

Contour Buddy for FD1 Series and FD75 FlexDraper[®] Headers

Setup, Operation, and Parts Manual 214513 Revision A Original Instruction

ContourBuddy.com

Contour Buddy for FD1 Series and FD75 FlexDraper® Headers.



Published: December 2017

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 FD1 Series and FD75 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

Right and left are determined from the operator's position. The front of the header is the side that faces the crop; the back of the header is the side that connects to the combine.

NOTE:

This document is not currently available in any language except English.

Introduction	i
Chapter 1: Safety	1
1.1 Safety Alert Symbols	1
1.2 Signal Words	2
1.3 General Safety	3
1.4 Maintenance Safety	5
1.5 Hydraulic Safety	6
1.6 Tire Safety	7
1.7 Safety Signs	8
1.7.1 Installing Safety Decals	8
Chapter 2: Assembly/Setup Instructions	9
2.1 Unloading Contour Buddy	9
2.2 Installing Contour Buddy	
2.2.1 Installing Inboard Wheel Assemblies	
2.2.2 Installing Outboard Wheel Assemblies and Jacks	14
2.2.3 Installing Transport Light Extension Bracket	16
Chapter 3: Operation	19
3.1 Owner/Operator Responsibilities	19
3.2 Operational Safety	20
3.3 Adjusting Wheel Height	21
3.3.1 Adjusting Inboard Wheel Height	21
3.3.2 Adjusting Outboard Wheel Height	23
Chapter 4: Maintenance	25
4.1 Lubricating Wheel Axles	25
Chapter 5: Repair Parts	27
5.1 Abbreviations	27
5.1.1 Serial Number Breaks	27
5.2 Contour Buddy – Jacks and Wheel Assemblies	
5.3 Contour Buddy – Decals	32
Chapter 6: Reference	35
6.1 Torque Specifications	35
6.1.1 SAE Bolt Torque Specifications	35
6.1.2 Metric Bolt Specifications	
6.1.3 Metric Bolt Specifications Bolting into Cast Aluminum	
6.1.4 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)	
6.1.6 O-Ring Eace Seal (ORES) Hydraulic Fittings	42 ۸۹

Predelivery Checklist	49
Index	47
6.2 Conversion Chart	45
6.1.7 Tapered Pipe Thread Fittings	44

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. Signal words are selected using the following guidelines:

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

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.

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

1.3 General Safety

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for job at hand. Do **NOT** take chances. You may need the following:
 - Hard hat
 - · Protective footwear with slip resistant soles
 - Protective glasses or goggles
 - Heavy gloves
 - Wet weather gear
 - Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.



Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment



Figure 1.4: Safety Equipment

3

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

- Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
- Keep all shields in place. **NEVER** alter or remove safety equipment. Make sure driveline guards can rotate independently of shaft and can telescope freely.
- Use only service and repair parts made or approved by equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.
- Keep hands, feet, clothing, and hair away from moving parts. **NEVER** attempt to clear obstructions or objects from a machine while engine is running.
- Do **NOT** modify machine. Unauthorized modifications may impair machine function and/or safety. It may also shorten machine's life.
- To avoid bodily injury or death from unexpected startup of machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.
- Keep service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- Keep work area well lit.
- Keep machinery clean. Straw and chaff on a hot engine is a fire hazard. Do **NOT** allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before storage.
- NEVER use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover sharp or extending components to prevent injury from accidental contact.



Figure 1.5: Safety around Equipment



Figure 1.6: Safety around Equipment



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 lube 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.
- 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 1.11: Testing for Hydraulic Leaks



Figure 1.12: Hydraulic Pressure Hazard



Figure 1.13: Safety around Equipment

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

1.6 Tire Safety



- 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



- 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 tire is correctly seated before inflating to operating pressure.



Figure 1.15: Safely Inflating Tire

- If tire is not correctly positioned on rim or is overinflated, 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 tire in any direction endangering anyone in area.
- Make sure all air is removed from tire before removing tire from rim.
- Do NOT remove, install, or repair a tire on a rim unless you have proper equipment and experience to perform job.
- Take tire and rim to a qualified tire repair shop.

1.7 Safety Signs

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

2 Assembly/Setup Instructions

2.1 Unloading Contour Buddy

To unload the Contour Buddy, follow these steps:

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

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.

