

Contour Buddy™ for FD1 Series, FD75, and FD70 FlexDraper® Headers

Setup, Operation, and Parts Manual

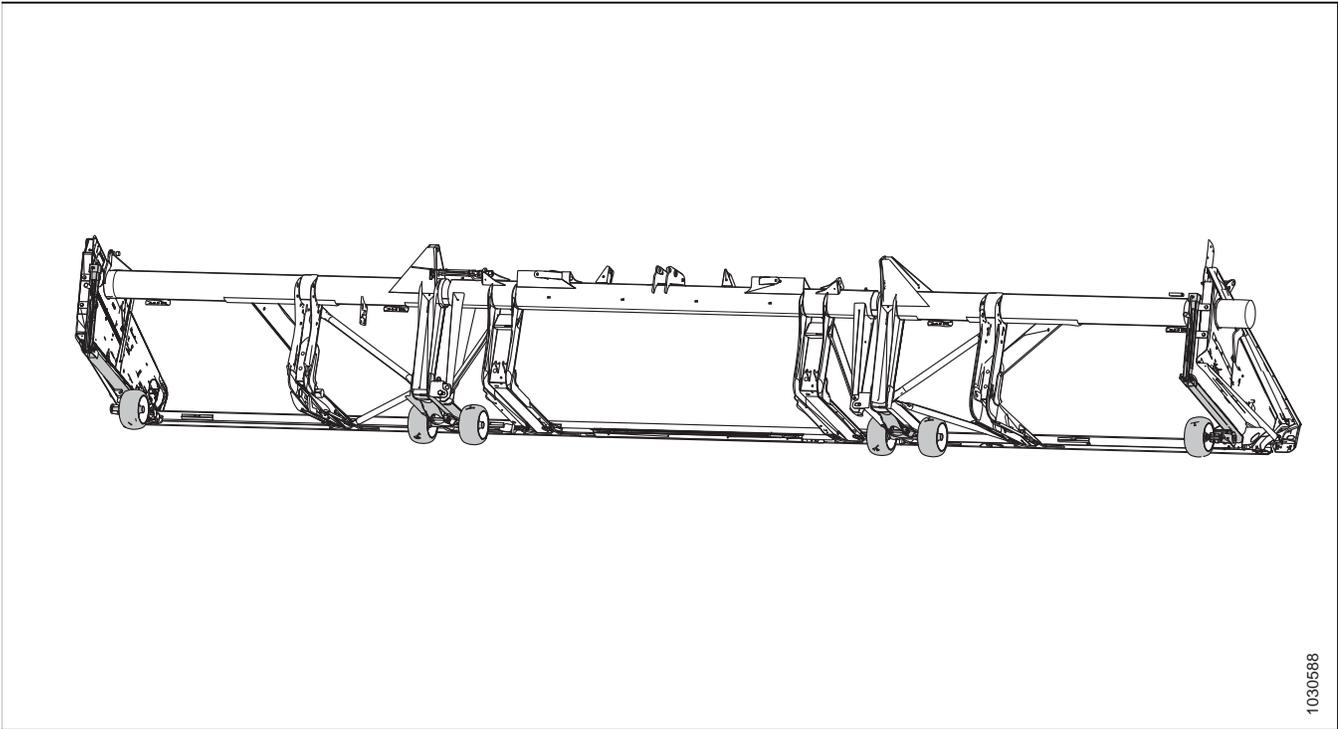
215208 Revision A

Original Instruction

Featuring MacDon FLEX-FLOAT Technology™

The harvesting specialists.

Contour Buddy™ for FD1 Series, FD75, and FD70 FlexDraper® Headers.



1030588

Published: September 2019

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Introduction

This manual contains safety information, setup instructions, operating and maintenance procedures, and parts information for the Contour Buddy™ kit.

The Contour Buddy™ kit contains inboard and outboard wheel assemblies that mount to the underside of a FlexDraper® header and allow the header to operate in flex mode while cutting above the ground. The Contour Buddy™ kit is designed for use with MacDon FD1 Series, FD75, and FD70 FlexDraper® Headers.

When setting up the machine or making adjustments, review and follow the recommended machine settings in all relevant original equipment manufacturer (OEM) publications. Failure to do so may compromise safety, machine function, and machine life.

Conventions

The following conventions are used in this document:

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

Installation Time

This kit takes approximately 3 hours to install.

NOTE:

Header float and wing balance must be reset after the kit is installed, and anytime the wheels are removed while cutting low crop.

NOTE:

This document is currently available in English only.

Summary of Changes

Section	Summary of Change	Internal Use Only
Inside front cover	Updated illustration.	SME review
<i>Introduction, page i</i>	Added approximate installation time and note regarding resetting header float and wing balance.	SME review
<i>2.2.2 Installing Outboard Wheel Assemblies and Jacks, page 14</i>	Added note for FD1 headers made in model year 2020.	ECN 58322
<i>2.2.2 Installing Outboard Wheel Assemblies and Jacks, page 14</i>	<ul style="list-style-type: none"> Added illustration 1030667 for jack mounting locations (FD 75). Added illustration 1030668 for jack mounting locations (FD1 and FD70). Added new illustration 1030546. 	QC Audit 2019–84
<i>2.2.2 Installing Outboard Wheel Assemblies and Jacks, page 14</i>	Added hole mount location tables.	SME review
<i>2.2.2 Installing Outboard Wheel Assemblies and Jacks, page 14</i>	Added new illustration 1030593.	SME review
<i>3.3.2 Adjusting Outboard Wheel Height, page 31</i>	Added new illustration 1030600.	SME review
<i>3.3.3 Removing Contour Buddy™ Wheel Assemblies, page 32</i>	Created new topic.	SME review
<i>5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38</i>	Replaced parts illustration 1030528 with 1030602.	SME review
<i>5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38</i>	Replaced axle frame support MD #284606 with MD #284694.	ECN 56671 ECN 57480 ECN 57694
<i>5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38</i>	Replaced isolator retainer MD #229973 with MD #284688.	ECN 57480
<i>5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38</i>	Replaced inboard axle support MD #284612 with MD #284683.	ECN 56671
<i>5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38</i>	Replaced pin MD #284603 with MD #284675.	ECN 56671
<i>5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38</i>	<ul style="list-style-type: none"> Replaced left isolator support MD #284558 with MD #284722. Replaced right isolator support MD #284574 with MD #284723. 	ECN 58541

Section	Summary of Change	Internal Use Only
<p><i>5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38</i></p>	<p>Added hub service parts:</p> <ul style="list-style-type: none"> • 284705 • 284706 • 284707 • 284708 • 284709 • 284710 	<p>ECN 57903</p>
<p><i>5.3 Contour Buddy™ – Decals, page 42</i></p>	<p>Added decal MD #302204 (Prop 65).</p>	<p>ECN 58835</p>

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Chapter 1: Safety

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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



Figure 1.1: Safety Symbol

1.2 Signal Words

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

DANGER

Indicates an imminently hazardous situation that, if 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.

1.3 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
- 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.

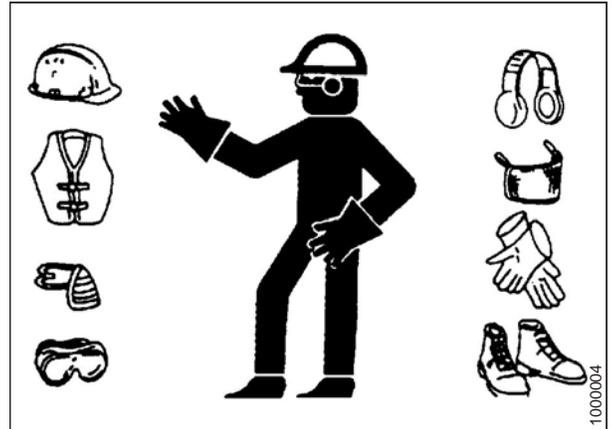


Figure 1.2: Safety Equipment



Figure 1.3: 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.

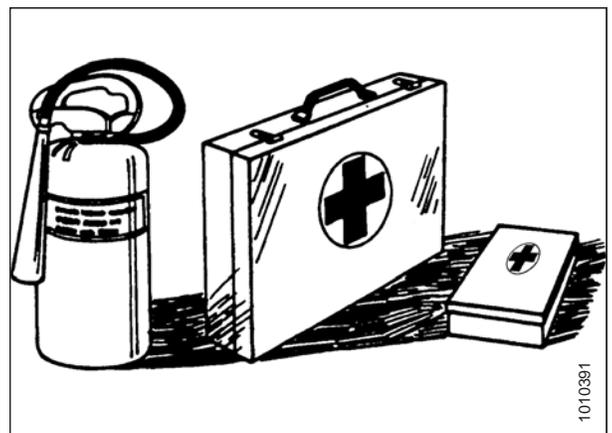


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

- Keep hands, feet, clothing, and hair away from moving parts. **NEVER** attempt to clear obstructions or objects from a machine while the engine is running.
- Do **NOT** modify the machine. Unauthorized modifications may impair 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.

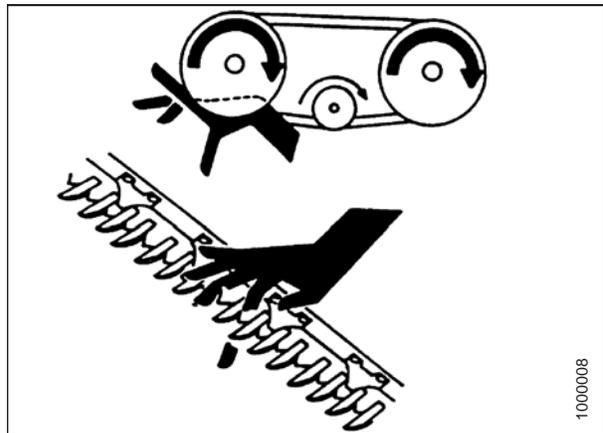


Figure 1.6: Safety around Equipment

- 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 1.7: Safety around Equipment

1.4 Maintenance Safety

To ensure your safety while maintaining machine:

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



Figure 1.8: Safety around Equipment

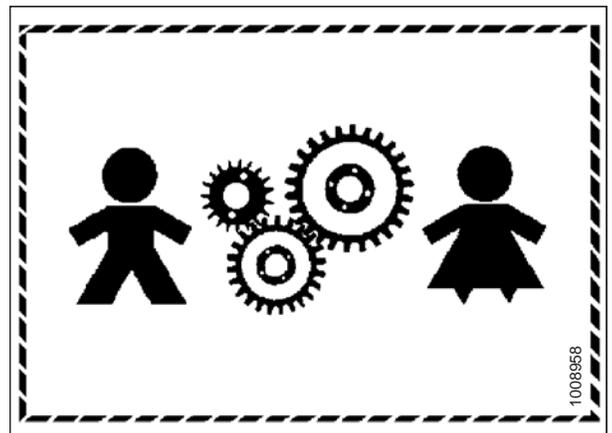


Figure 1.9: Equipment NOT Safe for Children

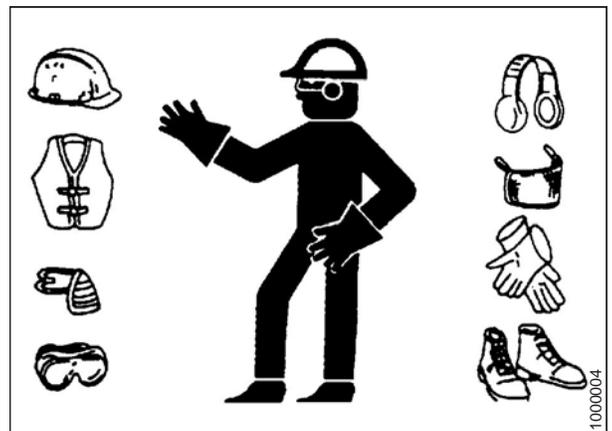


Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

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

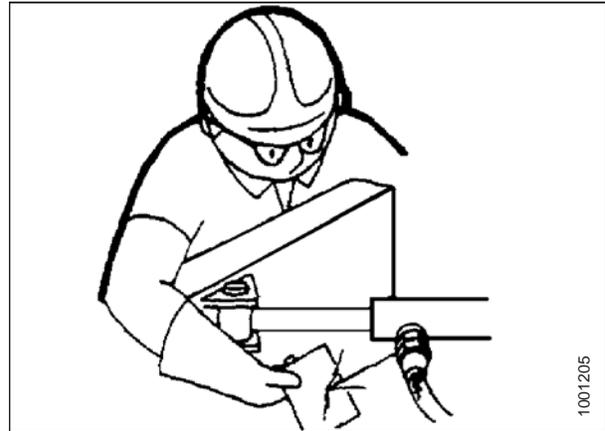


Figure 1.11: Testing for Hydraulic Leaks

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



Figure 1.12: Hydraulic Pressure Hazard

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

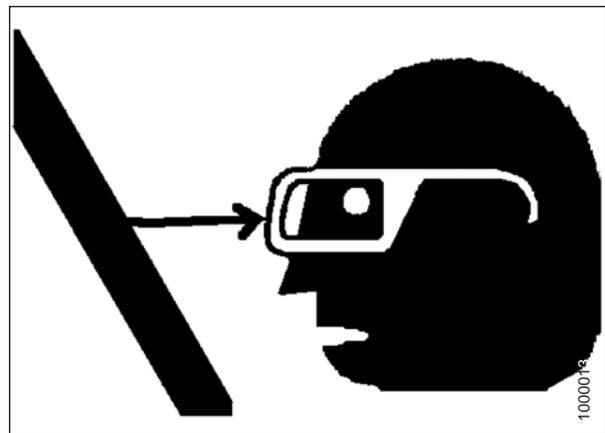


Figure 1.13: Safety around Equipment

1.6 Tire Safety

Service tires safely.

