

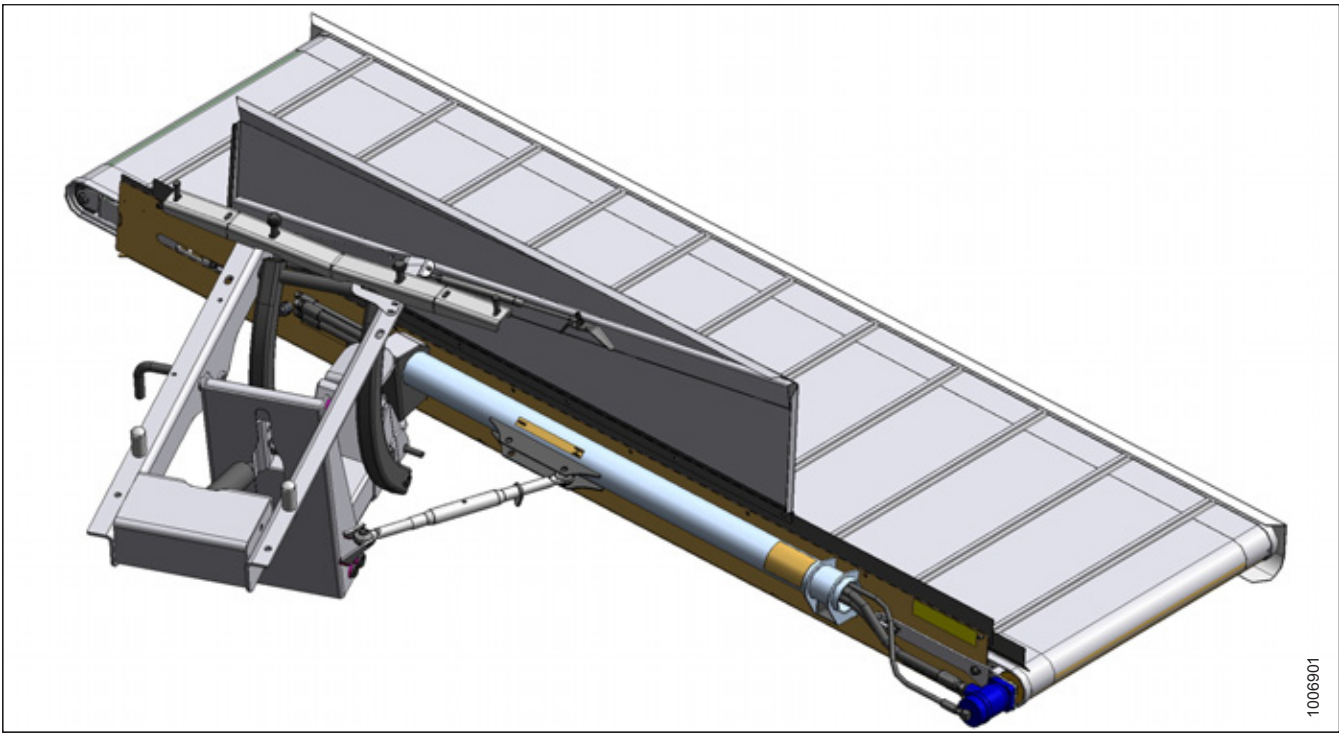
Double Windrow Attachment (DWA) for M Series Self-Propelled Windrowers

Setup, Operation, and Parts Manual

214315 Revision B

Original Instruction

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



Published: June 2018

Introduction

The Double Windrow Attachment (DWA) provides the ability to place two windrows of conditioned material close together.

The DWA can be mounted on M150, M155, M155E4, M200, and M205 Self-Propelled Windrowers.

The DWA is for use with A Series Auger Headers, D Series Draper Headers with HC10 Hay Conditioners, and R Series Rotary Disc Headers.

NOTE:

- A DWA should not be used on headers larger than 7.6 m (25 ft.).
- The HC10 is not compatible with M205 Self-Propelled Windrowers.
- M150, M155, M155E4, and M200 Self-Propelled Windrowers can use both a DWA and the HC10 on draper headers between 4.6 –7.6 m (15–25 ft.).

NOTE:

Depending on the windrower model year, a software update may be required for proper function of the auxiliary lift valve block provided with your DWA. Refer to MacDon Service Bulletin #SB1210 for details.

When the DWA system is engaged, the conditioned crop is deposited onto the side draper and placed 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.

CAREFULLY READ THE INFORMATION PROVIDED IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE OR MAINTAIN A DWA.

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

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

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

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

Conventions

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 Reference, page 109](#) of this document.

This document is available in English and Russian.

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).

List of Revisions

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

Summary of change	Location
Header position decal 176071 superseded by 176767 in ECN 56459.	<i>5.1 Deck, Draper, and Rollers (Illustration 1), page 86</i>
Drive roller weldment 144494 superseded by 176678 in ECN 55574.	<i>5.2 Deck, Draper, and Rollers (Illustration 2), page 88</i>
Added DWA Switch kit (MD #176748). Kit includes new switch MD #200974, support #176655, harness #183856, and hardware. Illustration updated to reflect changes. ECN 56200.	<i>5.3 Deck Supports and Linkage (Illustration 1), page 92</i>
Header position decal 176072 superseded by 176768 in ECN 56459.	
Header position decal 176071 superseded by 176767 in ECN 56459.	<i>5.4 Deck Supports and Linkage (Illustration 2), page 96</i>
Header position decals 176071 and 176072 superseded by 176767 and 176768 in ECN 56459.	<i>5.7 Decals, page 106</i>

Serial Number Location

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

DWA serial number: _____

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

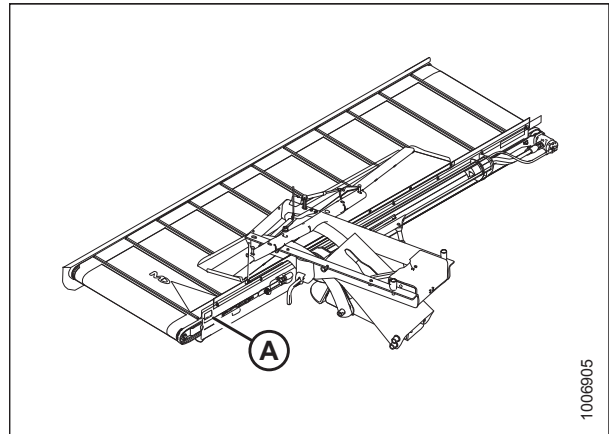


Figure 1. Serial Number Location

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1 Safety

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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



Figure 1.1: Safety Symbol

1.2 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. 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.

1.3 General Safety

CAUTION

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

Protect yourself.

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



Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

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

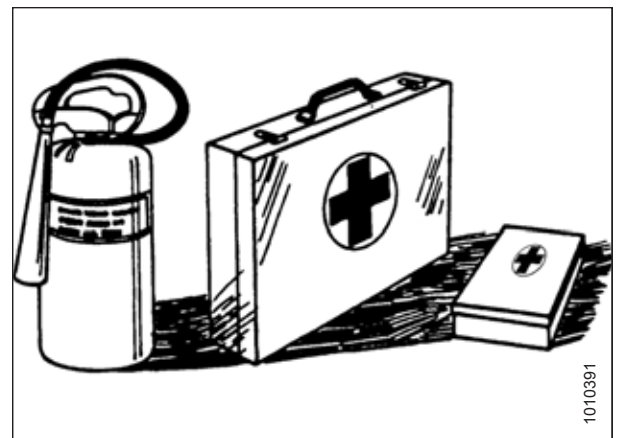


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

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

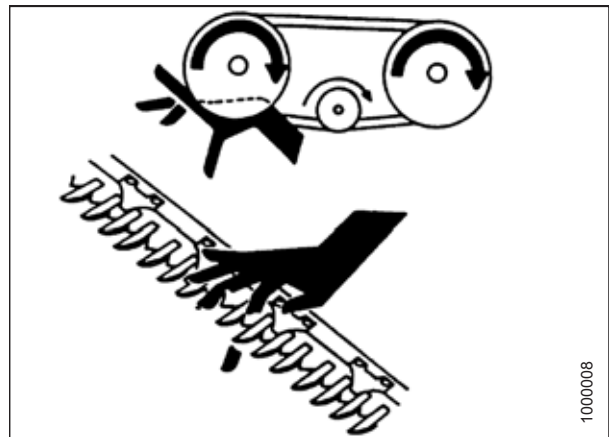


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

To ensure your safety while maintaining machine:

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



Figure 1.8: Safety around Equipment

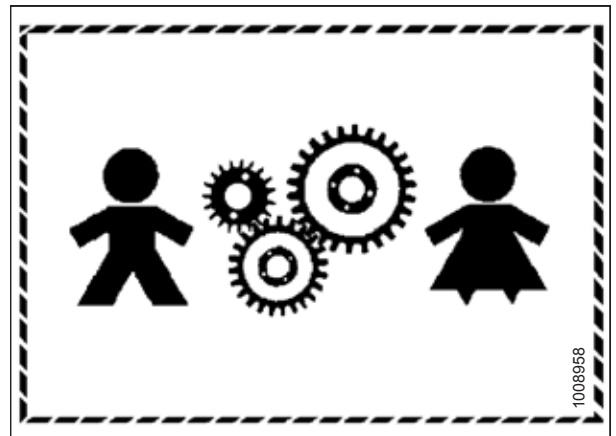


Figure 1.9: Equipment NOT Safe for Children



Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

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

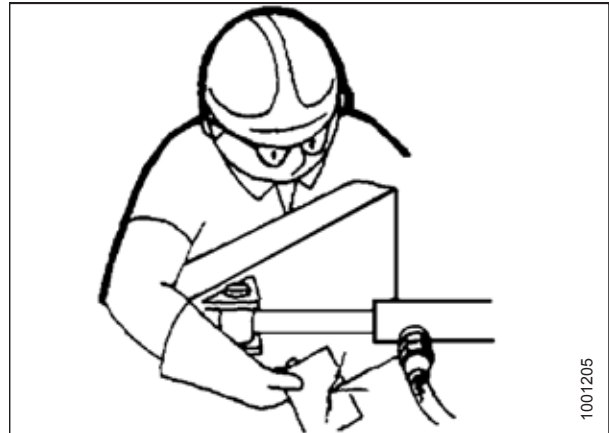


Figure 1.11: Testing for Hydraulic Leaks

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



Figure 1.12: Hydraulic Pressure Hazard

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

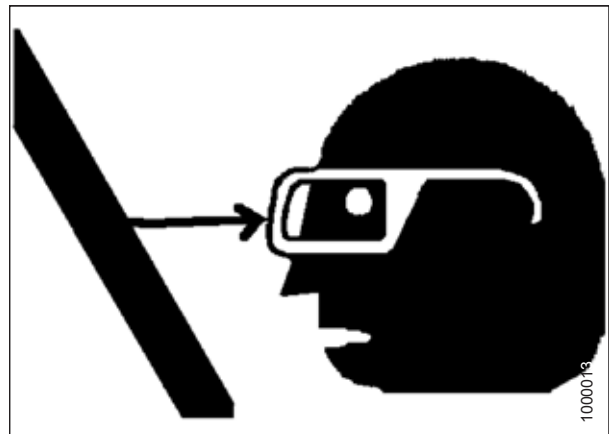


Figure 1.13: Safety around Equipment

1.6 Safety Signs

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

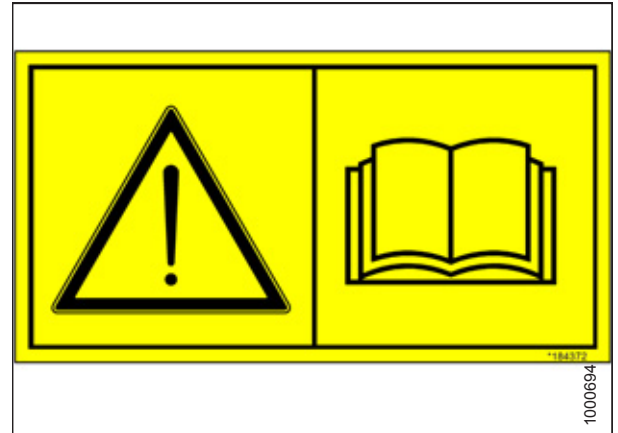


Figure 1.14: Operator's Manual Decal

1.6.1 Installing Safety Decals

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

1.7 Safety Sign Decals

MD #166466

HIGH PRESSURE HYDRAULICS

DO NOT GO NEAR LEAKS

Located on deck

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



Figure 1.15: MD #166466

MD #174683

PINCH POINT - MOVING PARTS

STAND CLEAR

Located on linkage arm (both sides)



Figure 1.16: MD #174683

SAFETY

MD #176295

DECK LIFT LOCK

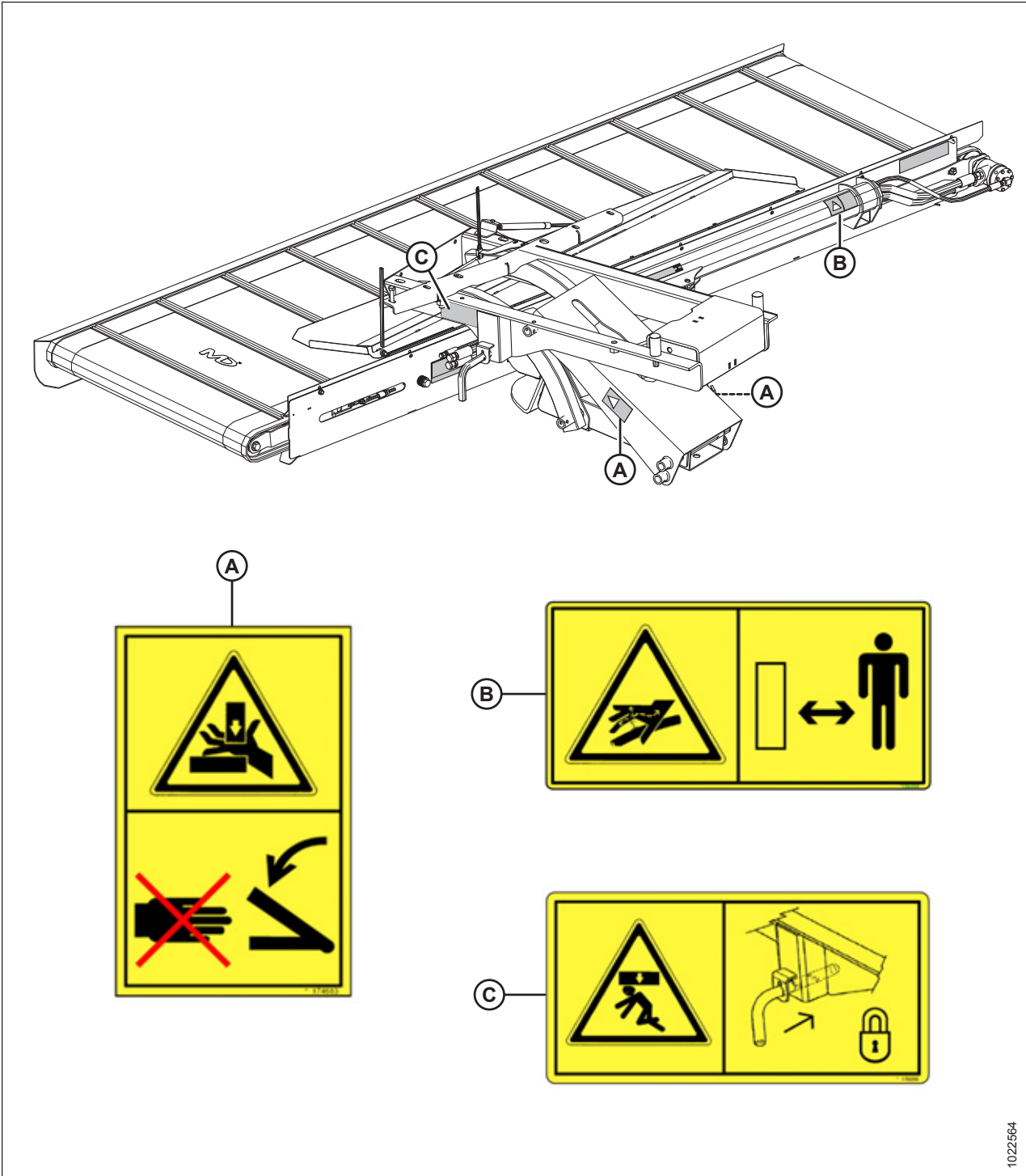
Located on deck linkage



Figure 1.17: MD #176295

1.8 Safety Decal Locations

Figure 1.18: Double Windrow Attachment (DWA) Safety Decal Locations



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

B - MD #166466 – High Pressure Hydraulics

C - MD #176295 – Deck Lift Lock

2 Assembly/Setup Instructions

NOTE:

The Double Window Attachment (DWA) will only fit windrower models listed in the Introduction ([Introduction, page i](#)). The DWA cannot be installed on the M100 or M105 Self-Propelled Windrower models.

2.1 Reworking Frame for Pre-2008 Windrowers

Before installing the Double Window Attachment (DWA) on a windrower built before the 2008 production year, follow these instructions:

1. If holes are not present, drill four 20 mm (25/32 in.) diameter holes at the locations shown in Figures 2.1, [page 11](#) and 2.2, [page 12](#).

IMPORTANT:

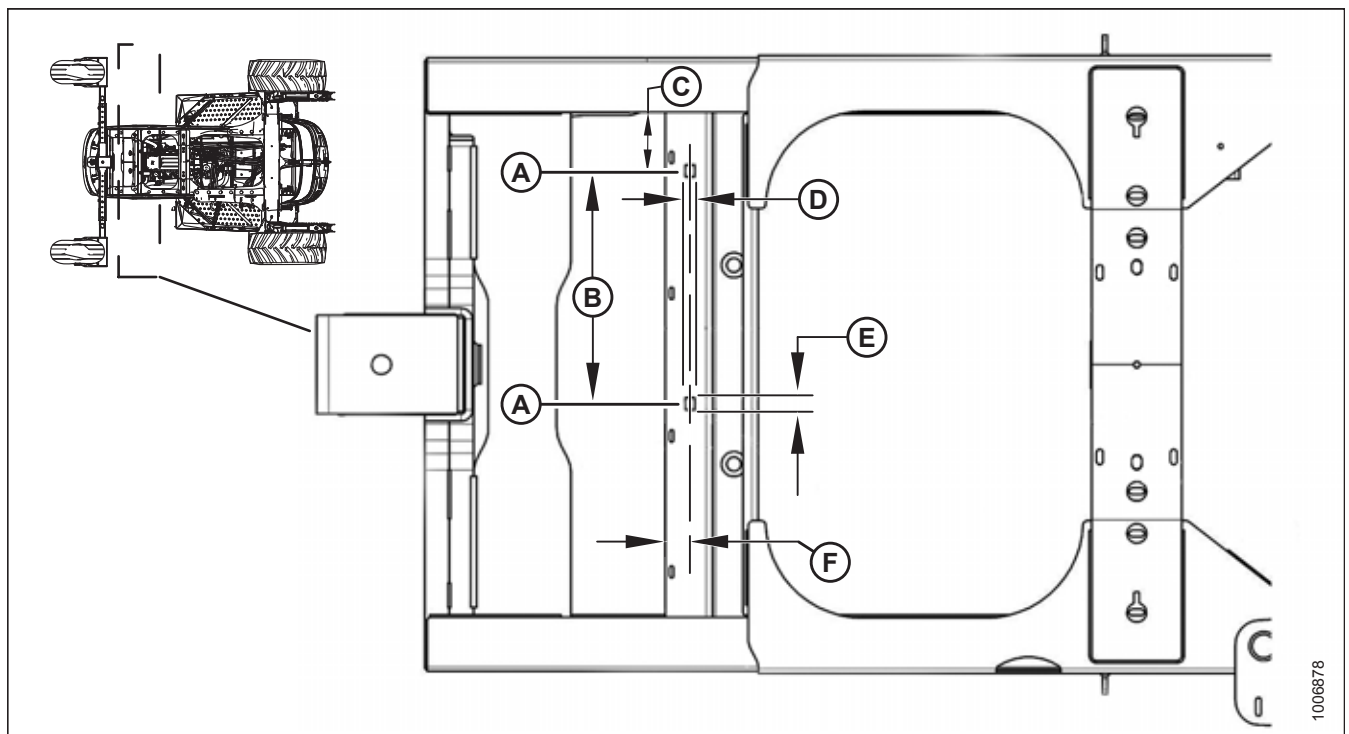
Move hydraulic hoses out of the way before drilling into the frame at the rear-facing end of the windrower.

2. Ream/grind rear holes to make them square for square neck bolts.

NOTE:

Slots are only required if holes do not line up with DWA frame.

Figure 2.1: Rear-Facing Frame



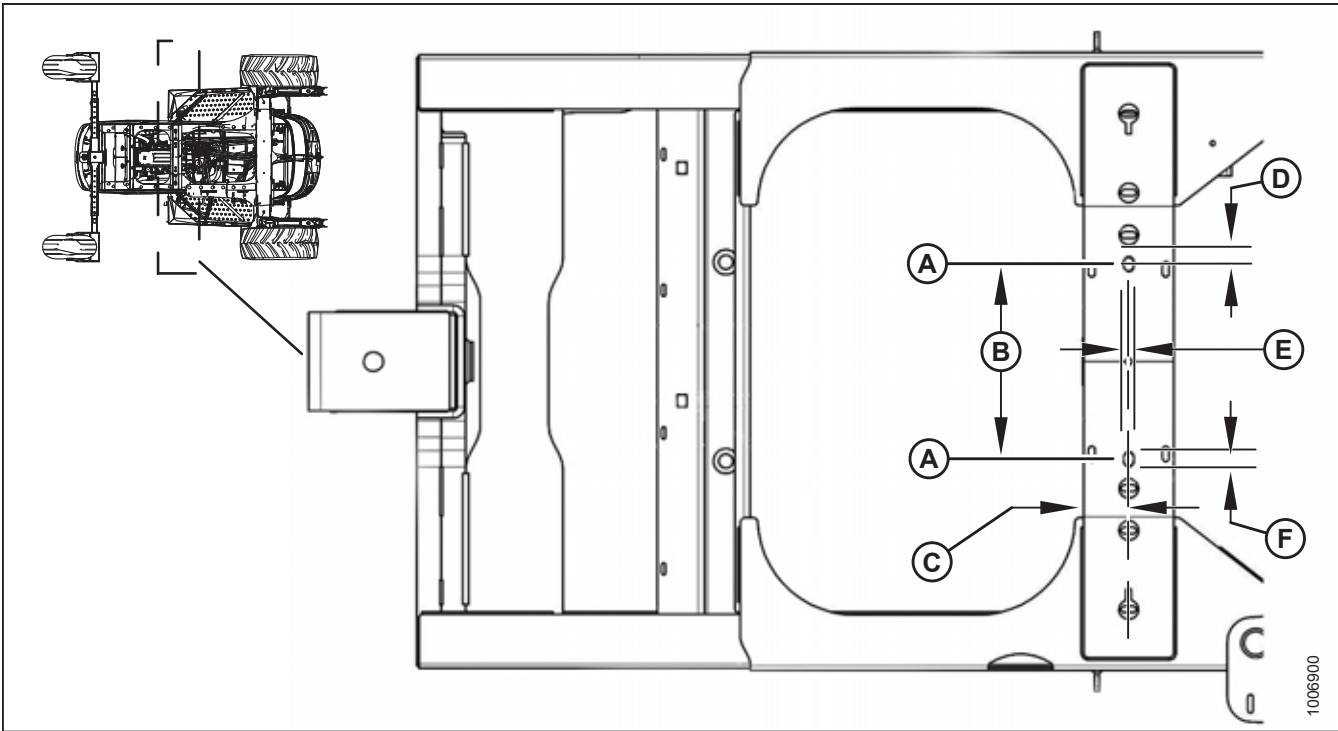
A - Rear Frame Hole Locations
D - 20 mm (25/32 in.)

B - 480 mm (18-7/8 in.)
E - 25 mm (1 in.)

C - 121.5 mm (4-25/32 in.)
F - 50 mm (1-31/32 in.)

ASSEMBLY/SETUP INSTRUCTIONS

Figure 2.2: Forward-Facing Frame



A - Front Frame Hole Locations
D - 40 mm (1-9/16 in.)

B - 402 mm (15-15/16 in.)
E - 20 mm (25/32 in.)

C - 92.5 mm (3-5/8 in.)
F - 28.5 mm (1-1/8 in.)

2.2 Installing the DWA Draper Drive Manifold

To install the Double Windrow Attachment (DWA) draper drive manifold, follow these steps:

1. Move the left (cab-forward) platform (A) to the open position to access the hydraulic valve blocks. Ensure the platform latch is engaged in open position. Refer to windrower operator's manual.

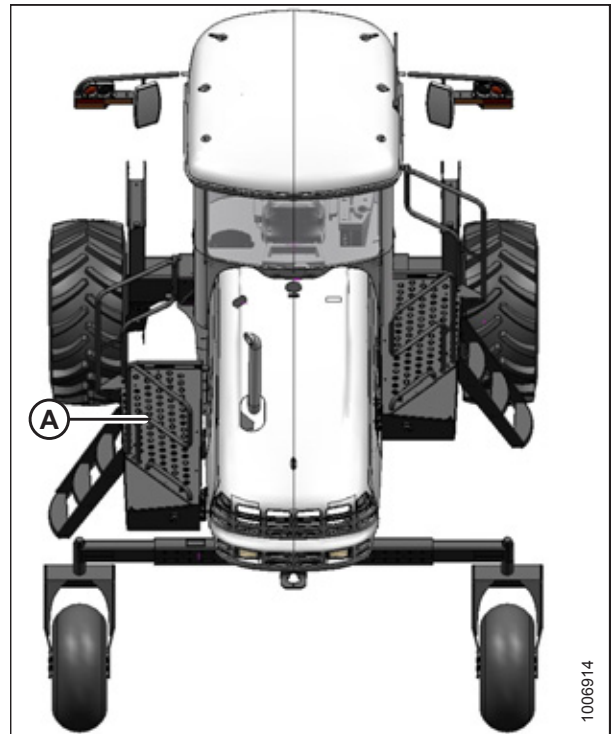


Figure 2.3: Windrower Top View with Left Platform in Open Position

2. To prepare the DWA draper drive manifold, install the #12 ORB x #12 JIC fitting (A) in port R2 on the DWA drive manifold.

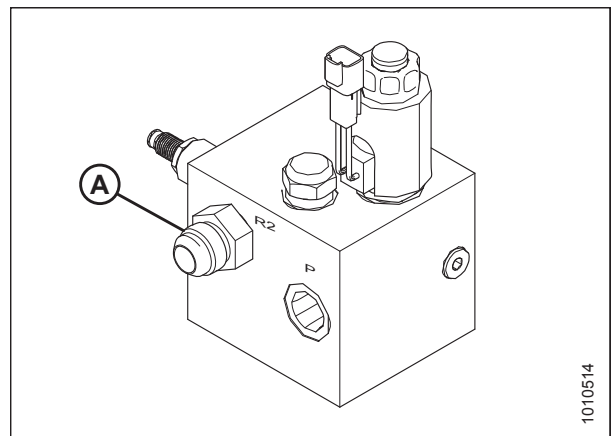


Figure 2.4: DWA Drive Manifold

ASSEMBLY/SETUP INSTRUCTIONS

3. Select the correct fitting for your windrower model.
 - **For M150/M200:** Install the regular #10 ORB x #10 JIC fitting (A) in port P on DWA drive manifold.
 - **For M155/M155E4/M205:** Install the long #10 ORB x #10 JIC fitting (B) in port P on DWA drive manifold.

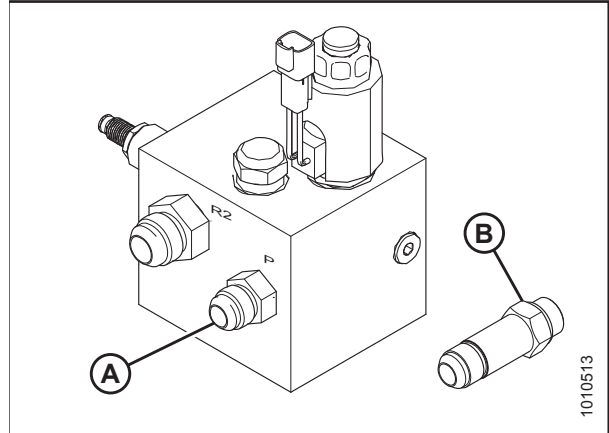


Figure 2.5: DWA Drive Manifold

4. To simplify assembly, install hose (A), supplied in kit, to the fitting in port R2 of DWA drive manifold before attaching the manifold to the frame.

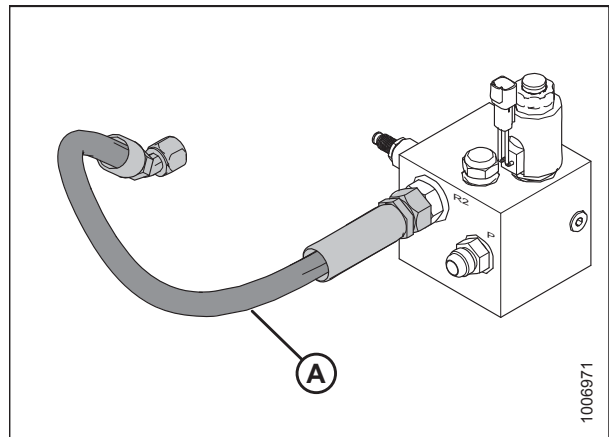


Figure 2.6: DWA Drive Manifold

5. Attach the DWA drive manifold to the windrower left side frame with two 3/8 in. serrated flange head bolts (A). Route hose and fittings through side frame pointing toward the windrower engine and relief valve (B) pointing to rear of windrower.

NOTE:

Leave plugs in ports DWA and R1.

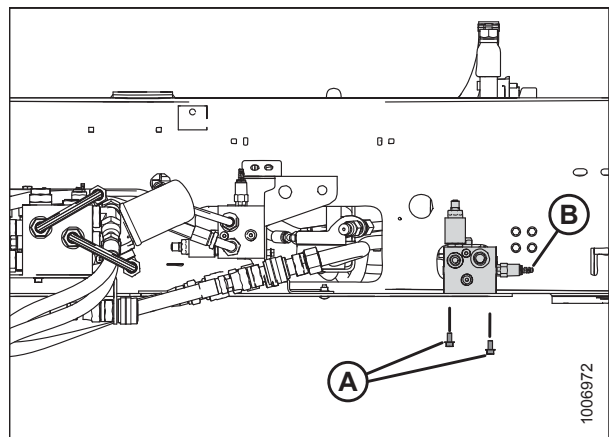


Figure 2.7: Windrower Left Side (M205 Shown)

ASSEMBLY/SETUP INSTRUCTIONS

- Remove hose (A) from cooler bypass relief valve (B) and connect to fitting at port P on DWA drive manifold. The other end of hose (A) is connected to the supercharge pump (D).
- Install the other end of hose (C) to the cooler bypass relief valve (B) where hose (A) was removed.

NOTE:

Gain access to hose (A) from under the windrower or by raising windrower hood and working from the left platform.

