MacDon

FC Series
FlexCorn™ Header

Unloading and Assembly Instructions

262144 Revision A

Original Instruction

The Harvesting Specialists.

FC3016 FlexCorn Header

Published June 2024.

Introduction

This document describes the unloading, setup, and predelivery requirements for the MacDon FC Series FlexCorn Header.

To ensure your customers receive all of the performance and safety benefits from this product, carefully follow the unloading and assembly procedure from the beginning through to completion.

Retain this instruction for future reference.

If the shipment is damaged or is missing parts, contact shortageanddamage@macdon.com.

Conventions

The following conventions are used in this document:

Right and left are determined from the operator's position. The front of the corn header faces the crop.

Unless otherwise noted, use the standard torque values provided in this manual.

Carefully read all the material provided before attempting to unload, assemble, or use the machine.

NOTE:

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

This instruction is currently available in English only.

Summary of Changes

At MacDon, we're continuously making improvements, and occasionally these improvements affect product documentation. The following list provides an account of major changes from the previous version of this document.

Section	Summary of Change	Internal Use Only
All	Initial Release	

TABLE OF CONTENTS

Chapter 1: Safety

Understanding and consistently following these safety procedures will help to ensure the safety of those operating the machine and of bystanders.

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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

Figure 1.1: Safety Symbol

1.2 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information.

Signal words are selected using the following guidelines:

 DANGER

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

 WARNING

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

 CAUTION

Indicates a potentially hazardous situation that, if it is not prevented, may result in minor or moderate injury. It may also be used to alert you to unsafe practices.

IMPORTANT:

Indicates a situation that, if not prevented, could result in a malfunction or damage to the machine.

NOTE:

Provides additional information or advice.

1.3 General Safety

Operating, servicing, and assembling machinery presents several safety risks. These risks can be reduced or eliminated by following the relevant safety procedures and wearing the appropriate personal protective equipment.

⚠ CAUTION

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

Wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do NOT take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask

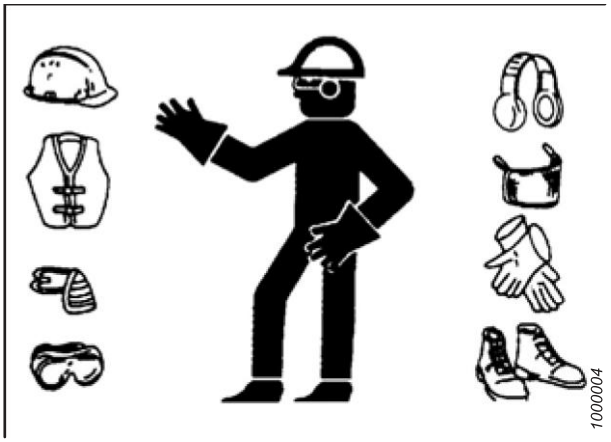

Figure 1.2: Safety Equipment

In addition, take the following precautions:

- Be aware that exposure to loud noises can cause hearing impairment. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.

Figure 1.3: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. NEVER ignore the signs of fatigue.

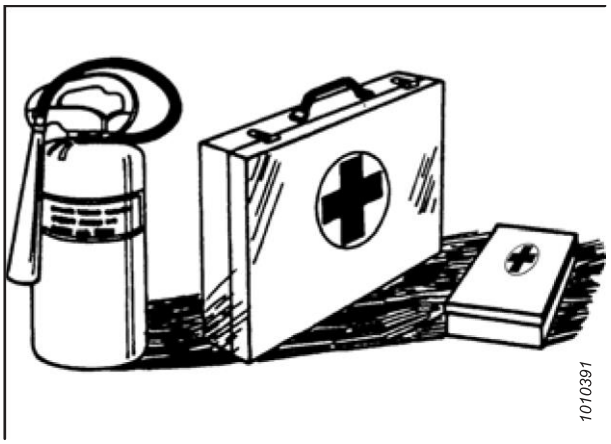

Figure 1.4: Safety Equipment

- Wear close-fitting clothing and cover long hair. NEVER wear dangling items such as hoodies, scarves, or bracelets.
- Keep all shields in place. NEVER alter or remove safety equipment. Ensure that the driveline guards can rotate independently of their shaft, and that they can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Parts from other manufacturers may not meet the correct strength, design, or safety requirements

Figure 1.5: Safety around Equipment

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

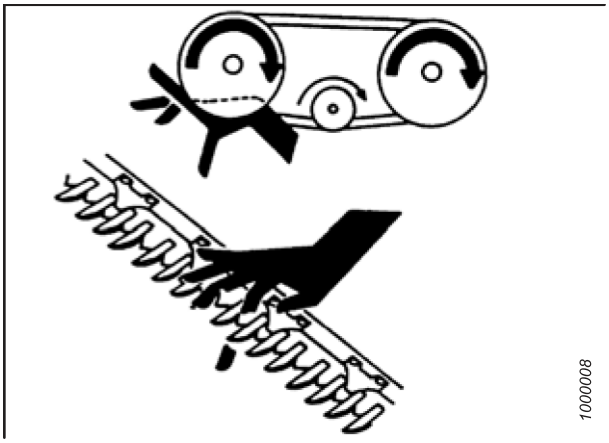

Figure 1.6: Safety around Equipment

- Keep the machine service area clean and dry. Wet and/or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Ensure that all electrical outlets and tools are properly grounded.
- Keep the work area well-lit.
- Keep machinery clean. Straw and chaff on a hot engine are fire hazards. Do NOT allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before they are stored.
- NEVER use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover any sharp or extending Figure 1.7: Safety around Equipment components to prevent injury from accidental contact.

Figure 1.7: Safety around Equipment

1.4 Hydraulic Safety

Because hydraulic fluid is under extreme pressure, hydraulic fluid leaks can be very dangerous. Follow the proper safety procedures when inspecting hydraulic fluid leaks and servicing hydraulic equipment.

- Always place all hydraulic controls in NEUTRAL before leaving the operator's seat.
- Ensure that all of the components in the hydraulic system are kept clean and in good condition.
- Replace any worn, cut, abraded, flattened, or crimped hoses and steel lines.
- Do NOT attempt any makeshift repairs to hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Makeshift repairs can fail suddenly and create hazardous conditions.

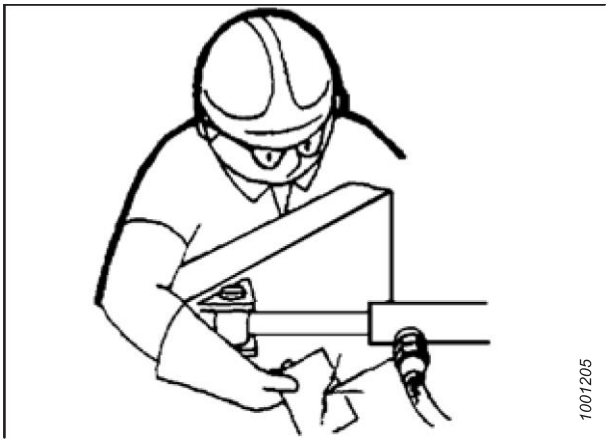

Figure 1.8: Testing for Hydraulic Leaks

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

Figure 1.9: Hydraulic Pressure Hazard

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

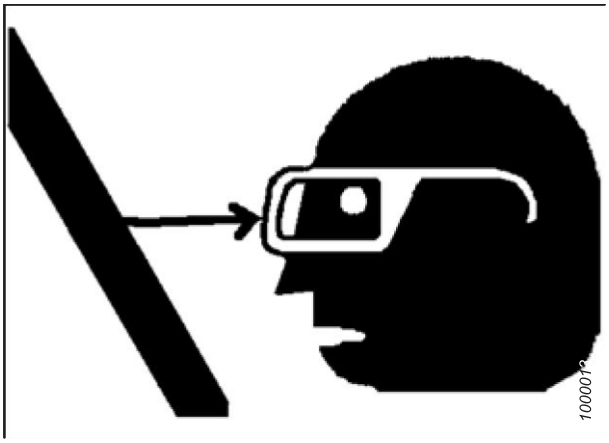

Figure 1.10: Safety around Equipment

1.5 Battery Safety

Working with vehicle batteries presents several safety risks.

WARINIG

- Keep all sparks and flames away from batteries. The electrolyte fluid in the battery cells emits an explosive gas which can build up over time.
- Ensure that there is adequate ventilation when charging the battery.

Figure 1.11: Safety around Batteries

WARINIG

- Wear safety glasses when working near batteries.
- To avoid the loss of electrolyte fluid, do NOT tip a battery more than 45° off its base.
- Battery electrolyte causes severe burns. Ensure that it does not contact your skin, eyes, or clothing.
- Electrolyte splashed into eyes is extremely damaging. If you are treating this condition; force the eye open and flush it with cool, clean water for 5 minutes. Call a doctor immediately.
- If electrolyte is spilled or splashed on one's clothing or their body, neutralize it immediately with a solution of baking soda and water, then rinse the strained area with clean water.

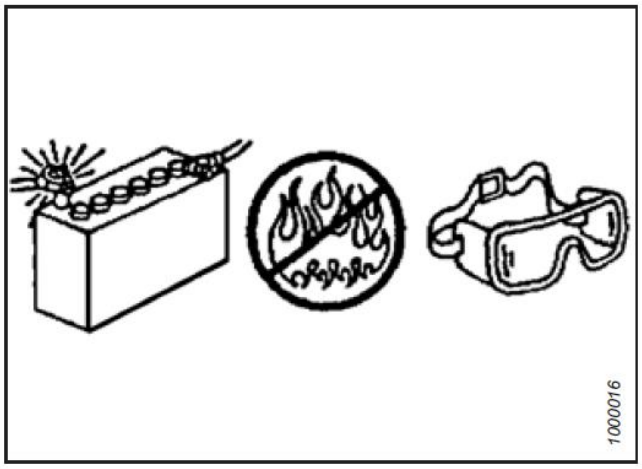

Figure 1.12: Safety around Batteries

WARINIG

- To avoid injury from a spark or short circuit, disconnect the battery ground cable before servicing any part of the electrical system.
- When working around batteries, remember that all of the exposed metal parts are live. Never lay a metal object across the terminals; this will generate a powerful spark and can electrocute the holder of the tool if they are not properly grounded.
- Keep batteries out of reach of children.

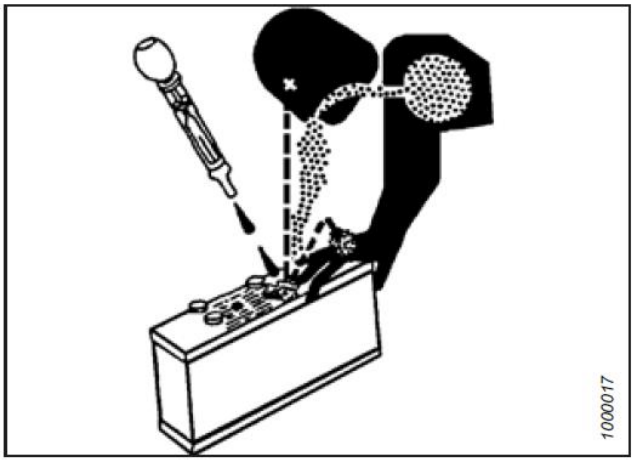

Figure 1.13: Safety around Batteries

1.6 Welding Precautions

To prevent damge to sensitive electronics, **NEVER** attempt welding on the header while it is connected to a combine.

WARNING

NEVER attempt welding on the header while it is connected to a combine. Severe damage to sensitive, expensive electronics can result from welding on the header while it is connected to a combine. It can be impossible to know what effect a high current may have regarding future malfunctions or a shorter lifespan.

For further welding precautions, consult the combine operator's manual.

Before welding on a header, you MUST detach the header from the combine, and then disconnect the following electrical components from the header:

Header Control Module

1. On the header frame, above the left driveshaft, disconnect Header Control Module (A) by unplugging bulkhead (B) from the module.

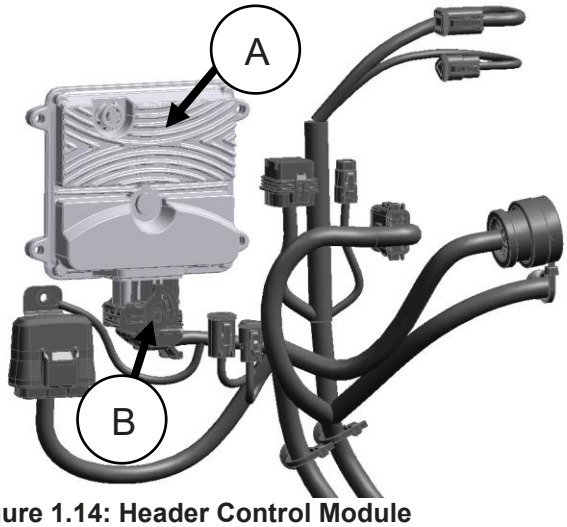

Figure 1.14: Header Control Module

2. To unplug the bulkhead from the module, push in tab (A) to unlatch arm (B).
3. Push arm (B) downward until it is in the position shown. Unplug the bulkhead from the module.

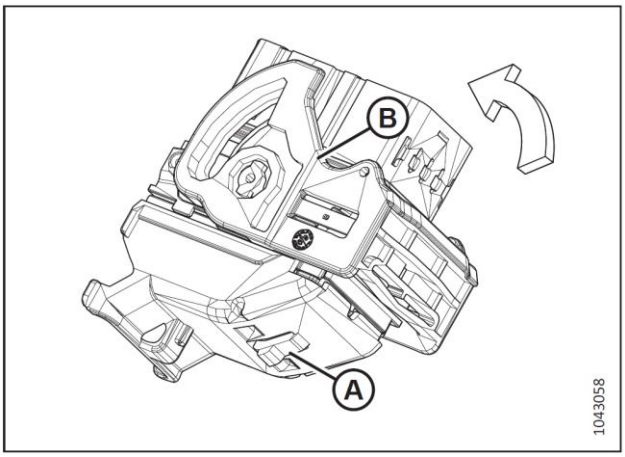

Figure 1.15: Unplugging Bulkhead from Control Module

Header Extension Module

1. On the header frame, above the left driveshaft, disconnect Header Control Module (A) by unplugging connector (B) from the module.

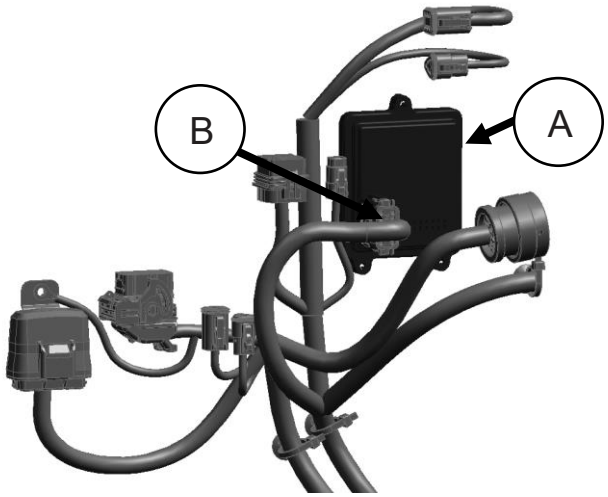

Figure 1.16: Header Extension Module

2. To unplug the connector from the module, push in tabs (C) and pull the connector out from the module.

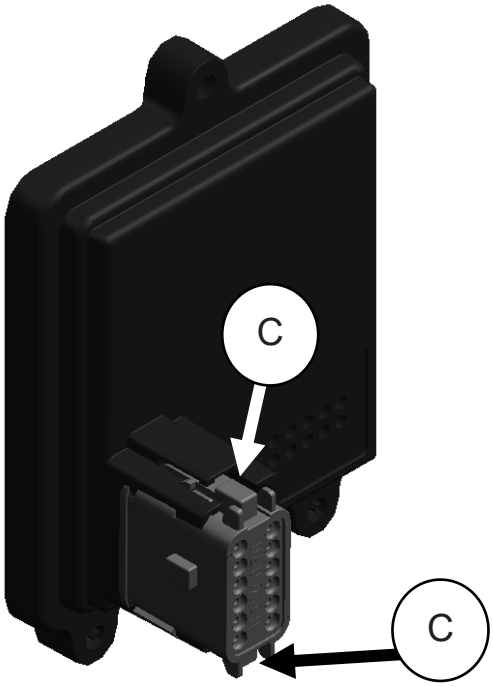

Figure 1.17: Header Extension Module

1.7 Safety Signs

Safety signs are decals placed on the machine where there is a risk of personal injury, or where the Operator should take extra precautions before operating the controls. They are usually yellow.

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or illegible.
- If the original part on which a safety sign was installed is replaced, ensure that the repair part displays the current safety sign.

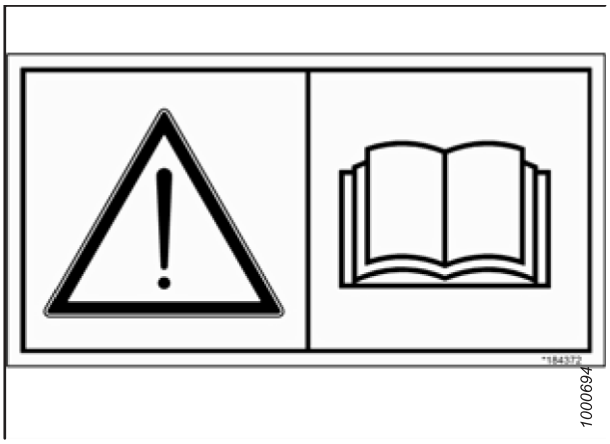

Figure 1.18: Operator's Manual Decal

Chapter 2: Header Specifications – FC Series FlexCorn Headers

The dimensions and weights of the various FC Series FlexCorn Headers are provided here.

DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage or bodily harm to operators or bystanders.

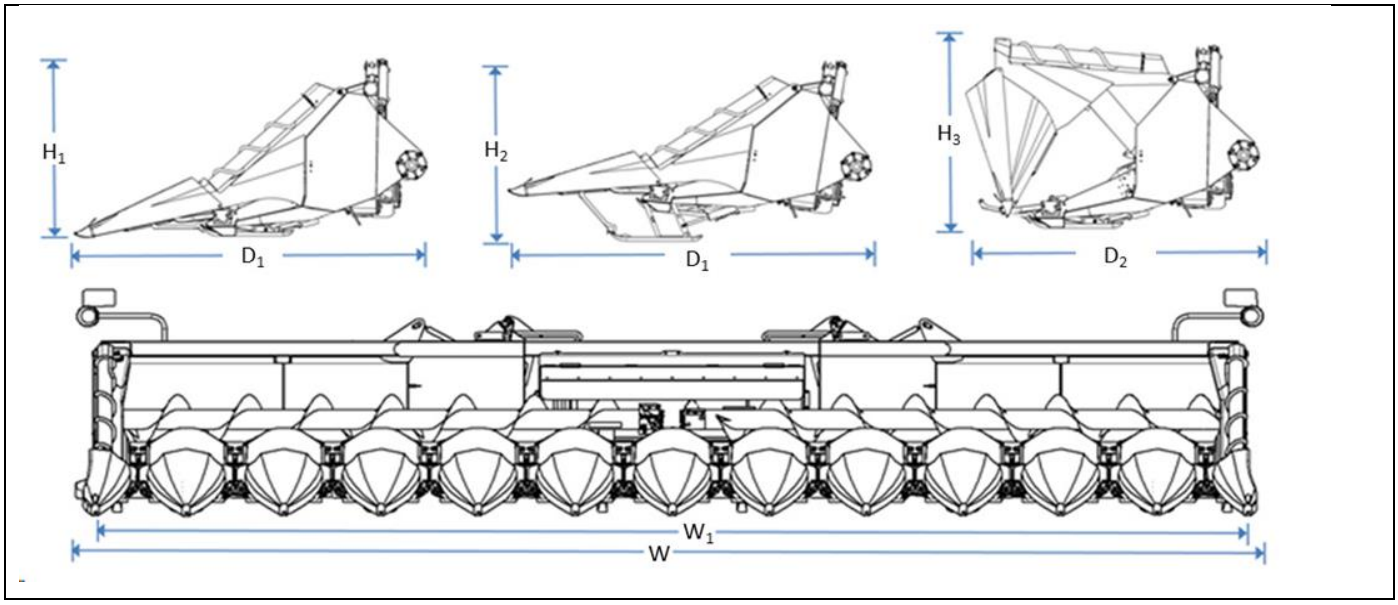

Figure 2.1 Header Dimensions

D1 - Header Length in Field Configuration

D2 - Header Length in Transport Configuration

D3 - Header Length in Shipping Configuration

H1 - Header Height in Field Configuration Skid Shoes Retracted

H2 - Header Height in Field Configuration Skid Shoes Extended

H3 - Header Height in Transport Configuration

W1 - Effective Harvesting Width

W2 - Overall Header Width

Table 2.1 Header Dimensions – All Models

Length in Field Configuration (D1)		Length in Shipping Configuration (D3)[2]		Length in Transport Configuration[1] (D2)		Height in Field Configuration Skid Shoes Retracted (H1)		Height in Transport Configuration (H3)[23]		Height in Field Configuration Skid Shoes Extended[1] (H2)	
m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.
2.97	9.7	1.10	3.6	1.10	3.6	1.45	4.8	2.45	8.0	2.43	8.0

Table 2.2 FlexCorn Header Dimensions

Row Spec	Model[3]	Weight		Effective Harvesting Width (W1)		Overall Width (W2)	
		kg	lb.	m	ft.	m	ft.
12R30	FC3012	4610	10,164	9.14	30.00	9.21	30.20
	FC3012C	4813	10,610	9.14	30.00	9.27	30.42
16R30	FC3016	5917	13,045	12.19	40.00	12.25	40.20
	FC3016C	6187	13,640	12.19	40.00	12.32	40.42

[1] Transport configuration is the configuration of the header after all unloading and assembly tasks are complete, used when transporting the header between fields.

[2] Shipping configuration is the configuration of the header when it is shipped from the factory.

[3] Model numbers ending in "C" indicate that the header is equipped with a chopper.

Chapter 3: Unloading Header

These instructions are to be followed when receiving a FC Series FlexCorn Header and preparing it for field use.

3.1 Unloading Trailer

Normally, two FC Series FlexCorn Headers are shipped together in an upright position on a trailer. Follow these procedures when unloading them from the trailer.

DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage or bodily harm to operators or bystanders.

To determine the equipment needed to handle the headers, refer to *Chapter 2: Header Specifications – FC Series FlexCorn Headers*

NOTE:

Refer to *4.2 Header Lifting Points* for details on correct locations to lift from.

To unload the headers from the trailer, follow these steps:

1. Move the trailer into position and block the trailer's wheels.
2. Lower the trailer storage stands.
3. Approach the header with a forklift and line up the forks with the fork slider channels under the shipping stand.
4. Slide the forks underneath the fork slider channels as far as possible without contacting the shipping support of the second header, if present.
5. Remove the tie-down straps, chains, and wooden blocks.
6. Slowly raise the header off of the trailer deck.
7. Back the forklift away from the trailer until the header clears the trailer. Slowly lower the header until it is 254 mm (10 in.) above the ground.
8. Take the header to the storage area. Set the header down securely on level ground free of rocks and debris.
9. Repeat this procedure to unload the second header, if present.

3.2 Inspecting Header

Once unloaded, each header must be inspected to ensure that the order was receive in its entirety, correctly, and without damage.

1. Inspect the following items to ensure that they are present and correct:
   - Serial number (located on plate [A] the left end of the header, on the top face of the top beam)

Figure 3.1: Serial Number Plate

   - Main driveline guard – ensure it is properly seated to the gearbox

Figure 3.2: Main Driveline Guard – Correct Seated

Figure 3.3: Main Driveline Guard – Incorrectly Seated

- Driveshaft and gearbox – ensure they are configured for the correct combine (the gear tooth configuration [A] is written or stamped on the gearbox's aluminum housing; you may need to remove the cover to see it); refer to *Table 3.1 Driveshaft and Gearbox Configurations*

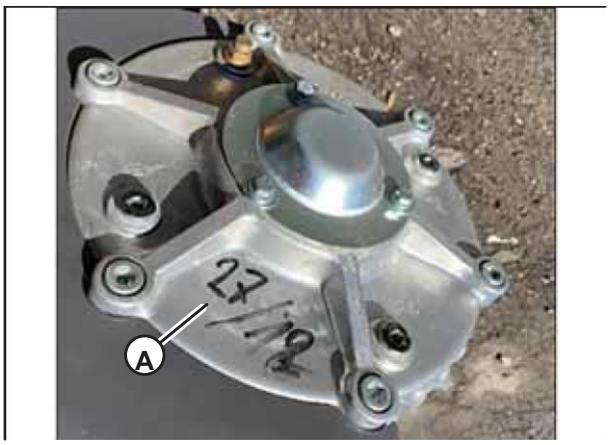

Figure 3.4: Gearbox Configuration

Table 3.1 Driveshaft and Gearbox Configurations

Combine	Drive	Gearbox Ratio	Driveshaft
Case and New Holland (2016 and earlier)	—	27T/12T	1 3/8 - 6 spline
Case and New Holland (2016 and earlier) with Sidehill Leveling Kit	—	27T/12T	1 3/8 - 6 spline CV
Case and New Holland (2017 and later)	—	27T/12T	1 3/8 - 21 spline
Case and New Holland (2017 and later) with Sidehill Leveling Kit	—	27T/12T	1 3/8 - 21 spline CV
CLAAS	—	27T/15T	1 3/8 - 21 spline
John Deere	Fixed	27T/11T	1 3/8 - 21 spline
	Variable	27T/15T	1 3/8 - 21 spline
John Deere with Sidehill Leveling Kit	Fixed	27T/11T	1 3/8 - 21 spline CV
	Variable	27T/15T	1 3/8 - 21 spline CV

- Parts shipped in wooden crate (A)
  - Wire Snout Brackets
  - Auger paddle/finger kit
  - Chopper wrench (on headers configured with stalk choppers)
  - Yellow MacDon decals (on headers configured for Case or New Holland combines)
  - Snout retaining pins for transporting header
  - In-Cab harness
  - FlexCorn Display Module
  - Power/battery harness
  - Row unit skid shoes and hardware
  - 16T/18T Auger drive sprocket

NOTE:

Figure 3.5: Wooden Shipping Crate shows the header still on the header cart. The header should have been removed from the cart before it was delivered to the dealership.

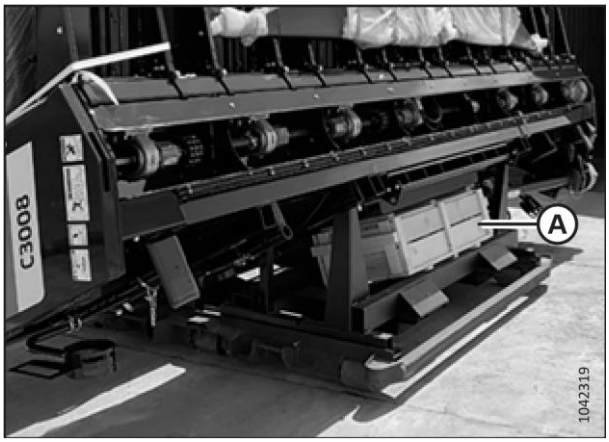

Figure 3.5: Wooden Shipping Crate

- Manuals located in the manual canister:
  - Operator’s manual
  - Parts catalog
  - Unload and assembly manual

Figure 3.6: Operator’s Manual

- Combine configuration — ensure the electrical and hydraulic completion parts are appropriate for the combine type
- Special configurations, for example:
  - Snout color
  - Rotary end dividers (REDs)
  - Stubble stompers
  - Tall end dividers (TEDs)

2. Check for shipping damage, for example:
   - Missing or damaged snouts
   - Decals that are peeling, bubbling, or scratched
   - Scuffed paint (touch up if possible)
   - Missing hardware or parts (toolbox cover, gathering chain tool, etc.)
   - Bent or damaged parts (snout support brackets, header field stands, clearance lights, etc.)

3. If the shipment is incorrect, damaged, or missing parts, send an itemized list and photographs to shortageanddamage@macdon.com.

Chapter 4: Assembling Header

Follow these procedures when preparing an FC Series Corn Header for field use.

4.1 Preparing Header While in Standing Position

Some assembly tasks are best done before lowering the header into field position.

1. Ensure that the assembly area is flat and free of rocks or debris that could damage the header. If necessary, move the header to a more suitable location.
2. Remove the wooden crate from the header shipping stand and set it aside.

4.1.1 Checking and Adjusting Minimum Snapping Roll Knife Clearance

There is a snapping unit assembly between each pair of snouts, and each assembly contains two snapping rolls with attached knives. The clearance between those knives should be checked, and if necessary adjusted, before lowering the header into field position.

⚠ CAUTION

Wear heavy gloves when working around or handling knives.

⚠ CAUTION

Ensure hands are clear when rotating snapping rolls. When you rotate one, others will rotate as well.

1. There is a pair of snapping rolls in each row. Rotate snapping rolls (A) and check the clearance between each pair. There should be a 1–2 mm (0.04–0.08 in.) gap (B) between opposing sharp knives.

   NOTE:

   If the header is equipped with a stalk chopper, you can rotate the snapping rolls by hand by turning the chopper assembly. If the header is not equipped with a stalk chopper, use a 32 mm wrench to turn the input hex shaft.

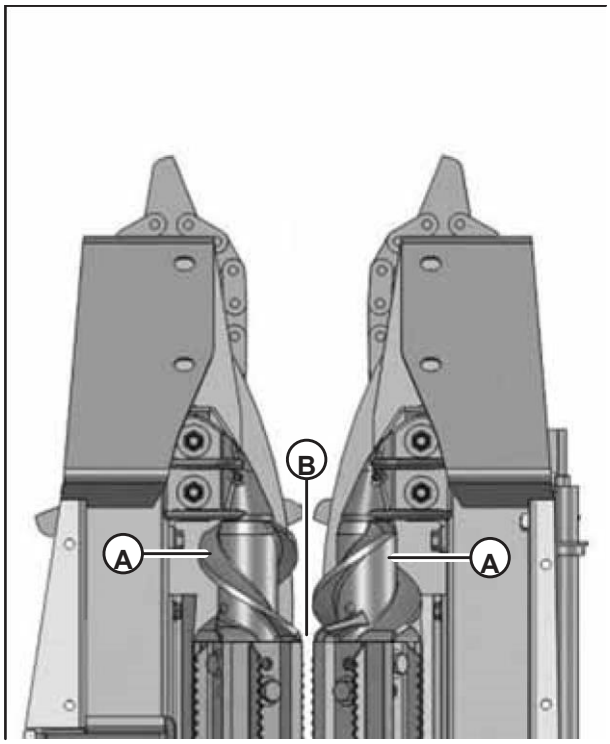

Figure 4.1: Snapping Roll Knife Clearance

2. If the clearance is inadequate, adjust the front of each snapping roll (A) as follows:
    a. Slightly loosen bolts (C) holding the snapping roll front support.
    b. Using a pry bar, slide the roll to adjust the gap between the opposing knives, and then retighten bolts (C).
    c. Repeat these steps on the second snapping roll. Make sure both rolls are adjusted the same amount. Gap (B) between the opposing knives should now be 1–2 mm (0.04–0.08 in.).
    d. Torque the nuts to 45 Nm (33 lbf·ft).
    e. After both rolls have been adjusted, rotate the rolls a full revolution to ensure that there is no contact between the knives.