WARNING

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

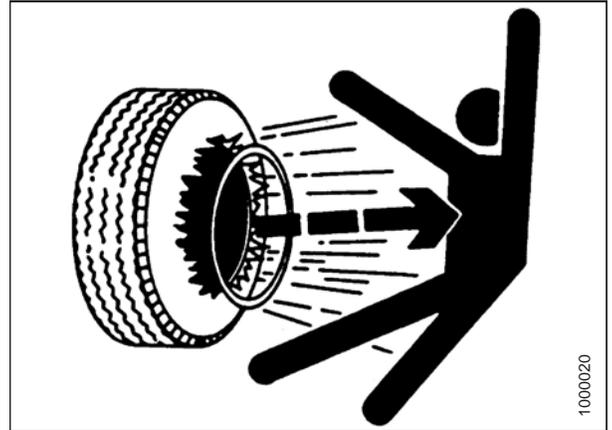


Figure 1.14: Overinflated Tire

WARNING

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



Figure 1.15: Safely Inflating Tire

1.7 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.
- Replacement safety signs are available from Dealer Parts Department.

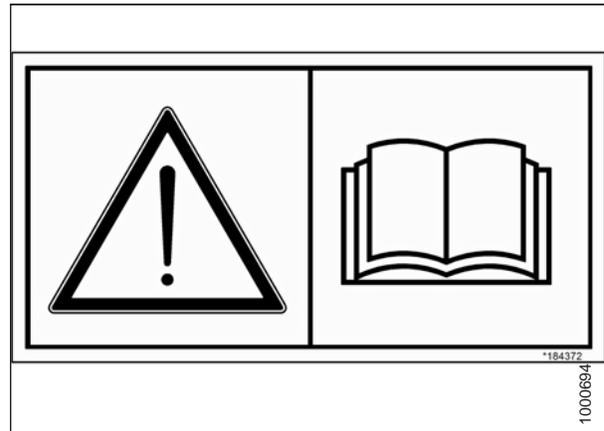


Figure 1.16: Operator's Manual Decal

1.7.1 Installing Safety Decals

1. Clean and dry the installation area.
2. Decide exactly where you are going to place the decal.
3. Remove the smaller portion of the split backing paper.
4. Place the decal in position and slowly peel back the remaining paper, smoothing the decal as it is applied.
5. Prick small air pockets with a pin and smooth out.

Chapter 2: Assembly/Setup Instructions

2.1 Unloading Contour Buddy™

To unload the Contour Buddy™, follow these steps:

WARNING

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

CAUTION

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

Table 2.1 Lifting Vehicle

Minimum Capacity	908 kg (2000 lb.)
Minimum Fork Length	198 cm (78 in.)

IMPORTANT:

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

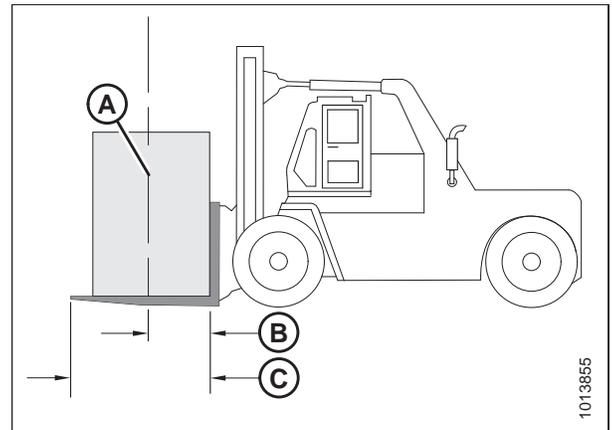


Figure 2.1: Minimum Lifting Capacity

A - Load Center of Gravity
B - Load Center 1220 mm (48 in.) from Back of Forks
C - Minimum Fork Length 1981 mm (78 in.)

1. Remove hauler's tie-down straps and chains.

WARNING

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

2. Use forklift to lift pallet (A) off of the trailer deck.
3. Back up until the unit clears trailer, and slowly lower to 150 mm (6 in.) from the ground.
4. Take to storage or setup area.
5. Set pallet down on secure, level ground.

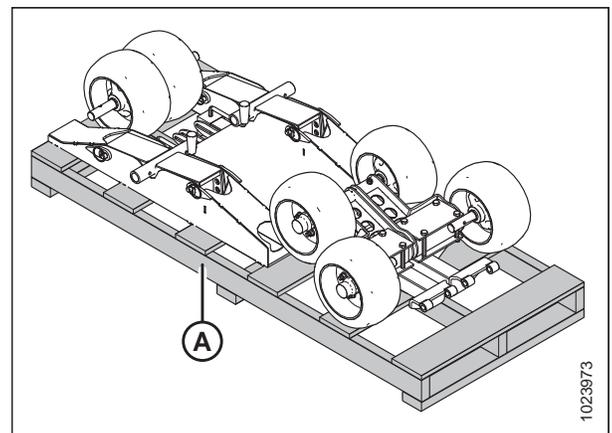


Figure 2.2: Pallet

ASSEMBLY/SETUP INSTRUCTIONS

6. Remove shipping banding and check bundles for damage and missing parts. The following bundles should have been shipped in the Contour Buddy™ kit:

- Wheel and hub assemblies (A)
- Inboard arm assemblies (B)
- Outboard wheel assemblies (C)
- Jacks (D)
- Parts bag (E)

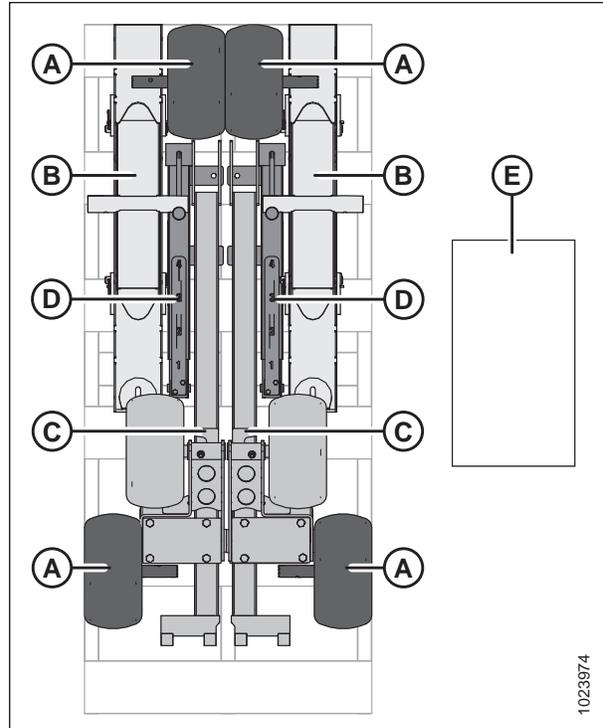


Figure 2.3: Contour Buddy™ Shipping Configuration – View from Above

2.2 Installing Contour Buddy™

To install the Contour Buddy™, follow these steps:

DANGER

To avoid bodily injury or death from unexpected startup or fall of raised header, stop engine, remove key, and engage safety props before going under header for any reason. If using a lifting vehicle, be sure header is secure before proceeding.

1. Use a lifting vehicle to raise header, or attach header to combine and fully raise header.
2. Stop the engine, and remove the key from the ignition.
3. Engage the header safety props or support the header on blocks on level ground. If using blocks to support the header, ensure the header is approximately 914 mm (36 in.) off the ground. Header safety props are located on the header lift cylinders and prevent the lift cylinders from unexpectedly retracting and lowering the header.
4. Perform the following procedures in order:
 - a. [2.2.1 Installing Inboard Wheel Assemblies, page 11](#)
 - b. [2.2.2 Installing Outboard Wheel Assemblies and Jacks, page 14](#)
 - c. [2.2.3 Installing Transport Light Extension Bracket – FD75 and FD1 Series FlexDraper® Headers, page 18](#)

2.2.1 Installing Inboard Wheel Assemblies

1. Position inboard arm assembly (A) underneath the left header leg on the outboard side of left flex frame hinge (B).
2. Slide the front of inboard arm assembly (A) into front pocket (C) on the left header leg as shown.

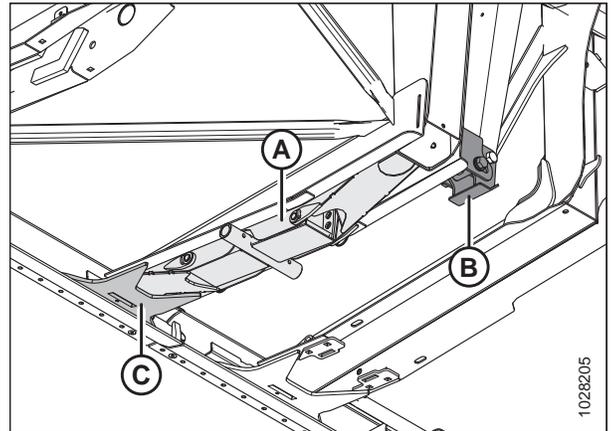


Figure 2.4: Inboard Arm Assembly Installed in Left Header Leg – View from Below

ASSEMBLY/SETUP INSTRUCTIONS

3. Attach inboard arm assembly to the left header leg with one 1 1/2 inch hex head bolt (A) (MD #252641), two channel washers (B) (MD #284602), and one 1/2 inch hex lock nut (C) (MD #18697) as shown.

NOTE:

Lower header frame brace removed from illustration for clarity.

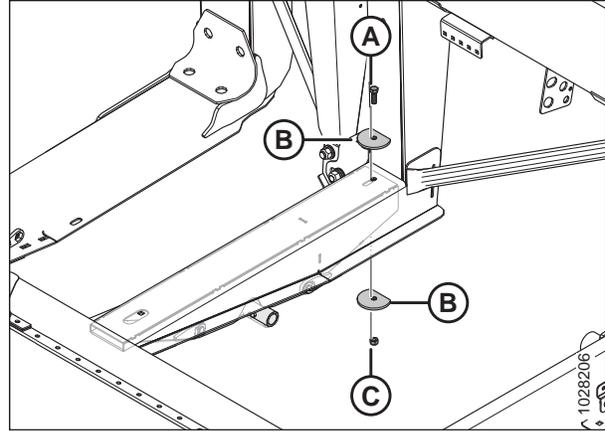


Figure 2.5: Inboard Arm Assembly and Left Header Leg – View from Above

4. Slide the axle of one wheel and hub assembly (A) into the axle receptor tube in the inboard arm assembly (B), and secure in place with a 2 1/4 in. hex head bolt (C) (MD #20055) and center lock nut (D) (MD #135511).
5. Repeat Step 4, [page 12](#) with a second wheel and hub assembly (E) and set of hardware on the opposite side of inboard arm assembly (B).

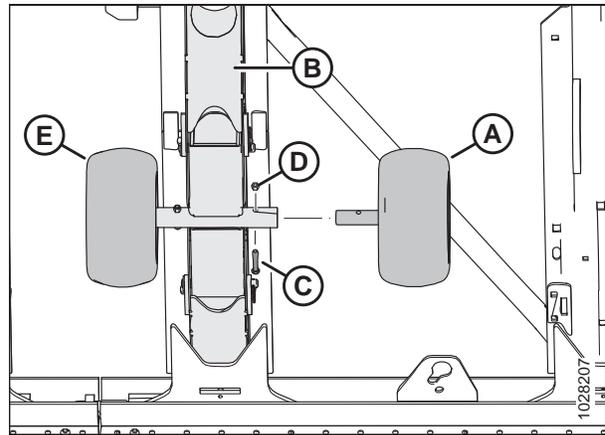
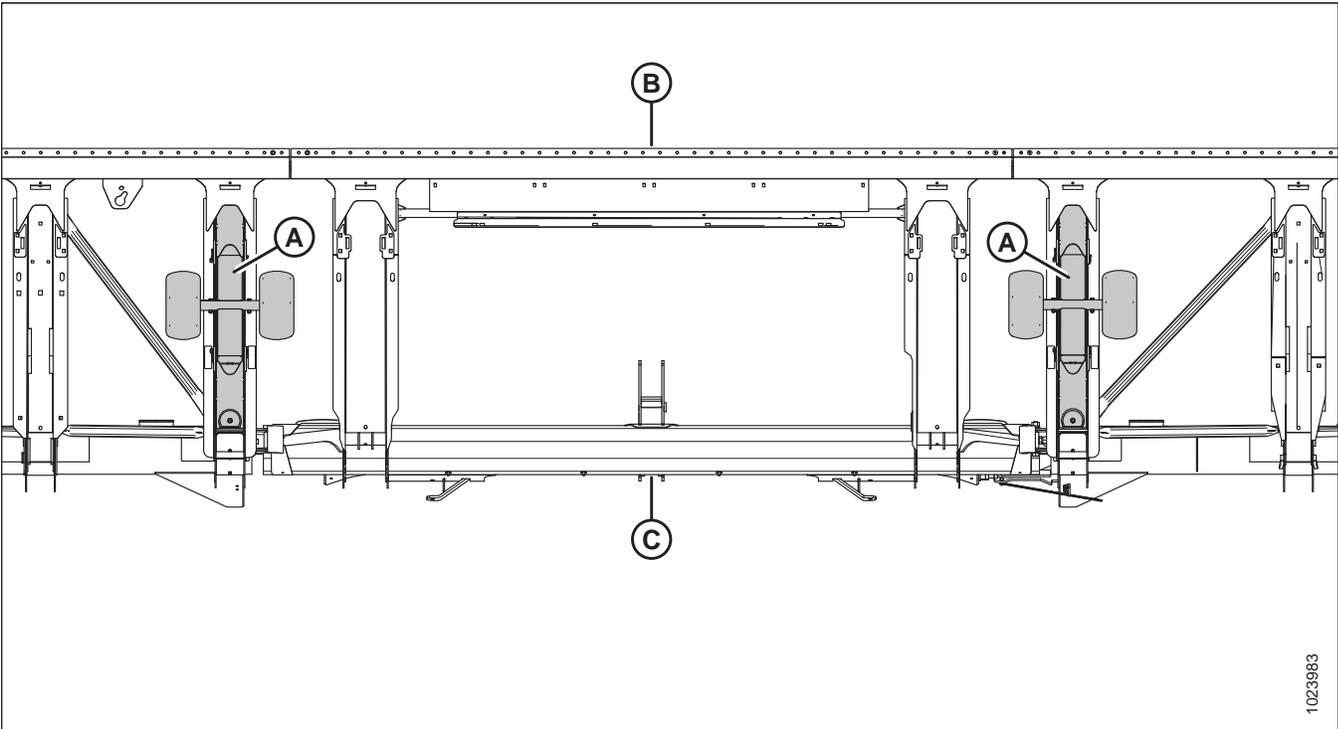


Figure 2.6: Inboard Wheel Assembly – View from Below

ASSEMBLY/SETUP INSTRUCTIONS

- 6. Repeat Steps 1, page 11 to 4, page 12 for the other inboard wheel assembly on the right side of the header. Refer to Figure 2.7, page 13.

