



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

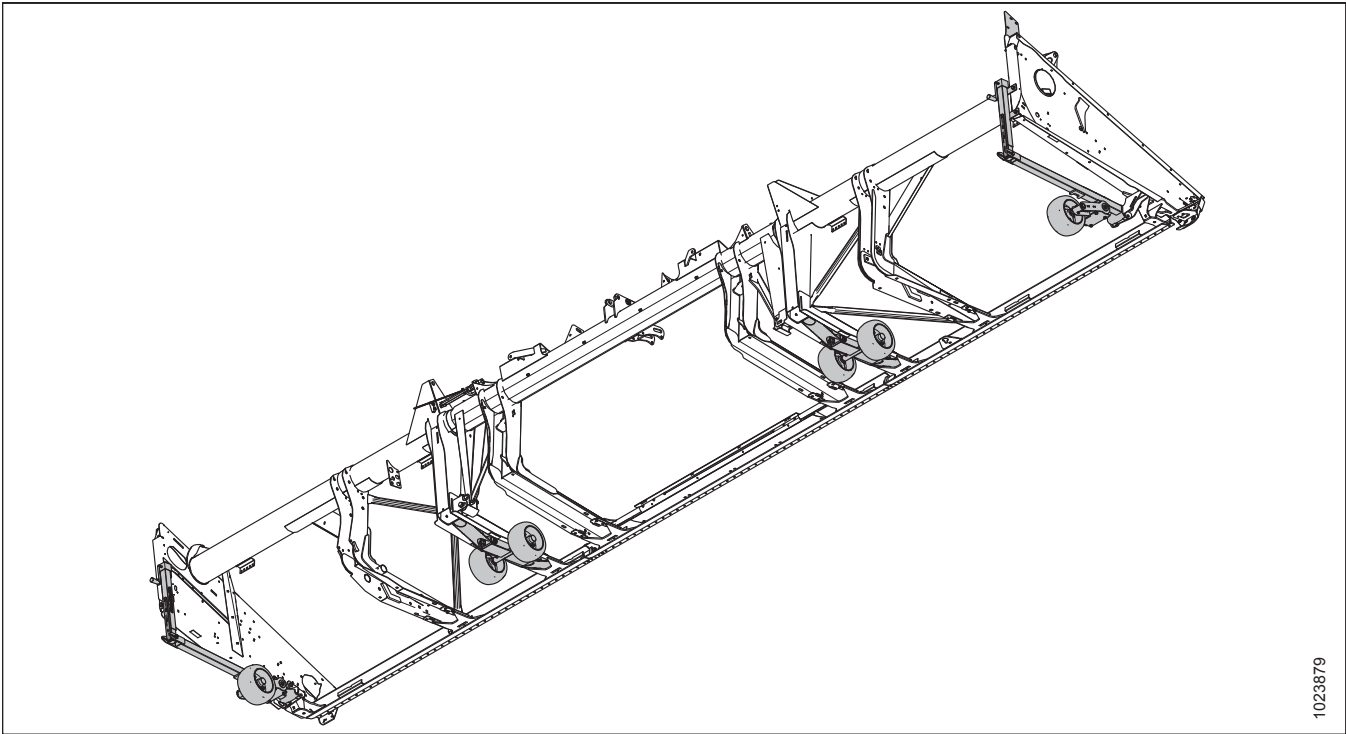
Setup, Operation, and Parts Manual

214513 Revision C

Original Instruction

***ContourBuddy.com***

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



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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 allows 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 machine function and machine life and may result in a hazardous situation.

### ***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.

### **NOTE:**

This document is currently available in English only.

## List of Revisions

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.

| Summary of Change                                                                                                                                                                                                                                                                                                                                                                                                     | Location                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Added references to FD70 FlexDraper® Headers.                                                                                                                                                                                                                                                                                                                                                                         | Throughout.                                                                                                           |
| Added explanations of IMPORTANT and NOTE.                                                                                                                                                                                                                                                                                                                                                                             | <a href="#">1.2 Signal Words, page 2</a>                                                                              |
| Reordered steps and updated illustrations to match.                                                                                                                                                                                                                                                                                                                                                                   | <a href="#">2.2.1 Installing Inboard Wheel Assemblies, page 11</a>                                                    |
| <ul style="list-style-type: none"> <li>Replaced bolt MD #135965 with bolt MD #21449.</li> <li>Added important notes warning not to damage drive belt.</li> <li>Revised mounting hole location.</li> </ul>                                                                                                                                                                                                             | <a href="#">2.2.2 Installing Outboard Wheel Assemblies and Jacks, page 14</a>                                         |
| Replaced bracket MD #284579 with bracket MD #304523 and reduced quantity of attachment hardware. Updated illustration to match.                                                                                                                                                                                                                                                                                       | <a href="#">2.2.3 Installing Transport Light Extension Bracket – FD75 and FD1 Series FlexDraper® Headers, page 16</a> |
| Added topic.                                                                                                                                                                                                                                                                                                                                                                                                          | <a href="#">2.2.4 Installing Transport Light Extension Bracket – FD70 FlexDraper® Headers, page 18</a>                |
| Added topic.                                                                                                                                                                                                                                                                                                                                                                                                          | <a href="#">2.3 Preparing Contour Buddy™ for Use, page 23</a>                                                         |
| Updated illustration so that holes are labelled with numbers, not letters.                                                                                                                                                                                                                                                                                                                                            | <a href="#">3.3.1 Adjusting Inboard Wheel Height, page 27</a>                                                         |
| Removed reference to indicator numbers and added instruction to level the cutterbar.                                                                                                                                                                                                                                                                                                                                  | <a href="#">3.3.2 Adjusting Outboard Wheel Height, page 29</a>                                                        |
| <ul style="list-style-type: none"> <li>Replaced plate MD #284579 with plate MD #304523.</li> <li>Replaced spacer MD #284595 with spacer MD #284699.</li> <li>Replaced plate MD #284596 with plate MD 3284700.</li> <li>Replaced bolts MD #135965 with bolt MD #21449.</li> <li>Changed quantities of bolt MD #100456 and nut MD #21452 to two.</li> <li>Added bolt MD #2007 for FD70 Double-Knife Headers.</li> </ul> | <a href="#">5.2 Contour Buddy™ – Jacks and Wheel Assemblies, page 34</a>                                              |

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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 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.

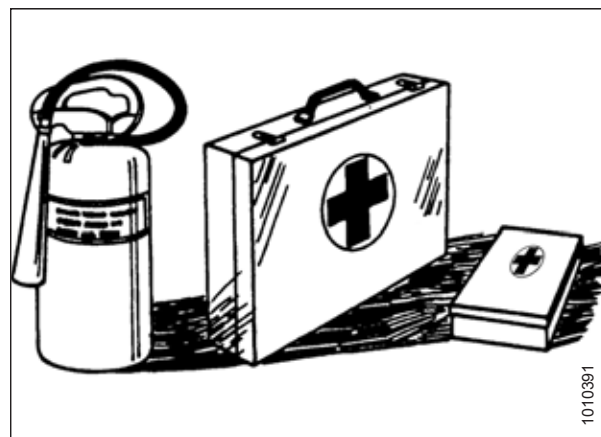


Figure 1.4: Safety Equipment

## 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 engine is running.
- Do **NOT** modify machine. Unauthorized modifications may impair machine function and/or safety. It may also shorten machine's life.
- To avoid injury or death from unexpected startup of machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

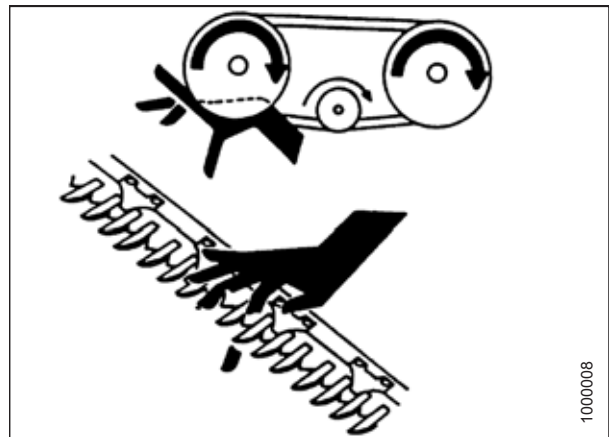


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

## 1.4 Maintenance Safety

To ensure your safety while maintaining machine:

- Review operator's manual and all safety items before operation and/or maintenance of 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 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 area of bystanders, especially children, when carrying out any maintenance, repairs, or adjustments.
- Install transport lock or place safety stands under frame before working under machine.
- If more than one person is servicing machine at 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 machine.
- Wear heavy gloves when working on knife components.



Figure 1.8: Safety around Equipment

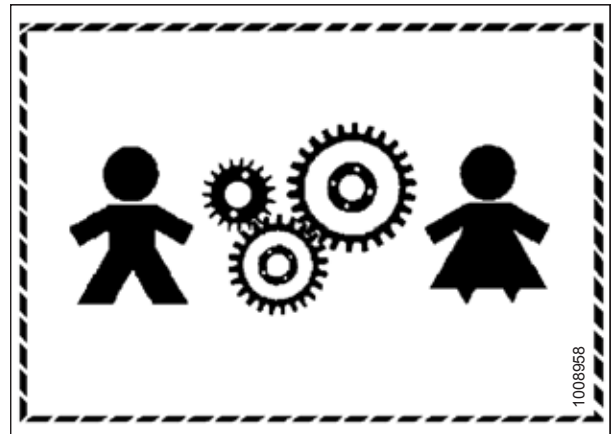


Figure 1.9: Equipment NOT Safe for Children



Figure 1.10: Safety Equipment

## 1.5 Hydraulic Safety

- Always place all hydraulic controls in Neutral before dismounting.
- Make sure that all components in 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.

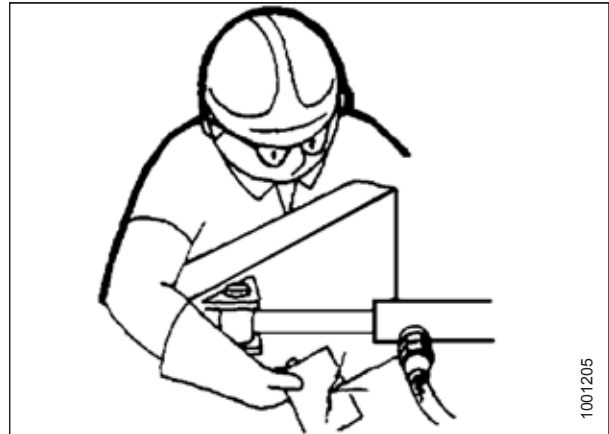


Figure 1.11: Testing for Hydraulic Leaks

- 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.

