

# **M205**

# **Self-Propelled Windrower**

Operator's Manual

169469 Rev. F

Original Instruction

This manual contains instructions for SAFETY, OPERATION, and MAINTENANCE/SERVICE for the MacDon M205 Self-Propelled Windrower.



Published October, 2013

## California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm. Battery posts, terminals and related accessories contain lead and lead components. Wash hands after handling.

# Declaration of Conformity


		
<b>EC Declaration of Conformity</b>		
MacDon Industries Ltd 680 Moray Street Winnipeg, Manitoba, Canada R3J 3S3		
<i>The undersigned hereby declares that:</i>		
<b>Machine type:</b>	<i>M Series Windrower</i>	
<b>Model:</b>	<i>M105, M155, M205</i>	
<b>Serial Number(s):</b>	<i>As Per Shipping Document</i>	
<i>fulfills all relevant provisions and essential requirements of the following directives:</i>		
Directive	Number	Certification Method
Machinery Directive	2006/42/EC	Self-Certification
EMC Directive	2004/108/EC	Self-Certification
<i>Name and address of the person in the European Community authorized to compile the technical construction file:</i>		
Johannes Molitor Schwarzwald Strasse 67 66482 Zweibrucken / Germany HRB 31002, Amtsgericht Zweibrucken		
<b>Place of Declaration:</b>	Winnipeg, Manitoba, Canada	<b>Name:</b> Ibrahim Saleh
<b>Date of Declaration:</b>	01 July 2013	<b>Title:</b> Director, Product Integrity

Figure 1

Continued on next page.

## **Whole Body and Hand-Arm Vibration Levels**

The weighted root mean square acceleration to which the whole body is subjected to ranges from 0.57 to 1.06 m/s<sup>2</sup> as measured on a representative machine during typical operations and analyzed in accordance with ISO 5008. During the same operations, the weighted root means square hand-arm vibration was less than 1.45 m/s<sup>2</sup> when analyzed in accordance with ISO 5349. These acceleration values depend on the roughness of the ground, the speeds at which the windrower is operated, the operator's experience, weight and driving habits.

## **Noise Levels**

The A-weight sound pressure levels inside the operator's station ranged from 70.1 to 73.1 dB(A) as measured on several representative machines in accordance with ISO 5131. The sound pressure level depends upon the engine speed and load, field and crop conditions and the type of platform used.

## Introduction

This manual contains information on the MacDon M205 Self-Propelled Windrower, which is designed to cut and lay in windrows, a wide variety of grain, hay and speciality crops. Windrowing allows starting the harvest earlier, protects the crop from wind damage, and gives you more flexibility in scheduling combine time.

The power unit (referred to in this manual as the “windrower”), when coupled with one of the specially designed auger, rotary, or draper headers, provides a package which incorporates many features and improvements in design.

The M205 Windrower is Dual Direction™, meaning that the windrower can be driven in the cab-forward or the engine-forward modes. Right-Hand and Left-Hand designations are therefore 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.

Use this manual as your first source of information about the machine. Use the Table of Contents and the Index to guide you to specific areas. Study the Table of Contents to familiarize yourself with how the material is organized.

If you follow the instructions given here, your M205 Windrower will work well for many years.

Keep this manual handy for frequent reference, and to pass on to new Operators or Owners. Call your Dealer if you need assistance, information, or additional copies of this manual. A manual storage case is provided in the cab. If you require more detailed service information, contact your MacDon Dealer.

**CAREFULLY READ ALL THE MATERIAL PROVIDED BEFORE ATTEMPTING SERVICE THE MACHINE.**

## Serial Number

WINDROWER MODEL  
NUMBER \_\_\_\_\_

YEAR OF MANUFACTURE \_\_\_\_\_

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



**Figure 2: Machine Serial Number location**

A - Serial number location

ENGINE SERIAL  
NUMBER \_\_\_\_\_

DATE OF  
MANUFACTURE \_\_\_\_\_

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



**Figure 3: Engine Serial Number location**

A - Serial number location

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# 1 Safety

## 1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

### Why is safety important to you?

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



**Figure 1.1: Read operator's manual before operating**

# SAFETY

## 1.2 Signal Words

Three signal words, DANGER, WARNING, and CAUTION, are used to alert you to hazardous situations. The appropriate signal word for each situation has been selected using the following guidelines:



### **DANGER**

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



### **WARNING**

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



### **CAUTION**

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



### 1.3 General Safety

## CAUTION

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

Protect yourself

- When assembling, operating and servicing machinery, wear all the protective clothing and personal safety devices that **COULD** be necessary for the job at hand. Don't take chances.

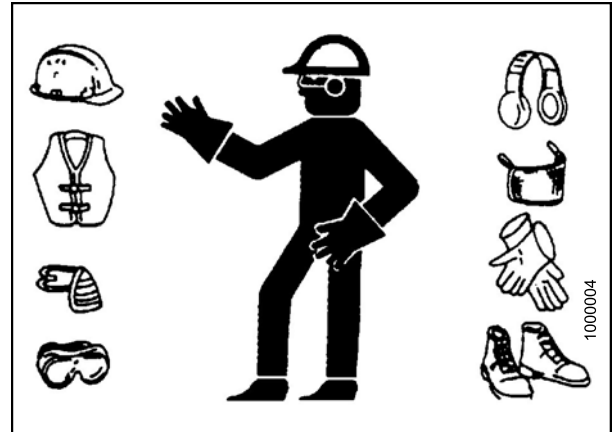


Figure 1.2

- You may need:
  - A hard hat
  - Protective footwear with slip resistant soles
  - Protective glasses or goggles
  - Heavy gloves
  - Wet weather gear
  - A respirator or filter mask
  - Hearing protection
    - Be aware that exposure to loud noise can cause impairment, or loss of hearing. Wearing suitable hearing protection devices such as ear muffs, or ear plugs. These will help protect against objectionable, or loud noises.
- Provide a first aid kit for use in case of emergencies.
- Keep a fire extinguisher on the machine. Be sure the fire extinguisher is properly maintained. Be familiar with its proper use.
- Keep young children away from the machinery at all times.
- Be aware that accidents often happen when the Operator is tired or in a hurry to get finished. Take the time to consider the safest way. Never ignore warning signs of fatigue.



Figure 1.3

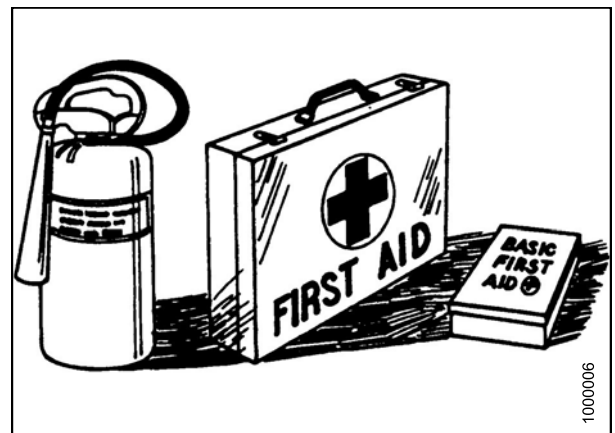


Figure 1.4

## 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 the shaft and can telescope freely.
- Use only service and repair parts, made, or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.



Figure 1.5

- Keep hands, feet, clothing, and hair away from moving parts. Never attempt to clear obstructions, or objects, from a machine while the engine is running.
- Do **NOT** modify the machine. Non-authorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

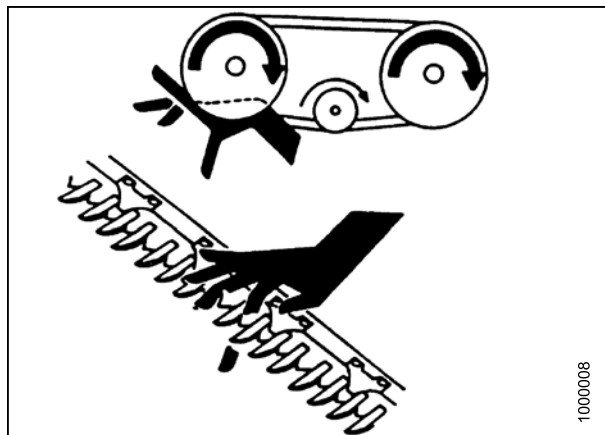


Figure 1.6

- Keep the area used for servicing machinery 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, are a fire hazard. Do **NOT** allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before storage.
- Never use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover sharp or extending components to prevent injury from accidental contact.



Figure 1.7

# SAFETY

## 1.4 Maintenance Safety

To ensure your safety while maintaining the machine:

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



Figure 1.8: Slip on puddle



Figure 1.9: Keep away

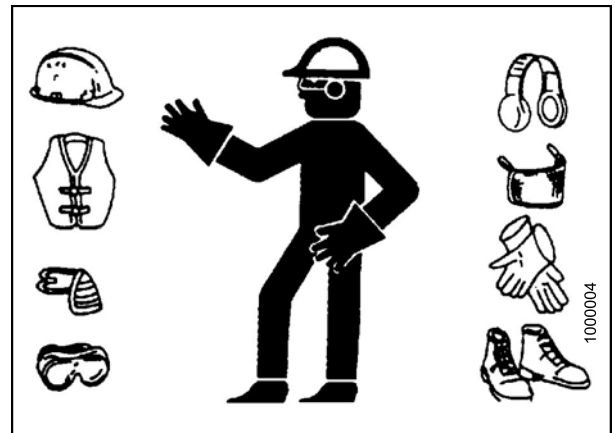


Figure 1.10: Safety gear

## SAFETY

### 1.5 Hydraulic Safety

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

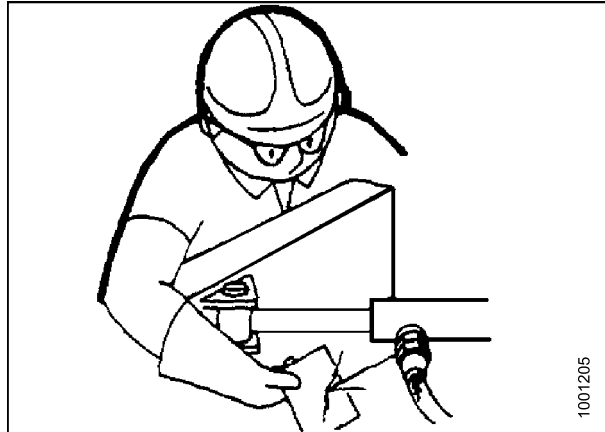


Figure 1.11: Checking hydraulic leaks

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



Figure 1.12: Hydraulic pressure hazard

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

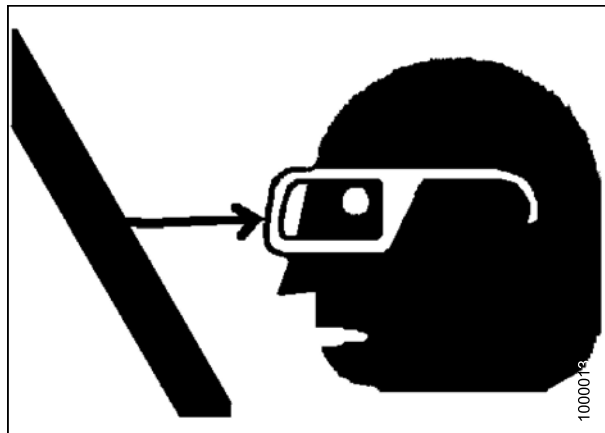


Figure 1.13: Wear safety glasses

## SAFETY

### 1.6 Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.



Figure 1.14: Lower all safety stops

- Do **NOT** attempt to mount a tire unless you have the proper training and equipment.

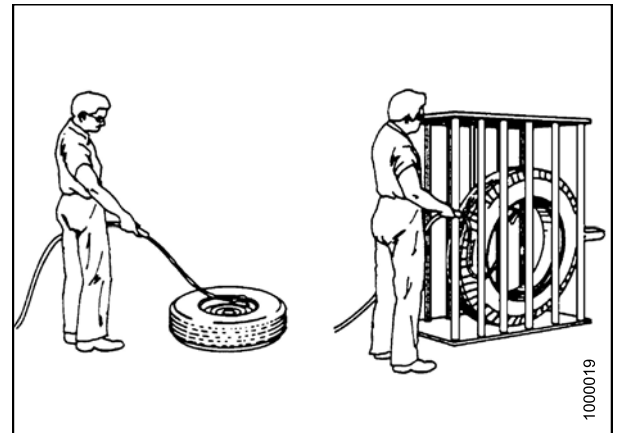


Figure 1.15: Safely filling a tire with air

- Have a qualified tire dealer or repair service perform required tire maintenance.

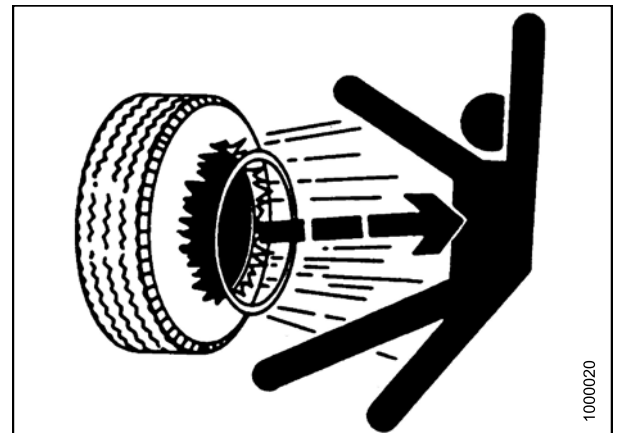


Figure 1.16: Over-inflation of tire

## SAFETY

### 1.7 Battery Safety

#### **WARNING**

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



Figure 1.17

## SAFETY



### 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 the eyes is extremely dangerous. Should this occur, force the eye open, and flood with cool, clean water for five minutes. Call a doctor immediately.
- If electrolyte is spilled or splashed on clothing or the 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 and part of electrical system.
- Do not operate the engine with alternator or battery disconnected. With battery cables disconnected and engine running, a high voltage can be built up if terminals touch the frame. Anyone touching the frame under these conditions would be severely shocked.
- When working around storage batteries, remember that all of the exposed metal parts are live. Never lay a metal object across the terminals because a spark or short circuit will result.
- Keep batteries out of reach of children.

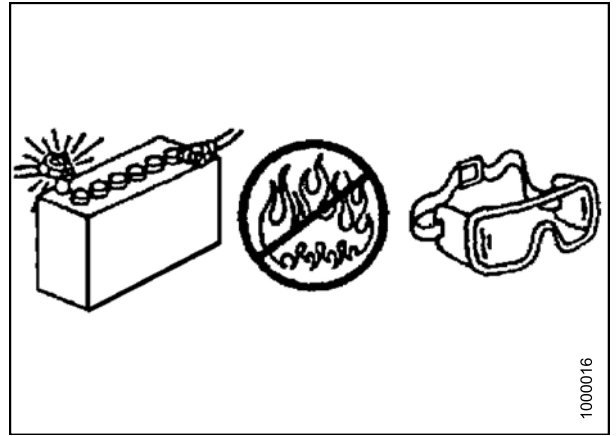


Figure 1.18

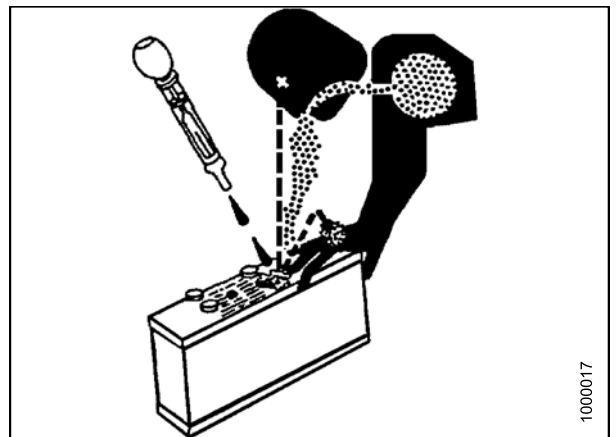


Figure 1.19

## **SAFETY**

### **1.8 Welding Precaution**

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



## SAFETY

### 1.9 Engine Safety



#### WARNING

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



#### CAUTION

- In the initial start-up of a new, serviced, or repaired engine always make provision to shut the engine off, in order to stop an over-speed. This may be accomplished by shutting off the air and/or fuel supply to the engine. Over-speed shut down should occur automatically for engines that are controlled electronically.
- Do not bypass or disable the 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. See the Service Manual for repairs and for 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 the area is free of personnel.
- 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 the parts carefully.
- If a warning tag is attached to the engine start switch or to the controls, do NOT start the engine or move the controls. Consult with the person who attached the warning tag before the engine is started.
- Start the engine from the operator's compartment. Always start the engine according to the procedure that is described in the Engine Starting section of the operator's manual. Knowing the correct procedure will help to prevent major damage to the engine components and prevent personal injury.
- To ensure that the jacket water heater (if equipped) and/or the lube oil heater (if equipped) is working correctly, check the water temperature gauge and/or the oil temperature gauge during the heater operation. Engine exhaust contains products of combustion which can be harmful to your health. Always start the engine and operate the engine in a well ventilated area. If the engine is started in an enclosed area, vent the engine exhaust to the outside.

**NOTE:** The engine may be equipped with a device for cold starting. If the engine will be operated in very cold conditions, then an additional cold starting aid may be required. Normally, the engine will be equipped with the correct type of starting aid for your region of operation.

#### 1.9.1 High Pressure Rails



#### 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 inspection, maintenance and service instructions may cause personal injury or death.

## SAFETY

### 1.9.2 Engine Electronics



#### **WARNING**

Tampering with the electronic system installation or the 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 Electronic 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 the 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 the engine operating conditions. If any of the engine parameters extend outside an allowable range, the ECM will initiate an 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 the engine power:

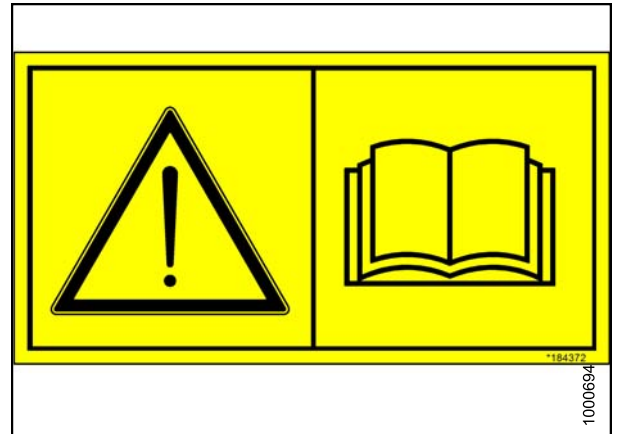
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Speed
- Intake Manifold Air Temperature

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

## SAFETY

### 1.10 Safety Signs

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



**Figure 1.20: Read operator's manual before operating**

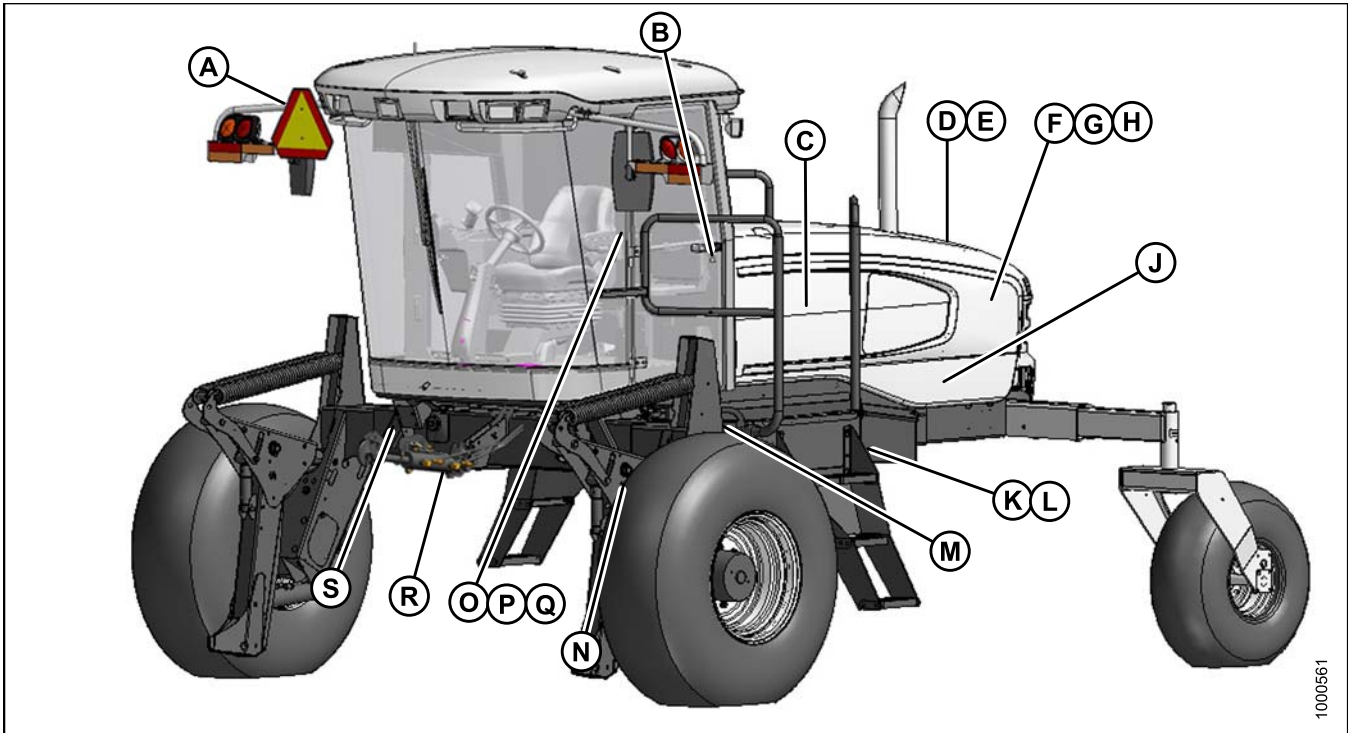
#### 1.10.1 Installing Safety Decals

To install a safety decal, follow these steps:

1. Be sure the installation area is clean and dry.
2. Decide on the exact location before you remove the decal backing paper.
3. Remove the smaller portion of the split backing paper.
4. Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.
5. Small air pockets can be smoothed out or pricked with a pin.

# SAFETY

## 1.11 Safety Sign Locations



**Figure 1.21: Safety Sign Locations (LH Side)**

A - Hazard sign MD #135378  
D - Exhaust cover MD #166450  
G - Fan shroud (middle) MD #166451  
K - Platform (L of step) MD #166425  
N - Lift linkage MD #166438  
Q - Inner post MD #166463

B - Cab door MD #166454  
E - Close to radiator cap MD #166461  
H - Fan shroud (bottom) MD #166452  
O - Inner post MD #166457  
P - Inner post MD #166234  
R - Neutral interlock MD #166425

C - Oil reservoir under hood MD #174436  
F - Fan shroud (top) MD #166450  
J - Frame opening MD #166233  
L - Platform (R of step) MD #166441  
M - Frame at valve block MD #166466  
S - Frame MD #166425

# SAFETY

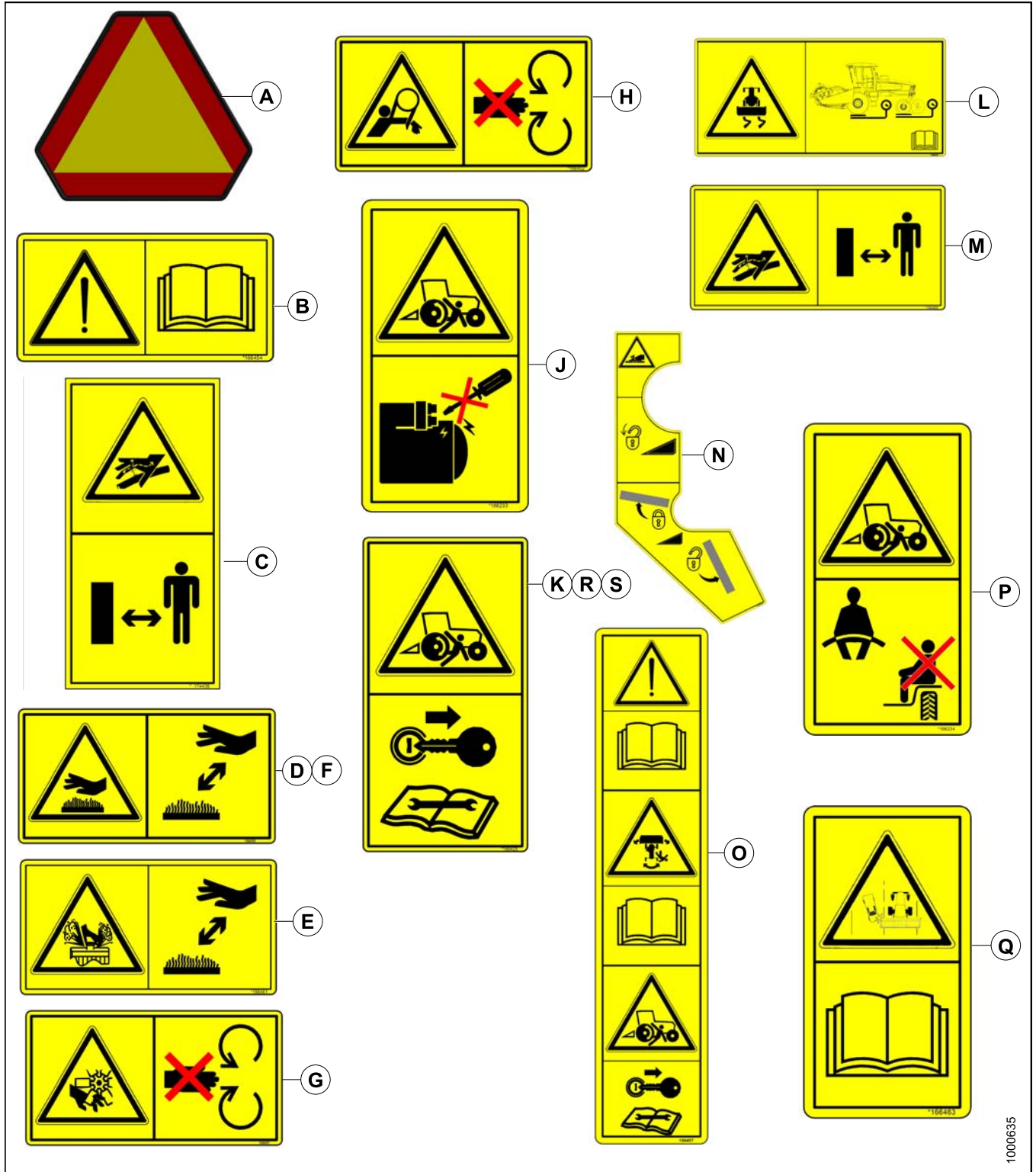
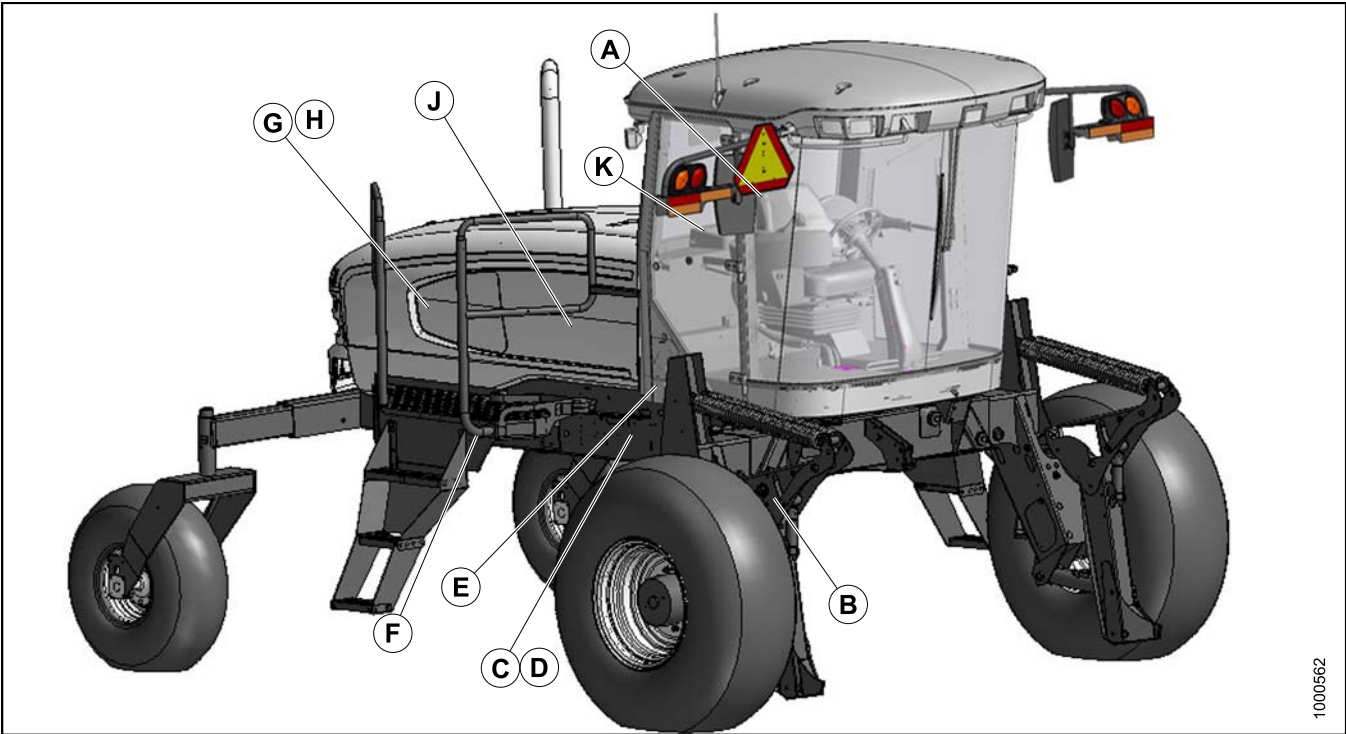


Figure 1.22: Safety Signs (LH Side)

# SAFETY



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**Figure 1.23: Safety Sign Locations (RH Side)**

A - Hazard sign on seat MD #115148  
D - Frame MD #166456  
G - Shroud MD #166451  
K - Wiper cover MD #166465

B - Lift linkage MD #166439  
E - Cab frame MD #184372  
H - Shroud MD #166452

C - Frame MD #166455  
F - Platform MD #166425  
J - Hydraulic reservoir MD #174436

# SAFETY

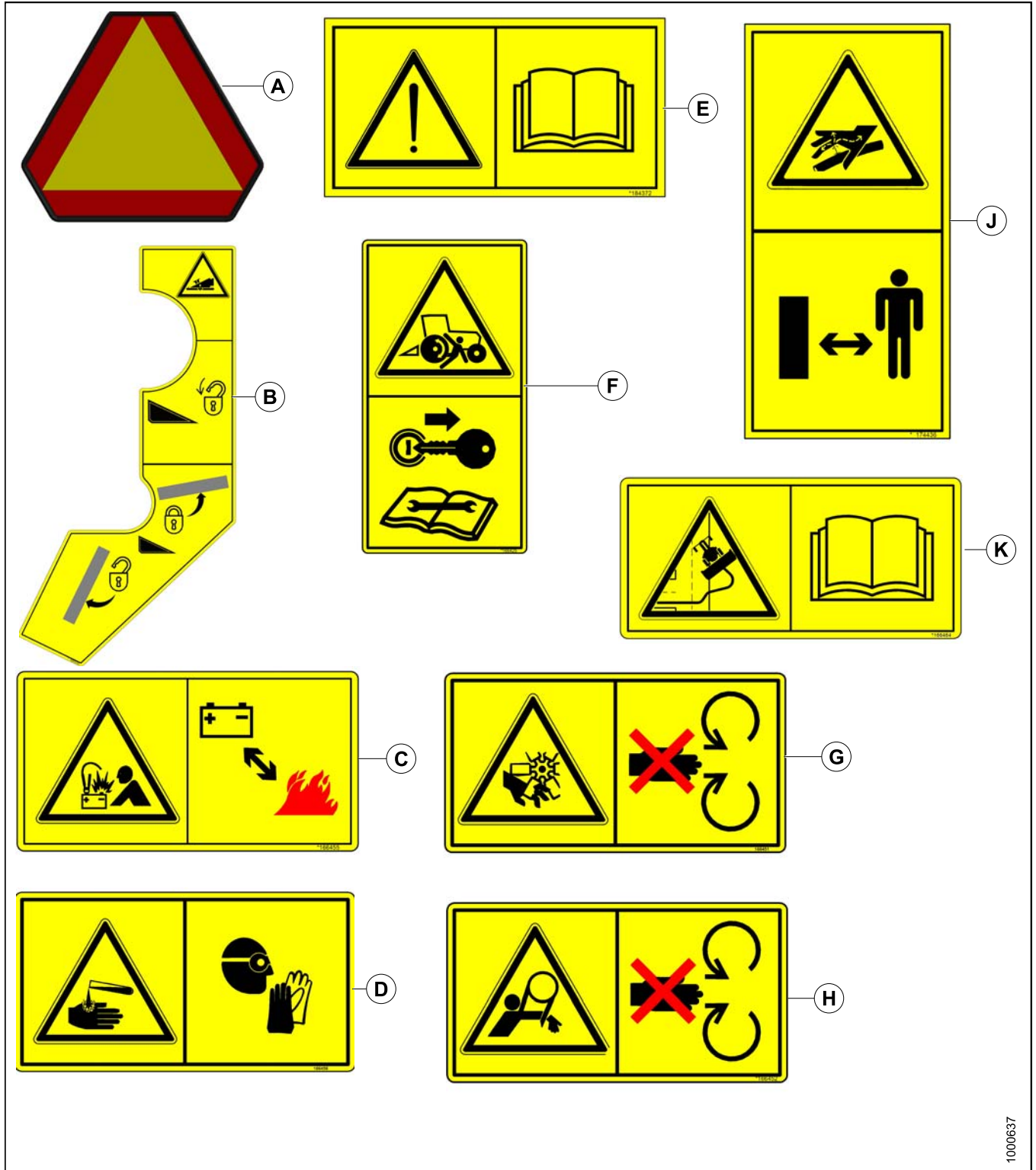


Figure 1.24: Safety Signs (RH Side)

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## SAFETY

### 1.12 Interpreting Safety Signs

In the safety sign explanations below, (a) refers to the top or left position panel, (b) refers to the bottom or right position of the safety decal depending on decal orientation.

**NOTE:** If there are more than two panels in a decal, the lettering will continue downward or to the right, depending on decal orientation.

1. MD #166233

a. Run-over hazard.

b. **DANGER**

- Do not start engine by shorting across starter or starter relay terminals. Machine will start with drive engaged and move if starting circuitry is bypassed.
- Start engine only from operator's seat. Do not try to start engine with someone under or near machine.

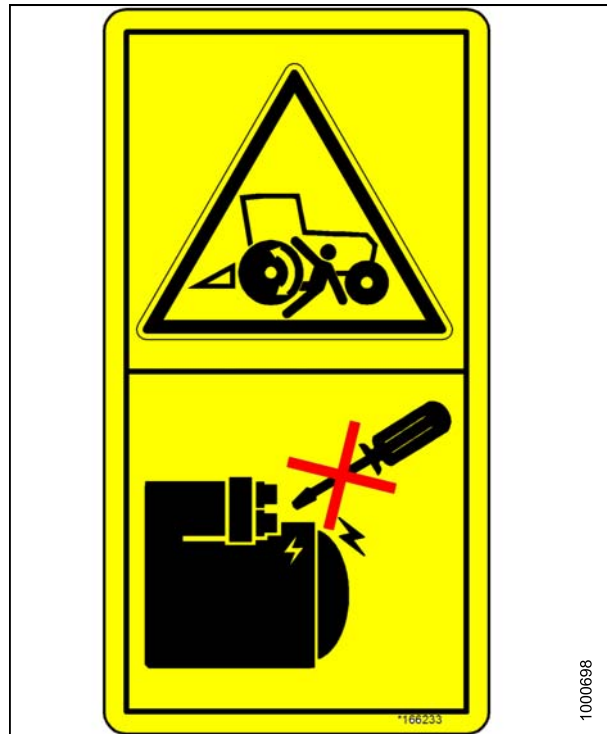


Figure 1.25: MD #166233



## SAFETY

### 2. MD #166234

a. Run-over hazard.

#### b. **WARNING**

- The training seat is provided for an experienced operator of the machine when a new operator is being trained.
- The training seat is not intended as a passenger seat or for use by children.
- Use the seat belt whenever operating the machine or riding as a trainer.
- Keep all other riders off the machine.



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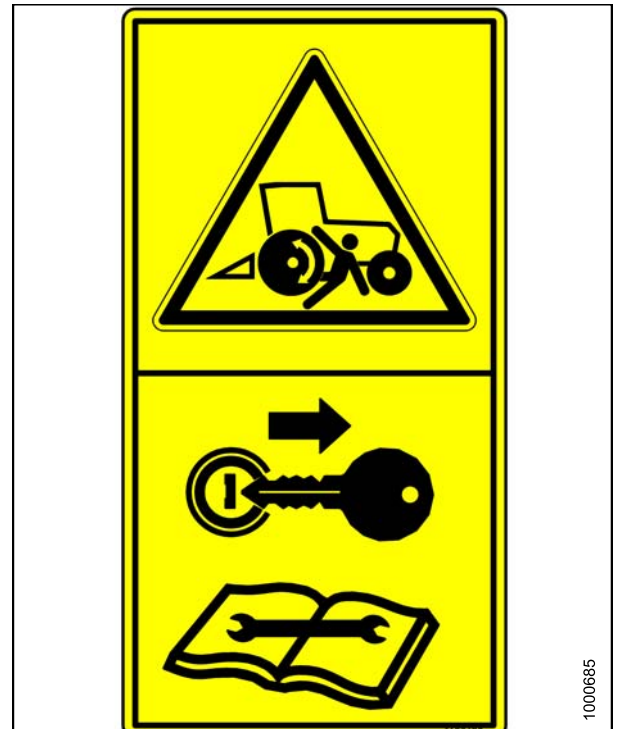
Figure 1.26: MD #166234

### 3. MD #166425

a. Roll-over hazard.

#### b. **WARNING**

- Stop engine and remove key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.



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Figure 1.27: MD #166425

## SAFETY

4. MD #166438
  - a. Crushing Hazard.
  - b. **DANGER**
    - Rest header on ground or engage mechanical locks before going under unit.

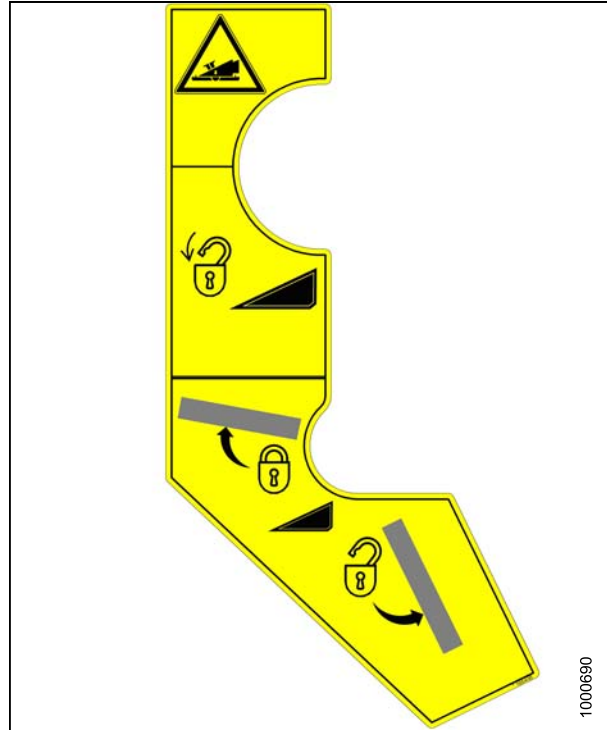


Figure 1.28: MD #166438

5. MD #166439
  - a. Crushing Hazard.
  - b. **DANGER**
    - Rest header on ground or engage mechanical locks before going under unit.

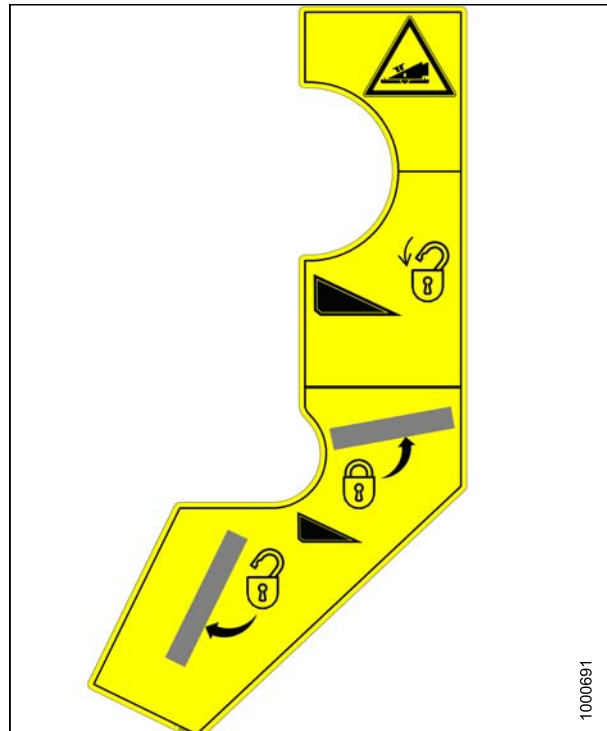


Figure 1.29: MD #166439

## SAFETY

### 6. MD #166441

a. Loss of control hazard.

b. **CAUTION**

- To prevent machine damage and/or loss of control, it is essential that the machine be equipped such that weights are within the specified limits.

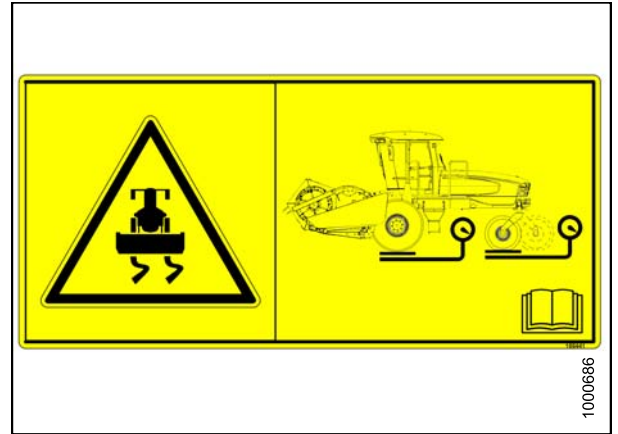


Figure 1.30: MD #166441

### 7. MD #166450

a. Hot surface hazard.

b. **WARNING**

- To avoid injury, keep a safe distance from hot surface.

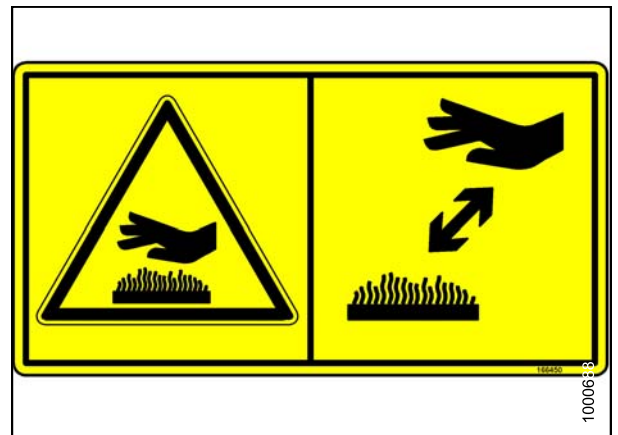


Figure 1.31: MD #166450

### 8. MD #166451

a. Rotating fan hazard.

b. **WARNING**

- To avoid injury, stop engine before opening engine hood.

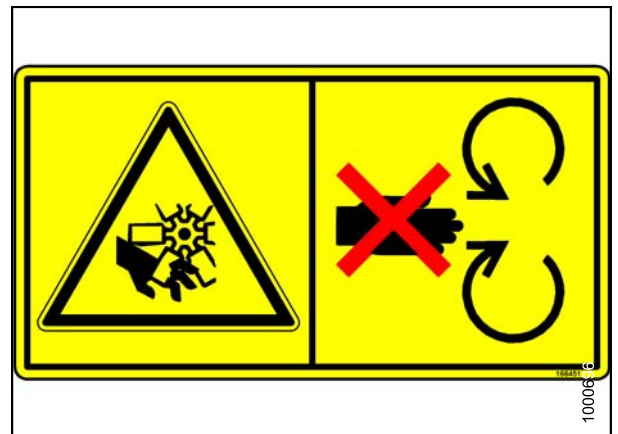


Figure 1.32: MD #166451

## SAFETY

### 9. MD #166452

a. Pinch point hazard.

#### b. **WARNING**

- To avoid injury, stop engine before opening engine hood.

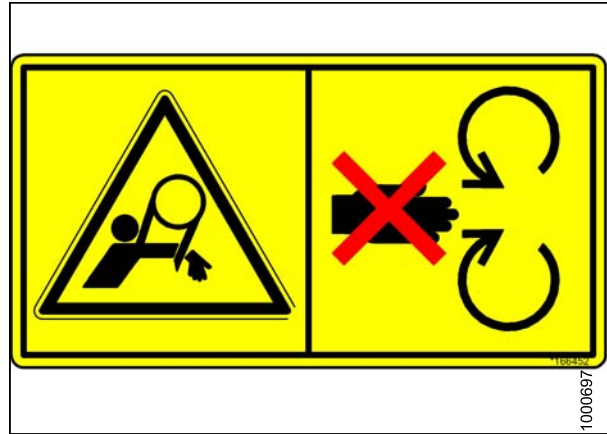


Figure 1.33: MD #166452

### 10. MD #166454

a. General hazard pertaining to machine operation and servicing.

#### b. **CAUTION**

To avoid injury or death from improper or unsafe machine operation:

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your dealer
- Do not allow untrained persons to operate the machine.
- Review safety instructions with all Operators annually.
- Ensure that all safety signs are installed and legible.
- Make certain everyone is clear of machine before starting engine and during operation.
- Keep riders off the machine.
- Keep all shields in place and stay clear of moving parts.
- Disengage header drive, put transmission in neutral and wait for all movement to stop before leaving operator's position.
- Shut down the engine and remove the key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage locks to prevent lowering of header or reel before servicing in the raised position.
- Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

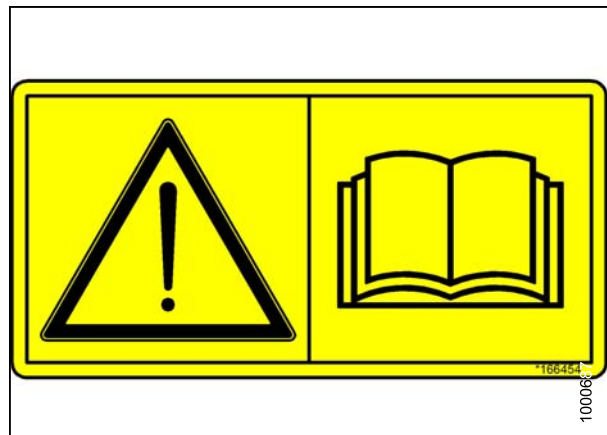


Figure 1.34: MD #166454

## SAFETY

### 11. MD #166455

- a. Explosion Hazard.
- b. **WARNING**
  - Prevent serious bodily injury caused by:
  - Explosive battery gases. Keep sparks and flames away from the battery. Refer to operator's manual for battery boosting and charging procedures.



Figure 1.35: MD #166455

### 12. MD #166456

- a. Battery acid hazard.
- b. **WARNING**
  - Corrosive and poisonous battery acid. Acid can severely burn your body and clothing.



Figure 1.36: MD #166456

## SAFETY

### 13. MD #166457

a. General hazard pertaining to machine operation and servicing.

b. **CAUTION**

To avoid injury or death from improper or unsafe machine operation:

- i. Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your dealer.
- ii. Do not allow untrained persons to operate the machine.
- iii. Review safety instructions with all operators annually.
- iv. Ensure that all safety signs are installed and legible.
- v. Make certain everyone is clear of machine before starting engine and during operation.
- vi. Keep riders off the machine.
- vii. Keep all shields in place and stay clear of moving parts.
- viii. Disengage header drive, put transmission in neutral and wait for all movement to stop before leaving operator's position.
- ix. Shut down the engine and remove the key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- x. Engage locks to prevent lowering of header or reel before servicing in the raised position.
- xi. Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

c. Run-over hazard.

d. **WARNING**

- Machine will move if steering wheel is turned while engine is running.
- Steering response is opposite to what is normally expected when backing up. Turn bottom of steering wheel in direction you want to go.
- Always move ground speed lever to slow end of range before shifting high-low speed control.

e. Run-over hazard.

f. Stop engine and remove key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.

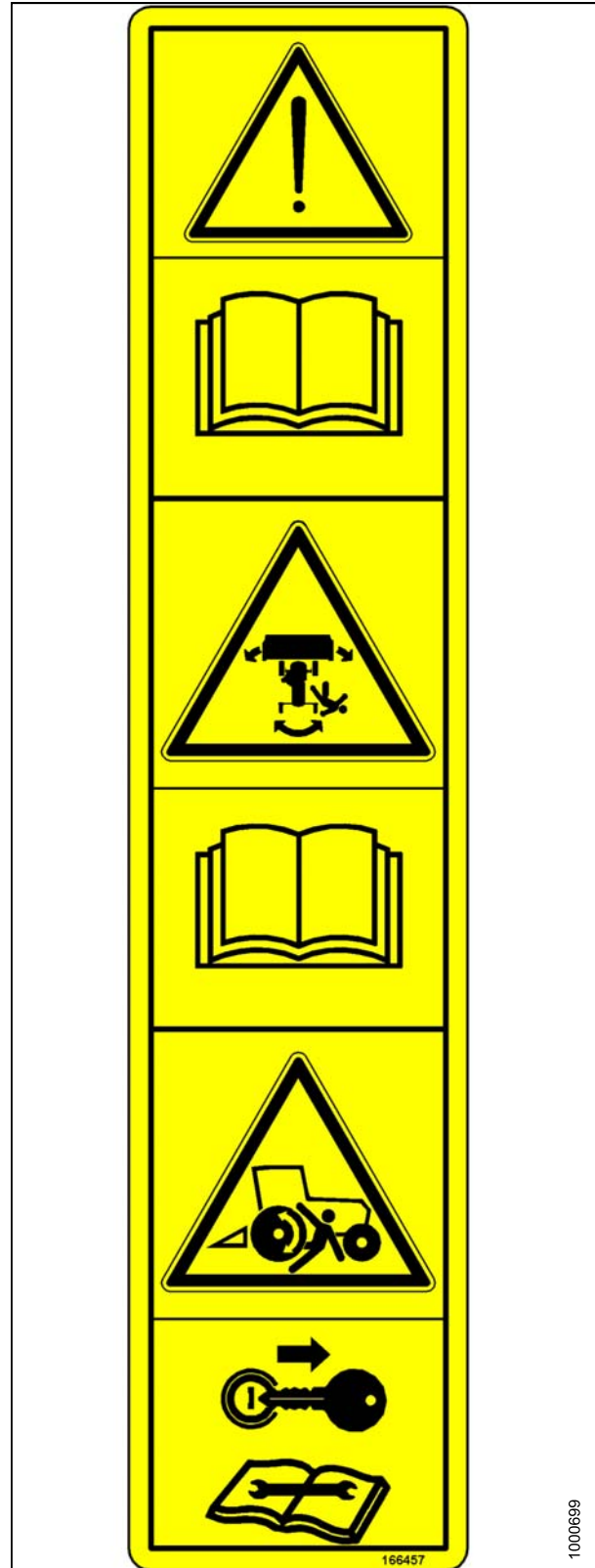


Figure 1.37: MD #166457

## SAFETY

### 14. MD #166461

- a. Hot fluid under pressure hazard.
- b. **CAUTION**
  - Coolant is under pressure and may be hot. Never remove radiator cap when engine is hot.



Figure 1.38: MD #166461

### 15. MD #166463

- a. Collision hazard in transport.
- b. **WARNING**
  - Collision between windrower and other vehicles may result in injury or death.

When driving windrower on public roadways:

- i. Obey all highway traffic regulations in your area. Use pilot vehicles front and rear of windrower if required by law.
- ii. Use slow moving vehicle emblem and flashing warning lights unless prohibited by law.
- iii. If width of attached header impedes other vehicle traffic, remove header and install MacDon approved weight box. Refer to operator's manual for safe procedure to tow header.

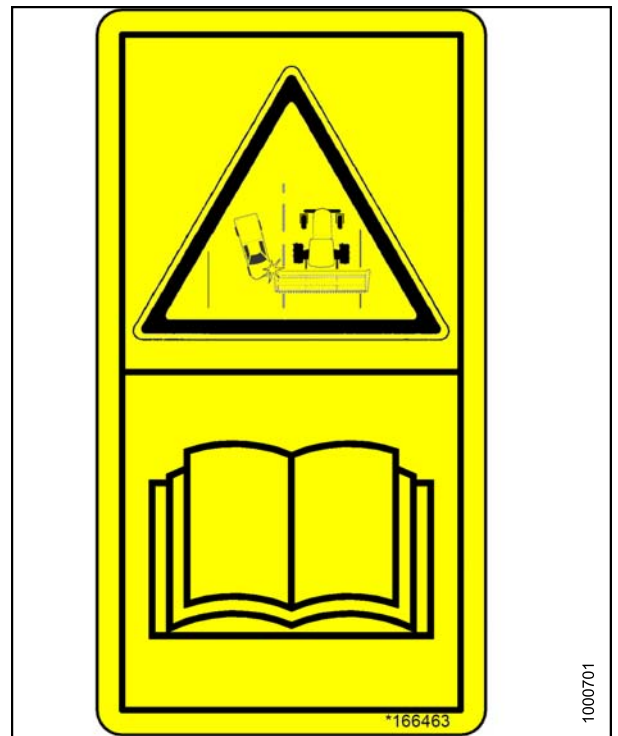


Figure 1.39: MD #166463

## SAFETY

### 16. MD #166465

a. Loss of control hazard.

b. **WARNING**

To avoid serious injury or death from loss of control:

- i. Do not make abrupt changes in steering direction.
- ii. Anticipate turns by slowing down well in advance.
- iii. Do not rapidly accelerate or decelerate while turning.
- iv. Limit speed to maximum 20 mph (32 km/h) when towing a header. To ensure steering control refer to operator's manual for adding weight to drive wheels.
- v. When travelling on steep slopes:
  - 1) Reduce speed and lower header.
  - 2) Move ground speed lever to slow end of range.
  - 3) Shift high-low speed control to low range.
- vi. With header removed, steering control is reduced if weight is not added to drive wheels. If you must drive the windrower without header or MacDon weight system:
  - 1) Operate in low speed range.
  - 2) Avoid slopes.
  - 3) Do not tow a header. **IF CONTROL OF MACHINE IS LOST, IMMEDIATELY PULL GROUND SPEED LEVER TO NEUTRAL.**

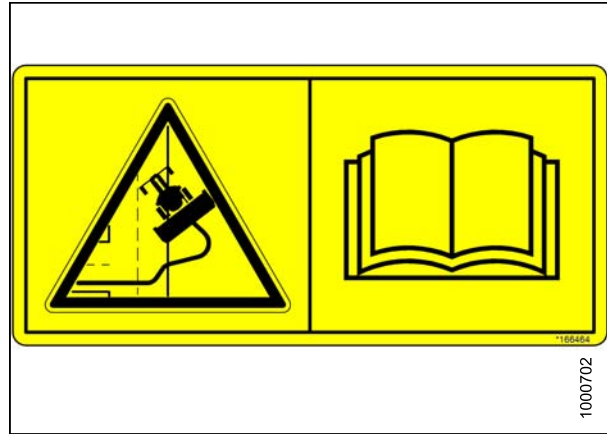


Figure 1.40: MD #166465



## SAFETY

### 17. MD #174436

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



Figure 1.41: MD #174436

### 18. MD #190546

- a. Slippery Surface.
- b. **WARNING**  
Do not place foot.
  - Do not use this area as a step or platform.
  - Failure to comply could result in serious injury or death.



Figure 1.42: MD #190546

## SAFETY

### 19. MD #220238

- a. Keep Shields In Place Hazard.
- b. **WARNING**
  - To avoid injury, stop engine before opening power drive system shield.
  - Keep all shields in place.

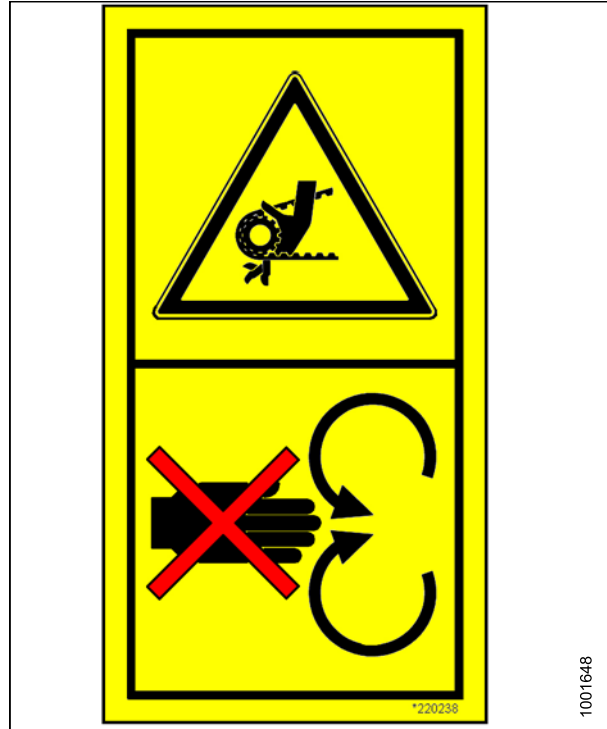


Figure 1.43: MD #220238

## 2 Description

### 2.1 Definitions

The following terms and acronyms may be used in this manual.

<b>Term</b>	<b>Definition</b>
A-Series header	MacDon auger header.
API	American Petroleum Institute.
APT	Articulating Power Tongue.
ASTM	American Society of Testing and Materials.
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut.
Cab-forward	Windrower operation with the Operator and cab facing in the direction of travel.
CDM	Cab Display Module on a self-propelled windrower.
Center-link	A hydraulic cylinder or manually adjustable turnbuckle type link between the header and the machine to which it is attached. It is used to change header angle.
CGVW	Combined Vehicle Gross Weight.
D-Series header	MacDon draper headers.
DKD	Double knife drive.
DDD	Double draper drive.
DR	Double reel.
DWA	Double Windrow Attachment.
ECM	Engine Control Module.
Engine-forward	Windrower operation with the Operator and engine facing in the direction of travel.
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other and the fitting has been tightened to a point where the fitting is no longer loose.
F.F.F.T	Flats from finger tight.
GSL	Ground Speed Lever.
GSS	Grass Seed Special.
GVW	Gross Vehicle Weight.
Hard joint	A joint made with the use of a fastener where the joining materials are highly incompressible.
Header	A machine that cuts and lays crop into a windrow, and is attached to a self-propelled windrower.
HDS	Hydraulic Deck Shift.
ISC	Intermediate Speed Control.
JIC	Joint Industrial Council: a standards body that developed the standard sizing and shape for original 37° flared fitting.
Knife	A cutting device which uses a reciprocating cutter. Also called a sickle.

## DESCRIPTION

<b>Term</b>	<b>Definition</b>
Mower conditioner	A machine that cuts and conditions hay, and is pulled by an agricultural tractor.
Nut	An internally threaded fastener that is designed to be paired with a bolt.
NPT	National Pipe Thread: a style of fitting used for low pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit.
ORB	O-ring Boss: a style of fitting commonly used in port opening on manifolds, pumps and motors.
ORFS	O-ring Face Seal: a style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring Seal.
PTO	Power Take-Off.
R-Series header	MacDon rotary disc header.
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict the use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings).
SAE	Society Of Automotive Engineers.
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of the mating parts.
SDD	Single draper drive.
Self-Propelled Windrower (SP)	Self-propelled machine consisting of a power unit with a header and/or conditioner.
Sickle	A cutting device which uses a reciprocating cutter. Also called a knife.
SKD	Single knife drive.
Soft joint	A joint made with the use of a fastener where the joining materials are compressible or experience relaxation over a period of time.
SR	Single reel.
Tractor	Agricultural type tractor.
Timed	One hydraulic motor drives both sickles boxes on double sickle headers.
Tension	Axial load placed on a bolt or screw, usually measured in pounds (lb) or Newtons (N).
T.F.F.T.	Turns from finger tight.
Torque	The product of a force X lever arm length, usually measured in foot-pounds (ft-lbf) or Newton-meters (Nm).
Torque angle	A tightening procedure where the fitting is assembled to a precondition (finger tight) and then the nut is turned further a number of degrees or a number of flats to achieve its final position.
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in the bolt or screw.
Truck	A four-wheel highway/road vehicle weighing no less than 7500 lbs (3400 kg).
UCA	Upper Cross Auger.
Untimed	Two hydraulic motors operate the two knife drive boxes independently on double knife headers.
Washer	A thin cylinder with a hole or slot located in the center and is to be used as a spacer, load distribution element or a locking mechanism.

## DESCRIPTION

<b>Term</b>	<b>Definition</b>
Windrower	Power unit of a self-propelled header.
WCM	Windrower Control Module.

## DESCRIPTION

### 2.2 Specifications

<b>ENGINE</b>		
Type	Cummins QSB-6.7L 6 Cylinder Turbo Diesel. B20 Bio-Diesel Approved.	
Displacement	409 cu.in. (6.7 L)	
Power	Rated	220 hp (164 kW) @ 2200 rpm
	Peak	230 hp (172 kW) @ 2000 rpm
Bore	4.21 in. (107 mm)	
Stroke	4.88 in. (124 mm)	
Maximum rpm (no load)	2250–2340	
Idle rpm	1075–1150	
<b>ELECTRICAL SYSTEM</b>		
Battery (2)	12 Volt, Maximum Dimension – 13 x 6.81 x 9.43 in. (334 x 188 x 232 mm). Group Rating 29H or 31A. Heavy Duty/Off Road/Vibration Resistant.	
Minimum CCA per battery (Cold Cranking Amps)	750	
Alternator	130 amp	
Egress Lighting	Standard	
Starter	Wet Type	
Working Lights	11	
<b>TRACTION DRIVE</b>		
Type	Hydrostatic, 3-Speed Electric Shift	
Speed	Field (Cab-Forward)	Low Range 0–11 mph (18 km/h), Mid Range 0–16 mph (26 km/h)
	Reverse (Cab-Forward)	6 mph (9.6 km/h)
	Transport (Engine-Forward)	High Range 0–23 mph (37 km/h)
Transmission	Type	2 Piston Pumps – 1 per Drive Wheel.
	Displacement	2.65 cu.in. (44 cc)
	Flow	40 U.S. gpm (167 L/min)
Final Drive	Type	Planetary Gearbox
	Ratio	30.06 : 1
Wheel Motor Displacement	Low-Range	4.15 cu.in. (68 cc)
	Mid-Range	3.01 cu.in. (50 cc)
	High-Range	1.93 cu.in. (32 cc)

## DESCRIPTION

<b>SYSTEM CAPACITIES</b>				
Fuel Tank		97 U.S. Gallons (367 L)		
Cooling		7.9 U.S. Gallons (30 L)		
Hydraulic Reservoir		17.2 U.S. Gallons (65 L)		
<b>HEADER DRIVE</b>				
Type		Hydraulic, Electrical Displacement Control		
Displacement		Piston Pump A – 6.44 cu.in. (105.5 cc.), Gear Pumps C and D – 1.02 cu.in. (16.7cc.)		
Flow		Piston Pump A – 0–72 gpm (–273 L/min), Gear Pumps C and D – 12 gpm (45 L/min)		
Max Pressure <sup>1</sup>		<b>Piston Pump (A)</b>	<b>Gear Pump C</b>	<b>Gear Pump D</b>
	Disc Drive (no header)	6000 psi (41,369 kPa)	—	—
	Knife Drive (differential)	4000 psi (27,579 kPa)	—	—
	Reel (Draper) Drive (differential)	2900 psi (19,994 kPa)	—	—
	Double Windrow Attachment (DWA) Drive	—	—	2900 psi (19,994 kPa)
	Conveyor (Draper) Reel/Auger (A40)	—	2900 psi (19,994 kPa)	—
	Supercharge	—	290–375 psi (1999–2585 kPa)	
<b>HEADER LIFT/TILT</b>				
Type		Hydraulic Double Acting Cylinders. Tilt – Hydraulic Positioning, Optional Mechanical Link		
Gear Pump (B) <sup>1</sup>	Displacement	1.02 cu.in. (16.7 cc)		
	Flow	12 U.S. gpm (45 L/min)		
	System Pressure (Relief/Max)	2500 psi (17,237 kPa)		
<b>HEADER FLOTATION</b>				
	Primary Adjustment	Manual, External, Draw-Bolt With Springs (1 per side). One Inner Booster Spring On Left Side.		
	Fine Adjustment	Hydraulic, In-Cab Switch		
	Automatic	Hydraulic, 3 Programmable Settings For All Headers (Deck Shift Compensation On Draper Headers)		
<b>CAB</b>				
Type		Spring/Shock Suspension		

1. See step for pump reference.

## DESCRIPTION

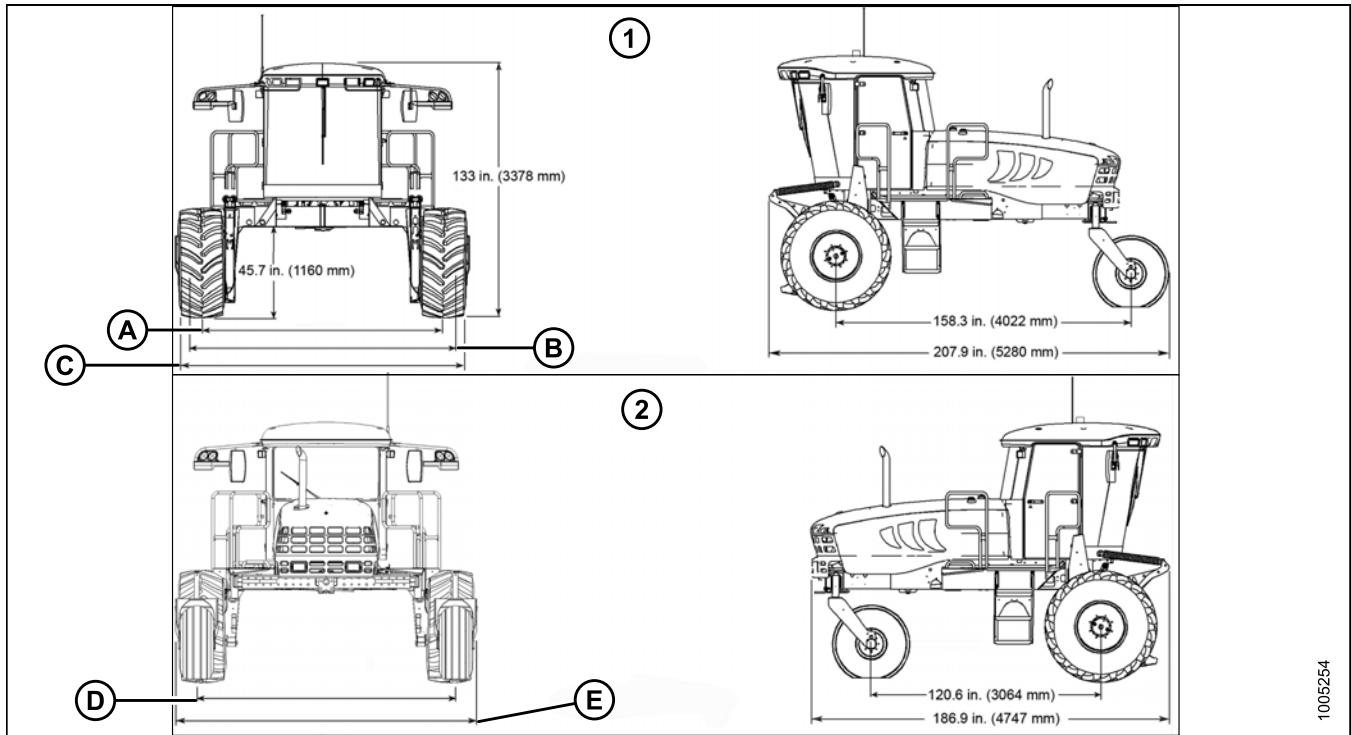
Dimensions	Width	63 in. (1600 mm)
	Depth	68.3 in. (1735 mm) (at top of window)
	Height	64.6 in. (1640 mm)
	Volume	125 cu.ft. (3540 L)
Seat	Driver	Adjustable Air-Ride Suspension, Seat Belt
	Training	Folding, Cab Mounted, Seat Belt
Windshield Wiper	Front	31.5 in. (800 mm) Blade
	Rear	22 in. (560 mm) Blade
Heater		24,000 Btu/h (7038 W)
Air Conditioning		28,280 Btu/h (8288 W)
Electrical Outlets		One Live, Two On Ignition, One Live/Keyed
Mirrors		One Inside (Transport), Two Outside (Field)
Radio		Two Speakers and Antenna Factory Installed. Radio Dealer Installed
<b>SYSTEM MONITORING</b>		
Speeds		Ground (mph or km/h), Engine (rpm), Knife (spm), Disc (rpm), Reel (rpm or mph/km/h), Conveyor (Ref. No.)
Header		Height, Angle, Float, Header Drive Load Gauge
<b>TIRE OPTIONS</b>		
Size	Drive	18.4 – 26 Bar, 18.4 – 26 Turf, 600-65 R28 Bar, 23.1 – 26 Turf, 580/70R26 Turf
	Rear	7.5 – 16SL Single Rib, 10 - 16 Front Steer Tire 16.5L – 16.1 Rib Implement Flotation, Forked Caster
Pressure	Drive	Bar – 32 psi (221 kPa), Turf – 20 psi (138 kPa)
	Rear	10 psi (69 kPa)
<b>FRAME AND STRUCTURE</b>		
Dimensions		Refer to <a href="#">2.3 M205 Windrower Dimensions, page 35</a>
Frame to Ground (Crop Clearance)		45.7 in. (1160 mm)
Weight	Base	9920 lb. (4500 kg)
	Max GVW	21500 (9750 kg)
	Max CGVW	23,100 lb (10,480 kg)
NG Header Compatibility		A40-D Auger, D50 Harvest Header, D60 Harvest Header / D65 Draper Up To 40 ft, R80/R85 Rotary Disc

- NOTE:**
1. Specifications and design are subject to change without notice or obligation to revise previously sold units.
  2. Weights do not include options.



## DESCRIPTION

### 2.3 M205 Windrower Dimensions



**Figure 2.1: Windrower Dimensions**

1- Cab-forward

2- Engine-forward

**Table 2.1 Drive Tires**

Tire size	Wheel position	Tread (A) [inch (mm)]	Hubs (B) [inch (mm)]	Tires (C) [inch (mm)]
18.4 x 26 Bar & Turf Narrow Track <sup>2</sup>	Inner/Outer (Shipping)	123-3/4 (3144)	140-9/16 (3571)	143-7/16 (3644)
	Outer/Outer	130-7/8 (3324)	147-11/16 (3751)	150-5/8 (3824)
	Inner/Inner	116-11/16 (2964)	133-1/2 (3391)	136-3/8 (3464)
18.4 x 26 Bar & Turf Wide Track <sup>2</sup>	Inner/Outer (Shipping)	130-11/16 (3319)	140-9/16 (3571)	150-3/8 (3819)
	Outer/Outer	137-3/4 (3499)	147-11/16 (3751)	157-7/16 (3999)
	Inner/Inner	123-9/16 (3139)	133-1/2 (3391)	143-1/4 (3639)
600/65R28 Radial Tire	Inner/Outer (Shipping)	123-9/16 (3139)	140-9/16 (3571)	147-15/16 (3758)
	Outer/Outer	130-11/16 (3319)	147-11/16 (3751)	155-1/16 (3938)
	Inner/Inner	116-1/2 (2959)	133-1/2 (3391)	140-7/8 (3578)

2. Only 18.4 x 26 tires are compatible with the 13-foot R80 and R85.

## DESCRIPTION

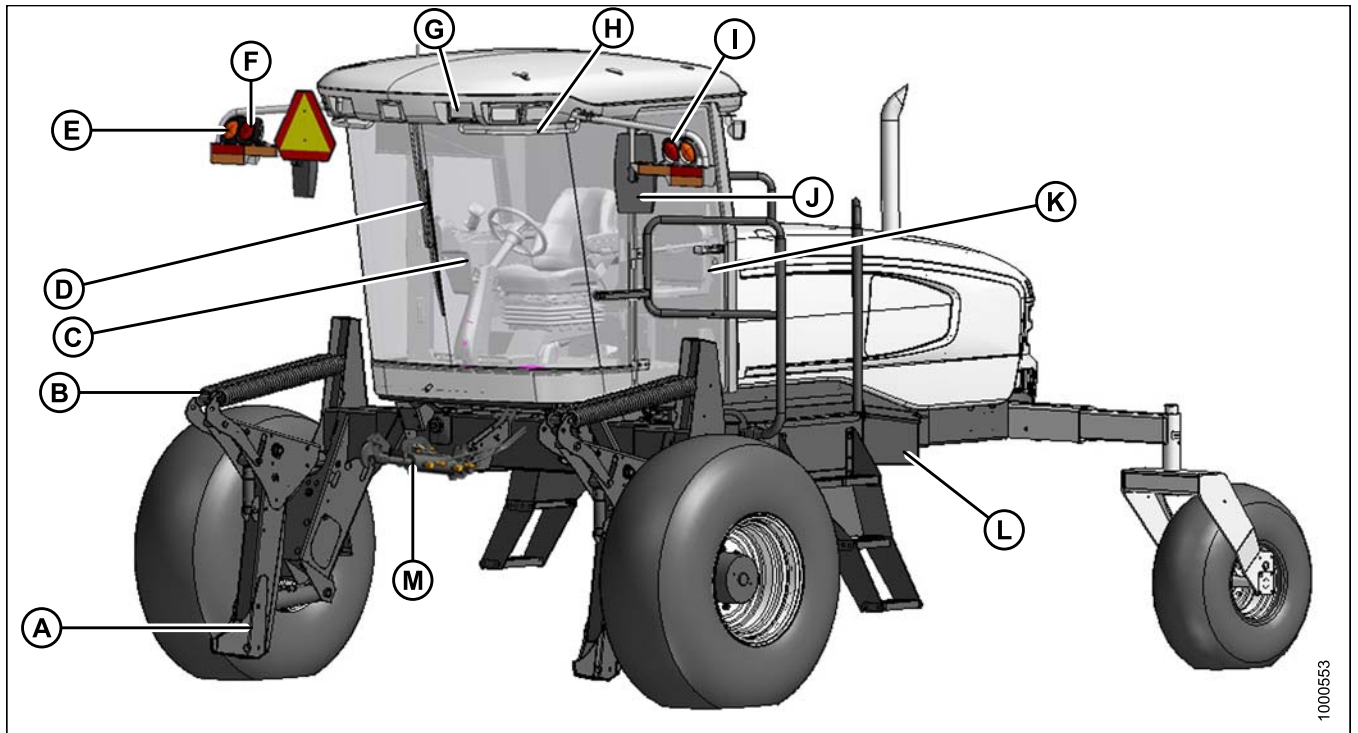
Tire size	Wheel position	Tread (A) [inch (mm)]	Hubs (B) [inch (mm)]	Tires (C) [inch (mm)]
23.1-26 and 580/70R26 Turf Tires	Inner/Outer (Shipping)	126-1/8 (3203)	140-9/16 (3571)	149-5/16 (3793)
	Outer/Outer	133-3/16 (3383)	147-11/16 (3751)	156-7/16 (3973)
	Inner/Inner	119 (3023)	133-1/2 (3391)	142-1/4 (3613)

**Table 2.2 Caster tires**

Tire size	Wheel position	Tread (D) [inch (mm)]	Casters (E) [inch (mm)]
7.5-16SL	Minimum	96-7/16 (2448)	118-15/16 (3032)
	Maximum	135-11/16 (3448)	158-3/4 (4032)
10-16 Formed Caster	Minimum	96-7/16 (2448)	118-15/16 (3032)
	Maximum	135-11/16 (3448)	158-3/4 (4032)
10-16 Forked Caster	Minimum	96-7/16 (2448)	118-11/16 (3014)
	Maximum	135-11/16 (3448)	158 (4014)
16.5 x 16.1	Minimum	96-7/16 (2448)	118-11/16 (3014)
	Maximum	135-11/16 (3448)	158 (4014)

## DESCRIPTION

### 2.4 Component Location



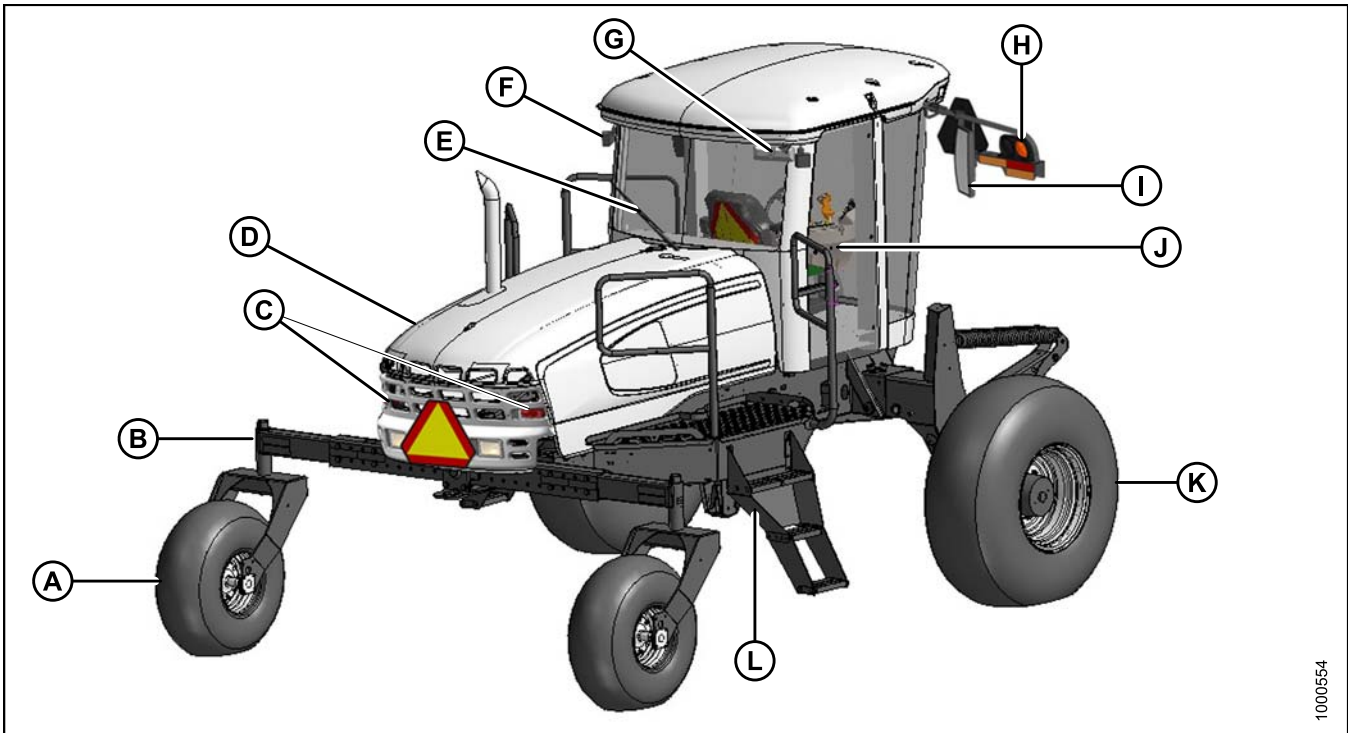
**Figure 2.2: M205 Windrower - Front Cab-Forward View**

A - Header lift leg  
D - Windshield wiper  
G - Field/road lights  
M - Center-link

B - Header float springs  
E - Turn signal / hazard lights  
H - Hand rails  
K - Door

C - Operator's station  
F - Tail light engine-forward  
I - Tail light engine-forward  
L - Maintenance platform

## DESCRIPTION



**Figure 2.3: M205 Windrower - Rear Cab-Forward View**

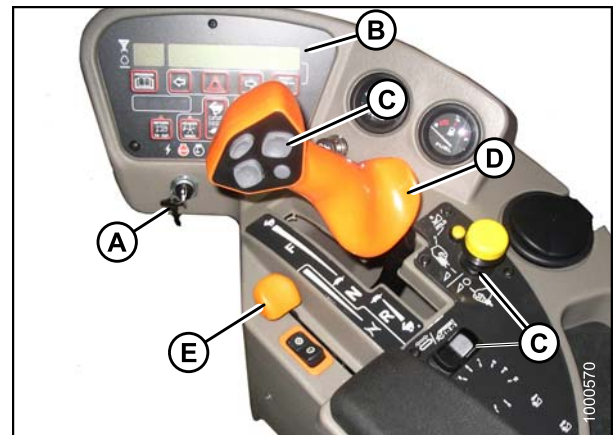
- |                             |                               |                                     |
|-----------------------------|-------------------------------|-------------------------------------|
| A - Caster wheel            | B - Walking beam              | C - Tail lights - cab-forward (opt) |
| D - Engine compartment hood | E - Windshield wiper          | F - Field/road lights               |
| G - Horn                    | H - Turn signal/hazard Lights | I - Mirror                          |
| J - Door                    | K - Drive wheel               | L - Maintenance platform            |

### 3 Operator's Station

The operator's station is designed for operating the windrower in a cab-forward mode (working mode), or in an engine-forward mode (transport mode). The operator's station, which includes the seat, console, and steering column, pivots 180 degrees so that the Operator maintains access to the windrower controls and gauges regardless of the direction of travel.

#### 3.1 Operator Console

The console contains controls to operate the windrower, as well as amenities for the Operator. The console position is adjustable to suit each particular Operator.

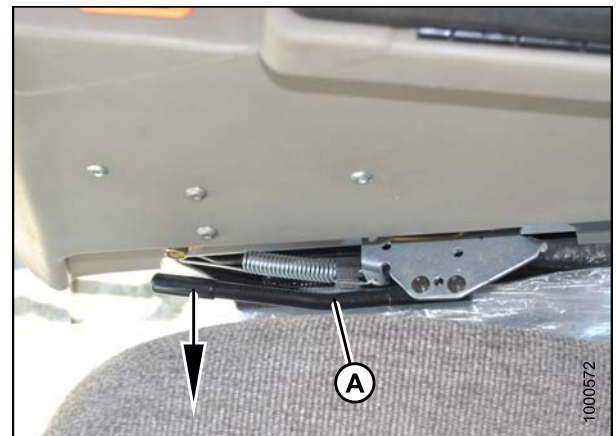


**Figure 3.1**

A - Ignition  
C - Header controls  
E - Throttle

B - Cab Display Module (CDM)  
D - Ground Speed Lever (GSL)

1. Adjusting fore-aft and height:
  - a. Pull lever (A), and slide console fore or aft to the desired position
  - b. Release lever to lock console.



**Figure 3.2**

## OPERATOR'S STATION

2. Adjusting only fore-aft:
  - a. Loosen nuts (A) under console.
  - b. Move console as required.
  - c. Tighten nuts (A).



**Figure 3.3**

# OPERATOR'S STATION

## 3.2 Operator Presence System

The Operator Presence System is a safety feature designed to deactivate or alarm selected systems when the Operator is not seated at the operator's station.

These systems include:

- Header Drive
- Engine and Transmission

### 3.2.1 Header Drive

- Requires the Operator to be seated in the seat in order to engage the header drive.
- Power is maintained to the header drive for five seconds after the Operator leaves the seat, and then the header shuts down.
- After the header has shut down automatically, the HEADER DRIVE switch must be moved to OFF position, and back to the ON position again to restart the header.

### 3.2.2 Engine and Transmission

- The engine will not start when the HEADER DRIVE switch is engaged.
- The engine will shut down when the windrower is moving at 5 mph (8 km/h) or less, and the Operator leaves the seat. The CDM will flash "NO OPERATOR" on the upper line, and "ENGINE SHUT DOWN 5...4...3...2...1...0" on the lower line accompanied by a steady tone. At "0", the engine shuts down.
- If the Operator leaves the seat, and the transmission is not locked in NEUTRAL, after five seconds the lower display will flash "NOT IN NEUTRAL", and an alarm will sound.
- When the seat is in between cab-forward and engine-forward positions, the engine will shut off if the transmission is not locked in the NEUTRAL position. The lower display will flash "LOCK SEAT BASE" until the seat base is locked into position.

## OPERATOR'S STATION

### 3.3 Operator's Seat Adjustment

The operator's seat has several adjustments. Refer to the following illustrations for the location and description of each adjustment.

#### 3.3.1 Fore-Aft

Adjusts fore-aft position.

1. Pull lever (A) up to release.
2. Move seat forward or rearward.
3. Release lever (A).



Figure 3.4

#### 3.3.2 Seat Suspension and Height

Controls suspension stiffness and seat height.

INCREASE: Press upper switch (A).

DECREASE: Press lower switch (B).



Figure 3.5



## OPERATOR'S STATION

### 3.3.3 Vertical Dampener

Adjusts suspension dampening.

INCREASE: Turn knob (A) counterclockwise.

DECREASE: Turn knob (A) clockwise.



Figure 3.6

### 3.3.4 Armrest

Raise armrest (A) for easier access to seat.

Lower armrest (A) after seat belt is buckled.



Figure 3.7

## OPERATOR'S STATION

### 3.3.5 Fore-Aft Isolator Lock

Locks Seat Fore-Aft Isolator.

LOCK: Push lever (A) down.

UNLOCK: Pull lever (A) up.



Figure 3.8

### 3.3.6 Seat Tilt

To adjust seat tilt:

1. Pull lever (A) up to release.
2. Position seat back as desired.
3. Release lever (A).



Figure 3.9

## OPERATOR'S STATION

### 3.3.7 Armrest Angle

Adjusts angle of armrest.

INCREASE: Rotate knob (A) clockwise.

DECREASE: Rotate knob (A) counterclockwise.

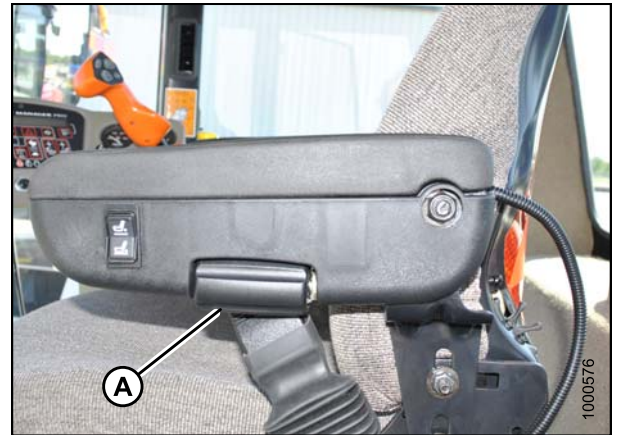


Figure 3.10

### 3.3.8 Lumbar Support

Adjusts stiffness of seat back.

INCREASE: Rotate knob (C) upward.

DECREASE: Rotate knob (C) downward.



Figure 3.11

## OPERATOR'S STATION

### 3.4 Training Seat

A wall mounted fold-up training seat complete with seat belt is provided.

#### **WARNING**

- The training seat is provided for an experienced Operator of the machine when a new Operator is being trained.
- The training seat is **NOT** intended as a **PASSENGER SEAT** or **FOR USE BY CHILDREN**. **USE THE SEAT BELT** whenever operating the machine or riding as a Trainer.
- **KEEP ALL OTHER RIDERS OFF THE MACHINE.**

For storage, lift seat (B), and secure with latch (A).

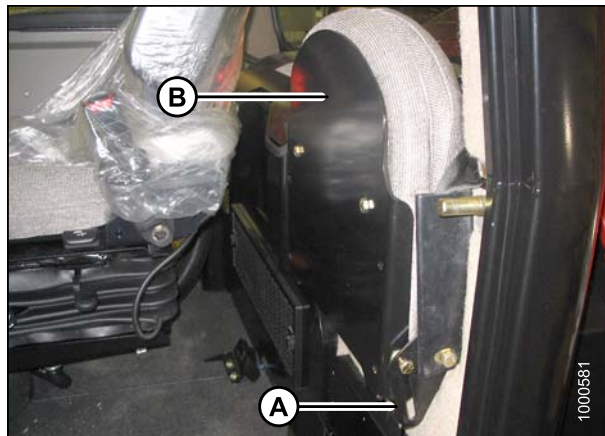


Figure 3.12

To lower seat, lift latch (A), and lower seat (B).



Figure 3.13

## OPERATOR'S STATION

### 3.5 Seat Belts

The windrower is equipped with a seat belt on the operator's and trainer's seats.

#### **WARNING**

- Before starting engine, securely fasten your seat belt, and ensure trainer's seat belt is fastened if occupied.
- The seat belt can help insure your safety if it is used and maintained.
- Never wear a seat belt loosely, or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat structural members.

To fasten seat belt (A), pull belt at right side completely across your body. Push the metal eye (B) into the buckle (C) until it locks. Adjust the position of the belt as low on your body as possible.

To release, push the red button (D) in the end of the buckle, and separate the buckle and metal eye.

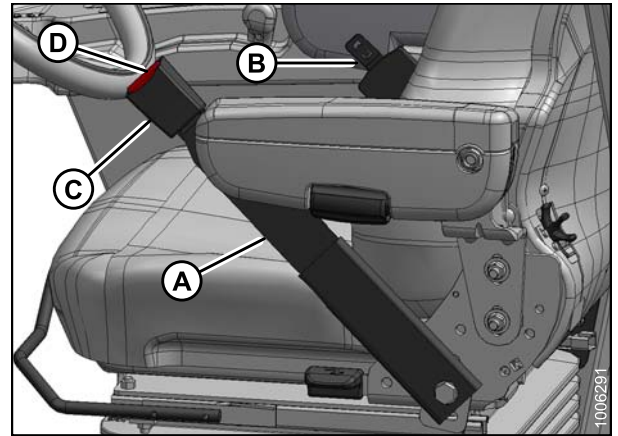


Figure 3.14

## OPERATOR'S STATION

### 3.6 Steering Column Adjustment

The steering column can be adjusted to suit each particular Operator, and for easier entry to and exit from the seat.

To adjust the steering column:

1. Hold onto steering wheel, lift handle (A), and move steering wheel up or down to desired position.
2. Release handle (A) to lock steering wheel position.

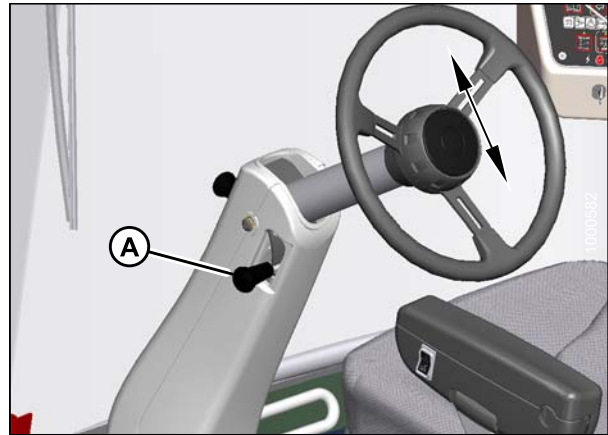


Figure 3.15

# OPERATOR'S STATION

## 3.7 Lighting

The field and road light switches are located on a panel in the cab headliner.

The lighting is dependent upon the position of the Operator's station, that is, cab-forward mode or engine-forward mode. The position of the operator's station automatically determines the lighting.

The hazard lights will be automatically activated when certain conditions are met. The windrower must be cab-forward, medium range, brake off, and header off.

The work lights will not turn on in certain instances. If the windrower is engine-forward or if the windrower is cab-forward, out of park, medium range, and header off.

### IMPORTANT

**Red and amber reflector tape is applied to be visible in both engine-forward and cab-forward modes.**

#### 3.7.1 Cab-Forward Lighting: Field

The following lights are on when the light switch is in FIELD position with the windrower in cab-forward mode:

- Field lights in cab roof (front and rear),
- Swath lights in hood,
- HID lights (if installed) on mirror supports.

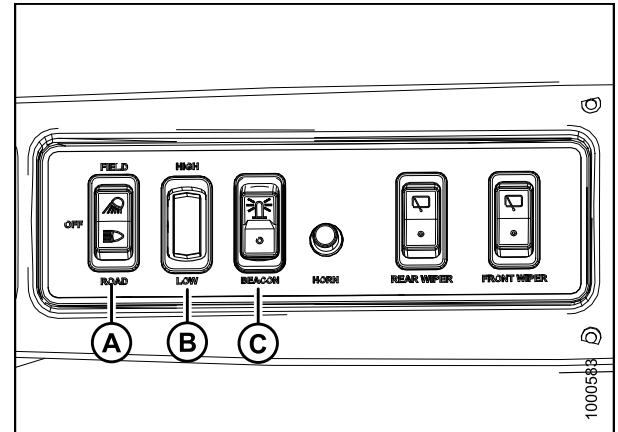


Figure 3.16: Roof Liner Console

- A - Field or road lights
- B - Low or high beams
- C - Beacon (if equipped)

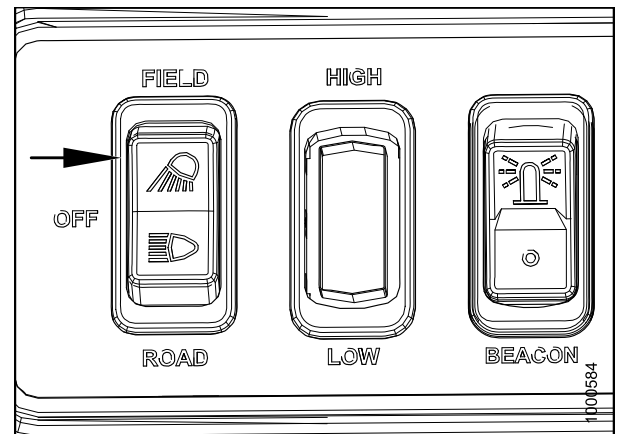


Figure 3.17

## OPERATOR'S STATION

The two innermost in the field light group (A) at the front of the cab are adjustable. See [Adjusting Field Lights, page 288](#).

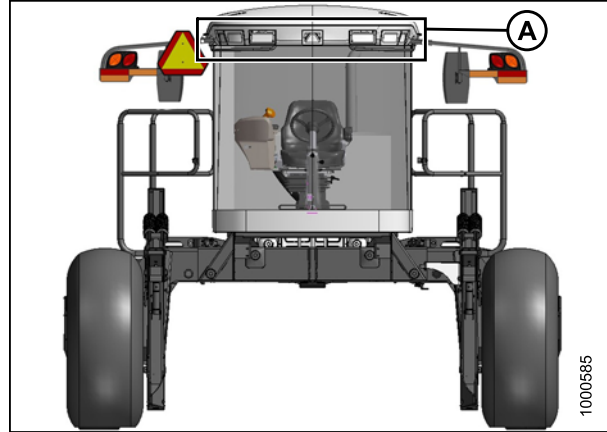


Figure 3.18: Cab-Forward: Front View

The two field lights (A) at the rear of the cab are adjustable. See [Adjusting the Rear Floodlights, page 293](#).

The two swath lights (B) in the hood are adjustable but because they are used as road lights in engine-forward mode and adjusted accordingly, they should not be adjusted for field operation.

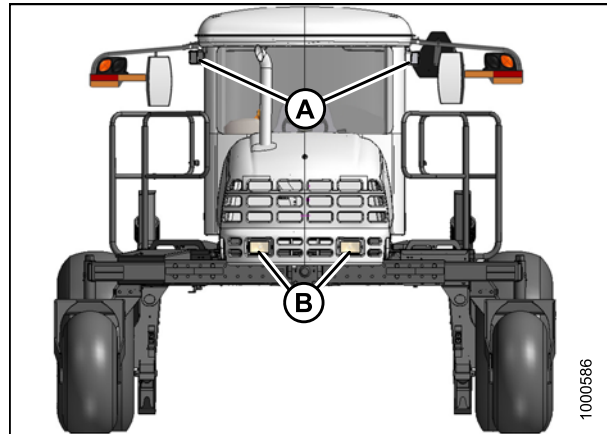


Figure 3.19: Cab-Forward: Rear View



# OPERATOR'S STATION

## 3.7.2 Engine-Forward Lighting: Road

The following lights are ON when the light switch is in ROAD position with the windrower in engine-forward mode:

- Red tail lights (A) on the mirror supports, and
- Amber turn signals and hazard lights (B) on mirror supports visible from both front and rear.

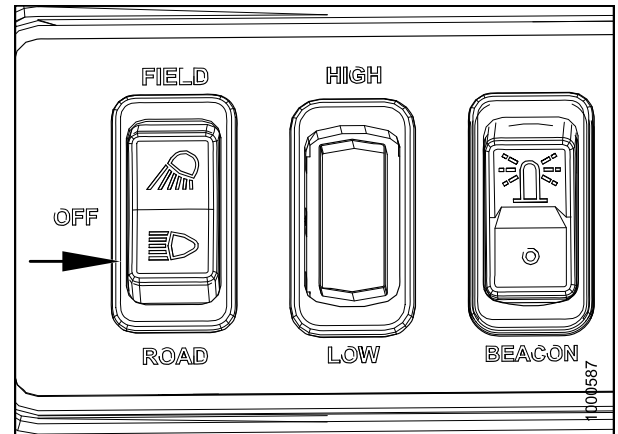


Figure 3.20

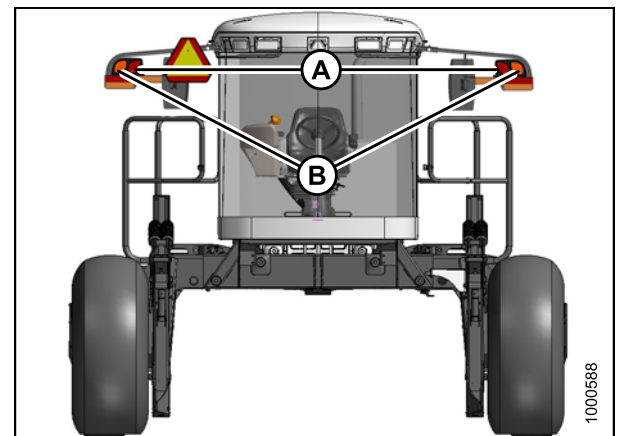


Figure 3.21: Engine-Forward: Rear View

- A - Red tail lights
- B - Amber turn signal / hazard lights

- Headlights (B) in hood with low/high.

The two headlights in the hood are adjustable. See [Aligning Headlights, page 284](#).

