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

Published: July 2018
Introduction

This manual contains unloading, assembly, and predelivery information for the MacDon M1170 Windrower, which 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®, meaning that the windrower can be driven in the cab-forward or the 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).
### List of Revisions

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

<table>
<thead>
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<tr>
<td>Added caution statement: “Engine exhaust gases become very hot during operation and can burn people and common materials. Stay clear of the rear machine and avoid exhaust gases when engine is running.”</td>
<td>1.6 Engine Safety, page 11</td>
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<td>Added caution statement: “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.”</td>
<td>1.6.1 High-Pressure Rail, page 11</td>
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<td>Added topic.</td>
<td>3.10 Replacing Speed Identification Symbol (SIS) Decal (US Only), page 34</td>
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<td>Updated R113 and A40DX tire pressures. Added R116 and A40DX Grass Seed.</td>
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<td>4.1.12 Checking and Adding Wheel Drive Lubricant, page 59</td>
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<td>• Added reference to R1 hydraulic drive bundle (B6621).</td>
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<td>• Added step to connect knife pressure hose if switching from a rotary header.</td>
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<td>• Added illustration showing both rotary configuration and auger/draper configuration.</td>
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<td>• Added step to disconnect knife pressure hose.</td>
<td>4.7 Calibrating the Windrower and Header, page 108</td>
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<td>• Added swath compressor to list of sensors that may require calibration.</td>
<td>5.1 Lubricants, Fluids, and System Capacities, page 113</td>
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<td>• Revised note to say a sensor requires calibration if header or attachment is connected for the first time.</td>
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<td>• Revised note to say the header must be attached and engaged to calibrate the knife drive.</td>
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<td>Updated system capacities:</td>
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<td>• DEF – 28 liters (7.5 US gallons)</td>
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<tr>
<td>• Diesel fuel – 518 liters (137 US gallons)</td>
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<tr>
<td>• Hydraulic oil – 60 liters (15.8 US gallons)</td>
<td></td>
</tr>
<tr>
<td>• AC refrigerant – 2.38 kg (5.25 lb.)</td>
<td></td>
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<td>Moved Starting the Engine and Checking and Adding Wheel Drive Lubricant to the end of the Predelivery Checks chapter.</td>
<td>• 4.1.11 Starting the Engine, page 55</td>
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<td></td>
<td>• 4.1.12 Checking and Adding Wheel Drive Lubricant, page 59</td>
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1 Safety

1.1 Signal Words

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

⚠️ DANGER

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

⚠️ WARNING

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

⚠️ CAUTION

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

⚠️ CAUTION

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for job at hand. Do NOT take chances. You may need the following:
  - Hard hat
  - Protective footwear with slip-resistant soles
  - Protective glasses or goggles
  - Heavy gloves
  - Wet weather gear
  - Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.
  - Provide a first aid kit for use in case of emergencies.
  - Keep a fire extinguisher on the machine. Be sure fire extinguisher is properly maintained. Be familiar with its proper use.
  - Keep young children away from machinery at all times.
  - Be aware that accidents often happen when Operator is tired or in a hurry. Take time to consider safest way. Never ignore warning signs of fatigue.
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.

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

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

WARNING

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

WARNING

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

**WARNING**

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

**WARNING**

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

**WARNING**

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

⚠️ WARNING

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.

- 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.
• Firewall extension module (A)
  Two connectors: P235 and P236
  Location: Behind cab, near header lift/fan manifold.
  To disconnect, use a small 3–6 mm (1/8–1/4 in.) blade screwdriver to insert into the connector’s locking tab. Gently pry upward (no more than 6 mm [1/4 in.]) to unlock the connector tab, and then pull the connector away from the module.

• Chassis extension module (A)
  Two connectors: P247 and P248
  Location: Under cab, inside left frame rail
  To disconnect, use a small 3–6 mm (1/8–1/4 in.) blade screwdriver to insert into the connector’s locking tab. Gently pry upward (no more than 6 mm [1/4 in.]) to unlock the connector tab, and then pull the connector away from the module.

• Engine Control Module (ECM)
  Two connectors for Cummins: P100 (A) and J1 Cummins Proprietary ECM Connector (B)
  Location: On engine
  To disconnect, pull the rubber boot off the cover, unlock the latch, and undo the main over-center latch. Remove strain relief bolts (C) so the connectors can be pulled away from the ECM.

  **IMPORTANT:**
  Be sure to disconnect both connectors. Note connector locations.

  **IMPORTANT:**
  Be sure to reconnect connectors in the proper locations. Do **NOT** cross connect.
NOTE:
To disconnect the remaining circular Deutsch connectors, rotate outer collar counterclockwise.

- Cab connectors (A)
  Two round connectors: C1 and C2
  Location: Under cab

- Roof connectors (A)
  Four connectors: C10, C12, C13, and C14
  Location: Under cab at base of left cab post

- Chassis relay module (A)
  Three connectors: P240, P241, and P242
  Location: Outside left frame rail near batteries
• Engine harness (A)
  Two round connectors: C30 and C31
  Location: Inside left frame rail, at rear of windrower

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

• 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 connector with receptacle before attempting to reconnect.

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 to 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 in order to stop an overspeed. This may be accomplished by shutting off the air and/or fuel supply to the engine.
• Do NOT bypass or disable automatic shutoff circuits. The circuits are provided in order to help prevent personal injury. The circuits are also provided in order to help prevent engine damage. Refer to the technical manual for repairs and adjustments.
• Inspect the engine for potential hazards.
• Before starting the engine, ensure that no one is on, underneath, or close to the engine. Ensure that people clear the area.
• All protective guards and all protective covers must be installed if the engine must be started in order to perform service procedures.
• To help prevent an accident that is caused by parts in rotation, work around parts carefully.
• If a warning tag is attached to engine start switch or to controls, do NOT start engine or move controls. Consult with person who attached warning tag before engine is started.
• Start engine from operator’s compartment. Always start engine according to procedure that is described in Starting Engine section of operator’s manual. Knowing correct procedure will help to prevent major damage to engine components and prevent personal injury.
• To ensure that the jacket water heater (if equipped) and/or 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 the engine and operate the engine in a well-ventilated area. If the engine is started in an enclosed area, vent the engine exhaust to the outside.
• 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:
The engine may be equipped with a device for cold starting. If the engine will be operated in very cold conditions, then an additional cold starting aid may be required.

1.6.1 High-Pressure Rail

CAUTION
• Contact with high-pressure fuel may cause fluid penetration and burn hazards. High-pressure fuel spray may cause a fire hazard. Failure to follow these instructions may cause personal injury or death.
• 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 can be dangerous and could result in personal injury or death and/or engine damage.

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

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

The following actions are available for engine monitoring control:

- Warning
- Derate
- Shut down

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

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

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

Figure 1.23: Operator’s Manual Decal
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

<table>
<thead>
<tr>
<th>Requirement</th>
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<tr>
<td>Minimum Capacity</td>
<td>7037 kg (15,500 lb.)</td>
</tr>
<tr>
<td>Minimum Fork Length</td>
<td>198.1 cm (78 in.)</td>
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</table>

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 forklift tines 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 windrower is clear of the trailer deck.
5. Back forklift slowly away from 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 windrower.
8. Check windrower for shipping damage, and check shipment for missing parts.
9. In case of shipping damage or missing parts, confirm that serial number matches shipping manifest, then contact MacDon immediately with any damage or shortage claims.

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

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).

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Figure 3.1: Left Step – Shipping Position

Figure 3.2: Left Step – Working Position
6. Retrieve bag containing drive wheel nuts from the storage compartment (A) behind the training seat.
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 the toolbox (A).

3. Remove banding and blocking (A) securing walking beam to frame.

4. Retrieve caster wheel assemblies from shipment.

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.
7. Attach a sling (B) to caster assembly (A).

8. Retrieve two washers (C) from the toolbox and place them on the caster wheel spindle (D).

9. If caster assembly is on a pallet, remove banding and shipping material securing the assembly (A) to pallet.

10. Attach the sling (A) on the 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).

12. Install the flat washer (A) onto the spindle.

13. Install key (B) and arm (C) onto spindle, ensuring that arm is positioned so there is no clearance at the top and bottom of the walking beam extension.


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 20 to 16, page 20 for second caster assembly.
3.3 Installing Drive Wheels

**IMPORTANT:**
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 windrower frame.

2. Clean mounting surface on wheel drive and rim.

---

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

3. Position pallet jack (A) or equivalent under tire and raise slightly.

4. Locate drive wheel against the wheel drive hub so air valve (B) is on the outside and the tire tread (C) points forward with the windrower in cab-forward orientation.

**NOTE:**
For turf tires (diamond tread pattern), be sure arrow on sidewall points in forward rotation with windrower in cab-forward.

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Figure 3.10: Supporting Windrower

Figure 3.11: Drive Wheel
5. Position wheel to line up holes in rim with studs on hub and push wheel onto 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 the wheel nuts.

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

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

8. Repeat tightening sequence two additional times, ensuring the specified torque is achieved each time.

9. Lower jack and move away from work area.

10. Raise windrower, remove stand, and lower windrower to ground.

11. Repeat Steps 2, page 21 to 8, page 22 for the other drive wheel.

12. Repeat 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.

⚠️ CAUTION

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

1. Using a forklift, lift front of windrower. Place a stand (A) (or equivalent) to support front of windrower and to keep right wheel (B) off the ground.

2. Slowly lower windrower onto a stand (A).

3. Place a pallet jack (C) (or equivalent) under the right wheel (B), and raise pallet jack enough to take the weight off the right wheel.

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

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

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

8. Move leg outwards to expose one hole (A) in frame.
9. Align holes at pin locations and use the slide hammer (B) to reinstall pins (A). If necessary, adjust jack to prevent damage to the outer edges of the pins.

10. Secure pins with bolts (A), washers, and nuts. Torque nuts to 136 Nm (100 lbf-ft).

11. Lower pallet jack and move it from work area.

12. Support the windrower with forklift, remove stand, and lower windrower to ground.
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.

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.

