

# **2000-B PICK-UP REEL**

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## **OPERATOR'S MANUAL**

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Inside Front Cover  
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# INTRODUCTION

Your new Model 2000-B cam-action Pick-Up Reel is ideal for downed-crop conditions and may be mounted on most windrowers and combines.

This manual is provided to assist you in the Assembly, Operation and Maintenance of your MacDon Pick-Up Reel. As well, a Service Parts listing is included. Use the manual as your first source of information about the reel.

CAREFULLY READ THE MANUAL BEFORE ATTEMPTING TO ASSEMBLE, MOUNT OR USE THE REEL.

Repair or replacement parts may be ordered from your nearest authorized dealer. When ordering, be sure to include the following information:

1. Serial number of reel. The serial number is located on the L/H cam assembly.
2. Part number, description and quantity of each part.
3. Make and header width of windrower or combine.

Keep this manual handy for reference and to pass on to new operators or owners. Call your Dealer if you need assistance, information or additional copies of this manual.

**NOTE:** A mounting parts list was shipped with the mounting package for your particular windrower or combine. Keep the list with this manual for future reference.

**NOTE:** For assembly and parts description purposes, right and left hand are determined from the Operator's position, facing forward (in the direction of travel). These may be abbreviated using R/H and L/H. The cam assemblies at either end of the reel are identified as right or left hand with decals.

**WARRANTY CLAIMS:** When claiming warranty, be sure to include all of the following information:

1. Serial number of reel.
2. Date purchased.
3. Date of failure.
4. Description of failure.
5. Part number and quantity of failed parts.

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# SAFETY



This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.

If this reel is used by an employee, or is loaned or rented, make certain that, prior to operating, the user:

1. Is instructed in safe and proper use.
2. Reviews and understands this manual.



## **BEFORE STARTING**

Read this manual completely and make sure you understand it before attempting assembly or operation.

Study all safety messages in this manual, as well as the combine or windrower manual.

Read all the safety signs on the machine.

Clear the area of other persons.

Clean reflective surfaces on the machine.

Learn and practice safe use of controls before operating.

It is your responsibility to understand and follow manufacturers' instructions on machine operation, service, and to observe pertinent laws and regulations.

To help prevent personal injuries during assembly, operation and maintenance; use protective shoes, a hard hat, protective glasses or goggles, and close-fitting clothing.

Provide a first aid kit for use in case of accident.



## **ASSEMBLY AND SERVICE**

Before rotating any reel not mounted on a header, be sure the reel is securely attached to stable supports at both ends so it cannot tip or fall.

Install and maintain all recommended shields and safety signs.

The reel drive must be properly shielded. Install and maintain all recommended shields and safety signs.

Do not crawl under, or climb over or through the reel assembly.

# SAFETY



## ASSEMBLY AND SERVICE (continued)

The reel weighs between 400 lbs. (15') and 800 lbs. (30') and must be adequately supported. When positioning the reel, be sure a stop is in place to prevent the reel from sliding off the reel support arms. See header Operator's Manual for reel clearance and fore-aft adjustments.

Do not service or adjust reel until:

1. The header is resting on the ground and the reel is fully lowered. If it is necessary to service in the raised position, first engage header and reel cylinder stops.
2. Header clutch is disengaged.
3. The engine is stopped and the key removed from the start switch.
4. The park brake is set.
5. All moving parts have stopped.



## OPERATING

Be aware and stay clear of rotating machine parts which cannot be shielded. Keep shields installed and wear close fitting clothing to help protect from entanglement and injury.

Lower or block all hydraulically or mechanically elevated implements, including the reel and other attachments before leaving the equipment.

Be aware that accidents often happen when the operator is tired or in a hurry to get finished. Take the time to consider the safest way. Never ignore warning signs of fatigue.



## SIGNAL WORDS

Note the use of the signal words DANGER, WARNING, and CAUTION with safety messages. The appropriate signal word for each message has been 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 is also used to alert against unsafe practices.

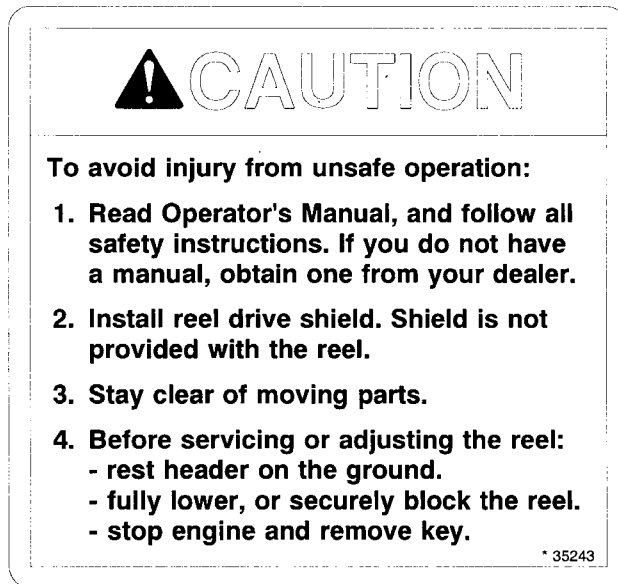
**CAUTION** - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It is also used as a reminder of good safety practices.

# SAFETY

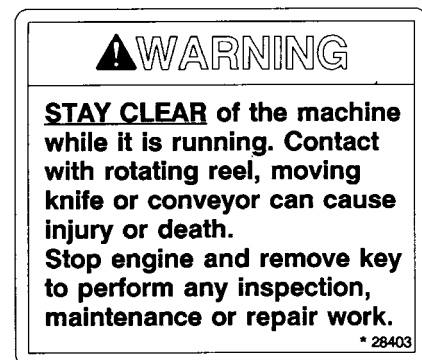
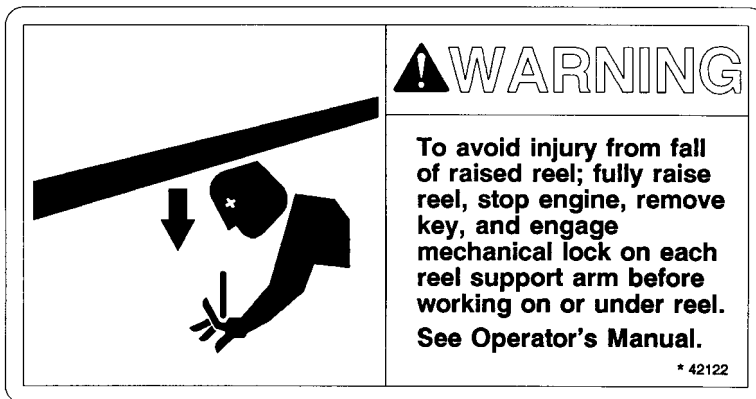


## SAFETY SIGNS

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or become illegible.
- If original parts on which a safety sign was installed are replaced, be sure the repair part also bears the current safety sign.
- Safety signs are available from your Dealer Parts Department.
- To install safety signs:
  1. Be sure the installation area is clean and dry.
  2. Decide on the exact position before you remove the backing paper.
  3. Remove the smaller portion of the split backing paper.
  4. Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.
  5. Small air pockets can be smoothed out or pricked with a pin.
- The following safety sign appears on the pick-up reel main tube.



- As well, the following or similar reel-related safety signs may appear on your combine or windrower header.



## ASSEMBLY



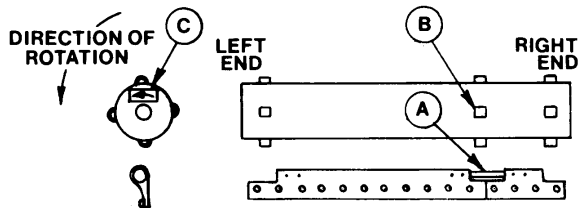
**CAUTION:** To help prevent injury, use protective shoes, a hard hat, protective glasses or goggles, and close fitting clothing.



**CAUTION:** Be careful when cutting strapping and shipping wire. Release of pressure can cause sudden movement. Remove wire and strapping from the assembly area.

### 1. IDENTIFY LEFT/RIGHT END:

Lay bats down as they were strapped to center tube. Do not turn end for end. Notches (A) in bats should line up with lugs (B) on reel center tube. Identify left and right ends of center tube by the decal (C) at each end.



IDENTIFY LEFT & RIGHT ENDS

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### 2. SUPPORT CENTER TUBE on suitable stands.