NOTE:

The rear of the snapping roll is fixed in place and cannot be adjusted.

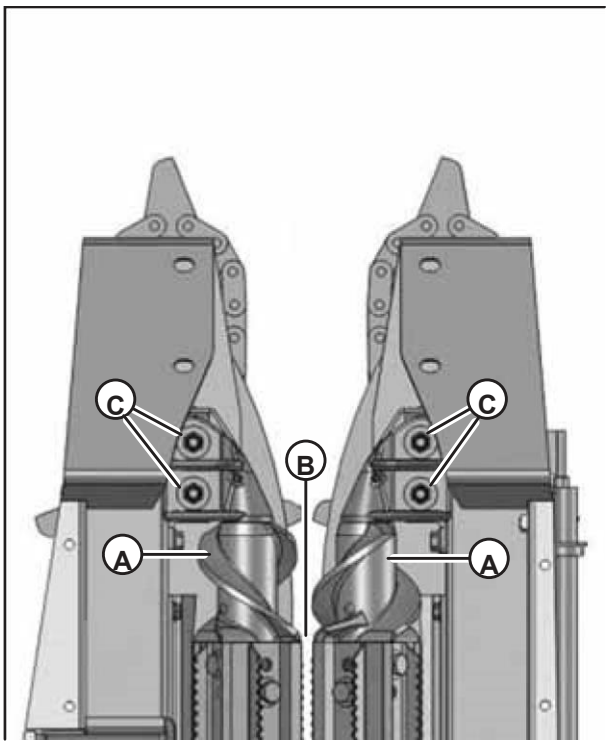

Figure 4.2: Snapping Roll Knife Clearance

4.1.2 Checking and Adjusting Vine Knife Clearance

The clearance between the snapping rolls and the vine knives should be checked, and if necessary adjusted, before lowering the header into field position.

⚠ CAUTION

Wear heavy gloves when working around or handling knives.

1. Rotate the snapping rolls again, and this time check the clearance between the rolls and the vine knives (A) and (B). The gap (C) should be 1–2 mm (0.04–0.08 in.).

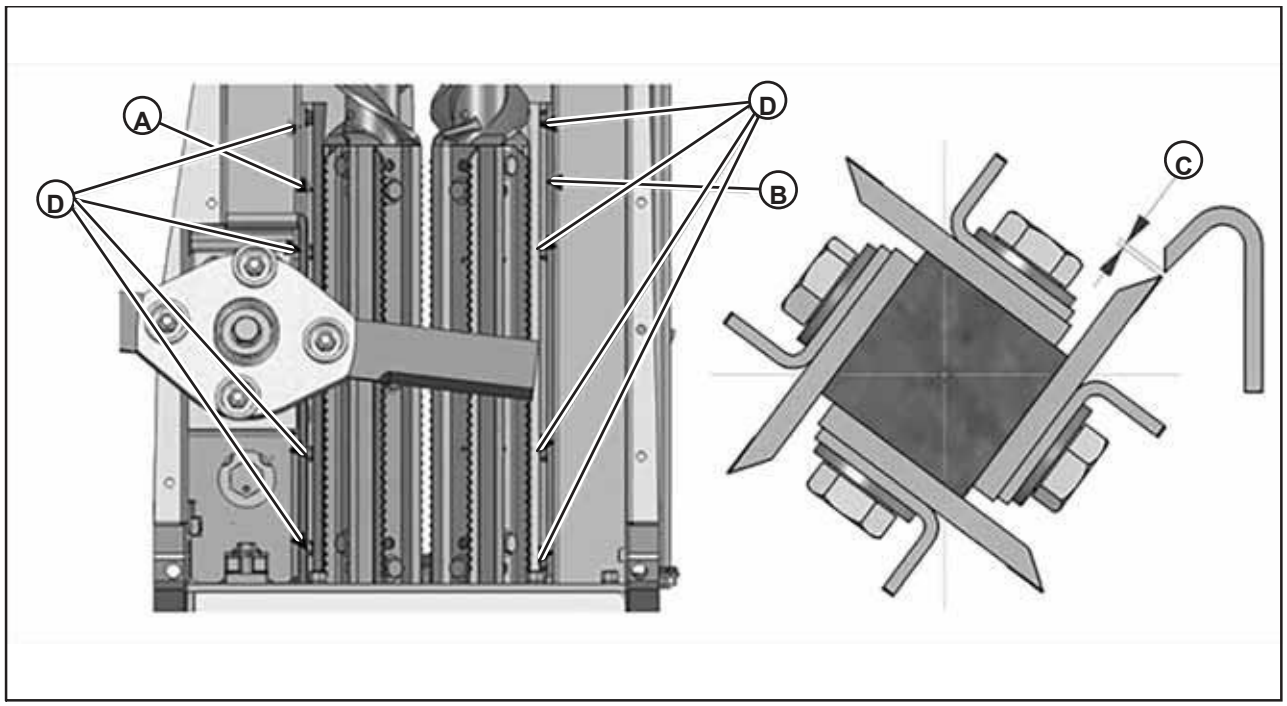

Figure 4.3: Vine Knives

2. If clearance is incorrect, adjust the position of the vine knives as follows:
    a. Loosen the four M8 bolts (D) securing one of the vine knives in place.
    b. Adjust the position of the knife, then retighten the bolts.
    c. Rotate the rolls a full revolution to ensure that there is no interference, and that clearance gap (C) is now correct.

4.1.3 Checking and Adjusting Stalk Chopper

If the header is equipped with stalk choppers, the stalk chopper should be checked, and if necessary adjusted, before lowering the header into field position.

⚠ WARNING

Stalk choppers have sharp edges. Wear heavy, cut-proof gloves when working around or handling choppers.

NOTE:

A chopper wrench should be supplied with every header equipped with stalk choppers. It should have been shipped in the wooden shipping crate (on folding headers) or in the header toolbox (on rigid headers).

1. Put on heavy, cut-proof gloves.
2. To check if the stalk chopper is engaged or disengaged, grab the center of stalk chopper (A) and rotate it. If the chopper is engaged, the snapping rolls should rotate with the chopper.
3. If the stalk chopper is disengaged, turn hex knob (B) 180 degrees to engage it. Repeat this adjustment on every row.
4. Once you have ensured that the stalk chopper is engaged, grab each chopper knife (C) in turn, and rotate the knives to make sure they do not bind. Stalk chopper knives must move freely.

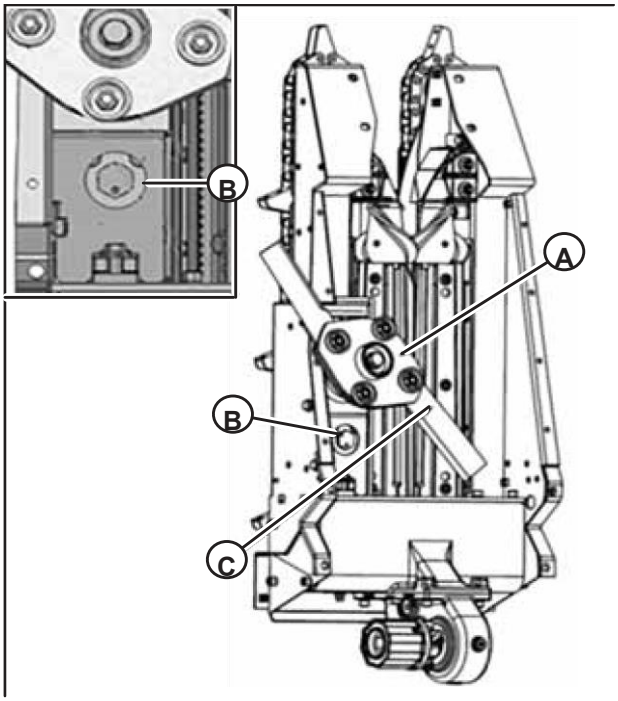

Figure 4.4: Stalk Chopper

4.1.4 Adjusting Header Stands and Removing Parts Shipped on Bottom of Header

The header stands need to be adjusted and some parts removed from the bottom of the header before lowering the header into field position.

1. Lower header stands (A) until the tops are flush with the top of the mount to protect the bottom of the snapping units and stalk choppers.

2. Remove any snouts and/or tall end dividers (TEDs) (B) that have been secured to the bottom of the header for shipping. Set them aside for later installation.

Figure 4.5: Header Stand

4.1.5 Checking and Adjusting Clearance Lights

Ensure the clearance lights are positioned in such a way that they won't be damaged when the header is lowered into field position.

1. Check if clearance lights (A) on each end of the header are pushed tight to the backsheet. If necessary, loosen four nuts (B), then slide the light inboard and upward. Retighten the nuts.

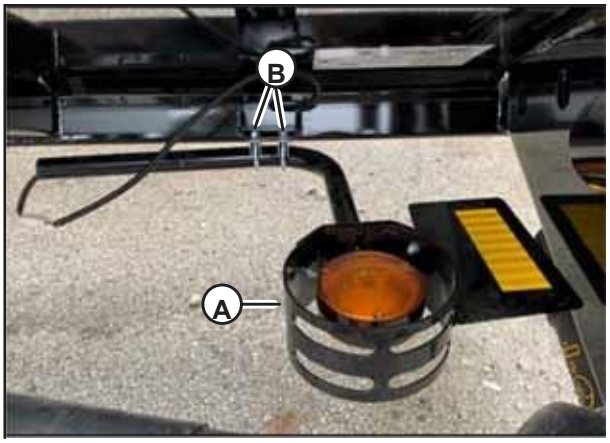

Figure 4.6: Clearance Lights

4.2 Header Lifting Points

The header can be lifted with either a forklift or a crane. It should only be lifted using the lifting points identified below.

Use an appropriately sized forklift or crane and cables to lift and move the header. For header dimensions and weight, refer to *Chapter 2: Header Specifications – FC Series FlexCorn Headers.*

Lifting from header stand

When using a forklift, ensure the forks are fully seated in the channels when moving headers on stands.

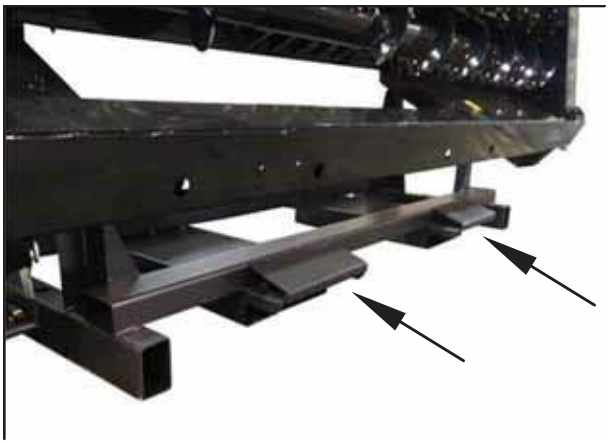

Figure 4.7: Forklift Channels in Header Stand

Lifting from lifting bars

Headers will arrive with lifting bars bolted to the underside of the row units.

Use an appropriately rated rigging hooked at all four lifting points, and make sure angle (A), between the cables and/or chains, is less than 90°.

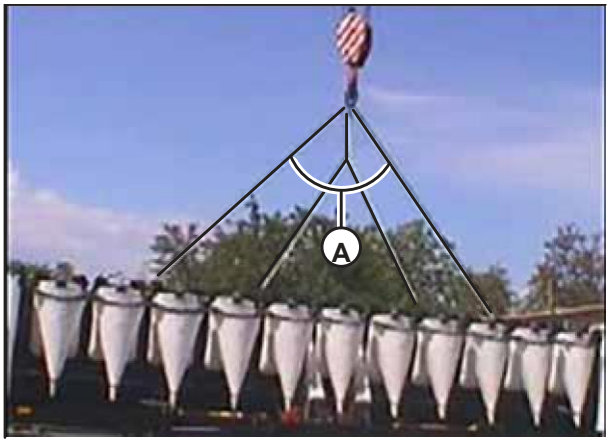

Figure 4.8: Header Lifting Points

4.3 Lowering Header to Field Position

The headers are shipped upright and will need to be lowered to the ground so that final assembly procedures can be performed.

1. Ensure that the assembly area is flat and free of rocks or debris that could damage the header. If necessary, move the header to a more suitable location.
2. Attach a lifting device to the header as described in *4.2 Header Lifting Points.*
3. Use the lifting device and cables to tip the header down into field position.

NOTE:

Ensure the cables and/or chains do not contact the snout support brackets when lowering the header.

4.4 Preparing Header for Combine Attachment

Certain assembly tasks must be completed after the header is lowered into field position but before it is attached to a combine.

Removing header stand

1. If applicable, remove adjustable strap (A) securing the bulkhead lines to the header stand.

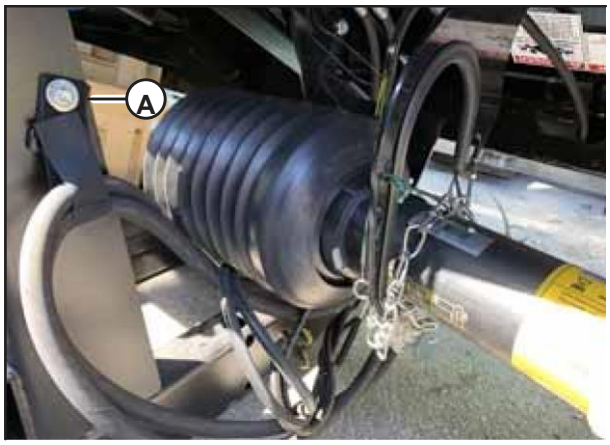

Figure 4.9: Adjustable Strap

2. While header stand (A) is supported by a forklift or crane, remove and the four M16 bolts securing the stand to the header.
3. Remove header stand (A) from the back of the header.

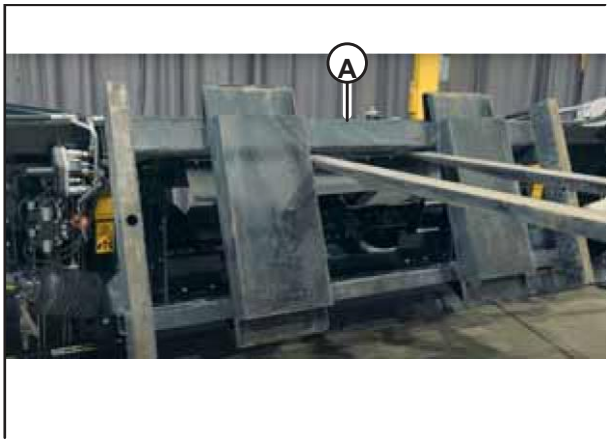

Figure 4.10: Removing Header Stand

4. Reinstall two of the M16x45mm bolts removed in step 2, torque to 270 Nm (199 lbf·ft), apply paint marker to indicate hardware has been torqued, and discard the other two M16 bolts.

Figure 4.11: Reinstalling Bolt for Flex Linkage

Repositioning clearance lights

4. Remove U-bolts (A) securing clearance light (B) in shipping position.

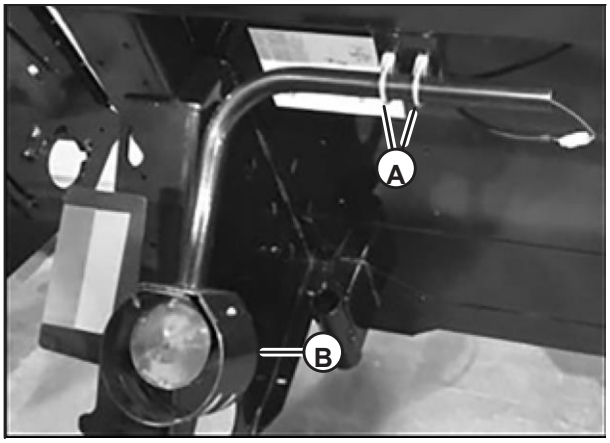

Figure 4.12: Driveline Storage Bracket in Lower Position

5. Rotate light (B) up to field position, ensuring that the yellow reflector faces forward.
6. Reinstall U-bolts (A) to secure light (B) in field position. Leave the U-bolts slightly loose so that the lights can rotate to prevent damage if they contact anything.
7. Repeat Steps 4 to 6 to reposition the clearance light at the other end of the header.

Figure 4.13: Clearance Light – Field Position

Trimming transition frame seal — John Deere only

8. Lower transition frame seals (A) may overlap the feeder house opening on some John Deere combines. If necessary, trim the edges of the seals to match the feeder house opening width

Figure 4.14: Too Large Transition Frame Seal

4.5 Attaching Header to Combine

The header must be attached to a combine before assembly can be completed.

IMPORTANT:

Headers are shipped already configured for a specific combine brand. If the header will be attached to a different combine brand, remove the factory-installed mounting kit and install the mounting kit recommended for the new combine brand before attaching the header to the combine.

NOTE:

Ensure that the combine feeder house's lugs are free of dirt and debris. Check the locking mechanism for freedom of movement and ensure that it is free of damage; make any necessary repairs to the locking mechanism before attaching the header to the combine.

NOTE:

Ensure that all electrical and hydraulic connectors are clean and free of dust and debris.

1. Engage and securely attach the header to the combine following the instructions provided in the combine operator's manual.
2. Engage the header safety props. For instructions, refer to the combine operator's manual.

4.5.1 Adjusting Latching Hooks

After picking up the header with the combine, you will need to adjust the latching hooks, which are specific to each combine model. Ensure the locking pins are securely seated before proceeding.

Refer to the applicable instructions for your combine model below.

Case IH Flagship and Legacy, New Holland CR and CX Series

1. Adjust hooks (A) on the combine until they are fully seated in the holes of the header.
2. Put combine locking arm (B) in header latch (C), and then tighten lower bolts (D).

   NOTE:

   Some combines have two of bolt (D) and some have three.

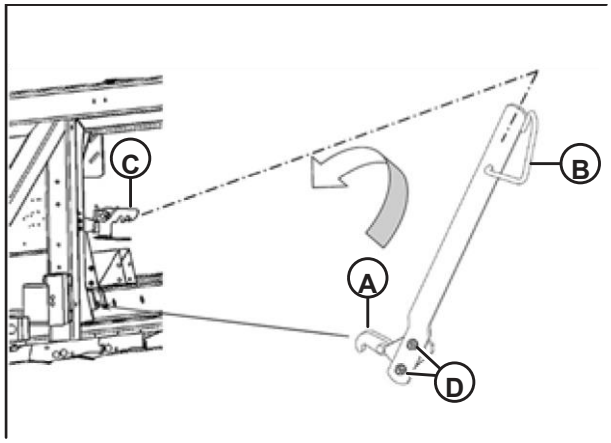

Figure 4.15: Header Latch – Case IH Flagship and Legacy, New Holland CR and CX Series

CLAAS Lexion 7000, and 8000 Series

1. Locate latch pin (B) on the transition frame on the rear of the header, just below the outboard corners of the delivery opening.
2. Engage latch pin (B) into the combine feeder house (A). Once engaged, set the latch strap (C) into the retaining slot.

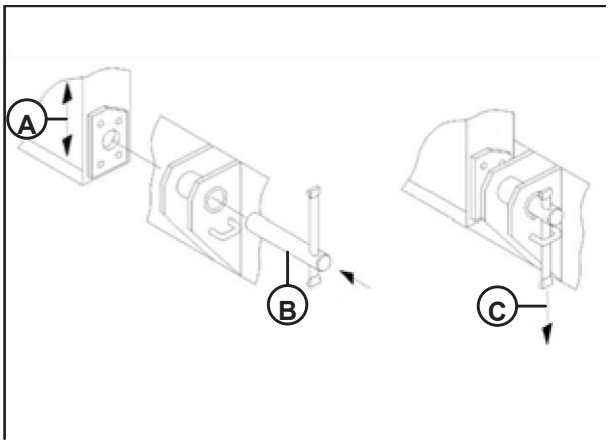

Figure 4.16: Transition Frame Latch – CLAAS Lexion 7000, and 8000 Series

John Deere S Series

1. On the header, in the bottom corners of the transition frame, loosen hardware (A), adjust retainer plate (B) as needed to engage the lock, and then retighten the hardware.

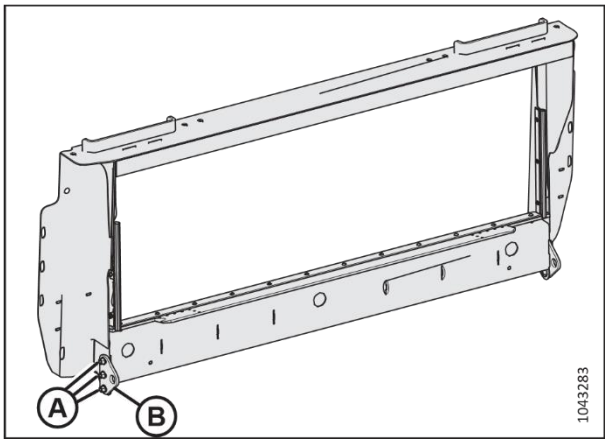

Figure 4.17: John Deere S Series Transition Frame

4.5.2 Attaching Driveshafts to Combine

All headers have a driveshafts on the left and right side of the combine feeder house. The driveshafts must be connected to the combine.

1. Connect the driveshafts and ensure that the protective shields are properly in place and that all rotating parts are adequately shielded. The shafts are installed at the factory with the protective shielding supplied by the shaft manufacturer.

   IMPORTANT:

   After connecting to the feeder drive shaft, position protective shield on the driveshaft according to the instructions in the combine operator's manual.

2. To prevent rotation of header driveshaft shield (A), attach both original chain restraints (B) to the header.

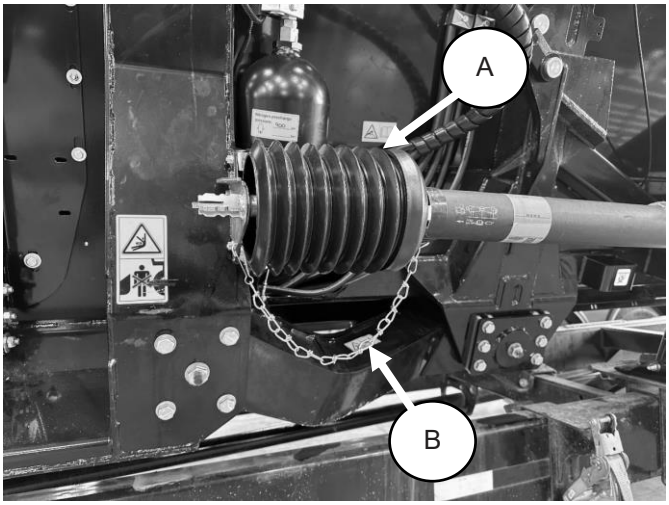

Figure 4.18: Header Driveshaft

4.5.3 Connecting Hydraulic Systems

The header's hydraulic and electrical systems must be connected to the combine's hydraulic and electrical systems

1. Connect the combine single/multi-point connector to multicoupler (A) on the left side of the header opening on the rear of the header. Refer to the combine operator's manual for the correct latching methods.

   NOTE:

   The connections vary for different combine brands.

Figure 4.19: Multicoupler on a header Configured for a Case or New Holland Combine

2. Verify the header hydraulic lines are routed correctly from the multicoupler to the header manifold

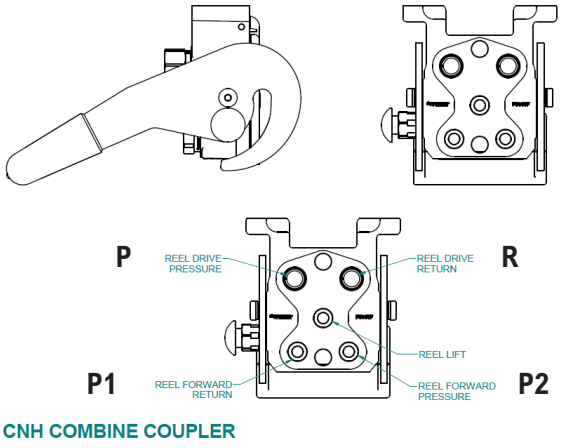

Figure 4.20: Case and New Holland Multicoupler Plumbing Routing

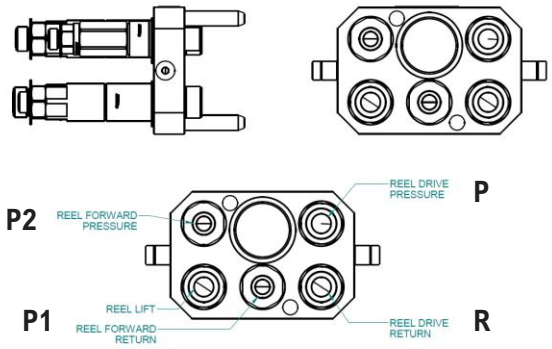

Figure 4.21: John Deere Multicoupler Plumbing Routing

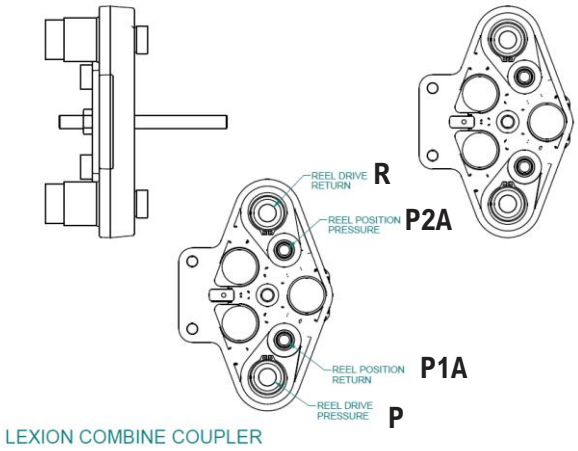

Figure 4.22: CLAAS Multicoupler Plumbing Routing

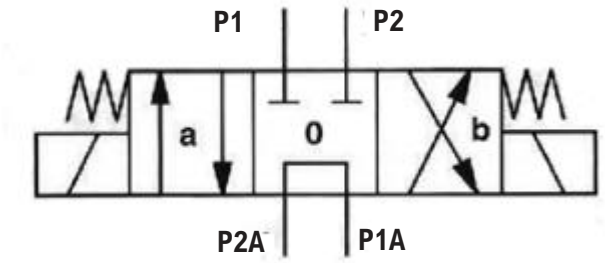

Figure 4.23: CLAAS Multicoupler Plumbing Routing

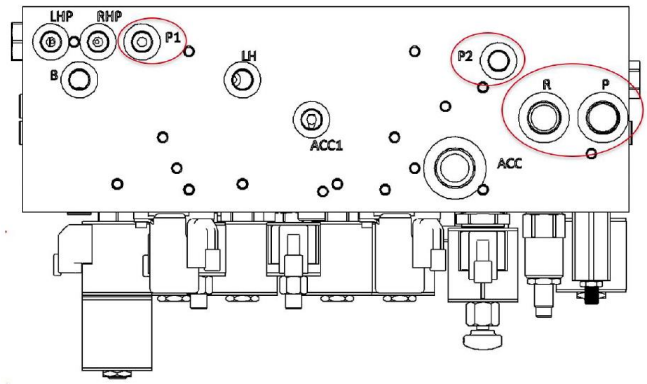

Figure 4.24: Header Side Multicoupler Plumbing Routing

4.6 Removing Shipping Components

Once the header is fully assembled, the remaining shipping components need to be removed.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Raise the header fully.
2. Engage the header safety props. For instructions, refer to the combine operator's manual.
3. Shut down the engine, and remove the key from the ignition.

Removing lifting bar(s)

1. Using a forklift, remove lifting bars (A) from the header.

Figure 4.25: Removing Lifting Bar

2. Remove toolbar connection plate underneath the header.

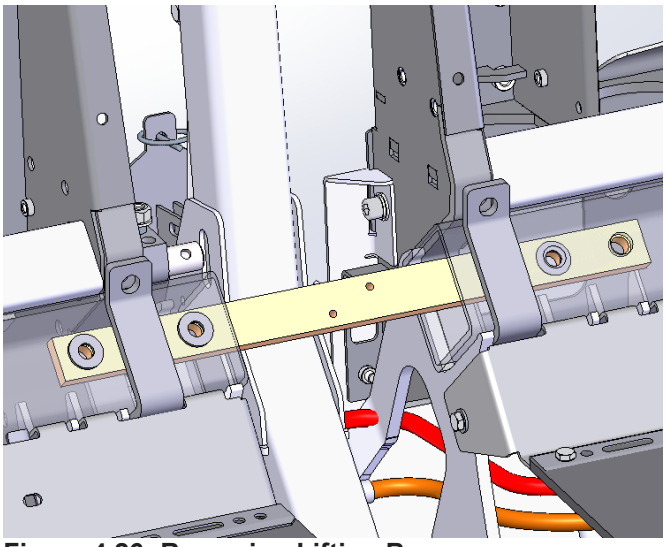

Figure 4.26: Removing Lifting Bar

Removing lock link shipping spacers

1. With header in field position, remove the hardware (6, 11, 12) and steel plates (8) from the center of the wing lock brackets.
2. Repeat Step 1 for both the left and right wing lock.

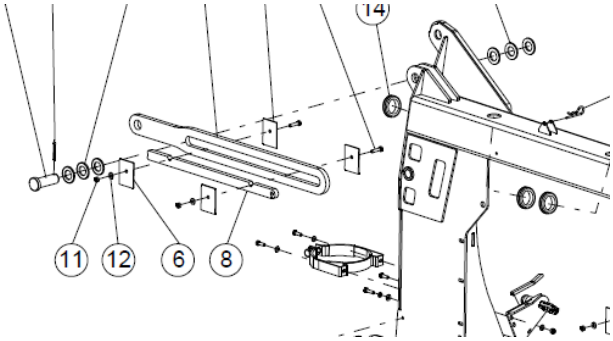

Figure 4.27: Removing Lock Link Shipping Spacers

4.7 Installing End Dividers

Each header must have either standard end dividers or rotary end dividers (REDs). Tall end dividers (TEDs) can be installed on standard end dividers or REDs.

Follow the installation procedure(s) for the dividers shipped with your header:

- *4.7.1 Installing Standard End Dividers*
- *4.7.2 Installing Rotary End Dividers*
- *4.7.3 Installing Tall End Dividers*

4.7.1 Installing Standard End Dividers

One divider needs to be installed on each end of the header.

1. Remove the hardware securing each divider to the shipping brackets, then using a forklift or crane, remove the dividers from the header. Retain the hardware for reinstallation.
2. Remove the shipping brackets from the header.
3. Insert shaft (A) through the upper hole in each divider (B), and then secure the shaft to support (C) at the top of the header side shield with retaining plate (D) and M6 bolt (E) (hardware retained from Step1).

   NOTE:

   For a close-up view, refer to Figure 4.29.

