

M1170 Windrower

Unloading and Assembly Instructions (North America)

215356 Revision A

Original Instruction

M1170 Windrower, featuring Dual Direction® and CrossFlex™ rear suspension



Published June 2020

© 2020 MacDon Industries, Ltd.

The information in this publication is based on the information available and in effect at the time of printing. MacDon Industries, Ltd. makes no representation or warranty of any kind, whether expressed or implied, with respect to the information in this publication. MacDon Industries, Ltd. reserves the right to make changes at any time without notice.

Introduction

This manual contains unloading, assembly, and predelivery information for the MacDon M1170 Windrower. When coupled with one of MacDon's A40DX, R1 SP Series, D1X Series, or D1XL Series Headers provides a package designed to cut and lay a variety of grain, hay, and specialty crops in windrows.

The M1170 Windrower is Dual Direction® and can be driven in cab-forward or engine-forward mode.

Right and left designations are determined by the operator's position facing the direction of travel. This manual uses the terms right cab-forward, left cab-forward, right engine-forward, and left engine-forward when referencing specific locations on the machine.

The ignition keys were shipped with the shipping documents and are used to lock the cab doors and tool box compartment.

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).

This document is currently available in English only.

Summary of Changes

The following list provides an account of major changes from the previous version of this document.

Section	Summary of Change	Internal Use Only
<i>4.1.2 Opening Hood, page 42</i>	Added topic	Tech pubs
<i>4.1.8 Checking Engine Gearbox Lubricant Level and Adding Lubricant, page 46</i>	Corrected gearbox oil level checking procedure	Product support
<i>4.1.11 Closing Hood, page 49</i>	Added topic	Tech pubs

TABLE OF CONTENTS

Introduction	i
Summary of Changes.....	ii
Chapter 1: Safety	1
1.1 Signal Words	1
1.2 General Safety	2
1.3 Tire Safety.....	4
1.4 Battery Safety	5
1.5 Welding Precaution	6
1.6 Engine Safety.....	10
1.6.1 High-Pressure Rail	10
1.6.2 Engine Electronics	10
1.7 Safety Signs	12
Chapter 2: Unloading the Windrower	13
2.1 Using One Forklift to Unload Windrower	13
Chapter 3: Assembling the Windrower	15
3.1 Lowering Steps.....	15
3.2 Installing Caster Wheels.....	17
3.3 Installing Drive Wheels	19
3.4 Repositioning Right Leg	21
3.5 Repositioning Caster Wheels	24
3.6 Installing Caster Anti-Shimmy Dampeners.....	27
3.7 Installing Windshield Access Step	29
3.8 Positioning Mirror Arms.....	30
3.9 Installing Slow Moving Vehicle Signs	31
3.10 Replacing Speed Identification Symbol Decal – US Only	32
3.11 Installing Rear Ballast Package.....	33
3.12 Lubrication	38
3.12.1 Lubrication Procedure	38
3.12.2 Lubrication Points	38
3.13 Connecting Batteries	39
Chapter 4: Performing Predelivery Checks.....	41
4.1 Completing Predelivery Checklist.....	41
4.1.1 Recording Serial Numbers	41
4.1.2 Opening Hood	42
4.1.3 Checking Engine Air Intake.....	43
4.1.4 Checking and Adding Engine Oil.....	43
4.1.5 Checking and Adding Hydraulic Oil	44
4.1.6 Checking Fuel Separator.....	45

TABLE OF CONTENTS

4.1.7 Checking Engine Coolant Level	46
4.1.8 Checking Engine Gearbox Lubricant Level and Adding Lubricant	46
4.1.9 Checking Air Conditioning Compressor Belts	47
4.1.10 Checking Operating Safety System.....	48
4.1.11 Closing Hood	49
4.1.12 Checking Tire Pressures	49
4.1.13 Starting the Engine	52
Engine Start Troubleshooting Tips.....	55
4.1.14 Checking and Adding Wheel Drive Lubricant	56
4.1.15 Checking Wheel Drive Lubricant Level – 12 Bolt (Optional)	56
4.2 Performing Operational Checks.....	58
4.2.1 Checking Auto Lights	58
4.2.2 Checking Harvest Performance Tracker Display	59
Navigating the Harvest Performance Tracker	60
Setting Language and Units of Measurement.....	61
Setting Time and Date	62
Setting Windrower Tire Size.....	63
4.2.3 Checking Engine Speed	63
4.2.4 Checking Selective Catalytic Regeneration Conditioning Mode	64
4.2.5 Checking Exterior Lights	65
4.2.6 Checking Horn.....	68
4.2.7 Checking Interior Lights.....	69
4.2.8 Checking Climate Controls	69
4.2.9 Checking the Radio and Activating the Bluetooth® Feature.....	70
4.3 Checking Manuals.....	72
4.4 Performing Final Steps.....	73
4.5 Attaching a Header to an M1170 Windrower.....	74
4.5.1 A40DX Auger Header	74
Attaching an A40DX Auger Header.....	74
Connecting A40DX Auger Hydraulics	79
4.5.2 D1X or D1XL Series Draper Header	82
Attaching Draper Header Supports	82
Attaching a D1X or D1XL Series Draper Header	83
Connecting D1X or D1XL Series Draper Header Hydraulics	89
4.5.3 R1 Series Rotary Disc Header	93
Attaching R1 Series Rotary Disc Header	93
Connecting R1 Series Rotary Disc Header Hydraulics	98
4.6 Adjusting Header Settings on the Harvest Performance Tracker	105
4.7 Calibrating the Header Systems.....	106
4.7.1 Calibrating the Knife Drive on the Harvest Performance Tracker Display	106
4.7.2 Calibrating Header Position Sensors on the Harvest Performance Tracker Display	109
Chapter 5: Reference	113
5.1 Lubricants, Fluids, and System Capacities.....	113
5.2 Fuel Specifications	115
5.3 Torque Specifications	116

TABLE OF CONTENTS

5.3.1 Metric Bolt Specifications	116
5.3.2 Metric Bolt Specifications Bolting into Cast Aluminum	118
5.3.3 O-Ring Boss Hydraulic Fittings – Adjustable	119
5.3.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable	121
5.3.5 O-Ring Face Seal Hydraulic Fittings.....	122
5.3.6 Tapered Pipe Thread Fittings.....	123
5.4 Conversion Chart.....	124
5.5 Definitions	125
Predelivery Checklist	129

Chapter 1: Safety

1.1 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.

1.2 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

In addition, take the following precautions:

- 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 1.1: Safety Equipment



Figure 1.2: 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.

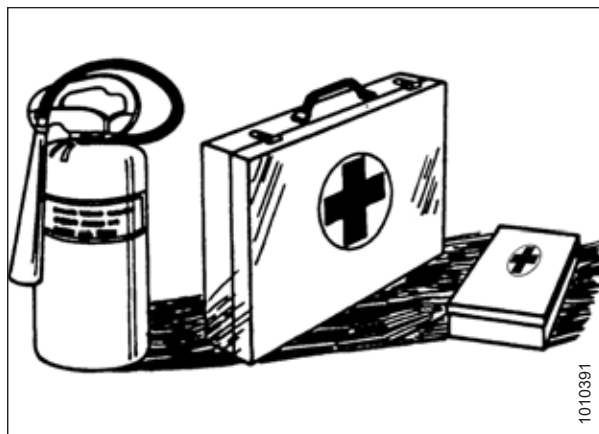


Figure 1.3: Safety Equipment

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 1.4: 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.

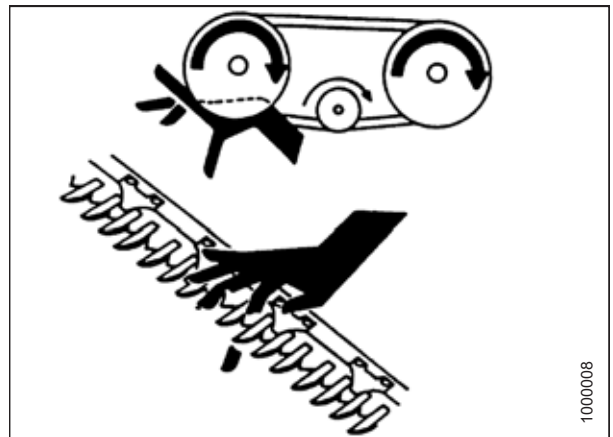


Figure 1.5: Safety around Equipment

- 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 1.6: Safety around Equipment

1.3 Tire Safety

Service tires safely.



WARNING

- 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.



Figure 1.7: Overinflated Tire



WARNING

- Do NOT remove, install, or repair a tire on a rim unless you have proper equipment and experience to perform job. Take the tire and rim to a qualified tire repair shop.
- Make sure the tire is correctly seated before inflating to operating pressure. If the tire is not correctly positioned on the rim or is overinflated, the 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 the tire in any direction, endangering anyone in area.
- Do NOT stand over tire when inflating. Use a clip-on chuck and extension hose.
- Do NOT exceed maximum inflation pressure indicated on tire label.
- Never use force on an inflated or partially inflated tire.
- Make sure all air is removed from the tire before removing the tire from the rim.
- Never weld a wheel rim.
- Replace tires that have defects and replace wheel rims that are cracked, worn, or severely rusted.



Figure 1.8: Safely Inflating Tire

1.4 Battery Safety

WARNING

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



Figure 1.9: Safety around Batteries

WARNING

- Wear safety glasses when working near batteries.
- To avoid an electrolyte loss, do NOT tip batteries more than 45°.
- 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.

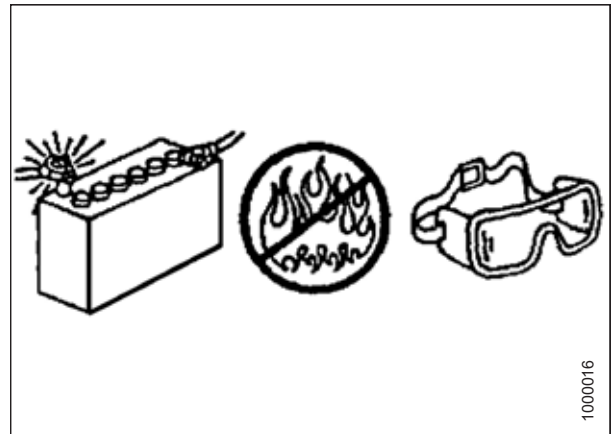


Figure 1.10: Safety around Batteries

WARNING

- To avoid injury from a spark or short circuit, disconnect the battery ground cable before servicing any part of the electrical system.
- Do NOT operate the engine with the alternator or battery disconnected. With battery cables disconnected and the engine running, a high voltage can be built up if terminals touch frame. Anyone touching the 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 the terminals because a spark or short circuit will result.
- Keep batteries out of reach of children.

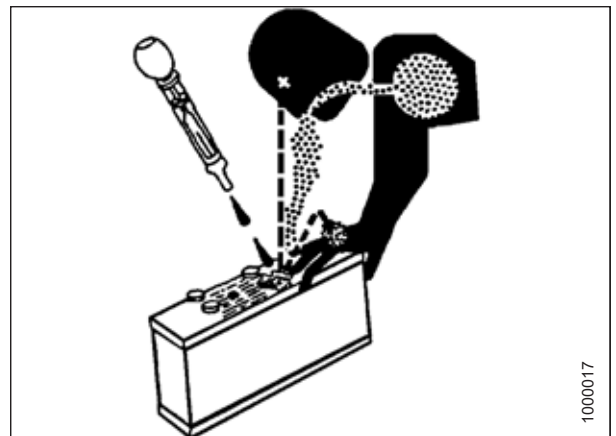


Figure 1.11: Safety around Batteries

1.5 Welding Precaution

IMPORTANT:

It is very important that correct procedures be followed when welding anything connected to the windrower. If procedures are not followed, it could result in severe damage to sensitive, expensive electronics. Even if complete failure of a module doesn't happen immediately, it is impossible to know what effect high current could have with regard to future malfunctions or shorter lifespan.

Due to the number of connectors, components to be welded should be removed from the windrower whenever possible rather than welded in place. When work needs to be completed on a header, disconnect the header completely from the windrower before welding. These same guidelines apply to plasma cutting, or any other high-current electrical operation performed on the machine.

The following items need to be disconnected:

- Negative battery terminals (A) (two connections)

IMPORTANT:

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

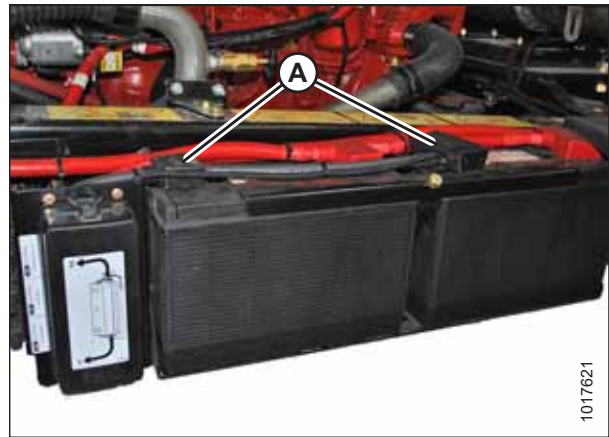


Figure 1.12: Negative Terminals

- 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 1.13: Master Controller

SAFETY

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

Location: Behind cab, near header lift/fan manifold

To disconnect the connectors, 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 1.14: Firewall Extension Module

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

Location: Under cab, inside left frame rail

To disconnect the connectors, 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.

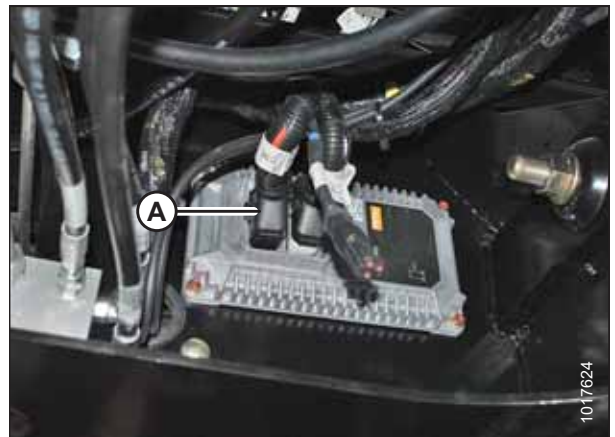


Figure 1.15: Chassis Extension Module

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

Location: On engine

To disconnect the connectors, 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.

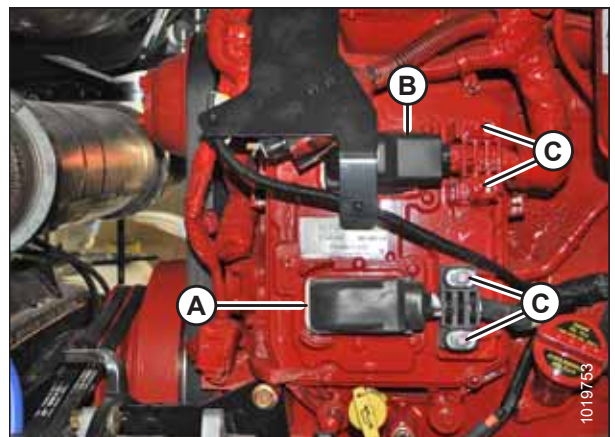


Figure 1.16: Engine Control Module

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

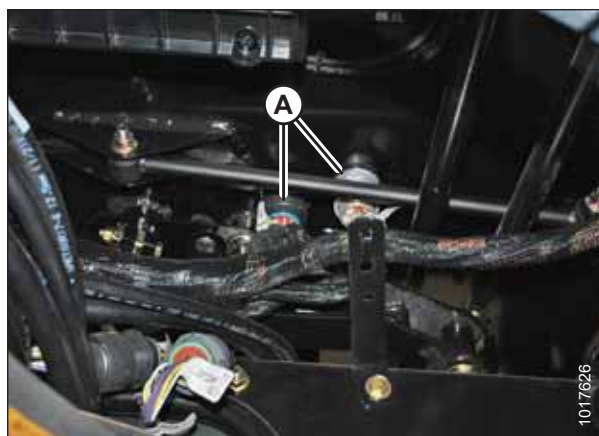


Figure 1.17: Cab Connectors

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

Location: Under cab at base of left cab post

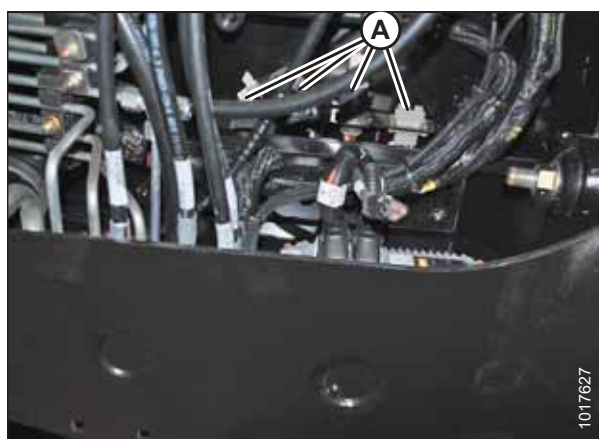


Figure 1.18: Roof Connectors

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

Location: Outside left frame rail near batteries



Figure 1.19: Chassis Relay Module

SAFETY

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

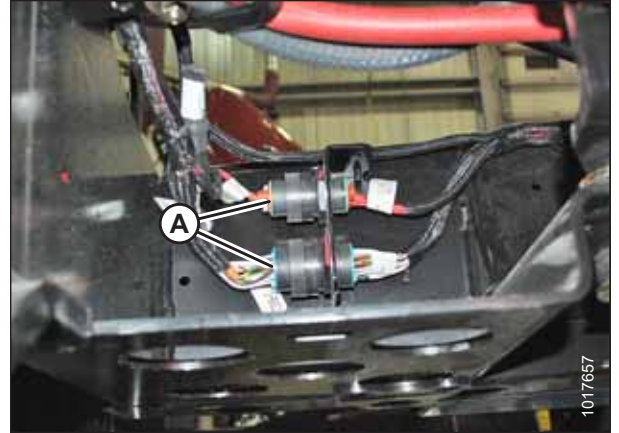


Figure 1.20: Engine Harness

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



Figure 1.21: 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.

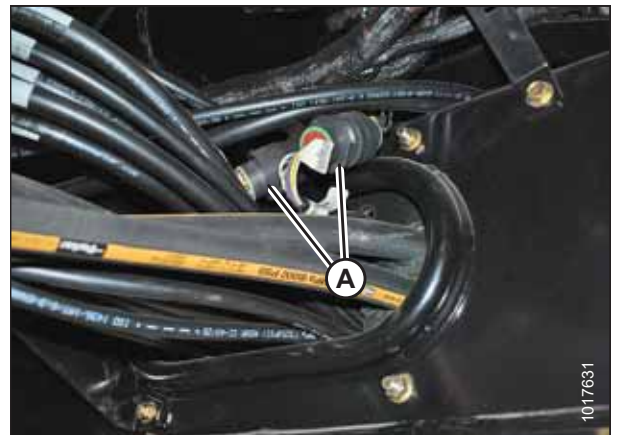


Figure 1.22: Wheel Motor Connectors

To align the connectors:

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

1.6 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 to prevent an overspeed. Do this by shutting off the air and/or fuel supply to the engine.
- Do NOT bypass or disable automatic shutoff circuits. The circuits help prevent personal injury, and prevent engine damage. For instructions, refer to the technical manual.
- Inspect the engine for potential hazards.
- Before starting the engine, ensure no one is on, underneath, or close to the engine. Ensure that people clear the area.
- All protective guards and covers must be installed if the engine must be started to perform service procedures.
- To help prevent an accident, work around rotating parts carefully.
- If a warning tag is attached to the engine start switch or controls, do NOT start engine or move controls. Consult whoever attached the warning tag before starting the engine.
- Start the engine from the operator's station. Follow the procedure in the Starting Engine section of the operator's manual. Following the correct procedure will help prevent major damage to engine components and prevent personal injury.
- To ensure that the jacket water heater (if equipped) and/or lubricant 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 and operate the engine in a well-ventilated area. If the engine is started in an enclosed area, vent exhaust to the outside.
- Engine exhaust gases become very hot during operation and can burn people and common materials. Stay clear of the rear of machine and avoid exhaust gases when engine is running.

NOTE:

If the engine will be operated in very cold conditions, then an additional cold-starting aid may be required.

1.6.1 High-Pressure Rail



WARNING

- 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.
- Before disconnecting fuel lines or any other components under high-pressure between the fuel pump and high-pressure common rail fuel system, confirm that the fuel pressure is relieved.

1.6.2 Engine Electronics



WARNING

Tampering with electronic system installation or original equipment manufacturer (OEM) wiring installation is 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 engine monitoring system can initiate the following actions:

- Warning
- Derate
- Shut down

Abnormalities in the following monitored conditions can 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

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.

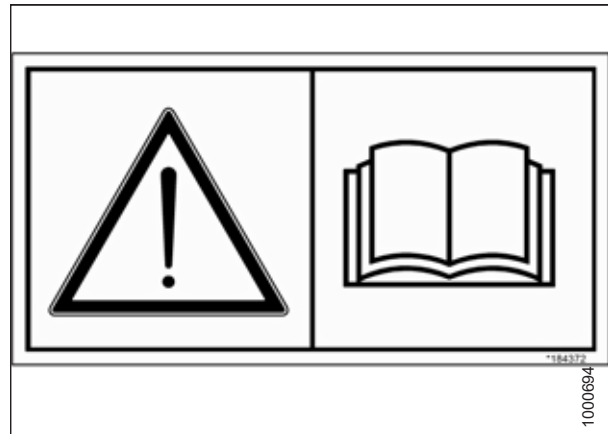


Figure 1.23: Operator's Manual Decal

Chapter 2: Unloading the Windrower

2.1 Using One Forklift to Unload Windrower

CAUTION

Equipment used for unloading must meet or exceed the specified requirements. Using inadequate equipment may result in chain breakage, vehicle tipping, or machine damage.

Table 2.1 Lifting Vehicle Requirements

Minimum Capacity ¹	7037 kg (15,500 lb.)
Minimum Fork Length	198.1 cm (78 in.)

IMPORTANT:

Forklifts are normally rated for a load located 610 mm (24 in.) ahead of the back end of the forks. To obtain forklift capacity at 122.2 cm (48 in.), check with your forklift distributor.

1. Move the trailer onto level ground and block the trailer wheels.
2. Set forks to the widest possible setting.

CAUTION

Ensure forks do NOT contact or lift on fuel tank (A) or engine oil pan (B) (not shown).

3. Position forklift from opposite side of fuel tank, and position forks (C) under windrower frame with the fuel tank (A) between the forks.

NOTE:

The windrower's center of gravity is approximately 157.5 cm (62 in.) rearwards from the center of the drive wheel.

WARNING

Ensure the forks extend beyond the far side of the frame.

4. Lift until the windrower is clear of the trailer deck.
5. Back forklift slowly away from the trailer until the windrower is clear of the trailer deck.
6. Lower unit slowly to the ground. If the ground is soft, place wooden blocks under the front shipping stands.
7. Carefully back forklift away from the windrower.
8. Check windrower for shipping damage, and check shipment for missing parts.
9. In case of shipping damage or missing parts, confirm that the serial number matches the shipping manifest, then contact MacDon immediately with any damage or shortage claims.

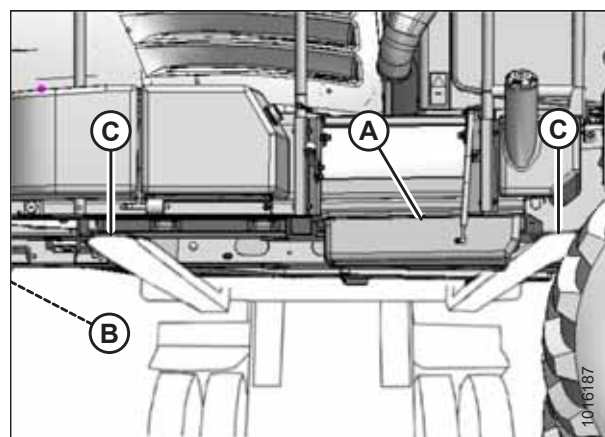


Figure 2.1: Windrower on Trailer

1. At 122.2 cm (48 in.) from back end of forks.

Chapter 3: Assembling the Windrower

Perform all procedures in this chapter in the order in which they are listed.

3.1 Lowering Steps

Lowering the steps allows safe and easy access to the cab where some assembly hardware was stored for shipping purposes.

Lower steps from shipping position to working position as follows:

NOTE:

Left side shown, right side opposite.

1. Remove stop bolt (A) and discard.
2. Loosen pivot bolts (B) at both sides of step (C).

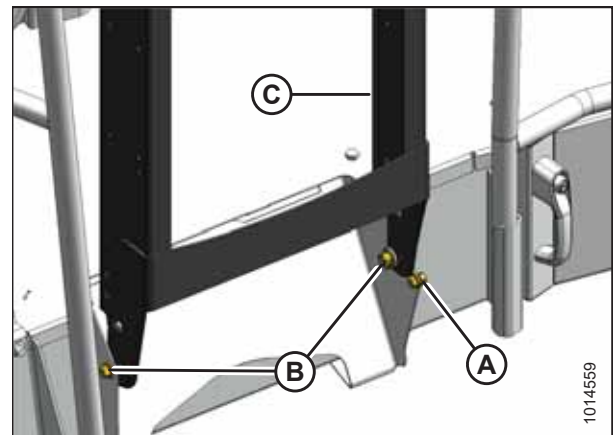


Figure 3.1: Left Step – Shipping Position

3. Lower step (A) to working position.
4. Ensure clips (B) are engaged in step.
5. Tighten pivot bolts (C) to 90–100 Nm (66–73 lbf·ft).

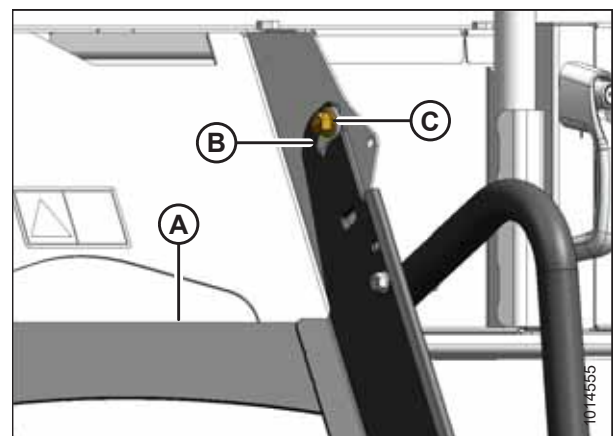


Figure 3.2: Left Step – Working Position

ASSEMBLING THE WINDROWER

6. Retrieve bag containing drive wheel nuts from the storage compartment (A) behind the training seat.

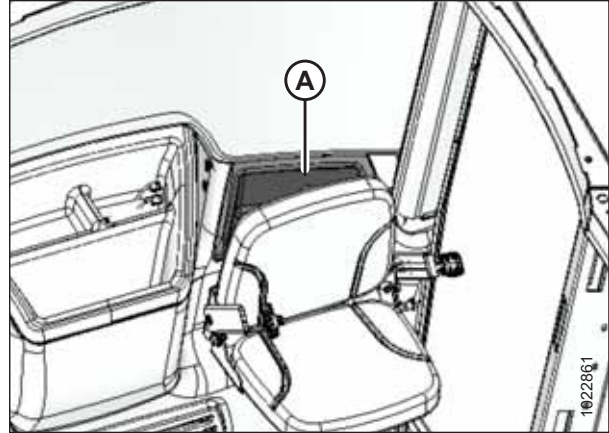


Figure 3.3: Storage Compartment

3.2 Installing Caster Wheels

Some shipping configurations come with caster wheels removed. Follow this procedure to install caster wheels if required.

1. Retrieve toolbox (A) from the storage compartment, and remove banding.

NOTE:

Use ignition key to unlock storage compartment.

2. Retrieve hardware from toolbox (A).

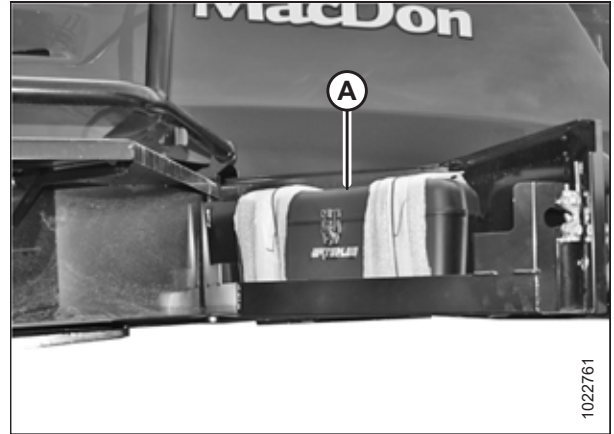


Figure 3.4: Toolbox

3. Remove banding and blocking (A) securing walking beam to frame.
4. Retrieve caster wheel assemblies from shipment.

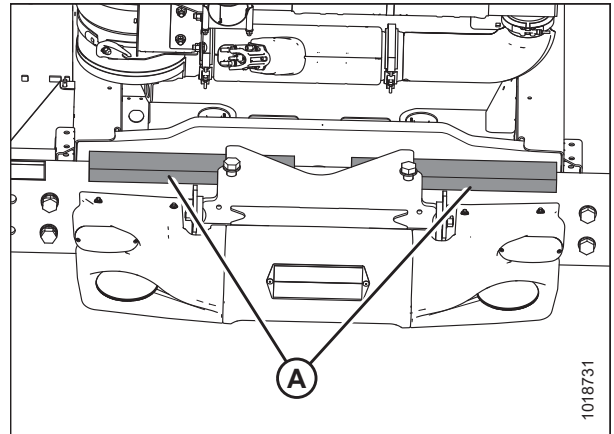


Figure 3.5: Windrower Rear

5. Using a forklift, approach windrower from the front and slide forks under frame.



CAUTION

Ensure forks do NOT contact fuel tank (A) and that forks lift on windrower frame.

6. Raise windrower approximately 152 cm (60 in.) off the ground. Place suitable stands under the drive wheel legs and rear frame, and lower windrower onto stands to partially unload the forks.



Figure 3.6: Lifting Windrower

ASSEMBLING THE WINDROWER

7. Attach sling (B) to caster assembly (A).
8. Retrieve two washers (C) from the toolbox and place them on caster wheel spindle (D).
9. If the caster assembly (A) is on a pallet, remove banding and shipping material securing assembly to the pallet.

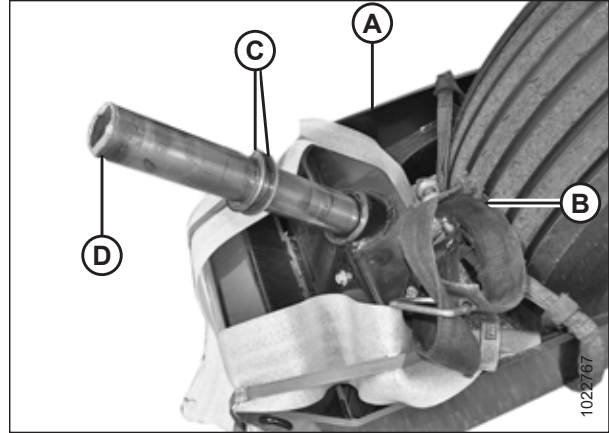


Figure 3.7: Caster Wheel Assembly in Shipping Configuration

10. Attach sling (A) on caster assembly (B) to a suitable lifting device.
11. Tilt walking beam (C) and maneuver caster assembly (B) so that spindle (D) can be installed onto walking beam (C).

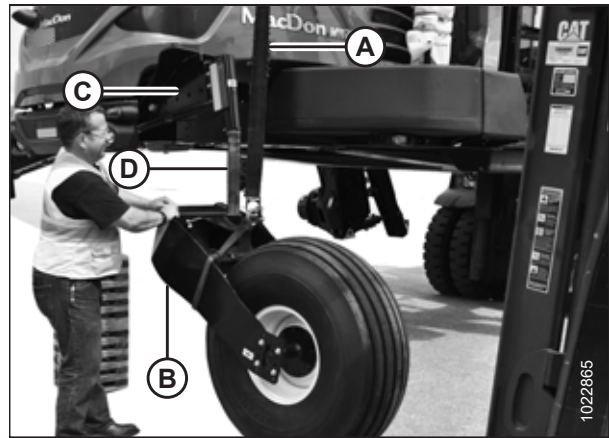


Figure 3.8: Installing Caster Assembly

12. Install flat washer (A) onto the spindle.
13. Install key (B) and arm (C) onto the spindle, ensuring that the arm is positioned so there is no clearance at the top and bottom of the walking beam extension.
14. Install retaining ring (D).
15. Tighten nut (E) and torque to 190–200 Nm (140–147 lbf-ft).
16. Remove sling from caster assembly.
17. Repeat Steps 7, page 18 to 16, page 18 for second caster assembly.

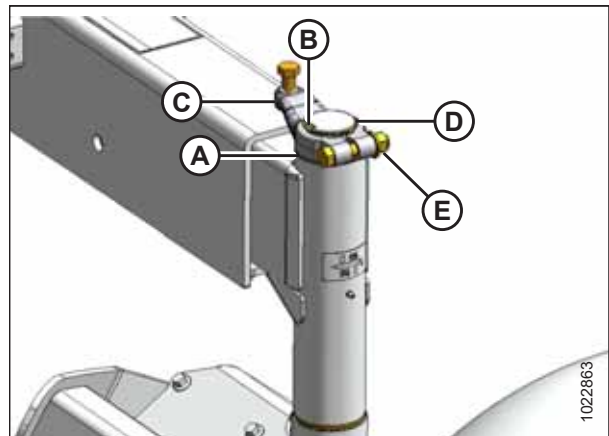


Figure 3.9: Caster Arm

3.3 Installing Drive Wheels

CAUTION

Use a lifting device capable of supporting a minimum of 907 kg (2000 lb.) to lift the wheel assembly.

IMPORTANT:

The windrower must be supported off the ground with stands.

1. Using a forklift, lift cab end of windrower to approximately 130 cm (51 in.) (B) off the ground, enough to position the drive wheel assembly (A). Place a stand (C) under the windrower frame.
2. Clean mounting surface on wheel drive and rim.

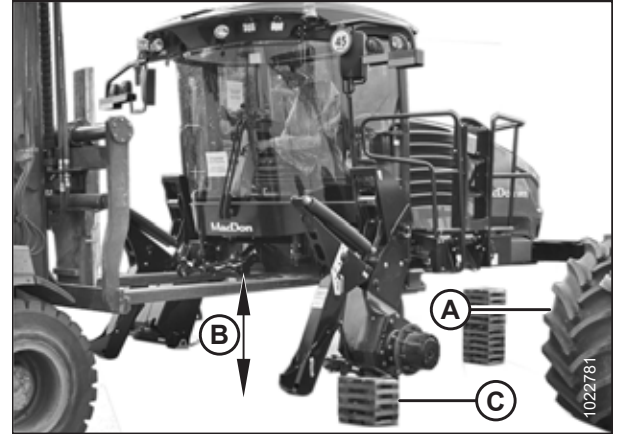


Figure 3.10: Supporting Windrower

3. Position a suitable lifting device (A) under the tire and raise slightly.
4. Position the wheel against wheel drive hub so air valve (B) is on the outside and tread (C) points forward (cab-forward orientation).

NOTE:

For turf tires (diamond tread pattern), be sure the arrow on the sidewall points in forward rotation (cab-forward).

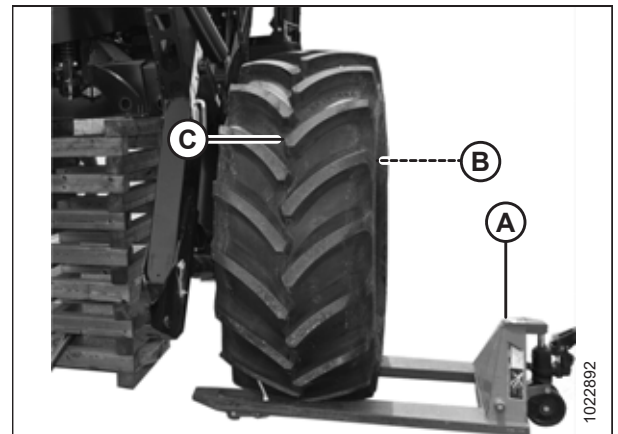


Figure 3.11: Drive Wheel

ASSEMBLING THE WINDROWER

5. Align the rim with studs on the hub and push the wheel onto the hub.
6. Install wheel nuts (A).

IMPORTANT:

To avoid damage to wheel rims and studs, do **NOT** use an impact wrench. Threads must be clean and dry. Do **NOT** apply lubricant or anti-seize compound. Do **NOT** overtighten wheel nuts.

