MacDon

A40D and A40DX Auger Header

Unloading and Assembly Instructions

215346 Revision A

Original Instruction

The Harvesting Specialists.

A40D Auger Header

Published May 2020

Introduction

This instructional manual describes the unloading, setup, and predelivery requirements for the MacDon A40D and A40DX Auger Headers, including a Grass Seed version for both models.

Refer to the Table of Contents and follow the provided procedures in the order given.

CAREFULLY READ THE INFORMATION PROVIDED IN THIS MANUAL BEFORE ATTEMPTING TO UNLOAD, ASSEMBLE, OR USE THE MACHINE.

Conventions

The following conventions are used in this document:

- Right and left are determined from the operator's position. The front of the auger header faces the crop.
- Unless otherwise noted, use the standard torque values provided in this manual.

NOTE:

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

This document is currently available in English only.

Summary of Changes

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

Section	Summary of Change	Internal Use Only
3.12.1 Attaching A40D Header to an M100 or M105 Windrower, page 30	Added image of driveshield in opened position.	Product Integrity
3.12.2 Attaching A40D an to M150, M155, or M155E4 Windrower, page 36	Added image of driveshield in opened position.	Product Integrity
3.12.2 Attaching A40D an to M150, M155, or M155E4 Windrower, page 36	Added image of driveshield in opened position.	Product Integrity
3.12.3 Attaching A40D Header to an M200 Windrower, page 42	Added image of driveshield in opened position.	Product Integrity
3.12.4 Attaching A40D Header to an M205 Windrower, page 48	Added image of driveshield in opened position.	Product Integrity
3.15.1 Hydraulic Drive Hose Routing – A40D Header and M Series Windrowers, page 63	Added image of driveshield in opened position.	Product Integrity

Chapter 1: Safety

1.1 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information. Signal words are selected using the following guidelines:

DANGER

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

WARNING

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

CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.2 General Safety

CAUTION

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

Protect yourself when assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

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

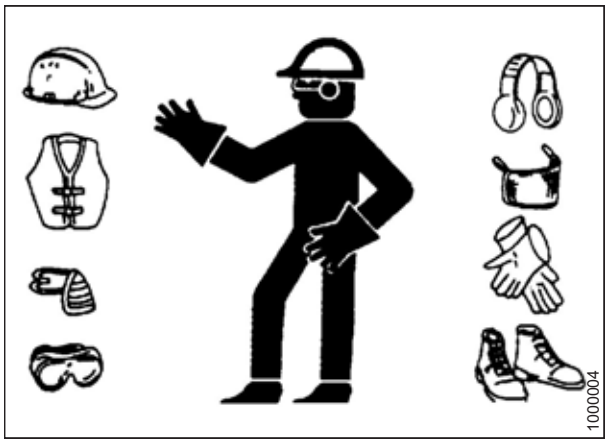


Figure 1.1: Safety Equipment

In addition, take the following precautions:

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

Figure 1.2: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Be familiar with its proper use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when the Operator is tired or in a hurry. Take time to consider safest way. **NEVER** ignore warning signs of fatigue.

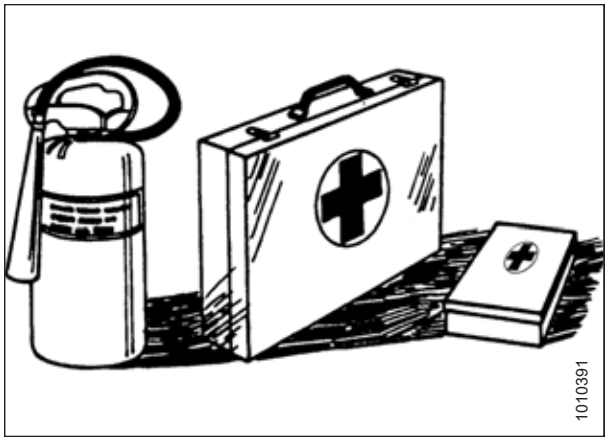


Figure 1.3: Safety Equipment

- Wear close-fitting clothing and cover long hair. **NEVER** wear dangling items such as scarves or bracelets.
- Keep all shields in place. **NEVER** alter or remove safety equipment. Make sure driveline guards can rotate independently of shaft and can telescope freely.
- Use only service and repair parts made or approved by equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.

Figure 1.4: Safety around Equipment

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

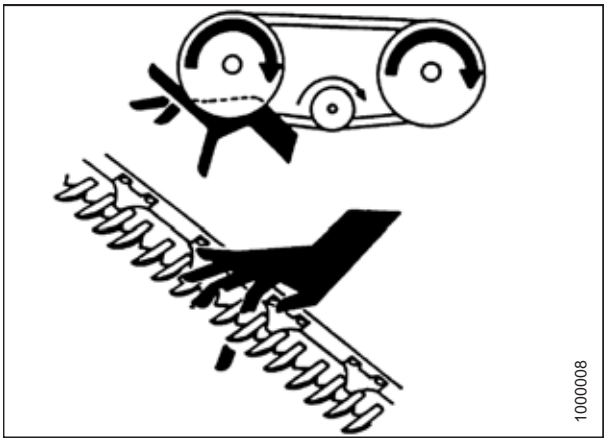


Figure 1.5: Safety around Equipment

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

Figure 1.6: Safety around Equipment

1.3 Safety Signs

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

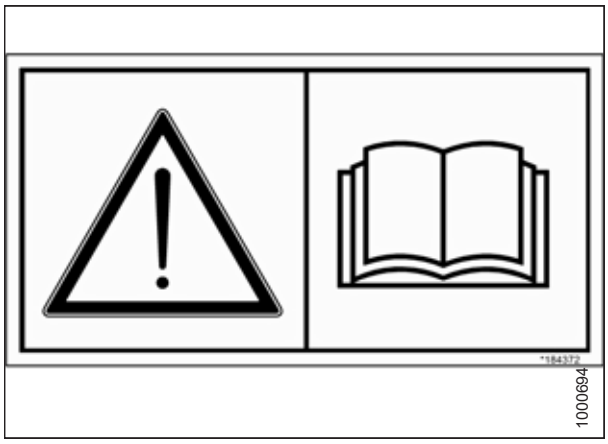


Figure 1.7: Operator's Manual Decal

Chapter 2: Unloading the Machine

Follow each procedure in this chapter in order.

2.1 Unloading the Header

CAUTION

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

CAUTION

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

Table 2.1 Lifting Vehicle

Minimum capacity[1]	8000 lb. (630 kg)
Minimum fork length	1981 mm (78 in.)

IMPORTANT:

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

WARNING

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

2.1.1 Unloading the Header from a Truck Flatbed

IMPORTANT:

Do **NOT** unload using lean bar for lifting. Chain hook slots in lean bar are only for laying the machine over into working position after it is on the ground.

NOTE:

Take care not to bend parts on backtube.

1. At 1220 mm (48 in.) from back end of forks.

To unload the header, follow these steps:

1. Remove hauler's tie-down straps and chains.
2. With a forklift, approach the header from either its underside or topside and slide forks (A) in underneath the lifting framework as far as possible.

   IMPORTANT:

   When possible, approach from the underside to minimize potential for scratching the unit.
3. Raise the header off the deck.

   IMPORTANT:

   If there are two headers on the flatbed, take care not to contact the other machine while unloading.

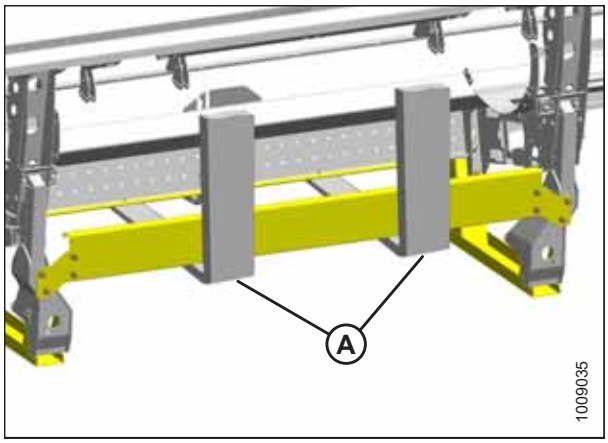


Figure 2.1: Forks in Position

4. Back up until unit clears truck flatbed and slowly lower to 150 mm (6 in.) from ground.
5. Using the forklift, take the header to a designated storage or setup area and securely set it down on the ground.
6. Repeat for the other header if required.
7. Check for shipping damage and missing parts.

Figure 2.2: Topside of Header in Shipping Configuration

Chapter 3: Assembling the Machine

Once all unloading procedures have been completed, it is time to set up the machine. Follow each procedure in this chapter in order.

3.1 Removing Underside Shipping Stand

CAUTION

Keep feet clear when removing final bolts.

1. Remove four bolts (A) and remove shipping stand (B). Discard stand and hardware.

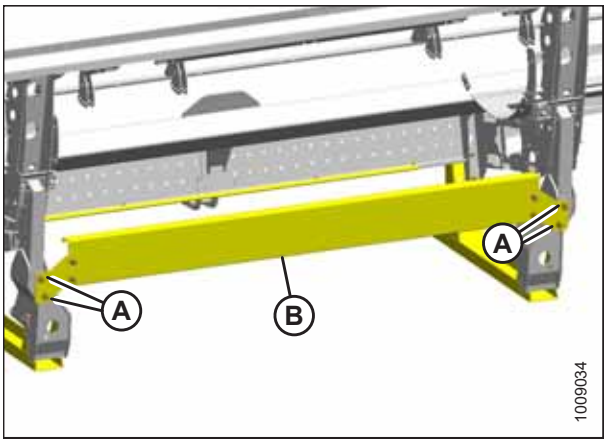


Figure 3.1: Underside Shipping Stand

3.2 Installing Skid Shoes

If the Skid Shoes kit is **NOT** supplied, proceed to *3.3 Installing Gauge Rollers, page 9*. Otherwise, proceed as follows:

NOTE:

This kit may be installed later in the header assembly sequence, but it may be easier prior to laying the header down.

1. Unpack skid shoe bundle.
2. Remove two clevis pins (A) from each skid shoe.
3. Remove nuts, bolts, and clips (B) from skid shoe.

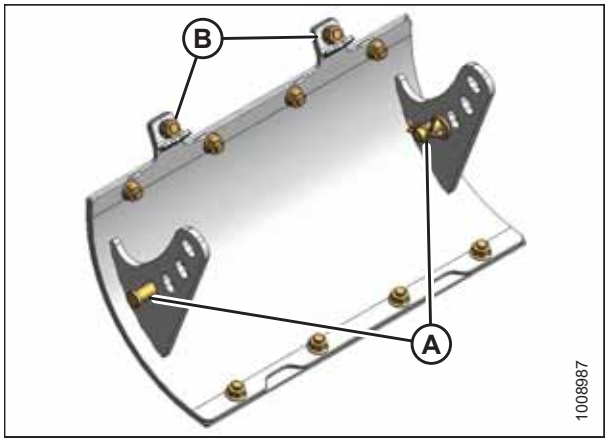


Figure 3.2: Skid Shoe Bundle

4. Position skid shoe below cutterbar and insert tabs on skid shoe into slots (A) in frame. Secure with clevis pin (B).

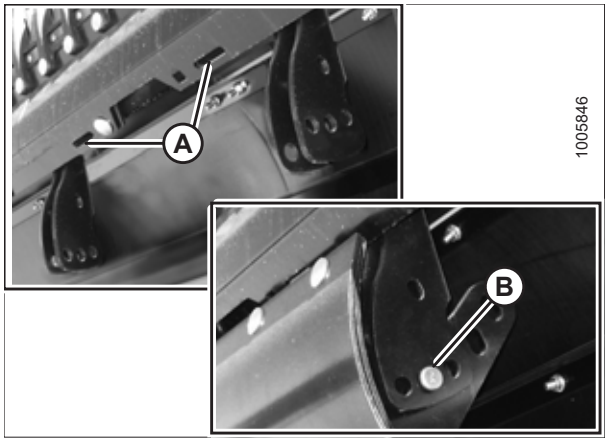


Figure 3.3: Skid Shoe Hardware

5. Attach clips (A) with bolts and nuts removed earlier in this procedure to secure skid shoe to cutterbar.

   NOTE:

   Use a socket and ratchet wrench to access the nuts.

6. Tighten nuts.
7. Remove clevis pin (B) and adjust skid shoe to desired height. Reinstall two clevis pins (B) and secure with lynch pins.
8. Repeat previous steps for opposite side. Set both skid shoes to the same position.

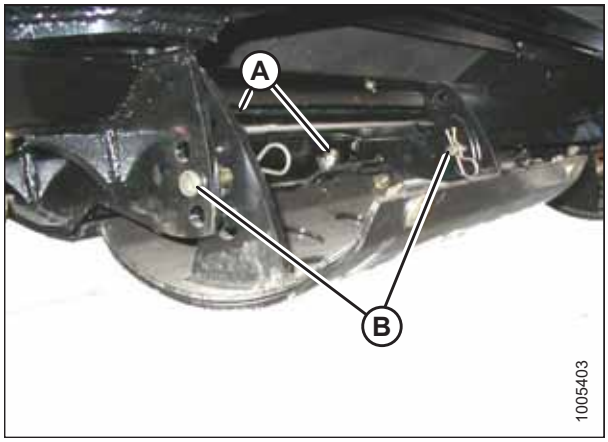


Figure 3.4: Skid Shoe Installed

3.3 Installing Gauge Rollers

If the Gauge Rollers kit is **NOT** supplied, proceed to *3.4 Tilting the Header into Field Position, page 11*. Otherwise, proceed as follows.

NOTE:

This kit may be installed later in the header assembly sequence, but it may be easier prior to laying the header down.

1. Unpack gauge roller bundle.
2. Remove two locking pins (A) from each assembly.
3. Remove nuts, bolts, and clips (B) from assembly.

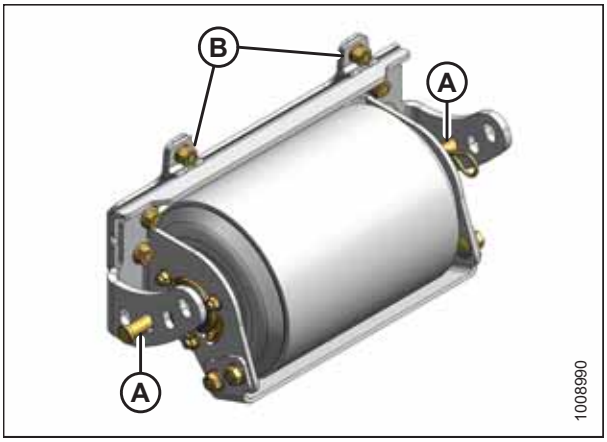


Figure 3.5: Gauge Roller in Shipping Configuration

4. Insert tabs on roller assembly into slots (A) on cutterbar at outboard mounting locations on frame.

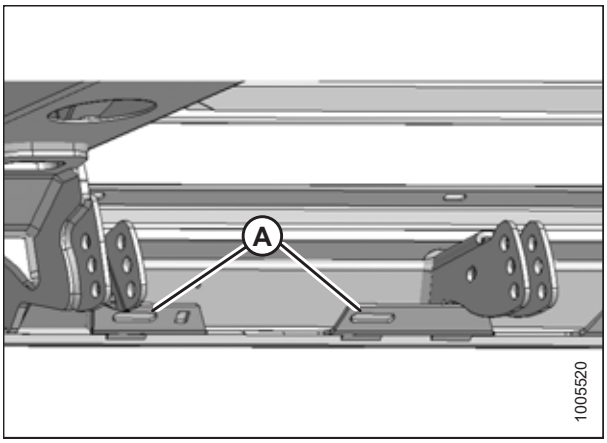


Figure 3.6: Gauge Roller Mounting Location

5. Secure the gauge roller assembly to support bracket with locking pin (B) at lowest position.
6. Attach clips (A) with bolts and nuts removed earlier in this procedure to secure roller assembly to cutterbar.
7. Tighten nuts.

   NOTE:

   Use a socket and ratchet wrench to access the nuts.

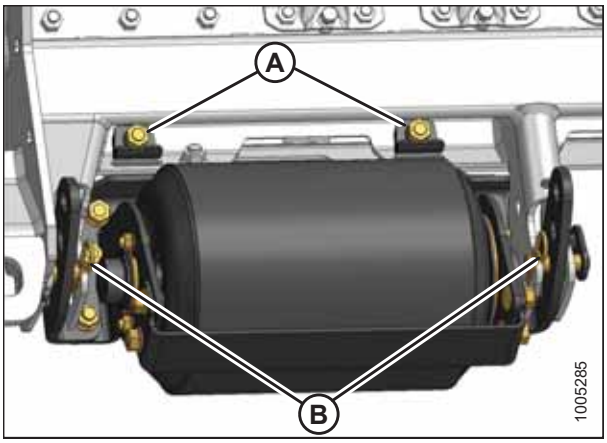


Figure 3.7: Gauge Roller

8. Remove locking pin (A) and adjust rollers to desired height. Reinstall both locking pins (A).
9. Ensure that nut (B) on each pin registers in adjacent hole in support bracket.
10. Secure pins with hairpins (C).
11. Repeat previous steps for opposite side. Set both gauge rollers to the same position.

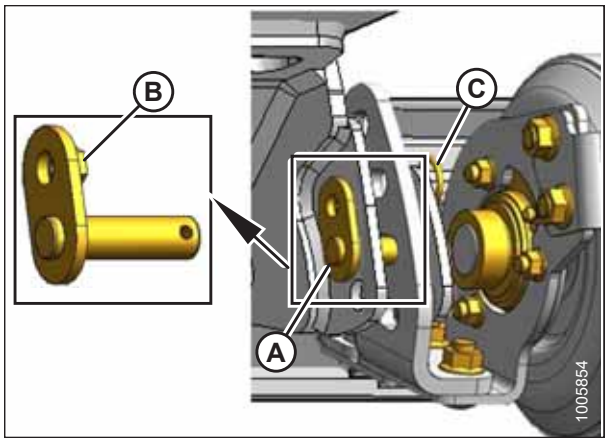


Figure 3.8: Gauge Roller and Locking Pin

3.4 Tilting the Header into Field Position

CAUTION

Ensure spreader bar or chain is secured to the forks so that it cannot slide off the forks or towards the mast as the header is tilted to the ground.

To tilt the header into the field position, follow these steps:

1. Attach either a spreader bar or chain to forks.
2. Drive lifting vehicle to approach header from its underside.

Table 3.1 Chain Specifications

Chain Type	Overhead lifting quality (1/2 in.)
Minimum Working Load	2270 kg (5000 lb.)

3. Attach chain hooks to lean bar at slots (A) as shown.

   IMPORTANT:

   Refer to Table *3.1, page 11* for minimum chain specifications. Also, the chain length must be sufficient to provide a **MINIMUM** 1.2 m (4 ft.) vertical chain height (B) when the chains are **FULLY TENSIONED**.

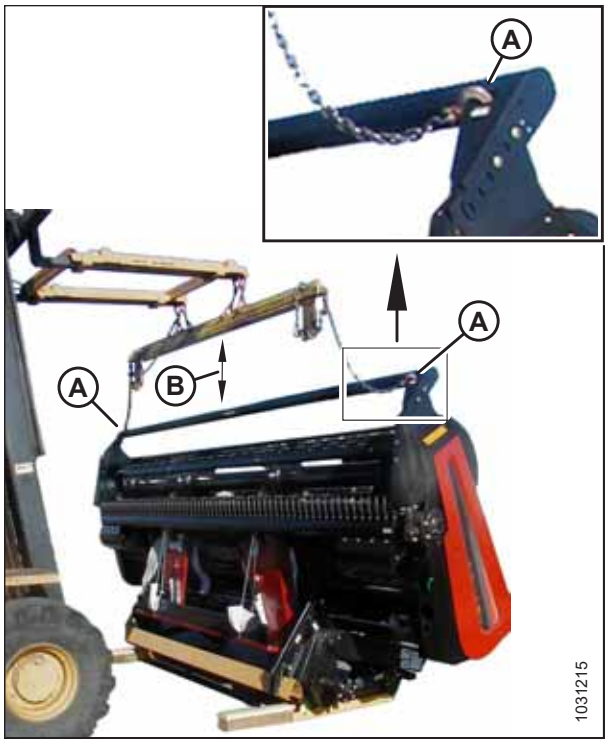


Figure 3.9: Header with Forklift

B- 1.2 m (48 in.) Minimum

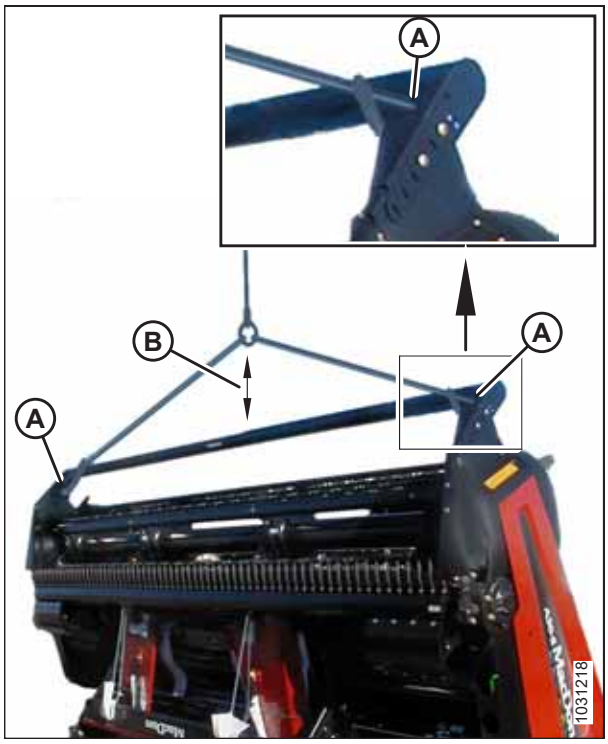


Figure 3.10: Header with Crane

A - 1.2 m (48 in.) Minimum

CAUTION

Stand clear when tilting the header, as the header may swing.

IMPORTANT:

Do **NOT** lift at lean bar when unloading from trailer. This procedure is only for **TILTING** the machine over into working position.

4. Raise forks until lift chains are fully tensioned.
5. Back up **SLOWLY**, while simultaneously tilting the machine, so that cutterbar skid shoes rest on blocks (A).
6. Remove chain hooks from lean bar.

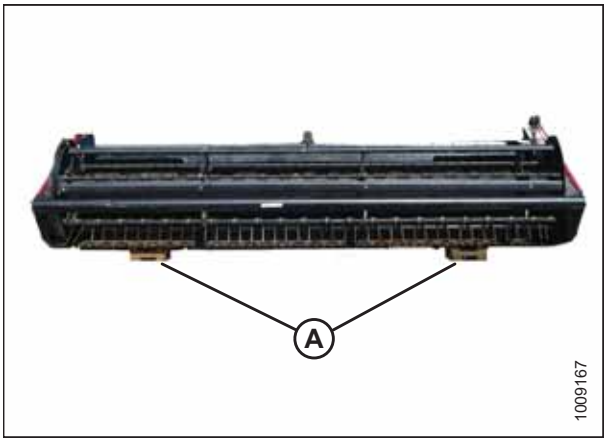


Figure 3.11: Header on Blocks

7. Attach chain to center-link anchor (A) on frame tube and raise rear of header approximately 305 mm (12 in.) off the ground.

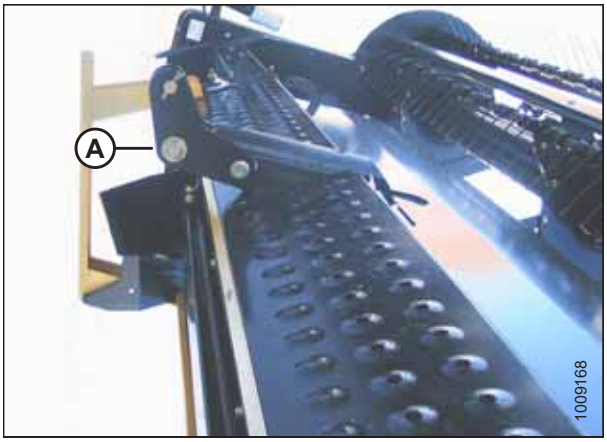


Figure 3.12: Center-Link Anchor

8. Remove lynch pin from clevis pin (A) in header stand at right side of header.
9. Hold stand (B) and remove clevis pin (A).

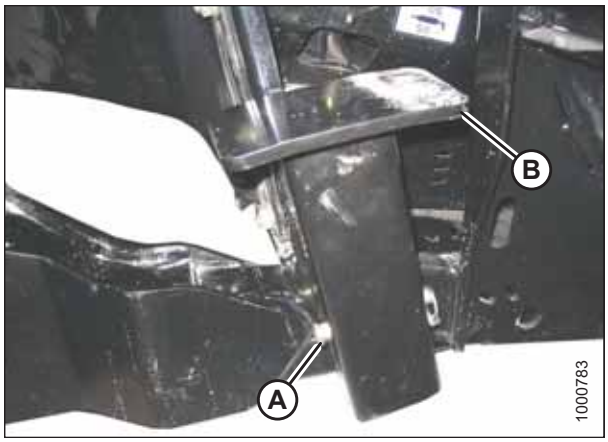


Figure 3.13: Header Stand in Shipping Position

10. Invert stand (A) and reinstall on header leg in upper hole location with clevis pin (B). Secure clevis pin (B) with lynch pin.

    NOTE:

    In soft conditions, use a wooden block under the stand.

11. Lower header onto stand (A).

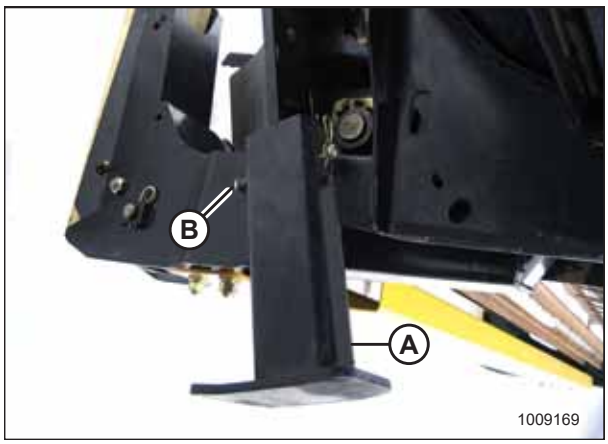


Figure 3.14: Header Stand

3.5 Removing Shipping Stands

To remove shipping stands, follow these steps:

1. **A40D headers only:** Remove and discard two bolts and nuts (A) from each shipping stand (B) at the right and left sides of the header.

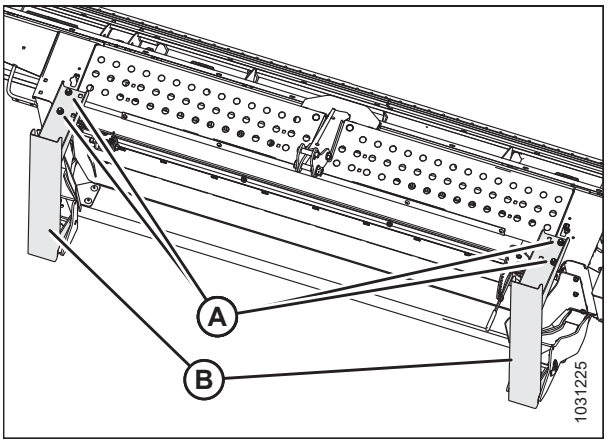


Figure 3.15: A40D Shipping Stands

2. **A40DX headers only:** Remove and **RETAIN** two bolts and nuts (A) from shipping stand (B) at the left side of the header. Remove and discard the two bolts and nuts (C) from shipping stand (D) at the right side of the header.

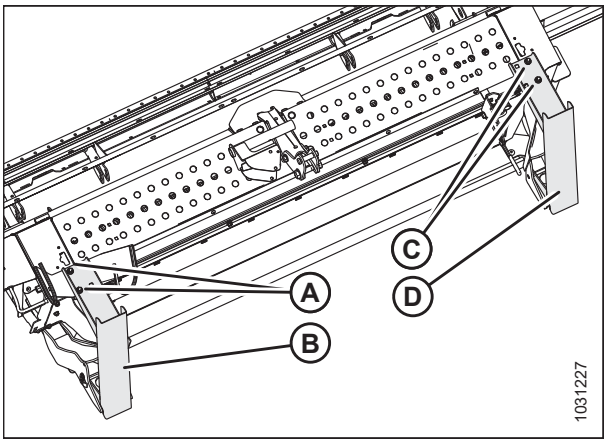


Figure 3.16: A40DX Shipping Stands

3. Remove hairpin from pin (A) and hold shipping stand (B) steady.
4. Remove and retain pin (A). Remove shipping stand from header and reinstall pin (A), and secure with hairpin retained from Step *3, page 16*. Repeat step for the other stand.

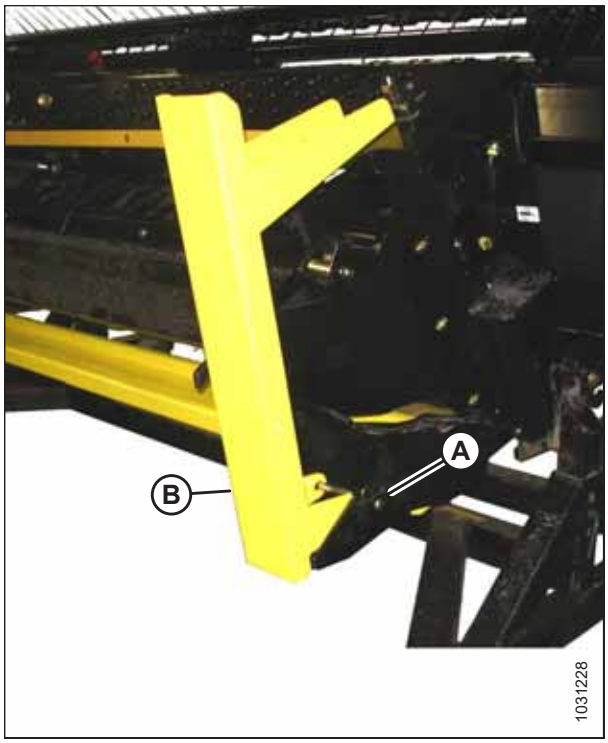


Figure 3.17: Right Side Shipping Stand — Left Side Opposite

5. **A40DX headers only:** Secure hose bracket (A) with two bolts (B) and nuts retained from Step *2, page 15*. Torque hardware (B) to 76–183 Nm (56–135 lbf·ft).

   IMPORTANT:

   Ensure bolt heads (B) face upward to avoid damaging routed hose bundle.

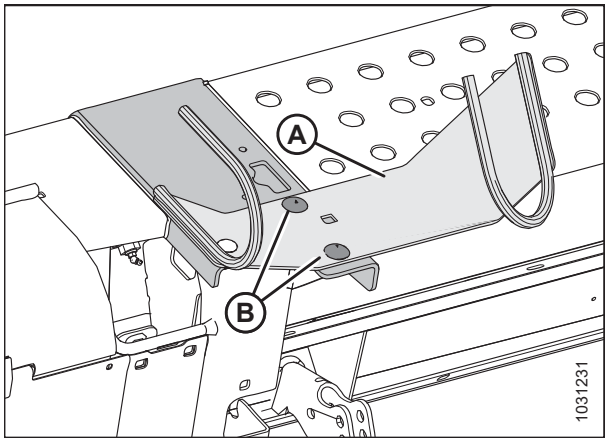


Figure 3.18: A40DX Hose Bracket

6. Remove four bolts (A) and remove angle (B). Discard angle and hardware.

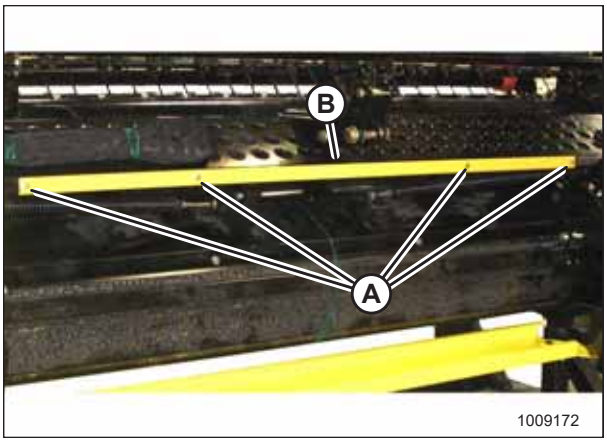


Figure 3.19: Shipping Stands

7. **Non-GSS headers only:** Remove straps that attach center deflector (A) to the conditioner.

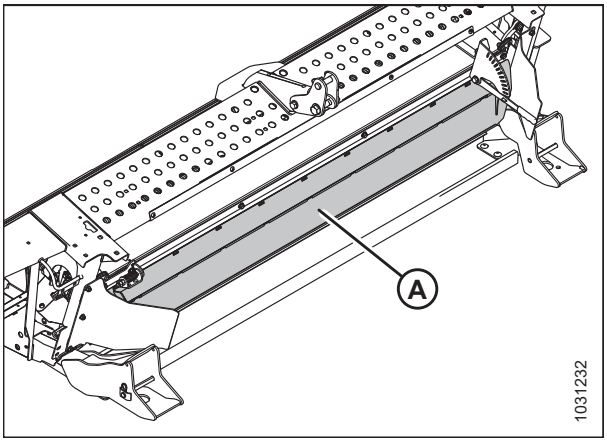


Figure 3.20: Center Deflector – Non-GSS Only

8. **Non-GSS headers only:** Pull baffle handle (A) towards the right of the header, and rotate handle until tab (B) locks into desired slot (C), based on the desired amount of crop throw.

   NOTE:

   The baffle is completely open when the tab is locked in top slot (C) as shown. A completely open baffle will cause the conditioner to throw the crop as far as possible. Adjust the baffle position according to the type of crop and/or windrower attachment. For example, if harvesting heavy crop using a windrower equipped with a double windrow attachment (DWA), you might have to open the baffle fully so the conditioner can throw the heavy crop properly onto the DWA deck.