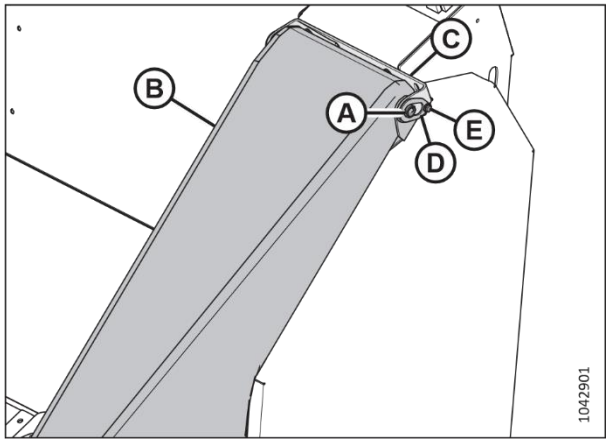

Figure 4.28: Standard End Divider Installed on Left Side Shield

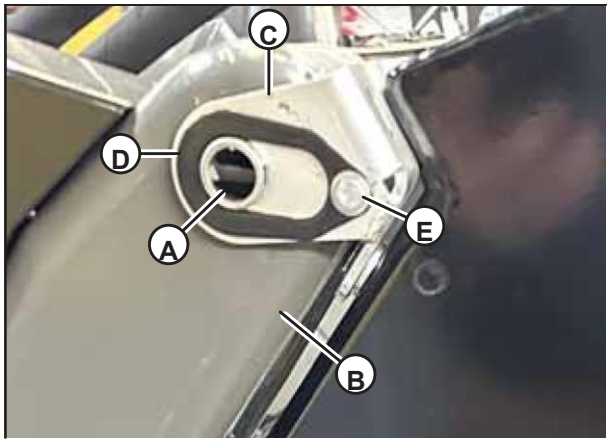

Figure 4.29: Close-Up of Top Divider Connection Point

A - Shaft **B – Divider**

C – Support **D – Retaining Plate**

E – M6 Bolt

4. Remove the shaft from the lower holes in divider (A), and insert it through snout (B) and then through the lower divider holes. Secure the shaft in place with two spacers (C), two spring washers (D), and two M12 x 35 Torx® hex socket button-head bolts (E). Apply mediumstrength threadlocker (Loctite® 243 or equivalent) to the bolts before installing them.

5. If you are installing tall end dividers (TEDs) on the standard end dividers, proceed to *4.7.3 Installing Tall End Dividers,* otherwise, proceed to *4.7.4 Checking and Adjusting End Divider Latches*.

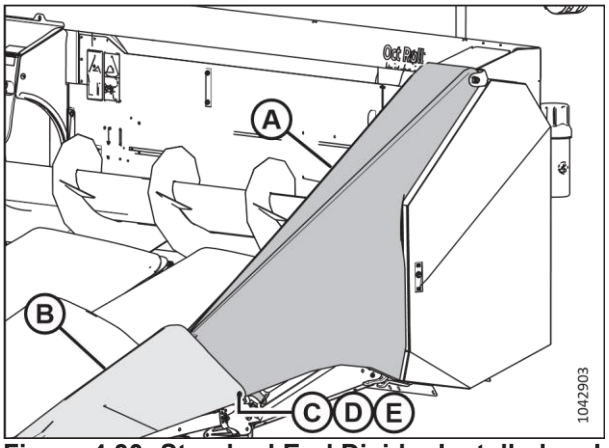

Figure 4.30: Standard End Divider Installed on Left Side Shield

4.7.2 Installing Rotary End Dividers

Rotary end dividers (REDs) are optional attachments that, if ordered, are secured to the ends of the header for shipping. One RED should be installed at each end of the header.

When ordered, two REDs are shipped with each header. Follow these steps for each of them.

1. Remove the hardware securing each RED (A) to the shipping brackets, then using a forklift or crane, remove the REDs from the header. Retain the hardware for reinstallation.

2. Remove the shipping brackets from the header.

Figure 4.31: RED in Shipping Configuration

3. Insert shaft (A) through the upper hole in each divider (B), and then secure the shaft to support (C) at the top of the header side shield with retaining plate (D) and M6 bolt (E) (hardware retained from Step 1).

NOTE:

For a close-up view, refer to Figure 4.33.

4. Remove the shaft from the lower holes in the divider, and insert it through snout (F) and then through the lower divider holes. Secure the shaft in place with two spacers (G), two spring washers (H), and two M12 x 35 Torx® hex socket button-head bolts (J). Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolts before installing them.

Figure 4.32: RED Installed on Header – Right Side

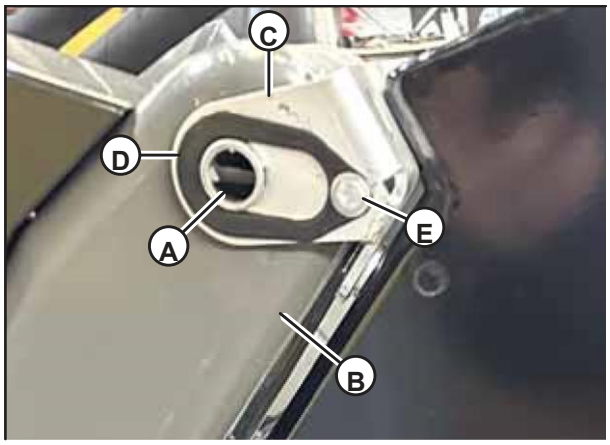

Figure 4.33: Close-Up of Top Divider Connection Point

A - Shaft

B – Divider

C – Support

D – Retaining Plate

E – M6 Bolt

5. Hydraulic hoses are routed from the motors on the REDs, along the top of the header to the multicoupler. Secure the hoses in the factory-installed hydraulic clamps (A). Pull the hoses tight before tightening the clamps.

6. If you are installing tall end dividers (TEDs) on the REDs, proceed to *4.7.3 Installing Tall End Dividers*, otherwise, proceed *4.7.4 Checking and Adjusting End Divider Latches*.

Figure 4.34: RED Hydraulic Hoses

4.7.3 Installing Tall End Dividers

Tall end dividers (TEDs) can be installed on both standard end dividers and rotary end dividers (REDs). If ordered, one TED should be installed on each standard end divider or RED.

NOTE:

TEDs are secured to the bottom of the header for shipping, and should have been removed and set aside in *4.1 Preparing Header While in Standing Position*.

NOTE:

When installing TEDs on REDs, ensure the REDs are switched off using the softkey in the FlexCorn application. Refer to *8.5.7 Engaging and Disengaging REDs (Option)* for more information.

Follow these steps to install each TED:

1. Lift the front end of existing standard or rotary end divider (A) and fold attached snout (B) down into bent-knee position.
2. Remove existing locking plate (C) from the rear side of the snout (if present). Retain the hardware.
3. Position the TED on top of the snout, and secure the TED's locking plate to the rear side of the snout with the existing hardware. The rubber curtain should fall on the inboard side of the snout.

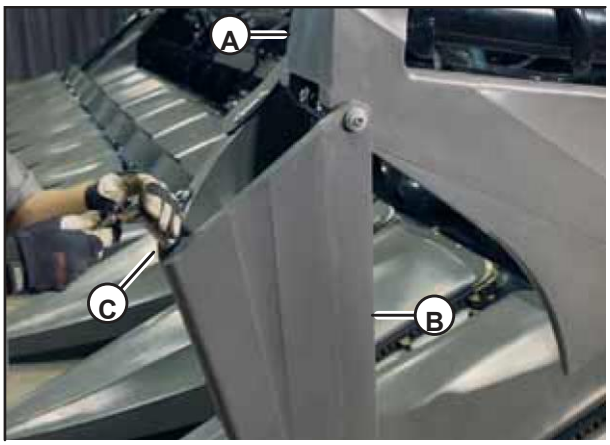

Figure 4.35: Rotary End Divider and Snout in Bent Knee Position

4. Insert an M8 x 100 hex bolt (A) through an M8 washer, then up through a hole near the end of the end snout into the molded nut near the tip of the TED.
5. Torque all the installed hardware to 23 Nm (204 lbf·in /17 lbf·ft).

Figure 4.36: TED Installed on Left Standard End Divider

6. Return snout (A), standard or rotary end divider (B), and tall end divider (C) to field position as shown in the illustration at right.
7. Repeat this procedure with the second TED on the other end of the header.

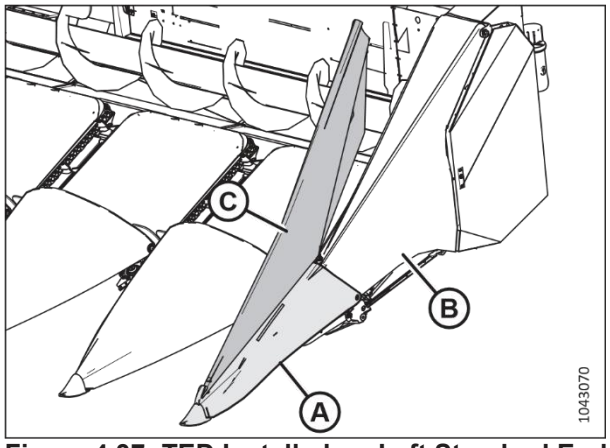

Figure 4.37: TED Installed on Left Standard End Divider

4.7.4 Checking and Adjusting End Divider Latches

Once the standard end dividers or rotary end dividers (REDs) have been installed, the latches at the front ends of the dividers need to be checked, and if necessary, adjusted.

1. Lower the end divider.
2. At the bottom/front end of the divider, check if shaft (A), securing the divider to the snout, seats into latching channel (B) as shown in the illustration at right.

   NOTE:

   The top of the divider and the snout have been removed from the illustration so that you can clearly see the latch mechanism.
3. If not, loosen three bolts (C) and slide channel (B) forward or rearward to allow shaft (A) to seat.
4. Tighten all bolts.
5. Swing latch (D) into place and lock it with lynch pin (E).
6. Repeat this procedure on the opposite end divider.

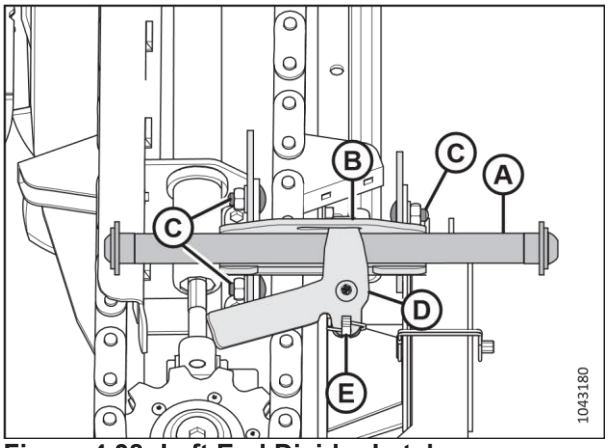

Figure 4.38: Left End Divider Latch

4.8 Installing Snouts and Snout Height Supports

Snouts must be removed from their shipping position and then reinstalled in field position.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Disengage the header safety props. For instructions, refer to the combine operator's manual.
2. Lower the header to the ground.
3. Shut down the engine, and remove the key from the ignition.
4. Remove the snouts from their shipping position, retaining the Torx® hardware and washers securing them in place. Discard the shipping brackets.

Figure 4.39: Snouts in Shipping Position

1. Headers with 76 cm (30 in.) row spacing: Remove wire bracket supports (A) from the wooden shipping crate, and install them on the front snouts. When necessary, the brackets will support the snouts in a raised position for service as shown in the illustration at right.

NOTE:

The wire bracket supports should not be used when transporting the header on the road. The snouts should be pointing down for transport as shown in Figure 4.42.

Figure 4.40: Wire Bracket Support Installed on Front Snout – Raised Service Position

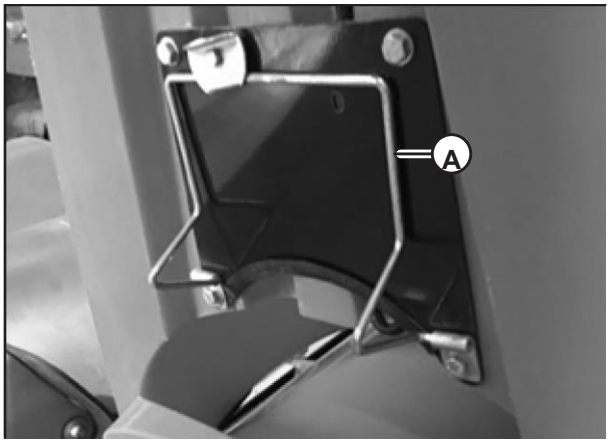

Figure 4.41: Wire Bracket Support Installed on Front Snout – Field Position

NOTE:

For trailer transport, remove the lynch pin securing rear divider (A) and lift the divider up. The snout tip will point down and sit in the hole just behind white plastic support (B).

NOTE:

The header will be equipped with large square lynch pins, these are to be used through the snout tips in transport position to prevent the snouts from bouncing out of the snout height supports.

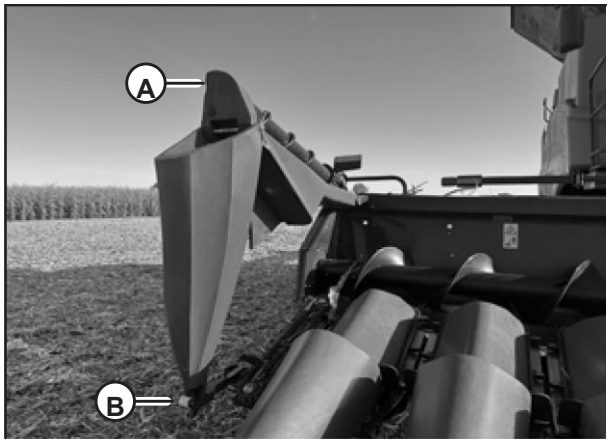

Figure 4.42: End Snout in Transport Position

2. Cross bolts (A) are positioned below snout support arms (C) for shipping purposes. One at a time, remove the cross bolts from shipping position, and reinstall them through rear second hole from the bottom (D) in fixed brackets (B) and through rear hole (E) in snout support arms (C). Secure cross bolts (A) with nuts, leaving them slightly loose to allow snout support arms (C) to pivot up and down.
3. Ensure that the nuts on the end snout are on the side furthest from the gathering chains to avoid the ends of the bolts contacting the chains.

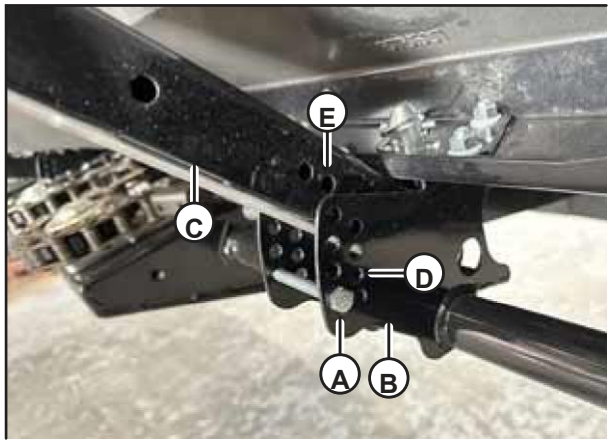

Figure 4.43: Snout Height Support in Shipping Position

4. Slightly loosen bolts (A) so that plastic rollers (B) are able to turn, as shown in the illustration at right. This will help prevent excess wear.

NOTE:

Don’t loosen bolts (B) too much or the nuts will fall off.

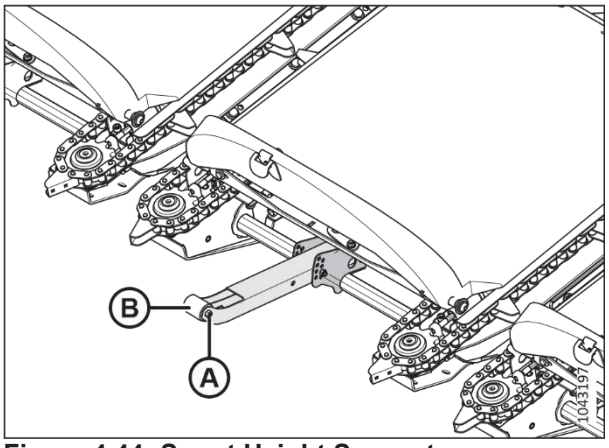

Figure 4.44: Snout Height Support

5. One at a time, position central snouts (A) on rear divider pins (B). There is one pin on each side of each rear divider.

NOTE:

There are two snouts with additional brackets installed on the bottom. These are to be installed above the adjustable skid shoes.

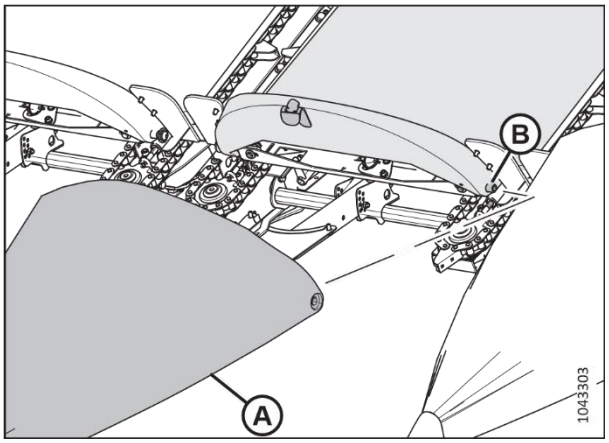

Figure 4.45: Snout Pivot Hardware

6. On rows with auto header height control (AHHC) or row guidance installed: Be sure that 8 mm spacer (A) is installed between the rear divider and snout on the left side of the header. Connect the front electrical harness with rear harness (B), and then secure the harnesses to the divider and snout with P-clamps (C) and self-tapping screws (D). Move the snouts and dividers to ensure that there is enough slack in the harnesses to allow the snouts to move into transport position without contacting the gathering chains.

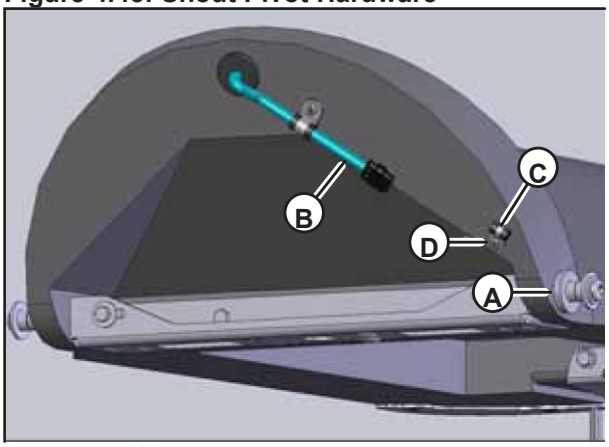

Figure 4.46: Harness on Rear Divider

7. On the end snouts, ensure the AHHC wiring has been secured using the provided P-clamps and self-tapping screws. Refer to Figure 4.47 and 4.48 for additional details.

Figure 4.47: Harness on Left End Divider

Figure 4.48: Harness on Left End Snout

8. Apply medium strength threadlocker (Loctite® 243 or equivalent) to Torx® head bolts (C), and use them with washers (D) and (E) to secure each snout in place. Torque the bolts to 100 Nm (74 lbf·ft).

   NOTE:

   The bolts and washers were retained from Step 4, page 47.

9. If there is more than 6 mm (1/4 in.) of movement between snout (A) and rear divider (F), shift divider pins (B) inward to reduce movement. Loosen hex bolts (G) on the inboard end of the pins, slide the pins inward to achieve a tight fit, and then retighten the hex bolts.

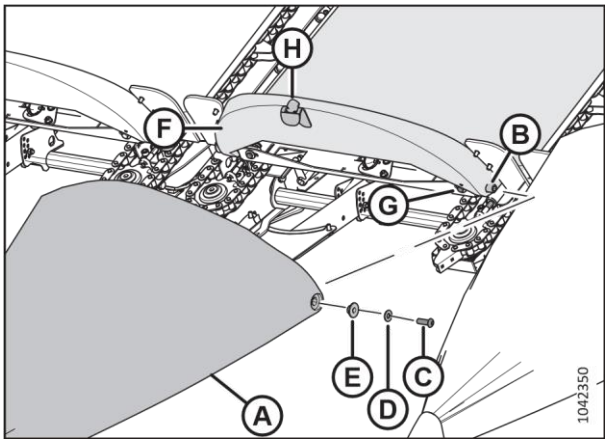

Figure 4.49: Snout Pivot Hardware

4.9 Installing Adjustable Skid Shoe Stalk Deflectors

Adjustable skid shoe stalk deflectors must be installed to prevent crop build-up at the front of the skid shoes.

IMPORTANT:

Do not adjust header mode or skid shoes with the snouts in service position. Movement of skid shoes will damage stalk deflector or snout support.

1. Remove locking hairpin (A) and rear slide securement pin (B) shown in Figure 4.50.

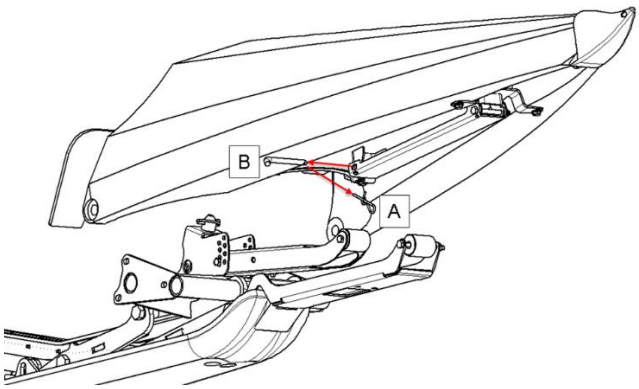

Figure 4.50: Adjustable Skid Shoe Stalk Deflector

2. Rotate slide channel to line up lower roller and slide channel under stalk deflector roller (C) shown in Figure 4.52.
3.

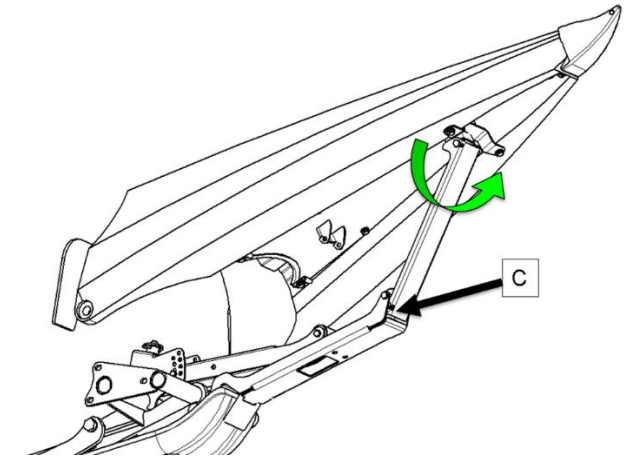

Figure 4.51: Adjustable Skid Shoe Stalk Deflector

4. Rotate slide channel back up to the original position and reinstall pin (B) and securement pin (A) shown in Figure 4.52.

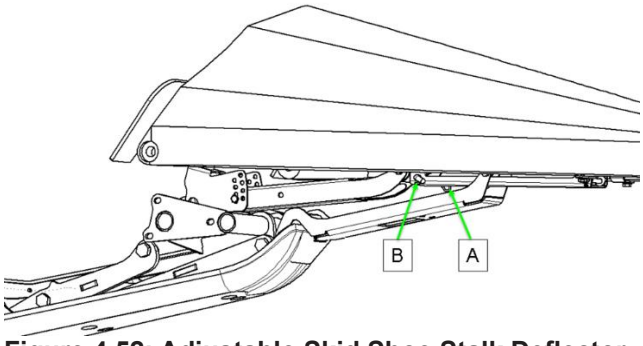

Figure 4.52: Adjustable Skid Shoe Stalk Deflector

4.10 Installing Row Unit Skid Shoes

Row unit skid shoes must be installed.

5. Start the engine.
6. Raise the header fully.
7. Engage the header safety props. For instructions, refer to the combine operator's manual.
8. Shut down the engine and remove the key from the ignition.
9. Retrieve the following parts that are shipped in the wooden crate:
    - Row unit skid shoes (A, B) MD #1.380.628 and MD #1.380.627
    - Six M10 bolts MD #79410002566
    - Six M10 nuts MD #73510000066
    - Six spring washers MD #91623938861

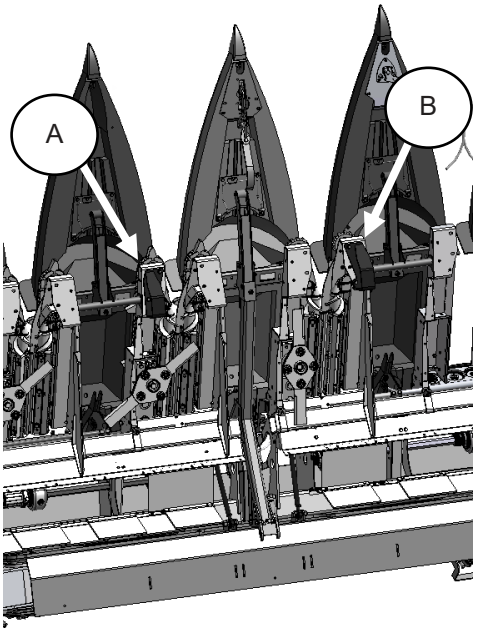

Figure 4.53: Row Unit Skid Shoe Location

10. Install row unit skid shoes. Torque hardware to 45 Nm (33 lbf·ft)

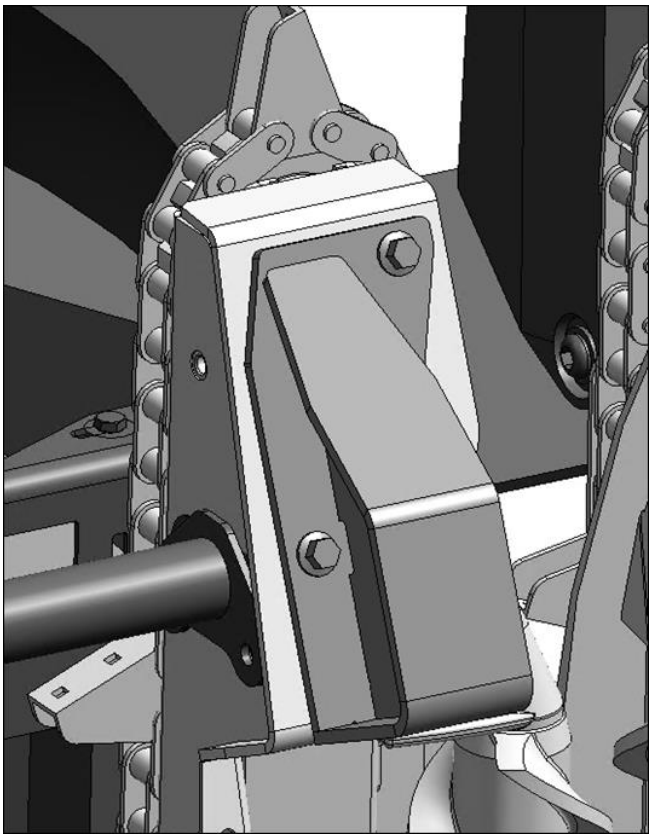

Figure 4.54: Right Wing Row Unit Skid Shoe Location

4.11 Connecting Electrical Systems

FlexCorn headers require a power and cab harness to be installed on the combine for the Flex system to function.

4.11.1 Installing Battery Power Harness

The header requires a connection to the combine battery to supply power to the flex system.

1. Locate Battery Power Harness MD #349343 in the wooden crate.
2. Find the combine battery location, refer to the combine operator's manual if you are unable to locate it
3. Route the battery harness from the battery location to the multicoupler on the header

NOTE:

If the harness is connected directly to the combine battery, the battery disconnect switch will not disconnect power from the FlexCorn control system. This could cause the system to always draw power from the battery and result in batteries losing their charge.

4. Attach the red positive (+) cable terminal (T301+) to the positive post on the combine battery bus bar +12 V connection.

IMPORTANT:

The batteries are negative-grounded. Ensure that the positive (+) terminal is connected to the positive terminal of the battery and the battery ground cable is connected to the negative (–) terminal of the battery. Connecting a cable to the wrong post can result in permanent damage to the electrical system.

5. Attach the black negative (-) cable (T300-) terminal to the ground or negative terminal on the bus bar.

NOTE:

The combine battery bus bar connection points will vary based on the combine brand and model. Refer to the combine operator's manual for details on battery location.

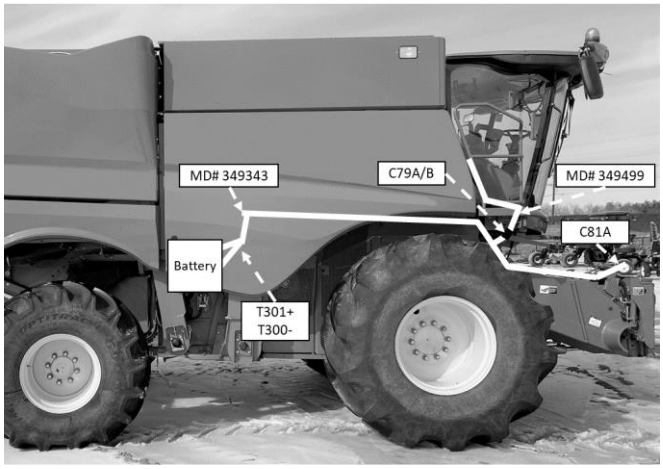

Figure 4.55: Battery Harness Routing on Combine

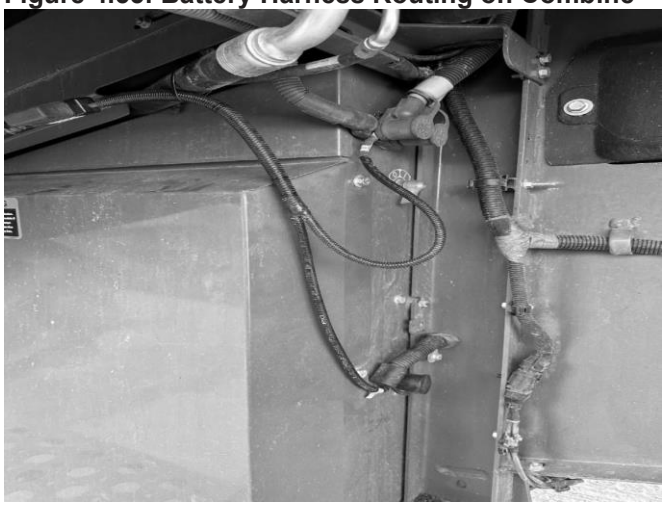

Figure 4.56: Combine Power Connections

6. Route the harness from the combine battery to the left side of the combine feeder house
7. Position connector C81A about 1 m (3 ft) past the left side of the feeder house near the multicoupler connection to allow harness to reach the connection on the header
8. Position connector C79A at the upper left side of the feeder house
9. Once harness has been positioned, confirm the harness is routed away from any moving components
10. Secure harness with cable ties every 0.3 m - 0.6 m (1 ft – 2 ft) to prevent damage to the harness

4.11.2 Installing In Cab Harness and Display Module

The header is controlled from the combine cab.