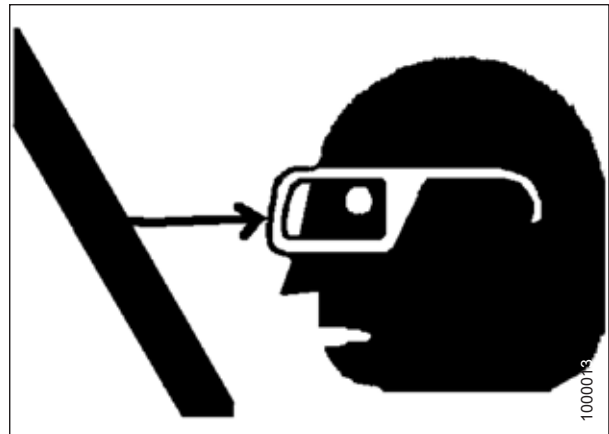


Figure 1.13: Safety around Equipment

## 1.6 Tire Safety

### WARNING

- Service tires safely.
- 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.

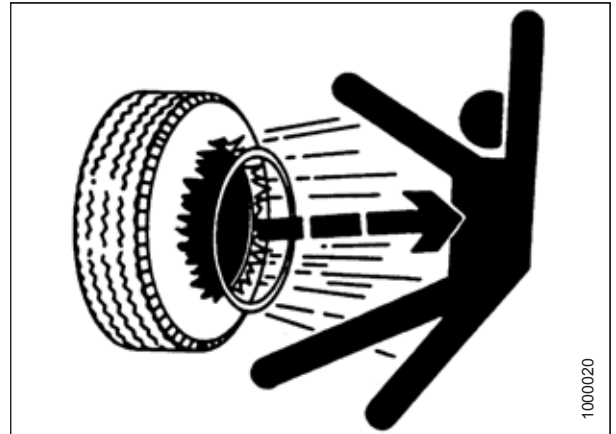


Figure 1.14: Overinflated Tire

### WARNING

- Do NOT stand over tire. Use a clip-on chuck and extension hose.
- Do NOT exceed maximum inflation pressure indicated on tire label.
- Replace tires that have defects.
- Replace wheel rims that are cracked, worn, or severely rusted.
- Never weld a wheel rim.
- Never use force on an inflated or partially inflated tire.
- 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.
- Make sure all air is removed from the tire before removing the tire from the rim.
- 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.

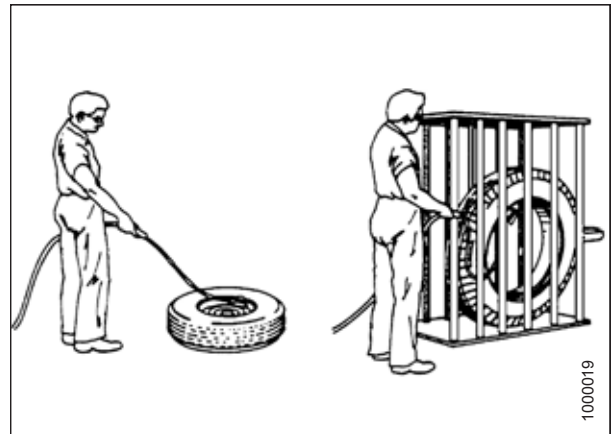


Figure 1.15: Safely Inflating Tire

## 1.7 Safety Signs

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or illegible.
- If 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.
- Safety signs are available from your Dealer.

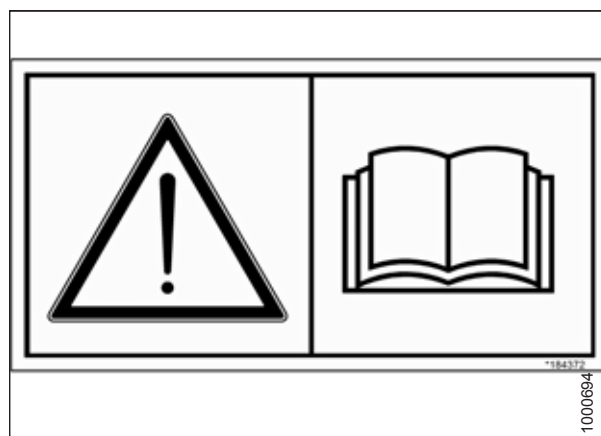


Figure 1.16: Operator's Manual Decal

### 1.7.1 Installing Safety Decals

1. Clean and dry installation area.
2. Decide on exact location before you remove decal backing paper.
3. Remove smaller portion of split backing paper.
4. Place decal in position and slowly peel back remaining paper, smoothing 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:

#### CAUTION

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

#### CAUTION

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

#### 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.

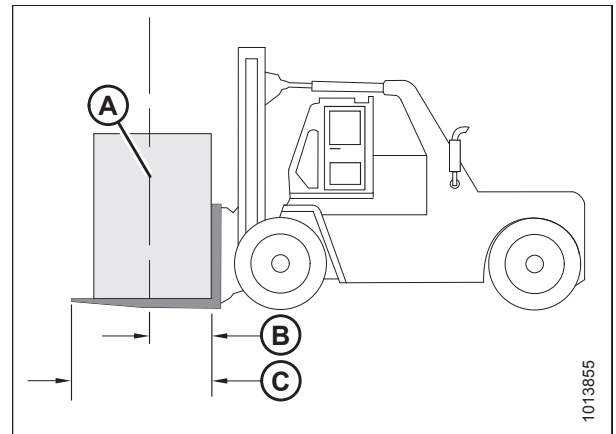


Figure 2.1: Minimum Lifting Capacity

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

Table 2.1 Lifting Vehicle

|                     |                   |
|---------------------|-------------------|
| Minimum Capacity    | 908 kg (2000 lb.) |
| Minimum Fork Length | 198 cm (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.

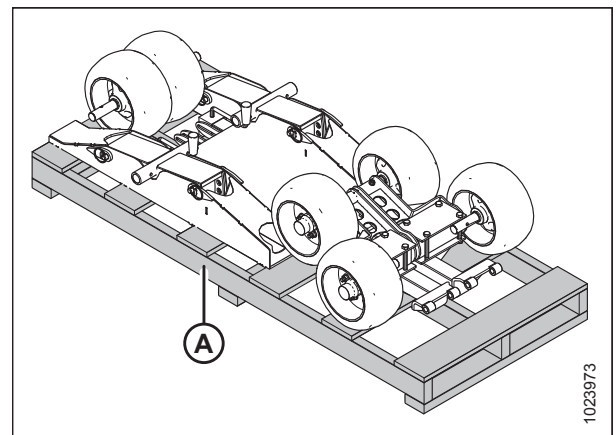
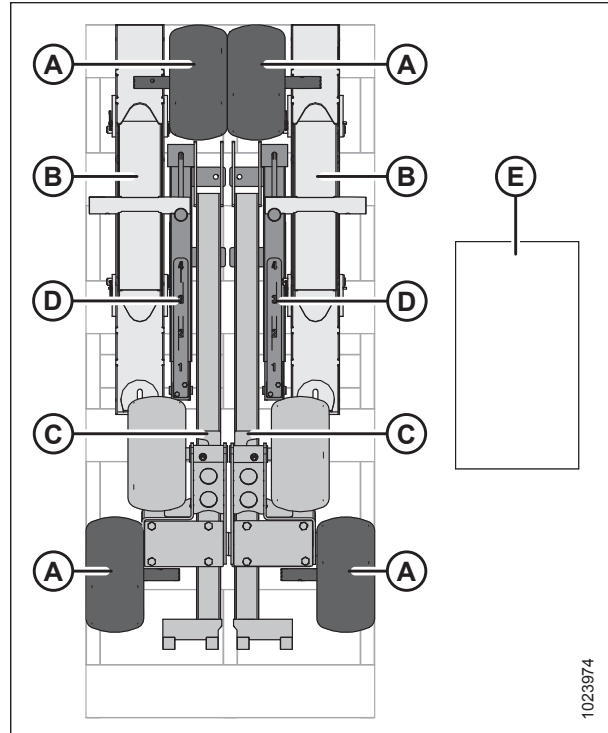


Figure 2.2: Pallet

## 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.
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 16](#)

### 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.

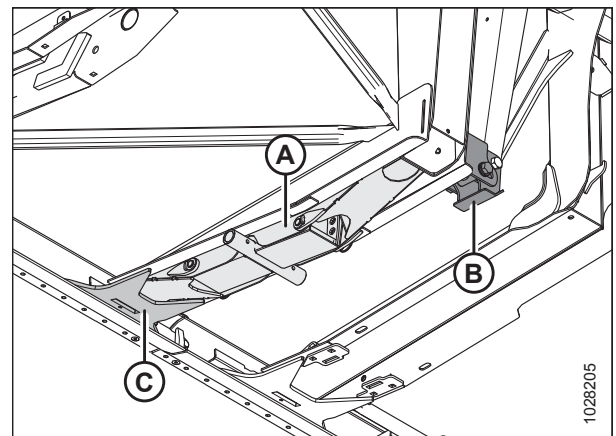


Figure 2.4: Inboard Arm Assembly Installed in Left Header Leg – View from Below

## ASSEMBLY/SETUP INSTRUCTIONS

3. Attach inboard arm assembly to the left header leg with one hex head bolt (A) (MD #252641), two channel washers (B) (MD #284602), and one hex lock nut (C) (MD #18697) as shown. Channel washers and hardware are shipped in a separate bag with the kit.

### NOTE:

Lower header frame brace removed from illustration for clarity.

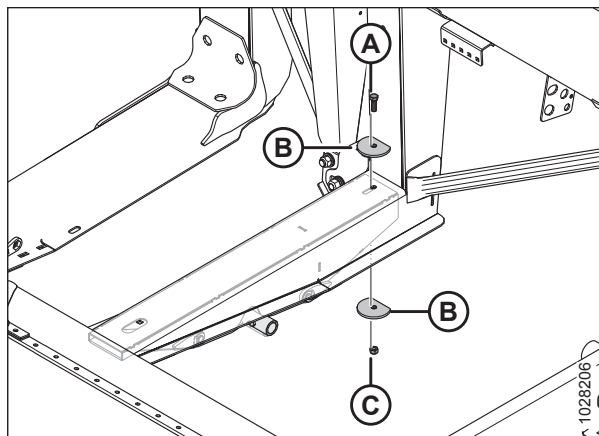


Figure 2.5: Inboard Arm Assembly and Left Header Leg – View from Above

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 hex head bolt (C) (MD #20055) and center lock nut (D) (MD #135511). Hardware is shipped in a separate bag with the kit.
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).

