

**MacDon**

# **Swath Compressor for M Series Windrowers**

**Setup, Operation, and Parts Manual**

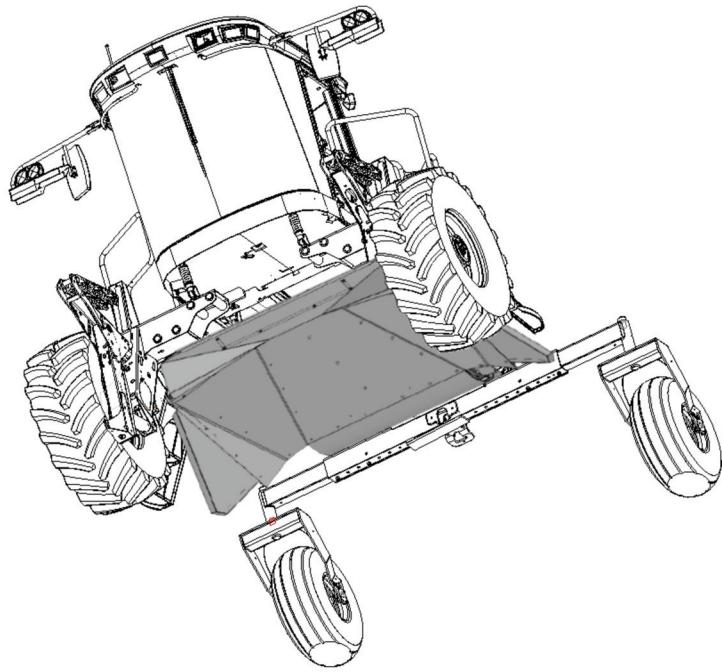
**214287 Revision A**

**2018 Model Year**

**Original Instruction**

***The harvesting specialists.***

Swath Compressor for M Series Windrowers



1023349

Published: September 2017

# Introduction

The MacDon Swath Compressor is a large, formed polyethylene sheet which is designed to mount to the underside of a MacDon M155, M155E4, or M205 Windrower. The MacDon Swath Compressor is designed for use with D Series 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.

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

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

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

## **NOTE:**

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

This manual is currently available in the English language only.

## **Conventions**

M155, M155E4 and M205 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.



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# 1 Safety

## 1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

### Why is safety important to you?

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



Figure 1.1: Safety Symbol

## SAFETY

### 1.2 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Signal words are selected using the following guidelines:

#### **DANGER**

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

#### **WARNING**

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

#### **CAUTION**

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

## 1.3 General Safety

### ⚠ CAUTION

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

Protect yourself.

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

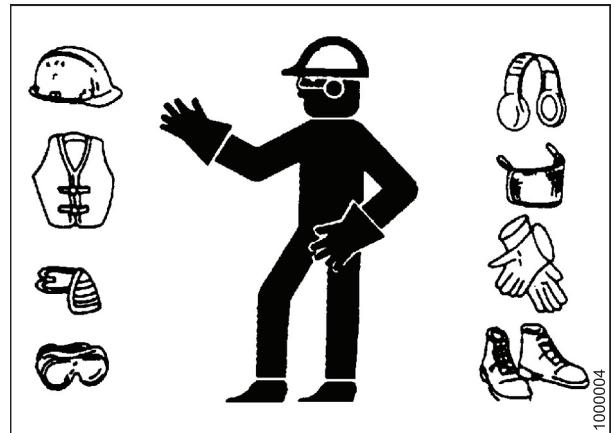


Figure 1.2: Safety Equipment

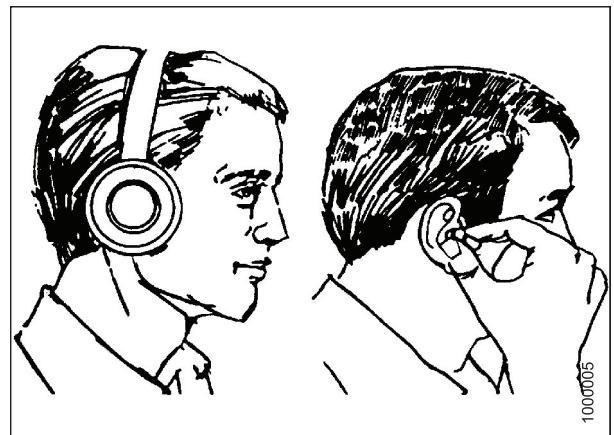


Figure 1.3: Safety Equipment

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

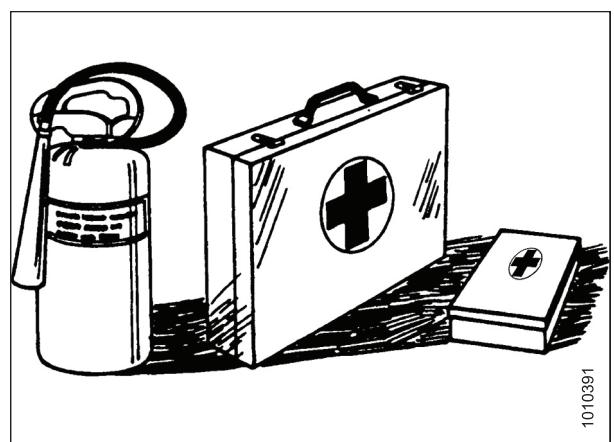


Figure 1.4: Safety Equipment

## SAFETY

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



Figure 1.5: Safety around Equipment

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

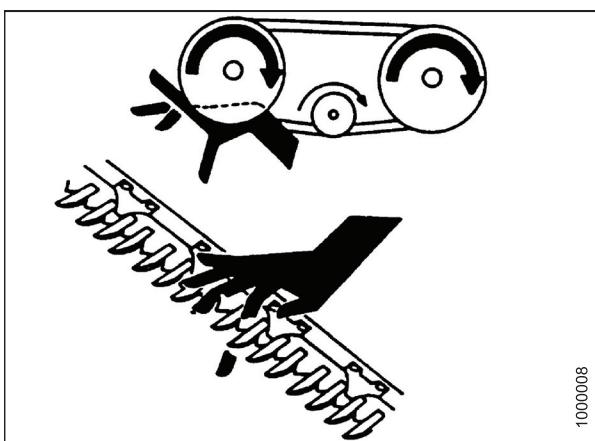


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

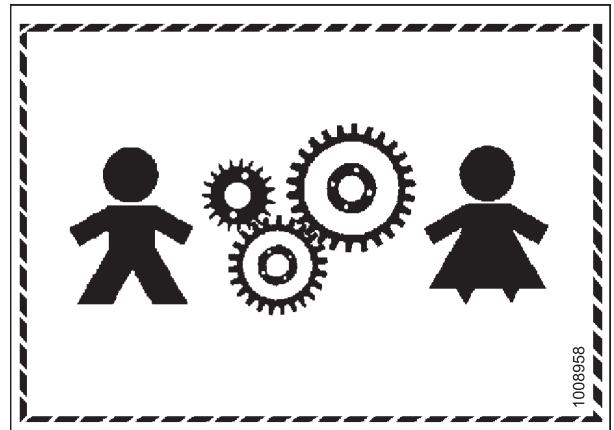
## 1.4 Maintenance Safety

To ensure your safety while maintaining machine:

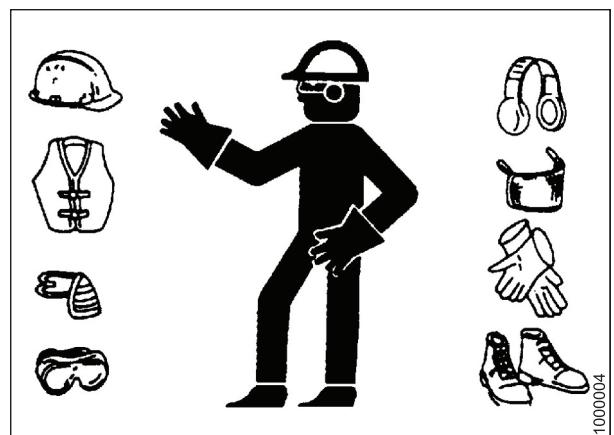
- Review operator's manual and all safety items before operation and/or maintenance of machine.
- Place all controls in Neutral, stop the engine, set the park brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, and/or repairing.
- Follow good shop practices: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



**Figure 1.8: Safety around Equipment**



**Figure 1.9: Equipment NOT Safe for Children**



**Figure 1.10: Safety Equipment**

## 1.5 Hydraulic Safety

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

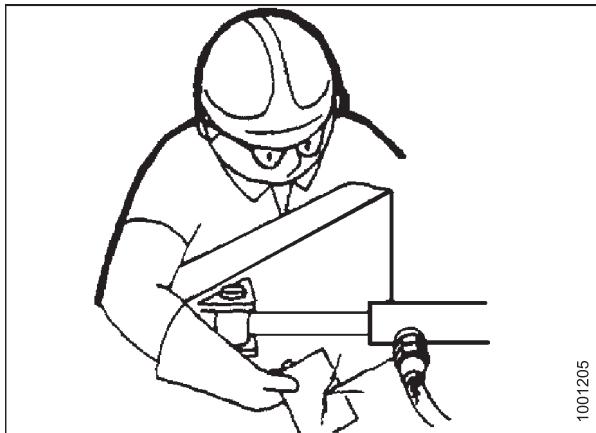


Figure 1.11: Testing for Hydraulic Leaks

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

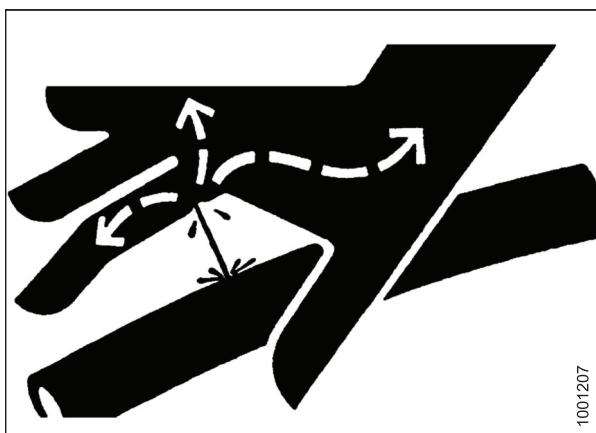


Figure 1.12: Hydraulic Pressure Hazard

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

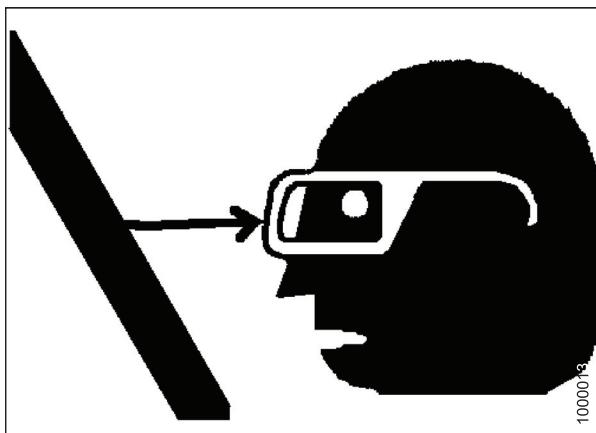
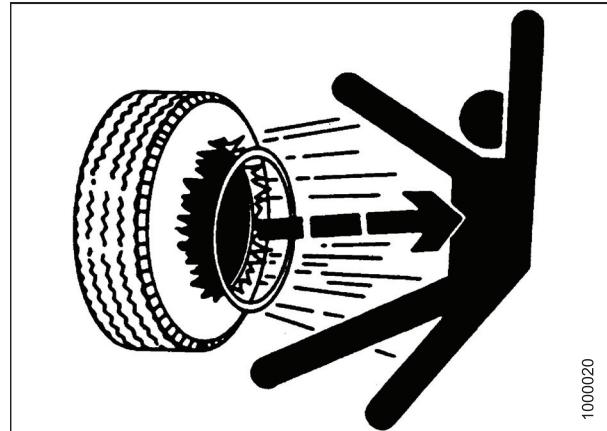


Figure 1.13: Safety around Equipment

## 1.6 Tire Safety

### **⚠️ WARNING**

- Service tires safely.
- A tire can explode during inflation which could cause serious injury or death.
- Follow proper procedures when mounting a tire on a wheel or rim. Failure to do so can produce an explosion that may result in serious injury or death.

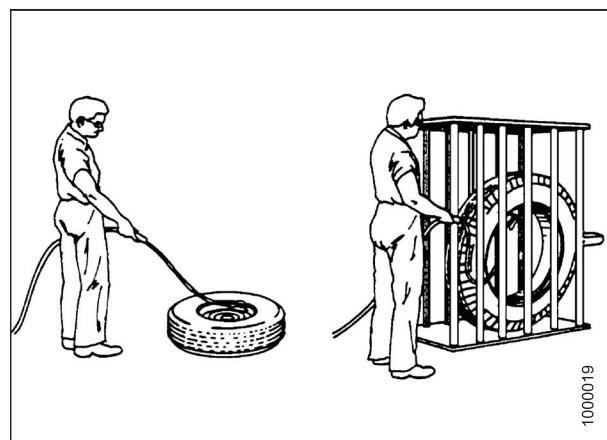


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Figure 1.14: Overinflated Tire

### **⚠️ WARNING**

- Do NOT stand over tire. Use a clip-on chuck and extension hose.
- Never exceed air pressure of 241 kPa (35 psi) for field tires and 276 kPa (40 psi) for transport tires when seating bead on rim.
- Do NOT exceed maximum inflation pressure indicated on tire label.
- Replace tires that have defects.
- Replace wheel rims that are cracked, worn, or severely rusted.
- Never weld a wheel rim.
- Never use force on an inflated or partially inflated tire.
- Make sure tire is correctly seated before inflating to operating pressure.
- If tire is not correctly positioned on rim or is overinflated, tire bead can loosen on one side causing air to escape at high speed and with great force. An air leak of this nature can thrust tire in any direction endangering anyone in area.
- Make sure all air is removed from tire before removing tire from rim.
- Do NOT remove, install, or repair a tire on a rim unless you have proper equipment and experience to perform job.
- Take tire and rim to a qualified tire repair shop.



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Figure 1.15: Safely Inflating Tire

## 1.7 Battery Safety

### **⚠ WARNING**

- Keep all sparks and flames away from batteries, as a gas given off by electrolyte is explosive.
- Ventilate when charging in enclosed space.



Figure 1.16: Safety around Batteries

### **⚠ WARNING**

- Wear safety glasses when working near batteries.
- Do NOT tip batteries more than 45° to avoid electrolyte loss.
- Battery electrolyte causes severe burns. Avoid contact with skin, eyes, or clothing.
- Electrolyte splashed into eyes is extremely dangerous. Should this occur, force eye open, and flood with cool, clean water for 5 minutes. Call a doctor immediately.
- If electrolyte is spilled or splashed on clothing or body, neutralize it immediately with a solution of baking soda and water, then rinse with clear water.

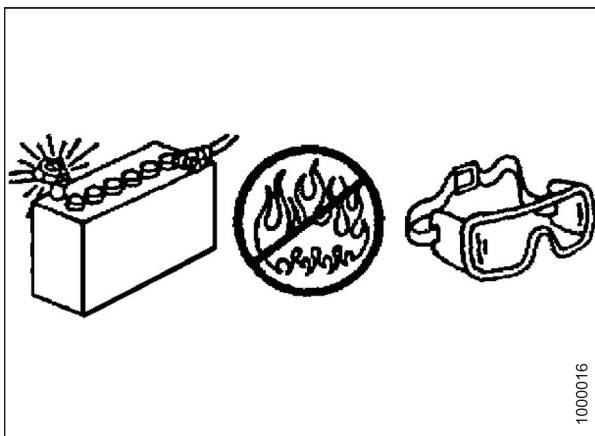


Figure 1.17: Safety around Batteries

### **⚠ WARNING**

- To avoid injury from spark or short circuit, disconnect battery ground cable before servicing any part of electrical system.
- Do NOT operate engine with alternator or battery disconnected. With battery cables disconnected and engine running, a high voltage can be built up if terminals touch frame. Anyone touching frame under these conditions would be severely shocked.
- When working around storage batteries, remember that all of the exposed metal parts are live. Never lay a metal object across terminals because a spark or short circuit will result.
- Keep batteries out of reach of children.

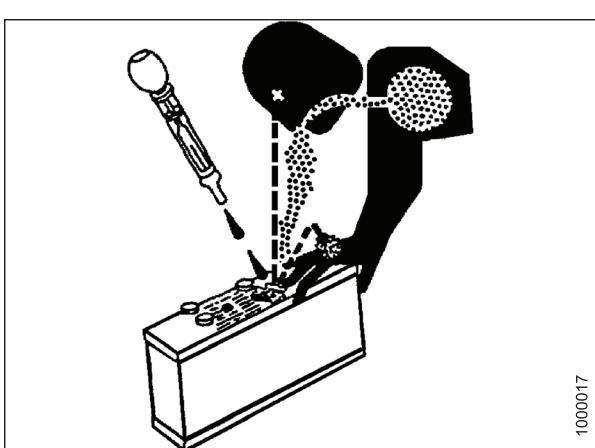


Figure 1.18: Safety around Batteries

## **SAFETY**

### **1.8 Welding Precautions**

High currents and voltage spikes associated with welding can cause damage to electronic components. Before welding on any part of windrower or an attached header, disconnect all electronic module harness connections as well as battery cables. Refer to your Dealer for proper procedures.

