D65
Combine Draper Header with CA25
Combine Adapter

Unloading and Assembly Instructions (North America)

147939 Revision A
2017 Model Year
Original Instruction

The harvesting specialists.
Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for the MacDon D65 Combine Draper Header with CA25 Combine Adapter.

To ensure your customers receive the best performance and safety from this product, carefully follow the unload and assembly procedure from the beginning through to completion.

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

Retain this instruction for future reference.

NOTE:
Keep your MacDon publications up-to-date. The latest version can be downloaded from our website (www.macdon.com) or from our Dealer portal (https://portal.macdon.com) (login required).
## List of Revisions

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

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1 Safety

1.1 Signal Words

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

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

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

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

⚠️ CAUTION

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for job at hand. Do NOT take chances. You may need the following:
  - Hard hat
  - Protective footwear with slip resistant soles
  - Protective glasses or goggles
  - Heavy gloves
  - Wet weather gear
  - Respirator or filter mask

- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as ear muffs or ear plugs to help protect against objectionable or loud noises.

- Provide a first aid kit for use in case of emergencies.

- Keep a fire extinguisher on the machine. Be sure fire extinguisher is properly maintained. Be familiar with its proper use.

- Keep young children away from machinery at all times.

- Be aware that accidents often happen when Operator is tired or in a hurry. Take time to consider safest way. Never ignore warning signs of fatigue.
• Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.

• Keep all shields in place. NEVER alter or remove safety equipment. Make sure driveline guards can rotate independently of shaft and can telescope freely.

• Use only service and repair parts made or approved by equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.

• Keep hands, feet, clothing, and hair away from moving parts. NEVER attempt to clear obstructions or objects from a machine while engine is running.

• Do NOT modify machine. Non-authorized modifications may impair machine function and/or safety. It may also shorten machine’s life.

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

• Keep service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.

• Keep work area well lit.

• Keep machinery clean. Straw and chaff on a hot engine is a fire hazard. Do NOT allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before storage.

• NEVER use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.

• When storing machinery, cover sharp or extending components to prevent injury from accidental contact.
1.3 Safety Signs

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

Figure 1.7: Operator's Manual Decal
2 Unloading Header and Adapter

Perform all procedures in order in which they are listed.

2.1 Unloading Header and Adapter from Trailer

The following procedure applies when two headers are shipped on a trailer.

⚠️ CAUTION
To avoid injury to bystanders from being struck by machinery, do NOT allow people to stand in unloading area.

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

IMPORTANT:
Forklifts are normally rated with load centered 610 mm (24 in.) from back end of forks. To obtain forklift capacity for a load centered at 1220 mm (48 in.), check with your forklift distributor.

Table 2.1 Lifting Vehicle

<table>
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<tr>
<th>Minimum Lifting Capacity</th>
<th>4082 kg (9000 lb.) load center (A) at 1220 mm (48 in.) (B) from back of forks</th>
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<tr>
<td>Minimum Fork Length (C)</td>
<td>1981 mm (78 in.)</td>
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To unload headers and adapters from a trailer, follow these steps:

1. Move trailer into position and block trailer wheels.
2. Lower trailer storage stands.

IMPORTANT:
Avoid lifting second header and ensure forks do not interfere with shipping frame. If forks contact second header, damage to headers may occur.
3. Approach header and line up forks (A) with fork slider channels (B) under adapter frame.
4. Slide forks (A) underneath fork slider channels (B) as far as possible without contacting shipping support of opposite header.
5. Remove hauler’s tie-down straps, chains, and wooden blocks.

**WARNING**

Be sure forks are secure before moving away from load. Stand clear when lifting.

7. Back up until unit clears trailer and slowly lower to 150 mm (6 in.) from ground.

8. Take header to storage or setup area. Ensure ground is flat and free of rocks or debris that could damage header.
9. Repeat above steps for second header.
10. Check for shipping damage and missing parts.
2.2 Lowering Header

1. Approach underside of header with lifting vehicle.

2. Attach chain to shipping support (A) at center reel arm.

   **IMPORTANT:**
   Do **NOT** attempt to lift at cutterbar when unloading from trailer. This procedure is **ONLY** for laying machine over into working position.

   **CAUTION**
   Stand clear of header when lowering. Machine may swing.
3. Back up SLOWLY while lowering forks until header rests on ground.

Figure 2.6: Lowering Header
4. Place 150 mm (6 inch) blocks (A) under each end and at center of cutterbar, then lower header onto blocks.

5. Remove chain.

Figure 2.7: Blocks at Each End of Cutterbar
2.3 Removing Shipping Stands

NOTE:
Unless otherwise specified, discard stands, shipping material, and hardware. The removable stands are painted yellow.

1. Remove two bolts (A) securing right fork slider channel to brace (C).

   NOTE:
   To access bolts at lower fork slider brace, header must be supported on 150 mm (6 in.) blocks. Refer to Step 4, page 9.

2. Remove two bolts (B) securing right fork slider channel to lower brace (D).

3. Repeat steps above for left side.

4. Remove bottom brace (A).

   Figure 2.8: Fork Slider Channels

   Figure 2.9: Lower Brace Removal
5. Remove two bolts (A) and then two bolts (B) from upper brace. Repeat for opposite side.
6. Remove right and left fork slider channels.

7. Remove upper brace (A).
8. Remove four bolts (A), and remove braces (B) from bottom of adapter.

9. Remove two bolts from bottom multicoupler guard bracket (A).

10. Remove four bolts securing clamps at top bracket (B).

11. Remove multicoupler guard (C).

12. Loosen three bolts (A) in each endshield guard and remove guards. Hardware can be removed when header endshields are open.
13. **30- to 45-foot headers**: Remove four bolts (A) and two bolts (B) from shipping stands at both outboard header legs. Remove stands.

14. Remove reel anti-rotation strap (A) between reel and endsheet.
15. **Single Reel**: Remove center shipping support by removing two bolts (A) at backtube and three bolts (B) at cutterbar.

**IMPORTANT:**
Do **NOT** remove center shipping support from double-reel headers at this time. Reel center arm must be supported until reel lift cylinders are installed.

![Figure 2.17: Single-Reel Shipping Support](image URL)
3 Assembling Header and Adapter

Perform all procedures in order in which they are listed.

3.1 Attaching Reel Lift Cylinders

Unless otherwise stated, the following procedure applies to single and double-reel headers.

Figure 3.1: Reel Right Arm (Parts Removed for Clarity)
Top Image - Single Reel
Bottom Image - Double Reel

Figure 3.2: Reel Left Arm
1. Remove two top bolts (A) on outboard reel arm supports. Repeat for opposite side.

2. **Double-reel headers:** Remove two top bolts (A) on center reel arm to allow center reel arm to move.

3. Position sling (A) around reel tube (B) close to outboard end of reel, and attach sling to a forklift (or equivalent).

4. Remove shipping wire/banding from reel lift cylinder.
5. Lift reel, and remove pins from endsheet and reel arm.

6. Align reel lift cylinder mounting holes until they line up with lug on endsheet and hole in reel arm.

7. Secure cylinder to endsheet and reel arm with clevis pins (A) and (B) as shown.
   - Insert cotter pin into clevis pin (A) on OUTBOARD side of reel arm
   - Insert cotter pin into clevis pin (B) on INBOARD side of endsheet

8. **Double reel**: Position sling (A) around reel tube near reel center support arm.

9. **Double reel**: Lift reel to gain access to center lift cylinder.

10. **Double reel**: Remove shipping wire and banding from reel center lift cylinder. Remove socket head bolt and nut from cylinder rod.
11. **Double reel:** Lift reel so that hole in center lift cylinder rod lines up with mounting hole in reel arm.

12. **Double reel:** Attach rod end of cylinder to reel arm with socket head bolt and nut (A). Access hardware through holes in reel arm braces.

13. **Double reel:** Torque bolt and nut (A) to 54–61 N·m (40–45 ft·lbf).

14. **Double reel:** Remove pin at barrel end of cylinder.

15. **Double reel:** Adjust reel height so pin can be installed at barrel end of cylinder and mounting structure.

16. Reposition sling (A) around reel tube near opposite outboard reel arm.

17. Remove shipping wire and banding from reel lift cylinder.

---

**Figure 3.8: Reel Arm Braces**

**Figure 3.9: Lifting Reel**
18. Lift reel and remove pins from endsheet and reel arm.

19. Align reel lift cylinder mounting holes until they line up with lug on endsheet and hole in reel arm.

20. Secure cylinder to endsheet and reel arm with clevis pins (A) and (B) as shown.
   - Insert cotter pin into clevis pin (A) at **OUTBOARD** side of reel arm
   - Insert cotter pin into clevis pin (B) at **INBOARD** side of endsheet

21. **Double reel**: Remove remaining bolt (A), disengage center reel arm shipping support (B) from cutterbar, and remove shipping support.
22. Remove bolts (A) from reel arm support at endsheet, and remove support. Repeat at other side.

Figure 3.12: Reel Outboard Arm Support
23. Remove brace bolts and tags (A) locking reel fore-aft position at outer reel arms.

**IMPORTANT:**
To prevent damaging fore-aft cylinders or structure, do **NOT** use fore-aft cylinders to assist with removing bolts.

Figure 3.13: Reel Right Arm
Top Image - Single Reel
Bottom Image - Double Reel

Figure 3.14: Reel Left Arm
24. **Double reel:** Remove remaining three bolts (A) locking reel fore-aft position at center reel arm, and remove shipping channel (B).

25. **Double reel:** Proceed to 3.4 Setting up Combine Adapter, page 28.
3.2 Installing Cutterbar Components: Single Reel

Guards, hold-downs and wear plates were removed so that a special shipping beam could be installed for shipping and need to be re-installed. A plastic bag wired to header contains these parts and hardware.

1. Retrieve plastic bag of parts from header.
2. Install cutterbar components in accordance with either:
   - 3.2.1 Formed Hold-Down, page 23
   - 3.2.2 Forged Hold-Down (Stub Guard Only), page 24

3.2.1 Formed Hold-Down

1. Position cutterbar wear plate (A) on cutterbar and install two 7/16 in. x 1-1/2 in. long special carriage bolts (B) provided.

![Figure 3.16: Cutterbar Wear Plate](image)
2. Place hold-down (A) on cutterbar as shown, and secure with existing nuts (B). Adjuster bolt (C) should not require adjusting.

3. Repeat previous steps for second (adjacent) location.

4. Torque nuts to 72 N·m (53 ft·lbf).

3.2.2 Forged Hold-Down (Stub Guard Only)

1. Position cutterbar wear plate (A) on cutterbar and install with two 7/16 in. x 1-1/2 in. long special carriage bolts (B).
2. Place adjuster plate (D) and hold-down (A) on cutterbar as shown, and secure with 7/16 in. hex nuts (B). Adjuster bolt (C) should not require adjusting.

3. Repeat previous steps for second (adjacent) location.

4. Torque nuts to 72 N·m (53 ft·lbf).

Figure 3.20: Stub Guard
3.3 Repositioning Gearbox

1. Remove shipping wire from driveline (A).

2. Remove shipping wire and wrapping on brace (A) and swing brace clear of gearbox.

3. Loosen nut (A) and move bolt out of shipping position slot.
4. Rotate gearbox and insert bolt into working position slot (A). Tighten nut.

5. Remove bolt and nut from bracket on gearbox.

6. Position brace (A) inside bracket and reinstall bolt and nut (B).
3.4 Setting up Combine Adapter

Complete the following procedures in order in which they are listed:

- 3.4.1 Installing Filler Cap, page 28
- 3.4.2 Removing Auger Flighting Extensions, page 30
- 3.4.3 Removing Stripper Bars, page 31
- 3.4.4 Replacing Feeder Deflectors: New Holland CR Combines, page 31

3.4.1 Installing Filler Cap

1. Remove filler cap from bag (A).

⚠️ CAUTION

Fluid may be under pressure. Allow pressure to equalize by loosening screws and lifting shipping cover slightly.

2. Remove yellow shipping cover (A) from adapter frame. Discard cover. Retain screws.
3. Remove top gasket (A) for use in next step.

**NOTE:**
There are two gaskets—one on either side of filler strainer flange.

4. Place gasket (A) (removed from top of filler strainer) onto filler cap neck (B), and align holes.

5. Install #10-32 screws on filler cap neck (B) pressing screws through gasket (A).

6. Apply Loctite® #565 (or equivalent) to screws.

7. Place filler cap neck (A) (complete with screws) over opening. Ensure machine screws are aligned with threaded holes.

8. Carefully thread in machine screws according to numbered sequence as shown to prevent cross threading.

9. Torque screws to 3.5 N·m (31 in·lbf) according to numbered sequence.
10. Install filler cap (A).

3.4.2 Removing Auger Flighting Extensions

Flighting extension kits may have been supplied with your header to improve feeding in certain crops such as rice. They are **NOT** recommended for cereal crops. If necessary, remove auger flighting extensions as follows:

**NOTE:**
Do **NOT** use flighting extensions on New Holland CR960, 9060, 970, 9070, and 9080 combines.

1. Remove access cover (A).
2. Remove eight bolts (B), washers, and nuts that secure flighting extension (C) to auger, and remove extension.
3. Repeat for other flighting extensions.
4. Reinstall access cover (A).
3.4.3 Removing Stripper Bars

Stripper bar kits may have been supplied with your header to improve feeding in certain crops such as rice. They are NOT recommended for cereal crops.

NOTE:
The following procedure does NOT apply to New Holland CR960, 9060, 970, 9070, and 9080 combines. For these combines, proceed to 3.4.4 Replacing Feeder Deflectors: New Holland CR Combines, page 31.

If necessary, remove auger stripper bars as follows:
1. Remove four bolts (A) and nuts securing bars (B) to adapter frame, and remove bars.
2. Repeat for opposite set of stripper bars.
3. Proceed to 3.5 Attaching Header to Combine, page 33.

3.4.4 Replacing Feeder Deflectors: New Holland CR Combines

If header is configured for a New Holland CR 960, 9070, or 9080 combine, adapter has a factory-installed feeder deflector kit to improve feeding into feeder house. The kit can be replaced if necessary.

⚠️ DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.

The D65/CA25FD75/CA25 combine completion package for New Holland models includes both a short feeder kit (installed at factory) and a long feeder kit for narrow feeder house combines. Refer to Table 3.1 CA25 Feeder Kits for CR Model Combines, page 31.

Table 3.1 CA25 Feeder Kits for CR Model Combines

<table>
<thead>
<tr>
<th>Combine Model</th>
<th>Feeder House Size</th>
<th>Feeder Kit Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR970, 9070, 9080</td>
<td>Wide</td>
<td>Short: 200 mm (7-7/8 in.)</td>
</tr>
<tr>
<td>CR960, 9060, 940, 9040</td>
<td>Narrow</td>
<td>Long: 325 mm (12-13/16 in.)</td>
</tr>
</tbody>
</table>
If required, replace feeder deflectors as follows:

1. Determine position of existing deflector (A) by measuring gap (X) between deflector’s forward edge and pan. Record this measurement.

2. Remove two bolts and nuts (B) securing deflector (A) to adapter frame and remove deflector.

3. Position replacement deflector and reinstall bolts and nuts (B). Do NOT tighten bolts.

4. Set gap (X) to dimension recorded in Step 1., page 32 and tighten bolts.

5. Repeat for opposite deflector.

**CAUTION**

Never start or move the machine until you are sure all bystanders have cleared the area.

6. Attach header to a combine, fully extend center-link.

7. Turn off combine and remove key from ignition.

8. Recheck gap (X) between deflector (A) and the pan.

**NOTE:**

The minimum gap when attached to combine should be 22 +/- 3 mm (7/8 +/- 1/8 in.).

9. If necessary, detach header from combine and adjust deflector to achieve minimum gap.
### 3.5 Attaching Header to Combine

The procedures for attaching header to a combine vary depending on combine model. Refer to the following table for appropriate procedure:

**Table 3.2 Combine Model Header Attachment Procedures**

<table>
<thead>
<tr>
<th>Combine</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGCO Gleaner R and S Series; Challenger 660, 670, 680B, 540C, and 560C; Massey 9690, 9790, 9895, 9520, 9540, and 9560</td>
<td>3.5.1 Attaching Header to a Challenger, Gleaner, or Massey Ferguson Combine, page 33</td>
</tr>
<tr>
<td>Case IH 7010, 8010, 7120, 8120, 9120, 5088, 6088, 7088, 5130, 6130, 7130, 7230, 8230, and 9230</td>
<td>3.5.2 Attaching Header to Case IH Combine, page 38</td>
</tr>
<tr>
<td>John Deere 60, 70, and S Series</td>
<td>3.5.3 Attaching Header to John Deere Combine, page 44</td>
</tr>
<tr>
<td>Lexion 500 and 700 (R Series)</td>
<td>3.5.4 Attaching Header to Lexion Combine, page 47</td>
</tr>
<tr>
<td>New Holland CR and CX</td>
<td>3.5.5 Attaching Header to New Holland CR/CX Combine, page 52</td>
</tr>
</tbody>
</table>

**NOTE:**
Kits are available to allow attachment to Case 23 and 25 Series combines, as well as to John Deere 50 Series combines.

**IMPORTANT:**
Ensure applicable functions (Automatic Header Height Control [AHHC], Draper Header Option, Hydraulic Center-Link Option, Hydraulic Reel Drive, etc.) are enabled on combine and in combine computer. Failure to do so may result in improper header operation.

#### 3.5.1 Attaching Header to a Challenger, Gleaner, or Massey Ferguson Combine

⚠️ **DANGER**

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

1. Use lock handle (B) to retract lugs (A) at base of feeder house.

![Figure 3.37: AGCO Group Feeder House](image)
CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

2. Start engine and slowly approach header until feeder house is directly underadapter top cross member (A) and alignment pins (C) on feeder house (shown in Figure 3.39: AGCO Group Alignment Pins, page 34) are aligned with holes (B) in adapter frame.

NOTE:

Feeder house may not be exactly as shown.

3. Raise feeder house slightly to lift header, ensuring feeder house saddle (A) is properly engaged in adapter frame.

4. Stop engine and remove key from ignition.
5. Use lock handle (B) to engage lugs (A) with adapter.

![Figure 3.41: AGCO Group Feeder House](image)

**CAUTION**

*Never start or move the machine until you are sure all bystanders have cleared the area.*

6. Start engine and lower header.

7. Stop engine and remove key from ignition.

**NOTE:**

The CA25 Combine Adapter is equipped with a multicoupler that connects to combine. If combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table 3.3 Multicoupler Kits, page 35 for a list of kits and installation instructions that are available through your combine Dealer.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Kit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenger</td>
<td>71530662</td>
</tr>
<tr>
<td>Gleaner R/S Series</td>
<td>71414706</td>
</tr>
<tr>
<td>Massey Ferguson</td>
<td>71411594</td>
</tr>
</tbody>
</table>

8. Raise handle (A) to release multicoupler (B) from adapter.

![Figure 3.42: Adapter Multicoupler](image)
9. Push handle (A) on combine to fully open position.
10. Clean mating surfaces of multicoupler (B) and receptacle if necessary.

11. Position multicoupler (A) onto combine receptacle, and pull handle (B) to fully engage multicoupler into receptacle.
12. Connect eel fore-aft/header tilt selector harness (C) to combine harness (D).

13. Remove shipping wire from driveline (A) and float lock lever (B).
ASSEMBLING HEADER AND ADAPTER

14. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.

15. Pull back collar (A) on end of driveline, and push driveline onto combine output shaft (B) until collar locks.
3.5.2 Attaching Header to Case IH Combine

⚠️ DANGER

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

1. On upper left side of combine adapter, remove nut (A) and flip lever (B) horizontally.

2. Position lever (A) onto stud (B).
3. Place spring arm (C) into hook on lever (B) to preload it, and tighten nut (A) with washer onto combine adapter.

4. On combine, ensure lock handle (A) is positioned so hooks (B) can engage adapter.

**CAUTION**

Never start or move the machine until you are sure all bystanders have cleared the area.

5. Start engine and slowly drive combine up to header until feeder house saddle (A) is directly under adapter top cross member (B).

6. Raise feeder house slightly to lift header, ensuring feeder saddle is properly engaged in adapter frame.

7. Stop engine and remove key from ignition.
8. On left side of feeder house, lift lever (A) on adapter and push handle (B) on combine to engage locks (C) on both sides of feeder house.

9. Push down on lever (A) so slot in lever engages handle and locks handle in place.

10. If lock (C) does not fully engage pin on adapter, loosen bolts (D) and adjust lock. Retighten bolts.

11. Open receptacle cover (A) on adapter.

12. Press lock button (B) and pull handle (C) to fully open position.

13. Clean receptacle mating surfaces.

14. Remove hydraulic quick coupler (A) from combine and clean mating surfaces.
15. Position coupler onto adapter receptacle (A) and push handle (B) (not shown) to engage multicoupler pins into receptacle.

16. Push handle (B) to closed position until lock button (C) snaps out.

17. Remove cover from electrical receptacle (A). Ensure receptacle is clean and has no signs of damage.

18. Remove electrical connector (A) from storage cup on combine, and route it to adapter receptacle.
19. Align lugs on connector (A) with slots in receptacle (B), push connector onto receptacle, and turn collar on connector to lock it in place.

20. Remove shipping wire (A) from driveline and float lock lever (B).

21. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.
22. Pull back collar (A) on end of driveline and push driveline onto combine output shaft (B) until collar locks.

23. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).
3.5.3 Attaching Header to John Deere Combine

⚠️ DANGER

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

1. Push handle (A) on combine multicoupler receptacle towards feeder house to retract pins (B) at bottom corners of feeder house. Clean the receptacle.

⚠️ CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

2. Start engine and slowly drive combine up to header until feeder house saddle (C) is directly under adapter top cross member (D).

3. Raise feeder house slightly to lift header ensuring feeder house saddle is properly engaged in adapter frame.

4. Stop engine and remove key from ignition.

5. Pull handle (A) on adapter to release multicoupler (B) from storage position. Remove multicoupler, and push handle back into adapter to store.

6. Position multicoupler (A) onto receptacle, and pull handle (B) to engage lugs on multicoupler into the handle.

7. Pull handle (B) to a horizontal position and ensure multicoupler (A) is fully engaged into receptacle.
8. Ensure that both feeder house pins (C) are fully engaged into adapter brackets.