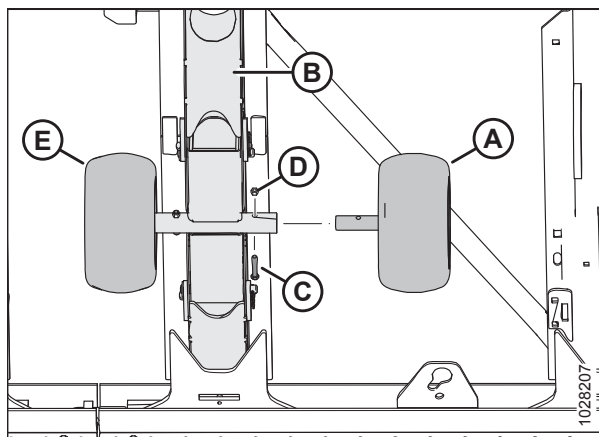
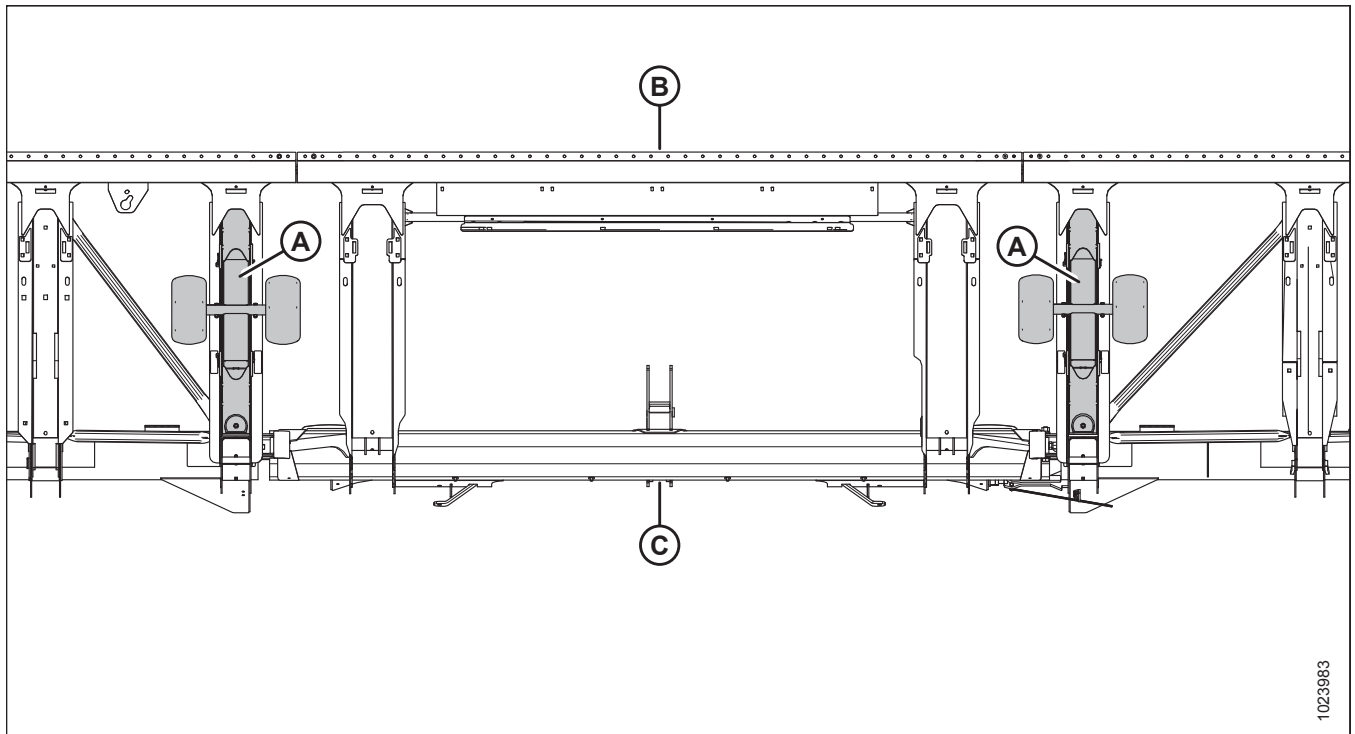


Figure 2.6: Inboard Wheel Assembly – View from Below

## ASSEMBLY/SETUP INSTRUCTIONS

- 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

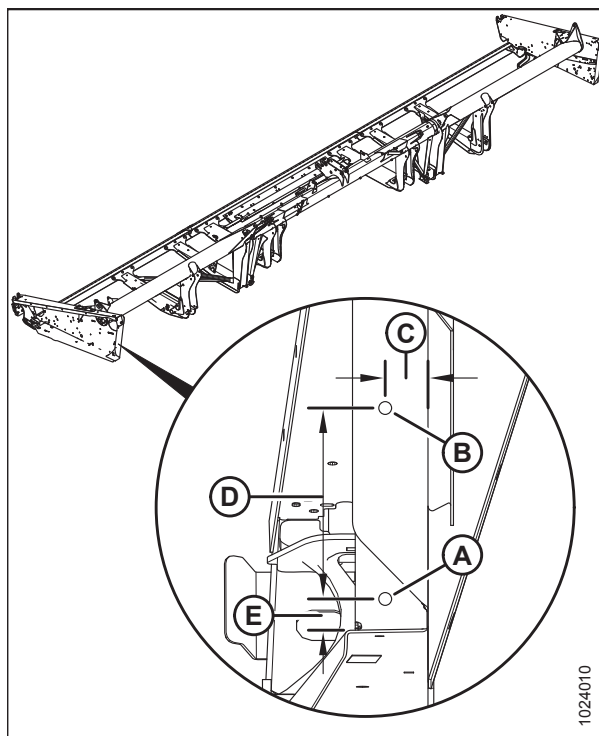
1. Open left endshield. Refer to header operator's manual for procedure.
2. Drill one 12.7 mm (1/2 in.) hole (A) on the back of the left endsheet as shown.

**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.



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

A - Lower Jack Mounting Hole  
 B - Upper Jack Mounting Hole  
 C - 47.6 mm (1 7/8 in.)  
 D - 212.0 mm (8 3/8 in.)  
 E - 218 mm (8 3/8 in.) for FD75, 69 mm (2 3/4 in.) for FD70 and FD1 Series

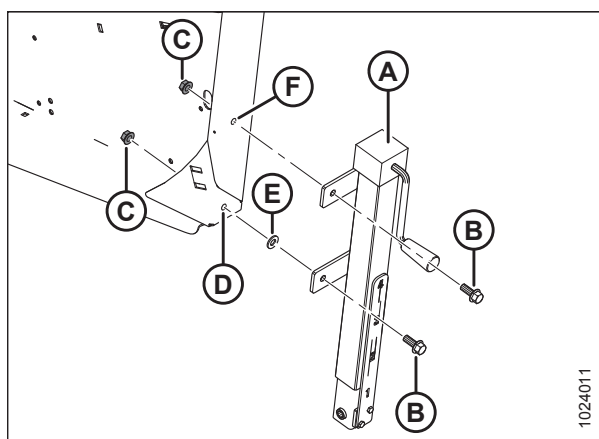
3. Secure left jack (A) onto endsheet using a hex head flange bolt (B) (MD #21449) and flange lock nut (C) (MD #50186) at lower hole (D) as shown. Hardware is shipped in a separate bag with the kit.

**FD75 Headers only:** Install hardened washer (E) (MD #135369) between the jack and the endsheet at the lower hole.

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

**IMPORTANT:**

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



**Figure 2.9: Jack Installation, View from Rear – FD75 Shown, FD1 Series Similar**

## ASSEMBLY/SETUP INSTRUCTIONS

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

**NOTE:**

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

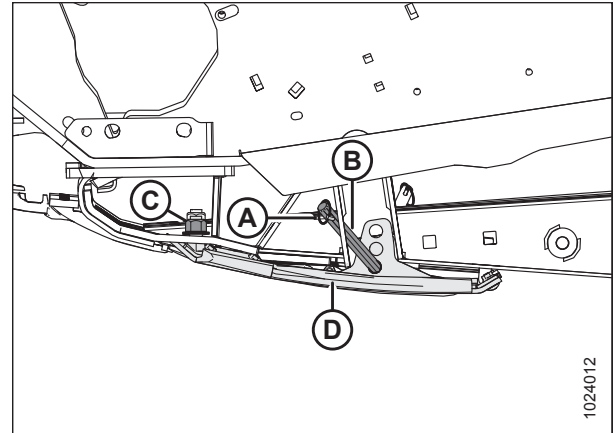


Figure 2.10: Outboard Skid Shoe – View from Left

7. Position front connection of left outboard wheel assembly (A) between the lugs on the existing outboard skid shoe mount (B) underneath the header frame.
8. Reinstall rod (C) and lynch pin (D) retained from Step 6, [page 15](#).

**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.

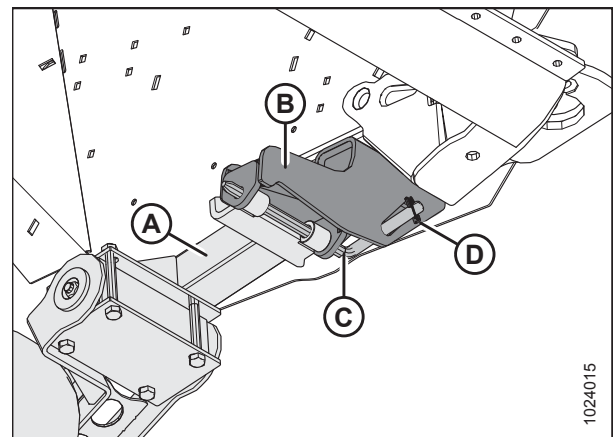


Figure 2.11: Outboard Wheel Assembly – View from Below

9. Position rear connection of left outboard wheel assembly (B) on left jack (A) as shown.
10. Install hex head bolt (C) (MD #21589), two hardened washers (D) (MD #135369), and flange lock nut (E) (MD #50186) as shown. Hardware is shipped in a separate bag with the kit. Tighten hardware snug, then back-off one turn.