1. Locate In Cab Harness MD #373058 and Module – Display MD #500617 in the wooden crate.
2. Find a suitable location to route the harness into the combine cab. Consult the combine manual for the recommended routing of the harness into the cab.

IMPORTANT:

Damage to the harness may occur if the harness is routed through the cab door.

3. Connect C79B on the In Cab Harness to C79A on the Battery Power Harness shown in Figure 4.57.
4. Connect P513 on the In Cab Harness to the display module.

Figure 4.57: In Cab Harness Routing

IMPORTANT:

Ensure that the harness is not binding throughout different seat positions or feeder house movement. Damage may occur to the harness if it is secured improperly.

5. Connect P800 to the combine J1939 diagnostic connector. Refer to the combine operator's manual for the location of the J1939 diagnostic connector.
6. Mount the display module in a safe location, some recommended locations are:
    a. Under the cup holders
    b. In one of the combine cab storage compartments
    c. If desired, use double-sided tape or hook and loop tape to fasten the controller to the cab wall.
7. Secure harness with cable ties every 0.3 m - 0.6 m (1 ft – 2 ft) to prevent damage to the harness.

Figure 4.58: New Holland CR Series J1939 Connection

NOTE:

P801 is available on the In Cab Harness for other applications that may need the combine J1939 diagnostic connector.

NOTE:

The display controller is powered by the control system on the header. Without the header connected to the combine and the battery harness connected, the display controller will not power on.

8. On the In Cab Harness ensure connector PCAN-IB (implement bus) is connected to PCAN (CAN config) and PCAN-VB (vehicle bus) is capped.

NOTE:

For some combines such as John Deere S600 Series, PCAN-VB should be connected to PCAN and PCAN-IB should be capped.

Figure 4.59: PCAN-VB and PCAN-IB Connectors

Chapter 5: Performing Predelivery Checks

Once the header has been assembled and the optional kits have been installed, the header will need to be run up and its performance tested.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

IMPORTANT:

Ensure that shipping material has not fallen into the header.

Perform the final checks listed on the Predelivery Checklist (*Predelivery Checklist*) to ensure that the header is field-ready. Refer to the procedures in this chapter for detailed instructions on performing the tasks listed in the Predelivery Checklist.

The completed Predelivery Checklist should be retained by the Operator or the Dealer.

5.1 Checking and Adjusting Header Angle

The header angle must be checked, and if necessary, adjusted for field operation.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Lower the header until the steel row unit skid shoe lightly touches the ground. Or until the front of the row unit is about 10cm (4 in) off the ground.
2. Shut down the engine, and remove the key from the ignition.

Figure 5.1: Front of Row Unit

3. Measure snapping plate angle (A) relative to the ground and adjust the feeder house angle until 23° is achieved.

   NOTE:

   A snapping plate angle greater than 23° will prevent ears from feeding smoothly up the snapping unit to the auger. If feeding issues are prevalent, ensure the header angle is not greater than 23°.

   NOTE:

   If the header is less than 23°, watch carefully for ground contact at the choppers and rear curtain.

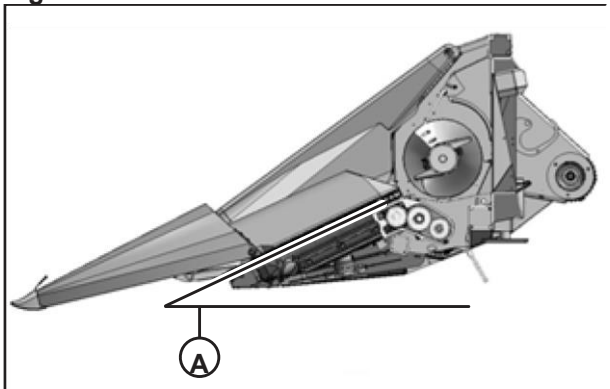

Figure 5.2: Snapping Plate Angle

5.2 Checking and Adjusting Snout Height

The snouts must be positioned properly so that they can work effectively.

1. With the header resting on the steel row unit skid shoe, and the header angle set at 23°, tip (A) of each center snout should be just off the ground. Gently press each tip down. With minimal pressure, you should be able to force the tips to touch the ground.

Figure 5.3: Correct Snout Position

2. If necessary, adjust the position of each center snout as follows:
   - Make coarse adjustments by changing the position of front cross bolt (A). Ensure the support adjustment bolt head faces the gathering chain on the end snouts to avoid contact.
   - Ensure cross bolt (A) is lined up in the correct hole. The front holes on the fixed bracket should use the front holes on the arm and the rear holes on the fixed bracket should use the rear holes on the arm.
   - Ensure cross bolt (A) is slightly loose to allow snout support arm (B) to pivot up and down.
   - Fine tune the position of the snout by adjusting the rear eye bolt (C).

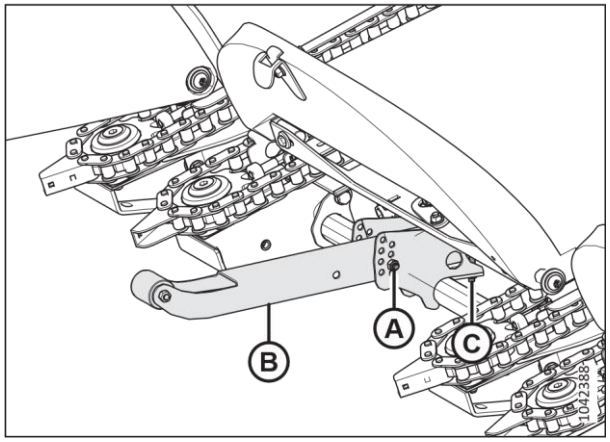

Figure 5.4: Snout Hardware – View from Below

3. Set the end snouts 13–25 mm (1/2–1 in.) higher than the rest of the snouts to prevent them from catching crop and debris on the ground if the combine is turned while the header is on the ground.

NOTE:

When adjusting snout height on the center snout, it may be required to adjust the center divider support. Refer to *5.5 Checking and Adjusting Center Divider Support*.

5.3 Checking and Adjusting Snapping Plate Gap

Each row on the header has one fixed snapping plate and one moving snapping plate. Normally, the gap between the plates should measure 19 mm (3/4 in.) at the front and 24 mm (15/16 in.) at the rear. However, the gap can be adjusted when harvesting specialty crops with very large or small stalks (for example, popcorn). The gap should be 5 mm (3/16 in.) smaller at the front than at the rear to prevent plugging.

Snapping plate tool (MD #1.369.047) is helpful for this procedure, but not required.

1. Set the in-cab snapping plate adjusting mechanism to the minimum snapping plate gap.
2. Position snapping plate tool (A) (MD #1.369.047) between snapping plates (B) and (C) in the first row. The snapping plates should lightly contact the lower tabs of the snapping plate tool.

   NOTE:

   If the snapping plate tool is not available, measure the gap between the snapping plates using a caliper feeler gauge, or a tape measure. The gap at the front should measure 19 mm (3/4 in.) and the gap at the rear should measure 24 mm (15/16 in.).
3. If adjustment is necessary, loosen bolts (D) and adjust fixed snapping plate (B) until the tabs just fit between the snapping plates, then retighten the bolts.
4. Repeat Steps 2 and 3, for each of the remaining rows.

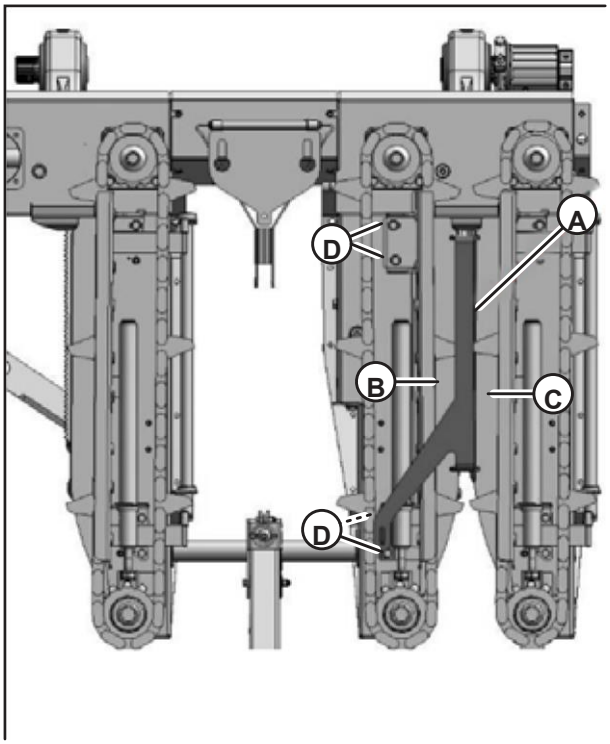

Figure 5.5: Snapping Plate Tool Positioned between Snapping Plates

5.4 Checking and Adjusting Rear Divider Latch

Rear divider latch adjustment is important for easy latching and quick turn around when transporting the header.

You may want to use snout seating tool (MD #1.369.048); it will ensure that the snouts align with the brackets after they are tightened down.

1. Raise the first center snout.
2. Remove lynch pin (A) from support pin (B).
3. Raise rear divider (C).
4. Close rear divider (C). If it latches correctly, proceed to Step 8. If it does not, proceed to Step 5.

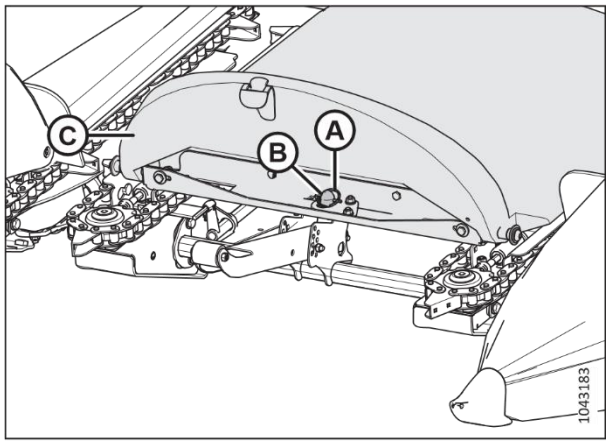

Figure 5.6: Rear Divider

5. Position the center hole in snout seating tool (A) (MD #1.369.048) over support pin (B). Slots in the tool should fit over tabs (C).

   NOTE:

   Different slots in the snout seating tool will be used depending on the row spacing.

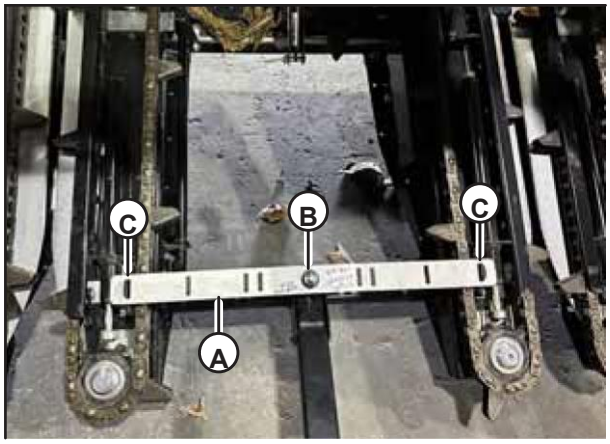

Figure 5.7: Snout Seating Tool in Use

6. If adjustment is needed, do one or both of the following:
   - Loosen socket-head screws (B), and then move tabs (C) until they are aligned. Tighten screws.
   - Loosen the nut below support pin (A), adjust the position of the support pin, and then tighten the nut.

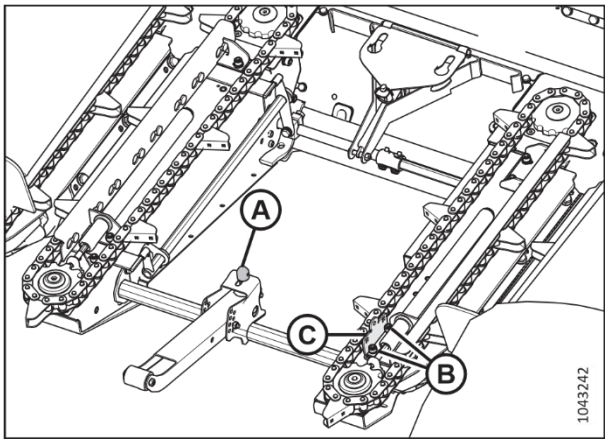

Figure 5.8: Adjustment Points

7. Lower rear divider (C), and reinstall lynch pin (A) in support pin (B).
8. Lower the snout into field position.
9. Repeat this procedure for each remaining rear divider.

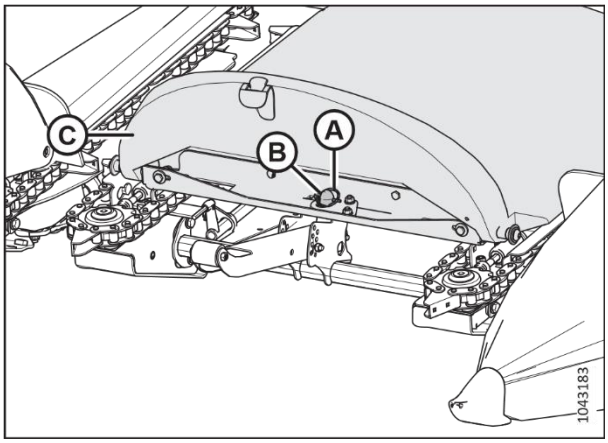

Figure 5.9: Rear Divider

5.5 Checking and Adjusting Center Divider Support

The center divider support adjustment is important to ensure the center divider and snout are positioned correctly in relation to the wing frames.

Checking center divider support:

1. Place header into Rigid mode. Refer to *8.5.2 Header Mode Selection – Rigid*
2. Lift header fully
3. Engage feeder house locks.
4. Sut combine off and remove the key from ignition.
5. Inspect the distance between the lower end of the center divider and the gathering chain guides. The gap should be between 1 - 5mm (0.04 – 0.20in).
6. If distance is greater than 5mm (0.20in), adjustment is required.

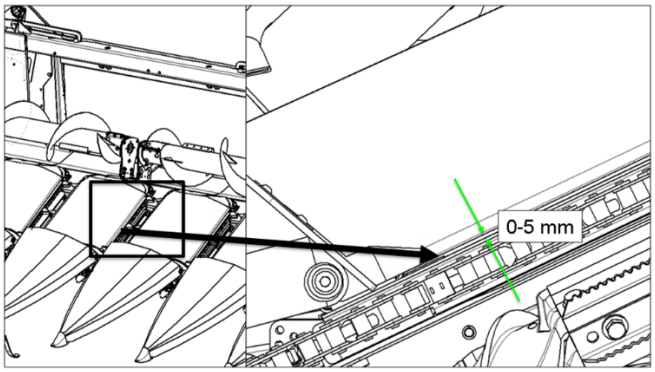

Figure 5.10: Center Divider Support

Adjusting center divider support:

1. Locate the mounting bolts (A) where the center divider support meets the subframe.
2. Loosen all 5 bolts, pull down on the front of the support until the proper gap is achieved.
3. Tighten jam nut on bolt (B)
4. Torque hardware to 100Nm (74 lbf·ft)

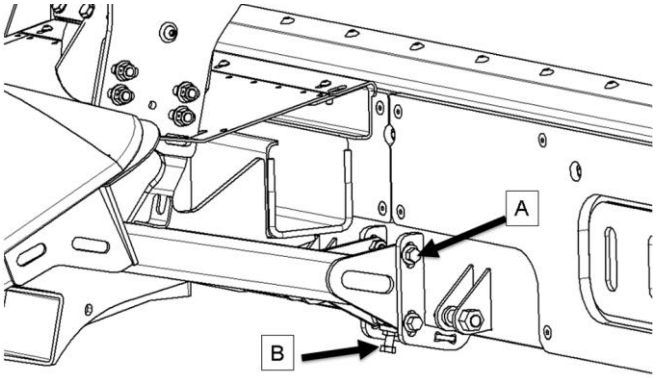

Figure 5.11: Center Divider Support Adjustment

5.6 Checking and Adjusting Auger Flighting Configuration

Headers come factory-configured with reverse auger flighting, which is appropriate for most conditions. If needed for challenging conditions, this flighting can be replaced with paddle flighting, which is included in the wooden shipping crate on every header.

5. Determine what kind of auger flighting (A) is appropriate flighting for your conditions.
   - Reverse flighting – The best all round flighting option; performs well in most conditions.
   - Paddle flighting – Recommended for use in corn with very dry stalks and in high trash conditions.

   NOTE:

   Paddle flighting can be disassembled to expose finger flighting.

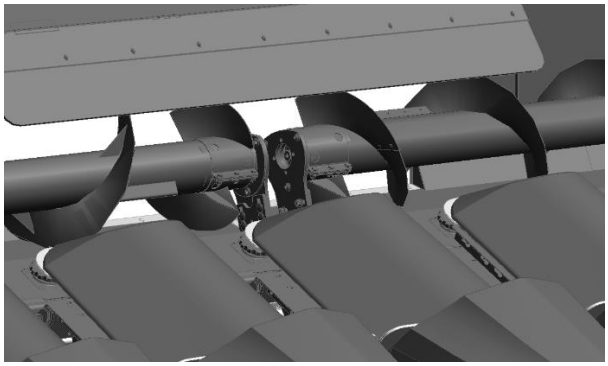

Figure 5.12: Auger with Reverse Flighting

6. If necessary, remove the factory-installed reverse flighting and install paddle flighting in its place. Paddle flighting is shipped in the wooden crate.

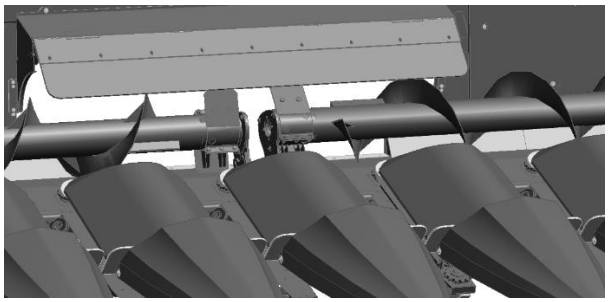

Figure 5.13: Auger with Paddle Flighting

5.7 Checking and Adjusting Auger Position

To promote ear-on-ear feeding through the auger, the auger height should be 32–38 mm (1 1/4–1 1/2 in.) and the clearance between the rear of the auger and the rear horizontal stripper bar should be 6 mm (1/4 in.) on all headers.

You can use a 38 x 89 mm (2 x 4 in.) block of wood as a gauge when setting the auger height.

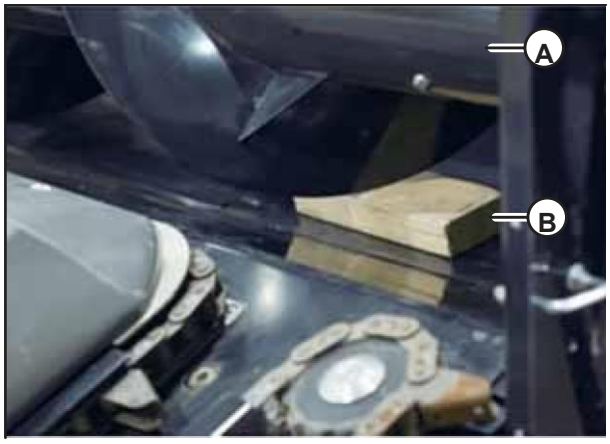

Figure 5.14: Auger Resting on Wood Block

1. Check gap (A) between the auger flighting and auger pan as shown in the illustration at right. If the gap is less than or greater than 32–38 mm (1 1/4–1 1/2 in.), adjustment is required

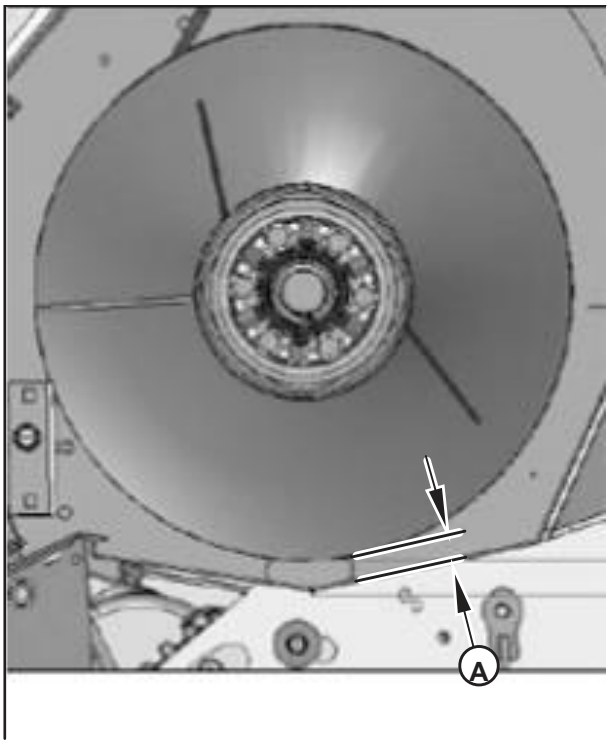

Figure 5.15: Clearance between Auger Flighting and Auger Pan

2. Check the gap between auger flighting and rear horizontal stripper bar as shown in the illustration at right. If the gap is less than or greater than 6 mm (1/4 in.) across the length of the auger, adjustment is required.
3. If adjustment is required, proceed to step 4. If not, proceed to *5.8 Checking and Replacing Auger Drive Sprockets*.

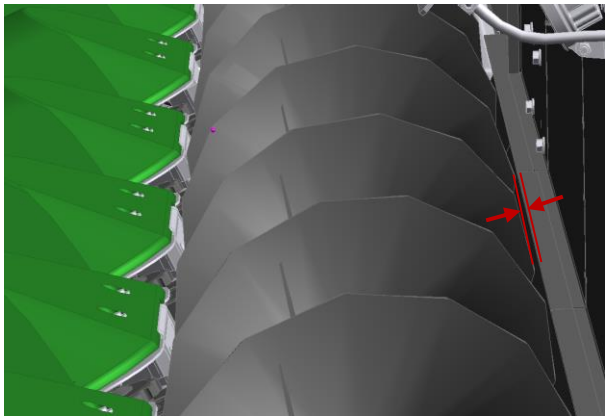

Figure 5.16: Auger-to-Stripper Bar Clearance

4. Open the right side shield.
5. Loosen bolts (A).
6. Loosen Torx® bolt (C) securing the tensioner pulley, and adjust draw bolt (D) to loosen the chain.
7. To adjust the auger-to-pan clearance, slightly loosen bolt (E), then use bolt (B) to move the auger.
8. To adjust the auger-to-stripper bar clearance, slightly loosen bolt (B), then use bolt (E) to move the auger.
9. Once the auger is positioned correctly, tighten all bolts.
10. Repeat this procedure on the left side of the header.

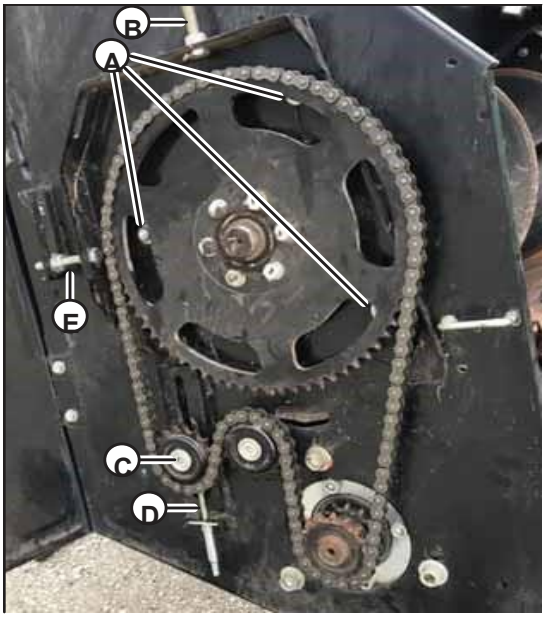

Figure 5.17: Auger Drive – Right Side

11. Adjust the center of the auger as follows:
    a. Support the auger so that it doesn't fall when the nuts are loosened.
    b. Loosen the nuts on the four bolts connecting the vertical piece in the center of the auger to the frame above.
    c. Use a prybar to move the auger until the auger-to-pan and auger-to-stripper bar clearances are both correct.
    d. Retighten the nuts and remove the auger support.

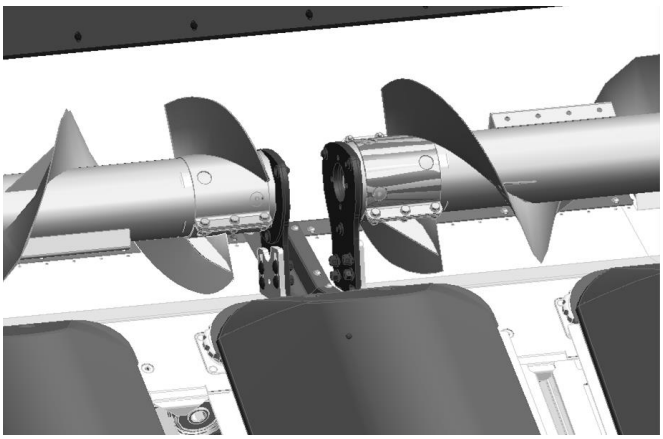

Figure 5.18: Center Auger Support Bolts

5.8 Checking and Replacing Auger Drive Sprockets

Depending on field conditions header performance may improve by adjusting the speed of the auger in relation to the header speed.

A 20T auger drive sprocket will be installed on the header from factory. This is the best configuration for most conditions. A 16T/18T sprocket is also included in the shipping crate that can be used in challenging conditions.

NOTE:

Smaller sprockets lead to slower auger speed.

Figure 5.19: Auger Drive Sprocket

5.9 Checking and Adjusting Auger Drive Chain Tension

You will need to ensure that the auger drive chain is tensioned correctly.

NOTE:

Check chain tension after torquing the idler sprocket as tightening the sprocket can change the chain tension.

1. Check the tension of the auger drive chain. It should deflect 19 mm (3/4 in.) at location (A).
2. If the chain tension is not correct, loosen Torx® bolt (B) securing the tensioner pulley, then adjust draw bolt (C) to achieve correct chain tension. Retighten bolt (B).

   NOTE:

   It is better to have a loose chain than a tight one.
3. Close the side shield.

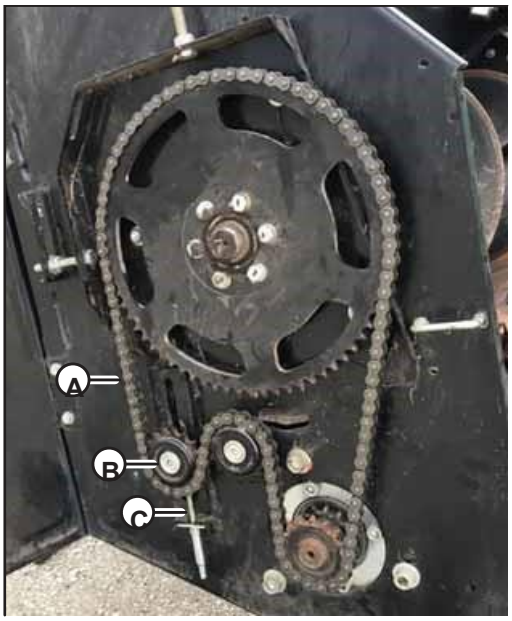

Figure 5.20: Auger Drive Chain

5.10 Checking and Adjusting Center Auger Timing

The auger timing must be checked, and if necessary, adjusted. Correct timing will aid in smooth feeding of crop into the feeder house.

1. Inspect flighting (A) an (B) on the right and left sides of the auger center. They should be offset from each other by 90° as shown in the illustration at right.
2. If the flighting is not correctly offset, follow these steps:
    a. Disconnect the drivelines from the combine.
    b. Hand-turn the chopper assembly (if equipped) or use a 32 mm wrench to turn the input hex shaft until the flighting are offset from each other by 90°.
    c. Reconnect the drivelines to the combine.

    NOTE:

    Alternatively, loosen the auger drive chain (for instructions, refer to *5.9 Checking and Adjusting Auger Drive Chain Tension*), remove the chain, rotate the auger to the desired position, and then reinstall and tension the chain.

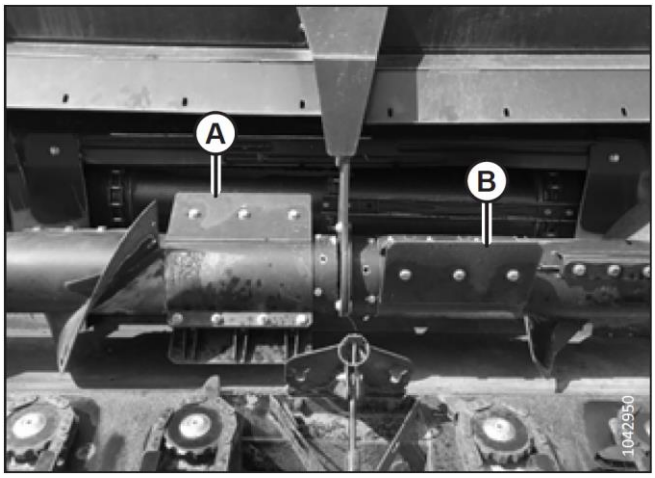

Figure 5.21: Two-Section Auger with Paddle Flighting

5.11 Checking and Adjusting Auger Debris Shield Angle

Auger debris shield(s) are installed in front of the delivery opening, above the auger.

Figure 5.22: Auger Debris Shield

1. Check the angle of the auger debris shield(s). Auger flap (A) should be 51 mm (2 in.) above the auger.
2. If the angle of the auger debris shield(s) needs to be adjusted, loosen bolts (B) on the sides of the shield(s), adjust the shield(s) to the correct angle, and then retighten the bolts.

5.12 Row Guidance System (Option)

MacDon's row guidance control system works in conjunction with your combines auto steering system. Once the header has been assembled and attached to the combine, the row guidance system will need to be configured to work with your combine.

Two sensors are installed on the snouts on the left side of center. These sensors send signals to the combine, which allow the combine to automatically steer to keep aligned with the crop rows.

The normal operating voltages for the sensors fall between 0.5VDC and 4.5 VDC. Any sensor error that results in a 0 V signal, indicates either a faulty sensor or insufficient voltage supply.

NOTE:

The combine must have row guidance unlocked/activated to use the MacDon row guidance sensor system. Contact your local dealer for more information.

5.12.1 Checking and Adjusting Row Guidance Sensor Linkage

The orientation of the row guidance sensor arm must be checked manually at the sensor. The output range of the sensor can be checked either manually or at the sensor or from the cab.

NOTE:

For in-cab instructions, refer to the combine operator's manual.

Checking and adjusting row guidance wand opening:

1. The opening of the sensor wands should match the center of the row unit.
2. The clearance between the wands should be between 15-25mm (0.59-0.98in).
3. If adjustment is required, loosens the 3 bolts closest to the wand pivot.
4. Rotate the wands to the correct location.
5. Retighten hardware.