## **1.9 Engine Safety**

### **⚠️ WARNING**

Do NOT use aerosol starting aids such as ether. Such use could result in an explosion and personal injury.

### **⚠️ CAUTION**

- On initial start-up of a new, serviced, or repaired engine, always be ready to stop the engine in order to stop an overspeed. This may be accomplished by shutting off the air and/or fuel supply to the engine.
- Do NOT bypass or disable automatic shutoff circuits. The circuits are provided in order to help prevent personal injury. The circuits are also provided in order to help prevent engine damage. Refer to your Dealer for repairs and adjustments.
- Inspect the engine for potential hazards.
- Before starting the engine, ensure that no one is on, underneath, or close to the engine. Ensure that people clear the area.
- All protective guards and all protective covers must be installed if the engine must be started in order to perform service procedures.
- To help prevent an accident that is caused by parts in rotation, work around parts carefully.
- If a warning tag is attached to engine start switch or to controls, do NOT start engine or move controls. Consult with person who attached warning tag before engine is started.
- Start engine from operator's compartment. Always start engine according to procedure that is described in Starting Engine section of operator's manual. Knowing correct procedure will help to prevent major damage to engine components and prevent personal injury.
- To ensure that the jacket water heater (if equipped) and/or lube oil heater (if equipped) is working correctly, check the water temperature gauge and/or oil temperature gauge during heater operation.
- Engine exhaust contains products of combustion which can be harmful to your health. Always start the engine and operate the engine in a well ventilated area. If the engine is started in an enclosed area, vent the engine exhaust to the outside.

#### **NOTE:**

The engine may be equipped with a device for cold starting. If the engine will be operated in very cold conditions, then an additional cold starting aid may be required.

### **1.9.1 High Pressure Rail**

### **⚠️ CAUTION**

Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these instructions may cause personal injury or death.

## 1.9.2 Engine Electronics

### **WARNING**

Tampering with electronic system installation or original equipment manufacturer (OEM) wiring installation can be dangerous and could result in personal injury or death and/or engine damage.

### **WARNING**

**Electrical Shock Hazard.** The electronic unit injectors use DC voltage. The engine control module (ECM) sends this voltage to the electronic unit injectors. Do NOT come in contact with the harness connector for the electronic unit injectors while engine is operating. Failure to follow this instruction could result in personal injury or death.

This engine has a comprehensive, programmable engine monitoring system. The ECM has the ability to monitor engine operating conditions. If conditions exceed the allowable range, the ECM will initiate immediate action.

The following actions are available for engine monitoring control:

- Warning
- Derate
- Shut down

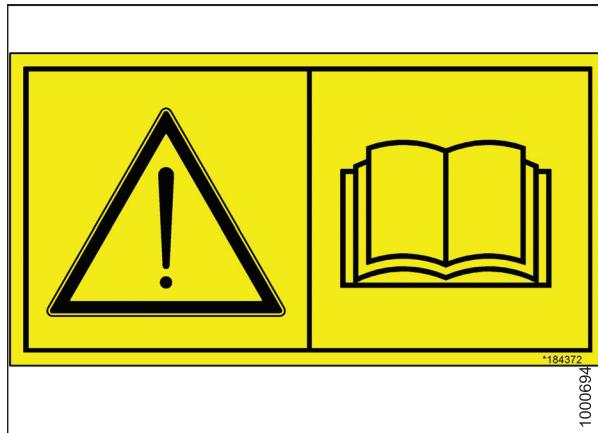
The following monitored engine operating conditions have the ability to limit engine speed and/or engine power:

- Engine coolant temperature
- Engine oil pressure
- Engine speed
- Intake manifold air temperature
- Diesel exhaust fluid (DEF) system performance
- Aftertreatment system performance

The engine monitoring package can vary for different engine models and different engine applications. However, monitoring system and engine monitoring control will be similar for all engines. Together, two controls provide engine monitoring function for specific engine application.

## **1.10 Safety Signs**

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



**Figure 1.19: Operator's Manual Decal**

### **1.10.1 Installing Safety Decals**

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

## 1.11 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.

### 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.

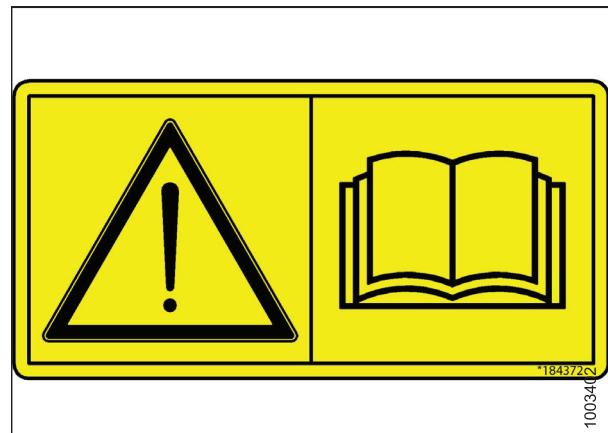


Figure 1.20: MD #184372



Figure 1.21: MD #166466

## SAFETY

**MD #174683**

PINCH POINT - MOVING PARTS

**STAND CLEAR**



Figure 1.22: MD #174683

**MD #291638**

LOCK - SWATH COMPRESSOR DECK

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



Figure 1.23: MD #291638

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

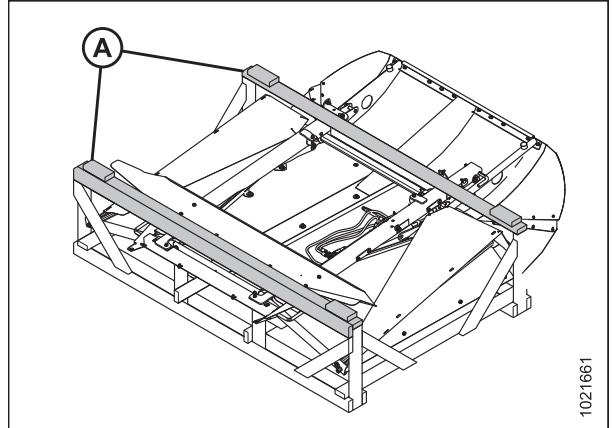


Figure 2.1: Shipping Configuration

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

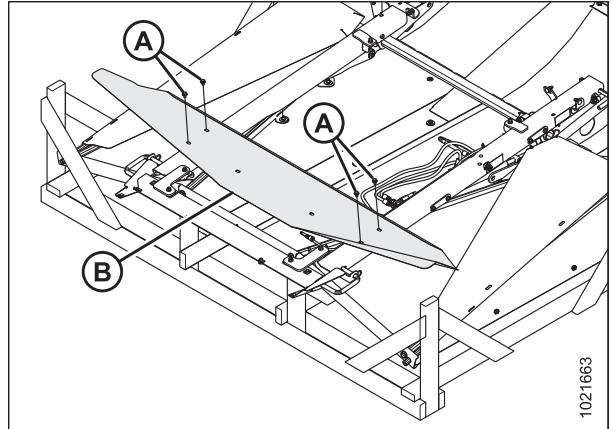
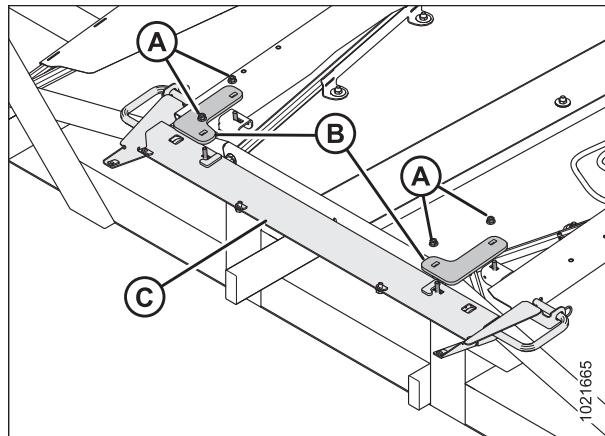


Figure 2.2: Unpacking Front Deflector

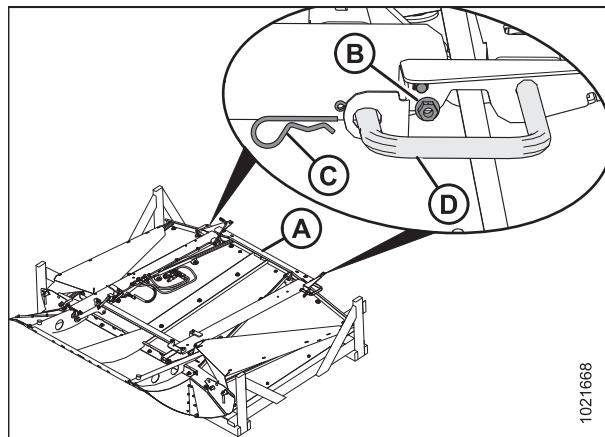
## INSTALLATION INSTRUCTIONS

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



**Figure 2.3: Unpacking Front Pivot Support**

4. On both sides of the front pivot support (A), remove bolts and nuts (B) securing support (A) to the left and right supports.
5. Remove hairpins (C) from pivot pins (D). Slide pivot pins outward to disengage from side supports, and then remove front pivot support (A).

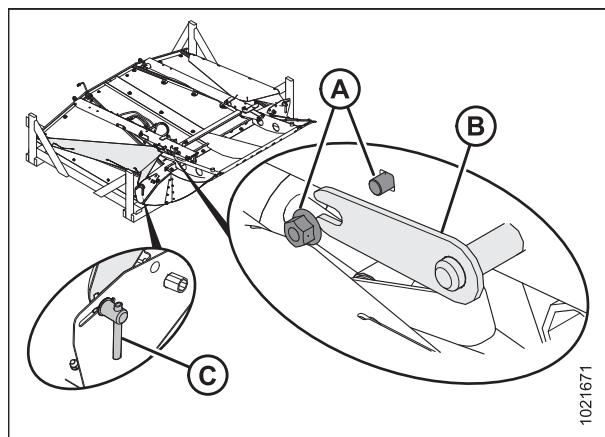


**Figure 2.4: Unpacking Front Pivot Support**

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

**NOTE:**

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



**Figure 2.5: Unpacking Left Support**

## INSTALLATION INSTRUCTIONS

7. Remove lynch pin (A) and washer (B) from pivot pin (C) through rod end of cylinder.

**NOTE:**

If necessary, lift left support (E) out of frame so pin (C) can slide out.

8. Release latch (D) and remove left support (E) complete with cylinder and hydraulic hoses.

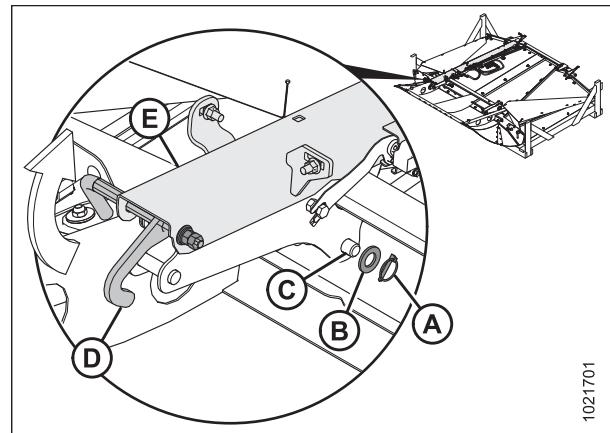


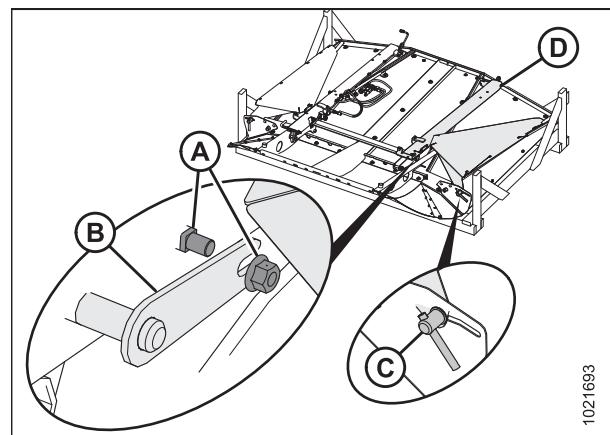
Figure 2.6: Unpacking Left Support

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

**NOTE:**

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

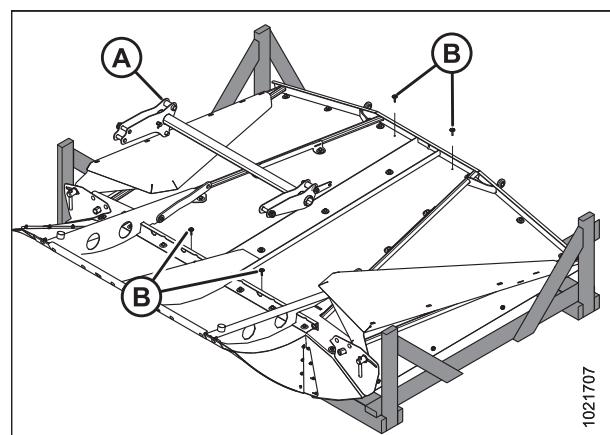
10. Remove the right support (D).



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Figure 2.7: Unpacking Right Support

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



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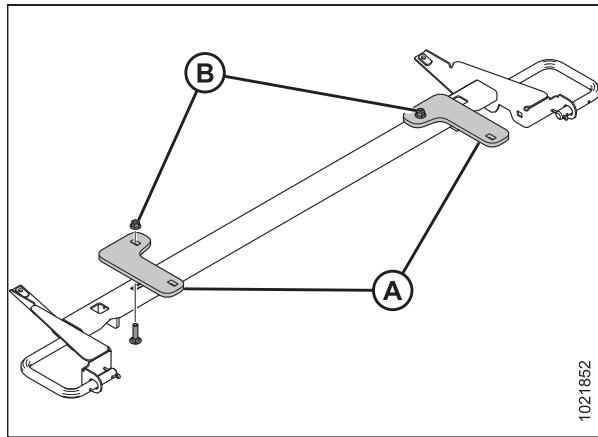
Figure 2.8: Unpacking Rock Shaft

## 2.2 Installing Swath Compressor

Follow these steps to install the swath compressor onto a M155, M155E4, or M205 windrower. The swath compressor weighs approximately 180 kg (400 lb.).

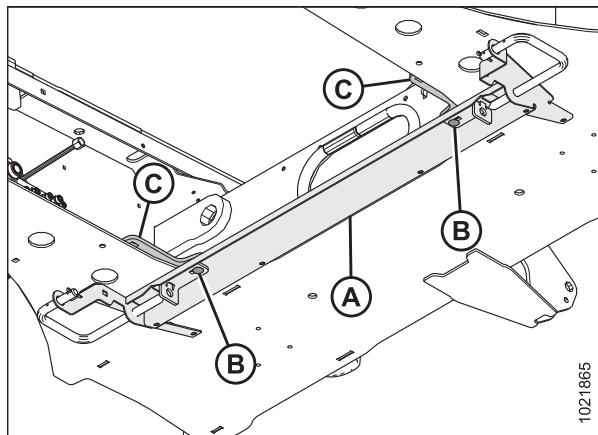
### 2.2.1 Installing Frame

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



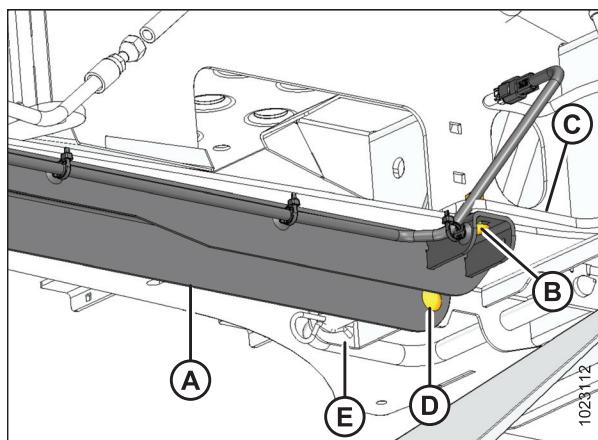
**Figure 2.9: Front Support**

2. Position front support (A) below the windrower frame at the cab end and adjust bar clamps (C) to hold support in place.
3. Tighten two bolts (B) on bar clamps (C) to hold front support in place, do not fully tighten.



