

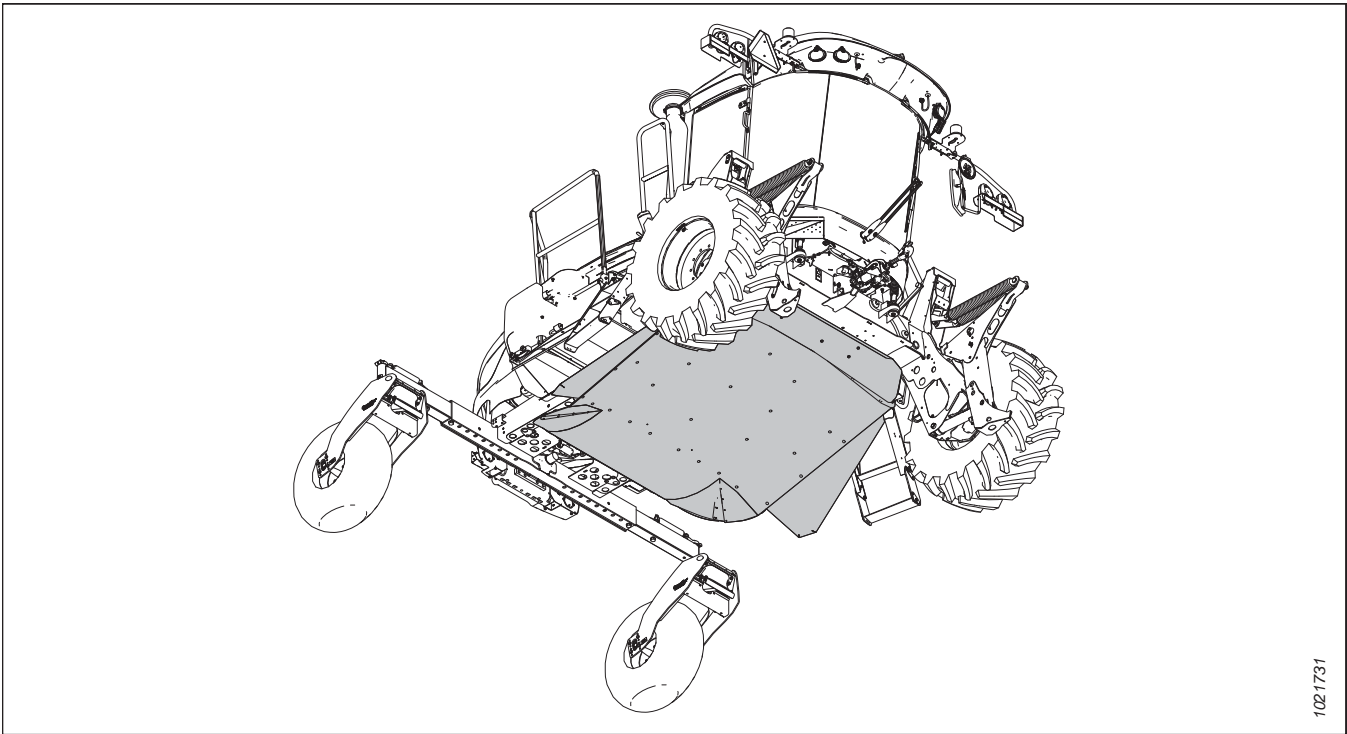
Swath Compressor for M1 Series Windrowers

Setup, Operation, and Parts Manual

215953 Revision A

Original Instruction

Swath Compressor for M1 Series Windrowers



1021731

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Introduction

Your Machine

The MacDon Swath Compressor is a large, formed polyethylene sheet designed to mount to the underside of a MacDon M1 Series Windrower. The MacDon Swath Compressor is designed for use with D1X and D1XL Draper Headers cutting canola.

IMPORTANT:

M1170NT and M1170NT5 Windrowers are **NOT** compatible with model year 2022 and prior Swath Compressors. The model year 2023 Swath Compressor has changes to the dimensions to allow it to be used with a windrower in narrow transport mode.

The swath compressor shapes the windrow and anchors it into the stubble behind the header to help prevent shelling in ripe conditions and wind damage. Excessive compression by a swath compressor or roller can increase losses from crop shelling, and may increase drying time; inadequate compression can leave a windrow prone to wind damage.

The swath compressor height can be adjusted and monitored from within the cab. Height can be adjusted for crop ripeness, yield, and the amount of compression required. The swath compressor will automatically lift up if an Operator stops and reverses the windrower.

NOTE:

A preferred height can be saved under a One-Touch-Return preset.

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.

If the shipment is damaged or is missing parts, contact the following according to your region:

- North America: shortageanddamage@macdon.com
- Australia: service@macdon.com.au
- Brazil: garantia-brasil@macdon.com
- Europe (except Russia): MarketingEurope@macdon.com
- Russia: shortageanddamage@macdon.com

Your Warranty

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

Your Manual

The following conventions are used in this document:

- M1 Series Windrowers are Dual Direction[®], meaning the windrower can be driven in cab-forward or engine-forward modes. When referencing specific locations on the machine, this manual always assumes a cab-forward direction when using the terms right and left.

- Unless otherwise noted, use the standard torque values provided in Chapter *6 Reference, page 67* of this document.

NOTE:

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

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

This manual is currently available in English only.

Summary of Changes

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

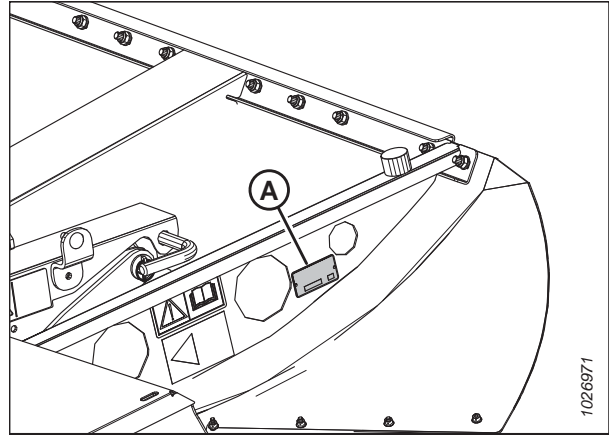
Section	Summary of Change	Internal Use Only
<i>Introduction, page i</i>	Added note that M1170NT and M1170NT5 windrowers are not compatible with 2022 and prior swath compressors.	Support
	Added contact information for shipments with damaged or missing parts.	Publications
<i>1.8 Understanding Safety Signs, page 13</i>	Updated descriptions of safety decals MD #184372 and MD #166466 to be consistent with other MacDon manuals. Added missing information to the descriptions of safety decals MD #174683 and MD #291638.	Publications, Safety
<i>2.1 Removing Swath Compressor from Shipping Crate, page 17</i>	Updated shipping assembly to show the new front deflector MD #310620.	ECN 61029
<i>2.2.4 Installing Shield Assembly, page 28</i>	Updated illustration of the front deflector.	ECN 60665
	Updated illustration of the side deflector in working position.	ECN 62272
	Added note that if an M1170NT/NT5 windrower is in narrow transport mode, there is risk of the side deflectors contacting the stairs if the deflectors are positioned fully outboard.	Support
<i>3.2 Calibrating Position Sensor, page 36</i>	Added note that to calibrate the position sensor, the swath compressor must be attached to the windrower, but it can be calibrated with or without a header attached.	Support
<i>3.3.5 Adjusting Side Deflectors, page 44</i>	Updated illustration of the side deflector adjustment.	ECN 62272
	Added note that if an M1170NT/NT5 windrower is in narrow transport mode, there is risk of the side deflectors contacting the stairs if the deflectors are positioned fully outboard.	Support
<i>4.2.2 Swath Compressor Harness (MD #209256), page 48</i>	Added cap for P560A to the harness illustration.	ECN 55935
<i>5.1 Abbreviations, page 56</i>	Added topic.	Publications
<i>5.2 Serial Number Breaks, page 57</i>	Added topic.	Publications
<i>5.3 Swath Compressor Shield Assembly, page 58</i>	Superseded deflector support weldment MD #306165 with MD #306660. Superseded side deflectors MD #277410 and MD #277411 with MD #306661 and MD #306662. Updated illustration.	ECN 62272
<i>5.4 Swath Compressor Hydraulics and Supports, page 60</i>	Superseded front deflector MD #128699 with MD #310620. Updated illustration.	ECN 60665
	Removed hydraulic hose MD #277044, and increased the quantity of hydraulic hose MD #277041 from 1 to 2.	ECN 61459

Serial Number

Record the swath compressor serial number in the space below.

Serial Number: _____

The serial number plate (A) is located on the left side of the swath compressor frame.



Serial Number Plate Location

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Chapter 1: Safety

Understanding and consistently following safety procedures helps to ensure the safety of machine operators and bystanders.

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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



Figure 1.1: Safety Symbol

1.2 Signal Words

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

Signal words are selected using the following guidelines:

DANGER

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

WARNING

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

CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.3 General Safety

Protect yourself when assembling, operating, and servicing machinery.

CAUTION

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

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

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

In addition, take the following precautions:

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



Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

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

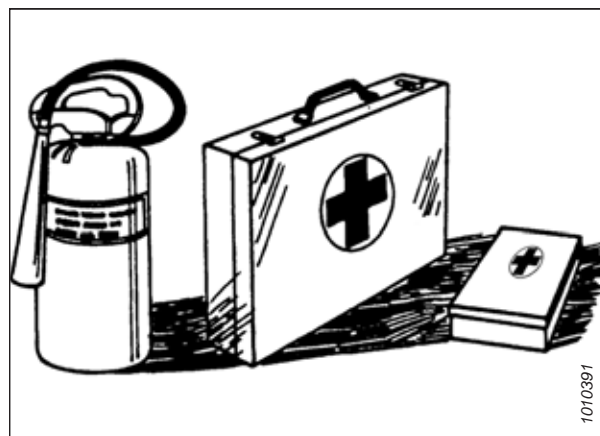


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

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

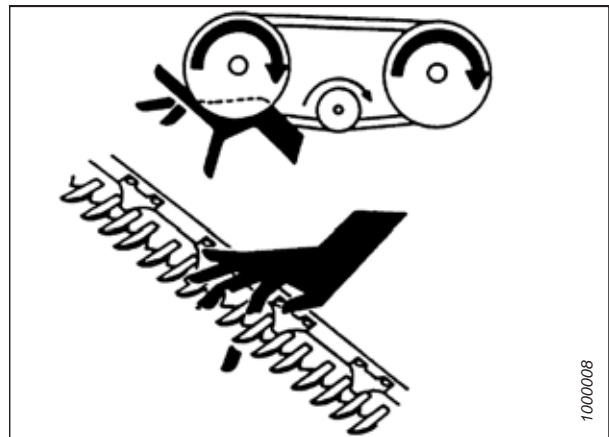


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

Protect yourself when maintaining machinery.

To ensure your safety while maintaining the machine:

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



Figure 1.8: Safety around Equipment

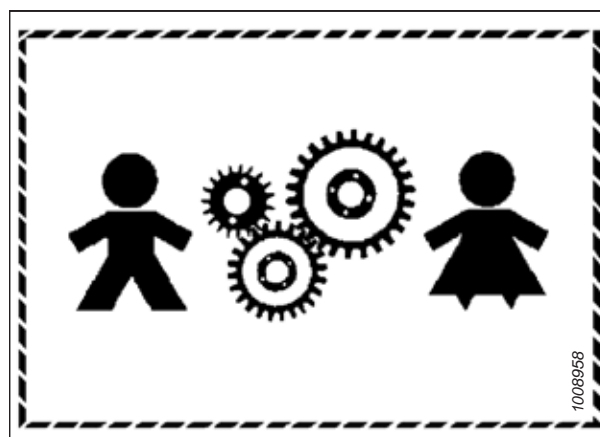


Figure 1.9: Equipment is NOT Safe for Children



Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

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

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

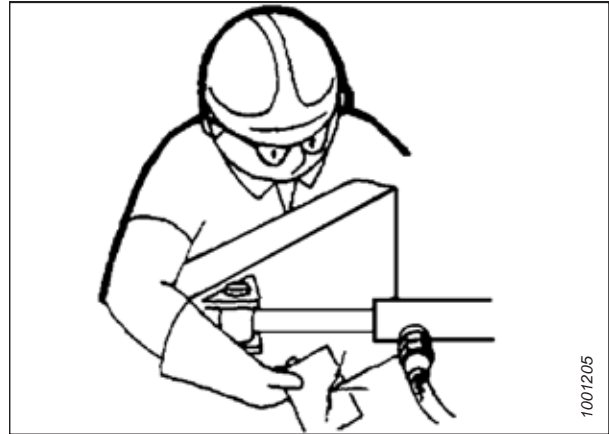


Figure 1.11: Testing for Hydraulic Leaks

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



Figure 1.12: Hydraulic Pressure Hazard

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

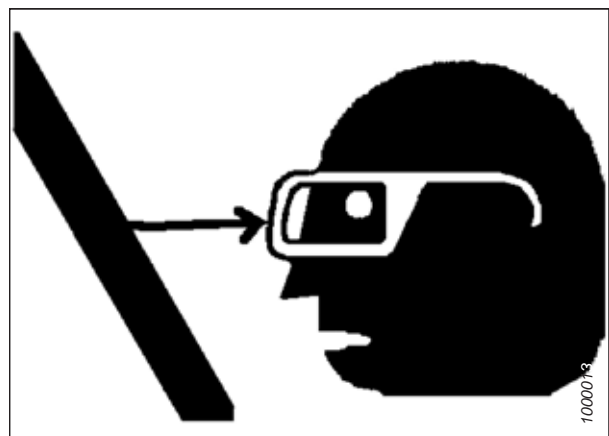


Figure 1.13: Safety around Equipment

1.6 Welding Precaution

Welding should never be attempted on the attachment while it is connected to a windrower.

WARNING

Severe damage to sensitive, expensive electronics can result from welding on the attachment while it is connected to the windrower. It is impossible to know what effect high current could have with regard to future malfunctions or shorter lifespan. It is very important that welding to the attachment frame is not attempted while connected to the windrower.

If welding is required on the attachment frame, it should be removed from the windrower.

If the attachment can not be removed from the windrower, refer to the following for welding precautions detailing electrical components that must be disconnected before welding.

The following items need to be disconnected:

- Negative battery terminals (A) (two connections)

IMPORTANT:

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



Figure 1.14: Negative Terminals

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

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

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

IMPORTANT:

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

IMPORTANT:

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



Figure 1.15: Master Controller

SAFETY

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

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

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



Figure 1.16: Firewall Extension Module

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

Location: Under the cab, inside the left frame rail

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

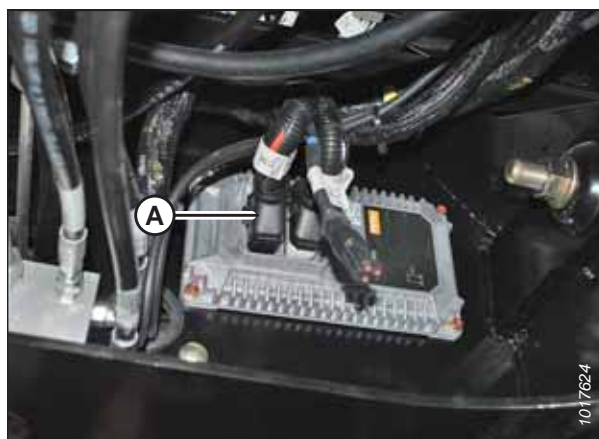


Figure 1.17: Chassis Extension Module

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

Location: On the engine

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

IMPORTANT:

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

IMPORTANT:

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

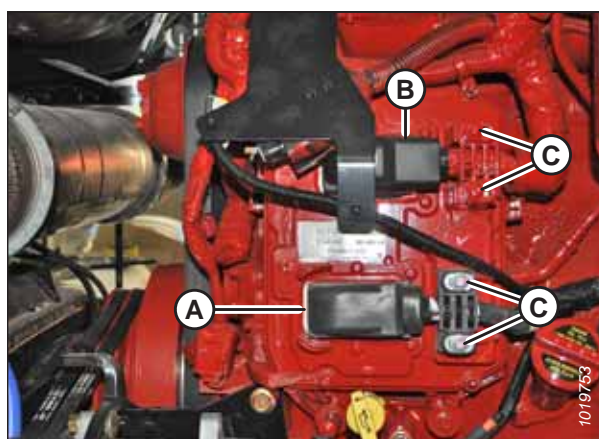


Figure 1.18: Engine Control Module

SAFETY

NOTE:

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

- Cab connectors (A)
Two round connectors: C1 and C2
Location: Under the cab
- Roof connectors (A)
Four connectors: C10, C12, C13, and C14
Location: Under the cab at the base of the left cab post
- Chassis relay module (A)
Three connectors: P240, P241, and P242
Location: Outside the left frame rail near the batteries

