

MacDon™

**Model D50 & D60 Harvest Header®
and Model FD70 FlexDraper®
with
Pick-Up Reel**

**REEL CAM SHIM INSTALLATION
INSTRUCTIONS**

FOREWARD

This document is for installing alignment shims into the reel cam system to improve the clearance between the cam arms and the cam disc. These instructions pertain exclusively to MacDon Model D50 and Model D60 Harvest Headers and Model FD70 FlexDraper headers equipped with the Pick-Up Reel.

Please read this instruction booklet thoroughly before attempting to install this optional equipment. The installation can be accomplished without the use of special tools. Consult the Header Operators Manuals for additional instructions.

Left and right hand are referenced from the operator's seat and looking forward.



WARNING

If header is attached to combine under no circumstances should any service procedure be performed without the combine safety locks engaged, engine shut off, and key removed.

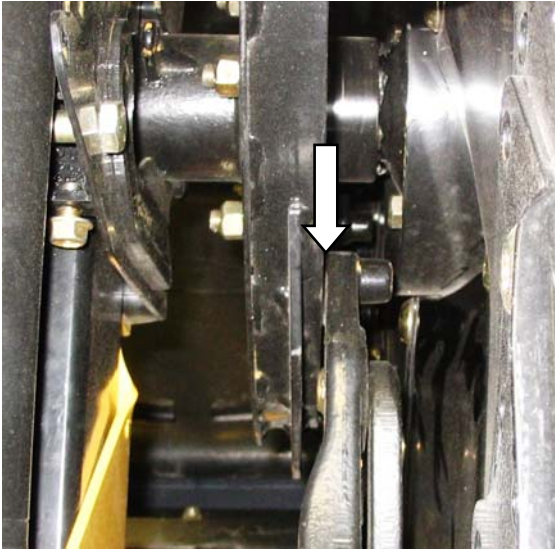
Refer to Safety section in Operators Manual before performing any service procedure.

PARTS REQUIRED

KIT #164570 Consisting Of:

PART NO.	DESCRIPTION	QTY
137753	Shim Ring 4 Bolt Flange	2
164061	Shim – Hub To Cam	2
169274	Instructions – Cam Shim Kit	1

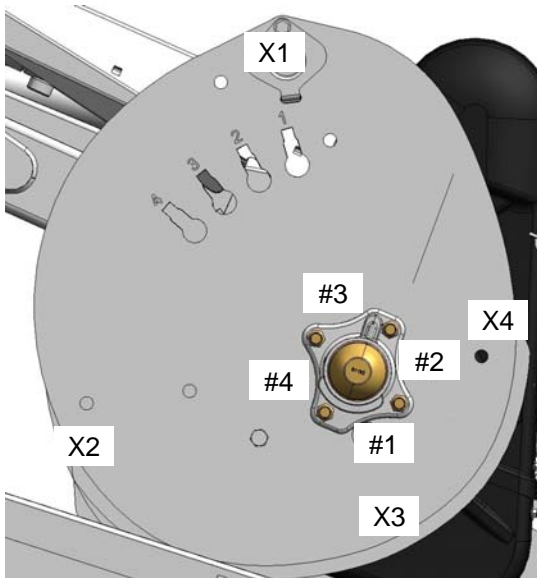
GENERAL



Sufficient clearance between the cam arms and cam disc must be maintained to prevent the cam arms from contacting the cam disc during operation. If contact is evident, the cam disc should be re-aligned and/or the clearance between the cam arms and cam disc should be adjusted.

STEP 1. CHECK CLEARANCES

- Lower header onto 6 inch (150 mm) wooden blocks or equivalent.
- Lower reel fully and place in full forward position.
- Shutdown engine and remove key.
- Rotate reel manually at least one revolution to visually determine where the minimum and



maximum gaps between the cam arms and the cam disc occur at the four locations (X1, X2, X3, and X4) around the cam disc.

- Measure and record the minimum and maximum gaps and mark at each location.
- Determine the cam tilt using the formulas in the **VARIATION** column in the following table.