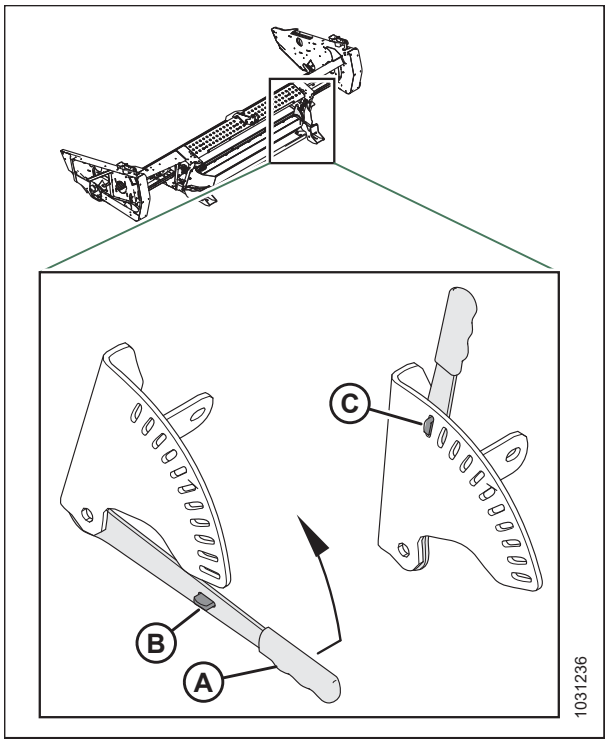


Figure 3.21: Center Deflector – Non-GSS Only

3.6 Installing Tall Crop Divider Kit

If the Tall Crop Divider kit is **NOT** supplied, proceed to *3.7 Adjusting Lean Bar, page 20*. Otherwise, proceed as follows:

1. Unpack kit and disassemble hardware from divider.

   NOTE:

   If tall crop extension angles are not required, proceed to Step *5, page 19*.

2. Remove hardware (A) on both sides of the lean bar, and then remove the lean bar from the auger header.

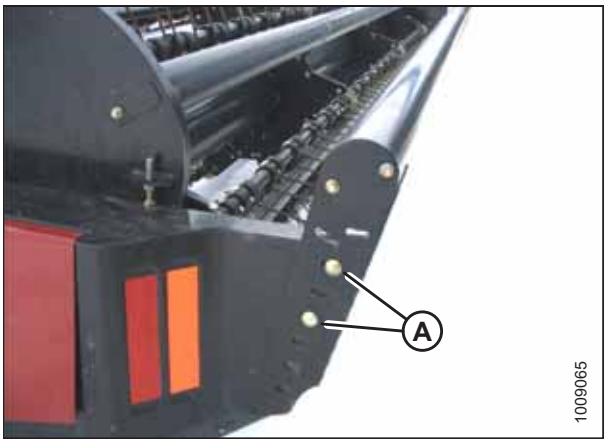


Figure 3.22: Lean Bar

3. Attach extension angles (A) to each end of lean bar (B) with four 1/2 x 1.0 in. hex bolts (C) and nuts provided.
4. Reinstall lean bar on header with existing hardware. Tighten bolts.

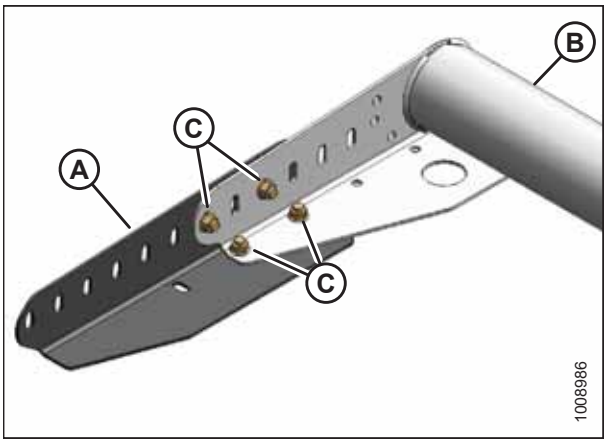


Figure 3.23: Extension Angles Attached to Ends of Lean Bar

5. Position left divider (C) at left side of lean bar and attach with U-bolt (A), two 3/8 in. nuts, and two 1/2 x 1.0 in. hex bolts (B) and nuts provided.

   NOTE:

   The divider may be positioned as shown or using the optional mounting hole (D).

6. Adjust to desired position and tighten hardware.
7. Repeat the previous two steps for the right side.

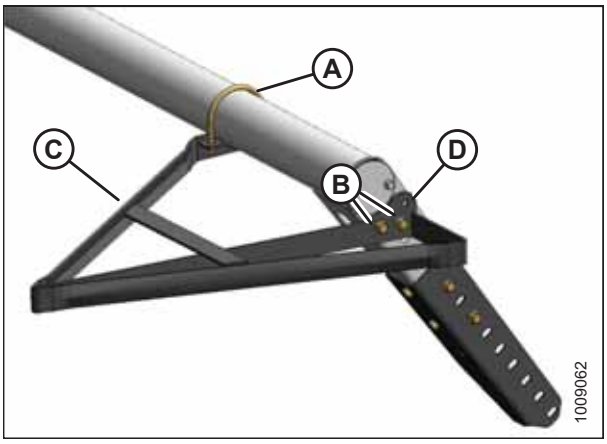


Figure 3.24: Tall Crop Divider Installed

3.7 Adjusting Lean Bar

The lean bar is fully retracted for shipping. Adjust as follows:

NOTE:

If optional tall crop divider kit is supplied, it can be installed prior to reinstalling the lean bar. Refer to *3.6 Installing Tall Crop Divider Kit, page 19*.

1. Remove hardware (A) on both sides and install lean bar in field position. Check that field position is suitable for the crop (normally 2/3 of crop height).

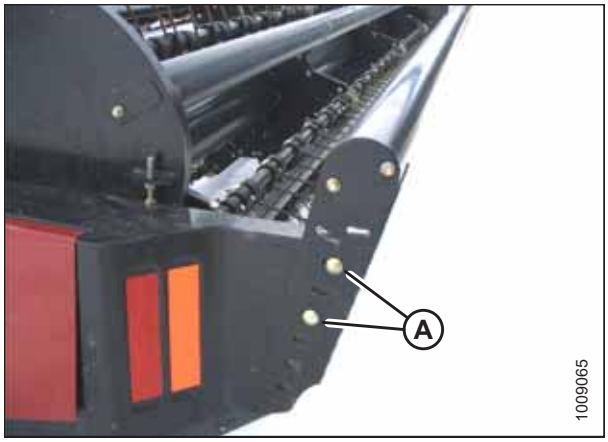


Figure 3.25: Lean Bar

3.8 Installing and Adjusting Pan Extensions

To install the pan extensions, do the following:

1. Remove deflectors (A) from their shipping positions on the header and unwrap.

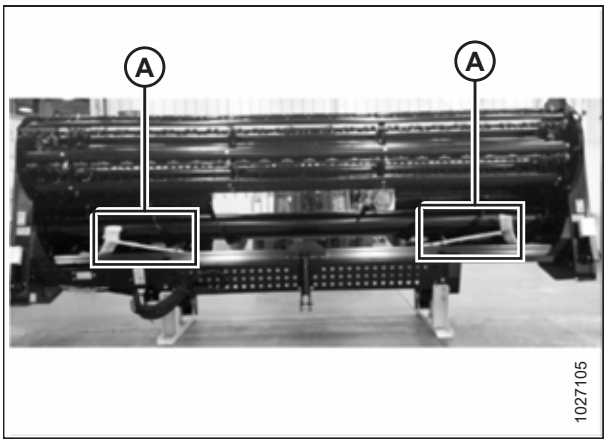


Figure 3.26: Shipping Configuration

2. Remove nut and bolt (A), nut and washers (B), and nuts (C) from the pan extension. Retain hardware.

   NOTE:

   Illustrations in this procedure show the left side pan extension. Instructions are similar for installing and adjusting the right side pan extension.

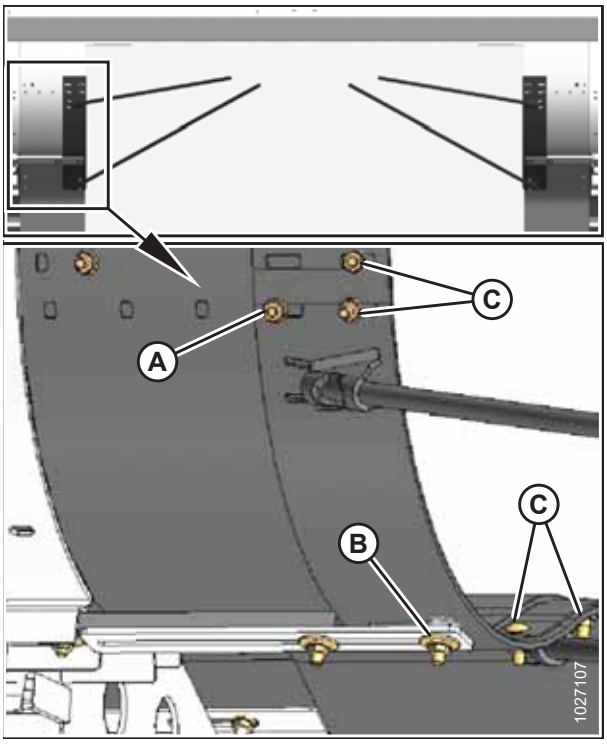


Figure 3.27: Pan Extension – Wide Setting

3. Install left side deflector (A) using nuts and bolts (B) and nut, bolt, and five washers (C) retained from the previous step. Torque all nuts to 11.5 Nm (102 lbf·in).

   NOTE:

   Do **NOT** install nut (D) if the pan extension's width will be adjusted.

   NOTE:

   Do **NOT** torque nuts if the pan extension's width will be adjusted.

4. Repeat steps for installing the pan extension on the opposite side of the header.

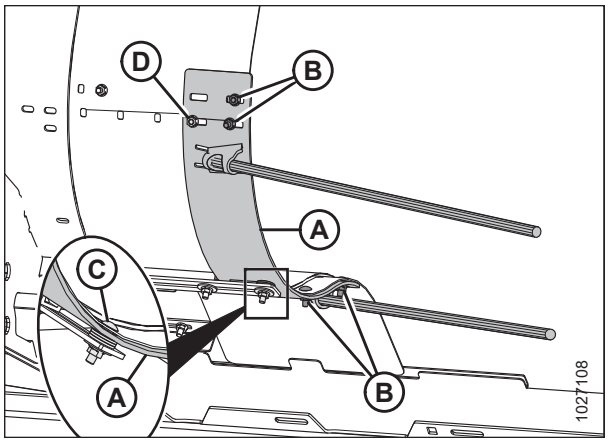


Figure 3.28: Left Side Deflector and Hardware

To adjust a pan extension's width, do the following:

1. Remove nut and bolt (A).
2. Loosen nut (B), but do **NOT** remove.
3. Slide pan extension (C) with swath forming rods inboard to the desired position, aligning holes on the pan extension and header.

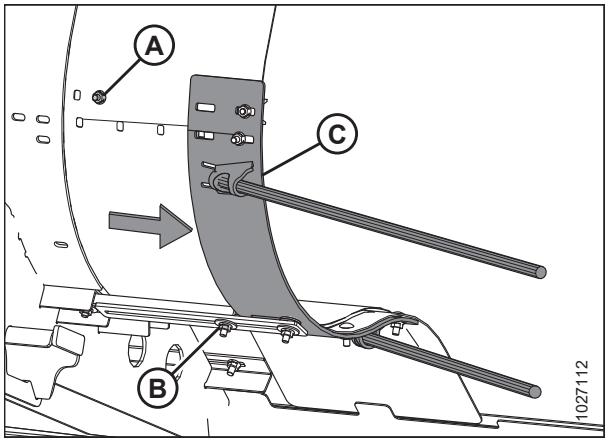


Figure 3.29: Left Side Pan Extension

4. Replace bolt and nut (A). Torque nut (A) and nut (B) to 11.5 Nm (102 lbf·in).
5. Install nut and bolt (C) and torque to 11.5 Nm (102 lbf·in).
6. Repeat for adjusting the pan extension on the right side of the header.

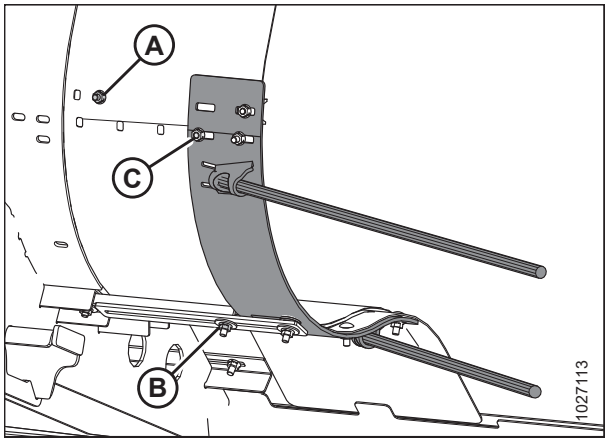


Figure 3.30: Left Side Pan Extension

3.9 Adjusting Transport Lights

1. Position amber light support (A) perpendicular to the header.
2. Check that pivot bolt (B) is tight enough to hold light support (A) in upright position, yet allows the light to pivot out of the way of obstructions.

   NOTE:

   Do **NOT** overtighten mounting hardware.
3. Ensure base of light housings and bolted connections on light supports provide proper electrical grounding.

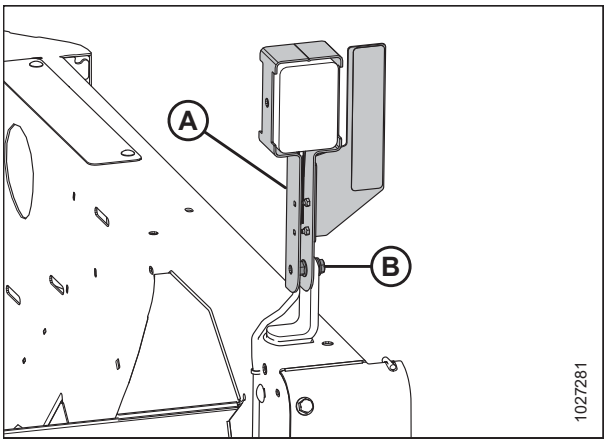


Figure 3.31: Amber Hazard Light

3.10 Assembling Forming Shield

1. Unpack and remove shipping material.
2. Remove bolts (A) from side deflectors (B).

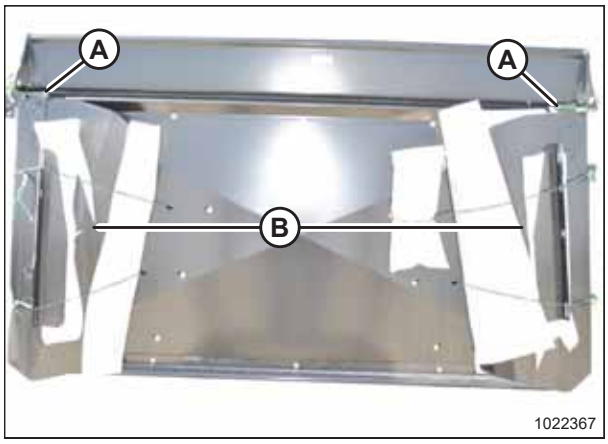


Figure 3.32: Forming Shield in Shipping Configuration

3. Install rubber strap (A) to side bracket (B) using bolt (C), washer (D), and nut (E).
4. Repeat for the other side.

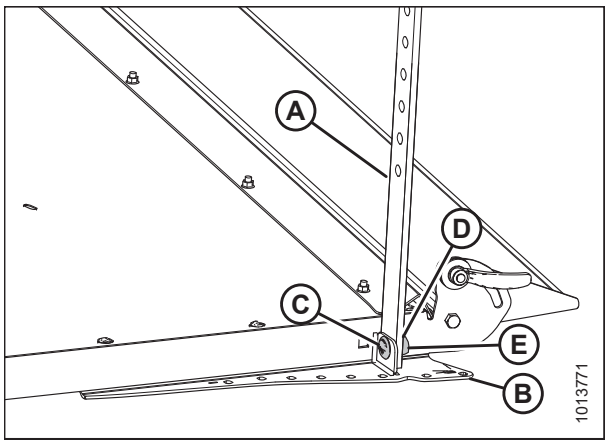


Figure 3.33: Rubber Strap

5. Lay cover (A) upside down on a flat surface.
6. Install center deflectors (B) using three bolts (C) on each side.

   NOTE:

   Arrange deflectors (B) so that narrow end (D) is toward the front of cover (A) and deep end (E) is toward the rear as shown in the illustration at right.

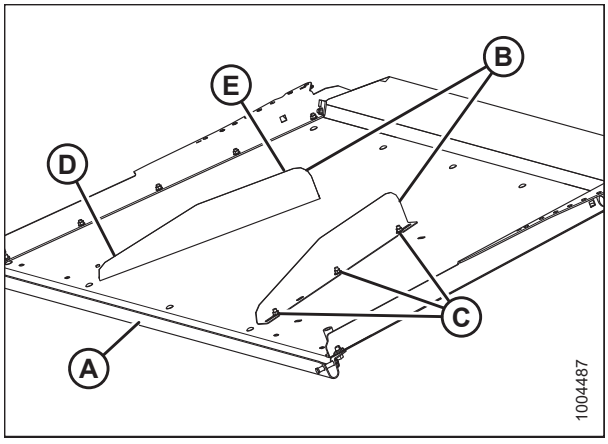


Figure 3.34: Center Deflectors

7. Assemble side deflectors (C) to cover with bolt (B), jam nut (E), washer (D), and nut (A) from previous step.
8. Tighten flange nut (A) enough to hold deflectors (C) in position, but still allow deflectors to move.
9. Tighten jam nut (E) against cover while holding bolt (B).

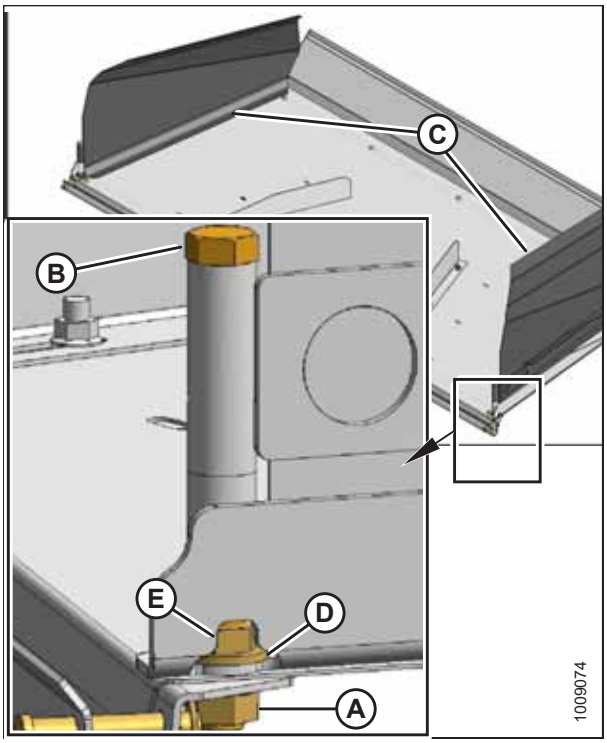


Figure 3.35: Side Deflectors

10. Remove lynch pin (A) from adjuster rod (B) and locate rod in hole in side deflector (C). Secure with lynch pin (A).
11. Repeat for other deflector.

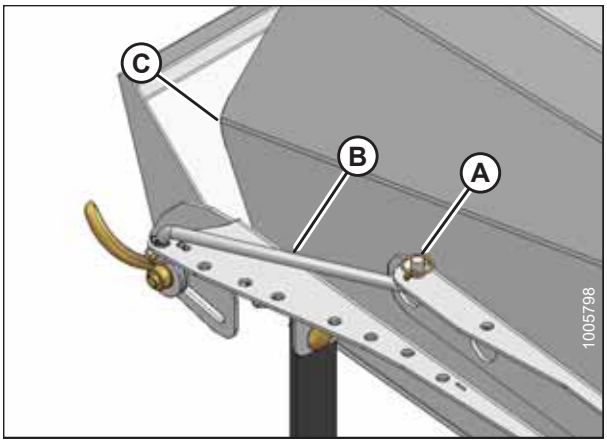


Figure 3.36: Adjuster Rod

12. Invert forming shield to installation position as shown.

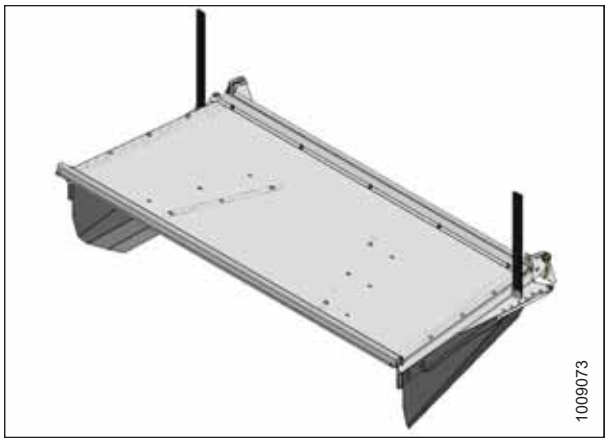


Figure 3.37: Forming Shield in Installation Position

3.11 Installing Forming Shield

NOTE:

Do **NOT** install the two triangular-shaped plates from the forming shield kit. Triangular plates are used with rotary headers.

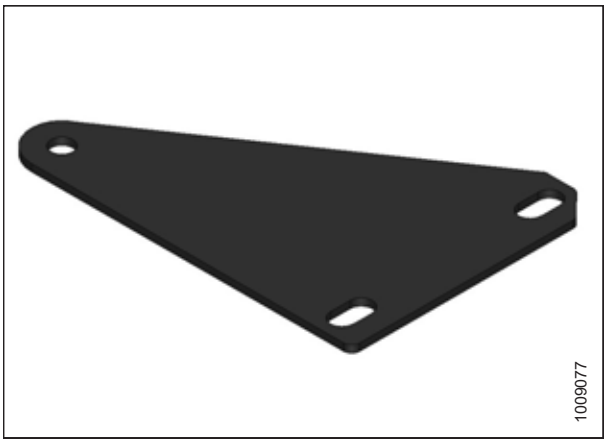


Figure 3.38: Triangular Plate

1. Install bolt (A) with spacer (B) and nut on each windrower leg in the upper hole. Hardware is supplied with forming shield kit.

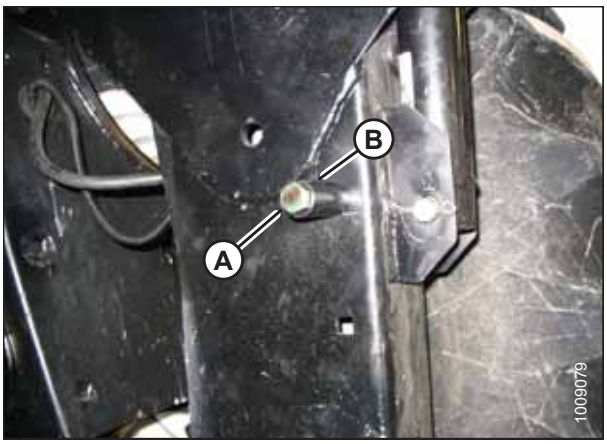


Figure 3.39: Windrower Leg

2. Remove two clevis pins (A) from forward end of forming shield.

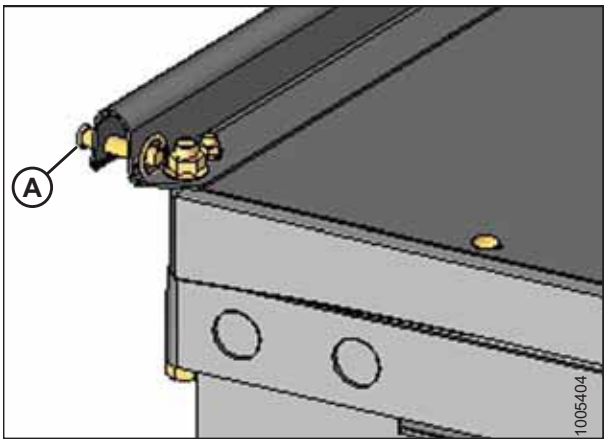


Figure 3.40: Forming Shield

3. Position forming shield (A) under windrower frame.

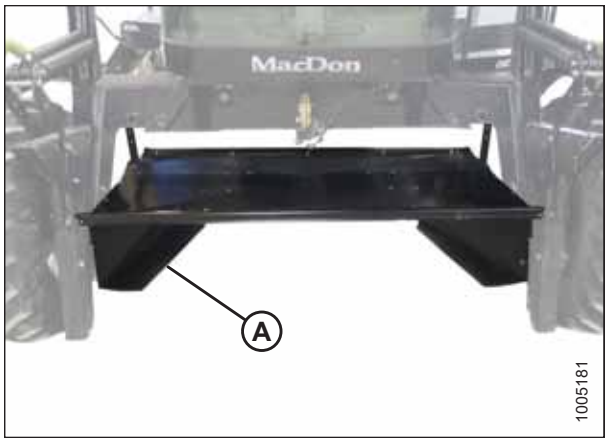


Figure 3.41: Forming Shield under Windrower

4. Position forming shield onto bolts (A) in windrower legs and secure with clevis pins (B) and hairpin.

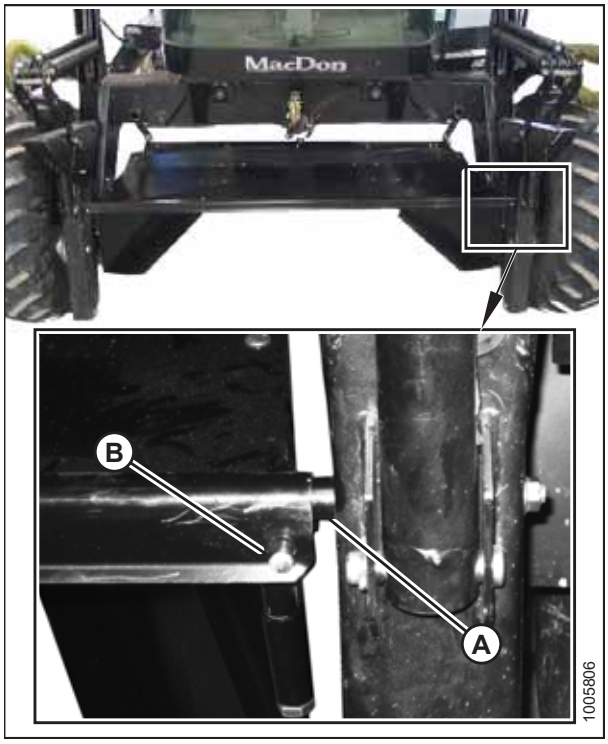


Figure 3.42: Forming Shield Attached to Windrower Legs

5. Lift aft end of the forming shield and attach straps (B) to pins (A) on the windrower frame. Install washer and hairpin to secure strap. Use the middle hole and adjust height to suit the crop.

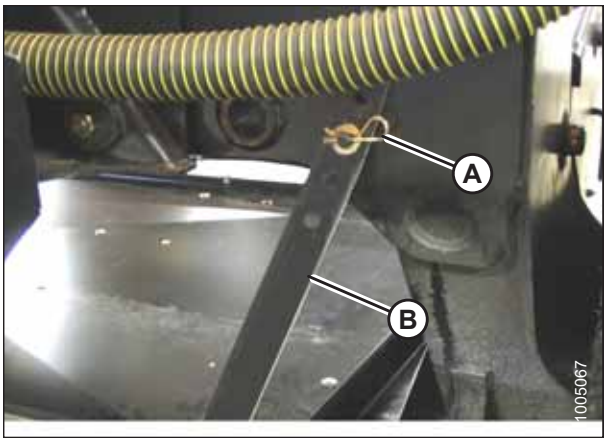


Figure 3.43: Forming Shield Attached to Windrower Frame

6. Set forming shield side deflectors to desired width by positioning adjuster bars (A). Use the same hole location on both sides.
   - Position deflectors at the narrowest setting for a narrow windrow (silage for example).
   - Position deflectors at the widest setting for a wide windrow.
7. Adjust fluffer shield (C) to middle position. Loosen handles (B) if required.

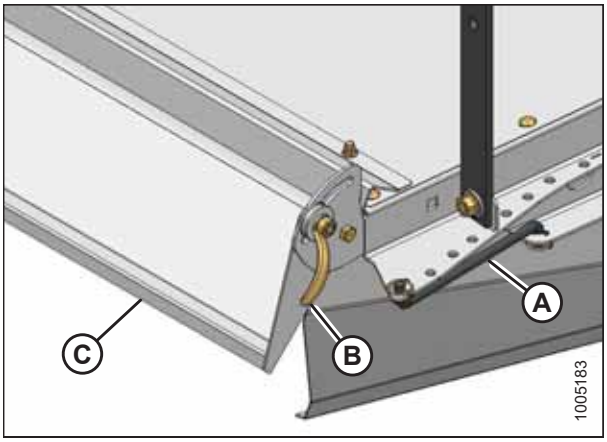


Figure 3.44: Side Deflectors and Fluffer Shield

3.12 Attaching A40D Headers to M Series Windrowers

The header drive hydraulic hoses and electrical harness are located on the left cab-forward side of the windrower. Refer to the following procedures for electrical and hydraulic connections:

IMPORTANT:

M150, M155, M155*E4*, and M200 Windrowers with the M Series Reverser kit (MD #B4656) installed need to have the reverser valve hose plumbing changed if switching between a D Series Draper Header with a conditioner to an A40D Auger Header. Changing this plumbing prevents improper operation and damage to the reel drive motor.

Refer to *3.14 Routing Reverser Manifold Jumper Hose – M Series Windrower, page 61* and (if necessary) to M Series Reverser Kit Installation Instructions (MD #169213), available from our dealer-only site (*https://portal.macdon.com*) (login required).

NOTE:

Header reel motor hose routing must be properly configured before attaching the header to a windrower. Hose routing on the header is factory-configured for M150, M155, M155*E4*, and M200 Windrowers. Header hose routing must be reconfigured if the header is being used on M100, M105, or M205 Windrowers.

Refer to the following procedures:

- *3.12.1 Attaching A40D Header to an M100 or M105 Windrower, page 30*
- *3.12.2 Attaching A40D an to M150, M155, or M155E4 Windrower, page 36*
- *3.12.3 Attaching A40D Header to an M200 Windrower, page 42*
- *3.12.4 Attaching A40D Header to an M205 Windrower, page 48*

Refer to your windrower operator's manual for procedures to mechanically attach the auger header to the windrower, and for modifications (if required) to the windrower hydraulic connections.

3.12.1 Attaching A40D Header to an M100 or M105 Windrower

WARNING

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

M100 and M105 Windrowers are factory-equipped with four header drive hoses (A) and an electrical harness (B) on the left side.

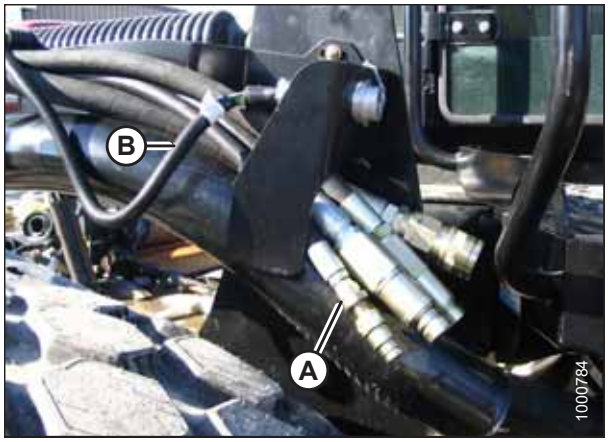


Figure 3.45: Header Drive Hoses

1. Shut down the engine, and remove the key from the ignition.
2. **Headers sold in North America:** Disengage rubber latch (A) and open driveshield (B).

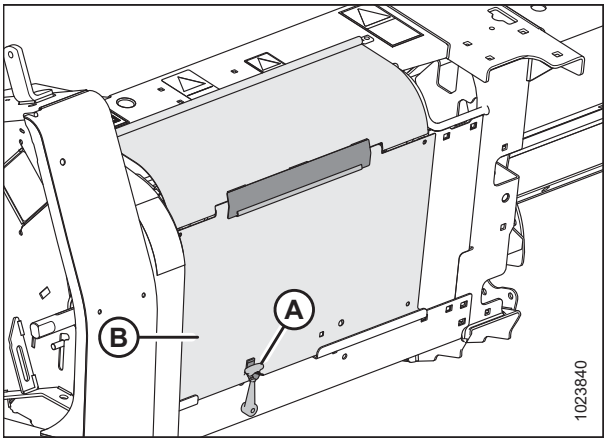


Figure 3.46: Driveshield – Headers Sold in North America

3. **Headers sold outside North America:** Insert a tool into hole (A) and pry to release latch (B). Disengage rubber latch (C) and open driveshield (D).

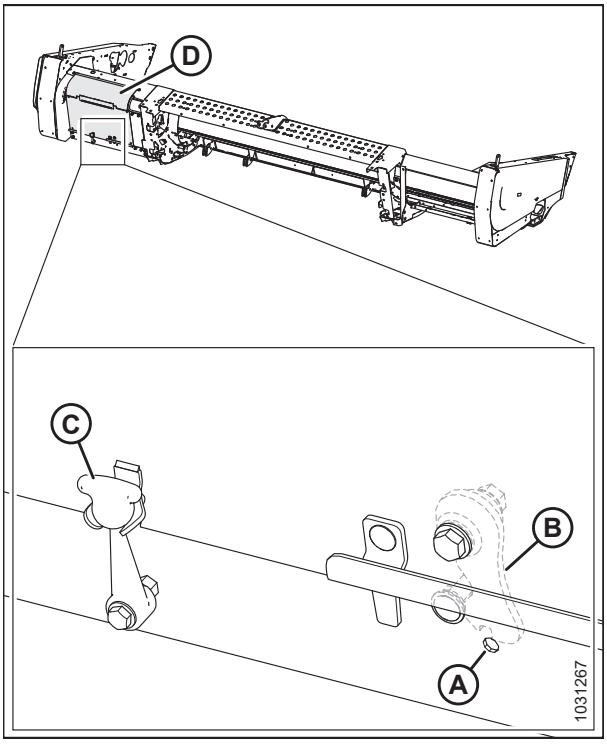


Figure 3.47: Driveshield – Headers Sold outside North America

Driveshield shown in the open position.