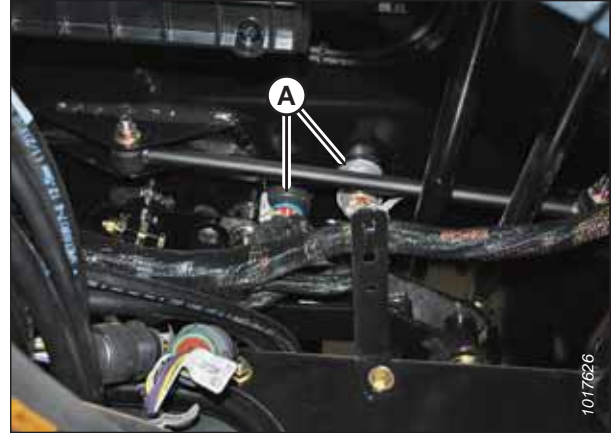


Figure 1.19: Cab Connectors

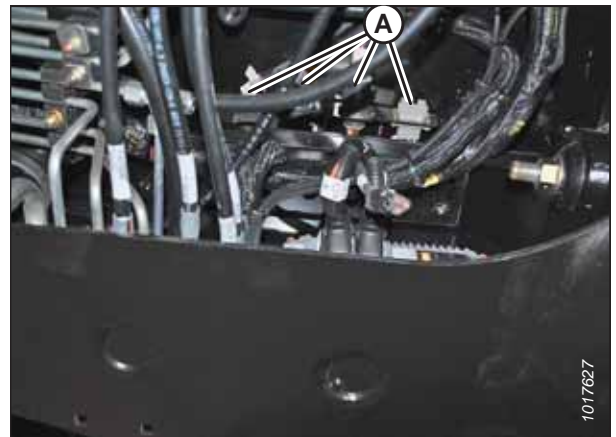


Figure 1.20: Roof Connectors

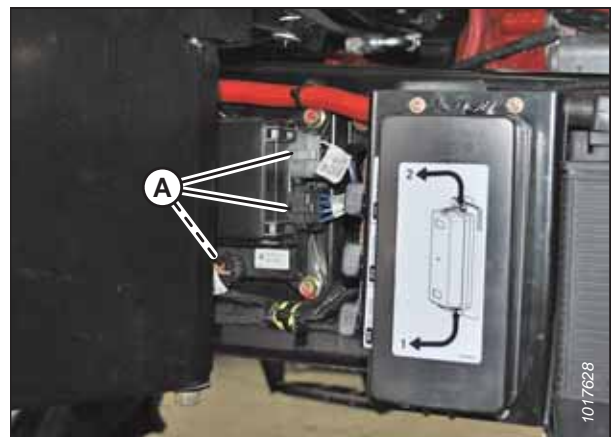


Figure 1.21: Chassis Relay Module

SAFETY

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

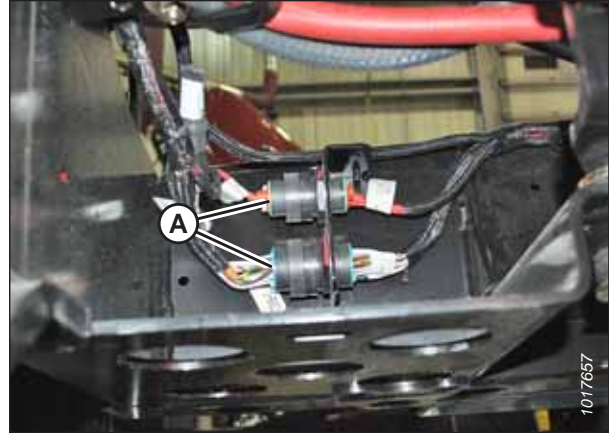


Figure 1.22: Engine Harness

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

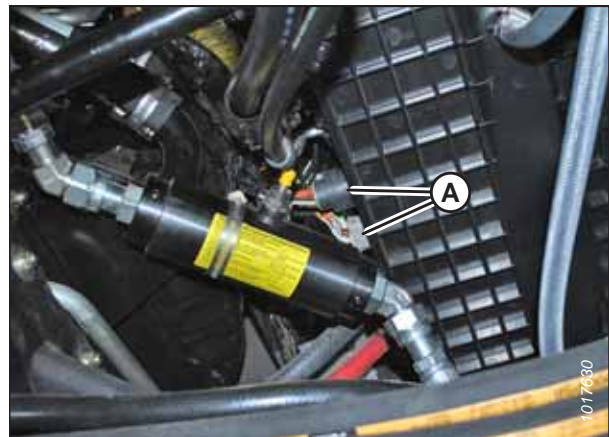


Figure 1.23: A/C Box Connectors

- Wheel motor connectors (A)
Two round connectors: C25 and C26
Location: Under the center of the frame, just behind the front cross member

IMPORTANT:

To connect the circular Deutsch connectors without bending the pins, fully align the plug with the receptacle before pressing the connector in.

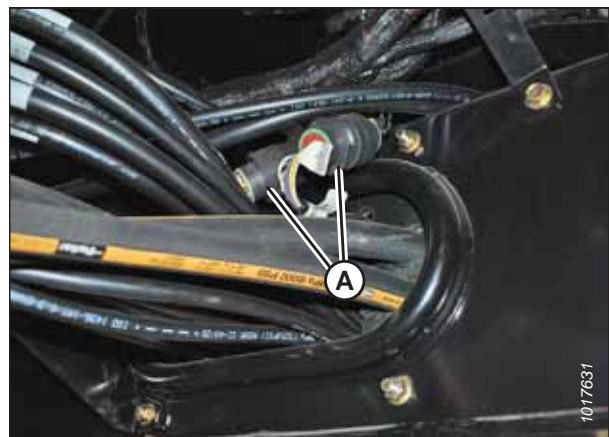


Figure 1.24: Wheel Motor Connectors

IMPORTANT:

To connect the circular Deutsch connectors without bending the pins, fully align the plug with the receptacle before pressing the connector in.

SAFETY

To align the connectors:

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

1.7 Safety Signs

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

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

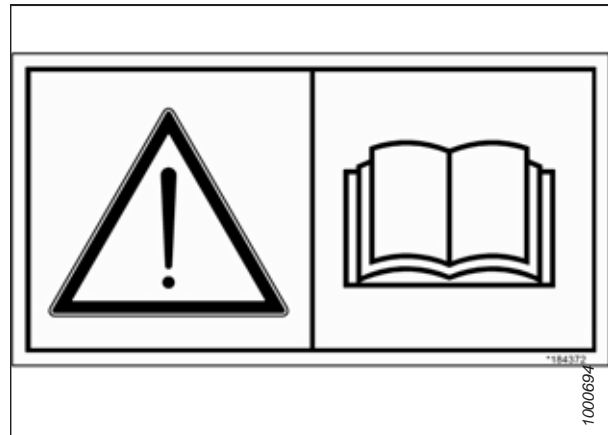


Figure 1.25: Operator's Manual Decal

1.7.1 Installing Safety Decals

Replace any safety decals that are worn or damaged.

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

1.8 Understanding Safety Signs

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

MD #184372

General hazard pertaining to machine operation and servicing

DANGER

To prevent injury or death from the improper or unsafe operation of the machine:

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Do **NOT** allow untrained persons to operate the machine.
- Review these safety instructions with all machine Operators every year.
- Ensure that all safety signs are installed and are legible.
- Make certain that bystanders are clear of the header before starting the engine and during operation of the header.
- Keep riders off of the machine.
- Keep all shields in place. Stay clear of moving parts.
- Disengage the header drive, put the transmission into Neutral, and wait for all movement to stop before leaving the operator's position.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Before servicing a header in the raised position, engage the cylinder safety props.
- Display a slow-moving vehicle emblem and activate the header's warning lights when operating the header on roadways (unless these actions are prohibited by law).

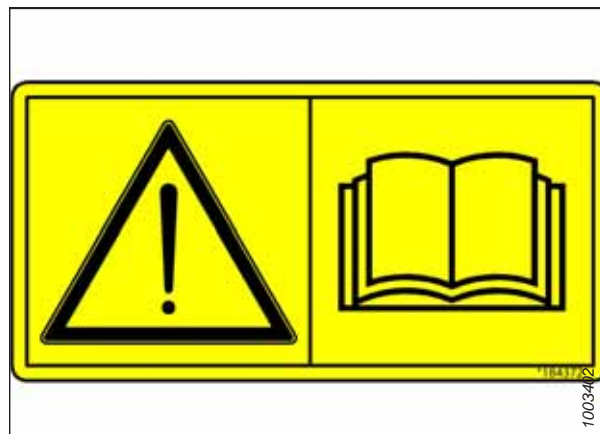


Figure 1.26: MD #184372

SAFETY

MD #166466

High-pressure oil hazard

WARNING

High-pressure hydraulic fluid can penetrate human skin, which can cause serious injury such as gangrene, which can be fatal. To prevent this:

- Do **NOT** go near hydraulic fluid leaks.
- Do **NOT** use a finger or skin to check for hydraulic fluid leaks.
- Lower the load or relieve the pressure in the hydraulic system before loosening any hydraulic fittings.
- If you are injured, seek emergency medical help. **IMMEDIATE** surgery is required to remove hydraulic fluid which has penetrated the skin.



Figure 1.27: MD #166466

MD #174683

Pinch point hazard

CAUTION

To prevent injury:

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



Figure 1.28: MD #174683

SAFETY

MD #291638

Lock – swath compressor deck

DANGER

To prevent injury:

- Engage lock when swath compressor is not in use.
- Lock compressor shield before servicing or working under the windrower.
- Lock compressor shield before operating in engine-forward mode.



Figure 1.29: MD #291638

Chapter 2: Installation Instructions

To unpack and install the swath compressor, follow these procedures in order.

2.1 Removing Swath Compressor from Shipping Crate

Follow these steps to unpack the swath compressor from the shipping crate. Retain all parts for installation unless instructed to discard.

1. Remove top cross members (A) from the shipping crate and discard.

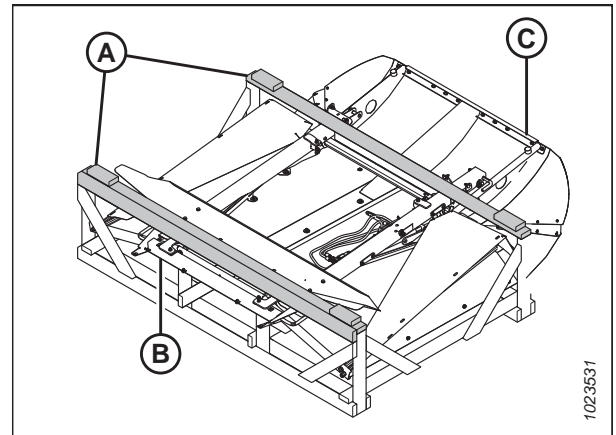


Figure 2.1: Shipping Configuration

A - Cross Members

B - Front

C - Rear

2. Remove four bolts (A) securing deflector (B) to the left and right supports, and remove deflector (B). Retain hardware for reinstallation.

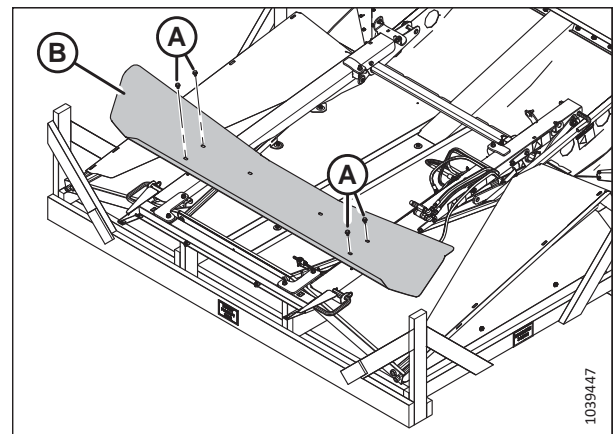


Figure 2.2: Front Deflector

INSTALLATION INSTRUCTIONS

3. Remove four bolts and nuts (A) and remove two bar clamps (B) from front pivot support (C).

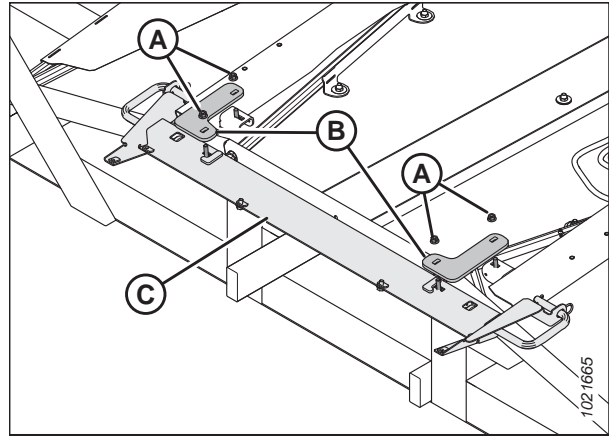


Figure 2.3: Front Pivot Support

4. Remove bolts and nuts (B) securing front support (A) to the left and right supports.
5. Remove hairpins (C) from pivot pins (D) and pull the pivot pins to disengage them from the side supports. Remove front pivot support (A).

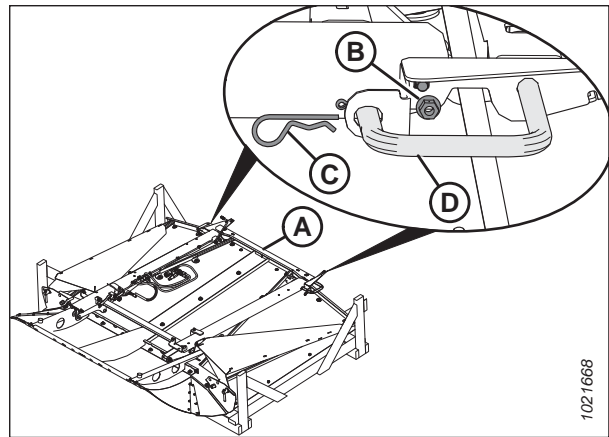


Figure 2.4: Front Pivot Support

6. Remove nut and bolt (A) and remove pivot pin (B) from the left support.

NOTE:

If necessary, loosen handle (C) and adjust the deflector so pin (B) can be removed.

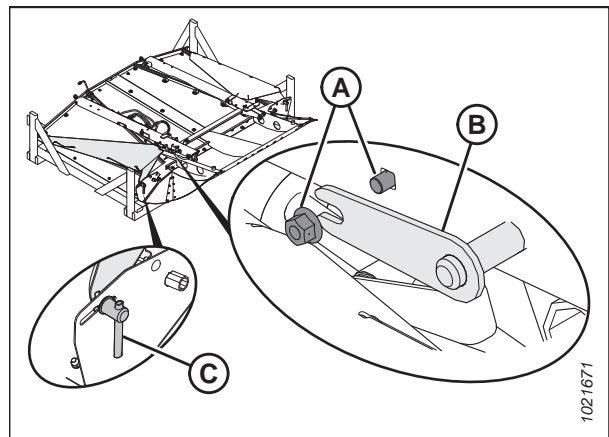


Figure 2.5: Left Support

INSTALLATION INSTRUCTIONS

7. Release latch (A) and remove left support (B), including the cylinder and hydraulic hoses.
8. Remove the shipping wire securing the hoses to the support.

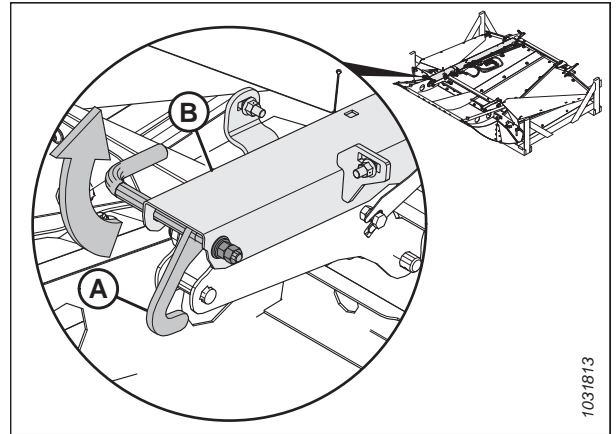


Figure 2.6: Left Support

9. Remove nut and bolt (A) and remove pivot pin (B) from the right support.

NOTE:

If necessary, loosen handle (C) and adjust the deflector so pin (B) can be removed.

10. Remove right support (D).

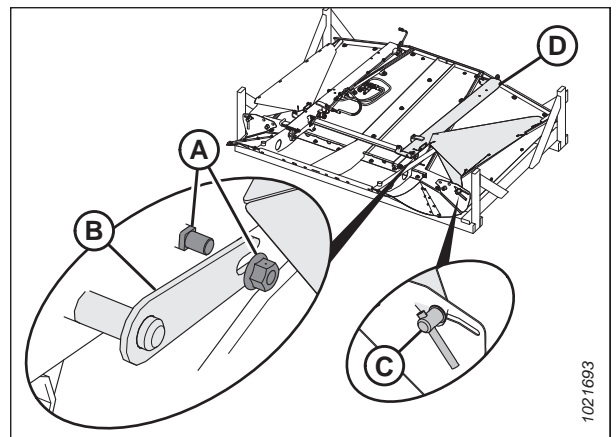


Figure 2.7: Right Support

11. Remove rock shaft (A).
12. Remove four lag screws (B) securing the swath compressor to its shipping crate. Discard the lag screws and washers.
13. Leave the swath compressor on the shipping pallet.

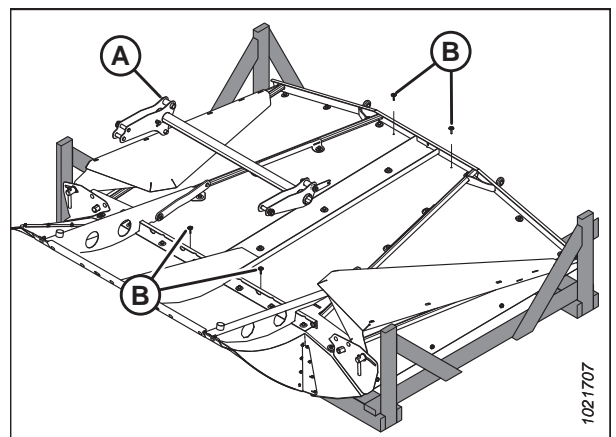


Figure 2.8: Rock Shaft

2.2 Installing Swath Compressor

Follow these steps to install the swath compressor onto an M1 Series Windrower. The swath compressor weighs approximately 180 kg (400 lb.).

2.2.1 Installing Frame

The swath compressor frame consists of the front, left, and right supports, and the rock shaft. These parts were unpacked from the shipping crate in the previous procedure.

1. Loosely attach bar clamps (A) to each side of the front support with two M10 bolts and nuts (B).

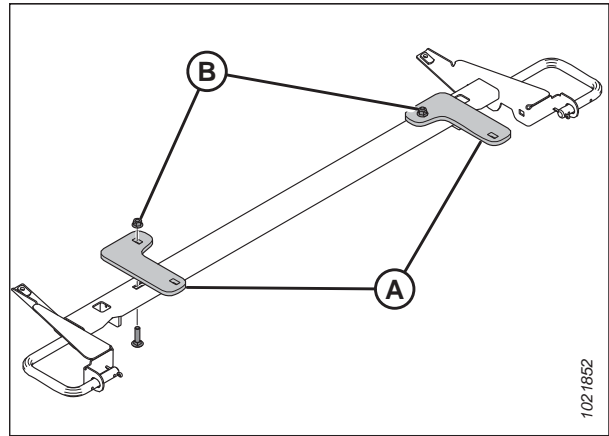


Figure 2.9: Front Support

2. Position front support (A) below the windrower frame at the cab end and adjust bar clamps (C) to hold the support in place. Tighten bolts (B) sufficiently to hold the support.