Figure 2.7: Inboard Wheel Assemblies Installed – View from Below



A - Inboard Wheel Assemblies

B - Cutterbar

C - Backtube

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2.2.2 Installing Outboard Wheel Assemblies and Jacks

FD1 headers made in model year 2020 have pre-drilled mounting holes. For FD70, FD75, and older model FD1 headers, follow the model-specific drilling locations described below.

FD75 Headers

Open or remove left endshield. For instructions, refer to header operator's manual.

Drill one 12.7 mm (1/2 in.) hole (A) on the back of the left endsheet as shown.

IMPORTANT:

Drill lower jack mounting hole (A) **ONLY**. Upper jack mounting hole (B) will be drilled once jack has been positioned using lower hole.

IMPORTANT:

Do **NOT** damage drive belt when drilling holes.

Table 2.2 Mounting Hole Spacing – FD75

Model	Mounting Hole Locations
FD75	218 mm (8 3/8 in.) from bottom of endshield

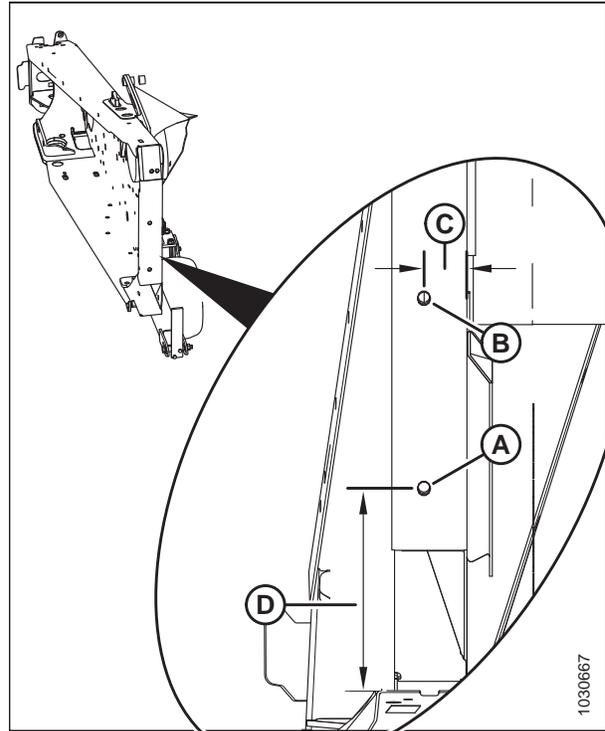


Figure 2.8: Jack Mounting Hole Locations, View from Rear – FD75

A - Lower Jack Mounting Hole
C - 47.6 mm (1 7/8 in.)

B - Upper Jack Mounting Hole
D - 218 mm (8 3/8 in.)

ASSEMBLY/SETUP INSTRUCTIONS

FD1 and FD70 Headers

Drill one 12.7 mm (1/2 in.) hole (A) on the back of the left endsheet as shown.

IMPORTANT:

Drill lower jack mounting hole (A) **ONLY**. Upper jack mounting hole (B) will be drilled once jack has been positioned using lower hole.

IMPORTANT:

Do **NOT** damage drive belt when drilling holes.

Table 2.3 Mounting Hole Spacing – FD1 and FD70

Model	Mounting Hole Locations
FD1 and FD70	69 mm (2 3/4 in.) from weld line

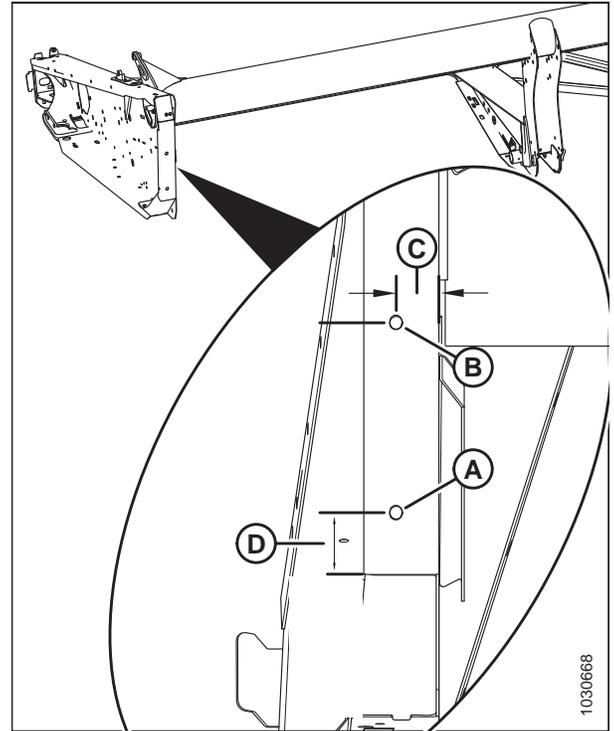


Figure 2.9: Jack Mounting Hole Locations, View from Rear – FD1/FD70

A - Lower Jack Mounting Hole
C - 47.6 mm (1 7/8 in.)

B - Upper Jack Mounting Hole
D - 69 mm (2 3/4 in.)

1. Secure left jack (A) onto endsheet using 1 inch hex head flange bolt (B) (MD #21449) and flange lock nut (C) (MD #50186) at lower hole (D) as shown.

NOTE:

Some part have been removed from the endshield assembly for clarity.

2. Ensure jack is parallel to the end of the header, and drill upper mounting hole (E) on the back of the endsheet. The hole should be 12.7 mm (1/2 in.) in diameter.
3. Install a 1 inch hex head flange bolt (B) (MD #21449) and flange lock nut (C) (MD #50186) at upper hole (E) as shown.

IMPORTANT:

Do **NOT** damage drive belt when drilling holes.

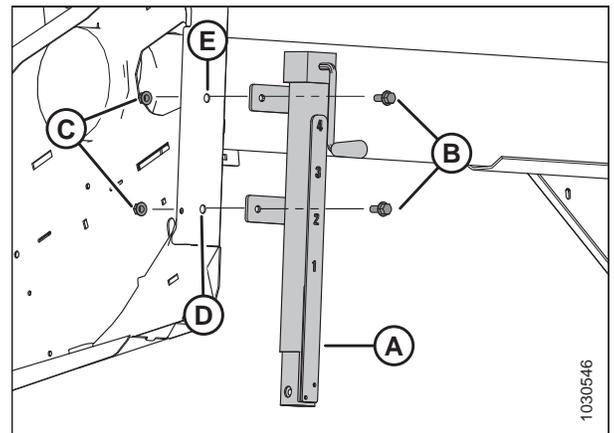


Figure 2.10: Jack Installation, View from Rear – FD75 Shown, FD1 Series Similar

ASSEMBLY/SETUP INSTRUCTIONS

- Remove lynch pin (A) and rod (B) from left outboard skid shoe. Retain lynch pin and rod for reinstallation.

NOTE:

Do **NOT** remove Belleville washers and hex lock nut (C) from outboard skid shoe (D).

- Remove wheel from outboard wheel assembly. For instructions, refer to [3.3.3 Removing Contour Buddy™ Wheel Assemblies](#), page 32.

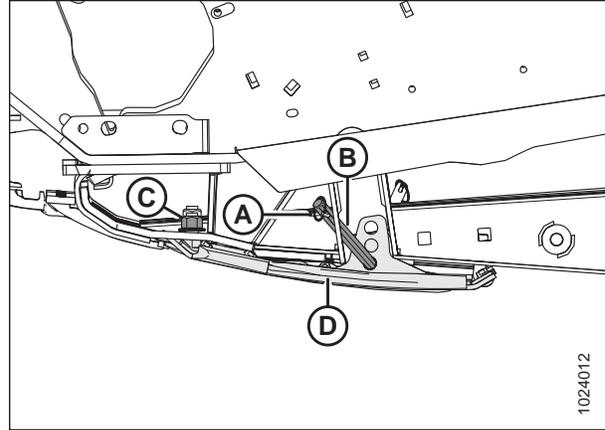


Figure 2.11: Outboard Skid Shoe – View from Left

- Position front connection of left outboard wheel assembly (A) between the lugs on the existing outboard skid shoe mount (B) underneath the header frame.
- Reinstall rod (C) and lynch pin (D) retained from Step 4, page 16.

NOTE:

Adjust height of outboard skid shoe as necessary to allow enough clearance for outboard wheel assembly to pivot. Skid shoe has been removed from the illustration at right for clarity.

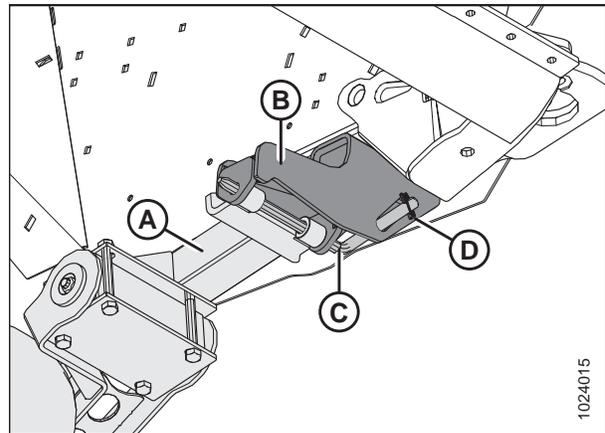


Figure 2.12: Outboard Wheel Assembly – View from Below

- Position rear connection of left outboard wheel assembly (B) on left jack (A) as shown.
- Install 4 inch hex head bolt (C) (MD #21589), two 1/2 inch hardened washers (D) (MD #135369), and 1/2 inch flange lock nut (E) (MD #50186) as shown. Tighten hardware snug, then back-off one turn.

NOTE:

Bolt should be able to slide in slot of outboard wheel assembly.

- Reinstall wheel from outboard wheel assembly that was removed in Step 5, page 16.

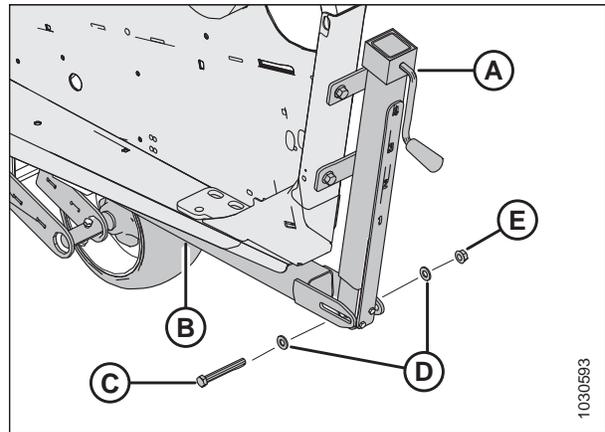


Figure 2.13: Jack and Outboard Wheel Assembly – View from Rear

ASSEMBLY/SETUP INSTRUCTIONS

NOTE:

Alignment of jack and outboard wheel assembly may be difficult. If necessary, loosen hardware (A) securing outboard skid shoe mount to endsheet to improve alignment, then tighten hardware (A) once hardware in Step 9, [page 16](#) has been installed.

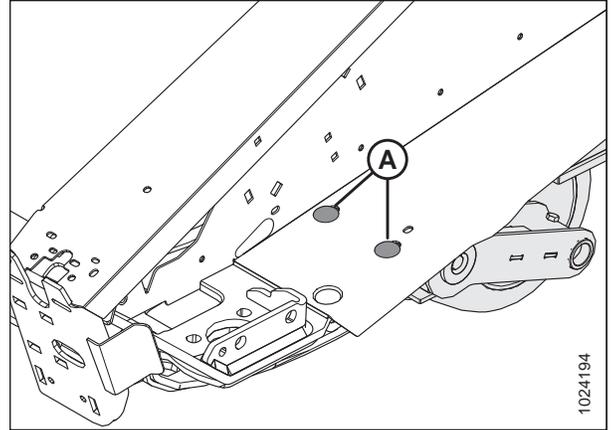


Figure 2.14: Outboard Skid Shoe Mount Hardware – View from Left

11. Reinstall and/or close left endshield. Refer to header operator's manual for procedure.
12. Repeat steps for the jack and outboard wheel assembly on the right side of the header.
13. Check and adjust header float. Refer to the header operator's manual for procedures.
14. Check and adjust header wing balance. Refer to the header operator's manual for procedures.