**IMPORTANT:**

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

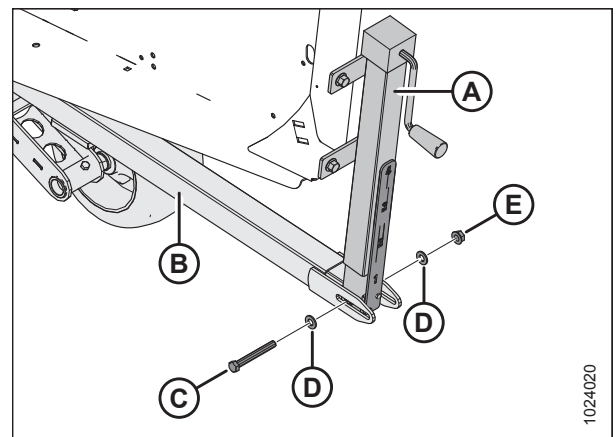
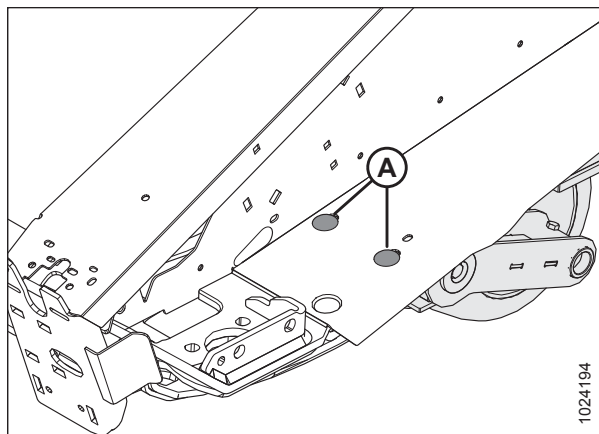


Figure 2.12: Jack and Outboard Wheel Assembly – View from Rear

## 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 10, page 15 has been installed.

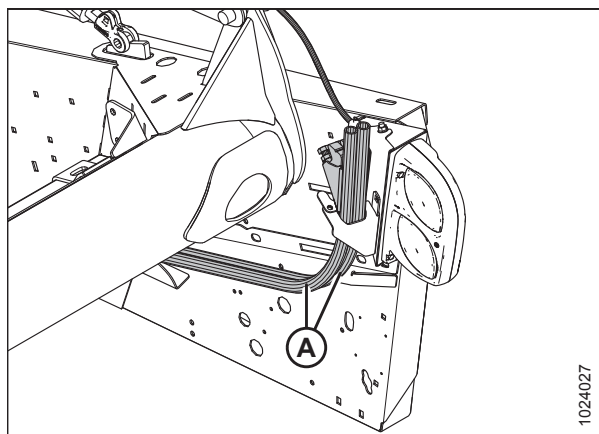
12. Repeat Steps 1, page 14 to 10, page 15 for the jack and outboard wheel assembly on the right side of the header.
13. Check and adjust header float. Refer to the header operator's manual for procedures.
14. Check and adjust header wing balance. Refer to the header operator's manual for procedures.



**Figure 2.13: Outboard Skid Shoe Mount Hardware – View from Left**

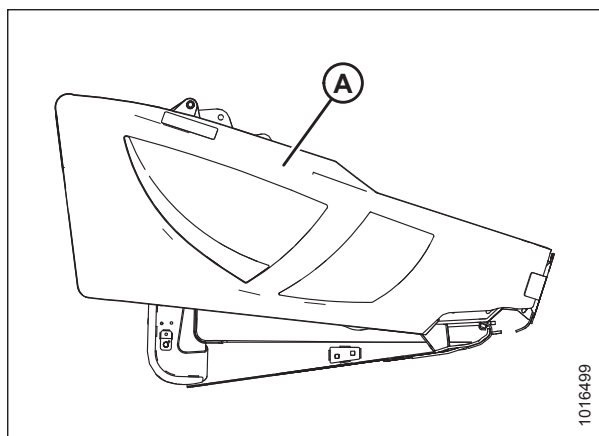
## 2.2.3 Installing Transport Light Extension Bracket – FD75 and FD1 Series FlexDraper® Headers

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 2.14: Divider Rods in Storage Position – View from Rear**

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



**Figure 2.15: Right Endshield – FD1 Series Shown**

## ASSEMBLY/SETUP INSTRUCTIONS

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.

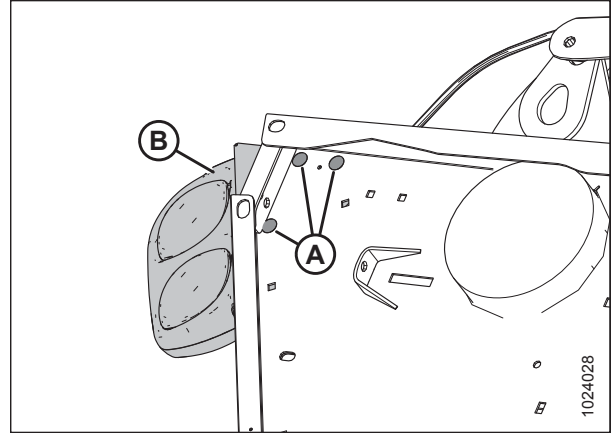


Figure 2.16: Rear Transport Light Assembly – View from Right

4. Install light extension bracket (A) (MD #304523) onto the right endsheet using two short square neck carriage head bolts (MD #100456) and two flange nuts (B) (MD #21452) as shown. Bracket and hardware are shipped in a separate bag with the kit.

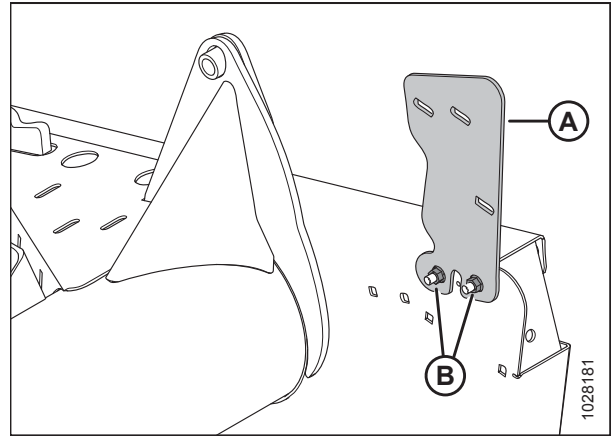


Figure 2.17: Transport Light Extension Bracket – View from Rear

5. Reinstall light assembly (A) onto extension bracket (B) using hardware (C) retained from Step 3, page 17.

**NOTE:**

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

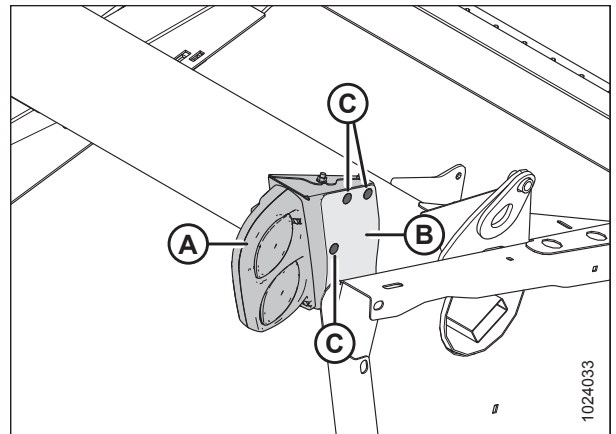


Figure 2.18: Rear Transport Light Assembly – View from Right

## 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.

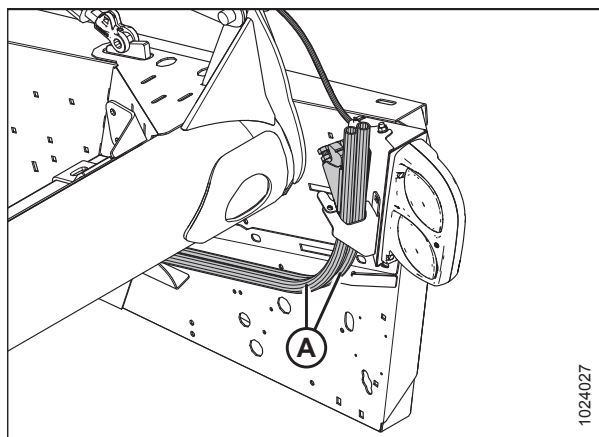


Figure 2.19: Divider Rods in Storage Position – View from Rear

2. Open right end shield (A).



Figure 2.20: 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 20.

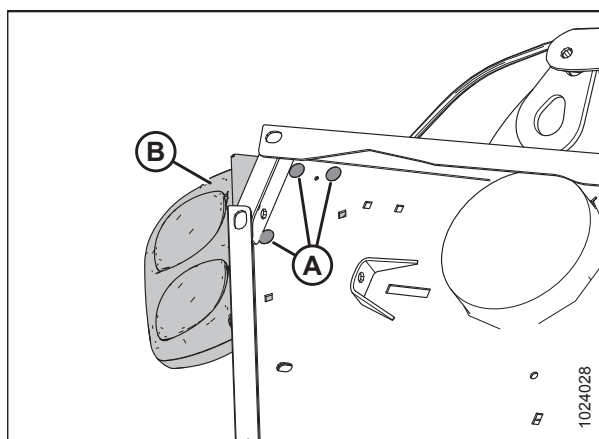


Figure 2.21: Rear Transport Light Assembly – View from Right

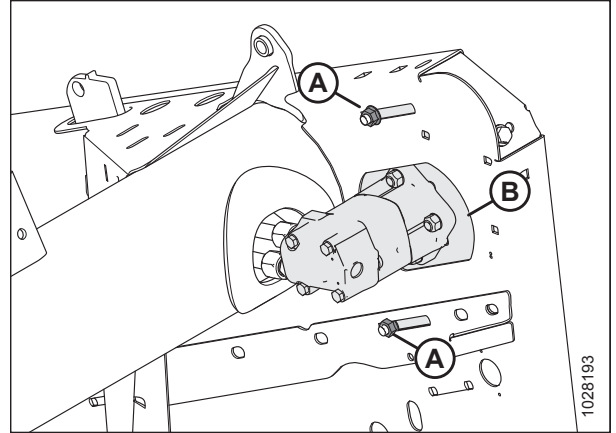


## ASSEMBLY/SETUP INSTRUCTIONS

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

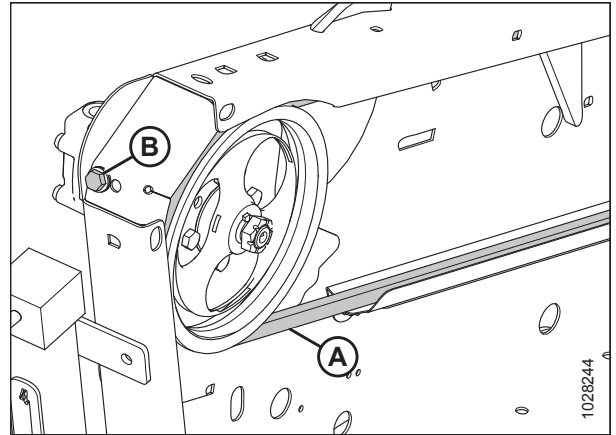
**NOTE:**

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 2.22: 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 2.23: 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 sets of hardware (A), but only three are visible in the illustration. The fourth is on the other side of the motor.