7. Torque drive wheel nuts to 510 Nm (375 lbf·ft) using tightening sequence shown.

IMPORTANT:

Use only manufacturer-specified nuts (MD #205397).

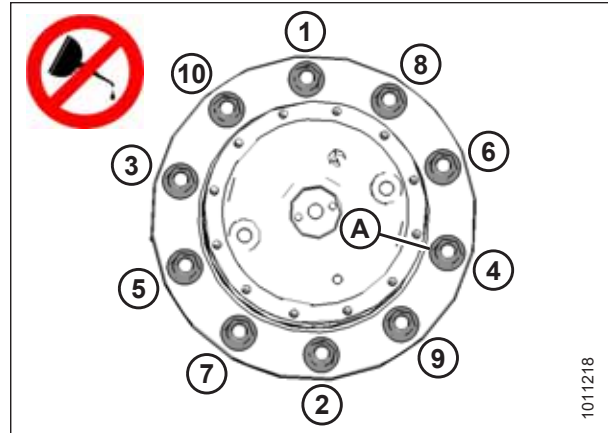


Figure 3.12: Tightening Sequence – Ten Bolt Wheel

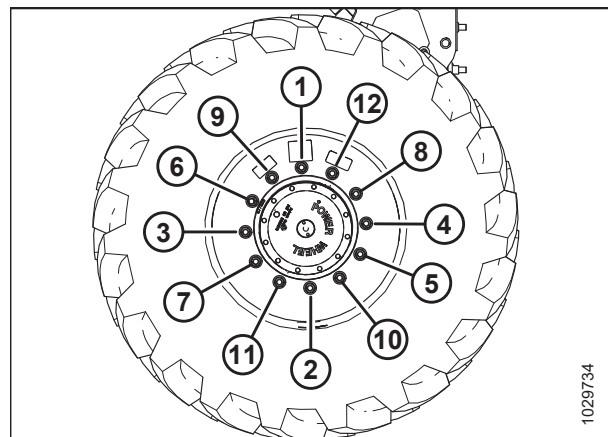


Figure 3.13: Tightening Sequence – Twelve Bolt Wheel

8. Repeat the tightening sequence two additional times, ensuring the specified torque is achieved each time.
9. Repeat Steps 2, page 19 to 8, page 20 for the other drive wheel.
10. Raise the windrower, remove the stand, and lower windrower to the ground.
11. Repeat the torque procedure every hour of operation until two consecutive checks confirm that there is no movement of the nuts.

3.4 Repositioning Right Leg

The right (cab-forward) leg requires repositioning from shipping to field configuration.

IMPORTANT:

Do **NOT** open the right cab-forward door when the right leg is in shipping configuration. If the glass door contacts the leg, it may result in broken glass and/or a damaged door seal.

1. Using a forklift, lift the front of the windrower. Place stand (A) (or equivalent) to support front of the windrower and to keep right wheel (B) off the ground.
2. Slowly lower the windrower onto a stand (A).
3. Place a pallet jack (C) (or equivalent) under right wheel (B), and raise pallet jack enough to take the weight off the right wheel.

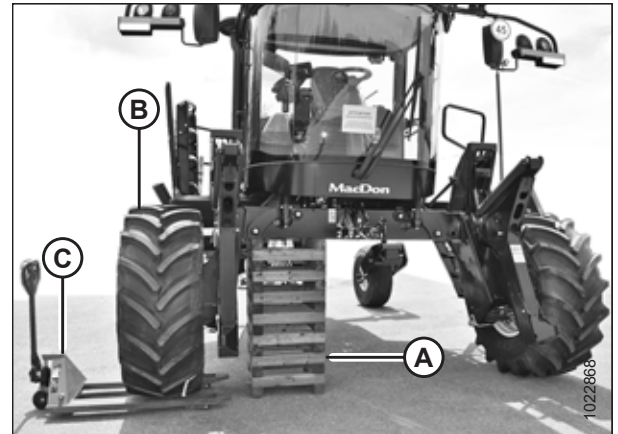


Figure 3.14: Supporting Right Leg of Windrower

4. Remove shipping tag and wire (A) from the traction drive hoses under the cab.



Figure 3.15: Under Windrower Cab

5. Remove two bolts (A), washers, and nuts from frame.

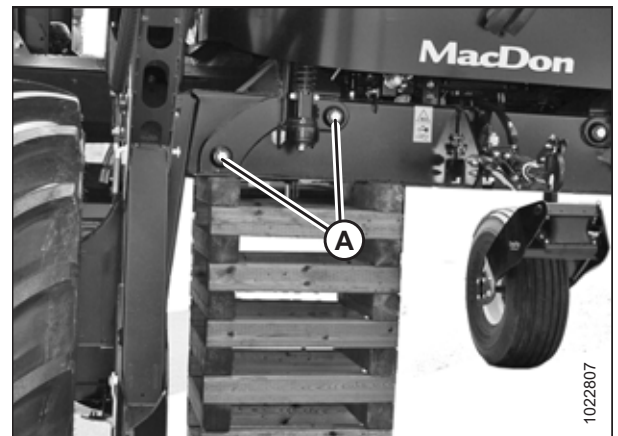


Figure 3.16: Windrower Right Leg

ASSEMBLING THE WINDROWER

6. Adjust lift height until pin (A) is loose. Extract the pin from the front of the frame with slide hammer (B) (MD #209816) (tool required due to limited space in front of the fuel tank). Instructions are included with the tool.

NOTE:

Removing the pins will be difficult if weight is still on the leg.

7. Repeat for second pin.

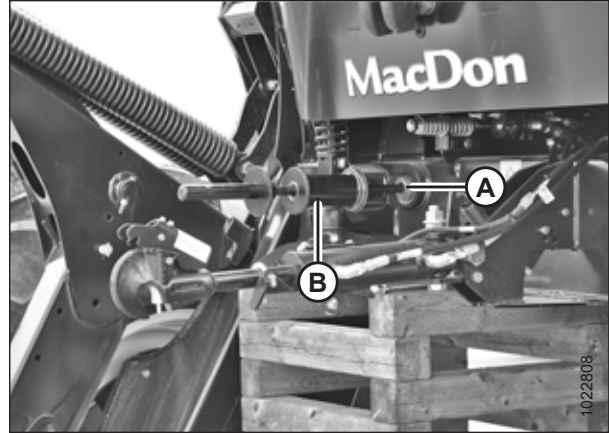


Figure 3.17: Slide Hammer

8. Move leg outwards to expose one hole (A) in the frame.



Figure 3.18: Repositioning Right Leg

9. Align holes at pin locations and use slide hammer (B) to reinstall pins (A). If necessary, adjust the jack to prevent damage to the outer edges of the pins.

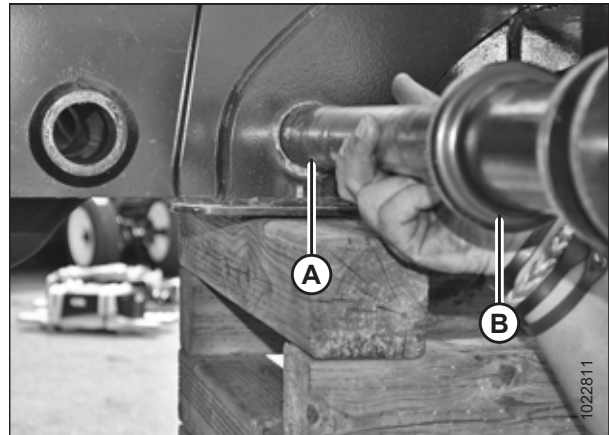


Figure 3.19: Leg Pin

ASSEMBLING THE WINDROWER

10. Secure pins with bolts (A), washers, and nuts. Torque nuts to 136 Nm (100 lbf·ft).
11. Lower the pallet jack and move it from the work area.
12. Support the windrower with a forklift, remove stand, and lower windrower to the ground.

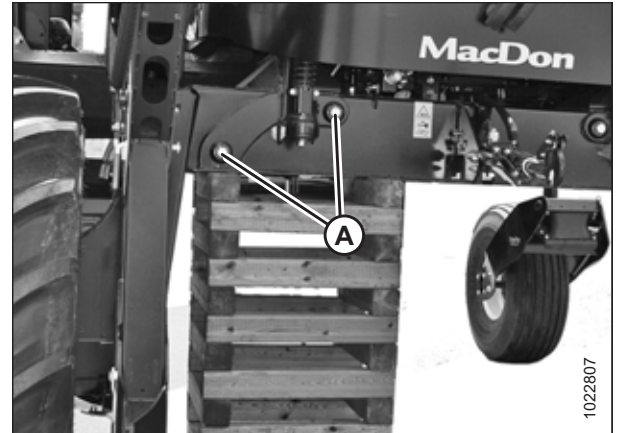


Figure 3.20: Right Leg

3.5 Repositioning Caster Wheels

A narrow caster tread width is better suited for smaller headers because it allows more space for the uncut crop and provides more maneuverability around poles, irrigation inlets, and other obstacles. A wider caster tread width reduces runover in heavy crops that produce large windrows.

1. Lift windrower with forklift to take most of the weight off casters.



Figure 3.21: Supporting Windrower

2. Remove four bolts and washers (A), shock support brackets (B), and slow moving vehicle (SMV) sign support bracket (C) from walking beam.
3. Retain hardware and support brackets (B) and (C) for installation later.

NOTE:

There is one SMV support bracket (C) preinstalled on shock support brackets (B) at the left cab-forward walking beam.

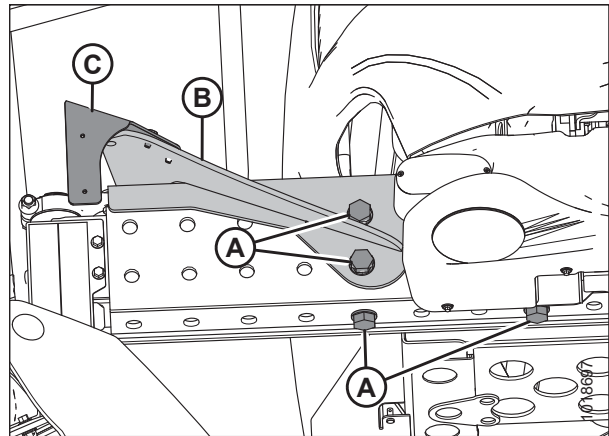


Figure 3.22: Walking Beam

4. If not done yet, remove banding and blocking (A) securing walking beam to frame.

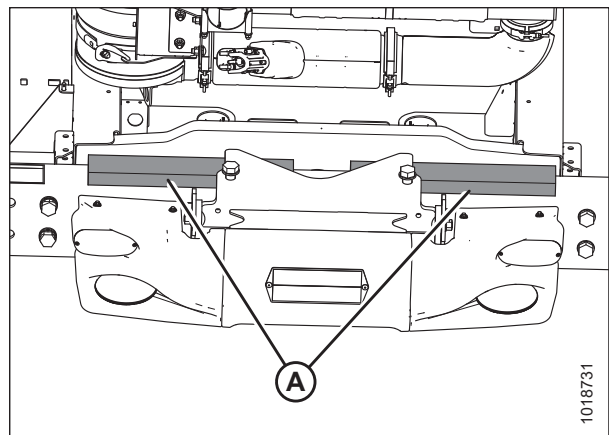


Figure 3.23: Windrower Rear

ASSEMBLING THE WINDROWER

5. Rotate the caster until wheel (A) is parallel to the walking beam to assist with moving the extensions. Pull walking beam extension (B) out to desired position and line up bolt holes.

NOTE:

The walking beam extension (B) can be adjusted into three working positions.

6. Install two M24 x 60 bolts and washers (C) on the bottom of beam. Do **NOT** tighten.

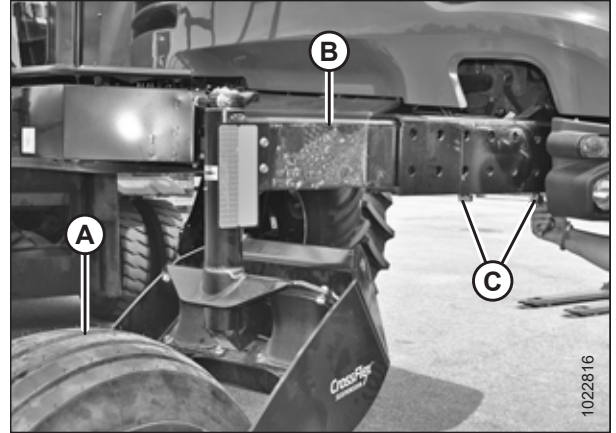


Figure 3.24: Walking Beam Extension

7. Install two M24 x 60 bolts coated with anti-seize compound and M24 flat washers (A) from the toolbox in the outboard side of the walking beam. Do **NOT** fully tighten.

NOTE:

Depending on the extent of walking beam position, outboard bolts may need to be installed first.

8. Place support brackets (B) onto walking beam as shown and secure with two M24 x 60 bolts coated with anti-seize compound and M24 flat washers (C). Do **NOT** fully tighten.

IMPORTANT:

Ensure support bracket plate (B) is parallel or is installed straight.

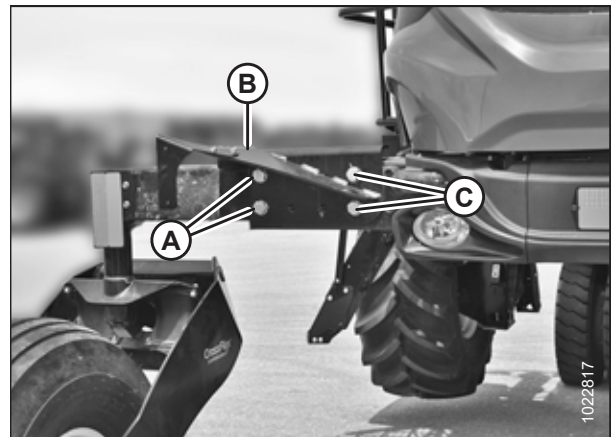


Figure 3.25: Anti-Shimmy Brackets

9. Tighten bolts as follows:
 - a. Snug bottom bolts (A), then snug back bolts (B).
 - b. Torque back bolts (B) to 745–770 Nm (550–570 lbf-ft).
 - c. Torque bottom bolts (A) to 745–770 Nm (550–570 lbf-ft).

IMPORTANT:

Torque bolts after first 5 hours of operation, and then again after 10 hours.

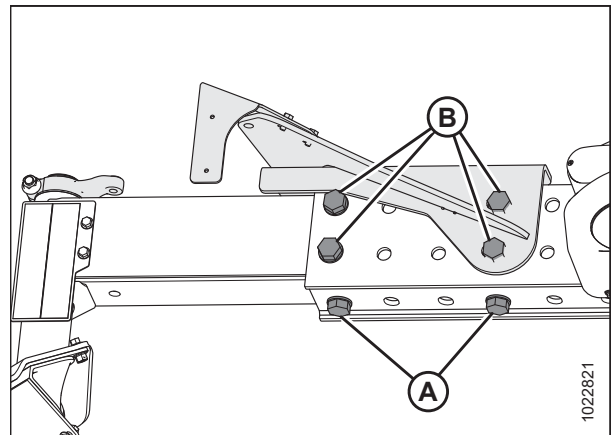


Figure 3.26: Walking Beam Bolts

ASSEMBLING THE WINDROWER

10. Repeat Steps 2, [page 24](#) to 9, [page 25](#) at opposite end of walking beam, ensuring that casters are spaced equally from center of windrower.
11. Lower windrower to ground.

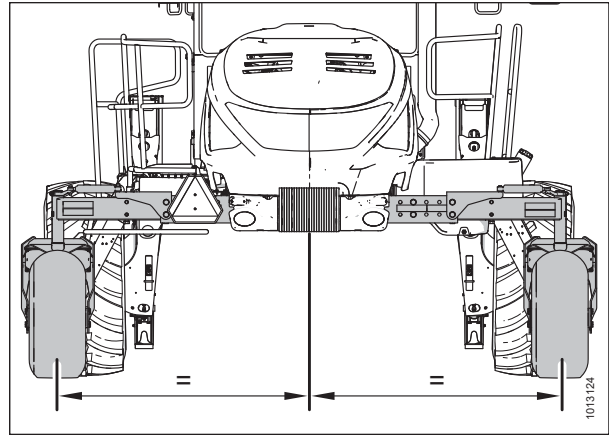


Figure 3.27: Walking Beam Adjustment

3.6 Installing Caster Anti-Shimmy Dampeners

1. Retrieve anti-shimmy dampeners and hardware from bag in toolbox.

2. If unit was shipped with casters installed, then complete the following procedure. Otherwise, proceed to step 3, [page 27](#).

- a. Remove retaining ring (A).
- b. Remove and discard yellow spacer (B).
- c. Retrieve key and arm from the toolbox.
- d. Install key and arm (D), and secure with retaining ring (E) on the caster shaft as shown.
- e. Tighten nut (C), and torque to 190–200 Nm (140–147 lbf·ft).

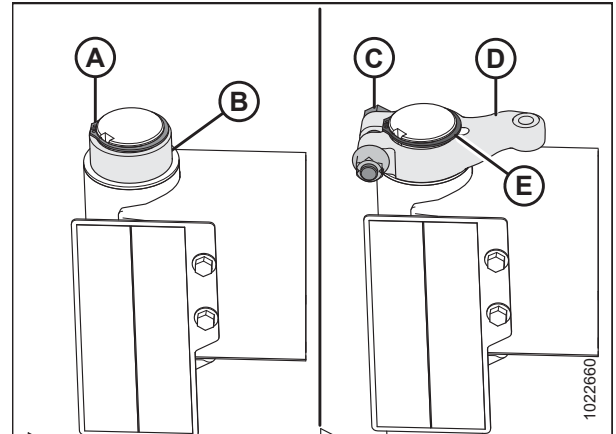


Figure 3.28: Anti-Shimmy Arm – Left Side

3. Attach barrel end of anti-shimmy dampener (A) to forward hole in support (B) with one M16 x 75 flange head bolt (C) and one M16 tech loc nut (D). Install bolt from under support. Do **NOT** fully tighten.

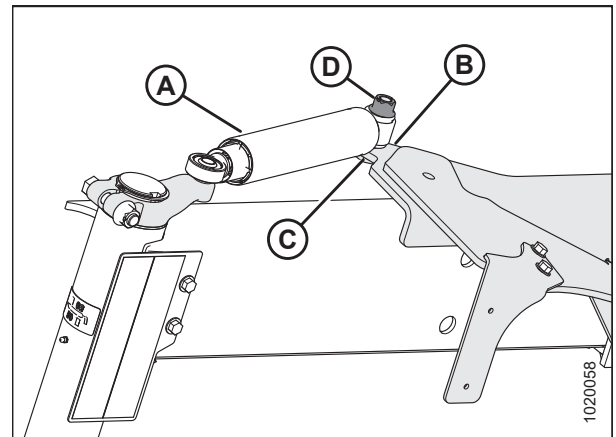


Figure 3.29: Anti-Shimmy System – Left Side

4. Attach barrel end of second anti-shimmy dampener (A) to support (B) at aft hole location with one M16 x 90 flange head bolt and M16 tech loc nut (C). Install bolt from under support. Do **NOT** fully tighten.
5. Rotate caster until arm (D) is aligned with walking beam.

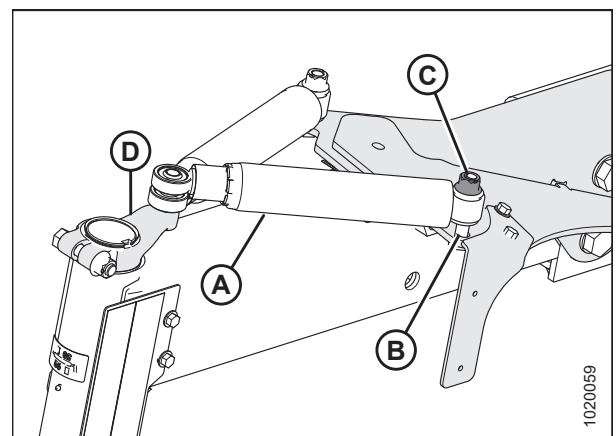


Figure 3.30: Anti-Shimmy System – Left Side

ASSEMBLING THE WINDROWER

6. Attach rod ends of anti-shimmy dampeners to arm with M16 x 90 flange head bolt (A) and three hardened washers (B).

NOTE:

Washers (B) are stamped with L9 for identification.

7. Torque bolt (A) to 244 Nm (180 lbf·ft).
8. Install jam nut (C) and torque to 136–140 Nm (100–103 lbf·ft).
9. Tighten bolts (D) at barrel end of anti-shimmy dampeners, and torque to 136–140 Nm (100–103 lbf·ft).

IMPORTANT:

Maintain arm parallel to walking beam while tightening. Do **NOT** overtighten.

10. Repeat Steps 2, [page 27](#) to 9, [page 28](#) for opposite end of walking beam.

IMPORTANT:

Torque bolts after first 5 hours of operation, and then again after 10 hours.

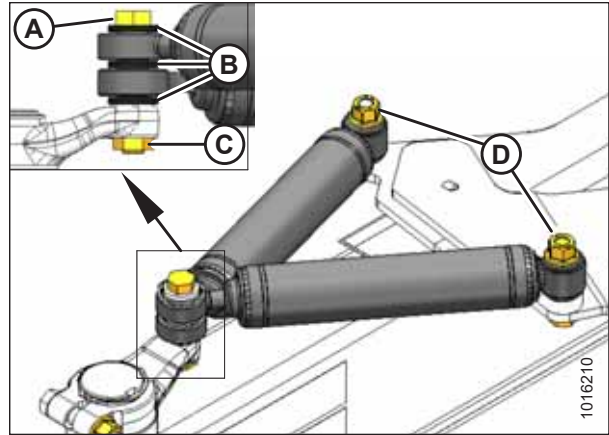


Figure 3.31: Anti-Shimmy System – Left Side

3.7 Installing Windshield Access Step

The windshield access step is secured on the railing of the right side platform (cab-forward).

1. Remove windshield access step (A) from the shipping location on the right platform, and remove packing materials (B) from the step and railing.
2. Retrieve the three self-tapping bolts from a bag in the toolbox.

NOTE:

Use the ignition key to unlock the toolbox compartment.

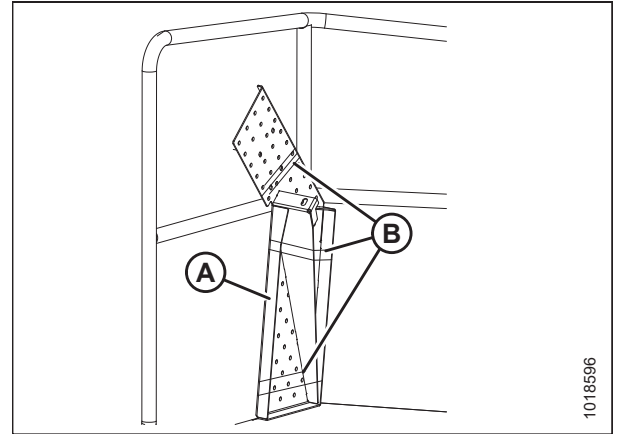


Figure 3.32: Step in Shipping Position

3. Position step (A) on right leg at forward end of platform as shown.
4. Install two M10 x 20 hex head screws (B) through top of step, but do **NOT** tighten.
5. Install one M10 x 20 hex head screw (C) through step support.
6. Tighten and torque screws to 54–61 Nm (40–45 lbf·ft).

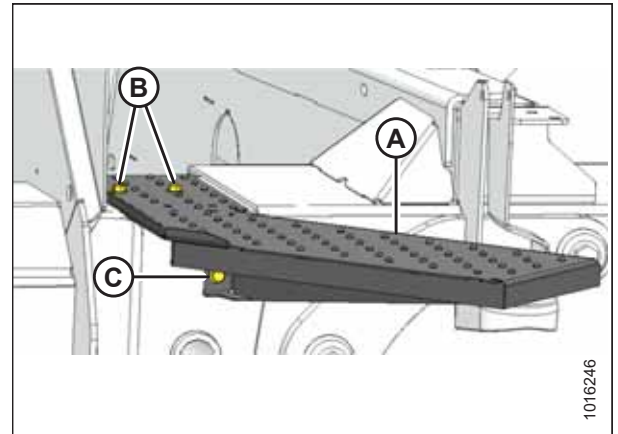


Figure 3.33: Windshield Access Step

3.8 Positioning Mirror Arms

The mirror/light support arms require repositioning from shipping position to working position.

1. Loosen retaining nut (A) and pivot nut (B) on support arm (C).
2. Swivel support arm (C) forward 90° from shipping position to working position.

IMPORTANT:

Avoid pinching the wire harness when rotating the mirror arms.

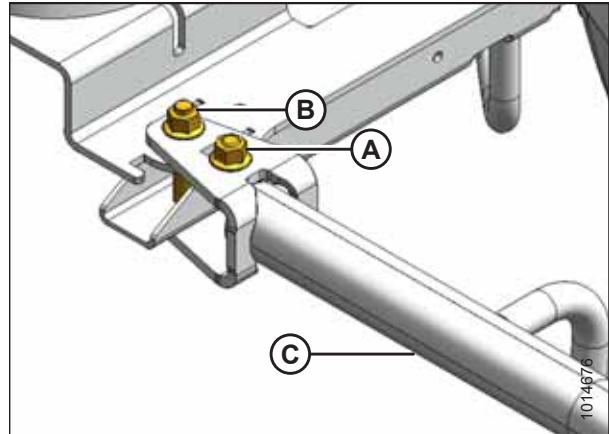


Figure 3.34: Mirror Arm in Shipping Position

3. Tighten retaining nut (A) to 37–41 Nm (28–30 lbf-ft).
4. Tighten pivot nut (B) to 24–27 Nm (18–20 lbf-ft).

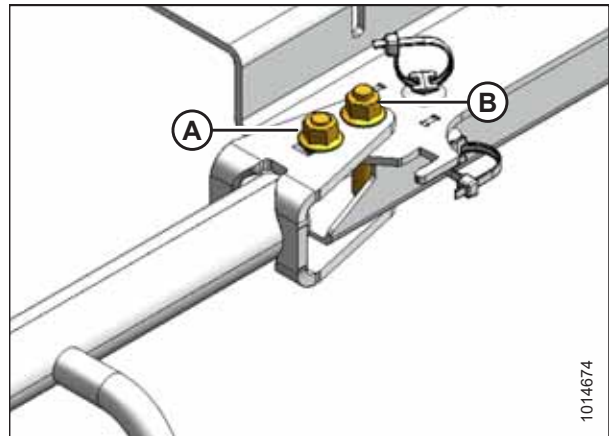


Figure 3.35: Mirror Arm in Working Position

5. To prevent pinching wires when adjusting mirror assemblies, ensure roof harness (A) and power mirror harness (B) (if installed) are secured as follows:
 - Roof harness (A) to supports with cable ties (C)
 - Mirror harness (B) (if installed) to roof harness (A) with cable tie (D)
 - Mirror harness (B) (if installed) to mirror arm tube with cable tie (E)
6. Repeat above steps for opposite mirror.

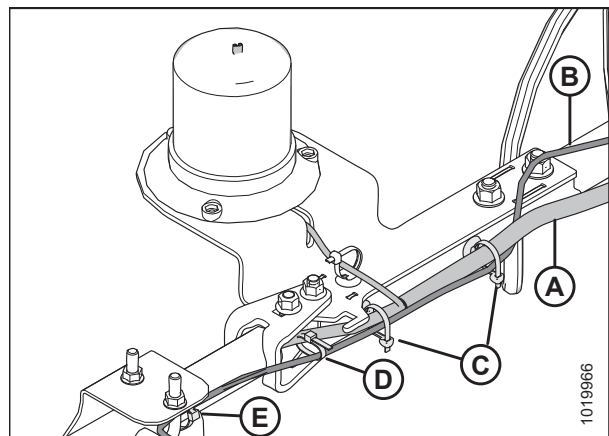


Figure 3.36: Mirror Arm in Working Position

3.9 Installing Slow Moving Vehicle Signs

To install the slow moving vehicle (SMV) sign onto the mirror/light support and walking beam, proceed as follows:

1. Retrieve SMV signs from inside cab and hardware from toolbox.

NOTE:

Use ignition key to unlock cab door and toolbox compartment.

2. Position sign (A) on existing bracket (B) as shown on right cab-forward side mirror/light support, and secure with two M6 x 20 hex head bolts (C) and M6 lock nuts.

IMPORTANT:

Ensure SMV sign does **NOT** cover brake light.

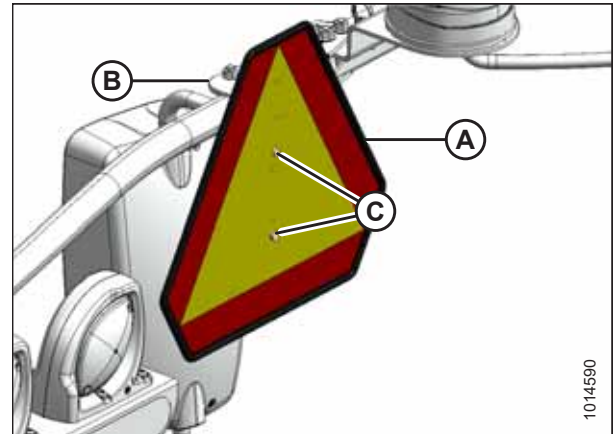


Figure 3.37: Right Side Mirror/Light Support

3. Locate support (A) on left cab-forward side of walking beam.
4. Position sign (B) on support (A) as shown, and secure with two M6 x 20 hex head bolts (C) and M6 lock nuts.

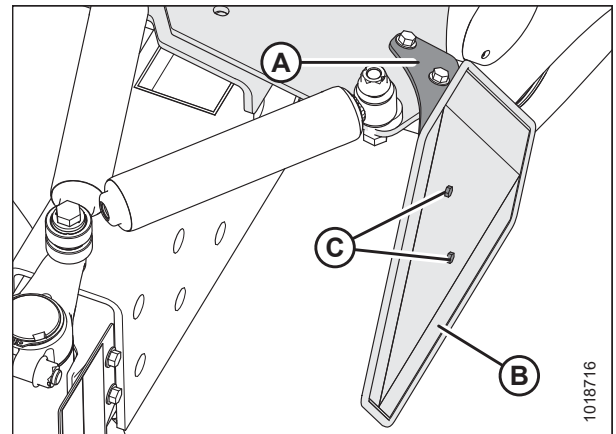


Figure 3.38: Walking Beam Left Side

3.10 Replacing Speed Identification Symbol Decal – US Only

This topic applies to windrowers used in the United States only.

1. Locate the existing speed identification symbol (SIS) decal bracket on the left mirror/lighting arm.
2. Wipe the existing decal with a clean cloth to remove dirt and grease.
3. Apply the 30 mile/h SIS decal (A) (MD #208900) over the existing 45 km/h decal.

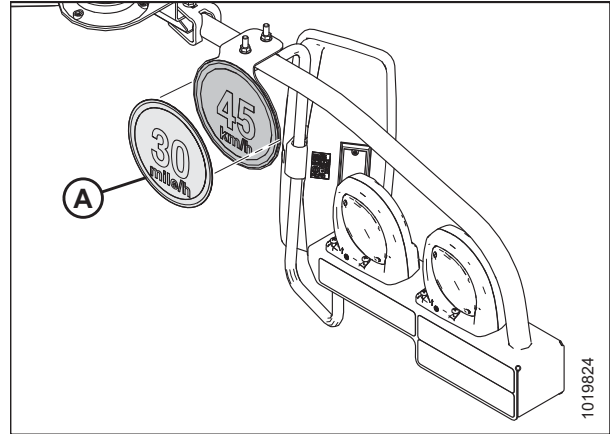


Figure 3.39: SIS Decal – US Only

3.11 Installing Rear Ballast Package

When operating the windrower with a heavy header, ballast needs to be added to the aft end. Use the following table to determine the amount of ballast required.

Refer to [4.1.12 Checking Tire Pressures, page 49](#) for proper tire pressures when operating with the applicable header.

Table 3.1 Ballast Specifications

Header Type	Description	Installed Options	Base Kit	Additional Kits	Additional Float Springs
D125X	7.6 m (25 ft.), single reel, double knife, timed	—	0	0	0
D130XL	9.1 m (30 ft.), single reel, double knife, timed	Base	0	0	0
D130XL	9.1 m (30 ft.), single reel, double knife, timed	Transport	1	0	0
D130XL	9.1 m (30 ft.), single reel, double knife, timed	Transport + upper cross auger + vertical knives	1	0	B6047
D135XL	10.6 m (35 ft.), single reel, double knife, untimed	Base	1	1	0
D135XL	10.6 m (35 ft.), single reel, double knife, untimed	Transport	1	1	B6047
D135XL	10.6 m (35 ft.), single reel, double knife, untimed	Transport + upper cross auger + vertical knives	1	2	B6047
D135XL	10.6 m (35 ft.), double reel, double knife, untimed	Base	1	1	0
D135XL	10.6 m (35 ft.), double reel, double knife, untimed	Transport	1	1	B6047
D135XL	10.6 m (35 ft.), double reel, double knife, untimed	Transport + upper cross auger + vertical knives	1	2	B6047
D140XL	12.2 m (40 ft.), double reel, double knife, untimed	Base	1	1	0
D140XL	12.2 m (40 ft.), double reel, double knife, untimed	Transport	1	1	B6047
D140XL	12.2 m (40 ft.), double reel, double knife, untimed	Transport + upper cross auger + vertical knives	1	2	B6047
D145XL	13.7 m (45 ft.), double reel, double knife, untimed	Base	1	1	B6047
D145XL	13.7 m (45 ft.), double reel, double knife, untimed	Transport	1	2	B6047
D145XL	13.7 m (45 ft.), double reel, double knife, untimed	Transport + upper cross auger + vertical knives	1	2	B6106

NOTE:

- A kit contains eight 20.4 kg (45 lb.) weights for a total weight of 163 kg (360 lb.).
- Ballast not required for A Series Auger Headers and R1 Series Disc Headers.

ASSEMBLING THE WINDROWER

Installing rear ballast

1. Refer to Table 3.1, page 33 to determine ballast to add to the windrower.
2. Shut down the engine, and remove the key from the ignition.
3. Move latch (A) towards the right cab-forward side of the windrower.
4. Grasp louver (B), and lift hood to open.

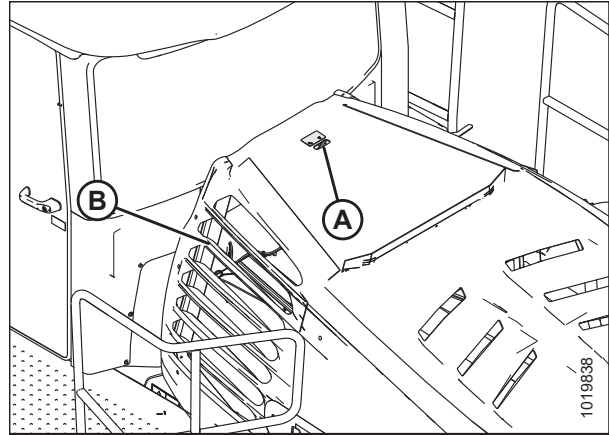


Figure 3.40: Engine Compartment Hood

5. Remove eight hex flange bolts (A).
6. Slightly pull light bezel assembly (B), and disconnect plugs P215 (C) and P210 (D) from the back of red tail/brake lights inside the bezel.
7. Remove light bezel assembly (B).