2.2.3 Installing Transport Light Extension Bracket – FD75 and FD1 Series FlexDraper® Headers

1. If divider rods (A) are in storage position, remove and store divider rods for installation at a later time. If divider rods are in field position, proceed to the next step.

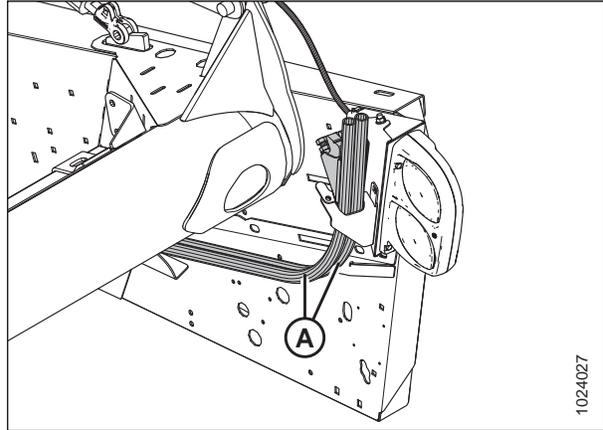


Figure 2.15: Divider Rods in Storage Position – View from Rear

2. Open or remove right endshield. For instructions, refer to the header operator's manual.

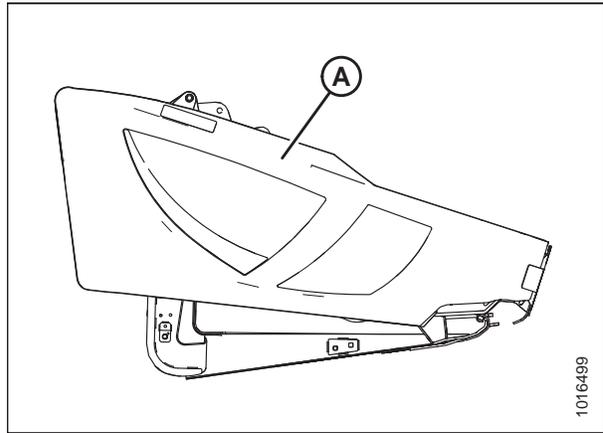


Figure 2.16: Right Endshield – FD1 Series Shown

3. Remove square neck carriage head bolts (A) and flange nuts securing rear transport light assembly (B) to the right endsheet. Retain hardware and light assembly for reinstallation.

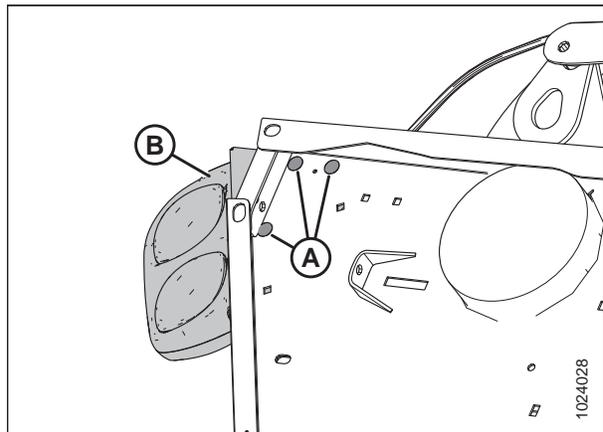


Figure 2.17: Rear Transport Light Assembly – View from Right

ASSEMBLY/SETUP INSTRUCTIONS

4. Install light extension bracket (A) (MD #304523) onto the right endsheet using two 1 inch square neck carriage head bolts (MD #100456) and two 3/8 inch flange nuts (B) (MD #21452) as shown.

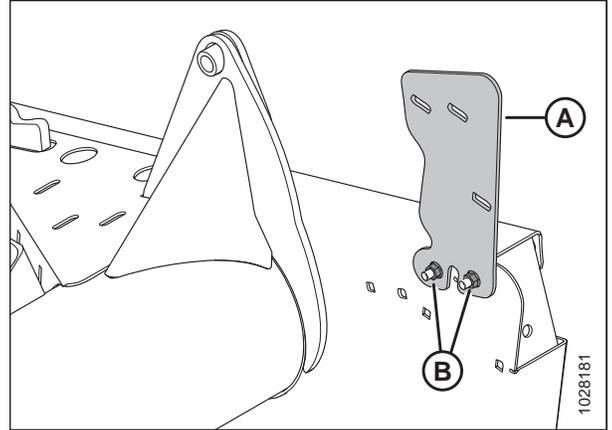


Figure 2.18: Transport Light Extension Bracket – View from Rear

5. Reinstall light assembly (A) onto extension bracket (B) using hardware (C) retained from Step 3, page 18.

NOTE:

Wiring harness P-clips may have to be removed and wiring harness may need to be adjusted to ensure enough of the harness loom reaches under the light cover. P-clips may be used to support the harness by using the adjacent hole.

NOTE:

Reel arm and transport light harness removed from illustration for clarity.

6. Close or reinstall right endshield. For instructions, refer to header operator's manual.

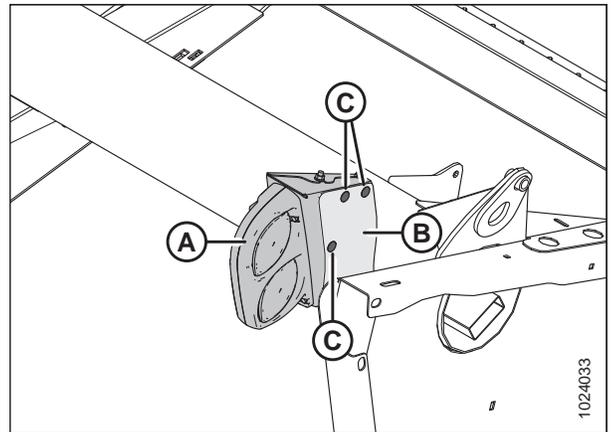


Figure 2.19: Rear Transport Light Assembly – View from Right

2.2.4 Installing Transport Light Extension Bracket – FD70 FlexDraper® Headers

NOTE:

Some parts have been removed from the illustrations for clarity.

1. If divider rods (A) are in storage position, remove and store divider rods for installation at a later time. If divider rods are in field position, proceed to the next step.

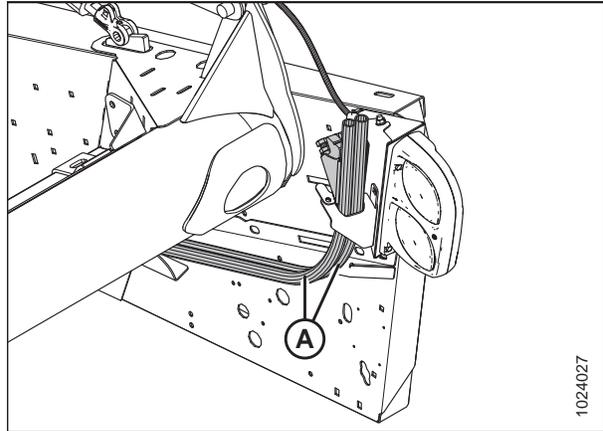


Figure 2.20: Divider Rods in Storage Position – View from Rear

2. Open right end shield (A).



Figure 2.21: Right Endshield

3. Remove square neck carriage head bolts (A) and flange nuts securing rear transport light assembly (B) to the right endsheet. Retain hardware and light assembly for reinstallation.
4. **Single-Knife Headers only:** Proceed to Step 10, page 22.

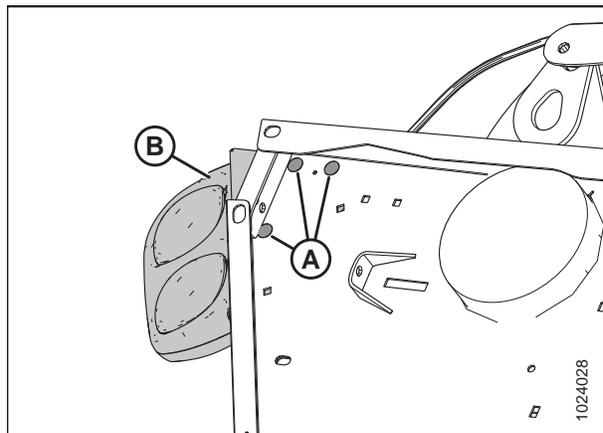


Figure 2.22: Rear Transport Light Assembly – View from Right

ASSEMBLY/SETUP INSTRUCTIONS

5. **Double-Knife Headers only:** Loosen bolts (A) holding motor assembly (B) tight to the header endsheet.

NOTE:

Motor mount assembly (B) includes the knife drive motor, the motor mount bracket visible through the holes in the header endsheet, and the pulley on the other side of the endsheet.

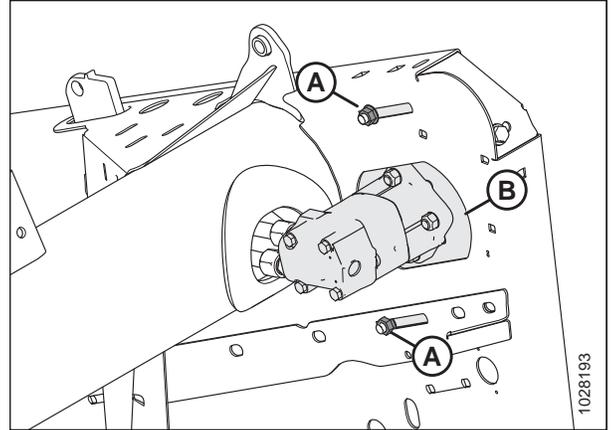


Figure 2.23: Knife Drive Motor – Double-Knife Header – View from Rear of Header

6. **Double-Knife Headers only:** On the other side of the header endsheet, loosen the tension on belt (A) by turning tensioning bolt (B) counterclockwise.
7. **Double-Knife Headers only:** Remove belt (A). Retain for reinstallation.

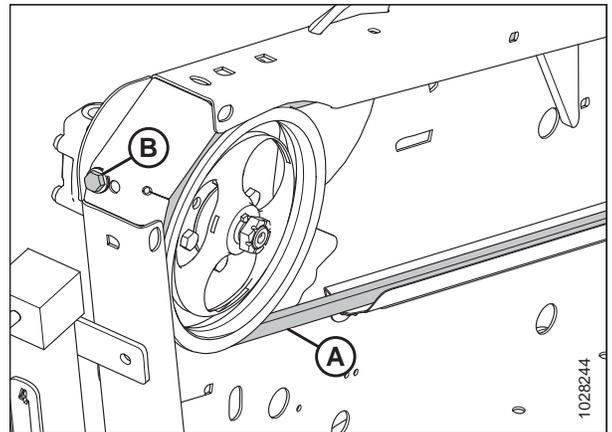


Figure 2.24: Knife Drive Belt and Pulley– Double-Knife Header – View from Rear

8. **Double-Knife Headers only:** Remove hardware (A) securing motor (B) to motor mount bracket (C), and then detach motor. Retain parts for reassembly.

NOTE:

There are four mounting locations (A), but only three are visible in the illustration. The fourth location is on the other side of the motor.

NOTE:

Motor mount bracket (C) is installed on the outboard side of the header endsheet. It is visible through the holes in the endsheet.

9. **Double-Knife Headers only:** Remove hardware (D) securing motor mount bracket (C) to the header endsheet, then remove the motor mount bracket. Retain parts for reassembly.

NOTE:

Leave the pulley attached to the other side of the motor mount bracket.

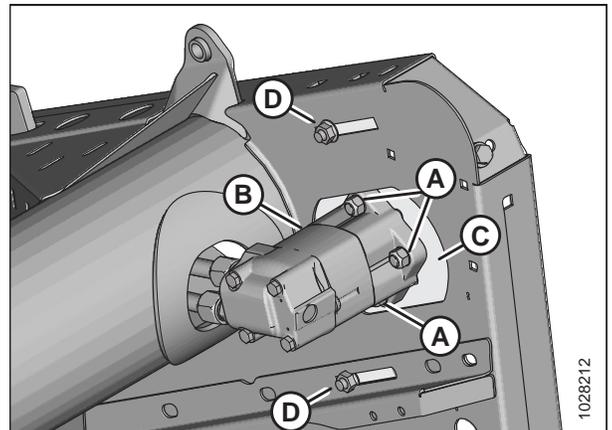


Figure 2.25: Knife Drive Motor– Double-Knife Header – View from Rear of Header

ASSEMBLY/SETUP INSTRUCTIONS

10. Position light extension bracket (A) (MD #304523) upright on the right endsheet. Secure the bracket to the right endsheet using a 1 inch square neck carriage bolt (MD #100456) and flange nut (B) (MD #21452).

NOTE:

Two 1/2 inch holes may need to be drilled if the holes do not line up correctly.

11. Holding bracket (A) in a vertical position and using it as a template, drill a 3/8 in. hole through the right endsheet at location (C).
12. Secure bracket (A) to the right end panel with a hex head bolt (MD #20077) and flange nut (MD #21452) at location (C).

