

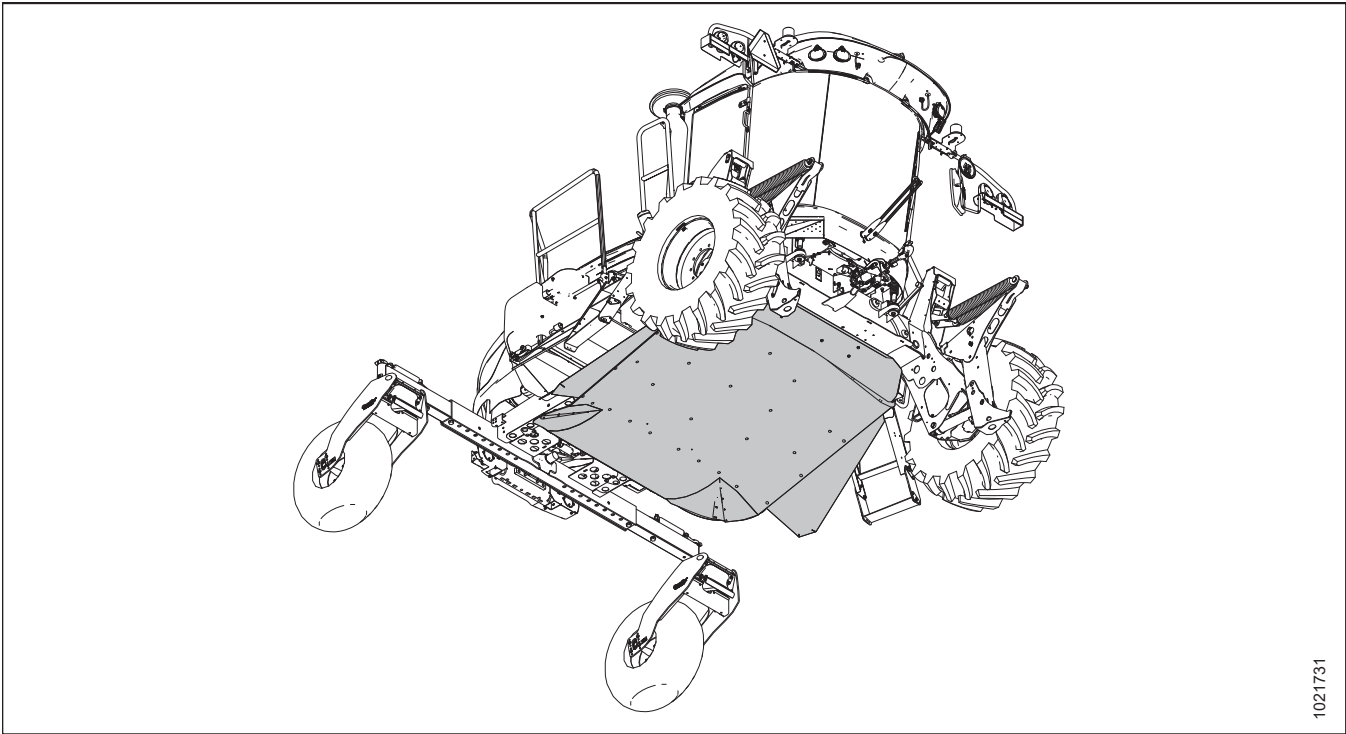
Swath Compressor for M1 Series Windrowers

Setup, Operation, and Parts Manual

215210 Revision A

Original Instruction

Swath Compressor for M1 Series Windrowers



1021731

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Introduction

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.

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 with the cab display. 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.

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

This manual is currently available in English only.

Conventions

- 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 65* 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 instruction 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.

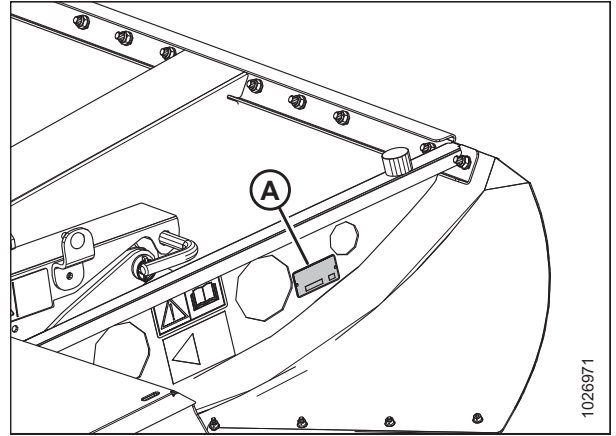
Section	Summary of Change	Internal Use Only
<i>3.3.6 Locking and Unlocking the Swath Compressor, page 43</i>	Updated topic title.	Tech Pubs
<i>2.1 Removing Swath Compressor from Shipping Crate, page 15</i>	Updated procedure steps and illustrations per SME request.	Engineering, Product Audit
<i>5.2 Swath Compressor Hydraulics and Supports, page 58</i>	Updated parts list replacing washer MD #18798 with washer MD #184701.	ECN 57945
<i>5.3 Decals, page 62</i>	Updated illustration and parts list to include decal MD #302204.	ECN 57716

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

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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



Figure 1.1: Safety Symbol

1.2 Signal Words

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

CAUTION

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

Protect yourself when assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for 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
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.



Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

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

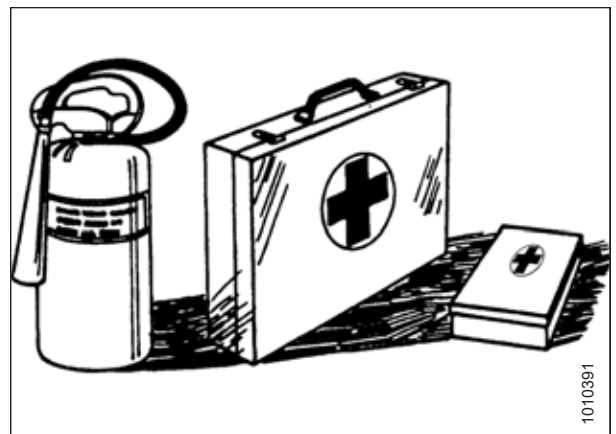


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

- Keep hands, feet, clothing, and hair away from moving parts. **NEVER** attempt to clear obstructions or objects from a machine while the engine is running.
- Do **NOT** modify the machine. Unauthorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid injury or death from 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.

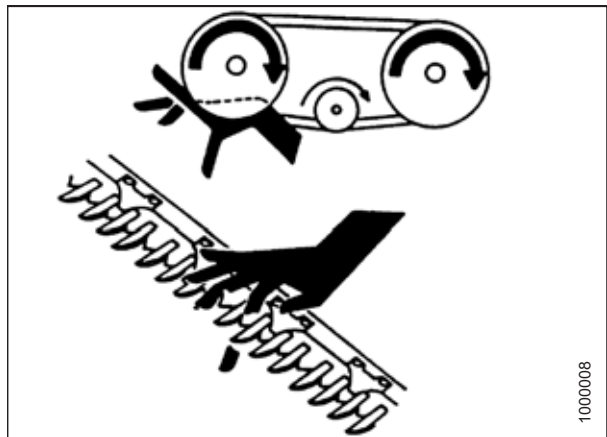


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

To ensure your safety while maintaining machine:

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



Figure 1.8: Safety around Equipment

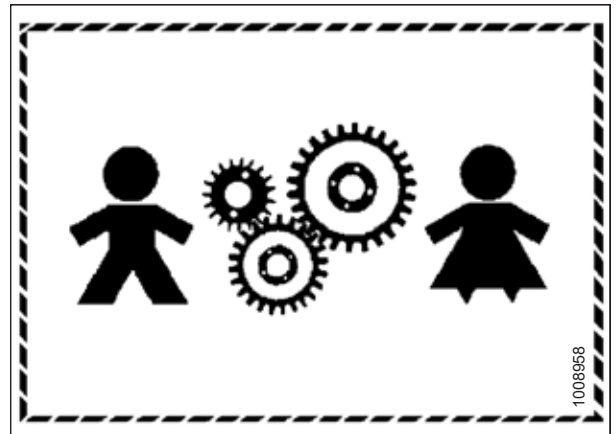


Figure 1.9: Equipment NOT Safe for Children



Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

- Always place all hydraulic controls in Neutral before leaving the operator's seat.
- Make sure that all 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 will fail suddenly and create hazardous and unsafe conditions.

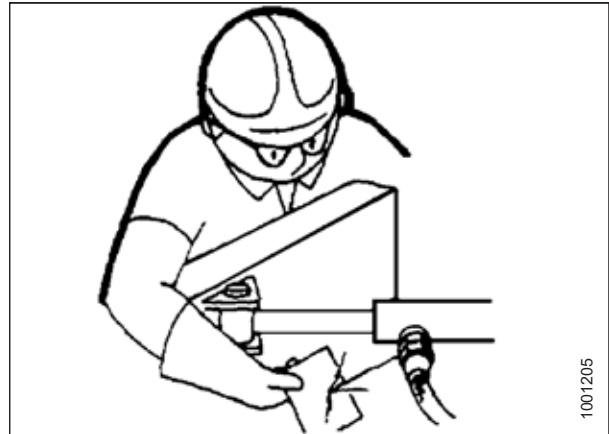


Figure 1.11: Testing for Hydraulic Leaks

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



Figure 1.12: Hydraulic Pressure Hazard

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

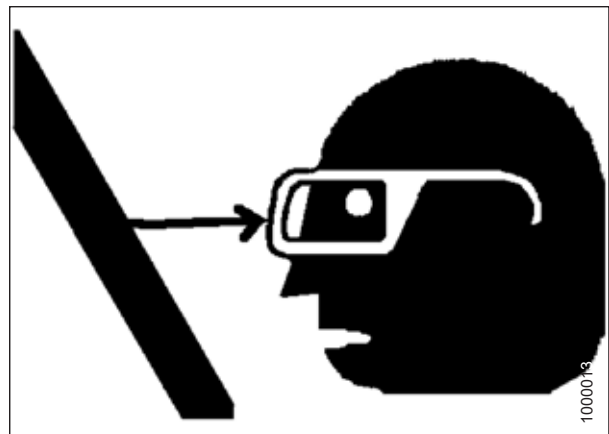


Figure 1.13: Safety around Equipment

1.6 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 an Operator needs to weld to 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 cab, near header lift/fan manifold

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

IMPORTANT:

When reconnecting these connectors, double-check 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 cab, near header lift/fan manifold

To disconnect, use a small 3–6 mm (1/8–1/4 in.) blade screwdriver to insert 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 cab, inside left frame rail

To disconnect, use a small 3–6 mm (1/8–1/4 in.) blade screwdriver to insert 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.

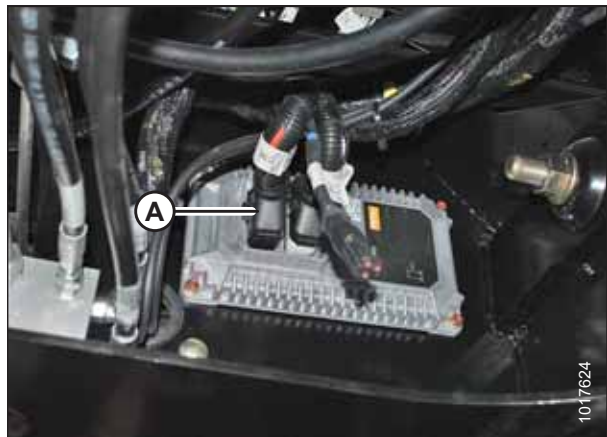


Figure 1.17: Chassis Extension Module

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

Location: On engine

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

IMPORTANT:

Be sure to disconnect both connectors. Note connector locations.

IMPORTANT:

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

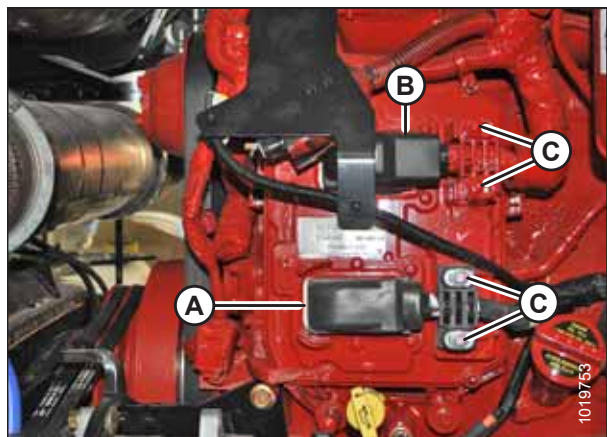


Figure 1.18: Engine Control Module

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



Figure 1.19: Cab Connectors

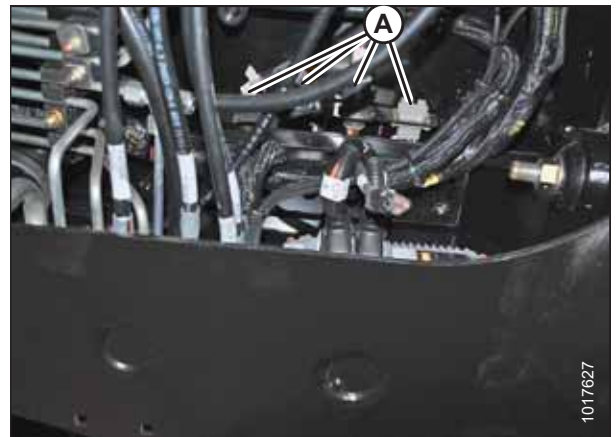


Figure 1.20: Roof Connectors



Figure 1.21: Chassis Relay Module

SAFETY

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

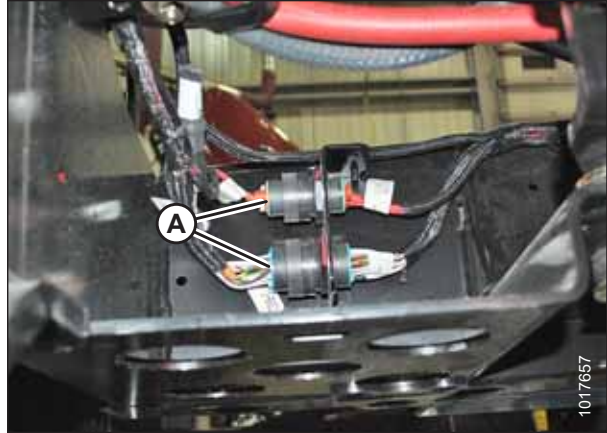


Figure 1.22: Engine Harness

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



Figure 1.23: A/C Box Connectors

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

IMPORTANT:

To connect circular Deutsch connectors without bending the pins, align the plug with the receptacle before attempting to connect.