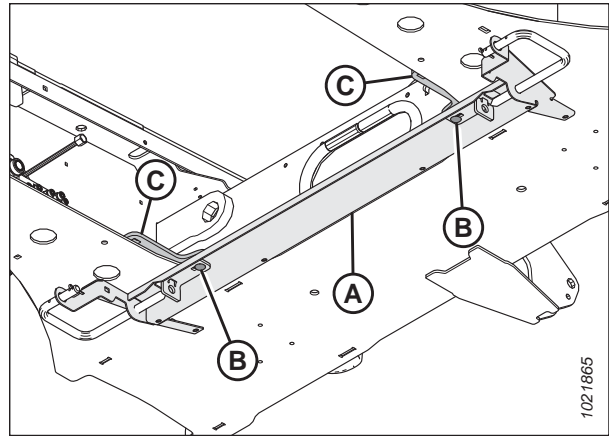


Figure 2.10: Front Support on Windrower Frame

INSTALLATION INSTRUCTIONS

- Loosen clamps (A) at the rear of the left and right supports.

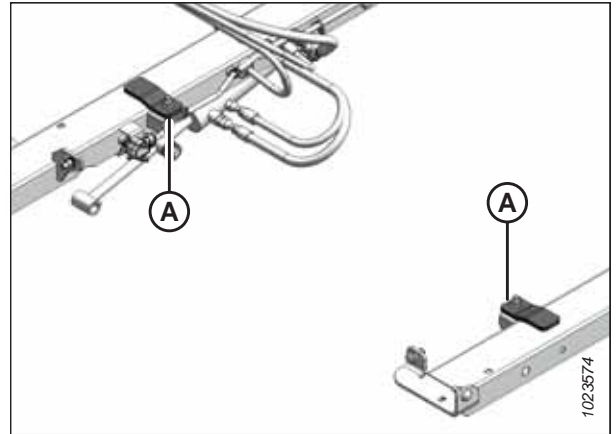


Figure 2.11: Left and Right Supports

- Position left support (A) onto the left side of the windrower frame as shown, and temporarily clamp in position with bar clamp (B) and M10 x 35 bolt (C) and nut.

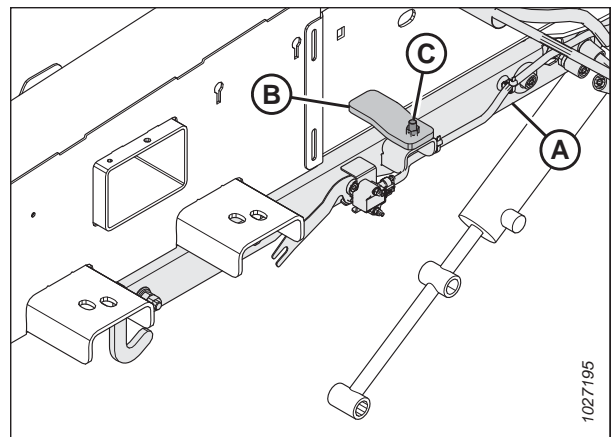


Figure 2.12: Left Support

- Install M10 x 35 mm bolt (B) and nut through support (A) and the bar clamp. Do **NOT** tighten.
- Install M10 x 20 mm bolt (C) and nut through left support (A) and front support (D). Do **NOT** fully tighten bolt.

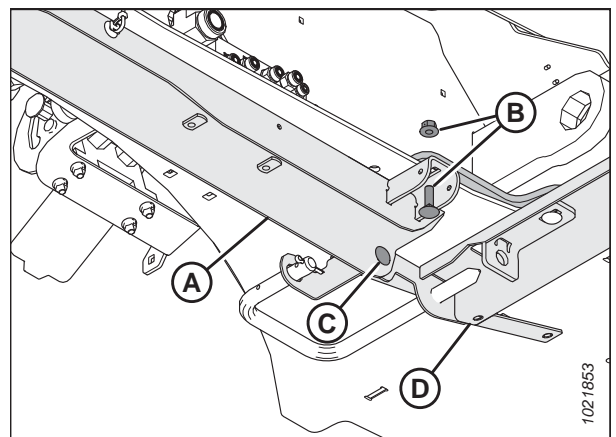


Figure 2.13: Left Support

INSTALLATION INSTRUCTIONS

- Secure the rear of left support (A) with M10 x 35 mm bolts (B) and (C), and nuts through the windrower frame. Do **NOT** fully tighten.

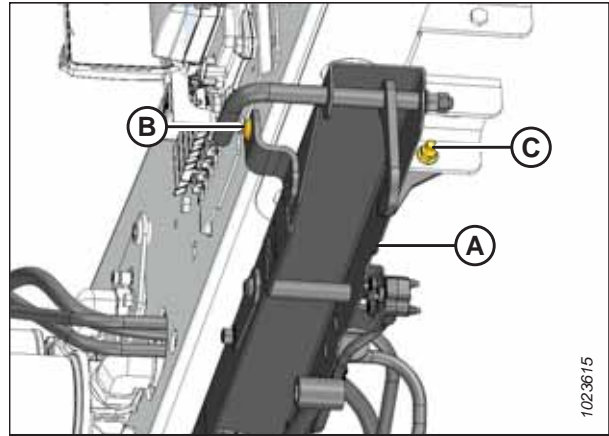


Figure 2.14: Left Support

- Remove bolt and nut (A) securing air cleaner support (B) to windrower frame (C). Discard bolt and nut.

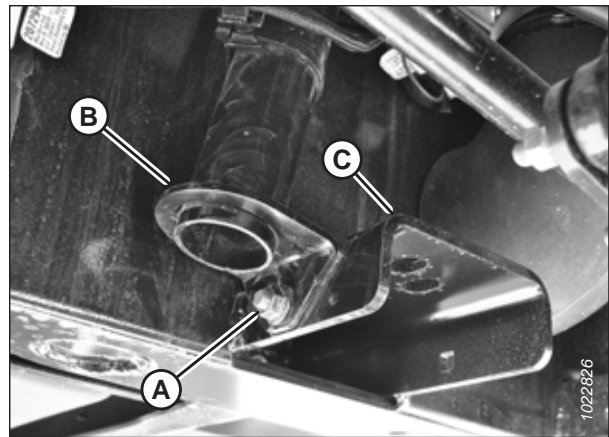


Figure 2.15: Air Cleaner Support

- Install the front end of right support (A) to the windrower frame with M10 x 35 bolt and nut (B) through bar clamp (C). Do **NOT** fully tighten.
- Install M10 x 20 bolt (D) and nut through the right support and the front support. Do **NOT** fully tighten.

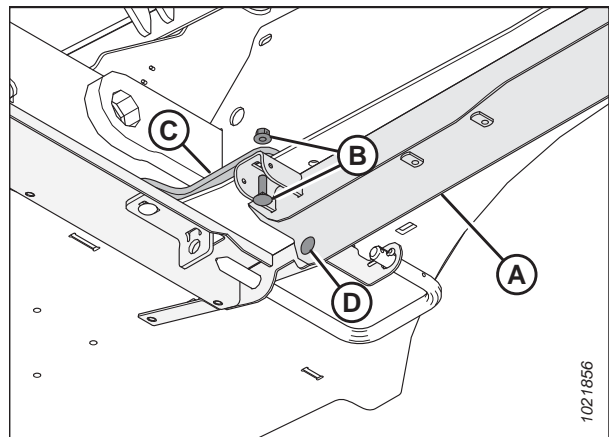


Figure 2.16: Right Support

INSTALLATION INSTRUCTIONS

11. Position air cleaner support (A) between the windrower frame and right rear support (B) and secure with M10 x 35 bolt and nut (C). The bolt head faces aft.
12. Secure right support (B) to the inside of the windrower frame with the bar clamp and M10 x 35 bolt (D) and nut. Do **NOT** fully tighten.

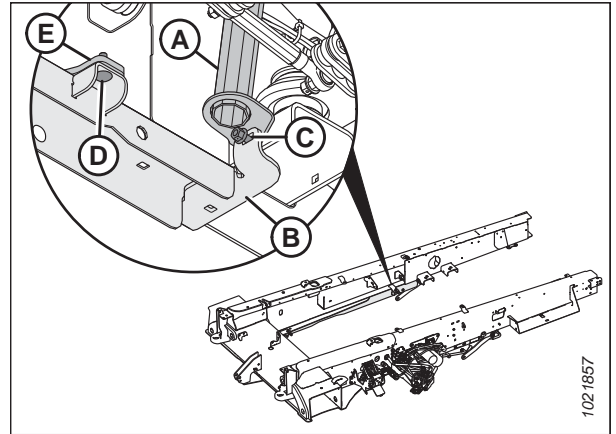


Figure 2.17: Right Support

13. Secure the aft end of right support (A) to the frame with M10 x 35 bolt (B) and nut. Do **NOT** fully tighten.

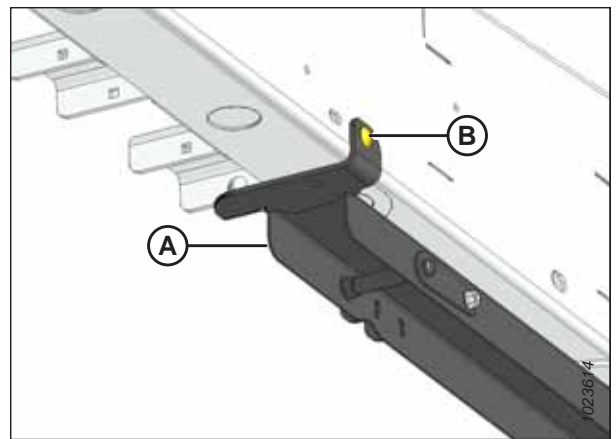


Figure 2.18: Right Support

14. Position rock shaft lift (A) inside the left and right support channels and install pivot pins (B) on both sides.
15. Secure pivot pins (B) with M10 x 20 mm bolts and nuts (C). Tighten the bolts.

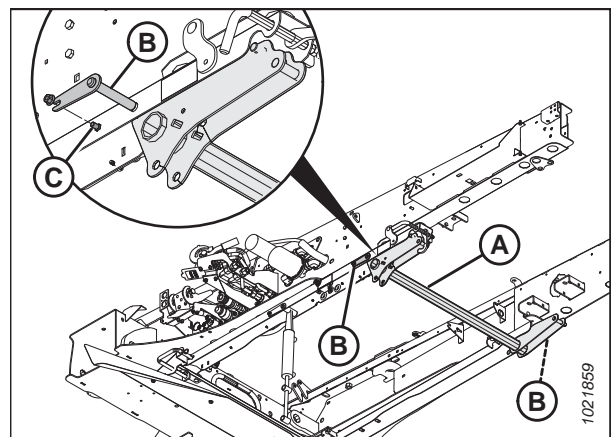


Figure 2.19: Rock Shaft

INSTALLATION INSTRUCTIONS

16. Ensure sensor arm (A) engages bolt (B) on the left rock shaft lift support, and ensure it is not bent or damaged.

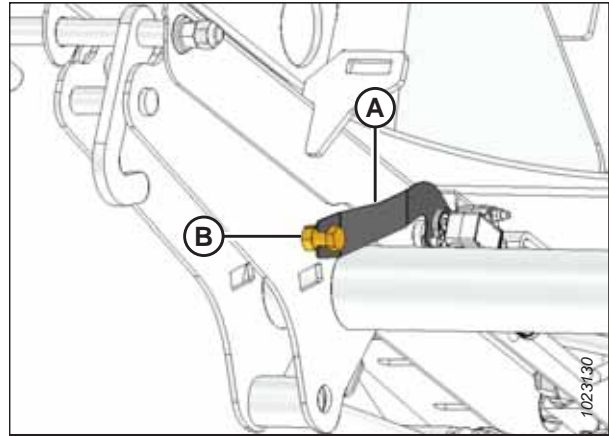


Figure 2.20: Sensor on Left Support

17. Tighten six bolts (A) attaching the supports directly to the frame and torque to 39 Nm (29 lbf·ft).
18. Tighten two bolts (B) attaching the side supports to the front support and torque to 39 Nm (29 lbf·ft).
19. Ensure front clamps (C) engage the windrower frame as much as possible and torque four bolts (D) to 39 Nm (29 lbf·ft).
20. Ensure rear clamps (E) engage the windrower frame as much as possible and torque two bolts (F) to 39 Nm (29 lbf·ft).

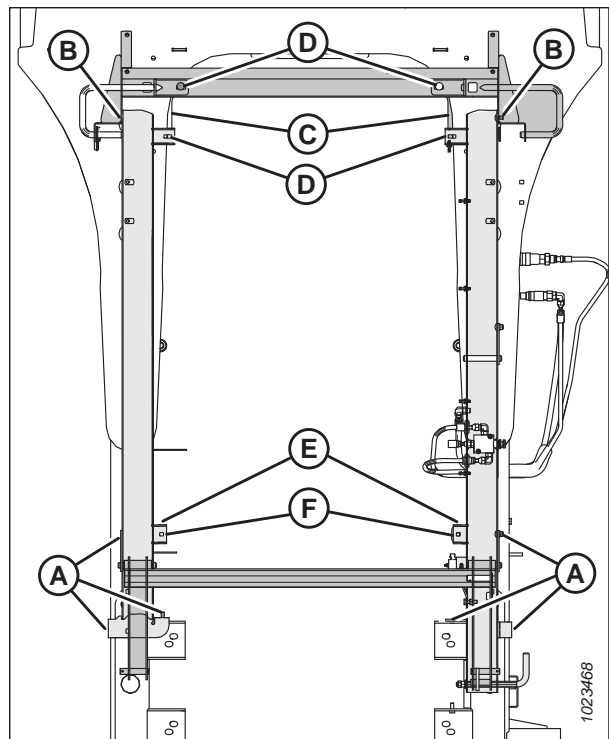


Figure 2.21: View from below Windrower

INSTALLATION INSTRUCTIONS

21. Install cable tie (B) (provided in manual bag) around sensor harness (A) and the connector at the base of the fuel filter, as shown at right. Ensure the cable tie is over the harness loom, and a slight amount of slack remains in the wires to the connector.

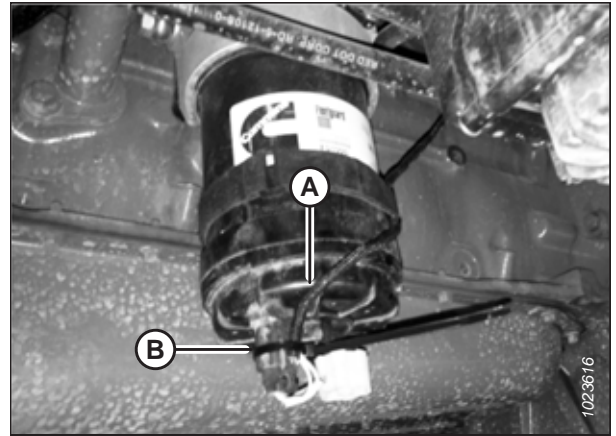


Figure 2.22: Fuel Filter Sensor Wire

2.2.2 Installing Electrical Harness

The electrical harness included with the swath compressor needs to be connected to connector P729 on the windrower chassis harness.

1. Locate three-pin electrical connector P729 (A) above the front cross member of the windrower frame.
2. Cut cable tie (B) securing P729 (A) to the larger electrical harness.

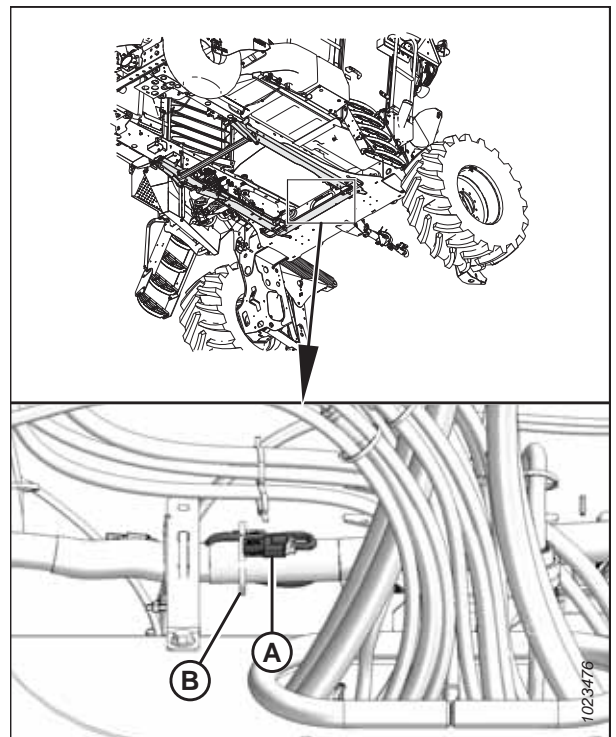


Figure 2.23: Windrower Electrical Harness

INSTALLATION INSTRUCTIONS

3. Route swath compressor harness (A) to P729 above front cross member, and connect to P729. Secure the loose harness to the frame with a cable tie.

NOTE:

Ensure the correct connector is used. Connector P288 is near connector P729.

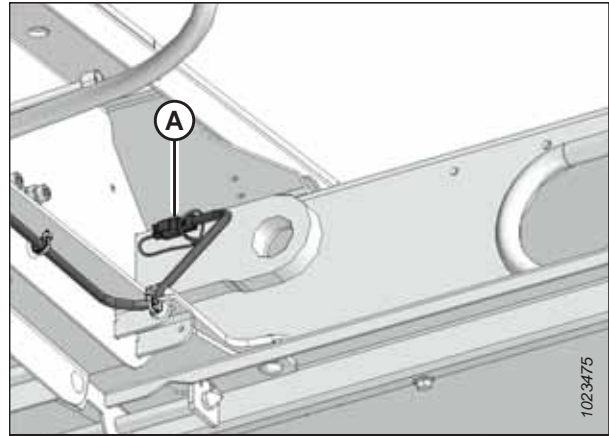


Figure 2.24: Windrower Electrical Harness

2.2.3 Connecting Hydraulics

The hydraulic hoses included with the swath compressor need to be connected to the windrower to allow the Operator to raise and lower the swath compressor from the windrower cab.

M1170 (2017 and earlier) hose routing

1. Route hydraulic hoses (A) under windrower frame, and between shield support (B) and hydraulic cylinder (C).

NOTE:

Position the hoses to avoid pinching.