**Figure 2.10: Front Support on Windrower Frame**

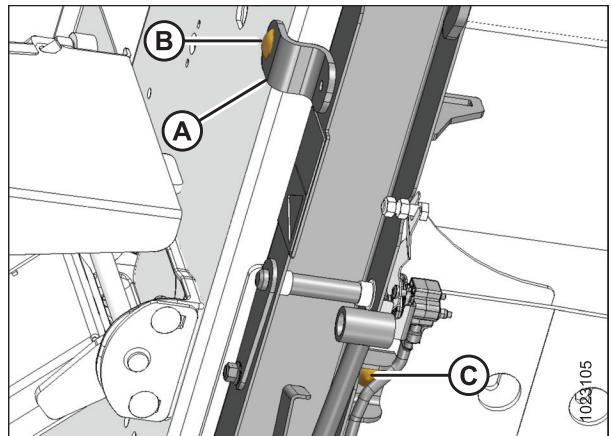
4. Locate left support (A) onto the left side of windrower frame as shown, and temporarily clamp in position.
5. Install M10 x 35 mm bolt (B) and nut through bar clamp (C) and M10 x 20 mm bolt (D) and nut through front support (E). Do not fully tighten bolts.



**Figure 2.11: Left Support (Front)**

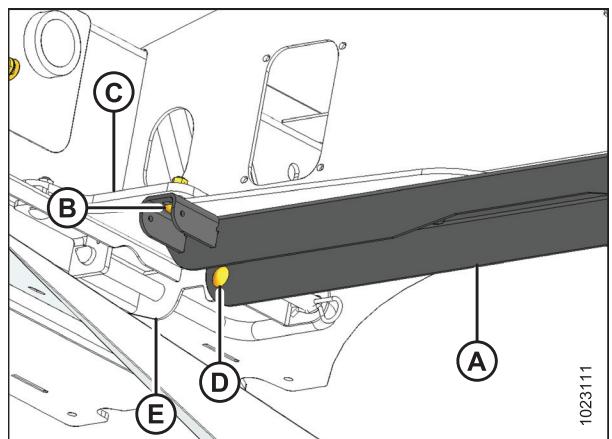
## INSTALLATION INSTRUCTIONS

6. Secure rear of left support with M10 x 35 mm bolt (C) and nut through existing hole in windrower frame. Do not fully tighten.
7. At rear of left support, pick up hole in bracket (A) and drill hole through frame with a 10 mm (13/32 in.) drill.
8. Install M10 x 35 mm bolt (B) and nut through bracket (A) and frame.



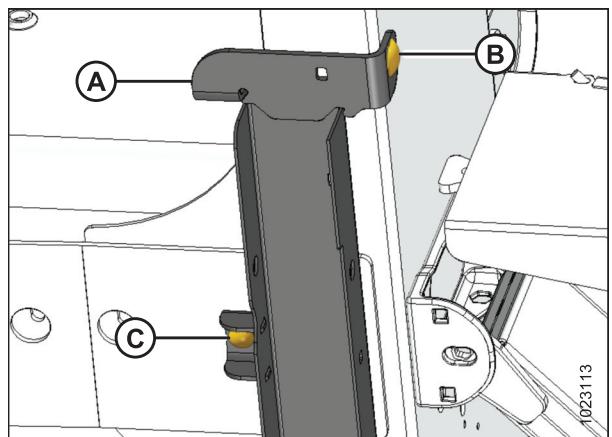
**Figure 2.12: Left Support (Rear)**

9. Remove clamp at aft end of right support and discard. Retain hardware.
10. Remove and discard hardware at aft inboard bracket location.
11. Locate right support (A) onto the right side of windrower frame as shown, and temporarily clamp in position.
12. Install M10 x 35 mm bolt (B) and nut through bar clamp (C) and M10 x 20 mm bolt (D) and nut through front support (E). Do not fully tighten bolts.



**Figure 2.13: Right Support (Front)**

13. Secure rear of right support with M10 x 35 mm bolt (C) and nut through existing hole in windrower frame. Do NOT fully tighten.
14. At rear of right support, pick up hole in bracket (A) and drill hole through frame with a 10 mm (13/32 in.) drill.
15. Install M10 x 35 mm bolt (B) and nut through bracket (A) and existing hole in windrower frame. Do not fully tighten.



**Figure 2.14: Right Support (Rear)**

## INSTALLATION INSTRUCTIONS

16. Position rock shaft lift (A) inside left and right support channels. Insert pivot pins (B) on both sides, and secure them with M10 x 20 mm bolts and nuts (C). Tighten bolts.

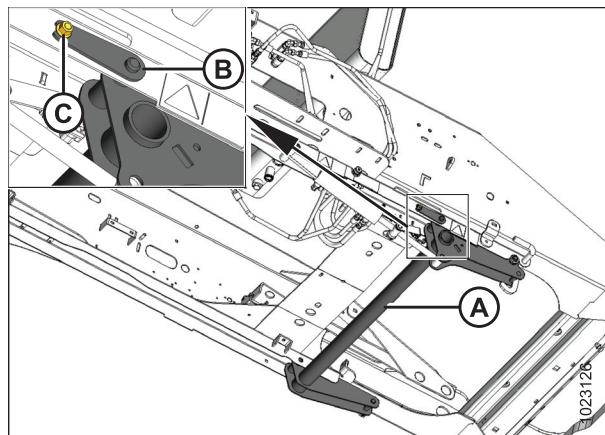


Figure 2.15: Rock Shaft

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

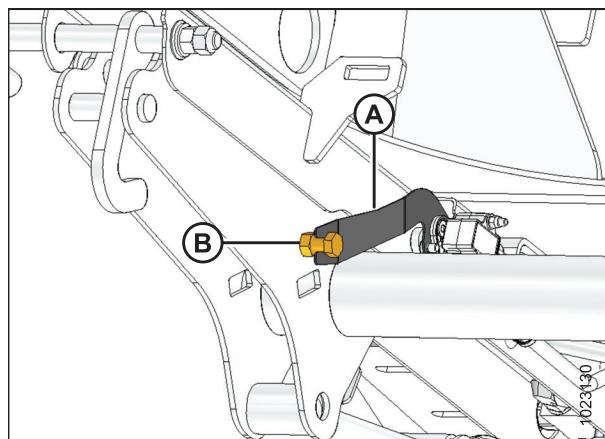


Figure 2.16: Sensor on Left Support

## INSTALLATION INSTRUCTIONS

18. Tighten six bolts (A) and torque to 39 Nm (29 lbf·ft).
19. Ensure front clamps (B) engage windrower frame as much as possible and torque four bolts (C) to 39 Nm (29 lbf·ft).

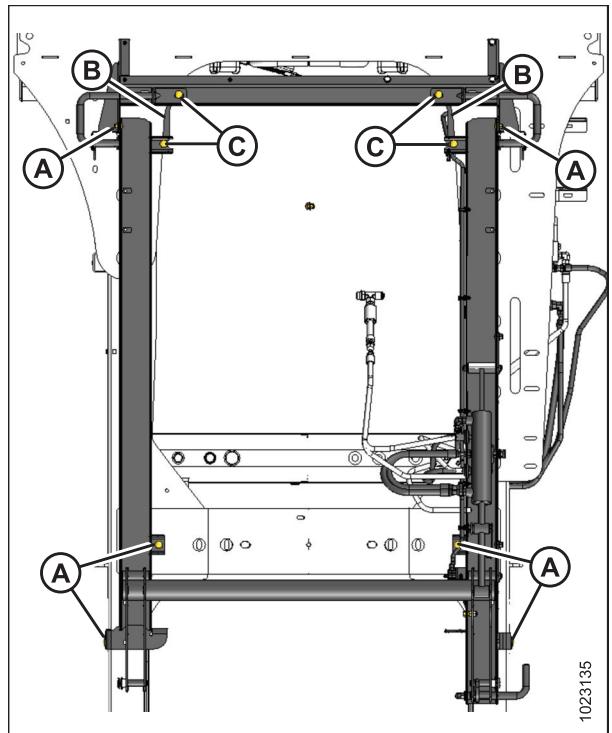


Figure 2.17: View from below Windrower

### 2.2.2 Installing Reverse Switch and Harness

1. Install reverse switch (A) onto existing bracket as shown with two M6 x 16 mm bolts and flanged lock nuts (B). Align switch support (C) with existing bracket before tightening nuts.

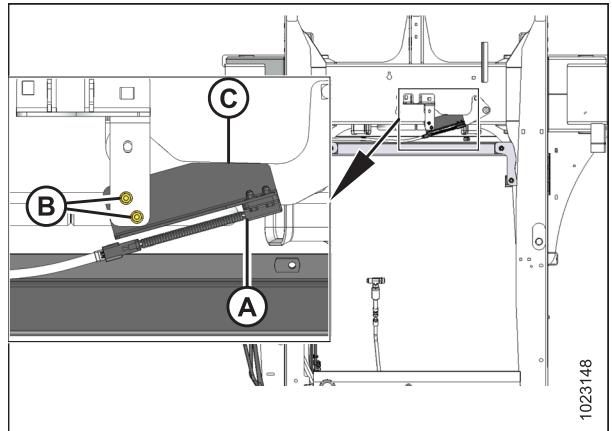


Figure 2.18: Reverse Switch (View From Top)

## INSTALLATION INSTRUCTIONS

2. Open left cab-forward side platform.
3. Locate harness bundle that contains three pin connector P97 (A). If connector is attached to a pressure sensor, remove the connector. Otherwise cut cable tie securing P97 (A) to wire bundle.



Figure 2.19: Electrical Harness

4. Route swath compressor harness (A) along forward cross-member. Connect swath compressor connector 410027 (B) to P97 (not shown).
  5. Connect swath compressor height sensor plug DTM06-3S (C) to existing receptacle DTM04-3P.
  6. Connect swath compressor reverse switch plug DTM06-2S (D) to reverse switch receptacle DTM04-2P.
  7. Route single wire (E) to main system harness and into cab at the left rear corner.
- 
8. Enter cab and locate the manual holder (A) beneath the trainer's seat. The WCM (B) is just above the manual holder.

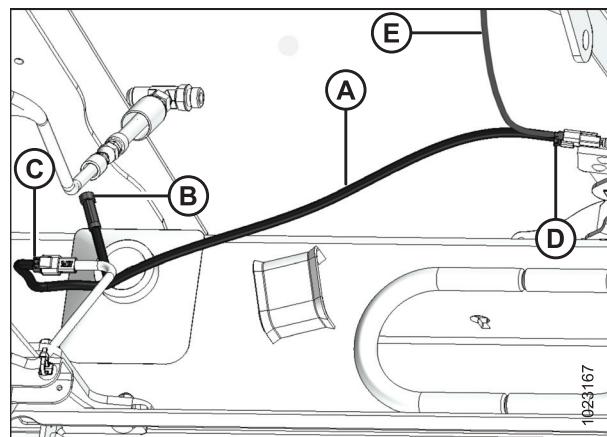


Figure 2.20: Electrical Harness



Figure 2.21: Manual Holder and WCM

## INSTALLATION INSTRUCTIONS

9. Gently move the upholstery (C) on both sides of the manual holder (A). Remove the two nuts (B) and remove manual holder.

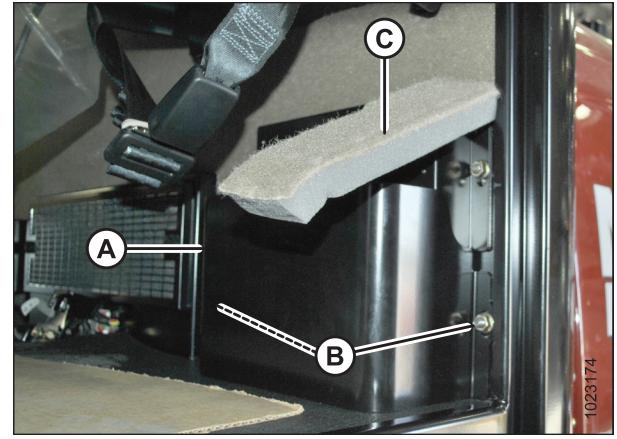


Figure 2.22: Upholstery and Hardware

10. Remove P35 plug (A) from the WCM.

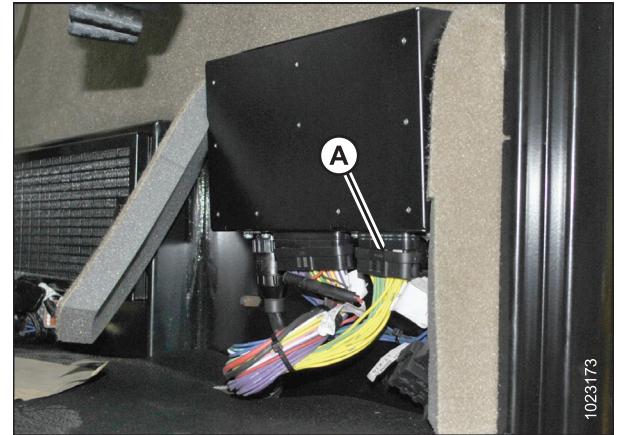


Figure 2.23: WCM and Wiring Harnesses

11. Retrieve single wire (A) from swath compressor and insert into position 24 (B) on harness side of P35 plug. Secure wire (A) to existing harness (C) with plastic cable tie.

12. Attach plug P35 to WCM.

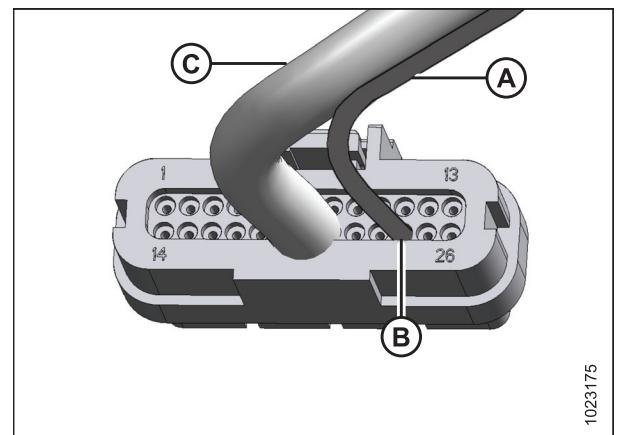
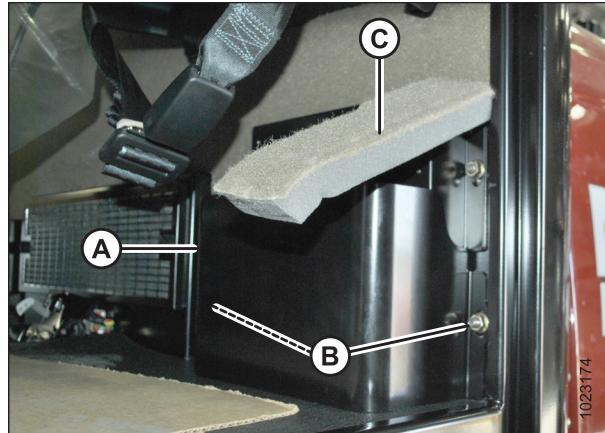


Figure 2.24: P35 Plug

## INSTALLATION INSTRUCTIONS

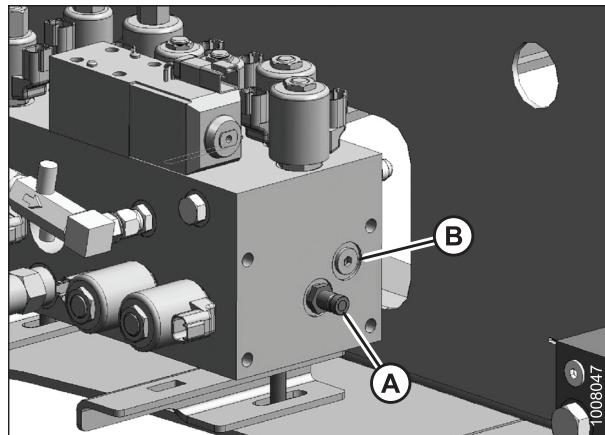
13. Reposition manual storage (A) and secure with two nuts (B). Replace upholstery (C).
14. Secure swath compressor harness to existing harness above forward cross member.



**Figure 2.25: Upholstery and Hardware**

### 2.2.3 Installing Valve Block

1. Remove fitting (A) and plug (B) from the lift manifold block and retain for use.
2. Apply grease to O-rings (supplied with valve block) and install them in the countersunk port holes where the plug and fitting were removed.



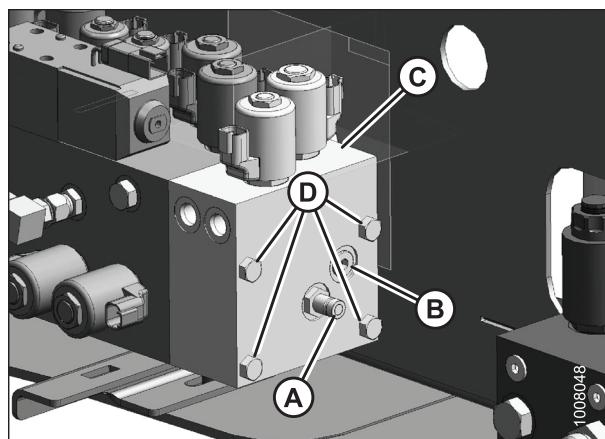
**Figure 2.26: Lift Manifold Block**

3. Assemble smooth side of new valve block (C) to existing valve block with four 3/8 in. bolts (D) provided. Use the longer bolts if there are two existing valve blocks.