4. If not done yet, remove banding and blocking (A) securing walking beam to frame.
5. Rotate the caster so the 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 bottom of beam. Do NOT tighten.

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.

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.
10. Repeat Steps 2, page 26 to 9, page 27 at opposite end of walking beam, ensuring that casters are spaced equally from center of windrower.

11. Lower windrower to ground.

Figure 3.26: 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 29.
   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).

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.

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 so that arm (D) is aligned with walking beam.
6. Attach rod ends of anti-shimmy dampeners to arm with M16 x 90 flange head bolt (A) and three hardened washers (B).

**NOTE:**
These 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 29 to 9, page 30 for opposite end of walking beam.

**IMPORTANT:**
Torque bolts after first 5 hours of operation, and then again after 10 hours.
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 shipping location on right platform, and remove packing materials (B) from step and railing.

2. Retrieve the three self-tapping bolts from a bag in the toolbox.

   **NOTE:**
   Use ignition key to unlock toolbox compartment.

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 3.31: Step in Shipping Position**

**Figure 3.32: 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 degrees from shipping position to working 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).
5. Repeat above steps for opposite mirror.
3.9 Installing Slow Moving Vehicle (SMV) Signs

To install the 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.

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.
3.10 Replacing Speed Identification Symbol (SIS) Decal (US Only)

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

1. Locate the existing 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 3.37: SIS Decal (US Only)
# 3.11 Installing Rear Ballast Package

When windrower operates 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 [4.1.10 Checking Tire Pressures, page 52](#) for proper tire pressures when operating with the applicable header.

**Table 3.1 Ballast Specifications**

<table>
<thead>
<tr>
<th>Header Type</th>
<th>Description</th>
<th>Installed Options</th>
<th>Base Kit</th>
<th>Additional Kits</th>
<th>Additional Float Springs</th>
</tr>
</thead>
<tbody>
<tr>
<td>D125X</td>
<td>7.6 m (25 ft.), single reel, double knife, timed</td>
<td>—</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D130XL</td>
<td>9.1 m (30 ft.), single reel, double knife, timed</td>
<td>Base</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D130XL</td>
<td>9.1 m (30 ft.), single reel, double knife, timed</td>
<td>Transport</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D130XL</td>
<td>9.1 m (30 ft.), single reel, double knife, timed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>1</td>
<td>0</td>
<td>B6047</td>
</tr>
<tr>
<td>D135XL</td>
<td>10.6 m (35 ft.), single reel, double knife, untimed</td>
<td>Base</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>D135XL</td>
<td>10.6 m (35 ft.), single reel, double knife, untimed</td>
<td>Transport</td>
<td>1</td>
<td>1</td>
<td>B6047</td>
</tr>
<tr>
<td>D135XL</td>
<td>10.6 m (35 ft.), single reel, double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>1</td>
<td>2</td>
<td>B6047</td>
</tr>
<tr>
<td>D135XL</td>
<td>10.6 m (35 ft.), double reel, double knife, untimed</td>
<td>Base</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>D135XL</td>
<td>10.6 m (35 ft.), double reel, double knife, untimed</td>
<td>Transport</td>
<td>1</td>
<td>1</td>
<td>B6047</td>
</tr>
<tr>
<td>D135XL</td>
<td>10.6 m (35 ft.), double reel, double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>1</td>
<td>2</td>
<td>B6047</td>
</tr>
<tr>
<td>D140XL</td>
<td>12.2 m (40 ft.), double reel, double knife, untimed</td>
<td>Base</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>D140XL</td>
<td>12.2 m (40 ft.), double reel, double knife, untimed</td>
<td>Transport</td>
<td>1</td>
<td>1</td>
<td>B6047</td>
</tr>
<tr>
<td>D140XL</td>
<td>12.2 m (40 ft.), double reel, double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>1</td>
<td>2</td>
<td>B6047</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double reel, double knife, untimed</td>
<td>Base</td>
<td>1</td>
<td>1</td>
<td>B6047</td>
</tr>
</tbody>
</table>
Table 3.1  Ballast Specifications (continued)

<table>
<thead>
<tr>
<th>Header Type</th>
<th>Description</th>
<th>Installed Options</th>
<th>Base Kit</th>
<th>Additional Kits</th>
<th>Additional Float Springs</th>
</tr>
</thead>
<tbody>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double reel, double knife, untimed</td>
<td>Transport</td>
<td>1</td>
<td>2</td>
<td>B6047</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double reel, double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>1</td>
<td>2</td>
<td>B6106</td>
</tr>
</tbody>
</table>

**NOTE:**
- Each kit consists of eight weights and weighs 163 kg (360 lb.).
- Ballast not required for A Series Auger Headers and R1 Series Disc Headers.

To install rear ballast, follow these steps:

**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. Refer to Table 3.1, page 35 to determine ballast to add to windrower.
2. Stop engine, and remove key.
3. Move latch (A) towards right cab-forward side of windrower.
4. Grasp louver (B), and lift hood to open.

![Figure 3.38: Engine Compartment Hood](image-url)
5. Remove eight hex flange bolts (A).

6. Slightly pull light bezel assembly (B), and disconnect plugs P215 (C) and P210 (D) from back of red tail/brake lights inside bezel.

7. Remove light bezel assembly (B).

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

**NOTE:**
- Retain center portion (A) of light bezel assembly for reinstallation when rear ballast are removed.
- Install six hex screws (B) on side bezels for safekeeping. These hex screws will be used when reinstalling center portion of light bezel.
9. Grasp hood by louver (A) and lower until hood engages latch.

**CAUTION**

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

10. Install weights (A) from outboard side and slide to middle of bracket on walking beam.

11. Install retaining bracket (B) on each side of weight bundle.

**IMPORTANT:**

Ensure retaining bracket (B) engage slot (C) in bracket.

12. Install rod (D) through retaining bracket and weights with spacers (E) as required.

13. Secure with nuts (F) and tighten.

**IMPORTANT:**

Ensure nuts (F) are flush with rod.
14. Move latch (A) towards right cab-forward side of windrower.

15. Grasp louver (B), and lift hood to open.
16. Bring left side bezel (A) close to frame and connect plug P215 to back of red tail/brake light.

17. Loosely attach left side bezel (A) to frame with four hex flange bolt (B).

18. Repeat Steps 16, page 40 to 17, page 40 attaching plug P210 at right side bezel (C).

19. Turn IGNITION key to RUN position, and ensure that rear swath lights (D) and red tail/brake lights (E) are working.

20. If lights are working, tighten hex flange bolts (B) to secure left and right light bezel.

**IMPORTANT:**
Ensure rear swath lights (D) are centered in light bezel.

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

**NOTE:**
Check that latch lever is not tilted to ensure hood is latched.
3.12  Lubricating the Windrower

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. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting. Do NOT overgrease wheel bearings.
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. 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 3.50: Lubrication Points

A - Top Link (Two Places) (Both Sides)
B - Caster Pivot (Both Sides)
C - Forked Caster Wheel Bearing (Two Places) (Both Wheels)
3.13 Connecting Batteries

1. Move latch (A) towards right cab-forward side of the windrower.

2. Grasp louver (B), and lift the hood to open.

3. Lift up on the cab-end of the cover (A) to disengage it from the retaining tab (B), and swing cover away from the frame.

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

4. Attach red positive (+) cable terminals to positive posts (B) on batteries and tighten clamps. Reposition plastic covers onto clamps.

5. Attach black negative (–) cable terminals to negative posts (A) on batteries and tighten clamps. Reposition plastic covers onto clamps.
ASSEMBLING THE WINDROWER

6. Swing the cover (A) towards the windrower frame. Lift up on the cab end of the cover until it is secured by the retaining tab (B) on the frame.

7. Grasp the hood by the louver (C) and lower until hood engages latch.

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

Figure 3.54: Battery Cover
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

1. Lower header so that lift cylinders are fully retracted.
2. Shut down engine, and remove key.
3. 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.

   The windrower serial number plate (A) is located on the left side of the main frame near the walking beam as shown.
2. Confirm serial number with manifest or work order.

   The engine serial number plate (A) is located on top of the engine cylinder head cover as shown.
4.1.2 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.

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.

4.1.3 Checking and Adding Engine Oil

**NOTE:**
Oil can be checked without opening the hood.

1. Remove the dipstick (A) by turning it counterclockwise to unlock.
2. Wipe the dipstick clean and reinsert it into the engine.
3. Remove the dipstick again and check the 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 US quarts) will raise the level from LOW to HIGH.

4. Replace dipstick and turn it clockwise to lock.

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.

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.
PERFORMING PREDELIVERY CHECKS

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

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

---

### 4.1.4 Checking and Adding Hydraulic Oil

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

1. Park windrower on level ground, and lower header so that lift cylinders are fully retracted.
2. Stop the engine and remove the key.
3. Locate the 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 the hood open or closed.

4. Ensure the hydraulic oil level is between the low and full indicator marks.
5. Add oil if necessary. For specifications, refer to 5.1 *Lubricants, Fluids, and System Capacities, page 113.*

**NOTE:**
After running up a header, the oil level should be checked again.
4.1.5 Checking Fuel Separator

1. Place a container under the 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 the drain valve (A) by hand 1-1/2 to 2 turns clockwise until tight.
5. Dispose of fluid in container in a safe manner.

![Figure 4.11: Fuel Filter](image)

4.1.6 Checking Engine Coolant Level

**NOTE:**
Ensure the engine has cooled down prior to checking.

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

3. The tank has a MAX and MIN COLD line marker. Coolant level should be kept at the MAX COLD line (A).

**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 4.12: Hood](image)

![Figure 4.13: Coolant Tank](image)
4. Grasp the hood by louver (A) and lower until hood engages latch.

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

---

### 4.1.7 Checking Engine Gearbox Lubricant Level and Adding Lubricant

1. Remove hex head check plug (A) on underside of windrower beneath the main pumps. The lubricant should be visible through the hole or slightly running out.

2. Add lubricant, if required, through the check plug hole (A) using a squeeze bottle, or by removing the breather at the top right side of the gearbox. For specification, refer to Section 5.1 Lubricants, Fluids, and System Capacities, page 113.