**NOTE:**
If pins (C) do not fully engage adapter brackets, loosen bolts (D) and adjust bracket as required.

9. Tighten bolts (D).

10. Slide latch (A) to lock handle (B) in position and secure with lynch pin (C).

11. Connect harness (D) to combine connector (E).

12. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.
13. Pull back collar (A) on end of driveline, and push driveline onto combine output shaft (B) until collar locks.

14. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).
### 3.5.4 Attaching Header to Lexion Combine

**DANGER**

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

1. Move handle (A) on CA25 Combine Adapter into raised position, and ensure pins (B) at bottom corners of adapter are retracted.

**CAUTION**

Never start or move the machine until you are sure all bystanders have cleared the area.

2. Start engine and slowly drive combine up to header until feeder house saddle (A) is directly under adapter top cross member (B).

3. Raise feeder house slightly to lift header ensuring feeder saddle is properly engaged in adapter frame.

4. Stop engine and remove key from ignition.

5. Remove locking pin (B) from adapter pin (A).
6. Lower handle (A) to engage pins (B) into feeder house. Reinsert locking pin (C) and secure with the hairpin.

7. Remove blocks from under cutterbar.

⚠️ CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

8. Start engine and lower header.

9. Stop engine and remove key from ignition.

10. Unscrew knob (A) on combine coupler (B) to release coupler from combine receptacle and clean coupler.

11. Remove CA25 receptacle cover (A).
12. Place CA25 receptacle cover (A) onto combine receptacle.

13. Clean mating surface of coupler (A) and position onto CA25 receptacle (B).

14. Turn knob (C) to secure coupler to receptacle.

15. Connect combine harness (D) to reel fore-aft/header tilt selector receptacle (E).

16. Remove shipping wire from driveline (A) and float lock lever (B).
17. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.

18. Attach driveline (A) to combine output shaft.
19. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

Figure 3.83: Float Lock in UNLOCK Position
3.5.5 Attaching Header to New Holland CR/CX Combine

⚠️ DANGER

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

1. On upper left side of combine CA25, remove nut (A) and flip lever (B) horizontally.

2. Position lever (A) onto stud (B).

3. Place spring arm (C) into hook on lever (B) to preload it, and tighten nut (A) with washer.
4. Ensure handle (A) is positioned so hooks (B) can engage CA25 adapter.

**CAUTION**

Never start or move the machine until you are sure all bystanders have cleared the area.

5. Start engine and slowly drive combine up to CA25 until feeder house saddle (A) is directly under CA25 top cross member (B).

6. Raise feeder house slightly to lift header ensuring feeder saddle is properly engaged in CA25 frame.

7. Stop engine and remove key from ignition.

8. Lift lever (A) on CA25 on left side of feeder house, and push handle (B) on combine to engage locks (C) on both sides of feeder house.

9. Push down on lever (A) so slot in lever engages handle and locks handle in place.

10. Loosen bolts (E) and adjust lock (C) if lock does not fully engage pin on CA25 when lever (A) and handle (B) are engaged. Retighten bolts.
11. Open receptacle cover (A) on CA25.

12. Push in lock button (B) and pull handle (C) to full open position.

13. Clean receptacle mating surfaces.

14. Remove hydraulic quick coupler (A) from storage plate on combine, and clean mating surface of coupler.

15. Position coupler (A) onto CA25 receptacle, and push handle (B) to engage pins into receptacle.

16. Push handle (B) to closed position until lock button (C) snaps out.

17. Remove cover on CA25 electrical receptacle.

18. Remove connector (D) from combine.

19. Align lugs on connector (D) with slots in CA25 receptacle, and push connector onto receptacle. Turn collar on connector to lock it in place.
20. Remove shipping wire from driveline and float lock lever.

21. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.

22. Pull back collar on end of driveline, and push driveline onto combine output shaft (A) until collar locks.
23. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

Figure 3.96: Float Lock in UNLOCK Position
3.6 Attaching Cam Arms

1. Rotate reel manually until tine bars with disconnected cam links are accessible.
2. Remove shipping wire (A) if not already removed.

3. Install cam arm (A) with preinstalled stub (B) into disc. Secure with 1/2 inch smooth face lock nut (C) and torque to 75 N·m (55 ft·lbf).

4. Attach cam link to tine bar crank as follows:
   a. Rotate tine bar crank (D) and position link (A) until attachment holes in bar crank and link are approximately aligned.
   b. Install bolt (B) in link (A) and position shim (C) on bolt so that shim is between link and tine bar crank (D).

   **NOTE:**
   Bolts are precoated with Loctite®; no further locking method is required.
   
   c. Realign link (A) and tine bar crank (D) and thread in bolt (B).
   d. Repeat for remaining tine bars and torque bolts to 165 N·m (120 ft·lbf).

Figure 3.100: Cam Linkage: 6-Bat Reel

Figure 3.101: Cam Linkage: 9-Bat Reel

A - Cam Arm
B - Preinstalled Stud
D - Tine Bar Crank
E - Link
F - Bolt
3.7 Removing Shipping Supports

The shipping supports are painted yellow, remove supports as follows:

**NOTE:**
Unless otherwise specified, discard supports as well as all shipping material and hardware.

1. Remove two bolts (A) and remove strap (B) from both sides of center frame.

   **NOTE:**
   If strap is difficult to remove, lift on one end of header to release load on strap so that bolts can be removed.

2. Remove lynch pin (A), nut and bolt (B), and remove shipping brace (C).

3. Reinstall lynch pin (A).

Figure 3.102: Strap on Center Frame

Figure 3.103: Shipping Brace
3.8 Positioning Transport Lights

Transport lights are located on each of outboard reel arms.

1. Position light (A) perpendicular to header. Light arm should move with normal hand force yet maintain its position. If not, proceed to next step.

2. Loosen jam nut (B) on light attachment bolt, and adjust hex nut (C) as required. Tighten jam nut (B).

3. Repeat above for opposite side.

Figure 3.104: Transport Light
3.9 Opening Endshield

1. Remove lynch pin (A) and tool (B) from pin (C) at top rear of endshield.

2. Use tool (B) to unlock latch (A) at lower rear corner of endshield.

3. Lift endshield at aft end to clear pin at top rear of endshield.

4. Swing endshield out and away from header while maintaining forward pressure to prevent endshield from slipping out of tab (C) at front of endsheet.

**IMPORTANT:**
Do NOT force endshield once it has reached its end of travel or damage to endshield structure may result. The endshield is designed to open sufficiently to allow access to drive system and manual case.

**NOTE:**
If additional access is required to front of drives area, carefully disengage front of endshield from tab (C) at front of endsheet and swing front of endshield away from header.
3.10 Removing Crop Dividers from Storage

Crop dividers are shipped attached to inboard side of endsheets. To remove crop dividers, follow these steps:

1. Open endshields. Refer to 3.9 Opening Endshield, page 61 Opening Endshield.

2. Support crop divider and remove shipping wire at front end (A).

3. Remove bolt (B).

4. Remove bolt with washer (C) and retain for installation.

5. Repeat above steps for opposite end.

Figure 3.108: Crop Divider Storage
3.11 Installing Crop Dividers without Latch Option

NOTE:
If crop divider latch option was ordered with header, proceed to 3.12 Installing Crop Dividers with Latch Option, page 64. Otherwise, complete the following procedure:

1. If not already open, open endshields. Refer to Opening Endshield.
2. Position crop divider as shown by inserting lugs (A) into holes (B) in endsheet.

3. Lift forward end of crop divider and install bolt (B) and special stepped washer (A) (step towards divider). Tighten bolt.

4. Check that divider does not move laterally. Adjust bolts (A) as required to tighten divider and remove lateral play when pulling at divider tip.

5. Close endshield. Refer to Closing Endshield.
3.12 Installing Crop Dividers with Latch Option

1. If not already open, open endshields. Refer to Opening Endshield.

2. Position crop divider as shown by inserting lugs (A) into holes in endsheet.

3. Lift forward end of divider until pin (B) engages and closes latch (C).

4. Push safety lever (D) down to lock pin in latch.

5. Close endshield. Refer to Closing Endshield.
3.13 Closing Endshield

1. Maintain forward pressure and swing the rear of the endshield towards the header.

2. Lift the endshield and engage pin (A) located on the top of the endsheet frame with the hole in endshield (B).

3. Push in the endshield to engage lower latch (A).

4. Use tool (B) to lock lower latch (A).

5. Replace tool (B) and lynch pin (A) on top pin (C).
3.14 Installing Crop Divider Rods

1. Remove divider rods from shipping location on header endsheet.
2. Position crop divider rod (B) on tip of crop divider as shown, and tighten bolt (A).
3. Repeat procedure at opposite end of header.

Figure 3.117: Divider Rod on Crop Divider
3.15 Installing Options

1. Retrieve kits supplied as options with header and install them according to instructions supplied with each kit.
2. Proceed to 4 Performing Predelivery Checks, page 69.
4  Performing Predelivery Checks

This machine has been set at the factory and should not require further adjustments; however, the following checks will ensure your machine provides maximum performance. If adjustments are necessary, follow the procedures in this chapter.

⚠️  WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

**IMPORTANT:**
To avoid machine damage, check that no shipping dunnage has fallen into machine.

1. Perform final checks as listed on Predelivery Checklist (yellow sheet attached to this instruction – ) to ensure machine is field-ready. Refer to following pages for detailed instructions as indicated on Checklist. The completed Checklist should be retained either by Operator or Dealer.

4.1  Checking Transport / Stabilizer Tire Pressure

Check tire inflation pressure. If necessary, adjust pressure according to following table:

<table>
<thead>
<tr>
<th>Size</th>
<th>Load Range</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST205/75 R15</td>
<td>D</td>
<td>448 kPa (65 psi)</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>552 kPa (80 psi)</td>
</tr>
</tbody>
</table>

**IMPORTANT:**
Do NOT exceed maximum pressure specified on tire sidewall.
4.2 Checking Wheel Bolt Torque

Perform following procedure to ensure that transport and stabilizer wheel bolts are correctly torqued:

1. Check wheel bolt torque is 110–120 N·m (80–90 ft·lbf).
   Refer to bolt tightening sequence illustration at right.

![Figure 4.1: Bolt Tightening Sequence]
4.3 Checking Knife Drive Box

To access knife drive box, endshield must be fully opened.

1. Fully open endshield(s) for access to knife drive box. Refer to Opening Endshield.

![Figure 4.2: Left Endshield Open](image1)

**IMPORTANT:**
The knife drive box breather is shipped in position (A) (forward) to prevent oil loss during transport. The breather plug **MUST** be repositioned to location (B) to prevent oil loss during normal operation. Failure to do so can result in damage to knife drive box.

2. Check position of plug (A) and breather (B) at knife drive box. Position **MUST** be as shown. Reposition if necessary.

3. Check oil level. It should be between lower hole (C) on dipstick and bottom end of dipstick. If necessary, add oil. Use clean SAE 85W-140 lubricant.

**IMPORTANT:**
Check oil level with top of knife drive box horizontal.

4. Close endshield(s). Refer to Closing Endshield.

![Figure 4.3: Knife Drive Box](image2)
4.4 Checking Oil Level in Header Drive Gearbox

⚠️ DANGER

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

1. Lower cutterbar to ground and ensure gearbox is in working position.
2. Shut down combine and remove key from ignition.
3. Remove oil level plug (A) and check that oil level is up to bottom of hole.
4. If no oil is required, replace oil level plug (A).

Figure 4.4: Header Drive Gearbox
4.5 Checking Oil Level in Hydraulic Reservoir

1. Check oil level using lower sight (A) and upper sight (B) with cutterbar just touching the ground.

   **NOTE:**
   Check level when oil is cold and with center-link retracted.

2. Ensure oil is at appropriate level for terrain as follows:
   - **Hilly terrain:** Maintain level so lower sight (A) is full, and upper sight (B) is up to one-half filled.
   - **Normal terrain:** Maintain level so lower sight (A) is full, and upper sight (B) is empty.
   - **Level ground:** For slopes of 6° or less, oil level may be kept slightly lower if desired. Maintain level so lower sight (A) is one-half filled or slightly higher.

3. Maintain level for normal terrain (D) so lower sight (A) is full, and upper sight (B) is empty.

   **NOTE:**
   It may be necessary to slightly reduce oil level when ambient temperatures are above 35°C (95°F) to prevent overflow at breather when normal operating temperatures are reached.
4.6 Checking and Adjusting Non-Timed Knife Drive Belt Tension

This procedure applies to single and double-knife headers with non-timed knife drives.

1. Shut down combine and remove key from ignition.
2. Open endshield(s). Refer to Opening Endshield.

   **NOTE:**
   The knife drive is identical on both sides of the header for double-knife headers.

3. Apply a force of 90 N (20 lbf) to mid-span (A) of belt. The belt should deflect 18 mm (3/4 in.). If necessary, adjust tension as per the following steps.

   **IMPORTANT:**
   To prolong belt and drive life, do NOT over-tighten belt.

4. Loosen two bolts (A) that secure motor assembly to header endsheet.
5. Turn adjuster bolt (B) as required to move drive motor to achieve belt deflection as per above. Tighten bolts (A).
6. Ensure that clearance between belt (C) and belt guide (E) is 1 mm (1/32 in.).
7. Loosen three bolts (D), and adjust position of guide (E) as required.
8. Tighten bolts (D).
9. Close endshield(s). Refer to Closing Endshield.

   **NOTE:**
   Readjust tension of a new belt after a five hour run-in period.
4.7 Checking and Adjusting Timed Double-Knife Drive Belt Tension

This procedure applies to double knife drive headers with timed knife drives. Use this procedure at each end of header.

1. Open endshield(s). Refer to Opening Endshield.

2. Apply a force of 27 N (6·lbf) to timing belt at mid-span (A). Belt should deflect 13 mm (1/2 in.).

If necessary, adjust belt tension at both ends of header as follows:

**IMPORTANT:**
To prolong belt and drive life, do **NOT** over-tighten belt.

3. Loosen two nuts (A) on knife drive belt idler mounting bracket. Belt will loosen.

4. Insert a long punch (or equivalent) into hole (C) in idler bracket.

5. Pry downward until a force of 27 N (6·lbf) deflects timing belt 13 mm (1/2 in.) at mid-span as per 2, page 75.
6. Tighten nuts (A) on idler mounting bracket.
7. Close endshield(s). Refer to *Closing Endshield*.

![Figure 4.12: Knife Drive](image)
PERFORMING PREDELIVERY CHECKS

4.8 Checking and Adjusting Knife Hold-Downs

NOTE:
Align guards prior to checking and adjusting hold-downs. Refer to 6.1.1 Adjusting Knife and Guards, page 248.

Refer to following procedures as applicable:
• 4.8.1 Checking Pointed Guard Hold-Downs, page 77
• 4.8.2 Checking Stub Guard Hold-Downs, page 79

4.8.1 Checking Pointed Guard Hold-Downs

This procedure is applicable to single- and double-knife headers with pointed guards.

Measure clearance between hold-downs and knife sections as follows:

⚠️ WARNING
To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down combine, and remove key from ignition.
2. Manually stroke knife to locate section (A) under hold-down (B).
3. At standard guard locations, push knife section (A) down against guard (C) and measure clearance between hold-down (B) and knife section (A) with a feeler gauge. The clearance should be 0.1–0.6 mm (0.004–0.024 in.).
4. If necessary, refer to Adjusting Pointed Guard Hold-Downs, page 78.

Double-Knife:

5. Manually stroke knife to locate sections (A) and (C) under center hold-down (B).
6. Insert a screwdriver or equivalent between sections at center guard location to force upper section (A) against hold-down (B) and lower section (C) against guard (D).
7. Measure clearance between knife sections (A) and (C) with a feeler gauge. The clearances should be:
   • At Tip (E) of Hold-Down: 0.1–0.4 mm (0.004–0.016 in.)
   • At Rear (F) of Hold-Down: 0.1–1.0 mm (0.004–0.040 in.)
8. If necessary, refer to Adjusting Hold-Down at Double-Knife Center Pointed Guard, page 78.
PERFORMING PREDELIVERY CHECKS

Adjusting Pointed Guard Hold-Downs

This procedure is applicable to normal formed sheet metal hold-downs on single-knife (SK) and double-knife (DK) headers. Do NOT use this procedure for hold-down at center guard position where knives overlap on double-knife headers. For center guard, refer to Adjusting Hold-Down at Double-Knife Center Pointed Guard, page 78.

⚠️ WARNING
To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down combine, and remove key from ignition.
2. Decrease clearance by turning bolt (B) clockwise to lower front of hold-down (A).
3. Increase clearance by turning bolt (B) counterclockwise to raise front of hold-down.

NOTE:
For larger adjustments, it may be necessary to loosen nuts (C), turn adjuster bolt (B), and then retighten nuts.

4. Recheck clearance and readjust as required.

Adjusting Hold-Down at Double-Knife Center Pointed Guard

⚠️ WARNING
To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down combine, and remove key from ignition.
2. Manually stroke knives so that sections (A) are under hold-down (B) as shown.
3. Loosen nuts (C) and back off bolts (D) until they don’t contact cutterbar.
4. Lightly clamp hold-down (B) to guard (E) with a C-clamp or equivalent. Position clamp on trash-bar at (F) as shown.
5. Turn bolts (D) until they contact cutterbar, then tighten ONE turn.
6. Remove clamp.
7. Tighten nuts (C) and torque to 45 N-m (35 lbf-ft).
8. Check clearances. Refer to 4.8.1 Checking Pointed Guard Hold-Downs, page 77.
4.8.2 Checking Stub Guard Hold-Downs

This procedure is applicable to single- and double-knife headers with stub guards.

Measure clearance between hold-downs and knife sections as follows:

⚠️ WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down combine, and remove key from ignition.

2. Manually stroke knife to locate section under hold-down (A).

3. **Standard Guard:**
   
   At standard guard locations, push knife section (B) down against guard (C) and measure clearance between hold-down (A) and knife section (B) with a feeler gauge. The clearance should be:
   
   - **At Hold-Down Tip (D):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At Rear of Hold-Down (E):** 0.1–1.0 mm (0.004–0.040 in.)
   - **At Sheet Metal Hold-Down (F):** 0.1–0.6 mm (0.004–0.024 in.)

4. If necessary, refer to *Adjusting Stub Guard Hold-Downs, page 80.*

---

**Figure 4.17: Standard Stub Forged Hold-Down**

**Figure 4.18: Standard Stub Sheet Metal Hold-Down**
PERFORMING PREDELIVERY CHECKS

Double-Knife Center Stub Guard:
5. Manually stroke knife to locate sections under hold-down (B).
6. At center guard location, insert a screwdriver or equivalent between sections at center guard location to force upper section (A) against hold-down (B) and lower section (C) against guard (D).
7. Measure clearance between knife sections (A) and (C) with a feeler gauge. The clearance should be:
   - At Hold-Down Tip (E): 0.1–0.4 mm (0.004–0.016 in.)
   - At Rear of Hold-Down (F): 0.1–1.0 mm (0.004–0.040 in.)
8. If necessary, refer to Adjusting Stub Guard Hold-Downs, page 80.

Adjusting Stub Guard Hold-Downs

⚠️ WARNING
To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.
Forced Hold-Down:
1. Shut down combine, and remove key from ignition.
2. Manually stroke knife to center section(s) (A) under hold-down (B) as shown.
3. Loosen nuts (C) and back off bolts (D) clear of cutterbar.
4. Lightly clamp hold-down (B) to guard (E) with a C-clamp or equivalent. Position clamp on trash-bar at (F) as shown.
5. Turn bolts (D) until they contact cutterbar, then tighten ONE turn.
6. Remove clamp.
7. Tighten nuts (B) and torque to 45 N·m (35 lbf·ft).
8. Check that specified clearances are achieved. Refer to 4.8.2 Checking Stub Guard Hold-Downs, page 79.

Sheet Metal Hold-Down:
9. Manually stroke knife to center section (A) under hold-down (B) as shown.
10. Decrease clearance by turning bolt (C) clockwise to lower front of hold-down. Clearance should be 0.1–0.6 mm (0.004–0.024 in.).
11. Increase clearance by turning bolt (C) counterclockwise to raise front of hold-down.

NOTE:
For larger adjustments, it may be necessary to loosen nuts (D), turn adjuster bolt (C), and then retighten nuts.

12. Torque nuts (D) to 72 N·m (53 ft·lbf) after all adjustments are complete and specified clearances are achieved. Refer to 4.8.2 Checking Stub Guard Hold-Downs, page 79.
4.9 Centering Reel

**WARNING**

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Start engine and set cutterbar height at approximately 150 mm (6 in.) above ground.
2. Lower reel and adjust fore-aft position to 5 on reel arm indicator decal.
3. Stop engine and remove key from ignition.
4. Manually rotate reel to position a tine tube above cutterbar.
5. Measure clearance (A) at locations (B) between reel tine tube and endsheet at both ends of header. The clearances should be same if reel is centered. Refer to following steps to center reel.

**Single-Reel Headers:**

6. Loosen bolt (A) on brace (B) at both ends of the reel.
7. Move forward end of reel support arm (C) laterally as required to center reel.
8. Tighten bolts (A) and torque to 359 N·m (265 ft·lb).
PERFORMING PREDELIVERY CHECKS

Double-Reel Headers:

9. Loosen bolts (A) on braces (B) at center support arm.
10. Move forward end of reel support arm (C) laterally as required to center reel.
11. Tighten bolts (A) and torque to 359 N·m (265 ft·lbf).

Figure 4.25: Double-Reel Center Support Arm
4.10 Checking and Adjusting Header Levelness

The adapter is factory-set to provide the proper level for the header and should not normally require adjustment.

If the header is NOT level, perform the following checks prior to adjusting the levelling linkages:

- Check that header knife drive compartments are empty.
- Check combine tire pressures.
- Check that combine feeder house is level. Refer to your combine operator’s manual for instructions.
- Check that top of adapter is level and parallel with feeder house.

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

1. Park combine on level ground.
2. Set header approximately 150 mm (6 in.) off ground, shut down combine, and remove key from ignition.
3. Check that header is against down stops.
4. Check header float and adjust if required. Refer to 4.11 Checking and Adjusting Header Float, page 86.
5. Adjust header levelness by making small adjustments (1/4–1/2 turn) to nut (A) on each float lock. Adjust each side equally but in opposite directions as follows:

   NOTE:
   Setscrew (B) does not require loosening for adjustments up to one-half turn of nut (A).

   a. Turn low-side nut clockwise to raise header.
   b. Turn high-side nut counterclockwise to lower header.