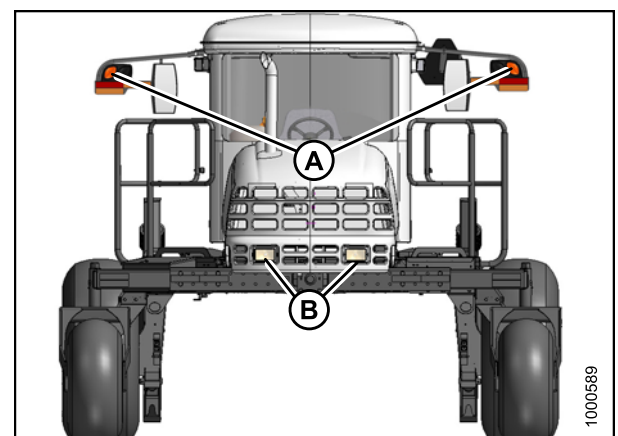


Figure 3.22: Engine-Forward: Front View

- A - Amber turn signal / hazard lights
- B - Road lights – low / high

## OPERATOR'S STATION

### 3.7.3 Cab-Forward Lighting: Road (Optional)

If equipped, the following lights are functional when the switch is in the ROAD position:

- Four lights (A) in cab roof,
- Amber turn signals and hazard lights (B) on mirror supports visible from both front and rear,
- red lights (C) in hood.

The hazard lights must be activated with the switch on the Cab Display Module (CDM) when driving on the road.

## IMPORTANT

Optional red tail lighting, and marking kit must be installed so that road travel in the cab-forward mode complies with road travel regulations. See your MacDon Dealer.

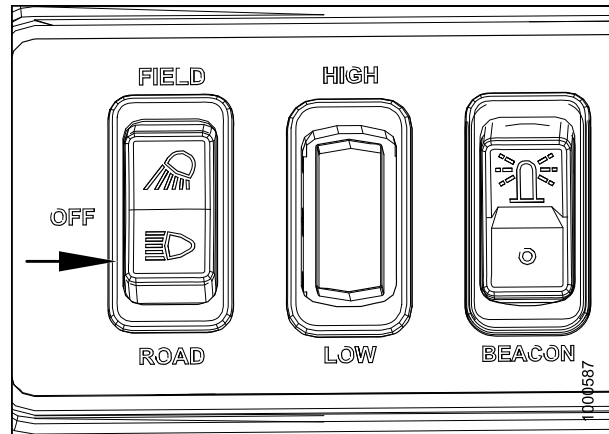


Figure 3.23

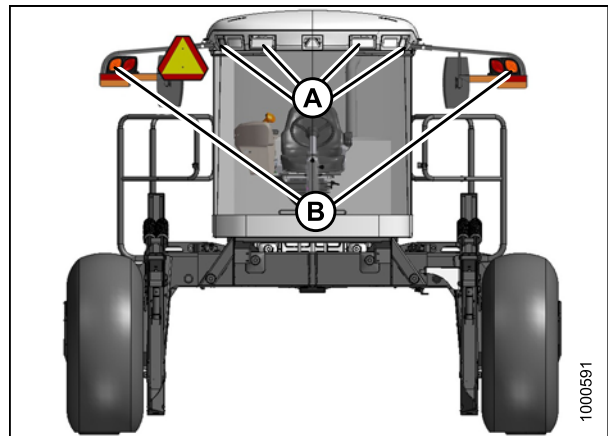
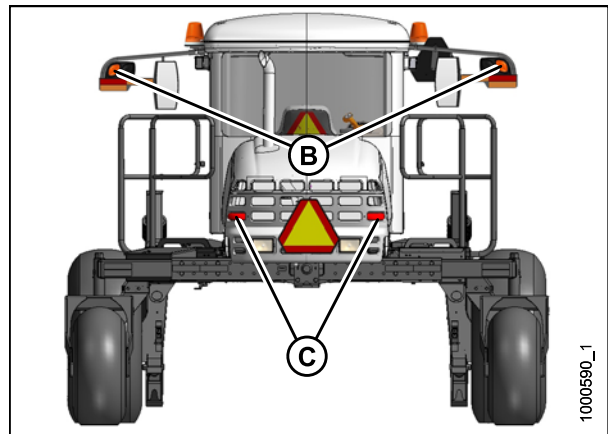


Figure 3.24: Cab-Forward: Front View



## OPERATOR'S STATION

### 3.7.4 Beacon Lighting: Export (N.A. Optional)

The beacon lights (A) are functional when the ignition and the beacon switch are ON.

The beacons must be used when driving on the road where required by law.

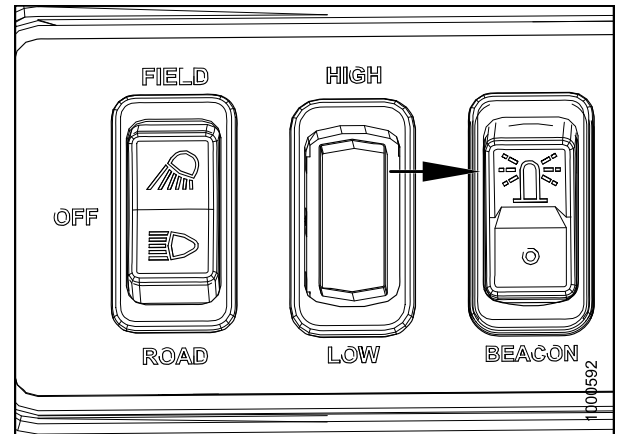


Figure 3.25

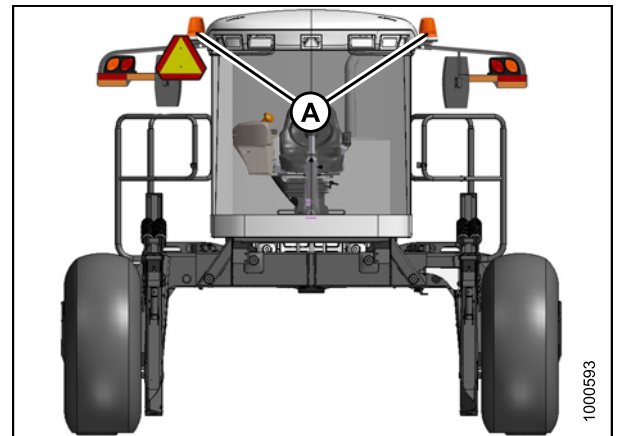


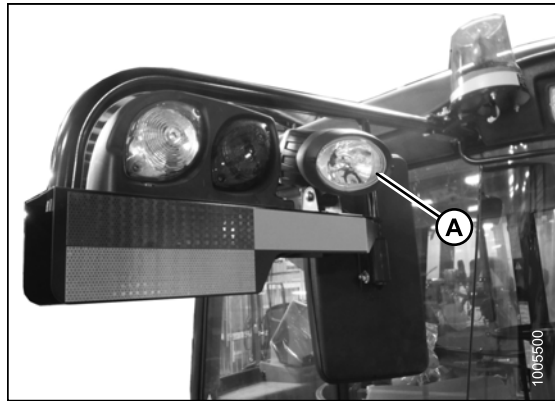
Figure 3.26: Cab-Forward: Front View

## OPERATOR'S STATION

### 3.7.5 HID Lighting (Optional)

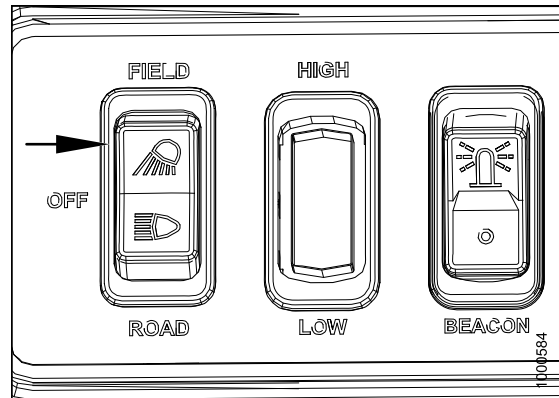
The two High Intensity Discharge (HID) lights (A) provide additional lighting during field operation. They operate only in cab-forward mode.

They are mounted on the mirror supports and are activated with the light switch in the FIELD position.



**Figure 3.27**

A - HID light

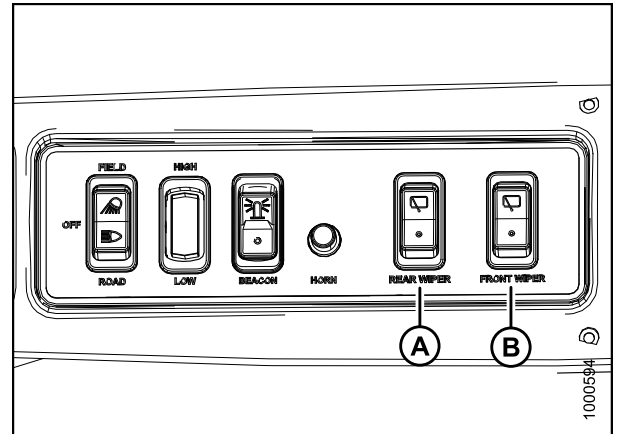


**Figure 3.28**

# OPERATOR'S STATION

## 3.8 Windshield Wipers

The windshield wiper controls are located in the cab headliner. The illustration shows the controls as in cab-forward mode.



**Figure 3.29**

A - Rear wiper

B - Front wiper

# OPERATOR'S STATION

## 3.9 Cab Temperature

The cab environment is controlled by a climate control system that provides clean air-conditioned or heated air for the Operator.

The heater/evaporator/blower assembly is located under the cab floorboard, and is accessible from beneath the windrower.

### 3.9.1 Heater Shut-off

A shut-off valve (A) at the engine allows the cab heater to be isolated from the engine coolant.

The valve must be OPEN to provide heat to the cab, but for maximum cooling, the valve can be CLOSED.

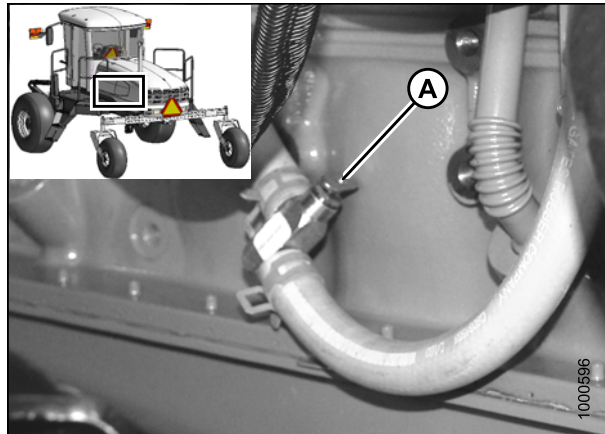


Figure 3.30

### 3.9.2 Air Distribution

Cab air distribution is controlled through adjustable air vents (A) located in the cab posts.

The vents provide window and Operator ventilation.

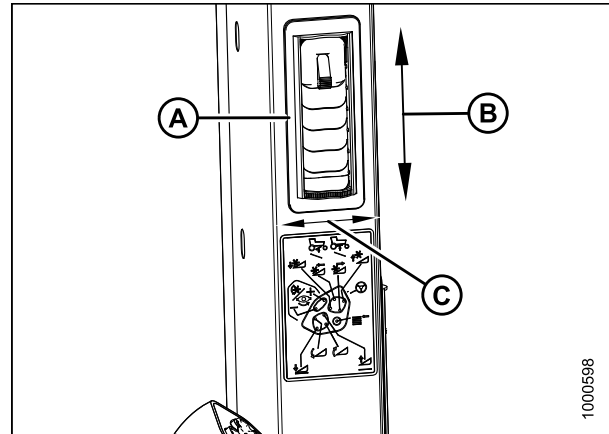


Figure 3.31

A - Vent  
C - Direction

B - Open/close

## OPERATOR'S STATION

### 3.9.3 Controls

**A – Blower Switch** controls the blower speed.

- OFF / LOW / MEDIUM / HIGH

**B – Air Conditioning Switch** controls A/C system.

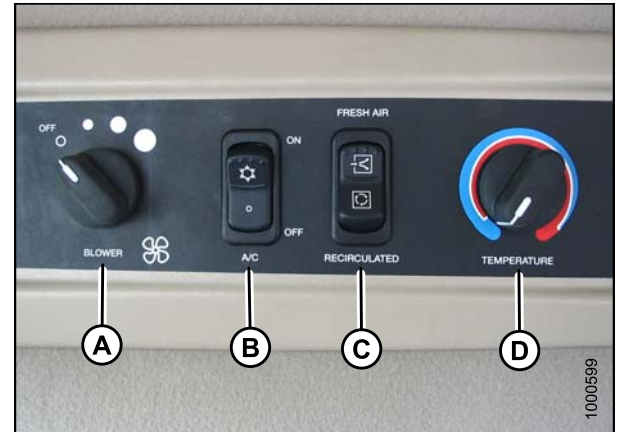
- OFF: A/C does not operate.
- ON: A/C operates with blower switch ON.

**C – Outside Air Switch** controls the air source.

- Fresh Air: Starts booster fan, and filtered outside air is drawn into cab.
- Recirculate: Stops booster fan, and cab air is recirculated.

**D – Temperature Control Switch** controls cab temperature.

- Increase: Turn clockwise.
- Decrease: Turn counterclockwise.



**Figure 3.32**

A - Blower switch  
C - Outside air switch

B - Air conditioning switch  
D - Temperature control switch

## IMPORTANT

**After storage for more than one week, to distribute the oil throughout the system, perform the following steps whenever the machine is first started:**

1. Ensure heater shut-off valve at engine is OPEN. See Section [3.9.1 Heater Shut-off, page 56](#).
2. Turn blower switch to the first position, turn temperature control switch to maximum heating, and A/C control to OFF.
3. Start engine, and operate at low idle until engine is warm.
4. Click A/C switch from OFF to ON for one second, then back to OFF for 5 to 10 seconds. Repeat this step ten times.

## OPERATOR'S STATION

### 3.10 Interior Lights

Two interior lights are installed in the cab headliner.

A low intensity LED light (A) is located directly overhead to provide ambient lighting if desired. It functions only when the key is in the run position. An ON-OFF switch is located on the light.

The other interior light (B) is located on the headliner switch panel and the push-ON, push-OFF button is located on the light. It functions at any time.

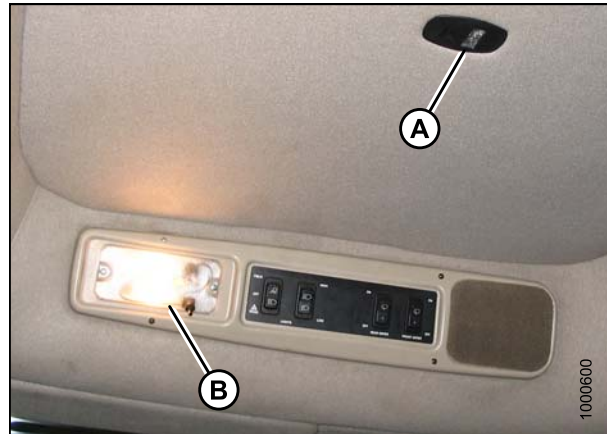


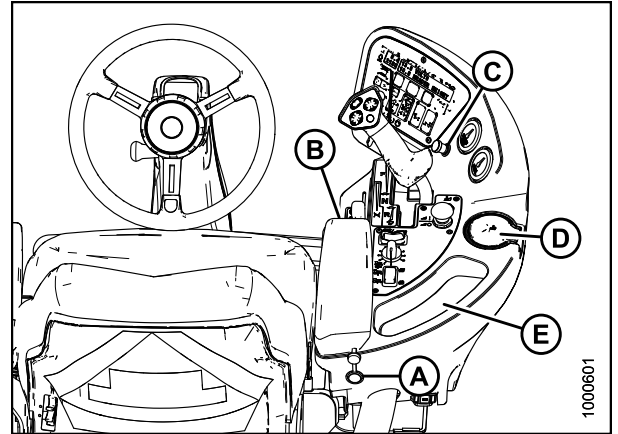
Figure 3.33



# OPERATOR'S STATION

## 3.11 Operator Amenities

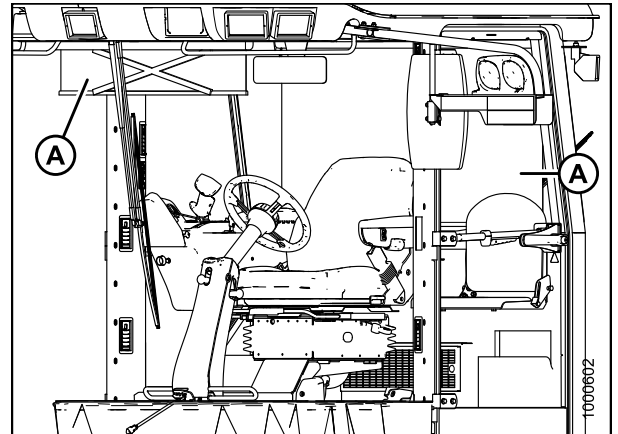
### The Console



**Figure 3.34: Console**

- A - Auxiliary power outlet
- B - Utility tray under armrest
- C - Cigarette lighter
- D - Ashtray / cup holder
- E - Utility tray

### Window Shades (optional)

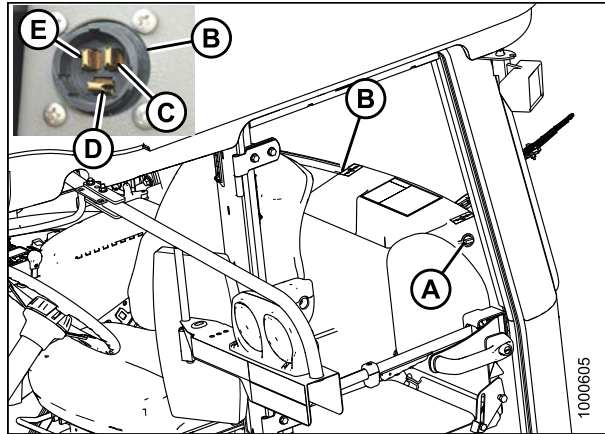


**Figure 3.35: Window Shades (option)**

- A - Window shades (optional)

# OPERATOR'S STATION

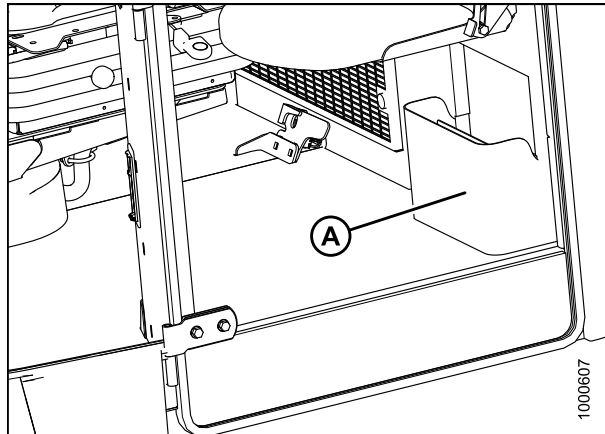
## Auxiliary Outlets



**Figure 3.36: Auxiliary Outlets**

- A - Auxiliary power outlet
- B - Auxiliary power outlet
- C - Battery terminal
- D - Ground terminal
- E - Switched terminal

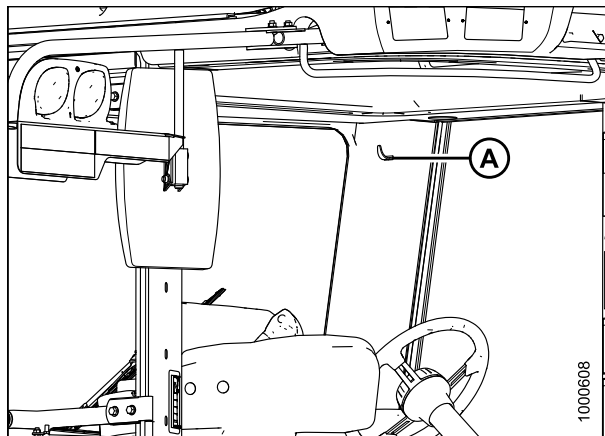
## Manual Storage



**Figure 3.37: Manual Storage**

- A - Manual storage

## Coat Hook



**Figure 3.38: Coat Hook**

- A - Coat hook

## OPERATOR'S STATION

### 3.12 Radio

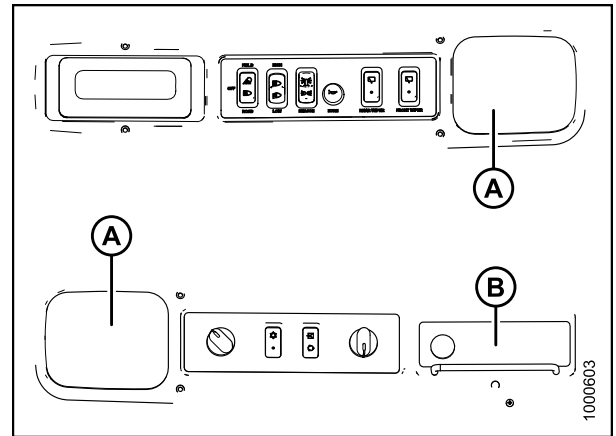
A radio is available as optional equipment from your Dealer.

#### 3.12.1 AM/FM Radio

A space (B) is provided in the cab headliner to accommodate the installation of an AM/FM radio that is available as optional equipment from your Dealer.

Two pre-wired speakers (A) have been factory installed in the headliner. Refer to Form MD #169540 M155 and M205 Self-Propelled Windrower Unloading and Assembly Instructions for North American Shipments or MD #169242 M Series Self-Propelled Windrower Unloading and Assembly Instructions for Container Shipments for radio installation procedures.

Operating instructions are supplied with the radio.



**Figure 3.39: Speakers in Roof Liner**

A - Speakers

B - Radio mounting location

#### 3.12.2 Antenna Mounting

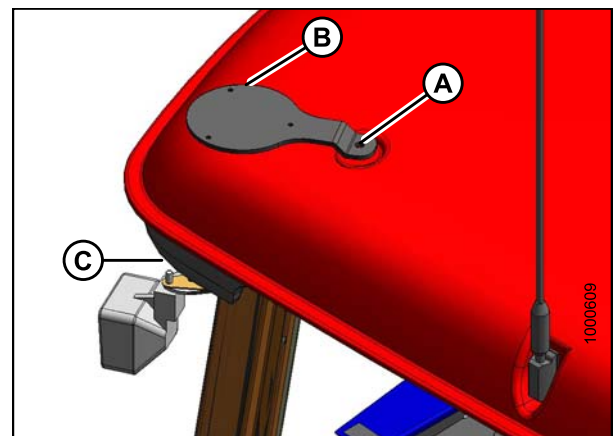
A roof-mounted antenna base for installing a magnetic antenna is available as an option from your Dealer. It accommodates most CB, two-way radio and satellite radio antennas. A knockout (C) for the antenna lead is provided on the cab post.

Order antenna mount MD #160288 (B), or see illustration for part dimensions for a homemade version.

## IMPORTANT

**Antenna base can only be installed on the LH and RH rear cab roof bolts.**

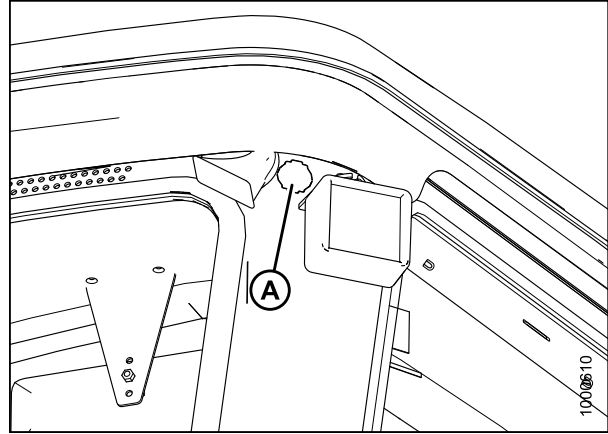
1. Remove existing bolt (A).
2. Install antenna mount (B) and secure with bolt (A)



**Figure 3.40**

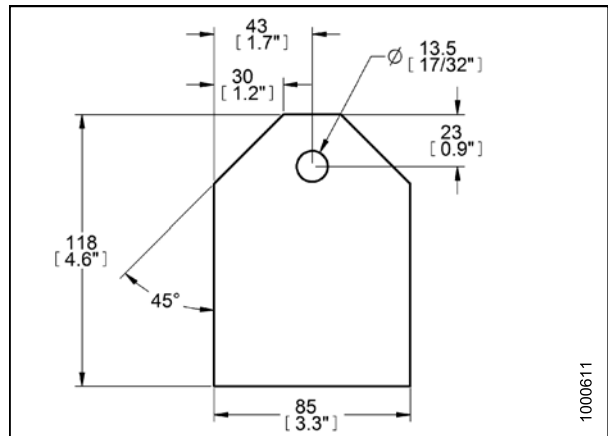
## OPERATOR'S STATION

The knockout (A) is located on the exterior right-hand rear corner post of the cab, under the roof, between the horn and the light.



**Figure 3.41: Knockout location in Cab**

To make your own mount, see template for mount.  
Use 11 GA. or 3.0 mm steel sheet.



**Figure 3.42: Template for Antenna Mount**

## OPERATOR'S STATION

### 3.13 Horn

The horn is activated by pushing the button (A) located on the panel in the headliner.

Sound the horn three times prior to starting the engine.

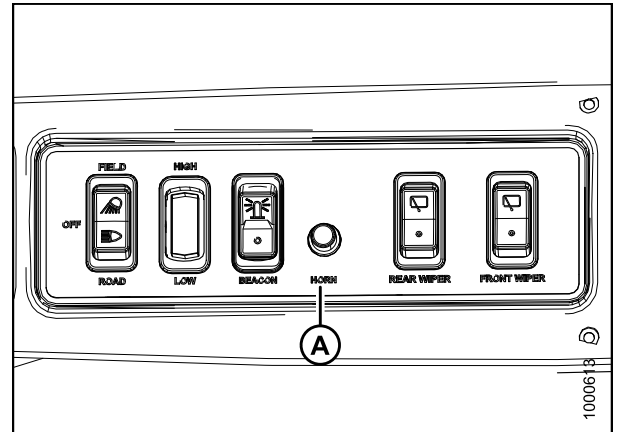


Figure 3.43

The horn is located outside the cab on the rear right-hand corner of the cab, under the roof.

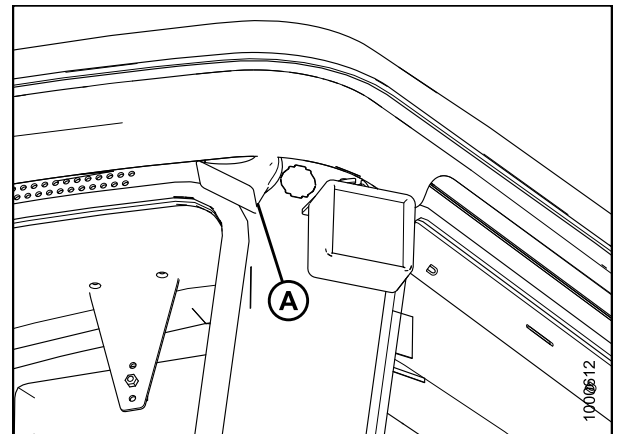


Figure 3.44: Horn Location

## OPERATOR'S STATION

### 3.14 Engine Controls and Gauges

All engine controls and gauges are conveniently located on the operator's console.

Refer to the following illustration for the location, and a description of each.

#### A – Ignition Switch

- ACC: Fully counterclockwise
- OFF: All Electrical Systems OFF
- RUN: Clockwise
- START: Fully Clockwise To Crank Engine. Release and Switch Returns to RUN
- REMOVE KEY WHEN WINDROWER NOT IN USE. KEY ALSO LOCKS DOORS

**B – Engine Temperature Gauge** indicates Engine Coolant Temperature

- Normal Running: 180°–225°F (82°–107°C).
- Warning Tone Over 230°F (110°C).

**C – Fuel Gauge** indicates Fuel Level in Tank

- E: Empty
- F: Full

**D – Throttle** controls engine RPM

- FULL: Push lever forward
- OPERATING: See [4.3.6 Driving the Windrower, page 108](#)
- CLOSED: Pull Lever Back



**Figure 3.45: Engine Controls and Gauges**

A - Ignition switch  
C - Fuel gauge

B - Engine temperature gauge  
D - Throttle

## OPERATOR'S STATION

### 3.15 Windrower Controls

#### Console Controls:

**A – TURN SIGNALS** activate turn signals on windrower and header

- Push-ON / Push-OFF

**B – GROUND SPEED LEVER (GSL)** controls speed and direction of movement

- F: Forward
- N: NEUTRAL
- N-DETENT: Engages Neutral Interlock, and applies park brake when steering locked in center
- R: Reverse

**C – HAZARD WARNING LIGHTS** activate signals on windrower and header

- Push-ON / Push-OFF

**D – GROUND SPEED RANGE SWITCH** shifts transmission speed range

- High range: 0–23 mph (37 km/h). ENGINE-FORWARD ONLY
- Mid range: 0–16 mph (25.7 km/h). CAB-FORWARD ONLY
- Low range: 0–11 mph (17.7 km/h)

#### E – N-Detent

#### Autosteer Control:

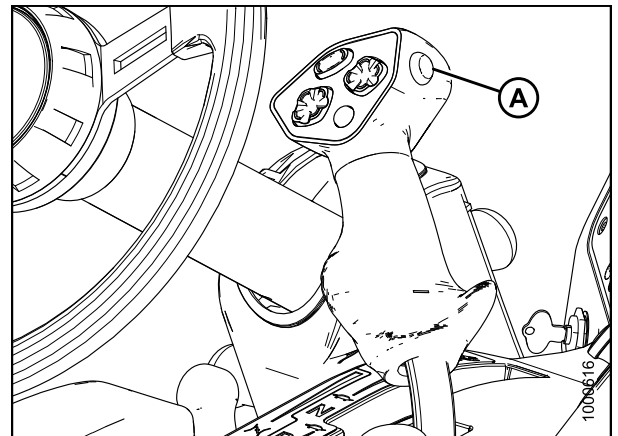
**A – AUTO-STEER ENGAGEMENT SWITCH** engages/disengages the Auto-Steer System (if compatible system is installed)

- ENGAGE: Click To Engage.
- DISENGAGE: Turn Steering Wheel Or Click To Disengage.



**Figure 3.46: Console Controls**

- |                           |                               |
|---------------------------|-------------------------------|
| A - Turn signals          | B - Ground speed lever (GSL)  |
| C - Hazard warning lights | D - Ground speed range switch |
| E - N-Detent              |                               |



**Figure 3.47: Auto-steer**

- A - Auto-steer engagement switch

The auto-steer engagement switch harness terminates (A) beneath the cab between the fuel tank and evaporator box.

## OPERATOR'S STATION

### 3.16 Header Controls

All header controls are conveniently located on the operator's console and on the Ground Speed Lever (GSL) handle.

**NOTE:** Some controls are optional equipment, and may not be present in your unit. Some controls may be installed, but will be nonfunctional for certain headers.

Refer to specific header sections in this manual for detailed operating procedures of all header controls.

#### 3.16.1 Header Drive Switch

Engages and disengages header drive.

- ENGAGE: Push Center and Pull Up
- DISENGAGE: Push Down

### IMPORTANT

Always move throttle lever back to IDLE before engaging header drive. Do NOT engage header with engine at full RPM.

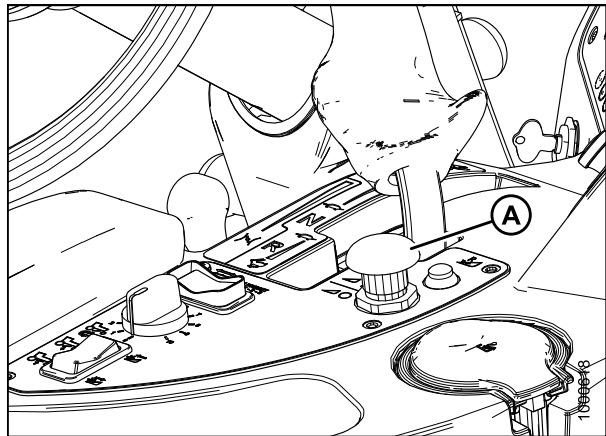


Figure 3.48

#### 3.16.2 Header Drive Reverse Button

**NOTE:** The optional hydraulic reversing kit must be installed on draper headers with a conditioner and on auger headers. Rotary disc headers are factory-equipped with the reverser.

- ENGAGE: Push and hold REVERSER button (B), and engage header with Switch (A).
- DISENGAGE: Release REVERSER Button (B).

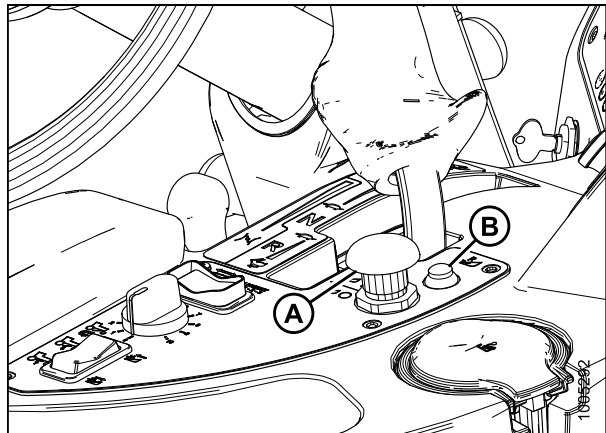


Figure 3.49



# OPERATOR'S STATION

## 3.16.3 Ground Speed Lever (GSL) Header Switches

The GSL (A) contains switches for the header functions that are most often adjusted while in operation to suit changing crop conditions. All are momentary-type switches.

**NOTE:** A decal (B) identifying switch functions is located on the cab post above the operator's console.

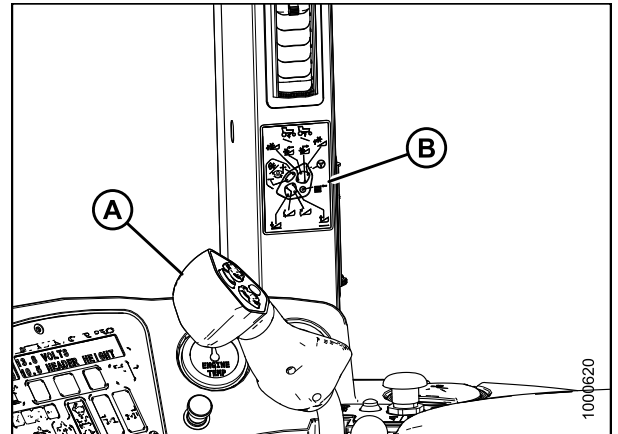


Figure 3.50

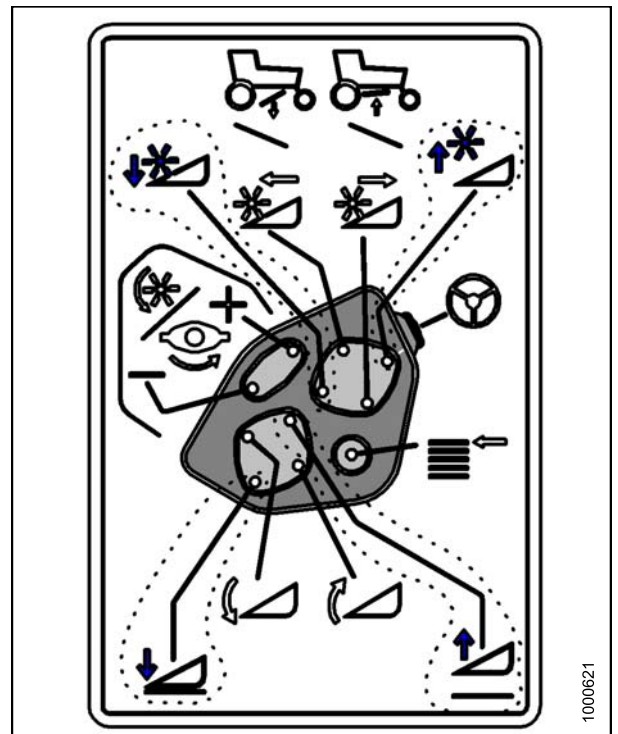


Figure 3.51

## OPERATOR'S STATION

### 3.16.4 Display Selector Switch

Selects and displays the settings in the Cab Display Module (CDM) top line read-out for each of the header controls.

Press switch (A) to scroll through settings.

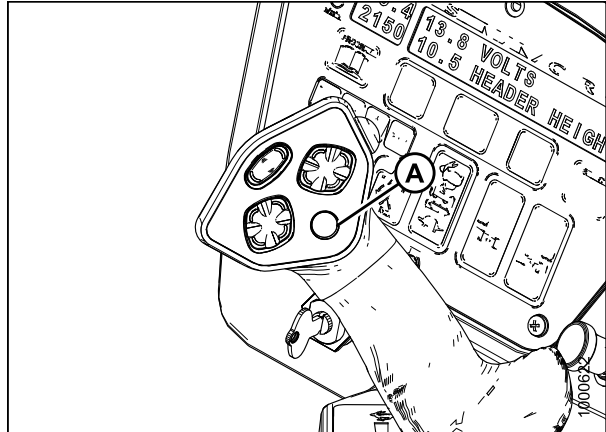


Figure 3.52

### 3.16.5 Reel Position Switches

The reel position switches perform functions depending on Cab Display Module (CDM) programming, and on which header is attached:

- Double Windrow Attachment (DWA) Position. See Section [4.4.7 Double Windrowing, page 153](#).
- Reel Fore-Aft Position and Height on Draper Headers. See Sections [4.5.6 Reel Fore-Aft Position, page 167](#) and [4.5.7 Reel Height, page 167](#).
- Center-link Assist Cylinder. See Sections [4.5.3 Attaching a D-Series Header, page 159](#), [4.6.1 Attaching an A-Series Header, page 178](#), or [4.7.1 Attaching an R-Series Header, page 193](#) (depending on your header).

**NOTE:** Refer to the specific header section for your equipment in this manual for detailed switch operating modes.

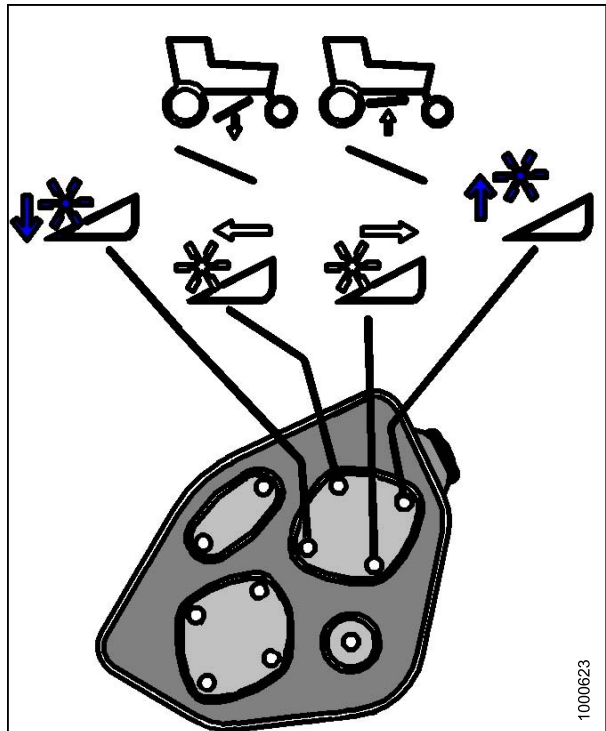


Figure 3.53

## OPERATOR'S STATION

### 3.16.6 Header Position Switches

Press and hold switch at location shown to move header up or down, and to change the angle of the header relative to the ground. Release switch at desired position.

**NOTE:** Refer to the specific header section for your equipment in this manual for detailed switch operating modes.

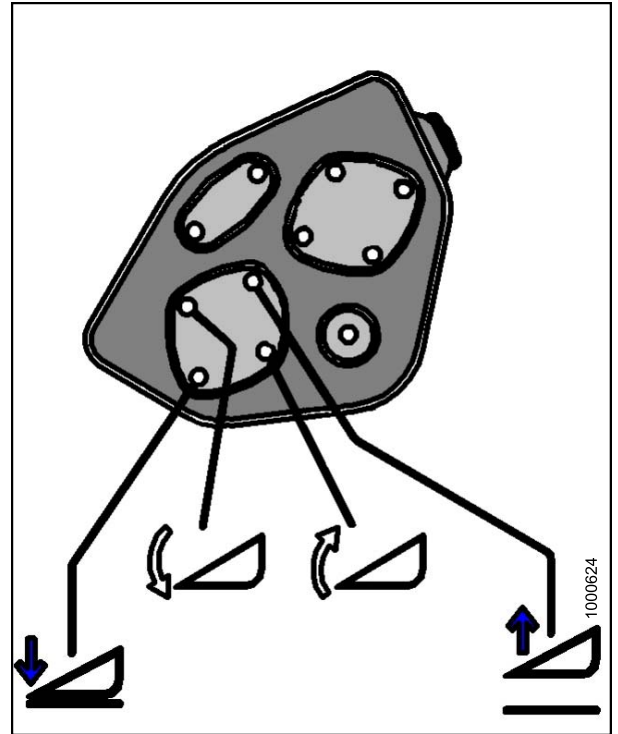


Figure 3.54

### 3.16.7 Reel and Disc Speed Switches

Press and hold switch at location shown to change reel or disc speed. Release switch at desired speed.

#### Auger Header

- A30 header: Not applicable
- A40 header: Auger speed is automatically maintained when reel speed is changed.

## IMPORTANT

Reel speed on auger header must not exceed 85 rpm. Auger speed must not exceed 320 rpm.

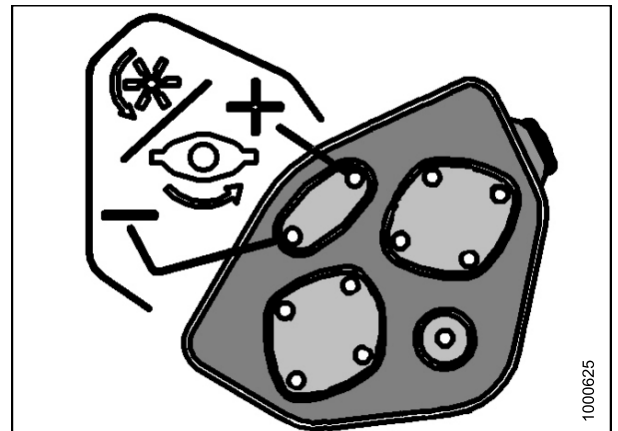


Figure 3.55

#### Draper Header

- Reel speed is limited in INDEX HEADER SPEED mode.

#### Rotary Disc Header

- Conditioner speed automatically adjusts when DISC SPEED is changed.

# OPERATOR'S STATION

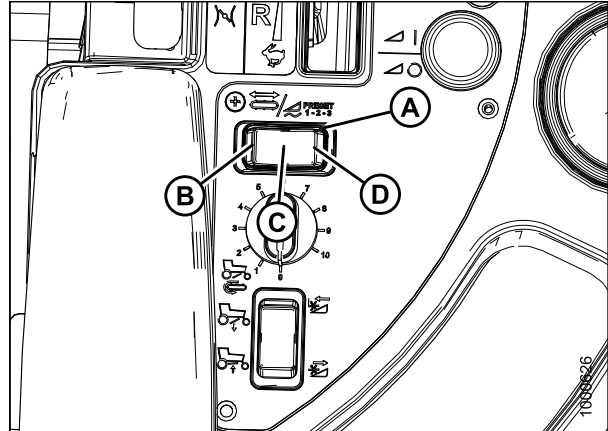
## 3.16.8 Console Header Switches

The operator's console contains switches for the following header functions.

### *Deck Shift/Float Preset Switch*

#### **Draper Header with Deck Shift Option**

- Controls deck shifting and float settings for double windrowing options with a draper header.



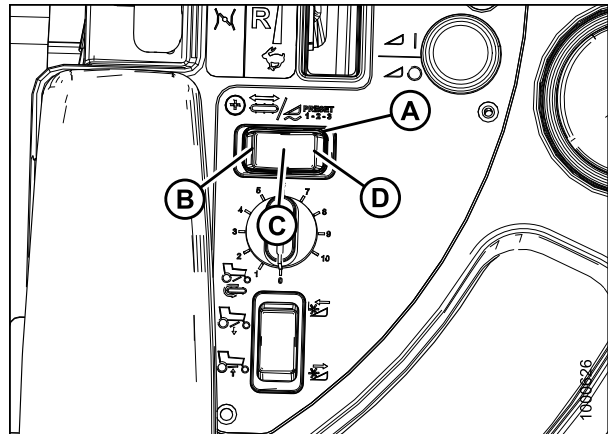
**Figure 3.56**

- A - Deck shift/float preset switch
- B - Left side delivery
- C - Center delivery
- D - Right side delivery

#### **Draper Header with Fixed Decks/Auger Header/Rotary Header**

- Selects preprogrammed header float settings. Refer to [Checking Float, page 138](#) for instructions to preset the float.

**NOTE:** Refer to the specific header section for your equipment in this manual for detailed switch operating modes.



**Figure 3.57**

- A - Deck shift/float preset switch
- B - Float preset 1
- C - Float preset 2
- D - Float preset 3

## OPERATOR'S STATION

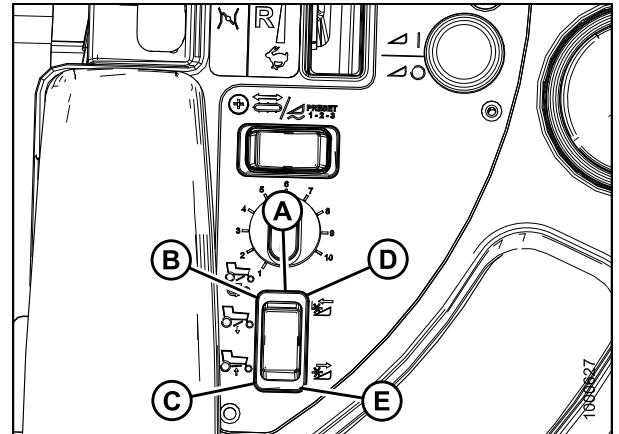
### *Double Windrow Attachment (DWA) / Swath Roller Switch (if Installed)*

#### **Double Windrow Attachment**

- DWA deck is raised (C) or lowered (B) if switch (A) is installed in the console and if the Cab Display Module (CDM) is programmed for this configuration. It may be used in lieu of the DWA switches on the Ground Speed Lever (GSL).

#### **Swath Roller**

- Roller is raised (E) or lowered (D) when switch is pressed.



**Figure 3.58**

- |                             |                       |
|-----------------------------|-----------------------|
| A - DWA/swath roller switch | B - DWA down          |
| C - DWA up                  | D - Swath roller down |
| E - Swath roller up         |                       |

## OPERATOR'S STATION

### 3.17 Cab Display Module (CDM)

#### 3.17.1 Engine and Windrower Functions



**Figure 3.59: CDM Engine and Windrower Functions**

- |                                  |                           |                          |
|----------------------------------|---------------------------|--------------------------|
| A - Engine rpm                   | B - Ground speed          | C - Display              |
| D - Hazard warning lights switch | E - Select switch         | F - Turn signal switches |
| G - Ignition switch positions    | H - Engine warning lights |                          |

A – Engine rpm

B – Ground speed: mph or kph

C – DISPLAY: Engine/windrower functions.

D – HAZARD WARNING LIGHTS switch: Activates hazard warning lights, cancels turn signal.

E – SELECT switch: Allows operator to select display item on lower line. Push to SELECT.

F – TURN SIGNAL switches: Activates Turn Signals on Windrower and Header Push-ON / Push-OFF.

G – IGNITION switch positions: Accessory / Stop / Run / Start.

H – Engine warning lights: Engine Pre-Heat / Water In Fuel / CAUTION / Stop Engine.

# OPERATOR'S STATION

## 3.17.2 Header Functions



**Figure 3.60: CDM Header Functions**

A - Display

D - Float switch – header left side

G - Return to cut height switch

B - Select switch

E - Adjust auger/drapper speed

C - Float switch – header right side

F - Header index switch

**A – DISPLAY:** Header functions.

**B – SELECT SWITCH:** Allows Operator to select display item. On lower line, push to SELECT.

**C – FLOAT SWITCH – Header Right Side:** Changes header float. The system remembers setting with deck shift option if activated with float setting switch. Push + to Increase. Push – to Decrease.

**D – FLOAT SWITCH – Header Left Side:** Changes header float. The system remembers setting with deck shift option if activated with float setting switch. Push + to Increase. Push – to Decrease.

**E – AUGER/DRAPER SPEED ADJUST:** Changes auger/drapper speed INDEX with INDEX SWITCH ON. Changes auger/drapper SPEED with INDEX SWITCH OFF. Push upper switch to increase. Push lower switch to decrease.

**F – HEADER INDEX SWITCH:** Links reel and conveyor speed to ground speed. Push-ON / Push-OFF.

**NOTE:** Illuminates in ON position.

**NOTE:** Header must be engaged.

**G – RETURN TO CUT HEIGHT SWITCH:** Allows cutting height pre-set. Push-ON/Push-OFF.

**NOTE:** Illuminates in ON position.

**NOTE:** Header must be engaged.

# OPERATOR'S STATION

## 3.17.3 Operating Screens

The Cab Display Module (CDM) and the Windrower Control Module (WCM) provide information on several functions for the engine, header, and windrower. The information displayed in various operating modes is described in the following sections.



**Figure 3.61: CDM Operating Screen**

A - Display selector for upper line  
D - CDM lower line

B - Display  
E - Display selector for lower line

C - CDM upper line

*Ignition ON, Engine not Running*

Display (upper line) (2–3 seconds)	Description
HEADER DISENGAGED	Indicates HEADER DRIVE switch is OFF.
IN PARK	Indicates Ground Speed Lever (GSL) is in N-DETENT.



## OPERATOR'S STATION

### *Engine-Forward, Engine Running*

<b>Display</b>	<b>Description</b>
ROAD GEAR (Upper Line)	Ground speed range switch in high range.
#####.# ENGINE HRS (Upper or Lower Line)	Total engine operating time.
#####.# HEADER HRS (Upper or Lower Line)	Total header operating time.
##### TOTAL ACRES (Upper or Lower Line) ##### TOTAL HECT (if Metric)	Total area cut by machine.
##.# HEADER HEIGHT (Upper or Lower Line)	Distance setting (00.0–10.0) between cutterbar and ground.
##.# HEADER ANGLE (Upper or Lower Line)	Angle setting (00.0–10.0) header relative to ground.
### °C or F HYD OIL TEMP	Hydraulic oil temperature.
##.# VOLTS (Upper or Lower Line)	Engine electrical system operating voltage.
SCROLL (Lower Line)	Displays above items after 2–3 seconds; press SELECT to cancel.

### *Cab-Forward, Engine Running, Header Disengaged*

Scroll through display with Cab Display Module (CDM) switch or Ground Speed Lever (GSL) switch.

<b>Display (lower or upper line)</b>	<b>Description</b>
#####.# ENGINE HRS	Total engine operating time.
#####.# HEADER HRS	Total header operating time.
###.# SUB ACRES ###.# SUB HECTARES (If Metric)	Area cut since last reset; to reset, display SUB ACRES on lower line, and hold down Program switch until display resets (5–7 seconds).
##### TOTAL ACRES ##### TOTAL HECT (If Metric)	Total area cut by machine.
##.# HEADER HEIGHT	Distance setting (00.0–10.0) between cutterbar and ground.
##.# HEADER ANGLE	Angle setting (00.0–10.0) header relative to ground.
##.# L FLOAT R ##.#	Float setting (0.0–10.0).
### °C or F HYD OIL TEMP	Hydraulic oil temperature.
##.# VOLTS	Engine electrical system operating voltage.
SCROLL (Lower Line)	Displays above items after 2–3 seconds; press SELECT to cancel.

## OPERATOR'S STATION

*Cab-Forward, Engine Running, Header Engaged, Draper Header Index Switch OFF*

Scroll through display with Cab Display Module (CDM) switch or Ground Speed Lever (GSL) switch.

Display (lower or upper line)	Description
#####.# ENGINE HRS	Total engine operating time.
#####.# HEADER HRS	Total header operating time.
##.# ACRES/HOUR ##.# HECTARES/HOUR (If Metric)	Actual cutting rate in acres (hectares)/hour.
###.# SUB ACRES ###.# SUB HECTARES (If Metric)	Area cut since last reset. To reset, display SUB ACRES on lower line, and hold down program switch until display resets (5–7 seconds).
##### TOTAL ACRES ##### TOTAL HECT (If Metric)	Total area cut by machine.
##.## REEL MPH ##.## REEL KPH (If Metric) ##.## REEL SENSOR	Reel peripheral speed.  Sensor Disabled. MPH or KPH and SENSOR alternate at 1 second intervals.
##.# DRAPER SPEED	Draper speed (0.0-11.0).
#### KNIFE SPEED #### KNIFE SENSOR	Knife speed In strokes per minute. Sensor Disabled. SPEED and SENSOR alternate at 1 second intervals.
##.# HEADER HEIGHT ##.# HEADER SENSOR	Distance setting (00.0–10.0) between cutterbar and ground. Sensor Disabled. HEIGHT and SENSOR alternate at 1 second intervals.
##.# HEADER ANGLE ##.# HEADER SENSOR	Angle setting (00.0–10.0). Header relative to ground. Sensor Disabled. ANGLE and SENSOR alternate at 1 second intervals.
##.# L FLOAT R ##.# FLOAT SENS DISABLED	Left and right float setting (0.0–10.0). Sensor Disabled.
### °C or F HYD OIL TEMP ### °C or F HYD SENSOR	Hydraulic oil temperature. Sensor Disabled. TEMP and SENSOR alternate at 1 second intervals.
LOAD ■■■■  #####	Bar graph representing hydraulic operating pressure. Full scale is pre-programmed overload pressure (2500–5000 psi). If sensor disabled, LOAD does not display <sup>3</sup>
##.# VOLTS	Engine electrical system operating voltage.

3. The LOAD sensor to monitor knife/conditioner circuit pressure is optional. To monitor reel/auger circuit pressure, relocate sensor as per Form MD #169031, which is available through your Dealer.

## OPERATOR'S STATION

Display (lower or upper line)	Description
SCROLL SUB-MENU (Lower Line Only) ##### KNIFE SPEED ##.# HEADER HEIGHT LOAD ##### #####  ##### ##.## REEL MPH ##.# DRAPER SPEED	Displays sub-menu after 2–3 seconds. Press SELECT to cancel. Scroll through sub-menu display with CDM switch.
KNIFE SPD OVERLOAD	

*Cab-Forward, Engine Running, Header Engaged, Draper Header Index Switch ON*

Scroll through display with Cab Display Module (CDM) switch or Ground Speed Lever (GSL) switch.

Display (lower or upper line)	Description
#####.# ENGINE HRS	Total engine operating time.
#####.# HEADER HRS	Total header operating time.
##.# ACRES/HOUR ##.# HECTARES/HOUR (If Metric)	Actual cutting rate in acres (hectares)/hour.
###.# SUB ACRES ###.# SUB HECTARES (If Metric)	Area cut since last reset. To reset, display SUB ACRES on lower line and hold down program switch until display resets (5–7 Seconds).
##### TOTAL ACRES ##### TOTAL HECT (If Metric)	Total area cut by machine.
##.## ##.# REEL IND REEL.SENSOR	Reel peripheral speed along with ground speed in mph or kph. Sensor Disabled. IND and SENSOR alternate at 1 second intervals.
##.# ##.# DRAP INDX	Draper speed along with ground speed in mph or kph.
#### KNIFE SPEED #### KNIFE SENSOR	Knife speed in strokes per minute. Sensor Disabled. SPEED and SENSOR alternate at 1 second intervals.
##.# HEADER HEIGHT ##.# HEADER SENSOR	Distance setting (00.0–10.0) between cutterbar and ground. Sensor Disabled. HEIGHT and SENSOR alternate at 1 second intervals.
##.# HEADER ANGLE ##.# HEADER SENSOR	Angle setting (00.0–10.0) header relative to ground. Sensor Disabled. ANGLE and SENSOR alternate at 1 second intervals.
##.# L FLOAT R ##.# FLOAT SENS DISABLED	Left and right float setting (0.0–10.0). Sensor Disabled.
### °C or F HYD OIL TEMP ### °C or F HYD SENSOR	Hydraulic oil temperature. Sensor Disabled. TEMP and SENSOR alternate at 1 second intervals.

## OPERATOR'S STATION

Display (lower or upper line)	Description
LOAD ■■■■  ■■■■	Bar graph representing hydraulic operating pressure. Full scale is pre-programmed overload pressure (2500–5000 psi). If sensor disabled, LOAD does not display <sup>4</sup>
##.# VOLTS	Engine electrical system operating voltage.
SCROLL SUB-MENU (Lower Line Only) ■■■■ KNIFE SPEED ##.# HEADER HEIGHT LOAD ■■■■ ■■■■  ##.# ##.# REEL IND ##.# ##.# DRAP INDX	Displays sub-menu after 2-3 seconds. Press SELECT to cancel. Scroll through sub-menu display with CDM switch.
##.## REEL MIN RPM (Lower Line)	Reel speed drops below programmed set-point.
MINIMUM (Lower Line)	Reel speed at zero ground speed.

### *Cab-Forward, Engine Running, Header Engaged, Rotary Header Installed*

Scroll through display with Cab Display Module (CDM) switch or Ground Speed Lever (GSL) switch.

Display (lower or upper line)	Description
#####.# ENGINE HRS	Total engine operating time.
#####.# HEADER HRS	Total header operating time.
##.# ACRES/HOUR ##.# HECTARES/HOUR (If Metric)	Actual cutting rate in acres (hectares)/hour.
###.# SUB ACRES ###.# SUB HECTARES (If Metric)	Area cut since last reset. To reset, display SUB ACRES on lower line, and hold down program switch until display resets (5–7 seconds).
##### TOTAL ACRES ##### TOTAL HECT (If Metric)	Total area cut by machine.
#### DISC RPM ##.## DISC SENSOR	Disc rotational speed. Sensor Disabled. RPM and SENSOR alternate at 1 second intervals.
##.# HEADER HEIGHT ##.# HEIGHT SENSOR	Distance setting (00.0–10.0) between cutterbar and ground. Sensor Disabled. HEIGHT and SENSOR alternate at 1 second intervals.
##.# HEADER ANGLE ##.# HEADER SENSOR	Angle setting (00.0–10.0) header relative to ground. Sensor Disabled. ANGLE and SENSOR alternate at 1 second intervals.
##.# L FLOAT R ##.# FLOAT SENS DISABLED	Left and right float setting (0.0–10.0). Sensor Disabled.

4. The LOAD sensor to monitor knife/conditioner circuit pressure is optional. To monitor reel/auger circuit pressure, relocate sensor as per Form MD #169031, which is available through your Dealer.

## OPERATOR'S STATION

Display (lower or upper line)	Description
LOAD ■■■■  ■■■■	Bar graph representing hydraulic operating pressure. Full scale is pre-programmed overload pressure (2500–5000 psi). If sensor disabled, LOAD does not display <sup>5</sup> .
### °C or F HYD OIL TEMP ### °C or F HYD TEMP	Hydraulic oil temperature. Sensor Disabled. TEMP and SENSOR alternate at 1 second intervals.
##.# VOLTS	Engine electrical system operating voltage.
SCROLL SUB-MENU (Lower Line Only) #### DISC RPM ##.# HEADER HEIGHT LOAD ■■■■ ■■■■  ■■■■	Displays sub-menu after 2–3 seconds. Press SELECT to cancel. Scroll through sub-menu display with CDM switch.

### Miscellaneous Operational Information

Scroll through display with Cab Display Module (CDM) switch or Ground Speed Lever (GSL) switch.

Display (upper line)	Description
HEADER DISENGAGED	Header drive is disengaged.
##.# FOOT DISK	AUGER or DRAPER will appear in place of DISK, depending on type of header attached.
IN PARK	GSL in N-DETENT position.
< LEFT TURN ■	Indicates left turn when left arrow is pressed on CDM. Engine-forward mode only <sup>6</sup> .
■ RIGHT TURN >	Indicates right turn when right arrow is pressed on CDM. Engine forward mode only <sup>7</sup>
■ HAZARD ■	Indicates hazard warning lights are on when hazard button is pressed on CDM.
HEADER REVERSE	Header drive running in reverse.
HEADER ENGAGED	Header drive engaged.
ROAD GEAR	With High Range selected on Console switch. Engine-forward only <sup>7</sup>

5. The LOAD sensor to monitor knife/conditioner circuit pressure is optional-installed. To monitor reel/auger circuit pressure, relocate sensor as per Form MD #169031, which is available through your Dealer.

6. If road light kit is not installed, CDM will display E135 LEFT STOP LAMP as a malfunction in CAB-FORWARD mode.

7. If road light kit is not installed, CDM will display E134 RIGHT STOP LAMP as a malfunction in CAB-FORWARD mode.

## OPERATOR'S STATION

### 3.17.4 Cab Display Module (CDM) Warning/Alarms

The CDM displays warnings and sounds alarms to notify of abnormal windrower status at startup when the ignition is turned ON, and at engine operating speeds above 500 rpm.

#### Engine Warning Lights



Figure 3.62: CDM Engine Warning Lights

A - Engine pre-heat

B - Water in fuel

C - Caution

D - Stop

E - Display

**A – ENGINE PRE-HEAT:** Illuminates yellow. Wait to start engine.

**B – CAUTION:** Illuminates yellow. Prompt attention is required, refer to display code.

**C – DISPLAY:** Displays malfunction code. Refer to Appendix and technical service manual.

**D – STOP:** Illuminates red. Stop engine immediately. Refer to display code.

**E – WATER IN FUEL:** Illuminates yellow. Service recommended.

## OPERATOR'S STATION

### Display Warnings and Alarms

Informs Operator of abnormal windrower conditions.



Figure 3.63: CDM Display Warnings and Alarms

A - Display

Display	Flashing	Alarm tone	Description
BRAKE OFF			Engine Running, Brake Solenoid Not Activated.
BRAKE ON	X	Short Beep with Each Flash.	Ground Speed Lever (GSL) out of N-DETENT, but Interlock Switch Remains Closed to Apply Brake.
BRAKE SW FAILURE	X	Short Beep with Each Flash.	Ignition ON / Engine Not Running, Brake Switch and Relay Closed.
CAB-FORWARD SW ON/ ENG-FORWARD SW ON	X	Messages Flash Alternately.	Both Seat Switches Activated.
CENTER STEERING		Beeps at 2 Per Second.	GSL or Interlock Switches not Closed with Key ON / Engine OFF.
DISENGAGE HEADER RE-ENGAGE <1800RPM>	X	None	R80/R85 - Engine rpm Above 1800 when Engaging Header.

## OPERATOR'S STATION

Display	Flashing	Alarm tone	Description
ENGINE AIR FILTER	X	Single Loud Tone for 10 Seconds. Repeats Every 30 Minutes Until Condition Is Corrected.	Engine Air Filter Requires Servicing.
ENGINE OIL PRESSURE	X	Continuous Loud Tone until Oil Pressure Is Regained	Low Engine Oil Pressure.
ENGINE TEMPERATURE	X	Ongoing Intermittent Moderate Tone until Temperature Is Below 215°F (102°C.)	Engine Temperature Over 110°C (230°F).
HEADER DISENGAGED		None	Normal
DISENGAGE HEADER	X	None	Header Switch Is in ON Position when Ignition Switch Turned ON.
HEADER OIL PRESS	X	Continuous Loud Tone until Oil Pressure Is Regained.	Low Header Charge Oil Pressure. Header Shuts Down Automatically. Header ON Switch Must be Moved to OFF Position and Then to ON Position to Restart the Header.
HYDRAULIC FILTER	X	Single Loud Tone for 10 Seconds. Repeats Every 15 Minutes until Condition Is Corrected.	Excessive Pressure Increase across Hydraulic Oil Filter.
### °C or F HYD OIL COLD	X	Tone Sounds with Each Flash for 5 Seconds and then Stops for 1 Minute. Flashing Continues. If Oil Still Cold after 1 Minute, Tone Sounds Again.	Hydraulic Oil Temp <10°C (50°F).
### °C or F HYD OIL HOT	X	Tone with Each Flash at 105°C (220°F) for 5 Seconds and Then Stops for 1 Minute. Flashing Continues. If Oil Still Hot after 1 Minute, Tone Sounds Again. Flashing and Steady Tone at 110°C (230°F) and Higher.	Hydraulic Oil Temp >105°C (220°F) but <110°C (230°F).
IN PARK	X	One Short Beep.	GSL In N-DETENT, Steering Wheel Centered, and Brakes Are Engaged.
KNIFE SPEED OVERLOAD	X	Short Beep With Each Flash Until Condition Is Corrected.	Machine Overload. Knife or Disc Speed Drops Below Programmed Value.
LOCK SEAT BASE		None	Seat Base not Detected in Cab- or Engine-Forward Position.



## OPERATOR'S STATION

Display	Flashing	Alarm tone	Description
LOW HYDRAULIC OIL	X	Continuous Loud Tone for 5 Seconds. If Condition not Rectified, Single Loud Tone Every 5 Minutes.	Low Hydraulic Oil Level. Header Shuts Down Automatically if Engaged. Header ON Switch Must Be Moved to OFF Position and then to ON Position to Restart the Header.
NO HEADER		None	Header Is Not Detected.
NO OPERATOR / NOT IN PARK ENGINE SHUTDOWN		Continuous Tone	Operator not Dected in Seat with Header Engaged or out of Neutral Detent with Machine Moving at <5mph (8km/h). Engine Shutdown after 5 Seconds.
NO OPERATOR		Continuous Tone	Engine Shutdown when Operator not Detected in Seat with Machine Moving >5 mph (8 km/h).
NOT IN PARK	X	Short Beep with Each Flash.	GSL or Interlock Switches Not Closed with Key ON / Engine OFF.
PLACE GSL INTO "N"		Beeps at 2 per Second until Corrected.	GSL or Interlock Switches Not Closed with Key ON / Engine OFF.
SLOW DOWN	X	Short Beep with Each Flash.	Ground Speed is Greater Than or Equal to 25 mph (40 km/h). Operator Should Pull Back on the GSL to Reduce Ground Speed.
TRANS OIL PRESS	X	Continuous Loud Tone Until Oil Pressure Is Regained.	Low Transmission Charge Oil Pressure.
TRANS OIL TEMP	X	Ongoing Intermittent Moderate Tone Until Temperature Is Below Acceptable Level.	Transmission Oil Temperature Above 221°F (106°C) .
### LOW VOLTS	X	Single Loud Tone for 10 Seconds.	Voltage Below 11.5.
### HIGH VOLTS	X	Single Loud Tone for 10 Seconds.	Voltage Above 15.5.

## OPERATOR'S STATION

### 3.17.5 Cab Display Module (CDM) Programming



Figure 3.64: CDM programming

A - Side display

B - Main display

C - Select switch

D - Menu item scroll forward

E - Menu item scroll backward

F - Program switch

**A – SIDE DISPLAY** displays software revision status.

- Upper Line – C### (CDM)
- Lower Line – M### (WCM)

**B – MAIN DISPLAY** displays menu item and selection.

- Upper Line – Menu Item
- Lower Line – Selection

**C – SELECT SWITCH** places monitor into Program Mode with PROGRAM SWITCH. Press to accept menu item and advance to next item.

**D – MENU ITEM SCROLL FORWARD** displays value under menu item.

- Push to scroll forward.
- Hold down for fast scroll<sup>8</sup>.

**E – MENU ITEM SCROLL BACKWARD** displays value under menu item.

- Push to scroll backward.
- Hold down for fast scroll<sup>8</sup>.

**F – PROGRAM SWITCH** places monitor into program mode. Press while pressing SELECT switch.

8. Fast scroll applies only when changing KNIFE SPEED, OVERLOAD PRESSURE, and TIRE SIZE.

## OPERATOR'S STATION

**NOTE:** Contact your MacDon Dealer for information regarding software updates to the electronic modules. Your Dealer will have the necessary interface tools and access to the latest software upgrades.

### IMPORTANT

**Header must be attached to the windrower so that the CDM can detect the type of header (Header ID), and adjust the programming mode accordingly.**

Proceed as follows to program the CDM:

1. Turn ignition key to RUN or start the engine.
2. Press PROGRAM and SELECT on CDM to enter programming mode. The four digit header ID code is displayed.
3. Press SELECT. WINDROWER SETUP? with header width is displayed on upper line.
4. Press right arrow until SET KNIFE SPEED? is displayed.
5. Press left or right arrow to change value on lower line.
6. Press SELECT to advance to the next L1 item and press arrow keys to change values.
7. Press PROGRAM to exit programming mode when finished entering desired values.

#### *Programming Guidelines*

Use the following guidelines when programming the Cab Display Module (CDM):

1. The monitoring system requires programming for each header, and the **HEADER MUST BE ATTACHED TO THE WINDROWER** so that the CDM recognizes the type of header.
2. Programming the system may be accomplished with or without the engine running.
  - If the engine is running, the transmission must be in neutral (GSL in N-DETENT).
  - If the engine is not running, the ignition must be turned to RUN.
3. The system only needs to be programmed once for each header. Most functions are pre-set at the factory but the Operator can make changes later on to suit windrowing conditions or modifications to the machine.
4. Input values for the windrower are provided in this manual, and values for the header functions are in the operator's manual for the applicable header.
5. The CDM must be in programming mode to view the program menus. Press PROGRAM and SELECT on the CDM to enter programming mode. Exit programming mode at any time by pressing PROGRAM or by turning ignition to OFF.
6. Refer to the [Detailed Programming Menu Flow Chart, page 85](#) for a listing of all the menus with user information for each menu item.

**NOTE:** Contact your MacDon dealer for information about software updates to the electronic modules. Your dealer will have the necessary interface tools and access to the latest software upgrades

#### *Detailed Programming Menu Flow Chart*

The programming menu flow chart is current for Cab Display Module (CDM) software 315 and Windrower Control Module (WCM) software V109.

# OPERATOR'S STATION

Programming Menu Flow Chart



1004285

# OPERATOR'S STATION

<pre> L2 &gt; X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   H E A D E R F L O A T L2 X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   R E E L F O R E / A F T L2 X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   D R A P E R S P E E D L2 X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   A U G E R S P E E D L2 X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   K N I F E S P E E D L2 X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   D I S K S P E E D L2 X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   R E E L S P E E D L2 X x x x   5 7 5 . 1 HRS ENABLED L2 X x x x   6 4 8 . 6 HRS LOCKED  L1 C x x x   E X I T V I E W L O C K O U T S ? L2 X x x x   N O / Y E S </pre>	<p>When the control lock outs are viewed the lower display line (L2) will show the engine hours and either ENABLED or LOCKED to indicate the present status along with the engine hours at which time the function was either ENABLED or LOCKED.</p> <p>Using the "arrow" keys allows the operator to select the various functions. Pressing "SELECT" will go to the EXIT VIEW LOCKOUTS? menu selection.</p> <p>If "NO" then jump to: H E A D E R T I L T</p> <p>If "NO" then jump to: S E T K N I F E S P E E D ? o r D I S C O V E R L O A D S P D ?</p> <p>Disc Header Only</p>
<pre> L1 C x x x   E X I T W I N D R W R S E T U P ? L2 X x x x   N O / Y E S </pre>	<p>If "NO" then jump to: C A L I B R A T E S E N S O R S ?</p> <p>Only if Engine is running!</p>
<pre> L1 C x x x   C A B D I S P L A Y S E T U P ? L2 X x x x   N O / Y E S  L1 C x x x   D I S P L A Y L A N G U A G E ? L2 X x x x   E N G L I S H L2 X x x x   E S P A N O L  L1 C x x x   D I S P L A Y U N I T S ? L2 X x x x   I M P E R I A L L2 X x x x   M E T R I C  L1 C x x x   C D M B U Z Z E R V O L U M E L2 X x x x    L1 C x x x   C D M B A C K L I G H T I N G L2 X x x x    L1 C x x x   C D M C O N T R A S T L2 X x x x    L1 C x x x   E X I T D I S P L A Y S E T U P ? L2 X x x x   N O / Y E S </pre>	<p>Use the "arrow" keys to change the default language. Pressing "SELECT" goes to the next L1 menu selection.</p> <p>The "arrow" keys are used to select between IMPERIAL or METRIC. The default value will be displayed first.</p> <p>The "arrow" keys are used to change the CDM buzzer volume, CDM backlighting or the CDM contrast, with the bar graph indicating the relative level for each item. When "SELECT" is pressed the program goes to the EXIT DISPLAY SETUP? menu selection.</p> <p>If "NO" then jump to: D I S P L A Y L A N G U A G E ?</p>
<pre> L1 C x x x   C A L I B R A T E S E N S O R S ? L2 X x x x   N O / Y E S </pre>	<p>If "NO" then jump to: D I A G N O S T I C M O D E ?</p> <p>If engine off then jump to diagnostic mode?</p>
<pre> L1 C x x x   T O C A L I B R A T E S E L E C T L2 X x x x   H E A D E R H E I G H T L2 X x x x   H E A D E R T I L T L2 X x x x   H E A D E R F L O A T L2 X x x x   S T O P &amp; E X I T  L1 C x x x   H E I G H T S E N S O R C A L L2 X x x x   R A I S E H D R T O S T A R T  L1 C x x x   C A L I B R A T I N G H E I G H T L2 X x x x   R A I S E H E A D E R H O L D L2 X x x x   H E A D E R R A I S E D O N E  L1 C x x x   H E I G H T S E N S O R C A L L2 X x x x   P R E S S L O W E R H E A D E R  L1 C x x x   C A L I B R A T I N G H E I G H T L2 X x x x   L O W E R H E A D E R H O L D L2 X x x x   H T S E N S O R C O M P L E T E  L1 C x x x   T O C A L I B R A T E S E L E C T L2 X x x x   H E A D E R H E I G H T L2 X x x x   H E A D E R T I L T L2 X x x x   H E A D E R F L O A T L2 X x x x   S T O P &amp; E X I T  L1 C x x x   H D R T I L T S E N S O R C A L L2 X x x x   E X T E N D T I L T T O S T A R T  L1 C x x x   C A L I B R A T I N G T I L T L2 X x x x   E X T E N D T I L T H O L D L2 X x x x   E X T E N D T I L T D O N E  L1 C x x x   H D R T I L T S E N S O R C A L L2 X x x x   P R E S S R E T R A C T T I L T  L1 C x x x   C A L I B R A T I N G T I L T L2 X x x x   R E T R A C T T I L T H O L D L2 X x x x   H D R T I L T C O M P L E T E  L1 C x x x   T O C A L I B R A T E S E L E C T L2 X x x x   H E A D E R H E I G H T </pre>	<p>The operator can select any of the three items requiring calibration (or exit the CAL menu) by using the turn signal switches to cycle through the choices. Pressing SELECT will take the operator to the calibration menu for that particular sensor.</p> <p>The display will indicate the sensor being calibrated. The operator will be prompted to raise the header and HOLD will flash until the system has completed reading in the signal with the header fully raised. HOLD will change to DONE (with buzzer).</p> <p>When the header raise is done, the CDM will prompt the user to lower the header. COMPLETE (with buzzer) will flash on the screen for 2 seconds when the calibration is finished.</p> <p>The operator can select any of the three items requiring calibration (or exit the CAL menu) by using the turn signal switches to cycle through the choices. Pressing SELECT will take the operator to the calibration menu for that particular sensor.</p> <p>The display will indicate the sensor being calibrated. The operator will be prompted to extend the header tilt and HOLD will flash until the system has completed reading in the signal with the header tilt fully extended. HOLD will change to DONE (with buzzer).</p> <p>When the header tilt extend is done, the CDM will prompt the user to press the header tilt retract. COMPLETE (with buzzer) will flash on the screen for 2 seconds when the calibration is finished.</p> <p>The operator can select any of the three items requiring calibration (or exit the CAL menu) by using the turn signal</p>



# OPERATOR'S STATION

	L2   X x x x    2 . 4 5 V F L O A T S E N S O R L1   C x x x    S E N S O R I N P U T    ← → L2   X x x x    K N I F E S P E E D S E N S O R L1   C x x x    S E N S O R I N P U T    ← → L2   X x x x    R E E L S P E E D S E N S O R L1   C x x x    S E N S O R I N P U T    ← → L2   X x x x    H Y D O I L T E M P S E N S O R	flashing in the area where the input reading would have been.  If a sensor has been disabled "SENSOR" will be flashing in the area where the input reading would have been.  NOTE: The oil temp. readout applies to the M205 model with the Sensata oil temp. sensor.
	L1   C x x x    A C T I V A T E F U N C T I O N S ? <span style="border: 1px solid black; padding: 2px;">If "NO" then jump to:</span> L2   X x x x    ←    N O / Y E S    →    F O R C E H E A D E R T Y P E ?	
	L1   C x x x    A C T I V A T E H E A D E R H T L2   X x x x    ←    D O W N / U P    → L1   C x x x    A C T I V A T E R E E L H T L2   X x x x    ←    D O W N / U P    → L1   C x x x    A C T I V A T E H D R T I L T L2   X x x x    ←    I N / O U T    → L1   C x x x    K N I F E D R V S P D X X X X L2   X x x x    D 0 P 0 ← - > + → L1   C x x x    D R A P E R D R V S P D X X X X L2   X x x x    D 0 P 0 ← - > + → L1   C x x x    R E E L D R V S P D X X X X L2   X x x x    D 0 P 0 ← - > + → L1   C x x x    D I S C D R V S P D X X X X L2   X x x x    D 0 P 0 ← - > + → L1   C x x x    A C T I V A T E D W A D R V L2   X x x x    D 0 P 0 ← - > + → L1   C x x x    A C T I V A T E R E E L F / A L2   X x x x    ←    F O R E / A F T    → L1   C x x x    A C T I V A T E H Y D P U R G E ? L2   X x x x    ←    N O / Y E S    → L1   C x x x    T O A C T I V A T E P U R G E L2   X x x x    P R E S S A N D H O L D    → L1   C x x x    P U R G E C Y C L E S T A R T E D L2   X x x x    P R E S S A N D H O L D    → L1   C x x x    P U R G E C Y C L E E N D E D L2   X x x x    L1   C x x x    P U R G E C Y C L E E N D E D L2   X x x x    ←    N O    E X I T    Y E S    → L1   C x x x    E X I T F U N C T I O N M E N U ? L2   X x x x    ←    N O / Y E S    →	For diagnostic purposes each header function can be activated by using the "arrow" keys on the CDM. When "SELECT" is pressed the program will go to the next function that can be activated.  If a disk header is detected then the nomenclature should read: DISC DRIVE instead of KNIFE DRIVE.  PWM OPERATION: If the HAZARD switch is pressed instead of the TURN SIGNAL switch the GSL will operate the PWM valve (HAZARD sw must be held) and the PWM value will reset to zero when released.  For Disc Header only  The DWA menu selection should only be available if the DWA INSTALLED? is set to YES.  For Disc Header only  ACTIVATE HYD PURGE - This is to allow the operator to purge the air from a new or changed pump system.  Pressing and holding the right hand "arrow" button activates a predetermined timed purge cycle. Releasing pressure on the switch or a completed cycle (timed out) will jump to the PURGE CYCLE ENDED menu selection.
	L1   C x x x    F O R C E H E A D E R T Y P E ?    "NO" then jump to: L2   X x x x    ←    N O / Y E S    →    E X I T D I A G N O S T I C ?	
	L1   C x x x    S E L E C T H E A D E R T Y P E L2   X x x x    ←    D I S K H E A D E R    → L2   X x x x    ←    S K A U G E R    → L2   X x x x    ←    D K A U G E R    → L2   X x x x    ←    G R A S S S E E D    → L2   X x x x    ← 2 0 F T S K D R A P E R → L2   X x x x    ← 2 5 F T S K D R A P E R → L2   X x x x    ← 3 0 F T S K D R A P E R → L2   X x x x    ← 3 5 F T S K D R A P E R → L2   X x x x    ← 1 5 F T D K D R A P E R → L2   X x x x    ← 2 0 F T D K D R A P E R → L2   X x x x    ← 2 5 F T D K D R A P E R → L2   X x x x    ← 3 0 F T D K D R A P E R → L2   X x x x    ← 3 5 F T D K D R A P E R → L2   X x x x    ← 4 0 F T D K D R A P E R → L1   C x x x    E X I T F O R C E H E A D E R ? L2   X x x x    ←    N O / Y E S    → L1   C x x x    E X I T D I A G N O S T I C ? L2   X x x x    ←    N O / Y E S    → L1   C x x x    E X I T S E T U P ? L2   X x x x    ←    N O / Y E S    → <span style="border: 1px solid black; padding: 2px; display: inline-block;">If "YES" then jump to:</span> O P E R A T I N G S C R E E N S	This allows the operator to select or "force" a header ID configuration if a "NO HEADER" ID is being read by the control system. The header type will revert back to "NO HEADER" every time the ignition is cycled.  When "SELECT" is pressed the program goes to the EXIT HEADER TYPE? menu selection.  If "NO" then jump to: S E L E C T H E A D E R T Y P E  If "NO" then jump to: V I E W E R R O R C O D E S ?  If "NO" then jump to: W I N D R O W E R S E T U P ?

# OPERATOR'S STATION

## Operating Information Screens

**Cab Display Monitor - Operating Information Screens**

**Disk Header**

L1 or L2	###.#	ENGINE	HRS
L1 or L2	###.#	HEADER	HRS
L1 or L2	###.#	ACRES /	HOURL
L1 or L2	###.#	SUB	ACRES
L1 or L2	#####	TOTAL	ACRES
L1 or L2	###.#	DISK	RPM
L1 or L2	###.#	HEADER	HEIGHT
L1 or L2	###.#	HEADER	ANGLE
L1 or L2	###.#	L FLOAT	R ###.#
L1 or L2	38 °F	HYD OIL	COLD
L1 or L2	148 °F	HYD OIL	TEMP
L1 or L2	221 °F	HYD OIL	HOT
L1 or L2	230 °F	HYD OIL	HOT

L1 or L2    LOAD I ■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■

L1 or L2    ###.# VOLTS

L2        SCROLL

➔

L2        DISK SPD OVERLOAD

**Metric Equivalents**

L1 or L2	##.#	HECTARES /	HOURL
L1 or L2	###.#	SUB	HECTARES
L1 or L2	#####	TOTAL	HECT

M155 / M205 - equipped with temp. sensor. There are 4 different display lines depending on the oil temp.: <10 deg. C - COLD with an intermittant tone, >105 C - HOT intermittant tone and >110 C - HOT with a steady tone.

**Scroll Sub-Menu**

L2	###.#	DISK	RPM
L2	###.#	HEADER	HEIGHT
L2	LOAD I	■■■■■	■■■■■

---

**Auger Header**

L1 or L2	###.#	ENGINE	HRS
L1 or L2	###.#	HEADER	HRS
L1 or L2	###.#	ACRES /	HOURL
L1 or L2	###.#	SUB	ACRES
L1 or L2	#####	TOTAL	ACRES
L1 or L2	###.#	REEL	RPM
L1 or L2	###.#	AUGER	SPEED
L1 or L2	###.#	KNIFE	SPEED
L1 or L2	###.#	HEADER	HEIGHT
L1 or L2	###.#	HEADER	ANGLE
L1 or L2	###.#	L FLOAT	R ###.#
L1 or L2	38 °F	HYD OIL	COLD
L1 or L2	148 °F	HYD OIL	TEMP
L1 or L2	221 °F	HYD OIL	HOT
L1 or L2	230 °F	HYD OIL	HOT

L1 or L2    LOAD I ■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■

L1 or L2    ###.# VOLTS

L2        SCROLL

➔

L2        KNIFE SPD OVERLOAD

**Metric Equivalents**

L1 or L2	##.#	HECTARES /	HOURL
L1 or L2	###.#	SUB	HECTARES
L1 or L2	#####	TOTAL	HECT

M155 / M205 - equipped with temp. sensor. There are 4 different display lines depending on the oil temp.: <10 deg. C - COLD with an intermittant tone, >105 C - HOT intermittant tone and >110 C - HOT with a steady tone.

**Scroll Sub-Menu**

L2	###.#	KNIFE	SPEED
L2	###.#	HEADER	HEIGHT
L2	LOAD I	■■■■■	■■■■■
L2	###.#	REEL	RPM
L2	###.#	AUGER	SPEED

---

**Draper Header**

L1 or L2	###.#	ENGINE	HRS
L1 or L2	###.#	HEADER	HRS
L1 or L2	###.#	ACRES /	HOURL
L1 or L2	###.#	SUB	ACRES
L1 or L2	#####	TOTAL	ACRES
L1 or L2	###.#	REEL	MPH
L1 or L2	###.#	DRAPER	SPEED
L1 or L2	###.#	KNIFE	SPEED
L1 or L2	###.#	HEADER	HEIGHT
L1 or L2	###.#	HEADER	ANGLE
L1 or L2	###.#	L FLOAT	R ###.#
L1 or L2	38 °F	HYD OIL	COLD
L1 or L2	148 °F	HYD OIL	TEMP
L1 or L2	221 °F	HYD OIL	HOT
L1 or L2	230 °F	HYD OIL	HOT

L1 or L2    LOAD I ■■■■■■ ■■■■■■ ■■■■■■ ■■■■■■

L1 or L2    ###.# VOLTS

L2        SCROLL

➔

L2        KNIFE SPD OVERLOAD

**Metric Equivalents**

L1 or L2	##.#	HECTARES /	HOURL
L1 or L2	###.#	SUB	HECTARES
L1 or L2	#####	TOTAL	HECT
L1 or L2	###.#	REEL	KPH

M155 / M205 - equipped with temp. sensor. There are 4 different display lines depending on the oil temp.: <10 deg. C - COLD with an intermittant tone, >105 C - HOT intermittant tone and >110 C - HOT with a steady tone.

**Scroll Sub-Menu**

L2	###.#	KNIFE	SPEED
L2	###.#	HEADER	HEIGHT
L2	LOAD I	■■■■■	■■■■■
L2	###.#	REEL	MPH
L2	###.#	DRAPER	SPEED

Header Index "ON"

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# OPERATOR'S STATION

L1 or L2	###.#	ENGINE	HR	S					
L1 or L2	###.#	HEADER	HR	S					
L1 or L2	###.#	ACRES	/	H	O	U	R		
L1 or L2	###.#	SUB	ACRES						
L1 or L2	###.#	TOTAL	ACRES						
L1 or L2	###.#	REEL	IND						
L1 or L2	###.#	DRAP	INDX						
L1 or L2	###.#	KNIFE	SPEED						
L1 or L2	###.#	HEADER	HEIGHT						
L1 or L2	###.#	HEADER	ANGLE						
L1 or L2	###.#	L	FLOAT	R	###.#				
L1 or L2	38°	F	HYD	OIL					
L1 or L2	148°	F	HYD	OIL					
L1 or L2	221°	F	HYD	OIL					
L1 or L2	230°	F	HYD	OIL					
L1 or L2	LOAD		■	■	■	■	■	■	■
L1 or L2	###.#	VOLTS							
L2	SCROLL								
L2	###.#	REEL	MIN	RPM					
L2	MINIMUM								

L1 or L2

L1 or L2

L1 or L2

L1 or L2

M155 / M205 - equipped with temp. sensor. There are 4 different display lines depending on the oil temp.: <10 deg. C - COLD with an intermittent tone, >105 C - HOT intermittent tone and >110 C - HOT with a steady tone.

**Scroll Sub-Menu**

L2	###.#	KNIFE	SPEED						
L2	###.#	HEADER	HEIGHT						
L2	LOAD		■	■	■	■	■	■	■
L2	###.#	REEL	IND						
L2	###.#	DRAP	INDX						

**Power Up & Misc. Display Information**

L1	HEADER	DIS	ENGAGED						
L1	###.#	FOOT	DISK						
L1	IN	PARK							
L1	<	LEFT	TURN						■
L1	■	RIGHT	TURN						>
L1	■	HAZARDS							■
L1	ROAD	GEAR							
L1	HEADER	REVERSE							
L1	HEADER	ENGAGED							

L1

L1

L1

L1

L1

L1

L1	###.#	FOOT	AUGER						
L1	###.#	FOOT	DRAPER						
L1	###.##	METRE	AUGER						
L1	###.##	METRE	DRAPER						
L1	###.##	METRE	DISK						

<b>Operating Menus - Sensors Enabled</b>									
L1 or L2	###.##	REEL	RPM						
L1 or L2	###.##	AUGER	SPEED						
L1 or L2	###.##	KNIFE	SPEED						
L1 or L2	###.#	HEADER	HEIGHT						
L1 or L2	###.#	HEADER	ANGLE						
L1 or L2	###.#	L	FLOAT	R	###.#				
L1 or L2	148°	F	HYD	OIL					
L1 or L2	LOAD		■	■	■	■	■	■	■

<b>Operating Menus - Sensors Disabled</b>									
L1 or L2	###.##	REEL	SENSOR						
L1 or L2	###.##	AUGER	SENSOR						
L1 or L2	###.##	KNIFE	SENSOR						
L1 or L2	###.#	HEADER	SENSOR						
L1 or L2	###.#	HEADER	SENSOR						
L1 or L2	FLOAT	SENS	DISABLED						
L1 or L2	148°	F	HYD						
L1 or L2	PRESSURE		SENSOR						

Operator presses PROGRAM / SELECT in the tractor setup menu or while the header is engaged - SPEED UNLOCKED.

L1	SET	KNIFE	SPEED?						
L2	←		1200	SPM					→

Normal display with knife speed unlocked.

Operator presses PROGRAM / SELECT in the tractor setup menu or while the header is engaged - SPEED LOCKED.

L1	KNIFE	SPEED	LOCKED						
L2	←		1200	SPM					→

Top line of display changes to this if locked. Pressing the arrow keys does not change the speed.

L1 or L2	###.#	HEADER	ANGLE						
----------	-------	--------	-------	--	--	--	--	--	--

Using the CDM or GSL SELECT button will display the standard information. If the GSL switch for the tilt function is pressed the display will not toggle to the function but display:

HEADER	TILT	LOCKED							
--------	------	--------	--	--	--	--	--	--	--

L1 or L2	###.#	L	FLOAT	R	###.#				
----------	-------	---	-------	---	-------	--	--	--	--

The CDM will show the "normal" float display when selected by using the SELECT button (CDM or GSL). If the CDM LHS or RHS FLOAT switches are pressed the display will show:

HEADER	FLOAT	LOCKED							
--------	-------	--------	--	--	--	--	--	--	--

# OPERATOR'S STATION

If the CDM or GSL select switch is pressed the CDM will display the values from the sensors (unless disabled). It is only when the function switch (that would activate a valve) is pressed that the display would show "LOCKED" for that function.

### AUGER HEADER

HEADER TILT	H	E	A	D	E	R	T	I	L	T	L	O	C	K	E	D		
HEADER FLT	H	E	A	D	E	R	F	L	O	A	T	L	O	C	K	E	D	
REEL	F	O	R	E	/	A	F	T	L	O	C	K	E	D				
AUGER SPD	A	U	G	E	R	S	P	E	E	D	L	O	C	K	E	D		
KNIFE SPEED	K	N	I	F	E	S	P	E	E	D	L	O	C	K	E	D		
REEL SPEED	R	E	E	L	S	P	E	E	D	L	O	C	K	E	D			

### ALTERNATE DISPLAY - LOCKED AT RHS

HEADER TILT	H	E	A	D	E	R	T	I	L	T		L	O	C	K	E	D	
HEADER FLT	H	E	A	D	E	R	F	L	O	A	T		L	O	C	K	E	D
REEL	F	O	R	E	/	A	F	T					L	O	C	K	E	D
AUGER SPD	A	U	G	E	R	S	P	E	E	D			L	O	C	K	E	D
KNIFE SPEED	K	N	I	F	E	S	P	E	E	D			L	O	C	K	E	D
REEL SPEED	R	E	E	L	S	P	E	E	D				L	O	C	K	E	D

### DRAPER HEADER

HEADER TILT	H	E	A	D	E	R	T	I	L	T	L	O	C	K	E	D		
HEADER FLT	H	E	A	D	E	R	F	L	O	A	T	L	O	C	K	E	D	
REEL	F	O	R	E	/	A	F	T	L	O	C	K	E	D				
DRAPER SPD	D	R	A	P	E	R	S	P	E	E	D	L	O	C	K	E	D	
KNIFE SPEED	K	N	I	F	E	S	P	E	E	D	L	O	C	K	E	D		
REEL SPEED	R	E	E	L	S	P	E	E	D	L	O	C	K	E	D			

### DRAPER HEADER

HEADER TILT	H	E	A	D	E	R	T	I	L	T		L	O	C	K	E	D	
HEADER FLT	H	E	A	D	E	R	F	L	O	A	T		L	O	C	K	E	D
REEL	F	O	R	E	/	A	F	T	L	O	C		L	O	C	K	E	D
DRAPER SPD	D	R	A	P	E	R	S	P	E	E	D		L	O	C	K	E	D
KNIFE SPEED	K	N	I	F	E	S	P	E	E	D			L	O	C	K	E	D
REEL SPEED	R	E	E	L	S	P	E	E	D				L	O	C	K	E	D

### DISK HEADER

HEADER TILT	H	E	A	D	E	R	T	I	L	T	L	O	C	K	E	D		
HEADER FLT	H	E	A	D	E	R	F	L	O	A	T	L	O	C	K	E	D	
DRAPER SPD	D	I	S	K	S	P	E	E	D	L	O	C	K	E	D			

### DISK HEADER

HEADER TILT	H	E	A	D	E	R	T	I	L	T		L	O	C	K	E	D	
HEADER FLT	H	E	A	D	E	R	F	L	O	A	T		L	O	C	K	E	D
DRAPER SPD	D	I	S	K	S	P	E	E	D				L	O	C	K	E	D

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## OPERATOR'S STATION

### 3.17.6 Engine Error Codes

The Cab Display Module (CDM) displays error codes when there is a fault with one of the several sensors that monitor and control engine operation, to assist the Operator or Technician in locating a specific problem with engine operation. See Section [Engine Error Codes](#).

### 3.17.7 Cab Display Module (CDM) and Windrower Control Module (WCM) Fault Codes

The CDM displays fault codes when there is a fault with one of the several sensors that monitor and control windrower operation, to assist the Operator or Technician in locating a specific problem with the windrower. See Section [CDM Error Codes](#).



## 4 Operation

### 4.1 Owner/Operator Responsibilities



#### **CAUTION**

- It is your responsibility to read and understand this manual completely before operating the windrower. Contact your Dealer if an instruction is not clear to you.
- Follow all safety messages in the manual and on safety signs on the machine.
- Remember that YOU are the key to safety. Good safety practices protect you and the people around you.
- Before allowing anyone to operate the windrower, for however short a time or distance, make sure they have been instructed in its safe and proper use.
- Review the manual and all safety related items with all Operators annually.
- Be alert for other Operators not using recommended procedures or not following safety precautions. Correct these mistakes immediately, before an accident occurs.
- Do NOT modify the machine. Unauthorized modifications may impair the function and/or safety and affect machine life.
- The safety information given in this manual does NOT replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.

# OPERATION

## 4.2 Symbol Definitions

The following symbols are used to depict functions or reactions at the various instruments and controls. Learn the meaning of these symbols before operating the windrower.

### 4.2.1 Engine Functions

These are the symbols that are used on the console.

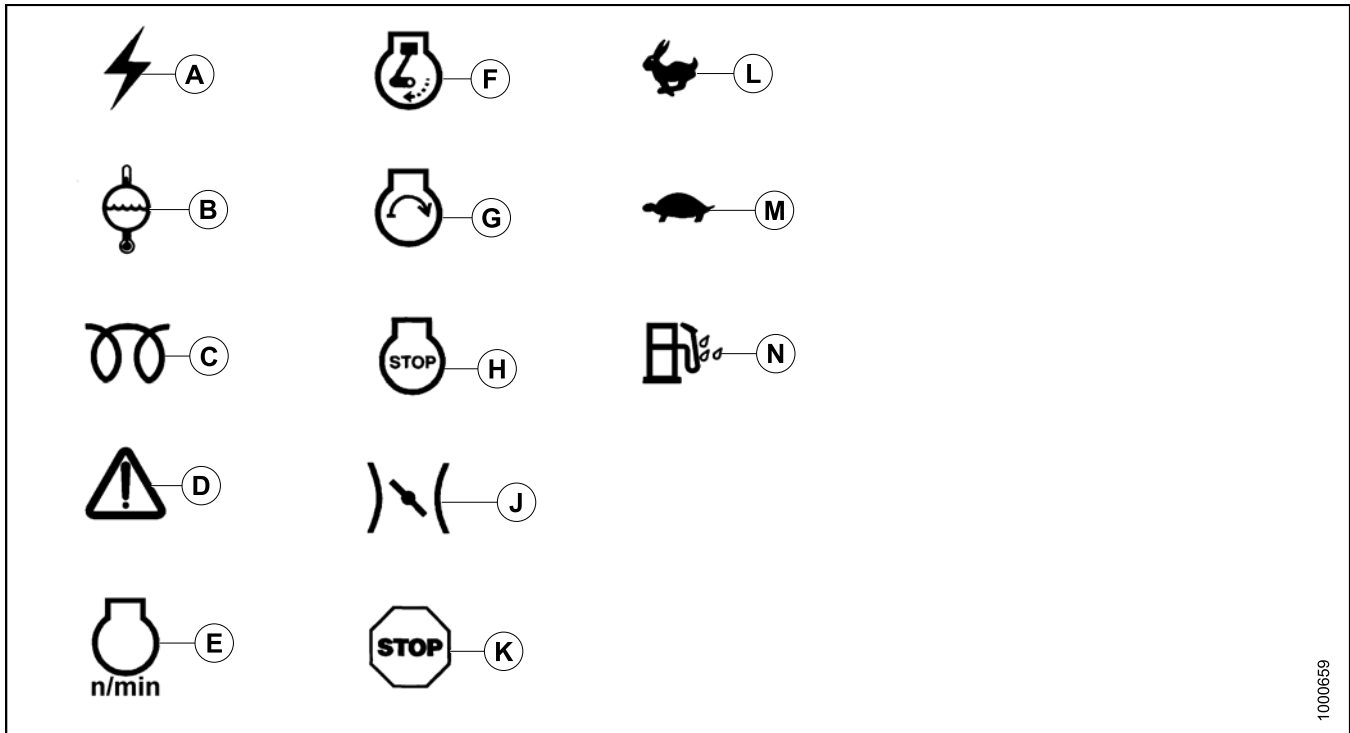


Figure 4.1: Engine Function Symbols

A - Electrical power – accessories

D - Engine malfunction

G - Engine start

K - Engine urgent stop

N - Water in fuel

B - Engine coolant temperature

E - Engine rpm

H - Engine stop

L - Fast

C - Engine glow plugs

F - Engine run

J - Engine throttle

M - Slow

## OPERATION

### 4.2.2 Windrower Operating Symbols

These are the symbols used on the console for windrower operation.