VARIATION (mm)	IF EQUAL TO OR GREATER THAN in. (mm)	ADD SHIM AT LOCATION
X3-X1	0.20 (5.0)	#1
X4-X2	0.18 (4.5)	#2
X1-X3	0.14 (3.5)	#3
X2-X4	0.12 (3.0)	#4

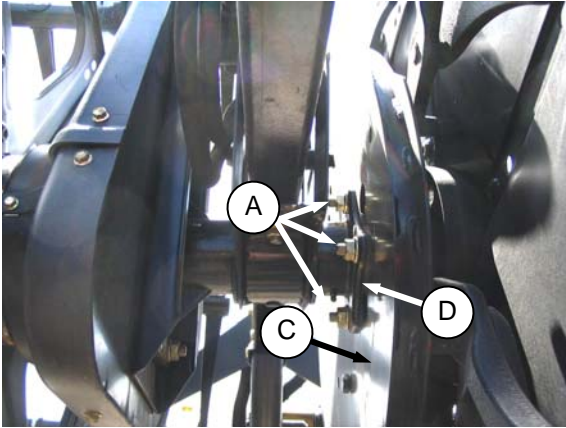
- If the variation is equal to or greater than the values in the table, proceed to STEP 2. RE-ALIGN CAM DISC.

Example: Gap at X2 is 0.2 inch and X4 is 0. Variation X2-X4 is $0.2 - 0 = 0.2$. The variation is greater than 0.12 in table so shims must be added at location #4. Quantity of shims is variation (0.2) minus spec. (0.12) divided by shim thickness (0.04) equals 2. So, install two shims at location #4.

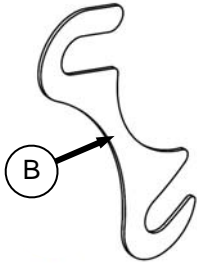
- If the variation is less than the values in the table and there is still contact or insufficient clearance between the cam arm and the cam disc, proceed to STEP 3. INSTALL "C" SHIMS.

STEP 2. RE-ALIGN CAM DISC

- a. Mark location on cam disc where shim(s) are to be added.



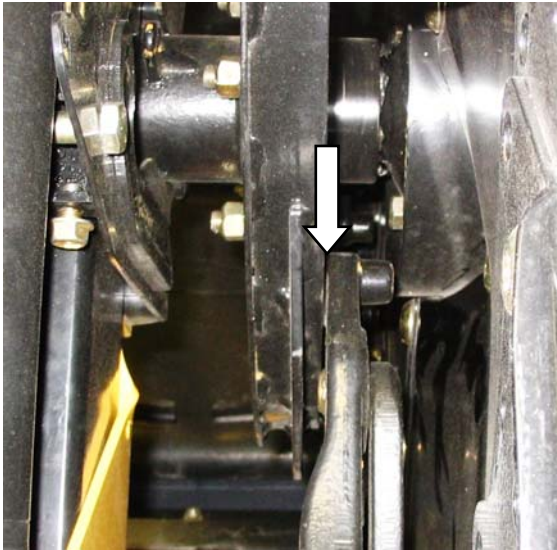
- b. Loosen four nuts (A) on cam disc.



- c. Add a shim(s) (B) (p/n 164061) between cam face (C) and reel hub (D) at the location marked in step a.
- d. Re-tighten nuts. Torque to 75 ft-lbf (102 N·m).
- e. Manually rotate reel and re-check clearances between cam arms and cam disc.
- f. If the variation is less than the values in the table and there is still contact or insufficient clearance between the cam arm and the cam disc, proceed to STEP 3. INSTALL "C" SHIMS.

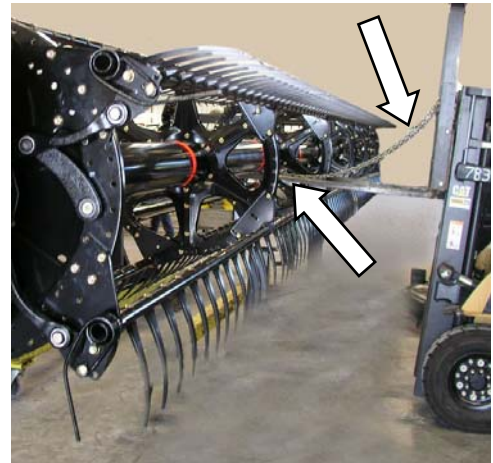
STEP 3. INSTALL "C" SHIMS

Perform this step only if necessary to achieve the required gap at all locations around the cam edge. Otherwise, proceed to STEP 4. RUN-UP CHECK. The installation is at the cam end of the reel.