   NOTE:
   Adjustment of more than two turns in either direction may adversely affect header float.

Figure 4.26: Float Lock
NOTE:
Ensure a minimum clearance of 2–3 mm (1/8 in.) (A) between the frame and the back of the bell crank lever.

NOTE:
Check the float after levelling header. Refer to 4.11 Checking and Adjusting Header Float, page 86.
4.11 Checking and Adjusting Header Float

**DANGER**

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

1. Park combine on level surface.
2. Lower reel fully.
3. Adjust fore-aft position to between 5 and 6 on position indicator decal (A) located on right side reel arm.

4. Adjust center-link to between B and C on indicator (A).
5. Position cutterbar 200–300 mm (8–12 in.) off the ground.
6. Stop engine and remove key from ignition.

7. Check that both header float lock levers (A) are in down (UNLOCK) position.
PERFORMING PREDELIVERY CHECKS

8. Place stabilizer wheels and slow speed transport wheels (if equipped) in storage position as follows:
   a. Support wheel weight by lifting slightly with one hand, and pull up on handle (A) to release the lock.
   b. Lift wheels to desired height, and engage support channel into slot (B) in upper support.
   c. Push down on handle (A) to lock.

9. Remove supplied torque wrench (A) from its storage position at right side of adapter frame. Pull slightly in direction shown to disengage wrench from the hook.
10. Place supplied torque wrench (A) onto float lock (B). Note position of wrench for checking left or right side.

11. Push down on wrench to rotate bell crank (C) forward.

12. Push down on wrench until indicator (A) reaches a maximum reading and then begins to decrease. Note maximum reading and repeat at opposite side.

13. Use following table as a guide for float settings:
   - If reading on wrench is high, header is heavy
   - If reading on wrench is low, header is light

Table 4.2 Float Settings

<table>
<thead>
<tr>
<th>Header Size (feet)</th>
<th>Torque Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cutting on Ground</td>
</tr>
<tr>
<td>20, 25, 30, and 35</td>
<td>1-1/2 to 2</td>
</tr>
<tr>
<td>40 and 45</td>
<td>2 to 2-1/2</td>
</tr>
</tbody>
</table>

Figure 4.33: Left Side of Adapter

Figure 4.34: Right Side of Adapter

Figure 4.35: Indicator
14. Increase float (decrease header weight) by loosening jam nuts, turning left side adjustment bolts (A) and right side adjustment bolts (B) clockwise, and tightening jam nuts.

15. Decrease float (increase header weight) by loosening jam nuts, turning left side adjustment bolts (A) and right side adjustment bolts (B) counterclockwise, and tightening jam nuts.

16. Use following guidelines when adjusting float:
   - Adjust float so wrench readings are equal on both sides of the header.
   - Turn each bolt pair equal amounts. Refer to Step 12, page 88, and repeat torque wrench reading procedure.

   **NOTE:**
   If adequate header float cannot be achieved using all of available adjustments, an optional heavy duty spring is available. See your MacDon Dealer or refer to parts catalog for ordering information.

17. Return torque wrench (A) to its storage location at right side of adapter frame.
4.12 Measuring and Adjusting Reel Clearance to Cutterbar

The minimum clearance between reel fingers and cutterbar ensures that reel fingers do not contact cutterbar during operation. The clearance is set at the factory, but some adjustment may be necessary before operation or if there is evidence of contact during operation.

The finger to guard/cutterbar clearances with reel fully lowered are shown in Table 4.3 Finger to Guard/Cutterbar Clearance, page 90.

Table 4.3 Finger to Guard/Cutterbar Clearance

<table>
<thead>
<tr>
<th>Header Width</th>
<th>(X) +/- 3 mm (1/8 in.) at Reel Ends</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single Reel</td>
</tr>
<tr>
<td>20 ft.</td>
<td>20 mm (3/4 in.)</td>
</tr>
<tr>
<td>25 ft.</td>
<td>25 mm (1 in.)</td>
</tr>
<tr>
<td>30 ft.</td>
<td>45 mm (1-3/4 in.)</td>
</tr>
<tr>
<td>35 ft.</td>
<td>60 mm (2-3/8 in.)</td>
</tr>
<tr>
<td>40 and 45 ft.</td>
<td>–</td>
</tr>
</tbody>
</table>

4.12.1 Measuring Reel Clearance

⚠️ DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.

1. Park machine on level ground.
2. Set fore-aft position to middle position 5 on fore-aft position indicator decal (A).
3. Lower reel fully.
4. Shut down engine and remove key from ignition.
5. Measure clearance at ends of each reel at locations (A).

**NOTE:**
The reel is factory-set to provide more clearance at center of reel than at ends (frown) to compensate for reel flexing.

6. Check clearance between (A) and (B). Depending on reel fore-aft position, minimum clearance can result at guard tine, hold-down, or cutterbar.

4.12.2 Adjusting Reel Clearance

Perform this procedure with reel at mid-point of fore-aft range and fully lowered.

⚠️ DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.

1. Adjust outboard reel arm lift cylinders to set clearance as follows:
   a. Loosen bolt (A).
   b. Turn cylinder rod (B) out of clevis to raise reel and increase clearance to cutterbar, or turn cylinder rod into clevis to lower reel and decrease clearance.
   c. Tighten bolt (A).
   d. Repeat at opposite side.

2. **Double Reel**: Adjust center arm lift cylinder link (A) to set clearance at center of reel as follows:

   **NOTE:**
   This adjustment is most easily performed from underside of arm.

   a. Loosen nut (B).
   b. Turn nut (C) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to lower reel and decrease clearance.
   c. Tighten nut (B).

3. Move reel back to ensure steel end fingers do not contact deflector shields.

4. If contact is evident, adjust reel upward to maintain clearance at all reel fore/aft positions. Alternatively, trim steel end fingers to obtain proper clearance.

5. Periodically check for evidence of contact, and adjust clearance as required.

---

**Figure 4.43: Reel Outboard Arm**

**Figure 4.44: Double-Reel Center Arm**
4.13 Adjusting Auger to Pan Clearance

⚠️ DANGER

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

IMPORTANT:
Maintain an appropriate distance between auger and auger pan. Too little clearance may result in tines or flighting contacting and damaging feed draper or pan when operating header at certain angles. Look for evidence of contact when greasing adapter.

1. Extend center-link to steepest header angle, and position header 150–254 mm (6–10 in.) off the ground.
2. Shut down combine and remove key from ignition.
3. Ensure float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.
4. Ensure lower end of linkage bars (A) are against studs (B) at both ends of auger.
5. Loosen two nuts (B).

6. Use adjuster bolt (A) to set clearance (C) to 5–10 mm (3/16–3/8 in.). Turn adjuster bolt (A) clockwise to increase clearance and counterclockwise to decrease clearance.

**NOTE:**
The clearance increases 25–40 mm (1–1-1/2 in.) when center-link is fully retracted.

7. Repeat previous two steps on opposite end of auger.

8. Tighten nuts (B) on both ends of feed auger. Torque nuts to 106–118 N·m (79–87 ft·lbf).
4.14 Checking and Adjusting Side Draper Tension

WARNING

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.

The drapers are tensioned at the factory and should not require adjustment. Draper tension should be just enough to prevent slipping and to keep draper from sagging below cutterbar.

1. Check that white bar (A) is approximately halfway in window.

   NOTE:
   Draper tension should be just enough to prevent slipping and to keep draper from sagging below cutterbar.

To adjust draper tension, follow these steps:

CAUTION

Check to be sure all bystanders have cleared the area.

2. Start engine and raise header.

3. Stop engine, remove key from ignition, and engage header safety props.

4. Check that draper guide (rubber track on underside of draper) is properly engaged in groove (A) of drive roller.
5. Check that idler roller (A) is between guides (B).

![Figure 4.50: Idler Roller – Typical Both Ends of Roller]

**IMPORTANT:**

Do **NOT** adjust nut (C). This nut is used for draper alignment only.

6. Turn adjuster bolt (A) counterclockwise to loosen draper. The white indicator bar (B) will move outboard in direction of arrow (D) to indicate that draper is loosening. Loosen until bar is about halfway in window.

7. Turn adjuster bolt (A) clockwise to tighten draper. The white indicator bar (B) will move inboard in direction of arrow (E) to indicate that draper is tightening. Tighten until bar is about halfway in window.

**IMPORTANT:**

- To avoid premature failure of draper, draper rollers, and/or tightener components, do **NOT** operate with tension set so that white bar is not visible.

- To prevent draper from scooping dirt, ensure draper is tight enough that it does **NOT** sag below point where cutterbar contacts the ground.

![Figure 4.51: Tension Adjuster: Left Shown – Right Opposite]
4.15 Checking and Adjusting Skid Shoes

If optional skid shoes are installed, check position and adjust if necessary.

⚠️ WARNING

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.

⚠️ DANGER

Engage header safety props and reel props before working under header or reel.

1. Check skid shoes are set to same position.
2. If necessary, adjust skid shoe as follows:
   a. Raise header fully and engage header safety props. Shut down engine and remove key from ignition.
   b. Remove lynch pin (B).
   c. Hold shoe and remove pin (C) by disengaging frame and then pulling away from shoe.
   d. Raise or lower skid shoe to desired position using holes in support as a guide.
   e. Reinsert pin (C), engage in frame, and secure with lynch pin (B).
   f. Check that all skid shoes are adjusted to same position.
4.16 Checking Draper Seal

⚠️ WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Lower header to working position. Stop engine, and remove key from ignition.

2. Check clearance (A) between draper (B) and cutterbar (C) is 0–3 mm (1/8 in.). Take measurements at deck support locations. Refer to chart and illustration on following page for approximate support locations.

Figure 4.54: Draper Seal
# Table 4.4 Deck Support Locations

<table>
<thead>
<tr>
<th>Header Size (ft)</th>
<th>Approximate Location of Support from Drive Roller (mm [in.])</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>15 (F)</td>
<td>354 (13-15/16)</td>
</tr>
<tr>
<td>20 (F)</td>
<td>354 (13-15/16)</td>
</tr>
<tr>
<td>25 (G)</td>
<td>354 (13-15/16)</td>
</tr>
<tr>
<td>30 (G)</td>
<td>354 (13-15/16)</td>
</tr>
<tr>
<td>35 (H)</td>
<td>354 (13-15/16)</td>
</tr>
<tr>
<td>40 (H)</td>
<td>354 (13-15/16)</td>
</tr>
<tr>
<td>45 (J)</td>
<td>354 (13-15/16)</td>
</tr>
</tbody>
</table>

Figure 4.55: Deck Support Locations – Left Shown, Right Opposite
4.17 Lubricating Header

Table 4.5 Recommended Lubricant

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE multipurpose</td>
<td>High temperature, extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base</td>
<td>As required unless otherwise specified</td>
</tr>
<tr>
<td></td>
<td>High temperature, extreme pressure (EP) performance with 10% max molybdenum disulphide (NLGI Grade 2) lithium base</td>
<td>Driveline slip-joints</td>
</tr>
</tbody>
</table>

4.17.1 Greasing Procedure

Greasing points are marked on machine by decals showing a grease gun and grease interval in hours of operation. Master grease point location decals are provided on header and adapter back frame.

⚠️ DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator’s seat for any reason.
4.17.2 Lubrication Points

Refer to illustrations on following pages to identify various locations that require lubrication.

Knifehead

IMPORTANT:
Overgreasing can cause knife to bend and make contact with guards closest to knifehead. Check for signs of excessive heating on first few guards after greasing. If required, relieve some pressure by removing grease fitting.

- To prevent binding and/or excessive wear caused by knife pressing on guards, do NOT over grease knifehead (A).
- Apply only 1–2 pumps of grease with a grease gun, or just until knifehead starts to move away from arm. Do NOT use an electric grease gun.
- If more than 6–8 pumps of grease gun are required to fill cavity, replace seal in the knifehead.
- Check for signs of excessive heating on first few guards after greasing. If required, relieve pressure by pressing check-ball in grease fitting.

NOTE:
Use High Temperature Extreme Pressure (EP2) Performance with 1% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base grease unless otherwise specified.
10% moly grease is recommended for the driveline slip joint.
Figure 4.58: Upper Cross Auger and Knife Drive (Double-Knife Timed Drive)
A - Upper Cross Auger U-Joint and Bearing
B - Upper Cross Auger Bearing (1 Place)
C - Upper Cross Auger (1 Place)
D - Knife Drive Bearing - DK Timed Drive (Both Sides)
E - Knife Drive Shaft - DK Timed Drive (Both Sides) 15 Pumps Minimum
Figure 4.59: Auger Pivot, Float Pivot, Driveline Guard, and Float Spring Tensioners

A - Left Float Spring Tensioner
B - Right Float Spring Tensioner
C - Driveline Guard (2 Places)
D - Auger Pivot
E - Float Pivot (2 Places)
F - Auger Pivot
PERFORMING PREDELIVERY CHECKS

IMPORTANT:
The reel U-joint (C) has an extended lubrication cross and bearing kit. Stop greasing when greasing becomes difficult or if U-joint stops taking grease. **OVERGREASING WILL DAMAGE U-JOINT.** Six to eight pumps is sufficient at first grease (factory). As U-joint wears and requires more than six pumps, grease joint more often.

**Figure 4.60: Reel Shaft Bearings**
A - Reel Shaft right Bearing (1 Place)
B - Reel Center Bearing (1 Place)
C - Reel Universal (1 Place)
D - Reel Shaft left Bearing (1 Place)
PERFORMING PREDELIVERY CHECKS

Figure 4.61: Rear Wheel Axle, Wheel Bearings, Frame/Wheel Pivot, and Front Wheel Pivot
A - Rear Wheel Axle  B - Rear Wheel Axle  C - Wheel Bearings (4 Places)
D - Front Wheel Pivot  E - Frame/Wheel Pivot (1 Place) Both Sides
4.18 Checking and Adjusting Endshields

Plastic endshields are subject to expansion or contraction caused by large temperature variations. The position of top pin and lower catch can be adjusted to compensate for dimensional changes.

1. Check gap (X) between front end of shields and header frame and compare to values in Table 4.6 Endshield Gap at Various Temperatures, page 107.

<table>
<thead>
<tr>
<th>Temperature °C (°F)</th>
<th>Gap (X) mm (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>–4 (25)</td>
<td>28 (1–1/10)</td>
</tr>
<tr>
<td>7 (45)</td>
<td>24 (1)</td>
</tr>
<tr>
<td>18 (65)</td>
<td>20 (13/16)</td>
</tr>
<tr>
<td>29 (85)</td>
<td>16 (5/8)</td>
</tr>
<tr>
<td>41 (105)</td>
<td>12 (1/2)</td>
</tr>
<tr>
<td>52 (125)</td>
<td>8 (5/16)</td>
</tr>
<tr>
<td>63 (145)</td>
<td>4 (3/16)</td>
</tr>
<tr>
<td>89 (165)</td>
<td>0</td>
</tr>
</tbody>
</table>

**NOTE:**
If endshield gap is correct, skip to next procedure. If adjustment is required, follow these steps:

2. Open endshield. Refer to Opening Endshield.
3. Loosen nut (A) on pin (B) from inside endsheet.
4. Close endshield and adjust position to achieve desired gap between front end of shield and header frame in accordance with Table 4.6 Endshield Gap at Various Temperatures, page 107.
5. Open endshield and tighten nut (A).
6. Check for a snug fit between top of shield and header frame, and for full engagement of endshield on pin (B).
7. If necessary, loosen bolts on catch (C) and adjust catch as required to reposition shield.
8. Tighten bolts on catch (C).
4.19 Checking Manuals

Check manual case contents. The manual case is located inside left endshield.

1. Open left endshield and remove cable tie on manual case.

2. Confirm that case contains following manuals:
   - D65 Draper Header for Combines Operator’s Manual
   - D65 Header/CA25 Adapter for Combines Quick Card
   - D65 Draper Header Parts Catalog
   - CA25 Combine Adapter Parts Catalog

3. Close case and endshield.
5 Setting up Auto Header Height Control

5.1 Auto Header Height Control (AHHC)

MacDon’s auto header height control (AHHC) feature works in conjunction with the AHHC option available on certain combine models.

A sensor is installed in float indicator box (A) on the CA25 Combine Adapter. This sensor sends a signal to combine allowing it to maintain a consistent cutting height and an optimum adapter float as header follows ground contours.

Figure 5.1: CA25 Combine Adapter

CA25 Combine Adapters are factory-equipped for AHHC; however, before using AHHC feature, you must do the following:

1. Ensure that AHHC sensor’s output voltage range is appropriate for combine. For more information, refer to 5.1.1 Sensor Output Voltage Range – Combine Requirements, page 110.
2. Prepare combine to use AHHC feature (applies only to some combine models—refer to instructions for your combine).
3. Calibrate AHHC system so that combine can correctly interpret data from height sensor on combine adapter (refer to instructions for your combine).

NOTE:
Once calibration is complete, you are ready to use AHHC feature in field. Individual combine settings can improve AHHC performance (refer to your combine instruction manual).
SETTING UP AUTO HEADER HEIGHT CONTROL

NOTE:
If your CA25 Combine Adapter is not equipped to work with a specific combine model, you will need to install appropriate combine completion package. Completion packages come with instructions for installing AHHC sensor on combine adapter.

Refer to the following instructions for your specific combine model:

- 5.1.2 Case IH 2300/2500 and 5088/6088/7088 Combines, page 114
- 5.1.3 Case IH 5130/6130/7130, 7010/8010, 7120/8120/9120, and 7230/8230/9230 Combines, page 117
- 5.1.4 Challenger 6 and 7 Series Combines, page 128
- 5.1.5 Gleaner R62/R72 Combines, page 135
- 5.1.6 Gleaner R65/R66/R75/R76 and S Series Combines, page 138
- 5.1.7 Gleaner S9 Series Combines, page 148
- 5.1.8 John Deere 50 Series Combines, page 162
- 5.1.9 John Deere 60 Series Combines, page 174
- 5.1.10 John Deere 70 Series Combines, page 180
- 5.1.11 John Deere S-Series and T-Series Combines, page 187
- 5.1.12 Lexion 500-Series Combines, page 198
- 5.1.13 Lexion 700-Series Combines, page 212
- 5.1.14 New Holland Combines CX/CR Series (CR Series—Model Year 2014 and Earlier), page 221
- 5.1.15 New Holland Combines (CR Series—Model Year 2015 and Later), page 232

5.1.1 Sensor Output Voltage Range – Combine Requirements

The auto header height control (AHHC) sensor output must be within a specific voltage range for each combine, or the AHHC feature will not work properly.

Table 5.1 Sensor Voltage Limits

<table>
<thead>
<tr>
<th>Combine</th>
<th>Low Voltage Limit</th>
<th>High Voltage Limit</th>
<th>Minimum Voltage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenger, Gleaner A, Gleaner S, Massey Ferguson</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
<tr>
<td>Case IH 5088/6088/7088, 5130/6130/7130, 7010/8010, 7120/8120/9120, and 7230/8230/9230</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
<tr>
<td>Case IH 2300/2500</td>
<td>3.0 V</td>
<td>7.0 V</td>
<td>4.0 V</td>
</tr>
<tr>
<td>Gleaner R and S Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
<tr>
<td>John Deere 50, 60, 70, S- and T-Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
<tr>
<td>Lexion 500/600/700 Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
</tbody>
</table>
**Setting up Auto Header Height Control**

<table>
<thead>
<tr>
<th>Combine</th>
<th>Low Voltage Limit</th>
<th>High Voltage Limit</th>
<th>Minimum Voltage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Holland CR/CX - 5 V system</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
<tr>
<td>New Holland CR/CX - 10 V system</td>
<td>3.0 V</td>
<td>7.0 V</td>
<td>4.1–4.4 V</td>
</tr>
</tbody>
</table>

**Note:**
Some combine models do not support checking sensor output voltage from cab (early 23/2588 series, Lexion 500/700 series). For these models, check output voltage manually. Refer to *Manually Checking Voltage Range, page 111*.

**Manually Checking Voltage Range**

The output voltage range of auto header height control (AHHC) sensors in some combines can be checked from cab. For instructions, refer to your combine operator’s manual or AHHC instructions later in this document.

To manually check sensor’s output voltage range, follow these steps:

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

   **Note:**
   If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.
4. Use a voltmeter (A) to measure voltage between ground (Pin 2) and signal (Pin 3) wires at AHHC sensor in float indicator box. Ensure it is at high voltage limit for combine. Refer to Table 5.1 Sensor Voltage Limits, page 110.

NOTE:
The harness connector must be plugged into sensor.

Figure 5.4: Measuring Voltage at Float Indicator Box

5. Fully lower combine feeder house, and float header up off down stops (float indicator should be at 4, and adapter should be fully separated from header).

NOTE:
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

6. Use a voltmeter (A) to measure voltage between ground and signal wires at AHHC sensor in float indicator box. It should be at low voltage limit for combine. Refer to Table 5.1 Sensor Voltage Limits, page 110.

NOTE:
The harness connector must be plugged into sensor.

7. Adjust voltage limits (refer to Adjusting Voltage Limits, page 112) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient. Refer to Table 5.1 Sensor Voltage Limits, page 110).

Adjusting Voltage Limits

NOTE:
The auto header height control (AHHC) sensor assemblies used for Lexion and some New Holland combines are slightly different from sensor assemblies used for other combine models—all three assemblies are illustrated in this procedure.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Complete the following steps to adjust high voltage limit:
   a. Extend guard angle fully; header angle indicator should be at D.
   b. Position header 152–254 mm (6–10 in.) above ground; float indicator should be at 0.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to right to increase high voltage limit and to left to decrease it.
   e. Tighten sensor mounting bolts (A).