Figure 4.2: Windrower Operating Symbols

A - Turn signals

C - Forward

E - Reverse

G - Headlights high beam

J - Lighter

L - Blower

N - Seat height up

P - Seat fore and aft

R - Seat back fore and aft

T - Cab temperature control

V- Recirculate

B - Hazard warning lights

D - Neutral

F - Headlights low beam

H - Work light

K - Fresh air

M - Windshield wiper

O - Seat height down

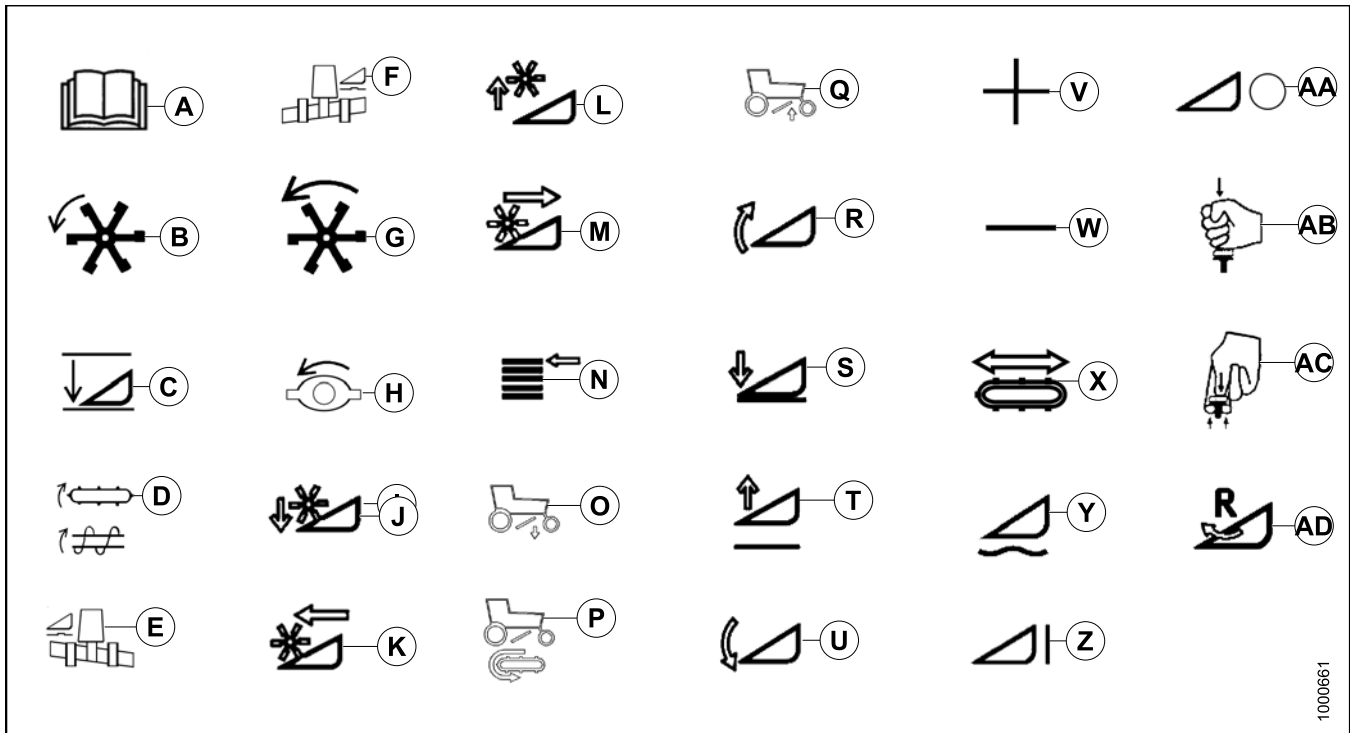
Q - Seat fore aft Isolator

S - Seat ride damping

U - Air conditioning

# OPERATION

## 4.2.3 Header Functions



**Figure 4.3: Header Function Symbols**

- |                            |                       |                                 |
|----------------------------|-----------------------|---------------------------------|
| A - Program                | B - Header index      | C - Return to cut               |
| D - Conveyor/auger speed   | E - Float left        | F - Float right                 |
| G - Reel speed             | H - Disc speed        | J - Reel down                   |
| K - Reel Back              | L - Reel up           | M - Reel rearward               |
| N - Display select         | O - DWA down          | P - DWA draper speed            |
| Q - DWA up                 | R - Header tilt up    | S - Header down                 |
| T - Header up              | U - Header tilt down  | V - Increase                    |
| W - Decrease               | X - Deck shift        | Y - Float                       |
| Z - Header engage          | AA - Header disengage | AB - Push down header disengage |
| AC - Pull up header engage | AD - Header reverse   |                                 |



## OPERATION

### 4.3 Operating the Windrower

#### 4.3.1 Operational Safety



## CAUTION

Follow these safety precautions:

- Wear close fitting clothing and protective shoes with slip resistant soles.
- Remove foreign objects from the machine and surrounding area.
- Carry with you any protective clothing and personal safety devices that **COULD** be necessary through the day. Don't take chances.
- You may need:
  - a hard hat
  - protective glasses or goggles
  - heavy gloves
  - respirator or filter mask
  - wet weather gear

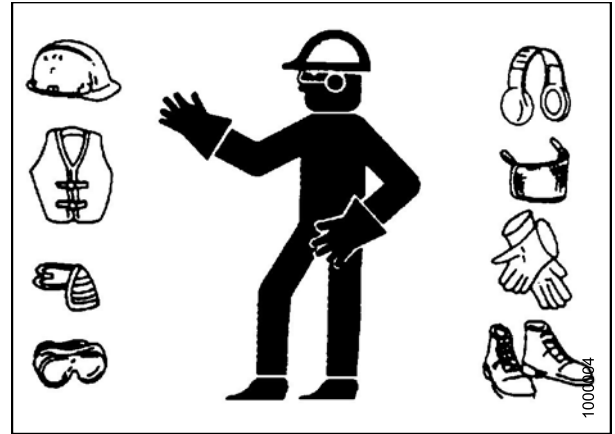


Figure 4.4

- Protect against noise. Wear a suitable hearing protective device such as ear muffs or ear plugs to protect against objectionable or uncomfortable loud noises.
- Follow all safety and operational instructions given in your operator's manuals. If you do not have a header manual, get one from your Dealer and read it thoroughly.
- Never attempt to start the engine or operate the machine except from the operator's seat
- Check the operation of all controls in a safe clear area before starting work.
- Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. Refer to [Shutting Down the Engine, page 106](#).
- Operate only in daylight or good artificial light.



Figure 4.5

## OPERATION

### 4.3.2 Break-In Period

The windrower is ready for normal operation. However there are several items to check and watch out for during the first 150 hours.

In addition to the following, perform the items specified in Section [5.11.1 Break-In Inspections, page 334](#).



## DANGER

**Before investigating an unusual sound or attempting to correct a problem, place Ground Speed Lever (GSL) in N-DETENT, shut off engine, and remove key.**

## IMPORTANT

**Until you become familiar with the sound and feel of your new windrower, be extra alert and attentive.**

- Operate engine at moderate load and avoid extremely heavy or light loading for longer than 5 minutes.
- Avoid unnecessary idling. If engine will be idling for longer than 5 minutes after reaching operating temperature, turn key OFF to stop engine.
- Check engine oil level frequently. Watch for any signs of leakage. If oil must be added, refer to Section [5.6.3 Checking Engine Oil Level, page 243](#).

**NOTE:** During the break-in period, a higher than usual oil consumption should be considered normal.

**NOTE:** If windrower must be driven in cold weather (below freezing), let engine idle for 3 minutes, and then operate at moderate speed until oil has warmed up.

- Watch coolant gauge in cab for temperature rising beyond normal operating range. Check that coolant level at reserve tank (mounted next to radiator) stays between HOT and COLD marks on tank. Refer to Section [5.6.8 Engine Cooling System, page 261](#). If over-heating problems occur, check for coolant leaks.

## OPERATION

### 4.3.3 Preseason Check



## CAUTION

- Review the operator's manual to refresh your memory on safety and operating recommendations.
- Review all safety signs and other decals on the windrower and note hazard areas.
- Be sure all shields and guards are properly installed and secured. Never alter or remove safety equipment.
- Be sure you understand and have practiced safe use of all controls. Know the capacity and operating characteristics of the machine.
- Store a properly stocked first aid kit and charged fire extinguisher on the windrower.

Perform the following safety checks at the beginning of each operating season:

1. Drain off excess hydraulic oil added for storage. Refer to Section [5.9.3 Draining Hydraulic Oil, page 310](#).
2. Remove plastic bags and/or tape from all sealed openings (air cleaner intake, exhaust pipe, fuel tank).
3. Charge battery and install. Be sure terminals are clean, and cables are connected securely.
4. Adjust tension on A/C compressor belt. See [Tensioning A/C Compressor Belt, page 271](#).
5. Check the entire air conditioning system for leakage at the beginning of each season.
6. Perform annual maintenance. See Section [5.11 Maintenance Schedule, page 334](#).

### 4.3.4 Daily Check

1. Check the machine for leaks or any parts that are missing, broken, or not working correctly.

**NOTE:** Use proper procedure when searching for pressurized fluid leaks. Refer to Section [5.9.7 Hoses and Lines, page 320](#).

2. Clean the windows and mirrors to be sure of good visibility in all directions. Stand on the platform to access the rear window. Hold onto the handholds on the cab front corners, and stand on the header anti-slip strips to wash the front window.
3. Clean all lights and reflective surfaces to maintain visibility to others.
4. Perform daily maintenance. Refer to Section [5.11 Maintenance Schedule, page 334](#).

## OPERATION

### 4.3.5 Engine Operation

#### Starting 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 N-DETENT, the steering wheel is locked in the NEUTRAL position, and the header drive 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. Machine will start with drive engaged, and move if normal starting circuitry is bypassed.
- Start engine only from operator's seat with controls in NEUTRAL. 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

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

## WARNING

Before starting engine, securely fasten your seat belt, and ensure Trainer's seat belt is fastened if occupied. The seat belt can help ensure your safety if it is used and maintained.

1. The battery main disconnect switch is located on the RH frame rail, behind the maintenance platform, and can be accessed by moving the platform. Ensure switch is switched to POWER ON position.

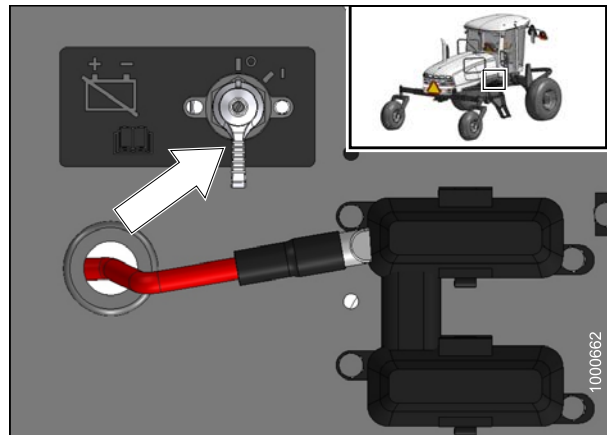


Figure 4.6

## OPERATION

2. Ensure lock (A) at the base of the steering column is engaged at cab-forward or engine-forward position.
3. Move Ground Speed Lever (GSL) (B) into N-DETENT.
4. 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 locked position as damage to the traction system may occur.



Figure 4.7

5. Fasten seat belt.
6. Push HEADER DRIVE switch (C) to ensure it is OFF.



Figure 4.8

## OPERATION

### Normal Start

Engine temperature above 60°F (16°C):

1. Set throttle (A) to START position—fully back.

## IMPORTANT

The machine gauges and instruments provide important information about machine operation and condition. Familiarize yourself with the gauges and monitor them carefully during start-up operation. Refer to [Section 3.14 Engine Controls and Gauges, page 64](#).



## CAUTION

Check to be sure all bystanders have cleared the area.

2. Sound horn three times.
3. Turn ignition key (B) to RUN position. Single loud tone sounds, engine warning lights illuminate as a self-test, and Cab Display Module (CDM) displays “HEADER DISENGAGED” and “IN PARK”.
4. Turn ignition key to START position until engine starts, and then release key. CDM displays programmed header data for 5 seconds if attached, and then returns to previous display.



Figure 4.9

## IMPORTANT

- Do NOT operate starter for longer than 15 seconds at a time.
- If engine does not start, wait at least two minutes before trying again.
- After the third 15 second crank attempt, allow solenoid to cool for 10 minutes before further cranking attempts. If engine still does not start, refer to [Section 6.1 Engine Troubleshooting, page 337](#).



## WARNING

If starter engages with steering wheel unlocked, ground speed lever out of NEUTRAL, or header clutch engaged, DO NOT START ENGINE. See your Dealer.

## OPERATION

### Cold Start

Engine temperature below 40°F (5°C):

1. Follow the procedure for a normal start. See [Normal Start, page 104](#).
2. The engine will cycle through a period where it appears to labour until the engine warms up. The throttle is nonresponsive during this time as the engine is in “WARM UP” mode. This mode will last from 30 seconds to 3 minutes depending on the temperature.
3. After the engine has stabilized and is idling normally, the throttle becomes active.

## IMPORTANT

**Do not operate engine above 1500 rpm until engine temperature gauge is above 100°F (40°C).**



### WARNING

**If starter engages with steering wheel unlocked, ground speed lever out of NEUTRAL, or header clutch engaged, DO NOT START ENGINE. See your Dealer.**

### *Engine Warm-Up*

Allow engine to run with throttle lever (A) at or near low idle position until temperature gauge (B) reaches approximately 100°F (40°C).



Figure 4.10

### *Engine Intermediate Speed Control (ISC)*

The engine operating speed can be programmed to enable the windrower to operate at reduced engine rpm, that is, 1800, 1900, 2000 rpm, or OFF (full throttle) without significantly affecting the ground or header speeds.

Engine ISC is useful when operating loads are reduced such as in light crop conditions that do not require the maximum engine rpm. Reduced engine speed lowers fuel consumption, noise levels, and exhaust emissions, in addition to reducing engine wear. The programmed engine speed is activated when the header is engaged.

Programming instructions are provided in [Section 3.17.5 Cab Display Module \(CDM\) Programming, page 84](#).

## OPERATION

### Shutting Down the Engine

# CAUTION

Park on a flat, level surface, header on the ground, and the ground speed lever in N-DETENT position and steering wheel locked.

## IMPORTANT

Before stopping engine, run at low idle for approximately five minutes to cool hot engine parts (and allow turbocharger to slow down while engine oil pressure is available).

1. Lower header.
2. Place Ground Speed Lever (GSL) (B) into N-DETENT.
3. Lock steering wheel
4. Turn ignition key counterclockwise to OFF position.



Figure 4.11

### Fuelling

Fill fuel tank daily, preferably at the end of the day's operation to help prevent condensation in the tank.

# CAUTION

Do not allow tank to empty. Running out of fuel can cause air locks and/or contamination of the fuel system. Refer to [System Priming, page 260](#).

# WARNING

- To avoid personal injury or death from explosion or fire, do NOT smoke or allow flame or sparks near fuel tank when refueling.
  - NEVER refuel the windrower when the engine is hot or running.
1. Stop windrower, and remove key.
  2. Stand on either platform to access the fuel tank filler pipe.



## OPERATION

3. Clean the area around filler cap (A).
4. Turn cap handle (B) counterclockwise until loose, and remove cap.
5. Fill tank with approved fuel. See [Lubricants, Fluids, and System Capacities](#), page 213.

### IMPORTANT

**Do NOT fill tank completely—space is required for expansion. A filled tank could overflow if exposed to a rise in temperature, such as direct sunlight.**

6. Replace fuel tank cap (A), and turn cap handle (B) clockwise until snug.

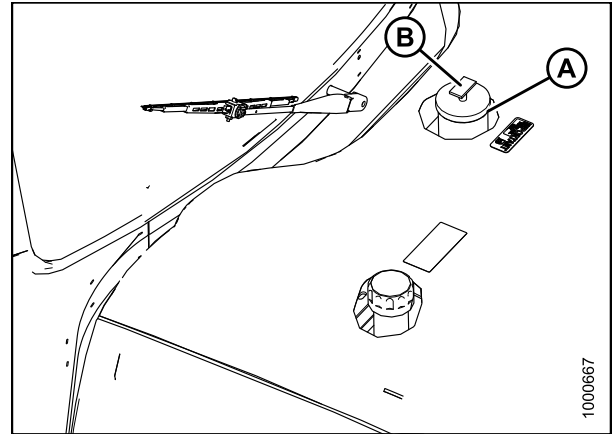


Figure 4.12

### Engine Temperature

The normal engine operating temperature range is 180–225°F (82–107°C), and is indicated by the temperature gauge (B) on the operator's console.

If the temperature exceeds 230°F (110°C), an ongoing intermittent tone will be heard, and the Cab Display Module (CDM) will flash "ENGINE TEMP". Stop the engine immediately, and determine cause. The tone will stop, and the CDM will return to normal when the temperature drops below 225°F (107°C).



Figure 4.13

### Engine Oil Pressure

The nominal engine oil pressure is 10 psi (69 kPa) at low idle, and 55.1 psi (380 kPa) at maximum rated speed.

If the oil pressure drops below preset level of 7.5 psi (52 kPa), the Cab Display Module (CDM) flashes an error code and error message. If STOP ENGINE light appears, stop the engine **IMMEDIATELY** and investigate. If yellow CAUTION light illuminates, stopping immediately is optional. The Operator may continue operations and investigate later, but is **STRONGLY** advised to monitor the situation carefully.

# OPERATION

## Electrical

The electrical system voltage is displayed on the Cab Display Module (CDM) when selected with the SELECT button on the Ground Speed Lever (GSL) handle, or the SELECT switch on the CDM. The display indicates the condition of the battery and alternator.

Ignition	Engine	Reading	Indicated condition
ON	Running	13.8–15.0	Normal
		> 16.0 <sup>9</sup>	Regulator out of adjustment
		< 12.5 <sup>9</sup>	Alternator not working or regulator out of adjustment
	Shutdown	12.0	Battery normal

## Engine Warning Lights

There are four engine warning lights that illuminate if abnormal conditions occur while the engine is running. The engine warning lights should **NOT** be illuminated under normal operating conditions.

For more information, refer to Section [Engine Warning Lights, page 80](#)

### 4.3.6 Driving the Windrower



## WARNING

- Before starting engine, securely fasten your seat belt, and ensure trainer's seat belt is fastened if occupied.
- The seat belt can help insure your safety if it is used and maintained.
- Never wear a seat belt loosely, or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat structural members.



## WARNING

- Avoid driving the machine with header removed. Removing header decreases the weight on drive wheels, reducing steering control.
- If necessary to drive machine with header removed, use transmission field speed range, do NOT exceed 1500 rpm engine speed, and avoid loose gravel and slopes.
- Never use windrower as a towing vehicle when header is removed, except as instructed in Section [Towing Header with Windrower, page 121](#). There is insufficient weight on the drive wheels to provide steering control.
- Because of windrower shape characteristics, a roll-over protected (ROPS) cab is not required. If operating with header removed, be aware that cab structure will NOT withstand a roll-over.

---

9. Display flashes voltage reading with single loud tone. Repeats every 30 minutes until condition is fixed.

## OPERATION



### CAUTION

#### HYDROSTATIC STEERING

- Turning the steering wheel varies the hydraulic flow to one drive wheel relative to the other drive wheel.
- The reaction of this type of steering is different from conventional steering mechanisms.



### CAUTION

- With the engine running, moving the ground speed lever out of N-DETENT unlocks steering. Any movement of steering wheel will then cause the machine to move, even if the ground speed lever has not been moved forward or rearward from the NEUTRAL position.
- Hydrostatic steering is more sensitive than mechanical steering.
- Steering is opposite to normal when driving in reverse.
- The brakes are only on when the GSL is in N-DETENT, and the steering wheel is centered and locked.



### DANGER

- NEVER move the ground speed lever or steering wheel until you are sure all bystanders have cleared the area.
- Make sure area is clear before making turns, as the ends of a header travel in a large arc.
- Check the operation of all controls in a safe, clear area before starting work.
- Do know the capacity and operating characteristics of your machine.
- Do NOT allow riders in or on the machine.
- Do NOT operate unless seated in the operator's position.
- Do NOT attempt to get on or off a moving windrower.
- AVOID sudden starts and stops.
- AVOID inclines, ditches and fences.
- Do NOT rapidly accelerate or decelerate when turning.
- REDUCE your speed before turning, crossing slopes, or travelling over rough ground.
- Do NOT allow anyone to stand behind the machine while operating. Foreign objects may be forcibly ejected.

## OPERATION

### Ingress/Egress

# CAUTION

To provide more secure hand and foot mobility, preventing slipping and possible injury, **ALWAYS** face the windrower, and use the hand rail when dismounting (or mounting).

- **NEVER** attempt to get on or off a moving windrower.

Before leaving the operator's seat for any reason:

- Park on level ground if possible.
- Be sure ground speed lever is in N-DETENT, and steering wheel is locked in the straight-ahead position.
- Fully lower header and reel.
- Disengage header drives.
- Stop engine, and remove key from ignition. A child or even a pet could engage an idling machine.
- Turn off wipers.
- Turn off lights unless required for inspection purposes.
- Release seat belt.
- Raise armrest and steering wheel for easier exit and re-entry.
- Lock the cab door when leaving the windrower unattended. (When the door is locked, it can still be opened from inside the cab.)

Swing-away platforms and stairs (A) are provided on both sides of the windrower to accommodate cab-forward and engine-forward access to the operator's station, as well as several maintenance tasks.

The right cab-forward side platform is shown above in the rearward (cab-forward) position.

Two doors (B) are provided for cab entry and exit in either cab-forward mode or engine-forward mode. Enter the cab using the door opposite the operator's console.

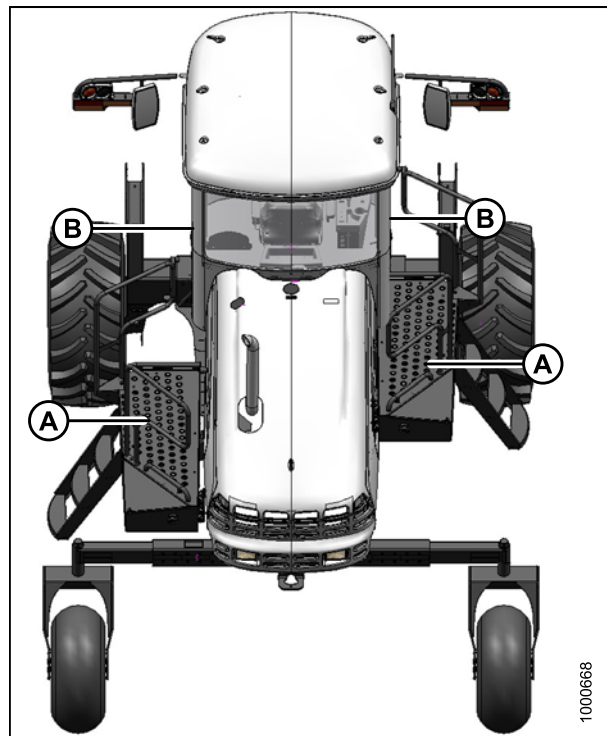


Figure 4.14

## OPERATION

### Cab-Forward Operation



## WARNING

Do NOT drive windrower on road in cab-forward configuration, unless it is equipped with the proper lighting and markings for cab-forward road travel.

Operator's station must be facing away from the engine. If necessary, swivel operator's seat to cab-forward position as follows:

1. Place Ground Speed Lever (GSL) (A) in N-DETENT. Engine can be running.

## IMPORTANT

If GSL is NOT in N-DETENT, damage to the GSL cable may result when swivelling operator's station.

2. Pull up on knob (B), and hold to release latch (C) at base of steering column.
3. Turn steering wheel counterclockwise to pivot operator's station clockwise 180° until pin engages latch to secure operator's station in new position.
4. Ensure seat belt is fastened.
5. Start engine if not running. Refer to [Starting Engine, page 102](#).
6. There are two cab-forward speed ranges. Set ground speed range switch (A) to either H (0–16 mph [25.7 km/h]), or L (0–11 mph [17.7 km/h]).
7. Slowly push throttle (B) to full forward (operating speed). Cab Display Module (CDM) should display 2320–2350 rpm at (C).



## CAUTION

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

8. Move the GSL (E) out of N-DETENT, and slowly forward to desired speed which will be displayed at (D).

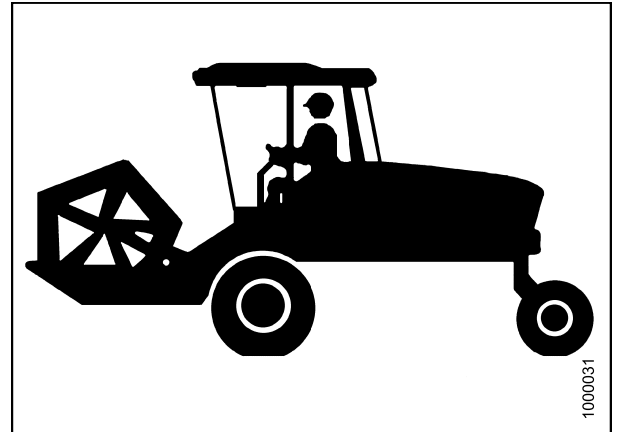


Figure 4.15: Cab-Forward Shown



Figure 4.16



Figure 4.17

## OPERATION

### CAUTION

Operate both steering wheel and ground speed lever slowly for familiarization. Avoid the common tendency of new Operators to oversteer.

The windrower can be equipped with an automatic steering system for use in the field.

The Auto-Steer is available as an option, and can be installed by an Auto-Steer dealer. The GSL has been pre-wired at the factory with a switch. Also see Section 7.1.2 Auto-Steer, page 355.

### *Reverse in Cab-Forward Mode*

### WARNING

Back up slowly. Steering is opposite to normal when reversing. Hold steering wheel at the bottom, and turn wheel in direction you want the rear (cab-forward) of the machine to travel.

1. Move speed range switch (A) to L.
2. Move throttle lever (B) to a mid-range position.

**NOTE:** Reversing in low speed range and at reduced engine speed is recommended since steering will be less sensitive than at higher speed settings.

### CAUTION

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

3. Move the Ground Speed Lever (GSL) rearward to desired speed.
4. Steer as shown.



Figure 4.18: Operator's Console

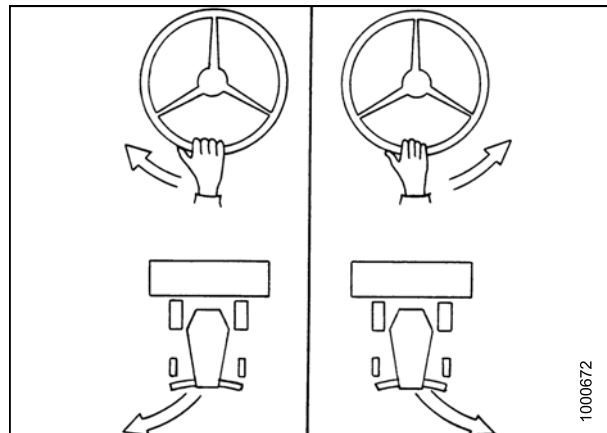


Figure 4.19: Cab-Forward Mode

## OPERATION

### Engine-Forward Operation

Operator's station must be facing toward the engine. If necessary, swivel operator's station to engine-forward position as follows:



Figure 4.20: Engine-forward - Seat Faces Engine

1. Place Ground Speed Lever (GSL) (A) in N-DETENT, and lock steering wheel. Engine can be running.

## IMPORTANT

If **GSL is NOT in N-DETENT**, damage to the **GSL cable** may result when swivelling operator's station.

2. Pull up on knob (B), and hold to release latch (C) at base of steering column.
3. Turn steering wheel clockwise to pivot operator's station counterclockwise 180° until pin engages latch to secure operator's station in new position.
4. Start engine if not running. Refer to [Starting Engine](#), page 102.
5. Set ground speed range switch (A) to **H** for road speed (0–23 mph [37 km/h]). Cab Display Module (CDM) will display ROAD GEAR at (F), and an alarm will briefly sound.
6. Slowly push throttle (B) to full forward (operating speed). CDM should display 2320–2350 RPM at (C).



Figure 4.21

## CAUTION

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

7. Slowly move the GSL (E) forward to desired speed which will be displayed at (D).

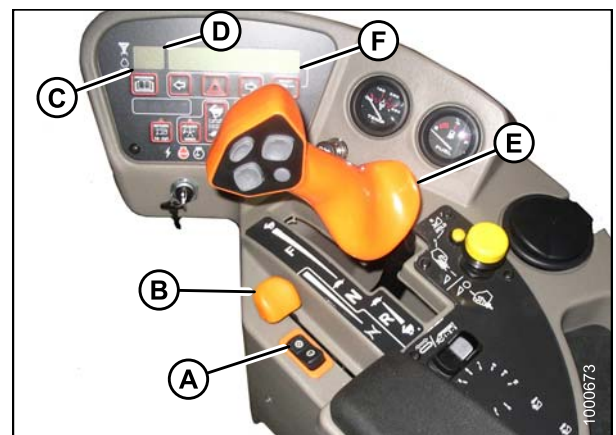


Figure 4.22

## OPERATION

### CAUTION

Operate both steering wheel and ground speed lever slowly for familiarization. Remember that steering is more sensitive when speed-range control is in Road Speed Position. Avoid the common tendency of new Operators to over-steer.

8. If more tractive (lugging) power is required (for example, when driving up a ramp, up a hill, or up out of a ditch):
  - a. Move the GSL (E) closer to NEUTRAL.
  - b. Switch speed-range control (B) to L (low range).
9. Once the lugging condition no longer exists:
  - a. Set GSL (E) to **NOT MORE THAN HALF** maximum forward speed.
  - b. Move speed-range control (B) to H (high range). Steering is more sensitive in this speed range.

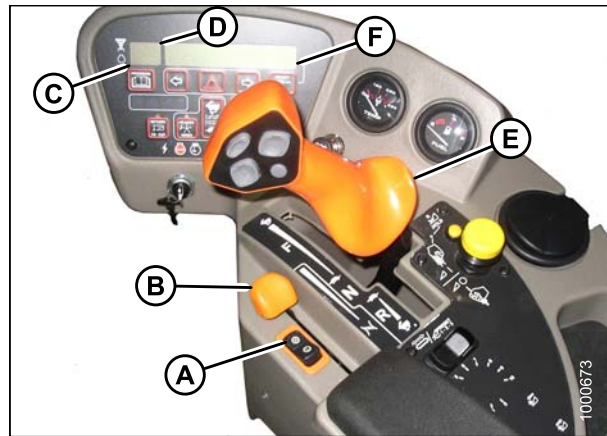


Figure 4.23

### *Reverse in Engine-Forward Mode*

### WARNING

Back up slowly. Steering is opposite to normal when reversing. Hold steering wheel at the bottom, and turn wheel in direction you want the rear (cab-forward) of the machine to travel.

1. Move speed-range switch (A) to L.
  2. Move throttle lever (B) to a mid-range position
- NOTE:** Reversing in low speed range and at reduced engine speed is recommended since steering will be less sensitive than at higher speed settings.



Figure 4.24



## OPERATION



### CAUTION

Check to be sure all bystanders have cleared the area.

3. Move the Ground Speed Lever (GSL) (C) rearward to desired speed.
4. Steer as shown.

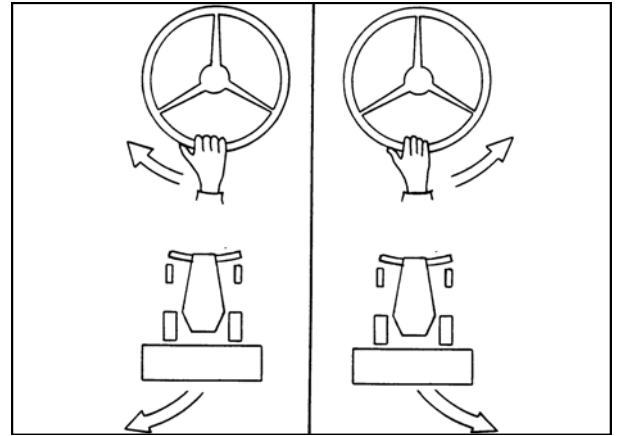


Figure 4.25

### Spin Turn

Hydrostatic steering provides significantly more manoeuvrability than mechanical steering.



### CAUTION

Be sure area is clear before making turns. Although windrower pivots on the spot, the ends of the header travel faster and in a large arc.

1. Move the Ground Speed Lever (GSL) (A) out of N-DETENT towards the seat, and hold.
2. Slowly turn the steering wheel in the desired direction of turn. The windrower will pivot between the drive wheels.
3. To stop the turn, slowly turn the steering wheel back to its centered position.
4. To increase the turn radius, slowly move the GSL away from NEUTRAL. Remember that this will increase ground speed as well.
5. To stop the turn, return the steering wheel to center.



Figure 4.26

### Stopping



### WARNING

Do NOT move ground speed lever rapidly back to NEUTRAL. Operator may be thrown forward by sudden stop. Always wear seat belt when operating windrower.

## OPERATION

1. **SLOWLY** return the Ground Speed Lever (GSL) (A) to NEUTRAL, and into N-DETENT.
2. Turn steering wheel until it locks.
3. Move throttle lever (B) to low idle position

**NOTE:** Avoid unnecessary idling. Stop engine if it will be idling for longer than 5 minutes.

4. Brakes are automatically engaged when steering wheel is locked in NEUTRAL position.



### CAUTION

Park on a flat, level surface, header on the ground, and the GSL in N-DETENT, and steering wheel locked.

### IMPORTANT

Before stopping engine, run at low idle for approximately five minutes to cool hot engine parts (and allow turbocharger to slow down while engine oil pressure is available).

5. Turn key counterclockwise to OFF position.

#### 4.3.7 Adjusting Caster Tread Width

The rear casters can be adjusted to a narrow tread width to allow loading and shipping without having to remove them.

A narrow tread width also suits smaller headers by allowing more space to the uncut crop, and provides more manoeuvrability around poles, irrigation inlets, or other obstacles.

A wider tread width is useful in heavy crops that produce large windrows so that runover is reduced.



### CAUTION

Park on a flat, level surface, header on the ground, and the ground speed lever in N-DETENT position and steering wheel locked.



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



Figure 4.27

## OPERATION

Adjust the caster tread width as follows:

1. Raise rear of windrower slightly so that most of the weight is off the casters, using a jack or other lifting device under the frame at (B).

**NOTE:** Lifting device should have a lifting capacity of at least 5000 lb (2270 kg).

2. Remove six bolts (A) four on backside, two on underside, and washers from left and right side of walking beam.

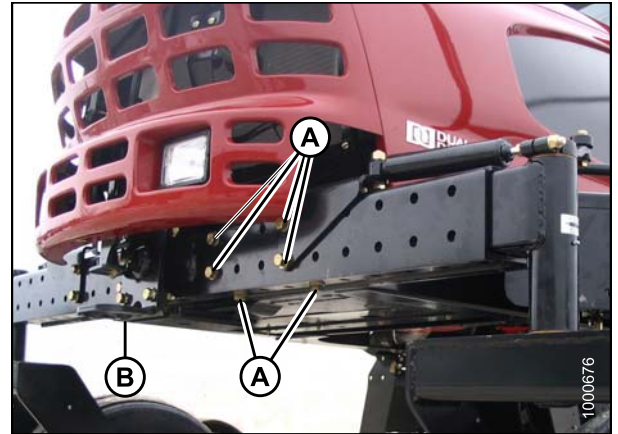


Figure 4.28

3. Slide extensions inboard or outboard equal amounts, and align holes at desired location.

**NOTE:** Use the caster wheels to assist in moving the axle by rotating the caster so that wheel is parallel to the axle.



Figure 4.29

## IMPORTANT

**Caster wheels must be equidistant from center of windrower.**

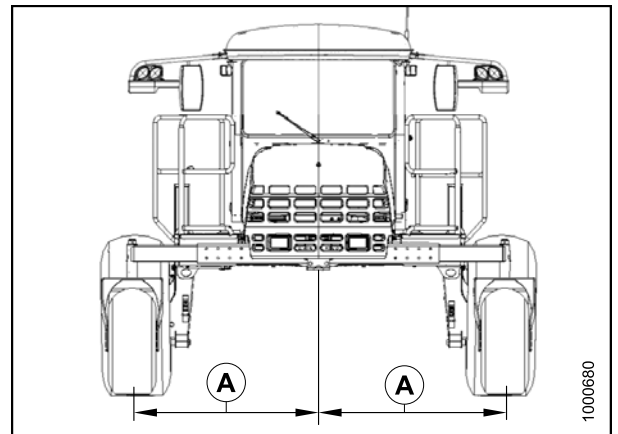


Figure 4.30

## OPERATION

4. Position bracket (A), and install back bolts (C).  
The two shorter bolts are installed at the back inboard locations.
5. Install bottom bolts (B).
6. Tighten bolts as follows:
  - a. Snug bottom bolts (C), then snug back bolts (C).
  - b. Tighten and torque back bolts (C) to 330 ft·lbf (447 Nm).
  - c. Tighten and torque bottom bolts (B) to 330 ft·lbf (447 Nm).
7. Lower windrower to ground.

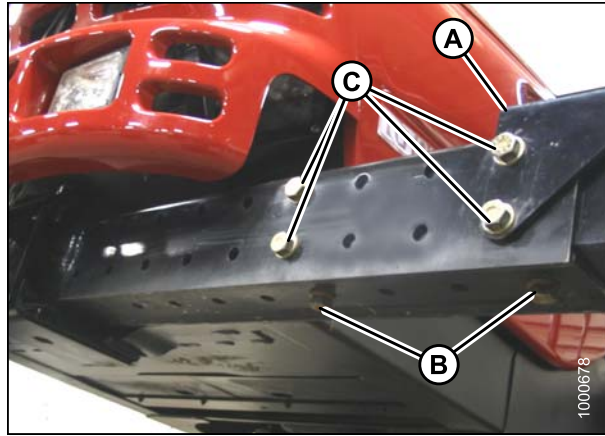


Figure 4.31

## IMPORTANT

Retorque bolts after first 5 and 10 hours of operation.

### 4.3.8 Transporting

#### *Driving on Road*

The M205 Self-propelled Windrower is designed to be driven on the road with the engine-forward to provide better visibility for the Operator, and improved stability for the machine.

. The windrower is also capable of being driven on the road in cab-forward, but at a reduced speed, and under restricted conditions.

### **WARNING**

Collision between windrower and other vehicles may result in injury or death.

### **WARNING**

When driving windrower on public roadways:

- Obey all highway traffic regulations in your area. Use pilot vehicles in front and rear of windrower if required by law.
- Use slow moving vehicle emblem and flashing warning lights unless prohibited by law.
- If width of attached header impedes other vehicle traffic, remove header, and install a MacDon approved weight box.

### **WARNING**

- Do NOT drive windrower on the road in the cab-forward mode, unless the optional lighting marking kit is installed, as lighting/reflector visibility will not be compliant with road regulations. See Section [7.1.13 Lighting and Marking for Cab-Forward Road Travel, page 356](#).
- Do NOT drive windrower on a road or highway at night, or in conditions which reduce visibility, such as fog or rain. The width of the windrower may not be apparent under these conditions.

## OPERATION

### CAUTION

Operate both steering wheel and ground speed lever slowly for familiarization. Remember that steering is more sensitive when speed-range control is in Road Speed Position. Avoid the common tendency of new Operators to over-steer.

### CAUTION

Check local laws for width regulations and lighting and marking requirements before transporting on roads.

Before driving windrower on a roadway:

1. Ensure HEADER DRIVE switch (A) is pushed to OFF position (DOWN).
2. Clean flashing amber lamps, red tail lamp and head lamps, and check that they work properly.
3. Clean all reflective surfaces and slow moving vehicle emblems.
4. Adjust interior rear view mirror, and clean windows.



Figure 4.32

5. Push LIGHT switch (A) to ROAD position to activate lamps. Always use these lamps on roads to provide warning to other vehicles. Use HIGH / LOW LIGHTS (B) as required when other vehicles are approaching.

Do **NOT** use field lamps on roads, other drivers may be confused by them.

6. Push BEACON switch (C) to ON to activate beacons (North America optional).

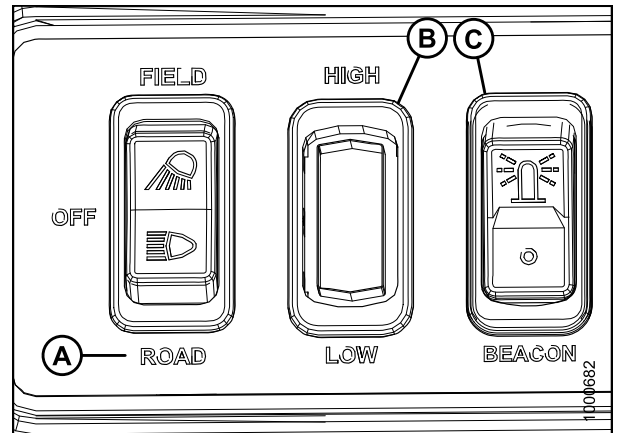


Figure 4.33

## OPERATION

- Press switch (A) on Cab Display Module (CDM) to activate hazard lights (Export optional).



Figure 4.34

- Set ground speed range switch (A) for road speed. CDM will display ROAD GEAR at (F) if windrower is in engine-forward mode.

**NOTE:** Windrower can be moving, but speed must be less than 5 mph (8 km/h) for road gear to engage.

- Slowly push throttle (B) to full forward (operating speed). CDM should display 2320–2350 RPM (C).
- Slowly move the Ground Speed Lever (GSL) (E) forward to desired speed which will be displayed at (F).
- If towing a header, refer to [Towing Header with Windrower](#), page 121.

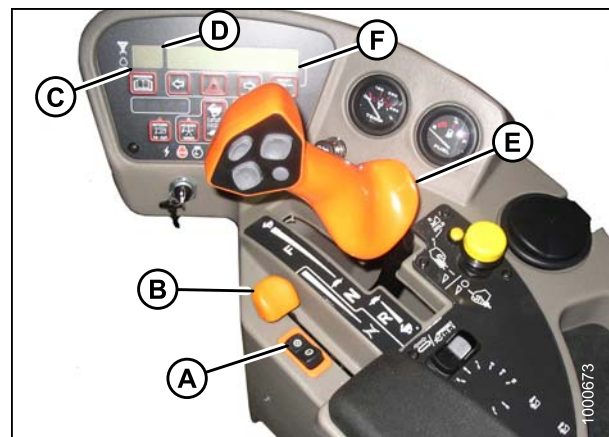


Figure 4.35

## OPERATION

### **WARNING**

To avoid serious injury or death from loss of control:

- Do NOT make abrupt changes in steering direction.
- Anticipate turns and steep slopes by slowing down well in advance.
- Do NOT rapidly accelerate or decelerate while turning.

When travelling on steep slopes:

- Move ground speed lever closer to NEUTRAL to reduce speed.
- Lower header.
- Move GROUND SPEED RANGE switch to L - low range.
- If the ground speed is greater than or equal to 25 mph (40 km/h), the CDM will display a warning message (SLOW DOWN) with an audible alert. Move GSL closer to NEUTRAL to reduce speed.

With header removed, steering control is reduced if weight is not added to drive wheels. If you must drive the windrower without header or MacDon weight system:

- Operate in low speed range.
- Do NOT exceed 1500 rpm engine speed.
- Avoid loose gravel and slopes.
- Do NOT tow a header.
- If control of machine is lost, immediately pull GROUND SPEED lever to NEUTRAL.

### *Towing Header with Windrower*

The windrower can be used to tow a MacDon draper header with the Slow Speed Transport option installed, provided the Weight Box option is installed on the windrower, or an approved header transporter with weight transfer to the lift arms.

### **WARNING**

**Draper Header with Transport Option**

- The windrower without the header must NOT be used to tow headers due to reduced traction and possible loss of control unless the Weight Box option is installed on the windrower, or a header transporter that transfers weight to the lift arms.
- For towed equipment without brakes, do NOT exceed 20 mph (32 km/h).



Figure 4.36

## OPERATION

### CAUTION

- To tow a header for transporting with an M205 Self-propelled Windrower, the header must be equipped with the appropriate equipment to comply with all local regulations.
- Before each towing trip, a pre-trip inspection must all be conducted to verify that all signal lighting and safety equipment is installed and functioning properly.
- Do NOT exceed the specified Combined Gross Vehicle Weight (CGVW).
- To prevent machine damage and/or loss of control, it is essential that the machine be equipped such that weights are within the following limits:

		lb	kg
<b>MAX GVW</b> (includes mounted implements).		21,500	9750
<b>MAX CGVW</b> (includes towed and mounted implements).		23,100	10,480
WEIGHT (A) ON BOTH DRIVE WHEELS	<b>MAXIMUM</b>	18,750	8500
	<b>MINIMUM</b>	10,070	4570
<b>MAX WEIGHT (B) ON BOTH CASTER TIRES</b>		6050	2750

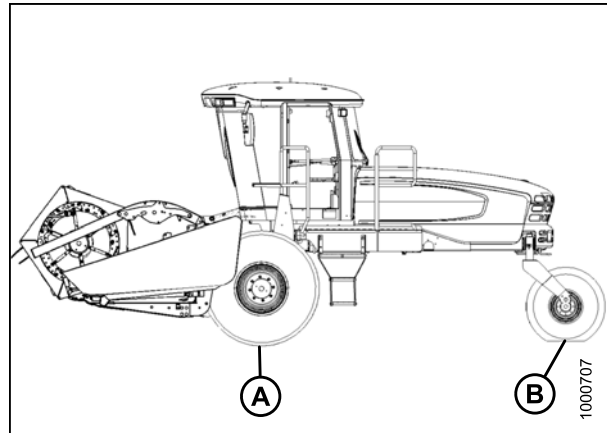


Figure 4.37

### Converting from Field to Transport Mode

1. Set header on the ground (field position).

### DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

2. Disconnect hydraulic and electrical connections:
  - a. **Left Side** – Store hydraulic hoses and electrical cable into the storage position. See header operator's manual.
  - b. **Right Side** – Release the multi-link, and place into storage on windrower. See header operator's manual.



## OPERATION

- Retrieve temporary lift pin from storage location on weight box, and install into **rear hole (A)** at the top of the lift arms for additional lift height for transport wheel deployment.

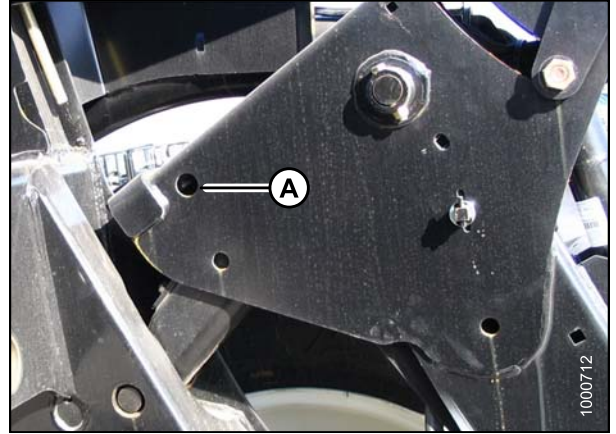


Figure 4.38



### CAUTION

Check to be sure all bystanders have cleared the area.



### DANGER

To avoid bodily injury from fall of raised header, always engage header lift cylinder safety props when working on or around raised header.

- Start engine and raise header to full height.
- Stop engine, and engage safety props on lift cylinders.
- Deploy header slow speed transport system. See header operator's manual.



Figure 4.39

## OPERATION

7. Remove float pin from engaged position (A), and insert in storage location (B). Secure with lynch pin.

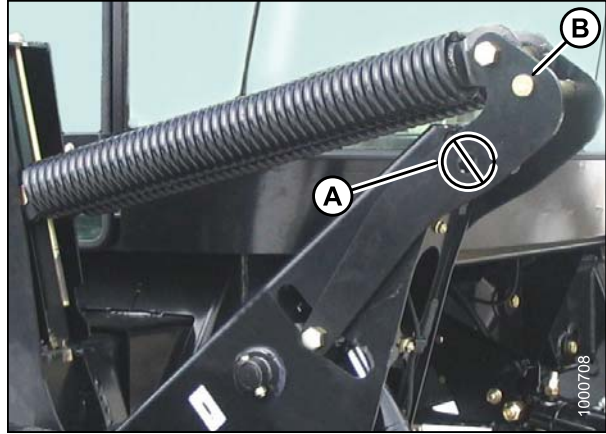


Figure 4.40

8. Remove pins (A) from lower end of lift linkages.  
**NOTE:** Pins (A) are also used to secure weight box to windrower linkage.
9. Release the safety props on the header lift cylinders.
10. Start engine, and lower header down onto the transport wheels.

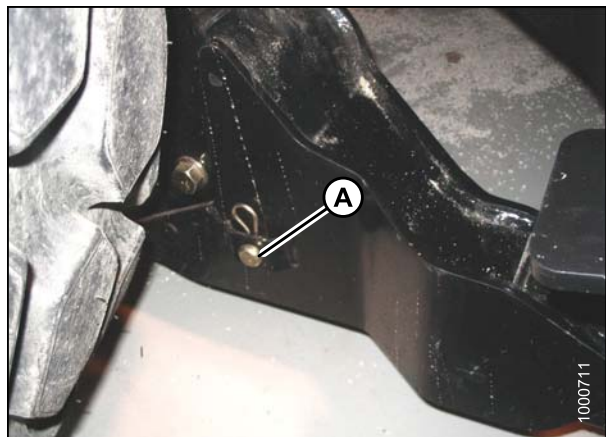


Figure 4.41

## OPERATION

11. Use the HEADER TILT switches to release load on the cylinder if necessary.

### **DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

12. Shut down engine and remove key from ignition.

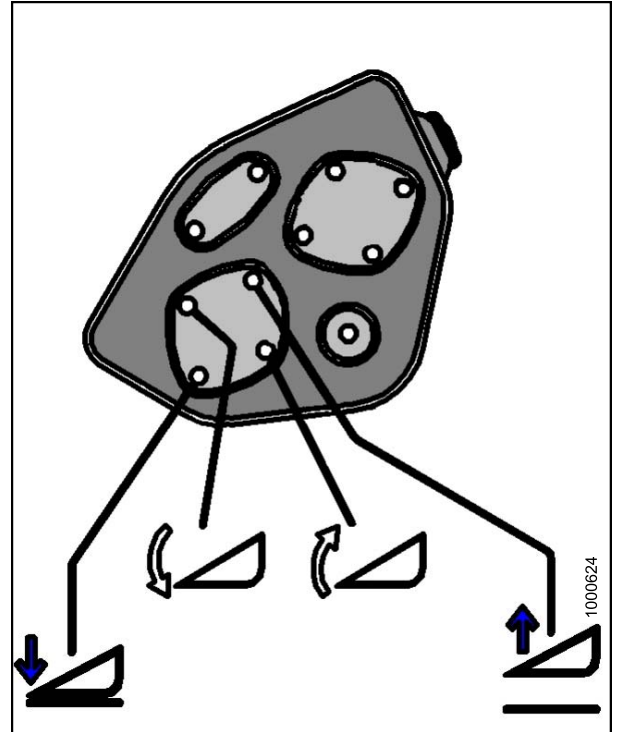


Figure 4.42

13. To unlock the center-link, pull up on latch (A), and position latch into notch (B) on top of hook.
14. Lift center-link off header pin.

**NOTE:** If center-link self-alignment kit is installed, start engine and raise center-link with the REEL UP switch on the Ground Speed Lever (GSL).

15. Slowly back windrower away from header, shut engine OFF, and remove key from ignition.

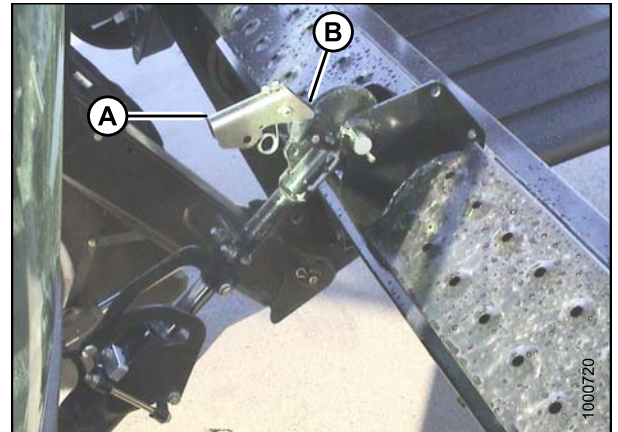


Figure 4.43

## OPERATION

### Attaching Header Transport Hitch to Header

Attach header transport hitch to header as follows:

1. Position end (A) of the aft section onto front wheel hook (B).
2. Push down until latch (C) captures the end (A).
3. Secure latch (C) with clevis pin (D).

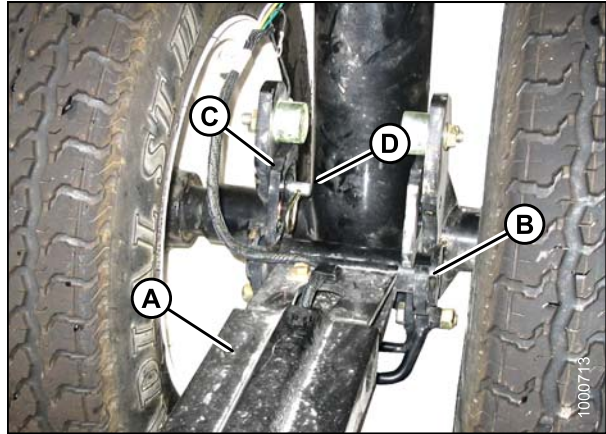


Figure 4.44

4. Remove the L-pin from end (A) of aft section (if installed).

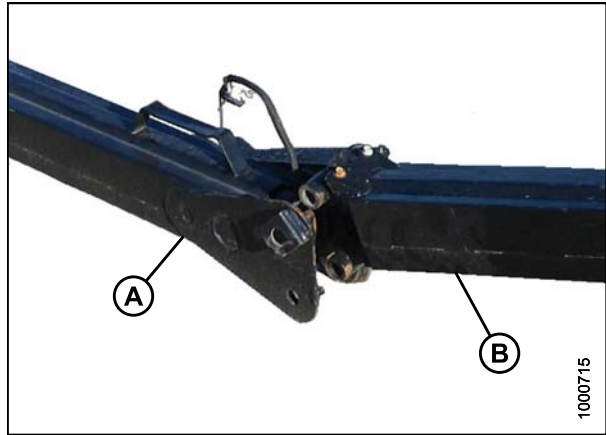


Figure 4.45

5. Position end (B) of the forward section into end (A) of the aft section, and lower forward section into aft section.

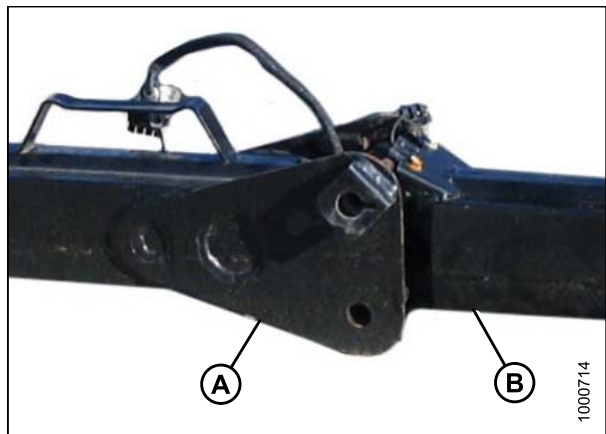


Figure 4.46

## OPERATION

6. Fully insert L-pin (A) in upper hole, and turn pin to lock it. Secure with ring pin (B).
7. Make electrical connection at the joint (C).

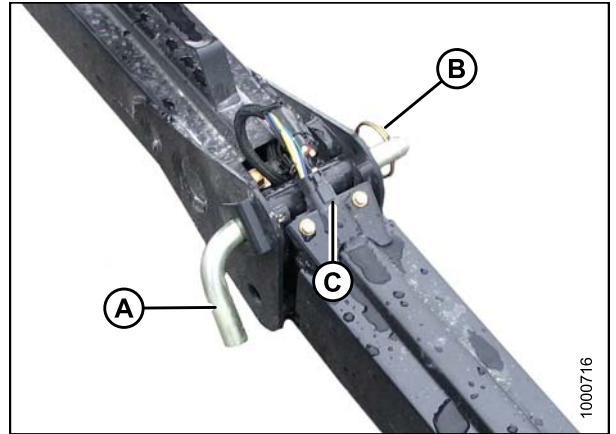


Figure 4.47

8. Make the electrical connection at the header wheel (A)



Figure 4.48

## IMPORTANT

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

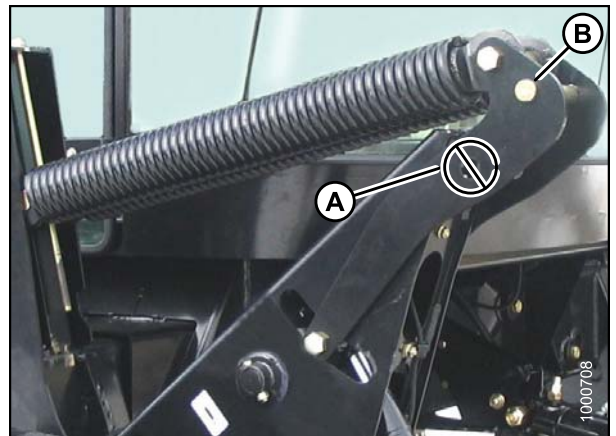


Figure 4.49

## OPERATION

9. Drive windrower so that windrower lift arms are positioned into the weight box pockets.
10. Raise lift arms slightly, and install locking pins (A) into pockets, and through windrower header lift linkages. Secure with hairpin.

**NOTE:** Pins (A) were previously removed from the header lift linkage lower end.

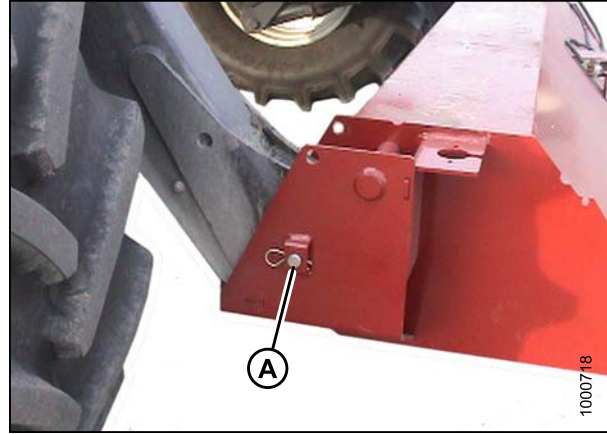


Figure 4.50

11. Route the weight box harness (A) to the electrical connector at the left side lift linkage, and connect harness to connector on windrower (B).
12. Raise lift arms fully, shut engine OFF, and remove key from ignition.

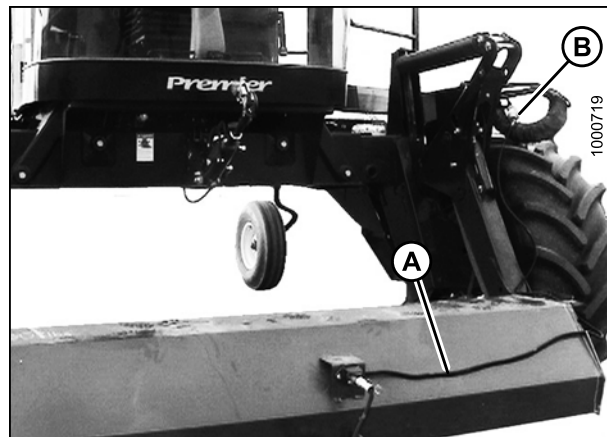


Figure 4.51

13. Move float pins from storage location (A) to engaged position (B).

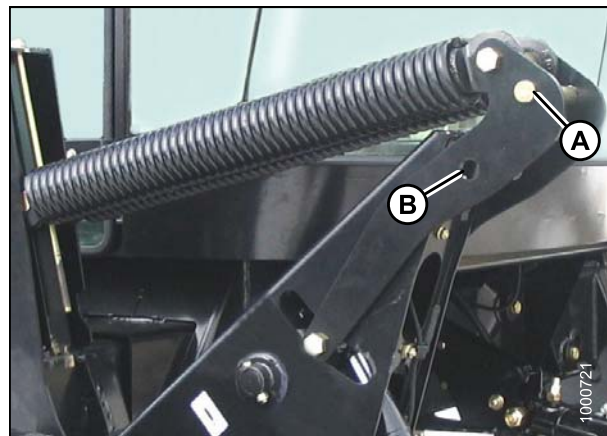


Figure 4.52

## OPERATION

14. Start engine, and press HEADER DOWN switch on Ground Speed Lever (GSL) to lower lift arms until the lift arm lifts away from the linkage at the rear of the lift arm.

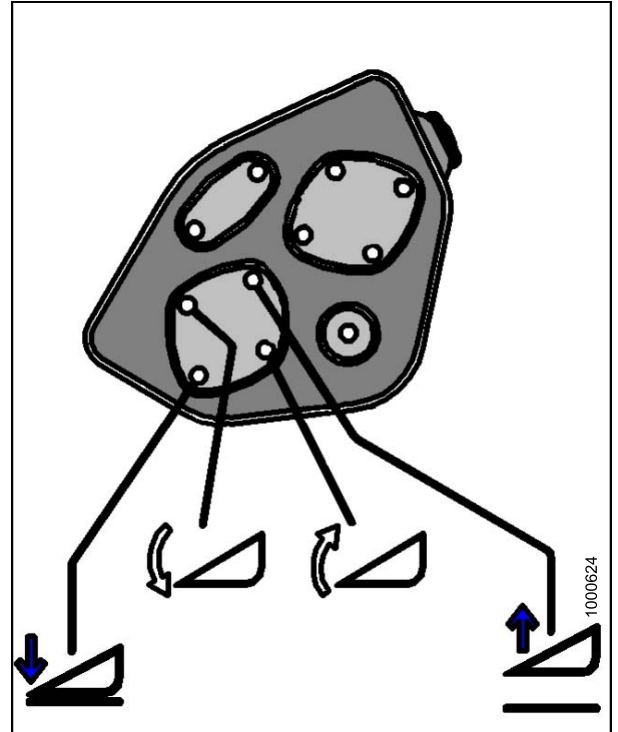


Figure 4.53

15. Attach slow speed transport hitch to the weight box tongue with drawbar pin. Secure using lynch pin (A). Attach safety chain (B).
16. Connect hitch harness (C) to electrical socket at front of weight box.

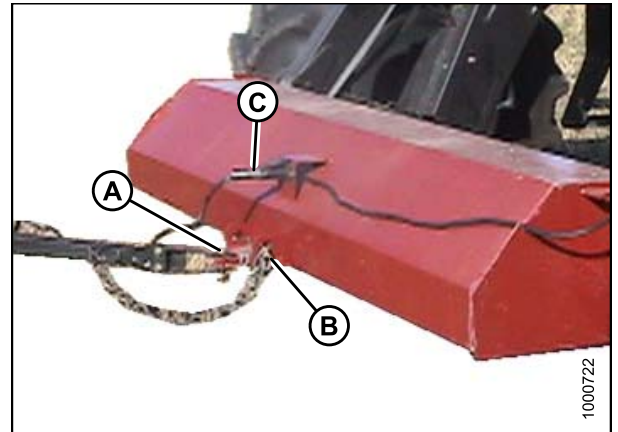


Figure 4.54

## OPERATION

17. Remove the temporary lift pins (A) (should be loose in lift arm), and place into storage holes on weight box.

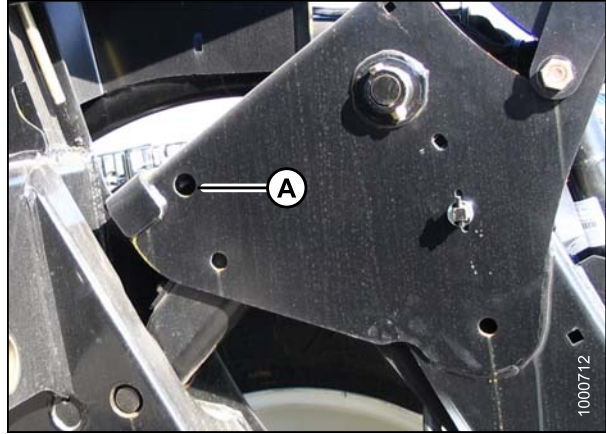


Figure 4.55

### Converting from Transport Mode to Field Operation

## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Stop engine, and remove key from ignition.
2. Disconnect electrical harness at connector (B) from windrower, and store harness (A) on weight box.

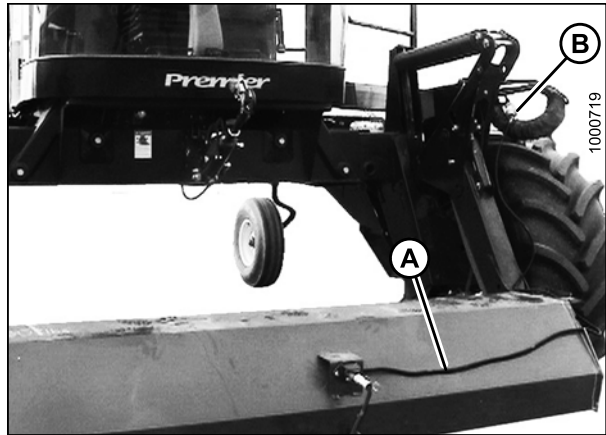


Figure 4.56



## OPERATION

3. Disconnect wiring connector (A) at front wheel.



Figure 4.57

4. Remove clevis pin (D).
5. Push latch (C), and lift tow-bar (A) from hook. Release latch, and replace clevis pin.
6. Unhook tow-bar from weight box.



Figure 4.58



## CAUTION

Check to be sure all bystanders have cleared the area.

7. Start engine, and lower lift arms until rear of lift arms floats up and away from the lift arm mechanism.
8. Stop engine, and remove key from ignition.

## OPERATION

9. Remove temporary lift pins (A) from weight box, and install pins (F) into holes at rear of lift arms.
10. Start engine, and fully raise lift arms. Stop engine, and remove key from ignition.
11. Engage lift cylinder safety props.

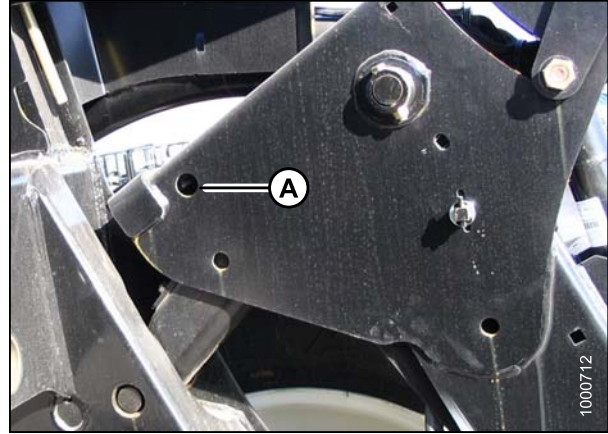


Figure 4.59

12. Move float pins from working hole location (A) to disengage the float, and store pins at storage hole location (B).

### IMPORTANT

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage hole location, and NOT installed in working hole location.

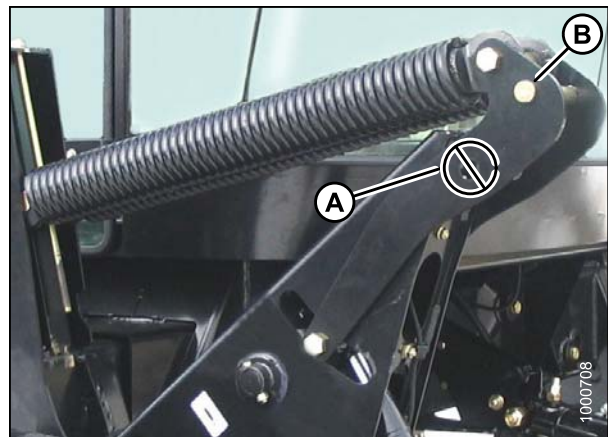


Figure 4.60

13. Remove pins (A) securing lift linkages to weight box, and retain pins for attaching header to windrower. Disengage lift cylinder safety props.

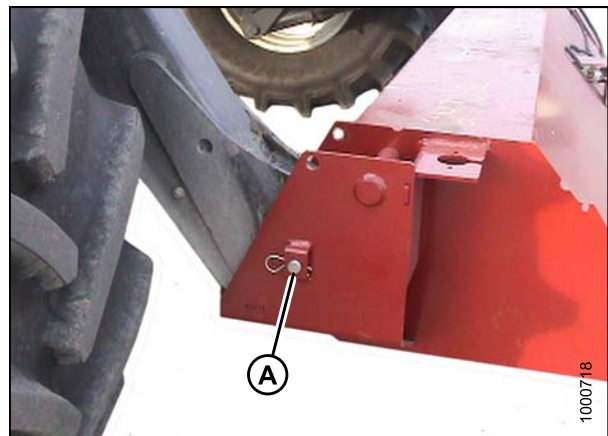


Figure 4.61

14. Start engine, lower weight box onto blocks, and back away.
15. Attach header to windrower. Refer to Section [4.5.3 Attaching a D-Series Header](#), page 159.
16. Convert header into field position. See header operator's manual for procedure.

## OPERATION

17. Before operating the machine, double check that all pins are secure, and that all safety equipment is installed and fully functional.
18. Proceed with operation of header.

### *Towing the Windrower (Emergency)*

In emergency situations, for example, towing out of a field or into a shop, windrower may be towed without a trailer, providing the following precautions are followed:

#### **WARNING**

A proper towing apparatus is critical to safe towing. Use the following guidelines:

- Do NOT attach directly from hitch to walking beam. Slope of tow bar will not provide proper transfer of braking force to windrower, causing loss of control.
- For proper steering, towing apparatus should be attached to BOTH left and right hand frame members, and should attach to tow bar at same height as towing vehicle hitch.
- Towing apparatus should be removed for field operation, to avoid interference with windrow.

#### **WARNING**

With final drives disengaged, the windrower may roll on a sloped surface. Before disengaging final drives, attach windrower to towing vehicle. After towing, engage drives, and ensure Ground Speed Lever (GSL) is in N-DETENT before detaching from towing vehicle.

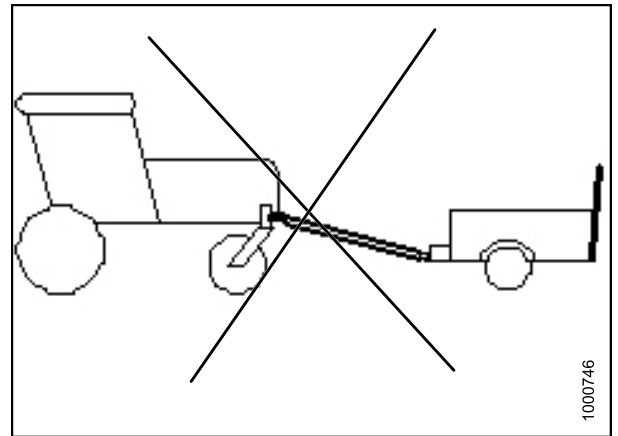


Figure 4.62

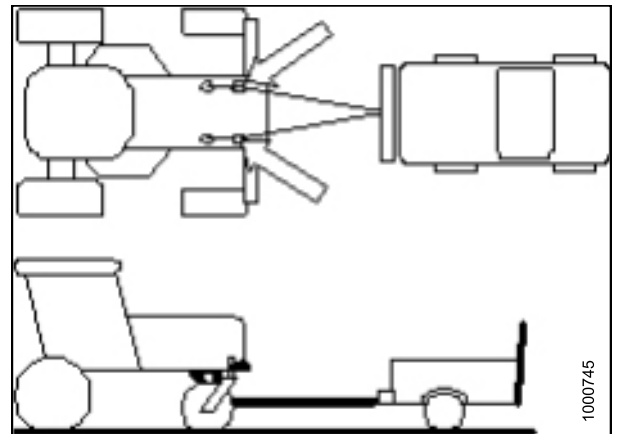


Figure 4.63

## OPERATION

# IMPORTANT

- Failure to disengage final drives before towing will result in serious transmission damage.
- Do NOT exceed 16 mph (26 km/h) when towing windrower.
- Do NOT use this towing method for normal transporting of windrower.
- Even with final drives disengaged, rolling speeds of more than 16 mph (26 km/h) will cause final drive gears to run at excessive speeds, possibly severely damaging or causing the unit to fail.

### Final Drives

Disengage and engage final drives as follows:

1. Remove the two hex bolts (A) at center of drive wheel.
2. Remove cap (B), and flip over so that dished side faces in. The cap depresses a pin that disengages the gearbox.
3. After towing, reverse cover (A) to re-engage final drives. Be sure plunger at center of wheel pops out to engage drive.

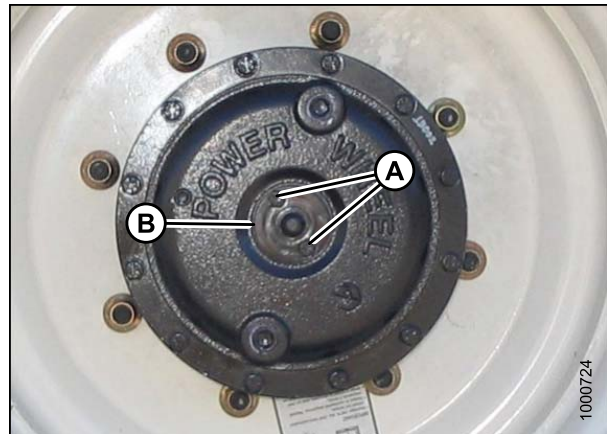


Figure 4.64

### 4.3.9 Storing the Windrower

At the end of each operating season, you need to store your windrower properly.

1. Clean the windrower thoroughly.

#### **WARNING**

Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials are toxic and/can be flammable.

2. Store windrower in a dry protected place.

#### **CAUTION**

Never operate engine in a closed building. Proper ventilation is required to avoid exhaust gas hazards.

3. Remove battery. Refer to [Removing Battery, page 282](#)
4. Bring to full charge, and store in a cool, dry place not subject to freezing.

#### **CAUTION**

Remember when working around storage batteries that all of the exposed metal parts are "live". Never lay a metal object across the terminals because a spark and short circuit will result.

## OPERATION

5. If stored outside, always cover windrower with a waterproof tarpaulin or other protective material. This will protect the switches, instruments, tires, etc. from inclement weather.
6. If no cover is available; seal air cleaner intake and exhaust pipe with plastic bags and/or waterproof tape.
7. If possible, block up windrower to take weight off tires. If it is not possible to block up the machine, increase tire pressure by 25% for storage. Adjust to recommended operating pressure before next use.
8. Repaint all worn or chipped painted surfaces to prevent rust.
9. Lubricate the windrower thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Apply grease to exposed threads and sliding surfaces of components.
10. Check for worn components and repair. Tighten loose hardware, and replace any missing hardware. See [Section 5.1.1 Torque Specifications, page 203](#).
11. Check for broken components and order replacements from your Dealer. Attention to these items right away will save time and effort at beginning of next season.
12. Add approved rust inhibitor to the engine oil in accordance with the manufacturer's instructions. Run engine to operating temperature to mix inhibitor with oil, unless otherwise specified.
13. To prevent condensation, fill hydraulic oil reservoir to filler neck with approved hydraulic system oil. Refer to [5.9.1 Checking and Filling Hydraulic Oil, page 308](#).
14. Test engine coolant antifreeze concentration to ensure it is sufficient to protect engine against lowest expected temperature.

## OPERATION

### 4.4 Operating with a Header

The M205 windrower is designed to use the MacDon A-Series Auger Header, R-Series Rotary Header, and D-Series Rigid Draper Header, with or without a Hay Conditioner. This section describes the attachment and detachment procedures and operating instructions for these header types.

#### 4.4.1 Header Lift Cylinder Safety Props

Lift cylinder safety props are located on both header lift cylinders on the windrower.

### DANGER

**To avoid bodily injury from fall of raised header, always engage header lift cylinder safety props when working on or around raised header.**

1. Start engine, and press HEADER UP (B) switch to raise header to maximum height.
2. If one end of the header does not raise fully, the lift cylinders require re-phasing. If re-phasing is needed, proceed as follows:
  - a. Press and hold the HEADER UP (B) switch until both cylinders stop moving.
  - b. Continue to hold the switch for 3–4 seconds.
  - c. Cylinders are phased.

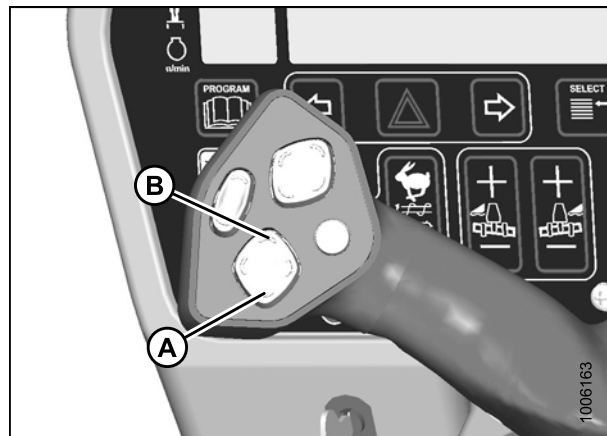


Figure 4.65

## OPERATION

3. Pull lever (A), and rotate toward header to lower cylinder safety prop (B) onto cylinder. Repeat for opposite cylinder.

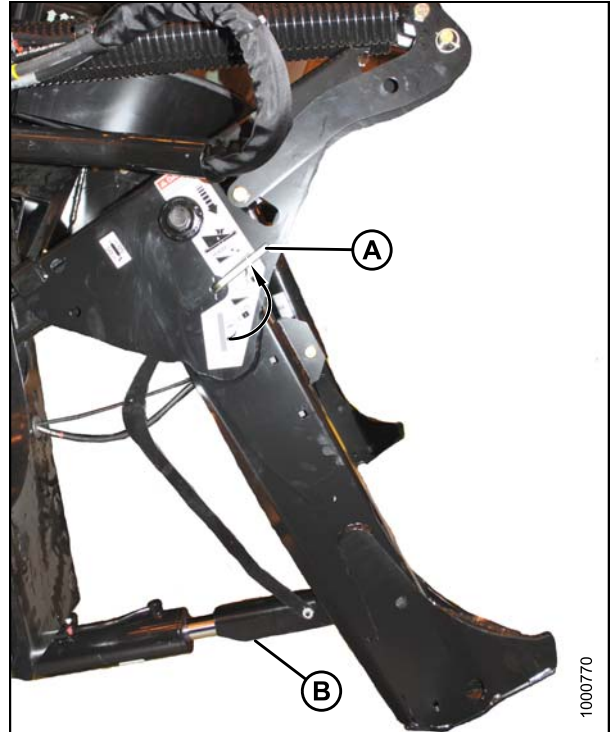


Figure 4.66

4. To disengage lift cylinder safety props, turn lever (A) away from header to raise safety prop until lever locks into vertical position. Repeat for opposite cylinder.

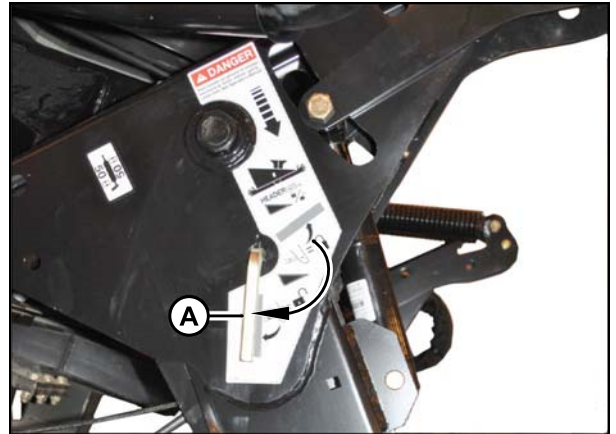


Figure 4.67

5. Start engine, choose a level area, and lower header to the ground. Stop engine, and remove key.

## OPERATION

### 4.4.2 Header Float

Float is intended for cutting crops that require the cutterbar to be in contact with the ground. Optimum float is for the cutterbar to maintain contact with the ground with minimum bouncing and scooping or pushing soil. The machine will perform best with minimum extra weight on the header.

## IMPORTANT

**To avoid frequent breakage of knife components, scooping soil, or soil build-up at cutterbar in wet conditions, header float should be set as light as possible without causing excessive bouncing.**

**When float setting is light, it may be necessary to use a slower ground speed to avoid excessive bouncing and leaving a ragged cut.**

**The stabilizer wheels are designed to minimize bouncing at the header ends and not “float” the header.**

**Refer to your header operator’s manual for float setting guidelines.**

### *Float Operating Guidelines*

When working with the cutterbar on the ground:

1. Set center-link to mid-range position (05.0 on Cab Display Module [CDM]). Refer to Section [4.4.5 Adjusting Header Angle, page 146](#).
2. In rocky fields, adjust skid shoes down to raise guards when operating at flattest header angle to minimize scooping rocks.
3. Adjust header height or adjust header angle to minimize pushing soil.

When working with the cutterbar off the ground (draper header only):

1. Set center-link to mid-range position (05.0 on CDM). Refer to Section [4.4.5 Adjusting Header Angle, page 146](#).
2. The proper setting requires balancing the amount of header weight carried by the float and stabilizer wheels. Refer to your draper header operator’s manual.
3. Use the CDM controls to automatically maintain cutting height. Refer to Section [4.4.6 Cutting Height, page 149](#).

### *Checking Float*

M-Series windrowers are equipped with primary (coarse) and secondary (fine) float adjustment systems. The primary or coarse adjustment uses drawbolts to change the tension on the springs in the lift linkages. The secondary or fine adjustment uses hydraulic cylinders to change the spring tension.



## OPERATION

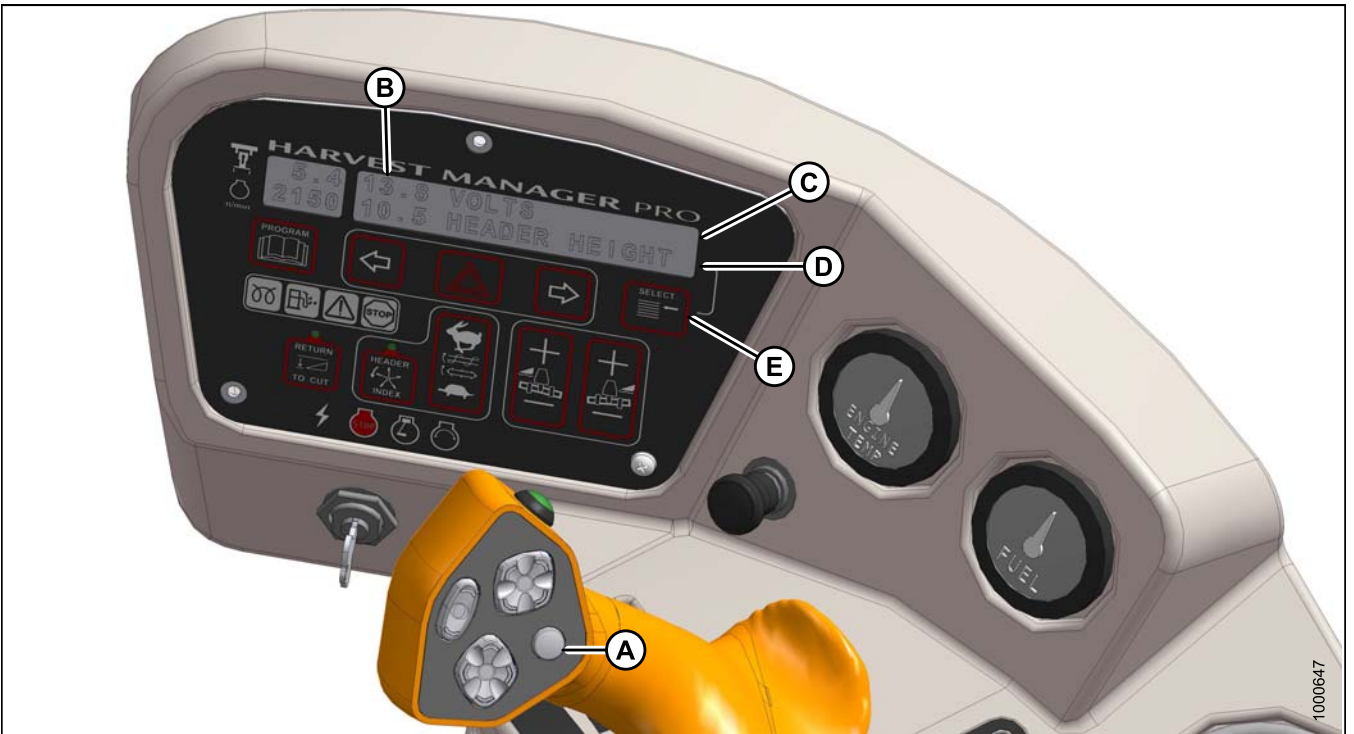


Figure 4.68: Cab Display Module (CDM) Float Adjustment

A - CDM display  
D - Header tilt down

B - Left float adjustment  
E - Header lower

C - Right float adjustment  
F - Header tilt up

Check header float as follows:



### CAUTION

Check to be sure all bystanders have cleared the area.

1. Start the engine.
2. Using HEADER TILT switches (D, F), set center-link to mid-range position (5.0 on CDM) (A).
3. Using HEADER DOWN switch (E), lower header fully with lift cylinders fully retracted.
4. Set left (B) and right (C) float fine adjustments on CDM to approximately 5.0 as follows:
  - a. Using float selector switch (B), push + to increase float, or – to decrease float on left side of header. CDM display (A) will indicate selected float for left side, for example (5.0 L FLOAT R XX.X).
  - b. Repeat for right side float with switch (C). Display will indicate float for both sides ( e.g. (5.0 L FLOAT R 5.0).



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Shut down engine, and remove key.
2. Grasp the divider rod and lift. The force to lift should be as noted in the following table, and should be approximately the same at both ends.

## OPERATION

Header	Force to lift cutterbar at ends with lift cylinder fully retracted
Auger	75–85 lbf (335–380 N)
Rotary	95–105 lbf (426–471 N)
Draper	75–85 lbf (335–380 N) with Stabilizer/Transport Wheels raised (if equipped).

### Adjusting Float Using Drawbolts

Coarse float adjustment is done using the drawbolts located on either side of the windrower.

If necessary, coarse adjust the float with the drawbolts as follows:



## CAUTION

Check to be sure all bystanders have cleared the area.

1. Start engine.
2. Using HEADER UP switch on Ground Speed Lever (GSL), Raise the header fully, shut down engine, and remove key.

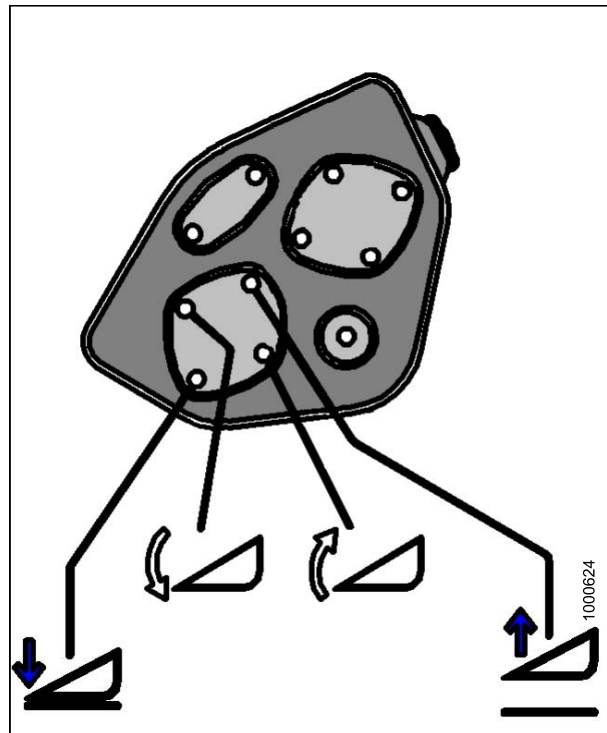


Figure 4.69

## OPERATION

3. Turn drawbolt (A) clockwise to increase float (makes header lighter), or counterclockwise to decrease float (makes header heavier).
4. Recheck the header float as described in [Checking Float, page 138](#).



Figure 4.70

### *Float Options*

For draper headers without the deck shift option, auger headers, and rotary headers, the float can be preprogrammed for three types of windrowing conditions.

Example:

- Position 1: Border
- Position 2: Normal
- Position 3: Rocky

Set float presets as follows:

1. Engage header.
2. Push FLOAT PRESET SWITCH (A) to Position 1 (B).

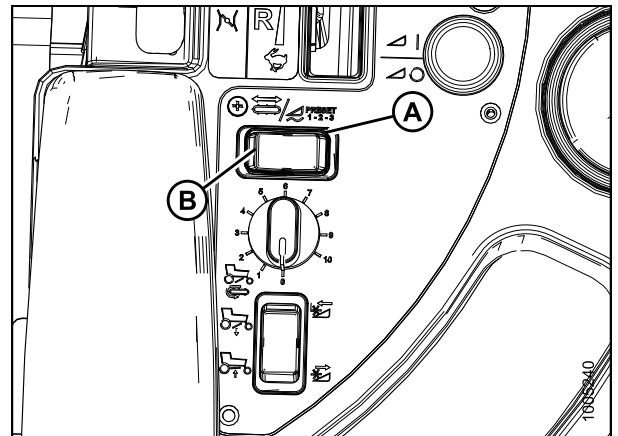


Figure 4.71

## OPERATION

- Using HEADER TILT switches (D, F), set center-link to mid-range position (5.0 on CDM) (A).
- Using HEADER DOWN switch (E), lower header fully with lift cylinders fully retracted.
- Set left (B) and right (C) float fine adjustments on CDM to approximately 5.0 as follows:
  - Using float selector switch (B), push + to increase float, or – to decrease float on left side of header. CDM display (A) will indicate selected float for left side, for example (5.0 L FLOAT R XX.X).
  - Repeat for right side float with switch (C). Display will indicate float for both sides ( e.g. (5.0 L FLOAT R 5.0).

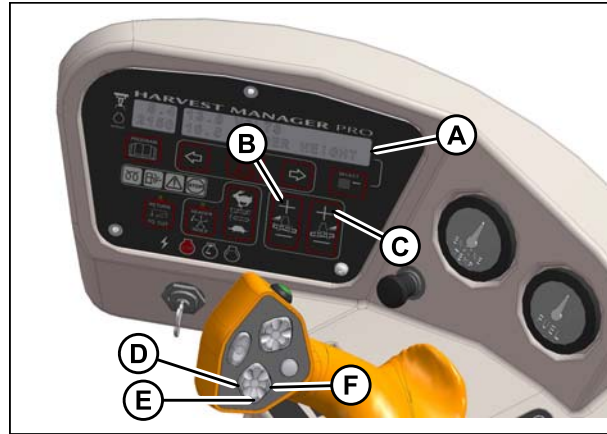


Figure 4.72

- |                            |                           |
|----------------------------|---------------------------|
| A - CDM display            | B - Left float adjustment |
| C - Right float adjustment | D - Header tilt down      |
| E - Header lower           | F - Header tilt up        |

- Select a second preset with the FLOAT PRESET 2 SWITCH (C).
- Repeat steps 1., [Float Options, page 141](#) and 2., [Float Options, page 141](#) to set the float.
- Select a third preset with the FLOAT PRESET 3 SWITCH (D).
- Repeat steps 1., [Float Options, page 141](#) and 2., [Float Options, page 141](#) to set the float.
- Operate windrower.

**NOTE:** For draper headers with the deck shift option, the float can be preprogrammed to compensate for weight distribution when the decks are shifted. Refer to [Setting Float Options with Deck Shift, page 177](#).

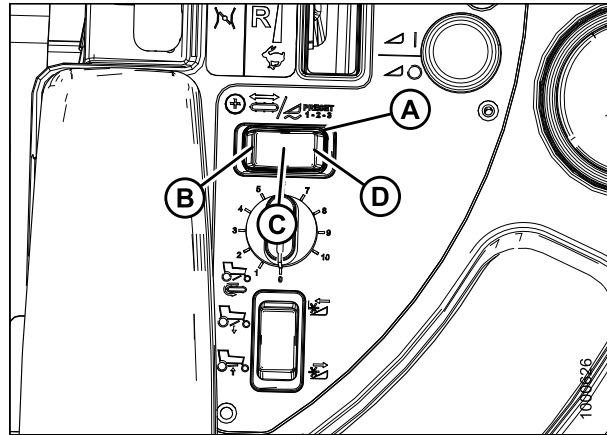


Figure 4.73

### 4.4.3 Levelling the Header

The windrower linkages are factory-set to provide the proper level for the header, and should not normally require adjustment.

If the header is not level, check the windrower tire pressures before adjusting the levelling linkages.

**NOTE:** The float springs are **NOT** used to level the header.

## OPERATION

To level the header, follow these steps:

1. Place float pins in locked out location (A).



Figure 4.74

2. Park windrower on level ground
3. Raise header fully, and hold momentarily to allow lift cylinders to rephase.

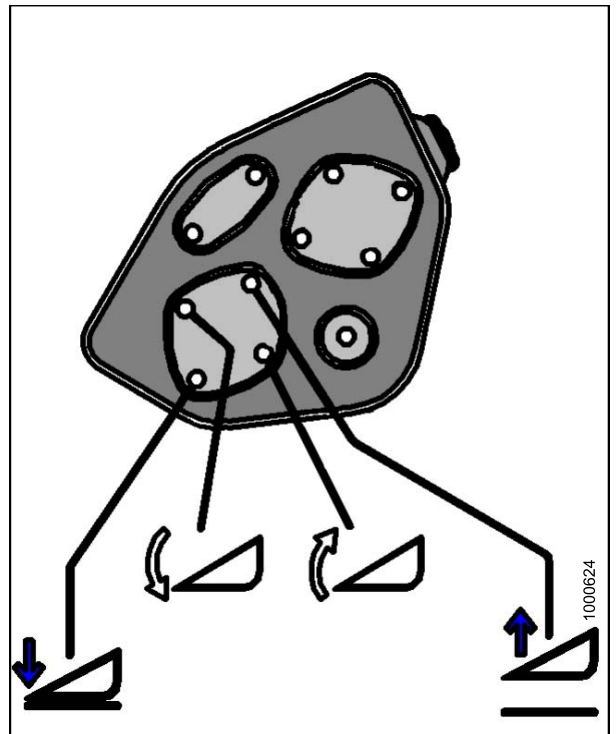


Figure 4.75

## OPERATION

4. Set header approximately 6 inches (150 mm) off ground, and check that member (A) is against link (B). Note the high and low end of header.
5. Place wooden blocks under header cutterbar and legs, and lower header onto blocks so that member (A) lifts off link (B) on both sides.
6. Stop engine, and remove key



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

7. On high side, remove nut, washer and bolt (A) that attaches shims (B) to link.
8. Remove one or both shims (B), and reinstall the hardware (A).
9. Start engine, and raise header slightly. Check level of header.
10. If additional levelling is required, install the removed shim on the opposite linkage.

**NOTE:** If required, additional shims are available from your Dealer.

11. Once header is level, return float pins to their engaged position (A).

**NOTE:** Float does **NOT** require adjustment after levelling header.

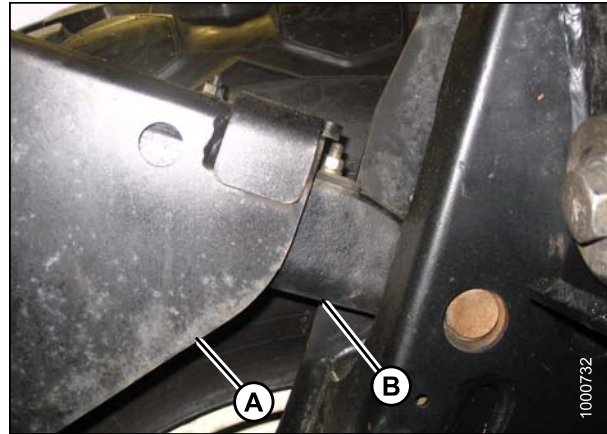


Figure 4.76

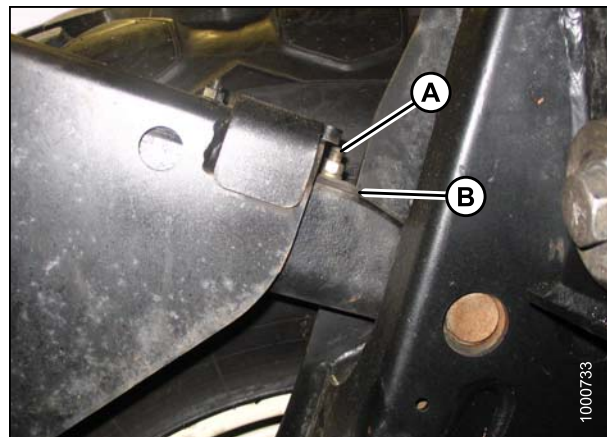


Figure 4.77



Figure 4.78

## OPERATION

### 4.4.4 Header Drive

The headers are hydraulically driven and controlled from the windrower with no mechanical drive shafts. See [2.2 Specifications, page 32](#).

All header controls are conveniently located on the operator's console, and on the Ground Speed Lever (GSL) handle.

**NOTE:** Some controls are optional equipment, and may not be present in your unit. Some controls may be installed, but will be nonfunctional for certain headers.

#### *Engaging and Disengaging the Header*



## CAUTION

Check to be sure all bystanders have cleared the area.

## IMPORTANT

Always move throttle lever back to idle before engaging header drive. Do NOT engage header with engine at full rpm.

#### Engage:

1. Move throttle (A) to adjust engine speed to idle.
2. Push the center down, and pull up the HEADER DRIVE switch (B) to engage header drive. A slight delay between switch ON and operating speed is normal.

#### Disengage:

3. Push HEADER DRIVE switch (B) down to disengage header drive.



Figure 4.79

#### *Reversing the Header*

**NOTE:** The optional hydraulic reversing kit must be installed for auger and draper headers with a conditioner. It is standard for rotary disc headers.

The optional hydraulic reversing kit allows the following:

- Reverses knife and conditioner drives on D-Series draper headers.
- Reverses reel, auger, knife, and conditioner drives on A-Series auger headers.
- Reverses the entire header drive on R-Series rotary disc headers.

## OPERATION

**Reverse** the header as follows:

1. Push down and hold HEADER DRIVE REVERSE button (A), and pull up the HEADER DRIVE switch (B).
2. CDM will display HEADER REVERSE.
3. **RELEASE REVERSE BUTTON (A) TO STOP HEADER.**
4. Push down the HEADER DRIVE switch (B) to OFF, so that it can be restarted.

**NOTE:** To re-engage header drive, push down, and pull up HEADER DRIVE knob.



Figure 4.80

### 4.4.5 Adjusting Header Angle

Header angle is defined as the angle between the ground and the drapers/cutterbar, and is adjustable to accommodate crop conditions and/or soil type.

Refer to the appropriate header operator's manual for range of adjustment and recommended settings for your particular header.

The header angle can be hydraulically adjusted from the cab without shutting down the windrower. A readout on the Cab Display Module (CDM) allows you to establish settings for each crop condition.

## IMPORTANT

**Changing header angle will affect flotation slightly because it has the effect of making the header lighter or heavier.**

## IMPORTANT

**To prevent excessive guard breakage when conditions are not suited to heavier float (e.g., rocky or wet), do NOT use the tilt control "on the go". Instead, use the HEADER HEIGHT switch.**



## OPERATION



**Figure 4.81: CDM**

A - Program button

B - Display

C - Header tilt down

D - Header tilt up

E - Display selector

Change header angle as follows:

1. To decrease (flatten) header angle, operate HEADER TILT UP switch (D) on Ground Speed Lever (GSL) handle so that cylinder retracts. The CDM display will show a reading on the lower line of decreasing value between 00.0 and 10.0.
2. To increase (steepen) header angle, operate HEADER TILT DOWN switch (C) on GSL handle so that cylinder extends. The CDM display will show a reading on the lower line of increasing value between 00.0 and 10.0.
3. The header tilt switch can be deactivated to prevent inadvertent header angle changes when pressing the HEADER HEIGHT control switches. Refer to [Section 3.17.5 Cab Display Module \(CDM\) Programming, page 84](#).
  - a. Switch to PROGRAM mode on CDM.
  - b. Press SELECT until SET CONTROL LOCKS? is displayed.
  - c. Press the right arrow to display HEADER TILT.
  - d. Press the right arrow to LOCK (deactivate) the control.
  - e. Press PROGRAM (A) to exit.