- a. Manually rotate reel and determine the minimum clearance between the cam disc and the cam arm.
- b. The gap between the cam edge and the linkage should be 0.010 in. (0.25 mm) minimum, and 0.2 in. (5.0 mm) nominal and should be approximately equal at all locations around the cam.
- c. Determine the quantity of "C" shims (p/n 137753) required to achieve the required gap.
 1. Example: If the minimum clearance is less than 0.010 inches, adding one shim (0.04) will increase the clearance to at least 0.04 inches. Adding two shims increases the clearance to at least 0.08 inches.

A. SINGLE REEL HEADERS

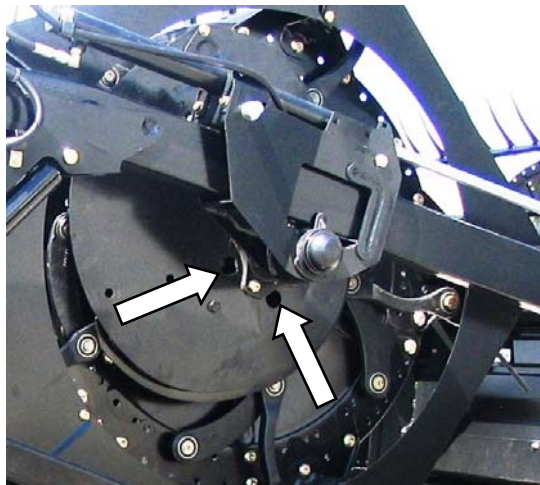


- a. Locate forks under reel tube at approximately the center disc and secure tube to forklift with a chain, OR locate a sling around reel tube and attach to a forklift or equivalent (See B DOUBLE REEL HEADERS).



- b. Raise forks slightly to take weight off reel.
- c. Remove bolt in LH reel arm brace so that reel arm and reel are free to move.

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- d. At cam end, rotate reel to line up bolts attaching cam hub to reel tube with access holes in cam disc. This allows access to the bolts with a socket and extension.



CAUTION

Reel may shift as last bolt is removed. Keep hands and fingers clear of work area.



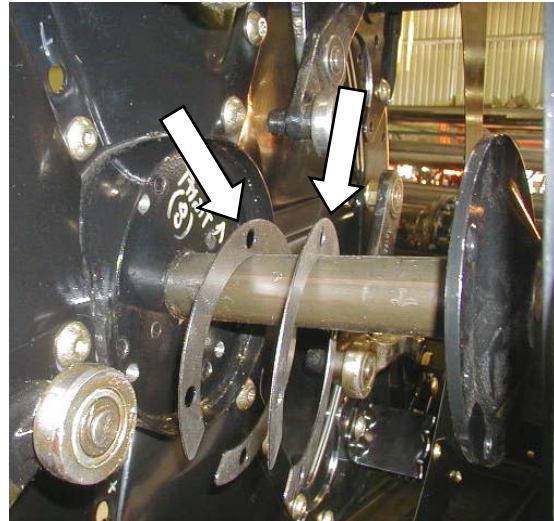
- e. Remove four ½” bolts and washers attaching cam hub to reel tube using access holes in cam disc. Rotate reel as required.
- f. Install two ½” bolts into jacking holes in cam hub and turn them to move cam hub away from reel tube.
- g. Continue to move reel outboard until shaft flange is exposed.



CAUTION

Ensure reel is supported when shaft and reel are moved apart. Do not pull reel completely off shaft.

- h. Remove bolts from jacking holes.
- i. Apply Loctite 243 to the four ½” bolts and install with lockwashers through hub.



- j. Install “C” shims as determined in STEP 3c. onto bolts.
- k. Align bolts with holes in reel tube and slide reel onto shaft while engaging tine bar rollers into cam track.
- l. Install bolts into reel tube ensuring shims are in place.
- m. Torque bolts to 80 ft-lbf (108 N·m).
- n. Remove sling/lifting forks from reel tube.
- o. Manually rotate reel and check for interference with moving parts.