2. Complete the following steps to adjust low voltage limit:
   a. Extend guard angle fully; header angle indicator should be at D.
   b. Fully lower header on ground; float indicator should be at 4.
   c. Loosen mounting bolts (A).
   d. Rotate sensor (B) clockwise to increase low voltage limit, and counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (A).
5.1.2 Case IH 2300/2500 and 5088/6088/7088 Combines

Engaging Auto Header Height Control (Case IH 2300)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Turn mode select switch (A) to HT.
2. Set desired header height with position control knob (B). The AHHC will raise and lower header to maintain this fixed distance from ground.
3. Turn feeder ON.
5. Use header raise rate control (A) and header lower rate control (B) as required to adjust rate at which header raises or lowers to maintain desired header height.
6. Use sensitivity control (A) to set sensitivity to changing ground conditions.
Calibrating Auto Header Height Control (AHHC) (Case IH 2300/2500 and 5088/6088/7088)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

To calibrate the AHHC system, follow these steps:


2. Start combine engine, but do NOT engage separator or feeder house.

3. Locate header control switch (A) on right console, and set to HT (this is AHHC mode).

4. Press header lower switch (A) on joystick lever until adapter and header are fully lowered. You may need to hold switch for several seconds.

5. Press header raise switch (A) on joystick lever. The header should stop at about halfway point. Continue holding header raise switch, and header will rise until feeder house reaches its upper limit. The AHHC system is now calibrated.

NOTE:
If float was set heavier to complete ground calibration procedure, adjust to recommended operating float after calibration is complete.
NOTE:
The ideal ground pressure—in most cases—is one number (on float indicator box) above header suspended off ground. For example, if float indicator needle (B) is positioned at 0 with header suspended off ground, then ideal ground pressure will be achieved with needle positioned at 1 (A). Operating with heavier pressures can wear cutterbar wear plate prematurely.

Figure 5.15: Float Indicator Box

Setting Sensitivity of Auto Header Height Control (Case IH 2300/2500 and 5088/6088/7088)

The sensitivity adjustment controls distance cutterbar must travel up or down before auto header height control (AHHC) reacts and raises or lowers feeder house. When sensitivity is set to maximum, only small changes in ground height are needed to cause feeder house to raise or lower. When sensitivity is set to minimum, large changes in ground height are needed to cause feeder house to raise or lower.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Use HEADER SETTINGS key (A) to display HEADER SENSITIVITY CHANGE page.
2. Use UP or DOWN keys (B and C) to adjust highlighted item. The height sensitivity setting range is 0 (least sensitive) to 250 (most sensitive) in increments of 10.

NOTE:
Adjustments take effect immediately. Use CANCEL key to return to original settings.

3. Use HEADER SETTINGS key (A) to highlight next changeable item.
4. Use ENTER key (D) to save changes and return to monitor page. If there are no changes, screen will return to monitor page after five seconds.

Figure 5.16: Combine Controls
5.1.3 Case IH 5130/6130/7130, 7010/8010, 7120/8120/9120, and 7230/8230/9230 Combines

Checking Voltage Range from Combine Cab (Case 8010)

NOTE: Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ CAUTION

Check to be sure all bystanders have cleared the area.

1. Position header 150 mm (6 in.) above ground, and unlock CA25 float.
SETTING UP AUTO HEADER HEIGHT CONTROL

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

   **NOTE:**
   If header is on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.

4. Ensure header float is unlocked.

5. Select DIAG (A) on Universal display MAIN page. The DIAG page displays.

7. Select HDR HEIGHT/TILT (A). The SENSOR page displays.

8. Select LEFT SEN (A). The exact voltage is displayed. Raise and lower header to see full range of voltage readings.
9. Adjust voltage limits (refer to Adjusting Voltage Limits, page 112) if sensor voltage is not within low and high limits, or if range between low and high limits is insufficient (refer to Table 5.1 Sensor Voltage Limits, page 110).

![Figure 5.24: Case 8010 Combine Display](image)

**Checking Voltage Range from Combine Cab** (Case IH 5130/6130/7130, 7010/8010; 7120/8120/9120; 7230/8230/9230)

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ **CAUTION**

Check to be sure all bystanders have cleared the area.

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**
If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

![Figure 5.25: Float Lock](image)
3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.

4. Ensure header float is unlocked.

5. Select DIAGNOSTICS (A) on MAIN page. The DIAGNOSTICS page opens.

6. Select SETTINGS. The SETTINGS page opens.

7. Select GROUP drop-down arrow (A). The GROUP dialog box displays.

9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at top of page. Raise and lower header to see full range of voltage readings.

10. Adjust voltage limits (refer to Adjusting Voltage Limits, page 112) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to Table 5.1 Sensor Voltage Limits, page 110).

**Calibrating Auto Header Height Control (Case IH 5130/6130/7130, 7010/8010; 7120/8120/9120; 7230/8230/9230)**

For best performance from the auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

**NOTE:**
This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with software version 28.00 or above, refer to Calibrating Auto Header Height Control (Case Combines with Version 28.00 or Higher Software), page 124.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Ensure center-link is set to D.
2. Ensure all header and adapter electrical and hydraulic connections are made.
3. Select TOOLBOX on MAIN page, and then select HEADER.
4. Set appropriate HEADER STYLE.

5. Set AUTO REEL SPEED SLOPE.
6. Set HEADER PRESSURE FLOAT to NO if equipped, and ensure REEL DRIVE is HYDRAULIC.

7. Install REEL FORE-BACK (if applicable).
8. Set HEIGHT SENSITIVITY to desired value. The recommended starting point is 180.
9. Install FORE-AFT CONTROL and HDR FORE-AFT TILT (if applicable).


11. Ensure HEADER TYPE is DRAPER.

   NOTE:
   If recognition resistor is plugged into header harness, you will not be able to change this value.

12. Set cutting type to PLATFORM.

13. Set appropriate HEADER WIDTH and HEADER USAGE.

Calibrating Auto Header Height Control (Case Combines with Version 28.00 or Higher Software)

For best performance of the auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator's manual for instructions.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Ensure center-link is set to D.
2. Select TOOLBOX on MAIN page, and then select HEADER SETUP.
3. Locate HEADER SUB TYPE field. It will be located on either HEAD 1 or HEAD 2 tab.

5. Locate HEADER SENSORS and HEADER PRESSURE FLOAT fields. They will be located on either HEAD 1 or HEAD 2 tab.
6. Select ENABLE (A) in HEADER SENSORS field.
7. Select NO (B) in HEADER PRESSURE FLOAT field.

8. Ensure AUTO HEIGHT icon (A) appears on monitor and is displayed as shown at (B). When header is set for cutting on ground, this verifies that combine is correctly using potentiometer on header to sense ground pressure.

   **NOTE:**
   AUTO HEIGHT field (B) may appear on any of RUN tabs and not necessarily on RUN 1 tab.
9. Select CALIBRATION on combine display, and press right arrow navigation key to enter information box.

10. Select HEADER (A), and press ENTER. The CALIBRATION dialog box opens.

   **NOTE:**
   You can use up and down navigation keys to move between options.

11. Follow calibration steps in order in which they appear in dialog box. As you proceed through calibration process, display will automatically update to show next step.

   **NOTE:**
   Pressing ESC key during any of steps or letting system sit idle for more than three minutes will cause calibration procedure to stop.

   **NOTE:**
   Refer to your combine operator’s manual for an explanation of any error codes.

12. When all steps have been completed, CALIBRATION SUCCESSFUL message is displayed on page. Exit CALIBRATION menu by pressing ENTER or ESC key.

   **NOTE:**
   If float was set heavier to complete ground calibration procedure, adjust to recommended operating float after calibration is complete.

13. If unit does not function properly, conduct maximum stubble height calibration.

**Setting Preset Cutting Height (Case 7010/8010, 7120/8120/9120, 7230/8230/9230)**

To set preset cutting height, follow these steps:

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ **CAUTION**

Check to be sure all bystanders have cleared the area.
1. Engage separator and header.
2. Manually raise or lower header to desired cutting height.
3. Press SET #1 switch (A). The HEADER HEIGHT MODE lamp (C), next to SET #1 switch, turns on.
4. Manually raise or lower header to a second desired cutting height.
5. Press SET #2 switch (B). The HEADER HEIGHT MODE lamp (D), next to SET #2 switch, turns on.

6. To swap between set points, press HEADER RESUME (A).
7. To pick up header at headlands, press HEADER RESUME (A) twice. To lower, press HEADER RESUME (A).

**NOTE:**
You can fine adjust these set points by using FINE ADJUST switch.

**NOTE:**
Pressing HEADER RAISE/LOWER switch will disengage AUTO HEIGHT mode. Press HEADER RESUME to reengage.

**NOTE:**
The ideal ground pressure—in most cases—is one number (on float indicator box) above header suspended off ground. For example, if float indicator needle (A) is positioned at 0 with header suspended off ground, then ideal ground pressure will be achieved with needle positioned at 1. Operating with heavier pressures can wear cutterbar wear plate prematurely.
5.1.4 Challenger 6 and 7 Series Combines

Checking Voltage Range from Combine Cab (Challenger 6 and 7 Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator's manual for updates.

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

   NOTE:
   If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.

Figure 5.44: Float Lock

Figure 5.45: Float Indicator Box
4. Go to FIELD page on combine monitor, and then press diagnostics icon. The MISCELLANEOUS page displays. 

5. Press VMM DIAGNOSTIC button (A). The VMM DIAGNOSTIC page displays.

6. Go to ANALOG IN tab, and then select VMM MODULE 3 by pressing text box below four tabs. The voltage from AHHC sensor is now displayed on page as HEADER HEIGHT RIGHT POT and HEADER HEIGHT LEFT POT. Both readings should be identical.

7. Fully lower combine feeder house (adapter should be fully separated from header). 

**NOTE:**
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

8. Read voltage.
9. Raise header so cutterbar is 150 mm (6 in.) off the ground.
10. Read voltage.
11. Adjust voltage limits (refer to Adjusting Voltage Limits, page 112) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to Table 5.1 Sensor Voltage Limits, page 110).
Engaging Auto Header Height Control (Challenger 6 Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

The following system components are required in order for auto header height control (AHHC) to work:

- Main module (PCB board) and header driver module (PCB board) mounted in card box in fuse panel module (FP)
- Multi-function control handle operator inputs
- Operator inputs mounted in control console module (CC) panel

NOTE:
In addition to above components, electro hydraulic header lift control valve is an integral part of system.

Engage AHHC as follows:

1. Scroll through header control options on combine display using header control switch until AHHC icon is displayed in first message box. The AHHC will adjust header height in relation to ground according to height setting and sensitivity setting.

Calibrating Auto Header Height Control (Challenger 6 Series)

NOTE:
For best performance of auto header height control (AHHC) system, perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Ensure center-link is set to D.
2. On FIELD page, press DIAGNOSTICS icon. The MISCELLANEOUS page appears.

3. Press CALIBRATIONS button. The CALIBRATIONS page appears.

4. Press HEADER button. The HEADER CALIBRATION page displays a warning.
5. Read warning message, and then press green check mark button.

6. Follow on-screen prompts to complete calibration.

**NOTE:**
The calibration procedure can be cancelled at any time by pressing cancel button in bottom right corner of page. While header calibration is running, calibration can also be canceled by using up, down, tilt right, or tilt left buttons on control handle.

**NOTE:**
If combine does not have header tilt installed or if it is inoperable, you may receive warnings during calibration. Press green check mark if these warnings appear. This will not affect AHHC calibration.

**Adjusting Header Height (Challenger 6 Series)**

Once auto header height control (AHHC) is activated, press and release HEADER LOWER button on control handle. The AHHC will automatically lower header to selected height setting.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator's manual for updates.
The selected AHHC height is adjusted using HEIGHT ADJUSTMENT knob on control console. Turning knob clockwise increases selected height, and turning knob counterclockwise decreases selected height.

Adjusting Header Raise/Lower Rate (Challenger 6 Series)

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press Header icon on FIELD page. The HEADER page displays.

3. Go to TABLE SETTINGS tab.
4. Press up arrow on MAX UP PWM to increase percentage number and increase raise speed; press down arrow on MAX UP PWM to decrease percentage number and decrease raise speed.
5. Press up arrow on MAX DOWN PWM to increase percentage number and increase lower speed; press down arrow on MAX DOWN PWM to decrease percentage number and decrease lower speed.

Figure 5.58: Challenger Combine Display

Setting Sensitivity of Auto Header Height Control (Challenger 6 Series)

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press HEADER icon on FIELD page. The HEADER page appears.
2. Press HEADER CONTROL button (A). The HEADER CONTROL page appears. You can adjust sensitivity on this page using up and down arrows.

Figure 5.59: Challenger Combine Display
3. Adjust sensitivity to maximum setting.

4. Activate AHHC, and press HEADER LOWER button on control handle.

5. Decrease sensitivity until feeder house remains steady and does not bounce up and down.

**NOTE:**
This is maximum sensitivity and is only an initial setting. The final setting must be made in field as system reaction will vary with changing surfaces and operating conditions.

**NOTE:**
If maximum sensitivity is not needed, a less sensitive setting will reduce frequency of header height corrections and component wear. Partially opening accumulator valve will cushion action of header lift cylinders and reduce header hunting.

### 5.1.5 Gleaner R62/R72 Combines

**System Requirements (Gleaner R62/R72)**

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

The following system components are required in order for auto header height control (AHHC) system to work:

- Main module (PCB board) and header driver module (PCB board) mounted in card box in fuse panel module (FP)
- Multi-Function Control Handle operator inputs
- Operator inputs mounted in control console module (CC) panel

**NOTE:**
In addition to components listed above, electro hydraulic header lift control valve is an integral part of system.

**Calibrating Auto Header Height Control (Gleaner R62/R72)**

For best performance of the auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

**NOTE:**
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

To calibrate auto header height control, follow these steps:

⚠️ **CAUTION**

Never start or move the machine until you are sure all bystanders have cleared the area.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Ensure center-link is set to D.
2. Start combine engine, and press and hold hidden C1 button (A) until LED light (B) flashes briefly.
3. Lower feeder house as far as it will go.
4. Press and hold hidden L2 button (C) until LED light (B) flashes briefly. The AHHC system is now calibrated.

Figure 5.61: Combine Header Control System

Setting Sensitivity of Auto Header Height Control (Gleaner R62/R72 Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Engage main threshing clutch (A) and header clutch (B).

Figure 5.62: Combine Control Console
2. Speed throttle (A) to over 2000 rpm.

3. Push AUTO HEADER HEIGHT button (A). The LED light (B) should flash continuously indicating that it is in standby mode and waiting for a response from Operator.

4. Briefly press HEADER DOWN button (A). The header should lower automatically and LED light should stay illuminated indicating that auto height system is engaged and working.
5. Turn HEIGHT dial (A) to increase or decrease ground pressure.

6. Turn SENSITIVITY dial (B) to control how quickly AHHC reacts to varying ground conditions.

**NOTE:**
The ideal ground pressure, in most cases, is one number of separation on AHHC from having header fully suspended off ground (A) to just resting on ground (B).

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### 5.1.6 Gleaner R65/R66/R75/R76 and S Series Combines

**Checking Voltage Range from Combine Cab (Gleaner R65/R66/R75/R76 and S Series)**

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

**NOTE:**
Refer to [5.1.7 Gleaner S9 Series Combines, page 148](#) for information specific to Gleaner S9 Series.

1. Position header 150 mm (6 in.) above ground, and unlock CA25 float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**
If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. Ensure pointer (A) on float indicator box is on 0. If necessary, adjust cable take-up bracket (B) until pointer is on 0.
SETTING UP AUTO HEADER HEIGHT CONTROL

Figure 5.70: Combine Heads-Up Display

4. Ensure header float is unlocked.
5. Press and hold button (A) on heads-up display for three seconds to enter diagnostic mode.
6. Scroll down using button (B) until LEFT is displayed on LCD screen.
7. Press OK button (C). The number indicated on LCD screen is voltage reading from sensor of AHHC. Raise and lower header to see full range of voltage readings.

Engaging Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to 5.1.7 Gleaner S9 Series Combines, page 148 for information specific to Gleaner S9 Series.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

The following system components are required in order for auto header height control (AHHC) to work:

• Main module (PCB board) and header driver module (PCB board) mounted in card box in fuse pane module (FP).
• Multi-Function Control Handle operator inputs.
• Operator inputs mounted in control console module (CC) panel.

NOTE:
In addition to above components, electro hydraulic header lift control valve also is an integral part of system.
SETTING UP AUTO HEADER HEIGHT CONTROL

Figure 5.71: Combine Auto Header Height Controls

1. Press AUTO MODE (A) button until AHHC LED light (B) begins flashing. If RTC light is flashing, press AUTO MODE (A) button again until it switches to AHHC.

2. Briefly press button (A) on control handle. The AHHC light should change from flashing to solid. The header also should drop toward ground. The AHHC is now engaged and can be adjusted for height and sensitivity.

3. Use controls to adjust height and sensitivity to changing ground conditions such as shallow gullies and field drainage trenches.

Calibrating Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

Calibration should be done on flat, level ground without the header clutches engaged. Header height and header tilt must NOT be in auto or standby modes. The engine rpm must be above 2000 rpm. The header tilt option on 2004 and earlier model combines does NOT work with MacDon headers. This system will have to be removed and disabled in order to calibrate auto header height control (AHHC). Refer to combine manual for instructions.

NOTE:
Refer to 5.1.7 Gleaner S9 Series Combines, page 148 for information specific to Gleaner S9 Series.
NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

Figure 5.73: Combine Auto Header Height Controls
A - AUTO MODE Button
B - AHHC Light
C - CAL1 Button
D - Raise Header
E - Lower Header
F - Auto Mode
G - CAL2 Button

NOTE:
For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

1. Ensure center-link is set to D.
2. Press AUTO MODE button (A) until AHHC light (B) is illuminated.
3. Press and hold CAL1 button (C) until you see following lights flash: raise header (D), lower header (E), tilt auto mode (F), and AHHC (B).
4. Fully lower header, and continue to hold HEADER LOWER button for 5–8 seconds to ensure adapter has separated from header.
5. Press CAL2 button (G) until lower header light (E) stops flashing, and release it when raise header light (D) begins flashing.
6. Raise header to its maximum height (ensure header is resting on down-stop pads).
7. Press CAL2 button (G) until raise header light (D) turns off.

NOTE:
The following steps are applicable only to 2005 and newer combines with Smartrac feeder house.
8. Wait for HEADER TILT LEFT light (not shown) to start flashing, and then tilt header to maximum left position.

9. Press CAL2 button (G) until HEADER TILT LEFT light (not shown) stops flashing, and release button when HEADER TILT RIGHT light (not shown) begins flashing.

10. Tilt header to maximum right position.

11. Press CAL2 button (G) until all of following lights flash: raise header (D), lower header (E), height auto mode (A), right header and left header (not shown), and tilt auto mode (F).

12. Center header.

13. Press CAL1 button (C) to exit calibration and save all values to memory. All lights should stop flashing.

**Turning off Accumulator (Gleaner R65/R66/R75/R76 and S Series)**

The accumulator will affect combine’s reaction time and greatly inhibit auto header height control's performance.

Refer to combine operator’s manual for proper procedure when turning accumulator off and on. For best performance, turn feeder house accumulator off.

**NOTE:**
The accumulator is located in front of front left axle beam.

![Figure 5.74: Combine Accumulator ON/OFF Switch](image)

A - Accumulator Lever (Off Position)

**Adjusting Header Raise/Lower Rate (Gleaner R65/R66/R75/R76 and S Series)**

**NOTE:**
Refer to 5.1.7 Gleaner S9 Series Combines, page 148 for information specific to Gleaner S9 Series.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
The auto header height control (AHHC) system's stability is affected by hydraulic flow rates. Ensure that header raise (A) and header lower (B) adjustable restrictors in hydraulic valve block are adjusted so that it takes approximately six seconds to raise header from ground level to maximum height (hydraulic cylinders fully extended), and approximately six seconds to lower header from maximum height to ground level.

If there is too much header movement (for example, hunting) when header is on ground, adjust lower rate to a slower rate of drop: seven or eight seconds.

**NOTE:**
Make this adjustment with hydraulic system at normal operating temperature (54.4°C [130°F]) and engine running at full throttle.

---

**Adjusting Ground Pressure (Gleaner R65/R66/R75/R76 and S Series)**

**NOTE:**
Refer to 5.1.7 Gleaner S9 Series Combines, page 148 for information specific to Gleaner S9 Series.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

To adjust header height, ensure header is in auto header height control (AHHC) mode. This is indicated by AUTO MODE LED light (A) displaying a continuous, solid light. The header will lower to height (ground pressure) corresponding to position selected with height control knob (B).

Turn knob counterclockwise for minimum ground pressure, and clockwise for maximum ground pressure.
NOTE:
The ideal ground pressure, in most cases, is one number of separation on AHHC from having header fully suspended off ground (B) to just resting on ground (A).

Adjusting Sensitivity of Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to 5.1.7 Gleaner S9 Series Combines, page 148 for information specific to Gleaner S9 Series.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
The SENSITIVITY ADJUSTMENT dial (A) controls the distance cutterbar must travel up or down before AHHC reacts and raises or lowers feeder house.

When SENSITIVITY ADJUSTMENT dial (A) is set to maximum (turned completely clockwise), only small changes in ground height are needed to cause feeder house to raise or lower. In this position, cutterbar moves up and down approximately 19 mm (3/4 in.) before control module signals hydraulic control valve to raise or lower header frame.

When SENSITIVITY ADJUSTMENT dial (A) is set to minimum (turned completely counterclockwise), large changes in ground height are needed to cause feeder house to raise or lower. In this position, cutterbar moves up and down approximately 51 mm (2 in.) before control module signals hydraulic control valve to raise or lower header frame.

The HEADER SENSE LINE input also changes range of sensitivity. When connected to a draper, counterclockwise position (least sensitive) allows for approximately 102 mm (4 in.) of vertical travel before correction is made.

Troubleshooting Alarms and Diagnostic Faults (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to 5.1.7 Gleaner S9 Series Combines, page 148 for information specific to Gleaner S9 Series.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

Display type:
Displayed on tachometer (A) as XX or XXX.

Figure 5.79: Tachometer
SETTING UP AUTO HEADER HEIGHT CONTROL

Displayed on LCD (A) as XXX cm or XX in.

Figure 5.80: Combine Heads-Up Display

Alarm conditions:

If an error message is received from fuse panel, an audible alarm sounds. The LCD on electronic instrument panel (EIP) indicates header system in error as HDR CTRL followed by HGT ERR for height, and HDR CTRL followed by TILT ERR for tilt. The header height LED flashes yellow two times every second.

The alarm also is noted by buzzer sounding five times every ten seconds.