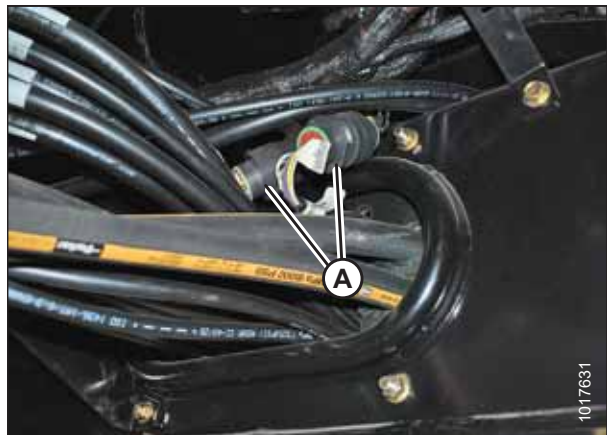


Figure 1.24: Wheel Motor Connectors

SAFETY

IMPORTANT:

To connect circular Deutsch connectors without bending the pins, align the plug with the receptacle before attempting to connect.

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 connectors so that channels are aligned.
3. Press connectors together while turning the outer connector clockwise until collar locks.

1.7 Safety Signs

- 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, be sure the repair part displays the current safety sign.
- Replacement safety signs are available from your MacDon Dealer Parts Department.

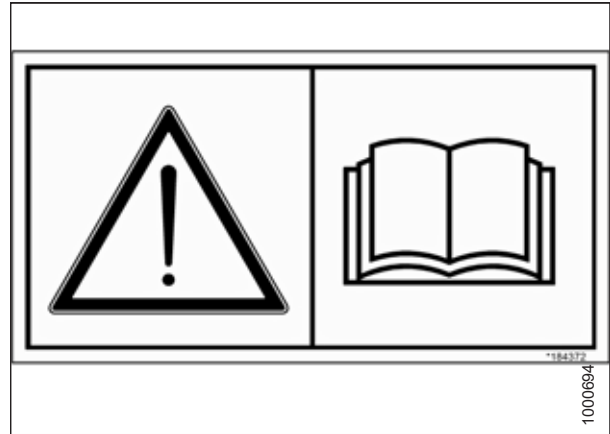


Figure 1.25: Operator's Manual Decal

1.7.1 Installing Safety Decals

1. Clean and dry the installation area.
2. Decide exactly where you are going to place the decal.
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 out.

1.8 Safety Sign Decals

MD #184372

General hazard pertaining to machine operation and servicing.

CAUTION

- 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 safety instructions with all Operators every year.
- Ensure that all safety signs are installed and legible.
- Make certain everyone is clear of machine before starting engine and during operation.
- Keep riders off the machine.
- Keep all shields in place and stay clear of moving parts.
- Disengage header drive, put transmission in Neutral, and wait for all movement to stop before leaving operator's position.
- Stop the engine and remove the key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage locks to prevent lowering of header or reel before servicing in the raised position.
- Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

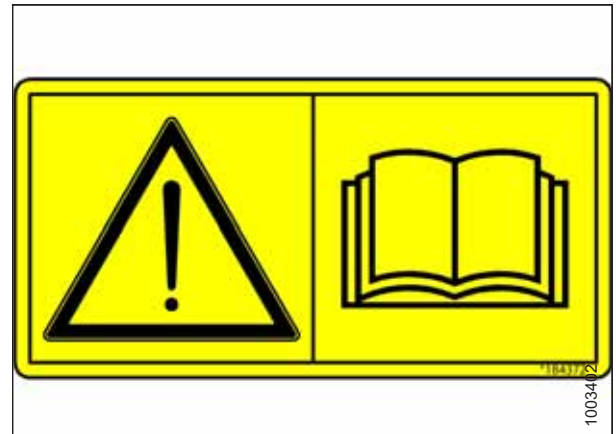


Figure 1.26: MD #184372

MD #166466

HIGH PRESSURE HYDRAULICS

DO NOT GO NEAR LEAKS

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



Figure 1.27: MD #166466

SAFETY

MD #174683

PINCH POINT - MOVING PARTS

STAND CLEAR



Figure 1.28: MD #174683

MD #291638

LOCK - SWATH COMPRESSOR DECK

- 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

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.

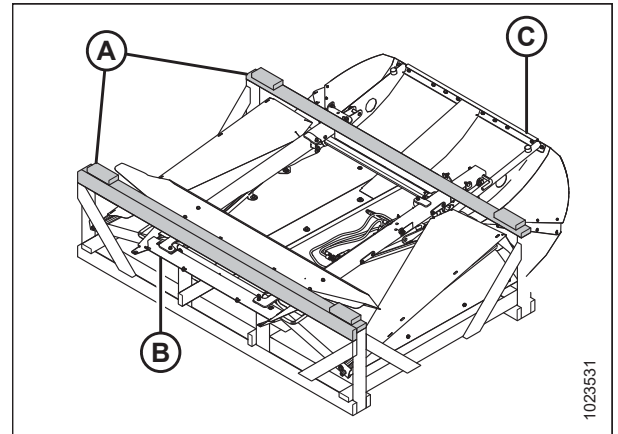


Figure 2.1: Shipping Configuration

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.

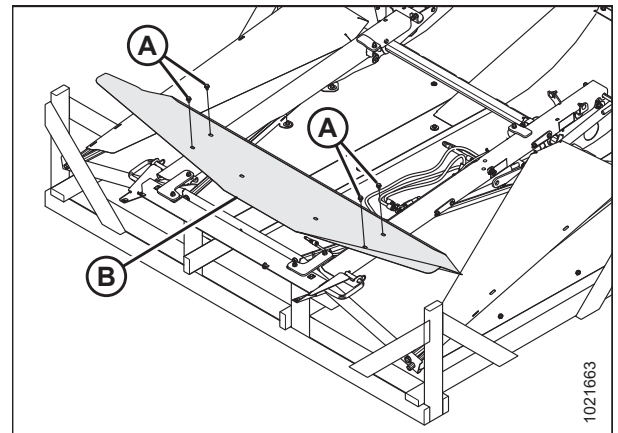


Figure 2.2: Front Deflector

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

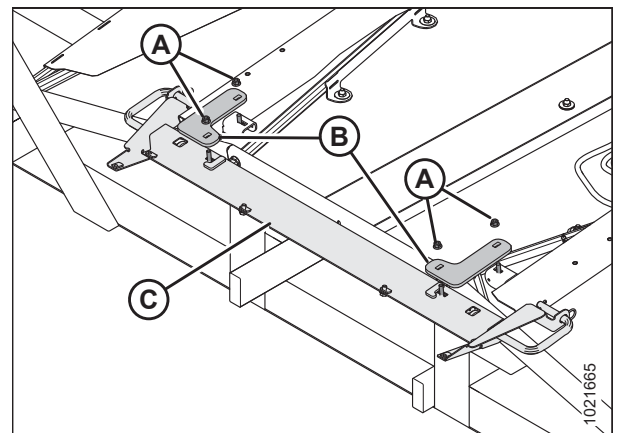


Figure 2.3: Front Pivot Support

INSTALLATION INSTRUCTIONS

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).

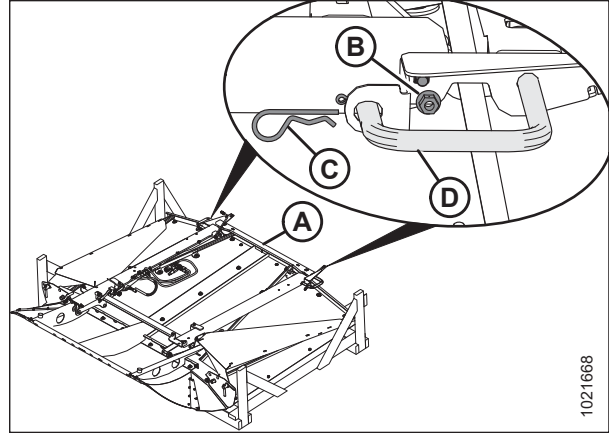


Figure 2.4: Front Pivot Support

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.

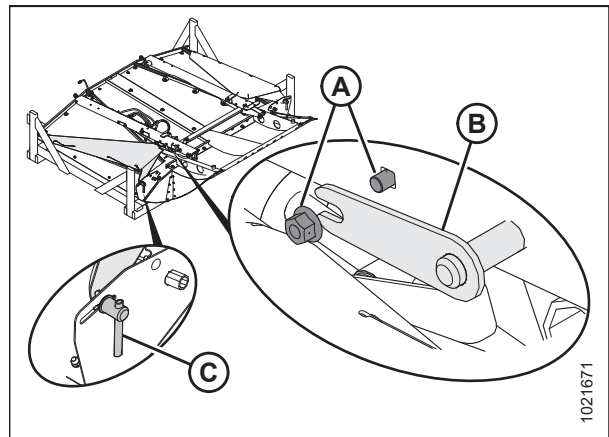


Figure 2.5: Left Support

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.

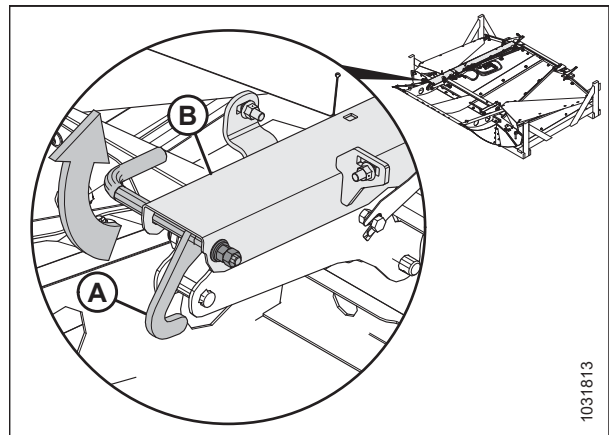


Figure 2.6: Left Support

INSTALLATION INSTRUCTIONS

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).

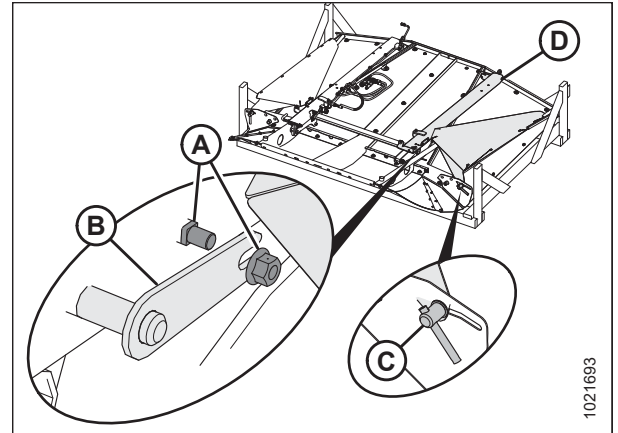


Figure 2.7: Right Support

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.

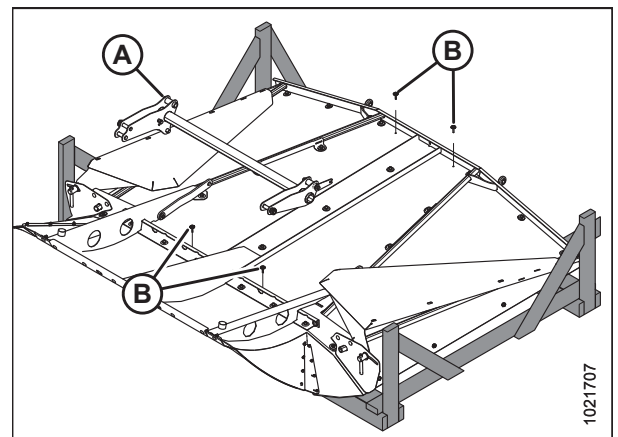


Figure 2.8: Rock Shaft

2.2 Installing Swath Compressor

Follow these steps to install the swath compressor onto an M1170 or M1240 Windrower. The swath compressor weighs approximately 180 kg (400 lb.).