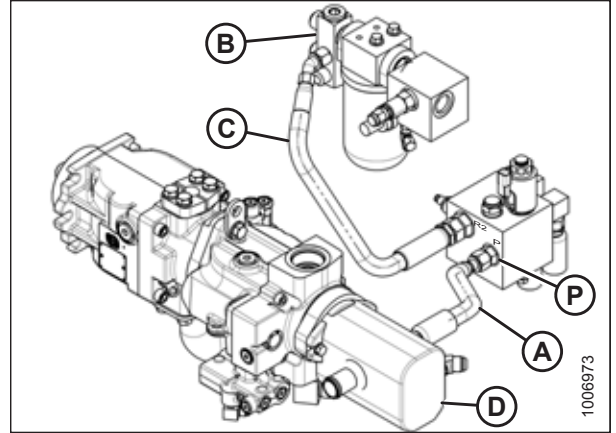
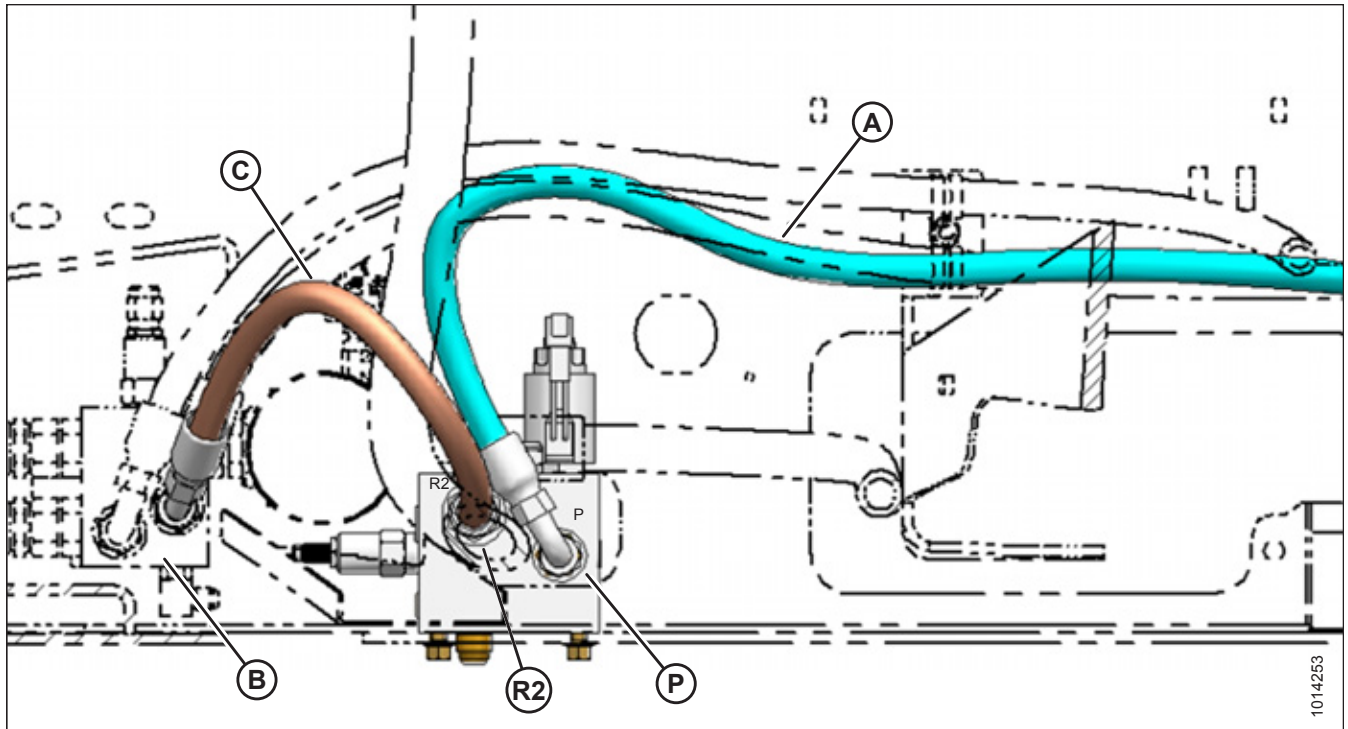


Figure 2.8: M150/M200 Configuration after Installing the DWA Drive Manifold

A - Hose
B - Bypass Relief Valve
C - Hose
D - Supercharge Pump
P - Port P

Figure 2.9: M205 Hose Configuration

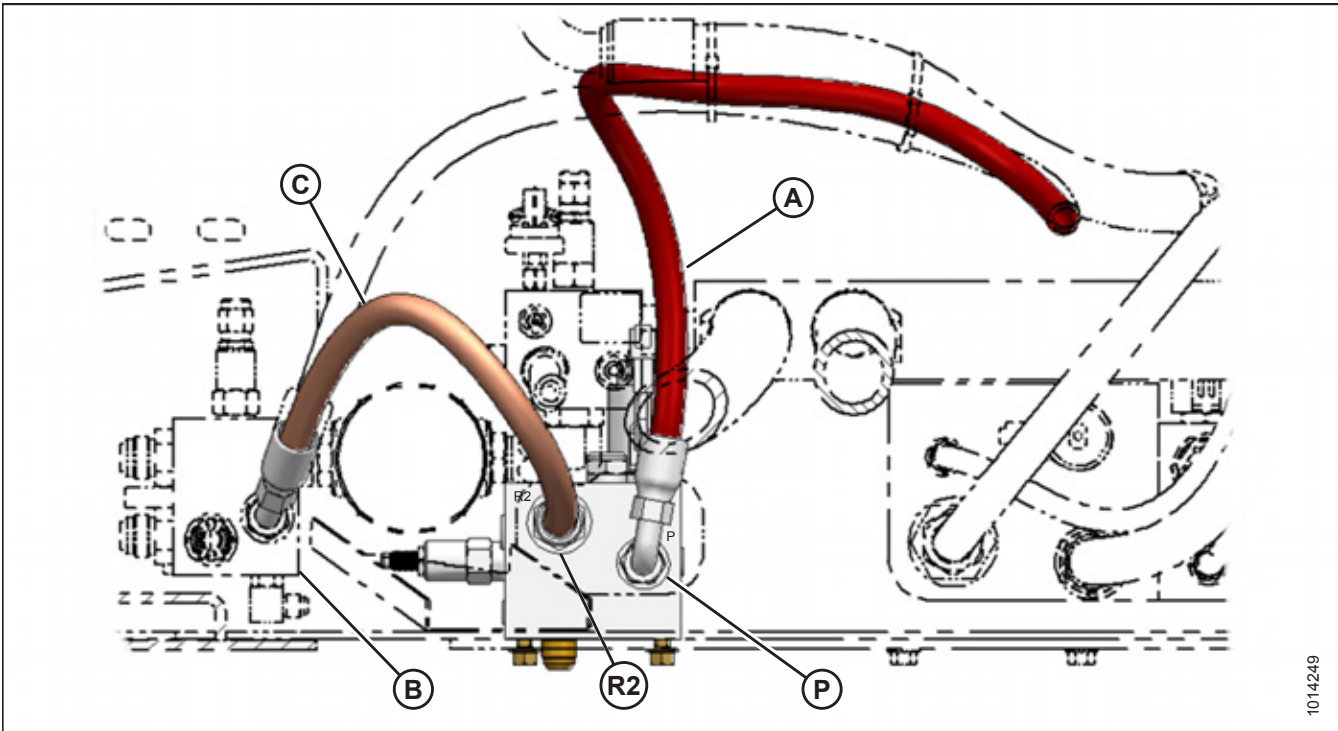


A - Hose from Port P on DWA Drive Manifold to Pump (not visible)
C - Hose from Port R2 on DWA Drive Manifold to Cooler Bypass Relief Valve

B - Cooler Bypass Relief Valve
P - Port P

ASSEMBLY/SETUP INSTRUCTIONS

Figure 2.10: M155/M155E4 Hose Configuration



A - Hose from Port P on DWA Drive Manifold to Pump (not visible)
C - Hose from Port R2 on DWA Drive Manifold to Cooler Bypass Relief Valve

B - Cooler Bypass Relief Valve
P - Port P

2.3 Installing the Platform Rail

To install the platform rail, proceed to the section that applies to your windrower:

- [2.3.1 Installing the Platform Rail: M155/M155E4/M205, page 17](#)
- [2.3.2 Installing the Platform Rail: M150/M200, page 18](#)

2.3.1 Installing the Platform Rail: M155/M155E4/M205

To install the platform rail on the right platform of an M155, M155E4, or M205, follow these steps:

1. Remove the right stairs (C) from the platform by removing the two top bolts (A) and loosening two bottom bolts (B). Retain bolts for reuse.
2. Lift the steps to detach the bottom keyhole slots from bolts (B).
3. Remove bolts (B) from bottom location on frame and loosely install bolts in top location (A).
4. Hang the platform rail (A) by fitting the keyhole slots in the adapter plate (B) onto the top bolts (C).
5. Install the two bottom bolts (D) and tighten all four bolts.

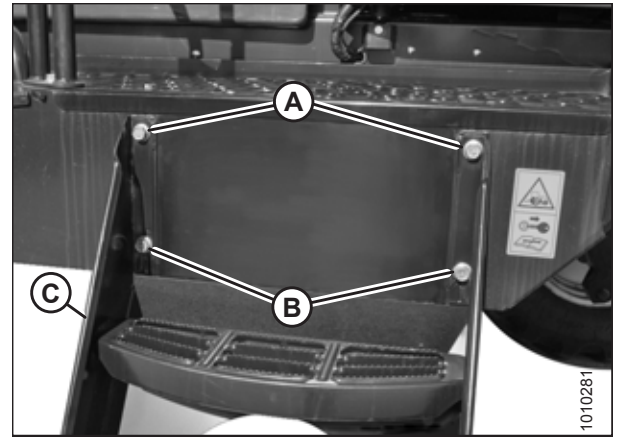


Figure 2.11: Right Stairs

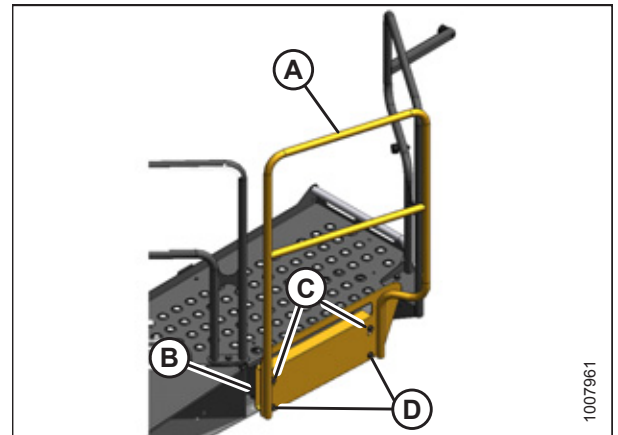


Figure 2.12: Platform Rail

ASSEMBLY/SETUP INSTRUCTIONS

2.3.2 Installing the Platform Rail: M150/M200

To install the platform rail to the right platform of an M150 or M200, follow these steps:

1. Remove the right stairs (C) from the platform by loosening the two top bolts (A) and removing two bottom bolts (B).
2. Lift the steps to detach the top keyhole slots from bolts (A). Retain bolts for the next step.

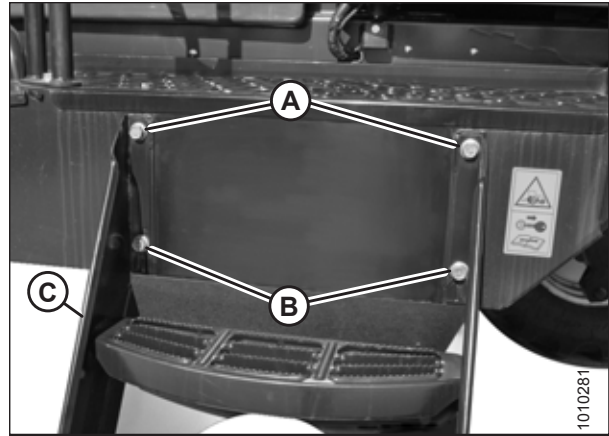


Figure 2.13: Right Stairs

3. Remove adapter plate (A) by removing four 1/2 NC x 1 in. flange bolts (B) and nuts.

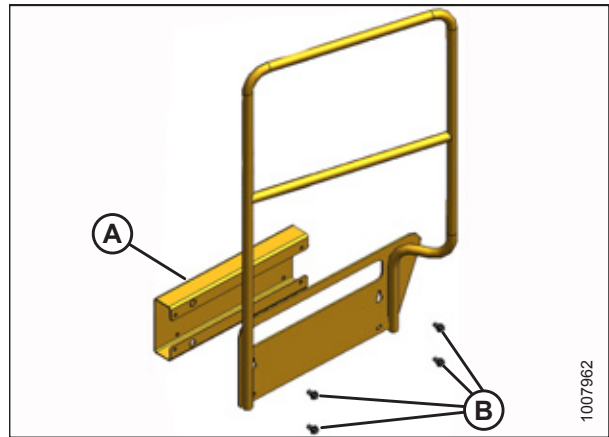


Figure 2.14: Platform Rail

4. Hang rail (A) without spacer plate by engaging keyhole slots on top bolts (B).
5. Install two bottom bolts (C) and tighten all four bolts.

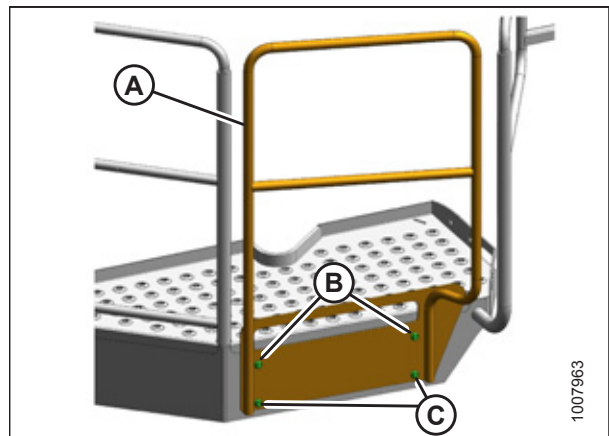


Figure 2.15: Platform Rail

2.4 Installing the Linkage

To install the linkage, proceed to the section that applies to your windrower.

- [2.4.1 Installing the Linkage: M150/M155/M155E4, page 19](#)
- [2.4.2 Installing the Linkage: M200, page 22](#)
- [2.4.3 Installing the Linkage: M205, page 26](#)

2.4.1 Installing the Linkage: M150/M155/M155E4

To install the linkage on an M150, M155, or M155E4 windrower, follow these steps:

1. Remove support (A) from the DWA linkage by removing nut (B).

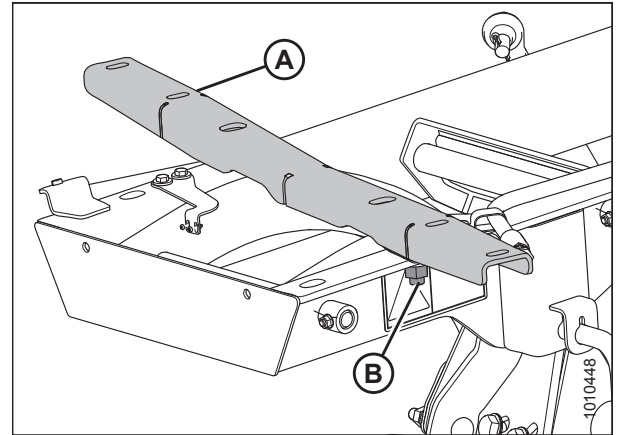


Figure 2.16: Linkage Support

2. Install two 3/4 in. x 4-1/2 in. long carriage head bolts (A) in the windrower frame member located between the engine and caster wheels.

NOTE:

Move the hoses located above the frame member to get the bolts in place.

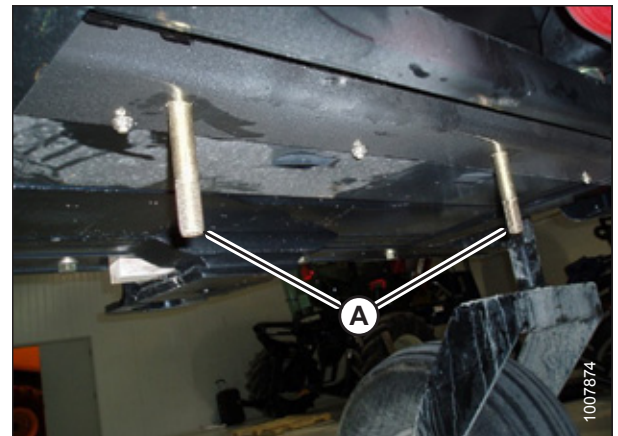


Figure 2.17: Frame Member under Windrower

ASSEMBLY/SETUP INSTRUCTIONS

3. Remove the outer bolt and nut (A) from the front engine mounts (B) on the left and right sides of the engine (C). Retain nuts for reuse.

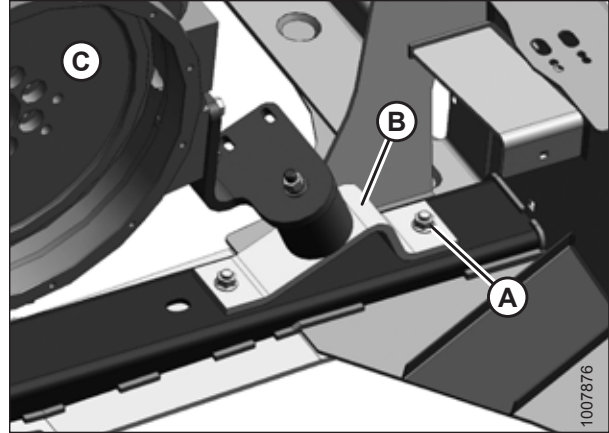


Figure 2.18: Front Engine Mounts

4. Mount the linkage support (A) to the windrower frame with two 1/2 in. x 2-3/4 in. long hex head bolts (B) with flat washers under the bolt heads and secure with nuts (C).

NOTE:

These bolts replace the engine mount bolts removed in Step 3, page 20.

5. From below the support, install a 3/4 in. x 3-1/2 in. long hex head bolt (D) with a flat washer (E) under the bolt head.
6. Secure with a flat washer, a lock washer, and a nut on top side of the frame.
7. From above the support, install a 3/4 in. x 5-1/2 in. long hex head bolt (F) with a flat washer under the bolt head.

Do **NOT** install nut on bolt (F).

8. Support linkage assembly (A) with a forklift.

NOTE:

Make sure the forks (B) do not lift against the cylinder fitting.

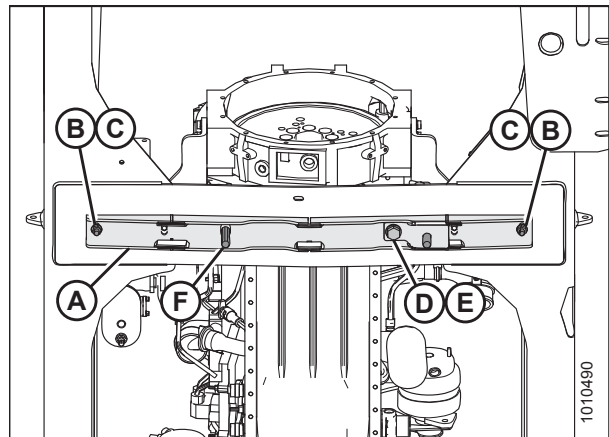


Figure 2.19: Linkage Support

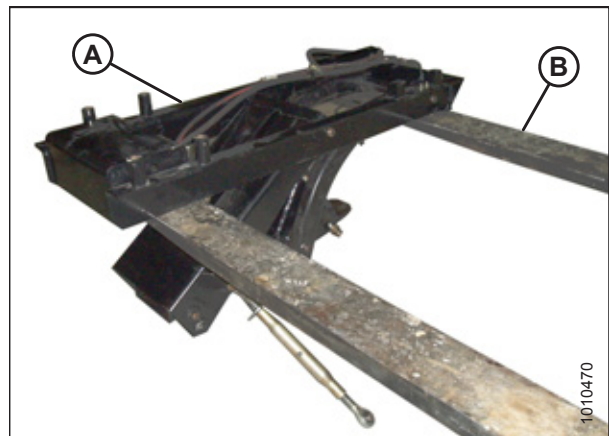


Figure 2.20: DWA Linkage

ASSEMBLY/SETUP INSTRUCTIONS

9. Align the DWA linkage with the four bolts in the windrower frame.

- **For an R Series header:** Mount the linkage in the most forward position (A).
- **For an A Series or D Series header:** Mount the linkage in the most rearward position (B).

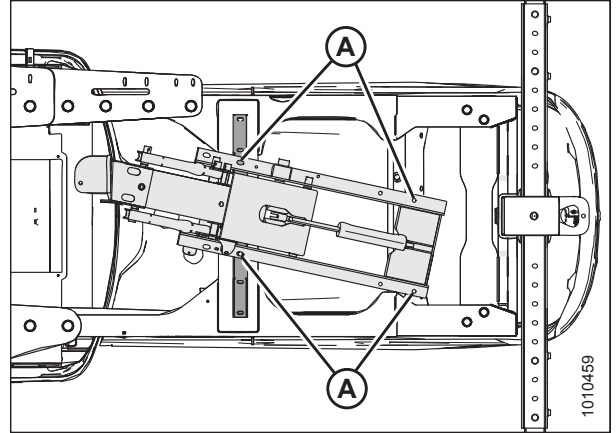


Figure 2.21: Linkage Forward

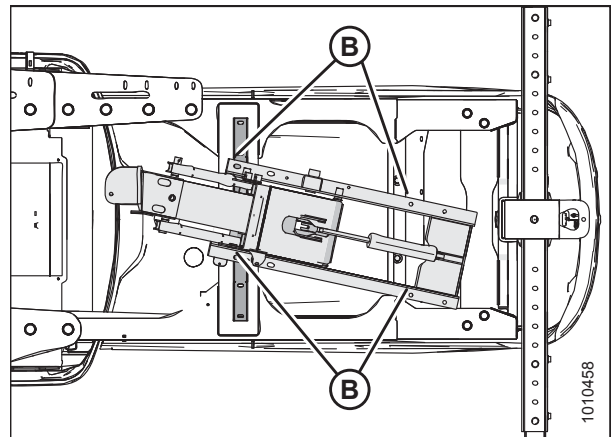


Figure 2.22: Linkage Rearward

10. Position two 1-1/2 in. OD x 1 in. ID x 2-3/4 in. long spacers (A) on the rear bolts.

11. Attach the linkage with four flat washers, lock washers, and nuts (B).

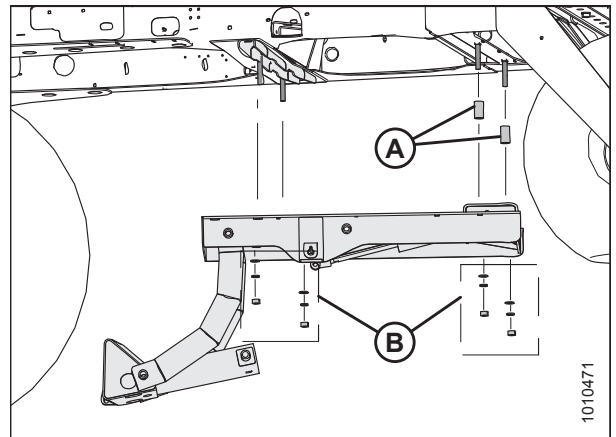


Figure 2.23: Linkage Forward

ASSEMBLY/SETUP INSTRUCTIONS

- Lower linkage by pulling on safety pin (A) on the left side of linkage.
- If the linkage does not lower, remove plugs at the end of lift cylinder hoses (B) to remove air from hoses.

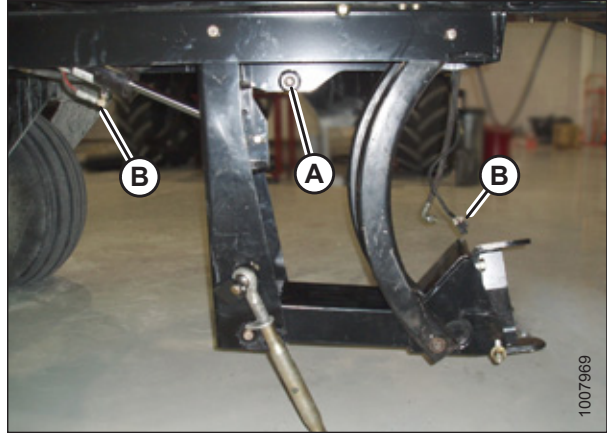


Figure 2.24: DWA Linkage

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

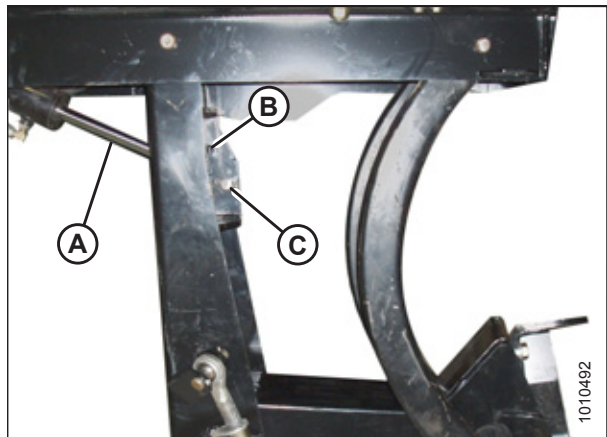


Figure 2.25: Lift Cylinder Pivot

2.4.2 Installing the Linkage: M200

To install the linkage on an M200 windrower, follow these steps:

- Remove support (A) from the double windrow attachment (DWA) linkage by removing nut (B).

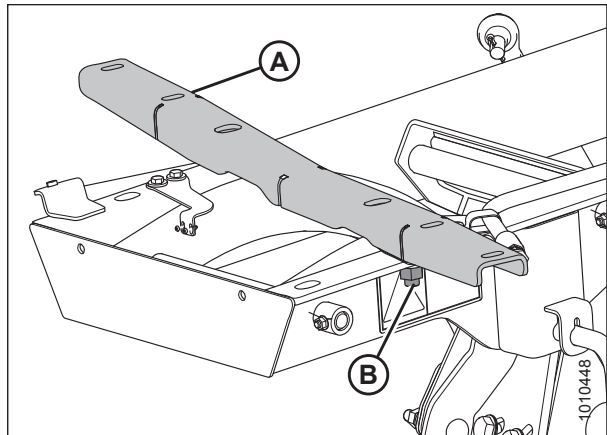


Figure 2.26: DWA Support

ASSEMBLY/SETUP INSTRUCTIONS

2. Install two 3/4 in. x 4-1/2 in. long carriage head bolts (A) in the windrower frame member located between the engine and caster wheels.

NOTE:

Move the hoses located above the frame member to get the bolts in place.

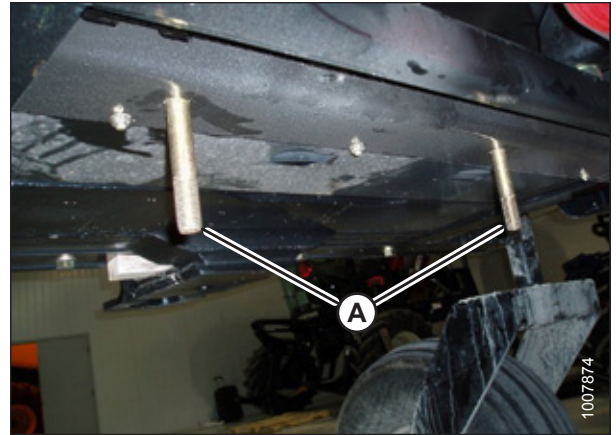


Figure 2.27: Windrower Frame Member

3. Remove four bolts (A) from the front engine mounts (two on left side and two on right side). Retain nuts for reuse.

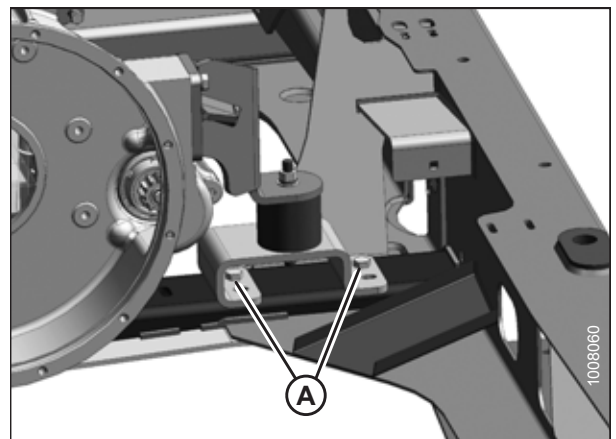


Figure 2.28: Windrower Engine Mount

4. Mount support (A) to windrower frame with four 1/2 in. x 2-3/4 in. long hex head bolts (C) with flat washers under the bolt heads and secure with nuts (B).

NOTE:

These bolts replace the engine mount bolts removed in Step 3, page 23.

5. From below the support, install a 3/4 in. x 3-1/2 in. long hex head bolt (E) with flat washer (F) under the bolt head.
6. Secure with a flat washer, a lock washer, and a nut on the top side of the frame.
7. From above the support, install a 3/4 in. x 5-1/2 in. long hex head bolt (D) with flat washer under the bolt head. Do **NOT** install nut on bolt (D).

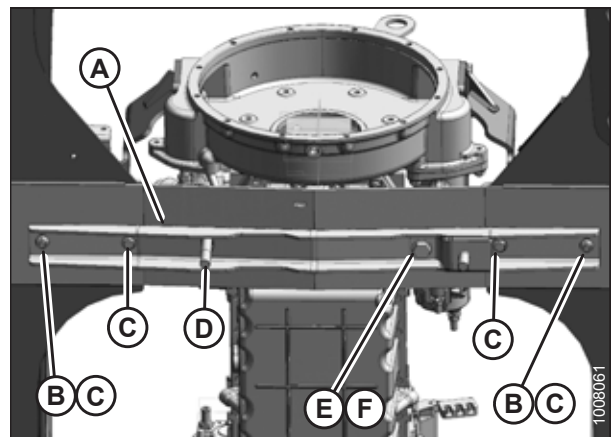


Figure 2.29: Linkage Support

ASSEMBLY/SETUP INSTRUCTIONS

8. Support linkage assembly (A) with a forklift.

NOTE:

Make sure the forks (B) do not lift against the cylinder fitting.

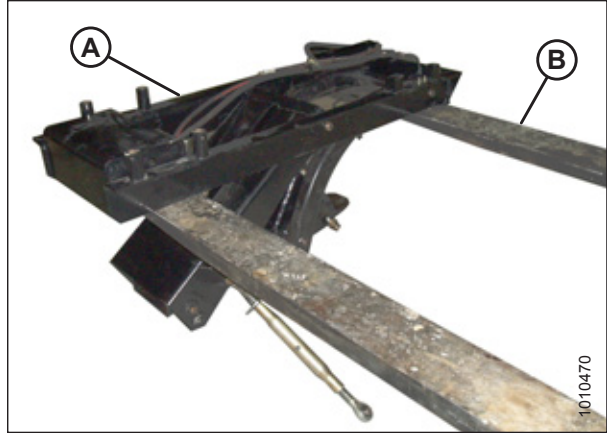


Figure 2.30: DWA Linkage

9. Align the DWA linkage with the four bolts in the windrower frame.

- **For R Series header:** Mount the linkage in the most forward position (A).
- **For A Series or D Series header:** Mount the linkage in the most rearward position (B).

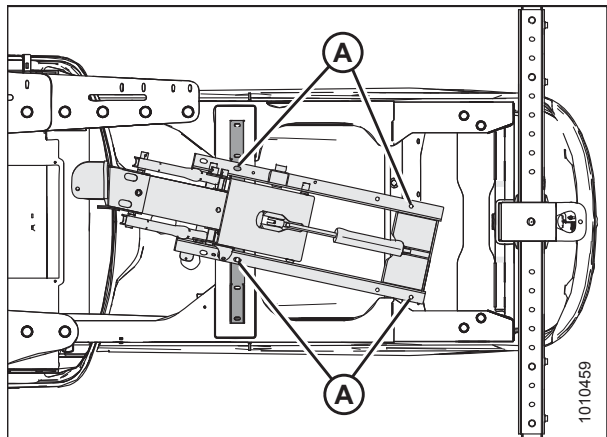


Figure 2.31: Linkage Forward

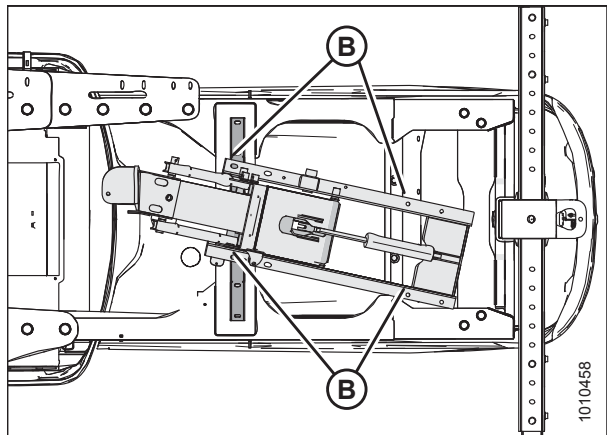


Figure 2.32: Linkage Rearward

ASSEMBLY/SETUP INSTRUCTIONS

10. Position two 1-1/2 in. OD x 1 in. ID x 2-3/4 in. long spacers (A) on the rear bolts.

NOTE:

Spacers are not required with the linkage in the rearward position.

11. Attach the linkage with four flat washers, lock washers, and nuts (B).

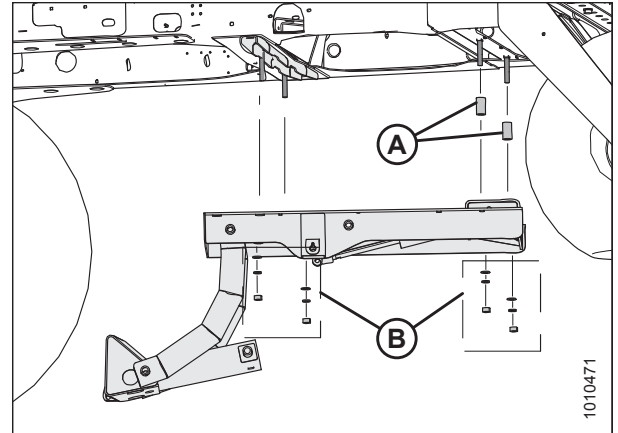


Figure 2.33: Linkage Forward

12. Lower linkage by pulling on safety pin (A) on the left side of linkage.
13. If the linkage does not lower, remove plugs at the end of lift cylinder hoses (B) to remove air from hoses.

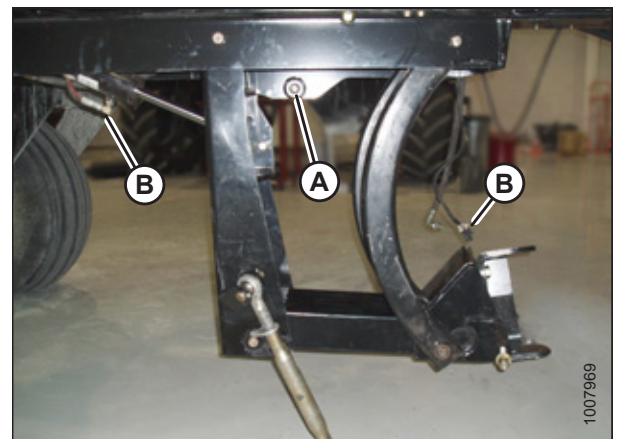


Figure 2.34: DWA Linkage

14. Secure the lift cylinder pivot (A) into the correct hole depending on header type:
 - **For R Series Header:** Insert pin in the upper hole (B).
 - **For D Series or A Series Headers:** Insert pin in the lower hole (C).

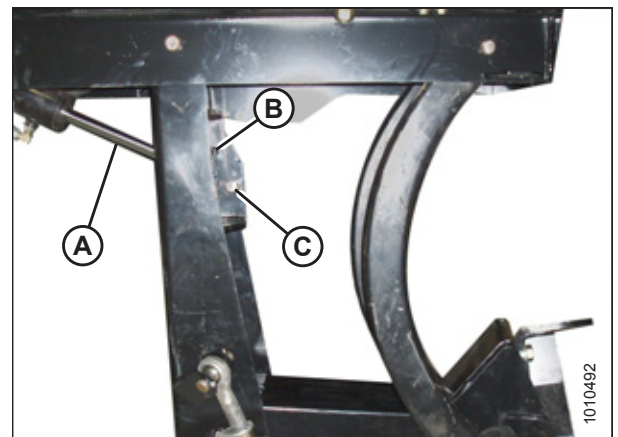


Figure 2.35: Lift Cylinder Pivot

2.4.3 Installing the Linkage: M205

To install the linkage on an M205 windrower, follow these steps:

1. Remove support (A) from the double windrow attachment (DWA) linkage by removing nut (B).

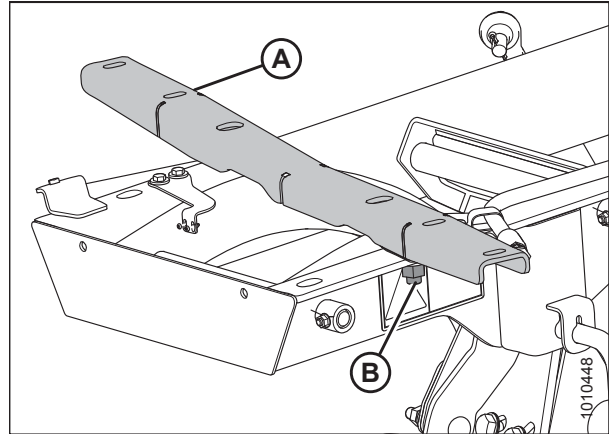


Figure 2.36: Linkage Support

2. Install two 3/4 in. x 4-1/2 in. long carriage head bolts (A) in the windrower frame member located between the engine and caster wheels.

NOTE:

Move the hoses located above the frame member to get the bolts in place.

