

# Performance Tips

New Holland Disc Mower Conditioners

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NEW HOLLAND





## Introduction

Thank you for taking the time to participate in this New Holland disc mower conditioner customer clinic. Our goal is to heighten your awareness of product features and function, as well as certain machine adjustments and maintenance procedures that will enhance the performance and prolong the life of your mower conditioner.

We have included information in these Performance Tips that will be helpful in operating and maintaining your New Holland mower conditioner. Your Operator's Manual will include most of this information, and should always be your main resource for answers to your machine operation questions. If your mower conditioner is operated or maintained by more than one person, be sure to share helpful hints in this Guide with all operators to keep your machine working at top efficiency.

At New Holland, we want to see you achieve a level of performance and reliability that exceeds your expectations, and confirms the belief that you have purchased the best hay equipment available.

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# SAFETY

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A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read the following precautions and the full list of precautionary statements in the Operator's Manuals.

## General Safety Rules

- Read the Operator's Manual thoroughly before starting, operating, servicing or carrying out any other operation on the machine. The time invested in reviewing the manual will pay off in terms of time saved later.
- Read all the safety decals on the machine and follow the instructions. Immediately replace any decals that are missing or damaged.
- The mower conditioner should be operated only by responsible individuals, who are familiar with the machine.
- Before connecting the mower conditioner to the tractor, be sure the tractor meets minimum horsepower requirements and is ballasted to control the unit, especially when operating in hilly terrain.
- DO NOT work around machinery wearing loose clothing that could get caught in the moving parts.
- Always disengage the PTO, lock the tractor brakes, and shut "OFF" the tractor engine before leaving the tractor seat, lubricating the unit, cleaning or unplugging any part of the machine, or adjusting the machine.
- A tractor with an enclosed cab is recommended when operating a rotary disc cutting machine.
- Loose stones and foreign objects can be deflected toward the operator on machines with rotary discs.
- Immediately replace any skirt that is torn or has a hole in it.
- Never stand behind the mower conditioner while it is running. Stones or other objects could be thrown from the unit unexpectedly.
- Replace damaged knives, knife hardware or discs immediately to prevent an accident.
- The bottom leading edge of worn discs can become very sharp. Wear gloves to prevent injury.
- DO NOT make weld repairs to the lifters or discs, as this will affect disc strength and balance.
- Always lower the header to the ground or engage the transport stops before working around the machine.
- Keep all shields in place. Never work on, or operate a machine with shields open or removed. DO NOT modify any shields and always reinstall or close all shields after working on the machine.
- DO NOT start the machine until you know that everyone is clear of the machine.
- Always operate the unit at rated PTO speed, (540 or 1000 RPM) for which the unit was designed.
- Always use the header transport stops and spring loaded tongue safety lock when transporting the machine.
- Always use SMV emblem, adequate lights and safety warning devices when transporting the machine on public roads. Check with your local law enforcement agencies for specific requirements for your area.
- Limit towing speeds to 20 MPH maximum. Be constantly aware of the size of the machine when maneuvering in traffic.
- Use the safety chain when transporting the unit on public roads.
- DO NOT weld on wheels. Welding on wheels may cause high stress and a wheel failure.
- DO NOT weld on wheels with a mounted tire. Welding on wheels with a mounted tire may cause the tire to burst, causing death or serious injury.
- If your Operator's Manual becomes lost or damaged ask your dealer to get you a new manual for your unit.

## BASIC CONFIGURATION SPECIFICATIONS

Disc mower conditioners combine cutting and conditioning of the crop in one machine.

The disc mower conditioners are equipped with a cutter bar, rubber roller or flail conditioning systems, swath gate, and windrow shields.

Two conditioning systems are used on New Holland DiscBines. Odd number models 1409, 1411, 1431 and 1441 are equipped with rubber roll conditioners. Even number models 1410, 1412, 1432 and 1442 condition crop with a flail system.

Models 1409 and 1410 are straight tongue side-pull mower conditioners with a cutting width of 9' 2".

The 1411 and 1412 cut a 10' 4" swath, and are a bent-tongue side-pull configuration.

Center-pivot models 1431 and 1432 cut 13', while the 1441 and 1442 take a 15' 7" swath. Center pivot tongue mower conditioners allow the operator to pivot the mower conditioner to cut crop back and forth from one side of the field. It also gives the operator more maneuverability for cutting around obstacles in the field.

The cutter bar discs cut and feed the crop into the conditioner. The momentum of the crop from the conditioner carries it to the swath gate or to the windrow shields, where it is deflected into a swath, or windrow.



# SERVICE INSPECTIONS

## Take Full Advantage of its Capabilities

- Getting the most from your New Holland Discbine® is the purpose of this booklet.
- New Holland wants to help owners achieve peak efficiency from all of their equipment.

Have you, or someone you know, purchased a new mower conditioner in the last few years and continued to use it in much the same way as the mower conditioner it replaced? Many times we fail to take advantage of the advanced features available on today's modern equipment. As a result the owner may not be getting all the value from the money spent.

Many of the items suggested in this booklet can be completed by the owner when preparing for the season or by the operator when starting a new field. Other adjustments, service procedures, or repairs might be more effectively completed by your dealer's trained service technicians.