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.
- 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 2.2: Pallet



Figure 2.3: Contour Buddy Shipping Configuration (View from Above)

2.2 Installing Contour Buddy

To install the Contour Buddy, follow these steps:

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 header lift cylinder stops 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. 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, page 16

2.2.1 Installing Inboard Wheel Assemblies

- Install one wheel and hub assembly (A) onto one of the inboard arm assemblies (B) using a hex head bolt (C) (MD #20055) and center lock nut (D) (MD #135511). Hardware is shipped in a separate bag with the kit.
- 2. Repeat Step 1, page 11 with a second wheel and hub assembly (E) and set of hardware on the opposite side of inboard arm assembly (B).



Figure 2.4: Inboard Wheel Assembly

- 3. Position inboard wheel assembly (A) underneath left header leg on the outboard side of left flex frame hinge (B).
- 4. Slide front of inboard wheel assembly into front pocket (C) of left header leg as shown.

 Attach inboard wheel assembly to 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 Wheel Assembly and Left Header Leg (View from Below)



Figure 2.6: Inboard Wheel Assembly and Left Header Leg (View from Above)

ASSEMBLY/SETUP INSTRUCTIONS

6. Repeat Steps 1, page 11 to 5, page 12 for the other inboard wheel assembly on the right side of the header. Refer to Figure 2.7, page 13 to confirm inboard wheel assemblies have been installed at the correct position.



Figure 2.7: Inboard Wheel Assemblies Installed (View from Below)

A - Inboard Wheel Assemblies

B - Cutterbar

C - Backtube

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.

 Secure left jack (A) onto endsheet using a hex head flange bolt (B) (MD #135965) and flange lock nut (C) (MD #50186) at lower hole (D) as shown. Hardware is shipped in a separate bag with the kit.

NOTE:

For FD75 Headers, ensure hardened washer (E) (MD #135369) is installed between jack and endsheet at 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 #135965) and flange lock nut (C) (MD #50186) at upper hole (F) as shown. Hardware is shipped in a separate bag with the kit.



Figure 2.8: Jack Mounting Hole Locations, View from Rear (FD75 Shown, FD1 Series Similar)

- A Lower Jack Mounting Hole C - 47.6 mm (1.87 in.) E - 37.6 mm (1.5 in.)
- B Upper Jack Mounting Hole D - 212.0 mm (8.3 in.)



Figure 2.9: Jack Installation, View from Rear (FD75 Shown, FD1 Series Similar)

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

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.

- 9. Position left jack (A) between rear connection of left outboard wheel assembly (B).
- 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 2.11: Outboard Wheel Assembly (View from Below)



Figure 2.12: 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 *10, page 15* has been installed.



Figure 2.13: Outboard Skid Shoe Mount Hardware (View from Left)

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

2.2.3 Installing Transport Light Extension Bracket

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. 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 2.15: Rear Transport Light Assembly (View from Right)

 Install light extension bracket (A) (MD #284579) onto the right endsheet using four short square neck carriage head bolts (MD #100456) and four flange nuts (B) (MD #21452) as shown. Bracket and hardware are shipped in a separate bag with the kit.



Figure 2.16: Transport Light Extension Bracket (View from Rear)



Figure 2.17: Rear Transport Light Assembly (View from Right)

4. Reinstall light assembly (A) onto extension bracket (B) using hardware (C) retained from Step 2, page 17.

NOTE:

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

3 Operation

3.1 Owner/Operator Responsibilities

- 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 also 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

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 combine seat.
- Check the operation of all controls in a safe, clear area before starting work.
- Do NOT allow riders on the combine.

- 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.



Figure 3.1: No Riders



Figure 3.2: Bystander Safety

- 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.

3.3 Adjusting Wheel Height

To adjust wheel height, follow these steps:



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 lift cylinder stops 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 21
 - b. 3.3.2 Adjusting Outboard Wheel Height, page 23

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)

NOTE:

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

- 2. Line up the appropriate hole of inboard axle support (A) with axle frame support (B) to achieve desired inboard wheel height. Refer to Table *3.1, page 22*.
- 3. Reinstall pin and ring removed in Step 1, page 21.
- 4. Repeat above procedure for opposite inboard wheel assembly.



Figure 3.4: Inboard Axle Support (View from Below)

A - Inboard Axle Support C- Hole 1 E - Hole 3 B - Axle Frame Support D - Hole 2 F - Hole 4

	Header Tilt Setting				
Hole	Α	В	С	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.)	