---

### 4.1.8 Checking Air Conditioning (A/C) Compressor Belts

1. Ensure A/C compressor belts (A) are tensioned so that a force of 35–55 N (8–12 lbf) on each belt deflects belt 5 mm (3/16 in.) at midspan.
4.1.9 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.

⚠️ CAUTION

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 displays OPERATOR MUST BE SEATED.

3. With the engine running and the seat base is between locked positions, move the 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 engine compartment 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 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 ignition.
   
   g. Remove wooden block and close hood.
PERFORMING PREDELIVERY CHECKS

7. Shut down the engine and 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. Shut down the engine and 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.

### 4.1.10 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 4.18: Windrower Tires](image)

#### Table 4.1 Drive Tire Inflation Specifications

<table>
<thead>
<tr>
<th>Header Type</th>
<th>Description</th>
<th>Installed Options</th>
<th>Weight Kit</th>
<th>Tire Type</th>
<th>Pressure kPa (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draper Header</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>D115X</td>
<td>4.6 m (15 ft.), double</td>
<td>—</td>
<td>—</td>
<td>Bar</td>
<td>138 (20)</td>
</tr>
<tr>
<td></td>
<td>knife, timed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D115X</td>
<td>4.6 m (15 ft.), double</td>
<td>—</td>
<td>—</td>
<td>Turf</td>
<td>138 (20)</td>
</tr>
<tr>
<td></td>
<td>knife, timed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D120X</td>
<td>6.1 m (20 ft.), double</td>
<td>—</td>
<td>—</td>
<td>Bar</td>
<td>138 (20)</td>
</tr>
<tr>
<td></td>
<td>knife, timed</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D120X</td>
<td>6.1 m (20 ft.), double</td>
<td>—</td>
<td>—</td>
<td>Turf</td>
<td>138 (20)</td>
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<tr>
<td></td>
<td>knife, timed</td>
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<tr>
<td>D125X</td>
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<td>—</td>
<td>Bar</td>
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<td></td>
<td>knife, timed</td>
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</tr>
<tr>
<td>D125X</td>
<td>7.6 m (25 ft.), double</td>
<td>—</td>
<td>—</td>
<td>Turf</td>
<td>159 (23)</td>
</tr>
<tr>
<td></td>
<td>knife, timed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D130X</td>
<td>9.1 m (30 ft.), double</td>
<td>Transport</td>
<td>1</td>
<td>Bar</td>
<td>200 (29)</td>
</tr>
<tr>
<td></td>
<td>knife, timed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 4.1 Drive Tire Inflation Specifications (continued)

<table>
<thead>
<tr>
<th>Header Type</th>
<th>Description</th>
<th>Installed Options</th>
<th>Weight Kit</th>
<th>Tire Type</th>
<th>Pressure kPa (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D130XL single reel</td>
<td>9.1 m (30 ft.), double knife, timed</td>
<td>Transport</td>
<td>1</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D130XL single reel</td>
<td>9.1 m (30 ft.), double knife, timed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>1</td>
<td>Bar</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D130XL single reel</td>
<td>9.1 m (30 ft.), double knife, timed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>1</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL single reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Bar</td>
<td>200 (29)</td>
</tr>
<tr>
<td>D135XL single reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL single reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport</td>
<td>2</td>
<td>Bar</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL single reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport</td>
<td>2</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL single reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Bar</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL single reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL double reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Bar</td>
<td>221 (32)</td>
</tr>
<tr>
<td>D135XL double reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL double reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport</td>
<td>2</td>
<td>Bar</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL double reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport</td>
<td>2</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D135XL double reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Bar</td>
<td>283 (41)</td>
</tr>
<tr>
<td>D135XL double reel</td>
<td>10.7 m (35 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D140XL double reel</td>
<td>12.2 m (40 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Bar</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D140XL double reel</td>
<td>12.2 m (40 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D140XL double reel</td>
<td>12.2 m (40 ft.), double knife, untimed</td>
<td>Transport</td>
<td>2</td>
<td>Bar</td>
<td>241 (35)</td>
</tr>
</tbody>
</table>
### Table 4.1 Drive Tire Inflation Specifications (continued)

<table>
<thead>
<tr>
<th>Header Type</th>
<th>Description</th>
<th>Installed Options</th>
<th>Weight Kit</th>
<th>Tire Type</th>
<th>Pressure kPa (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D140XL</td>
<td>12.2 m (40 ft.), double knife, untimed</td>
<td>Transport</td>
<td>2</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D140XL</td>
<td>12.2 m (40 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Bar</td>
<td>283 (41)</td>
</tr>
<tr>
<td>D140XL</td>
<td>12.2 m (40 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Bar</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double knife, untimed</td>
<td>Base</td>
<td>2</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double knife, untimed</td>
<td>Transport</td>
<td>3</td>
<td>Bar</td>
<td>262 (38)</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double knife, untimed</td>
<td>Transport</td>
<td>3</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Bar</td>
<td>283 (41)</td>
</tr>
<tr>
<td>D145XL</td>
<td>13.7 m (45 ft.), double knife, untimed</td>
<td>Transport + upper cross auger + vertical knives</td>
<td>3</td>
<td>Turf</td>
<td>241 (35)</td>
</tr>
</tbody>
</table>

### Rotary Disc Header

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Conditioner</th>
<th>—</th>
<th>Bar</th>
<th>138 (20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R113</td>
<td>4 m (13 ft.)</td>
<td>No Conditioner</td>
<td>—</td>
<td>Bar</td>
<td>138 (20)</td>
</tr>
<tr>
<td>R113</td>
<td>4 m (13 ft.)</td>
<td>No Conditioner</td>
<td>—</td>
<td>Turf</td>
<td>138 (20)</td>
</tr>
<tr>
<td>R113</td>
<td>4 m (13 ft.)</td>
<td>Steel or Poly Roll</td>
<td>—</td>
<td>Bar</td>
<td>179 (26)</td>
</tr>
<tr>
<td>R113</td>
<td>4 m (13 ft.)</td>
<td>Steel or Poly Roll</td>
<td>—</td>
<td>Turf</td>
<td>159 (23)</td>
</tr>
<tr>
<td>R116</td>
<td>4.9 m (16 ft.)</td>
<td>No Conditioner</td>
<td>—</td>
<td>Bar</td>
<td>138 (20)</td>
</tr>
<tr>
<td>R116</td>
<td>4.9 m (16 ft.)</td>
<td>No Conditioner</td>
<td>—</td>
<td>Turf</td>
<td>138 (20)</td>
</tr>
<tr>
<td>R116</td>
<td>4.9 m (16 ft.)</td>
<td>Steel or Poly Roll</td>
<td>—</td>
<td>Bar</td>
<td>179 (26)</td>
</tr>
<tr>
<td>R116</td>
<td>4.9 m (16 ft.)</td>
<td>Steel or Poly Roll</td>
<td>—</td>
<td>Turf</td>
<td>179 (26)</td>
</tr>
</tbody>
</table>

### Auger Header

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>—</th>
<th>—</th>
<th>Bar</th>
<th>200 (29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A40DX</td>
<td>4.9 m (16 ft.)</td>
<td>—</td>
<td>—</td>
<td>Bar</td>
<td>200 (29)</td>
</tr>
<tr>
<td>A40DX</td>
<td>4.9 m (16 ft.)</td>
<td>—</td>
<td>—</td>
<td>Turf</td>
<td>200 (29)</td>
</tr>
<tr>
<td>A40DX GSS</td>
<td>4.9 m (16 ft.) (Grass Seed)</td>
<td>—</td>
<td>—</td>
<td>Bar</td>
<td>159 (23)</td>
</tr>
<tr>
<td>A40DX GSS</td>
<td>4.9 m (16 ft.) (Grass Seed)</td>
<td>—</td>
<td>—</td>
<td>Turf</td>
<td>159 (23)</td>
</tr>
</tbody>
</table>

PERFORMING PREDELIVERY CHECKS
Table 4.1 Drive Tire Inflation Specifications (continued)

<table>
<thead>
<tr>
<th>Header Type</th>
<th>Description</th>
<th>Installed Options</th>
<th>Weight Kit</th>
<th>Tire Type</th>
<th>Pressure kPa (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A40DX</td>
<td>5.5 m (18 ft.)</td>
<td>—</td>
<td>—</td>
<td>Bar</td>
<td>200 (29)</td>
</tr>
<tr>
<td>A40DX</td>
<td>5.5 m (18 ft.)</td>
<td>—</td>
<td>—</td>
<td>Turf</td>
<td>220 (32)</td>
</tr>
</tbody>
</table>

4.1.11 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 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 engine by shorting across starter or starter relay terminals. If normal starting circuitry is bypassed, machine will start with drive engaged and move.

• Start engine only from operator’s seat with controls in PARK. NEVER start engine while standing on ground. NEVER try to start engine with someone under or near machine.

• Before starting engine, be sure there is plenty of ventilation to avoid asphyxiation.

IMPORTANT:

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

• Engine oil – refer to 4.1.3 Checking and Adding Engine Oil, page 46
• Hydraulic oil – refer to 4.1.4 Checking and Adding Hydraulic Oil, page 48
• Gearbox oil – refer to 4.1.7 Checking Engine Gearbox Lubricant Level and Adding Lubricant, page 50

IMPORTANT:

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

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

Figure 4.19: Direction Locks
2. Move ground speed lever (GSL) (A) into PARK (C).

3. Turn 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.

4. Fasten seat belt.

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

6. Turn IGNITION switch (A) to the ON position; the Harvest Performance Tracker (HPT) (B) will illuminate. If HPT is still booting up, wait for WAIT TO START (WTS) symbol (C) to disappear before trying to start engine.