When an alarm condition occurs, a green LED flashes on and off (green, yellow, or red depending on input). In addition, a message is displayed on LCD to identify nature of alarm. For example, HYD TEMP, OPEN, SHRT will be flashed alternately.
Diagnostic fault failures: Refer to Figure 5.80: Combine Heads-Up Display, page 147.

Pressing header height switch (B) for a minimum of five seconds will put EIP in header diagnostic mode. The LCD (shown on previous page) will display message HDR DIAG when EIP has entered header diagnostic mode.

In this mode, after three seconds, header fault parameter labels are displayed on EIP LCD. All information displayed is read-only.

The OK (C) and CLEAR (D) buttons allow you to scroll through list of parameters. If there are no active fault codes, EIP LCD will display NO CODE.

When a parameter is displayed, its label is displayed for three seconds, after which its value is automatically displayed.

Pressing OK button (C) while value is displayed will advance to next parameter and display its label.

When a parameter label is displayed and OK button (C) is pressed before three seconds, parameter's value will be displayed.

Pressing AREA (E) will cycle through options. When LEFT is displayed on LCD, press OK button (C), and auto header height control (AHHC) voltage will be shown on the display.

Press DIST button (F) to cycle back through table.

Press CLEAR button (D) to exit header diagnostics and return to normal mode.

Refer to 5.1.16 Sensor Operation, page 242.

5.1.7 Gleaner S9 Series Combines

This section is for Gleaner S9 Series combines only.

Setting up Header (Gleaner S9)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator's manual for updates.

The AGCO Tyton terminal is used to set up and manage a MacDon draper header on an Gleaner S9 combine. The terminal has a touch screen so you can simply touch desired area on terminal screen to select an item.

![Figure 5.81: Gleaner S9](image)

A - Tyton Terminal  B - Hydro Handle / Ground Speed Lever  C - Throttle Lever  D - Header Control Cluster
1. On top right quadrant of home page, touch COMBINE icon (A) on top right. The COMBINE MAIN MENU opens.

2. On COMBINE MAIN MENU, touch HEADER SETTINGS (A). The HEADER SETTINGS page opens.
3. Touch HEADER CONFIGURATION field (A). A page showing predefined headers opens.
   - If your MacDon header is already set up, it appears on header list. Touch MacDon header title (B) to highlight selection in blue, and then touch green check mark (E) to continue.
   - If only default header (D) is shown, touch ADD/KEYBOARD button (C), and use on-screen keyboard to enter MacDon header information. When complete, touch one of areas at bottom of page and you will be returned to HEADER SETTINGS page.
     - The green check mark saves settings
     - The garbage can icon deletes highlighted header from list
     - The red X cancels change(s)
4. To specify type of header installed on machine, touch HEADER TYPE field (A).

5. A list of predefined header types appears.
   - For MacDon D65 and FD75 FlexDraper headers, touch POWER FLOW (A)
   - Touch green check mark (B) to save selection and continue.

6. Make sure that HEADER HAS REEL ATTACHED green check box (A) is checked.
7. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter 40 as MacDon Reel Diameter.

8. Touch REEL PPR (Speed Pulses Per Revolution) field (B) and enter 30 as PPR value for your MacDon header. (PPR is number of teeth on reel speed sprocket. AGCO configured MacDon headers have 30 teeth on sensor pickup reel).

9. Touch green check mark (B) at bottom of numeric keypad (A) when complete, or red X to cancel.

10. When entries are complete, touch green check mark (A) at bottom of HEADER SETTINGS page.

**Setting up Reel Settings (Gleaner S9)**

⚠️ **CAUTION**

Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on, or close to it.
NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. From COMBINE MAIN MENU, touch REEL SETTINGS (A) to open REEL SETTINGS page.

2. To set minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard displays. Enter desired value. Touch green check mark to accept new value, or red X to cancel. The reel speed (in mph) and rpm are shown.

   NOTE:
   At bottom of REEL SETTINGS page, reel diameter and reel pulses per revolution are displayed. These values have already been set in HEADER SETTINGS page.

3. Reel speed is calibrated in REEL SETTINGS page by touching CALIBRATE button (A) in top right of page.

4. The CALIBRATION WIZARD opens and displays a hazard message warning page.

   CAUTION
   Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on, or close to it.

5. Make sure all conditions listed on CALIBRATION WIZARD warning page are met. Press green check mark to accept and start reel calibration. Pressing red X will cancel calibration procedure.
6. An informational message appears in CALIBRATION WIZARD that reel calibration has started. The reel will begin turning slowly and increase to high speed. A progress bar is provided. If necessary, touch red X to cancel. Otherwise, wait for message that reel calibration has completed successfully. Touch green check mark to save calibrated settings.

Figure 5.94: Calibration Progress

Setting up Automatic Header Controls (Gleaner S9 Series)

Automatic header functions are configured on HEADER SETTINGS page.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. **Automatic Control Functions:** There are toggle (OFF/ON) switches on HEADER SETTINGS page for automatic control functions. For MacDon headers, ensure following two functions are enabled as shown:
   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)
   All other switches are disabled (and are not highlighted).

2. The **Sensitivity** setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below toggle switches. To enter a new sensitivity setting, touch setting field below specific toggle switch, and enter new value in on-screen keyboard.
   - If combine does not change feeder position quickly enough when in Auto Mode, increase sensitivity.
   - If combine hunts for a position in Auto Mode, decrease sensitivity.

NOTE:
Recommended sensitivity starting points for MacDon headers are:
   - 50 for RTC (A)
   - 60 for AHHC (B)
3. **Header Speed**: The speed at which header moves is adjusted in HEADER CONTROL SPEED area (A) of HEADER SETTINGS page. The following speeds can be adjusted:
   - Tilt left and right is lateral tilt of combine faceplate.
   - Header up and down (slow and fast speeds) is a two-stage button with slow speed on first detent and fast on second.

   **NOTE:**
   Recommended header control speed starting points for MacDon headers are:
   - Slow: 45 up / 40 down
   - Fast: 100 up / 100 down

4. **Header Offsets (A)**: Offset distances are important for yield mapping. There are two dimensions that can be adjusted on HEADER SETTINGS page:
   - Header Lateral Offset: distance between centerline of header and centerline of machine. This should be set at 0 for a MacDon header.
   - Feeder House to Cutter: distance from machine interface to cutterbar. This should be set at 68 for a MacDon header.
SETTING UP AUTO HEADER HEIGHT CONTROL

Calibrating Header (Gleaner S9 Series)

The auto header control functions are configured on HEADER SETTINGS page.

⚠️ CAUTION

Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on, or close to it.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. On COMBINE MAIN MENU, touch HEADER SETTINGS (A).

Figure 5.98: Header Settings Inputs for MacDon Headers

Figure 5.99: Combine Main Menu
2. Touch CALIBRATE (A) at bottom right of page. The HEADER CALIBRATION page displays.

The right side of page shows calibration information (A). Results are shown for a variety of sensors (B) at top of list:
- Left and right header sensor (v) (values will be same with MacDon headers)
- Header height sensor (mA)
- Tilt position sensor (mA)

The modes applicable to MacDon headers are shown with check marks below line (C):
- Return to cut
- Automatic header height control

⚠️ CAUTION

Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on, or close to it.

3. On ground speed lever (GSL), press HEADER DOWN button (A). Sensor values start changing on HEADER CALIBRATION page as header lowers.

**NOTE:**
The header needs to be lowered all the way, and then raised off ground. The range should be between 0.5 and 4.5v. If value is not in that range, sensor needs to be adjusted.
4. When sensor values are stable, touch CALIBRATE icon (A).

5. The hazard message warning page for HEADER CALIBRATION appears. Before proceeding with calibration by touching green check mark, make sure that all conditions on page are met.

6. Touch green check mark at bottom of page to start CALIBRATION WIZARD.

A progress bar is provided and wizard can be stopped at any time by touching red X. The header moves automatically and erratically during this process.
7. When calibration is complete, a message displays, and summary information (A) is shown. Green check marks confirm functions have been calibrated (B). Touch bottom green check mark (C) to save.

TIP:
On COMBINE MAIN MENU page, there is a CALIBRATION icon (A) that when touched opens a general CALIBRATION menu where you can directly choose from a variety of calibrations including header and reel calibration.

Operating with a Gleaner S9 Combine

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
These are primary controls to be used to engage and use auto header height control (AHHC) function.

1. With header running, set Lateral Tilt to MANUAL by pressing switch (A) upward to MAN position.
2. Engage AHHC by pressing switch (B) upward to I position.
3. Press AHHC control switch (A) on ground speed lever (GSL) to engage AHHC. The header positions itself in current setpoint position.
4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune setpoint position.

**Header In-Field Settings**

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. To quickly view header group settings, touch HEADER icon (A) that is second from bottom on right side of Tryton Terminal home page.

2. The display area shows:
   - (B) – The left header height indicator is current position of header.
   - (C) – The red line on current header height position indicator (B) shows setpoint cut-off position.
   - (D) – Adjust setpoint cut-off position by touching HEADER symbol and using scroll wheel on right side of Tyton terminal. As scroll wheel is moved, position of cut-off will move.
   - (E) – The right indicator is set cut height for AHHC. Fine-tune cutting height with header height setpoint control dial on header control cluster. As control is adjusted, cut height indicator will move.
   - (F) – The header working width.
   - (G) – Header pitch.

3. Touching a field opens on-screen keyboard so that values can be adjusted. Enter new value and touch green check mark when complete.
The scroll wheel (A) is on right side of Tyton terminal.

Header height setpoint control dial (A) is on header control cluster.

### 5.1.8 John Deere 50 Series Combines

#### Output Voltage Range

The auto header height sensor output must be within a specific range, or feature will not work properly.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Low Voltage Limit</th>
<th>High Voltage Limit</th>
<th>Minimum Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Deere 50</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>3.0 V</td>
</tr>
</tbody>
</table>

Check sensor’s output voltage range from combine cab or manually at float indicator box according to instructions that follow.

**Manually Checking Output Voltage Range**

To manually check sensor’s output voltage range, follow these steps:
1. Position header 150 mm (6 in.) above ground, and rest it on safety props. Unlock adapter float.

**NOTE:**
If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of auto header height control (AHHC) system.

2. The pointer (A) on float indicator box should point at 0. If it does not, adjust cable take-up bracket (B) until pointer (A) on float indicator box points to 0.

3. Use a voltmeter (A) to measure voltage between ground and signal wires at AHHC sensor in float indicator box.

**NOTE:**
The voltage reading should be below 4.3 V.

4. Fully lower combine feeder house, and float header up off safety props (float indicator should be at 4, and adapter should be fully separated from header).

**NOTE:**
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

5. Use a voltmeter (A) to measure voltage between ground and signal wires at AHHC sensor in float indicator box. It should be at low voltage limit for combine—0.7 V.

6. If sensor voltage is not within low and high limits, or if range between low and high limits is insufficient (on this combine, it should be at least 3.0 V), make adjustments according to Adjusting Voltage Limits, page 166).
SETTING UP AUTO HEADER HEIGHT CONTROL

Checking Voltage Range from Combine Cab

Before checking voltage range, follow these steps:

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

   **NOTE:**
   If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. The pointer (A) on float indicator box should point at 0. If it does not point at zero, adjust cable take-up bracket (B) until it does.
4. Press DIAGNOSTIC button (D) on monitor—**dIA** appears on monitor.

5. Press UP button (A) until **EO1** appears on monitor—this is header adjustment.

6. Press ENTER button (C).

7. Press UP (A) or DOWN button (B) until **24** is displayed on top portion of monitor—this is voltage reading for sensor.

8. Ensure header float is unlocked.

9. Start combine, and fully lower feeder house to ground. The adapter should be completely separated from header.

**NOTE:**
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

10. Check sensor reading on monitor. It should be at or above **0.7 V**.

11. Raise header so it is just off ground, and recheck sensor reading.

12. Raise header so it is just off ground and check sensor reading again. It should be below **4.3 V**.

13. If sensor voltage is not within low and high limits (**0.5–4.3 V**), or if range between low and high limits is less than **3.0 V**, you need to make adjustments according to *Adjusting Voltage Limits, page 166*. 
Setting Up Auto Header Height Control

Adjusting Voltage Limits

1. To adjust high voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at D.
   b. Position header 150–254 mm (6–10 in.) above ground. Float indicator should be at 0.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to right to increase high voltage limit, or to left to decrease it.
   e. Tighten sensor mounting bolts (A).
2. To adjust low voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at D.
   b. Fully lower header on ground. Float indicator should be at 4.
   c. Loosen mounting bolts (C).
   d. Rotate potentiometer (D) clockwise to increase low voltage limit, or counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (C).
3. If readings are in proper range, auto header height control can be calibrated.

Calibrating Auto Header Height

The calibration procedure determines limits of auto header height sensor for John Deere 50 series combines.

Calibrate auto header height system after initial header installation and after replacement or adjustment of any component of auto header height system. If system does not function properly, repeat calibration before proceeding to other troubleshooting steps.

NOTE:
For best performance of auto header height system, perform these procedures with center-link adjusted as long as possible. When setup and calibration is complete, adjust center-link back to desired header angle. See header angle topic in operations section of header operator’s manual.

1. Rest header on down stops, and unlock adapter float.
2. Start combine.
3. Press DIAGNOSTIC button (A) on monitor—dIA appears on monitor.

4. Press CAL button (A)—dIA-CAL appears on the monitor.
5. Press UP or DOWN buttons until hdr appears on the monitor.

6. Press ENTER button—hdr H-dn appears on the monitor.

7. Fully lower feeder house to ground.

**NOTE:**
Hold HEADER DOWN switch for 5–8 seconds to ensure feeder house is fully lowered.

8. Press CAL button (A) to save lower calibration of header—hdr H-UP appears on monitor.

9. Raise header three feet off ground, and press CAL (A) button—EOC appears on monitor.

10. Press ENTER button (B) to save calibration of header. Your AHHC is now calibrated.

**NOTE:**
If an error code appears on screen, sensor is not in correct working range. Refer to *Output Voltage Range, page 162* to check and adjust range.

11. After calibration is complete, specific combine operation settings need to be made to ensure proper field operation.

**Setting Sensitivity of Auto Header Height Control**

This is also known as dead band adjustment.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

To increase sensitivity of auto header height, follow these steps:
1. Press DIAGNOSTIC button (A) on monitor. dIA appears on the monitor.

2. Press UP button (B) until EO1 appears on monitor, and press ENTER (D). This is header adjustment.

3. Press UP (B) or DOWN (C) button until 112 is displayed on monitor. This is your sensitivity setting.

   **NOTE:**
   The lower reading, higher sensitivity. Ideal operating range is typically between 50 and 80.

4. Press ENTER (D) to select 112 as sensitivity setting (this will allow you to change first digit of number sequence).

5. Press UP (B) or DOWN (C) until desired number is displayed, then press CAL (E) button. This will bring you to second digit. Repeat this procedure until desired setting is achieved.

6. Press ENTER (D) to save changes.

   **NOTE:**
   The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.

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**Adjusting Threshold for Drop Rate Valve**

This procedure explains how to adjust point at which restrictor valve opens allowing full flow to lift cylinders.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
1. Press DIAGNOSTIC button (A) on monitor. DI A appears on the monitor.

2. Press UP button (B) until EO1 appears on monitor and press ENTER (C). This is header adjustment.

3. Press UP (B) or DOWN button until 114 is displayed on top portion of monitor. This is setting that adjusts when fast drop rate starts with respect to dead band.

   **NOTE:**
   The default setting is 100. Ideal operating range is typically between 60 and 85.

4. Press ENTER (C) to select 114 as fast drop rate (this will allow you to change first digit of number sequence).

5. Press UP (B) or DOWN (E) until desired number is displayed, then press CAL button (D). This will bring you to second digit. Repeat this procedure until desired setting is achieved.

6. Press ENTER (C) to save changes.

   **NOTE:**
   The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.

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**Operating Auto Header Height**

To operate your auto header height, follow these steps:

**IMPORTANT:**
For proper performance, deactivate accumulator (A) as described in combine’s operator’s manual.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Ensure HEADER HEIGHT RESUME and ACTIVE HEADER CONTROL functions are ON by pressing buttons on top monitor. Icons will appear on monitor with same picture that is displayed on buttons. This indicates that your auto header height, resume, and active header control are turned ON.

   - **ACTIVE HEADER HEIGHT** (A) is indicated with an arrow going up and down in front of it (A).
   - **HEADER HEIGHT RESUME** (B) is indicated with a header diagram with a curved arrow in front of it (B).

2. Once HEADER HEIGHT RESUME and AUTO HEADER CONTROL are turned ON, use buttons 2 (B) and 3 (C) on your hydrostatic lever for active header control.

   **NOTE:**
   Button 1 (A) is reserved for AUTO HEIGHT RESUME which will return header to a certain height, but will not automatically compensate for ground variation.

   **NOTE:**
   In order to use any of buttons combine must be running, AUTO HEADER HEIGHT SENSING must be turned ON, and header switch and feeder house must also be engaged.

3. Push button you would like to use, and header will position itself at a default height.
4. Adjust header to desired ground pressure by turning your auto header control dial located at upper right corner of console (A). Once you have set your desired ground pressure, auto header height will now maintain constant float at this ground pressure (it will lower or raise feeder house to compensate for changes in ground height).

**NOTE:**
Auto header height is designed to optimize your float when cutting on ground. It does not function when cutterbar is off ground.

![Figure 5.131: Auto Header Control Dial](image1)

5. The additional buttons (2 or 3) on hydrostatic lever are used for two different ground pressure settings. The header control dial on console will work for specific button that was pushed to activate auto header height control. Each time button is pushed, header will return to that specific ground pressure.

![Figure 5.132: Float Indicator Box](image2)

**Replacing Auto Header Height Control (AHHC) Sensor**

The auto header height control (AHHC) sensor/potentiometer sends a signal to combine allowing it to maintain a cutting height and optimize float as header follows ground contours. To replace AHHC sensor, follow these steps:

1. Disconnect wiring harness from existing sensor (A).
2. Remove two nuts and bolts (B) that secure sensor to bracket and remove sensor (A).

![Figure 5.133: AHHC Sensor](image3)
IMPORTANT:
To avoid damaging new sensor, install sensor as follows:

3. Position sensor control arm (A) against stop (B).
4. Install new sensor (C) onto linkage arm with wiring plug facing away from stop.
5. Pretension sensor’s internal spring by rotating sensor (C) until bolt holes align with holes on bracket.

6. Secure new sensor (A) to bracket with two nuts and bolts (B).

7. Ensure linkage (A) operates freely (arrow indicates approximate range).
8. Reconnect wiring harness to plug (B) on sensor.
9. Check voltage range of new sensor and adjust if necessary.
5.1.9 John Deere 60 Series Combines

Checking Voltage Range from Combine Cab (John Deere 60 Series)

The auto header height sensor output must be within a specific range, or feature will not work properly.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Low Voltage Limit</th>
<th>High Voltage Limit</th>
<th>Minimum Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Deere 60 Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>3.0 V</td>
</tr>
</tbody>
</table>

Check sensor’s output voltage range from combine cab according to instructions that follow.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ CAUTION

Check to be sure all bystanders have cleared the area.

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**
If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.

![Figure 5.137: Float Lock](image1)

![Figure 5.138: Float Indicator Box](image2)
4. Press DIAGNOSTIC button (D) on monitor—DIA appears on monitor.
5. Press UP button (A) until EO1 appears on monitor—this is header adjustment.
6. Press ENTER button (C).
7. Press UP (A) or DOWN button (B) until 24 is displayed on top portion of monitor—this is voltage reading for sensor.
8. Ensure header float is unlocked.
9. Start combine, and fully lower feeder house to ground.

**NOTE:**
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

10. Check sensor reading on monitor.
11. Raise header so it is just off ground, and recheck sensor reading.
12. If sensor voltage is not within low and high limits or if range between low and high limits is insufficient, refer to *Adjusting Voltage Limits, page 112.*
Calibrating Auto Header Height Control (John Deere 60 Series)

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

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

1. Ensure center-link is set to D.
2. Rest header on down stops, and unlock adapter float.
3. Put wings in locked position.
4. Start combine.
5. Press DIAGNOSTIC button (A) on monitor. DIA appears on monitor.
6. Press CAL button (B). DIA-CAL appears on monitor.

Figure 5.140: John Deere Combine Display
7. Press UP or DOWN buttons until HDR appears on monitor.

8. Press ENTER button. HDR H-DN appears on monitor.

9. Fully lower feeder house to ground.

   **NOTE:**
   You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

10. Press CAL button (A) to save calibration of header. HDR H-UP appears on monitor.

11. Raise header three feet off ground and press CAL (A) button. EOC appears on monitor.

12. Press ENTER button (B) to save calibration of header. Your AHHC is now calibrated.

   **NOTE:**
   If an error code appears during calibration, sensor is out of voltage range and will require adjustment. Refer to *Checking Voltage Range from Combine Cab (John Deere 60 Series)*, page 174.

   **NOTE:**
   After calibration is complete, adjust combine operation settings to ensure proper field operation.

*Turning Accumulator off (John Deere 60 Series)*

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Press DIAGNOSTIC button (A) on monitor. DIA appears on the monitor.
2. Press UP button (B) until EO1 appears on monitor, and press ENTER (D). This is header adjustment.
3. Press UP (B) or DOWN (C) button until 132 is displayed on top portion of monitor. This is reading for accumulator.
4. Press ENTER (D) to select 132 as accumulator reading (this will allow you to change display to a three-digit number so it has a 0 in it, for example, x0x).
5. Press UP (B) or DOWN (C) button until desired number is displayed, and press CAL (E) button.
6. Press ENTER (D) to save changes. The accumulator is now deactivated.

Setting Sensing Grain Header Height to 50 (John Deere 60 Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

To set sensing grain header height, follow these steps:
1. Press DIAGNOSTIC button (A) on monitor. DIA appears on the monitor.
2. Press UP button (B) until EO1 appears on monitor, and press ENTER (D). This is header adjustment.
3. Press UP (B) or DOWN (C) button until 128 is displayed on top portion of monitor. This is reading for the sensor.
4. Press ENTER (D) to select 128 as sensor reading (this will allow you to change display to a three-digit number so it has a 50 in it).
5. Press UP (B) or DOWN (C) button until desired number is displayed, and press CAL (E) button.
6. Press ENTER (D) to save the changes. The height is now set.
NOTE:
Do NOT use active header float function (A) in combination with MacDon auto header height control (AHHC)—the two systems will counteract one another. The header symbol (B) on display should NOT have a wavy line under it and should appear exactly as shown on Active Header Control Display in Figure 5.145: John Deere Combine Display, page 179.