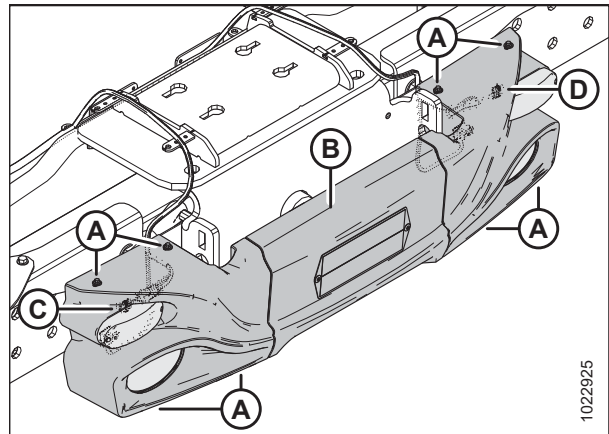


Figure 3.41: Rear Light Bezel

8. Separate light bezel assembly (A) by removing six hex screws (B).

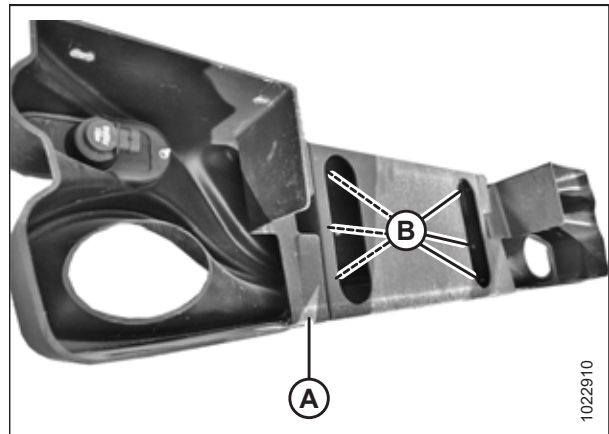


Figure 3.42: Bezel Assembly

ASSEMBLING THE WINDROWER

NOTE:

- Retain center portion (A) of light bezel assembly for reinstallation when ballast is removed.
- Install six hex screws (B) on side bezels for safekeeping. These hex screws will be used when reinstalling center portion of light bezel.

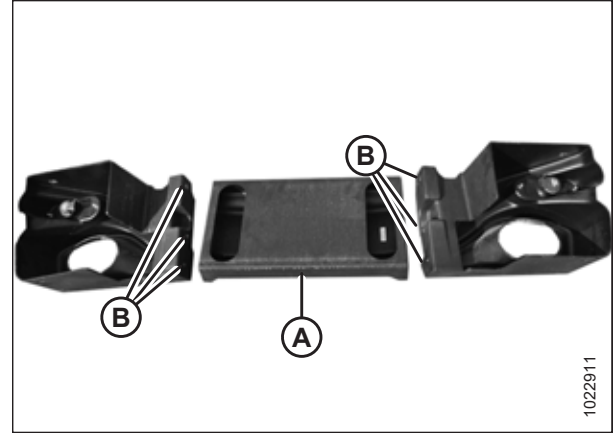


Figure 3.43: Bezel Assembly

CAUTION

To avoid injury, keep fingers clear of weight bracket when installing weights.

9. Install weights (A) from outboard side and slide to the middle of the bracket on the walking beam.
10. Install retaining bracket (B) on each side of the weight bundle.

IMPORTANT:

Ensure retaining bracket (B) engages slot (C) in the bracket.

11. Install rod (D) through retaining bracket and weights with spacers (E) as required.
12. Secure with nuts (F) and tighten.

IMPORTANT:

Ensure nuts (F) are flush with the rod.

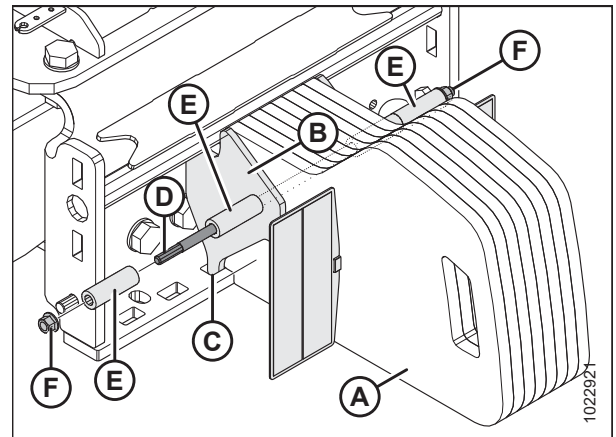


Figure 3.44: Weights Installed

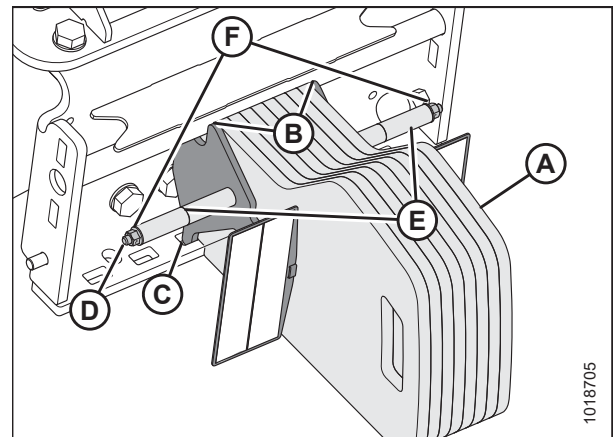


Figure 3.45: Base Kit – 163 kg (360 lb.)

ASSEMBLING THE WINDROWER

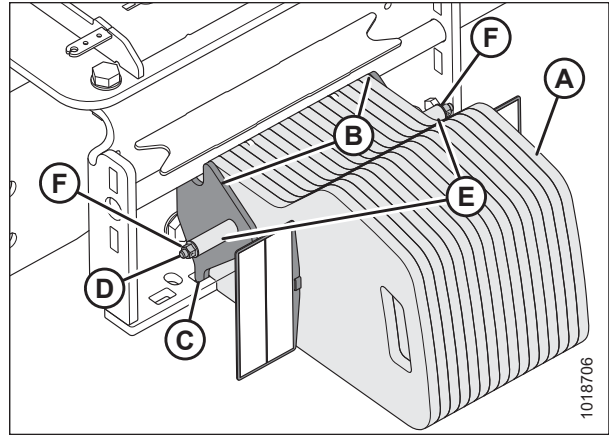


Figure 3.46: Two Sets – 326 kg (720 lb.)

NOTE:

When all three sets of weights are installed, no spacers are required.

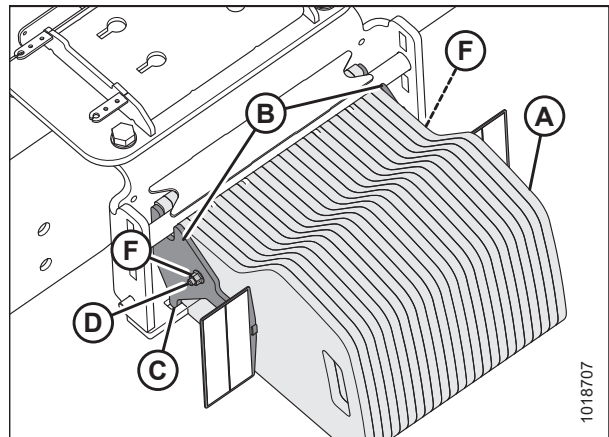


Figure 3.47: Three Sets – 489 kg (1080 lb.)

13. Move latch (A) towards the right cab-forward side of the windrower.
14. Grasp louver (B), and lift hood to open.

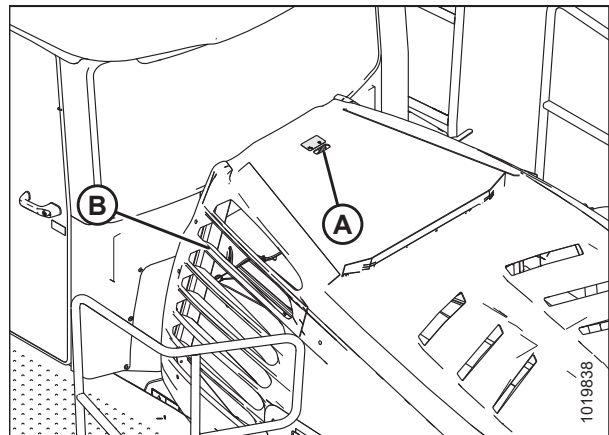


Figure 3.48: Engine Compartment Hood

ASSEMBLING THE WINDROWER

15. Bring left side bezel (A) close to the frame and connect plug P215 to the back of red tail/brake light (E).
16. Loosely attach left side bezel (A) to frame with four hex flange bolts (B).
17. Repeat Steps 15, page 37 and 16, page 37, attaching plug P210 at right side bezel (C).
18. Turn the IGNITION key to the RUN position, and ensure that rear swath lights (D) and red tail/brake lights (E) are working.
19. If the lights are working, tighten hex flange bolts (B) to secure the left and right light bezels.

IMPORTANT:

Ensure rear swath lights (D) are centered in the light bezel.

20. Grasp hood by louver (A) and lower until the hood engages the latch.

NOTE:

Check that the latch lever is not tilted to ensure the hood is latched.

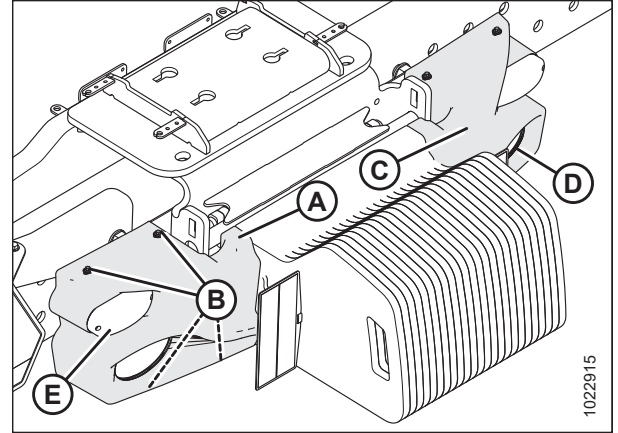


Figure 3.49: Rear Light Bezel with Ballast

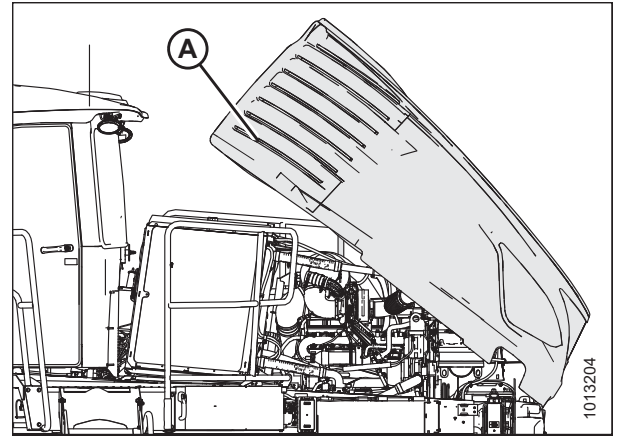


Figure 3.50: Engine Compartment

3.12 Lubrication

For grease specification, refer to [5.1 Lubricants, Fluids, and System Capacities, page 113](#).

3.12.1 Lubrication Procedure



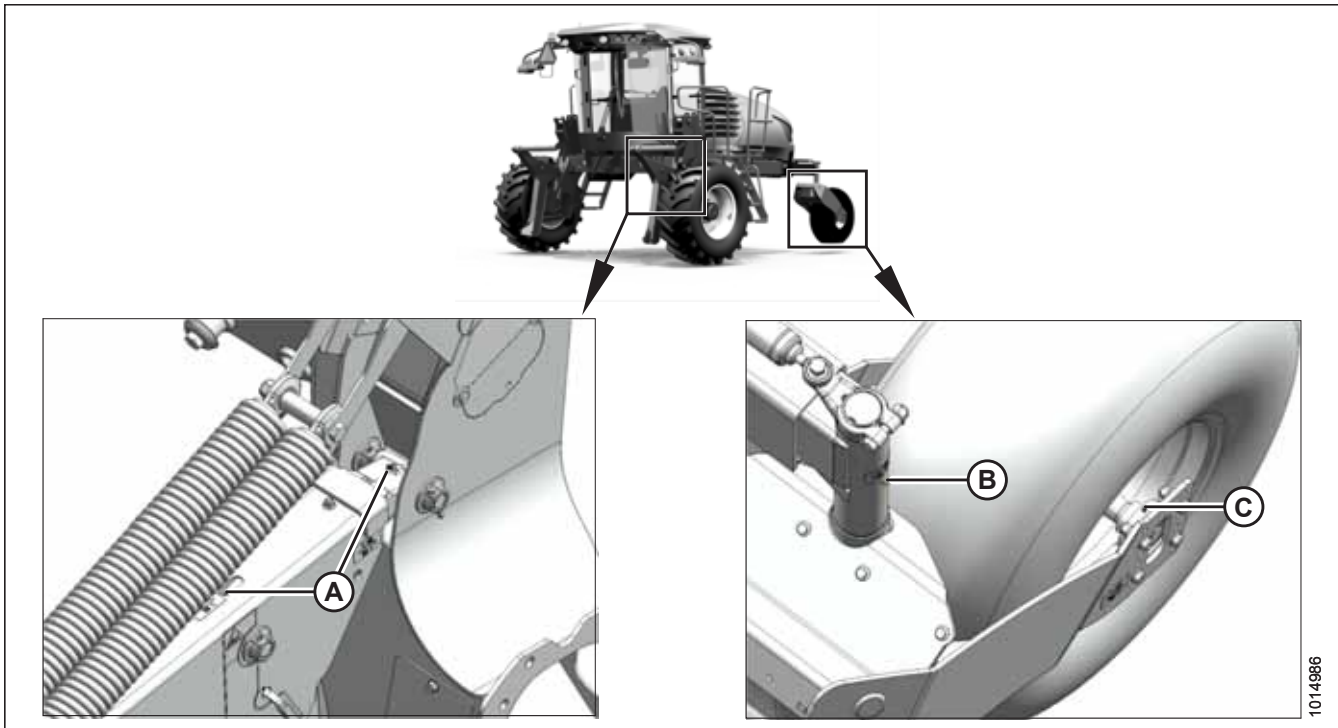
WARNING

To avoid bodily 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.

1. Shut down the engine, and remove the key from the ignition.
2. Wipe the grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Inject grease through the fitting with a grease gun until the grease overflows fitting. Do **NOT** overgrease the wheel bearings.
4. Leave excess grease on the fitting to keep out dirt.
5. Replace any loose or broken fittings immediately.
6. Remove and thoroughly clean any fittings (including the lubricant passageway) that will not take grease. Replace fitting, if necessary.

3.12.2 Lubrication Points

Figure 3.51: Lubrication Points



A - Top Link (Two Places) (Both Sides)

C - Forked Caster Wheel Bearing (Two Places) (Both Wheels)

B - Caster Pivot (Both Sides)

3.13 Connecting Batteries

1. Move latch (A) towards the right cab-forward side of the windrower.
2. Grasp louver (B), and lift the hood to open.

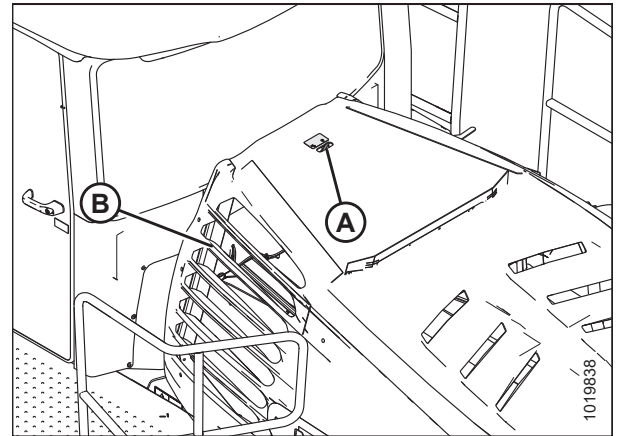


Figure 3.52: Engine Compartment Hood

3. Lift up on cab-end of cover (A) to disengage it from retaining tab (B), and swing the cover away from the frame.
4. If installing a new battery, remove plastic caps from battery posts.

IMPORTANT:

Batteries are negative grounded. Always connect starter cable to the positive (+) terminal of battery and battery ground cable to negative (–) terminal of battery. Reversed polarity in battery or alternator may result in permanent damage to electrical system.

NOTE:

Before connecting harness to batteries, ensure that positive terminal is positioned on the right side of battery when installed on battery support.

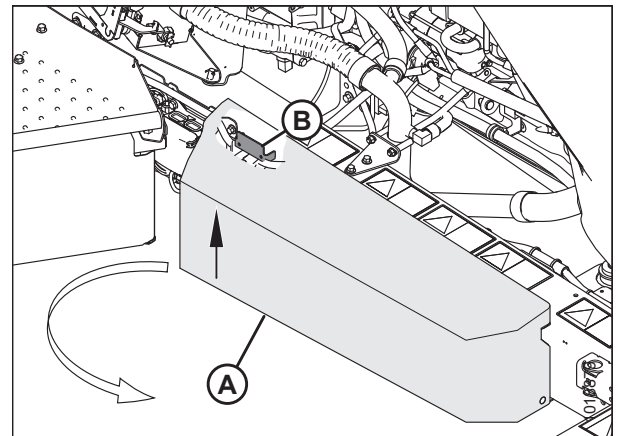


Figure 3.53: Battery Location

5. Attach red positive (+) cable terminals to positive posts (B) on batteries and tighten clamps. Reposition plastic covers onto clamps.
6. Attach black negative (–) cable terminals to negative posts (A) on batteries and tighten clamps. Reposition plastic covers onto clamps.

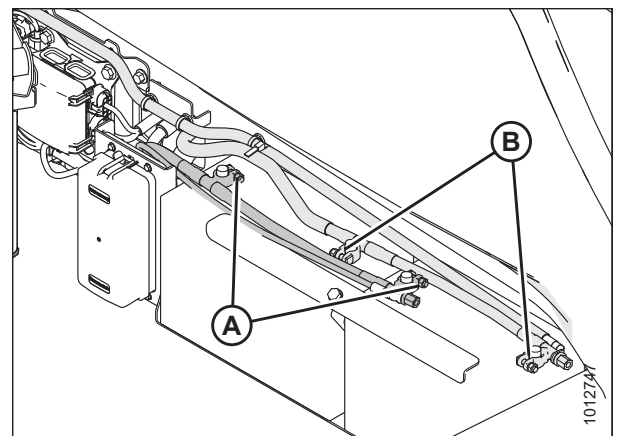


Figure 3.54: Batteries

ASSEMBLING THE WINDROWER

7. Swing cover (A) towards the windrower frame. Lift up on the cab end of the cover until it is secured by retaining tab (B) on the frame.
8. Grasp hood by louver (C) and lower until hood engages the latch.

NOTE:

Check that the latch lever is not tilted to ensure the hood is latched.

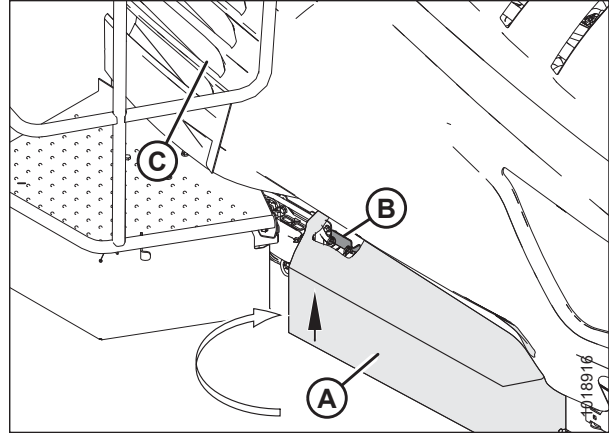


Figure 3.55: Battery Cover

Chapter 4: Performing Predelivery Checks

Perform all procedures in this chapter in the order in which they are listed.

IMPORTANT:

The machine should not require further adjustments; however, perform the following checks and complete the yellow predelivery checklist at the end of this book to ensure your machine operates at maximum performance. Make adjustments only if absolutely necessary and in accordance with the instructions in this manual.

4.1 Completing Predelivery Checklist

Perform the final checks and adjustments listed on the following pages and the *Predelivery Checklist, page 129* (yellow sheet attached to this instruction) to ensure the machine is field-ready.

IMPORTANT:

Ensure the Operator or the Dealer retains the completed Predelivery Checklist.

4.1.1 Recording Serial Numbers

1. Record the windrower and engine serial numbers on the *Predelivery Checklist, page 129*, and confirm the serial number with the manifest or work order.

The windrower serial number plate (A) is located on the left side of the main frame near the walking beam as shown.

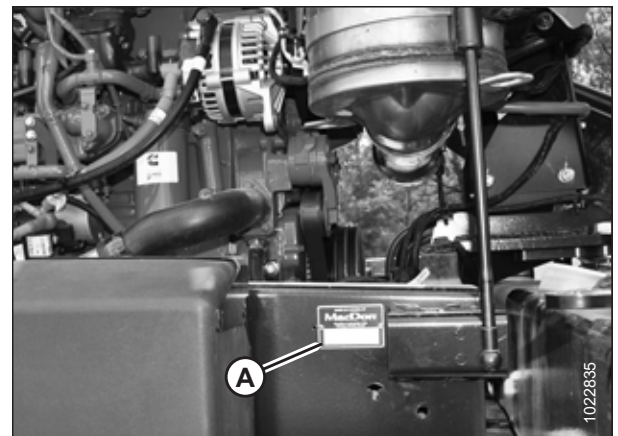


Figure 4.1: Windrower Serial Number Location

The engine serial number plate (A) is located on top of the engine cylinder head cover as shown.

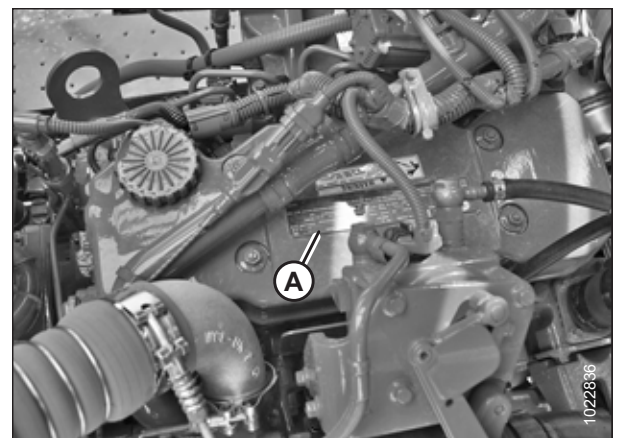


Figure 4.2: Engine Serial Number Location

4.1.2 Opening Hood

WARNING

To avoid bodily 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.

1. Shut down the engine, and remove the key from the ignition.
2. Move latch (A) towards right cab-forward side of the windrower.
3. Grasp louver (B), and lift hood to open.

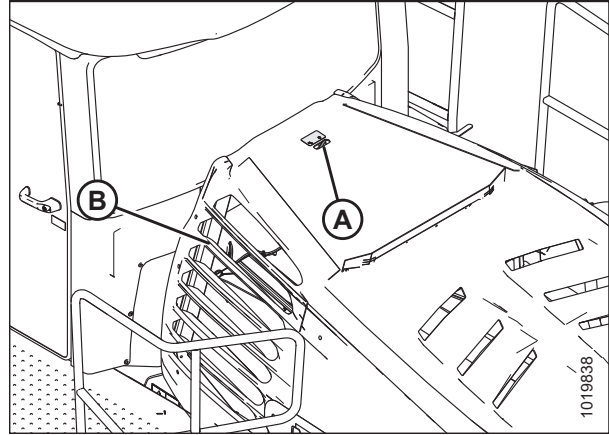


Figure 4.3: Hood

NOTE:

If the optional High Debris Cooler Intake kit (A) is installed, a louver can still be used to open the hood.

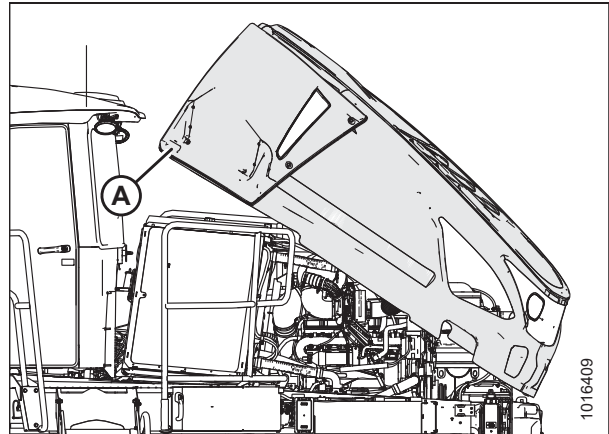


Figure 4.4: Hood with Optional High Debris Cooler Intake Kit

4.1.3 Checking Engine Air Intake

1. Check all engine air intake ducting (A) and joints for looseness. Tighten hose clamps as required.
2. Check that end cap (B) is secure and locked.

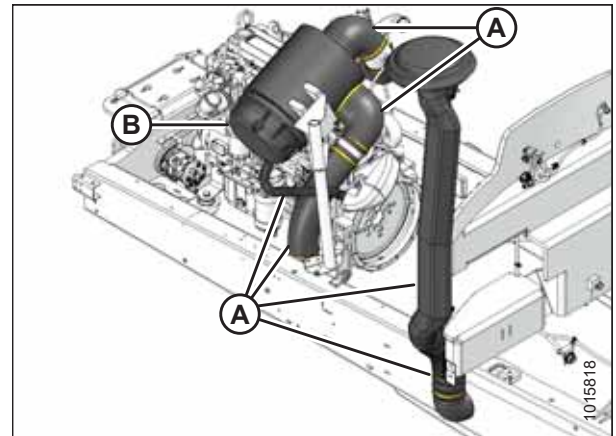


Figure 4.5: Engine Air Intake

3. Check the three constant torque hose clamps (A) and spring clamp (B) on turbocharger intake duct. Clamp (B) is properly tightened when screw tip (C) extends beyond housing and Belleville washers (D) are almost flat.

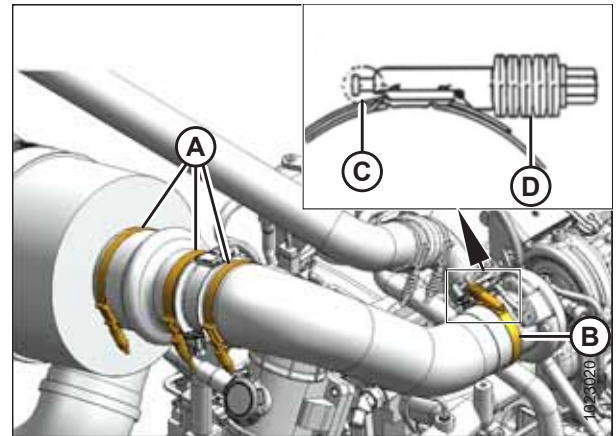


Figure 4.6: Constant Torque Clamps

4.1.4 Checking and Adding Engine Oil

NOTE:

Oil can be checked without opening the hood.

1. Remove dipstick (A) by turning it counterclockwise to unlock.
2. Wipe dipstick clean and reinsert it into engine.

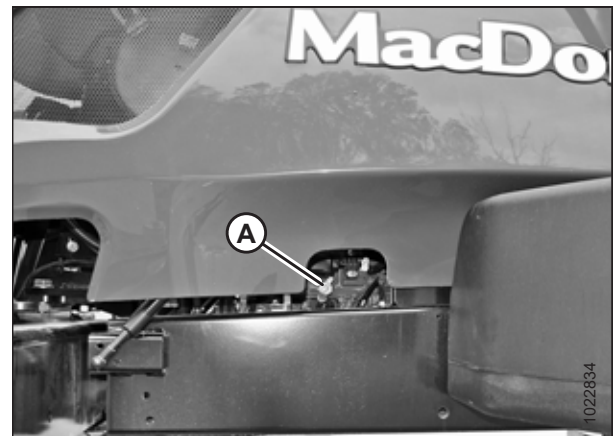


Figure 4.7: Dipstick Location

PERFORMING PREDELIVERY CHECKS

3. Remove dipstick again and check oil level. Oil level should be between LOW (L) and HIGH (H). If below the LOW mark, add oil.

NOTE:

Adding 1.9 liters (2 U.S. quarts) will raise the level from LOW to HIGH.

4. Replace dipstick and turn it clockwise to lock.

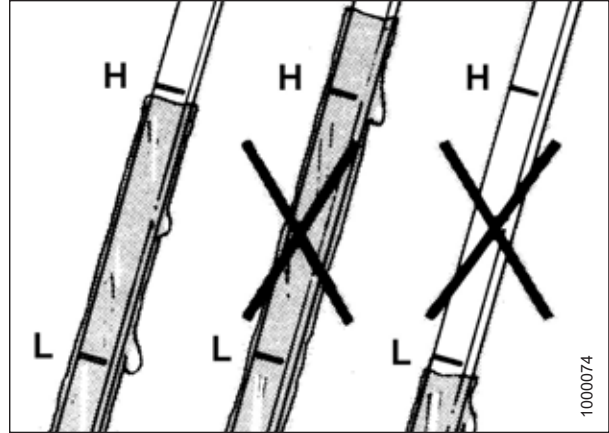


Figure 4.8: Engine Oil Level

If oil level is too low, follow these steps to add oil:

1. Move latch (A) towards right cab-forward side of the windrower.
2. Grasp louver (B), and lift hood to open.

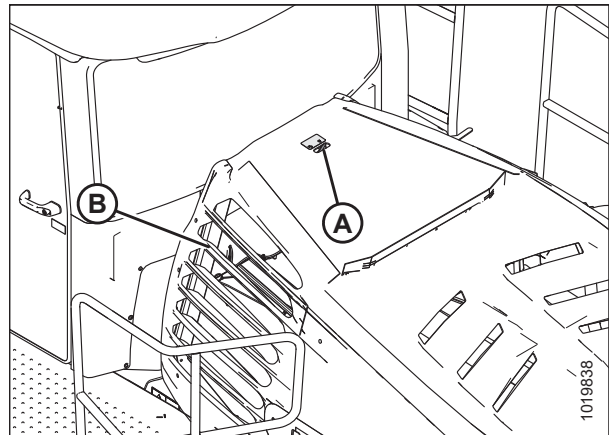


Figure 4.9: Hood

3. Clean around filler cap (A) and remove by turning it counterclockwise.
4. Carefully add oil to achieve the desired level. A funnel is recommended to avoid spillage. For oil specifications, refer to [5.1 Lubricants, Fluids, and System Capacities, page 113](#).

CAUTION

Do NOT fill above the HIGH mark.

5. Replace oil filler cap (A) and turn it clockwise until snug.

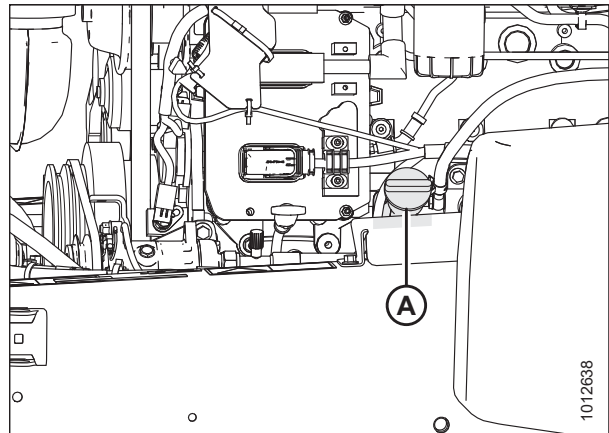


Figure 4.10: Oil Filler Cap

4.1.5 Checking and Adding Hydraulic Oil

WARNING

Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury.

PERFORMING PREDELIVERY CHECKS

1. Locate sight glass (A) on the right side of the tank. It indicates the oil level and any signs of contamination.

NOTE:

No oil in the sight glass indicates that the oil level is below the add mark on the dipstick. The sight glass is viewable with hood open or closed.

2. Ensure the hydraulic oil level is between the low and full indicator marks.

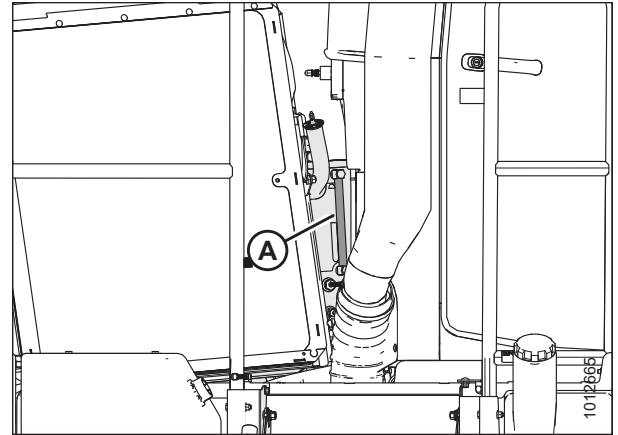


Figure 4.11: Hydraulic Oil Sight Glass

3. If the oil level is too low, refer to [5.1 Lubricants, Fluids, and System Capacities, page 113](#) for oil specifications and add oil as follows:

IMPORTANT:

Clean area to prevent debris from entering tank.

- a. Turn plug handle (B) counterclockwise until loose and remove the plug by pulling straight out.
- b. To improve oil fill rate, open breather cap (A).
- c. Reinstall breather cap (A) and plug (B) and turn the plug handle clockwise until secure.

NOTE:

After running up a header, check oil level again.

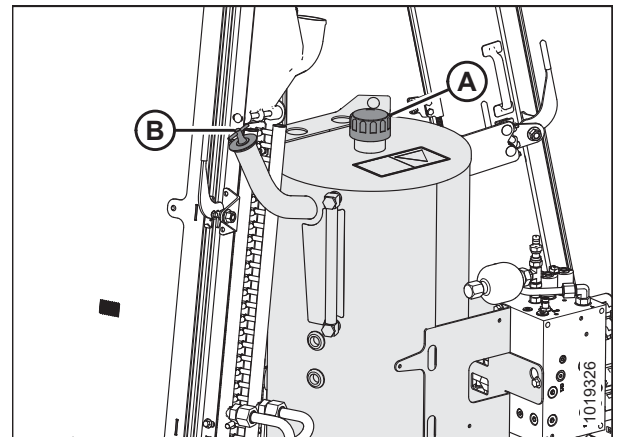


Figure 4.12: Hydraulic Oil Sight Glass

4.1.6 Checking Fuel Separator

1. Place a container under filter drain valve (A).
2. Turn drain valve (A) by hand 1 1/2 to 2 turns counterclockwise until fuel begins draining.
3. Drain the filter sump of water and sediment until clear fuel is visible. Clean as necessary.
4. Turn drain valve (A) by hand 1 1/2 to 2 turns clockwise until tight.
5. Dispose of fluid in a safe manner.

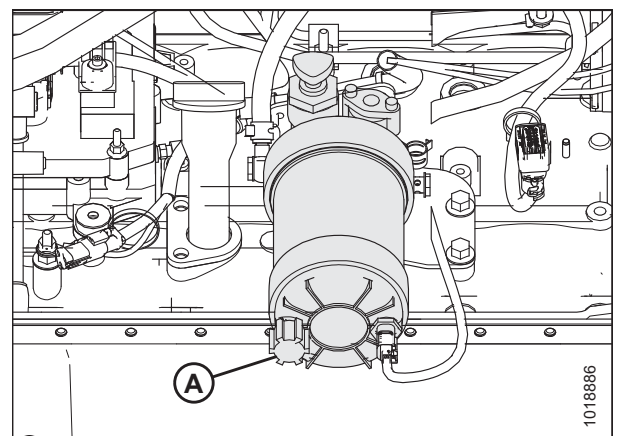


Figure 4.13: Fuel Filter

4.1.7 Checking Engine Coolant Level

1. Locate the coolant tank.
2. The tank has a MAX and MIN COLD line marker. Check to make sure the coolant level is at the MAX COLD line (A). If it is too low, add coolant.

NOTE:

When checking coolant level, use the MAX COLD line on the side of tank that faces cab for an accurate measurement.

NOTE:

For specifications, refer to [5.1 Lubricants, Fluids, and System Capacities](#), page 113.