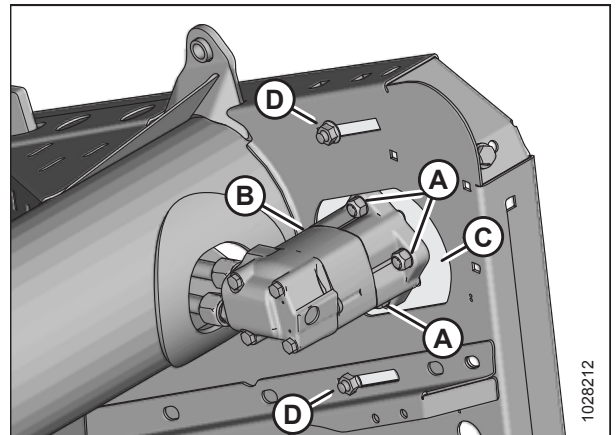
**NOTE:**

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

## ASSEMBLY/SETUP INSTRUCTIONS

10. Position light extension bracket (A) (MD #304523) on the right endsheet and align the square slots. Secure the bracket to the right endsheet using a short square neck carriage bolt (MD #100456) and flange nut (B) (MD #21452). The bracket and hardware are shipped in a separate bag with the kit.
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).

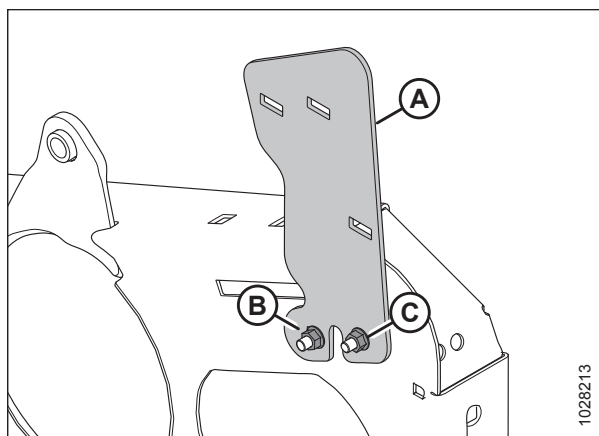


Figure 2.25: Transport Light Extension Bracket – View from Rear

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

**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 23](#).

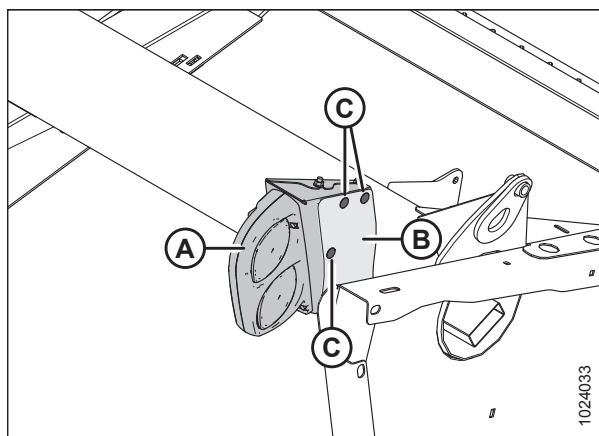


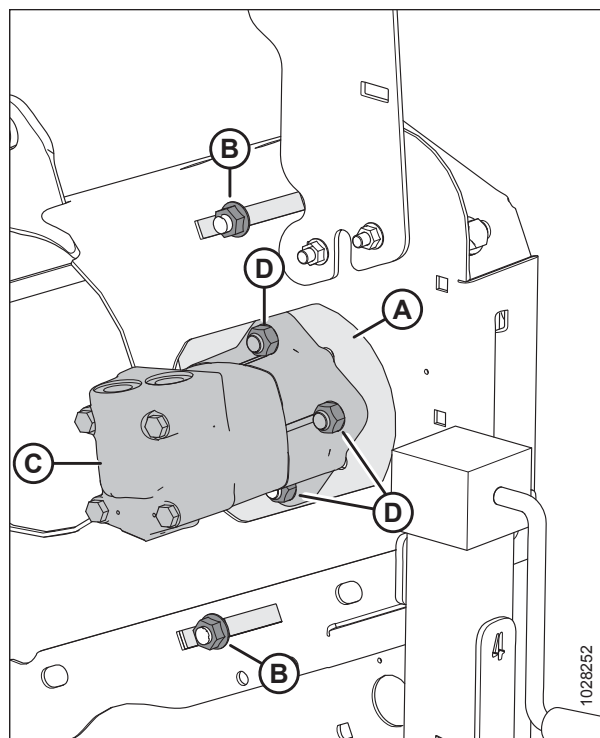
Figure 2.26: Rear Transport Light Assembly – View from Right

## ASSEMBLY/SETUP INSTRUCTIONS

15. **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 19](#).
16. **Double-Knife Headers only:** Reinstall motor (C) on motor mount bracket (A) with hardware (D) retained from Step 8, [page 19](#).

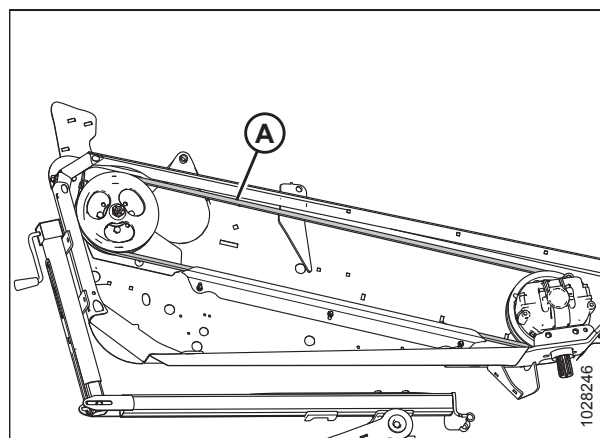
**NOTE:**

Four sets of hardware (D) hold motor (C) in place, but only three are visible in the illustration. The other set is on the other side of the motor.



**Figure 2.27: Knife Drive Motor– Double-Knife Header– View from Rear of Header**

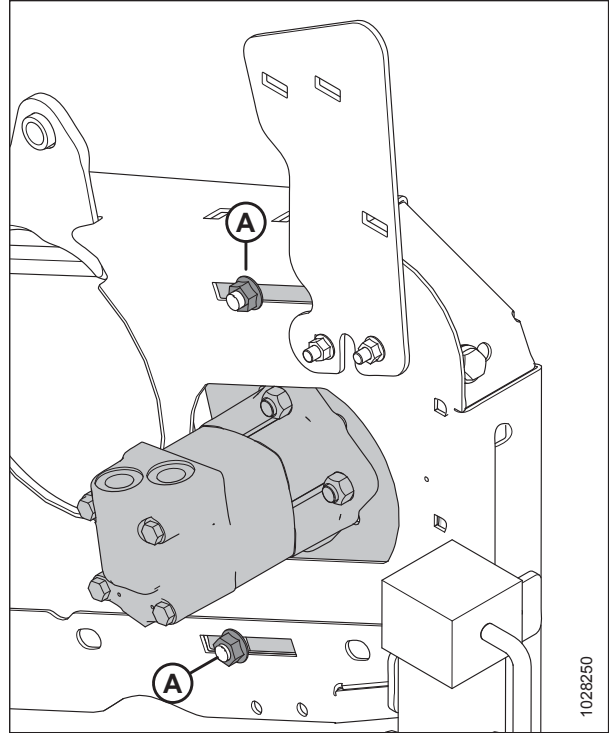
17. **Double-Knife Headers only:** Reinstall belt (A).



**Figure 2.28: 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.



**Figure 2.29: 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 right header endshield. 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. Refer to the header operator's manual.
- Operate only in daylight or good artificial light.

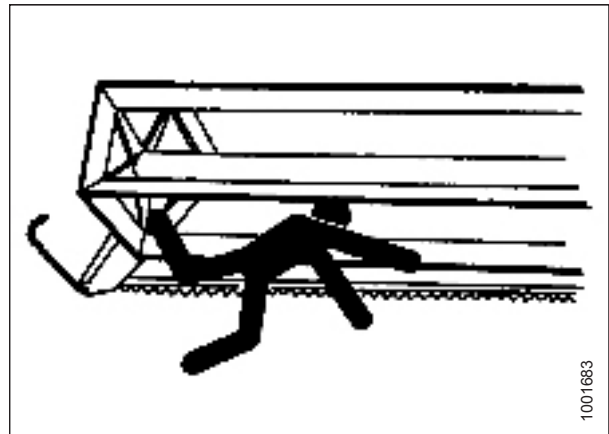


Figure 3.2: Bystander Safety



### 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. Attach header to combine and raise header to desired header height.
2. Adjust header angle to desired setting.
3. Stop engine and remove key from ignition.
4. 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.
5. Perform the following procedures in order:
  - a. [3.3.1 Adjusting Inboard Wheel Height, page 27](#)
  - b. [3.3.2 Adjusting Outboard Wheel Height, page 29](#)

#### 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.

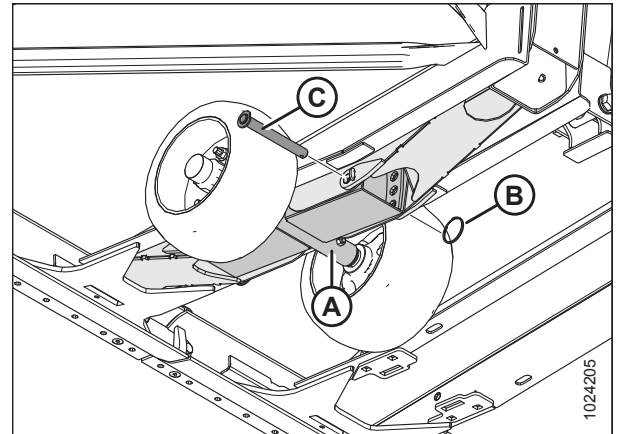


Figure 3.3: Inboard Wheel Assembly and Left Header Leg – View from Below, Right Opposite

## 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 28.
3. Reinstall pin and ring removed in Step 1, page 27.
4. Repeat above procedure for opposite inboard wheel assembly.