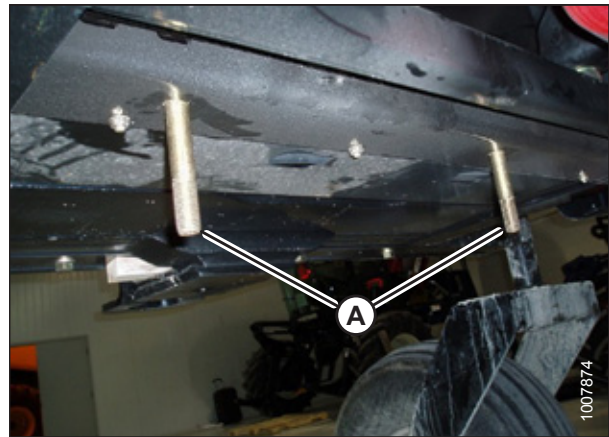


Figure 2.37: Frame Member under Windrower

ASSEMBLY/SETUP INSTRUCTIONS

M205 Windrower (2010 and 2011 Production Year Only):

3. Remove the 3/4 in. x 3-1/2 in. long bolt (A) from the stabilizer link mount near the right front engine mount. Retain bolt for reuse.

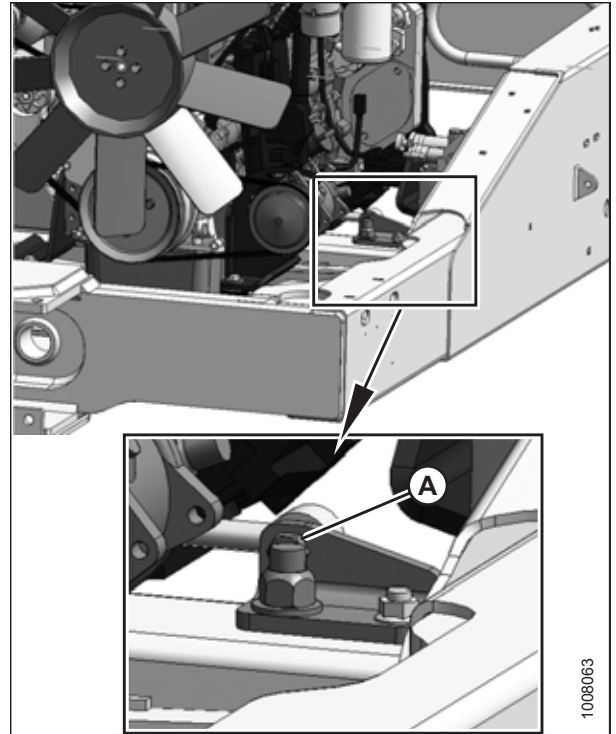


Figure 2.38: Stabilizer Link

4. Mount the linkage support (A) to the windrower frame with two 1/2 in. x 2-3/4 in. long hex head bolts (B) with flat washers under the bolt heads and secure with nuts (C).
5. From below the support, install a 3/4 in. x 3-1/2 in. long hex head bolt (D) with a flat washer (E) under the bolt head.
6. Secure with a flat washer, a lock washer, and a nut on top side of the frame.
7. From above the support, install a 3/4 in. x 5-1/2 in. long hex head bolt (F) with flat washer under the bolt head.

NOTE:

This bolt replaces the 3-1/2 in. long bolt removed in Step 3, [page 27](#).

Do **NOT** install nut on bolt (F).

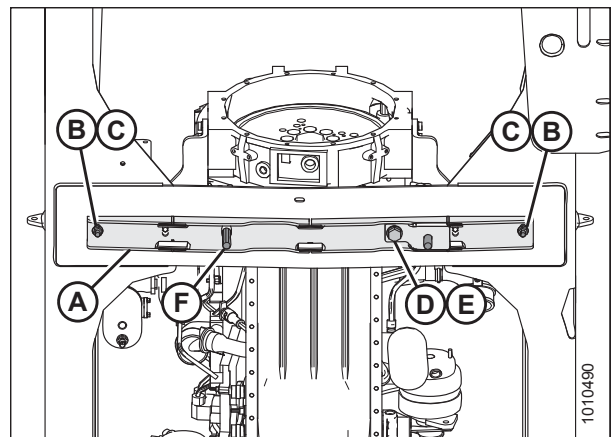


Figure 2.39: Linkage Support

ASSEMBLY/SETUP INSTRUCTIONS

8. Support linkage assembly (A) with a forklift.

NOTE:

Make sure the forks (B) do not lift against the cylinder fitting.

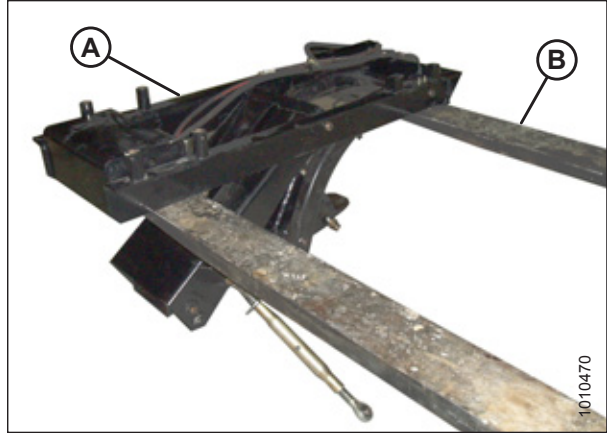


Figure 2.40: DWA Linkage

9. Align the DWA linkage with the four bolts in the windrower frame.

- **For an R Series header:** Mount the linkage in the most forward position (A).
- **For an A Series or D Series header:** Mount the linkage in the most rearward position (B).

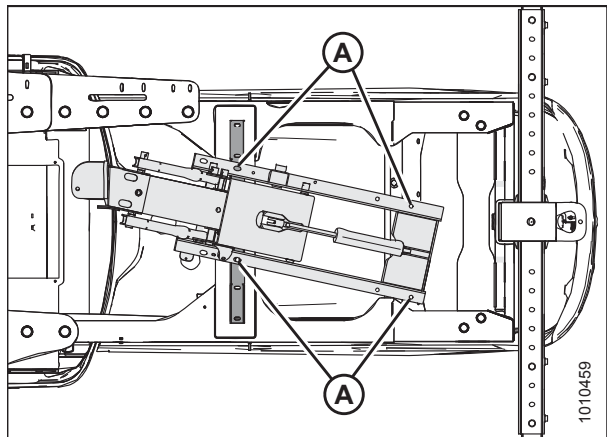


Figure 2.41: Linkage Forward

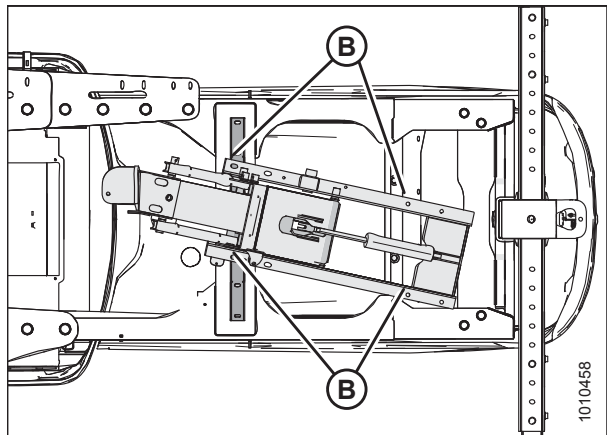


Figure 2.42: Linkage Rearward

ASSEMBLY/SETUP INSTRUCTIONS

10. Attach the linkage with four flat washers, lock washers, and nuts (A).

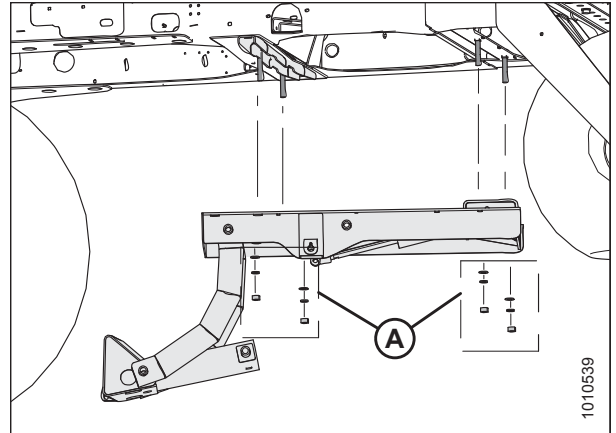


Figure 2.43: Linkage Forward

11. Lower linkage by pulling on safety pin (A) on the left side of linkage.
12. If the linkage does not lower, remove plugs at the end of lift cylinder hoses (B) to remove air from hoses.

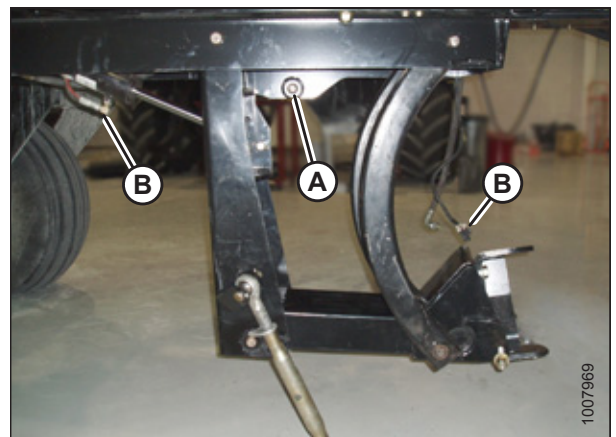


Figure 2.44: DWA Linkage

13. Secure the lift cylinder pivot (A) into the correct hole depending on header type:
 - **For an R Series header:** Insert pin in the upper hole (B).
 - **For a D Series or A Series header:** Insert pin in the lower hole (C).

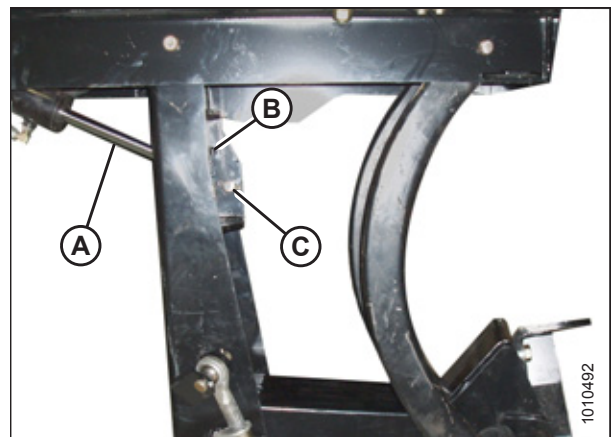


Figure 2.45: Lift Cylinder Pivot

2.5 Installing the Deck

To install the double windrow attachment (DWA) deck, follow these steps:

1. Remove the shipping boards (A) by removing the transport banding (B) and discard.

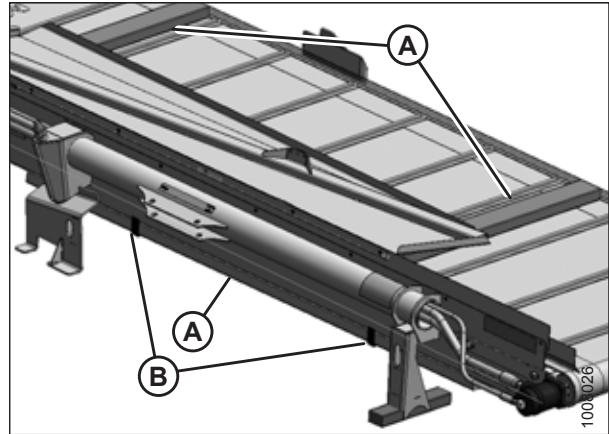


Figure 2.46: DWA Deck

2. Support the deck with a forklift. Forks (C) should be inboard of shipping stand (A).
3. Remove the two shipping stands (A) from the front of the deck by removing nut (B).
4. Reinstall nut (B) with a washer. Washers are supplied in hydraulic kit.

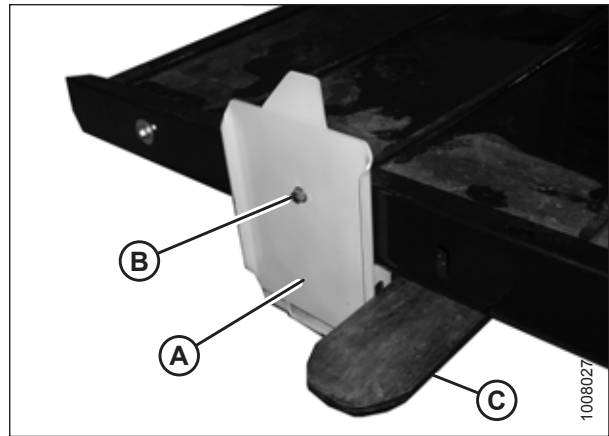


Figure 2.47: Deck Shipping Stand

5. Remove the shipping stand (A) from the rear of the deck by removing the two nuts (B) and washers (C).

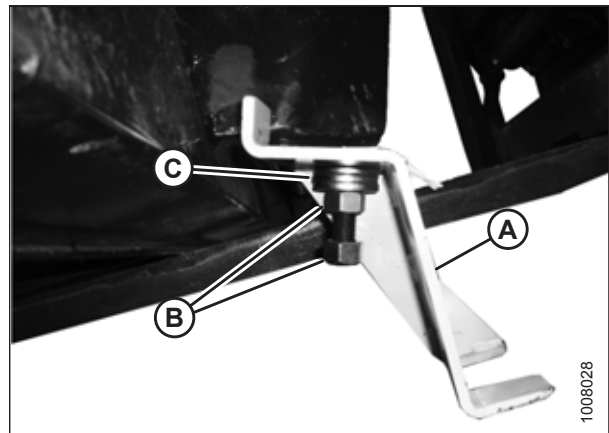


Figure 2.48: Deck Shipping Stand

ASSEMBLY/SETUP INSTRUCTIONS

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

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

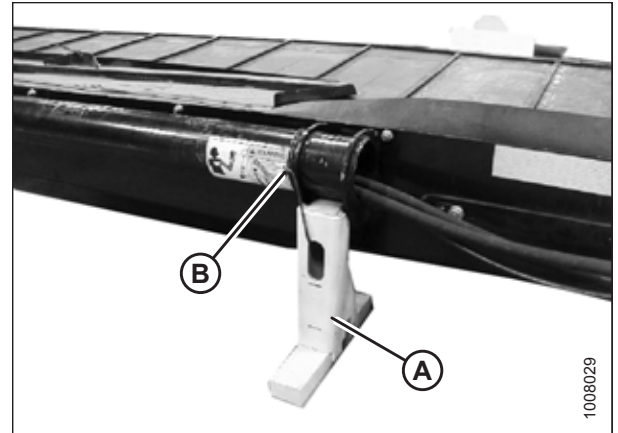


Figure 2.49: Deck Shipping Stand

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



Figure 2.50: DWA Deck Supported with Floor Jack

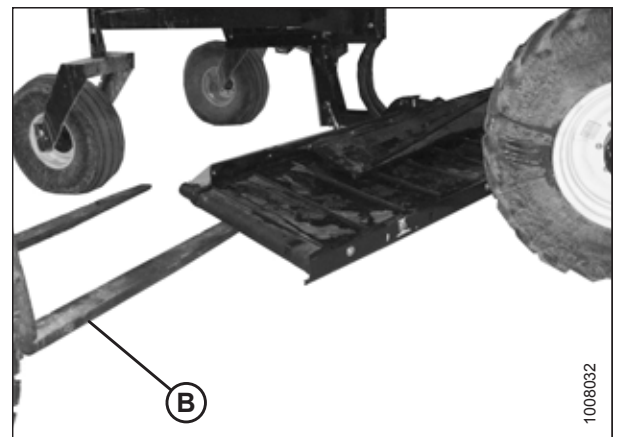


Figure 2.51: DWA Deck Supported with Fork Lift

ASSEMBLY/SETUP INSTRUCTIONS

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

NOTE:

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

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

IMPORTANT:

Apply proper torque to nuts.

13. Add grease to grease fitting (F).
14. Attach turnbuckle (A) from linkage to deck.
- If used with an R Series Rotary Disc Header, use the inner pivot (B)
 - If used with an A Series Auger or D Series Draper Header, use the outer pivot (C)

NOTE:

The turnbuckle length should be approximately:

- 530 mm (21 in.) long for an R Series Rotary Disc Header
 - 630 mm (25 in.) long for an A Series Auger Header or D Series Draper Header
15. Adjust the turnbuckle length so the space (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 the deck is set up for a rotary disc header, the windrower needs to be running for the deck to be in its most forward position. This adjustment can be fine-tuned when the hydraulics setup is complete.

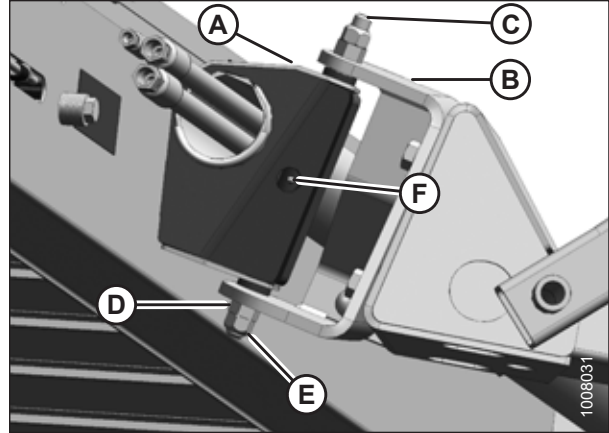


Figure 2.52: Deck Pivot

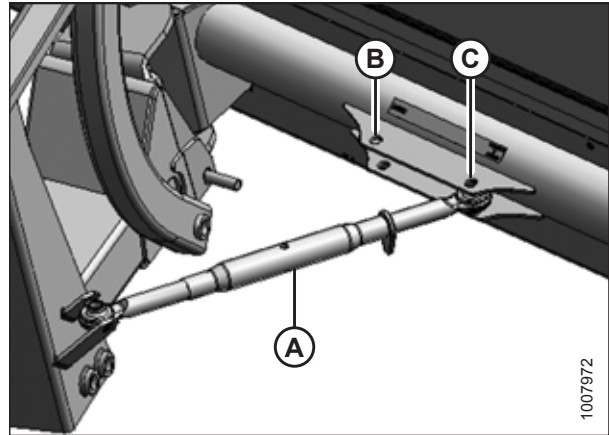


Figure 2.53: Adjustable Turnbuckle

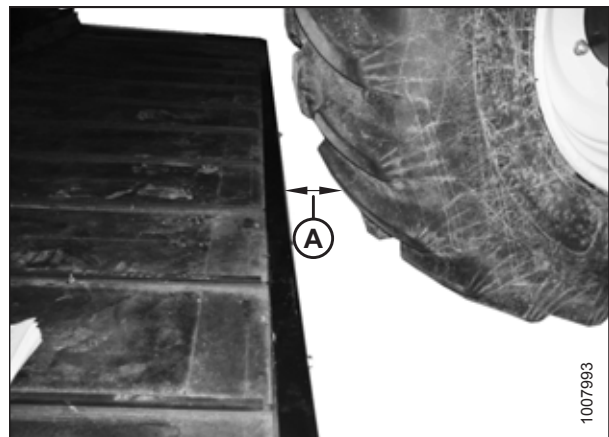


Figure 2.54: Deck and Right Drive Wheel

ASSEMBLY/SETUP INSTRUCTIONS

16. Raise backsheet (A) on the deck and remove the top nuts (B) and (C).
17. Install the gas shock (D) in the center hole and secure it with nuts (B) and (C).

IMPORTANT:

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

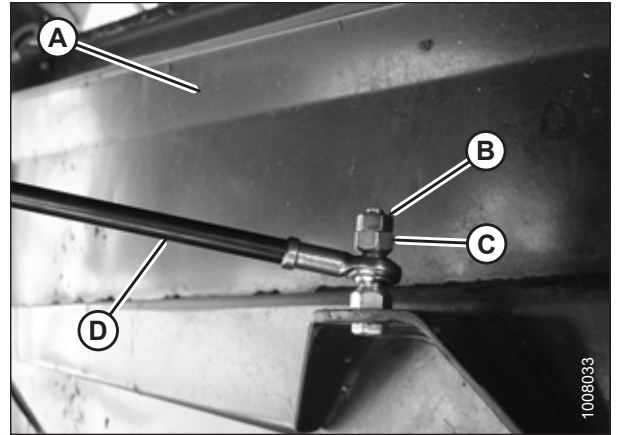


Figure 2.55: Backsheet Gas Shock

2.6 Installing the Hydraulics

To install the DWA hydraulics, follow these steps:

1. Use a clean rag to remove dirt and moisture from all hydraulic couplers to prevent contamination of the hydraulic system.
2. Install the #10 ORB x #10 JIC elbow (A) into port DWA on the draper drive block.
3. Install the #12 ORB x #10 JIC elbow (B) into port R1.

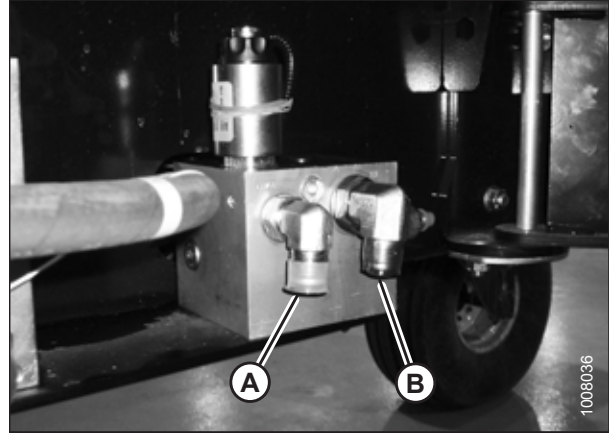


Figure 2.56: Draper Drive Block

4. Connect the #10 tee (A) to elbow (B) in the draper drive block.
5. Connect the pressure hose (C) (marked with blue cable tie) from the top port of the draper drive motor to elbow (D) in the draper drive block.
6. Connect the return hose (E) to tee (A).
7. Connect the 1/2 in. lift cylinder hose (F) to tee (A).

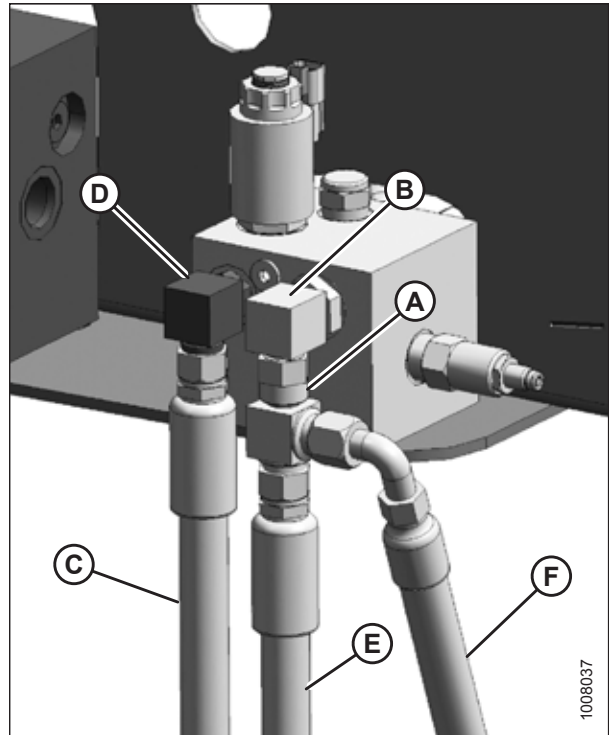


Figure 2.57: Draper Drive Block

A - #10 Tee	B - Elbow	C - Pressure Hose
D - Elbow	E - Return Hose	F - Lift Cylinder Hose

ASSEMBLY/SETUP INSTRUCTIONS

To install case drain hose (A), proceed to the section that applies to your windrower/header configuration.

- M150/M200 and A Series, no reverser. Refer to [2.6.1 Installing Case Drain Hose: M150/M200 and A Series Headers without Reverser, page 35](#)
- M150/M200 and A Series with reverser. Refer to [2.6.2 Installing Case Drain Hose: M150/M200 and A Series Headers with Reverser, page 36](#)
- M150/M200 and D Series, no reverser. Refer to [2.6.3 Installing Case Drain Hose: M150/M200 and D Series Headers without Reverser, page 37](#)
- M150/M200 and D Series with reverser. Refer to [2.6.4 Installing Case Drain Hose: M150/M200 and D Series Headers with Reverser, page 38](#)
- M150/M200 and R Series. Refer to [2.6.5 Installing Case Drain Hose: M150/M200 and R Series Headers, page 38](#)
- M155/M155E4/M205 all header types. Refer to [2.6.6 Installing Case Drain Hose: M155/M155E4/M205 with All Headers, page 39](#)

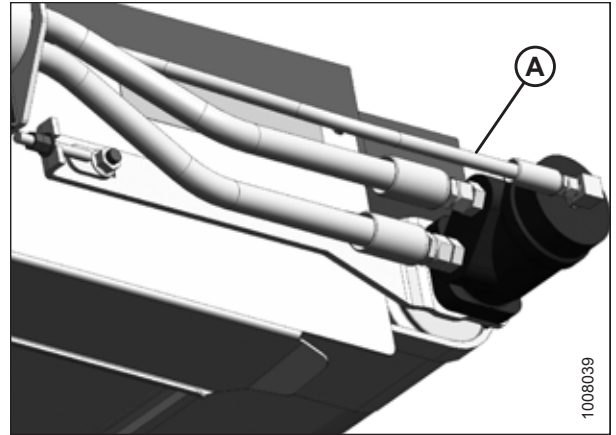


Figure 2.58: Case Drain Hose

2.6.1 Installing Case Drain Hose: M150/M200 and A Series Headers without Reverser

To connect the case drain hose to the header drive block, follow these steps:

1. Connect the #12 ORB x #10 JIC elbow (B) to port T on the header drive block.
2. Connect the #10 JIC x #6 JIC reducer (C) to elbow (B).
3. Install the case drain hose (A) to reducer (C).

NOTE:

Make sure hose (A) is not rubbing against any fittings.

Refer to [5.5 Hydraulics and In-Cab Electrical, page 98](#) for additional information on the hydraulic connections.

4. Proceed to [2.7 Installing the Auxiliary Valve Block, page 40](#).

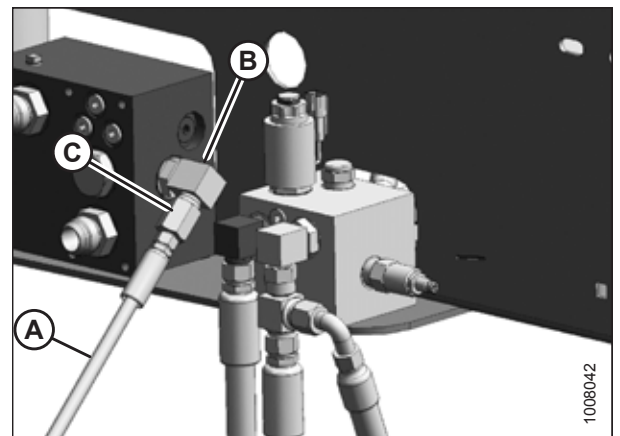


Figure 2.59: Header Drive Block

2.6.2 Installing Case Drain Hose: M150/M200 and A Series Headers with Reverser

To connect the case drain hose to the header drive block, follow these steps:

1. Connect the #12 ORB x #10 JIC elbow (B) to port T on the header drive block.
2. Connect the #10 JIC x #10 JIC elbow (C) to elbow (B).
3. Connect the #10 JIC x #6 JIC reducer (D) to elbow (C).
4. Install the case drain hose (A) to reducer (D).

NOTE:

Make sure hose (A) is not rubbing against any fittings.

Refer to [5.5 Hydraulics and In-Cab Electrical, page 98](#) for additional information on the hydraulic connections.

5. Proceed to [2.7 Installing the Auxiliary Valve Block, page 40](#).

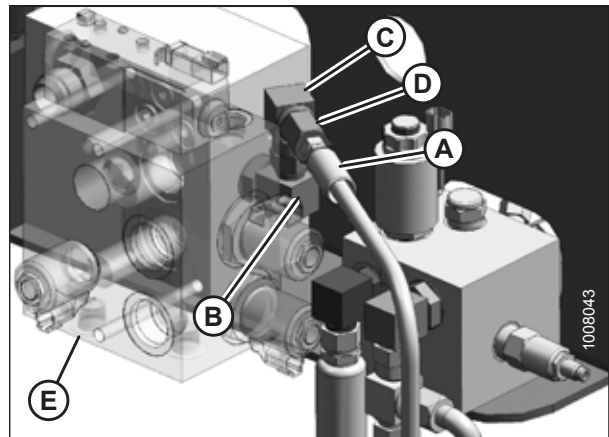


Figure 2.60: Header Drive Block

A - Case Drain Hose	B - #12 ORB x #10 JIC Elbow
C - #10 JIC x #10 JIC Elbow	D - #10 JIC x #6 JIC Reducer
E - Reverser (Hidden)	

2.6.3 Installing Case Drain Hose: M150/M200 and D Series Headers without Reverser

To connect the case drain hose to the header drive block, follow these steps:

1. Disconnect the reel return hose (and all the fittings in between) connected to port T on the header drive block.
2. Connect the #12 ORB x #10 JIC elbow (B) to port T on the header drive block.
3. Connect the #10 JIC tee (C) to elbow (B).
4. Connect the #10 JIC x #10 JIC elbow (D) to tee (C).
5. Connect the #10 JIC x #6 JIC reducer (E) to elbow (D).
6. Install case drain hose (A) to reducer (E).

NOTE:

Make sure hose (A) is not rubbing against any fittings.

Refer to [5.5 Hydraulics and In-Cab Electrical, page 98](#) for additional information on the hydraulic connections.

7. Reconnect the reel return hose by installing elbow removed earlier in [Step 1, page 37](#) to tee (C) followed by the reel return hose.
8. Proceed to [2.7 Installing the Auxiliary Valve Block, page 40](#).

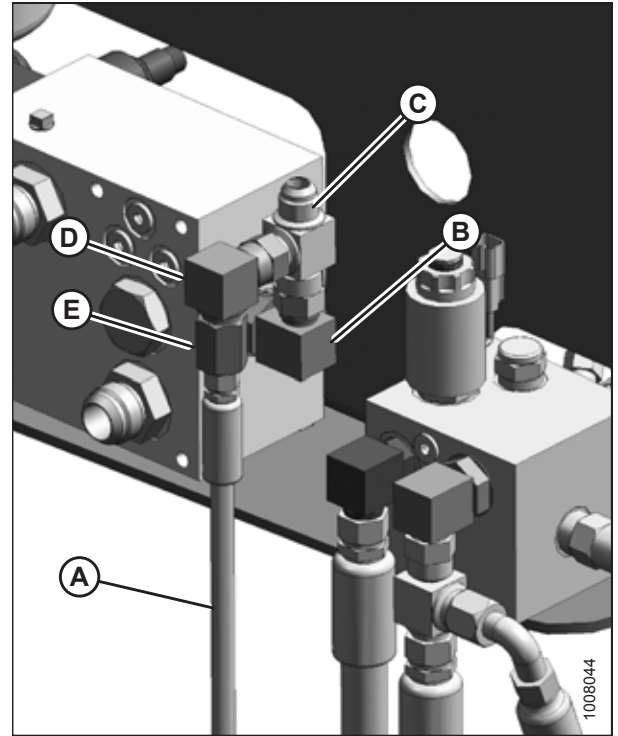


Figure 2.61: Header Drive Block

- | | |
|------------------------------|-----------------------------|
| A - Case Drain Hose | B - #12 ORB x #10 JIC Elbow |
| C - #10 JIC Tee | D - #10 JIC x #10 JIC Elbow |
| E - #10 JIC x #6 JIC Reducer | |

2.6.4 Installing Case Drain Hose: M150/M200 and D Series Headers with Reverser

To connect the case drain hose to the header drive block, follow these steps:

1. Disconnect the reel return hose connected to port T and all the fittings in between.
2. Connect #12 ORB x #10 JIC elbow (B) to port T on the header drive block.
3. Connect #10 JIC tee (D) to elbow (B).
4. Connect #10 JIC x #6 JIC reducer (C) to tee (D).
5. Connect case drain hose (A) to reducer (C).

NOTE:

Make sure hose (A) is not rubbing against any fittings.

Refer to [5.5 Hydraulics and In-Cab Electrical, page 98](#) for additional information on the hydraulic connections.

6. Reconnect the reel return hose by first installing elbow removed earlier in Step 1, [page 38](#) to tee (D) followed by reel return hose.
7. Proceed to [2.7 Installing the Auxiliary Valve Block, page 40](#).

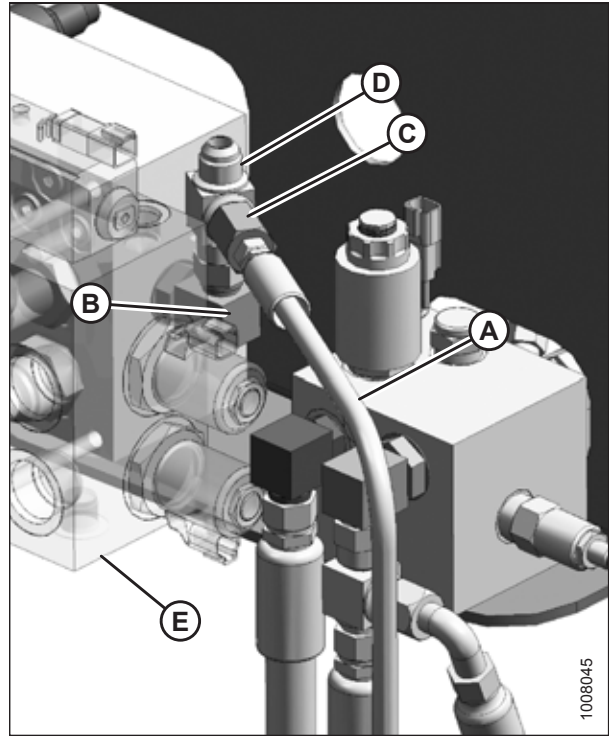


Figure 2.62: Header Drive Block

- | | |
|------------------------------|-----------------------------|
| A - Case Drain Hose | B - #12 ORB x #10 JIC Elbow |
| C - #10 JIC x #6 JIC Reducer | D - #10 JIC Tee |
| E - Reverser (Hidden) | |

2.6.5 Installing Case Drain Hose: M150/M200 and R Series Headers

To connect the case drain hose to the header drive block follow these steps:

1. Connect #12 ORB x #10 JIC elbow (B) to port T on the header drive block.
2. Install #10 JIC x #6 JIC reducer (C) to elbow (B).
3. Install case drain hose (A) to reducer (C).

NOTE:

Make sure hose (A) is not rubbing against any fittings.

Refer to [5.5 Hydraulics and In-Cab Electrical, page 98](#) for additional information on the hydraulic connections.