**NOTE:**

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

4. Torque bolts to 34 Nm (25 lbf·ft).
5. Replace fitting (A) and plug (B) (removed in Step 1) into new valve block. If plug (B) is damaged on removal, an extra plug is provided in the kit.



**Figure 2.27: Valve Block**

## INSTALLATION INSTRUCTIONS

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

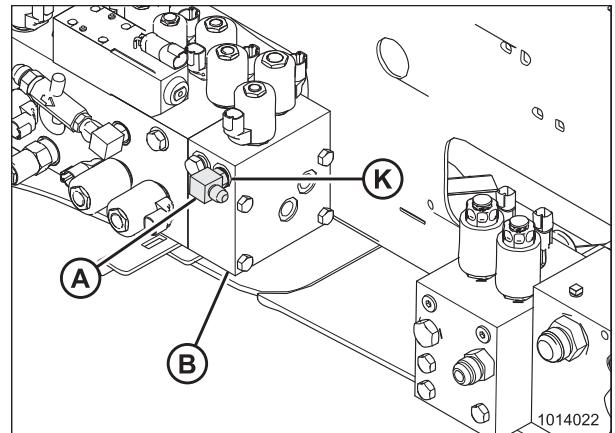


Figure 2.28: New Valve Block

### 2.2.4 Connecting Hydraulics

1. Remove quick disconnect couplers (A) and elbows from the three hoses on swath compressor, and discard.

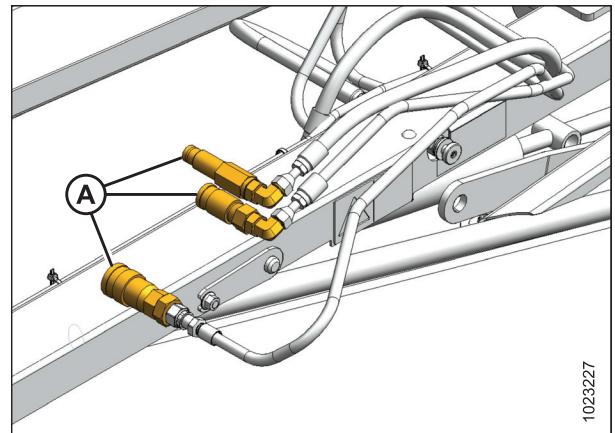


Figure 2.29: Quick Disconnects

2. Remove hose (A) and fitting (B) from charge pump (C).

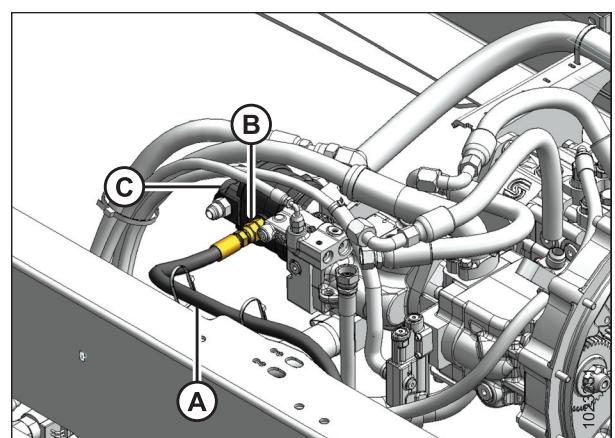


Figure 2.30: M Series Hydraulics

## INSTALLATION INSTRUCTIONS

3. Install tee (A) in its place. Reconnect existing hose (B) to tee (A).
4. Retrieve new hose (C) from shipment and connect to tee (A) and to hose (D) from pressure-reducing valve forward fitting.
5. Connect hose (A) from barrel end of cylinder (B) to elbow (C) on valve block.
6. Remove and discard plug from tank at location (D). Install elbow (E).
7. Connect hose (F) from pressure reducing valve (G) to elbow (E) on tank.

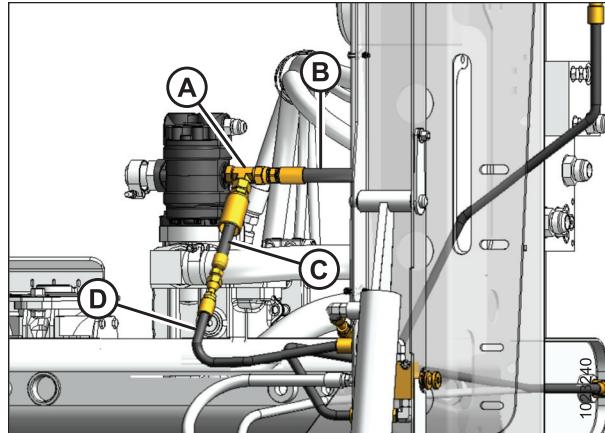


Figure 2.31: Hose Connections (View from under Windrower)

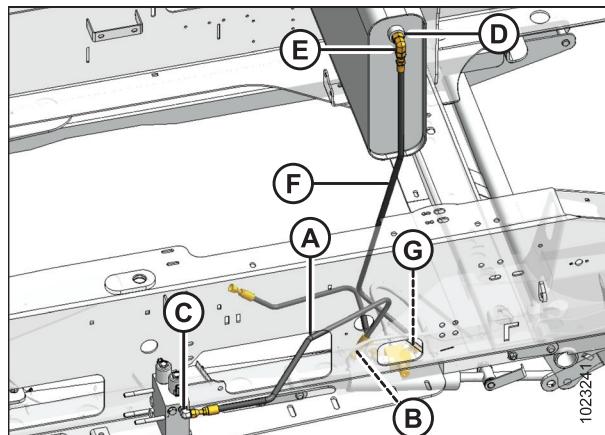


Figure 2.32: Hose Connections

### 2.2.5 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.

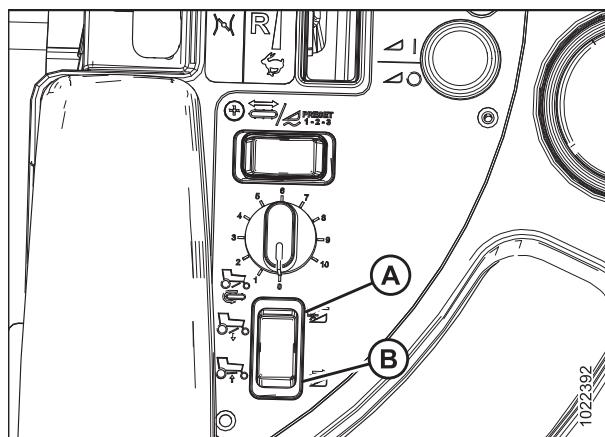
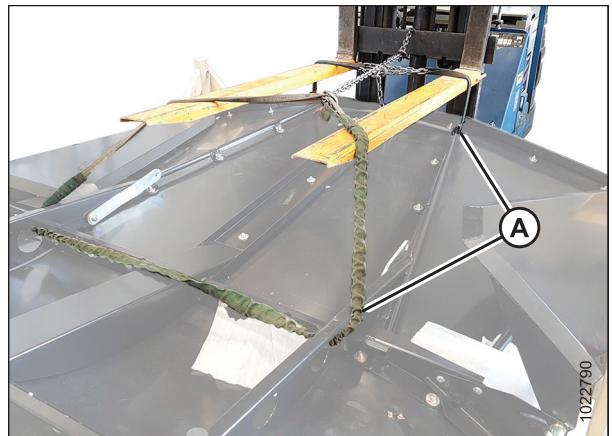


Figure 2.33: Windrower Console Buttons

## INSTALLATION INSTRUCTIONS

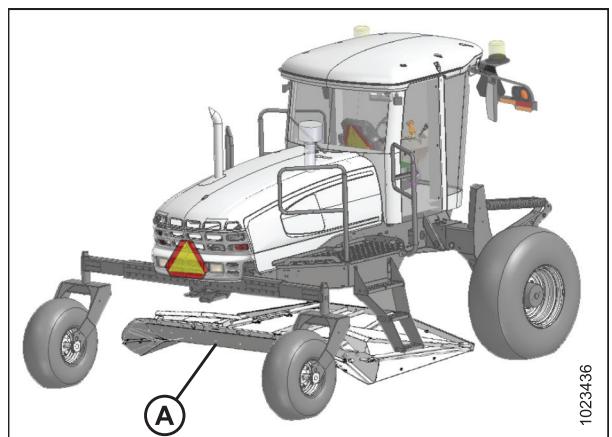
3. Position forklift with forks over front of compressor shield, and attach lifting straps (A) through front and back of shield frame. Lift swath compressor shield out of shipping crate.



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Figure 2.34: 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.



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Figure 2.35: Compressor Shield under Windrower

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

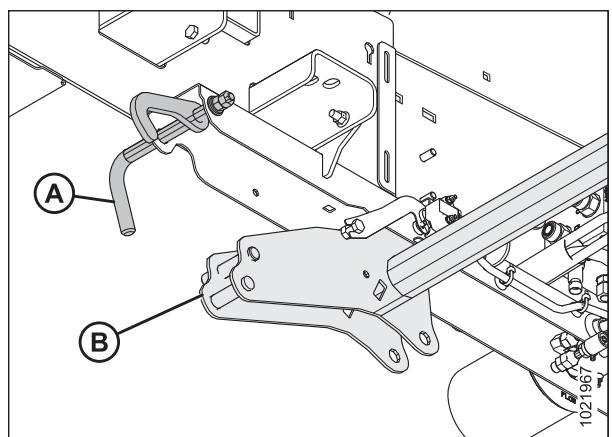


Figure 2.36: Rock Shaft and Lock

## INSTALLATION INSTRUCTIONS

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 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.

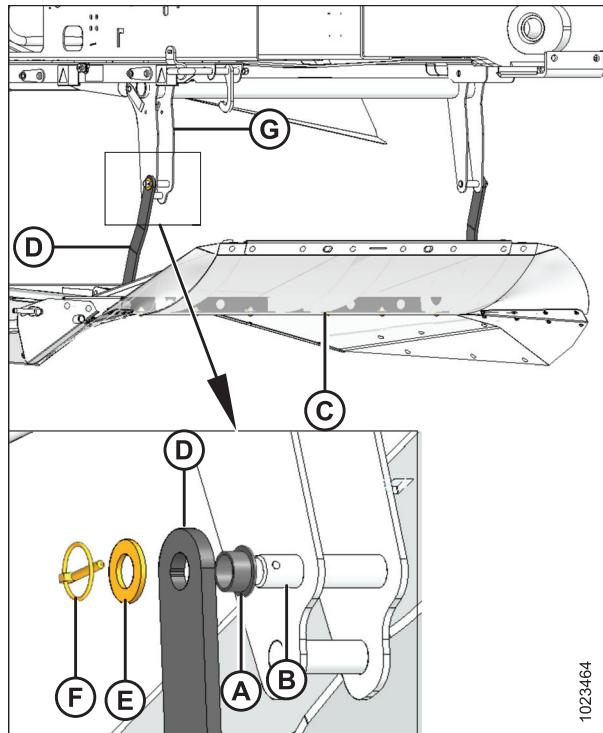


Figure 2.37: Shield Installation

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

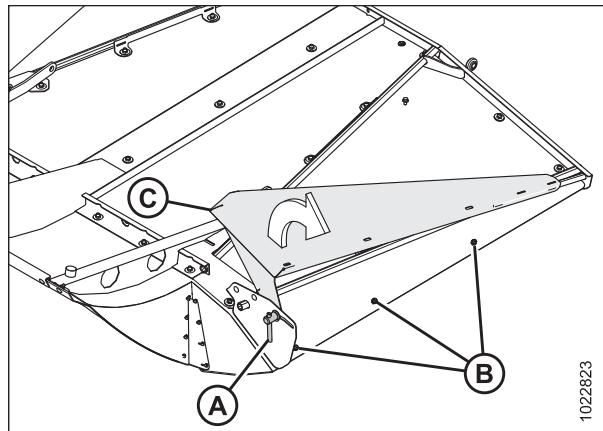


Figure 2.38: Side Deflector Shipping Position

## INSTALLATION INSTRUCTIONS

11. 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.
12. Torque nuts to 22 Nm (15 lbf·ft).
13. Position the side deflector and tighten the adjustment handle (C). Repeat on opposite side.

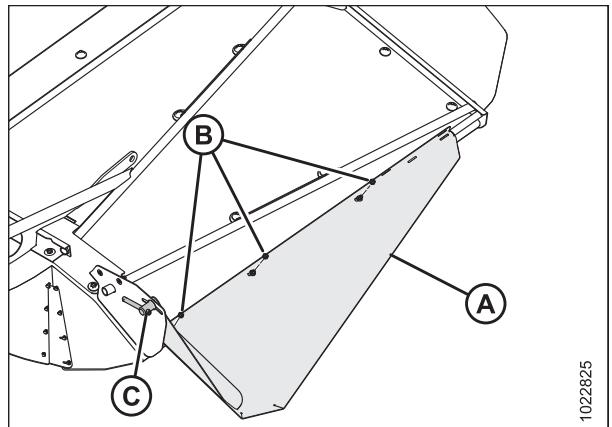


Figure 2.39: Side Deflector Working Position

14. Push down on rear (A) of shield and another installer lifts the front (D).
15. 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.

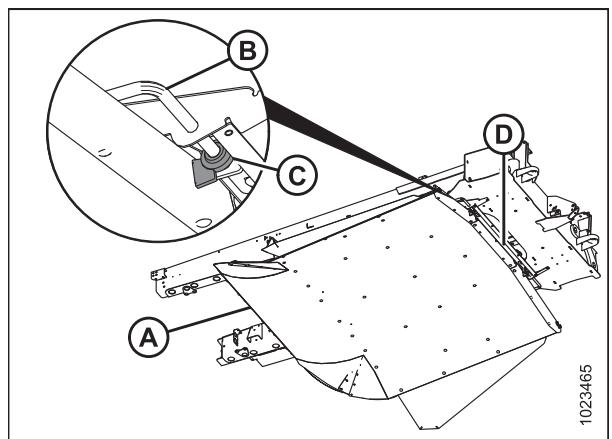


Figure 2.40: Front Pivot Pins

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

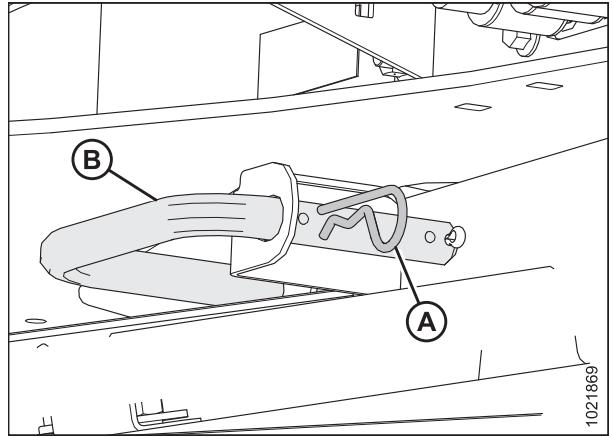


Figure 2.41: Front Pivot Pins

## INSTALLATION INSTRUCTIONS

17. 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.
18. Secure pin with washer (C) and lynch pin (D).

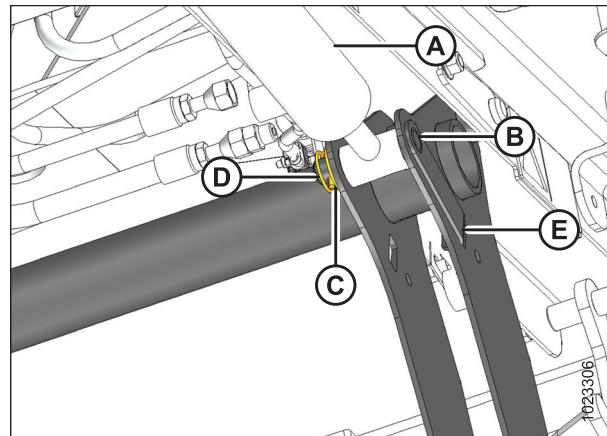


Figure 2.42: Rock Shaft

19. Position front deflector (A) onto front support (B) and remove the two existing bolts (C) that interfere with the deflector. Do not discard.
20. 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.