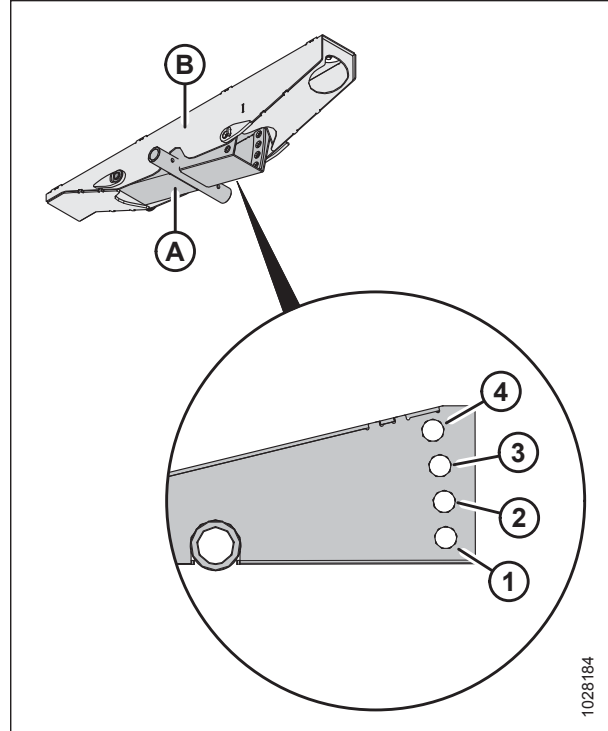


Figure 3.4: Inboard Axle Support – View from Below

Table 3.1 Inboard Wheel Height

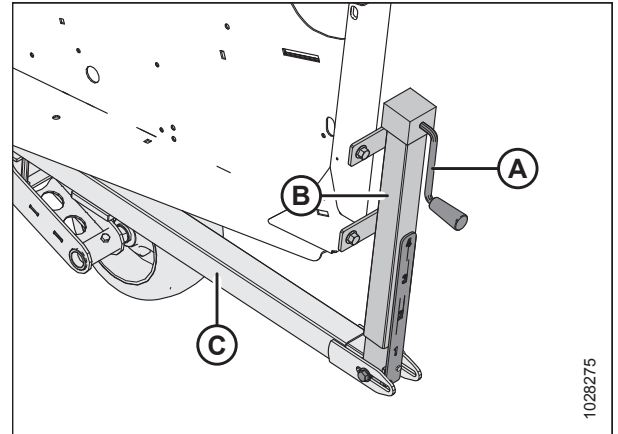
| Hole | Header Tilt Setting |                    |                    |                    |
|------|---------------------|--------------------|--------------------|--------------------|
|      | A                   | B                  | C                  | D                  |
| 1    | 228.6 mm (9.0 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 28 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.

### 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**



## 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).

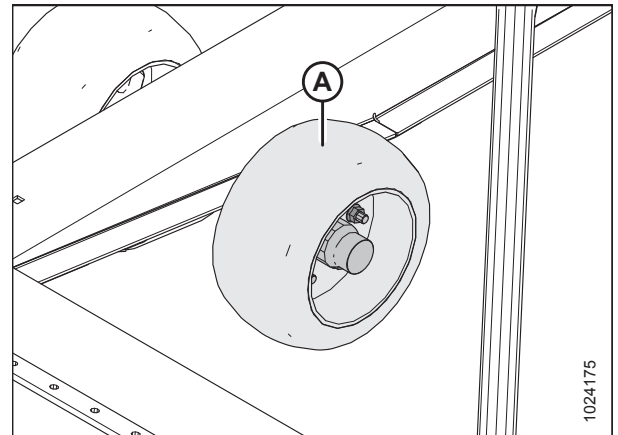


Figure 4.1: Wheel Assembly

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

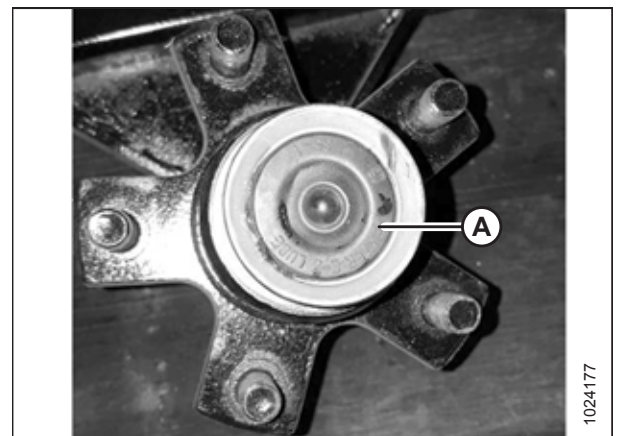


Figure 4.2: Rubber Plug on Wheel Axle

## 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 31](#).
8. Repeat procedure for each wheel assembly as required.

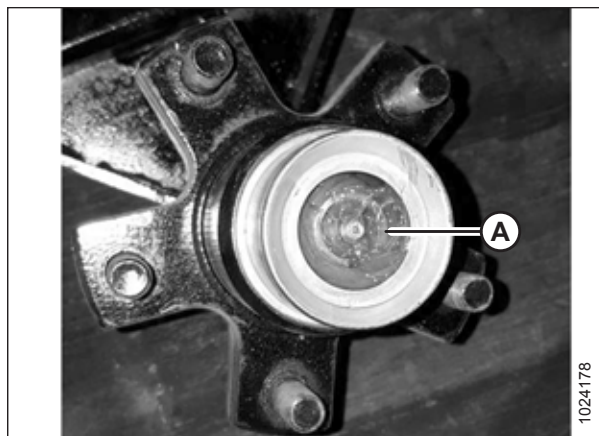


Figure 4.3: Lubrication Point on Wheel Axle

# 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)

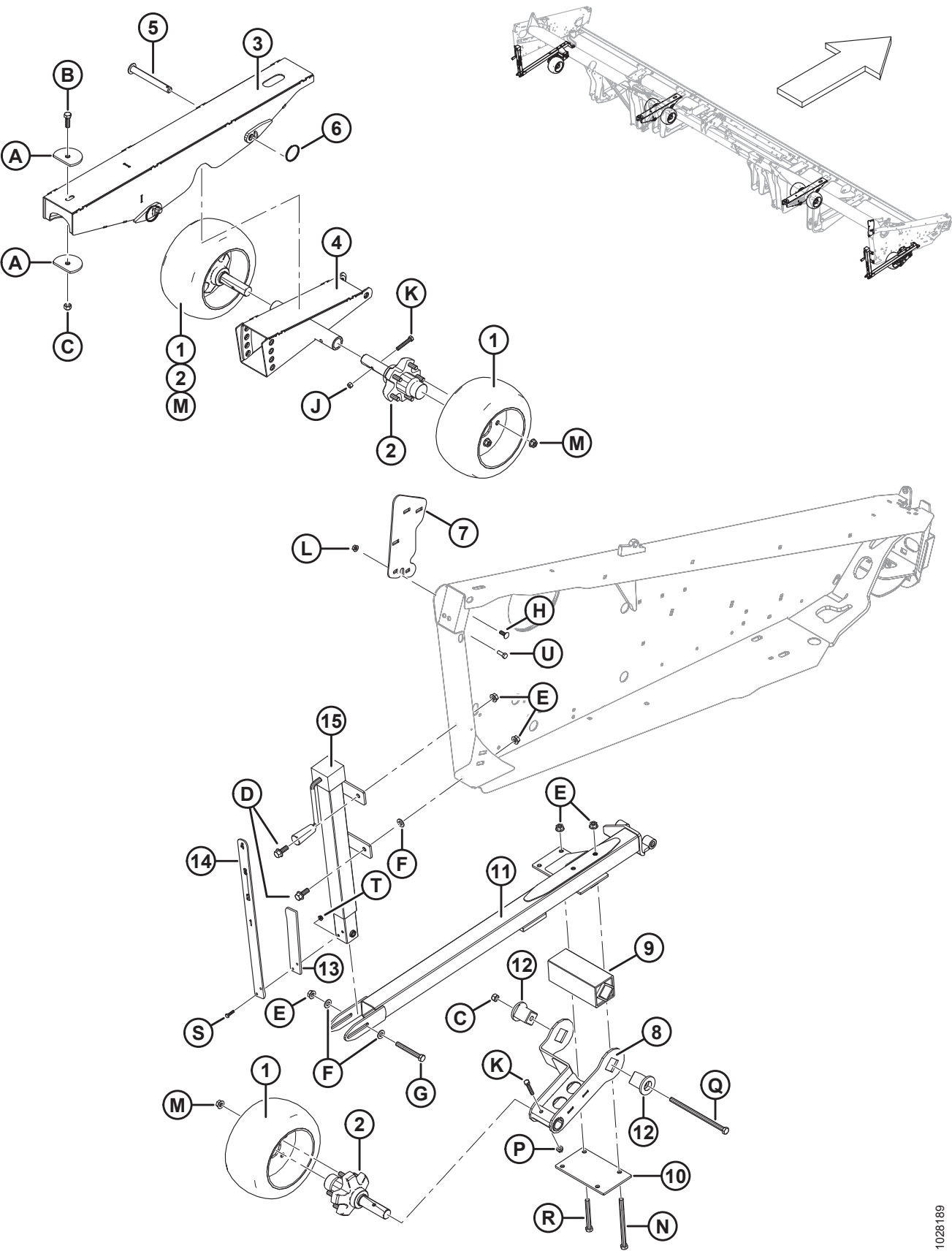
### 5.1.1 Serial Number Breaks

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



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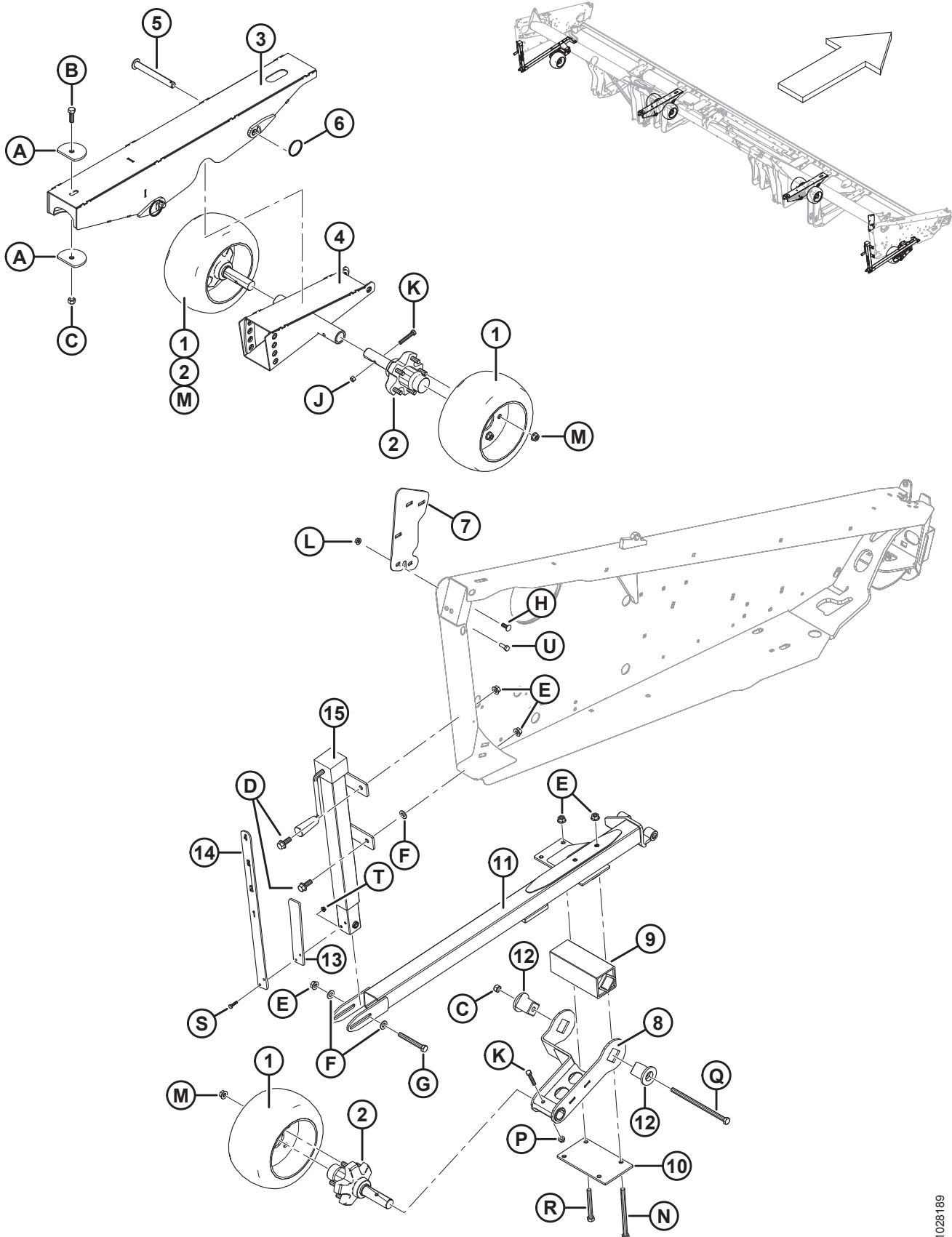
## REPAIR PARTS