4. Proceed to [2.7 Installing the Auxiliary Valve Block, page 40](#).

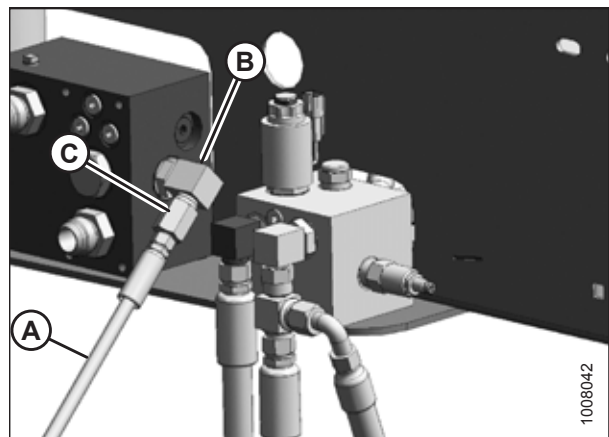


Figure 2.63: Header Drive Block

2.6.6 Installing Case Drain Hose: M155/M155E4/M205 with All Headers

To connect the case drain hose to the hydraulic reservoir, follow these steps:

1. Remove plug from the top left corner of the hydraulic reservoir and connect the #10 ORB x #6 JIC elbow (B) to the reservoir port.
2. Connect the case drain hose (A) to elbow (B).
3. Proceed to [2.7 Installing the Auxiliary Valve Block, page 40](#).

Refer to [5.5 Hydraulics and In-Cab Electrical, page 98](#) for additional information on the hydraulic connections.

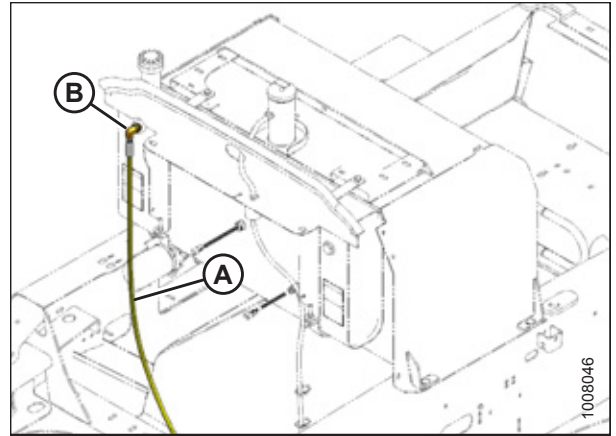


Figure 2.64: Hydraulic Reservoir

2.7 Installing the Auxiliary Valve Block

To connect the auxiliary valve block, follow these steps:

1. Remove fitting (A) and plug (B) from the lift manifold block and retain for use.

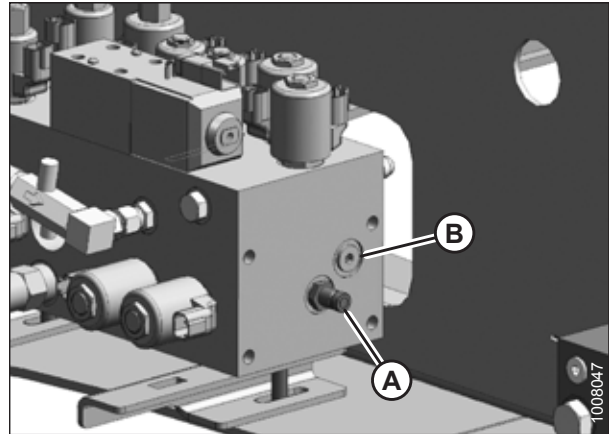


Figure 2.65: Lift Manifold Block

2. Attach the auxiliary valve block (C) to the lift manifold block.

NOTE:

If installing onto a windrower paired with a D60 header with reel fore-aft, the windrower will already have an auxiliary valve block. The new valve block (C) is mounted next to the existing one.

3. Apply grease to O-rings (supplied with valve block) and install them in the countersunk port holes where the plugs were removed.
4. Assemble smooth side of valve (C) to lift valve with four 3/8 in. bolts (D) provided. Use the longer bolts if there are two auxiliary valve blocks.
5. Torque bolts to 34 Nm (25 lbf·ft).
6. Replace fitting (A) and plug (B) (removed in Step 1, [page 40](#)) into auxiliary valve block. If plug (B) is damaged on removal, an extra plug is provided in the kit.

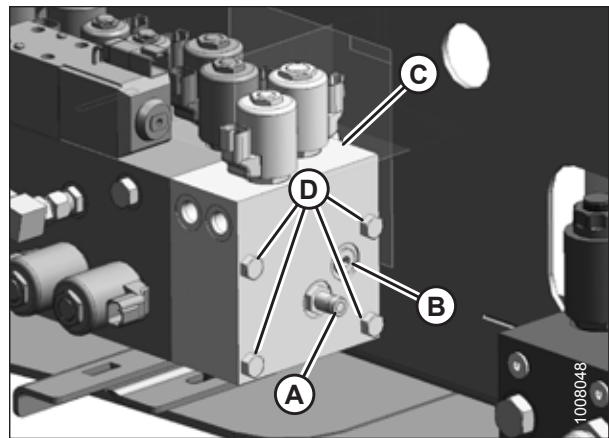


Figure 2.66: Auxiliary Valve Block

ASSEMBLY/SETUP INSTRUCTIONS

7. Install the 90° elbow fitting (A) into port K on the auxiliary valve block (B).

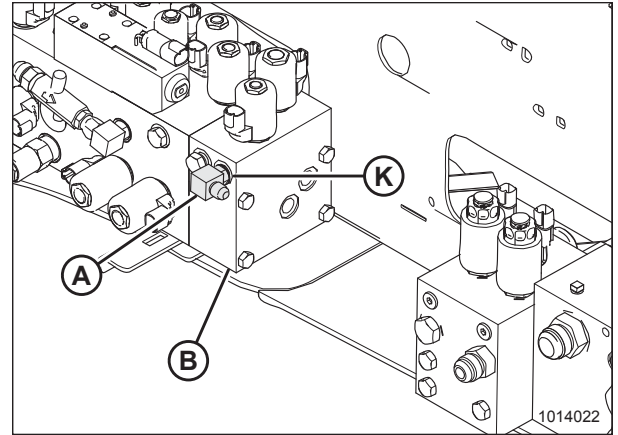


Figure 2.67: Auxiliary Valve Block

8. Install the 9/16–18 ORB fitting (A) into flow valve (B).
9. Install the 3/8 in. tube 37° flare fitting (C) onto the flow valve (B).

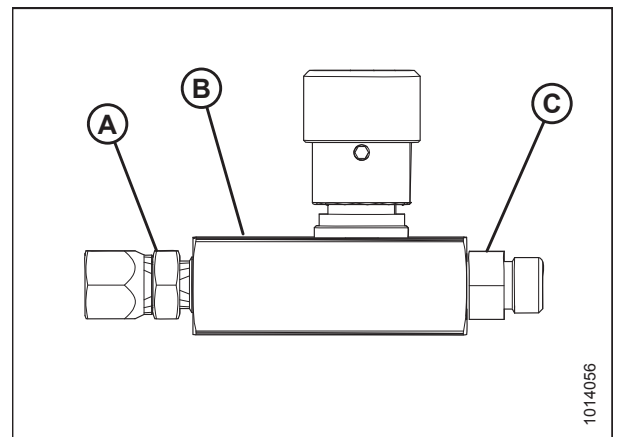


Figure 2.68: Flow Valve

IMPORTANT:

Orient flow valve as shown. The long end of the flow valve (A) should face the auxiliary valve block (B).

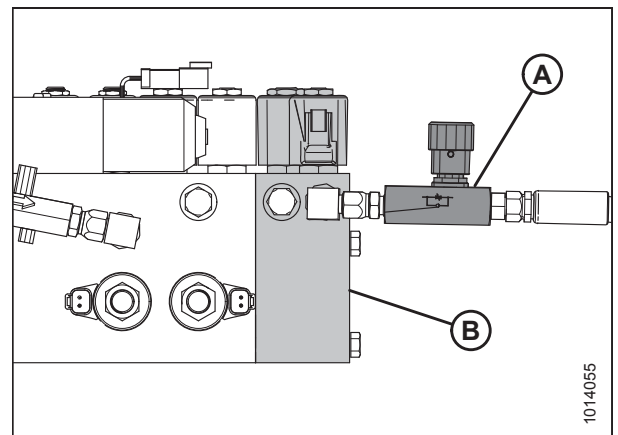


Figure 2.69: Flow Valve and Auxiliary Valve Block

ASSEMBLY/SETUP INSTRUCTIONS

10. Connect the 9/16–18 ORB fitting (C) to the 90° elbow fitting (A).
11. Route the 1/4 in. lift cylinder hose (E) through the side of windrower frame and connect to fitting (D).
12. Route the hoses neatly by using the cable ties included in the kit. Ensure hoses are not rubbing against moving parts.
13. Install plug (F) into port J on the auxiliary valve block (B).

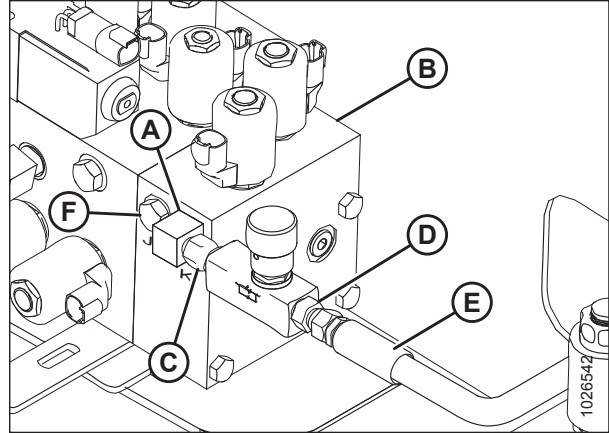


Figure 2.70: Auxiliary Valve Block

14. Install DWA Lift Rate decal (A) (MD #167903) at location shown at right. To install decal, follow these steps:
 - a. Clean and dry installation area.
 - b. Decide on exact location before you remove decal backing paper.
 - c. Remove smaller portion of split backing paper.
 - d. Place decal in position and slowly peel back remaining paper, smoothing sign as it is applied.
 - e. Prick small air pockets with a pin and smooth out.

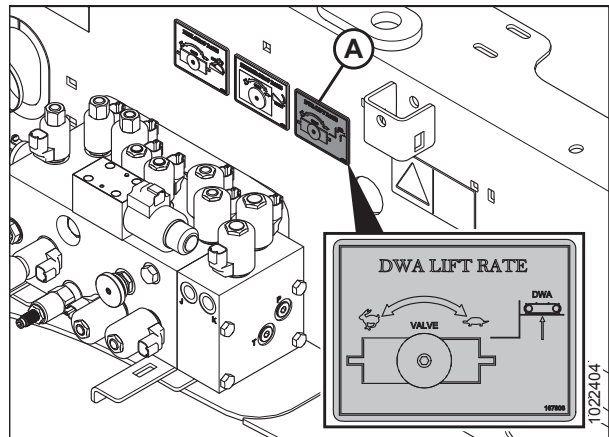


Figure 2.71: DWA Lift Rate Decal (MD #167903)

2.8 Installing the Electrical System

To install the electrical system for the double windrow attachment (DWA), follow these steps:

1. Connect the wiring harness from the DWA linkage to plug (A) on the draper drive block.
2. Connect the other plug on the DWA harness to P74 on the windrower harness, located near the valve block.

NOTE:

On some 2012 and earlier M205 windrowers, the P74 branch of the windrower harness will not be long enough to connect to the DWA harness. A harness extension is provided in the DWA hydraulic kit.

3. Connect plug P73 on the windrower harness to plug (B) on the lift block valve 4C.
4. Connect plug P72 on the windrower harness to plug (C) on the lift block valve 2C.
5. Inside the windrower cab, remove cover (A) from the console by removing five screws (B).

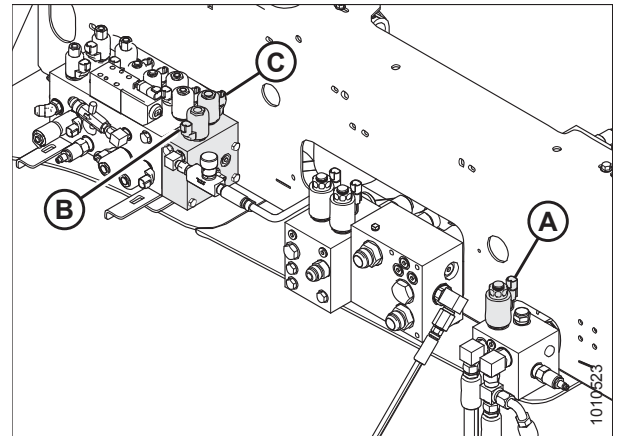


Figure 2.72: Electrical Connections (M205 Similar)

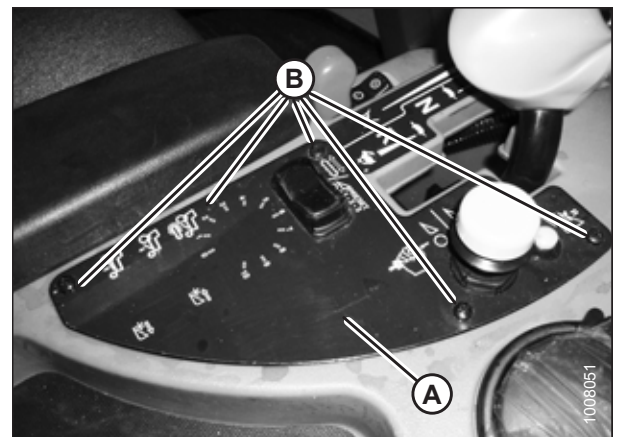


Figure 2.73: Console Control Plate

6. Cut a hole in the decal and install rotary switch (A) as shown. There is a premade hole in the mounting plate.

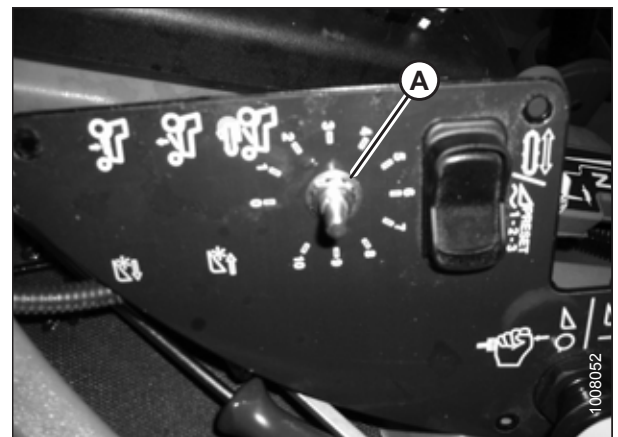


Figure 2.74: Console Control Plate

ASSEMBLY/SETUP INSTRUCTIONS

7. Remove the knockout in cover (A) for the rocker switch and file down the burrs.

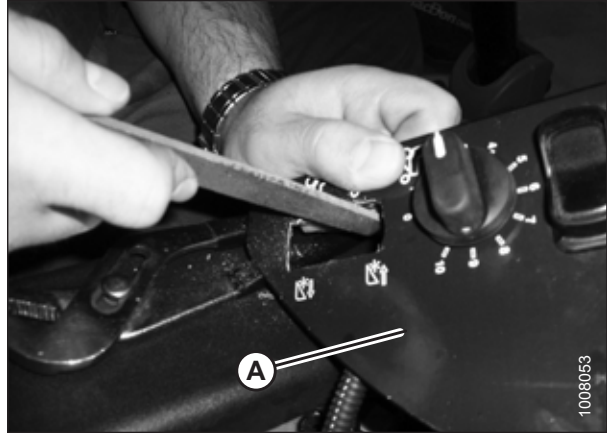


Figure 2.75: Console Control Plate

8. Install knob (A) on the rotary switch and tighten the setscrew in knob with a hex key (B).

NOTE:

Knob may not be exactly as shown.

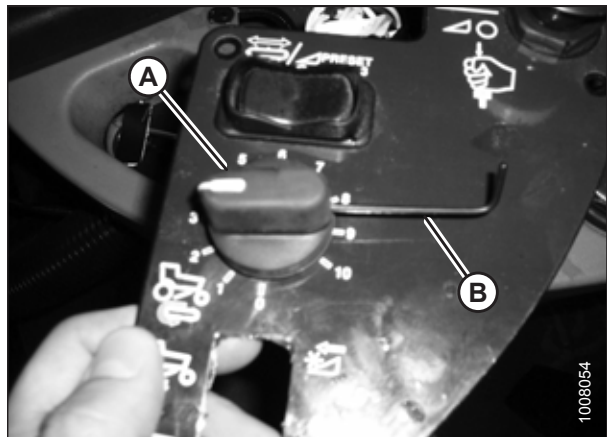


Figure 2.76: Console Control Plate

9. Install rocker switch (A) in the cover. The side with the prongs should be next to the operator's seat.

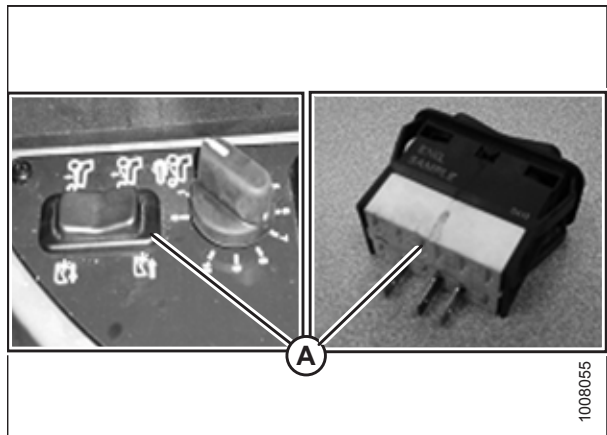


Figure 2.77: DWA Switch

ASSEMBLY/SETUP INSTRUCTIONS

10. Install the rocker switch into plug (A) and install the rotary switch into plug (B). These plugs come prewired into the windrower console.

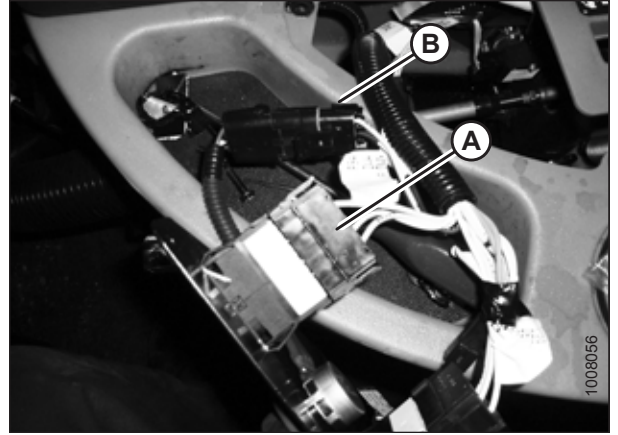


Figure 2.78: DWA Switch

11. Reinstall the cover (A) with five screws (B).

NOTE:

Refer to [2.8.1 Activating the Double Windrow Attachment \(DWA\)](#), page 46 to program the cab display module for control of DWA functions.

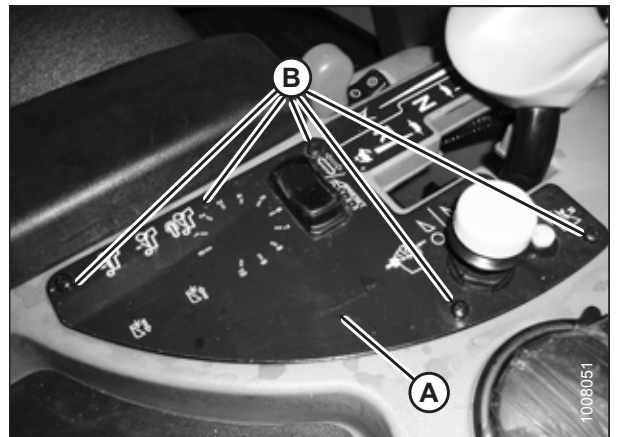


Figure 2.79: Console Control Plate

2.8.1 Activating the Double Windrow Attachment (DWA)

CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:

Cab display module images in this procedure apply to a M155 Self Propelled Windrower. M205 is similar.

1. Turn ignition key to RUN, or start the engine.
2. Press PROGRAM (A) and SELECT (C) on cab display module (CDM) to enter programming mode.
 - WINDROWER SETUP? is displayed on the upper line.
 - NO/YES is displayed on the lower line.
3. Press right arrow (B) to select YES. Press SELECT (C).
 - SET KNIFE SPEED? is displayed on the upper line.

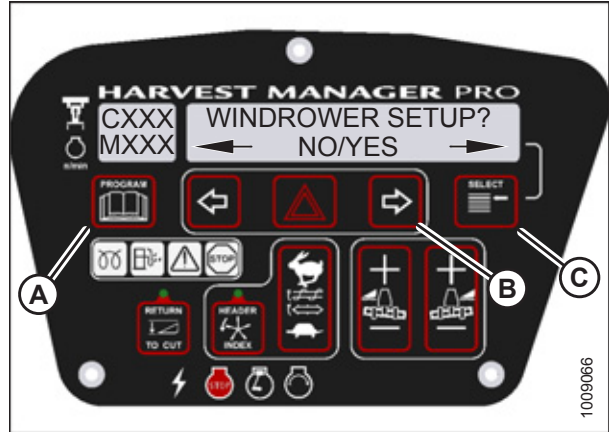


Figure 2.80: CDM Programming Buttons

4. Press SELECT (B) until DWA INSTALLED? is displayed on the upper line.
 - NO/YES is displayed on the lower line.
5. Press right arrow (A) to select YES. Press SELECT (B).



Figure 2.81: DWA Controls

ASSEMBLY/SETUP INSTRUCTIONS

6. SWAP DWA CONTROLS? is displayed on the upper line.
 - NO/YES is displayed on the lower line.

NOTE:

This step swaps the DWA controls from the console switch to the ground speed lever (GSL) reel fore-aft buttons.



Figure 2.82: DWA Controls

7. Press right arrow (C) to select YES. Press SELECT (D).
 - DWA AUTO UP/DOWN? is displayed on the upper line.
 - NO/YES is displayed on the lower line.

NOTE:

If the Operator selects YES, the DWA Auto-Up function will be activated by the GSL Reel Fore-Aft button.

8. Press right arrow (C) to select YES. Press SELECT (D).
9. Press PROGRAM (A) to exit programming mode or press SELECT (D) to proceed to next windrower setup action.

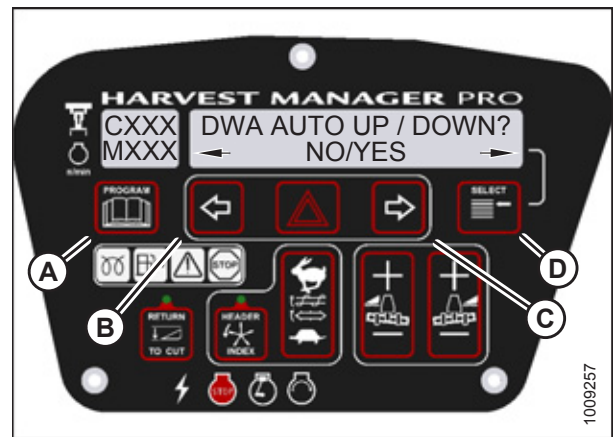


Figure 2.83: DWA Auto Up/Down

2.9 Installing the Tank Overflow Hose Extension

The extension hose prevents overflow fluid dropping onto the Double Windrow Attachment (DWA) draper deck. Instructions are model-specific.

- To install the overflow extension hose on M150 models with Cummins engines, refer to [2.9.1 Installing the Tank Overflow Hose Extension: M150, page 48](#)
- To install the overflow extension hose on M155/M155E4 models with Cummins engines, refer to [2.9.2 Installing the Tank Overflow Hose Extension: M155/M155E4, page 50](#)
- To install the overflow extension hose on M200 models with Cat engines, refer to [2.9.3 Installing the Tank Overflow Hose Extension: M200 with Cat Engine, page 51](#)
- To install the overflow extension hose on M205 models with Cummins engines, refer to [2.9.4 Installing the Tank Overflow Hose Extension: M205, page 52](#)

2.9.1 Installing the Tank Overflow Hose Extension: M150

To install the tank overflow hose on an M150 Self-Propelled Windrower, follow these steps:

1. Locate hydraulic hose (A) and fuel tank overflow hose (B).
2. Pull the fuel tank hose (B) out from clamp (C).
3. Using the supplied plastic tee fitting (D), join the hydraulic and fuel overflow lines:
 - Hose (B) connects to 3/8 in. tee branch with smaller gear clamp (E)
 - Hose (A) connects to 5/8 in. tee branch with larger gear clamp (F)

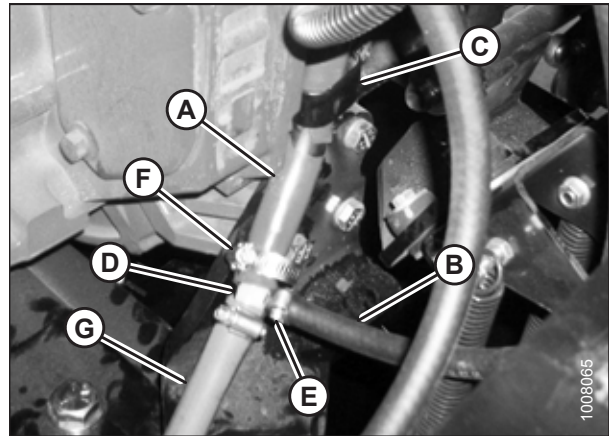


Figure 2.84: Fuel and Hydraulic Overflow Hoses

ASSEMBLY/SETUP INSTRUCTIONS

4. Attach the extension hose to the plastic tee fitting using another larger gear clamp.
5. Route hose (A) through the slot in frame member and secure with a cable tie (B) as shown.
6. Trim hose (A) to length as follows:
 - **R Series Rotary Disc Header:** Leave approximately 180 mm (7 in.) free hose below windrower frame
 - **A Series Auger and D Series Draper Header:** Leave approximately 360 mm (14 in.) free hose below windrower frame

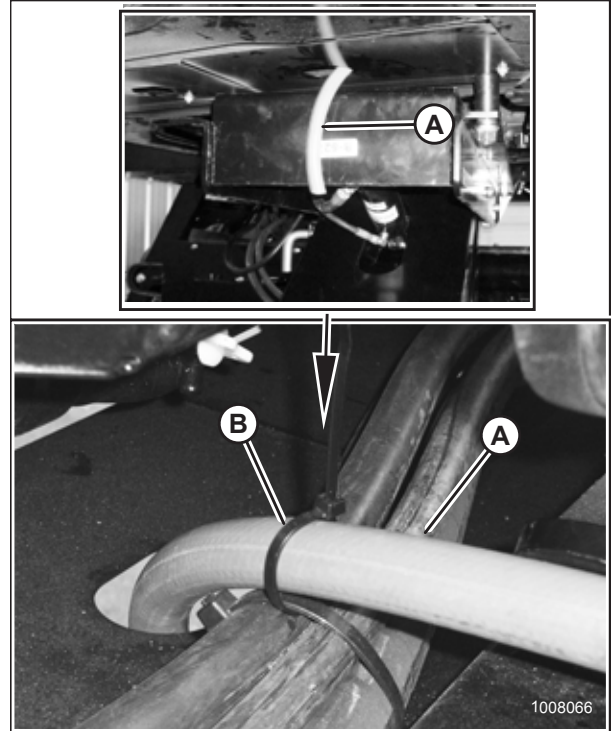


Figure 2.85: Overflow Hose Routing

2.9.2 Installing the Tank Overflow Hose Extension: M155/M155E4

To install the tank overflow hose on an M155 or M155E4 Self-Propelled Windrower, follow these steps:

1. Locate the end of the fuel tank overflow hose (A) on windrower.
2. On an M155, pull the fuel tank hose (A) out from clamp (B).
3. Attach union fitting to fuel overflow line using smaller gear clamp.

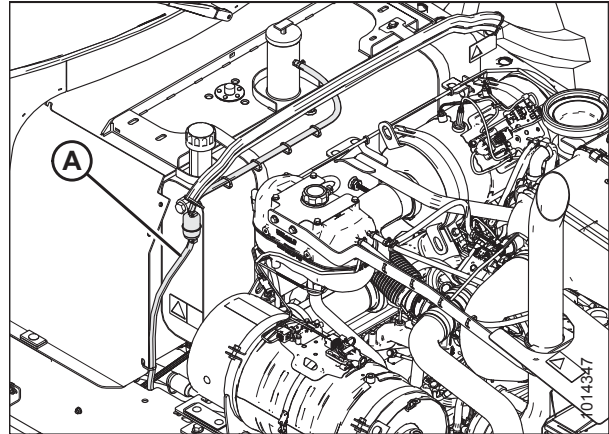


Figure 2.86: M155E4 Fuel Overflow Hose

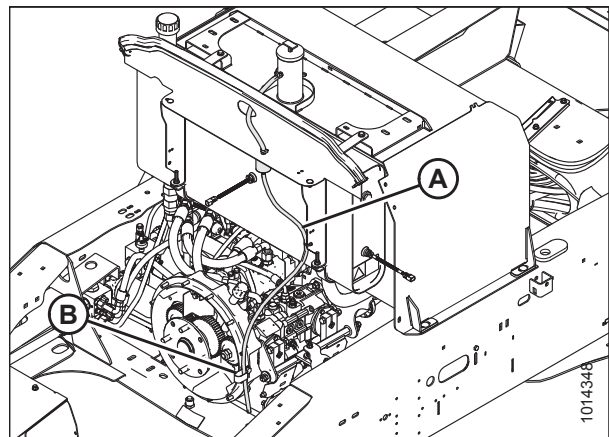


Figure 2.87: M155 Fuel Overflow Hose

ASSEMBLY/SETUP INSTRUCTIONS

4. Attach the extension hose to the union fitting using a larger gear clamp.
5. Route hose (A) through the slot in frame member and secure with a cable tie (B) as shown.
6. Trim hose (A) to length as follows:
 - **R Series Rotary Disc Header:** Leave approximately 180 mm (7 in.) free hose below windrower frame
 - **A Series Auger and D Series Draper Header:** Leave approximately 360 mm (14 in.) free hose below windrower frame

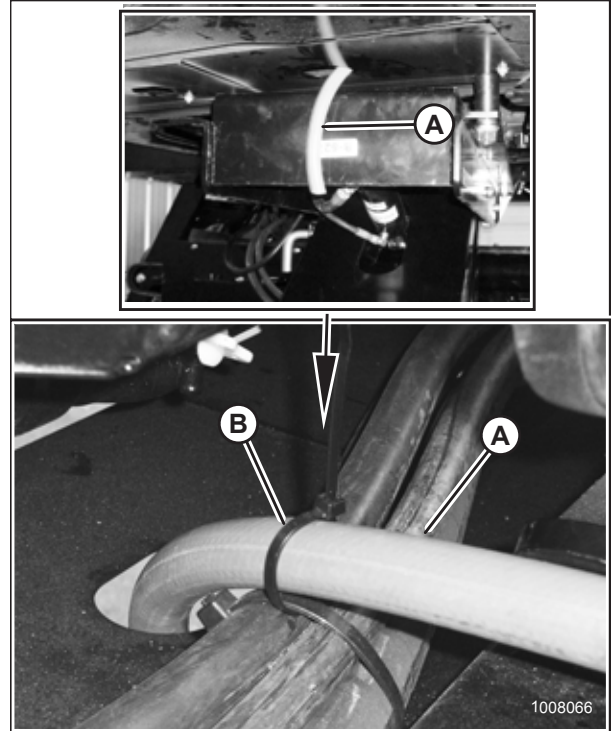


Figure 2.88: Overflow Hoses

2.9.3 Installing the Tank Overflow Hose Extension: M200 with Cat Engine

To install the tank overflow hose on an M200 Self-Propelled Windrower, follow these steps:

1. Locate the hydraulic and fuel tank breather hose (A).
2. Connect the supplied extension hose (B) to the existing hose (A) using a straight plastic joiner and two hose clamps at (C) as shown.
3. Trim hose (B) to length as follows:
 - **R Series Rotary Disc Header:** leave approximately 180 mm (7 in.) free hose below windrower frame
 - **A Series Auger and D Series Draper Header:** leave approximately 360 mm (14 in.) free hose below windrower frame

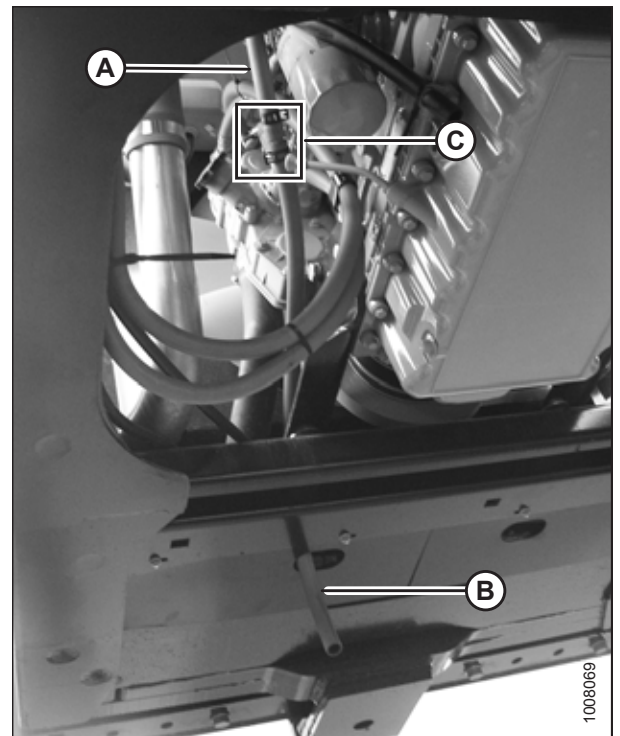


Figure 2.89: Overflow Hose

2.9.4 Installing the Tank Overflow Hose Extension: M205

To install the tank overflow hose on a M205 Self-Propelled Windrower, follow these steps:

1. Locate hydraulic hose (A) and fuel tank overflow hose (B).
2. Pull the fuel tank hose (B) out from clamp (C).
3. Using the supplied plastic tee fitting (D), join the hydraulic overflow and fuel overflow lines:
 - Hose (B) connects to 3/8 in. tee branch with smaller gear clamp (E)
 - Hose (A) connects to 5/8 in. tee branch with larger gear clamp (F)

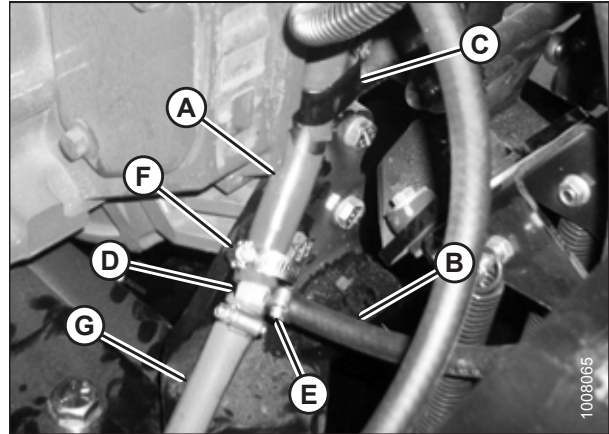


Figure 2.90: Overflow Hoses

4. Attach the extension hose to the plastic tee fitting using another, larger gear clamp.
5. Route the extension hose (A) alongside of the windrower frame, and secure to the existing hoses with a cable tie (B) as shown.