Figure 5.23: Row Guidance Wand Opening

Checking sensor orientation:

1. View row guidance sensor voltage in the combine monitor diagnostics screen.
2. Compare voltages to the chart below, if the voltage is reading in the incorrect orientation, you must change the sensor orientation.

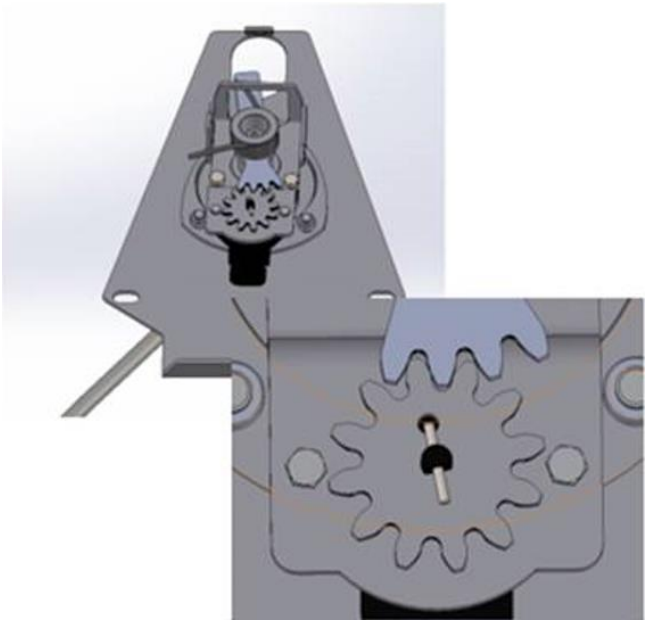

Figure 5.24: John Deere Right Row Guidance Sensor Orientation

Adjusting sensor orientation:

1. **Take careful note of the hole position in the gear.**
2. **Loosen the two bolts holding the sensor in place unitl the gear can be rotated freely.**
3. **Turn the gear 180° (until the hole is on the opposite side)**
4. **Retighten the sensor retaining bolts.**

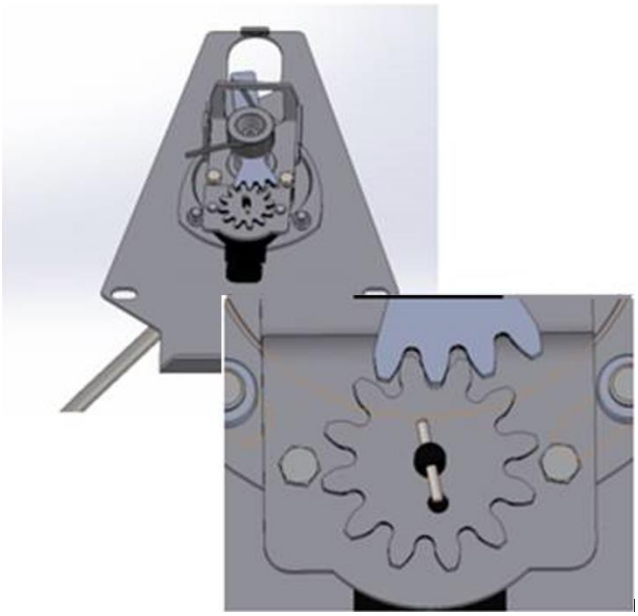

Figure 5.25: Case, New Holland, and CLAAS Right Row Guidance Sensor Orientation

Table 5.1: Row Guidance Sensor Voltage Limits

Combine Type	Recommended Voltage Range			
	Left Sensor Voltage with Wands Extended	Left Sensor Voltage with Wands Retracted	Right Sensor Voltage with Wands Extended	Right Sensor Voltage with Wands Retracted
John Deere	0.7 V	4.2 V	4.2 V	0.7 V
Case, New Holland, CLAAS	0.7 V	4.2 V	0.7 V	4.2 V

5.13 Wing Position Sensors

The wing position sensors read the angle of the wing in relation to the center section of the header. These signals are used by the header control module to calculate lateral tilt values to send to the combine for positioning the feeder house.

The wing position sensors also provide the header information on wing position when switching from Flex to Rigid position.

5.13.1 Setting up Wing Position Sensors

The wing position sensors must be within range when the header is level and on the wing locks, or the header may not level the wings correctly to allow for installation of the wing locks.

To set the wing position sensors:

1. Ensure wing lock links are locked. Refer to *8.6 Locking and Unlocking Wing Lock Links*
2. Place header in Service Mode. Refer to *8.5.3 Header Mode Selection – Service*

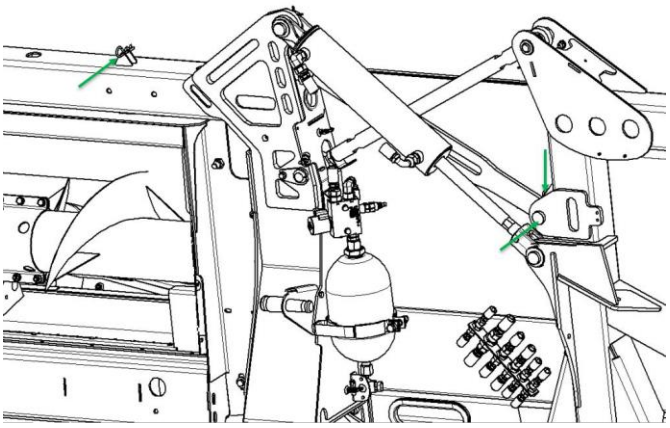

Figure 5.26 Wing Lock Links Installed

3. Navigate to the diagnostics screen in the FlexCorn Application.
4. Select the I/O List page.
5. Scroll to the LH and RH Wing Position Sensors
6. Ensure voltage is reading 2450 – 2550 mV. If voltage is not reading within the specified range, continue to step 6 to adjust the wing position sensor(s).

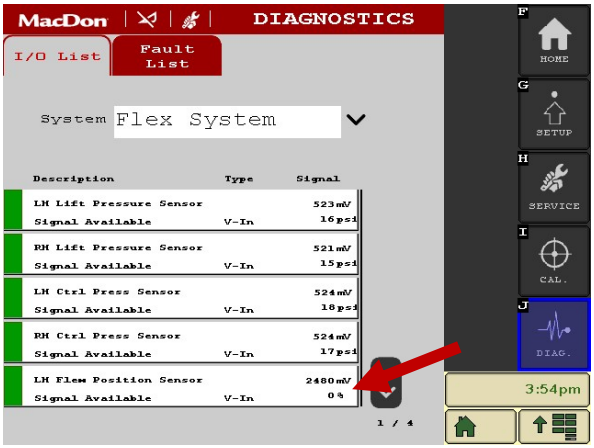

Figure 5.27 Left Wing Position Sensor Reading in FlexCorn Application

7. The wing position sensors have both course and fine adjustment. Adjust the sensor to within 2450 – 2550 mV.

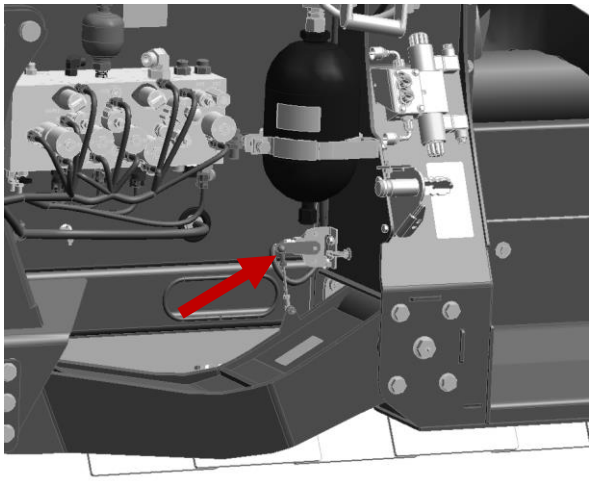

Figure 5.28: Left Wing Position Sensor

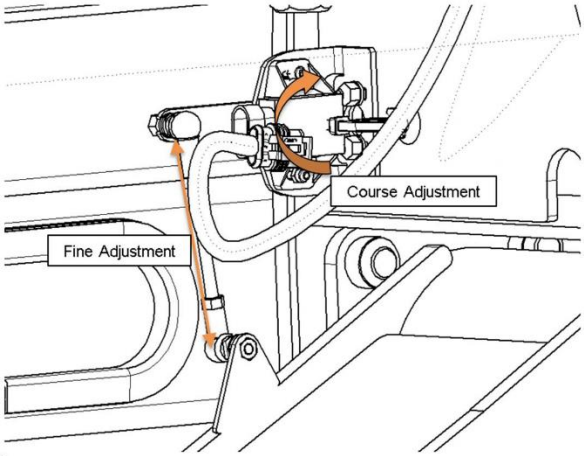

Figure 5.29: Left Wing Position Sensor

5.14 Adjustable Skid Shoe Proximity Sensors

The skid shoe proximity sensors are triggered when the adjustable skid shoes are fully retracted. These signals are used by the FlexCorn Header Control Module to determine when the shoes are fully retracted and if the shoes need to be rephased.

5.14.1 Setting up Adjustable Skid Shoe Proximity Sensors

The skid shoe proximity sensors must be positioned correctly so they reliably sense the skid shoe linkage and aren't damaged when the shoes are retracted.

To set the adjustable skid shoe proximity sensors:

1. Raise the header fully.
2. Engage the header safety props. For instructions, refer to the combine operator's manual.
3. Place header in Rigid or Flex mode.
4. Navigate to the Run screen in the FlexCorn Application
5. Press and hold the Skid Shoe Extend button for 5 seconds.
6. Press and hold the Skid Shoe Retract button for 5 seconds.
7. When the skid shoes are completely retracted the icons above the retract button will turn green.
8. If the icons do not turn green when the skid shoes are fully retracted, proceed to step 9 to adjust the skid shoe proximity sensors.

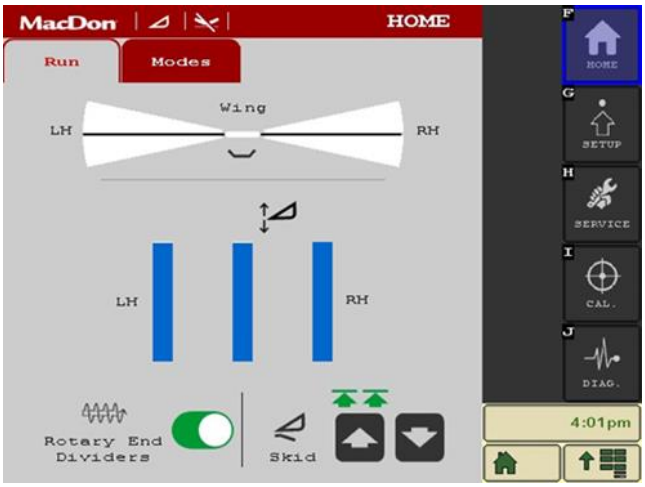

Figure 5.30: Skid Shoe Sensor Reading in FlexCorn Application

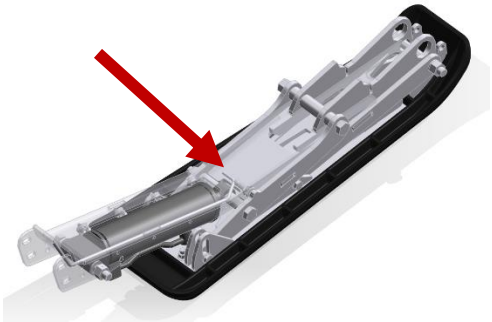

Figure 5.31: Skid Shoe Proximity Sensor

9. Press and hold the Skid Shoe Extend button for 5 seconds. This will allow access to adjust the sensor gap.
10. Adjust the sensor gap to 1-3mm (0.0625-0.125in.)
11. Repeat steps 5-10, if after repeating the steps, the sensors are still not reading, check harness connection and refer to the FlexCorn corn header Operator's Manual for troubleshooting information.

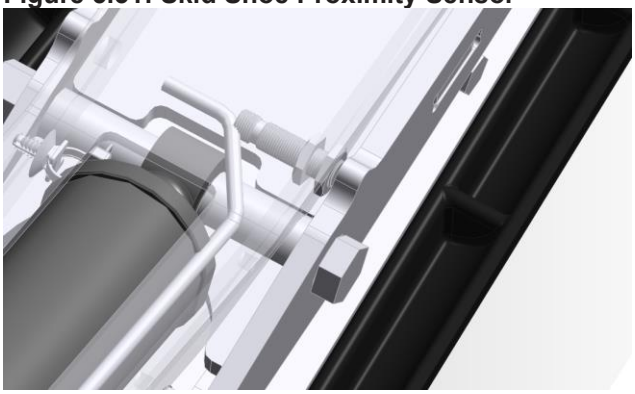

Figure 5.32: Skid Shoe Proximity Sensor Adjustment

5.15 Checking and Adjusting Fluid Levels

Fluid levels must be checked, and if necessary adjusted, in the drive gearboxes, driven gearboxes, snapping unit gearbox, and if installed, the stalk chopper gearboxes.

5.15.1 Checking and Adjusting Oil Level – Drive and Driven Gearboxes

Headers will have two sets of drive and driven gearboxes. The oil level in each one should be checked with the header at harvesting height; the oil level changes significantly as the header is raised.

For oil type and quantity, refer to the inside back cover of this document.

1. With the header resting on the steel row unit skid shoes or a 10 x 10 cm (4 x 4 in.) blocks and the header angle at 23°, remove level plug (A) from the drive gearbox. Oil should just drip out.

   NOTE:

   Breather (B) should always be mounted on the top of the gearbox as shown.

   NOTE:

   On headers configured for CLAAS combines, the drive gearbox is positioned higher up.

2. If the oil level is low, add oil through breather (B) or level plug on the face of the gearbox (A).

Figure 5.33: Drive Gearbox

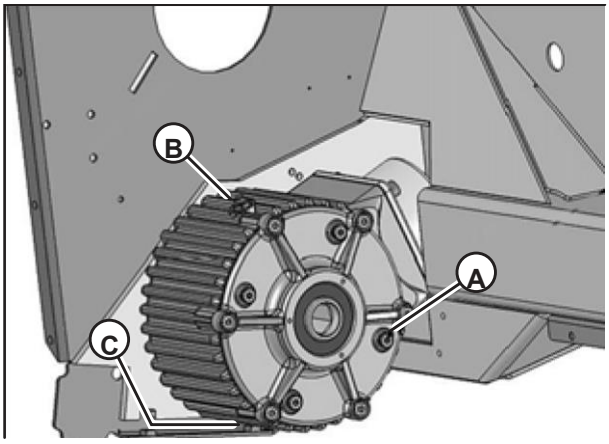

Figure 5.34: Driven Gearbox

A – Level Plug **B – Breather**

C – Drain Plug

5.15.2 Checking and Adjusting Lubricant Level – Snapping Unit Gearbox

There is one gearbox in each snapping unit. The lubricant level in each one needs to be checked, and if necessary, adjusted.

For lubricant type and quantity, refer to the inside back cover of this document.

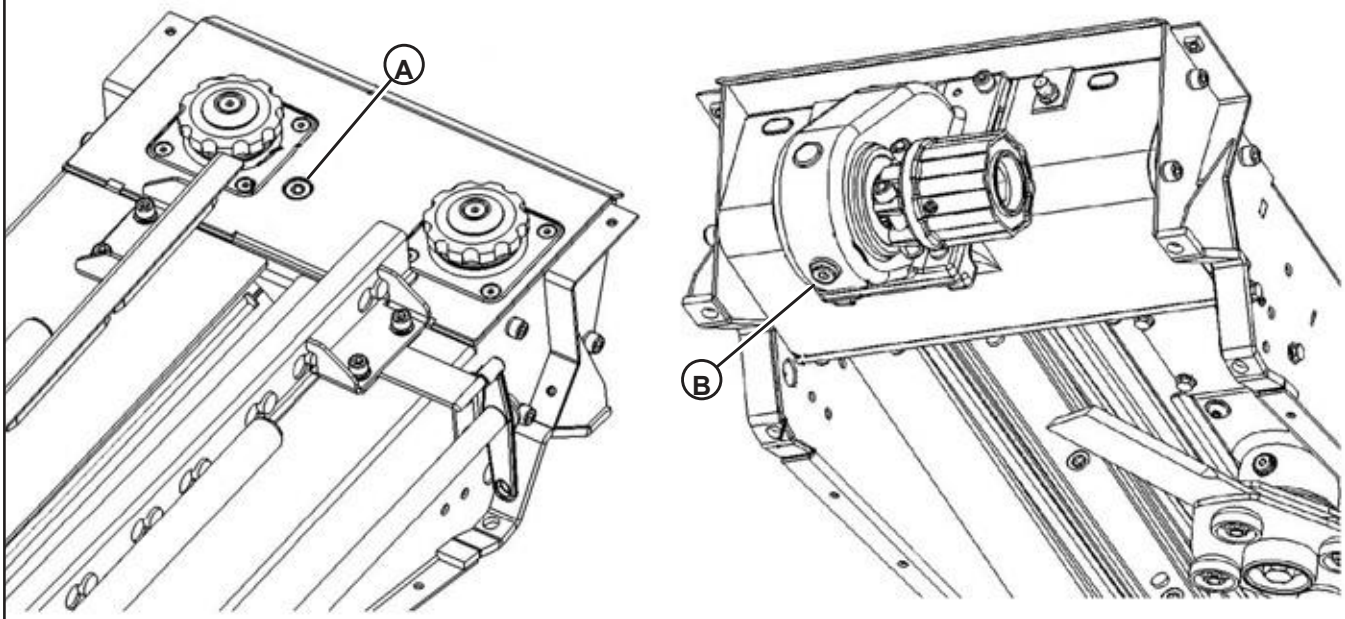

Figure 5.35: Snapping Unit Gearbox

A – Lubricant Fill Plug and Dipstick

B – Lubricant Drain Plug

1. With the header resting on 10 x 10 cm (4 x 4 in.) blocks and the header angle at 23°, inspect the first snapping unit gearbox. Unscrew dipstick (A), wipe the dipstick, then replace but do not screw it back in, wait, then remove the dipstick again. The lubricant level should be midway between the minimum and maximum warning lines.
2. If there isn't enough lubricant, add more.
3. Repeat this procedure for each of the snapping unit gearboxes.

5.15.3 Checking and Adjusting Oil Level – Stalk Chopper Gearbox (Option)

If stalk choppers are installed on the header, each one will have a gearbox. The oil level in each gearbox needs to be checked, and if necessary, adjusted.

For oil type and quantity, refer to the inside back cover of this document.

1. With the header resting on 10 x 10 cm (4 x 4 in.) blocks and the header angle at 23°, unscrew dipstick (A), wipe the dipstick, then replace but do not screw it back in, wait, then remove the dipstick again.
2. If there isn't enough lubricant, add more.
3. Repeat this procedure for each stalk chopper gearbox.

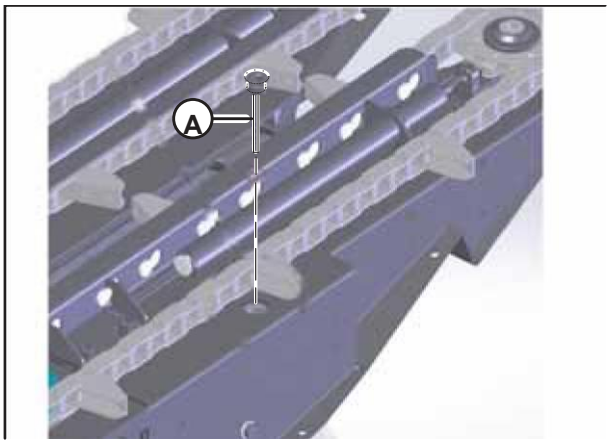

Figure 5.36: Stalk Chopper Gearbox Dipstick

5.16 Lubricating Header

All of the lubrication points on the header need to be inspected to ensure that they can accept grease.

Use the proper lubricant for the application. Refer to the table below for information on the type of lubricant to use.

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance with 1% max. molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
		High temperature extreme pressure (EP) performance with 10% max. molybdenum disulphide (NLGI Grade 2) lithium base	Header drive shaft	—
Semi-fluid grease	EP-00	Extreme pressure (EP) performance with lithium base	Row unit main gearbox	2.5 liters (2.6 quarts)
Gear lubricant	SAE 80W-140 or SAE 85W-140	API service class GL-5	Stalk chopper gearbox	0.3 liters (0.3 quarts)
			Input drive and driven gearboxes	0.9 liters (1.0 quarts)
Chain lubricant	Chain lubricant or SAE 30W oil	Chain oil is formulated to provide good wear protection and resistance to foaming. It protects the chain and drive sprockets against wear.	Auger drive chain, hex shaft chain couplings, and snapping plate indicator cable	—

5.16.1 Greasing Procedure

Some header components need to be lubricated in order to perform their function correctly and prevent machine damage.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Wipe the grease fitting with a clean cloth before greasing it to avoid injecting dirt and grit.

IMPORTANT:

Use clean, high-temperature, extreme-pressure grease only.

2. Inject the grease through the fitting with a grease gun until the grease overflows the fitting (except where noted).
3. Leave the excess grease on the fitting to keep the dirt out.
4. Replace any loose or broken grease fittings immediately.
5. Remove and thoroughly clean any fitting that will not take grease. Clean the lubricant passageway. Replace the fitting if necessary.

Lubrication table			
#	type	period	qty.
1	EP NLGI Grade 2*	250 [h]	look at operator's manual
2	EP-00 grease	250 [h]	5,5 [pounds] 2,5 [kg]
3	EP NLGI Grade 2*	250 [h]	look at operator's manual
4	EP NLGI Grade 2*	50 [h]	look at operator's manual
5	EP NLGI Grade 2*	50 [h]	look at operator's manual
6	EP NLGI Grade 2*	250 [h]	look at operator's manual
7	EP NLGI Grade 2*	250 [h]	look at operator's manual
8	Gearbox oil	50 [h]	look at operator's manual
9	Gearbox oil	10 [h]	look at operator's manual
10	SAE 80W-140**	50 [h]	10,15 [fl.oz.] 0,3 [l]
11	SAE 80W-140**	250 [h]	30,45 [fl.oz.] 0,9 [l]

*high temperature, 1% max molybdenum disulphide, lithium base
**SAE 85W-140 can be used as an alternative

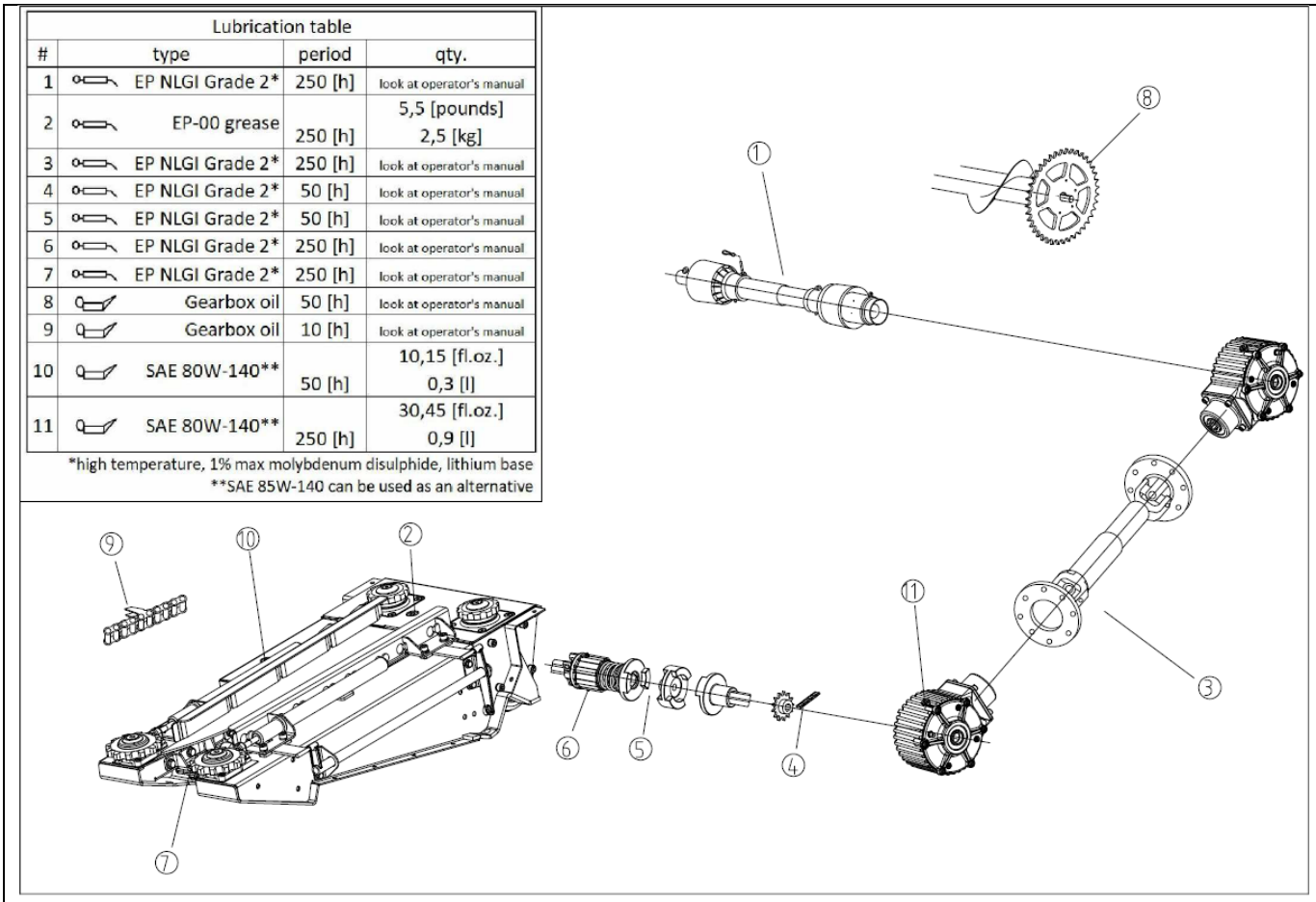

Figure 5.37: Grease Locations

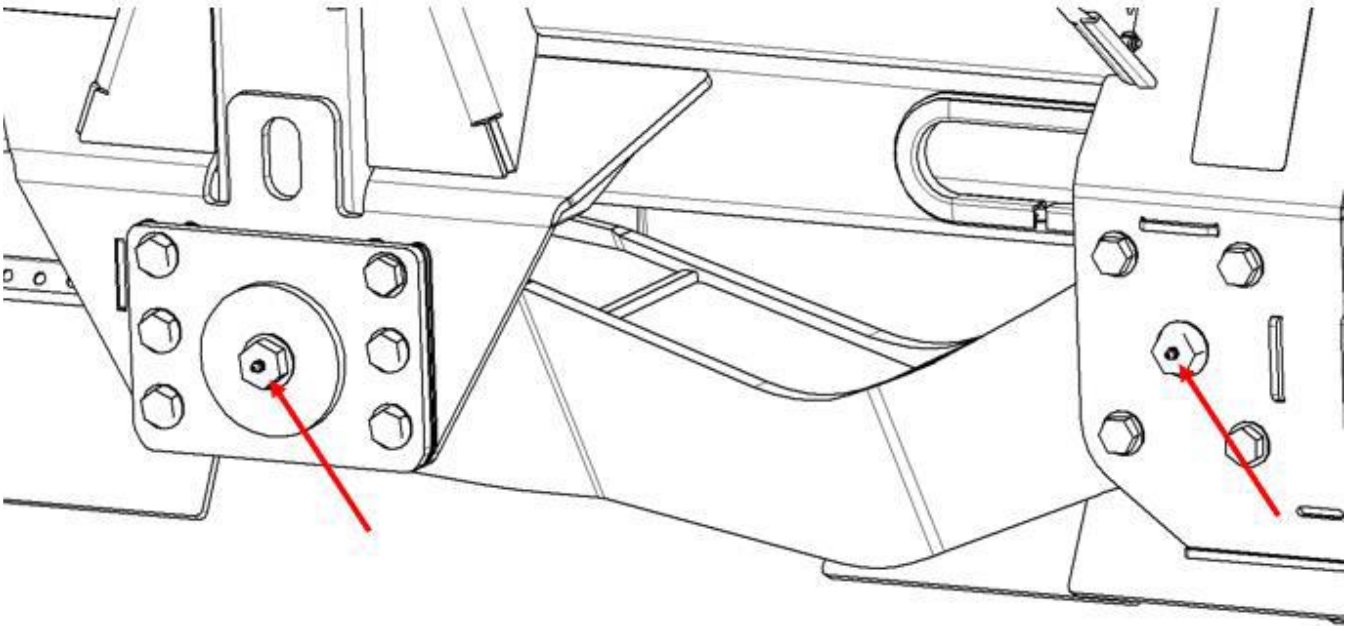

Figure 5.38: Grease Locations – Flex Linkage

Chapter 6: Configuring Combine

If rotary end dividers (REDs), an auto header height control (AHHC) system, or row guidance have been installed, the combine that will be used to operate the header will need to be configured to use them.

Refer to the appropriate instructions for your combine brand:

6.1 Configuring Case IH Combines

Case IH combines must be configured with a Case IH Pro 700 display in order to be compatible with MacDon FC Series FlexCorn Headers.

IMPORTANT:

Case IH Pro 700 displays must have ISOBUS Universal Terminal (UT) software installed. To install ISOBUS UT software, contact your local Case IH dealer and ask to have it installed. Without the UT software installed, the FlexCorn application will not be available through the combine display and the flex system of the header will not function.

NOTE:

With Case IH Pro 700 Displays it is possible to choose between 6 or 12 visible softkeys. The FlexCorn UT application is optimized for 6 softkeys. Choosing 12 visible softkeys may cause issues with displaying some items on the screen. To change this setting: Navigate to the home screen → Toolbox → VT Tab → Soft Keys → Select 6.

6.1.1 Configuring Case Display – CaseIH Pro 700 Display

Table 6.1 Header Settings – Case IH Pro 700 Display

Setup Parameter	Suggested Setting	Notes/Comments
Maximum Work Height	75%	Recommended
Header Type	Corn	Required (should auto select based on header ID)
Cutting Type	Row	Required (should auto select based on header ID)
Frame Type	Rigid	
Total Rows	Select based on header configuration	
Rows in Use	Operator preference	
Row Spacing	Select based on header configuration	
Header Alarm Rings	Operator preference	
Auto Cut Width	Operator preference	
Overlap Mode	Operator preference	
Work Width Reset Mode	Operator preference	
Feeder Speed Corn	Full Range	
Header Sensors	Enabled	
Header Pressure Float	Disabled	
Height/Tilt Response	Fast	
Pressure float override	20%	
Auto Height Override	No	
Auto Header Lift	Yes	Customer preference, recommended.
HHC Raise Rate	230	May depend on header weight.
HHC Lower Rate	200	May depend on header weight.
HHC Height Sensitivity	200	
HHC Tilt Sensitivity	150	
HHC Tilt Rate	100	
Reel Speed Minimum	2.0mph	
Reel Speed Slope	100	
Reel Drive Type	Hydraulic	
Reel Speed Sensor	No	
Reel Sensor Horizontal	No	

Reel End Dividers	Yes	Required, even if header doesn’t have rotary end dividers!
Knife Fore-Aft	No	
Deck Plates	Hydraulic	
Header Lateral Tilt	Yes	Required
Autotilt	No	
Autolevel in Headland	Yes	

NOTE:

Some options/selections may not be available unless the combine display is in dealer mode.