2.2.1 Installing Frame

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

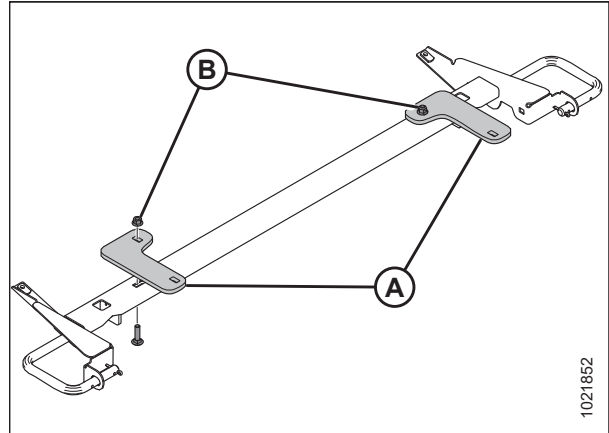


Figure 2.9: Front Support

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

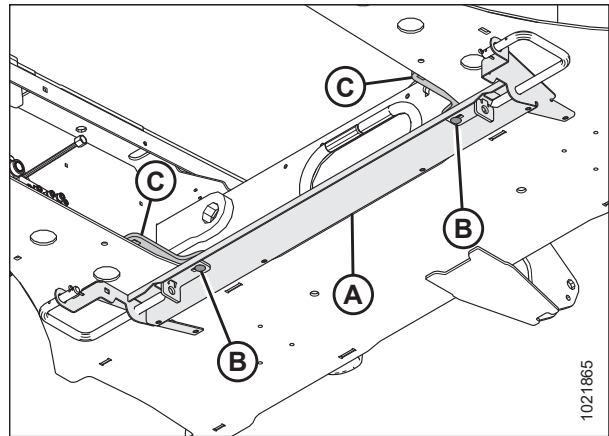


Figure 2.10: Front Support on Windrower Frame

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

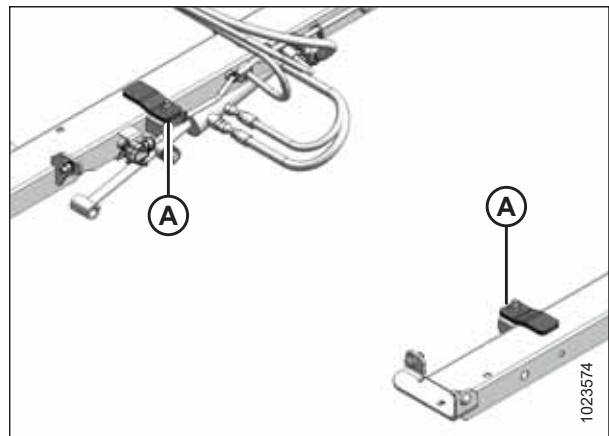


Figure 2.11: Left and Right Supports

INSTALLATION INSTRUCTIONS

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

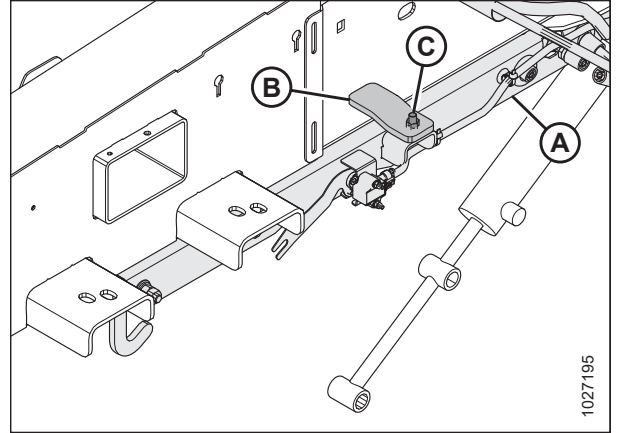


Figure 2.12: Left Support

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

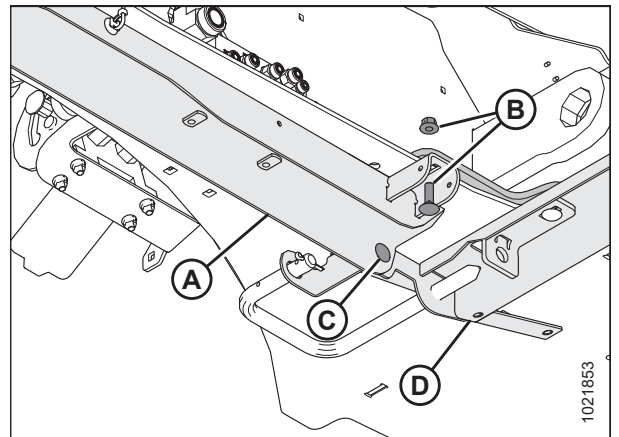


Figure 2.13: Left Support

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

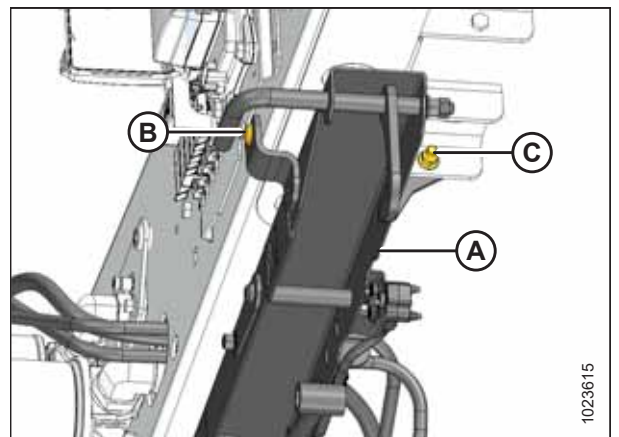


Figure 2.14: Left Support

INSTALLATION INSTRUCTIONS

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

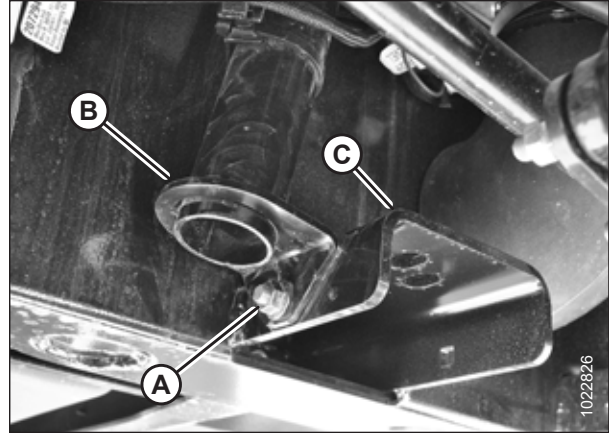


Figure 2.15: Air Cleaner Support

- Install front end of right support (A) to 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 right support and front support. Do **NOT** fully tighten.

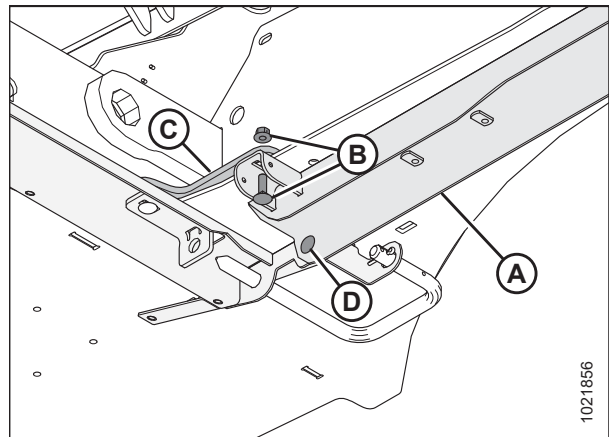


Figure 2.16: Right Support

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

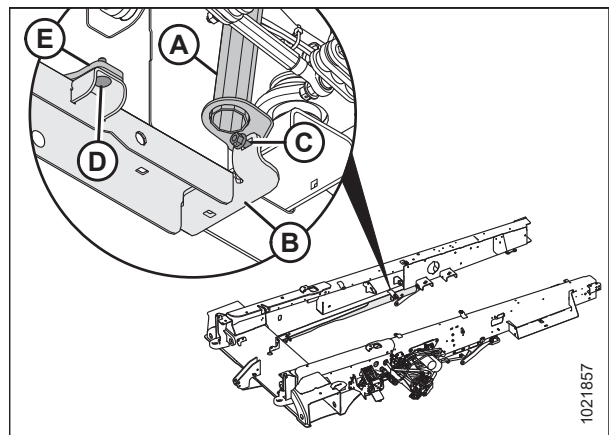


Figure 2.17: Right Support

INSTALLATION INSTRUCTIONS

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

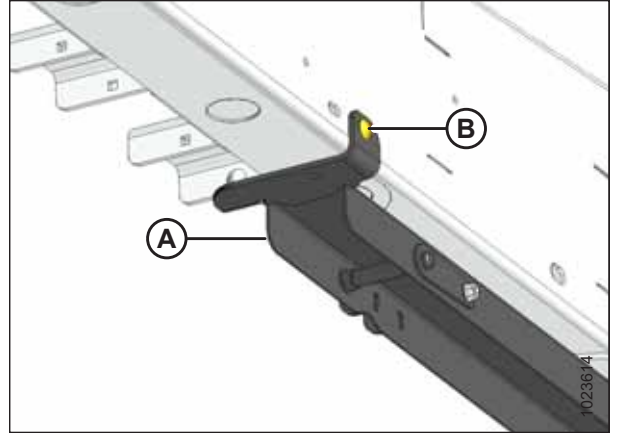


Figure 2.18: Right Support

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

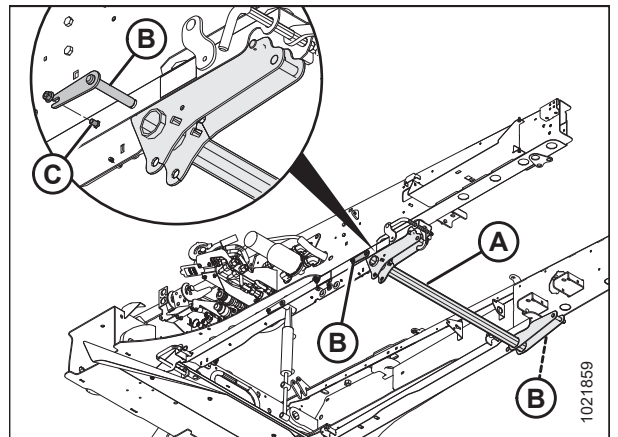


Figure 2.19: Rock Shaft

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

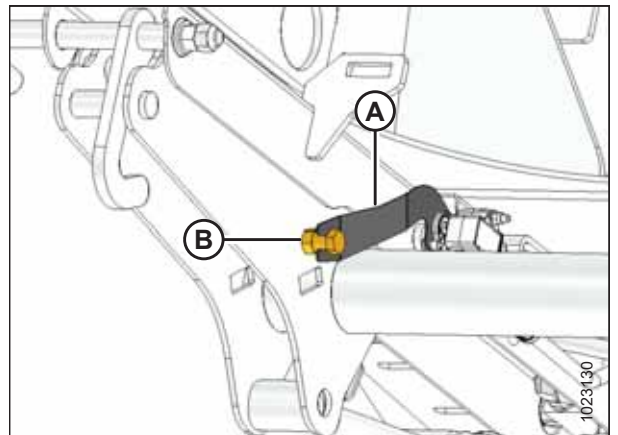


Figure 2.20: Sensor on Left Support

INSTALLATION INSTRUCTIONS

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

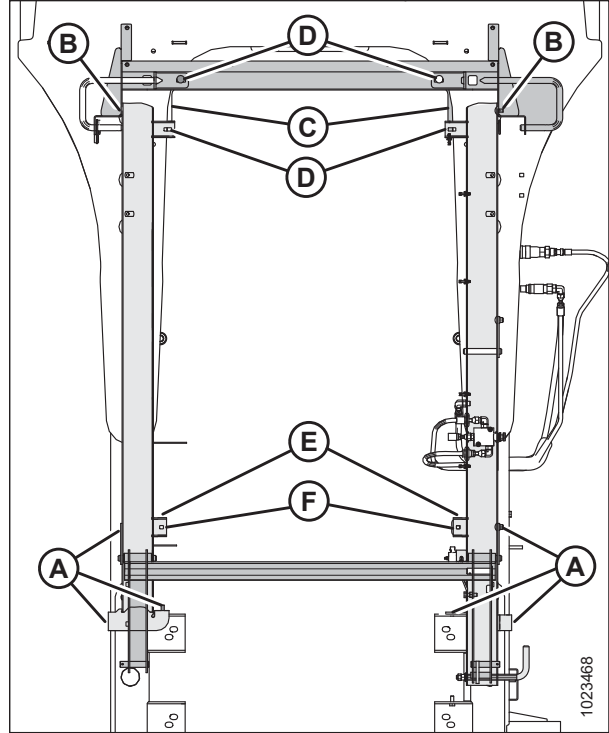


Figure 2.21: View from below Windrower

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

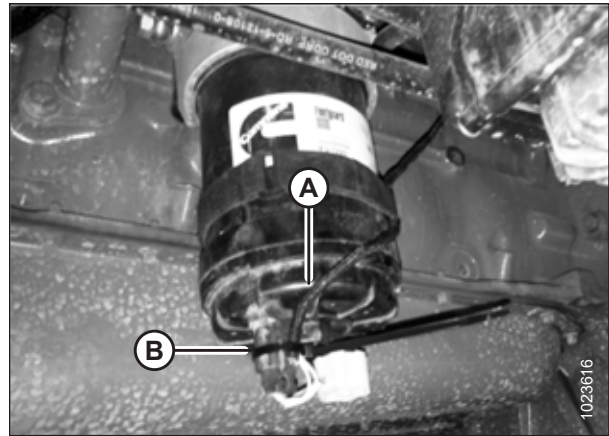


Figure 2.22: Fuel Filter Sensor Wire

INSTALLATION INSTRUCTIONS

2.2.2 Installing Electrical 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.

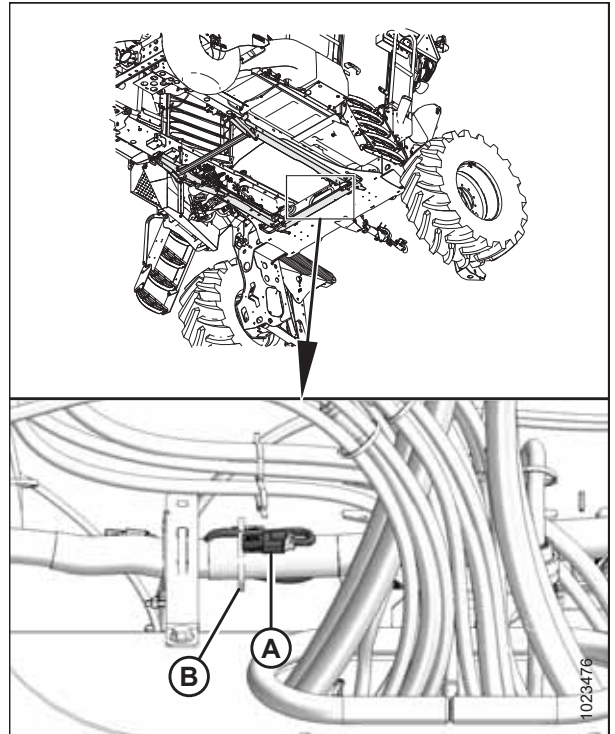


Figure 2.23: Windrower Electrical Harness

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

NOTE:

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

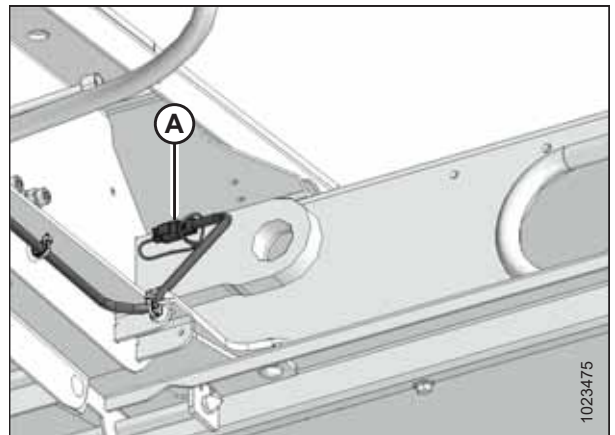


Figure 2.24: Windrower Electrical Harness

2.2.3 Connecting Hydraulics

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 hoses to avoid pinching.

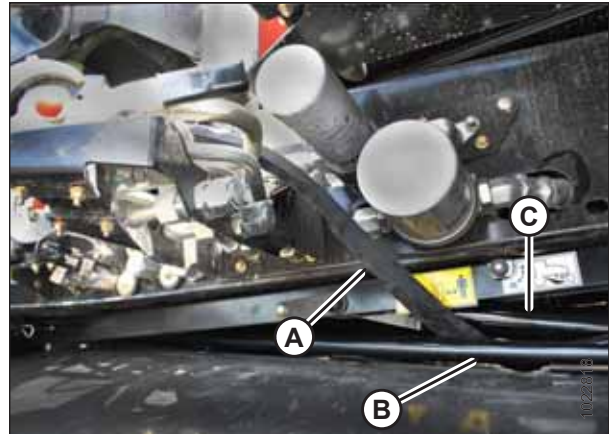


Figure 2.25: M1170 Hose Routing – 2017 and Earlier

M1170 / M1240 (2018 and later) hose routing

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

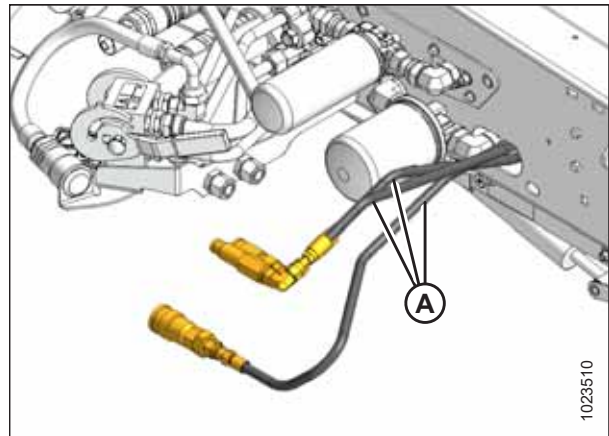


Figure 2.26: M1170 and M1240 Hose Routing — 2018 and Later

CAUTION

Check to be sure all bystanders have cleared the area.

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



Figure 2.27: Windrower Console Switches

INSTALLATION INSTRUCTIONS

M1170 (2017 and earlier) hose connections

5. Route hoses under the filters and connect 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 sheath contacts fittings. Secure sheath at both ends with cable ties (MD #30753) supplied in manual bag.