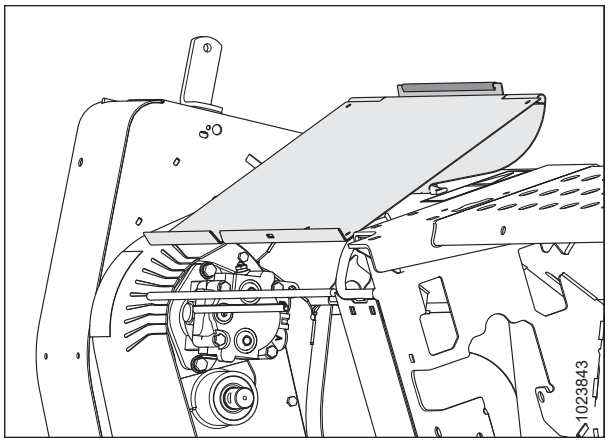


Figure 3.48: Driveshield Open

5. Remove cap (A) from the electrical connector and remove the connector from the support bracket.
6. Disengage and rotate lever (B) counterclockwise to the raised position to release the hose bundle (C).

Figure 3.49: Support Bracket and Hose Bundle

7. Move hose/electrical bundle (A) to the header.
8. Route bundle (A) from the windrower through support (B) and access hole (C) in the header frame alongside existing hose bundle (D) from the header.
9. Remove the cover from header electrical receptacle (E).
10. Push the connector onto the receptacle and turn the collar on the connector to lock it in place.
11. Attach the cover to the mating cover on the windrower wiring harness.
12. Remove the caps from the hydraulic couplers. Clean if necessary.

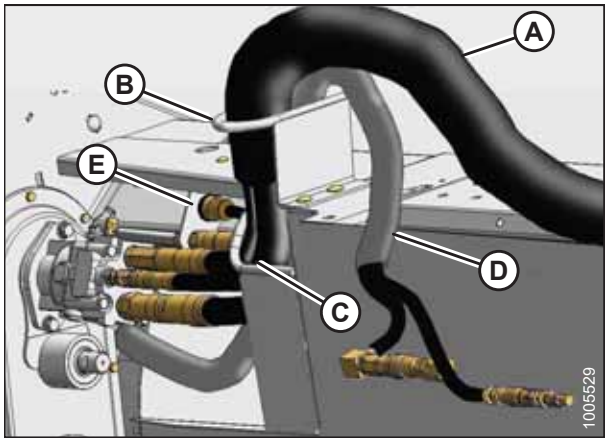


Figure 3.50: Hose and Electrical Bundle – 4.9 m (16 ft.) Header Shown, 5.5 m (18 ft.) Header Similar

13. **A40D standard headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

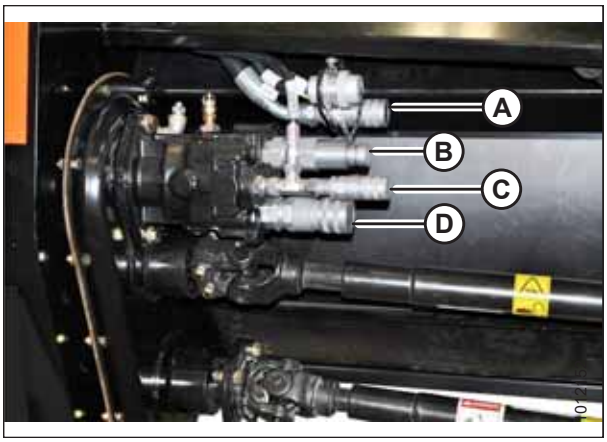


Figure 3.51: A40D Hose Connections – 4.9 m (16 ft.) Header Shown

Figure 3.52: A40D Hose Connections – 5.4 m (18 ft.) Header Shown

14. **A40D GSS headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

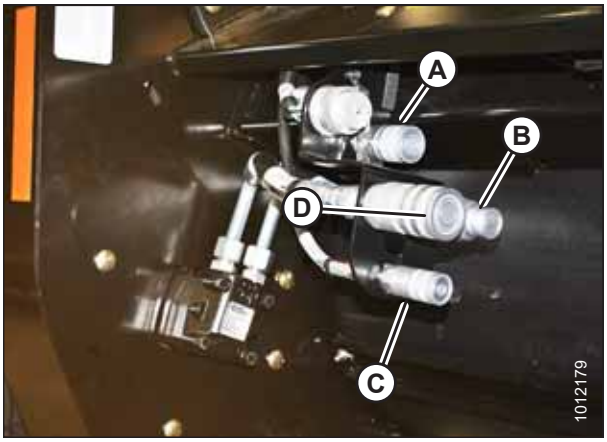


Figure 3.53: A40D GSS Hose Connections – 4.9 m (16 ft. header)

15. Route auger return/reel pressure hose bundle (A) from the header to the windrower, and position the bundle above existing hose support (C) as shown.
16. Secure with three straps (D), and lower lever (B).

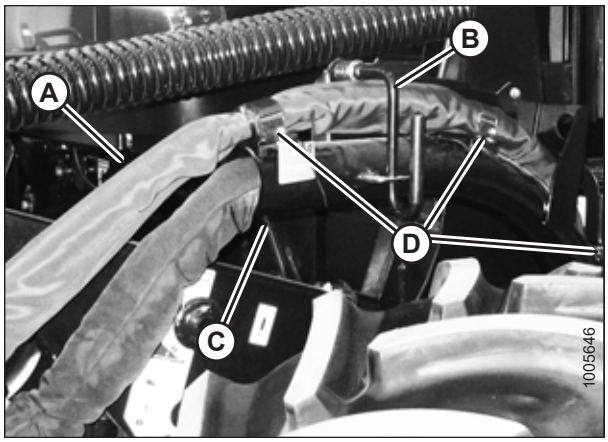


Figure 3.54: Auger Return and Reel Pressure Hose Bundle

17. If manifolds are **NOT** configured as shown (A), refer to *3.13.1 Modifying Hydraulics – M100, M105 Windrowers, page 53*.

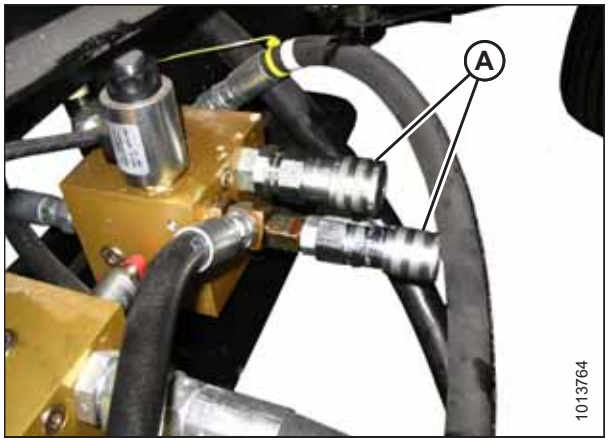


Figure 3.55: Manifolds Configuration

18. Push auger/reel pressure (A) and auger/reel return (B) hose couplers onto the mating receptacles on the manifold until the collar on the receptacle snaps into the lock position.

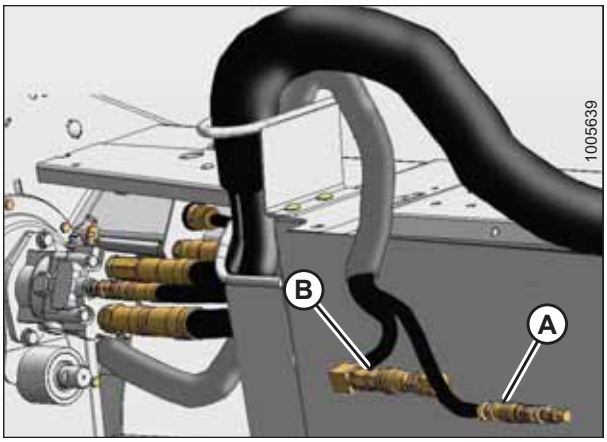


Figure 3.56: Auger/Reel Pressure and Auger/Reel Return Hose Couplers

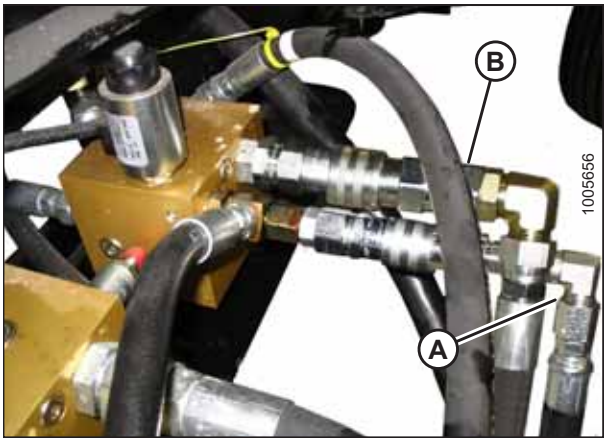


Figure 3.57: Auger/Reel Pressure and Auger/Reel Return Manifold Receptacles

19. Open the header left endshield.
20. Check reel pressure line (A) connection to the reel drive motor (B). Connect the reel pressure line to a different port on the reel motor port depending on the model of windrower:
    - If attaching the header to an M150, M155, M155E4, or M200, do **NOT** change the reel pressure connection to the motor, **UNLESS** switching to windrower models M100, M105, or M205. All model years of A40D / A40D GSS are factory-configured for M150, M155, M155E4, and M200.
    - Before attaching the header to an **M100, M105, or M205** move the reel pressure line connection (A) to the other port (C). Refer to *3.15.1 Hydraulic Drive Hose Routing – A40D Header and M Series Windrowers, page 63*.

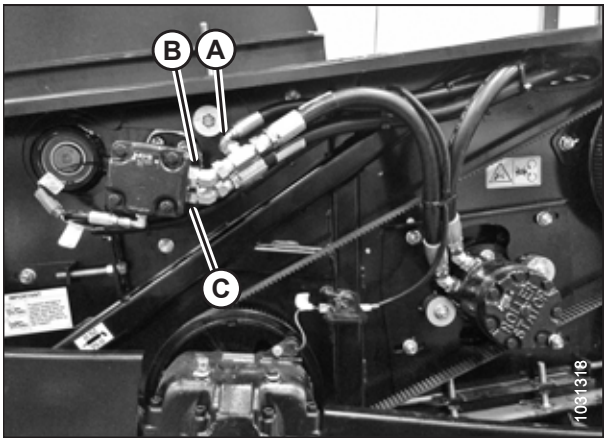


Figure 3.58: A40D/A40D GSS Header – Factory Configuration for M150, M155, M155*E4* and M200

3.12.2 Attaching A40D an to M150, M155, or M155*E4* Windrower

WARNING

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

Four header drive hoses (A) and an electrical harness (B) are located on the left side of the windrower.

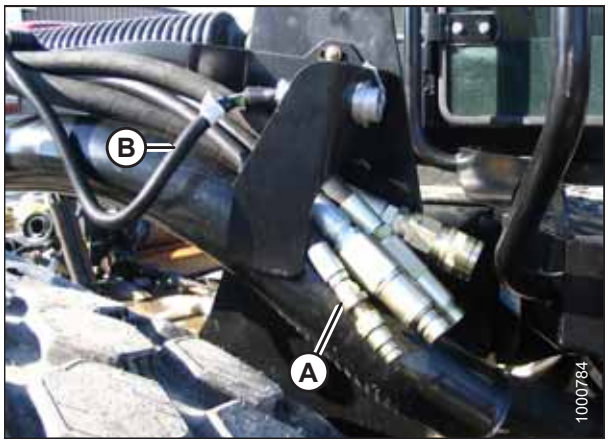


Figure 3.59: Header Drive Hoses

1. Shut down the engine, and remove the key from the ignition.
2. **Headers sold in North America:** Disengage rubber latch (A) and open driveshield (B).

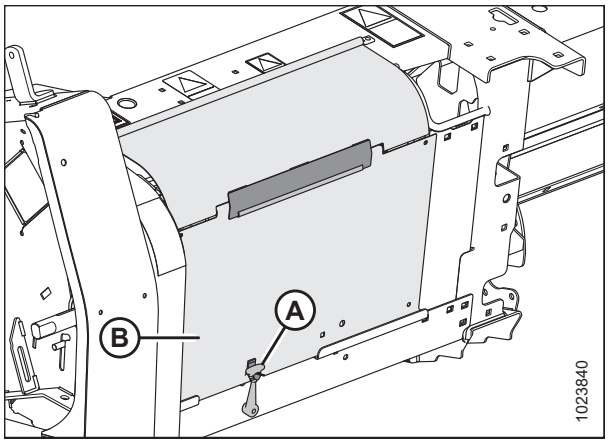


Figure 3.60: Driveshield – Headers Sold in North America

3. **Headers sold outside North America:** Insert a tool into hole (A) and pry to release latch (B). Disengage rubber latch (C) and open driveshield (D).

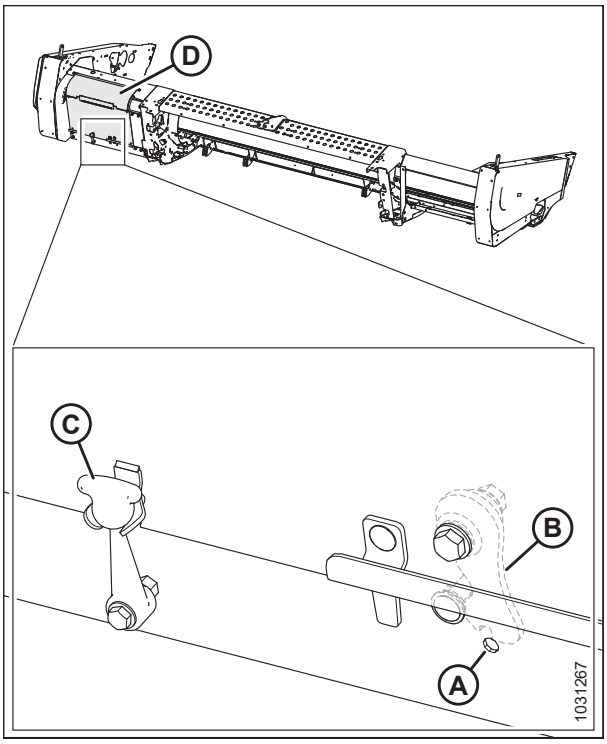


Figure 3.61: Driveshield – Headers Sold outside North America

Driveshield shown in the open position.

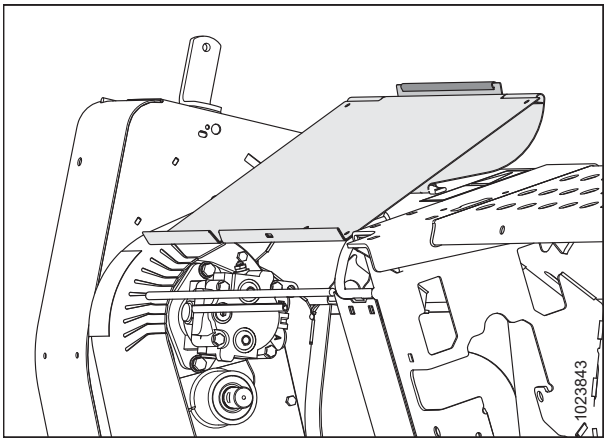


Figure 3.62: Driveshield Open

5. Remove cap (A) from the electrical connector and remove the connector from the support bracket.
6. Disengage and rotate lever (B) counterclockwise to the raised position to release the hose bundle (C).

Figure 3.63: Support Bracket and Hose Bundle

7. Move hose/electrical bundle (A) to the header.
8. Route bundle (A) from the windrower through support (B) and access hole (C) in the header frame alongside existing hose bundle (D) from the header.
9. Remove the cover from header electrical receptacle (E).
10. Push the connector onto the receptacle and turn the collar on the connector to lock it in place.
11. Attach the cover to the mating cover on the windrower wiring harness.
12. Remove the caps from the hydraulic couplers. Clean if necessary.

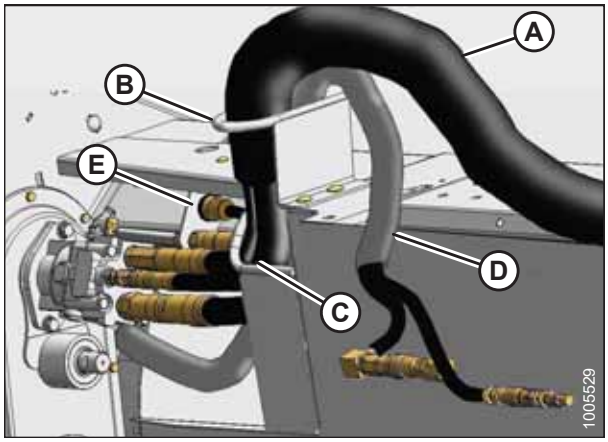


Figure 3.64: Hose and Electrical Bundle – 4.9 m (16 ft.) Header Shown, 5.5 m (18 ft.) Header Similar

13. **A40D standard headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

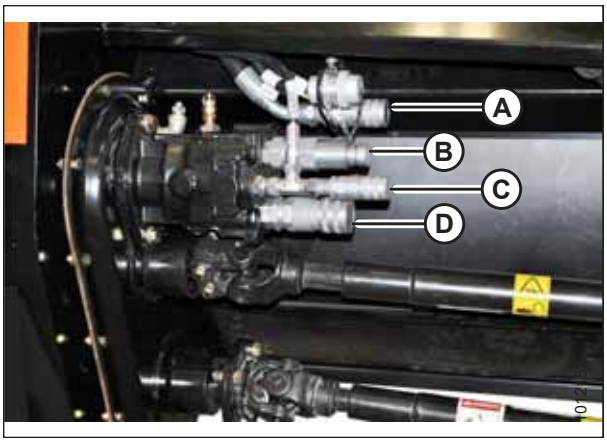


Figure 3.65: A40D Hose Connections – 4.9 m (16 ft.) Header Shown

Figure 3.66: A40D Hose Connections – 5.4 m (18 ft.) Header Shown

14. **A40D GSS headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

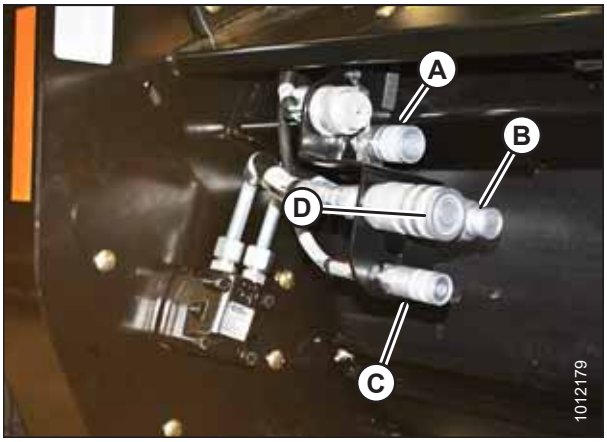


Figure 3.67: A40D GSS Hose Connections – 4.9 m (16 ft. header)

15. Route auger return/reel pressure hose bundle (A) from the header to the windrower, and position the bundle above existing hose support (C) as shown.
16. Secure with three straps (D), and lower lever (B).

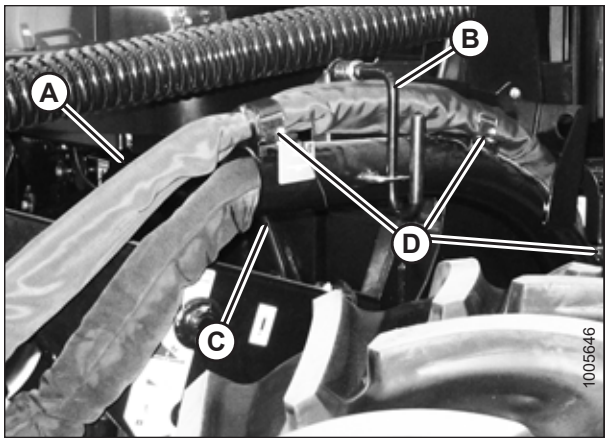


Figure 3.68: Auger Return and Reel Pressure Hose Bundle

17. If manifolds are **NOT** configured as shown, refer to *3.13.2 Modifying Hydraulics – M150, M155, M155E4 Windrowers, page 55*.

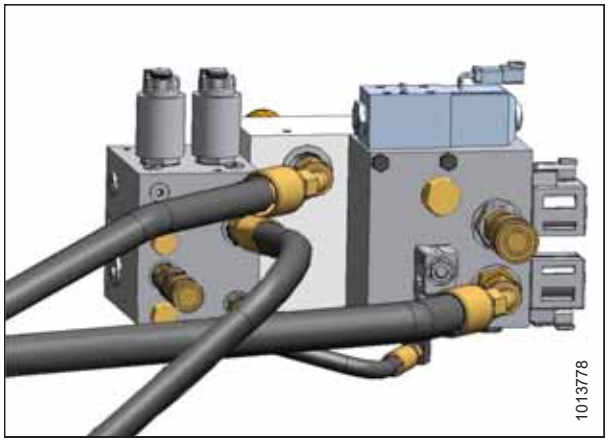


Figure 3.69: M150/M155/M155*E4* with Reverser Valve

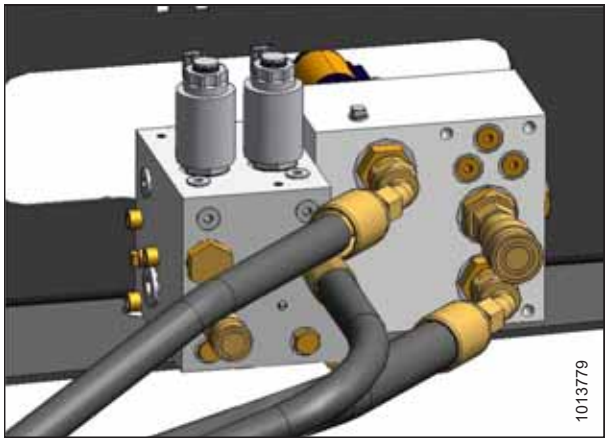


Figure 3.70: M150/M155/M155*E4* without Reverser Valve

18. Locate auger pressure (A) and auger/reel return hoses (B).

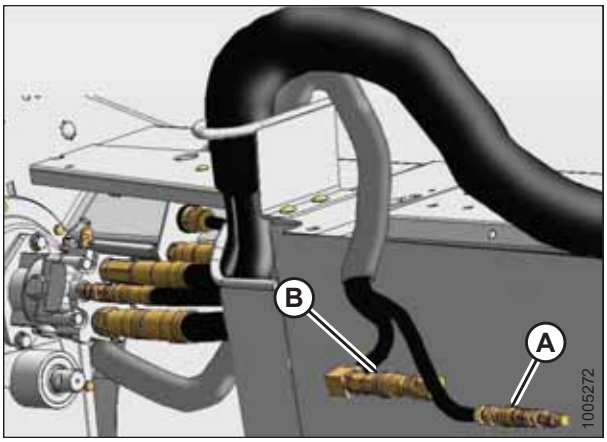


Figure 3.71: Auger Pressure and Auger/Reel Return Hose Couplers – 4.9 m (16 ft.) Header Shown (5.5 m [18 ft.] Similar)

19. Push auger pressure (A) and auger/reel return (B) hose couplers onto mating receptacles on manifolds until collar on receptacle snaps into lock position.
20. Proceed to *3.14 Routing Reverser Manifold Jumper Hose – M Series Windrower, page 61*.

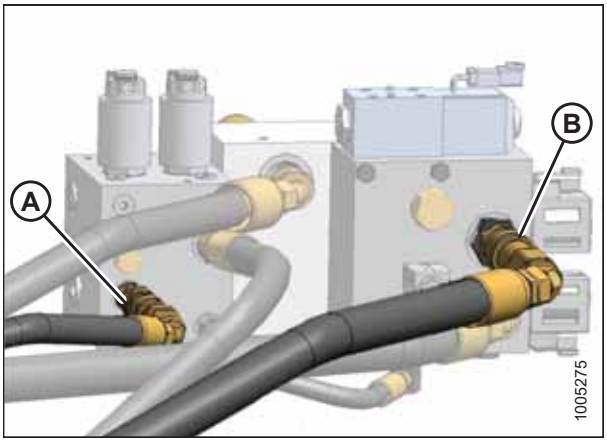


Figure 3.72: M150/M155/M155*E4* with Reverser Valve

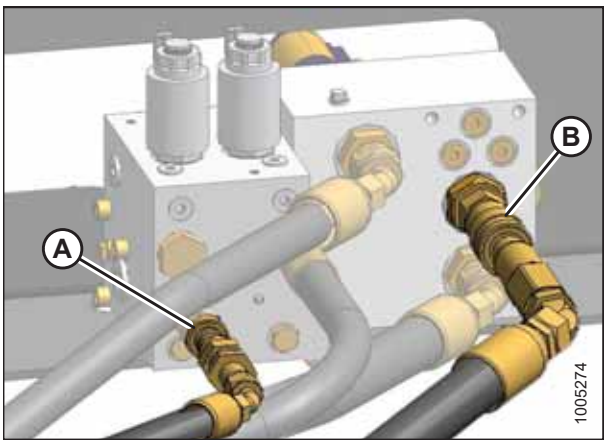


Figure 3.73: M150/M155/M155*E4* without Reverser Valve

3.12.3 Attaching A40D Header to an M200 Windrower

WARNING

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

The M200 Windrower requires four drive hoses (A) to run an A40D Auger Header. An electrical harness (B) is located on the left side of the windrower.

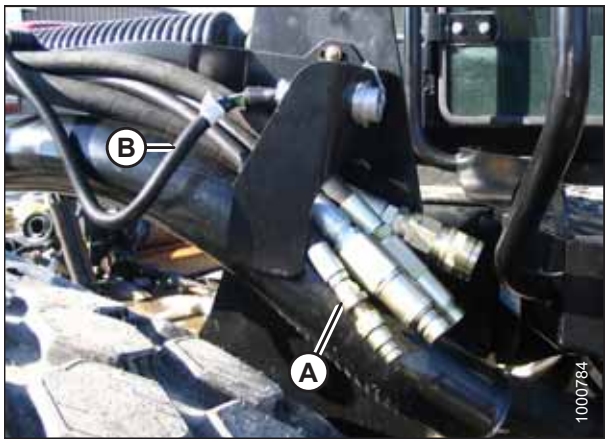


Figure 3.74: Drive Hoses

If only three drive hoses are present, before following the procedure below, configure the M200 to run an A40D Auger Header by installing kit MD #B4651. The kit includes an additional hose (A), hardware, and installation instructions.

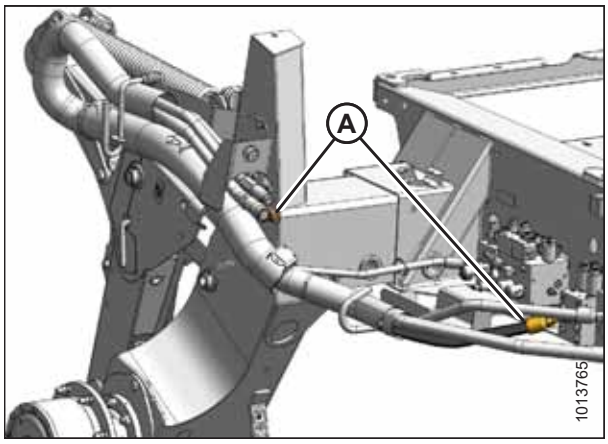


Figure 3.75: Auger Header Drive and Draper Header Reel Drive and Lift Plumbing Kit (MD #B4651)

1. Shut down the engine, and remove the key from the ignition.
2. **Headers sold in North America:** Disengage rubber latch (A) and open driveshield (B).

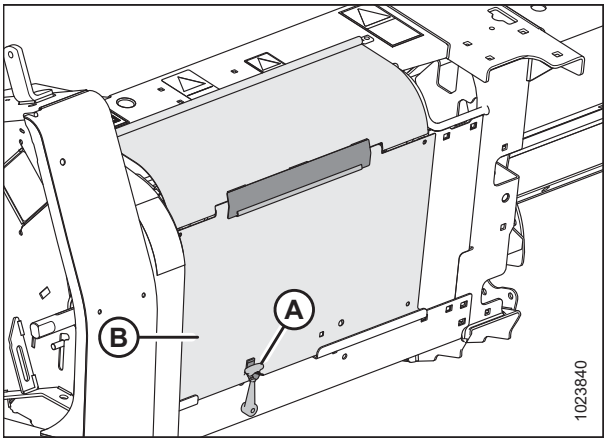


Figure 3.76: Driveshield – Headers Sold in North America

3. **Headers sold outside North America:** Insert a tool into hole (A) and pry to release latch (B). Disengage rubber latch (C) and open driveshield (D).

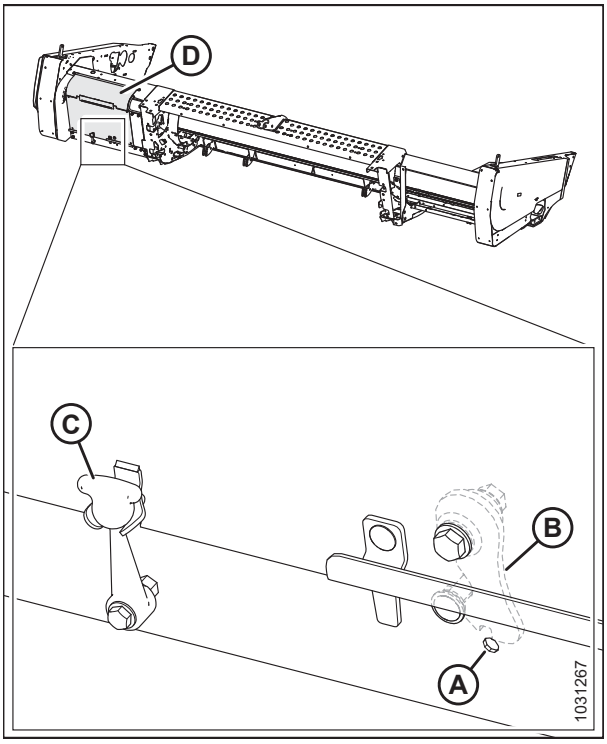


Figure 3.77: Driveshield – Headers Sold outside North America

Driveshield shown in the open position.

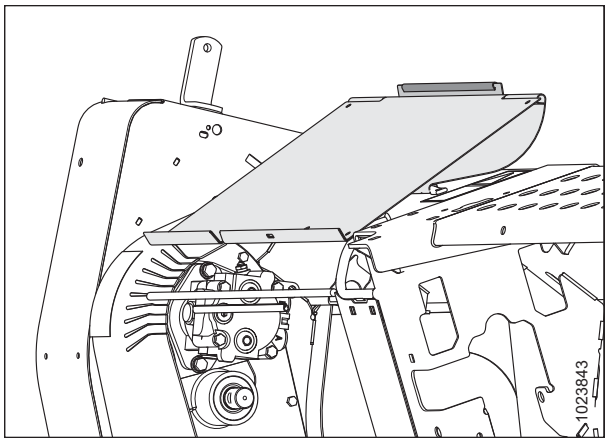


Figure 3.78: Driveshield Open

5. Remove cap (A) from the electrical connector and remove the connector from the support bracket.
6. Disengage and rotate lever (B) counterclockwise to the raised position to release the hose bundle (C).

Figure 3.79: Support Bracket and Hose Bundle

7. Move hose/electrical bundle (A) to the header.
8. Route bundle (A) from the windrower through support (B) and access hole (C) in the header frame alongside existing hose bundle (D) from the header.
9. Remove the cover from header electrical receptacle (E).
10. Push the connector onto the receptacle and turn the collar on the connector to lock it in place.
11. Attach the cover to the mating cover on the windrower wiring harness.
12. Remove the caps from the hydraulic couplers. Clean if necessary.

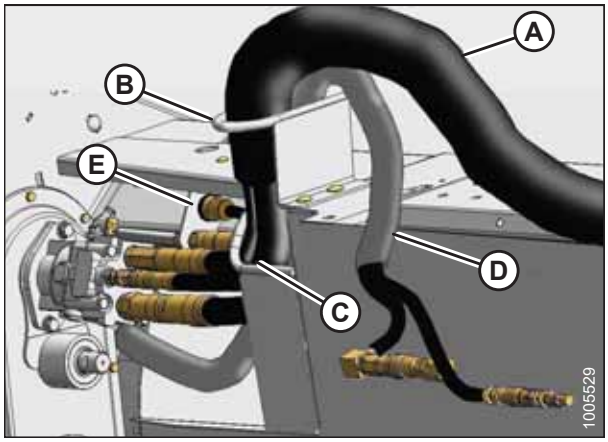


Figure 3.80: Hose and Electrical Bundle – 4.9 m (16 ft.) Header Shown, 5.5 m (18 ft.) Header Similar

13. **A40D standard headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

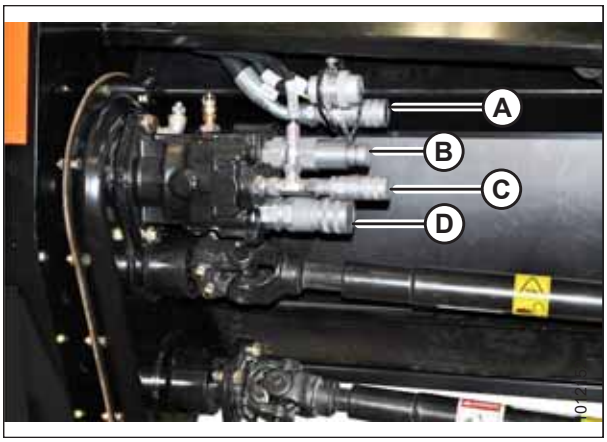


Figure 3.81: A40D Hose Connections – 4.9 m (16 ft.) Header Shown

Figure 3.82: A40D Hose Connections – 5.4 m (18 ft.) Header Shown

14. **A40D GSS headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

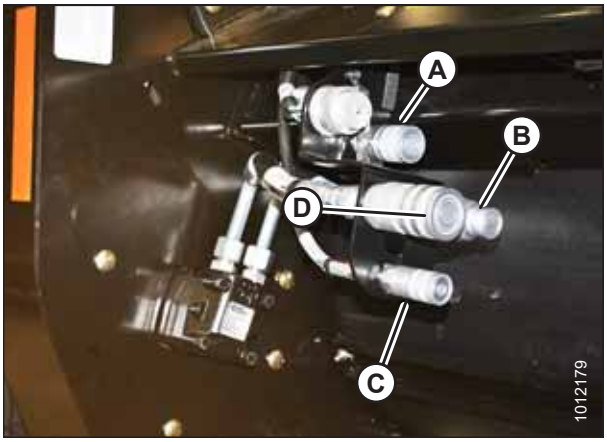


Figure 3.83: A40D GSS Hose Connections – 4.9 m (16 ft. header)

15. Route auger return/reel pressure hose bundle (A) from the header to the windrower, and position the bundle above existing hose support (C) as shown.
16. Secure with three straps (D), and lower lever (B).