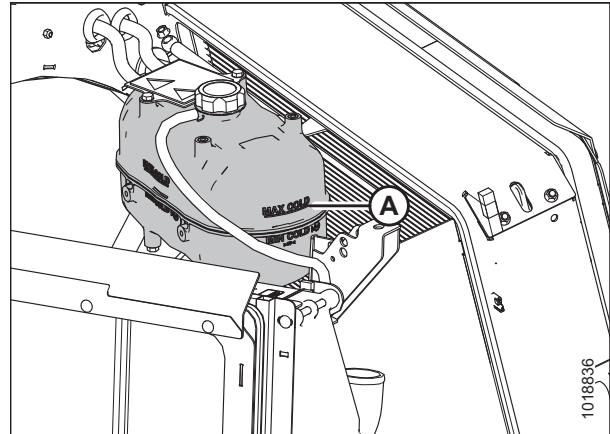


Figure 4.14: Coolant Tank

4.1.8 Checking Engine Gearbox Lubricant Level and Adding Lubricant

1. Park the windrower on a level surface.
2. Shut down the engine, and remove the key from the ignition.

NOTE:

If engine is hot, wait 10 minutes before checking level to allow lubricant to cool and settle in the sump.

3. Open the hood. For instructions, refer to the operators manual..
4. Locate gearbox oil level check plug (A) under the windrower.
5. Remove oil level check plug (A). The lubricant should be visible through the hole or slightly running out.

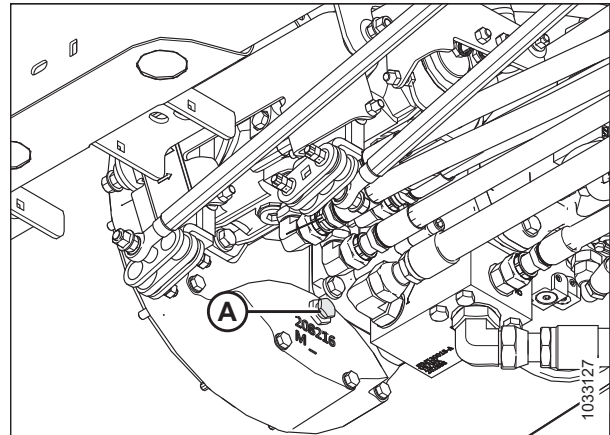


Figure 4.15: Gearbox Lubricant Check Plug

PERFORMING PREDELIVERY CHECKS

Add lubricant as follows:

6. Open the hood. For instructions, refer to the operators manual..
7. Remove breather cap (A) and add lubricant until it runs out of the check port.

NOTE:

Refer to [5.1 Lubricants, Fluids, and System Capacities](#), page [113](#) for oil requirements.

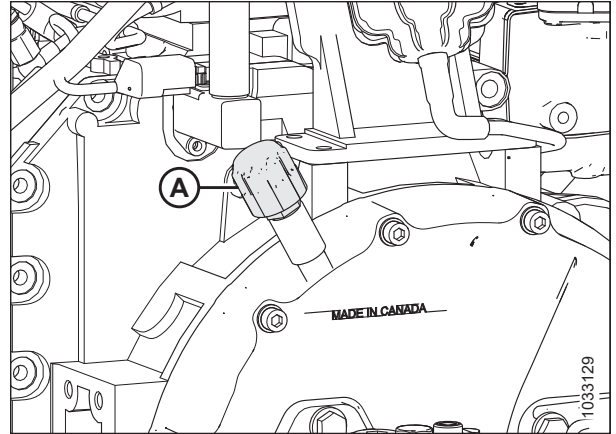


Figure 4.16: Gearbox Lubricant Filler

8. Replace oil level check plug (A) and the breather cap and tighten both.
9. Operate the engine at low idle and check for leaks at the oil level check plug (A).

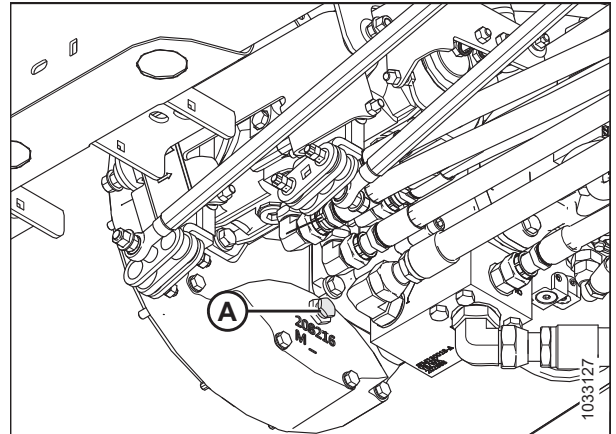


Figure 4.17: Gearbox Lubricant Check Plug

4.1.9 Checking Air Conditioning Compressor Belts

1. Ensure air conditioning (A/C) compressor belts (A) are tensioned so that a force of 35–55 N (8–12 lbf) deflects each belt 5 mm (3/16 in.) at midspan.

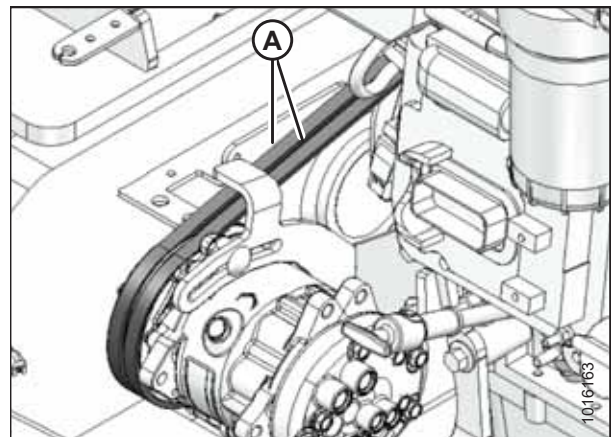


Figure 4.18: A/C Compressor Belts

4.1.10 Checking Operating Safety System

Perform the following checks to ensure the windrower operating safety systems are functioning properly:

WARNING

To avoid bodily 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.

WARNING

Check to be sure all bystanders have cleared the area.

1. With the engine running and the seat base in engine-forward mode, engage the HEADER ENGAGE switch. Confirm the header drive does **NOT** engage and the Harvest Performance Tracker (HPT) displays LOCK SEAT BASE IN CAB-FORWARD.
2. With the engine running and the seat base in cab-forward mode, stand up and engage the HEADER DRIVE switch. The header drive should **NOT** engage and the HPT should display OPERATOR MUST BE SEATED.
3. With the engine running and the seat base unlocked, move the ground speed lever (GSL) out of PARK. Confirm the engine immediately shuts down and the HPT displays LOCK SEAT BASE and sounds a tone.
4. Shut down the engine and engage HEADER ENGAGE switch. Try starting the engine and confirm the HPT displays DISENGAGE HEADER. If the engine turns over, the safety system requires adjustment. Refer to the technical manual for adjustment procedures.
5. Shut down the engine and open the cooler box door. Try starting the engine and confirm the HPT displays CLOSE COOLER BOX DOOR. If the engine turns over, the safety system requires adjustment. Refer to the technical manual for adjustment procedures.
6. Shut down the engine and perform the following safety system checks:
 - a. Open the hood.
 - b. Pry the steering interlock away from pintle arms (A) by inserting a wedge or pry bar between one of the interlock channels (B) and the pintle arm.
 - c. Insert a wooden block approximately 19 mm (3/4 in.) thick between the opposite channel and the pintle arm so the interlock channel is clear of the pintle arm.
 - d. Turn the steering wheel off-center and move the GSL to PARK.
 - e. Try starting the engine and confirm the HPT displays LOCK STEERING WHEEL IN CENTER POSITION. The engine should **NOT** turn over. If the engine turns over, the safety system requires adjustment. Refer to the technical manual for adjustment procedures.
 - f. Remove key from the ignition.
 - g. Remove wooden block and close hood.

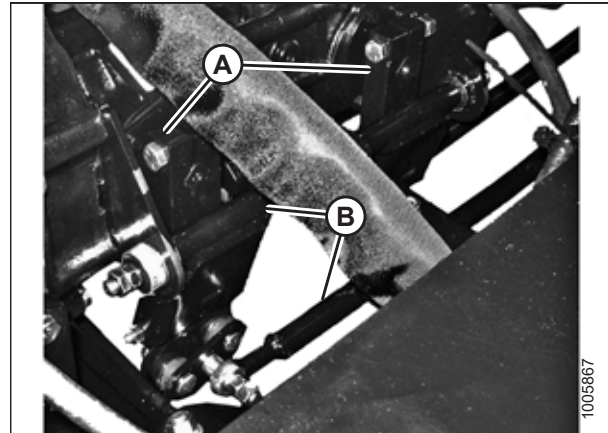


Figure 4.19: Pintle Arms

PERFORMING PREDELIVERY CHECKS

7. Center the steering wheel. Place the GSL in NEUTRAL but not in PARK. Try starting the engine and confirm the HPT displays MOVE GSL INTO PARK. The engine should **NOT** turn over. If the engine turns over, the safety system requires adjustment. Refer to the technical manual for adjustment procedures.
8. With the engine off, center the steering wheel. Place the GSL in PARK and ensure the operator's station is **NOT** locked. Try starting the engine and confirm that the engine does **NOT** crank, and the HPT displays LOCK SEAT BASE. If the engine starts, the safety system requires adjustment. Refer to the technical manual for adjustment procedures.

4.1.11 Closing Hood

1. Grasp hood by louver (A) and lower until hood engages latch.

NOTE:

Check that latch lever is not tilted to ensure hood is latched.

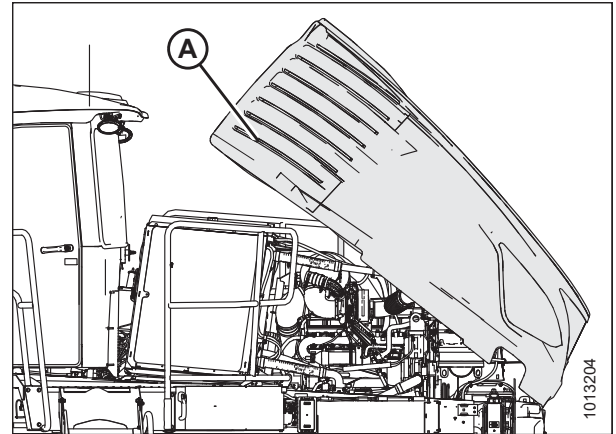


Figure 4.20: Engine Compartment

4.1.12 Checking Tire Pressures

Check tire pressures with a gauge.

Caster Wheel Tires: Inflate all caster wheel tires (B) to 110 kPa (16 psi).

Drive Wheel Tires: For optimal performance, drive wheel (A) tire pressures are determined by tire type, header size, and additional options. Refer to the following table:

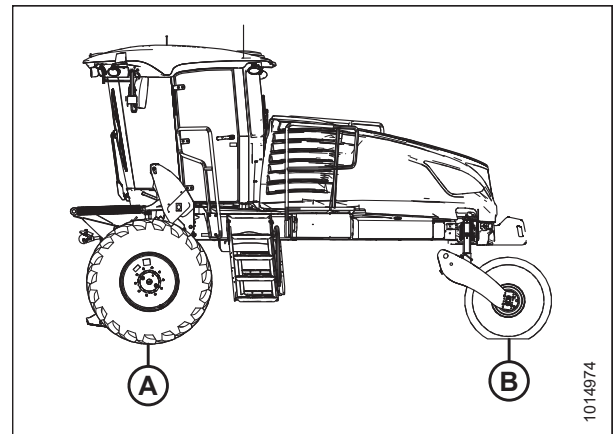


Figure 4.21: Windrower Tires

Table 4.1 Drive Tire Inflation Specifications

Header Type	Description	Installed Options	Weight Kit	Tire Type	Pressure kPa (psi)
Draper Header					
D115X single reel	4.6 m (15 ft.), double knife, timed	—	—	Bar	138 (20)

PERFORMING PREDELIVERY CHECKS

Table 4.1 Drive Tire Inflation Specifications (continued)

Header Type	Description	Installed Options	Weight Kit	Tire Type	Pressure kPa (psi)
D115X single reel	4.6 m (15 ft.), double knife, timed	—	—	Turf	138 (20)
D120X single reel	6.1 m (20 ft.), double knife, timed	—	—	Bar	138 (20)
D120X single reel	6.1 m (20 ft.), double knife, timed	—	—	Turf	138 (20)
D125X single reel	7.6 m (25 ft.), double knife, timed	—	—	Bar	159 (23)
D125X single reel	7.6 m (25 ft.), double knife, timed	—	—	Turf	159 (23)
D130XL single reel	9.1 m (30 ft.), double knife, timed	Transport	1	Bar	200 (29)
D130XL single reel	9.1 m (30 ft.), double knife, timed	Transport	1	Turf	241 (35)
D130XL single reel	9.1 m (30 ft.), double knife, timed	Transport + upper cross auger + vertical knives	1	Bar	241 (35)
D130XL single reel	9.1 m (30 ft.), double knife, timed	Transport + upper cross auger + vertical knives	1	Turf	241 (35)
D135XL single reel	10.7 m (35 ft.), double knife, untimed	Base	2	Bar	200 (29)
D135XL single reel	10.7 m (35 ft.), double knife, untimed	Base	2	Turf	241 (35)
D135XL single reel	10.7 m (35 ft.), double knife, untimed	Transport	2	Bar	241 (35)
D135XL single reel	10.7 m (35 ft.), double knife, untimed	Transport	2	Turf	241 (35)
D135XL single reel	10.7 m (35 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Bar	241 (35)
D135XL single reel	10.7 m (35 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Turf	241 (35)
D135XL double reel	10.7 m (35 ft.), double knife, untimed	Base	2	Bar	221 (32)
D135XL double reel	10.7 m (35 ft.), double knife, untimed	Base	2	Turf	241 (35)
D135XL double reel	10.7 m (35 ft.), double knife, untimed	Transport	2	Bar	241 (35)
D135XL double reel	10.7 m (35 ft.), double knife, untimed	Transport	2	Turf	241 (35)
D135XL double reel	10.7 m (35 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Bar	283 (41)
D135XL double reel	10.7 m (35 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Turf	241 (35)

PERFORMING PREDELIVERY CHECKS

Table 4.1 Drive Tire Inflation Specifications (continued)

Header Type	Description	Installed Options	Weight Kit	Tire Type	Pressure kPa (psi)
D140XL double reel	12.2 m (40 ft.), double knife, untimed	Base	2	Bar	241 (35)
D140XL double reel	12.2 m (40 ft.), double knife, untimed	Base	2	Turf	241 (35)
D140XL double reel	12.2 m (40 ft.), double knife, untimed	Transport	2	Bar	241 (35)
D140XL double reel	12.2 m (40 ft.), double knife, untimed	Transport	2	Turf	241 (35)
D140XL double reel	12.2 m (40 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Bar	283 (41)
D140XL double reel	12.2 m (40 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Turf	241 (35)
D145XL double reel	13.7 m (45 ft.), double knife, untimed	Base	2	Bar	241 (35)
D145XL double reel	13.7 m (45 ft.), double knife, untimed	Base	2	Turf	241 (35)
D145XL double reel	13.7 m (45 ft.), double knife, untimed	Transport	3	Bar	262 (38)
D145XL double reel	13.7 m (45 ft.), double knife, untimed	Transport	3	Turf	241 (35)
D145XL double reel	13.7 m (45 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Bar	283 (41)
D145XL double reel	13.7 m (45 ft.), double knife, untimed	Transport + upper cross auger + vertical knives	3	Turf	241 (35)
Rotary Disc Header					
R113/R116	4 m (13 ft.) / 4.9 m (16 ft.)	No Conditioner	—	Bar or Turf	138 (20)
R113/R116	4 m (13 ft.) / 4.9 m (16 ft.)	Steel or Poly Roll	—	Bar	179 (26)
R113/R116	4 m (13 ft.) / 4.9 m (16 ft.)	Steel or Poly Roll	—	Turf	159 (23)
Auger Header					
A40DX	4.9 m (16 ft.)	—	—	Bar	200 (29)
A40DX	4.9 m (16 ft.)	—	—	Turf	200 (29)
A40DX GSS	4.9 m (16 ft.) (Grass Seed)	—	—	Bar	159 (23)
A40DX GSS	4.9 m (16 ft.) (Grass Seed)	—	—	Turf	159 (23)
A40DX	5.5 m (18 ft.)	—	—	Bar	200 (29)
A40DX	5.5 m (18 ft.)	—	—	Turf	220 (32)

4.1.13 Starting the Engine



DANGER

- Avoid possible injury or death from a runaway machine.
- This machine has safety devices which allow the engine to start only when the ground speed lever (GSL) is in PARK, the steering wheel is locked in the PARK position, and the HEADER ENGAGE switch is in the OFF position. Under NO circumstances are these devices to be deliberately rewired or misadjusted so that the engine can be started with controls out of NEUTRAL.
- Do NOT start the engine by shorting across the starter or starter relay terminals. If normal starting circuitry is bypassed, the machine will start with the drive engaged and move.
- Start the engine only from operator's seat with controls in PARK. NEVER start the engine while standing on ground. NEVER try to start the engine with someone under or near the machine.
- Before starting the engine, be sure there is plenty of ventilation to avoid asphyxiation.

IMPORTANT:

Before starting the windrower, check fluid level of the following, and add fluid if necessary:

- Engine oil – Refer to the operator's manual
- Hydraulic oil – Refer to the operator's manual
- Gearbox oil – Refer to the operator's manual

IMPORTANT:

Do **NOT** tow the machine to start the engine. Damage to hydrostatic drives will result.

NOTE:

Before taking the GSL out of PARK, let the hydraulic oil warm up to 32°C (90°F). You can view the hydraulic oil temperature on Run Screen 4 on the Harvest Performance Tracker (HPT) display.

NOTE:

When the console receives a wake-up signal, the console awakens from sleep mode and closes the battery disconnect relay. The Harvest Performance Tracker (HPT) goes into a boot-up sequence that takes approximately 40 seconds. The following items trigger a wake-up signal for the console:

- Key switch ignition or accessory positions
- Cab door switch
- Horn button
- Hazards button
- Field lights button
- Clearance lights button
- Road lights button
- High beam button

PERFORMING PREDELIVERY CHECKS

1. Before starting the engine, ensure engine exhaust pipe (A) is not covered or obstructed.



Figure 4.22: Engine Exhaust

2. Ensure the cab-forward or engine-forward directional lock (A) is engaged at the base of the steering column.

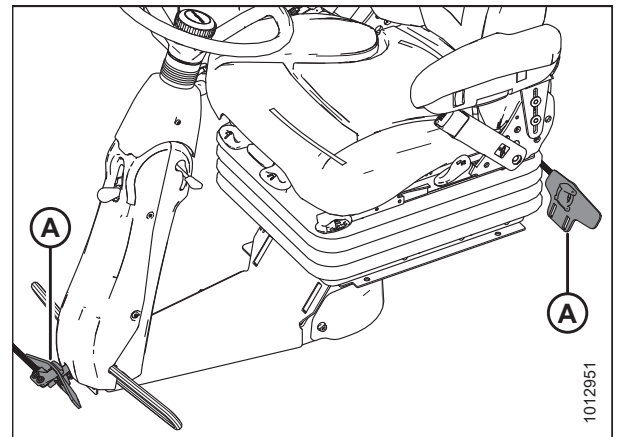


Figure 4.23: Direction Locks

3. Move GSL (A) into PARK (C).
4. Turn the steering wheel until it locks. It may be possible to move the steering wheel slightly in the locked position.

IMPORTANT:

Do **NOT** attempt to force the wheel out of the locked position or damage to the steering system may occur.

5. Fasten seat belt.
6. Push HEADER ENGAGE switch (B) to ensure it is in the OFF position.

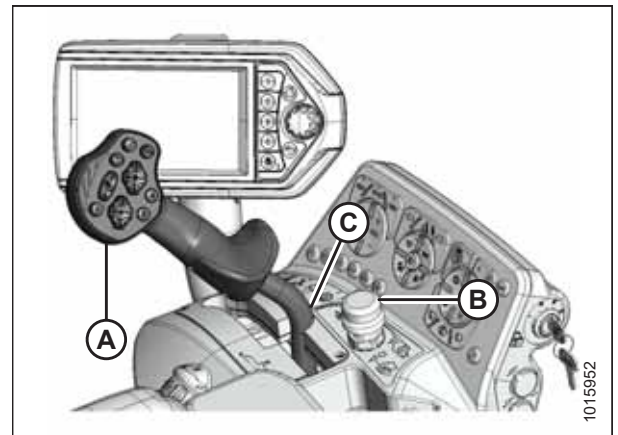


Figure 4.24: Operator Controls

PERFORMING PREDELIVERY CHECKS

7. Turn IGNITION switch (A) to the ON position; the Harvest Performance Tracker (HPT) display (B) will illuminate. If the HPT is still booting up, wait for WAIT TO START (WTS) symbol (C) to disappear before trying to start engine.
8. Check that red PARK symbol light (D) is ON and that there are no error messages on screen.
9. Press HORN button (E) three times prior to starting the engine.

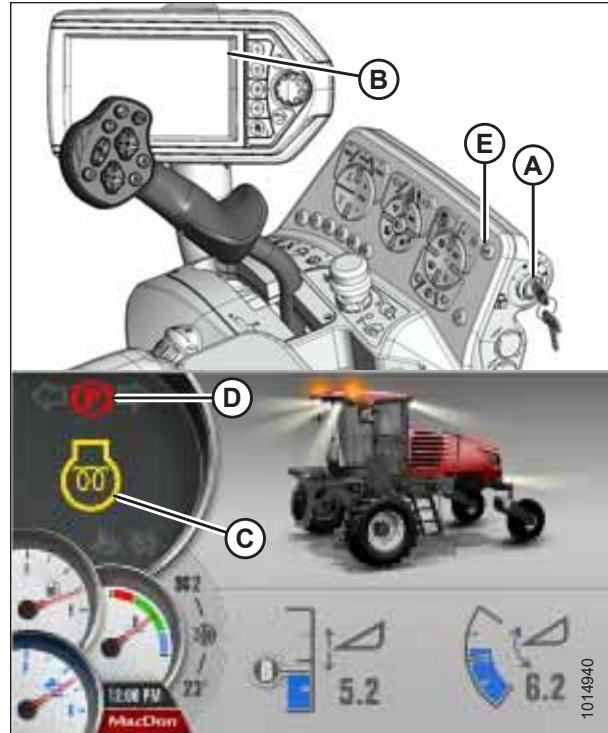


Figure 4.25: Console and HPT Run Screen

10. Turn the IGNITION switch to crank (A).

NOTE:

When the engine starts and the header is not engaged, the HPT will display the header disengaged page (B).

IMPORTANT:

- Do **NOT** operate the starter for longer than 15 seconds at a time.
- If the engine does not start, wait at least 2 minutes before trying again.
- If you crank the engine for more than 30 seconds within a 2-minute period, the engine will lock the starter circuit to prevent overheating, and a flashing WTS symbol will appear on the display. Wait for the WTS symbol to stop flashing before attempting to crank engine again.
- If the engine still does not start, refer to the operator's manual.



Figure 4.26: HPT Header Disengaged Screen

PERFORMING PREDELIVERY CHECKS

NOTE:

When the engine temperature is below 5°C (40°F), the engine will cycle through a period where it appears to labor until it warms up. Do **NOT** operate the engine above 1500 rpm until the HPT engine temperature gauge is above the blue range (A).



Figure 4.27: HPT No Header Screen

Engine Start Troubleshooting Tips

If the windrower will not start normally, refer to the following troubleshooting table:

IMPORTANT:

Do **NOT** tow the machine to start engine. Damage to the hydrostatic drives will result.

Table 4.2 Engine Start Troubleshooting

Problem	Solution
Controls not in NEUTRAL	<ul style="list-style-type: none"> • Move GSL to NEUTRAL • Move steering wheel to locked (centered) position • Disengage HEADER switch
Operator's station not locked	<ul style="list-style-type: none"> • Adjust position of operator's station • Ensure lock is engaged
Neutral interlock misadjusted	<ul style="list-style-type: none"> • Refer to the windrower technical manual
No fuel to engine	<ul style="list-style-type: none"> • Fill empty fuel tank • Replace clogged filter • Check for blocked or damaged fuel lines
Old fuel in tank	<ul style="list-style-type: none"> • Drain tank • Refill with fresh fuel
Water, dirt, or air in fuel system	<ul style="list-style-type: none"> • Drain, flush, fill, and prime system
Improper type of fuel	<ul style="list-style-type: none"> • Drain tank • Refill with correct fuel
Crankcase oil too heavy	<ul style="list-style-type: none"> • Replace with recommended oil
Low battery output	<ul style="list-style-type: none"> • Test the battery • Check battery electrolyte level

Table 4.2 Engine Start Troubleshooting (continued)

Problem	Solution
Poor battery connection	<ul style="list-style-type: none"> Clean and tighten loose connections
Faulty starter	<ul style="list-style-type: none"> Refer to the windrower technical manual
Wiring shorted, circuit breaker open	<ul style="list-style-type: none"> Check continuity of wiring and breaker (manually reset)
Faulty injectors	<ul style="list-style-type: none"> Refer to the windrower technical manual

4.1.14 Checking and Adding Wheel Drive Lubricant

The following procedure is for 10-bolt drive wheels. If the windrower is equipped with the optional high torque power wheels (12-bolt), refer to [4.1.15 Checking Wheel Drive Lubricant Level – 12 Bolt \(Optional\)](#), page 56.

WARNING

To avoid bodily 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.

CAUTION

Park on a flat, level surface with the header on the ground, 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.

1. Park the windrower on level ground.
2. Position windrower so plugs (A) and (B) are horizontally aligned with the center (C) of the hub.
3. Shut down the engine, and remove the key from the ignition.
4. Remove plug (A) or (B). The lubricant should be visible through the port or running out slightly.
5. If necessary, add lubricant until lubricant runs out from the open port (A) or (B). For lubricant specifications, refer to [5.1 Lubricants, Fluids, and System Capacities](#), page 113.

NOTE:

The type of lubricant used after the first wheel drive lubricant change is **NOT** the same type of lubricant used in the factory. Refer to the manual's inside back cover for the recommended wheel drive lubricant.

6. Reinstall plugs and tighten.

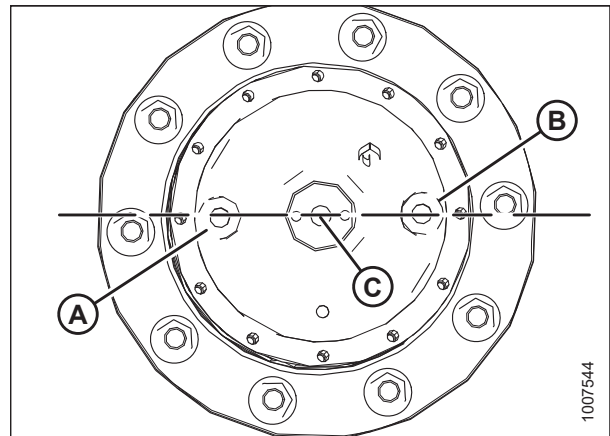


Figure 4.28: Drive Wheel Hub

4.1.15 Checking Wheel Drive Lubricant Level – 12 Bolt (Optional)

Check the wheel drive lubricant level every 250 hours or annually.

WARNING

To avoid bodily 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.

PERFORMING PREDELIVERY CHECKS

1. Park the windrower on level ground.
2. Rotate the wheel drive until fill/drain plug (A) is vertically centered with the hub, and check plug (B) is horizontally aligned with the center of the hub.
3. Shut down the engine, and remove the key from the ignition.



WARNING

Use caution when removing plug as there may be pressure in the drive.

4. Remove check plug (B). The lubricant should be visible through the port or running out slightly.
5. Reinstall check plug (B) and torque to 7.5 Nm (6 lbf·ft).
6. Reinstall fill/drain plug (A) and torque to 22 Nm (18 lbf·ft).

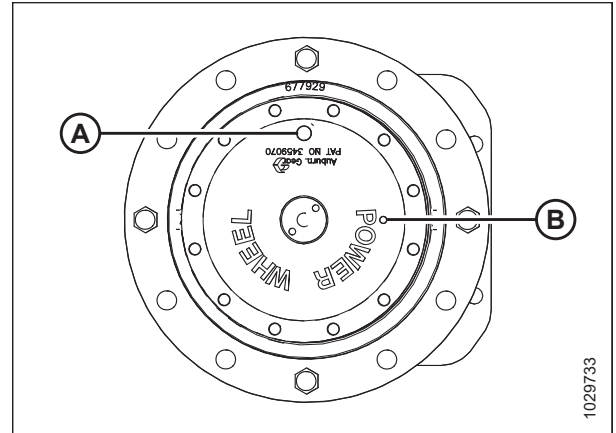


Figure 4.29: Wheel Drive – 12 Bolt

4.2 Performing Operational Checks

1. Perform the final checks and adjustments listed on the following pages and the *Predelivery Checklist, page 129* (yellow sheet attached to this instruction) to ensure the machine is field-ready.
2. Ensure the Operator or the Dealer retains the completed Predelivery Checklist.

4.2.1 Checking Auto Lights

WARNING

To avoid bodily 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.

1. Open the cab door, turn the IGNITION switch to ON and confirm that the Harvest Performance Tracker (HPT) display is booting up by displaying MACDON.



Figure 4.30: HPT Display – Boot-Up

2. Start the engine. For instructions, refer to *4.1.13 Starting the Engine, page 52*.
3. If a header is attached, confirm that the HPT default shows the header disengaged screen.



Figure 4.31: HPT Display – Header Disengaged

PERFORMING PREDELIVERY CHECKS

4. If a header is not attached, confirm that the HPT shows the no header screen.



Figure 4.32: HPT Display – No Header

5. Press LIGHT switch (A) to turn on the headlights.
6. Shut down the engine and leave the cab without switching off the lights. Confirm that the HPT display, headlights, and egress light shut off within 3 minutes.

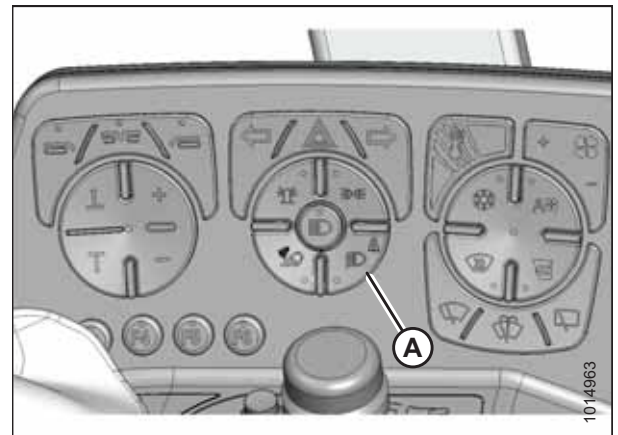


Figure 4.33: Headlight Switch

4.2.2 Checking Harvest Performance Tracker Display

1. If not already running, start the engine. For instructions, refer to [4.1.13 Starting the Engine, page 52](#).
2. If a header is not attached, check that the no header screen is displayed.



Figure 4.34: HPT Display – No Header

PERFORMING PREDELIVERY CHECKS

3. If a header is attached, check that header screen (A) is displayed.
4. Check red park symbol (B) is on.
5. Check engine rpm (C) is displayed.
6. Check fuel gauge (D), DEF gauge (E) and temperature gauge (F) in display screen.

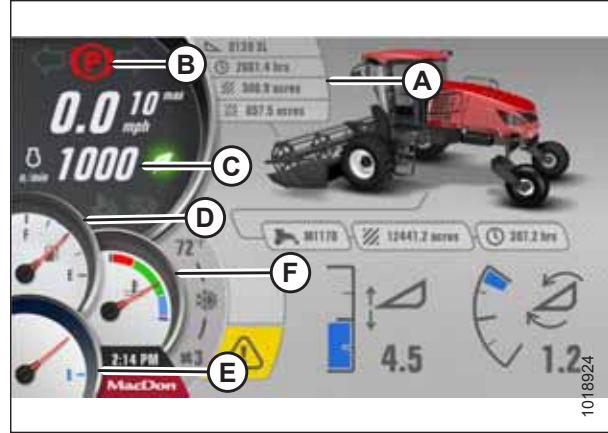


Figure 4.35: HPT Display – Header Attached

Navigating the Harvest Performance Tracker

Turning scroll knob (A) on the Harvest Performance Tracker (HPT) highlights the available options within a menu and increases/decreases the available settings. Pushing the scroll knob selects functions or menu items. Scroll and select functions are duplicated on the ground speed lever (GSL) controls. Unless otherwise specified, these two buttons will always perform the same function and when Select is referred to in this document, either one of these buttons can be used.

1. Turn rotary scroll knob (A) clockwise to move selections down the screen, to the right, clockwise, or to increase settings. Push scroll knob to activate selection.
2. Turn rotary scroll knob (A) counterclockwise to move selections up the screen, to the left, counterclockwise, or to decrease settings. Push scroll knob to activate selection.

NOTE:

The scroll wheel on the back of the GSL and the SELECT button on the front of the GSL perform the same functions as the HPT scroll knob.



Figure 4.36: HPT Scroll Knob

3. Press soft key 5 (A) to open the main menu.
4. Use HPT scroll knob (B) or GSL scroll wheel to place red cursor over SETTINGS icon (C).
5. Press HPT scroll knob (B) or GSL SELECT button to activate SETTINGS menu options.

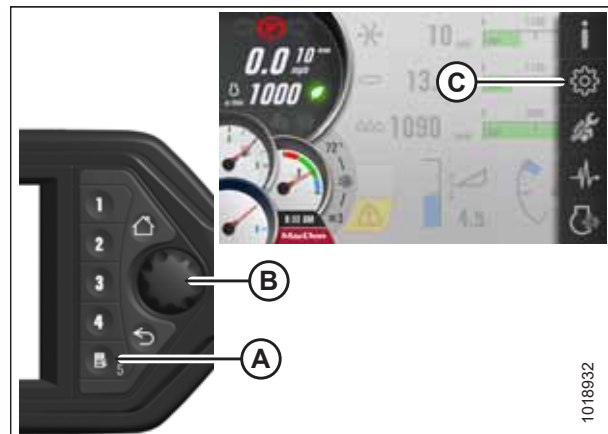


Figure 4.37: Main Menu

PERFORMING PREDELIVERY CHECKS

6. Press BACK button (A) on the HPT to return to previous level within menu structure.
7. Press HOME button (B) on the HPT to return to last selected run screen (or header disengaged screen).



Figure 4.38: HPT

Setting Language and Units of Measurement

To set the language and units of measurement displayed, follow these steps:

1. Navigate to the SETTINGS menu with soft key 5 and the Harvest Performance Tracker (HPT) scroll knob. For instructions, refer to [Navigating the Harvest Performance Tracker, page 60](#).
2. Scroll to SCREEN icon (A) and select it.
3. Scroll to LANGUAGE AND UNITS icon (B), and select it to open the adjustment window.
4. Scroll through the available options on the HPT, select desired item, and scroll to adjust:

LANGUAGE

- ENGLISH (default)
- SPANISH

UNITS

- METRIC
- USA (default)

Refer to [5.4 Conversion Chart, page 124](#) for a comprehensive list of U.S. and metric units.

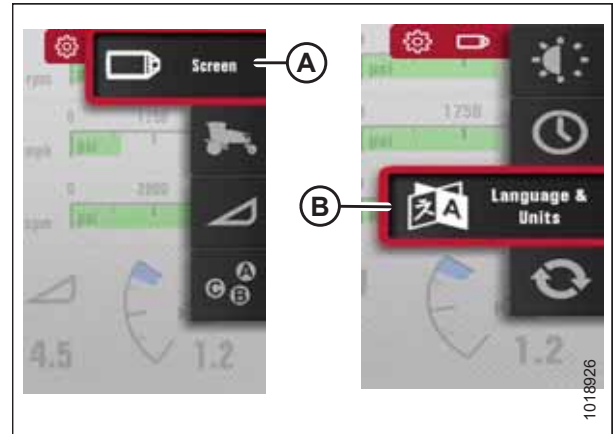


Figure 4.39: Language and Units

Setting Time and Date

Whenever the Harvest Performance Tracker (HPT) boots up, the time and date will display according to your selected configuration.

1. Navigate to the SETTINGS menu with soft key 5 and the HPT scroll knob. For instructions, refer to [Navigating the Harvest Performance Tracker, page 60](#).
2. Scroll to SCREEN option (A) and select it.
3. Scroll to TIME AND DATE option (B), and select it to open the adjustment window.