**WARNING:** The completed reel weighs between 400 lbs. (15') and 800 lbs. (30') and must be adequately supported.

**NOTE:** Be sure reel is located where it can be easily approached when mounting on header.



SUPPORT CENTER TUBE

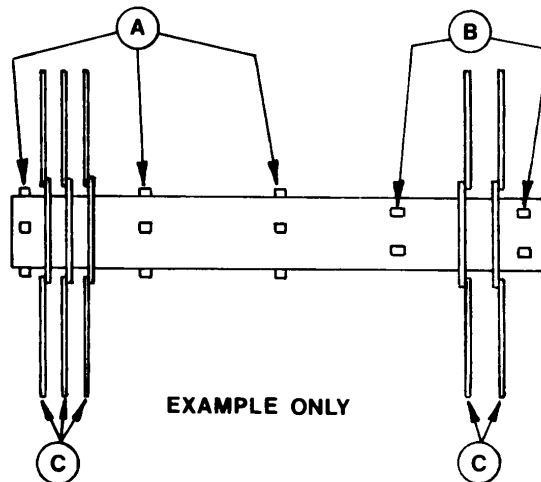
## ASSEMBLY

### 3. SLIDE REEL ARM ASSEMBLIES ONTO CENTER TUBE.

**NOTE:** The lug pattern is different at each end of the tube. The pattern at each end continues towards the center of the tube. The number of positions with the same lug pattern determines the number of arm assemblies to be installed from that end.

**EXAMPLE:** Lug pattern (A) is repeated at three positions; slide three reel arm assemblies (C) on that end.

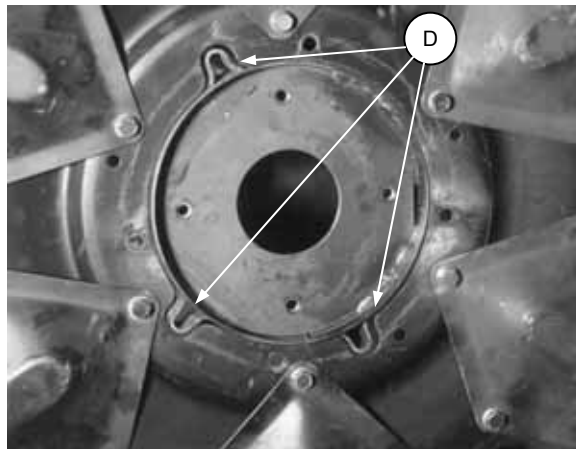
Lug pattern (B) is repeated at two positions; slide two assemblies (C) on that end.



IDENTIFY LUG PATTERN & SLIDE ON ARM ASSEMBLIES

To install arm assemblies:

- With disc of assembly facing in, match the three notches (D) in the arm disc with the three end lugs on the center tube and slide assembly over these lugs.
- Rotate assembly until any notch in disc aligns with the fourth (offset) lug and slide on.
- Repeat until all assemblies are on reel tube, past the first set of lugs at each end.

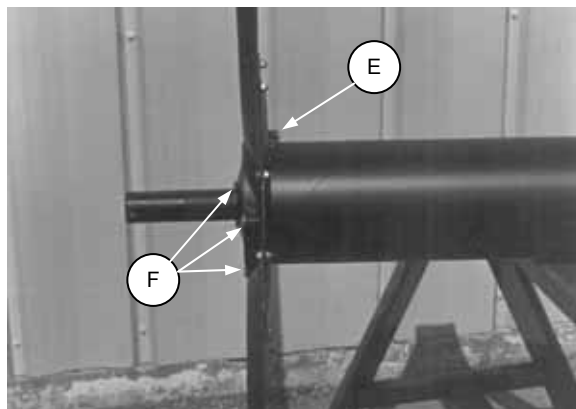


LINE UP 3 LUGS, SLIDE ON, ROTATE TO LINE UP OFFSET LUG

- Fasten one arm assembly at each end, using 3/8 NC x 1-1/2 carriage bolts and flange nuts as follows:

Place the disc between the one offset lug (E) and the other three lugs (F) and rotate to align holes in disc with lugs on tube. Install hardware finger tight only, with bolt heads against lugs.

**NOTE:** It is sufficient to fasten only the outside arm assemblies at this stage, leaving the rest of the arm assemblies close to the end of the reel. Final positioning is easier after the reel is mounted.



ATTACH ONE ARM ASSEMBLY EACH END



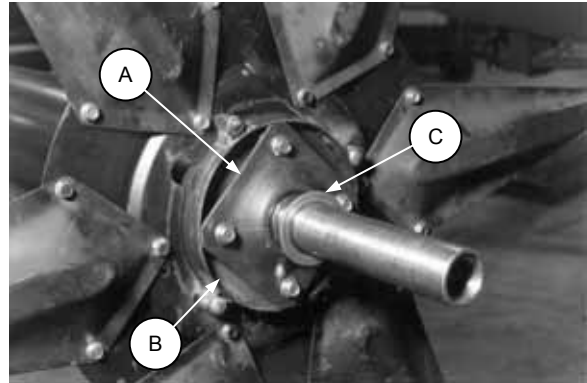
## ASSEMBLY

4. INSTALL END SHAFTS from mounting package using four 3/8 NC flange bolts.

**NOTE:** End shaft can be identified as right or left by the decal on the support to which it is assembled. Be sure the drive end shaft is installed at the proper end of the reel for your machine.

**IMPORTANT:** Tighten the four bolts evenly to pull shaft straight into tube. Plate (A) must contact disc (B). When contact is made, torque bolts to 35 ft.lbs. (47 N·m).

Slide one 3 inch O.D. washer (C) from mounting package onto each end shaft.



INSTALL END SHAFTS & WASHER

5. ASSEMBLE AND INSTALL CAMS.

- a. Identify left and right reel supports (A) (from mounting package) by the decal on each part.

- b. Attach each reel support (A) to a cam track (B) with one 3/8 NC x 3/4 carriage bolt and flange nut at (C). (Both cam tracks are the same.)

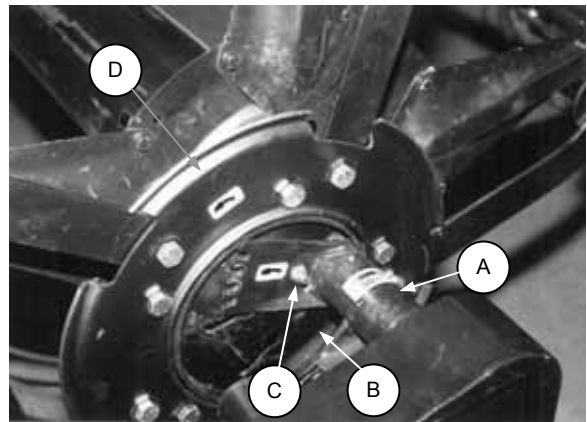
**IMPORTANT:** Do not install bolt in adjustment slots until reel is mounted. Damage to reel may result if ends are not evenly adjusted.

- c. Slide reel support/cam track assemblies onto end shafts, matching rotation decals on center tube to decals on reel supports.

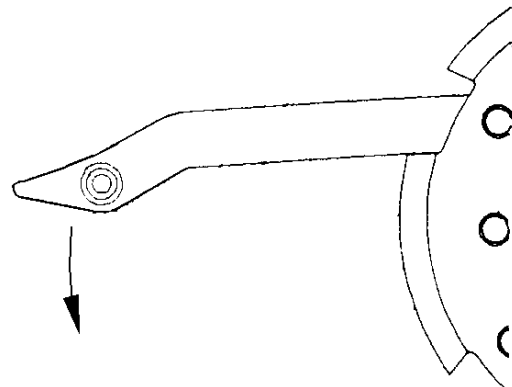
- d. Identify right and left cam arm assemblies (D) by the decal on each cam ring. Position the cam arms collapsed or removed for shipping and tighten locknuts to 150 ft.lbs. (200 N·m).

**NOTE:** For L/H cam assembly, flip over both collapsed arms so that all cam arms are oriented the same way in direction of rotation.

- e. Slide right and left cam arm assemblies (D) over cam tracks at respective ends of reel, ensuring that rotation decals on center tube, reel supports and cam rings all match.



ASSEMBLE AND INSTALL CAMS  
(LEFT HAND SHOWN)



## ASSEMBLY



**WARNING:** Before rotating the reel be sure L/H & R/H mounts are well clamped so that reel cannot tip or fall.



**CAUTION:** To prevent cam arm assemblies from sliding sideways off of cam tracks as reel is mounted, wire-tie cam arm assembly to the outer reel arm assembly (fastened in step 3).

### 6. MOUNT REEL TO HEADER SUPPORT ARMS.

**NOTE:** If header is not available, position new stands at left and right mounts and clamp reel securely. Remove supports under reel center tube.