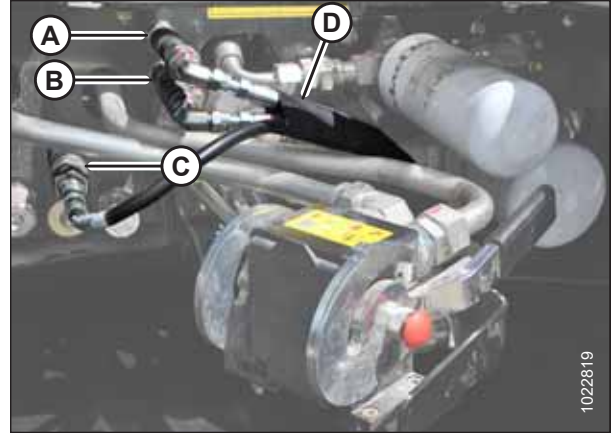


Figure 2.28: M1170 Hose Connections – 2017 and Earlier

M1170 / M1240 (2018 and later) hose connections

7. Connect 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 sheath contacts coupler fittings. Secure sheath at both ends with cable ties (MD #30753) supplied in manual bag.

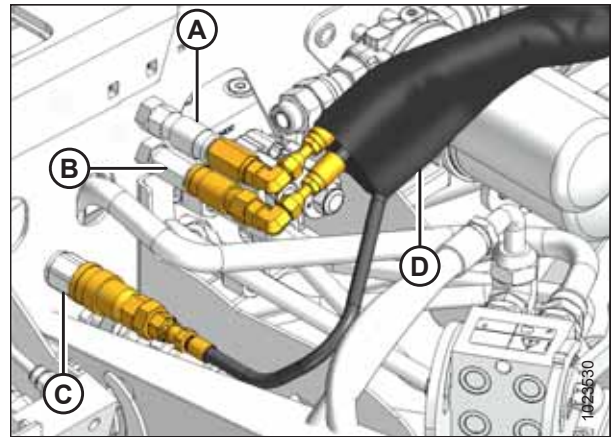


Figure 2.29: M1170 and M1240 Hose Connections – 2018 and Later

INSTALLATION INSTRUCTIONS

2.2.4 Installing Shield Assembly

1. Start engine and raise header legs. Press SWATH COMPRESSOR LOWER button (A) to fully retract swath compressor cylinder.
2. Shut off engine and remove key.



Figure 2.30: Windrower Console Buttons

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

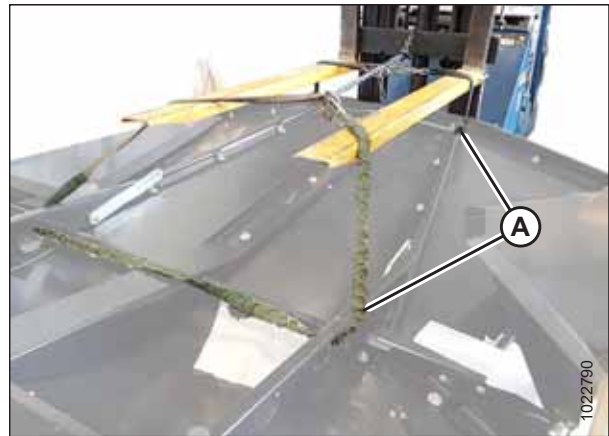


Figure 2.31: Lifting Swath Compressor Shield

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

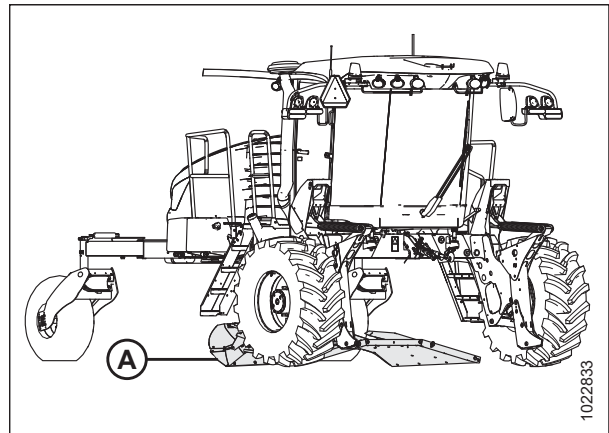


Figure 2.32: Compressor Shield under Windrower

INSTALLATION INSTRUCTIONS

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

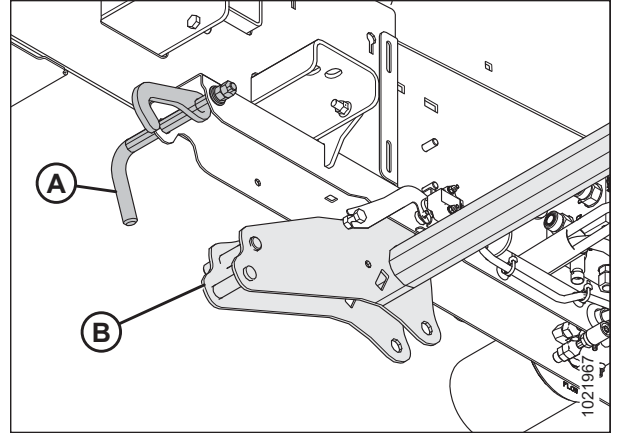


Figure 2.33: Rock Shaft and Lock

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

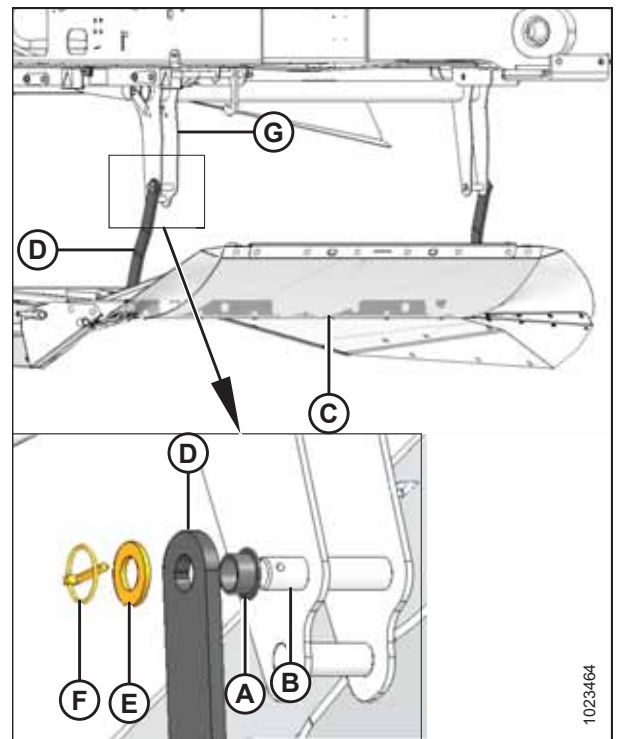


Figure 2.34: Shield Installation

INSTALLATION INSTRUCTIONS

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

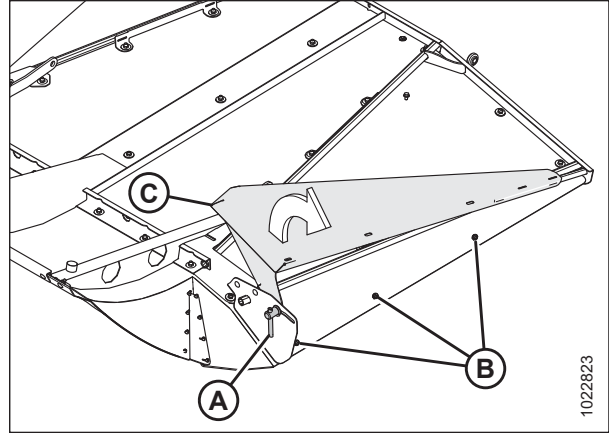


Figure 2.35: Side Deflector Shipping Position

- Rotate side deflector (A) to working position, and secure it to compressor shield with three bolts and nuts (B) from previous step. Install bolts with heads facing the crop.
- Torque nuts to 22 Nm (15 lbf-ft).
- Position the side deflector and tighten the adjustment handle (C). Repeat on opposite side.

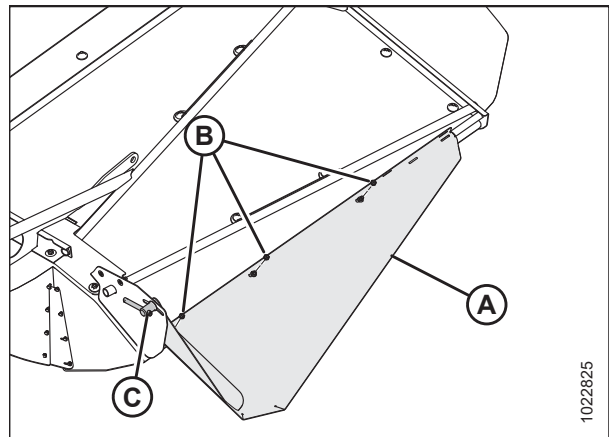


Figure 2.36: Side Deflector Working Position

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

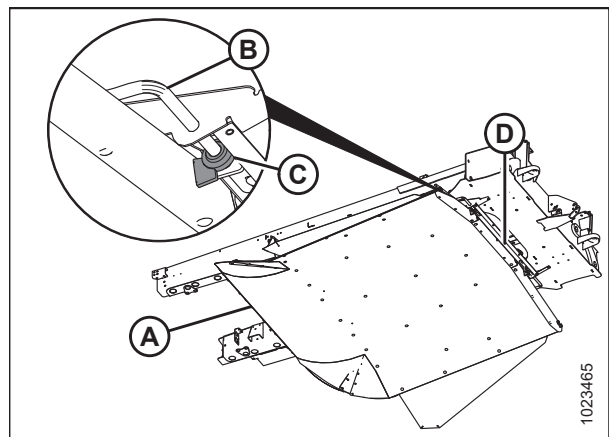


Figure 2.37: Front Pivot Pins

INSTALLATION INSTRUCTIONS

17. Install hairpin (A) to secure pivot pin (B). Repeat on opposite side.

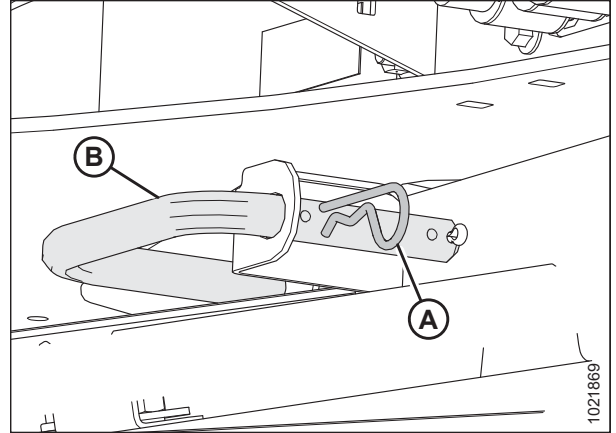


Figure 2.38: Front Pivot Pins

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

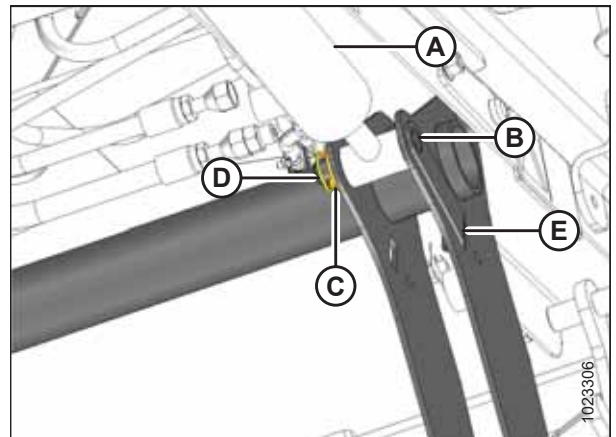


Figure 2.39: Rock Shaft

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

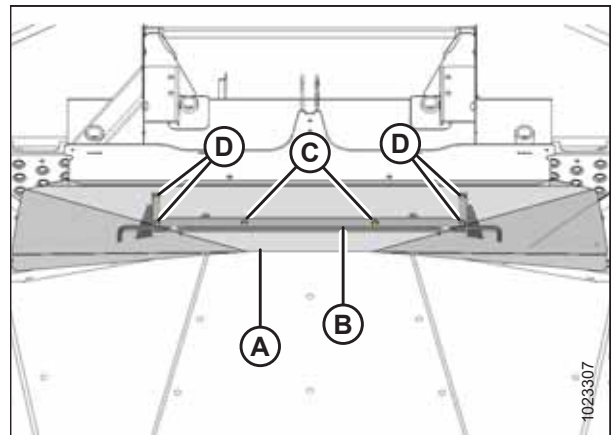


Figure 2.40: Front Deflector — View from below Shield

Chapter 3: Operation

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. To activate the swath compressor with the Harvest Performance Tracker (HPT), follow these steps:

NOTE:

If necessary, refer to the windrower operator’s manual to review navigating the HPT display. A header must be attached to the windrower.

1. Turn 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.
3. Use the Harvest Performance Tracker (HPT) scroll knob (B) or the ground speed lever (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).

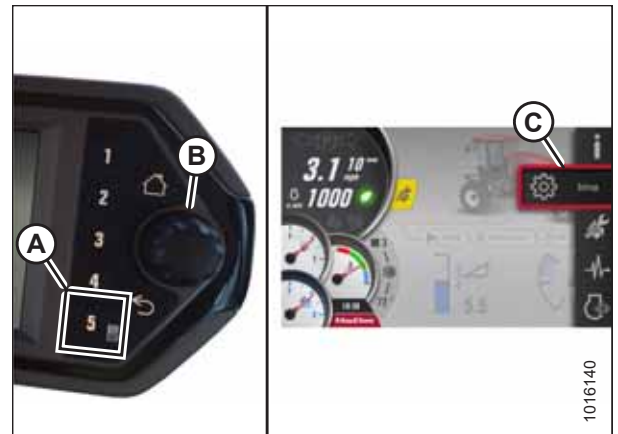


Figure 3.1: Opening the Main Menu



Figure 3.2: Header Setup Screen

OPERATION

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

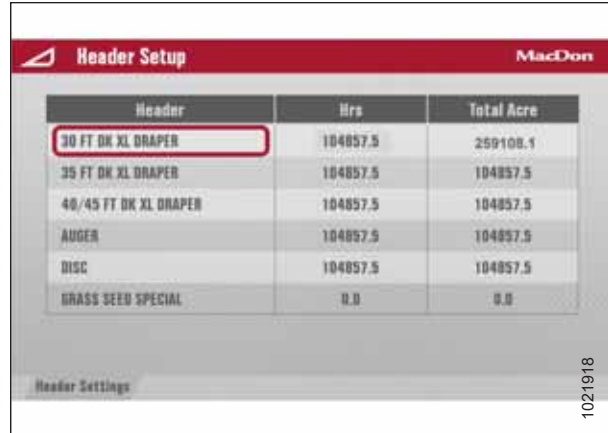


Figure 3.3: Header Setup Screen

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

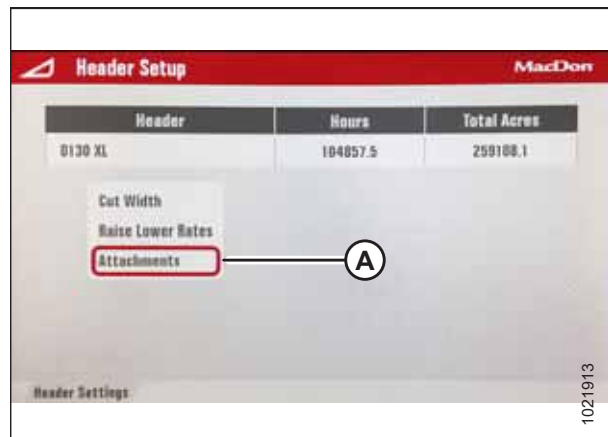


Figure 3.4: Header Setup Screen

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

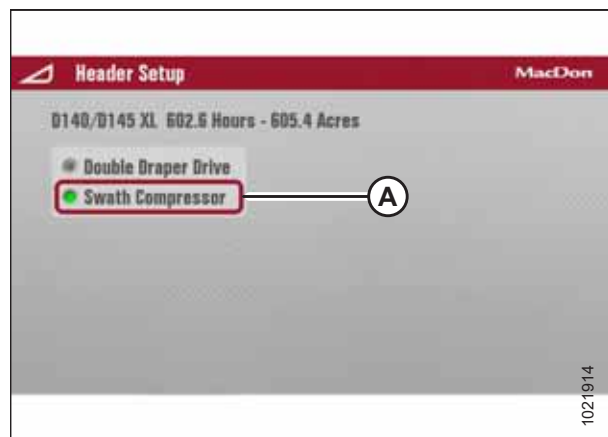


Figure 3.5: Attachments Screen

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 sensor. For instructions, refer to [3.2 Calibrating Position Sensor, page 34](#).

