.

2.1 Parts List – Hardware Bag

A parts list is provided in this instruction so that you can confirm that you have received all required parts before you begin installation.



Bolt length is measured from under the head of the bolt to the tip of the threads. Be sure you are using the correct bolt.

Ref	Part Number	Description	Quantity
1	18627	PIN – CLEVIS	2
2	18648	PIN – COTTER 3/16 DIA X 1.25 ZP	2
3	30753	FASTENER – CABLE TIE BLACK	4
4	103738	CLAMP – PVC INSULATED 13/16 IN. TUBE SIZE	1
5	136418	FITTING – ELBOW 45° HYD	2
6	300577	CLAMP – DBL INSULATED 3/4 IN	2
A	11695	WASHER – FLAT	2
B	30627	BOLT – HEX HD TFL M10 X 1.5 X 25-8.8-A3L (25 MM LONG)	1
C	112130	WASHER – HARD ASTM F436 3/4 IN. NOM. ID AB0C	6
D	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	2
E	136082	BOLT – HEX HD TFL M20 X 2.5 X 50-8.8-AA3L (50 MM LONG)	3
F	136122	NUT – HEX FLG CTR LOC M20 X 2.5-10-AA1J	6
G	136157	BOLT – HEX HD M20 X 2.5 X 65-10.9-AA1J (65 MM LONG)	1
H	136701	WASHER – NORDLOCK M20	4
J	184661	BOLT – HEX HD TFL M10 X 1.5 X 30-8.8-AA1J (30 MM LONG)	1

INSTALLATION INSTRUCTIONS

Ref	Part Number	Description	Quantity
K	184711	WASHER – FLAT REG M10-200HV-AA1J	2
L	252303	BOLT – HEX HD TFL M20 X 2.5 X 40-10.9-A3L (40 MM LONG)	4

2.2 Raising Stairs on Right Side on Windrower

Raise the right stairs when installing and operating the Double Windrow Attachment (DWA).

1. Lift stairs (A) by hand until spring-loaded latch (B) locks steps in the upright position.

IMPORTANT:

Do **NOT** use the DWA deck as a step or a platform.

NOTE:

Rubber bumper (C) stops the stairs from going past the upright position. Stairs are held in the down position by gas shock (D).

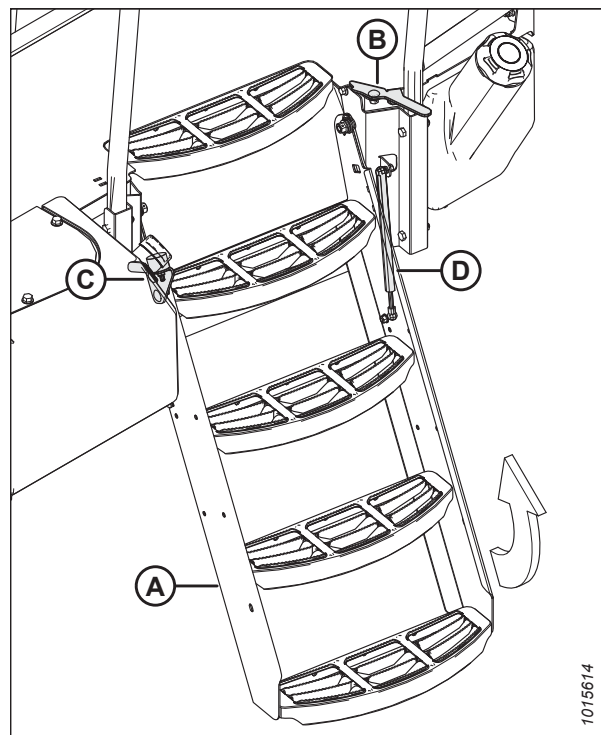


Figure 2.1: Right Stairs – Down Position

To lower/release 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.

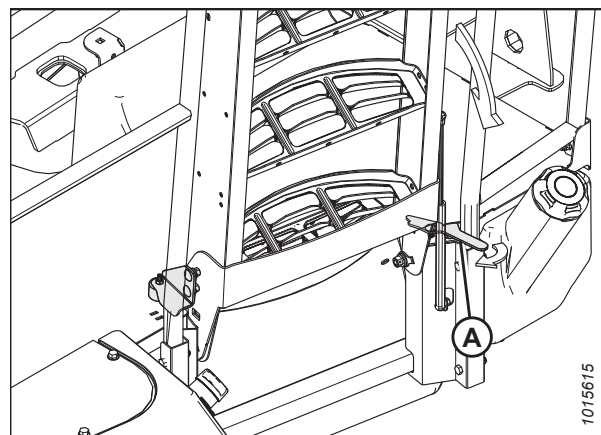


Figure 2.2: Right Stairs – Up Position

2.3 Configuring Double Windrow Attachment

The Double Windrow Attachment (DWA) must be configured to work with the type of header attached to the windrower.

The DWA has two recommended configurations: Disc mode (D1) optimizes the deck position when operating the R85 or R216 Rotary Disc header; Sickles mode (D2) optimizes the deck position when operating the A Series auger header. For instructions, refer to [3.6 Raising Deck, page 56](#).

NOTE:

The Option configuration, in which the linkage pin is set to front position (A2), the bracket is set to tall position (B2), and the backsheet ball joint link is set to the option position, is **NOT** recommended for normal operation.

Table 2.1 DWA Setup Configurations

Callout	Adjustment	Disc Header (D1)	Auger Header (D2)
A	Linkage pivot pin	Rear (A1)	Rear (A1)
B	Upper ball joint bracket size	Short (B1)	Short (B1)
C	Upper ball joint bracket position	Upper	Lower
D	Backsheet ball joint link	Disc	Sickle
E	Deck turnbuckle	Disc	Sickle

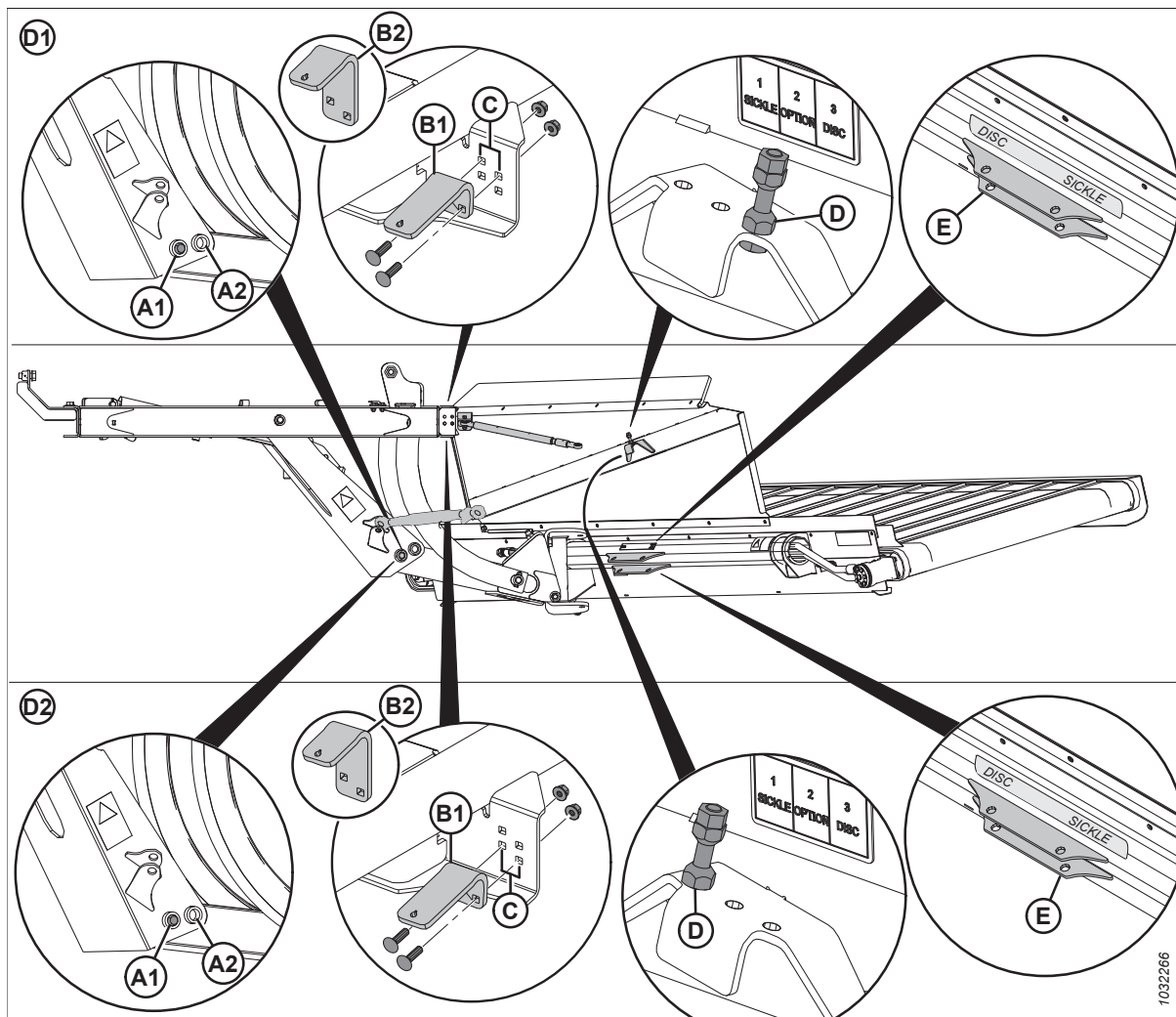


Figure 2.3: DWA Configurations

2.4 Installing Linkage

The linkage is the mechanical interface that connects the windrower to the Double Windrow Attachment (DWA) draper deck.

1. Remove clevis (A) by removing one bolt and two nuts at location (B). Set clevis and hardware aside.
2. Remove turnbuckle (C) (MD #144996) and set aside.

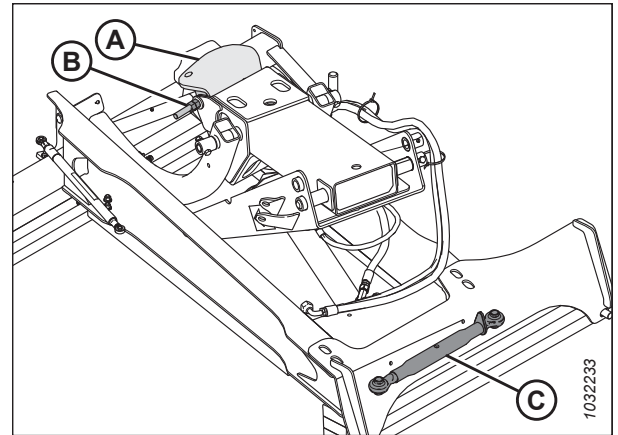


Figure 2.4: Clevis and Cylinder Shipping Location

3. Locate the four connection points on the windrower frame, shown in the illustration below.

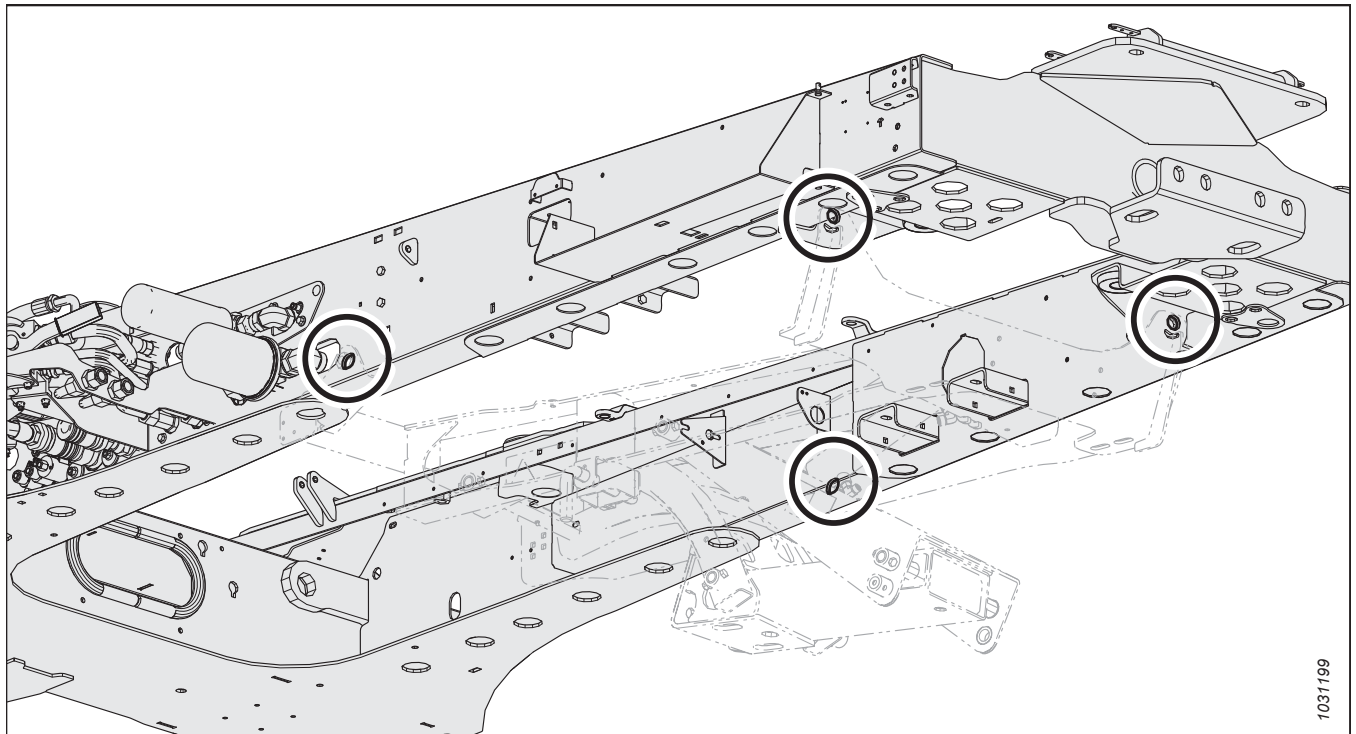


Figure 2.5: Connection Points – View from below Windrower

INSTALLATION INSTRUCTIONS

- Support the linkage assembly with a forklift and lift into place under the windrower.

NOTE:

Ensure that the forks (A) do **NOT** lift against cylinder fitting (B).

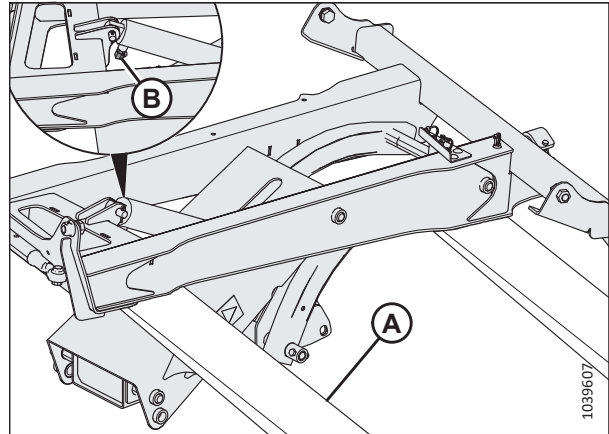


Figure 2.6: Linkage on Forks

- Align linkage (A) with the windrower connection points shown in Figure 2.5, page 19.
- Retrieve the following parts from the bag shipped with the DWA:
 - Six washers (MD #112130)
 - Two nuts (MD #136122)
 - Four bolts (MD #252303), 40 mm (1 37/64 in.)

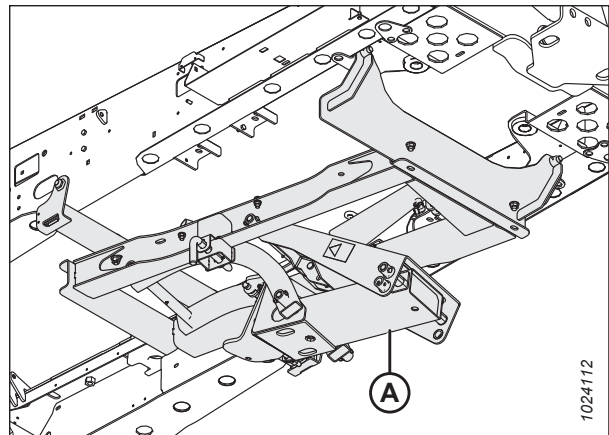


Figure 2.7: DWA Linkage under Windrower

- At right location (A) and left location (B), attach the front of the linkage frame to the windrower with two bolts (C) (MD #252303) and four washers (D) (MD #112130). Right location (A) requires three washers, and left location (B) requires one washer. Install the bolt from the inside of the frame into welded nut (E).

IMPORTANT:

Ensure that the correct bolts are installed by measuring the bolt length. The wrong bolts could result in machine failure. Length is measured from under the head of the bolt to the tip of the threads.

IMPORTANT:

Ensure that three washers are installed at right location (A) as required; otherwise, a lack of clearance may result in bolt (C) damaging the fuel tank.

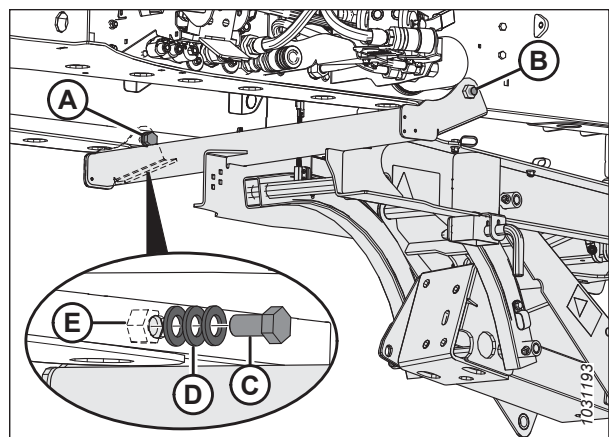


Figure 2.8: Linkage Frame under Windrower

INSTALLATION INSTRUCTIONS

8. Attach the rear of the linkage frame to the windrower with two 40 mm (1 37/64 in.) bolts (B) (MD #252303), two washers (C) (MD #112130), and two nuts (D) (MD #136122) at locations (A).

IMPORTANT:

Ensure that the correct bolts are installed by measuring the bolt length. The wrong bolts could result in machine failure. Length is measured from under the head of the bolt to the tip of the threads.

9. Torque all hardware to 461 Nm (340 lbf-ft).

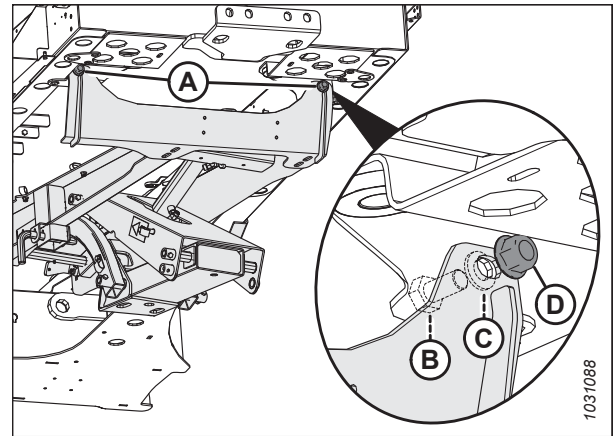


Figure 2.9: Linkage Frame under Windrower

10. Remove shipping wire (B) from hoses (A).

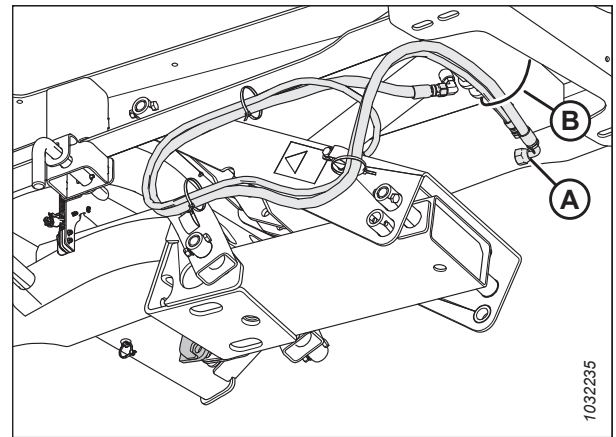


Figure 2.10: Hoses Strapped to Linkage

11. On the left side of the linkage, rotate safety pin (A) to allow the roll pin to clear the slot in the linkage frame.
12. Pull safety pin (A) outward to allow the linkage arm to lower.

NOTE:

If the linkage arm will not lower, **TEMPORARILY** connect the lift cylinder hoses to the windrower, set the valve setting to 5, and cycle the cylinder to full extension/retraction until the air is removed. For instructions, refer to Step 1, page 30 to Step 5, page 31. After lowering the linkage arm, disconnect the lift cylinder hoses, return to this page, and proceed to Step 13, page 22.

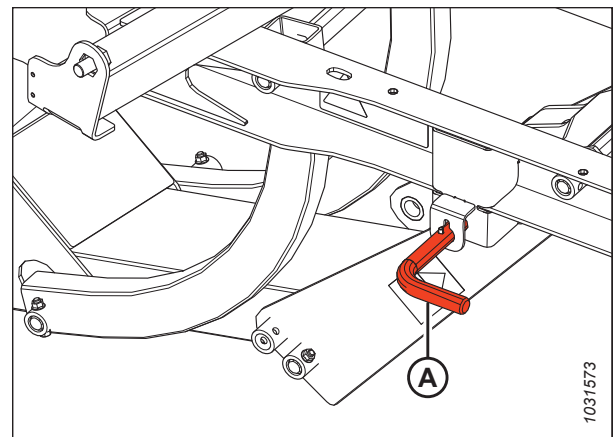


Figure 2.11: DWA Linkage

INSTALLATION INSTRUCTIONS

13. Secure the lift cylinder pivot into the correct hole depending on header type:
- R85 and R216 Rotary Disc Headers: insert pin in upper hole (A)
 - A40DX Auger Headers: insert pin in lower hole (B)

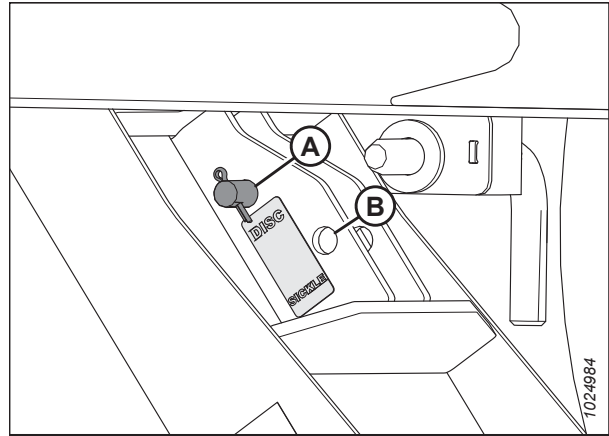


Figure 2.12: Lift Cylinder Pivot

2.5 Installing Deck

The Double Windrow Attachment (DWA) deck provides the conveyor to distribute crop beside the windrower.

1. Remove shipping boards (A) by removing transport banding (B). Remove the shipping wire securing the deck motor hoses to the deck (not shown).

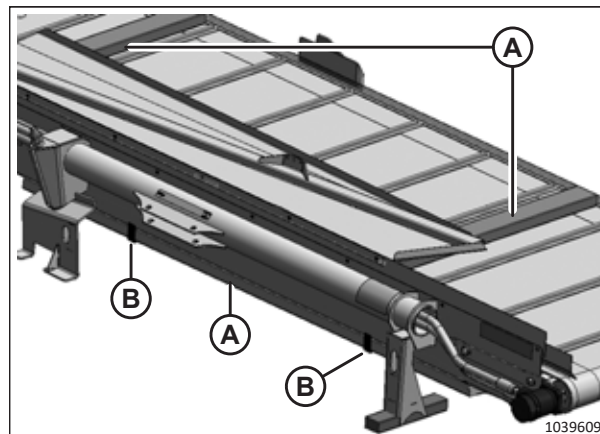


Figure 2.13: DWA Deck

2. Support the deck with a forklift. Forks (A) should be positioned inboard of shipping stand (B).

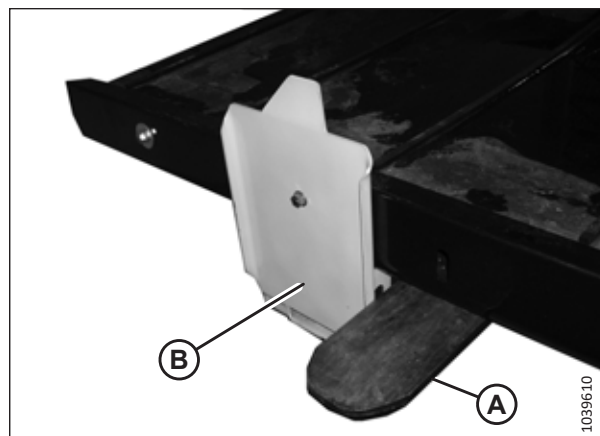


Figure 2.14: Deck Shipping Stand

3. Remove deck shipping stand (A) by removing transport wire (B). The DWA deck is now ready to be assembled to the linkage underneath the windrower.

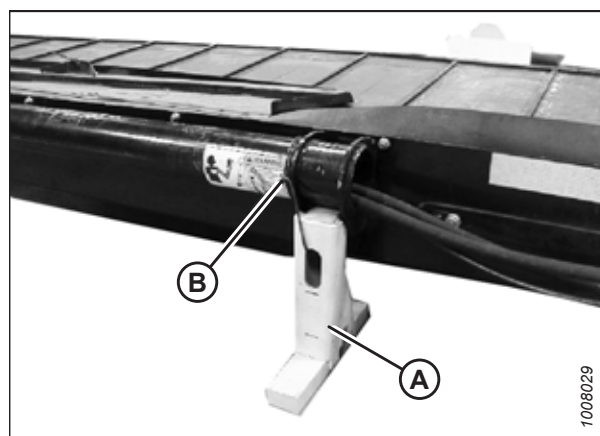


Figure 2.15: Deck Shipping Stand

INSTALLATION INSTRUCTIONS

4. Remove shipping stand (A) from the rear of the deck by removing two nuts (B) and washers (C). Retain the two nuts for installing the clevis onto the deck pivot.

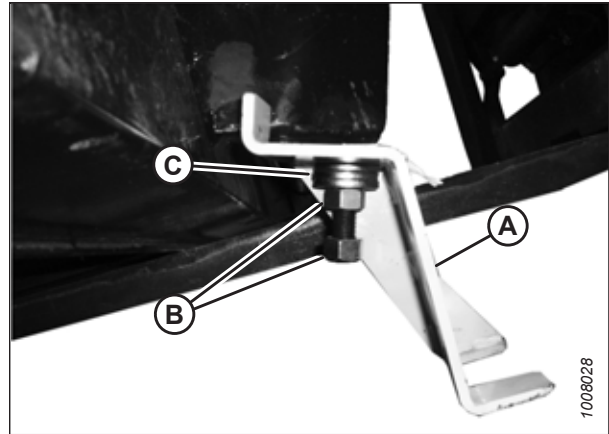


Figure 2.16: Deck Shipping Stand

5. Position clevis (B) onto deck pivot (A).

NOTE:

Ensure that there is a loose bushing inside deck pivot (A).

6. Install rod (C) with preinstalled hex nut (D) and lock nut (E) through the top of the deck pivot.
7. Install retained nut (D) from step 4, page 24 to the bottom of the deck pivot shaft.

NOTE:

Do **NOT** torque the hardware at this time.

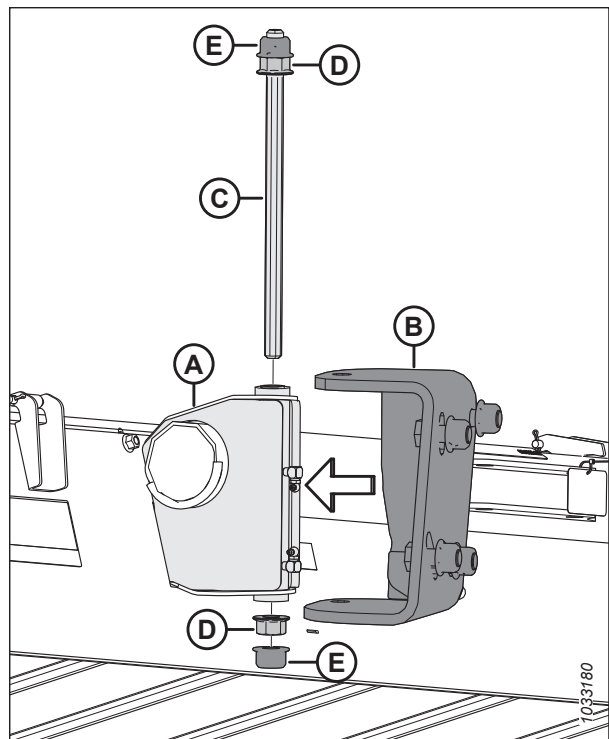


Figure 2.17: Deck Pivot and Linkage Clevis

INSTALLATION INSTRUCTIONS

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

NOTE:

Floor jack (A) is shown in the figure on the right; forklift (B) is shown in the figure below.



Figure 2.18: DWA Deck Supported with Floor Jack

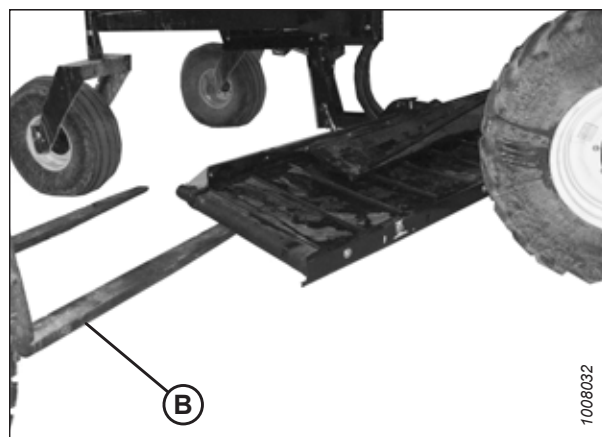


Figure 2.19: DWA Deck Supported with Forklift

10. Align linkage arm (A) with holes in clevis (B) by raising or lowering the floor jack (or forklift).
11. Retrieve the following clevis hardware from the bag:
 - Three bolts (MD #136082), 50 mm (1 31/32 in.) long.
 - One bolt (MD #136157), 65 mm (2 9/16 in.) long.
 - Four washers (MD #136701)
 - Four nuts (MD #136122)

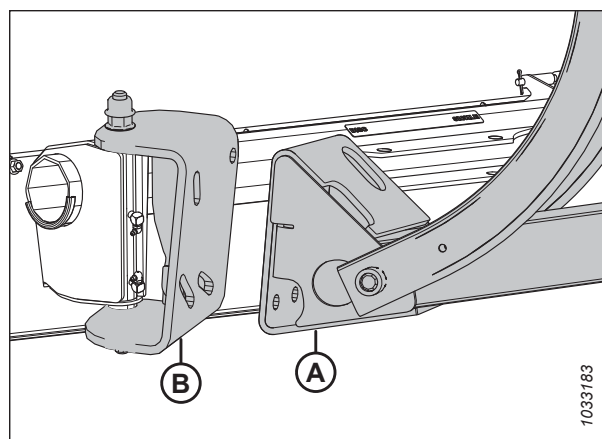


Figure 2.20: Aligning Linkage

INSTALLATION INSTRUCTIONS

12. Install one 65 mm (2 9/16 in.) long bolt (A) (MD #136157) in the top right corner as shown in the figure on the right. Install three 50 mm (1 31/32 in.) long bolts (B) (MD #136082) in the remaining clevis slots. Secure bolts (A) and (B) with Nord-Lock® washers (C), and nuts (D).