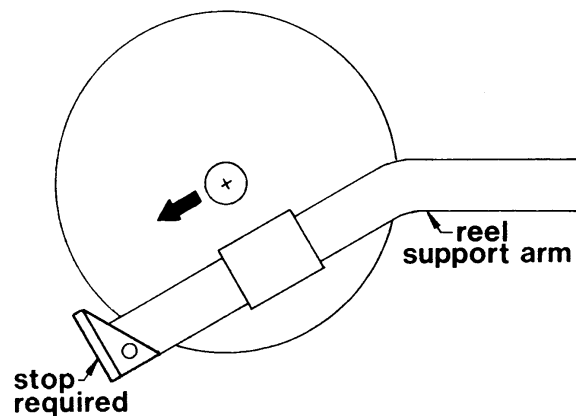
See insert sheet supplied with mounting package for mounting instructions.



**WARNING:** The reel weighs between 400 lbs. (15') and 800 lbs. (30') and must be adequately supported. When positioning, be sure a stop is in place to prevent the reel from sliding off the reel support arms.



**WARNING:** The reel drive must be properly shielded. Install and maintain all recommended shields and safety signs.



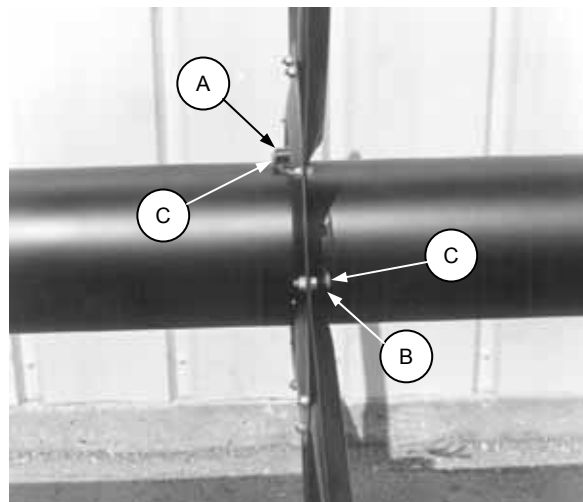
MOUNT REEL SAFELY

### 7. ATTACH REMAINING REEL ARM ASSEMBLIES to center tube using 3/8 NC x 1-1/2 long carriage bolts and flange locknuts as follows:

Position arm assembly at the set of lugs where it is to be installed.

Place the disc between the one offset lug (A) and the other three lugs (B) and rotate to align holes in disc with lugs on tube.

Install hardware finger tight only, with bolt heads (C) against lugs.



ATTACH REEL ARM ASSEMBLIES

## ASSEMBLY

### 8. ATTACH CRANKS TO BAT ASSEMBLIES:

- a. Left and right cranks are bundled separately. Identify left and right cranks by the decal on one crank per bundle.
- b. Install left (E) and right cranks into bat assemblies (F). Be sure orientation of bats is as shown.

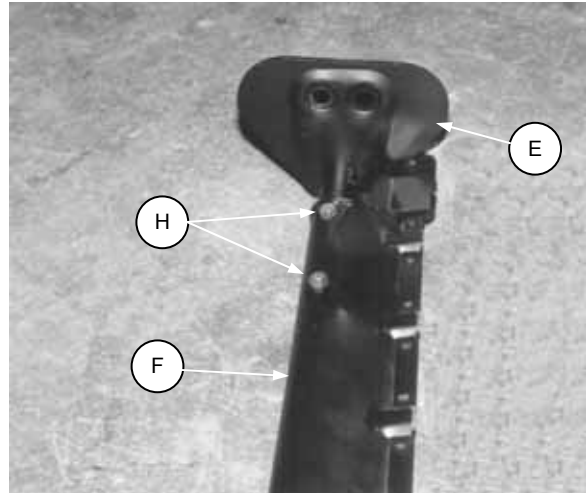
***At Left Cranks Only:*** Fasten with 5/16 NC x 1-1/2 inch hex socket head capscrews and special tapered nuts (H). (Taper against bat). Tighten hardware only until bat is clamped to tube (0 to 1 1/2 threads showing). Do not collapse bat and tube by over-tightening.

***IMPORTANT:*** Do not install hardware for right cranks at this stage. This hardware will be installed at Step 15.

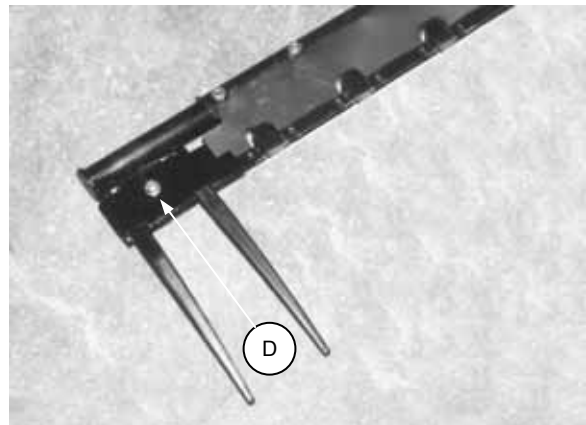
- c. ***36' Header Only:*** At inboard end of L/H and R/H reels, install fingers in end bats. (See Step 11 for procedure). Install 5/16 NC x 3/4 carriage bolt and flange nut at (D), tightening only until fingers are clamped.

Attach end bats to bat assemblies similar to cranks, (Step 8 b, above).

**NOTE:** Clamping of end bat fingers prior to installation of end bat is necessary to provide proper fit-up between end bat and formed bat.



INSTALL CRANKS INTO BATS - FASTEN LEFT HAND ONLY



CLAMP FINGERS IN END BATS BEFORE INSTALLATION (36' HEADER ONLY)

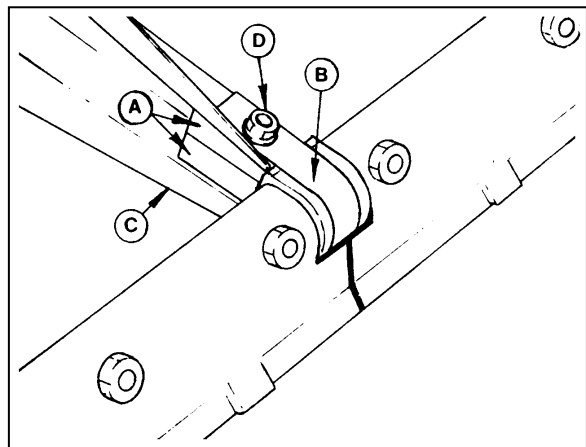
### 9. ATTACH BATS TO REEL ARMS:

- a. Assemble bearing halves (A) and steel strap (B) onto reel bats.

**NOTE:** Apply a thin layer of grease on all plastic bearings to prolong bearing life.

- b. Check that left and right hand decals on bat assemblies and cam assemblies match. Attach bats to reel arms (C) as shown with 5/16 x 2 1/4 inch hex head capscrews and flange locknuts (D). FINGER TIGHTEN ONLY.

- c. Straighten bats, then tighten hardware at arm discs only. See Step 14 for proper torques.



ATTACH BATS TO REEL ARMS



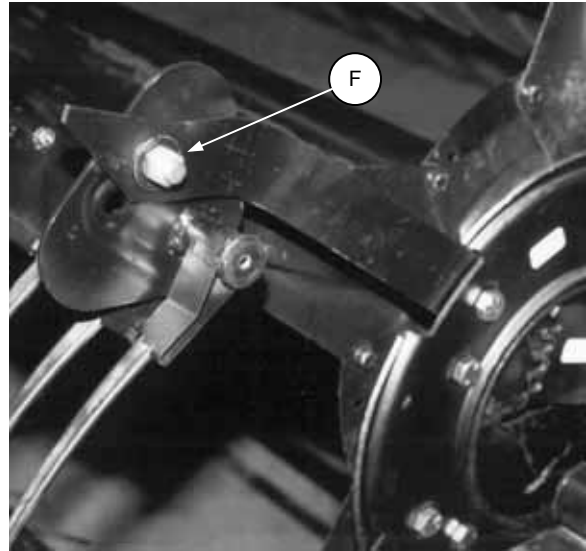
**WARNING:** Do not crawl under, or climb over or through the reel assembly.

## ASSEMBLY

10. ATTACH CAM ARMS (F) to cranks on bat assemblies using 5/8 x 1-3/8 hex head shoulder bolts and lock nuts. Finger tighten only.

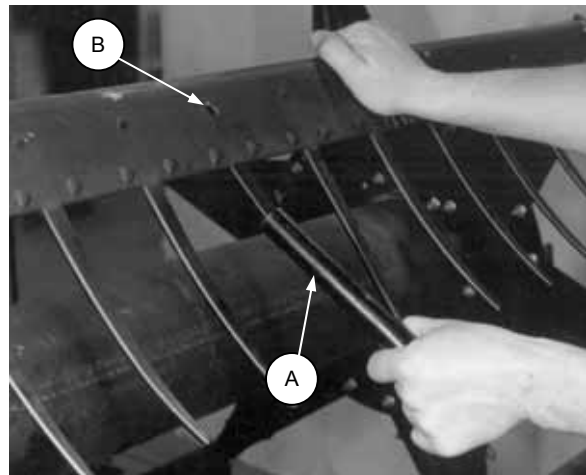
**NOTE:** There are two positions on the crank for connecting cam arms. See "Recommended Settings" chart on page 14 and choose the position best suited to your conditions. (Position "Y" is shown here.)