7. Check that red PARK symbol light (D) is ON and that there are no error messages on screen.

8. Press HORN button (E) three times.
9. 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 screen (B).

**IMPORTANT:**
- Do **NOT** operate starter for longer than 15 seconds at a time.
- If 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 illuminate on the HPT display. Wait for the WTS symbol to stop flashing before attempting to crank engine again.
- If engine still does not start, refer to *Engine Start Troubleshooting Tips, page 58.*

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

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

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

**Table 4.2 Engine Start Troubleshooting**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls not in NEUTRAL</td>
<td>• Move GSL to NEUTRAL&lt;br&gt;• Move steering wheel to locked (centered) position&lt;br&gt;• Disengage HEADER switch</td>
</tr>
<tr>
<td>Operator’s station not locked</td>
<td>• Adjust position of operator’s station&lt;br&gt;• Ensure lock is engaged</td>
</tr>
<tr>
<td>Neutral interlock misadjusted</td>
<td>• Refer to the windrower technical manual</td>
</tr>
<tr>
<td>No fuel to engine</td>
<td>• Fill empty fuel tank&lt;br&gt;• Replace clogged filter&lt;br&gt;• Check for blocked or damaged fuel lines</td>
</tr>
<tr>
<td>Old fuel in tank</td>
<td>• Drain tank&lt;br&gt;• Refill with fresh fuel</td>
</tr>
<tr>
<td>Water, dirt, or air in fuel system</td>
<td>• Drain, flush, fill, and prime system</td>
</tr>
<tr>
<td>Improper type of fuel</td>
<td>• Drain tank&lt;br&gt;• Refill with correct fuel</td>
</tr>
<tr>
<td>Crankcase oil too heavy</td>
<td>• Replace with recommended oil</td>
</tr>
<tr>
<td>Low battery output</td>
<td>• Test the battery&lt;br&gt;• Check battery electrolyte level</td>
</tr>
<tr>
<td>Poor battery connection</td>
<td>• Clean and tighten loose connections</td>
</tr>
<tr>
<td>Faulty starter</td>
<td>• Refer to the windrower technical manual</td>
</tr>
<tr>
<td>Wiring shorted, circuit breaker open</td>
<td>• Check continuity of wiring and breaker (manually reset)</td>
</tr>
<tr>
<td>Faulty injectors</td>
<td>• Refer to the windrower technical manual</td>
</tr>
</tbody>
</table>
4.1.12 Checking and Adding Wheel Drive Lubricant

⚠️ 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 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. Stop the engine, and remove the key.
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 lubricant change is different from the factory-supplied lubricant.
6. Reinstall plugs and tighten.

![Figure 4.24: Drive Wheel Hub](image)
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.

2. Start the engine. Refer to *4.1.11 Starting the Engine, page 55*.

3. If a header is attached, confirm that the HPT default shows the header disengaged screen.
PERFORMING PREDELIVERY CHECKS

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

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.

4.2.2 Checking Harvest Performance Display (HPT)

1. If not already running, start the engine. Refer to 4.1.11 Starting the Engine, page 55.

2. If a header is not attached, check that the no header screen is displayed.
3. If a header is attached, check that the 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.

**Navigating the Harvest Performance Tracker**

Turning the 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.
PERFORMING PREDELIVERY CHECKS

NOTE:
The scroll wheel (A) on the back of the GSL and the SELECT button (B) on the front of the GSL perform the same functions as the HPT scroll knob.

3. Press soft key 5 (A) to open main menu.
4. Use HPT scroll knob (B) or ground speed lever (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.

6. Press BACK button (A) on HPT to return to previous level within menu structure.
7. Press HOME button (B) on HPT to return to last selected run screen (or header disengaged screen).
Setting Language and Units of Measure

1. Navigate to the SETTINGS menu with soft key 5 and the Harvest Performance Tracker (HPT) scroll knob. Refer to Navigating the Harvest Performance Tracker, page 62 if required.

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.

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. Refer to Navigating the Harvest Performance Tracker, page 62 if required.

2. Scroll to the SCREEN option (A) and select it.

3. Scroll to the TIME AND DATE option (B), and select it to open the adjustment window.
4. Scroll through the available options on the HPT display, select desired option, and scroll to adjust.

Figure 4.37: 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. Refer to Navigating the Harvest Performance Tracker, page 62 if required.

2. Scroll to the WINDROWER SETTINGS icon (A) and select it.

3. Scroll to the 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.

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 4.38: Tire Size

Figure 4.39: Tire Selection
4.2.3 Checking Engine Speed

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

**Table 4.3 Engine Speed**

<table>
<thead>
<tr>
<th>Idle</th>
<th>Maximum (No Load)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 rpm</td>
<td>2500 rpm</td>
</tr>
</tbody>
</table>

Figure 4.40: HPT Display
4.2.4 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 4.41: 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.
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.
PERFORMING PREDELIVERY CHECKS

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

4.2.5 Checking Horn

1. Push HORN button (A) and listen for horn.
4.2.6 Checking Interior Lights

1. Open cab door and check that interior light (A) illuminates.
2. Enter the cab and close door; light should go off.
3. Turn IGNITION key to RUN position.
4. Push OVERHEAD DOME LIGHT switch (A) to the ON position (B) and check that the light illuminates.
5. Push 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 door open.
7. Push switch (A) to OFF position (D) and check that light is off.

4.2.7 Checking Air Conditioning and Heater

1. Start engine and allow it to reach operating temperature.
2. To distribute oil throughout the A/C system, perform the following steps after starting a machine that has been stored for more than 1 week:
   a. Press + (A) on FAN SPEED switch to start fan, adjust temperature control (B) to maximum heating, and press A/C switch (C) if necessary so that 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.
3. Press AUTO FAN switch (A) (LED light shows orange) and then press RED TEMPERATURE CONTROL switch (B) until warm air enters cab through vents.

4. Press BLUE TEMPERATURE CONTROL switch (C) until cool air is entering the cab.

5. Press FAN SPEED switch (D) (+ or –) and note change in air flow. AUTO FAN light should be off.

6. Press RECIRCULATING AIR switch (E) and check air flow in cab.

4.2.8 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.

1. To check the radio, follow this procedure:
   a. Turn 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 the Volume/Select knob (C) to change the volume level.
   e. Insert a CD into the disc slot (D), or connect a USB storage device to the unit. The radio will automatically switch mode and begin playback after the media is successfully loaded.
2. To activate the Bluetooth® feature, follow this procedure:
   a. Press POWER button (A) to turn the 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 VOL/SEL knob to display ON and press VOL/SEL to select.
   f. Rotate VOL/SEL knob and select DISCOVER.
   g. Rotate VOL/SEL knob to display ON and press VOL/SEL to select.
4.3 Checking Manuals

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

1. Ensure the following manuals are included with the windrower:
   - Operator’s Manual
   - Parts Catalog
   - Quick Card
   - Engine Manual
4.4 Performing Final Steps

1. When predelivery checks are complete, remove the plastic covering from the Harvest Performance Tracker (HPT) and the seats.

2. If there is an optional GPS kit included, locate bag inside the cab containing the kit, and install in accordance with the instructions included. If not installing kit, label bag (GPS Completion kit) and place kit in toolbox for safekeeping.

3. Remove instruction from the right cab-forward door only **AFTER** right leg is repositioned to field configuration.

4. **AFTER** the machine is delivered to the end user, remove the decal from the windshield only.

Figure 4.55: Windshield Decal (MD #166705)
4.5 Attaching Headers to M1 Series Windrower

4.5.1 A40DX Auger Header

Attaching an A40DX Auger Header

⚠️ CAUTION

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

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

   IMPORTANT:
   Remove protective cover from exhaust stack prior to starting engine.

⚠️ CAUTION

Check to be sure all bystanders have cleared the area.

2. Start 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 by doing the following:

![Header Support](image1)

![Header Float Springs](image2)
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 to select.

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

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.
8. **For hydraulic center-link without self-alignment:**
   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.

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

10. **For hydraulic center-link with self-alignment:** 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 rod end of link cylinder (C) until hook engages and locks onto header pin.

    **IMPORTANT:**
    Hook release (D) must be down to enable self-locking mechanism. If the release is open (up), manually push it down after hook engages 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.
PERFORMING PREDELIVERY CHECKS

**CAUTION**

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. Stop the engine and remove the key.

17. Engage safety prop on the windrower’s lift cylinder as follows:
   a. Pull lever (A) and rotate toward header to release, and lower safety prop onto cylinder.
   b. Repeat for opposite lift cylinder.

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

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

   **IMPORTANT:**
   Ensure clevis pin (A) is fully inserted and hairpin is installed behind bracket.
19. Remove lynch pin from clevis pin (A) in stand (B).
20. Hold stand (B) and remove pin (A).
21. Move stand to storage position by inverting and relocating onto bracket as shown. Reinsert clevis pin (A) and secure with lynch pin.

22. Disengage safety prop by turning lever (A) downward to raise prop until lever locks into vertical position.
23. Repeat for opposite side.

⚠️ CAUTION
Check to be sure all bystanders have cleared the area.

24. Start engine and press HEADER DOWN switch (A) on GSL to fully lower header.
25. Press rotary scroll knob (A) on HPT to highlight QuickMenu options.

26. Rotate scroll knob (A) to highlight the HEADER FLOAT symbol (B). Press scroll knob to select.

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 float setting and press 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 float in increments of 0.05 to optimize field performance.

29. Stop the engine and remove the key.

30. Grasp one end of the auger header and lift. Lifting force should be 335–380 N (75–85 lbf) and should be the same at both ends.

31. Proceed to *Connecting A40DX Hydraulics, page 82.*
Connecting A40DX 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 left cab-forward side of windrower and ensure cab door is closed.
2. Push latch (B), and pull platform (A) toward walking beam until it stops and latch engages.

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

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.
PERFORMING PREDELIVERY CHECKS

6. Clean multicouplers and receptacles to prevent contamination.

7. Push button (A) on rear multicoupler receptacle and rotate handle (B) away from windrower.

8. Open cover (C) and position multicoupler (D) onto receptacle. Align pins in coupler with slots in handle (B), and rotate handle toward windrower so that coupler is locked onto receptacle and button (A) snaps out.

