

PETER PINGATORE

1991

OPERATOR'S MANUAL

MacDon HARVEST HEADER

for

Model 7000 Self-Propelled Windrower
John Deere 7720, 8820, 9500 and 9600 Combines
Case IH 1460, 1660, 1480 and 1680 Combines
Deutz Allis R60, R70, R6, R7, 1982 and up N6 and N7 Combines
Massey Ferguson 860 Combine
Don 1500 Combine
Ford New Holland TR86 and TR96 Combines



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INTRODUCTION

Your new Harvest Header is designed to serve a dual function in your grain and specialty crop harvesting operation:

1. Teamed with your self propelled windrower power unit, the header will cut and lay crop into uniform fluffy windrows. Windrowing allows starting the harvest earlier, protects the crop from wind damage, and gives you more flexibility in scheduling combine time.
2. When conditions are right for straight-cutting, the header can quickly be adapted to attach directly to your combine. When weather is not a critical factor, straight-cutting eliminates the windrowing operation.

NOTE: This manual contains information on the Harvest Header. It must be used in conjunction with your Windrower and Combine Operator's Manuals.

CAREFULLY READ ALL MANUALS TO BECOME FAMILIAR WITH RECOMMENDED PROCEDURES BEFORE ATTEMPTING TO UNLOAD, ASSEMBLE OR USE THE MACHINE.

Use this manual as your first source of information about the header. If you follow the instructions given in this manual your Harvest Header will work well for many years.

This manual contains information on "Safety", "Operation" and "Maintenance/Service". In addition, "Unloading and Assembly" instruction is given towards the back of this book.

Use the Table of Contents and the Index to guide you to specific areas. Study the Table of Contents to familiarize yourself with how the material is organized.

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

NOTE: Right hand (R/H), and Left hand (L/H) designations are determined from the operator's position, facing forward.

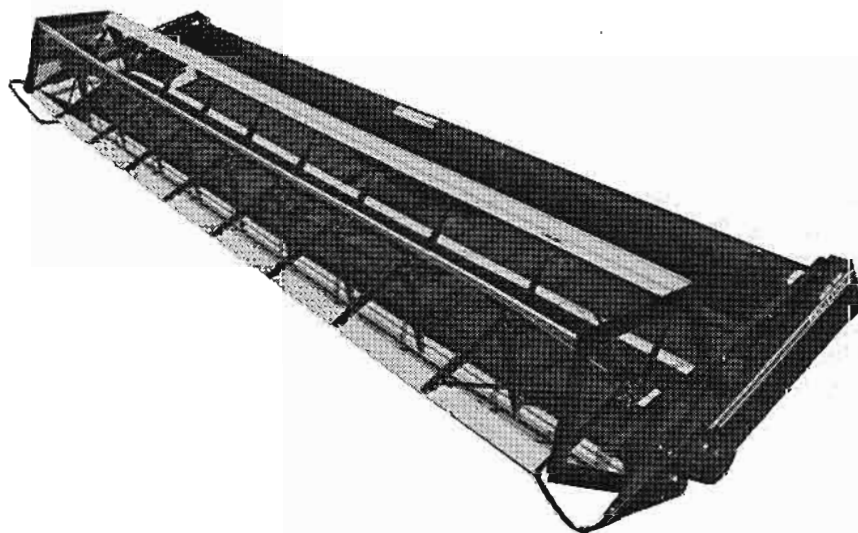


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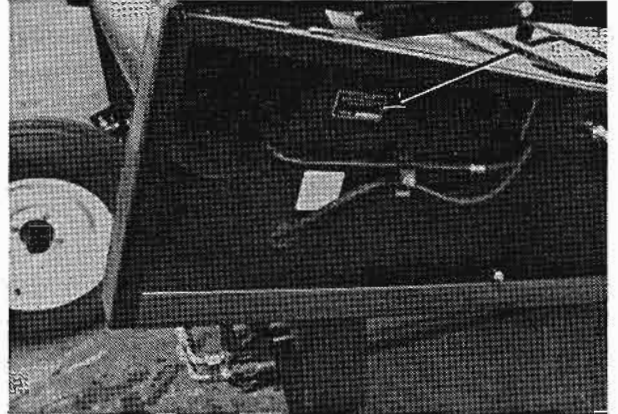
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SERIAL NUMBER LOCATIONS

Record the serial numbers in the space provided.

Harvest Header: _____

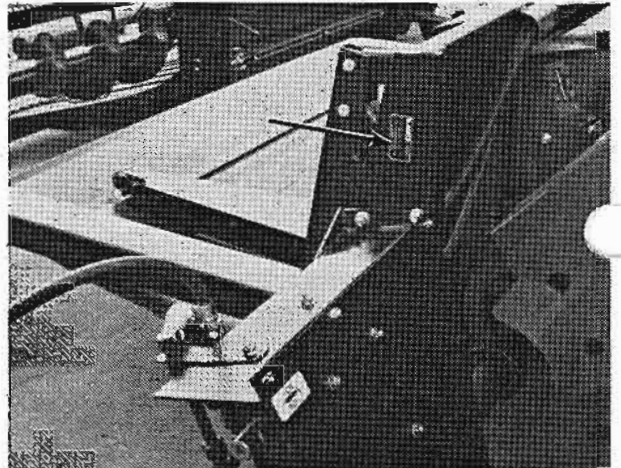
Plate is located on right hand end sheet,
near main tube.



HARVEST HEADER SERIAL PLATE LOCATION

Combine Adapter: _____

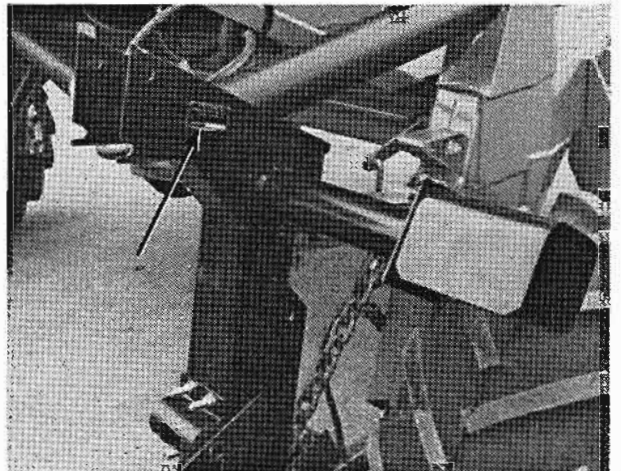
Plate is located on left side of adapter
frame.



COMBINE ADAPTER SERIAL PLATE LOCATION

Windrower Adapter: _____

Plate is located on left adapter leg.



WINDROWER ADAPTER SERIAL PLATE LOCATIC

NOTE: When ordering parts and service, be sure
to give your dealer the complete and
proper serial number.

SAFETY

SAFETY ALERT SYMBOL



This safety alert symbol indicates important safety messages in this manual and on safety signs on the header.

This symbol means: **ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!**

Carefully read and follow the safety message accompanying this symbol.

Why is SAFETY important to you?

3 BIG REASONS

- ACCIDENTS DISABLE AND KILL
- ACCIDENTS COST
- ACCIDENTS CAN BE AVOIDED

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:



- an immediate and specific hazard or forbidden practice which **WILL** result in severe personal injury or death if the message is not followed.



- a specific hazard or unsafe practice which **COULD** result in severe personal injury or death if the message is not followed.



- unsafe practice which **COULD** result in personal injury if the message is not followed, or a reminder of good safety practices.

SAFETY

SAFETY SIGNS

- The safety signs reproduced below appear on the header at the locations listed.
- 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.



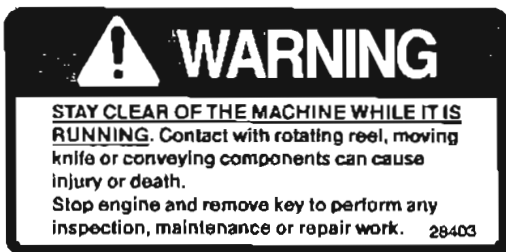
HEADER BACK TUBE



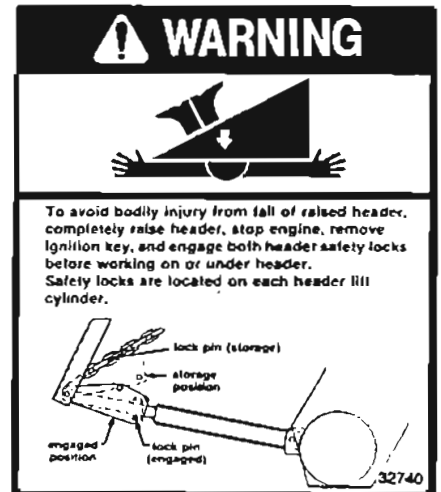
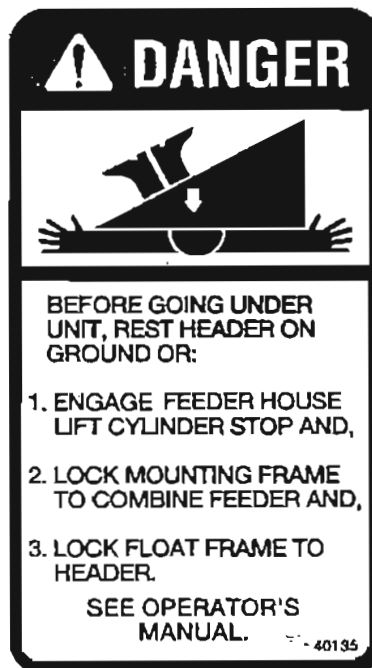
DRIVELINES



DRIVE SHIELDS



LEFT HAND SHIELD



HEADER LIFT LEG (WINDROWER ADAPTER)



LEFT AND RIGHT END FRAMES

COMBINE ADAPTER

SAFETY

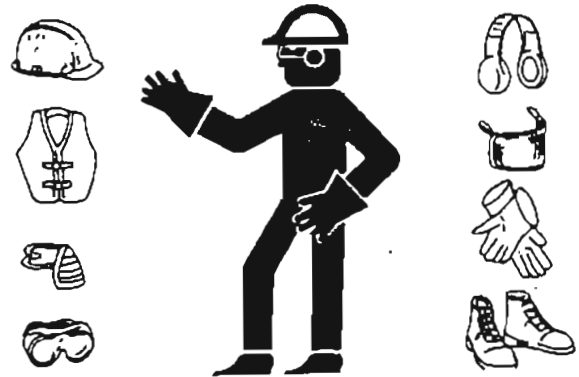


GENERAL SAFETY

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

1. Protect Yourself

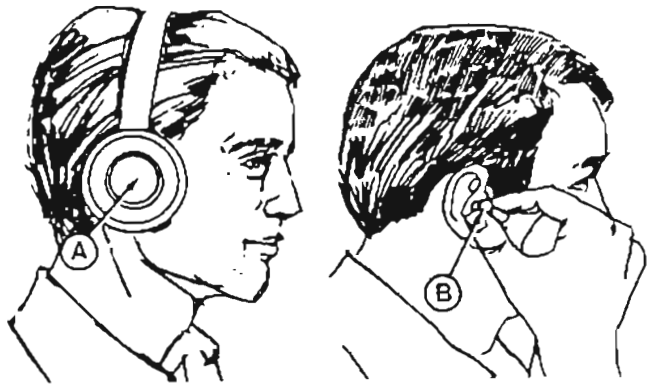
When assembling, operating and servicing machinery, wear all the protective clothing and personal safety devices that COULD be necessary for the job at hand. Don't take chances.



PROTECT YOURSELF

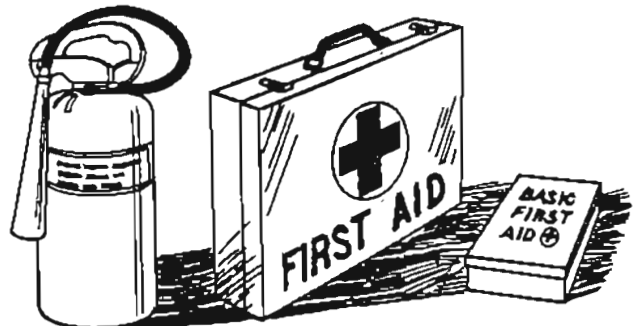
You may need:

- a hard hat
- protective shoes with slip resistant soles
- protective glasses or goggles
- heavy gloves
- wet weather gear
- respirator or filter mask
- hearing protection. Be aware that prolonged exposure to loud noise can cause impairment or loss of hearing. Wearing a suitable hearing protective device such as ear muffs (A) or ear plugs (B) protects against objectionable or loud noises.



PROTECT AGAINST NOISE

2. Provide a first-aid kit for use in case of emergencies.
3. Keep a fire extinguisher on the machine. Be sure the extinguisher is properly maintained and be familiar with its proper use.
4. Keep young children away from machinery at all times.



BE PREPARED FOR EMERGENCIES

SAFETY

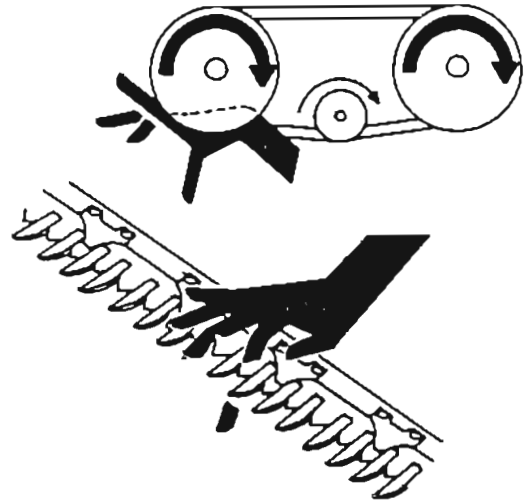


GENERAL SAFETY (continued)

5. Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
6. Keep hands, feet, clothing and hair away from moving parts. Never attempt to clear obstructions or objects from a machine while the engine is running.
7. Keep all shields in place. Never alter or remove safety equipment.
8. Do not substitute parts, especially safety related, that may not meet strength or design requirements of the manufacturer.
9. Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.
10. Keep the area used for servicing machinery clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
11. Use adequate light for the job at hand.
12. Keep machinery clean. Straw and chaff on a hot engine are a fire hazard. Do not allow oil or grease to accumulate on service platforms, ladders or controls. Clean machines before storage.
13. Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
14. When storing machinery cover sharp or extending components to prevent injury from accidental contact.



NEVER WEAR LOOSE
OR DANGLING CLOTHES



KEEP AWAY FROM MOVING PARTS



KEEP SERVICE AREA
CLEAN AND DRY

SPECIFICATIONS

HARVEST HEADER:

	WINDROWER	COMBINE
	(Specs listed may vary depending on combine)	
	Wobble Box (enclosed oil bath)	
KNIFE DRIVE	1300 strokes/minute	
KNIFE SPEED	1100 strokes/minute	
KNIFE TYPE	Over-serrated	
DELIVERY OPENING WIDTH (between rollers)	31" (780 mm) to 66 1/2" (1690 mm)	
DELIVERY OPENING HEIGHT at 8" (200 mm) cutting height	34 - 37" (865 - 940 mm)	
CUTTERBAR RANGE (ground to guard tip)	2" (50 mm) below ground to 35" (890 mm) above	determined by combine
CUTTERBAR ANGLE at 8" (200 mm) cutting height	5° - 8° below horiz.	8° - 11° below horiz.
DRAPER TYPE	Rubber Coated Polyester with Rubber Slats	
DRAPER WIDTH	41.5" (1055 mm)	
DRAPER DRIVE	Hydraulic	
DRAPER ANGLE	10° - 13° below horiz.	13° - 16° below horiz.
DRAPER SPEED	0 - 530 ft./minute	0 - 600 ft./minute
FEEDER DRAPER SPEED		560 ft./minute
CROSS AUGER SPEED (Varies with draper speed)		0 - 400 RPM
REEL TYPE	5 Bat metal (Standard) Cam Action Pick-Up Reel (Optional)	
REEL DRIVE	Hydraulic	
REEL SPEED	10 - 50 RPM	determined by combine
GAUGE WHEELS (Standard on 36 ft., optional for 30 ft.)	6.70-15 I1 Rib Implement	
TIRE PRESSURE	24 to 28 psi (165 to 195 kPa)	
HEADER WEIGHT (with bat reel, less adapters)		
25 ft.	2350 lbs. (1065 kg)	
30 ft.	2600 lbs. (1180 kg)	
36 ft.	3030 lbs. (1375 kg)	
COMBINE ADAPTER WEIGHT	approx. 1100 lbs. (500 kg) (varies with combine)	
WINDROWER ADAPTER WEIGHT	175 lbs. (80 kg)	

(SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT
NOTICE OR OBLIGATION TO REVISE UNITS PREVIOUSLY SOLD.)

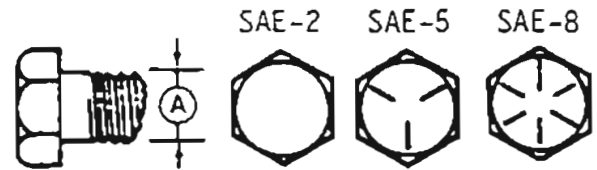
TORQUE SPECIFICATIONS

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

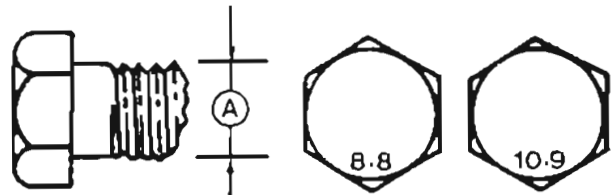
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque *					
	SAE 2		SAE 5		SAE 8	
	N.m	(lb-ft)	N.m	(lb-ft)	N.m	(lb-ft)
1/4"	8	(6)	12	(9)	17	(12)
5/16"	13	(10)	25	(19)	36	(27)
3/8"	27	(20)	45	(33)	63	(45)
7/16"	41	(30)	72	(53)	100	(75)
1/2"	61	(45)	110	(80)	155	(115)
9/16"	95	(70)	155	(115)	220	(165)
5/8"	128	(95)	215	(160)	305	(220)
3/4"	225	(165)	390	(290)	540	(400)
7/8"	230	(170)	570	(420)	880	(650)
1"	345	(225)	850	(630)	1320	(970)



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque			
	8.8		10.9	
	N.m	(lb-ft)	N.m	(lb-ft)
M3	.5	(.4)	1.8	(1.3)
M4	3	(2.2)	4.5	(3.3)
M5	6	(4)	9	(7)
M6	10	(7)	15	(11)
M8	25	(18)	35	(26)
M10	50	(37)	70	(52)
M12	90	(66)	125	(92)
M14	140	(103)	200	(148)
M16	225	(166)	310	(229)
M20	435	(321)	610	(450)
M24	750	(553)	1050	(774)
M30	1495	(1103)	2100	(1550)
M36	2600	(1917)	3675	(2710)



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

TORQUE SPECIFICATIONS

TIGHTENING O-RING FITTINGS *

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back the lock nut off until washer bottoms out at top of groove.
3. Hand tighten fitting until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.
4. Position angle fittings by unscrewing no more than one turn.
5. Tighten straight fittings to torque shown.
6. Tighten angle fittings to torque shown while holding body of fitting with a wrench.

Thread Size (in.)	Nut Size Across Flats (in.)	Torque Value*		Recommended Turn to Tighten (After Finger Tightening)	
		(N.m)	(lb-ft)	(Flats)	(Turns)
3/8	1/2	8	6	2	1/3
7/16	9/16	12	9	2	1/3
1/2	5/8	16	12	2	1/3
9/16	11/16	24	18	2	1/3
3/4	7/8	46	34	2	1/3
7/8	1	62	46	1-1/2	1/4
1-1/8	1-1/4	102	75	1	1/6
1-3/16	1-3/8	122	90	1	1/6
1-5/16	1-1/2	142	105	3/4	1/8
1-5/8	1-7/8	190	140	3/4	1/8
1-7/8	2-1/8	217	160	1/2	1/12

* The torque values shown are based on lubricated connections as in reassembly.

TIGHTENING FLARE TYPE TUBE FITTINGS *

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

Tube Size OD (in.)	Nut Size Across Flats (in.)	Torque Value*		Recommended Turns to Tighten (After Finger Tightening)	
		(N.m)	(lb-ft)	(Flats)	(Turns)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
3/8	11/16	24	18	1	1/6
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1-1/4	102	75	3/4	1/8
7/8	1-3/8	122	90	3/4	1/8

* The torque values shown are based on lubricated connections as in reassembly.

OPERATION

YOUR RESPONSIBILITIES AS AN OWNER/OPERATOR

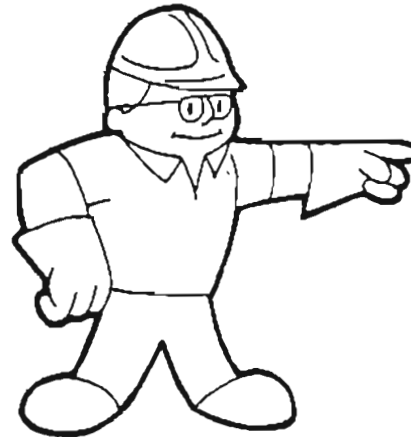


CAUTION:

1. It is your responsibility to read and understand this manual and the Windrower or Combine Operator's Manual completely before operating the header. Contact your dealer if an instruction is not clear to you.
2. Follow all safety messages in the manuals and on safety signs on the header and windrower or combine.
3. Remember that **YOU** are the key to safety. Good safety practices protect you and the people around you.
4. Before allowing anyone to operate the machine, for however short a time or distance, make sure they have been instructed in its safe and proper use.
5. Review the manual and all safety related items with all operators annually.
6. Be alert for other operators not using recommended procedures or not following safety precautions. Correct these mistakes immediately, before an accident occurs.
7. Do not modify the machine. Unauthorized modifications may impair the function and/or safety and affect machine life.
8. The safety information given in this manual does not replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.



READ THE OPERATOR'S MANUAL



FOLLOW SAFETY RULES

TO THE NEW OPERATOR

It's natural for an operator to be anxious to get started with a new machine. Please take the time to familiarize yourself with the header by reading the Operator's Manuals and safety signs before attempting operation.

WINDROWER OPERATION

NOTE: Pages 13 to 25 deal with attaching and operating the header with the MacDon 7000 Self-Propelled Windrower (or equivalent). For Combine Operation, see Page 26.

ATTACHING HEADER TO WINDROWER TRACTOR



CAUTION: Do not carry anything on the tractor linkage except the headers designed for use with it.

1. Support cutterbar approximately 6" (150 mm) from ground at (A) both ends.

NOTE: Choose an area that is as level as possible.

Block both gauge wheels, front and rear (B), if applicable.

2. For 36 and 30 foot headers with gauge wheels, be sure gauge wheel pins are in stand position (C), both sides, to support rear of header.

For 25 and 30 foot headers without gauge wheels, be sure header stand is secure.

3. Retract lift cylinders on windrower tractor as follows:



CAUTION: Be sure area is clear of bystanders, then start engine.

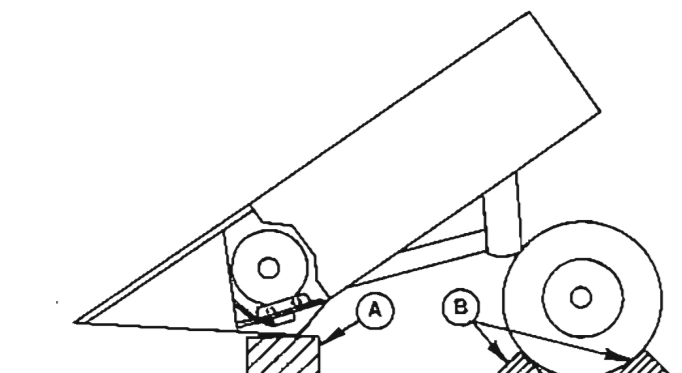
Depress toe of header lift pedal (extreme right) to retract cylinders.

NOTE: If cylinders do not retract sufficiently, additional weight or force on mounting legs may be required.

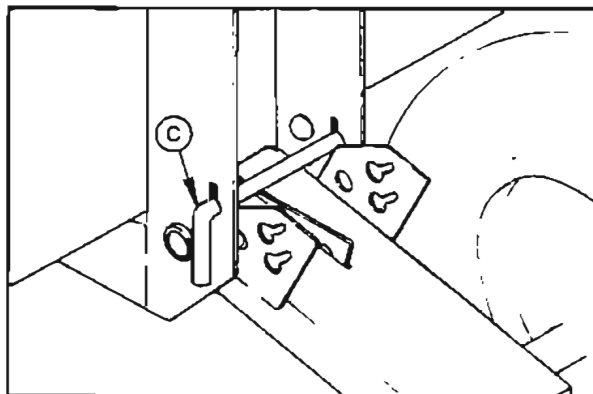
4. Mounting legs should be installed on tractor lift linkages. See "Preparing the Tractor" in Assembly section.

Slowly drive tractor straight forward until mounting legs are engaged in header legs. Stop engine and remove key.

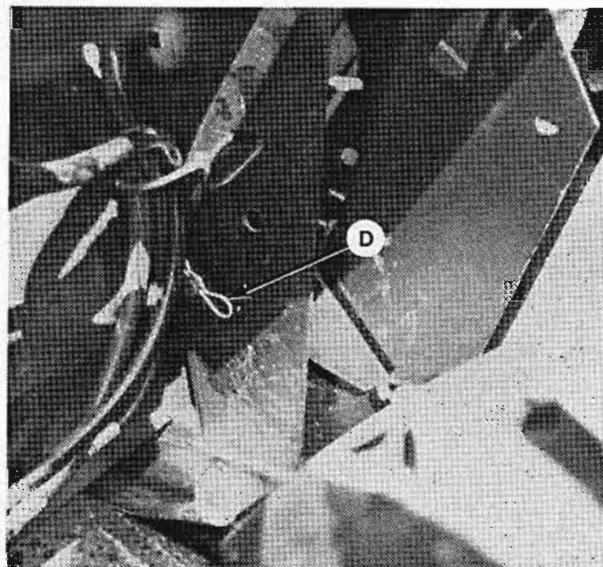
Align slot in engaging plate with hole in header leg and install pin (D), both sides.



SUPPORT CUTTERBAR



GAUGE WHEELS - STAND POSITION



INSTALL ENGAGING PINS - BOTH SIDES

WINDROWER OPERATION

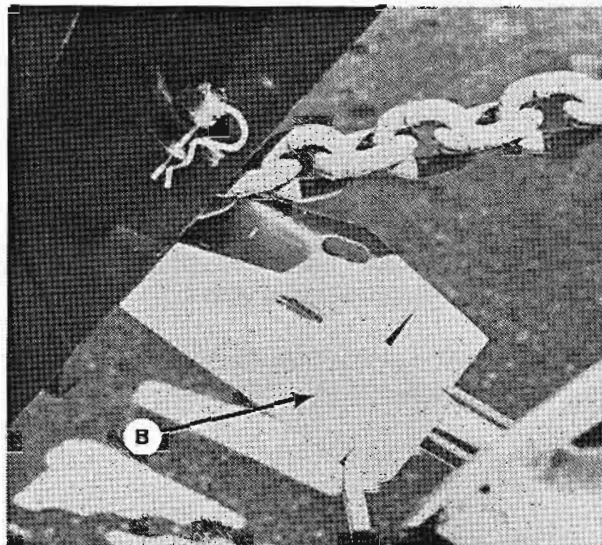
ATTACHING HEADER TO WINDROWER TRACTOR (continued)

5. Start engine and back up slightly to allow linkage alignment. Depress heel of header lift (extreme right) pedal and raise header slowly.

Raise header fully, stop engine.

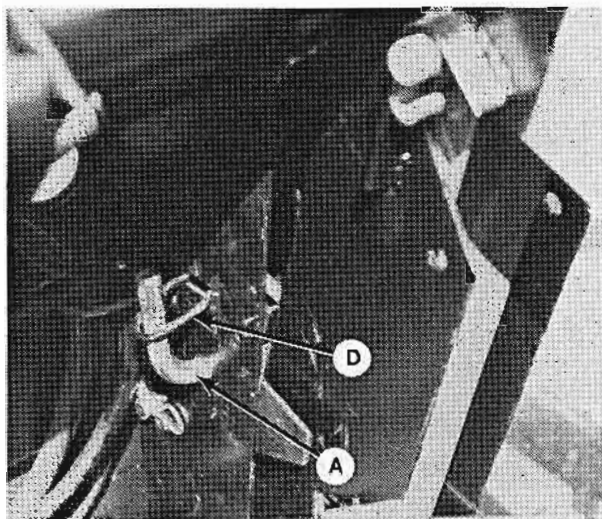


WARNING: To avoid bodily injury from fall of raised header, always engage header lift cylinder stops (B) when working on or around raised header.



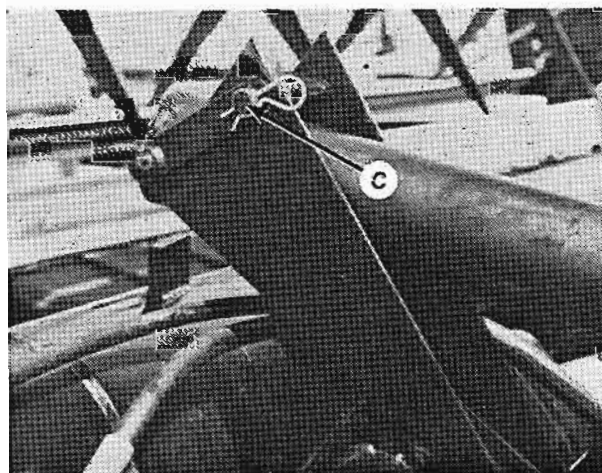
ENGAGE LIFT CYLINDER STOPS

6. Install pin (A), both sides. Position pin retainer (D).



INSTALL HEADER LOCK PINS

7. Attach float springs to header anchors with pins (C) and lock with hair pins.

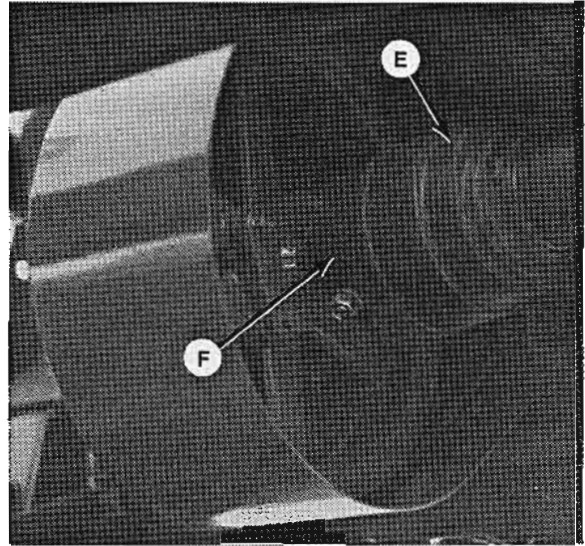


ATTACH FLOAT SPRINGS

WINDROWER OPERATION

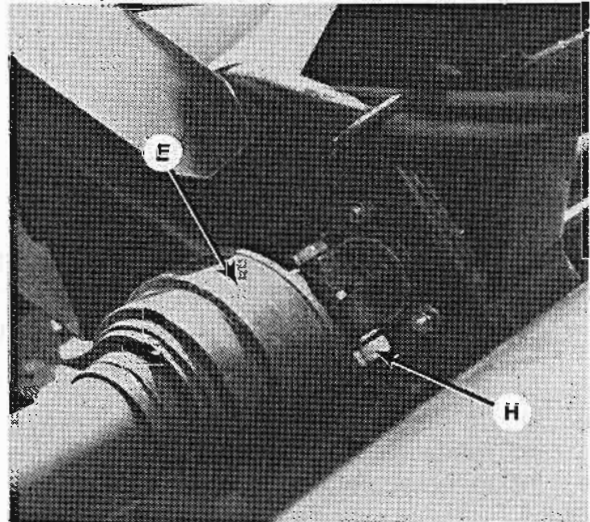
ATTACHING HEADER TO WINDROWER TRACTOR (continued)

8. a. Connect driveline (E) to header drive pulley shaft (F) on tractor. Tighten clamp yoke hardware.