IMPORTANT:

Ensure that the correct bolts are installed by measuring the bolt length. The wrong bolts could result in machine failure. Length is measured from under the head of the bolt to the tip of the threads.

IMPORTANT:

Nord-Lock washers (C) are supplied together, but it is possible that the two halves separated during transport. Ensure finer serrations (E) are to the outside and mating surfaces (F) are locked in place.

NOTE:

Do **NOT** torque the hardware at this time.

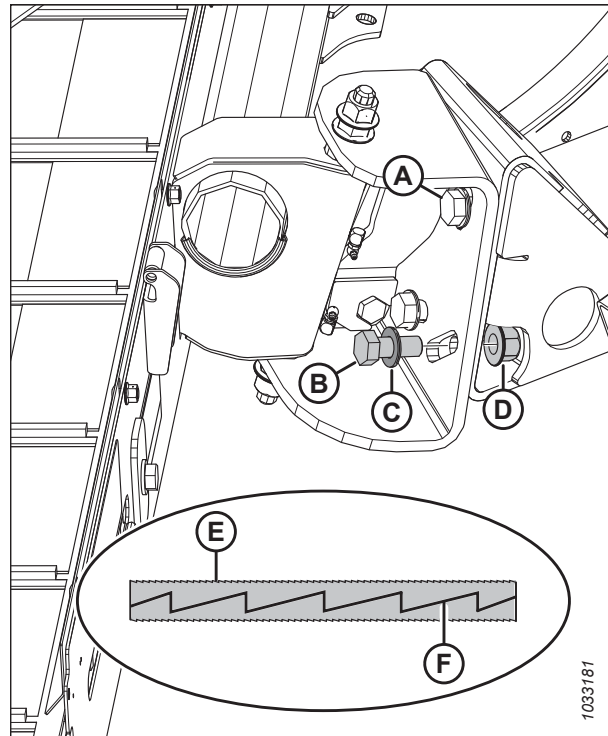


Figure 2.21: Linkage Mounting Hardware

13. Install adjustment bolt (A), flat washer (B), and two hex nuts (C) and (D).

NOTE:

The clevis has been made transparent in the illustration to show hardware on both sides.

14. Adjust bolt (A) until the deck is parallel with the ground.
15. Tighten jam nut (D) against nut (C).

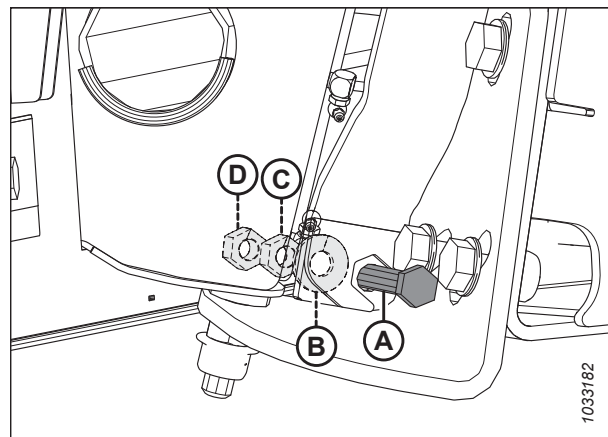


Figure 2.22: Installing Adjustment Bolt

INSTALLATION INSTRUCTIONS

16. Torque four mounting bolts (A) to 332 Nm (245 lbf-ft).
17. Torque nuts (B) to 330 Nm (243 lbf-ft).
18. Tighten nuts (C).
19. Add grease to grease zerks (D). Apply high temperature extreme pressure (EP2) performance grease with 1.5–5% molybdenum disulphide (NLGI grade 2) lithium base.

IMPORTANT:

Do **NOT** overgrease. Overgreasing creates excessive friction and heat.

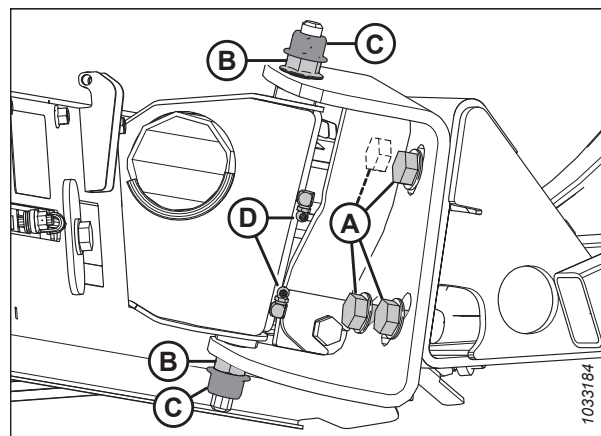


Figure 2.23: Clevis Hardware

20. Remove two shipping stands (A) from the front of the deck by removing bolt (B). Retain bolt (B) for reinstallation.

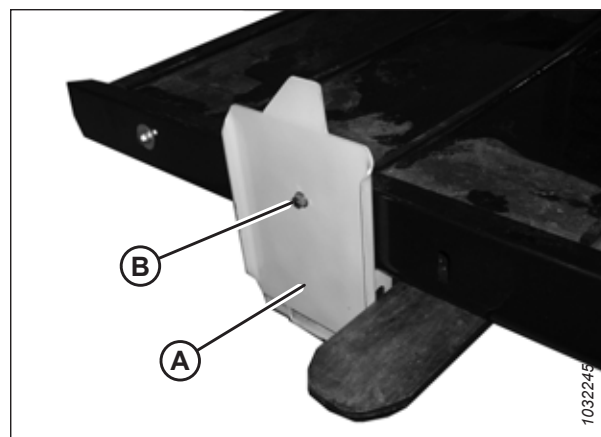


Figure 2.24: Deck Shipping Stand

21. Install washer (A) (MD #11695), and reinstall retained bolt (B) from step 20, page 27.

IMPORTANT:

Apply a medium-strength threadlocker (Loctite® 242®, 243®, or equivalent) to the bolt prior to reinstallation.

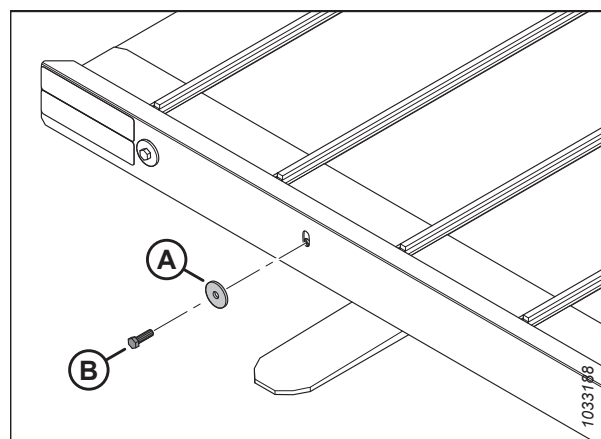


Figure 2.25: Deck Hardware

INSTALLATION INSTRUCTIONS

22. Ensure that the deck angle is horizontal, or at a slight incline, relative to the ground. Distance (A) should be equal to or greater than distance (B). To adjust the angle, refer to [3.5.2 Adjusting Deck Angle Relative to the Ground, page 55](#).

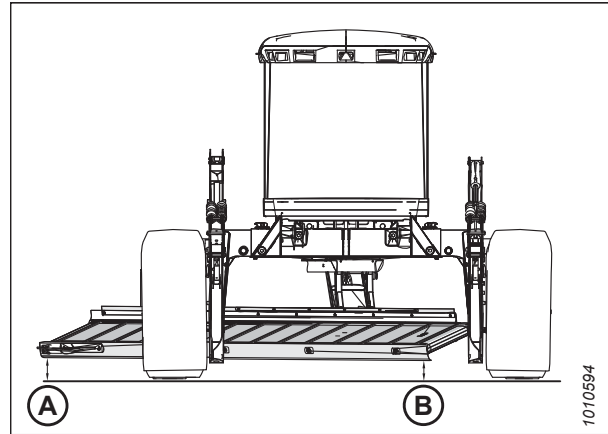


Figure 2.26: Deck Angle

23. Retrieve two clevis pins (MD #18627) and two cotter pins (MD #18648) from the hardware bag. Attach turnbuckle (A) (MD #144996) from linkage to deck using a clevis pin (MD #18627) on each end. Secure clevis pins with cotter pins (MD #18648).

- Connection point (B) is for R85 or R216 Rotary Disc Headers. The approximate turnbuckle length is 530 mm (21 in.).
- Connection point (C) is for A40DX Auger Headers. The approximate turnbuckle length is 630 mm (25 in.).

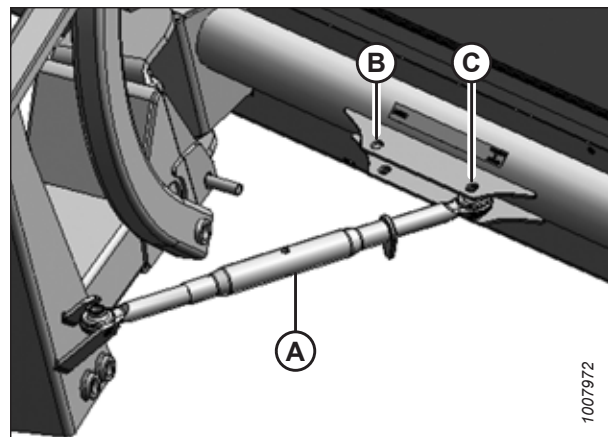


Figure 2.27: Adjustable Turnbuckle

24. Adjust the turnbuckle length so that gap (A) between the deck and the right drive tire is approximately 100 mm (4 in.).

NOTE:

The single-acting lift cylinder is pressurized with the draper drive circuit; therefore, when evaluating deck setup, the windrower must be running for the deck to be in its most forward position. This adjustment can be fine-tuned when the hydraulics setup is complete.

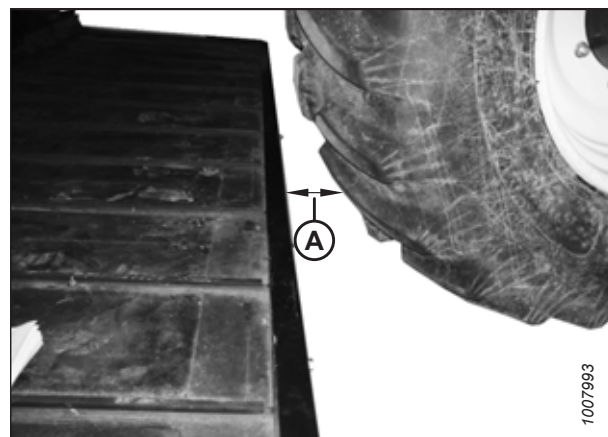


Figure 2.28: Deck and Right Drive Wheel

INSTALLATION INSTRUCTIONS

25. Attach short ball joint link bracket (A) with the already installed carriage bolts at the correct position for your header:

- Upper holes (B) for R85 or R216 Rotary Disc Headers
- Lower holes (C) for A Series Auger Headers

NOTE:

A tall ball joint link bracket (D) is also provided. Do **NOT** use the tall bracket in standard configuration. Refer to [3.6 Raising Deck, page 56](#) for more information.

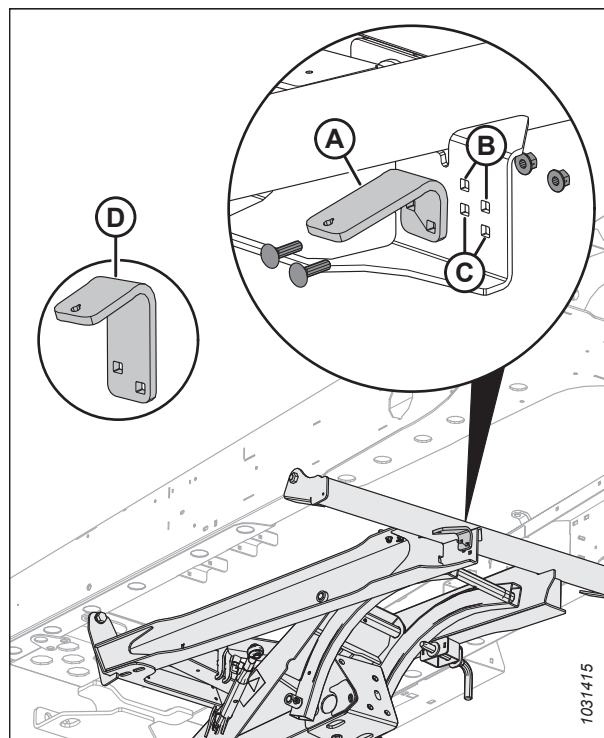


Figure 2.29: Ball Joint Link Bracket

26. Raise backsheet (A) off the deck and remove top nut (B) and tapered nut (C).
27. Install ball joint link (D) onto the bolt on the backsheet at the correct position for your header:
- Hole 3 for R85 or R216 Rotary Disc Headers
 - Hole 1 for A40DX Auger Headers
 - Hole 2 (optional); refer to [3.6 Raising Deck, page 56](#).
28. Install tapered nut (C) and torque the nut to 26 Nm (19 lbf ft).
29. Install nut (B) and torque the nut to 26 Nm (19 lbf ft).

IMPORTANT:

Ensure that the taper of nut (C) faces the ball joint as shown in the figure on the right.

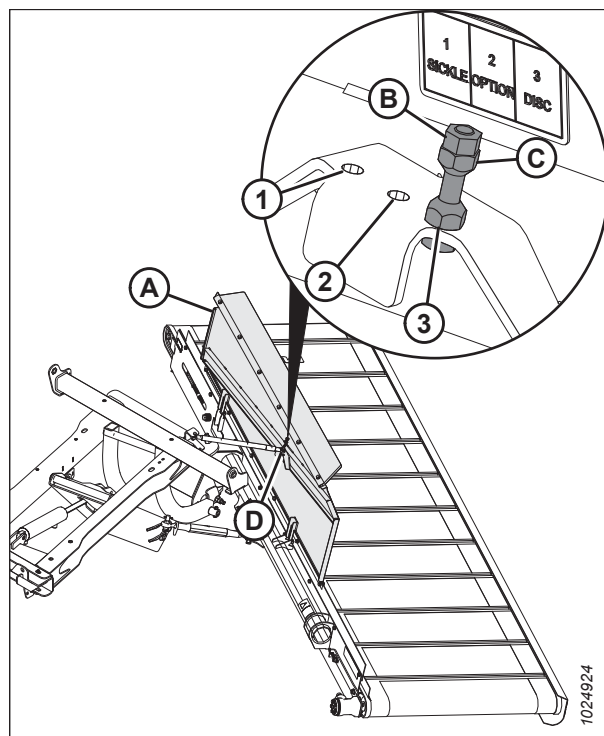


Figure 2.30: Ball Joint Link

2.6 Connecting Hydraulics to M1170 Windrower

The hydraulic connections allow the windrower's hydraulics to power and control the Double Windrow Attachment (DWA) system.

DANGER

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

1. Start the windrower and press and hold AUXILIARY LOWER switch (A) for five seconds to relieve pressure behind the couplers.
2. Shut down the engine, and remove the key from the ignition.



Figure 2.31: Windrower Console Switches

3. Route lift cylinder hoses (A) underneath both filters as shown in the figure on the right.
4. Connect linkage quick couplers (B) to quick couplers (C) on the windrower frame.

NOTE:

The DWA linkage and windrower have quick couplers preinstalled for easy connection.

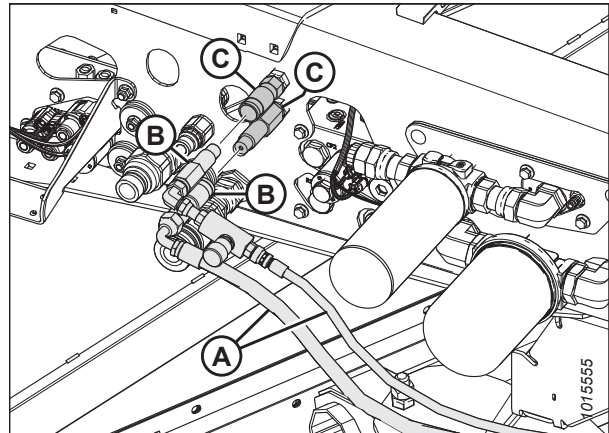


Figure 2.32: DWA Linkage Hydraulics

INSTALLATION INSTRUCTIONS

5. Set the lift valve setting to **5** as follows:
 - a. Loosen set screw (A).
 - b. Turn valve (B) all the way clockwise, and take note of the zero position.
 - c. Rotate the valve counterclockwise so that 5 is in that same position.
 - d. Tighten the set screw.

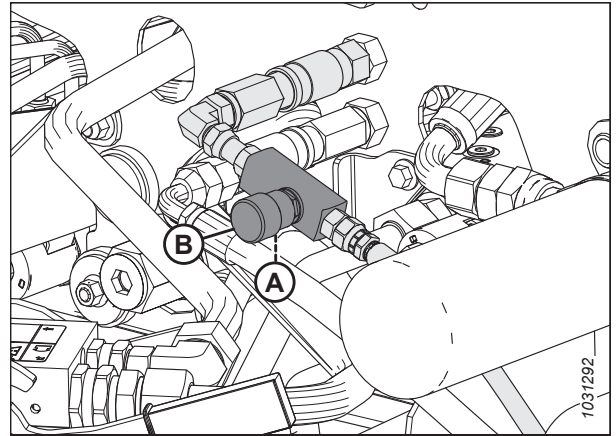


Figure 2.33: Deck Lift Valve

6. Retrieve the following parts from the bag:
 - Two clamps (MD #300577)
 - One clamp (MD #103738)
 - One bolt (MD #30627), 25 mm (63/64 in.) long
 - One bolt (MD #184661), 30 mm (1 3/16 in.) long
 - Two washers (MD #184711)
 - Two nuts (MD #135799)

INSTALLATION INSTRUCTIONS

7. Secure two lift cylinder hoses (A) to the top of the DWA frame with two clamps (B) (MD #300577) and (C) (MD #300577):

Attach clamp (B) (MD #300577) to the **TOP** of the frame, and clamp (F) (MD #103738) to the **BOTTOM** of the frame with the following hardware:

- One bolt (D) (MD #184661), 30 mm (1 3/16 in.) long
- One washer (E) (MD #184711)
- One nut (G) (MD #135799)

IMPORTANT:

Ensure that the correct bolts are installed by measuring the bolt length. The wrong bolts could result in machine failure. Length is measured from under the head of the bolt to the tip of the threads.

NOTE:

Do **NOT** tighten nut (G). Clamp (F) is applied for the deck motor pressure and the return hoses.

Attach clamp (C) (MD #300577) to the top of the frame using the following hardware:

- One bolt (H) (MD #30627), 25 mm (63/64 in.) long
- One washer (J) (MD #184711)
- One nut (K) (MD #135799)

IMPORTANT:

Ensure that the correct bolts are installed by measuring the bolt length. The wrong bolts could result in machine failure. Length is measured from under the head of the bolt to the tip of the threads.

8. Retrieve three cable ties (MD #30753) from the bag. Secure the cylinder hoses together at three locations (A) using cable ties.

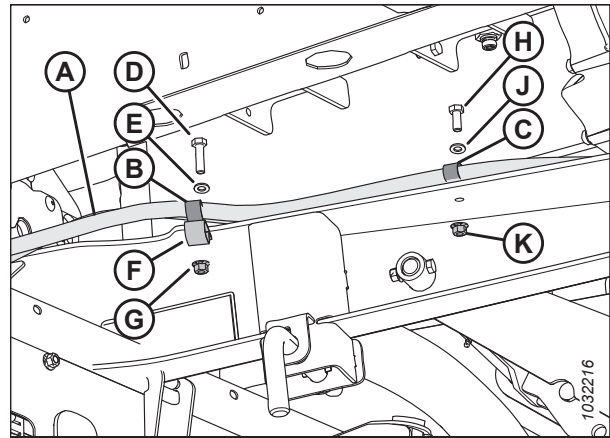


Figure 2.34: Linkage Cylinder Hoses

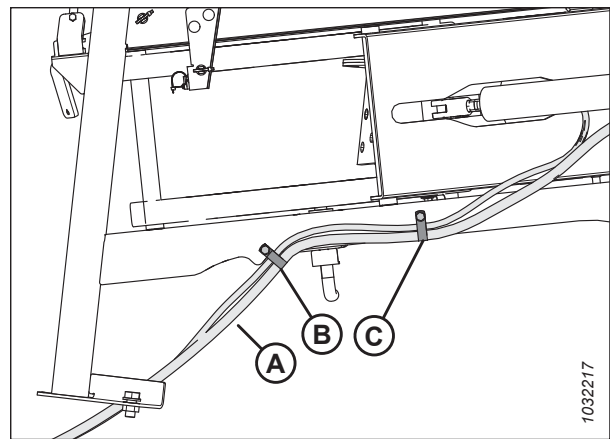


Figure 2.35: Linkage Lift Cylinder Hoses – Top View

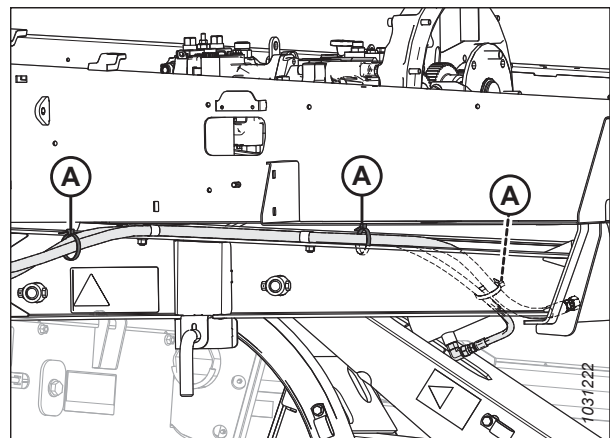


Figure 2.36: Linkage Lift Cylinder Hoses

INSTALLATION INSTRUCTIONS

9. Remove caps (A) from the fittings on the back of multicoupler support (B).

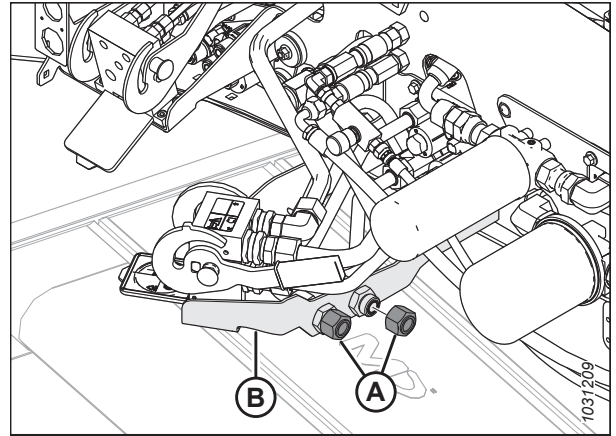


Figure 2.37: Multicouplers

10. Locate pump case drain hose (A) connected to elbow fitting (B) on lift/fan pump (C).
11. Disconnect hose (A) from elbow fitting (B).

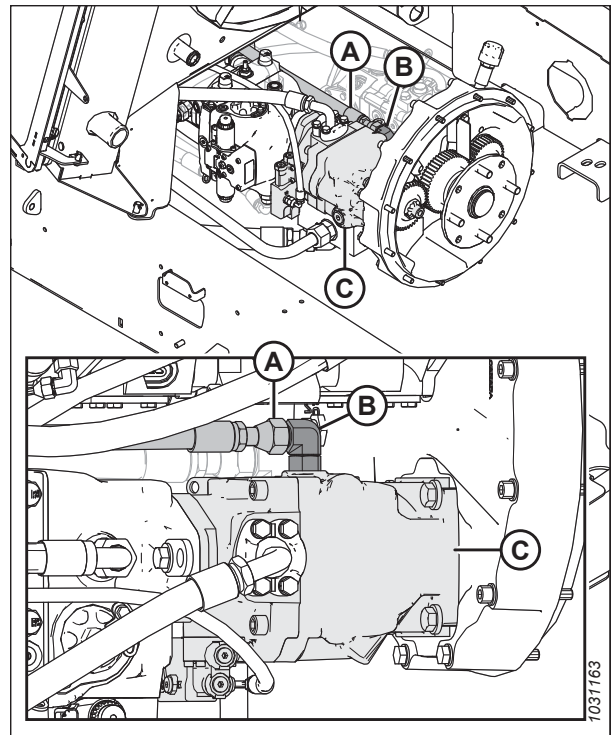


Figure 2.38: Lift/Fan Pump

INSTALLATION INSTRUCTIONS

12. Install reducer (B) (MD #252893) and tee fitting (C) (MD #135784) on deck motor case drain hose (A).
13. Torque reducer (B) to 84 Nm (62 lbf-ft).
14. Torque case drain hose (A) to 42 Nm (31 lbf-ft).

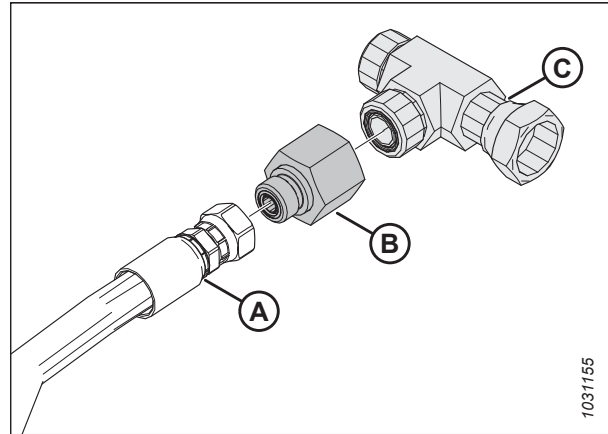


Figure 2.39: Case Drain Hose and Fittings

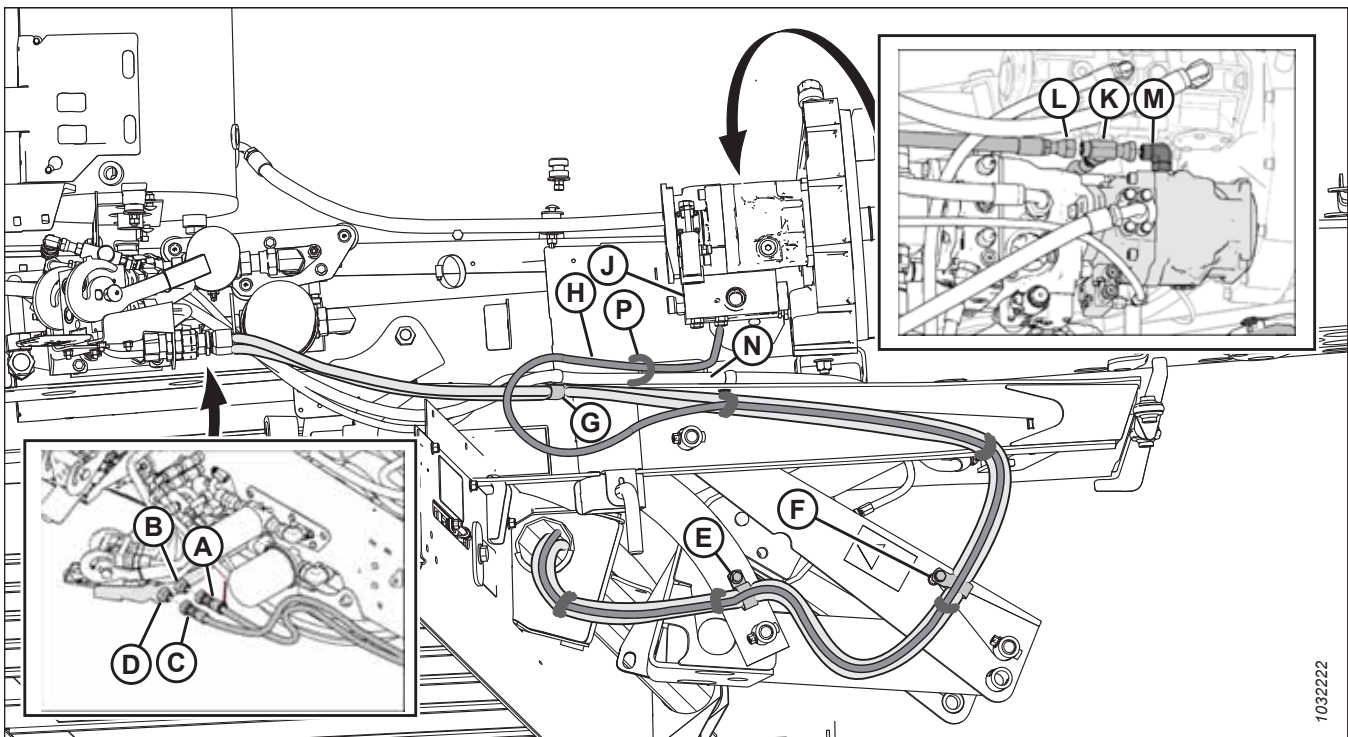


Figure 2.40: Deck Motor Hose Routing – M1170

15. Install deck pressure hose (A) (red cable tie, MD #176575) onto fitting (B). Torque fittings to 120 Nm (88 lbf-ft).
16. Install deck return hose (C) (MD #176575) onto fitting (D). Torque fittings to 120 Nm (88 lbf-ft).
17. Secure the pressure hose and the return hose using two clamps (E) and (F) mounted to the DWA, and one clamp (G) (previously left loose) mounted below the frame.
 - For rotary disc headers, ensure clamp (E) is located at the yellow tape on all 3 hoses.
 - For auger headers, ensure clamp (E) is located at the red tape on all 3 hoses.
 - Ensure clamps (E) and (F) are located at the yellow tape on all 3 hoses.
18. Route case drain hose¹ (H) under the windrower frame and under inlet manifold (J).

1. If a replacement is needed, order MD #176883. For more information, refer to topic [5.5 Hydraulic Hoses, page 94](#)

INSTALLATION INSTRUCTIONS

19. Install tee-fitting end (K) of the motor case drain hose between existing hose (L) and elbow fitting (M).
20. Torque hose (L) and tee fitting (K) to 84 Nm (62 lbf·ft).
21. Tie the case drain hose (H) to lift cylinder hose (N) using cable tie (P).
22. Tighten all clamps.