9. Push button (E) on front multicoupler receptacle and rotate handle (F) away from windrower.

10. Open cover (G) and position multicoupler (H) onto receptacle. Align pins in coupler with slots in handle, and rotate handle toward windrower so that coupler is locked onto receptacle and button (E) snaps out.

**M1170 configured with R1 Hydraulic Drive Bundle (B6621):**

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

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

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

If **NOT** installed, attach draper header support (supplied with header) to windrower lift linkage as follows:

1. Remove hairpin and clevis pin (B) from the draper header support (A).

2. Position the draper header support (B) on lift linkage (A), and reinstall clevis pin (C).
   
   **NOTE:**
   To avoid pin snagging the windrow, install the clevis pin on the outboard side of the draper header support.

3. Secure clevis pin (C) with hairpin (D).
4. Repeat for opposite lift linkage.


Attaching a D1X or D1XL Series Header

NOTE:
Draper header supports must be installed onto the windrower lift linkage before starting this procedure. Refer to Attaching Draper Header Supports, page 85.

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. Hydraulic Center-Link without Self-Alignment:
   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.

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

CAUTION
Check to be sure all bystanders have cleared the area.

   IMPORTANT:
   Remove protective cover from exhaust stack prior to starting 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 by doing the following:

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

6. On Float Adjust page, press soft key 3 (A) to remove float.
7. **Self-Aligning Hydraulic Center-Link:**
   a. Press HEADER DOWN switch on the ground speed lever (GSL) to fully retract header lift cylinders.
   b. Press REEL UP switch 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.

8. Drive the windrower slowly forward until the draper header supports (A) enter the header legs (B). Continue driving slowly forward until lift linkages contact the support plates in the header legs and the header nudges forward.

9. Ensure that lift linkages are properly engaged in header legs and are contacting the support plates.

10. **Self-Aligning Hydraulic Center-Link:**
    a. Adjust position of the 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 self-locking mechanism.

    b. If the hook release (C) is open (up), stop the engine and remove the ignition key. Manually push the 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 the hook release (C) is down.

    d. Check that center-link is locked onto header by pressing the REEL UP switch on the GSL.

---

**Figure 4.87: GSL Switches**

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

**Figure 4.88: Header Leg and Draper Header Support**

**Figure 4.89: Hydraulic Center-Link**
11. **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. Stop the engine and remove the key.
   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 4.90: Hydraulic Center-Link](image)

**CAUTION**

Check to be sure all bystanders have cleared the area.

   e. Start engine.

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

13. Stop the engine and remove the key.

14. Engage safety prop on lift cylinder as follows:
   a. Pull lever (A) and rotate toward header to release, and lower safety prop onto cylinder.
   b. Repeat for opposite lift cylinder.

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

![Figure 4.91: GSL](image)

![Figure 4.92: Cylinder Safety Prop](image)
15. Install pin (B) through the header leg (engaging U-bracket in draper header support) on both sides and secure with a hairpin (A).

16. Raise header stand (D) to storage position by pulling spring pin (C) and lifting stand into uppermost position. Release spring pin.

17. Disengage safety prop by turning lever (A) downward to raise safety prop until lever locks into vertical position.

   **NOTE:**
   If safety prop will not disengage, raise header slightly.

18. Repeat for opposite side.

   **CAUTION**
   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.
20. Press rotary scroll knob (A) on Harvest Performance Tracker (HPT) to highlight QuickMenu options.

21. Rotate scroll knob (A) to highlight the HEADER FLOAT symbol (B), and press scroll knob to select.

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 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. Stop the engine and remove the key.

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 Hydraulics, page 92.*
PERFORMING PREDELIVERY CHECKS

Connecting D1X or D1XL Series 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 hose management arm (B) rearward to disengage arm from latch.
2. Move arm (B) toward left cab-forward side of windrower.

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

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

Figure 4.98: Hydraulic Hose Management Arm

Figure 4.99: Platform

Figure 4.100: Hydraulic Hose Management Arm
M1170 configured with R1 Hydraulic Drive Bundle (B6621):

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 frame.

8. Retrieve draper drive and reel control multicoupler (A) from hose management arm.

9. Push knob (B) on hydraulic receptacle and pull handle (C) fully away from windrower.

10. Open cover (D) and position coupler onto receptacle. Align pins in coupler with slots in handle (C) and push handle toward windrower so that coupler is locked onto receptacle and knob (B) snaps out.

NOTE:
Hose connector (F) only on M1170 configured with R1 Hydraulic Drive Bundle (B6621).

11. Remove cover from electrical connector (E), push electrical connector onto receptacle, and secure by turning collar on electrical connector clockwise.
12. Retrieve knife and reel drive multicoupler (A) from hose management arm.

13. Push knob (B) on hydraulic receptacle and pull handle (C) fully away from windrower.

14. Open cover (D) and position coupler onto receptacle. Align pins in coupler with slots in handle (C) and push handle toward windrower so that coupler is locked onto receptacle and knob (B) snaps out.

15. Push latch (B) to unlock the platform (A).

16. Push the platform towards the cab until it stops and latch engages.

17. Ensure hydraulic hose routing is as straight as possible and avoids potential rub/wear points.
4.5.3 R1 Series Disc Header

Attaching R1 Series Disc Header

The windrower hydraulic center-link may be equipped with a self-aligning option that allows the Operator to control the vertical position 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. **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.

2. Remove hairpin (A) from clevis pin (B), and remove pin from header support (C) on both sides of header.

⚠️ CAUTION

Check to be sure all bystanders have cleared the area.

**IMPORTANT:**
Remove protective cover from exhaust stack prior to starting 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.

4. Press rotary scroll knob (A) on the HPT display to highlight QuickMenu options.

5. Rotate scroll knob (A) to highlight the HEADER FLOAT symbol (B), and press scroll knob to select. The header float adjust screen displays.

6. 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.
7. Press HEADER DOWN switch (E) on the ground speed lever (GSL) to fully retract header lift cylinders.

8. **Self-Aligning Hydraulic Center-Link:** 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.

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

10. Ensure that feet (A) are properly engaged in supports (B).

11. **Self-Aligning Hydraulic Center-Link:**
   a. Adjust position of the 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 self-locking mechanism.

   b. If the hook release (C) is open (up), stop the engine and remove the ignition key. Manually push the 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 the hook release (C) is down.

   d. Check that center-link is locked onto header by pressing the REEL UP switch on the GSL.
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. Stop the engine and remove the key.
   
   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.

![](image1)

**CAUTION**

Check to be sure all bystanders have cleared the area.

   e. Start engine.

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

14. Stop the engine and remove the key.

15. Engage safety prop on the windrower’s lift cylinder as follows:

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

   **IMPORTANT:**
   
   Ensure the safety props engage over the cylinder piston rods. If a safety prop does not engage properly, raise the header until the prop fits over the rod.
16. Install clevis pin (A) through support and windrower lift arm and secure with hairpin (B). Repeat for opposite side.

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

17. Disengage safety props by turning lever (A) away from the header to raise the safety prop until the lever locks into vertical position. Repeat for opposite cylinder.

18. Start the engine and press HEADER DOWN switch (A) on GSL to fully lower header.
19. 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 the HEADER FLOAT symbol (B), and press scroll knob to select. Screen changes.

20. 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.

21. Stop the engine and remove the key.

22. Grasp one end of the header and lift. Lifting force should be 426–471 N (95–105 lbf) and should be the same at both ends.

**Connecting R1 Series 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 left cab-forward side of windrower and ensure cab door is closed.

2. Push latch (B), and pull platform (A) toward walking beam until it stops and latch engages.
3. Retrieve the hydraulic hoses from the header.

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

   **NOTE:**
   Route hoses as straight as possible and avoid rub/wear points that could damage hydraulic hoses.

5. Disconnect male coupler (A) from pressure hose.

6. Disconnect female coupler and fitting (B) from return hose.

7. Remove coupling and cap (A) and plug (B) from fittings on windrower.
8. Install male coupler onto pressure fitting (A), and female coupler onto return fitting (B) on windrower.

9. Tighten couplers onto fittings.

10. Retrieve following parts from the bag located inside left header support:

**Figure 4.127: Hydraulic Drive Parts**

A - 253785, Hose, Hyd, Knife Pressure (1)  
B - 136413, Fitting, Coupling, Female (1)  
C - 243604, Cap, Harness (1)  
D - 253783, Bracket, Coupler Holder (1)  
E - 135718, Cap, Hyd, SAE-16 ORFS (1)
11. Connect female coupler (B) to hose (A).

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

13. Install cap (A) on tee.

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

18. Connect hose fitting (A) to elbow (B).
19. Place female coupler (C) in coupler holder (D).
PERFORMING PREDELIVERY CHECKS

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

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

21. 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)

NOTE:
The hydraulic hoses should have enough slack to pass by the 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.
PERFORMING PREDELIVERY CHECKS

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

23. Pull platform (A) towards the cab until it stops and latch engages.
4.6 Checking Header Settings

1. Navigate to SETTINGS menu with soft key 5 and Harvest Performance Tracker (HPT) scroll knob. Refer to Navigating the Harvest Performance Tracker, page 62 if required.

2. Scroll to SET-UP HEADER option (A) and select it.

3. Scroll to highlight appropriate item and select it.

4. Scroll to highlight appropriate option and select it.
   - Example: If a draper header is attached, and ATTACHMENTS (B) is selected, the available choice is DOUBLE DRAPER DRIVE.

5. Scroll to highlight appropriate item and select it.

6. After completing the SETTINGS, proceed to 4.7 Calibrating the Windrower and Header, page 108, and 4.8 Calibrating Windrower Knife Drive on Harvest Performance Tracker (HPT) Display, page 111.
4.7 Calibrating the Windrower and Header

When a header is attached to the windrower, the Harvest Performance Tracker (HPT) will recognize the header ID and determine the appropriate systems to calibrate. The following sensors may require calibration depending on header type:

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

Recalibration is required if the HPT is replaced, a position sensor is replaced, sensor readouts are erratic, or the first time a certain header type and attachment are connected to the windrower.

**NOTE:**
To calibrate the knife drive, the header must be attached and engaged. If the header is disengaged when calibration is selected, the message ENGAGE HEADER will appear on the screen.