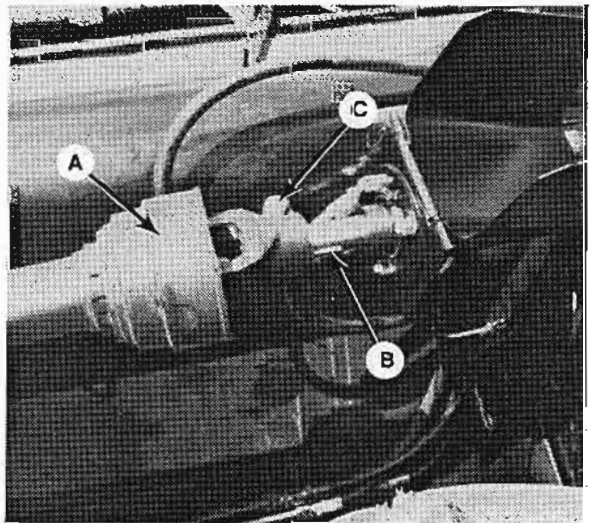
CONNECT DRIVELINE
AT TRACTOR

- b. Connect other end of driveline (E) to shaft at left header leg. Tighten clamping hardware (H).



CONNECT DRIVELINE
AT HEADER

9. Connect secondary driveline (A) to shaft at left header leg. Ensure key (B) is in place. Tighten clamping hardware (C).



CONNECT DRIVELINE

WINDROWER OPERATION

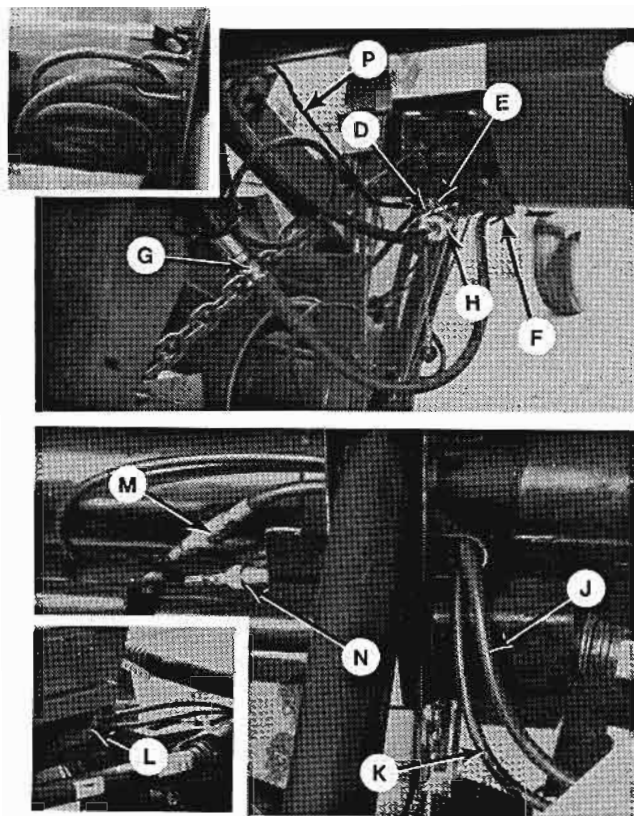
ATTACHING HEADER TO WINDROWER TRACTOR (continued)

10. Make the five hydraulic line connections:

- a. Connect quick coupler (D) to reel lift line (E) at tractor right hand leg.
- b. Connect hose from tractor relief valve assembly (F) to coupler at right hand leg (G).
- c. Connect hose (H) to coupler at tractor relief valve assembly (F).
- d. Route hoses (J) and (K) from 4-way valve (at left front corner of cab) behind hydraulic oil filler tube (L) and connect to couplers (M) and (N) at left header leg.

NOTE: Coupler (N) will be located at cross auger motor if auger is installed.

11. Connect the electrical wiring harness (P).

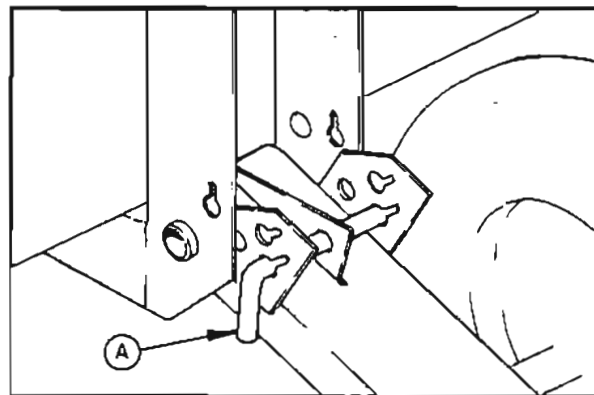


HYDRAULIC & ELECTRICAL CONNECTIONS

12. For 36 and 30 foot headers with gauge wheels, remove pins at gauge wheels and place in field position (A). See "Cutterbar Angle" for alternate pin position for steeper cutterbar angle.

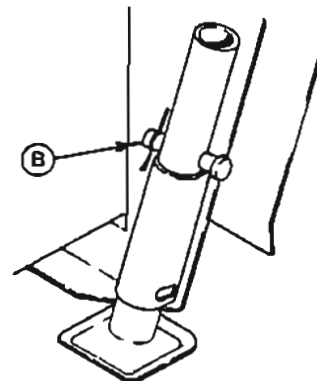
NOTE: Rotate pin to align roll pin with key slot for removal and installation. Roll pin locks inside to secure the position.

For 25 and 30 foot headers without gauge wheels, raise header stand to storage position (B).



GAUGE WHEELS - FIELD POSITION

13. Disengage header lift cylinder stops and lower header to ground. Check and adjust header flotation if required. See "Header Flotation" in Operation section.



HEADER STAND - STORAGE POSITION

WINDROWER OPERATION

DETACHING HEADER FROM WINDROWER TRACTOR

1. Lower header to level ground and lower the reel. Stop engine and remove key.



DANGER: Wait for all movement to stop. A rotating driveline can cause entanglement resulting in serious personal injury or death.

Disconnect secondary driveline and store on tab (A).

Block both gauge wheels, front and rear, if applicable.

2. Disconnect five hydraulic lines at quick couplers:
 - One at header right hand leg.
 - Two at header left hand leg.
 - Two near tractor right hand leg.

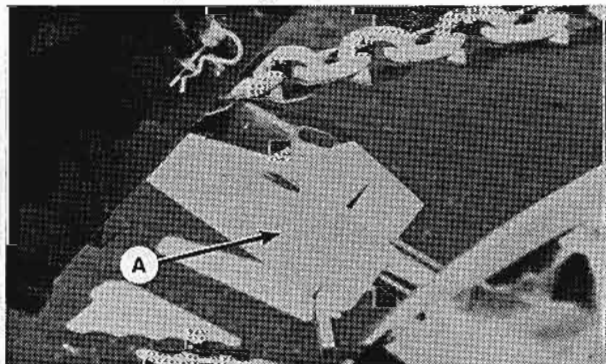
Couple header hoses at (B) and (C) for storage. Plug reel lift line coupler (D).

Couple the hose from the relief valve to the coupler at the relief valve (G) for storage. Cap reel lift line coupler (H).

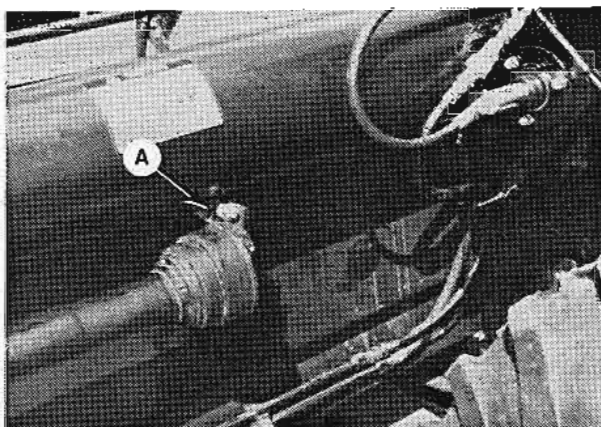
Couple the hoses from the 4-way valve together for storage.

IMPORTANT: Be sure header and tractor stored hoses are not entangled.

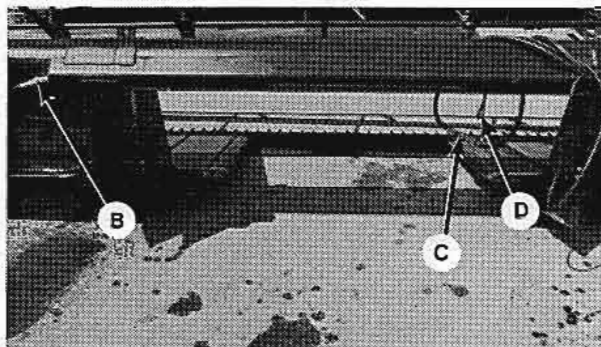
3. Disconnect electrical wiring harness (J).
4. Start engine. Activate header lift (extreme right) pedal to raise header fully. Stop engine and remove key from ignition.



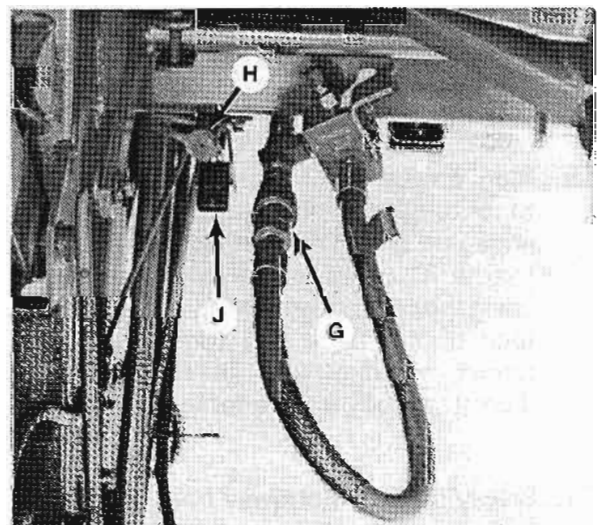
WARNING: To avoid bodily injury from fall of raised header, always engage header lift cylinder stops (A) when working on or around raised header.



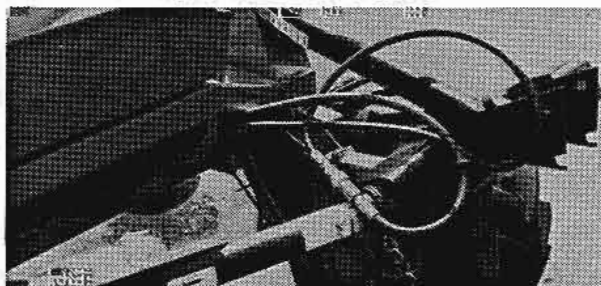
DISCONNECT AND STORE DRIVELINE



STORE HEADER HOSES & DISCONNECT WIRING



STORE RELIEF VALVE HOSE & CAP REEL LIFT LINE



STORE 4-WAY VALVE HOSE

WINDROWER OPERATION

DETACHING HEADER FROM WINDROWER TRACTOR (continued)

5. Remove float spring retaining pins from header anchors. Push springs back and rest on mounting legs.

Remove pins (C) securing adapter legs to header legs. Do not remove engaging pins (D) at this time.

6. For 36 and 30 foot headers with gauge wheels, remove pins at gauge wheels and place in stand position (B).

For 25 and 30 foot headers without gauge wheels, lower header stand into position (E).

7. Set 6 inch (150 mm) blocks beneath the cutterbar.



CAUTION: For best stability, place blocks as close as possible to each end of the header (maximum 2 ft [600 mm]).

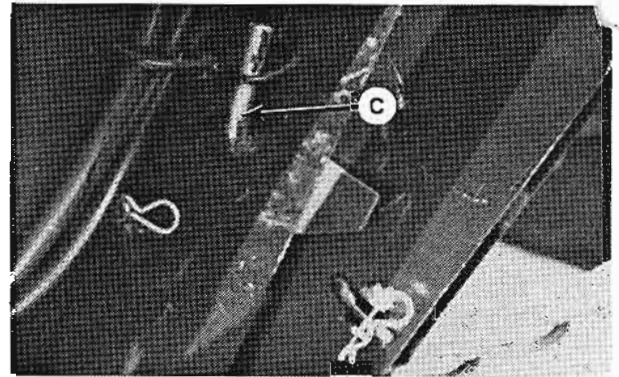
8. Raise header lift cylinder stops to storage position.

9. Start engine and lower header onto blocks. Stop engine and remove key. Remove engaging pins (D). Start engine and hold the header lift pedal in the down position while using the variable ground speed lever to slowly rock tractor back and forth. This will fully retract cylinders and lift channel pins will disengage lugs on header legs.

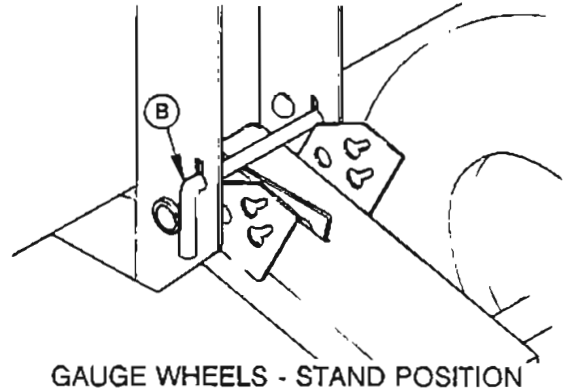
10. Slowly back tractor away from header.



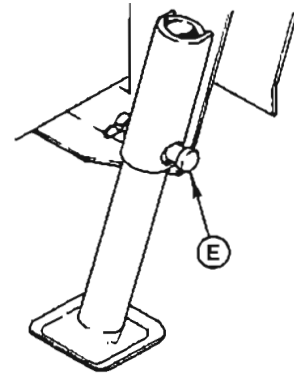
CAUTION: Avoid driving machine with header removed, tractor alone is less stable and more difficult to control. If necessary to drive machine with header removed, do not exceed half maximum engine speed and avoid slopes.



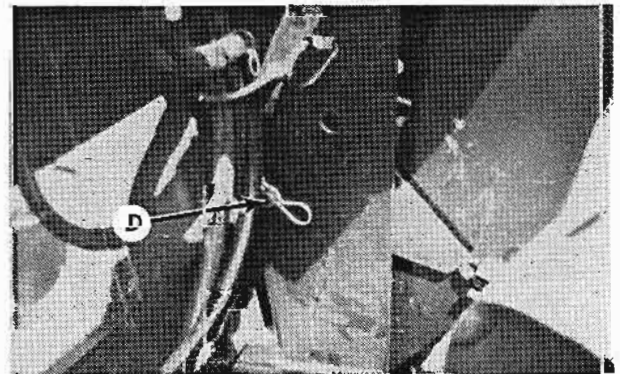
REMOVE HEADER LOCK PINS



GAUGE WHEELS - STAND POSITION



HEADER STAND - LOWERED



REMOVE ENGAGING PINS AFTER LOWERING HEADER

WINDROWER OPERATION

Windrower Header Controls:

HEADER DRIVE CLUTCH

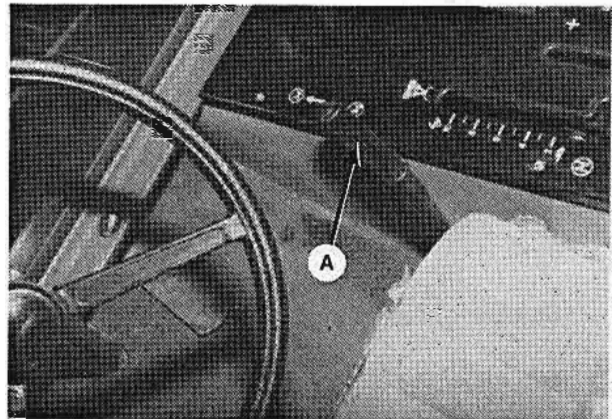


CAUTION: Be sure all bystanders are clear of machine before starting engine or engaging header drive clutch.

To engage header drives on windrower, push lever (A) slowly to forward position.

To disengage, pull lever back.

NOTE: Engine will not start with header drive clutch engaged.



HEADER DRIVE CLUTCH - WINDROWER

HEADER LIFT CYLINDER STOPS



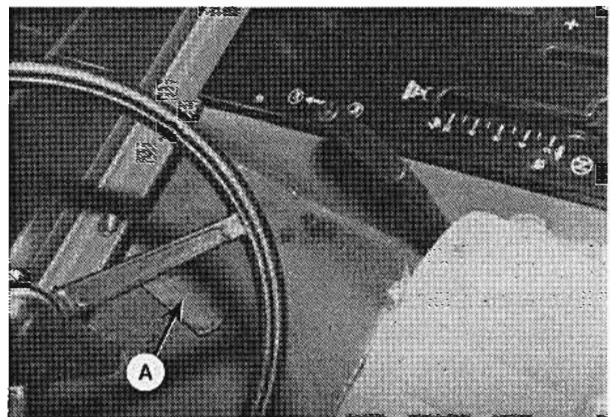
WARNING: To avoid bodily injury or death from fall of raised header, always engage cylinder stops before going under header for any reason.

Cylinder stops are located on both header lift cylinders on windrower.

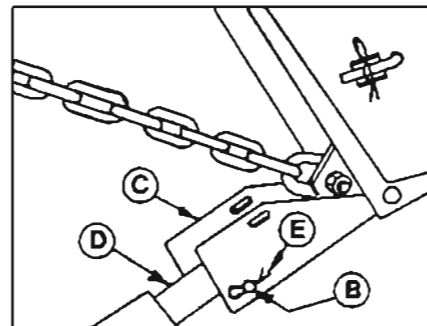
To engage cylinder stops:

1. Push on heel of extreme right pedal (A) to raise header to maximum height.
2. Pull pin (B) and position stop (C) over cylinder rod (D). Install pin (B) through hole in stop, under cylinder rod. Secure with hairpin (E).

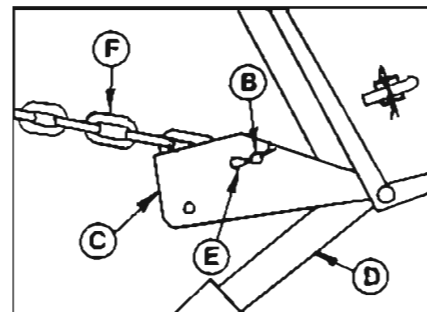
NOTE: When placing cylinder stop in storage position, always have chain (F) tight (header up) to ensure proper positioning of pin.



HEADER LIFT PEDAL - WINDROWER



LIFT CYLINDER STOP - ENGAGED



LIFT CYLINDER STOP - STORAGE

WINDROWER OPERATION

Windrower Header Controls: (continued)

CUTTING HEIGHT: WINDROWER

For grain crops the windrow should normally be laid on stubble from 6 to 8 inches high (150 to 200 mm).

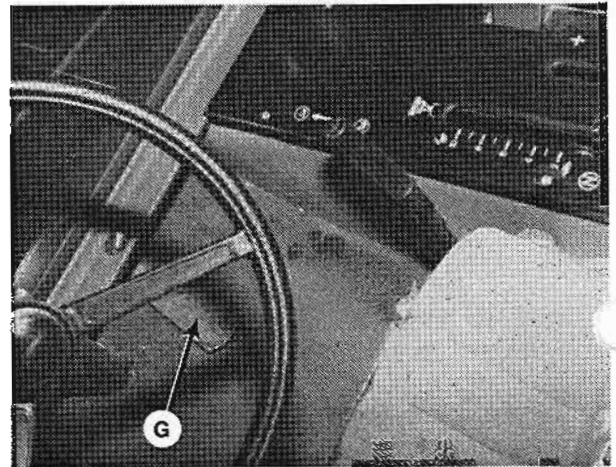
Stubble of this height:

1. Allows free circulation of air under the windrow for more even drying.
2. Supports the windrow without bending.
3. Keeps grain heads from contacting ground. Heads that touch the ground are difficult to pick up and will sprout in damp weather.

HEADER LIFT: WINDROWER

Header lift is controlled by the extreme right pedal (G) in windrower cab. Push on heel of pedal to raise header. Push on toe to lower header.

If the header lowers too slowly, the drop rate may be increased. See "Header Lift Control Valve: Drop Rate" in Maintenance/Service section.

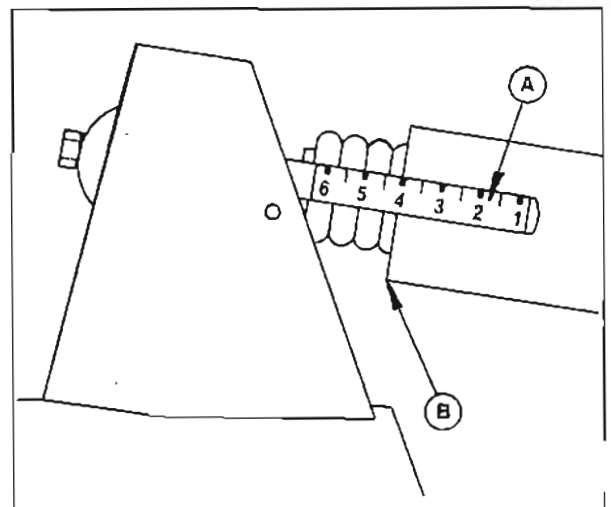


HEADER LIFT PEDAL - WINDROWER

CUTTERBAR HEIGHT INDICATOR: WINDROWER

Use the gauge decal (A) at the left hand spring anchor to identify desired cutting heights. Back end of tube (B) is gauge indicator.

NOTE: The gauge numbers do not correspond to a specific unit of measure, that is, a gauge reading of 4 is not 4 inches off the ground. The numbers are an indication of relative header height, for example, height 4 cuts shorter than 5 but higher than 3.



CUTTERBAR HEIGHT INDICATOR -
SHOWN AT CUTTING HEIGHT 4

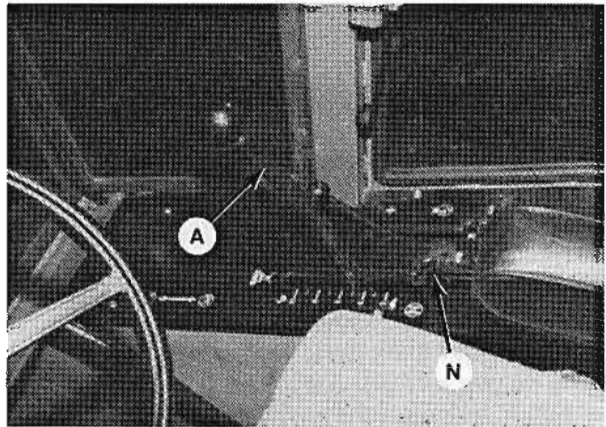
WINDROWER OPERATION

Windrower Header Controls: (continued)

GROUND SPEED LEVER

Ground speed affects the orientation of stalks in the windrow. Increasing ground speed will cause the configuration of the windrow to go from parallel formation to herringbone or dovetail. See "Windrow Characteristics" in this section.

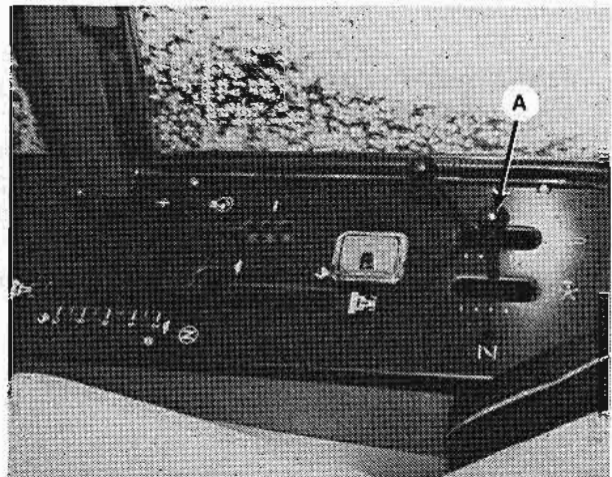
For windrower, ground speed is increased by moving lever (A) forward. To decrease forward speed, move lever rearward toward neutral (N).



GROUND SPEED LEVER - WINDROWER

REEL SPEED CONTROL

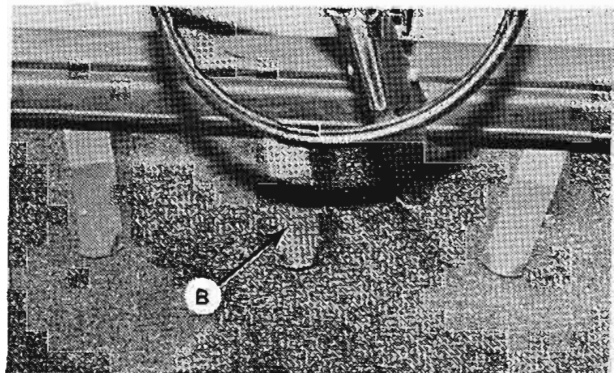
For windrower, move lever (A) forward to increase reel speed and rearward to decrease. Range is 10 to 50 RPM. See "Operating Variables" under Header Operation for the effects of various reel speeds.



REEL SPEED CONTROL - WINDROWER

REEL HEIGHT CONTROL

Reel height is controlled by the center pedal (B) in cab. Push on heel of pedal to raise reel. Push on toe to lower reel. See "Operating Variables" under Header Operation for suggested reel height settings for various crops and conditions.



REEL LIFT PEDAL - WINDROWER

WINDROWER OPERATION

Windrower Header Controls (continued)

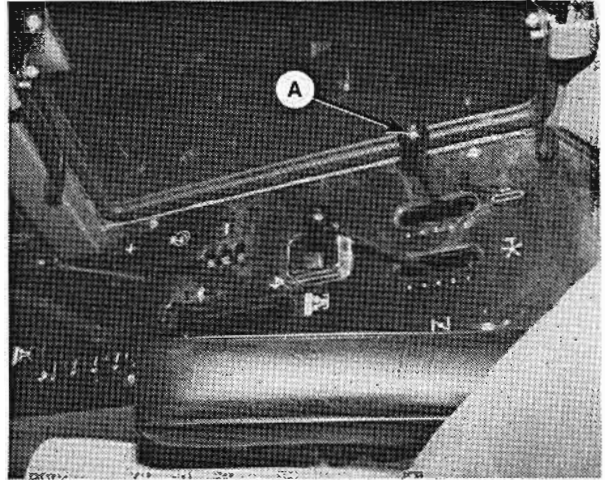
DRAPER SPEED CONTROL

Draper speed affects the orientation of stalks in the windrow. Faster draper speeds will tend to form herringbone or dovetail configurations. See "Windrow Characteristics" in this section.

To adjust draper speed on windrower, move lever (A) forward to increase draper speed and rearward to decrease. Range is 0 to 900 roller RPM, or 0 to 530 ft./minute (161 m/min.)

NOTE: If higher draper speed is required, an adjustment can be made to "borrow" hydraulic flow from the reel drive. See "Draper Speed Control Valve: Linkage Adjustment" in Maintenance/Service section.

IMPORTANT: For windrower, the extreme left foot pedal (connected to 4-way valve under left front corner of cab) must be in the "toe-down" position to allow proper oil flow to the draper drives. Accidental shifting of this pedal from the "toe-down" position will cause the drapers to stop or reverse. A valve position lock (available from your Dealer) may be installed to prevent shifting of the valve.



DRAPER SPEED CONTROL - WINDROWER

WINDROWER OPERATION

Windrower Header Controls (continued)

HEADER FLOTATION

IMPORTANT:

To avoid:

- frequent breakage of knife components
 - scooping soil
 - soil build-up at cutterbar in wet conditions,
- set header float as light as possible without causing excessive bouncing.

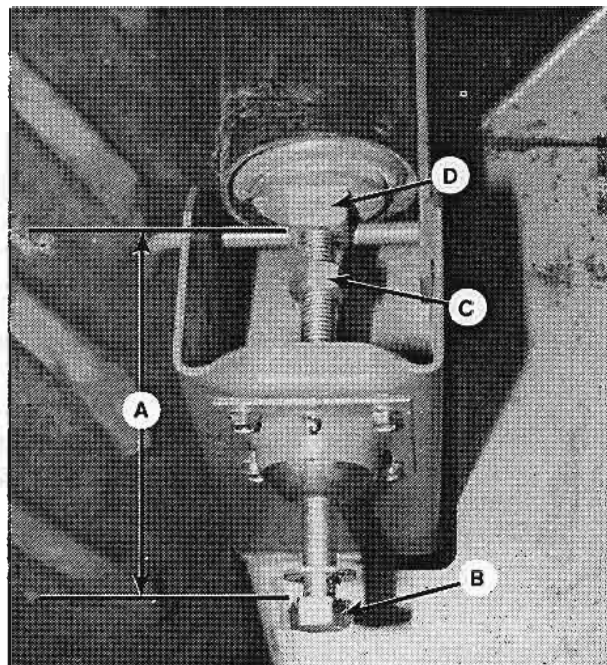
Under normal conditions, adjust float spring tension so 60 to 70 lbs. force (265 to 310 N) is required to lift cutterbar off ground at each end.

To adjust header float on windrower:



WARNING: Never exceed 10 inch (250 mm) dimension at (A). Insufficient thread engagement could cause connection to fail when spring tension is applied.

1. Raise header fully, shut off engine and remove key.
2. Back nut (C) away from spring.
3. Turn spring drawbolt (B) clockwise to increase float (which makes header lighter when lowered to ground).
Turn bolt counter-clockwise to decrease float (which makes header heavier when lowered).
4. Tighten nut (C) against spring insert (D) to lock position.
5. Lower header and check float at both ends of cutterbar. Force required to lift cutterbar should be approximately the same at both ends.



FLOAT ADJUSTMENT - WINDROWER

NOTE: If a pick-up reel is installed it may be necessary to install an auxiliary float spring kit to achieve required float. This kit (# 23770) is available from your Windrower Dealer.

WINDROWER OPERATION

Windrower Header Controls (continued)

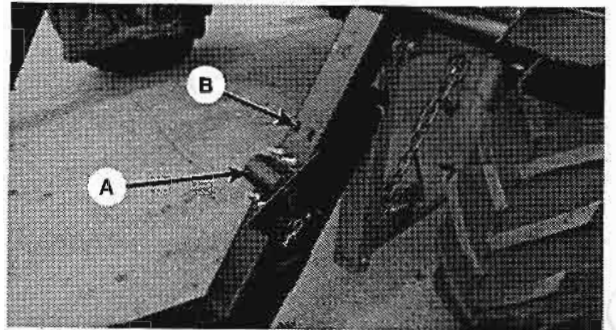
CUTTERBAR ANGLE

The cutterbar (or guard) angle can be set at 5° or 8° below horizontal on the windrower.

IMPORTANT: The flattest cutterbar angle (5° for windrower) is recommended for normal conditions and is the factory set position. A flatter cutterbar angle reduces knife section breakage and reduces soil scooping or build-up at the cutterbar in wet conditions. Use a steeper angle only when required in down crop for better lifting action.