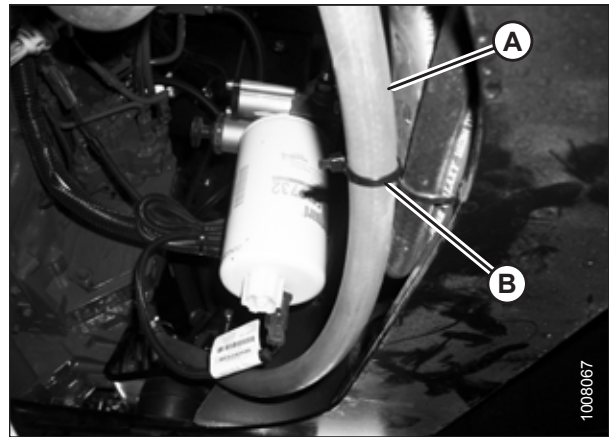


Figure 2.91: Overflow Hoses

ASSEMBLY/SETUP INSTRUCTIONS

6. Trim hose (A) to length as follows:

- **R Series Rotary Disc Header:** Leave approximately 180 mm (7 in.) free hose below windrower frame
- **A Series Auger and D Series Draper Header:** Leave approximately 360 mm (14 in.) free hose below windrower frame

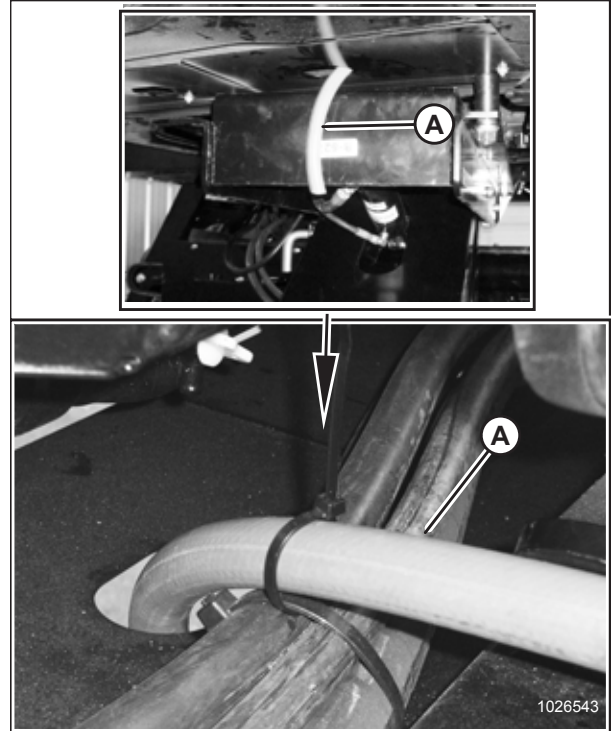


Figure 2.92: Overflow Hoses

3 Operation

3.1 Operational Safety

CAUTION

To avoid bodily injury:

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

3.2 Engaging the Deck Safety Pin

Engage the deck safety pin as follows:

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

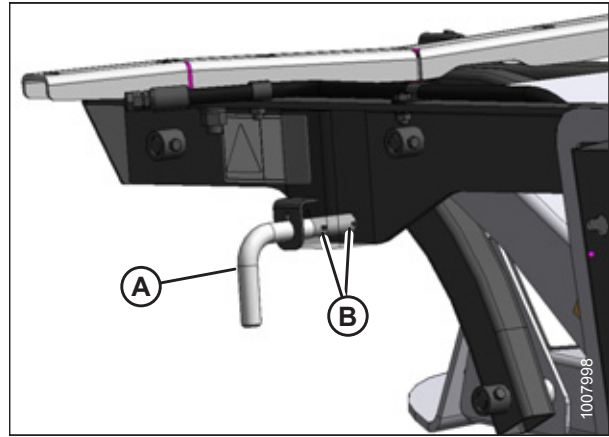


Figure 3.1: DWA Deck Safety Pin

3.3 Raising and Lowering the Deck

NOTE:

Use extra caution when raising the deck for the first time. The deck rotates as it raises and lowers, and the backsheet folds onto the deck. Make sure the deck and backsheet are not interfering with windrower parts or with the forming shield.

If you have chosen YES to swap the Double Window Attachment (DWA) controls in the setup instructions, use the REEL FORE-AFT switch on the ground speed lever (GSL) to RAISE and LOWER the deck:

- The deck moves forward when lowering, so switch operation will be the same as when moving the reel forward. REEL FORWARD position (A) moves DWA DOWN
- The deck moves rearward when raising, so switch operation will be the same as when moving the reel rearward. REEL AFT position (B) moves DWA UP

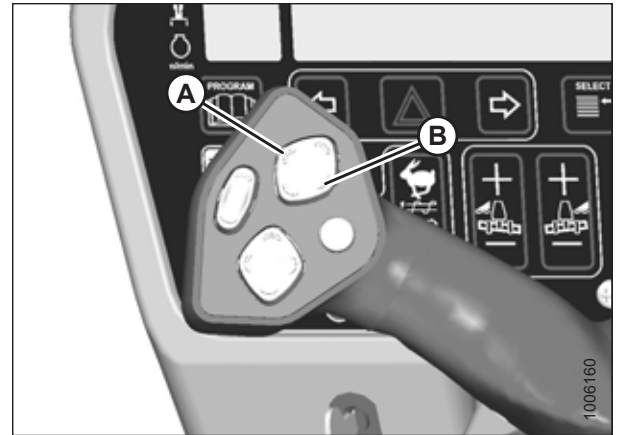


Figure 3.2: Reel Fore-Aft Switch

If you have chosen NO to swap the DWA controls in the setup instructions, use the console DECK LIFT CONTROLS rocker switch to move the DWA UP and DOWN.

- Press the rocker switch forward portion (A) to lower the DWA (DWA DOWN)
- Press the rocker switch rearward portion (B) to raise the DWA (DWA UP)

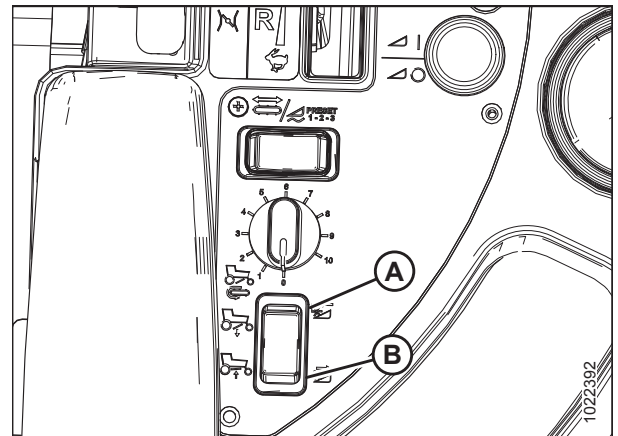


Figure 3.3: Console Rocker Switch

OPERATION

3.3.1 Adjusting the Deck Lift Speed

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

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

Refer to the following to adjust the deck lift speed:

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

NOTE:

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

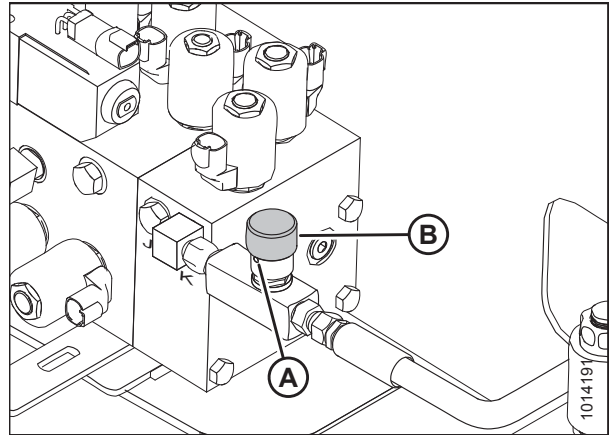


Figure 3.4: Auxiliary Valve Block and Deck Lift Speed Valve

3.3.2 Adjusting the Draper Shut-Off Switch

To adjust the draper shut-off switch, follow these steps:

NOTE:

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

1. Loosen screws (A) to lower the switch (B).
2. Torque screws (A) to 1.2–1.5 Nm (10.8–13.2 lbf-in) when the adjustment is complete.

NOTE:

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

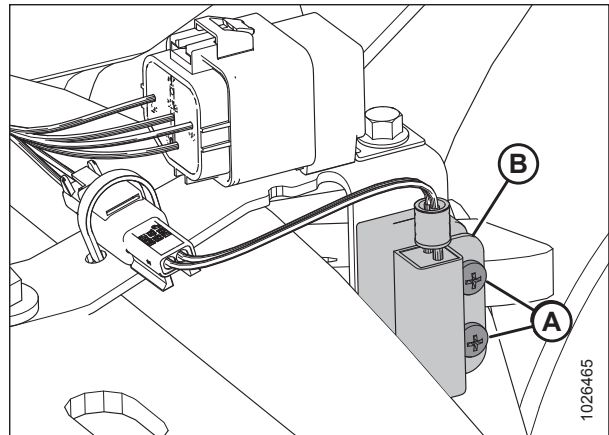


Figure 3.5: Draper Shut-Off Switch

3.4 Setting Draper Speed

To set the draper speed, turn the draper speed control knob (A) on the console (knob may not be exactly as shown).

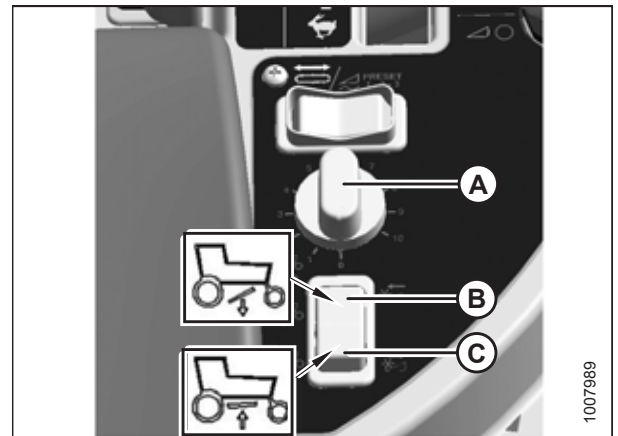


Figure 3.6: DWA Controls

- A - Draper Speed Knob
- B - DWA Down Rocker Switch
- C - DWA Up Rocker Switch

3.5 Adjusting the Deck Angle

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

To adjust the deck angle relative to the right drive tire, refer to [3.5.1 Adjusting Deck Angle Relative to the Drive Tire](#), page 60.

To adjust the deck angle relative to the ground, refer to [3.5.2 Adjusting Deck Angle Relative to the Ground](#), page 61.

NOTE:

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

3.5.1 Adjusting Deck Angle Relative to the Drive Tire

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

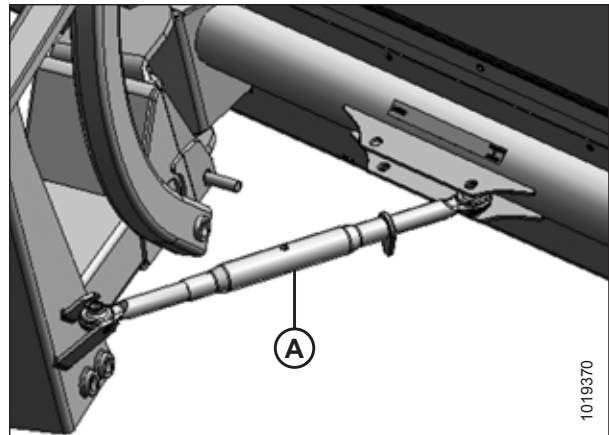


Figure 3.7: Deck Angle Turnbuckle

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

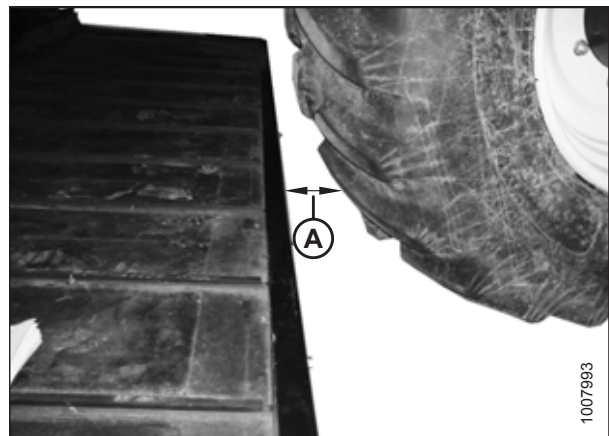


Figure 3.8: Distance from Deck to Tire

OPERATION

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

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

NOTE:

The turnbuckle length should be approximately:

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

4. Retighten the locking tab (B) against the turnbuckle center tube (A).
5. Attach the turnbuckle to connection point (C) for an R Series header and at connection point (D) for A Series header or D Series header.

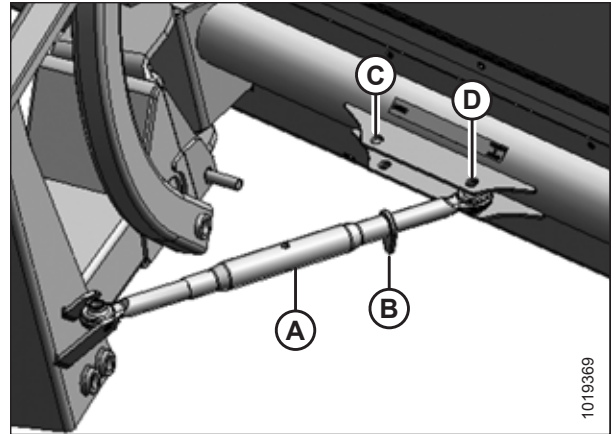


Figure 3.9: Adjusting Turnbuckle

3.5.2 Adjusting Deck Angle Relative to the Ground

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

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

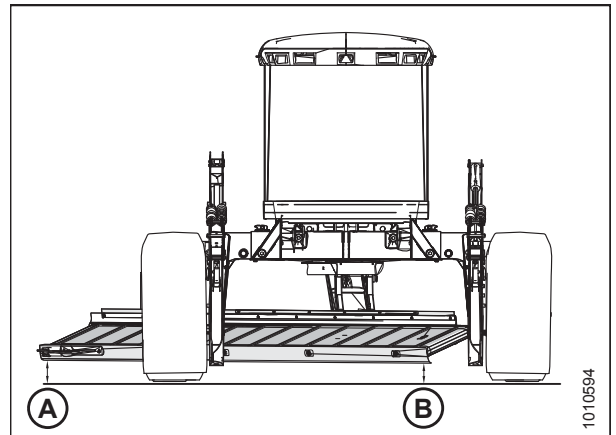


Figure 3.10: DWA Deck

To adjust deck angle:

1. Loosen the four 3/4 in. bolts (A).

NOTE:

The fourth bolt is hidden behind bracket (B) and not visible in this illustration.

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

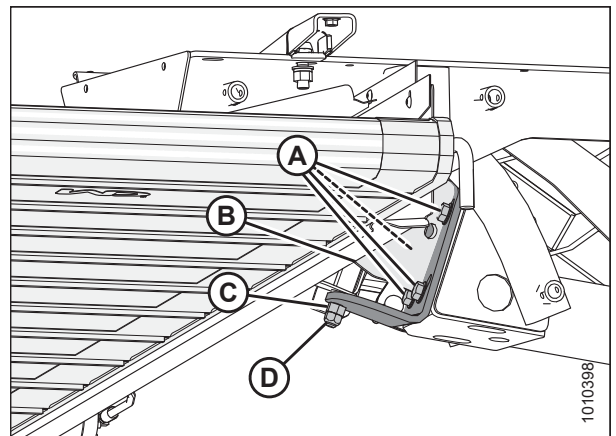


Figure 3.11: Deck Pivot

OPERATION

3.6 Adjusting Deck Height

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

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

1. Lower linkage by fully extending cylinder.
2. Move bottom pivot pin to lower position (A). This will raise the front of the deck approximately 100 mm (4 in.).

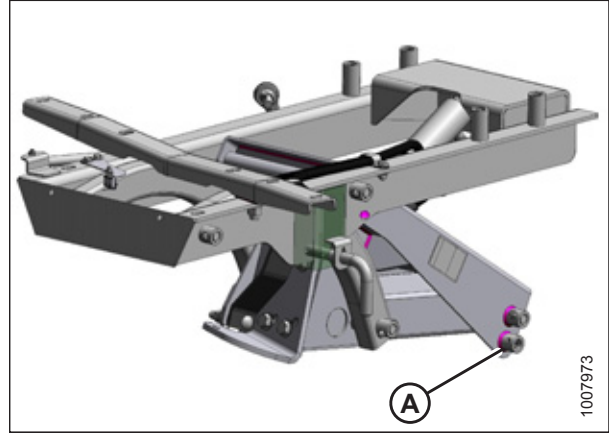


Figure 3.12: DWA Linkage

3.7 Positioning the Conditioner Forming Shield

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

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

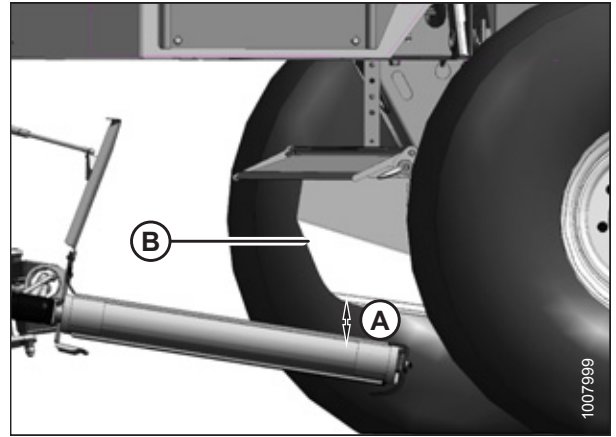


Figure 3.13: Deck Lowered

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

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

NOTE:

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

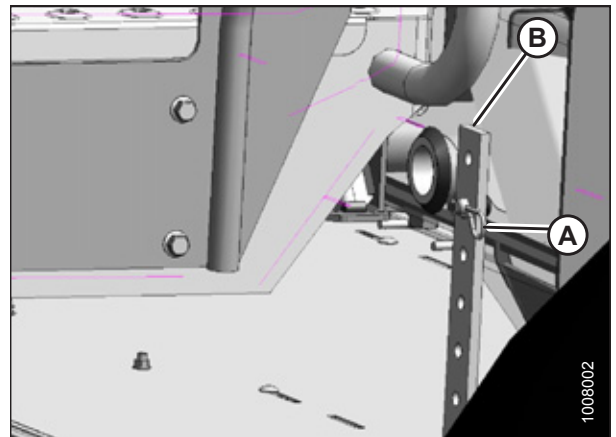


Figure 3.14: Forming Shield

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

NOTE:

When using header to produce single windrows (for bailing), position the side forming shields for desired windrow width.

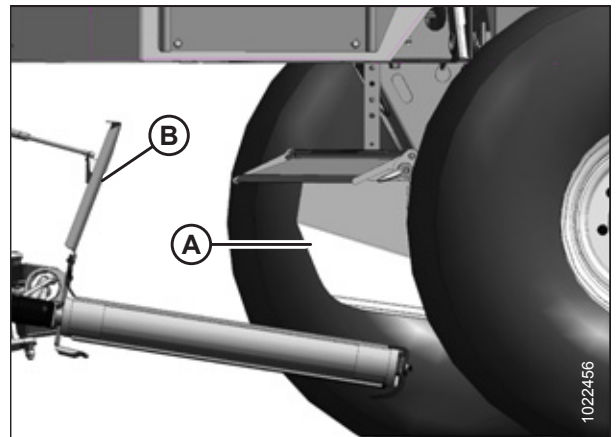


Figure 3.15: Deck Lowered

OPERATION

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

- Set the left end of the rear deflector lower to direct crop down toward the DWA draper.
- Set the right end of the rear deflector higher to allow space for crop to flow to the DWA deck.

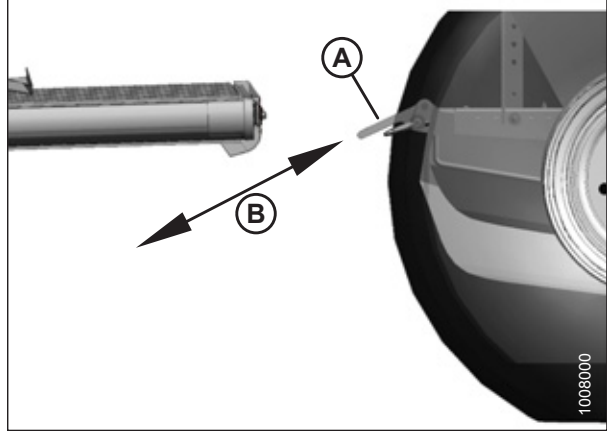


Figure 3.16: Deck Raised

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

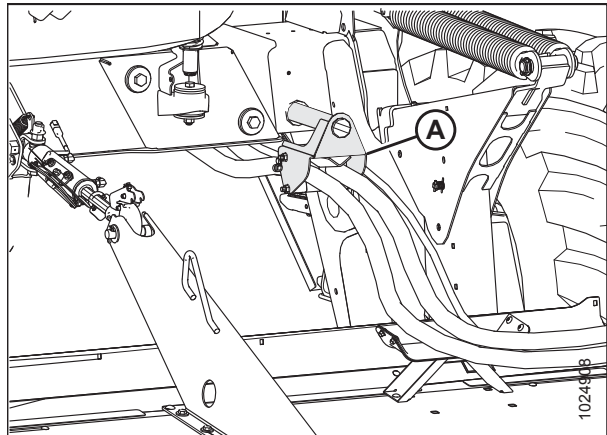


Figure 3.17: Header Hose Support

NOTE:

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

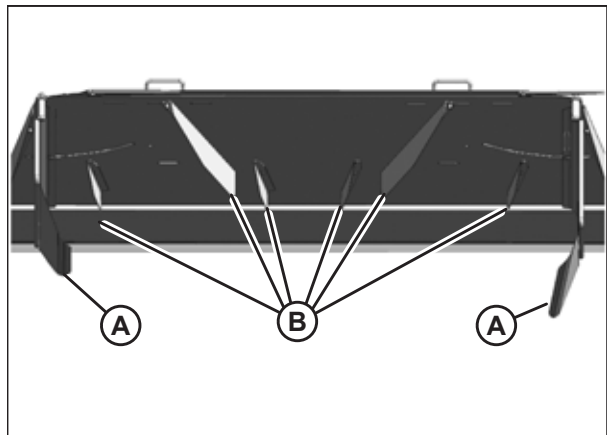


Figure 3.18: Fins under Forming Shield

A - Side Deflectors

B - Fins Under Forming Shield

3.8 Positioning the Conditioner Rolls

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

The gap size depends on the crop type and yield.

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

Refer to the conditioner roll adjustment procedure in your A Series or R85 operator's manual.

3.9 Operating Recommendations

3.9.1 Operating with 4.6–7.6 m (15–25 ft.) Headers

Refer to the following operating recommendations when using the Double Windrow Attachment (DWA) with 4.6–7.6 m (15–25 ft.) headers:

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

3.9.2 Operating with an R Series Rotary Disc Header

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

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

Crop flow from the cutterbar to the rolls

- Header cut width must be kept as full as possible on the right side. Any less than 75% may have adverse effects on feeding.
- Tall crop feed plates should only be installed when cutting tall, heavier crops; they can degrade cutterbar performance if used in medium to light alfalfa.
- Higher ground speeds will usually result in better crop flow from the conditioner rolls to the deck. Ground speed should be a minimum of 10 km/h (6 mph) for light crops.
- Disc speed must be within the recommended range for the specific crop/yield (refer to the header operator's manual).

Crop flow from the conditioner rolls to the forming shield

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

OPERATION

Forming shield settings

- Make sure forming shield (A) is installed correctly with bracket (B).
- Remove windrow forming fins from underside of forming shield to improve crop flow to DWA.
- Periodically remove buildup of sticky crop residue on deflector sliding surfaces.
- Refer to [3.7 Positioning the Conditioner Forming Shield, page 63](#).

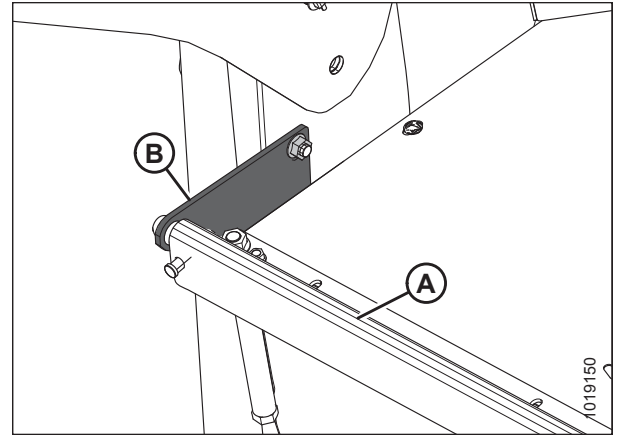


Figure 3.19: Forming Shield

4 Maintenance and Servicing

4.1 Draper Maintenance

4.1.1 Adjusting Draper Tension

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

Set draper tension as follows:

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

NOTE:

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

IMPORTANT:

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

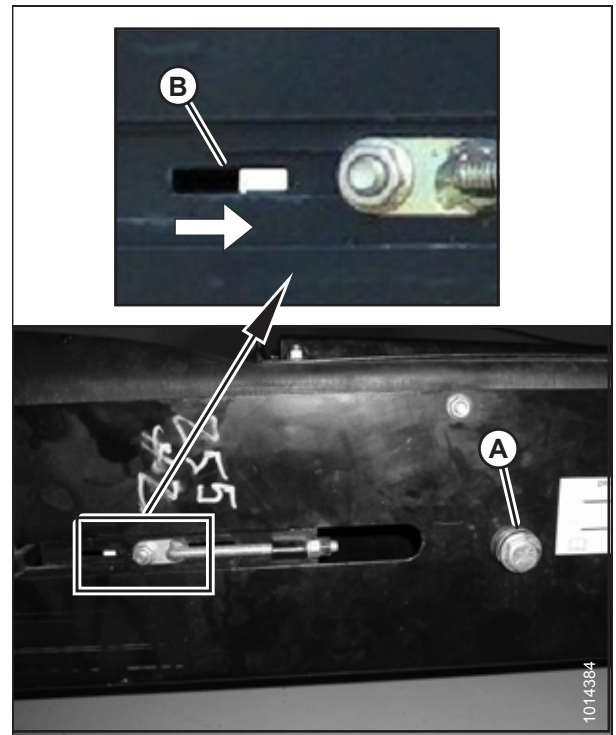


Figure 4.1: Draper Tension Adjuster

4.1.2 Checking the Draper Tracking

Draper tracking needs to be checked when the draper is first run up otherwise the draper can be damaged. Refer to [4.1.3 Adjusting Draper Tracking, page 70](#) to adjust the tracking.

4.1.3 Adjusting Draper Tracking

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

⚠ DANGER

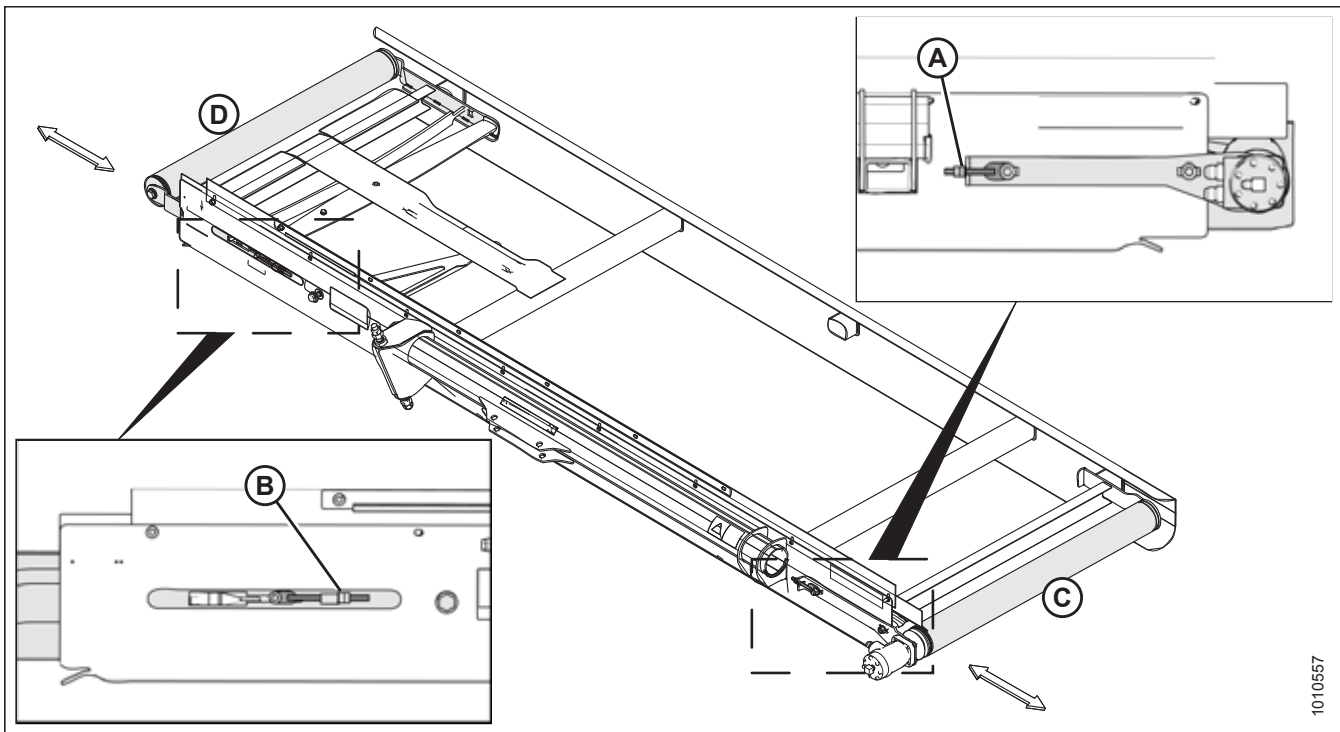
To avoid bodily injury or death from unexpected start-up or fall of raised machine, stop engine, remove key and engage safety pin before going under machine for any reason.

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

Table 4.1 Draper Tracking Adjustments

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

Figure 4.2: Draper Tracking



MAINTENANCE AND SERVICING

To adjust tracking on the idler roller side:

1. Loosen the two nuts (A).
2. Adjust nut (B) according to Table 4.1, page 70.
3. Secure the idler roller by tightening the two nuts (A).
4. After adjusting draper tracking, readjust the draper tension. Refer to 4.1.1 *Adjusting Draper Tension*, page 69.

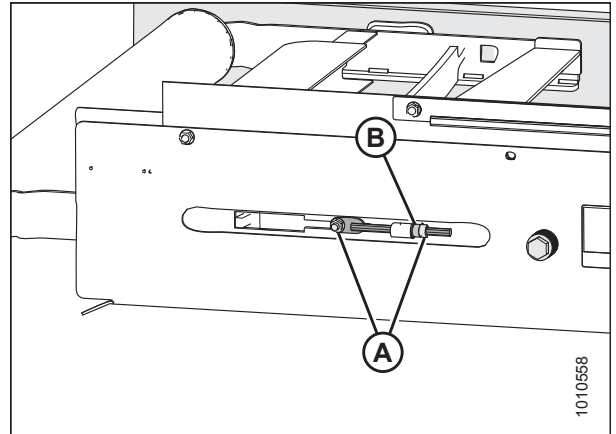


Figure 4.3: Tracking Adjustment: Idler Roller

To adjust tracking on the drive roller side:

5. Loosen the three locking nuts (B).
6. Adjust nut (A) according to Table 4.1, page 70 above.
7. Tighten the three nuts (B) to secure the drive roller.
8. After adjusting draper tracking, adjust the draper tension. Refer to 4.1.1 *Adjusting Draper Tension*, page 69.

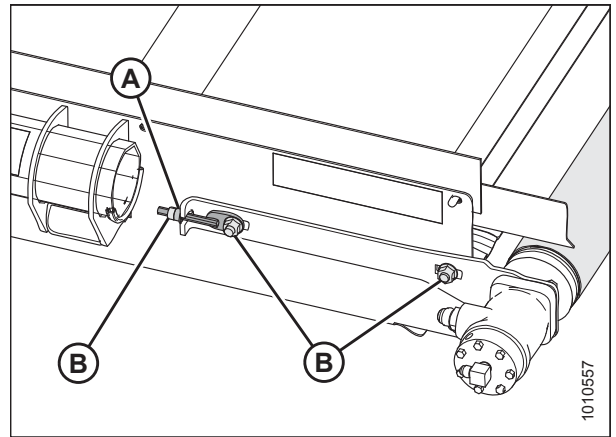


Figure 4.4: Tracking Adjustment: Drive Roller

4.1.4 Replacing Draper

⚠ DANGER

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

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

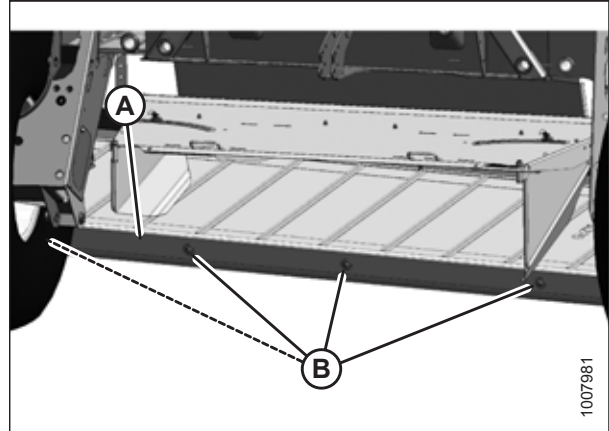


Figure 4.5: Front Skid

4. Disconnect turnbuckle (A) and allow the deck to rotate rearward to increase the space between the deck and tire.
5. Pull off the old draper and slide on the new one. The draper is bidirectional so orientation does not matter.
6. Tension the draper. Refer to [4.1.1 Adjusting Draper Tension, page 69](#)
7. Reinstall turnbuckle (A) and the front skid.
8. Adjust the front skid to achieve a 1.5–3.0 mm (1/16–1/8 in.) gap to draper.
9. Run the new draper and check alignment. Adjust alignment if necessary.
10. Recheck draper tension after it has run for a few hours.