⚠️ **CAUTION**

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

1. Start the engine, and engage the header.
2. Press soft key 5 (A) to open the main menu.
3. To scroll to the settings icon (C), use the HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown).
4. Press the HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.

![Figure 4.138: Opening the Main Menu](image)
5. Scroll to the WINDROWER SETTINGS icon (A) and press SELECT.

6. Scroll to the CALIBRATION icon (B), and press SELECT to open the adjustment page.

**NOTE:**
The F3 shortcut button on the operator’s console will also open the WINDROWER SETTINGS menu.

7. Select POSITION SENSORS (A).

8. Select CALIBRATION WITH HEADER ENGAGED to display the calibration page as shown at right.

9. Press the PLAY button on the screen to begin the calibration process.

**NOTE:**
If the engine speed is less than 1500 rpm when you press the PLAY button, the calibration system will accelerate the engine to 1500 rpm.
10. When Stage 1 of the calibration is complete, press the PLAY button (A) on the screen to continue with Stage 2 of the calibration process.

11. When Stage 2 of the calibration is complete, press the RESUME button (A) on the screen to set HEADER FLOAT, or press the HOME or BACK button (not shown) to exit without setting the float.

**NOTE:**
Press the X button (A) on the screen (or press the HOME, BACK, or any GSL button [buttons not shown]) 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 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. A flashing amber question mark will appear on the calibration icon in the menu system. If a sensor is out of range, adjust the sensor and restart the calibration process.
4.8 Calibrating Windrower Knife Drive on Harvest Performance Tracker (HPT) Display

NOTE:
Calibration of the knife drive must be completed with the header attached; the header must be engaged to perform the calibration procedure. If the header is disengaged when calibration is selected, the message ENGAGE HEADER will appear on the screen.

⚠ CAUTION
Check to be sure all bystanders have cleared the area.

1. Start the windrower and engage the header.
2. Press soft key 5 (A) to open the main menu.
3. Use the HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown) to place the red cursor over the SETTINGS icon (C).
4. Press the HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.
5. Scroll to the WINDROWER SETTINGS icon (A) and press SELECT.
6. Scroll to the CALIBRATION icon (B), and press SELECT to open the adjustment page.

NOTE:
The F3 shortcut button on the operator’s console will also open the WINDROWER’S SETTINGS menu.

7. Select KNIFE DRIVE.
8. Press the PLAY button on the screen 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 button (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.

![Figure 4.147: Calibration Page](image-url)
## 5 Reference

### 5.1 Lubricants, Fluids, and System Capacities

⚠ **CAUTION**

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

Table 5.1 System Capacities

<table>
<thead>
<tr>
<th>Lubricant/Fluid</th>
<th>Location</th>
<th>Description</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel exhaust fluid</td>
<td>Diesel exhaust fluid tank</td>
<td>Must meet ISO 22241 requirements.</td>
<td>28 liters (7.5 US gallons)</td>
</tr>
<tr>
<td>Grease</td>
<td>As required unless otherwise specified</td>
<td>SAE multi-purpose high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base</td>
<td>As required unless otherwise specified</td>
</tr>
<tr>
<td>Diesel fuel</td>
<td>Fuel tank</td>
<td>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</td>
<td>518 liters (137 US gallons)</td>
</tr>
<tr>
<td>Hydraulic oil</td>
<td>Hydraulic reservoir</td>
<td>Single grade trans-hydraulic oil. Recommended brands:</td>
<td>60 liters (15.8 US gallons)^3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Petro-Canada Duratran</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- John Deere Hy-Gard J20C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Case HY-TRAN ULTRACTION</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- AGCO Power Fluid 821XL</td>
<td></td>
</tr>
<tr>
<td>Gear lubricant</td>
<td>Gearbox</td>
<td>SAE 75W-140 or 80W-140, API service class GL-5 fully synthetic gear lubricant, (SAE J2360 preferred)</td>
<td>2.1 liters (2.2 US quarts)</td>
</tr>
<tr>
<td>Gear lubricant</td>
<td>Wheel drive</td>
<td>SAE 75W-140 or 80W-140, API service class GL-5 fully synthetic gear lubricant, (SAE J2360 preferred)</td>
<td>1.4 liters (1.5 US quarts)</td>
</tr>
<tr>
<td>Antifreeze</td>
<td>Engine cooling system</td>
<td>ASTM D-6210 and Fleetguard ES Compleat®</td>
<td>31 liters (8.2 US gallons)^4</td>
</tr>
<tr>
<td>Engine oil</td>
<td>Engine oil pan</td>
<td>SAE 15W-40 compliant with SAE specs for API Class SJ and CJ-4 engine oil</td>
<td>11 liters (11.6 US quarts)</td>
</tr>
<tr>
<td>Air conditioning</td>
<td>Air conditioning system</td>
<td>R134A</td>
<td>2.38 kg (5.25 lb.)</td>
</tr>
</tbody>
</table>

---

2. Optional when operating temperature is below 0°C (32°F).
4. Equal parts with water; high quality, soft, deionized or distilled water as recommended by Supplier.
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 Specification

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

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.

---

5. 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*

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (Nm)</th>
<th>Torque (lbf·ft) (*lbf·in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>3-0.5</td>
<td>1.4</td>
<td>1.6</td>
</tr>
<tr>
<td>3.5-0.6</td>
<td>2.2</td>
<td>2.5</td>
</tr>
<tr>
<td>4-0.7</td>
<td>3.3</td>
<td>3.7</td>
</tr>
<tr>
<td>5-0.8</td>
<td>6.7</td>
<td>7.4</td>
</tr>
<tr>
<td>6-1.0</td>
<td>11.4</td>
<td>12.6</td>
</tr>
<tr>
<td>8-1.25</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>10-1.5</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>12-1.75</td>
<td>95</td>
<td>105</td>
</tr>
<tr>
<td>14-2.0</td>
<td>152</td>
<td>168</td>
</tr>
<tr>
<td>16-2.0</td>
<td>236</td>
<td>261</td>
</tr>
<tr>
<td>20-2.5</td>
<td>460</td>
<td>509</td>
</tr>
<tr>
<td>24-3.0</td>
<td>796</td>
<td>879</td>
</tr>
</tbody>
</table>

*Figure 5.1: Bolt Grades*
Table 5.4 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (Nm)</th>
<th>Torque (lbf·ft) (*lbf·in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>3-0.5</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>3.5-0.6</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>4-0.7</td>
<td>2.3</td>
<td>2.5</td>
</tr>
<tr>
<td>5-0.8</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>6-1.0</td>
<td>7.7</td>
<td>8.6</td>
</tr>
<tr>
<td>8-1.25</td>
<td>18.8</td>
<td>20.8</td>
</tr>
<tr>
<td>10-1.5</td>
<td>37</td>
<td>41</td>
</tr>
<tr>
<td>12-1.75</td>
<td>65</td>
<td>72</td>
</tr>
<tr>
<td>14-2.0</td>
<td>104</td>
<td>115</td>
</tr>
<tr>
<td>16-2.0</td>
<td>161</td>
<td>178</td>
</tr>
<tr>
<td>20-2.5</td>
<td>314</td>
<td>347</td>
</tr>
<tr>
<td>24-3.0</td>
<td>543</td>
<td>600</td>
</tr>
</tbody>
</table>

Table 5.5 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (Nm)</th>
<th>Torque (lbf·ft) (*lbf·in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>3-0.5</td>
<td>1.8</td>
<td>2</td>
</tr>
<tr>
<td>3.5-0.6</td>
<td>2.8</td>
<td>3.1</td>
</tr>
<tr>
<td>4-0.7</td>
<td>4.2</td>
<td>4.6</td>
</tr>
<tr>
<td>5-0.8</td>
<td>8.4</td>
<td>9.3</td>
</tr>
<tr>
<td>6-1.0</td>
<td>14.3</td>
<td>15.8</td>
</tr>
<tr>
<td>8-1.25</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td>10-1.5</td>
<td>75</td>
<td>83</td>
</tr>
<tr>
<td>12-1.75</td>
<td>132</td>
<td>145</td>
</tr>
<tr>
<td>14-2.0</td>
<td>210</td>
<td>232</td>
</tr>
<tr>
<td>16-2.0</td>
<td>326</td>
<td>360</td>
</tr>
<tr>
<td>20-2.5</td>
<td>637</td>
<td>704</td>
</tr>
<tr>
<td>24-3.0</td>
<td>1101</td>
<td>1217</td>
</tr>
</tbody>
</table>
Table 5.6 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (Nm)</th>
<th>Torque (lbf-ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>3-0.5</td>
<td>1.3</td>
<td>1.5</td>
</tr>
<tr>
<td>3.5-0.6</td>
<td>2.1</td>
<td>2.3</td>
</tr>
<tr>
<td>4-0.7</td>
<td>3.1</td>
<td>3.4</td>
</tr>
<tr>
<td>5-0.8</td>
<td>6.3</td>
<td>7</td>
</tr>
<tr>
<td>6-1.0</td>
<td>10.7</td>
<td>11.8</td>
</tr>
<tr>
<td>8-1.25</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>10-1.5</td>
<td>51</td>
<td>57</td>
</tr>
<tr>
<td>12-1.75</td>
<td>90</td>
<td>99</td>
</tr>
<tr>
<td>14-2.0</td>
<td>143</td>
<td>158</td>
</tr>
<tr>
<td>16-2.0</td>
<td>222</td>
<td>246</td>
</tr>
<tr>
<td>20-2.5</td>
<td>434</td>
<td>480</td>
</tr>
<tr>
<td>24-3.0</td>
<td>750</td>
<td>829</td>
</tr>
</tbody>
</table>

5.3.2 Metric Bolt Specifications Bolting into Cast Aluminum

Table 5.7 Metric Bolt Bolting into Cast Aluminum

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>8.8 (Cast Aluminum)</th>
<th>10.9 (Cast Aluminum)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nm</td>
<td>lbf-ft</td>
</tr>
<tr>
<td>M3</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>M4</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>M5</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>M6</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>M8</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>M10</td>
<td>40</td>
<td>28</td>
</tr>
<tr>
<td>M12</td>
<td>70</td>
<td>52</td>
</tr>
<tr>
<td>M14</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>M16</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>
5.3.3 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.