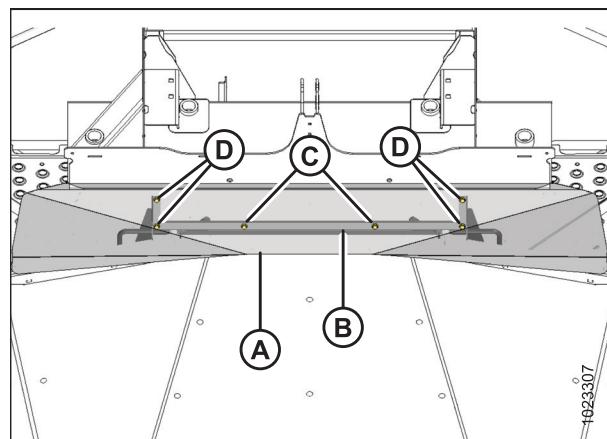


Figure 2.43: Front Deflector (View from under Shield)

# 3 Operation

## 3.1 Activating the Swath Compressor

### NOTE:

- All cab display module images in this procedure apply to a M155 Self-Propelled-Windrower. Other M Series models are similar.
- The DWA must be disabled in the CDM when setting up the swath compressor.
- Use the following procedure when installing a drive manifold (MD #139508).



### CAUTION

Check to be sure all bystanders have cleared the area.

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



Figure 3.1: CDM Programming Buttons

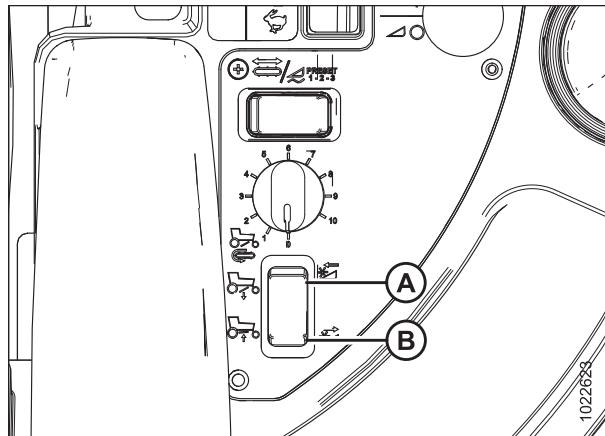
4. Press SELECT (B) until SWATH COMPR INSTALL? is displayed on the upper line.
  - NO/YES is displayed on the lower line.
5. Press right arrow (A) to select YES. Press SELECT (B).
6. Press SELECT (B) until CALIBRATE SENSORS is displayed on upper line. NO/YES is displayed on lower line.
7. Press right arrow (A) to select YES. Press SELECT (B).
  - TO CALIBRATE SELECT is displayed on upper line.
  - HEADER HEIGHT is displayed on lower line.
8. Press right arrow (A) to scroll through choices until SWATH COMPR HT is displayed. Press SELECT (B).
  - SWATH SENSOR CAL is displayed on upper line.
  - SWATH UP TO START is displayed on lower line.



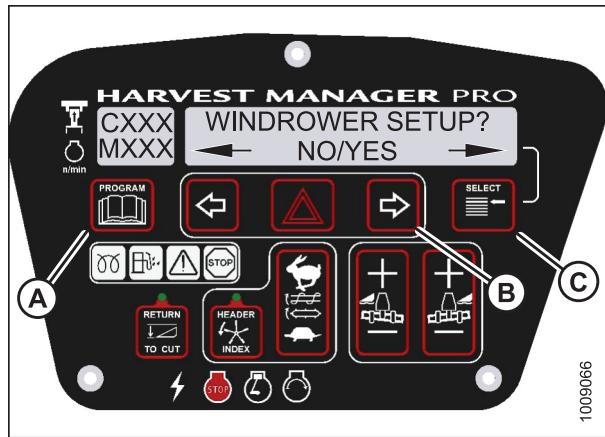
Figure 3.2: Swath Compressor Controls

## OPERATION

9. Press switch (B) on console to raise swath compressor.
  - CALIBRATING SWATH is displayed on upper line.
  - FORM UP and flashing HOLD is displayed on lower line until system has completed reading signal with swath compressor fully raised.
  - SWATH FORM UP and DONE (with buzzer) is displayed on lower line when complete.
  - SWATH SENSOR CAL is displayed on upper line.
  - PRESS SWATH DOWN is displayed on lower line.
10. Press switch (A) on console to lower swath compressor.
  - CALIBRATING SWATH is displayed on upper line.
  - FORM DOWN and HOLD is displayed on lower line.
  - SWATH FORM COMPLETE flashes for 2 seconds on lower line (with buzzer) when calibration is finished.
11. Press PROGRAM (A) to exit programming mode or press SELECT (C) to proceed to next windrower setup action.



**Figure 3.3: Swath Compressor Switch**



**Figure 3.4: CDM Programming Buttons**

## 3.2 Using the Swath Compressor

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

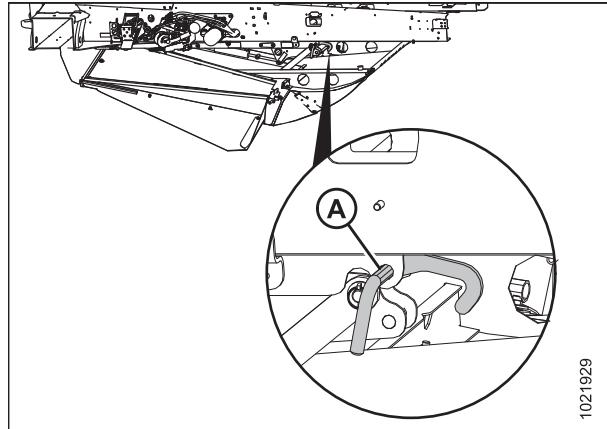
### **⚠ CAUTION**

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) on the left rear support counterclockwise to disengage lock.

#### **IMPORTANT:**

- Lock prevents swath compressor from lowering inadvertently when not in use, either due to operator error or loss of hydraulic pressure.
- Engage lock when operating in engine-forward mode.
- Disengage lock before using swath compressor.



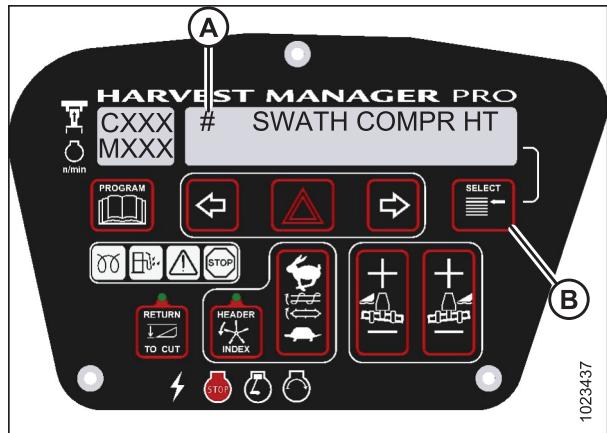
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Figure 3.5: Swath Compressor Lock

### **⚠ CAUTION**

Check to be sure all bystanders have cleared the area.

2. Start the windrower in cab-forward mode.
3. Press SELECT switch (B) on CDM to show SWATH COMPR HT (A) on display. Height is displayed using an arbitrary scale from 0 to 10. Fully raised is 0.



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Figure 3.6: CDM Display

## OPERATION

- Lower swath compressor by pressing button (A) on the operator's console, and raise it by pressing button (B). The CDM display indicates the position of the swath compressor. Release the switch to stop movement at the desired height.

**NOTE:**

The last position set with the console buttons 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 the display reverts to the previous screen.

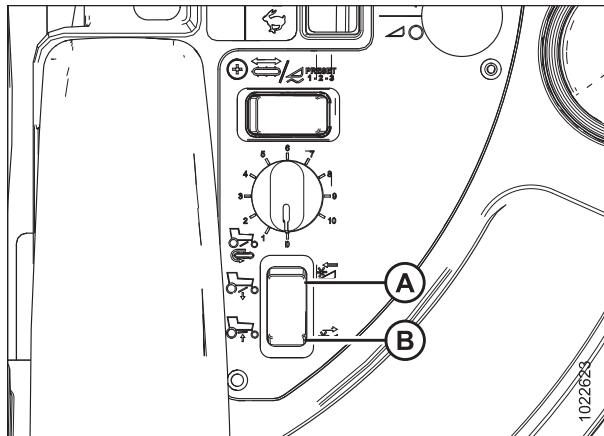


Figure 3.7: Operator's Console

***Swath compressor automated functions: header engaged, cab-forward***

- When ground speed higher than 2.5 km/h (1.6 mph) is detected, the swath compressor lowers to target height.
- When ground speed transitions through 1.6 km/h (1 mph) during deceleration, the swath compressor is fully raised.
- When ground speed is faster than 1.6 km/h (1 mph) and the HEADER ENGAGE switch is OFF, the swath compressor will fully raise.
- The swath compressor remains inactive in engine-forward mode.

### 3.2.1 Setting up the Swath Compressor

The following settings are suggested as a starting point for first-time users of the swath compressor attachment.

**⚠ CAUTION**

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.

- Rotate handle (A) counterclockwise to disengage lock on the rear, left support.

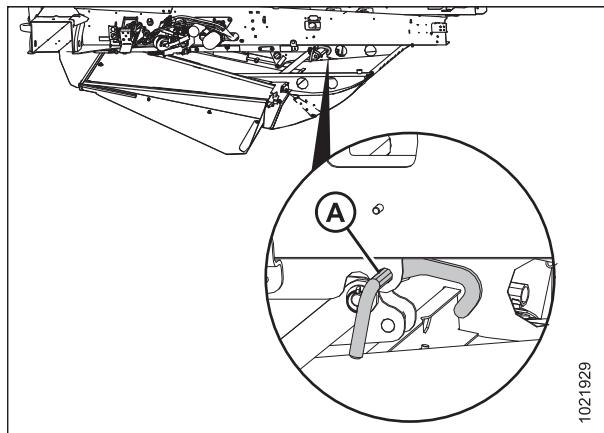


Figure 3.8: Swath Compressor Lock

## OPERATION

2. Start the engine, set ground speed lever (GSL) in Park, and ensure that header is disengaged.
3. Adjust swath compressor position with controls (A) and (B) on the console to the target (preferred) operating height. Set to 6 (C) if no preferred setting.
4. Engage and then disengage the header. The swath compressor will raise fully.
5. Engage header and begin cutting crop. When ground speed exceeds 2.5 km/h (1.6 mph), the swath compressor will lower to the target (preferred) height.
6. Stop the windrower and check the formation of the windrow.
  - If necessary adjust the target height. Refer to Step 4, *page 34*.
  - If the edges of the windrow are not sufficiently pressed into the stubble, adjust side deflectors. Refer to 3.2.3 *Adjusting Side Deflectors, page 36*.
  - If swath compressor forming shield raises too easily when travelling over dense windrows, adjust down force. Refer to 3.2.2 *Adjusting Down Force, page 36*.
7. When the swath compressor is not in use, is being serviced, or when the windrower is in engine-forward mode, raise the swath compressor and engage the swath compressor lock. Refer to 3.2.4 *Locking the Swath Compressor, page 37*.

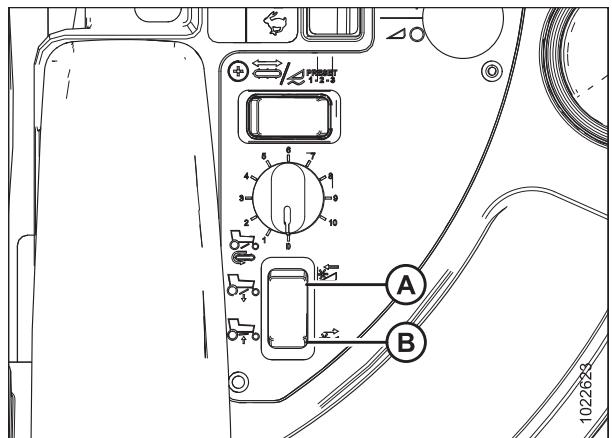


Figure 3.9: Operator's Console

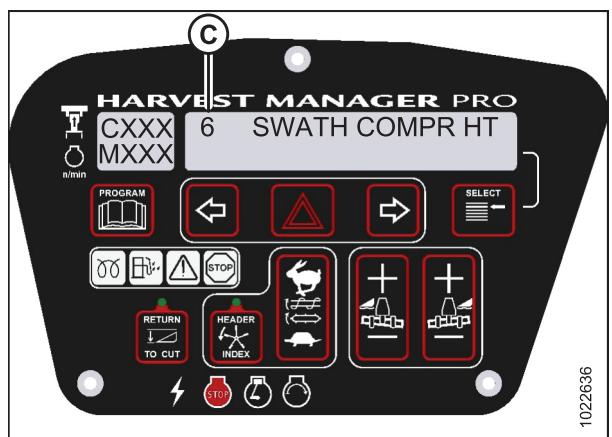


Figure 3.10: CDM Display

### 3.2.2 Adjusting Down Force

The swath compressor automatically raises when the load on the shield exceeds the down force setting. When load decreases, the compressor deck automatically returns to the target height. The down force setting is set at the factory to suit most crop conditions and can be adjusted as follows:

1. Loosen jam nut (A) to allow the adjustment knob (B) to turn. Do **NOT** remove nut.
  - Turn adjuster knob (B) clockwise to increase down force for a more compact windrow and higher wind resistance.
  - Turn the adjuster knob (B) counterclockwise to decrease down force and minimize crop shelling.

**NOTE:**

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

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

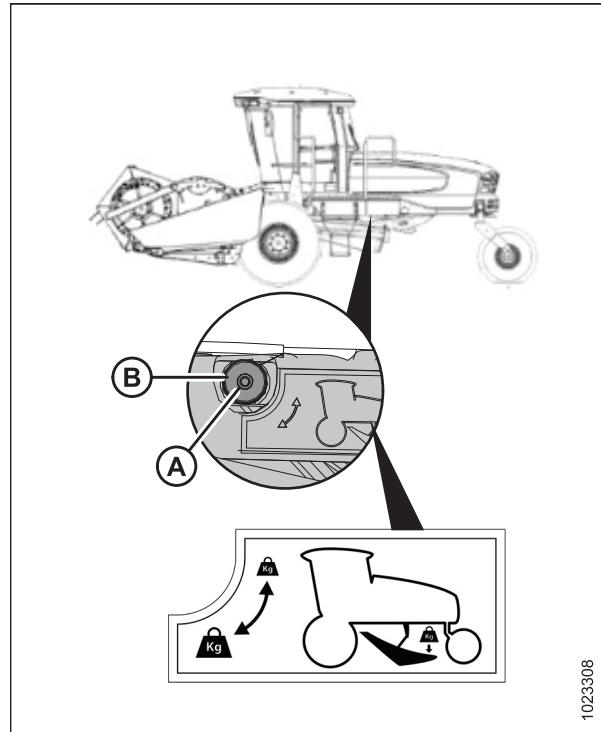


Figure 3.11: Down Force Adjustment

### 3.2.3 Adjusting Side Deflectors

To reduce wind damage to the windrow, adjust side deflectors to ensure edges 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.

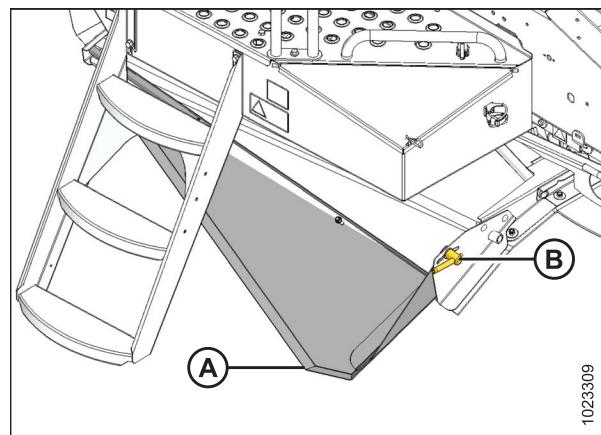


Figure 3.12: Swath Compressor Side Deflectors

### 3.2.4 Locking 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.

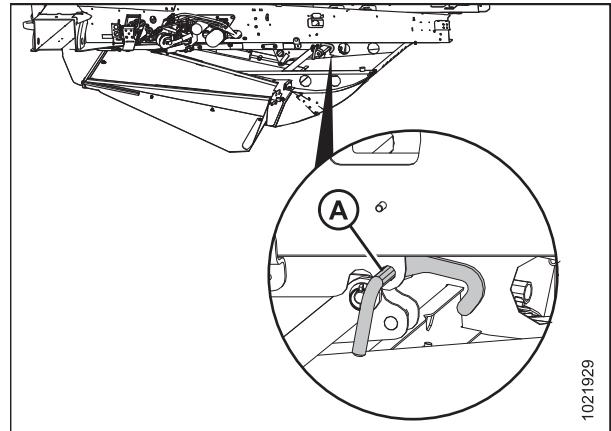


Figure 3.13: Swath Compressor Lock



## 4 Maintenance

The swath compressor does not require any scheduled maintenance or servicing. If necessary to replace components, refer to [5 Illustrated Parts List, page 41](#) in this manual.

### 4.1 Removing Swath Compressor Shield

Windrower service or maintenance procedures may require access under the machine. Do **NOT** service the windrower by lowering the swath compressor and sitting on top of the shield. To remove the shield follow these steps:



#### CAUTION

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 windrower, fully lower swath compressor, turn off windrower, and remove key.