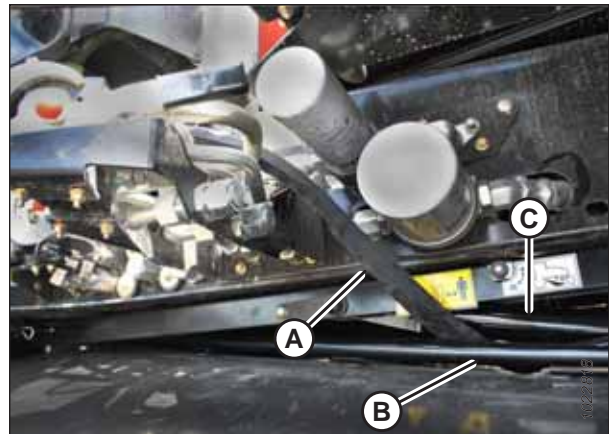


Figure 2.25: M1170 Hose Routing – 2017 and Earlier

M1 Series (2018 and later) hose routing

2. Route hydraulic hoses (A) through the opening in left windrower frame.

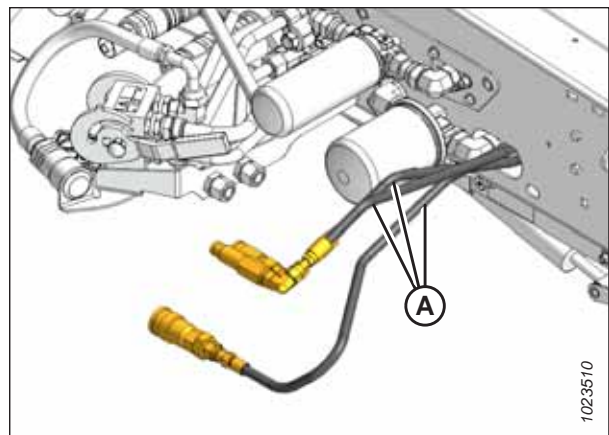


Figure 2.26: M1 Series Hose Routing — 2018 and Later

INSTALLATION INSTRUCTIONS

CAUTION

Ensure that all bystanders have cleared the area.

3. Start the engine and press SWATH COMPRESSOR LOWER switch (A) for five seconds to relieve pressure behind the couplers.
4. Shut down the engine, and remove the key from the ignition.



Figure 2.27: Windrower Console Switches

M1170 (2017 and earlier) hose connections

5. Route the hoses under the filters and connect the hydraulic couplers as follows:
 - Hose with male coupler to female connector (A)
 - Hose with (smaller) female coupler to male connector (B)
 - Hose with (larger) female coupler to male connector (C)
6. Position hose sheath (D) so the sheath contacts the fittings. Secure the sheath at both ends with cable ties (MD #30753) supplied in the manual bag.

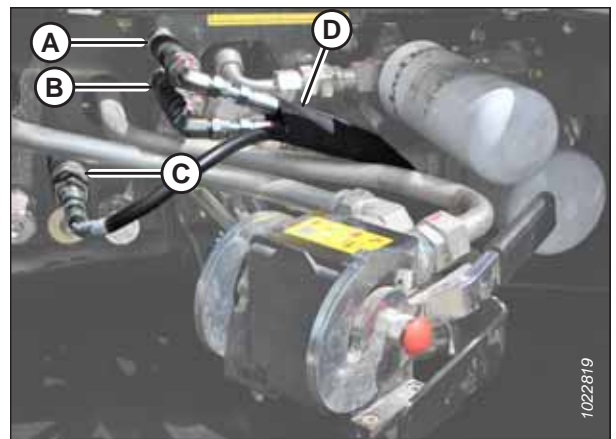


Figure 2.28: M1170 Hose Connections – 2017 and Earlier

M1 Series (2018 and later) hose connections

7. Connect the hydraulic couplers as follows:
 - Hose with male coupler to female connector (A)
 - Hose with (smaller) female coupler to male connector (B)
 - Hose with (larger) female coupler to male connector (C)
8. Position hose sheath (D) so the sheath contacts the coupler fittings. Secure the sheath at both ends with cable ties (MD #30753) supplied in the manual bag.

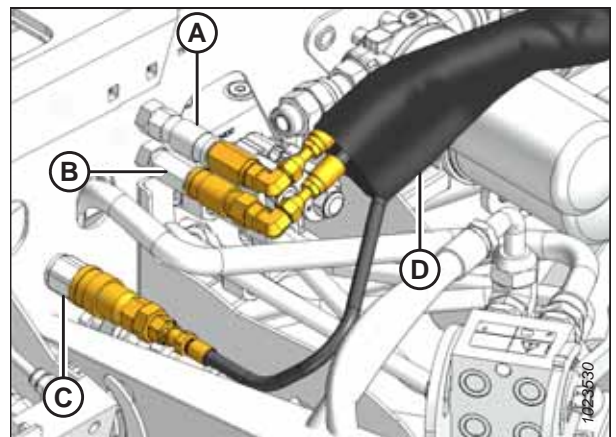


Figure 2.29: M1 Series Hose Connections — 2018 and Later

2.2.4 Installing Shield Assembly

The shield assembly attaches to the swath compressor frame.

1. Start the engine and raise the header legs.
2. Press SWATH COMPRESSOR LOWER button (A) to fully retract the swath compressor cylinder.
3. Shut down the engine, and remove the key from the ignition.



Figure 2.30: Windrower Console Buttons

4. Position the forklift with the forks over the front of the compressor shield, and attach lifting straps (A) through the front and back of the shield frame. Lift the swath compressor shield out of the shipping crate.



Figure 2.31: Lifting Swath Compressor Shield

5. Approach the windrower from the front and move shield (A) under the windrower. Lower the shield to the ground. Remove the lifting straps and back the forklift clear of the windrower.

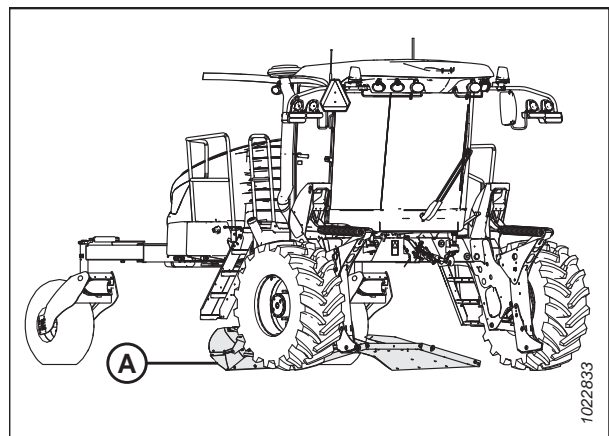


Figure 2.32: Compressor Shield under Windrower

INSTALLATION INSTRUCTIONS

6. To make connecting the lowering arms easier, turn lock handle (A) counterclockwise and rotate rock shaft (B) so that the supports are vertical.

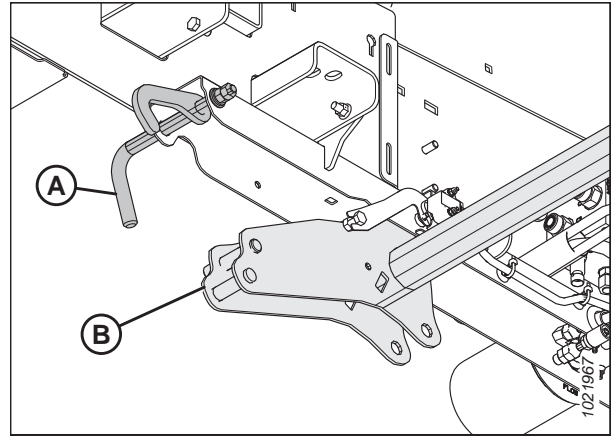


Figure 2.33: Rock Shaft and Lock

7. Ensure bushings (A) are installed onto pins (B) on both sides of the rock shaft.
8. Position a floor jack or equivalent under swath compressor shield cross member (C).
9. Raise the shield with the jack sufficiently to connect lowering arm (D) to pin (B) on rock shaft (G).
10. Secure lowering arm (D) to rock shaft (G) with washer (E) and lynch pin (F). Repeat on the opposite side of the shield.
11. Lower the jack and remove it from the work area.

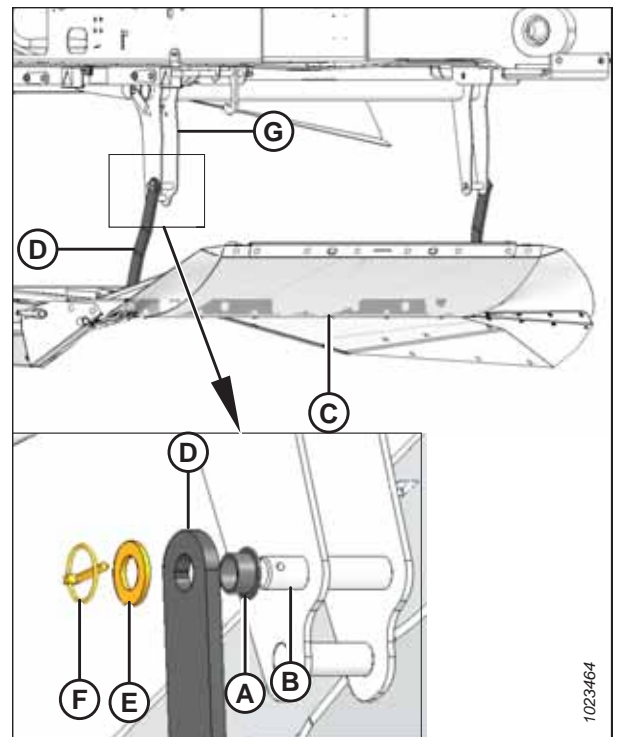


Figure 2.34: Shield Installation

INSTALLATION INSTRUCTIONS

- Loosen handle (A) and remove three bolts and nuts (B) from side deflector (C). Retain the bolts and nuts.

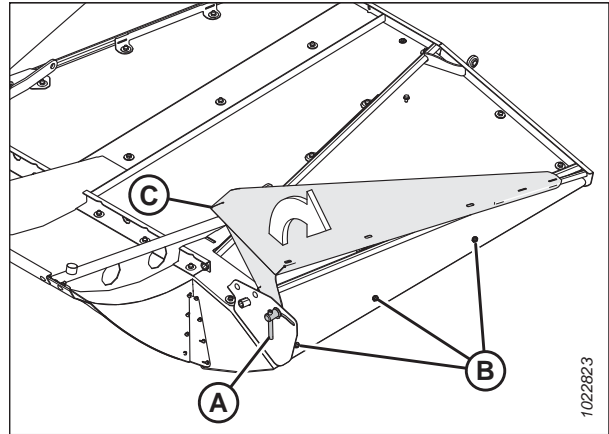


Figure 2.35: Side Deflector Shipping Position

- Rotate side deflector (A) to working position, and secure it to the compressor shield with three bolts and nuts (B) from the previous step. Install the bolts with their heads facing the crop.

IMPORTANT:

When an M1170NT or M1170NT5 is in narrow transport mode, there is risk of the side deflectors contacting the stairs if the deflectors are positioned fully outboard.

- Torque nuts to 22 Nm (15 lbf-ft).
- Position the side deflector and tighten adjustment handle (C). Repeat on the opposite deflector.

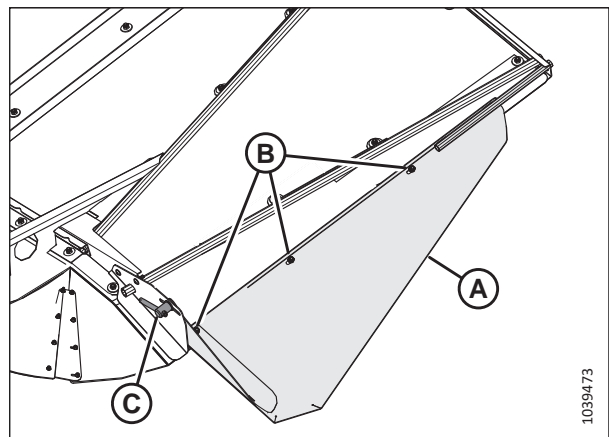


Figure 2.36: Side Deflector Working Position

- Push down on rear (A) of the shield while another installer lifts the front (D).
- Align ball joints (C) with pins (B) at the front of the shield, and insert pins (B). Use a rubber mallet if the pins are difficult to install.

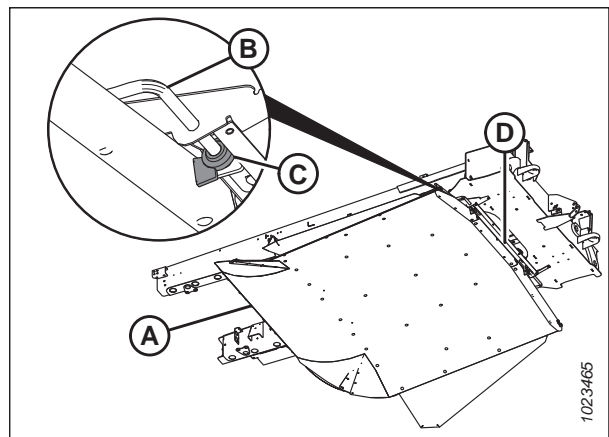


Figure 2.37: Front Pivot Pins

INSTALLATION INSTRUCTIONS

18. Install hairpin (A) to secure pivot pin (B). Repeat on the opposite side of the shield.

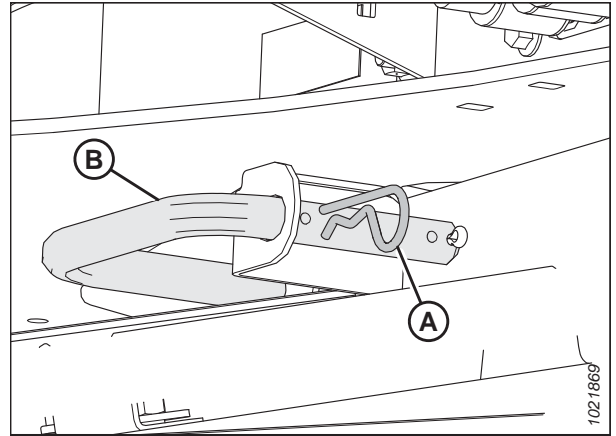


Figure 2.38: Front Pivot Pins

19. Align the rod end of hydraulic cylinder (A) with the holes in the rock shaft and secure with pin (B). Ensure the plate on the pin engages slot (E) in the rock shaft support.
20. Secure the pin with washer (C) and lynch pin (D).

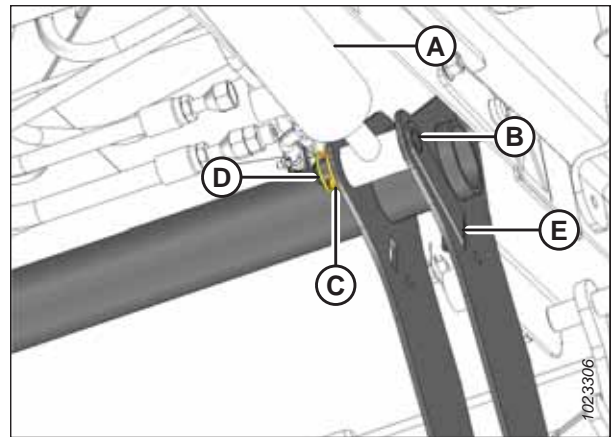


Figure 2.39: Rock Shaft

21. Position front deflector (A) onto front support (B) and remove the two existing bolts (C) that interfere with the deflector. Do **NOT** discard the bolts.
22. Secure deflector (A) to the support with two M10 hex head bolts (C), removed in previous step, and four M10 hex head bolts (D) that secured the deflector to the frame for shipping purposes. Center the deflector to the main shield before tightening the bolts.

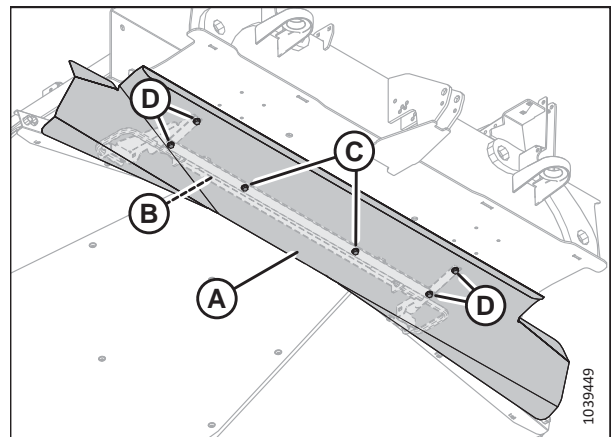


Figure 2.40: Front Deflector — View from below Shield

Chapter 3: Operation

Safely operating your machine requires familiarizing yourself with its capabilities.

3.1 Activating the Swath Compressor

The swath compressor must be activated in the windrower's control system the first time it is attached to a windrower.

NOTE:

If necessary, refer to the windrower operator's manual to review navigating the Harvest Performance Tracker (HPT) display. A header must be attached to the windrower.

1. Turn the ignition key to ON to activate the HPT.
2. Press soft key 5 (A) to open the main menu or press SHIFT and SELECT on the ground speed lever (GSL).
3. Use the HPT scroll knob (B) or the GSL scroll wheel (not shown) to place red cursor (C) over the icon you want to select.

NOTE:

Using the scroll knob will activate titles that explain each selection.

4. Press HPT scroll knob (B) or the GSL SELECT button (not shown) to select the highlighted icon.

NOTE:

Pressing the corresponding soft key will also work.