**IMPORTANT:** Install hardware with bolt head inboard. Once a cam arm position is chosen, ensure all arms are in the same position at both ends of the reel.



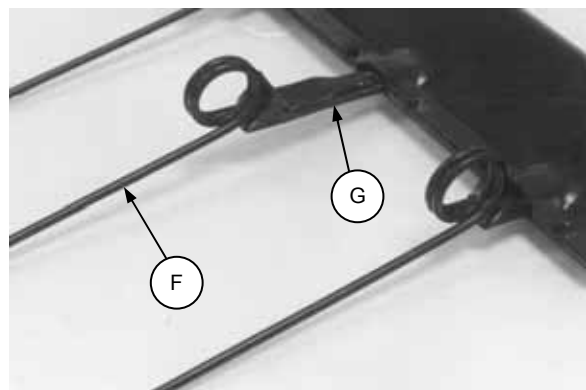
ATTACH CAM ARMS

11. INSTALL FINGERS in bats using tool (A) provided, ensuring button snaps into hole (B) in bat.



INSTALL FINGERS

For steel fingers, pre-assemble finger (F) and clip (G) and install as above.



STEEL FINGERS

## ASSEMBLY

### 12. INSTALL END SHIELDS

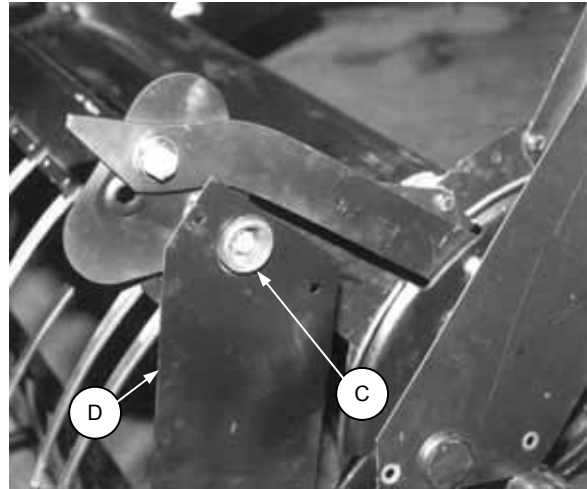
- a. Insert shield bearing (C) into pocket (with hole) in end shield (D). The step on the bearing must protrude through hole in end shield.
- b. Attach bearing to crank (or end bat for 36") with 3/8 x 5/8 inch flange head self-tapping screw. Tighten enough to prevent rotation of the shield bearing against end of crank tube. Do not over-tighten, plastic bearing may split.
- c. Bring the closed end of the next end shield up, enclosing the bearing. Fasten end shields with 5/16 x 3/8 Phillips truss head machine screws and nuts (E).

**IMPORTANT:** To avoid damage to reel bats and shields, screw heads must be to the inside of the reel.

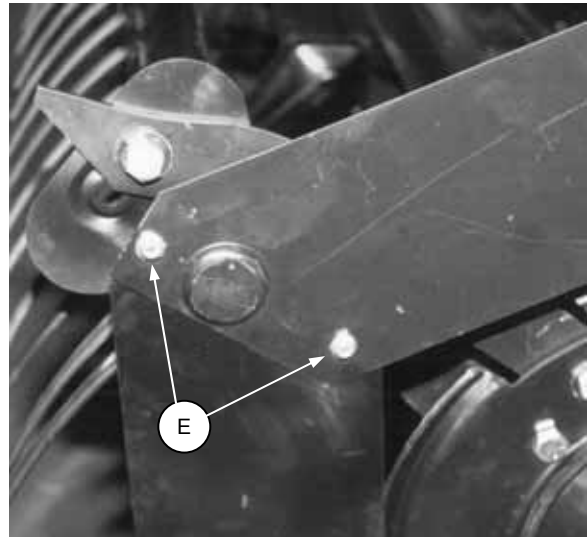
Leave hardware loose until all shields are attached.

- d. Clearance between end shields and header end sheet (or nearest point of contact) should be 1 to 2 1/2 inches (25 - 64 mm).

If necessary, adjust reel support arm braces to center the reel in the header. See your header Operator's Manual.



INSTALL END SHIELD BEARINGS



ASSEMBLE END SHIELDS

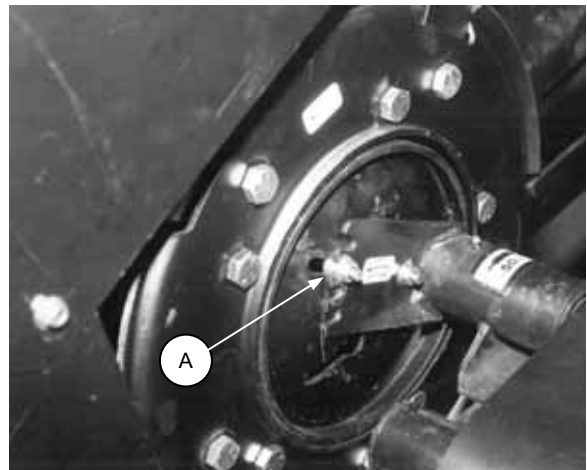
### 13. ADJUST FINGER PITCH POSITION.

See "Recommended Settings" on page 14 and choose a position best suited to your conditions.

**IMPORTANT:** To prevent twisting damage to the reel, be sure reel support arms on header are lifting in phase before installing bolt (A). If installing reel on a new header, bleed reel lift hydraulics before installing bolt (A).

Install 3/8 x 3/4 carriage bolt (A) and flange nut in the same position at both ends of the reel.

**IMPORTANT:** Reel damage can result if reel is unevenly adjusted.



ADJUST FINGER PITCH

## ASSEMBLY

14. TIGHTEN HARDWARE - Tighten all reel hardware to the following torques, measured on the locknuts:

5/8" hardware: 150 ft.lbs. (200 N·m)  
- cam arms to cranks

3/8" hardware: 22 ft.lbs. (30 N·m)  
- arm discs to center tube  
- reel supports to cam tracks

5/16" hex socket head hardware: 22 ft.lbs.(30 N·m)  
- cranks to bats  
- end bats to bats (36' only)

5/16" Phillips head hardware: 12 ft.lbs.(16 N·m)  
- end shields

**NOTE:** At bearing straps, tighten only until plastic bearing is clamped. DO NOT CRUSH BEARING BY OVER-TIGHTENING. Bolt thread at bearing straps should not protrude more than 3/16 inch (4 mm) above nut.

15. INSTALL AND TIGHTEN R/H CRANK HARDWARE - After tightening all assembled hardware, check that both cams are in time (at the same position). When they are timed, attach right cranks to bats, using the same hardware and procedure as described for the left side in Step 8.

Tighten only until bat is clamped to crank tube. Do not collapse bat and tube by over-tightening.

16. Perform Pre-Delivery Checklist (yellow page at back of this book).

**IMPORTANT:** Reel works best when fingers come as close to cutterbar as possible without interference. Be aware that flexing of header and reel over bumps can result in contact if clearance settings are insufficient. See page 15 for minimum clearance settings.

Refer to windrower or combine Operator's Manual for reel clearance adjustment. On some models it may be necessary to install risers on the reel support arms to achieve adequate clearance. If so, these will have been included in the mounting package.

## OPERATION



**WARNING:** Do not service or adjust reel until:

1. The header is resting on the ground.
2. The reel is fully lowered or securely blocked.
3. The engine is stopped and the key removed from the start switch.
4. The park brake is set.



**WARNING:** Be aware and stay clear of rotating parts that cannot be shielded. Keep shields installed and wear close fitting clothing to help protect from entanglement and injury.

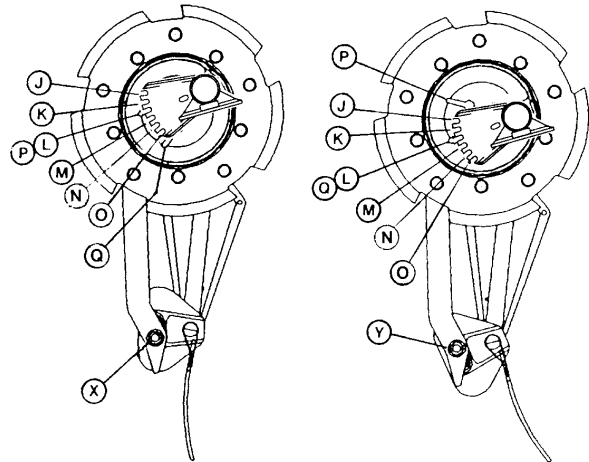
# OPERATION

## PICK-UP REEL ADJUSTMENTS

The reel has a series of adjustments which affect crop flow into the sickle and conveyors. This section describes these adjustments and gives recommended settings for several crops and conditions. The Trouble Shooting section of this manual includes some tips to improve performance.