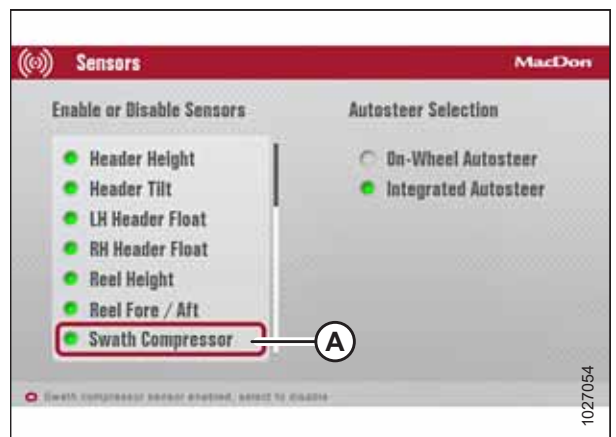


Figure 3.8: Sensors Menu

3.2 Calibrating Position Sensor

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

To calibrate the system with the header attached to the windrower, refer to [3.2.1 Calibrating Sensors with Header Attached](#), page 34.

3.2.1 Calibrating Sensors with Header Attached

The Harvest Performance Tracker (HPT) recognizes the header that is attached to the windrower and determines the systems that require calibration. The following sensors will be calibrated depending on header type:

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

CAUTION

Before starting the machine, check to be sure all bystanders have cleared the area.

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

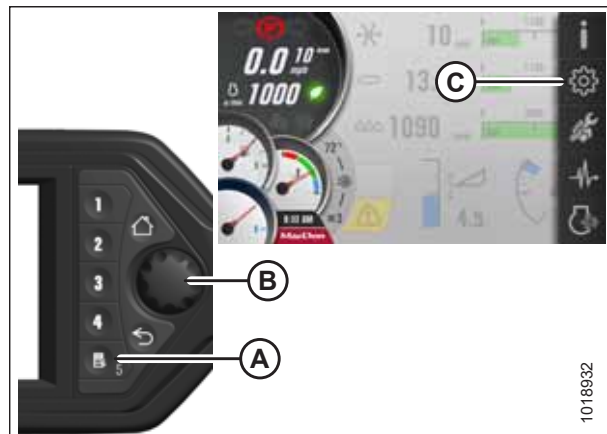


Figure 3.9: Opening the Main Menu

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 screen.



Figure 3.10: Windrower Settings Icon and Calibration Submenu Icon

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

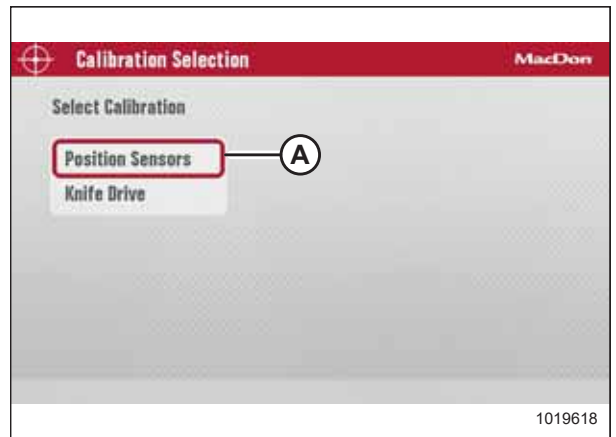


Figure 3.11: Calibration Selection Screen

NOTE:

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

8. Press the PLAY icon on the screen to begin the calibration process. The display on the screen 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.

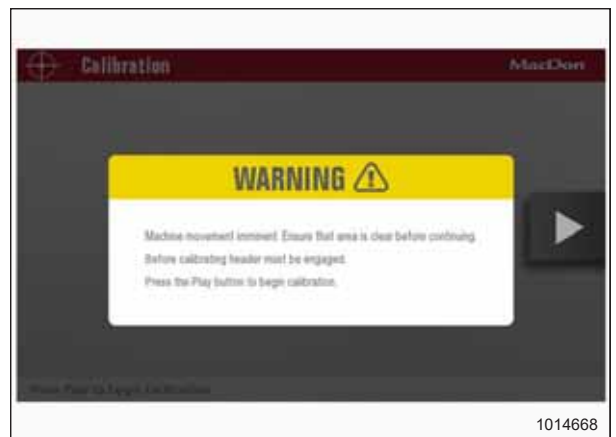


Figure 3.12: Calibration Screen

OPERATION

NOTE:

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

NOTE:

If a sensor goes out of its normal operating range during the calibration process, calibration will stop and a message will appear on the screen 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) on the screen 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) on the screen 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 speed prior to calibration 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 and repeat the calibration process from the beginning.



Figure 3.16: Sample of Failed Calibration Display Message

3.3 Using the Swath Compressor

3.3.1 Controlling the Swath Compressor

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

! WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key from ignition before leaving operator’s seat for any reason.

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

NOTE:

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 31](#) refer to the Swath Compressor for M1 Series Windrowers Setup, Operation, and Parts Manual.



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.

NOTE:

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

NOTE:

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

OPERATION

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.

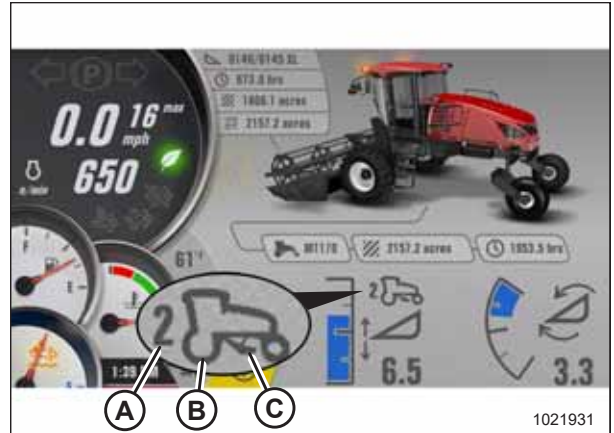


Figure 3.19: HPT Display

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 raises as the ground speed transitions through 1.6 km/h (1 mph) during deceleration.
- The swath compressor fully raises 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 the Swath Compressor, page 43](#).

3.3.2 Setting up the 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 flat, level surface with the ground speed lever (GSL) in PARK position and the steering wheel in locked position (centered). Wait for the HPT to beep and display a red P symbol to confirm the park brakes have engaged.

WARNING

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

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.

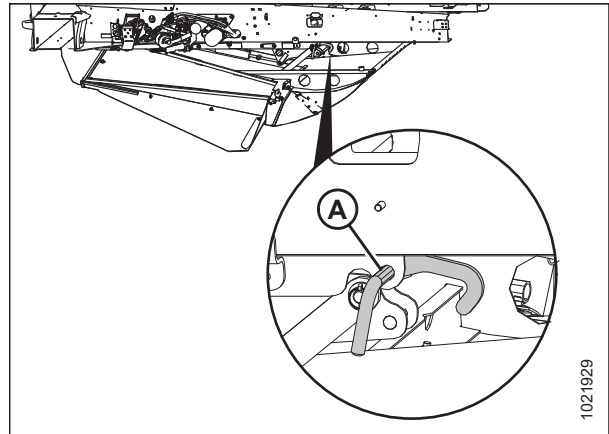


Figure 3.20: Swath Compressor Lock

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

OPERATION

- 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).
- Stop the windrower and 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 42](#).
 - If the swath compressor shield raises too easily in dense windrows, adjust the compression. For instructions, refer to [3.3.4 Adjusting Compression, page 42](#).



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:

- Adjust header and swath compressor to desired position.
- 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.

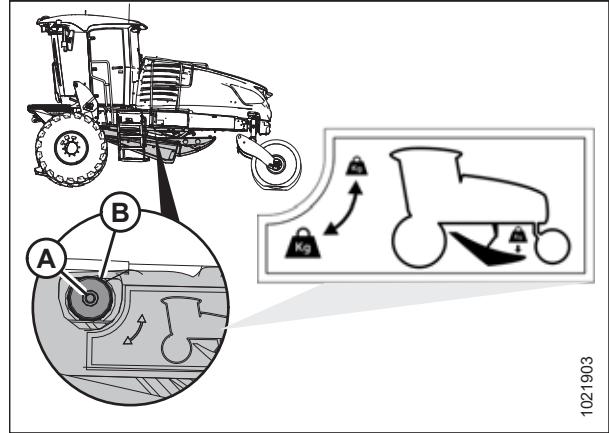


Figure 3.24: Compression Adjustment

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

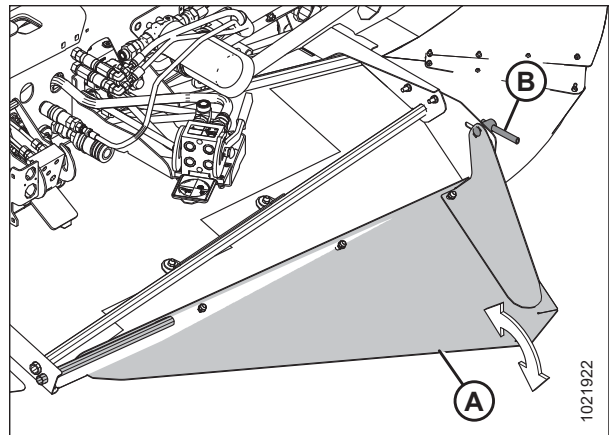


Figure 3.25: Swath Compressor Side Deflectors

3.3.6 Locking and Unlocking the 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.

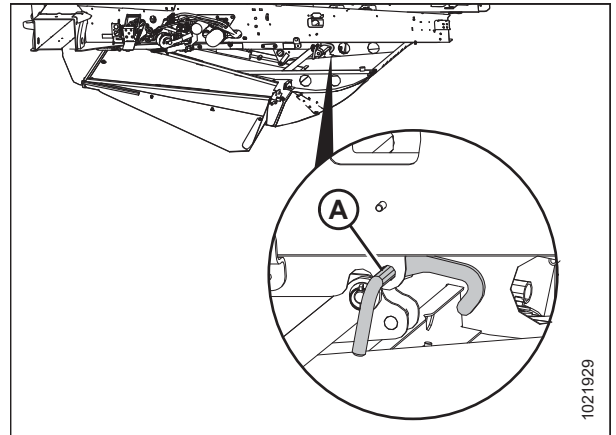


Figure 3.26: Swath Compressor Lock

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:

WARNING

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

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.

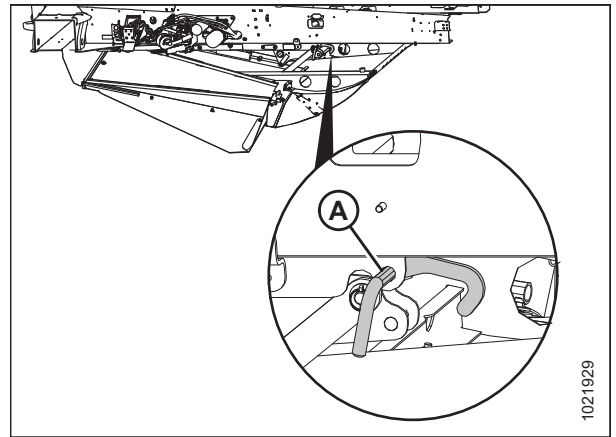


Figure 4.1: Swath Compressor Lock

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

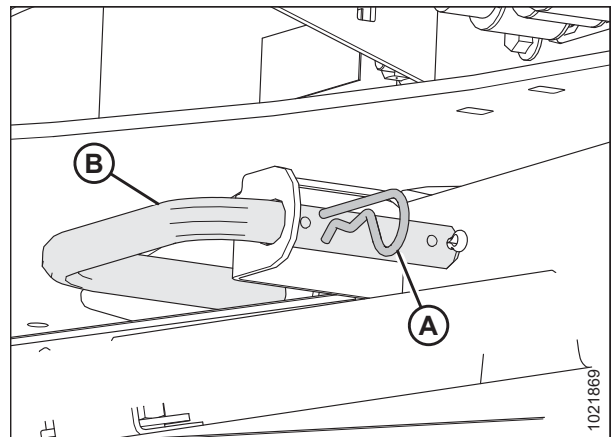


Figure 4.2: Forward Pivot Pin

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.

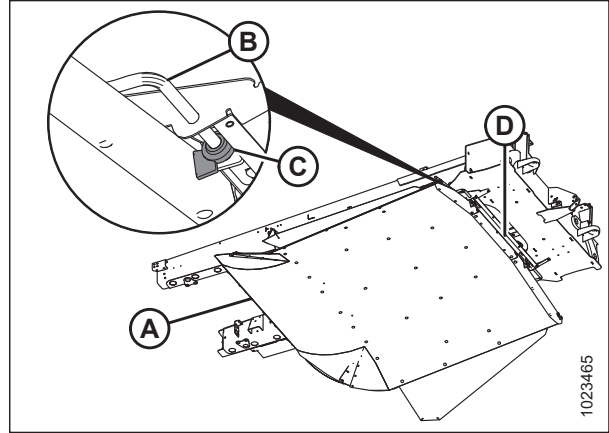


Figure 4.3: Front Pivot Pins

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.