6.2 Configuring CLAAS Combines

To setup a CLAAS combine with a MacDon FC Series FlexCorn header you must install one of the following ISOBUS compatible displays.

- John Deere GS3 2630, GS3 CommandCenter
- John Deere 4240, 4640
- John Deere Gen 4 CommandCenter 4100/4200/4600
- CaseIH Pro 700
- New Holland Intelliview IV

Follow the applicable combine configuration instructions for the display you have installed.

Table 6.2 Header Settings – CLAAS 7000 and 8000 Series

Setup Parameter	Suggested Setting	Notes/Comments
Reel Speed Adjust		Reel drive is required to be engaged as the reel drive circuit powers the Flex System and REDs (if installed. To engage the reel drive pump on the combine, pins XA13 and XC5 must be connected together on the header side of the multicoupler. The pins are provided in the harness.

6.3 Configuring John Deere Combines

John Deere combines must be configured with one of the following displays in order to be compatible with MacDon FC Series FlexCorn Headers.

- John Deere GS3 2630, GS3 CommandCenter
- John Deere 4240, 4640
- John Deere Gen 4 CommandCenter 4100/4200/4600

To be compatible with Model Year 2021 and newer John Deere combines, John Deere Solution Number 220414 to increase the reel drive output flow rate must be completed. If this is not completed the customer may experience poor flex performance and the rotary end divider stalling (if equipped). Contact your local John Deere dealer and ask to have this completed. Once the solution is completed you will see the corn reel speed adjustment range has increased from 0-10 to 0-60.

6.3.1 Configuring John Deere Display – John Deere S600 Series

Table 6.3 Header Settings – John Deere S600 Series

Setup Parameter	Suggested Setting	Notes/Comments
Header Width		Select based on header configuration
Row configuration		Select based on header configuration
Rotary End Divider	✓ in check box	Required, even if header doesn't have rotary end dividers!

NOTE:

On MY21-22.5 combines, you must complete John Deere Solution 220414 to increase reel drive flow. Combine software likely needs to be updated, contact your local dealer for completion of this solution.

6.3.2 Configuring John Deere Display – John Deere S700 Series

Table 6.4 Header Settings – John Deere S700 Series

Setup Parameter	Suggested Setting	Notes/Comments
Header Auxiliary Function	✓ in check box	Required, even if header doesn't have rotary end dividers!

NOTE:

On MY21-22.5 combines, you must complete John Deere Solution 220414 to increase reel drive flow. Combine software likely needs to be updated, contact your local dealer for completion of this solution.

6.3.3 John Deere Reel Drive Relief Pressure

To use a FC3012 or FC3012C FlexCorn header on a John Deere open center reel drive combine including S650, S660, S670, S760, S770 the header reel relief setting will need to be adjusted to ensure that the combine does not exceed its relief setting.

IMPORTANT:

Due to the lower reel drive circuit relief pressure setting on these combines, FC3016 and FC3016C FlexCorn headers are not compatible with John Deere combines using open center reel drive systems including S650, S660, S670, S760, S770.

1. Ensure the header is not running and control system has been placed in “Service Mode” to remove the pressure from the hydraulic system (see Operators Manual for details).
2. Locate the FlexCorn hydraulic manifold (MD#349191).
3. Locate the hydraulic manifold relief valve labelled RV1.
4. Use a paint marker to draw a line on the valve adjustment screw and valve body to mark the initial position of the valve adjustment screw.
5. Loosen the adjustment screw jam nut.
6. Turn the adjustment screw 3/8 turn counterclockwise to reduce the relief pressure setting from 2000psi to 1750psi.
7. Tighten the adjustment screw jam nut.

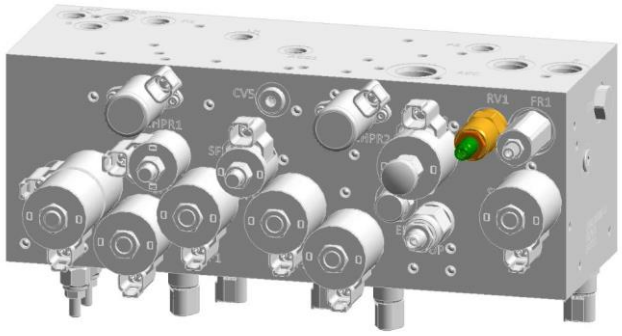

Figure 6.1: Reel Drive Relief Valve on Header Manifold

NOTE:

It is recommended to draw a new line on the valve to indicate the new position of the adjustment screw on the valve body.

NOTE:

If Rotary End Dividers are installed, they will stall if the combine reel drive relief setting is exceeded. If this occurs regularly, reduce the header pressure relief setting further by following steps 1-7 above, turning the adjustment screw 1/8 turn counterclockwise, and retightening the adjustment screw jam nut.

6.4 Configuring New Holland Combines

New Holland combines must be configured with a New Holland Intelliview IV display in order to be compatible with MacDon FC Series FlexCorn Headers.

IMPORTANT:

New Holland Intelliview IV displays must have ISOBUS Universal Terminal (UT) software installed. To install ISOBUS UT software, contact your local New Holland dealer and ask to have it installed. Without the UT software installed, the FlexCorn application will not be available through the combine display and the flex system of the header will not function.

NOTE:

With New Holland Intelliview IV displays it is possible to choose between 6 or 12 visible softkeys. The FlexCorn UT application is optimized for 6 softkeys. Choosing 12 visible softkeys may cause issues with displaying some items on the screen. To change this setting: Navigate to the home screen → Toolbox → VT Tab → Soft Keys → Select 6.

6.4.1 Configuring New Holland Display – New Holland Intelliview IV Display

Table 6.5 Header Settings – New Holland Intelliview IV Display

Setup Parameter	Suggested Setting	Notes/Comments
Header Type	Rigid Corn or Variable Speed Corn	
Deck Plates	Installed	
Hydraulic Rotating Dividers	Installed	Required, even if header doesn't have rotary end dividers!
Frame Type	Rigid	Required
Knife Fore-Aft	Not Installed	
Hydraulic Reel Reverse	Not Installed	
Header Alarm	Operator Preference	
Header Alarm Rings	Operator Preference	
Rows In Use	Select based on header configuration	
Row Spacing	Select based on header configuration	
Header Center Offset	0.00	
Flip Up Kit	Not Installed	
Header Blow-Off	Not Installed	
Reel Speed Minimum	2.0mph	
Reel Speed Offset	0.0mph	
Maximum Work Height	75%	Recommend 75% but ultimately up to customer.
Autofloat	Installed	Required
AutoFloat II	Enable	Required

Auto Header Lift	Installed	Customer preference, recommended.
Autotilt in Headland	Installed	Customer preference, recommended.
Autolevel in Headland	Installed	Customer preference, recommended.
Pressure Override Threshold	290psi	Unknown if this matters
Height/Tilt Response	Fast	Recommend Fast
HHC Height Sens.	150	
HHC Tilt Sens.	200	
HHC Raise Slow Rate	220	
HHC Raise Fast Rate	250	
HHC Lower Slow Rate	60	May depend on header weight.
HHC Lower Fast Rate	150	May depend on header weight.
Header Slip Clutch	Not Installed	

Chapter 7: MacDon FlexCorn Application

7.1 Navigating to the FlexCorn Application – Case IH Combines

To navigate to the MacDon FlexCorn application:

1. Navigate to the main screen on the combine display
2. Select the VT icon

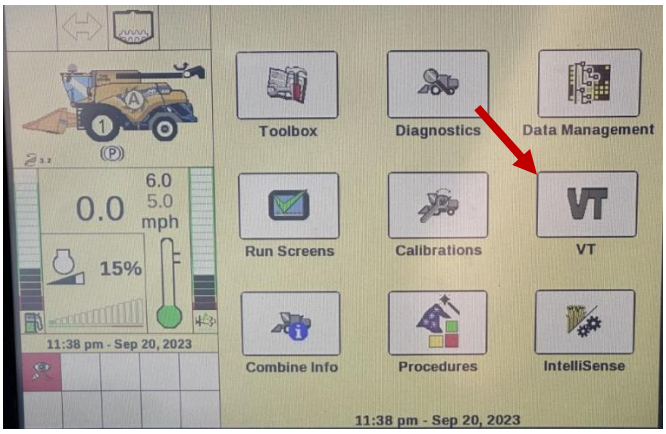

Figure 7.1: Case and New Holland Display Main Page

3. Select the MacDon FlexCorn icon

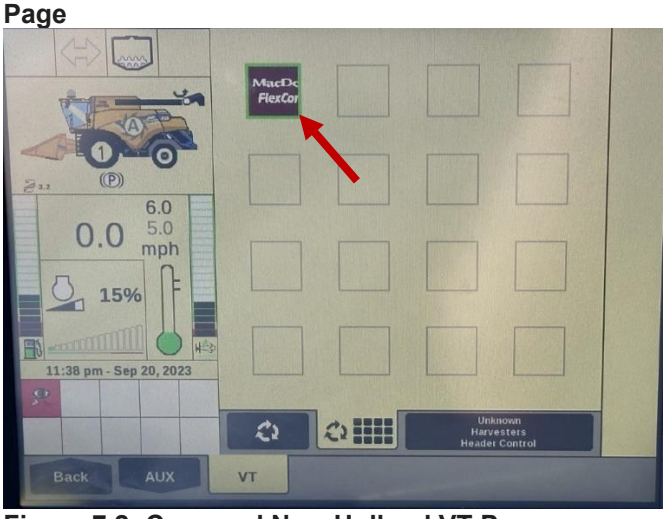

Figure 7.2: Case and New Holland VT Page

4. For the first power-on cycle after hooking up the system, it could take up to five minutes to load the ISOBUS application. During the loading process, leave the machine keyed on. You will see the "loading object pool" icon appear in the lower left section of the display (shown in Figure 7.3).
5. Wait up to 5 minutes on initial setup for the application to load.

NOTE:

If the MacDon FlexCorn application does not come up on the combine display within 5 minutes, confirm all harness connections are secure and the in-cab controller power light is illuminated.

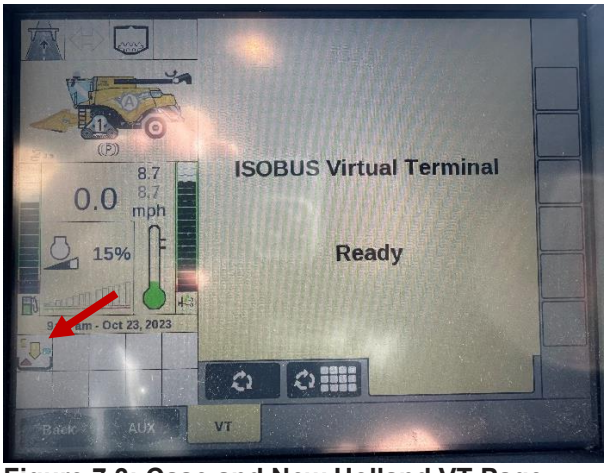

Figure 7.3: Case and New Holland VT Page

7.2 Navigating to the FlexCorn Application – CLAAS 7000 and 8000 Series Combines

Follow the applicable combine instructions for the display you have installed.

7.3 Navigating to the FlexCorn Application – John Deere S600 Series Combines

To navigate to the MacDon FlexCorn application on John Deere 2630/GS3 Command Center displays:

IMPORTANT:

For some older John Deere S600 series combines you must connect the PCAN connector to PCAN-VB on the in-cab harness.

1. Select the menu icon at the bottom right side of the display.
2. Select the MacDon FlexCorn icon.
3. Wait up to 5 minutes on initial setup for the application to load.
4. UT applications that are currently uploading will display with a green progress bar.

NOTE:

If the MacDon FlexCorn application does not come up on the combine display within 5 minutes, confirm all harness connections are secure and the in-cab controller power light is illuminated. After 5 minutes, if the MacDon FlexCorn application does not populate, disconnect the PCAN connector, and reconnect it to the alternate connector (PCAN-IB or PCAN-VB).

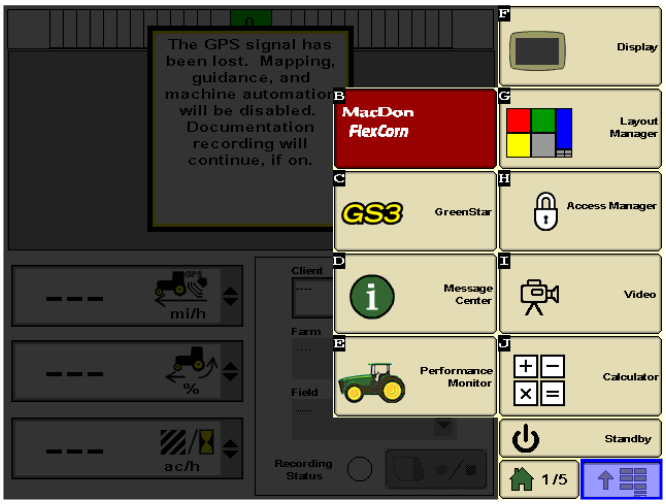

Figure 7.4: John Deere S600 Menu

7.4 Navigating to the FlexCorn Application – John Deere S700 Series Combines

To navigate to the MacDon FlexCorn application on John Deere Generation 4 4240, 4640, 4100, 4200, or 4600 displays:

IMPORTANT:

For John Deere S700 series combines you must connect the PCAN connector to PCAN-IB on the in-cab harness.

1. Select the menu icon at the bottom right side of the display.

Figure 7.5: John Deere S700 Main Screen

2. Select Applications tab on the left side of the display.

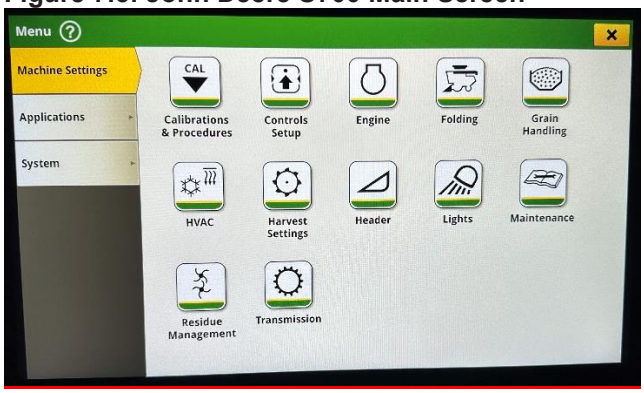

Figure 7.6: John Deere S700 Menu

3. Select ISOBUS VT.
4. The first time opening of the FlexCorn Application will require time to setup the Application.

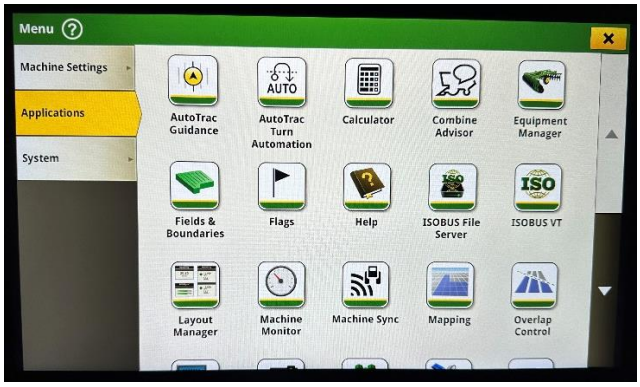

Figure 7.7: John Deere S700 Aplication Page

5. Select the MacDon FlexCorn ISOBUS Implement
6. Wait up to 5 minutes on initial setup for the application to load.
7. UT applications that are currently uploading will display with a green progress bar.

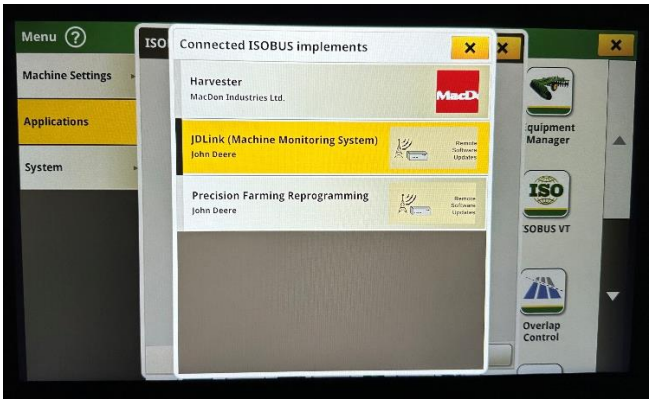

Figure 7.9: John Deere S700 ISOBUS Implement Selection Page

NOTE:

8. If the MacDon FlexCorn application does not come up on the combine display within 5 minutes, confirm all harness connections are secure and the in-cab controller power light is illuminated. After 5 minutes, if the MacDon FlexCorn application does not populate, disconnect the PCAN connector, and reconnect it to the alternate connector (PCAN-IB or PCAN-VB).

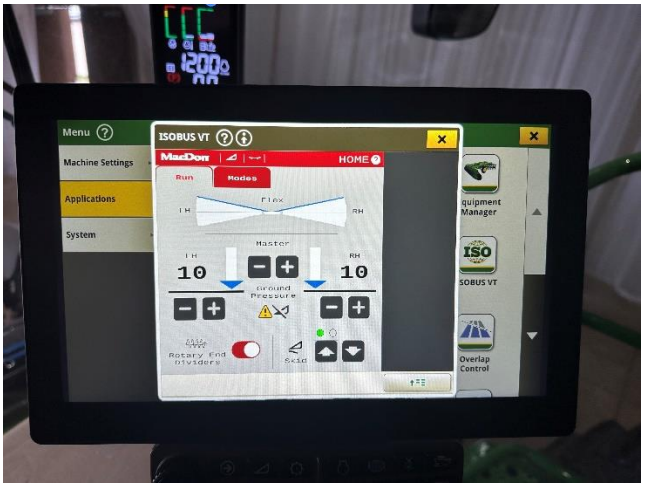

Figure 7.10: FlexCorn Application Run Screen on John Deere S700 Series Combine

7.5 Navigating to the FlexCorn Application – New Holland CR Series Combines

To navigate to the MacDon FlexCorn application:

1. Navigate to the main screen on the combine display.
2. Select the VT icon shown in Figure 7.11.

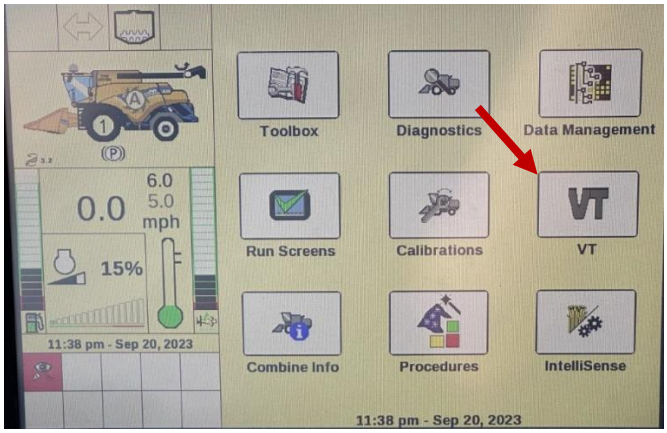

Figure 7.11: Case and New Holland Display Main Page

3. Select the MacDon FlexCorn icon shown in Figure 7.12

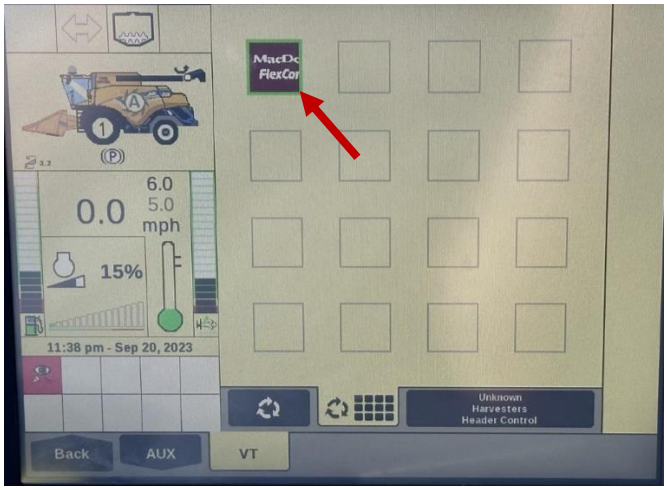

Figure 7.12: Case and New Holland VT Page

4. For the first power-on cycle after hooking up the system, it could take up to five minutes to load. During the loading process, leave the machine keyed on. You will see the “loading object pool” icon appear in the lower left section of the display (shown in Figure 7.13).
5. Wait up to 5 minutes on initial setup for the application to load.

NOTE:

If the MacDon FlexCorn application does not come up on the combine display within 5 minutes, confirm all harness connections are secure and the in-cab controller power light is illuminated.

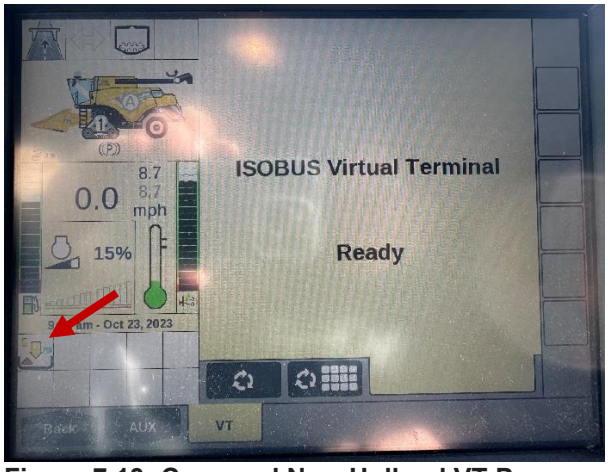

Figure 7.13: Case and New Holland VT Page

7.6 Configuring MacDon FlexCorn Application

The FlexCorn application needs to be configured for the combine.

To setup the MacDon FlexCorn application in the combine, follow the instructions in the previous section.

Once the application has opened follow the steps below to configure the application for the combine. (John Deere 2630 Display screenshots shown below).

1. Navigate to the setup screen by selecting the SETUP icon on the right side of the display

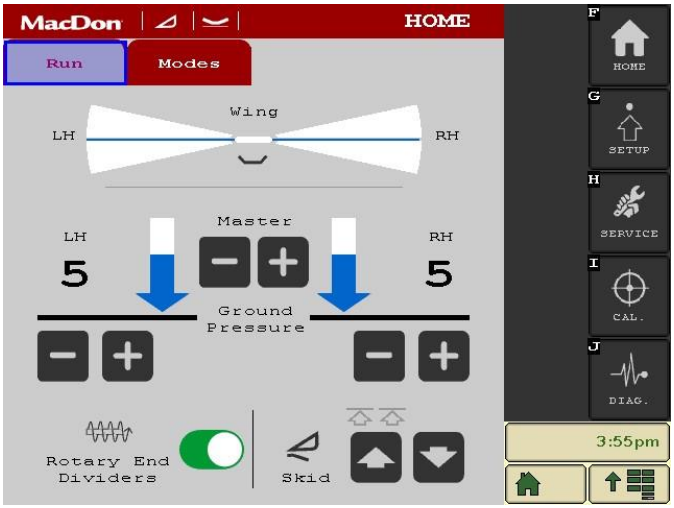

Figure 7.14: MacDon FlexCorn Application Home Screen

2. If there are two or more displays installed in the cab, the FlexCorn Application can be moved between the screens.
3. To open the application on a second display in the combine, navigate to Setup screen
4. Select the Display page
5. Press and hold the Next VT icon until the application opens on the other display.

NOTE:

Most combine displays allow for ISOBUS UT/VT applications to be added to run screens. Follow instructions in the combine or display manual for instructions.

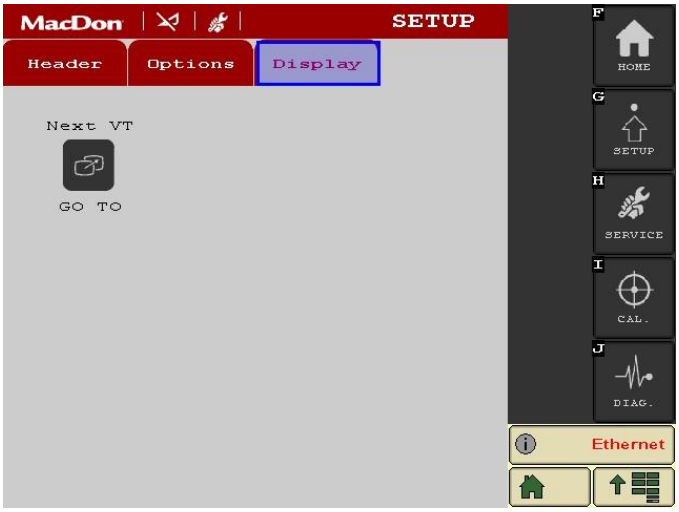

Figure 7.15: FlexCorn Application Setup Screen

6. To configure the application for the header, select the appropriate Header Model and Combine Make from the drop-down menus

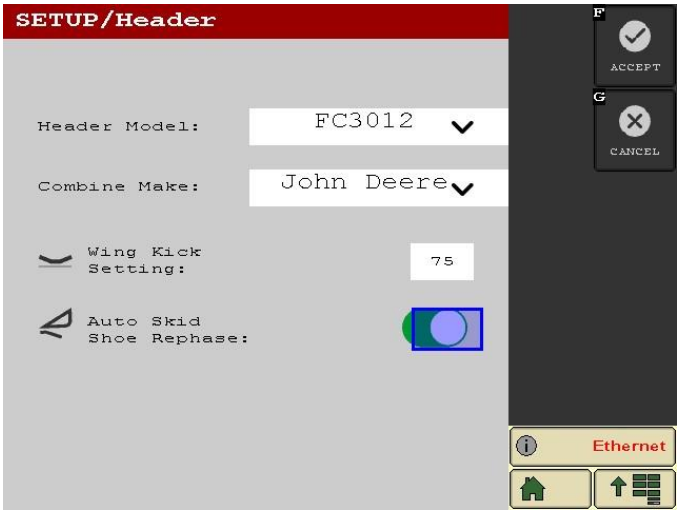

Figure 7.16: Setup Screen Drop Down Selections

7. Input desired wing kick setting in the Wing Kick Setting text box

NOTE:

Wing Kick is a feature that flexes the wings up when the header is operating in flex mode and is lifted off the ground. Wing Kick helps avoid contact with the ground and standing crop by providing more clearance between the header wings and ground. The setting can be adjusted from between 0% and 75%, when set to 75% the wings will flex upwards to 75% of the maximum range.

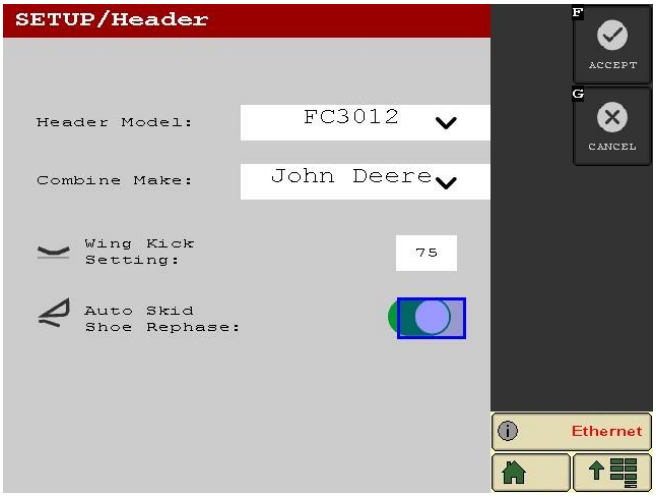

Figure 7.17: Wing Kick Input

8. Select Auto Skid Shoe Rephase option. This feature will automatically rephase the skid shoes when the header is lifted at the end of a pass to ensure that the skid shoes are at the same height.

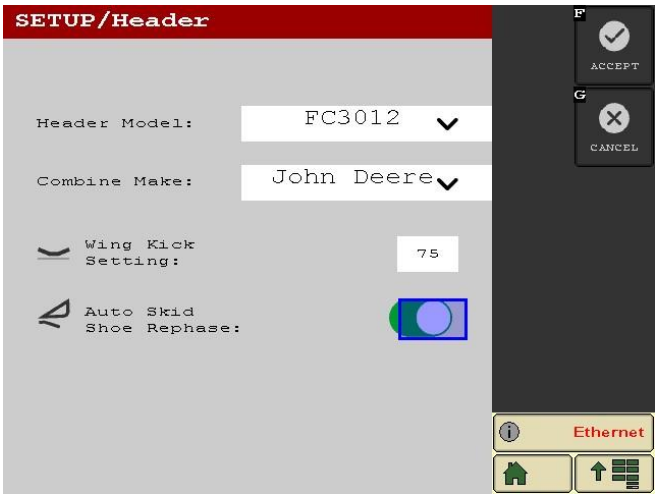

Figure 7.18: Auto Skid Shoe Rephase Selection

9. If the header is configured with Rotary End Dividers, navigate to the options page and press the Edit softkey.

Figure 7.19: Setup Screen Options Page

10. Select the check box for rotary end divider if installed on the header.

⚠ WARNING:
If Rotary End Dividers are not installed, but this box is checked, the FlexCorn header may cause the combine hydraulic reel drive to exceed relief pressure and will not operate as expected.

11. To prevent end dividers from turning, the on/off button on the home screen should be used. If end dividers are installed this box should always be checked. Refer to *8.5.7 Engaging and Disengaging REDs (Option)* for more details.

Figure 7.20: Editing Options Page

Chapter 8: Header Calibrations & Run Up

The header needs to be calibrated prior to use in the field for peak performance while harvesting. The header must be recalibrated when the header is used on a different combine, the header configuration changes (optional accessories are added or removed), the calibrations are manually reset, or the header controller is replaced.

The header needs to be operated and its performance observed before it can be delivered to the customer, to ensure that all features are functional. A 30-minute trial run is recommended.

Follow the sequence listed below to calibrate a MacDon FlexCorn header:

DANGER

Ensure that all bystanders have cleared the area.

1. Start the combine and engage the drive with the engine speed at low idle. If all sounds well, run the header slowly.

IMPORTANT:

Avoid starting the drive at full throttle as the inertia load from acceleration can be 8–10 times more than the load from steady speed operation. High-speed startup may cause damage to the drive system and safety clutches.