### New Holland Maintenance Inspections — prepare your mower conditioner for peak performance

Ask your New Holland dealer about New Holland Maintenance Inspections. It is a proactive way to be sure your mower conditioner will operate at its best possible performance in demanding conditions.

New Holland Maintenance Inspections include a visual and functional inspection of your mower conditioner. They can be used as a pre-season or as a post-season tune-up. Benefits include:

- Increased productivity
- Less downtime during the season
- Lower operating costs
- Improved fuel economy
- Documented maintenance
- Serviced by New Holland-trained service professionals
- Serviced with Genuine New Holland lubricants, kits, and parts



**The combined advantages of New Holland Maintenance Inspections should result in a lower cost of ownership and higher resale values.**

## Documented Service Promotes High Resale Value

When you schedule your equipment for annual maintenance inspection services, your New Holland dealership places annual Service Plus Maintenance decals (*see figure 6.1*) on your equipment after each inspection, distinguishing your commitment to keep your machines running in top condition. Not only does annual maintenance support your productivity in the field, each decal symbolizes completed service—which may increase the resale value of your equipment.

Because New Holland technicians use New Holland Maintenance Inspection Checklists for each inspection, you can rest assured that the service is thorough and nothing is overlooked



Figure 6.1

Ask your dealer about performing a New Holland Maintenance Inspection service to keep you up and running!

	Replace/			Replace/	
	OK	Adjust	Header	OK	Adjust
<b>Hitch and Driveline</b>					
1. Safety Chains/Transport Warning Lights	<input type="radio"/>	<input type="radio"/>	1. Header Flotation	<input type="radio"/>	<input type="radio"/>
2. Hitch Pivot Pins/Linkage and Transport Lock	<input type="radio"/>	<input type="radio"/>	2. Skid Shoes	<input type="radio"/>	<input type="radio"/>
3. PTO Slide Collar and Splines	<input type="radio"/>	<input type="radio"/>	3. Header Drive Belts	<input type="radio"/>	<input type="radio"/>
4. Primary PTO U-Joints and Telescoping Section	<input type="radio"/>	<input type="radio"/>	4. Check Spring Condition	<input type="radio"/>	<input type="radio"/>
			<b>Cutter Bar</b>	<input type="radio"/>	<input type="radio"/>
			1. Knives and Knife Bolts	<input type="radio"/>	<input type="radio"/>
<b>Pivot Tongue Units (1431/1432/1441/1442)</b>			2. Lifters and Cutter Bar Discs	<input type="radio"/>	<input type="radio"/>
1. Primary PTO U-Joints and Telescoping Section	<input type="radio"/>	<input type="radio"/>	3. Cutter Bar Mounting Bolts	<input type="radio"/>	<input type="radio"/>
2. Swivel Hitch Gearboxes	<input type="radio"/>	<input type="radio"/>	4. Cutter Bar Module Oil	<input type="radio"/>	<input type="radio"/>
3. Swivel Hitch Trunnion and Gearbox Coupler	<input type="radio"/>	<input type="radio"/>	5. Cutter Bar Drive Shafts		
4. Secondary Front PTO U-Joint and Telescoping Section	<input type="radio"/>	<input type="radio"/>	<b>Conditioner Rolls/Flails</b>		
5. Secondary PTO Rear U-Joint and Slip Clutch	<input type="radio"/>	<input type="radio"/>	1. Timing	<input type="radio"/>	<input type="radio"/>
6. Center Pivoting Gearbox	<input type="radio"/>	<input type="radio"/>	2. Roll Gap (Check in 3 places across and around roll, per Operator's Manual)	<input type="radio"/>	<input type="radio"/>
			3. Pivot Arms/Roll Pressure Adjustment and Lubrication	<input type="radio"/>	<input type="radio"/>
<b>Main Frame and Wheels</b>			4. Bearings - Damage, Discoloration	<input type="radio"/>	<input type="radio"/>
1. Tire Pressure/Inflation	<input type="radio"/>	<input type="radio"/>	5. Roll Drive Gearbox	<input type="radio"/>	<input type="radio"/>
2. Wheel Bolts	<input type="radio"/>	<input type="radio"/>	6. Conditioner Drive Belt	<input type="radio"/>	<input type="radio"/>
3. Wheel Bearings	<input type="radio"/>	<input type="radio"/>	7. Rolls - Damage, Discoloration, Runout	<input type="radio"/>	<input type="radio"/>
4. Wheel Arms	<input type="radio"/>	<input type="radio"/>	8. Conditioner Flails (1410/1412/1432/1442 only)	<input type="radio"/>	<input type="radio"/>
5. Header Lift Arms	<input type="radio"/>	<input type="radio"/>	9. Hood Liner and Adjustment Crank (1410/1412/1432/1442 only)	<input type="radio"/>	<input type="radio"/>
6. Linkages and Pins	<input type="radio"/>	<input type="radio"/>			
7. Lubricate/Grease all Zerk fittings per Operator's Manual	<input type="radio"/>	<input type="radio"/>	<b>Miscellaneous</b>		
			1. Pain/Safety - Warning Decals/Exterior Condition/SMV Emblem	<input type="radio"/>	<input type="radio"/>
<b>Drives</b>			2. Operator's Manual	<input type="radio"/>	<input type="radio"/>
1. Main Bevel Gearbox Oil Level	<input type="radio"/>	<input type="radio"/>			
2. Slip Clutch	<input type="radio"/>	<input type="radio"/>			
3. Chains and Belts Condition and Alignment	<input type="radio"/>	<input type="radio"/>			
4. Sprocket and Sheave Condition and Alignment	<input type="radio"/>	<input type="radio"/>			

# OPERATION

## Connecting the Mower Conditioner to the Tractor

To obtain top performance from the mower conditioner, the following steps should be followed.