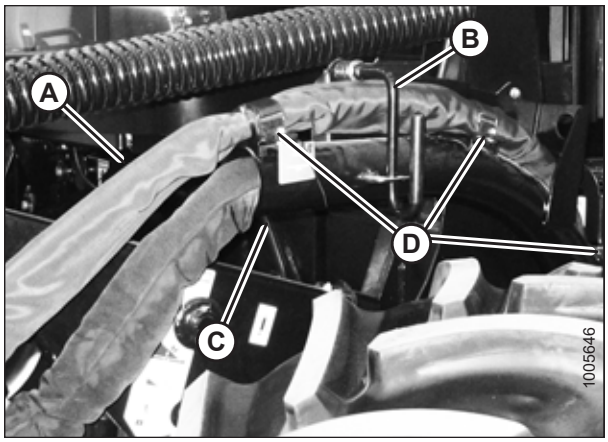


Figure 3.84: Auger Return and Reel Pressure Hose Bundle

17. If manifolds are **NOT** configured as shown, refer to the relevant procedure for your windrower:
    - *3.13.3 Modifying Hydraulics – M200 Windrower with Reverser Manifold, page 57*
    - *3.13.4 Modifying Hydraulics – M200 Windrower without Reverser Manifold, page 58*

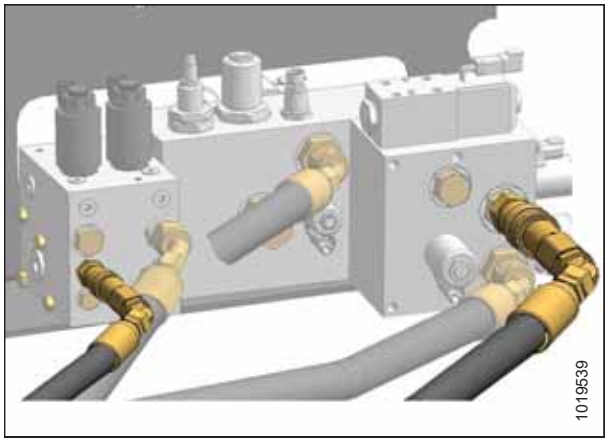


Figure 3.85: M200 With Reverser Valve

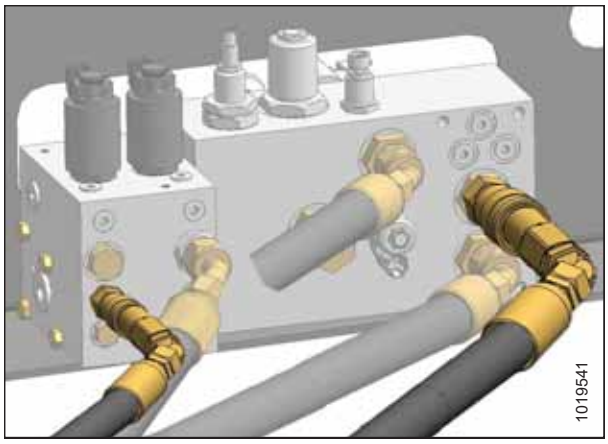


Figure 3.86: M200 without Reverser Valve

18. Locate auger pressure (A) and auger/reel return (B) hoses.

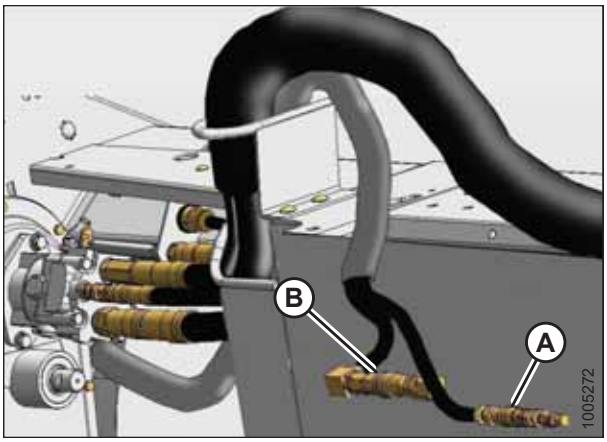


Figure 3.87: Auger Pressure and Auger/Reel Return Hose Couplers – 4.9 m (16 ft.) Header Shown, 5.5 m (18 ft.) Header Similar

19. Push auger pressure (A) and auger/reel return (B) hose couplers onto mating receptacles on manifolds until collar on receptacle snaps into lock position.
20. Proceed to *3.14 Routing Reverser Manifold Jumper Hose – M Series Windrower, page 61*.

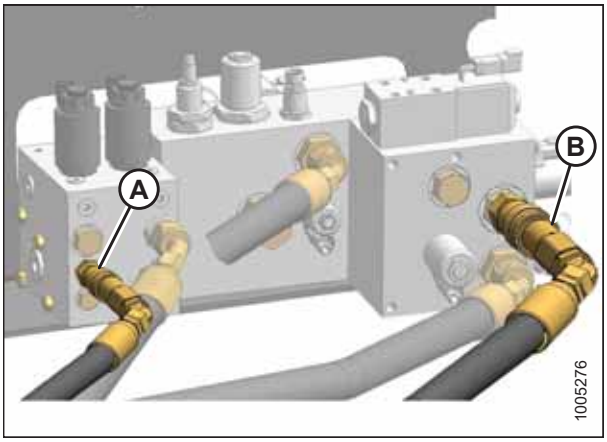


Figure 3.88: M200 with Reverser Valve

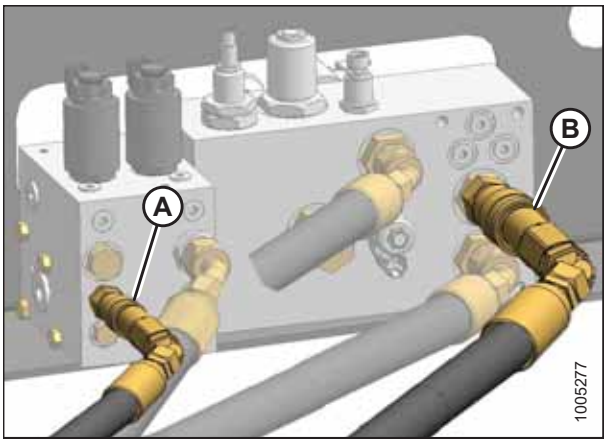


Figure 3.89: M200 without Reverser Valve

3.12.4 Attaching A40D Header to an M205 Windrower

WARNING

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

The M205 Windrower must be equipped with an auger drive basic kit and a completion kit as shown at right. If necessary, order and install the following kits shown in the table below. Installation instructions are supplied with the kits.

Kit Description	MacDon Part Number
Base kit	MD #B5491
Reverser kit[2]	MD #B5492
Coupler	MD #B5497

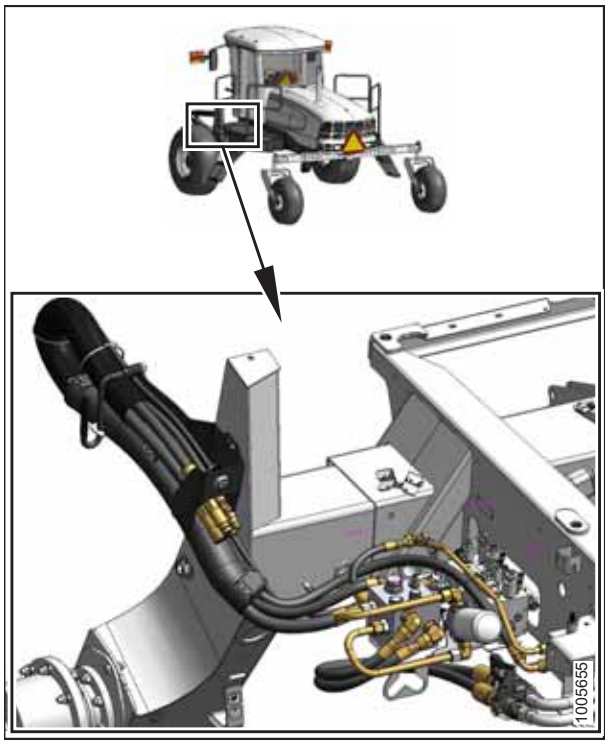


Figure 3.90: Auger Drive Basic Kit and Completion Kit Installed

1. Shut down the engine, and remove the key from the ignition.
2. **Headers sold in North America:** Disengage rubber latch (A) and open driveshield (B).

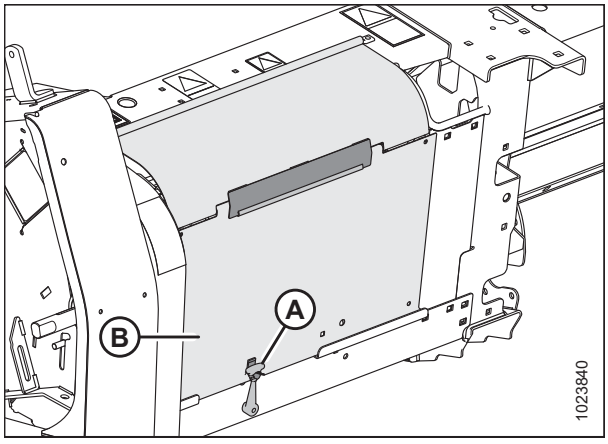


Figure 3.91: Driveshield – Headers Sold in North America

2. Reverser kit is **REQUIRED**. Install prior to hook-up.

3. **Headers sold outside North America:** Insert a tool into hole (A) and pry to release latch (B). Disengage rubber latch (C) and open driveshield (D).

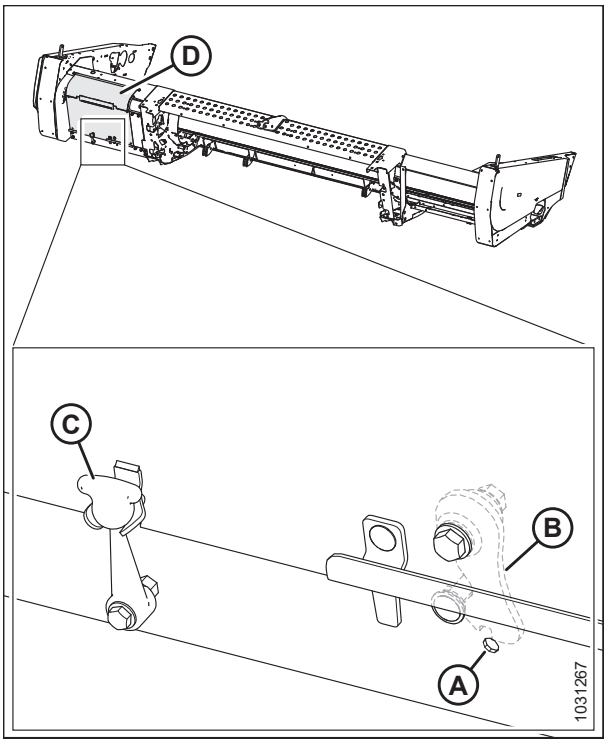


Figure 3.92: Driveshield – Headers Sold outside North America

Driveshield shown in the open position.

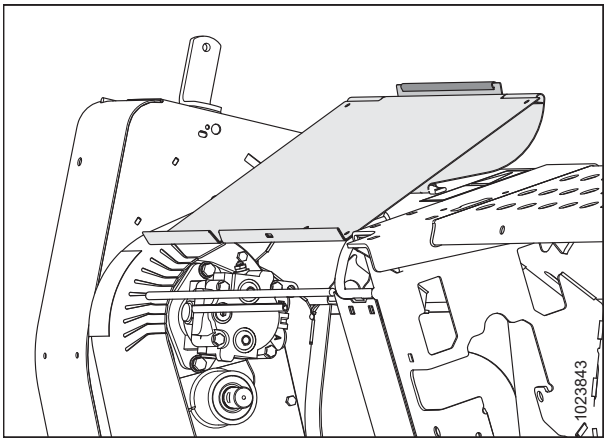


Figure 3.93: Driveshield Open

5. Remove cap (A) from the electrical connector and remove the connector from the support bracket.
6. Disengage and rotate lever (B) counterclockwise to the raised position to release the hose bundle (C).

Figure 3.94: Support Bracket and Hose Bundle

7. Move hose/electrical bundle (A) to the header.
8. Route bundle (A) from the windrower through support (B) and access hole (C) in the header frame alongside existing hose bundle (D) from the header.
9. Remove the cover from header electrical receptacle (E).
10. Push the connector onto the receptacle and turn the collar on the connector to lock it in place.
11. Attach the cover to the mating cover on the windrower wiring harness.
12. Remove the caps from the hydraulic couplers. Clean if necessary.

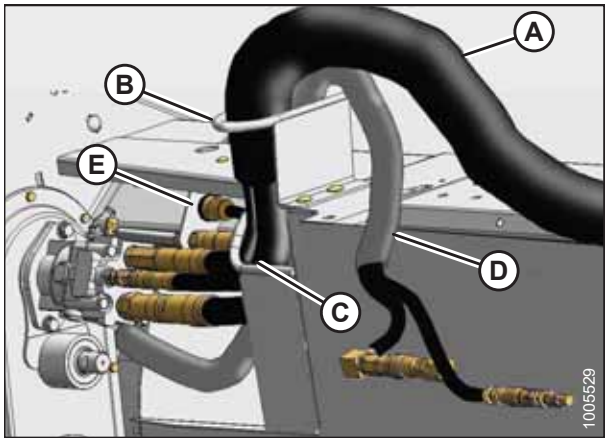


Figure 3.95: Hose and Electrical Bundle – 4.9 m (16 ft.) Header Shown, 5.5 m (18 ft.) Header Similar

13. **A40D standard headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

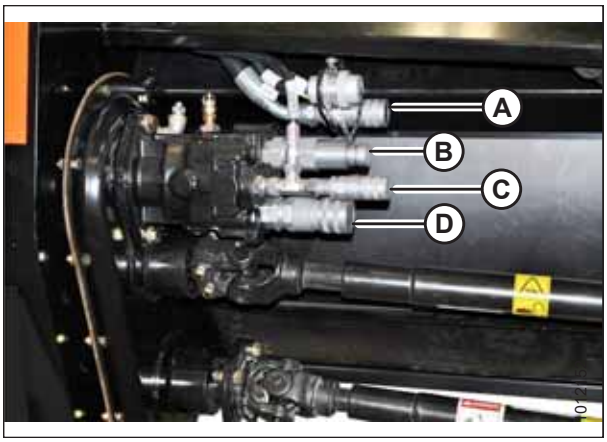


Figure 3.96: A40D Hose Connections – 4.9 m (16 ft.) Header Shown

Figure 3.97: A40D Hose Connections – 5.4 m (18 ft.) Header Shown

14. **A40D GSS headers:** Push the following hose connectors onto the mating receptacles as shown until the collars on the receptacles snap into lock position:

    - Reel/auger pressure (A)
    - Knife and conditioner return (B)
    - Case drain (C)
    - Knife and conditioner pressure (D)

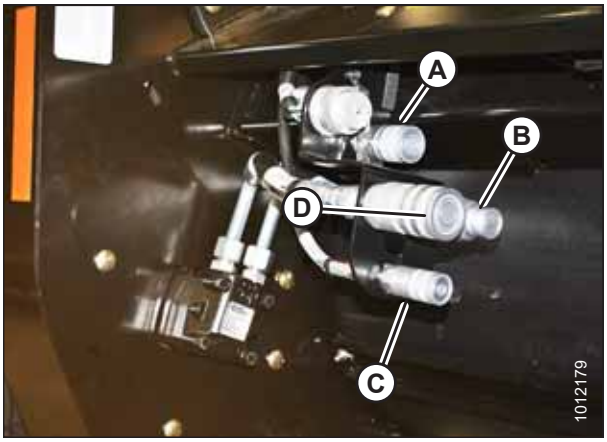


Figure 3.98: A40D GSS Hose Connections – 4.9 m (16 ft. header)

15. Route auger return/reel pressure hose bundle (A) from the header to the windrower, and position the bundle above existing hose support (C) as shown.
16. Secure with three straps (D), and lower lever (B).

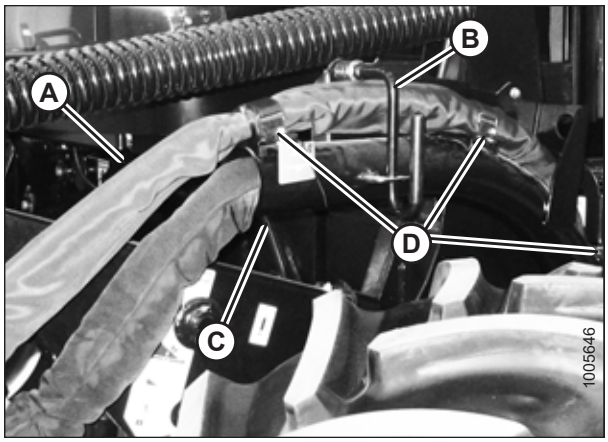


Figure 3.99: Auger Return and Reel Pressure Hose Bundle

17. Push auger/reel pressure (A) and auger/reel return (B) hose couplers onto mating receptacles on manifold until collar on receptacle snaps into lock position.

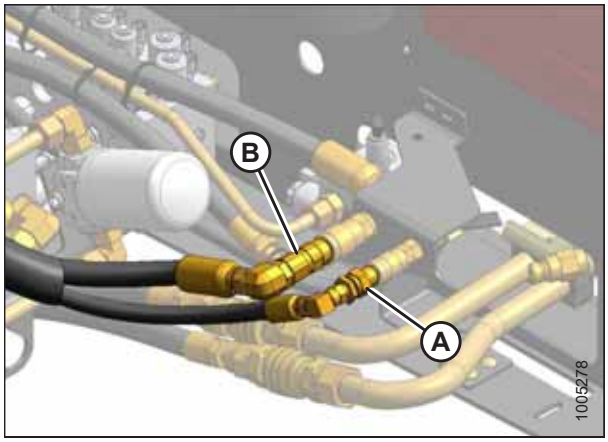


Figure 3.100: Auger/Reel Pressure and Auger/Reel Return Hose Couplers

18. Check reel pressure line (A) connection to the reel drive motor (B). Connect the reel pressure line to a different port on the reel motor port depending on the model of windrower:
    - If attaching the header to an M150, M155, M155E4, or M200, do **NOT** change the reel pressure connection to the motor, **UNLESS** switching to windrower models M100, M105, or M205. All model years of A40D / A40D GSS are factory-configured for M150, M155, M155E4, and M200.
    - Before attaching the header to an **M100, M105, or M205** move the reel pressure line connection (A) to the other port (C). Refer to *3.15.1 Hydraulic Drive Hose Routing – A40D Header and M Series Windrowers, page 63*.

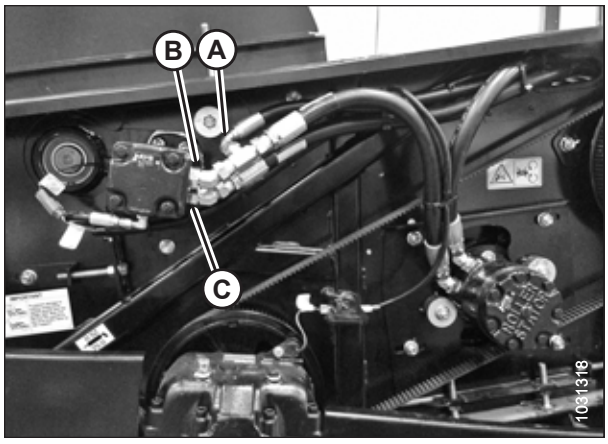


Figure 3.101: A40D/A40D GSS Header – Factory Configuration for M150, M155, M155*E4* and M200

3.13 Modifying Hydraulics – A40D Header

The windrower hydraulics must be modified to work correctly with an A40D Auger Header. Follow the instructions in the relevant section for your windrower model:

3.13.1 Modifying Hydraulics – M100, M105 Windrowers

1. Open left maintenance platform on windrower.
2. At valve (A) on the manifold, remove cap (B) from port R1 fitting (R1) and plug (C) from DWA tee fitting (DWA). Ports may not be labelled.

   NOTE:

   Check valve (D) is required when attaching an A40D Header to an M100 or M105 Windrower. All M105 Windrowers made in 2012 and later come factory-installed with check valve (D). If required, check valve (MD #167344) can be ordered from MacDon Parts.

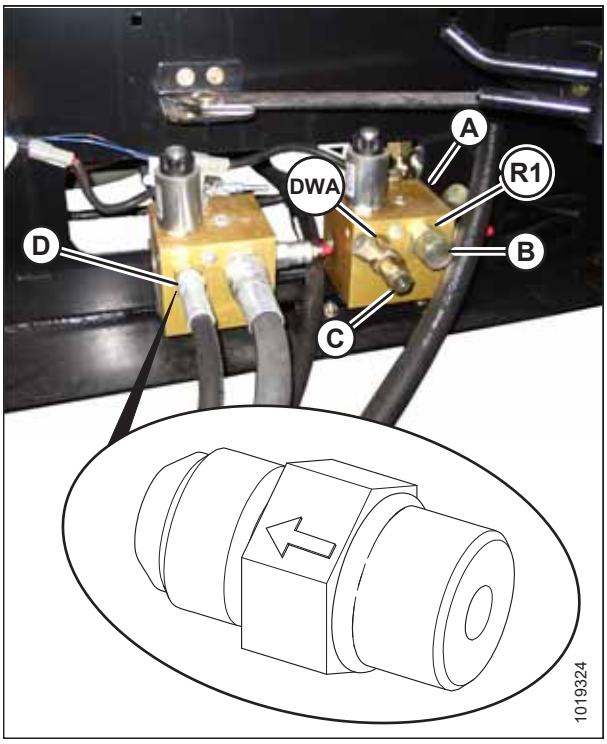


Figure 3.102: Manifolds in Factory Configuration

3. Remove female coupler assemblies (A) and (B) from auger return and reel pressure hose bundle (C) from header.

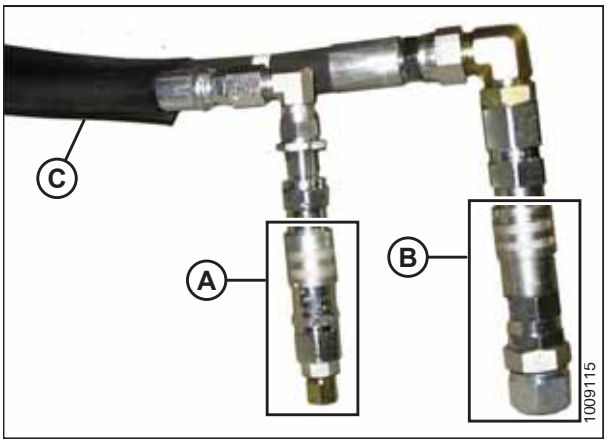


Figure 3.103: Auger Return and Reel Pressure Hose Bundle

4. Remove and discard cap (C) and adapter fitting (B) with O-ring from the large coupler (A).

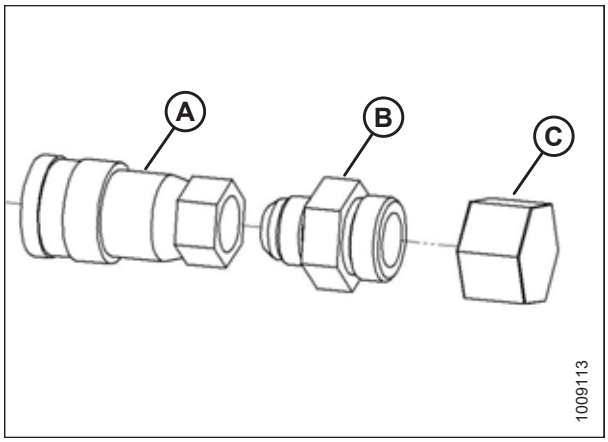


Figure 3.104: Large Coupler Assembly

5. Install large coupler (A) onto the fitting at port R1 on manifold (B).

   IMPORTANT:

   Make sure the O-ring is on JIC threads in port R1 to ensure a proper seal with coupler (A). If the O-ring is missing, reuse the O-ring from the discarded adapter fitting in Step *4, page 54*.

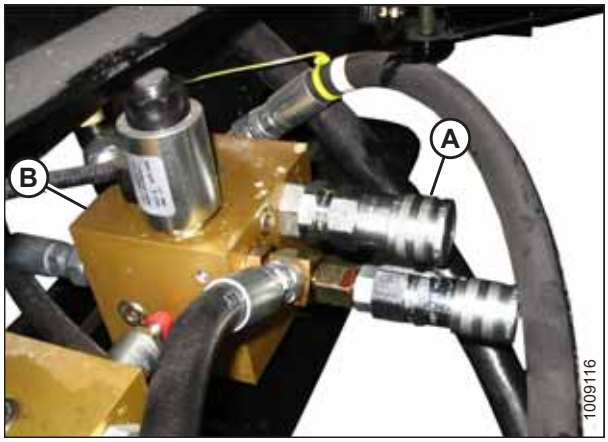


Figure 3.105: Manifold Configured for Auger Header

6. Remove and discard cap (A), O-ring (B), and adapter fitting (C) from small coupler assembly (D).

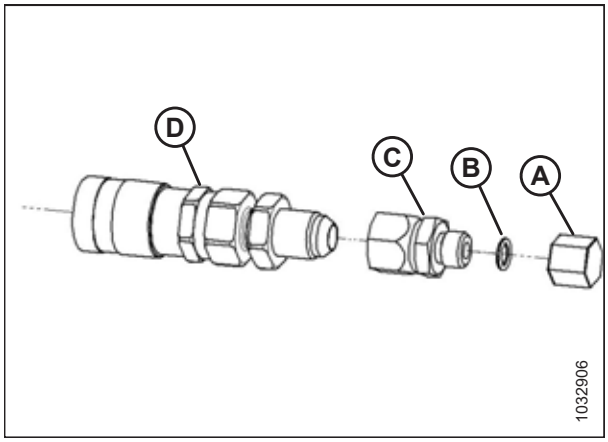


Figure 3.106: Small Coupler Assembly

7. Install small coupler subassembly (A) onto tee (B) on manifold (C).

   NOTE:

   Position of adjacent hoses may require slight adjustment to allow access for new hoses.

8. Return to Step *18, page 35*.

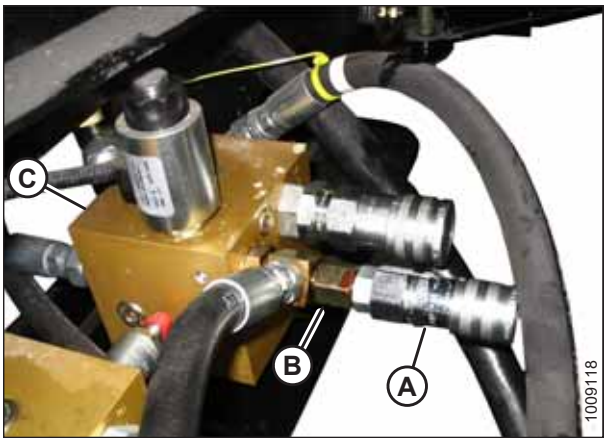


Figure 3.107: Manifold Configured for Auger Header

3.13.2 Modifying Hydraulics – M150, M155, M155*E4* Windrowers

1. Open left maintenance platform on windrower.
2. Remove the plugs from ports R2 (R2) on manifolds (A) and (B). Ports may not be labelled.

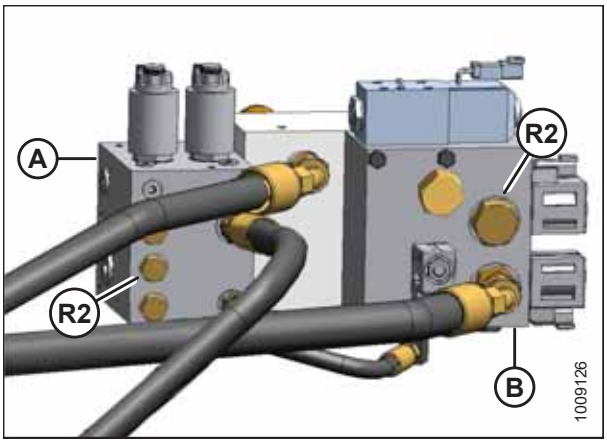


Figure 3.108: Manifolds with Reverser Valve

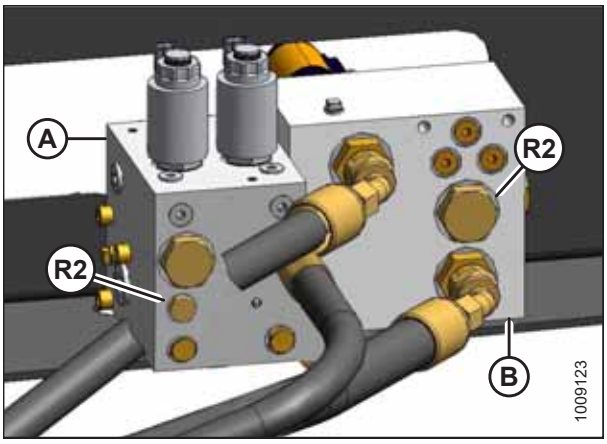


Figure 3.109: Manifolds without Reverser Valve in Factory Configuration

3. Remove female coupler assemblies (A) and (B) from hoses in bundle (C) from header, and remove caps.

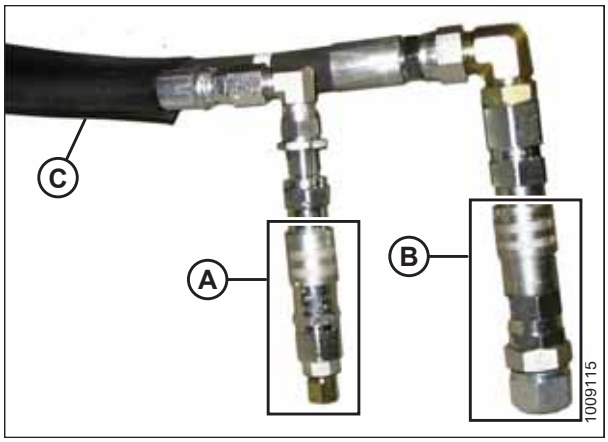


Figure 3.110: Header Hose Bundle

4. Install smaller coupler assembly (C) in port R2 on manifold (A) and the larger coupler assembly (D) in port R2 on manifold (B).
5. Return to Step *18, page 41*.

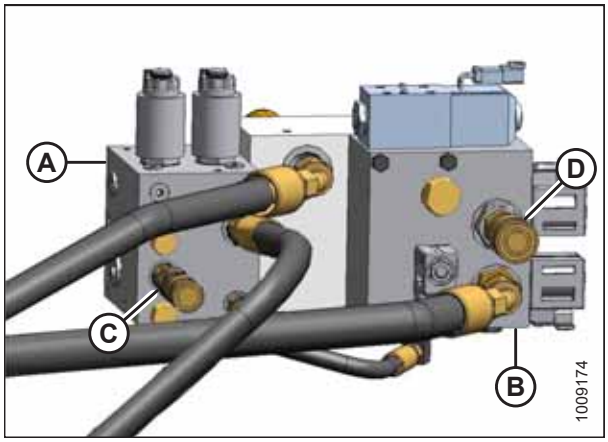


Figure 3.111: Manifolds with Reverser Valve Configured for Auger Header

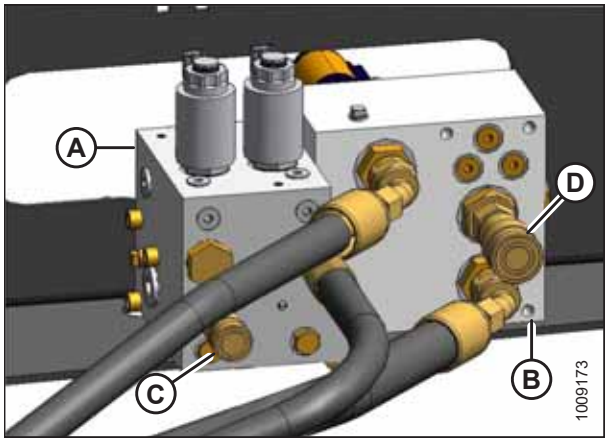


Figure 3.112: Manifolds without Reverser Valve Configured for Auger Header

3.13.3 Modifying Hydraulics – M200 Windrower with Reverser Manifold

IMPORTANT:

For windrowers with Reverser kit (MD #B4656) installed, to prevent draper header reel damage and improper operation, hose plumbing to reverser manifold must be changed to suit the header type if switching between A40D Auger Header and draper header. Refer to kit installation instruction for proper plumbing procedures for each header type.