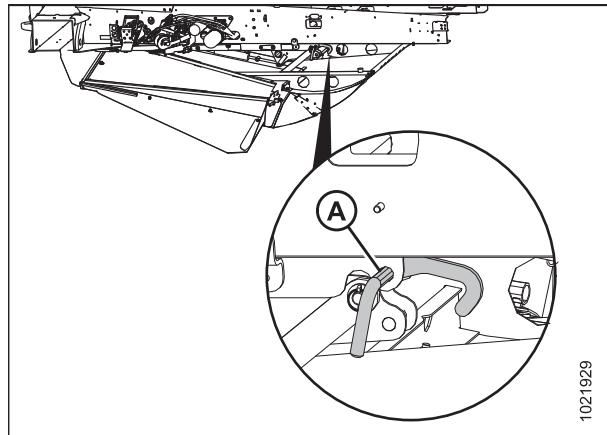


Figure 4.1: Swath Compressor Lock

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

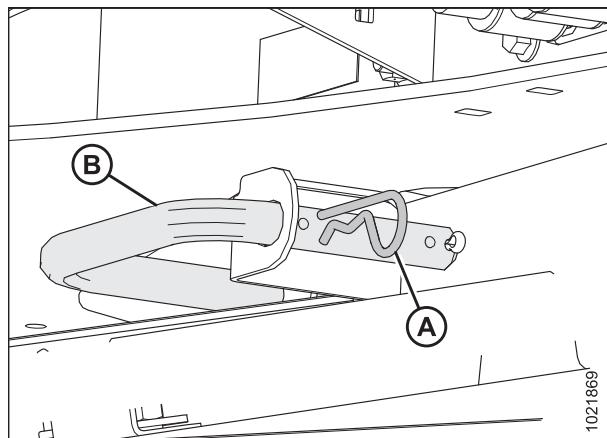
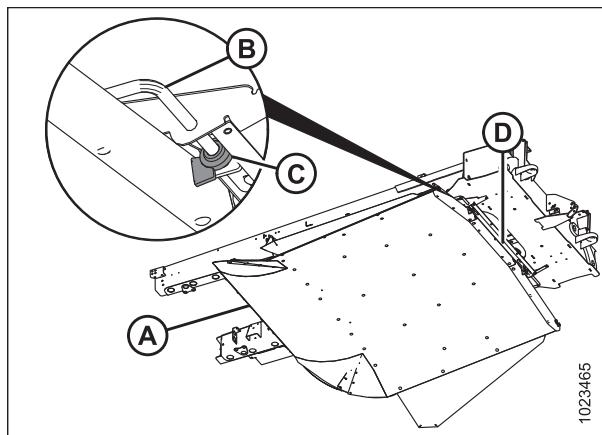


Figure 4.2: Forward Pivot Pin

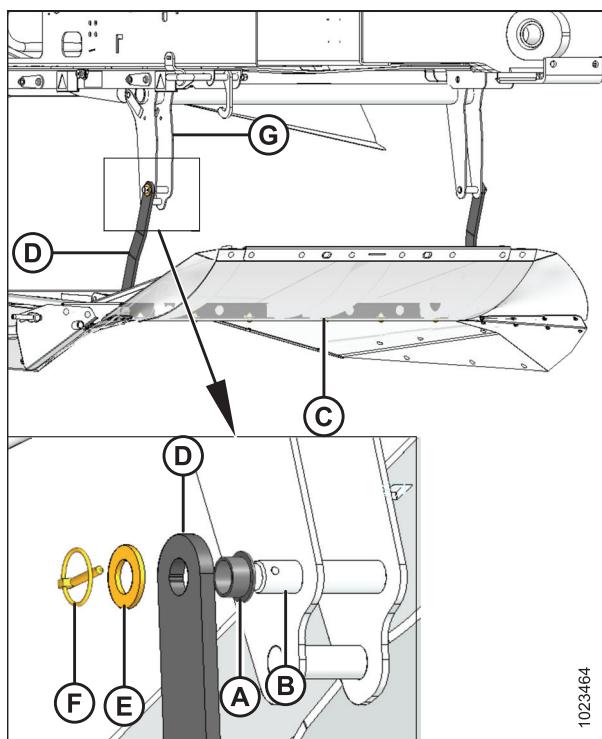
## MAINTENANCE

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



**Figure 4.3: Front Pivot Pins**

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



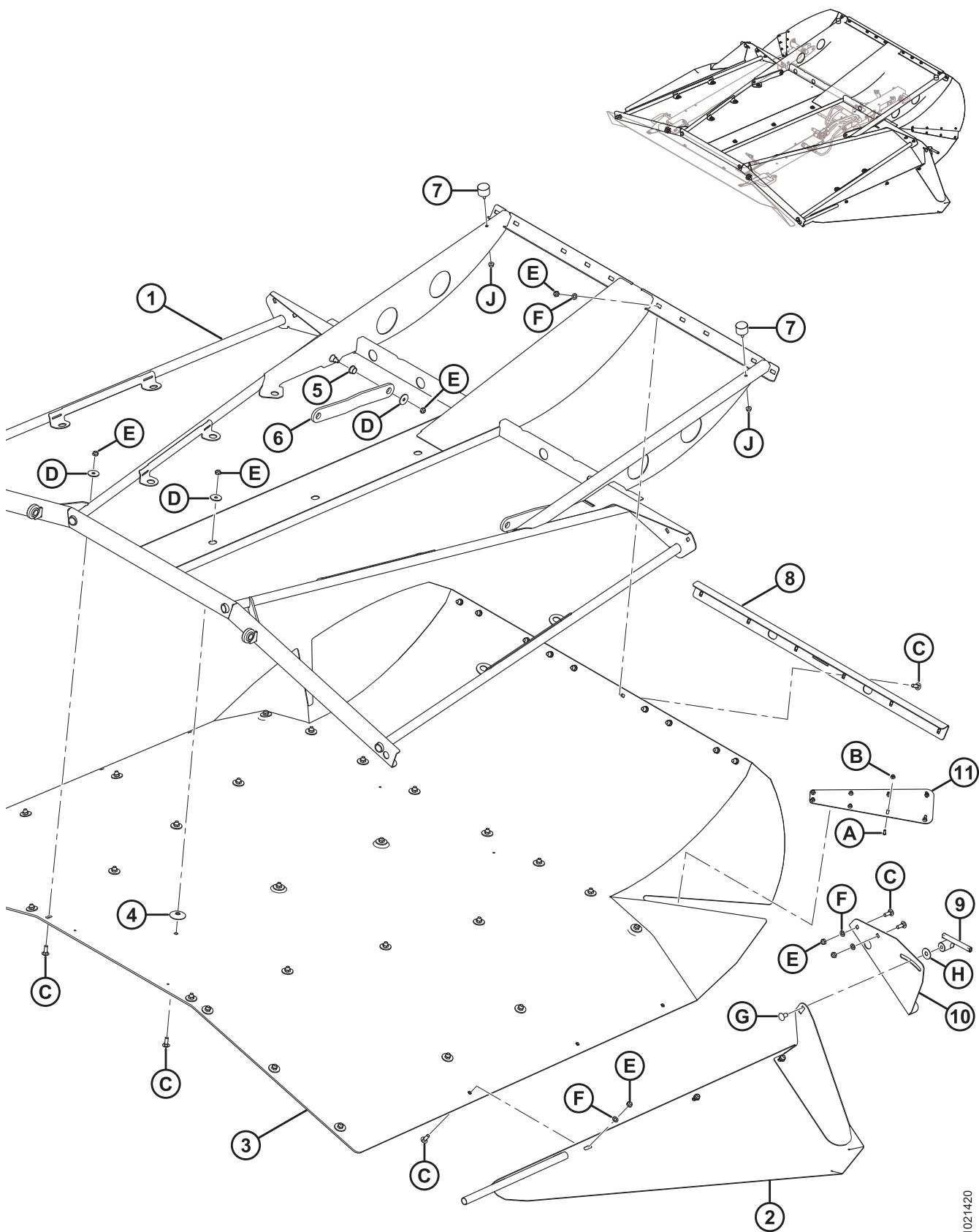
**Figure 4.4: Disconnecting Lowering Arms**

## **5 Illustrated Parts List**

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

## ILLUSTRATED PARTS LIST

### 5.1 Swath Compressor Frame

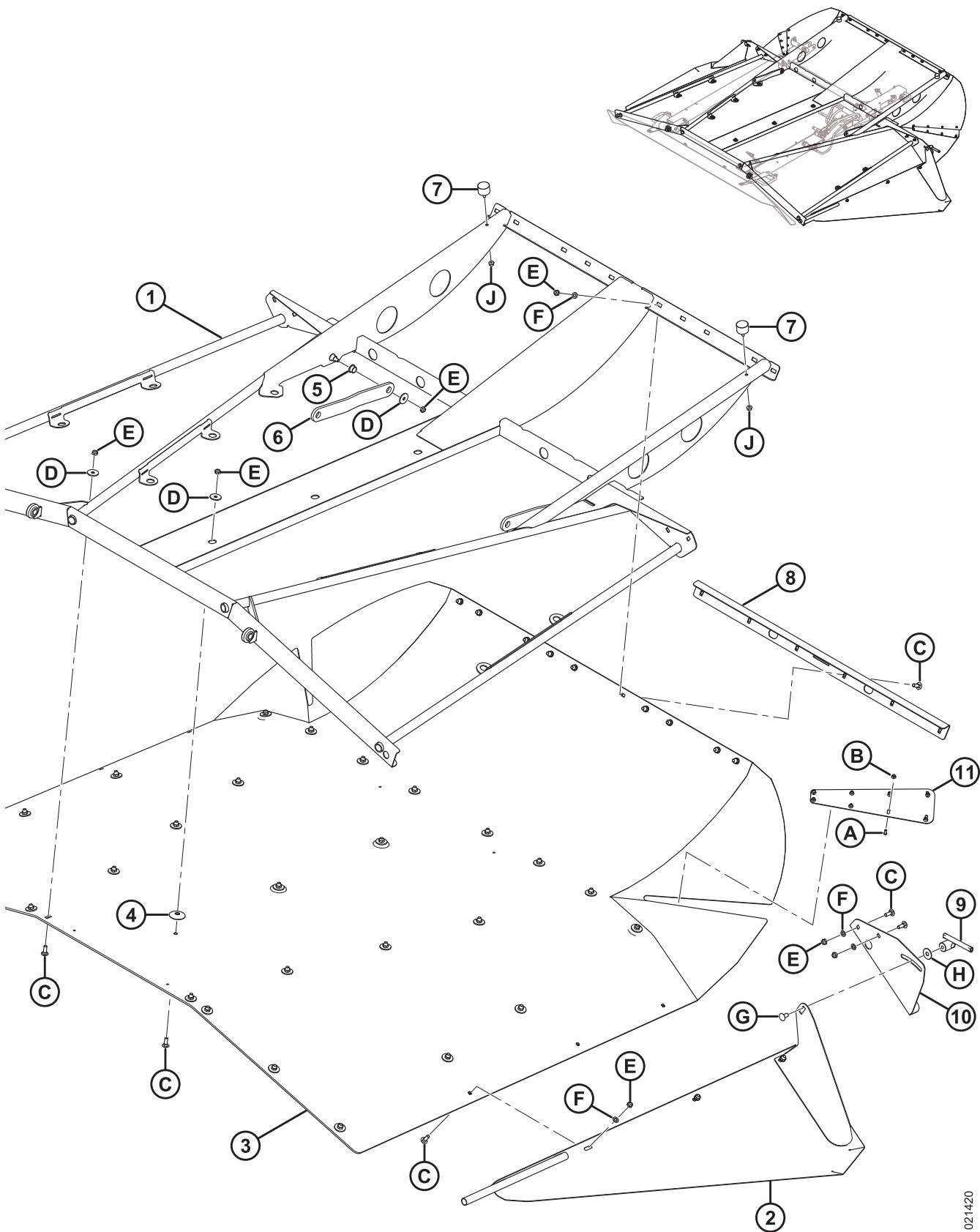


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## ILLUSTRATED PARTS LIST

Ref	Part Number	Description	Qty	Serial Number
		<b>Swath Compressor Frame</b>		
1	277318	SUPPORT – DEFLECTORS, WELD'T	1	
2	277410	DEFLECTOR – LH WELD'T	1	
	277411	DEFLECTOR – RH WELD'T	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	1	
	277414	SUPPORT – REAR DEFLECTOR, RH	1	
11	277409	STRAP – JOINING	2	

## ILLUSTRATED PARTS LIST



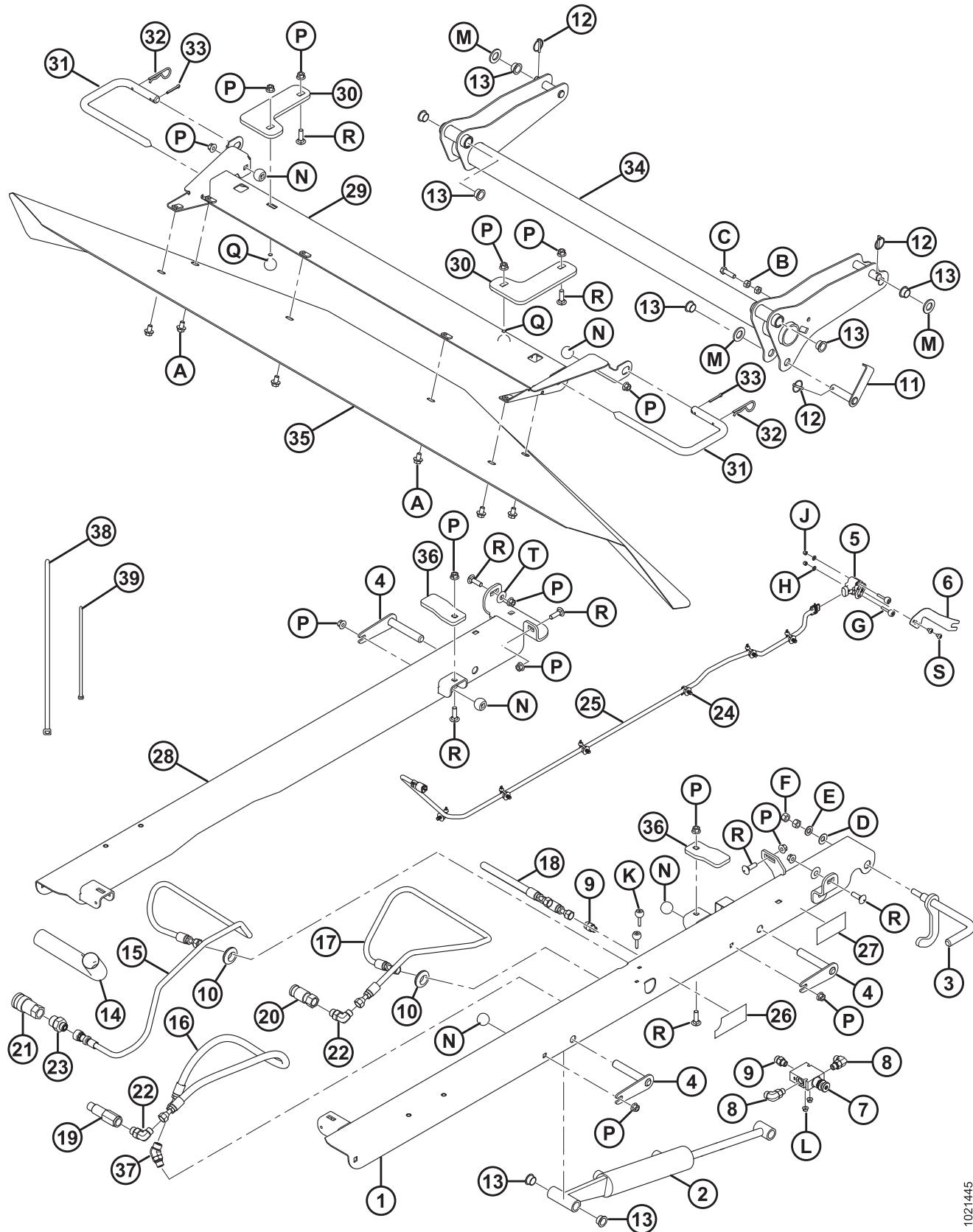
1021420

## ILLUSTRATED PARTS LIST

Ref	Part Number	Description	Qty	Serial Number
		<b>Swath Compressor Frame (continued)</b>		
A	191393	BOLT – HEX SOC M6X1X20-12.9-AB0R	16	
B	152668	NUT – HEX FLG CTR LOC M6X1-8-A2L	16	
C	184662	BOLT – RHSN TFL M10X1.5X30-8.8-A3L	49	
D	16652	WASHER – FLAT	31	
E	184692	NUT – HEX NYLOC M10X1.5-8-A3L	51	
F	184711	WASHER – FLAT REG M10-200HV-A3L	20	
G	152439	BOLT – RHSSN M12X1.75X25-8.8-A3L	2	
H	32247	WASHER – FLAT	2	
J	135337	NUT – HEX FLG CTR LOC M8X1.25-8-A2L	2	