Tractor hook-up

### Tractor Requirements

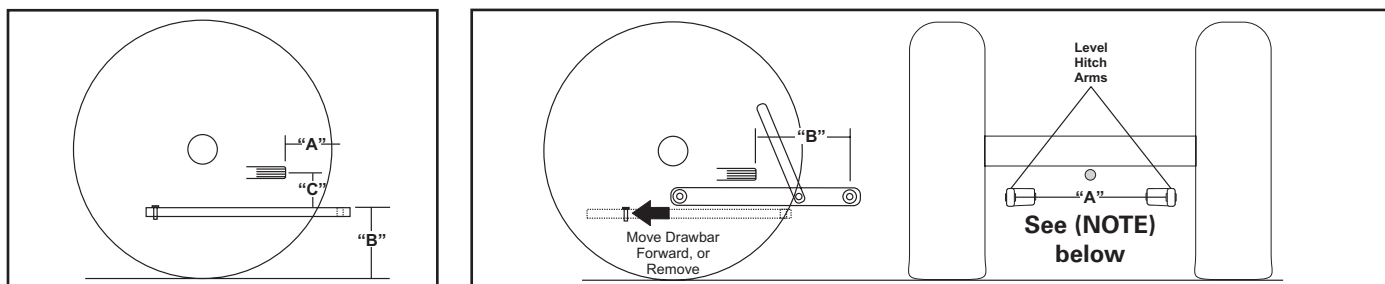
Model	Min HP	Hitch Category	# of Hyd Outlets	Min Hyd. Pressure
1409/1410	65	1 or 2	2	1500 PSI
1411/1412	80	1 or 2	2	1500 PSI
1431/1432	90	2 or 3	2	1500 PSI
1441/1442	100	2 or 3	2	1500 PSI

**Table 8.1**

The tractor drawbar and PTO must be set up properly before attaching the unit to the tractor. If the tractor-to-mower-conditioner relationship is not properly adjusted, it will affect the performance of the mower conditioner. Improper tractor hook-up may result in PTO drive shaft failure, improper header flotation, incorrect cutter bar angle and poor crop feeding (*see figures 8.1-8.2, and table 8.2*).

Adjust the tractor tread width so the wheels do not run over the windrow. Use a tractor with sufficient ground clearance to prevent crop from snagging and bunching on the underside of the tractor.

### Tractor Drawbar and PTO Dimensions



**Drawbar**

**Figure 8.1**

**2-Point**

**Figure 8.2**

Model/PTO/Hitch Configuration	Illustration	Dim "A"	Dim "B"	Dim "C"
1409/1410/1411/1412 540 RPM PTO	Drawbar	14"	13-20"	6-12"
1411/1412 1000 RPM PTO	Drawbar	16"	13-20"	6-12"
1431/1432 1000 RPM PTO, Standard Tongue Option 1 (requires extension)	Drawbar	16"	13-20"	6-12"
1431/1432 1000 RPM PTO Standard Tongue Option 2	Drawbar	24"	13-20" ① 15-22" ②	6-12"
1431/1432/1441/1442 1000 RPM PTO, Drawbar Swivel Hitch	Drawbar	16"	13-20"	6-12"
1431/1432/1441/1442 1000 RPM PTO, 2-Point Swivel Hitch	2-Point	32-1/2" Cat 2 & 3N 38" Cat 3	< 25" - Use forward hole in yoke >25" - Use rear hole in yoke (3)	

① Tractors up to 125 HP

② Tractors 125 - 160 HP

③ Install the appropriate lift pins in the correct location in the lift yoke and tighten securely to 400 ft. lbs. torque.

**Table 8.2**

**Failure to install the lift pins in the correct position could result in failure of the PTO drive shaft.**

Only install one set of lift pins, damage to the hitch could occur if both long and short pins are installed.

**NOTE:** The swivel hitch center pivot disc mower conditioners are shipped with two sets of lift pins.

- Shorter pins are used with tractors equipped with Category 2 and 3N hitches
- Longer pins are used with tractors equipped with Category 3 and 3N hitches
- Bushings for use with Category 3 and 3N hitches are also included
- If the disc mower conditioner is to be used with a quick hitch, a quick hitch bushing kit is available from your dealer

## Attaching the Mower Conditioner to the Tractor

Certain steps must be taken whenever attaching the mower conditioner to the tractor, regardless of the type of hitching arrangement.