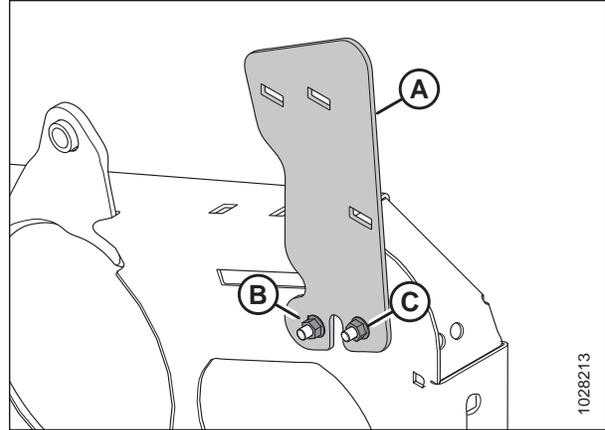


Figure 2.26: Transport Light Extension Bracket – View from Rear

13. Reinstall light assembly (A) onto extension bracket (B) using hardware (C) retained from Step 3, page 20.

NOTE:

Wiring harness P-clips may need to be removed and harness adjusted to ensure harness loom reaches under light cover. P-clips may be used to support the harness by using an adjacent hole.

NOTE:

Reel arm and transport light harness removed from illustration for clarity.

14. **Single-Knife Headers only:** Proceed to [2.3 Preparing Contour Buddy™ for Use, page 25](#).

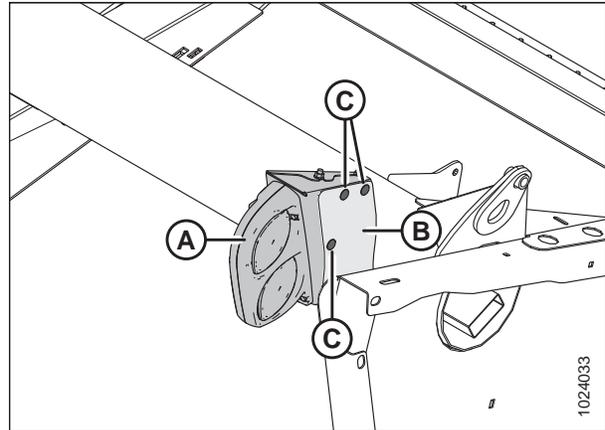


Figure 2.27: Rear Transport Light Assembly – View from Right

ASSEMBLY/SETUP INSTRUCTIONS

- Double-Knife Headers only:** Reinstall motor mount bracket (A) with attached pulley on header endsheet, and secure in place with hardware (B) retained from Step 9, page 21.
- Double-Knife Headers only:** Reinstall motor (C) on motor mount bracket (A) with hardware (D) retained from Step 8, page 21.

NOTE:

There are four mounting locations (D) holding motor (C) in place, but only three are visible in the illustration. The fourth location is on the other side of the motor.

NOTE:

Light assembly removed from illustration for clarity.

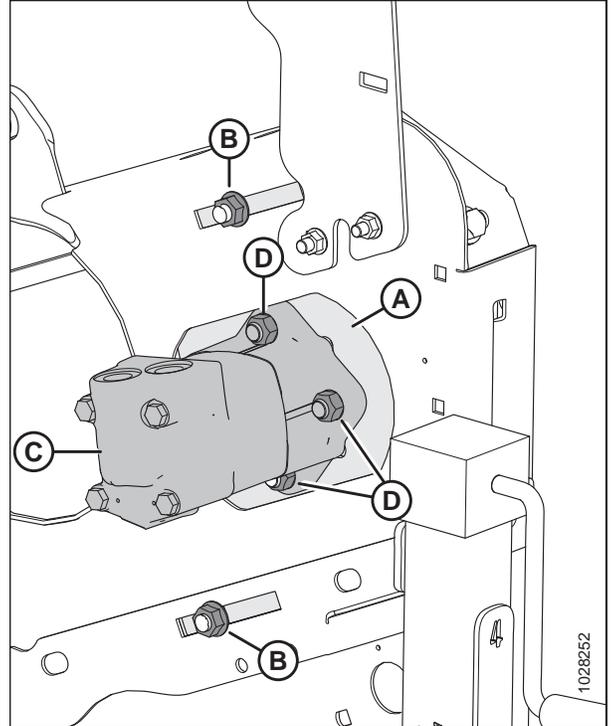


Figure 2.28: Knife Drive Motor– Double-Knife Header – View from Rear of Header

- Double-Knife Headers only:** Reinstall belt (A).

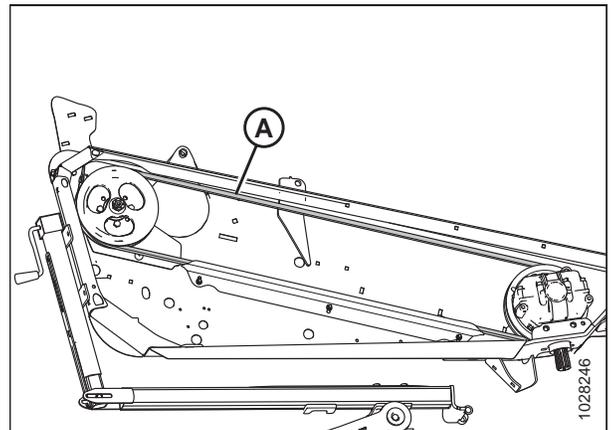


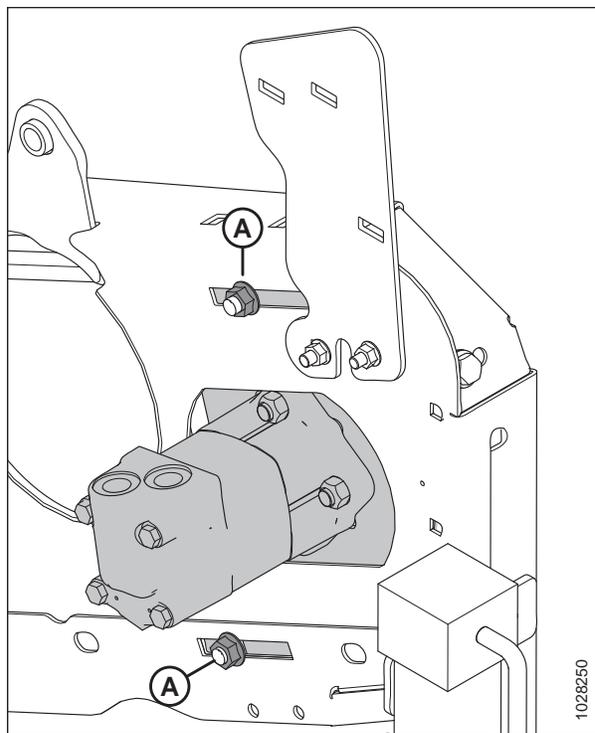
Figure 2.29: Right Side of Double-Knife Header

ASSEMBLY/SETUP INSTRUCTIONS

18. **Double-Knife Headers only:** Tighten bolts (A) securing the motor assembly to the header end sheet.

NOTE:

Light assembly removed from illustration for clarity.



**Figure 2.30: Knife Drive Motor– Double-Knife Header
– View from Rear of Header**

19. **Double-Knife Headers only:** Adjust belt tension. For instructions, refer to the header operator's manual.

2.3 Preparing Contour Buddy™ for Use

Once all parts have been installed, follow these steps to prepare Contour Buddy™ for use:

1. Close the header endshields. For instructions, refer to the header operator's manual.
2. Check and adjust the header float. For instructions, refer to the header operator's manual.
3. Check and adjust wing balance. For instructions, refer to the header operator's manual.

NOTE:

Skewing of the wheels is normal when ground pressure is applied.

Chapter 3: Operation

3.1 Owner/Operator Responsibilities



CAUTION

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

3.2 Operational Safety

CAUTION

Adhere to the following safety precautions:

- Follow all safety and operational instructions provided in your operator's manuals. If you do not have a combine manual, get one from your Dealer and read it thoroughly.
- Never attempt to start the engine or operate the machine except from the operators seat.
- Check the operation of all controls in a safe, clear area before starting work.
- Do NOT allow riders on the combine.

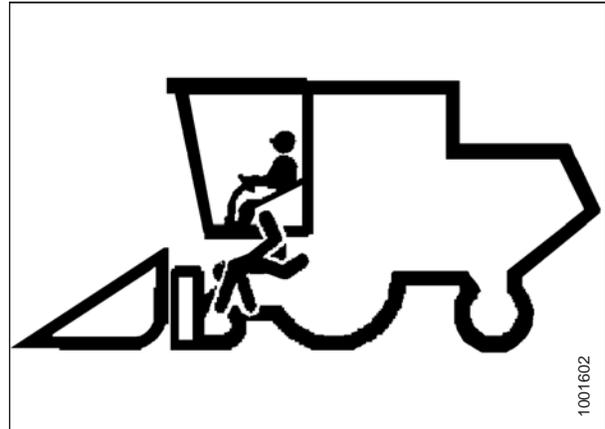


Figure 3.1: No Riders

CAUTION

- Never start or move the machine until you are sure all bystanders have cleared the area.
- Avoid travelling over loose fill, rocks, ditches, or holes.
- Drive slowly through gates and doorways.
- When working on inclines, travel uphill or downhill whenever possible. Be sure to keep transmission in gear when travelling downhill.
- Never attempt to get on or off a moving machine.
- Do NOT leave operator's station while the engine is running.
- To avoid bodily injury or death from unexpected startup of a machine, always stop the engine and remove the key before adjusting or removing plugged material from the machine.
- Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. For instructions, refer to the header operator's manual.
- Operate only in daylight or good artificial light.

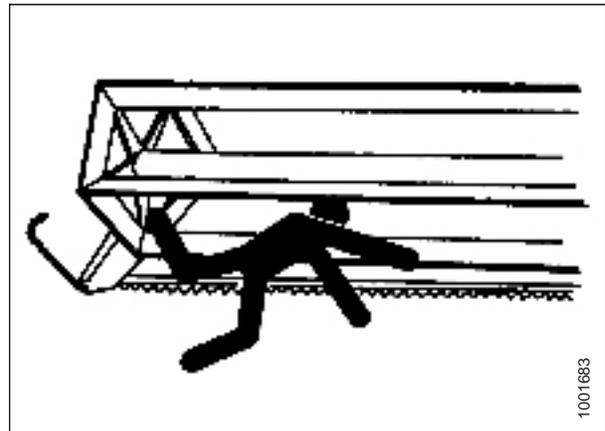


Figure 3.2: Bystander Safety

3.3 Adjusting Wheel Height

To adjust wheel height, follow these steps:

DANGER

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

1. Start combine, raise header fully, and engage safety props.
2. Stop engine and remove key from ignition.
3. Engage header safety props or support header on blocks on level ground. If using blocks to support header, ensure header is approximately 914 mm (36 in.) off the ground.
4. Perform the following procedures in order:
 - a. [3.3.1 Adjusting Inboard Wheel Height, page 29](#)
 - b. [3.3.2 Adjusting Outboard Wheel Height, page 31](#)

3.3.1 Adjusting Inboard Wheel Height

1. Support inboard axle support (A), and remove ring (B) and pin (C) to release rear of axle support. Retain ring and pin for reinstallation.

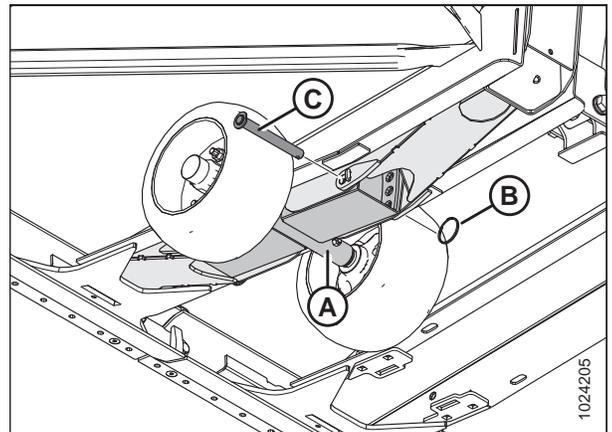


Figure 3.3: Inboard Wheel Assembly and Left Header Leg – View from Below, Right Opposite

OPERATION

NOTE:

Parts have been removed from the illustration at right for clarity.

2. Align the appropriate hole in inboard axle support (A) with axle frame support (B) to achieve desired inboard wheel height. Refer to Table 3.1, page 30.
3. Reinstall pin and ring removed in Step 1, page 29.
4. Repeat above procedure for opposite inboard wheel assembly.

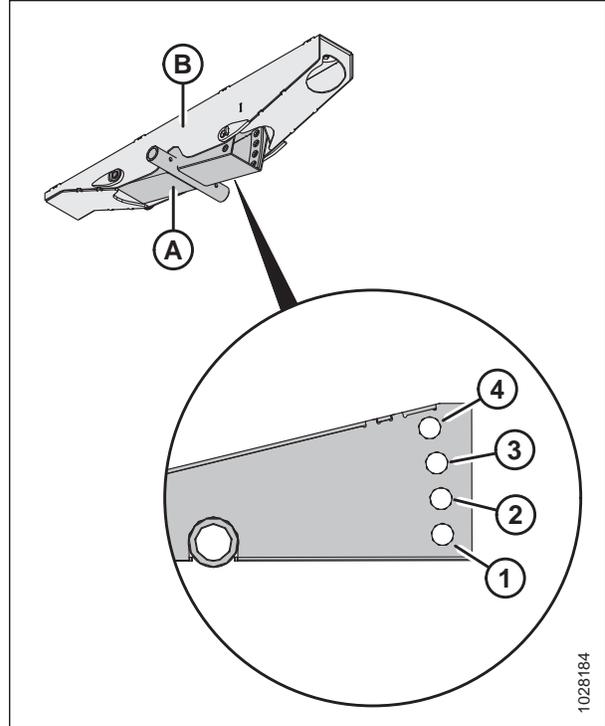


Figure 3.4: Inboard Axle Support – View from Below

Table 3.1 Inboard Wheel Height

Hole	Header Tilt Setting			
	A	B	C	D
1	228.6 mm (9.0 in.)	195.6 mm (7.7 in.)	160.0 mm (6.3 in.)	127.0 mm (5.0 in.)
2	236.2 mm (9.3 in.)	210.8 mm (8.3 in.)	177.8 mm (7.0 in.)	144.8 mm (5.7 in.)
3	261.6 mm (10.3 in.)	228.6 mm (9.0 in.)	195.6 mm (7.7 in.)	162.6 mm (6.4 in.)
4	279.4 mm (11.0 in.)	248.9 mm (9.8 in.)	210.8 mm (8.3 in.)	180.3 mm (7.1 in.)