2.7 Connecting Hydraulics to M1240 Windrower

The hydraulic connections allow the windrower's hydraulics to power and control the Double Windrow Attachment (DWA) system.

DANGER

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

1. Start the windrower and press and hold AUXILIARY LOWER switch (A) for five seconds to release pressure behind the couplers.
2. Shut down the engine, and remove the key from the ignition.



Figure 2.41: Windrower Console Switches

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

NOTE:

The DWA linkage and windrower have quick couplers preinstalled for easy connection.

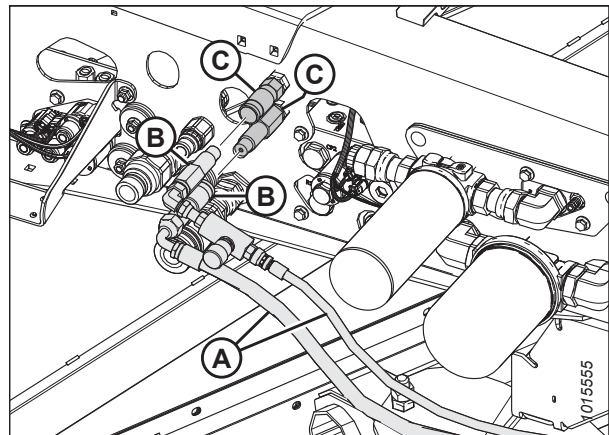


Figure 2.42: DWA Linkage Hydraulics

INSTALLATION INSTRUCTIONS

5. Set the lift valve setting to **5** as follows:
 - a. Loosen set screw (A).
 - b. Turn valve (B) all the way clockwise, and take note of the zero position.
 - c. Rotate the valve counterclockwise so that 5 is in that same position.
 - d. Tighten the set screw.

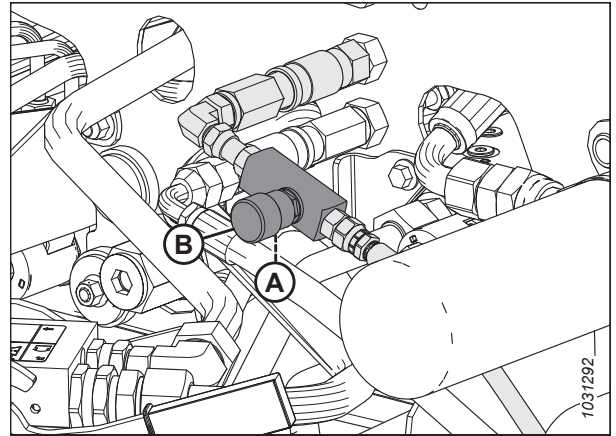


Figure 2.43: Deck Lift Valve

6. Retrieve the following parts from the bag:
 - Two clamps (MD #300577)
 - One clamp (MD #103738)
 - One bolt (MD #30627), 25 mm (63/64 in.) long
 - One bolt (MD #184661), 30 mm (1 3/16 in.) long
 - Two washers (MD #184711)
 - Two nuts (MD #135799)

INSTALLATION INSTRUCTIONS

7. Secure two lift cylinder hoses (A) to the top of the DWA frame at locations shown using clamps (B) (MD #300577) and (C) (MD #300577):

Attach clamp (B) (MD #300577) to the TOP of the frame, and clamp (F) (MD #103738) to the BOTTOM of the frame using the following hardware:

- One bolt (D) (MD #184661), 30 mm (1 3/16 in.) long
- One washer (E) (MD #184711)
- One nut (F) (MD #135799)

IMPORTANT:

Ensure that the correct bolts are installed by measuring the bolt length. The wrong bolts could result in machine failure. Length is measured from under the head of the bolt to the tip of the threads.

NOTE:

Do **NOT** tighten nut (G). Clamp (F) is applied to the deck motor pressure and return hoses.

Attach clamp (C) (MD #300577) to the top of the frame using the following hardware:

- One bolt (H) (MD #30627), 25 mm (63/64 in.) long
- One washer (J) (MD #184711)
- One nut (K) (MD #135799)

IMPORTANT:

Ensure that the correct bolts are installed by measuring the bolt length. The wrong bolts could result in machine failure. Length is measured from under the head of the bolt to the tip of the threads.

8. Retrieve three cable ties (MD #30753) from the bag. Secure the cylinder hoses together at three locations (A) using cable ties.

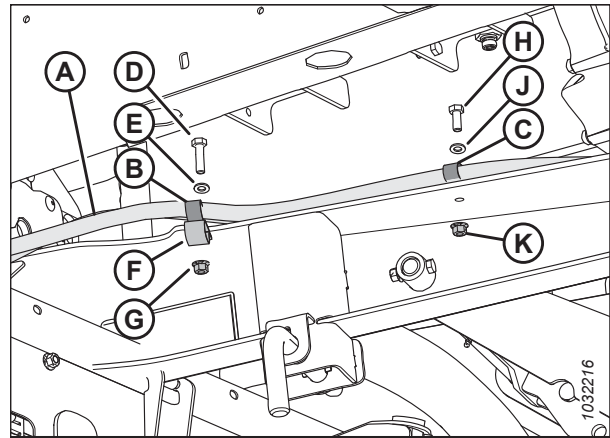


Figure 2.44: Linkage Cylinder Hoses

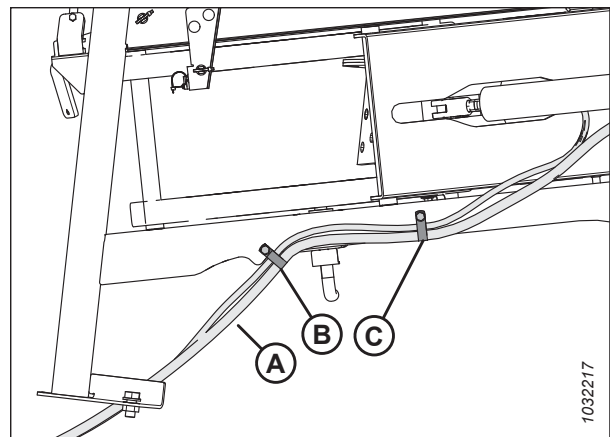


Figure 2.45: Linkage Lift Cylinder Hoses – Top View

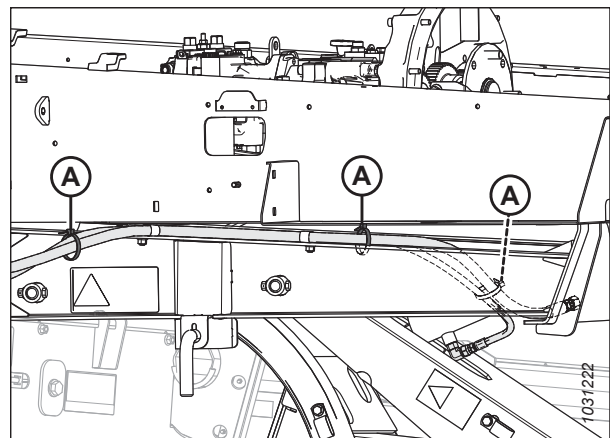


Figure 2.46: Linkage Lift Cylinder Hoses

INSTALLATION INSTRUCTIONS

9. Locate case drain cooler hose (A) that routes along the back of disc/knife pump (C) and is clamped to the gearbox.
10. Disconnect hose (A) from hose (B).

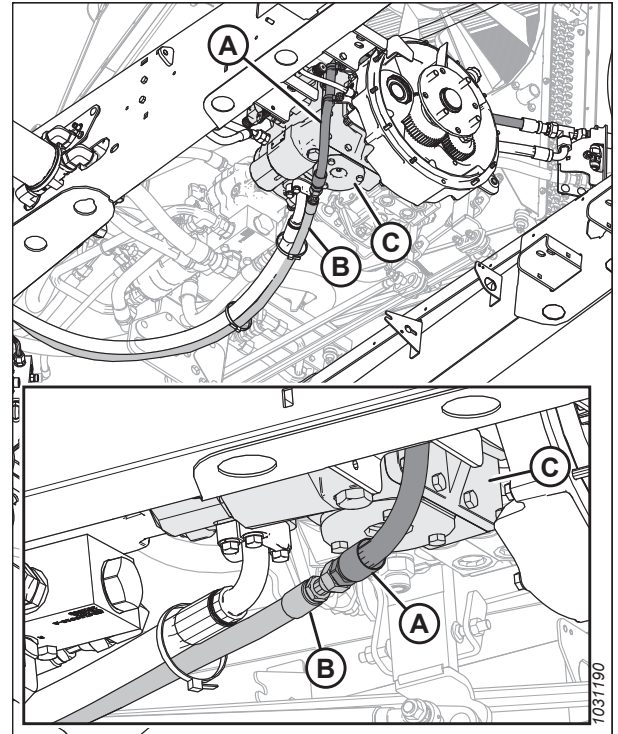


Figure 2.47: Disc/Knife Pump

11. Loosely Install reducer (B) (MD #252893) and tee fitting (C) (MD #135784) on deck motor case drain hose (A).
12. Torque reducer (B) to 84 Nm (62 lbf-ft).
13. Torque case drain hose (A) to 42 Nm (31 lbf-ft).

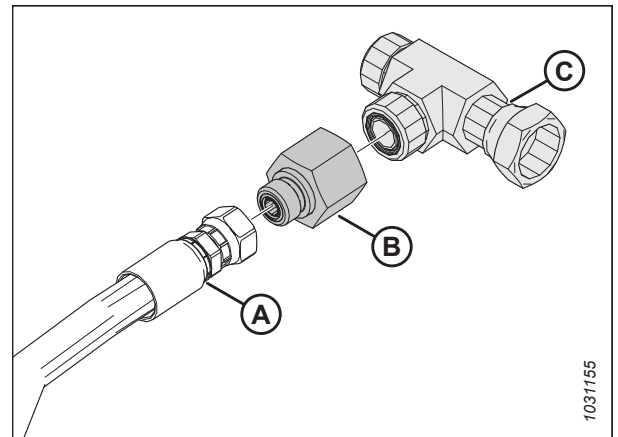


Figure 2.48: Case Drain Hose and Fittings

INSTALLATION INSTRUCTIONS

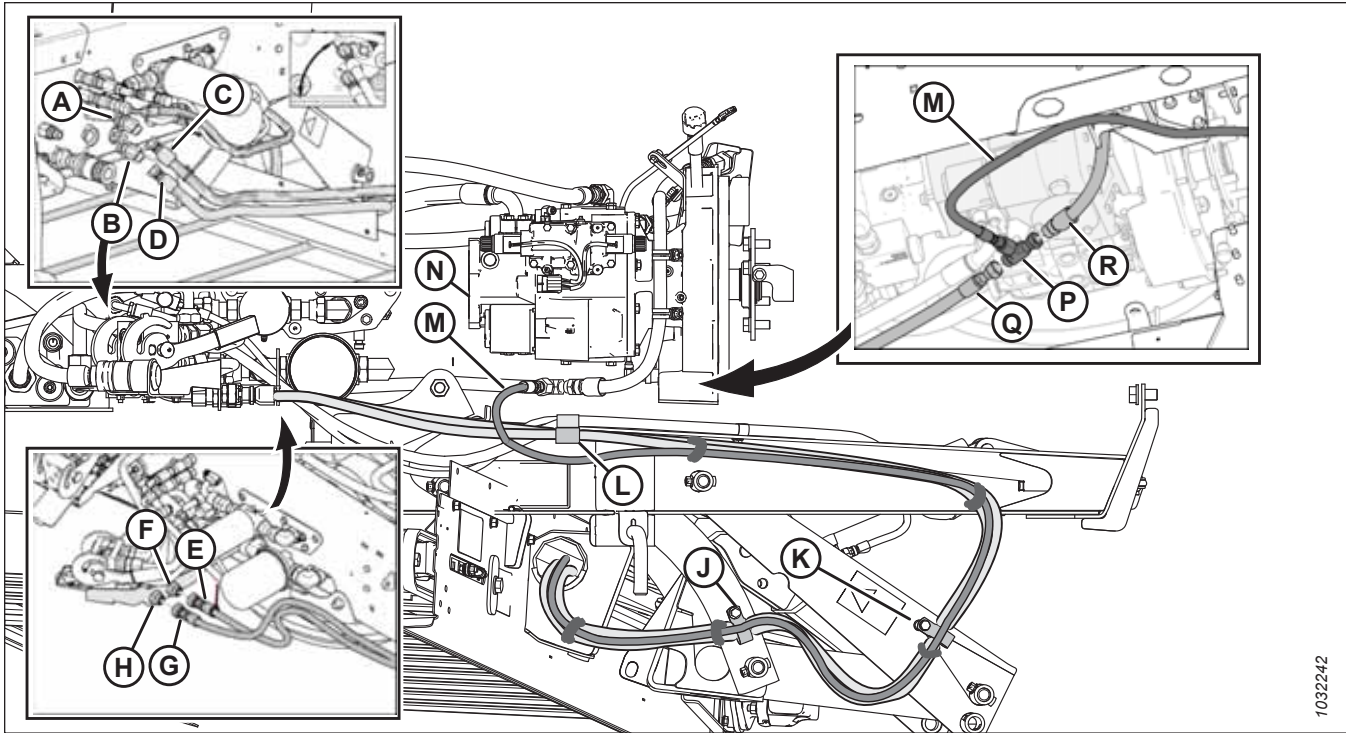


Figure 2.49: Deck Motor Hose Routing – M1240

14. Install the deck pressure and return hoses as follows:

- **Disc-Only Configuration:** Install 45° fittings (A) and (B) into the hydraulic manifold, and torque to 120 Nm (88 lbf ft). Install deck pressure hose (C) (red cable tie, MD #176575) on top fitting (A). Install deck return hose (D) (MD #176575) onto bottom fitting (B), and torque to 120 Nm (88 lbf·ft).

NOTE:

Orient fittings to 60° from the vertical as shown in the figure above.

- **Disc/Draper Configuration:** Install deck pressure hose (E) (red cable tie, MD #176575) onto fitting (F). Install deck return hose (G) (MD #176575) onto fitting (H). Torque both hoses to 120 Nm (88 lbf·ft).

15. Secure the pressure hose and the return hose using clamps (J) and (K) mounted to the DWA, and one clamp (L) (previously left loose) mounted below the frame.

- For rotary disc headers, ensure clamp (J) is located at the yellow tape on the hoses.
- For auger headers, ensure clamp (J) is located at the red tape on the hoses.
- Ensure clamps (K) and (L) are located at the yellow tape on the hoses.

16. Route case drain hose² (M) under the windrower frame and under disc/knife pump (N).

17. Install tee-fitting end (P) of the motor case drain hose between existing hoses (Q) and (R).

18. Torque hose (Q) and tee fitting (P) to 84 Nm (62 lbf·ft).

19. Tighten all clamps.

2. If a replacement is needed, order MD #176883. For more information, refer to [topic 5.5 Hydraulic Hoses, page 94](#)

2.8 Connecting Proximity Sensor

The Double Windrow Attachment (DWA) proximity sensor communicates the position of the DWA deck to the windrower's electronic control system and controls when the draper turns on or off. The proximity sensor comes preinstalled on the DWA linkage.

1. On the inner right side of the windrower frame, locate DWA extension connector C24A (A). The DWA extension is tied to the chassis harness.
2. Remove cable ties (B) binding the DWA extension to the chassis harness.

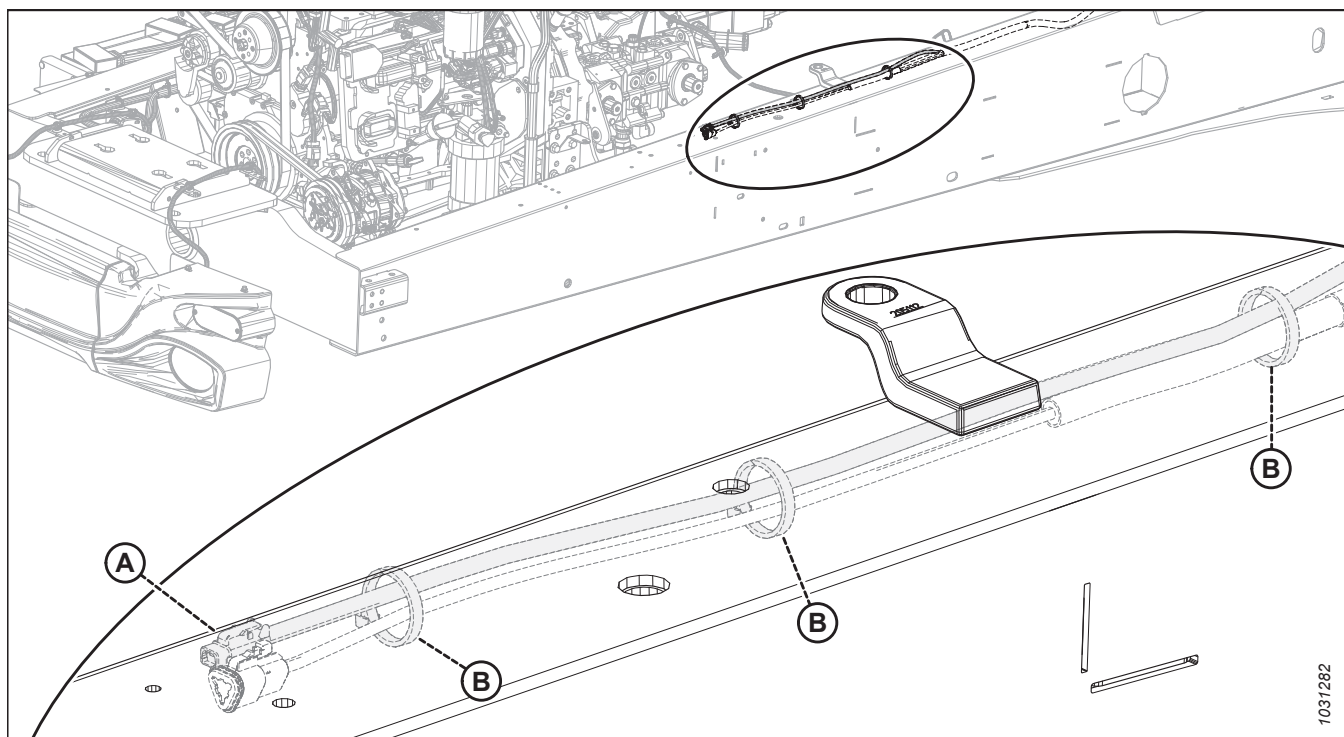


Figure 2.50: Chassis Harness – DWA Extension C24A

3. Locate proximity sensor connector (A) at the top right side of the DWA linkage.

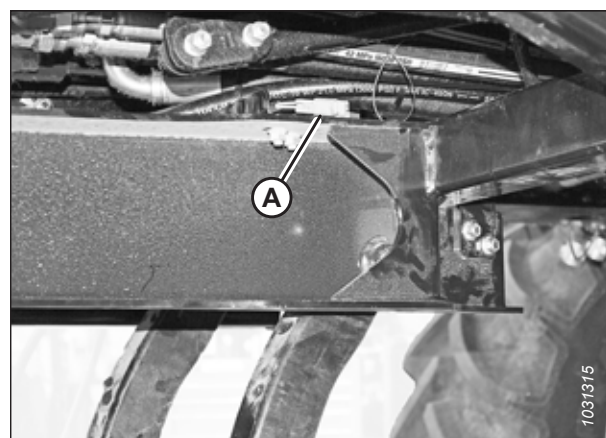


Figure 2.51: DWA Proximity Sensor

INSTALLATION INSTRUCTIONS

4. Connect DWA extension C24A to DWA proximity sensor (A).
5. Secure extension harness (B) under the linkage frame using existing fir tree clips (C).

IMPORTANT:

Ensure extension harness (B) is secured under the linkage frame, as shown in the figure, to prevent interference with the steering components.

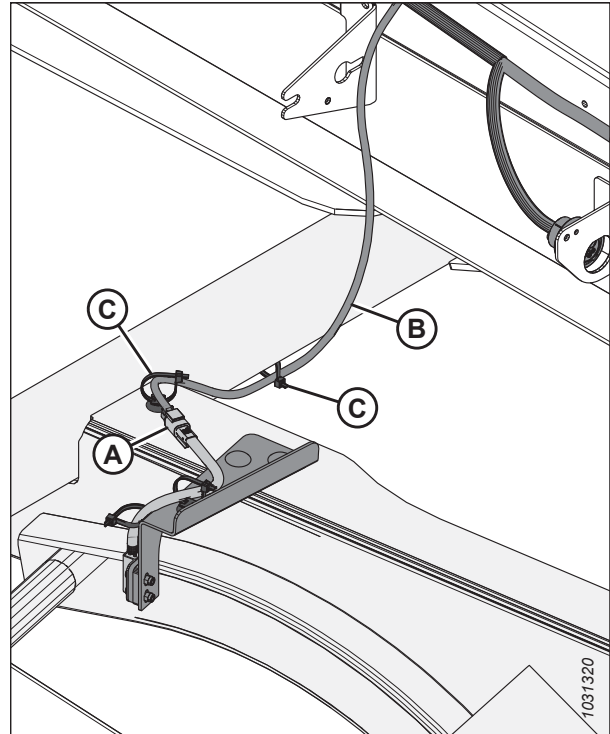


Figure 2.52: DWA Proximity Sensor

2.9 Checking Clearance between Front Skid and Draper

Excess space between the Double Windrow Attachment's (DWA) front skid and draper can lead to crop build-up; too little clearance can cause premature draper wear.

1. Ensure that skid height (A) is 1.5–3 mm (1/16–1/8 in.) above the draper.

IMPORTANT:

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 the gap is too large, crop can enter the draper.
2. Adjust the skid height if required. For instructions, refer to [4.1.5 Adjusting Front Skid, page 69](#).

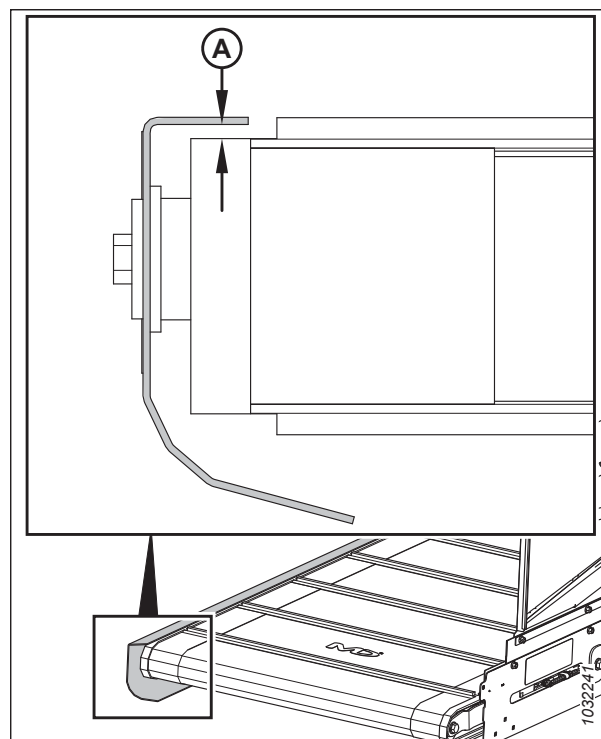


Figure 2.53: Draper Deck Front Skid

2.10 Activating Double Windrow Attachment

The Double Windrow Attachment (DWA) must be activated in the windrower's Harvest Performance Tracker (HPT), prior to use.

NOTE:

The ground speed lever (GSL) controls for the DWA will only work when there is a recognized header ID (wired or forced) and the DWA has been activated for that header type. For more information on the header setup and recognizing the header ID, refer to your header or windrower operator's manual.

To activate the DWA, follow these steps:

1. In the HEADER SETUP menu, scroll down and select ATTACHMENTS (A).

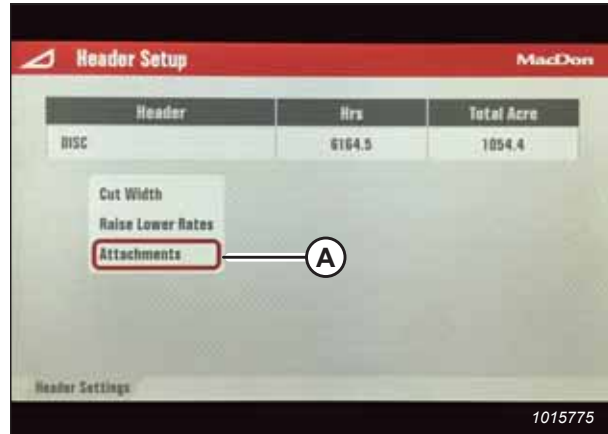


Figure 2.54: Header Setup – Attachments

2. Select DWA (A). The display will show an image of the buttons that control the DWA with each particular header. The DWA is now activated.

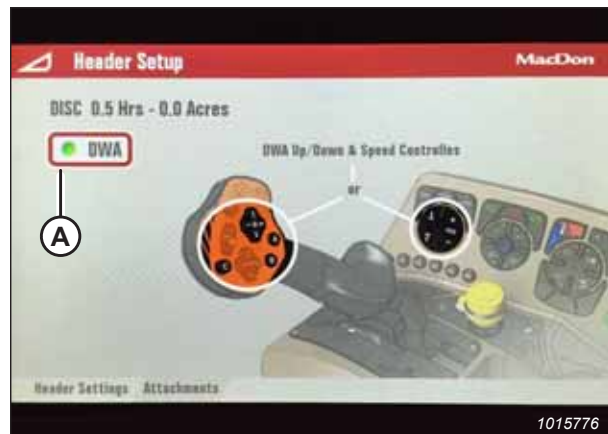


Figure 2.55: Selecting DWA

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

The One-Touch-Return buttons (A, B, and C) on the Harvest Performance Tracker (HPT) and GSL handle allow you to save three presets.

1. Press soft key 5 (A) to open the main menu.
2. Highlight settings icon (C) with HPT scroll knob (B) and press the scroll knob to select the settings icon.

NOTE:

The procedure is similar when using the GSL handle. Highlight the settings icon with the GSL scroll wheel and then select the icon using the GSL select button (white checkmark).



Figure 2.56: Opening the Main Menu

3. Highlight One-Touch-Return icon (A) with the scroll knob and press the scroll knob to select the icon. The HEADLAND MANAGEMENT menu (B) displays.

NOTE:

The procedure is similar when using the GSL handle. Highlight One-Touch-Return icon (A) with the GSL scroll wheel and then select the icon using the GSL select button (white checkmark).

NOTE:

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

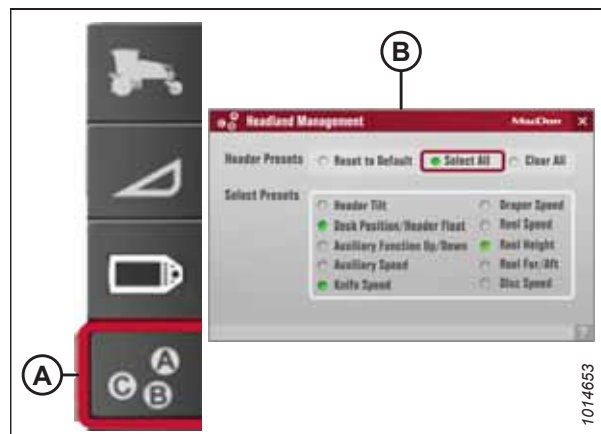


Figure 2.57: One-Touch-Return Icon and Menu List

4. To program the One-Touch-Return buttons, press and hold buttons A, B, or C on the GSL handle for 3 seconds until an audible tone is heard. The tone confirms that the header settings are saved to that button. The One-Touch-Return buttons will always save the header height settings, but the following DWA settings can also be saved:

- DWA up/down
- DWA speed

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



Figure 2.58: One-Touch-Return Buttons on the GSL

2.10.2 Setting Draper Pressure Alarm

The draper pressure alarm indicates when the Double Windrow Attachment (DWA) draper is operating above the desired pressure, such as when crop is lodged between the draper and the deck.

1. Open the QuickMenu system by pressing scroll knob (A) on the HPT or GSL select button (B) while the run screen is showing the DWA speed and pressure alarm.

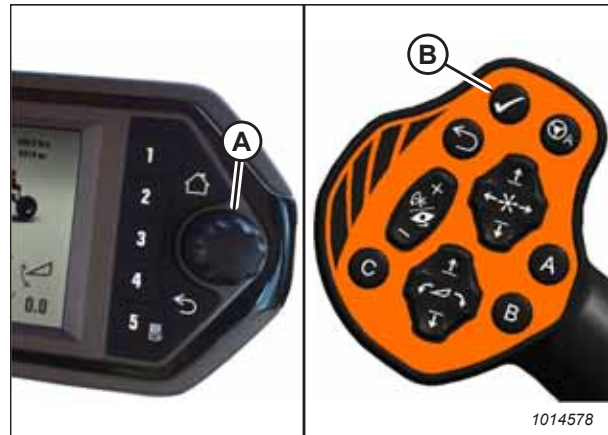


Figure 2.59: HPT Scroll Knob and GSL Select Button

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



Figure 2.60: QuickMenu / Draper Pressure Alarm

3. Adjust alarm setpoint (A) to the desired value by scrolling until the pressure reaches the desired alarm point. The alarm can be turned off by scrolling to the right end of the pressure graph. The digital value is replaced with three dashed lines, indicating that it's possible to adjust the alarm setpoint value. Refer to your windrower manual for more information about alarm settings.



Figure 2.61: QuickMenu / Draper Pressure Alarm

Chapter 3: Operation

Safely operating your machine requires familiarizing yourself with its capabilities.

3.1 Operational Safety

Observe these safety precautions when operating the Double Windrow Attachment (DWA), and, as always, follow all the safety precautions in the windrower and header operator's manuals.



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 the deck is raised fully for transport, service, or storage—or before going under the deck.
- Keep away from the draper and rollers when they are in motion.
- Keep clear of the deck while it is being raised or lowered.

3.2 Engaging and Disengaging Deck Safety Pin

The Double Windrow Attachment (DWA) deck safety pin prevents the deck from lowering unexpectedly. You can only engage the pin when the deck is fully raised. Engage the pin before going under the deck for any reason. Ensure that the pin is disengaged before lowering the DWA.

- To engage the deck safety pin, refer to [3.2.1 Engaging the Deck Safety Pin, page 48](#).
- To disengage the deck safety pin, refer to [3.2.2 Disengaging Deck Safety Pin, page 48](#).

3.2.1 Engaging the Deck Safety Pin

This section explains how to properly engage the deck safety pin.