## ILLUSTRATED PARTS LIST

### 5.2 Swath Compressor Hydraulics and Supports

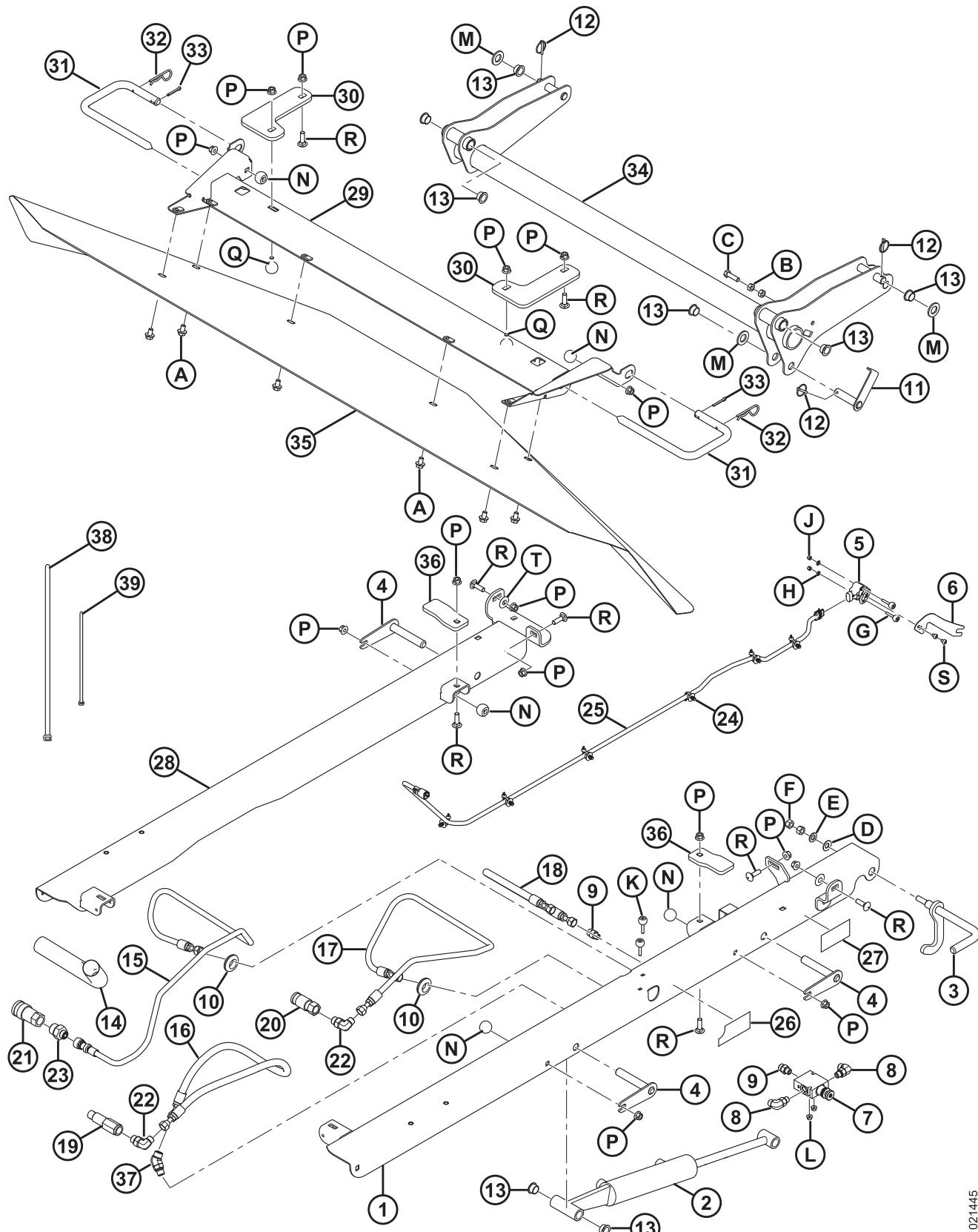


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## ILLUSTRATED PARTS LIST

Ref	Part Number	Description	Qty	Serial Number
		<b>Hydraulics and Supports</b>		
1	128780	SUPPORT – LH WELD'T	1	
2	128764	CYLINDER	1	
3	128768	LEVER – LOCK PIN WELD'T	1	
4	128788	PIN – PIVOT, WELD'T	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, WELD'T	1	
12	50193	PIN – LYNCH	3	
13	128737	BUSHING – FLANGE	10	
14	112940	SLEEVE	1	
15	277042	HOSE – HYD	1	
16	277041	HOSE – HYD	1	
17	277044	HOSE – HYD	1	
18	232597	HOSE – HYD	1	
19	135386	COUPLER – MALE HYD. 3/8 IN. FLAT FACE	1	
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 WELD'T	1	
29	128762	SUPPORT – FRONT PIVOT, WELD'T	1	

## ILLUSTRATED PARTS LIST



1021445

## ILLUSTRATED PARTS LIST

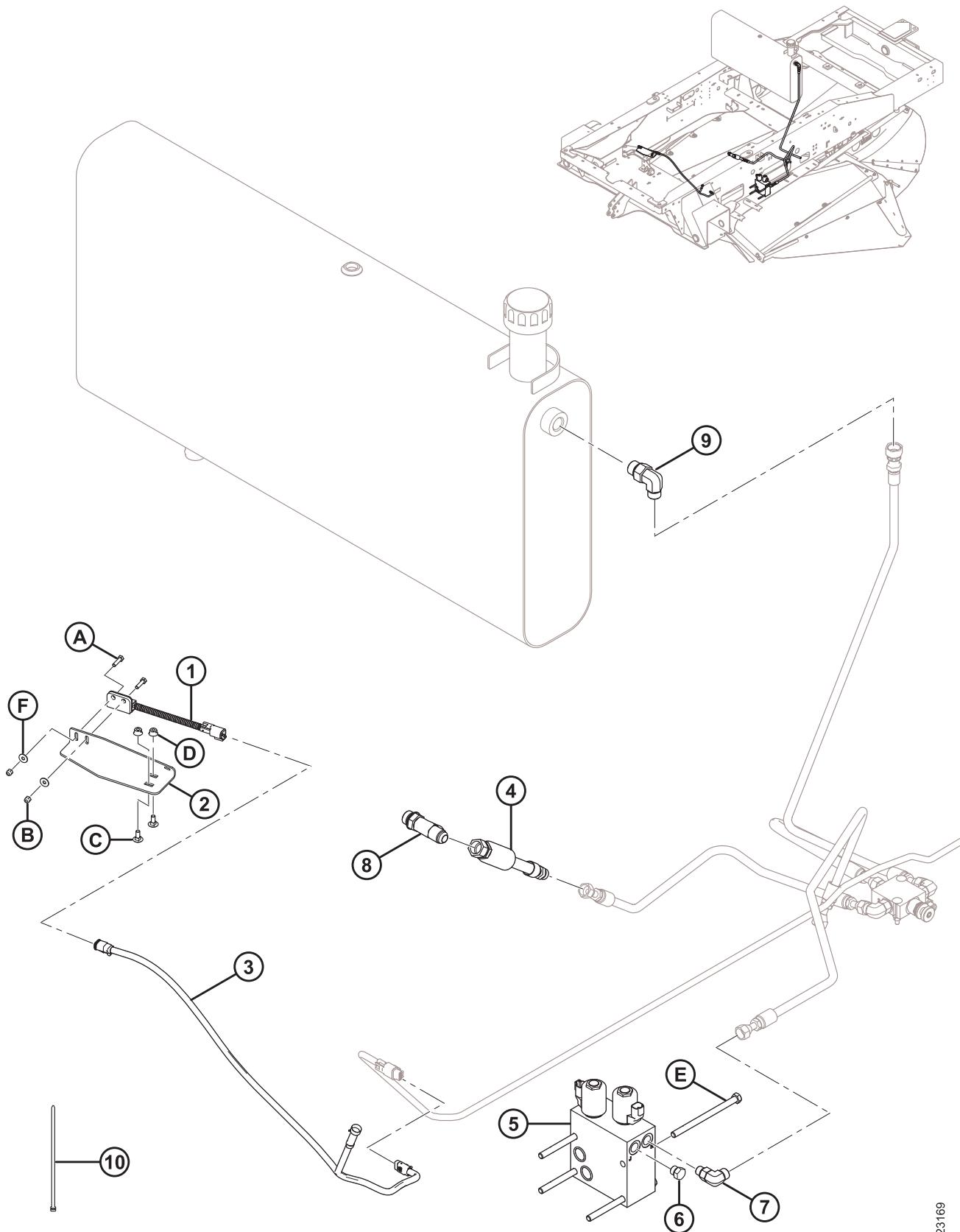
Ref	Part Number	Description	Qty	Serial Number
		<b>Hydraulics and Supports (continued)</b>		
30	128776	BAR – CLAMP	2	
31	128756	PIN – PIVOT	2	
32	13125	PIN – HAIR	2	
33	18648	PIN – COTTER 3/16 DIA X 1.25 ZP	2	
34	128770	ROCKSHAFT – LIFT, WELD'T	1	
35	128699	DEFLECTOR – FRONT	1	
36	277435	BAR – CLAMP	2	
37	136144	FITTING – ELBOW 45° HYD	1	
38	307531	FASTENER – CABLE TIE BLACK	2	
39	217631	FASTENER – CABLE TIE BLACK	1	
A	136151	BOLT – HEX FLG HD TFL M10X1.5X16-8.8-A3L	6	
B	30505	NUT – HEX M10X1.5-10-A3L	2	
C	30628	BOLT – HEX HD M10X1.5X35-8.8-A3L	1	
D	184595	WASHER – CONICAL SPRING 1/2"	1	
E	184714	WASHER – FLAT REG M12-300HV-A3L	1	
F	184694	NUT – HEX M12X1.75-8-A3L	2	
G	136604	BOLT – RHSN TFL M5X0.8X40-8.8-AA2L	2	
H	18798	WASHER – FLAT SAE 7/32 ID X 7/16 IN OD ZP	2	
J	197230	NUT – HEX NYLOC M5X0.8-8-A2L	2	
K	136731	BOLT – RHSN M6X1X45-8.8-A2L	2	
L	152668	NUT – HEX FLG CTR LOC M6X1-8-A2L	2	
M	18601	WASHER – SAE FLAT 13/16 ID X 1.5 IN OD ZP	3	
N	136178	BOLT – RHSN M10X1.5X20-8.8-A3L	4	
P	135799	NUT – HEX FLG CTR LOC M10X1.5-10-A3L	12	
Q	152732	BOLT – RHSN M10X1.5X40-8.8-A3L	2	
R	135691	BOLT – RHSN TFL M10X1.5X35-8.8-A3L	8	
S	252291	SCR – PAN HD M6X1X8-8.8-A2L	2	
T	306351	WASHER – FLAT REG M10-STL-SOFT-AA1J	2	

1. Shipped in manual bag.

## ILLUSTRATED PARTS LIST

### 5.2.1 M Series Swath Compressor Completion

This supplemental parts list is applicable only to M150, M155, M155E4, and M205 windrowers.

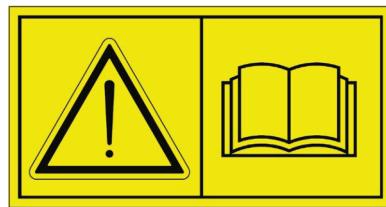
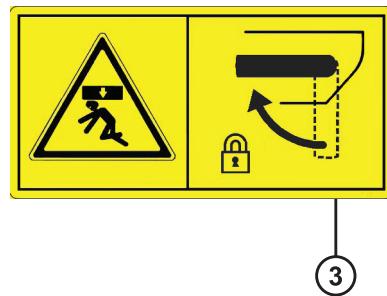
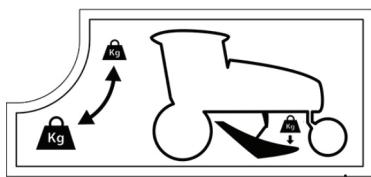
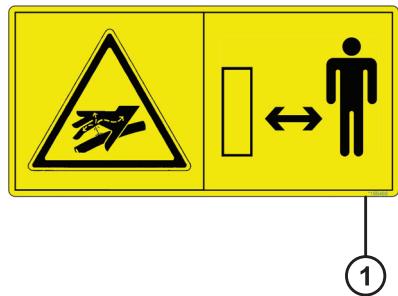
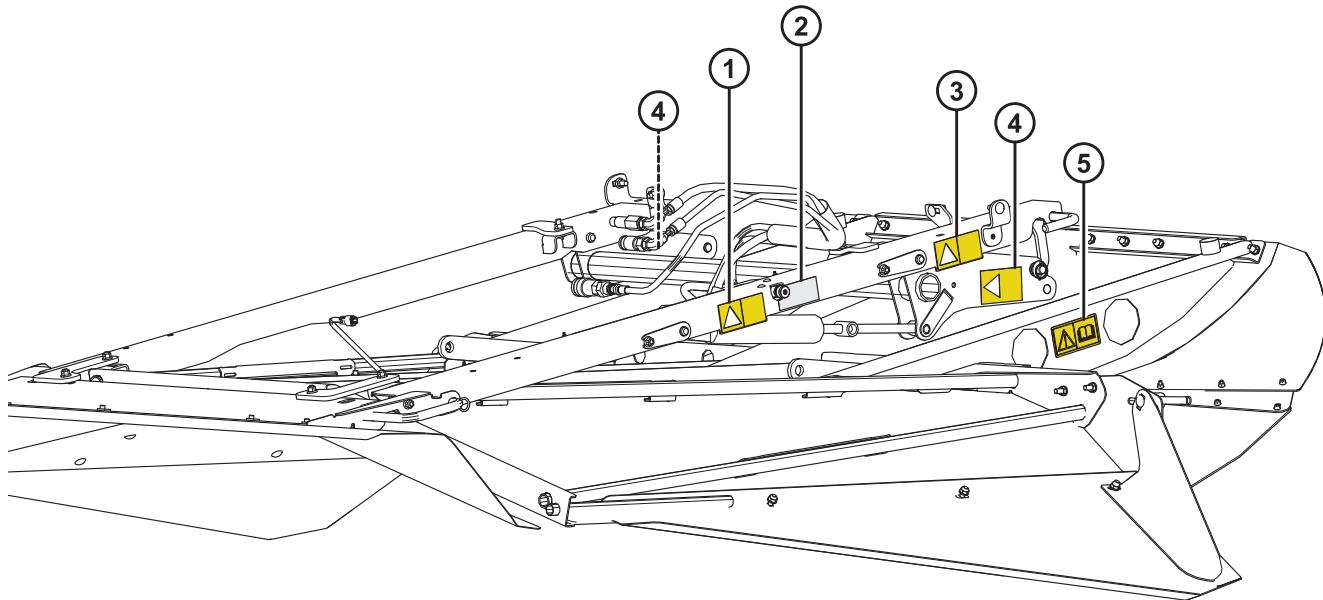


## ILLUSTRATED PARTS LIST

Ref	Part Number	Description	Qty	Serial Number
		<b>Swath Compressor Completion Package</b>		
1	200974	SWITCH – PROXIMITY	1	
2	128681	SUPPORT – F/R SWITCH	1	
3	128972	HARNESS – 5-SERIES SWATH COMP	1	
4	277043	HOSE – HYD	1	
5	139974	VALVE BLOCK – AUX LIFT (REEL FORE AFT-DWA)	1	
6	30994	PLUG – HEX CW O-RING	1	
7	136095	FITTING – ELBOW 90° HYD	1	
8	50019	FITTING – TEE HYD STR THD RUN TEE CW O-RING	1	
9	135917	FITTING – ELBOW 90° HYD	1	
10	21763	FASTENER – CABLE TIE BLACK	5	
A	184640	BOLT – HEX HD M5X0.8X20-8.8-A2L	2	
B	197230	NUT – HEX NYLOC M5X0.8-8-A2L	2	
C	136748	BOLT – RHSN M6X1X16-8.8-A2L	2	
D	152668	NUT – HEX FLG CTR LOC M6X1-8-A2L	2	
E	10948	BOLT – HH 3/8 NC X 5.5 LG GR 5 ZP	4	
F	184701	WASHER – FLAT LARGE M5-200HV-A2L	2	

## ILLUSTRATED PARTS LIST

### 5.3 Decals



10222127

## ILLUSTRATED PARTS LIST

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 (may not be exactly as shown)	1	
4	174683	DECAL – PINCH POINT	2	
5	184372	DECAL – READ MANUAL	1	



# 6 Reference

## 6.1 Torque Specifications

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

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

### **Jam nuts**

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

### **Self-tapping screws**

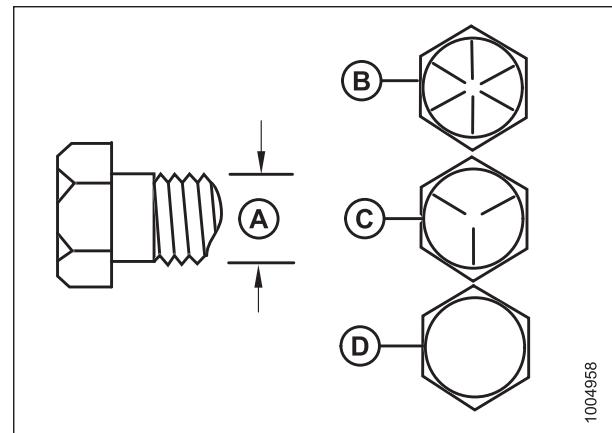
Standard torque is to be used (not to be used on critical or structurally important joints).