2. After the slow speed start, increase the engine speed to a medium level, and listen for abnormal sounds. If no irregularity is observed, increase the engine speed to full throttle.
3. Set Reel drive flow, refer to *8.1 Setting Rotary End Divider/Reel Drive Flow*
4. Run header for 5-10 minutes before proceeding to step 5.
5. Engage the rotary end dividers (REDs) (if installed) in the FlexCorn Application. Confirm that they turn the correct direction (left: clockwise; right: counterclockwise), refer to *8.5.7 Engaging and Disengaging REDs (Option).*
6. Disengage the header drive and threshing system.
7. Shut down the combine and remove the key from the ignition.
8. Engage the feeder house locks.
9. Unlock wing locks, refer to *8.6 Locking and Unlocking Wing Lock Links*.
10. Disengage the feeder house locks.

DANGER

Ensure that all bystanders have cleared the area.

11. Start combine and engage threshing system.
12. Manually cycle the skid shoes to ensure that the hydraulics are functioning as intended, refer to *8.5.9 Adjustable Skid Shoe Phasing.*
13. Calibrate MacDon Header in the FlexCorn Application, refer to *8.2 Calibrating Header Flex System in FlexCorn Application.*
14. Calibrate Header AHHC in the FlexCorn Application, refer to *8.3 Calibrating AHHC in FlexCorn Application*.
15. Calibrate Combine AHHC in the combine display, refer to *8.4 Calibrating Combine*.
16. Check the lights and confirm that they turn on and off as expected.

8.1 Setting Rotary End Divider/Reel Drive Flow

Rotary End Dividers must be enabled in the combine display for the Flex system to function. The combine reel drive circuit powers the flex system and rotary end dividers (if installed).

⚠ WARNING:

If REDs are turned off by using the combine reel drive speed control, the flex system will not function. This will lead to poor performance and possible header damage. If it is desired that the REDs be turned off, do that on the home/run screen of the FlexCorn application.

Set Rotary End Divider/Reel Drive flow to around 50% using the dial on the combine console. Rotary End Divider speed can be adjusted by using the reel drive speed; however, the combine reel drive speed should never be set below 25%.

- If the header is equipped with REDs the combine reel drive flow should be 4-7gpm to provide the required amount of flow to the header.
- If the header is not equipped with REDs the combine reel drive flow should be 3-4gpm to provide the required amount of flow to the header.

To check for correct pressure and flow on headers without REDs:

1. Ensure the area around the header and combine is clear of bystanders
2. Start the combine
3. Navigate to the setup screen in the FlexCorn Application and place the header in Service Mode
4. Navigate to the setup screen in the FlexCorn Application and enable REDs
5. Navigate to the home screen and ensure that the RED ON/OFF slider is enabled
6. Navigate to the diagnostics screen in the FlexCorn Application and find the “Input Pressure” reading
7. Engage the combine threshing system and header drive
8. Set the reel speed to its lowest setting
9. Slowly increase the reel drive speed on the combine until the input pressure is above 1000 psi
10. Navigate to the setup screen in the FlexCorn application and disable REDs

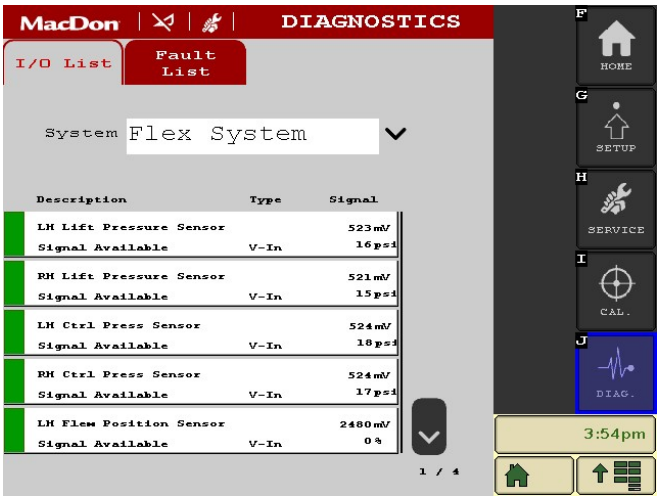

Figure 8.1: FlexCorn Application Diagnostics Screen

NOTE:

If the Rotary End Divider/Reel Drive flow is not sufficient the header will react slowly, and the REDs may stall (if installed).

8.2 Calibrating Header Flex System in FlexCorn Application

The header must be calibrated for peak performance while harvesting.

The header must be recalibrated when the header is used on a different combine, the header configuration changes (optional accessories are added or removed), the calibrations are manually reset, or the header controller is replaced.

1. Uninstall header lock links to allow full wing movement
2. Navigate to the CAL (calibration) page in the FlexCorn application.

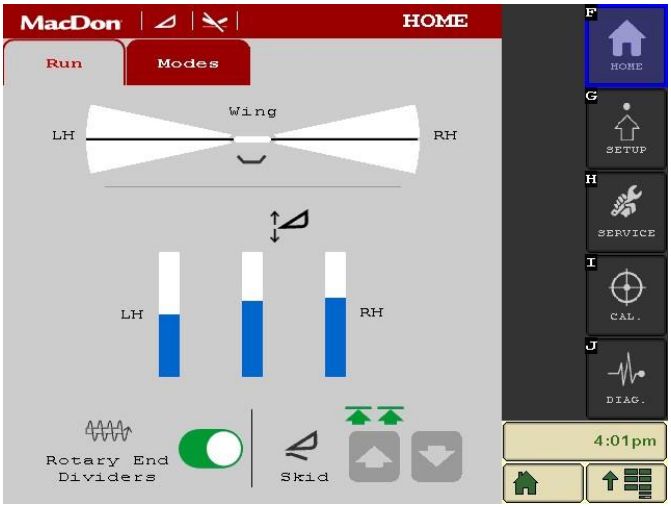

Figure 8.2: FlexCorn Home Screen

IMPORTANT:

At any point during the calibration select the Cancel icon to stop the calibration.

3. Ensure the following:
   - The combine is parked on level ground
   - The header angle (snapping plate angle) is set to 23°
4. Lift the combine feeder house as high as possible

Figure 8.3: FlexCorn Header Calibration Screen

IMPORTANT:

The header will move by itself, ensure the area is clear of bystanders. If at any point someone comes near the header, disengage the header drive.

5. Engage the combine threshing system and header drive

NOTE:

The header must be engaged to complete the calibration. The Flex system requires flow from the reel drive system in order to actuate.

6. Select the “Calibrate” icon. The header calibration will proceed automatically
7. The calibration progress bar will show the progress of the calibration.
8. Once the calibration is completed the progress bar will fill completely and the status message will read “Calibration Complete” and the new calibration values will appear on the screen.
9. To accept the new calibration, select the Accept soft key in the top right of the application. If the new calibration is not wanted, select the Cancel soft key.

NOTE:

To view the previous calibration values, select the Prev soft key on the bottom right of the application.

10. Once the calibration is complete the header will return to the mode it was in prior to the calibration.
11. Proceed to section *8.3 Calibrating AHHC in FlexCorn Application* or disengage the header drive and combine threshing system.

Figure 8.4: FlexCorn Header Calibration

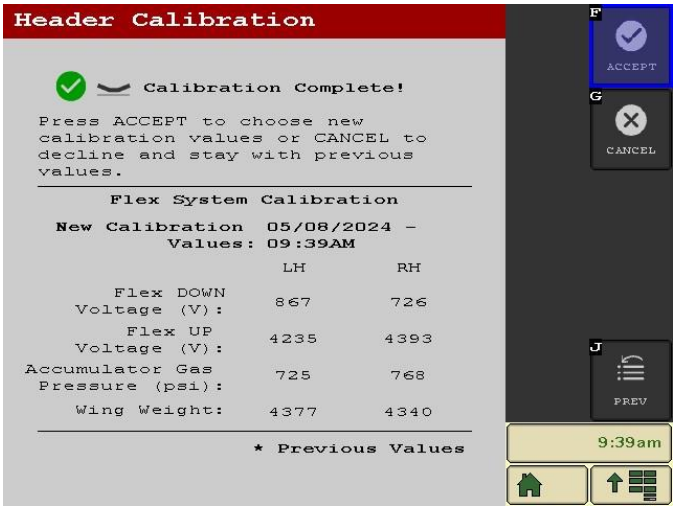

Figure 8.5: FlexCorn Header Calibration Complete

8.3 Calibrating AHHC in FlexCorn Application

MacDon's auto header height control (AHHC) system works in conjunction with your combines AHHC system. Once the header has been assembled and attached to the combine, the AHHC system will need to be configured to work with the combine.

Three sensors are installed underneath the right end, center, and left end snouts. These sensors send analog signals to the header controller to sense the position of the header in relation to the ground. The header controller calculates header position and the optimum float as the header follows the contours of the ground and communicates with the combine AHHC system, which allow the combine to maintain the required feeder house position.

The normal operating voltages for the sensors fall between 0.5VDC and 4.5 VDC. An increase in sensor voltage correlates to an increase in header height, while a decrease in sensor voltage correlates to a decrease in header height. Any sensor error results in a 0 V signal, which indicates either a faulty sensor or insufficient voltage supply.

The normal operating voltages for the AHHC signals sent to the combine is between 0.7VDC and 4.2 VDC. This is coded into the software on the header controller, so no manual adjustment should be required on the sensors to complete a successful combine AHHC calibration.

The auto header height system must be calibrated in the FlexCorn Application prior to completing the combine auto header height calibration.

The AHHC must be recalibrated when the header is used on a different combine, the calibrations are manually reset, there are adjustments or changes made to the AHHC sensors, or the header controller is replaced.

1. Engage the combine threshing system and header drive.

Figure 8.6: Rigid Mode

2. Navigate to the CAL (calibration) page in the FlexCorn application.

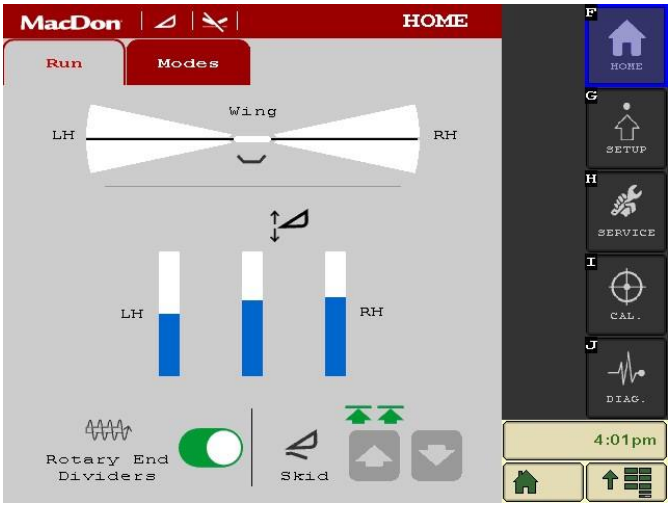

Figure 8.7: FlexCorn Home Screen

3. Navigate to the AHHC screen

IMPORTANT:

At any point during the calibration select the Cancel icon to stop the calibration.

4. Ensure the following:
   - The combine is parked on level ground
   - The header angle (snapping plate angle) is set to 23°

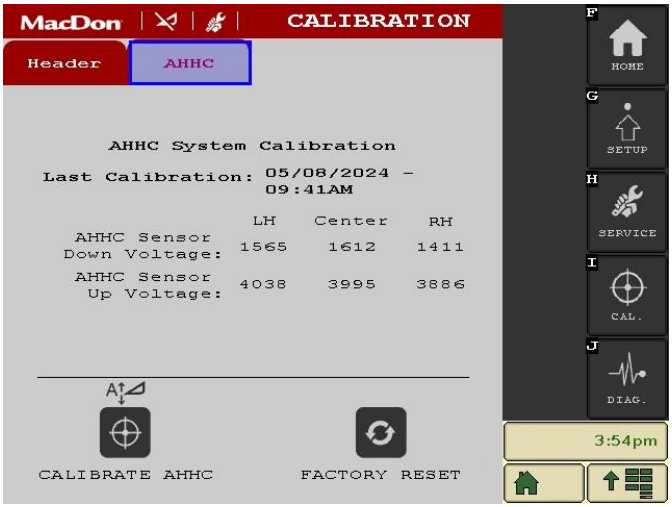

Figure 8.8: FlexCorn Calibration Screen

5. Select the “Calibrate AHHC” icon. This calibration requires input from the operator to proceed.

NOTE:

The header will automatically level the wings and place the system in Rigid mode

6. The calibration status will update with the required input from the operator.
7. Once the header levels and locks in Rigid mode, the operator will be asked to lower the header to the ground and hold.

NOTE:

To prevent the AHHC dongles from sticking into the ground when lowering the header, drive forwards very slowly while lowering the header.

8. Next, the operator will be asked to lift the header off the ground
9. Once the calibration is complete the wings will remain level and locked in Rigid mode.
10. The calibration status will read “Calibration Complete”.
11. Disengage the header drive and combine threshing system

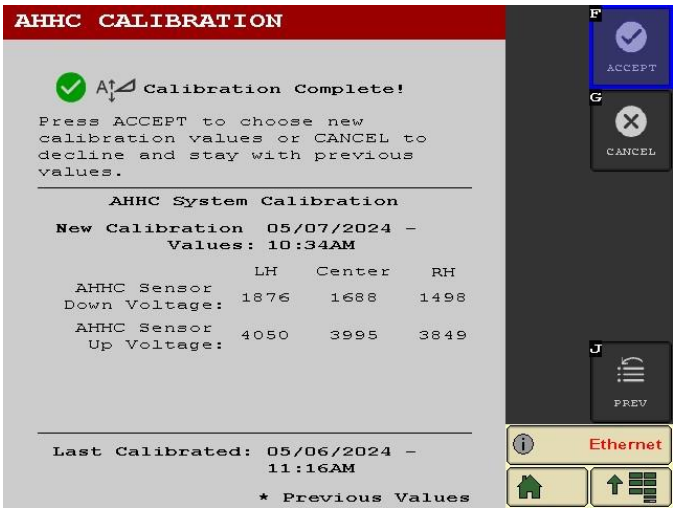

Figure 8.9: FlexCorn AHHC Calibration Complete

8.4 Calibrating Combine

Complete the required combine calibrations. Some of these calibrations may include:

- Feeder house calibration
- Header calibration
- Auto header height calibration
- Feeder house engagement calibration

Refer to the combine operator's manual for instructions on calibrations.

NOTE:

The combine calibrations must be completed with the header in Rigid mode.

NOTE:

When completing the Feeder house engagement calibration on Case or New Holland combines, ensure the combine has been fully warmed up to operating temperature; this calibration must NOT be done with cold oil. Uncouple any header driveshafts from the combine.

8.5 Adjusting Header Settings in the FlexCorn Application

8.5.1 Header Mode Selection – Flex

Flex mode is used when the operator wants the flex system engaged and wings to follow the ground. This will be the most common operational state.

To place the header in Flex mode:

1. On the FlexCorn application, navigate to the Modes tab.
2. Engage the combine threshing system and header drive.

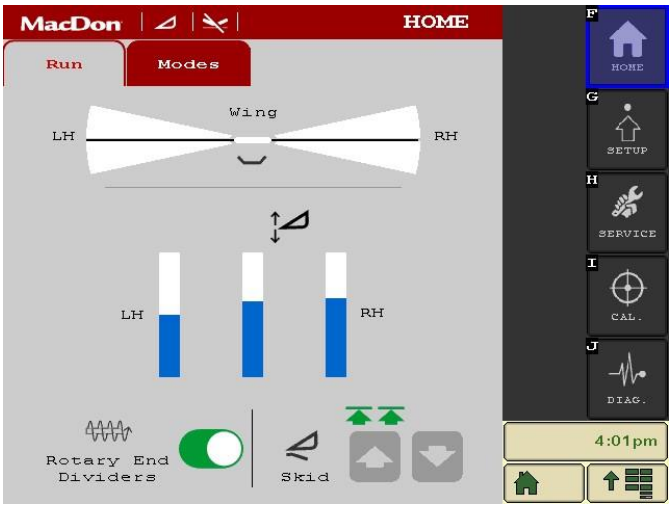

Figure 8.10: FlexCorn Application Home Screen

3. Select the Flex icon to place the header in Flex Mode.
4. A warning will appear to alert the operator that the wings may move.
5. Select Accept icon to enter Flex mode
6. When the icon at the top of the screen changes to the Flex icon, the header is now in Flex mode.

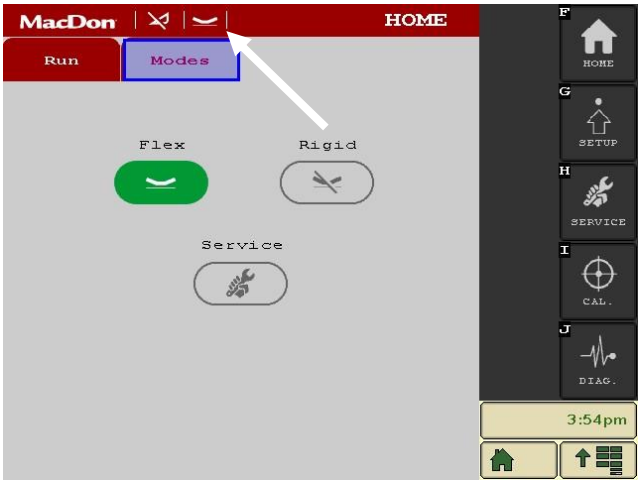

Figure 8.11: Flex Mode Enabled

NOTE:

The mode status icon at the top of the screen will flash if the header is transitioning from one mode to another. The transition is very fast going to flex mode but may take a couple minutes going from flex to rigid. Once the transition is complete, the icon will remain solid.

7. Disengage the header drive and combine threshing system

8. When operating in Flex mode the view on the home screen will update to show the position of the wings as well as ground pressure controls.

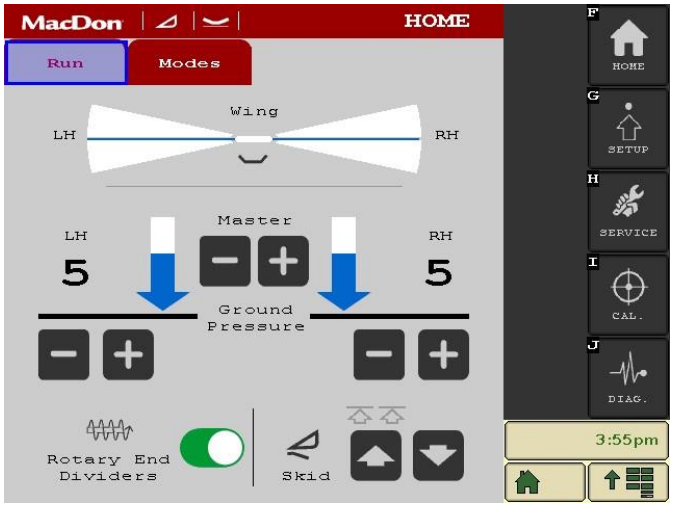

Figure 8.12: Wing Flex Indicator

8.5.2 Header Mode Selection – Rigid

Rigid mode uses hydraulic valves to lock the wings straight. This mode should be used when putting the header on a trailer, or if the operator wants to harvest with a straight header.

To place the header in Rigid mode:

1. On the FlexCorn application, navigate to the Modes tab.
2. Engage the combine threshing system and header drive.

NOTE:

The header must be engaged to transition to Rigid mode.

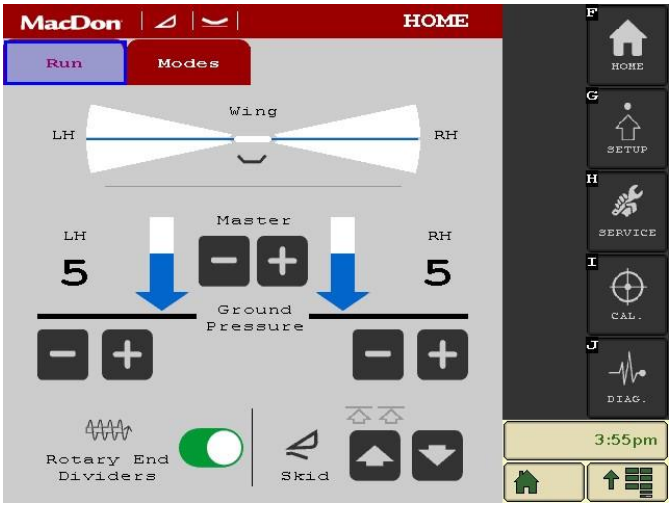

Figure 8.13: FlexCorn Application Home Screen

3. Select the Rigid icon to place the header in Rigid Mode.
4. A warning will appear to alert the operator that the wings will move.
5. Select Accept icon to enter Rigid mode.
6. When the icon at the top of the screen changes to the Rigid icon, the header is now in Rigid mode.

NOTE:

The mode status icon at the top of the screen will flash if the header is transitioning from one mode to another. The transition is very fast going to flex mode but may take a couple minutes going from flex to rigid. Once the transition is complete, the icon will remain solid.

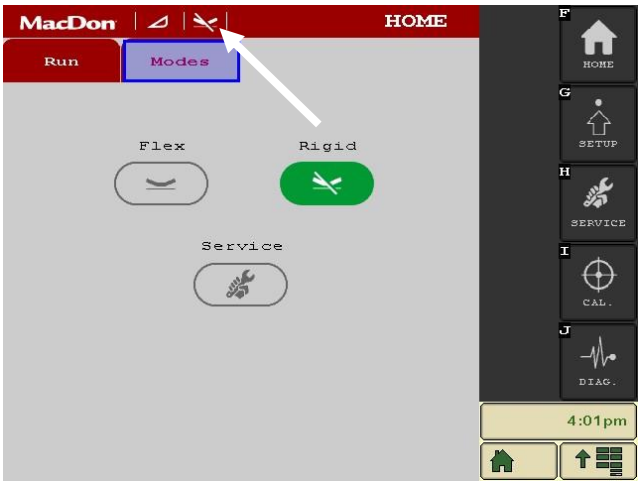

Figure 8.14: Rigid Mode Enabled

7. Disengage the header drive and combine threshing system.

8.5.3 Header Mode Selection – Service

If the header needs to be serviced or you intend to store the header for an extended period of time we recommend placing the header in service mode. When in service mode the header hydraulic systems will drain the residual pressure from the accumulators back to the combine through the reel drive return line.

When service mode is entered, the wings will lower until them contact a solid stop. This may be the ground, wing locks, or end of range on the cylinder.

To place the header in Service mode:

1. Install header lock links.
2. Navigate to the home screen on the FlexCorn Application

DANGER
Ensure that all bystanders have cleared the area.

3. Engage the combine threshing system and header drive.

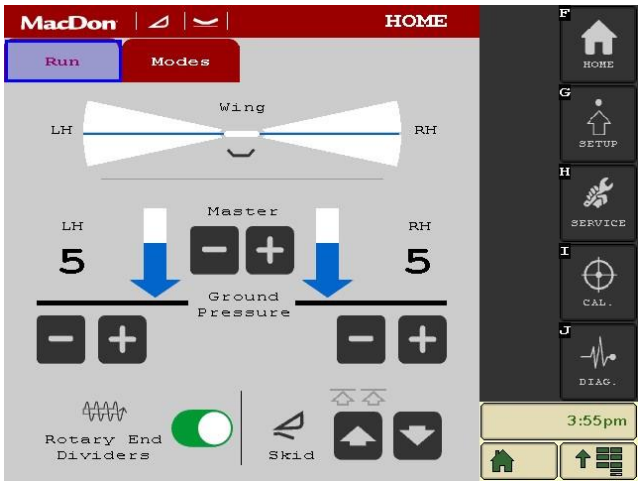

Figure 8.15: FlexCorn Application Home Screen

4. Select the Service icon

WARNING
During the transition to Service mode there may be unexpected header movement.

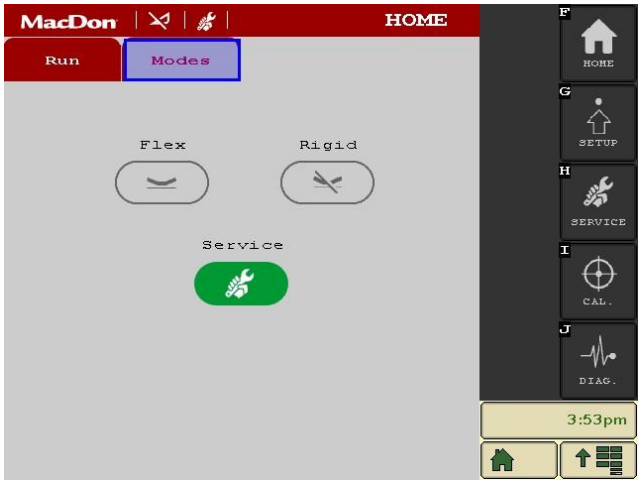

Figure 8.16: Service Mode Enabled

5. A warning will appear to alert the operator that the wings will drop if not properly supported.
6. Select Accept icon to enter Service Mode

NOTE:

Select the Cancel icon to return to the previous page without entering Service Mode.

7. After selecting Accept, the wings will unlock and drain the hydraulic fluid from the accumulators will drain back to the combine through the hydraulic reel drive return line.
8. The Service icon will flash during the transition, and will be displayed at the top of the screen when in Service mode
9. After transitioning to Service mode, the display will automatically open the Service Mode screen.
10. Verify that the following boxes are green:
    a. Lift Pressure
    b. Flex Pressure
    c. Flex Motion
    d. Flex Lock
11. Disengage the header drive and combine threshing system

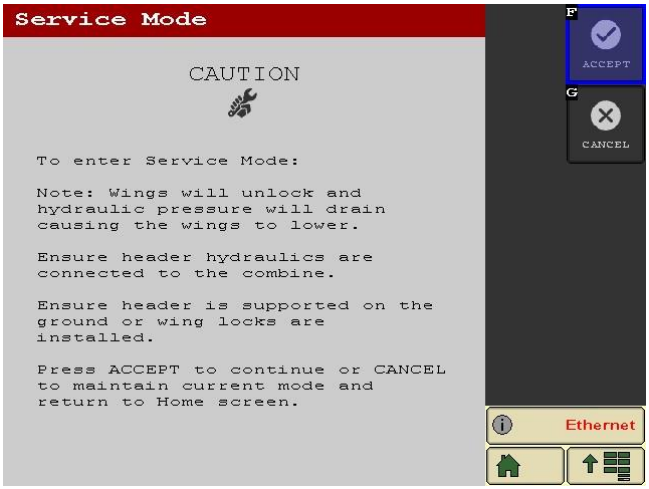

Figure 8.17: Service Mode Alert

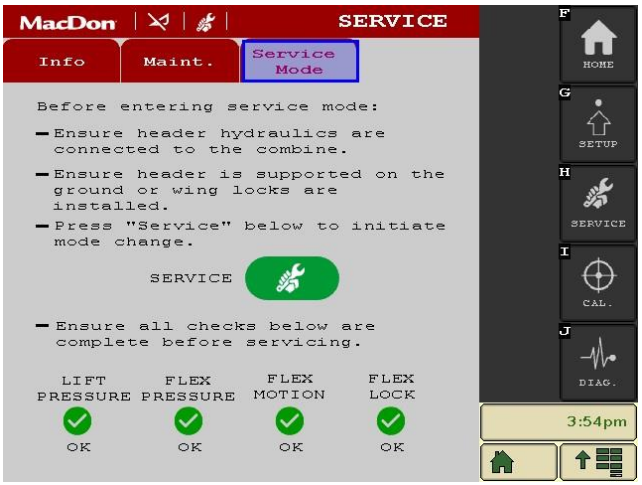

Figure 8.18: Service Mode Tab in Diagnostics Screen

To exit Service Mode:

1. Navigate to the Mode tab on the Home Screen
2. Select either the Flex or Rigid mode icons

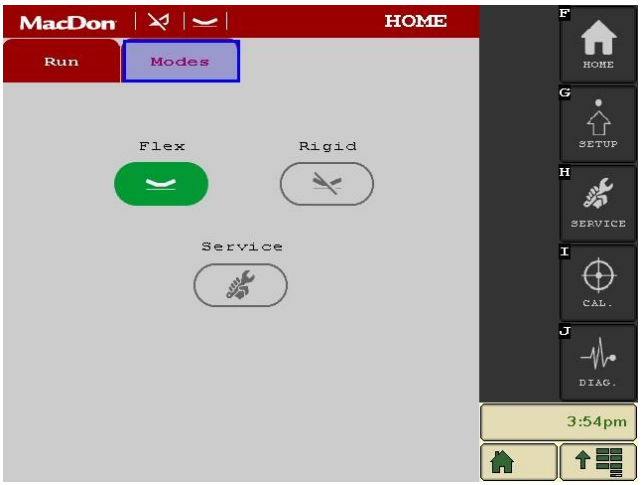

Figure 8.19: Mode Tab on Home Screen

8.5.4 Entering Service Mode Manually

If the header needs to be serviced without access to a combine, follow the procedure below.

WARNING

Draining the system in this way does not depressurize the flex cylinders so care should be taken not to loosen any connections on the flex cylinders or lift accumulator manifolds MD #349213 and ensure the wings remain supported. It is recommended to follow the procedure for servicing the header with a combine as described in *8.5.3 Header Mode Selection – Service*.

1. Support the header wings on the ground.
2. Disconnect the multicoupler from the combine.
3. Place an oil pan underneath the header multicoupler.

WARNING

This hose will contain a small amount of pressurized fluid.

4. Follow the hose from P1 on the header manifold to the multicoupler.
5. Slowly loosen the reel drive circuit return hose fitting on the header multicoupler, but do not fully disconnect fitting

NOTE:

Before reassembly, the fitting O-ring will need to be inspected for damage and the fitting must be properly retorqued.

6. Locate the three manual override valves on the FlexCorn hydraulic manifold labelled SF1, SF2, and SV3.

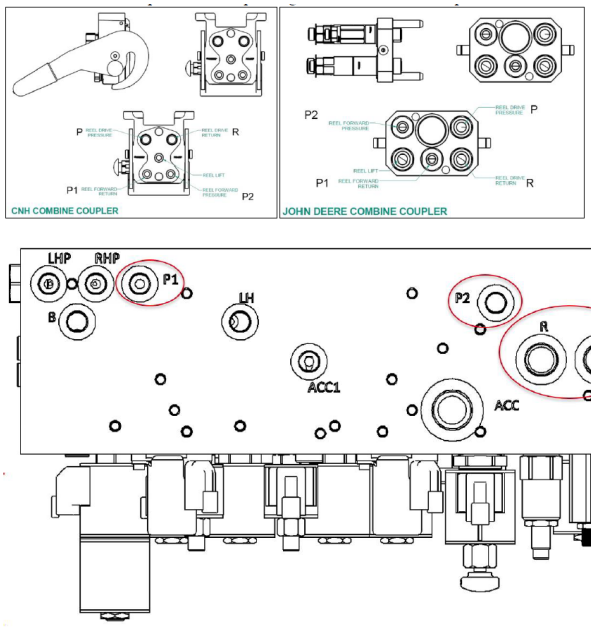

Figure 8.20: Multicoupler Hose Routing

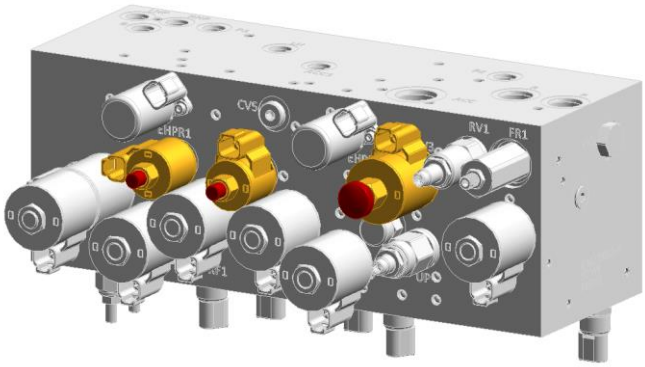

Figure 8.21: Hydraulic Manifold Override Valves

7. To drain valves SF1 and SF2, identify which valve body is installed in the block (see Figure 8.XX).
    a. On valve body (A) the manual override is engaged by spinning it CCW to the up position and disengaged by pushing down on the mechanism followed by a CW spin
    b. On valve body (B) the manual override is engaged by spinning it either CW or CCW and disengaged by pressing down on the mechanism then rotating it. This can be done either CW or CCW until it securely sits in the detent position, ensuring that the valve is completely disengaged.
8. To drain valve SV3, push in and hold the button. To disengage the manual override, release the button.