Setting Sensitivity of Auto Header Height Control (John Deere 60 Series)

This is also known as dead band adjustment.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press DIAGNOSTIC button (A) on monitor. DIA appears on the monitor.
2. Press UP button (B) until EO1 appears on monitor, and press ENTER (D). This is header adjustment.
3. Press UP (B) or DOWN (C) button until 112 is displayed on monitor. This is your sensitivity setting.

NOTE:
The lower reading, higher sensitivity. Ideal operating range is typically between 50 and 80.

4. Press ENTER (D) to select 112 as sensitivity setting (this will allow you to change first digit of number sequence).
5. Press UP (B) or DOWN (C) until desired number is displayed, then press CAL (E) button. This will bring you to second digit. Repeat this procedure until desired setting is achieved.
6. Press ENTER (D) to save changes.

NOTE:
The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.
Adjusting Threshold for Drop Rate Valve (John Deere 60 Series)

This procedure explains how to adjust point at which restrictor valve opens allowing full flow to lift cylinders.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press DIAGNOSTIC button (A) on monitor. DIA appears on the monitor.
2. Press UP button (B) until EO1 appears on monitor and press ENTER (C). This is header adjustment.
3. Press UP (B) or DOWN button (E) until 114 is displayed on top portion of monitor. This is setting that adjusts when fast drop rate starts with respect to dead band.

NOTE:
The default setting is 100. Ideal operating range is typically between 60 and 85.

4. Press ENTER (C) to select 114 as fast drop rate (this will allow you to change first digit of number sequence).
5. Press UP (B) or DOWN (E) until desired number is displayed, then press CAL button (D). This will bring you to second digit. Repeat this procedure until desired setting is achieved.
6. Press ENTER (C) to save changes.

NOTE:
The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.

5.1.10 John Deere 70 Series Combines

Checking Voltage Range from Combine Cab (John Deere 70 Series)

The auto header height sensor output must be within a specific range, or feature will not work properly.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Low Voltage Limit</th>
<th>High Voltage Limit</th>
<th>Minimum Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Deere 70 Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>3.0 V</td>
</tr>
</tbody>
</table>

Check sensor’s output voltage range from combine cab according to instructions that follow.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
CAUTION

Check to be sure all bystanders have cleared the area.

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**
If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.

4. Press HOME PAGE button (A) on main page of combine display.
5. Ensure three icons (A) depicted in illustration at right appear on combine display.

6. Use scroll knob (A) to highlight middle icon (the green i) and press check mark button (B) to select it. This will display Message Center.

7. Use scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from right column, and then select it by pressing check mark button.

8. Use scroll knob to highlight drop down box (B), and press check mark button to select it.
9. Use scroll knob to highlight LC 1.001 VEHICLE (A), and then press check mark button to select it.

10. Use scroll knob to highlight down arrow (A) and press check mark button to scroll through list until 029 DATA (B) is displayed and voltage reading (C) appears on combine display.

11. Ensure header float is unlocked.

12. Start combine and fully lower feeder house to the ground.

   **NOTE:**
   You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

13. Check sensor reading on monitor.

14. Raise header so it is just off ground and recheck sensor reading.

15. If sensor voltage is not within low and high limits or if range between low and high limits is insufficient, refer to *Adjusting Voltage Limits, page 112.*
Setting Up Auto Header Height Control

Calibrating Feeder House Speed (John Deere 70 Series)

The feeder house speed must be calibrated before you calibrate auto header height control (AHHC) system. Refer to combine operator’s manual for instructions.

Calibrating Auto Header Height Control (John Deere 70 Series)

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ CAUTION

Check to be sure all bystanders have cleared the area.

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock adapter float.
3. Start combine.
4. Press button located fourth from left along top of monitor (A) to select icon that resembles an open book with a wrench on it (B).
5. Press top button (A) a second time to enter diagnostics and calibration mode.

6. Select HEADER in box (A) by scrolling down to box using scroll knob, and then pressing check mark button (knob and button are shown in Figure 5.158: John Deere Combine Control Console, page 185).
7. Scroll down to lower right icon that resembles an arrow in a diamond (B) and press check mark button to select it.
8. Follow steps listed on combine display to perform the calibration.

**NOTE:**
If an error code appears on page, sensor is not in correct working range. Refer to Checking Voltage Range from Combine Cab (John Deere 70 Series), page 180 to check and adjust range.

**Setting Sensitivity of Auto Header Height Control (John Deere 70 Series)**

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press button (A) twice and current sensitivity setting will appear on combine display (the lower reading, lower sensitivity).
2. Use scroll knob (B) to adjust sensitivity setting. The adjustment will be saved automatically.

**NOTE:**
If page remains idle for a short period of time, it will automatically return to previous page. Pressing check mark button (C) also will return combine display to previous page.
SETTING UP AUTO HEADER HEIGHT CONTROL

NOTE:
The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.

Adjusting Manual Header Raise/Lower Rate (John Deere 70 Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press button (A) and current raise/lower rate setting will appear on monitor (the lower reading, slower rate).
2. Use scroll knob (B) to adjust rate. The adjustment will be saved automatically.

NOTE:
If page remains idle for a short period of time, it will automatically return to previous page. Pressing check mark button (C) will also return monitor to previous page.

NOTE:
The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.
5.1.11 John Deere S-Series and T-Series Combines

Checking Voltage Range from Combine Cab (John Deere S-Series)

The auto header height sensor output must be within a specific range, or feature will not work properly.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Low Voltage Limit</th>
<th>High Voltage Limit</th>
<th>Minimum Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Deere S and T-Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>3.0 V</td>
</tr>
</tbody>
</table>

Check sensor’s output voltage range from combine cab according to instructions that follow.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ **CAUTION**

Check to be sure all bystanders have cleared the area.

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

   **NOTE:**
   If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.
4. Press CALIBRATION icon (A) on main page of combine display. The CALIBRATION page appears.

5. Press DIAGNOSTIC READINGS icon (A) on CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

6. Select AHHC RESUME (A) and a list of calibration options appears.
SETTING UP AUTO HEADER HEIGHT CONTROL

7. Select AHHC SENSING option.

8. Press icon that resembles an arrow in a box (A). The AHHC SENSING menu appears and five pages of information are displayed.

9. Press icon (A) until it reads Page 5 near top of the page and following sensor readings appear:
   - LEFT HEADER HEIGHT
   - CENTER HEADER HEIGHT
   - RIGHT HEADER HEIGHT
   A reading is displayed for only center header height sensor. On MacDon header, there is only one sensor located in float indicator box on top of the CA25.

10. Ensure header float is unlocked.

11. Start combine and fully lower feeder house to the ground.

   **NOTE:**
   You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

12. Check sensor reading on monitor.

13. If sensor voltage is not within low and high limits or if range between low and high limits is insufficient refer to *Adjusting Voltage Limits, page 112.*
Calibrating Feeder House Fore/Aft Tilt Range (John Deere S-Series)

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

This procedure applies only to model year 2015 and later John Deere S-Series combines.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

The feeder house fore/aft tilt is controlled by buttons (C) and (D) at back of hydro handle.

![Figure 5.170: John Deere Hydro Handle](image)

**NOTE:**
The feeder house fore/aft tilt controls can be changed to work with buttons E and F by pressing hydro handle icon (A) and then selecting FEEDER HOUSE FORE/AFT TILT from drop-down menu (B) on combine display.

![Figure 5.171: John Deere Combine Display](image)

To calibrate feeder house fore/aft tilt range, follow these steps:

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock adapter float.
3. Place wings in locked position.
4. Press DIAGNOSTIC icon (A) on main page of combine display. The CALIBRATION page displays.

5. Select CALIBRATIONS drop-down menu (A) to view list of calibration options.

6. Press arrow (A) to cycle up though calibration options and select FEEDER HOUSE FORE/AFT TILT RANGE.

8. Follow instructions that appear on combine display. As you proceed through calibration process, display will automatically update to show next step.

   **NOTE:**
   If an error code appears during calibration, sensor is out of voltage range and will require adjustment. Refer to *Checking Voltage Range from Combine Cab (John Deere S-Series)*, page 187.

---

**Calibrating Auto Header Height Control (John Deere S-Series)**

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock adapter float.
3. Place wings in locked position.
4. Press DIAGNOSTIC icon (A) on main page of monitor. The CALIBRATION page appears.

5. Select THRESHING CLEARANCE (A) and a list of calibration options appears.

6. Select FEEDER HOUSE SPEED (A) and calibrate.
7. Select HEADER (B) and calibrate.
8. Press icon (A) with either FEEDER HOUSE SPEED or HEADER selected and icon will turn green.

9. Click button (A) and instructions will appear on screen to guide you through remaining calibration steps.

**NOTE:**
If an error code appears during calibration, sensor is out of voltage range and will require adjustment. Refer to *Adjusting Voltage Limits, page 112.*

---

**Setting Sensitivity of Auto Header Height Control (John Deere S-Series)**

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press button (A) twice and current sensitivity setting will appear on combine display.
SETTING UP AUTO HEADER HEIGHT CONTROL

2. Press – or + icon (A) to adjust rates.

NOTE:
The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.

Adjusting Manual Header Raise/Lower Rate (John Deere S-Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press button (A) and current sensitivity setting will appear on monitor.

2. Press – or + icon (A) to adjust rates.

NOTE:
The numbers depicted on displays in these illustrations are for reference purposes only; they are not intended to represent specific settings for your equipment.
NOTE:
The ideal ground pressure—in most cases—is one number (on float indicator box) above header suspended off ground. For example, if float indicator needle (A) is positioned at 0 with header suspended off ground, then ideal ground pressure will be achieved with needle positioned at 1. Operating with heavier pressures can wear cutterbar wear plate prematurely.

Setting Preset Cutting Height (John Deere S-Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Press COMBINE – HEADER SETUP icon (A) on main page. The COMBINE – HEADER SETUP page appears. This page is used to set various header settings such as reel speed, header width, and height of feeder house for acre counter engagement.

3. Select top-left (A) and top-center (B) icons for auto height sensing and return to cut.

4. Select an appropriate ground pressure setting. Preset button 2 (B) on joystick for a light ground pressure setting in muddy or soft soil conditions, or preset button 3 (C) for a heavy ground pressure setting in harder soil conditions and a faster ground speed.

**NOTE:**
Preset button 1 (A) is reserved for header lift on headland and is not used for ground cutting.

**NOTE:**
The ideal ground pressure—in most cases—is one number (on float indicator box) above header suspended off ground. For example, if float indicator needle (A) is positioned at 0 with header suspended off ground, then ideal ground pressure will be achieved with needle positioned at 1. Operating with heavier pressures can wear cutterbar wear plate prematurely.
5. Use control knob (A) to scroll through different button options.

**NOTE:**
When AHHC is engaged, AHHC icon (A) appears on monitor and number indicating which button was pressed (B) is displayed on the screen.

---

### 5.1.12 Lexion 500-Series Combines

**Auto Header Height Sensor Voltage Requirements**

The auto header height sensor output must be within a specific voltage range for feature to work properly.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Lower Voltage Limit (± 0.2)</th>
<th>Upper Voltage Limit (± 0.2)</th>
<th>Minimum Range Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexion 500/600/700 Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
</tbody>
</table>

Check sensor’s output voltage range at float indicator according to instructions that follow.
Checking Sensor’s Output Voltage Range

The auto header height sensor output must be within a specific range for feature to work properly. To check sensor’s output voltage range, follow these steps:

1. Position header 150 mm (6 in.) above ground, and rest it on safety props. Unlock adapter float.

   **NOTE:**
   If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

2. The pointer (A) on float indicator should point at 0. If it does not, adjust cable bracket (B) until pointer (A) on float indicator points to 0.

3. Measure voltage between ground and signal wires at AHHC sensor in float indicator with a voltmeter.

   **NOTE:**
   The voltage reading should be below 4.3 V.
4. Fully lower combine feeder house until adapter is no longer supporting header. The float indicator should read 4.

**NOTE:**
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

5. Measure voltage between ground and signal wires at AHHC sensor in float indicator with a voltmeter (A). It should be at low voltage limit for combine – 0.7 V.

6. If sensor voltage is not within low and high limits, or if range between low and high limits less than 3.0 V, make adjustments according to Adjusting Voltage Limits, page 200).

### Adjusting Voltage Limits

1. To adjust high voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at D.
   b. Position header 150–254 mm (6–10 in.) above ground. Float indicator should be at 0.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to right to increase high voltage limit, or to left to decrease it.
   e. Tighten sensor mounting bolts (A).

2. To adjust low voltage limit:
   a. Fully extend center-link, (i.e. increase header/guard angle to maximum). Header angle indicator should be at D.
   b. Fully lower header to ground. Float indicator should be at 4.
   c. Loosen mounting bolts (C).
   d. Rotate potentiometer (D) clockwise to increase low voltage limit, or counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (C).

3. When readings are in proper range, auto header height control can be calibrated.

### Calibrating Auto Header Height System

The calibration procedure determines limits of auto header height sensor.

Calibrate auto header height system after initial header installation, and after replacing or adjusting any component of auto header height system. If system does not function, calibrate it again.
Calibrating Auto Header Height Control (Lexion 500 Series)

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Ensure center-link is set to D.

2. Use < key (A) or > key (B) to select AUTO HEADER, and press OK key (C). The E5 page displays whether automatic header height is ON or OFF.

3. Use – key (A) or + key (B) to turn ON AHHC, and press OK (C).

4. Engage threshing mechanism and header.
5. Use < or > key to select CUTT.HEIGHT LIMITS, and press OK.

6. Follow procedure displayed on screen to program upper and lower limits of header into CEBIS (CLAAS Electronic on-Board Information System).

7. Use < or > key to select SENSITIVITY CAC, and press OK.

**NOTE:**
Setting sensitivity of AHHC system impacts reaction speed of AHHC on the header.

8. Use – key or + key to change setting of reaction speed, and press OK key.

9. Use line (A) or value (B) to determine sensitivity setting.

**NOTE:**
The setting can be adjusted from 0–100%. When sensitivity is adjusted to 0%, signals from sensing bands have no effect on automatic cutting height adjustment. When sensitivity is adjusted to 100%, signals from sensing bands have maximum effect on automatic cutting height adjustment. The recommended starting point is 50%.
SETTING UP AUTO HEADER HEIGHT CONTROL

Auto Header Height Sensor Voltage Requirements

The auto header height sensor output must be within a specific voltage range for feature to work properly.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Lower Voltage Limit (+/- 0.2)</th>
<th>Upper Voltage Limit (+/- 0.2)</th>
<th>Minimum Range Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexion 500/600/700 Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
</tbody>
</table>

Check sensor’s output voltage range at float indicator according to instructions that follow.

Setting Cutting Height (Lexion 500 Series)

Cutting heights can be programmed into preset cutting height and auto contour systems. Use preset cutting height system for cutting heights above 150 mm (5.9 in.), and use auto contour system for cutting heights below 150 mm (5.9 in.).

Setting Preset Cutting Height (Lexion 500 Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Start engine.
2. Activate machine enable switch.
3. Engage threshing mechanism.
4. Engage header.
5. Briefly press button (A) in order to activate auto contour system, or briefly press button (B) in order to activate preset cutting height system.

NOTE:
Button (A) is used only with auto header height control (AHHC) function. Button (B) is used only with return to cut function.

Figure 5.203: Joystick Buttons
SETTING UP AUTO HEADER HEIGHT CONTROL

6. Use < key (C) or > key (D) to select CUTTING HEIGHT page, and press OK key (E).

7. Use – key (A) or + key (B) to set desired cutting height. An arrow indicates selected cutting height on scale.

8. Briefly press button (A) or button (B) in order to select set point.

9. Repeat Step 7., page 204 for set point.

Setting Cutting Height Manually (Lexion 500 Series)

To set cutting height manually, follow these steps:

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Use button (A) to raise header, or button (B) to lower header to desired cutting height.

2. Press and hold button (C) for three seconds to store cutting height into CEBIS (CLAAS Electronic on-Board Information System). An alarm will sound when new setting has been stored.

3. If desired, program a second set point by using button (A) to raise header or button (B) to lower header to desired cutting height, and briefly press button (C) to store second set point into CEBIS. An alarm will sound when new setting has been stored.

NOTE:
For above ground cutting, repeat Step 1., page 205, and use button (D) instead of button (C) while repeating Step 2., page 205.

Setting Sensitivity of Auto Header Height Control (Lexion 500 Series)

Setting sensitivity of auto header height control (AHHC) system impacts reaction speed of AHHC on header.

NOTE:
The upper and lower limits of header must be programmed into CEBIS before adjusting sensitivity of AHHC system. The setting can be adjusted from 0–100%. When sensitivity is adjusted to 0%, signals from sensing bands have no effect on automatic cutting height adjustment. When sensitivity is adjusted to 100%, signals from sensing bands have maximum effect on automatic cutting height adjustment. The recommended starting point is 50%.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Use < key (C) or > key (D) to select SENSITIVITY CAC, and press OK key (E).

2. Use – key (A) or + (B) key to change reaction speed setting, and press OK key (E).
3. Use line (A) or value (B) to determine sensitivity setting.

Figure 5.208: Lexion Combine Display
Figure 5.209: Flow Chart for Setting Sensitivity of Float Optimizer
Setting Up Auto Header Height Control

Adjusting Auto Reel Speed (Lexion 500 Series)

The reel speed can be preset when automatic header functions are activated. Follow these steps to preset reel speed.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Use < or > key to select REEL WINDOW. Window **E15** will display current advance or retard speed of reel in relation to ground speed.

2. Press OK key (C) to open REEL SPEED window.

3. Use – key (A) or + key (B) to set reel speed in relation to current ground speed. Window **E15** will display selected reel speed.

Figure 5.210: Combine Display

Figure 5.211: Combine Controls
4. If desired, manually adjust reel speed by rotating rotary switch to reel position (A), and then use – or + key to set reel speed. Window E15 will display selected reel speed.

5. Press and hold button (A) or button (B) for three seconds to store setting into CEBIS (CLAAS Electronic on-Board Information System). An alarm will sound when new setting has been stored.

NOTE:
Whenever button (A) or button (B) is pressed for three seconds, current positions for reel speed and cutting height are stored.
6. Use < or > key to select REEL WINDOW. When reel window is selected, window E15 will display current advance or retard speed of reel in relation to ground speed.

7. Press OK key (E), and use < key (C) or the > key (D) to select REEL FORE AND AFT window.
8. Use – key (A) or + key (B) to set reel fore-aft position.
SETTING UP AUTO HEADER HEIGHT CONTROL

NOTE:
Reel fore-aft position can also be set using joystick.

9. Press and hold button (C) or button (D) for three seconds to store setting into CEBIS (CLAAS Electronic on-Board Information System). An alarm will sound when new setting has been stored.

NOTE:
Whenever button (C) or button (D) is pressed for three seconds, current positions for reel speed and cutting height are stored.

Figure 5.217: Joystick Buttons
5.1.13 Lexion 700-Series Combines

This section applies to Lexion 700-series combines. Refer to 5.1.12 Lexion 500-Series Combines, page 198 for Lexion 500-series.

Auto Header Height Sensor Voltage Requirements

The auto header height sensor output must be within a specific voltage range for feature to work properly.

<table>
<thead>
<tr>
<th>Combine</th>
<th>Lower Voltage Limit (+/- 0.2)</th>
<th>Upper Voltage Limit (+/- 0.2)</th>
<th>Minimum Range Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexion 500/600/700 Series</td>
<td>0.7 V</td>
<td>4.3 V</td>
<td>2.5 V</td>
</tr>
</tbody>
</table>

Check sensor’s output voltage range at float indicator according to instructions that follow.

Checking Sensor’s Output Voltage Range

The auto header height sensor output must be within a specific range for feature to work properly. To check sensor’s output voltage range, follow these steps:

1. Position header 150 mm (6 in.) above ground, and rest it on safety props. Unlock adapter float.

   **NOTE:**
   If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

2. The pointer (A) on float indicator should point at 0. If it does not, adjust cable bracket (B) until pointer (A) on float indicator points to 0.

   ![Figure 5.218: Float Indicator with Auto Header Height Sensor](image)
3. Measure voltage between ground and signal wires at AHHC sensor in float indicator with a voltmeter.

**NOTE:**
The voltage reading should be below **4.3 V**.

4. Fully lower combine feeder house until adapter is no longer supporting header. The float indicator should read **4**.

**NOTE:**
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.

5. Measure voltage between ground and signal wires at AHHC sensor in float indicator with a voltmeter (A). It should be at low voltage limit for combine – **0.7 V**.

6. If sensor voltage is not within low and high limits, or if range between low and high limits less than **3.0 V**, make adjustments according to *Adjusting Voltage Limits, page 200*.
### Adjusting Voltage Limits

1. To adjust high voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at D.
   b. Position header 150–254 mm (6–10 in.) above ground. Float indicator should be at 0.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to right to increase high voltage limit, or to left to decrease it.
   e. Tighten sensor mounting bolts (A).
2. To adjust low voltage limit:
   a. Fully extend center-link, (i.e. increase header/guard angle to maximum). Header angle indicator should be at D.
   b. Fully lower header to ground. Float indicator should be at 4.
   c. Loosen mounting bolts (C).
   d. Rotate potentiometer (D) clockwise to increase low voltage limit, or counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (C).
3. When readings are in proper range, auto header height control can be calibrated.

### Calibrating Auto Header Height System

The calibration procedure determines limits of auto header height sensor.

Calibrate auto header height system after initial header installation, and after replacing or adjusting any component of auto header height system. If system does not function, calibrate it again.

### Calibrating Auto Header Height Control (Lexion 700 Series)

For best performance of the auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

**NOTE:**
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Ensure center-link is set to D.
2. Ensure that header float is unlocked.
3. To calibrate AUTO CONTOUR, use control knob (A) to scroll left and right in top row until AUTO CONTOUR icon (B) is highlighted. Press control knob (A) to select it.

4. Use control knob (A) to highlight icon that resembles a header with up and down arrows (not shown), and press control knob (A) to select it. The highlighted HEADER icon (B) will be displayed on the screen.