Figure 4.40: Time and Date

4. Scroll through the available options on the HPT display, select the desired option, and scroll to adjust.



Figure 4.41: Time and Date

Setting Windrower Tire Size

The Harvest Performance Tracker (HPT) is factory-set for 600/65R28 bar tires. If the windrower has a different tire type, you need to change this setting. Setting the proper tire size is important for accurate tracking of ground speed, acres, and productivity data.

1. Navigate to the SETTINGS menu with soft key 5 and the HPT scroll knob. For instructions, refer to [Navigating the Harvest Performance Tracker, page 60](#).
2. Scroll to WINDROWER SETTINGS icon (A) and select it.
3. Scroll to TIRES icon (B), and select it to display the adjustment window.

NOTE:

The F3 shortcut button on the operator's console will also display the WINDROWER SETTINGS menu.



Figure 4.42: Tire Size

4. Scroll to highlight the appropriate tire size (A) and select it. The new selection will be displayed with a shaded green radio button.

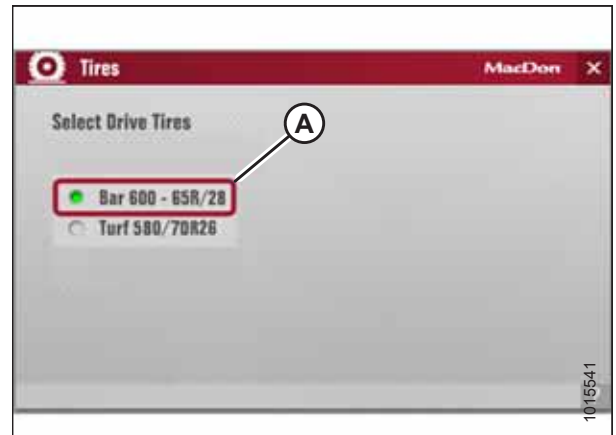


Figure 4.43: Tire Selection

4.2.3 Checking Engine Speed

1. Move the throttle to idle position.
2. Check engine speed (A) on the Harvest Performance Tracker (HPT) display and compare to value in table below.
3. Move the throttle to maximum rpm position.
4. Check engine speed (A) on the HPT and compare to value in table below.

Table 4.3 Engine Speed

Idle	Maximum (No Load)
1000 rpm	2500 rpm



Figure 4.44: HPT Display

4.2.4 Checking Selective Catalytic Regeneration Conditioning Mode

To prevent loss of engine power due to inhibiting exhaust system cleaning for a prolonged period, ensure that the selective catalytic regeneration (SCR) conditioning inhibit mode is off—indicator (A) on the Harvest Performance Tracker (HPT) display is **NOT** highlighted—before delivery to the customer.

If the SCR conditioning inhibit symbol is highlighted, turn inhibit mode off as follows:



Figure 4.45: HPT Display

1. Press the soft key 5/menu button (A) on the HPT.
2. Press soft key 5/menu button (A) next to the EXHAUST AFTERTREATMENT icon (B).

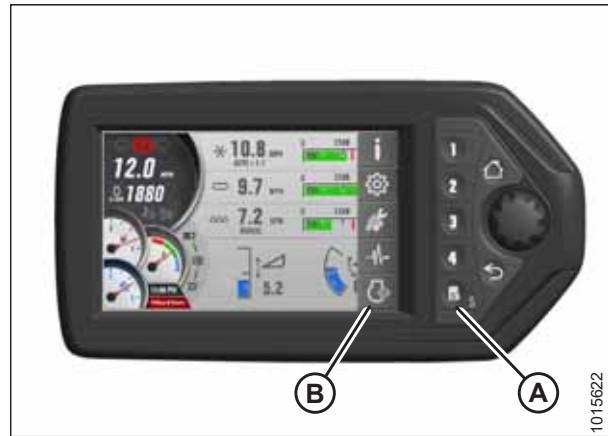


Figure 4.46: HPT Display

3. To turn off SCR conditioning inhibit mode, press soft key 5/ menu button (A) next to the INHIBIT SCR CONDITIONING icon (B), and hold for 3 seconds. The highlighted SCR CONDITIONING INHIBIT icon (C) will turn off.



Figure 4.47: HPT Display

4.2.5 Checking Exterior Lights

1. **For models with LED lighting:** Remove plastic film from LED lighting.
2. Rotate operator's seat to cab-forward mode.
3. Press FIELD LIGHT switch (A).
4. Check that front field lights (B), rear field lights (C), and rear swath lights (D) are functioning.

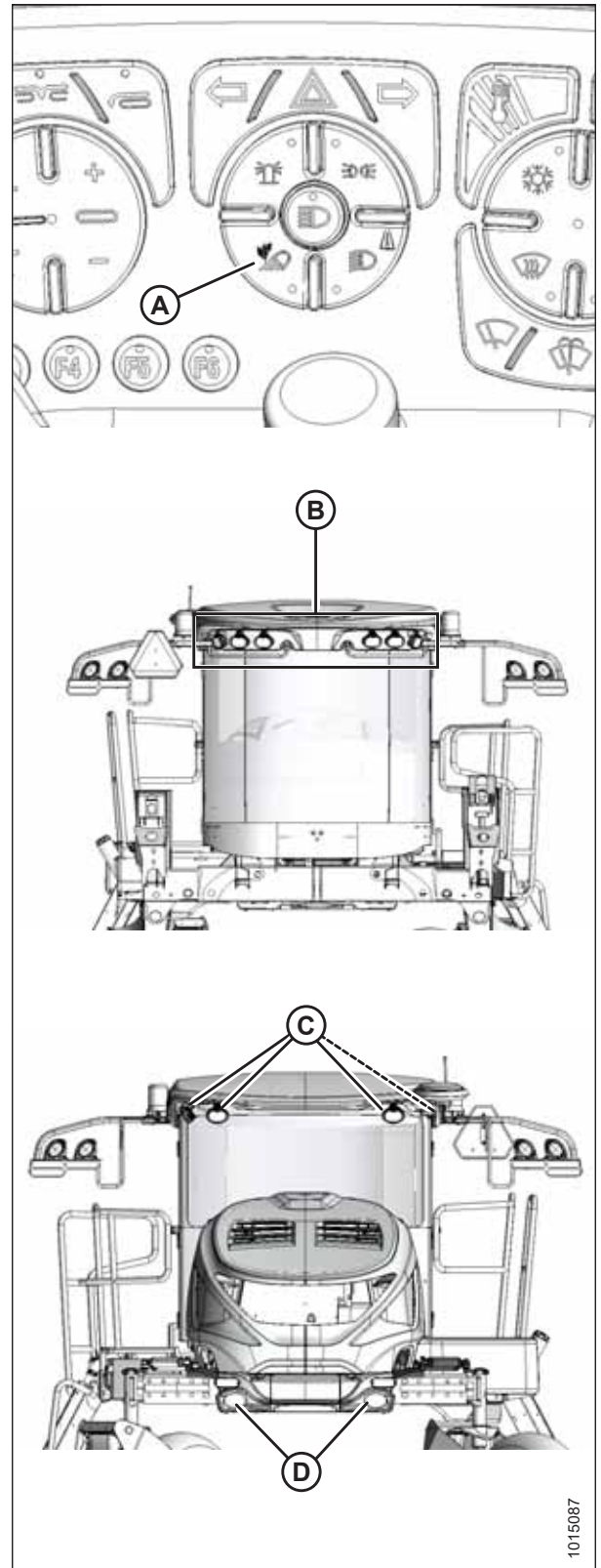


Figure 4.48: Field Lights

PERFORMING PREDELIVERY CHECKS

5. Press ROAD LIGHT switch (A), and check that front road lights (B) and rear red tail/brake lights (C) are functioning.
6. Press HIGH/LOW switch (D), and check lights (B).
7. Press TURN SIGNAL switches (E) on console, and check amber lights (F).
8. Press HAZARD LIGHT switch (G), and check flashing hazard lights (F).
9. Press switches to shut off lights.

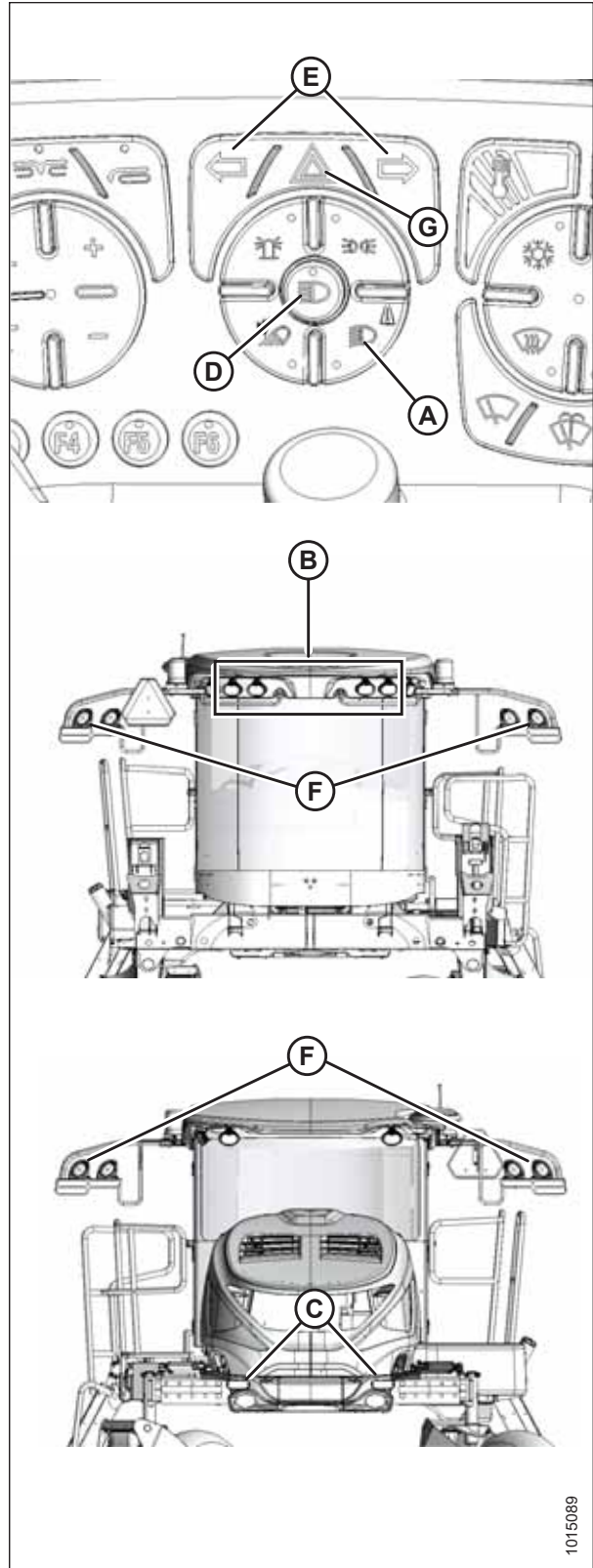


Figure 4.49: Road Lights – Cab-Forward

PERFORMING PREDELIVERY CHECKS

10. Rotate operator's seat to engine-forward mode.
11. Press ROAD LIGHT switch (A), and check that front road lights (B) and rear red tail/brake lights (C) are functioning.
12. Press HIGH/LOW switch (D) and check lights (B).
13. Press TURN SIGNAL switches (E) switches on console and check amber lights (F).
14. Press HAZARD LIGHT switch (G) and check flashing hazard lights (F).
15. Press switches to shut off lights.

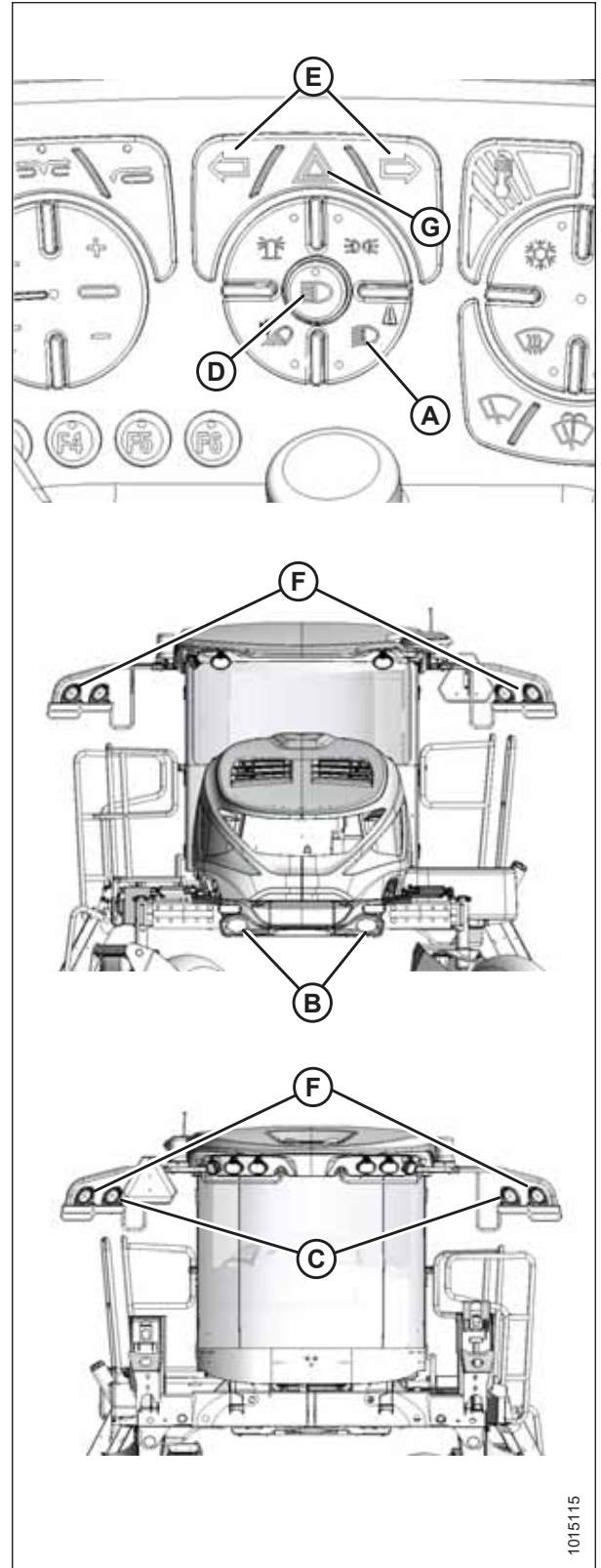


Figure 4.50: Road Lights – Engine-Forward

PERFORMING PREDELIVERY CHECKS

16. Push BEACON SWITCH (A), and check that amber beacons (B) are functioning.
17. Press switch to shut off beacons.

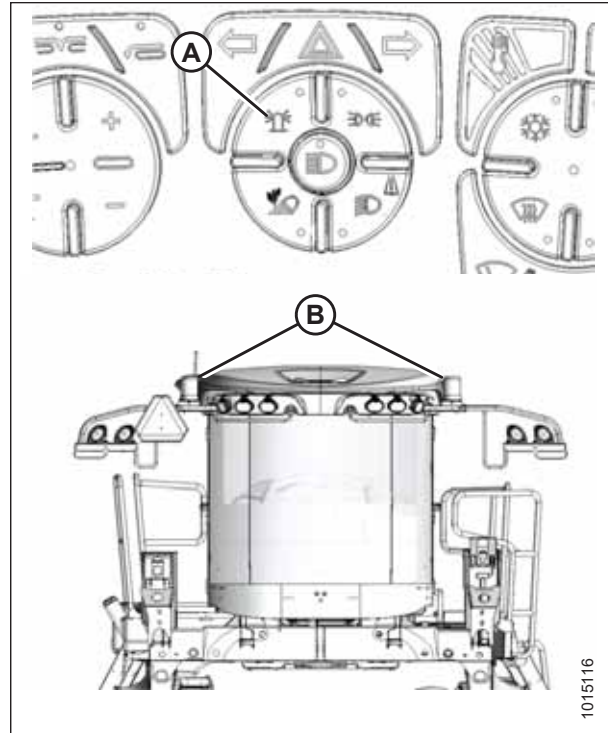


Figure 4.51: Beacons

4.2.6 Checking Horn

1. Push HORN button (A) and listen for horn.

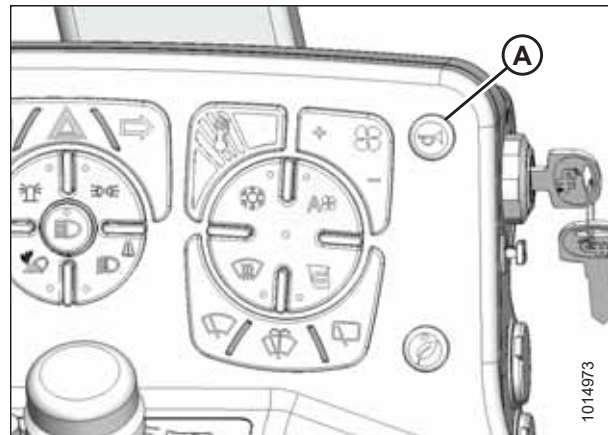


Figure 4.52: Horn Button

4.2.7 Checking Interior Lights

1. Open the cab door and check that interior light (A) illuminates.
2. Enter the cab and close door; the light should go off.

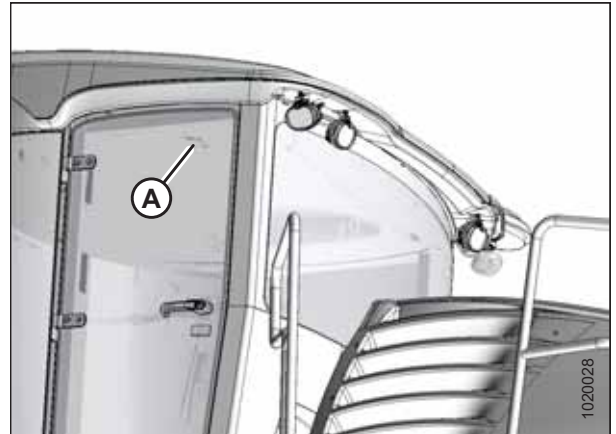


Figure 4.53: Interior Light

3. Turn the IGNITION key to the RUN position.
4. Push OVERHEAD DOME LIGHT switch (A) to the ON position (B) and check that the light illuminates.
5. Push the LIGHT switch to the DOOR position (C) and check that the light is off.
6. Open the door and check that the light illuminates. Leave the door open.
7. Push switch (A) to OFF position (D) and check that the light is off.

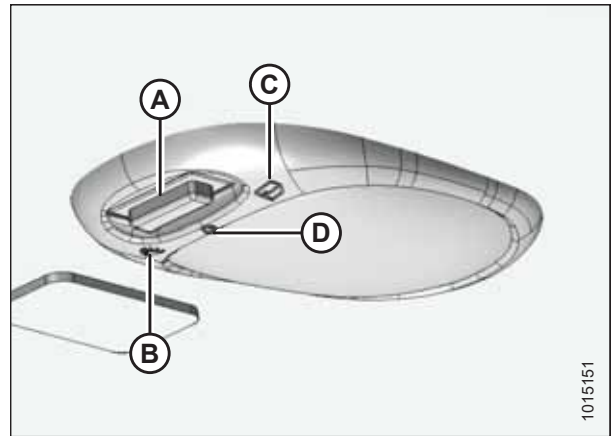


Figure 4.54: Interior Light

4.2.8 Checking Climate Controls

1. Start the engine and allow it to reach operating temperature.
2. If starting a machine that has been stored for more than 1 week, distribute the oil throughout the A/C system as follows:
 - a. Press + (A) on the FAN SPEED switch to start the fan, adjust temperature control (B) to maximum heating, and press A/C switch (C) if necessary so that the LED light is **NOT** lit.
 - b. Press A/C switch (C) to ON (LED light is lit) for one second, then OFF for 5 to 10 seconds. Repeat this step ten times.

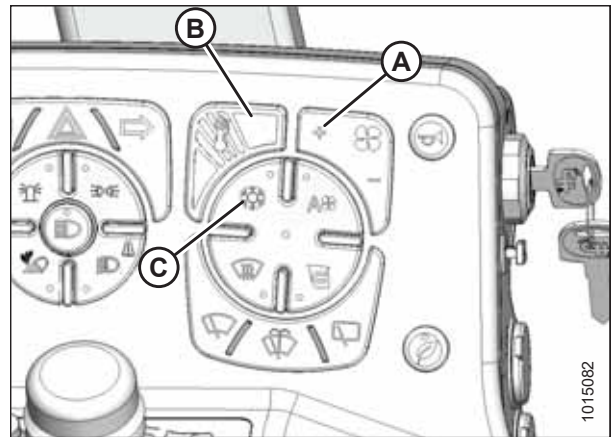


Figure 4.55: A/C Controls

PERFORMING PREDELIVERY CHECKS

3. Press AUTO FAN switch (A) (LED light shows orange) and then press RED TEMPERATURE CONTROL switch (B) until warm air flows through cab vents.
4. Press BLUE TEMPERATURE CONTROL switch (C) until cool air enters the cab.
5. Press FAN SPEED switch (D) (+ or -) and note change in airflow. The AUTO FAN light should be off.
6. Press RECIRCULATING AIR switch (E) and check airflow in cab.
7. Press WINDSHIELD DEFOG/DEFROST switch (F) and check airflow on windshield.

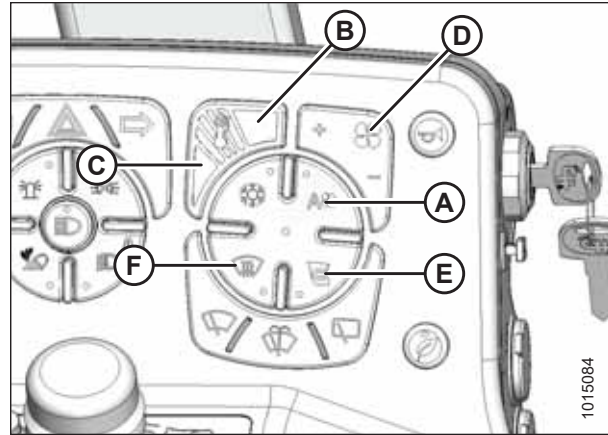


Figure 4.56: Climate Controls

4.2.9 Checking the Radio and Activating the Bluetooth® Feature

A radio (A) and two speakers (B) are factory-installed in the cab headliner. The radio operates in AM, FM, CD, and USB modes. It also supports Bluetooth® wireless technology audio streaming and hands-free calling.

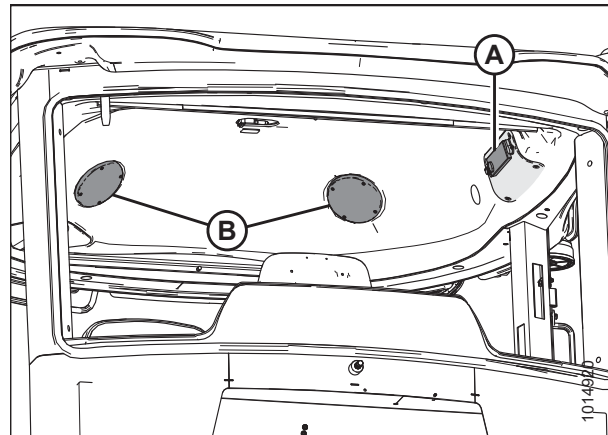


Figure 4.57: Radio and Speakers

1. To check the radio, follow this procedure:
 - a. Turn the IGNITION key to RUN position.
 - b. Press POWER button (A) to turn the radio on. Hold the POWER button to turn it off.

NOTE:

The button will illuminate red when OFF and blue when ON.

- c. Press BAND/BACK button (B) to change radio bands.
- d. Rotate Volume/Select knob (C) to change the volume level.
- e. Insert a CD into disc slot (D), or connect a USB storage device to the unit. The radio will automatically switch mode and begin playback after media is successfully loaded.

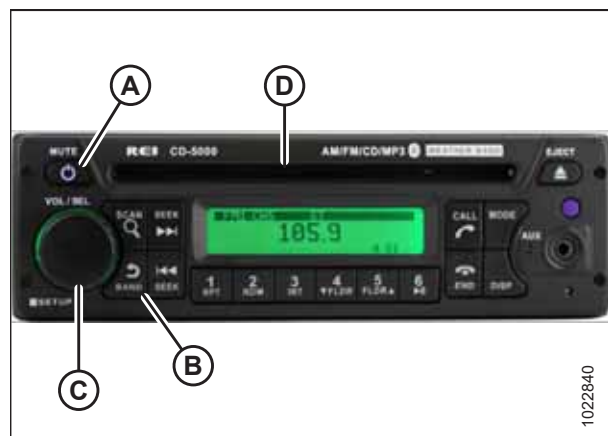


Figure 4.58: Radio

PERFORMING PREDELIVERY CHECKS

2. To activate the Bluetooth® feature, follow this procedure:
 - a. Press POWER button (A) to turn radio on.
 - b. Press and hold VOL/SEL knob (B) for two seconds. MENU is displayed on screen (C).
 - c. Rotate VOL/SEL (B) to highlight BT SET menu and press VOL/SEL to select. BLUETOOTH ON/OFF is displayed (C).
 - d. Press VOL/SEL to select BLUETOOTH.
 - e. Rotate the VOL/SEL knob to display ON and press VOL/SEL to select.
 - f. Rotate the VOL/SEL knob and select DISCOVER.
 - g. Rotate the VOL/SEL knob to display ON and press VOL/SEL to select.

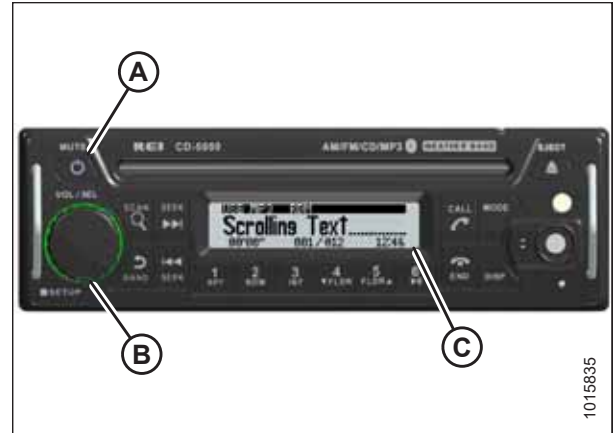


Figure 4.59: Bluetooth® Radio

4.3 Checking Manuals

Manuals are stored in one of the manual storage cases (A) behind the operator's seat.

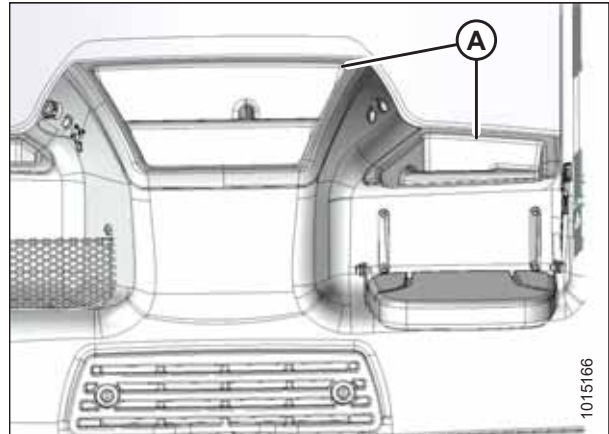


Figure 4.60: Manual Storage Case

1. Ensure the following manuals are included with the windrower:

- Operator's Manual
- Parts Catalog
- Quick Card
- Engine Manual



Figure 4.61: Manuals and Quick Card

4.4 Performing Final Steps

1. After the predelivery checks are complete, remove the plastic covering from the Harvest Performance Tracker (HPT) and the seats.
2. If the optional GPS kit is included, locate GPS mount parts bag inside the cab, and install it according to the instructions included with the EZ Pilot® or Autopilot™ bundle. If not installing kit, place GPS mount parts bag in toolbox for future installation.
3. Remove the Keep This Door Closed sign from the right door **AFTER** the right leg is repositioned to field configuration.
4. Do **NOT** remove the drive wheel torque procedure decal from the windshield.



Figure 4.62: Windshield Decal

4.5 Attaching a Header to an M1170 Windrower

4.5.1 A40DX Auger Header

Attaching an A40DX Auger Header

The windrower may have an optional self-aligning hydraulic center-link that allows vertical position control of the center-link from the cab.

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. Remove hairpin (A) from pin (B), and remove the pin from header supports (C) on both sides of the header.

CAUTION

Check to be sure all bystanders have cleared the area.

2. Start the engine.

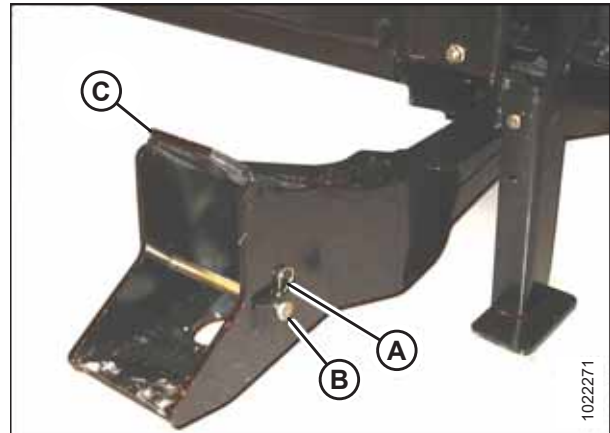


Figure 4.63: Header Support

IMPORTANT:

When lowering the header lift legs without a header or weight box attached to the windrower, ensure the float springs tension is fully released to prevent damage to the header lift linkages.

NOTE:

If not prompted by the Harvest Performance Tracker (HPT) display to remove float, remove float manually by doing the following:

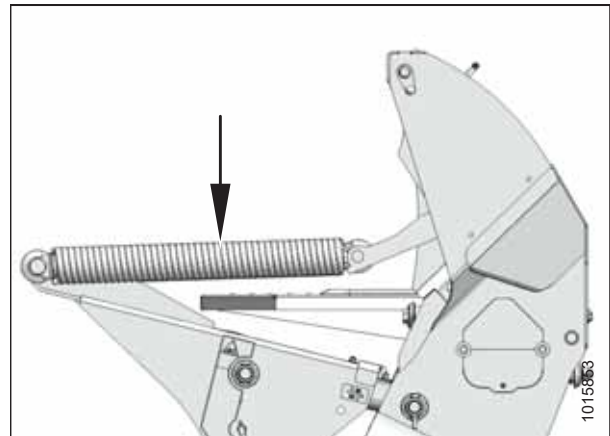


Figure 4.64: Header Float Springs

PERFORMING PREDELIVERY CHECKS

3. Press HPT scroll knob (A) to highlight QuickMenu options.
4. Rotate HPT scroll knob (A) to highlight the HEADER FLOAT symbol (B) and press the scroll knob to select.



Figure 4.65: HPT Display

5. On FLOAT ADJUST PAGE, press soft key 3 (A) to remove float.



Figure 4.66: HPT Display

6. Press the HEADER DOWN switch (A) on the ground speed lever (GSL) to fully retract header lift cylinders.
7. For hydraulic center-link with self-alignment, press the REEL UP switch (B) on the GSL to raise the center-link until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.



Figure 4.67: GSL

PERFORMING PREDELIVERY CHECKS

8. If the hydraulic center-link self-alignment kit is not installed, relocate pin (A) in frame linkage as required to raise the center-link (B) until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

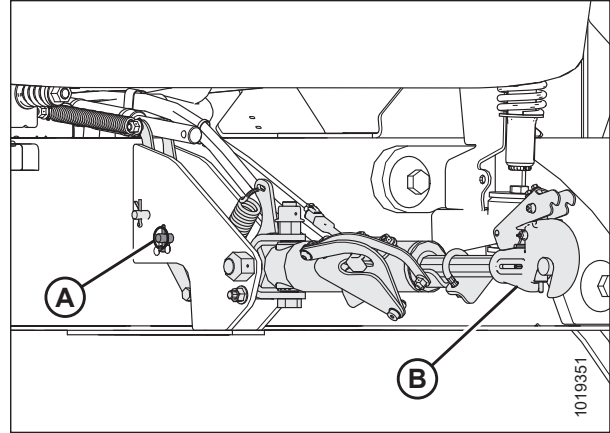


Figure 4.68: Hydraulic Center-Link without Self-Alignment Kit

9. Drive the windrower slowly forward so feet (A) on the windrower enter supports (B) on the header. Continue to drive slowly forward until the feet engage the supports, and the header nudges forward.

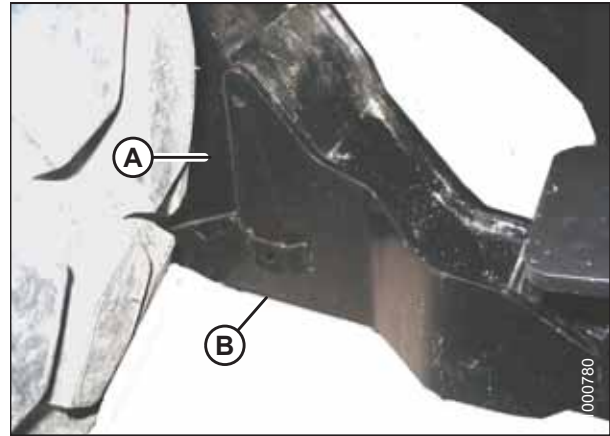


Figure 4.69: Header Support

10. If the hydraulic center-link self-alignment kit is installed, adjust position of the center-link cylinder (A) with switches on the GSL until the hook (B) is above the header attachment pin.
11. For hydraulic center-link without self-alignment, push down on the rod end of link cylinder (C) until the hook engages and locks onto the header pin.

IMPORTANT:

Hook release (D) must be down to enable the self-locking mechanism. If the release is open (up), manually push it down after the hook engages the header pin.

12. For hydraulic center-link with self-alignment, lower center-link (A) onto the header with REEL DOWN switch on the GSL until it locks into position (hook release [D] is down).
13. For hydraulic center-link with self-alignment, check that center-link is locked onto header by pressing the REEL UP switch on the GSL.

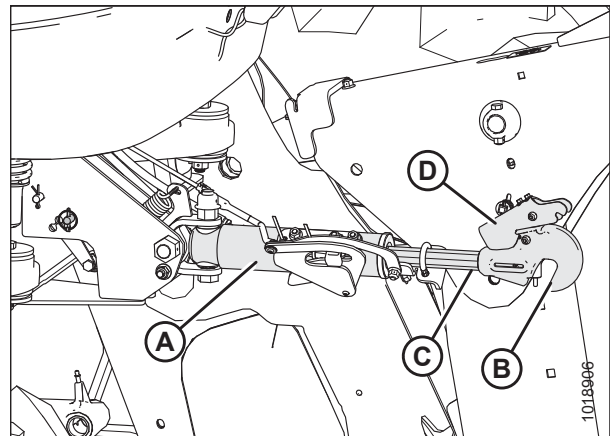


Figure 4.70: Hydraulic Center-Link

WARNING

Check to be sure all bystanders have cleared the area.

14. Press the HEADER UP switch (A) to raise header to maximum height.
15. If one end of the header does **NOT** fully raise, rephase the lift cylinders as follows:
 - a. Press and hold the HEADER UP switch (A) until both cylinders stop moving.
 - b. Continue to hold the switch for 3–4 seconds. Cylinders are now phased.

NOTE:

This procedure may have to be repeated if there is air in the system.

16. Shut down the engine, and remove the key from the ignition.
17. Engage the safety props on both lift cylinders as follows:
 - a. Pull lever (A) toward you to release, and then rotate toward header to lower the safety prop onto the cylinder.
 - b. Repeat for the opposite lift cylinder.

IMPORTANT:

Ensure the safety props engage over the cylinder piston rods. If the safety prop does **NOT** engage properly, raise the header until the safety prop fits over the rod.

18. Install clevis pin (A) through the support and foot, and secure with a hairpin. Repeat for the opposite support.

IMPORTANT:

Ensure clevis pin (A) is fully inserted and the hairpin is installed behind bracket.