Table 3.1 Inboard Wheel Height

NOTE:

Refer to Figure 3.4, page 22 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

- Turn handle (A) on jack (B) clockwise to lower outboard wheel assembly (C), and counterclockwise to raise outboard wheel assembly.
- 2. Adjust outboard wheel assemblies so that the number on the indicator (D) matches the hole position of the inboard wheel assemblies. Refer to *3.3.1 Adjusting Inboard Wheel Height, page 21.*

IMPORTANT:

Cutterbar must be level. If further height adjustment is required, lower header so that the auto header height control (AHHC) indicator reads **2** and adjust the outboard wheel assemblies until the cutterbar is level.



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

4 Maintenance

4.1 Lubricating Wheel Axles

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

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 header lift cylinder stops 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. 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

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 26.
- 8. Repeat procedure for each wheel assembly as required.

IMPORTANT:

Wheel axles should be lubricated annually.



Figure 4.3: Lubrication Point on Wheel Axle

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



Ref	Part Number	Description		Serial Number
	284618	KIT – CONTOUR BUDDY ¹	Qty	Italibol
1	284584	WHEEL – SOLID TIRE 6 X 8	6	
2	284583	HUB – AXLE 5 X 4.5 MACHINED	6	
3	284606	SUPPORT – AXLE FRAME WELDT	2	
4	284612	SUPPORT WELDT – INBOARD AXLE	2	
5	284603	PIN WELDT	4	
6	118137	RING	4	
7	284579	PLATE – LIGHT EXT. BRACKET	1	
8	284558	SUPPORT WELDT – LH ISOLATOR	1	
	284574	SUPPORT WELDT – RH ISOLATOR	1	
9	258054	HOUSING – TORSION ISOLATOR	2	
10	284568	PLATE – CLAMP	2	
11	284555	BEAM WELDT – LH	1	
	284576	BEAM WELDT – RH	1	
12	229973	RETAINER – ISOLATOR	4	
13	284595	SPACER – INDICATOR	2	
14	284596	PLATE – JACK SCALE	2	
15	284664	JACK – LH W/ CB DECAL ²	1	
	284665	JACK – RH W/ CB DECAL ²	1	

^{1.} Includes all listed parts and hardware. For decals, refer to Section 5.3 Contour Buddy – Decals, page 32.

^{2.} Includes Contour Buddy Decal. Refer to Section 5.3 Contour Buddy – Decals, page 32.



REPAIR PARTS

Ref	Part Number	Description	Qtv	Serial Number
A	284602	WASHER – CHANNEL	4	
В	252641	BOLT – HH 1/2-13 X 1.5-GR8-AA3L	2	
С	18697	NUT – HEX LOCK DT .500-13 UNC	4	
D	135965	BOLT – HH FLG (SM FACE) 1/2 NC X 1.25 GR 5 ZP	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	
Н	100456	BOLT – RHSSN 3/8 NC X 1.0 GR 5 ZP	4	
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	4	
М	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	
Р	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	184539	BOLT – HH 1/2 NC X 4.25 LG GR 5 ZP	4	
S	21573	BOLT – HEX HD 1/4 NC X 1.0 LG GR 5 ZP	4	
Т	135248	NUT – HEX FLG CTR LOC	4	

5.3 Contour Buddy – Decals





REPAIR PARTS

Ref	Part Number	Description		Serial Number
	284618	KIT – CONTOUR BUDDY ³	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 28.

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	Torqu	e (Nm)	Torque (lbf·ft) (*lbf·in)		
312e (A)	Min.	Max.	Min.	Max.	
1/4-20	11.9	13.2	*106	*117	
5/16-18	24.6	27.1	*218	*241	
3/8-16	44	48	32	36	
7/16-14	70	77	52	57	
1/2-13	106	118	79	87	
9/16-12	153	170	114	126	
5/8-11	212	234	157	173	
3/4-10	380	420	281	311	
7/8-9	606	669	449	496	
1-8	825	912	611	676	



Figure	6.1:	Bolt	Grades
--------	------	------	--------

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

Nominal	Torque (Nm)		Torque (lbf·ft) (*lbf·in)		
Size (A)	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	

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

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

Nominal	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
512e (A)	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 6.2: Bolt Grades	
A - Nominal Size	B - SAE-
C - SAE-5	D - SAE-





Figure 6.3: Bolt Grade	es
------------------------	----

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

Nominal	Torque (Nm)		Torque (lbf·ft) (*lbf∙in)		
Size (A)	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	



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

Figure 6.4: Bolt Grades A - Nominal Size B C - SAE-5 D

B - SAE-8 D - SAE-2 1004958

6.1.2 Metric Bolt Specifications

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

Nominal	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
Size (A)	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