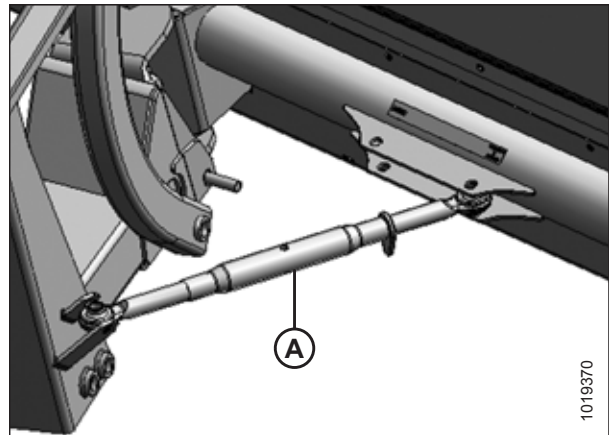


Figure 4.6: Deck Angle Turnbuckle

4.1.5 Adjusting Front Skid

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

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

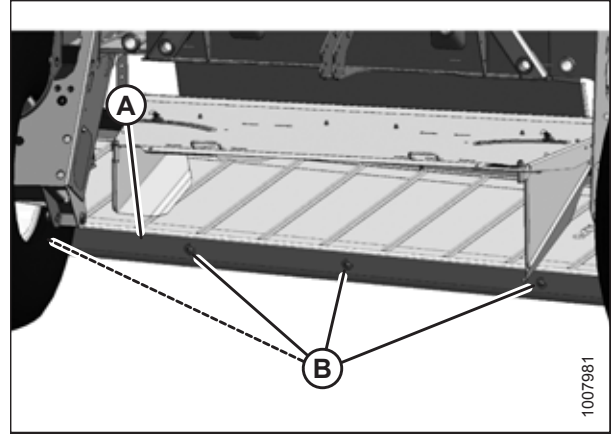


Figure 4.7: Draper Deck Front Skid

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

NOTE:

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

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

3. Tighten nuts (B).

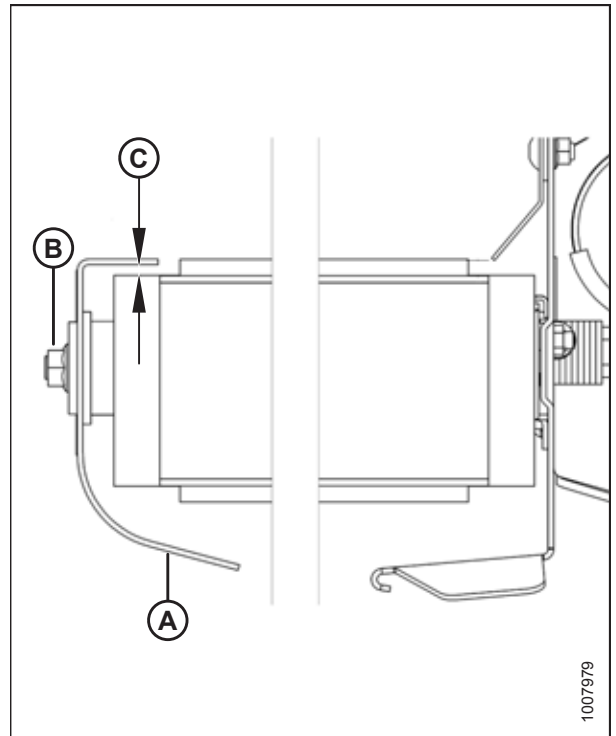


Figure 4.8: Draper Deck Cross Section

4.1.6 Adjusting Rear Deflector

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

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

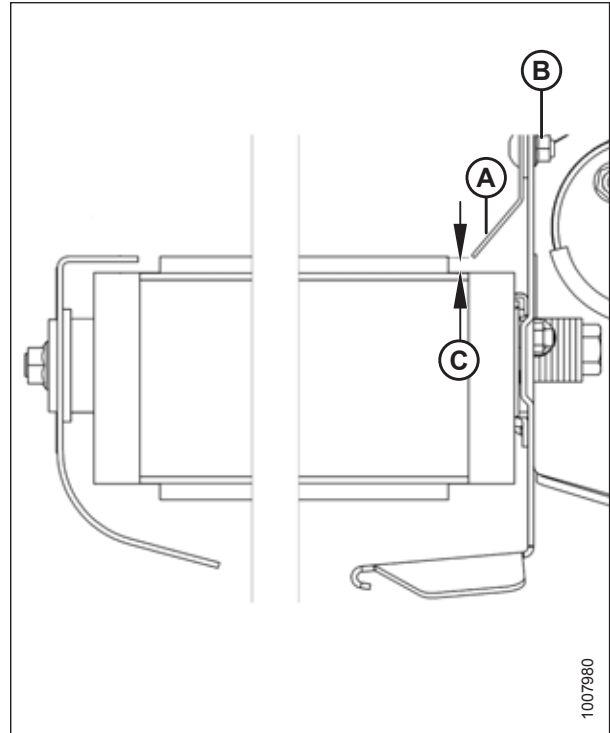


Figure 4.9: Draper Deck Cross Section

MAINTENANCE AND SERVICING

4.1.7 Maintaining Draper Rollers

The draper rollers have nongreaseable bearings. The external seal should be checked every 200 hours (more frequently in sandy conditions) to maximize bearing life. Remove front skid to inspect seals.

MAINTENANCE AND SERVICING

Removing and Reinstalling the Drive Roller

DANGER

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

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

1. Raise deck, and engage safety pin (A).
2. Remove front skid, loosen and remove draper. Refer to [4.1.5 Adjusting Front Skid, page 73](#).

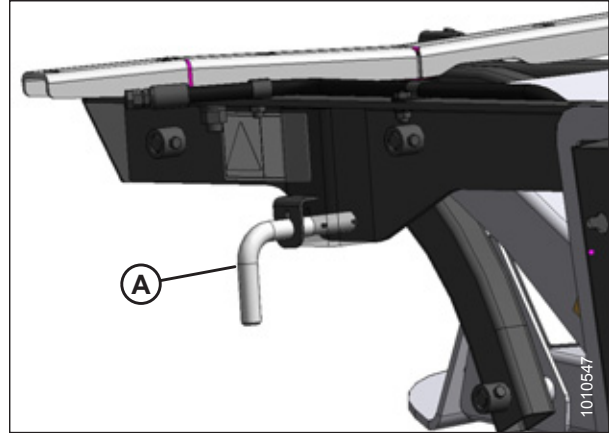


Figure 4.10: Safety Pin

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

NOTE:

The second jam nut and setscrew are not visible in this illustration.

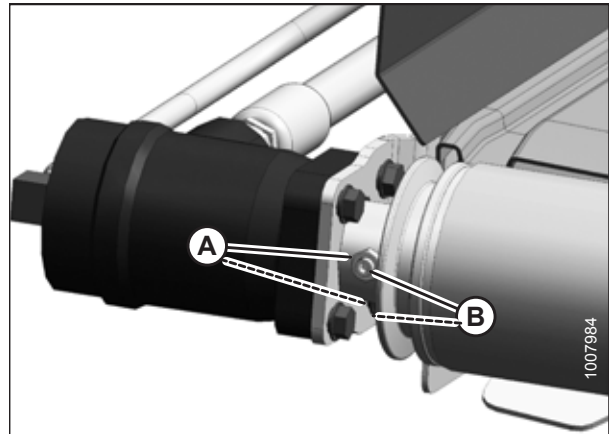


Figure 4.11: Draper Drive Roller

MAINTENANCE AND SERVICING

4. Remove the bolt and washer (B) at the front of the drive roller (A). The arm can be pulled out of the deck.
5. Slide the drive roller off the motor shaft.
6. If you need to repair the bearing or seal, refer to [4.1.8 Replacing Draper Roller Bearing/Seal](#), page 80.

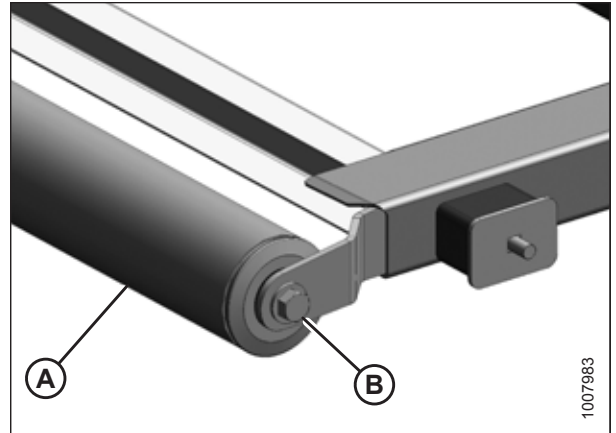


Figure 4.12: Draper Drive Roller

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

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

NOTE:

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

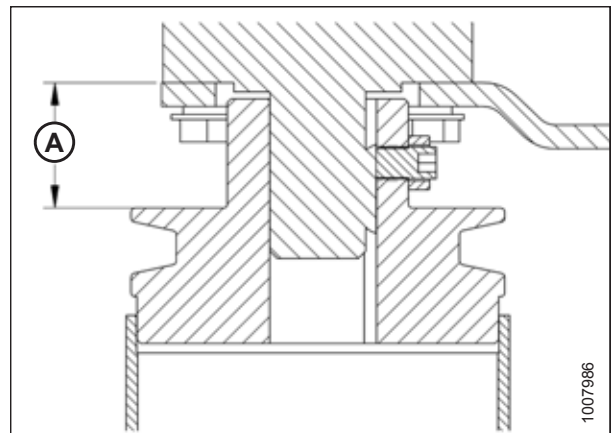


Figure 4.13: Drive Roller Cross Section

8. Install the two setscrews (B) and torque to 27 Nm (20 lbf·ft).
9. Install the two jam nuts (A).

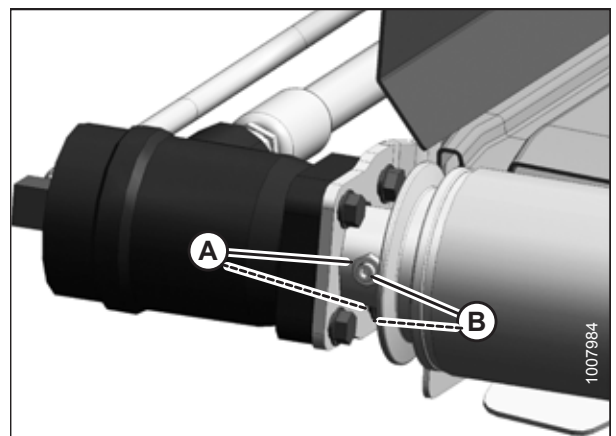


Figure 4.14: Draper Drive Roller

MAINTENANCE AND SERVICING

10. Torque bolt (A) to 95 Nm (70 lbf·ft).

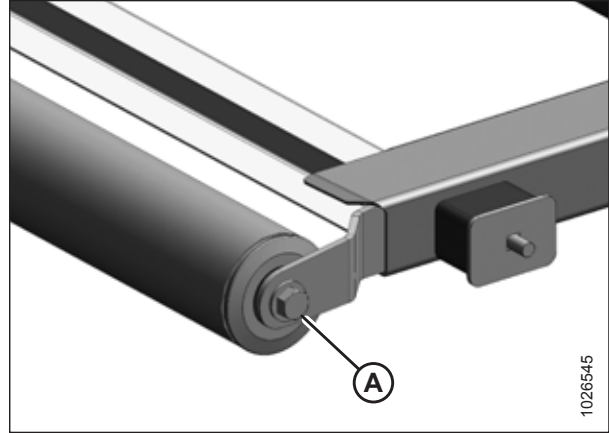


Figure 4.15: Draper Drive Roller

Removing and Reinstalling the Idler Roller

⚠ DANGER

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

To remove the idler roller follow these steps:

1. Raise the deck and engage the safety pin (A).
2. Remove the front skid. Refer to [4.1.5 Adjusting Front Skid, page 73](#).

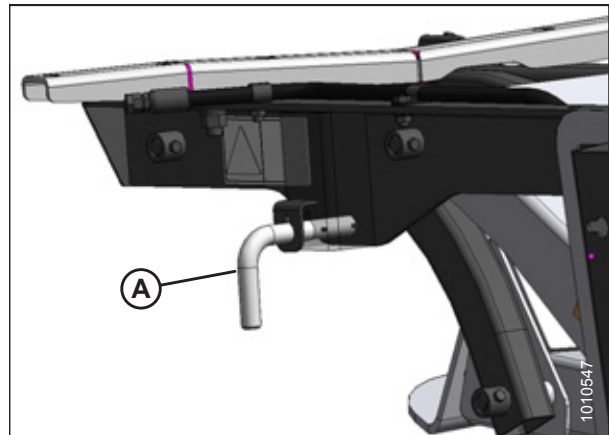


Figure 4.16: Safety Pin

MAINTENANCE AND SERVICING

- Loosen the draper.

NOTE:

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

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

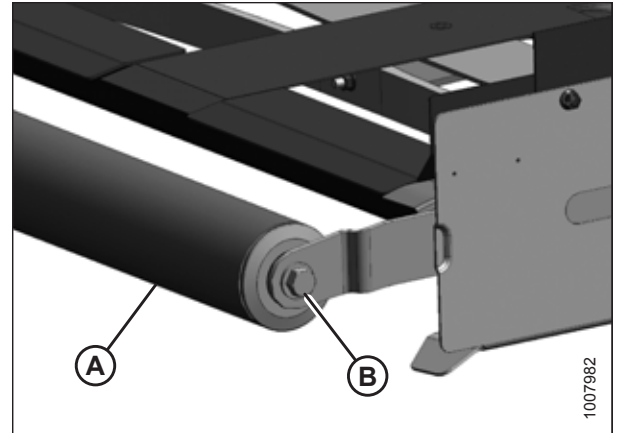


Figure 4.17: Idler Roller

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

- Reattach bolt and washer (B) at each end of the roller.
- Tighten the draper. Refer to [4.1.1 Adjusting Draper Tension, page 69](#).
- Reattach the front skid. Refer to [4.1.5 Adjusting Front Skid, page 73](#).
- Torque bolts (B) to 95 Nm (70 lbf·ft).

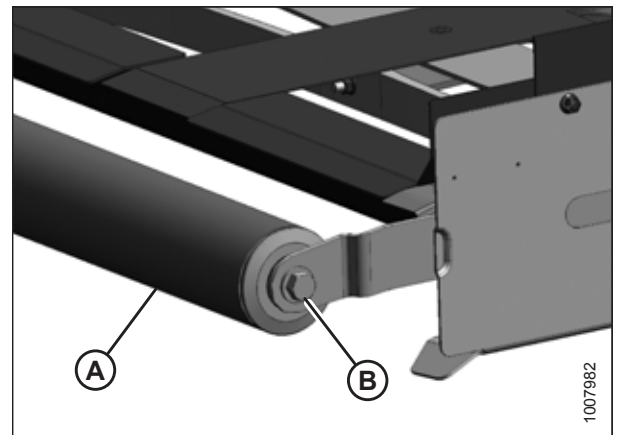


Figure 4.18: Idler Roller

4.1.8 Replacing Draper Roller Bearing/Seal

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

1. Remove the roller assembly. Refer to [4.1.7 Maintaining Draper Rollers, page 75](#).
2. Remove bearing assembly (B) and seal (A) from roller tube (C) as follows:
 - a. Attach a slide hammer (D) to threaded shaft.
 - b. Tap out the bearing assembly.
3. Clean inside the roller tube (C) and check for wear or damage. Replace if necessary.

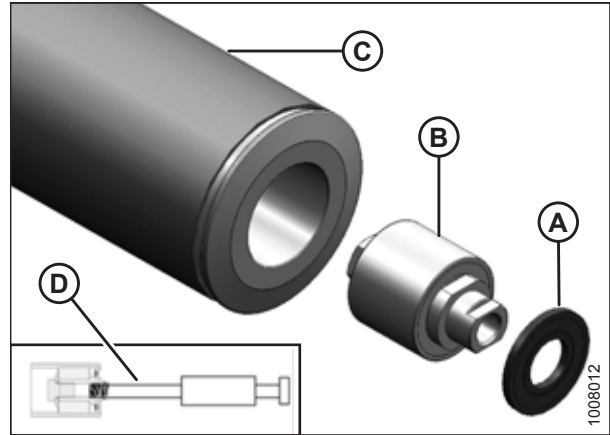


Figure 4.19: Roller Bearing

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

NOTE:

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

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

NOTE:

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

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

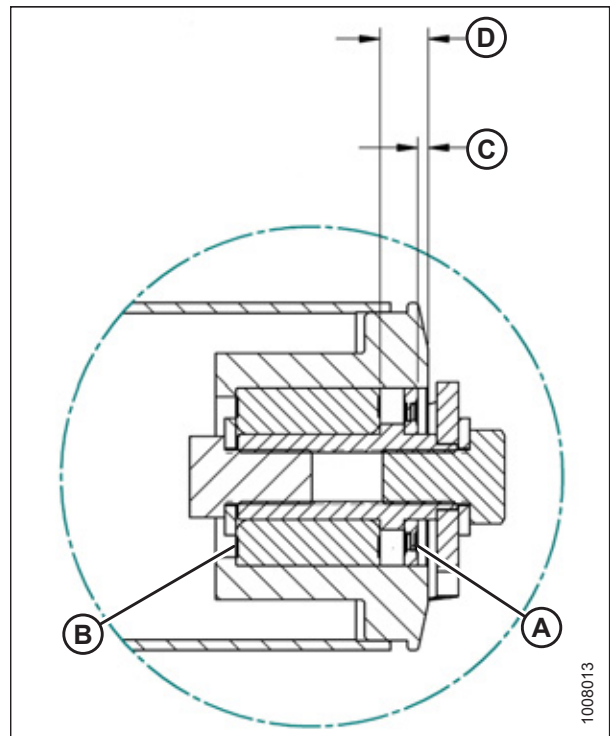


Figure 4.20: Roller Bearing Cross Section

4.2 Lubricating the Double Windrow Attachment

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

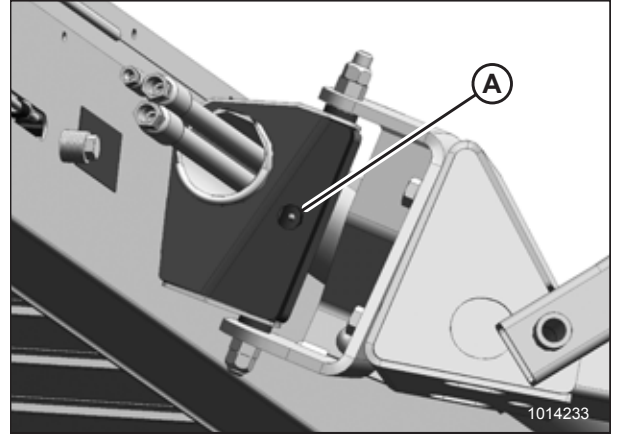


Figure 4.21: Deck Pivot

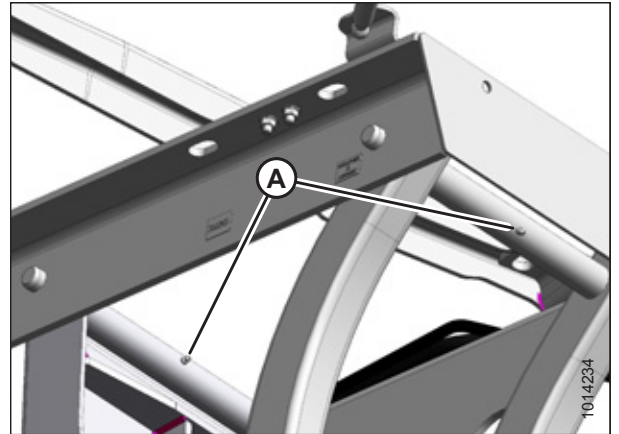


Figure 4.22: Linkage Pivot

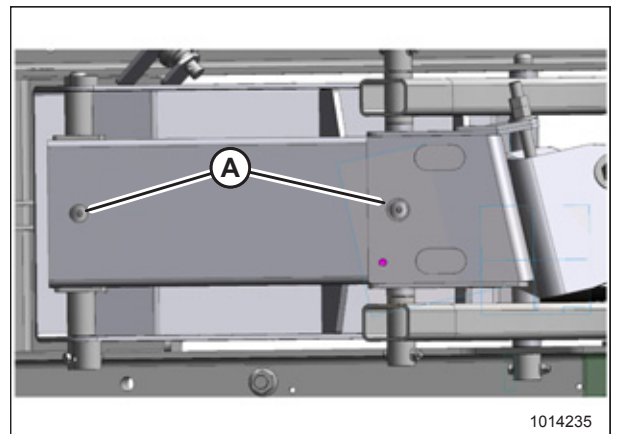
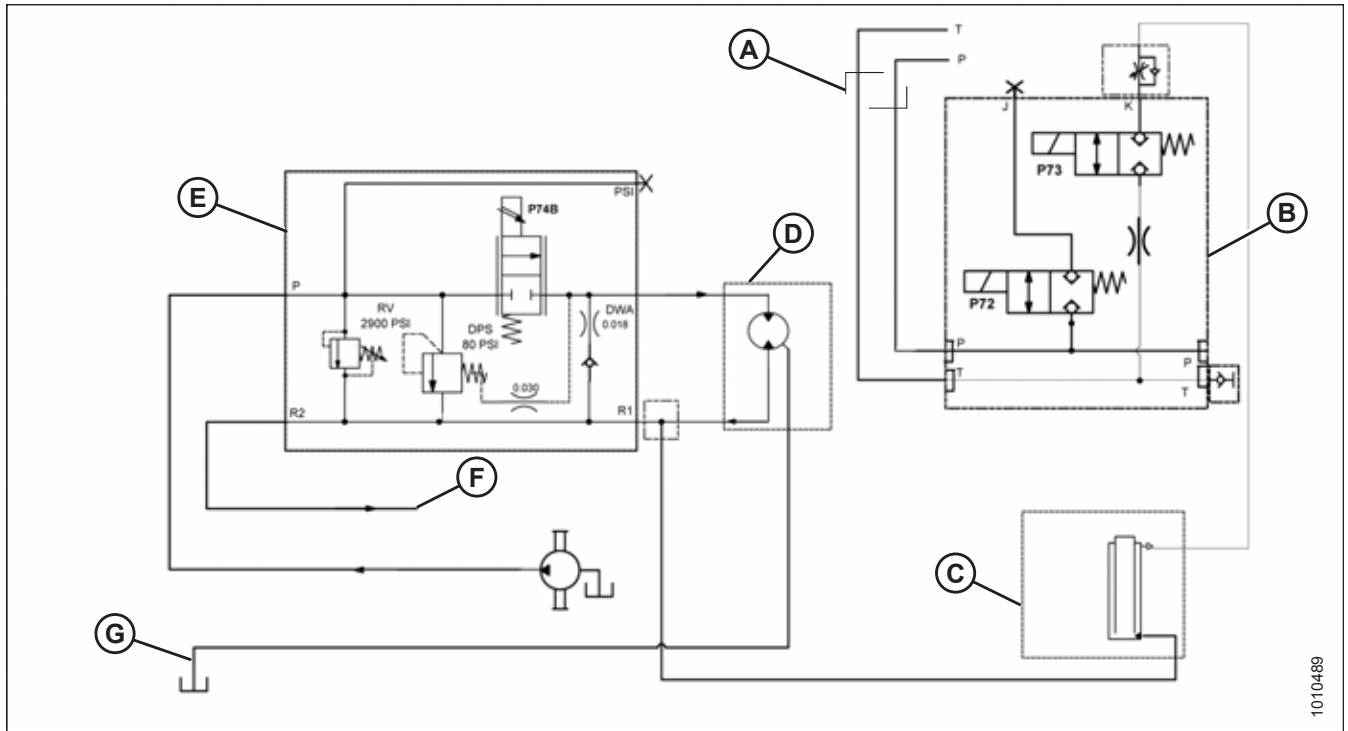


Figure 4.23: Linkage Pivot: Bottom View of DWA

MAINTENANCE AND SERVICING

Hydraulic schematic with newer DWA drive block with 2900 psi relief valve and new DWA lift block (MD #139974) with two double check valves.

Figure 4.25: Newer DWA Drive Block and Lift Block (MD #139974) Schematic



A - To Header Lift Block ¹
 C - DWA Lift Cylinder
 E - DWA Drive Block
 G - Tank Line ^{2 3}

B - DWA Lift Block
 D - DWA Draper Motor
 F - To Manifold Cooler Bypass

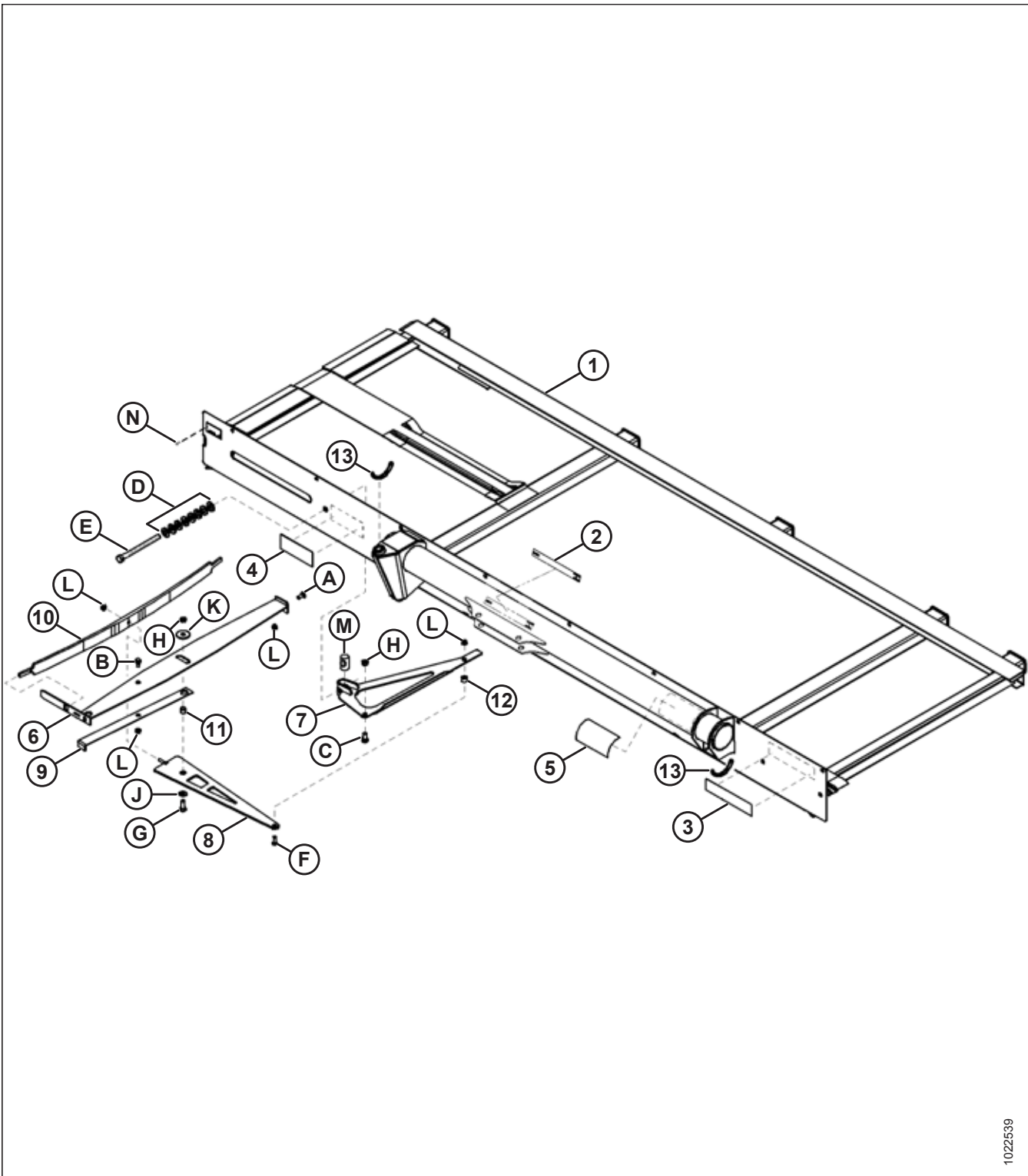
1010489

1. The auxiliary block (MD #139974) is bolted directly to the main lift block, depending on windrower options. Ports T and P are direct links.
2. M150/M200 to port T on knife drive block.
3. M155/M155E4/M205 direct to reservoir.

5 Repair Parts

5.1 Deck, Draper, and Rollers (Illustration 1)

Figure 5.1: Deck, Draper, and Rollers (Illustration 1)

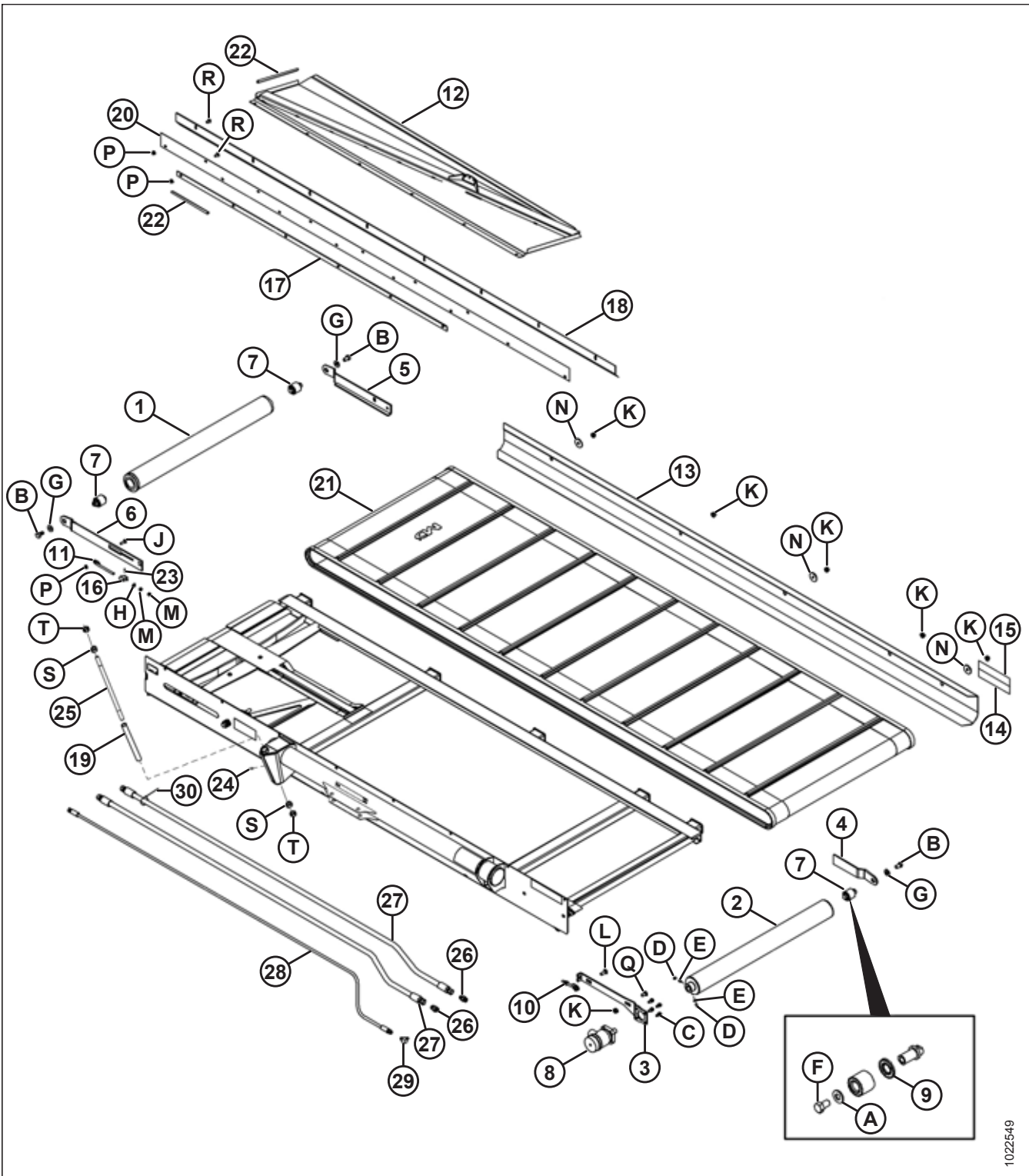


REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	172730	DECK – COMPLETE WITH DECALS	1	
2	176767	DECAL – HEADER POSITION, HORIZONTAL FORMAT	1	
3	115146	REFLECTOR – AMBER	1	
4	220084	DECAL – DRAPER TENSION	1	
5	166466	DECAL – WARNING, HYDRAULIC, 2 PANEL	1	
6	120449	MEMBER – LH STABILIZER WELDMENT	1	
7	120451	BELL CRANK WELDMENT – LH	1	
8	120462	MEMBER – COMPRESSION WELDMENT	1	
9	145428	INDICATOR	1	
10	145548	SPRING – LEAF (TENSIONER)	1	
11	132531	SPACER	1	
12	132532	SPACER	1	
13	109791	MOULDING	2	
A	19965	BOLT – RHSN, 3/8 NC x 1.0 GR 5 ZP	1	
B	172259	BOLT – SHOULDER, 3/8-16 UNC	1	
C	21575	BOLT – HEX HEAD, 1/2 NC x 1.0 GR 5 ZP	1	
D	30441	WASHER – HARDENED	8	
E	135906	BOLT – HEX HEAD, 5/8 NC x 7.5 LG TFL GR 5 ZP	1	
F	20077	BOLT – HEX HEAD, 3/8 NC x 1.0 LG GR 5 ZP	1	
G	21491	BOLT – HEX HEAD, 1/2 NC x 1.25 LG GR 5 ZP	1	
H	137727	NUT – HEX JAM, DT, 1/2-13 UNC GR 5 ZP	2	
J	18599	WASHER – SAE FLAT, 17/32 ID x 1 1/16 INCH OD ZP	1	
K	42592	WASHER – FLAT	1	
L	30228	NUT – FLANGE, DT, SMOOTH FACE, 3/8-16 UNC	4	
M	145361	NUT – SPECIAL	1	
N	14338	RIVET – BLIND 1/8 x 1/8	2	

5.2 Deck, Draper, and Rollers (Illustration 2)

Figure 5.2: Deck, Draper, and Rollers (Illustration 2)