**Finger Pitch** is the angle the fingers operate at in relation to the ground. In the illustration below, finger pitch on right is more aggressive than pitch on left. Generally, a more aggressive finger pitch is required for crops that are down, tangled or matted. A less aggressive finger pitch is suitable for standing crop. Adjustment of the finger pitch is achieved in two stages:

1. Select Cam Arm Position - This is a major adjustment made by moving cam arm mounting bolt to position X or position Y as shown. All cam arms at both ends of the reel must be in the same position. Position X is a less aggressive setting, recommended for standing or partially down crops. Position Y is a more aggressive setting, recommended for down and tangled crops.



FINGER PITCH ADJUSTMENTS

2. Select Finger Pitch - This is a fine-tuning adjustment made by selecting range slot P or Q and pitch notch J, K, L, M, N or O. Range slot P is more aggressive than slot Q. Pitch notch J is least aggressive, notch O is most aggressive. Select a position aggressive enough to provide sufficient lift, yet still release crop properly. **TIP:** In bushy crop that sits high on the drapers or augers, try a more aggressive finger pitch to reduce carry-over.

## RECOMMENDED SETTINGS

CROP CONDITIONS	CROP TYPE	CAM ARM POSITION	RANGE SLOT	FINGER PITCH NOTCH *
Standing or Partially Down	Alfalfa, Rice, Short Cereal	X	P	L or M
Thick, Heavily Matted, Mostly Down	Canola, Peas	Y	Q	M
		Y	P	J
	Tall Cereal	Y	P	K or L
	Rice	Y	P	L or M
	Soybeans	X	P	M

\* **NOTE:** Recommended finger pitch notches are for MacDon 942 and 960/962 Headers. This will vary for other headers.



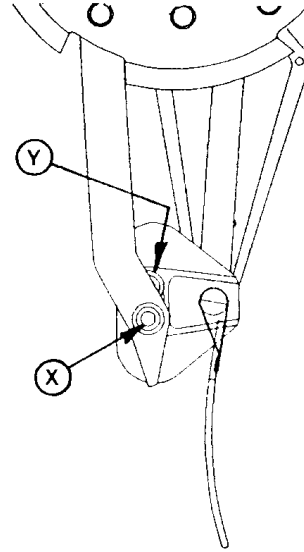
## OPERATION

### PICK-UP REEL CAM ARM POSITION AND FINGER PITCH ADJUSTMENT PROCEDURES

**IMPORTANT:** To avoid reel damage, be sure the same notch and range slot are being used at both ends of the reel. Be sure crank position is consistent at all cam arms at both ends.

#### To adjust cam arm position:

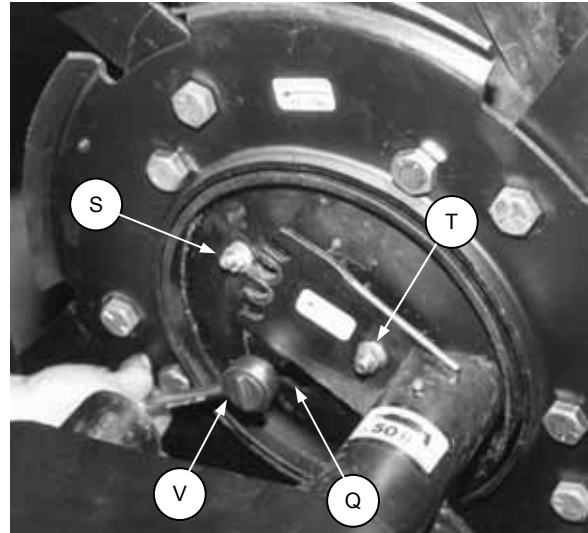
1. Lower the reel or engage reel support arm props.
2. Lower header fully.
3. Reposition cam arm bolt from position (X) to position (Y) or vice versa.
4. Repeat at all cam arms, both sides.
5. Tighten cam arm bolts to 170 ft.lbs. (230 N·m).



CAM ARM POSITION ADJUSTMENT

#### To adjust finger pitch angle:

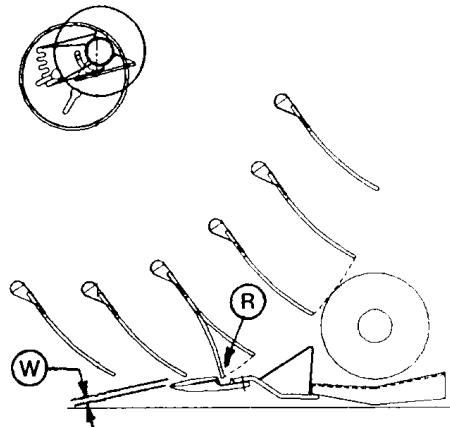
1. Lower the reel and header fully.
2. Loosen carriage bolts (S) and (T) on both L/H and R/H cam assemblies.
3. Slide the front carriage bolt (S) out of the notch at each end. (To change to alternate range slot (Q), remove loosened bolt and nut from keyhole slot.)
4. Adjust to desired position as follows:  
Grasping one bat to keep it from rotating relative to the reel, rotate reel by hand to move cam to desired position. If cam remains stationary, use a 3/8 drive ratchet handle (V) in alternate range slot to rotate the cam. Slide carriage bolt into new notch and tighten bolts (S) and (T) to 22 ft.lbs. (30 N·m).



FINGER PITCH ADJUSTMENT

5. Check clearance to cutterbar:  
When operating reel with an aggressive finger pitch, be sure that fingers will not contact sickle when flexed back by crop, as at (R).  
Minimum finger path to guard clearance (W) is:  
3/4" (20 mm) for headers under 21'  
1 1/4" (30 mm) for 21' header  
1 1/2" (40 mm) for 25' header  
2" (50 mm) for 30' header  
**Check clearance along entire cutterbar length.** See "Reel Clearance to Cutterbar" in your header Operator's Manual.

**NOTE:** For auger and Multi-Crop headers, finger path should come as close to augers as possible without contact.



CHECK CLEARANCE TO SICKLE  
(AND AUGERS IF APPLICABLE)

## TROUBLESHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
<b>CROP LOSS AT CUTTERBAR</b>			
Does not pick-up down crop.	Cutterbar too high.	Lower cutterbar.	*
	Header angle too flat.	Steepen header angle.	*
	Reel too high.	Lower reel.	*
	Reel too far back.	Move reel forward.	*
	Ground speed too fast for reel speed.	Reduce ground speed or increase reel speed.	* *
	Reel fingers not lifting crop sufficiently.	Move cam arms to pos'n. Y to increase finger pitch aggressiveness.	14
		Install lifter guards.	**
Heads shattering or breaking off.	Reel speed too fast.	Reduce reel speed.	*
	Reel too low.	Raise reel.	*
	Ground speed too fast.	Reduce ground speed.	*
	Crop too ripe.	Operate at night when humidity is higher.	---
Cut grain falling ahead of cutterbar.	Ground speed too slow.	Increase ground speed.	*
	Reel speed too slow	Increase reel speed.	*
	Reel too high.	Lower reel.	*
	Cutterbar too high.	Lower cutterbar.	*
	Reel too far forward.	Move reel back on support arms.	*
	Worn or broken sickle components.	Replace.	*
Strips of uncut material.	Crowding uncut crop.	Allow enough room for crop to be fed to cutterbar.	---
	Broken sickle sections.	Replace.	*

\* See your Header or Power Unit Operator's Manual.

\*\* See your dealer.

## TROUBLESHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
<b>CROP LOSS AT CUTTERBAR (continued)</b>			
Crop not being cut at ends.	Reel too high or not centered in header.	Lower reel or adjust horizontal position.	* *
	Sickle hold-downs not adjusted properly.	Adjust hold-downs so sickle works freely, but still keep sections from lifting off guards.	*
	Sickle sections or guards are worn or broken.	Check and replace all worn and broken cutting parts.	*
	Header is not level.	Level header.	*
	Reel fingers not lifting crop properly ahead of sickle.	Increase finger pitch aggressiveness.	14
	Divider runs down thick crop at ends, preventing proper feeding.	Replace 3 or 4 end guards with stub guards.	**

### CUTTING ACTION & SICKLE COMPONENTS

Ragged or uneven cutting of crop.	Sickle hold-downs not adjusted properly.	Adjust hold-downs so sickle works freely, but still keep sections from lifting off guards.	*
	Sickle sections or guards are worn or broken.	Check and replace all worn and broken cutting parts.	*
	Sickle is not operating at recommended speed.	Check engine speed of windrower.	*
	Ground speed too fast for reel speed.	Reduce ground speed or increase reel speed.	* *
	Reel fingers not lifting crop properly ahead of sickle.	Increase finger pitch aggressiveness.	14
	Cutterbar too high.	Lower cutting height.	*
	Header angle too flat.	Steepen header angle.	*
	Bent sickle, causing binding of cutting parts.	Straighten a bent sickle. Align guards.	* *

\* See your Header or Power Unit Operator's Manual.