- Grease the tractor PTO splines before attaching the mower conditioner PTO to the tractor
- Attach the mower conditioner PTO to the tractor PTO making sure the mower conditioner PTO shaft is fully seated and locked into position
- Always attach and use a safety chain when transporting on public roads

**Some additional steps must be taken in certain situations with specific hitches. 1431/1432 Standard Tongue Units (see figure 9.1)**

### Option #1

- The drawbar extension **MUST BE USED** for sharp turns and to ensure proper PTO installation to prevent damage to PTO components. Pivoting the tongue will put heavy side loads on the tractor drawbar.
- Attach the drawbar extension to the tractor drawbar and securely tighten all hardware
- The 5/8" attaching hardware should be torqued to 140 ft. lbs., and re-torqued after operating a few hours

### 1431/1432 Standard Tongue Units

#### Option #2

- Option #2 does not require the drawbar extension
- With the tractor drawbar adjusted to 24" from the end of the tractor PTO shaft to the center of the hitch pin hole, attach the mower conditioner hitch directly to the tractor drawbar.

### Bumper Extensions for Standard Tongue Units

Bumper extensions are required to limit the turn angle between the tractor and the center pivot disc mower conditioner (see figure 9.2).

- Turn limits are necessary on tractors where the drawbar extends more than 12" behind the rear tractor tires when the drawbar is set at 24" from the end of tractor PTO shaft.
- Restricting turn angle prevents bottoming out the primary PTO 80° CV joint

Install the bumper extensions on the existing bumper frame, tightening hardware to 140 ft. lbs.

- Attach the disc mower conditioner to the tractor and turn the tractor sharply until the rear tractor tire is close to the bumper extension
- If the tractor tire will contact the forward edge of the bumper extension, reposition the extensions to the forward position to prevent possible damage to the tractor tires



Figure 9.1



Figure 9.2

## 1431/1432/1441/1442 Drawbar Swivel Hitch Units

- The drawbar swivel hitch extension must be used on all tractors when using the drawbar swivel hitch (*see figure 10.1*). Pivoting the tongue will put heavy side loads on the tractor drawbar.
- Due to heavy side loading, the tractor drawbar must meet at category 3 specifications, 3" x 1.5" or larger. Extended use of smaller, lighter drawbars may cause premature drawbar failures.
- Attach the drawbar extension to the tractor drawbar and securely tighten all hardware
- The 3/4" attaching hardware should be torqued to 225 ft. lbs., and re-torqued after operating a few hours
- Final attachment is completed in the following order:
  1. Remove the latch pin and let the pawl pivot down.
  2. Back the tractor so the cross pin in the hitch extension is located under the hook.
  3. Lower jack until pin is engaged in hook.
  4. Rotate pawl back up and secure with latch pin, previously removed.



Figure 10.1



Figure 10.2

## 1431/1432/1441/1442 2-Point Swivel Hitch Units

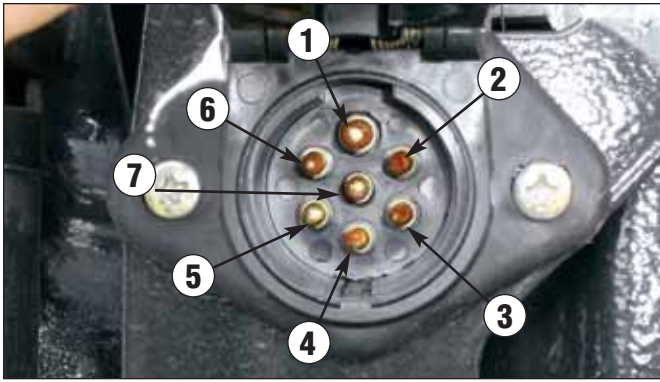
Attach the lower lift arms to the pins on the swivel hitch and secure with a linchpin in both lift pins (*see figure 10.2*).

- The pin diameter is CAT 2 for the long and short pins. It will be necessary to use bushings to increase the diameter of the pins if the tractor is equipped with a CAT 3 hitch.
- If a quick hitch is being used, install the quick hitch bushing kit on the lift pins of the mower conditioner
- **If using a quick hitch, remove the primary PTO assembly from the mower conditioner and reverse the PTO support. If the PTO and support are not removed, damage to the PTO and support may occur.**
- Attach the mower conditioner PTO to the tractor PTO making sure it is fully engaged and locked into position
- Slowly raise the lift arms, making sure the PTO shaft does not bottom out. If required limit the lift arm travel to prevent the PTO from bottoming. Refer to the tractor Operator's Manual for this adjustment.

**Failure to limit the up travel of the three point hitch could result in damage to the primary PTO drive shaft and the tractor PTO.**

- Operate the tractor lift system and raise the 3-point arms until the mower conditioner PTO is level
- Attach the check chains to the tractor top link attaching point. With the PTO shaft level attach the check chains to the lift pins on the mower conditioner hitch.
- Check chains are not intended to carry the weight of the tongue, only to limit the lowering of the lift arms to prevent PTO damage

**Failure to properly use the check chains could result in primary PTO or tractor PTO damage.**



- |                      |                       |
|----------------------|-----------------------|
| 1. Ground            | 5. Directional, right |
| 2. Not used          | 6. Tail Lights        |
| 3. Directional, left | 7. Not Used           |
| 4. Brake lights      |                       |

**Figure 11.1**

- Make necessary electrical connections for transport warning and turn signal lights (*see figure 11.1*)
- Newer tractors have a mating lighting connector, with wiring compatible with the mower conditioner circuits. Older tractors may require addition of wiring connections for proper lighting operation.