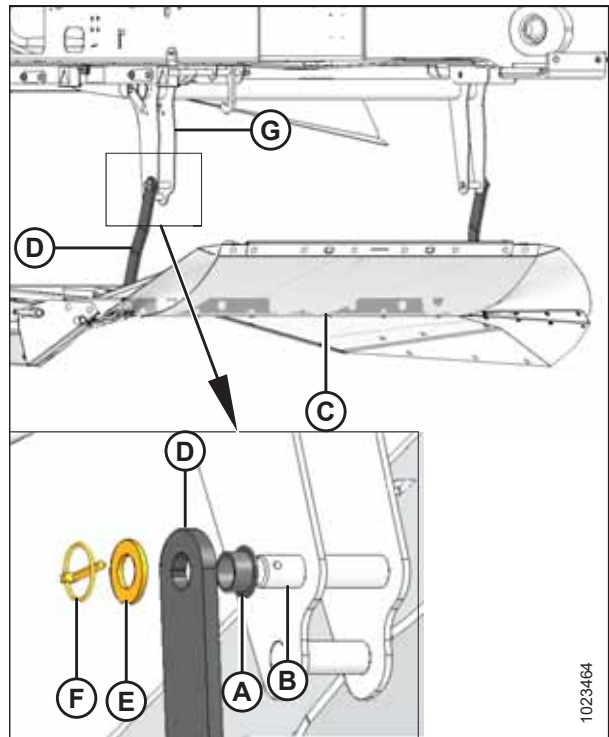


Figure 4.4: Disconnecting Lowering Arms

4.2 Electrical System

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

4.2.1 Rotary Sensor – MD #128994

Range: 0.5–4.5 volts (-45° – +45°)

Table 4.1 Rotary Sensor Pinout (MD #128994)

Position	Function
1	Power
2	Ground
3	Signal

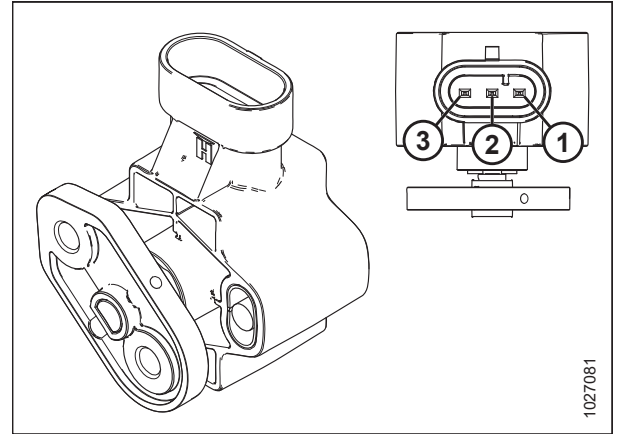


Figure 4.5: MD #128994

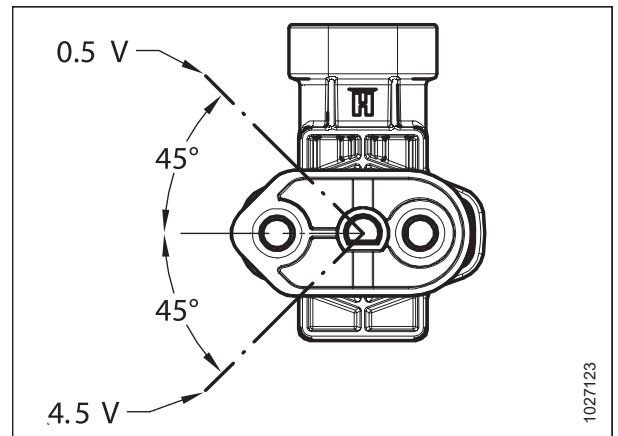
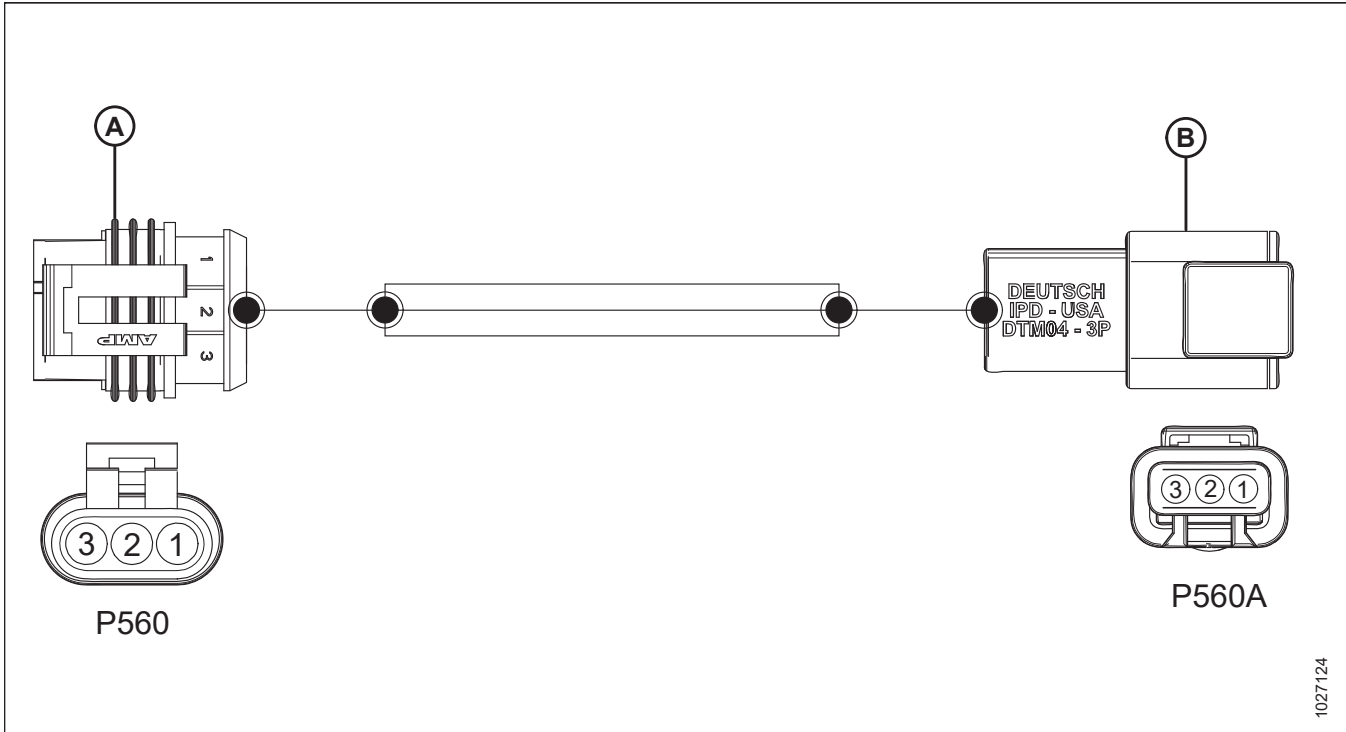


Figure 4.6: Sensor Voltage Range

4.2.2 Swath Compressor Harness – MD #209256

Figure 4.7: Harness (MD #209256)



A - MD #134091 (Tyco, AMP SS 1.5 3P) – to Rotary Sensor

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

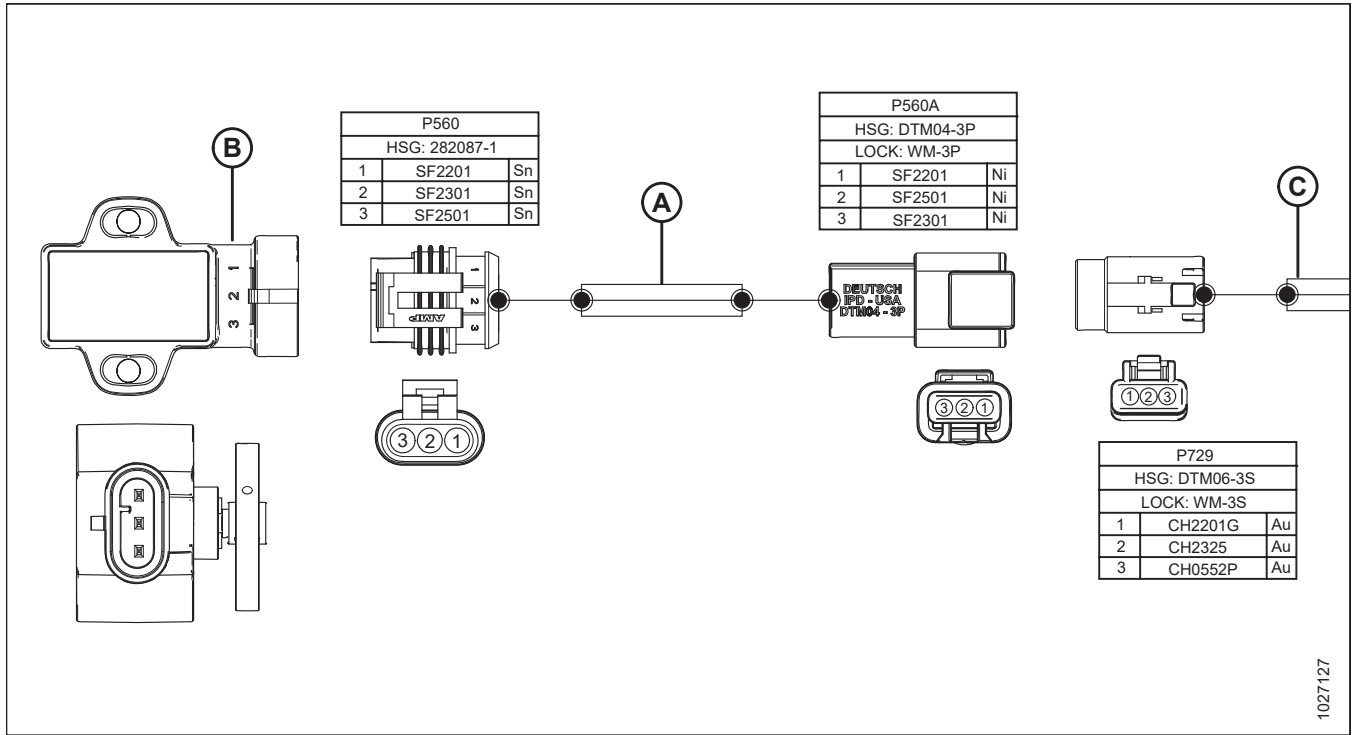
Table 4.3 MD #134018 – Deutsch, DTM04-3P

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

Figure 4.8: Swath Compressor Harness Connections



A - Swath Compressor Harness (MD #209256)

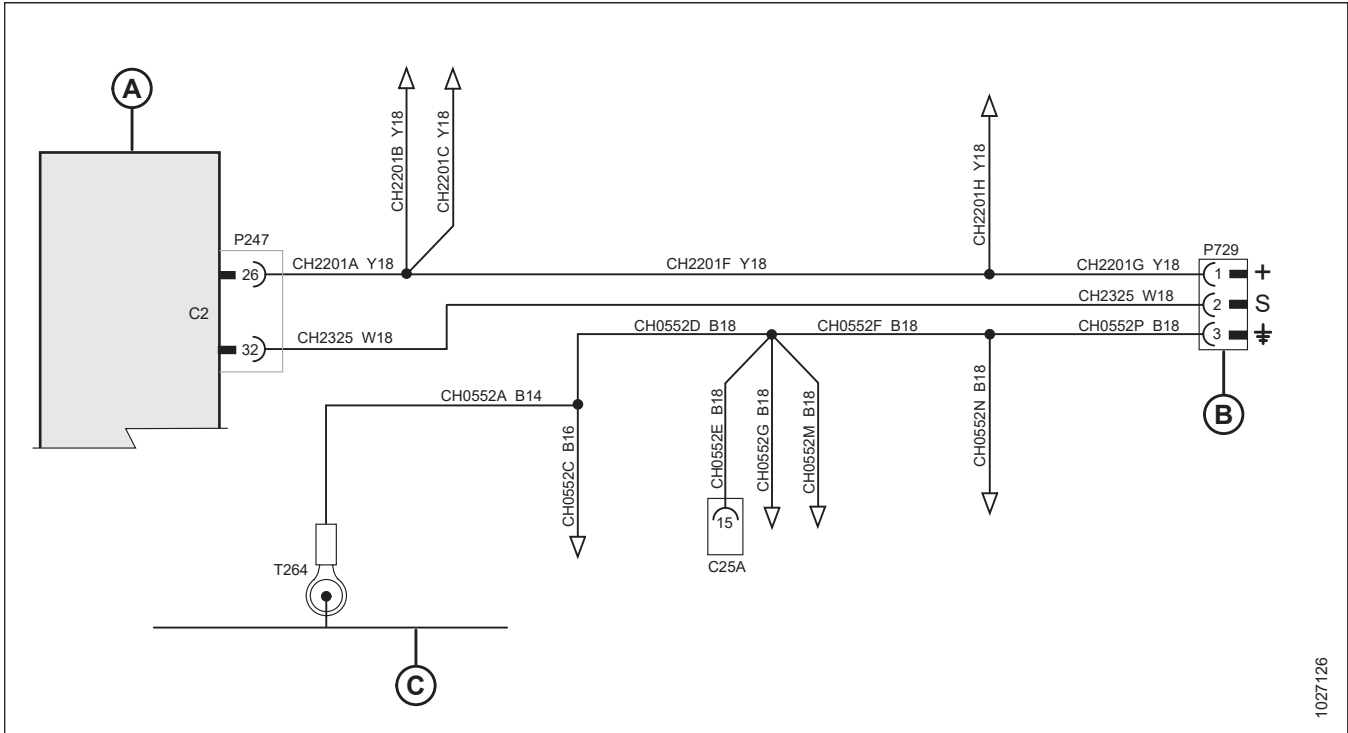
B - Rotary Sensor (MD #128994)

C - Chassis Harness

1027127

4.2.3 Electrical Schematic

Figure 4.9: Electrical Schematic – M1 Series with Swath Compressor



1027126

A - Chassis Extension Module

B - Connector P729 (to Swath Compressor Harness P560A)