\*\* See your dealer.

## TROUBLESHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
<b>CUTTING ACTION &amp; SICKLE COMPONENTS</b>			
Ragged or uneven cutting of crop. (continued)	Cutting edge of guards not close enough or parallel to sickle sections.	Align guards.	*
	Tangled or tough to cut crop.	Install stub guards.	*
Sickle plugging.	Reel too far back.	Move reel forward.	*
	Loose sickle drive belt.	Adjust drive belt tension.	*
	Reel too high or too far forward.	Lower reel or move reel rearward.	* *
	Ground speed too slow.	Increase ground speed.	*
	Loose sickle drive belt.	Adjust drive belt tension.	*
	Improper sickle hold-down adjustment.	Adjust hold-down so sickle is held against guard cutting surface.	*
	Dull or broken sickle sections.	Replace.	*
	Bent or broken guards.	Align or replace.	*
	Reel fingers not lifting crop properly ahead of sickle.	Increase finger pitch aggressiveness.	14
	Steel pick-up fingers contacting sickle.	Increase reel clearance to cutterbar.	*
Header float too heavy.	Adjust float springs for lighter float.	*	
Mud or dirt build-up on cutterbar.	Raise cutterbar by lowering skid shoes.		*
		Flatten header angle.	*
	Sickle is not operating at recommended speed.	Check engine speed of windrower.	*

\* See your Header or Power Unit Operator's Manual.

## TROUBLESHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
<b>REEL DELIVERY</b>			
Reel not releasing crop.	In heavy crop, fingers starting to flip over before releasing crop.	Move to a <u>more</u> aggressive finger pitch notch.	14
	In light crop, cam arms in position Y.	Move cam arms to position X.	14
	Reel speed too fast.	Reduce speed of reel to allow crop to fall onto augers properly. Reel speed should be slightly faster than ground speed.	*
	Reel too low.	Raise reel.	*
	Reel too far back.	Move reel forward.	*
Wrapping on reel end.	Finger pitch too aggressive.	Decrease finger pitch aggressiveness.	14
	Reel too low.	Raise reel.	*
	Reel speed too fast.	Reduce reel speed.	*
	Reel not centered in header.	Center reel in header.	*
Reel releases crop too quickly.	Finger pitch not aggressive enough.	Increase finger pitch aggressiveness.	14
	Reel too far forward.	Move reel back.	*
Reel motion is uneven in heavy crop.	Reel speed too fast.	Reduce reel speed.	*
	Reel taking too much "bite" at crop entry.	Move cam arms to position Y.	14
	Reel fingers not aggressive enough.	Move to a more aggressive finger pitch notch.	14
	Reel too low.	Raise reel.	*
	Relief pressure too low.	Increase relief pressure.	*
	Relief valve malfunction.	Replace relief valve.	-

\* See your Header or Power Unit Operator's Manual.

## TROUBLESHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>	
<b>REEL DELIVERY (continued)</b>				
Early wear and/or destruction of cam components.	Reel adjustments not the same at both ends of reel.	Adjust cam arm position, finger pitch range slot and notch to same at both ends.	14	
Premature destruction of cam arm bearings.	Cam arms bent, causing bearing misalignment.	Straighten cam arms to set bearings parallel.	---	
Destruction of end shields.	Reel not centered in header.	Center reel in header.	*	
<b>CONVEYOR FEEDING</b>				
Crop builds up on conveyors.	Cutterbar too low.	Raise cutting height.	*	
	Conveyor speed too slow.	Increase conveyor speed.	*	
	Reel too far back.	Move reel forward	*	
	Reel speed too fast.	Reduce reel speed.	*	
	Reel too low.	Raise reel.	*	
	Ground speed too fast.	Reduce ground speed.	*	
	Bunchy feeding from cutterbar to conveyors.	Reel too far forward.	Move reel back on support arms.	*
		Reel too high.	Lower reel.	*
Reel speed too slow.		Increase reel speed.	*	
Cutterbar too high.		Lower cutting height.	*	
	Ground speed too slow.	Increase ground speed.	*	

\* - See your Header or Power Unit Operator's Manual.

## MAINTENANCE



**CAUTION:** To help prevent personal injuries; use protective shoes, a hard hat, protective glasses or goggles, and close-fitting clothing.



**CAUTION:** Install and maintain all recommended shields and safety signs.



**WARNING:** Do not service or adjust the reel until:

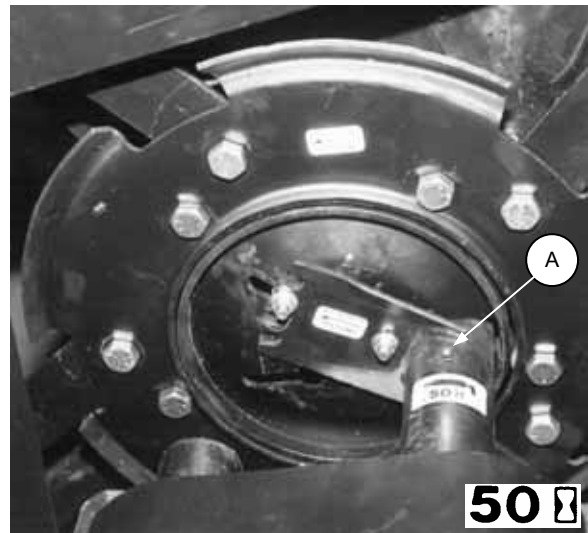
1. The header is resting on the ground.
2. The reel is fully lowered or adequately supported.
3. The engine is stopped and the key removed from the start switch.
4. The park brake is set.

### LUBRICATION

1. Center Tube Bearings (A) - Grease every 50 hours of operation using SAE Multi-Purpose Grease.

Procedure: Wipe grease fitting with a clean cloth before lubricating avoid injecting dirt and grit. Leave excess lubricant on fitting after lubricating to shield from dirt. This excess is to be wiped away at next lubrication. If grease fitting will not take lubricant, clean fitting and lubricant passageway thoroughly. Replace with new fitting if necessary.

2. Plastic Bearings - Grease all bearings during assembly and oil before storage to prevent rusting of shafts under bearings.



GREASE CENTER TUBE BEARINGS

---

### MAINTENANCE CHECKLIST

Periodically:

1. Check that all bolts and nuts are tight. See Assembly Step 14 for proper torques.
2. Examine bearings for excessive wear.

## MAINTENANCE

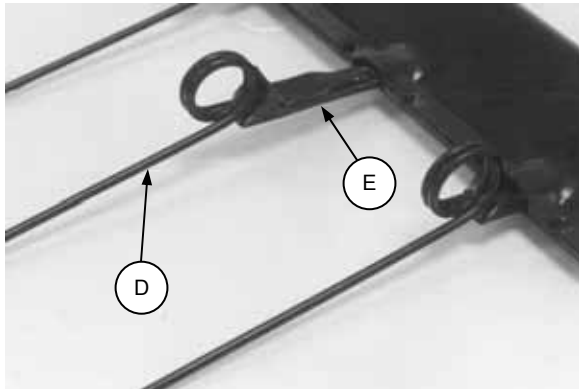
### FINGER REMOVAL

- a. Insert screwdriver in slot in finger button and tap to push button into bat and down.

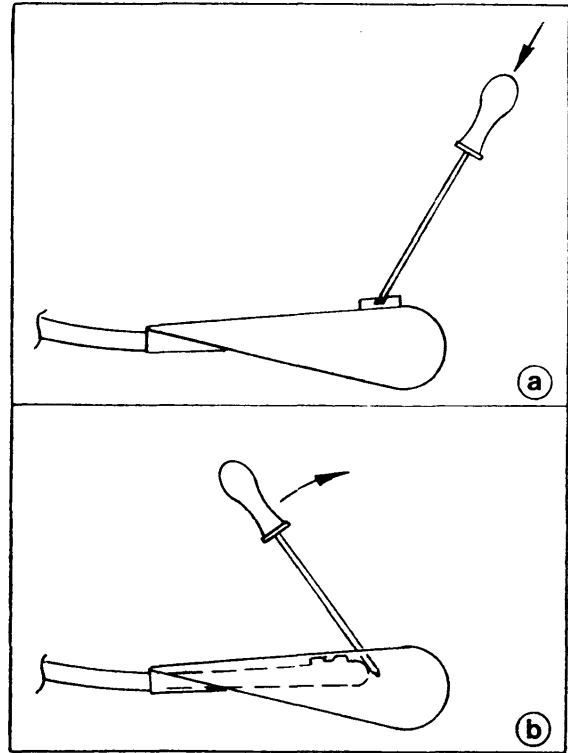
**NOTE:** For 36' Header: On end bats at center of header, 5/16 flange nut (C) must be loosened to allow finger removal.