## OPERATION

### Self-Locking Center-Link Hook

Periodically check the operation of the hook locking mechanism, and ensure that it is working properly as follows:

1. If header is attached to windrower, disconnect center-link hook from header by pulling up on handle (A) to release the locking device, and then lifting the hook off the header pin.
2. Lower the handle (A) into the **LOCK** position.
3. Push up on lock pin (B) only. Handle should catch on casting, and pin should **NOT** lift.
4. Push up on actuator rod (C), and lock pin should lift with the handle.

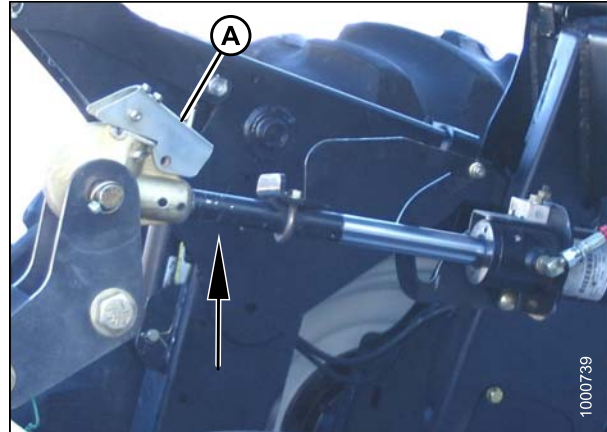


Figure 4.82

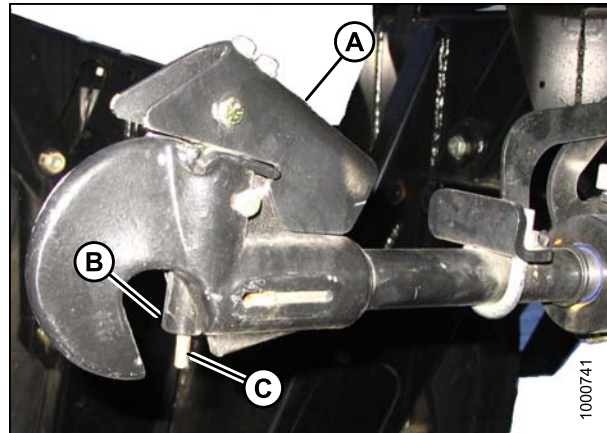


Figure 4.83

A - Handle

B - Lock pin

C - Actuator rod



Figure 4.84

## OPERATION

### 4.4.6 Cutting Height



**Figure 4.85**

A - Display

B - Header raise

C - Header lower

D - Display selector

The header is raised or lowered with the HEADER UP (B) or HEADER DOWN (C) switches on the Ground Speed Lever (GSL).

The Cab Display Module (CDM) indicates the header height by a reading on the DISPLAY (A) lower line between 00.0 and 10.0, with 00.0 being on the ground.

Use DISPLAY SELECTOR switch (D) to display the current setting.

#### *Return to Cut*

The M-Series monitoring system will assist you in maintaining the desired cutting height with the RETURN TO CUT feature that can be turned OFF or ON with a switch on the Cab Display Module (CDM).

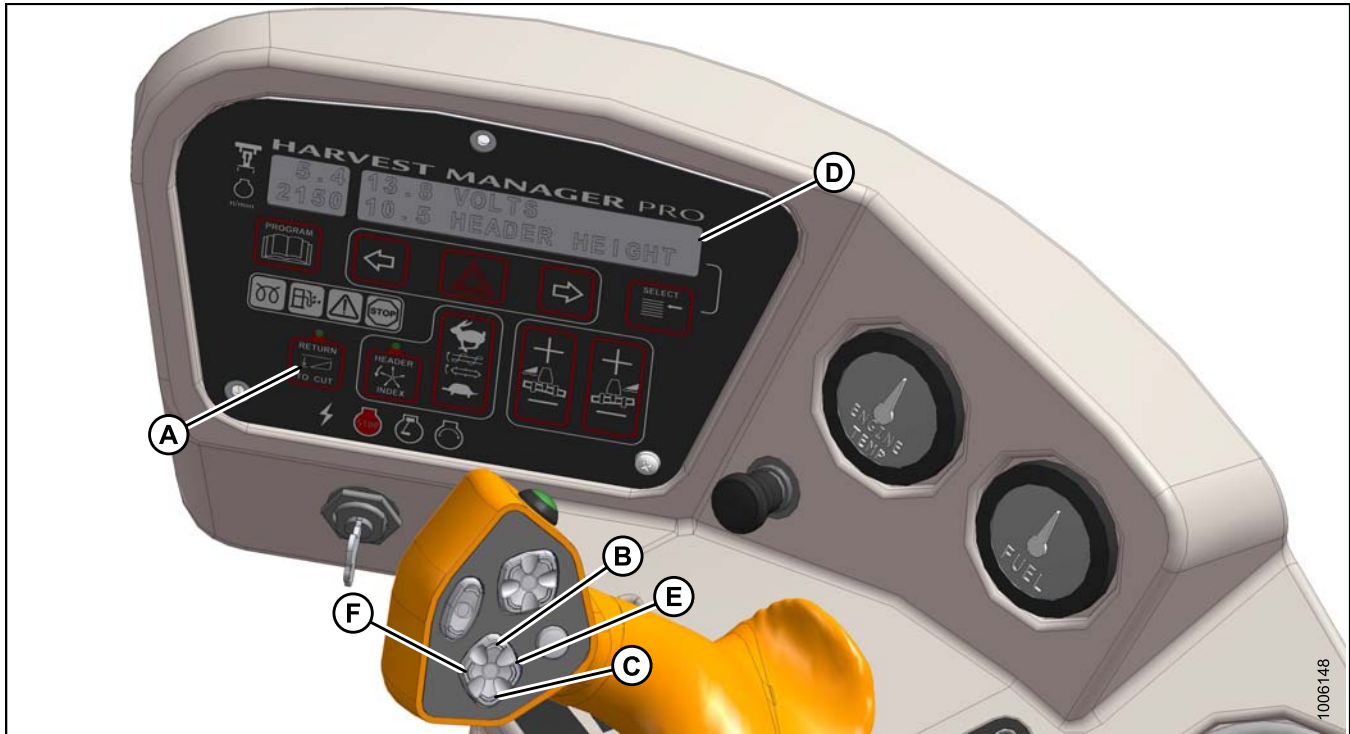
The RETURN TO CUT feature enables you to have the header return to a preselected cutting height and angle.

If desired, the CDM can be programmed so that only the cutting height feature is active. The unit is preprogrammed to activate both cutting height and header angle.

The AUTO RAISE HEIGHT feature allows you to raise the header to a preselected height while in the RETURN TO CUT mode. See [Programming Auto Raise Height Feature, page 152](#).

## OPERATION

### Programming Return to Cut Feature



**Figure 4.86**

A - Return to cut  
E - Header tilt up

B - Header up  
F - Header tilt down

C - Header down

D - Display

Program the RETURN TO CUT feature as follows:

## IMPORTANT

**The windrower must be running with the header engaged.**

1. RETURN TO CUT switch (A) must be OFF (indicator light is OFF).
2. Adjust the header to the desired cutting height with the HEADER UP (B) or HEADER DOWN (C) switches on the Ground Speed Lever (GSL). The Cab Display Module (CDM) displays between **00.0 and 10.0** at (D).
3. Adjust the header angle with the HEADER TILT UP (E) or HEADER TILT DOWN (F) switches on the GSL. CDM displays between **00.0 and 10.0**. This step is not required if height only has been preselected.
4. Press the RETURN TO CUT switch (A) on the CDM. The indicator light will illuminate, and the settings are now programmed into the Windrower Control Module (WCM).

## OPERATION

### Using Return to Cut Feature

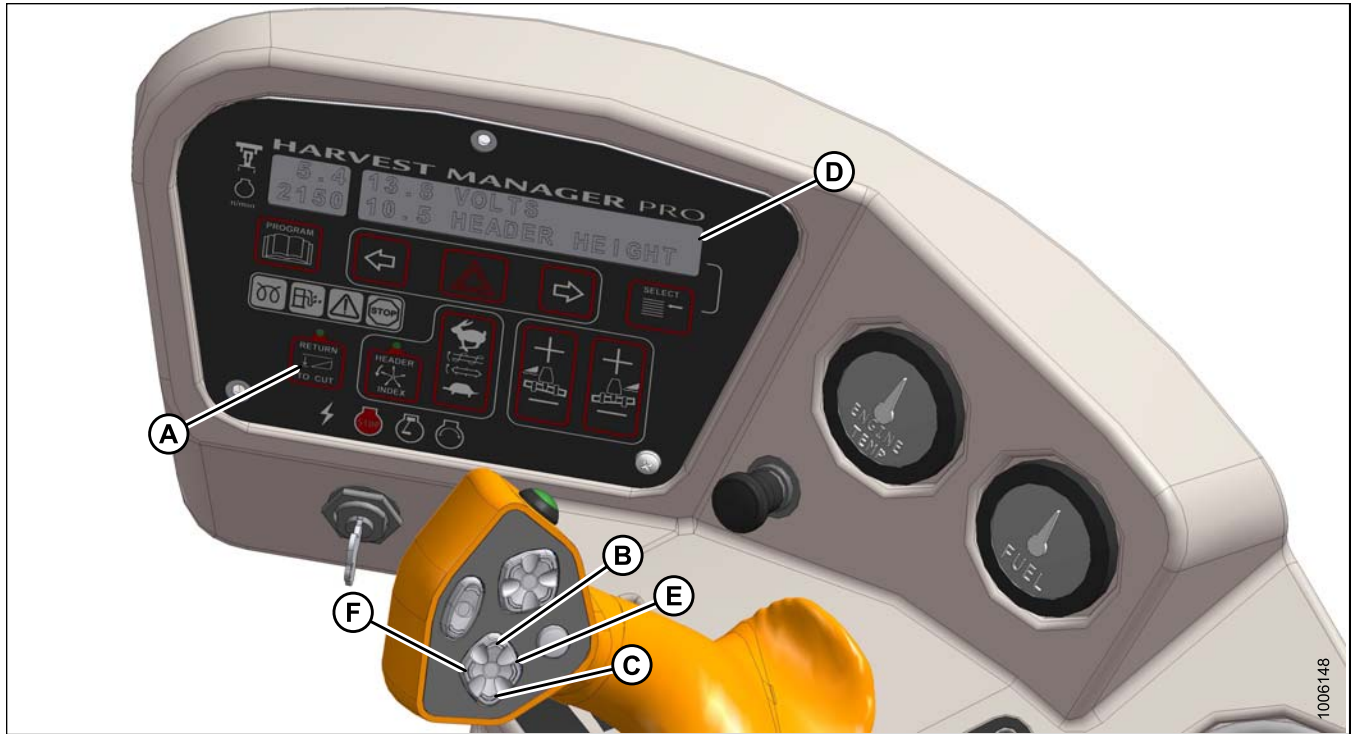


Figure 4.87

A - Return to cut  
E - Header tilt up

B - Header up  
F - Header tilt down

C - Header down

D - Display

Use the RETURN TO CUT feature as follows:

## IMPORTANT

Ensure the header is engaged, and the RETURN TO CUT switch (A) is illuminated.

**NOTE:** The header can be raised or lowered at any time by **pressing and holding** the HEADER UP (B) or HEADER DOWN (C) switches on the Ground Speed Lever (GSL).

1. If header is above the preset cutting height, **momentarily press** HEADER DOWN switch (C), and header will return to preset height.
2. If the header is below the preset height, **press and hold** the HEADER UP (B) switch to raise the header. Release switch to stop header. Alarm will sound when header rises past the preset height.
3. If the header angle is changed, double click (two clicks within 0.5 seconds) the HEADER TILT UP (E) or HEADER TILT DOWN switch (F), and the header will return to the preset angle.

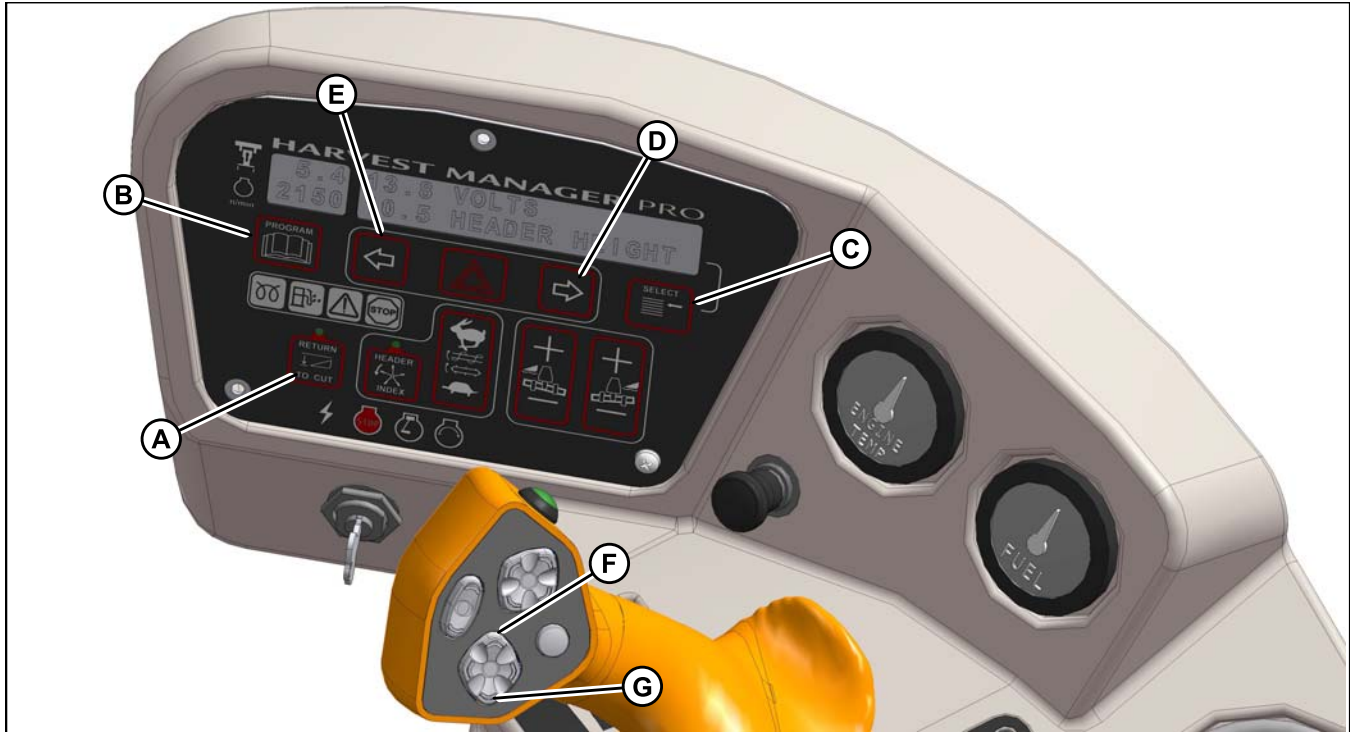
**NOTE:** If the header cannot return to the preset height or angle within 30 seconds, the RETURN TO CUT feature will deactivate to prevent the hydraulic oil from overheating. Push the RETURN TO CUT switch (A) to reactivate.

## OPERATION

### Auto Raise Height

The header can be automatically raised if programmed into the Cab Display Module (CDM).

#### Programming Auto Raise Height Feature



**Figure 4.88**

A - Return to cut  
E - Left arrow

B - Program  
F - Header up

C - Select  
G - Header down

D - Right arrow

Program the AUTO RAISE HEIGHT feature as follows:

1. RETURN TO CUT switch (A) can be OFF or ON.
2. Press PROGRAM (B) and SELECT (C) on Cab Display Module (CDM) to enter programming mode.
3. Press SELECT (C). WINDROWER SETUP? is displayed on upper line (B).
4. Press right arrow (D), then SELECT. SET KNIFE SPEED? is displayed.
5. Press SELECT (C) until AUTO RAISE HEIGHT is displayed.
6. Press left arrow (E) or right arrow (D) to change value on lower line. Working range is 4.0 to 9.5. At 10.0 the feature is disabled and "OFF" is displayed.
7. Press PROGRAM to exit programming mode when finished entering desired values.

## OPERATION

### Using Auto Raise Height Feature

# IMPORTANT

**The windrower must be running with the header engaged at the cutting height, and the RETURN TO CUT switch (A) activated.**

Use the AUTO RAISE HEIGHT feature as follows: Refer to illustration on opposite page.

1. Double-click (two clicks within 0.5 seconds) the HEADER UP switch (D) on the Ground Speed Lever (GSL) to raise the header to the AUTO RAISE HEIGHT set point.

**NOTE:** With AUTO RAISE HEIGHT on, the ACRE counter will be disabled when header height greater than preset cutting height.

2. If desired, press HEADER UP switch while header is being raised to disable AUTO RAISE HEIGHT and maintain current height.

**NOTE:** With AUTO RAISE HEIGHT off, the ACRE counter will be disabled when header height value is greater than 9.5. OFF is displayed on the Cab Display Module (CDM).

3. Momentarily press HEADER DOWN switch (E) to return the header to the pre-set cutting height.

### *Header Drop Rate*

The header should lower gradually when the HEADER DOWN switch is pressed. From full height to ground should take approximately 3–4 seconds.

If the drop rate requires adjustment, refer to [Adjusting Header Drop Rate, page 317](#)

### 4.4.7 Double Windrowing

The double windrow attachment (DWA) allows the combining of two windrows of conditioned material close together to be picked up by a forage chopper.

The system is for use with the A-Series Auger Header, R-Series Rotary Disc Header, and D65 Draper Header with HC10 Hay Conditioner.

The conditioned crop is deposited onto the side delivery system draper, and delivered to the side of the windrower when required.

Raising the side delivery system shuts off the draper, and allows the crop to be deposited between the windrower wheels as it would be without the side delivery system.

Refer to MacDon M Series Windrower Double Windrow Attachment Manual (Form MD #169216) for complete operating and maintenance instructions. The manual is shipped with the DWA kit.



Figure 4.89

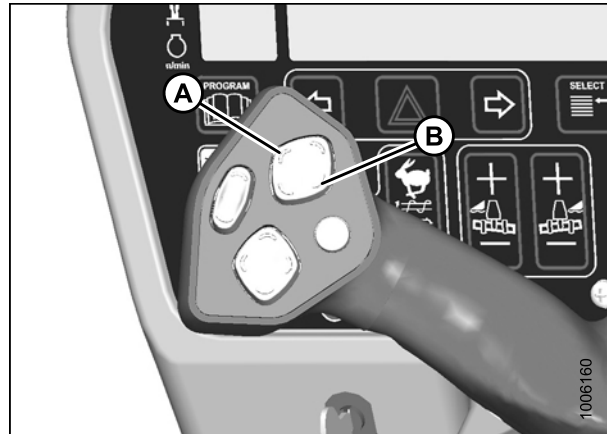
## OPERATION

### *DWA Deck Position*

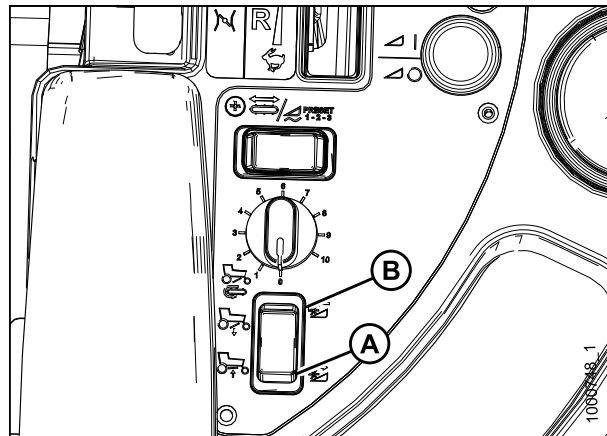
The deck is raised and lowered with the DWA UP (A) and DWA DOWN (B) switches on the Ground Speed Lever (GSL), or with the rocker switch on the operator's console, depending on how the windrower Cab Display Module (CDM) is programmed during the installation of the Double Windrow Attachment (DWA).

To swap controls from the console to the GSL, see [Detailed Programming Menu Flow Chart, page 85](#).

**NOTE:** The same switch is used for raising and lowering a swath roller (if installed).



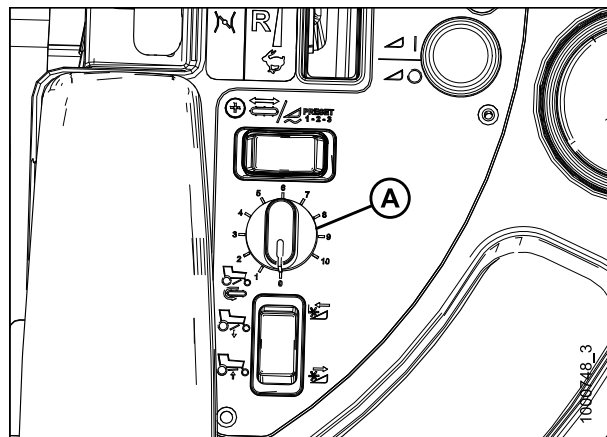
**Figure 4.90: Ground Speed Lever**



**Figure 4.91: Operator's Console**

### *DWA Draper Speed*

The draper speed is controlled with the rotary switch (A) next to the rocker switch on the operator's console.



**Figure 4.92: Operator's console**



## OPERATION

### 4.4.8 Swath Roller Operation

The Swath roller is raised and lowered with the DWA UP (A) and DWA DOWN (B) switches on the Ground Speed Lever (GSL), or with the rocker switch on the operator's console, depending on how the windrower Cab Display Module (CDM) is programmed during the installation of the Swath Roller kit.

To swap controls from the console to the GSL, see [Detailed Programming Menu Flow Chart, page 85](#).

Refer to the operating instructions that are provided with the Swath Roller kit.

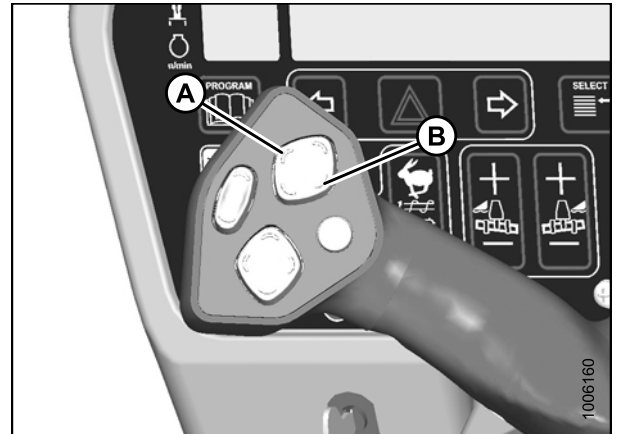


Figure 4.93

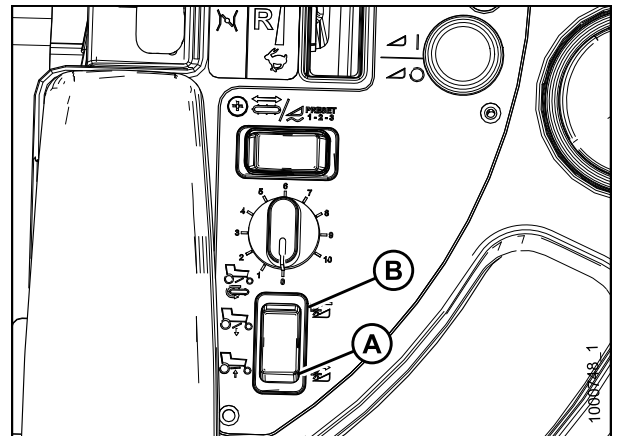


Figure 4.94

## OPERATION

### 4.5 Operating with a D-Series Header

To operate a D-Series header, the M205 must be equipped with a draper driver basic kit and a completion kit as shown.

If necessary, obtain the following kits from your MacDon Dealer and install them in accordance with the instructions supplied with the kits.

Kit Description	Kit Number
Base Draper/Auger Drive kit	MD #B5491
Draper Header Reel Drive Completion kit	MD #B5496
Hydraulic Couplers kit	MD #B5497

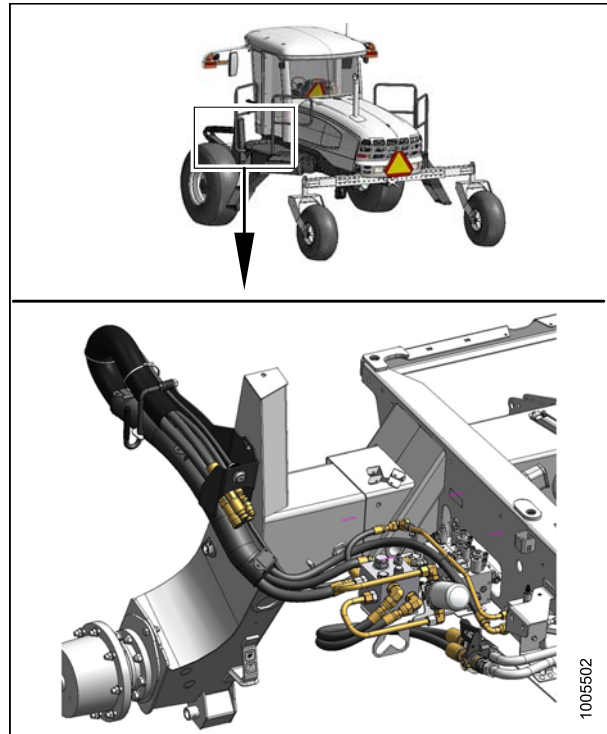


Figure 4.95: Draper Header Drive Hydraulics

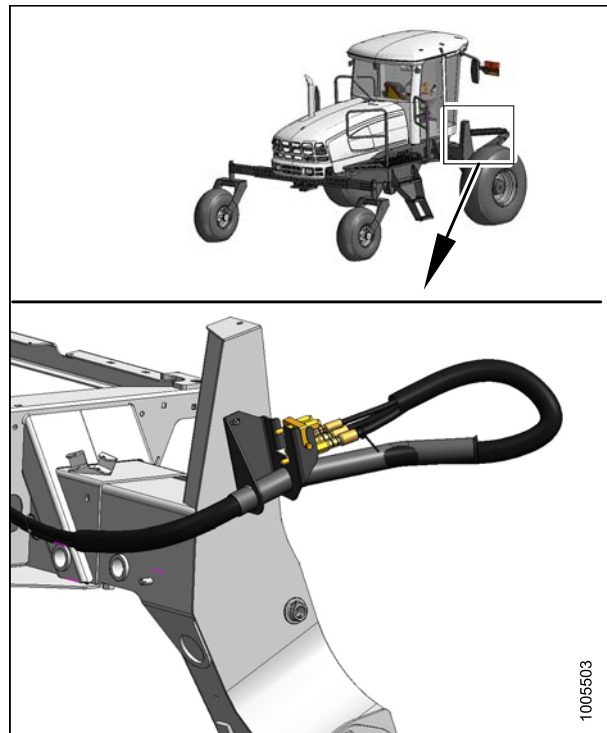


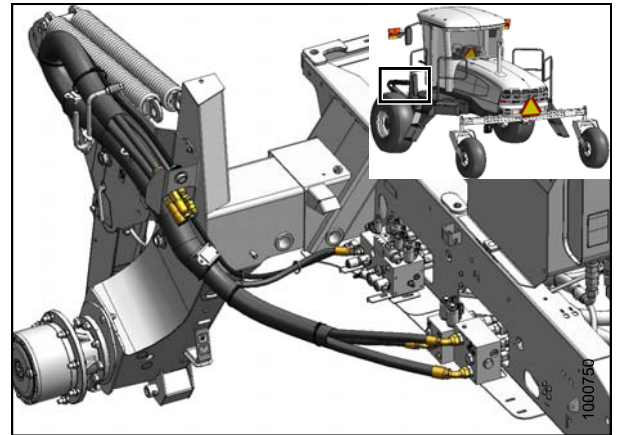
Figure 4.96: Draper Header Reel Hydraulics

## OPERATION

### 4.5.1 Configuring Hydraulics

The windrower must be fitted with a draper drive basic kit to operate D-Series draper headers.

Windrowers equipped with D-Series hydraulics have four header drive hoses on the LH side.

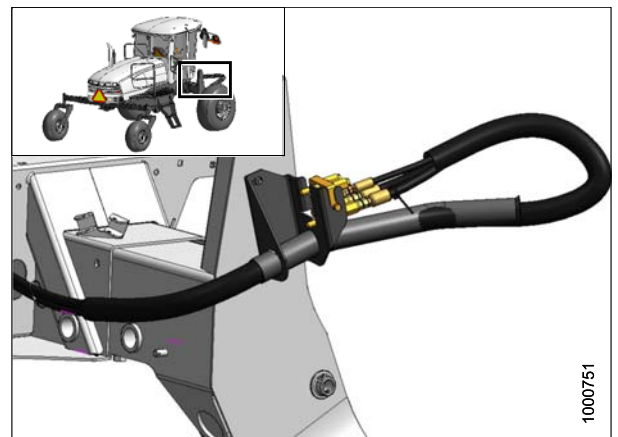


**Figure 4.97: Draper Header Drive Hydraulics**

There are also up to five reel drive hoses on the RH side.

If necessary, obtain the following kits from your MacDon Dealer, and install them in accordance with the instructions supplied with the kits.

- Base Kit MD #B5577



**Figure 4.98: Draper Header Reel Hydraulics**

## OPERATION

### 4.5.2 Attaching Header Boots

Header boots are required to attach a D-Series Draper Header to the windrower.

#### CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

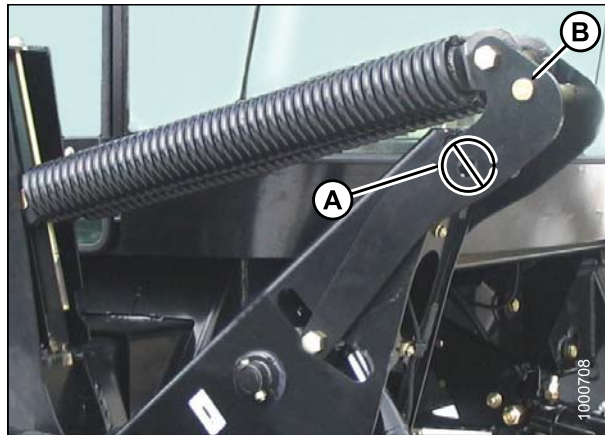


Figure 4.99

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

1. Remove pin (B) from boot (A).
2. Position boot (B) on lift linkage (A) and reinstall pin (C). Pin may be installed from either side of boot.
3. Secure pin (C) with hairpin (D).
4. Repeat for opposite side.

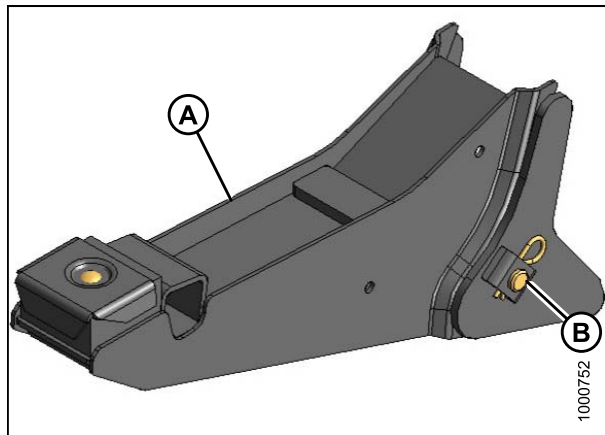


Figure 4.100

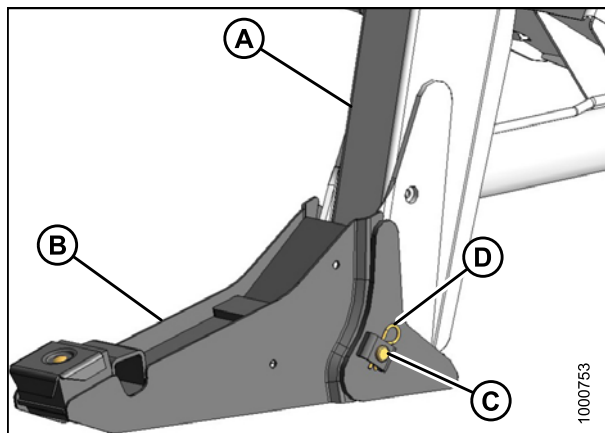


Figure 4.101

## OPERATION

### 4.5.3 Attaching a D-Series Header

This topic assumes that draper header boots have already been attached to the windrower lift linkage. If that is not the case, see [4.5.2 Attaching Header Boots, page 158](#).

To attach a D-Series Draper Header to the M205 windrower, follow these steps:

1. Remove hairpin (A) on pins (B), and remove pins from header legs.



## CAUTION

Check to be sure all bystanders have cleared the area.

2. Start engine, and push HEADER DOWN button (A) on the Ground Speed Lever (GSL) to fully retract header lift cylinders.

3. Slowly drive windrower forward so that boots (A) enter header legs (B). Continue to drive slowly forward until life linkages contact support plates in the header legs, and the header nudges forward.
4. Check that linkages are properly engaged in header legs, contacting support plates.

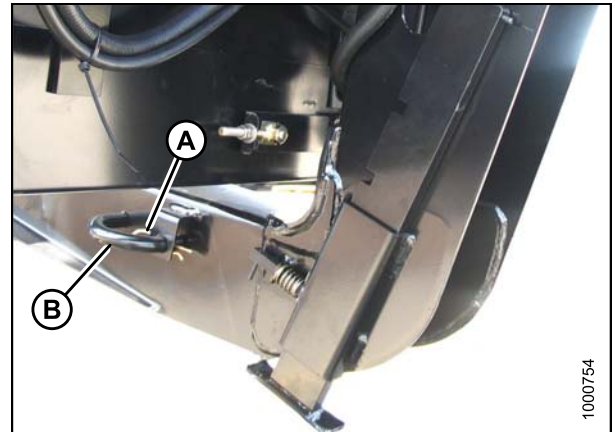


Figure 4.102

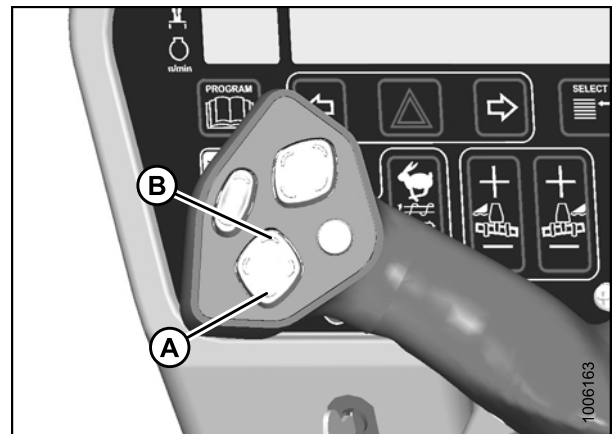


Figure 4.103

A - Header Down button

B - Header Up button

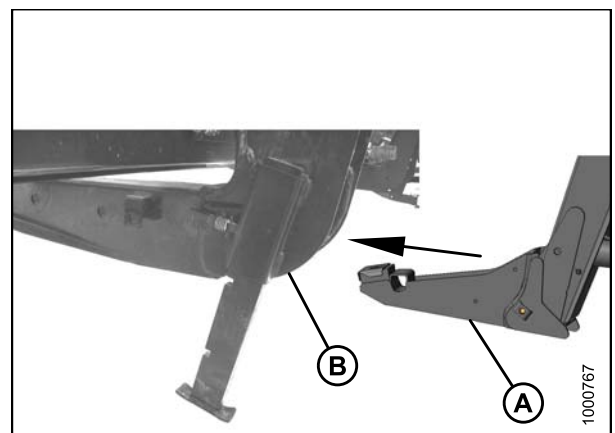


Figure 4.104

## OPERATION

- Adjust position of the center-link cylinder with the REEL UP (A) and REEL DOWN (B) switches, and HEADER TILT switches (C) and (D) on the GSL to position the hook above the header attachment pin.

### IMPORTANT

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

- Lower center-link onto the header with REEL DOWN (B) switch until it locks into position (hook release is down).
- Raise the header fully with the HEADER UP (E) switch on the GSL.
- Stop engine and remove key.



### DANGER

To avoid bodily injury from fall of raised header, always engage header lift cylinder safety props when working on or around raised header.

- Engage lift cylinder safety props on both lift cylinders. Refer to Section 4.4.1 Header Lift Cylinder Safety Props, page 136.
- Install pin (B) through header leg, (engaging U-bracket in lift linkage) on both sides, and secure with hairpin (A).
- Raise header stand (D) to storage position by pulling pin (C), and lifting stand into uppermost position. Release pin (C).

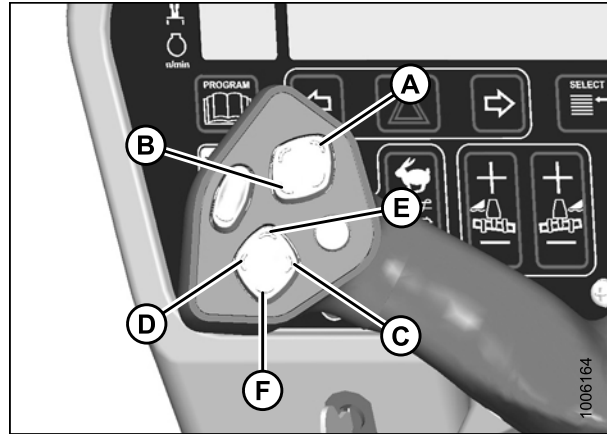


Figure 4.105



Figure 4.106

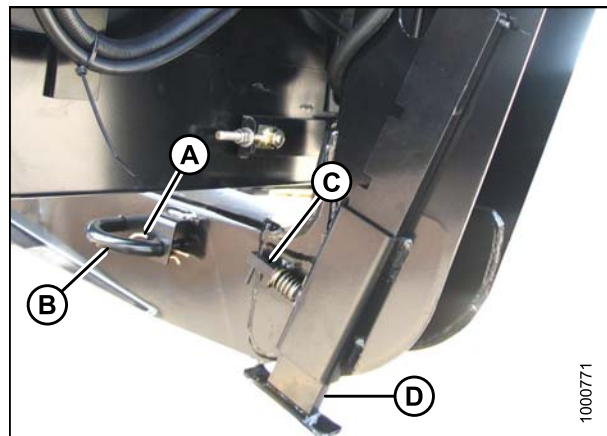


Figure 4.107

## OPERATION

12. Remove pin from storage position (B) in linkage, and insert in hole (A) to engage float springs. Secure with hairpin.

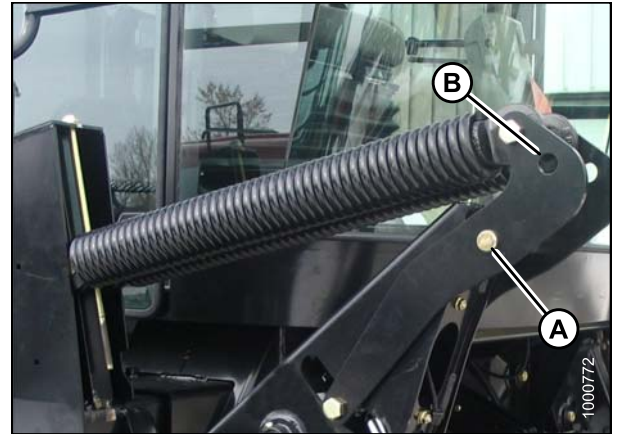


Figure 4.108

13. Disengage lift cylinder stop by turning lever (A) downward to release and lower stop until lever locks into vertical position.
14. Repeat for opposite lift cylinder stop.

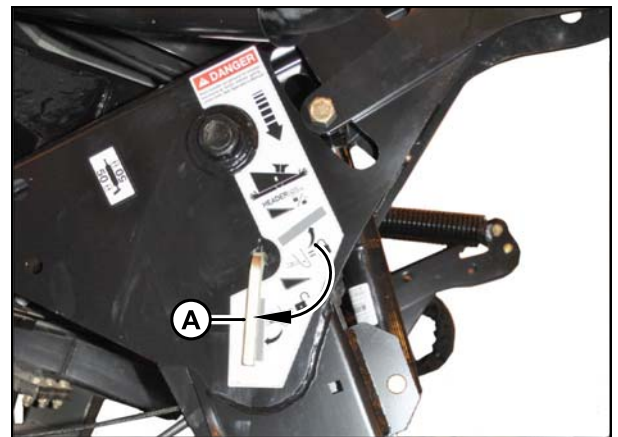


Figure 4.109



## CAUTION

Check to be sure all bystanders have cleared the area.

15. Start engine, and push HEADER DOWN (A) switch on GSL to lower header fully.
16. Stop engine, and remove key.

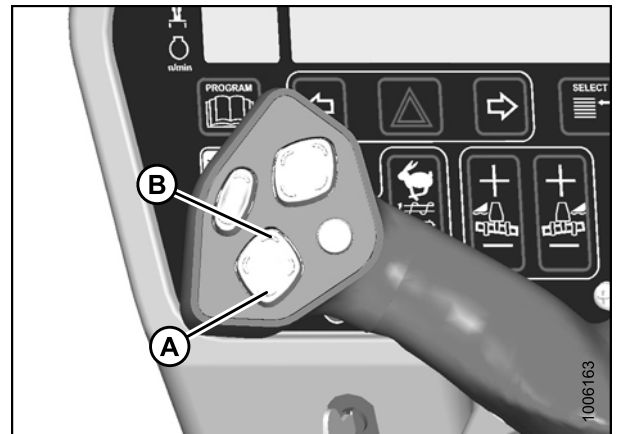


Figure 4.110

## OPERATION

17. Connect header drive hoses (A) and electrical harness (B) at left cab-forward side of windrower to header. Refer to the draper header operator's manual for further information.

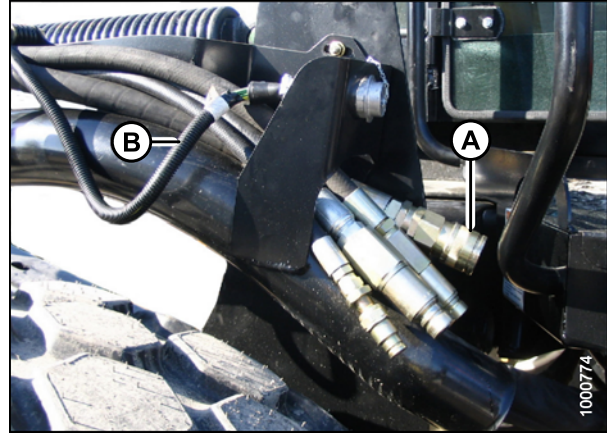


Figure 4.111

18. Connect reel hydraulics (A) at right cab-forward side of windrower to header. Refer to the draper header operator's manual for further information.

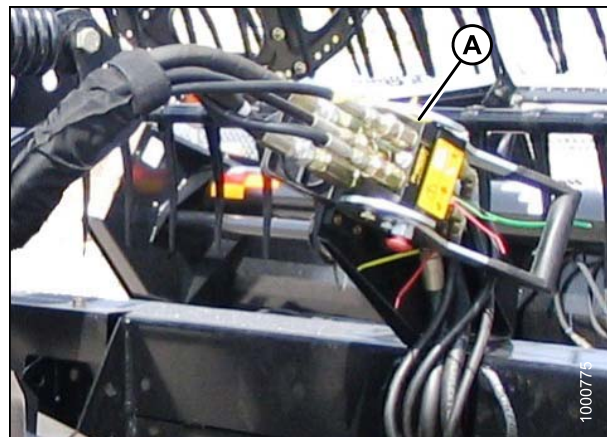


Figure 4.112

### 4.5.4 Detaching a D-Series Header

1. Start engine, and press HEADER UP (B) switch to raise header to maximum height.
2. If one end of the header does not raise fully, the lift cylinders require re-phasing. If re-phasing is needed, proceed as follows:
  - a. Press and hold the HEADER UP (B) switch until both cylinders stop moving.
  - b. Continue to hold the switch for 3–4 seconds.
  - c. Cylinders are phased.
3. Stop engine, and remove key.

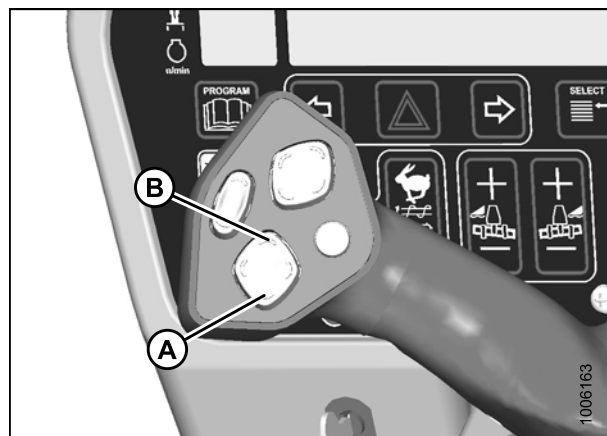


Figure 4.113



## OPERATION

4. Pull lever (A), and rotate toward header to lower cylinder safety prop (B) onto cylinder. Repeat for opposite cylinder.

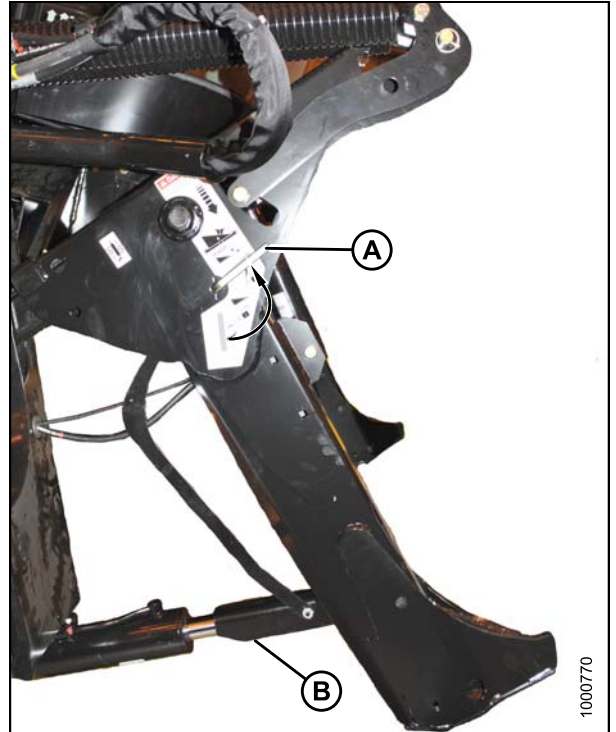


Figure 4.114

5. Remove pin (B) by removing hairpin (A) from header leg on both sides.
6. Lower header stand (D) by pulling spring loaded pin (C). Release pin to lock stand.

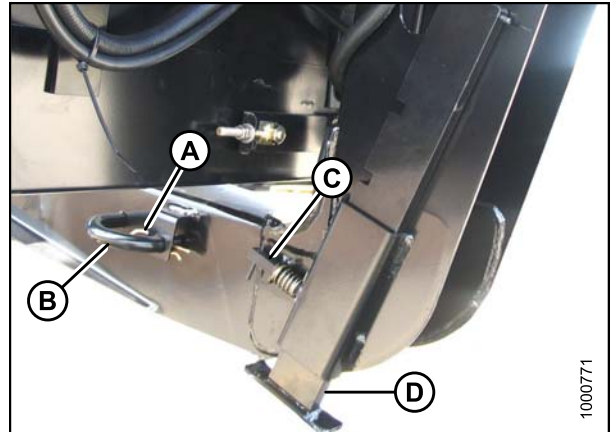


Figure 4.115

## OPERATION

- Remove pin from location (A) to disengage float springs, and insert in storage hole (B). Secure with lynch pin.

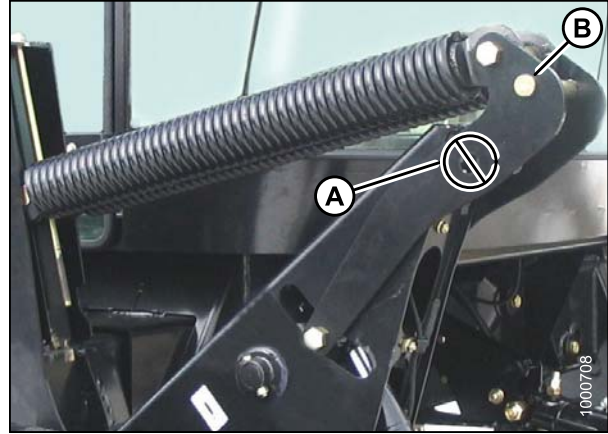


Figure 4.116

### CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

- To disengage lift cylinder safety props, turn lever (A) away from header to raise safety prop until lever locks into vertical position. Repeat for opposite cylinder.

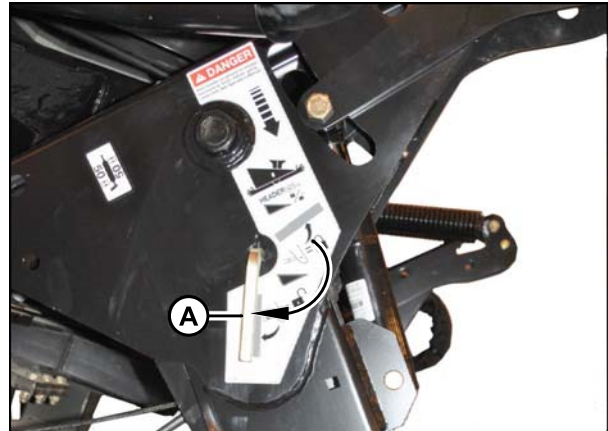


Figure 4.117

- Disconnect header drive hydraulics (A) and electrical harness (B) from header and store in support on windrower left cab-forward side. Refer to the draper header operator's manual for further information.

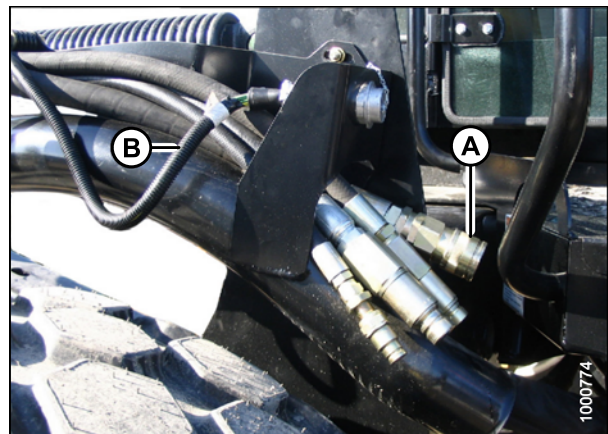


Figure 4.118

## OPERATION

10. Disconnect reel hydraulics (A) from header, and store on bracket at windrower left cab-forward side. Refer to the draper header operator's manual for further information.

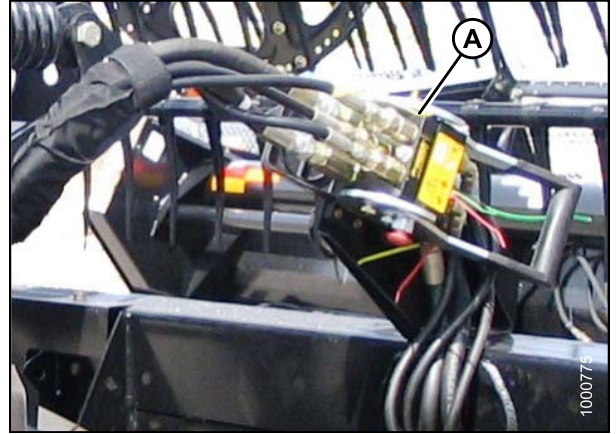


Figure 4.119

11. Start engine, and activate HEADER TILT cylinder switches (A) and (B) on GSL to release load on center-link.

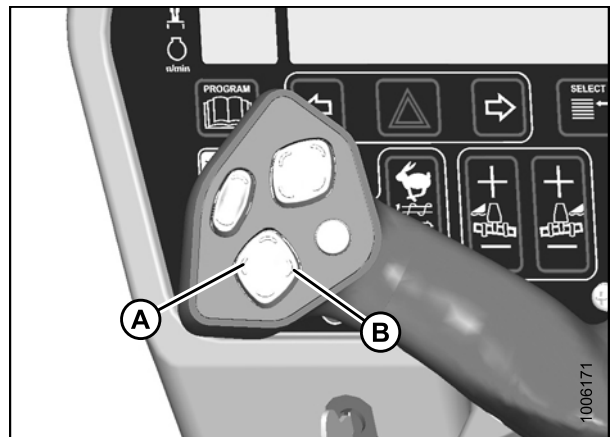


Figure 4.120

## OPERATION

12. Disconnect center-link by lifting release (B), and lift hook (A) off header.

**NOTE:** If optional center-link self-alignment kit is installed, lift release (B), and then operate the link lift cylinder with REEL UP switch (C) on GSL to disengage the center-link from the header.

**NOTE:** If hay conditioner is installed, watch clearances on both sides.

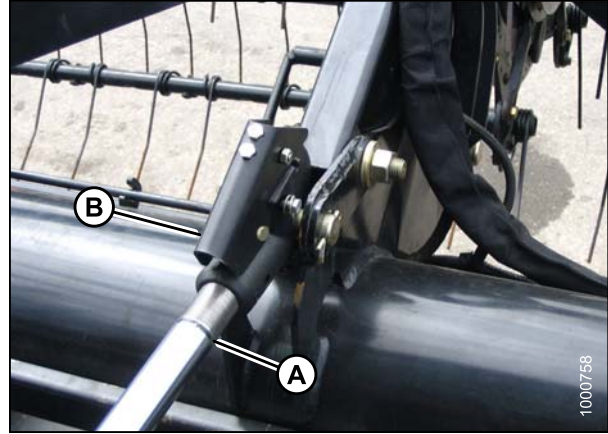
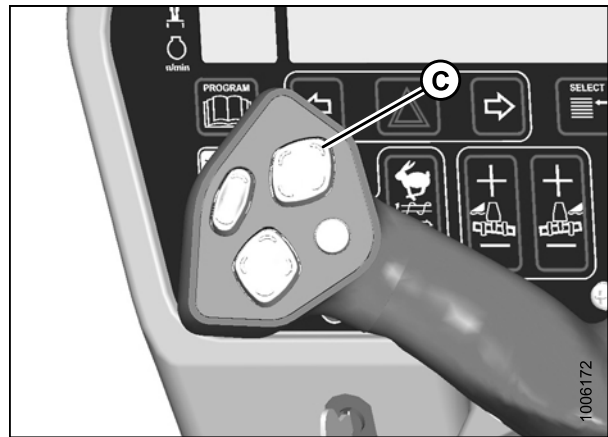


Figure 4.121



13. Re-install pin (B) into header leg, and secure with hairpin (A).

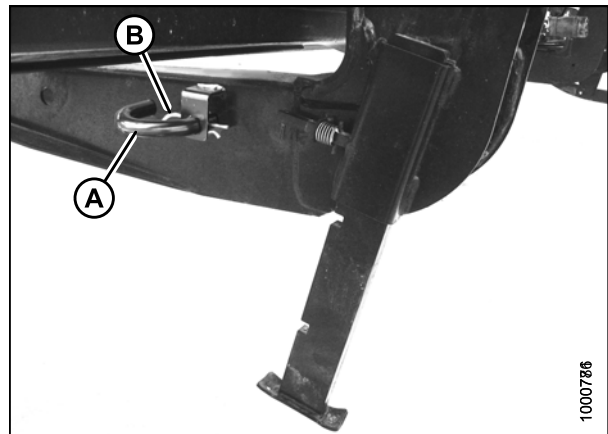


Figure 4.122

### 4.5.5 Header Position

Refer to Section [4.4 Operating with a Header](#), page 136 for procedures for controlling header height, header tilt, and float.

## OPERATION

### 4.5.6 Reel Fore-Aft Position

The reel fore-aft position can be hydraulically adjusted with the optional reel position system, and is controlled with multi-function switches on the Ground Speed Lever (GSL).

Press and hold the switch for the desired FORWARD (A) or AFT (B) movement of the reel.

**NOTE:** The switches also control adjustments to the optional Double Windrow Attachment (DWA) conveyor, and can be activated when programming the Cab Display Module (CDM).

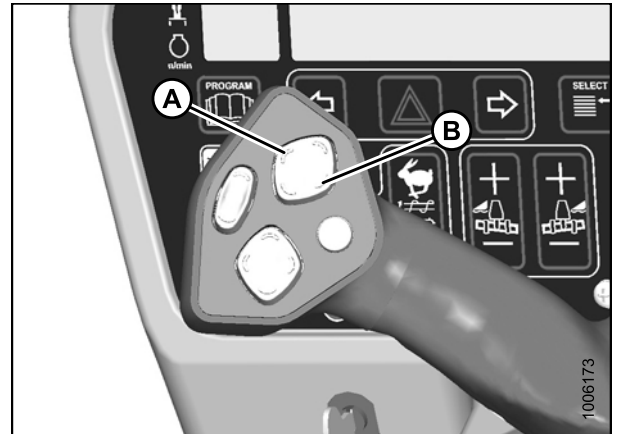


Figure 4.123

### 4.5.7 Reel Height

Press and hold the switch for the desired UP (A) or DOWN (B) movement of the reel.

## IMPORTANT

**Under certain conditions, with reel raised to full height, the reel tines may contact the cab roof. Exercise care to avoid damage to the machine.**

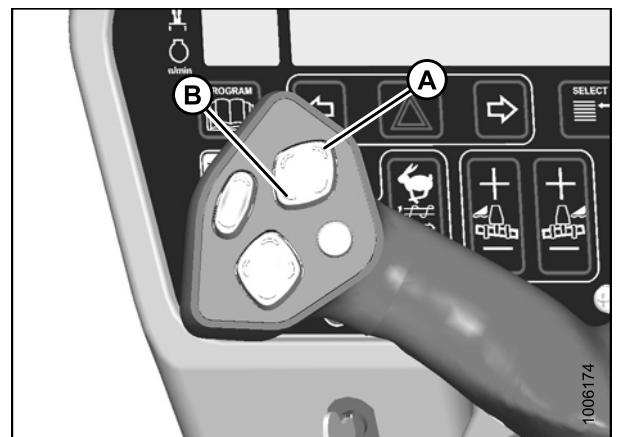


Figure 4.124

### 4.5.8 Reel Speed

The reel speed is controlled with switches on the Ground Speed Lever (GSL). On D-Series Draper Headers, it can be set relative to the ground speed of the windrower using the HEADER INDEX feature, or can run independently. Refer to the operator's manual for your specific header for windrowing guidelines and recommended speeds.

#### *Reel to Ground Speed*

Setting the speed of the reel relative to ground speed using the Header Index function allows you to run the engine at lower rpm while maintaining the desired ground and reel speed. Reducing engine speed saves fuel and reduces noise in the cab.

This mode requires setting the **MINIMUM REEL SPEED** and the **REEL INDEX**.

## OPERATION



Figure 4.125

A - Display  
D - Slow

B - Header index  
E - Display selector

C - Fast

1. Set the **MINIMUM REEL SPEED** as follows:

### IMPORTANT

**Windrower can be moving, but must be less than minimum reel speed.**

- a. Engage header.
- b. Set HEADER INDEX switch (B) to **ON**.
- c. On Ground Speed Lever (GSL), press DISPLAY SELECTOR (E) to display **###.### MIN REEL**, or press FAST (C) or SLOW (D) switch.  
**###.###** = RPM or MPH or KPH<sup>10</sup>.
- d. Press FAST (C) or SLOW (D) until desired minimum reel speed is displayed.

**NOTE:** The reel will continue operating at the Minimum Reel Speed setting when ground speed drops below this value. DISPLAY (A) will flash **###.### MIN REEL** (RPM or MPH or KPH) to prompt you to change the minimum set-point, or increase ground speed if Ground Speed Plus Index is **LESS THAN** the Minimum Reel Speed Set-Point.

2. Set the **REEL INDEX** as follows:

### IMPORTANT

**Windrower can be moving, but must be greater than minimum reel speed.**

- a. Set HEADER INDEX (B) switch to **ON**.

---

10. As per settings in CDM programming

## OPERATION

- b. On GSL press DISPLAY SELECTOR (E) to display **##.## ##.# REEL IND**, or press FAST (C) or SLOW (D) switch.  
**##.##** = RPM or MPH or KPH<sup>10</sup>, **##.#** = 0.0 to 9.9.
- c. Press FAST (C) or SLOW (D) until desired reel index is displayed.

### Examples:

1. Windrower is operating at 8 mph with Header Index ON and set at 5.5.  
Display shows **13.5 5.5 REEL IND** where **13.5** (8 + 5.5) is the reel speed in mph, and **5.5** is the header index setting.
2. Windrower speed drops to 7.5 mph at the same Header Index setting.  
Display shows **13.0 5.5 REEL IND** where **13.0** (7.5 + 5.5) is the reel speed in mph, and **5.5** is the header index setting.
3. Windrower is operating at 8 mph with Header Index ON and set at 1.0.  
Display shows **9.0 1.0 REEL IND** where **9.0** (8 + 1.0) is the reel speed in mph, and **1.0** is the header index setting.

### Reel Only Speed



Figure 4.126

A - Display

B - Header index

C - Reel fast

D - Reel slow

E - Display selector



## CAUTION

Check to be sure all bystanders have cleared the area.

Set the speed of the reel independently of ground speed as follows while operating the windrower:

## OPERATION

**NOTE:** This procedure is similar to changing the draper speed “on the go” with the conveyor speed control switch. See [Setting Draper Speed Independent of Ground Speed, page 173](#). These changes become the new set-points.

1. Set HEADER INDEX (B) to **OFF**.
2. On Ground Speed Lever (GSL) press REEL FAST (C) or REEL SLOW (D) until desired reel speed is displayed at (A).
3. DISPLAY (A) shows **##.## REEL MPH**.

### 4.5.9 Draper Speed

Draper speed affects the orientation of stalks in the windrow. Faster draper speeds tend to form herringbone or dovetail configurations. Refer to your header operator’s manual for guidelines on what speed to use.

The draper speed can be set with switches on the Cab Display Module (CDM) relative to the ground speed of the windrower with the HEADER INDEX function, or can run independently.

#### *Draper to Ground Speed*

Setting the speed of the draper relative to ground speed using the HEADER INDEX function allows you to run the engine at lower rpm while maintaining the desired ground and draper speed. Reducing engine speed saves fuel and reduces noise in the cab.

This mode requires setting the **MINIMUM DRAPER SPEED** and setting the **DRAPER INDEX**.



## OPERATION

### Draper Minimum Speed

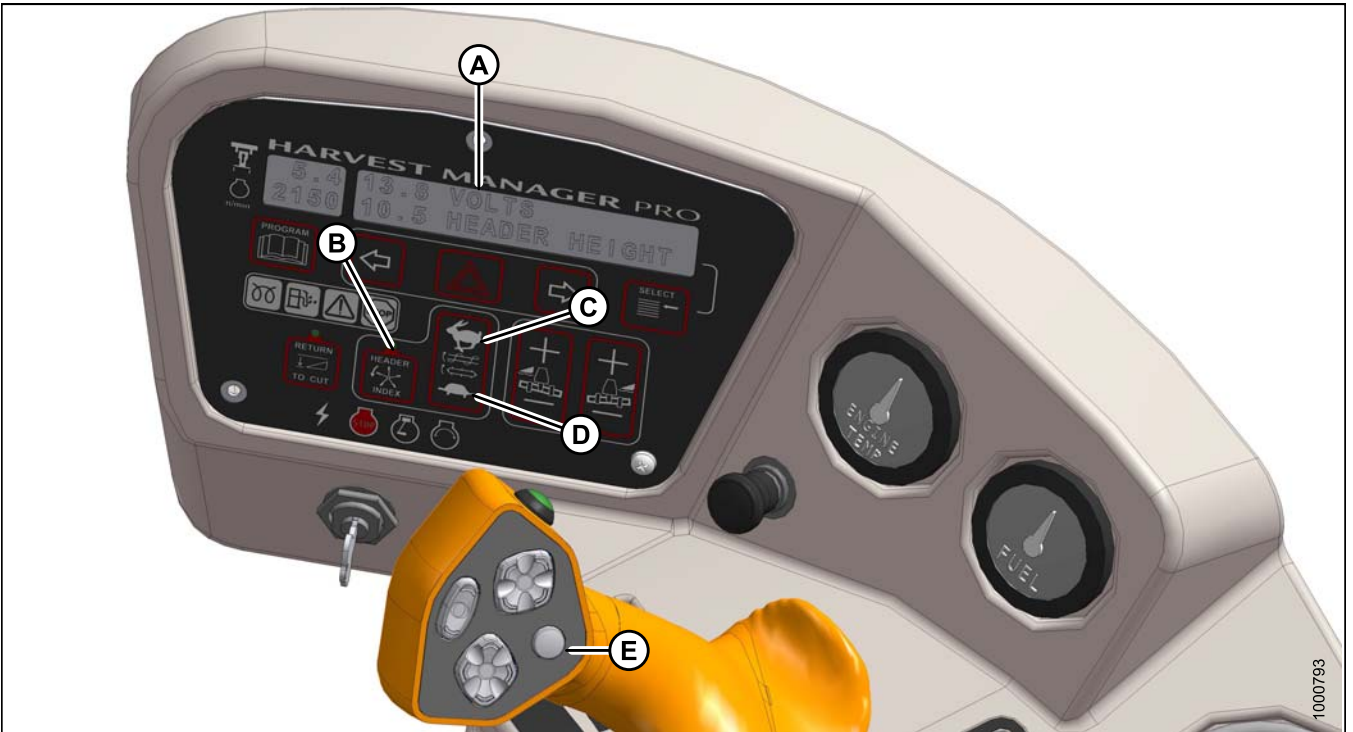


Figure 4.127

A - Display

B - Header index

C - Draper fast

D - Draper slow

E - Display selector

## IMPORTANT

Windrower can be moving, but must be less than minimum reel speed.

Set **DRAPER MINIMUM SPEED** as follows:

1. Engage header.
2. Set **HEADER INDEX (B)** switch to **ON**.
3. Press **DISPLAY SELECTOR (E)** for **DRAPER MIN**
4. On Cab Display Module (CDM) press **SLOW (D)** until beep is heard.
5. Display (A) shows **### DRAPER MIN.**<sup>11</sup>

11. DISPLAY will flash **### MIN CONV (MPH or KPH)** to prompt you to change the minimum set point, or increase ground speed if Ground Speed Plus Index is **less than** the Minimum Draper Speed Set Point.

## OPERATION

### Draper Index

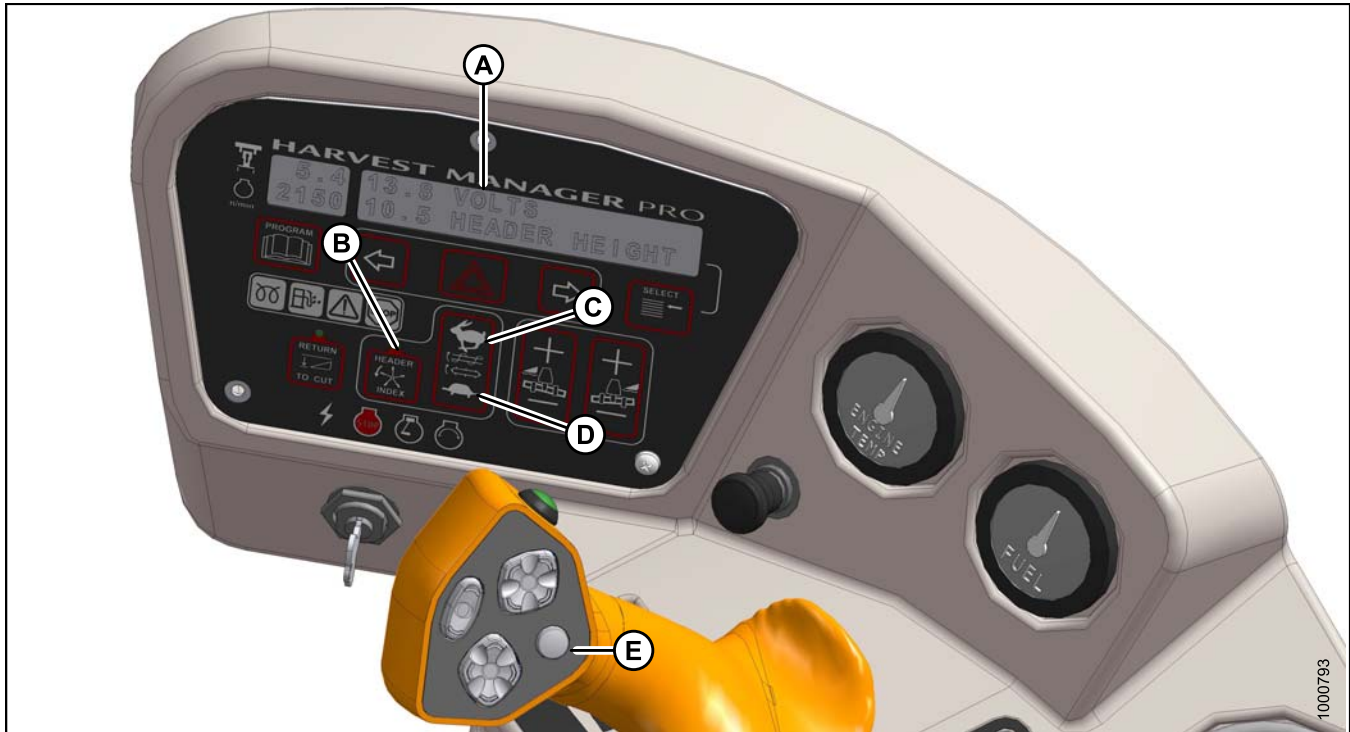


Figure 4.128

A - Display

B - Header index

C - Draper fast

D - Draper slow

E - Display selector

Set **DRAPER INDEX** as follows:

## IMPORTANT

**Windrower can be moving, but must be greater than minimum reel speed.**

1. Engage header.
2. Set **HEADER INDEX** switch (B) to **ON**.
3. Press **DISPLAY SELECTOR** (E) so that **DRAPER INDX** is displayed at (A).
4. On Cab Display Module (CDM) press **DRAPER FAST** (C) or **SLOW** (D) until desired index is displayed at (A).  
Display shows **###.## DRAP IND**.  
**###.##** = MPH or KPH  
**##.#** = -1.9 to +3.0

## OPERATION

### Examples:

- Windrower is operating at 8 mph with HEADER INDEX ON, and set at 1.5.

Display shows: **9.5 1.5 DRAP INDX**

where **9.5** ( $8 + 1.5$ ) is the draper speed in mph, and **1.5** is the HEADER INDEX setting.

- Windrower speed drops to 7.5 mph at same HEADER INDEX setting.

Display shows: **9.0 1.5 DRAP INDX**

where **9.0** ( $7.5 + 1.5$ ) is the draper speed in mph, and **1.5** is the HEADER INDEX setting.

- Windrower is operating at 8 mph with HEADER INDEX ON, and set at 0.9.

Display shows: **8.9 0.9 DRAP INDX**

where **8.9** ( $8 + 0.9$ ) is the draper speed in mph, and **0.9** is the HEADER INDEX setting.

### *Setting Draper Speed Independent of Ground Speed*

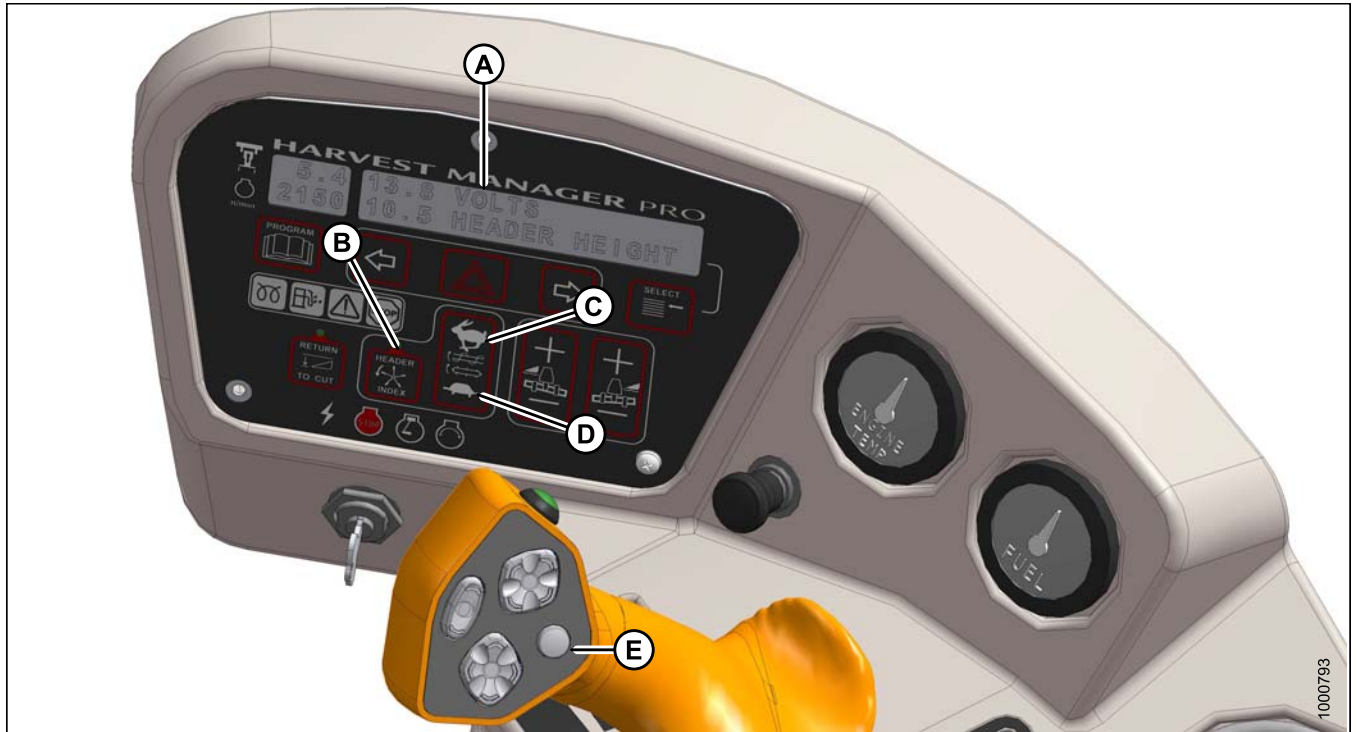


Figure 4.129

A - Display

B - Header index

C - Draper fast

D - Draper slow

E - Display selector

Set the speed of the draper independently of ground speed as follows:

**NOTE:** This procedure can also be used to change the draper speed “on the go”.



## CAUTION

Check to be sure all bystanders have cleared the area.

## OPERATION

1. Engage header.
2. Set HEADER INDEX switch (B) to **OFF**.
3. Press DISPLAY SELECTOR (E) to display at (A) **DRAPER SPEED**.
4. On Cab Display Module (CDM) press **FAST** (C) or **SLOW** (D) until desired draper speed is displayed at (A).  
Display shows **### DRAPER SPEED**.  
### = MPH or KPH

### 4.5.10 Knife Speed

The ideal cutting speed of the knife should be such that a clean cut is achieved. Crop types and conditions usually influence the knife and forward speeds.

The Windrower Control Module (WCM) reads a code from the header that determines the knife speed range and the minimum speed when the header is first attached to the windrower.

The desired speed can be programmed on the Cab Display Module (CDM), and is stored in the WCM memory so that if the header is detached and then reattached to the windrower, the knife will operate at the original set-point.

If no header code is detected, the CDM displays NO HEADER, the knife speed reverts to a range from 800–1000 strokes per minute, and you can then preset the speed.

Refer to the header operator's manual for the suggested knife speed for a variety of crops and conditions.

**NOTE:** The knife speed cannot be programmed outside the range specified for each header.

## OPERATION

### Setting Knife Speed “On the Go”



Figure 4.130

A - Display

B - Slower

C - Faster

D - Program

E - Select



## CAUTION

Check to be sure all bystanders have cleared the area.

Display and set knife speed “on the go” as follows:

1. Engage header.
2. On Cab Display Module (CDM) press PROGRAM (D) and SELECT (E).  
DISPLAY (A) shows **#### KNIFE SPM.**  
#### = strokes per minute.
3. Press SLOWER (B) or FASTER (C) until desired knife speed is displayed at (A).

## OPERATION

### 4.5.11 Deck Shift (Optional)

The hydraulic deck shift option allows you to control deck position and draper rotation from the operator's station. It enables crop delivery from left side, center, or right side of the header.

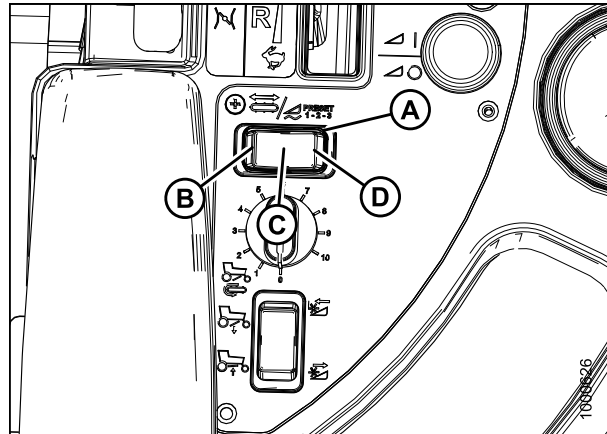
#### *Shifting Deck*

### CAUTION

Check to be sure all bystanders have cleared the area.

Shift decks as follows:

1. Engage header.
2. Push switch (A) to desired delivery position. Deck(s) will move, and direction of drapers will change accordingly.
3. Operate windrower.



**Figure 4.131**

A - Deck shift switch

B - Left side delivery

C - Center delivery

D - Right side delivery

## OPERATION

### Setting Float Options with Deck Shift

For draper headers equipped with the deck shift option, the header float can be set for each position of the decks. The float is then maintained when the decks are shifted.



## CAUTION

Check to be sure all bystanders have cleared the area.

Program the float as follows:

1. Engage header.
2. Using HEADER TILT SWITCHES (A) and (B) on the GSL, set center-link to mid-range position (05.0 on DISPLAY) (E).
3. Push DECK SHIFT switch (G) on the console to desired delivery position.
4. Using HEADER DOWN switch (C) on the GSL, lower header fully with lift cylinders fully retracted.
5. Using LEFT FLOAT SWITCH (D), push + to increase float, or - to decrease float on left side of header. DISPLAY (E) will indicate selected float for left side, for example (8.0 L FLOAT R ##.#).
6. Repeat for right side float with RIGHT switch (F). DISPLAY (E) will indicate float for both sides, for example (8.0 L FLOAT R 3.0).
7. Select a second deck position with the DECK SHIFT switch (G).
8. Repeat steps 5. and 6. above to set the float.
9. Select a third position if desired with the DECK SHIFT switch (G), and repeat steps 5. and 6. above to set the float.

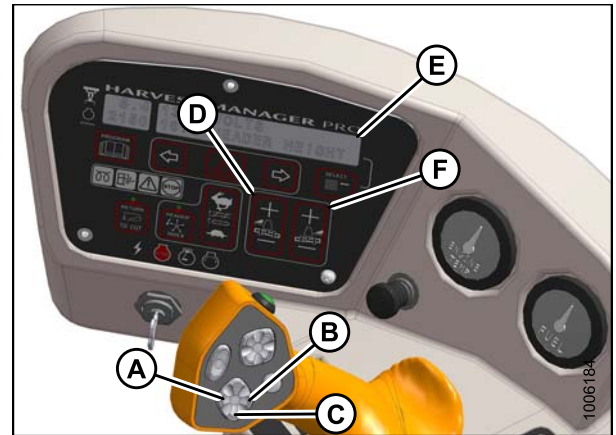


Figure 4.132

- |                      |                    |
|----------------------|--------------------|
| A - Header tilt down | B - Header tilt up |
| C - Header down      | D - Left float     |
| E - Display          | F - Right float    |

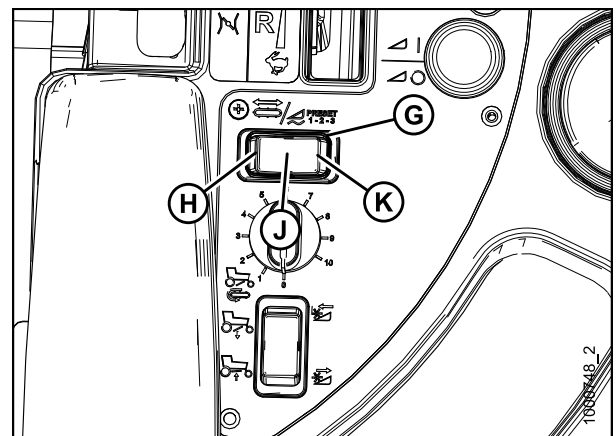


Figure 4.133

- |                       |                         |
|-----------------------|-------------------------|
| A - Deck shift switch | B - Left side delivery  |
| C - Center delivery   | D - Right side delivery |

## OPERATION

### 4.6 Operating with an A-Series Header

The M205 must be equipped with an auger drive basic kit and a completion kit as shown.

If necessary, obtain the following kits from your MacDon Dealer, and install them in accordance with the instructions supplied with the kits.

Kit Description	Kit Number
Base Draper/Auger Drive kit	MD #B5491
Draper Conditioner/Auger Header Reverser Completion kit	MD #B5492
Hydraulic Coupler kit	MD #B5497

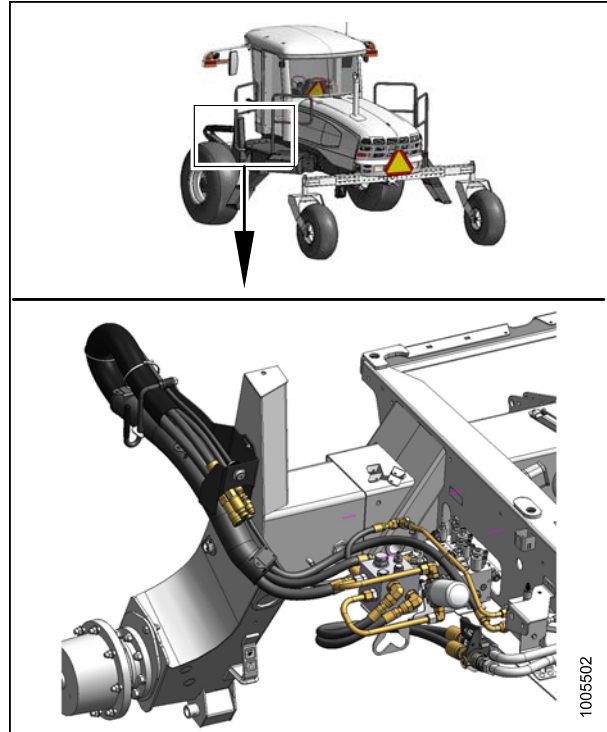


Figure 4.134

#### 4.6.1 Attaching an A-Series Header

1. Remove hairpin (A) from pin (B), and remove pin from left and right header boots (C) on header.

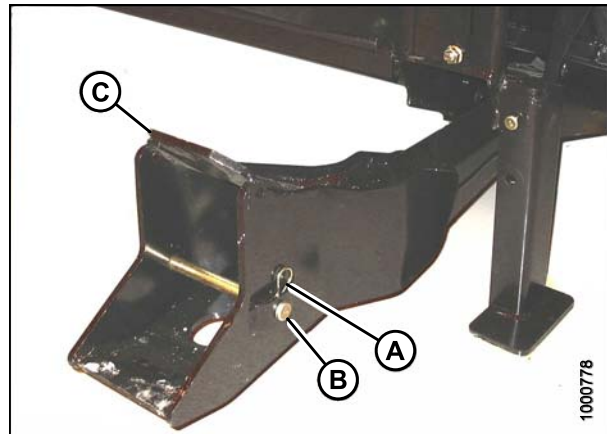


Figure 4.135



## OPERATION

### CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

### CAUTION

Check to be sure all bystanders have cleared the area.

2. Start the engine, and activate HEADER DOWN (A) button on the GSL to fully retract header lift cylinders.

### IMPORTANT

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

3. Slowly drive windrower forward so that feet (A) on windrower enter boots (B) on the header. Continue to drive slowly forward until feet engage the boots, and header nudges forward.

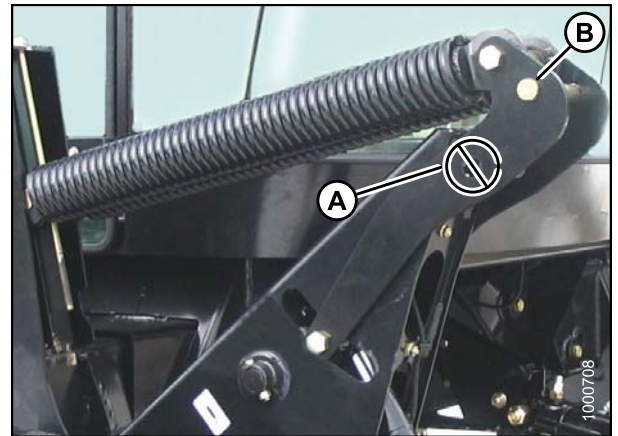


Figure 4.136

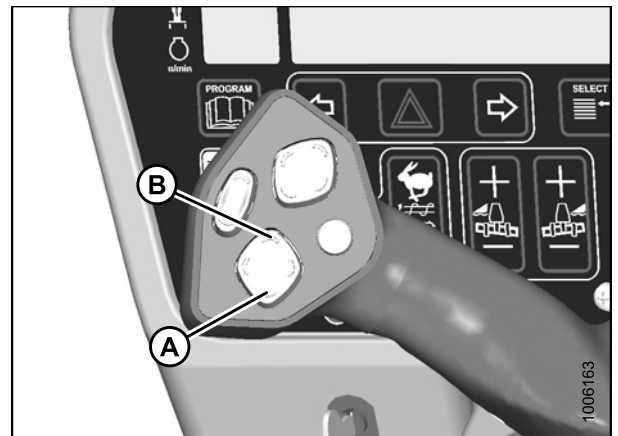


Figure 4.137

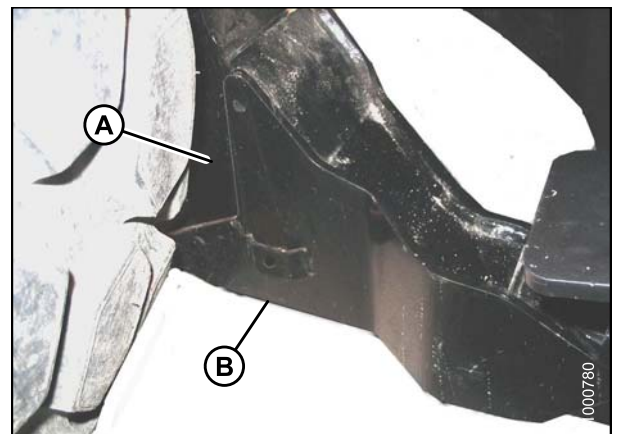


Figure 4.138

## OPERATION

- Adjust the position of the center-link cylinder with the REEL UP (A), REEL DOWN (B), and HEADER TILT (C) and (D) switches on the GSL to position the hook above the header attachment pin.

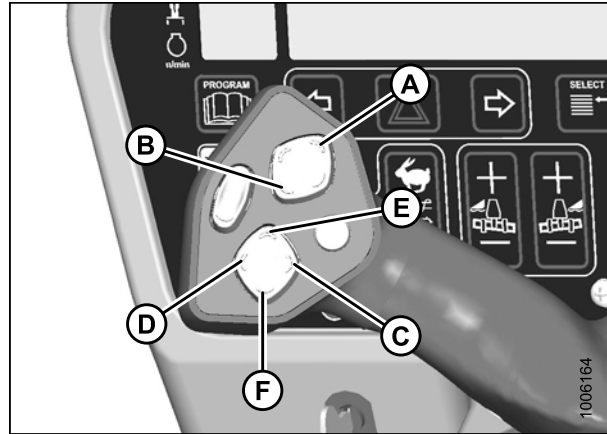


Figure 4.139

- Lower the center-link onto the header with REEL DOWN switch (B) until it locks into position (handle is down).

### IMPORTANT

Hook release must be down to enable self-locking mechanism. If the release is open (up), manually push it down after hook engages header pin. Check that center-link is locked onto header by pulling upward on rod end of cylinder.

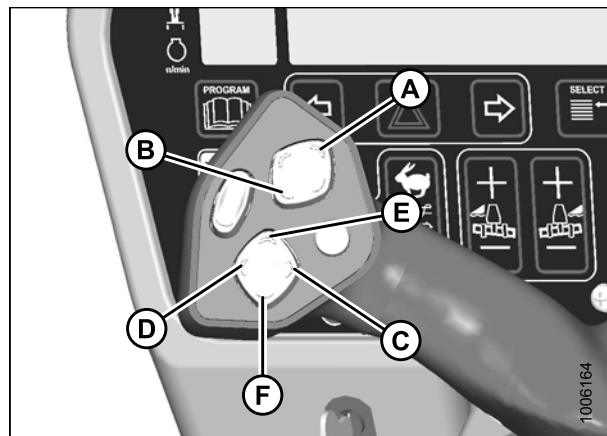


Figure 4.140

- Raise the header fully with the HEADER UP (E) switch on the GSL.
- Stop engine, and remove key.

### DANGER

To avoid bodily injury from fall of raised header, always engage header lift cylinder safety props when working on or around raised header.



## OPERATION

- Pull lever (A), and rotate toward header to lower cylinder safety prop (B) onto cylinder. Repeat for opposite cylinder.

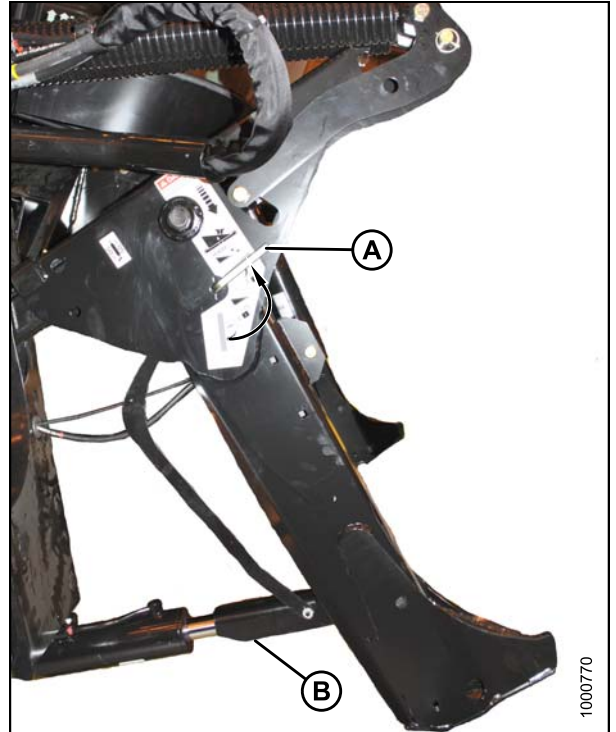


Figure 4.141

- Install pin (A) through each boot and foot, and secure with hairpin. Do this to both sides.

### IMPORTANT

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

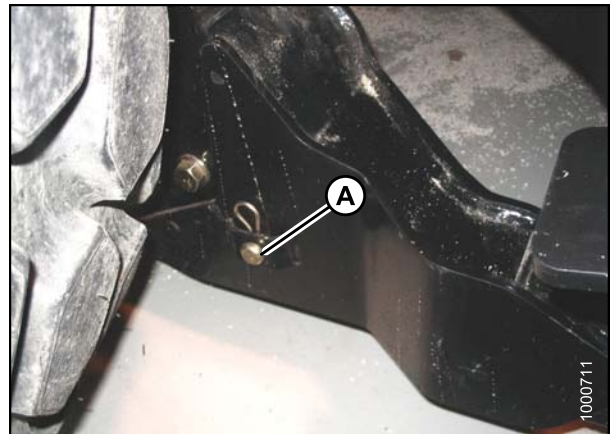


Figure 4.142

## OPERATION

10. Remove lynch pin from pin (A) in stand (B).
11. Hold stand (B), and remove pin (A).
12. Reposition stand to storage position by inverting stand, and relocating on bracket as shown. Reinsert pin (A), and secure with lynch pin.

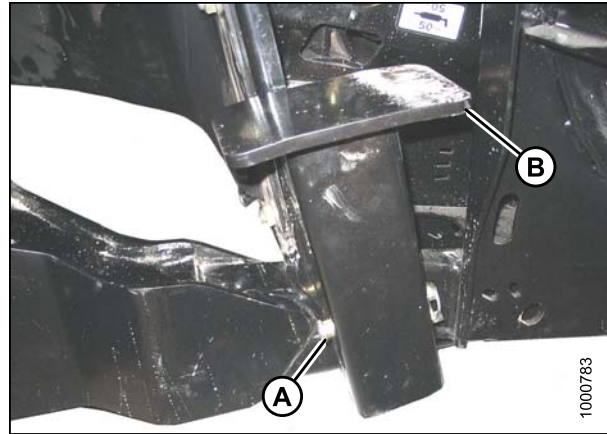


Figure 4.143

13. Remove pin from storage position (B) in linkage, and insert in hole (A) to engage float springs. Secure with hairpin.

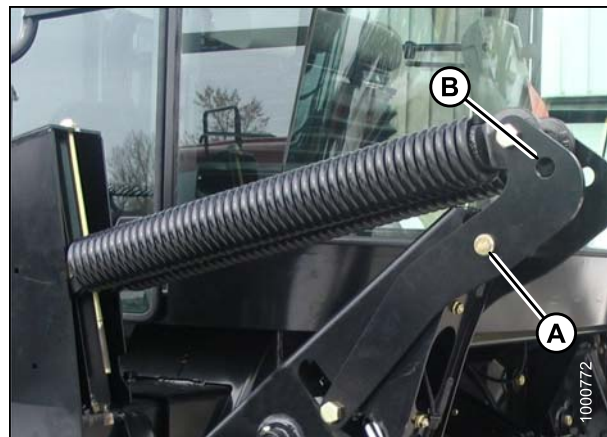


Figure 4.144

14. To disengage lift cylinder safety props, turn lever (A) away from header to raise safety prop until lever locks into vertical position. Repeat for opposite cylinder.

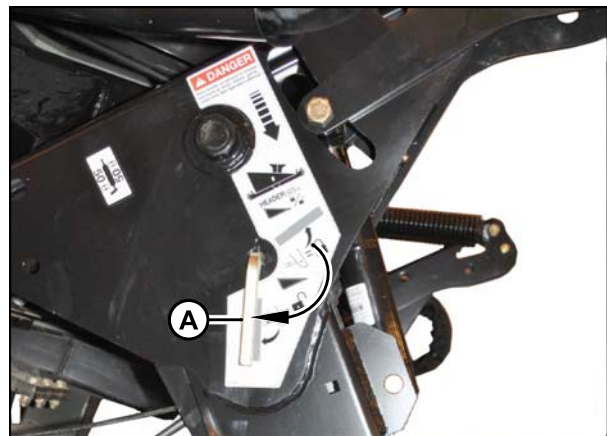


Figure 4.145

## OPERATION

15. Connect header drive hoses (A) and electrical harness (B) to header. Refer to the auger header operator's manual for additional information.

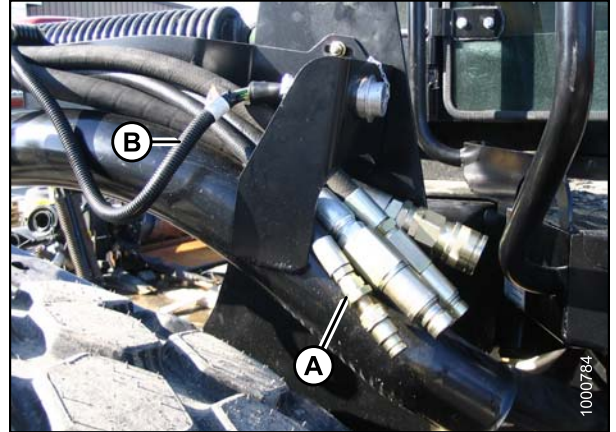


Figure 4.146

### 4.6.2 Detaching an A-Series Header

1. Raise the header fully with the HEADER UP (B) switch on the Ground Speed Lever (GSL). Stop engine, and remove key.



## DANGER

To avoid bodily injury from fall of raised header, always engage header lift cylinder safety props when working on or around raised header.

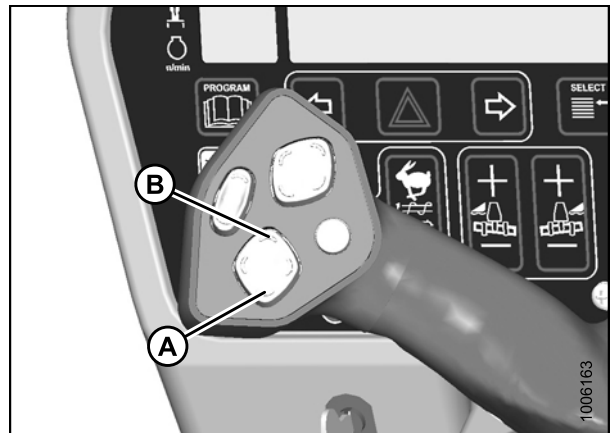


Figure 4.147

## OPERATION

2. Pull lever (A), and rotate toward header to lower cylinder safety prop (B) onto cylinder. Repeat for opposite cylinder.

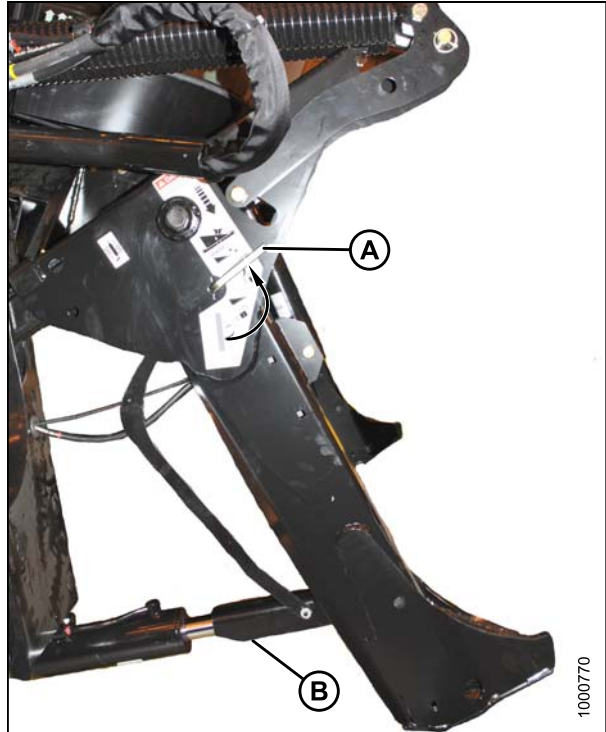


Figure 4.148

3. Remove hairpin from pin (A), and remove pin from left and right header boots (B) on header.

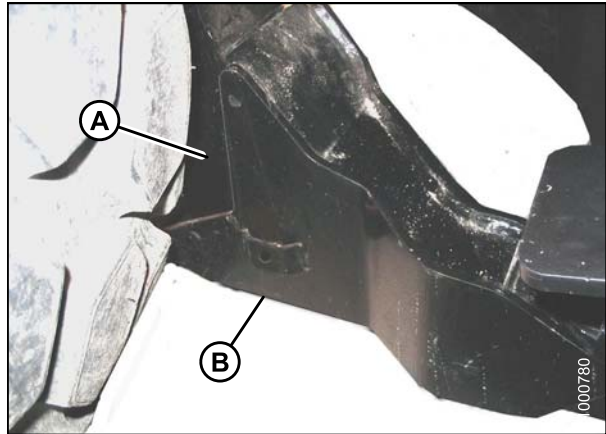


Figure 4.149

## OPERATION

4. Lower stand (A) by pulling pin (B), inverting stand, and relocating on bracket. Reinsert pin (B), and secure with hairpin.