| Ref | Part Number   | Description                                           | Qty      | Serial Number |
|-----|---------------|-------------------------------------------------------|----------|---------------|
|     | 284618        | KIT – CONTOUR BUDDY <sup>1</sup>                      |          |               |
|     |               |                                                       |          |               |
| 1   | 284584        | WHEEL – SOLID TIRE 6 X 8                              | 6        |               |
| 2   | 284583        | HUB – AXLE 5 X 4.5 MACHINED                           | 6        |               |
| 3   | 284606        | SUPPORT – AXLE FRAME                                  | 2        |               |
| 4   | 284612        | SUPPORT – INBOARD AXLE                                | 2        |               |
| 5   | 284603        | PIN                                                   | 4        |               |
| 6   | 118137        | RING                                                  | 4        |               |
| 7   | <b>304523</b> | PLATE – LIGHT EXT. BRACKET                            | 1        |               |
| 8   | 284558        | SUPPORT – LH ISOLATOR                                 | 1        |               |
|     | 284574        | 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  | 229973        | RETAINER – ISOLATOR                                   | 4        |               |
| 13  | <b>284699</b> | SPACER – INDICATOR                                    | 2        |               |
| 14  | <b>284700</b> | PLATE – JACK SCALE                                    | 2        |               |
| 15  | 284664        | JACK – LH W/ CB DECAL <sup>2</sup>                    | 1        |               |
|     | 284665        | JACK – RH W/ CB DECAL <sup>2</sup>                    | 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   | <b>21449</b>  | <b>BOLT – HEX FLG HD 1/2–13 UNC X 1 IN. GR 5 AA1J</b> | 4        |               |
| E   | 50186         | NUT – FLANGE LOCK SM FACE DT 0.500-13 UNC GR 5        | 14       |               |
| F   | 135369        | WASHER – HARDENED ASTM F436 1/2                       | 6        |               |
| 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                     | <b>2</b> |               |
| J   | 135511        | NUT – CENTER LOCK .375-16 UNC GR 5 ZP                 | 4        |               |
| K   | 20055         | BOLT – HH 3/8 NC X 2.25 LG GR 5 ZP                    | 6        |               |
| L   | 21452         | NUT – FLANGE (SER FACE) .375-16 UNC                   | <b>2</b> |               |
| 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        |               |

1. Includes all listed parts and hardware. For decals, refer to Section [5.3 Contour Buddy™ – Decals, page 38](#).

2. Includes Contour Buddy Decal. Refer to Section [5.3 Contour Buddy™ – Decals, page 38](#).

# REPAIR PARTS

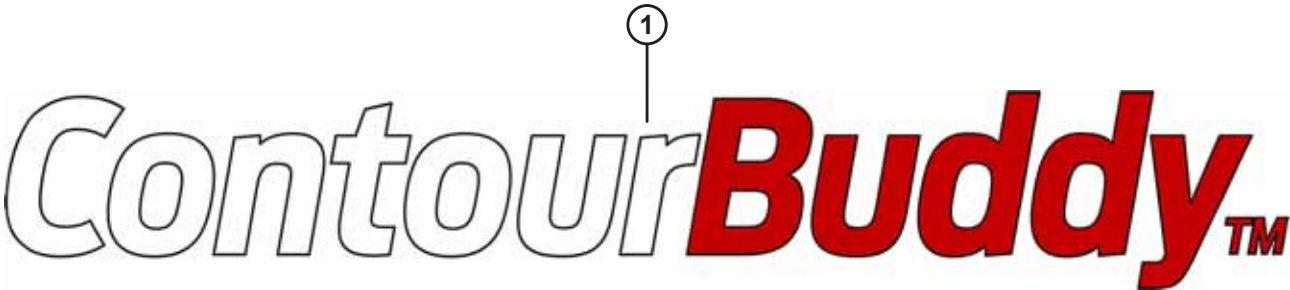
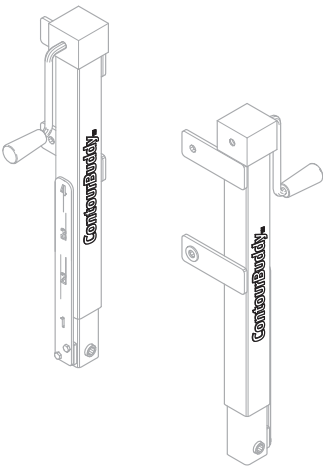


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## REPAIR PARTS

| Ref | Part Number | Description                                                                        | Qty | Serial Number |
|-----|-------------|------------------------------------------------------------------------------------|-----|---------------|
| 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



## REPAIR PARTS

| Ref | Part Number | Description                      | Qty | Serial Number |
|-----|-------------|----------------------------------|-----|---------------|
|     | 284618      | KIT – CONTOUR BUDDY <sup>3</sup> | 1   |               |
|     |             |                                  |     |               |
| 1   | 284663      | DECAL – CONTOUR BUDDY            | 2   |               |

---

3. Includes all listed parts. For jacks and wheel assemblies, refer to Section [5.2 Contour Buddy™ – Jacks and Wheel Assemblies](#), page 34.



## 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***

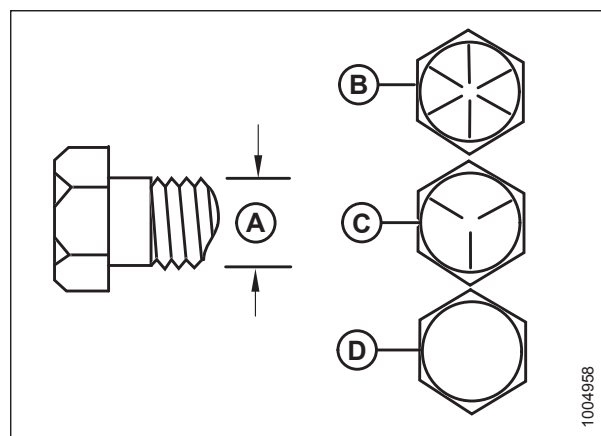
Standard torque is to be used (**NOT** to be used on critical or structurally important joints).