B. DOUBLE REEL HEADERS

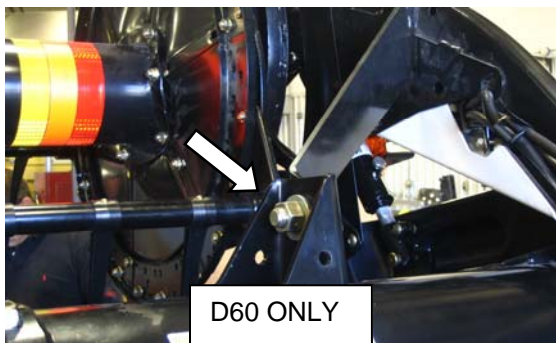
I. RH REEL



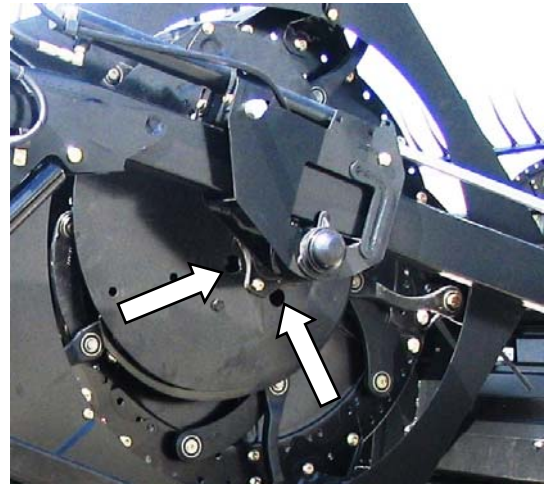
- Locate a sling around RH reel tube at approximately the center disc and attach to a forklift or equivalent, OR, locate forks under reel tube and secure tube to forklift with a chain (See A. SINGLE REEL HEADERS).
- Raise forks slightly to take weight off reel.

NOTE

Outboard reel arms on FD70 FlexDraper headers are not braced, proceed to step d.

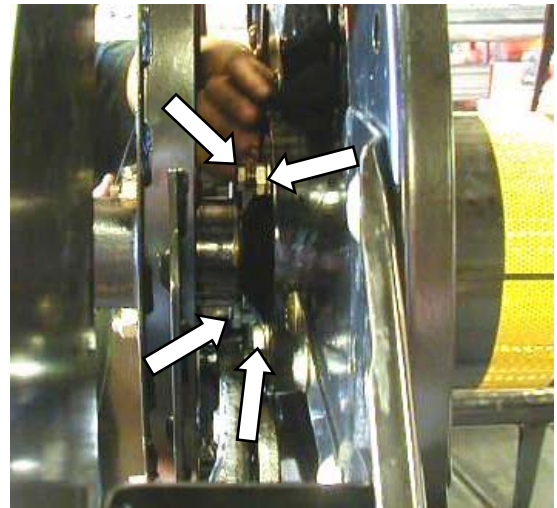


- Remove bolt in RH reel arm brace so that reel arm is free to move.
- At cam end, rotate reel to line up bolts attaching cam hub to reel tube with access holes in cam disc. This allows access to the bolts with a socket and extension.



CAUTION

Reel may shift as last bolt is removed. Keep hands and fingers clear of work area.



- Remove four ½" bolts and washers attaching cam hub to reel tube using access holes in cam disc. Rotate reel as required.
- Install two ½" bolts into jacking holes in cam hub and turn them to move cam hub away from reel tube.
- Continue to move reel outboard until shaft flange is exposed.