To adjust cutterbar angle on windrower:

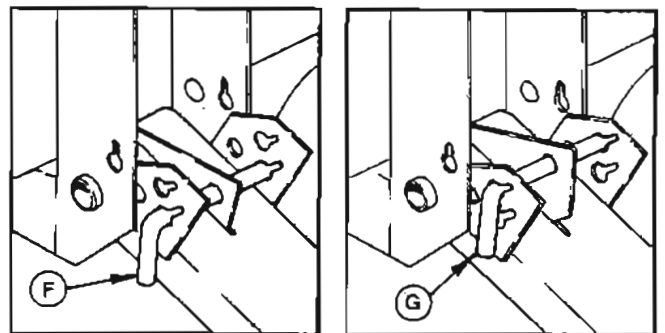
1. Detach header from windrower. See "Detaching Header from Windrower Tractor".
2. Move pivot mounting bracket to position (A) for flatter cutterbar angle or position (B) for steeper cutterbar angle.
IMPORTANT: Adjust both sides the same.
3. Reattach header to tractor. See "Attaching Header to Windrower Tractor".
4. **IMPORTANT:** For 36 and 30 foot headers with gauge wheels, select proper gauge wheel position for the chosen cutterbar angle. See "Gauge Wheel Position" below.



CUTTERBAR ANGLE ADJUST. - WINDROWER

GAUGE WHEEL POSITION

Use gauge wheel position (F) for flatter cutterbar angle and position (G) for steeper angle.



SELECT GAUGE WHEEL POSITION

WINDROWER OPERATION

WINDROW CHARACTERISTICS

Factors such as ground speed, reel speed, draper speed and delivery opening will all affect the resulting windrow. You will quickly become adept at adjusting these variables to achieve the desired results.

NOTE: Crop condition is a major factor in forming a good windrow. While standing or uniformly leaning crops can generally be easily formed into an acceptable windrow, such is not the case when stalks are tangled or leaning in several directions.

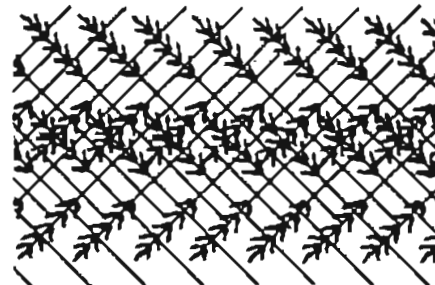
There are three basic criteria by which the quality of a windrow is measured:

1. Weight Distribution - heads and stalks distributed evenly across full width of windrow.
2. Good Curing - a loose, open windrow for better drying.
3. Good Weatherability - a well formed windrow that holds heads off ground and holds together in extreme weather conditions.

HERRINGBONE WINDROW

The most desirable form of windrow, stalks are crossed and interwoven. Heads are distributed across full width of windrow. Windrow rating:

Weight Distribution: Good
Curing Characteristics: Good
Weatherability: Excellent

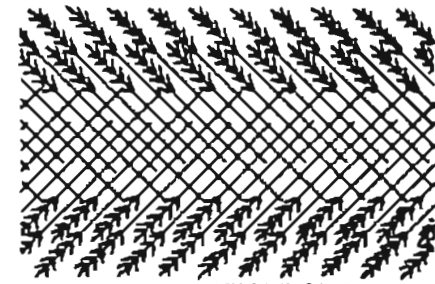


HERRINGBONE WINDROW

FANTAIL WINDROW

The stalk tips are crossed in center and heads are in line along outside edges. Windrow rating:

Weight Distribution: Fair
Curing Characteristics: Fair
Weatherability: Fair

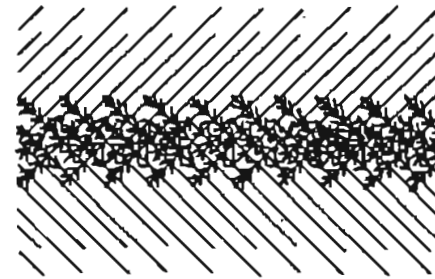


FANTAIL WINDROW

DOVETAIL WINDROW

The stalk tips are lined along outside edges of windrow and heads are crossed in center. Windrow rating:

Weight Distribution: Poor
Curing Characteristics: Fair
Weatherability: Poor

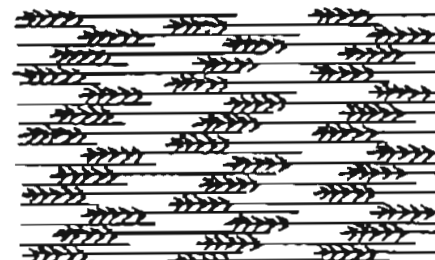


DOVETAIL WINDROW

PARALLEL WINDROW

The stalks are parallel to windrow and heads evenly distributed across width of windrow.

Weight Distribution: Good
Curing Characteristics: Good
Weatherability: Good



PARALLEL WINDROW

COMBINE OPERATION

NOTE: Pages 26 to 33 deal with attaching and operating the header with a combine. For Windrower Operation, see Page 13.

ATTACHING HEADER TO COMBINE AND ADAPTER

1. Attach adapter package to combine feeder housing. See "Preparing the Combine" in Assembly section.
2. Block both ends of cutterbar 6" (150 mm) off ground (A) and, if applicable, block both gauge wheels front and rear (B).

NOTE: Choose an area that is as level as possible.

3. For 36 and 30 foot headers with gauge wheels, be sure gauge wheel pins are in stand position (L) to support rear of header.

For 25 and 30 foot headers without gauge wheels, be sure header stand is secure.



CAUTION: Be sure area is clear of bystanders before starting engine.

4. Drive slowly forward and engage adapter legs (C) in header legs (D).

Continue forward until lip of adapter (E) is under cutterbar and catch (F) engages under catch in header leg.

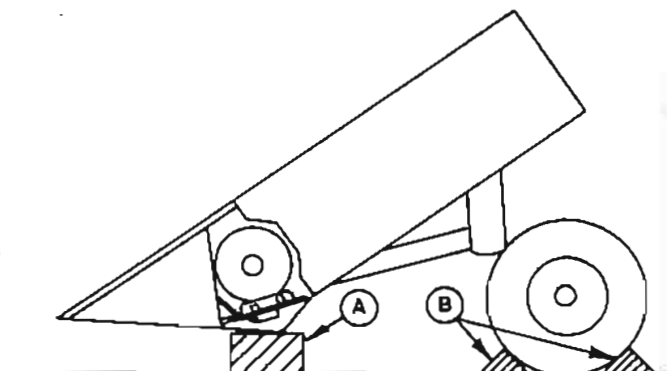
IMPORTANT: Take care not to crush hydraulic hoses when driving into header.

5. Raise header, stop engine and remove key.

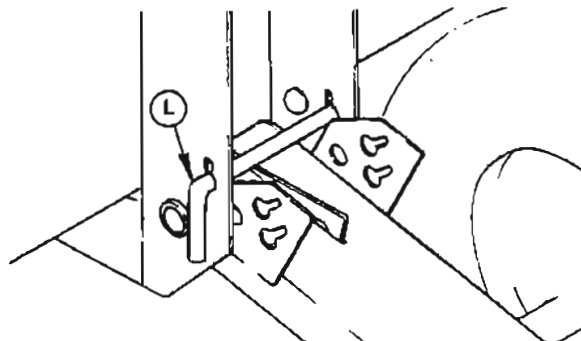


WARNING: To avoid bodily injury from fall of raised header, engage header lift cylinder stops when working on or around raised header. See your Combine Operator's Manual for details.

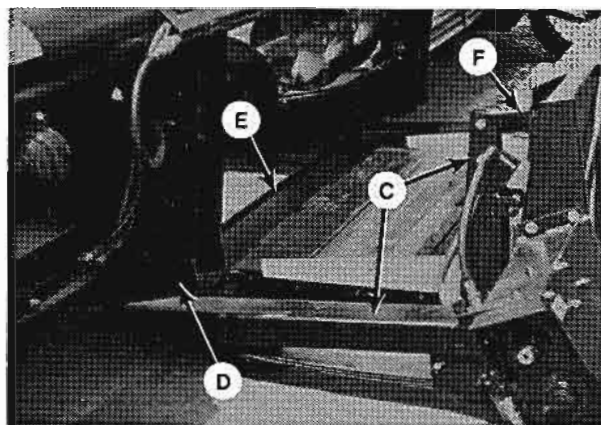
6. Attach adapter to header with pin (G), both sides. Position pin retainer (H).
7. Disengage float lock-out by lowering retainers to position (K).



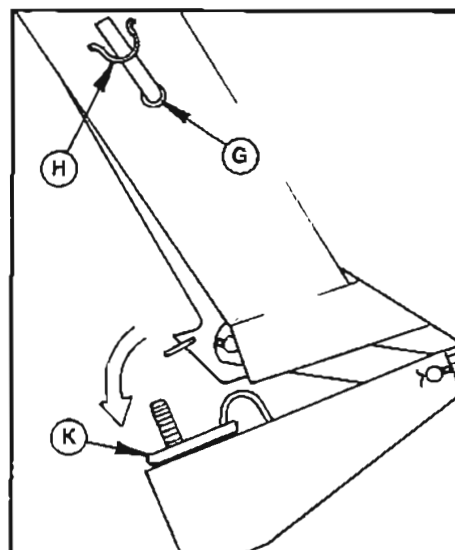
BLOCK CUTTERBAR AND GAUGE WHEELS



GAUGE WHEELS - STAND POSITION



ALIGN MOUNTING LEGS



INSTALL PINS & DISENGAGE FLOAT LOCK

COMBINE OPERATION

ATTACHING HEADER TO COMBINE AND ADAPTER (continued)

8. Remove driveline from storage tab on header tube and install on chain case shaft (J). Secure clamp yoke hardware.
9. Make the five hydraulic line connections:
 - Two connections (A) and (B) from header to combine reel drive pressure and reel lift lines.
 - Three connections (C), (D) and (E) from the adapter to the header.

IMPORTANT: For proper routing, be sure colour codes match at connections (C)- yellow, (D)- blue and (E)- red.

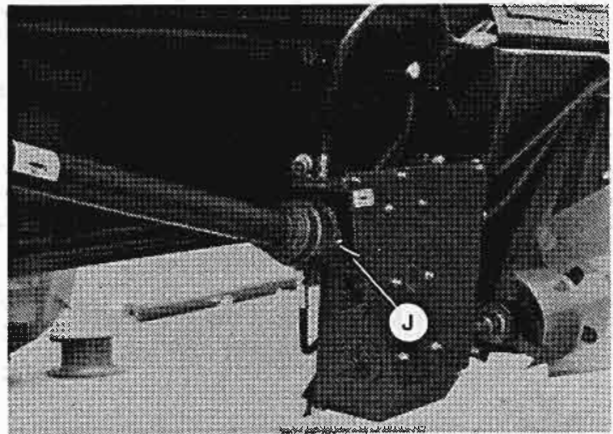
IMPORTANT: Reel drive return line should have been connected when adapter was attached to combine. Check that this coupler is fully connected before engaging drive. **FAILURE TO DO SO MAY DAMAGE MOTOR AND PUMP SEALS.**

10. For 36 and 30 foot headers with gauge wheels, remove pins at gauge wheels and place in field position (F). See "Cutterbar Angle" for alternate pin position for steepest cutterbar angle.

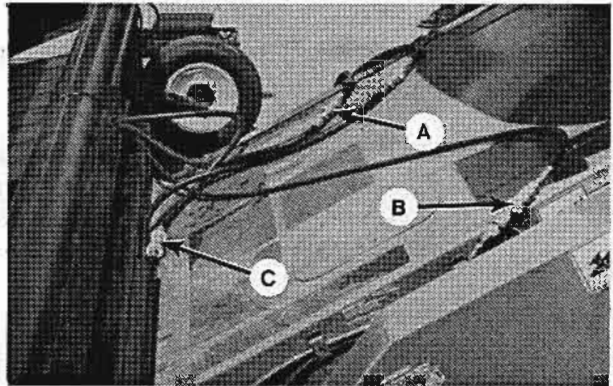
NOTE: Rotate pin to align roll pin with key slot for removal and installation. Roll pin locks inside to secure the position.

For 25 and 30 foot headers without gauge wheels, raise header stand to storage position (G).

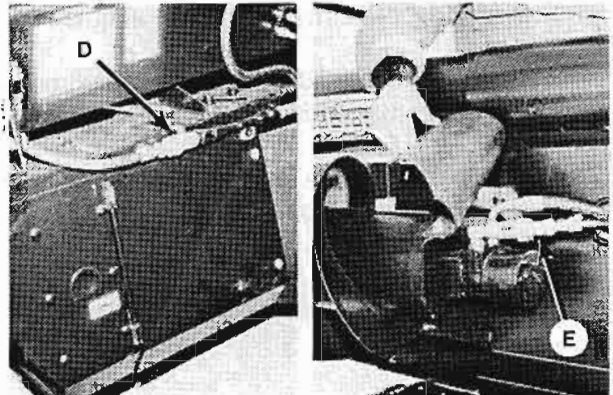
11. Disengage header lift cylinder stops and lower header.



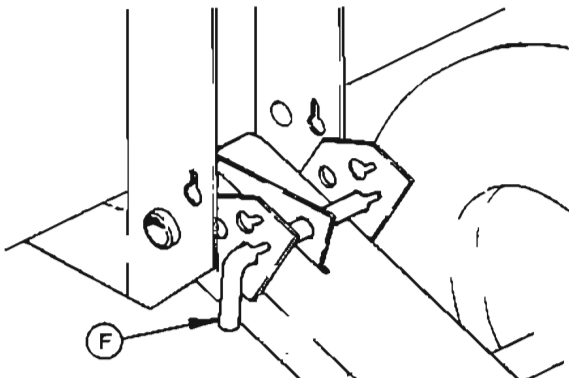
ATTACH DRIVELINE



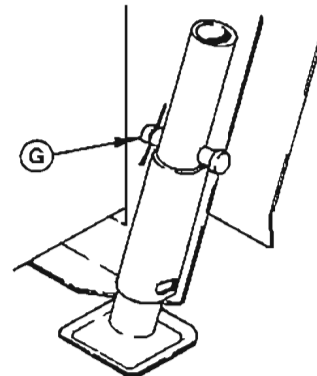
HYDRAULIC CONNECTIONS



HYDRAULIC CONNECTIONS



GAUGE WHEELS - FIELD POSITION



HEADER STAND - STORAGE POSITION

COMBINE OPERATION

DETACHING HEADER FROM COMBINE AND ADAPTER

Use this procedure when detaching to switch header over to windrower.

When detaching from combine for transport, detach header and adapter from combine. Instructions for this procedure are given in this section.

1. Choose a level area. Lower the reel and raise the header. Stop engine and remove key.



WARNING: To avoid bodily injury from fall of raised header, engage header lift cylinder stops when working on or around raised header. See your Combine Operator's Manual for details.



DANGER: Wait for all movement to stop. A rotating driveline can cause entanglement resulting in serious personal injury or death.

2. Disconnect driveline from chain case shaft and install on storage tab (A) on header tube. Secure with clamp yoke hardware.
3. Disconnect five hydraulic lines at quick couplers.

Couple or cap all lines to prevent hydraulic system contamination.

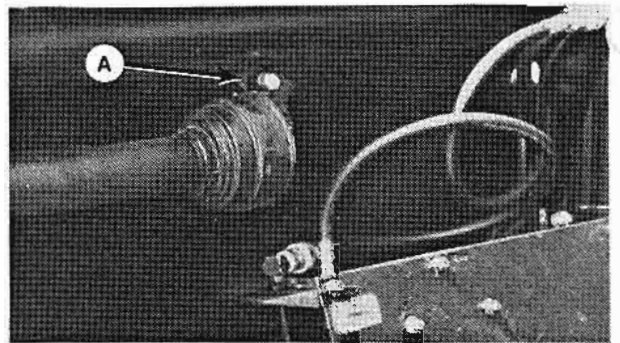
IMPORTANT: Be sure header stored hoses and combine/adapter stored hoses are not entangled.

4. Set 6" (150 mm) blocks beneath the cutterbar.

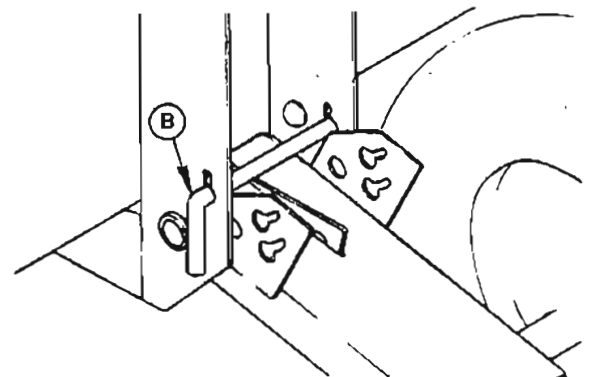


CAUTION: For best stability, place blocks as close as possible to each end of the header, (maximum 2 ft. [600 mm]).

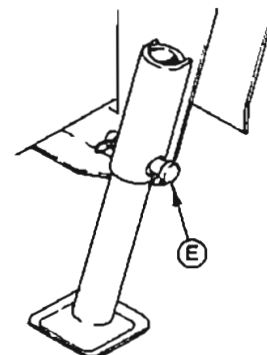
5. For 36 and 30 foot headers with gauge wheels, remove pins at gauge wheels and place in stand position (B). Block both gauge wheels. For 25 and 30 foot headers without gauge wheels, lower header stand into position (E).
6. Move float lock-out retainers to engaged position (C).
7. Remove pins (D) securing adapter legs to header legs.
8. Disengage header lift cylinder stops, start engine and lower header onto blocks.
9. Slowly back away from header.



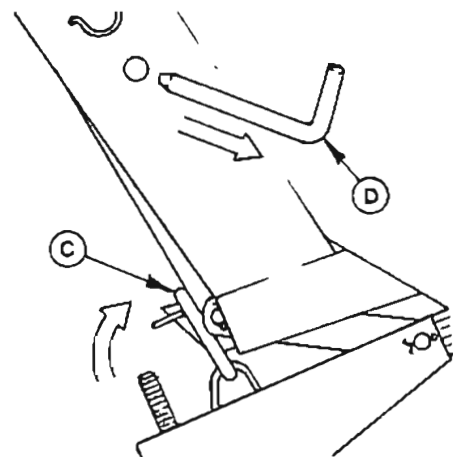
DISCONNECT AND STORE DRIVELINE



GAUGE WHEELS - STAND POSITION



HEADER STAND - LOWERED



LOCK OUT FLOAT AND REMOVE HEADER PINS - BOTH SIDES

COMBINE OPERATION

DETACHING HEADER AND ADAPTER FROM COMBINE

Use this procedure when detaching header for transport.

When detaching from combine to switch header over to windrower, detach header from combine and adapter. Instructions for this procedure are given in this section.

1. Choose a level area. Lower the reel and raise the header. Stop engine and remove key.



WARNING: To avoid bodily injury from fall of raised header, engage header lift cylinder stops when working on or around raised header. See your Combine Operator's Manual for details.

2. Move float lock-out retainers to engaged position (C).
3. Disconnect three hydraulic lines at quick couplers:
 - a. Reel drive pressure line (combine to header).
 - b. Reel lift line (combine to header).
 - c. Flow return line (combine to adapter).

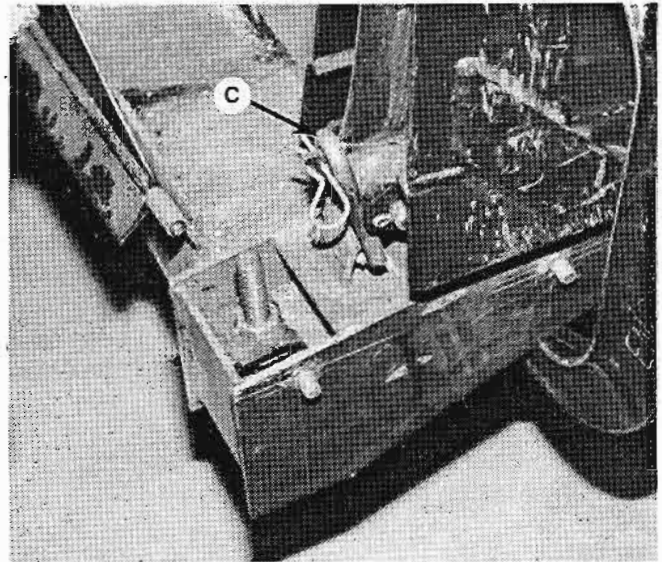
Couple or cap all lines to prevent hydraulic system contamination.

IMPORTANT: Be sure header stored hoses and combine stored hoses are not entangled.



DANGER: Wait for all movement to stop before approaching driveline. A rotating driveline can cause entanglement resulting in serious personal injury or death.

4. Disconnect input driveline from adapter drive case. See Mounting Instruction insert sheet.
5. Disconnect the header lock system. See Mounting Instruction insert sheet.
6. Disengage header lift cylinder stops, start engine and lower header to ground.
7. Slowly back combine away from header.



LOCK OUT FLOAT LINK - BOTH SIDES

COMBINE OPERATION

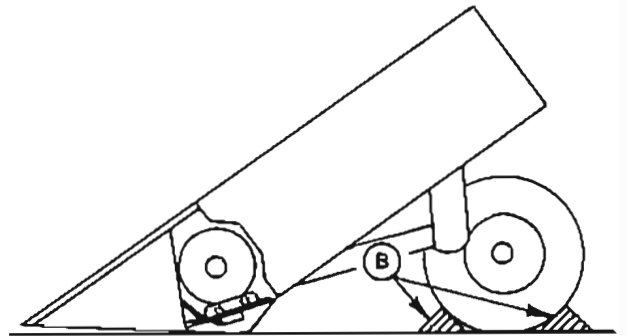
ATTACHING HEADER AND ADAPTER TO COMBINE

1. If applicable, block both gauge wheels front and rear (B).

NOTE: Choose an area that is as level as possible.



CAUTION: Be sure area is clear of bystanders before starting engine.



BLOCK GAUGE WHEELS

2. Drive combine slowly forward and engage lifting device. See Mounting Instruction Insert sheet for details.
3. Raise header, stop engine and remove key.

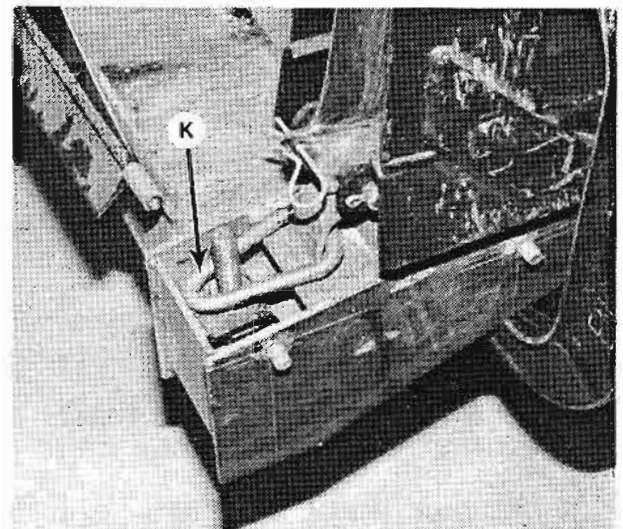


WARNING: To avoid bodily injury from fall of raised header, engage header lift cylinder stops when working on or around raised header. See your Combine Operator's Manual for details.

4. Connect header lock system. See Mounting Instruction Insert sheet.
5. Connect input driveline to adapter drive case. See Mounting Instruction insert sheet.
6. Connect three hydraulic lines at quick couplers:
 - a. Reel drive pressure line (combine to header).
 - b. Reel lift line (combine to header).
 - c. Reel drive return line (combine to adapter).

IMPORTANT: Be sure the reel drive return line coupler is fully connected before engaging drive. FAILURE TO DO SO MAY DAMAGE MOTOR AND PUMP SEALS.

7. Disengage float lock-out by lowering retainers to position (K).
8. Disengage header lift cylinder stops and lower header.



DISENGAGE FLOAT LOCK-OUT

COMBINE OPERATION

Combine Header Controls

See your Combine Operator's Manual for identification of:

HEADER DRIVE CLUTCH



CAUTION: Be sure all bystanders are clear of machine before starting engine or engaging header drive clutch.

HEADER LIFT CYLINDER STOPS



WARNING: To avoid bodily injury or death from fall of raised header, always engage cylinder stops before going under header for any reason.

HEADER LIFT CONTROL

Cutting Height: Combine

Straight-cutting height is largely determined by operator preference. Some factors to consider are:

1. Combine size and load requirements.
2. Type and condition of crop.
3. Tillage methods.

GROUND SPEED CONTROL

Ground speed should be such that knife can cut crop smoothly and cleanly, while giving the desired feeding rate.

See "Operating Variables" under Header Operation for information on the effects of varying ground speed.

REEL SPEED & HEIGHT CONTROLS

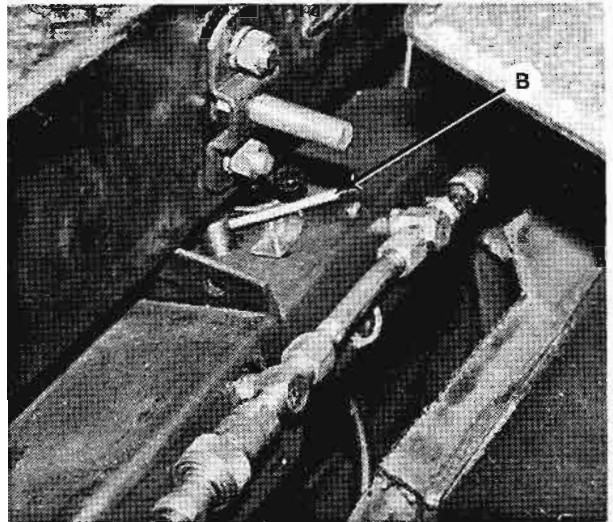
See "Operating Variables" under Header Operation for suggested reel speed and height settings.

COMBINE OPERATION

Combine Header Controls (continued)

DRAPER SPEED CONTROL

To adjust draper speed on combine, Move flow control lever (B) clockwise to increase draper speed and counter-clockwise to decrease. Range is 0 to 1020 roller RPM, or 0 to 600 ft./minute (183 m/min.). A mid-range setting (5 to 6 on flow control indicator) is suggested.



DRAPER SPEED CONTROL - COMBINE

HEADER FLOTATION

IMPORTANT:

To avoid:

- frequent breakage of knife components
 - scooping soil
 - soil build-up at cutterbar in wet conditions,
- set header float as light as possible without causing excessive bouncing.

Under normal conditions, adjust float spring tension so 60 to 70 lbs. force (265 to 310 N) is required to lift cutterbar off ground at each end.

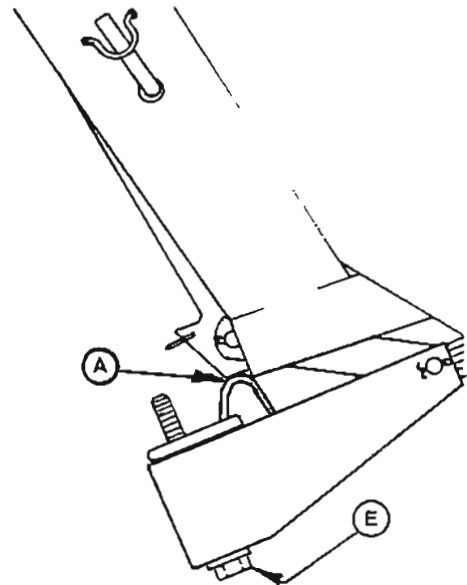
To adjust header float on combine:

1. Raise header fully.



WARNING: To avoid bodily injury or death from unexpected start-up or fall of raised header, stop engine, remove key and engage header lift cylinder stops before going under header to adjust float (or for any reason).

2. Turn bolts (E) at each side of adapter clockwise to increase float (which makes header lighter when lowered to ground). Turn bolts counter-clockwise to decrease float (which makes header heavier when lowered).
3. Disengage lift cylinder stops and lower header. Check float at both ends of cutterbar. Force required to lift cutterbar should be approximately the same at both ends.



FLOAT ADJUSTMENT - COMBINE

NOTE: With header raised off the ground, float link should contact stop at (A). A gap between link and stop with header off the ground is an indication that float is set too light.

COMBINE OPERATION

Combine Header Controls (continued)

CUTTERBAR ANGLE

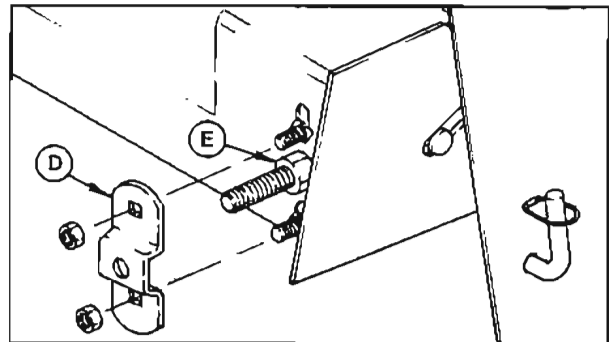
NOTE: For cutterbar angle adjustment on CASE IH 1480 & 1680 and Ford-New Holland Combines, see Combine Operator's Manual.

The cutterbar (or guard) angle can be set at between 8° and 11° below horizontal on the combine. (Actual range may vary with combine set-up.)

IMPORTANT: The flattest cutterbar angle (8° for combine) is recommended for normal conditions and is the factory set position. A flatter cutterbar angle reduces knife section breakage and reduces soil scooping or build-up at the cutterbar in wet conditions. Use a steeper angle only when required in down crop for better lifting action.

To adjust cutterbar angle on combine:

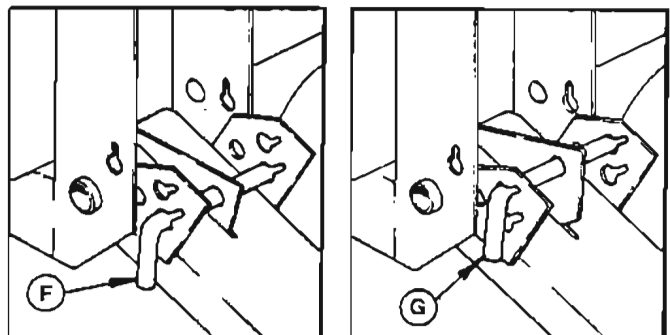
1. Raise header 6 inches (300 mm).
2. Remove lock (D), both sides of adapter.
3. Turn nut (E) clockwise to flatten cutterbar angle, or counter-clockwise to steepen angle.
IMPORTANT: Adjust both sides the same.
4. Replace lock (D).
5. Adjust header float. See "Header Flotation", opposite page.
6. **IMPORTANT:** For 36 and 30 foot headers with gauge wheels, select proper gauge wheel position for the chosen cutterbar angle. See "Gauge Wheel Position" below.



CUTTERBAR ANGLE ADJUST. - COMBINE

GAUGE WHEEL POSITION

Use gauge wheel position (F) for flatter cutterbar angles and position (G) for steepest angle.



SELECT GAUGE WHEEL POSITION

HEADER OPERATION

BREAK-IN PERIOD

1. After attaching header to combine or windrower tractor for the first time, set reel speed to maximum and operate the machine slowly for 5 minutes, watching and listening FROM THE OPERATOR'S SEAT for binding or interfering parts. Check draper tracking and adjust if required. See Maintenance/Service section.

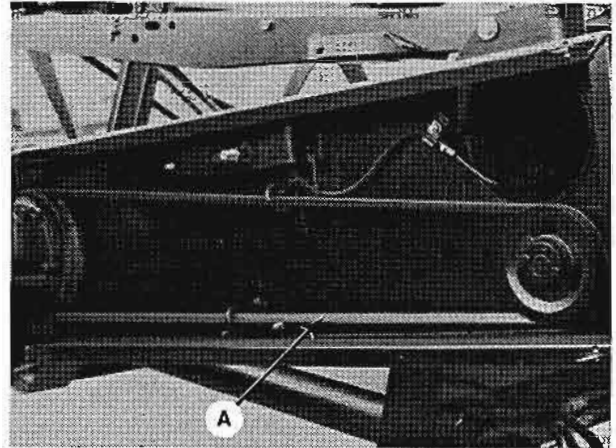


CAUTION: Before investigating an unusual sound or attempting to correct a problem, shut off engine, engage parking brake and remove key.