Nominal	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
Size (A)	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

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

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

Nominal	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
Size (A)	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 6.6: Bolt Grades



Figure 6.7: Bolt Grades

Nominal	Torque (Nm)		Torque (lbf⋅ft) (*lbf⋅in)		
Size (A)	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 M	etric Bolt Bol	Iting into Cas	st Aluminum

	Bolt Torque			
Nominal Size (A)	8.8 (Cast Aluminum)		10.9 (Cast Aluminum	
	Nm	Nm Ibf·ft		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 (ORB) Hydraulic Fittings (Adjustable)

- 1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
- 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



Figure 6.11: Hydraulic Fitting

- 5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact part face (E).
- 6. Position angle fittings by unscrewing no more than one turn.
- 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.

REFERENCE

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

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

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

6.1.5 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

- 1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
- 2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
- 3. Apply hydraulic system oil to O-ring.
- 4. Install fitting (C) into port until fitting is hand-tight.
- 5. Torque fitting (C) according to values in Table 6.11, page 42.
- 6. Check final condition of fitting.



Figure 6.12: Hydraulic Fitting

		Torque Value ⁵	
SAE Dash Size	i nread Size (in.)	Nm Ibf·ft (*lbf·in)	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

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

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

6.1.6 O-Ring Face Seal (ORFS) Hydraulic Fittings

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



Figure 6.13: Hydraulic Fitting

- 2. Apply hydraulic system oil to O-ring (B).
- 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* 43.

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

SAE Dash Size	Thread Size (in)		Torque Value ⁶	
	Thread Size (III.)	Tube O.D. (III.)	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

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

^{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

SAE Doob Size	Thread Size (in)	Tube O.D. (in.)	Torque Value ⁸	
SAE DASII SIZE	Thread Size (iii.)		Nm	lbf·ft
-14	Note ⁷	7/8	-	-
-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

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

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 and scratches, or any form of contamination.
- 2. Apply pipe thread sealant (paste type) to external pipe threads.
- 3. Thread fitting into port until hand-tight.
- 4. Torque connector to appropriate torque angle. The Turns From Finger Tight (T.F.F.T.) values are shown in Table 6.13, page 44. 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 T.F.F.T.	Recommended F.F.F.T.
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

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

Index

18697	31
20055	31
21452	31
21573	31
21589	31
30228	31
50009	31
50186	31
100456	31
109091	31
118137	29
135248	31
135369	31
135511	31
135965	31
184539	31
188470	31
229973	
252641	31
258054	
284555	
284558	
284568	
284574	29
284576	29
284579	29
284583	29
284584	29
284595	29
284596	
284602	
284603	
284606	
284612	
284618	29, 33
284663	
284664	
284665	

Α

adjusting	
wheel height	21
inboard	21
outboard	23
assembly/setup	9

С

checklists49

Н

hydraulics	
fittings	
O-ring boss (ORB) adjustable	40
O-ring boss (ORB) non-adjustable	42
O-ring face seal (ORFS)	43
tapered pipe thread fittings	44
hydraulic safety	6

I

installing	11
jacks	14
transport light extension bracket	16
wheel assemblies	
inboard	11
outboard	14

J

jacks	
installing	14

L

lubrication	

Μ

maintenance and servicing	
safety	5
wheel axles	25
metric bolts	
torque specifications	37

0

operator responsibilities	19
owner responsibilities	19

Ρ

redelivery checklist49

R

repair parts	27
decals	
jacks	
wheel assemblies	28

S

SAE	
bolt torques	35
safety	1
general safety	3
hydraulic safety	6
maintenance safety	5
operational safety.	20
safety alert symbols	1
safety sign decals	8
installing decals	8
signal words	2
tire safety	7
setup	, 11
See also installing	
See also unloading	
specifications	
torque specifications	35

Т

35
37
40
42
43
35
44
16

U

unloading9

W

wheel assemblies	
inboard	
adjusting wheel height	
installing	
outboard	

adjusting wheel height	23
installing	14
wheels and tires	
safety	7

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.

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.	2.1 Unloading Contour Buddy, page 9
	Check for loose hardware. Tighten to required torque.	6.1 Torque Specifications, page 35
	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.	3.3.1 Adjusting Inboard Wheel Height, page 21
	Adjust outboard wheel height.	3.3.2 Adjusting Outboard Wheel Height, page 23

Date Checked:

Checked by:

ContourBuddy.com