Figure 4.71: GSL

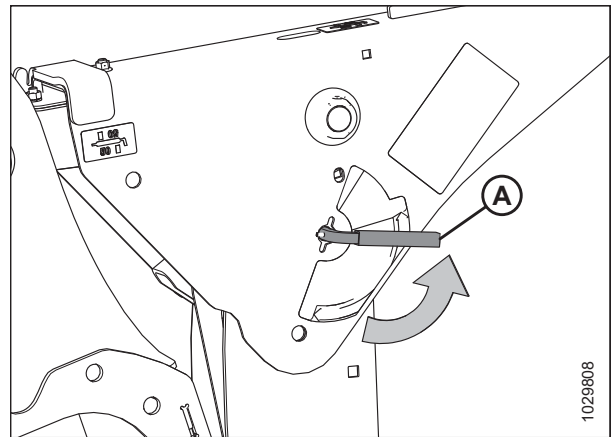


Figure 4.72: Safety Prop Lever

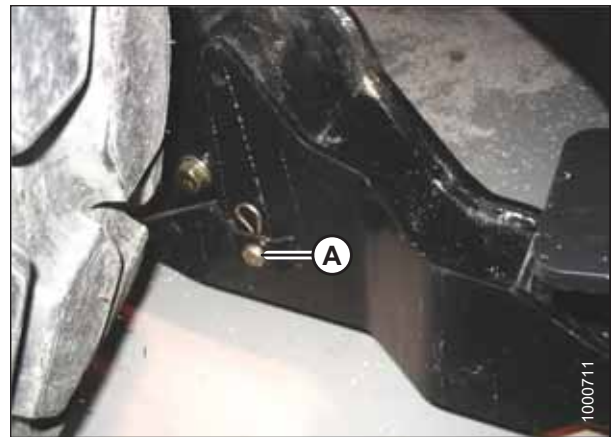


Figure 4.73: Header Support

PERFORMING PREDELIVERY CHECKS

19. Remove the lynch pin from clevis pin (A) in stand (B).
20. Hold stand (B) and remove pin (A).
21. Move the stand to storage position by inverting and relocating onto bracket as shown. Reinsert clevis pin (A) and secure with the lynch pin.

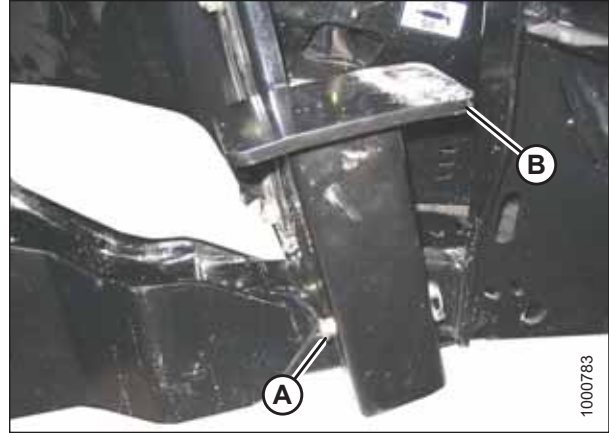


Figure 4.74: Header Stand

22. Disengage the safety props on both lift cylinders as follows:

NOTE:

If the safety prop will **NOT** disengage, raise the header to release the prop.

- a. Turn lever (A) away from the header to raise the safety prop until the lever locks into the vertical position.
- b. Repeat for the opposite cylinder.

23. Repeat for the opposite side.

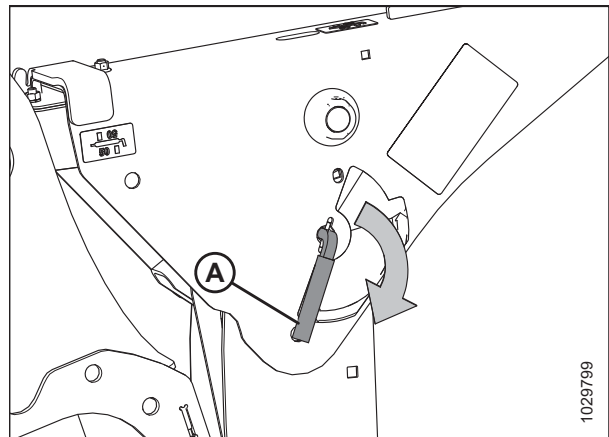


Figure 4.75: Safety Prop Lever

WARNING

Check to be sure all bystanders have cleared the area.

24. Start the engine and press HEADER DOWN switch (A) on GSL to fully lower the header.

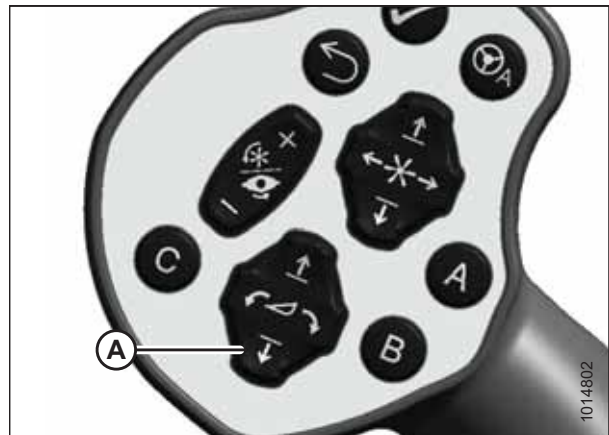


Figure 4.76: GSL

PERFORMING PREDELIVERY CHECKS

25. Press rotary scroll knob (A) on the HPT to highlight the QuickMenu options.
26. Rotate scroll knob (A) to highlight the HEADER FLOAT symbol (B). Press the scroll knob to select.



Figure 4.77: HPT Display

27. Turn scroll knob (A) to highlight left (B) or right (C) float and press knob (A) to activate selection.
28. Rotate scroll knob (A) to adjust the float setting and press the knob when finished.

IMPORTANT:

Float adjustments of 1.0 (out of 10) change the header weight at the cutterbar by approximately 91 kg (200 lb.). Adjust the float in increments of 0.05 to optimize field performance.

29. Shut down the engine, and remove the key from the ignition.
30. Grasp one end of the auger header and lift. Lifting force should be 335–380 N (75–85 lbf) at both ends.



Figure 4.78: HPT Display

Connecting A40DX Auger Hydraulics



CAUTION

Do NOT stand on an unlocked platform. It is unstable and may cause you to fall.

1. Approach platform/stair unit (A) on the left cab-forward side of the windrower and ensure the cab door is closed.
2. Push latch (B), and pull platform (A) toward the walking beam until it stops and the latch engages.

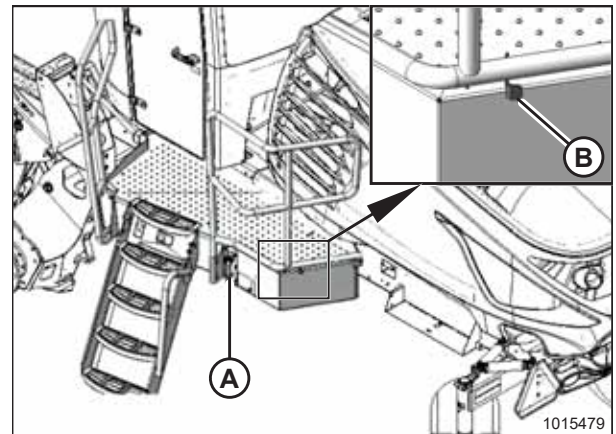


Figure 4.79: Left Cab-Forward Platform

PERFORMING PREDELIVERY CHECKS

3. Retrieve hydraulic multicouplers (A) and electrical harness (B) from the header.
4. Route the hose/harness bundle toward the windrower through support (C).

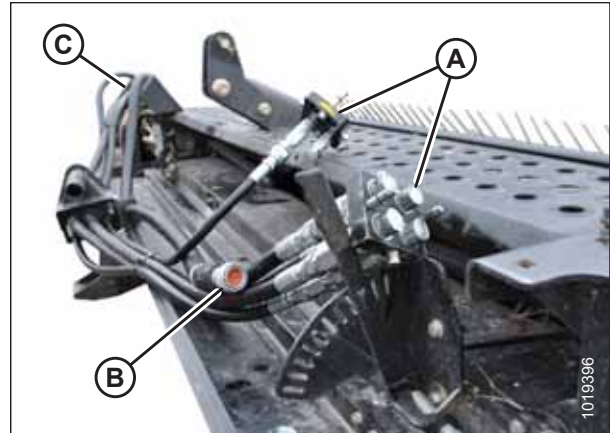


Figure 4.80: Hydraulic Hoses in Storage Position

5. Insert hose support (B) into hole (A) in the windrower left leg, and route the header hose bundle (C) under the windrower to the hydraulic and electrical couplers.

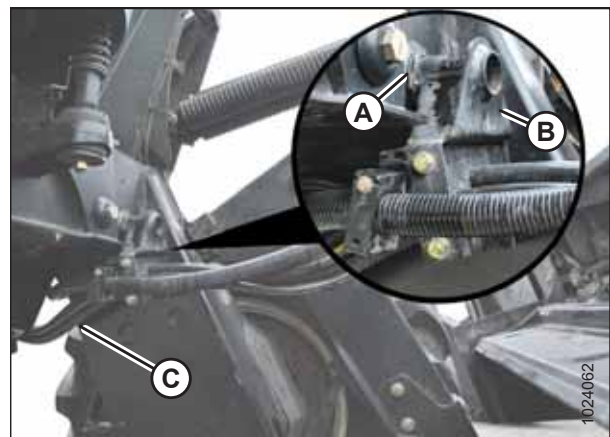


Figure 4.81: Multicoupler

6. Clean the multicouplers and receptacles to prevent contamination.
7. Push button (A) on the rear multicoupler receptacle and rotate handle (B) away from the windrower.
8. Open cover (C) and position multicoupler (D) onto the receptacle. Align the pins in the coupler with slots in handle (B), and rotate the handle toward the windrower so that the coupler is locked onto the receptacle and button (A) snaps out.
9. Push button (E) on the front multicoupler receptacle and rotate handle (F) away from the windrower.
10. Open cover (G) and position multicoupler (H) onto the receptacle. Align the pins in the coupler with slots in the handle, and rotate the handle toward the windrower so that the coupler is locked onto the receptacle and button (E) snaps out.

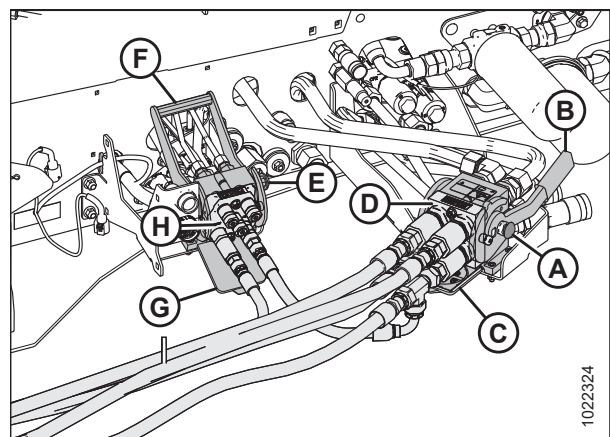


Figure 4.82: Knife/Reel/Auger Drive Multicoupler

PERFORMING PREDELIVERY CHECKS

M1170 configured with R1 Hydraulic Drive Bundle

11. If switching from a rotary header to an auger header, remove hose (A) from storage location (B) and connect to knife pressure receptacle (C) on the frame.

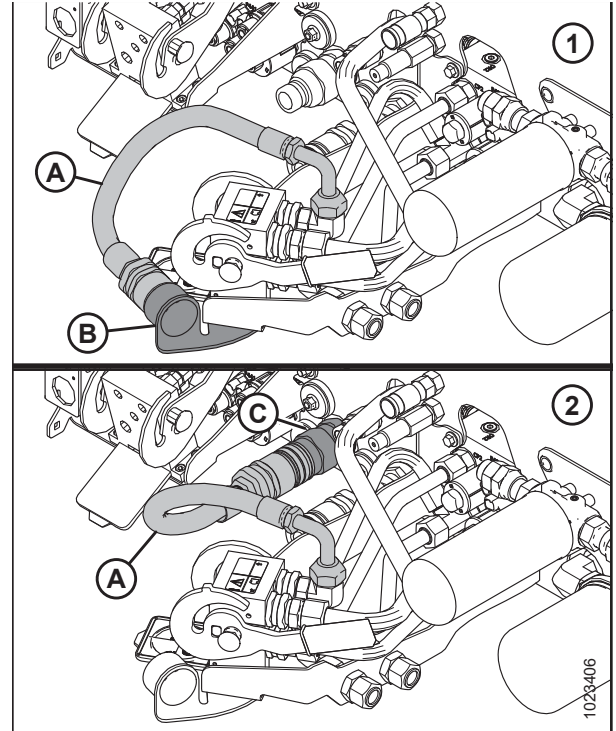


Figure 4.83: Knife Pressure Hose Positions

- 1 - Hose in Storage Position (Rotary Configuration)
- 2 - Hose to Knife Pressure Receptacle (Auger/Draper Configuration)

12. Remove cover from receptacle (A), and connect the electrical harness from the header.

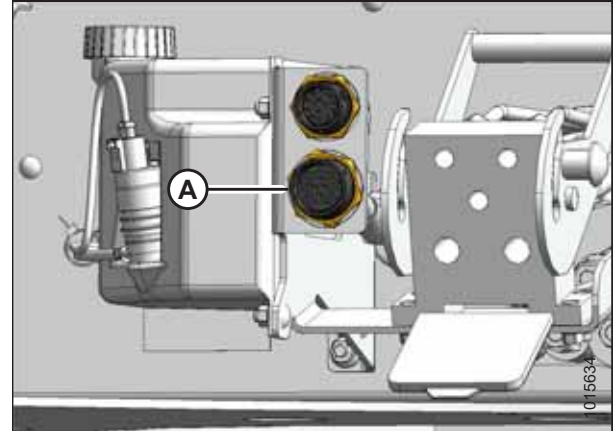


Figure 4.84: Electrical Connectors

PERFORMING PREDELIVERY CHECKS

13. Push latch (A) to unlock platform (B).

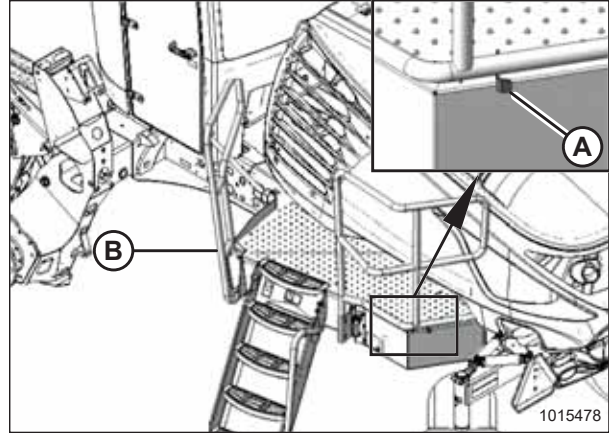


Figure 4.85: Left Cab-Forward Platform

14. Pull platform (A) towards the cab until it stops and latch engages.

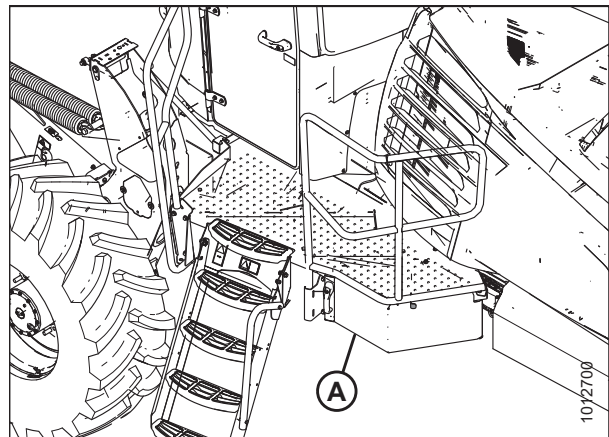


Figure 4.86: Left Cab-Forward Platform

4.5.2 D1X or D1XL Series Draper Header

Attaching Draper Header Supports

Draper header supports are required to attach a D1X or D1XL Series Draper Header to the windrower.



WARNING

To avoid bodily 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.

1. Shut down the engine, and remove the key from the ignition.

PERFORMING PREDELIVERY CHECKS

2. Retrieve the header draper supports.
3. Remove the hairpin and clevis pin (B) from draper header support (A).

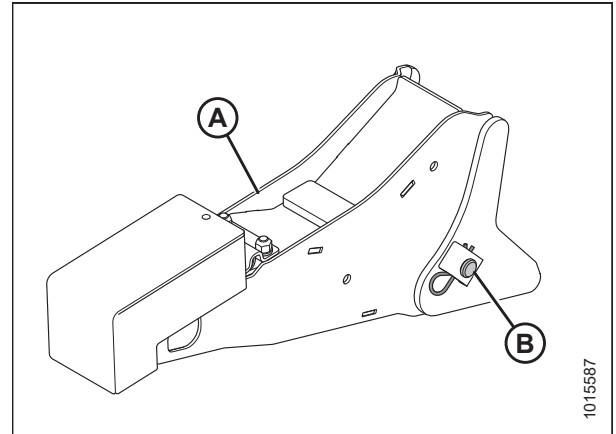


Figure 4.87: Draper Header Support

4. Position draper header support (B) on lift linkage (A), and reinstall clevis pin (C).

NOTE:

To avoid the pin snagging the windrow, install the clevis pin on the outboard side of the draper header support.

5. Secure clevis pin (C) with hairpin (D).
6. Repeat for the opposite lift linkage.

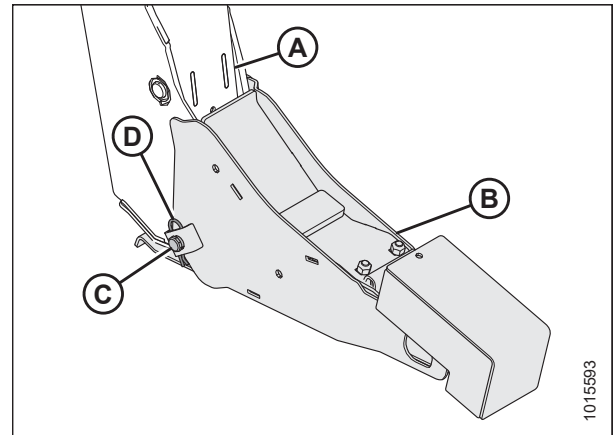


Figure 4.88: Draper Header Support

Attaching a D1X or D1XL Series Draper Header

The windrower may have an optional self-aligning hydraulic center-link that allows vertical position control of the center-link from the cab.

NOTE:

Draper header supports must be installed onto the windrower lift linkage before starting this procedure. For instructions, refer to [Attaching Draper Header Supports, page 82](#).



WARNING

To avoid bodily 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.

1. Shut down the engine, and remove the key from the ignition.

PERFORMING PREDELIVERY CHECKS

2. **For windrowers without the self-aligning center-link kit:** Relocate pin (A) in the frame linkage as required to raise center-link (B) until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

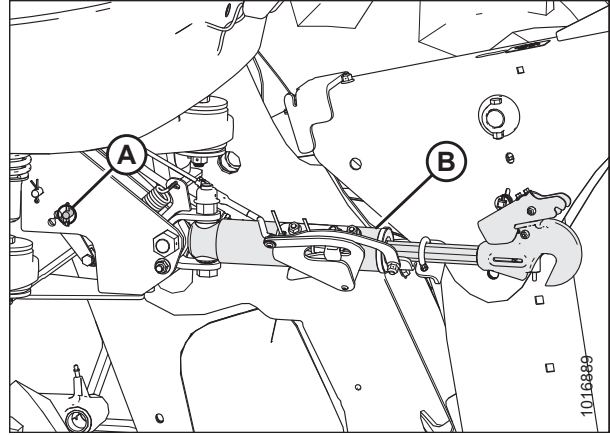


Figure 4.89: Center-Link without Self-Alignment

3. Remove hairpin (A) from pin (B), and remove pin (B) from header leg. Repeat on the opposite header leg.

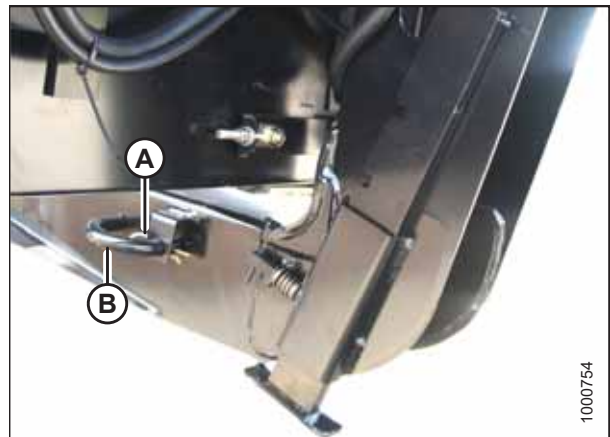


Figure 4.90: Header Leg



WARNING

Check to be sure all bystanders have cleared the area.

4. Start the engine.



CAUTION

When lowering header lift legs without a header or weight box attached to the windrower, ensure the float springs tension is fully released to prevent damage to the header lift linkages.

NOTE:

If not prompted by the Harvest Performance Tracker (HPT) display to remove float, remove float manually as follows:

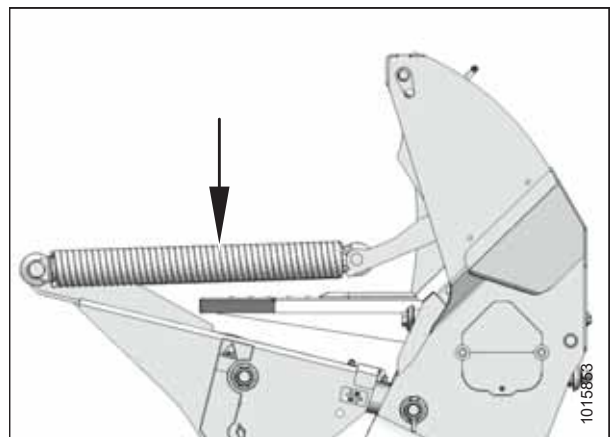


Figure 4.91: Header Float Springs

PERFORMING PREDELIVERY CHECKS

5. Press scroll knob (A) on the HPT to display the QuickMenu system.
6. Rotate scroll knob (A) to highlight HEADER FLOAT symbol (B), and press the scroll knob to select.



Figure 4.92: HPT Display

7. On the FLOAT ADJUST page, press soft key 3 (A) to remove float.



Figure 4.93: HPT Display

8. **For windrowers equipped with the self-aligning center-link kit:**
 - a. Press HEADER DOWN switch (E) on the ground speed lever (GSL) to fully retract the header lift cylinders.
 - b. Press REEL UP switch (B) on the GSL to raise the center-link until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

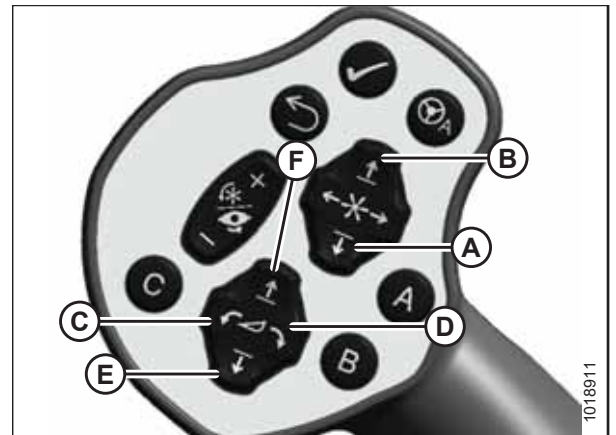


Figure 4.94: GSL Switches

- | | |
|----------------------|--------------------|
| A - Reel Down | B - Reel Up |
| C - Header Tilt Down | D - Header Tilt Up |
| E - Header Down | F - Header Up |

PERFORMING PREDELIVERY CHECKS

9. Drive the windrower slowly forward until draper header supports (A) enter header legs (B). Continue driving slowly forward until lift linkages contact the support plates in the header legs and the header nudges forward.
10. Ensure that lift linkages are properly engaged in the header legs and are contacting the support plates.

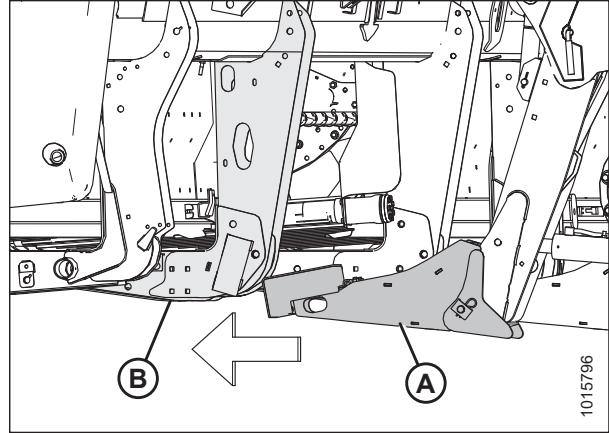


Figure 4.95: Header Leg and Draper Header Support

11. Self-Aligning Hydraulic Center-Link:

- a. Adjust the position of center-link cylinder (A) with the switches on the GSL until hook (B) is above the header attachment pin.

IMPORTANT:

Hook release (C) must be down to enable the self-locking mechanism.

- b. If hook release (C) is open (up), shut down the engine, and remove the key from the ignition. Manually push hook release (C) down after the hook engages the header pin.
- c. Lower center-link (A) onto the header with REEL DOWN switch on the GSL until the center-link locks into position and hook release (C) is down.
- d. Check that center-link is locked onto header by pressing the REEL UP switch on the GSL.

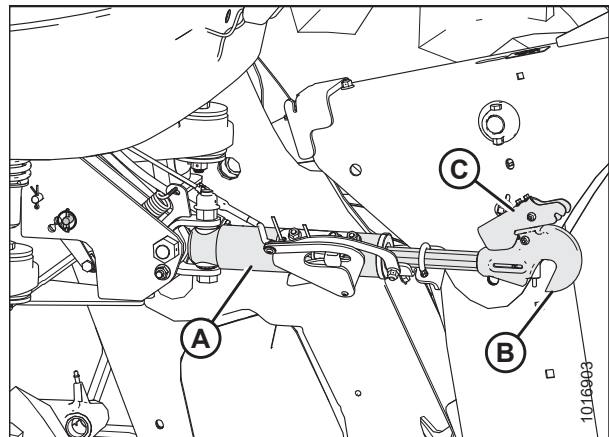


Figure 4.96: Hydraulic Center-Link

12. Hydraulic Center-Link without Self-Alignment:

- a. Press HEADER TILT UP or HEADER TILT DOWN cylinder switches on the GSL to extend or retract center-link cylinder until the hook is aligned with the header attachment pin.
- b. Shut down the engine, and remove the key from the ignition.
- c. Push down on rod end of link cylinder (B) until hook engages and locks onto header pin.

IMPORTANT:

Hook release must be down to enable self-locking mechanism. If the hook release is open (up), manually push it down after hook engages pin.

- d. Check that center-link (A) is locked onto header by pulling upward on rod end (B) of cylinder.

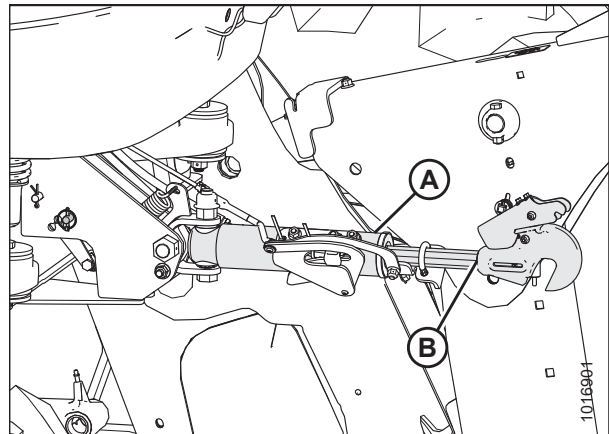


Figure 4.97: Hydraulic Center-Link

! WARNING

Check to be sure all bystanders have cleared the area.

e. Start the engine.

13. Press HEADER UP switch (A) to raise header to maximum height.

NOTE:

If one end of the header does **NOT** fully raise, rephase the lift cylinders as follows:

- a. Press and hold HEADER UP switch (A) until both cylinders stop moving.
- b. Continue to hold the switch for 3–4 seconds. Cylinders are now phased.

14. Shut down the engine, and remove the key from the ignition.



Figure 4.98: GSL

15. Engage the safety props on both lift cylinders as follows:

- a. Pull lever (A) toward you to release, and then rotate toward header to lower the safety prop onto the cylinder.
- b. Repeat for the opposite lift cylinder.

IMPORTANT:

Ensure the safety props engage over the cylinder piston rods. If the safety prop does **NOT** engage properly, raise the header until the safety prop fits over the rod.

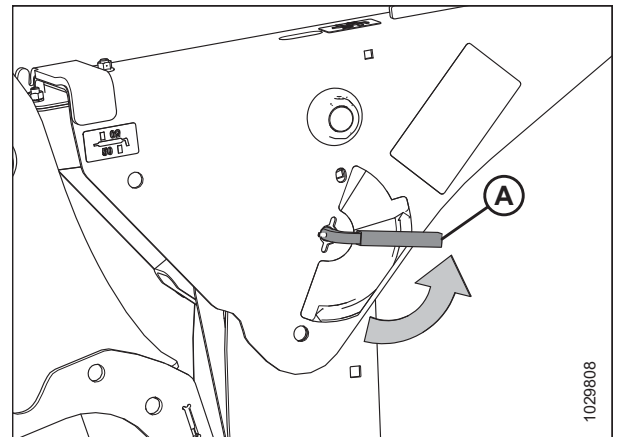


Figure 4.99: Safety Prop Lever

16. Install pin (B) through the header leg (engaging U-bracket in draper header support) on both sides and secure with a hairpin (A).
17. Raise header stand (D) to storage position by pulling spring pin (C) and lifting stand into uppermost position. Release spring pin.

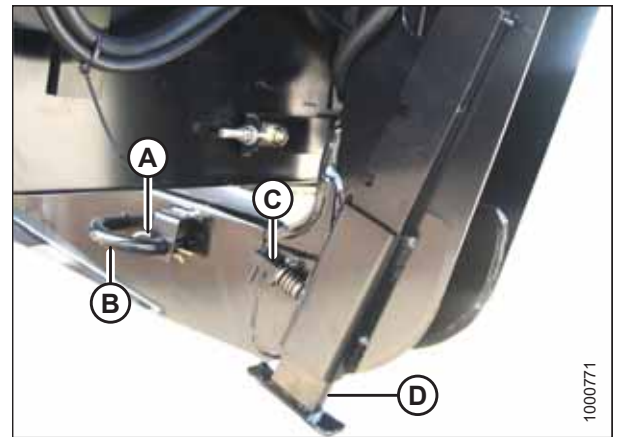


Figure 4.100: Header Leg

PERFORMING PREDELIVERY CHECKS

18. Disengage the safety props on both lift cylinders as follows:

NOTE:

If the safety prop will **NOT** disengage, raise the header to release the prop.

- Turn lever (A) away from the header to raise the safety prop until the lever locks into the vertical position.
- Repeat for the opposite cylinder.

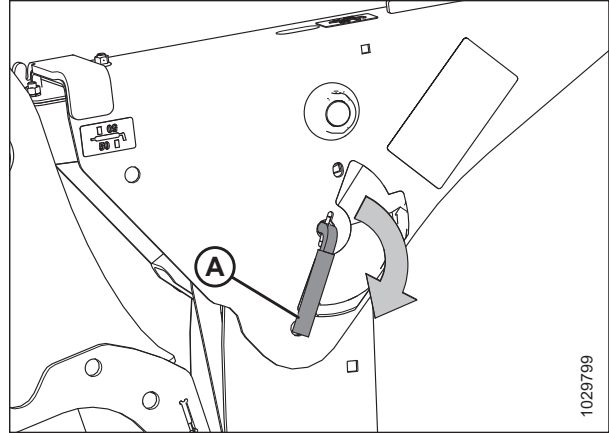


Figure 4.101: Safety Prop Lever

! WARNING

Check to be sure all bystanders have cleared the area.

19. Start engine and press HEADER DOWN switch (A) on GSL to fully lower header.

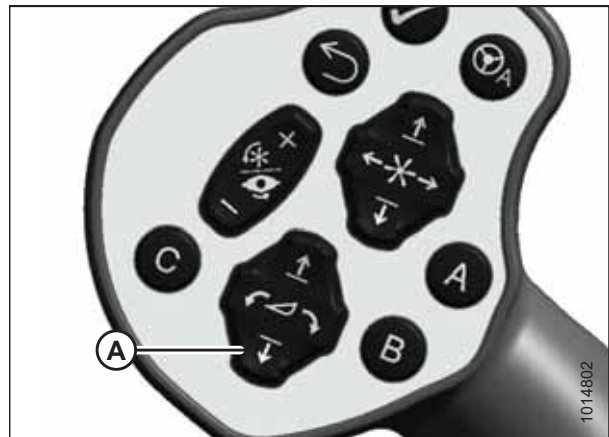


Figure 4.102: GSL

20. Press rotary scroll knob (A) on Harvest Performance Tracker (HPT) to highlight QuickMenu options.
21. Rotate scroll knob (A) to highlight HEADER FLOAT symbol (B), and press scroll knob to select.



Figure 4.103: HPT Display

PERFORMING PREDELIVERY CHECKS

22. Turn scroll knob (A) to highlight left (B) or right (C) float and press knob (A) to activate selection.
23. Rotate scroll knob (A) to adjust float setting and press knob (A) when finished.

IMPORTANT:

Float adjustments of 1.0 (out of 10) change the header weight at the cutterbar by approximately 91 kg (200 lb.). Adjust float in increments of 0.05 to optimize field performance.

24. Shut down the engine, and remove the key from the ignition.
25. Grasp one end of the draper header and lift. Lifting force should be 335–380 N (75–85 lbf) and should be the same at both ends.
26. Proceed to [Connecting D1X or D1XL Series Draper Header Hydraulics](#), page 89.



Figure 4.104: HPT Display

Connecting D1X or D1XL Series Draper Header Hydraulics

IMPORTANT:

To prevent contamination of the hydraulic system, use a clean rag to remove dirt and moisture from all (fixed and movable) hydraulic couplers.

1. Push link on latch (C) and pull handle (A) on hydraulic hose management system (B) rearward to disengage arm from the latch.
2. Move hydraulic hose management system (B) toward the left cab-forward side of the windrower.

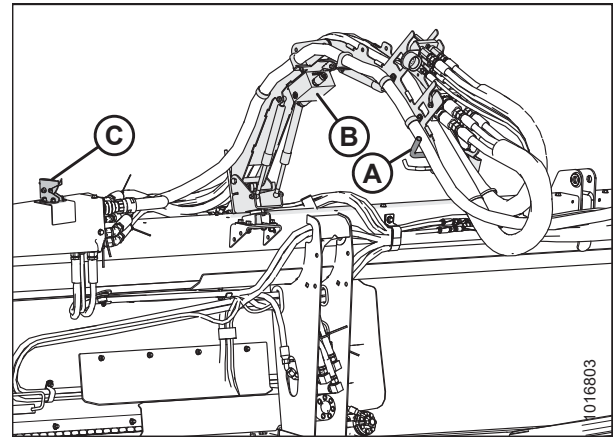


Figure 4.105: Hydraulic Hose Management System

PERFORMING PREDELIVERY CHECKS

3. Ensure the cab door is closed on the left cab-forward side of the windrower.
4. Push latch (B), and pull platform (A) toward the walking beam until the platform stops and the latch engages.

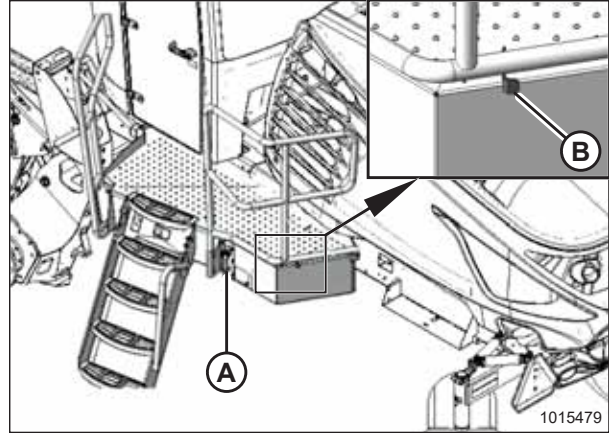


Figure 4.106: Platform

5. Connect hydraulic hose management system (A) to the windrower by securing ball joint (B) into latch support (C) on the windrower leg.
6. Open the platform.