1. Open left maintenance platform on windrower.
2. Remove the plugs from ports R2 (R2) on manifolds (A) and (B).

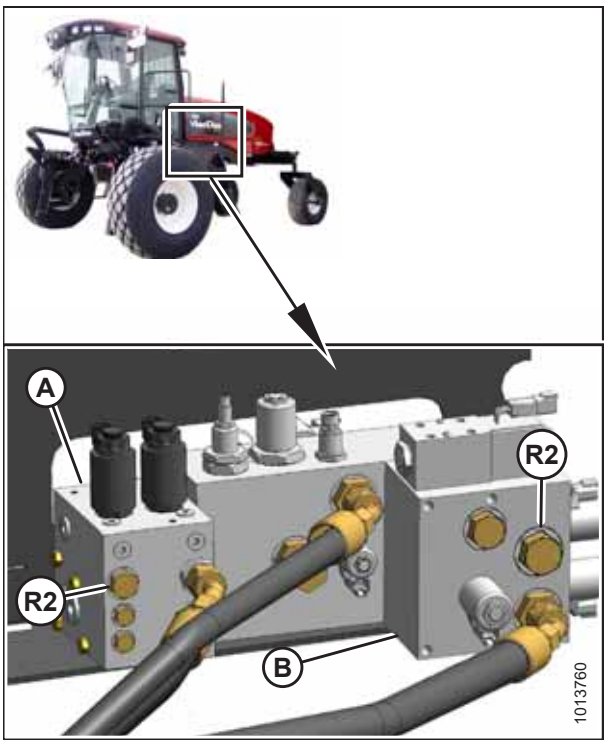


Figure 3.113: Manifolds with Reverser Manifold in Factory Configuration

3. Remove female coupler assemblies (A) and (B) from hoses in bundle (C) from header, and remove caps.

   NOTE:

   To avoid contact with platform support, the reel/auger return hose uses a 45° fitting (MD #50098).

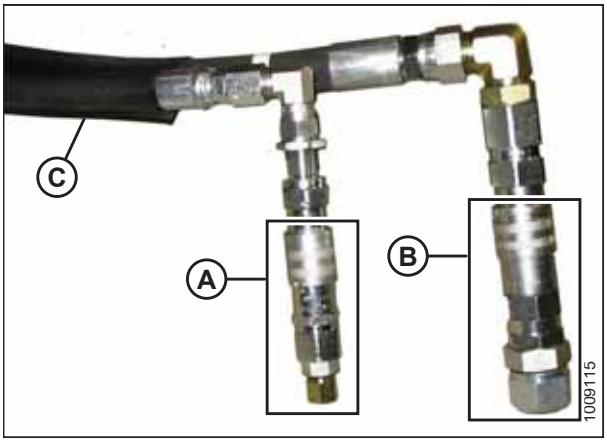


Figure 3.114: Header Hose Bundle

4. Install smaller coupler assembly (C) in port R2 on manifold (A) and the larger coupler assembly (D) in port R2 on manifold (B).

   NOTE:

   Position of adjacent hoses may require slight adjustment to allow access for new hoses. Align larger coupler assembly (D) with R1 hose (E).

5. Return to Step *18, page 47*.

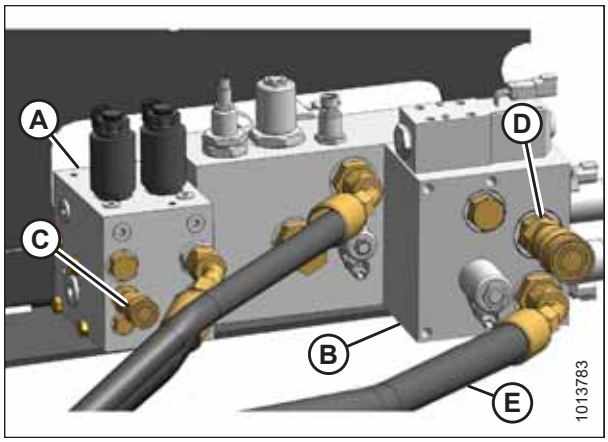


Figure 3.115: Manifolds with Reverser Manifold Configured for Auger Header

3.13.4 Modifying Hydraulics – M200 Windrower without Reverser Manifold

1. Open left maintenance platform on windrower.
2. Remove the plug from port R2 (R2) on manifold (A) and the cap from fitting in port R2 (R2) on manifold (B). Ports may not be labelled.

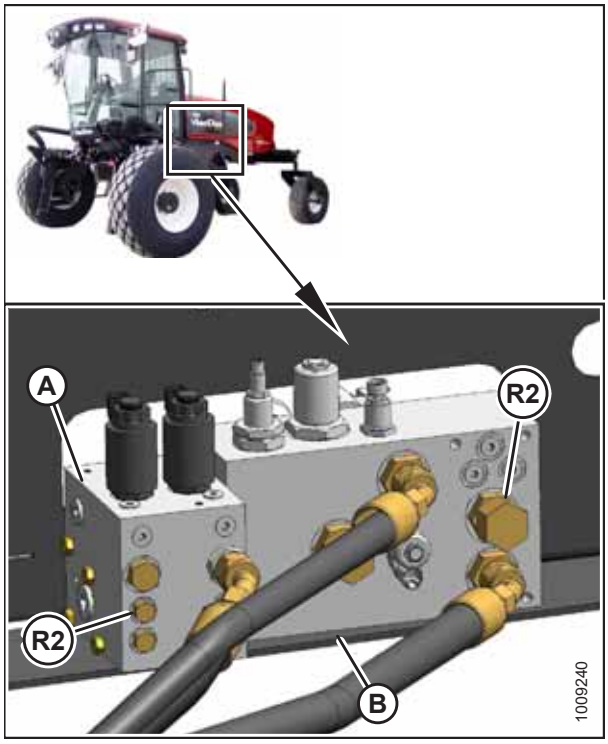


Figure 3.116: Manifolds without Reverser Manifold in Factory Configuration

3. Remove female coupler assemblies (A) and (B) from hoses in bundle (C) from header.

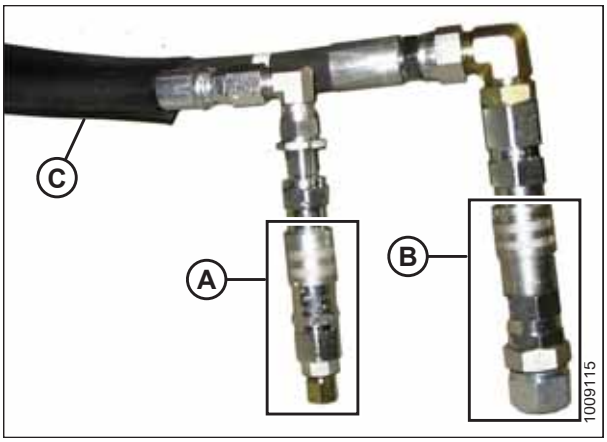


Figure 3.117: Header Hose Bundle

4. Remove and discard cap (A) and adapter fitting (B) (including O-ring) from large coupler (C).

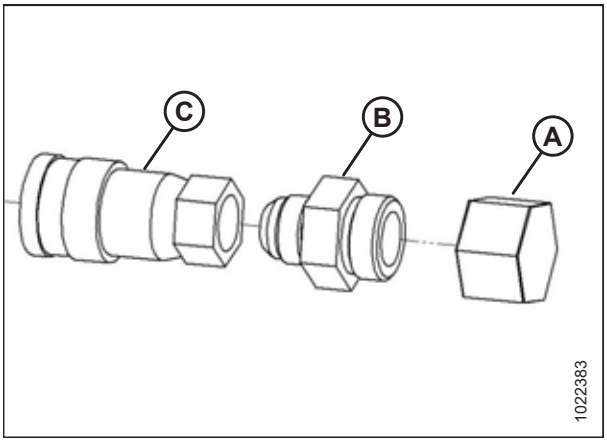


Figure 3.118: Large Coupler Assembly

5. Install larger coupler (D) onto fitting at port R2 on manifold (B).
6. Remove cap from smaller coupler assembly (C) and install assembly in port R2 on manifold (A).

   IMPORTANT:

   Make sure O-ring is on JIC threads in port R1 to ensure a proper seal with coupler (D). If O-ring is missing, reuse O-ring from discarded adapter fitting in Step *4, page 59*.
7. Return to Step *18, page 47*.

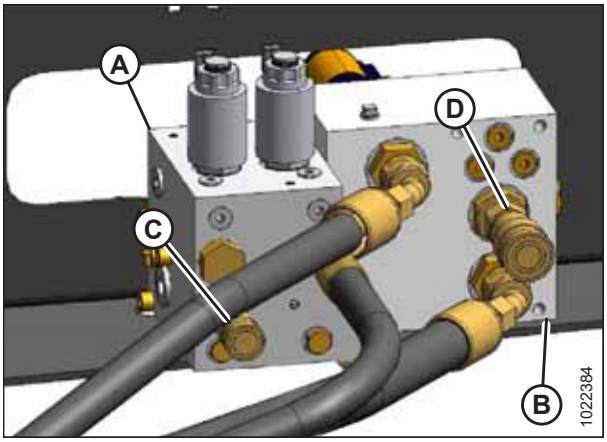


Figure 3.119: Manifolds without Reverser Manifold Configured for Auger Header – M155 Shown, M200 Similar

3.13.5 Modifying Hydraulics – M205 Windrower

The M205 hydraulics need to be modified to accept an A40D Auger Header. Kits MD #B5491, MD #B5492, and MD #B5497 should have been supplied with your header.

1. Install kits in accordance with the instructions that were supplied with the kits to achieve the configuration shown at right.

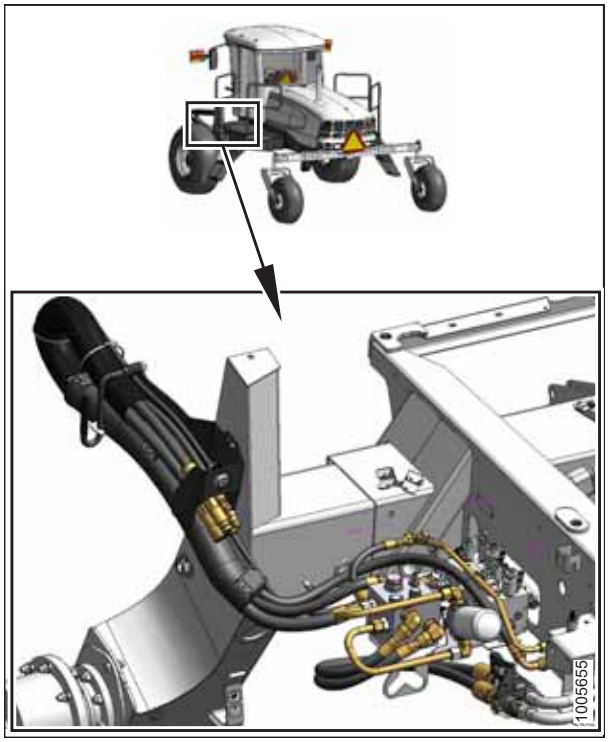


Figure 3.120: Auger Header Hydraulics

3.14 Routing Reverser Manifold Jumper Hose – M Series Windrower

An optional manifold (A) to reverse the header drive in the event of plugging may have been installed on an M150, M155, M155*E4*, or M200 windrower. If reverser manifold (A) is installed, proceed as follows; otherwise, disregard this procedure.

IMPORTANT:

Jumper hose routing (B) on the reverser manifold is specific for each model of header. Do **NOT** operate the header unless the jumper hose is routed correctly.

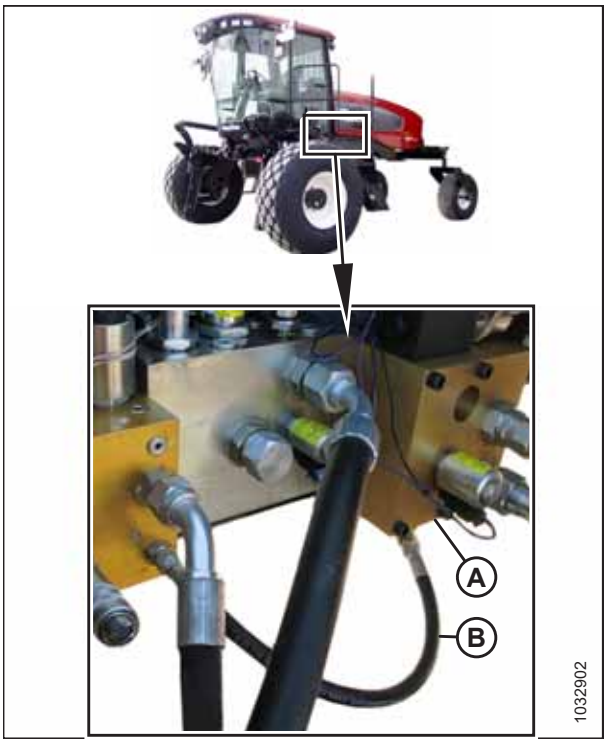


Figure 3.121: Reverser Manifold – A40D on M200 Shown (M150, M155, and M155*E4* Similar)

1. Move the left windrower platform to the open position to expose the hydraulic manifolds.
2. Route jumper hose (B) from C2 conveyor circuit (C) to port CR on reverser manifold (A) as shown.

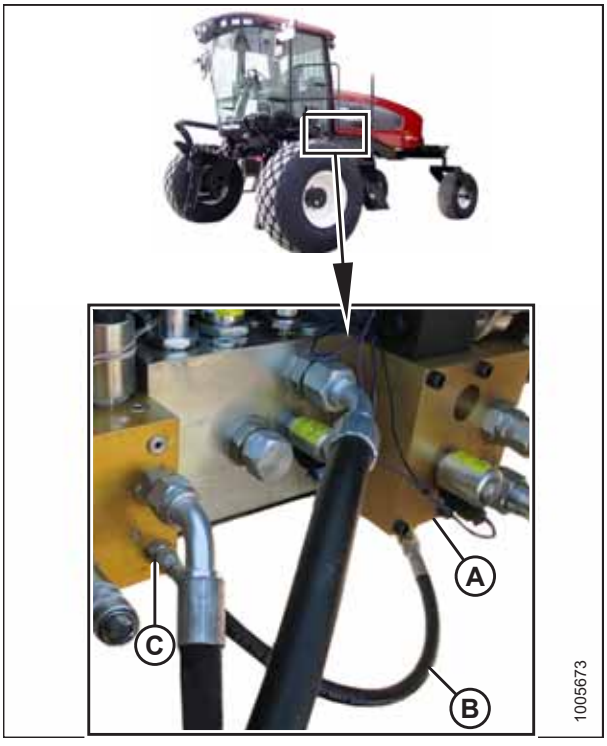


Figure 3.122: Jumper Hose Position – A40D on M200 Shown (M150, M155, and M155*E4* Similar)

IMPORTANT:

For draper headers, port CR is routed to port R4 (as shown in image at right) on reverser manifold. Reroute jumper hose (B) when switching between draper and auger headers. This prevents draper header reel damage and improper operation, which occurs if reel runs backwards.

NOTE:

Jumper hose rerouting is unnecessary if hay conditioner is **NOT** installed on draper header. The draper header reverser function is suppressed unless hay conditioner is activated in Windrower Setup using the cab display module (CDM).

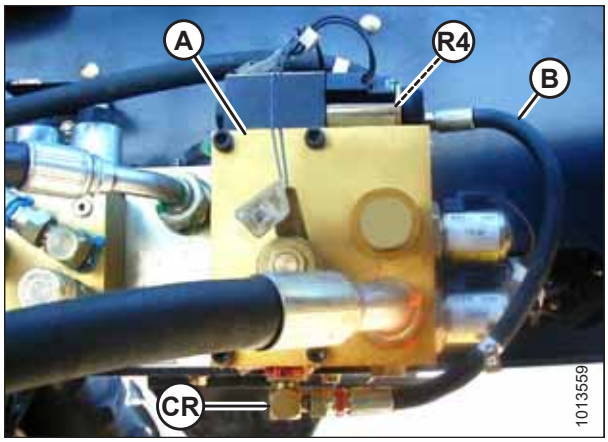


Figure 3.123: Jumper Hose Position – Draper Header on M150 Shown (M155, M155*E4*, and M200 Similar)

3. Proceed to *3.18 Repositioning Knife Drive Box Breathers, page 73*.

3.15 Hydraulic Drive Hose Routing – M Series Windrowers

IMPORTANT:

Only A40D and A40D GSS Headers are factory-configured for operation with M Series Windrowers.

3.15.1 Hydraulic Drive Hose Routing – A40D Header and M Series Windrowers

The A40D Auger Header hydraulic drive hose routing depends on the windrower model to which the header is being attached.

A40D Headers are factory-configured for M150, M155, M155*E4*, and M200 Windrowers as shown in Figure *3.130, page 65*.

To route hoses for M100, M105, and M205 Windrowers, proceed as follows:

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Press screwdriver against latch in opening (A) and lift to open header left endshield. Shield will latch at location (B) to stay open.

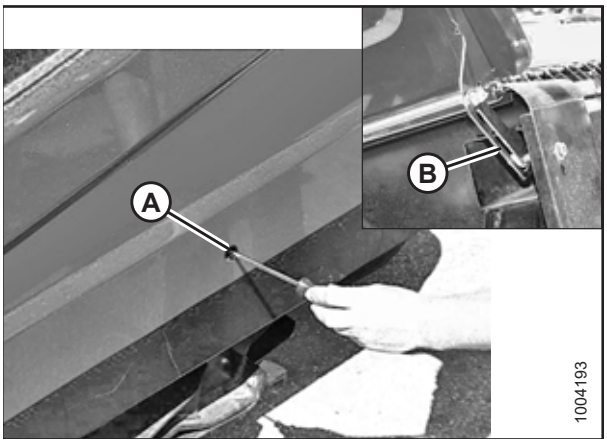


Figure 3.124: Left Endshield

3. **Headers sold in North America:** Disengage rubber latch (A) and open driveshield (B).

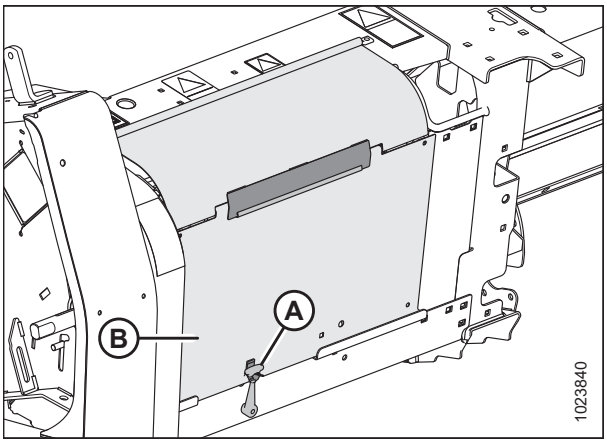


Figure 3.125: Driveshield – Headers Sold in North America

4. **Headers sold outside North America:** Insert a tool into hole (A) and pry to release latch (B). Disengage rubber latch (C) and open driveshield (D).

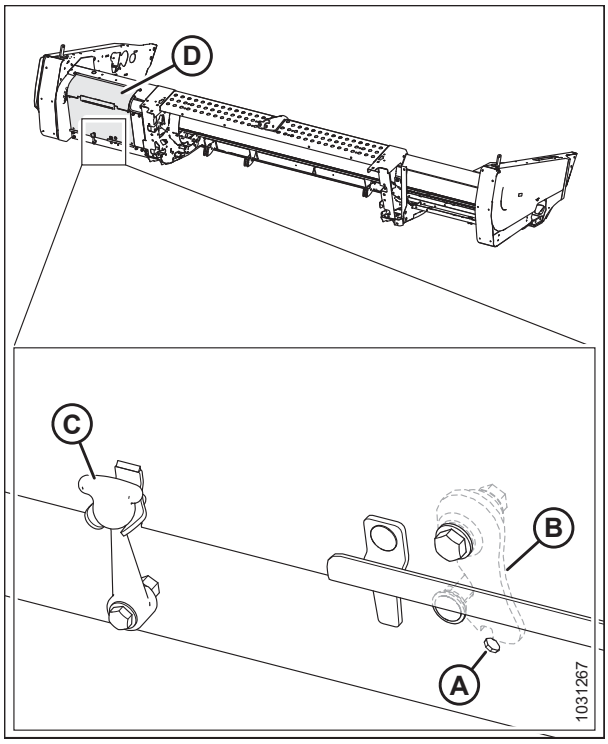


Figure 3.126: Driveshield – Headers Sold outside North America

Driveshield shown in the open position.

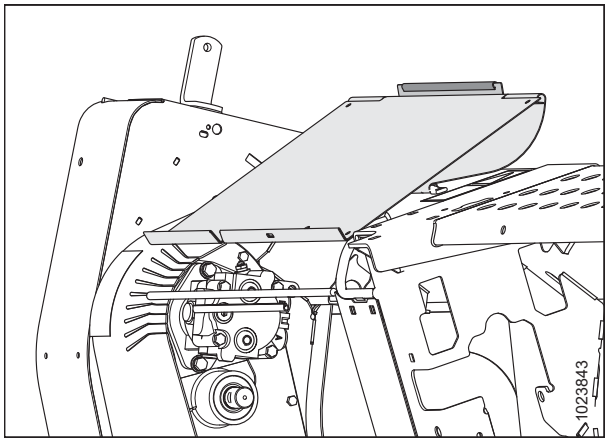


Figure 3.127: Driveshield Open

6. Loosen bulkhead nut (A) on auger and reel pressure coupler (B). This allows auger and reel pressure hose (C) to rotate freely.

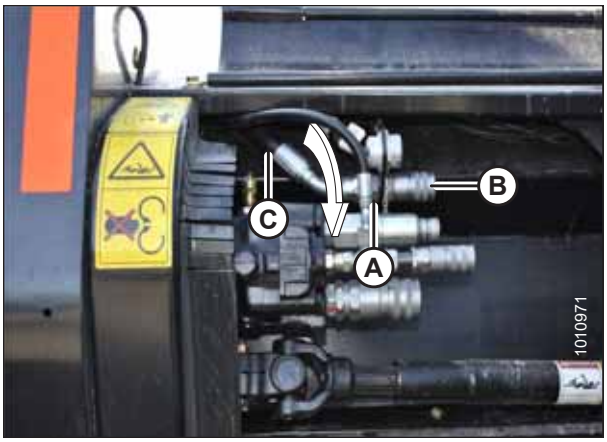


Figure 3.128: Auger and Reel Pressure Coupler and Hose – 4.9 m (16 ft.) Header Shown

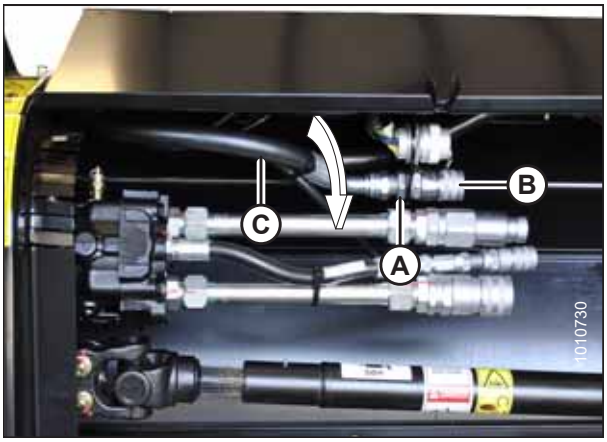


Figure 3.129: Auger and Reel Pressure Coupler and Hose – 5.5 m (18 ft.) Header Shown

7. Disconnect hoses as follows:
   a. Disconnect hose (A) from tee (B).
   b. Disconnect tee (B) from the reel motor upper port.
   c. Disconnect hose (C) from the reel motor lower port.
8. Cut cable ties (D) at locations shown in illustration.

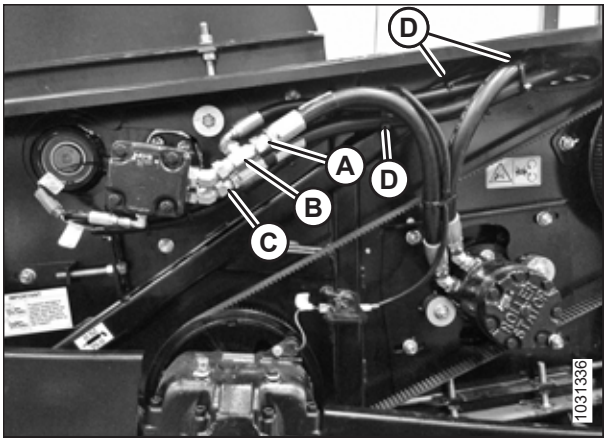


Figure 3.130: Factory Configuration – M150, M155, M155*E4*, and M200

9. Reconnect hoses as follows:

   a. Reroute hose (E) behind hose (A) and (F) to hose (C) and connect tee (B) to the lower port fitting.

   b. Reroute hose (C) above hose (E) and (F) and connect hose (C) to tee (B). Tighten hose (C).

   c. Loosen 45° fittings at both ports. This allows room for wrenches when tightening tee (B) to lower port.

   d. Connect hose (A) to upper port fitting as shown and check orientation of 45° fitting.

      NOTE:

      Ensure that hose (A) is routed in front of hose (C) and hose (E).

   e. Confirm orientation of the upper port 45° fitting, back-off tee (B), and tighten the upper port fitting in position determined. Tighten hose (A).

   f. Check orientation of the lower port 45° fitting and tighten.

   g. Connect tee (B) to the lower port 45° fitting and tighten.

10. Secure hose routing with cable ties (A) as shown.

    IMPORTANT:

    Ensure that electrical harness (B) and reel motor case drain hose (C) are secured to hose (D) and that there is at least 25 mm (1 in.) clearance between hose bundle (E) and knife drive timing belt (F).

    IMPORTANT:

    Ensure there is enough clearance between the hoses and any hardware that may need to be accessed to adjust the reel or auger.

11. Orient fittings and, if necessary, use a cable tie to ensure a minimum clearance of 20 mm (3/4 in.) between hoses and bolt at location (G).

12. Orient fittings to provide minimum 10 mm (3/8 in.) clearance between hoses and unplug tool at location (H).

13. Orient fittings to provide minimum 200 mm (7 7/8 in.) clearance between end panel and hoses in location (J).

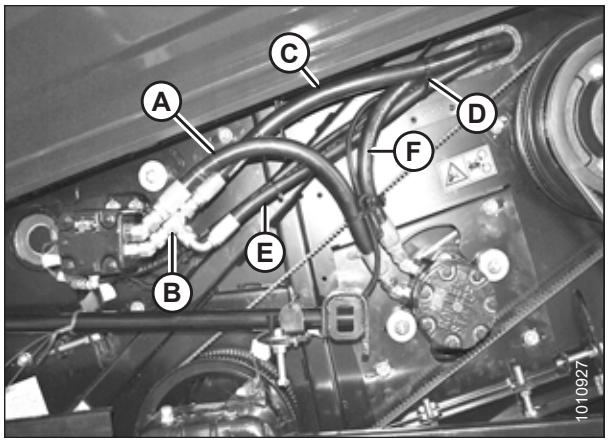


Figure 3.131: Adjusted Configuration – M100, M105, and M205

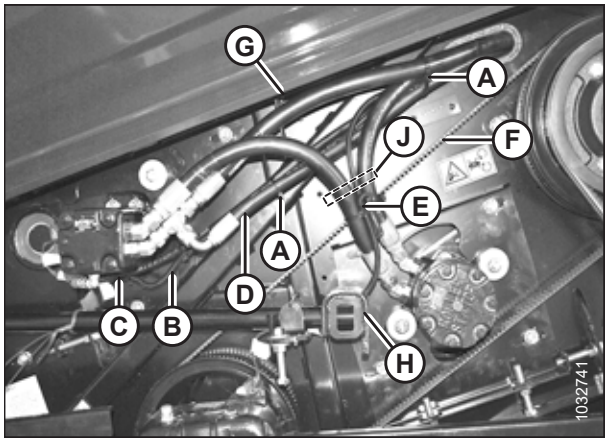


Figure 3.132: Adjusted Configuration – M100, M105, and M205

14. Rotate coupler (B) and hose (C) downward as shown until slack has been sufficiently reduced. Tighten bulkhead nut (A).

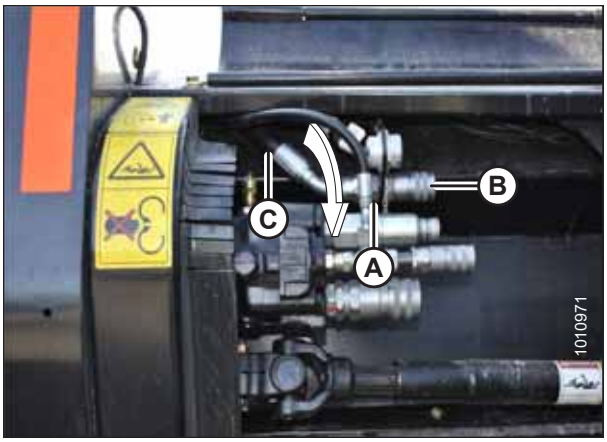


Figure 3.133: Auger and Reel Pressure Coupler and Hose – 4.3 m and 4.9 m (14 ft. and 16 ft.) Header Shown

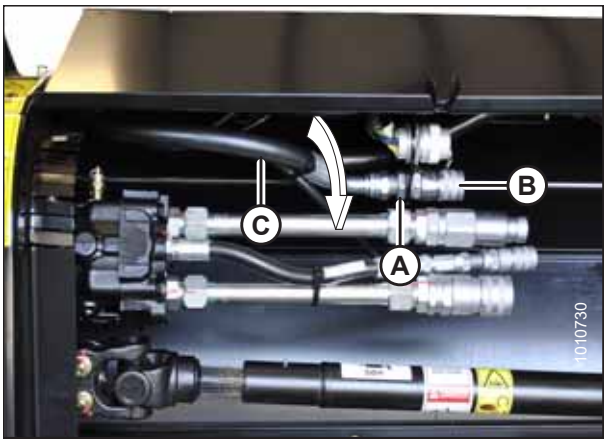


Figure 3.134: Auger and Reel Pressure Coupler and Hose – 5.5 m (18 ft.) Header Shown

15. **Headers sold in North America:** Close driveshield (B) and engage rubber latch (A).

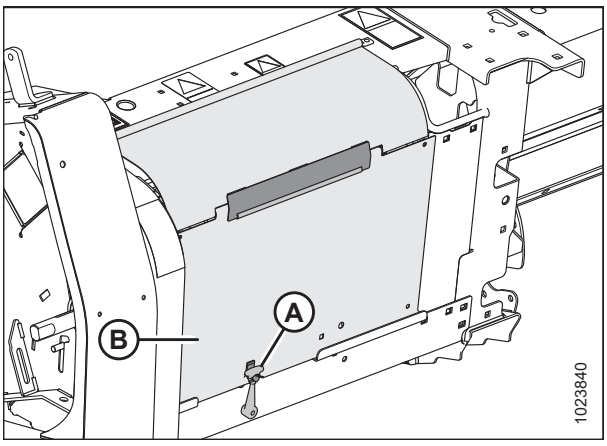


Figure 3.135: Driveshield – Headers Sold in North America

16. **Headers sold outside North America:** Close driveshield (A). Latch (B) will automatically latch. Engage rubber latch (C).
17. Close driveshield before engaging header.
18. Proceed to *3.18 Repositioning Knife Drive Box Breathers, page 73*.

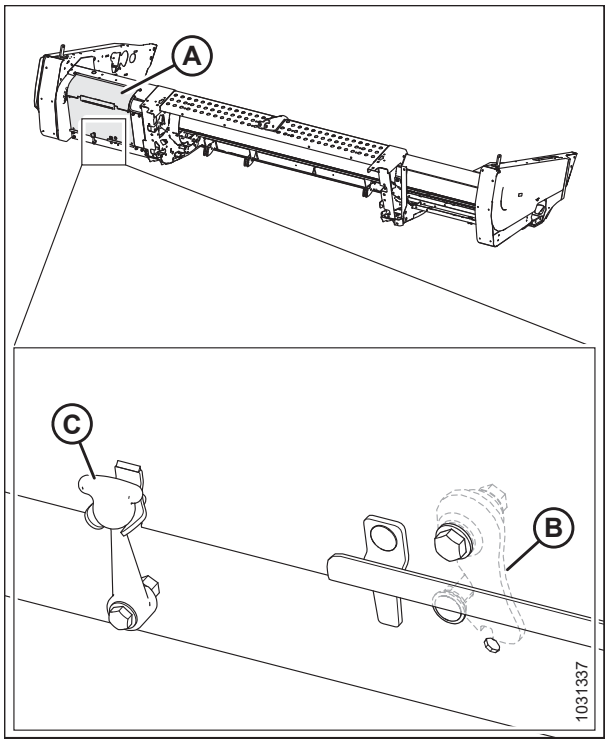


Figure 3.136: Driveshield – Headers Sold outside North America

3.16 Attaching A40DX Header to M1 Series Windrower

WARNING

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

This procedure is for A Series Headers equipped with the Auger Header Compatibility kit (MD# B5998) or the A40D SP Grass Seed Auger Conversion kit (MD #B6384). Kits B5998 and B6384 include a new manifold and hose bundle required for operation with an M1 Series Windrower, and effectively convert an A40D header into an A40DX header.

Refer to your windrower operator's manual for instructions for mechanically attaching an A40DX Auger Header to an M1 Series Windrower and for modifications to the windrower hydraulic connections (if required).

Header drive hydraulic hoses and electrical harness are located on the left, cab-forward side of the windrower. To connect the hydraulic and electrical bundle from an A40DX header to an M1 Series Windrower, follow these steps:

1. Shut down the engine, and remove the key from the ignition.
2. Route header hose bundle through hose guide (A) on header as shown.