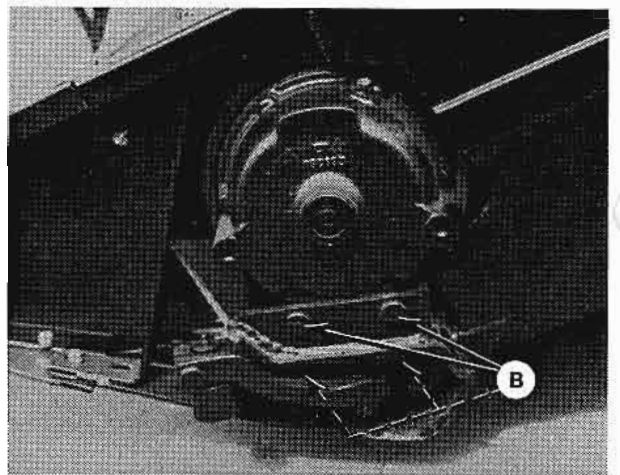
NOTE: Side drapers and auger will not operate until the oil flow from the reel drive fills the lines.

IMPORTANT: If the side drapers and auger start moving, then slow down and stop, STOP THE HEADER DRIVE IMMEDIATELY. Ensure that hydraulic return line to combine is properly coupled and there is no obstruction in coupling or lines. Back pressure over 300 psi (2070 kPa) will damage pump and motor seals.

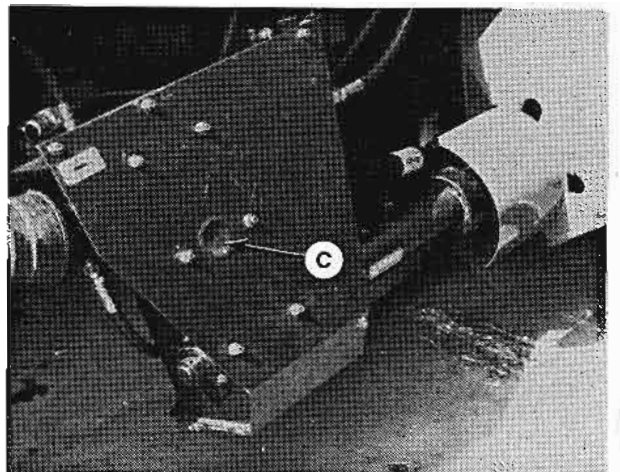
2. Change hydraulic oil filter(s) after 5 hours operation and again after 50 hours. Thereafter, refer to combine or windrower Operator's Manual for service interval.
3. Check knife drive belt (A) after 5 hours operation for initial stretch. Tighten as necessary. (See Maintenance/Service section.) Continue to check the belt periodically for the first 50 hours.
4. Check hardware after 5 hours operation. Tighten as necessary. See Specifications section for recommended torques.
5. For 36 and 30 foot headers with gauge wheels, check gauge wheel bolt torque after 10 hours operation and periodically thereafter (at least every 100 hours).
Torque: 50 to 60 ft.lbs. (68 to 81 N·m)
6. Tighten the four wobble box mounting bolts (B) after 10 hours operation and every 100 hours thereafter. Torque to 200 ft.lbs. (270 N·m), starting with the side mounting bolts.
7. Check drive chain (C) on combine adapter after 10 hours operation for proper tension. See Maintenance/Service section.



CHECK KNIFE DRIVE BELT TENSION



TIGHTEN FOUR WOBBLE BOX MOUNTING BOLTS



CHECK DRIVE CHAIN TENSION

HEADER OPERATION

PRE-STARTING CHECKS

Do the following at the start of each operating season:



CAUTION:

1. **Review the Operator's Manual to refresh your memory on safety and operating recommendations.**
2. **Review all safety signs and other decals on the machine and note hazard areas.**
3. **Be sure all shields and guards are properly installed and secured. Never alter or remove safety equipment.**
4. **Be sure you understand and have practiced safe use of all controls. Know the capacity and operating characteristics of the machine.**
5. **Check the first aid kit and fire extinguisher. Know where they are and how to use them.**

ALSO:

6. **Install drapers. See "Drapers" in Maintenance/Service section.**
7. **Adjust belt, draper and chain tension. See Maintenance/Service section.**
8. **Perform all Annual maintenance. See Maintenance/Service section.**

HEADER OPERATION

PRE-STARTING CHECKS

Do the following each day before start-up:

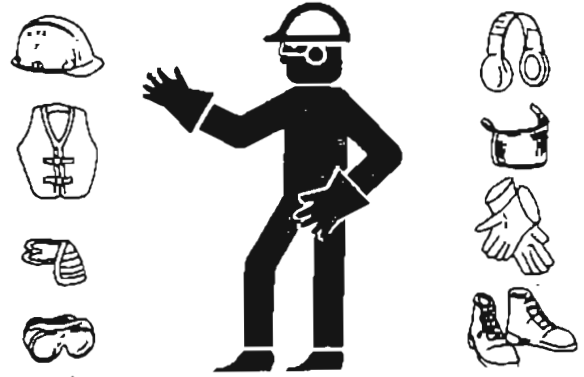


CAUTION:

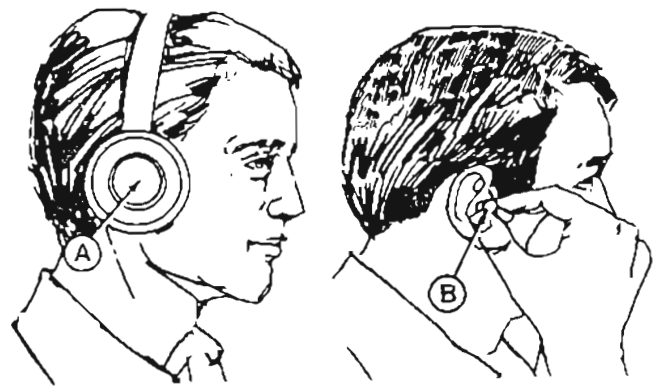
1. Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on or close to it.
2. Remove foreign objects from the header and surrounding area.
3. Wear close fitting clothing and protective shoes with slip resistant soles. As well, carry with you any protective clothing that **COULD** be necessary through the day. Don't take chances.
You may need:
 - a hard hat
 - protective glasses or goggles
 - heavy gloves
 - respirator or filter mask
 - wet weather gear
4. Protect against noise. Wear a suitable hearing protective device such as ear muffs (A) or ear plugs (B) to protect against objectionable or uncomfortable loud noises.
5. Check the machine for leaks, or any parts that are loose, missing, broken or not working correctly.

NOTE: Use proper procedure when checking for pressurized fluid leaks. See "Hydraulic System" in Maintenance/Service section.

6. Clean lights and reflective surfaces on the machine.
7. Perform all Daily maintenance. See Maintenance/Service section.



PROTECT YOURSELF



PROTECT AGAINST NOISE

HEADER OPERATION

OPERATE CORRECTLY

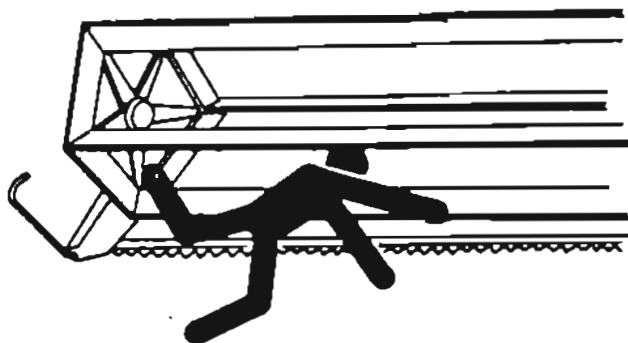


CAUTION:

1. Follow all safety and operational instructions given in your Operator's Manuals. If you do not have a windrower tractor and/or combine manual, get one from your dealer and read it thoroughly.
2. Never attempt to start the engine or operate the machine except from the operator's seat.
3. Check the operation of all controls in a safe clear area before starting work.
4. Do not allow riders on windrower or combine.
5. Never start or move the machine until you are sure all bystanders have cleared the area.
6. Avoid travelling over loose fill, rocks, ditches or holes.
7. Drive slowly through gates and doorways.
8. When working on inclines, travel uphill or downhill when possible. Be sure to keep transmission in gear when travelling downhill.
9. Never attempt to get on or off a moving machine.
10. Do not leave the operator's station while the engine is running.
11. Stop engine and remove key before adjusting or removing plugged material from the machine. A child or even a pet could engage the drive.
12. Check for excessive vibration and unusual noises. If there is any indication of trouble, shut-down and inspect the machine. Follow proper shut-down procedure:
 - engage brake
 - disengage header drive
 - turn off engine and remove key
 - wait for all movement to stop
 - dismount and engage cylinder stops before inspecting raised machine.
13. Operate only in daylight or good artificial light.



DO NOT ALLOW RIDERS



CLEAR THE AREA BEFORE OPERATING

HEADER OPERATION

REEL PROPS



WARNING: To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

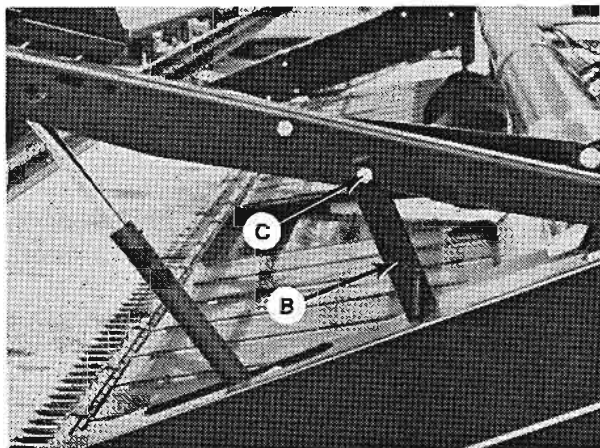
Reel props are located at each reel support arm.

To engage reel props:

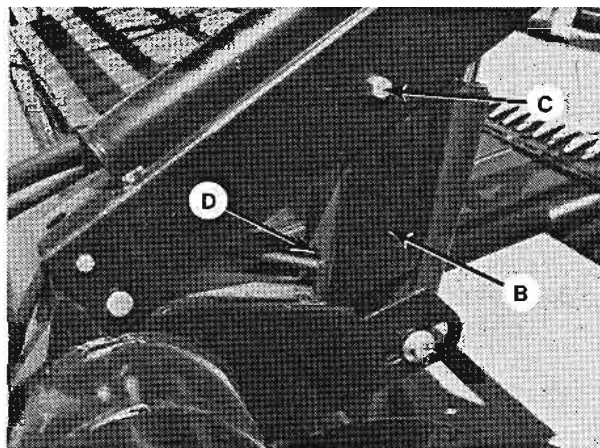
1. Raise reel to maximum height.
2. Move props (B) to engaged position.
3. Lower reel until props contact end frames.

NOTE: Keep pivot bolt (C) properly tightened so prop remains in stored position when not in use, yet can be engaged with hand force.

For 36 foot header, be sure hose is positioned to pass through slot (D) in center arm prop.



REEL PROP - ENGAGED



36 FT. CENTER ARM
REEL PROP - ENGAGED

HEADER OPERATION

Operating Variables

Satisfactory function of the header in all situations requires making the proper adjustments to suit various crops and conditions.

Correct operation reduces crop loss and allows cutting of more acres. As well, proper adjustments and timely maintenance will increase the length of service you receive from the machine.

The variables listed at right will affect the performance of the header. You will quickly become adept at adjusting the machine to give you the desired results.

<u>HARVEST HEADER</u>	
1.	Cutting Height
2.	Divider Angle
3.	Ground Speed
4.	Reel Speed
5.	Reel Height
6.	Reel Fore-Aft Position
7.	Draper Speed
8.	Cutting Width
9.	Delivery Opening Width
10.	Header Flotation
11.	Cutterbar Angle

OPERATING VARIABLES

CUTTING HEIGHT

Cutting height will vary, depending on whether windrowing or straight-cutting, type of crop, etc. See Windrower Operation and Combine Operation sections for stubble height recommendations for each.

Skid Shoes (Attachment)

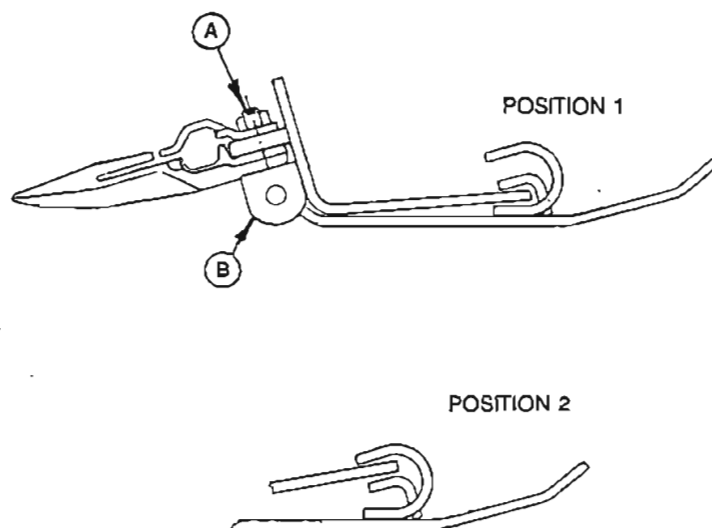
Skid shoes are available as an attachment. The primary benefits of skid shoes are:

1. Help prevent damage to cutting components.
2. Reduce scooping of dirt onto cutterbar.
3. Provide a method of setting a minimum cutting height.

To adjust skid shoes:

1. Remove one of the bolts (A) securing support (B).
2. Remove rods from supports and position shoe at desired setting. Adjust both shoes to the same position to provide an even cutting height.
3. Replace rods in supports and replace bolt (A).

NOTE: Additional skid shoes may be installed if required.



SKID SHOE POSITIONS

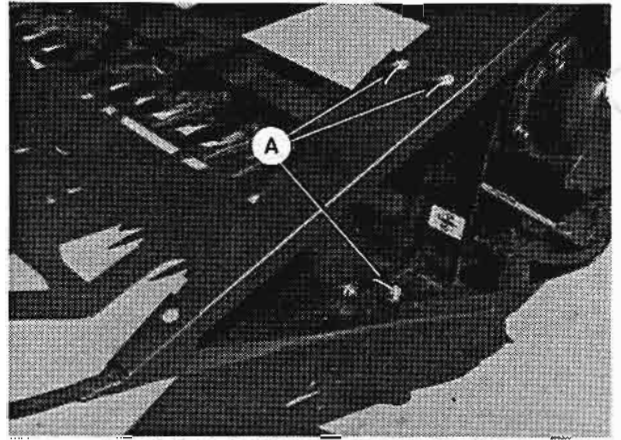
HEADER OPERATION

Operating Variables (continued)

DIVIDER ANGLE

The dividers can be angled in or out to provide proper separation and clean entry in a variety of crops.

To adjust angle, loosen hardware (A), position divider and tighten hardware.



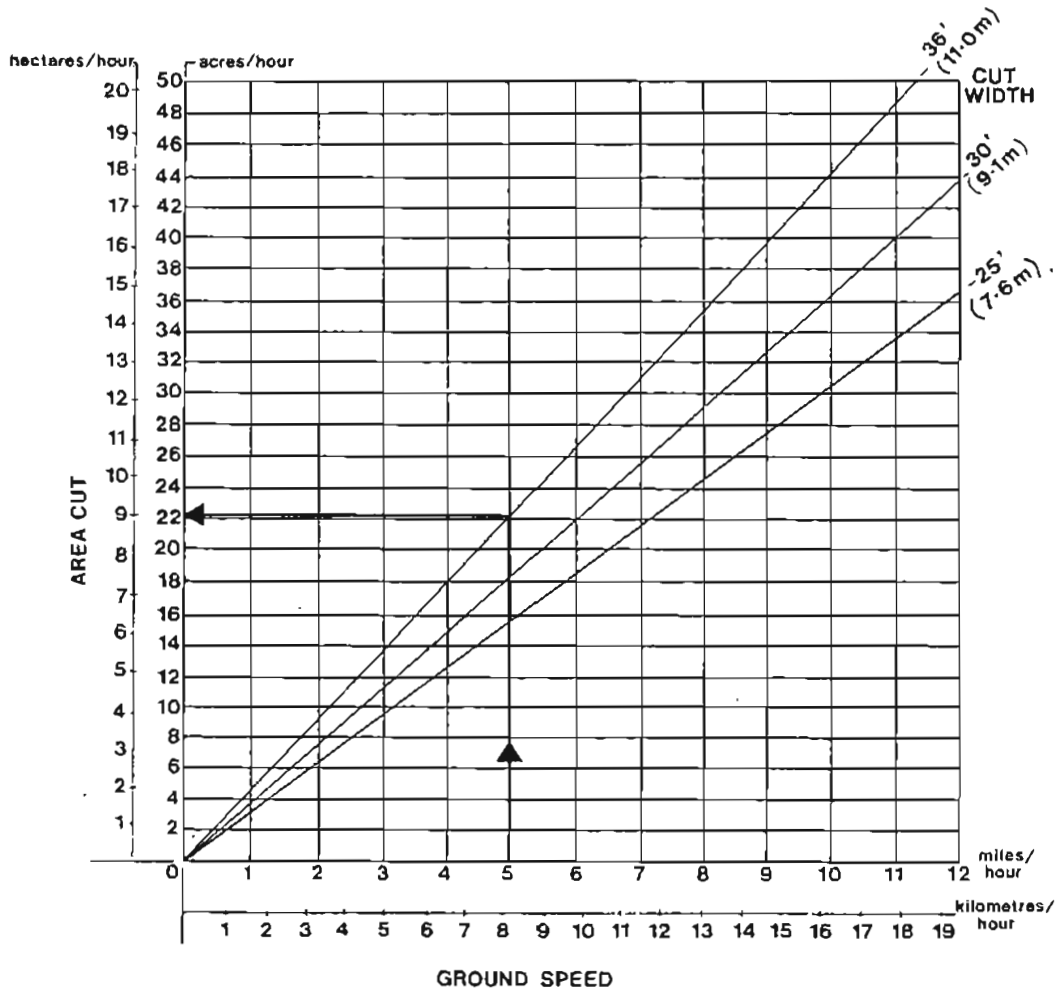
DIVIDER ANGLE ADJUSTMENT

GROUND SPEED

Ground speed should be such that the knife can cut crop smoothly and cleanly, while giving the desired delivery of material to the opening. See Windrower Operation for the affect of ground speed on windrow formation.

As ground speed is increased, draper and reel speed should be increased to handle the extra material.

The chart below indicates the relationship between ground speed and area cut for the three header sizes. Example shown: At a ground speed of 5 miles per hour (8 km/h) with a 36 ft. header, the area cut would be approximately 22 acres (9 hectares).



HEADER OPERATION

Operating Variables (continued)

REEL SPEED

- Reel speed affects the smoothness and evenness of the delivered crop. Operating the reel too fast or too slow relative to ground speed will cause bunching.
 - In standing crop, reel speed should be just faster than ground speed, to sweep the crop across the knife.
 - A faster reel speed may be necessary in leaning or down crop.
 - Excessive shattering of grain heads may be an indication that reel speed is too fast.
-

REEL HEIGHT

- Depending on crop height, adjust reel height to carry material through the knife onto the drapers.
 - Down crop may require a lower reel height.
 - Bushy crop may require raising the reel to prevent unevenness in delivery.
-

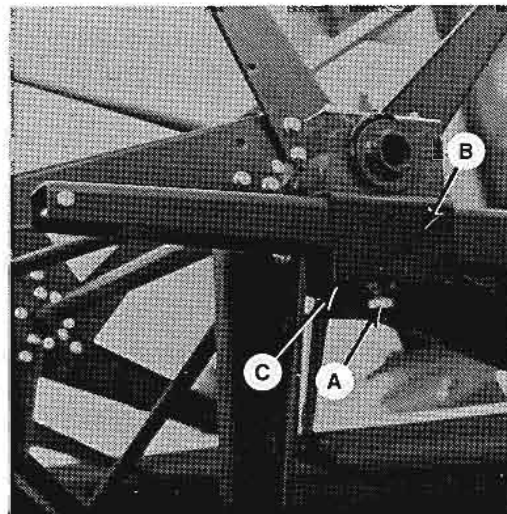
REEL POSITION - FORE & AFT

Reel fore-aft position can be adjusted to suit various crop conditions:

- For straight standing crop, the reel position is normally centered above the cutterbar.
- For crops that are down, tangled, or leaning, move reel ahead of cutterbar.
- Bushy crops require positioning the reel behind the cutterbar, applying downward force on the crop and drapers.

To adjust reel fore-aft position:

1. Lower reel so support arms are horizontal.
2. Back off jam nut on positioning screw (A) at each arm.
3. Loosen screw (A) and slide reel mounting channel (B). A pry bar may be used at hole (C).
4. Tighten screw into selected hole position and secure with jam nut.
5. Be sure screw is in the same hole at each arm.
6. Check reel clearance to cutterbar. See Maintenance/Service section.



REEL FORE-AFT POSITION
ADJUSTMENT

HEADER OPERATION

Operating Variables (continued)

DRAPER SPEED

Draper speed affects the orientation of stalks in the delivered crop. See Windrow Operation for the affect of draper speed on windrow formation.

For combine operation, draper speed is varied at a flow control lever located on the combine adapter. See "Combine Operation" for details.

CUTTING WIDTH

Unless combine capacity is a limiting factor, run the end of the header close to the edge of the standing crop, taking a full cut. If a full width cut will overload your combine, cut less than a full header width. Overloading the combine means wasted crop, high fuel consumption, and possible repair bills.

DELIVERY OPENING WIDTH

For combine header operation, set delivery opening to suit feeder housing width. See "Install Drapers" in Assembly section.

For windrower, the width of the delivery opening affects the width and configuration of the windrow.

The decision to widen or narrow the opening should be based on the following factors:

- Combine pick-up capability
- Type and yield of crop
- Weather conditions (rain, humidity, wind)
- Drying time available

See "Windrow Characteristics" under Windrower Operation for the strengths and weaknesses of the various windrow configurations with respect to these factors.

HEADER OPERATION

Operating Variables

DELIVERY OPENING WIDTH (continued)

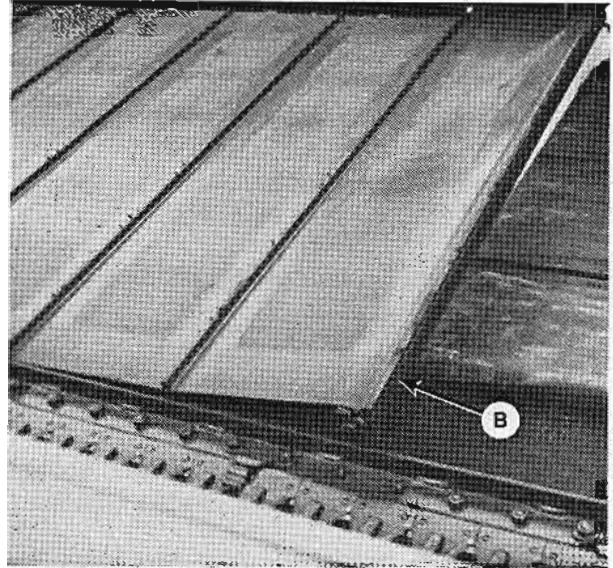
The delivery opening can be adjusted to any width between 31" (780 mm) and 66 1/2" (1690 mm) measured between the rollers.

To adjust delivery opening width:

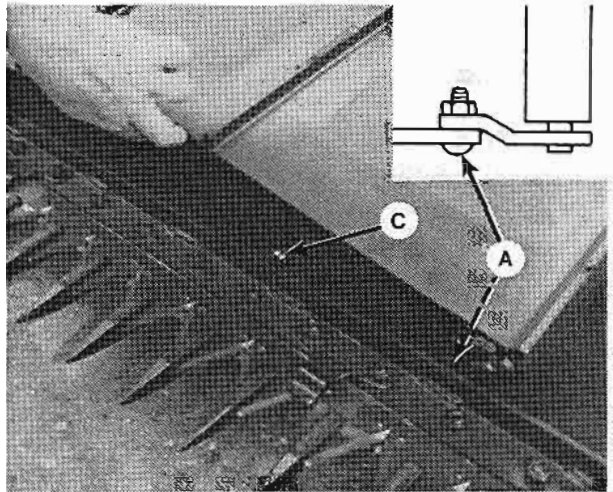
1. Loosen pivot bolt (A) at each end of idler roller.
2. Release draper tension by lifting draper at idler roller to over-center position (B).
3. Remove screws from connector slat of draper.
4. Loosen bolts (C) at each end of idler roller.
5. Connect draper at desired length, making new connecting holes if necessary. See "Replacing Drapers" in Maintenance/Service section. Cut excessive flap off of draper.

NOTE: For narrow opening sizes, a short section of draper is available as a repair part.

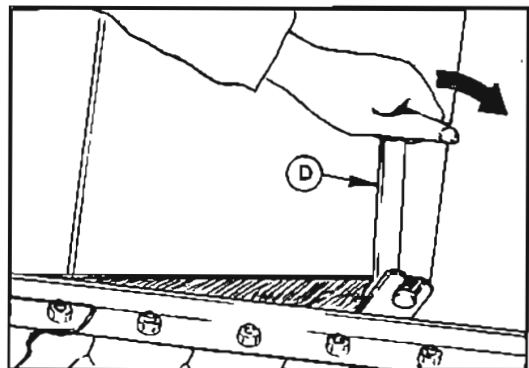
6. Move idler roller to snug up the draper and tighten bolts (C).
7. Apply draper tension by returning idler roller to working position with a 15/16" wrench (D). Position end of wrench on pivot bolt (A) and use shaft of wrench to rotate idler roller down to working position.
8. Tighten pivot bolt (A).
9. Check draper tension and tracking. See "Drapers" in Maintenance/Service section.



RELEASE DRAPER TENSION



DELIVERY OPENING ADJUSTMENT



APPLY DRAPER TENSION

HEADER OPERATION

Operating Variables (continued)

HEADER FLOTATION

IMPORTANT: To avoid frequent breakage of knife components, scooping soil, or soil build-up at cutterbar in wet conditions, header float should be set as light as possible without causing excessive bouncing.

Under normal conditions, adjust float spring tension so 60 to 70 lbs. force (265 to 310 N) is required to lift cutterbar off ground at each end.

See "Header Flotation" under Windrower Operation and Combine Operation for adjustment details.

CUTTERBAR ANGLE

The cutterbar (or guard) angle can be set at 5° or 8° below horizontal on the windrower and between 8° and 11° below horizontal on the combine. (Actual range may vary with combine set-up.)

IMPORTANT: The flattest cutterbar angles (8° for combine and 5° for windrower) are recommended for normal conditions and are the factory set positions. A flatter cutterbar angle reduces knife section breakage and reduces soil scooping or build-up at the cutterbar in wet conditions. Use a steeper angle only when required in down crop for better lifting action.

See "Cutterbar Angle" under Header Operation and Combine Operation for adjustment details.

IMPORTANT: For 36 and 30 foot headers with gauge wheels, select proper gauge wheel position for the chosen cutterbar angle. See "Gauge Wheel Position" under Windrower Operation and Combine Operation.

HEADER OPERATION

Transporting the Header

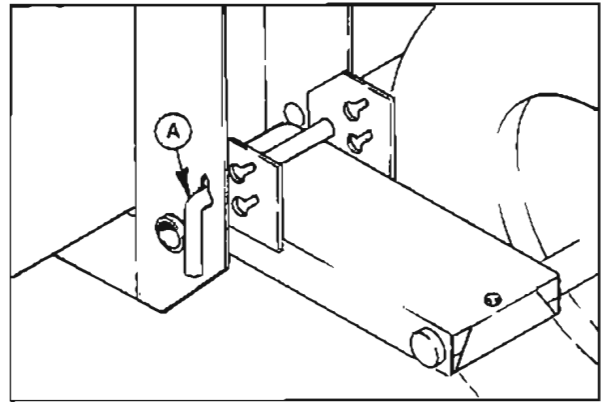


WARNING: Do not drive windrower or combine with header attached on a road or highway at night, or in conditions which reduce visibility, such as fog or rain. The width of the header makes it unsafe to transport under these conditions.



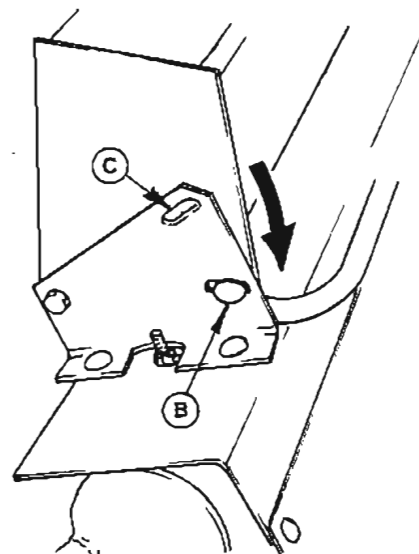
CAUTION:

1. Check local laws for width regulations and lighting or marking requirements before transporting on roads.
2. Follow all recommended procedures in your Windrower or Combine Operator's Manual for transporting, towing etc.
3. Disengage header drive clutch when traveling to and from the field.
4. For 36 and 30 foot headers with gauge wheels, secure gauge wheels in transport position (A).
5. Before driving windrower or combine on a roadway, be sure flashing amber lamps, red tail lamp and head lamps are clean and work properly. Always use these lamps on roads to provide adequate warning to other vehicles.
6. Do not use field lamps on roads, other drivers may be confused by them.
7. Before driving on a roadway, clean slow moving vehicle emblem and reflectors. Adjust rear view mirror and clean windows.
8. Lower the reel fully. Raise header and engage header lift cylinder stops unless transporting in hills. (See point #9.) Maintain adequate visibility and be aware of roadside obstructions, oncoming traffic and bridges.
9. When traveling down hill, reduce speed and keep header at a minimum height. This provides maximum stability if forward motion is stopped for any reason. Raise header completely at bottom of grade to avoid contacting ground.
10. Travel speed should be such that complete control and machine stability are maintained at all times.



GAUGE WHEELS - TRANSPORT POSITION

NOTE: Where it is necessary to reduce the transport width of the header/combine adapter package, remove chain case pivot bolt (B), swing chain case in to transport position, align slot (C) with hole and reinstall bolt.



CHAIN CASE PIVOT

HEADER OPERATION

SHUT-DOWN PROCEDURE



CAUTION: Before leaving operator's seat for any reason:

1. Park on level ground if possible.
2. Lower the header and reel fully.
3. Place all controls in NEUTRAL or PARK.
4. Disengage header drive.
5. Engage the park brake.
6. Stop engine and remove key from ignition.
7. Wait for all movement to stop.

STORAGE PROCEDURE

Do the following at the end of each operating season:



CAUTION:

1. **Clean the header thoroughly. Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.**
2. **Cover cutterbar and knife guards to prevent injury from accidental contact.**

Also:

3. Store machine in a dry, protected place if possible. If stored outside, cover with a waterproof canvas or other protective material.
4. Remove drapers and store in a dark, dry place.

NOTE: If drapers are not removed, release tension and angle header so water/snow will not accumulate on drapers. This accumulation of weight can stretch draper material and put excessive stress on draper slats and draper tracks.