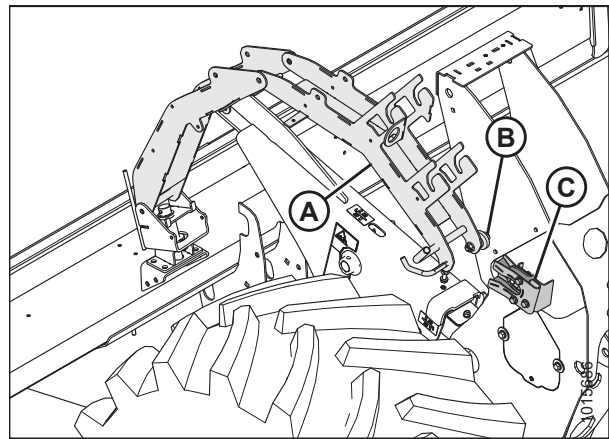


Figure 4.107: Hydraulic Hose Management System

PERFORMING PREDELIVERY CHECKS

M1170 configured with R1 Hydraulic Drive kit

7. If switching from a rotary header to a draper header, remove hose (A) from storage location (B) and connect to knife pressure receptacle (C) on the frame.

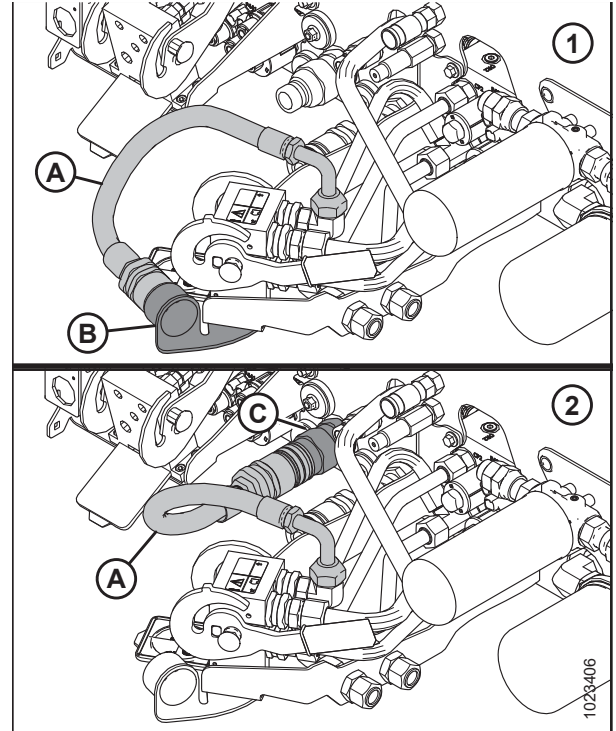


Figure 4.108: Knife Pressure Hose Positions

1 - Hose in Storage Position (Rotary Configuration)

2 - Hose to Knife Pressure Receptacle (Auger/Draper Configuration)

8. Retrieve draper drive and reel control multicoupler (A) from the hydraulic hose management system.
9. Push knob (B) on hydraulic receptacle and pull handle (C) fully away from the windrower.
10. Open cover (D) and position coupler onto the receptacle. Align the pins in the coupler with slots in handle (C) and push the handle toward the windrower so that the coupler locks onto the receptacle and knob (B) snaps out.
11. Remove hose quick-disconnect (F) from the storage location and connect to receptacle on the frame.

NOTE:

Hose quick-disconnect (F) is only present on M1240 machines configured for draper headers, and on M1170 machines with the R1 Series Hydraulic Drive kit (MD #B6621) installed.

12. Remove the cover from electrical connector (E), push the electrical connector onto the receptacle, and secure it by turning the collar on the electrical connector clockwise.

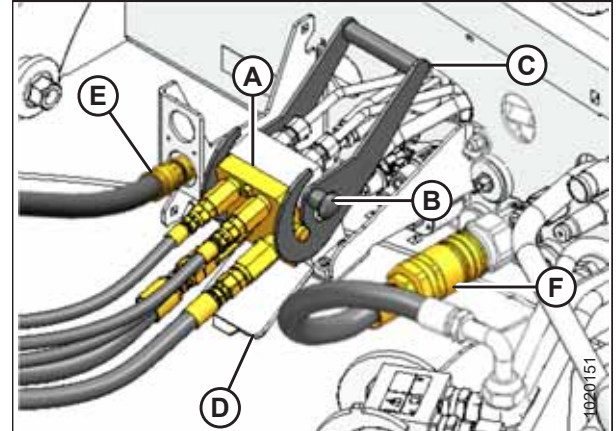


Figure 4.109: Draper/Reel Multicoupler

PERFORMING PREDELIVERY CHECKS

13. Retrieve knife and reel drive multicoupler (A) from the hydraulic hose management system.
14. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
15. Open cover (D) and position the coupler onto the receptacle. Align the pins in the coupler with the slots in handle (C), and push the handle toward the windrower so that the coupler locks onto the receptacle and knob (B) snaps out.
16. Close the platform.

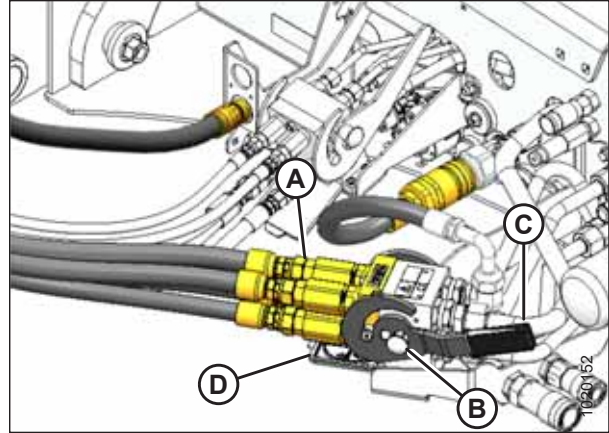


Figure 4.110: Knife/Reel Drive Multicoupler

17. Push latch (B) to unlock platform (A).
18. Push the platform towards the cab until it stops and the latch engages.

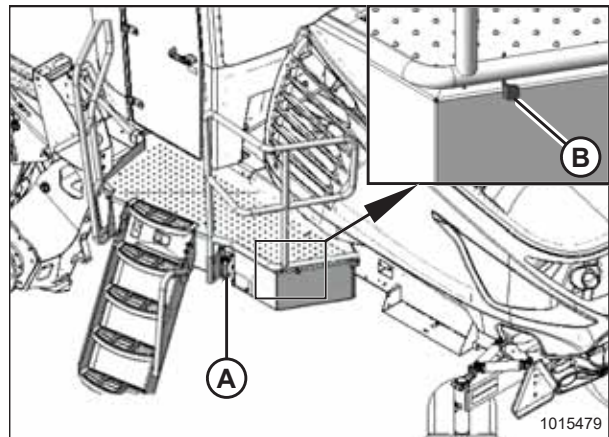


Figure 4.111: Platform

19. Ensure hydraulic hose routing is as straight as possible and avoids potential rub/wear points.

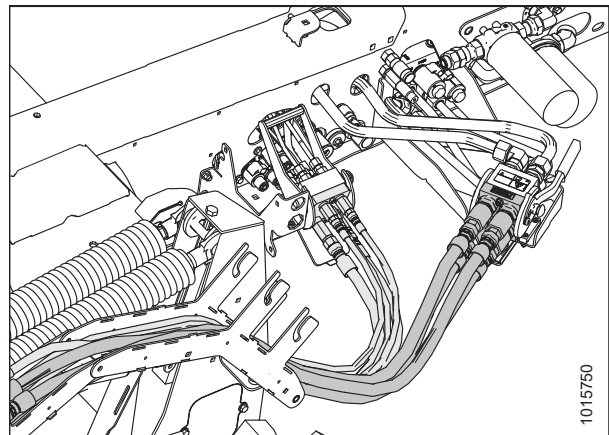


Figure 4.112: Hydraulic Multicouplers and Hose Routing

4.5.3 R1 Series Rotary Disc Header

Attaching R1 Series Rotary Disc Header

The windrower may have an optional self-aligning hydraulic center-link that allows vertical position control of the center-link from the cab.

WARNING

To avoid bodily 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.

1. Shut down the engine, and remove the key from the ignition.
2. **Hydraulic Center-Link without Self-Alignment:** Remove pin (A) and raise center-link (B) until hook is above the attachment pin on header. Replace pin (A) to hold center-link in place.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

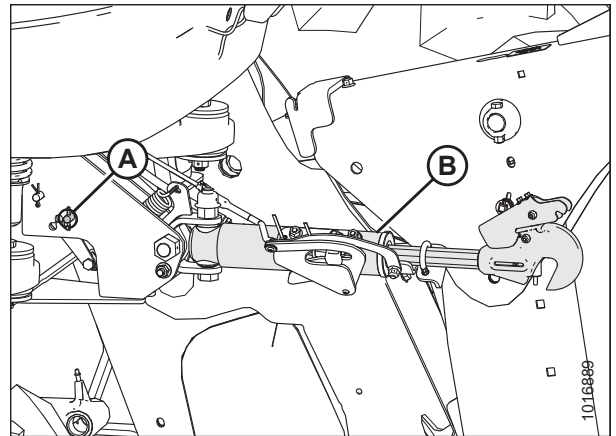


Figure 4.113: Hydraulic Center-Link

3. Remove hairpin (A) from clevis pin (B), and remove pin from header support (C) on both sides of the header.
4. Start the engine.

WARNING

Check to be sure all bystanders have cleared the area.

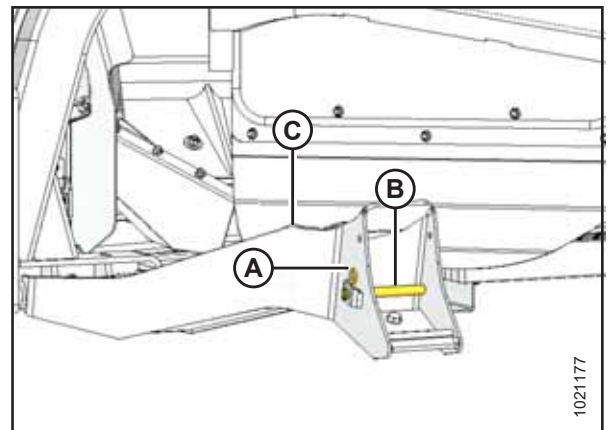


Figure 4.114: Header Support

⚠ CAUTION

When lowering header lift legs without a header or weight box attached to the windrower, ensure the float springs tension is fully released to prevent damage to the header lift linkages.

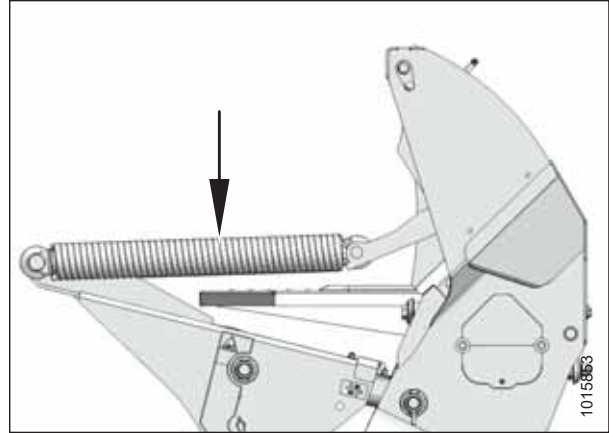


Figure 4.115: Header Float Spring

5. Press rotary scroll knob (A) on Harvest Performance Tracker (HPT) display to highlight QuickMenu options.
6. Rotate scroll knob (A) to highlight the HEADER FLOAT symbol (B), and press scroll knob to select. The header float adjust screen displays.



Figure 4.116: HPT Display

7. Press soft key 3 (A) to remove the header float.

NOTE:

If the header float is active, the icon at soft key 3 will display REMOVE FLOAT; if header float has been removed, the icon will display RESUME FLOAT.



Figure 4.117: HPT Display

PERFORMING PREDELIVERY CHECKS

8. Press HEADER DOWN switch (E) on ground speed lever (GSL) to fully retract header lift cylinders.
9. **Self-Aligning Hydraulic Center-Link:** Press REEL UP switch (B) on the GSL to raise the center-link until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

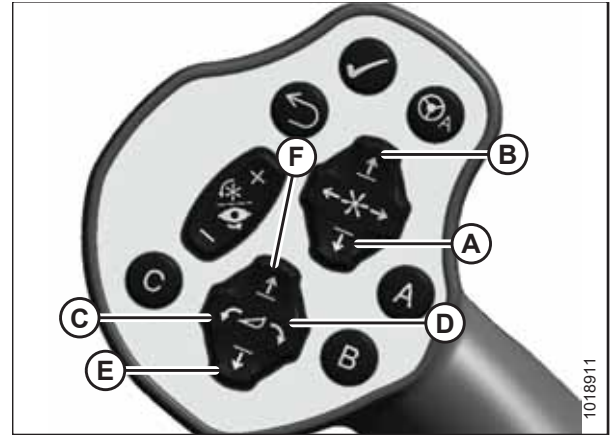


Figure 4.118: GSL

A - Reel Down
C - Header Tilt Down
E - Header Down

B - Reel Up
D - Header Tilt Up
F - Header Up

10. Drive the windrower slowly forward until feet (A) enter supports (B). Continue to drive slowly forward until feet engage the supports and header nudges forward.
11. Ensure feet (A) are properly engaged in supports (B).

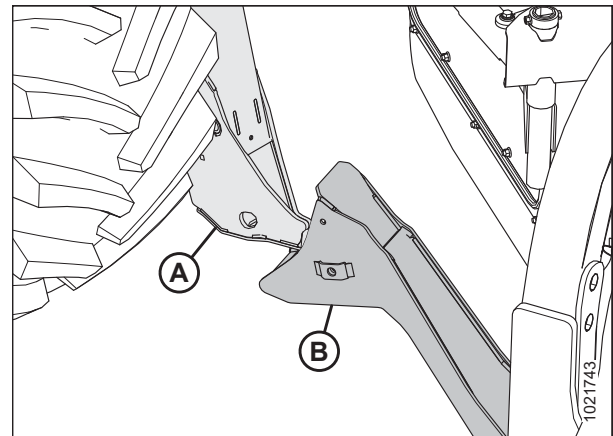


Figure 4.119: Header Support

12. Self-Aligning Hydraulic Center-Link:

- a. Adjust the position of center-link cylinder (A) with the switches on the GSL until hook (B) is above the header attachment pin.

IMPORTANT:

Hook release (C) must be down to enable the self-locking mechanism.

- b. If hook release (C) is open (up), shut down the engine, and remove the key from the ignition. Manually push hook release (C) down after the hook engages the header pin.
- c. Lower center-link (A) onto the header with REEL DOWN switch on the GSL until the center-link locks into position and hook release (C) is down.
- d. Check that center-link is locked onto header by pressing the REEL UP switch on the GSL.

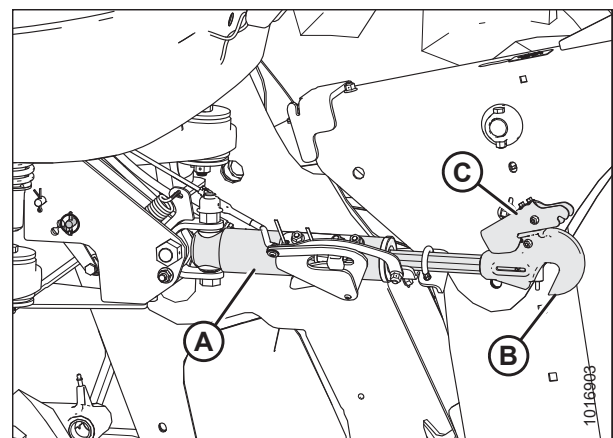


Figure 4.120: Hydraulic Center-Link

13. **Hydraulic Center-Link without Self-Alignment:**

- a. Press HEADER TILT UP or HEADER TILT DOWN cylinder switches on the GSL to extend or retract center-link cylinder until the hook is aligned with the header attachment pin.
- b. Shut down the engine, and remove the key from the ignition.
- c. Push down on rod end of link cylinder (B) until hook engages and locks onto header pin.

IMPORTANT:

Hook release must be down to enable self-locking mechanism. If the hook release is open (up), manually push it down after hook engages pin.

- d. Check that center-link (A) is locked onto header by pulling upward on rod end (B) of cylinder.



WARNING

Check to be sure all bystanders have cleared the area.

- e. Start the engine.

14. Press HEADER UP switch (A) to raise the header to maximum height.

NOTE:

If one end of the header does **NOT** fully raise, rephase the lift cylinders as follows:

- a. Press and hold HEADER UP switch (A) until both cylinders stop moving.
- b. Continue to hold the switch for 3–4 seconds. Cylinders are now phased.

15. Shut down the engine, and remove the key from the ignition.

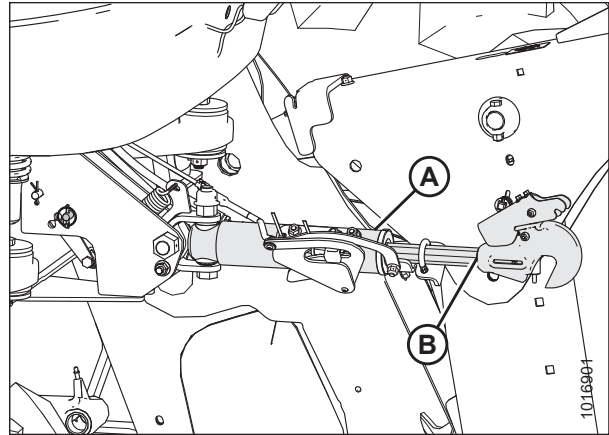


Figure 4.121: Hydraulic Center-Link



Figure 4.122: GSL

16. Engage the safety props on both lift cylinders as follows:

- a. Pull lever (A) toward you to release, and then rotate toward header to lower the safety prop onto the cylinder.
- b. Repeat for the opposite lift cylinder.

IMPORTANT:

Ensure the safety props engage over the cylinder piston rods. If the safety prop does **NOT** engage properly, raise the header until the safety prop fits over the rod.

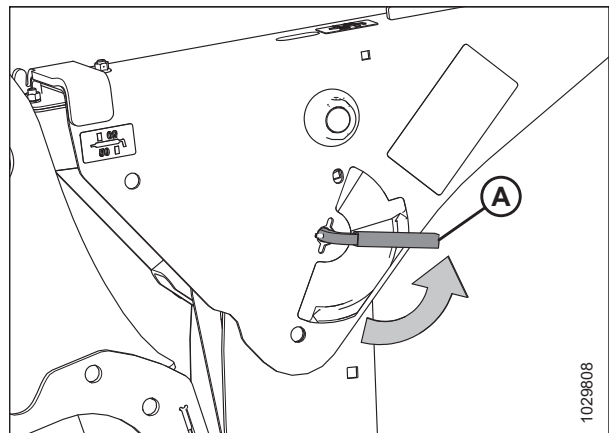


Figure 4.123: Safety Prop Lever

PERFORMING PREDELIVERY CHECKS

17. Install clevis pin (A) through support and windrower lift arm and secure with hairpin (B). Repeat for the opposite side of the header.

IMPORTANT:

Ensure clevis pin (A) is fully inserted, and hairpin is installed behind bracket.

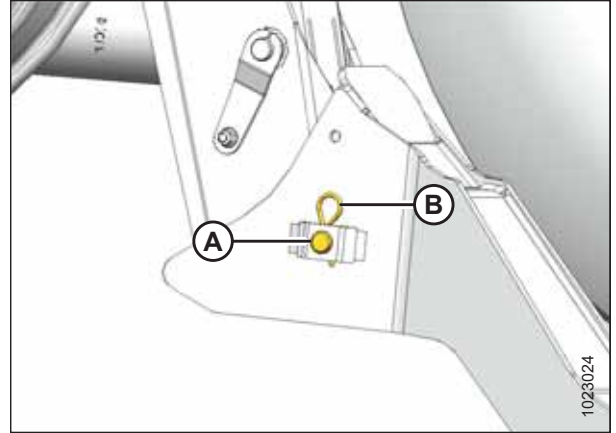


Figure 4.124: Header Support

18. Disengage the safety props on both lift cylinders as follows:

NOTE:

If the safety prop will **NOT** disengage, raise the header to release the prop.

- a. Turn lever (A) away from the header to raise the safety prop until the lever locks into the vertical position.
- b. Repeat for the opposite cylinder.

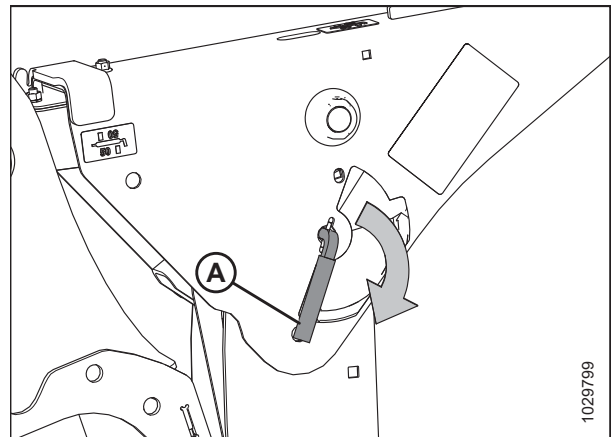


Figure 4.125: Safety Prop Lever

19. Start the engine and press HEADER DOWN switch (A) on GSL to fully lower header.
20. Shut down the engine, and remove the key from the ignition.

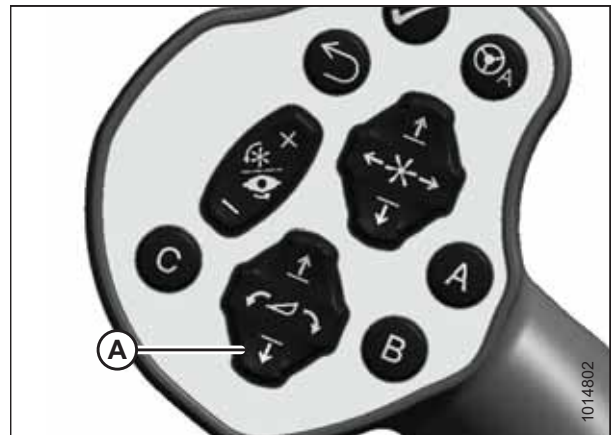


Figure 4.126: GSL

PERFORMING PREDELIVERY CHECKS

21. If not prompted by the HPT display to restore header float, restore header float manually by doing the following:
 - a. Press rotary scroll knob (A) on Harvest Performance Tracker (HPT) to highlight QuickMenu options.
 - b. Rotate scroll knob (A) to highlight HEADER FLOAT symbol (B), and press scroll knob to select. Screen changes.



Figure 4.127: HPT Display

22. Press soft key 3 (A) to restore the header float.

NOTE:

If the header float is active, the icon at soft key 3 will display REMOVE FLOAT; if header float has been removed, the icon will display RESUME FLOAT.

23. Shut down the engine, and remove the key from the ignition.



Figure 4.128: HPT Display

Connecting R1 Series Rotary Disc Header Hydraulics

IMPORTANT:

To prevent contamination of the hydraulic system, use a clean rag to remove dirt and moisture from all (fixed and movable) hydraulic couplers.

1. Approach platform/stair unit (A) on the left cab-forward side of the windrower and ensure the cab door is closed.
2. Push latch (B), and pull platform (A) toward the walking beam until it stops and the latch engages.
3. Open the platform.
4. Retrieve the hydraulic hoses from the header.

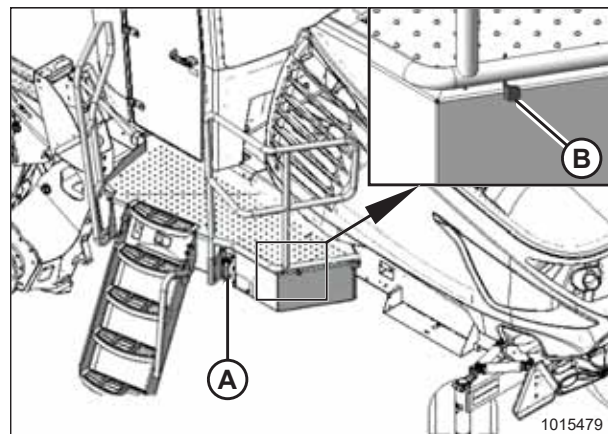


Figure 4.129: Left Cab-Forward Platform

PERFORMING PREDELIVERY CHECKS

5. Attach hose support (A) to the frame near the windrower left cab-forward leg, and route hoses under frame.

NOTE:

Route hydraulic hoses as straight as possible, and avoid rub/wear points that could cause damage.

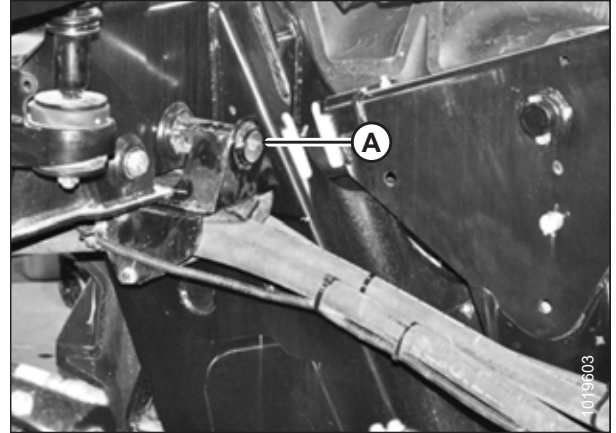


Figure 4.130: Hose Support Attachment

6. Disconnect male coupler (A) from pressure hose.
7. Disconnect female coupler and fitting (B) from return hose.

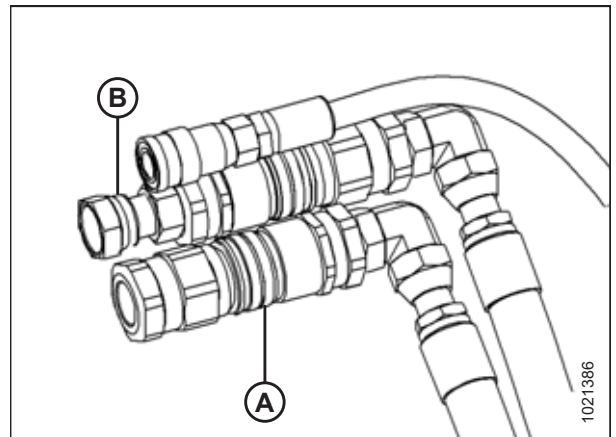


Figure 4.131: Hoses from Header

8. Remove coupling and cap (A) and plug (B) from fittings on windrower.

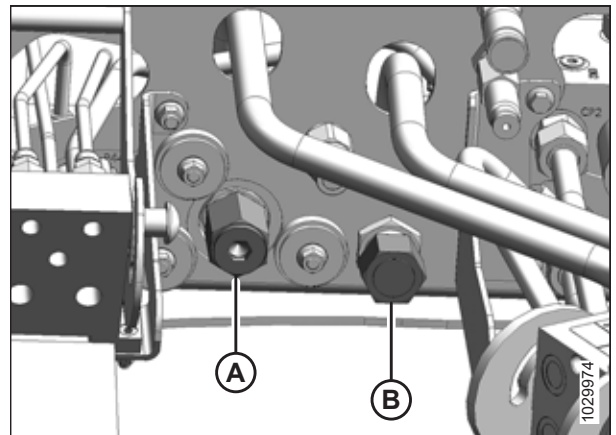


Figure 4.132: Windrower Hydraulics

PERFORMING PREDELIVERY CHECKS

9. Install male coupler onto pressure fitting (A), and female coupler onto return fitting (B) on windrower.
10. Tighten couplers onto fittings.

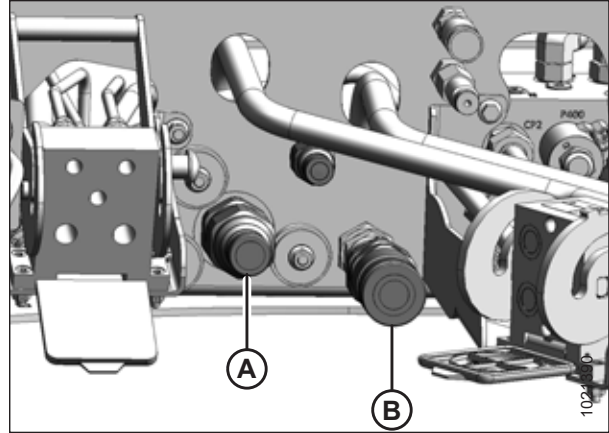


Figure 4.133: Couplers

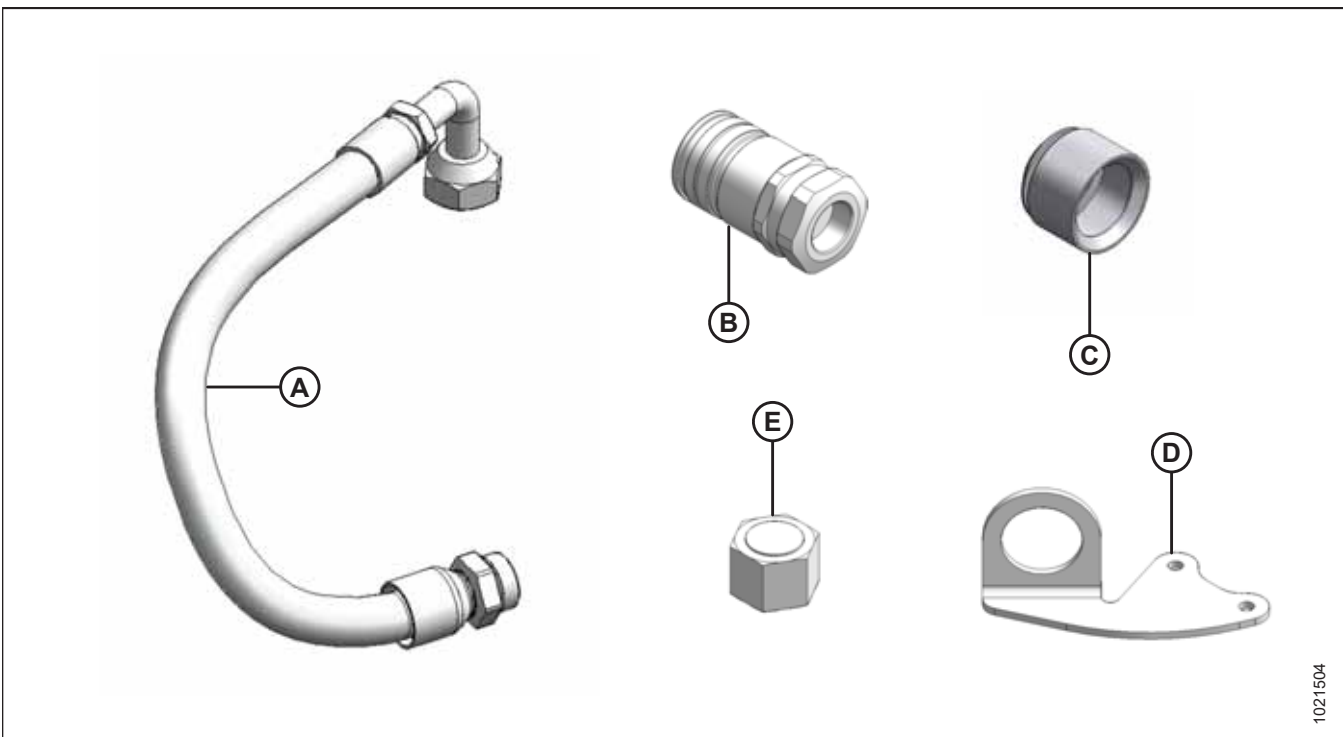


Figure 4.134: Hydraulic Drive Parts

A - MD #253785, Hose, Hyd, Knife Pressure (1)
D - MD #253783, Bracket, Coupler Holder (1)

B - MD #136413, Fitting, Coupling, Female (1)
E - MD #135718, Cap, Hyd, SAE-16 ORFS (1)

C - MD #243604, Cap, Harness (1)

11. Retrieve the parts shown in Figure 4.134, page 100 from the bag located inside left header support.

PERFORMING PREDELIVERY CHECKS

12. Connect female coupler (B) to hose (A).

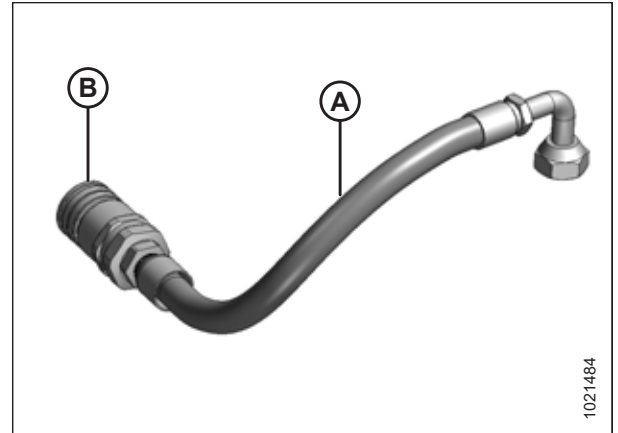


Figure 4.135: Knife Pressure Hose

13. Disconnect steel line (A) from elbow (B) and tee (C) (inside frame) and remove line. Discard line.

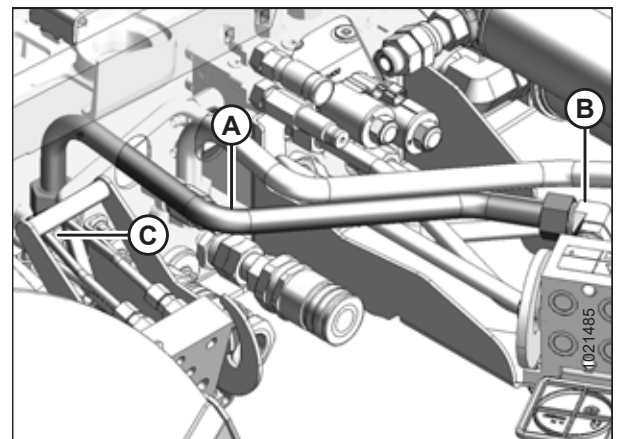


Figure 4.136: Windrower Couplers

14. Install cap (A) on tee.
15. Reposition elbow (B) as shown.

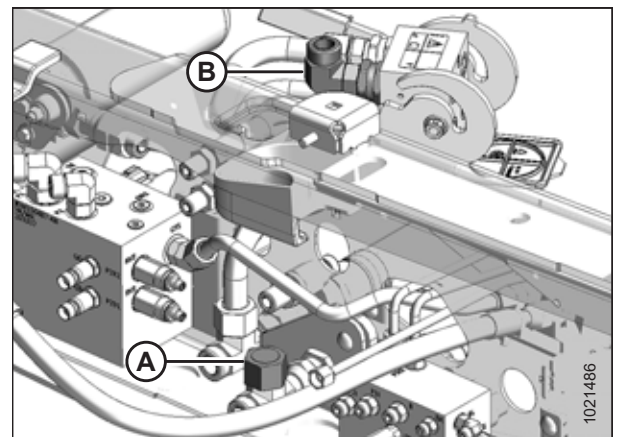


Figure 4.137: Windrower Header Drive

PERFORMING PREDELIVERY CHECKS

16. Remove two existing nuts (A) securing multicoupler to bracket (B).
17. Position new bracket (C) onto existing bolts and secure with existing nuts (A).
18. Install rubber coupler holder (D) into bracket (C).

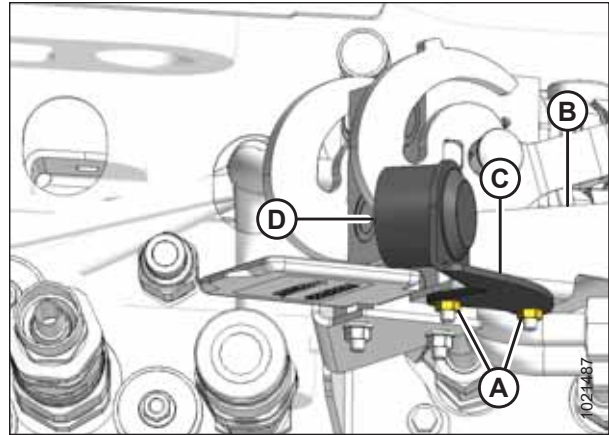


Figure 4.138: Windrower Couplers

19. Connect fitting (A) on knife pressure hose to elbow fitting (B).
20. Place female coupler (C) on knife pressure hose into holder (D).