NOTE:

Refer to Figure 3.4, page 30 for hole positions. Heights listed above may vary depending on soil conditions, weight of crop on header, and angle of feeder house faceplate relative to the ground.

OPERATION

3.3.2 Adjusting Outboard Wheel Height

1. Turn handle (A) on jack (B) clockwise to lower outboard wheel assembly (C), and counterclockwise to raise outboard wheel assembly.
2. Level the cutterbar by adjusting the outboard wheel assemblies up or down until the distance from the outboard ends of the cutterbar to the ground matches the distance from the center of the cutterbar to the ground.

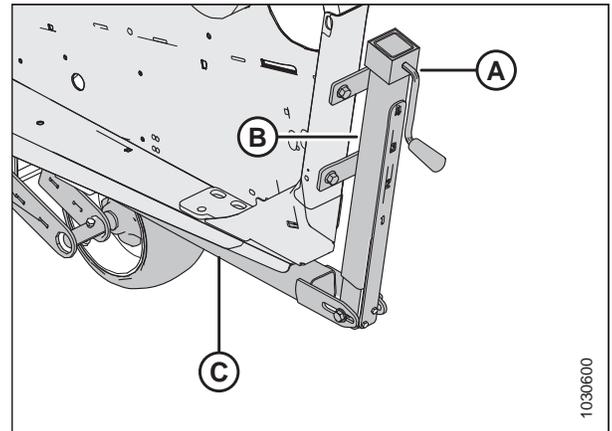


Figure 3.5: Jack and Outboard Wheel Assembly – View from Rear, Left Shown, Right Opposite

OPERATION

3.3.3 Removing Contour Buddy™ Wheel Assemblies

Removing inboard and outboard wheel assemblies may be required when using header in low crop conditions.

Inboard Wheels

1. To remove wheel assemblies, remove 1/2 inch hex head nut (C), channel washers (B), and 1 1/2 inch hex head bolt (A).

NOTE:

Wheels can be removed from assembly beforehand to lighten assembly during lowering.

NOTE:

The lower header frame brace removed from illustration for clarity.

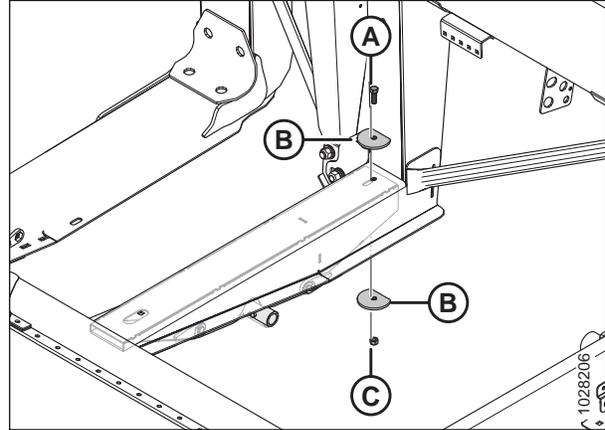


Figure 3.6: Inboard Arm Assembly and Left Header Leg – View from Above

2. Slide the front inboard arm assembly (A) out of front pocket (C) on the left header leg as shown.
3. Remove inboard arm assembly (A) from flex frame hinge (B).

NOTE:

To reinstall wheel assemblies, refer to [2.2.1 Installing Inboard Wheel Assemblies, page 11](#).

NOTE:

Header float and wing balance **MUST** be reset after removing or reinstalling wheel assemblies.

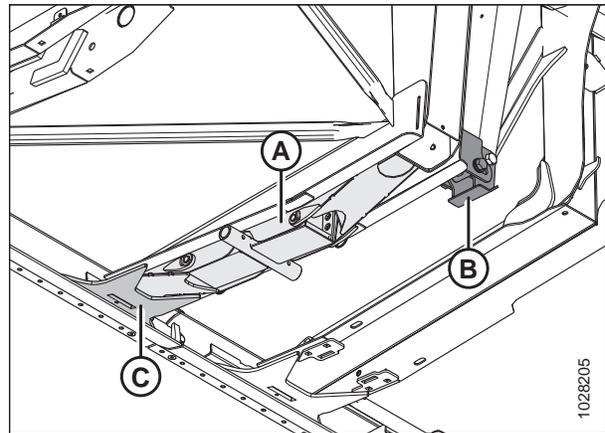


Figure 3.7: Inboard Arm Assembly Installed in Left Header Leg – View from Below

OPERATION

Outboard Wheels

4. Remove 1/2 inch flange locknut (E), 1/2 inch hardened washers (D), and 4 inch hex head bolt (C) from outboard wheel assembly (B) on left jack (A).

NOTE:

Outboard jacks (A) do not have to be removed when cutting in low crop conditions.

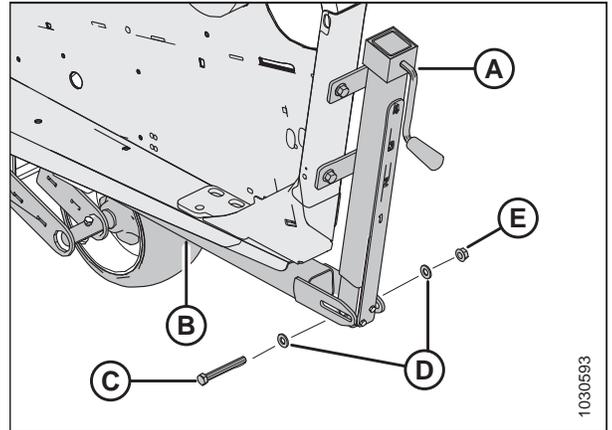


Figure 3.8: Jack and Outboard Wheel Assembly – View from Rear

5. Remove lynch pin (D) and rod (C).
6. Separate front connection of left outboard wheel assembly (A) from the lugs on the existing outboard skid shoe mount (B) underneath the header frame.

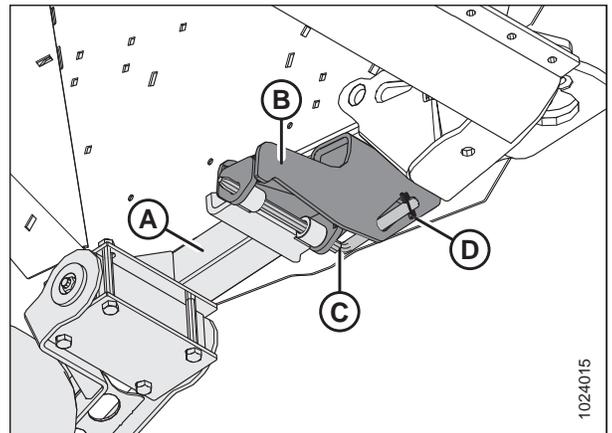


Figure 3.9: Outboard Wheel Assembly – View from Below

7. Install rod (B) and lynch pin (A) into left outboard skid shoe.

NOTE:

Do **NOT** remove Belleville washers and hex lock nut (C) from outboard skid shoe (D).

NOTE:

To reinstall wheel assemblies, refer to [2.2.2 Installing Outboard Wheel Assemblies and Jacks, page 14](#).

NOTE:

Header float and wing balance **MUST** be reset after removing or reinstalling wheel assemblies.

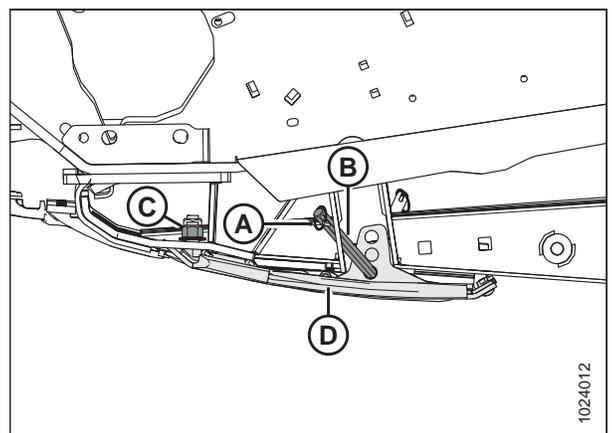


Figure 3.10: Outboard Skid Shoe – View from Left

Chapter 4: Maintenance

4.1 Lubricating Wheel Axles

Wheel axles should be lubricated annually. To lubricate wheel axles, follow these steps:

DANGER

To avoid bodily injury or death from unexpected startup or fall of raised header, stop engine, remove key, and engage safety props before going under header for any reason. If using a lifting vehicle, be sure header is secure before proceeding.

1. Use a lifting vehicle to raise header, or attach header to combine and fully raise header.
2. Stop engine and remove key from ignition.
3. Engage the header safety props or support the header on blocks on level ground. If using blocks to support the header, ensure the header is approximately 914 mm (36 in.) off the ground.
4. Locate wheel assembly (A).

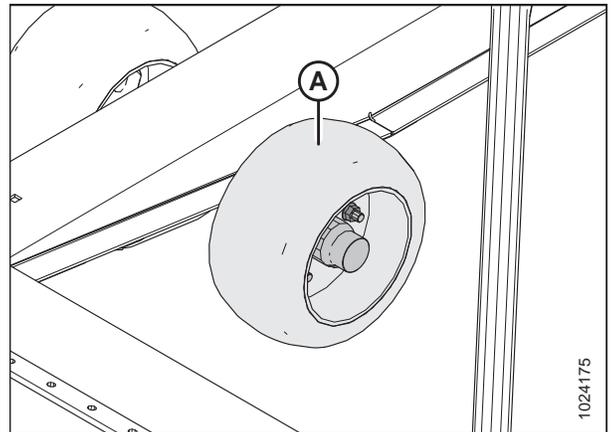


Figure 4.1: Wheel Assembly

5. Remove rubber plug (A). Retain plug for reinstallation.

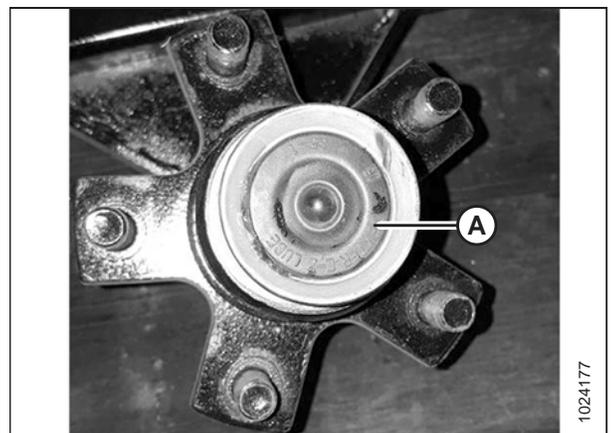


Figure 4.2: Rubber Plug on Wheel Axle

MAINTENANCE

IMPORTANT:

Grease **SLOWLY**. Rapid greasing may force rear seal to move.

6. Apply grease at lubrication point (A), and allow excess grease to flow out the front of the axle hub.
7. Reinstall rubber plug removed in Step 5, [page 35](#).
8. Repeat procedure for each wheel assembly as required.

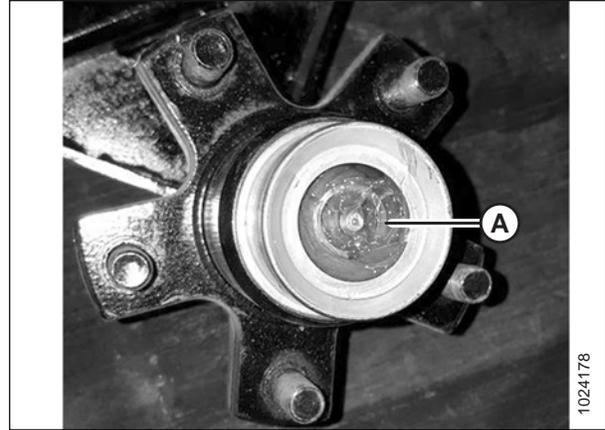


Figure 4.3: Lubrication Point on Wheel Axle

Chapter 5: Repair Parts

This chapter lists all the replacement parts that can be ordered for a Contour Buddy™.

Bold text is used to indicate updates made at the current revision level. With each new revision of the manual, previous revisions are returned to regular text.

In this manual, right and left are determined from the operator's position, facing forward with the machine in cab-forward position. An arrow is sometimes used in illustrations to indicate cab-forward position.

5.1 Abbreviations

The following abbreviations are used in this manual.