1. Raise the DWA deck.
2. Push pin (A) inward until both roll pins (B) are inside the channel.
3. Rotate pin (A) 90°.

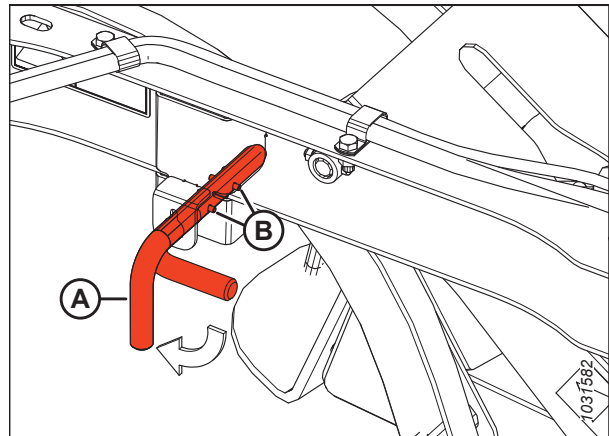


Figure 3.1: Deck Safety Pin – Engaged

3.2.2 Disengaging Deck Safety Pin

This section explains how to properly disengage the deck safety pin.

1. Rotate pin (A) 90°.
2. Pull pin (A) outboard until roll pin (B) is outside the channel.

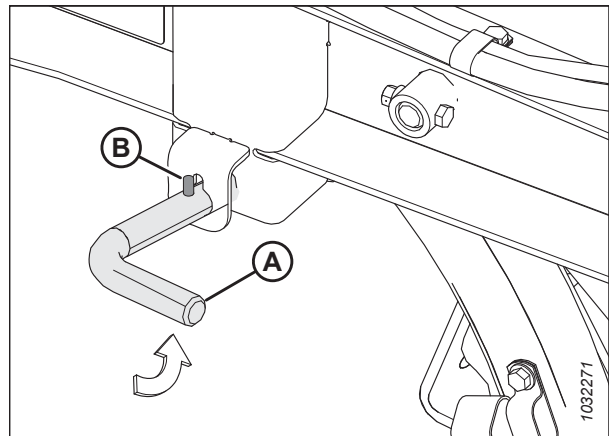


Figure 3.2: Deck Safety Pin – Disengaged

OPERATION

3. Rotate pin (A) 90°.

NOTE:

This will allow roll pin (B) to prevent the safety pin from sliding inboard and damaging the linkage during operation.

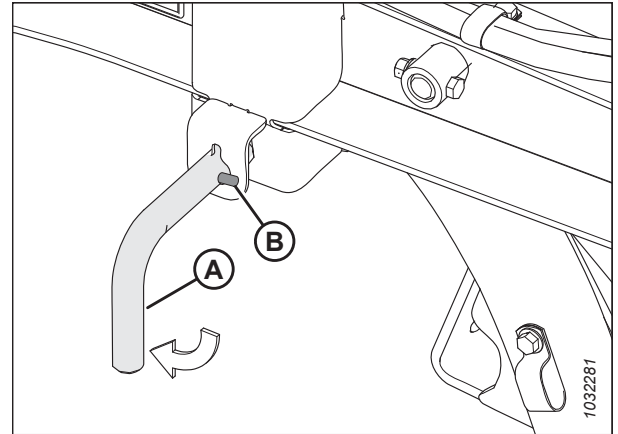


Figure 3.3: Deck Safety Pin – Disengaged

3.3 Raising and Lowering Deck

Raising and lowering the Double Windrow Attachment (DWA) can be controlled in three ways: pressing reel raise/lower buttons on the GSL, pressing raise/lower buttons on the operator's console, and presetting deck position with headland management position buttons.

IMPORTANT:

Proceed with extra caution when raising the deck for the first time. The deck rotates as it raises and lowers, and the backsheet folds onto the deck. Ensure that the deck and backsheet are not interfering with windrower parts or the forming shield. If interference does occur, adjust the proximity sensor. For instructions, refer to [3.3.2 Adjusting Proximity Sensor](#), page 52.

NOTE:

The GSL controls for the DWA will only work when there is a recognized header ID (wired or forced) and the DWA has been activated for that header type.

- For more information on the header setup and recognizing the header ID, refer to your header or windrower operator's manual.
- For instructions on activating the DWA, refer to [2.10 Activating Double Windrow Attachment](#), page 44.

To raise or lower the deck, follow these steps:

1. Remove/disengage the deck safety pin. For instructions, refer to [3.2.2 Disengaging Deck Safety Pin](#), page 48.
2. To raise the DWA deck, press and hold reel raise button (A) on the GSL handle; to lower the DWA deck, press and hold reel lower button (B) on the GSL handle. The operator can interrupt the raising and lowering of the DWA deck by releasing the buttons.
3. To raise the DWA deck, press and hold button (A) on the operator's console ; to lower the DWA deck, press and hold button (B) on the operator's console. The operator can interrupt the raising and lowering of the DWA deck by releasing the buttons.

NOTE:

When setting the deck position with the One-Touch-Return buttons A, B, and C on the GSL, the deck movement (raise/lower) cannot be interrupted. For instructions, refer to [2.10.1 Setting One-Touch-Return Buttons \(A, B, and C\)](#), page 45.

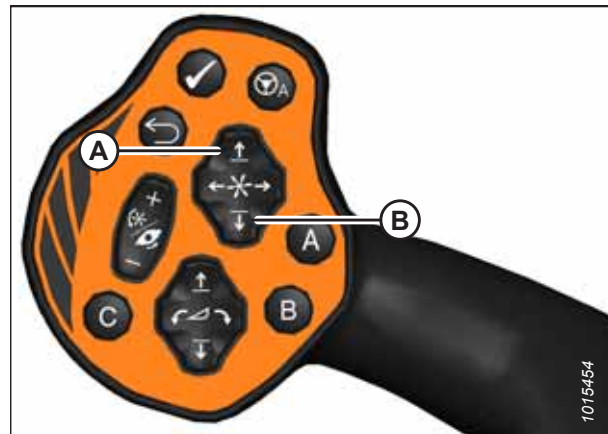


Figure 3.4: Ground Speed Lever (GSL)



Figure 3.5: Operator's Console

OPERATION

NOTE:

DWA deck position (A) (up or down) is displayed on the Harvest Performance Tracker (HPT). If the raise/lower motion is interrupted, the HPT defines up or down as disengaged or engaged.



Figure 3.6: Harvest Performance Tracker (HPT)

3.3.1 Adjusting Deck Lift Speed

Identifying the proper Double Windrow Attachment (DWA) deck lift speed is essential for successful 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 hex socket screw (A) to lock the adjusting knob into position. Loosen the locking screw enough to allow adjustment valve knob (B) to turn. Do **NOT** remove screw. Tighten the screw after adjustments.

Refer to the following to adjust the deck lift speed:

- If the deck lift speed is too high, turn adjuster valve knob (B) clockwise.
- If the deck lift speed is too low, turn adjuster valve knob (B) counterclockwise.

NOTE:

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

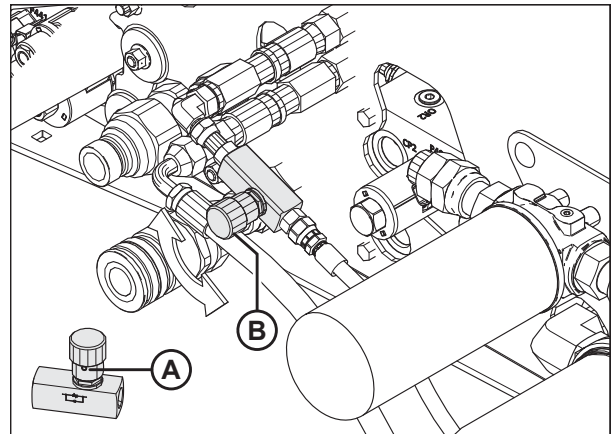


Figure 3.7: Deck Lift Speed Valve

3.3.2 Adjusting Proximity Sensor

Carefully adjust the proximity sensor when starting the Double Windrow Attachment (DWA) for the first time.

1. The draper shuts off automatically when the deck is raised about two-thirds of the way. If the deck does not shut off (resulting in the backsheet touching the draper before it shuts off), lower the proximity sensor at the linkage as follows:
 - a. Loosen screws (A) to lower switch (B).
 - b. Tighten screws (A) and torque to 1.4 Nm (12 lbf·in).

NOTE:

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

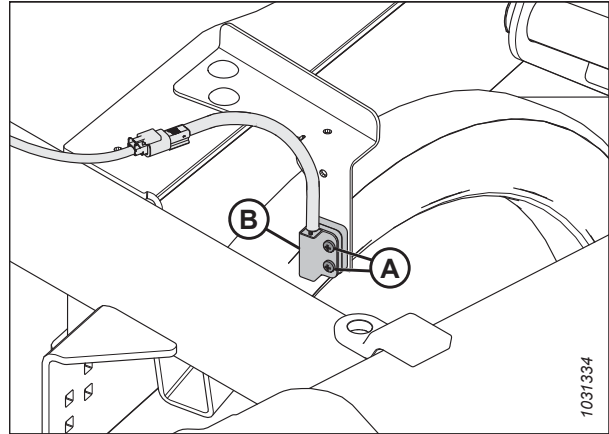


Figure 3.8: Proximity Sensor

2. If the sensor is not positioned at 90° to the DWA frame, the adjacent frame can activate the switch and prevent the draper from running. Follow these steps to position the sensor at 90°:
 - a. Loosen bolts (A) and adjust sensor bracket (B) fore or aft until it is 90° to the DWA linkage arm.
 - b. Ensure that sensor (C) is positioned 4 mm (5/32 in.) from the linkage arm.
 - c. Tighten bolts (A).

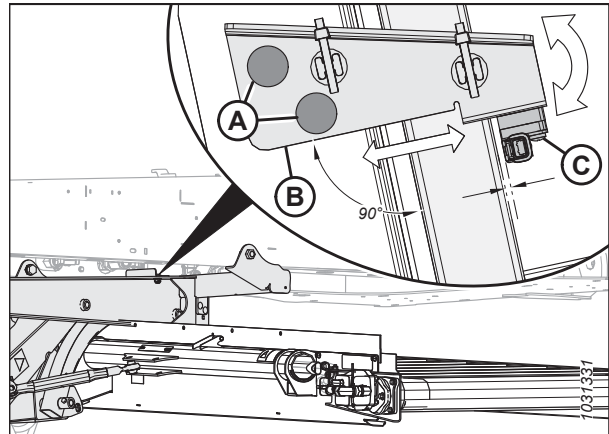


Figure 3.9: Proximity Sensor

3.4 Setting Draper Speed

The Double Windrow Attachment (DWA) draper speed is adjustable from the GSL or the operator's console.

NOTE:

The first time the DWA is started on the windrower, it is likely that the default speed will be zero. This means that the header may be engaged, but the DWA deck may not be turning. Increase the speed, and verify that the deck has started to turn.

1. Adjust the draper speed by using the reel fore/aft buttons on the GSL. Press reel fore button (A) to increase the speed and reel aft button (B) to decrease the speed.

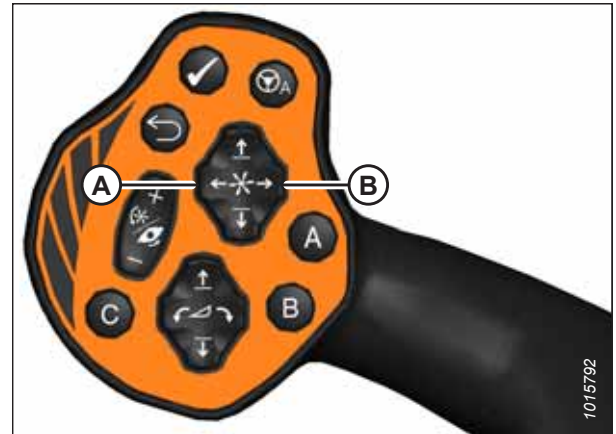


Figure 3.10: GSL

2. Adjust the draper speed from the operator's console by pressing button (A) to increase the speed or pressing button (B) to decrease the speed.



Figure 3.11: Operator's Console

NOTE:

DWA draper speed (A) is displayed on the Harvest Performance Tracker (HPT).



Figure 3.12: HPT

3.5 Adjusting Deck Angle

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

NOTE:

If set up with an R85 or R216 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.

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 54](#).

To adjust the deck angle relative to the ground, refer to [3.5.2 Adjusting Deck Angle Relative to the Ground, page 55](#).

3.5.1 Adjusting Deck Angle Relative to the Drive Tire

The turnbuckle on the Double Windrow Attachment (DWA) can be adjusted to change the deck angle relative to the drive tire.

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

1. Loosen locking tab (D) on the adjustable turnbuckle.
2. Rotate center tube (A) to the desired length.
 - Connection point (B) is for R85 or R216 Rotary Disc Headers. The approximate turnbuckle length is 530 mm (21 in.).
 - Connection point (C) is for A40DX Headers. The approximate turnbuckle length is 630 mm (25 in.).

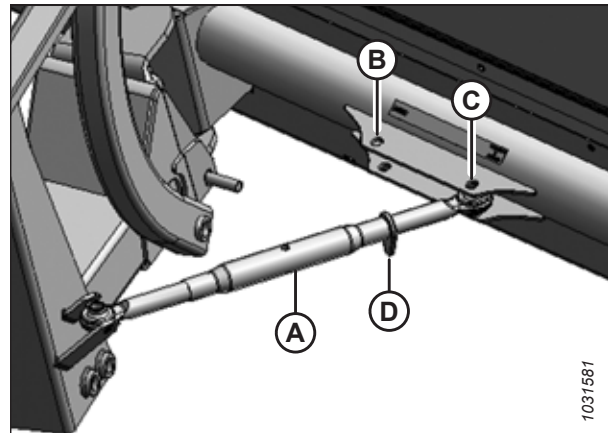


Figure 3.13: Adjustable Turnbuckle

3. Adjust the turnbuckle length so that gap (A) between the deck and the right drive tire is approximately 100 mm (4 in.).

NOTE:

The single-acting lift cylinder is pressurized with the draper drive circuit; therefore, when evaluating deck setup, the windrower must be running for the deck to be in its most forward position.

4. Tighten the locking tab against the center tube.

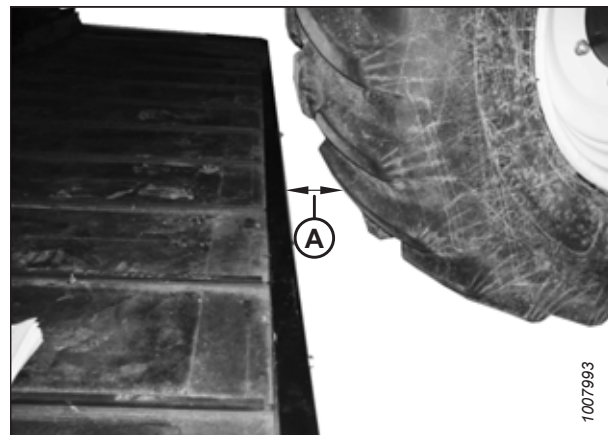


Figure 3.14: Distance from Deck to Tire

3.5.2 Adjusting Deck Angle Relative to the Ground

When the deck is in its normal running position, 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).

- Increase distance (A) if crop needs to be thrown farther.
- For lighter crop conditions with an R85 or R215 Rotary Disc Header, distance (A) should be equal to distance (B).

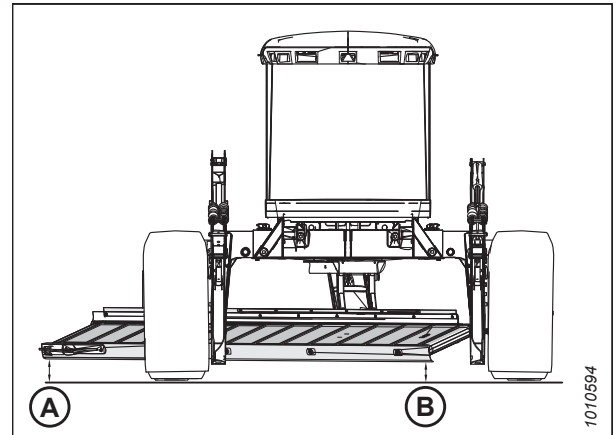


Figure 3.15: DWA Deck

To adjust deck angle:

1. Loosen longer bolt (B) and three shorter bolts (A).

NOTE:

One of the shorter bolts is hidden behind bracket (C) and is not shown in the illustration at right.

2. Loosen jam nut (D).
3. To increase the distance between the ground and the deck, tighten nut (E); to decrease the distance between the ground and the deck, loosen nut (E).

IMPORTANT:

Ensure at least 25 mm (1 in.) clearance between the backsheet and the fuel tank with the DWA in working position.

4. After adjustment, tighten jam nut (D).
5. Torque bolts (A) and (B) to 332 Nm (245 lbf-ft).

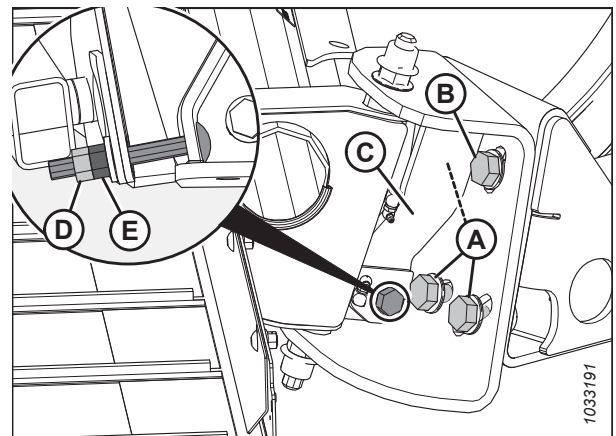


Figure 3.16: Deck Pivot

3.6 Raising Deck

It may be necessary to change the deck height on the Double Windrow Attachment (DWA) if performance issues occur. Changing the deck height changes the height at which the deck will receive crop from the header.

IMPORTANT:

Raising the deck is generally **NOT** recommended. Ensure that there is at least 25 mm (1 in.) of clearance between the backsheet and the fuel tank when the DWA is in the working position.

To prevent the draper deck components from wearing out rapidly, do **NOT** allow the deck to touch the ground. If absolutely necessary, raise the deck as follows:

IMPORTANT:

Changing the height of the deck can result in premature draper wear, if the draper contacts rear panel dust shield (A) during operation.

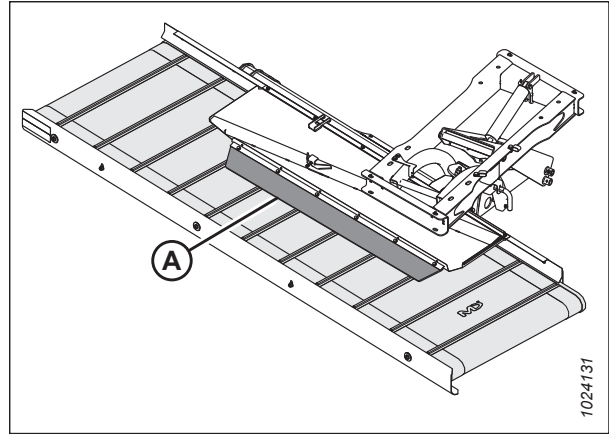


Figure 3.17: Draper Deck

1. Lower the linkage by fully extending the cylinder.
2. Support the deck on blocks.
3. Remove bolt and nut (A), and move pivot pin (B) to forward position (C). This will raise the front of the deck by approximately 100 mm (4 in.).

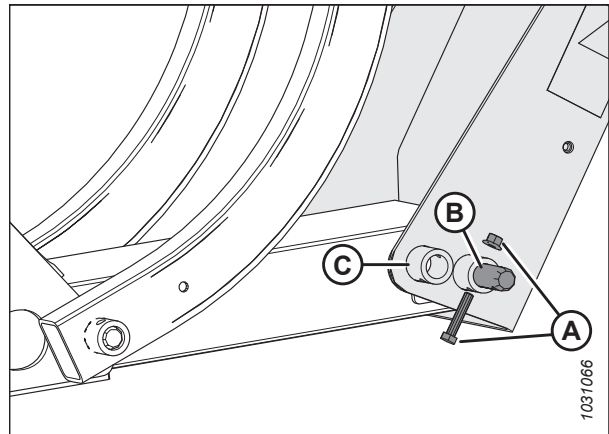


Figure 3.18: DWA Linkage

OPERATION

4. Reinstall bolt and nut (A) to secure pivot pin (B) to rear arm (C).

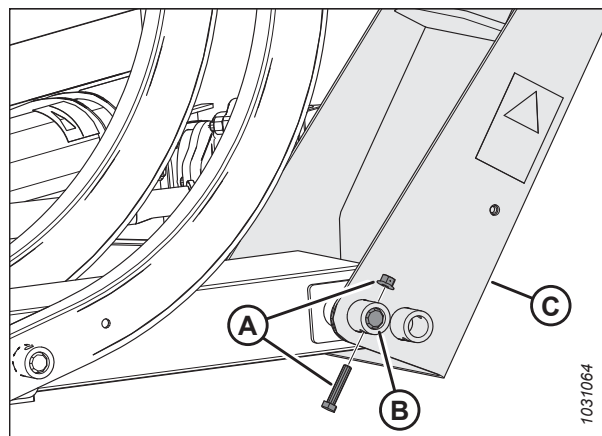


Figure 3.19: DWA Linkage

5. With the deck in the raised position, install the correct ball joint link bracket according to your header:
 - For R85 and R216 Rotary Disc Headers, install tall bracket (A) at upper holes (C).
 - For A40DX Auger Headers, install short bracket (B) at upper holes (C).

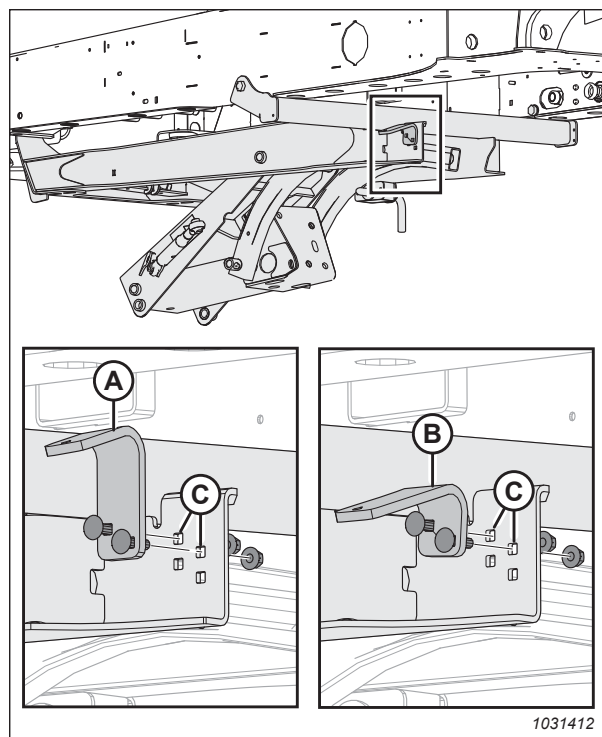


Figure 3.20: Ball Joint Link Bracket

OPERATION

6. Install ball joint link (D) in the middle hole on backsheet panel (A).

IMPORTANT:

Ensure that there is at least 25 mm (1 in.) of clearance between the backsheet and the fuel tank when the DWA is in the working position.

7. Install tapered nut (C). Torque the nut to 26 Nm (19 lbf ft.).

IMPORTANT:

Ensure that the taper of nut (C) faces the ball joint as shown in Figure 3.21 *Ball Joint Link*, page 58.

8. Install nut (B) and torque the nut to 26 Nm (19 lbf ft.).

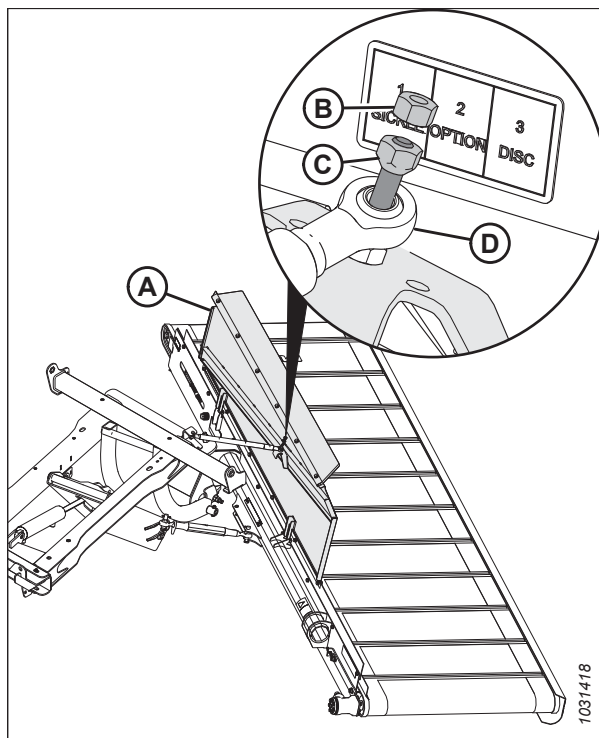


Figure 3.21: Ball Joint Link

3.7 Positioning Conditioner Forming Shield

Forming shields help direct the crop flow onto the Double Windrow Attachment (DWA) draper. Their position can be adjusted depending on the type of windrow desired.

1. Ensure that forming shield (B) is high enough to clear the deck when it is lowered.

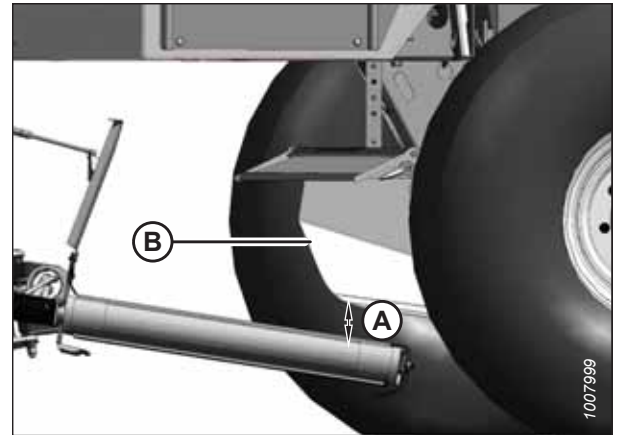


Figure 3.22: Deck Lowered

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

2. Remove hairpin (A).
3. Adjust strap (B) to the desired position.

NOTE:

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

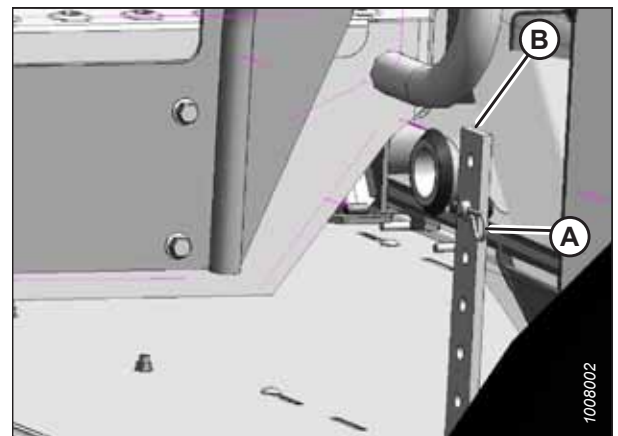


Figure 3.23: Forming Shield

4. Adjust left deflector (A) to direct the crop towards the inboard side of DWA backsheet (B).
5. Adjust the right deflector to the widest position possible without affecting crop flow. This is where the deck is farthest from the conditioner rolls.

NOTE:

When operating a header to produce single windrows (for baling), position the side forming shields for the desired windrow width.

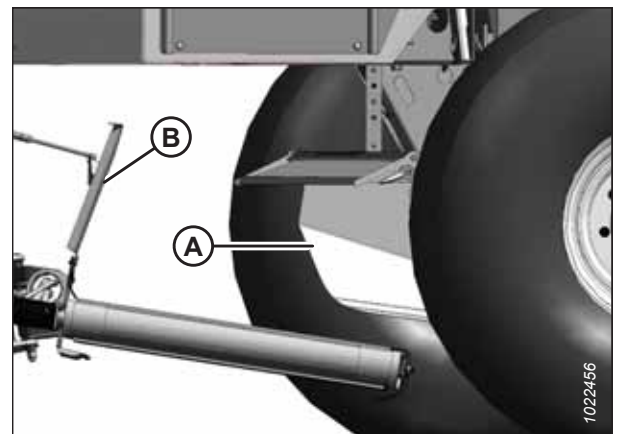


Figure 3.24: Deck Lowered

OPERATION

6. Adjust rear deflector baffle (A) so that crop flow (B) does not interfere with the deck when fully raised:
 - Set the left end of the rear deflector lower to direct the crop down toward the DWA draper.
 - Set the right end of the rear deflector higher to allow space for the crop to flow to the DWA deck.

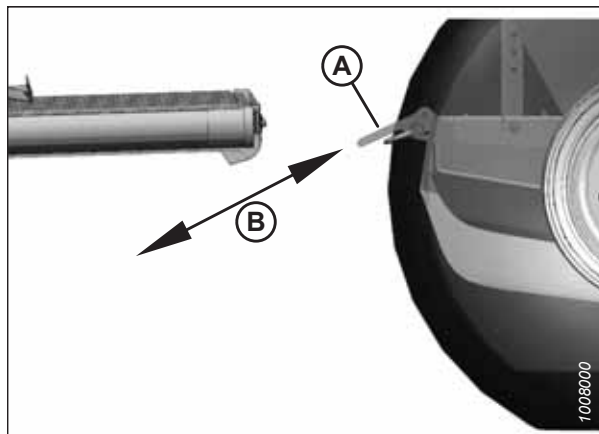


Figure 3.25: Deck Raised

7. After installing the forming shield, raise the header fully.
8. Ensure that there is adequate clearance between the top of the forming shield and header drive hose support (A) attached to the windrower frame.