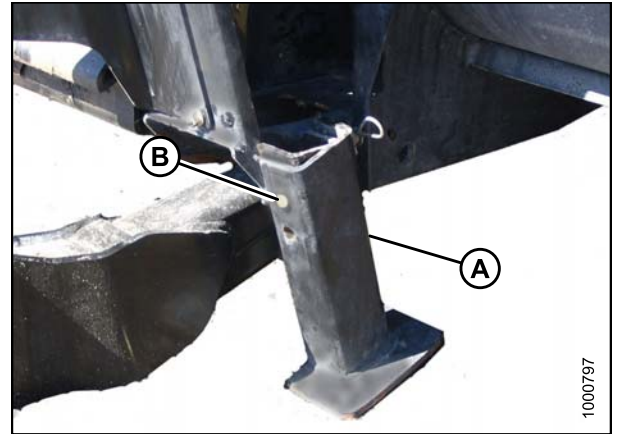


Figure 4.150

5. Remove pin from linkage (A) to disengage float springs, and insert in storage hole (B). Secure with lynch pin. Repeat for opposite linkage.



### CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

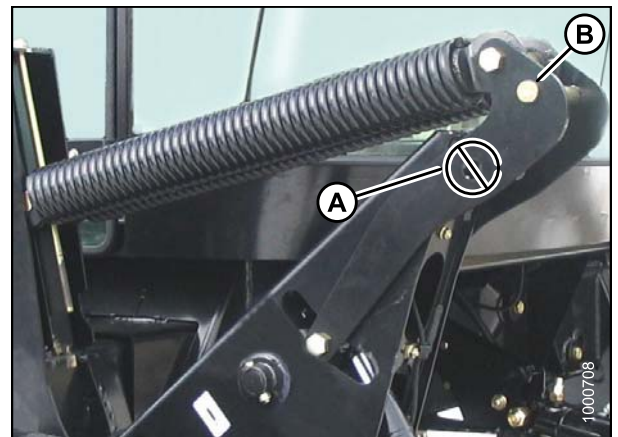


Figure 4.151

6. To disengage lift cylinder safety props, turn lever (A) away from header to raise safety prop until lever locks into vertical position. Repeat for opposite cylinder.



Figure 4.152

## OPERATION

7. Start engine, choose a level area, and lower header to the ground with HEADER DOWN switch (F) on GSL.
8. Use HEADER TILT switches (C) and (D) on GSL to release load on center-link cylinder.

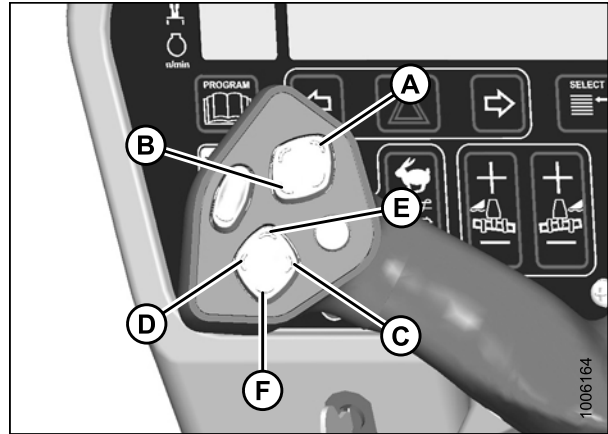


Figure 4.153

9. Lift hook release (C), and lift hook (B) off header pin.

**NOTE:** If optional center-link self-alignment kit is installed, lift release (C), and then operate the link lift cylinder with REEL UP (A) switch on GSL to disengage the center-link from the header.

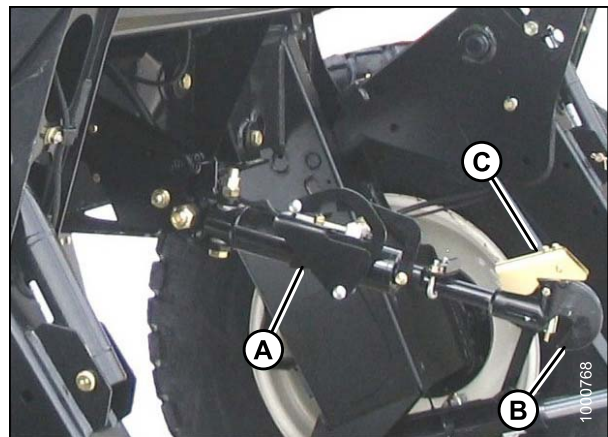


Figure 4.154

10. Disconnect header drive hydraulics (A) and electrical harness (B) and store in support on windrower. Refer to the auger header operator's manual for additional information.
11. Slowly back windrower away from header.

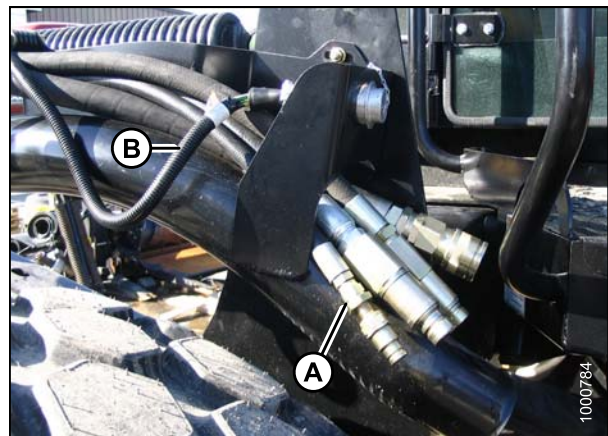


Figure 4.155



## OPERATION

12. Reinstall pins (B), secure with hairpin (A) in header boots (C).

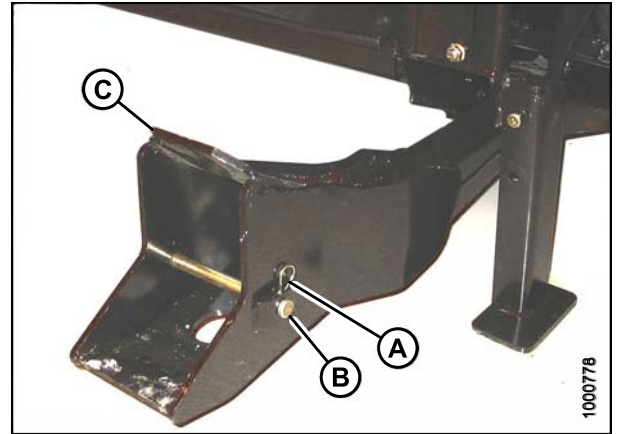


Figure 4.156

### 4.6.3 Auger Speed

#### *Changing Auger Speed on A30-D Headers*

On A30–D auger headers, the auger speed is fixed to the knife speed but can be independently changed from the knife speed by changing the auger drive sprocket. Refer to the Auger Header Operator's Manual (MD #169000). The auger speed is not monitored and cannot be displayed.

#### *Changing Auger Speed on A40-D Headers*

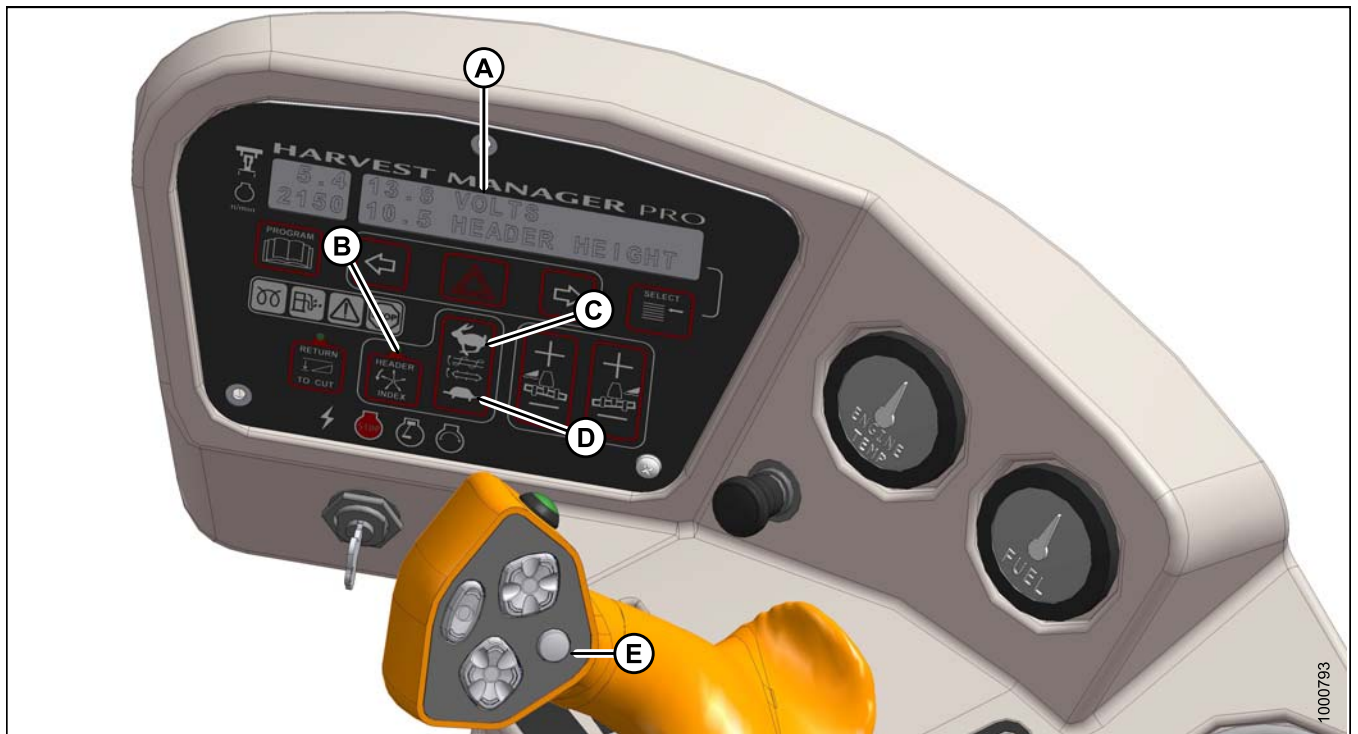


Figure 4.157

A - Display  
E - Display selector

B - Header index switch

C - Auger fast

D - Auger slow

## OPERATION

### CAUTION

Check to be sure all bystanders have cleared the area.

Change auger speed as follows:

1. Engage header.
2. Set HEADER INDEX switch (B) to **OFF**
3. On Ground Speed Lever (GSL) press DISPLAY SELECTOR switch (E) until **### AUGER SPEED**, is displayed at (A), or on CDM, press FAST (C) or SLOW (D).  
Display (A) shows **### AUGER SPEED**.<sup>12</sup>  
**### = 4.7 to 9.9**
4. Press FAST (C) or SLOW (D) on CDM until desired auger speed is displayed at (A).

**NOTE:** Changing the auger speed also changes the reel speed because the drive motors are in series. Auger speed is displayed on CDM as 4.7. This value is constant and cannot be changed even if actual auger speed changes with adjustments through reel circuit.

#### 4.6.4 Reel Speed

Refer to your header operator's manual for recommended reel speed settings for your particular crop.

##### *Reel Speed: A30-D Headers*

The reel is driven by the auger, and both are dependent on the main header drive speed. The auger speed and hence the reel speed can be changed by installing a different size auger drive sprocket, or by varying the windrower engine rpm. This header does not have a reel speed sensor, therefore no read out is available for the display.

##### *Reel Speed: A40-D Headers*

The A40-D auger header features a hydraulic direct drive reel with an operating speed range of 15–50 rpm that is controlled with switches on the Cab Display Module (CDM), and on the Ground Speed Lever (GSL) at the Operator's station.

The reel drive motor and the auger drive motor are connected in series so that changing the reel speed also changes the auger speed. The reel cannot be separately controlled without changing the auger speed. Switches on the GSL are used to adjust the reel speed which is displayed on the CDM display. The reel speed can be set by two methods:

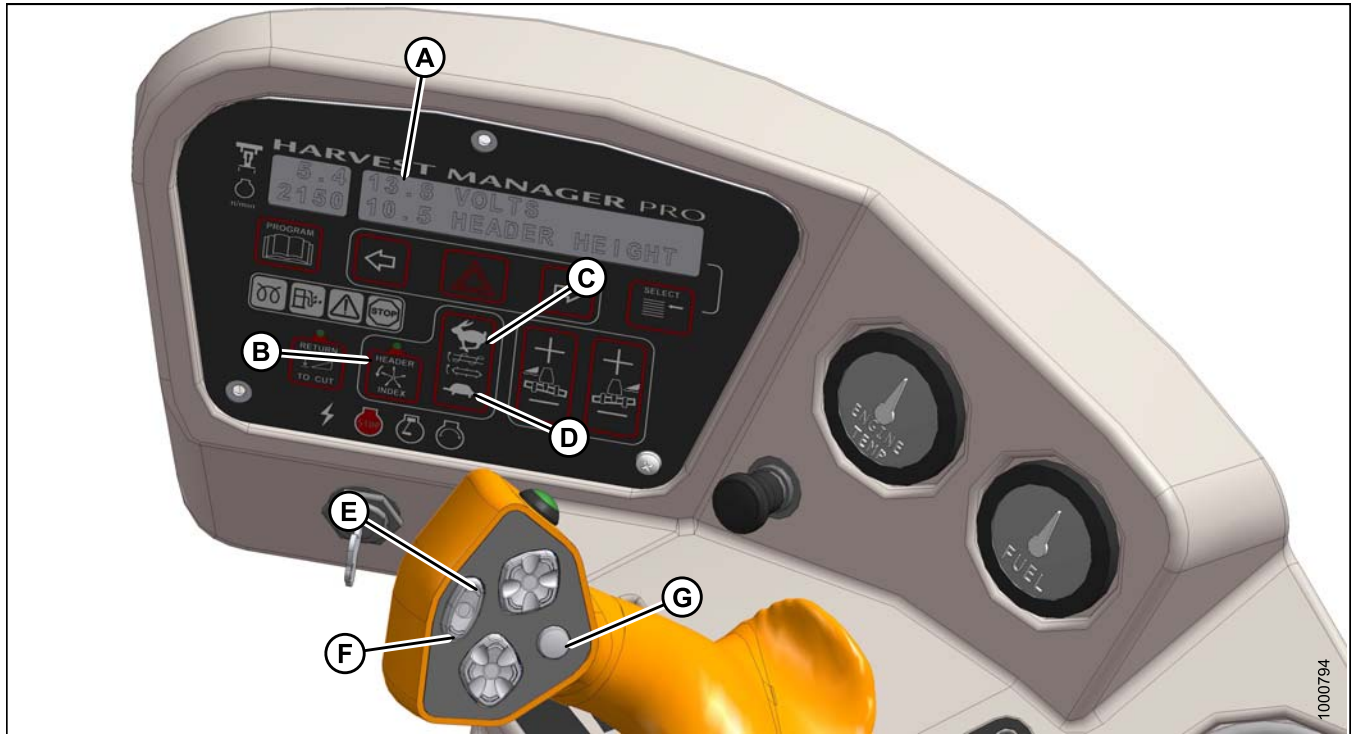
- Reel On-the-Go (reel and auger speeds change)
- Reel to Ground (indexed)

---

<sup>12</sup>. Auger Speed Not to Exceed 320 rpm.

## OPERATION

### Adjusting Reel Speed “On The Go”



**Figure 4.158**

A - Display  
E - Reel fast

B - Header index  
F - Reel slow

C - Auger fast  
G - Display selector

D - Auger slow

The reel speed adjustment range is from 50 to 85 rpm. Adjust the reel speed while the machine is in operation as follows:

1. Set HEADER INDEX switch (B) to **OFF**.
2. On Ground Speed Lever (GSL), press REEL SLOW (F) or REEL FAST (E) until desired speed is reached. DISPLAY (A) shows **### REEL RPM**.

**NOTE:** Adjusting the reel speed will result in a change to auger speed because hydraulic motors are connected in series.

#### Setting Reel to Ground Speed

Setting the speed of the reel relative to ground speed using the Header Index function automatically adjusts the reel speed with changes in ground speed. Operator fatigue is reduced and more consistent crop flow into the auger is achieved.

**NOTE:** Any change to the reel speed will result in a change to the auger speed because the drive motors are in series.

This mode requires setting the **Minimum Reel Speed** and the **Reel Index**.

## OPERATION



Figure 4.159

A - Display  
D - Slow

B - Header index  
E - Display selector

C - Fast

1. Set the Minimum Reel Speed as follows:

### IMPORTANT

**Windrower can be moving, but must be less than minimum reel speed.**

- a. Engage header.
- b. Set HEADER INDEX switch (B) to **ON**.
- c. On Ground Speed Lever (GSL) press DISPLAY SELECTOR (E) to display **###.## MIN REEL**, or press FAST (C) or SLOW (D) switch.  
**###.##** = RPM or MPH or KPH<sup>13</sup>
- d. Press SLOW (D) until beep is heard.
- e. Display (A) shows **###.## REEL MIN RPM**.

**NOTE:** The reel will continue operating at the Minimum Reel Speed setting when ground speed drops below this value. DISPLAY (A) will flash **###.## MIN REEL** (RPM or MPH or KPH) to prompt the operator to change the minimum set-point, or increase ground speed if Ground Speed Plus Index is **LESS THAN** the Minimum Reel Speed Set-Point.

2. Set the Reel Index as follows:

### IMPORTANT

**Windrower can be moving, but must be greater than minimum reel speed.**

13. As per settings in Cab Display Module (CDM) programming.

## OPERATION

- a. Set HEADER INDEX switch (B) to **ON**.
- b. On GSL press DISPLAY SELECTOR (E) to display **##.## ##.# REEL IND**, or press FAST (C) or SLOW (D) switch.  
**##.##** = RPM or MPH or KPH<sup>13</sup>, **##.#** = 0.0 to 9.9.
- c. Press FAST (C) or SLOW (D) until desired reel index is displayed.

Examples:

- Windrower is operating at 8 mph with HEADER INDEX ON, and set at -1.0.

Display shows: **7.0 -1.0 REEL IND**

where **7.0** (8.0-1.0) is the reel speed in mph, and **-1.0** is the HEADER INDEX setting.

- Windrower speed drops to 7.5 mph at same HEADER INDEX setting.

Display shows: **6.5 -1.0 REEL IND**

where **6.5** (7.5-1.0) is the reel speed in mph, and **-1.0** is the HEADER INDEX setting.

- Windrower is operating at 8 mph with HEADER INDEX ON, and set at 2.0.

Display shows: **10.0 2.0 REEL IND**

where **10.0** (8+2.0) is the reel speed in mph, and **2.0** is the HEADER INDEX setting.

### 4.6.5 Knife Speed

The ideal cutting speed of the knife should be such that a clean cut is achieved. Crop types and conditions usually influence the knife and forward speeds.

The Windrower Control Module (WCM) reads a code from the header that determines the knife speed range and the minimum speed when the header is first attached to the windrower.

The desired speed can be programmed on the Cab Display Module (CDM), and is stored in the WCM memory so that if the header is detached and then reattached to the windrower, the knife will operate at the original set-point.

If no header code is detected, the CDM displays NO HEADER, and the knife speed reverts to a range from 0–1400 strokes per minute. You can then adjust the speed setting.

Refer to the header operator's manual for the suggested knife speed for a variety of crops and conditions.

**NOTE:** The knife speed cannot be programmed outside the range specified for each header.

**NOTE:** The speed can be adjusted without shutting down the machine, although it is recommended that the windrower be stopped to enable you to reprogram the WCM.

## OPERATION

### Setting Knife Speed “On the Go”



Figure 4.160

A - Display  
D - Program

B - Slower (left arrow)  
E - Select

C - Faster (right arrow)



## CAUTION

Check to be sure all bystanders have cleared the area.

Display and set knife speed “on the go” as follows:

1. Engage header.
2. Press PROGRAM (D) and SELECT (E).
3. DISPLAY (A) shows **#### KNIFE SPM.**
4. To adjust knife speed, press ARROW (B) or ARROW (C).  
Display (A) shows new knife speed **#### KNIFE SPM.**

## OPERATION

### 4.7 Operating with an R-Series Header

The M205 is factory equipped with hydraulics and connections to run the R-Series Rotary Disc headers.

The R85 16-foot header is factory equipped with the hydraulic connections for attachment to the windrower.

The R85 13-foot header and the R80 13- and 16-foot headers are shipped without the motor and hoses installed, and the installation of a separate motor and hose bundle is necessary.

If required, obtain kit MD #B5456 from your MacDon Dealer, and install it in accordance with the instructions supplied with the kit.

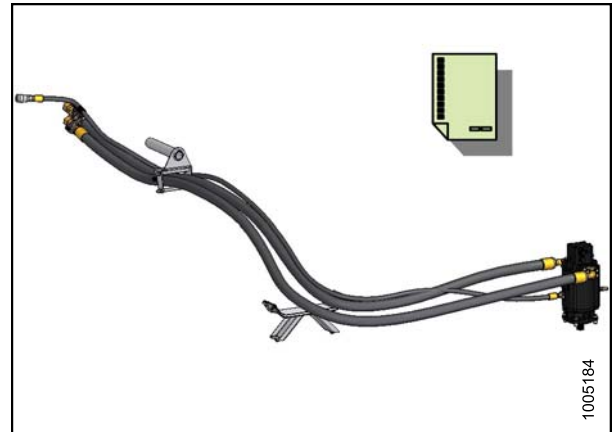


Figure 4.161: Kit MD #B5456

#### 4.7.1 Attaching an R-Series Header

1. Remove hairpin (B) from pin (A), and remove pin from on left and right header boots (C) on header.

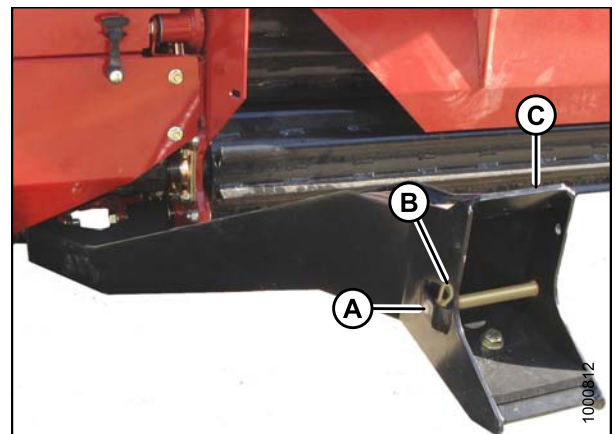


Figure 4.162

### CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

### CAUTION

Check to be sure all bystanders have cleared the area.



Figure 4.163

## OPERATION

2. Start the engine, and press HEADER DOWN button (A) on the Ground Speed Lever (GSL) to fully retract header lift cylinders.

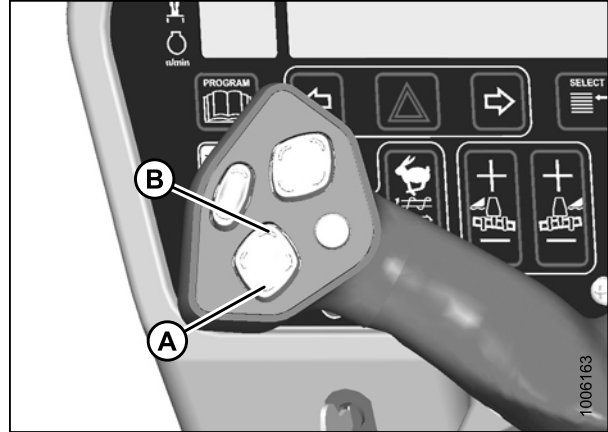


Figure 4.164

3. Slowly drive windrower forward so that feet (B) on windrower enter boots (A) on the header.
4. Continue to drive slowly forward until feet engage the boots, and header nudges forward.

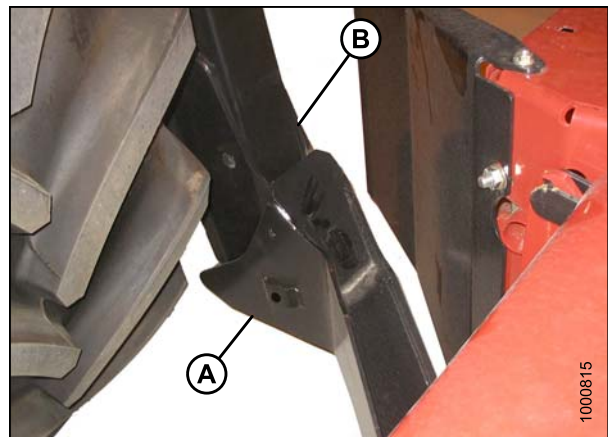


Figure 4.165

5. Adjust the position of the center-link cylinder with the REEL UP (A), REEL DOWN (B), and HEADER TILT switches (C) and (D) on the GSL to position the hook above the header attachment pin.

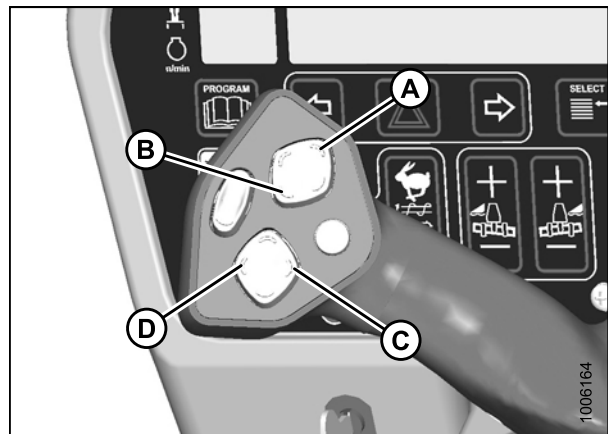


Figure 4.166



## OPERATION

6. Lower the center-link onto the header with REEL DOWN switch until it locks into position (hook release is down).
7. Check that center-link is locked onto header pin by pressing the REEL UP switch on the GSL.

### IMPORTANT

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

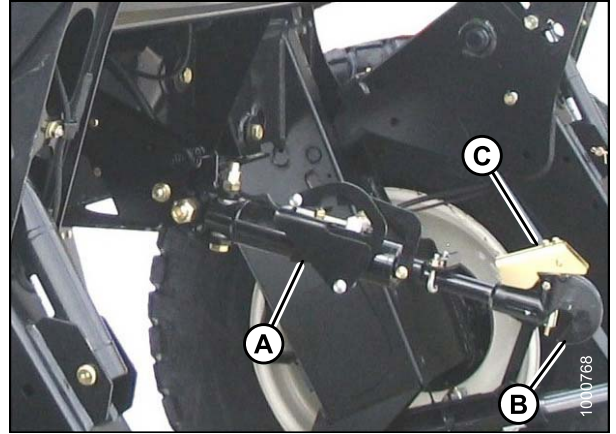


Figure 4.167

8. Start engine, and press HEADER UP (B) switch to raise header to maximum height.
9. If one end of the header does not raise fully, the lift cylinders require re-phasing. If re-phasing is needed, proceed as follows:
  - a. Press and hold the HEADER UP (B) switch until both cylinders stop moving.
  - b. Continue to hold the switch for 3–4 seconds.
  - c. Cylinders are phased.
10. Stop engine, and remove key from ignition.

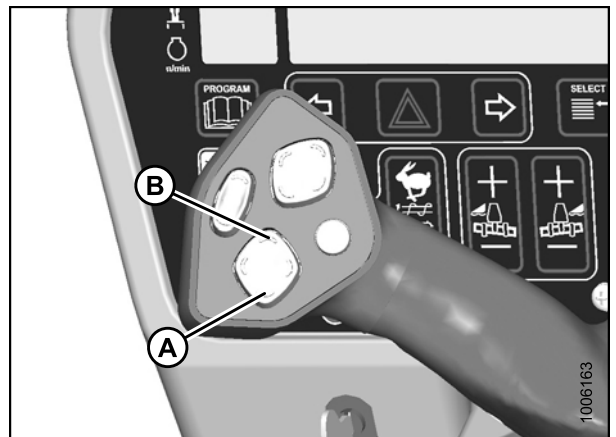


Figure 4.168

## OPERATION

11. Pull lever (A), and rotate toward header to lower cylinder safety prop (B) onto cylinder. Repeat for opposite cylinder.

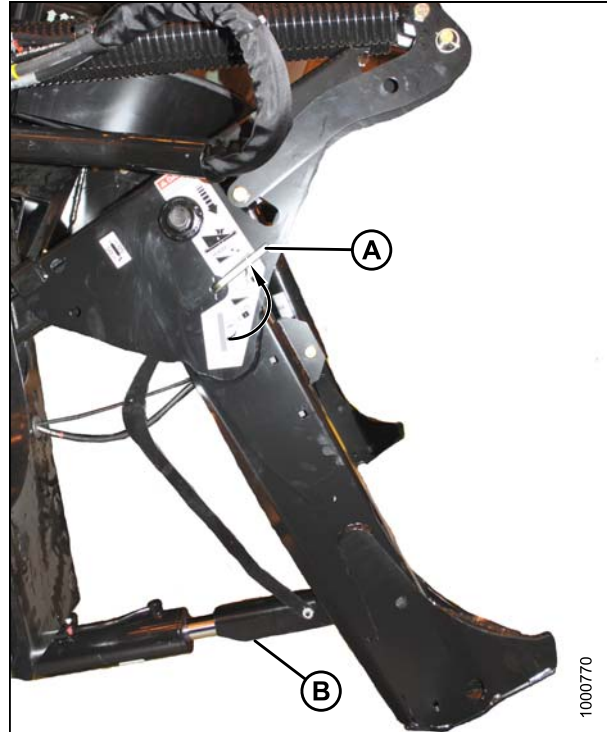


Figure 4.169

12. Install pin (A) through each boot and foot, and secure with hairpin (B). Do this to both sides.

### IMPORTANT

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

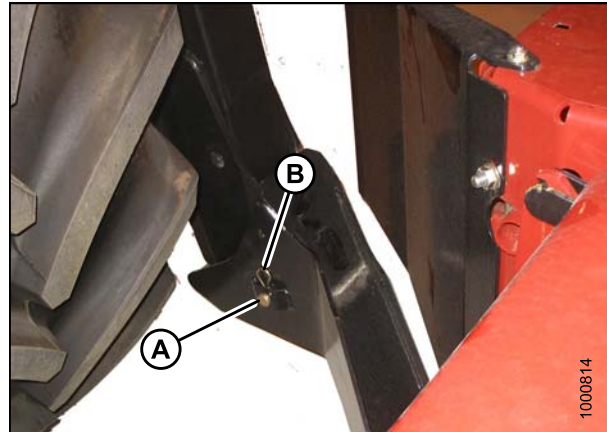


Figure 4.170

## OPERATION

13. Remove pin from storage position (B) in linkage, and insert in hole (A) to engage float springs. Secure with hairpin.

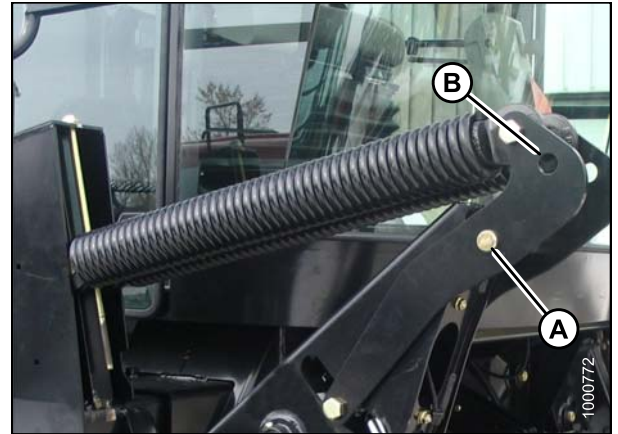


Figure 4.171

14. To disengage lift cylinder safety props, turn lever (A) away from header to raise safety prop until lever locks into vertical position. Repeat for opposite cylinder.
15. Start engine and lower header to the ground. Stop engine and remove key from ignition.
16. Connect header drive hydraulics and electrical harness to header. Refer to your rotary disc header operator's manual for additional information.

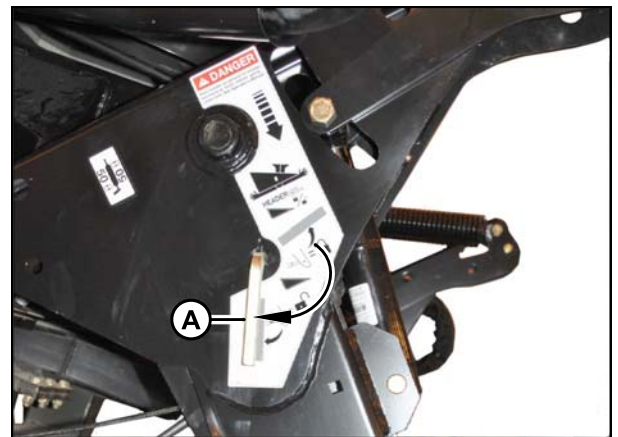


Figure 4.172

### 4.7.2 Detaching an R-Series Header

1. Start engine, and press HEADER UP (B) switch to raise header to maximum height.
2. If one end of the header does not raise fully, the lift cylinders require re-phasing. If re-phasing is needed, proceed as follows:
  - a. Press and hold the HEADER UP (B) switch until both cylinders stop moving.
  - b. Continue to hold the switch for 3–4 seconds.
  - c. Cylinders are phased.

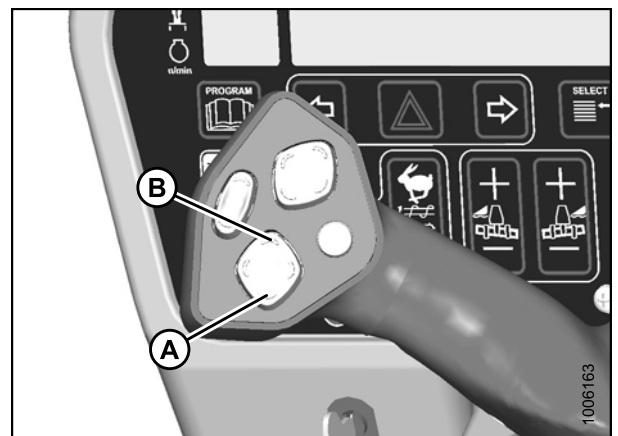


Figure 4.173

## OPERATION

3. Pull lever (A), and rotate toward header to lower cylinder safety prop (B) onto cylinder. Repeat for opposite cylinder.
4. Stop engine, and remove key from ignition.

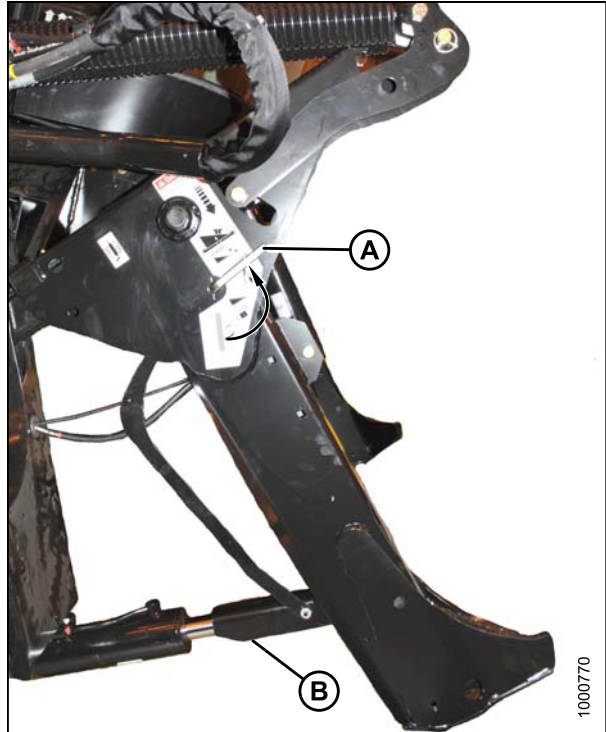


Figure 4.174

5. Remove hairpin from pin (A), and remove pin from left and right header boots (B) on header.

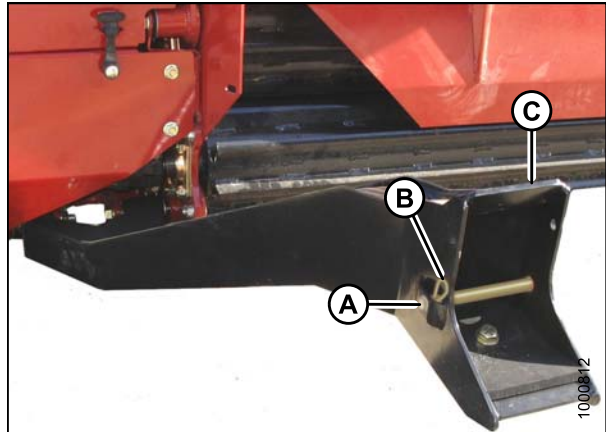


Figure 4.175

## OPERATION

6. Remove pin from location (A) to disengage float springs, and insert in storage hole (B). Secure with hairpin.



### CAUTION

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

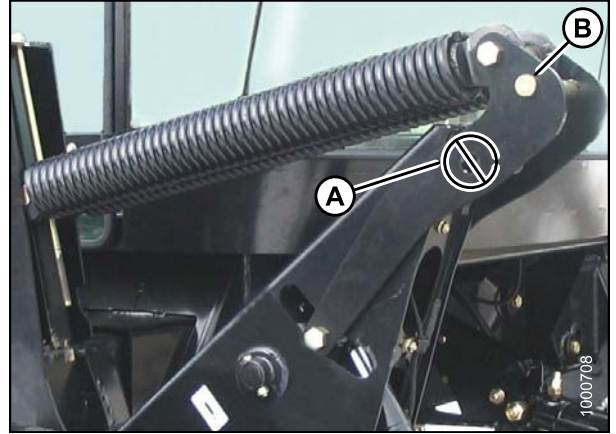


Figure 4.176

7. To disengage lift cylinder safety props, turn lever (A) away from header to raise safety prop until lever locks into vertical position. Repeat for opposite cylinder.
8. Start engine, choose a level area and lower header to the ground. Stop engine and remove key from ignition.



Figure 4.177

9. Use HEADER TILT cylinder switches on GSL to release load on center-link cylinder (A).
10. Lift hook release (B).
11. Press REEL UP switch on GSL to disengage the center-link hook (C) from the header.

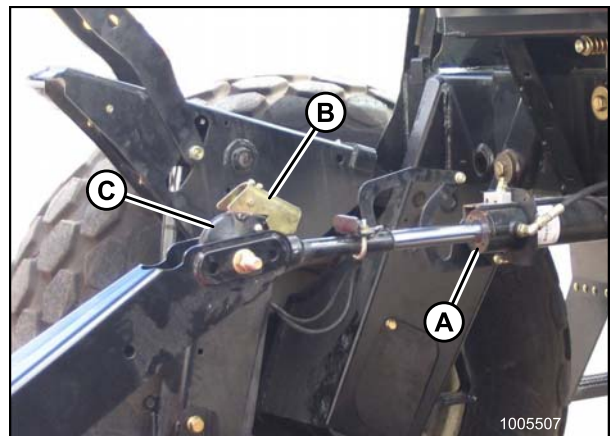


Figure 4.178

## OPERATION

12. Disconnect header drive hydraulics (A) and electrical harness (B) and store in support on windrower. Refer to your rotary disc header operator's manual for further information.
13. Slowly back windrower away from header.

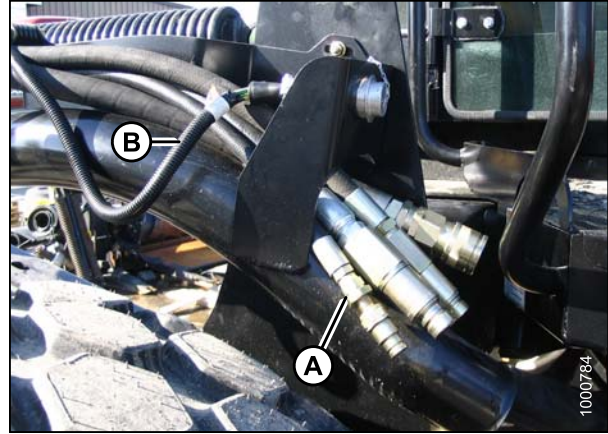


Figure 4.179

14. Reinstall pin (A) through each boot (C), and secure with hairpin (B). Do this to both sides.

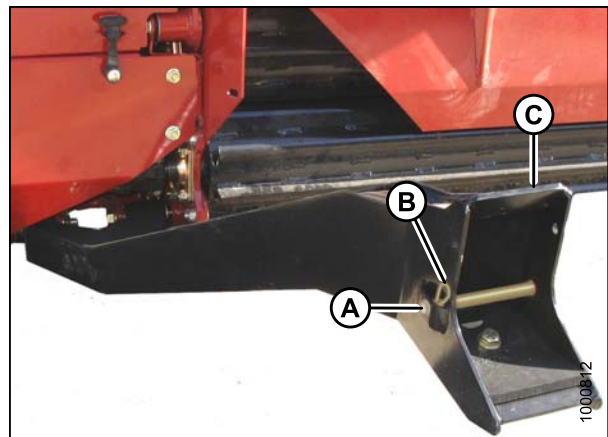


Figure 4.180

### 4.7.3 Disc Speed

The ideal speed of the discs should be such that a clean cut is achieved. Crop types and conditions usually influence the disc and forward speeds.

The Windrower Control Module (WCM) reads a code from the header that determines the speed range and the minimum speed when the header is first attached to the windrower.

The desired speed can be programmed on the Cab Display Module (CDM), and is stored in the WCM memory so that if the header is detached and then reattached to the windrower, the disc will operate at the original set-point.

If no header code is detected, the CDM displays NO HEADER, and the disc speed reverts to a pre-set range that can be changed by the Operator.

Refer to the header operator's manual for the suggested disc speed for a variety of crops and conditions.

## OPERATION

### Setting Disc Speed

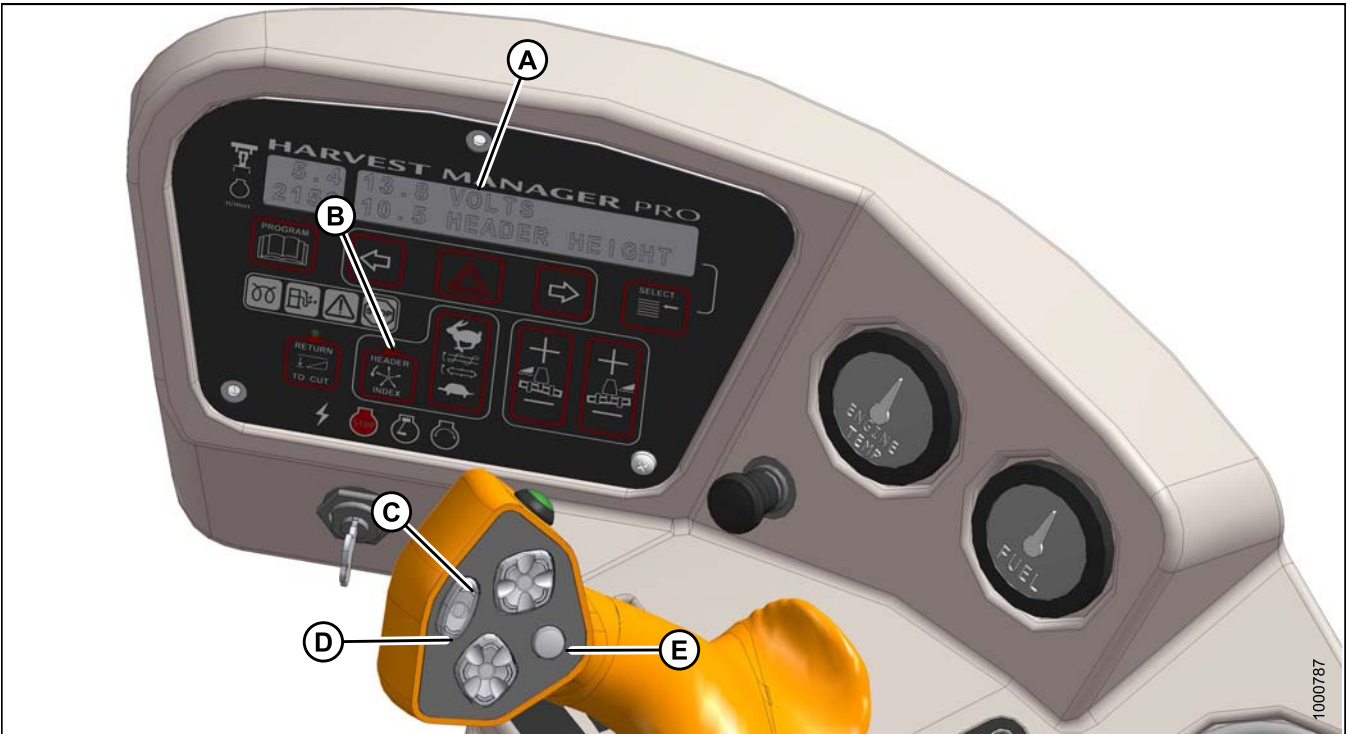


Figure 4.181

A - Display

B - Header index

C - Fast

D - Slow

E - Display selector



## CAUTION

Check to be sure all bystanders have cleared the area.

Display and set the desired disc speed as follows:

1. Engage header.
2. Set HEADER INDEX switch (B) to **OFF**.
3. On Ground Speed Lever (GSL) press FAST (C) or SLOW (D) until desired disc speed is displayed at (A). Display (A) shows **#### DISC RPM**.

#### = RPM





## 5 Maintenance and Servicing

### 5.1 Maintenance Specifications

#### 5.1.1 Torque Specifications

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

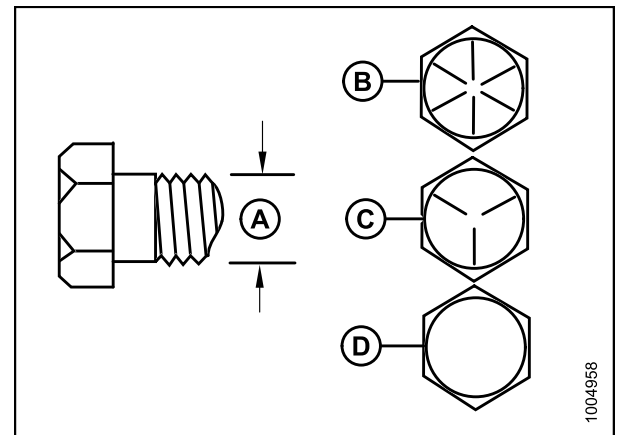
- Tighten all bolts to the torques specified in chart (unless otherwise noted throughout this manual).
- Replace hardware with the same strength and grade bolt.
- Check tightness of bolts periodically, using the tables below as a guide.
- Torque categories for bolts and cap screws are identified by their head markings.

#### SAE Bolt Torque Specifications

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

**Table 5.1 SAE Grade 5 Bolt and Grade 5 Free Spinning**

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



**Figure 5.1**

A - Nominal size  
C - SAE-5

B - SAE-8  
D - SAE-2

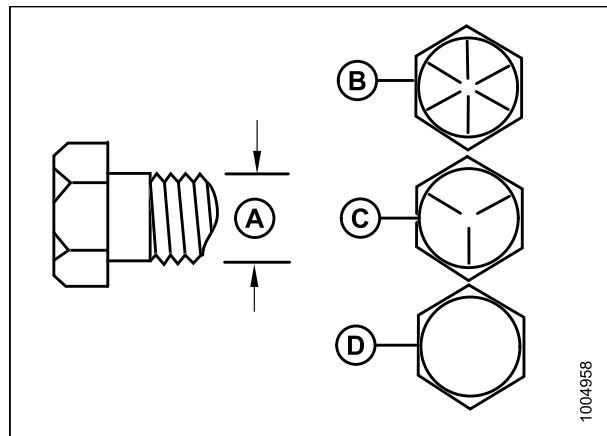
## MAINTENANCE AND SERVICING

**Table 5.2 SAE Grade 5 Bolt and Grade 5 Distorted Thread Nut**

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

**Table 5.3 SAE Grade 8 Bolt and Grade 8 Distorted Thread Nut**

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



**Figure 5.2**

A - Nominal size  
C - SAE-5

B - SAE-8  
D - SAE-2

## MAINTENANCE AND SERVICING

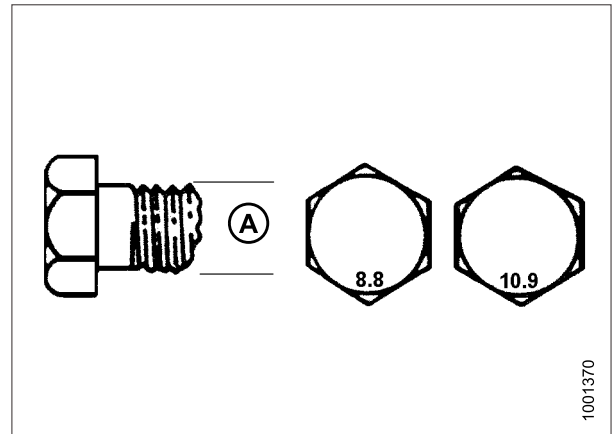
**Table 5.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut**

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

### *Metric Bolt Specifications*

**Table 5.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut**

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



**Figure 5.3**  
A - Nominal size

## MAINTENANCE AND SERVICING

**Table 5.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut**

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

**Table 5.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut**

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

**MAINTENANCE AND SERVICING**

**Table 5.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut**

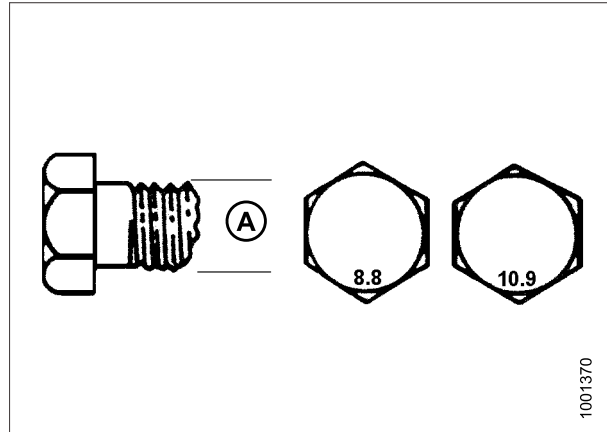
Nominal size	Torque (ft-lbf)(*in-lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*12	*13	1.3	1.5
3.5-0.6	*19	*21	2.1	2.3
4-0.7	*28	*31	3.1	3.4
5-0.8	*56	*62	6.3	7
6-1.0	*95	*105	10.7	11.8
8-1.25	19	21	26	29
10-1.5	38	42	51	57
12-1.75	66	73	90	99
14-2.0	106	117	143	158
16-2.0	165	182	222	246
20-2.5	322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

## MAINTENANCE AND SERVICING

### Metric Bolt Specifications Bolting into Cast Aluminum

**Table 5.9 Metric Bolt Bolting into Cast Aluminum**

Nominal size	Bolt torque			
	8.8 (cast aluminum)		10.9 (cast aluminum)	
	ft-lbf	N-m	ft-lbf	N-m
M3			1	
M4			2.6	4
M5			5.5	8
M6	6	9	9	12
M8	14	20	20	28
M10	28	40	40	55
M12	52	70	73	100
M14				
M16				

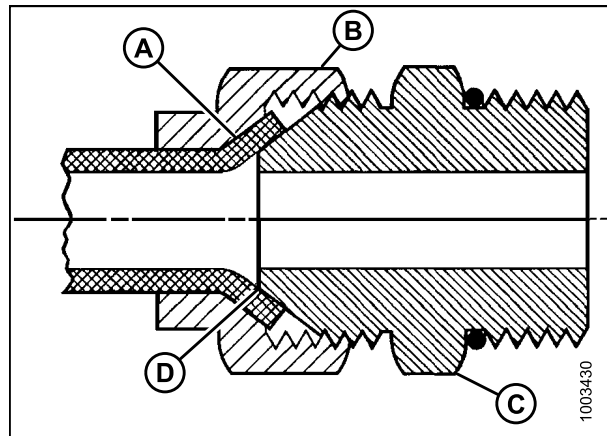


**Figure 5.4**

A - Nominal size

### Flare-Type Hydraulic Fittings

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection, and hand-tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body, and with the second, tighten the swivel nut to the torque shown.



**Figure 5.5**

A - Flare

B - Nut

C - Flareseat

D - Body

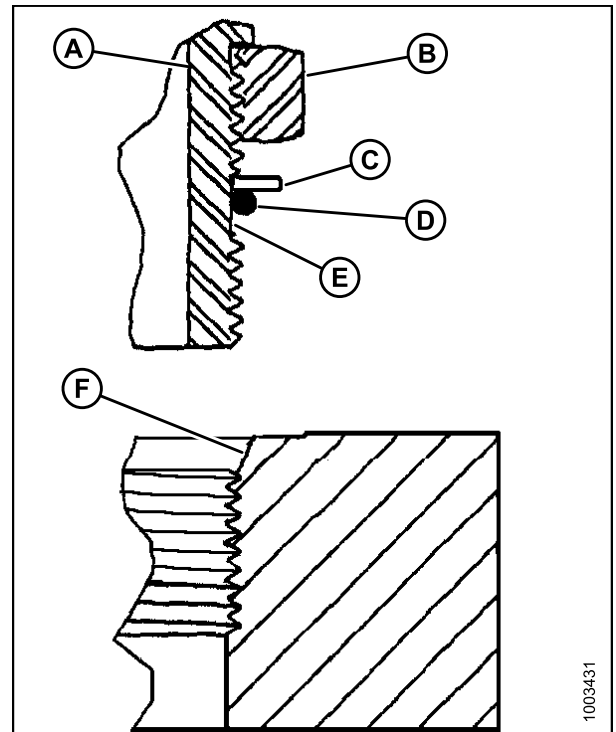
## MAINTENANCE AND SERVICING

**Table 5.10 Flare-type hydraulic tube fittings**

SAE NO.	Tube size O.D. (in.)	Thread size (in.)	Nutsizes across flats (in.)	Torque value <sup>14</sup>		Flats from finger tight (FFFT)	
				ft-lbf	Nm	Flats	Turns
3	3/16	3/8	7/16	6	8	1	1/6
4	1/4	7/16	9/16	9	12	1	1/6
5	5/16	1/2	5/8	12	16	1	1/6
6	3/8	9/16	11/16	18	24	1	1/6
8	1/2	3/4	7/8	34	46	1	1/6
10	5/8	7/8	1	46	62	1	1/6
12	3/4	1-1/16	1-1/4	75	102	3/4	1/8
14	7/8	1-3/8	1-3/8	90	122	3/4	1/8
16	1	1-5/16	1-1/2	105	142	3/4	1/8

### *O-Ring Boss (ORB) Hydraulic Fittings*

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back off the lock nut until washer (A) bottoms out at top of groove (B) in fitting.
3. Hand-tighten fitting until back up washer (A) or washer face (if straight fitting) bottoms on part face (C) and O-ring is seated.
4. Position angle fittings by unscrewing **NO MORE THAN** one turn.
5. Tighten straight fittings to torque shown.
6. Tighten angle fittings to torque shown in the following table, while holding body of fitting with a wrench.



**Figure 5.6**

A - Fitting      B - Lock nut      C - Washer  
 D - O-ring      E - Groove      F - Seat

14. Torque values shown are based on lubricated connections as in re-assembly.

## MAINTENANCE AND SERVICING

**Table 5.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)**

SAE NO.	Thread size (in.)	Nut size across flats (in.)	Torque value <sup>15</sup>		Flats from finger tight (FFFT) <sup>16</sup>	
			ft-lbf	Nm	Flats	Turns
3	3/8	1/2	6	8	2	1/3
4	7/16	9/16	9	12	2	1/3
5	1/2	5/8	12	16	2	1/3
6	9/16	11/16	18	24	2	1/3
8	3/4	7/8	34	46	2	1/3
10	7/8	1	46	62	1-1/2	1/4
12	1-1/16	1-1/4	75	102	1	1/6
16	1-5/16	1-1/2	105	142	3/4	1/8
20	1-5/8	1-7/8	140	190	3/4	1/8
24	1-7/8	2-1/8	160	217	1/2	1/12

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

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



**Figure 5.7**

15. Torque values shown are based on lubricated connections as in re-assembly.

16. Always default to the torque value for evaluation of adequate torque.

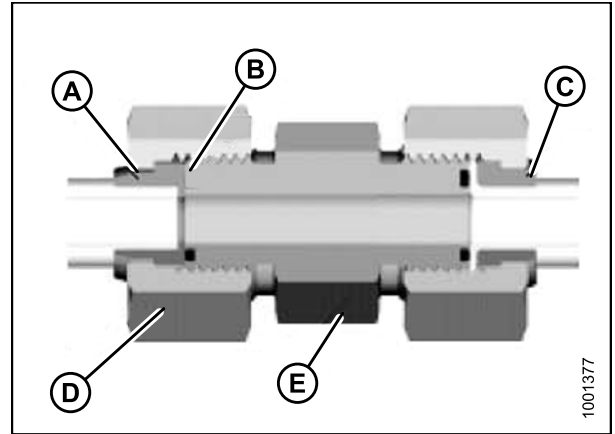


## MAINTENANCE AND SERVICING

2. Apply hydraulic system oil to the O-ring.
3. Align the tube or hose assembly. Ensure that flat face of the mating flange comes in full contact with O-ring.
4. Thread tube or hose nut until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fitting further to a given torque value in the table shown in the opposite column.

**NOTE:** If applicable, always hold the hex on the fitting body to prevent unwanted rotation of fitting body and hose when tightening the fitting nut.

6. When assembling unions or two hoses together, three wrenches will be required.
7. Check the final condition of the fitting.



**Figure 5.8**

A - Brazed sleeve  
C - Two piece sleeve  
E - Fitting body

B - O-ring  
D - Nut

**Table 5.12 O-Ring Face Seal (ORFS) Hydraulic Fittings**

SAE NO.	Thread size (in.)	Tube O.D. (in.)	Torque value <sup>17</sup>		Flats from finger tight (FFFT) <sup>18</sup>	
			ft-lbf	Nm	Tube Nuts	Swivel & Hose
3	<sup>19</sup>	3/16	–	–	–	–
4	9/16	1/4	11–12	14–16	1/4–1/2	1/2–3/4
5	<sup>19</sup>	5/16	–	–	–	–
6	11/16	3/8	18–20	24–27	1/4–1/2	1/2–3/4
8	13/16	1/2	32–35	43–47		
10	1	5/8	45–51	60–68		
12	1-3/16	3/4	67–71	90–95		1/3–1/2
14	1-3/16	7/8	67–71	90–95		
16	1-7/16	1	93–100	125–135		
20	1-11/16	1-1/4	126–141	170–190		
24	2	1-1/2	148–167	200–225	–	–
32	2-1/2	2	–	–	–	–

17. Torque values and angles shown are based on lubricated connection, as in re-assembly.

18. Always default to the torque value for evaluation of adequate torque.

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

## MAINTENANCE AND SERVICING

### 5.1.2 Recommended Fuel, Fluids, and Lubricants

#### *Storing Lubricants and Fluids*

Your machine can operate at top efficiency only if clean fuel and lubricants are used.

- Use clean containers to handle all fuels and lubricants.
- Store in an area protected from dust, moisture, and other contaminants.
- Buy good quality, clean fuel from a reputable dealer.
- Avoid storing fuel over long periods of time. If you have a slow turnover of fuel in windrower tank or supply tank, add fuel conditioner to avoid condensation problems.
- Store fuel in a convenient place away from buildings.

#### *Fuel Specifications*

Use good quality diesel fuel from a reputable supplier. For most year-round service, No. 2 diesel fuel meeting ASTM specification D-975 Grade S15 will provide good performance.

20 °F (-7°C), or is required to operate at colder-than-normal conditions for prolonged periods, use climatized No. 2 diesel fuel, or dilute the No. 2 diesel fuel with 50% No. 1 diesel fuel. This will provide better protection from fuel gelling or wax-plugging of the fuel filters.

**Table 5.13 Fuel Specification**

<b>Fuel</b>	<b>Specification</b>	<b>Sulphur (by weight)</b>	<b>Water and sediment (by volume)</b>	<b>Cetane no. °C</b>	<b>Lubricity</b>
Diesel Grade No. 2	ASTMD-975	0.5% Max.	0.05% Max.	40° Min	520 Microns
Diesel Grade No.1 and 2 mix <sup>20</sup>	n/a	1% Maximum 0.5% Max.Preferred	0.1% Max.	45–55° Cold Weather / High Altitude	460 Microns

In extreme situations, when available fuels are of poor quality or problems exist which are peculiar to certain operations, additives can be used. However, the engine manufacturer recommends consultation with the fuel supplier or engine manufacturer prior to use of fuel additives. Among the situations where additives can prove useful are the following:

- 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 anti-oxidant or storage stability additive can help with fuel system deposits and poor storage stability.
- A lubricity enhancer can be used to increase the lubricity of fuels so that they meet the requirements given in the table on the previous page. Diesel fuel conditioner is available from your Dealer.

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20. Optional when operating temp below 0°C. (32°F)

## MAINTENANCE AND SERVICING

### Lubricants, Fluids, and System Capacities

**Table 5.14 System Capacities**

Lubricant/Fluid	Location	Description	Capacity
Grease	As Required Unless Otherwise Specified.	SAE Multi-Purpose.High Temperature Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base.	
Diesel Fuel	Fuel Tank	Diesel Grade No.2, or Diesel Grade No.1 and 2 mix <sup>21</sup> ; see Section <a href="#">Fuel Specifications, page 212</a> for more information.	97 U.S. Gallons (378 liters)
Hydraulic Oil	Hydraulic Reservoir	SAE 15W-40 Compliant With SAE Specs For API Class SJ and CH-4 Engine Oil	17.2 U.S. Gallons (66 liters)
Gear Lubricant	Gear Box	SAE 75W-90, API Service Class GL-5.Fully Synthetic Gear Lubricant, (SAE J2360 Preferred).	2.2 U.S. Quarts (2.1 liters)
	Wheel Drive <sup>22</sup>		1.5 U.S. Quarts (1.4 liters)
Anti Freeze	Engine Cooling System	ASTM D-4985, Ethylene Glycol with SCA.	5.3 U.S. Gallons (20 liters) <sup>23</sup>
Engine Oil	Engine Oil pan	SAE 15W-40 Compliant With SAE Specs For API Class SJ and CH-4 Engine Oil.	15.0 U.S. Quarts (14.2 liters)
Air Conditioning Refrigerant <sup>24</sup>	Air Conditioning System	R134A	5 lb. (2.27 kg)
Air Conditioning. Compressor Oil <sup>25</sup>	Air Conditioning System Total Capacity	PAG SP-15	8.1 fl. oz. (240 cc)

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:

- Is formulated with a quality nitrite free additive package.
- 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.

21. Optional when operating temp below 32°F.(0°C).

22. SAE 85W-140 API Service Class GL-5. Extreme Pressure Gear Lubricant is used before initial change.

23. Equal Parts With Water, High quality, soft, de-ionized or distilled water as recommended by Supplier.

24. For prior models who have not upgraded to 5 lb. of refrigerant order Kit MD #183180, which includes decal to advise of systems 5 lb. charge requirement. See Service Bulletin 1254.

25. Check to see if oil is present prior to installation. A new compressor (**MD #109617**) comes from the MacDon Parts System with 8.1 fl oz. (240 cc) of PAG SP-15 refrigerant oil inside of it.

## MAINTENANCE AND SERVICING

# IMPORTANT

Do NOT use cooling system sealing additives or antifreeze that contains sealing additives. Do NOT mix ethylene glycol and propylene glycol base coolants. Do NOT use coolants that contain nitrites.

### *Filter Part Numbers*

**Table 5.15 M205 Filter Part Numbers**

<b>Filter</b>	<b>Part number</b>
Engine Oil Filter	MD #111974
Charge Oil Filter	MD #112419
Return Oil Filter	MD #112419
Lift Oil Filter	MD #112419
Primary Fuel Filter Element	MD #111972
Secondary Fuel Filter Element	MD #166312
Fuel Filler Filter	MD #163989
Primary Element (CAB)	MD #139149
Primary Air Filter Element	MD #138685
Secondary Air Filter Element	MD #139077

## MAINTENANCE AND SERVICING

### 5.1.3 Conversion Chart

Quantity	Inch-Pound units		Factor	SI units (metric)	
	Unit name	Abbreviation		Unit name	Abbreviation
Area	acres	acres	$\times 0.4047 =$	hectares	ha
Flow	US gallons per minute	gpm	$\times 3.7854 =$	liters per minute	L/min
Force	pounds force	lbf	$\times 4.4482 =$	Newtons	N
Length	inch	in.	$\times 25.4 =$	millimeters	mm
	foot	ft.	$\times 0.305 =$	meters	m
Power	horsepower	hp	$\times 0.7457 =$	kilowatts	kW
Pressure	pounds per square inch	psi	$\times 6.8948 =$	kilopascals	kPa
			$\times .00689 =$	megapascals	MPa
			$\div 14.5038 =$	bar (non-SI)	bar
Torque	pound feet or foot pounds	ft·lbf	$\times 1.3558 =$	newton meters	N·m
	pound inches or inch pounds	in·lbf	$\times 0.1129 =$	newton meters	N·m
Temperature	degrees fahrenheit	°F	$(^{\circ}\text{F}-32) \times 0.56 =$	Celsius	°C
Velocity	feet per minute	ft/min	$\times 0.3048 =$	meters per minute	m/min
	feet per second	ft/s	$\times 0.3048 =$	meters per second	m/s
	miles per hour	mph	$\times 1.6063 =$	kilometres per hour	km/h
Volume	US gallons	US gal	$\times 3.7854 =$	liters	L
	ounces	oz.	$\times 29.5735 =$	milliliters	ml
	cubic inches	in. <sup>3</sup>	$\times 16.3871 =$	cubic centimetres	cm <sup>3</sup> or cc
Weight	pounds	lbs	$\times 0.4536 =$	kilograms	kg

## MAINTENANCE AND SERVICING

### 5.2 Engine Compartment Hood

The engine hood has two open positions. The lowest is for general maintenance such as checking and adding fluid, servicing the cooling box, etc. The highest position accommodates full access to the engine bay.

#### 5.2.1 Opening Hood (Lower Position)

### DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Stop the engine and remove the key.
2. Locate latch (A) behind grill and lift to release hood.
3. Raise hood until strap (B), which should be looped under hooks (C) and (D), stops it at approximately a 40° angle.
4. Remove strap from hook (C) and allow hood to raise slightly further.

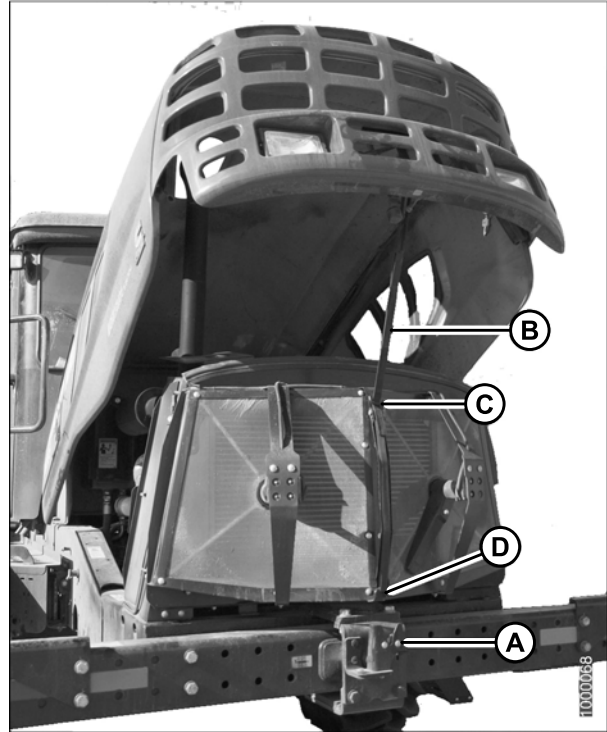


Figure 5.9

## MAINTENANCE AND SERVICING

### 5.2.2 Closing Hood (Lower Position)

1. Grasp the strap at (B), and loop under upper hook (C).

### IMPORTANT

Failure to hook strap may result in it becoming entangled with the screen cleaners or the latch.

2. Pull down on strap (B), grasp the hood when within reach, and lower until hood engages latch (A).

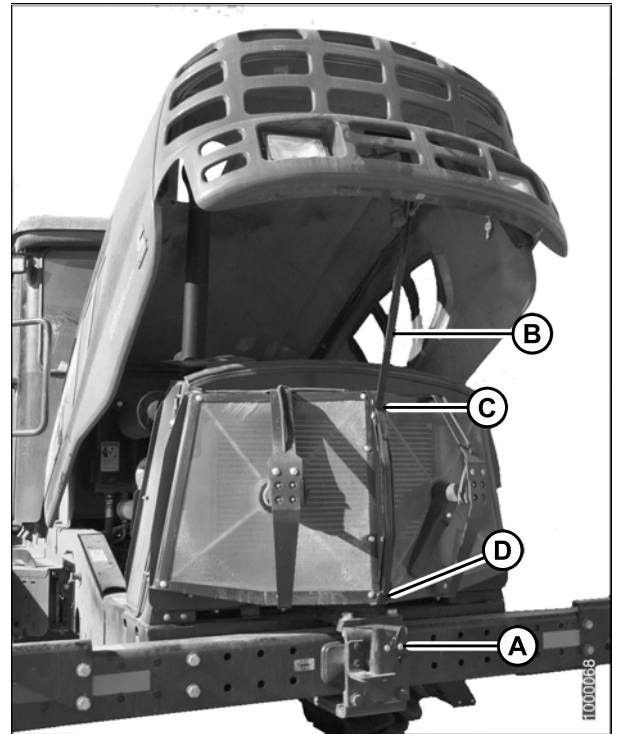


Figure 5.10

### 5.2.3 Opening Hood (Highest Position)



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Stop the engine and remove the key.
2. Locate latch (A) behind grill, and lift to release hood.
3. Raise hood until strap (B) [which should be looped under hooks (C) and (D)] stops it at approximately a 40° angle.
4. Remove strap from hook (C), and allow hood to raise slightly further.
5. Remove strap from hook (D), and allow hood to raise fully to approximately 65°.

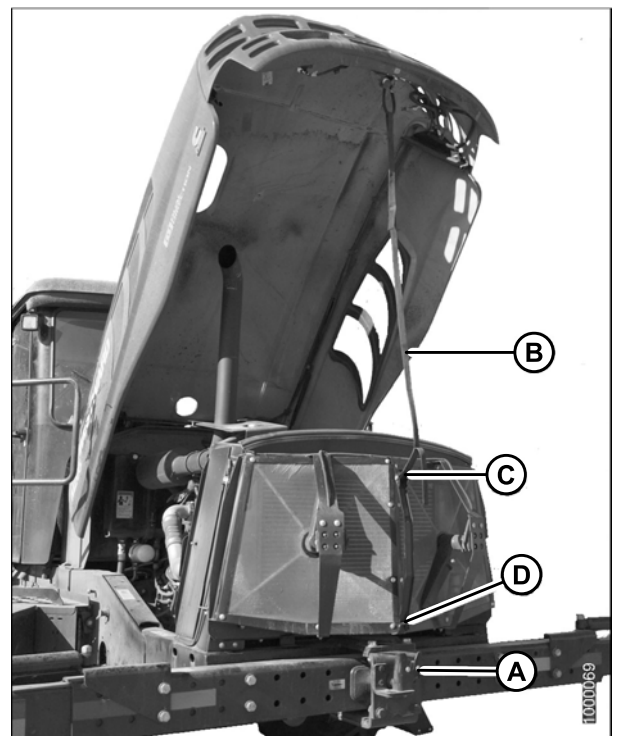


Figure 5.11

## MAINTENANCE AND SERVICING

### 5.2.4 Closing Hood (Highest Position)

1. Pull down on strap (B), and loop under lower hook (D).
2. Grasp the strap, and loop under upper hook (C).

### **IMPORTANT**

**Failure to hook strap may result in it becoming entangled with the screen cleaners or the latch.**

3. Pull down on strap, grasp the hood when within reach, and lower until hood engages latch (A).

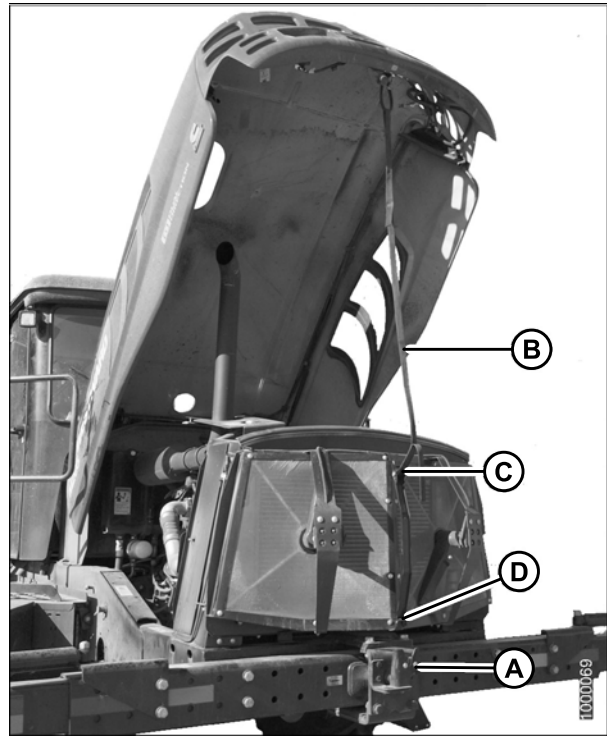


Figure 5.12



## MAINTENANCE AND SERVICING

### 5.3 Maintenance Platforms

Swing away platform/stair units are provided on both sides of the windrower for access to the operator's station and engine bay maintenance.

To improve access to the hydraulics plumbing or battery, the platforms can be swung away from the windrower.

The maintenance platforms have two positions:

1. Standard
2. Major Service

#### 5.3.1 Opening Platforms (Standard Position)

1. Approach the platform/stair unit (A) or (B) that you want to move. This procedure describes how to open the cab-forward left platform (A). The same procedure is used for the right platform (B).

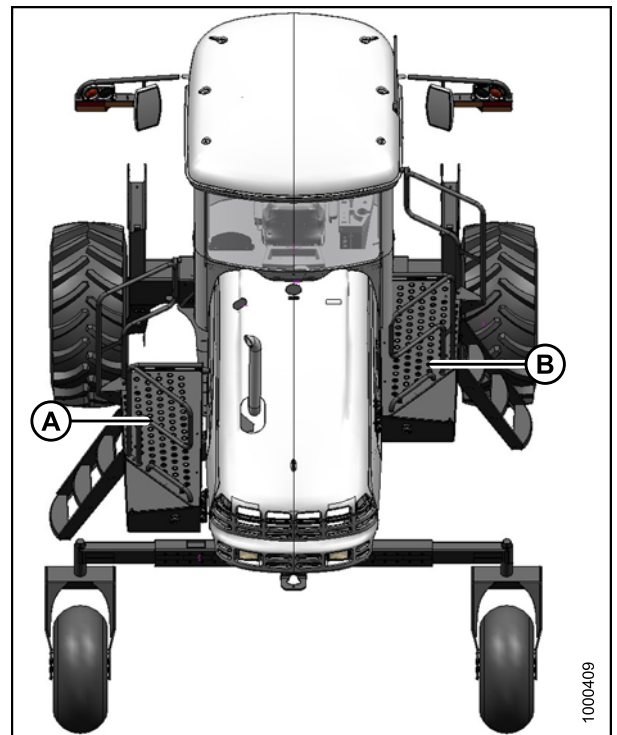


Figure 5.13

2. Push latch (A), and pull platform (B) toward walking beam until it stops and latch re-engages in open position.

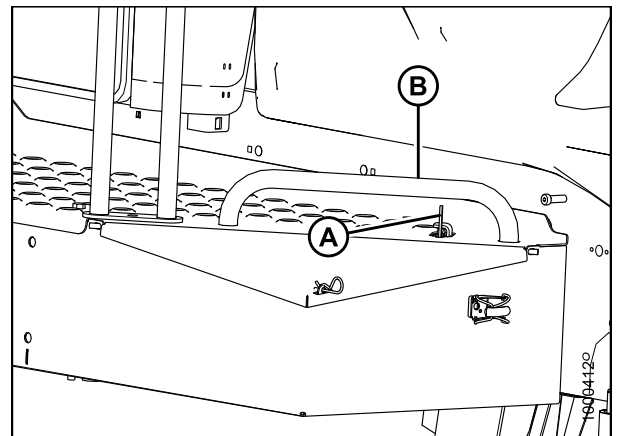


Figure 5.14

## MAINTENANCE AND SERVICING

### 5.3.2 Closing Platforms (Standard Position)

This procedure describes how to close the cab-forward left platform (A). The same procedure is used to close the right platform (B).

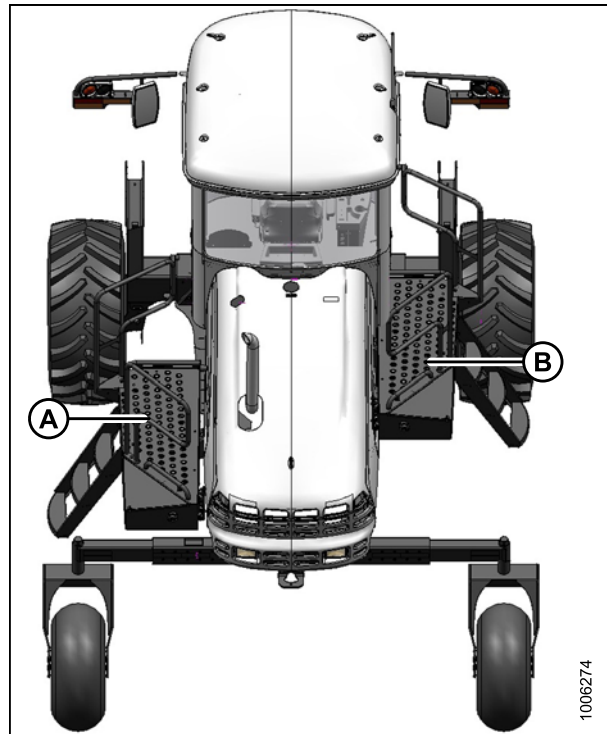


Figure 5.15

1. If platform is latched in the open position, push latch (A) to unlock it.
2. Grasp handle (B) on platform, and push forward until it stops and latch (A) re-engages.

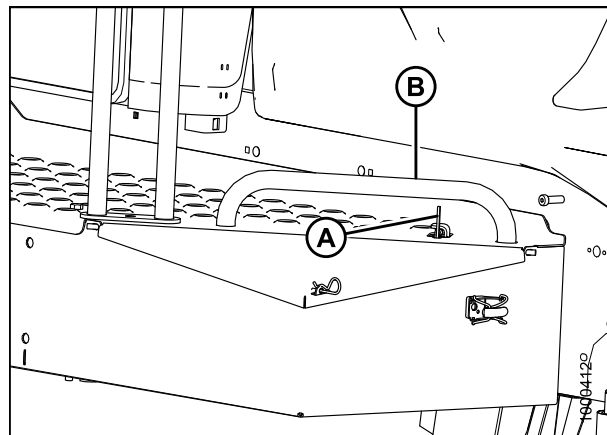


Figure 5.16

### 5.3.3 Opening Platforms (Major Service Position)

To improve access to the hydraulics plumbing or battery, the platforms can be swung away from the windrower.

1. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.

## MAINTENANCE AND SERVICING

# IMPORTANT

Failure to open hood will result in damage to the hood when the platform is repositioned.

2. Approach the platform/stair unit (A) or (B) that you want to move. This procedure describes how to open the cab-forward left platform (A). The same procedure is used to for the right platform (B).

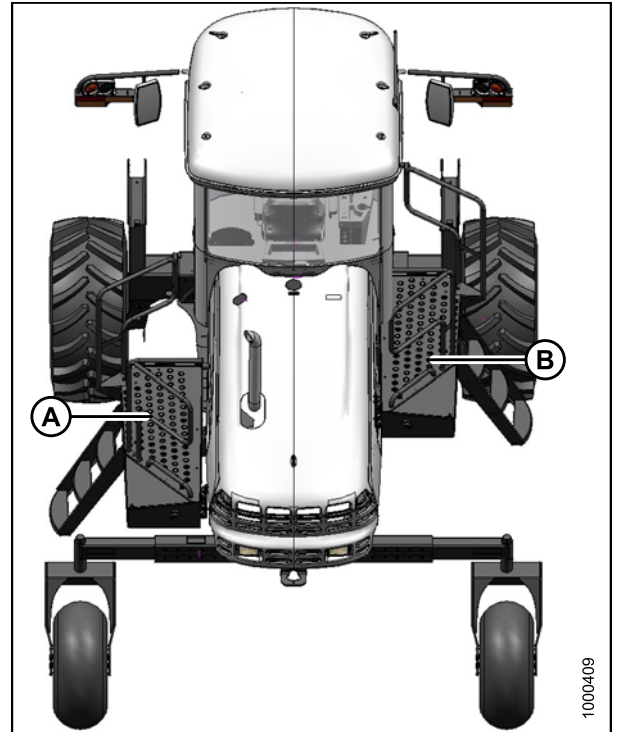


Figure 5.17

3. Unlock latch (A), and move platform (B) toward open position. Do **NOT** lock in full aft position.

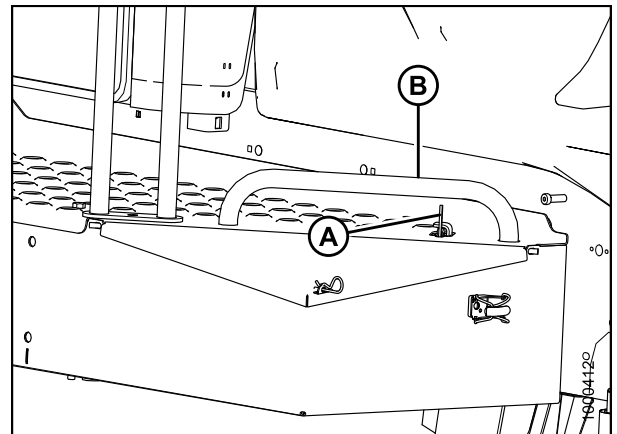


Figure 5.18

## MAINTENANCE AND SERVICING

4. Remove the nut and bolt that secures the link (A) to the frame. Swing link (A) out of the way.
5. Pull the front (cab-forward) end of platform away from frame while moving it towards the walking beam. Aft corner (B) of platform should project slightly into engine bay when optimum opening is reached.

### CAUTION

Do NOT stand on the platform in the unlocked position. It is unstable and may result in a fall.

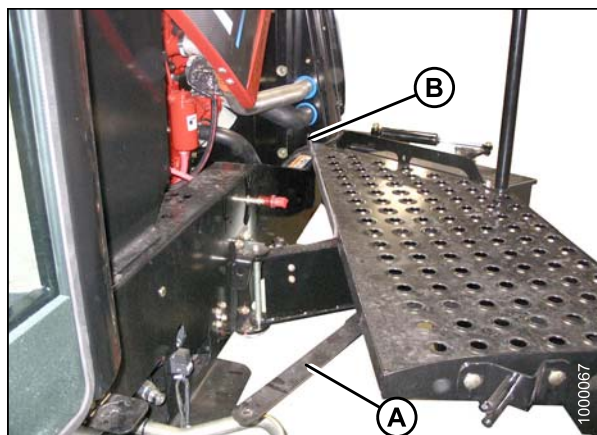


Figure 5.19

### 5.3.4 Closing Platforms (Major Service Position)

### CAUTION

Do not stand on the platform in the unlocked position. It is unstable and may result in a fall.

1. Swing link (A) all the way forward.
2. Push the front (cab-forward) end of platform towards the frame while moving the platform forward (cab-forward).
3. Position link (A) on bracket and install bolt and nut. Tighten enough so that link can still swivel on bracket.
4. Move platform (B) forward (cab-forward) until it stops and latch (A) re-engages.
5. Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.

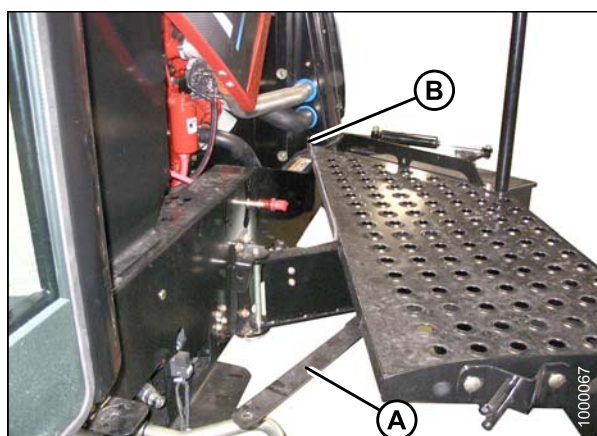


Figure 5.20

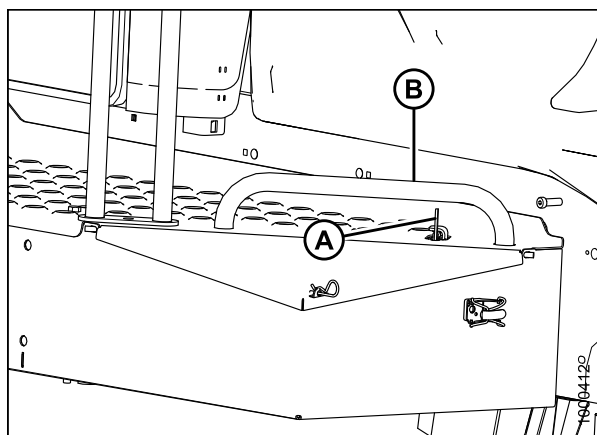


Figure 5.21

## MAINTENANCE AND SERVICING

### 5.4 Windrower Lubrication



#### WARNING

To avoid personal injury, before servicing windrower or opening drive covers, follow procedures in the SAFETY section.

The greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation.

Log hours of operation, and use the Maintenance Checklist provided to keep a record of scheduled maintenance. Refer to Section [5.11.2 Maintenance Schedule / Record, page 335](#).

#### 5.4.1 Lubricating the Windrower



#### DANGER

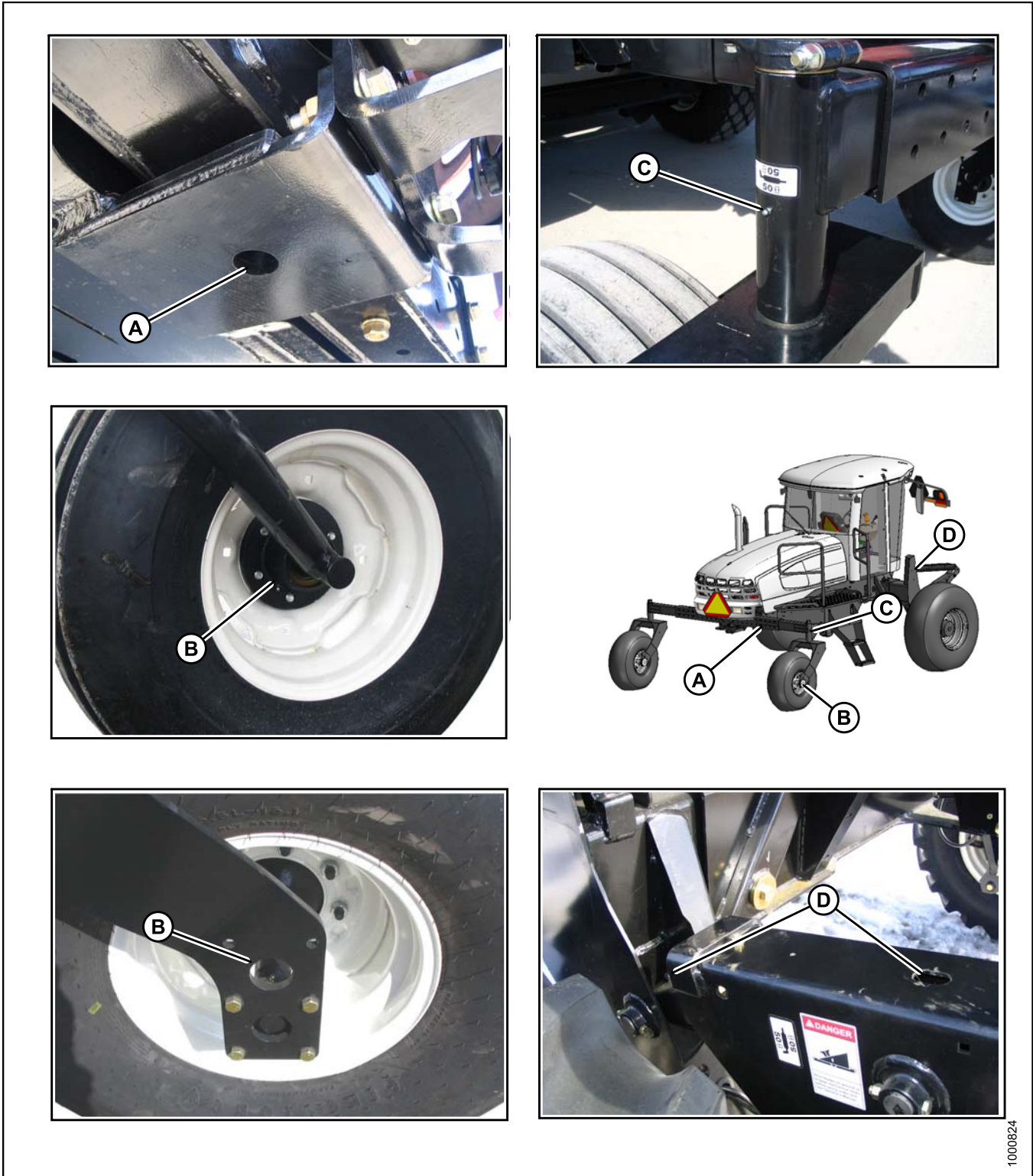
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

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, except where noted. See [Lubricants, Fluids, and System Capacities, page 213](#).
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. If fitting will **NOT** take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

#### 5.4.2 Lubrication Points

Refer to the following illustrations to identify various locations that require lubrication.

# MAINTENANCE AND SERVICING



**Figure 5.22: Lubrication points**

- A - Walking beam pivot
- B - Forked castor wheel bearing(2 PLCS) (both wheels)
- D - Top link (2 PLCS) (both sides)
- B - Formed castor wheel bearing (1 PLC) (both wheels)
- C - Castor pivot (both sides)

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## MAINTENANCE AND SERVICING

### 5.5 Operator's Station

#### 5.5.1 Seat Belts

- Keep sharp edges and items that can cause damage away from the belts.
- From time to time, check belts, buckles, retractors, tethers, slack take-up system and mounting bolts for damage.
- Replace all parts that have damage or wear.
- Replace belts that have cuts that can weaken the belt.
- Check that bolts are tight on the seat bracket or mounting.
- Keep seat belts clean and dry. Clean only with a soap solution and warm water. Do **NOT** use bleach or dye on the belts, as this may weaken the material.

#### 5.5.2 Safety Systems

Perform the following checks on the operator's presence and engine lock-out systems annually or every 500 hours—whichever occurs first.

##### *Checking Operator Presence System*

1. While the windrower engine running, place the Ground Speed Lever (GSL) in NEUTRAL, and turn the steering wheel until it locks.
2. With everyone clear of the machine, engage header drive switch:
  - a. After header drives are running, stand up out of the seat. In approximately 5 seconds, the header should shut off.
  - b. If **NOT**, the Operator Presence System requires adjustment. See your MacDon Dealer.  
**NOTE:** To restart the header, move the HEADER DRIVE switch to OFF position, and back to the ON position again.
3. With the engine running, position the GSL in NEUTRAL, and in N-DETENT:
  - a. Swivel the operator's station, but do not lock into position.
  - b. Move GSL out of N-DETENT. The engine should shut down, and the lower display will flash "LOCK SEAT BASE → CENTER STEERING WHEEL → NOT IN NEUTRAL".
  - c. Swivel and lock the operator's station, and the display should return to normal.
  - d. If the engine does **NOT** shut down, the seat position switches require adjustment. See your MacDon Dealer.
4. With the windrower moving at less than 5 mph (8 km/h):
  - a. Stand up out of the seat.
  - b. The Cab Display Module (CDM) will flash "NO OPERATOR" on the upper line, and "ENGINE SHUT DOWN 5...4...3...2...1...0" on the lower line accompanied by a steady tone. At "0", the engine shuts down.
  - c. If the engine does **NOT** shut down, the Operator Presence System requires adjustment. See your MacDon Dealer.
5. With the windrower moving at more than 5 mph (8 km/h):
  - a. Stand up out of the seat.
  - b. The CDM should beep once and display "NO OPERATOR" on the lower line.

## MAINTENANCE AND SERVICING

- c. If **NOT**, the Operator Presence System requires adjustment. See your MacDon Dealer.

### *Checking Engine Interlock*

With the engine shut down, and the header drive switch engaged, try to start the engine. If the engine turns over, the system requires adjustment. See your MacDon Dealer.

With the engine shut down, steering wheel not centered, and the Ground Speed Lever (GSL) in NEUTRAL, but not in N-DETENT, try to start the engine. The Cab Display Module (CDM) will flash “NOT IN NEUTRAL” on the display upper line, and “CENTER STEERING WHEEL” on the lower line, accompanied by a short beep with each flash, and the engine should **NOT** turn over. If the engine turns over, the system requires adjustment. See your MacDon Dealer.

A properly functioning system should operate as follows. If not, see your MacDon Dealer.

- The starter should engage **ONLY** when the GSL is in N-DETENT, steering wheel locked in the CENTER position, and the header drive switch is in the OFF position.
- Under the above conditions, the brake should engage, and the machine should not move after engine start-up.
- The steering wheel should **NOT** lock with the engine running, and the GSL is out of the N-DETENT.
- The machine should **NOT** move with the engine running, and with the steering wheel still centered, when the GSL is pulled straight out of N-DETENT (not in forward or reverse).

### 5.5.3 Ground Speed Lever (GSL) Adjustments

#### *Adjusting Ground Speed Lever (GSL) Lateral Movement*

The GSL should easily move into the N-DETENT by itself. Adjust the lateral pivot resistance as follows:

## **DANGER**

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Remove the five screws (A) securing control panel (B) to console, remove panel, and store in the tray.

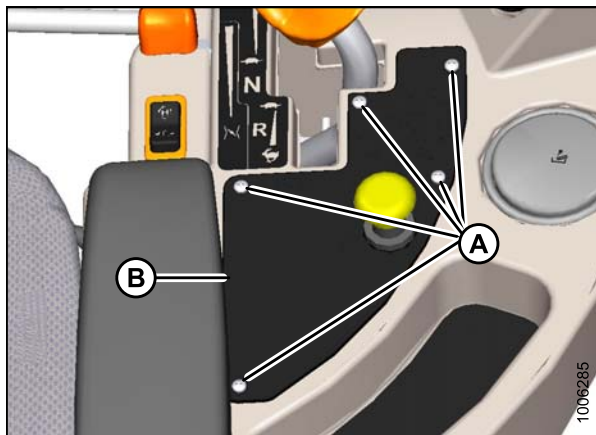


Figure 5.23



## MAINTENANCE AND SERVICING

2. Back off the jam nut (A), and turn nut (B) to either tighten or loosen the pivot. The nut should be tightened to snug, and then backed off 1/2 turn.
3. Tighten jam nut (A).
4. Check movement of GSL.

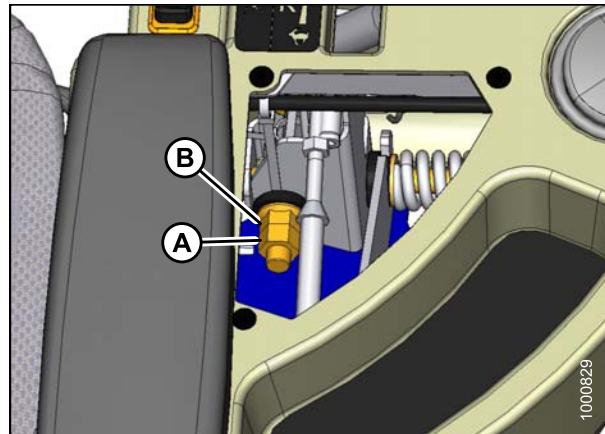


Figure 5.24

5. Reinstall the control panel (B) with the five screws (A).

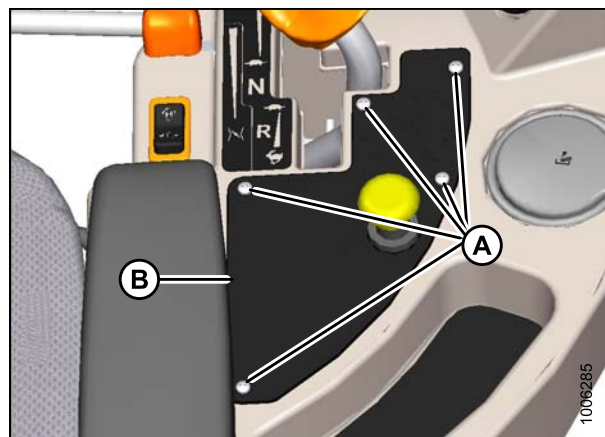


Figure 5.25

### *Adjusting Ground Speed Lever (GSL) Fore-Aft Movement*

The GSL should remain as positioned by the Operator, and yet can be moved without excessive force. The spring is set at the factory to 1-1/4 in. (32 mm).

Adjust as follows:

1. Pull handle (A) toward the operator's seat, and move the console fully forward to ease accessibility from the underside of the console.

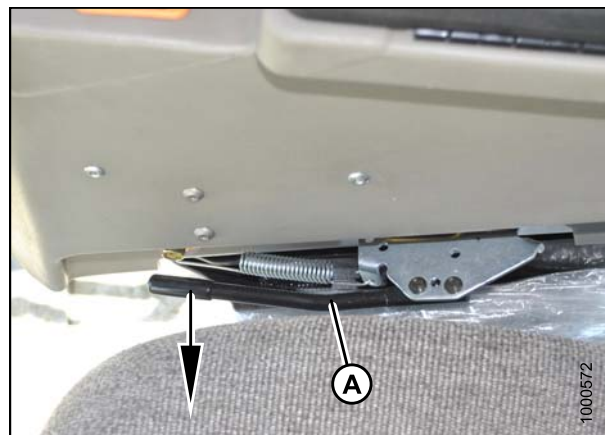
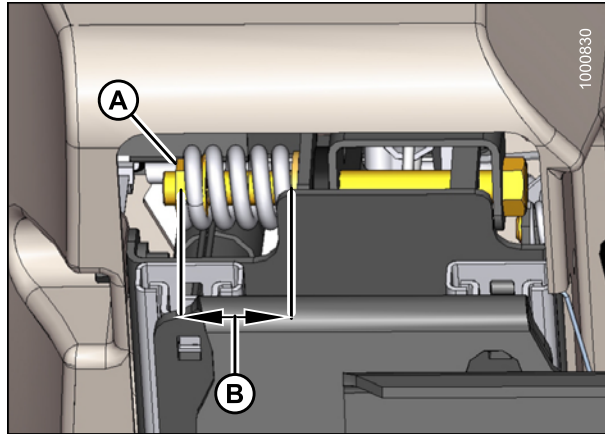


Figure 5.26

## MAINTENANCE AND SERVICING

2. To increase the pivot resistance, turn the nut (A) clockwise to compress the spring.
3. To decrease the resistance, turn the nut (A) counterclockwise to release the spring tension.