A/R – as required (quantity varies)
C/W – complete with
CSK – countersink
DK – double knife
DT – distorted thread
FLG – flange
I.D. – inside diameter
LH – left hand (determined from Operator's position, facing forward)
NC – national coarse thread
NF – national fine thread
NSS – not serviced separately
O.D. – outside diameter
OPT – optional
PT – pull-type (mower conditioner)
REF – reference, part number called up elsewhere in manual
RH – right hand (determined from Operator's position, facing forward)
RHSN – round head, square neck or square neck carriage bolt
RHSSN – round head, short, square neck
SMV – slow moving vehicle
SP – self-propelled (header)

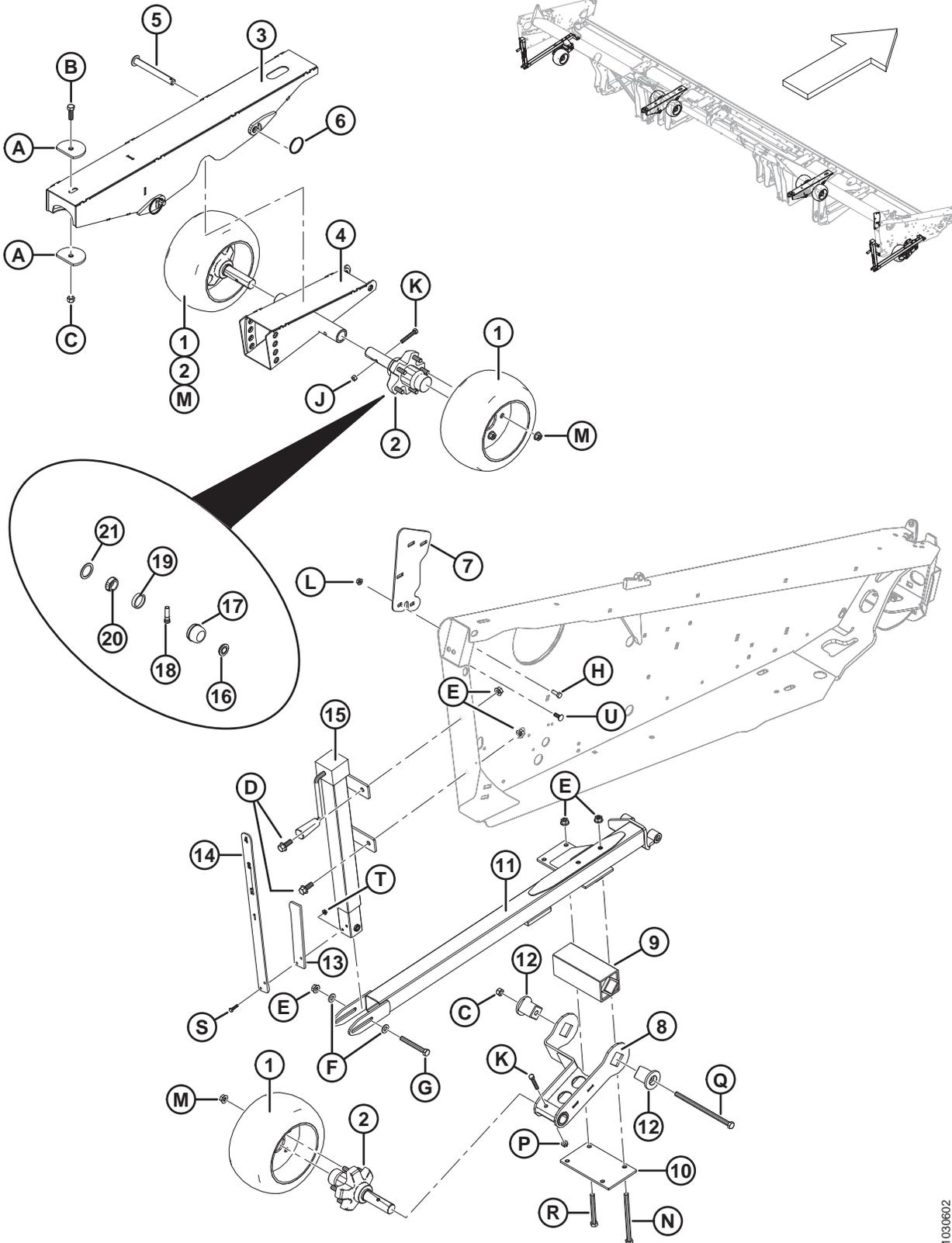
5.1.1 Serial Number Breaks

The side of the serial number on which the dash (–) appears determines whether the part is used "up to" or "after" the serial number given.

Example:

- –162249 Used on machines up to and including serial number 166249
- 166250– Used on machines including and after serial number 166250

5.2 Contour Buddy™ – Jacks and Wheel Assemblies



1030602

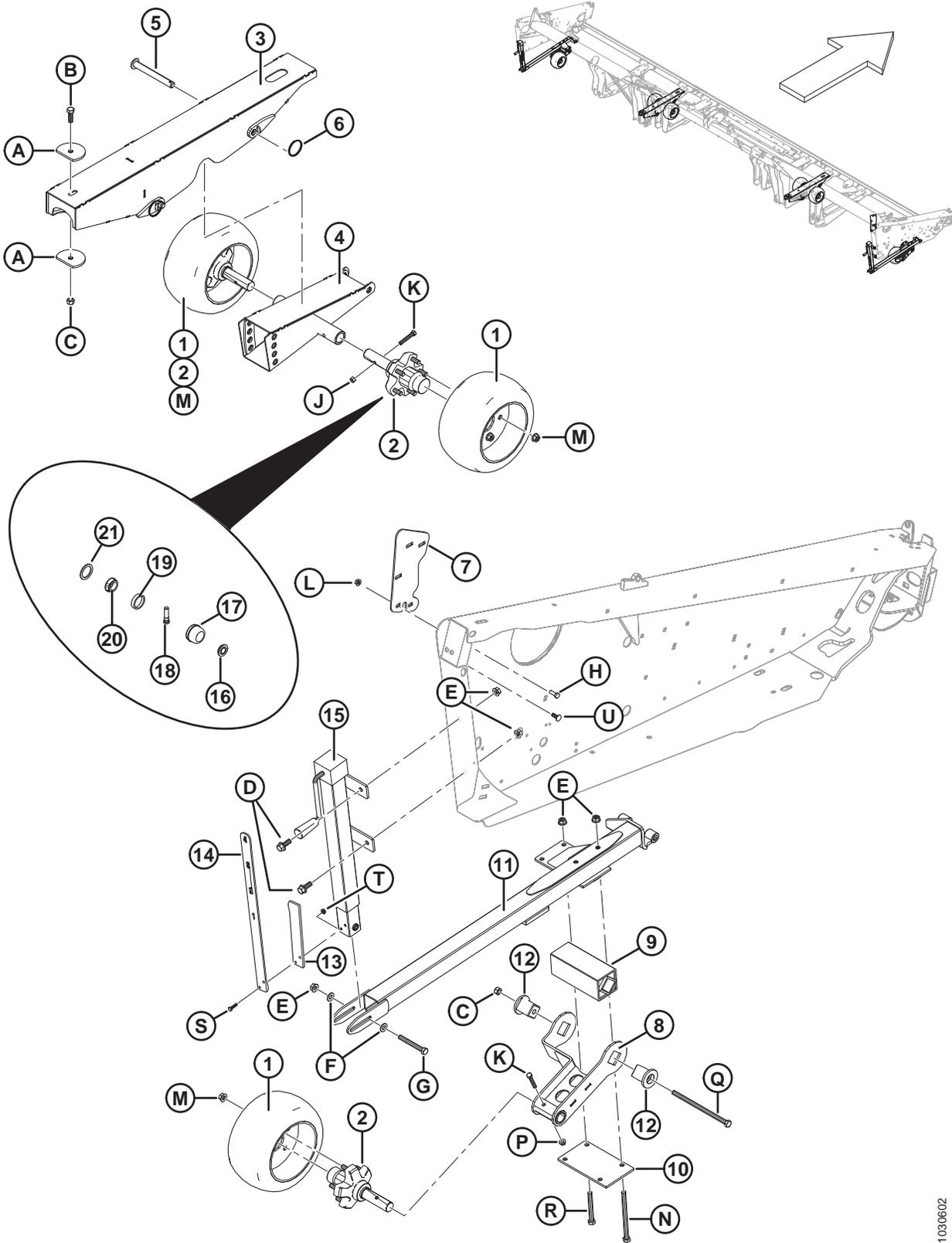
REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
	284618	KIT – CONTOUR BUDDY ¹		
1	284584	WHEEL – SOLID TIRE 6 X 8	6	
2	284583	HUB – AXLE 5 X 4.5 MACHINED	6	
3	284694	SUPPORT – AXLE FRAME	2	
4	284683	SUPPORT – INBOARD AXLE	2	
5	284675	PIN	4	
6	118137	RING	4	
7	304523	PLATE – LIGHT EXT. BRACKET	1	
8	284722	SUPPORT – LH ISOLATOR	1	
	284723	SUPPORT – RH ISOLATOR	1	
9	258054	HOUSING – TORSION ISOLATOR	2	
10	284568	PLATE – CLAMP	2	
11	284555	BEAM – LH	1	
	284576	BEAM – RH	1	
12	284688	RETAINER – ISOLATOR	4	
13	284699	SPACER – INDICATOR	2	
14	284700	PLATE – JACK SCALE	2	
15	284664	JACK – LH W/ CB DECAL ²	1	
	284665	JACK – RH W/ CB DECAL ²	1	
16	284705	PLUG – RUBBER	1	
17	284706	CAP – EZ LUBE	1	
18	284707	STUD	1	
19	284708	BEARING – CUP, 47 MM	1	
20	284709	BEARING – CONE, 44 MM	1	
21	284710	SEAL	1	
A	284602	WASHER – CHANNEL	4	
B	252641	BOLT – HH 1/2-13 X 1.5-GR8-AA3L	2	
C	18697	NUT – HEX LOCK DT .500-13 UNC	4	
D	21449	BOLT – HEX FLG HD 1/2–13 UNC X 1 IN. GR 5 AA1J	4	
E	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13 UNC GR 5	14	
F	135369	WASHER – HARDENED ASTM F436 1/2	4	
G	21589	BOLT – HH 1/2 NC X 4.0 LG GR 5 ZP	2	
H	100456	BOLT – RHSSN 3/8 NC X 1.0 GR 5 ZP	2	
J	135511	NUT – CENTER LOCK .375-16 UNC GR 5 ZP	4	

1. Includes all listed parts and hardware. For decals, refer to Section *5.3 Contour Buddy™ – Decals, page 42*.

2. Includes Contour Buddy Decal. Refer to Section *5.3 Contour Buddy™ – Decals, page 42*.

REPAIR PARTS

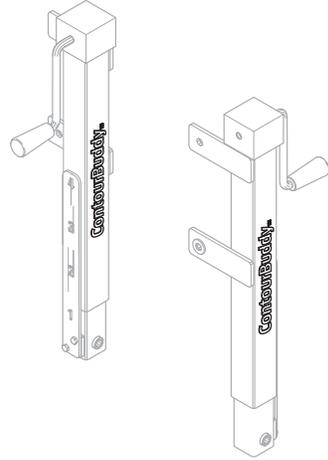


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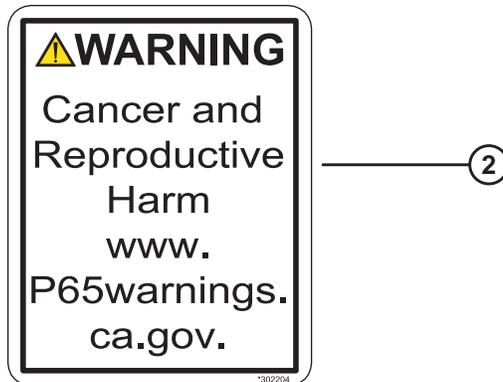
REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
K	20055	BOLT – HH 3/8 NC X 2.25 LG GR 5 ZP	6	
L	21452	NUT – FLANGE (SER FACE) .375-16 UNC	2	
M	188470	NUT – FLANGE LOCK SM FACE DT 0.500-20 UNF GR G	30	
N	50009	BOLT – HH 1/2 NC X 7.0 LG GR 5 ZP	4	
P	30228	NUT – FLANGE DT SMOOTH FACE 0.375-16 UNC	2	
Q	109091	BOLT – HH 1/2 NC X 9.0 LG GR 5 ZP	2	
R	30209	BOLT – HH 1/2 NC X 4.5 LG GR 5 ZP	4	
S	21573	BOLT – HEX HD 1/4 NC X 1.0 LG GR 5 ZP	4	
T	135248	NUT – HEX FLG CTR LOC	4	
U	20077	BOLT – HEX HD TFL 3/8–16 UNC X 1 IN. GR5 AA1J (for FD70 Double-Knife Headers only)	1	

5.3 Contour Buddy™ – Decals



①
*Contour***Buddy™**



REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
	284618	KIT – CONTOUR BUDDY ³	1	
1	284663	DECAL – CONTOUR BUDDY	2	
2	302204	DECAL – CA PROPOSITION 65	1	

3. Includes all listed parts. For jacks and wheel assemblies, refer to Section *5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 38*.