5. Scroll down and select HEADER SETUP menu (A).

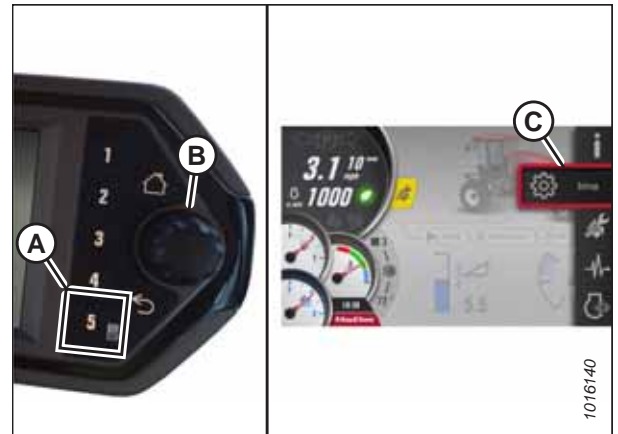


Figure 3.1: Opening the Main Menu



Figure 3.2: Header Setup Menu

OPERATION

6. Select the correct header size and type from the HEADER list.

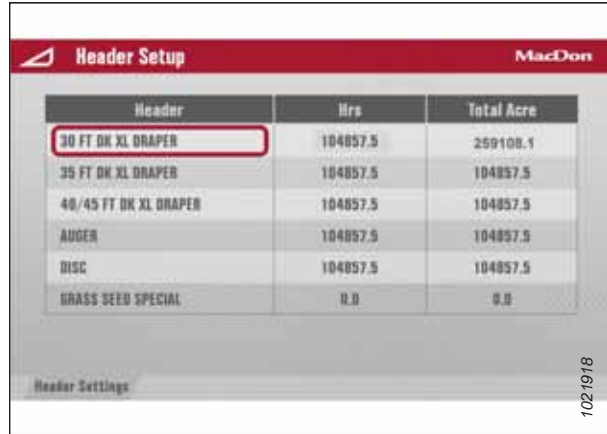


Figure 3.3: Header Setup Menu

7. Select ATTACHMENTS (A) from the HEADER SETUP menu.

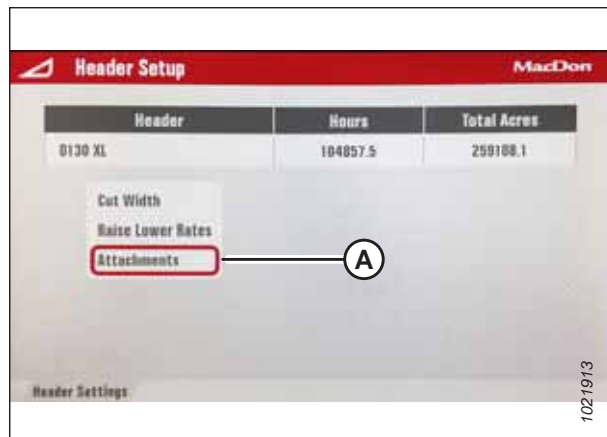


Figure 3.4: Header Setup Menu

8. Select SWATH COMPRESSOR (A) from the menu. The sensor is now active, and the HPT will control the swath compressor.

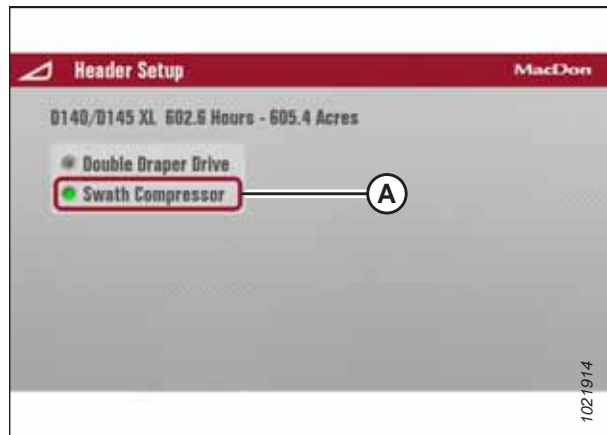


Figure 3.5: Attachments Menu

OPERATION

- From the SETUP menu, select WINDROWER SETTINGS (A).



Figure 3.6: Setup Menu

- Select SENSORS menu (A).



Figure 3.7: Windrower Settings

- Scroll to SWATH COMPRESSOR (A) and confirm the swath compressor sensor is enabled.
- Calibrate the sensor. For instructions, refer to [3.2 Calibrating Position Sensor](#), page 36.

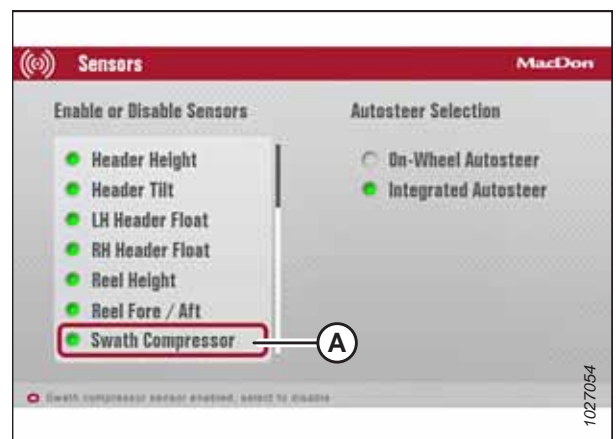


Figure 3.8: Sensors Menu

3.2 Calibrating Position Sensor

The swath compressor position sensor must be calibrated when the system is first installed.

NOTE:

To calibrate the position sensor, the swath compressor must be attached to the windrower, but it can be calibrated with or without a header attached. This procedure shows the calibration process with both the swath compressor and header attached to the windrower.

The Harvest Performance Tracker (HPT) recognizes the attachment(s) and determines the systems that require calibration.

The following sensors will be calibrated depending on the attachment(s):

- Header height
- Header angle
- Header float left
- Header float right
- Reel height
- Reel fore-aft
- Swath compressor height

DANGER

Ensure that all bystanders have cleared the area.

To calibrate the sensors, follow these steps:

1. Start the windrower, and engage the header.
2. Press soft key 5 (A) to open the main menu.

NOTE:

Calibrations **MUST** be performed with the engine running. Some calibrations will not be available with the engine off.

3. Use HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown) to highlight SETTINGS icon (C).
4. Press HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.

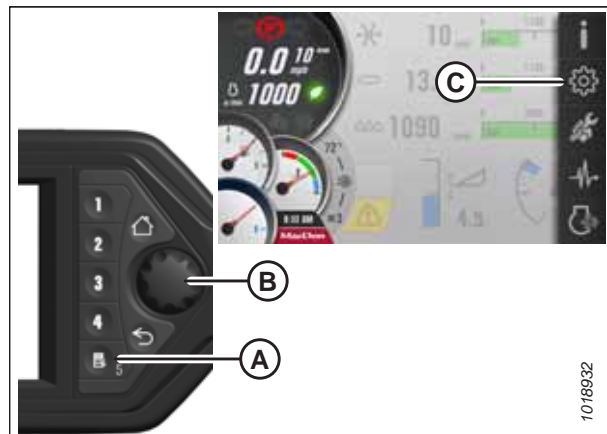


Figure 3.9: Opening the Main Menu

OPERATION

5. Scroll to WINDROWER SETTINGS icon (A) and press SELECT.
6. Scroll to CALIBRATION icon (B), and press SELECT to open the Calibration Selection menu.

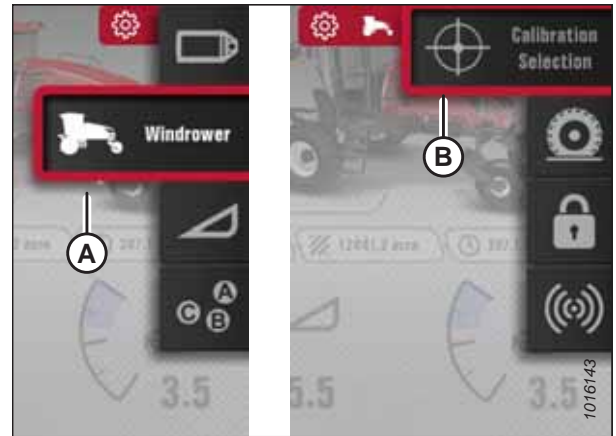


Figure 3.10: Windrower Settings Icon and Calibration Submenu Icon

7. In the Calibration Selection menu, scroll to Position Sensors (A) and press SELECT.

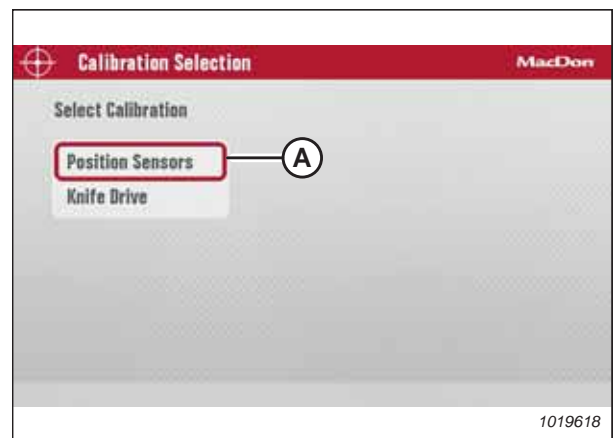


Figure 3.11: Calibration Selection Menu

NOTE:

If calibration is selected with header disengaged, a message ENGAGE HEADER will display followed by the WARNING message on the right.

8. Press the PLAY icon to begin the calibration process. The display will change to show that calibration has started.

NOTE:

If the engine speed is less than 1500 rpm prior to starting the calibration, the system will accelerate the engine speed to 1500 rpm.

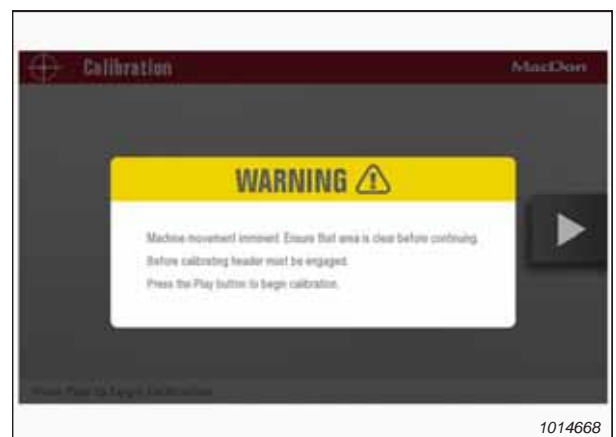


Figure 3.12: Calibration Screen

OPERATION

NOTE:

Pressing X icon (A) (or pressing the HOME, BACK or any GSL button [buttons not shown]) at any time during the calibration process will EXIT calibration without saving. The engine speed will also return to the original rpm.

NOTE:

If a sensor goes out of its normal operating range during the calibration process, calibration will stop and a message will appear indicating that the sensor is out of range.



Figure 3.13: Calibration Screen

9. When stage one of the calibration is complete, press PLAY icon (A) to continue with stage two of the calibration process.



Figure 3.14: Calibration Screen

10. When stage two of the calibration is complete, press RESUME icon (A) to set HEADER FLOAT, or press HOME or BACK button (not shown) to exit without setting the float.

NOTE:

The engine speed returns to the original rpm when stage two calibration is complete.



Figure 3.15: Calibration Screen

OPERATION

NOTE:

If the voltage of any sensor sweeps below what is acceptable during calibration, a message will be displayed after completing the calibration with a list of sensors with voltage range that is not acceptable. The Operator must then adjust the sensor(s) and repeat the calibration process from the beginning.



Figure 3.16: Sample of Failed Calibration Display Message

3.3 Using Swath Compressor

The swath compressor height can be adjusted and monitored with the Harvest Performance Tracker (HPT) display. Height can be adjusted for crop ripeness, yield, and the amount of compression required. The swath compressor will automatically lift up if the Operator stops or reverses the windrower.

3.3.1 Swath Compressor Controls

This topic explains how the windrower controls the swath compressor, and describes the automated raise/lower functions.

DANGER

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

Swath compressor height (A) is displayed on the Harvest Performance Tracker (HPT) with a scale from 0–10.

Swath compressor icon (B) is displayed on the HPT when the swath compressor is activated in the attachments menu. If the sensor is disabled, height number (A) is replaced by a sensor disabled icon. For instructions on enabling the sensor, refer to [3.1 Activating the Swath Compressor, page 33](#).



Figure 3.17: HPT Display

Switches (A) and (B) on the operator’s console are used to adjust the position (height). Releasing the switch stops the movement.

Each momentary press of the switch changes the value by one. Pressing and holding changes the value by one increment per second.

The last position set with the console switches becomes the target height. When an adjustment is made, the display shows the target value. The system immediately adjusts to attain the target position. After the last adjustment, the display shows target value for 5 seconds then reverts to the actual position.



Figure 3.18: Operator’s Console

Display functions

- As the swath compressor moves up or down, target value (A) changes, windrower icon (B) appears as an outline, and swath compressor icon (C) flashes.
- Windrower icon (B) is solid when the target height is achieved.
- Value (A) is 0, and image (B) is an outline with the swath compressor fully raised.
- Icon (B) is not visible and automation is disabled without a header attached. Swath compressor height can still be adjusted.



Figure 3.19: HPT Display

Swath compressor automated functions: header engaged

- The swath compressor lowers to target height at a ground speed higher than 2.5 km/h (1.6 mph).
- The swath compressor fully rises as the ground speed transitions through 1.6 km/h (1 mph) during deceleration.
- The swath compressor fully rises when the header is disengaged at a ground speed higher than 1.6 km/h (1 mph).
- An IMPORTANT message to raise the swath compressor appears on the HPT accompanied by a tone when the GSL is moved out of PARK in engine-forward mode if the swath compressor is not fully raised.

Engage the swath compressor lock when the swath compressor is not in use, or when the windrower is in engine-forward mode. For instructions, refer to [3.3.6 Locking and Unlocking Swath Compressor, page 44](#).

3.3.2 Setting up Swath Compressor

Operate the windrower in crop and use the following procedure to determine the settings for the crop and crop conditions.

CAUTION

Park on a level surface with the ground speed lever (GSL) in the PARK position and the steering wheel in the locked (centered) position. Wait for the Harvest Performance Tracker (HPT) to beep and display a red P symbol to confirm that the parking brake is engaged.

DANGER

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

OPERATION

1. Rotate handle (A) counterclockwise to disengage the lock on the left rear support.
2. Start the engine, set ground speed lever (GSL) in PARK, and ensure that the header is disengaged.

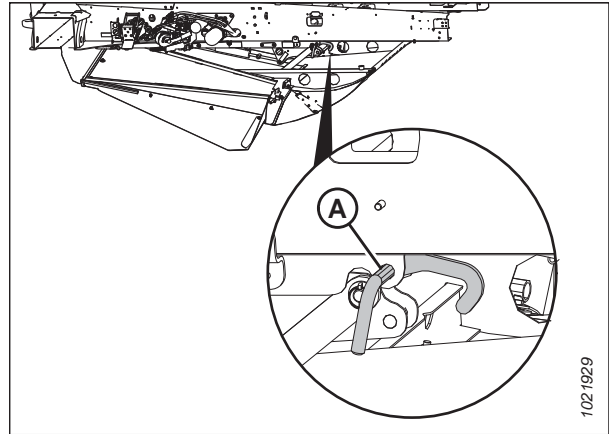


Figure 3.20: Swath Compressor Lock

3. Adjust the swath compressor position to the target (or preferred) operating height using controls (A) and (B) on the console. Set the target operating height to 6 if there is no preferred operating height.
4. Engage and then disengage the header. The swath compressor will raise fully.

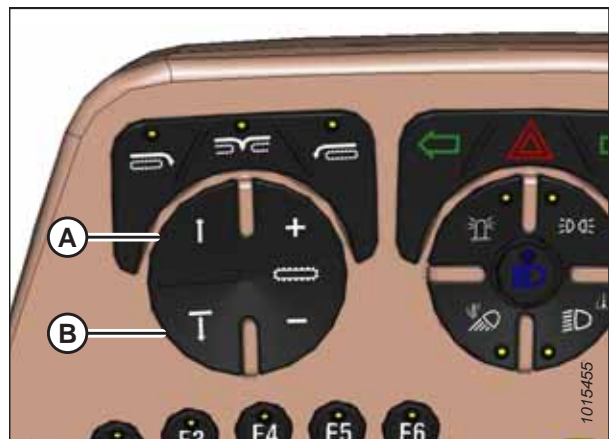


Figure 3.21: Operator's Console

5. Engage the header and begin cutting crop. When the ground speed exceeds 2.5 km/h (1.6 mph), the swath compressor will lower to target (or preferred) height (A).
6. Shut down the engine, and remove the key from the ignition.
7. Check the formation of the windrow.
 - If necessary, adjust target height (A).
 - If the edges of the windrow are not sufficiently pressed into the stubble, adjust the side deflectors. For instructions, refer to [3.3.5 Adjusting Side Deflectors](#), page 44.
 - If the swath compressor shield raises too easily in dense windrows, adjust the compression. For instructions, refer to [3.3.4 Adjusting Compression](#), page 43.



Figure 3.22: Display

3.3.3 Programming One-Touch-Return

The One-Touch-Return switches A, B, and C always save header height settings, but swath compressor settings can also be saved depending on the header type.

To program the One-Touch-Return switches, follow these steps:

1. Adjust the header and swath compressor to desired position.
2. Press and hold switch A, B, or C on the ground speed lever (GSL) handle for 3 seconds until an audible tone is heard. The current header/swath compressor settings are saved to that switch. To return header to a preset condition, quickly tap the A, B, or C switch.

NOTE:

A new swath compressor setting will only be stored if the compressor position was set with the UP/DOWN switches on the console. If swath compressor height sensor is disabled, automation is disabled. Raise/lower operation is only possible by pressing console switches.



Figure 3.23: Ground Speed Lever (GSL)

3.3.4 Adjusting Compression

The swath compressor automatically raises when the load on the shield exceeds the compression setting. When load decreases, the compressor deck automatically returns to the target height.

The compression setting is set at the factory to suit most crop conditions and can be adjusted as follows:

1. Loosen jam nut (A) to allow adjustment knob (B) to turn. Do **NOT** remove the nut.
 - For a more compact windrow with higher wind resistance, turn adjuster knob (B) clockwise to increase cut crop compression.
 - To minimize crop shelling and decrease cut crop compression, turn adjuster knob (B) counterclockwise.

NOTE:

Start with the lowest compression (with the adjuster knob fully turned counterclockwise) and increase the compression setting in 1/2 turn increments as required.

2. Tighten jam nut (A) sufficiently to maintain the setting.

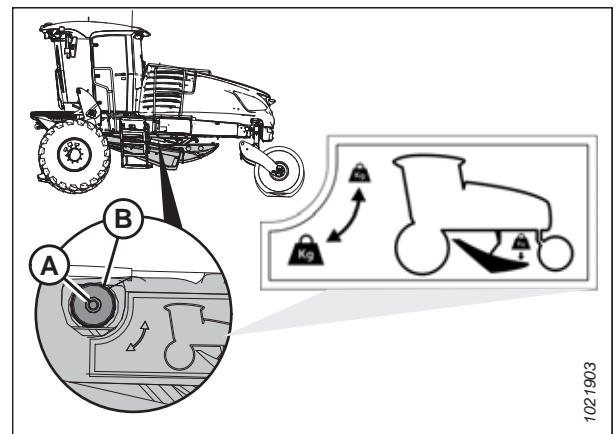


Figure 3.24: Compression Adjustment

3.3.5 Adjusting Side Deflectors

To reduce wind damage to the windrow, adjust the side deflectors to ensure the edges of the windrows are tucked in and anchored to the stubble.

1. To adjust swath compressor side deflectors (A), loosen handles (B) and move deflectors to the desired position. To ensure windrow placement is centered, set both side deflectors to the same position.

IMPORTANT:

When an M1170NT or M1170NT5 is in narrow transport mode, there is risk of the side deflectors contacting the stairs if the deflectors are positioned fully outboard.