2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.

3. Check that O-ring (A) is **NOT** on threads and adjust if necessary.

4. Apply hydraulic system oil to O-ring (A).

5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact part face (E).

6. Position angle fittings by unscrewing no more than one turn.

7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and other on lock nut (C).

8. Check final condition of fitting.

---

**Figure 5.6: Hydraulic Fitting**

**Figure 5.7: Hydraulic Fitting**
### Table 5.8 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

<table>
<thead>
<tr>
<th>SAE Dash Size</th>
<th>Thread Size (in.)</th>
<th>Torque Value&lt;sup&gt;6&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nm</td>
</tr>
<tr>
<td>-2</td>
<td>5/16–24</td>
<td>6–7</td>
</tr>
<tr>
<td>-3</td>
<td>3/8–24</td>
<td>12–13</td>
</tr>
<tr>
<td>-4</td>
<td>7/16–20</td>
<td>19–21</td>
</tr>
<tr>
<td>-5</td>
<td>1/2–20</td>
<td>21–33</td>
</tr>
<tr>
<td>-6</td>
<td>9/16–18</td>
<td>26–29</td>
</tr>
<tr>
<td>-8</td>
<td>3/4–16</td>
<td>46–50</td>
</tr>
<tr>
<td>-10</td>
<td>7/8–14</td>
<td>75–82</td>
</tr>
<tr>
<td>-12</td>
<td>1-1/16–12</td>
<td>120–132</td>
</tr>
<tr>
<td>-14</td>
<td>1-3/8–12</td>
<td>153–168</td>
</tr>
<tr>
<td>-16</td>
<td>1-5/16–12</td>
<td>176–193</td>
</tr>
<tr>
<td>-20</td>
<td>1-5/8–12</td>
<td>221–243</td>
</tr>
<tr>
<td>-24</td>
<td>1-7/8–12</td>
<td>270–298</td>
</tr>
<tr>
<td>-32</td>
<td>2-1/2–12</td>
<td>332–365</td>
</tr>
</tbody>
</table>

---

<sup>6.</sup> Torque values shown are based on lubricated connections as in reassembly.
5.3.4 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table 5.9, page 121.
6. Check final condition of fitting.

![Figure 5.8: Hydraulic Fitting](image)

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

<table>
<thead>
<tr>
<th>SAE Dash Size</th>
<th>Thread Size (in.)</th>
<th>Torque Value *</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>5/16–24</td>
<td>6–7</td>
</tr>
<tr>
<td>-3</td>
<td>3/8–24</td>
<td>12–13</td>
</tr>
<tr>
<td>-4</td>
<td>7/16–20</td>
<td>19–21</td>
</tr>
<tr>
<td>-5</td>
<td>1/2–20</td>
<td>21–33</td>
</tr>
<tr>
<td>-6</td>
<td>9/16–18</td>
<td>26–29</td>
</tr>
<tr>
<td>-8</td>
<td>3/4–16</td>
<td>46–50</td>
</tr>
<tr>
<td>-10</td>
<td>7/8–14</td>
<td>75–82</td>
</tr>
<tr>
<td>-12</td>
<td>1-1/16–12</td>
<td>120–132</td>
</tr>
<tr>
<td>-14</td>
<td>1-3/8–12</td>
<td>153–168</td>
</tr>
<tr>
<td>-16</td>
<td>1-5/16–12</td>
<td>176–193</td>
</tr>
<tr>
<td>-20</td>
<td>1-5/8–12</td>
<td>221–243</td>
</tr>
<tr>
<td>-24</td>
<td>1-7/8–12</td>
<td>270–298</td>
</tr>
<tr>
<td>-32</td>
<td>2-1/2–12</td>
<td>332–365</td>
</tr>
</tbody>
</table>

*Torque values shown are based on lubricated connections as in reassembly.*
5.3.5 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

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.

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

<table>
<thead>
<tr>
<th>SAE Dash Size</th>
<th>Thread Size (in.)</th>
<th>Tube O.D. (in.)</th>
<th>Torque Value(^8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nm</td>
</tr>
<tr>
<td>-3</td>
<td>Note(^9)</td>
<td>3/16</td>
<td>–</td>
</tr>
<tr>
<td>-4</td>
<td>9/16</td>
<td>1/4</td>
<td>25–28</td>
</tr>
<tr>
<td>-5</td>
<td>Note(^9)</td>
<td>5/16</td>
<td>–</td>
</tr>
<tr>
<td>-6</td>
<td>11/16</td>
<td>3/8</td>
<td>40–44</td>
</tr>
<tr>
<td>-8</td>
<td>13/16</td>
<td>1/2</td>
<td>55–61</td>
</tr>
<tr>
<td>-10</td>
<td>1</td>
<td>5/8</td>
<td>80–88</td>
</tr>
<tr>
<td>-12</td>
<td>1-3/16</td>
<td>3/4</td>
<td>115–127</td>
</tr>
</tbody>
</table>

---

8. Torque values and angles shown are based on lubricated connection as in reassembly.
9. O-ring face seal type end not defined for this tube size.
Table 5.10 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

<table>
<thead>
<tr>
<th>SAE Dash Size</th>
<th>Thread Size (in.)</th>
<th>Tube O.D. (in.)</th>
<th>Torque Value(^{10})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nm</td>
</tr>
<tr>
<td>-14</td>
<td>Note(^9)</td>
<td>7/8</td>
<td></td>
</tr>
<tr>
<td>-16</td>
<td>1-7/16</td>
<td>1</td>
<td>150–165</td>
</tr>
<tr>
<td>-20</td>
<td>1-11/16</td>
<td>1-1/4</td>
<td>205–226</td>
</tr>
<tr>
<td>-24</td>
<td>1–2</td>
<td>1-1/2</td>
<td>315–347</td>
</tr>
<tr>
<td>-32</td>
<td>2-1/2</td>
<td>2</td>
<td>510–561</td>
</tr>
</tbody>
</table>

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 and scratches, or any form of contamination.

2. Apply pipe thread sealant (paste type) to external pipe threads.

3. Thread fitting into port until hand-tight.

4. Torque connector to appropriate torque angle. The Turns From Finger Tight (TFFT) values are shown in Table 5.11, page 123. Make sure that tube end of a shaped connector (typically 45 degree or 90 degree) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.

5. Clean all residue and any excess thread conditioner with appropriate cleaner.

6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.

7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

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

Table 5.11 Hydraulic Fitting Pipe Thread

<table>
<thead>
<tr>
<th>Tapered Pipe Thread Size</th>
<th>Recommended TFFT</th>
<th>Recommended FFFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8–27</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>1/4–18</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>3/8–18</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>1/2–14</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>3/4–14</td>
<td>1.5–2.5</td>
<td>12–18</td>
</tr>
<tr>
<td>1–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
<tr>
<td>1 1/4–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
<tr>
<td>1 1/2–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
<tr>
<td>2–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
</tbody>
</table>

\(^{10}\) Torque values and angles shown are based on lubricated connection as in reassembly.
## 5.4 Conversion Chart

### Table 5.12 Conversion Chart

<table>
<thead>
<tr>
<th>Quantity</th>
<th>SI Units (Metric)</th>
<th>Factor</th>
<th>US Customary Units (Standard)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit Name</td>
<td>Abbreviation</td>
<td>Unit Name</td>
</tr>
<tr>
<td>Area</td>
<td>hectare</td>
<td>ha</td>
<td>acre</td>
</tr>
<tr>
<td>Flow</td>
<td>liters per minute</td>
<td>L/min</td>
<td>US gallons per minute</td>
</tr>
<tr>
<td>Force</td>
<td>Newton</td>
<td>N</td>
<td>pound force</td>
</tr>
<tr>
<td>Length</td>
<td>millimeter</td>
<td>mm</td>
<td>inch</td>
</tr>
<tr>
<td>Length</td>
<td>meter</td>
<td>m</td>
<td>foot</td>
</tr>
<tr>
<td>Power</td>
<td>kilowatt</td>
<td>kW</td>
<td>horsepower</td>
</tr>
<tr>
<td>Pressure</td>
<td>kilopascal</td>
<td>kPa</td>
<td>pounds per square inch</td>
</tr>
<tr>
<td>Pressure</td>
<td>megapascal</td>
<td>MPa</td>
<td>pounds per square inch</td>
</tr>
<tr>
<td>Pressure</td>
<td>bar (Non-SI)</td>
<td>bar</td>
<td>pounds per square inch</td>
</tr>
<tr>
<td>Torque</td>
<td>Newton meter</td>
<td>Nm</td>
<td>pound feet or foot pounds</td>
</tr>
<tr>
<td>Torque</td>
<td>Newton meter</td>
<td>Nm</td>
<td>pound inches or inch pounds</td>
</tr>
<tr>
<td>Temperature</td>
<td>degrees Celsius</td>
<td>ºC</td>
<td>degrees Fahrenheit</td>
</tr>
<tr>
<td>Velocity</td>
<td>meters per minute</td>
<td>m/min</td>
<td>feet per minute</td>
</tr>
<tr>
<td>Velocity</td>
<td>meters per second</td>
<td>m/s</td>
<td>feet per second</td>
</tr>
<tr>
<td>Velocity</td>
<td>kilometers per hour</td>
<td>km/h</td>
<td>miles per hour</td>
</tr>
<tr>
<td>Volume</td>
<td>liter</td>
<td>L</td>
<td>US gallon</td>
</tr>
<tr>
<td>Volume</td>
<td>milliliter</td>
<td>ml</td>
<td>ounce</td>
</tr>
<tr>
<td>Volume</td>
<td>cubic centimeter</td>
<td>cm³ or cc</td>
<td>x 0.061 =</td>
</tr>
<tr>
<td>Weight</td>
<td>kilogram</td>
<td>kg</td>
<td>pound</td>
</tr>
</tbody>
</table>
5.5 Definitions