C - Ground Rail

4.3 Hydraulic Schematic

MAINTENANCE

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

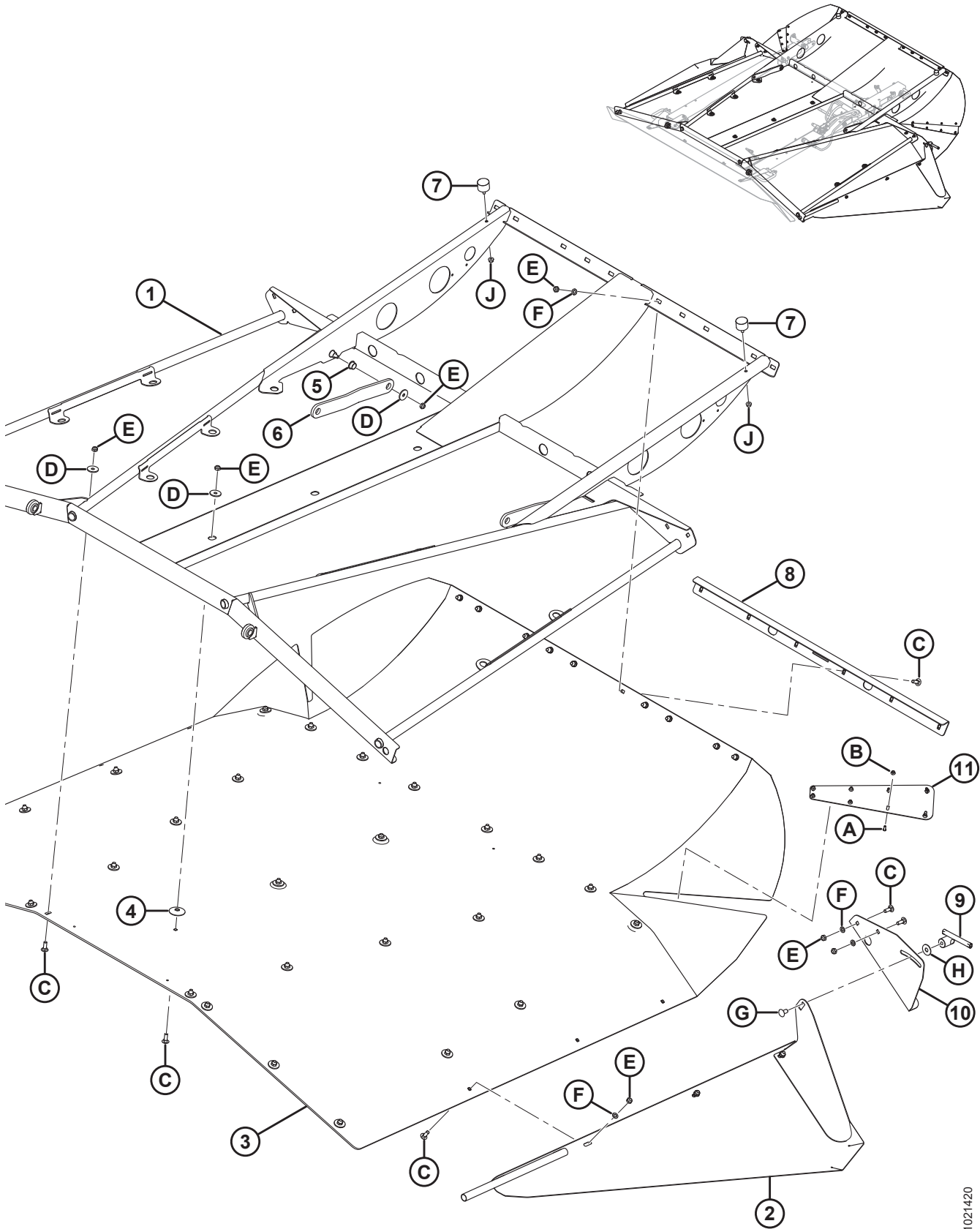
B - Swath Compressor Lift Cylinder
E - Inlet Manifold
H - Gear Pump

C - Hydraulic Tank
F - Junction Manifold

Chapter 5: Illustrated Parts Lists

This section lists the replacement parts for the M1 Series windrower swath compressor.

5.1 Swath Compressor Frame

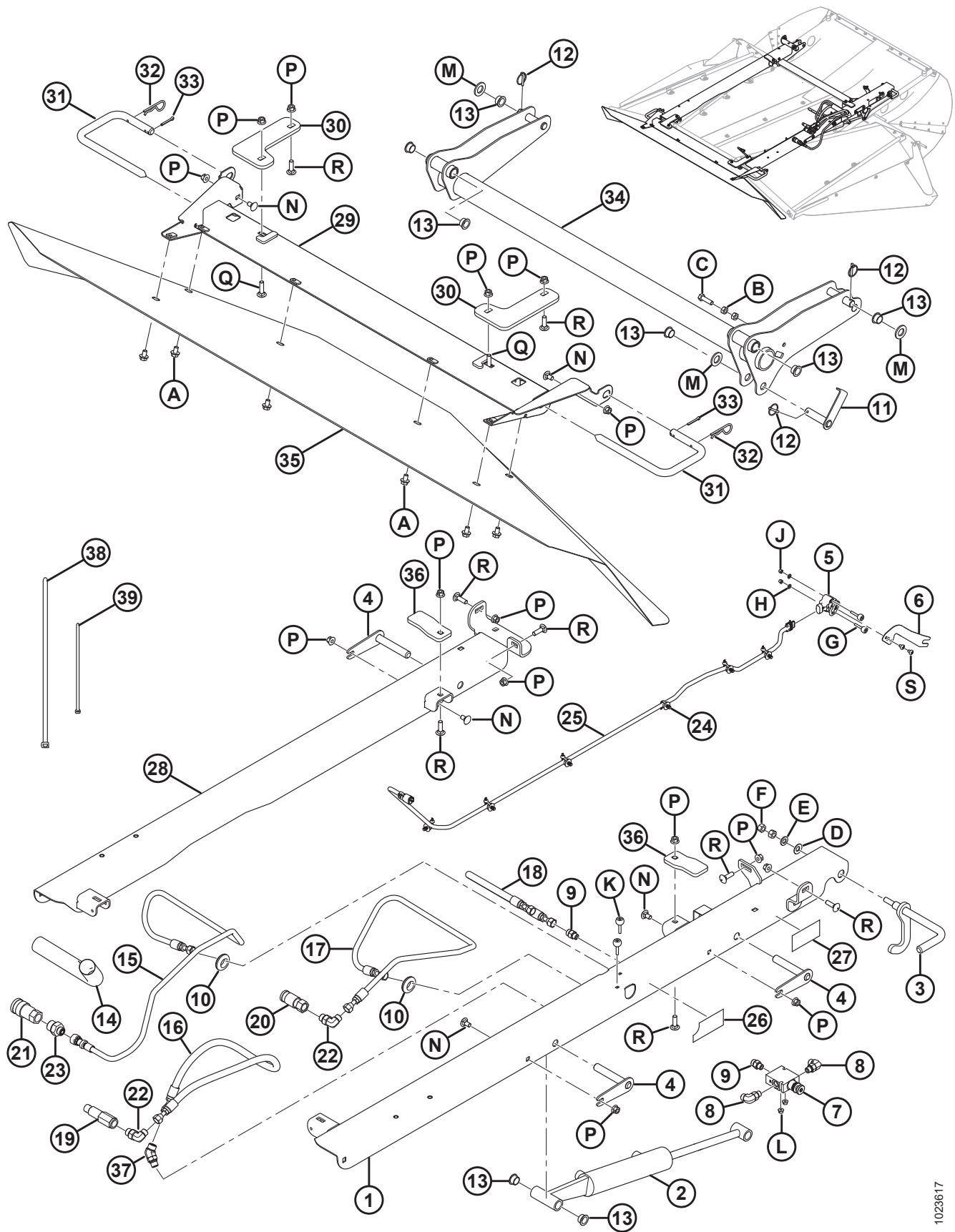


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ILLUSTRATED PARTS LISTS

Ref	Part Number	Description	Qty	Serial Number
		SWATH COMPRESSOR FRAME		
1	306165	SUPPORT – DEFLECTORS, WELDMENT	1	
2	277410	DEFLECTOR – LH WELDMENT	1	
	277411	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	16	
B	152668	NUT – HEX FLG CTR LOC M6 X 1-8-A2L	16	
C	252872	SCREW – FLG BTN HD M10 X 30-10.9-AA1J	49	
D	16652	WASHER – FLAT	31	
E	184692	NUT – HEX NYLOC M10 X 1.5-8-A3L	51	
F	184711	WASHER – FLAT REG M10-200HV-A3L	20	
G	152439	BOLT – RHSSN M12 X 1.75 X 25-8.8-A3L	2	
H	32247	WASHER – FLAT	2	
J	135337	NUT – HEX FLG CTR LOC M8 X 1.25-8-A2L	2	

5.2 Swath Compressor Hydraulics and Supports

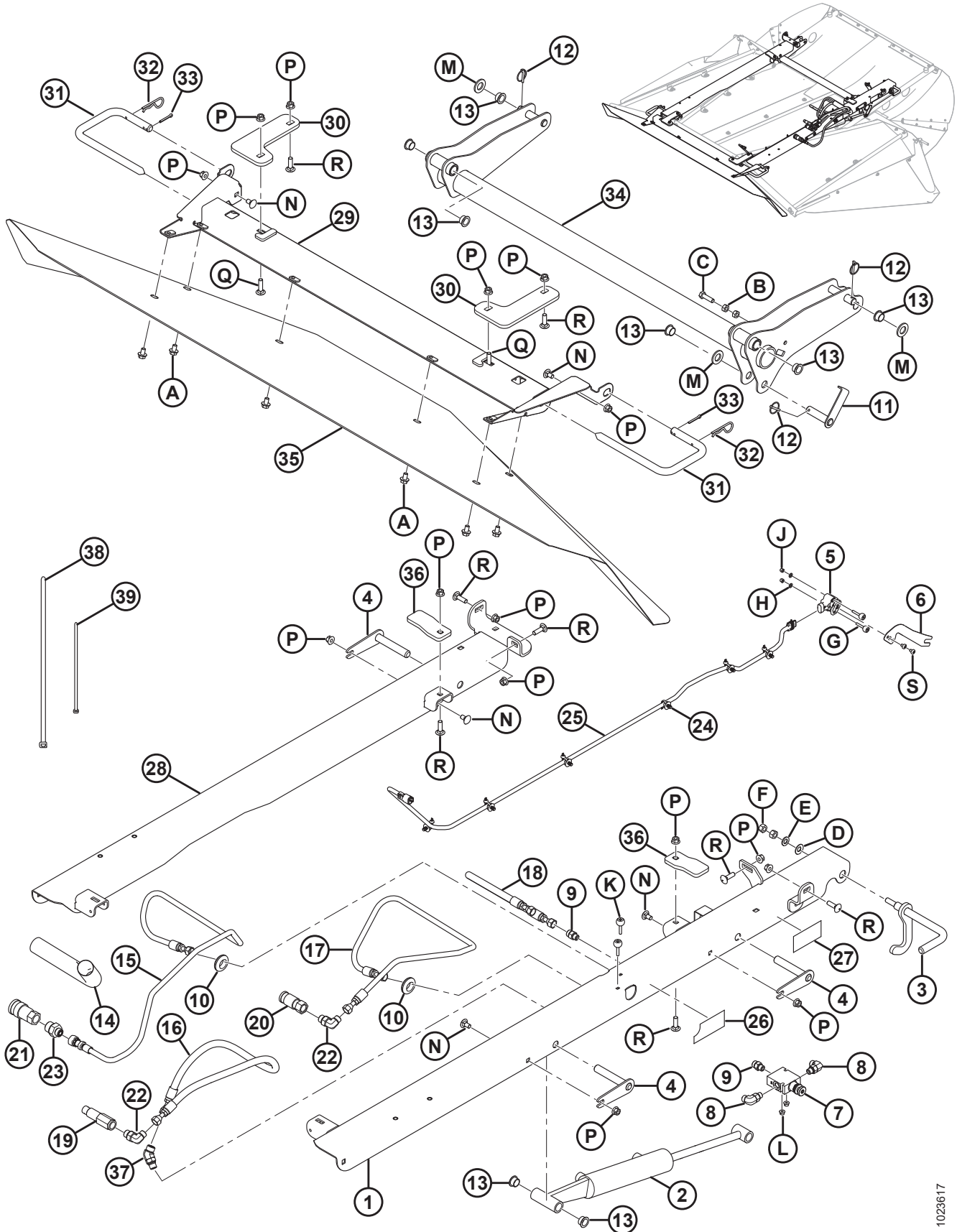


1023617

ILLUSTRATED PARTS LISTS

Ref	Part Number	Description	Qty	Serial Number
		HYDRAULICS AND SUPPORTS		
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.	1	
17	277044	HOSE – HYD, .25 IN. I.D., 1200 MM LG, 100R17, METAL REIN.	1	
18	232597	HOSE – HYD, .25 IN. I.D., 490 MM LG, 100R17, METAL REIN.	1	
19	135386	COUPLER – MALE HYD. 3/8 IN. FLAT FACE	1	
	111978	SEAL KIT		
20	135312	COUPLER – FEMALE HYD. 3/8 IN. FLAT FACE	1	
21	135474	COUPLER – HYDRAULIC, 1/2 IN. FEMALE FF	1	
22	136149	FITTING – ELBOW 90° HYD CW O-RING	2	
23	136194	FITTING – ADAPTER	1	
24	136655	FASTENER – FIR TREE MT W/ TIE	6	
25	209256	HARNESS – SWATH COMPRESSOR	1	
26	128973	DECAL – DOWN FORCE	1	
27	128974	DECAL – UP LOCK	1	
28	128781	SUPPORT – RH WELDMENT	1	
29	128762	SUPPORT – FRONT PIVOT, WELDMENT	1	
30	128776	BAR – CLAMP	2	
31	128756	PIN – PIVOT	2	
32	13125	PIN – HAIR	2	
33	18648	PIN – COTTER 3/16 DIA X 1.25 ZP	2	
34	128770	ROCKSHAFT – LIFT, WELDMENT	1	
35	128699	DEFLECTOR – FRONT	1	
36	277435	BAR – CLAMP	2	

ILLUSTRATED PARTS LISTS



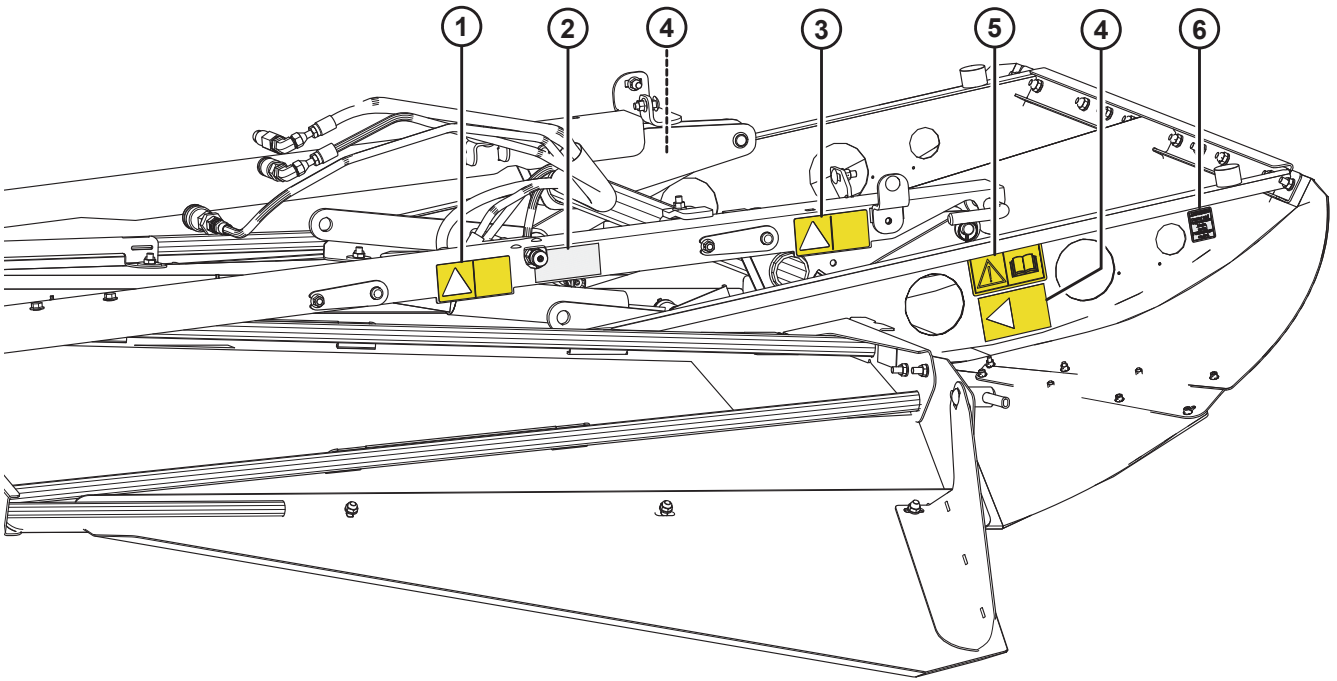
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ILLUSTRATED PARTS LISTS