2. Tighten handles (B) when adjustment is complete.

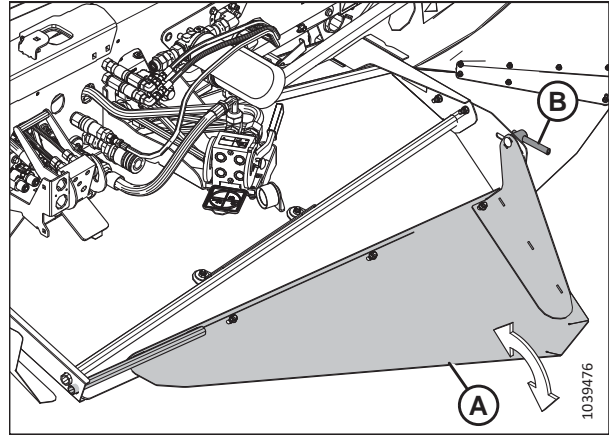


Figure 3.25: Swath Compressor Side Deflectors

3.3.6 Locking and Unlocking Swath Compressor

The swath compressor lock is located on the left cab-forward side of the swath compressor frame. When engaged, the lock prevents the compressor shield from lowering.

1. Turn lock handle (A) clockwise to engage the swath compressor lock under the following conditions:
 - Swath compressor is not in use
 - Windrower is being serviced
 - Windrower is in engine-forward mode
2. Turn handle (A) counterclockwise to disengage the lock before operating the swath compressor.

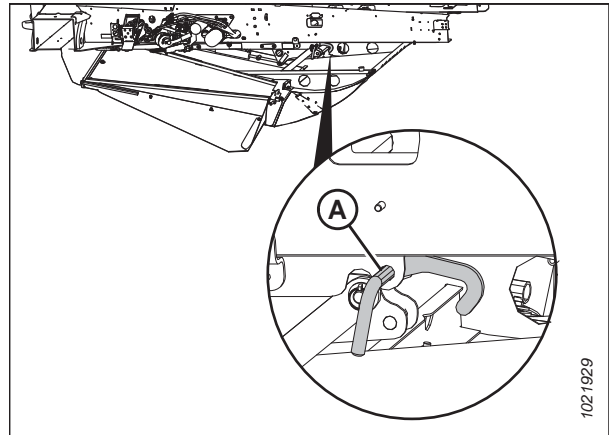


Figure 3.26: Swath Compressor Lock

Chapter 4: Maintenance

The swath compressor does not require any scheduled maintenance or servicing.

If it's necessary to replace components, refer to *5 Illustrated Parts Lists, page 55* in this manual.

4.1 Removing Swath Compressor Shield

Windrower service or maintenance procedures may require access under the machine. Do **NOT** sit on the swath compressor shield to service the windrower. Remove the shield as follows:

DANGER

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

1. Disengage swath compressor lock (A).
2. Start the windrower and fully lower the swath compressor.
3. Shut down the engine, and remove the key from the ignition.

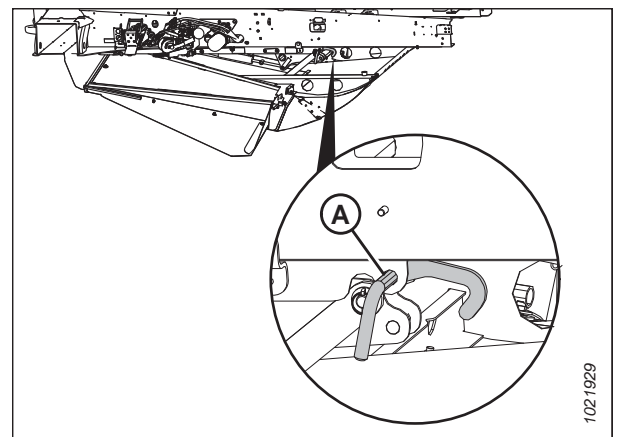


Figure 4.1: Swath Compressor Lock

4. At the front of the swath compressor, remove hairpin (A) from pivot pin (B) on both sides of the frame.

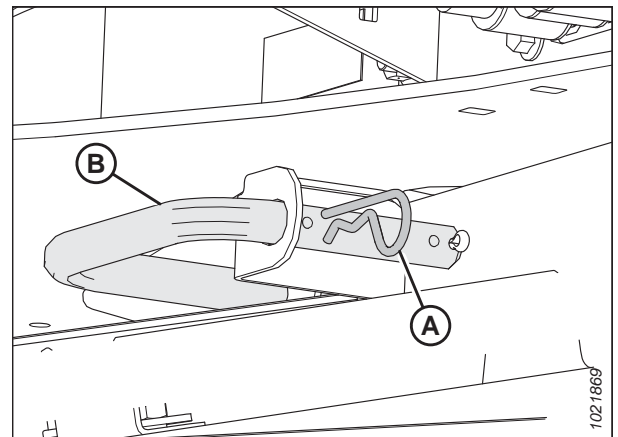


Figure 4.2: Forward Pivot Pin

MAINTENANCE

5. Push down on shield's rear side (A) while another person supports front side (D). Pull pivot pins (B) from ball joints (C) on both sides of the frame. To avoid misplacing parts, reinstall the hairpins into the pivot pins.
6. Lower the front end of the shield to the ground.

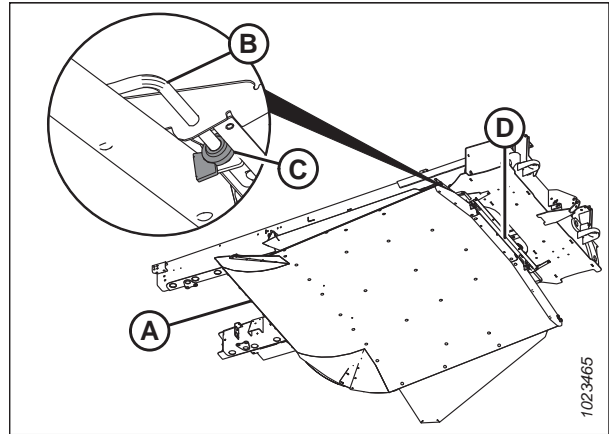


Figure 4.3: Front Pivot Pins

7. Support the shield under support (C) at the back end with a floor jack (or equivalent).
8. Remove lynch pins (F) and washers (E) from pins (B) on both ends of rock shaft (G).
9. Remove lowering arms (D) from rock shaft (G).
10. Store bushings (A), washers (E) and lynch pins (F) on pins (B).
11. Lower the back end of the shield to the ground and move the jack away from the work area.
12. Start the windrower and fully raise the swath compressor lift mechanism. Slowly drive the windrower away from the shield.

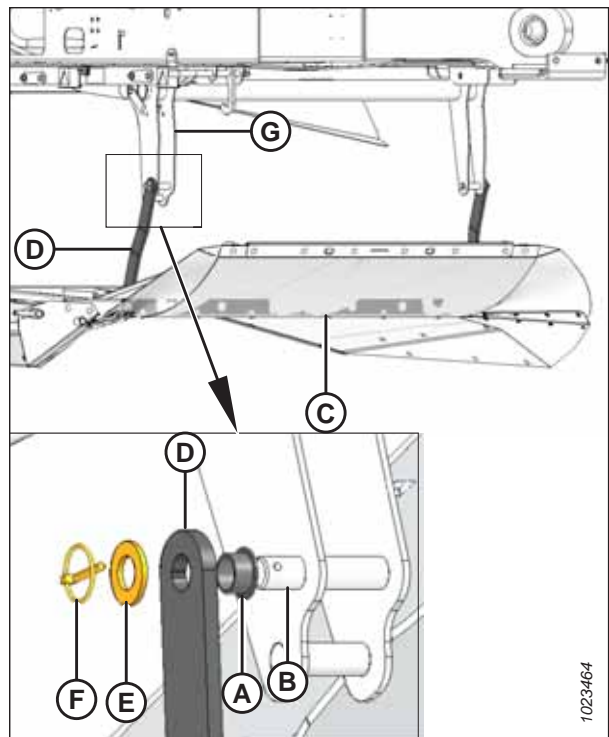


Figure 4.4: Disconnecting Lowering Arms

4.2 Electrical System

The electrical system for the swath compressor is powered by the windrower.

4.2.1 Rotary Sensor (MD #128994)

The rotary position sensor is located on the inboard side of the swath compressor's left support assembly.

Range: 0.5–4.5 volts (-45° – +45°)

Table 4.1 Rotary Sensor Pinout (MD #128994)

Position	Function
1	Power
2	Ground
3	Signal

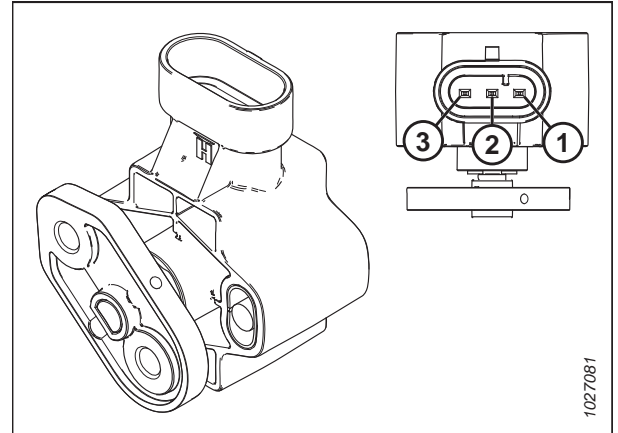


Figure 4.5: MD #128994

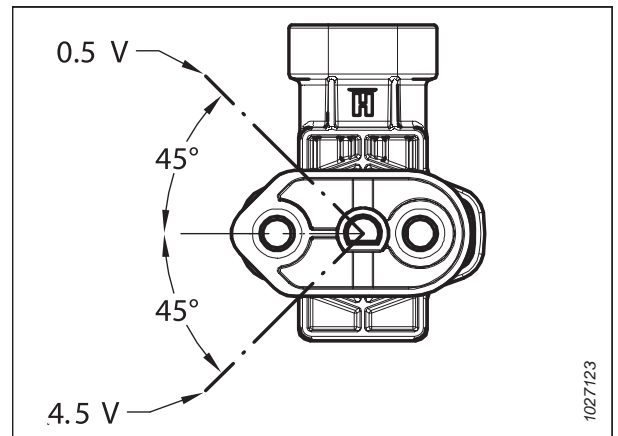


Figure 4.6: Sensor Voltage Range

4.2.2 Swath Compressor Harness (MD #209256)

The swath compressor harness connects to the position sensor and P729 on the windrower's chassis harness.

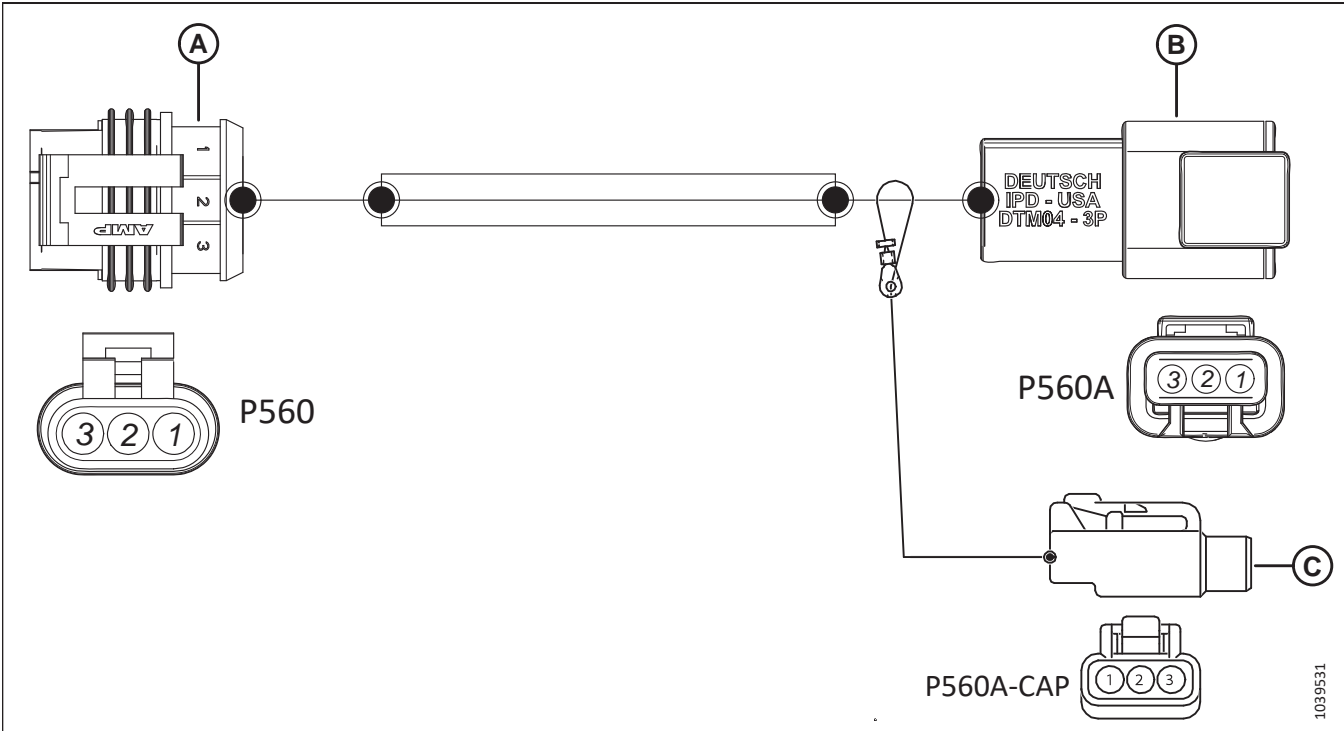


Figure 4.7: Harness (MD #209256)

A - MD #134091 (Tyco, AMP SS 1.5 3P) – to Rotary Sensor
 C - MD #134019 (Deutsch, DTM06-3S) – P560A Cap

B - MD #134018 (Deutsch, DTM04-3P) – to Chassis Harness P729

Table 4.2 MD #134091 – Tyco, AMP SS 1.5 3P

Pin	Circuit	Color	Awg	From	To
1	SF2201	Yellow	18	Rotary sensor, pin 1 (power)	P560A, pin 1
2	SF2301	White	18	Rotary sensor, pin 2 (ground)	P560A, pin 3
3	SF2501	Brown	18	Rotary sensor, pin 3 (signal)	P560A, pin 2

Table 4.3 MD #134018 – Deutsch, DTM04-3P

Pin	Circuit	Color	Awg	From	To
1	SF2201	Yellow	18	P560, pin 1 (power)	P729, pin 1 – CH2201G
2	SF2501	Brown	18	P560, pin 3 (signal)	P729, pin 2 – CH2325
3	SF2301	White	18	P560, pin 2 (ground)	P729, pin 3 – CH0552P

MAINTENANCE

Harness Connections

The swath compressor harness connects to the position sensor and P729 on the windrower's chassis harness.

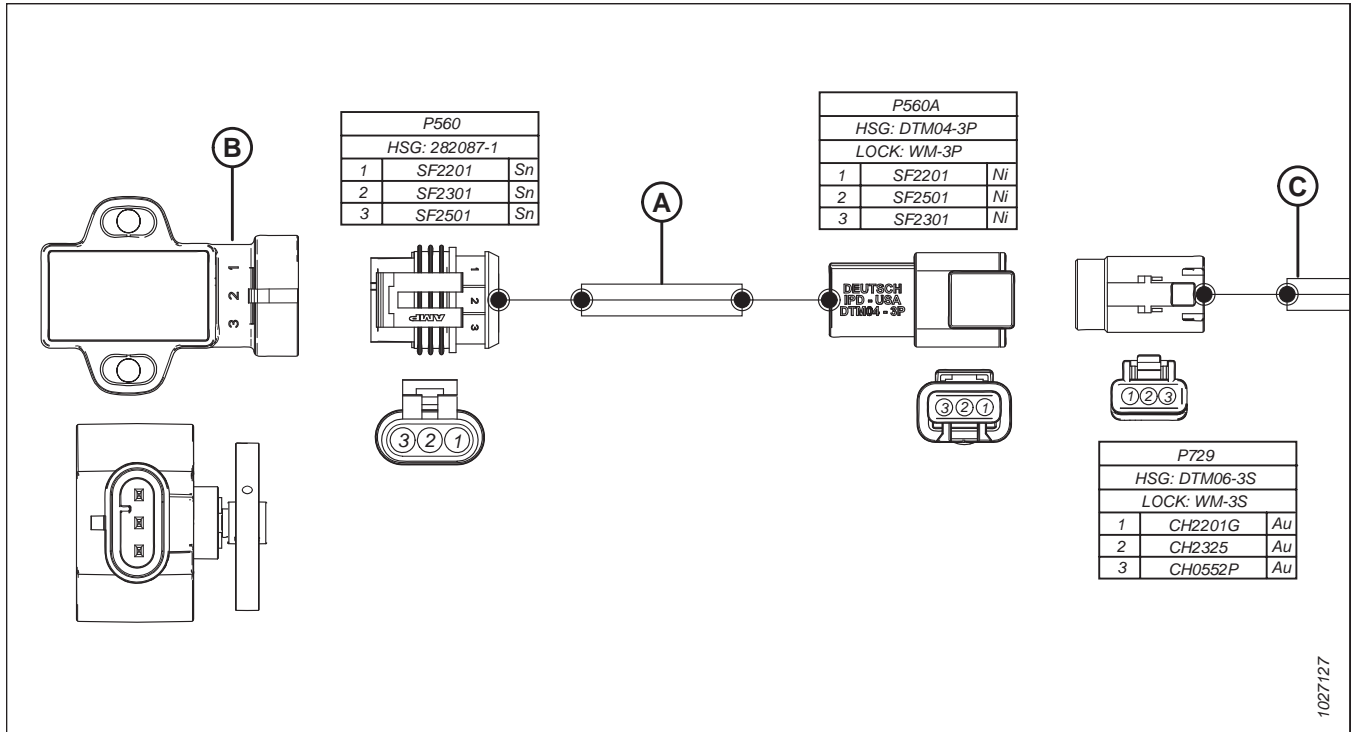


Figure 4.8: Swath Compressor Harness Connections

A - Swath Compressor Harness (MD #209256)

B - Rotary Sensor (MD #128994)

C - Chassis Harness

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4.2.3 Electrical Schematic

This electrical schematic shows the electrical circuit on the chassis harness that provides power to the swath compressor.