## Transporting the Disc Mower Conditioner

When transporting the disc mower conditioner on public highways, configure the unit for the narrowest possible transport width.

- Pivot the mower conditioner tongue to the transport position and engage the swing cylinder lock, to prevent cylinder movement
- On center pivot units, position the tongue in the center of the header and engage the spring loaded tongue latch pin at the rear of the tongue (*see figure 11.2*).

Additional steps for safe road transport.

- Raise the header and engage the header lift locks then lower the header onto the locks (*see figure 11.3*).
- Attach the safety chain from the mower conditioner to the tractor
- Be sure the SMV (Slow Moving Vehicle) emblem is visible from the rear when the mower conditioner is in the transport position
- Use transport lights, amber flashing, and red tail/stop lights
- The mower conditioner is also equipped with reflective tape. Keep the reflective tape clean and in good condition. If the tape becomes damaged contact your dealer for new decal tape strips.



**Figure 11.2**



**Figure 11.3**

# OPERATION

## Basic Mower Conditioner Adjustments and Configuration

### Header Flotation

The header flotation should be set so a 100-120 lb. lifting force at each end will start to lift the header from the ground.

- Increase the tension on the flotation springs in rough or stony conditions to reduce header flotation force to 75-100 lbs. (see figure 12.1)
- If the header is too light (springs tight), the header will bounce creating uneven cut height, poor crop feeding and poor windrow or swath appearance
- If the header is too heavy (springs loose), the header will not float properly over obstacles causing cutter bar and knife damage. This then will affect cutting and feeding of the crop.
- DO NOT exceed 150 lb. flotation force. Cutterbar or header damage may occur.

### Cutting Height

The cutting height is adjusted by changing the header tilt angle. The header tilt can be set to three different operating positions (see figure 12.2).

**NOTE:** The following cutting height values are with 14° twist knives installed. Cut height will vary slightly with other knives installed.

Minimum Tilt - Approximately 2.65" cutting height

- Used in stony field conditions
- Used when cutting new seeding, (first cutting) to prevent pulling the crop from the ground
- Used in crops where longer stubble is desired
- Soft field conditions

Mid Position Tilt - Approximately 1.71" cutting height

- Used for normal crop conditions

Maximum Tilt - approximately .95" cutting height

- Used in tough cutting conditions
- For down crop conditions
- For dead, wet undergrowth conditions

### High Stubble Kit

Provides a higher cutting height for clipping pastures or for crops where higher stubble is desired. The high stubble kit will increase the cutting height from a range of .95" - 2.65" to 3.5"-5".



Figure 12.1



Figure 12.2

## Flail Conditioner (1410, 1412, 1432 and 1442)

The New Holland Flail Conditioner is used primarily for grass hay crops. Flails (*see figure 13.1*) condition crop by scuffing and cracking the crop stems, opening the stem for improved drying.

The aggressiveness of the flail conditioner is adjusted by moving the top hood up or down to restrict crop movement (*see figure 13.2*). Lowering the hood increases crop contact with the flails, increasing conditioning.

In extreme conditions and tough crops, a dimpled hood option will increase conditioning. A high speed rotor option for the 1410 and 1412 will also increase conditioning were necessary. A low speed rotor option is available for 1432 and 1442 crops requiring less conditioning.

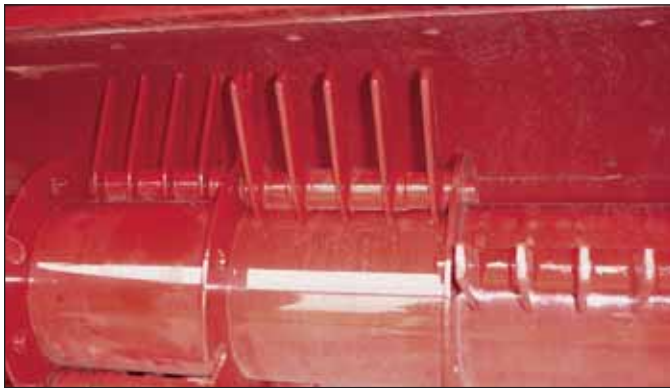


Figure 13.1



Figure 13.2

### Roll Gap

Conditioner roll gap is a critical element in proper crop conditioning. Gap can be adjusted to vary the conditioner performance based on the type of crop being harvested (*see figure 13.3*).

### Rubber Conditioner Rolls

The roll clearance and pressure should be adjusted to obtain 90% of stems being cracked and 5% of the leaves being damaged, with dark marks on the leaves.