**Figure 5.27**

B - Spring dimension 1-1/4 in (32 mm)

### 5.5.4 Steering Adjustments

#### *Checking Steering Link Pivots*

The following checks should be performed annually:



**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Place Ground Speed Lever (GSL) (A) in N-DETENT, shut down engine, and remove key.
2. Beneath the cab, check for evidence of interference of moving parts with hoses, tubes, other linkages.



**Figure 5.28**

# MAINTENANCE AND SERVICING

- 3. Check steering rod bolts (A) for looseness, and ball joints (B) for any perceptible play or movement.

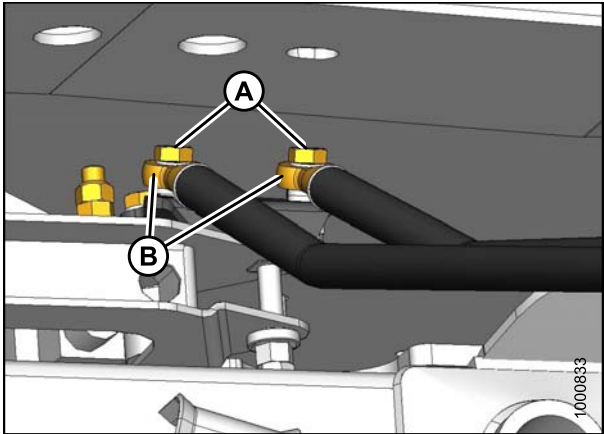


Figure 5.29: Steering Rods

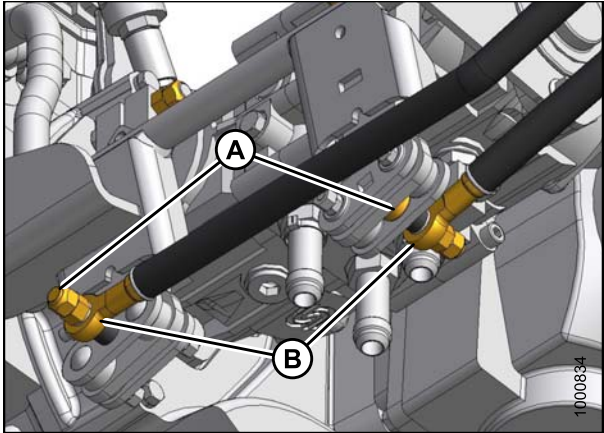


Figure 5.30: Steering Rods (Pump End)

- 4. Check steering link bolts (A) for looseness, and ball joints (B) for any perceptible play or movement.

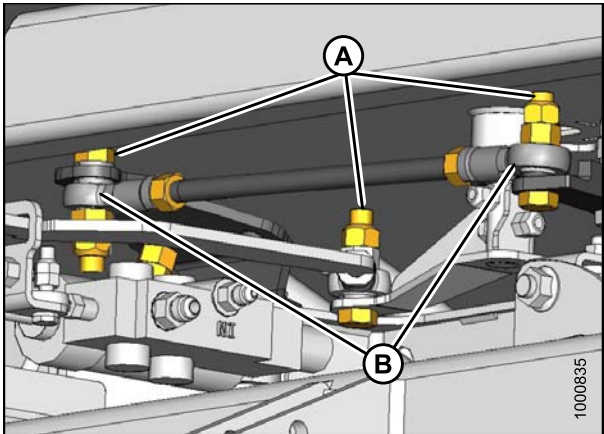


Figure 5.31

## MAINTENANCE AND SERVICING

5. If bolts are loose:
  - a. Back off jam nut (A).
  - b. Tighten inside nut (B) to 70–80 ft·lbf (95–108 N·m).
  - c. Hold inside nut (B), and tighten jam nut (A) to 60–70 ft·lbf (81–95 N·m).
6. If steering link ball joints or steering rod ball joints (D) are loose, they should be replaced. See your MacDon Dealer or refer to the windrower technical manual for replacement procedures.

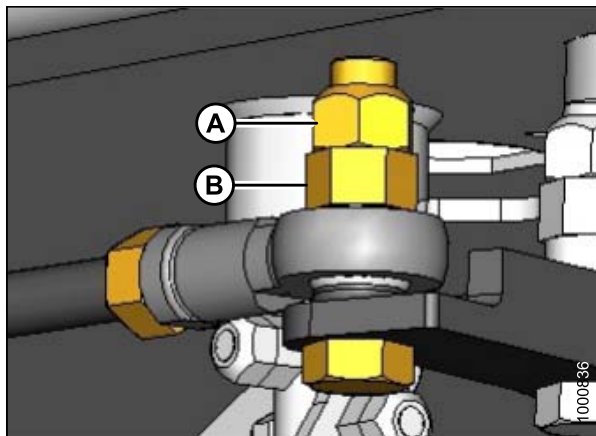


Figure 5.32

7. After replacing parts or making adjustments, perform checks for Neutral interlock and steering lock. Refer to Section [5.5.2 Safety Systems, page 225](#).

### Checking Steering Chain Tension



**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Check steering for binding or excessive play which may be the result of the steering chain being too tight or too loose. If the steering chain does not require adjustment, skip the following steps.
2. If the chain tension requires adjustment, swivel the operator's station to position steering column close to the door.
3. At the base of the steering column, check dimension (C) at spring. It should be 5/8 in. (16 mm).

Adjust dimension as follows:

- a. Loosen nut (A), and turn nut (B) to achieve 5/8 in. (16 mm) dimension (C).
- b. Tighten nut (A) against nut (B) to secure position.
- c. Check that steering chain is taut, and steering shaft is free to rotate.

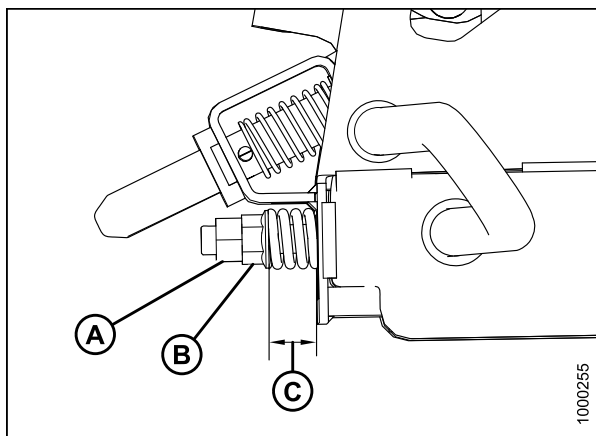


Figure 5.33

## MAINTENANCE AND SERVICING

### 5.5.5 Park Brake

The brake is applied when the interlock is fully engaged. To engage the interlock and the brake, the Ground Speed Lever (GSL) must be in the N-DETENT position, and the steering wheel centered.

#### *Adjusting and Replacing Interlock Switch*

The Ground Speed Lever (GSL) switch is located inside the console, but can easily be removed for adjustment or replacement. Check that GSL contacts switch lever, and pushes plunger.



**DANGER**

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

Adjust or replace switch as follows:

1. Place GSL in N-DETENT, shut down engine and remove key.
2. Remove the five screws (A) securing control panel (B) to console, remove panel, and store in the tray.



Figure 5.34

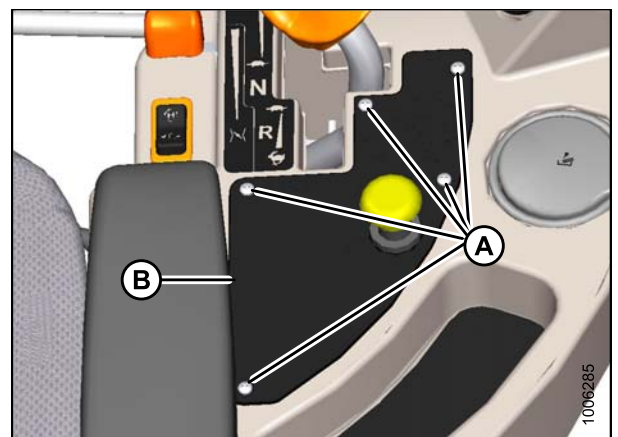


Figure 5.35

## MAINTENANCE AND SERVICING

3. From inside the console, pull switch support (A) so that rubber nuts (B) pull out of mounting holes, and remove switch complete with support from console.

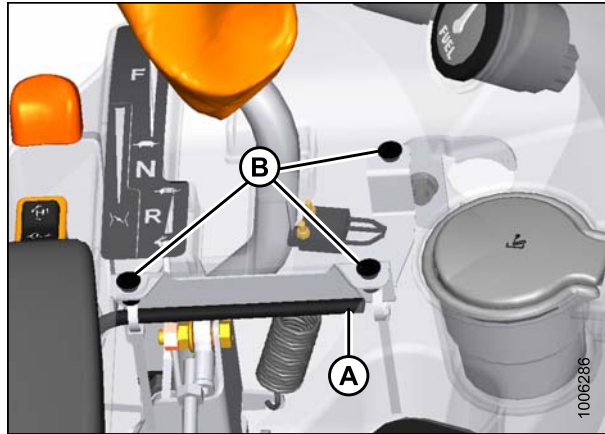


Figure 5.36

4. Adjust switch (A) as follows:
  - a. Loosen screws (B), and rotate switch on support sufficiently so that GSL will contact switch lever (C), and push in the plunger.
  - b. Tighten screws (B).

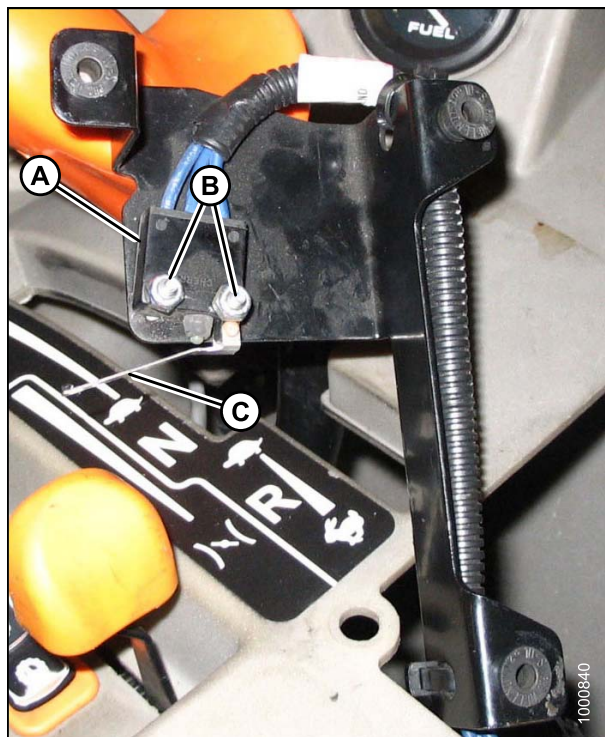


Figure 5.37

## MAINTENANCE AND SERVICING

5. If necessary, replace switch as follows
  - a. Disconnect wiring harness at connector (C).
  - b. Cut nylon ties (A).
  - c. Remove screws (B), and remove switch.
  - d. Install new switch on support with screws (B).
  - e. Secure harness to support (D) with nylon ties (A).
  - f. Connect harness to console wiring (C).
  - g. Position switch support (E) inside console, and push rubber nuts (F) into holes.
  - h. Check operation of switch.
  - i. Reinstall control panel (G) with five screws (H).

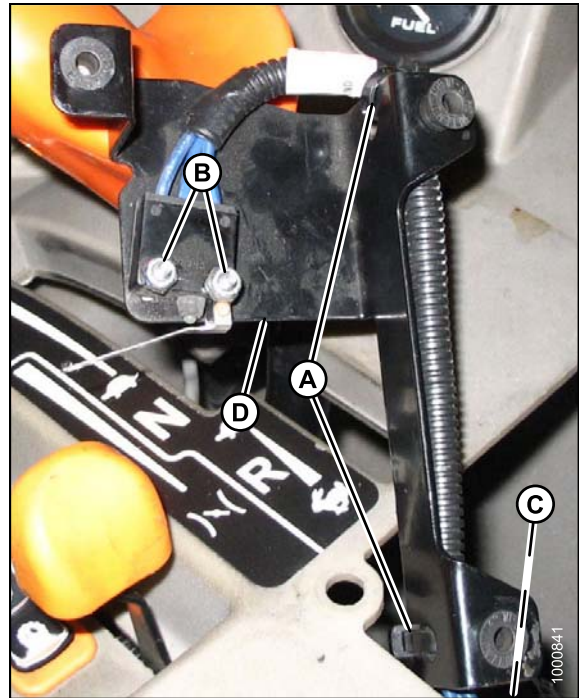


Figure 5.38

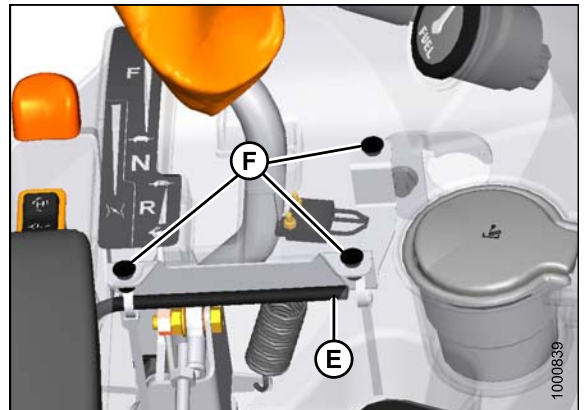


Figure 5.39: Switch support and rubber nuts

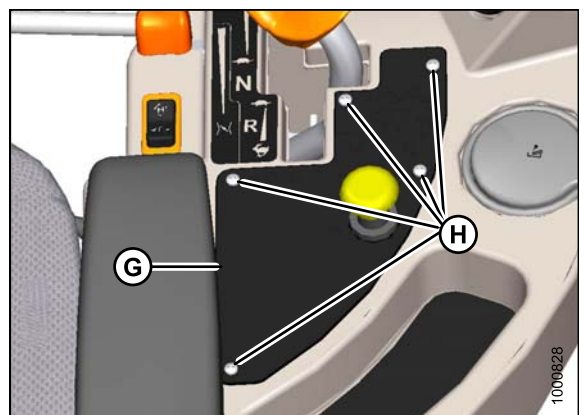


Figure 5.40: Control panel 5 screws

## MAINTENANCE AND SERVICING

### 5.5.6 HVAC System

#### *Fresh Air Intake Filter*

The fresh air filter is located outside the right rear of the cab, and should be serviced every 50 hours under normal conditions, and more frequently in severe conditions.

#### Removing Fresh Air Filter



**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Open the right-hand platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
2. Rotate latch (A), and slide filter tray (B) out of the housing.

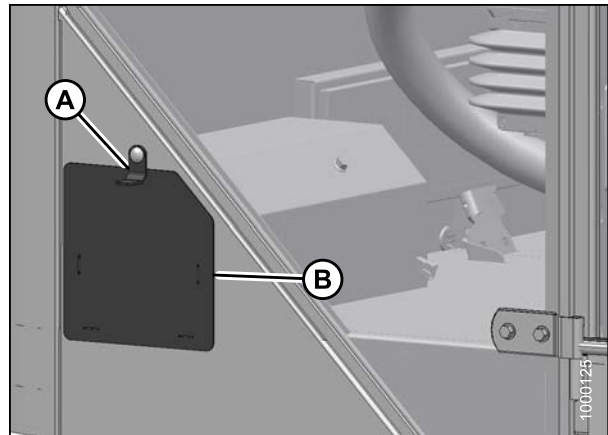


Figure 5.41

3. Remove filter (A) from tray (B).

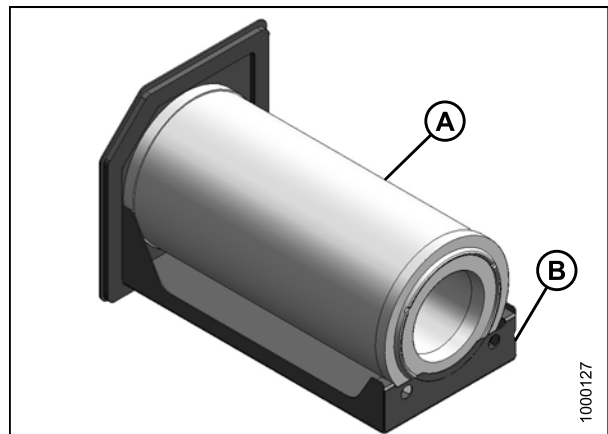


Figure 5.42

#### Inspecting And Cleaning Fresh Air Filter Element

1. Pat sides of element gently to loosen dirt. Do **NOT** tap element against a hard surface.
2. Using a Dry Element Cleaner Gun, clean element with compressed air.
3. Hold nozzle next to inner surface, and move up and down pleats.



## MAINTENANCE AND SERVICING

4. Repeat previous steps to remove additional dirt as required.
5. Hold a bright light inside element, and check carefully for holes. Discard any element that shows the slightest hole.
6. Check outer screen for dents. Vibration would quickly wear a hole in the filter.
7. Check filter gasket for cracks, tears, or other signs of damage. If gasket is damaged or missing, replace element.

### IMPORTANT

Air pressure must NOT exceed 60 psi (414 kPa). Do NOT direct air against outside of element, as dirt might be forced through to inside.

#### Installing Fresh Air Filter

1. Clean tray (B) and interior of filter housing.
2. Place filter (A) onto tray (B).

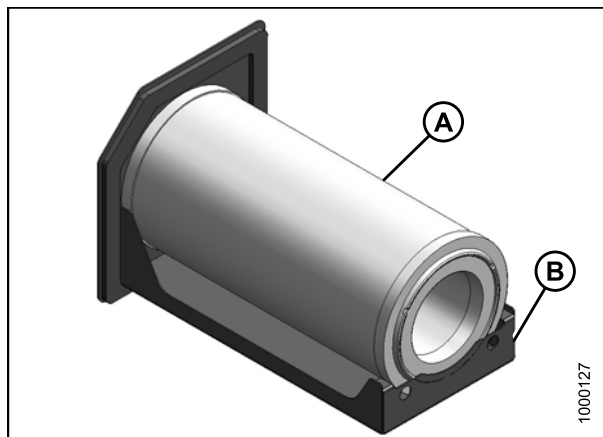


Figure 5.43

3. Slide filter tray (B) into housing.
4. Close and latch housing door (A).

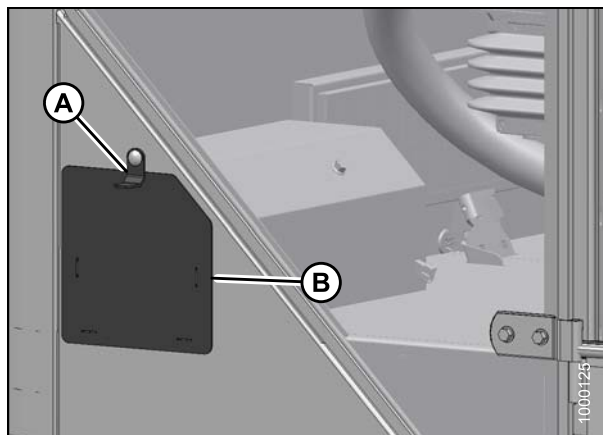


Figure 5.44

## MAINTENANCE AND SERVICING

### Return Air Cleaner/Filter

The return air cleaner/filter is located behind the operator's seat on the cab wall, and should be serviced every 100 hours as follows:

#### Removing and Installing Return Air Filter/Cleaner



## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Unscrew the two knobs (A) attaching cover and filter to cab wall, and remove the cover and filter assembly (B).

2. Separate the filter (B) from the cover (A).
3. Clean or replace filter. If cleaning filter, see Section [Cleaning Return Air Cleaner](#), page 237.
4. Assemble the cleaner (B) and cover (A), and position on cab wall over opening.

5. Secure filter assembly (B) to cab wall with knobs (A).

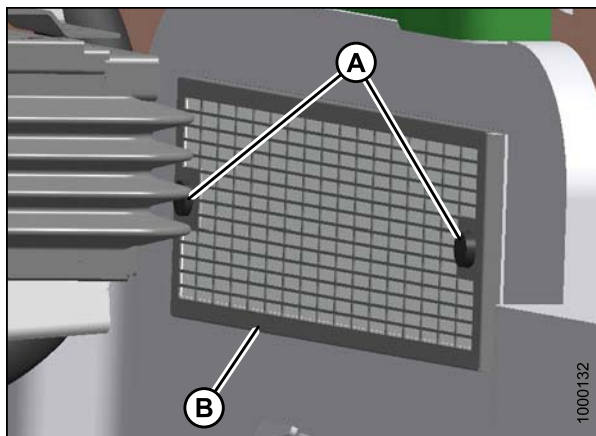


Figure 5.45

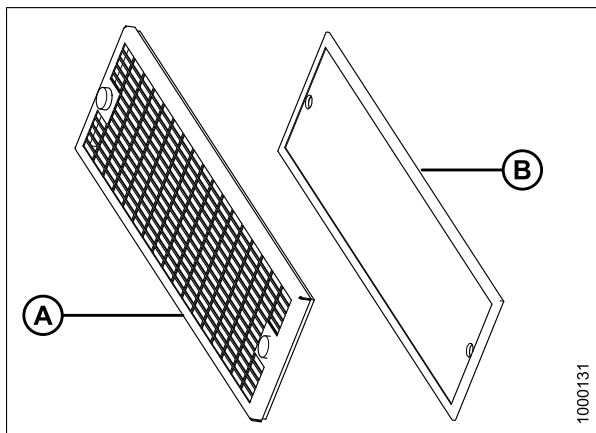


Figure 5.46

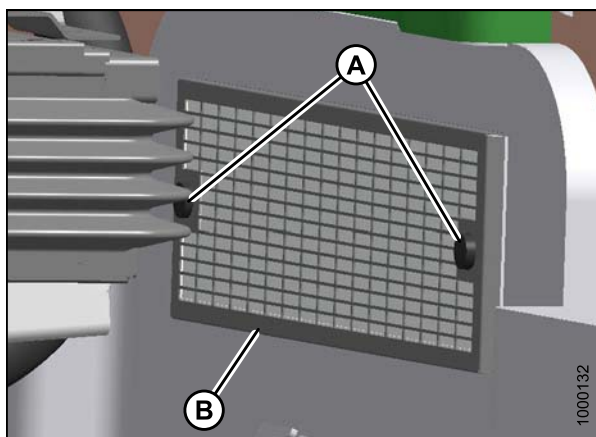


Figure 5.47

## MAINTENANCE AND SERVICING

### Cleaning Return Air Cleaner

Clean the electrostatic filter as follows

1. Mix a solution of warm water and detergent in a suitable container so that the filter (B) can soak for a few minutes.
2. Agitate to flush out the dirt.
3. Rinse with clean water, and dry with compressed air.
4. Inspect filter for damage, separation, and holes. Replace if damaged.

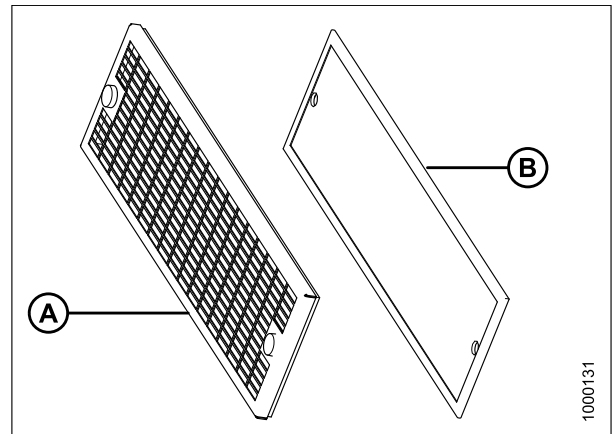


Figure 5.48

### Air Conditioning Condenser

The air conditioning condenser should be cleaned daily with compressed air. More frequent cleaning may be necessary in severe conditions.

Cleaning the condenser can be done at the same time as the radiator, oil cooler, and charge air cooler. Refer to Section [5.7 Engine Cooler Box](#), page 273.

### Air Conditioning Evaporator

The air conditioning evaporator should be checked annually for cleanliness. If the air conditioning system produces insufficient cooling, a possible cause is clogged evaporator fins. Fins will clog up from the side opposite the blowers. The evaporator is located inside the heating air conditioning unit under the cab, and it is accessed by removing the cover from the unit.

### Removing Air Conditioning Cover

1. Loosen the clamps (A) on the two drain hoses, and pull the hoses off the air conditioning drain tubes.

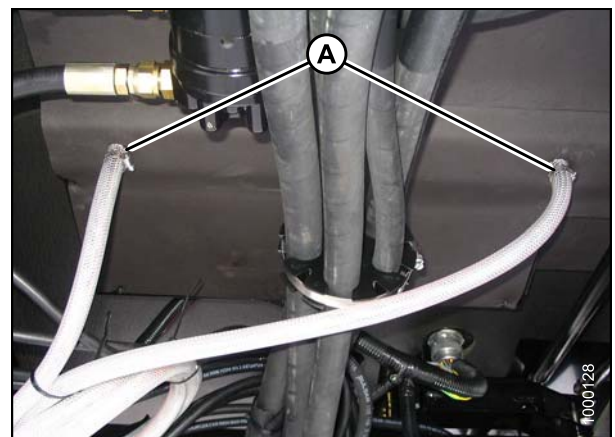


Figure 5.49

## MAINTENANCE AND SERVICING

2. Remove the eight screws (A) that attach the cover (B) and remove the cover.

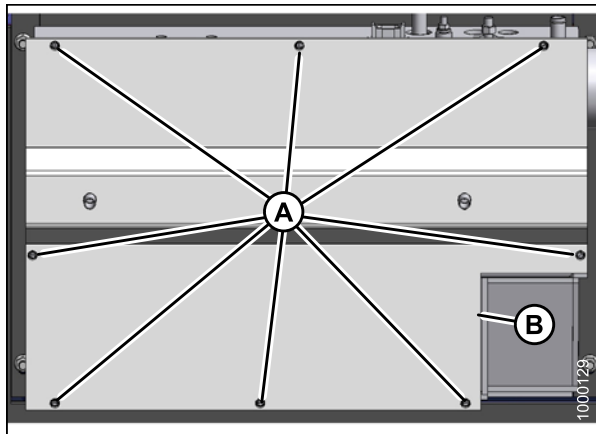


Figure 5.50

### Cleaning Air Conditioning Evaporator Core



## WARNING

To avoid cuts from evaporator fins, do not use bare hands to brush away clogs.

1. Use a vacuum or compressed air to remove dirt from inside the unit.
2. Blow compressed air through the evaporator fins from the blower side first as shown. Direct the air straight into the evaporator to prevent fin damage. A nozzle extension would make this procedure easier.
3. Repeat the previous step from the side opposite the blowers.
4. If dirt is still present, soak evaporator in water to loosen dirt, and then blow out with compressed air.

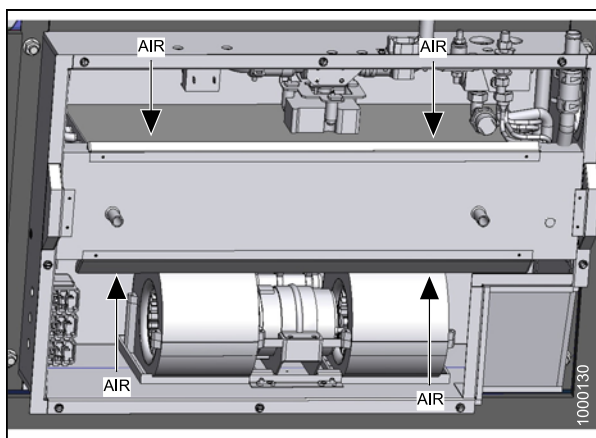


Figure 5.51

### Installing Air Conditioning Cover

1. Straighten any bent fins.
2. Reposition cover (B), and attach with eight screws (A).

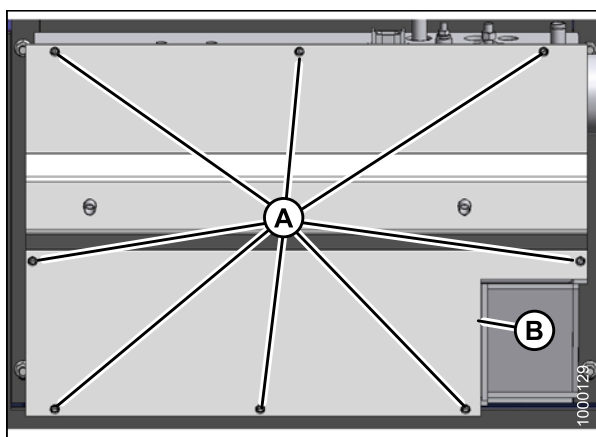


Figure 5.52

## MAINTENANCE AND SERVICING

3. Reattach drain hoses to drain tubes, and secure with hose clamps (A).

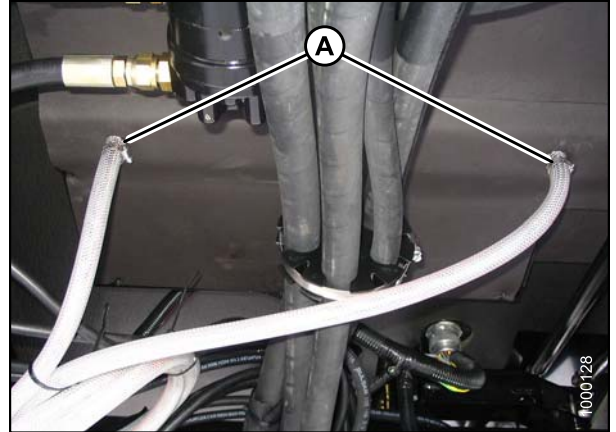


Figure 5.53

### *Air Conditioning Compressor*

The compressor is protected from excessively low suction and high discharge pressures by two switches that shut down the compressor to prevent damage to the system. These switches do not require any regular servicing or maintenance, so if problems occur and the switches are suspect, contact your MacDon Dealer.

- Low pressure switch is normally closed with an A/C charge in the system. It is located at the outlet of the evaporator (under cab in A/C box). It will open when the pressure falls to 2–8 psi (14–55 kPa) and close when pressure rises above 15–25 psi (103–172 kPa).
- High pressure switch is normally closed with an A/C charge in the system and is located on the receiver drier (right-hand frame rail, behind back of fuse panel). It opens if pressure exceeds 360–380 psi (2482–2620 kPa) on rising pressure. It will close when pressure falls below 220–280 psi (1517–1931 kPa) on falling pressure.

If the compressor cycles rapidly due to rapid pressure changes, the Cab Display Module (CDM) displays a warning “CHECK A/C SYSTEM”. Contact your Dealer.

### Refrigerant and Oil

## IMPORTANT

**Perform the following steps whenever the machine is first started after storage for more than one week.**

1. Ensure heater shut-off valve at engine is open. See Section [3.9.1 Heater Shut-off](#), page 56.
2. Turn blower switch (A) to FIRST position, turn temperature control switch to MAXIMUM heating, and air conditioning control (B) to OFF.
3. Start engine, and operate at low idle until engine is warm.
4. Click switch (B) from OFF to ON for one second, then back to OFF for 5–10 seconds. Repeat this step ten times.

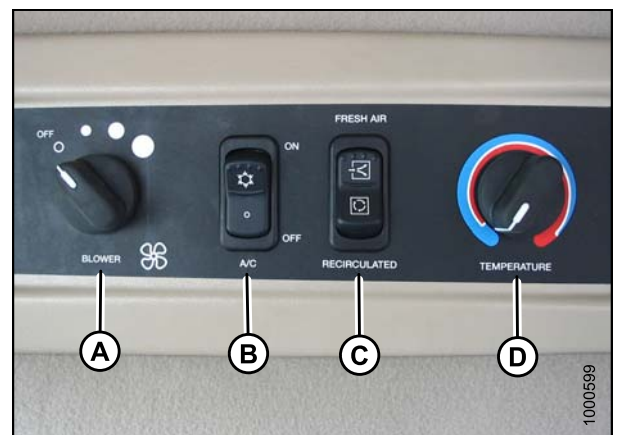


Figure 5.54

A - Blower switch  
C - Outside air switch

B - Air conditioning switch  
D - Temperature control

## MAINTENANCE AND SERVICING

### Servicing the Air Conditioning Compressor

Refer to [Replacing A/C Compressor Belt, page 271](#) for procedure.

See your MacDon Dealer for all other servicing procedures.

## MAINTENANCE AND SERVICING

### 5.6 Engine



#### CAUTION

- **NEVER** operate engine in a closed building. Proper ventilation is required to avoid exhaust gas hazards.
- **Keep the engine clean.** Straw and chaff on a hot engine are a fire hazard.
- **NEVER** use gasoline, naphtha, or any other volatile material for cleaning purposes. These materials are toxic and/or flammable.

#### 5.6.1 General Engine Inspection

Engine inspection should be performed by your MacDon Dealer.

Refer to your engine manual for further information. (Owner's Manual QSB 4.5 and QSB 6.7 Engine Cummins #4021531 supplied with your machine).

#### 5.6.2 Turning Engine Manually

To manually turn the engine with the flywheel, an access hole is provided on the left cab-forward side for a barring tool that is available from Cummins.



#### DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

# IMPORTANT

Ensure nothing falls into gearbox oil reservoir.

1. Stop the engine and remove the key.
2. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
3. Remove the red plastic covers (A) from the positive cable clamps. Loosen the clamps and remove cable from batteries.

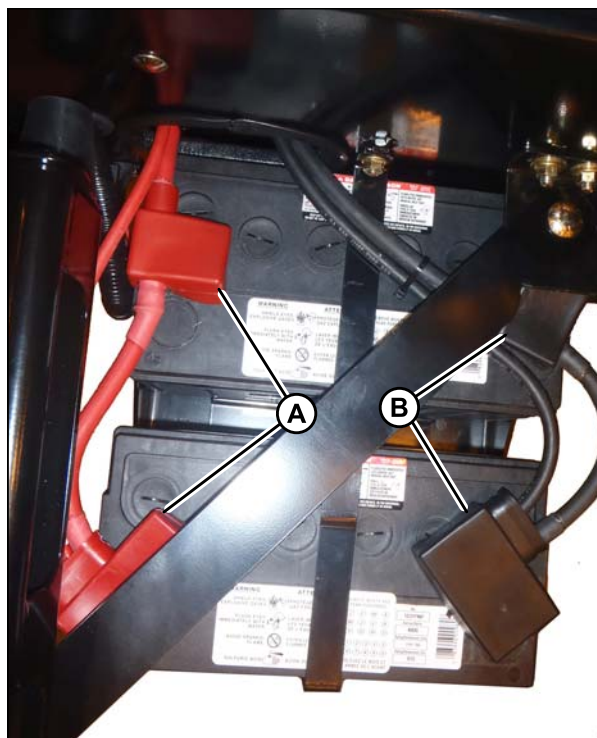


Figure 5.55

4. Clean area around the plastic cap on access hole (A). Remove the cap.
5. Insert the barring tool (B) into the flywheel housing until it engages the ring gear.
6. Attach a 1/2 in. square drive ratchet or breaker bar, and turn.
7. Remove barring tool, and clean oil from around access hole.
8. Clean plastic cap, and reinstall in hole (A) with silicone sealant.

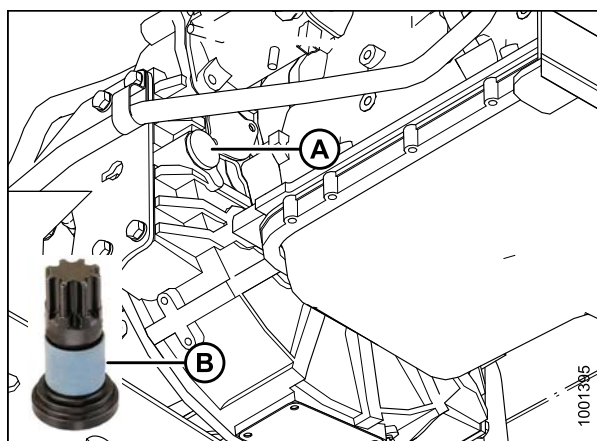


Figure 5.56

A - Access hole

B - Cummins barring tool



### IMPORTANT

**BATTERY IS 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.

9. Attach negative (black) cables (B) to negative posts on batteries, and tighten clamps. Then attach positive (red) cables (A) to positive post on batteries, and tighten clamps.
10. Reposition plastic covers onto clamps.
11. Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.

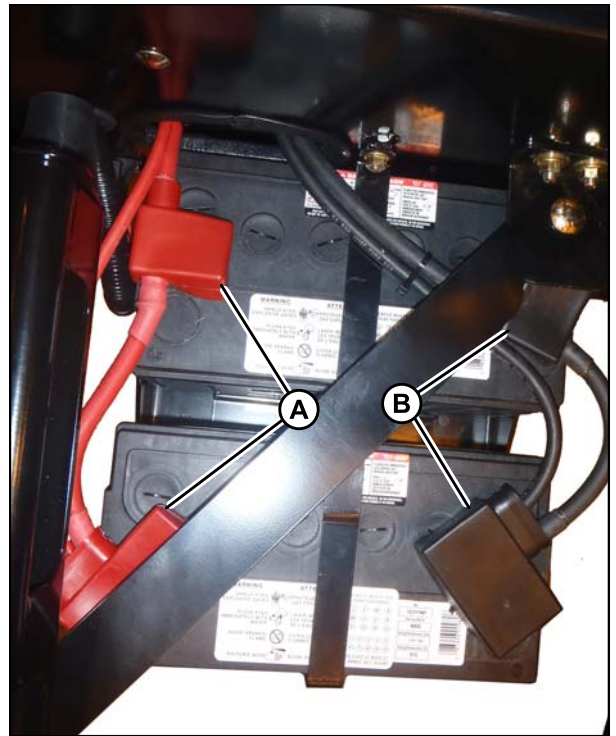


Figure 5.57

### 5.6.3 Checking Engine Oil Level

Check engine oil level frequently and watch for any signs of leakage.

**NOTE:** During the break-in period, a higher than usual oil consumption should be considered normal.

To check the engine oil level, follow these steps:

1. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
2. Operate the engine at low idle and check for leaks at the filter and drain plug.
3. Stop the engine and remove the key. Wait about 5 minutes.
4. Remove dipstick (B) by turning it counterclockwise to unlock.
5. Wipe clean, reinsert in engine, and then remove.

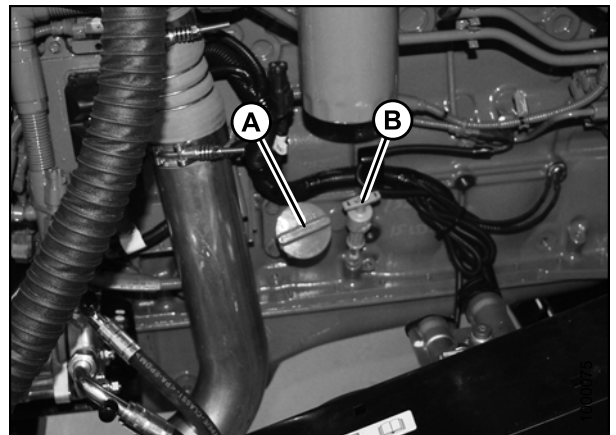


Figure 5.58

## MAINTENANCE AND SERVICING

- Oil level should be between LOW and HIGH. If level is below LOW mark, 2 U.S. quarts (1.9 liters) will raise the level from LOW to HIGH.

**NOTE:** If you need to add oil, see Section [Adding Engine Oil](#), page 245.

- Replace dipstick, and turn it clockwise to lock.
- Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

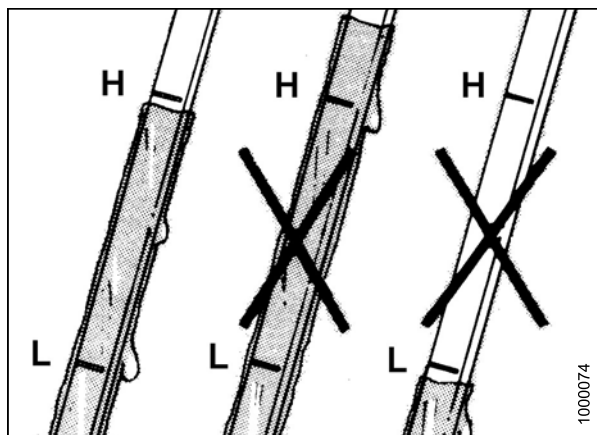


Figure 5.59

### 5.6.4 Changing Engine Oil

#### *Draining Engine Oil*

**NOTE:** The engine should be warm prior to changing the oil.



## DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

- Stop the engine and remove the key.
- Place a drain pan of about 6 U.S. gallons (24 liters) under the engine oil drain.
- Remove oil pan drain plug (A), and allow the oil to completely finish draining.
- Replace drain plug (A)
- Check the condition of the used oil. If either of the following is evident, have your Dealer correct the problem before starting the engine:
  - Thin black oil indicates fuel dilution.
  - Milky discoloration indicates coolant dilution.
- Properly dispose of used oil.

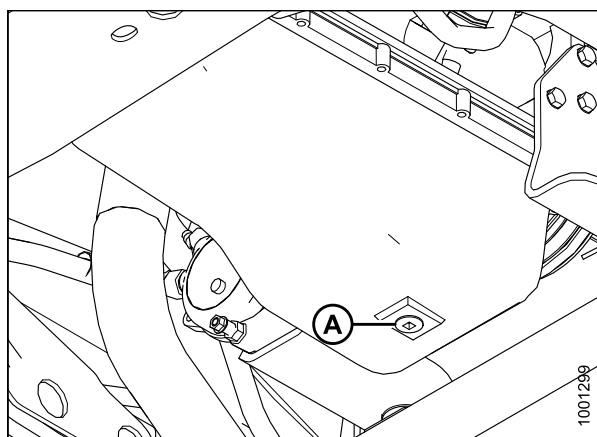


Figure 5.60

## MAINTENANCE AND SERVICING

### Replacing Engine Oil Filter

**NOTE:** Replace oil filter as follows each time engine oil is changed.

1. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
2. Clean around the filter head (A).
3. Remove filter.
4. Clean gasket mating surface.
5. Apply a thin film of clean oil to the gasket on the new filter. See Section [Filter Part Numbers](#), page 214 for recommended oil filter to use.
6. Screw the new filter onto the filter mount until the gasket contacts the filter head.
7. Tighten the filter an additional 1/2 to 3/4 turn by hand.

## IMPORTANT

**Do NOT use a filter wrench to install the oil filter. Overtightening can damage the gasket and filter.**

8. Properly dispose of used oil filter.

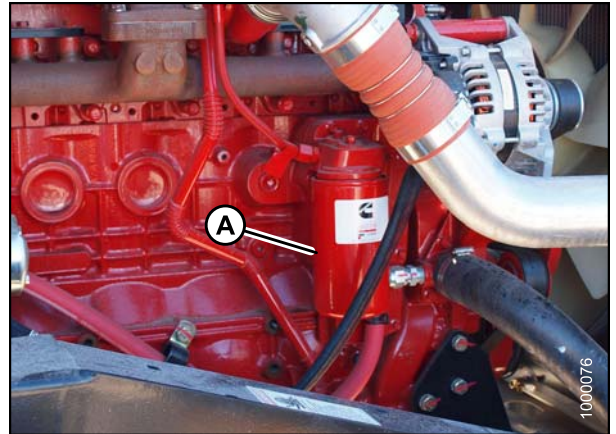


Figure 5.61

### Adding Engine Oil

1. Stop the engine and remove the key. Wait about 5 minutes.
2. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
3. Remove filler cap (A) by turning it counterclockwise.
4. Carefully pour the oil. A funnel is recommended to avoid spillage. See [Lubricants, Fluids, and System Capacities](#), page 213 for oil specifications.



## CAUTION

**Do NOT fill above the HIGH mark.**

5. Replace oil filler cap (A) and turn it clockwise until snug.
6. Check the oil level. See Section [5.6.3 Checking Engine Oil Level](#), page 243.
7. Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.

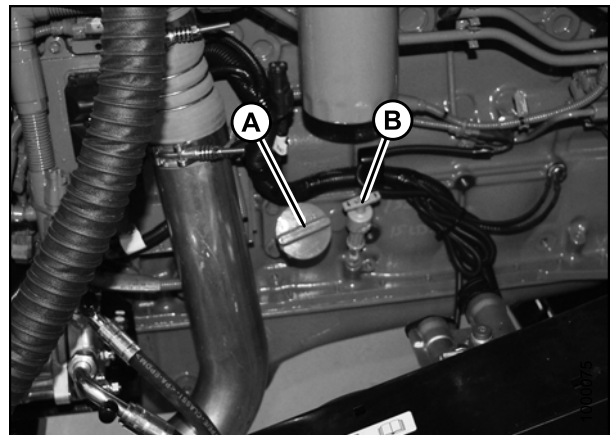


Figure 5.62

### 5.6.5 Air Intake System

## IMPORTANT

**Do NOT run engine with air cleaner disconnected or disassembled.**

## MAINTENANCE AND SERVICING

Engine intake air (A) is drawn through a duct (D) from the cooling box that precleans the air, and then through a dual element filter (B).

The air cleaner canister is equipped with aspirator (C) that removes dust continuously from the air cleaner housing.

The air cleaner is also equipped with a restriction switch (E) which activates a warning display and tone on the Cab Display Module (CDM) when the filter system requires servicing.

After servicing the filter, you must reset the restriction switch by pushing the button on the end of it to reset it.

### IMPORTANT

- **Over-servicing the filter element increases the risk of dirt being ingested by the engine, and severely damaging the engine.**
- **Filter servicing should only be performed when the CDM indicates “ENGINE AIR FILTER” or, at the specified interval. Refer to Section 5.11.2 Maintenance Schedule / Record, page 335.**

### Removing Primary Air Filter

1. Open the hood. See Section 5.2.1 Opening Hood (Lower Position), page 216.
2. Open the maintenance platform on right cab-forward side. See Section 5.3.1 Opening Platforms (Standard Position), page 219.
3. Slightly lift catch (A) at side of end cap (B), and rotate end cap counterclockwise until it stops.

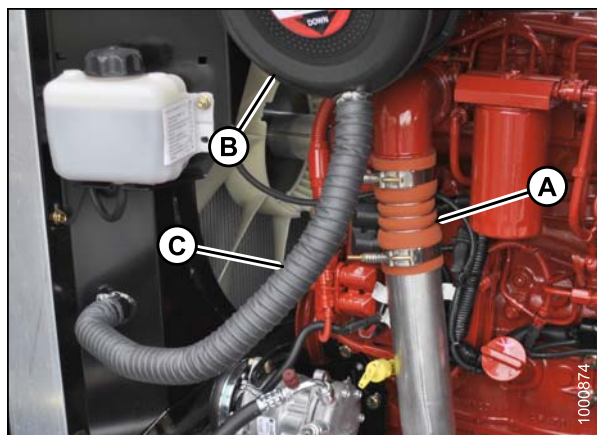


Figure 5.63

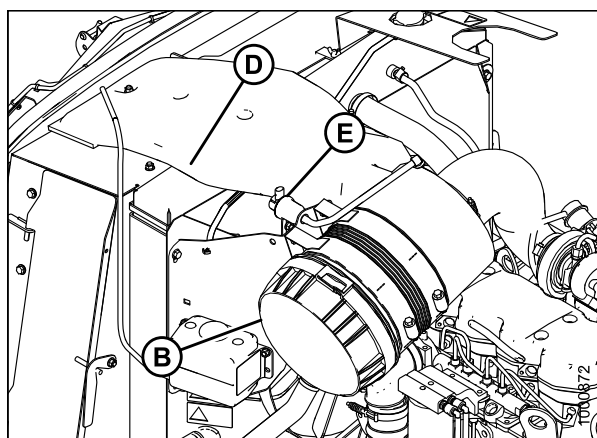


Figure 5.64

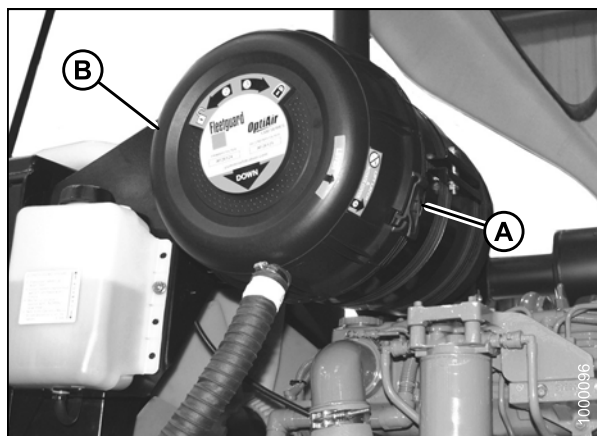


Figure 5.65

## MAINTENANCE AND SERVICING

4. Make sure arrow (A) lines up with UNLOCK symbol on end cap.
5. Pull off the end cap.

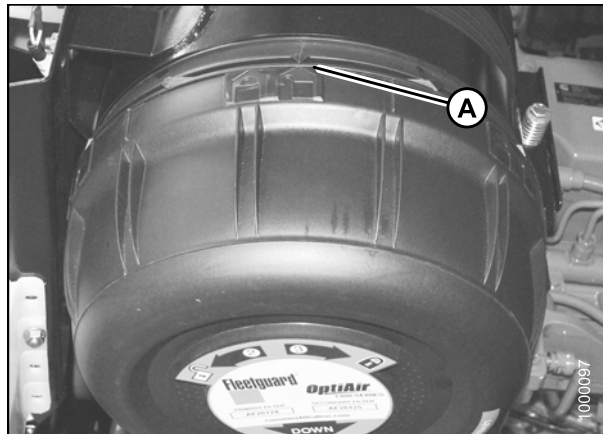


Figure 5.66

6. Check the aspirator duct opening (A) for obstructions or damage. Clean if necessary.

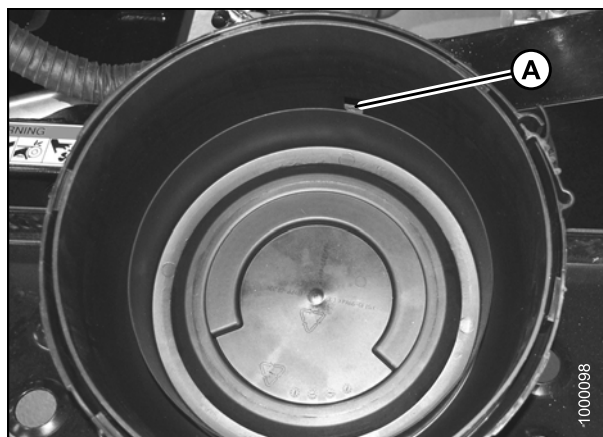


Figure 5.67

7. Pull out the primary filter element (A).

### IMPORTANT

Be extremely careful with the dirty element, until you get it completely out of the housing. Accidentally bumping it while still inside means dropped dirt and dust may contaminate the clean side of your filter housing, before the new filter element has a chance to do its job.

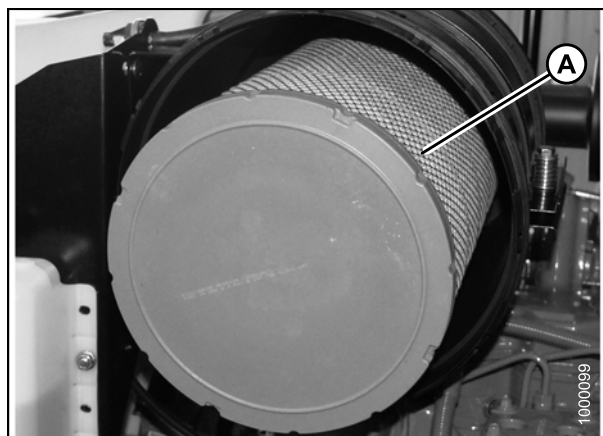


Figure 5.68

### IMPORTANT

- **Do NOT remove the secondary (inner) filter element unless it needs replacing. It must never be cleaned.**
  - **Replace secondary element annually or after every third primary filter change, even if it looks clean.**
  - **If the secondary element looks dirty, a further inspection will be required.**
  - **Examine filter canister for cracks and replace as necessary.**
  - **Ensure canister retaining latches are secure.**
  - **Ensure filter sealing surfaces are soft, flexible and sealing, not hard, and allowing debris through to safety filter.**
8. Clean the inside of the housing and end cap carefully. Dirt left in the air cleaner housing may be harmful to your engine.
- Use a clean, water-dampened cloth to wipe every surface clean.
  - Check it visually to make sure it is clean before putting in a new element.
  - Always clean the gasket sealing surfaces of the housing. An improper gasket seal is one of the most common causes of engine contamination.
  - Make sure that all hardened dirt ridges are completely removed wherever filter gaskets contact the cleaner housing.

## MAINTENANCE AND SERVICING

9. Check for uneven dirt patterns on your old element. Your old element is a valuable clue to potential dust leakage or gasket sealing problems.
  - A pattern on the element clean side is a sign that the old element was not firmly sealed or that a dust leak exists.
  - Make certain the cause of that leak is identified and rectified before replacing the element.
  - Press fresh gasket to see if it springs back.
  - On a radial seal element the gasket surface is the inside diameter of the open end cap.
  - Make sure the gasket is seating evenly, if you don't feel the gasket is seating evenly for a perfect seal, you may not have protection.
  - Recheck to see if the sealing surface in the housing is clean, or if the element is the correct model number. It may be too short for the housing.
10. If required, also change the secondary filter.

### *Installing Primary Air Filter*

**NOTE:** If replacing air filter, see Section [Filter Part Numbers](#), page 214.

1. Insert new primary filter element (A) into canister over secondary element, and push into place, ensuring that element is firmly seated in canister.

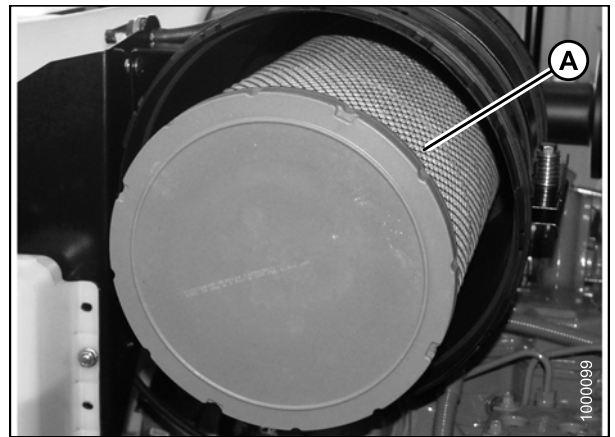


Figure 5.69

## MAINTENANCE AND SERVICING

2. Align arrow (A) to UNLOCK position on end cap, and push end cap fully onto housing.
3. Rotate end cap clockwise until catch (A) engages housing to prevent end cap from turning.

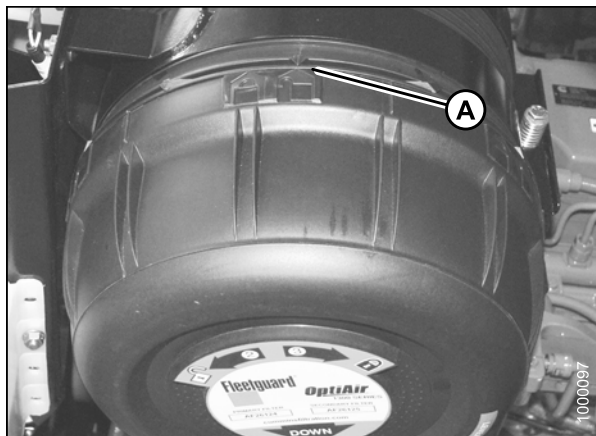


Figure 5.70

4. Position end cap (B) onto filter housing with aspirator pointing approximately down.

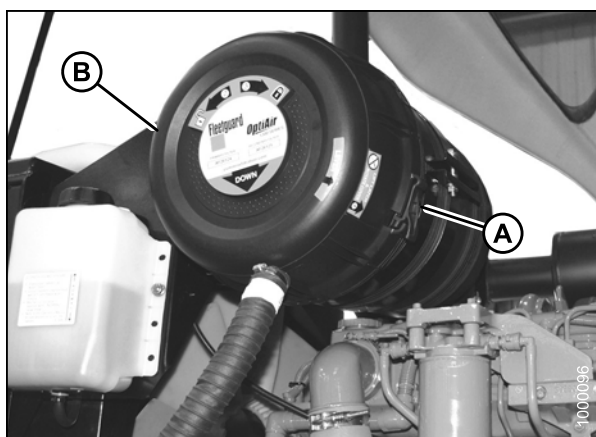


Figure 5.71

5. After servicing the filter, you must reset the restriction switch (A) by pushing the button on the end of it to reset it.
6. Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.
7. Close the maintenance platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.

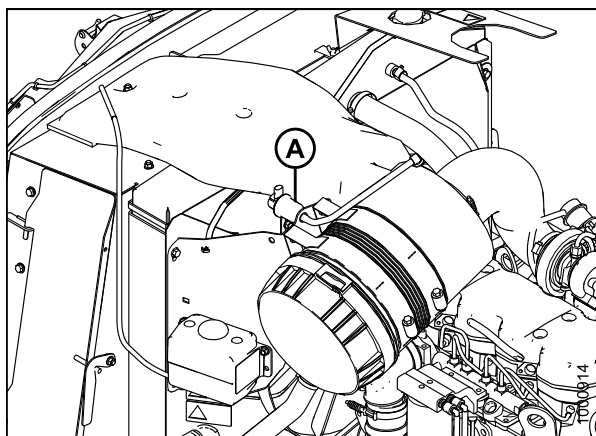


Figure 5.72

### *Cleaning Engine Air Filter Primary Element*

## IMPORTANT

The secondary (inner) element should NEVER be cleaned, only replaced.



## MAINTENANCE AND SERVICING

### IMPORTANT

**Air filter element cleaning is NOT recommended due to the possible degradation of the element material. If cleaning is performed, there are several risks involved, and the following procedures should be followed. If any of the following conditions are found, the filter element MUST be replaced.**

1. Hold a bright light inside element, and check carefully for holes.
2. Check outer screen for dents. Vibration would quickly wear a hole in the filter.
3. Check filter gasket for cracks, tears, or other signs of damage.
4. Check element for oil or soot contamination.
5. Check the secondary element for cleanliness. If there is visible dirt on the secondary element, replace both primary and secondary elements. Do **NOT** clean.

### IMPORTANT

**The air cleaner's primary (outer) filter element should be replaced after three cleanings or at the specified interval. The secondary (inner) element should be replaced every third time the primary element is changed. Refer to Section 5.11 Maintenance Schedule, page 334 for the required interval.**

6. If secondary element passes inspection, clean primary element as follows:
  - a. Use compressed air not exceeding 60 psi (400 kPa), and a Dry Element Cleaner Gun.
  - b. Hold nozzle next to inner surface only, and move up and down on pleats.
  - c. After three cleanings (or at the specified interval), replace the primary element.
7. Repeat inspection before installing.

## MAINTENANCE AND SERVICING

### Removing and Installing Secondary Air Filter

# IMPORTANT

- The secondary element should never be cleaned only replaced. Do not remove the secondary secondary filter element unless it needs replacing. The secondary element must never be cleaned
  - Replace safety element annually or after every third primary filter change, even if it appears clean.
  - If you are changing secondary element because it looked dirty a further inspection will be required.
  - Examine filter canister for cracks and replace as necessary.
  - Ensure canister retaining latches are secure. Ensure filter sealing surfaces are soft, flexible and sealing, not hard and allowing debris through to secondary filter.
1. Remove the primary filter, see Section [Removing Primary Air Filter, page 246](#).
  2. If required, also change the secondary filter.

# IMPORTANT

**When replacing secondary filter, reinsert new filter as soon as possible to prevent dirt from entering engine intake.**

3. Remove the secondary element (A) and pull it out of the canister.  
**NOTE:** If replacing filter, see Section [Filter Part Numbers, page 214](#).
4. Insert new secondary filter element (A) into canister, seal first, and push until seal is seated inside canister.
5. Install the primary filter, see Section [Installing Primary Air Filter, page 249](#).

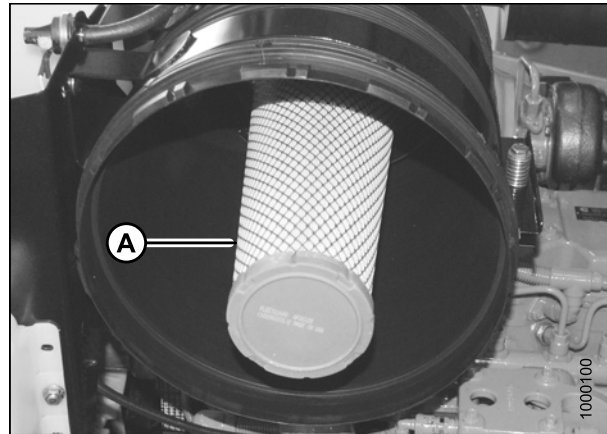


Figure 5.73

## MAINTENANCE AND SERVICING

### 5.6.6 Charge Air Cooling

After the intake air passes through the air filter, it passes through the turbocharger (A) that boosts the pressure. This process heats the air so it is passed through pipe (B) to a cooler before entering the engine intake.

The cooler is located in the cooling box (C) behind the radiator, and should be cleaned daily with compressed air. Refer to Section [5.7 Engine Cooler Box](#), page 273.

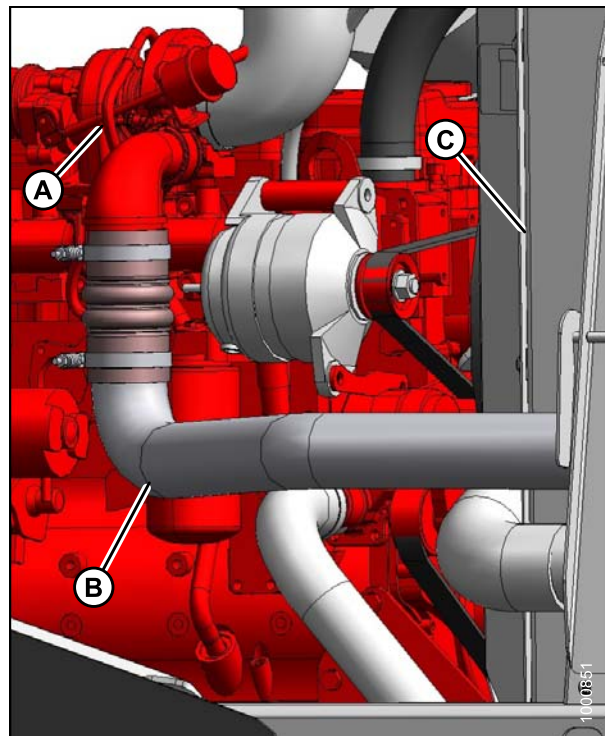


Figure 5.74

## MAINTENANCE AND SERVICING

### 5.6.7 Fuel System

#### *Removing and Installing Fuel Tank Vent*

The fuel tank is vented by a hose that is connected to the filler tube. The hose is connected to a filter that should be changed annually.

1. Stop the engine and remove the key.
2. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
3. Open the right cab-forward side maintenance platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
4. Locate filter (A) on vent line against hydraulic oil reservoir.
5. Release hose tension clamps (B) and slide away from filter. Pull hoses off filter.
6. Position new filter through hole in frame and attach top hose onto filter. *IN* marking should face down.

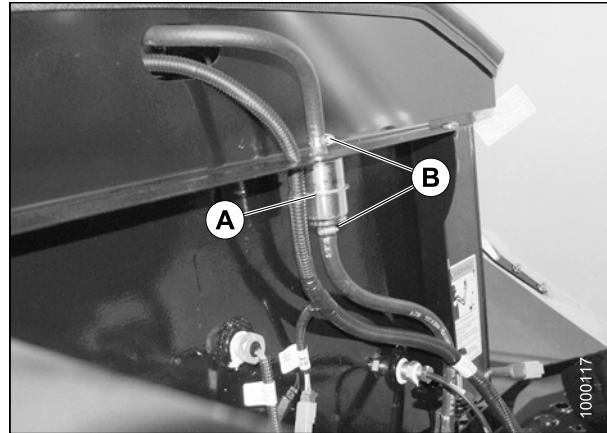
**NOTE:** If filter has an arrow instead of an *IN* marking, arrow should point up.

7. Attach lower hose to filter and secure both hoses with tension clamps (B).
8. Close hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.
9. Close the maintenance platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220

#### *Fuel Filters*

The windrower fuel system is equipped with primary and secondary screw-on cartridge type filters. The primary filter is equipped with a separator that separates sediment and water from the fuel.

Change both filters every 500 hours of operation.



**Figure 5.75**

## MAINTENANCE AND SERVICING

### Removing Primary Fuel Filter



**DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Stop the engine and remove the key.
2. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
3. On the bottom of the fuel tank, locate the fuel supply valve (A) and move it to the closed position.
4. Locate the primary (B) fuel filter which is located on the right cab-forward side of the windrower.

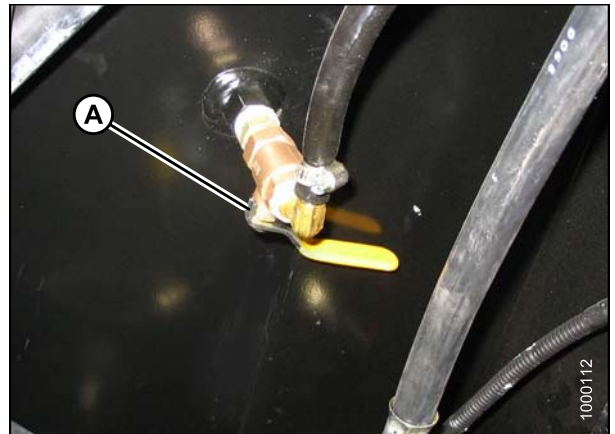


Figure 5.76

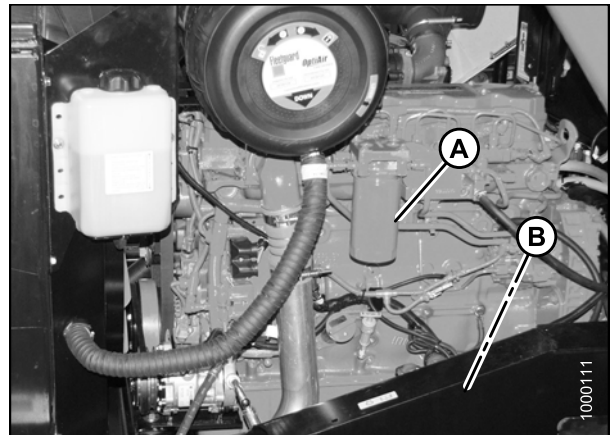


Figure 5.77: Fuel Filter Locations

5. Clean around the primary filter head (A)
6. Disconnect the water in fuel (WIF) sensor (B) from bottom of filter.
7. Turn drain valve (C) by hand counterclockwise until draining occurs, and drain filter into a container.
8. Remove filter (D) with a filter wrench.
9. Clean gasket mating surface.

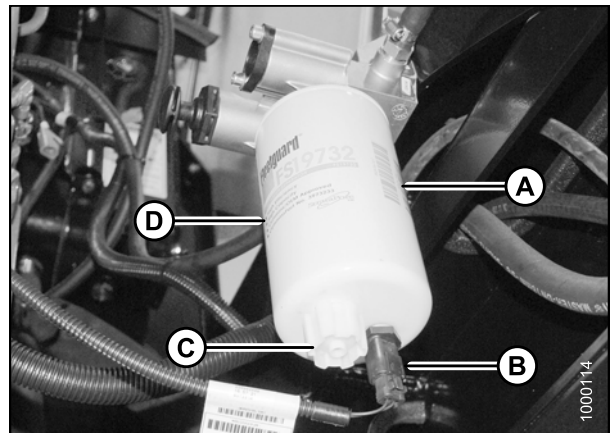


Figure 5.78

## MAINTENANCE AND SERVICING

### Installing Primary Fuel Filter

#### IMPORTANT

Do NOT prefill filter with fuel. Prefilling can contaminate the fuel system.

**NOTE:** If replacing filter, see Section [Filter Part Numbers, page 214](#).

1. Screw the new filter (D) onto the filter mount until the gasket contacts the filter head.
2. Reconnect water in fuel (WIF) sensor (B).
3. Tighten the filter an additional 1/2 to 3/4 turn by hand.

#### IMPORTANT

Do NOT use a filter wrench to install the filter. Over-tightening can damage the gasket and filter.

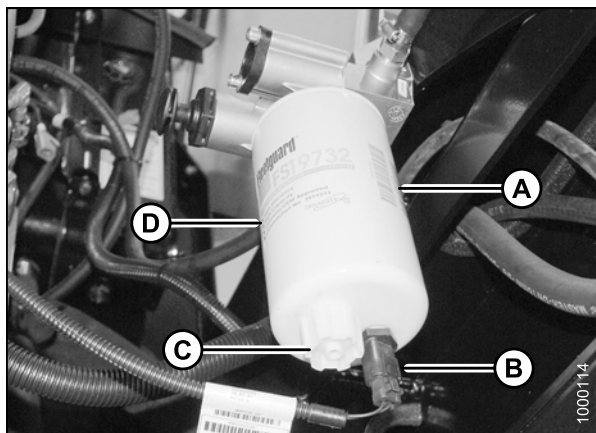


Figure 5.79

### Removing Secondary Fuel Filter

1. Clean around the secondary filter head (A).
2. Place a container under the filter to catch spilled fluid.
3. Remove filter (A) with a filter wrench.
4. Clean gasket mating surface.

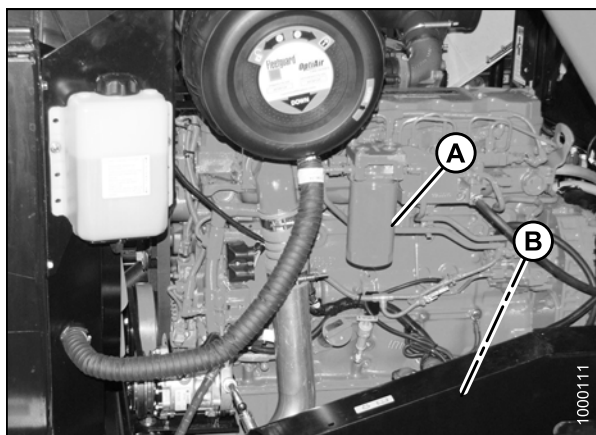


Figure 5.80

### Installing Secondary Fuel Filter

#### IMPORTANT

Do NOT prefill filter with fuel. Prefilling can contaminate the fuel system

**NOTE:** If replacing filter, see Section [Filter Part Numbers, page 214](#).

1. Screw the new secondary filter (A) onto the filter mount until the gasket contacts the filter head.
2. Tighten the filter an additional 1/2 to 3/4 turn by hand.

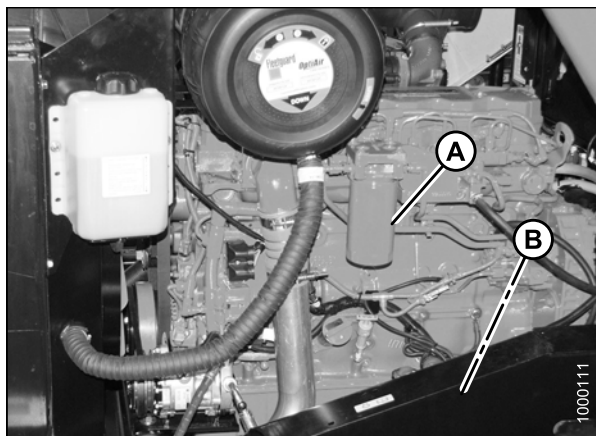


Figure 5.81

### IMPORTANT

Do **NOT** use a filter wrench to install the filter. Over-tightening can damage the gasket and filter.

3. Open fuel valve (A) under fuel tank.
4. Prime the fuel system, see Section [Priming Fuel System](#), page 261.

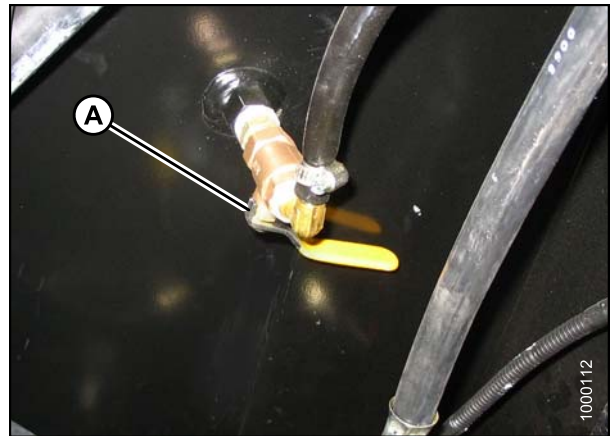


Figure 5.82

### *Draining the Fuel Tank*

Draining the fuel tank is necessary to remove old or contaminated fuel.



### WARNING

- To avoid personal injury or death from explosion or fire, do **NOT** smoke or allow flame or sparks near fuel tank when refueling.
- **NEVER** refuel the windrower when the engine is hot or running.



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Stop the engine and remove the key.
2. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
3. Close fuel supply valve (A). Located on the bottom of the fuel tank.

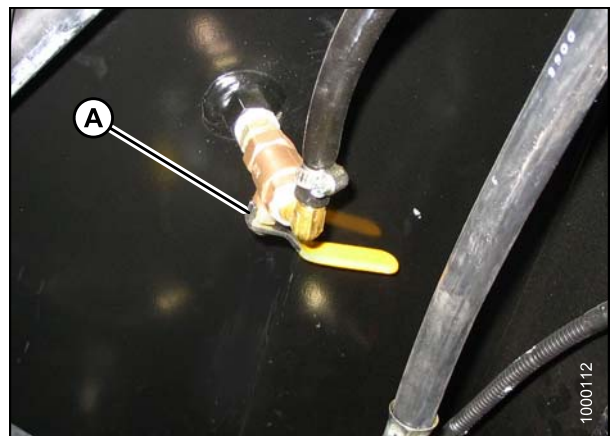


Figure 5.83: Fuel shutoff valve

## MAINTENANCE AND SERVICING

4. Place a 5 US gallon (20 liter) drain pan under the fuel supply hose (A) at primary filter.
5. Loosen clamp (B), and pull hose (A) off fitting.

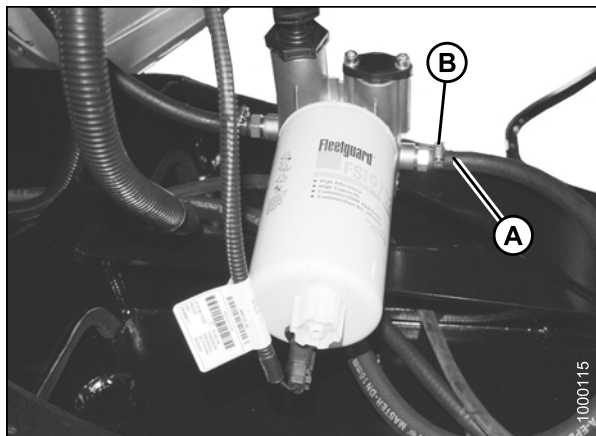


Figure 5.84

6. Route hose to drain pan, and open valve (A) to drain tank.

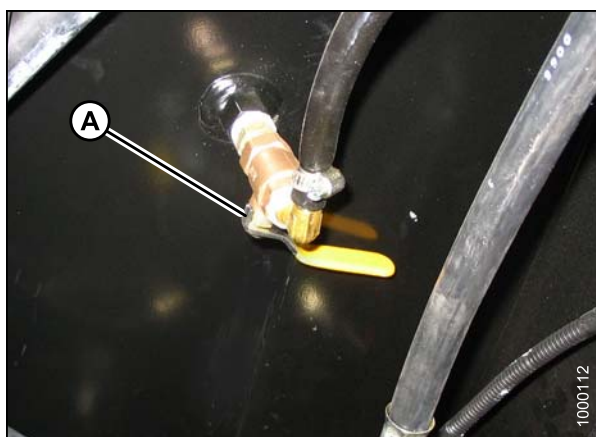


Figure 5.85: Fuel Shut off Valve

7. Add some clean fuel to tank to flush out any remaining contaminants.
8. Reattach hose (A) to fitting. Install clamp (B), and tighten.

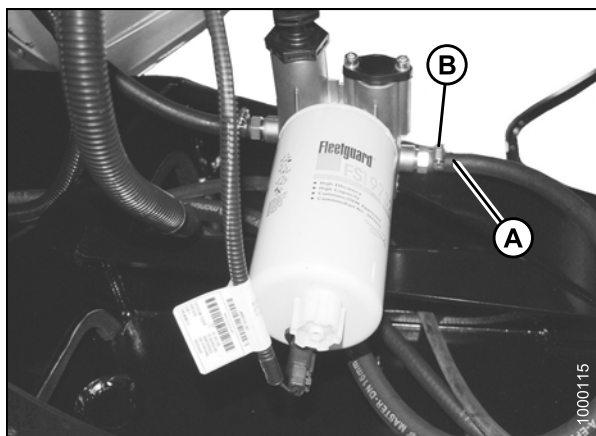


Figure 5.86

**NOTE:** Do not refill the fuel tank if you need to work on the system. Refill it once work is completed. See Section [Filling Fuel Tank, page 259](#).



## MAINTENANCE AND SERVICING

### *Filling Fuel Tank*



## WARNING

- To avoid personal injury or death from explosion or fire, do NOT smoke or allow flame or sparks near fuel tank when refueling.
- NEVER refuel the windrower when the engine is hot or running.



## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Stop the engine and remove the key.
2. Stand on either platform to access the fuel tank filler pipe.
3. Clean the area around the filler cap.
4. Turn cap handle counterclockwise until loose, and remove cap.
5. Fill tank with approved fuel, see Section [Lubricants, Fluids, and System Capacities, page 213](#).

**NOTE:** Fill fuel tank daily, preferably at the end of the day's operation to help prevent condensation in the tank.

## IMPORTANT

Do NOT fill tank completely as space is required for expansion. A filled tank could overflow if exposed to a rise in temperature, such as direct sunlight.

## IMPORTANT

Do NOT allow tank to empty. Running out of fuel can cause air locks and/or contamination of the fuel system. See Section [Priming Fuel System, page 261](#) for priming procedures.

## MAINTENANCE AND SERVICING

### *Fuel/Water Separator*

A fuel water separator is incorporated into the primary fuel filter. The separator is equipped with a sensor that detects water in the fuel and alerts the Operator on the Cab Display Module (CDM), and a drain.

#### Removing Water from Fuel System

Drain the water and sediment as follows from the separator daily, or at any time the CDM Water in Fuel (WIF) light illuminates.

1. Stop the engine and remove the key.
2. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
3. Place a container under the filter to catch spilled fluid.
4. Turn drain valve (C) by hand 1-1/2 to 2 turns counterclockwise until draining occurs.
5. Drain the filter sump of water and sediment until clear fuel is visible.
6. Turn the valve clockwise to close the drain.
7. Dispose of fluid safely.
8. Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.

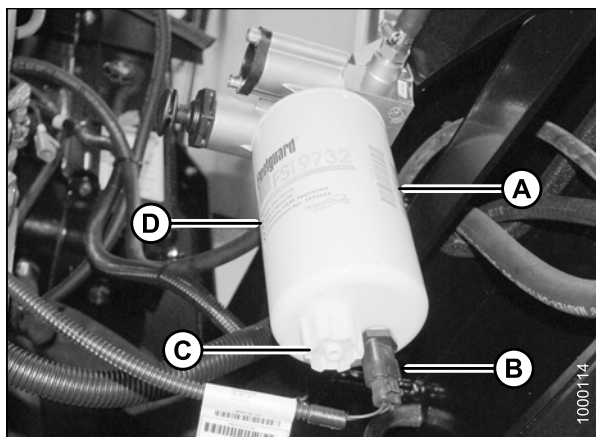


Figure 5.87

#### System Priming

Controlled venting of air is provided at the injection pump through the fuel drain manifold. Small amounts of air introduced by changing filters or injection pump supply line will be vented automatically, if the fuel filters are changed in accordance with instructions.

## IMPORTANT

**Bleeding the fuel system is not recommended or required.**

Manual priming will be required if:

- Fuel filter is replaced.
- Injection pump is replaced.
- High-pressure fuel lines are replaced.
- Engine is run until fuel tank is empty.

## MAINTENANCE AND SERVICING

### Priming Fuel System

1. Stop the engine and remove the key.
2. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
3. Turn the priming knob (A) counterclockwise to unlock the plunger on the primary filter head.
4. Pump approximately 120 times to pressurize the fuel system.
5. Lock the plunger by turning knob (A) clockwise until snug.
6. Try starting engine. If engine does not start, repeat priming.
7. Close hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.



Figure 5.88

### 5.6.8 Engine Cooling System

The engine cooling system is designed to maintain the engine operating temperature within the specified operating range.

**NOTE:** Antifreeze is essential in any climate. It broadens the operating temperature range by lowering the coolant freezing point, **AND** by raising its boiling point. Antifreeze also contains rust inhibitors and other additives to prolong engine life.

## IMPORTANT

**If antifreeze strength is not adequate, do NOT drain cooling system to protect against freezing. System may not drain completely, and damage from freezing could still result.**

## MAINTENANCE AND SERVICING

### Checking Coolant Level

Check coolant level in the coolant recovery tank (A) daily.

1. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
2. Open the platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.

**NOTE:** To view coolant capacities, see [Lubricants, Fluids, and System Capacities](#), page 213.

3. Check coolant level in coolant recovery tank (A). Tank should be at least half full.
4. If level in coolant recovery tank is low, remove cap (B), and add coolant. Use Ethylene Glycol with SCA equal parts with high quality, soft, de-ionized or distilled water as recommended by the Supplier to protect the engine to temperatures of -30°F (-34°C).

**NOTE:** Do not add coolant to radiator except when changing coolant.

5. Replace cap (B).
6. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.
7. Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

### Checking Engine Coolant Strength

Check the anti-freeze in the radiator with a tester annually, preferably before off-season storage.



## CAUTION

- To avoid personal injury from hot coolant, do NOT turn radiator cap until engine cools.
- Engine exhaust stack may be hot.

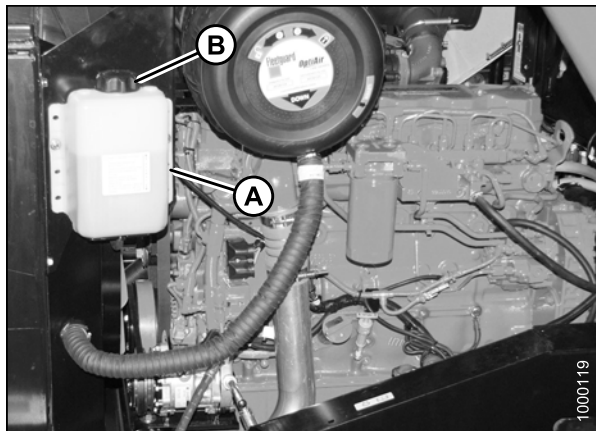


Figure 5.89

## MAINTENANCE AND SERVICING

1. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
2. Open the platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
3. Remove the radiator cap (A).
4. Turn the cap (A) counterclockwise to the first notch to relieve pressure before removing cap completely.
5. Turn cap (A) again, and remove.
6. Check the coolant in the radiator using an antifreeze tester. Tester should indicate protection to temperatures of -30°F (-34°C).
7. Inspect the radiator cap before reinstalling, see [Inspecting Radiator Cap](#), page 263.
8. Install radiator cap (A).
9. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.
10. Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

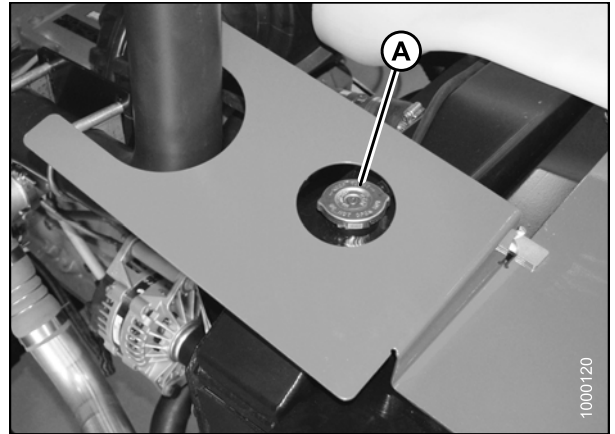


Figure 5.90

### *Inspecting Radiator Cap*

The radiator cap must fit tightly and the cap gasket must be in good condition to maintain the 14–18 psi (97–124 kPa) pressure in the cooling system.

## CAUTION

- To avoid personal injury from hot coolant, do NOT turn radiator cap until engine cools.
- Engine exhaust stack may be hot.

1. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
2. Open the platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
3. Turn the cap (A) counterclockwise to the “first notch” to relieve pressure before removing cap completely.
4. Turn the cap (A) again, and remove.
5. Check the gasket for cracks or deterioration, and replace the cap if necessary.
6. Check that the spring in the cap moves freely.
7. Replace the cap if spring is stuck.
8. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.
9. Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

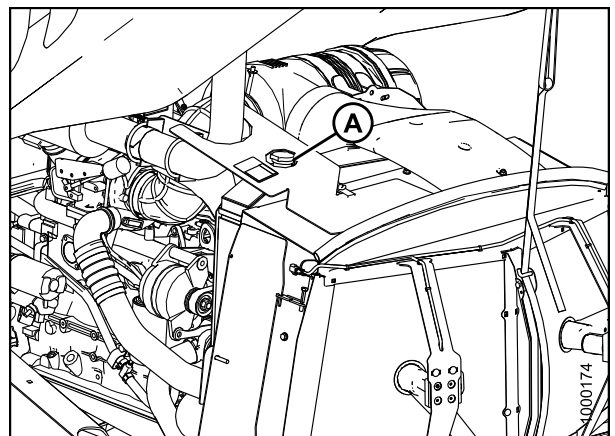


Figure 5.91

## MAINTENANCE AND SERVICING

### Changing Coolant

Coolant should be drained, and the system flushed and filled with new coolant every **2000 hours or 2 years**.

#### Draining Coolant



### WARNING

To avoid personal injury from hot coolant, do not turn radiator cap until engine cools.

Engine exhaust may be hot.

1. Stop engine and let it cool.
2. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
3. Open the platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
4. Turn the radiator cap (A) to the first notch to relieve pressure before removing cap completely.
5. Place a drain pan (about 8 U.S. gallons [30 liters]) under the engine and radiator.
6. Remove the radiator cap, and open radiator drain valve (A) at the bottom of the engine side of the radiator lower tank. (Frame has been removed for clarity.)

**NOTE:** Use a deflector or a hose to prevent coolant running onto frame.

7. Close the heater shutoff valve (A), and disconnect hose on heater side of valve.
8. Open valve to drain the block.
9. When system is drained, re attach hose on valve (A).

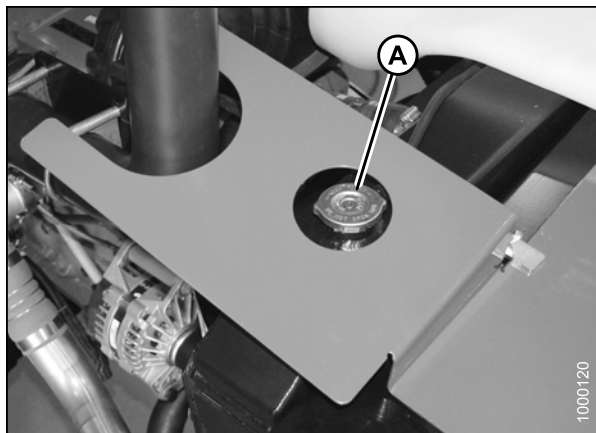


Figure 5.92

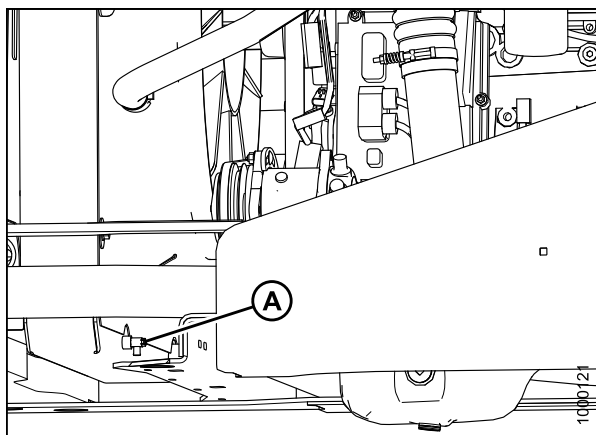


Figure 5.93

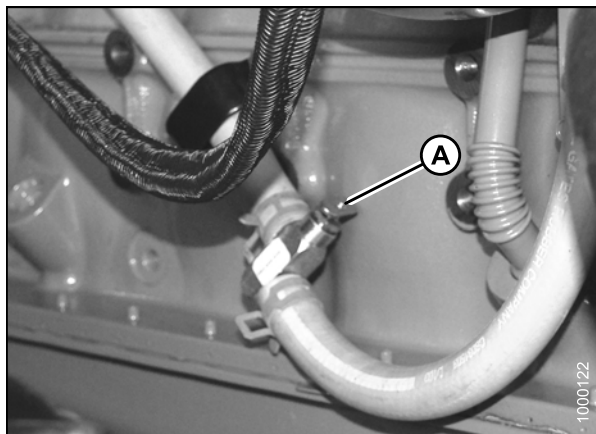


Figure 5.94

## MAINTENANCE AND SERVICING

10. Close radiator drain valve (A) at the bottom of the engine side of the radiator lower tank. (Frame has been removed for clarity.)
11. Fill system with clean water through the radiator, and replace radiator cap.

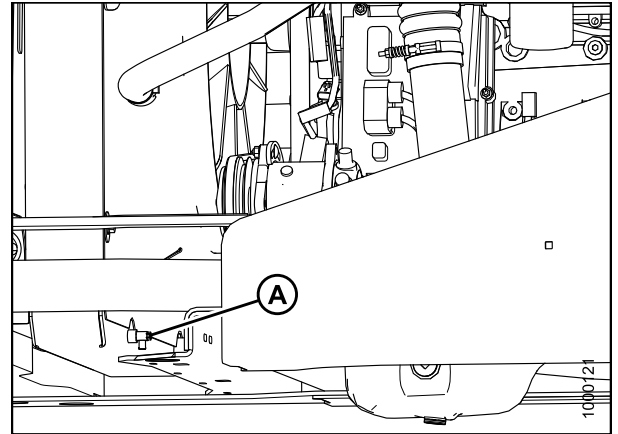


Figure 5.95

12. Open heater shutoff valve (A).
13. Start engine, and turn temperature control knob to HIGH. Run engine until normal operating temperature is reached.
14. Stop engine, and drain water out before rust or sediment settles. Repeat coolant removal procedure.
15. Close drain valves, and fill system with a solution of clean water and a heavy duty radiator cleaner. Follow instructions provided with cleaner.
16. After using cleaner solution, again flush system with clean water. Inspect radiator, hoses and fittings for leaks
17. Close drain valves, and fill system. See Section [Adding Coolant](#), page 266.
18. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.
19. Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

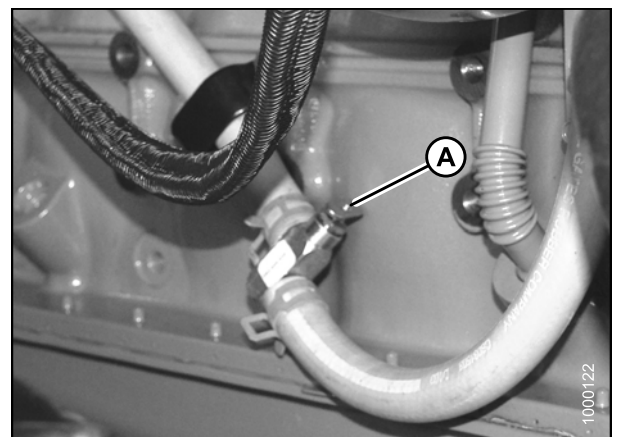


Figure 5.96

## MAINTENANCE AND SERVICING

### Adding Coolant

1. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
2. Open the platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
3. Check daily the coolant level in the coolant recovery tank (A), the tank should be at least half full.
4. If less, then remove cap (B), and add coolant.

**NOTE:** To view coolant specifications, see Section [Lubricants, Fluids, and System Capacities](#), page 213

**NOTE:** Do not add coolant to radiator except when changing coolant.

5. Replace cap (B).
6. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.
7. Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

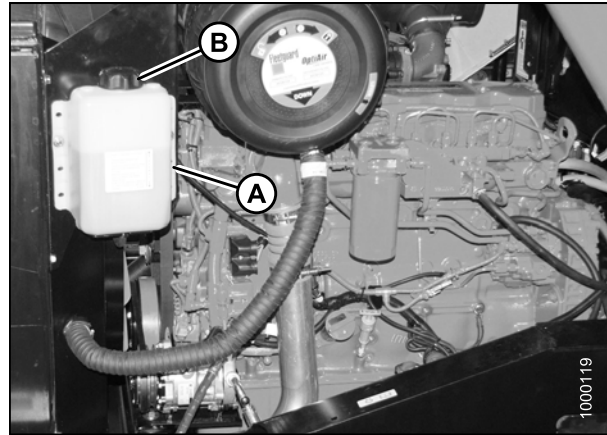


Figure 5.97

### 5.6.9 Gearbox

#### *Checking Lubricant Level and Adding Lubricant*

#### **CAUTION**

Park on a flat, level surface, header on the ground, and the ground speed lever in N-DETENT position and steering wheel locked.

#### **DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



## MAINTENANCE AND SERVICING

1. Check the lubricant level every 50 hours as follows:
  - a. Park the windrower on level ground, shut down engine, and remove key.
  - b. Under the windrower, beneath the main pumps, locate and remove check plug (A). The lubricant should be visible through the hole or slightly running out.

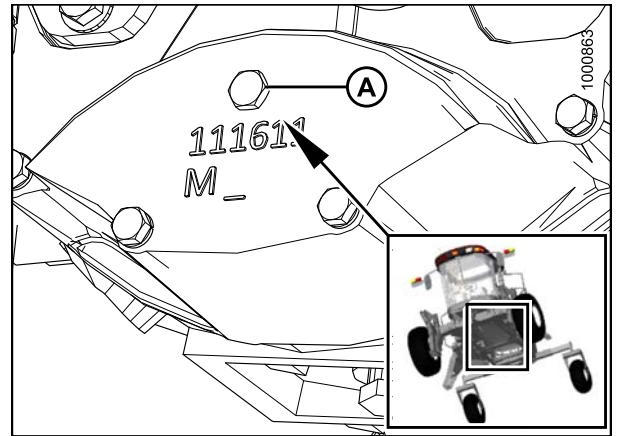


Figure 5.98

**NOTE:** To view lubricant specifications, refer to [Lubricants, Fluids, and System Capacities](#), page 213.

2. Add lubricant as follows:
  - a. Remove breather cap (A), and add lubricant until it runs out at the check plug.
  - b. Replace check plug and breather cap, and tighten.
  - c. Operate the engine at low idle, and check for leaks at the check plug and drain plug.

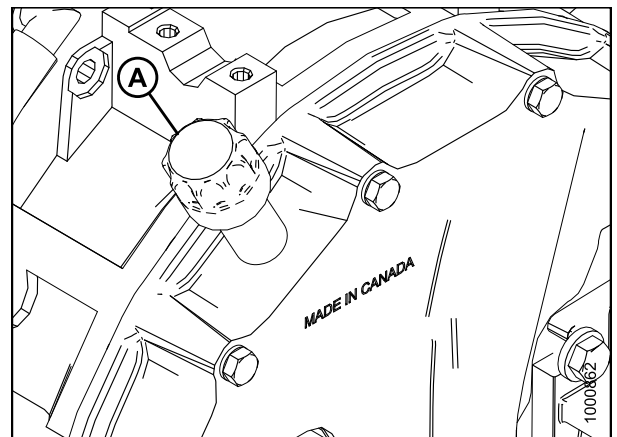


Figure 5.99

## MAINTENANCE AND SERVICING

### Changing Lubricant

Change gearbox lubricant after the first 50 hours, and then at 500 hours as follows:

**NOTE:** The engine should be warm prior to changing the oil.

1. Stop engine, and remove key.
2. Place a 1 U.S. gallon (4 liters) drain pan under the gearbox.
3. Remove drain plug (B), and allow oil to completely finish draining.
4. Install drain plug (B), and remove check plug (A).

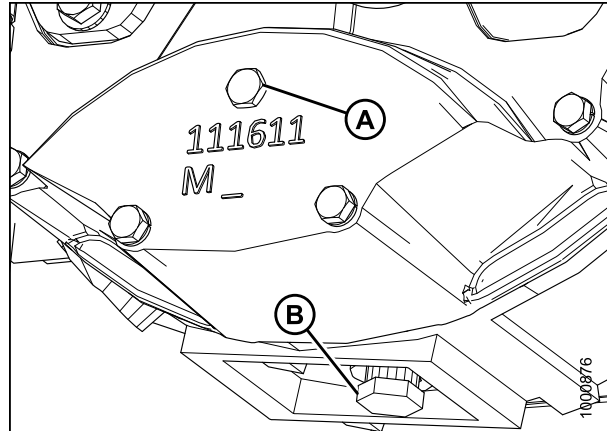


Figure 5.100

**NOTE:** To view oil specifications, refer to [Lubricants, Fluids, and System Capacities, page 213](#)

5. Operate the engine at low idle, and check for leaks at the check plug and drain plug.

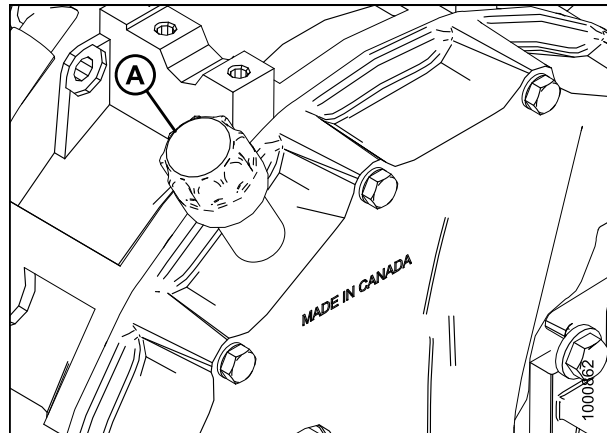


Figure 5.101

### 5.6.10 Inspecting Exhaust System



## CAUTION

To avoid burns, do NOT touch muffler when engine is running or before allowing sufficient cooling time after shut-down

## MAINTENANCE AND SERVICING

The exhaust system requires no regular maintenance, but it should be inspected periodically as follows:

1. Open the hood to its highest position. For instructions, see Section 5.2.3 [Opening Hood \(Highest Position\)](#), page 217.
2. Inspect the area around clamps (A) for breakage, cracks and rust-through. In addition to excess noise, a leaky exhaust system may allow exhaust gases to escape to the cab.
3. Dents or crushed portions of any tubing create exhaust flow restriction, and increase back pressure significantly. Even relatively small dents will cause decreased fuel economy and increased turbo wear. If dents are relatively large, increased bearing and cylinder wear will occur due to increased exhaust temperature.
4. The exhaust system should be secured to eliminate vibration. The brackets (B) should fit securely to the muffler (C), and to the engine.
5. Do **NOT** change muffler type, piping sizes, or exhaust configuration. See your Dealer for proper replacement parts.