5. With letter A highlighted (shown as B in image to right), use control knob (A) to move to highlight icon that resembles a header with up and down arrows (C), and press control knob (A) to select it.
6. After pressing control knob, letter A and screwdriver icon appear on screen (as shown).

7. Use control knob (A) to move to highlight icon that resembles a screwdriver (B).

8. Exit cab to engage combine separator and feeder house.

9. Press control knob (A) and a progress bar chart will appear.

10. Fully raise feeder house and progress bar chart will advance to 25% (A).

11. Fully lower feeder house until header stops moving. Header float should be unlocked. The progress bar chart will advance to 50%.

12. Fully raise feeder house a second time and progress bar chart will advance to 75%.

13. Fully lower feeder house until header stops moving, and progress bar chart will advance to 100%.

14. Once calibrations are complete, progress bar chart displays 100% (A). The procedure is now complete.

**NOTE:** At any time during calibration, if voltage is not within range of 0.5–4.5 volts, monitor will indicate that learning procedure has not concluded.

**NOTE:** If header float is set too light, an error message will appear. If error message appears, back float off three full-turns of adjuster bolts to adjust float to approximately 45–55 kg (100–125 lb.).

15. The calibration procedure is now complete.
SETTING UP AUTO HEADER HEIGHT CONTROL

Setting Cutting Height (Lexion 700 Series)

To set cutting height, follow these steps.

⚠️ CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Lower header to desired cutting height or ground pressure setting. The float indicator (the white module on top of CA25 adapter) should be set to 1.5.

![Figure 5.228: Float Indicator](image)

2. Push and hold left side of header. Raise and lower switch (A) until you hear a ping.

NOTE:
Two different cutting heights can be programmed.

![Figure 5.229: Lexion Combine Display, Console, and Joystick](image)

Setting Sensitivity of Auto Header Height Control (Lexion 700 Series)

NOTE:
Changes may have been made to combine controls or display since this document was published. Refer to combine operator’s manual for updates.
1. Use control knob (A) to highlight HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL dialog box opens.

2. Select HEADER icon.


4. Select SENSITIVITY CAC (B) from list.

5. Select SENSITIVITY CAC icon (A).

**NOTE:**
To set sensitivity, you will have to change CUTTING HEIGHT ADJUSTMENT (B) from 0 default. The settings from 1–50 provide a faster response, whereas settings from -1 to -50 provide a slower response. For best results, make adjustments in increments of five.

6. Increase CUTTING HEIGHT ADJUSTMENT setting (B) if reaction time between header and adapter is too slow while cutting on ground, and decrease CUTTING HEIGHT ADJUSTMENT setting (B) if reaction time between header and adapter is too fast.

7. Increase sensitivity if header is lowered too slowly, and decrease sensitivity if header hits ground too hard or is lowered too quickly.
Adjusting Auto Reel Speed (Lexion 700 Series)

Adjust auto reel speed as follows:

**NOTE:**
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Turn control knob (A) to highlight HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL dialog menu opens.

2. Turn control knob (A) to select REEL SPEED (B), and adjust reel speed (if you are **NOT** using Auto Reel Speed). A graph displays in dialog menu.
3. Select ACTUAL VALUE (A) from AUTO REEL SPEED dialog menu (if you are using Auto Reel Speed). The ACTUAL VALUE indicates auto reel speed.

4. Use control knob (A) to change reel speed.

NOTE:
In most cases, ideal ground pressure is one number higher than value on float indicator with header off ground. For example, if float indicator needle (A) is positioned at 0 with header off ground, then ideal ground pressure will be achieved with needle positioned at 1. Operating with heavier pressures can wear cutterbar wear plate prematurely.
5.1.14 New Holland Combines CX/CR Series (CR Series—Model Year 2014 and Earlier)

NOTE:
For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to 5.1.15 New Holland Combines (CR Series—Model Year 2015 and Later), page 232.

Checking Voltage Range from Combine Cab (New Holland)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

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

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

NOTE:
If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

Figure 5.238: Float Lock
3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.

4. Ensure header float is unlocked.

5. Select DIAGNOSTICS (A) on main page. The DIAGNOSTICS page displays.

6. Select SETTINGS. The SETTINGS page displays.
7. Select GROUP drop-down arrow (A). The GROUP dialog box displays.


9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at top of page.

10. Raise and lower header to see full range of voltage readings.

11. Adjust voltage limits (refer to Adjusting Voltage Limits, page 112) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to Table 5.1 Sensor Voltage Limits, page 110).

Engaging Auto Header Height Control (New Holland CR/CX Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Select HEADER LATERAL FLOAT on combine display, and press ENTER.
2. Use up and down navigation keys to move between options, and select INSTALLED.

3. Select HEADER AUTOFLOAT, and press ENTER.
4. Use up and down navigation keys to move between options, and select INSTALLED.
**Setting Up Auto Header Height Control**

*Calibrating Auto Header Height Control (New Holland CR/CX Series)*

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

**NOTE:**
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ **CAUTION**

Check to be sure all bystanders have cleared the area.

Check following conditions before starting header calibration procedure:

- The header is attached to combine.
- The combine is on level ground, with header level to ground.
- The header is on down stops, and center-link is set to D.
- The engine is running.
- The combine is not moving.
- No faults have been received from Header Height Controller (HHC) module.
- Header/feeder is disengaged.
- Lateral flotation buttons are NOT pressed.
- ESC key is NOT pressed.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATION on combine display, and press right arrow navigation key to enter information box.

2. Select HEADER (A), and press ENTER. The CALIBRATION dialog box opens.

**NOTE:**
You can use up and down navigation keys to move between options.

*Figure 5.247: New Holland Combine Display*
3. Follow calibration steps in order in which they appear in dialog box. As you proceed through calibration process, display will automatically update to show next step.

**NOTE:**
Pressing ESC key during any of steps or letting system sit idle for more than three minutes will cause calibration procedure to stop.

**NOTE:**
Refer to your combine operator’s manual for an explanation of any error codes.

4. When all steps have been completed, CALIBRATION SUCCESSFUL message is displayed on page. Exit CALIBRATION menu by pressing ENTER or ESC key.

**NOTE:**
If float was set heavier to complete ground calibration procedure, adjust to recommended operating float after calibration is complete.

5. If unit does not function properly, conduct maximum stubble height calibration.

**Calibrating Maximum Stubble Height**

This procedure describes how to calibrate the area counter to stop or start counting at the correct height. Program header to a height that will never be reached while cutting. The area counter will stop counting when header is above programmed height, and will begin counting when header is below programmed height.

Select height of header that corresponds to description above.

**IMPORTANT:**
- If value is set too low, area may NOT be counted since header is sometimes raised above this threshold although combine is still cutting.
- If value is set too high, area counter will keep counting even when header is raised (but below this threshold) and combine is no longer cutting crop.

⚠️ **CAUTION**

Check to be sure all bystanders have cleared the area.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Select MAXIMUM STUBBLE HEIGHT calibration dialog box. As you proceed through calibration process, display will automatically update to show next step.

2. Move header to correct position using header up or down control switch on multifunction handle.

3. Press ENTER to continue. As you proceed through calibration process, display will automatically update to show next step.

4. Press ENTER or ESC to close calibration page. The calibration is now complete.

Adjusting Header Raise Rate (New Holland CR/CX Series)

If necessary, header raise rate (the first speed on HEADER HEIGHT rocker switch of multifunctional handle) can be adjusted.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Select HEADER RAISE RATE on combine display.
2. Use + or – buttons to change setting.
3. Press ENTER to save new setting.

NOTE:
The raise rate can be changed from 32 to 236 in steps of 34. The factory setting is 100.

![Figure 5.251: New Holland Combine Display](image)

Setting Header Lower Rate to 50 (New Holland CR/CX Series)

If necessary, header lower rate (the automatic header height control button or second speed on header height rocker switch of multifunction handle) can be adjusted.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator's manual for updates.

1. Select HEADER LOWER RATE on combine display.
2. Use + or – buttons to change setting to 50.
3. Press ENTER to save new setting.

NOTE:
The lower rate can be changed from 2 to 247 in steps of 7. It is factory-set to 100.

![Figure 5.252: New Holland Combine Display](image)

Setting Sensitivity of Auto Header Height Control to 200 (New Holland CR/CX Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠ CAUTION
Check to be sure all bystanders have cleared the area.
1. Engage threshing and feeder house.
2. Select HEIGHT SENSITIVITY on combine display screen.
3. Use + or – buttons to change setting to 200.
4. Press ENTER to save new setting.

**NOTE:**
The sensitivity can be changed from 10 to 250 in steps of 10. It is factory-set to 100.

---

Setting Preset Cutting Height (New Holland CR/CX Series)

To set preset cutting height, follow these steps:

**NOTE:**
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.
SETTING UP AUTO HEADER HEIGHT CONTROL

1. Engage threshing mechanism and feeder with switches (A) and (B).

2. Set HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT MODE position (A) or (B).

3. Lower header to desired cutting height using HEADER HEIGHT AND HEADER LATERAL FLOTATION rocker switch (C).

4. Press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of two seconds to store height position. A beep will confirm setting.

   **NOTE:**
   It is possible to store two different header height values by using HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT MODE position (A) or (B).

5. To change one of memorized header height set points while combine is in use, use HEADER HEIGHT AND HEADER LATERAL FLOTATION rocker switch (C) (slow up/down) to raise or lower header to desired value. Press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of two seconds to store new height position. A beep will confirm setting.

   **NOTE:**
   Do NOT press too hard on AUTOMATIC HEADER HEIGHT CONTROL button (E), or float mode will be disengaged.

   **NOTE:**
   It is not necessary to press rocker switch (D) again after adjusting.

   **NOTE:**
   The ideal ground pressure—in most cases—is one number (on float indicator box) above header suspended off ground. For example, if float indicator needle (A) is positioned at 0 with header suspended off ground, then ideal ground pressure will be achieved with needle positioned at 1. Operating with heavier pressures can wear cutterbar wear plate prematurely.
**SETTING UP AUTO HEADER HEIGHT CONTROL**

*Configuring Reel Fore-Aft, Header Tilt, and Header Type (New Holland CR Series)*

This procedure applies only to 2016 New Holland CR models 6.90, 7.90, 8.90, and 9.90.

**NOTE:**
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Simultaneously press both UNLOAD (A) and RESUME (B) buttons on hydro handle.

![Figure 5.256: New Holland Combine Controls](image)

2. On HEAD 1 page, change CUTTING TYPE from FLEX to PLATFORM as shown at (A).

![Figure 5.257: New Holland Combine Display](image)

3. On HEAD 2 page, change HEADER SUB TYPE from DEFAULT to 80/90 as shown at (A).

![Figure 5.258: New Holland Combine Display](image)
There are now two different buttons for ON GROUND presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require first two buttons (A and B). The third button down (C) is not configured.

![Figure 5.259: New Holland Combine Controls](image)

### 5.1.15 New Holland Combines (CR Series—Model Year 2015 and Later)

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other New Holland combine models, refer to [5.1.14 New Holland Combines CX/CR Series (CR Series—Model Year 2014 and Earlier), page 221](#).

**Engaging Auto Header Height Control (New Holland CR Series)**

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle.

**NOTE:**
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

1. Ensure center-link is set to D.
2. Select TOOLBOX (A) on main page. The TOOLBOX page displays.

![Figure 5.260: New Holland Combine Display](image)
3. Simultaneously press both UNLOAD (A) and RESUME (B) buttons on hydro handle.

4. Select HEAD 1 (A). The HEADER SETUP 1 page displays.

5. Select CUTTING TYPE drop-down arrow (B) and change CUTTING TYPE to PLATFORM (C).

7. Select 80/90 (A).


9. Select AUTOFLOAT drop-down arrow and set AUTOFLOAT to INSTALLED (A).

10. Select AUTO HEADER LIFT drop-down arrow and set AUTO HEADER LIFT to INSTALLED (B).

**NOTE:**
With AUTO HEADER LIFT installed and AHHC engaged, header will lift up automatically when you pull back on GSL.

11. Set values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.
12. Set values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

![New Holland Combine Display](image)

*Figure 5.267: New Holland Combine Display*

**Checking Voltage Range from Combine Cab (New Holland CR Series)**

**NOTE:**
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

**CAUTION**

Check to be sure all bystanders have cleared the area.

1. Position header 150 mm (6 in.) above ground, and unlock adapter float.

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**
If header is not on down stops, float is too light. Readjust float if necessary.

**NOTE:**
If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of AHHC system.

![Float Lock](image)

*Figure 5.268: Float Lock*
3. Adjust cable take-up bracket (B) (if necessary) until pointer (A) on float indicator is on 0.

4. Ensure header float is unlocked.

5. Select DIAGNOSTICS (A) on main page. The DIAGNOSTICS page displays.

7. Select HEADER HEIGHT/TILT (A) from GROUP drop-down menu.

8. Select HEADER HEIGHT SENS. L (B) from PARAMETER drop-down menu.

9. Select GRAPH (A). The exact voltage (B) is displayed at top of page.

10. Raise and lower header to see full range of voltage readings.

11. Adjust voltage limits (refer to Adjusting Voltage Limits, page 112) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to Table 5.1 Sensor Voltage Limits, page 110).
Calibrating Auto Header Height Control (New Holland CR Series)

For best performance of auto header height control (AHHC), perform these procedures with center-link set to D. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to Header Angle in header operator’s manual for instructions.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to combine operator’s manual for updates.

⚠️ CAUTION

Check to be sure all bystanders have cleared the area.

Check following conditions before starting header calibration procedure:

- The header is attached to combine.
- The combine is on level ground, with header level to ground.
- The header is on down stops, and center-link is set to D.
- The engine is running.
- The combine is not moving.
- No faults have been received from Header Height Controller (HHC) module.
- Header/feeder is disengaged.
- Lateral flotation buttons are NOT pressed.
- ESC key is NOT pressed.

To calibrate AHHC, follow these steps:

1. Select CALIBRATIONS (A) on main page. The CALIBRATION page displays.
2. Select CALIBRATION drop-down arrow (A).

3. Select HEADER (A) from list of calibration options.

4. Follow calibration steps in order in which they appear on screen. As you proceed through calibration process, display will automatically update to show next step.

**NOTE:**
Pressing ESC key during any of steps or letting system sit idle for more than three minutes will cause calibration procedure to stop.

**NOTE:**
Refer to your combine operator’s manual for an explanation of any error codes.
5. When all steps have been completed, CALIBRATION COMPLETED message is displayed on screen.

**NOTE:**
If float was set heavier to complete ground calibration procedure, adjust to recommended operating float after calibration is complete.

---

**Setting Auto Height (New Holland CR Series)**

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

The console has two buttons used for auto height presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require first two buttons (A and B). The third button (C) is not configured.

To set auto height, follow these steps:
1. Engage separator and header.
2. Select RUN SCREENS (A) on main page.
3. Select RUN tab that shows MANUAL HEIGHT.

**NOTE:**
The MANUAL HEIGHT field may appear on any of RUN tabs. When an auto height set point button is pressed, display will change to AUTO HEIGHT (A).

4. Lower header to ground.

5. Select one of auto height set point buttons shown in Figure 5.280: *New Holland Combine Controls, page 240.*
   - Press SET 1 button for a light ground setting (1 on float indicator box)
   - Press SET 2 button for a heavier ground setting (2 on float indicator box)

**Setting Maximum Work Height (New Holland CR Series)**

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

1. Select TOOLBOX (A) on main page. The TOOLBOX page displays.

2. Select FEEDER (A). The FEEDER SETUP page displays.

3. Select MAXIMUM WORK HEIGHT field (B).
4. Set MAXIMUM WORK HEIGHT to desired value.
5. Press SET and then press ENTER.

5.1.16 Sensor Operation

The position sensors supplied with auto header height control (AHHC) system are 1000 ohm (1k) industrial series sensors containing sealed connectors. Normal operating signal voltages for sensors fall between 10% (0.5VDC) and 90% (4.5VDC).

- A sensor operating with a signal voltage below 5% is considered to be shorted
- A sensor with a signal voltage above 95% is considered to be open

An increase in sensor voltage correlates to an increase in header height.

Each sensor is constructed with a power wire and a ground wire. Inside sensor, these two wires are connected by a high resistance filament band (C). The resistance measured across power (A) and ground (B) wires should read a constant value between 800 and 1200 ohms (0.8–1.2 k) with nominal reading being 1000 ohms (1 k).
In addition to power (A) and ground (B) wires, a signal wire (C) is connected internally to a movable wiper that is attached to an external arm and sweeps high resistance filament band. As external arm is rotated and wiper is moved toward or away from power wire connection, measured resistance at signal wire (C) changes.

The resistance measured across signal and ground wires should increase uniformly from a low 80–100 ohms (.08–0.1 k) to a high 800–1200 ohms (0.8–1.2 k). This can be observed if an ohmmeter is connected across signal and power wires and sensor shaft rotated. When an input voltage is applied to high resistance filament band through power wire (A), output (or measured) voltage in signal wire (C) is changed by this variable resistance.

NOTE:
Ground and power wires may differ depending on combine.
6 Running up Header

To run up header, follow these steps:

⚠️ **DANGER**

Engage header safety props and reel props before working under header or reel.

⚠️ **DANGER**

To avoid bodily injury or death from unexpected start-up or fall of a raised machine, always stop engine and remove key before leaving the operator’s seat, and always engage safety props before going under the machine for any reason.

⚠️ **CAUTION**

Never start or move the machine until you are sure all bystanders have cleared the area.

1. Start combine, raise header fully, and engage header lift cylinder locks.
2. Stop engine and remove key.

1. Lower plastic pan under adapter and check for shipping materials/debris that may have fallen under adapter draper.
2. Rotate latches (A) to unlock handles (B).
3. Hold pan (C) and rotate handles (B) to release pan. Lower pan to expose draper.

![Figure 6.1: Adapter Plastic Pan](image-url)
4. Check and remove debris from pan (A) and draper.

5. Raise pan and rotate handle (B) so that rod engages clips (D) on pan.

6. Push handle (B) into slot and secure it with latches (A).
7. Check that draper speed control (A) is set to 6 as shown. If required, turn knob until desired setting lines up with slot in panel.

8. Ensure feeder house variable speed is set to MINIMUM.

⚠️ CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

9. Open left endshield. Refer to Opening Endshield

10. Start combine and run header slowly for FIVE minutes while watching and listening FROM THE OPERATOR’S SEAT for binding or interfering parts.

   **NOTE:**
   Reel and side drapers will not operate until oil flow fills lines.

11. Run header for an additional TEN minutes at operating speed while watching and listening FROM THE OPERATOR’S SEAT for binding or interfering parts.

12. Have someone check rpm of knife drive box pulley (A) with a handheld tachometer.
1. Compare actual pulley rpm with values in following chart:

Table 6.1 Recommended Knife Drive Speed (rpm)

<table>
<thead>
<tr>
<th>Header Size</th>
<th>Recommended Knife Drive Speed Range: Single Knife</th>
<th>Recommended Knife Drive Speed Range: Double Knife</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 foot</td>
<td>N/A</td>
<td>700–850 rpm</td>
</tr>
<tr>
<td>25 foot</td>
<td>600–725 rpm</td>
<td></td>
</tr>
<tr>
<td>30 foot</td>
<td>600–700 rpm</td>
<td>600–750 rpm</td>
</tr>
<tr>
<td>35 foot</td>
<td>550–650 rpm</td>
<td></td>
</tr>
<tr>
<td>40 foot</td>
<td>525–600 rpm</td>
<td>550–700 rpm</td>
</tr>
<tr>
<td>45 foot</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

The header knife drive is driven by the adapter-mounted hydraulic pump. The following speeds are factory-set for the combine feeder house:

- AGCO: 625 rpm (includes Challenger, Gleaner, and Massey Ferguson)
- Case: 580 rpm
- John Deere: 490 rpm
- Lexion: 750 rpm (420 on combine display)
- New Holland: 580 rpm

**IMPORTANT:**

These are the **MINIMUM** speed settings for variable speed feeder houses. To avoid damage to the header, do **NOT** operate at speeds higher than the minimum speed settings.

1. If adjustment to knife drive box pulley rpm is necessary, refer to your combine operator’s manual.
2. Perform run-up check as listed on Predelivery Checklist (yellow sheet attached to this instruction - Predelivery Checklist, page 267).

### 6.1 Performing Post Run-Up Adjustments

Perform post run-up check as listed on Predelivery Checklist. Refer to yellow sheet attached to this instruction to ensure machine is field-ready.

⚠️ **WARNING**

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

Some adjustments may be necessary after run-up. Refer to following:

- **6.1.1 Adjusting Knife and Guards, page 248**

### 6.1.1 Adjusting Knife and Guards

⚠️ **WARNING**

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.
1. Stop engine and remove key.
2. Check guards for signs of heating during run-up due to insufficient clearance between guard and knife.
3. If heating is evident, check gap between knifehead (A) and pitman arm (B). A business card should slide easily through gap. If not, adjust gap by loosening bolt and tapping knifehead (A) with a hammer. Retighten bolt.

4. Adjust guard alignment as necessary using guard straightening tool (MD #140135). Adjust guard tips upwards by positioning tool as shown and pulling up.