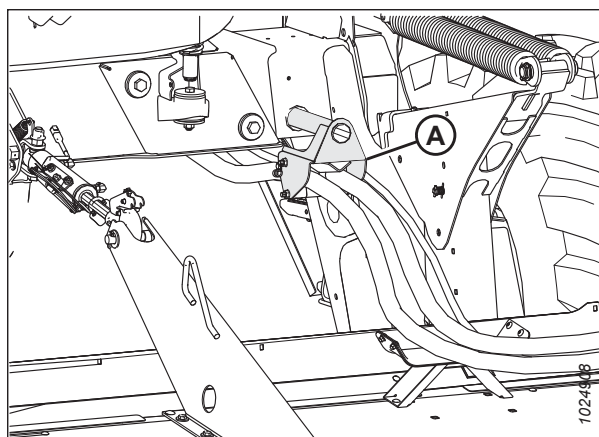


Figure 3.26: Header Hose Support

9. When using the DWA with disc headers, remove fins (B) under the forming shield.

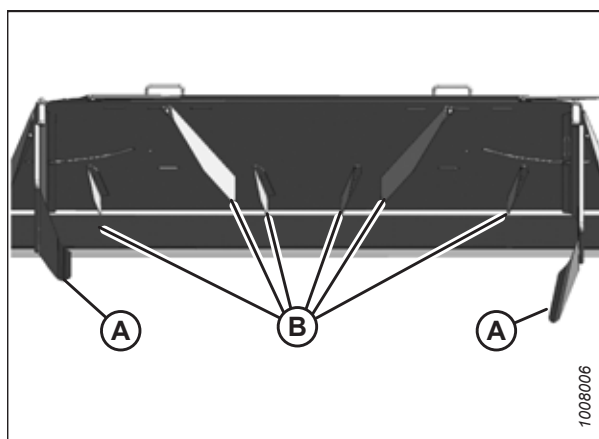


Figure 3.27: Fins under Forming Shield

A - Side Deflectors

B - Fins under Forming Shield

3.8 Positioning Conditioner Rolls

The conditioner roll gap must be adjusted to throw crop onto the Double Windrow Attachment (DWA). The gap between the conditioner rolls must be small enough to throw the crop onto the DWA.

The gap size depends on the crop type and volume:

- A gap that is too small for a heavy crop will require excessive engine power and will cause excessive wear to the DWA.
- 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 header operator's manual.

3.9 Operating Recommendations

Apply the following settings when first setting up the Double Windrow Attachment (DWA).

3.9.1 Operating with A40DX Auger Header (Non-Grass Seed Only)

Refer to the following operating recommendations when using the Double Windrow Attachment (DWA) with an A40DX Auger Header (non-Grass Seed only) configured for use with an M1 Series Windrower:

- On the first pass, raise the DWA and deposit the crop between the wheels of the windrower.
- On the return pass, lower the DWA 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 modified by adjusting the draper speed (faster draper speeds will throw the crop farther).

3.9.2 Operating with R85 or R216 Rotary Disc Header (Non-Grass Seed Only)

The conditioner rolls on a rotary disc header are farther ahead than on other headers, delivering light crop from the conditioner rolls to the side delivery deck on the Double Windrow Attachment (DWA).

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

Crop flow from the cutterbar to the rolls

- Keep the right side of the header as full as possible. Operating with the right side of the header at less than 75% of capacity may have an adverse effect on feeding.
- The feed plates appropriate for the type of crop being cut must be installed. Feed plates are required for cutting forage crops but not for alfalfa. For more information, refer to the header operator's manual.
- Higher ground speeds will usually result in better crop flow from the conditioner rolls to the deck. The windrower's ground speed should be at least 10 km/h (6 mph) when cutting light crops.
- Disc speed must be within the recommended range for the specific crop type and density. For more information, refer to the header operator's manual.
- **R216 – Light crops such as alfalfa:** Configure the cutterbar to produce two crop streams. For instructions, refer to the header operator's manual.

OPERATION

Crop flow from the conditioner rolls to the forming shield

- **R85:** The rear baffle on the rotary disc header should be in the uppermost position; however, the rear baffle may need to be lowered for center windrowing.
- **R216:** Adjust the rear baffle so that it is slightly lower than the uppermost position. If using the manual baffle, move handle (A) to second notch (B).
- The crop trajectory arc is higher when the header is positioned at a steeper angle. Set the header angle to throw crop at the maximum arc height without contacting the top forming shield excessively.
- Removing the fins from the rear baffle may improve crop trajectory to the rear baffle.
- Crop may be thrown above the forming shield if the header is positioned at an extreme header angle or if the rear baffle is set incorrectly. Change the angle of the header or remove the fins to address this problem.
- The height of the header affects its angle. Ideally, the lift linkage should be fully down at all times when the header is operating.
- The conditioner roll gap should be small enough that the conditioner rolls can engage with the cut crop.
- The speed of the conditioner rolls varies with the disc speed. The higher the speed of the conditioner rolls, the faster that crop is thrown backward by the conditioner rolls. Ensure that the disc speed is in the recommended range.

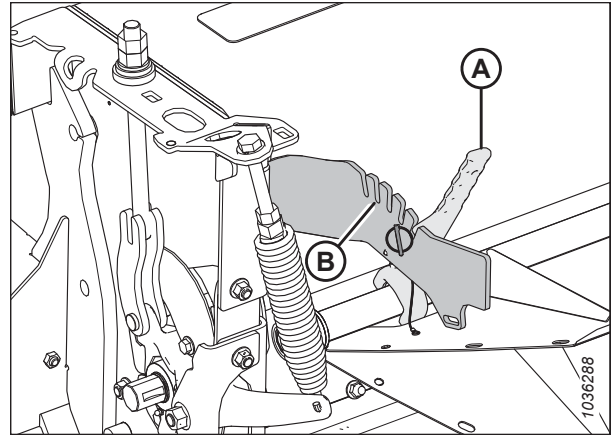


Figure 3.28: Left Side of Conditioner

OPERATION

Forming shield settings

- Ensure that forming shield (A) is installed correctly on bracket (B).
- Periodically, remove any buildup of sticky crop residue on the deflector's sliding surfaces.
- For further instructions, refer to [3.7 Positioning Conditioner Forming Shield](#), page 59.

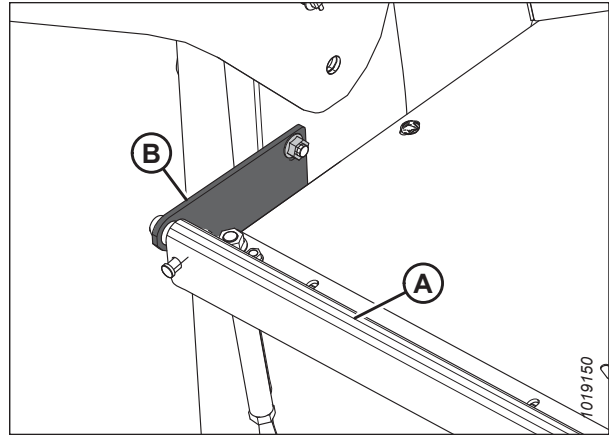


Figure 3.29: Forming Shield – for use with R85 Rotary Disc Header

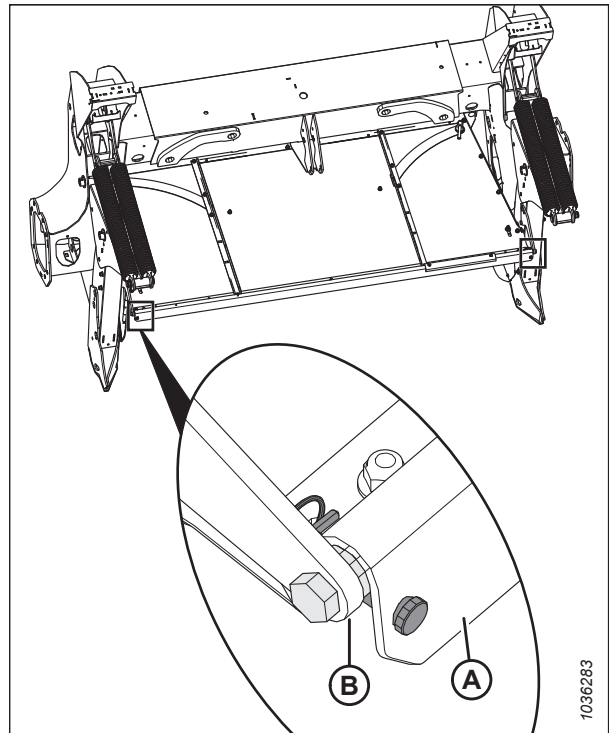


Figure 3.30: Forming Shield – for use with R216 Rotary Disc Header

Chapter 4: Maintenance and Servicing

Follow these maintenance procedures to ensure the service life of the Double Windrow Attachment (DWA).

4.1 Draper Maintenance

The draper on the Double Windrow Attachment (DWA) can have its tension and tracking adjusted. The draper and the draper rollers can also be replaced if they are worn out.

4.1.1 Adjusting Draper Tension

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

Set the draper tension as follows:

1. Ensure that draper guide (A) (rubber track on underside of draper) is properly engaged in groove (B) of the drive roller, and that the idler roller is between the draper guides.

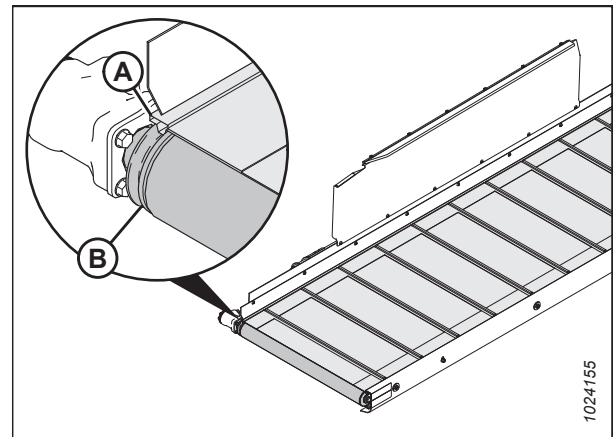


Figure 4.1: Draper Guide – Cutaway View

2. Turn bolt (A) clockwise to tighten. White indicator bar (B) will move to the right, indicating the draper is tightening.
3. 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.

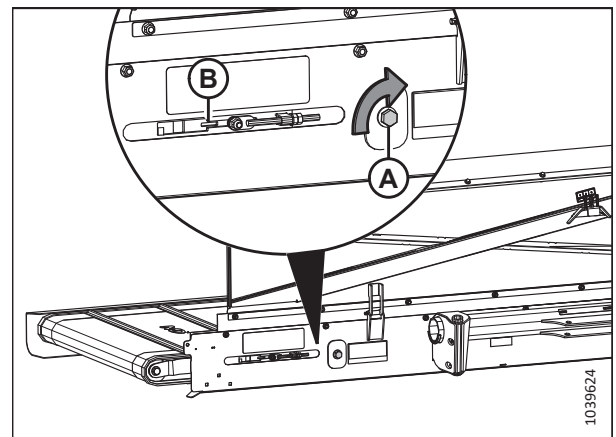


Figure 4.2: Draper Tension

4.1.2 Checking Draper Tracking

During the first run up, ensure that the draper is tracking in the center of the deck and **NOT** running to one side unevenly; otherwise, damage to the draper can occur.

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 the unexpected start-up or fall of a raised machine: stop the engine, remove the key, and engage the safety pin before going under the machine.

1. Raise the Double Windrow Attachment (DWA) deck fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the deck safety pin. For instructions, refer to [3.2.1 Engaging the Deck Safety Pin, page 48](#).
4. If the draper is tracking incorrectly, refer to the following table to adjust the rollers:

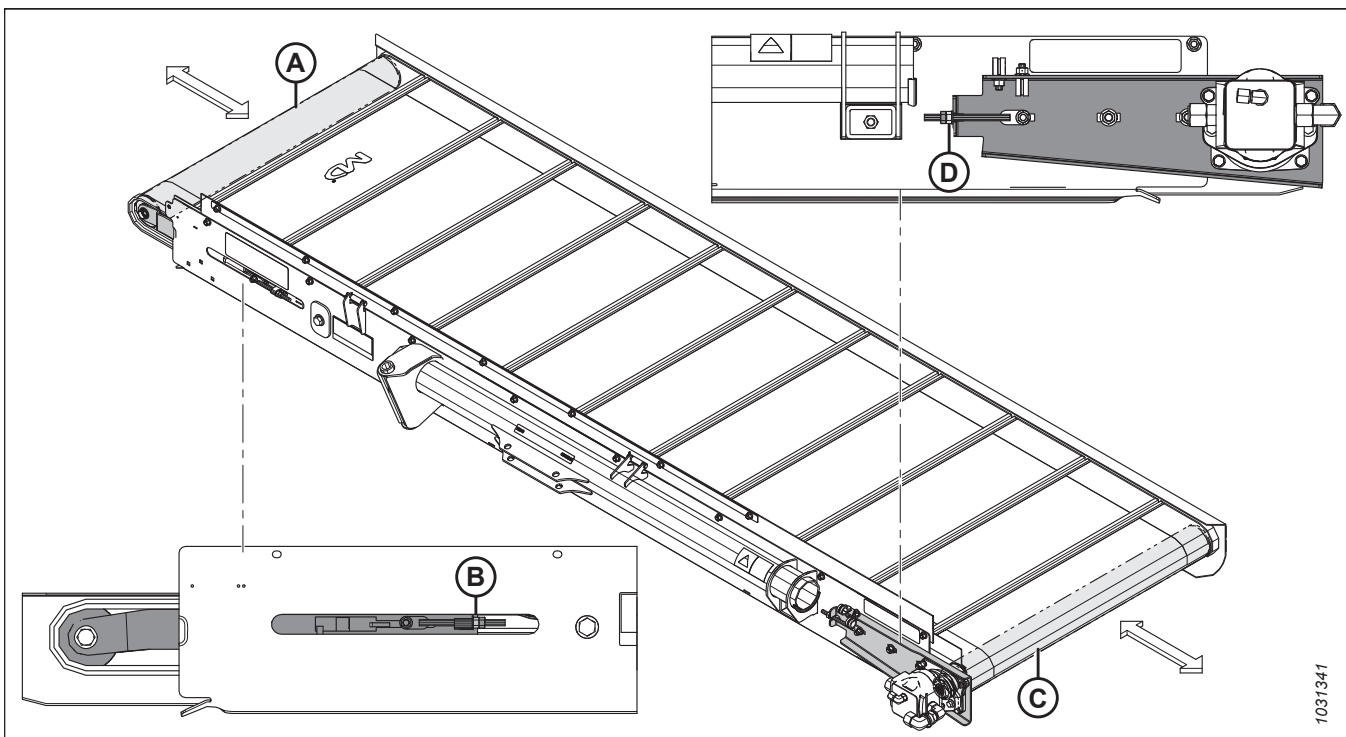


Figure 4.3: Draper Tracking Adjustments

Table 4.1 Draper Tracking Adjustments

Tracking	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:

5. Loosen two nuts (A).
6. Adjust nut (B) according to Table 4.1, page 66.
7. Secure the idler roller by tightening two nuts (A).
8. After adjusting the draper tracking, readjust the draper tension. For instructions, refer to 4.1.1 *Adjusting Draper Tension*, page 65.

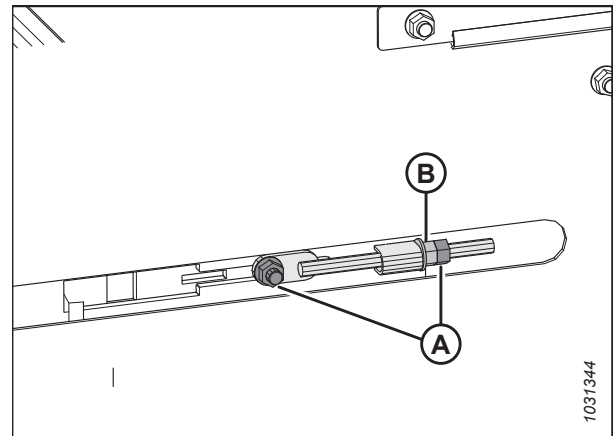


Figure 4.4: Idler Roller Tracking Adjuster

To adjust tracking on the drive roller side:

9. Loosen four locking nuts (A).
10. Adjust nut (D) according to Table 4.1.1 *Adjusting Draper Tension*, page 65.
11. Tighten four nuts (A) to secure the drive roller.
12. After adjusting the draper tracking, adjust the draper tension. For instructions, refer to 4.1.1 *Adjusting Draper Tension*, page 65.

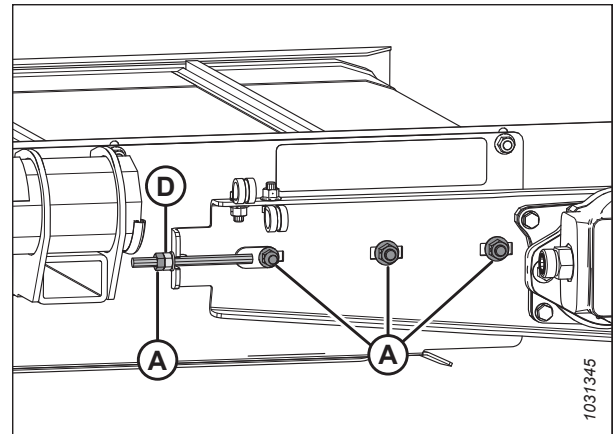


Figure 4.5: Drive Roller Tracking Adjuster

4.1.4 Replacing Draper

If the draper is damaged, remove the old draper and install the new one.

DANGER

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

1. Raise the deck high enough to increase the space between the deck and the right drive tire.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the deck safety pin. For instructions, refer to [3.2.1 Engaging the Deck Safety Pin, page 48](#).
4. Remove front skid (A) by removing five bolts (B) and washers (C).
5. Push the idler roller inward as far as possible.

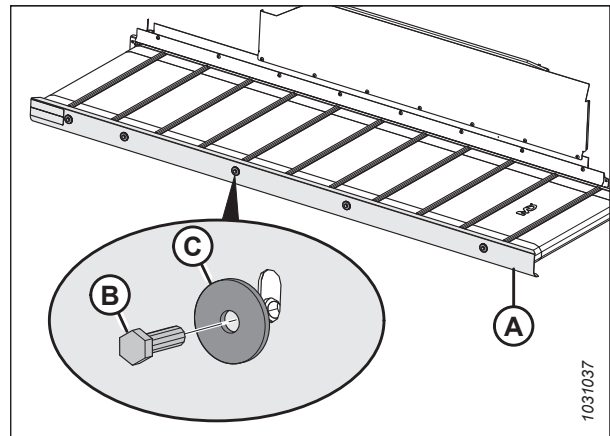


Figure 4.6: Front Skid

6. Disconnect turnbuckle (A) and allow the deck to rotate rearward to increase the space between the deck and the tire.
7. Remove the old draper and install the new one. The draper is bidirectional so orientation does not matter.
8. Set the draper tension. For instructions, refer to [4.1.1 Adjusting Draper Tension, page 65](#).
9. Reinstall turnbuckle (A) and the front skid.
10. Adjust the front skid so that the skid height is 1.5–3 mm (1/16–1/8 in.) above the draper. For more information, refer to [4.1.5 Adjusting Front Skid, page 69](#).
11. Run the new draper and verify the alignment. Adjust alignment if necessary, refer to [4.1.3 Adjusting Draper Tracking, page 66](#).
12. Inspect the draper tension after a few hours of operation.

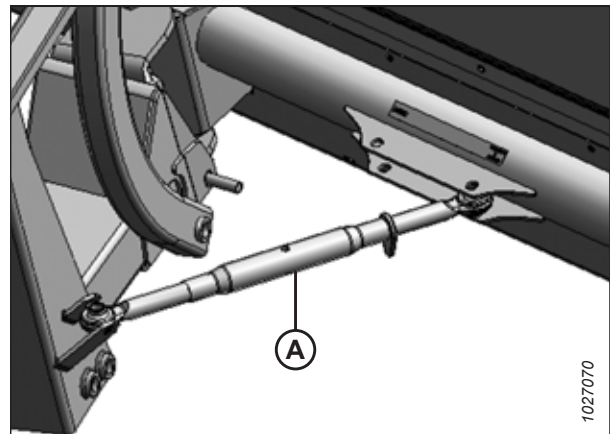


Figure 4.7: Deck Angle Turnbuckle

4.1.5 Adjusting Front Skid

Excess space between the Double Windrow Attachment's (DWA) front skid and draper can lead to crop build-up; too little clearance can cause premature draper wear.

To adjust the front skid, follow these steps:

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

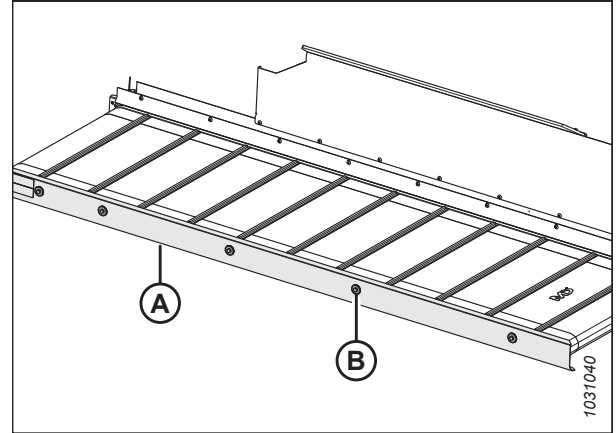


Figure 4.8: Draper Deck Front Skid

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

IMPORTANT:

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

- Constant contact between the skid and the draper results in excessive heat and can cause the draper to melt.
- If the gap is too wide, crop can enter the draper.

3. Tighten bolts (B) to 90 Nm (66 lbf·ft).

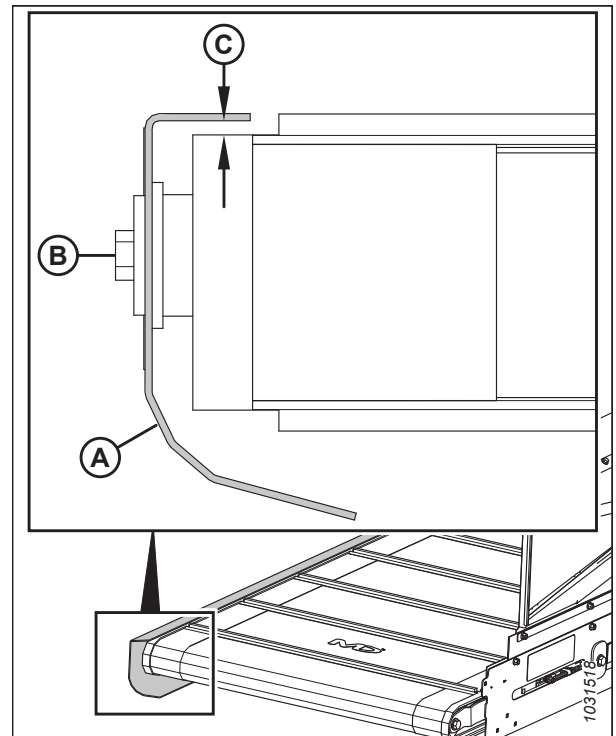


Figure 4.9: Draper Deck Front Skid

4.1.6 Adjusting Rear Deflector

The rear deflector prevents crop from getting inside the draper.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Ensure that the deck safety pin is engaged. For instructions, refer to [3.2.1 Engaging the Deck Safety Pin, page 48](#).
3. Loosen eight nuts (B) securing rear deflector (A) along the length of the deck.

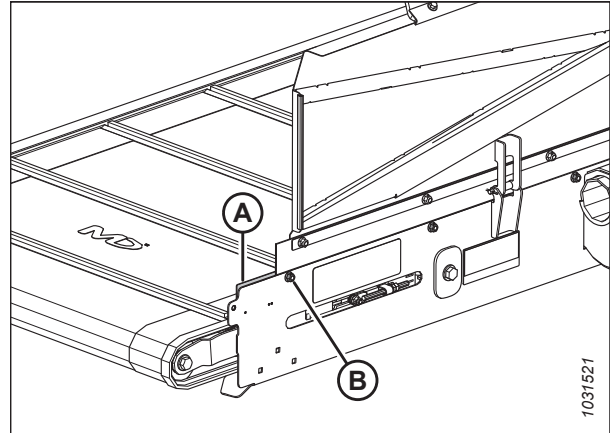


Figure 4.10: Draper Deck Rear Deflector

4. Set height (C) so that deflector (A) is 1.5–8 mm (1/16–5/16 in.) above the draper.
5. Tighten nuts (B).

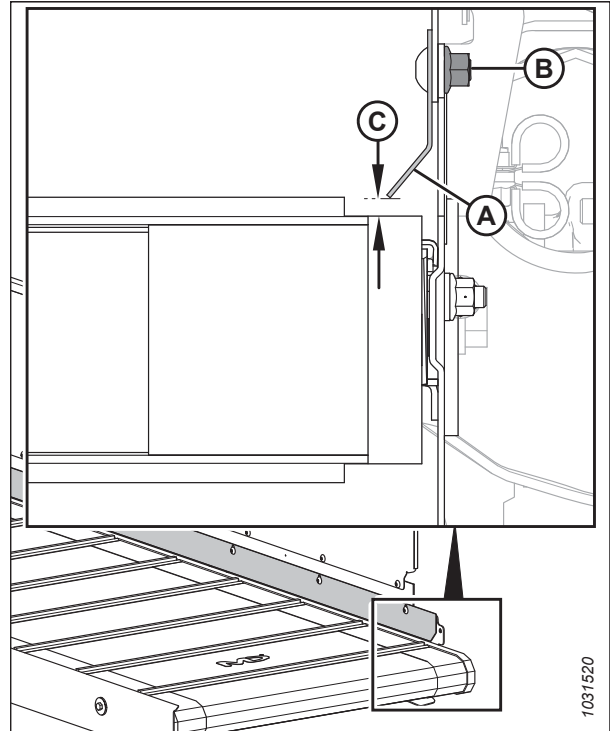


Figure 4.11: Draper Deck Rear Deflector

4.1.7 Maintaining Draper Rollers

The draper rollers have sealed bearings. The seals on the bearings should be inspected every 200 hours (they should be inspected more frequently in dusty operating conditions) to ensure the service life of the bearings. Remove the front skid to inspect the seals on the bearings.

Removing and Reinstalling Drive Roller

Proper removal and reinstallation of the drive roller is essential for maintenance of the machine.

DANGER

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

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

1. Raise the Double Windrow Attachment (DWA) deck fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage safety pin (A). For more information, refer to [3.2.1 Engaging the Deck Safety Pin, page 48](#)
4. Remove the front skid.
5. Loosen and remove the draper. For instructions, refer to [4.1.4 Replacing Draper, page 68](#).
6. Loosen set screw (A) on the drive roller bearing.
7. Using a hammer and a punch at hole (B), unlock the bearing collar by tapping the collar in the opposite direction of rotation.

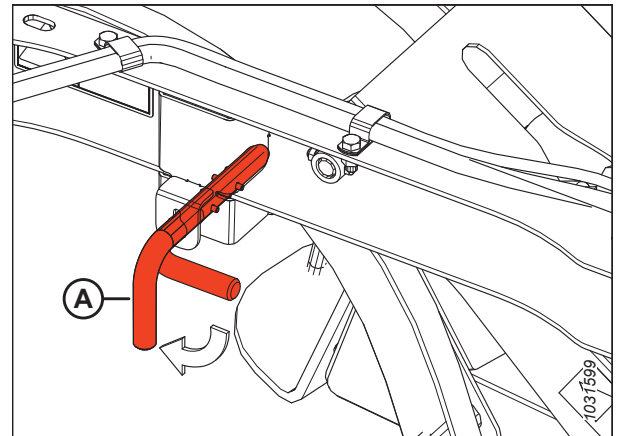


Figure 4.12: Safety Pin

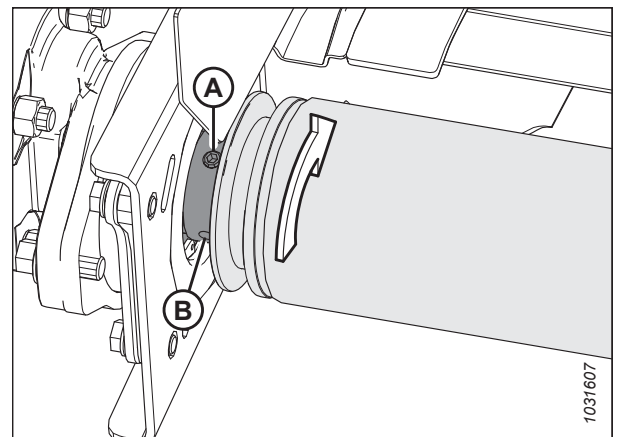


Figure 4.13: Draper Drive Roller

MAINTENANCE AND SERVICING

8. Remove drive roller (A) by removing bolt and washer (B) at the end of the roller.
9. Slide the drive roller off the motor shaft.

NOTE:

If you need to repair the bearing or seal, refer to [4.1.8 Replacing Draper Roller Bearing and Seal, page 75](#).

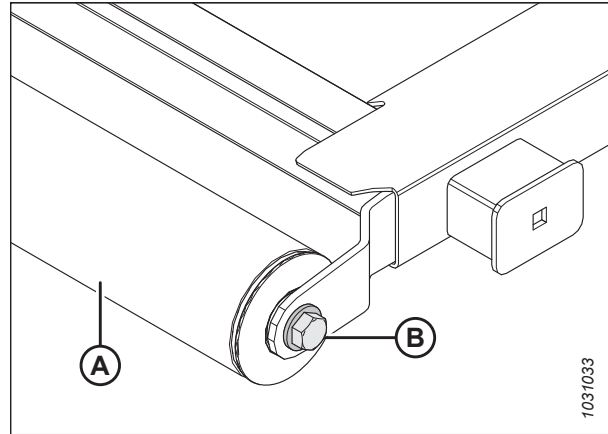


Figure 4.14: Draper Drive Roller

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

10. Slide drive roller (A) into bearing (B) and onto the motor shaft.
11. Push the drive roller onto the motor until contact is made with the motor shaft shoulder.
12. Ensure that the roller is fully engaged.

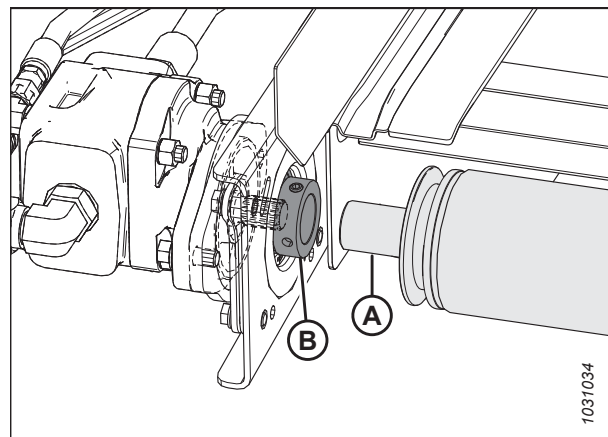


Figure 4.15: Draper Drive Roller

13. Install washer and bolt (B) into drive roller (A) and torque to 95 Nm (70 lbf-ft).

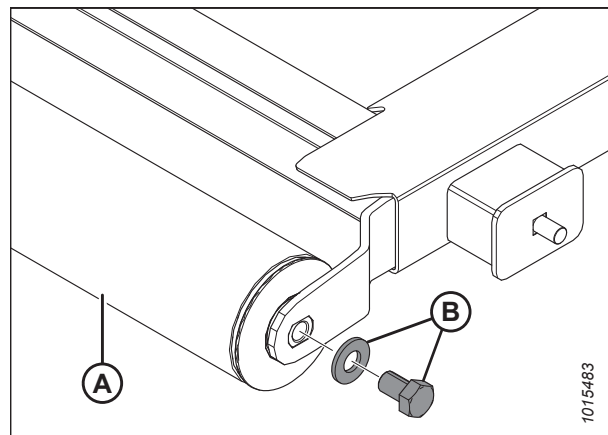


Figure 4.16: Draper Drive Roller

MAINTENANCE AND SERVICING

14. Using a hammer and a punch at hole (B), lock the collar by tapping it in the same direction as rotation.
15. When the lock collar is set, tighten set screw (A) to 27 Nm (20 lbf·ft).