Normal cutting conditions;

- Roll gap should be 1/64"-1/8"

Thick stemmed crops;

- Increase roll gap to 1/4" or greater

**Minimum roll clearance should be checked in multiple positions to allow for variation or runout in the roll.**

Rolls must be timed and adjusted so the two rolls never contact (*see figure 13.4*). Extreme vibration and high stress on the drive system will result from roll contact.

- Roll timing is adjusted with a slotted sprocket or universal joint drive hub on one roll (depends on model)

**Contact your New Holland dealer for assistance when making critical adjustments to roll clearance and timing.**

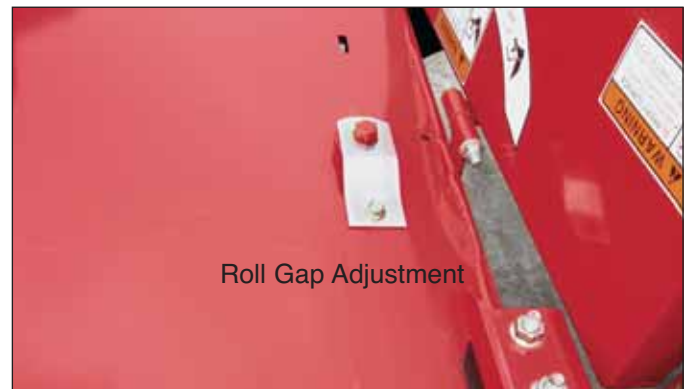


Figure 13.3



Figure 13.4

## Cutter Bar Inspection

Cutter bar components should be inspected on a regular basis to prevent expensive repairs and down time.

- Knives – for damage; broken, bent, missing or loose hardware
- Lifters – for damage; bent, cracked and loose or missing hardware
- Discs – for damage; bent, cracked and loose or missing hardware
- Disc timing – discs should be 90° to each other. (Discs that are not timed properly may indicate internal cutter bar damage.)

## Inspection Procedure

Starting at one end of the cutter bar, try to rock each disc up and down. A small amount of movement up to 0.060" is normal (*see figure 14.1*).

- Excessive movement indicates a loose disc hub retaining bolt or worn top cap bearings

Starting at the left end of the cutter bar and working down the cutter bar, grasp two adjacent discs, and slowly rotate one disc while holding the other disc against the direction of rotation.

- If one disc suddenly moves or excessive free play is felt, internal wear or damage is indicated

Scheduled maintenance is an essential part of keeping your disc mower conditioner working at top performance, with the highest level of reliability and minimal downtime. Operators must still make some time to assure all necessary maintenance is performed in a timely and conscientious manner.

In addition to prioritizing the time necessary to perform normal maintenance operations, using top quality New Holland replacement parts and lubricants will go far in assuring your efforts to will be rewarded with trouble-free and productive haymaking.

## Module Lubricant

Remove the plug and dipstick from each disc module and check lubricant level every 50 hours of operation. Re-fill with EP 135H 80W90 gear lube (*see figure 14.2*).



Figure 14.1

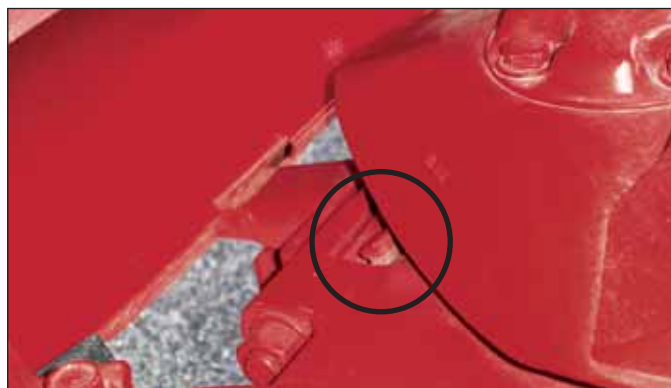


Figure 14.2

### Lincoln's new, heavy-duty 14.4 volt PowerLuber gives you the power to lubricate just about anything, anytime, anywhere.

- Two-speed switch for high-pressure or high-volume delivery
- Cycle indicator pin to monitor grease output
- "Smart" charging system delivers reliable power

All the features you need, including comfortable grip and balanced design; hook for shoulder strap; built-in hose and coupler holder; and a slim, compact carrying case.

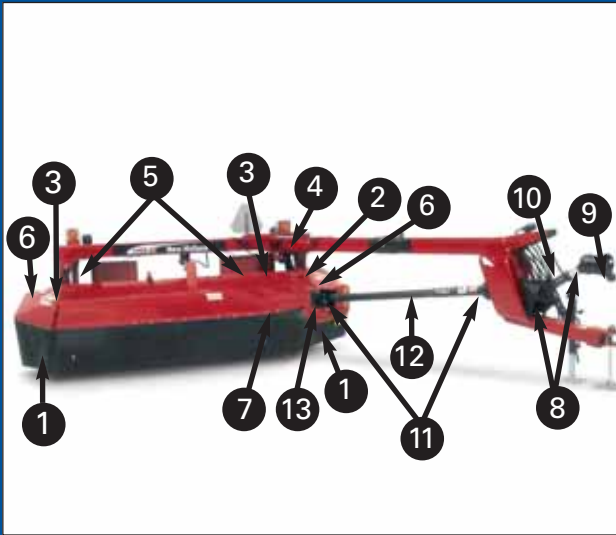
— Model 1442 - Part No. 87298560, one battery