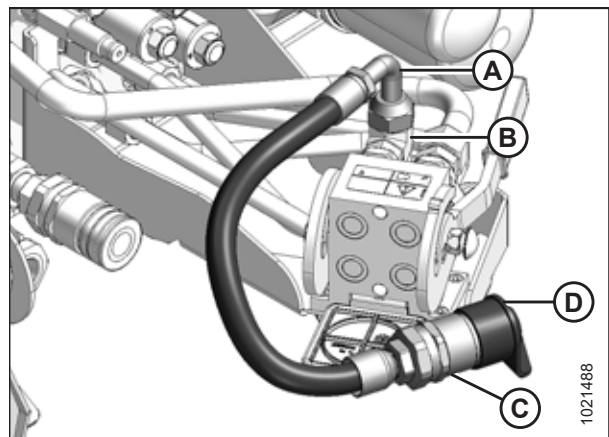


Figure 4.139: Windrower Coupler

PERFORMING PREDELIVERY CHECKS

If switching from an auger/draper header to a rotary header:

21. Disconnect hose (A) from knife pressure receptacle (C) on frame, and move to storage location (B).

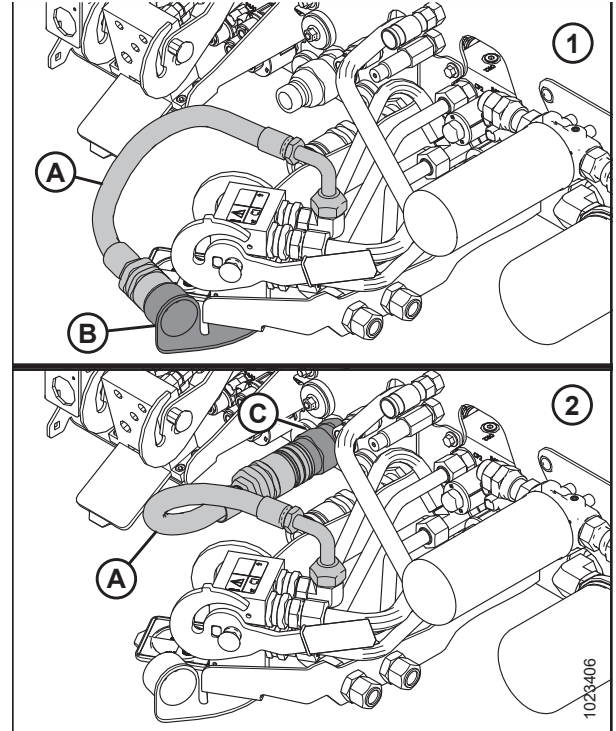


Figure 4.140: Knife Pressure Hose Positions

- 1 - Knife Pressure Hose in Storage Position – Rotary Configuration
- 2 - Hose to Knife Pressure Receptacle – Auger/Draper Configuration

22. Attach couplers to receptacles on windrower as follows:
 - a. Connect pressure hose female coupler to receptacle (A)
 - b. Connect return hose male coupler to receptacle (B)
 - c. Connect case drain hose coupler to receptacle (C)
 - d. Connect the electrical harness to receptacle (D)

IMPORTANT:

The hydraulic hoses should have enough slack to pass by multicoupler (E) without coming into contact with it. This will protect the hoses from rubbing against the multicoupler and becoming damaged. You can increase slack in the hoses by loosening and adjusting the hose holder on the front windrower leg, and pulling the hoses backward toward the windrower.

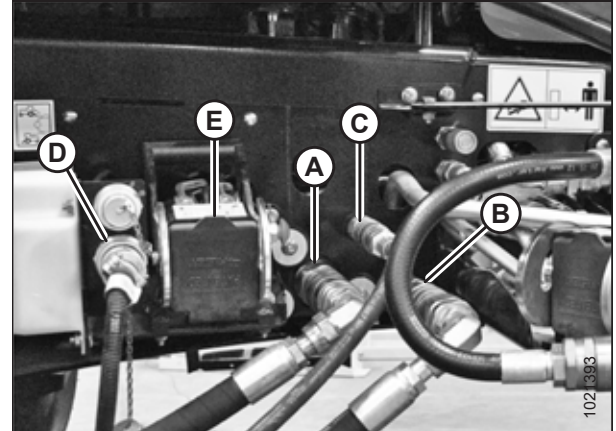


Figure 4.141: Hydraulic and Electrical Connections

PERFORMING PREDELIVERY CHECKS

23. Push latch (B) to unlock platform (A).

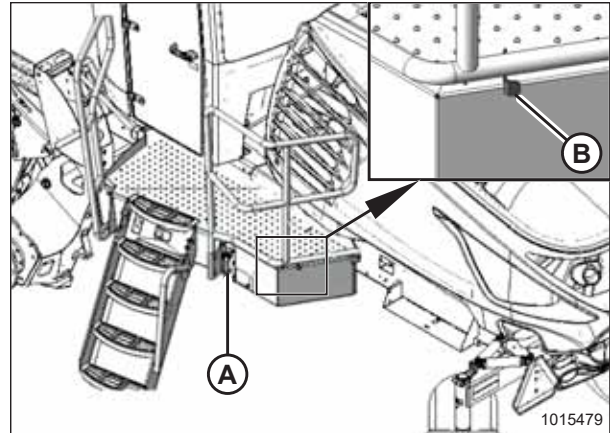


Figure 4.142: Left Cab-Forward Platform

24. Pull platform (A) towards the cab until it stops and latch engages.

25. Close the platform.

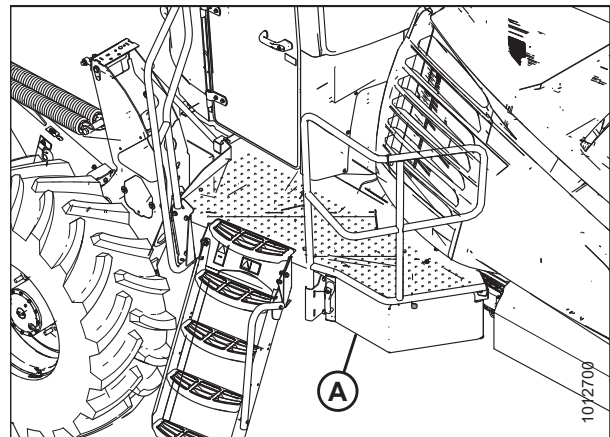


Figure 4.143: Left Cab-Forward Platform

4.6 Adjusting Header Settings on the Harvest Performance Tracker

Before operating the header, ensure the Harvest Performance Tracker (HPT) settings are appropriate for your header.

1. Navigate to SETTINGS menu with soft key 5 and HPT scroll knob. For instructions, refer to [Navigating the Harvest Performance Tracker, page 60](#) if required.

2. Scroll to SET-UP HEADER option (A) and press the scroll knob to select it.

NOTE:

Settings vary depending on the header type.

3. Scroll to highlight appropriate option and press the scroll knob to select it.

For example, if a draper header is attached, and ATTACHMENTS (B) is selected, the available choice is DOUBLE DRAPER DRIVE.

4. After completing the SETTINGS, proceed to [4.7 Calibrating the Header Systems, page 106](#), and [4.7.1 Calibrating the Knife Drive on the Harvest Performance Tracker Display, page 106](#).

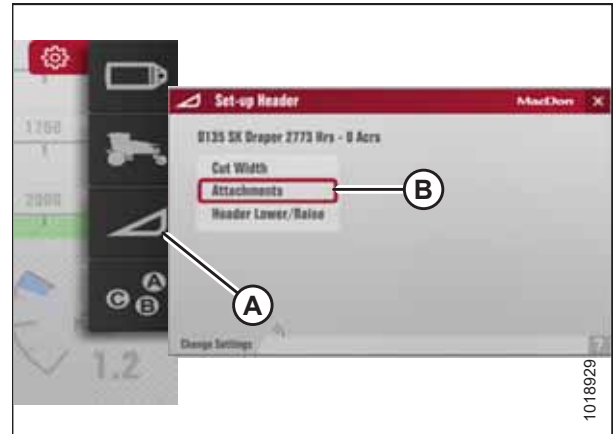


Figure 4.144: Header Settings

4.7 Calibrating the Header Systems

The Harvest Performance Tracker (HPT) recognizes when a header 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
- Knife Drive

Re-calibration is required if the HPT is replaced, a position sensor is replaced, sensor readouts are erratic, pump has been replaced or a new header type or attachment is connected to the windrower.

Refer to following topics for calibrating various header systems;

- [4.7.1 Calibrating the Knife Drive on the Harvest Performance Tracker Display, page 106](#)
- [4.7.2 Calibrating Header Position Sensors on the Harvest Performance Tracker Display, page 109](#)

4.7.1 Calibrating the Knife Drive on the Harvest Performance Tracker Display

When a header is attached to a Windrower, the Harvest Performance Tracker (HPT) will recognize the header ID and configure the windrower accordingly. The header must be calibrated to ensure that the knife drive pump output is accurate.



CAUTION

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

1. Start the engine.
2. Press soft key 5 (A) to open the Harvest Performance Tracker (HPT) main menu.

NOTE:

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

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

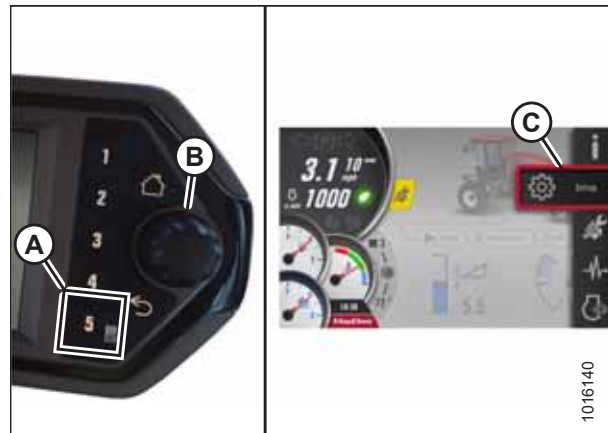


Figure 4.145: Opening the Main Menu

PERFORMING PREDELIVERY CHECKS

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.

NOTE:

The F3 shortcut button on the operator's console will also open the WINDROWER SETTINGS menu.

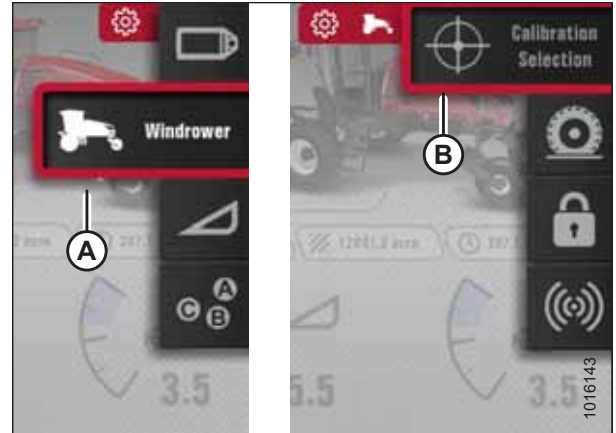


Figure 4.146: Windrower Settings Icon and Calibration Submenu Icon

7. In the Calibration Selection screen, scroll to Knife Drive (A) and press SELECT.
8. Engage the header.

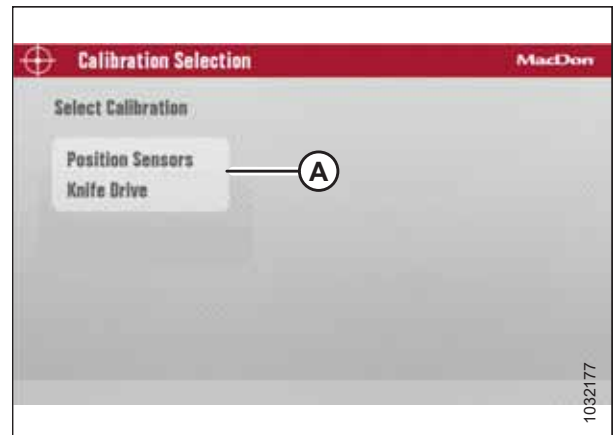


Figure 4.147: Calibration Selection Screen

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.

9. 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 4.148: Calibration Screen

PERFORMING PREDELIVERY CHECKS

- When Stage 1 of the calibration is complete, press PLAY icon (A) on the screen to continue with Stage 2 of the calibration process.

NOTE:

Knife drive calibration is completed in nine stages.



Figure 4.149: Calibration Page

- Press the PLAY icon to begin the calibration process.

NOTE:

During the calibration sequence, the engine rpm and header speed will increase and decrease multiple times.

NOTE:

Press the X icon (A) on the screen or use the HEADER DISENGAGE switch at any time during the calibration process to exit calibration without saving. The engine speed will return to the original rpm prior to starting the calibration process.

NOTE:

If an error message appears when calibrating the knife drive system, check the following items;

- Confirm the engine and hydraulics are at operating temperature
- Confirm the hydraulic system is free of any restrictions and is in working order
- Confirm the throttle is working:
 - Check engine codes to confirm engine is not derated or throttle inhibited
 - Throttle is controlled over the powertrain CAN network. Check the powertrain CAN network wiring and connectors for open or intermittent connection
- Confirm sensor mounting is fastened properly and sensor gap meets specification
- Check sensor wiring and connectors for intermittent connection
- Replace sensor



Figure 4.150: Calibration Page

4.7.2 Calibrating Header Position Sensors on the Harvest Performance Tracker Display

CAUTION

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

1. Start the engine.
2. Press soft key 5 (A) to open the Harvest Performance Tracker (HPT) main menu.

NOTE:

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

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

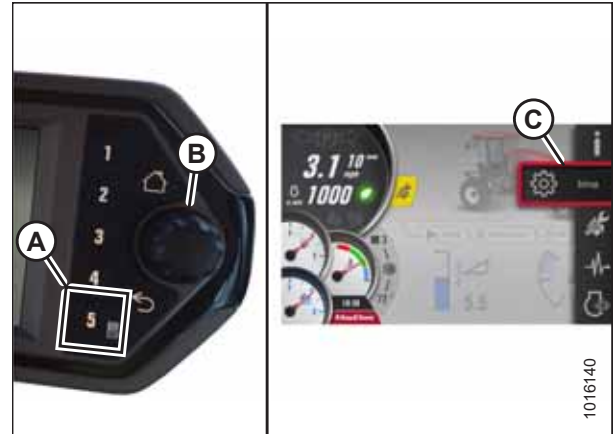


Figure 4.151: Opening the Main Menu

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.

NOTE:

The F3 shortcut button on the operator's console will also open the WINDROWER SETTINGS menu.

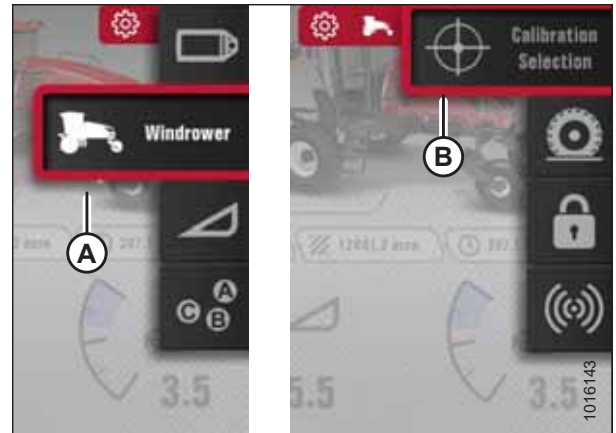


Figure 4.152: Windrower Settings Icon and Calibration Submenu Icon

PERFORMING PREDELIVERY CHECKS

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

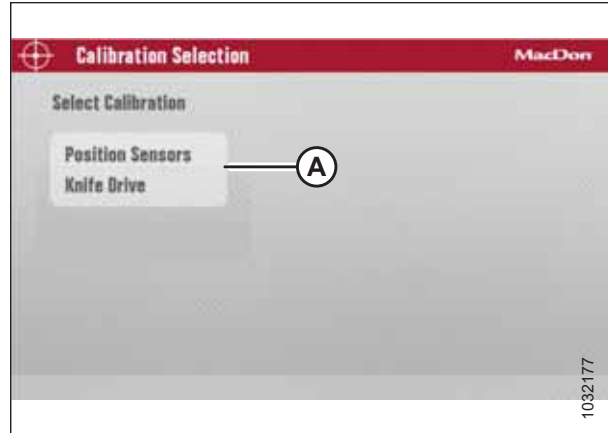


Figure 4.153: Calibration Selection Screen

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 4.154: Calibration Screen

8. 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 4.155: Calibration Screen

PERFORMING PREDELIVERY CHECKS

- 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 4.156: Calibration Screen

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 4.157: Sample of Failed Calibration Display Message

Chapter 5: Reference

5.1 Lubricants, Fluids, and System Capacities



WARNING

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

Table 5.1 System Capacities

Lubricant/Fluid	Location	Description	Capacity
Diesel exhaust fluid (DEF)	Diesel exhaust fluid tank	Must meet ISO 22241 requirements.	28 liters (7.5 U.S. gallons)
Grease	As required unless otherwise specified	SAE multi-purpose high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified
Diesel fuel	Fuel tank	Ultra low sulphur diesel (ULSD) Grade No. 2, or ULSD Grade No. 1 and 2 mix ² ; refer to 5.2 Fuel Specifications, page 115 for more information	518 liters (137 U.S. gallons)
Hydraulic oil	Hydraulic reservoir	Single grade transmission/hydraulic fluid (THF) Recommend Viscosity: <ul style="list-style-type: none"> 60.1 cSt @ 40°C 9.5 cSt @ 100°C Recommended brands: <ul style="list-style-type: none"> AGCO Power Fluid 821XL Case HY-TRAN ULTRACTION John Deere Hy-Gard J20C Petro-Canada DURATRAN 	60 liters (15.8 U.S. gallons) ³
Gear lubricant	Gearbox	SAE 75W-140 or 80W-140, API service class GL-5 fully synthetic gear lubricant (SAE J2360 preferred)	2.3 liters (2.4 U.S. quarts)
Gear lubricant	Standard Wheel drive	SAE 75W-140 or 80W-140, API service class GL-5 fully synthetic gear lubricant (SAE J2360 preferred)	1.4 liters (1.5 U.S. quarts)
Gear lubricant	High Torque Wheel drive	SAE 85W-140, API service class GL-5 fully synthetic gear lubricant	4.5 liters (4.8 U.S. quarts)
Antifreeze	Engine cooling system	ASTM D-6210 and Fleetguard ES Compleat®	31 liters (8.2 U.S. gallons)
Engine oil	Engine oil pan	SAE 15W-40 compliant with SAE specs for API Class SJ and CJ-4 engine oil	11 liters (11.6 U.S. quarts)
Air conditioning refrigerant	Air conditioning system	R134A	2.38 kg (5.25 lb.)

2. Optional when operating temperature is below 0°C (32°F).

3. Denotes capacity of a dry system. Refill capacity is 58 liters (15 U.S. gallons).

REFERENCE

Table 5.1 System Capacities (continued)

Lubricant/Fluid	Location	Description	Capacity
Air conditioning refrigerant oil	Air conditioning system total capacity	PAG SP-15	240 cc (8.1 fl. oz.)
Windshield washer fluid	Windshield washer fluid tank	SAE J942 compliant	4 liters (1 U.S. gallon)

If Fleetguard ES Compleat® is unavailable, use a coolant concentrate or prediluted coolant intended for use with heavy duty diesel engines and with a minimum of the following chemical and physical properties:

- Provides cylinder cavitation protection according to fleet study run at or above 60% load capacity.
- Protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion.

The additive package must be part of one of the following coolant mixtures:

- Ethylene glycol or propylene glycol base prediluted (40–60%) heavy duty coolant.
- Ethylene glycol or propylene glycol base heavy duty coolant concentrate in a 40–60% mixture of concentrate with quality water.

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

IMPORTANT:

Do **NOT** use cooling system sealing additives or antifreeze that contains sealing additives.

5.2 Fuel Specifications

Use only ultra low sulphur diesel (ULSD) from a reputable supplier. For most year-round service, No. 2 ULSD fuel meeting ASTM specification D975 Grade S15 will provide good performance.

Table 5.2 Fuel Specifications

Fuel	Specification	Sulphur (by weight)	Water and Sediment (by volume)	Cetane No. °C (°F)	Lubricity
ULSD Grade No. 2	ASTM D975	0.5% maximum	0.05% maximum	40 (104) minimum	520 Microns
ULSD Grade No. 1 and 2 mix ⁴	n/a	1% maximum 0.5% maximum preferred	0.1% maximum	45–55 (113–130) cold weather / high altitude	460 Microns

In extreme situations, when available fuels are of poor quality or problems exist which are particular to certain operations, additives can be used; however, the engine manufacturer recommends consultation with the fuel supplier or engine manufacturer before using fuel additives. Situations where additives are useful include:

- A cetane improver additive can be used with low cetane fuels.
- A wax crystal modifier can help with fuels with high cold filter plugging points (CFPP).
- An anti-icer can help prevent ice formation in wet fuel during cold weather.
- An antioxidant or storage stability additive can help with fuel system deposits and poor storage stability.
- Diesel fuel conditioner can be used to increase the lubricity of fuels so that they meet the requirements given in Table 5.2, page 115.

4. Optional when operating temperature is below 0°C (32°F) .

5.3 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).

5.3.1 Metric Bolt Specifications

Table 5.3 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

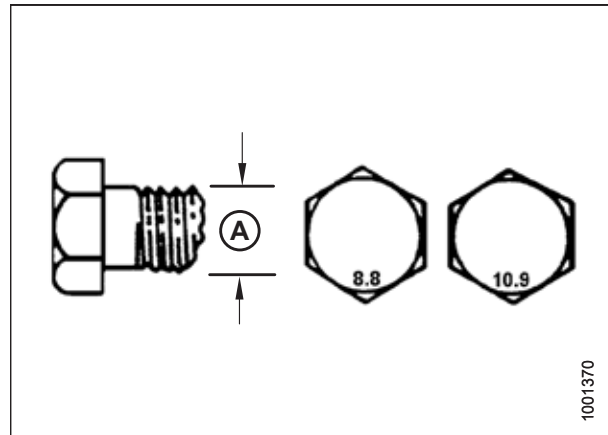


Figure 5.1: Bolt Grades

REFERENCE

Table 5.4 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

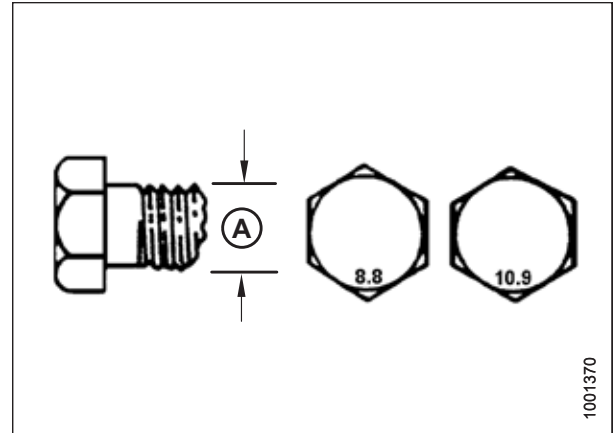


Figure 5.2: Bolt Grades

Table 5.5 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

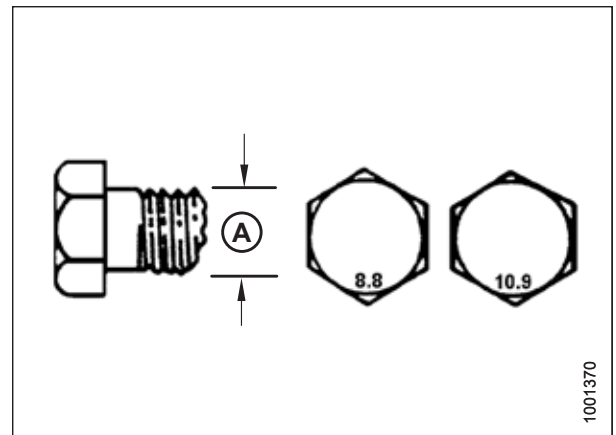


Figure 5.3: Bolt Grades

REFERENCE

Table 5.6 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

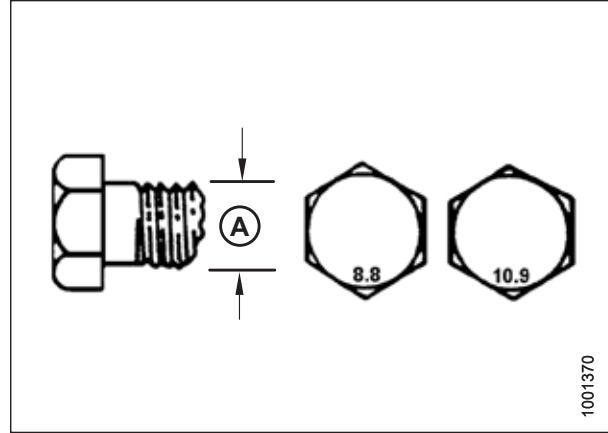


Figure 5.4: Bolt Grades

5.3.2 Metric Bolt Specifications Bolting into Cast Aluminum

Table 5.7 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	—	—	—	—

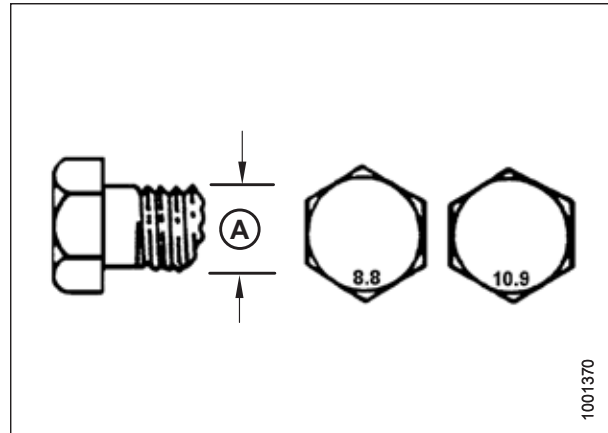


Figure 5.5: Bolt Grades

5.3.3 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).

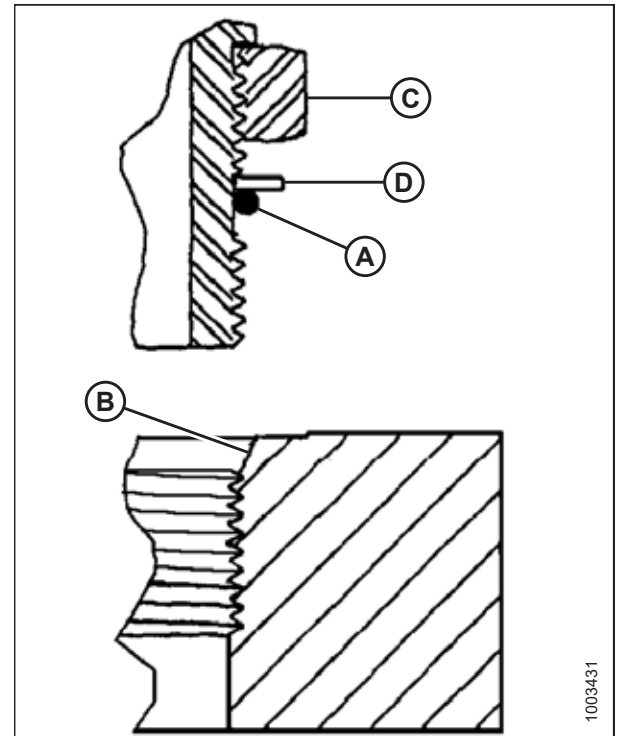


Figure 5.6: Hydraulic Fitting

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.

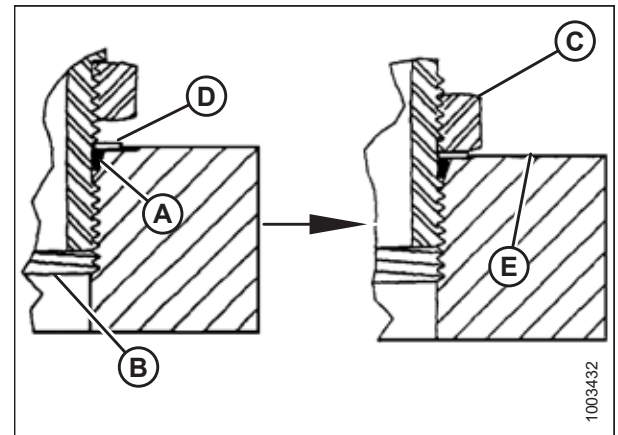


Figure 5.7: Hydraulic Fitting

REFERENCE

Table 5.8 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ⁵	
		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

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

5.3.4 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 5.9, page 121.
6. Check final condition of fitting.

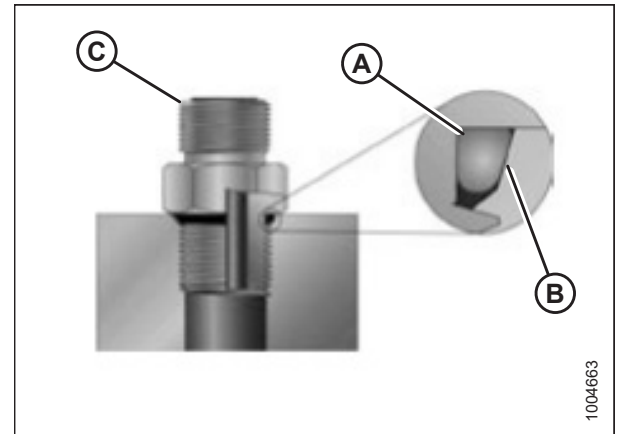


Figure 5.8: Hydraulic Fitting

Table 5.9 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

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

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

5.3.5 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 5.9: 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 5.10, page 122.

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.

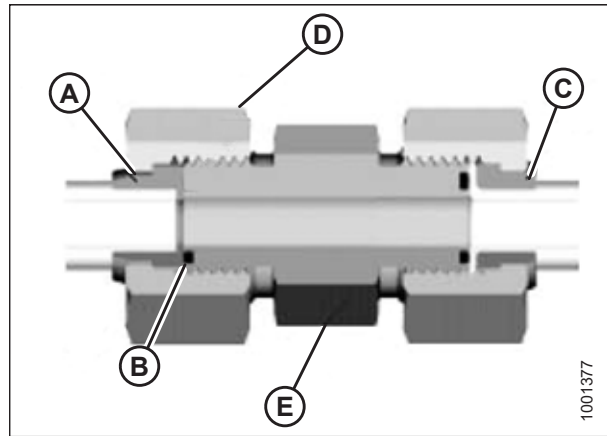


Figure 5.10: Hydraulic Fitting

Table 5.10 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

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

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

REFERENCE

Table 5.10 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁹	
			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

5.3.6 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 5.11, page 123. 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 5.11 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

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

5.4 Conversion Chart

Table 5.12 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.

5.5 Definitions

The following terms and acronyms may be used in this instruction:

Term	Definition
A Series header	MacDon A40D, A40DX, and Grass Seed auger headers
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Cab-forward	Windrower operation with Operator and cab facing in direction of travel
Center-link	A hydraulic cylinder link between the header and machine used to change header angle
CGVW	Combined gross vehicle weight
D1X Series Header	MacDon D115X, D120X, and D125X rigid draper headers for M1 Series Windrowers
D1XL Series Header	MacDon D130XL, D135XL, D140XL, and D145XL rigid draper headers for M1 Series Windrowers
DDD	Double-draper drive
DEF	Diesel exhaust fluid; also called AdBlue in Europe, and AUS 32 in Australia
DEF Supply Module	Pump that supplies diesel exhaust fluid through system
DM	Dosing module
DK	Double knife
DKD	Double-knife drive
DOC	Diesel oxidation catalyst
DRT	Aftertreatment decomposition tube
DWA	Double Windrow Attachment
ECM	Engine control module
EEC	Eco engine control
Engine-forward	Windrower operation with Operator and engine facing in direction of travel
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose
GSL	Ground speed lever
GSS	Grass Seed
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header	A machine that cuts and lays crop into a windrow and is attached to a windrower
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in head (internal-wrenching hexagon drive); also known as an Allen key and various other synonyms
HDS	Hydraulic deck shift

REFERENCE

Term	Definition
hp	Horsepower
HPT display	Harvest Performance Tracker display module on an M1 Series Windrower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)
MDS	Mechanical deck shift
M1 Series	MacDon M1170 and M1240 Windrowers
n/a	Not applicable
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
PARK	The slot opposite the NEUTRAL position on operator's console of M1 Series windrowers
R1 SP Series	MacDon R113 and R116 Rotary Disc Headers for windrowers
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
SCR	Selective catalytic reduction
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part
SDD	Single-drawer drive
SK	Single knife
SKD	Single-knife drive
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lb·ft)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
ULSD	Ultra-low sulphur diesel

REFERENCE

Term	Definition
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or locking mechanism
Windrower	Power unit for a header
WOT	Wide open throttle

Predelivery Checklist

Perform these checks and adjustments prior to delivery to your Customer. Complete this checklist and provide it to the Dealer or the Operator.



CAUTION

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

Windrower Serial Number:

Engine Serial Number:

M1170 Windrower Predelivery Checklist

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque.	5 Reference, page 113
	Check tire air pressures and adjust as required.	4.1.12 Checking Tire Pressures, page 49
	Check wheel drive hub lubricant level.	4.1.14 Checking and Adding Wheel Drive Lubricant, page 56
	Check engine coolant level and strength at pressurized coolant tank.	4.1.7 Checking Engine Coolant Level, page 46
	Check air cleaner and clamps.	4.1.3 Checking Engine Air Intake, page 43
	Check engine oil level and check for leaks.	4.1.4 Checking and Adding Engine Oil, page 43
	Check hydraulic oil level and check for leaks along lines.	4.1.5 Checking and Adding Hydraulic Oil, page 44
	Check fuel separator for water and foreign material, drain and clean as necessary, and add fuel.	4.1.6 Checking Fuel Separator, page 45
	Check gearbox lubricant level.	4.1.8 Checking Engine Gearbox Lubricant Level and Adding Lubricant, page 46
	Check tension of A/C compressor belt.	4.1.9 Checking Air Conditioning Compressor Belts, page 47
	Check that machine is completely lubricated.	3.12.2 Lubrication Points, page 38
	Check Operator's Presence System.	4.1.10 Checking Operating Safety System, page 48
	Check horn operation.	4.2.6 Checking Horn, page 68
	Start engine and run to operating temperature.	4.1.13 Starting the Engine, page 52
	Check HPT, fuel, and diesel exhaust fluid (DEF) gauges for operation.	4.2.2 Checking Harvest Performance Tracker Display, page 59
	Check engine speed on HPT.	4.2.3 Checking Engine Speed, page 63
	Ensure selective catalytic reduction (SCR) conditioning inhibit is off.	4.2.4 Checking Selective Catalytic Regeneration Conditioning Mode, page 64
	Check that air conditioning and heater are functioning properly.	4.2.8 Checking Climate Controls, page 69
	Check that interior lights are functioning properly.	4.2.7 Checking Interior Lights, page 69

REFERENCE

✓	Item	Reference
	Check that exterior lights are functioning properly.	4.2.5 Checking Exterior Lights, page 65
	Check that hazard and signal lights are functioning properly.	4.2.5 Checking Exterior Lights, page 65
	Check that beacons are functioning properly (if installed).	4.2.5 Checking Exterior Lights, page 65
	Complete the header's Predelivery Checklist (if applicable).	—
	Check that manuals are in the windrower manual case.	4.3 Checking Manuals, page 72
	Remove plastic coverings and windshield decal from cab interior.	4.4 Performing Final Steps, page 73

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

CUSTOMERS**MacDon.com****DEALERS****Portal.MacDon.com**

Trademarks of products are the marks of their
respective manufacturers and/or distributors.

Printed in Canada