- b. Insert screwdriver into buttonhole in bat and pry top of finger down until it can be removed from pocket.

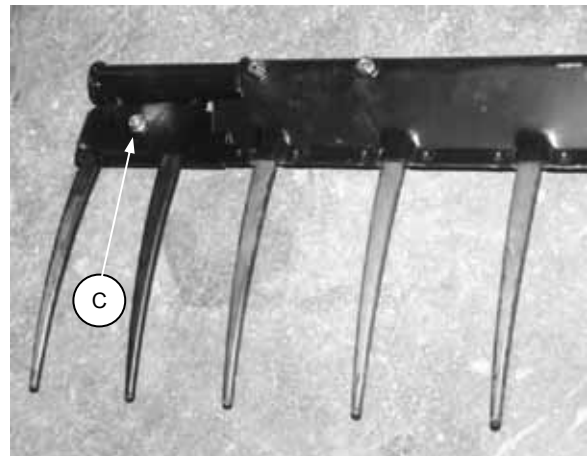
- c. Use tool supplied to install new finger. For steel fingers, pre-assemble finger (D) and clip (E) and install.



STEEL FINGER ASSEMBLY



FINGER REMOVAL

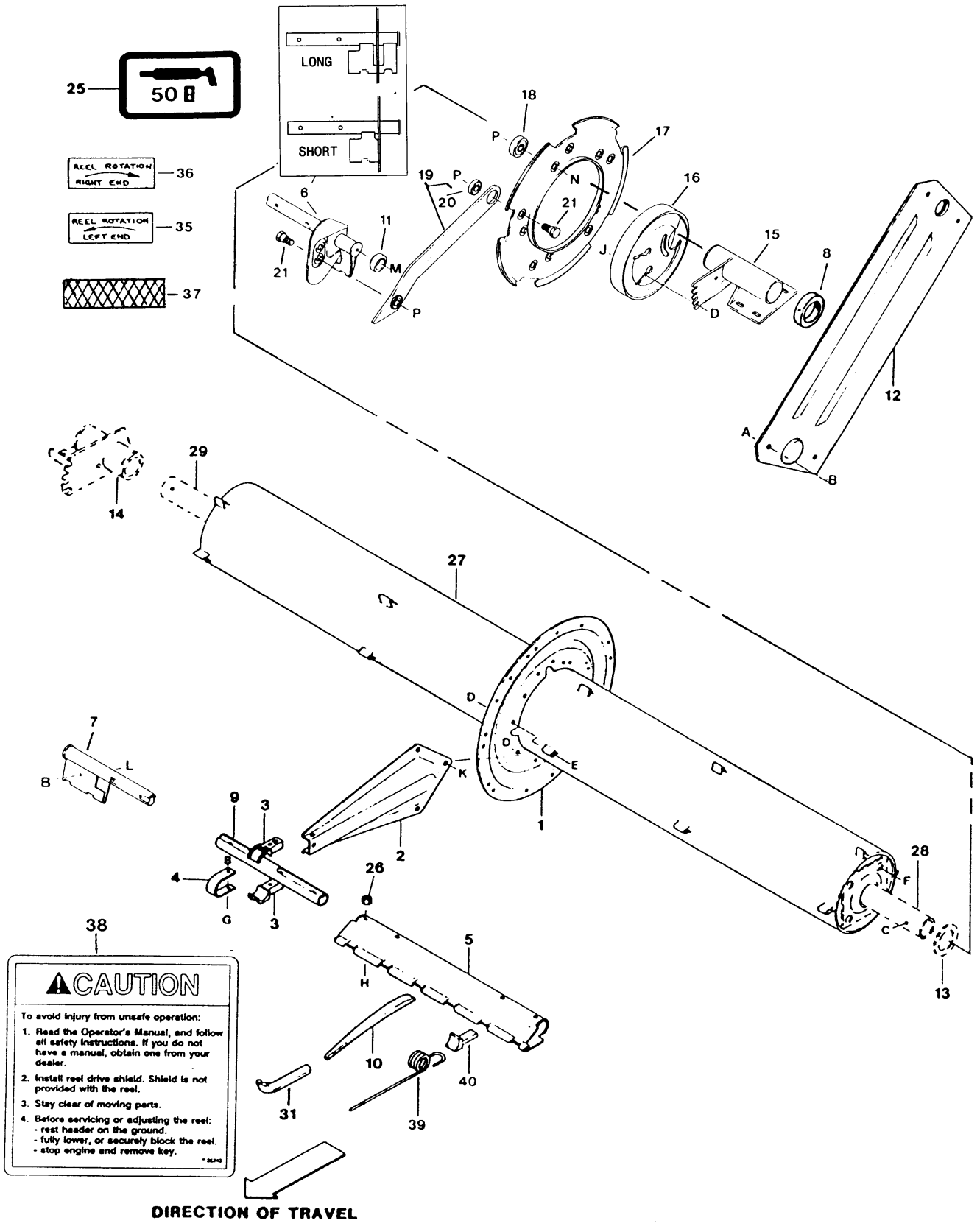


LOOSEN BOLT TO REMOVE  
END BAT FINGERS (36' ONLY)





# REPAIR PARTS



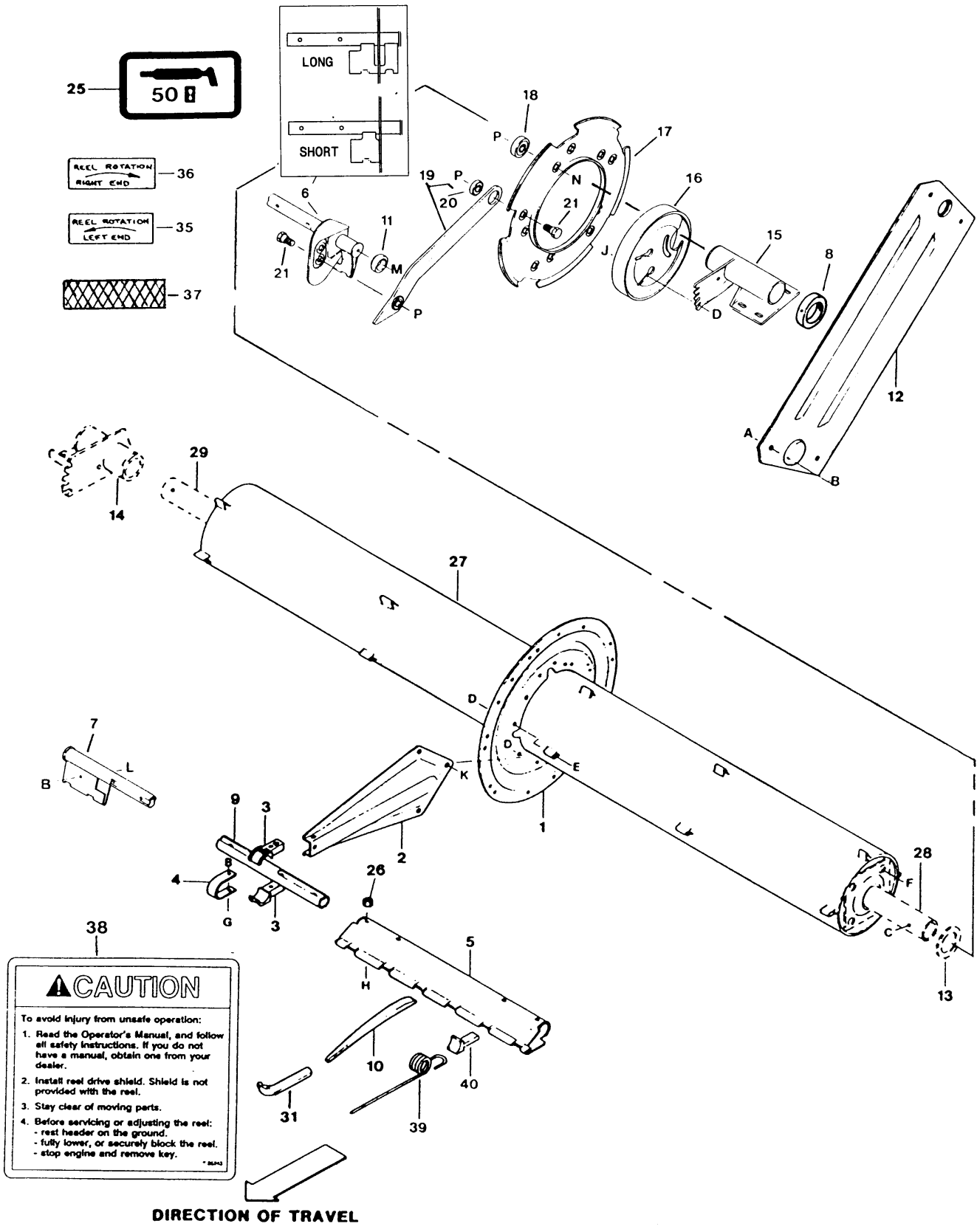
## REPAIR PARTS

**NOTE:** A mounting parts list was shipped with the mounting package for your particular windrower or combine. Keep the list with this manual for future reference.