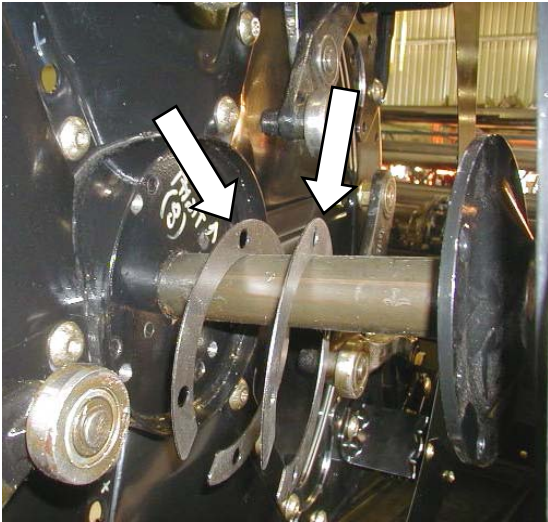


CAUTION

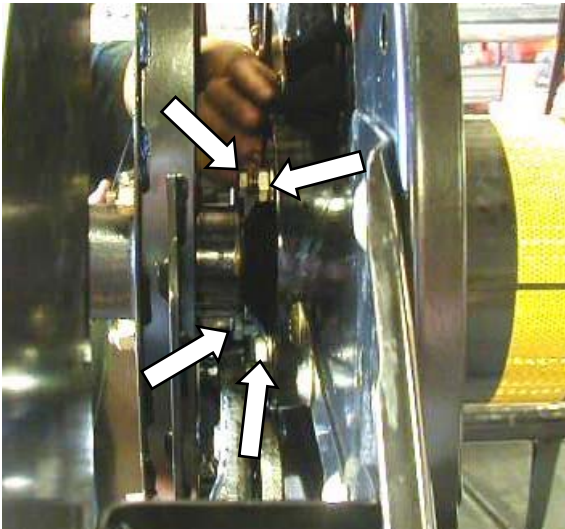
Ensure reel is supported when shaft and reel are moved apart. Do not pull reel completely off shaft.

- Remove bolts from jacking holes.
- Apply Loctite 243 to the four ½" bolts and install with lockwashers through hub.

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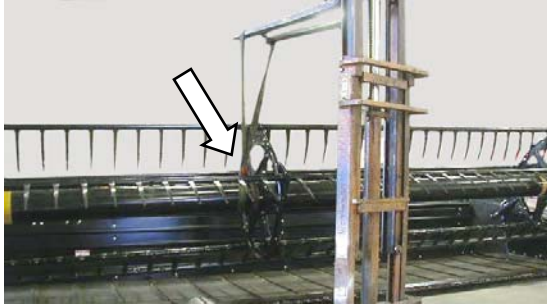


- j. Install "C" shims as determined in STEP 3c. onto bolts.
- k. Align bolts with holes in reel tube and slide reel onto shaft while engaging tine bar rollers into cam track.



- l. Install bolts into reel tube ensuring shims are in place.
- m. Torque bolts to 80 ft-lbf (108 N·m).
- n. Remove sling/lifting forks from reel tube.
- o. Manually rotate reel and check for interference with moving parts.

II. LH REEL



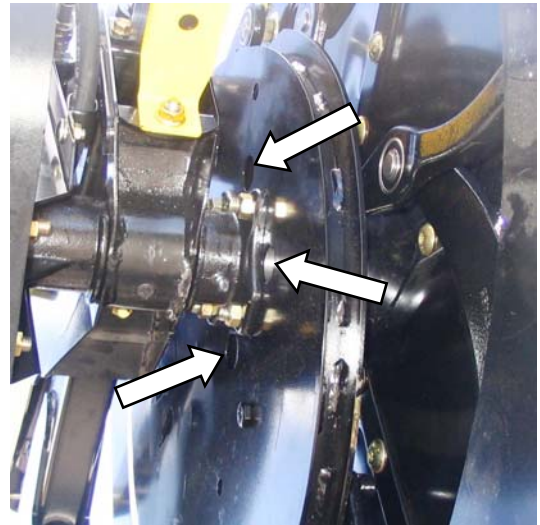
- a. Locate a sling around LH reel tube at approximately the center disc and attach to a forklift or equivalent OR, locate forks under reel tube and secure tube to forklift with a chain (See A. SINGLE REEL HEADERS).
- b. Raise forks slightly to take weight off reel.

NOTE

Outboard reel arms on FD70 FlexDraper headers are not braced, proceed to step d.



- c. Remove bolt in LH reel arm brace so that reel arm is free to move when removing the reel.

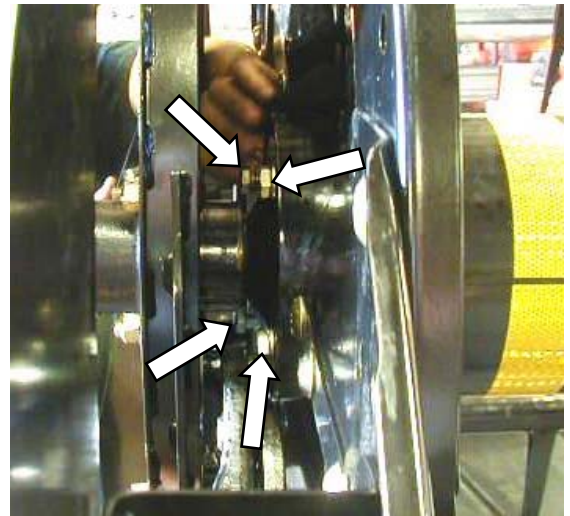


- d. At cam end, rotate reel to line up bolts attaching cam hub to reel tube with access holes in cam disc. This allows access to the bolts with a socket and extension.