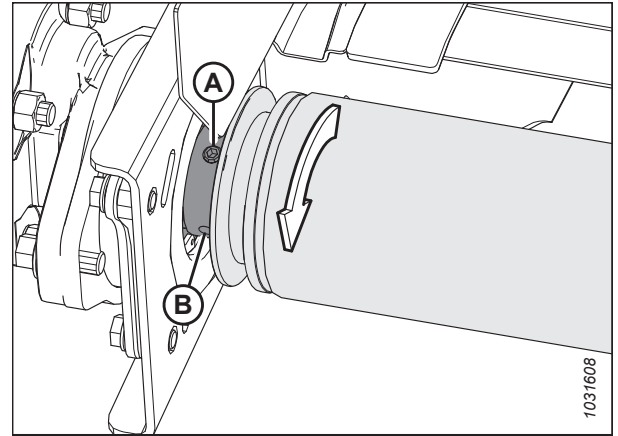


Figure 4.17: Draper Drive Roller

Removing and Reinstalling Idler Roller

Proper removal and reinstallation of the idler roller is essential for maintenance of the machine.

DANGER

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

To remove the idler roller, follow these steps:

1. Raise the Double Windrow Attachment (DWA) deck fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage safety pin (A). For more information, refer to [3.2.1 Engaging the Deck Safety Pin, page 48](#).

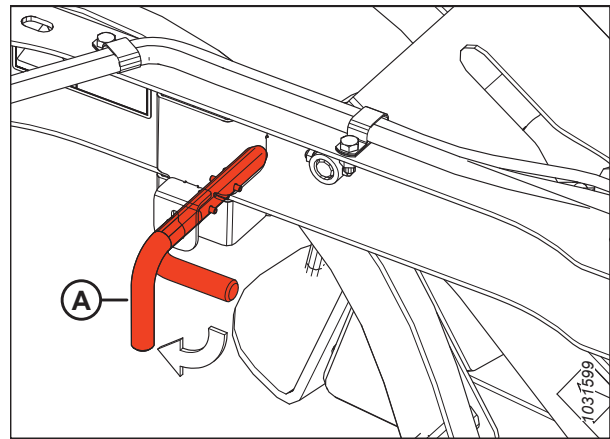


Figure 4.18: Safety Pin

4. Remove front skid (A) by removing five bolts (B) and washers (C).

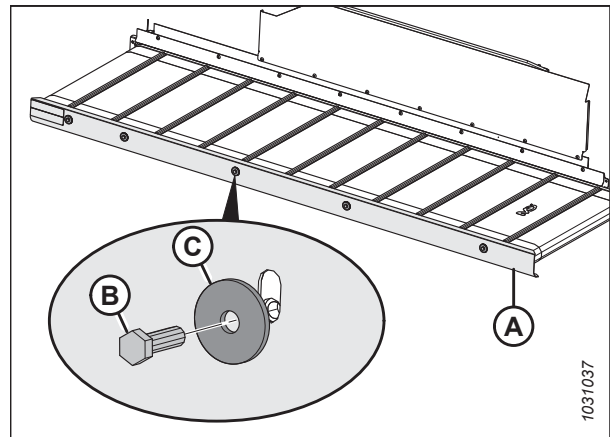


Figure 4.19: Front Skid

5. Loosen the draper.

NOTE:

The draper does not need to be removed, but removal will ease the roller disassembly.

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

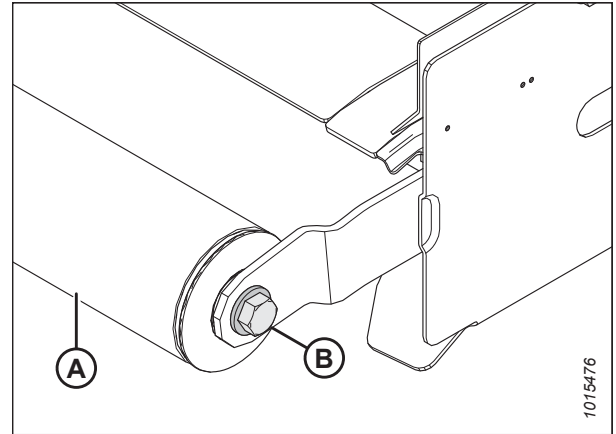


Figure 4.20: Idler Roller

To reinstall the idler roller, follow these steps:

7. Reattach bolt and washer (B) at each end of idler roller (A). Torque bolts to 95 Nm (70 lbf·ft).
8. Tighten the draper. For instructions, refer to [4.1.1 Adjusting Draper Tension, page 65](#).
9. Reattach the front skid. For instructions, refer to [4.1.5 Adjusting Front Skid, page 69](#).

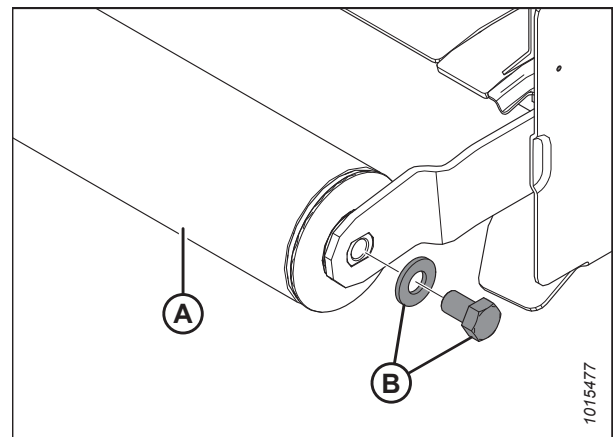


Figure 4.21: Idler Roller

4.1.8 Replacing Draper Roller Bearing and Seal

You will need a slide hammer to remove the bearing from the draper roller.

1. Remove the roller assembly. For instructions, refer to [4.1.7 Maintaining Draper Rollers, page 71](#).
2. Remove bearing assembly (B) and seal (A) from roller tube (C) as follows:
 - a. Attach slide hammer (D) to the threaded shaft.
 - b. Tap out the bearing assembly.
3. Clean the inside of roller tube (C) and examine it for wear or damage. Replace the roller tube if wear or damage is present.

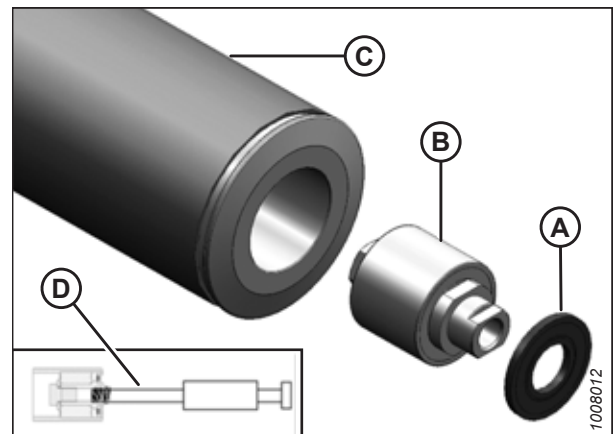


Figure 4.22: Roller Bearing

MAINTENANCE AND SERVICING

4. Install bearing assembly (B) onto the roller by pushing on the **OUTER** race of bearing.

IMPORTANT:

Do **NOT** push on the inner race of the bearing, or the bearing may be damaged and rendered unusable. Do not install a damaged bearing.

NOTE:

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

5. Apply grease in front of the bearing.

IMPORTANT:

Use SAE multi-purpose high temperature extreme pressure (EP2) performance with 0–1% max molybdenum disulphide (NLGI grade 2) lithium base.

6. Install seal (A) into the roller by pushing on the outer and inner race of the seal.

NOTE:

The seal is fully positioned when dimension (C) is 3 mm (0.12 in.). A flat washer (1.0 in. ID x 2.0 in. OD) can act as a suitable seal driver.

7. Ensure that the bearing and its seal turn freely.
8. Reinstall the roller assembly into the deck.

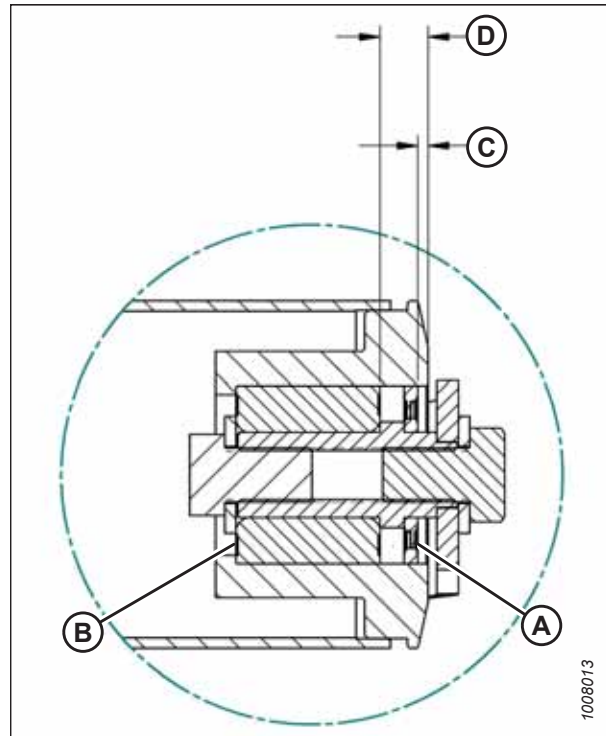


Figure 4.23: Roller Bearing Cross Section

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4.2 Greasing Double Windrow Attachment

Regularly greasing the pivot points ensures that the system moves more freely during operation.

Grease six pivot points (A), shown in the figures on the right, every 25 hours.

NOTE:

Use high temperature extreme pressure (EP2) performance grease with 1.5–5% molybdenum disulphide (NLGI grade 2) lithium base.

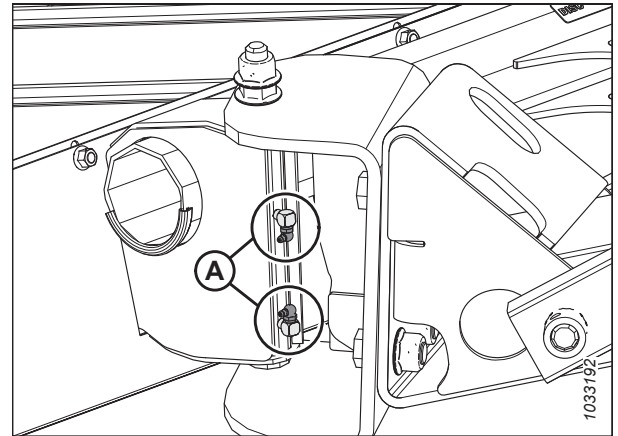


Figure 4.24: Deck Pivot

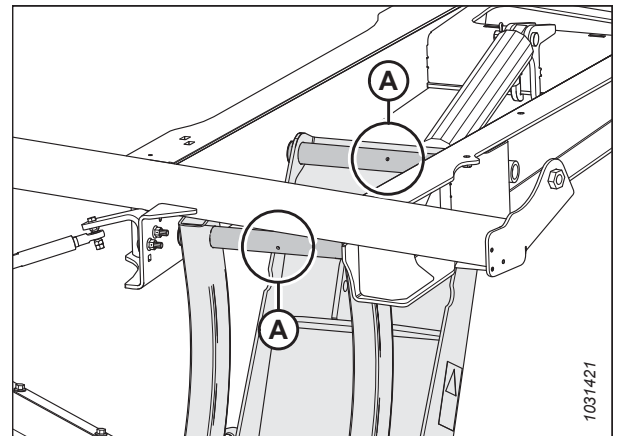


Figure 4.25: Linkage Pivot

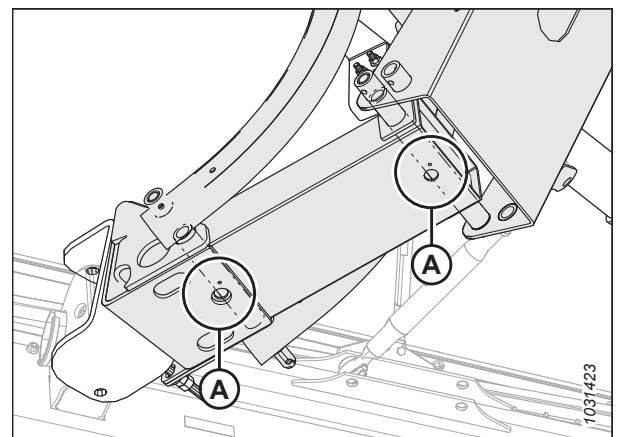
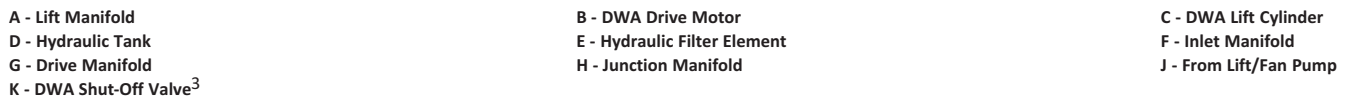


Figure 4.26: Linkage Pivot – Bottom View of DWA

Figure 4.27: DWA Hydraulic Schematic – M1170

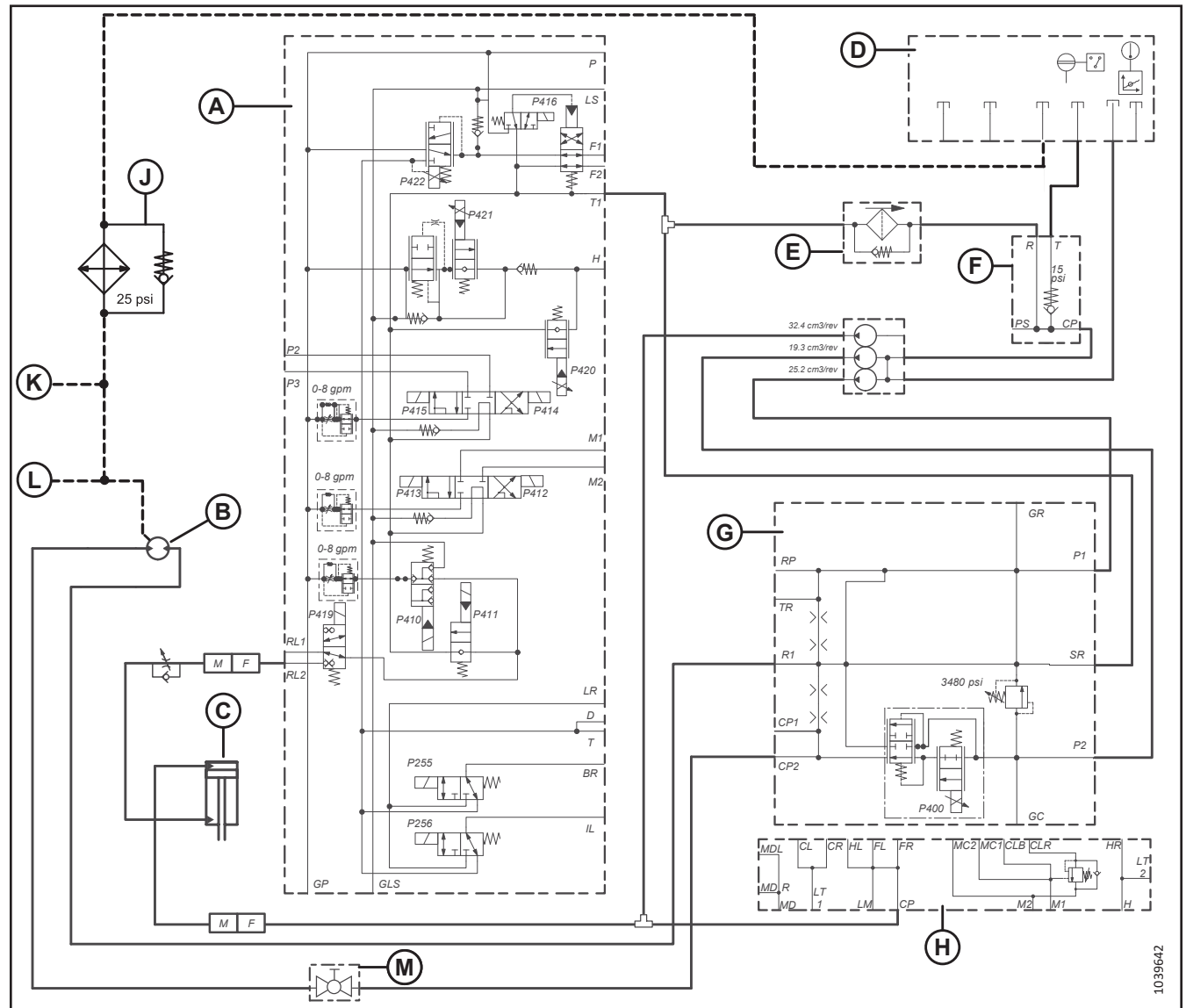


Revision A

4.4 Hydraulic Schematic – Double Windrow Attachment on M1240

For detailed hydraulic schematics, contact your MacDon Dealer.

Figure 4.28: DWA Hydraulic Schematic – M1240



A - Lift Manifold
D - Hydraulic Tank
G - Drive Manifold
K - From Header Drive Pump

B - DWA Drive Motor
E - Hydraulic Filter Element
H - Junction Manifold
L - From Disc Motor Case Drain

C - DWA Lift Cylinder
F - Inlet Manifold
J - Case Drain Cooler
M - DWA Shut-Off Valve⁴

4. The DWA shut-off valve (MD #B9020) is optional.

4.5 Double Windrow Attachment Proximity Switch

This topic provides the specifications for the Double Windrow Attachment (DWA) proximity switch.

Double Windrow Attachment (DWA) proximity switch (A) information:

Magnetic reed switch:

- Normally open
- Temperature range: -40°C to 105°C (-40°F to 221°F)
- Maximum voltage: 100 VAC/VDC
- Maximum current: 300 mA DC

Deutsch DTM04-2P connector:

- Pin 1 power: connects to C24A (B)
(12V+ Sensors EXT MOD - CH) — pin 26 on chassis extension module
- Pin 2 switched output signal: connects to C24A (B) — pin 22 on chassis extension module (C)

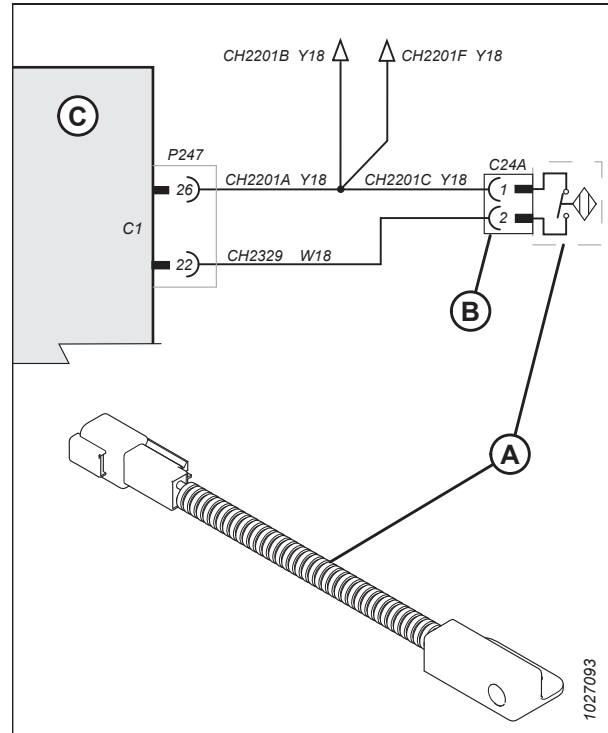


Figure 4.29: Proximity Switch – MD #200974

Chapter 5: Repair Parts

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

When ordering, be sure the correct part number is given.

Bold text is used to indicate updates made at the current revision level. With each new revision of the manual, previous revisions are returned to regular text.

5.1 Abbreviations

A/R – as required (quantity varies)	ASSY – assembly	BHRN – button head rib neck
BV – ball valve	CCW – counterclockwise	CON – conical (spring washer)
CSK – countersink	C/W – complete with	CW – clockwise
DBLE – double	DK – double knife	DR – double reel
DT – distorted thread	FLG – flange	GA – gauge
GR – grade	GS – grass seed	HD – head
HDR – header	HFA – hydraulic fore-aft	HH – hex head
HNBR – hydrogenated nitrile butadiene rubber	HYD – hydraulic	I.D. – inside diameter
IP – internal plus (torx plus)	KP – knife pressure	KR – knife return
LG – long	LH – left hand (determined from Operator's position, facing forward)	LK – lock
MACH – machine	MD – MacDon	MFA – manual fore-aft
MY – model year	NC – national coarse thread	NF – national fine thread
NSS – not sold separately	NT – narrow transport	O.D. – outside diameter
OPT – optional	PO – pilot operated	PT – pull-type (mower conditioner)
RC – roller chain	REF – reference, part number called up elsewhere in catalog	REG – regular
RH – right hand (determined from Operator's position, facing forward)	RHSN – round head, square neck or square neck carriage bolt	RHSSN – round head, short, square neck
RTD – rotating tine drum	SAE – Society of Automotive Engineers (part produced to comply with)	SD – side draper
SER – serrated	SK – single knife	SKT HD – socket head
SMTH – smooth	SMV – slow moving vehicle	SOCK – socket
SP – self-propelled (windrower) header	SPCL – special	SPH – spherical
SPI – serrations per inch (knife Sections)	SR – single reel	STL – steel (stainless)
STR – standard	STVR – Stover	TFL – thread full length
THD – thread	TR – triple reel	UCA – upper cross auger
UDK – untimed double knife	UNC – unified coarse thread	UNEF – unified extra fine thread
UNF – unified fine thread	UNS – unified special thread series	VK – veritcal knife
WF – wide frame	ZP – zinc plated	

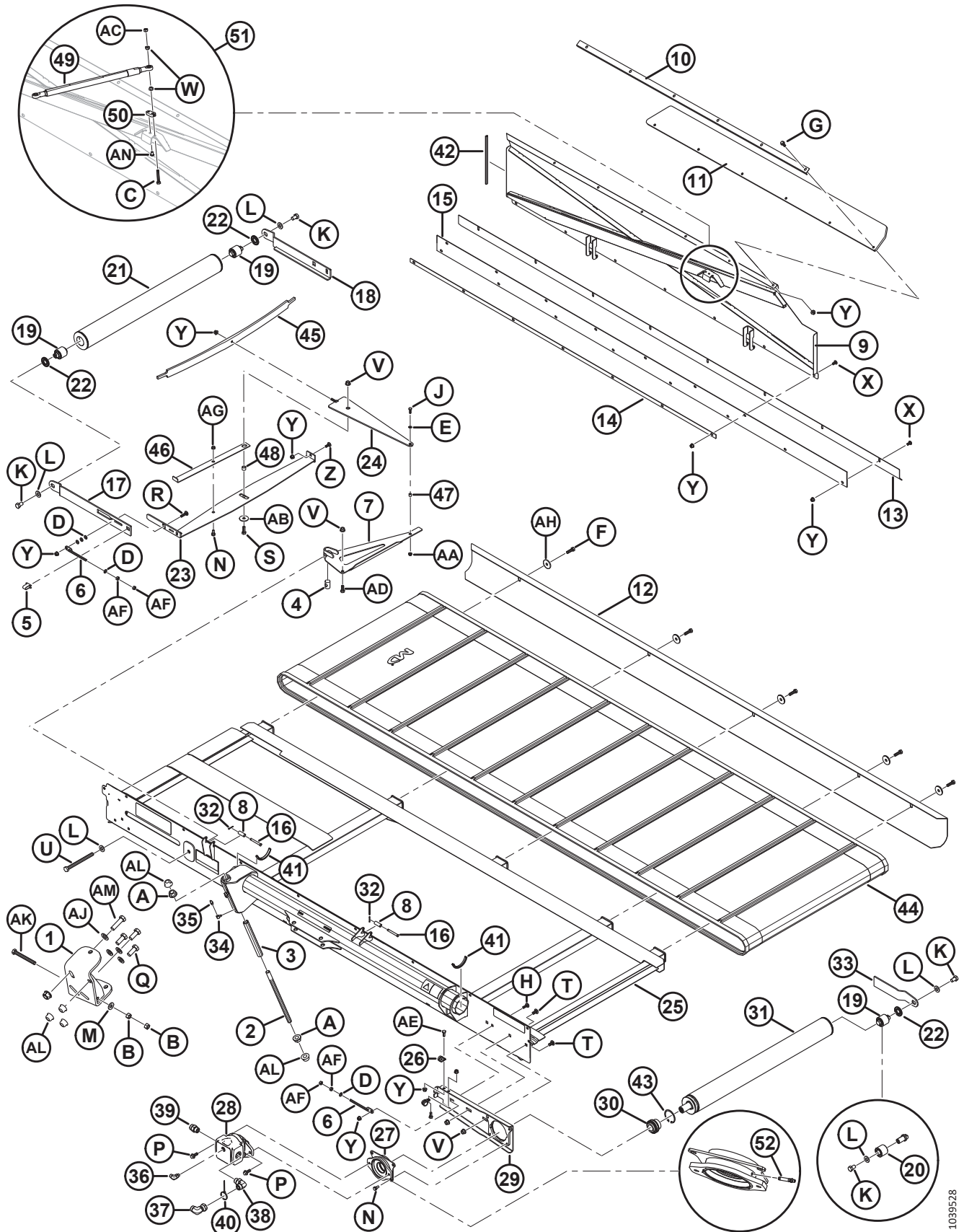
5.2 Serial Number Breaks

The side of the serial number on which the dash (–) appears determines whether the part is used "up to" or "after" the serial number given.

Example:

- –451189 Used on machines up to and including serial number 451189
- 451190– Used on machines including and after serial number 451190

5.3 Deck, Draper, and Rollers



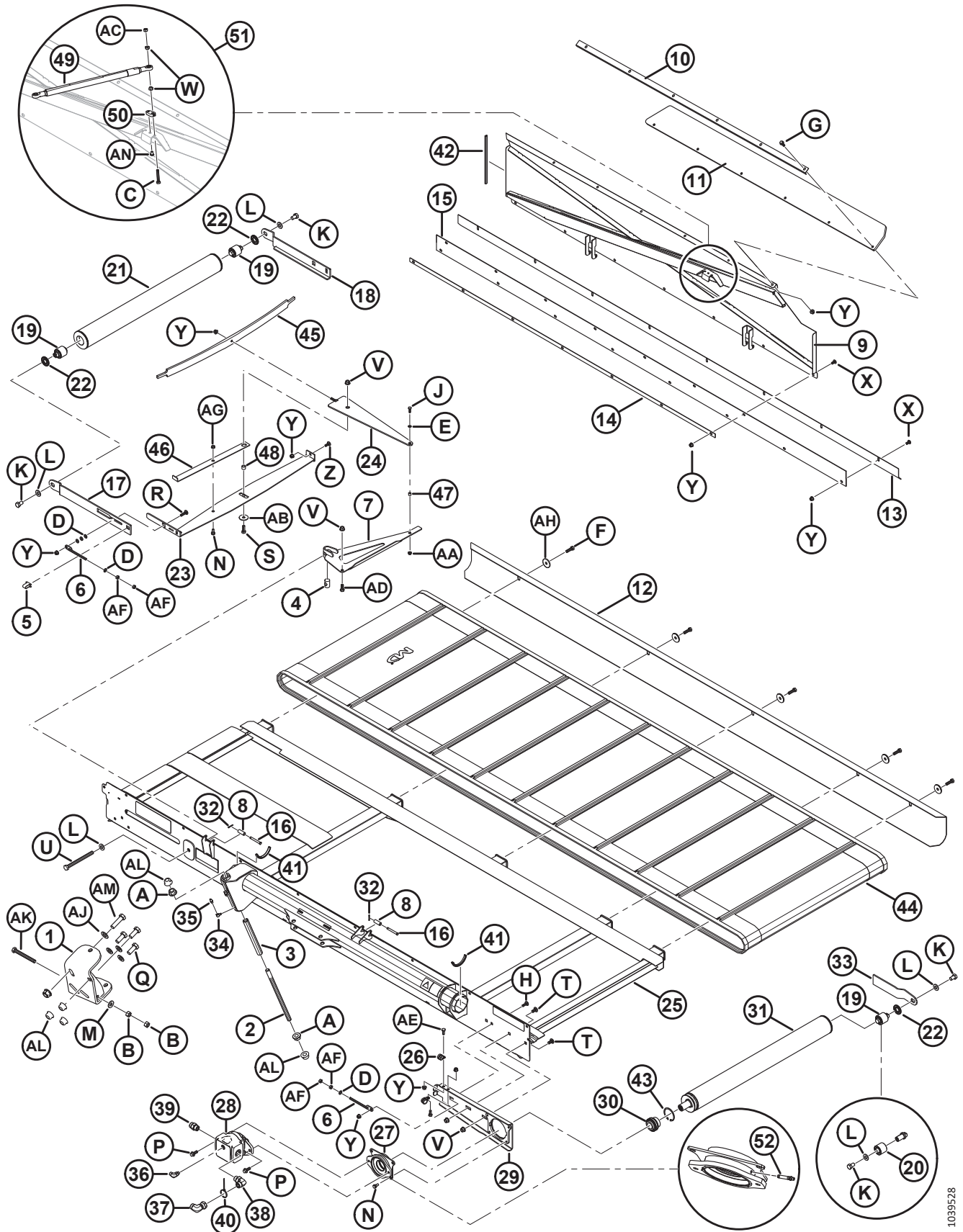
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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	176591	CLEVIS – WELDMENT	1	
2	176583	ROD – THREADED M20 X 2.5 X 385-8.8-A3L	1	
3	176582	BUSHING – MACHINED	1	
4	275758	NUT – SPECIAL	1	
5	275232	SUPPORT – ADJUSTER SCREW	1	
6	227914	BOLT – ADJUSTER WELDMENT	2	
7	220181	BELL CRANK WELDMENT	1	
8	176862	SPACER	2	
9	176852	PANEL – REAR, DECAL ⁵	1	
10	176839	FLANGE	1	
11	176838	SHIELD – DUST	1	
12	176817	CHANNEL – DECAL ASSEMBLY, SKID ⁶	1	
13	176663	DEFLECTOR – SEAL	1	
14	176589	BAR – STIFFENER	1	
15	176588	SEAL – BACKSHEET	1	
16	13249	PIN – CLEVIS	2	
17	176587	ARM – SUPPORT REAR	1	
18	176585	ARM – SUPPORT WELDMENT	1	
19	165735	PIN ASSEMBLY – DRAPER ROLLER ⁷	3	
20	132607	BEARING – DOUBLE ROW BALL 52 OD X 25 BORE	3	
21	144833	ROLLER – IDLER WELDMENT	1	
22	120845	SEAL – NILOS LSTO STEEL DISK	3	
23	176578	MEMBER – LH STABILIZER WELDMENT	1	
24	176564	MEMBER – COMPRESSION WELDMENT	1	
25	176553	DECK – DECAL ASSEMBLY DWA ⁸	1	
26	135709	CLAMP – INSULATED 3/4 IN.	2	
27	176784	HUB – WELDMENT MACHINED	1	
28	176890	MOTOR – HYDRAULIC	1	
	176845	SEAL – DIRT EXCLUDER (OUTER) ⁹		
	176846	SEAL – LIP (INNER) ¹⁰		
	176847	RING – SNAP		
29	176557	ARM – WELDMENT, MOTOR	1	
30	176544	BEARING – BALL CYL OD CW LC	1	
31	176355	ROLLER – DRIVE WELDMENT SPLINE	1	
32	18605	PIN – COTTER 1/8 DIA X 1 ZP	2	
33	144499	ARM – ROLLER SUPPORT	1	
34	50187	FITTING – LUBRICATION 90° ELBOW ADAPTER	2	
35	21194	FITTING – LUBRICATION 90° 1/8 NPT	2	
36	136095	FITTING – ELBOW 90° HYD	1	

5. Includes back panel adjustment decal (MD #176832). Refer to [5.6 Decals and Reflectors, page 96](#).
6. Includes reflectors (MD #115145 and 115147). Refer to [5.6 Decals and Reflectors, page 96](#).
7. Includes pin (NSS), bearing (MD #132607), washer (MD #30441), and bolt (MD #145249).
8. Includes decals (MD #176875, 220084, 176767, 166466, 115146). Refer to [5.6 Decals and Reflectors, page 96](#).
9. To be installed with the lip facing away from the gear.
10. To be installed with the lip facing the gear.