5. Lower header onto blocks to keep cutterbar off ground.
6. Lower reel completely. If stored outside, tie reel to frame to prevent rotation caused by wind.
7. Repaint all worn or chipped painted surfaces to prevent rust.
8. Loosen knife drive belt.
9. Lubricate the machine thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Oil cutterbar and apply grease to exposed threads and sliding surfaces of components.
10. Check for worn or broken components and repair or order replacements from your dealer. Attention to these items right away will save time and effort at beginning of next season.
11. Replace or tighten any missing or loose hardware. See Specifications section for torque charts.

MAINTENANCE/SERVICE

SERVICE PROCEDURES



CAUTION: To avoid personal injury, before servicing machine or opening drive covers:

1. Fully lower header and reel. If it is necessary to service in the raised position, first engage header lift cylinder stops and reel props.
2. Disengage header drive clutch.
3. Stop engine and remove key.
4. Engage park brake.
5. Wait for all moving parts to stop.

Park on level surface when possible. Block wheels securely. Follow all recommendations in your Windrower or Combine Operator's Manual.

Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.

Wear protective shoes with slip-resistant soles, a hard hat, protective glasses or goggles and heavy gloves.

Be prepared if an accident should occur. Know where the first aid kit and fire extinguisher are located and how to use them.

Keep the service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.

Use adequate light for the job at hand.

Replace all shields removed or opened for service.

Do not substitute parts, especially safety related, that may not meet strength or design requirements of the manufacturer.

Keep the header clean. Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.

MAINTENANCE/SERVICE

RECOMMENDED LUBRICANTS

GREASE

Use an SAE Multi-Purpose High Temperature Grease with Extreme Pressure (EP) Performance and containing at least 1.5% molybdenum disulfide.

Also acceptable is an SAE Multi-Purpose Lithium Base Grease.

WOBBLE BOX LUBRICANT

In knife drive wobble box, use SAE 85W-140 gear lubricant. (API Service Classification GL-5)

CAPACITIES

Wobble Box - 900 ml (1.0 U.S. quart)

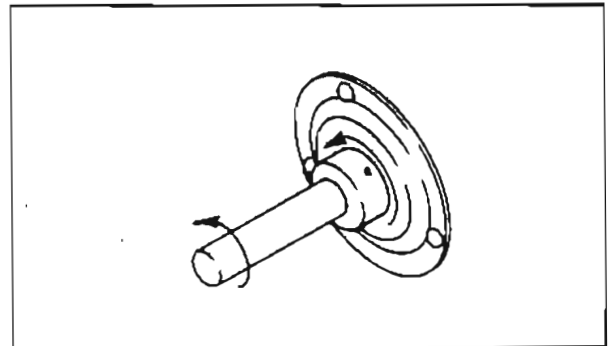
Chain Case (Combine Adapter) - 1200 grams (SAE Multi-Purpose Grease)

STORING LUBRICANTS

Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

SEALED BEARING INSTALLATION

1. Clean shaft and coat with rust preventative.
2. Install flange, bearing, flange and lock collar. The locking cam is only on one side of the bearing.
3. Install (but do not tighten) the flange bolts.
4. When the shaft is located correctly, lock the lock collar with a punch. The collar should be locked in the same direction the shaft rotates. Tighten the set screw in the collar.
5. Tighten the flange bolts.
6. Loosen the flange bolts on the mating bearing one turn and re-tighten. This will allow the bearing to line up.



TIGHTEN COLLAR IN DIRECTION
SHAFT ROTATES

MAINTENANCE/SERVICE

GREASING THE HEADER

See "Recommended Lubricants" in this section for recommended greases.

The following greasing points are marked on the header by decals showing a grease gun (A), and grease interval (B) in hours of operation. Use the hour meter in the windrower or combine cab and the "Maintenance Checklist" provided to keep a record of scheduled maintenance.

Procedure:

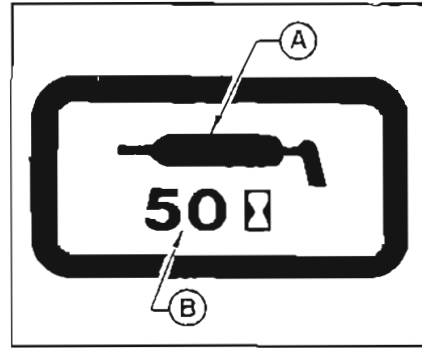
1. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting.
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. If fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

10 Hours or Daily:



DANGER: Stay clear of driveline until all movement has stopped. Entanglement with rotating driveline will cause serious personal injury or death. Avoid loose fitting or dangling clothing.

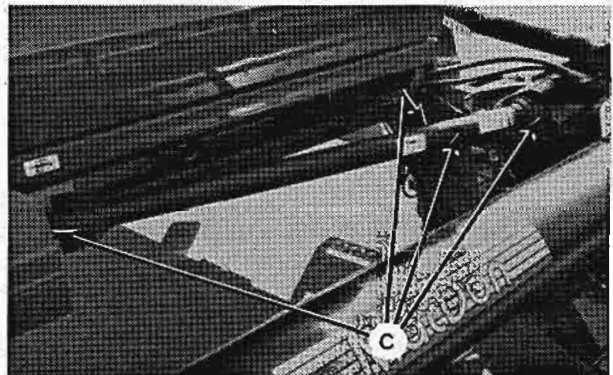
1. Primary Driveline (C) - (windrower tractor to header): four fittings.
2. Secondary Driveline (D) - four fittings



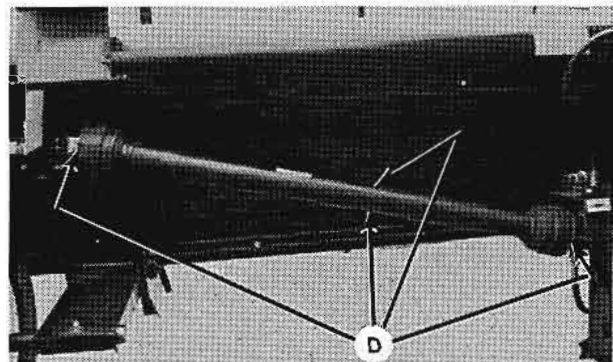
SAMPLE GREASE DECAL



STAY CLEAR OF ROTATING DRIVELINES



PRIMARY DRIVELINE - WINDROWER



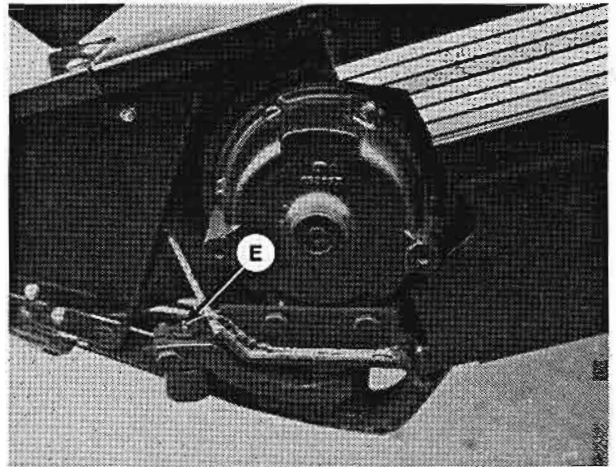
SECONDARY DRIVELINE

MAINTENANCE/SERVICE

GREASING THE HEADER

10 Hours or Daily (continued):

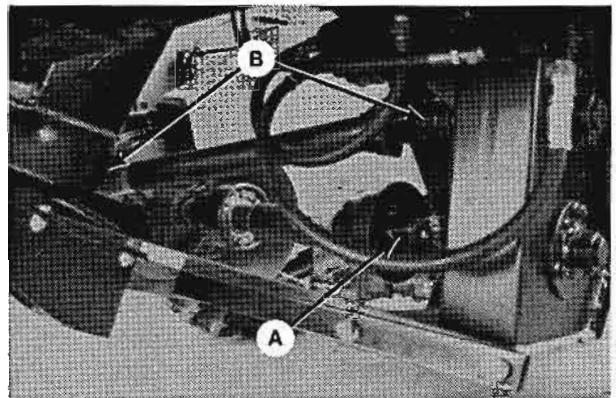
3. Knife Head (E) - one fitting



KNIFE HEAD

25 Hours

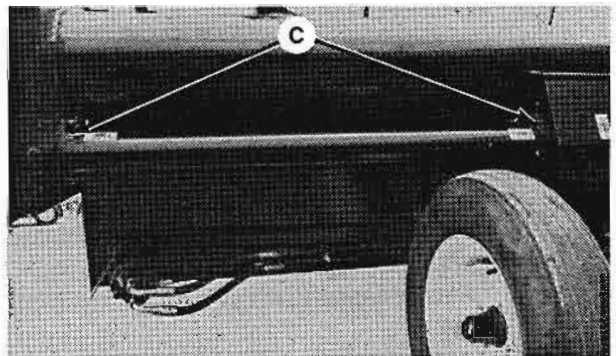
1. Chain Case Input Driveline (A) - (combine adapter): one or two fittings depending on make of combine.
2. Feeder Draper Driveline (B) - (combine adapter): two fittings



COMBINE ADAPTER DRIVELINES

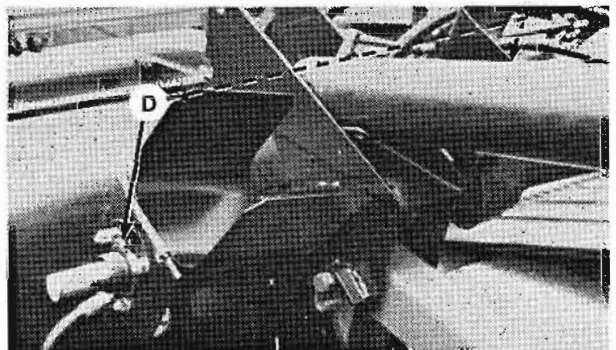
50 Hours

1. Knife Drive Shaft Support Bearings (C) - two fittings



KNIFE DRIVE SHAFT SUPPORT BEARINGS

2. Drive Shaft Bearings (D) (left hand windrower adapter leg): two fittings



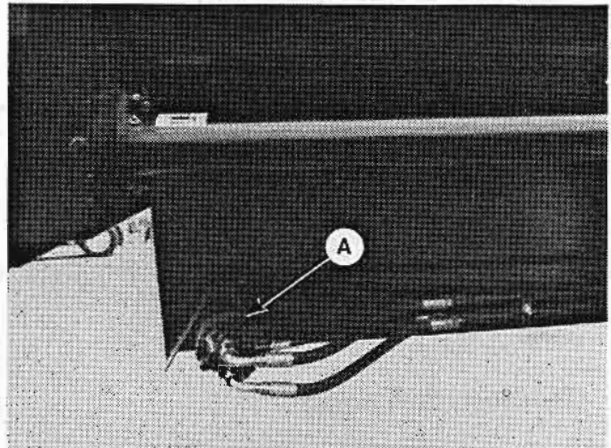
DRIVE SHAFT BEARINGS -
L/H WINDROWER ADAPTER LEG

MAINTENANCE/SERVICE

GREASING THE HEADER (continued)

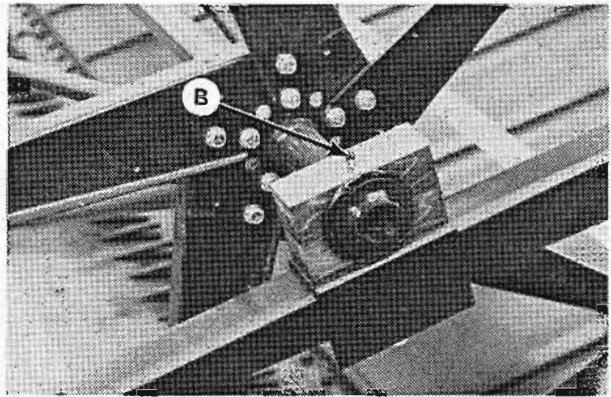
100 Hours or Annually:

1. Draper Drive Rollers Rear Bearings (A)
(one fitting per roller)
 - Header - two fittings
 - Combine Adapter - one fitting



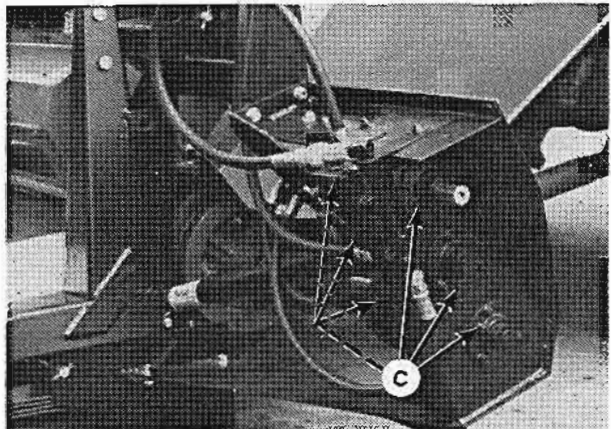
DRAPER DRIVE ROLLER REAR BEARINGS

2. Reel Shaft Bearings (B)
 - 25 and 30 foot headers - one fitting
 - 36 foot header - two fittings



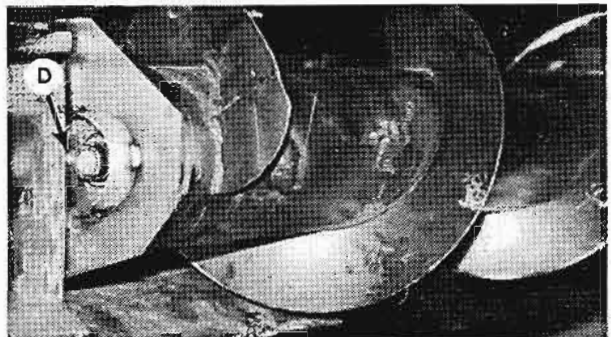
REEL SHAFT BEARINGS

3. Chain Case Bearings (C) - (combine adapter)
six fittings



CHAIN CASE BEARINGS

4. Cross Auger Bearing (D) - one fitting



CROSS AUGER BEARING

MAINTENANCE/SERVICE

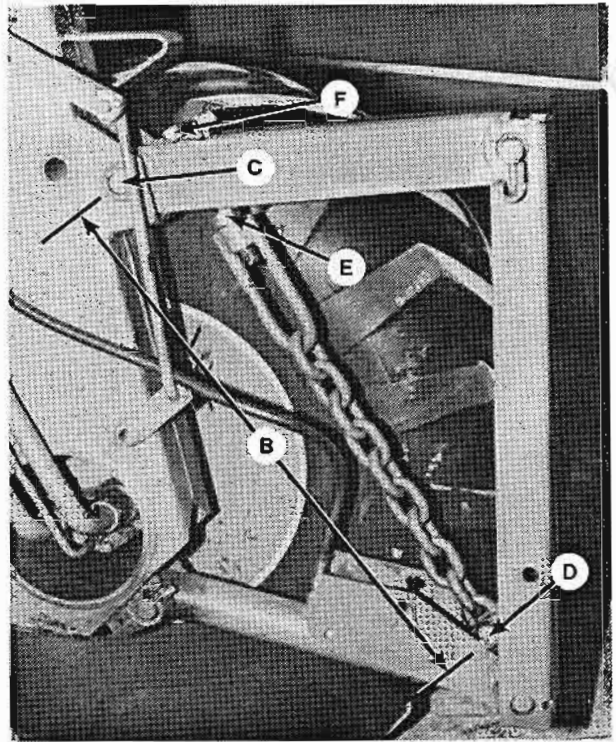
HEADER LEVELLING : WINDROWER

The length (B) of the diagonal chain (measured from top link pin [C] to the bottom chain bolt [D]) should be 26.0 inches (660 mm).

If header is not level, shorten chain length (B) on the lower side until header is level.

To adjust chain length:

1. Lower header onto a block so diagonal chain slackens.
2. Loosen jam nut (E).
3. Turn bolt (F) until desired chain length is reached.
4. Tighten jam nut (E).



HEADER LEVELLING - WINDROWER

HEADER LEVELLING: COMBINE

Check your Combine Operator's Manual for details of header levelling adjustment.

MAINTENANCE/SERVICE

HYDRAULIC SYSTEM

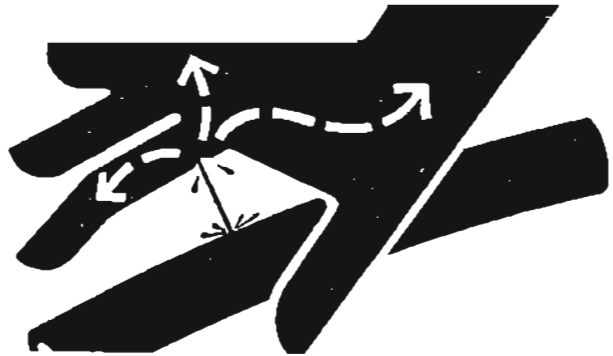
Hydraulic Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.



WARNING: Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines.

Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard or paper to search for leaks. **IF ANY** fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.



AVOID HIGH-PRESSURE FLUIDS

IMPORTANT:

- Ensure all hydraulic couplings are fully engaged before operating header. Failure to properly connect hydraulics may damage pump or motor seals.
- Keep hydraulic coupler tips and connectors clean. Dust, dirt, water and foreign material are the major causes of hydraulic system damage.
- To prevent improper mixing of oils: If header is to be switched back and forth from combine to windrower, change oil in Windrower hydraulic system to match Combine hydraulic system. See your Windrower and Combine Operator's Manuals for total hydraulic system care.
- Hydraulic pressure in return line from header must be kept below 300 psi (2 MPa) to prevent damage to pump and motor seals. **DO NOT INSTALL ANY HYDRAULIC MOTORS** (for example, a chaff spreader) or other device that would restrict return flow or increase pressure. Failures resulting from the addition of such attachments will not be covered under MacDon Warranty.



CHECK PROPERLY FOR LEAKS

MAINTENANCE/SERVICE

HYDRAULIC SYSTEM (continued)

NOTE: Pages 54 to 56 deal with hydraulics related to windrower use only. For combine header hydraulics, see Page 57.

Header Lift Control Valve: Drop Rate - Windrower

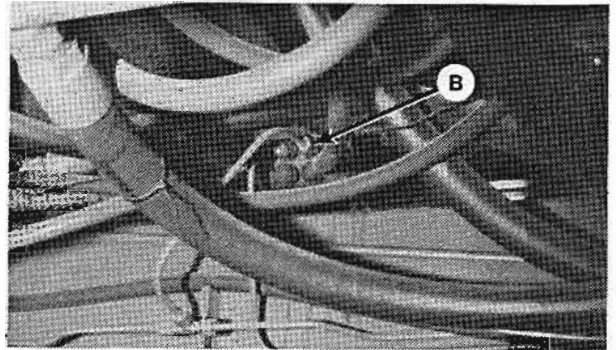
The header lift control valve is mounted to the tractor frame front cross member, and is connected to the right hand and center pedals in the cab.

If the header lowers too slowly, the drop rate may be increased (without affecting raising speed) as follows:

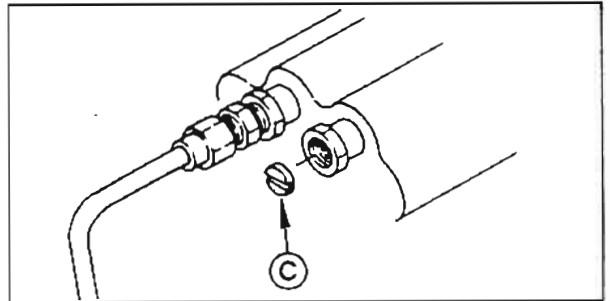


DANGER: To avoid bodily injury or death from fall of raised header, **LOWER HEADER TO GROUND, shut off engine and remove key before removing hydraulic line.**

1. Remove hydraulic line and male connector from port (B) at rear of valve.
2. Remove hexagonal orifice plate (C) from the port.
3. Reinstall male connector and hydraulic line.



LOCATE HEADER LIFT PORT -REAR OF VALVE



REMOVE ORIFICE PLATE

MAINTENANCE/SERVICE

HYDRAULIC SYSTEM (continued)

Header Lift Control Valve: Relief Pressure - Windrower

The header lift control valve is mounted to the tractor frame front cross member, and is connected to the right hand and center pedals in the cab.

The control valve relief pressure is factory set to provide sufficient lift for all headers.

If you encounter lift capacity problems (for example, insufficient lift to attach float springs) the probable cause is low relief pressure.

To check and adjust relief pressure:

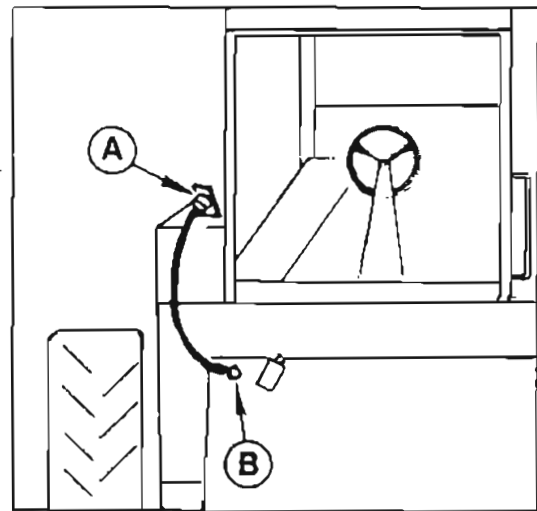
1. Lower header to ground, shut off engine and remove key from ignition.
2. Attach a 3000 psi (20 MPa) pressure gauge (A) to the reel lift line quick coupler (B) at tractor right hand leg. Position gauge so it can be read from the operator's seat.
3.
 - a. Start engine as described in Windrower Operator's Manual.
 - b. Move throttle lever fully forward.
 - c. Depress heel of reel lift (center) pedal and check pressure reading on gauge. Pressure should be 2300 to 2400 psi (15.8 to 16.5 MPa). If pressure is too low, proceed with steps d) to f).



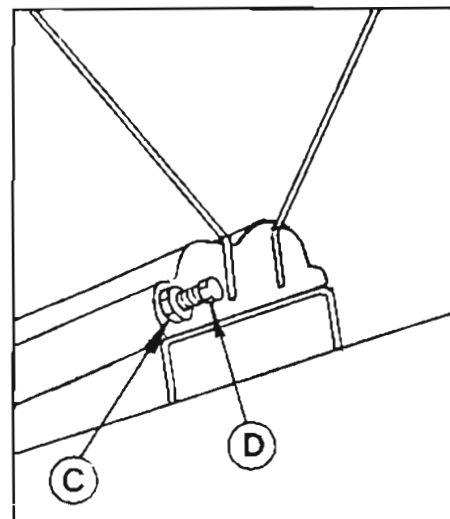
WARNING: To avoid bodily injury from fall of raised header, and/or machine damage, do not exceed 2400 psi (16.5 MPa) relief pressure.

- d. Shut off engine and remove key from ignition.
- e. Loosen jam nut (C) and turn adjuster (D) 1/8 turn inward.
- f. Tighten jam nut.
- g. Check relief pressure (steps a, b, c).

NOTE: Earlier production tractor units have a different control valve which has shim-adjusted relief pressure. To increase relief pressure of these valves, install shim kit (# 33005), available from your Dealer.



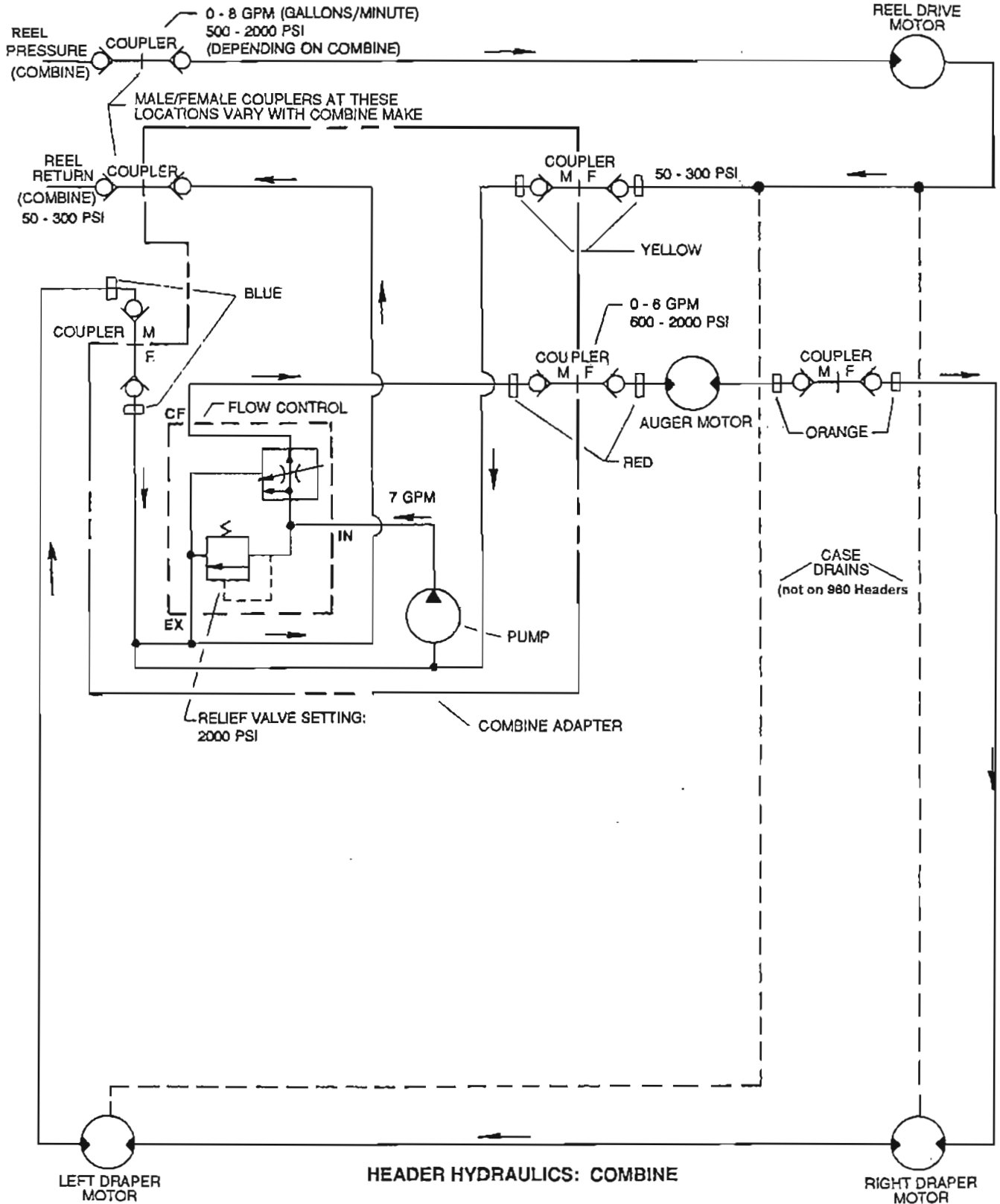
PRESSURE GAUGE ATTACHMENT



CONTROL VALVE RELIEF PRESSURE ADJUSTMENT

MACDON HARVEST HEADERS (1988-1991) or 960 HARVEST HEADERS (1991-1997)
 ATTACHED TO 1991 & PRIOR COMBINE ADAPTERS - NO RESERVOIR ON ADAPTER

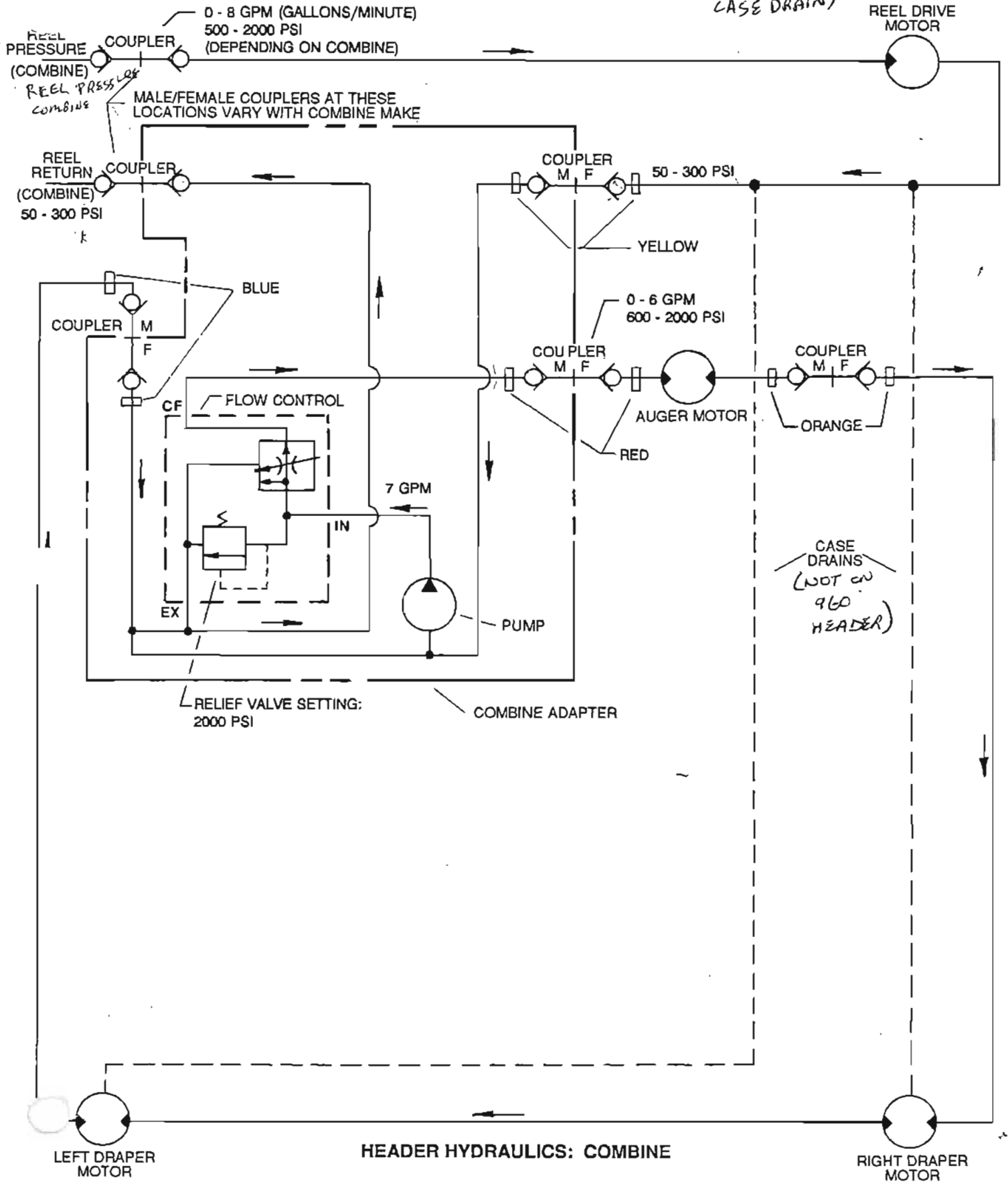
HYDRAULIC SYSTEM (continued)



MAINTENANCE/SERVICE

1991 + PRIOR HEADERS
WITH 1991 + PRIOR ADAPTER
(960 HEADERS NO
CASE DRAIN)

HYDRAULIC SYSTEM (continued)



MAINTENANCE/SERVICE

CHAIN CASE - COMBINE ADAPTER

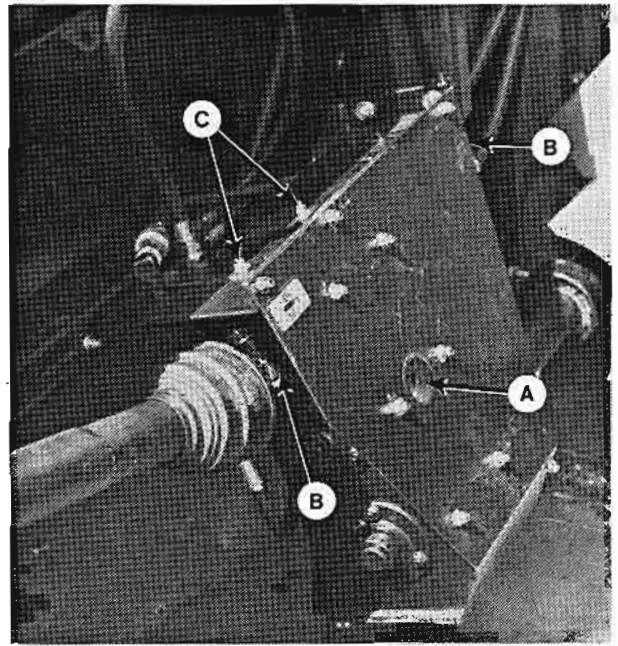
Chain Tension

Check chain tension after the first 10 hours operation and every 50 hours thereafter, as follows:

1. Remove rubber plug at (A).
2. Chain should deflect maximum 1 inch (25 mm).
3. If adjustment is required:
 - a. Loosen bolts at top bearing flanges (B) (three per side).
 - b. Adjust chain tension with bolts (C).