CAUTION

Reel may shift as last bolt is removed. Keep hands and fingers clear of work area.



- e. Remove four 1/2" bolts and washers attaching cam hub to reel tube using access holes in cam disc. Rotate reel as required.
- f. Install two 1/2" bolts into jacking holes in cam hub and turn them to move cam hub away from reel tube.
- g. Continue to move reel outboard until shaft flange is exposed.

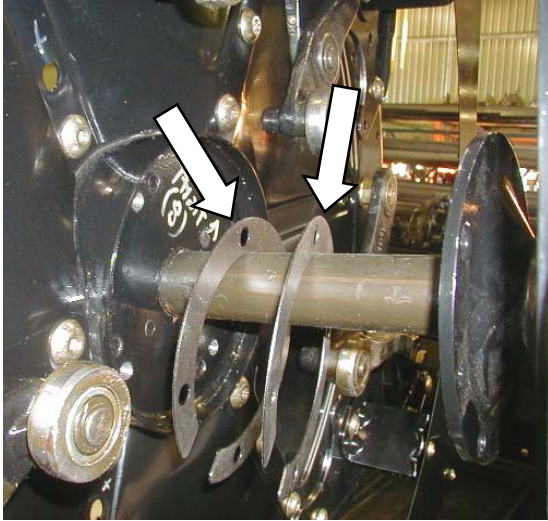
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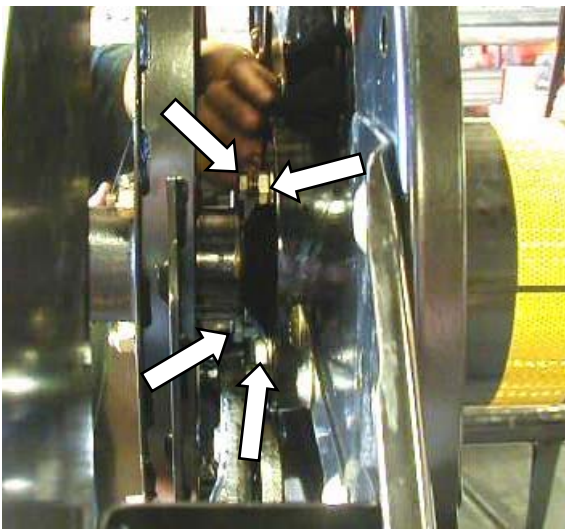
CAUTION

Ensure reel is supported when shaft and reel are moved apart. Do not pull reel completely off shaft.

- h. Remove bolts from jacking holes.
- i. Apply Loctite 243 to the four ½” bolts and install with lockwashers through hub.



- j. Install “C” shims as determined in STEP 3c. onto bolts.
- k. Align bolts with holes in reel tube and slide reel onto shaft while engaging tine bar rollers into cam track.



- l. Install bolts into reel tube ensuring shims are in place.
- m. Torque bolts to 80 ft-lbf (108 N·m).
- n. Remove sling/lifting forks from reel tube.
- o. Manually rotate reel and check for interference with moving parts.

- p. Re-install bolts at LH and RH reel arm braces (D60 only).

STEP 7. RUN-UP CHECK



CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.



CAUTION

Keep all shields in place. Never alter or remove safety equipment. Make sure driveline guards can rotate independently of the shaft and can telescope freely.



CAUTION

Before investigating an unusual sound or attempting to correct a problem, shut off engine, engage parking brake and remove key.



CAUTION

Do not start the machine until work area is clear of tools, slings, chains, etc.

- a. Check header and reel fully assembled and clear area of tools, etc.
- b. Start engine and run header slowly for 5 minutes.
- c. Shutdown engine and check cam ends of reel for evidence of cam arms rubbing on cam or other interfering parts.
- d. Readjust as required.