— Model 1444 - Part No. 87298561, two batteries

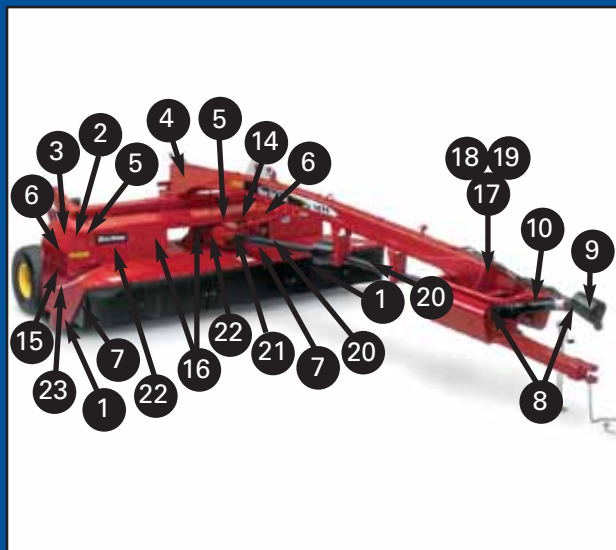
Powerluber is a registered trademark of Lincoln Industrial Corp.

### Lincoln PowerLuber®





**Side-Pull**



**Pivot-Tongue**

10 Hrs./Daily

- 1 Cutter Bar Mounting Bolts (Both Sides)
- 2 Roll Drive Shaft
- 3 Wheel Arms
- 4 Tongue Pivot Pin
- 5 Header Lift Arms (Both Sides)
- 6 Upper Roll Pivot Arms (Rubber Rolls Only-Both Sides)
- 7 Cutter Bar Drive Shaft
- 8 Primary PTO CV Universal Joints
- 9 PTO Slide Collar
- 10 Primary PTO Sliding Shaft

**SIDE-PULL ONLY**

- 11 Secondary PTO CV Universal Joints (2)
- 12 Secondary PTO Sliding Shaft
- 13 Slip Clutch/Overrunning Clutch

**CENTER PIVOT ONLY**

- 14 CutterBar Jackshaft
- 15 Conditioner Drive Belt Adjustment (Check)
- 16 Header Drive Belts (Check)
- 17 Swivel Hitch Trunnion
- 18 Swivel Hitch Gearbox Coupler
- 19 Primary PTO Swivel Hitch Tongue
- 20 Intermediate PTO (4 Locations)
- 21 Rear U-Joint & Slip Clutch (Intermediate PTO) Header Drive Belt
- 22 Idler Pivots
- 23 Conditioner Roll Drive Belt Idler Pivot

**Tire Pressure, Wheel Bolt Torque, and Lubricant Specifications**

Model	1409/1410/1411/1412	1431/1432/1441/1442
Tire Pressure	166 kPa (24 PSI)	207 kPa (30 PSI)
Wheel Bolt Torque	156 Nm (115 ft. lbs.)	156 Nm (115 ft. lbs.)
Grease	Lithium base EP high temp.	Lithium base EP high temp.
Gearbox Oil	API-GL-5 80W-90	API-GL-5 80W-90

# TROUBLESHOOTING

FIELD PROBLEMS AND ADJUSTMENTS	SYMPTOM	SUGGESTED ACTION
<b>Driveline Area</b>		
PTO drive line shaft failures	Improper hook-up to tractor	Properly adjust tractor drawbar and align PTO assembly
	Insufficient lubrication on telescoping sections of the drive line	Clean and lubricate the driveline components
PTO U-joint and/or CV-Joint failures	Insufficient lubrication, PTO shaft not telescoping freely	Clean and properly lubricate PTO components
	Insufficient or improper lubrication of the U-joint or CV-joint. Make certain that telescoping sections are not bottoming out due to over-turning.	Grease Every 8 hours and pump 4-6 pumps into the U-joint and 16-20 pumps into the CV-joint ①. Follow the procedure outlined regarding the use of tire bumpers
	Overloading of the PTO drive	Check slip clutch, free up clutch and properly adjust
	Slip clutch frozen or over tightened not allowing the clutch to slip	Loosen and clean slip clutch and properly adjust clutch
	Engaging tractor PTO at too high engine RPM	Check PTO slip clutch and engage tractor PTO at low engine RPM
	Improper hook-up to tractor	Properly adjust tractor draw bar and align PTO assembly
<b>Cutter Bar Area</b>		
Excessive breaking or binding of knives and discs	Header too heavy to float properly	Adjust flotation springs until the force required to start to lift the header at each end is 75-100 lbs. or less
	Operating in severe rough or stony conditions	Adjust the flotation springs to achieve a lift force of 100-120 lbs. At each end of header.
	Improper tractor hook-up, tractor drawbar too low	Adjust the tractor drawbar and machine hitch 13" to 20" above the ground. <b>Changing tractor drawbar height will affect the header flotation setting. After changing drawbar height, re-adjust the header flotation.</b>
	Points of knives and discs down too far at the front tip	Change cutter bar tilt to reduce cutter bar angle, to allow the cutter bar to ride over stones, etc.
	Binding in the wheel arm pivots	Free up and lubricate the wheel arm pivots
	Dull or missing knives	Replace knife
	Knives not free to rotate	Free up knives
Leaving ragged stubble	Operating at improper PTO speed	Operate at rated PTO speed, do not overspeed machine
	Header flotation is set too light	Readjust header flotation to a heavier setting. DO NOT exceed 100-120-lbs. <b>Higher ground speed may require increasing header weight to 130-150 lbs. DO NOT exceed (150 lbs.) flotation force or damage to the header may occur.</b>
	Cutting the crop too high	Increase the cutterbar angle
Leaving streaks of uncut material across cut width	Broken or missing knife	Replace knife