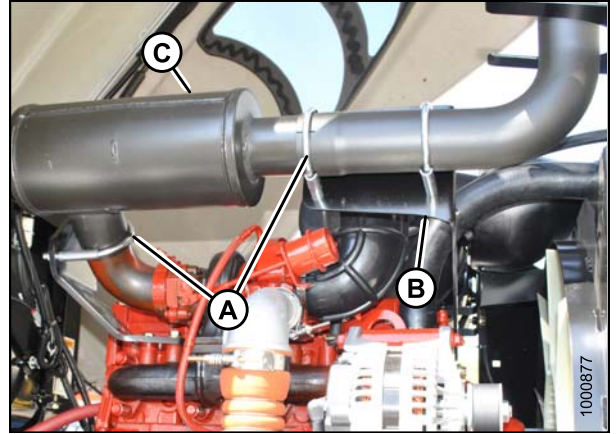


Figure 5.102

### 5.6.11 Belts



## DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

#### *Tensioning Alternator/Fan Belt*

The alternator, water pump, and fan belt is automatically tightened; manual adjustment is not required.

## MAINTENANCE AND SERVICING

### Replacing Fan Belt

1. Shut down the engine and remove the key.
2. Open the LH platform. See Section 5.3.1 [Opening Platforms \(Standard Position\)](#), page 219.
3. Open the hood. See Section 5.2.1 [Opening Hood \(Lower Position\)](#), page 216.
4. Loosen compressor mounting hardware (B) and push compressor towards engine to release tension.
5. Remove belt (A) from compressor.

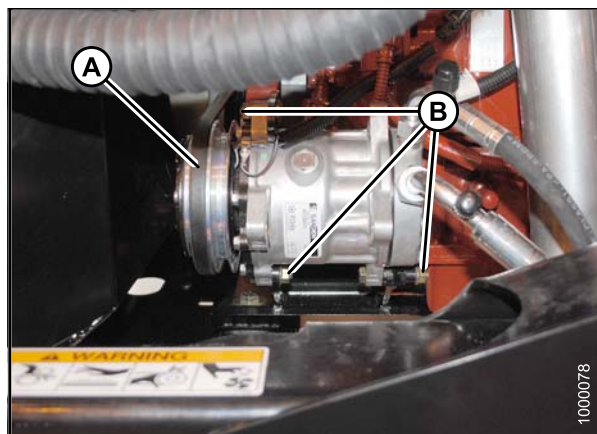


Figure 5.103

6. Insert the drive end of a 1/2 in. drive ratchet wrench into the belt tensioner (B).
7. Rotate tensioner counterclockwise until fan belt (C) can be slipped off pulley (D). Release tensioner and remove wrench.
8. Remove belt in order 1–2–3 as shown. Route fan belt around fan and remove belt.
9. Install new belt (C) around fan and onto pulleys in order 3–2–1.
10. Insert the drive end of a 1/2 in. drive ratchet wrench into the belt tensioner (C).
11. Rotate tensioner counterclockwise until belt (C) can be slipped onto pulley (D). Release tensioner and remove wrench.
12. Check that belt is properly seated in all pulley grooves.
13. Install compressor belt (A).
14. Pry compressor away from engine so that a force of 8–12 ft·lbf (35–55 N·m) deflects the belt (A) 3/16 in. (5 mm) at mid-span.
15. Tighten compressor mounting hardware (B).
16. Recheck tension and readjust as required.
17. Close the hood. See Section 5.2.2 [Closing Hood \(Lower Position\)](#), page 217.
18. Close the platform. See Section 5.3.2 [Closing Platforms \(Standard Position\)](#), page 220.

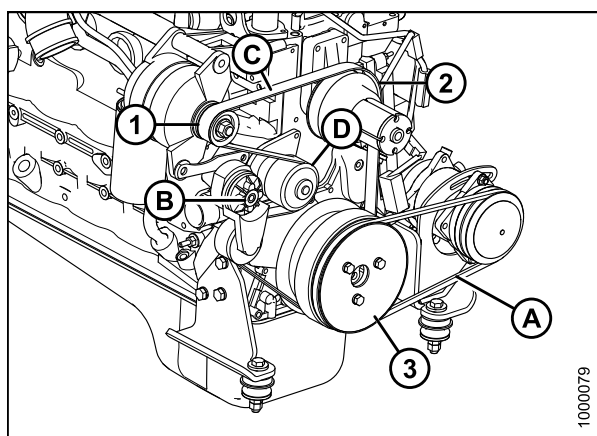


Figure 5.104: Engine Belts

- |                         |                    |
|-------------------------|--------------------|
| A - A/C compressor belt | B - Belt tensioner |
| C - Fan belt            | D - Pulley         |

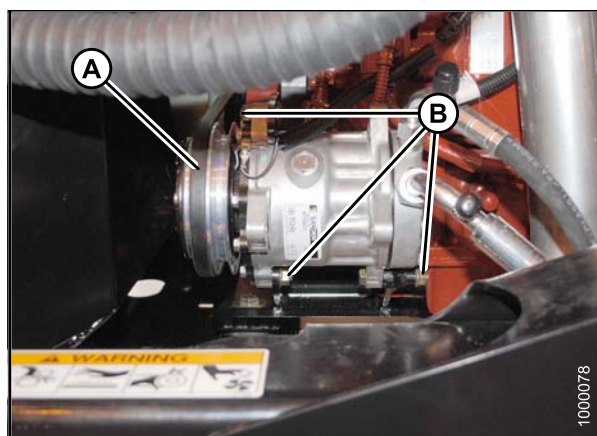


Figure 5.105

## MAINTENANCE AND SERVICING

### *Tensioning A/C Compressor Belt*

1. Shut down the engine and remove the key.
2. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
3. Loosen compressor mounting hardware (B).
4. Pry compressor away from engine so that a force of 8–12 ft·lbf (35–55 N·m) deflects the belt (A) 3/16 in. (5 mm) at mid-span.
5. Tighten compressor mounting hardware (B).
6. Recheck tension and readjust as required.
7. Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.

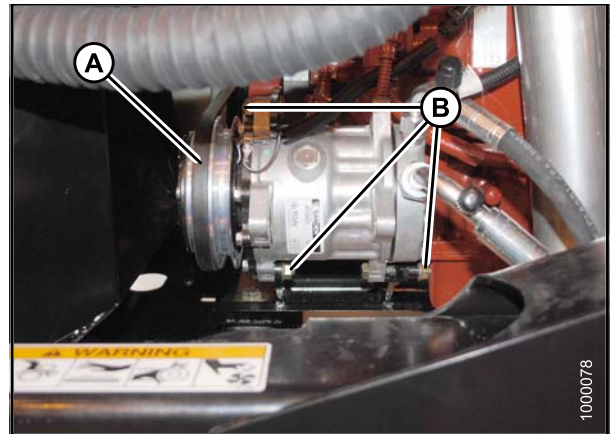


Figure 5.106

### *Replacing A/C Compressor Belt*

1. Shut down the engine and remove the key.
2. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
3. Loosen compressor mounting hardware (B) and push compressor towards engine to release tension.
4. Remove belt (A) from compressor.

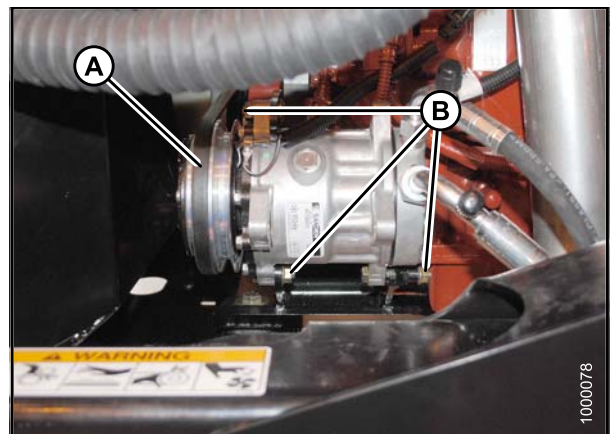


Figure 5.107

5. Install compressor belt (A).
6. Pry compressor away from engine so that a force of 8–12 ft·lbf (35–55 N·m) deflects the belt (A) 3/16 in. (5 mm) at mid-span.
7. Tighten compressor mounting hardware (B).
8. Recheck tension and readjust as required.
9. Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\)](#), page 217.

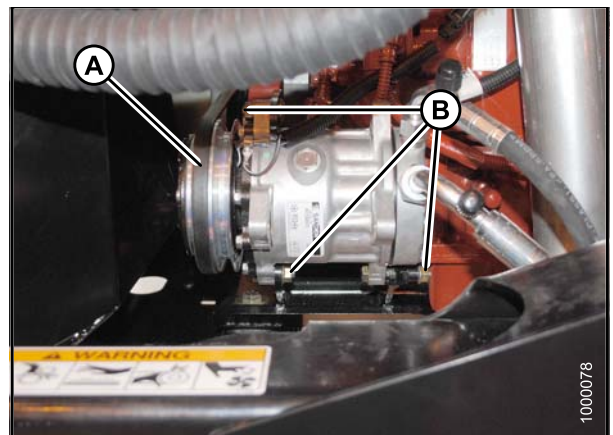


Figure 5.108

## MAINTENANCE AND SERVICING

### 5.6.12 Engine Speed

The maximum and idle engine speeds are factory set.

See Section [2.2 Specifications, page 32](#) for detailed information. If specified speeds cannot be maintained, see your MacDon Dealer.

See also [Engine Intermediate Speed Control \(ISC\), page 105](#).

#### *Throttle Adjustment*

The engine speed is controlled with the throttle lever that is connected to an electronic sensor inside the console.

The throttle lever in the cab should move the throttle sensor the full range between slow speed stop and full rpm stop without contacting the console at either position.

If the throttle lever is contacting the console, and interferes with specified engine speeds, the sensor position possibly requires adjustment. See your MacDon Dealer.

## MAINTENANCE AND SERVICING

### 5.7 Engine Cooler Box

#### 5.7.1 Opening Cooler Box Screen

1. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
2. Push latch (A) and open screen assembly access door (B). Secure with rod stored inside screen door.

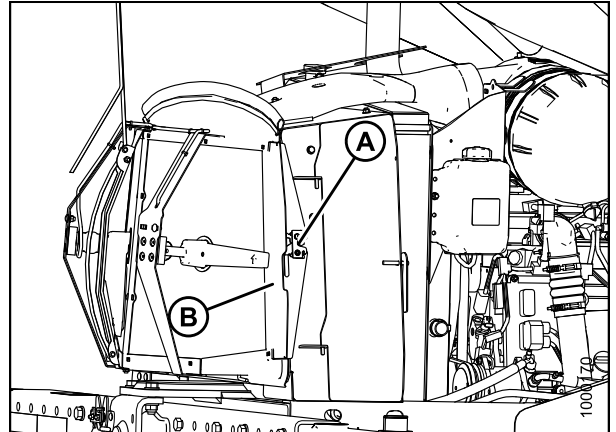


Figure 5.109

#### 5.7.2 Cleaning Screens and Coolers

The cooling box screen is equipped with an automatic cleaning device that vacuums the screen by means of two rotors. They only operate when the engine is running. The rotors are electrically driven, and the suction is provided by the engine cooling fan. If the screen is not being cleaned by the rotors, they may be plugged.

If rotors (A) are plugged, clean as follows:

1. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
2. Remove nut (B).
3. Pivot screen cleaner assembly (C) away from screen.
4. Blow out debris from duct (A) with compressed air.
5. If ducts are plugged, open the cooler box screen. See Section [5.7.1 Opening Cooler Box Screen](#), page 273.

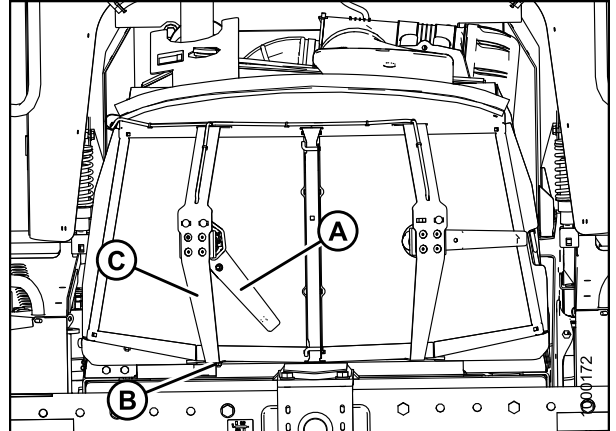


Figure 5.110

## MAINTENANCE AND SERVICING

6. Blow debris out of duct (A) with compressed air.
7. Clean screen with compressed air.

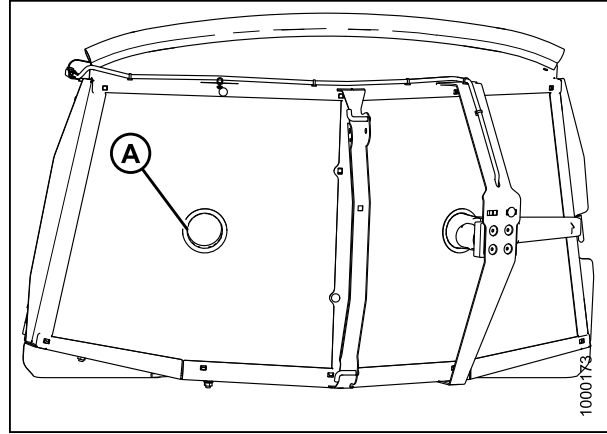


Figure 5.111

8. Reposition the screen cleaner assembly (C). Secure with bolt and nut (B).
9. Close the cooler box screen. See Section [5.7.5 Closing Cooler Screen](#), page 277
10. Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

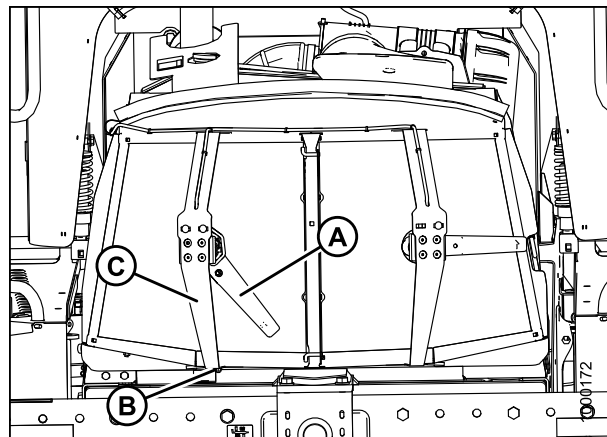


Figure 5.112

### 5.7.3 Maintaining Cooler Box

The radiator and oil cooler should be cleaned daily with compressed air. More frequent cleaning may be necessary in severe conditions. The charge air cooler and air conditioning condenser may also be cleaned at the same time.

To clean these components, proceed as follows:

1. Open cooler box screen. See Section [5.7.1 Opening Cooler Box Screen](#), page 273.
2. Lift lever (A), and pull open the cab-forward right-hand access door (B).

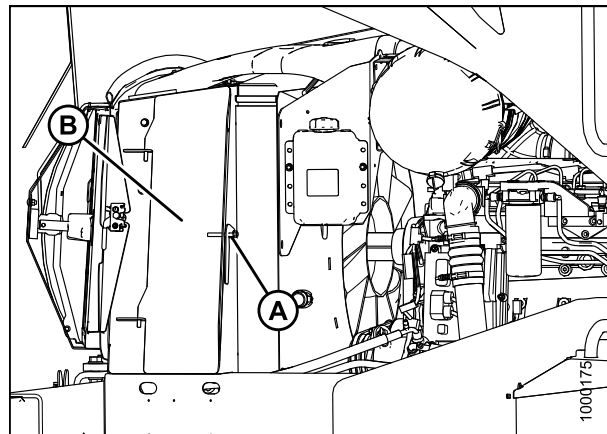


Figure 5.113



## MAINTENANCE AND SERVICING

- Slide out the oil cooler / air conditioning condenser assembly (A).

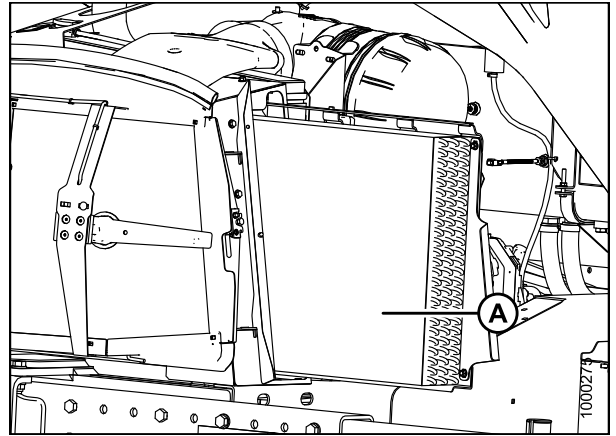


Figure 5.114

- Lift latch (A), and open the cab-forward left-hand access door (B) at left side of cooling box.

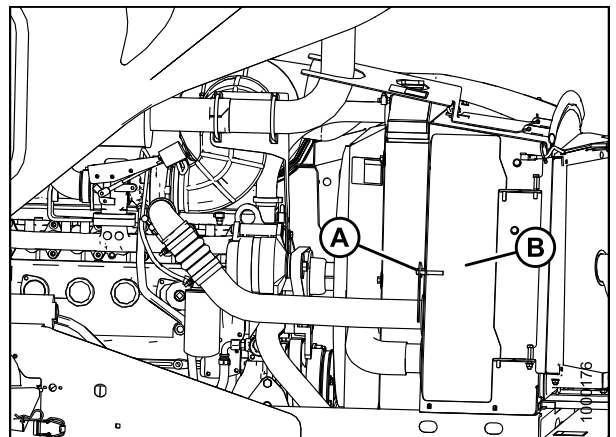


Figure 5.115

- Remove wing nut (A), and open access door (B) at top of cooling box.

**NOTE:** Fins on coolers can be very easily bent which may interfere with its function. Exercise caution when cleaning.

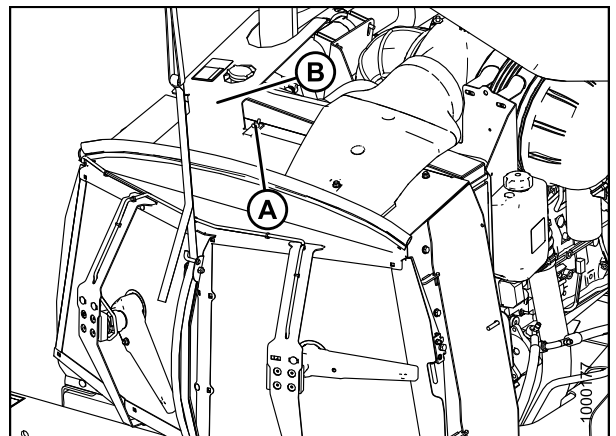
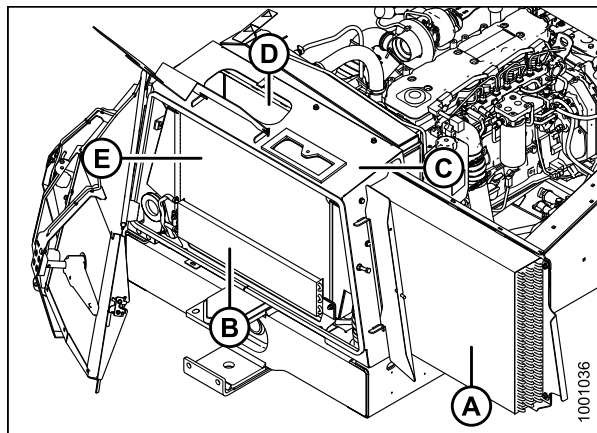


Figure 5.116

## MAINTENANCE AND SERVICING

- Clean radiator (D) through access holes in cooling box with compressed air.
- Clean oil cooler / air conditioning condenser (A), charge air cooler (E), fuel cooler (B) and cooling box (C) with compressed air.
- Inspect all lines and coolers for evidence of leaks and damage.
- Slide oil cooler / air conditioning condenser (A) back into cooling box (C).
- Close side access door, and lock with lever.
- Close access door on top of the cooling box, and secure with wing nut.
- Close cooler box screen. See Section [5.7.5 Closing Cooler Screen, page 277](#).



**Figure 5.117**

A - Oil cooler/condenser  
B - Fuel cooler  
C - Cooling box  
D - Radiator  
E - Air cooler

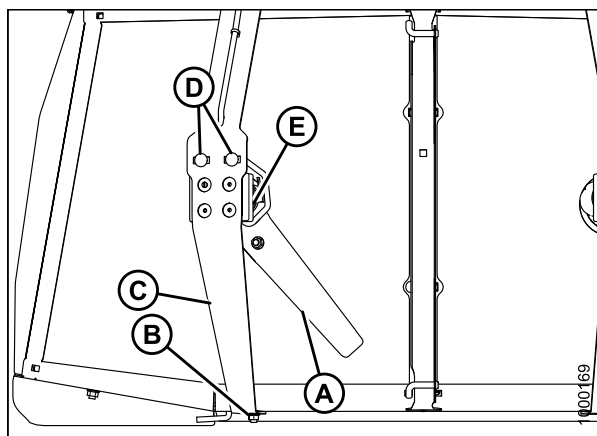
### 5.7.4 Screen Cleaner Duct to Screen Clearance

Check clearance between trailing edge of screen cleaner duct (A) and screen. It should be 0.04–0.32 in. (1–8 mm) at all locations when rotating.

**NOTE:** Screen cleaner ducts rotate counterclockwise and may touch screen as long as it continues to rotate.

If necessary, adjust clearance as follows:

- Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\), page 216](#).
- Loosen nut (B) on motor support (C).
- Move support in or out until duct is 0.08–0.24 in. (2–6 mm) from screen near the center.
- Tighten nut (B).
- Loosen the two motor mount bolts (D).
- Move motor/ duct assembly (E) to obtain 0.04–0.32 in. (1–8 mm) gap to screen at full rotation of the duct.
- Tighten nuts (D) on motor mount.
- Close the hood. See Section [5.2.2 Closing Hood \(Lower Position\), page 217](#).



**Figure 5.118**

A - Trailing edge of screen cleaner duct  
B - Nut  
C - Motor support  
D - Motor mount bolts  
E - Motor/duct assembly

## MAINTENANCE AND SERVICING

### 5.7.5 Closing Cooler Screen

1. Unhook the support rod and store it in the screen door. Close screen access door (B) and engage latch (A).
2. Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

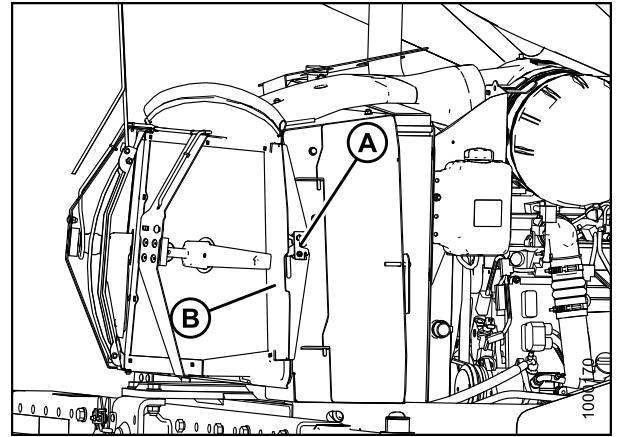


Figure 5.119

## MAINTENANCE AND SERVICING

### 5.8 Electrical System

#### 5.8.1 Battery

##### *Maintaining the Battery*

### CAUTION

**Do NOT attempt to service battery unless you have the proper equipment and experience to perform the job. Have it done by a qualified Dealer.**

- Check battery charge **once a year**, and more often if operating in cold weather. Hydrometer readings should be 1.260 to 1.300. Readings below 1.250 indicate charging is required. See [Charging the Battery, page 279](#). Add electrolyte if necessary. See [Adding Electrolyte to the Battery, page 281](#).
- Keep battery clean by wiping it with a damp cloth.
- Keep all connections clean and tight. Remove any corrosion, and wash terminals with a solution of baking soda and water. A light coating of grease on terminals (after cables are attached) will reduce corrosion.
- To prolong battery life, store batteries fully charged and at +20° to +80°F (-7° to +26°C). Check voltage after storage, and recharge as needed, according to battery and charger manufacturer recommendations.
- Do **NOT** stack storage batteries on top of each other.

##### *Battery Main Disconnect Switch*

A battery main disconnect switch is located on the right cab-forward side frame rail, just behind the batteries, and can be easily accessed by moving the maintenance platform.

Ensure switch is switched to POWER OFF position when performing major servicing to electrical components, or for periods of non-use to prevent inadvertent loss of battery charge.

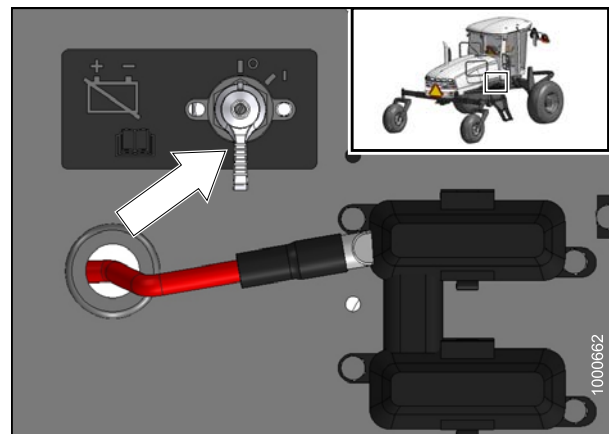


Figure 5.120

## MAINTENANCE AND SERVICING

### Charging the Battery



## CAUTION

- Ventilate the area where batteries are being charged.
- Do NOT charge a frozen battery. Warm to 60°F (16°C) before charging.
- Do NOT connect or disconnect live circuits. To prevent sparks, turn off charger and connect positive cable first. PROTECT YOUR EYES.
- If charging battery in windrower, disconnect POSITIVE battery cable before connecting charger cable, then connect ground cable last, away from battery.
- Stop or cut back charging rate if battery feels hot, or is venting electrolyte. Battery temperature must not exceed 125°F (52°C).
- The maximum charge rate in amperes should be NO MORE than 1/3 of the battery's reserve capacity minute rating. If the terminal voltage exceeds 16.0 volts while charging, reduce the charge rate.
- Continue charging and reduce the rate as needed until a two hour period results in no increase in voltage or decrease in current.



## WARNING

- Gel and AGM (Absorbed Glass Mat) batteries require a voltage-limited charger. Charging a Gel or AGM battery on a typical shop charger—even one time—may greatly shorten its life.
- If the electrolyte is accessible, verify that plates are covered before beginning to charge. At the end of charge, add distilled water as needed to bring levels to the proper height. If water is added, charge for an additional 30 minutes to mix. If electrolyte levels are low, but battery is not accessible, remove battery from service.

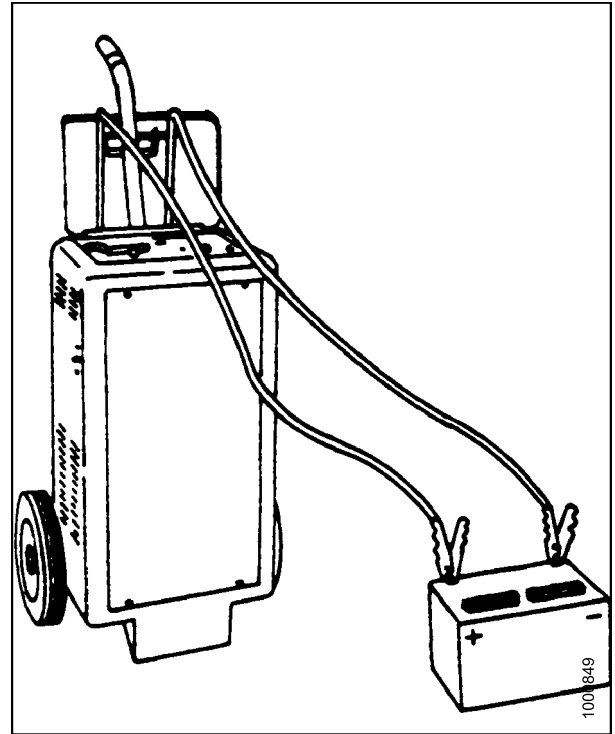


Figure 5.121

Voltage	State of charge (%)	Approximate battery charging time <sup>26</sup> to full charge at 80°F/27°C. (minutes)			
		Maximum rate at (Amps)			
Standard battery					
12 Volts		50	30	20	10
12.6	100	— FULL CHARGE —			
12.4	75	20	35	48	90
12.2	50	45	75	95	180
12.0	25	65	115	145	280
11.8	0	85	150	195	370

26. Charging time depends upon battery capacity, condition, age, temperature and efficiency of charger.

### CAUTION

Follow all instructions and precautions furnished by the battery charger manufacturer, including the following:

- Charge at recommended rates and times.
- Turn off charger prior to hook up to avoid dangerous sparks. Wear proper eye protection.
- Reduce charge rate if the terminal voltage is higher than 16.0 volts while charging. The maximum charge rate in amperes should not exceed 1/3 of the battery's reserve capacity minute rating.
- Continue charging if there is no change in voltage or current for a period of two-hour and reduce the rate as needed.
- If the battery case gets hot during charging or spews large amount of gasses, temporarily stop charging.

### IMPORTANT

**NEVER overcharge batteries. Excessive charging will shorten battery life.**

To charge battery, follow these steps:

1. Stop engine, and remove key.
2. Move platform on right cab-forward side of machine to open position to allow access to the batteries. See [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
3. Remove red plastic cover (A) from positive cable clamps.
4. Remove black plastic cover (B) from negative terminals.
5. If charging battery in windrower, disconnect **positive** battery cable (A), then connect charger cable to positive post. Connect charger ground cable to the engine block last, away from battery.
6. Charge batteries in accordance with charger manufacturer's instructions.
7. Close platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.

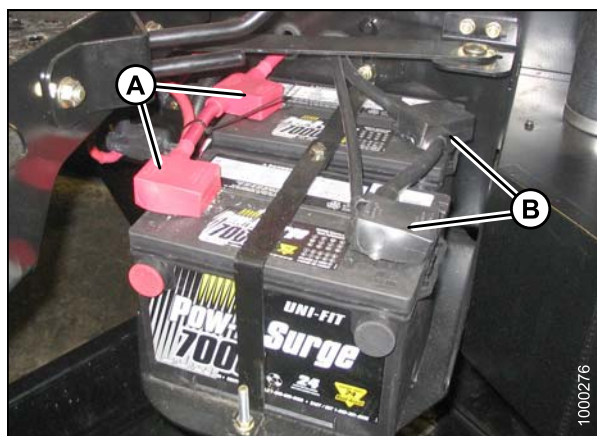


Figure 5.122

A - Positive terminals

B - Negative terminals

## MAINTENANCE AND SERVICING

### *Boosting the Battery*

A twelve volt battery can be connected in parallel (+ to +) with the windrower battery. Use heavy-duty battery cables.

### CAUTION

- Gas given off by batteries is explosive. Keep sparks and flames away from batteries.
  - Wear protective eye-wear when using a booster battery.
  - Be sure everyone is clear of machine when starting engine. Start engine from operator's station only.
1. Remove red rubber cover from boost post (A) on windrower frame.
  2. Attach one end of battery cable to positive (+) terminal of booster battery, and other end to positive boost post (A) on windrower frame.
  3. Attach second cable to negative (-) terminal of booster battery, and then to ground post (B) on windrower frame.
  4. Turn ignition switch in cab as with normal start up.
  5. After engine starts, disconnect cable from windrower ground first, and then disconnect the other cables.
  6. Replace rubber cover on boost post (A).

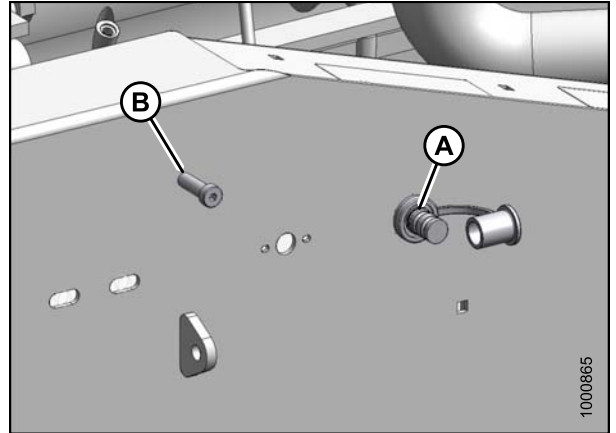


Figure 5.123

### *Adding Electrolyte to the Battery*

### WARNING

- Keep all smoking materials, sparks and flames away from electrolyte container and battery, as gas given off by electrolyte is explosive.
- Battery electrolyte causes severe burns. Avoid contact with skin, eyes or clothing. Wear protective eyewear and heavy gloves.



Figure 5.124

## MAINTENANCE AND SERVICING

### **WARNING**

- If electrolyte is spilled or splashed on clothing or on the body, neutralize it immediately with a solution of baking soda and water, then rinse with clean water.
- Electrolyte splashed into the eyes is extremely dangerous. Should this occur, force the eye open, and flood with cool, clean water for five minutes. Call a Doctor immediately.

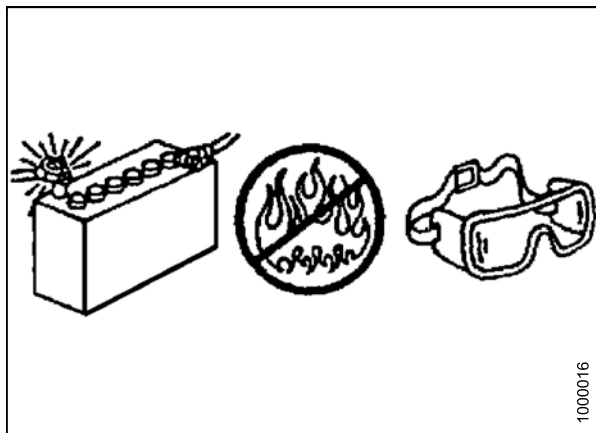


Figure 5.125

1. If battery is installed in windrower, stop the engine and remove the key.
2. Open the platform on the right side of the cab. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
3. Add electrolyte in accordance with the battery manufacturer's instructions.
4. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.



Figure 5.126

### *Removing Battery*

### **CAUTION**

Do not attempt to service battery unless you have the proper equipment and experience to perform the job.

### **DANGER**

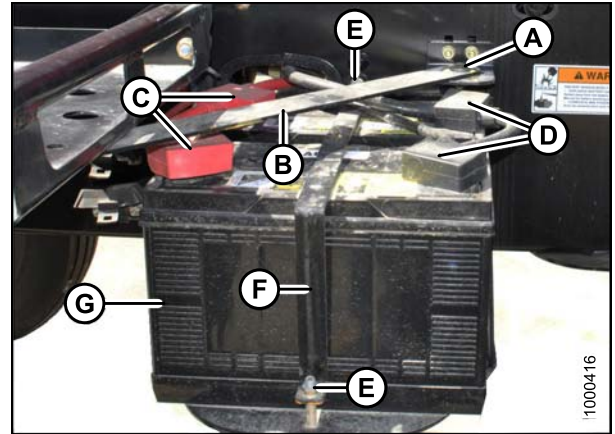
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



## MAINTENANCE AND SERVICING

1. Shut down the engine and remove the key.
2. Open the right cab-forward platform to expose the batteries. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
3. Remove the bolt (A) that secures the platform arm to the platform. Swing arm (B) out of the way.
4. Loosen clamps (D) on negative terminals and remove cable from batteries.
5. Remove the red plastic cover from positive cable clamps (C). Loosen the clamps and remove cable from batteries.
6. Remove bolts (E) securing strap (F) to frame, and remove strap.
7. Lift batteries off holder (G).

**NOTE:** Dual battery support can be removed from frame by simply lifting support, and pulling it away from frame.



**Figure 5.127**

A - Bolt  
 B - Arm  
 C - Positive terminal clamp  
 D - Negative terminal clamp  
 E - Bolt  
 F - Strap  
 G - Holder

### *Installing Battery*

**Table 5.16 Battery Specification**

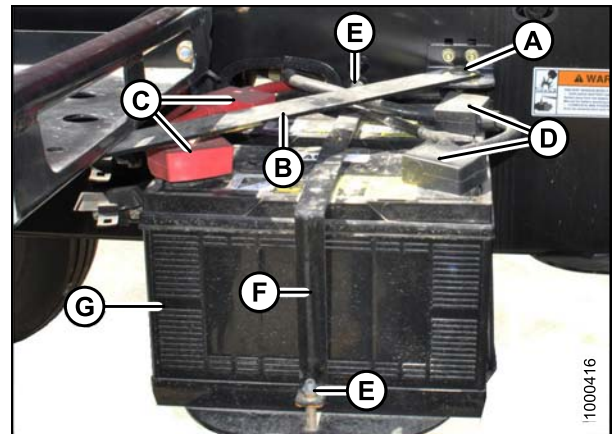
Rating	Group	CCA (min)	Volt	Maximum Dimension
Heavy duty, off-road, vibration resistant	BCI 29H or 31A	750	12	13.25 x 7.37 x 9.44 inches (334 x 188 x 232 mm)

1. Position new batteries on dual battery support.
2. Install strap (F) with bolts (E).

## IMPORTANT

**BATTERY IS 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.

3. Attach positive (red) cable clamps (C) to positive post on batteries, and tighten. Reposition plastic covers onto clamps.
4. Attach negative (black) cable clamps (D) to negative post on batteries, and tighten clamps.
5. Close the platform. , see Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.



**Figure 5.128**

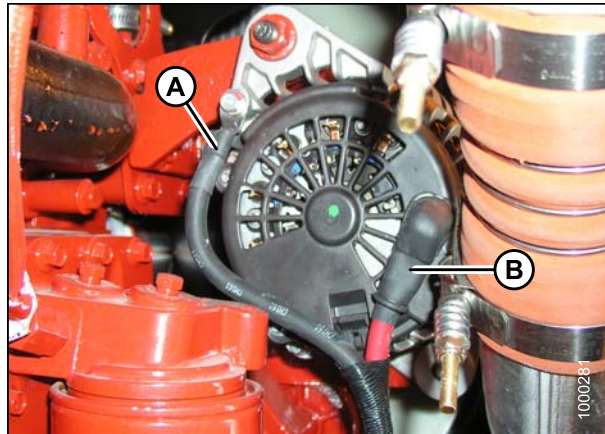
A - Bolt  
 B - Arm  
 C - Positive terminal clamp  
 D - Negative terminal clamp  
 E - Bolt  
 F - Strap  
 G - Holder

## MAINTENANCE AND SERVICING

### *Preventing Electrical System Damage*

To prevent electrical system damage, take the following precautions:

- Carefully observe polarity when attaching booster battery.
- Do not short across battery or alternator terminals, or allow battery positive (+) cable or alternator wire to become grounded.
- Be sure alternator connections are correct before cables are connected to battery.
- When welding on any part of the machine, disconnect battery cables and alternator wire. See Section 1.8 [Welding Precaution](#), page 10.
- Always disconnect battery ground cable when working with the alternator or regulator.
- Never attempt to polarize alternator or regulator.
- If wires are disconnected from the alternator, use the illustration to ensure proper reconnection.
- Never ground the alternator field terminal or field.
- Never connect or disconnect alternator or regulator wires with battery connected or alternator operating.
- Always disconnect cables from the battery when using a charger to charge battery in windrower.
- Ensure all cables are securely connected before operating engine.



**Figure 5.129: Alternator**

A - Negative terminal

B - Positive terminal

### **5.8.2 Headlights: Engine-Forward**

#### *Aligning Headlights*



**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

**NOTE:** Header should be attached and raised to maintain proper windrower stance.

1. Position windrower on level ground in front of a vertical surface in accordance with the illustration.
2. Shut down engine, and remove key.

## MAINTENANCE AND SERVICING

- Turn on ROAD lights, and switch to low-beam.

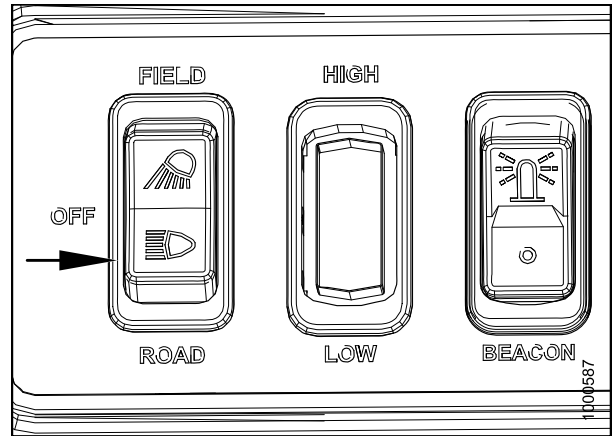


Figure 5.130

- Align the headlights to the following specifications by turning adjusting screws (A).
  - Adjustments are for low-beam.
  - Light beams laterally centered on the direction of travel line from the headlights (that is, not skewed left or right).
  - Upper limit of the beam not higher than 49-3/4 inches (1263 mm) above ground at a distance of 25 ft. (7.5 m) from the headlight.



Figure 5.131

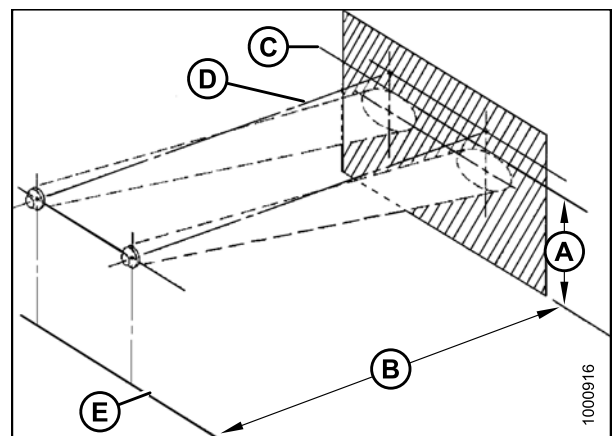


Figure 5.132

- A - 49.75 in. (1263 mm) maximum
- B - 25 ft (7.5 m)
- C - Top edge of beam
- D - Beam centered on direction of travel line
- E - Ground

## MAINTENANCE AND SERVICING

### Replacing Headlight Bulb

1. Remove two screws (A), and remove headlight assembly from hood.



Figure 5.133

2. Pull wiring harness connector off the headlight assembly, and remove rubber insulator boot (A).

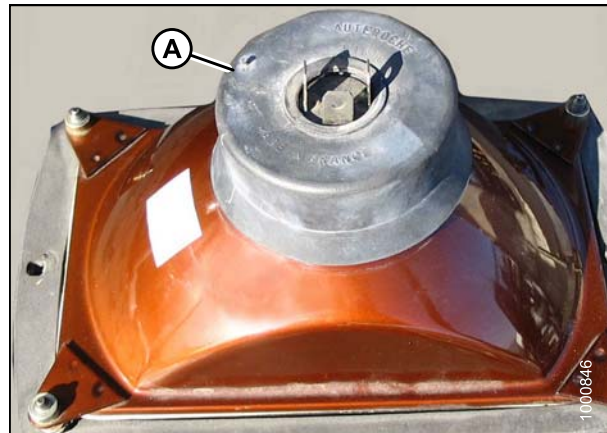


Figure 5.134

3. Pinch the wire retainer (A), and lift away from hooks.
4. Remove bulb (B) from body.

### IMPORTANT

Do NOT touch the glass of the halogen bulb as the oils or other chemicals from your skin will cause the bulb to fail prematurely.

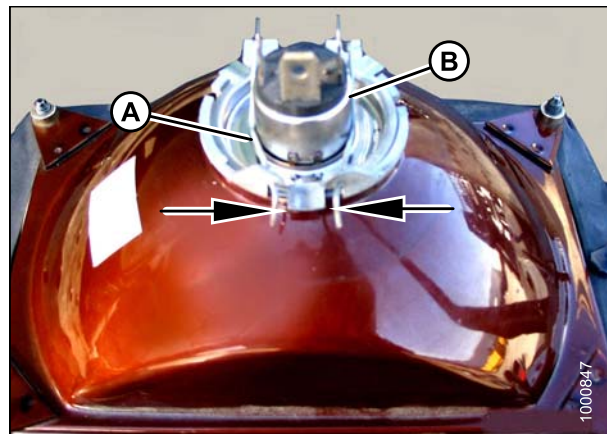


Figure 5.135

# MAINTENANCE AND SERVICING

- 5. Align lugs (B) on new bulb with slots (C) in body, and push into place.
- 6. Secure bulb with wire retainer (A)

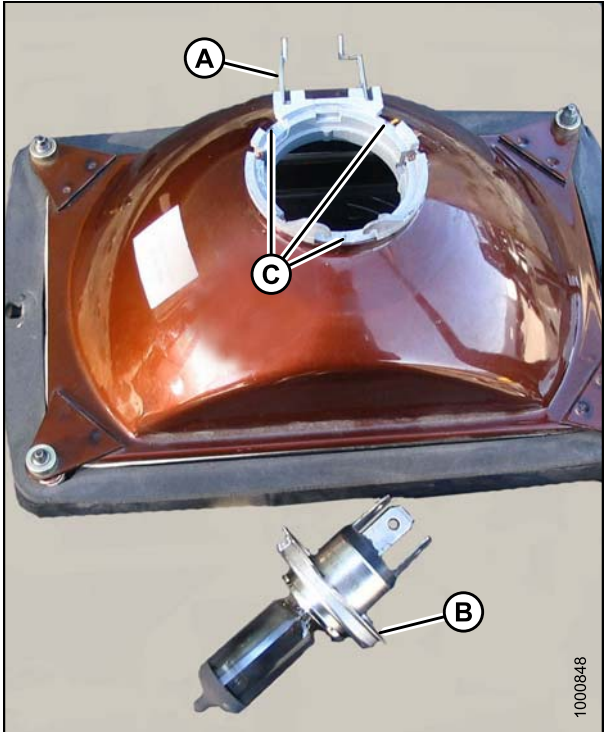


Figure 5.136

- 7. Replace rubber insulator boot (A).
- 8. Push connector onto light bulb.

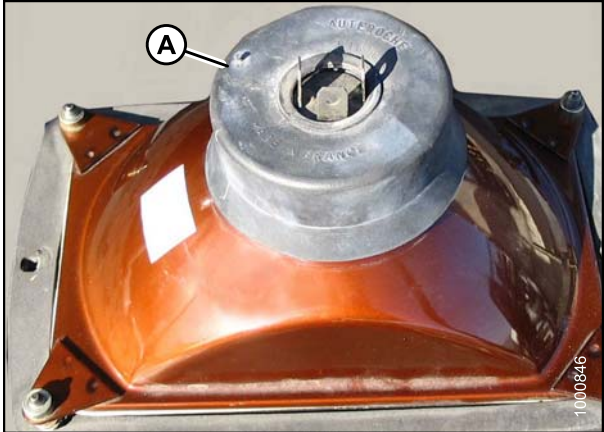


Figure 5.137

## MAINTENANCE AND SERVICING

9. Position headlight into light receptacle, ensuring top is up, and secure with screws (A).

**NOTE:** Aligning of light should not be necessary.



Figure 5.138

### 5.8.3 Field Lights: Cab-Forward

#### *Adjusting Field Lights*

The field lights are best adjusted with the machine in the field (or equivalent) to suit Operator preference.



## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Hold onto handholds (A) on the cab front corners, and stand on header anti-slip strips.

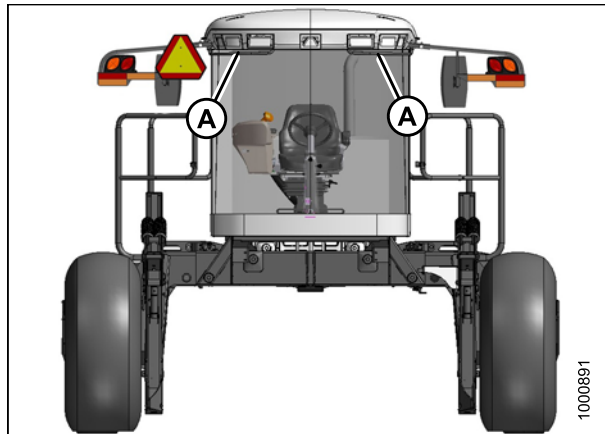


Figure 5.139

2. Adjust lights with screws (A).



Figure 5.140

## MAINTENANCE AND SERVICING

### *Replacing Field Light Bulb*

1. Remove two screws (A), and remove light assembly.
2. Replace bulb as described in [Replacing Field Light Bulb, page 289](#)

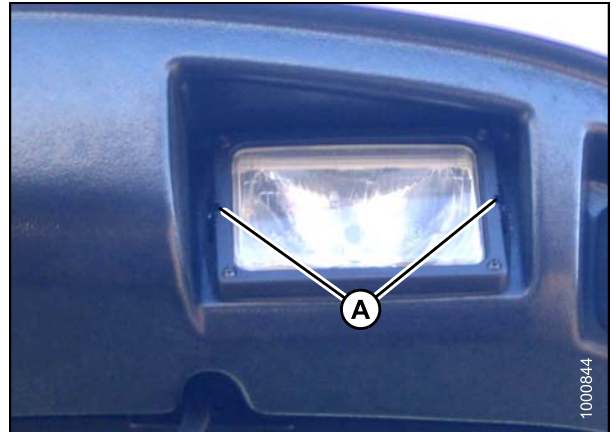


Figure 5.141

### 5.8.4 Floodlights: Forward

#### *Adjusting Forward Floodlights*

The forward floodlights are **NOT** adjustable.

#### *Replacing Bulb in Cab-Forward Floodlight*

Replace bulbs as follows:

1. Shut down engine, and remove key. Turn lights OFF.
2. Hold onto the handholds (A) on the cab front corners, and stand on the header anti-slip strips when removing the forward field lights.
3. Remove two screws (B), and remove light bezel (C).
4. Remove light from receptacle.

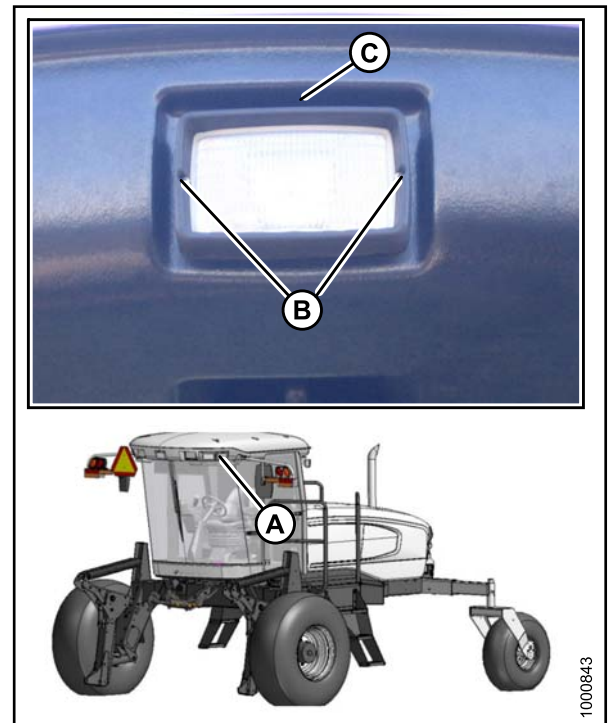


Figure 5.142

## MAINTENANCE AND SERVICING

5. Pinch the wire retainer (A), and lift away from hooks.
6. Remove bulb (B) from body, and pull wire from connector (C).

### IMPORTANT

Do NOT touch the glass of the halogen bulb as the oils or other chemicals from your skin will cause the bulb to fail prematurely.

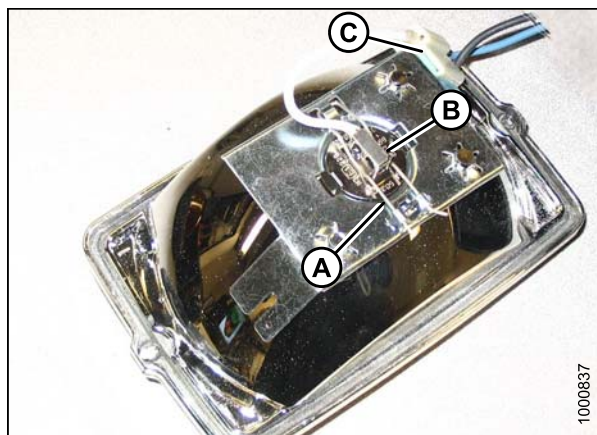


Figure 5.143

7. Match slots on new bulb (B) with lugs (D) in optical unit, and insert bulb into unit.
8. Secure bulb with wire retainer (A).
9. Push wire into connector (C).

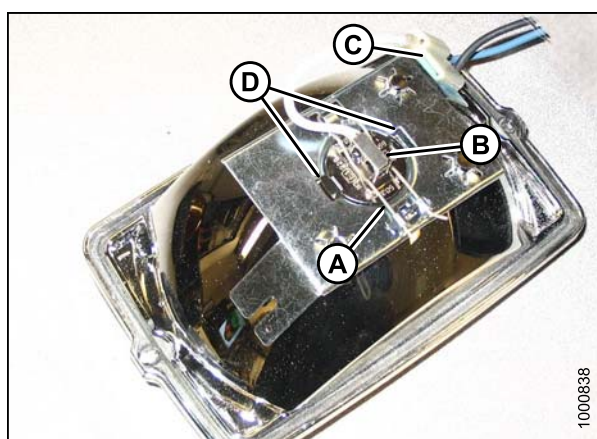


Figure 5.144

10. Position light into light receptacle, ensuring top is up, and secure with bezel (C) and screws (B).

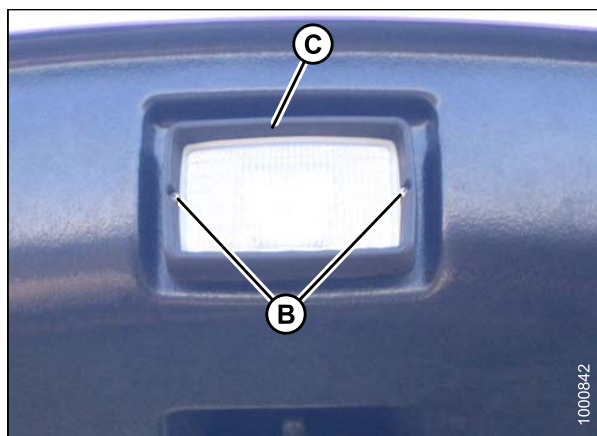


Figure 5.145



## MAINTENANCE AND SERVICING

### 5.8.5 HID Field Lights

#### *Replacing HID Flood Lights*



**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Shut down engine, and remove key. Turn lights OFF.

**NOTE:** Hold onto the handholds on the cab front corners, and stand on the header anti-slip strips, or stand on the maintenance platform when accessing the HID flood lights.

2. Disconnect lamp connector (A) from electrical harness (B).

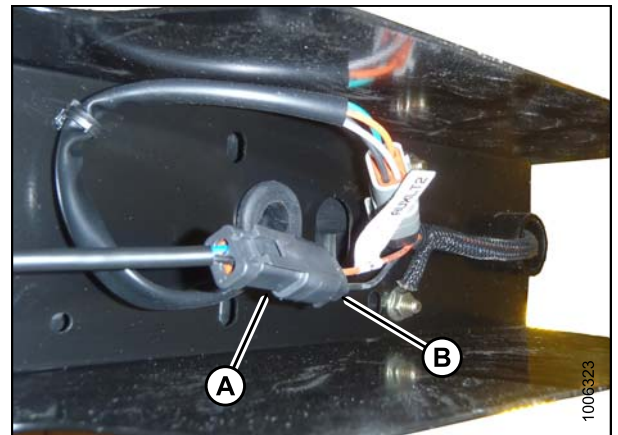


Figure 5.146

3. Remove grommet (A) from light support (B).
4. If replacing lamp and bracket assembly, remove nut (C) and spring washer from inside light support (B) and remove light assembly.

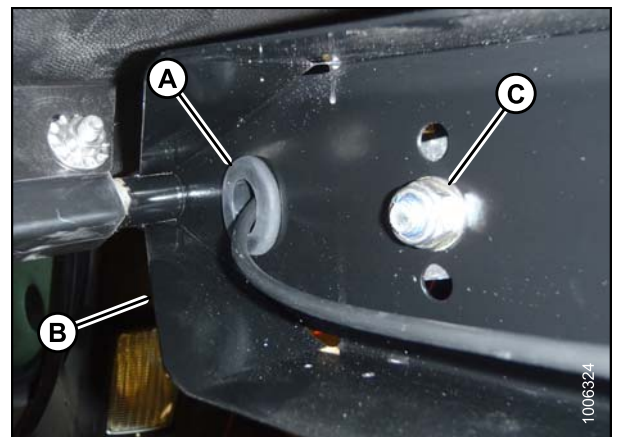


Figure 5.147

## MAINTENANCE AND SERVICING

5. If replacing the lamp only, remove the nut, spring washer and bolt (A) securing lamp (B) to lamp bracket (C) and remove lamp (B).
6. If installing lamp only, position new lamp (B) in lamp bracket (C) and secure with bolt (A), spring washer and nut. Adjust lamp (B) to desired position and tighten bolt (A).

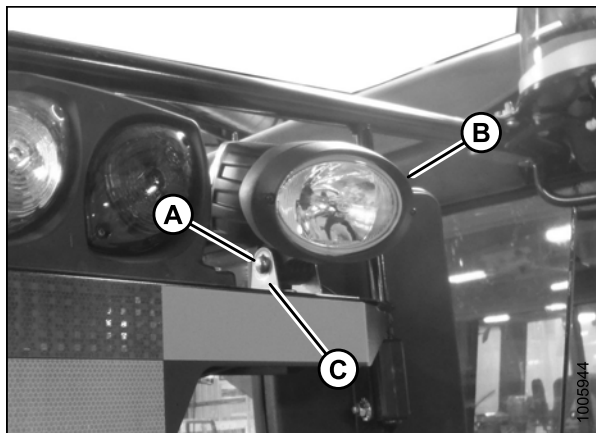


Figure 5.148

7. If installing light/bracket assembly, locate light in center hole in light support (B) and secure with hardware (C) provided with light assembly. Adjust light assembly to desired position and tighten nut (C).
8. Route lamp harness through grommet (A) and slot in light support (B).
9. Re-install grommet (A) in light support (B).

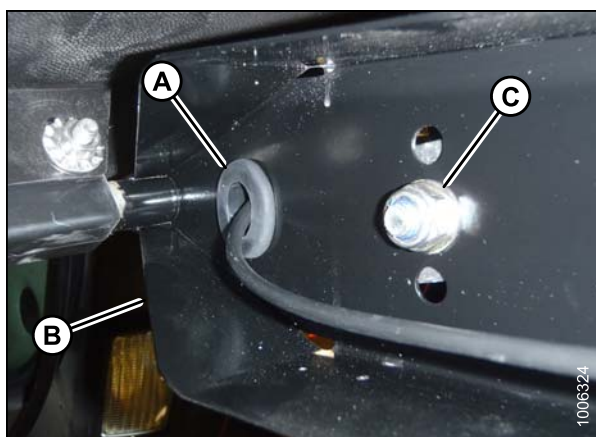


Figure 5.149

10. Connect lamp plug (A) to main harness connector (B).

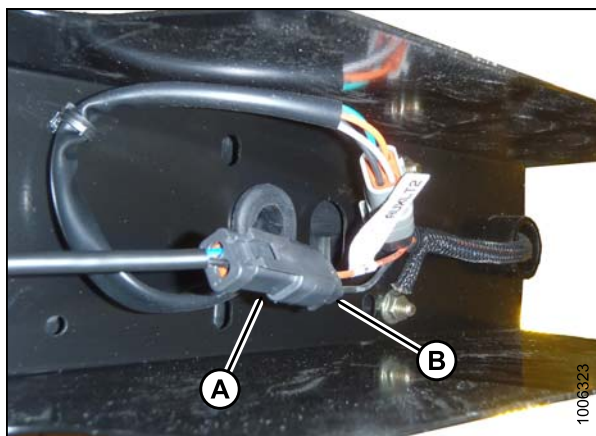


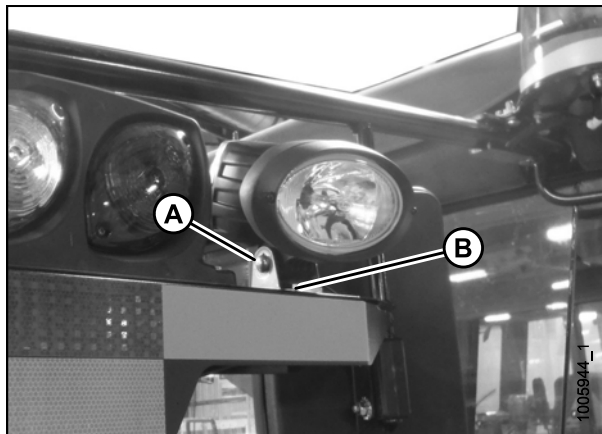
Figure 5.150

## MAINTENANCE AND SERVICING

### *Adjusting the HID Floodlights*

The HID floodlights are best adjusted with the machine in the field (or equivalent) to suit Operator preference.

1. Shut down engine, and remove key. Turn lights ON.
2. Loosen bolt (A) and nut (B) (located inside light/mirror support).
3. Position light to desired position.
4. Tighten bolt (A) and nut (B).



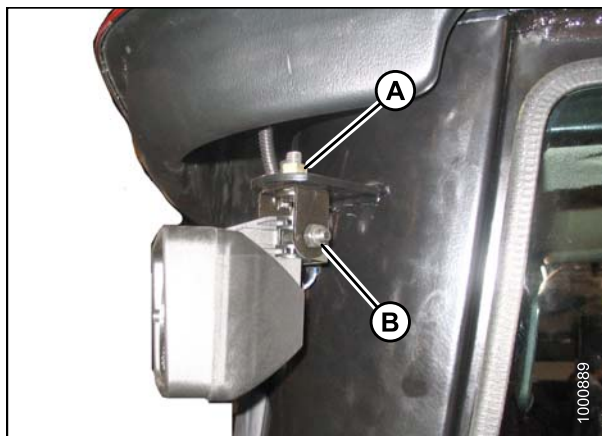
**Figure 5.151**

### **5.8.6 Floodlights: Rear**

#### *Adjusting the Rear Floodlights*

The rear floodlights are best adjusted with the machine in the field (or equivalent) to suit Operator preference.

1. Shut down engine, and remove key. Turn lights ON.
2. Loosen bolts (A) and (B).
3. Position light to desired position.
4. Tighten bolts (A) and (B).



**Figure 5.152**

## MAINTENANCE AND SERVICING

### Replacing Bulb in Rear Floodlight

1. Shut down engine, and remove key. Turn lights OFF.
2. Remove two screws (A), and remove light bezel (B).
3. Remove light from receptacle.

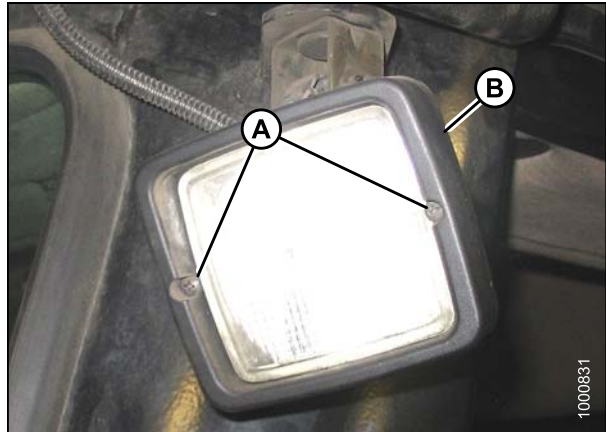


Figure 5.153

## IMPORTANT

**Do NOT touch the glass of the halogen bulb as the oils or other chemicals from your skin will cause the bulb to fail prematurely.**

4. Pinch the wire retainer (A), and lift away from hooks.
5. Remove bulb (B) from body, and pull wire from connector (D).
6. Match slots on new bulb (B) with lugs (C) in optical unit, and insert bulb into unit.
7. Secure bulb with wire retainer (A).
8. Push wire into connector (D).

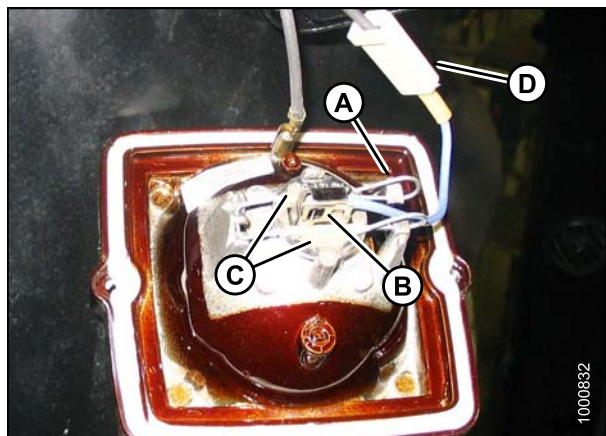


Figure 5.154

9. Position light into light receptacle, ensuring top is up, and secure with bezel (B) and screws (A).

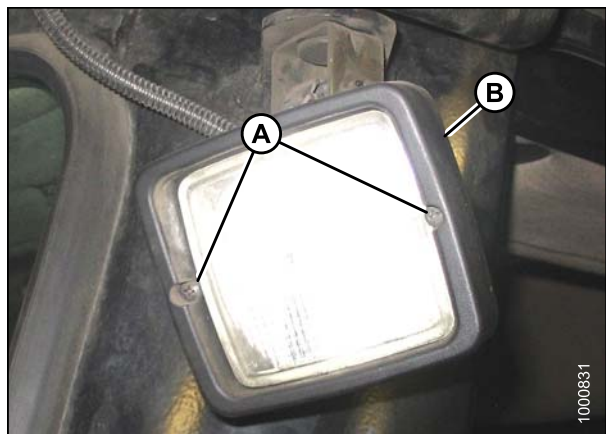


Figure 5.155

## MAINTENANCE AND SERVICING

### 5.8.7 Red And Amber Lights

#### **DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Shut down engine, and remove key. Turn lights OFF.

**NOTE:** Hold onto the handholds (A) on the cab front corners, and stand on the header anti-slip strips, or stand on the maintenance platform when accessing the red and amber lights.

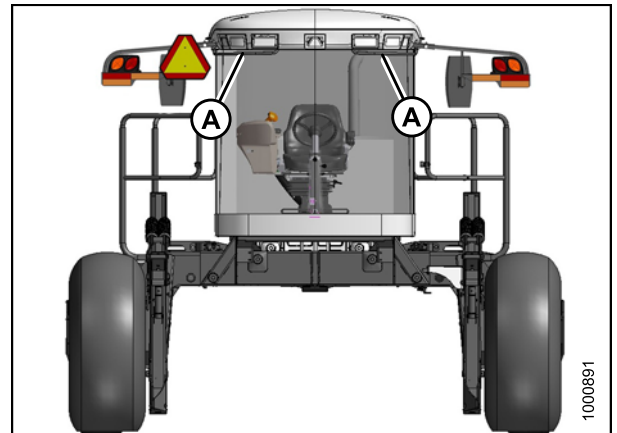


Figure 5.156

2. Remove two screws (A) from lens, and remove lens.
3. Push and twist light bulb to remove from socket.
4. Install new bulb in socket ensuring that bulb base is properly engaged in socket. Use Bulb Trade #1157 for red tail lights and #1156 for amber lights.
5. Reinstall lens with screws (B).

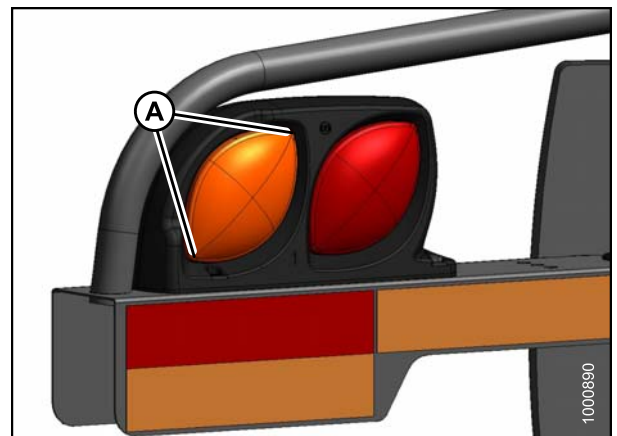


Figure 5.157

### 5.8.8 Red Tail Lights (if installed)

#### **DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Shut down engine, and remove key. Turn lights OFF.

## MAINTENANCE AND SERVICING

2. In the grill of the hood, remove two screws (A) from light (B), and remove light.
3. Remove connector from light.
4. Connect wiring harness to new light (B), and install light with screws (A).

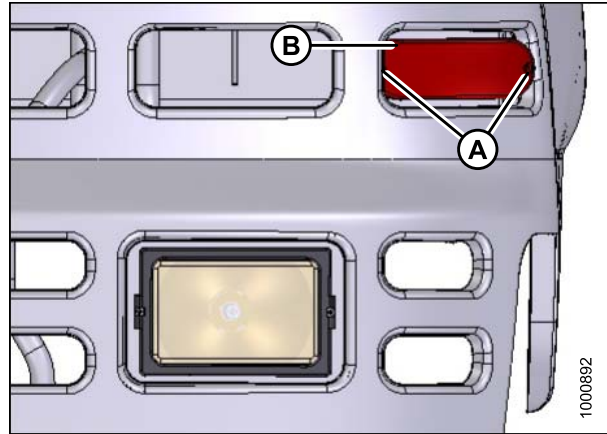


Figure 5.158

### 5.8.9 Beacons (if installed)

Beacons are available as an optional Dealer-installed attachment.

1. Shut down engine, and remove key. Turn beacons OFF.

**NOTE:** Hold onto the handholds (B) on the cab front corners, and stand on the header anti-slip strips, or stand on the maintenance platform when accessing the beacons (A).

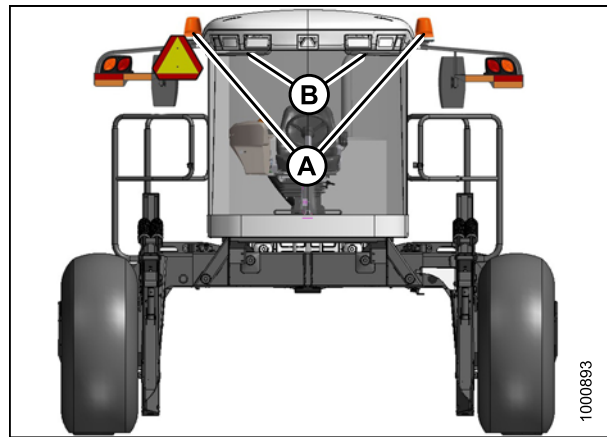


Figure 5.159

2. Turn lens (A) counterclockwise to unlock lens from base, and remove lens.

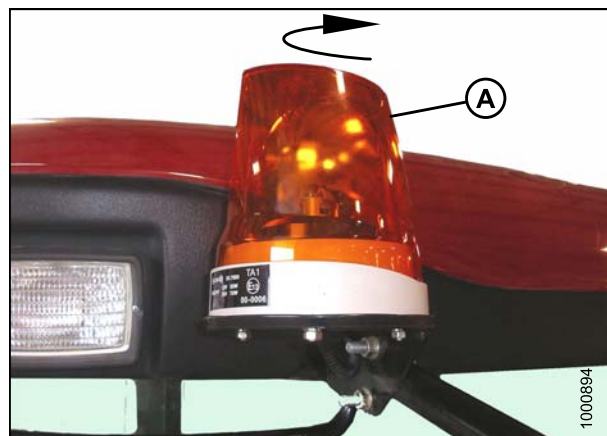


Figure 5.160

## MAINTENANCE AND SERVICING

3. Pinch retainer (A), and remove it from lamp socket.
4. Pull lamp out of socket.

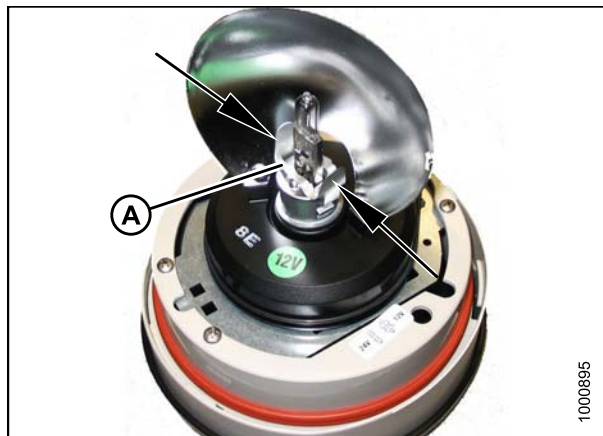


Figure 5.161

5. Disconnect harness from lamp.

### IMPORTANT

Do NOT touch the glass of the halogen bulb as the oils or other chemicals from your skin will cause the bulb to fail prematurely.



Figure 5.162

## MAINTENANCE AND SERVICING

6. Connect harness to new lamp, place lamp in socket, and line up the flat side on lamp with recess in socket.



Figure 5.163

7. Place retainer (A) over lamp, and pinch tabs to secure retainer to socket.

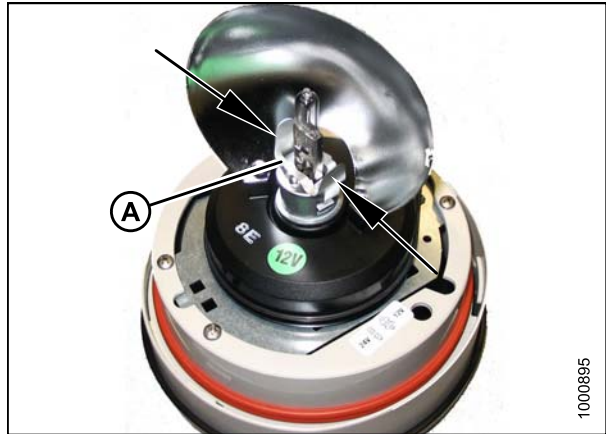


Figure 5.164



# MAINTENANCE AND SERVICING

- 8. Line up the three lugs (one is longer) in the base with slots in lens, and seat the lens against the rubber seal.

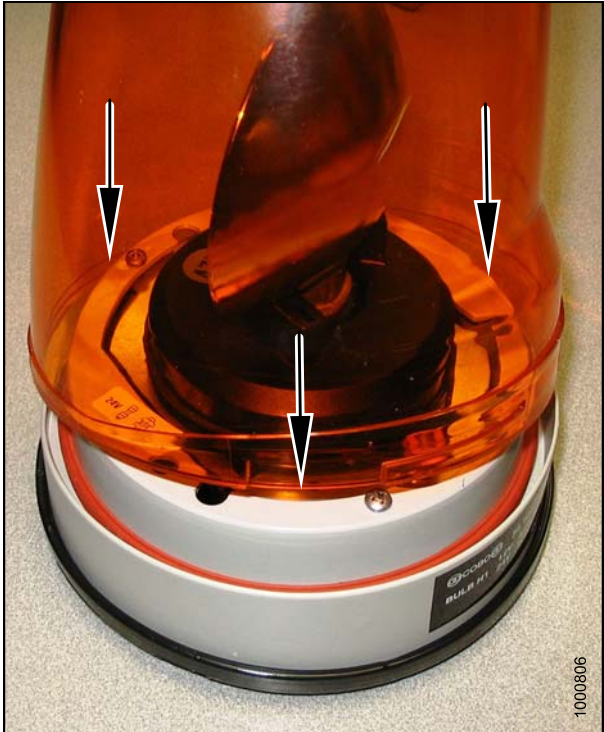


Figure 5.165

- 9. Turn the lens clockwise to lock it in place.

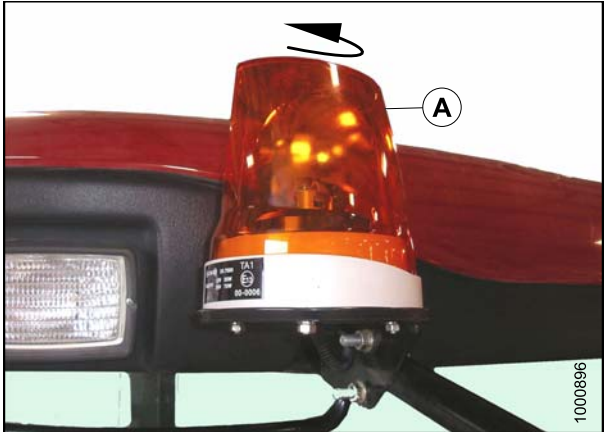


Figure 5.166

## MAINTENANCE AND SERVICING

### 5.8.10 Console Gauge Light

1. Shut down engine, and remove key. Turn lights OFF.
2. Remove the appropriate gauge access hole decal (A) behind the operator's console.

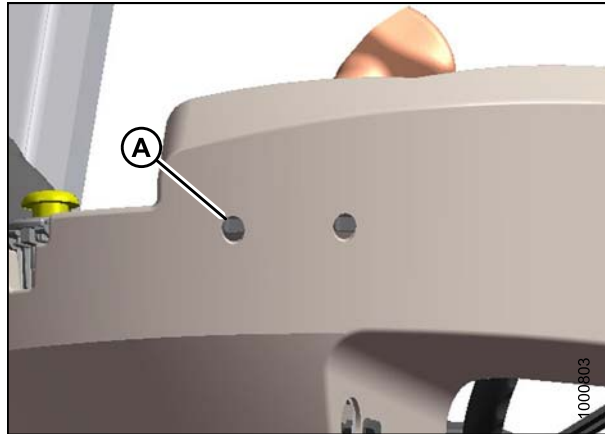


Figure 5.167

3. Remove nut (B) securing mounting bracket (C) to gauge inside the console.
4. Pull gauge out from console. It is not necessary to disconnect the wiring harness to back of gauge.
5. Twist bulb holder (D) counterclockwise until loose, and pull bulb holder from back of gauge.
6. Insert new bulb into gauge, and turn clockwise until it locks.
7. Push gauge into console.
8. Locate bracket (C) onto back of gauge, and secure with nut (B). Tighten nut to 75–96 in-ozf (529–678 mN·m).
9. Replace gauge access-hole decal (A).

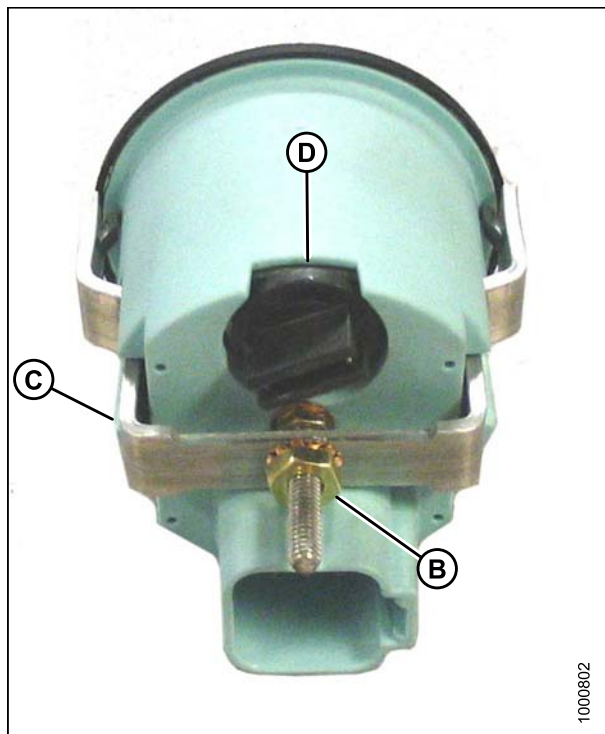


Figure 5.168

## MAINTENANCE AND SERVICING

### 5.8.11 Dome Light

1. Shut down engine.
2. Remove two screws (A) from plastic lens, and remove lens.
3. Replace bulb.
4. Reinstall plastic lens with screws (A).

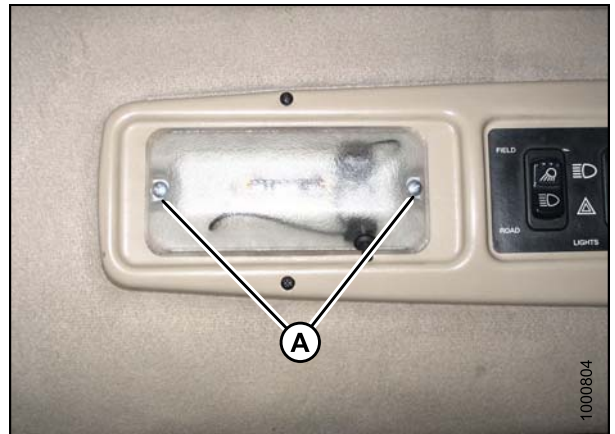


Figure 5.169

### 5.8.12 Ambient Light

1. Shut down engine.
2. Locate the ambient light fixture (A) in the roof liner.

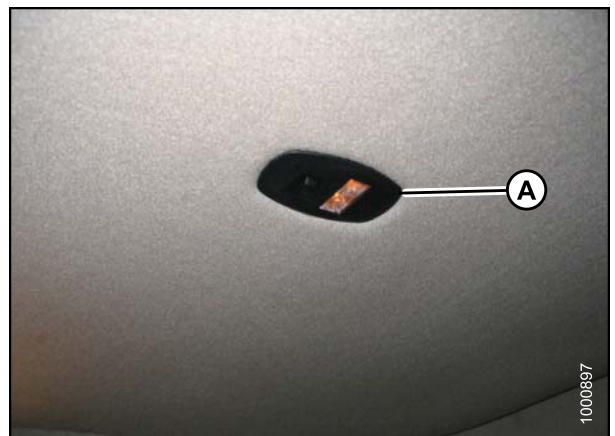


Figure 5.170

3. Push against tabs (A) with a screwdriver, and pull ambient light fixture out of cab roof.
4. Remove wires from connectors (B).
5. Connect wires to new light fixture.
6. Push into place in cab roof until tabs hold fixture in place.

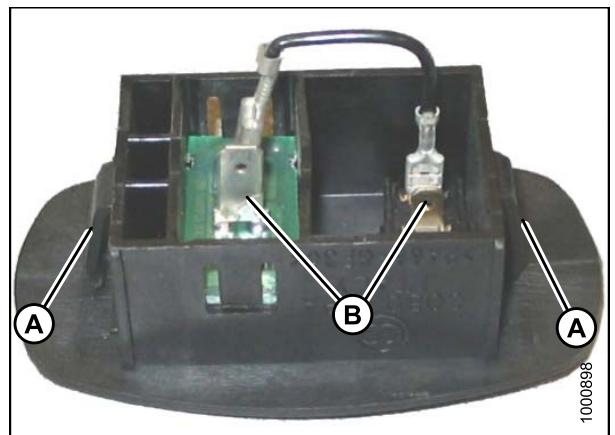


Figure 5.171

## MAINTENANCE AND SERVICING

### 5.8.13 Turn Signal Indicators

If the turn signal indicators on the Cab Display Module (CDM) do **NOT** function, contact your MacDon Dealer.

### 5.8.14 Circuit Breakers and Fuses

The circuit breakers and fuses are located inside the fuse box that is mounted on the frame under the right cab-forward side platform.



**DANGER**

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

The circuit breakers automatically reset. Fuses are the plastic blade type.

Access the breakers and fuses as follows:

1. Stop engine, and remove key.
2. Move right cab-forward side platform rearward (cab-forward).
3. Remove wing nut (A), and remove fuse box cover (B).
4. Refer to decal on inside of cover for identification of fuses and circuit breakers.
5. A cover may be installed over the circuit breaker. Remove it to access the breaker.

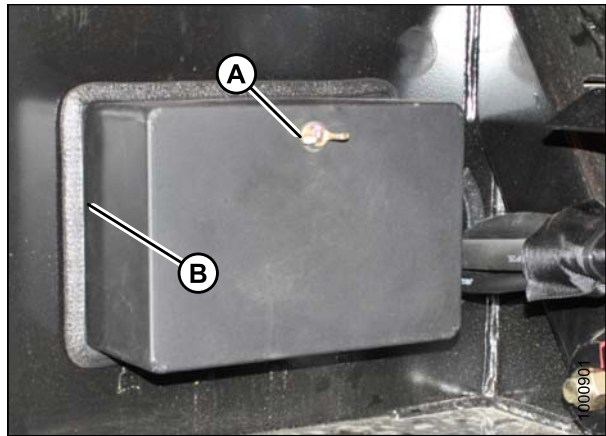


Figure 5.172

## MAINTENANCE AND SERVICING

### Checking and Replacing Fuses

1. To check fuse, pull fuse (A) out of receptacle, and visually examine.
2. To replace fuse, insert new fuse into receptacle.

## IMPORTANT

Replacement fuses should match rating on decal shown on following page.

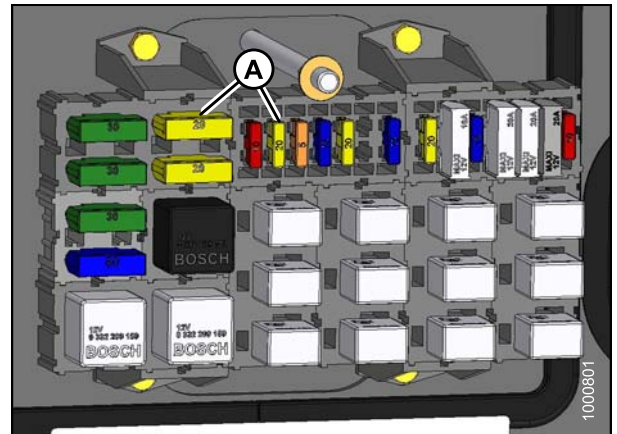


Figure 5.173

### Replacing Circuit Breakers and Relays

Access the breakers and relays as follows:

1. Stop engine, and remove key.
2. Move right cab-forward side platform rearward (cab-forward).
3. To replace circuit breaker (A), pull breaker out of receptacle, and install new circuit breaker.
4. To replace relay (B), pull relay out of receptacle, and install new relay.
5. Reinstall cover, and secure with wing nut.

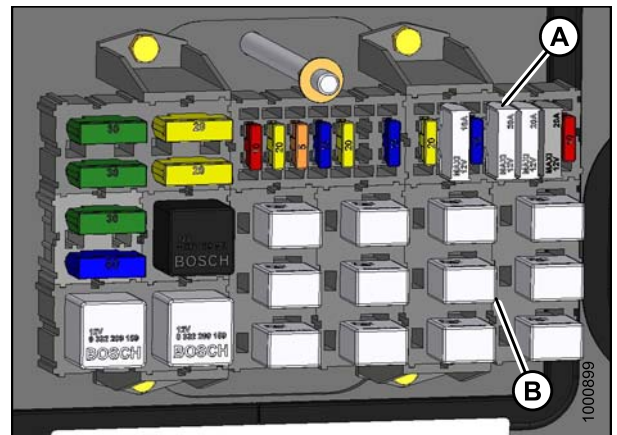
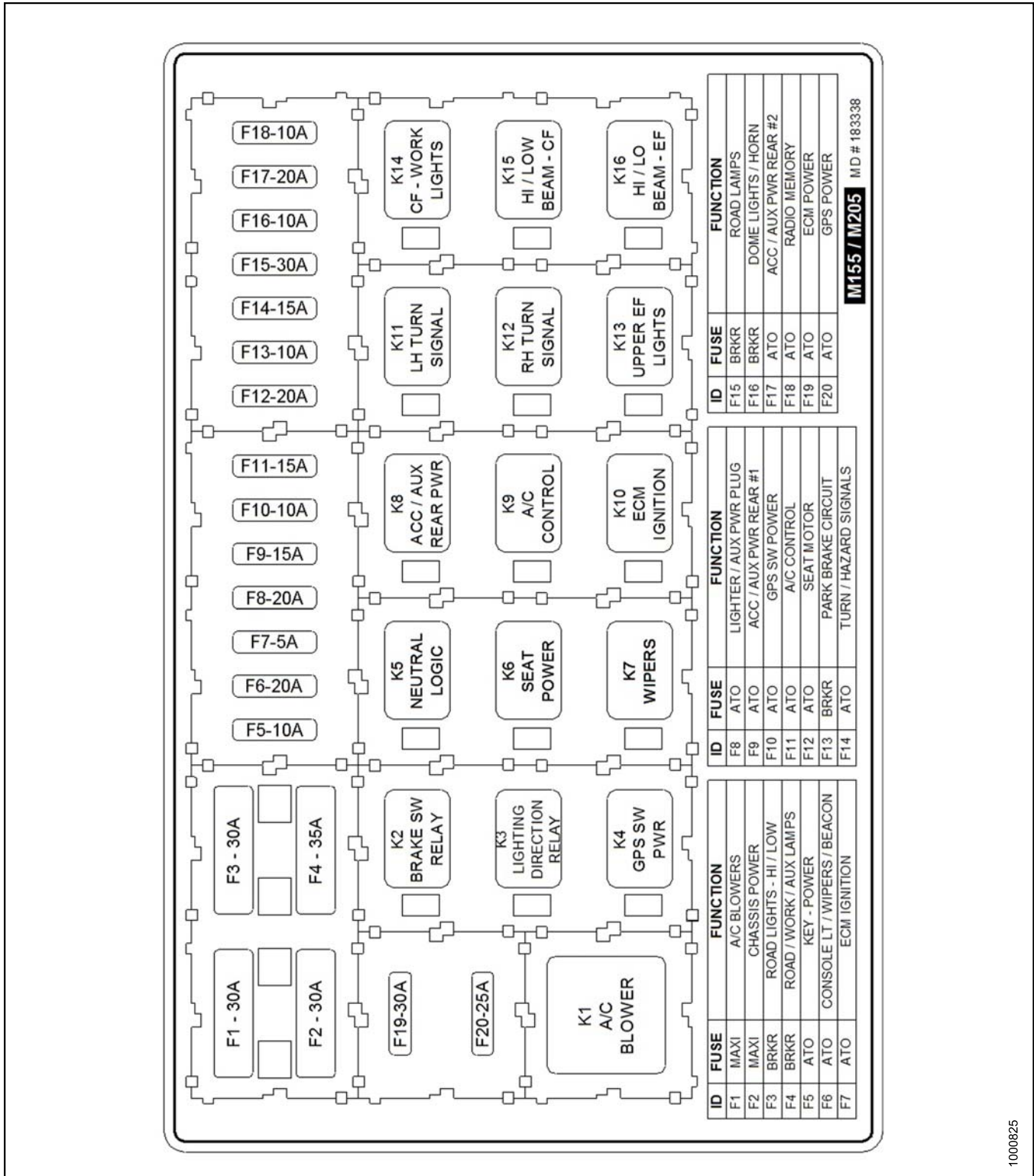


Figure 5.174

# MAINTENANCE AND SERVICING

## Fuse Box Decal



**M155 / M205** MD # 183338

Figure 5.175: Fuse Decal

1000825

## MAINTENANCE AND SERVICING

### *Inspecting and Replacing 125-Amp Main Fuses*

The 125 amp main fuse holders are located on the frame under the right cab-forward side platform beside the battery.

Access the fuses as follows:



**DANGER**

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Stop engine, and remove key.
2. Move right cab-forward side platform rearward (cab-forward).
3. To check condition of fuse (A), pull tab (B), and open cover (C).

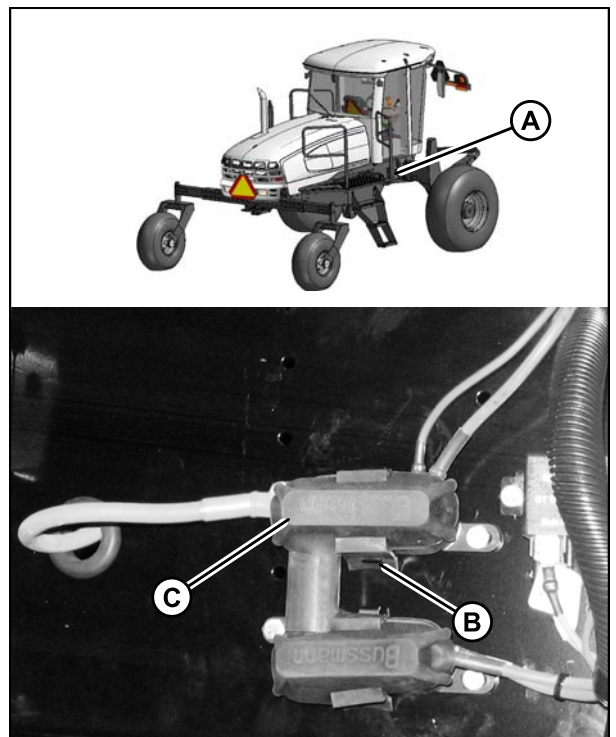


Figure 5.176

## MAINTENANCE AND SERVICING

4. Visually examine fuse (B) for indications of melting.
5. To remove fuse (B), remove two nuts (C), and pull fuse free from holder. Existing wiring may need to be pulled off the stud first.
6. Install new fuse on studs and any existing wiring that was removed.
7. Secure with nuts (C).

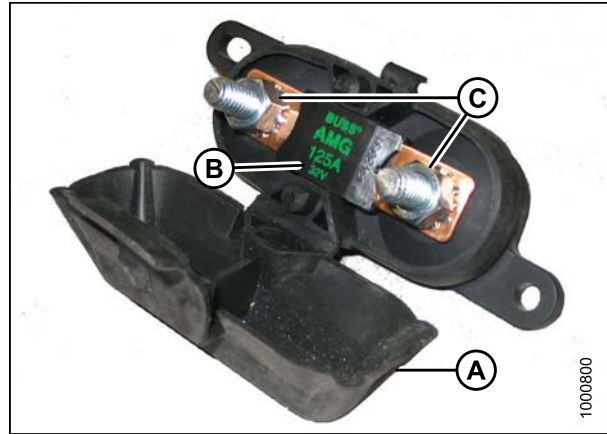


Figure 5.177

8. Close cover (C), and secure with tab (B).
9. Return platform to operating position. Ensure lock engages.

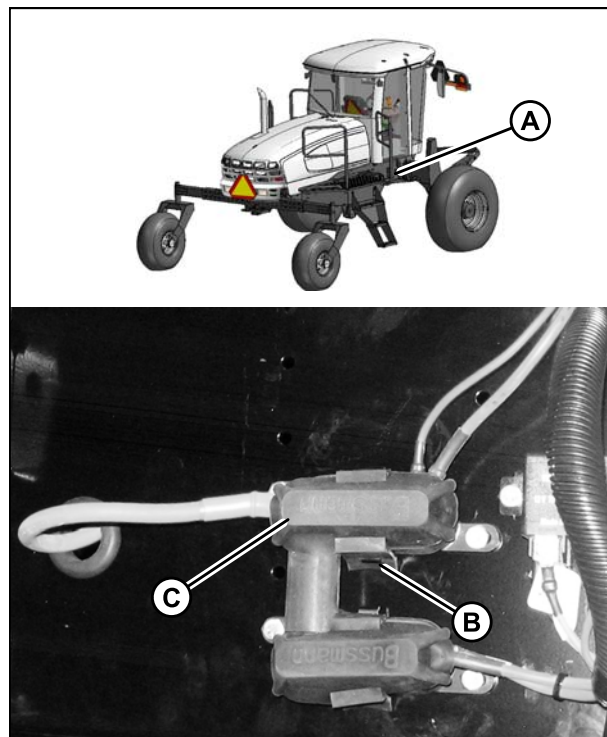


Figure 5.178



## MAINTENANCE AND SERVICING

### 5.9 Hydraulic System

The M205 windrower hydraulic system provides oil for the windrower drive system, and the header lift and drive systems.

#### **WARNING**

- Avoid high pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines.
- Tighten all connections before applying pressure. Keep hands and body away from pin-holes and nozzles which eject fluids under high pressure.



Figure 5.179

#### **WARNING**

- Use a piece of cardboard or paper to search for leaks.
- If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a Doctor familiar with this type of injury or gangrene may result.

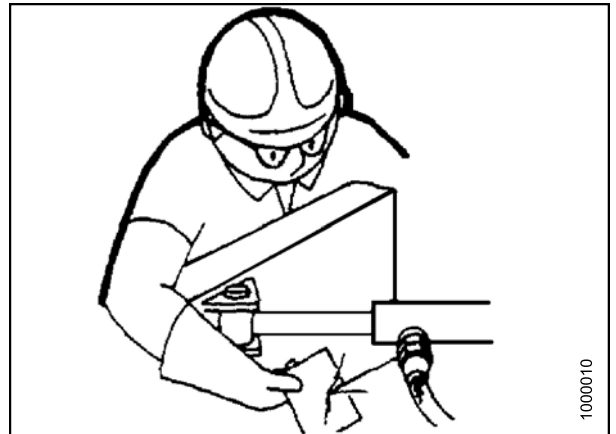


Figure 5.180

## IMPORTANT

- Dirt, dust, water and foreign material are the major causes of trouble developing in the hydraulic system.
- If the hydraulic system should be disconnected for service, protect the ends of hoses, tubing and ports of components from contamination with clean, lint-free towels or clean plastic bags.
- Before installing any replacement hose, flush the inside of it with unused diesel fuel or unused commercial petroleum cleaning solvent for ten seconds minimum. Do NOT use water, water soluble cleaners, or compressed air.
- The components in this system are built to very close tolerances, and have been adjusted at the factory. Do NOT attempt to service these components except to maintain proper oil level, change oil and filters and to adjust relief pressures as described in this manual. See your MacDon Dealer for all other service.

## MAINTENANCE AND SERVICING

### 5.9.1 Checking and Filling Hydraulic Oil

Check hydraulic oil level daily.

#### **DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

#### **CAUTION**

To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B), and NOT installed at hole location (A).

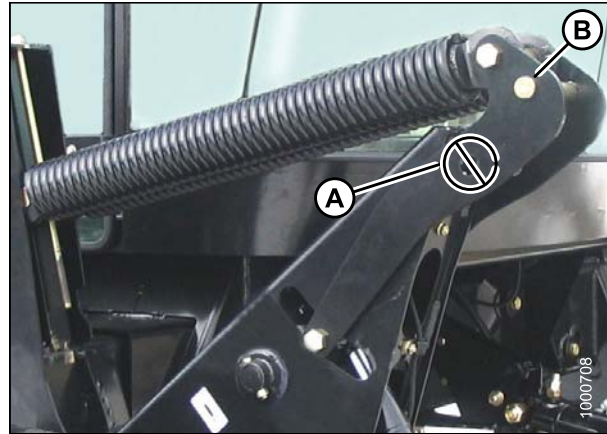


Figure 5.181

1. Park windrower on level ground and lower header and reel so that lift cylinders are fully retracted.
2. Stop the engine and remove the key.
3. Open the hood. See Section [5.2.1 Opening Hood \(Lower Position\)](#), page 216.
4. Open the platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
5. A sight glass (A) on the tank provides a quick indication of low oil level and also shows if the oil is contaminated. No oil in the sight glass indicates oil level is below the add mark on the dipstick.