### 6.1.1 SAE Bolt Torque Specifications

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

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

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



**Figure 6.1: Bolt Grades**

A - Nominal Size

C - SAE-5

B - SAE-8

D - SAE-2

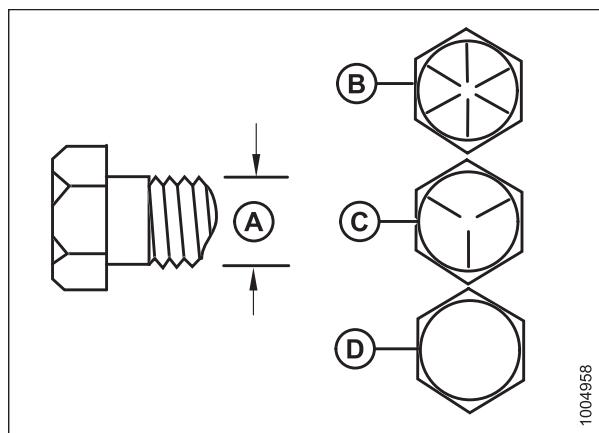
## REFERENCE

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

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

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

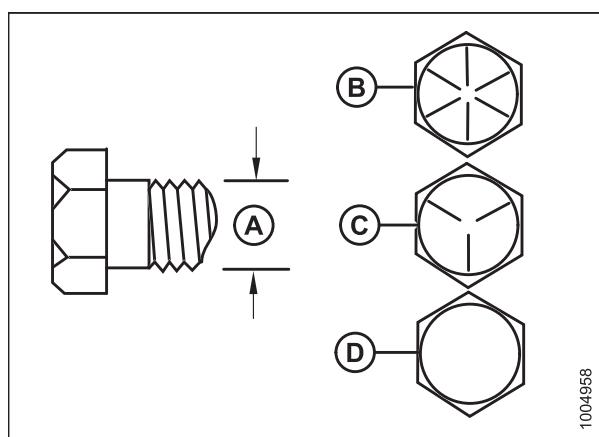
Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	24	26	18	19
3/8-16	42	46	31	34
7/16-14	67	74	50	55
1/2-13	102	113	76	84
9/16-12	148	163	109	121
5/8-11	204	225	151	167
3/4-10	362	400	268	296
7/8-9	583	644	432	477
1-8	874	966	647	716



**Figure 6.2: Bolt Grades**

A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2



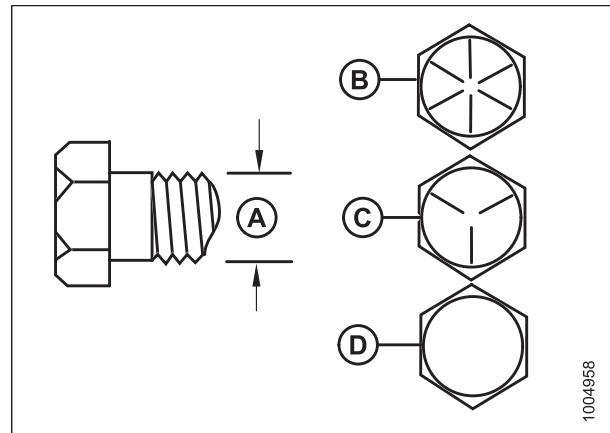
**Figure 6.3: Bolt Grades**

A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

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

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



**Figure 6.4: Bolt Grades**

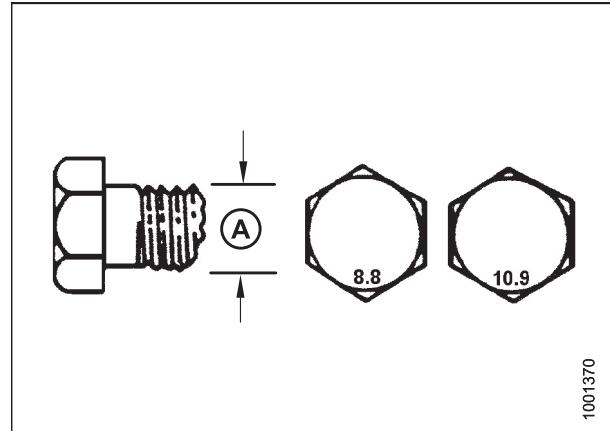
A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

### 6.1.2 Metric Bolt Specifications

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

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



**Figure 6.5: Bolt Grades**

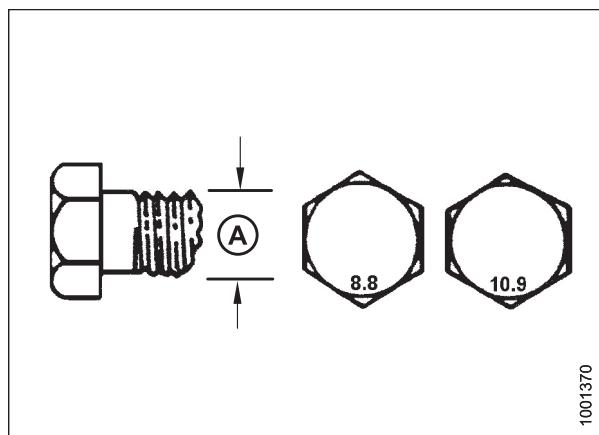
## REFERENCE

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

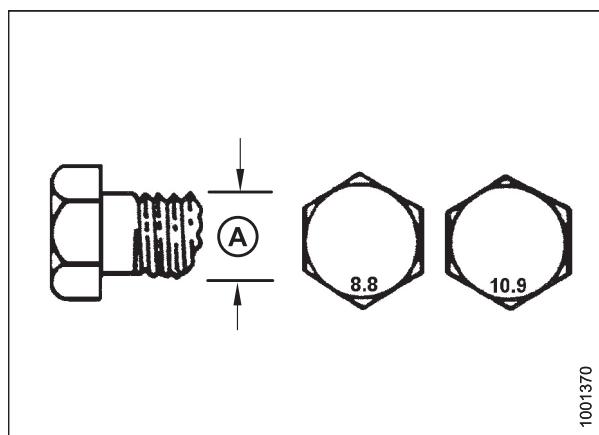
Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5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

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

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



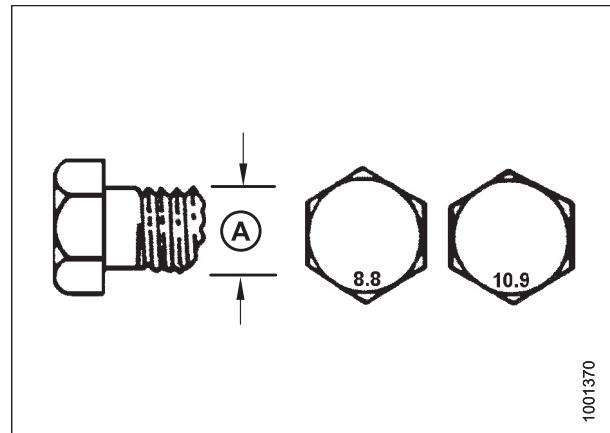
**Figure 6.6: Bolt Grades**



**Figure 6.7: Bolt Grades**

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

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

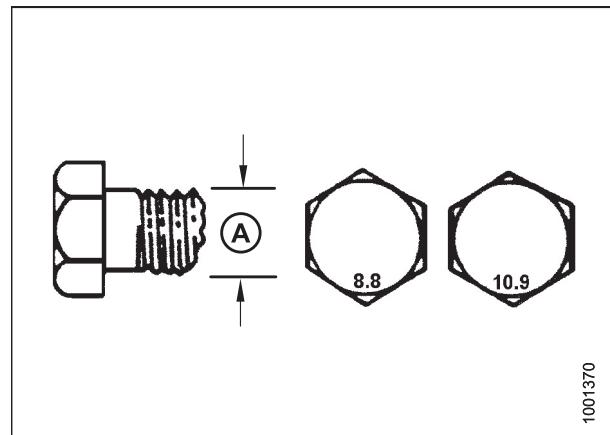


**Figure 6.8: Bolt Grades**

### 6.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

**Table 6.9 Metric Bolt Bolting into Cast Aluminum**

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



**Figure 6.9: Bolt Grades**

### 6.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table 6.10, page 60.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

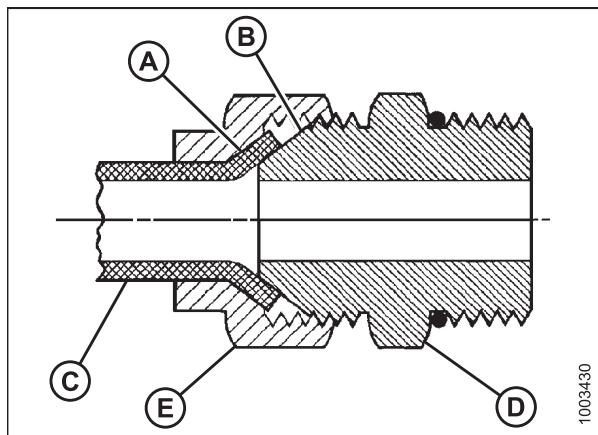


Figure 6.10: Hydraulic Fitting

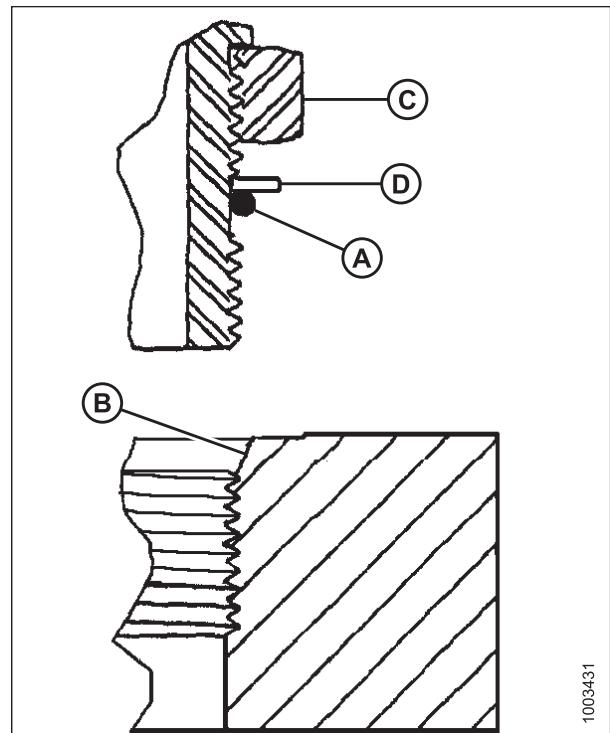
Table 6.10 Flare-Type Hydraulic Tube Fittings

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

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

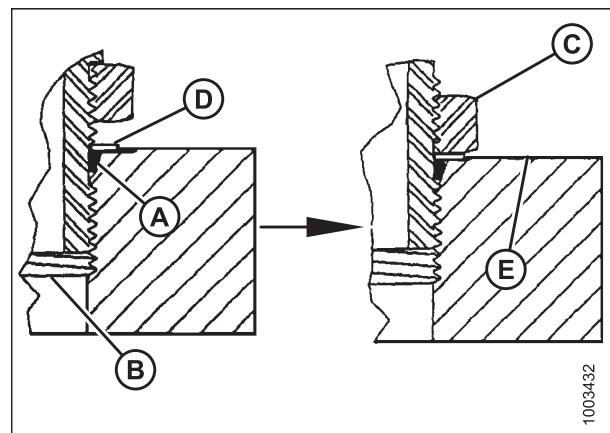
### 6.1.5 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

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



**Figure 6.11: Hydraulic Fitting**

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



**Figure 6.12: Hydraulic Fitting**

## REFERENCE

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

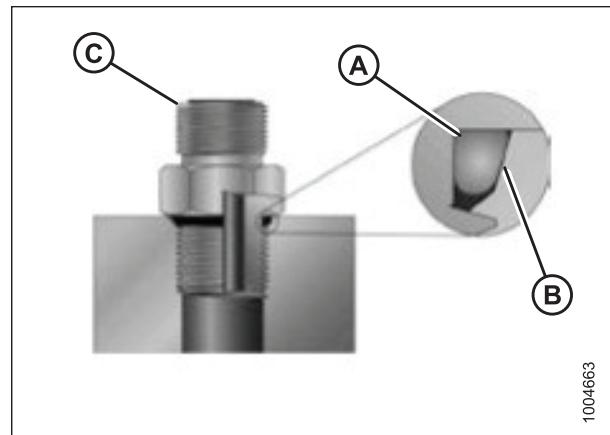
SAE Dash Size	Thread Size (in.)	Torque Value <sup>3</sup>	
		Nm	Ibf·ft (*Ibf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1-1/16–12	120–132	88–97
-14	1-3/8–12	153–168	113–124
-16	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.

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

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table 6.12, [page 63](#).
6. Check final condition of fitting.



**Figure 6.13: Hydraulic Fitting**

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

SAE Dash Size	Thread Size (in.)	Torque Value <sup>4</sup>	
		Nm	Ibf·ft (*Ibf·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.

### 6.1.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

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



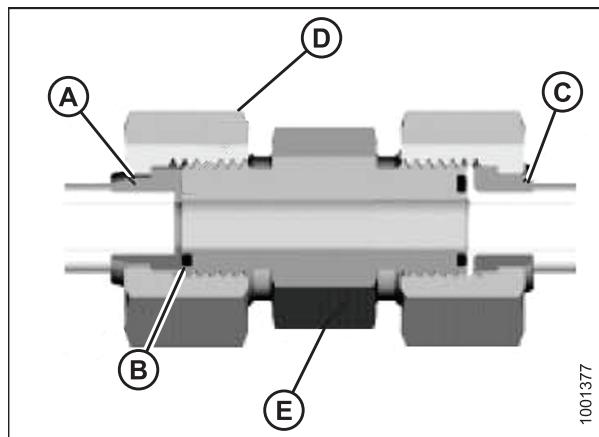
**Figure 6.14: Hydraulic Fitting**

- Apply hydraulic system oil to O-ring (B).
- Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
- Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
- Torque fittings according to values in Table 6.13, page 64.

**NOTE:**

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

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



**Figure 6.15: Hydraulic Fitting**

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value <sup>5</sup>	
			Nm	lbf·ft
-3	Note <sup>6</sup>	3/16	—	—
-4	9/16	1/4	25–28	18–21
-5	Note <sup>6</sup>	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

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.

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value <sup>7</sup>	
			Nm	lbf·ft
-14	Note <sup>6</sup>	7/8	—	—
-16	1-7/16	1	150–165	111–122
-20	1-11/16	1-1/4	205–226	151–167
-24	1–2	1-1/2	315–347	232–256
-32	2-1/2	2	510–561	376–414

### 6.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The Turns From Finger Tight (T.F.F.T.) values are shown in Table 6.14, page 65. 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 6.14 Hydraulic Fitting Pipe Thread**

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

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

## 6.2 Conversion Chart

Table 6.15 Conversion Chart

Quantity	SI Units (Metric)		Factor	Inch-Pound Units (Imperial)	
	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 <sup>3</sup> or cc	x 0.061 =	cubic inch	in. <sup>3</sup>
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.	<a href="#">6.1 Torque Specifications, page 55</a>
	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/removing washers (MD #30635) where rear supports are fastened to the outside of frame.	<a href="#">2.2.1 Installing Frame, page 18</a>
	Ensure sensor arm does not bind when raising or lowering the swath compressor.	<a href="#">2.2.1 Installing Frame, page 18</a>
	Check hydraulic hose and electrical harness routing for clearance when raising or lowering swath compressor. Adjust as necessary.	<a href="#">2.2.4 Connecting Hydraulics, page 25</a> <a href="#">2.2.2 Installing Reverse Switch and Harness, page 21</a>
	Ensure hydraulic hoses are secured in place with cable ties.	<a href="#">2.2.4 Connecting Hydraulics, page 25</a>
	Ensure swath compressor lock is functioning properly.	<a href="#">3.2.4 Locking the Swath Compressor, page 37</a>
	Check for hydraulic leaks.	—
	Ensure side deflectors are set evenly to desired position.	<a href="#">3.2.3 Adjusting Side Deflectors, page 36</a>
	Ensure latest software version is installed in windrower.	—

Date checked: \_\_\_\_\_ Checked by: \_\_\_\_\_





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