Ref	Part Number	Description	Qty	Serial Number
37	136144	FITTING – ELBOW 45° HYD	1	
38	30753	FASTENER – CABLE TIE, BLACK, 305 MM LG ¹	2	
39	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	6	
B	30505	NUT – HEX M10 X 1.5-10-A3L	2	
C	30628	BOLT – HEX HD M10 X 1.5 X 35-8.8-A3L	1	
D	184595	WASHER – CONICAL SPRING 1/2 IN.	1	
E	184714	WASHER – FLAT REG M12-300HV-A3L	1	
F	184694	NUT – HEX M12 X 1.75-8-A3L	2	
G	136604	BOLT – RHSN TFL M5 X 0.8 X 40-8.8-AA1J	2	
H	184701	WASHER – FLAT LARGE M5-200HV	2	
J	197230	NUT – HEX NYLOC M5 X 0.8-8-A2L	2	
K	136731	BOLT – RHSN M6 X 1 X 45-8.8-A2L	2	
L	152668	NUT – HEX FLG CTR LOC M6 X 1-8-A2L	2	
M	18601	WASHER – SAE FLAT 13/16 I.D. X 1.5 IN. O.D. ZP	3	
N	136178	BOLT – RHSN M10 X 1.5 X 20-8.8-A3L	4	
P	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10-A3L	12	
Q	152732	BOLT – RHSN M10 X 1.5 X 40-8.8-A3L	2	
R	135691	BOLT – RHSN TFL M10 X 1.5 X 35-8.8-A3L	8	
S	252291	SCREW – PAN HD M6 X 1 X 8-8.8-A2L	2	

1. Shipped in manual bag.

5.3 Decals



1



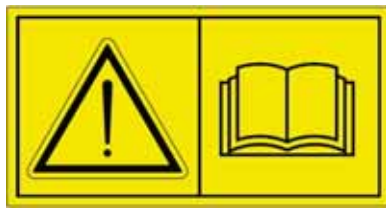
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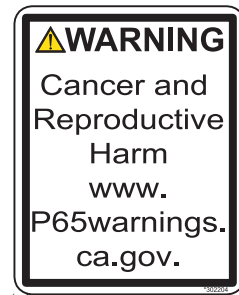
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4 x2



5



6

1031822

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

6.1 Torque Specifications

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

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

Jam nuts

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

Self-tapping screws

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

6.1.1 Metric Bolt Specifications

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

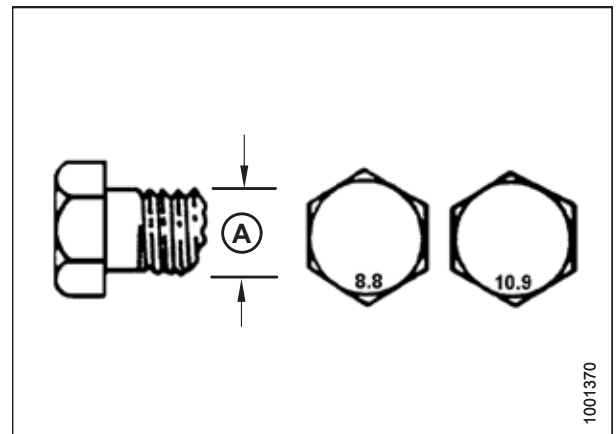


Figure 6.1: Bolt Grades

1001370

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

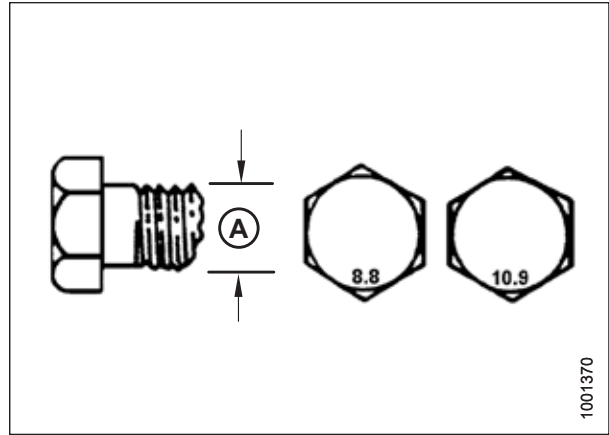


Figure 6.2: Bolt Grades

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

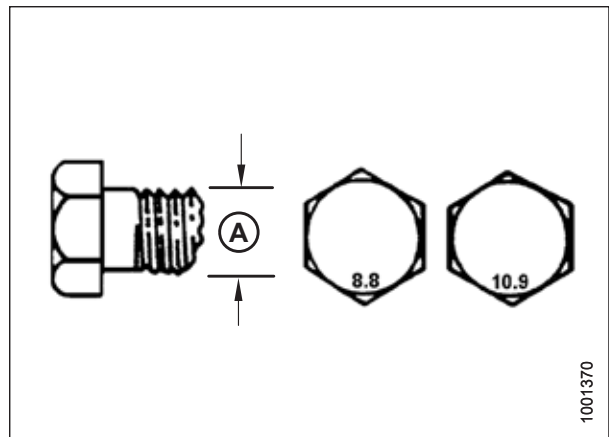


Figure 6.3: Bolt Grades

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

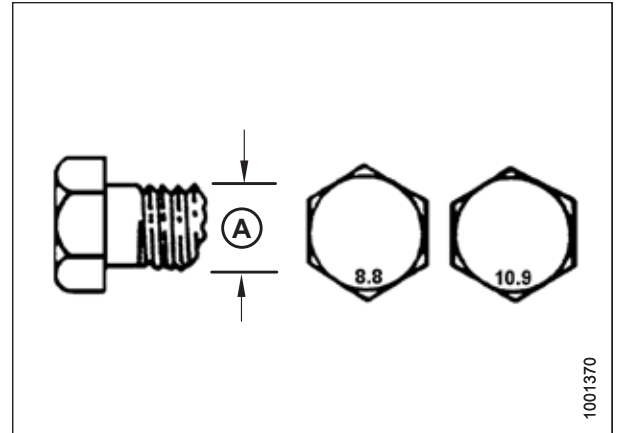


Figure 6.4: Bolt Grades

6.1.2 Metric Bolt Specifications Bolting into Cast Aluminum

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	-	-	-	-

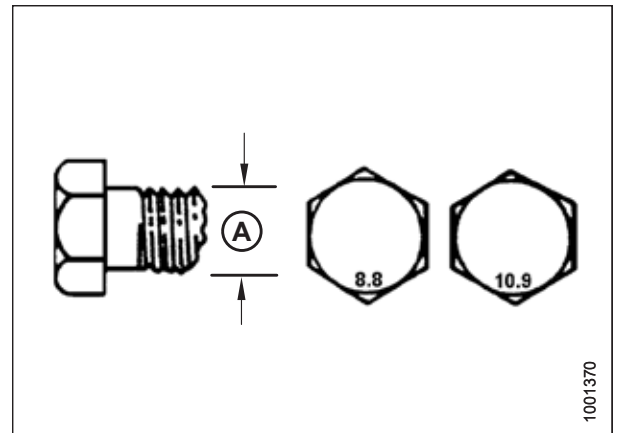


Figure 6.5: Bolt Grades

6.1.3 O-Ring Boss Hydraulic Fittings – Adjustable

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

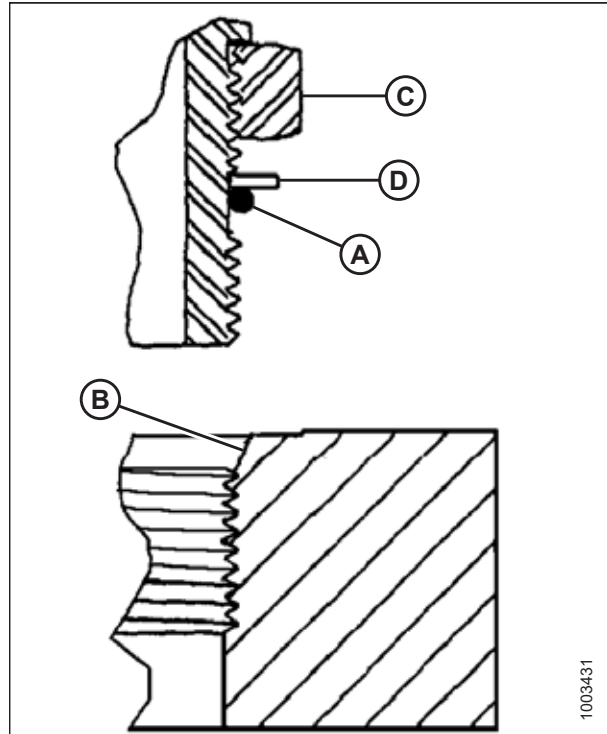


Figure 6.6: Hydraulic Fitting

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

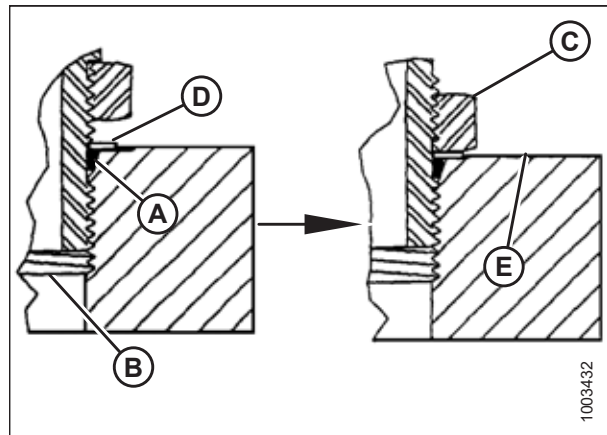


Figure 6.7: Hydraulic Fitting

REFERENCE

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

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

REFERENCE

6.1.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table 6.7, page 70.
6. Check final condition of fitting.

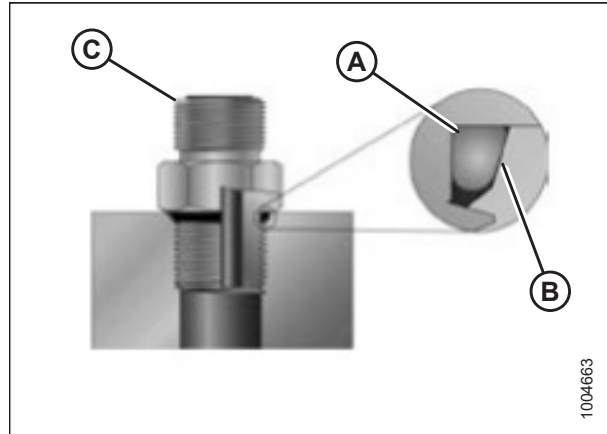


Figure 6.8: Hydraulic Fitting

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
-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

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

6.1.5 O-Ring Face Seal Hydraulic Fittings

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



Figure 6.9: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table 6.8, page 71.

NOTE:

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

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

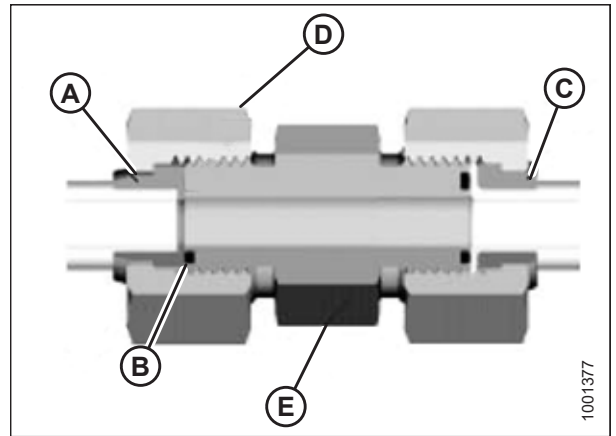


Figure 6.10: Hydraulic Fitting

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁵	
			Nm	lbf-ft
-3	Note ⁶	3/16	-	-
-4	9/16	1/4	25-28	18-21
-5	Note ⁶	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 ⁶	7/8	-	-

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

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

REFERENCE

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁷	
			Nm	lbf-ft
-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

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks, scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 6.9, page 72. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

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

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

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

6.2 Conversion Chart

Table 6.10 Conversion Chart

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

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Predelivery Checklist

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

 **CAUTION**

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 65</i>
	Raise and lower swath compressor to check for linkage binding. Rubber bumpers at rear should contact windrower frame when fully raised. If binding occurs, adjust by adding washers where rear supports are fastened to the outside of frame.	<i>2.2.1 Installing Frame, page 18</i>
	Ensure sensor arm does not bind when raising or lowering the swath compressor.	<i>2.2.1 Installing Frame, page 18</i>
	Ensure fuel filter sensor wire does not contact swath compressor frame when fully raised.	<i>2.2.1 Installing Frame, page 18</i>
	Check hydraulic hose routing for clearance when raising or lowering swath compressor. Adjust as necessary.	<i>2.2.3 Connecting Hydraulics, page 24</i>
	Ensure hydraulic hoses are secured in place with cable ties.	<i>2.2.3 Connecting Hydraulics, page 24</i>
	Ensure swath compressor lock is functioning properly.	<i>3.3.6 Locking and Unlocking the Swath Compressor, page 43</i>
	Check for hydraulic leaks.	—
	Ensure side deflectors are set evenly to desired position.	<i>3.3.5 Adjusting Side Deflectors, page 42</i>
	Ensure latest software version is installed in windrower.	—

Date checked: _____ Checked by: _____

MacDon Industries Ltd.

680 Moray Street
Winnipeg, Manitoba
Canada R3J 3S3
t. (204) 885-5590 f. (204) 832-7749

MacDon, Inc.

10708 N. Pomona Avenue
Kansas City, Missouri
United States 64153-1924
t. (816) 891-7313 f. (816) 891-7323

MacDon Australia Pty. Ltd.

A.C.N. 079 393 721
P.O. Box 103 Somerton, Victoria, Australia
Australia 3061
t.+61 3 8301 1911 f.+61 3 8301 1912

MacDon Brasil Agribusiness Ltda.

Rua Grã Nicco, 113, sala 404, B. 04
Mossunguê, Curitiba, Paraná
CEP 81200-200 Brasil
t. +55 (41) 2101-1713 f. +55 (41) 2101-1699

LLC MacDon Russia Ltd.

123317 Moscow, Russia
10 Presnenskaya nab, Block C
Floor 5, Office No. 534, Regus Business Centre
t. +7 495 775 6971 f. +7 495 967 7600

MacDon Europe GmbH

Hagenauer Strasse 59
65203 Wiesbaden
Germany

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