102549

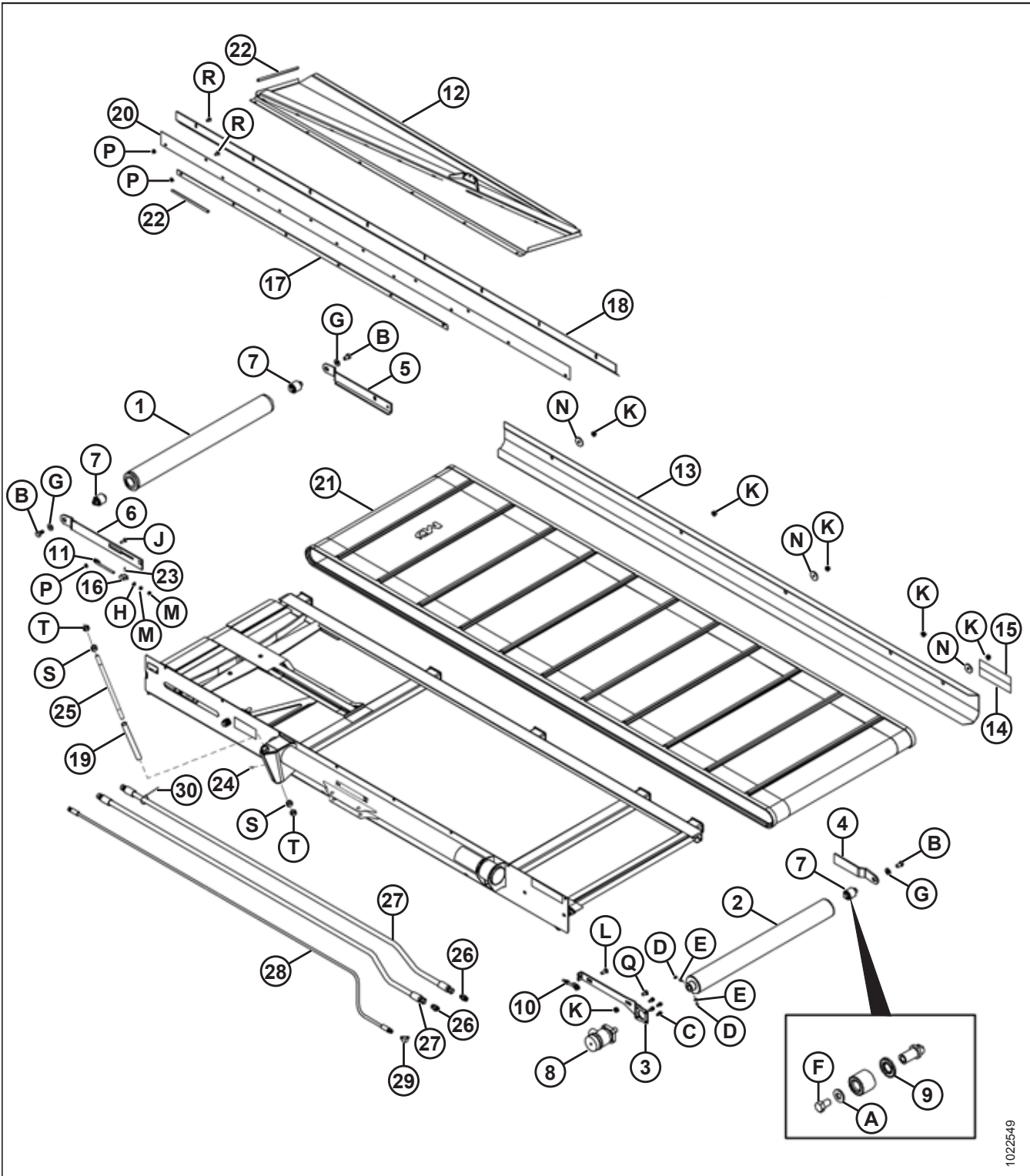
REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	144833	ROLLER – IDLER WELDMENT	1	
2	176678	ROLLER – DRIVE WELDMENT	1	
3	144501	ARM – SUPPORT	1	
4	144499	ARM – ROLLER SUPPORT	1	
5	176000	ARM – SUPPORT WELDMENT	1	
6	144837	ARM – SUPPORT REAR	1	
7	165735	PIN ASSEMBLY – DRAPER ROLLER	3	
8	144832	MOTOR – HYDRAULIC M & S 1.52 CI	1	
	132759	SEAL KIT – M & S MOTOR		
	123306	KEY – WOODRUFF(1/4 X 1 NOM.)		
9	120845	SEAL – NILOS LSTO STEEL DISK	3	
10	145593	ROD – ADJUSTER WELDMENT	1	
11	145345	ROD – ADJUSTER WELDMENT	1	
12	144602	PANEL – REAR WELDMENT	1	
13	172747	SKID – COMPLETE WITH REFLECTORS	1	
14	115145	REFLECTOR – FLUORESCENT RED-ORANGE	1	
15	115147	REFLECTOR – RED	1	
16	145357	BRACKET – IDLER ARM	1	
17	144652	BAR – STIFFENER	1	
18	144851	DEFLECTOR – SEAL	1	
19	144558	BUSHING – STEEL	1	
20	144597	SEAL – BACKSHEET	1	
21	165304	DRAPER – ENDLESS, DWA	1	
22	37687	MOULDING	2	
23	18604	PIN – COTTER 3/32 DIA. x 3/4 ZP	1	
24	18671	FITTING – LUBE 1/4-28 UNF	1	
25	176063	SHAFT – THREADED ⁴	1	
26	30695	FITTING – HYDRAULIC CONNECTOR	2	
27	132867	HOSE – HYDRAULIC	2	
28	176077	HOSE – HYDRAULIC	1	
29	50104	FITTING – ELBOW 90° HYDRAULIC	1	
30	135266	FASTENER – CABLE TIE, LIGHT BLUE	1	

4. Older units used a hex head bolt in this location. When replacing bolt with the new threaded shaft, also order one each of nuts, items 69 and 70 for head end.

REPAIR PARTS

Figure 5.3: Deck, Draper, and Rollers (Illustration 2)



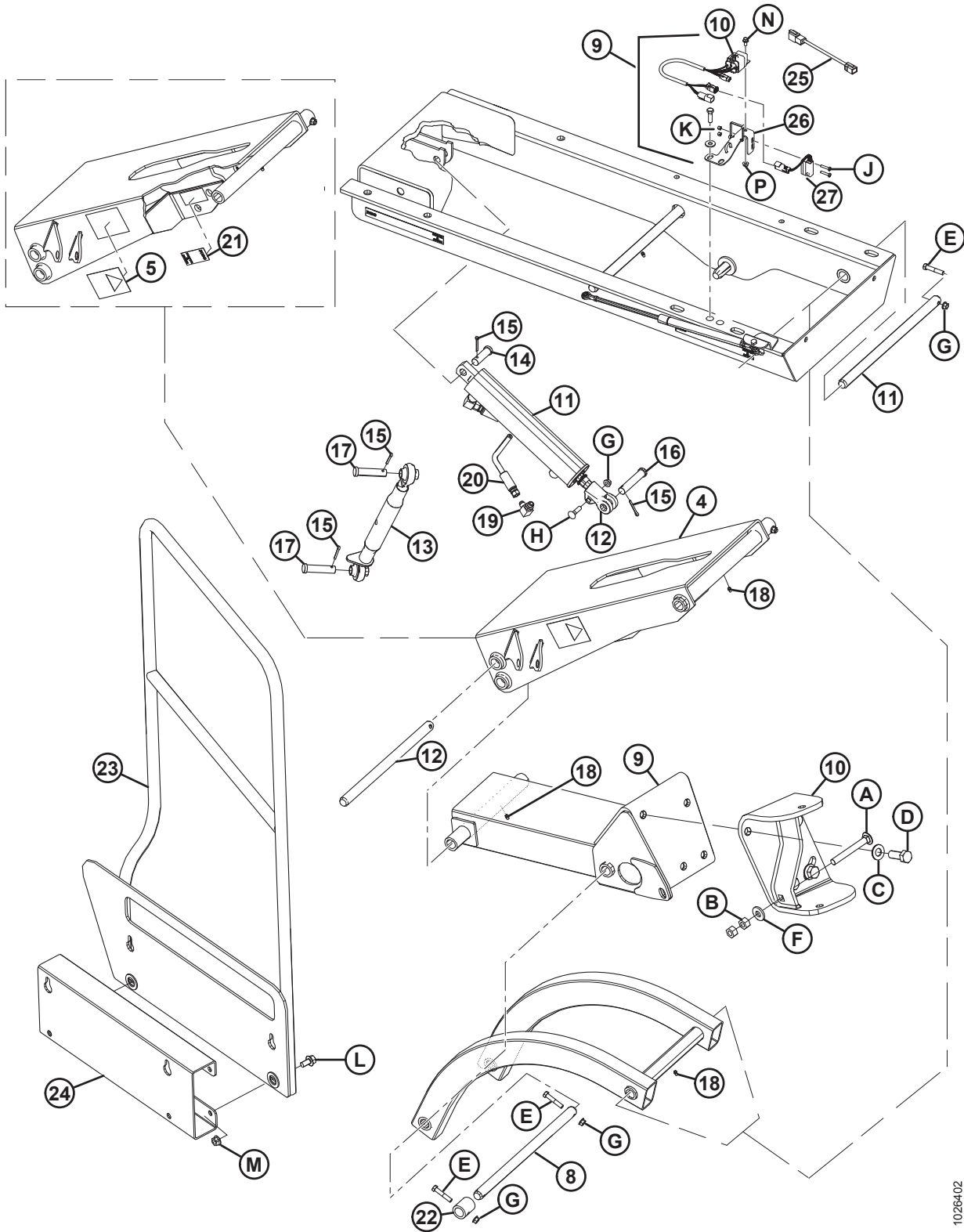
1022549

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
A	30441	WASHER – HARDENED	3	
B	145249	BOLT – HEX HEAD, 5/8 NF x 1.0 LG GR 5 ZP	3	
C	172259	BOLT – SHOULDER, 3/8-16 UNC	4	
D	18709	SETSCREW – HEXHD, SKT CUP PT 3/8 NC x 5/8 LG	2	
E	18664	NUT – HEX JAM, 3/8-16 UNC GR 5 ZP	2	
F	145249	BOLT – HEX HEAD, 5/8 NF x 1.0 LG GR 5 ZP	3	
G	30441	WASHER – HARDENED	3	
H	18598	WASHER – SAE FLAT, 13/32 ID x 13/16 INCH OD ZP	2	
J	19966	BOLT – RDH, SQ NECK, 3/8 NC x 1.25 LG GR 5 ZP	1	
K	50186	NUT – FLG, LOCK, SMTH FACE, DT, 1/2-13 UNC – GR 5	7	
L	21471	BOLT – RHSN, 1/2 NC x 1.25 GR 5 ZP	1	
M	18590	NUT – HEX, 3/8-16 UNC GR 5 ZP	4	
N	11695	WASHER – FLAT	3	
P	30228	NUT – FLG, DT, SMOOTH FACE, 3/8-16 UNC	15	
Q	21066	BOLT – RHSN, 1/2 NC x 1 GR 5 ZP	1	
R	135157	SCREW – MACHINE	14	
S	18593	NUT – HEX, 3/4-10 UNC GR 5 ZP	2	
T	18689	NUT – HEX, LOCK, DISTORTED THREAD, 3/4-10 UNC	2	

5.3 Deck Supports and Linkage (Illustration 1)

Figure 5.4: Deck Supports and Linkage (Illustration 1)



1026402

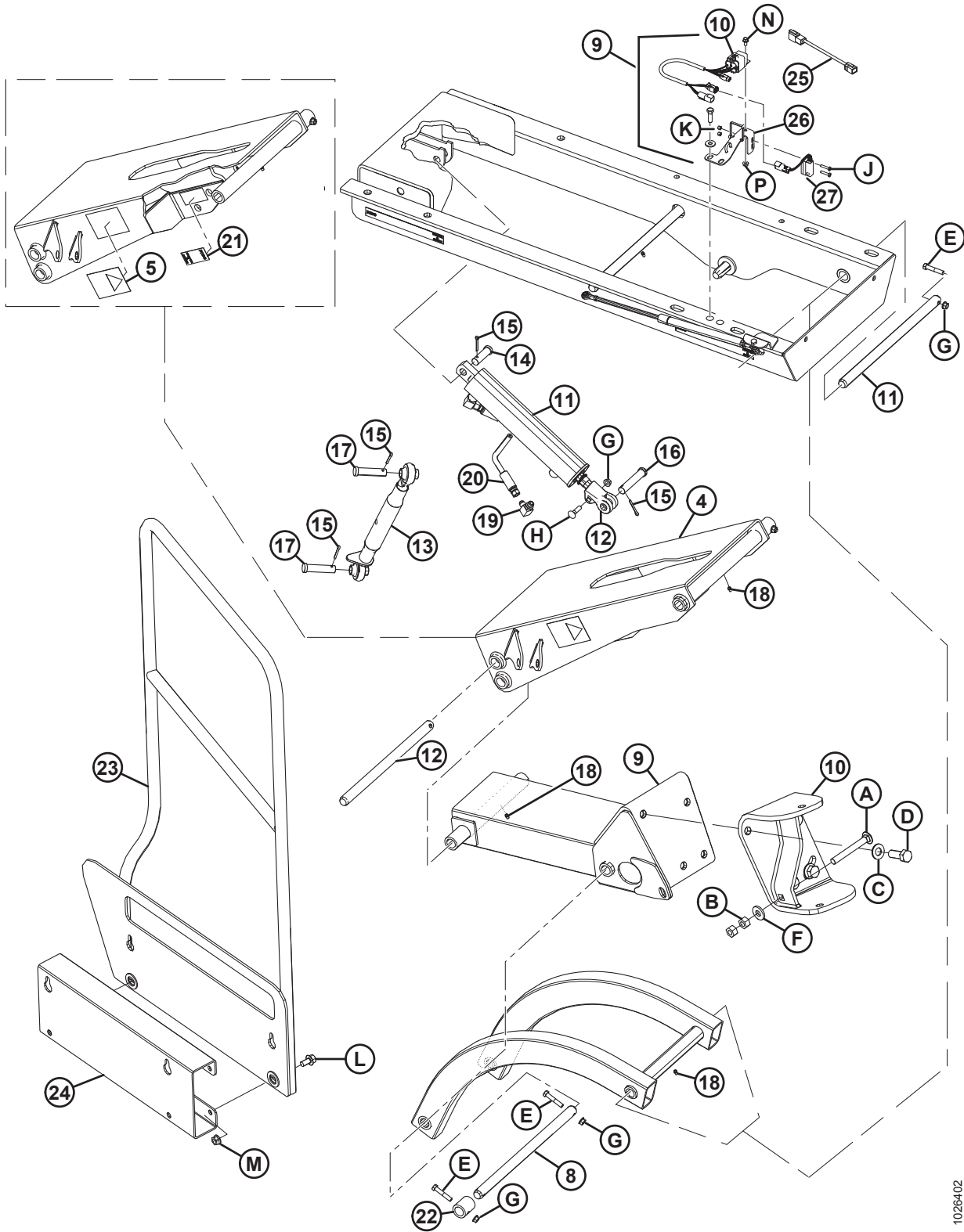
REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	172746	ARM – DECAL ASSEMBLY	1	
2	174683	DECAL – WARNING DWA LINKAGE PINCH POINT, 2 PANEL	2	
3	144592	ARM – FRONT WELDMENT	1	
4	144593	ARM – BOTTOM WELDMENT	1	
5	144594	CLEVIS – WELDMENT	1	
6	172910	SHAFT	1	
7	176018	SHAFT	1	
8	176023	SHAFT	1	
9	176748	KIT – M-SERIES DWA SWITCH ⁵	1	
10	183856	HARNESS – DWA	1	
11	208966	CYLINDER – HYDRAULIC	1	
	176031	SEAL KIT – FOR CYLINDER		
12	172664	CLEVIS	1	
13	144996	JOINT ASSEMBLY	1	
14	18626	PIN – CLEVIS	1	
15	18648	PIN – COTTER, 3/16 DIA. x 1.25 ZP	4	
16	20312	PIN – CLEVIS	1	
17	18627	PIN – CLEVIS	2	
18	18671	FITTING – LUBE, 1/4-28 UNF	4	
19	30282	FITTING – ELBOW 90° HYDRAULIC	1	
20	144805	HOSE – HYDRAULIC	1	
21	176768	DECAL – HEADER POSITION, VERTICAL FORMAT	1	
22	172903	TUBE	1	
23	144870	RAIL WELDMENT	1	
24	139491	PLATE – HANDRAIL ADAPTER (M155/M205 ONLY)	1	
	176533	KIT – DWA RAIL ADAPTER ⁶		
25	138744	HARNESS – M205, DWA EXTENSION (USE IF REQUIRED)	1	

-
5. Kit includes support (MD #176655), switch (MD #200974), harness (MD #183856), hardware, and installation instructions.
 6. Kit contains handrail support (MD #139491), cable ties (MD #209608), nut (MD #50186), bolt (MD #21449), and manual.

REPAIR PARTS

Figure 5.5: Deck Supports and Linkage (Illustration 1)



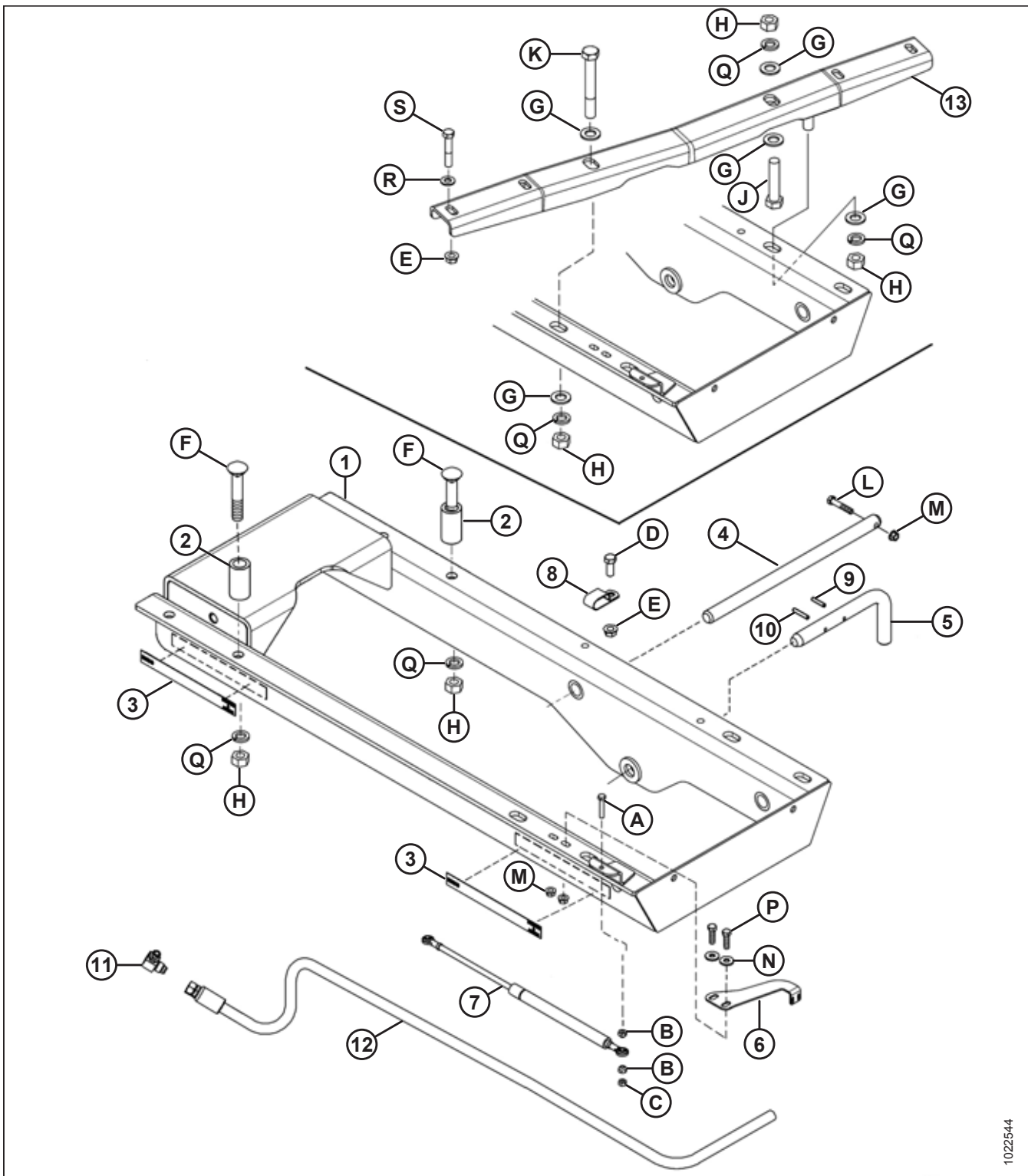
1028402

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
26	176655	SUPPORT – PROXIMITY SENSOR	1	
27	200974	SWITCH – PROXIMITY	1	
A	30816	BOLT – RHSN, 5/8 NC x 5 TFL GR 5 ZP		
B	18592	NUT – HEX, 5/8-11 UNC GR 5 ZP		
C	176009	WASHER – NORDLOCK, 3/4" SP		
D	30512	BOLT – HEX HEAD, 3/4 NC x 2.0 LG GR 5 ZP		
E	21354	BOLT – HEX HEAD, 3/8 NC x 2.0 LG GR 5 ZP		
F	22072	WASHER – FLAT		
G	30228	NUT – FLANGE, DT, SMOOTH FACE, 3/8-16 UNC		
H	21484	BOLT – RHSN, 3/8 NC x 1.25 LG GR 5 ZP		
J	252183	SCREW – PAN HD M5X0.8X25-4.8-AA2L		
K	197230	NUT – NYLOC		
L	21449	BOLT – HEXHD FLG (SERR. FACE) ½ NC x 1.0 GR 5 ZP		
M	50186	NUT – FLANGE LOCK, SMTH FACE, 0.500-13 UNC GR5		
N	21968	BOLT – HEX FLG SER HD 1/4-20X0.5 GR 5 - AA1J		
P	135248	NUT – HEX FLG CTR LOC		

5.4 Deck Supports and Linkage (Illustration 2)

Figure 5.6: Deck Supports and Linkage (Illustration 2)



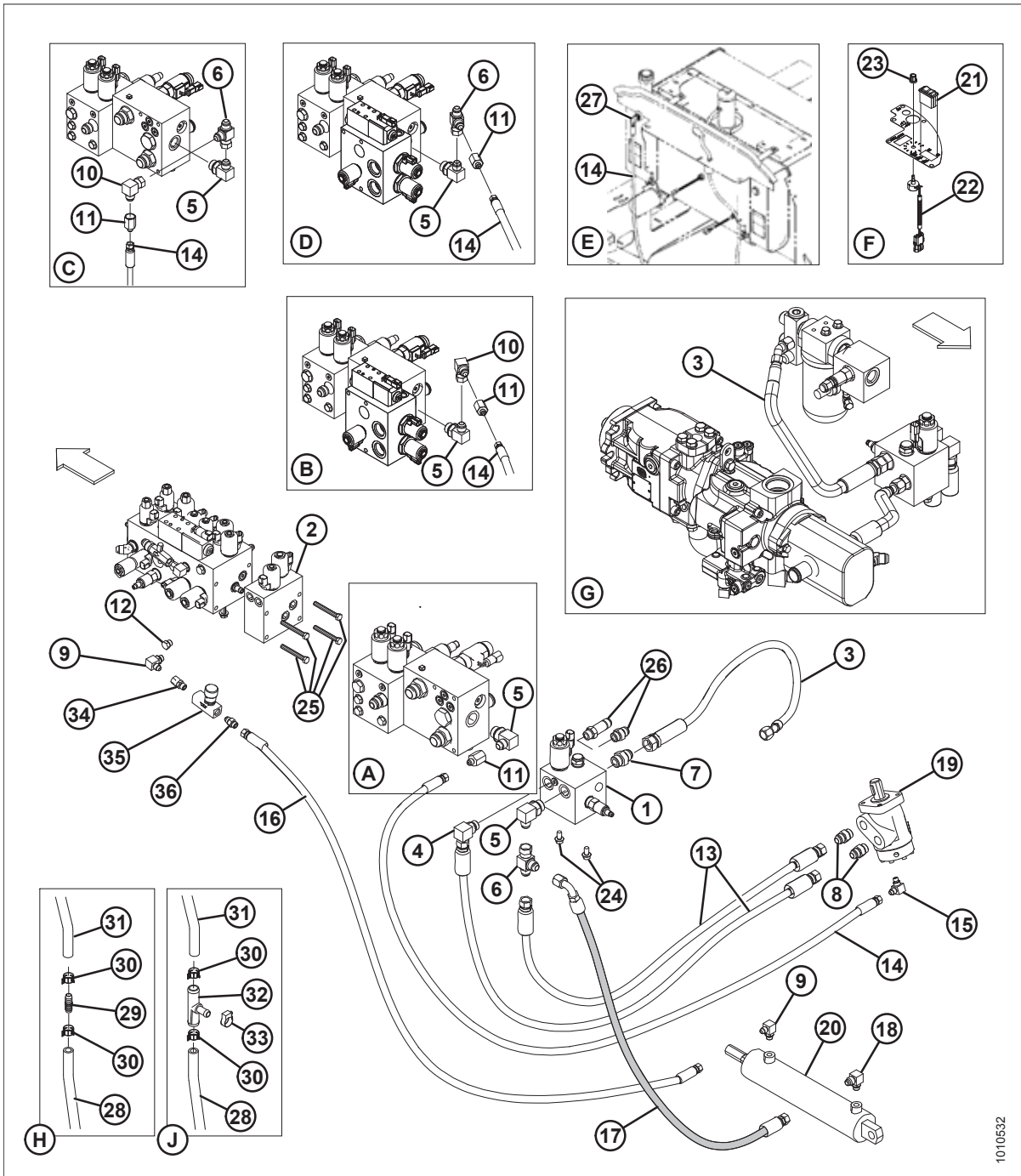
102544

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	144590	SUPPORT WELDMENT KIT, CONSISTS OF 176062, ITEMS 2, 6, 13 & HARDWARE.	1	
	176062	SUPPORT WELDMENT	1	
2	144587	SPACER – 1-1/2" OD x 1" ID x 2-3/4" LONG	2	
3	176767	DECAL – HEADER POSITION, HORIZONTAL FORMAT	2	
4	172910	SHAFT	1	
5	176016	PIN – L	1	
6	144853	SUPPORT	1	
7	176066	CYLINDER – GAS SPRING	1	
8	103738	CLAMP – PVC INSULATED 13/16" TUBE SIZE	2	
9	16266	PIN – SPRING, 1/4 DIA. x 1.25 LG	1	
10	2147	PIN – SPRING, 1/4 DIA. x 1.5 LG	1	
11	21805	FITTING – ELBOW HYDRAULIC	1	
12	144806	HOSE – HYDRAULIC	1	
13	176060	CHANNEL WELDMENT	1	
A	176067	BOLT – HEXHD, 5/16 NC x 1-3/4 INCH TFL GR 5 ZP	2	
B	35689	NUT – SPECIAL (TAPER FACING ROD END)	4	
C	18589	NUT – HEX, 5/16 NC	2	
D	21491	BOLT – HEX HEAD, 1/2 NC x 1.25 LG GR 5 ZP	2	
E	50186	NUT – FLG LOCK, SMTH FACE, DT, 1/2-13 UNC GR 5	6	
F	102266	BOLT – RHSSN, 3/4 NC x 4.5 LG GR 5 ZP	2	
G	18601	WASHER – SAE FLAT, 13/16 ID x 1.5 INCH OD ZP	5	
H	18593	NUT – HEX, 3/4-10 UNC GR 5 ZP	5	
J	30896	BOLT – HEX HEAD, 3/4-10 UNC x 3.50 LG	1	
K	30549	BOLT – HEX HEAD, 3/4 NC x 5.5 LG GR 5 ZP	1	
L	21354	BOLT – HEX HEAD, 3/8 NC x 2.0 LG GR 5 ZP	1	
M	30228	NUT – FLG, DT, SMOOTH FACE, 3/8-16 UNC	3	
N	20535	WASHER – FLAT	2	
P	21264	BOLT – HEX HEAD, 3/8 NC x 1.25 LG GR 5 ZP	2	
Q	18640	WASHER – LOCK, 3/4	5	
R	18599	WASHER – FLAT, 17/32 INCH I.D	4	
S	21880	BOLT – HEXHD, 1/2 NC x 2.75 LONG, GR 5, ZP	4	

5.5 Hydraulics and In-Cab Electrical

Figure 5.7: Hydraulics and In-Cab Electrical



1010532

- A - M150/M200 A Series Or R Series: Case Drain
- C - M150/M200 D Series: Case Drain
- E - M155/M155E4/M205: Case Drain
- G - M150/M200 Shown (5 Series Similar)
- J - Optional M155/M155E4/M205

- B - M150/M200 A Series With Reverser: Case Drain
- D - M150/M200 D Series With Reverser: Case Drain
- F - In-Cab Electrical
- H - Optional M200 Only

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	139508	MANIFOLD – DWA DRIVE, SEE NEXT PAGE FOR SERVICE PARTS	1	
2	139974	VALVE BLOCK AUX LIFT, SEE NEXT PAGE FOR SERVICE PARTS ⁷	1	
3	144807	HOSE – HYDRAULIC	1	
4	21843	FITTING – ELBOW 90° HYDRAULIC	1	
5	50221	FITTING – ELBOW 90° HYDRAULIC	2	
6	50102	FITTING – HYDRAULIC TEE	2	
7	21830	FITTING – HYDRAULIC CONNECTOR	1	
8	30695	FITTING – HYDRAULIC CONNECTOR	2	
9	30282	FITTING – ELBOW 90° HYDRAULIC	2	
10	30556	FITTING – ELBOW 90° HYDRAULIC	1	
11	118084	FTG – HYDRAULIC REDUCER	1	
12	30994	PLUG – HEX CW O-RING	2	
13	132867	HOSE – HYDRAULIC	2	
14	176077	HOSE – HYDRAULIC	1	
15	50104	FITTING – ELBOW 90° HYDRAULIC	1	
16	144805	HOSE – HYDRAULIC	1	
17	144806	HOSE – HYDRAULIC	1	
18	21805	FITTING – ELBOW HYDRAULIC	1	
19	REF	MOTOR – SEE DRAPER AND DECK		
20	REF	CYLINDER – SEE DECK SUPPORTS AND LINKAGE		
21	109575	SWITCH – ROCKER, MOM-OFF-MOM	1	
22	109718	GAUGE – POTENTIOMETER	1	
23	138691	KNOB – SPEED CONTROL	1	
24	21821	BOLT – HH FLG (SERR FACE) 3/8 NC x 0.75 GR 5 ZP	2	

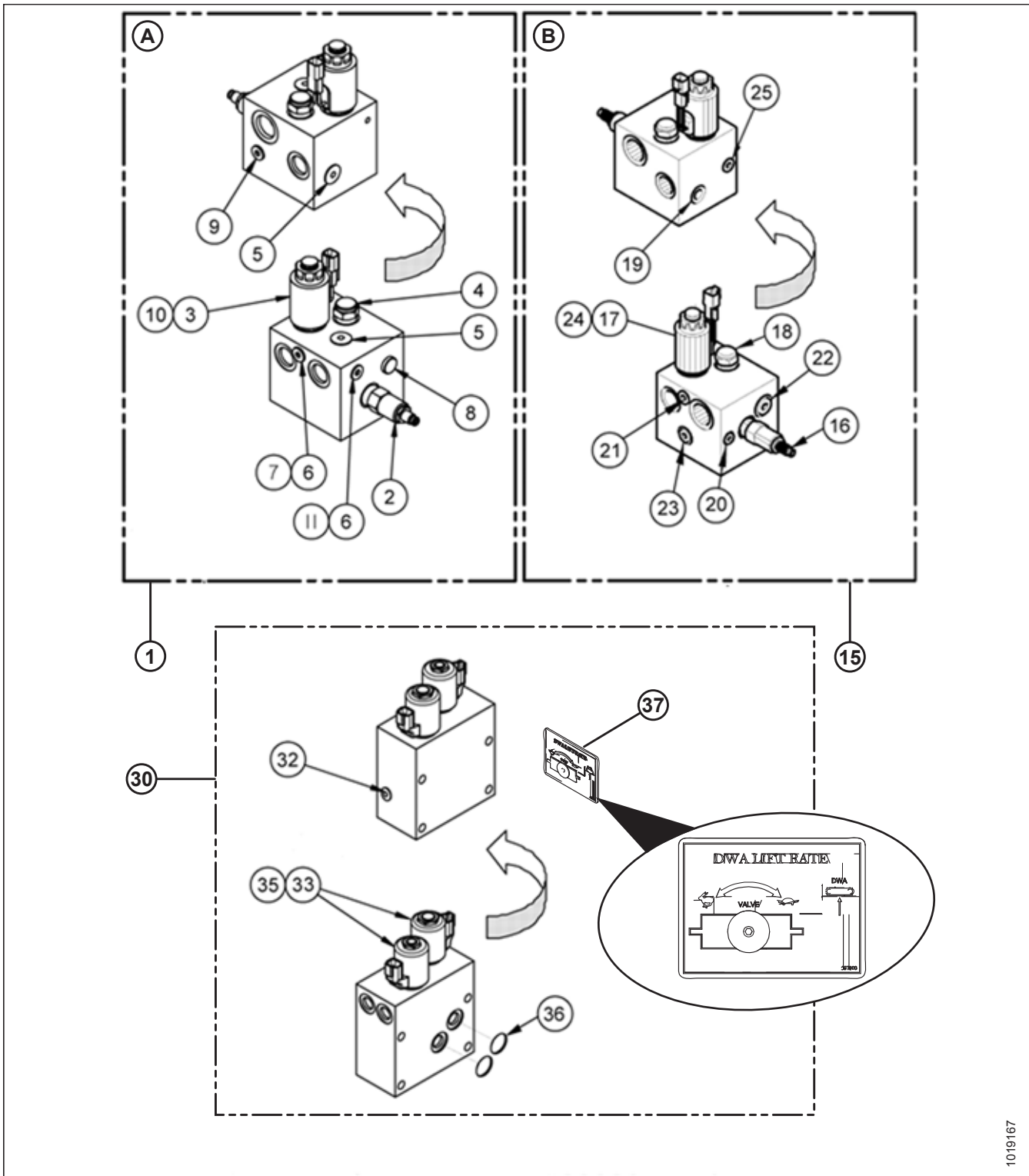
7. Refer to service bulletin SB #1210 regarding software update required.