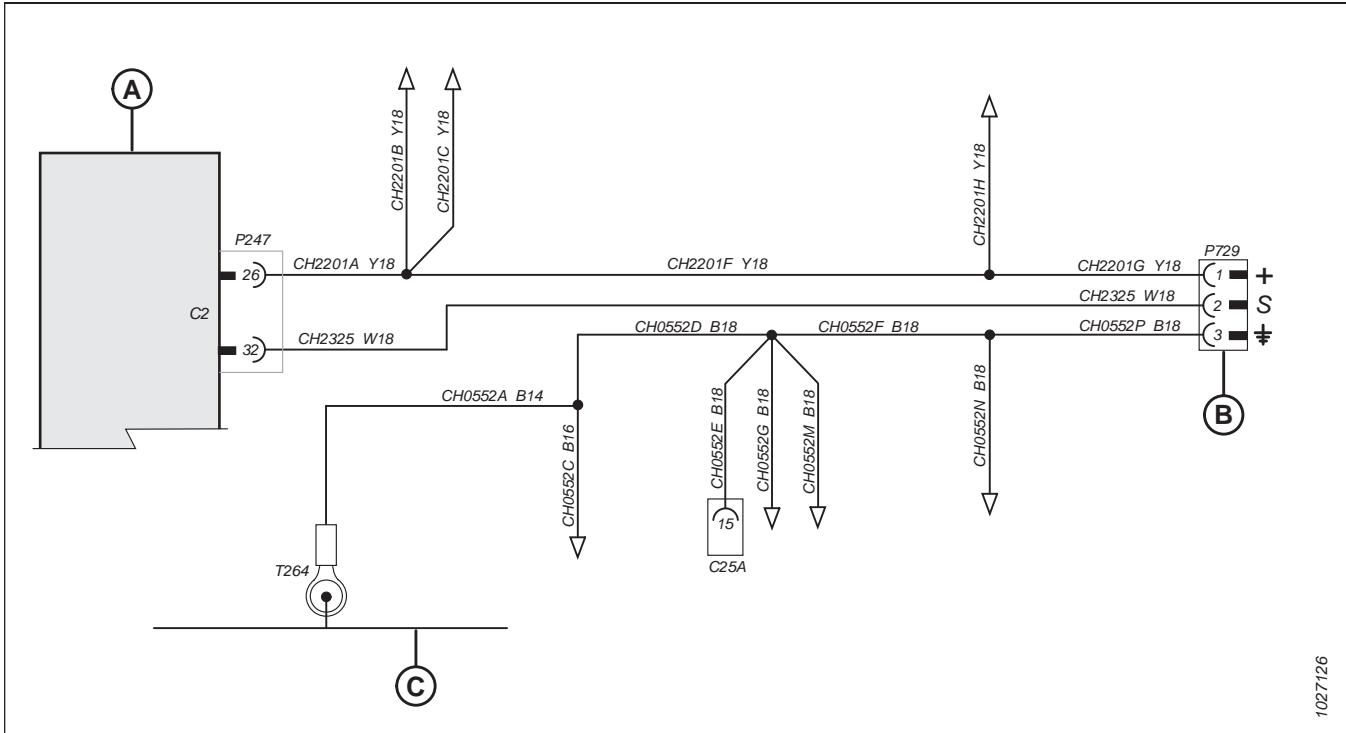


Figure 4.9: Electrical Schematic – M1 Series with Swath Compressor

A - Chassis Extension Module

B - Connector P729 (to Swath Compressor Harness P560A)

C - Ground Rail

1027126

4.3 Hydraulic Schematic

This hydraulic schematic shows an M1 Series Windrower with a Swath Compressor attached.

MAINTENANCE

**A - Lift Manifold
D - Hydraulic Filter Element
G - Reducing Valve**

**B - Swath Compressor Lift Cylinder
E - Inlet Manifold
H - Gear Pump**

**C - Hydraulic Tank
F - Junction Manifold**

Chapter 5: Illustrated Parts Lists

This section lists the replacement parts for the M1 Series Windrower and Swath Compressor.

ILLUSTRATED PARTS LISTS

5.1 Abbreviations

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

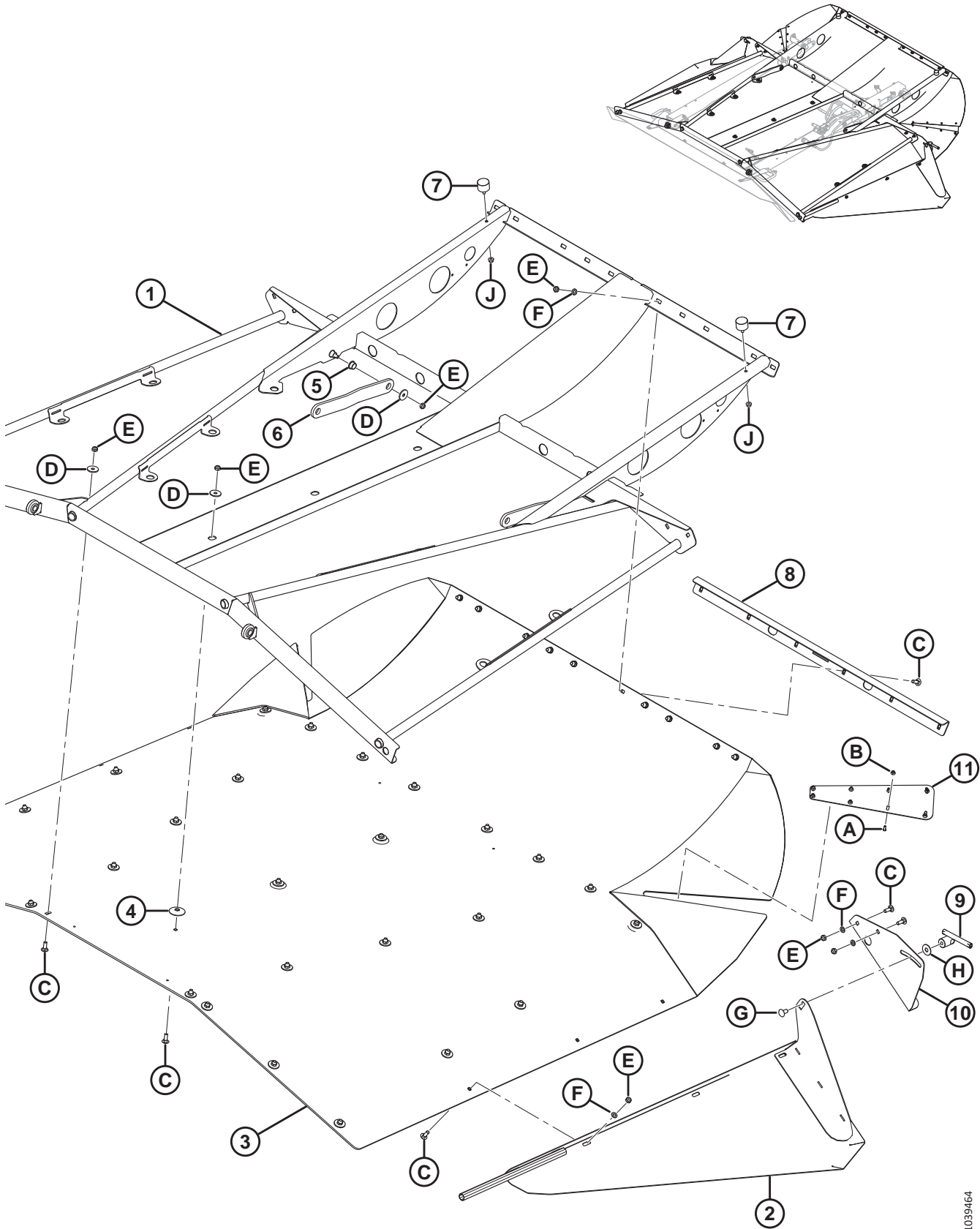
5.2 Serial Number Breaks

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

Example:

- -162249 Used on machines up to and including serial number 166249
- 166250- Used on machines including and after serial number 166250

5.3 Swath Compressor Shield Assembly

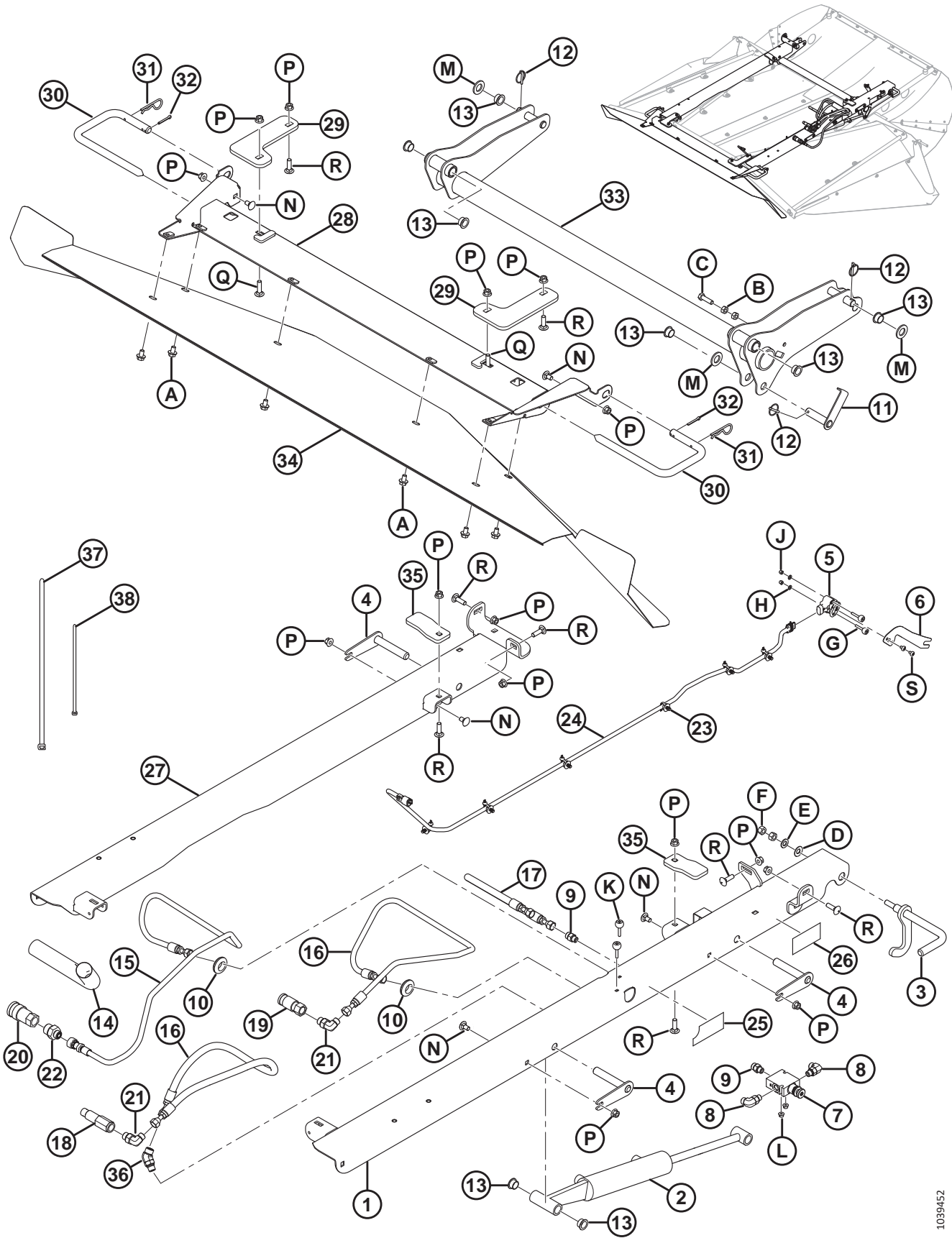


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ILLUSTRATED PARTS LISTS

Ref	Part Number	Description	Qty	Serial Number
1	306660	SUPPORT – DEFLECTORS, WELDMENT	1	
2	306661	DEFLECTOR – LH WELDMENT	1	
	306662	DEFLECTOR – RH WELDMENT	1	
3	277323	SHEET – SWATH COMPRESSOR	1	
4	128697	DISC – RETAINER	21	
5	128737	BUSHING – FLANGE	2	
6	128729	ARM – LOWER	2	
7	203350	BUMPER – RUBBER	2	
8	128740	ANGLE – REAR TOP	1	
9	247693	ASSEMBLY – HANDLE	2	
10	277405	SUPPORT – REAR DEFLECTOR, LH	1	
	277414	SUPPORT – REAR DEFLECTOR, RH	1	
11	277409	STRAP – JOINING	2	
A	191393	BOLT – HEX SOC M6 X 1 X 20-12.9-AB0R		
B	152668	NUT – HEX FLG CTR LOC M6 X 1-8-A2L		
C	252872	SCREW – FLG BTN HD M10 X 30-10.9-AA1J		
D	16652	WASHER – FLAT		
E	184692	NUT – HEX NYLOC M10 X 1.5-8-A3L		
F	184711	WASHER – FLAT REG M10-200HV-A3L		
G	152439	BOLT – RHSSN M12 X 1.75 X 25-8.8-A3L		
H	32247	WASHER – FLAT		
J	135337	NUT – HEX FLG CTR LOC M8 X 1.25-8-A2L		

5.4 Swath Compressor Hydraulics and Supports



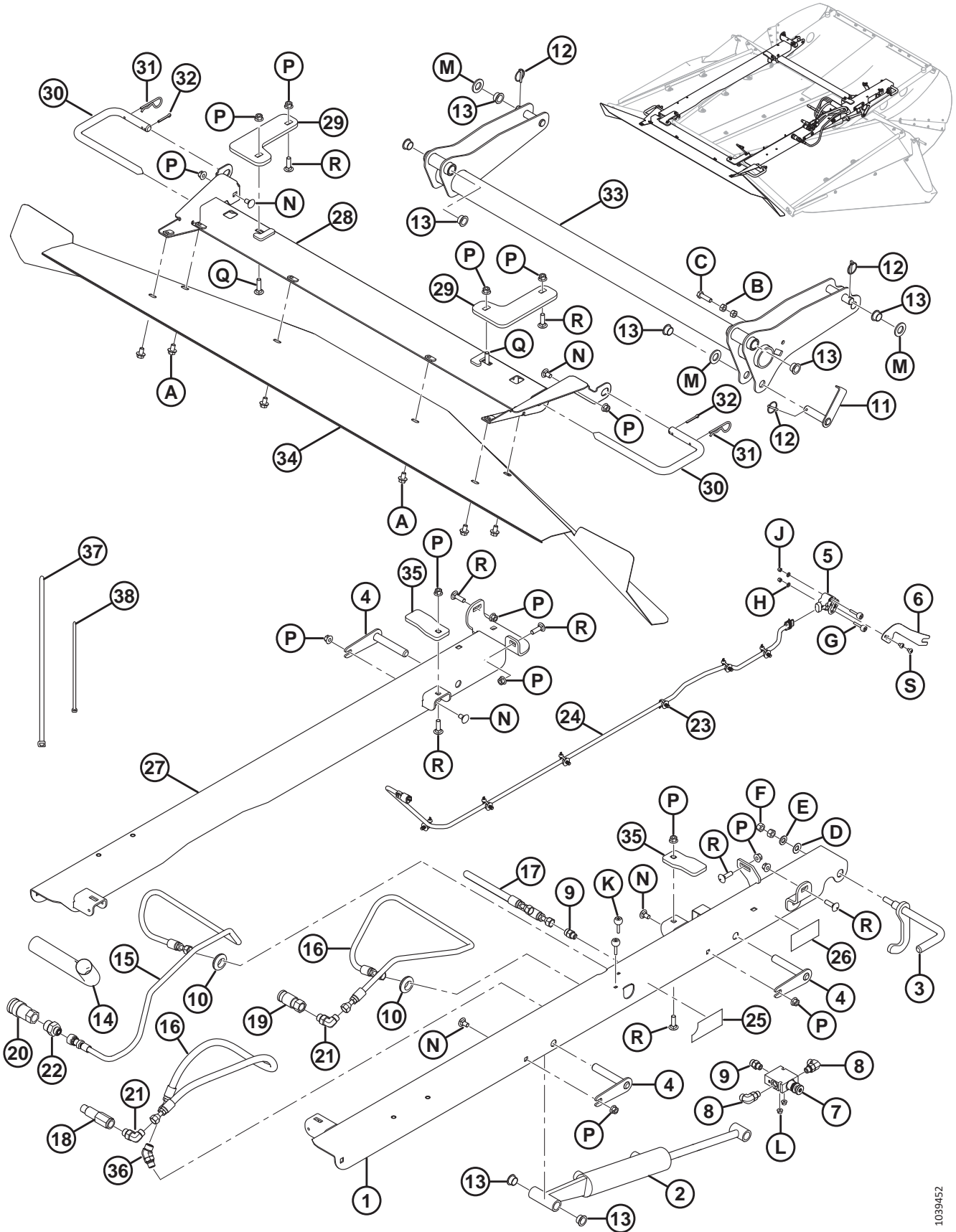
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ILLUSTRATED PARTS LISTS

Ref	Part Number	Description	Qty	Serial Number
1	128780	SUPPORT – LH WELDMENT	1	
2	128764	CYLINDER	1	
3	128768	LEVER – LOCK PIN WELDMENT	1	
4	128788	PIN – PIVOT, WELDMENT	3	
5	128994	ROTARY SENSOR HV	1	
6	128773	ARM – SENSOR	1	
7	128789	VALVE – PRESSURE REDUCING	1	
8	136095	FITTING – ELBOW 90° HYD	2	
9	135778	FITTING – ADAPTER	2	
10	42046	GROMMET	2	
11	277331	PIN – CYLINDER, WELDMENT	1	
12	50193	PIN – LYNCH	3	
13	128737	BUSHING – FLANGE	10	
14	112940	SLEEVE	1	
15	277042	HOSE – HYD, .25 IN. I.D., 1400 MM LG, 100R17, METAL REIN.	1	
16	277041	HOSE – HYD, .25 IN. I.D., 1220 MM LG, 100R17, METAL REIN.	2	
17	232597	HOSE – HYD, .25 IN. I.D., 490 MM LG, 100R17, METAL REIN.	1	
18	135386	COUPLER – MALE HYD. 3/8 IN. FLAT FACE	1	
	111978	SEAL KIT		
19	135312	COUPLER – FEMALE HYD. 3/8 IN. FLAT FACE	1	
20	135474	COUPLER – HYDRAULIC, 1/2 IN. FEMALE FF	1	
21	136149	FITTING – ELBOW 90° HYD CW O-RING	2	
22	136194	FITTING – ADAPTER	1	
23	136655	FASTENER – FIR TREE MT W/ TIE	6	
24	209256	HARNESS – SWATH COMPRESSOR	1	
25	128973	DECAL – DOWN FORCE	1	
26	128974	DECAL – UP LOCK	1	
27	128781	SUPPORT – RH WELDMENT	1	
28	128762	SUPPORT – FRONT PIVOT, WELDMENT	1	
29	128776	BAR – CLAMP	2	
30	128756	PIN – PIVOT	2	
31	13125	PIN – HAIR	2	
32	18648	PIN – COTTER 3/16 DIA X 1.25 ZP	2	
33	128770	ROCKSHAFT – LIFT, WELDMENT	1	
34	310620	DEFLECTOR – FRONT	1	
35	277435	BAR – CLAMP	2	
36	136144	FITTING – ELBOW 45° HYD	1	
37	30753	FASTENER – CABLE TIE, BLACK, 305 MM LG ¹	2	
38	21763	FASTENER – CABLE TIE, BLACK, 160 MM LG ¹	1	
A	136151	BOLT – HEX FLG HD TFL M10 X 1.5 X 16-8.8-A3L		
B	30505	NUT – HEX M10 X 1.5-10-A3L		
C	30628	BOLT – HEX HD M10 X 1.5 X 35-8.8-A3L		