REF	PART NUMBER	DESCRIPTION	QTY	SERIAL NUMBER
1	27171	DISC - arm.....	A/R	
2	35017	ARM - reel.....	A/R	
3	48083	BEARING HALF - bat .....	A/R	
4	27166	STRAP - bearing .....	A/R	
5	48008	BAT - reel, 54" (1380 mm).....	A/R	
	48009	BAT - reel, 60" (1535 mm).....	A/R	
	48010	BAT - reel, 66" (1690 mm).....	A/R	
	48011	BAT - reel, 72" (1840 mm).....	A/R	
6	48070	CRANK - L/H, long .....	A/R	
	48071	CRANK - R/H, long.....	A/R	
	48128	CRANK - L/H, short .....	A/R	
	48129	CRANK - R/H, short.....	A/R	
7	48095	BAT - INBOARD END, L/H reel - 36' 960 only .....	5	
	48135	BAT - INBOARD END, L/H reel - 36' 962 only .....	5	
	48096	BAT - INBOARD END, R/H reel - 36' 960 only.....	5	
	48136	BAT - INBOARD END, R/H reel - 36' 962 only.....	5	
8	REF	COLLAR - shaft, See Mounting Packages .....	A/R	
9	27984	TUBE - bat connector .....	A/R	
10	27985	FINGER - pick-up, plastic.....	A/R	
11	48086	BEARING - end shield (was 35660).....	A/R	
12	48023	SHIELD - end, 5 bat reel .....	10	
	48024	SHIELD - end, 6 bat reel .....	12	
13	REF	WASHER - flat, see Mounting Packages .....	A/R	
14	REF	SUPPORT R/H - see Mounting Packages .....	1	
15	REF	SUPPORT L/H - see Mounting Packages .....	1	
16	48065	CAM TRACK .....	2	
17	48058	RING - cam, L/H, 5 bat reel .....	1	
	48059	RING - cam, R/H, 5 bat reel .....	1	
	48060	RING - cam, L/H, 6 bat reel .....	1	
	48061	RING - cam, R/H, 6 bat reel .....	1	
18	50184	BEARING - ball.....	A/R	
19	48051	ARM - cam.....	A/R	
20	50185	BEARING - ball.....	A/R	
21	48050	BOLT - shoulder, special .....	A/R	
25	23165	DECAL - 50 hour grease .....	2	
26	35689	NUT - special, 5/16 inch NC .....	A/R	
27	REF	TUBE - main, see listing on page 27 .....	1	
28	REF	TUBE - end, L/H, see Mounting Packages.....	1	
29	REF	TUBE - end, R/H, see Mounting Packages .....	1	
31	35661	TOOL - finger/adjuster .....	1	
35	35396	DECAL - reel rotation, left.....	3	
36	35397	DECAL - reel rotation, right .....	3	
37	26697	REFLECTOR - amber .....	2	
38	35243	DECAL - CAUTION, general safety.....	2	
39	35282	FINGER - Pick-Up, steel.....	A/R	
40	35281	CLIP - steel finger.....	A/R	

A-P Hardware See Page 27.

# REPAIR PARTS



## REPAIR PARTS

REF	PART NUMBER	DESCRIPTION	QTY	SERIAL NUMBER
A	30808	SCREW - machine, Phillips Truss Head, 5/16 NC x 3/8 inch		
B	30280	NUT - lock, flange head, 5/16 inch NC distorted thread		
C	REF	HARDWARE - mounting, see Mounting Package		
D	30228	NUT - lock, flange head, 3/8 inch NC distorted thread		
E	21484	BOLT - round head, square neck, 3/8 NC x 1-1/2 inch		
F	30712	BOLT - flange head, 3/8 NC x 2 1/2 inch (thread full)		
G	21569	CAPSCREW - hex head, 5/16 NC x 2 inch		
H	30504	CAPSCREW - hex socket head, 5/16 NC x 1-1/2 inch		
J	21472	BOLT - round head, square neck, 3/8 NC x 3/4 inch		
K	50076	BOLT - flange head, 3/8 NC x 5/8 inch		
L	21281	BOLT - round head, square neck, 5/16 NC x 3/4 inch		
M	101898	SCREW - flange head, self tapping, 3/8 x 5/8 inch		
N	21594	BOLT - hex head, 5/8 NC x 1-1/2 inch		
P	18666	NUT - lock, 5/8 NC distorted thread		
<hr/>				
27	35058	Main Tube - 128 inches (3245 mm) long - 12 ft. header.....	1	
	35059	Main Tube - 134 inches (3400 mm) long - 12 ½ ft. header.....	1	
	35060	Main Tube - 140 inches (3550 mm) long - 13 ft. header.....	1	
	35061	Main Tube - 146 inches (3705 mm) long - 13 ½ ft. header.....	1	
	35064	Main Tube - 164 inches (4155 mm) long - 15 ft. header.....	1	
	35065	Main Tube - 170 inches (4310 mm) long - 15 ½ ft. header.....	1	
	35066	Main Tube - 176 inches (4460 mm) long - 16 ft. header.....	1	
	35067	Main Tube - 182 inches (4615 mm) long - 16 ½ ft. header.....	1	
	35068	Main Tube - 188 inches (4770 mm) long - 17 ft. header.....	1	
	35069	Main Tube - 194 inches (4920 mm) long - 17 ½ ft. header.....	1	
	35070	Main Tube - 200 inches (5075 mm) long - 18 ft. & 36 ft. (qty 2) headers ....	1	
	35071	Main Tube - 206 inches (5230 mm) long - 18 ½ ft. header.....	1	
	35072	Main Tube - 212 inches (5380 mm) long - 19 ft. header.....	1	
	35073	Main Tube - 218 inches (5535 mm) long - 19 ½ ft. header.....	1	
	35074	Main Tube - 224 inches (5680 mm) long - 20 ft. header.....	1	
	35075	Main Tube - 230 inches (5830 mm) long - 20 ½ ft. header.....	1	
	35076	Main Tube - 236 inches (5985 mm) long - 21 ft. header.....	1	
	35077	Main Tube - 242 inches (6140 mm) long - 21 ½ ft. header.....	1	
	35078	Main Tube - 248 inches (6290 mm) long - 22 ft. header.....	1	
	35079	Main Tube - 254 inches (6445 mm) long - 22 ½ ft. header.....	1	
	35082	Main Tube - 272 inches (6905 mm) long - 24 ft. header.....	1	
	35083	Main Tube - 278 inches (7060 mm) long - 24 ½ ft. header.....	1	
	35084	Main Tube - 284 inches (7210 mm) long - 25 ft. header.....	1	
	35087	Main Tube - 302 inches (7660 mm) long - 26 ½ ft. header.....	1	
	35088	Main Tube - 308 inches (7815 mm) long - 27 ft. header.....	1	
	35091	Main Tube - 338 inches (8580 mm) long - 29 ½ ft. header.....	1	
	35092	Main Tube - 344 inches (8735 mm) long - 30 ft. header.....	1	
	35093	Main Tube - 350 inches (8890 mm) long - 30 ½ ft. header.....	1	

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## 2000-B Pick-Up Reel Pre-Delivery Checklist

Perform these checks and adjustments prior to delivery to your customer. See the Operator's Manual for adjustment details.



**CAUTION: Carefully follow the instructions given. Be alert for safety related messages which bring your attention to hazards and unsafe practices.**

Reel Serial Number \_\_\_\_\_

- Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.
- Grease all plastic bearings during assembly and grease center tube bearings at end supports.
- Set cam arm in the "X" position.
- Ensure cam arm bolts have nut on bearing side.
- Set finger pitch in third notch from the top and use the top range slot.
- Set reel fore-aft to center the reel over the cutterbar.
- Check finger clearance to cutterbar:  
Under 21' header –  $\frac{3}{4}$ " (20 mm), 21' –  $1\frac{1}{4}$ " (30 mm), 25' –  $1\frac{1}{2}$ " (40 mm), 30' – 2" (50 mm)
- Recommended reel speed is 10% above ground speed.

Date Checked: \_\_\_\_\_

Checked by: \_\_\_\_\_