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
25	21568	BOLT – HH 3/8 NC x 3.0 LG – UNITS WITH 1 AUX. DRIVE BLOCK	4	
	10948	BOLT – HH 3/8 NC x 5.5 LG – UNITS WITH 2 AUX. DRIVE BLOCKS	4	
26	30695	FITTING – CONNECTOR HYDRAULIC – M150 / M200 WINDROWERS	1	
	135848	FITTING – ADAPTER, LONG – M155 / M205 WINDROWERS	1	
27	135352	FITTING – ELBOW 90° HYDRAULIC – M155 / M205 WINDROWERS	1	
28	110764	HOSE – 5/8 I.D. – EXTENSION FOR TANK BREATHER/OVERFLOW HOSE. PREVENTS OVERFLOW FLUID DROPPING ONTO DWA DRAPER DECK	1	
29	176069	FITTING – JOINTER, PLASTIC – 5/8 HEATER HOSE – M200 ONLY	1	
31	REF	HOSE – HYDRAULIC OIL TANK BREATHER/OVERFLOW		
32	134055	FITTING – PLASTIC TEE – M155/M205	1	
33	30500	CLAMP – HOSE GEAR TYPE, 6/16 RANGE	1	
34	135015	FITTING – ADAPTER – HYDRAULIC	1	
35	183211	VALVE	1	
36	15903	FITTING – CONNECTOR – HYDRAULIC	1	

5.6 Hydraulic Service Components

Figure 5.9: Hydraulic Service Components



1019167

A - Eaton MCD-8286, Serial No. 207009 and Below

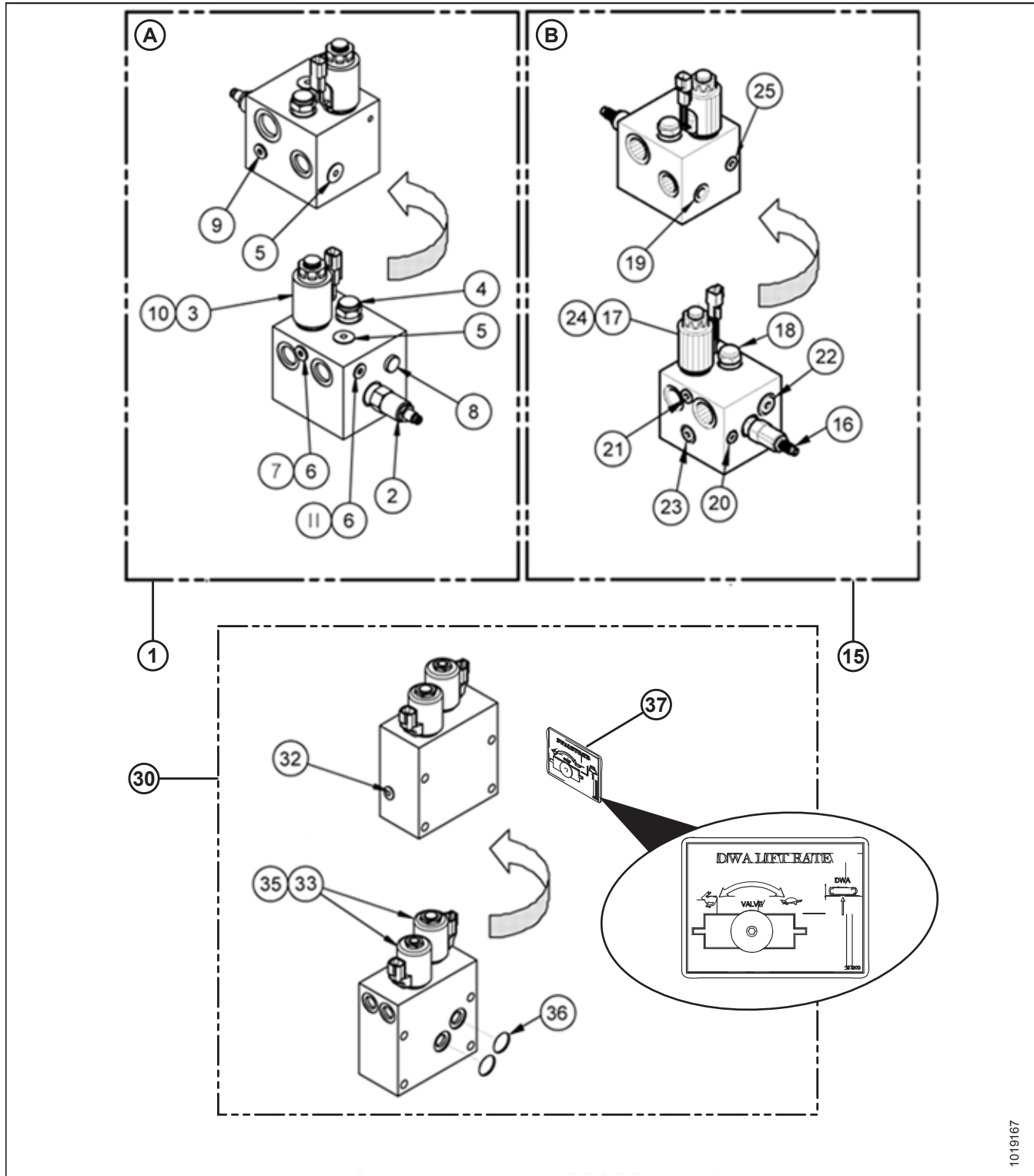
B - Eaton 630AA00821A, Serial No. 207010 and Above

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	Not Avail.	MANIFOLD – DWA DRIVE, TO REPLACE COMPLETE UNIT ORDER 139508	1	207009 AND EARLIER
	49846	SEAL KIT		
2	162285	VALVE – RELIEF	1	
3	163166	CONTROL – PROPORTIONAL FLOW	1	
4	162283	VALVE – DIFF. PRESS SENSING	1	
	162284	SEAL KIT #10 3 WAY – SHORT	1	
5	163159	FITTING – ZERO LEAK GOLD, 3/4-16	2	
6	163156	FITTING – ZERO LEAK GOLD, 9/16-18	2	
7	163168	PLUG – ORIFICE	1	
8	158174	PLUG – HEX SOCKET C/W O-RING	1	
9	163149	FITTING – ZERO LEAK GOLD, 1/2-20	1	
10	163173	COIL – ASSEMBLY	1	
	163178	SEAL KIT	1	
11	162287	PLUG – ORIFICE	1	

REPAIR PARTS

Figure 5.10: Hydraulic Service Components



A - Eaton MCD-8286, Serial No. 207009 and Below

B - Eaton 630AA00821A, Serial No. 207010 and Above

1019167

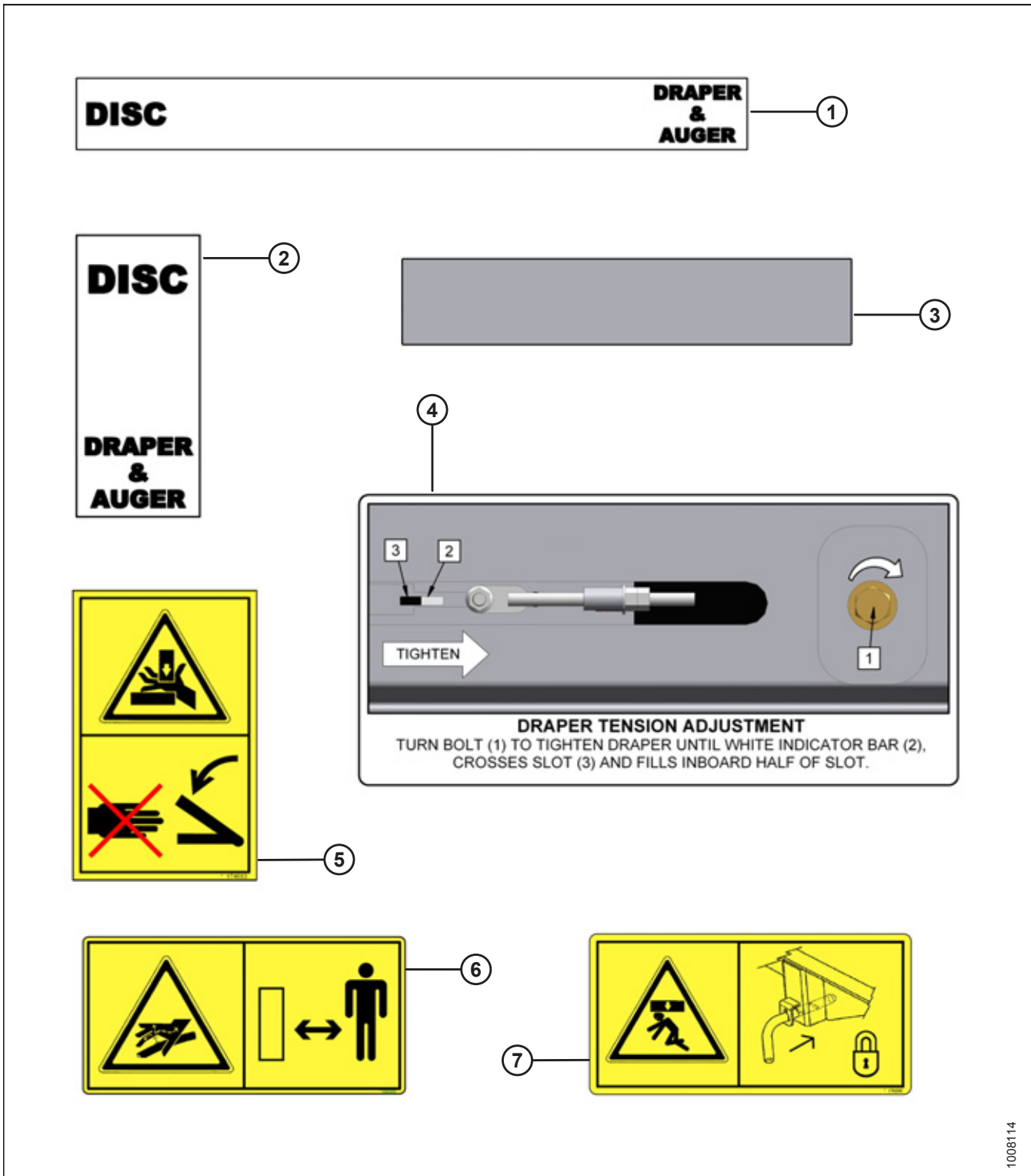
REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
15	139508	MANIFOLD – DWA DRIVE	1	207010 and later
	49846	SEAL KIT		
	100577	PLUG – HEX SOCKET C/W O-RING, 9/16-18		
16	139542	VALVE – RELIEF	1	
17	163166	CONTROL – PROPORTIONAL FLOW	1	
18	162283	VALVE – DIFF. PRESS. SENSING	1	
	162284	SEAL KIT #10 3 WAY - SHORT		
19	163159	FITTING – ZERO LEAK GOLD, 3/4-16	2	
20	163167	SENSE CHECK KIT	1	
21	163168	PLUG – ORIFICE	1	
22	158174	PLUG – HEX SOCKET C/W O-RING	1	
23	163149	FITTING – ZERO LEAK GOLD, 1/2-20	1	
24	163173	COIL – ASSEMBLY	1	
	163178	SEAL KIT		
25	162287	PLUG – ORIFICE	1	
30	139974	VALVE BLOCK AUX LIFT ⁸	1	
32	163156	FITTING – ZERO LEAK GOLD	1	
33	163143	VALVE – SOLENOID (INCLUDES NUT 163191)	2	
	163191	NUT – SPECIAL		
	163160	SEAL KIT	2	
35	163154	COIL – TOUGH	2	
36	163184	O-RING	2	
37	167903	DECAL – LIFT RATE	1	

8. Refer to service bulletin SB#1210 regarding software update required

5.7 Decals

Figure 5.11: Decals



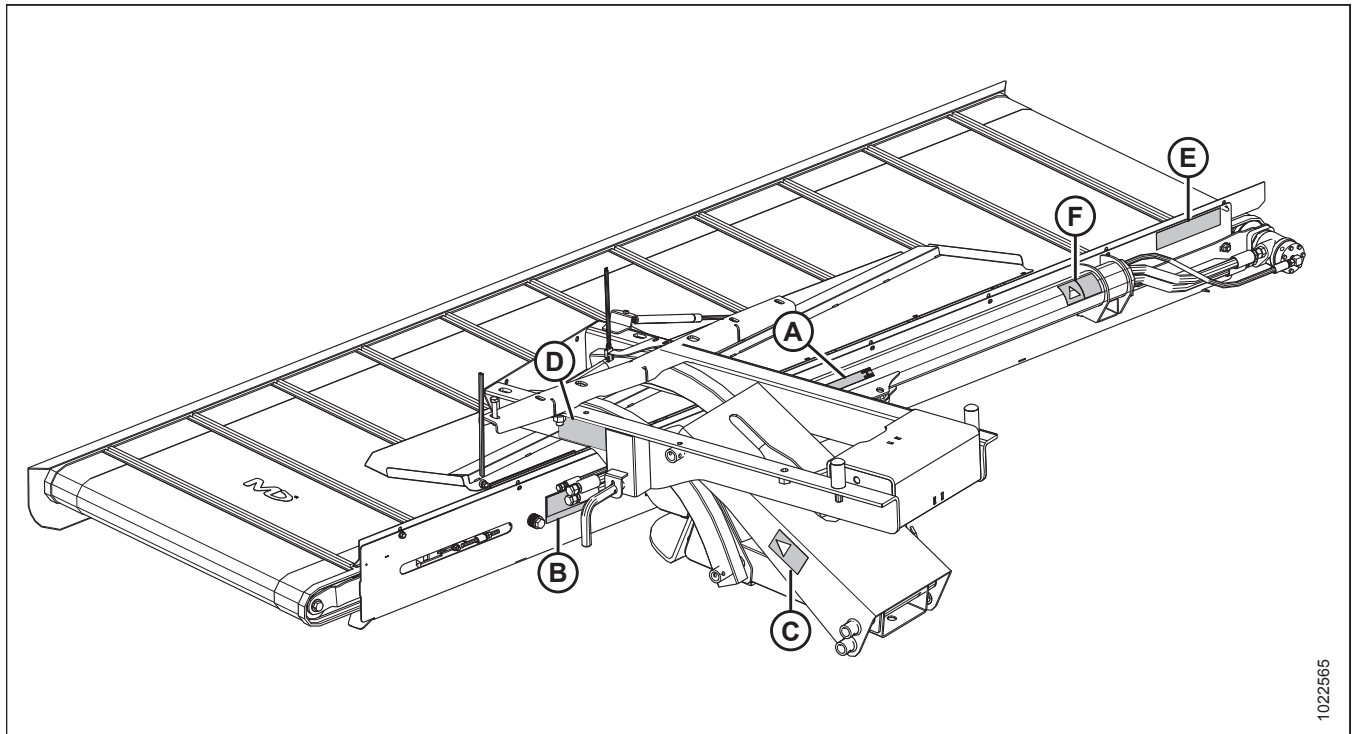
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REPAIR PARTS

Ref	Part Number	DESCRIPTION	Qty	Serial Number
1	176767	DECAL – HEADER POSITION, HORIZONTAL FORMAT	3	
2	176768	DECAL – HEADER POSITION, VERTICAL FORMAT	1	
3	115146	REFLECTOR – AMBER	1	
	115145	REFLECTOR – FLUORESCENT RED-ORANGE	1	
	115147	REFLECTOR – RED	1	
4	220084	DECAL – DRAPER TENSION	1	
5	174683	DECAL – WARNING DWA LINKAGE PINCH POINT, 2 PANEL	2	
6	166466	DECAL – WARNING, HIGH PRESSURE HYDRAULICS, 2 PANEL	1	
7	176295	DECAL – DECK LIFT LOCK	1	

5.7.1 Decal and Reflector Locations

Figure 5.12: Decal and Reflector Locations



A - MD #176071 – Header Position, Horizontal

B - MD #220084 – Draper Tension

C - MD #174683 – DWA Linkage Pinch Point

D - MD #176295 – Deck Lift Lock

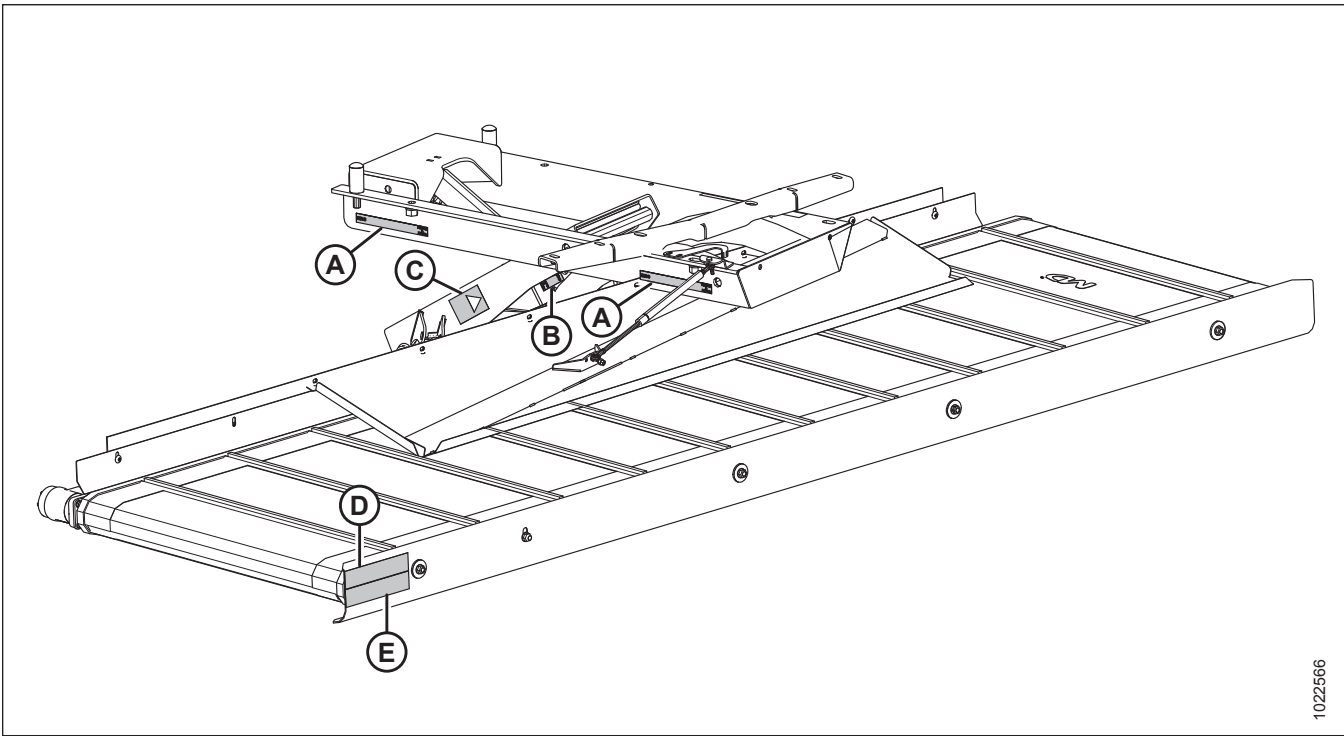
E - MD #115146 – Reflector, Amber

F - MD #166466 – High Pressure Hydraulics

1022565

REPAIR PARTS

Figure 5.13: Decal and Reflector Locations



A - MD #176071 – Header Position, Horizontal

B - MD #176072 – Header Position, Vertical

C - MD #174683 – DWA Linkage Pinch Point

D - MD #115147 – Reflector, Red

E - MD #115145 – Reflector, Fluorescent Red-Orange

6 Reference

6.1 Torque Specifications

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

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

Jam nuts

When applying torque to finished jam nuts, multiply the torque applied to regular nuts by $f=0.65$.

Self-tapping screws

Standard torque is to be used (**NOT** to be used on critical or structurally important joints).

6.1.1 SAE Bolt Torque Specifications

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

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

Nominal Size (A)	Torque (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

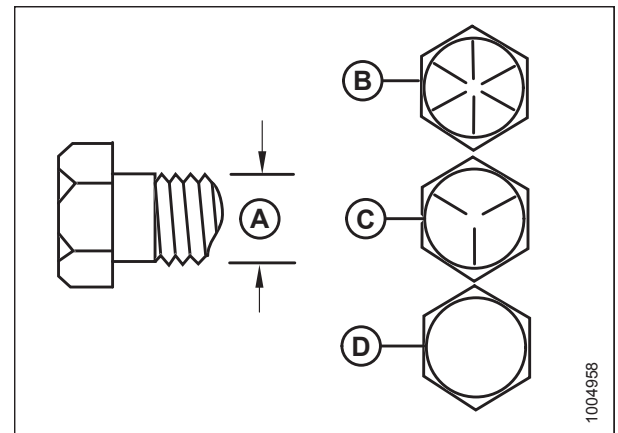


Figure 6.1: Bolt Grades

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

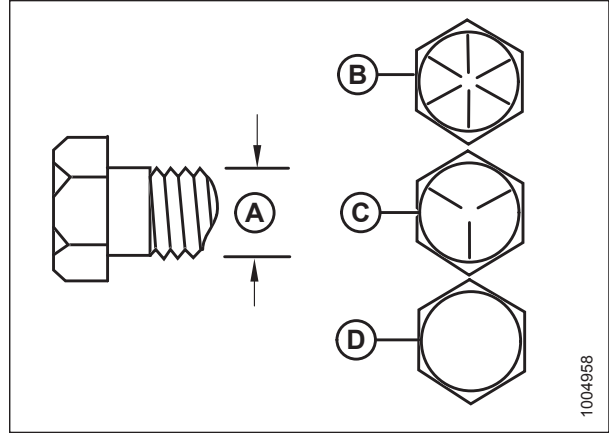


Figure 6.2: Bolt Grades

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

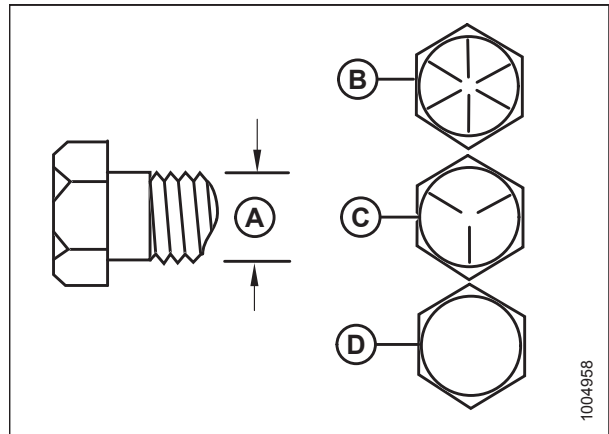


Figure 6.3: Bolt Grades

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

REFERENCE

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

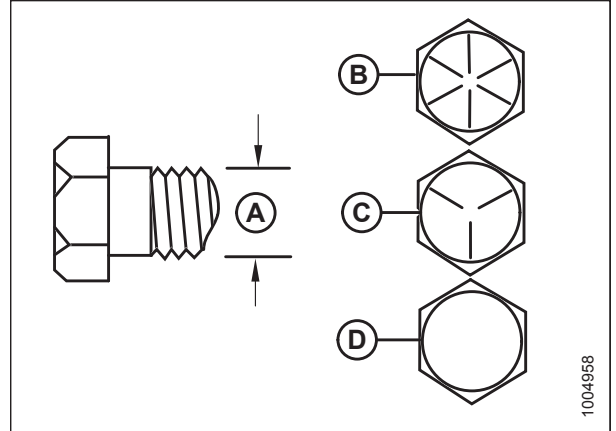


Figure 6.4: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

1004958

6.1.2 Metric Bolt Specifications

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

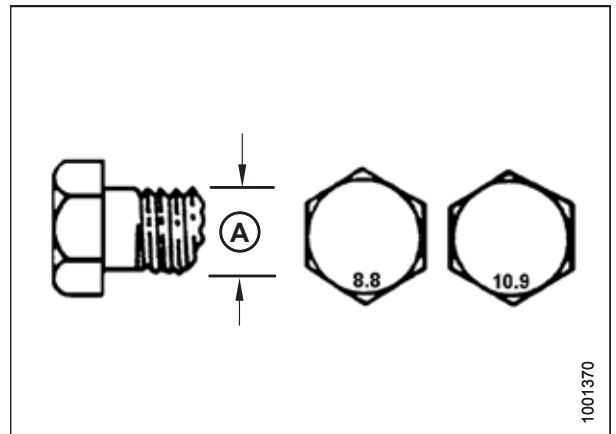


Figure 6.5: Bolt Grades

1001370

REFERENCE

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

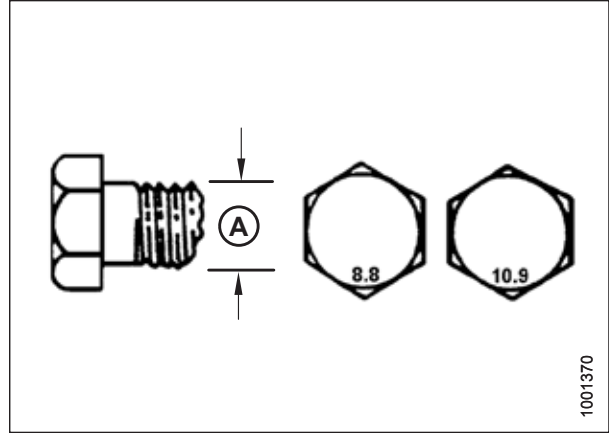


Figure 6.6: Bolt Grades

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

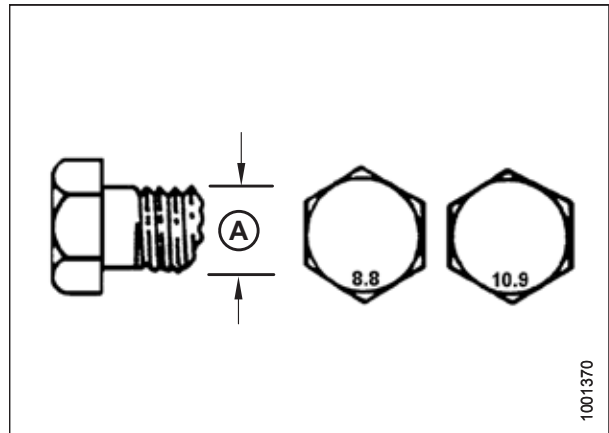


Figure 6.7: Bolt Grades

REFERENCE

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

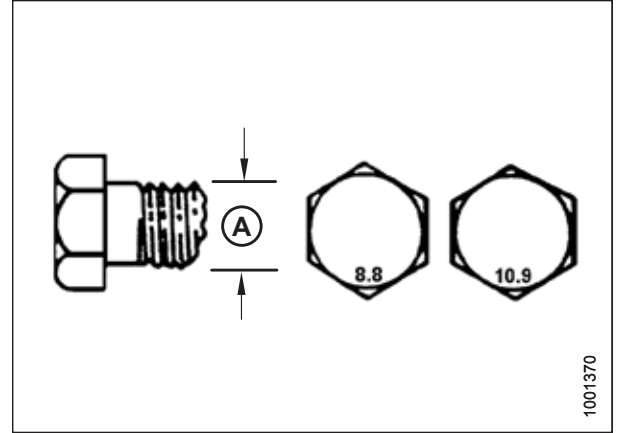


Figure 6.8: Bolt Grades

6.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 6.9 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	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	–	–	–	–

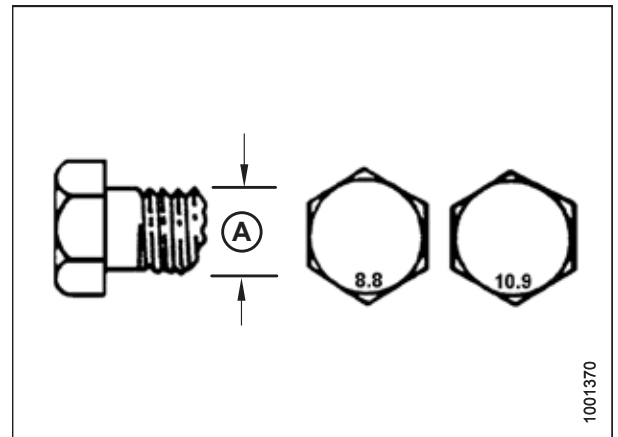


Figure 6.9: Bolt Grades

REFERENCE

6.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table 6.10, page 114.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

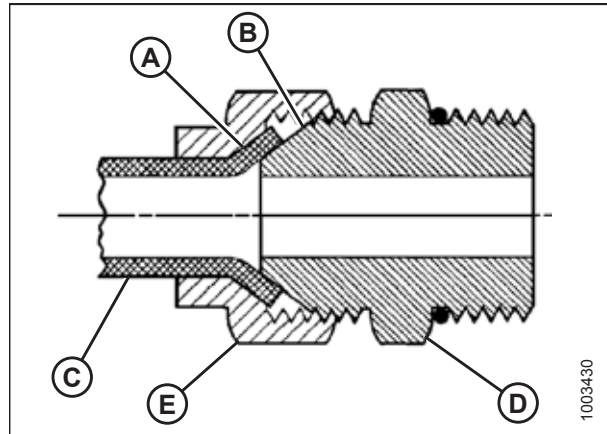


Figure 6.10: Hydraulic Fitting

Table 6.10 Flare-Type Hydraulic Tube Fittings

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

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

REFERENCE

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

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

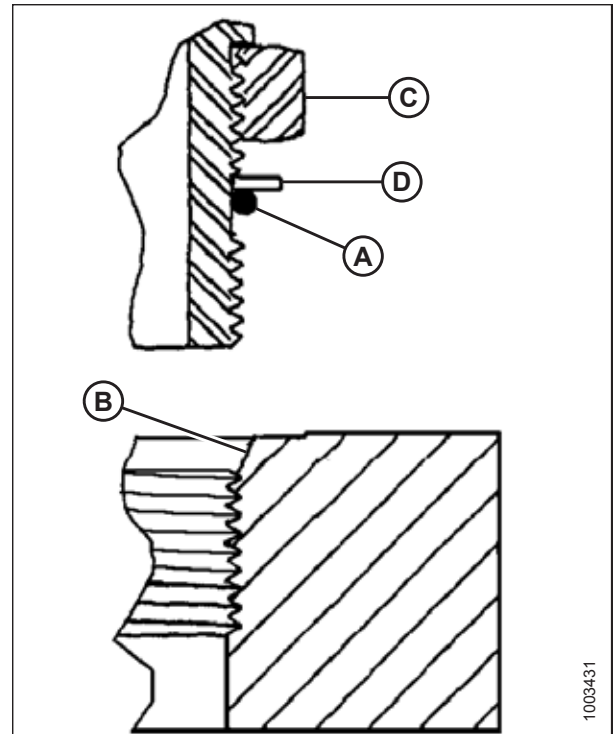


Figure 6.11: Hydraulic Fitting

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

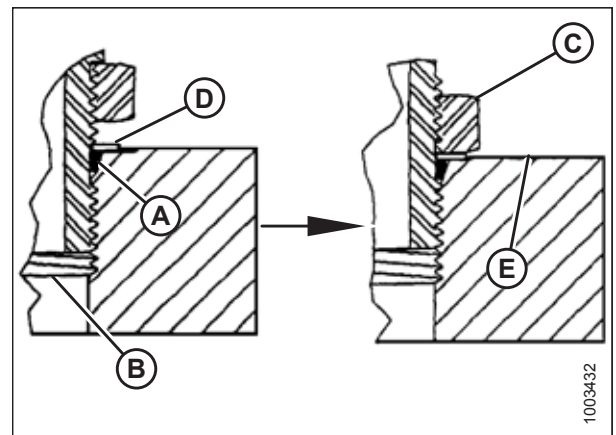


Figure 6.12: Hydraulic Fitting

REFERENCE

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

SAE Dash Size	Thread Size (in.)	Torque Value ¹⁰	
		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

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

REFERENCE

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

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table 6.12, page 117.
6. Check final condition of fitting.

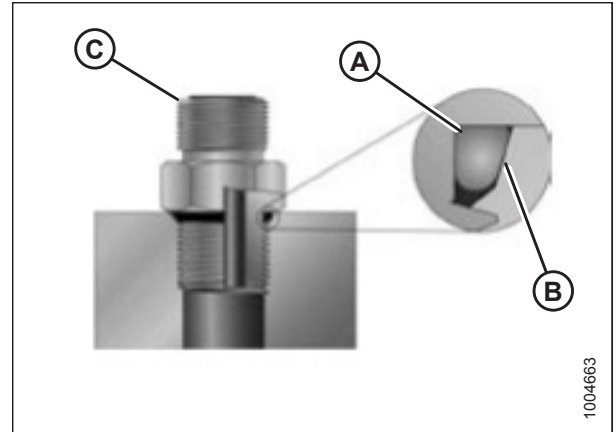


Figure 6.13: Hydraulic Fitting

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

SAE Dash Size	Thread Size (in.)	Torque Value ¹¹	
		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

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

REFERENCE

6.1.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

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



Figure 6.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table 6.13, page 118.

NOTE:

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

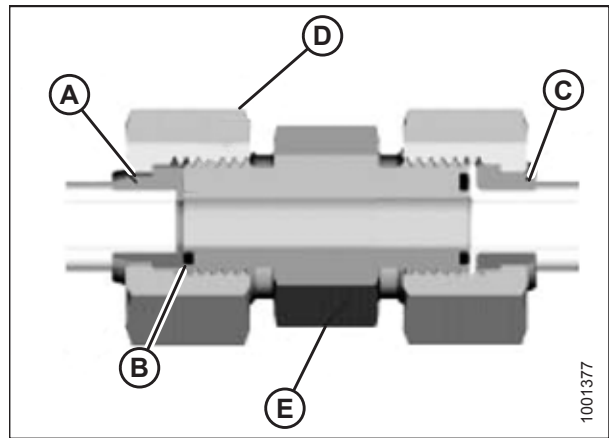


Figure 6.15: Hydraulic Fitting

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

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ¹²	
			Nm	lbf-ft
-3	Note ¹³	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ¹³	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

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

13. 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 ¹⁴	
			Nm	lbf·ft
-14	Note ¹³	7/8	–	–
-16	1-7/16	1	150–165	111–122
-20	1-11/16	1-1/4	205–226	151–167
-24	1–2	1-1/2	315–347	232–256
-32	2-1/2	2	510–561	376–414

6.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The Turns From Finger Tight (TFFT) values are shown in Table 6.14, page 119. Make sure that tube end of a shaped connector (typically 45 degree or 90 degree) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

Overtorque failure of fittings may not be evident until fittings are disassembled.

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

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

REFERENCE

6.2 Conversion Chart

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.

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Predelivery Checklist

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

CAUTION

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

DWA Serial Number:

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping material is removed.	—
	Check for loose hardware. Tighten to required torque.	<i>6.1 Torque Specifications, page 109</i>
	Check that shipping stands have been correctly removed from the DWA deck.	<i>2.5 Installing the Deck, page 30</i>
	Check and adjust front skid to correct height above the draper. Tighten securing nuts.	<i>4.1.5 Adjusting Front Skid, page 73</i>
	Check and adjust rear deflector to correct height above the draper. Tighten securing nuts.	<i>4.1.6 Adjusting Rear Deflector, page 74</i>
	Check external draper roller seal condition. Seal should be secure and without gaps.	<i>4.1.7 Maintaining Draper Rollers, page 75</i>
	Check that deck and linkage pivot points are properly greased.	<i>4.2 Lubricating the Double Windrow Attachment, page 81</i>

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