REPAIR PARTS



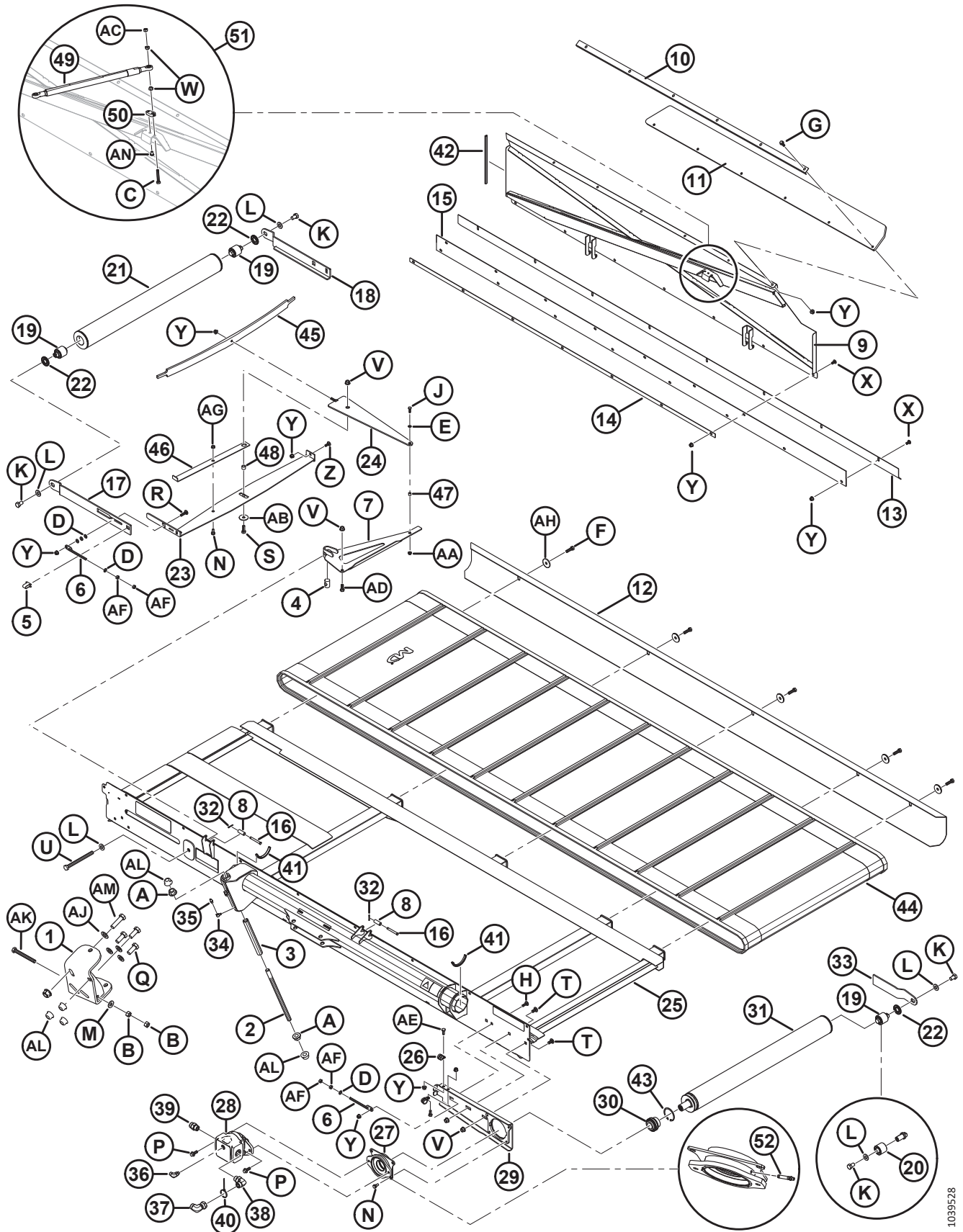
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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
37	135888	FITTING – ELBOW 90° HYD	1	
	135868	O-RING – Ø1.78 X Ø18.77		
38	135821	FITTING – ELBOW 90° HYD	1	
	30971	O-RING – Ø2.95 X Ø23.47 ¹¹		
	135868	O-RING – Ø1.78 X Ø18.77 ¹²		
39	135788	FITTING – ADAPTER	1	
	30971	O-RING – Ø2.95 X Ø23.47 ¹¹		
	135868	O-RING – Ø1.78 X Ø18.77 ¹²		
40	40702	FASTENER – CABLE TIE (RED)	1	
41	109791	MOULDING	2	
42	37687	MOULDING	1	
43	38854	RING – INT RETAINING	1	
44	165304	DRAPER – ENDLESS 30FT	1	
45	145548	SPRING – LEAF, TENSIONER	1	
46	145428	INDICATOR	1	
47	132532	SPACER	1	
48	132531	SPACER	1	
49	176733	LINK – BALL JOINT	1	
50	176905	PLATE – MACHINED ¹³	1	
51	176910	KIT – BACKSHEET LINK ¹⁴	A/R	
52	30934	FITTING – LUBRICATION 1/4 28 TAPER THD	1	
A	252476	NUT – HEX SMTH FLG M20 X 2.5-10-AA1J		
B	184699	NUT – HEX M16 X 2-8-AA1J		
C	252270	BOLT – HEX HD TFL M8 X 1.25 X 50-8.8-BO		
D	184711	WASHER – FLAT REG M10-200HV-AA1J		
E	184708	WASHER – FLAT M8-200HV-AA1J		
F	184669	BOLT – HEX HD M12 X 1.75 X 40-8.8-AA1J		
G	184665	BOLT – HEX FLG HD M10 X 1.5 X 30-10.9-AA1J		
H	184662	BOLT – RHSN TFL M10 X 1.5 X 30-8.8-AA1J		
J	184652	BOLT – HEX HD TFL M8 X 1.25 X 25-8.8-AA1J		
K	145249	BOLT – HEX HD TFL 5/8 - 18 X 1.0 GR5 -AA1J		
L	30441	WASHER – HARDENED ASTM F436 5/8		
M	22072	WASHER – FLAT		
N	172259	BOLT – SHOULDER .375-16 UNC - AA1J		
P	148798	BOLT – HEX FLG HD M12 X 1.75 X 30-10.9-AA1J		
Q	136082	BOLT – HEX HD TFL M20 X 2.5 X 50-8.8-AA3L		
R	152732	BOLT – RHSN M10 X 1.5 X 40-8.8-AA1J		

11. MD #30971 is for the end of the fitting with a size of 1 3/16 - 12 (-12 ORFS).
12. MD #135686 is for the end of the fitting with a size of 1 1/16 - 12 (-12 ORB).
13. Plate may not be included in your model year DWA. It is part of kit MD #176910 which can be purchased to improve to durability of your DWA.
14. Kit provides an improved design to avoid ball joint link from bottoming out. Kit includes ball joint link (MD #176733), machined plate (MD #176905), screw (MD #252292), bolt (MD #252270), two nuts (MD #136417), and nut (MD #30856).

REPAIR PARTS



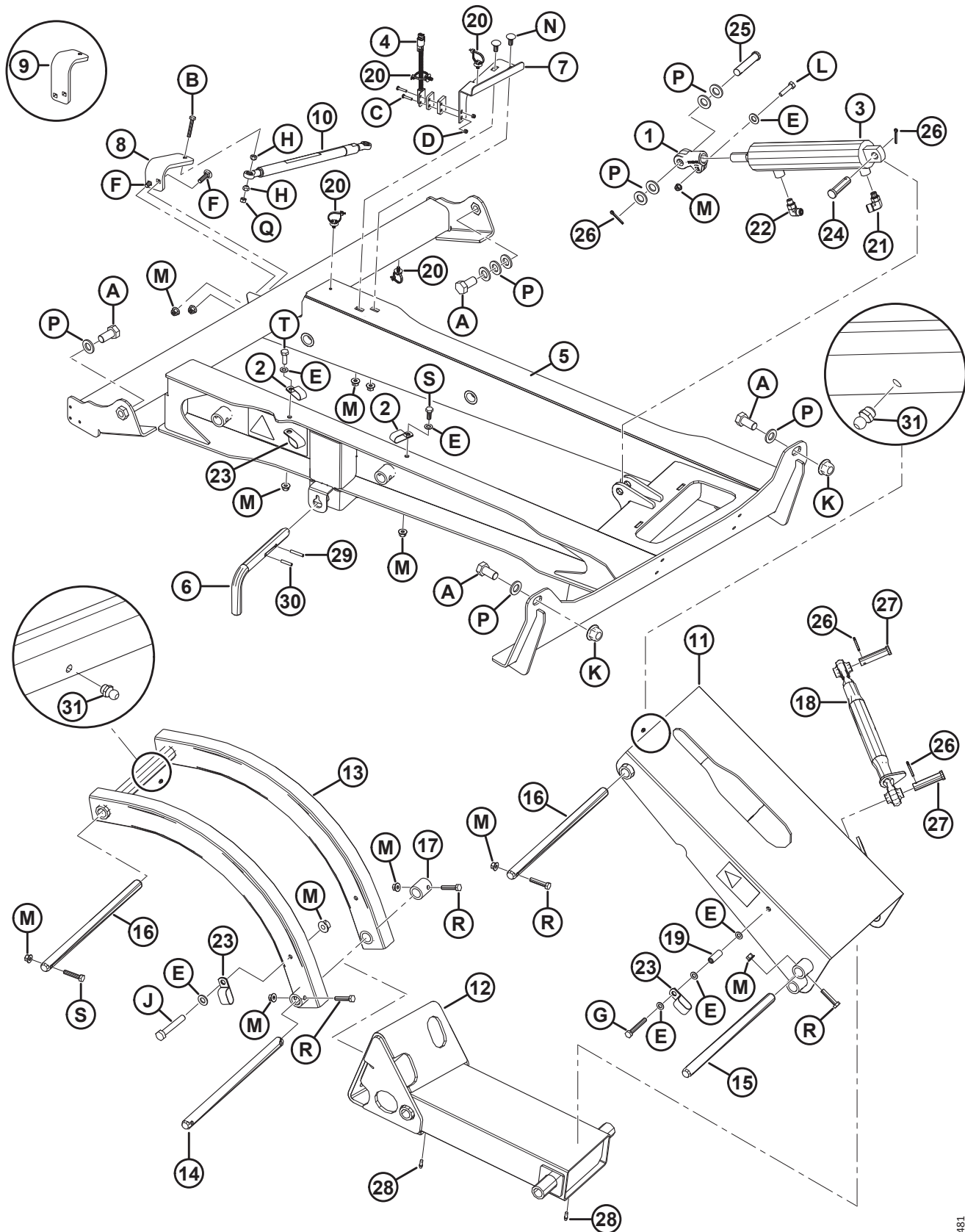
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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
S	152730	BOLT – HEX HD TFL M12 X 1.75 X 35-10.9-AA1J		
T	152439	BOLT – RHSSN M12 X 1.75 X 25-8.8-AA1J		
U	136504	BOLT – HEX HD TFL M16 X 2 X 190-8.8-AA1J		
V	136431	NUT – HEX FLG CTR LOC M12 X 1.75-10		
W	136417	NUT – HEX SPCL M8 X 1.25		
X	136395	SCREW – TORX TRUSS HD M10 X 1.5 X 20 X SPCL-8.8-A3L		
Y	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10		
Z	135785	BOLT – RHSN M10 X 1.5 X 25-8.8-AA1J		
AA	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J		
AB	42592	WASHER – FLAT		
AC	30856	NUT – HEX M8 X 1.25-9-AA1J		
AD	30630	BOLT – HEX HD TFL M12 X 1.75 X 30-8.8-A3L		
AE	30627	BOLT – HEX HD TFL M10 X 1.5 X 25-8.8-A3L		
AF	30505	NUT – HEX M10 X 1.5-10-AA1J		
AG	30228	NUT – FLG DT SM FACE 3/8-16 UNC-GR5-AA1J		
AH	11695	WASHER – FLAT		
AJ	136701	WASHER – NORDLOCK M20		
AK	136172	BOLT – HEX HD TFL M16 X 2 X 140-8.8-AA1J		
AL	136122	NUT – HEX FLG CTR LOC M20 X 2.5-10-AA1J		
AM	136157	BOLT – HEX HD M20 X 2.5 X 65-10.9-AA1J		
AN	252292	SCREW – HEX SOC BTN HD M8 X 1.25 X 12-10.9-AA1J ¹⁵		

15. This screw may not be included in your model year DWA. It is part of kit MD #176910 which can be purchased to improve the durability of your DWA.

5.4 Linkage and Deck Support



1039481

REPAIR PARTS

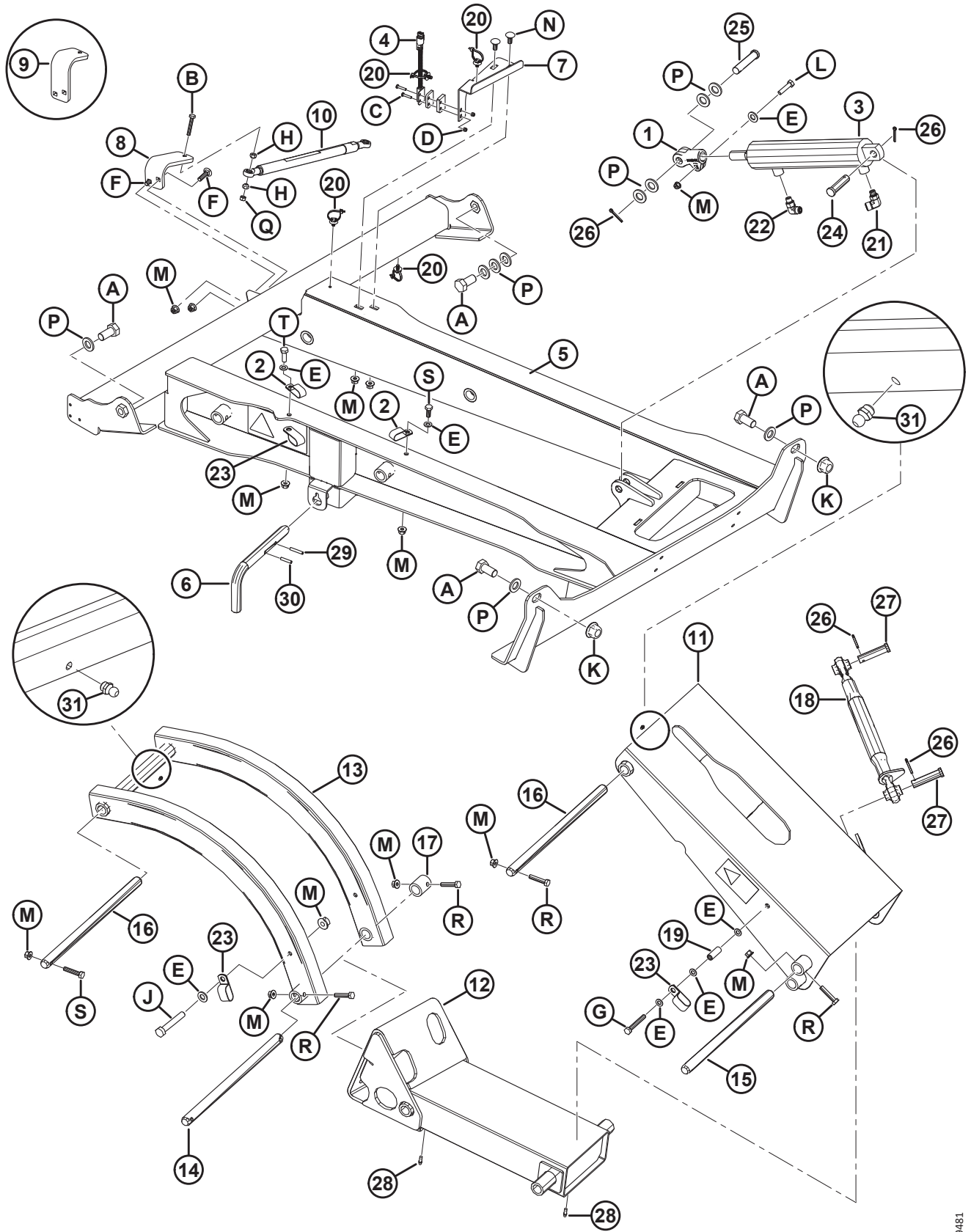
Ref	Part Number	Description	Qty	Serial Number
1	304314	CLEVIS	1	
2	300577	CLAMP – DBL INSULATED 3/4 IN.	2	
3	208966	CYLINDER – HYD	1	
	176031	SEAL KIT		
4	200974	SWITCH – PROXIMITY, C/W SPACERS	1	
5	176864	DWA SUPPORT, DECAL ASSY ¹⁶	1	
6	176860	PIN – L	1	
7	176829	SUPPORT – PROXIMITY SENSOR	1	
8	176861	BRACKET – LINKAGE, SHORT (STANDARD)	1	
9	176812	BRACKET – LINKAGE, TALL (OPTION)	1	
10	REF	LINK – BALL JOINT ¹⁷		
11	176891	ARM – DECAL ASSY ¹⁸	1	
12	176568	ARM – BOTTOM WELDMENT	1	
13	176145	ARM – FRONT WELDMENT	1	
14	176023	SHAFT	1	
15	176018	SHAFT	1	
16	172910	SHAFT	2	
17	172903	TUBE	1	
18	144996	JOINT ASSEMBLY	1	
19	142825	SPACER	1	
20	136655	FASTENER – FIR TREE MT W/ TIE	4	
21	136238	FITTING – ELBOW 90° HYD	1	
22	136095	FITTING – ELBOW 90° HYD	1	
23	103738	CLAMP – PVC INSULATED 13/16 IN. TUBE SIZE	3	
24	30463	PIN – CLEVIS	1	
25	20312	PIN – CLEVIS	1	
26	18648	PIN – COTTER 3/16 DIA X 1.25 ZP	4	
27	18627	PIN – CLEVIS	2	
28	7536	FITTING – LUBRICATION 1/4 28 TAPER THD	2	
29	2147	PIN – SPRING 1/4 DIA X 1.5 LG	1	
30	16266	PIN – SPRING 1/4 DIA X 1.25 LG	1	
31	18671	FITTING – LUBRICATION 1/4 28 UNF	2	
A	252303	BOLT – HEX HD TFL M20 X 2.5 X 40-10.9-A3L		
B	252270	BOLT – HEX HD TFL M8 X 1.25 X 50-8.8-BO		
C	252183	SCREW – PAN HD M5 X 0.8 X 25-4.8-AA1J		
D	197230	NUT – HEX NYLOC M5 X 0.8-8-AA1J		
E	184711	WASHER – FLAT REG M10-200HV-AA1J		
F	152732	BOLT – RHSN M10 X 1.5 X 40-8.8-AA1J		
G	184659	BOLT – HEX HD M10 X 1.5 X 75-8.8-AA1J		

16. Includes DWA lift lock decal (MD #176295). Refer to [5.6 Decals and Reflectors, page 96](#).

17. For ball joint link, refer to [5.3 Deck, Draper, and Rollers, page 84](#).

18. Includes header position decal (MD #176768) and two pinch point decals (MD #174683). Refer to [5.6 Decals and Reflectors, page 96](#).

REPAIR PARTS

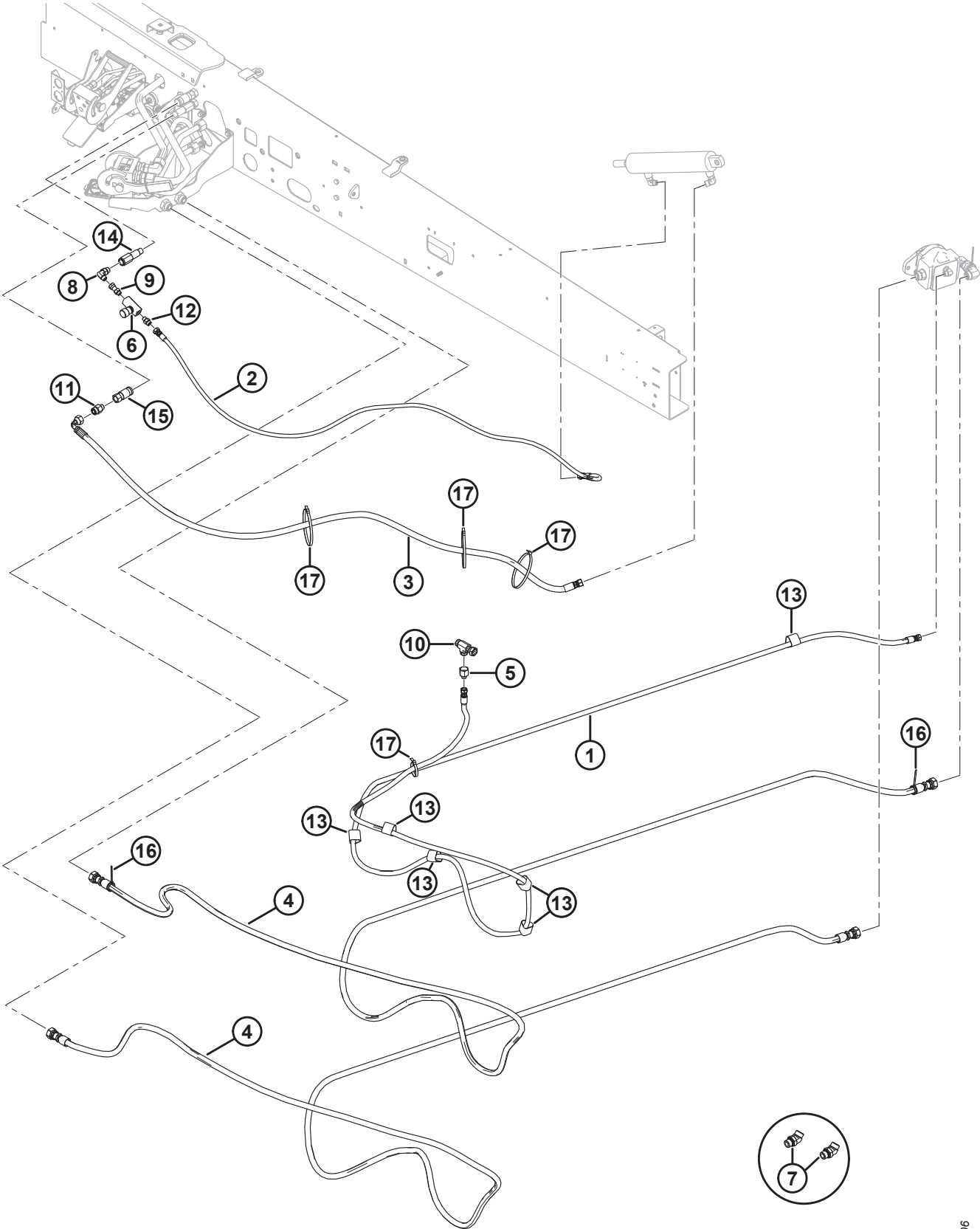


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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
H	136417	NUT – HEX SPCL M8 X 1.25		
J	108172	BOLT – HEX HD M10 X 1.5 X 65-8.8-AA1J		
K	136122	NUT – HEX FLG CTR LOC M20 X 2.5-10-AA1J		
L	135319	BOLT – HEX HD M10 X 1.5 X 40-8.8-AA1J		
M	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10		
N	135785	BOLT – RHSN M10 X 1.5 X 25-8.8-AA1J		
P	112130	WASHER – HARD ASTM F436 3/4 IN. NOM. ID ABOC		
Q	30856	NUT – HEX M8 X 1.25-9-AA1J		
R	30629	BOLT – HEX HD M10 X 1.5 X 50-8.8-A3L		
S	30627	BOLT – HEX HD TFL M10 X 1.5 X 25-8.8-A3L		
T	184661	BOLT – HEX HD TFL M10 X 1.5 X 30-8.8-AA1J		

5.5 Hydraulic Hoses



1032206

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	176883	HOSE – CASE DRAIN	1	
2	176498	HOSE – HYDRAULIC	1	
3	176497	HOSE – HYDRAULIC	1	
4	176575	HOSE – HYDRAULIC	2	
5	252893	FITTING – REDUCER HYD	1	
6	183211	VALVE	1	
7	136418	FITTING – ELBOW 45° HYD ¹⁹	2	
	30971	O-RING – Ø2.95 X Ø23.47 ²⁰		
	135868	O-RING – Ø1.78 X Ø18.77 ²¹		
8	136149	FITTING – ELBOW 90° HYD	1	
9	136147	FITTING – CONNECTOR HYD	1	
10	135784	FITTING – TEE HYD	1	
	135867	O-RING Ø1.78 X Ø15.60		
11	135781	FITTING – ADAPTER	1	
12	135778	FITTING – ADAPTER	1	
13	135443	CINCH STRAP 4 IN. LG	6	
14	135386	COUPLER – MALE HYD. 3/8 IN. (FASTER) ²²	1	
	111978	SEAL KIT – FOR 3/8 MALE COUPLER (FASTER)		
15	135312	COUPLER – FEMALE HYD. 3/8 IN. FLAT FACE	1	
16	40702	FASTENER – CABLE TIE (RED)	2	
17	30753	FASTENER – CABLE TIE (BLACK)	4	

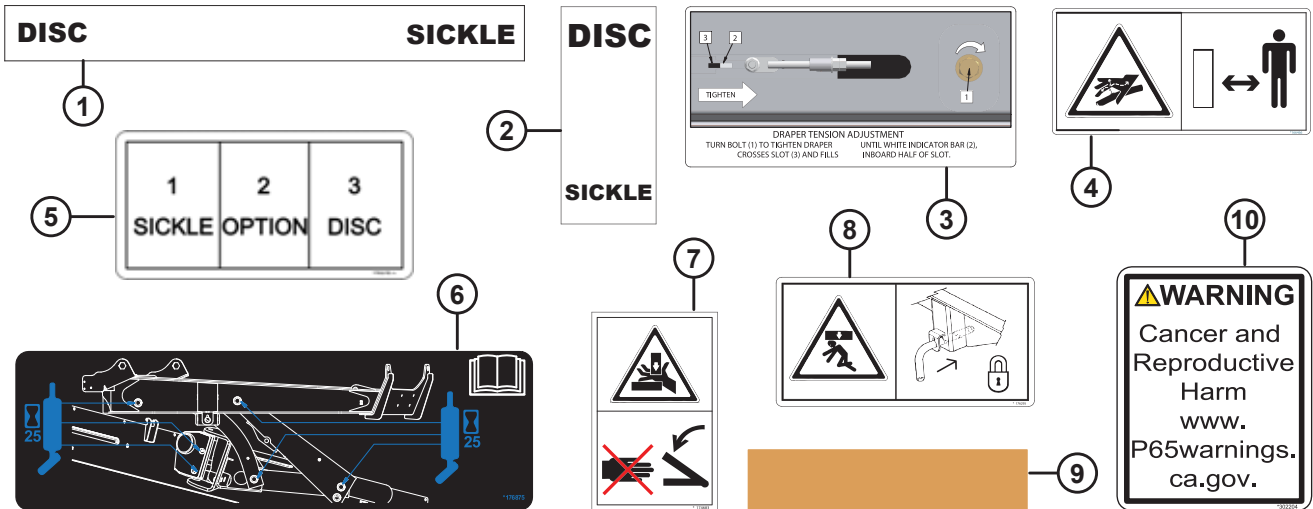
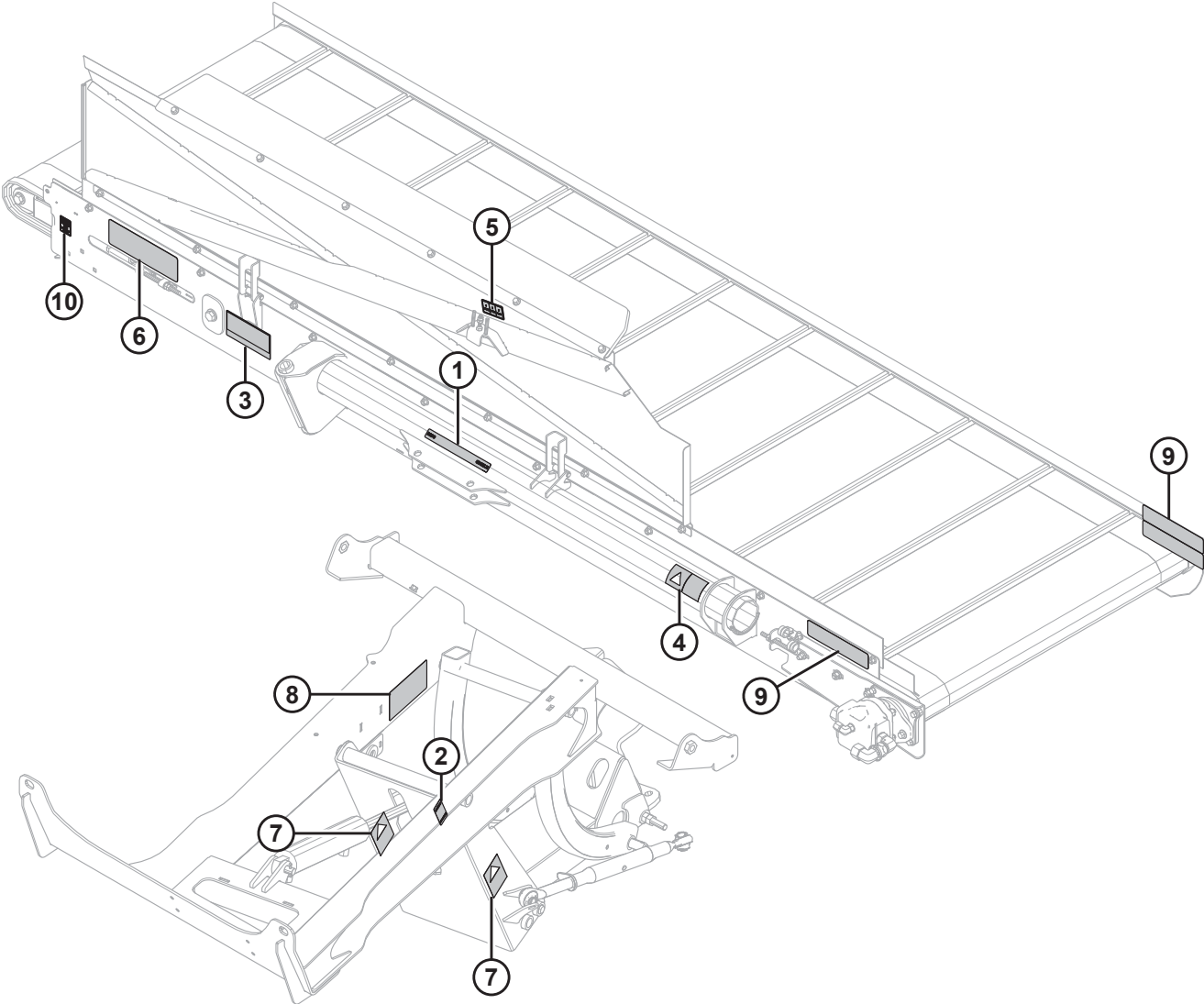
19. Used on M1240 Windrowers configured for disc only.