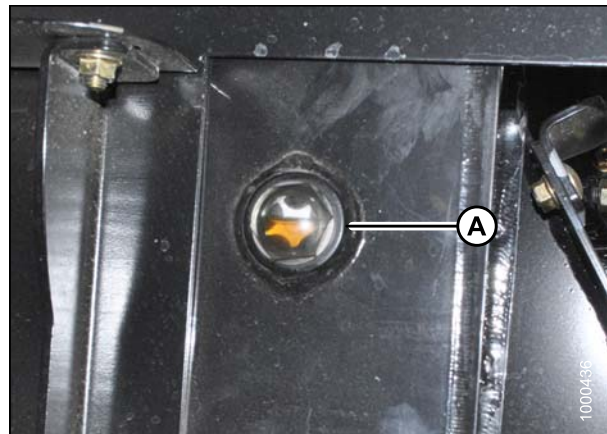


Figure 5.182

## MAINTENANCE AND SERVICING

- Stand on left cab-forward side platform to access the filler pipe.
- Turn filler cap counterclockwise approximately 1/4 turn to unlock, and then remove cap and dipstick.

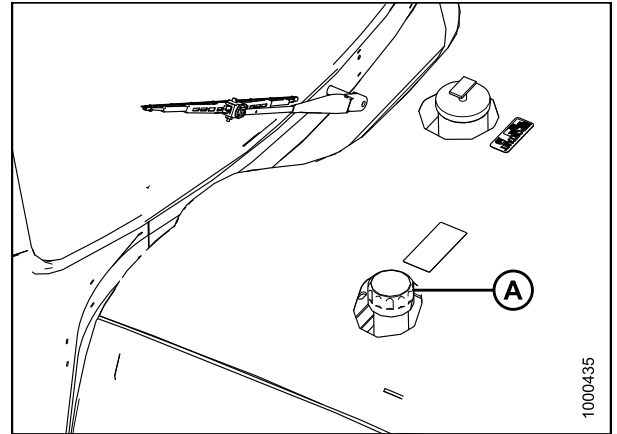


Figure 5.183

- Maintain level between LOW and FULL marks. If necessary, add oil. See Section [Lubricants, Fluids, and System Capacities](#), page 213 for hydraulic oil specifications and quantity.

### IMPORTANT

- Use good quality oil that has been prefiltered.
- Exercise care to prevent debris from falling into tank.

**NOTE:** When dipstick is showing LOW, you will require approximately 1 U.S. gallon (4 liters) to fill to the FULL mark.

- Reinstall dipstick and filler cap (A), and then turn clockwise to lock.
- Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.
- Close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.

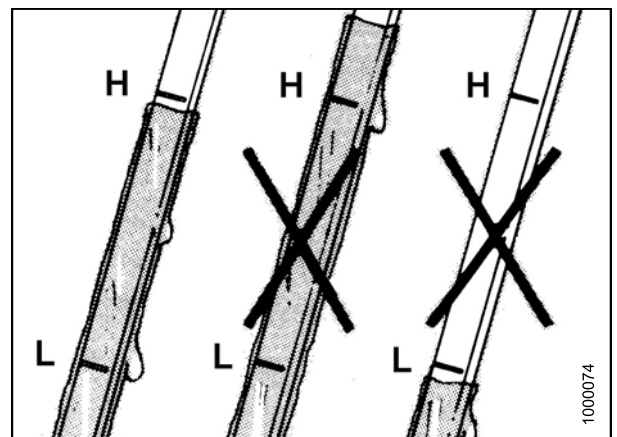


Figure 5.184

### 5.9.2 Hydraulic Oil Cooler

The hydraulic oil cooler is located inside the cooling box behind the radiator.

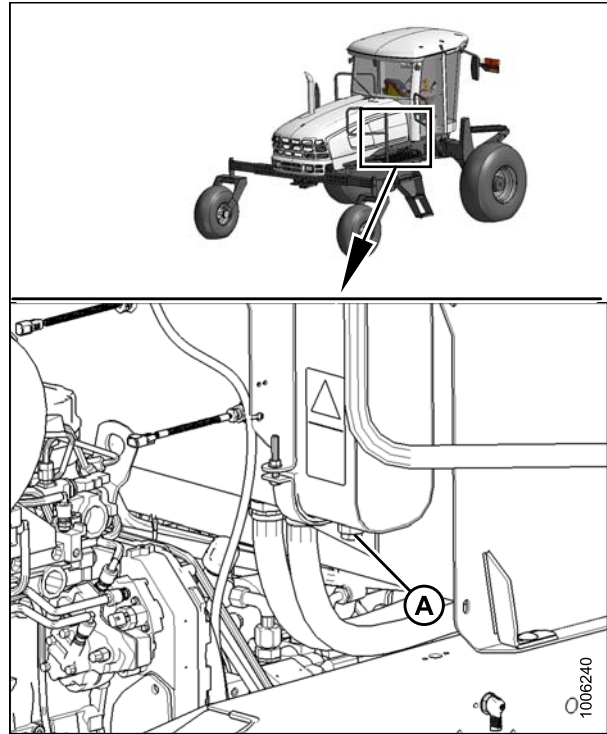
It should be cleaned daily with compressed air. Refer to Section [5.7.3 Maintaining Cooler Box](#), page 274.

## MAINTENANCE AND SERVICING

### 5.9.3 Draining Hydraulic Oil

**NOTE:** Change hydraulic oil every 1500 hours.

1. Park windrower on level ground, and lower header and reel so that lift cylinders are fully retracted.
2. Stop the engine and remove the key.
3. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
4. Place a clean container (at least 20 U.S gallons [75 liters]) under drain at the bottom of the hydraulic reservoir to collect the oil.
5. Remove drain plug (A), and allow oil to drain.
6. Change the lift filter. See Section [Removing Lift Filter](#), page 311.
7. Clean off any metal debris that may have accumulated on magnetic plug. Wipe plug with a clean cloth. Check O-ring condition. Look for cracking, breakage or deformation that may impede sealing ability and replace as required.
8. Install drain plug (A).
9. Fill hydraulic oil reservoir. See Section [5.9.1 Checking and Filling Hydraulic Oil](#), page 308.



**Figure 5.185**

## MAINTENANCE AND SERVICING

### 5.9.4 Hydraulic Filter Change

#### *Lift Filter*

The lift filter filters the oil from the header and reel lift hydraulic systems before it re-enters the oil reservoir. It should be changed whenever the oil in the hydraulic reservoir is changed.

#### Removing Lift Filter

Change the lift filter at the same time that the hydraulic oil is changed (1500 hours or bi-annually).

## IMPORTANT

If filter needs to be changed at any other time, a vacuum must be applied to the supply tank to prevent the oil from running out of the filter head when the filter is removed.



## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

1. Stop engine, and remove key.
2. Open the hood. See Section [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
3. Locate the oil filter (A) below the hydraulic oil reservoir.
4. Place a container underneath the filter to catch any oil that may leak.
5. Clean around head of the filter.
6. Unscrew the filter (A) with a filter wrench.

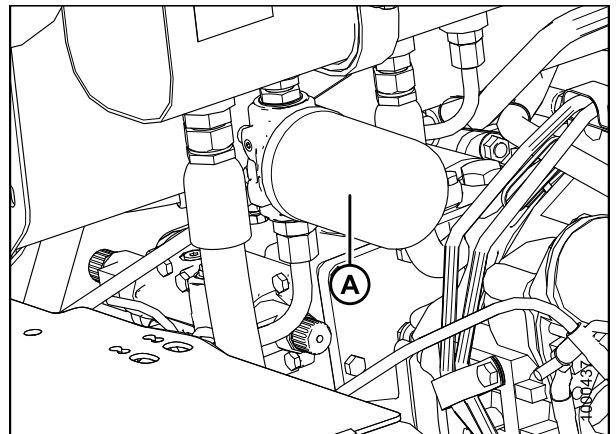


Figure 5.186

#### Installing Lift Filter

**NOTE:** To view filter specifications, refer to [Filter Part Numbers](#), page 214.

## MAINTENANCE AND SERVICING

1. Clean the gasket surface of the filter head
2. Apply a thin film of clean oil to the filter gasket.
3. Screw the new filter (A) onto the mount until the gasket contacts the filter head.
4. Tighten filter an additional 1/2 turn by hand.

### IMPORTANT

Do NOT use a filter wrench to install oil filter.  
Over-tightening can damage gasket and filter.

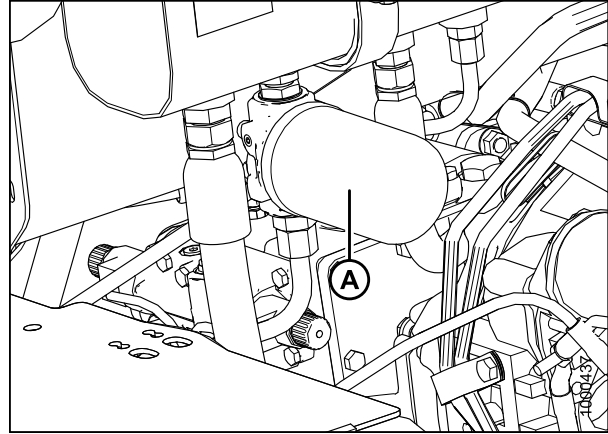


Figure 5.187

### Charge Filter

The charge filter filters the oil in the windrower hydraulic charge circuit that supplies make up oil for normal losses at motor and pump case drains and associated circuits.

### Removing Charge Filter

1. Stop the engine and remove the key.
2. Clean around head of the filter.
3. Place a container beneath the filter to collect any oil that may leak out.
4. Unscrew filter (A) with a filter wrench.
5. Dispose of used oil and filter in accordance with local environmental legislation.

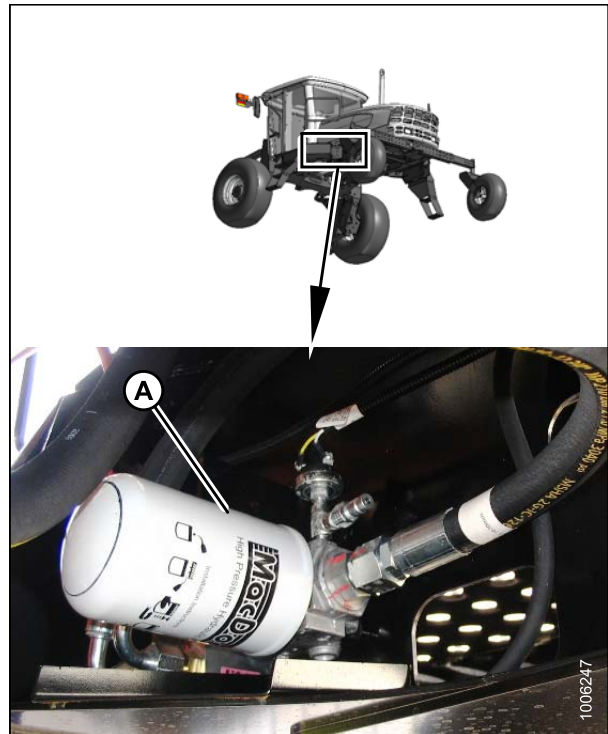


Figure 5.188

## MAINTENANCE AND SERVICING

### Installing Charge Filter

**NOTE:** To view filter specifications, refer to [Filter Part Numbers, page 214](#).

1. Clean the gasket surface of the filter head.
2. Apply a thin film of clean oil to the filter gasket.
3. Screw the new filter (A) onto the mount until the gasket contacts the filter head.
4. Tighten filter an additional 1/2 turn by hand.

### IMPORTANT

**Do NOT use a filter wrench to install oil filter. Overtightening can damage gasket and filter.**

5. Check hydraulic fluid levels, see Section [5.9.1 Checking and Filling Hydraulic Oil, page 308](#). For capacity level, see Section [Lubricants, Fluids, and System Capacities, page 213](#).

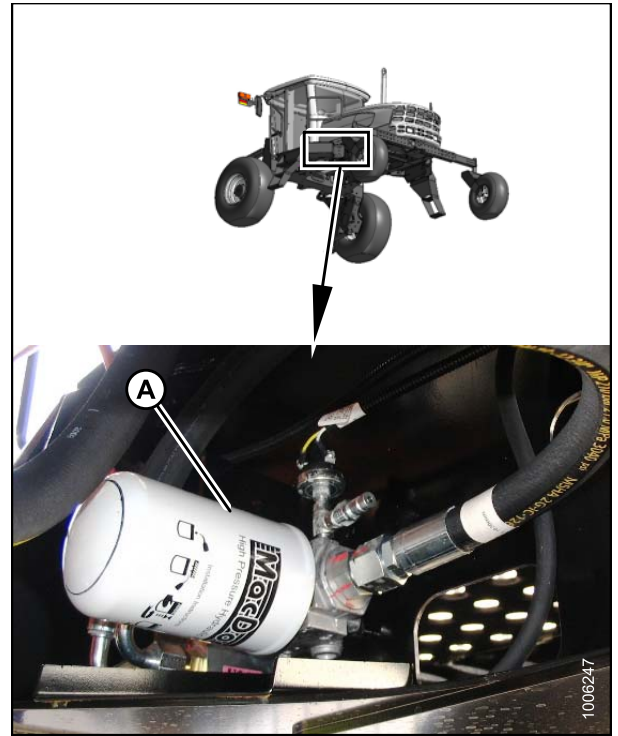


Figure 5.189

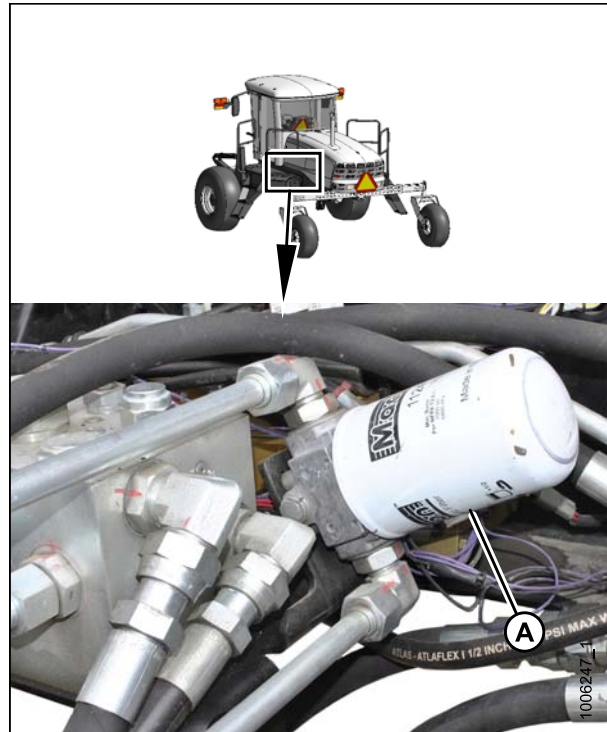
## MAINTENANCE AND SERVICING

### *Return Filter*

The return filter filters the oil in the header drive systems and should be changed after the first 50 hours and then at 500 hour intervals. The return filter is a part of the hydraulics package required to run a draper or auger header and is not present in a windrower unless this package is installed.

#### **Removing Return Filter**

1. Stop the engine and remove the key.
2. Open the left cab-forward side maintenance platform. See [Section 5.3.1 Opening Platforms \(Standard Position\)](#), page 219
3. Locate the return filter (A) next to the valve block.
4. Clean around head of the filter (A).
5. Place a container beneath the filter (A) to collect any oil that may leak out.
6. Unscrew filter (A) with a filter wrench.
7. Dispose of used oil and filter in accordance with local environmental legislation.



**Figure 5.190**



## MAINTENANCE AND SERVICING

### Installing Return Filter

**NOTE:** To view filter specifications, refer to [Filter Part Numbers, page 214](#).

1. Clean the gasket surface of the filter head.
2. Apply a thin film of clean oil to the filter gasket.
3. Screw the new filter (A) onto the mount until the gasket contacts the filter head.
4. Tighten filter an additional 1/2 turn by hand.

### IMPORTANT

**Do NOT use a filter wrench to install oil filter. Overtightening can damage gasket and filter.**

5. Close maintenance platform. See Section [5.3.2 Closing Platforms \(Standard Position\), page 220](#)
6. Check hydraulic fluid levels. See Section [5.9.1 Checking and Filling Hydraulic Oil, page 308](#). For capacity level, see Section [Lubricants, Fluids, and System Capacities, page 213](#).

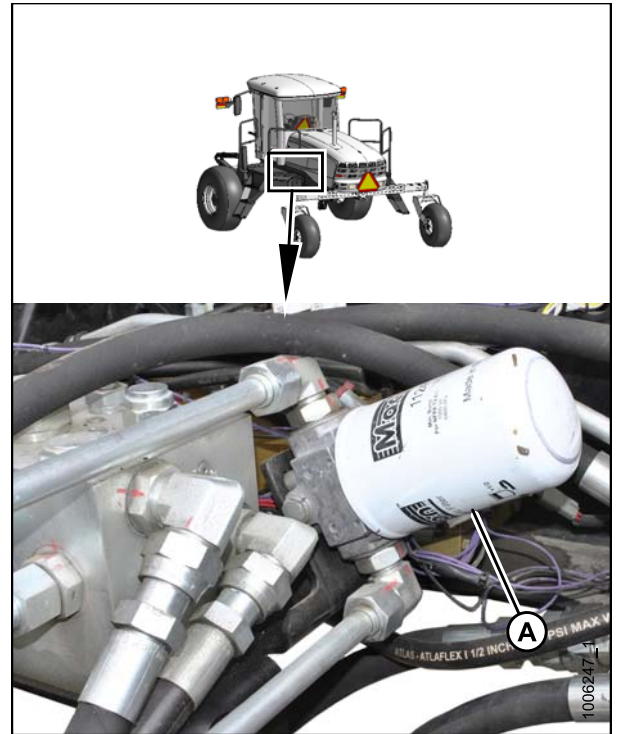


Figure 5.191

### 5.9.5 Header and Reel Hydraulics

#### *Relief Valve and Overload Settings*

The pressure relief valve is preset (Windrower Differential Relief Setting) for all header types, models, sizes and options. See table below.

When the system operating pressure reaches the relief setting, the relief valve opens which causes a high pitch sound. Reduce the ground speed to maintain the correct system load and header drive operation.

An optional load sensor may be installed to warn that the system pressure is approaching an overload condition, by a tone and flashing the pressure reading. If the warning is ignored, the load will continue to rise which causes the relief valve to open at the relief setting. Otherwise, reduce the ground speed to maintain the correct system load and header drive operation.

The overload pressure is programmed into the CDM when inputting the header parameters. Refer to [3.17.5 Cab Display Module \(CDM\) Programming, page 84](#) and the table below for suggested settings

If lift and drive capacity problems develop, the pressure relief valve may require adjusting. Contact your MacDon Dealer.

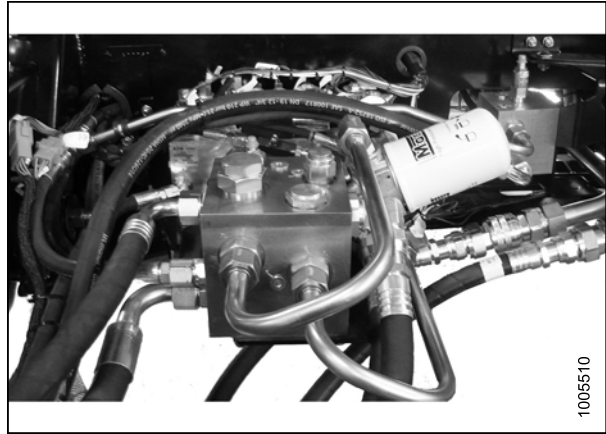
## MAINTENANCE AND SERVICING

Header model	Application/system	Windrower differential relief setting (header attached) psi (kPa)	Suggested overload warning setting psi (kPa)
R80 and R85	Disc pressure	5500 (37,921)	5000 (34,474)
D60, D65, and A40D	Reel/drapper pressure	2900 (19,994)	2500 (17,237)
	Knife/conditioner pressure	4000 (27,579)	3600 (24,821)

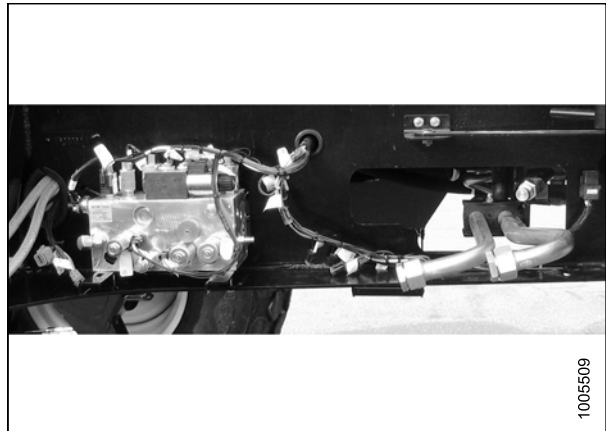
### *Flow Control Blocks*

Two hydraulic valve blocks with multiple cartridges are used for the various windrower functions and are controlled by the Windrower Control Module (WCM) according to the inputs from the Operator. The valve blocks are located behind the left cab-forward side platform.

The valve blocks do **NOT** require any scheduled maintenance other than to check for leaking fittings or loose electrical connections. If service is required, contact your MacDon Dealer.



**Figure 5.192: Draper Header Hydraulics**



**Figure 5.193: Rotary Disc Header Hydraulics**

## MAINTENANCE AND SERVICING

### *Adjusting Header Drop Rate*

The header should lower gradually when the lower header switch is pressed. From full height to ground should take approximately 3 – 4 seconds.

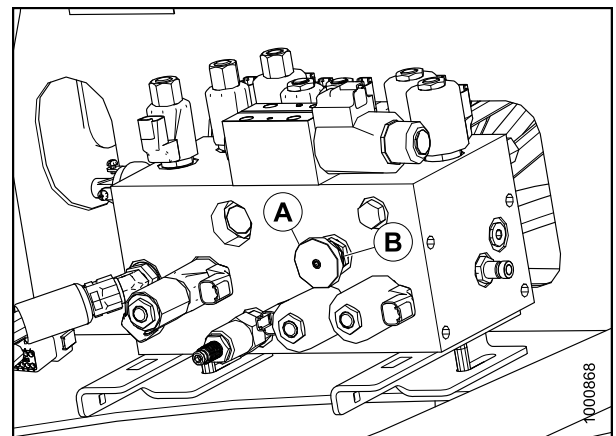
**NOTE:** If drop rate is too slow, return to cut height or tilt or float presets may time out. This is to keep the hydraulics from being pressurized.



## DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

1. Lower header to ground, stop the engine and remove the key.
2. Move left cab-forward side platform rearward. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.
3. Loosen inner knob (A) on needle valve, and then turn outer knob (B),
  - a. Clockwise to decrease the drop rate,
  - b. Counterclockwise to increase the drop rate.
4. Tighten inner knob (A).
5. Check drop rate, and readjust as required.
6. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.



**Figure 5.194**

### *Adjusting Reel Drop Rate*

The reel should lower gradually when the lower reel switch is pressed. From fully raised to fully lowered should take approximately 3–4 seconds. Drop rate is a customer preference and will vary based on crop type and cutting condition.

**NOTE:** Drop speed should not be less than 3 to 4 seconds from all the way up to all the way down as structural damage may result.

**NOTE:** If drop rate is too slow, return to cut height or tilt or float presets may time out. This is to keep the hydraulics from being pressurized.

1. Lower header to ground, stop the engine and remove the key.
2. Open the left cab-forward side maintenance platform. See Section [5.3.1 Opening Platforms \(Standard Position\)](#), page 219.

## MAINTENANCE AND SERVICING

3. Locate valve (A) installed at port D, it controls the reel drop rate.

**NOTE:** This valve is only installed with a draper header.

4. Loosen set screw (B) and turn cap (C),
  - Clockwise to decrease the drop rate
  - Counterclockwise to increase the drop rate
5. Check drop rate and re-adjust as required
6. Tighten setscrew (B).

**NOTE:** To reset to factory specs, fully close the needle valve and open it 4 turns counterclockwise.

7. Close the platform. See Section [5.3.2 Closing Platforms \(Standard Position\)](#), page 220.

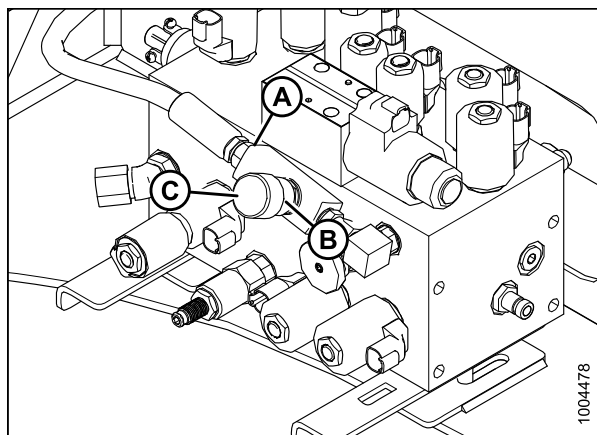


Figure 5.195

### 5.9.6 Traction Drive Hydraulics

#### *Transmission Oil Pressure*

The windrower transmission consists of two variable displacement axial piston hydraulic pumps, one for each drive wheel.

The pumps are driven through a gearbox from the engine. Each pump requires charge flow to make up for internal leakage, maintain positive pressure in the main circuit, provide flow for cooling, and replace any leakage losses from external valving or auxiliary systems.

The charge pressure is monitored, and if it drops below 250 psi (1725 kPa), the Cab Display Module (CDM) sounds a tone, and displays a flashing warning. Refer to Section [3.17.4 Cab Display Module \(CDM\) Warning/Alarms](#), page 80.

## IMPORTANT

**Rated charge pressure MUST be maintained under all conditions of operation to prevent damage to the transmission.**

If the TRANS OIL PRESSURE warning is displayed, shut down engine, and proceed as follows:

1. Check the hydraulic fluid level in the tank. Refer to [5.9.1 Checking and Filling Hydraulic Oil](#), page 308.
2. Check the hoses and lines for leakage.
3. Check the charge pressure relief valve. Refer to [Checking Charge Pump Pressure](#), page 319.
4. If charge pressure still cannot be maintained, do **NOT** operate the windrower. Contact your MacDon Dealer.

## MAINTENANCE AND SERVICING

### Checking Charge Pump Pressure

Incorrect charge pressure settings may result in the inability to build required system pressure and/or inadequate loop flushing flows.

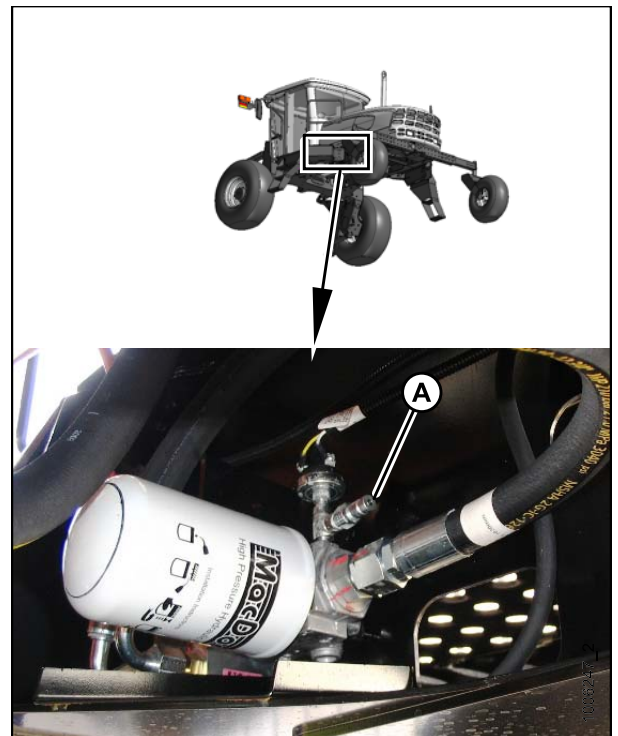
Correct charge pressure **MUST** be maintained under all conditions to maintain pump control performance, and to operate the brake release



**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

Check charge pump pressure as follows:

1. Open engine compartment hood fully. See [5.2.3 Opening Hood \(Highest Position\)](#), page 217.
2. Attach a 0–600 psi (4000 kPa) pressure gauge to a hose that is long enough to allow pressure gauge to be read from the operator's seat.
3. Locate the test port (A) which is located on the charge filter head. Clean test port fitting, and attach hose to the fitting.
4. Start engine, and leave at idle. Pressure should be 270–300 psi (1862–2068) kPa) with the hydraulic oil at 100°F (40°C) minimum.
5. Note reading and shut down windrower.
6. If pressure is **NOT** within this range, contact your MacDon Dealer.
7. Otherwise, remove hose from test port and close the hood. See Section [5.2.4 Closing Hood \(Highest Position\)](#), page 218.



**Figure 5.196**

A - Charge pump test port

## MAINTENANCE AND SERVICING

### 5.9.7 Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.

#### **WARNING**

- Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury.
- Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.
- Keep hands and body away from pin-holes and nozzles which eject fluids under high pressure.
- If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a Doctor familiar with this type of injury or gangrene may result.
- Use a piece of cardboard or paper to search for leaks.

#### **IMPORTANT**

- Keep hydraulic coupler tips and connectors clean. Dust, dirt, water and foreign material are the major causes of hydraulic system damage.
- DO NOT attempt to service hydraulic system in the field. Precision fits require WHITE ROOM CARE during overhaul.



Figure 5.197

## 5.10 Wheels and Tires

### 5.10.1 Drive Wheel

#### *Drive Tire Inflation*

## DANGER

- NEVER install a tube in a cracked wheel rim.
- NEVER weld a wheel rim.
- Make sure all the air is removed from a tire before removing the tire from the rim.
- NEVER use force on an inflated or partially inflated tire. Make sure the tire is correctly seated before inflating to operating pressure.
- Do NOT remove, install or make repairs to a tire on a rim, unless you have the proper equipment and experience to perform the job. Take the tire and rim to a qualified tire repair shop.
- If the tire is NOT in correct position on the rim, or if too full of air, the tire bead can loosen on one side, causing air to leak at high speed and with great force. An air leak of this nature can thrust the tire in any direction, endangering anyone in the area.
- Do NOT exceed maximum inflation pressure as per label on tire.
- Use a safety cage if available.
- Do NOT stand over tire. Use a clip-on chuck and extension hose.

## DANGER

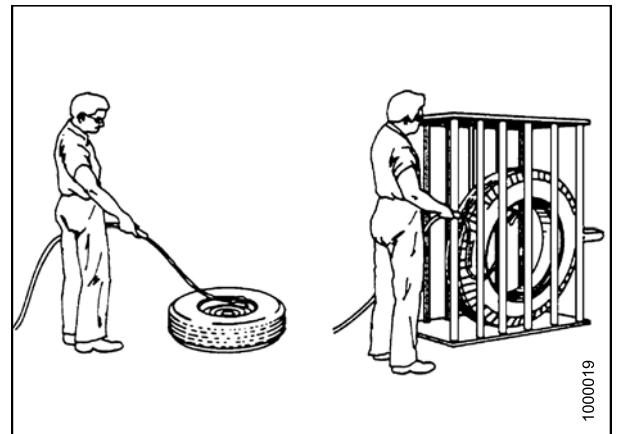
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

Measure tire pressure annually with a gauge. To maintain pressure, visually check daily that tires have not lost pressure, and adjust pressure as required. Under-inflation of drive tires can cause side wall cracks.

Determine the type and size of tire that is installed on your machine, and then refer to the table below for the appropriate tire pressure.

**Table 5.17 Tire Pressure**

Drive tire options				
18.4-26 Bar	600 / 65 R28 Bar	18.4-26 Turf	23.1-26 Turf	580 / 70 R26Turf
32 psi (221 kPa)	26 psi (179 kPa)	35 psi (241 kPa)	20 psi (138 kPa)	24 psi (165 kPa)



**Figure 5.198**

## MAINTENANCE AND SERVICING

### *Tightening Drive Wheel Nuts*

At first use, or when a wheel is removed, re-torque drive wheel nut torque after one hour of operation.

Continue with torquing procedure at one hour intervals of operation until two consecutive checks produce no movement of the nuts.

1. Tighten nuts to 220 ft·lbf (300 Nm) using the tightening sequence as shown.

**NOTE:** To avoid damage to wheel rims, do **NOT** overtighten wheel nuts.

2. Repeat sequence three times.

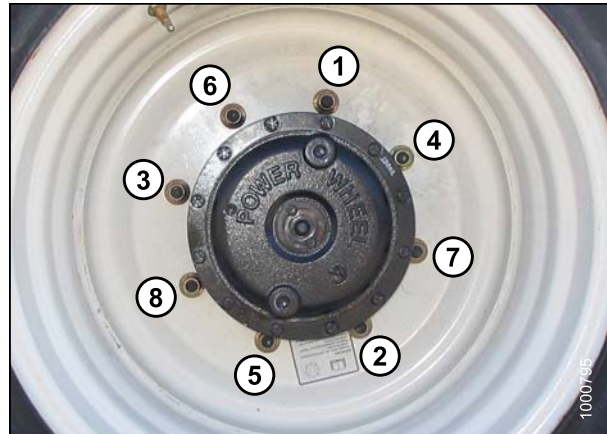


Figure 5.199

### *Servicing Drive Wheel*

#### Raising Drive Wheel

This procedure can be used on both drive wheels.

### **DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

### **CAUTION**

Header **MUST** be removed, and **NO** weight box installed. Use a hydraulic jack with minimum lifting capacity of 5000 lb (2268 Kg) to provide adequate support for the machine.

### **CAUTION**

Use a jack with minimum lifting capacity of 4000 lb (1816 kg) to provide adequate support for the machine.

1. Remove the header.
2. Park windrower on level ground and block all wheels.
3. Place Ground Speed Lever (GSL) in N-DETENT (A), shut down engine, and remove key.



Figure 5.200



## MAINTENANCE AND SERVICING

- Place a jack under the leg jack point (A) and raise the drive wheel until it is slightly off ground. Place a jack stand beneath the lift cylinder mount (B).



### CAUTION

Jack stand must be capable of supporting a minimum of 5000 lb (2268 kg).

**NOTE:** Do **NOT** place jack stand under the cylinder. Use a small metal plate on top of the jack stand.

- Lower the windrower onto the jack stand.

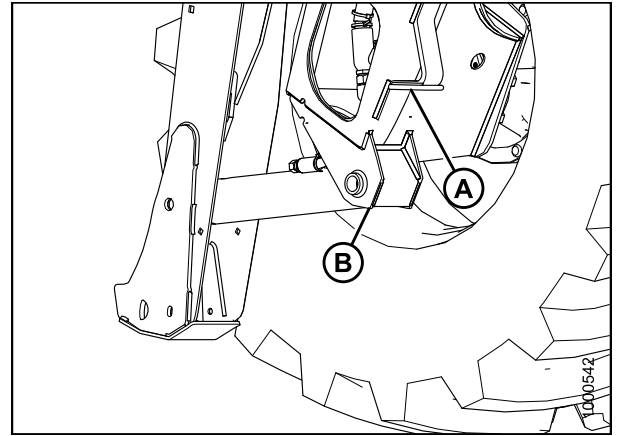


Figure 5.201

### Removing Drive Wheel

- Raise the windrower drive wheel (A) off the ground. See Section [Raising Drive Wheel, page 322](#).
- Remove the wheel nuts (B).
- Remove the wheel (A).



### CAUTION

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

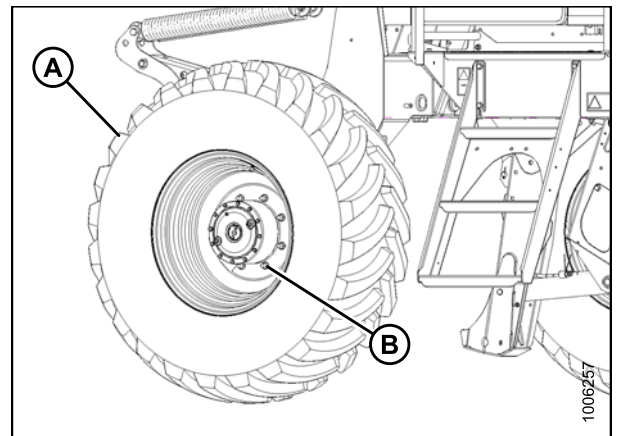


Figure 5.202

### Installing Drive Wheel

- Position the drive wheel (A) onto the wheel drive hub (B).

**NOTE:** Ensure that the valve stem (C) faces outboard, and that the tire tread (D) points forward when viewing tire from above.

**NOTE:** For Turf tires (diamond tread), be sure arrow on sidewall points in forward rotation.

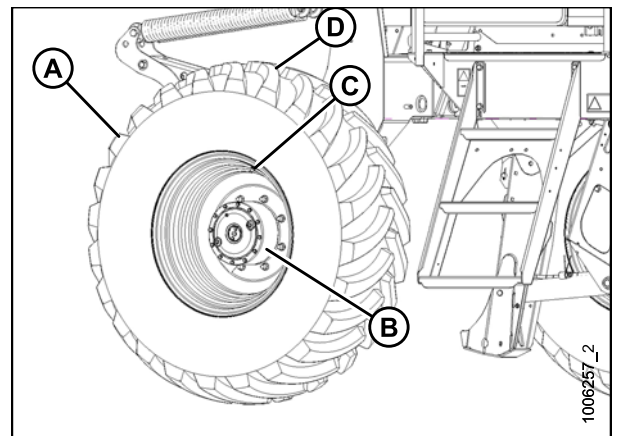


Figure 5.203

## MAINTENANCE AND SERVICING

2. Line up the holes in the rim with the studs on the wheel drive hub. Install wheel nuts (E).
3. Tighten nuts (A) to 220 ft·lbf (300 N·m) using the tightening sequence shown. Repeat the sequence three times.



### CAUTION

To avoid damage to rim, do NOT overtighten wheel nuts.

4. Lower the windrower. See Section [Lowering Drive Wheel](#), page 324.
5. After one hour of operation, re-torque the wheel nuts. Then check every hour until two consecutive checks produce no movement of the nuts.

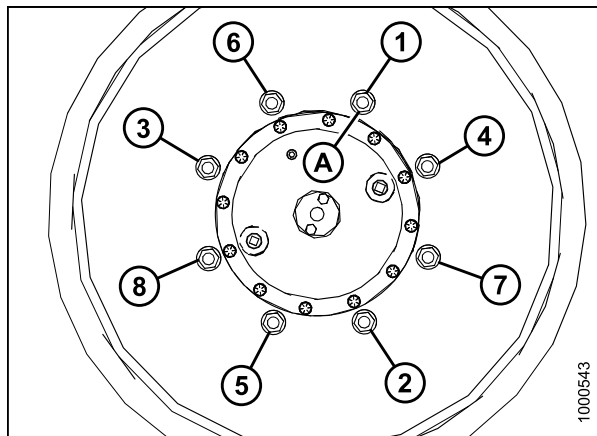


Figure 5.204

### Lowering Drive Wheel

This procedure can be used on both drive wheels.

1. Place a jack under the leg jack point (A) and raise the drive wheel slightly off the jack stand.
2. Remove the jack stand and lower the drive wheel to the ground.
3. Remove the jack.

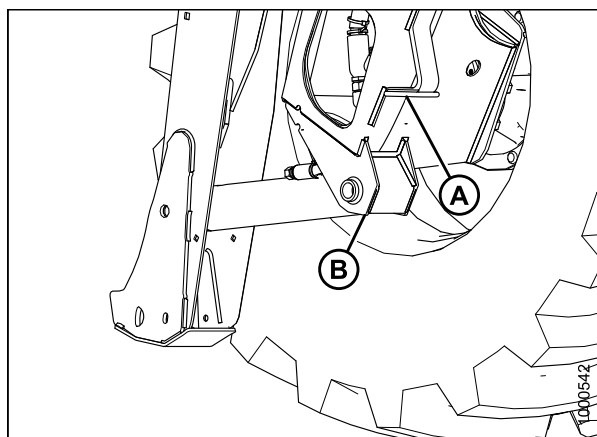


Figure 5.205

## MAINTENANCE AND SERVICING

### Lubrication

#### Checking Wheel Drive Lubricant Level

Check the level every 200 hours or annually.

**NOTE:** The windrower should be on level ground when checking lubricant level.

1. Position windrower so that plugs (A) and (B) are horizontally aligned with the center (C) of the hub.
2. Remove plug (A) or (B). The lubricant should be visible through the port, or slightly running out. If lubricant needs to be added, see Section [Adding Wheel Drive Lubricant](#), page 325.
3. Reinstall plugs and tighten.

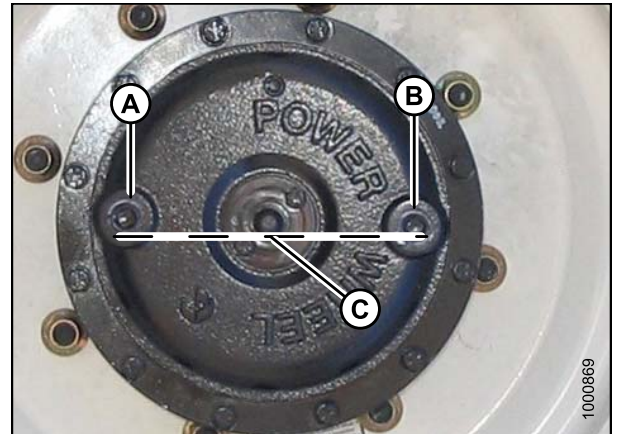


Figure 5.206

#### Adding Wheel Drive Lubricant

**NOTE:** Do **NOT** mix lubricants of different brands or characteristics.

**NOTE:** For lubricant specifications, see Section [Lubricants, Fluids, and System Capacities](#), page 213

1. Rotate the wheel drive so plugs (A) and (B) are horizontal (C) (if it is not already in that position).
2. Stop windrower and remove key from ignition.
3. Remove the two plugs (A) and (B).

**NOTE: PRIOR TO FIRST CHANGE:** use SAE 85W-140, API Service, Class GL-5, Extreme Pressure Gear Lubricant.

**NOTE: AFTER FIRST CHANGE:** use SAE 75W-90, API Service, Class GL-5, Fully Synthetic Transmission Lubricant (SAE J2360 preferred).

4. Add lubricant through one of the ports until the lubricant flows out of the other port.
5. Reinstall and tighten plugs (A) and (B).
6. Start up and operate the windrower for a few minutes, then stop and check the oil level. See Section [Checking Wheel Drive Lubricant Level](#), page 325. If necessary, add more oil.

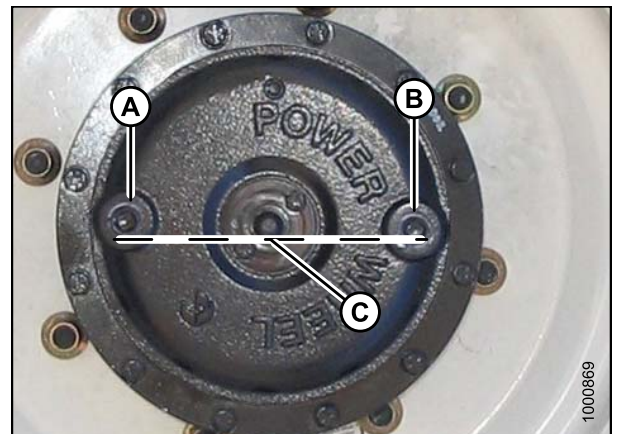


Figure 5.207

## MAINTENANCE AND SERVICING

### Changing Wheel Drive Lubricant

The wheel drive lubricant should be changed after the first 50 hours and then in accordance with the schedule in this manual. Change the lubricant when it's at a temperature such that it drains easily.

1. Park windrower on level ground and position windrower so that drain plug (B) is at the lowest point.
2. Shut down windrower and remove key from ignition.
3. Place a large enough container (about 2 quarts [2 liters]) under the lower plug (B).
4. Remove plugs (A) and (B) and drain lubricant into container.

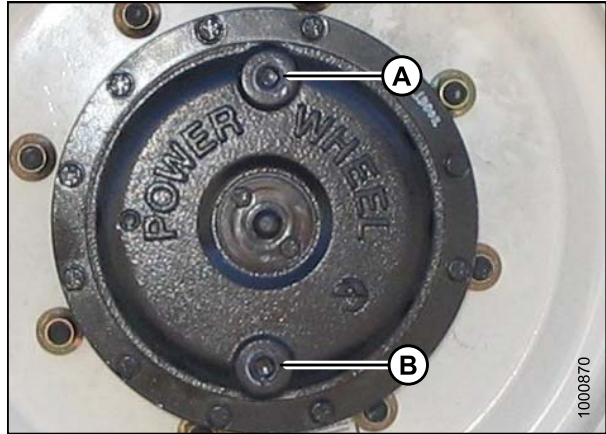


Figure 5.208

5. After the lubricant has completely drained, position windrower so that ports (A) and (B) on wheel are level with the center of the hub (C) as shown.



### CAUTION

Dispose of the oil in a manner that is in compliance with the local rules and regulations.

6. Add lubricant, see Section [Adding Wheel Drive Lubricant](#), page 325.

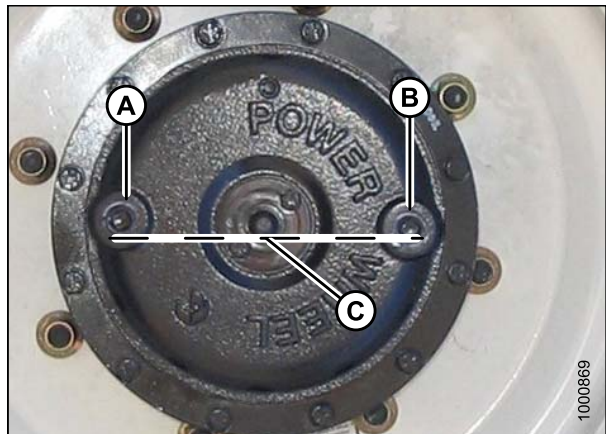


Figure 5.209

## MAINTENANCE AND SERVICING

### 5.10.2 Caster Wheels

#### *Caster Tire Inflation*

## DANGER

- NEVER install a tube in a cracked wheel rim.
- NEVER weld a wheel rim.
- Make sure all the air is removed from a tire before removing the tire from the rim.
- NEVER use force on an inflated or partially inflated tire. Make sure the tire is correctly seated before inflating to operating pressure.
- Do NOT remove, install or make repairs to a tire on a rim, unless you have the proper equipment and experience to perform the job. Take the tire and rim to a qualified tire repair shop.
- If the tire is NOT in correct position on the rim, or if too full of air, the tire bead can loosen on one side, causing air to leak at high speed and with great force. An air leak of this nature can thrust the tire in any direction, endangering anyone in the area.
- Do NOT exceed maximum inflation pressure as per label on tire.
- Use a safety cage if available.
- Do NOT stand over tire. Use a clip-on chuck and extension hose.

## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

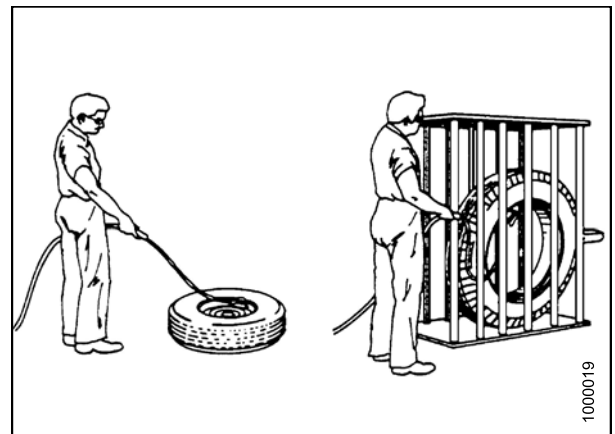
Measure tire pressure annually with a gauge. Caster tire pressure should be 10 psi (69 kPa).

To maintain pressure, visually check daily that tires have not lost pressure, and adjust pressure as needed. Under-inflation of tires can cause side wall cracks.

**NOTE:** If caster wheels shimmy, a possible cause is over-inflation.

**Table 5.18 Tire Pressure**

Rear Tire options	
Formed Caster:	Forked Caster:
7.5 – 16SL Single Rib, 10 - 16 Front Steer Tire	16.5L – 16.1 Rib Implement Flotation, 10 – 16 Front Steer Tire
10 psi (69 kPa) psi	



**Figure 5.210**

## MAINTENANCE AND SERVICING

### *Caster Wheel Nut Torque*

At first use, or when a wheel is removed, check wheel nut/bolt torque every 15 minutes on the road, or 1 hour in the field until the specified torque is maintained.

Continue with a checking schedule of 10 and 50 hours (field or road operation), and then every 200 hour intervals thereafter.

1. Tighten wheel nuts/bolts (A) to 120 ft·lbf (163 N·m) using the tightening sequence as shown.

2. Repeat sequence three times.

- Forked Caster

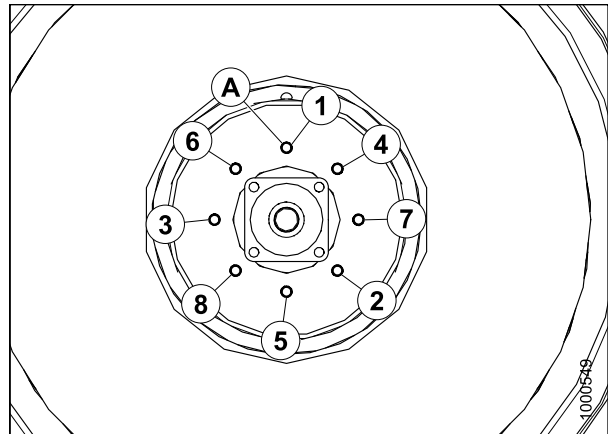


Figure 5.211

- Formed Caster

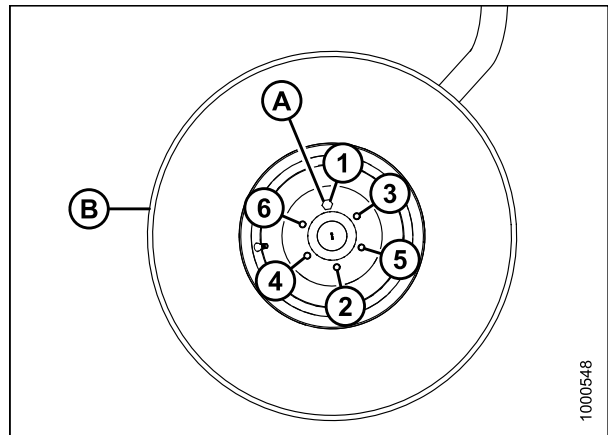


Figure 5.212

### *Servicing Caster Wheels*

#### **Raising Caster Wheel (Formed and Forked)**

This procedure is the same for forked and formed caster wheels.



**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

## MAINTENANCE AND SERVICING

1. Park windrower on level ground and block the drive wheels.
2. Place the Ground Speed Lever (GSL) in N-DETENT, stop the engine and remove the key.



Figure 5.213

3. Raise end of walking beam (A) using a suitable lifting device capable of lifting 4000 lb (1816 kg) minimum until the caster wheel assembly (B) is slightly off the ground.
4. Place a jack stand beneath the walking beam, and lower the beam until resting on the stand.

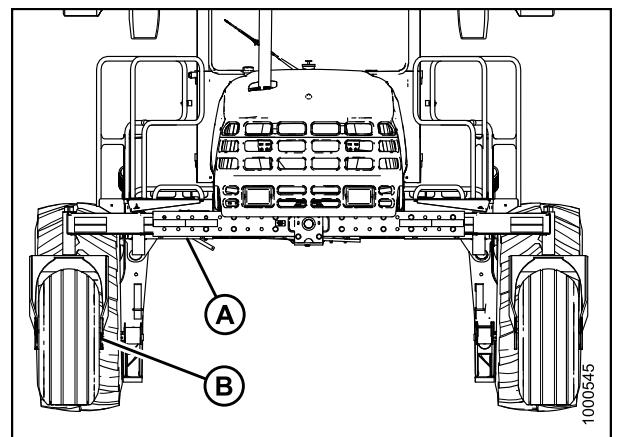


Figure 5.214

### Lowering Caster Wheel (Formed and Forked)

This procedure is the same for forked and formed caster wheels.

1. Raise the end of walking beam slightly, using a suitable lifting device capable of lifting minimum 4000 lb (1816 kg).
2. Remove the jack stand and lower the end of the walking beam until the caster wheel assembly is on the ground.
3. Remove blocks from the drive tires.

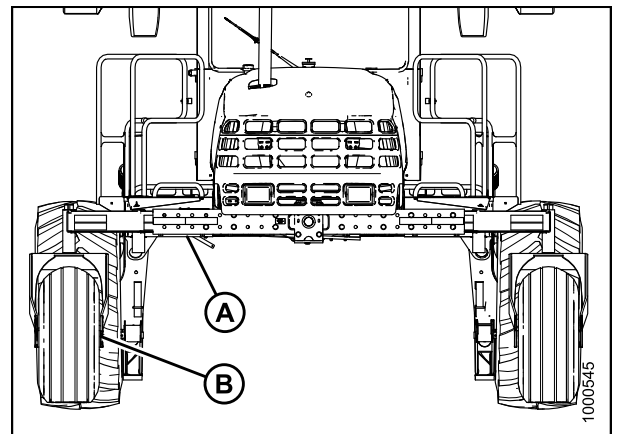


Figure 5.215

## MAINTENANCE AND SERVICING

### Removing Forked Caster Wheel

1. Raise caster wheel. See Section [Raising Caster Wheel \(Formed and Forked\)](#) , page 328.

### CAUTION

Wheel assemblies are heavy. Support wheel assembly before removing axle bolts.

2. Remove the eight bolts (A) (four on each side of caster) attaching axle (B) and cover (C) to forked caster (E), and remove wheel assembly (D) from caster (E).
3. Remove the eight wheel nuts (A) that secure the axle (B) to the wheel (C).
4. Separate axle (B) and wheel (C).

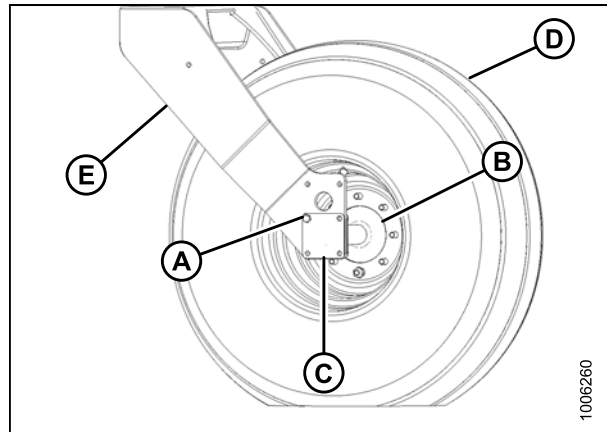


Figure 5.216

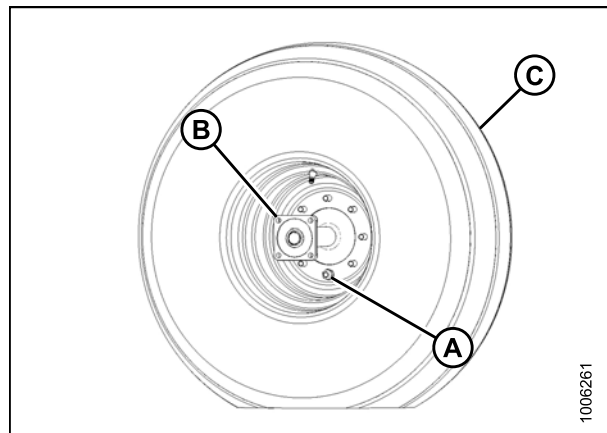


Figure 5.217

### Installing Forked Caster Wheel

1. Position wheel assembly (C) on axle assembly (B), and install wheel nuts (A).

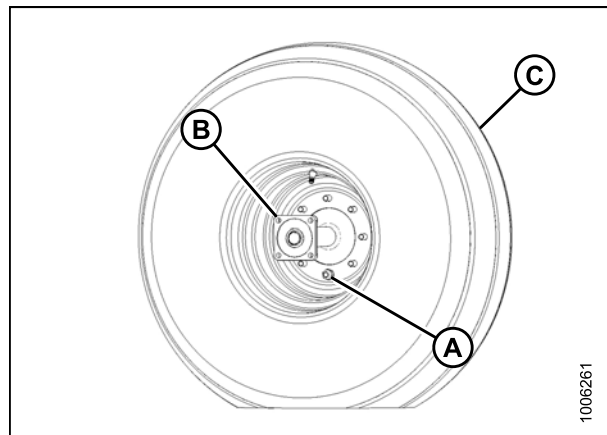


Figure 5.218



## MAINTENANCE AND SERVICING

2. Torque wheel nuts (A) to 120 ft·lbf (163 N·m) using the tightening sequence shown.

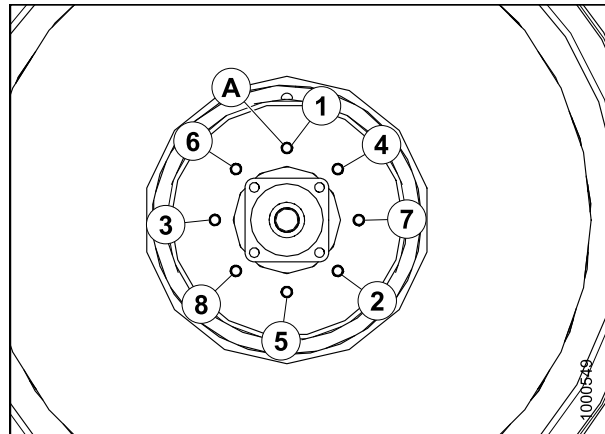


Figure 5.219

3. Position wheel assembly (D) in forked caster (E).
4. Position cover plates (C) and install eight bolts (A) (four on each side of caster) to secure axle (B) to caster (E). Torque bolts to 75–79 ft·lbf (97–107 N·m).
5. Lower caster wheel, see Section [Lowering Caster Wheel \(Formed and Forked\)](#), page 329.

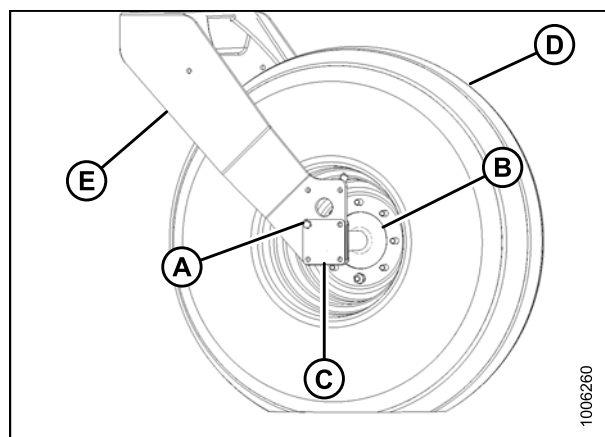


Figure 5.220

### Removing Formed Caster Wheel

1. Raise caster wheel. See [Raising Caster Wheel \(Formed and Forked\)](#), page 328
2. Remove the six bolts (A) that secure the wheel (B) to the hub.
3. Remove wheel (B).

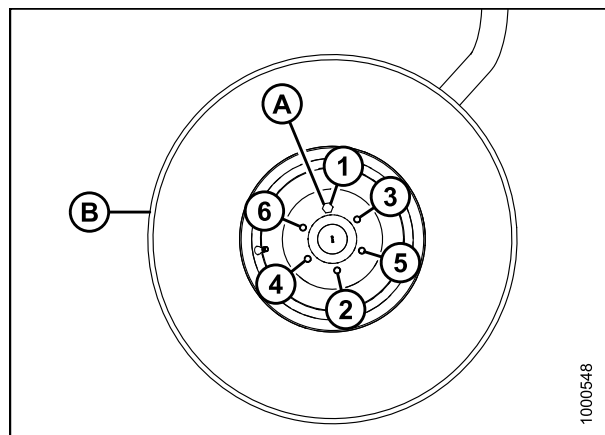


Figure 5.221

## MAINTENANCE AND SERVICING

### Installing Formed Caster Wheel

1. Position wheel assembly (B) on hub, and install wheel bolts (A).
2. Torque bolts (A) to 120 ft·lbf (163 N·m).
3. Lower caster wheel. See Section [Lowering Caster Wheel \(Formed and Forked\)](#), page 329.

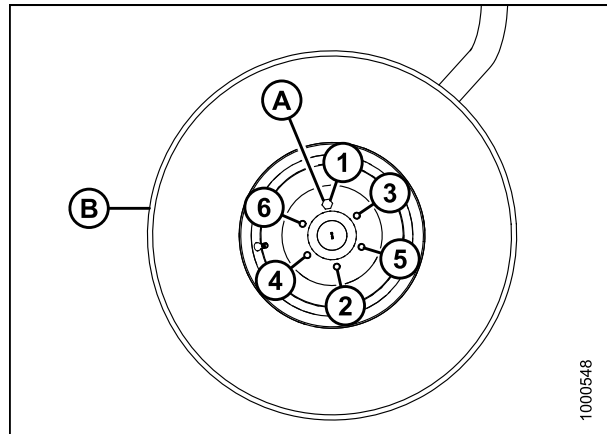


Figure 5.222

### Caster Wheels Anti-Shimmy Dampeners

Each caster is equipped with a fluid-filled anti-shimmy dampener (A).

The mounting bolts (B) need to be checked periodically for security. Refer to Section [5.11 Maintenance Schedule](#), page 334.

- Inboard bolt should be tightened to 100 ft·lbf (135 N·m).
- Outboard bolt should be tightened to 85 ft·lbf (115 N·m).

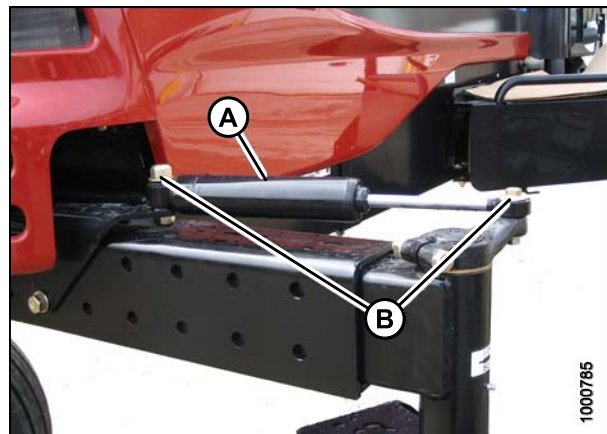


Figure 5.223

## MAINTENANCE AND SERVICING

### *Ballast Requirements*

Fluid ballasting of rear caster tires is recommended to provide adequate machine stability when using large headers on the windrower. Also, the stability of the machine varies with different attachments, windrower options, terrain, and the operator's driving technique.

Ballast capability per tire is at a maximum fill of 75%, or when fluid is level with valve stem when the stem is positioned at 12 o'clock. Fluid can be added to any level up to maximum fill. Always add an equal amount of fluid on both sides.

Tire size	Fluid per tire at 75% fill US Gal. (liters)	Total weight of both tires lb (kg) <sup>27</sup>
7.5 X 16	10 (38)	200 (91)
10 X 16	18 (69)	380 (170)
16.5 X 16.1	41 (158)	830 (377)

Header Description		Recommended Ballast				Recommended Tire Size
		Level Ground		Hills		
Type	Size	Per Tire	Both Tires	Per Tire	Both Tires	
		US Gal (liters)	lb (kg) <sup>27</sup>	US Gal (liters)	lb (kg) <sup>27</sup>	
<b>A-Series</b>	All options	0				7.5 X 16 10 X 16 16.5 X 16.1
<b>R-Series</b>	All					
<b>D-Series</b>	25-ft and down	0				
	30-ft Single or Double Reel without Conditioner. 35-ft Single Reel					
	30-ft Double Reel Steel Fingers and Conditioner. 35-ft Double Reel (5 or 6 Bat)	18 (69)	380 (170)	30 (115)	630 (288)	Level Ground: 10 X 16 Level Ground: 16.5 X 16.1 Hills: 16.5 X 16.1
	40-ft	30 (115)	630 (288)	41 (158)	830 (377)	16.5 X 16.1

27. Weights are given for typical calcium chloride and water mixtures. Weight is reduced by 20% if only water is used (for areas that do **not** require anti-freeze protection).

## MAINTENANCE AND SERVICING

### 5.11 Maintenance Schedule

The Maintenance Schedule (see next page) specifies the periodic maintenance procedures and service intervals.

Regular maintenance is the best insurance against early wear and untimely breakdowns. Following this schedule will increase machine life.

For detailed instructions, refer to the various procedures in this chapter. Use the fluids and lubricants specified in Section 5.1.2 [Recommended Fuel, Fluids, and Lubricants, page 212](#).

**Service Intervals:** The recommended service intervals are in hours of operation. Where a service interval is given in more than one time frame, for example, 100 hours or annually, service the machine at whichever interval is reached first.

## IMPORTANT

**Recommended intervals are for average conditions. Service the machine more often if operated under adverse conditions (severe dust, extra heavy loads, etc.).**



## CAUTION

Carefully follow safety messages given under **RECOMMENDED SAFETY PROCEDURES**.

#### 5.11.1 Break-In Inspections

Break-in inspections		
Hours	Item	Check
1	Drive wheel nuts	Torque: 220 ft·lbf (300 N·m). Repeat checks at one hour intervals until torque stabilizes at two consecutive checks.
5	A/C compressor belt	Tension.
	Caster wheel nuts	Torque: 120 ft·lbf (163 N·m).
	Caster wheel anti-shimmy dampener bolts	Inboard bolt torque: 100 ft·lbf (135 N·m). Outboard bolt torque: 85 ft·lbf (115 N·m).
	Walking beam width adjustment bolts	Torque: 330 ft·lbf (448 N·m).
10	Walking beam width adjustment bolts	Torque: 330 ft·lbf (448 N·m).
	Neutral	Dealer adjusted.
50	Hose clamps: air intake / radiator / heater / hydraulic	Hand-tighten unless otherwise noted.
	Walking beam width adjustment bolts	Torque: 330 ft·lbf (448 N·m).
	Caster wheel anti-shimmy dampener bolts	Inboard bolt torque: 100 ft·lbf (135 N·m). Outboard bolt torque: 85 ft·lbf (115 N·m).
	Drive wheel lubricant	Change.
	Main gearbox oil	
	Charge system oil filter	
	Return oil filter (if applicable)	

## MAINTENANCE AND SERVICING

### 5.11.2 Maintenance Schedule / Record

**WINDROWER SERIAL NUMBER:** \_\_\_\_\_

Combine this record with the record in the header operator's manual. Copy this page to continue record.

Refer to the Maintenance and Servicing section for details on each maintenance procedure.

Maintenance record	Action:	✓ - Check	⬇ - Lubricate	▲ - Change	✳ - Clean	+ - Add										
Hour meter reading																
Date																
Serviced by																
<b>FIRST USE, Refer to Section 5.11.1 Break-In Inspections, page 334</b>																
<b>10 HOURS OR DAILY<sup>28</sup></b>																
✳ A/C Condenser <sup>29</sup>																
✳ Charge Air Cooler <sup>29</sup>																
✓ Engine Oil Level <sup>29</sup>																
✓ Engine Coolant Level <sup>29</sup>																
✓ Fuel Tank <sup>29</sup>																
✓ Fuel Filter Water Trap <sup>29</sup>																
✓ Hydraulic Hoses and Lines <sup>29</sup>																
✳ Hydraulic Oil Cooler <sup>29</sup>																
✓ Hydraulic Oil Level <sup>29</sup>																
✳ Radiator <sup>29</sup>																
✓ Tire Inflation <sup>29</sup>																
<b>ANNUALLY<sup>30</sup></b>																
✓ A/C Blower																
✓ Antifreeze Concentration																
✓ Battery Charge																
✓ Battery Fluid Level																
▲ Fuel Tank Vent Line Filter																
✓ Steering Linkages																
<b>50 HOURS</b>																
✳ Cab Fresh Air Intake Filter																
⬇ Caster Pivots																

28. Whichever occurs first.

29. A record of daily maintenance is not normally required but is at the Owner/Operators discretion.

30. It is recommended that annual maintenance be done prior to start of operating season..

## MAINTENANCE AND SERVICING

Maintenance record	Action:	✓ - Check	⬇ - Lubricate	▲ - Change	✳ - Clean	+ - Add													
⬇	Forked Caster Spindle Bearings																		
✓	Gearbox Oil Level																		
⬇	Top Lift Link Pivots																		
⬇	Walking Beam Center Pivot																		
<b>100 HOURS OR ANNUALLY<sup>28, 30</sup></b>																			
✳	Cab Air Return Filter																		
<b>250 HOURS OR ANNUALLY<sup>28, 30</sup></b>																			
▲	Engine Oil and Filter																		
▲	Engine Air Cleaner Primary Filter Element																		
⬇	Formed Caster Wheel Hub Bearings																		
✓	Drive Wheel Lubricant																		
<b>500 HOURS OR ANNUALLY<sup>28, 30</sup></b>																			
▲	Fuel Filters																		
▲	Gearbox Lubricant																		
▲	Charge System and Return Oil Filters																		
✓	Safety Systems (or Annually)																		
<b>1000 HOURS</b>																			
▲	Drive Wheel Lubricant																		
✓	Engine Valve Tappet Clearance																		
<b>1500 HOURS OR BI-ANNUALLY<sup>28</sup></b>																			
▲	Hydraulic Oil and Lift Filter																		
<b>2000 HOURS OR BI-ANNUALLY<sup>28</sup></b>																			
▲	Engine Coolant																		
✓	General Inspection																		
<b>5000 HOURS OR BI-ANNUALLY<sup>28</sup></b>																			
✓	Engine Valve Tappet Clearance.																		

## 6 Troubleshooting

### 6.1 Engine Troubleshooting

Symptom	Problem	Solution	Section
Engine Hard To Start or Will Not Start.	Controls not in NEUTRAL.	Move GSL to NEUTRAL.	Starting Engine, page 102
		Move steering wheel to locked position.	
		Disengage header drive switch.	4.4.4 Header Drive, page 145
	NEUTRAL interlock misadjusted.	Contact your Dealer.	See your MacDon Dealer.
	No fuel to engine.	Fill empty fuel tank. Replace clogged filter.	Fuelling, page 106 Fuel Filters, page 254
	Old fuel in tank.	Drain tank. Refill with fresh fuel.	5.6.7 Fuel System, page 254
	Water, dirt, or air in fuel system.	Drain, flush, fill, and prime system.	
	Improper type of fuel.	Use proper fuel for operating conditions.	Fuel Specifications, page 212
	Crankcase oil too heavy.	Use recommended oil.	Lubricants, Fluids, and System Capacities, page 213
	Low battery output.	Have battery tested. Check battery electrolyte level.	5.8.1 Battery, page 278
	Poor battery connection.	Clean and tighten loose connections.	
	Faulty starter.	Contact your Dealer.	See your MacDon Dealer.
	Loose electrical connection at fuel pump.	Ensure connector at pump is fully pushed in.	Refer to your technical manual.
	Wiring shorted, circuit breaker open.	Check continuity of wiring and breaker (manual reset).	Checking and Replacing Fuses, page 303
	ECM fuse (1 of 2) blown.	Replace.	
	ECM Ignition relay faulty.		
NEUTRAL Logic relay faulty.			
Faulty injectors.	Contact your Dealer.	See your MacDon Dealer.	

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
Engine Knocks.	Engine out of time.	Contact your Dealer.	See your MacDon Dealer.
	Insufficient oil.	Add oil.	<a href="#">Adding Engine Oil, page 245</a>
	Low or high coolant temperature.	Contact your Dealer.	See your MacDon Dealer.
	Improper fuel.	Use proper fuel.	<a href="#">Fuel Specifications, page 212</a>
Low Oil Pressure.	Low oil level.	Add oil.	<a href="#">Adding Engine Oil, page 245</a>
	Improper type of oil.	Drain and fill crankcase with proper oil.	<a href="#">Lubricants, Fluids, and System Capacities, page 213</a>
	Worn components.	Contact your Dealer.	See your MacDon Dealer.
Internal parts worn.			
High Oil Consumption.	Crankcase oil too light.	Use recommended oil.	<a href="#">Lubricants, Fluids, and System Capacities, page 213</a>
	Oil leaks	Check for leaks around gaskets, seals, and drain plugs.	<a href="#">5.6.3 Checking Engine Oil Level, page 243</a>



## TROUBLESHOOTING

Symptom	Problem	Solution	Section
Engine Runs Irregularly or Stalls Frequently.	Unsteady fuel supply.	Change filter on fuel tank vent line. Replace clogged fuel filter.	<a href="#">Removing and Installing Fuel Tank Vent, page 254</a> <a href="#">5.6.7 Fuel System, page 254</a>
	Water or dirt in fuel system.	Drain, flush, and fill fuel system.	<a href="#">Lubricants, Fluids, and System Capacities, page 213</a>
	Low coolant temperature.	Remove and check thermostat.	See your MacDon Dealer.
	Air in fuel system.	Contact your Dealer.	
	Dirty or faulty injectors.		
Lack Of Power.	Incorrect timing.		
	Engine oil viscosity too high.	Use recommended oil.	<a href="#">Lubricants, Fluids, and System Capacities, page 213</a>
	Intake air restriction.	Service air cleaner.	<a href="#">5.6.5 Air Intake System, page 245</a>
	Clogged fuel filter.	Replace primary fuel filter, and if necessary, replace secondary fuel filter.	<a href="#">Fuel Filters, page 254</a>
	High back pressure.	Clean out or replace muffler.	<a href="#">5.6.10 Inspecting Exhaust System, page 268</a>
	Improper type of fuel.	Use proper fuel.	<a href="#">Fuel Specifications, page 212</a>
	High or low engine temperature.	Remove and check thermostat.	See your MacDon Dealer.
	Improper valve clearance.	Contact your Dealer.	
	Faulty injectors.		
Engine Temp. Below Normal.	Defective thermostat.	Remove and check thermostat.	

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
Warning Alarm Sounds.	Engine overheated.	Check coolant level.	<a href="#">Checking Coolant Level, page 262</a>
		Check thermostat.	See your MacDon Dealer.
	Low engine oil pressure.	Check oil level.	<a href="#">5.6.3 Checking Engine Oil Level, page 243</a>
	Low transmission oil pressure.		<a href="#">5.9.1 Checking and Filling Hydraulic Oil, page 308</a>
Engine Overheats.	Low coolant level.	Fill reserve tank to proper level. Check system for leaks.	<a href="#">5.6.8 Engine Cooling System, page 261</a>
	Water only for coolant.	Replace with antifreeze.	
	Engine overloaded.	Reduce ground speed.	<a href="#">4.3.6 Driving the Windrower, page 108</a>
	Defective radiator cap.	Replace cap.	<a href="#">Inspecting Radiator Cap, page 263</a>
	Defective fan belt.	Replace belt.	<a href="#">Replacing Fan Belt, page 270</a>
	Dirty radiator screen, rotors turning	Check for obstructions in ducting from screen to fan shroud.	<a href="#">5.7 Engine Cooler Box, page 273</a>
	Dirty radiator screen, rotors not turning	Check connections to rotor electric motor.	
	Dirty radiator core.	Clean radiator.	<a href="#">5.6.8 Engine Cooling System, page 261</a>
	Cooling system dirty.	Flush cooling system.	
	Defective thermostat.	Remove and check thermostat.	See your MacDon Dealer.
	Defective temperature gauge or sender.	Check coolant temperature with thermometer. Replace gauge if necessary.	
Defective water pump.	Contact your Dealer.		

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
High Fuel Consumption.	Clogged or dirty air cleaner.	Service air cleaner.	<a href="#">5.6.5 Air Intake System, page 245</a>
	Engine overloaded.	Reduce ground speed.	<a href="#">4.3.6 Driving the Windrower, page 108</a>
	Improper valve clearance.	Contact your Dealer.	See your MacDon Dealer.
	Engine out of time.		
	Dirty injectors..		
	Low engine temperature.	Check thermostat.	
	Improper type of fuel.	Use proper fuel.	<a href="#">Fuel Specifications, page 212</a>
Engine Emits Black or Grey Exhaust.	Improper type of fuel.	Consult your fuel supplier, and use proper type fuel for conditions.	<a href="#">Fuel Specifications, page 212</a>
	Engine overloaded.	Reduce ground speed.	<a href="#">4.3.6 Driving the Windrower, page 108</a>
	Clogged or dirty air cleaner.	Service air cleaner.	<a href="#">5.6.5 Air Intake System, page 245</a>
	Defective muffler.	Check muffler for possible damage that might create back pressure.	<a href="#">5.6.10 Inspecting Exhaust System, page 268</a>
	Dirty or faulty injectors.	Contact your Dealer.	See your MacDon Dealer.
	Engine out of time.		
	Air in fuel system.		
Engine Emits White Exhaust.	Engine out of time.	Contact your Dealer.	Contact your Dealer.
	Improper type of fuel.	Consult your fuel supplier, and use proper type fuel for conditions.	<a href="#">Fuel Specifications, page 212</a>
	Cool engine.	Warm engine up to normal operating temperature.	<a href="#">Engine Warm-Up, page 105</a>
	Defective thermostat.	Remove and check thermostat.	See your MacDon Dealer.

## TROUBLESHOOTING

Symptom	Problem	Solution	Section	
Starter Cranks Slowly or Will Not Operate.	Low battery output.	Check battery charge.	<a href="#">Maintaining the Battery, page 278</a>	
	Loose or corroded battery connections.	Clean and tighten loose connections.		
	Controls not in NEUTRAL.	Move GSL to NEUTRAL.		<a href="#">4.3.6 Driving the Windrower, page 108</a>
		Move steering wheel to center position.		<a href="#">Reverse in Cab-Forward Mode, page 112</a>
		Disengage header.		<a href="#">Engaging and Disengaging the Header, page 145</a>
	Relay not functioning.	Check relay and wire connections.	<a href="#">5.8 Electrical System, page 278</a>	
	Main fuse defective/blown.	Replace main fuse.		
	Key power fuse blown.	Replace.		
	Key switch worn or terminals loose.	Contact your Dealer.	See your MacDon Dealer.	
	Switch at interlock not closed or defective.	Adjust switch or replace. Contact your Dealer.		
Crankcase oil too high viscosity.	Use recommended oil.	<a href="#">Lubricants, Fluids, and System Capacities, page 213</a>		
Air Filters Require Frequent Cleaning.	Vacuator plugged.	Clean out vacuator.	<a href="#">5.6.5 Air Intake System, page 245</a>	
	Pre-cleaner rotor not turning freely.	Repair/replace.	<a href="#">5.7 Engine Cooler Box, page 273</a>	

# TROUBLESHOOTING

## 6.2 Electrical Troubleshooting

Symptom	Problem	Solution	Section
Low Voltage and/or Battery Will Not Charge.	Defective battery.	Have battery tested.	<a href="#">5.8.1 Battery, page 278</a>
	Loose or corroded connections.	Clean and tighten battery connections.	<a href="#">Maintaining the Battery, page 278</a>
	Defective alternator belt.	Replace worn belt.	<a href="#">Replacing Fan Belt, page 270</a>
	Alternator or voltage regulator not connected properly.	Connect properly.	<a href="#">5.8.1 Battery, page 278</a>
	Dirty or defective alternator, defective voltage regulator, or high resistance in circuit.	Contact your Dealer.	See your MacDon Dealer.
Lights Dim.	Defective light switch.		
	High resistance in circuit or poor ground on lights.	Check the wiring circuit for a break in a wire or a poor ground.	—
Lights Do Not Light.	Burned out or defective light bulb.	Replace light bulb.	<a href="#">Replacing Headlight Bulb, page 286</a>
			<a href="#">Replacing Bulb in Cab-Forward Floodlight, page 289</a>
			<a href="#">Replacing Bulb in Rear Floodlight, page 294</a>
	Broken wiring.	Check wiring for broken wire or shorts.	—
	Poor ground on lights.	Clean and tighten ground wires.	—
	Open or defective circuit breaker.	Check circuit breaker	<a href="#">5.8.14 Circuit Breakers and Fuses, page 302</a>
Defective relay.	Replace relay	<a href="#">Replacing Circuit Breakers and Relays, page 303</a>	
Defective light switch.			
Turn Signals or Indicators Showing Wrong Direction.	Reversed wires.	Contact your Dealer	See your MacDon Dealer.
No Current to Cab.	Broken or disconnected wire.		
	Circuit breaker tripped.	Breaker automatically resets.	—
	Battery disconnect switch is OFF.	Turn switch ON.	<a href="#">Battery Main Disconnect Switch, page 278</a>

## TROUBLESHOOTING

### 6.3 Hydraulics Troubleshooting

Symptom	Problem	Solution	Section
Header or Reel Not Lifting.	Appropriate solenoids not being energized by activating switch.	Contact your Dealer.	See your MacDon Dealer.
	Contaminant in relief valve.	Clean relief valve at cylinder control valve.	
Header or Reel Lifts but Lacks Power.	Relief pressure too low or contaminant in relief valve.	Check/adjust/clean relief valve at cylinder control valve.	
Reel and/or Conveyor Not Turning.	Header drive switch not engaged.	Engage switch.	<a href="#">Engaging and Disengaging the Header, page 145</a>
	Flow controls adjusted too low.	Toggle speed controls on CDM to increase flow.	<a href="#">4.5.8 Reel Speed, page 167</a> <a href="#">Reel Speed</a> <a href="#">4.7.3 Disc Speed, page 200</a>
	Appropriate solenoid on flow control block not being energized.	Contact your Dealer.	See your MacDon Dealer.
Reel and/or Conveyor Turns But Lacks Power.	Relief pressure too low.	Check/adjust/clean relief valve.	
Hydraulic Oil High-Temp. Alarm.	Hydraulic oil cooling system not working properly.	Check/clean cooling box.	<a href="#">5.7 Engine Cooler Box, page 273</a>
	Faulty bypass valve.	Clean or replace.	See your MacDon Dealer.
Hydraulic Oil Low-Temp. Alarm.	Hydraulic oil too cold.	Run engine until hydraulic oil warms up.	—

## TROUBLESHOOTING

### 6.4 Header Drive Troubleshooting

Symptom	Problem	Solution	Section
Header Drive Not Engaging.	Header Drive switch in cab not engaged.	Engage switch.	<a href="#">Engaging and Disengaging the Header, page 145</a>
	Operator Presence switch not closed or faulty.	Occupy operator's seat or replace switch. Contact your Dealer.	See your MacDon Dealer.
	Appropriate solenoid not being energized by activating switch.	Contact your Dealer.	
Header Drive Lacks Power.	Relief valve setting too low.		
Warning Alarm Sounds.	Header drive overload.	Reduce ground speed.	<a href="#">Engine-Forward Operation, page 113</a>
	Relief valve setting too low.	Contact your Dealer.	See your MacDon Dealer.

## TROUBLESHOOTING

### 6.5 Traction Drive Troubleshooting

Symptom	Problem	Solution	Section
Warning Alarm Sounds and Transmission Oil Light Is On.	Low hydraulic oil level.	Stop engine, and add oil to hydraulic system.	<a href="#">5.9.1 Checking and Filling Hydraulic Oil, page 308</a>
	Low hydraulic pressure.	Contact your Dealer.	See your MacDon Dealer.
	Foreign material shorting sender.		
	Short in alarm wiring.		
	Faulty sender.		
Wheels Lack Pulling Ability On A Grade or Pulling Out Of A Ditch.	Internal pump or motor damage.	Contact your Dealer.	See your MacDon Dealer.
	Insufficient torque at drive wheels.	Move ground speed-range control to field position, and reduce ground speed.	<a href="#">Engine-Forward Operation, page 113</a>
	Loose or worn controls.	Check controls.	<a href="#">5.5.3 Ground Speed Lever (GSL) Adjustments, page 226</a>
	Air in system.	Use proper oil.	<a href="#">Lubricants, Fluids, and System Capacities, page 213</a>
		Check oil level and leaks.	<a href="#">5.9.1 Checking and Filling Hydraulic Oil, page 308</a>
		Check hydraulic oil filters.	<a href="#">5.9 Hydraulic System, page 307</a>
	Brakes binding or not releasing fully.	Check pressure on brake release valve (min. 200 psi [1379 kPa]).	See your MacDon Dealer.
	Relief valve in tandem pump dirty or damaged.	Replace relief valve.	
	With Steering Wheel Centered, One Wheel Pulls More Than The Other.	Leakage at pump or motor.	Contact your Dealer.
Wheels not in same speed range.			
Faulty relief valve.		Repair or replace valve. Contact your Dealer.	



## TROUBLESHOOTING

Symptom	Problem	Solution	Section
Both Wheels Will Not Pull In Forward or Reverse.	Pump arms have broken shaft or loose hardware.	Repair or tighten.	Contact your Dealer.
	Brakes binding or not releasing fully.	Check pressure on brake release valve (min. 200 psi [1379 kPa]).	
	Low oil level.	Check oil reservoir level.	<a href="#">5.9.1 Checking and Filling Hydraulic Oil, page 308</a>
	Power hubs disengaged.	Engage final drives.	<a href="#">Final Drives, page 134</a>
	Damaged hydraulic lines preventing proper oil flow.	Replace damaged lines.	See your MacDon Dealer.
	Speed-range control not working.	Contact your Dealer.	
	Steering controls worn or defective.	Check GSL and steering for loose, worn or damaged ball joints and connecting rods.	<a href="#">5.5.3 Ground Speed Lever (GSL) Adjustments, page 226</a> <a href="#">5.5.4 Steering Adjustments, page 228</a>
	Charge pressure relief valve misadjusted or damaged.	Check the valve adjustment. Check valve parts and seat.	<a href="#">Checking Charge Pump Pressure, page 319</a>
	Failed pump or motor.	Contact your Dealer.	See your MacDon Dealer.

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
One Wheel Does Not Pull In Forward or Reverse.	Broken pump arm or shaft.	Contact your Dealer.	See your MacDon Dealer.
	One final drive disengaged.	Engage final drive.	<a href="#">Final Drives, page 134</a>
	Steering controls worn or defective.	Check GSL and steering for loose, worn or damaged ball joints and connecting rods.	<a href="#">5.5.3 Ground Speed Lever (GSL) Adjustments, page 226</a> <a href="#">5.5.4 Steering Adjustments, page 228</a>
	High pressure relief valve stuck open, damaged seat.	Check valve, and clean or replace.	See your MacDon Dealer.
	Brakes binding or not releasing fully.	Check pressure on brake release valve) (min. 200 psi [1379 kPa]).	See your MacDon Dealer.
	Damaged hydraulic lines preventing proper oil flow.	Contact your Dealer.	
	Speed-range control not working.		
Failed pump, motor or power hub.			
Excessive Noise From Drive System.	Mechanical interference in steering or ground speed linkage.	Adjust, repair, replace.	<a href="#">5.5.3 Ground Speed Lever (GSL) Adjustments, page 226</a> <a href="#">5.5.4 Steering Adjustments, page 228</a>
	Brakes binding or not releasing fully.	Check pressure on brake release valve) (min. 200 psi [1379 kPa]).	See your MacDon Dealer.
	Faulty pump or motor.	Contact your Dealer.	
	Air in system.	Check lines for leakage.	—
	Hydraulic line clamps loose.	Tighten clamps.	
Hydraulic Oil Filter Leaks At Seal.	Not properly tightened.	Tighten filter element.	<a href="#">Charge Filter, page 312</a>
	Damaged seal or threads.	Replace filter or filter head.	

## TROUBLESHOOTING

### 6.6 Steering and Ground Speed Control Troubleshooting

Symptom	Problem	Solution	Section
Machine Will Not Steer Straight.	Linkage worn or loose.	Adjust steering chain tension. Replace worn parts. Adjust linkage.	<a href="#">5.5.4 Steering Adjustments, page 228</a>
Machine Moves On Flat Ground With Controls In NEUTRAL.	Neutral interlock misadjusted.	Contact your Dealer.	See your MacDon Dealer.
	Parking brake not functioning.		
	GSL servo misadjusted.		
	GSL cable misadjusted.		
Steering Wheel Will Not Lock With GSL In N-DETENT.	Transmission interlock misadjusted.	Contact your Dealer.	See your MacDon Dealer.
Steering Wheel Will Not Unlock.	Transmission interlock cylinder not working.		
Insufficient Road Speed.	Speed-range control in field position.	Move to road position.	<a href="#">Driving on Road, page 118</a>
Steering Is Too Stiff or Too Loose.	Steering chain tension is out of adjustment.	Adjust steering chain tension.	<a href="#">5.5.4 Steering Adjustments, page 228</a>

## TROUBLESHOOTING

### 6.7 Cab Air Troubleshooting

Symptom	Problem	Solution	Section
Blower Fan Will Not Run.	Burned out motor.	Contact your Dealer.	See your MacDon Dealer.
	Burned out switch.		
	Motor shaft tight or bearings worn.		
	Faulty wiring—loose or broken.		
Blower Fan Operating But No Air Coming Into Cab.	Blower rotors in contact with housing.		
	Dirty fresh air filter.	Clean fresh air filter.	<a href="#">Cleaning Engine Air Filter Primary Element, page 250</a>
	Dirty recirculating air filter.	Clean recirculating filter.	<a href="#">Cleaning Return Air Cleaner, page 237</a>
	Evaporator clogged.	Clean evaporator.	<a href="#">Cleaning Air Conditioning Evaporator Core, page 238</a>
	Air flow passage blocked.	Remove blockage.	—
Heater Not Heating.	Heater shut-off valve at engine closed.	Open valve.	<a href="#">3.9.1 Heater Shut-off, page 56</a>
	Defective thermostat in engine water outlet manifold.	Replace thermostat.	See your MacDon Dealer..
	Heater temperature control defective.	Replace control.	
	No thermostat in engine water outlet manifold.	Install thermostat.	
Odor From Air Louvers.	Plugged drainage hose.	Blow out hose with compressed air.	—
	Dirty filters.	Clean filters.	<a href="#">Cleaning Engine Air Filter Primary Element, page 250</a> <a href="#">Cleaning Return Air Cleaner, page 237</a>

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
Air Conditioning Not Cooling.	Low refrigerant level.	Add refrigerant. Contact your Dealer.	See your MacDon Dealer.
	Clutch coil burned out or disconnected.	Contact your Dealer.	
	Blower motor disconnected or burned out.		
	Switch contacts in thermostat burned excessively, or sensing element defective.	Replace thermostat.	
	Compressor partially or completely seized.	Remove compressor for service or replacement.	
	Condenser fins plugged.	Clean condenser.	<a href="#">Air Conditioning Condenser, page 237</a>
	Loose or broken compressor drive belt.	Replace drive belt and/ or tighten to specs.	<a href="#">Tensioning A/C Compressor Belt, page 271</a> <a href="#">Replacing A/C Compressor Belt, page 271</a>
	Dirty filters.	Clean fresh air and recirculation filters.	<a href="#">Cleaning Engine Air Filter Primary Element, page 250</a> <a href="#">Cleaning Return Air Cleaner, page 237</a>
	Broken or disconnected electrical wire.	Check all terminals for loose connections; check wiring for hidden breaks.	—
	Broken or disconnected ground wire.	Check ground wire to see if loose, broken, or disconnected.	
	Expansion valve stuck in open or closed position.	Contact your Dealer.	See your MacDon Dealer..
	Broken refrigerant line.		
	Leak in system.		
	Compressor shaft seal leaking.		
Clogged screen in receiver-drier; plugged hose or coil.			

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
Air Conditioning Not Producing Sufficient Cooling. (Sufficient Cooling Defined As When Air Temperature In Cab, Measured At Louvered Vent, Can Be Maintained At 25°F (14°C) Below Ambient Air Temperature.)	Compressor clutch slipping.	Remove clutch assembly for service or replacement.	See your MacDon Dealer..
	Thermostat defective or improperly adjusted.	Replace thermostat.	
	Clogged air filters.	Remove air filters, and clean or replace as necessary.	Cleaning Engine Air Filter Primary Element, page 250 Cleaning Return Air Cleaner, page 237
	Heater circuit is open.	Close temperature control in cab, and valve on engine).	3.9.3 Controls, page 57 3.9.1 Heater Shut-off, page 56
	Insufficient air circulation over condenser coil; fins clogged with dirt or insects.	Clean condenser.	Air Conditioning Condenser, page 237
	Evaporator fins clogged.	Clean evaporator fins (under cab floor).	Air Conditioning Evaporator, page 237
	Refrigerant low.	Contact your Dealer.	See your MacDon Dealer..
	Clogged expansion valve.		
	Clogged receiver-drier.		
	Excessive moisture in system.		
	Air in system.		
Blower motor sluggish in operation.			
Air Conditioning System Too Noisy.	Defective winding or improper connection in compressor clutch coil or relay.	Contact your Dealer.	See your MacDon Dealer.
	Excessive charge in system.		
	Low charge in system.		
	Excessive moisture in system.		
	Loose or excessively worn drive belt.	Tighten or replace as required.	Tensioning A/C Compressor Belt, page 271 Replacing A/C Compressor Belt, page 271
Noisy clutch.	Remove clutch for service or replacement as required.	See your MacDon Dealer.	

## TROUBLESHOOTING

Air Conditioning System Too Noisy.	Noisy compressor.	Check mountings and repair. Remove compressor for service or replacement.	See your MacDon Dealer.
	Compressor oil level low.	Add SP-15 PAG refrigerant oil.	
	Blower fan noisy due to excessive wear.	Remove blower motor for service or replacement as necessary.	
Air Conditioning Cools Intermittently.	Unit icing up due to: Thermostat adjusted too low.	Adjust thermostat.	See your MacDon Dealer.
	Excessive moisture in system. Incorrect super-heat adjustment in expansion valve.	Contact your Dealer.	See your MacDon Dealer.
	Thermostat defective.		
	Defective blower switch or blower motor.		
	Partially open, improper ground or loose connection in compressor clutch coil.		
Compressor clutch slipping.			
Windows Fog Up.	High humidity.	Run A/C to dehumidify air and heater to control temperature.	<a href="#">3.9.3 Controls, page 57</a>

## TROUBLESHOOTING

### 6.8 Operator's Station Troubleshooting

Symptom	Problem	Solution	Section
Rough Ride	Seat suspension not adjusted for operator's weight.	Adjust seat suspension.	<a href="#">3.3 Operator's Seat Adjustment, page 42</a>
	High air pressure in tires.	Deflate to proper pressure.	<a href="#">Drive Tire Inflation, page 321</a> <a href="#">Caster Tire Inflation, page 327</a>
	Cab suspension too stiff.	Adjust suspension.	See your technical manual.



## 7 Options and Attachments

### 7.1 Options and Attachments

The following options and attachments are available through your MacDon Dealer. The Dealer will require the part number (MD #) to determine pricing and availability.

#### 7.1.1 AM/FM Radio

Available for installation into pre-wired cab. Speakers are factory-installed.

For installation details, refer to the unloading and assembly instructions supplied with your windrower.

#### 7.1.2 Auto-Steer

MacDon works with GPS Auto Steer providers to enable a wide range of systems including electric steering wheel/column-based systems and hydraulically integrated systems. In both cases, wire harness routing is enabled by knock-outs in the cab frame. The ground speed lever (GSL) has been pre-wired with an Auto-Steer engage button. Hydraulic systems require the use of a hydraulic interface kit (hydraulic valve, steering cylinder, etc.) Some GPS providers supply these parts in their vehicle specific installation packages. Other providers have made arrangements with MacDon to make these installation kits available through MacDon Dealers.

MD #B5589

#### 7.1.3 Completion Kit for Auger and Draper Header Drives

Used to allow operation of a draper or auger header. Requires installation of Draper Header Reel Drive Kit ([7.1.5 Completion Kit for Draper Header Reel Drive, page 355](#)), or Auger Header Drive Kit ([7.1.4 Completion Kit for Auger Header Drive and Conditioner Reverser, page 355](#)).

MD #B5491

#### 7.1.4 Completion Kit for Auger Header Drive and Conditioner Reverser

Used together with Completion Kit for Auger and Draper Header Drives ([7.1.3 Completion Kit for Auger and Draper Header Drives, page 355](#)) to allow operation of an auger header. Allows the conditioner to reverse on both auger and draper headers.

MD #B5492

#### 7.1.5 Completion Kit for Draper Header Reel Drive

Used together with Completion Kit for Auger and Draper Header Drives ([7.1.3 Completion Kit for Auger and Draper Header Drives, page 355](#)) to allow operation of a draper header. Includes reel fore-aft plumbing.

MD #B5496

#### 7.1.6 Cooling Kits

There are two cooling kits available:

- Hood Air Scoop (MD #B5805)
- Intake Air Pre-cleaner and Air Cooler/Radiator Sweeps (MD #B5806)

## OPTIONS AND ATTACHMENTS

### 7.1.7 Double Windrow Attachment

Allows auger header windrower to lay a double windrow. The kit includes a draper deck, linkage assembly, hydraulics, and installation instructions.

MD #C1987 — This collector consists of:

- MD #46555 Deck
- MD #B5270 Linkage assembly
- MD #B5301 Hydraulic kit

### 7.1.8 External Booster Spring

Available for headers over 6000 lb (2724 kg) to increase the float capacity.

MD #B4659

### 7.1.9 Fan Air Baffle

Provides a baffle to reduce windrow disturbance by air exiting the engine cooling fan.

MD #B5440

### 7.1.10 HID Auxiliary Lighting

Provides additional field lighting. The kit includes two cab-mounted high intensity discharge lamps and installation instructions.

MD #B5596

### 7.1.11 Internal Booster Spring

An additional spring that is installed inside the header lift spring for increased float capacity.

MD #B5303

### 7.1.12 Light Header Flotation

Available for headers that do not require as much spring tension for header float.

MD #B4664

### 7.1.13 Lighting and Marking for Cab-Forward Road Travel

Allows the windrower to be compliant with vehicle lighting regulations when travelling in the cab-forward mode on public roads. The kit includes red tail lights, slow moving vehicle (SMV) markings, hardware, and installation instructions.

MD #B5412

## OPTIONS AND ATTACHMENTS

### 7.1.14 Pressure Sensor

Monitors knife drive (or reel drive) hydraulic pressure, and warns of overload conditions.

### 7.1.15 Quick Coupler Kit

Allows for quick removal of header hydraulics from windrower.

MD #B5497

### 7.1.16 Reversible Fan

This kit is for use in high debris conditions.

MD #B5659

### 7.1.17 Swath Roller

The axle-mounted swath roller increases the windrow's resistance to wind disturbance, especially in canola or similar crops. It can be fitted with a hydraulic lift with in-cab controls.

Contact: Free Form Plastic Products

Box 159

502 F.P. Bourgault Drive

St. Brieux, SK S0K 3V0

(306) 275-2155

<http://www.freeformplastics.com>

### 7.1.18 Towing Harness

The towing harness is used together with the weight box when towing a D-Series draper header equipped with slow speed transport option behind the windrower.

Weight box harness only

MD #B5280

### 7.1.19 Warning Beacons

Two rotating warning beacons that are designed for installation onto the pre-wired cab. The kit includes the beacons, a switch, mounting hardware, and instructions. The beacons are standard equipment for exported windrowers, and optional for North America.

MD #B5582

## OPTIONS AND ATTACHMENTS

### 7.1.20 Weight Box

The weight box is designed to attach to the header lift system for driving on roads without the header attached .

Weight box without harness<sup>31</sup>

MD #B5238

Weight box without harness and concrete<sup>31</sup>

MD #5240

### 7.1.21 Windshield Shades

Retractable sun shades for front and rear windows. Attachment hardware is included.

MD #B4866

---

31. Towing harness is also required when towing a header. See Section [7.1.18 Towing Harness, page 357](#).

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