IMPORTANT: To maintain proper chain alignment turn both bolts (C) the same number of turns when adjusting.

4. Check tension and replace plug (A).



CHAIN TENSION ADJUSTMENT

306 - 4452722

Chain Lubrication

Check chain lubrication every 100 hours or annually:

1. Remove rubber plug at (A).
2. Chain should be coated with a thin film of grease.
3. If required, add one complete tube (400 g) SAE Multi-Purpose Grease to the chain case. Case capacity is 1200 grams (three tubes).
4. Replace plug (A).

MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE



WARNING: Keep hands clear of the area between guards and knife at all times.

Knife Lubrication

Apply SAE 10 or equivalent light weight oil daily (one or two drops per section) along entire length of knife.

NOTE: Do not oil knife if operating in sandy conditions. Oil will cause sand to adhere to knife components, resulting in excessive wear.

Knife Sections

Check daily that sections are firmly riveted to the knife back and are not worn or broken. Replace as required.

To replace knife section:



CAUTION: Always wear protective eyewear when removing old rivet heads. Wear heavy gloves when working around or handling sharp knives.

IMPORTANT: Strike rivet heads from side rather than the front when removing old rivets.

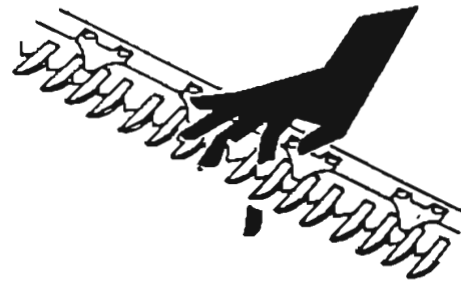
1. A worn or broken knife section (A) can be replaced without removing knife from cutterbar.

IMPORTANT: Do not punch out old rivets, this enlarges hole in knife back.

2. Shear old rivet heads (C) with chisel and hammer.
3. Remove old rivets using tool (D) and remove old knife section.

IMPORTANT: Do not mix heavy and light knife sections on same knife.

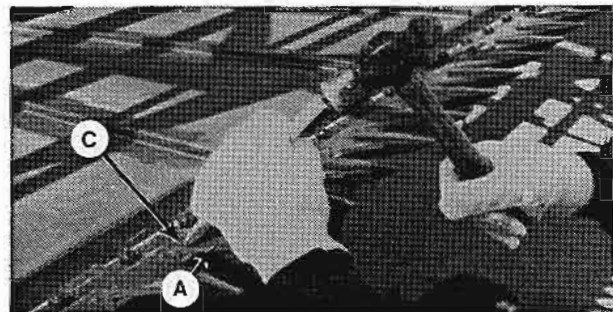
4. Position new knife section, insert new rivets from below and secure using riveting tool.



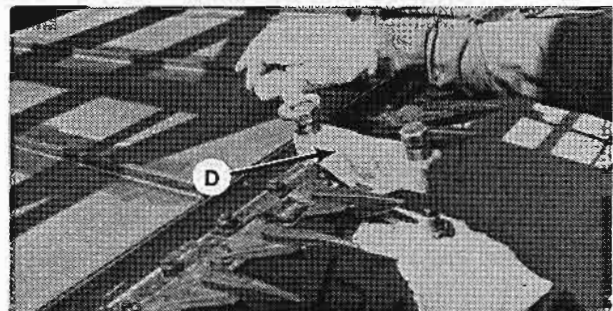
KEEP HANDS AWAY FROM KNIFE



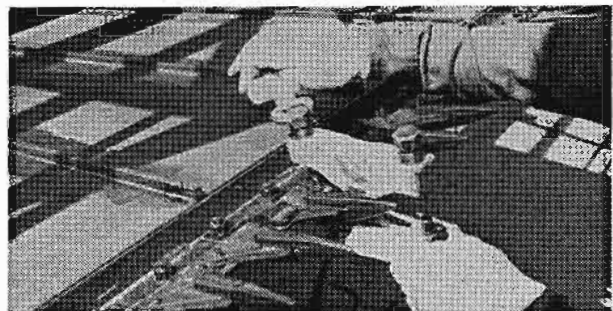
OIL KNIFE DAILY EXCEPT
IN SANDY SOIL



SHEAR OLD RIVETS



REMOVE OLD RIVETS



INSTALL NEW RIVETS

MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE (continued)

To Remove Knife

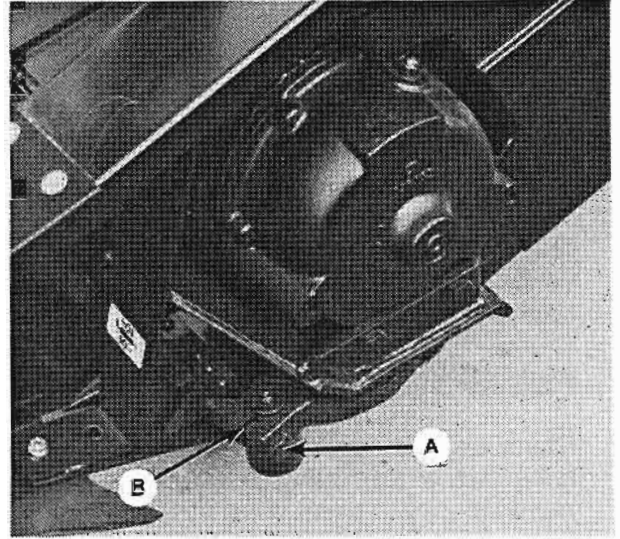


WARNING: Always stand to rear of knife during removal to reduce risk of injury from cutting edges. Wear heavy gloves when handling knife.

1. Clean area around knife head. Stroke knife to its outer limit and remove bolt (A).
2. Insert screwdriver in slot (B) and pry up on knife head pin to free knife.
3. Pull knife out.

NOTE: For two piece knives, remove bolts from splice plate and pull knife out from both ends.

4. Cover knife head to shield bearing from dirt.



REMOVING KNIFE

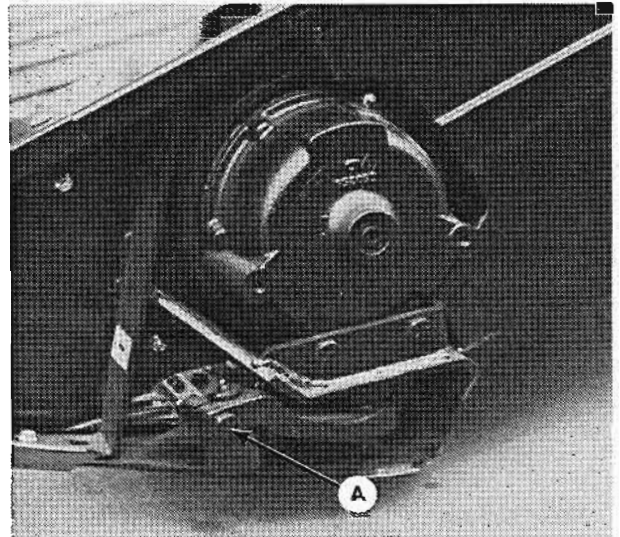
To Install Knife



WARNING: Always stand to rear of knife during installation to reduce risk of injury from cutting edges. Wear heavy gloves when handling knife.

IMPORTANT: Always align guards and re-set knife clips while replacing knife. See "Guards" and "Knife Clips" in this section.

1. Slide knife into place and replace bolt (A).
NOTE: Notch in knife head pin must align with bolt.
2. Tighten bolt (A) to 160 ft.lbs. (217 N·m).
3. Align guards and adjust knife clips.



INSTALLING KNIFE

MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE (continued)

Guards



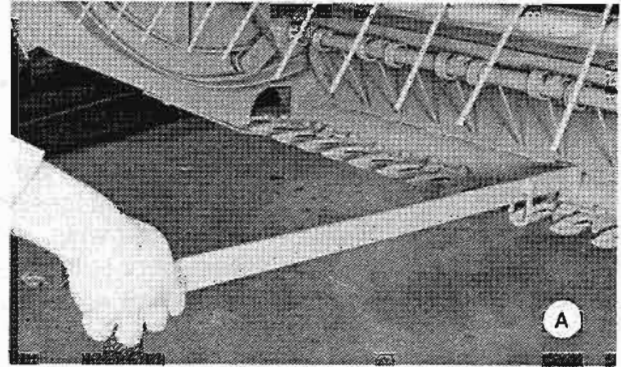
CAUTION: Always engage reel props before working under reel.

Check daily that guards are aligned to obtain proper shear cut between knife section and guard. Knife sections should contact shear surface of each guard.

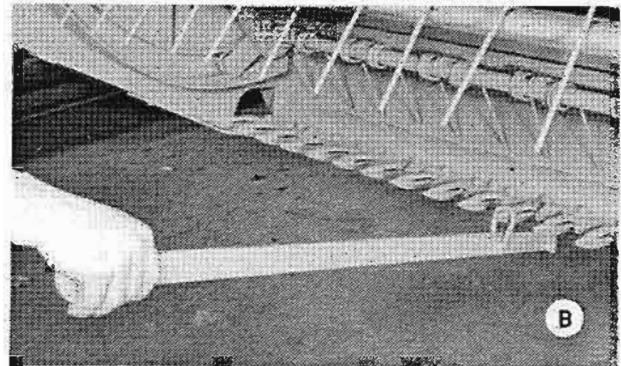
To align guards, strike each guard tip up or down as necessary, or use a guard straightening tool (available from your Dealer Parts Department) as shown:

To bend guard tips up, position tool as shown at (A) and pull up.

To bend tips down, position tool as at (B) and push down.



BENDING GUARD TIPS UP



BENDING GUARD TIPS DOWN

Knife Clips

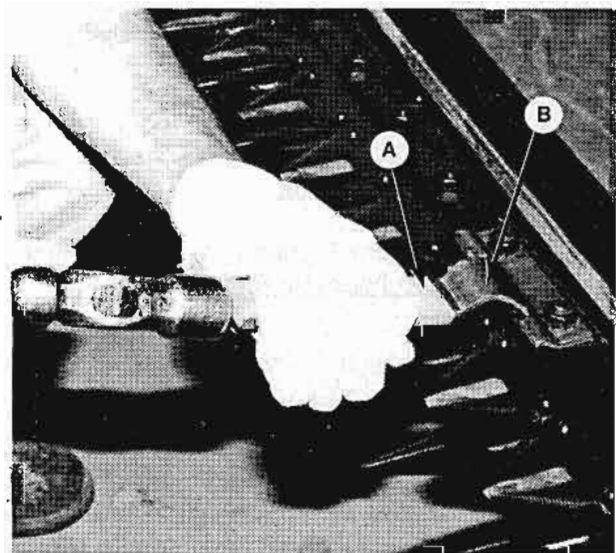


CAUTION: Always engage reel props before working under reel.

Check daily that knife clips are set to prevent knife sections from lifting off guards but still permit knife to slide without binding. Set clips after guards are aligned.

To set clips:

1. Using a flat piece of bar (A), tap end of clip as shown. This allows adjustment of clip arch (B) without "pinching" knife. Clearance from clip to knife section should be .020 in. (0.5 mm).
2. After adjusting all knife clips, run header at a low engine speed and listen for noise due to insufficient clearance. Re-adjust as necessary by placing a .020 in. (0.5 mm) shim between clip and section, then striking the clip arch (B) with a hammer.



SETTING KNIFE CLIPS

MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE (continued)

Knife Drive Belt Tension

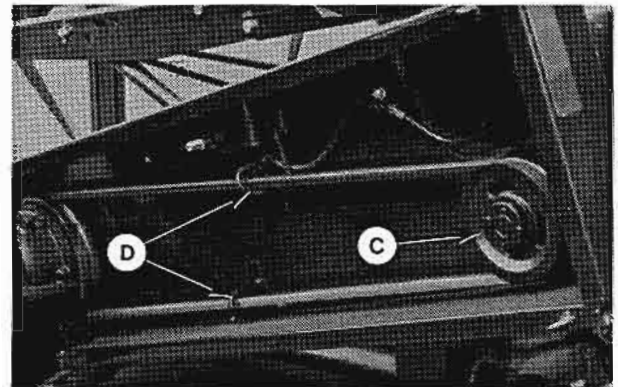
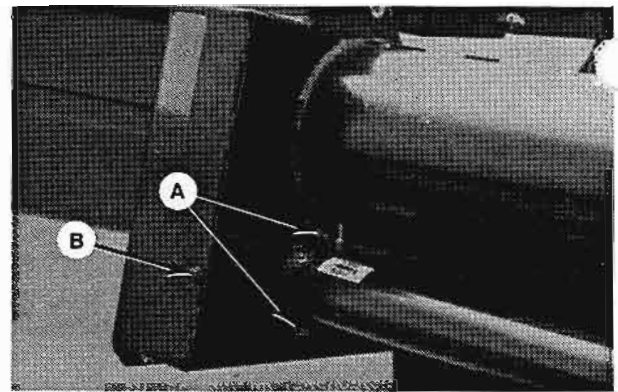
Check knife drive belt tension after the first 5 hours operation and every 100 hours thereafter.

IMPORTANT: To prolong belt and drive life, do not overtighten belt. Operate at minimum tension required to prevent slipping or excessive belt whip. When installing a new belt, never pry over pulley. Loosen adjusting device sufficiently to allow easy installation.

To adjust:

1. Loosen two nuts (A).
2. Turn adjusting bolt (B) to position pulley (C) so that a force of 18 lbs. (80 N) deflects belt 3/4 inch (20 mm) at mid-span.
3. Tighten nuts (A).
4. Adjust belt guides (D) in slots so belt runs through guides without rubbing.

NOTE: To remove belt, slacken with adjuster and remove bolt-on panel in left end sheet at wobble box.

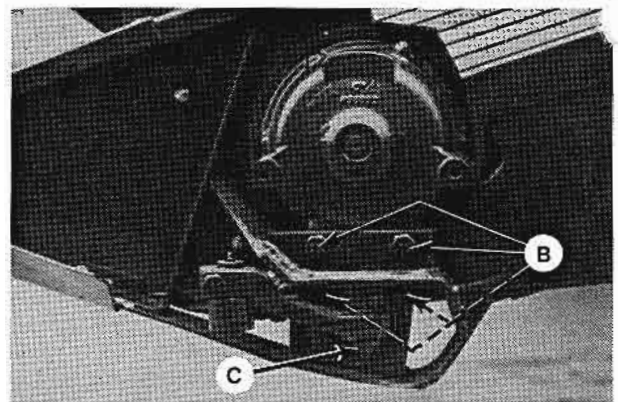


KNIFE DRIVE BELT TENSION ADJUSTMENT

Wobble Box Mounting Bolts

Check four wobble box mounting bolts (B) torque after the first 10 hours operation and every 100 hours thereafter. Torque should be 200 ft. lbs. (270 N.m). When tightening, start with the side mounting bolts.

If slotted nut (C) securing drive arm is removed, torque to 200 ft. lbs. (270 N.m) when replacing.



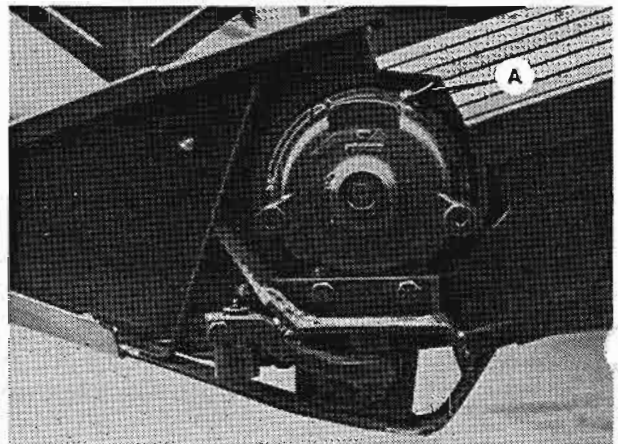
WOBBLE BOX MOUNTING BOLTS

Wobble Box Lubricant

Check wobble box lubricant level before first operation and every 100 hours thereafter.

To check:

1. Raise header to a point where the wobble box base is approximately level.
2. Remove breather (A) and measure down. Use a somewhat flexible measuring device to allow insertion past internal components. Oil level should be 2 1/2 to 3 1/2 inches (65 to 90 mm) from top of hole.
3. Add as required. See "Recommended Lubricants" for specified gear lube and capacity of box.



CHECK WOBBLE BOX OIL

MAINTENANCE/SERVICE

REEL AND REEL DRIVE

Reel Clearance From Cutterbar

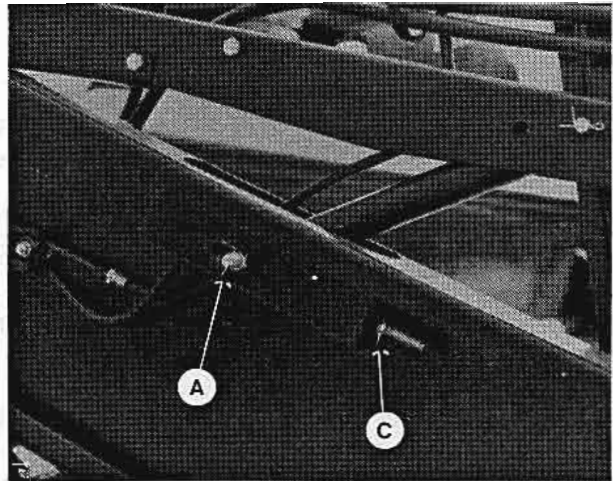
The reel should be adjusted to provide 2 inches (50 mm) clearance above cutterbar and/or drapers with reel fully lowered.

Check reel clearance whenever the reel fore-aft position is changed.

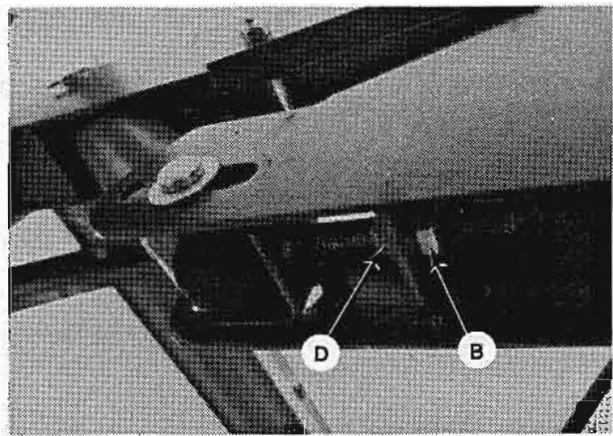
To increase reel clearance from cutterbar:

1. Lower header and reel fully.
2. Loosen nut (A) at right and left reel arms.
3. For 36' header, loosen nut (B) at center reel arm.
4. Turn adjuster nuts (C) and (D) clockwise to achieve proper and consistent clearance across cutterbar.
5. Tighten nut (A) both sides and nut (B).

To decrease reel clearance, turn nuts (C) counter-clockwise and at 36' center arm, loosen nut (D) and turn nut (B) clockwise.



REEL CLEARANCE ADJUSTMENT



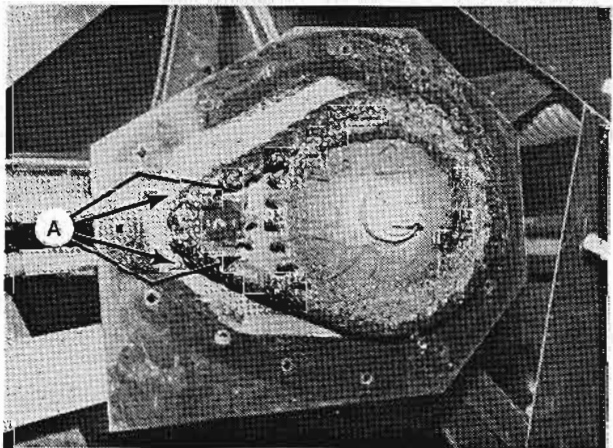
REEL CLEARANCE ADJUSTMENT
36' HEADER - CENTER ARM

Reel Drive Chain Tension

Check the reel drive chain tension annually.

To adjust:

1. Loosen four bolts (A).
2. Slide motor away from reel shaft until a force of 11 lbs. (50 N) deflects chain 1/8 inch (3 mm) at mid-span.
3. Tighten bolts (A).



REEL DRIVE CHAIN TENSION
AND LUBRICATION

Reel Drive Chain Lubrication

Lubricate full length of chain annually with Multi-Purpose Grease.

MAINTENANCE/SERVICE

DRAPERS

Draper Care

IMPORTANT: The investment in time to be sure drapers are properly adjusted and running true will greatly increase draper life.

Follow these draper care tips:

1. Set draper tension just high enough to prevent slipping.
2. At the end of each day's operation, especially if machine will not be moved for several days, lower cutterbar to prevent water build-up on the drapers. The additional weight of an accumulation of water will stretch drapers and put excessive stress on the draper slats and draper tracks.
3. Adjust draper rollers so drapers track properly. See "Draper Tracking" below.

Draper Tracking

IMPORTANT: When first checking draper tracking, operate drapers slowly. Drapers can then be stopped quickly to prevent damage caused by excessive misalignment.

Adjustments are made at both the drive roller and the idler roller for proper draper tracking. Use the "Drive Roller" and "Draper Tension" adjustments in this section so that:

1. Drapers track parallel to cutterbar, running between draper guides, not rubbing hard against one edge.
2. Drapers just contact cutterbar with header at cutting height.

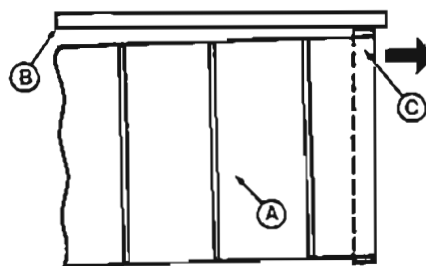
MAINTENANCE/SERVICE

DRAPERS (continued)

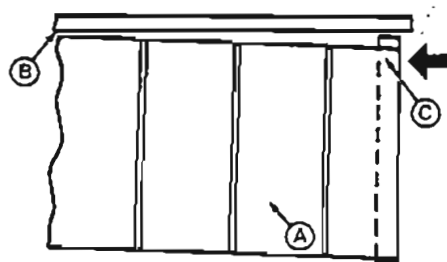
Drive Roller Adjustment

To align drapers:

1. If draper edge is further from cutterbar (B) at idler roller than at drive roller (C) move front of drive roller (C) away from draper (A).
2. If draper edge is closer to cutterbar (B) at idler roller than at drive roller (C), move front of drive roller (C) toward draper (A).



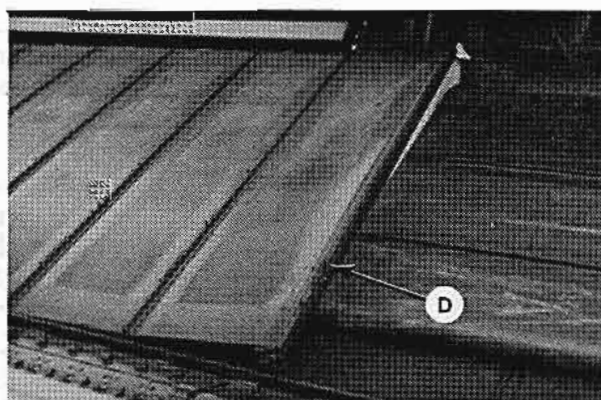
MOVE DRIVE ROLLER ⇒ TO CORRECT ALIGNMENT



MOVE DRIVE ROLLER ⇐ TO CORRECT ALIGNMENT

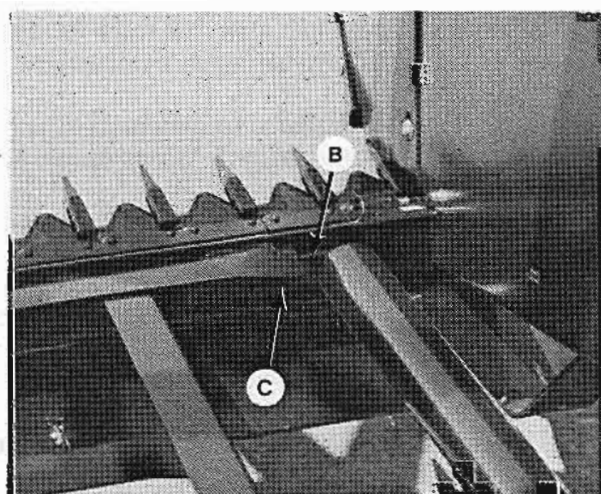
To adjust drive roller position, continue as follows:

3. Release draper tension by lifting draper at idler roller to over-center position (D).
4. Mark drive roller bracket (B) before moving roller, to show original position.
5. Loosen nut (C).



RELEASE DRAPER TENSION

- NOTE:** Best access to this nut is from underside if a wrench is used or topside if a ratchet is used.
6. Move front of drive roller in or out in 1/8 inch (3 mm) increments until draper runs parallel to cutterbar.
 7. Tighten nut (C) to secure the position and reapply draper tension. See "Draper Tension".
 8. Once drapers are tracking parallel to cutterbar, adjust idler roller (see "Draper Tension") so that draper just touches cutterbar at cutting height.
 9. Check that draper edges are running parallel to cutterbar after idler roller adjustment. Adjust again if necessary.



DRIVE ROLLER ADJUSTMENT

MAINTENANCE/SERVICE

DRAPERS (continued)

Draper Tension Adjustment

Draper tension is adjusted with spring assemblies at each end of the idler roller. Tension should be adjusted just tight enough to prevent slippage.

Also, by varying the front and rear spring settings with respect to each other, the draper can be adjusted to track closer to, or further from the cutterbar. See "Draper Tracking" in this section.

NOTE: On long drapers, best tracking is usually achieved with front idler spring compressed more than rear by approximately 1/2 inch (12 mm).

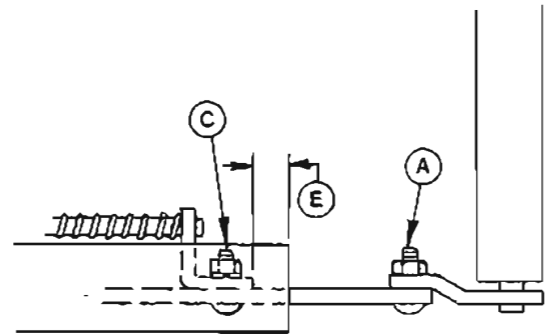
To adjust:

1. Loosen pivot bolt (A) at each end of idler roller.
2. Release draper tension by lifting draper at idler roller to over-center position (B).
3. Mark the current position of bolts (C) at each end of idler roller as a reference point, then loosen bolts (C) and slide roller in or out to desired position. Tighten bolts (C).
4. Apply draper tension by returning idler roller to working position with 15/16" wrench (D). Position end of wrench on pivot bolt (A) and use shaft of wrench to rotate idler roller down to working position.
5. Tighten pivot bolt (A).
6. Check draper tension. Sufficient tension should be achieved when end of angle welded to spring rod is approximately 1/2 inch (13 mm) from end of draper track (E). Adjust again if necessary.

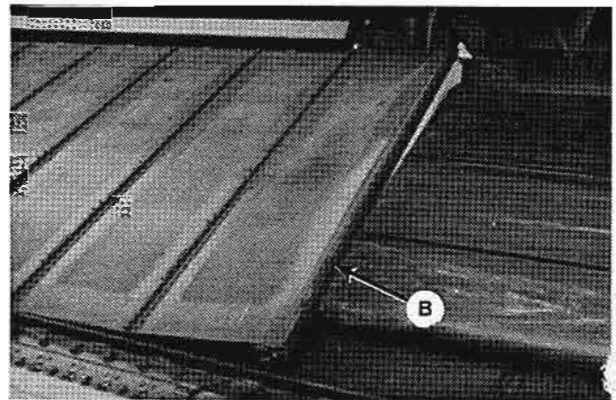
NOTE: For new drapers, set dimension (E) at about 3/4 inch (20 mm) to allow for initial draper stretch.

7. Check that draper tracking has not been affected by this adjustment. Correct if necessary.
8. For combine operation, check that side drapers overlap of feeder draper is within suggested range. See "Install Draper" in Assembly section.

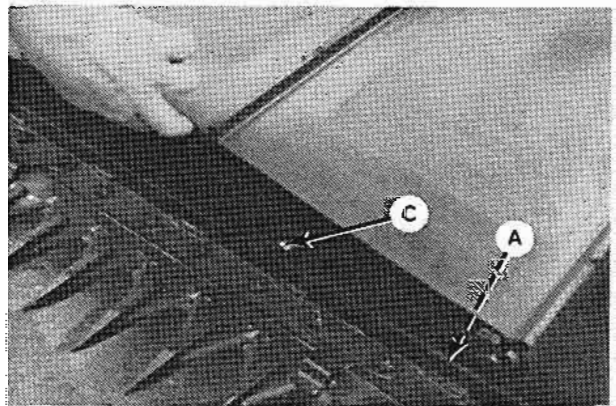
NOTE: If draper must be excessively tightened to prevent slippage, a drive roller lagging kit is available from your dealer.



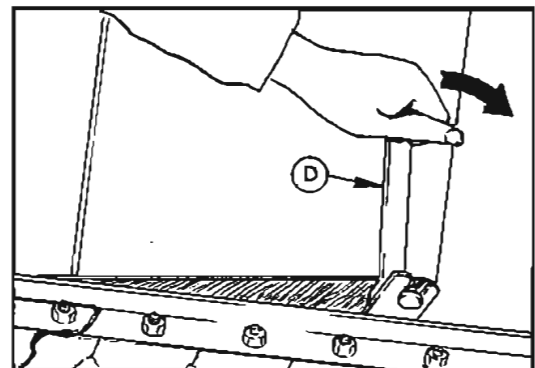
IDLER ROLLER ASSEMBLY



RELEASE DRAPER TENSION



IDLER SPRING ADJUSTMENT



APPLY DRAPER TENSION

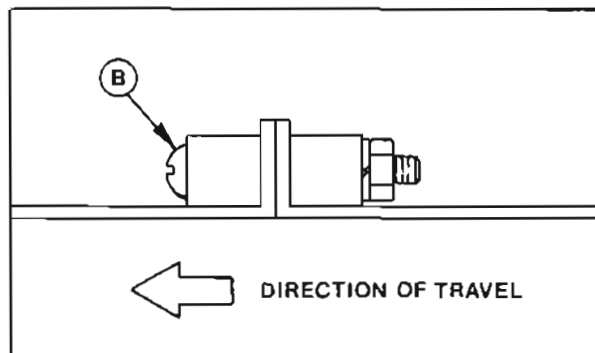
MAINTENANCE/SERVICE

DRAPERS (continued)

Replacing Drapers

When installing drapers:

1. Right and left side drapers are different lengths. Be sure you have them properly positioned before cutting a draper you think is too long.
2. Install screws (B) with heads facing direction of travel.