5. Adjust guard tips downward by positioning tool as shown and pushing down.
7 Reference

7.1 Torque Specifications

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

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

7.1.1 SAE Bolt Torque Specifications

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

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (N·m)</th>
<th>Torque (ft·lbf) (*in·lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>1/4-20</td>
<td>11.9</td>
<td>13.2</td>
</tr>
<tr>
<td>5/16-18</td>
<td>24.6</td>
<td>27.1</td>
</tr>
<tr>
<td>3/8-16</td>
<td>44</td>
<td>48</td>
</tr>
<tr>
<td>7/16-14</td>
<td>70</td>
<td>77</td>
</tr>
<tr>
<td>1/2-13</td>
<td>106</td>
<td>118</td>
</tr>
<tr>
<td>9/16-12</td>
<td>153</td>
<td>170</td>
</tr>
<tr>
<td>5/8-11</td>
<td>212</td>
<td>234</td>
</tr>
<tr>
<td>3/4-10</td>
<td>380</td>
<td>420</td>
</tr>
<tr>
<td>7/8-9</td>
<td>606</td>
<td>669</td>
</tr>
<tr>
<td>1-8</td>
<td>825</td>
<td>912</td>
</tr>
</tbody>
</table>

Table 7.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

Figure 7.1: Bolt Grades

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2
### Table 7.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (N·m)</th>
<th>Torque (ft·lbf) (*in·lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>1/4-20</td>
<td>8.1</td>
<td>9</td>
</tr>
<tr>
<td>5/16-18</td>
<td>16.7</td>
<td>18.5</td>
</tr>
<tr>
<td>3/8-16</td>
<td>30</td>
<td>33</td>
</tr>
<tr>
<td>7/16-14</td>
<td>48</td>
<td>53</td>
</tr>
<tr>
<td>1/2-13</td>
<td>73</td>
<td>80</td>
</tr>
<tr>
<td>9/16-12</td>
<td>105</td>
<td>116</td>
</tr>
<tr>
<td>5/8-11</td>
<td>144</td>
<td>160</td>
</tr>
<tr>
<td>3/4-10</td>
<td>259</td>
<td>286</td>
</tr>
<tr>
<td>7/8-9</td>
<td>413</td>
<td>456</td>
</tr>
<tr>
<td>1-8</td>
<td>619</td>
<td>684</td>
</tr>
</tbody>
</table>

### Figure 7.2: Bolt Grades

A - Nominal Size  
B - SAE-8  
C - SAE-5  
D - SAE-2

### Table 7.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (N·m)</th>
<th>Torque (ft·lbf) (*in·lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>1/4-20</td>
<td>16.8</td>
<td>18.6</td>
</tr>
<tr>
<td>5/16-18</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>3/8-16</td>
<td>42</td>
<td>46</td>
</tr>
<tr>
<td>7/16-14</td>
<td>67</td>
<td>74</td>
</tr>
<tr>
<td>1/2-13</td>
<td>102</td>
<td>113</td>
</tr>
<tr>
<td>9/16-12</td>
<td>148</td>
<td>163</td>
</tr>
<tr>
<td>5/8-11</td>
<td>204</td>
<td>225</td>
</tr>
<tr>
<td>3/4-10</td>
<td>362</td>
<td>400</td>
</tr>
<tr>
<td>7/8-9</td>
<td>583</td>
<td>644</td>
</tr>
<tr>
<td>1-8</td>
<td>874</td>
<td>966</td>
</tr>
</tbody>
</table>

### Figure 7.3: Bolt Grades

A - Nominal Size  
B - SAE-8  
C - SAE-5  
D - SAE-2
Table 7.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (N·m)</th>
<th>Torque (ft·lbf) (*in·lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>1/4-20</td>
<td>16.8</td>
<td>18.6</td>
</tr>
<tr>
<td>5/16-18</td>
<td>35</td>
<td>38</td>
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<tr>
<td>3/8-16</td>
<td>61</td>
<td>68</td>
</tr>
<tr>
<td>7/16-14</td>
<td>98</td>
<td>109</td>
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<tr>
<td>1/2-13</td>
<td>150</td>
<td>166</td>
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<td>330</td>
</tr>
<tr>
<td>3/4-10</td>
<td>531</td>
<td>587</td>
</tr>
<tr>
<td>7/8-9</td>
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<td>945</td>
</tr>
<tr>
<td>1-8</td>
<td>1165</td>
<td>1288</td>
</tr>
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</table>

7.1.2 Metric Bolt Specifications

Table 7.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (N·m)</th>
<th>Torque (ft·lbf) (*in·lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>3-0.5</td>
<td>1.4</td>
<td>1.6</td>
</tr>
<tr>
<td>3.5-0.6</td>
<td>2.2</td>
<td>2.5</td>
</tr>
<tr>
<td>4-0.7</td>
<td>3.3</td>
<td>3.7</td>
</tr>
<tr>
<td>5-0.8</td>
<td>6.7</td>
<td>7.4</td>
</tr>
<tr>
<td>6-1.0</td>
<td>11.4</td>
<td>12.6</td>
</tr>
<tr>
<td>8-1.25</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>10-1.5</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>12-1.75</td>
<td>95</td>
<td>105</td>
</tr>
<tr>
<td>14-2.0</td>
<td>152</td>
<td>168</td>
</tr>
<tr>
<td>16-2.0</td>
<td>236</td>
<td>261</td>
</tr>
<tr>
<td>20-2.5</td>
<td>460</td>
<td>509</td>
</tr>
<tr>
<td>24-3.0</td>
<td>796</td>
<td>879</td>
</tr>
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</table>
### Table 7.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Torque (N·m)</th>
<th>Torque (ft·lbf) (*in·lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>3-0.5</td>
<td>1</td>
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</tr>
<tr>
<td>3.5-0.6</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>4-0.7</td>
<td>2.3</td>
<td>2.5</td>
</tr>
<tr>
<td>5-0.8</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>6-1.0</td>
<td>7.7</td>
<td>8.6</td>
</tr>
<tr>
<td>8-1.25</td>
<td>18.8</td>
<td>20.8</td>
</tr>
<tr>
<td>10-1.5</td>
<td>37</td>
<td>41</td>
</tr>
<tr>
<td>12-1.75</td>
<td>65</td>
<td>72</td>
</tr>
<tr>
<td>14-2.0</td>
<td>104</td>
<td>115</td>
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<td>314</td>
<td>347</td>
</tr>
<tr>
<td>24-3.0</td>
<td>543</td>
<td>600</td>
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### Table 7.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

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

Figure 7.6: Bolt Grades

Figure 7.7: Bolt Grades
Table 7.8: Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

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

Figure 7.8: Bolt Grades
7.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 7.9 Metric Bolt Bolting into Cast Aluminum

<table>
<thead>
<tr>
<th>Nominal Size (A)</th>
<th>Bolt Torque 8.8 (Cast Aluminum)</th>
<th>Bolt Torque 10.9 (Cast Aluminum)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N·m</td>
<td>ft-lbf</td>
</tr>
<tr>
<td>M3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>M4</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>M5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>M6</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>M8</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>M10</td>
<td>40</td>
<td>28</td>
</tr>
<tr>
<td>M12</td>
<td>70</td>
<td>52</td>
</tr>
<tr>
<td>M14</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>M16</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

7.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.

2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.

3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table 7.10 Flare-Type Hydraulic Tube Fittings, page 257.

4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.

5. Assess final condition of connection.
Table 7.10 Flare-Type Hydraulic Tube Fittings

<table>
<thead>
<tr>
<th>SAE Dash Size</th>
<th>Thread Size (in.)</th>
<th>Torque Value&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Flats from Finger Tight (FFFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N·m</td>
<td>ft·lbf</td>
</tr>
<tr>
<td>-2</td>
<td>5/16–24</td>
<td>4–5</td>
<td>3–4</td>
</tr>
<tr>
<td>-3</td>
<td>3/8–24</td>
<td>7–8</td>
<td>5–6</td>
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<tr>
<td>-4</td>
<td>7/16–20</td>
<td>18–19</td>
<td>13–14</td>
</tr>
<tr>
<td>-5</td>
<td>1/2–20</td>
<td>19–21</td>
<td>14–15</td>
</tr>
<tr>
<td>-6</td>
<td>9/16–18</td>
<td>30–33</td>
<td>22–24</td>
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<td>-8</td>
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<td>42–46</td>
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<td>-10</td>
<td>7/8–14</td>
<td>81–89</td>
<td>60–66</td>
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<td>-12</td>
<td>1-1/16–12</td>
<td>113–124</td>
<td>83–91</td>
</tr>
<tr>
<td>-14</td>
<td>1-3/16–12</td>
<td>136–149</td>
<td>100–110</td>
</tr>
<tr>
<td>-16</td>
<td>1-5/16–12</td>
<td>160–176</td>
<td>118–130</td>
</tr>
<tr>
<td>-20</td>
<td>1-5/8–12</td>
<td>228–250</td>
<td>168–184</td>
</tr>
<tr>
<td>-24</td>
<td>1-7/8–12</td>
<td>264–291</td>
<td>195–215</td>
</tr>
<tr>
<td>-32</td>
<td>2-1/2–12</td>
<td>359–395</td>
<td>265–291</td>
</tr>
<tr>
<td>-40</td>
<td>3–12</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

---

2. Torque values shown are based on lubricated connections as in reassembly.
7.1.5 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

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

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

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

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

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

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

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

8. Check final condition of fitting.
### Table 7.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

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

---

3. Torque values shown are based on lubricated connections as in reassembly.
7.1.6 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to values in Table 7.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable), page 260.
6. Check final condition of fitting.

---

Table 7.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

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

---

<sup>4</sup> Torque values shown are based on lubricated connections as in reassembly.
7.1.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

2. Apply hydraulic system oil to O-ring (B).

3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).

4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.

5. Torque fittings according to values in Table 7.13 O-Ring Face Seal (ORFS) Hydraulic Fittings, page 262.

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

6. Use three wrenches when assembling unions or joining two hoses together.

7. Check final condition of fitting.
### Table 7.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

<table>
<thead>
<tr>
<th>SAE Dash Size</th>
<th>Thread Size (in.)</th>
<th>Tube O.D. (in.)</th>
<th><strong>Torque Value</strong>&lt;sup&gt;5&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>N·m</td>
</tr>
<tr>
<td>-3</td>
<td>Note&lt;sup&gt;6&lt;/sup&gt;</td>
<td>3/16</td>
<td>–</td>
</tr>
<tr>
<td>-4</td>
<td>9/16</td>
<td>1/4</td>
<td>25–28</td>
</tr>
<tr>
<td>-5</td>
<td>Note&lt;sup&gt;6&lt;/sup&gt;</td>
<td>5/16</td>
<td>–</td>
</tr>
<tr>
<td>-6</td>
<td>11/16</td>
<td>3/8</td>
<td>40–44</td>
</tr>
<tr>
<td>-8</td>
<td>13/16</td>
<td>1/2</td>
<td>55–61</td>
</tr>
<tr>
<td>-10</td>
<td>1</td>
<td>5/8</td>
<td>80–88</td>
</tr>
<tr>
<td>-12</td>
<td>1-3/16</td>
<td>3/4</td>
<td>115–127</td>
</tr>
<tr>
<td>-14</td>
<td>Note&lt;sup&gt;6&lt;/sup&gt;</td>
<td>7/8</td>
<td>–</td>
</tr>
<tr>
<td>-16</td>
<td>1-7/16</td>
<td>1</td>
<td>150–165</td>
</tr>
<tr>
<td>-20</td>
<td>1-11/16</td>
<td>1-1/4</td>
<td>205–226</td>
</tr>
<tr>
<td>-24</td>
<td>1–2</td>
<td>1-1/2</td>
<td>315–347</td>
</tr>
<tr>
<td>-32</td>
<td>2-1/2</td>
<td>2</td>
<td>510–561</td>
</tr>
</tbody>
</table>

---

5. Torque values and angles shown are based on lubricated connection as in reassembly.
6. O-ring face seal type end not defined for this tube size.
7.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.

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

3. Thread fitting into port until hand-tight.

4. Torque connector to appropriate torque angle. The Turns From Finger Tight (TFFT) values are shown in Table 7.14 Hydraulic Fitting Pipe Thread, page 263. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.

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

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

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

**NOTE:**

Over-torque failure of fittings may not be evident until fittings are disassembled.

<table>
<thead>
<tr>
<th>Tapered Pipe Thread Size</th>
<th>Recommended T.F.F.T</th>
<th>Recommended F.F.F.T</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8–27</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>1/4–18</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>3/8–18</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>1/2–14</td>
<td>2–3</td>
<td>12–18</td>
</tr>
<tr>
<td>3/4–14</td>
<td>1.5–2.5</td>
<td>12–18</td>
</tr>
<tr>
<td>1–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
<tr>
<td>1 1/4–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
<tr>
<td>1 1/2–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
<tr>
<td>2–11 1/2</td>
<td>1.5–2.5</td>
<td>9–15</td>
</tr>
</tbody>
</table>
## 7.2 Conversion Chart

### Table 7.15 Conversion Chart

<table>
<thead>
<tr>
<th>Quantity</th>
<th>SI Units (Metric)</th>
<th>Factor</th>
<th>Inch-Pound Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit Name</td>
<td>Abbreviation</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>hectares</td>
<td>ha</td>
<td>x 0.4047 =</td>
</tr>
<tr>
<td>Flow</td>
<td>liters per minute</td>
<td>L/min</td>
<td>x 3.7854 =</td>
</tr>
<tr>
<td>Force</td>
<td>Newtons</td>
<td>N</td>
<td>x 4.4482 =</td>
</tr>
<tr>
<td>Length</td>
<td>millimeters</td>
<td>mm</td>
<td>x 25.4 =</td>
</tr>
<tr>
<td></td>
<td>meters</td>
<td>m</td>
<td>x 0.305 =</td>
</tr>
<tr>
<td>Power</td>
<td>kilowatts</td>
<td>kW</td>
<td>x 0.7457 =</td>
</tr>
<tr>
<td>Pressure</td>
<td>kilopascals</td>
<td>kPa</td>
<td>x 6.8948 =</td>
</tr>
<tr>
<td></td>
<td>megapascals</td>
<td>MPa</td>
<td>x 0.0069 =</td>
</tr>
<tr>
<td></td>
<td>bar (Non-SI)</td>
<td>bar</td>
<td>x 14.5038 =</td>
</tr>
<tr>
<td>Torque</td>
<td>Newton meters</td>
<td>N·m</td>
<td>x 1.3558 =</td>
</tr>
<tr>
<td></td>
<td>Newton meters</td>
<td>N·m</td>
<td>x 0.1129 =</td>
</tr>
<tr>
<td>Temperature</td>
<td>Celsius</td>
<td>°C</td>
<td>(°F-32) x 0.56 =</td>
</tr>
<tr>
<td>Velocity</td>
<td>meters per minute</td>
<td>m/min</td>
<td>x 0.3048 =</td>
</tr>
<tr>
<td></td>
<td>meters per second</td>
<td>m/s</td>
<td>x 0.3048 =</td>
</tr>
<tr>
<td></td>
<td>kilometers per hour</td>
<td>km/h</td>
<td>x 1.6063 =</td>
</tr>
<tr>
<td>Volume</td>
<td>liters</td>
<td>L</td>
<td>x 3.7854 =</td>
</tr>
<tr>
<td></td>
<td>milliliters</td>
<td>ml</td>
<td>x 29.5735 =</td>
</tr>
<tr>
<td></td>
<td>cubic centimeters</td>
<td>cm³ or cc</td>
<td>x 16.3871 =</td>
</tr>
<tr>
<td>Weight</td>
<td>kilograms</td>
<td>kg</td>
<td>x 0.4536 =</td>
</tr>
</tbody>
</table>
7.3 Definitions

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

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society of Testing and Materials</td>
</tr>
<tr>
<td>Bolt</td>
<td>A headed and externally threaded fastener that is designed to be paired with a nut</td>
</tr>
<tr>
<td>Center-link</td>
<td>A hydraulic cylinder link between header and machine to which it is attached: It is used to change header angle</td>
</tr>
<tr>
<td>CGVW</td>
<td>Combined vehicle gross weight</td>
</tr>
<tr>
<td>D-Series header</td>
<td>MacDon D50, D60, and D65 rigid draper headers</td>
</tr>
<tr>
<td>Finger tight</td>
<td>Finger tight is a reference position where sealing surfaces or components are making contact with each other and fitting has been tightened to a point where fitting is no longer loose</td>
</tr>
<tr>
<td>FFFT</td>
<td>Flats from finger tight</td>
</tr>
<tr>
<td>GSL</td>
<td>Ground speed lever</td>
</tr>
<tr>
<td>GVW</td>
<td>Gross vehicle weight</td>
</tr>
<tr>
<td>Hard joint</td>
<td>A joint made with use of a fastener where joining materials are highly incompressible</td>
</tr>
<tr>
<td>Header</td>
<td>A machine that cuts crop and feeds it into an attached combine</td>
</tr>
<tr>
<td>Hex key</td>
<td>A hex key or Allen key (also known by various other synonyms) is a tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in head (internal-wrenching hexagon drive)</td>
</tr>
<tr>
<td>hp</td>
<td>Horsepower</td>
</tr>
<tr>
<td>ISC</td>
<td>Intermediate Speed Control</td>
</tr>
<tr>
<td>JIC</td>
<td>Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting</td>
</tr>
<tr>
<td>n/a</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Nut</td>
<td>An internally threaded fastener that is designed to be paired with a bolt</td>
</tr>
<tr>
<td>NPT</td>
<td>National Pipe Thread: A style of fitting used for low pressure port openings Threads on NPT fittings are uniquely tapered for an interference fit</td>
</tr>
<tr>
<td>ORB</td>
<td>O-ring boss: A style of fitting commonly used in port opening on manifolds, pumps, and motors</td>
</tr>
<tr>
<td>ORFS</td>
<td>O-ring face seal: A style of fitting commonly used for connecting hoses and tubes This style of fitting is also commonly called ORS, which stands for O-ring seal</td>
</tr>
<tr>
<td>RoHS (Reduction of Hazardous Substances)</td>
<td>A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)</td>
</tr>
<tr>
<td>SAE</td>
<td>Society of Automotive Engineers</td>
</tr>
<tr>
<td>Screw</td>
<td>A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of mating parts</td>
</tr>
<tr>
<td>Soft joint</td>
<td>A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Truck</td>
<td>A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)</td>
</tr>
<tr>
<td>Tension</td>
<td>Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)</td>
</tr>
<tr>
<td>TFFT</td>
<td>Turns from finger tight</td>
</tr>
<tr>
<td>Torque</td>
<td>The product of a force x lever arm length, usually measured in Newton-meters (N·m) or foot-pounds (ft·lbf)</td>
</tr>
<tr>
<td>Torque angle</td>
<td>A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees or a number of flats to achieve its final position</td>
</tr>
<tr>
<td>Torque-tension</td>
<td>The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw</td>
</tr>
<tr>
<td>Washer</td>
<td>A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or a locking mechanism</td>
</tr>
</tbody>
</table>
Predeliver Check List

Perform these checks and adjustments prior to delivery to your Customer. **Adjustments are normally not required as the machine is factory-assembled and adjusted.** If adjustments are required, refer to the appropriate page number in this manual. The completed checklist should be retained by either Operator or 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: | Adapter Serial Number: |

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.</td>
<td>—</td>
</tr>
<tr>
<td>✓ Check for loose hardware. Tighten to required torque.</td>
<td>7.1 Torque Specifications, page 251</td>
</tr>
<tr>
<td>✓ Check tire pressure (Transport/Stabilizer Option).</td>
<td>4.1 Checking Transport / Stabilizer Tire Pressure, page 69</td>
</tr>
<tr>
<td>✓ Check wheel bolt torque (Transport/Stabilizer Option).</td>
<td>4.2 Checking Wheel Bolt Torque, page 70</td>
</tr>
<tr>
<td>✓ Check knife drive box breather position.</td>
<td>4.3 Checking Knife Drive Box, page 71</td>
</tr>
<tr>
<td>✓ Check knife drive box lube level.</td>
<td>4.3 Checking Knife Drive Box, page 71</td>
</tr>
<tr>
<td>✓ Check adapter gearbox lube level.</td>
<td>4.4 Checking Oil Level in Header Drive Gearbox, page 72</td>
</tr>
<tr>
<td>✓ Check hydraulic reservoir lube level before and after run-up.</td>
<td>4.5 Checking Oil Level in Hydraulic Reservoir, page 73</td>
</tr>
<tr>
<td>✓ Check knife drive belt(s) tension.</td>
<td>4.6 Checking and Adjusting Non-Timed Knife Drive Belt Tension, page 74</td>
</tr>
<tr>
<td>✓ Check if reel is centered between header endsheets.</td>
<td>4.9 Centering Reel, page 82</td>
</tr>
<tr>
<td>✓ Grease all bearings and drivelines.</td>
<td>4.17 Lubricating Header, page 100</td>
</tr>
<tr>
<td>✓ Check side draper tension.</td>
<td>4.14 Checking and Adjusting Side Draper Tension, page 95</td>
</tr>
<tr>
<td>✓ Check draper seal.</td>
<td>4.16 Checking Draper Seal, page 98</td>
</tr>
<tr>
<td>✓ Check header levelness.</td>
<td>4.10 Checking and Adjusting Header Levelness, page 84</td>
</tr>
<tr>
<td>✓ Check header float.</td>
<td>4.11 Checking and Adjusting Header Float, page 86</td>
</tr>
<tr>
<td>✓ Check reel tine to cutterbar clearance.</td>
<td>4.12.1 Measuring Reel Clearance, page 90</td>
</tr>
<tr>
<td>✓ Check auger flighting to feed pan clearance.</td>
<td>4.13 Adjusting Auger to Pan Clearance, page 93</td>
</tr>
<tr>
<td>✓ Check knife hold-down adjustment.</td>
<td>4.8 Checking and Adjusting Knife Hold-Downs, page 77</td>
</tr>
<tr>
<td>Item</td>
<td>Reference</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Check fitment of endshields.</td>
<td>4.18 Checking and Adjusting Endshields, page 107</td>
</tr>
<tr>
<td>Check skid shoes are evenly adjusted at a setting appropriate for first crop.</td>
<td>4.15 Checking and Adjusting Skid Shoes, page 97</td>
</tr>
<tr>
<td>Check feeder house variable speed is set to minimum.</td>
<td>—</td>
</tr>
<tr>
<td>Run-up procedure</td>
<td></td>
</tr>
<tr>
<td>Check hydraulic hose and wiring harness routing for clearance when raising or lowering header and reel.</td>
<td>—</td>
</tr>
<tr>
<td>Check lights are functional.</td>
<td>—</td>
</tr>
<tr>
<td>Check auto header height is calibrated and functioning correctly.</td>
<td>5.1 Auto Header Height Control (AHHC), page 109</td>
</tr>
<tr>
<td>Check knife speed.</td>
<td>6 Running up Header, page 245</td>
</tr>
<tr>
<td>Post run-up check. Stop engine.</td>
<td></td>
</tr>
<tr>
<td>Check knife sections for discoloration caused by misalignment of components.</td>
<td>6.1.1 Adjusting Knife and Guards, page 248</td>
</tr>
<tr>
<td>Check for hydraulic leaks.</td>
<td>—</td>
</tr>
<tr>
<td>Check that manual storage case contains all of required manuals.</td>
<td>4.19 Checking Manuals, page 108</td>
</tr>
</tbody>
</table>

Date Checked: ____________________________  Checked by: ____________________________