NOTE:

By pressing each of the valve overrides one-by-one you are allowing all hydraulic fluid from the accumulators to drain through the hydraulic reel drive return line.

9. Once all three valves have been used to drain the system completely, the system is safe to be serviced.
10. Once service is complete, inspect the reel drive fitting removed in step 5 for damage before reinstalling on the multicoupler.

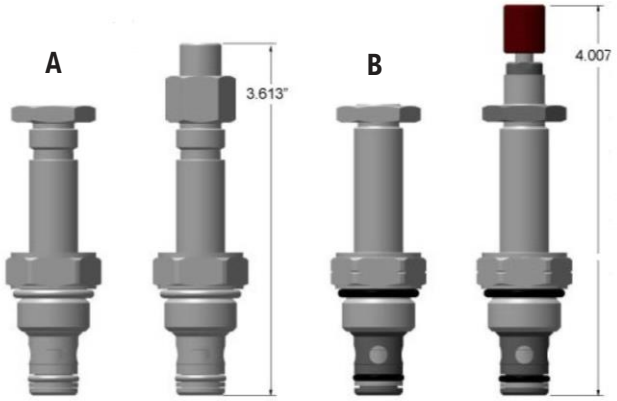

Figure 8.22: Identifying Valve Revision SF1 and SF2

8.5.5 Help Screens

8.5.6 Adjusting Header Ground Pressure

Header ground pressure adjustment changes the weight each outer skid shoe puts on the ground. Generally, a higher ground pressure will react to changes in ground contour faster while a lower ground pressure will follow the ground more gently. If the ground pressure is too high, it will increase wear on the skid shoes or push soil, and too light, the wings may not maintain consistent contact with the ground or skip over lower areas. It is recommended to set the ground pressure as low as possible while achieving the desired responsiveness and ground following performance. This adjustment can be made on the home screen of the FlexCorn Application.

1. Navigate the home screen of the FlexCorn Application

NOTE:

The two blue arrows will indicate the current ground pressure setting. It is recommended to start with a ground pressure setting of 5, and to increase or decrease the setting based on performance and current conditions.

2. If the skid shoes begin to dig into the ground or push soil, Ground Pressure should be reduced
    a. To reduce the ground pressure (reduce the weight on skid shoes) use the LH/RH Ground Pressure or Master Ground Pressure decrease icons (-)
3. If the wings are slow to respond or skid shoes fail to stay engaged with the ground, ground pressure should be increased
    a. To increase the ground pressure (increase the weight on the skid shoes) use the LH/RH ground pressure or master ground pressure increase icons (+)

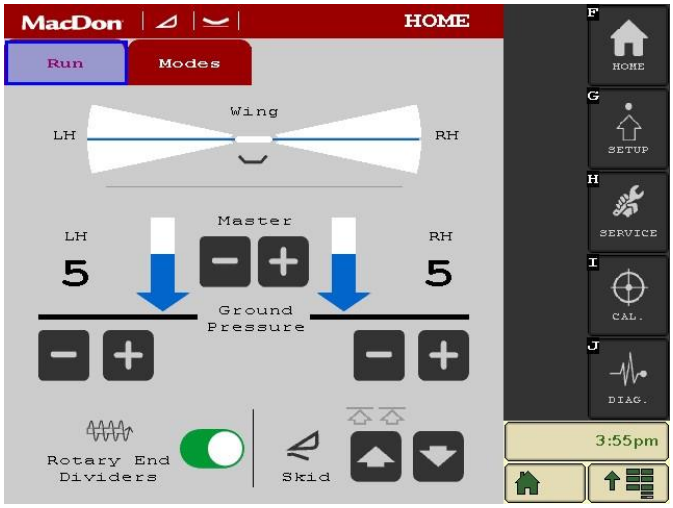

Figure 8.24: FlexCorn Application Home Screen

NOTE:

The Master Ground Pressure icons will increase/decrease both left and right wings ground pressure simultaneously.

The LH/RH ground pressure icons will increase/decrease each wings ground pressure independently.

8.5.7 Engaging and Disengaging REDs (Option)

To engage or disengage Rotary End Dividers (REDs)

NOTE:

Ensure the REDs are enabled in the combine settings.

1. Navigate to the setup screen on the FlexCorn Application

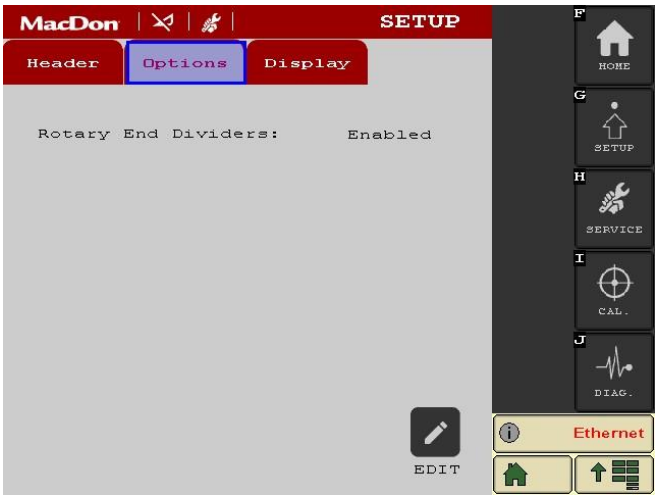

Figure 8.25: FlexCorn Application Setup Screen

2. Ensure that Rotary End Dividers shows as Enabled.

NOTE:

To prevent end dividers from turning, the on/off button on the home screen should be used. If end dividers are installed this box should always be checked.

3. Navigate to the Home screen.
4. The toggle icon in the bottom left of the display will engage and disengage the REDs.

IMPORTANT:

Do not turn off Rotary End Dividers by reducing the speed with the console buttons/dial. This will lead to poor performance and possible header damage.

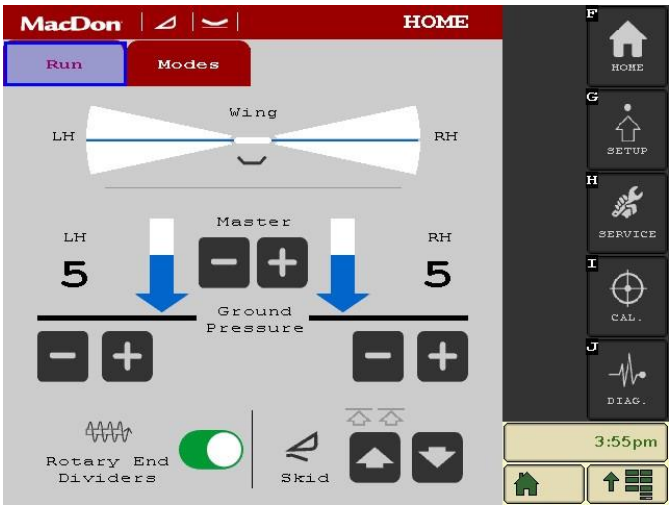

Figure 8.26: FlexCorn Application Home Screen

8.5.8 Setting Header Cut Height

The FlexCorn system works with the combine Automatic Header Height Control (AHHC) system to maintain a uniform cut height while harvesting.

This is achieved by sending the appropriate voltage signals to the combine which are interpreted by the combine to automatically control the feeder house height and lateral tilt (if applicable),

The FlexCorn system also automatically adjusts the adjustable skid shoes on the header to match the cut height at the ends of the header to the height at the center.

To adjust cut height, adjust the combine AHHC setting in the cab.

If cut height appears uneven:

1. Ensure the AHHC dongles on the header are not stuck or damaged.
2. Ensure the header and combine AHHC systems have been calibrated, refer to *8.3 Calibrating AHHC in FlexCorn Application*, and *8.4 Calibrating Combine*.
3. Rephase the skid shoes cylinders, refer to *8.5.9 Adjustable Skid Shoe Phasing*.

8.5.9 Adjustable Skid Shoe Phasing

The adjustable skid shoes are controlled hydraulically in series through a primary/secondary hydraulic circuit.

Due to outside factors or overloading scenarios, the skid shoes can become out of phase. The cylinders can be rephased by fully extending them to allow fluid to flow from one cylinder to the next.

To setup Automatic Skid Shoe Rephasing:

1. Navigate to the Setup screen in the FlexCorn Application
2. Ensure the Auto Skid Shoe Rephase toggle icon is enabled

NOTE:

If Automatic Skid Shoe Rephasing is selected in the Setup screen, this rephasing will occur automatically when the header is lifted off the ground.

NOTE:

If there is debris in the linkage the skid shoes may not be able to retract fully, clean the skid shoe linkage if they are not able to fully retract.

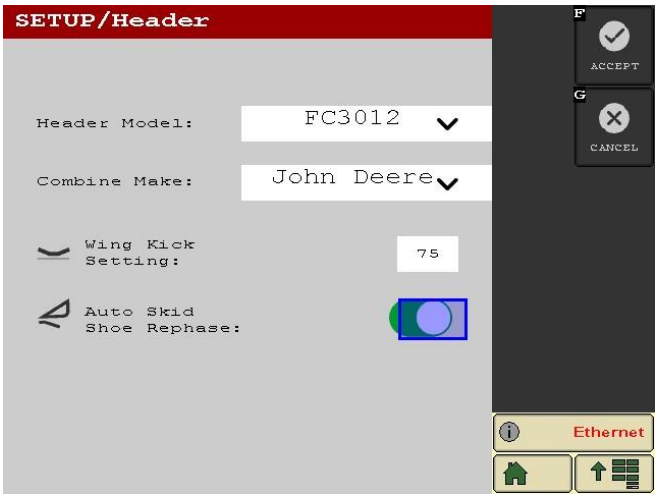

Figure 8.27: FlexCorn Application Setup Screen

To manually actuate the skid shoes:

With the header drive engaged and the header lifted off the ground, navigate to the home screen of the FlexCorn Application.

- Press and hold the skid shoe extend icon (C) to extend the skid shoe linkage.
- Press and hold the skid shoe retract icon (D) to retract the skid shoe linkage.

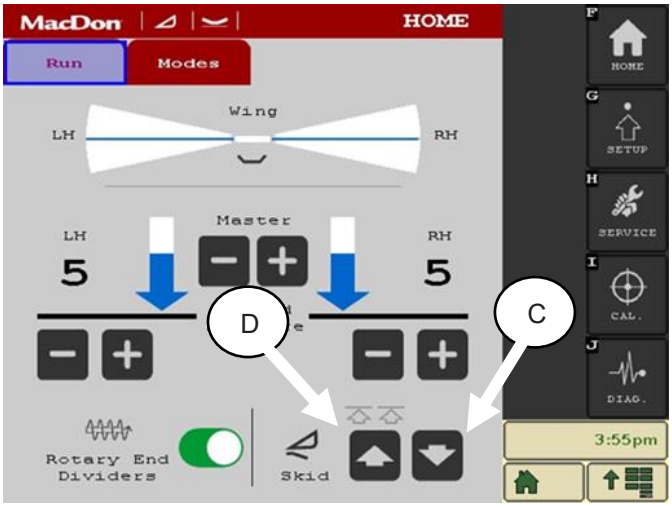

Figure 8.28: FlexCorn Application Home Screen

Cleaning skid shoe linkage:

1. Lift the header all the way
2. Engage the combine threshing system and header drive
3. Press and hold the skid shoe retract icon for 5 seconds
4. Navigate to the Diagnostics page in the FlexCorn Application
5. Skid Shoe Retract, if the value shows “1” then the sensor is indicating that the skid shoe linkage is fully retracted.

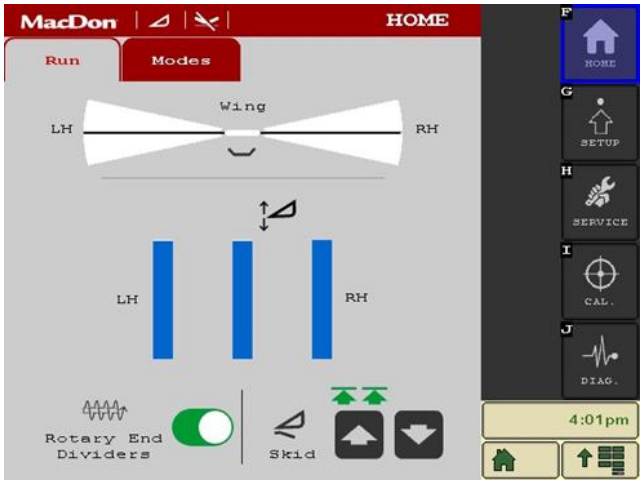

Figure 8.29: FlexCorn Application Diagnostics Page

6. Press and hold the skid shoe extend icon for 5 seconds
7. Disengage the header drive and threshing system
8. Shut down the combine and remove the key from the ignition
9. Engage the feeder house locks
10. Remove all loose debris from the skid shoe linkage. If there is dirt/mud build up use a tool to remove as much as possible

Repeat steps 2-10 as required

Figure 8.30: Adjustable Skid Shoe Linkage

8.6 Locking and Unlocking Wing Lock Links

The locking links prevent the wings from going below a level position. They should be used when the operator wants to harvest without flexing, during off-season storage, or for servicing the header.

The locking links DO NOT prevent upward movement, so should only be used during service activity after putting the header in service mode.

To Unlock the Wing Locks:

1. With the header attached to the combine, place the header in Flex mode. *Refer to 8.5.1 Header Mode Selection – Flex.*
2. Remove lower locking pin.

NOTE:

If pins are difficult to remove, the wing position sensors need to be adjusted. Refer to *5.13 Wing Position Sensors*.

3. Slide lock link towards the center of the header into storage position

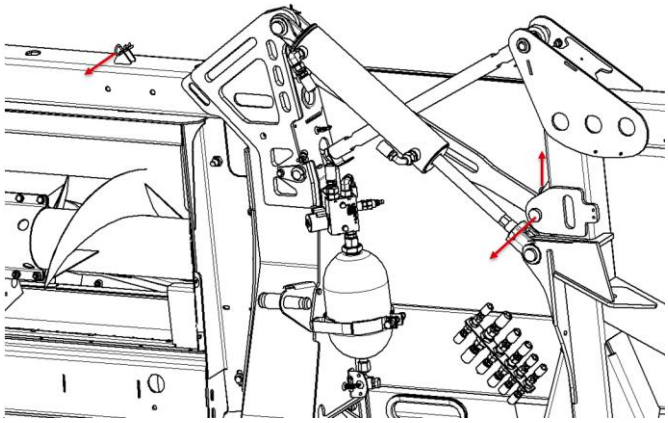

Figure 8.31: Uninstalling Wing Lock Links

4. Use the R-clip to retain the lock link in storage position.
5. Reinstall the lower locking pin

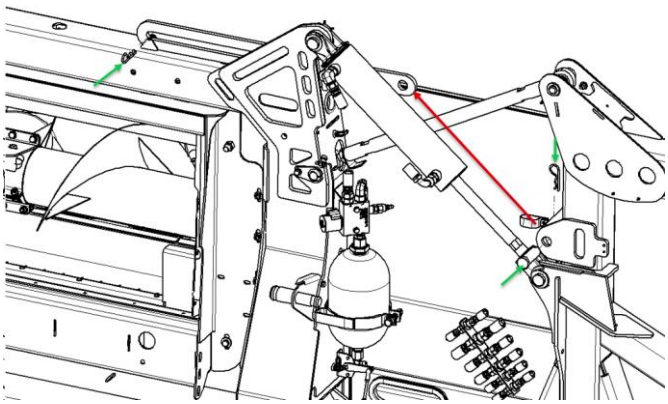

Figure 8.32: Uninstalling Wing Lock Links

To Lock the Wing Locks:

1. With header attached to the combine, place the header in Rigid mode. Refer to *8.5.2 Header Mode Selection – Rigid.*
2. Remove the lower locking pin
3. Remove the retaining clip
4. Slide the lock link outwards from storage position

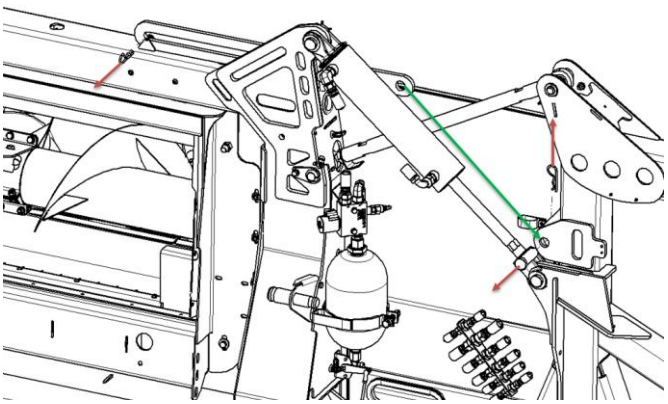

Figure 8.33: Installing Wing Lock Links

5. Align the lock link with the locking pin hole and reinstall the lower locking pin.

NOTE:

If pins are difficult to install, the wing position sensors need to be adjusted. Refer to *5.13 Wing Position Sensors*.

6. Reinstall the retaining clip for the storage position

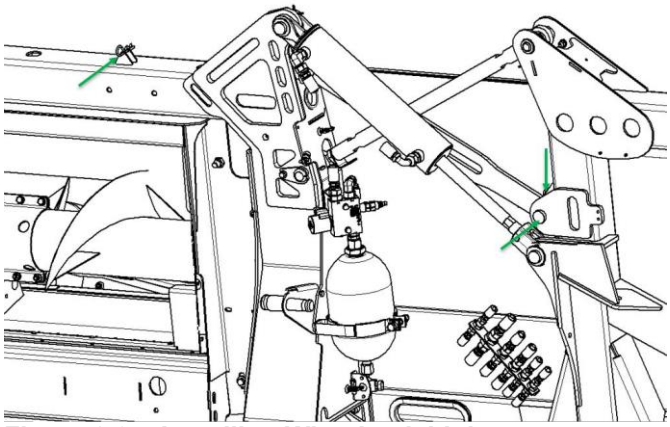

Figure 8.34: Installing Wing Lock Links

Locking Wing Lock Tips and Tricks:

If the wing locks are difficult to remove or install the wing position sensors need to be readjusted. Refer to *5.13 Wing Position Sensors*.

If after adjusting the wing position sensors, the wing locks are still difficult to install, adjust the Wing Kick setting in the FlexCorn Application, this will automatically raise the wings when a header raise/lower cycle is completed.

In the event of electrical or hydraulic issues, ensure the header electrical and hydraulic multicoupler are connected. Place the header in Service mode, use the feeder house to push the wings into the ground. This should allow enough room to install the wing lock links.

Chapter 9: Transporting Header

There are two ways to transport the header: you can attach it to the front of a combine or tow it behind a combine or agricultural tractor.

For more information, refer to:

- *9.1 Transporting Header on Combine*
- *9.2 Transporting Header on Header Trailer*

9.1 Transporting Header on Combine

In good conditions with good visibility, you can transport the header while it is attached to a combine.

WARNING

Do NOT drive the combine with the header attached at night, or in conditions which reduce visibility, such as fog or rain. The width of the header may not be apparent under these conditions.

CAUTION

- Check the local laws for width regulations and any lighting or marking requirements before transporting on roads.
- Follow all of the recommended procedures in your combine operator's manual for transporting, towing, etc.
- Before driving on a roadway, ensure that the lights are clean and working properly. Pivot the amber lamps so that they can be seen by approaching traffic. Always use lamps when travelling on roads.
- Do NOT use field lamps on roads-they may confuse other drivers.
- Before driving on a roadway, clean vehicle signs and reflectors, adjust the rear view mirrors, and clean the windows.
- Only travel with the header in Rigid mode.
- Fully raise the header (unless you are transporting the header across hills).
- Watch out for roadside obstructions, oncoming traffic, and bridges.
- When travelling downhill, reduce your speed and keep the header at a minimum height to provide maximum stability in case you stop for any reason. At the bottom of the hill, raise the header completely to avoid contacting the ground.

9.2 Transporting Header on Header Trailer

The header can be transported using a header trailer. Reference the trailers operator's manual for instructions on safe use.

CAUTION

- Ensure the header trailer is rated for the header weight.
- Ensure that the snouts have been placed in the bent knee position for transport with transport lynch pins installed.
- Ensure the header has been placed in Rigid mode.
- Ensure the header is supported on the trailer by the header stands and row unit skid shoes.
- Ensure header has been secured to the header trailer.

Chapter 10: Reference

Additional information and commonly repeated procedures are included in the reference chapter.

10.1 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Refer to these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Refer to the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Refer to the standard torque values when installing the self-tapping screws. Do NOT install the self-tapping screws on structural or otherwise critical joints.

10.1.1 Torque Specifications for Fasteners

Specifications are provided for the appropriate final torque values to secure various sizes of metric bolts, screws, and nuts.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do NOT add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 10.1 Torque Values for Fasteners (Nm)

Size	Quality		
Bolts/Screws	Class 8.8	Class 10.9	Class12.9
Nuts	Class 8	Class 10	Class 12
M6	10	14	16
M8	23	33	40
M10	45	63	75
M12	78	110	130
M14	122	175	210
M16	195	270	325
M18	260	370	440
M20	370	525	630
M24	640	900	1080
M30	1260	1800	2160

Table 10.2 Torque Values for Fasteners (lbf·ft)

Size	Quality		
Bolts/Screws	Class 8.8	Class 10.9	Class 12.9
Nuts	Class 8	Class 10	Class 12
M6	7	10	12
M8	17	24	30
M10	33	46	55
M12	58	81	96
M14	90	129	155
M16	144	199	240
M18	192	273	325
M20	273	387	465
M24	472	664	797
M30	929	1328	1593

10.1.2 Torque Specifications for Hydraulic Fittings

The standard torque values for hydraulic ring tube fittings are provided. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

Table 10.3 Dimensions and Torque Specifications – L Series

Size	Minimum Tube Wall Thickness	Torque Value	
		Nm	lbf·ft (*lbf·in)
6	6 x 1	25	*221
8	8 x 1	40	30
10	10 x 1	50	37
12	12 x 1.5	70	52
15	15 x 1.5	90	66
18	18 x 1.5	115	85
22	22 x 2	210	155
28	28 x 2	310	229
35	35 x 3	500	369
42	42 x 3	600	443

Table 10.4 Dimensions and Torque Specifications – S Series

Size	Minimum Tube Wall Thickness	Torque Value	
		Nm	lbf·ft
6	6 x 2	35	26
8	8 x 1.5	55	41
10	10 x 1.5	70	52
12	12 x 1.5	85	63
14	14 x 2	110	81
16	16 x 1.5	120	89
20	20 x 2	200	148
25	25 x 2.5	340	251
30	30 x 3	480	354
38	38 x 4	850	627

10.2 Conversion Chart

This manual uses both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 10.5 Conversion Chart

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

10.3 Definitions

The following terms, abbreviations, and acronyms are used in this instruction.

Table 10.6 Definitions

Term	Definition
AHHC	Automatic header height control
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener designed to be paired with a nut
FFFT	Flats from finger tight
Field configuration	Also known as working position. The configuration of the machine when working in the field.
Finger tight	A reference position in which the given sealing surfaces or components are making contact with each other. The fitting has been tightened by hand to a point where the fitting is no longer loose and cannot be tightened further by hand
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for the original 37° flared fitting
n/a	Not applicable
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-Ring Seal
RED	Rotary end divider
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread when it is inserted into a mating part.
Shipping configuration	The configuration of the machine when it is shipped from the factory
TED	Tall end divider
Tension	An axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.). This term can also be used to describe the force a belt exerts on a pulley or sprocket
TFFT	Turns from finger tight
Torque	The product of a force * the length of a lever arm, usually measured in Newton-meters (Nm), foot-pounds (lbf·ft), or inch-pounds (lbf·in)
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw

Transport configuration	The configuration of the machine when it is being transported between fields.
Washer	A thin cylinder with a hole or a slot located in the center, used as a spacer, a load distribution element, or a locking mechanism

Predelivery Checklist

Perform these checks and adjustments before delivering the machine to your Customer. If adjustments are required, refer to the appropriate page number in this manual. The completed Checklist should be retained by either the Operator or the Dealer.

CAUTION

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

Header Serial Number: _____

✓	Step	Item	Reference
	1	Check for shipping damage and missing parts	*3.2 Inspecting Header*
	2	Verify that the input gearbox configuration is correct for the combine	*3.2 Inspecting Header*
	3	Verify that the gathering chain tool is present	*3.2 Inspecting Header*
	4	Verify that the operator's manual and parts catalog are present	3.2 Inspecting Header
	5	Verify that the hydraulic, electrical, and transition frame completion is correct for the combine	*3.2 Inspecting Header*
		Check the snapping roll clearances	*4.1 Preparing Header While in Standing Position*
		Check the vine knife clearances	*4.1 Preparing Header While in Standing Position*
		Ensure the chopper gearboxes are fully engaged prior to runup (if applicable)	*4.1 Preparing Header While in Standing Position*
		Ensure that the chopper knives rotate freely (if applicable)	*4.1 Preparing Header While in Standing Position*
		Ensure that the clearance lights are in field configuration	*4.4 Preparing Header for Combine Attachment*
		Pick up the header with the combine	*4.5 Attaching Header to Combine*
		Ensure the transition frame latches are properly secured to the feeder house	*4.5.1 Adjusting Latching Hooks*
		Ensure that the drive shafts are properly connected to the combine feeder house	*4.5.2 Attaching Driveshafts to Combine*
		Ensure that the shipping brackets and packaging have been removed	*4.6 Removing Shipping Components*
		Ensure end dividers have been properly installed	*4.7 Installing End Dividers*
		Ensure the end divider latches are properly adjusted and secured	*4.7.4 Checking and Adjusting End Divider Latches*
		Ensure that the snouts have all been attached	*4.8 Installing Snouts and Snout Height Supports*

		Ensure that center steel skids have been installed.	*4.10 Installing Row Unit Skid Shoes*
		Verify that the power harness has been installed on the combine	*4.11.1 Installing Battery Power Harness*
		Verify that the cab harness has been installed on the combine	*4.11.2 Installing In Cab Harness and Display Module*
		Verify that the cab controller has been installed in the combine cab and is in a secure location	*4.11.2 Installing In Cab Harness and Display Module*
		Ensure auto header height control (AHHC) wires are connected and secure.	*4.8 Installing Snouts and Snout Height Supports*
		Ensure that row guidance wires are connected and secure (if applicable)	*5.12.1 Checking and Adjusting Row Guidance Sensor Linkage*
✓	**Step**	**Item**	**Reference**
		Check the header angle	*5.1 Checking and Adjusting Header Angle*
		Set the snout tip height	*5.2 Checking and Adjusting Snout Height*
		Check the snapping plate clearances	*5.3 Checking and Adjusting Snapping Plate Gap*
		Ensure the correct auger flighting is installed for the conditions	*5.6 Checking and Adjusting Auger Flighting Configuration*
		Check the auger clearances	*5.7 Checking and Adjusting Auger Position*
		Check the auger drive chain tension	*5.9 Checking and Adjusting Auger Drive Chain Tension*
		Check the fluid level in the input drive gearbox(es) and input driven gearbox(es)	*5.15.1 Checking and Adjusting Oil Level – Drive and Driven Gearboxes*
		Check the fluid level in the snapping unit gearbox	*5.15.2 Checking and Adjusting Lubricant Level – Snapping Unit Gearbox*
		Check the fluid level in the chopper gearbox (if applicable)	*5.15.3 Checking and Adjusting Oil Level – Stalk Chopper Gearbox (Option)*
		Grease all bearings and drivelines	*5.16 Lubricating Header*
		Configure combine header settings	*Chapter 6: Configuring Combine*
		Check that the FlexCorn application loads onto the combine display	*Chapter 7: MacDon FlexCorn Application*
		Configure FlexCorn application for correct combine and header type	*Chapter 7: MacDon FlexCorn Application*
		Configure Rotary End Divider settings in the FlexCorn application	*Chapter 6: Configuring Combine*
		Ensure that the wing position sensors are properly adjusted	*5.13 Wing Position Sensors*
		Ensure that the skid shoe proximity switches are properly adjusted	*5.14 Adjustable Skid Shoe Proximity Sensors*
		Lock links	*8.6 Locking and Unlocking Wing Lock Links*
		Calibrate header in FlexCorn application	*8.2 Calibrating Header Flex System in FlexCorn Application*

		Calibrate the AHHC in FlexCorn application	*8.3 Calibrating AHHC in FlexCorn Application*
		Calibrate combine AHHC	*8.4 Calibrating Combine*
		Run up the header in forward and reverse	*Chapter 8: Header Calibrations & Run Up*
		Ensure header enters Service, Rigid, and Flex modes	*Chapter 8: Header Calibrations & Run Up*
		Check the header speed	*Chapter 8: Header Calibrations & Run Up*
		Check for loose hardware	—

Date Checked: Checked by:

Recommended Fluids and Lubricants

Ensure your machine operates at top efficiency by using clean fluids and lubricants only.

- Use clean containers to handle all fluids and lubricants.
- Store fluids and lubricants in an area protected from dust, moisture, and other contaminants.

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance with 1% max. molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
		High temperature extreme pressure (EP) performance with 10% max. molybdenum disulphide (NLGI Grade 2) lithium base	Header drive shaft	—
Semi-fluid grease	EP-00	Extreme pressure (EP) performance with lithium base	Row unit main gearbox	2.5 liters (2.6 quarts)
Gear lubricant	SAE 80W-140 or SAE 85W-140	API service class GL-5	Stalk chopper gearbox	0.3 liters (0.3 quarts)
			Input drive and driven gearboxes	0.9 liters (1.0 quarts)
Chain lubricant	Chain lubricant or SAE 30W oil	Chain oil is formulated to provide good wear protection and resistance to foaming. It protects the chain and drive sprockets against wear.	Auger drive chain, hex shaft chain couplings, and snapping plate indicator cable	—

MacDon

CUSTOMERS

MacDon.com

DEALERS

Portal.MacDon.com

Printed in Hungary