FIELD PROBLEMS AND ADJUSTMENTS	SYMPTOM	SUGGESTED ACTION
<b>Conditioner Area</b>		
Material not conditioned properly. (Not enough conditioning).	Not enough roll pressure	Increase roll tension
	Too much roll clearance	Re-adjust roll gap and re-time rolls. The roll clearance and pressure should be adjusted to obtain 90% of stems being cracked and 5% of the leaves being damaged, with dark marks on the leaves.
Over conditioning	Too much roll pressure	Loosen the roll pressure
	Conditioner rolls too close together, rolls contacting each other	Adjust roll gap and re-time rolls
	Roll timing mis-adjusted, lugs not centered	Re-time rolls
	Top conditioner roll linkage frozen, not moving freely	Free frozen linkage, re-adjust roll gap and re-time rolls
Material being crushed with minimal amount of roll tension	Roll timing	Re-time rolls
	Rolls too close together, rolls should not contact each other	Re-adjust roll gap and re-time rolls
Flail Conditioner system, Crop not conditioned properly (insufficient conditioning)	Conditioner hood too high	Lower conditioner hood
		Add optional dimpled hood
	Flails not swinging freely	Free up flails
	Rotor speed low	Operate at correct PTO RPM Add high speed rotor option (1410 & 1412)
Excessive conditioning and crop damage	Conditioner hood too close to rotor	Raise conditioner hood Remove dimpled hood (if equipped)
	Excessive rotor speed	Add low speed rotor option (1432 & 1442)

**\*NOTE:** Some resistance may be felt when adding grease to the CV-joint.  
 • It is extremely important the CV-joints are greased properly

## Storage

Most operators are quite maintenance conscious during the heavy use of the haying season. However, when the last crop is cut, equipment is often put away until next year, with little thought to off-season storage and preventive measures. Refer to the Operator's Manual for a complete list of storage procedures. Some of the main steps are:

- Clean the unit, especially wrapped material or debris that has accumulated in areas where moisture may collect. Store the unit out of the weather if possible.
- Lubricate the unit. Drain gearboxes and modules and refill with fresh lubricant
- Perform any necessary repair
- Relieve spring pressure where possible:
  - Roll pressure
  - Flotation springs
  - Belt tension
- Park the unit on transport locks, or with the cutter bar on blocks
- Adjust tire pressure to 30 PSI to prevent deformation during storage

### **Optional equipment and usage Bumper Extensions, Standard Tongue Only (1431/1432 Only)**

Bumper extensions are required to limit the turn angle between the tractor and the center pivot disc mower conditioner on tractors where the drawbar extends more than 305 mm (12") behind the rear tractor tires when the drawbar is set at 609 mm (24") from end of tractor PTO shaft, to prevent bottoming out of the primary PTO 80 CV joint.

### **Truck Hitch (for swivel hitch tongues only) (1431/1432/1441/1442)**

A truck hitch is available for use with the disc mower conditioner equipped with the swivel hitch tongue. This will allow towing of the swivel hitch disc mower conditioner with a suitably sized truck.

## High Stubble Kit

The high stubble kit can be installed to provide a higher cutting height for clipping pastures or for crops where higher stubble is desired. The high stubble kit will increase the cutting height from 24-67.3 mm (.95-2.65") to 89-127 mm (3.5-5").

## Viney Crop Guide (1411/1412)

The viney crop guide can be installed to improve cutting performance in long-stemmed, down, and tangled crops. This guides the crop down into the path of the outer disc and knives to ensure the crop is cut off cleanly. The guide may be used at all header operating angles and may be left on when cutting in other crops.

## Disc Knives

### 7° Twist Knives

The 7° twist knives are recommended for abrasive soil and rocky crop cutting conditions. These knives function well in a wide range of field and cutting conditions.

### 14° Twist Knives (standard equipment) and 14° Twist Serrated Knives

The 14° twist knives are recommended in most crop conditions. The greater twist angle enables the knife's cutting edge to cut closer to the ground while providing more lifting action to move the crop over the cutter bar into the conditioner, producing a cleaner cut. The greater twist angle in these knives makes them more susceptible to rock damage.

## V Knives

The V knives are recommended in rocky conditions where excessive knife bending is a concern. This style knife has greater resistance to bending when coming in contact with a foreign object. The cutting quality of this knife is not as good as with the twisted knives.



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