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

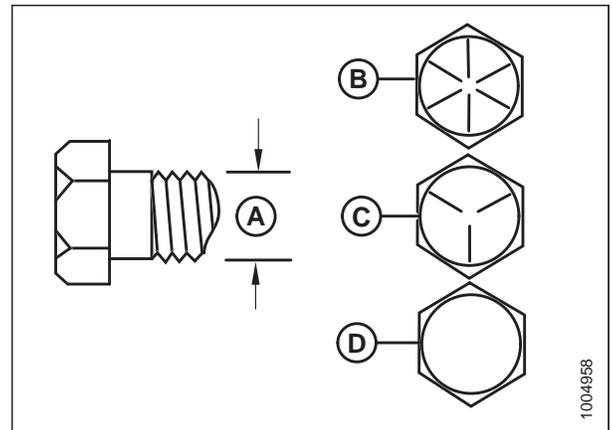


Figure 6.1: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

REFERENCE

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

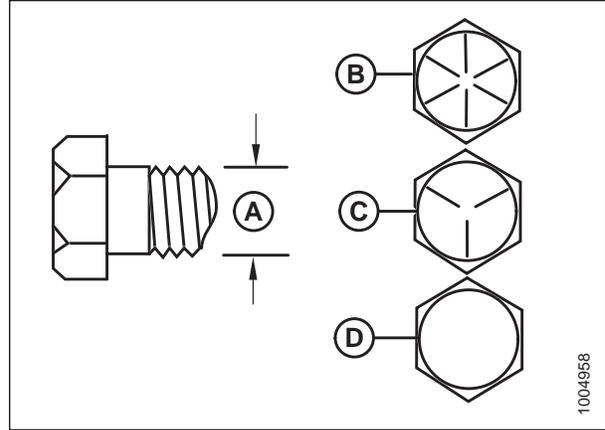


Figure 6.2: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
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

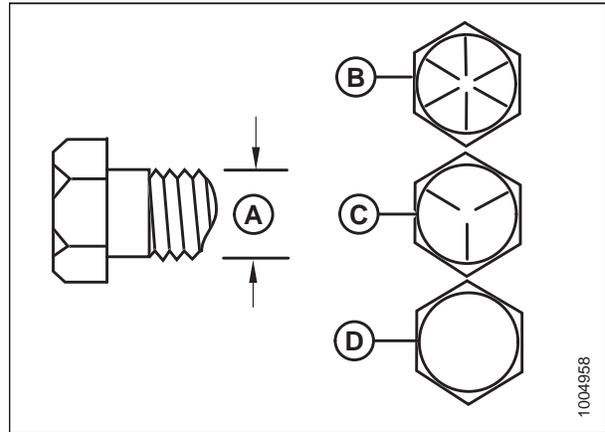


Figure 6.3: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

REFERENCE

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

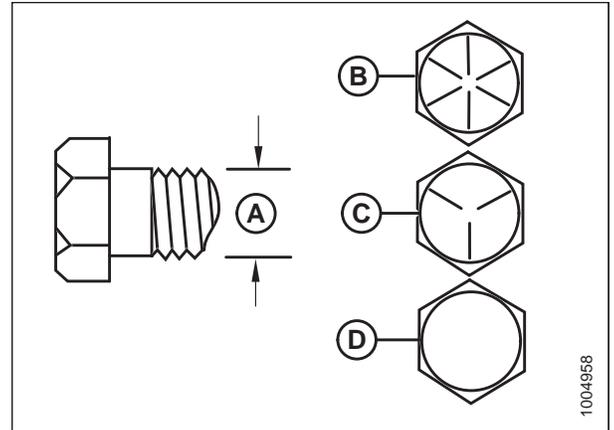


Figure 6.4: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
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

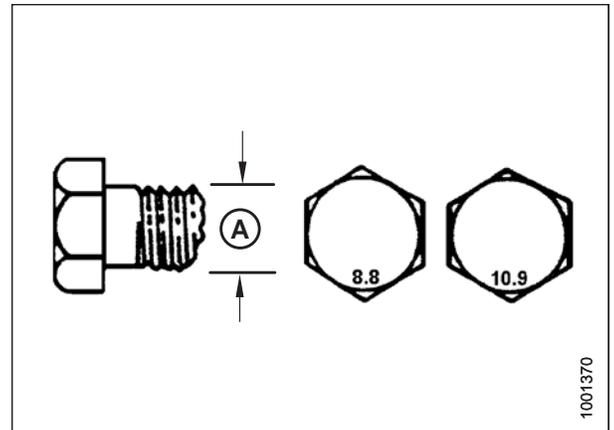


Figure 6.5: Bolt Grades

REFERENCE

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

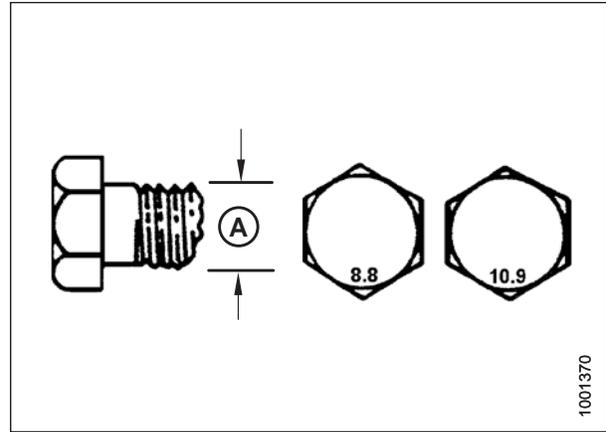


Figure 6.6: Bolt Grades

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

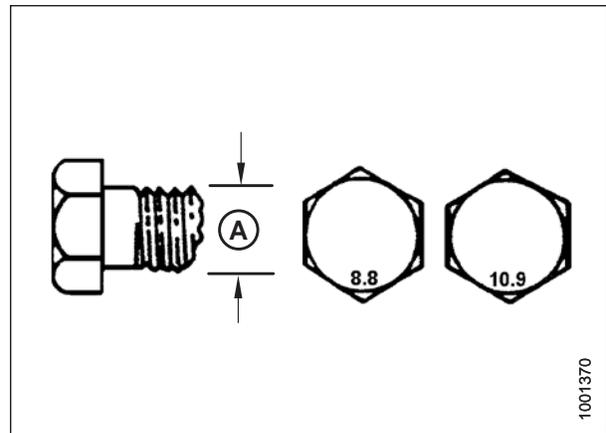


Figure 6.7: Bolt Grades

REFERENCE

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

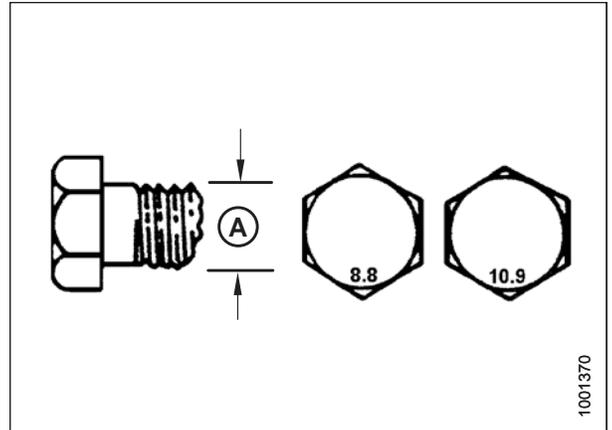


Figure 6.8: Bolt Grades

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	-	-	-	-

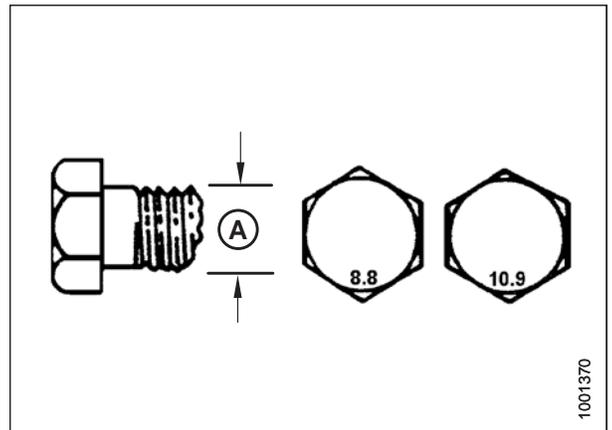


Figure 6.9: Bolt Grades

6.1.4 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).

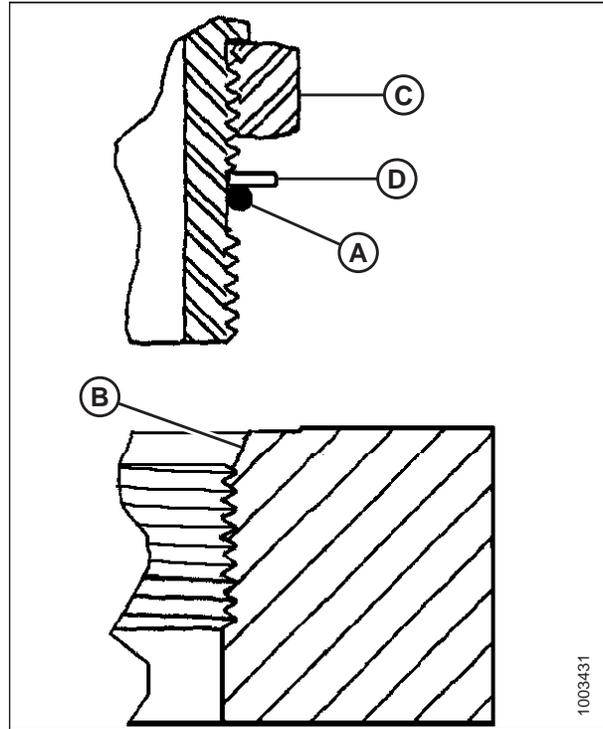


Figure 6.10: Hydraulic Fitting

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.

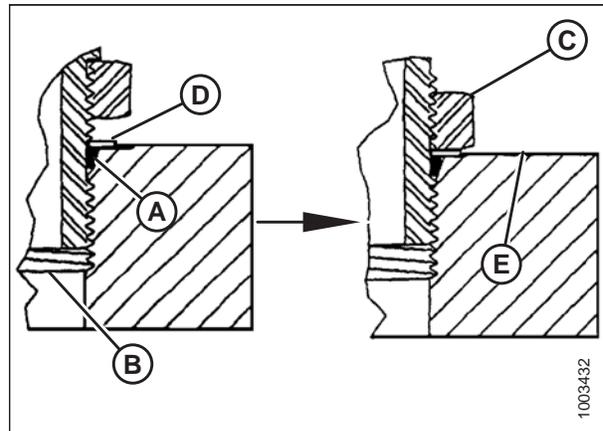


Figure 6.11: Hydraulic Fitting

REFERENCE

Table 6.10 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ⁴	
		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

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

REFERENCE

6.1.5 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 6.11, page 52.
6. Check final condition of fitting.

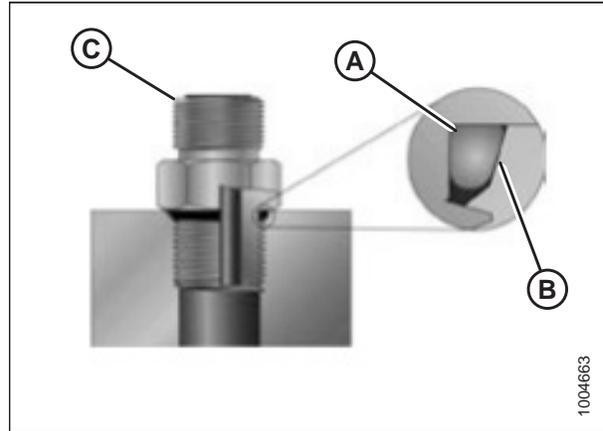


Figure 6.12: Hydraulic Fitting

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

SAE Dash Size	Thread Size (in.)	Torque Value ⁵	
		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

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

REFERENCE

6.1.6 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 6.13: 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 6.12, page 53.

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.

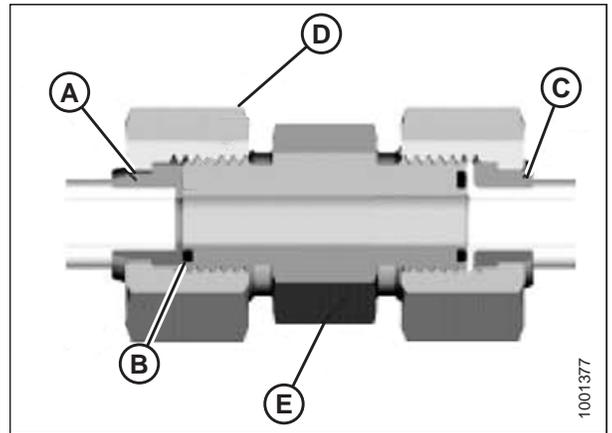


Figure 6.14: Hydraulic Fitting

Table 6.12 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁶	
			Nm	lbf-ft
-3	Note ⁷	3/16	-	-
-4	9/16	1/4	25-28	18-21
-5	Note ⁷	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 ⁷	7/8	-	-

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

7. O-ring face seal type end not defined for this tube size.

REFERENCE

Table 6.12 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁸	
			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

6.1.7 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 6.13, page 54. 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 6.13 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

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

6.2 Conversion Chart

Table 6.14 Conversion Chart

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

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Preelivery Checklist

Perform these checks and adjustments prior to delivery to your Customer. 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.

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping material is removed.	<i>2.1 Unloading Contour Buddy™, page 9</i>
	Check for loose hardware. Tighten to required torque.	<i>6.1 Torque Specifications, page 45</i>
	Adjust inboard wheel height.	<i>3.3.1 Adjusting Inboard Wheel Height, page 29</i>
	Adjust outboard wheel height.	<i>3.3.2 Adjusting Outboard Wheel Height, page 31</i>
	Check and adjust header float.	Refer to header operator's manual.
	Check and adjust header wing balance.	Refer to header operator's manual.

Date Checked:

Checked by:

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Printed in Canada