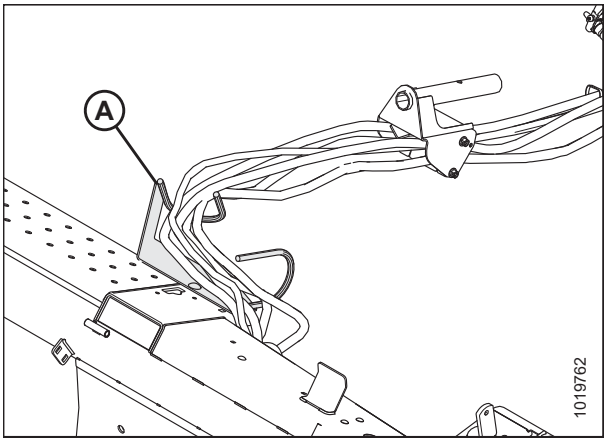


Figure 3.137: Hose Bundle

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

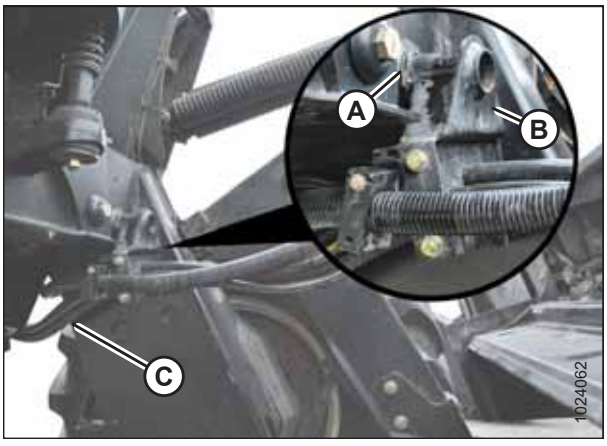


Figure 3.138: Hose Support

4. If attaching to a rotary disc-ready windrower, ensure knife drive hose (A) is connected to coupler (B).

   NOTE:

   Hose (A) provides power to run the knife/conditioner.

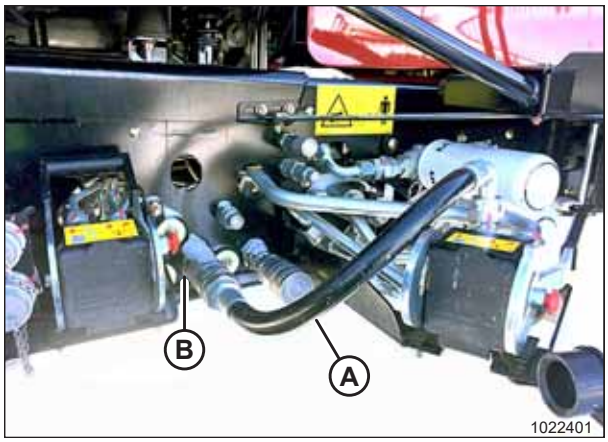


Figure 3.139: M1170/M1240 – Rotary Disc Header Configured

NOTE:

M1170 Windrowers with standard auger/draper configuration don't require the knife drive hose; only the two multicouplers (A) are used to connect the auger header.

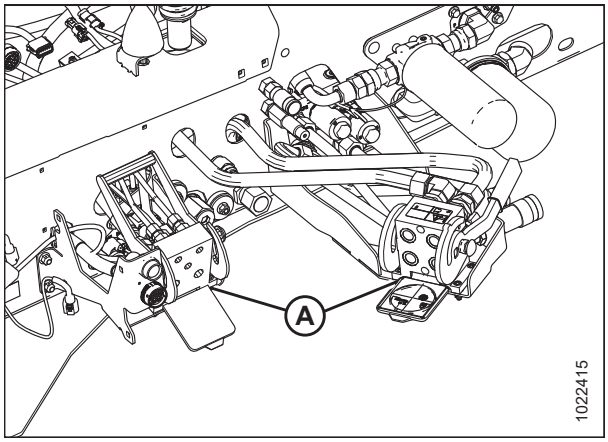


Figure 3.140: M1170 Standard Configuration – Auger/ Draper Ready

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

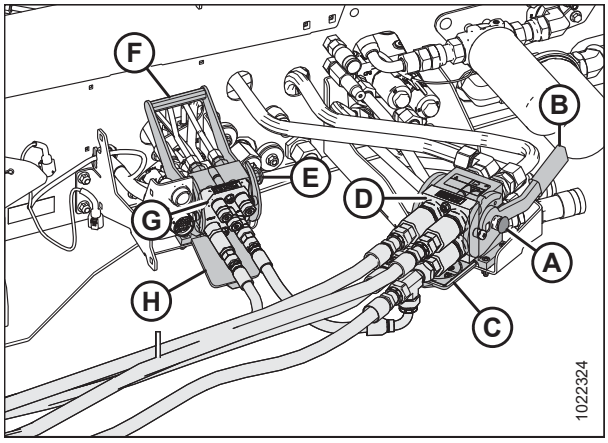


Figure 3.141: Multicouplers

10. Remove cover from receptacle (A) and connect electrical harness from header.

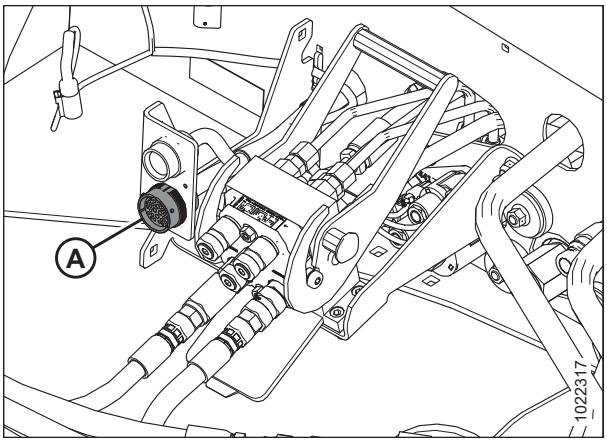


Figure 3.142: Windrower Electrical Connector

A40DX Grass Seed headers and A40DX headers equipped with Reel Speed Control kit (MD #B6604)

A40DX Grass Seed headers have a factory-installed reel speed kit and includes a second electrical connection required for attaching to an M1 Series Windrower. The Reel Speed Control kit (MD #B6604) is an available option for an A40DX header.

Complete the following step when connecting an A40DX Grass Seed header (or an A40DX header with MD #B6604 equipped) to an M1 Series Windrower:

11. Remove cover from receptacle (A) on windrower and connect electrical harness (B) from header.

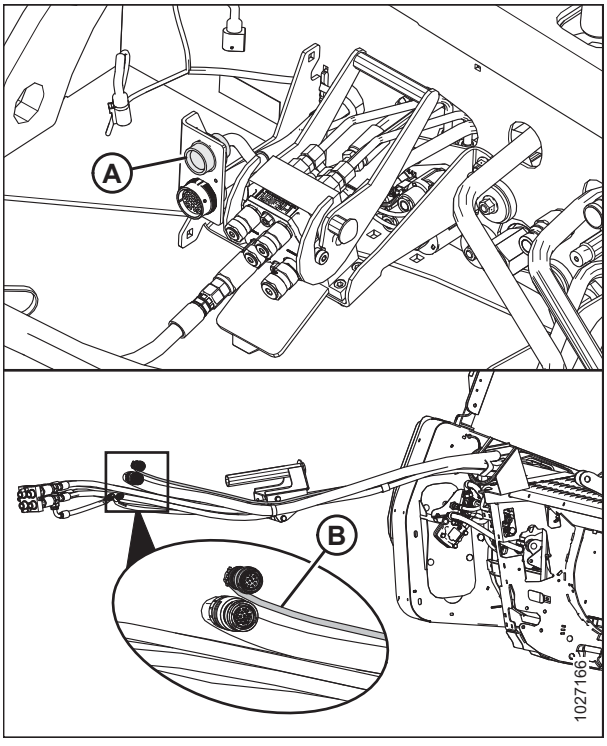


Figure 3.143: Electrical Connection

3.17 Hydraulic Drive Hose Routing – M1 Series Windrowers

IMPORTANT:

Only A40DX and A40DX GSS headers are factory-configured for operation with M1170 and M1240 Windrowers.

IMPORTANT:

If attempting to attach an A40D Header to an M1170 or M1240 Windrower, the M1 Series Conversion kit (MD #B5998) or the A40D SP Grass Seed Auger Conversion kit (MD #B6384) must first be installed. These kits include a new manifold and hydraulic hose bundle required for operation with an M1 Series Windrower, and effectively convert an A40D header into an A40DX header.

IMPORTANT:

The Reel Speed Control kit (MD #B6604) is standard on A40DX GSS headers starting in model year 2019. This kit can be ordered separately for A40DX GSS headers prior to model year 2019, and for A40DX headers.

A40DX and A40DX GSS hose routing does **NOT** require adjustment. Proceed to *3.18 Repositioning Knife Drive Box Breathers, page 73*.

3.18 Repositioning Knife Drive Box Breathers

There is one knife drive box at each end of the auger header. The knife drive boxes sit at different angles when in shipping and field positions. When the position is changed, the breathers need to be moved to make sure oil does **NOT** leak from the knife drive boxes.

1. Move breathers/dipsticks (A) to back port and install plug (B) in forward port of knife drive boxes.

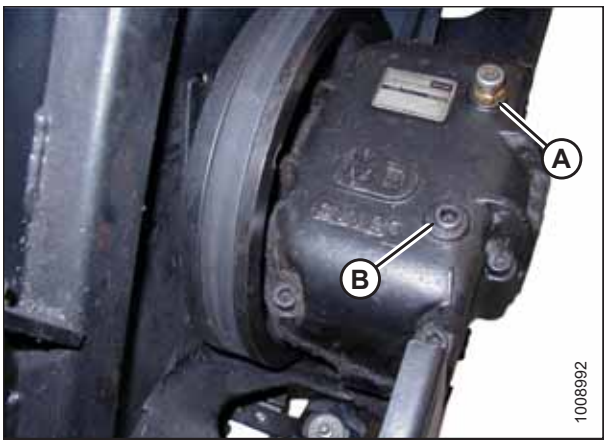


Figure 3.144: Top View of Knife Drive Box

2. With the top of the knife drive box horizontal, check the oil level. It should be between lower hole (A) and the end of the dipstick.
3. If required, add SAE 85W-140 lubricant.

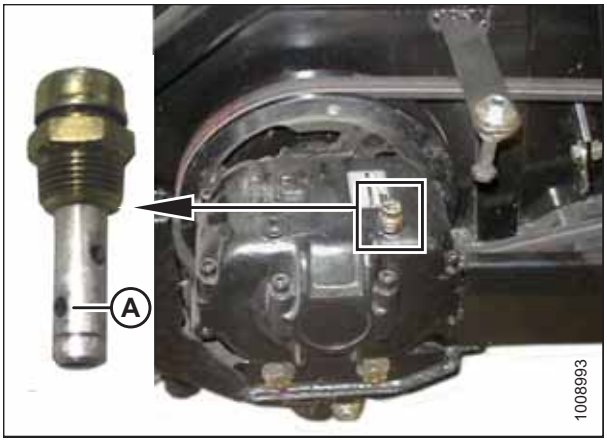


Figure 3.145: Side View of Knife Drive Box and Close-up of Dipstick

Chapter 4: Lubricating the Machine

4.1 Greasing Procedure

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. If the header is raised, engage the header safety props.
3. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
4. Inject grease through fitting with grease gun until grease overflows fitting, except where noted.
5. Leave excess grease on fitting to keep out dirt.
6. Replace any loose or broken fittings immediately.
7. If fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

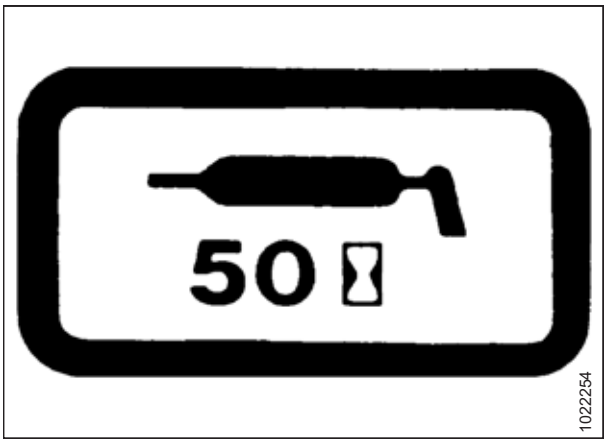


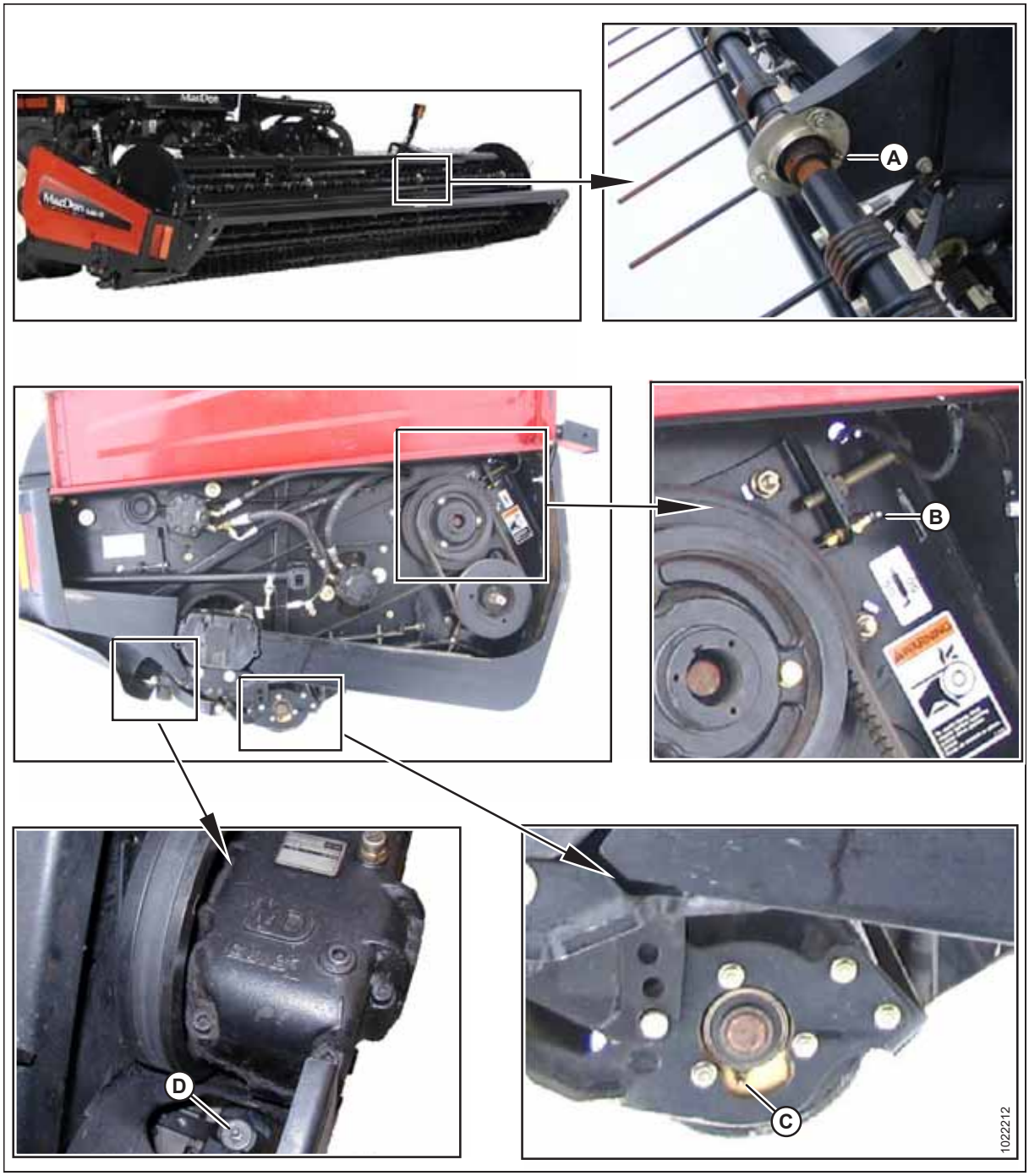
Figure 4.1: Grease Interval Decal

4.2 Lubrication Points – Left Side of Header

NOTE:

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base. To prevent binding and/or excessive wear caused by knife pressing on guards, do **NOT** over-grease. If more than 6 to 8 pumps of grease gun are required to fill the cavity, replace the seal in the knifehead.

Figure 4.2: Header Left Side



A - Tine Bar Bearing (4 Places – Each Tine Bar)
B - Knife Drive Bearing (1 Place)
C - Gauge Roller Bearing (2 Places) (Both Sides if Installed)
D - Knifehead Bearing (1 Place)

4.3 Lubrication Points – Right Side of Header

NOTE:

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base. To prevent binding and/or excessive wear caused by knife pressing on guards, do **NOT** over-grease. If more than 6 to 8 pumps of grease gun are required to fill the cavity, replace the seal in the knifehead.

Figure 4.3: Header Right Side

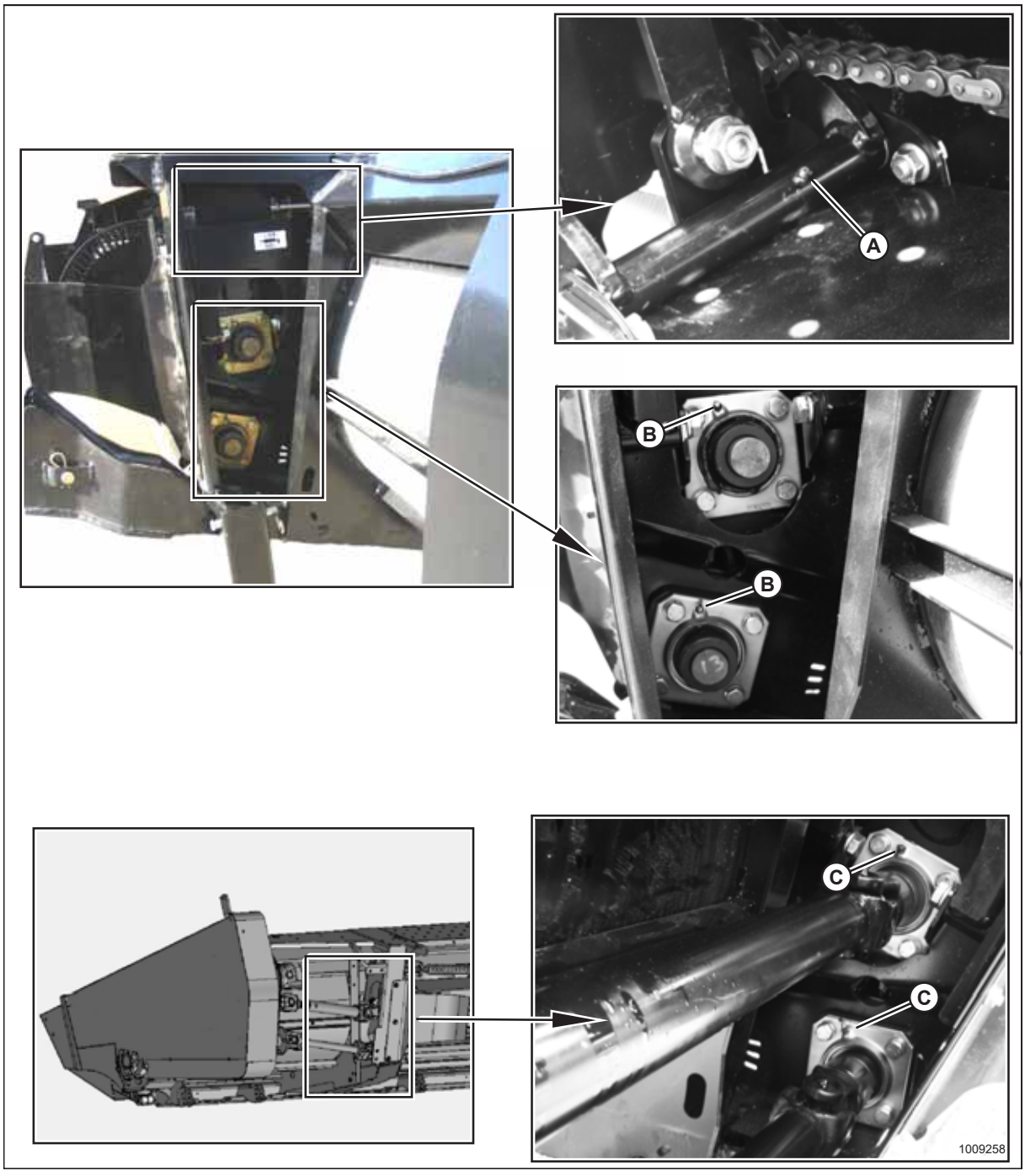
A - Knife Drive Bearing (1 Place)
B - Reel Shaft Bearing (1 Place)
C - Auger Shaft Bearing (1 Place)
D - Knifehead Bearing (1 Place)

4.4 Lubrication Points – Hay Conditioner

NOTE:

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base.

Figure 4.4: Hay Conditioner



A - Roll Pivot (1 Place - Both Sides)

B - Roll Shaft Bearings (2 Places)

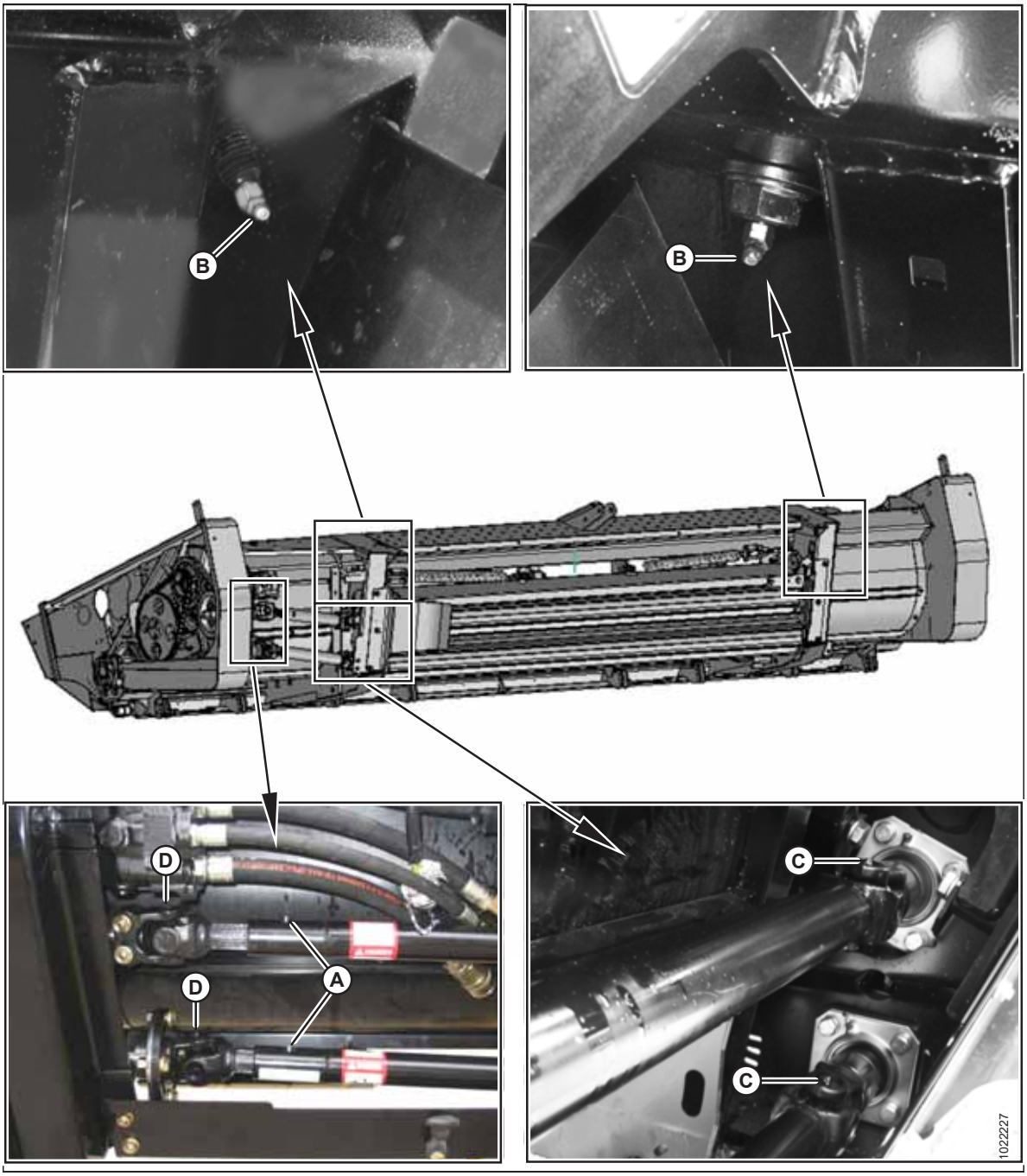
C - Roll Shaft Bearings (2 Places)

4.5 Lubrication Points – Drivelines

NOTE:

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base.

Figure 4.5: Drivelines



A - Driveline Shafts (2 Places)[3]
B - Cross Shafts (2 Places)
C - Driveline Universals (2 Places)
D - Driveline Universals (2 Places)

3. 10% moly grease is recommended for driveline shaft slip joints **ONLY**.

4.6 Knife and Gearbox Oil

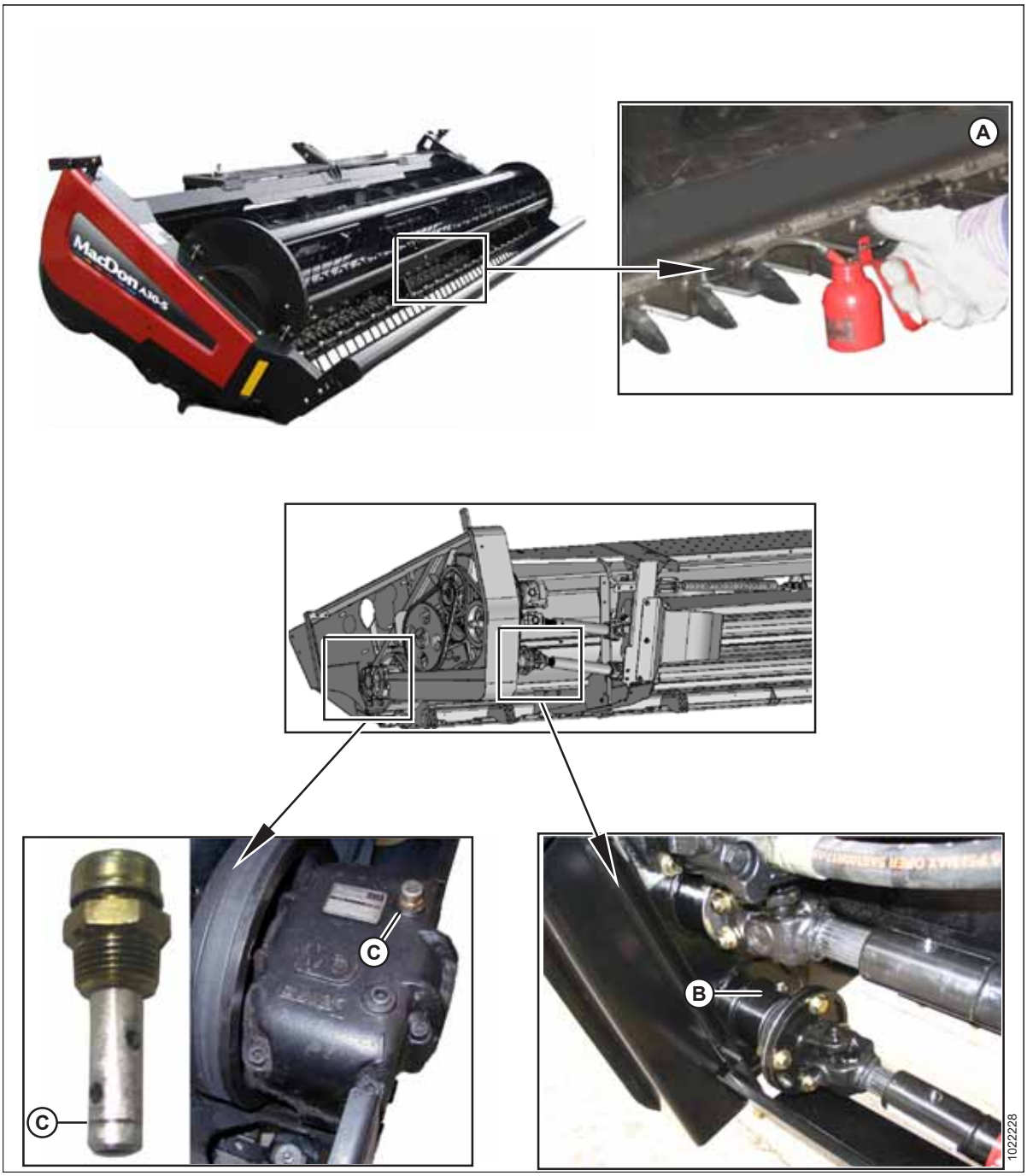


Figure 4.6: Knife and Gearbox Oil

A - Oil Knife Daily Except in Sandy Soil (SAE 30)
B - Check Roll Gearbox (1 Place)[5]
C - Knife Drive Box (2 Places)[4]

4. Check oil level with the header down on level ground.
5. Header should be on the ground.

Chapter 5: Performing Predelivery Checks

WARNING

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

IMPORTANT:

To avoid machine damage, check that no shipping dunnage has fallen down between auger and pans.

1. Perform final checks and adjustments as listed on the Predelivery Checklist (yellow sheet attached to back of this instruction – *Predelivery Checklist, page 121*) to ensure the machine is field-ready. Refer to the following pages for detailed instructions as indicated on the checklist.
2. The completed checklist should be retained either by the Operator or the Dealer.

5.1 Checking Drive Belts and Chains

1. Open endshield on header right side.
2. Check knife drive timing belt (A). It should deflect 14 mm (0.55 in.) when a load of 22–30 N (5–6.5 lbf) is applied mid span.

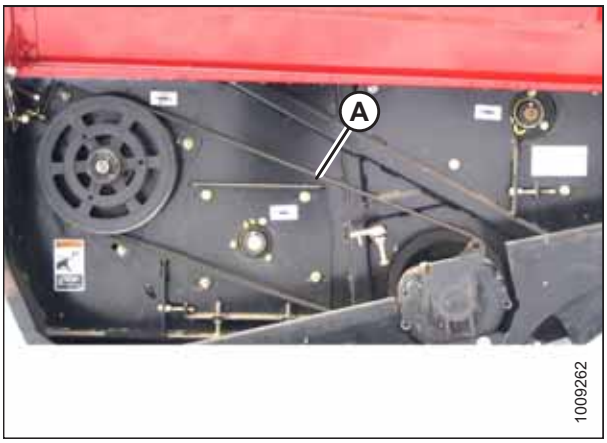


Figure 5.1: A40D Header Right Side

3. Open endshield on header left side.
4. Check knife drive timing belt (A). It should deflect 14 mm (0.55 in.) when a load of 22–30 N (5–6.5 lbf) is applied mid span.
5. Check knife drive V-belts (B). They should deflect 4 mm (3/16 in.) when a load of 35–40 N (8–12 lbf) is applied to each belt mid span.
6. Close endshields.

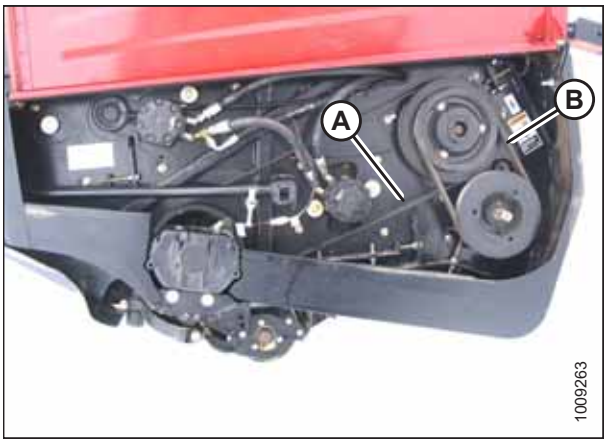


Figure 5.2: A40D Header Left Side

5.2 Checking Auger Stripper Bar Clearance

1. Check for signs of auger flighting (A) rubbing stripper bars (B) after run-up.

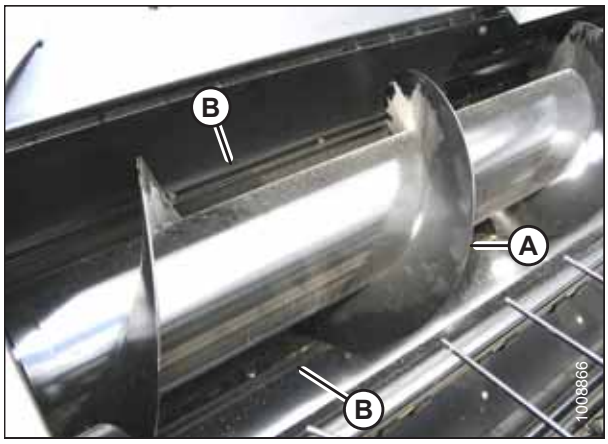


Figure 5.3: Auger

2. Check clearance between auger flighting (A) and stripper bars (B).

   NOTE:

   The auger flighting (A) should clear the stripper bars (B) on the auger pan by approximately 1–4 mm (1/32–5/32 in.). Shimming the stripper bars may be required.

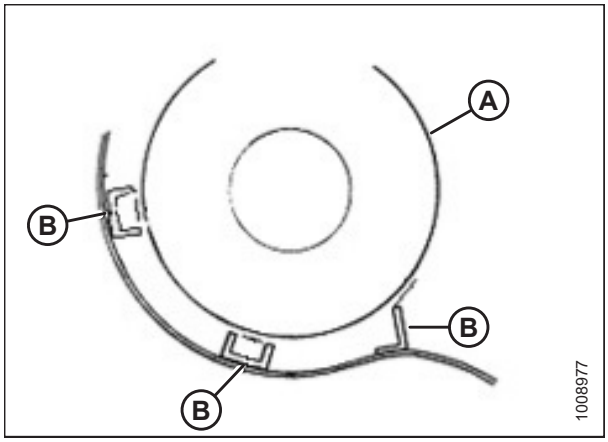


Figure 5.4: End View Diagram Showing Auger and Stripper Bars

5.3 Checking Reel Tine to Header Pan Clearance

IMPORTANT:

The dimensions provided are guidelines only. Tines may slightly contact the guards, but **NOT** the knife sections or the auger pan.