INSTALL DRAPERS CORRECTLY

GAUGE WHEELS - 36 FT. STANDARD, 30 FT OPTION

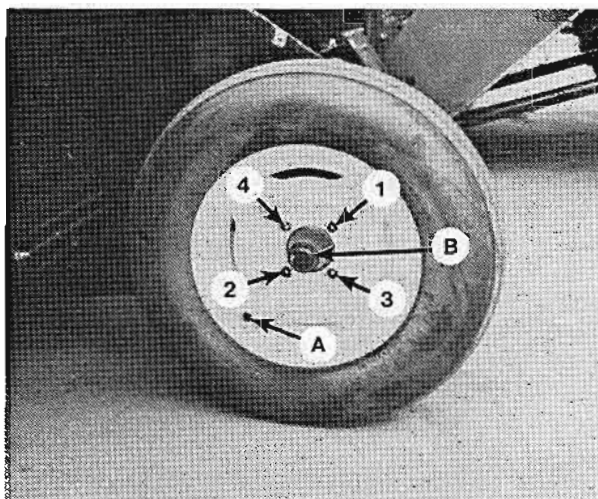
Wheel Bolts

Check and tighten wheel bolts after the first 10 hours of operation and every 100 hours thereafter.

Whenever a wheel is removed and re-installed, check torque after one hour of operation. Maintain 50 to 60 ft.lbs. (68 to 81 N·m) of torque.

Follow the proper bolt tightening sequence (1 to 4) shown.

NOTE: When installing wheel, be sure valve stem (A) points away from wheel support.



GAUGE WHEEL MAINTENANCE

Wheel Bearings

Remove bearings from hub (B), clean thoroughly and repack with bearing grease every 500 hours.

MAINTENANCE/SERVICE

GAUGE WHEELS (continued)

Tire Inflation

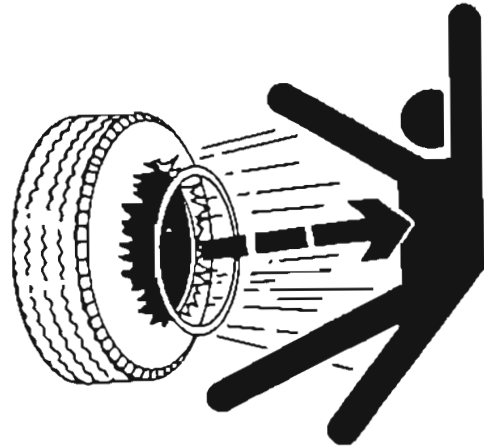
Check tire pressure daily. Maintain pressures recommended in Specifications section.



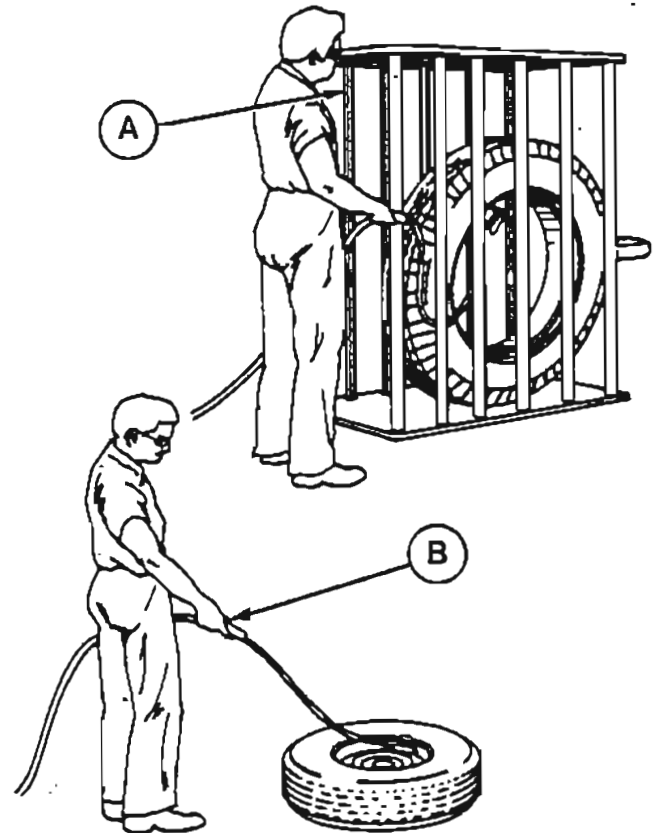
WARNING: Service tires safely. A tire can explode during inflation and cause serious injury or death. Never increase air pressure beyond 35 psi (241 kPa) to seat the bead on the rim. Replace the tire if it has a defect. Replace a wheel rim which has cracks, wear or severe rust. Never weld a wheel rim. Make sure all the air is removed from a tire before removing the tire from a rim. Never use force on an inflated or partially inflated tire. Make sure the tire is correctly seated before inflating to operating pressure.

Do not remove, install or make repairs to a tire on a rim unless you have the proper equipment and experience to perform the job. Take the tire and rim to a qualified tire repair shop. If the tire is not in correct position on the rim, or is too full of air, the tire bead can loosen on one side, causing air to leak at high speed and with great force. An air leak of this nature can thrust the tire in any direction, endangering anyone in the area.

- (A) - Use a safety cage if available.
- (B) - Do not stand over tire. Use a clip-on chuck and extension hose.



SERVICE TIRES SAFELY



MAINTENANCE/SERVICE

MAINTENANCE SCHEDULE

The following maintenance schedule is a listing of periodic maintenance procedures, organized by service intervals. For detailed instruction, see the specific headings in Maintenance/Service section. Use "Recommended Lubricants" as specified under that heading.

SERVICE INTERVALS

The recommended service intervals are in hours of operation. Use the hour meter in the windrower or combine cab to indicate when the next service interval has been reached.

IMPORTANT: Recommended intervals are for average conditions. Service header more often if operated under adverse conditions (severe dust, extra heavy loads, etc.)

Regular maintenance is the best insurance against early wear and untimely breakdowns. Following this schedule will increase machine life.

Where a service interval is given in more than one time frame, eg. "100 hours or Annually", service the header at whichever interval is reached first.



CAUTION: Carefully follow safety messages given under "Service Procedures".

MAINTENANCE/SERVICE

MAINTENANCE SCHEDULE

AT FIRST USE: See "Preparing the Header" and "Break-In Period" in Operation section.

10 HOURS OR DAILY

1. Grease driveline (to windrower tractor)
 2. Grease secondary driveline
 3. Grease knife head
 4. Check hydraulic hoses and components for leaks
 5. Oil knife (except in sandy conditions)
 6. Check knife sections, guards and clips
 7. Check tire pressure (36 ft., 30 ft. option)
-

25 HOURS

1. Grease chain case input driveline (combine adapter)
 2. Grease feeder draper driveline (combine adapter)
-

50 HOURS

1. Grease knife drive shaft support bearings
 2. Grease drive shaft bearings (windrower adapter leg)
 3. Check chain tension (combine adapter)
-

100 HOURS OR ANNUALLY *

1. Grease draper drive rollers rear bearings
2. Grease reel shaft bearings
3. Grease chain case bearings (combine adapter)
4. Lubricate chain at combine adapter
5. Check knife drive belt tension
6. Check wobble box mounting bolts
7. Check wobble box lubricant level
8. Check reel drive chain tension
9. Grease reel drive chain
10. Check wheel bolt torques (36 ft., 30 ft. option)
11. Grease cross auger bearing

* It is recommended that Annual Maintenance be done prior to start of operating season.

END OF SEASON: See "Storage Procedure" in Operation section.

500 HOURS

1. Grease wheel bearings (36 ft., 30 ft option)

MAINTENANCE RECORD

Header Fleet No. _____

Serial No. _____

Adapter Fleet No. _____

Serial No. _____

Combine this record with Windrower or Combine Maintenance Record for "complete unit" service.
See Maintenance/Service section for details on each procedure. Copy this page to continue record.

(W) - Windrower only (C) - Combine only
(G) - Units with gauge wheels only

ACTION CODES:		✓ - Check	🔸 - Lubricate																					
ACTION CODE	Hour Meter Reading/ Serviced By:																							
	Maintenance Procedure																							
	BREAK-IN	See "Preparing the Header" and "Break-In Period" in Operation section for checklist.																						
	10 HOURS OR DAILY																							
	🔸 Primary Driveline (W)																							
	🔸 Secondary Driveline																							
	🔸 Knife Head																							
	✓ Sections, Guards, Clips																							
	🔸 Knife Assembly																							
	✓ Hydraulic Hoses and Lines																							
	✓ Tire Pressure (G)																							
	25 HOURS																							
	🔸 Chain Case Input Driveline (C)																							
	🔸 Feeder Draper Driveline (C)																							
	50 HOURS																							
	🔸 Knife Drive Shaft Support Brgs.																							
	🔸 Drive Shaft Brgs.-Adapter Leg (W)																							
	✓ Adapter Chain Tension (C)																							
	100 HOURS OR ANNUALLY																							
	🔸 Draper Drive Roller Bearings																							
	🔸 Reel Shaft Bearings																							
	🔸 Chain Case Bearings (C)																							
	🔸 Adapter Chain (C)																							
	🔸 Reel Drive Chain																							
	✓ Knife Drive Belt Tension																							
	✓ Wobble Box Bolt Torque																							
	✓ Wobble Box Lube Level																							
	✓ Reel Drive Chain Tension																							
	✓ Wheel Bolt Torques (G)																							
	🔸 Cross Auger Bearing																							
	500 HOURS																							
	🔸 Wheel Bearings (G)																							

TROUBLESHOOTING

<u>PROBLEM</u>	<u>CAUSE</u>	<u>REMEDY</u>	<u>REF.</u>	
CROP LOSS AT CUTTERBAR				
Heads shattering or breaking off.	Reel speed too fast.	Reduce reel speed.	41	
	Ground speed too fast.	Reduce ground speed.	40	
	Crop too ripe.	Operate at night when humidity is higher.	---	
Cut grain falling ahead of cutterbar.	Reel too high.	Lower reel.	41	
	Cutterbar too high.	Lower cutterbar.	39	
Does not pick-up down crop.	Cutterbar too high.	Lower cutterbar.	39	
	Reel too high.	Lower reel.	41	
	Reel too far back.	Move reel forward on support arms.	41	
	Ground speed too fast for reel speed.		Reduce ground speed or increase reel speed.	40 41
			Set gauge wheels for low cutterbar angle.	24/33
		Bat reel unsuitable for conditions.	Install pick-up reel.	77
	Crop left at dividers.	Divider not gathering crop.	Change divider angle.	40
Strips of uncut material.	Crowding uncut crop.	Allow enough room for crop to be fed to cutterbar.	---	
Excessive bouncing at normal field speed.	Float set too light.	Adjust float.	44	
Crop build-up at reel lift cylinders.	High crop, like canola, carrying over divider rods.	Cut top bend off divider rods, place plastic tubes over rods to extend height.	---	
CUTTING COMPONENTS				
Excessive breakage of knife sections or guards.	Cutterbar angle too steep in stony field conditions.	Flatten cutterbar angle or raise header height.	44 39	
	Float set too heavy.	Adjust float.	44	
	Bent or broken guard.	Straighten or replace.	61	

TROUBLE SHOOTING

<u>PROBLEM</u>	<u>CAUSE</u>	<u>REMEDY</u>	<u>REF.</u>
CUTTING COMPONENTS (continued)			
Knife back breakage.	Bent or broken guard.	Straighten or replace.	61
	Worn knife head pin.	Replace.	60
	Dull knife.	Replace.	60
Ragged and uneven cutting of crop.	Knife is not operating at recommended speed.	Check engine speed of windrower or combine.	*
	Cutterbar plugged with material.	Adjust reel to sweep material off cutterbar.	41
	Various parts of cutterbar, such as knife sections, guards are worn, damaged, or broken.	Check and replace all worn and broken parts of cutterbar to obtain even cutting of crop.	59
	Bent knife, causing binding of cutting parts.	Straighten a bent knife: Check guard alignment and align if necessary for a smooth cut.	60 61
	Knife clips not adjusted to permit knife to work freely.	Adjust knife clips so knife will work freely, but still keep knife sections from lifting off guards.	61
	Cutting edge of guards not close enough or parallel to knife sections.	Adjust guards.	61
	Lips of guard out of adjustment or bent, causing poor shearing action.	Adjust lips of guards so they are parallel to shear edge of guards.	61
	Reel speed too slow.	Increase reel speed.	41
	Ground speed too fast.	Reduce ground speed.	40
	Loose knife drive belt.	Adjust knife drive belt tension.	62
Excessive vibration of cutting parts.	Knife is not operating at recommended speed.	Check engine speed of windrower or combine.	*
	Excessive looseness of cutting parts and knife drive.	Remove all excessive play from cutterbar and knife drive to eliminate vibration. After removing excessive play, make certain cutterbar and knife drive are properly adjusted.	59

* See Windrower or Combine Operator's Manual.

TROUBLE SHOOTING

<u>PROBLEM</u>	<u>CAUSE</u>	<u>REMEDY</u>	<u>REF.</u>
CUTTING COMPONENTS (continued)			
Knife plugging.	Loose knife drive belt.	Adjust belt tension.	62
	Dull or broken knife sections.	Replace.	59
	Bent or broken guards.	Align or replace.	61
	Improper knife clip adjustment.	Adjust knife clip.	61
	Improper reel adjustment.	Adjust to sweep material off cutterbar.	41
	Improper header float adjustment.	Adjust float springs.	44
	Cutterbar angle too steep.	Flatten cutterbar angle.	44
	Mud or dirt buildup on cutterbar.	Raise cutterbar.	39
REEL DELIVERY			
Reel wrapping in tangled and weedy crops causing improper reel delivery.	Incorrect location and height of reel.	Place reel well ahead and down.	41
	Reel speed too fast.	Reduce speed of reel to allow weedy crops to fall onto drapers.	41
Reel carrying crop over causing improper reel delivery.	Tall grain or nodding varieties of crops catch on reel bats and arms.	Increase width of reel bats with wire screen or canvas for nodding varieties of crops.	--
	Reel speed too fast.	Reduce speed of reel so crop will not carry over top of reel. Reel should turn just enough faster than ground travel so that crop heads are laid well back on drapers.	41
	Reel height too low.	Raise reel height to reduce amount of crop gathered by reel.	41
DRAPER TRACKING & DRIVE			
Draper not running parallel to cutterbar.	Draper rubbing on front edge at drive roller.	Adjust front of drive roller away from idler roller.	65
	Draper rubbing on front edge at idler roller.	Adjust front of drive roller towards idler roller.	65

TROUBLE SHOOTING

<u>PROBLEM</u>	<u>CAUSE</u>	<u>REMEDY</u>	<u>REF.</u>
DRAPER TRACKING & DRIVE (continued)			
Draper rubbing at cutterbar.	Draper tension misadjusted.	Adjust draper tension.	66
Draper running too far from cutterbar.	Draper tension misadjusted.	Adjust draper tension.	66
Draper will not drive.	Drive or idler roller wrapped with material.	Loosen draper and clean rollers.	66
	Deck shift pedal improperly positioned. (Windrower)	Position pedal toe-down for center delivery.	22
	Slat or connector bar jammed by frame or material.	Loosen draper and clear obstruction.	66
	Roller bearing seized.	Replace.	48
	Valve spools not positioned properly.	Check and adjust controls.	56
	Low hydraulic oil.	Fill reservoir to full level.	*
Drapers run backwards.	Deck shift pedal improperly positioned. (Windrower)	Position pedal toe-down for center delivery.	22
WINDROW FORMATION			
Heads on ground (flowered out).	Draper speed too slow.	Increase draper speed.	22
	Ground speed too slow.	Increase ground speed.	21
	Crop too ripe.	Cut material before too mature.	—
Hollow in center.	Draper speed too slow.	Increase draper speed.	22
	Delivery opening too wide.	Decrease delivery opening width.	43
Heads in center (too much herringbone).	Draper speed too fast.	Reduce draper speed.	22
	Ground speed too fast.	Reduce ground speed.	21
	Crop too green.	Allow to mature.	—
Uneven windrow	Ground speed too fast for drapers.	Reduce ground speed or increase draper speed.	21 22
	Reel too low	Raise reel.	21
	Reel too fast	Reduce reel speed.	21

* See Windrower or Combine Operator's Manual.

TROUBLE SHOOTING

<u>PROBLEM</u>	<u>CAUSE</u>	<u>REMEDY</u>	<u>REF.</u>
HYDRAULICS			
Reel will not lift.	Reel lift quick couplers not compatible.	Change quick coupler	---
<u>Combine:</u> Blow seals in motor and pump.	Excessive back pressure caused by: - return line disconnected. - extra motor (chaff spreader etc.) installed in header return line.	- Connect return line. - Remove or modify to keep return pressure below 300 psi.	insert **
<u>Windrower:</u> Header lift insufficient to allow float spring installation.	Control valve relief pressure too low.	Increase relief pressure.	55
COMBINE OPERATION			
Cross auger back-feeds.	Side drapers running too fast, piling material in center of feeder draper.	Reduce draper speed.	32
	Front drum of feeder housing improperly positioned.	Adjust position.	*
	<u>John Deere:</u> Feeder chain running too slow.	Run feeder chain at high speed.	*
	<u>John Deere:</u> Equipped with feeder chain with 4 pitches per bar.	Replace with 6 pitch per bar feeder chain, or remove every other bar.	*
	<u>Case IH:</u> Dust shield on front of feeder house.	Remove dust shield	*
Side drapers back-feed.	Insufficient overlap of feeder draper.	Extend side drapers to overlap feeder draper side sheets by 3-4" (80-100 mm).	85
Combine feeder housing pushes dirt when trying to pick up down crop.	Feeder housing lowered too far, eliminating header float.	Raise feeder housing until float linkage bottoms, change header to steeper angle to pick up down crop.	33
	Float too light, float links do not rest on stops.	Adjust to heavier float.	32
Cutterbar does not float or pushes dirt.	Float set too heavy.	Adjust to lighter float.	32
	Float lock-out not disengaged.	Raise header, disengage float lock-out.	26

* See your Combine Operator's Manual.

** See your Combine Dealer.

OPTIONS AND ATTACHMENTS

Consult your Windrower dealer for details on the following options and attachments.

PICK-UP REEL

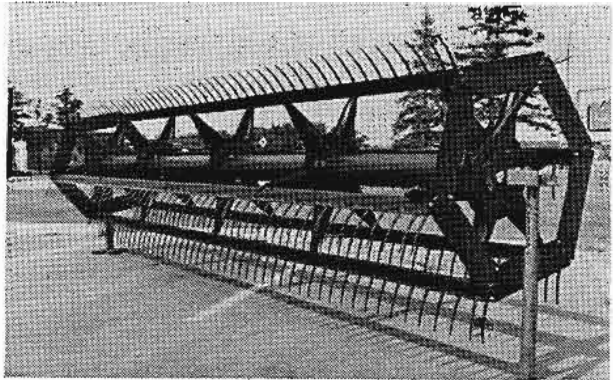
Available for all header sizes, the cam-action pick-up reel is ideal for downed-crop conditions.

Available with replaceable plastic or steel fingers.

A separate Operator's Manual is provided with the pick-up Reel.

NOTE: If pick-up reel is installed on windrower header it may be necessary to install an auxiliary float spring kit. This kit (including assembly instructions) is available from your dealer.

Adjust reel clearance after installing pick-up reel. See "Reel Clearance From Cutterbar" in Maintenance/Service section.

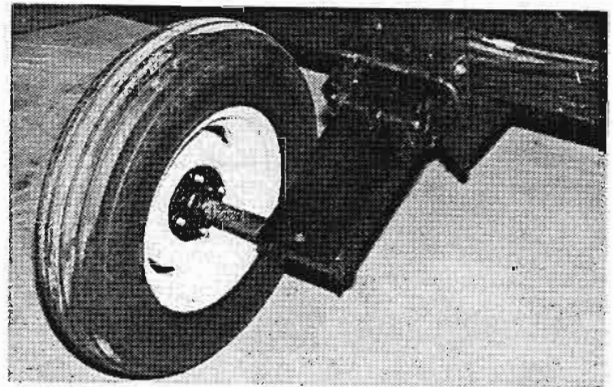


PICK-UP REEL

GAUGE WHEELS

Standard equipment on 36 foot headers, gauge wheels are available as an option for 30 foot headers. Gauge wheels are not available for 25 foot headers.

Gauge wheels improve end-to-end float, allowing larger headers to better follow ground contours.



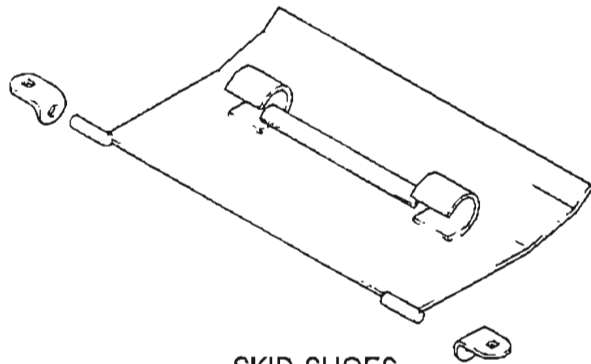
GAUGE WHEELS - 30 FT. OPTION

SKID SHOES

Skid shoes are available as an attachment. The primary benefits of skid shoes are:

1. Help prevent damage to cutting components.
2. Reduce scooping of dirt onto cutterbar.
3. Provide a method of setting a minimum cutting height.

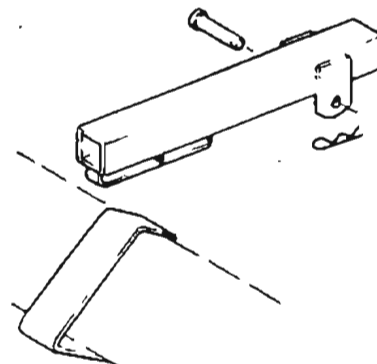
See "Skid Shoes" in Operation section for adjustment details.



SKID SHOES

HEADER LIFT KIT

Installation of this kit allows lifting the header from field position. Useful for loading/unloading in mobile custom harvest operations. Installation instructions are included with the kit.



HEADER LIFT KIT

UNLOADING & ASSEMBLY

PREPARE TO UNLOAD



CAUTION: To avoid injury to bystanders from being struck by machinery, do not allow persons to stand in unloading area.

1. Move trailer into position on firm, level ground and block trailer wheels.
2. Lower trailer storage stands.
3. Check that the load has not shifted or otherwise become unstable and check shipping stands for damage before removing hauler's tie-downs. If it appears load is unstable, take precautions to prevent machines falling when tie-downs are removed.



PREPARE TO UNLOAD

UNLOADING EQUIPMENT



CAUTION: Unloading equipment must meet or exceed the specified requirements. Using inadequate equipment may result in chain breakage, vehicle tipping or machine damage.

CHAIN REQUIREMENTS

Use overhead lifting quality chain (1/2 inch) with minimum 5000 lb. (2270 kg) working load limit. Chain length must be sufficient to provide minimum 4 ft. (1.2 m) vertical chain height.

LIFTING VEHICLE REQUIREMENTS

Use a lifting vehicle with a minimum 4000 lb. (1815 kg) lifting capacity and a minimum 15 ft. (4.5 m) lifting height.

UNLOADING & ASSEMBLY

UNLOAD HEADER

1. Attach chain hooks at points (A) and (B) marked "Lift Here".



CAUTION: To avoid injury from shifting or falling machines, remove hauler's tie-downs from one header at a time, after it is secured to unloading vehicle.

2. Remove hauler's tie-down straps and chains.



CAUTION: Be sure hooks are secure before moving away from load. Stand clear when lifting, machine may swing. Do not allow anyone to walk under or near the header as it is unloaded or moved.

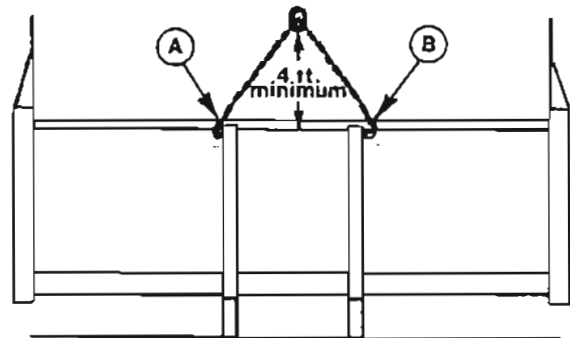
3. Raise header 12 inches (300 mm), remove from trailer.
4. Take to storage or set-up area.
5. Set header down securely on level ground. Check for shipping stand damage and damaged or missing parts.
6. Remove chain hooks.



WARNING: Header shipping stands are designed for shipping economy. They do not provide a base broad enough for storage of units in an upright position.

To avoid personal injury, death or machine damage from headers falling or blowing over, proceed with instructions to "Lower Header" (next page) before leaving units in storage.

If it is necessary to store machines upright on shipping stands, ensure that the ground is firm and level. Take factors such as exposure to wind, and the effects of snow melt and ground thaw into consideration. Tie units together and brace on both sides, or place against a secure backstop and brace the unsupported side.



ATTACH CHAIN HOOKS

UNLOADING & ASSEMBLY

LOWER HEADER

1. Drive lifting vehicle to approach header from its "underside".

Attach chain hooks to points (A) and (B) marked "Lift Here".

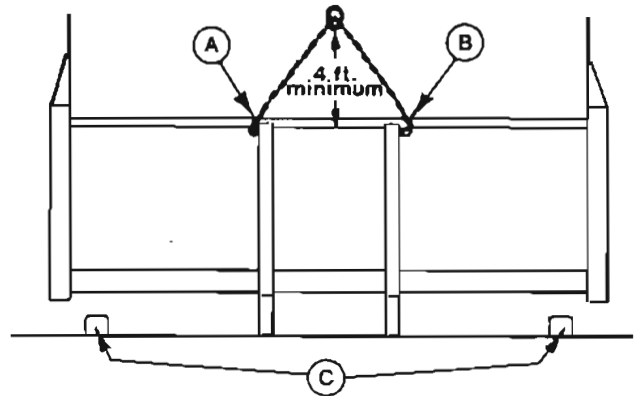
See "Chain Requirements" in this section for minimum chain specifications.

2. Raise lifting apparatus to take some of the weight off shipping stands and back up SLOWLY to lower header.



CAUTION: Stand clear when lowering, as machine may swing.

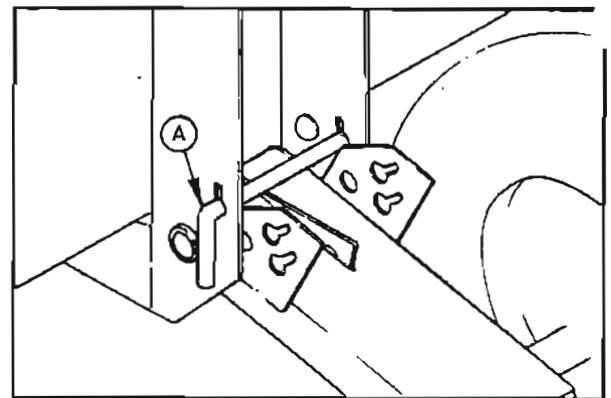
3. Place 6" (150 mm) blocks (C) under each end of cutterbar.



ATTACH CHAIN HOOKS AND PLACE BLOCKS UNDER CUTTERBAR

INSTALL GAUGE WHEELS - 36 ft. (30 ft. OPTION)

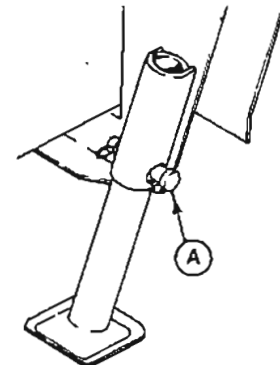
1. Remove chain hooks and move lifting vehicle to rear of header. Raise rear of header and:
 - a. Attach gauge wheels to hubs. Be sure valve stem faces away from wheel support. Torque wheel bolts to 50 to 60 ft. lbs. (68 to 81 N.m).
 - b. Remove pins securing wheel assemblies and lower to stand position. Secure with pins at (A).
2. Lower header onto gauge wheels and 6" (150 mm) blocks under cutterbar. Remove shipping stands
3. Check tire pressure. Inflate to 24 to 28 psi (165 to 195 kPa).



GAUGE WHEELS - STAND POSITION

LOWER HEADER STAND - 25 and 30 ft.

1. Remove chain hooks and move lifting vehicle to rear of header.
2. Raise rear of header and lower header stand into position (A).
3. Lower header onto stand and 6" (150 mm) blocks under cutterbar. Remove shipping stands.

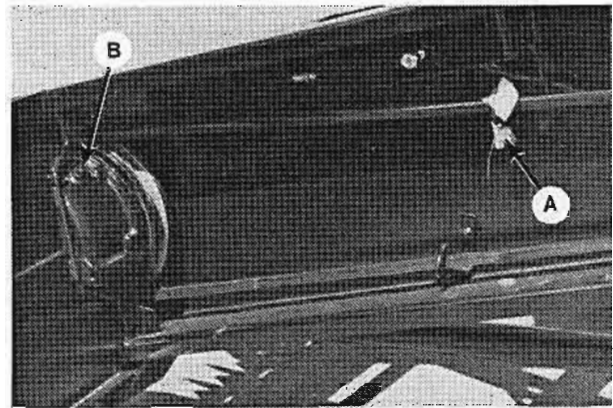


HEADER STAND - LOWERED

UNLOADING & ASSEMBLY

INSTALL BREATHER IN WOBBLE BOX

1. Untie plastic bag (A) and replace pipe plug (B) in wobble box with breather from bag.



INSTALL BREATHER IN WOBBLE BOX

ASSEMBLE BAT REEL



CAUTION: Wire and strapping are under pressure. Be careful when cutting. Remove wire and strapping from assembly area once removed from machine.

1. Remove all strapping and shipping wire.
2. Raise reel support arms and engage reel props (A).

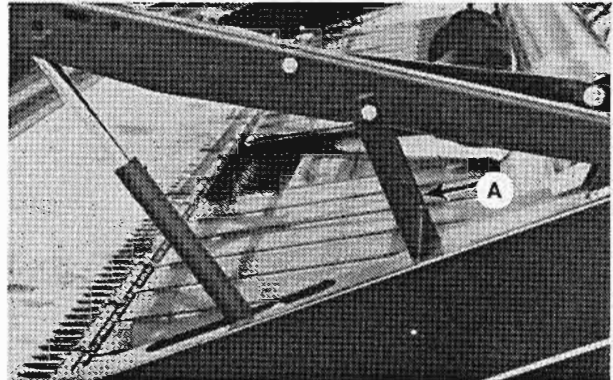
NOTE: Reel hardware is shipped in two bags, separated by size.

3. Remove ten 3/8 x 1" bolts (five per side) fastening the reel braces (B) to reel flanges (C) and reel arms (D). Loosen all remaining hardware at flanges (C) to allow arms to swing freely.