#### 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**

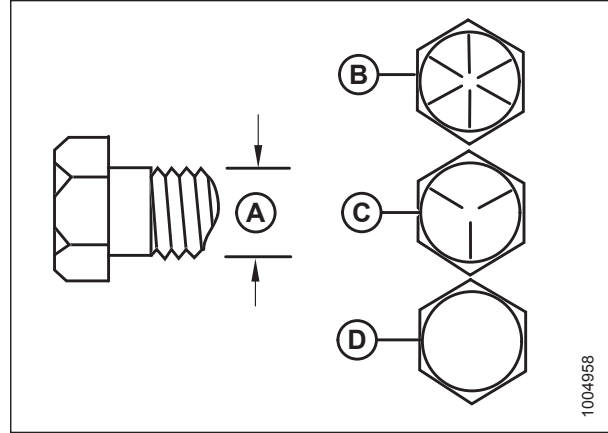
A - Nominal Size  
C - SAE-5

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  |



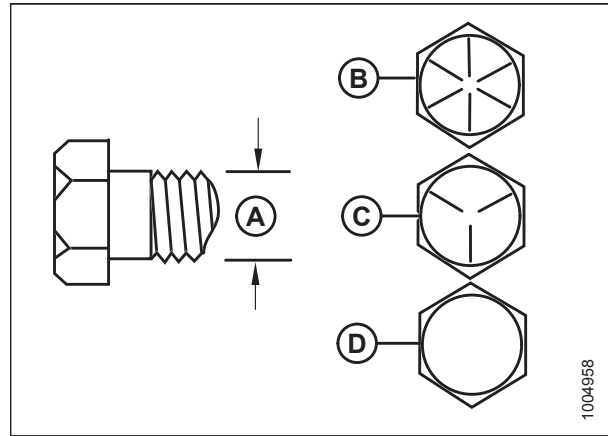
**Figure 6.2: Bolt Grades**

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

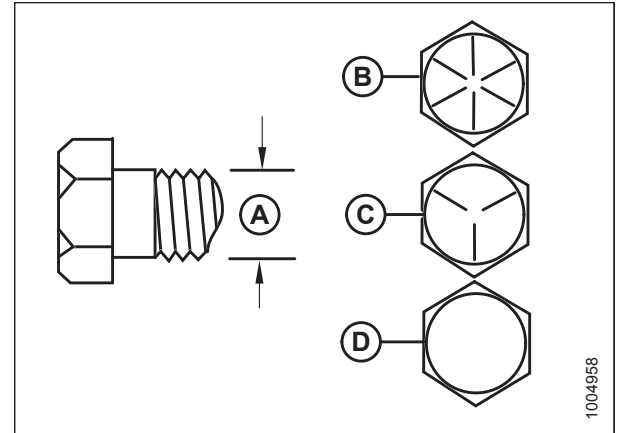
B - SAE-8  
D - SAE-2



## 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**

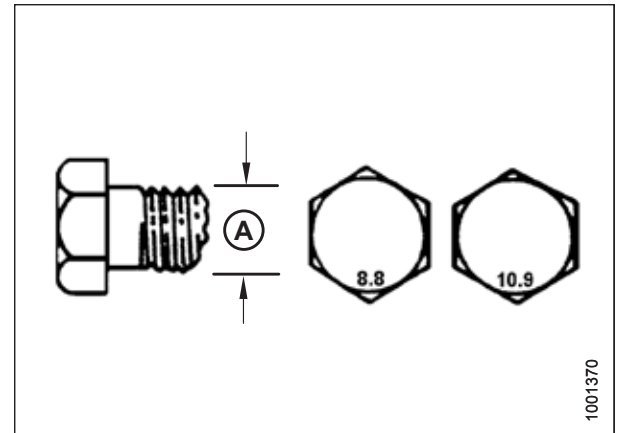
A - Nominal Size  
C - SAE-5

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  |

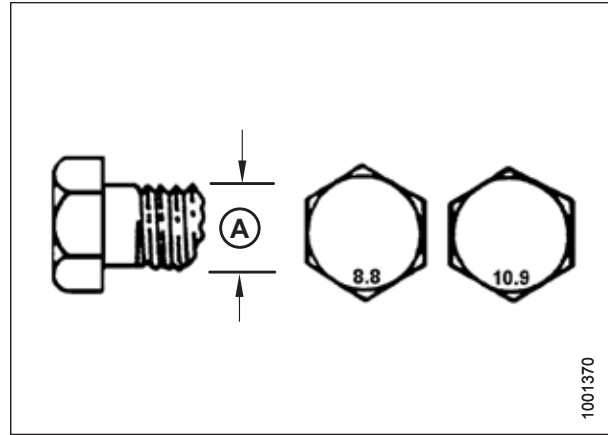


**Figure 6.5: Bolt Grades**

## REFERENCE

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

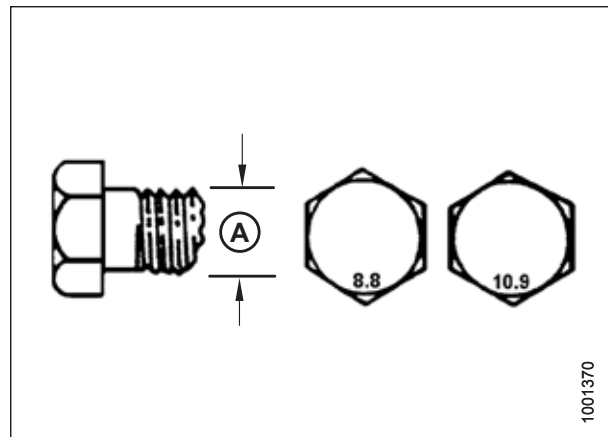
| Nominal Size (A) | Torque (Nm) |      | Torque (lbf-ft) (*lbf-in) |      |
|------------------|-------------|------|---------------------------|------|
|                  | Min.        | Max. | Min.                      | Max. |
| 3-0.5            | 1           | 1.1  | *9                        | *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**

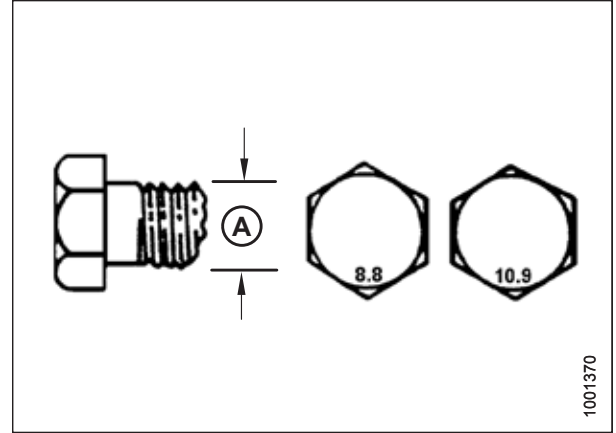
| Nominal Size (A) | Torque (Nm) |      | Torque (lbf-ft) (*lbf-in) |      |
|------------------|-------------|------|---------------------------|------|
|                  | Min.        | Max. | Min.                      | Max. |
| 3-0.5            | 1.8         | 2    | *18                       | *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**

**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  |

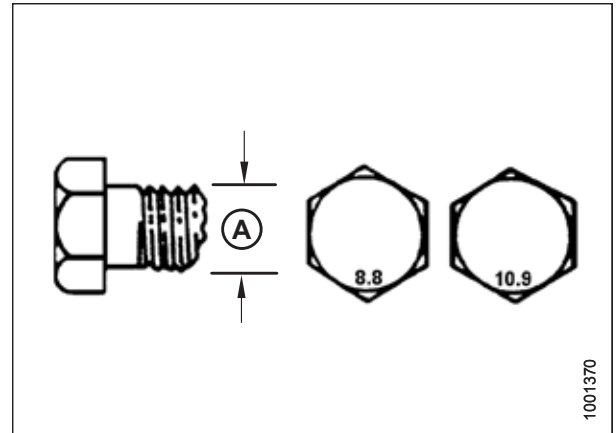


**Figure 6.8: Bolt Grades**

### 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<br>(Cast Aluminum) |        | 10.9<br>(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).

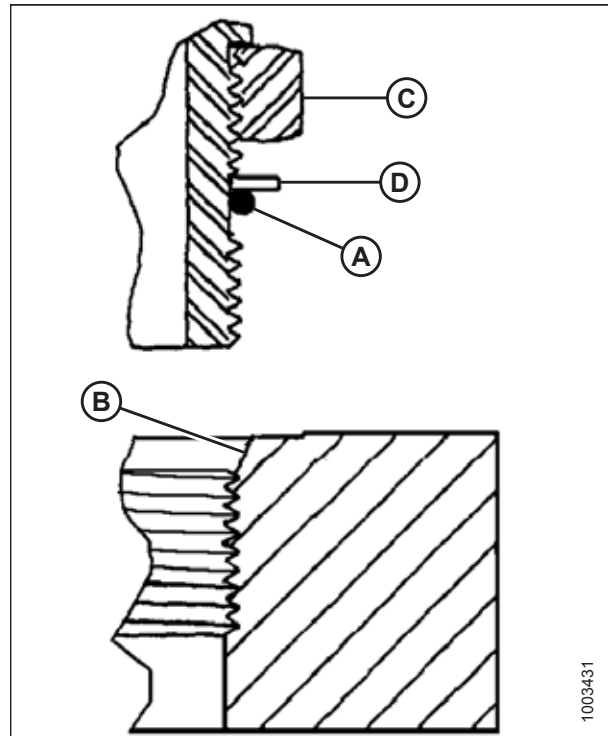


Figure 6.10: Hydraulic Fitting

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.

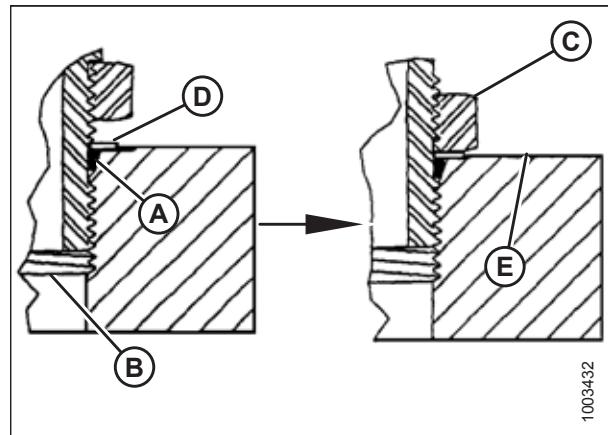


Figure 6.11: Hydraulic Fitting

## REFERENCE

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

| SAE Dash Size | Thread Size (in.) | Torque Value <sup>4</sup> |                  |
|---------------|-------------------|---------------------------|------------------|
|               |                   | 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.

### 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 48.
6. Check final condition of fitting.

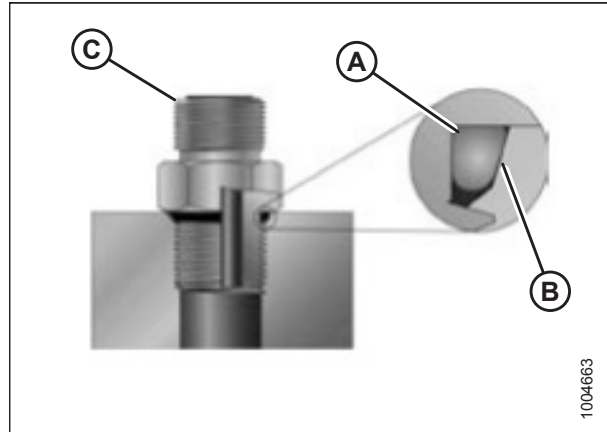


Figure 6.12: Hydraulic Fitting

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

| SAE Dash Size | Thread Size (in.) | Torque Value <sup>5</sup> |                  |
|---------------|-------------------|---------------------------|------------------|
|               |                   | 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.

### 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 49.

**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.

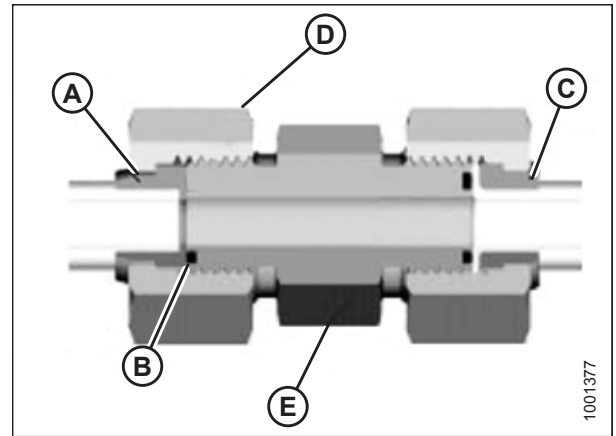


Figure 6.14: Hydraulic Fitting

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

| SAE Dash Size | Thread Size (in.) | Tube O.D. (in.) | Torque Value <sup>6</sup> |        |
|---------------|-------------------|-----------------|---------------------------|--------|
|               |                   |                 | Nm                        | lbf-ft |
| -3            | Note <sup>7</sup> | 3/16            | –                         | –      |
| -4            | 9/16              | 1/4             | 25–28                     | 18–21  |
| -5            | Note <sup>7</sup> | 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 <sup>7</sup> | 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 <sup>8</sup> |         |
|---------------|-------------------|-----------------|---------------------------|---------|
|               |                   |                 | 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 50. Make sure that tube end of a shaped connector (typically 45 degree or 90 degree) 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 <sup>3</sup> or cc | $\times 0.061 =$                       | cubic inch                    | in. <sup>3</sup> |
| Weight      | kilogram            | kg                    | $\times 2.2046 =$                      | pound                         | lb.              |



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# Predelivery 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. | <a href="#">2.1 Unloading Contour Buddy™, page 9</a>           |
|   | Check for loose hardware. Tighten to required torque.                                 | <a href="#">6.1 Torque Specifications, page 41</a>             |
|   | Check and adjust header float.                                                        | Refer to header operator's manual.                             |
|   | Check and adjust header wing balance.                                                 | Refer to header operator's manual.                             |
|   | Adjust inboard wheel height.                                                          | <a href="#">3.3.1 Adjusting Inboard Wheel Height, page 27</a>  |
|   | Adjust outboard wheel height.                                                         | <a href="#">3.3.2 Adjusting Outboard Wheel Height, page 29</a> |

Date Checked:

Checked by:





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