1. Rotate reel slowly by hand and check tine clearance at knife and pan. Flex tines to simulate crop-loaded position to ensure tine clearances to knife sections and auger pan are adequate for working conditions.
2. Check that reel rotates freely.

   IMPORTANT:

   If there are a few reel tine fingers that are touching the pan while the rest are at the correct height, trim the longer tines to match the rest. Be sure to adjust both sides of the reel. Ensure that tines do **NOT** contact the plastic header pan.

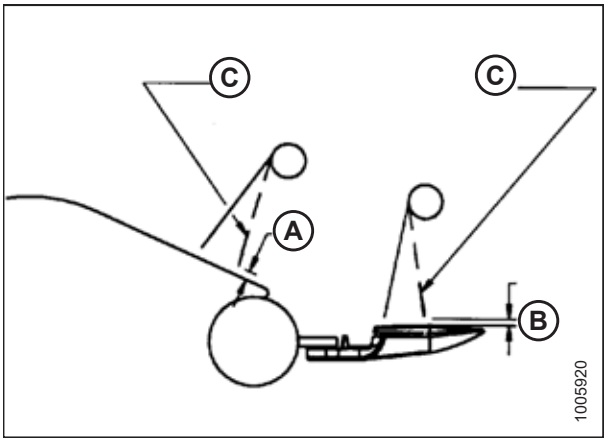


Figure 5.5: Reel Tine to Header Pan Clearance

A - 2–10 mm (1/16–3/8 in.) Clearance
B - 2 mm (1/16 in.) Minimum to Knife Section
C - Flex Tines Back When Checking Clearance

5.4 Checking and Adjusting Float – M Series Windrowers

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

WARNING

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

WARNING

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

NOTE:

Always check the float with the header set in working position (with the header fully lowered to the ground and the header angle set to the desired cutting height per crop type and conditions).

To check and adjust the float, follow these steps:

1. Start the engine, and lower the header to the ground.
2. Using the header tilt switches on the in-cab controls, set the header center-link to the mid-range position (**5.0** on the cab display module). Refer to your windrower operator's manual for detailed instructions.
3. Lower the header fully with the lift cylinders fully retracted.
4. Set left and right float fine adjustments to mid-range position (**5.0** on the cab display module). Refer to your windrower operator's manual for detailed instructions.
5. Shut down the engine, and remove the key from the ignition.
6. Check float by grasping the lean bar and lifting. Lifting force should be 335–380 N (75–85 lbf) and should be approximately the same at both ends.
7. If necessary, perform the following steps to adjust the float:
   a. Raise header fully, shut down engine, and remove key.
   b. Turn drawbolt (A) clockwise to increase float (makes header lighter) or counterclockwise to decrease float (makes header heavier).

      NOTE:

      Illustration shows top of windrower wheel leg member.

   c. Recheck the float.

Figure 5.6: Drawbolt

5.5 Checking and Adjusting Float – M1 Series Windrower

Header float on M1170 and M1240 Windrowers is completely adjustable from the cab through the Harvest Performance Tracker (HPT).

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

5.5.1 Checking Float – M1 Series Windrowers

WARNING

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

CAUTION

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

1. Start the engine.
2. Use HEADER TILT switches (A) on the ground speed lever (GSL) to set the center-link to the mid-range position (**5.0** on the Harvest Performance Tracker [HPT]).
3. Using HEADER DOWN switch (B), lower the header fully and with the header lift cylinders fully retracted.

   NOTE:

   Ensure the header is level with the ground with zero tilt.
4. Shut down the engine, and remove the key from the ignition.
5. Grasp one end of the header and lift. Lifting force should be 335–380 N (75–85 lbf) and should be the same at both ends.

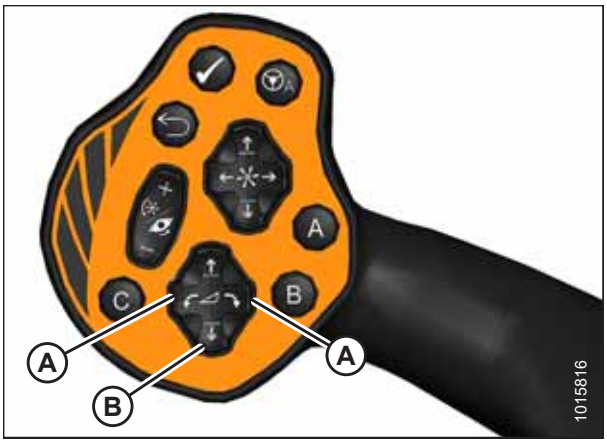


Figure 5.7: GSL

6. Restart the engine, and adjust float as required. For instructions, refer to *5.5.2 Setting the Float, page 86*.

   NOTE:

   Increasing the float value on the HPT makes the header feel lighter.

5.5.2 Setting the Float

The float can be set for windrowing with the cutterbar on the ground.

The optimum float setting lets the header follow the contour of the terrain. Proceed as follows:

1. Set center-link to mid-range position (5.0 on the Harvest Performance Tracker [HPT]). For instructions, refer to the windrower operator's manual.
2. Lower the header until the cutterbar is on the ground.

   NOTE:

   To minimize scooping rocks when operating at the flattest header angle, lower the header skid shoes. For instructions, refer to your header operator's manual.

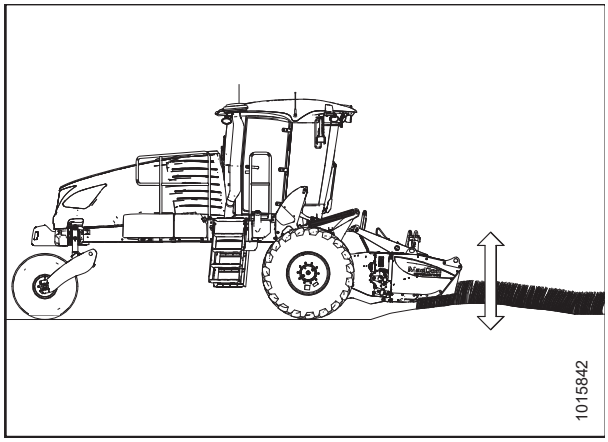


Figure 5.8: Header Float – Cutterbar on Ground

3. Press rotary scroll knob (A) on the to display the QuickMenu system.
4. Rotate scroll knob (A) to highlight header float icon (B) and press scroll knob to select.

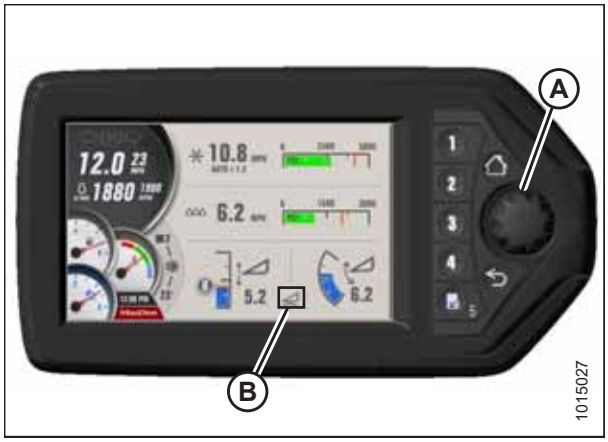


Figure 5.9: HPT Run Screen

5. Turn scroll knob (A) to highlight left (B) or right (C) float and press knob (A) to activate selection.
6. Rotate scroll knob (A) to adjust float setting and press knob when finished. Float is now set.

   NOTE:

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

7. Use soft key 3 (D) to remove/resume float and deck position to previous setting for the attached header.

Figure 5.10: HPT Left and Right Float Settings

5.5.3 Removing and Restoring Float

Follow these steps to remove and restore the header float settings:

1. Press rotary scroll knob (A) on Harvest Performance Tracker (HPT) to display the QuickMenu system or press F1 on the console.
2. Rotate scroll knob (A) to highlight header float icon (B) and press scroll knob to select.

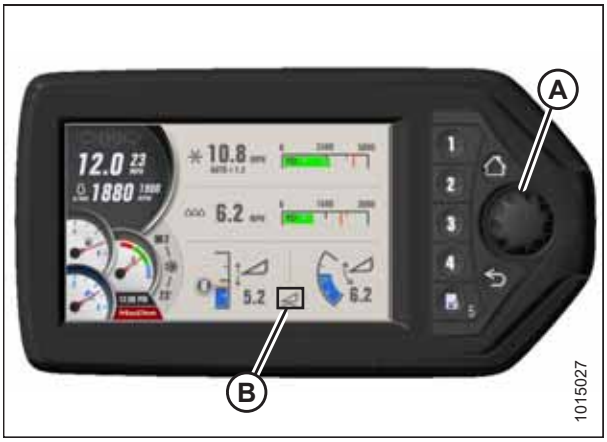


Figure 5.11: HPT Run Screen

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

   NOTE:

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

Figure 5.12: HPT Display – Adjusting Float

5.6 Leveling the Header – M Series Windrower

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

If the header is **NOT** level, do the following steps before adjusting the levelling linkages. The float springs are **NOT** used to level the header.

WARNING

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

1. Park windrower on level ground.
2. Check windrower tire pressures.
3. Raise header fully and hold momentarily to allow lift cylinders to rephase.
4. Shut down the engine, and remove the key from the ignition.
5. Place float pins (A) in locked out position.

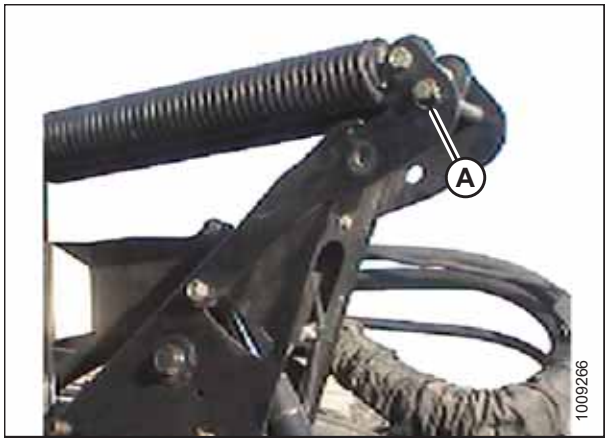


Figure 5.13: Float Pin

CAUTION

Check to be sure all bystanders have cleared the area.

6. Start engine and set header approximately 150 mm (6 in.) off ground.
7. Check that member (A) is against link (B).
8. Note which end of header is high and which is low.

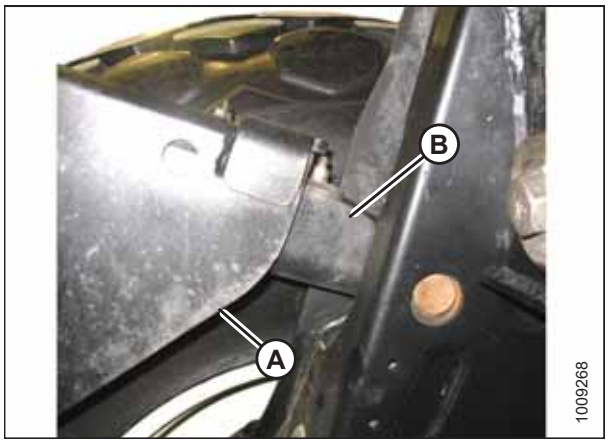


Figure 5.14: Member and Link

9. Place wooden blocks (A) under header cutterbar and legs.

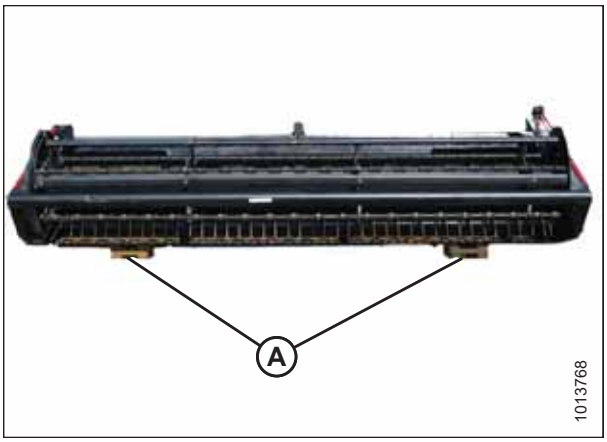


Figure 5.15: Header on Blocks

10. Lower header onto blocks so that members (A) lift off of links (B).
11. Shut down the engine, and remove the key from the ignition.

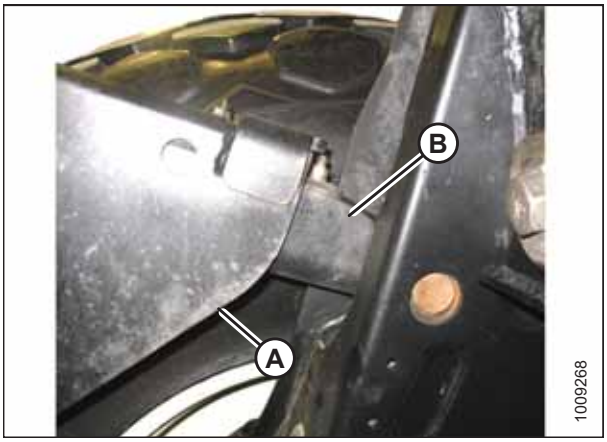


Figure 5.16: Member and Link

12. Remove nut, washer, and bolt (A) that attach shims (B) to link at the header high end.
13. Remove one or both shims (B) and reinstall the hardware (A).
14. Start engine and raise header slightly. Check if the header is level.
15. If additional levelling is required, install the removed shim on the opposite linkage.

    NOTE:

    If required, additional shims (MD #110854) can be ordered from your MacDon Dealer.

    NOTE:

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

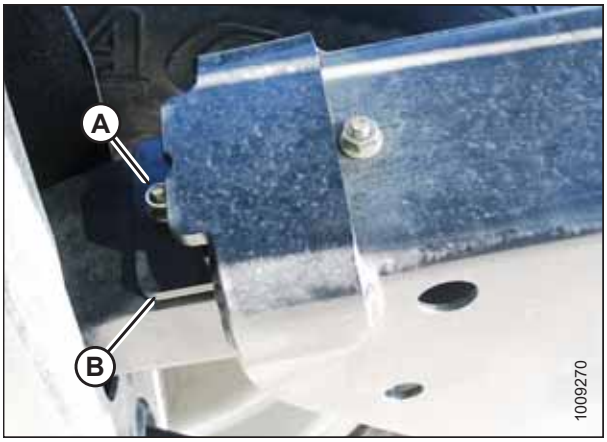


Figure 5.17: Shims

5.7 Leveling the Header – M1 Series Windrower

The windrower lift linkages are factory-set to provide the proper header level, and should not normally require adjustment. If leveling is required, follow these steps:

WARNING

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

1. Press rotary scroll knob (A) on Harvest Performance Tracker (HPT) to display the QuickMenu system.
2. Rotate scroll knob (A) to highlight the header float symbol (B) and press scroll knob to select. The Set-up Float page displays.

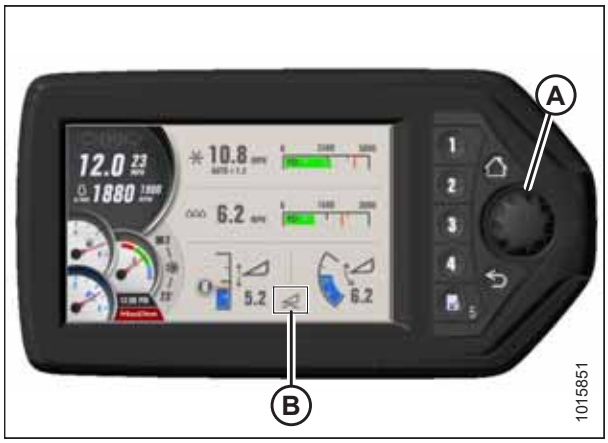


Figure 5.18: HPT Display

3. Press soft key 3 (A) to remove float.

Figure 5.19: HPT Display

4. Park the windrower on level ground.
5. Press HEADER RAISE button (A) on the ground speed lever (GSL). When the header reaches maximum height, continue to hold the header raise button momentarily to allow the lift cylinders to rephase.

Figure 5.20: GSL

6. Lower the header to approximately 150 mm (6 in.) off the ground.
7. Ensure that channel (A) is against link (B).
8. Shut down the engine, and remove the key from the ignition.
9. Measure the distance to the ground at both ends of the header to determine if the header is level.

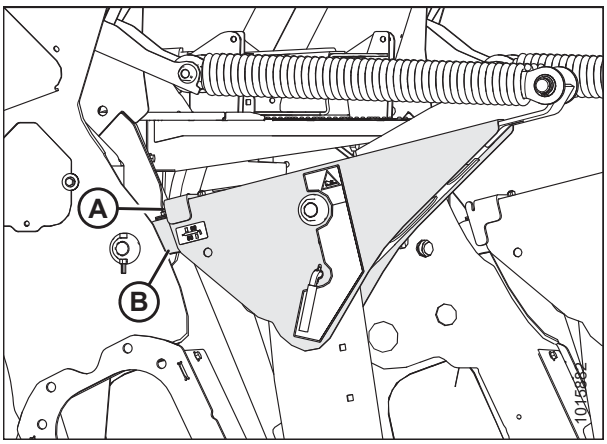


Figure 5.21: Lift Linkage

CAUTION

Check to be sure all bystanders have cleared the area.

10. If adjustment is necessary, start engine and resume float. Lower the header onto the ground until channel (A) lifts away from the link (B) on both sides.
11. Shut down the engine, and remove the key from the ignition.

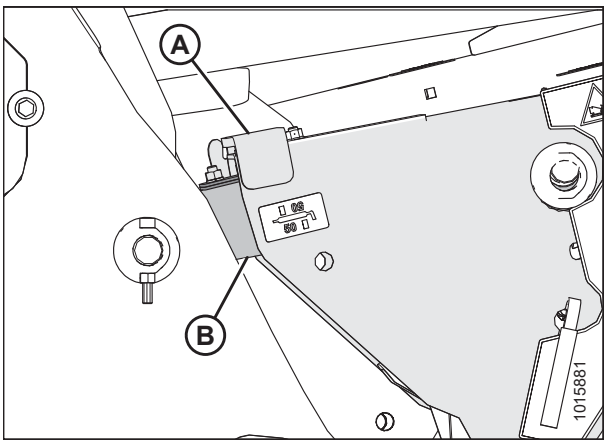


Figure 5.22: Lift Linkage

12. On the side that is higher, remove nut, washer, and bolt (A) that attaches shims (B) to the linkage.
13. Remove one or both of shims (B) and reinstall hardware (A).

CAUTION

Check to be sure all bystanders have cleared the area.

14. Repeat Step *5, page 91* to Step *9, page 91* to rephase the cylinders and check the header level.
15. If additional adjustment is required, repeat Step *10, page 91* to Step *13, page 92*, and install one of the removed shims on the opposite linkage.

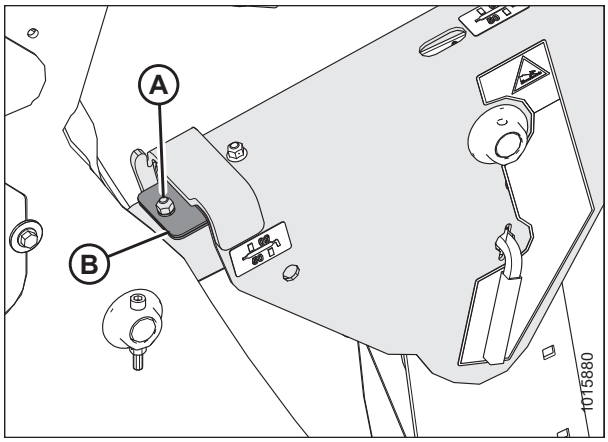


Figure 5.23: Lift Linkage Shims

16. Reset the header float. For instructions, refer to *5.5.2 Setting the Float, page 86*.

5.8 Checking Conditioner Rolls

WARNING

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

1. Lower the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Check that nut (A) is tight and top of nut (A) is at 2 on decal (C).
4. If required, adjust gap by loosening nut (A) and turning adjuster (B). Retighten nut (A).

   NOTE:

   When adjusting roll gap, be sure that the decal reading is the same on both sides of the conditioner roll to achieve consistent intermesh across the rolls.

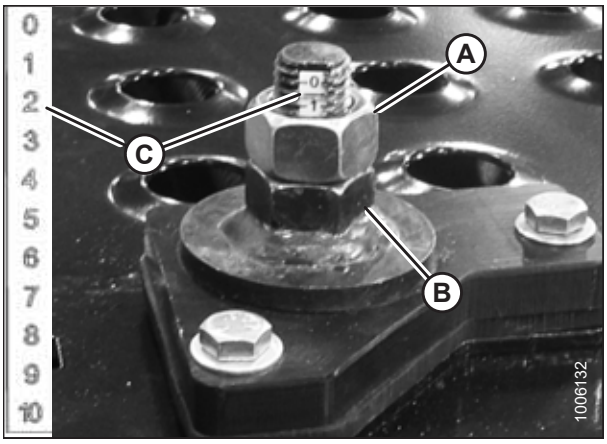


Figure 5.24: Roll Gap Adjustment Hardware

5. Loosen bolt (A) and rotate cover (B) to expose access port (C).
6. Check roll timing by examining distance **X** at each end of the rolls (C). Each steel bar on one roll should be centered between two bars of the other roll, so that distance **X** is 12 mm (1/2 in.).

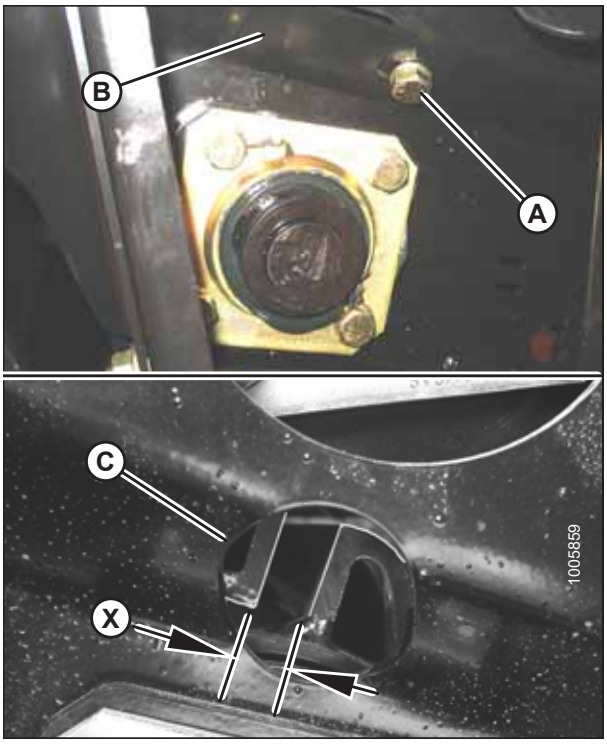


Figure 5.25: Access Port – Exposed

If required, adjust the roll timing as follows:

7. Loosen four bolts (A) in slots of yoke plate on lower roll universal shaft.
8. Turn rolls to achieve best timing.
9. When roll timing is satisfactory, tighten bolts (A) to secure the position.

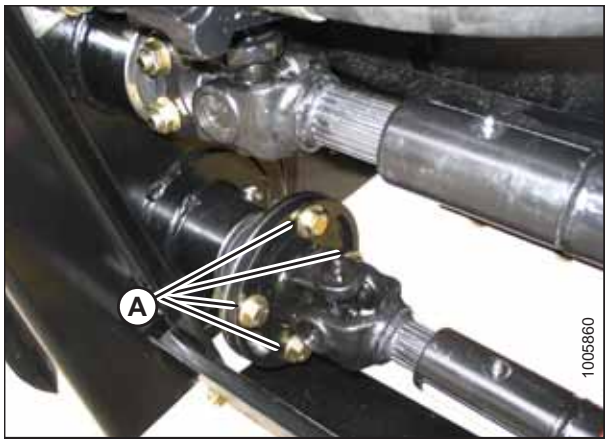


Figure 5.26: Roll Timing Adjustment Hardware

10. Reposition cover (A), and tighten bolt (B).

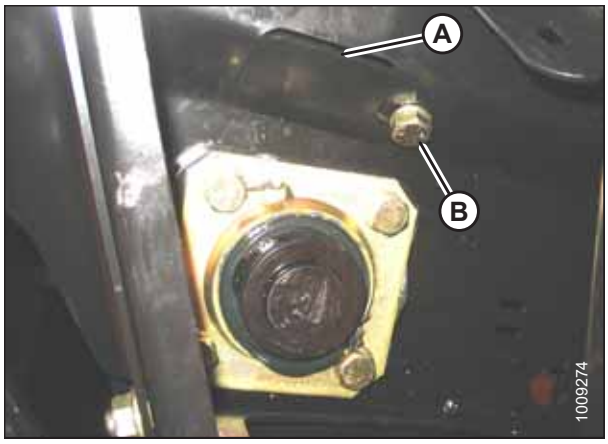


Figure 5.27: Access Port – Covered

5.9 Checking Oil Level in Conditioner Gearbox

WARNING

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

1. Lower the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Ensure that the gearbox is level with ground.
4. Remove check plug (A) and ensure that oil runs out. If oil does not run, fill the conditioner gearbox using SAE 85W-140.
5. Replace check plug (A).

Figure 5.28: Check Plug

5.10 Checking Optional Skid Shoes / Gauge Rollers

DANGER

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

1. Raise the header fully.
2. Engage the header safety props.
3. Shut down the engine, and remove the key from the ignition.
4. Check that pins (A) are installed in the same position in all skid shoes (B).

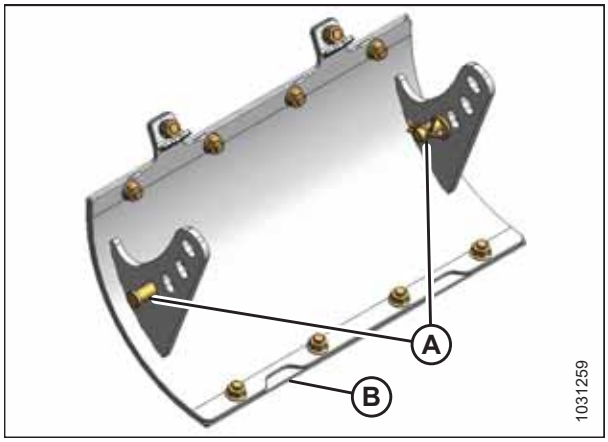


Figure 5.29: Skid Shoe

5. Check that pins (A) are installed in the same position in all gauge rollers (B).

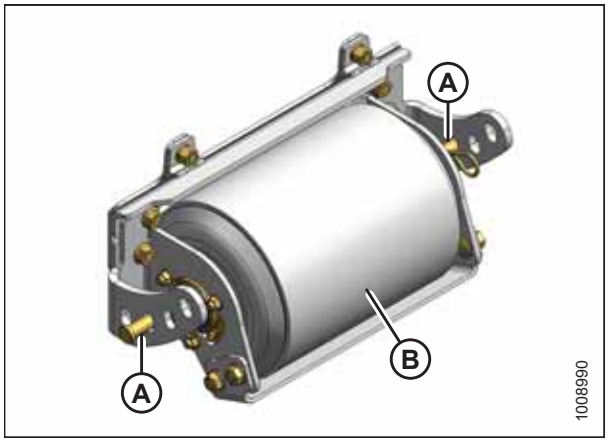


Figure 5.30: Gauge Roller

5.11 Checking Lights

Hazard lights, which are mounted on both ends of the header, are activated by switches in the windrower cab.

1. Check that pivot bolt (A) is tight enough to hold light support (B) in an upright position, but will still allow the light to pivot out of the way of obstructions.

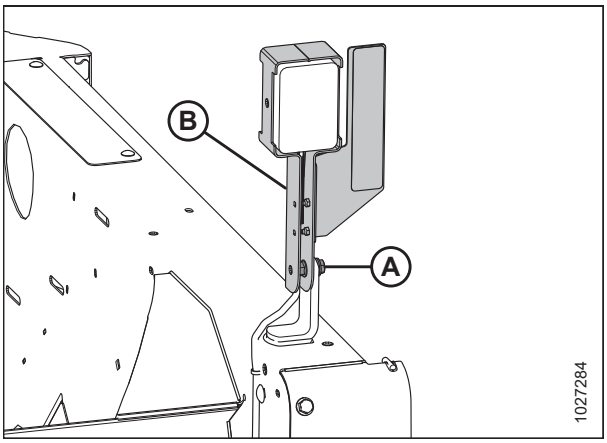


Figure 5.31: Hazard Light

5.12 Running up Header

WARNING

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

WARNING

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

1. Start windrower and operate header slowly for 5 minutes, watching and listening **FROM THE WINDROWER SEAT** for binding, interfering parts, or unusual noises.
2. Run the machine for 15 minutes at maximum engine operating rpm and perform the run-up check as listed on the Predelivery Checklist (yellow sheet attached to this manual – *Predelivery Checklist, page 121*) to ensure machine is field-ready.
3. Proceed as follows:
   - **M Series Windrower:** Proceed to Step *15, page 100*.
   - **M1 Series Windrower:** Calibrate the knife drive. Proceed to the next step.
4. Start the engine.
5. Press soft key 5 (A) to open the Harvest Performance Tracker (HPT) main menu.

   NOTE:

   Calibrations **MUST** be performed with the engine running. Some calibrations will **NOT** be available with engine off.
6. Use HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown) to highlight SETTINGS icon (C).
7. Press HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.

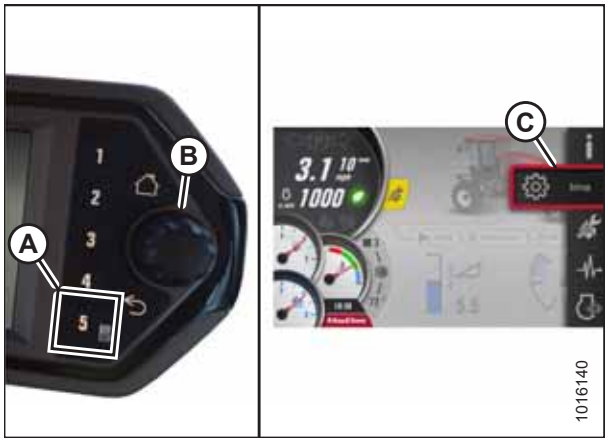


Figure 5.32: Opening the Main Menu

8. Scroll to WINDROWER SETTINGS icon (A) and press SELECT.
9. Scroll to CALIBRATION icon (B), and press SELECT to open the Calibration Selection screen.

   NOTE:

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

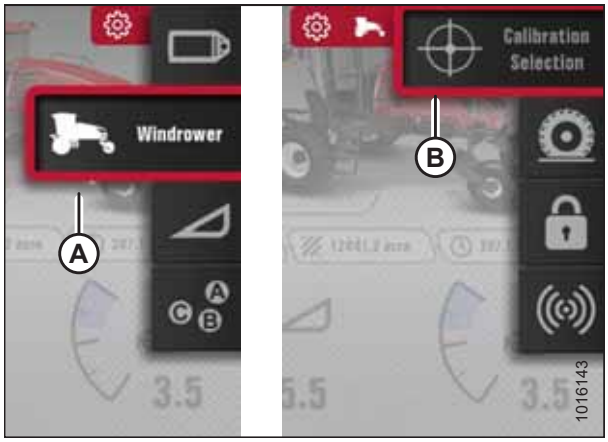


Figure 5.33: Windrower Settings Icon and Calibration Submenu Icon

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

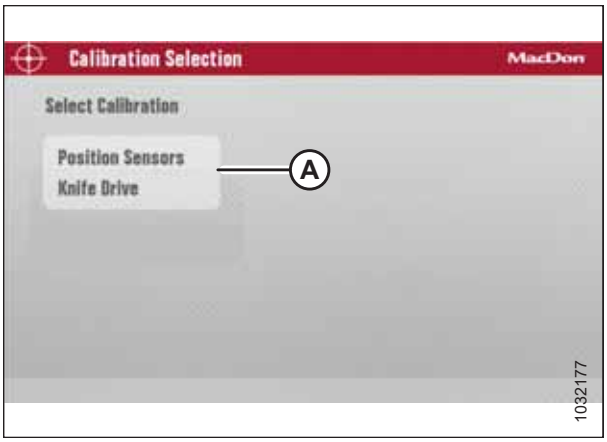


Figure 5.34: Calibration Selection Screen

NOTE:

If calibration is selected with header disengaged, a message ENGAGE HEADER will come up on the screen followed by the WARNING message on the right.

12. Press the PLAY icon on the screen to begin the calibration process. The display on the screen will change to show that calibration has started.

NOTE:

If the engine speed is less than 1500 rpm prior to starting the calibration, the system will accelerate the engine speed to 1500 rpm.

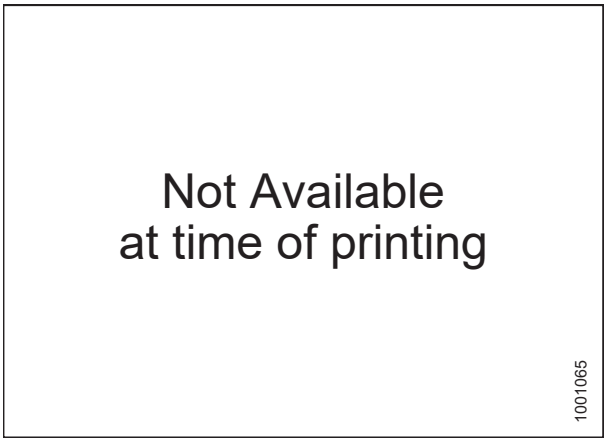


Figure 5.35: Calibration Screen

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

NOTE:

Knife drive calibration is completed in nine stages.