1. Shipped in manual bag.

ILLUSTRATED PARTS LISTS

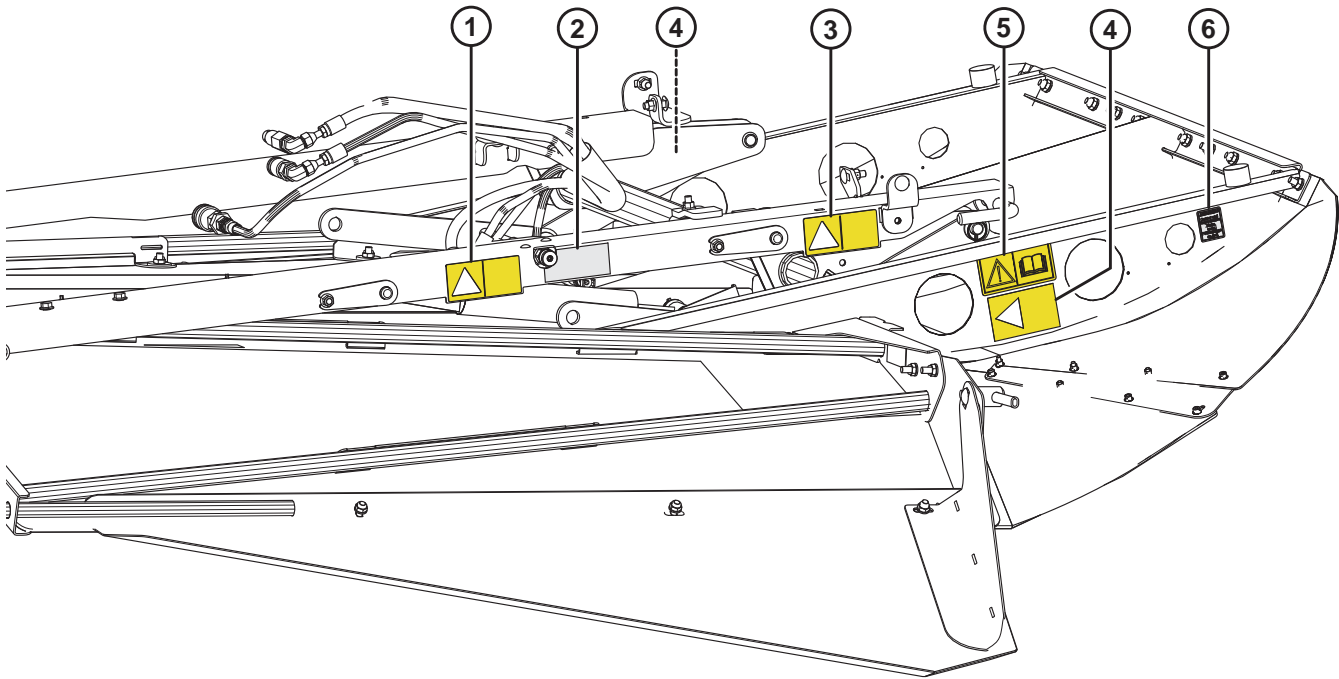


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ILLUSTRATED PARTS LISTS

Ref	Part Number	Description	Qty	Serial Number
D	184595	WASHER – CONICAL SPRING 1/2 IN.		
E	184714	WASHER – FLAT REG M12-300HV-A3L		
F	184694	NUT – HEX M12 X 1.75-8-A3L		
G	136604	BOLT – RHSN TFL M5 X 0.8 X 40-8.8-AA1J		
H	184701	WASHER – FLAT LARGE M5-200HV		
J	197230	NUT – HEX NYLOC M5 X 0.8-8-A2L		
K	136731	BOLT – RHSN M6 X 1 X 45-8.8-A2L		
L	152668	NUT – HEX FLG CTR LOC M6 X 1-8-A2L		
M	18601	WASHER – SAE FLAT 13/16 I.D. X 1.5 IN. O.D. ZP		
N	136178	BOLT – RHSN M10 X 1.5 X 20-8.8-A3L		
P	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10-A3L		
Q	152732	BOLT – RHSN M10 X 1.5 X 40-8.8-A3L		
R	135691	BOLT – RHSN TFL M10 X 1.5 X 35-8.8-A3L		
S	252291	SCREW – PAN HD M6 X 1 X 8-8.8-A2L		

5.5 Decals



1



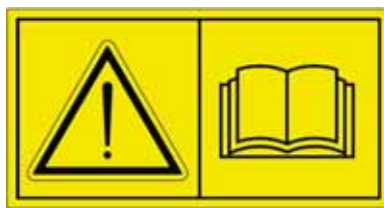
2



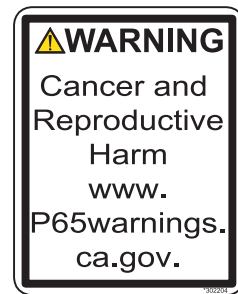
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4 x2



5



6

ILLUSTRATED PARTS LISTS

Ref	Part Number	Description	Qty	Serial Number
1	166466	DECAL – HIGH PRESSURE FLUID	1	
2	128973	DECAL – DOWN FORCE	1	
3	291638	DECAL – DECK LOWER LOCK ²	1	
4	174683	DECAL – PINCH POINT	2	
5	184372	DECAL – READ MANUAL	1	
6	302204	DECAL – CA PROPOSITION 65	1	

2. May not be exactly as shown.

Chapter 6: Reference

The topics provided in this chapter can be consulted as needed.

6.1 Torque Specifications

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

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

Jam nuts

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

Self-tapping screws

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

6.1.1 Metric Bolt Specifications

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

NOTE:

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

Table 6.1 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

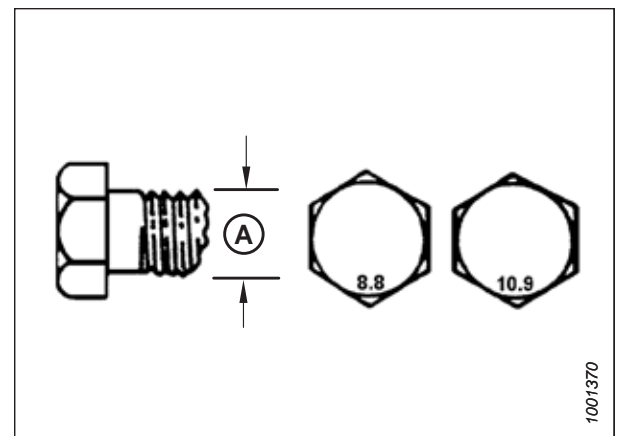


Figure 6.1: Bolt Grades

REFERENCE

Table 6.2 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

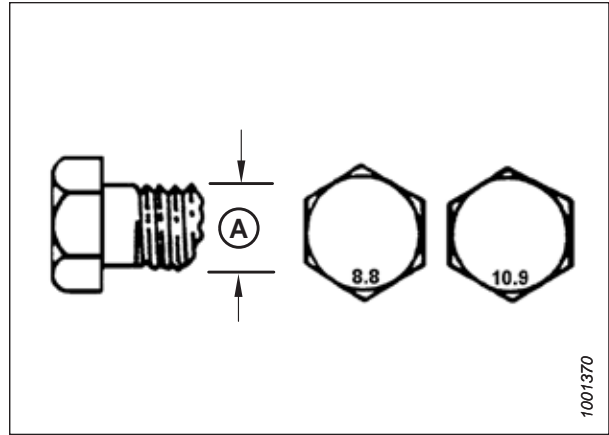


Figure 6.2: Bolt Grades

Table 6.3 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

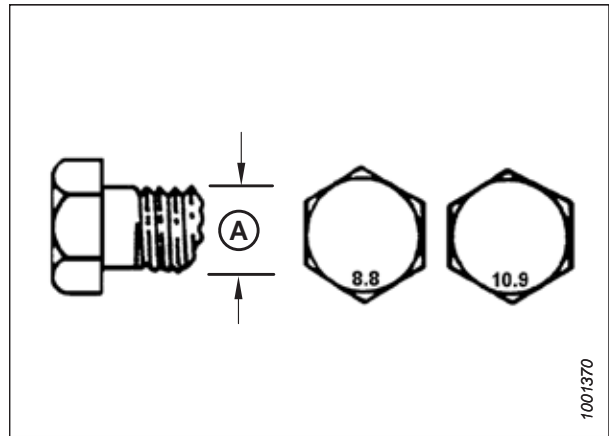


Figure 6.3: Bolt Grades

REFERENCE

Table 6.4 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

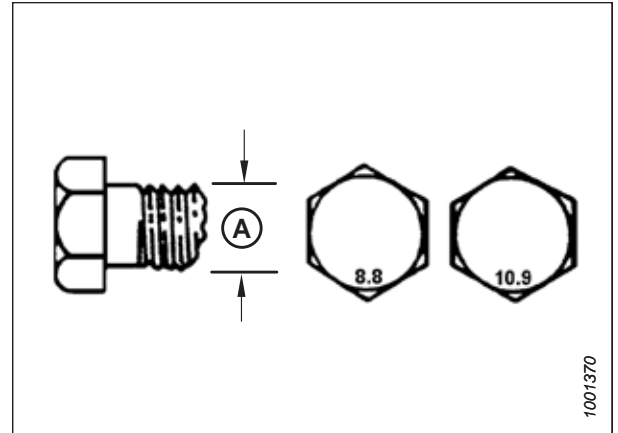


Figure 6.4: Bolt Grades

6.1.2 Metric Bolt Specifications – Cast Aluminum

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

NOTE:

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

Table 6.5 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	–	–	–	–

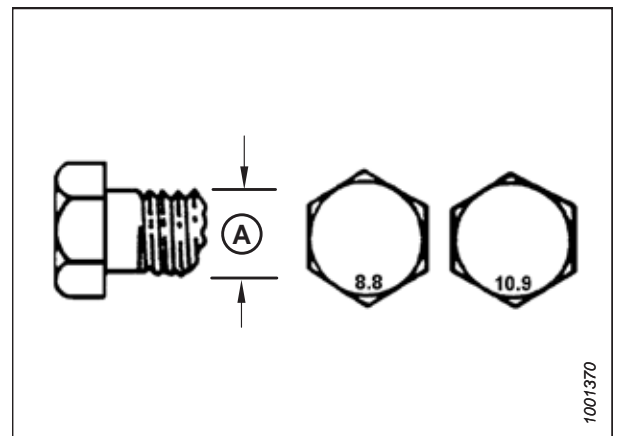


Figure 6.5: Bolt Grades

6.1.3 O-Ring Boss Hydraulic Fittings – Adjustable

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

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

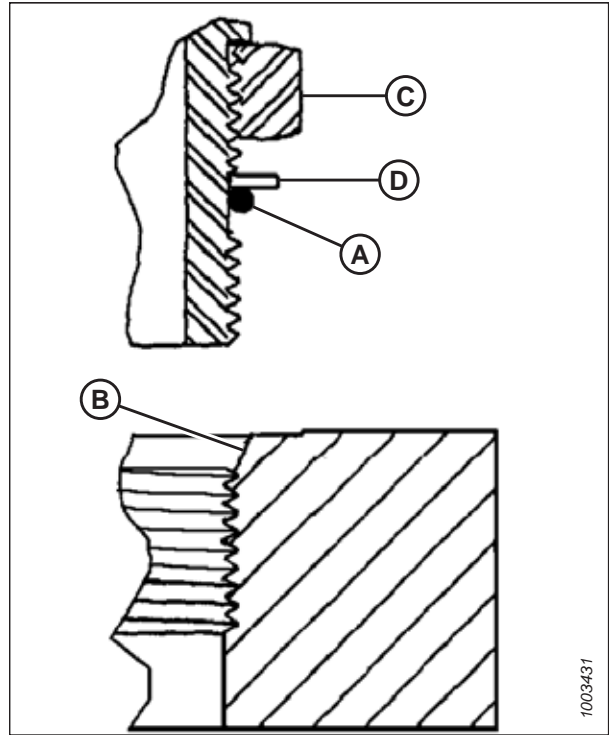


Figure 6.6: Hydraulic Fitting

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

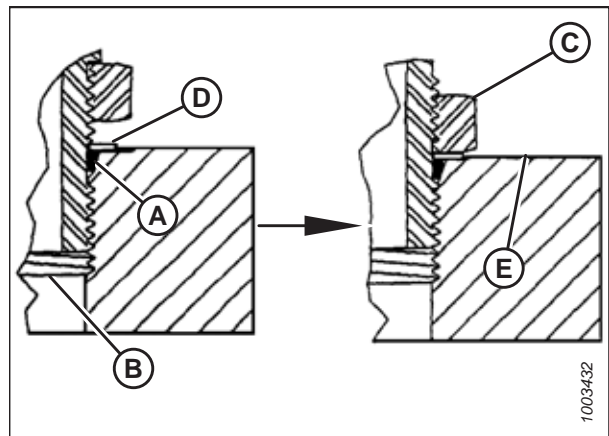


Figure 6.7: Hydraulic Fitting

Table 6.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ³	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115

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

REFERENCE

Table 6.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable (continued)

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

6.1.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable

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

Torque values are shown in the table below.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table 6.7, page 71.
6. Verify the final condition of the fitting.

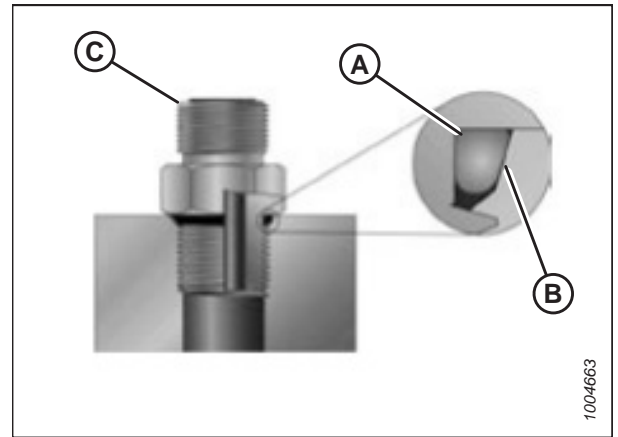


Figure 6.8: Hydraulic Fitting

Table 6.7 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ⁴	
		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

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

REFERENCE

Table 6.7 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value ⁵	
		Nm	lbf-ft (*lbf-in)
-8	3/4-16	46-50	34-37
-10	7/8-14	75-82	55-60
-12	1 1/16-12	120-132	88-97
-14	1 3/8-12	153-168	113-124
-16	1 5/16-12	176-193	130-142
-20	1 5/8-12	221-243	163-179
-24	1 7/8-12	270-298	199-220
-32	2 1/2-12	332-365	245-269

6.1.5 O-Ring Face Seal Hydraulic Fittings

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

Torque values are shown in the table below.

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



Figure 6.9: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table 6.8, page 73.

NOTE:

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

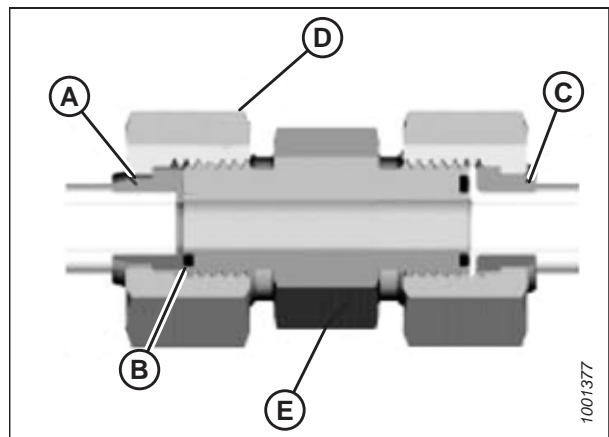


Figure 6.10: Hydraulic Fitting

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

REFERENCE

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

Table 6.8 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁶	
			Nm	lbf-ft
-3	Note ⁷	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ⁷	5/16	–	–
-6	11/16	3/8	40–44	29–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-14	Note ⁷	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

6.1.6 Tapered Pipe Thread Fittings

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

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.
4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 6.9, page 74. Ensure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never loosen the threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with an appropriate cleaner.
6. Inspect the final condition of the fitting. Pay special attention to the possibility of cracks in the port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

NOTE:

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

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

REFERENCE

Table 6.9 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

6.2 Conversion Chart

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

Table 6.10 Conversion Chart

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

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Predelivery Checklist

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

CAUTION

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

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque.	<i>6.1 Torque Specifications, page 67</i>
	Raise and lower the swath compressor to check for linkage binding. Rubber bumpers at the rear should contact the windrower frame when fully raised. If binding occurs, adjust by adding washers where the rear supports are fastened to the outside of the frame.	<i>2.2.1 Installing Frame, page 20</i>
	Ensure sensor arm does not bind when raising or lowering the swath compressor.	<i>2.2.1 Installing Frame, page 20</i>
	Ensure the fuel filter sensor wire does not contact the swath compressor frame when fully raised.	<i>2.2.1 Installing Frame, page 20</i>
	Check hydraulic hose routing for clearance when raising or lowering the swath compressor. Adjust as necessary.	<i>2.2.3 Connecting Hydraulics, page 26</i>
	Ensure hydraulic hoses are secured in place with cable ties.	<i>2.2.3 Connecting Hydraulics, page 26</i>
	Ensure the swath compressor lock is functioning properly.	<i>3.3.6 Locking and Unlocking Swath Compressor, page 44</i>
	Check for hydraulic leaks.	—
	Ensure the side deflectors are set evenly to the desired position.	<i>3.3.5 Adjusting Side Deflectors, page 44</i>
	Ensure the latest software version is installed in the windrower.	—

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