20. MD #30971 is for the end of the fitting with a size of 1 3/16 - 12 (-12 ORFS).

21. MD #135686 is for the end of the fitting with a size of 1 1/16 - 12 (-12 ORB).

22. Faster coupler (MD #135386) is interchangeable with Parker Hannifin coupler (NSS). Seal kit (MD #111978) is only intended for Faster coupler and cannot be used with Parker Hannifin coupler. Length can be used to differentiate the two couplers; Faster coupler = 101 mm and Parker Hannifin coupler = 84 mm.

5.6 Decals and Reflectors

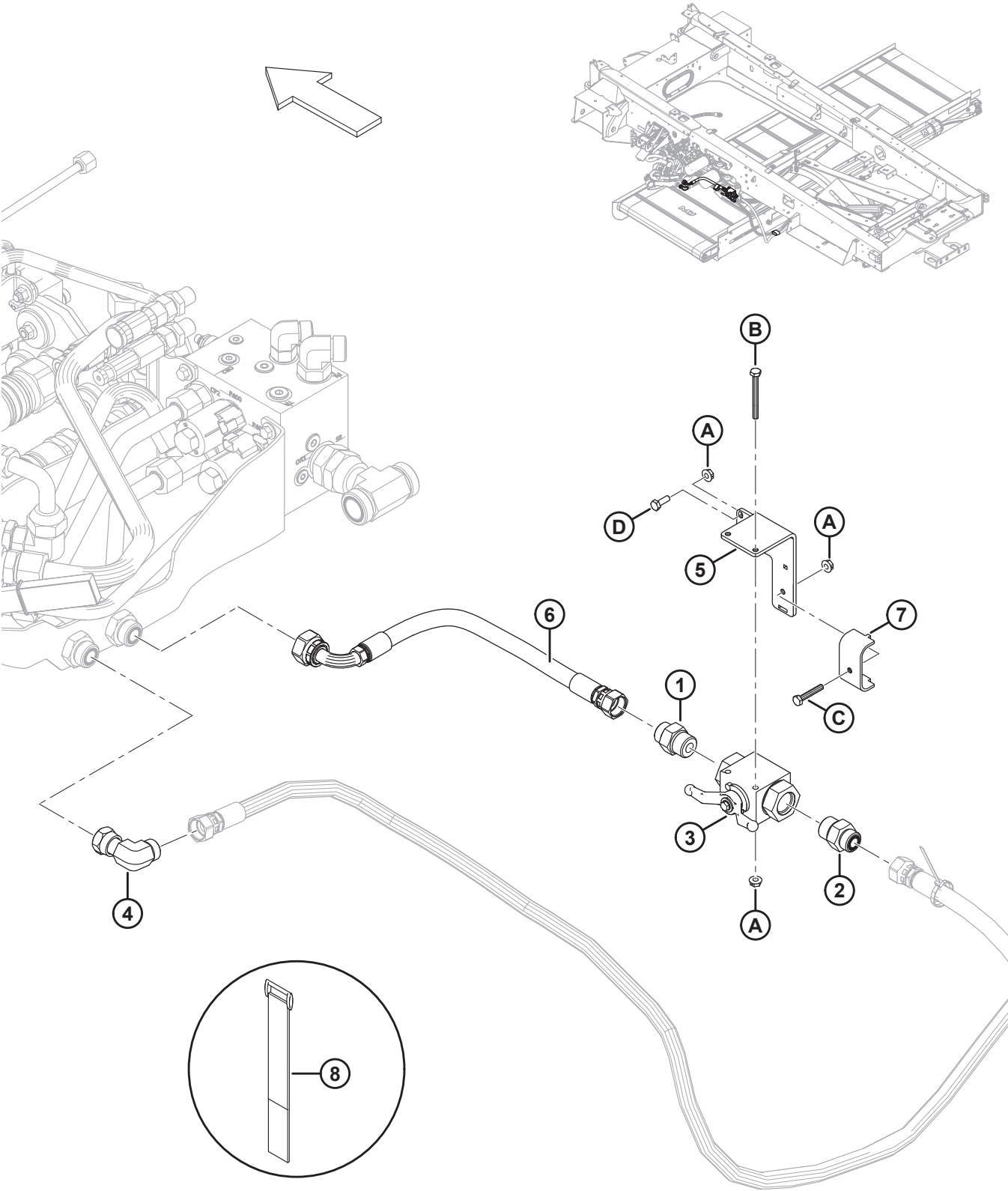


1031131

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	176767	DECAL – HEADER POSITION, HORIZONTAL		
2	176768	DECAL – HEADER POSITION, VERTICAL		
3	220084	DECAL – DRAPER TENSION		
4	166466	DECAL – WARNING, HIGH PRESSURE HYDRAULICS		
5	176832	DECAL – BACK PANEL ADJUSTMENT		
6	176875	DECAL – MASTER GREASE		
7	174683	DECAL – WARNING DWA LINKAGE PINCH POINT		
8	176295	DECAL – DECK LIFT LOCK		
9	115145	REFLECTOR – FLUORESCENT RED-ORANGE		
	115146	REFLECTOR – AMBER		
	115147	REFLECTOR – RED		
10	302204	DECAL – CA PROPOSITION 65		

5.7 (Option) DWA Shut-Off Kit



1036505

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
	B9020	KIT – M1 DWA SHUT-OFF ²³		
1	135786	FITTING – ADAPTER	1	
	30971	O-RING – #12 ORB		
	135867	O-RING – #10 ORFS		
2	135786	FITTING – ADAPTER (2019 AND PRIOR DWA) ²⁴	1	–371189
	30971	O-RING – #12 ORB		
	135867	O-RING – #10 ORFS		
	135788	FITTING – ADAPTER (2020 AND LATER DWA) ²⁵	1	371190–
	30971	O-RING – #12 ORB		
	135868	O-RING – #12 ORFS		
3	294263	VALVE – BALL	1	
4	136846	FITTING – SWIVEL 90 DEG HYD 10-10	1	
5	299820	BRACKET – BV MOUNT, DWA	1	
6	299822	HOSE – HYD, 100R17, 0.5 IN. DIA, 430 MM LG	1	
7	299898	HOLDER – HOSES	1	
8	135444	FASTENER – CINCH STRAP 6 IN. LG	2	
A	135248	NUT – HEX FLG CTR LOC	5	
B	21854	BOLT – HEX HD 1/4 NC X 2.5 LG GR 5 ZP	2	
C	21574	BOLT – HEX HD 1/4 NC X 1.5 LG GR 5 ZP	1	
D	21566	BOLT – HEX HD 1/4 NC X 0.75 LG GR 5 ZP	2	

23. Kit includes all listed parts and instructions. Kits available through Whole Goods only.

24. Service part for model year 2019 and prior Double Windrow Attachment (DWA).

25. Service part for model year 2020 and later Double Windrow Attachment (DWA).

Chapter 6: Reference

The reference chapter provides additional information such as lubricants, fluids, and system capacities, fuel and torque specifications, a unit conversion chart, and a list of acronyms, abbreviations, and terms used in this publication.

6.1 Torque Specifications

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

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

Jam nuts

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

Self-tapping screws

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

6.1.1 SAE Bolt Torque Specifications

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

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

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

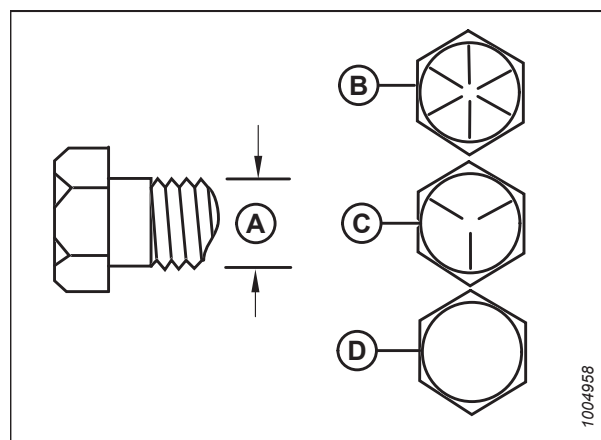


Figure 6.1: Bolt Grades

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 (Nm)		Torque (lbf-ft) (*lbf-in)	
	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

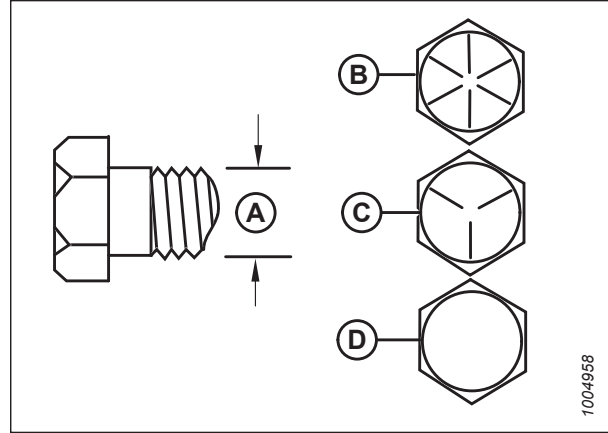


Figure 6.2: Bolt Grades

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 (Nm)		Torque (lbf-ft) (*lbf-in)	
	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

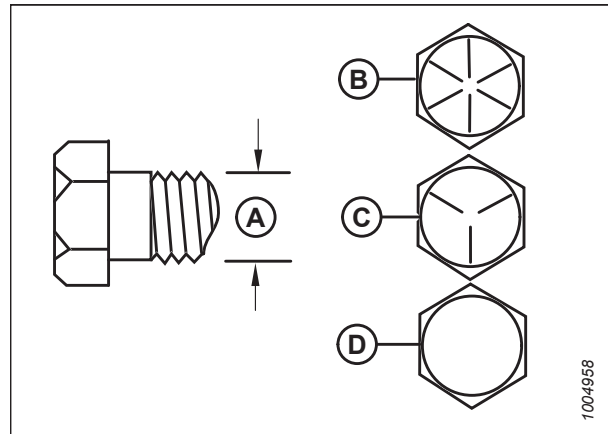


Figure 6.3: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

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

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	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

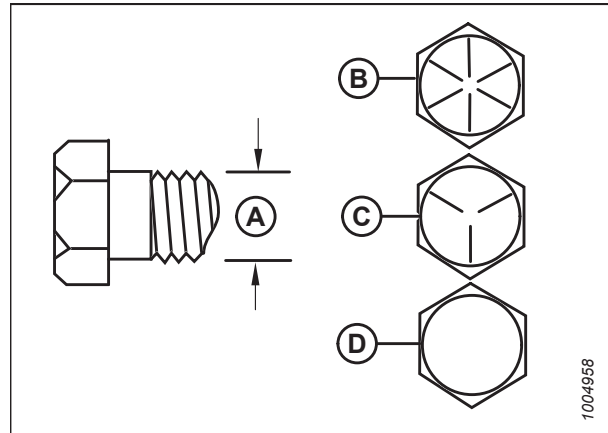


Figure 6.4: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

6.1.2 Metric Bolt Specifications

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

NOTE:

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

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

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

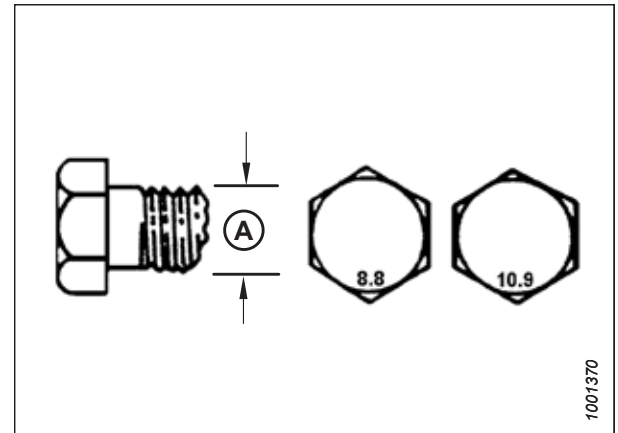


Figure 6.5: Bolt Grades

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

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

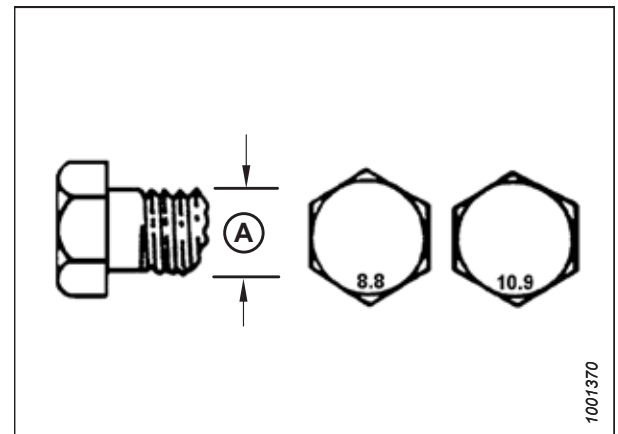
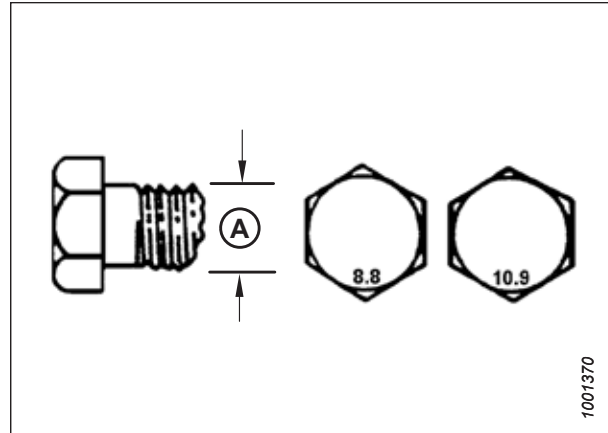


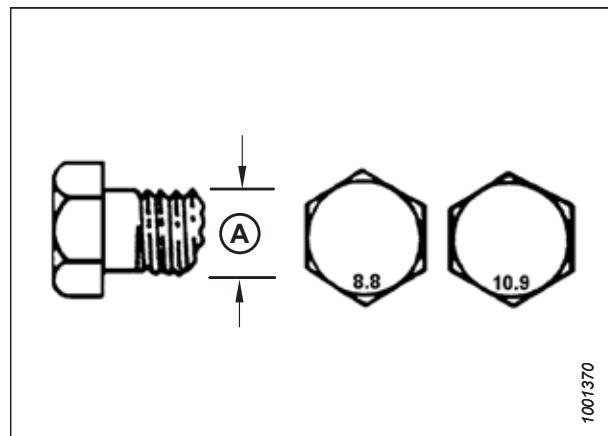
Figure 6.6: Bolt Grades

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

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

**Figure 6.7: Bolt Grades****Table 6.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut**

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

**Figure 6.8: Bolt Grades**

6.1.3 Metric Bolt Specifications – Cast Aluminum

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

NOTE:

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

Table 6.9 Metric Bolt Bolting into Cast Aluminum

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

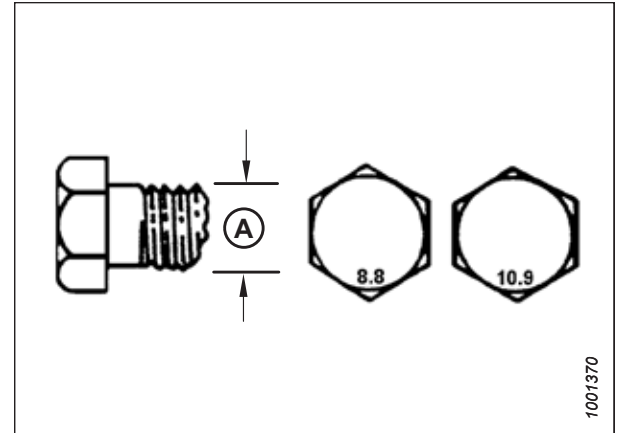


Figure 6.9: Bolt Grades

6.1.4 Flare-Type Hydraulic Fittings

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

1. Inspect flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto the fitting without lubrication until contact is made between the flared surfaces.
3. Torque fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value in Table 6.10, page 105.
4. Secure fitting (D) with two wrenches. Place one wrench on fitting body (D), and tighten nut (E) with the other wrench to the torque value shown in Table 6.10, page 105.
5. Verify the final condition of connection.

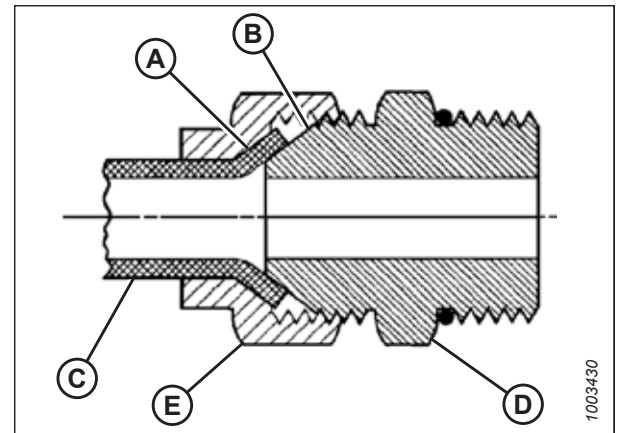


Figure 6.10: Hydraulic Fitting

Table 6.10 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value ²⁶		Flats from Finger Tight (FFFT)	
		Nm	lbf·ft	Tube	Swivel Nut or Hose
-2	5/16-24	4-5	3-4	—	—
-3	3/8-24	7-8	5-6	—	—
-4	7/16-20	18-19	13-14	2 1/2	2
-5	1/2-20	19-21	14-15	2	2
-6	9/16-18	30-33	22-24	2	1 1/2
-8	3/4-16	57-63	42-46	2	1 1/2
-10	7/8-14	81-89	60-66	1 1/2	1 1/2

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

Table 6.10 Flare-Type Hydraulic Tube Fittings (continued)

SAE Dash Size	Thread Size (in.)	Torque Value ²⁷		Flats from Finger Tight (FFFT)	
		Nm	lbf-ft	Tube	Swivel Nut or Hose
-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

6.1.5 O-Ring Boss Hydraulic Fittings – Adjustable

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

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

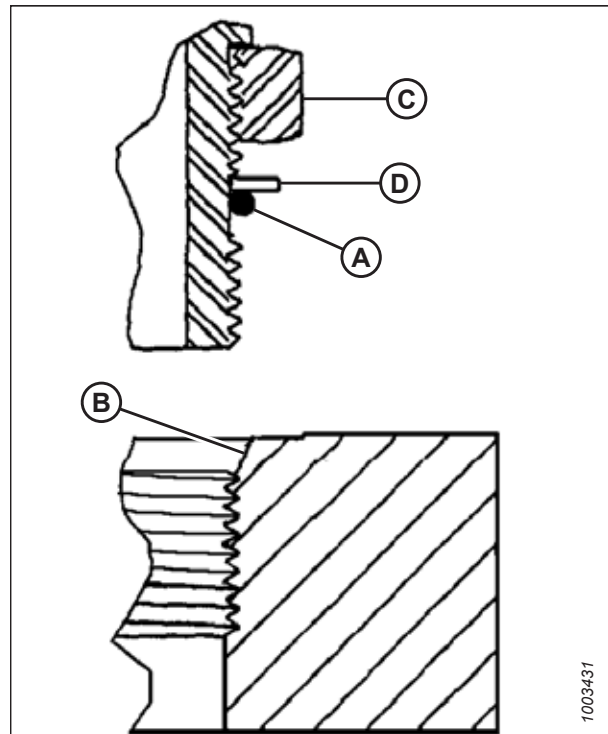


Figure 6.11: Hydraulic Fitting

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

REFERENCE

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

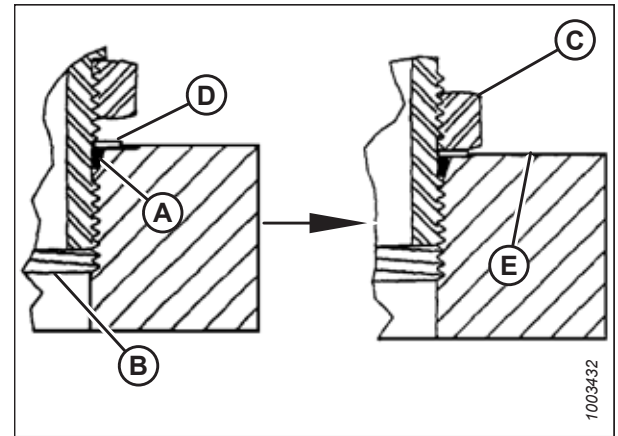


Figure 6.12: Hydraulic Fitting

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

SAE Dash Size	Thread Size (in.)	Torque Value ²⁸	
		Nm	lbf·ft (*lbf·in)
-2	5/16-24	6-7	*53-62
-3	3/8-24	12-13	*106-115
-4	7/16-20	19-21	14-15
-5	1/2-20	21-33	15-24
-6	9/16-18	26-29	19-21
-8	3/4-16	46-50	34-37
-10	7/8-14	75-82	55-60
-12	1 1/16-12	120-132	88-97
-14	1 3/8-12	153-168	113-124
-16	1 5/16-12	176-193	130-142
-20	1 5/8-12	221-243	163-179
-24	1 7/8-12	270-298	199-220
-32	2 1/2-12	332-365	245-269

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

6.1.6 O-Ring Boss Hydraulic Fittings – Non-Adjustable

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

Torque values are shown in the table below.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table 6.12, page 108.
6. Verify the final condition of the fitting.

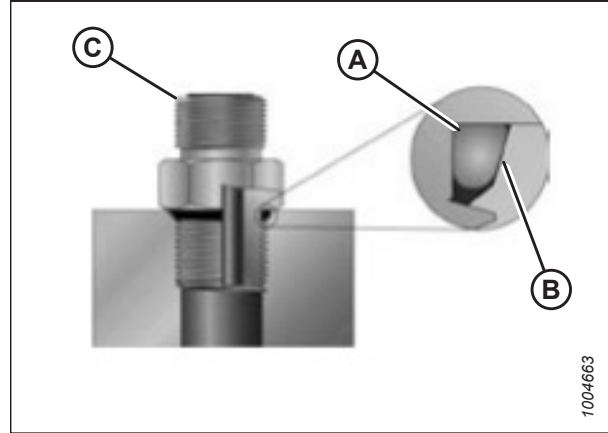


Figure 6.13: Hydraulic Fitting

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

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

6.1.7 O-Ring Face Seal Hydraulic Fittings

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

Torque values are shown in the Table 6.13, page 109

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

REFERENCE

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



Figure 6.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table 6.13, page 109.

NOTE:

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

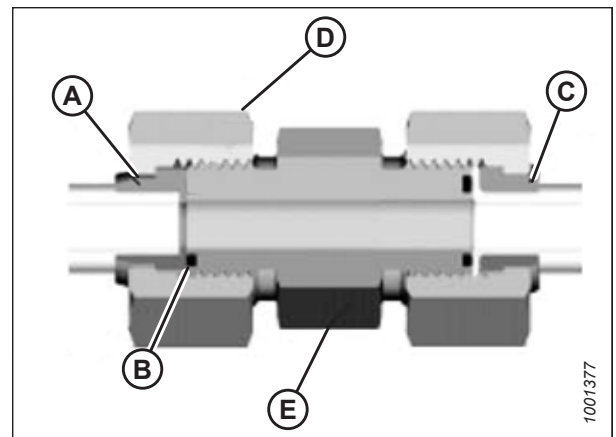


Figure 6.15: Hydraulic Fitting

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

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ³⁰	
			Nm	lbf·ft
-3	Note ³¹	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ³¹	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 ³¹	7/8	–	–
-16	1 7/16	1	150–165	111–122

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

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

REFERENCE

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ³²	
			Nm	lbf·ft
-20	1 11/16	1 1/4	205–226	151–167
-24	1–2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

6.1.8 Tapered Pipe Thread Fittings

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

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.
4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 6.14, page 110. Ensure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never loosen the threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with an appropriate cleaner.
6. Inspect the final condition of the fitting. Pay special attention to the possibility of cracks in the port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

NOTE:

The failure of fittings due to over-torquing may not be evident until the fittings are disassembled and inspected.

Table 6.14 Hydraulic Fitting Pipe Thread

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

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

6.2 Conversion Chart

Both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement are used in this manual. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 6.15 Conversion Chart

Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	$\times 2.4710 =$	acre	acres
Flow	liters per minute	L/min	$\times 0.2642 =$	US gallons per minute	gpm
Force	Newton	N	$\times 0.2248 =$	pound force	lbf
Length	millimeter	mm	$\times 0.0394 =$	inch	in.
Length	meter	m	$\times 3.2808 =$	foot	ft.
Power	kilowatt	kW	$\times 1.341 =$	horsepower	hp
Pressure	kilopascal	kPa	$\times 0.145 =$	pounds per square inch	psi
Pressure	megapascal	MPa	$\times 145.038 =$	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	$\times 14.5038 =$	pounds per square inch	psi
Torque	Newton meter	Nm	$\times 0.7376 =$	pound feet or foot pounds	lbf·ft
Torque	Newton meter	Nm	$\times 8.8507 =$	pound inches or inch pounds	lbf·in
Temperature	degrees Celsius	°C	$(^{\circ}\text{C} \times 1.8) + 32 =$	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	$\times 3.2808 =$	feet per minute	ft/min
Velocity	meters per second	m/s	$\times 3.2808 =$	feet per second	ft/s
Velocity	kilometers per hour	km/h	$\times 0.6214 =$	miles per hour	mph
Volume	liter	L	$\times 0.2642 =$	US gallon	US gal
Volume	milliliter	mL	$\times 0.0338 =$	ounce	oz.
Volume	cubic centimeter	cm ³ or cc	$\times 0.061 =$	cubic inch	in. ³
Weight	kilogram	kg	$\times 2.2046 =$	pound	lb.

Index

2147	91	135785	89, 93
7536	91	135786	99
11695	15, 89	135788	87, 99
13249	85	135799	15, 89, 93
16266	91	135821	87
18605	85	135867	95, 99
18627	15, 91	135868	87, 95, 99
18648	15, 91	135888	87
18671	91	136082	15, 87
20312	91	136095	85, 91
21194	85	136122	15, 89, 93
21566	99	136147	95
21574	99	136149	95
21854	99	136157	15, 89
22072	87	136172	89
30228	89	136238	91
30441	87	136395	89
30463	91	136417	89, 93
30505	89	136418	15, 95
30627	15, 89, 93	136431	89
30629	93	136504	89
30630	89	136655	91
30753	15, 95	136701	15, 89
30856	89, 93	136846	99
30971	87, 95, 99	142825	91
37687	87	144499	85
38854	87	144833	85
40702	87, 95	144996	91
42592	89	145249	87
50187	85	145428	87
103738	15, 91	145548	87
108172	93	148798	87
109791	87	152439	89
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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

Follow the instructions carefully. Pay attention to safety-related messages, and avoid unsafe practices.

✓	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 101
	Check that all shipping stands have been removed.	2.5 Installing Deck, page 23
	Check and adjust front skid to correct height above the draper. Tighten securing nuts.	4.1.5 Adjusting Front Skid, page 69
	Check and adjust rear deflector to correct height above the draper. Tighten securing nuts.	4.1.6 Adjusting Rear Deflector, page 70
	Check external draper roller seal condition. Seal should be secure and without gaps.	4.1.7 Maintaining Draper Rollers, page 71
	Check that draper pivot points are properly greased.	4.2 Greasing Double Windrow Attachment, page 77

DWA Serial Number:

Date Checked:

Checked by:

Recommended Lubricants



WARNING

To avoid injury or death, do NOT allow ANY machine fluids to enter the body.

Table: System Capacities

Lubricant/Fluid	Location	Description	Capacity
Grease	Deck pivots	SAE multi-purpose high temperature extreme pressure (EP2) performance with 1.5–5 % max molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified
Grease	Linkage pivots	SAE multi-purpose high temperature extreme pressure (EP2) performance with 1.5–5 % max molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified
Grease	Draper drive roller bearing	SAE multi-purpose high temperature extreme pressure (EP2) performance with 0–1 % max molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified
Grease	Draper idler roller bearing	SAE multi-purpose high temperature extreme pressure (EP2) performance with 0–1 % max molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified

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