Figure 5.36: Calibration Page

14. Press the PLAY button to begin the calibration process.

    NOTE:

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

    NOTE:

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

    NOTE:

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

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

15. Check knife speed using the windrower cab display module (CDM) (for M Series) or harvest performance tracker (HPT) (for M1 Series) during run-up and adjust knife speed to maximum on the CDM or HPT. Knife speed should be 1950 spm (actual speed of knife drive box pulley [A] should be 975 rpm) with the engine at maximum operating rpm.
16. If speed is incorrect, check the header ID in the windrower CDM (M Series) or HPT (M1 Series). The header drive pump may also require adjusting. Refer to *5.13 Checking Knife Speed, page 101*.
17. Shut down the engine, and remove the key from the ignition.

Figure 5.37: Calibration Page

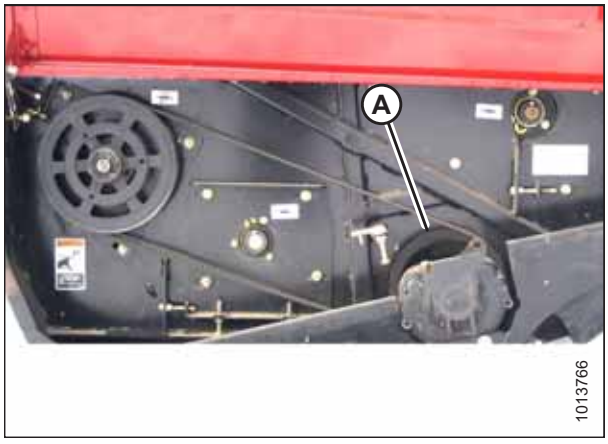


Figure 5.38: Right End of Header

5.13 Checking Knife Speed

A40D

Refer to the following sections to check the header knife speed when attaching an A40D Auger Header to an M100 or M105 Windrower.

Refer to the windrower operator's manual to check the header knife speed in the windrower cab display module (CDM) when attaching an A40D Auger Header to an M150, M155, M155*E4*, M200, or M205 Windrower.

A40DX

Refer to the windrower operator's manual to check the header knife speed on Harvest Performance Tracker (HPT) when attaching an A40DX Auger Header to an M1170 or M1240 Windrower.

5.13.1 Setting Knife Speed on an M100 or M105

The knife speed has been preset at the factory to the lowest rpm. Change the knife speed by making adjustments to the knife drive pump.

For optimum performance, set the knife speed within the range specified. Refer to Table *5.1, page 101*.

NOTE:

When attaching an A40D Auger Header to an M100 or M105 Windrower for the first time, knife speed should be set to the **MAXIMUM** setting.

Table 5.1 A40D Auger Header Knife Speed

Header Description		Knife Speed			
Type	Size	Minimum		Maximum	
		rpm[6]	spm[7]	rpm[6]	spm[7]
Auger A40D	All	700	1400	975	1950

6. rpm = speed of knife drive box pulley (revolutions per minute)
7. spm = strokes per minute of knife (rpm x 2)

Setting Knife Speed with Expansion Module (MD #B4666)

WARNING

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

1. Press SELECT button (B) on the ground speed lever (GSL) until the CDM (A) displays the knife speed in spm. This indicates that optional expansion module (MD #B4666) is installed.
2. If knife speed is **NOT** displayed, the optional expansion module is not installed. Proceed to *Setting Knife Speed without Expansion Module (MD #B4666), page 103*.
3. Compare reading to Table *5.1, page 101*.

Figure 5.39: Operator Console

If required, adjust the knife speed as follows:

4. Shut down the engine, and remove the key from the ignition.
5. Open engine hood.
6. Locate knife drive pump (A) and knife speed adjuster screw (B) under the right (cab-forward) side of the windrower.

   NOTE:

   The knife speed adjuster screw may have a plastic cap (B) covering it. Pull this cap off to expose the screw.

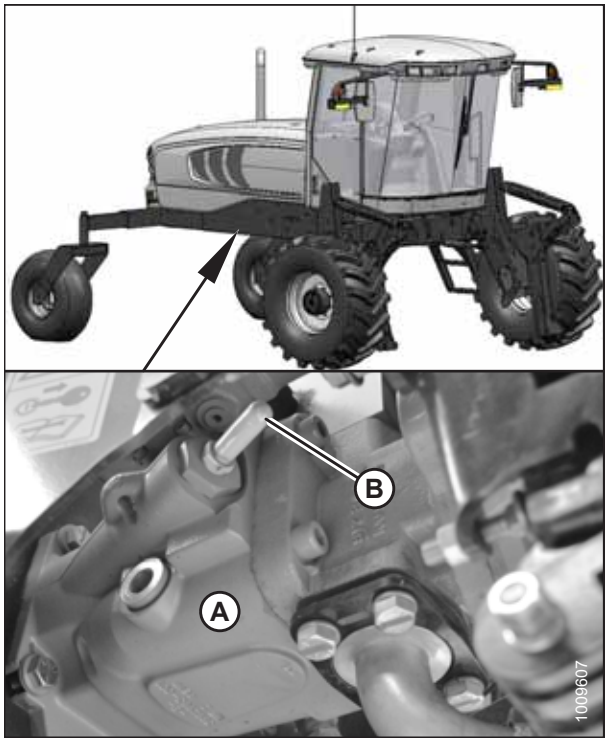


Figure 5.40: Knife Drive Pump

7. Loosen jam nut (A).
8. Turn adjuster screw (B) clockwise (screw in) to decrease knife speed, and counterclockwise (screw out) to increase the knife speed.

   NOTE:

   One turn of adjuster screw (B) will change the knife speed by approximately 116 spm, or the knife drive box pulley speed by 58 rpm.
9. Once adjustment has been made, torque jam nut (A).
10. Close hood, start engine, and recheck knife speed.

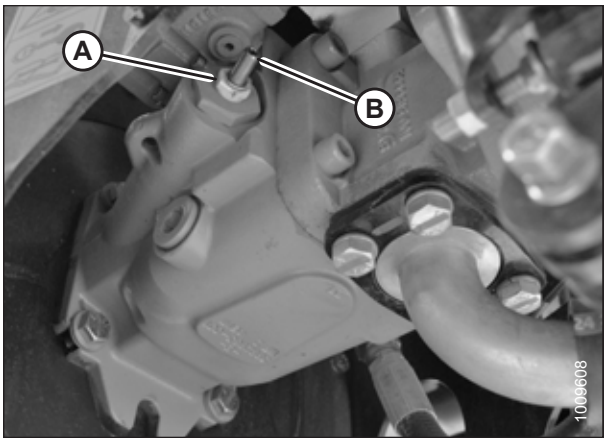


Figure 5.41: Knife Speed Adjuster Screw

Setting Knife Speed without Expansion Module (MD #B4666)

1. Check header knife drive box pulley speed with a handheld tachometer.
2. Multiply the rpm reading by two to obtain the knife speed in strokes per minute.
3. Compare reading to Table *5.1, page 101*.
4. If required, adjust knife speed. Refer to Step *4, page 102* to Step *10, page 103*.

Figure 5.42: Knife Drive Box on Header

5.14 Adjusting Knife and Guards

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Check guards for signs of heating during run-up due to insufficient clearance between guard and knife.
3. Using a feeler gauge, check for a 0.25 mm (.01 in.) gap between knifehead (A) and pitman arm (B). If gap is incorrect, adjust by loosening bolt (C), and tapping knifehead (A) with a hammer. Retighten bolt.

   NOTE:

   If a feeler gauge is not available, a business card should slide easily through gap.

   IMPORTANT:

   Over-greasing can cause the knife to bend and make contact with the guards closest to the knifehead. Check for signs of excessive heating on first few guards after greasing. If required, relieve some pressure by pressing the check-ball in grease fitting or remove grease fitting.

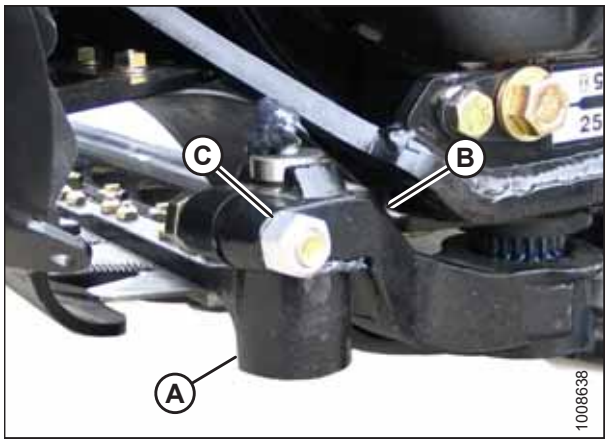


Figure 5.43: Knifehead and Pitman Arm

4. Adjust guard alignment as necessary using guard straightening tool (MD #140135). Adjust guard tips upwards by positioning tool as shown and pulling up.

Figure 5.44: Guard Tips – Upward Adjustment

5. Adjust guard tips downward by positioning tool as shown and pushing down.

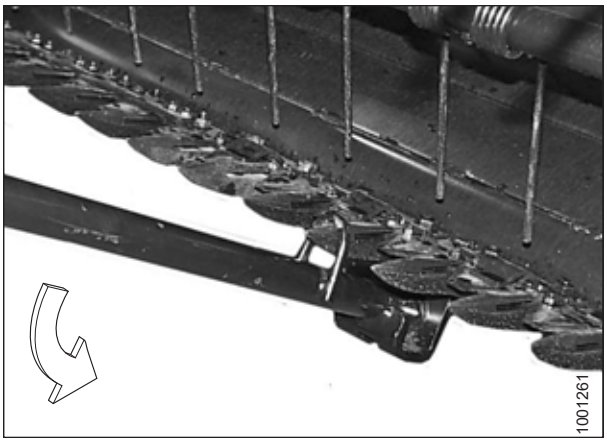


Figure 5.45: Guard Tips – Downward Adjustment

5.15 Checking Manuals

The manual case is located inside the right endshield.

1. Open right endshield (A) and remove cable tie (B) from manual case (C).

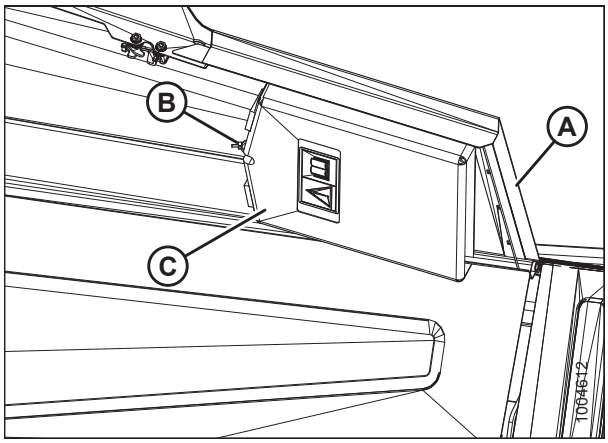


Figure 5.46: Manual Case

2. Ensure the following manuals are stored in the manual case:
   - A40D/A40DX Auger Header Quick Card
   - A40D/A40DX Auger Header Operator's Manual
   - A Series Auger Header Parts Catalog
3. Replace cable tie on manual case and close endshield.

Figure 5.47: Manuals

Chapter 6: Reference

6.1 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.

Jam nuts

When applying torque to finished jam nuts, multiply the torque applied to regular nuts by f=0.65.

Self-tapping screws

Standard torque is to be used (**NOT** to be used on critical or structurally important joints).

6.1.1 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 6.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	11.9	13.2	*106	*117
5/16-18	24.6	27.1	*218	*241
3/8-16	44	48	32	36
7/16-14	70	77	52	57
1/2-13	106	118	79	87
9/16-12	153	170	114	126
5/8-11	212	234	157	173
3/4-10	380	420	281	311
7/8-9	606	669	449	496
1-8	825	912	611	676

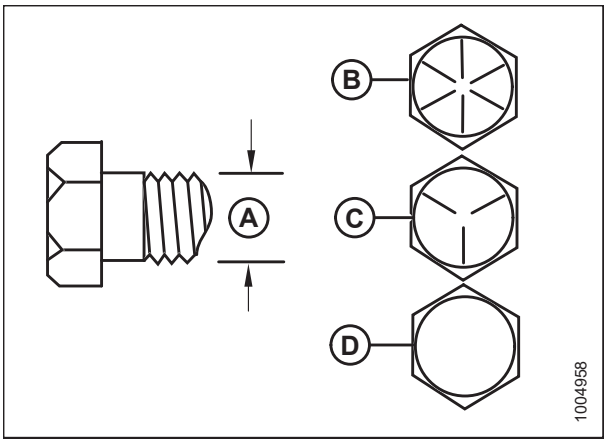


Figure 6.1: Bolt Grades

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2

Table 6.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	8.1	9	*72	*80
5/16-18	16.7	18.5	*149	*164
3/8-16	30	33	22	24
7/16-14	48	53	35	39
1/2-13	73	80	54	59
9/16-12	105	116	77	86
5/8-11	144	160	107	118
3/4-10	259	286	192	212
7/8-9	413	456	306	338
1-8	619	684	459	507

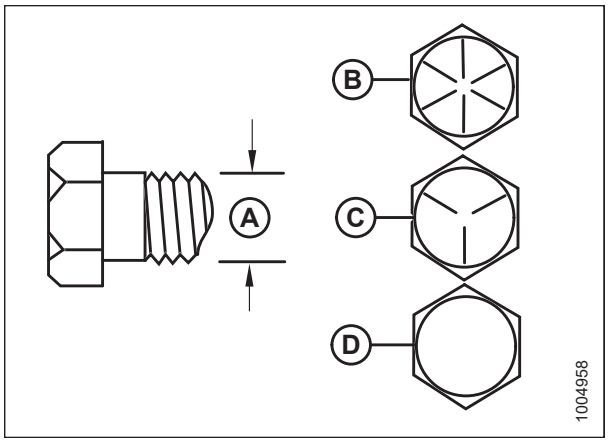


Figure 6.2: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 6.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	24	26	18	19
3/8-16	42	46	31	34
7/16-14	67	74	50	55
1/2-13	102	113	76	84
9/16-12	148	163	109	121
5/8-11	204	225	151	167
3/4-10	362	400	268	296
7/8-9	583	644	432	477
1-8	874	966	647	716

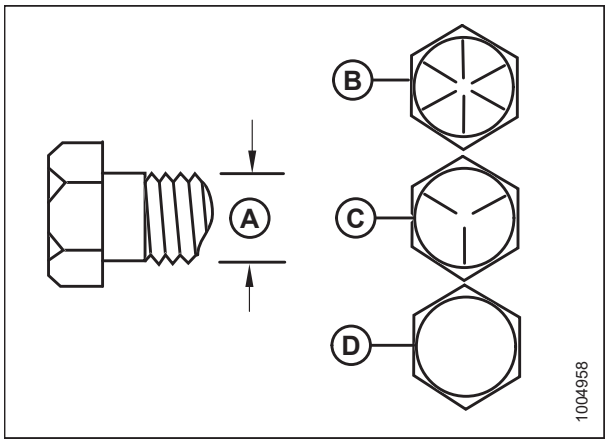


Figure 6.3: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 6.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	35	38	26	28
3/8-16	61	68	46	50
7/16-14	98	109	73	81
1/2-13	150	166	111	123
9/16-12	217	239	160	177
5/8-11	299	330	221	345
3/4-10	531	587	393	435
7/8-9	855	945	633	700
1-8	1165	1288	863	954

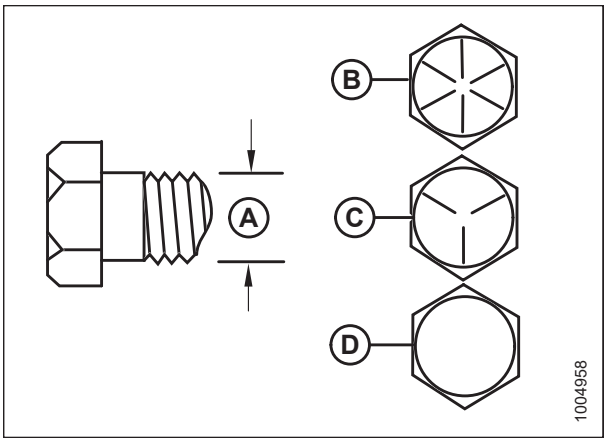


Figure 6.4: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

6.1.2 Metric Bolt Specifications

Table 6.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.4	1.6	*13	*14
3.5-0.6	2.2	2.5	*20	*22
4-0.7	3.3	3.7	*29	*32
5-0.8	6.7	7.4	*59	*66
6-1.0	11.4	12.6	*101	*112
8-1.25	28	30	20	23
10-1.5	55	60	40	45
12-1.75	95	105	70	78
14-2.0	152	168	113	124
16-2.0	236	261	175	193
20-2.5	460	509	341	377
24-3.0	796	879	589	651

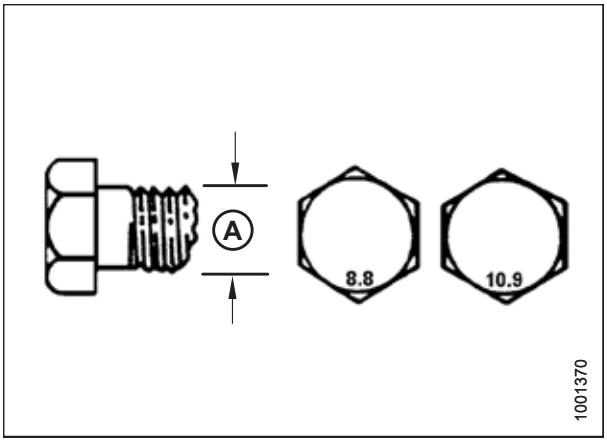


Figure 6.5: Bolt Grades

Table 6.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5	314	347	233	257
24-3.0	543	600	402	444

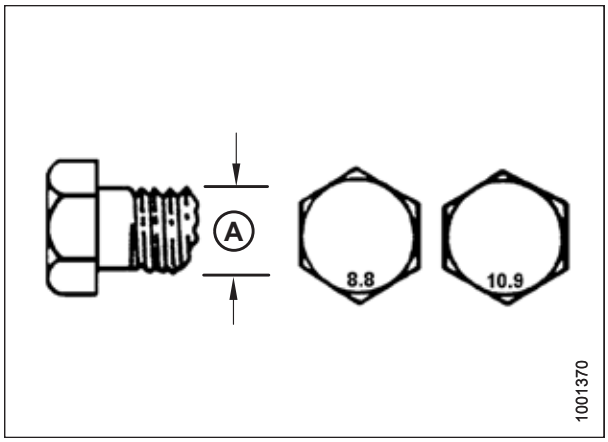


Figure 6.6: Bolt Grades

Table 6.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.8	2	*18	*19
3.5-0.6	2.8	3.1	*27	*30
4-0.7	4.2	4.6	*41	*45
5-0.8	8.4	9.3	*82	*91
6-1.0	14.3	15.8	*140	*154
8-1.25	38	42	28	31
10-1.5	75	83	56	62
12-1.75	132	145	97	108
14-2.0	210	232	156	172
16-2.0	326	360	242	267
20-2.5	637	704	472	521
24-3.0	1101	1217	815	901

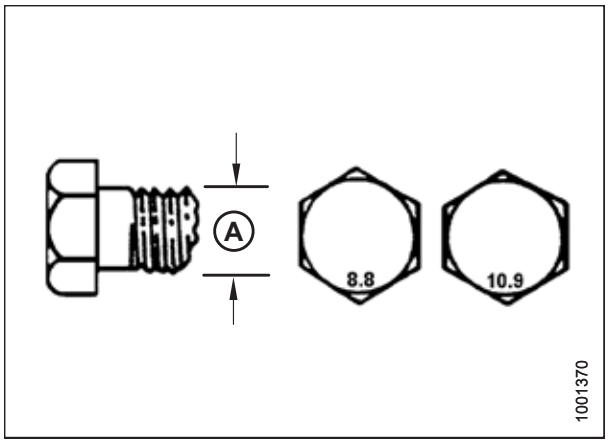


Figure 6.7: Bolt Grades

Table 6.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.3	1.5	*12	*13
3.5-0.6	2.1	2.3	*19	*21
4-0.7	3.1	3.4	*28	*31
5-0.8	6.3	7	*56	*62
6-1.0	10.7	11.8	*95	*105
8-1.25	26	29	19	21
10-1.5	51	57	38	42
12-1.75	90	99	66	73
14-2.0	143	158	106	117
16-2.0	222	246	165	182
20-2.5	434	480	322	356
24-3.0	750	829	556	614

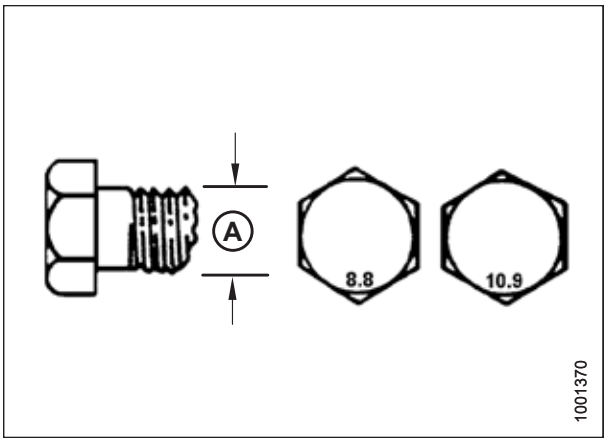


Figure 6.8: Bolt Grades

6.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 6.9 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	Nm	lbf·ft	Nm	lbf·ft
M3	–	–	–	1
M4	–	–	4	2.6
M5	–	–	8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73
M14	–	–	–	–
M16	–	–	–	–

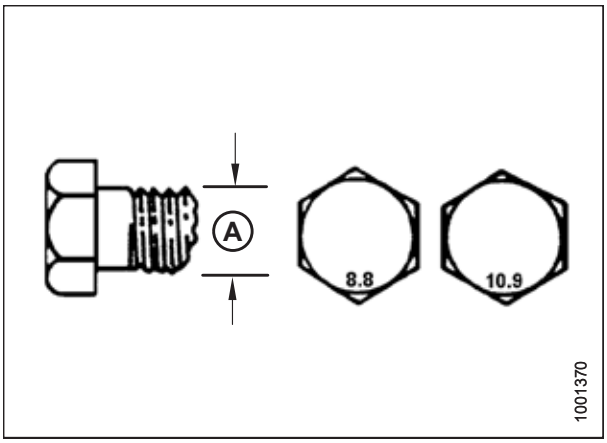


Figure 6.9: Bolt Grades

6.1.4 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 *6.10, page 112*.
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.

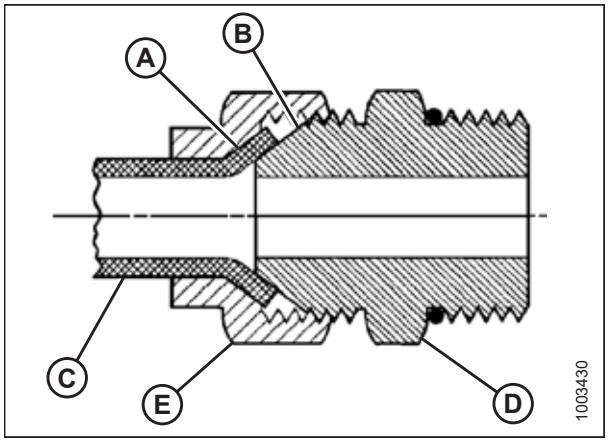


Figure 6.10: Hydraulic Fitting

Table 6.10 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value[8]		Flats from Finger Tight (FFFT)	
		Nm	lbf·ft	Tube	Swivel Nut or Hose
-2	5/16–24	4–5	3–4	—	—
-3	3/8–24	7–8	5–6	—	—
-4	7/16–20	18–19	13–14	2 1/2	2
-5	1/2–20	19–21	14–15	2	2
-6	9/16–18	30–33	22–24	2	1 1/2
-8	3/4–16	57–63	42–46	2	1 1/2
-10	7/8–14	81–89	60–66	1 1/2	1 1/2
-12	1 1/16–12	113–124	83–91	1 1/2	1 1/4
-14	1 3/16–12	136–149	100–110	1 1/2	1 1/4
-16	1 5/16–12	160–176	118–130	1 1/2	1
-20	1 5/8–12	228–250	168–184	1	1
-24	1 7/8–12	264–291	195–215	1	1
-32	2 1/2–12	359–395	265–291	1	1
-40	3–12	—	—	1	1

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

6.1.5 O-Ring Boss Hydraulic Fittings – Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
4. Apply hydraulic system oil to O-ring (A).

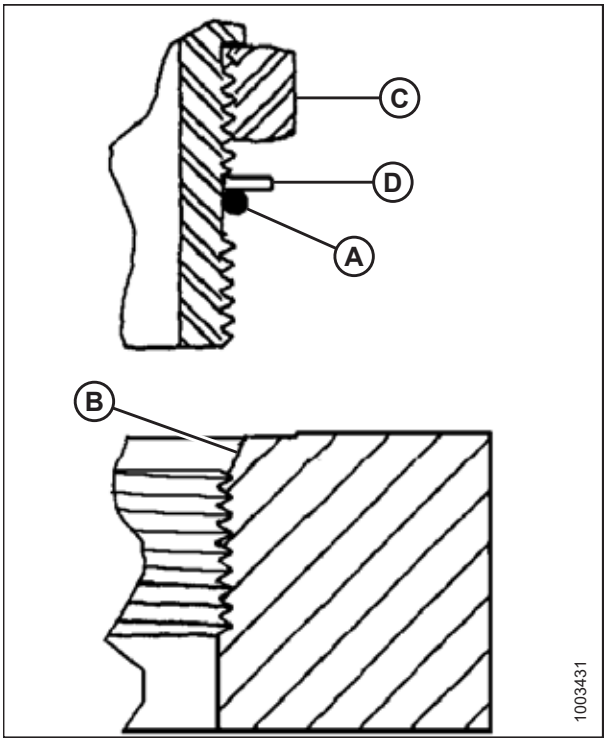


Figure 6.11: Hydraulic Fitting

5. Install fitting (B) into port until backup washer (D) and O-ring (A) contact part face (E).
6. Position angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and other on lock nut (C).
8. Check final condition of fitting.

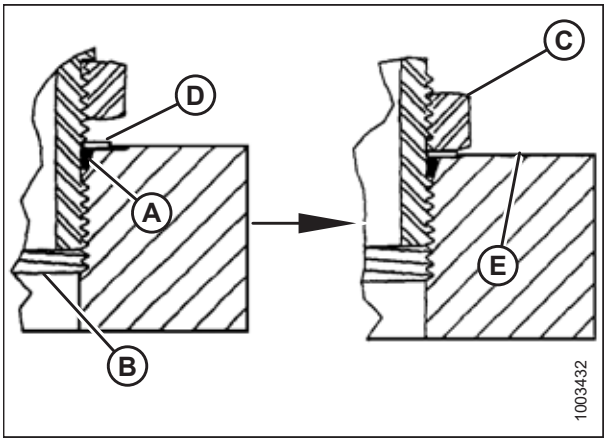


Figure 6.12: Hydraulic Fitting

Table 6.11 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

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

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

6.1.6 O-Ring Boss Hydraulic Fittings – Non-Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table *6.12, page 115*.
6. Check final condition of fitting.

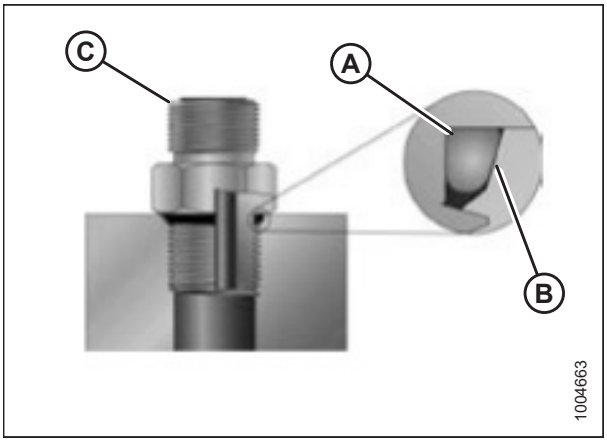


Figure 6.13: Hydraulic Fitting

Table 6.12 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

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

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

6.1.7 O-Ring Face Seal Hydraulic Fittings

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

Figure 6.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table *6.13, page 116*.

   NOTE:

   If applicable, hold hex on fitting body (E) to prevent rotation of fitting body and hose when tightening fitting nut (D).
6. Use three wrenches when assembling unions or joining two hoses together.
7. Check final condition of fitting.

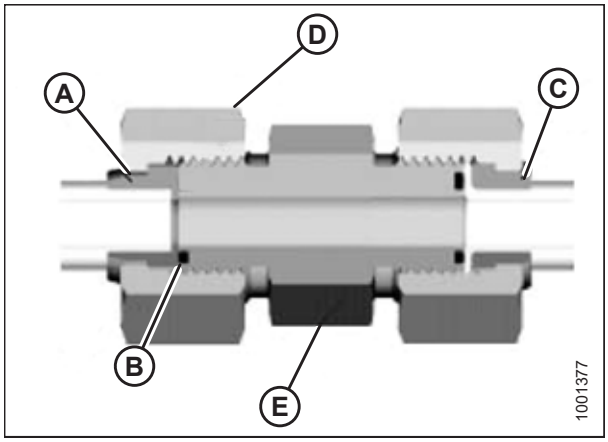


Figure 6.15: Hydraulic Fitting

Table 6.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[11]	
			Nm	lbf·ft
-3	Note[12]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[12]	5/16	–	–
-6	11/16	3/8	40–44	29–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-14	Note[12]	7/8	–	–

11. Torque values and angles shown are based on lubricated connection as in reassembly.
12. O-ring face seal type end not defined for this tube size.

Table 6.13 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[13]	
			Nm	lbf·ft
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	1–2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

6.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks, scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table *6.14, page 117*. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

   NOTE:

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

Table 6.14 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended TFFT	Recommended FFFT
1/8–27	2–3	12–18
1/4–18	2–3	12–18
3/8–18	2–3	12–18
1/2–14	2–3	12–18
3/4–14	1.5–2.5	12–18
1–11 1/2	1.5–2.5	9–15
1 1/4–11 1/2	1.5–2.5	9–15
1 1/2–11 1/2	1.5–2.5	9–15
2–11 1/2	1.5–2.5	9–15

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

6.2 Conversion Chart

Table 6.15 Conversion Chart

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

6.3 Definitions

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

Term	Definition
A Series header	MacDon A30S, A30D, A40D, A40DX, and Grass Seed auger headers
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Cab-forward	Windrower operation with Operator and cab facing in direction of travel
CDM	Cab display module on an M Series Windrower
Center-link	A hydraulic cylinder link between the header and machine used to change header angle
CGVW	Combined gross vehicle weight
DK	Double knife
DKD	Double-knife drive
DWA	Double Windrow Attachment
ECM	Engine control module
Export header	Header configuration typical outside North America
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose
GSS	Grass Seed
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header	A machine that cuts and lays crop into a windrow and is attached to a windrower
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in head (internal-wrenching hexagon drive); also known as an Allen key and various other synonyms
hp	Horsepower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)
M Series windrower	MacDon M100, M105, M150, M155, M155*E4*, M200, and M205 windrowers
M1 Series	MacDon M1170 and M1240 Windrowers
n/a	Not applicable
N-DETENT	The slot opposite the NEUTRAL position on the operator's console of M Series SP Windrowers
North American header	Header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit

Term	Definition
Nut	An internally threaded fastener that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part
Self-Propelled (SP) Windrower	Self-propelled machine consisting of a power unit with a header
SKD	Single-knife drive
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Timed knife drive	Synchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor
Torque	The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or locking mechanism
WCM	Windrower control module
Windrower	Power unit for a header
WOT	Wide open throttle

Predelivery Checklist

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

CAUTION

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

Header Serial Number: _____

Table .16 A40D, A40DX Predelivery Checklist

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque if applicable.	
	Check knife drive belt tension.	*5.1 Checking Drive Belts and Chains, page 81*
	Check reel tine to header pan and knife clearance.	*5.3 Checking Reel Tine to Header Pan Clearance, page 83*
	Check auger stripper bar clearance.	*5.2 Checking Auger Stripper Bar Clearance, page 82*
	If mechanical link, set header angle to middle of adjustment range for first use.	—
	Check that header is level.	• *5.6 Leveling the Header – M Series Windrower, page 88* • *5.7 Leveling the Header – M1 Series Windrower, page 90*
	Check header float: 335–380 N (75–85 lbf).	• *5.4 Checking and Adjusting Float – M Series Windrowers, page 84* • *5.5 Checking and Adjusting Float – M1 Series Windrower, page 85*
	Check lean bar is adjusted to a setting appropriate for first crop.	*3.7 Adjusting Lean Bar, page 20*
	Check skid shoes are evenly adjusted at a setting appropriate for first crop.	*5.10 Checking Optional Skid Shoes / Gauge Rollers, page 96*
	Check knife drive box lube level and breather position.	*3.18 Repositioning Knife Drive Box Breathers, page 73*
	Check that rear and side forming shields are evenly set to desired position.	*3.10 Assembling Forming Shield, page 24*
	Grease all bearings and drivelines.	*4 Lubricating the Machine, page 75*
	Check conditioner gear case lube level.	*5.9 Checking Oil Level in Conditioner Gearbox , page 95*
	Check conditioner roll gap, timing, and alignment.	*5.8 Checking Conditioner Rolls, page 93*
	Check roll intermesh hardware is securely tightened.	*5.8 Checking Conditioner Rolls, page 93*

RUN-UP PROCEDURE		*5.12 Running up Header, page 98*
	Check hydraulic hose and wiring harness routing for clearance when raising or lowering header and when retracting or extending center-link.	—
	Check knife speed.	*5.13 Checking Knife Speed, page 101*
	Check that amber flasher and signal lights are functional.	*5.11 Checking Lights, page 97*
	Check header ID on windrower CDM.	—
POST RUN-UP CHECKS. STOP ENGINE.		
	Check for hydraulic leaks.	—
	Check belt and chain drives for idler alignment and heated bearings.	*5.1 Checking Drive Belts and Chains, page 81*
	Check knife sections for discoloration caused by misalignment of components.	*5.14 Adjusting Knife and Guards, page 104*
	Check manuals in the right header endshield.	*5.15 Checking Manuals, page 106*

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