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

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Series header</td>
<td>MacDon A40D, A40DX, and Grass Seed auger headers</td>
</tr>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society of Testing and Materials</td>
</tr>
<tr>
<td>Bolt</td>
<td>A headed and externally threaded fastener that is designed to be paired with a nut</td>
</tr>
<tr>
<td>Cab-forward</td>
<td>Windrower operation with Operator and cab facing in direction of travel</td>
</tr>
<tr>
<td>Center-link</td>
<td>A hydraulic cylinder link between header and machine used to change header angle</td>
</tr>
<tr>
<td>CGVW</td>
<td>Combined gross vehicle weight</td>
</tr>
<tr>
<td>D1X Series header</td>
<td>MacDon D115X, D120X, and D125X rigid draper headers for M1 Series Windrows</td>
</tr>
<tr>
<td>D1XL Series header</td>
<td>MacDon D130XL, D135XL, D140XL, and D145XL rigid draper headers for M1 Series Windrows</td>
</tr>
<tr>
<td>DDD</td>
<td>Double-draper drive</td>
</tr>
<tr>
<td>DEF</td>
<td>Diesel exhaust fluid; also called AdBlue in Europe, and AUS 32 in Australia</td>
</tr>
<tr>
<td>DEF DOSING UNIT</td>
<td>Pump that supplies diesel exhaust fluid through system</td>
</tr>
<tr>
<td>DM</td>
<td>Dosing module</td>
</tr>
<tr>
<td>DK</td>
<td>Double knife</td>
</tr>
<tr>
<td>DKD</td>
<td>Double-knife drive</td>
</tr>
<tr>
<td>DOC</td>
<td>Diesel oxidation catalyst</td>
</tr>
<tr>
<td>DRT</td>
<td>Aftertreatment decomposition tube</td>
</tr>
<tr>
<td>DWA</td>
<td>Double Windrow Attachment</td>
</tr>
<tr>
<td>ECM</td>
<td>Engine control module</td>
</tr>
<tr>
<td>EEC</td>
<td>Eco engine control</td>
</tr>
<tr>
<td>Engine-forward</td>
<td>Windrower operation with Operator and engine facing in direction of travel</td>
</tr>
<tr>
<td>FFFF</td>
<td>Flats from finger tight</td>
</tr>
<tr>
<td>Finger tight</td>
<td>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</td>
</tr>
<tr>
<td>GSL</td>
<td>Ground speed lever</td>
</tr>
<tr>
<td>GSS</td>
<td>Grass Seed</td>
</tr>
<tr>
<td>GVW</td>
<td>Gross vehicle weight</td>
</tr>
<tr>
<td>Hard joint</td>
<td>A joint made with use of a fastener where joining materials are highly incompressible</td>
</tr>
<tr>
<td>Header</td>
<td>A machine that cuts and lays crop into a windrow and is attached to a windrow</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hex key</td>
<td>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</td>
</tr>
<tr>
<td>HDS</td>
<td>Hydraulic deck shift</td>
</tr>
<tr>
<td>hp</td>
<td>Horsepower</td>
</tr>
<tr>
<td>HPT display</td>
<td>Harvest Performance Tracker display module on a windrower</td>
</tr>
<tr>
<td>JIC</td>
<td>Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting</td>
</tr>
<tr>
<td>Knife</td>
<td>A cutting device which uses a reciprocating cutter (also called a sickle)</td>
</tr>
<tr>
<td>MDS</td>
<td>Mechanical deck shift</td>
</tr>
<tr>
<td>M1 Series windrower</td>
<td>MacDon M1170 and M1240 windrowers</td>
</tr>
<tr>
<td>n/a</td>
<td>Not applicable</td>
</tr>
<tr>
<td>NPT</td>
<td>National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit</td>
</tr>
<tr>
<td>Nut</td>
<td>An internally threaded fastener that is designed to be paired with a bolt</td>
</tr>
<tr>
<td>ORB</td>
<td>O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors</td>
</tr>
<tr>
<td>ORFS</td>
<td>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</td>
</tr>
<tr>
<td>PARK</td>
<td>The slot opposite the NEUTRAL position on operator’s console of M1 Series windrowers</td>
</tr>
<tr>
<td>RoHS (Reduction of Hazardous Substances)</td>
<td>A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)</td>
</tr>
<tr>
<td>rpm</td>
<td>Revolutions per minute</td>
</tr>
<tr>
<td>R1 Series header</td>
<td>MacDon R113 SP disc headers for windrowers</td>
</tr>
<tr>
<td>SAE</td>
<td>Society of Automotive Engineers</td>
</tr>
<tr>
<td>SCR</td>
<td>Selective catalytic reduction catalyst</td>
</tr>
<tr>
<td>Screw</td>
<td>A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part</td>
</tr>
<tr>
<td>SDD</td>
<td>Single-draper drive</td>
</tr>
<tr>
<td>Self-Propelled (SP) Windrower</td>
<td>Self-propelled machine consisting of a power unit with a header</td>
</tr>
<tr>
<td>SK</td>
<td>Single knife</td>
</tr>
<tr>
<td>SKD</td>
<td>Single-knife drive</td>
</tr>
<tr>
<td>Soft joint</td>
<td>A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time</td>
</tr>
<tr>
<td>spm</td>
<td>Strokes per minute</td>
</tr>
<tr>
<td>Tension</td>
<td>Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TFFT</td>
<td>Turns from finger tight</td>
</tr>
<tr>
<td>Torque</td>
<td>The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf-ft)</td>
</tr>
<tr>
<td>Torque angle</td>
<td>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</td>
</tr>
<tr>
<td>Torque-tension</td>
<td>The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw</td>
</tr>
<tr>
<td>ULSD</td>
<td>Ultra-low sulphur diesel</td>
</tr>
<tr>
<td>Washer</td>
<td>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</td>
</tr>
<tr>
<td>Windrower</td>
<td>Power unit of a self-propelled header</td>
</tr>
<tr>
<td>WOT</td>
<td>Wide open throttle</td>
</tr>
</tbody>
</table>
**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.

<table>
<thead>
<tr>
<th>Windrower Serial Number:</th>
<th>Engine Serial Number:</th>
</tr>
</thead>
</table>

**M1170 Windrower Predelivery Checklist**

<table>
<thead>
<tr>
<th>✓ Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.</td>
<td></td>
</tr>
<tr>
<td>Check for loose hardware. Tighten to required torque.</td>
<td>5 Reference, page 113</td>
</tr>
<tr>
<td>Check tire air pressures and adjust as required.</td>
<td>4.1.10 Checking Tire Pressures, page 52</td>
</tr>
<tr>
<td>Check wheel drive hub lubricant level.</td>
<td>4.1.12 Checking and Adding Wheel Drive Lubricant, page 59</td>
</tr>
<tr>
<td>Check engine coolant level and strength at pressurized coolant tank.</td>
<td>4.1.6 Checking Engine Coolant Level, page 49</td>
</tr>
<tr>
<td>Check air cleaner and clamps.</td>
<td>4.1.2 Checking Engine Air Intake, page 46</td>
</tr>
<tr>
<td>Check engine oil level and check for leaks.</td>
<td>4.1.3 Checking and Adding Engine Oil, page 46</td>
</tr>
<tr>
<td>Check hydraulic oil level and check for leaks along lines.</td>
<td>4.1.4 Checking and Adding Hydraulic Oil, page 48</td>
</tr>
<tr>
<td>Check fuel separator for water and foreign material, drain and clean as necessary, and add fuel.</td>
<td>4.1.5 Checking Fuel Separator, page 49</td>
</tr>
<tr>
<td>Check gearbox lubricant level.</td>
<td>4.1.7 Checking Engine Gearbox Lubricant Level and Adding Lubricant, page 50</td>
</tr>
<tr>
<td>Check tension of A/C compressor belt.</td>
<td>4.1.8 Checking Air Conditioning (A/C) Compressor Belts, page 50</td>
</tr>
<tr>
<td>Check that machine is completely lubricated.</td>
<td>3.12.2 Lubrication Points, page 41</td>
</tr>
<tr>
<td>Check Operator’s Presence System</td>
<td>4.1.9 Checking Operating Safety System, page 51</td>
</tr>
<tr>
<td>Check horn operation.</td>
<td>4.2.5 Checking Horn, page 70</td>
</tr>
<tr>
<td><strong>Start engine and run to operating temperature.</strong></td>
<td>4.1.11 Starting the Engine, page 55</td>
</tr>
<tr>
<td>Check HPT, fuel, and diesel exhaust fluid (DEF) gauges for operation.</td>
<td>4.2.2 Checking Harvest Performance Display (HPT), page 61</td>
</tr>
<tr>
<td>Check engine speed on HPT.</td>
<td>4.2.3 Checking Engine Speed, page 66</td>
</tr>
<tr>
<td>Check that air conditioning and heater are functioning properly.</td>
<td>4.2.7 Checking Air Conditioning and Heater, page 71</td>
</tr>
</tbody>
</table>
## Reference

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check that interior lights are functioning properly.</td>
<td>4.2.6 Checking Interior Lights, page 71</td>
</tr>
<tr>
<td>Check that exterior lights are functioning properly.</td>
<td>4.2.4 Checking Exterior Lights, page 67</td>
</tr>
<tr>
<td>Check that hazard and signal lights are functioning properly.</td>
<td>4.2.4 Checking Exterior Lights, page 67</td>
</tr>
<tr>
<td>Check that beacons are functioning properly (if installed).</td>
<td>4.2.4 Checking Exterior Lights, page 67</td>
</tr>
<tr>
<td>Complete the header’s Predelivery Checklist (if applicable).</td>
<td></td>
</tr>
<tr>
<td>Check that manuals are in the windrower manual case.</td>
<td>4.3 Checking Manuals, page 74</td>
</tr>
<tr>
<td>Remove plastic coverings and windshield decal from cab interior.</td>
<td>4.4 Performing Final Steps, page 75</td>
</tr>
</tbody>
</table>

**Date Checked:**

**Checked by:**