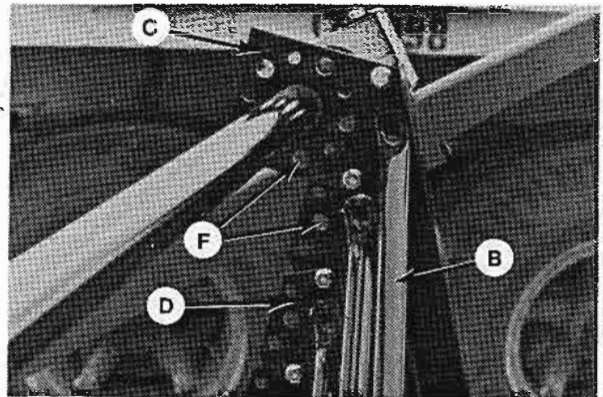
NOTE: The 36 ft. header has two 18 ft. reels and reel braces are not required. Instructions regarding braces are not relevant for the 36 ft. header.

4. Rotate (lift) the first bat up 1/5 turn, to align the second set of reel arms (E). Using a punch in the "line-up" holes (F) install 3/8 x 3/4" bolts (G) fastening the second reel arms to the reel flanges.

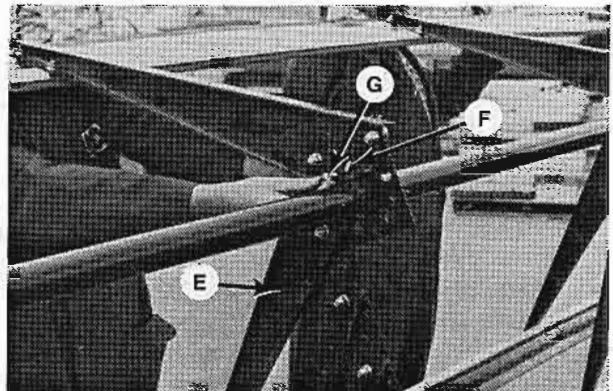
NOTE: Install all hardware finger tight to allow straightening after assembly.



ENGAGE REEL PROPS



REMOVE BRACE HARDWARE AT ARMS



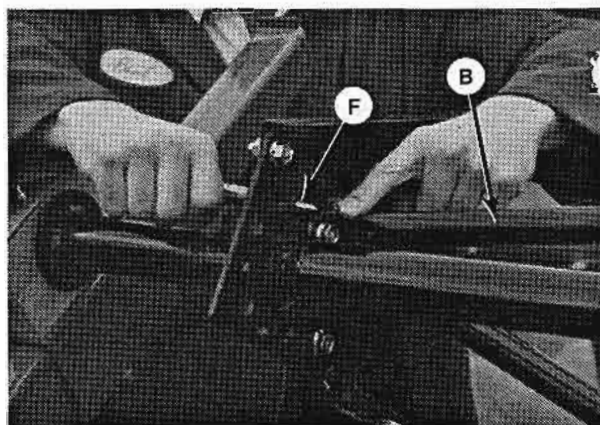
ALIGN & FASTEN REEL ARM SET #2

UNLOADING & ASSEMBLY

ASSEMBLE BAT REEL (continued)

5. With punch in line-up holes (F), fasten the first reel brace (B) to the reel arm and flange at each end.

NOTE: Use the 3/8 x 1" flange bolts removed in step 3 when fastening reel braces to reel flanges. These bolts are 1/4" longer than the others to accommodate the reel brace thickness.



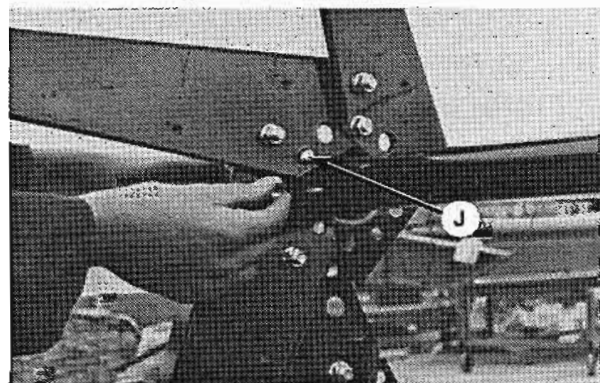
ATTACH FIRST REEL BRACE - BOTH ENDS

6. Lift second reel bat to align the third set of reel arms (H).



ALIGN REEL ARM SET # 3

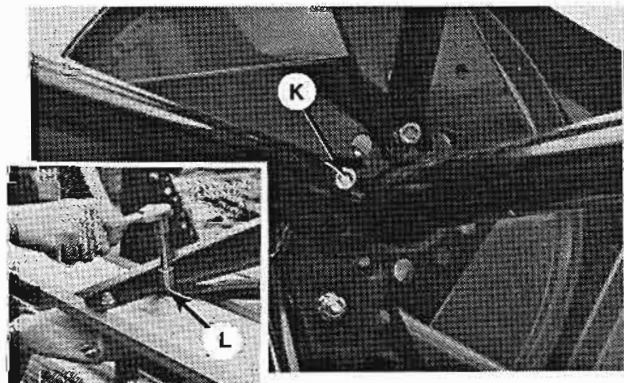
Using a punch in line-up holes, install 3/8 x 3/4 bolts (J) to fasten third set of reel arms to reel flanges.



ATTACH REEL ARM SET # 3

Install 3/8 x 1" bolts (K) to fasten the second reel brace at each end.

NOTE: Loosen second reel brace at bat (L) to allow fastening at left hand end reel flange. Remaining three braces at left end may also require loosening at the bat to allow fastening to reel flange.

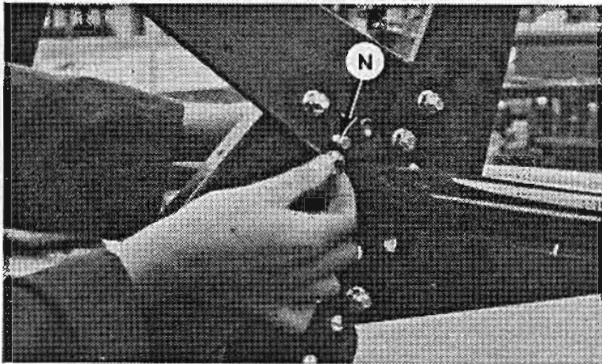


ATTACH SECOND REEL BRACE - BOTH ENDS

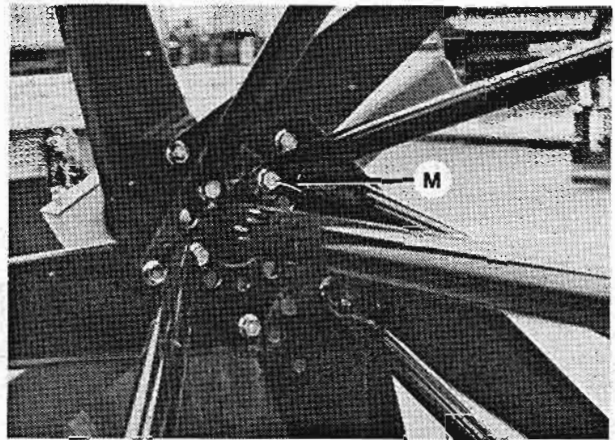
UNLOADING & ASSEMBLY

ASSEMBLE BAT REEL (continued)

7. Rotate reel again, now lifting the third bat and fasten the third reel braces (M) and the fourth reel arms (N).

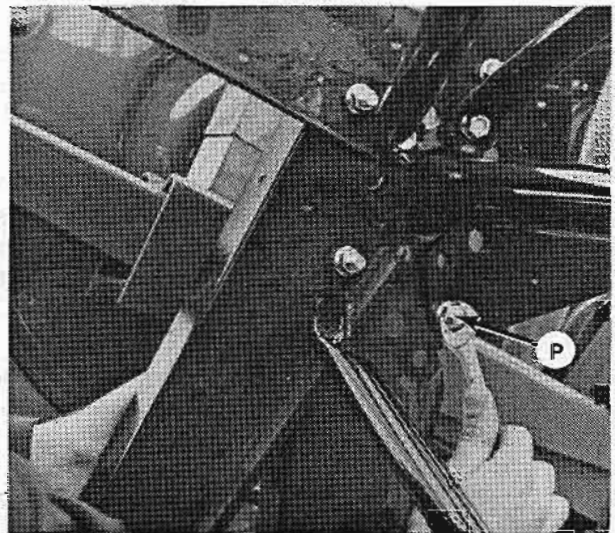


ATTACH REEL ARM SET # 4



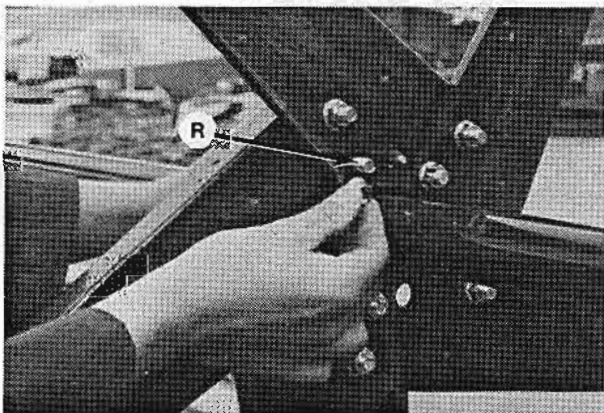
ATTACH THIRD REEL BRACE - BOTH ENDS

8. Remove the flange bolt (P) (one at each reel flange) securing the first reel arm to the reel flange.

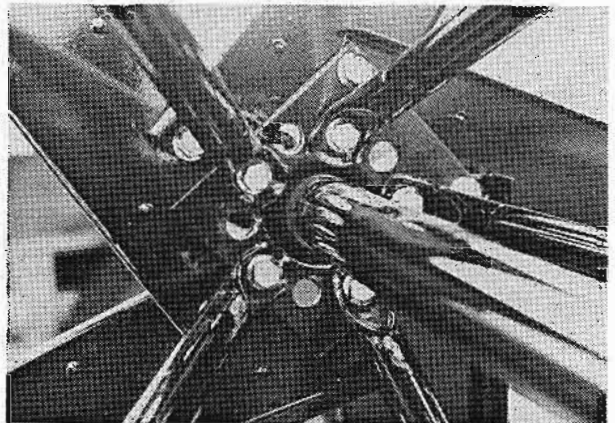


REMOVE BOLT FROM REEL ARM SET # 1

9. Rotate the reel the final 1/5 turn, so the fifth reel arm slides past the first reel arm to its proper position. Use a punch in "line-up" holes and fasten the fourth and fifth reel braces and the fifth reel arms (R).



ATTACH REEL ARM SET # 5

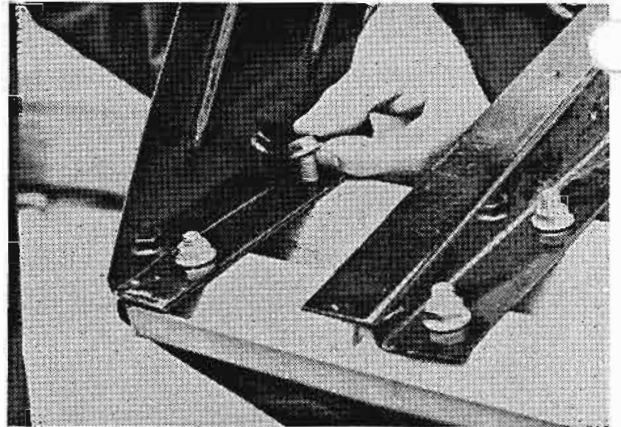


ALL REEL BRACES INSTALLED

UNLOADING & ASSEMBLY

ASSEMBLE BAT REEL (continued)

10. Fasten the reel ends to the bats using the 5/16" hardware (finger tight only). All hardware should now be on the reel.

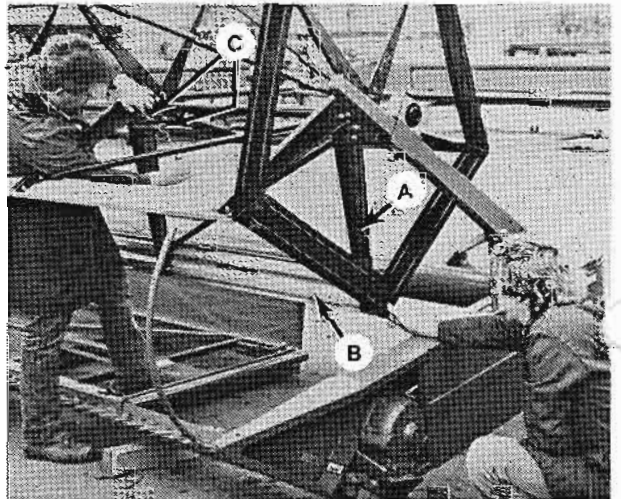


ATTACH REEL ENDS - 5/16 HARDWARE

11. With one set of reel arms pointing vertically downwards (A) look down the length of the bat (B) and make adjustments to straighten the bat. When this bat is acceptably straight, tighten the two 3/8 flange bolts (C) at each reel flange which are lined up vertically and are common to the reel arms attached to the straightened bat.
12. Rotate the reel 1/5 turn so the next set of reel arms is pointing vertically downwards. Repeat the straightening and tightening procedure in Step # 11. Continue this sequence until all reel arm flange hardware is tight.

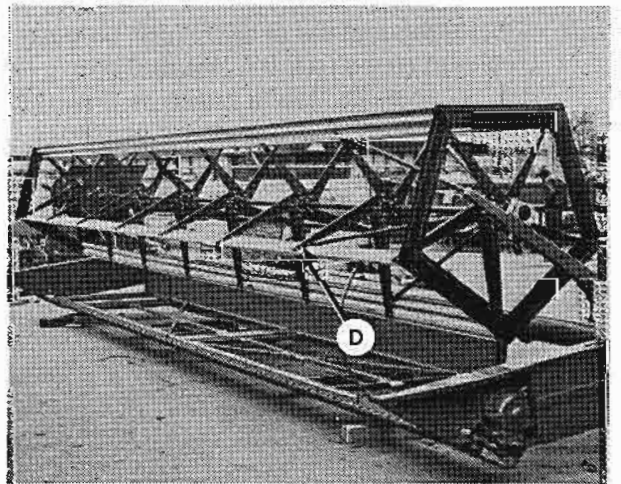
NOTE: In order to straighten the last bat it may be necessary to loosen the first set of bolts that were tightened in Step # 11.

If, after this procedure, bats do not appear straight, loosen hardware as required to adjust.



STRAIGHTEN BATS - TIGHTEN HARDWARE

13. Tighten the 5/16" flange hardware securing the reel ends.
14. Check that all hardware is sufficiently tight, (50 ft. lbs. [68 N.m] for 3/8" hardware and 35 ft. lbs. [47 N.m] for 5/16" hardware).
15. Check that the reel shaft is straight. The clearance from bat to cutterbar should not vary as the reel is turned. The reel shaft may be straightened by adjusting the reel brace position at the reel bats (D).
16. Adjust reel clearance from cutterbar (see Maintenance/Service section) and reel fore-aft position (see Operation section).



COMPLETE REEL

UNLOADING & ASSEMBLY

INSTALL DRAPERS

NOTE: Right and left side drapers are different lengths. Be sure you have the drapers properly positioned. Drapers are marked with an identification number. Install as follows:

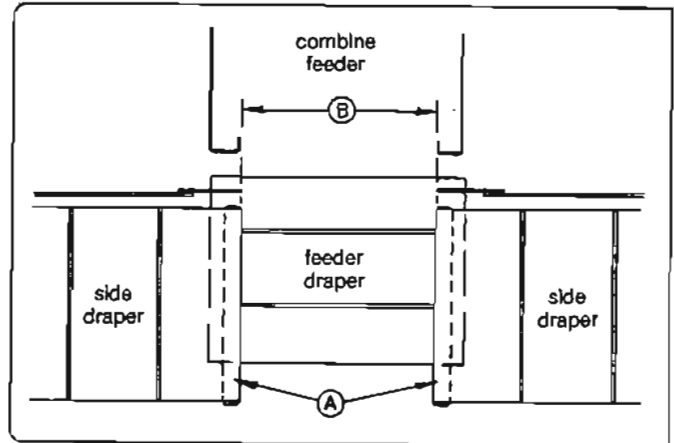
25 ft. header: Right side # 33797
 Left side # 33796
 30 ft. header: Right side # 37293
 Left side # 33798
 36 ft. header: Right side # 37125
 Left side # 37124

To install:

1. **Combine Use:** For proper feeding, position idler rollers (A) of side drapers to align with opening (B) in combine feeder. Note that this will result in side drapers over-lapping feeder draper.

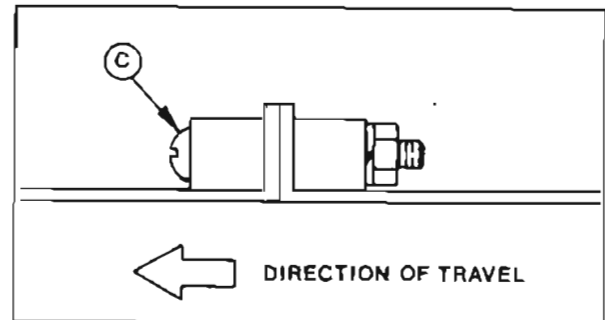
Windrower: Choose delivery opening size and connect drapers to suit.

See "Delivery Opening Width" under Header Operation for procedure.

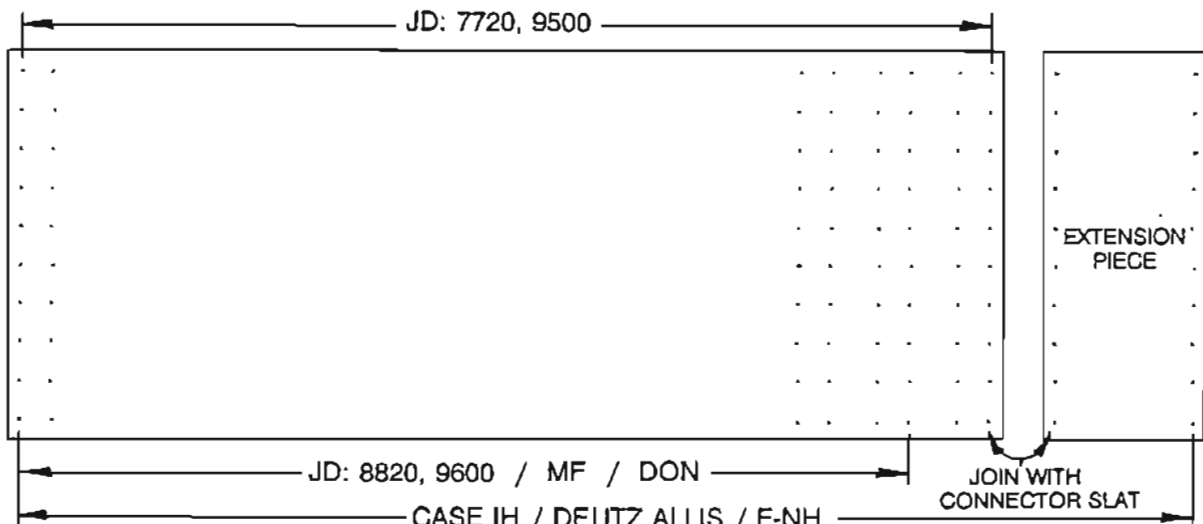


DELIVERY OPENING - COMBINES

2. Position connector slats at appropriate rows of holes in draper for your combine. See chart below.
3. Install screws (C) with heads leading in direction of travel.
4. Position idler roller to snug up draper and apply draper tension. See "Draper Tension Adjustment" in Maintenance/Service section.



DRAPER INSTALLATION

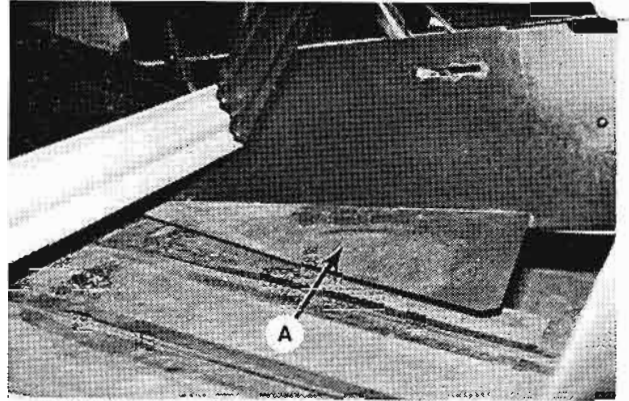


SIDE DRAPER CONNECTION - COMBINES

UNLOADING & ASSEMBLY

INSTALL END DEFLECTORS

Install end deflectors (A), both sides, with 3/8 x 3/4 carriage bolts and nuts.

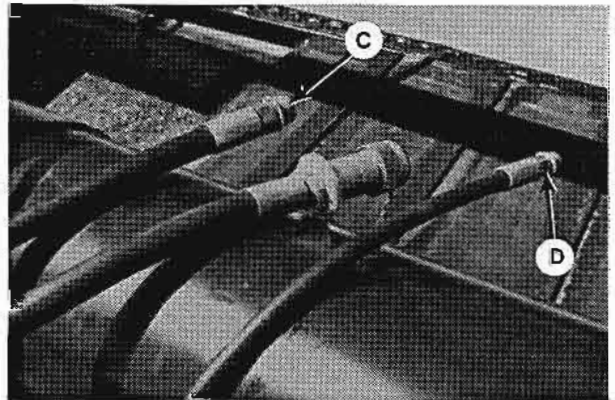


INSTALL END DEFLECTORS

INSTALL QUICK COUPLERS ON HEADER HOSES

Install quick couplers (and, if applicable, hose extension) supplied with windrower or combine adapter package at hose (C) (reel drive pressure line - 1/2 NPT) and hose (D) (reel lift line - 1/4 NPT).

NOTE: For combine adapter, couplers are shipped strapped to hydraulic pump, under drive cover. For windrower adapter, they are shipped inside adapter leg.



INSTALL QUICK COUPLERS

UNLOADING & ASSEMBLY

Preparing for Combine Use

The following 3 pages are related specifically to preparing for combine use. For Windrower Preparation see page 90.

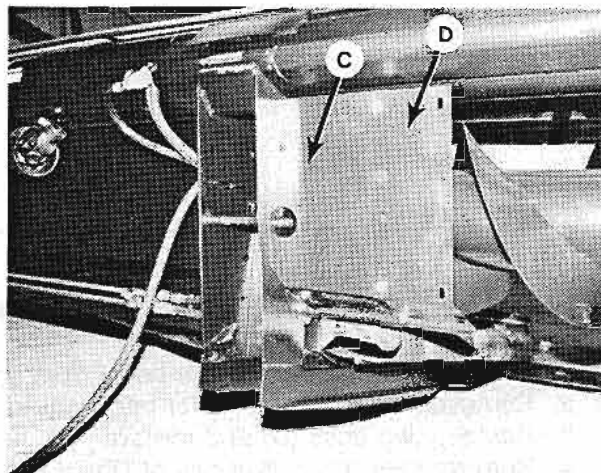


IMPORTANT: Hydraulic pressure in return line from header must be kept below 300 psi (2 MPa) to prevent damage to pump and motor seals. **DO NOT INSTALL ANY HYDRAULIC MOTORS** (for example, a chaff spreader) or other device that would restrict return flow or increase pressure. Failures resulting from the addition of such attachments will not be covered under MacDon Warranty.

INSTALL DELIVERY OPENING PANELS (shipped with combine adapter)

Install panels (C) both sides of delivery opening with 3/8 x 3/4 carriage bolts and nuts (2 per panel).

NOTE: The purpose of the panels is to align header opening with the opening in combine feeder. To achieve this on the John Deere 9500 and 7720, as well as the Case IH 1460 and 1660: Remove panel extensions from their storage position on panels (C) and reinstall in position (D) to provide narrower opening.



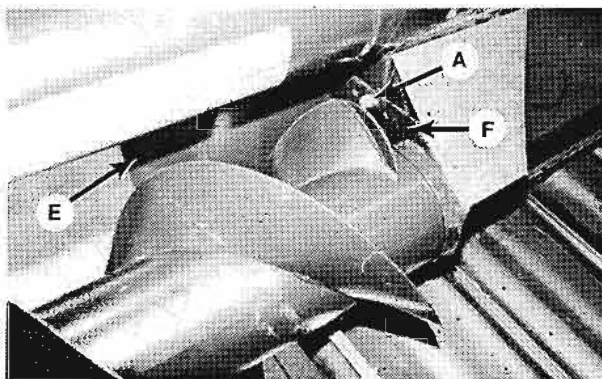
INSTALL DELIVERY OPENING PANELS

INSTALL CROSS AUGER

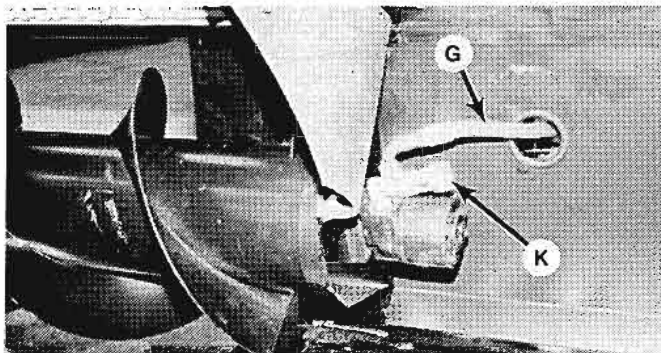
1. Install auger at delivery opening using 1/2 x 1 inch bolts and lockwashers at (A), both sides.

NOTE: Auger flighting should clear panel extensions (E) by 1/2 inch (13 mm). Choose from three sets of mounting holes in auger supports (F) to achieve this clearance.

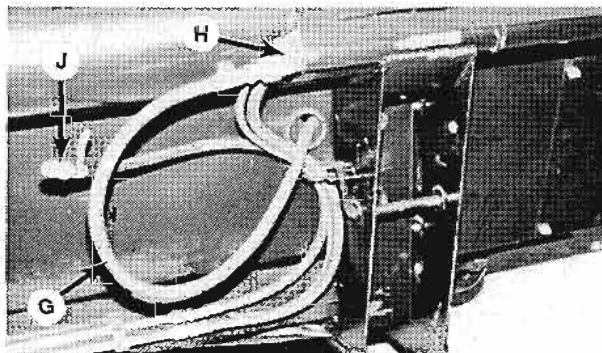
2. Connect hose (G) from motor to coupler (H) at header left leg (orange to orange). Blue coupler (J) and red coupler (K) will be connected to combine adapter, but can be coupled for storage.



ATTACH AUGER



ROUTE HOSE FROM MOTOR THRU HOLE



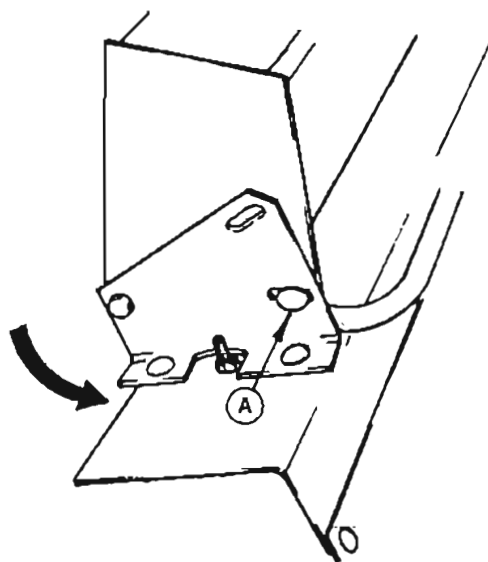
ATTACH HYDRAULICS AT LEG

UNLOADING & ASSEMBLY

Preparing for Combine Use (continued)

POSITION CHAIN CASE ON COMBINE ADAPTER

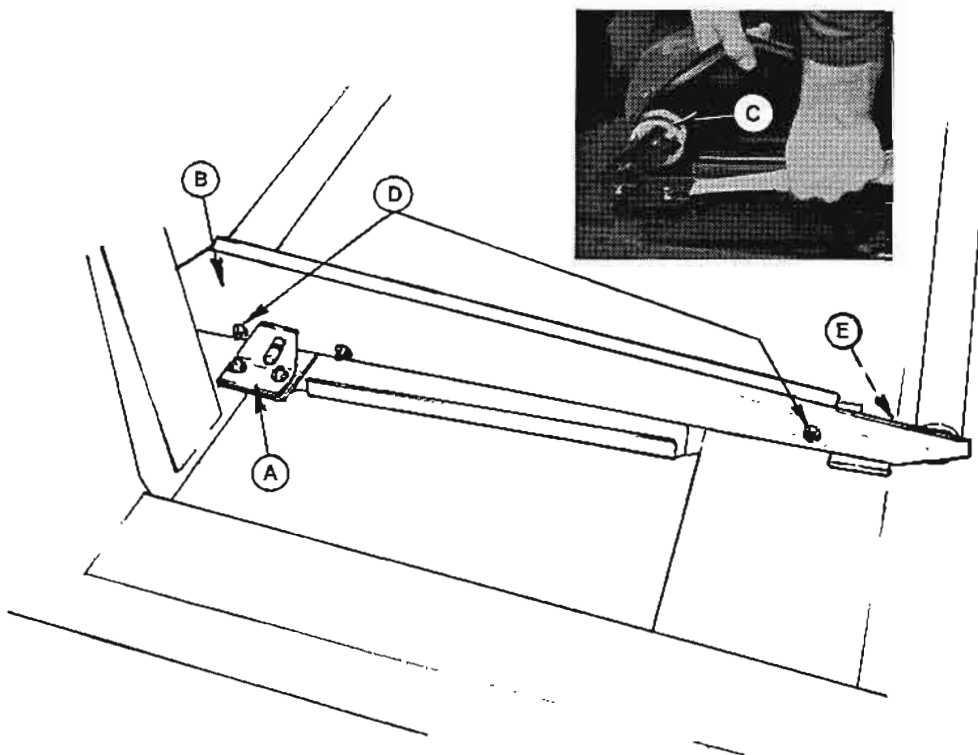
1. Remove pivot bolt (A) and swing chain case out to working position. Replace bolt (A).



PIVOT CHAIN CASE TO WORKING POSITION

INSTALL FEEDER DRAPER ON COMBINE ADAPTER

1. Remove rear mount (A) (two bolts) from right hand side of feeder draper assembly.
2. Remove feeder draper carrier frame (B) from adapter frame.
3. Remove two bolts (D) and remove right hand side from carrier frame.
4. Remove idler roller pivot bolt at (E), allowing idler roller to be moved inward.
5. Align splice in draper (where there is a gap in the belt on underside) with drive roller and slide feeder draper on, ensuring belt on underside engages grooves (C) on left side.
6. Reassemble and apply draper tension (see Maintenance/ Service section).
7. Ensure rear of feeder draper is free to float up or down.



REMOVE SUPPORTS - INSTALL DRAPER

UNLOADING & ASSEMBLY

Preparing for Combine Use (continued)

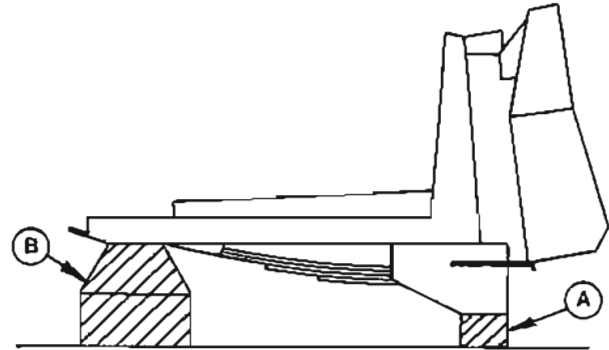
ATTACH ADAPTER TO COMBINE

Attach combine adapter package to feeder housing of combine. See Mounting Instructions Insert Sheet for details on your particular make of combine.

IMPORTANT: Before attaching adapter to combine, place 4" (100 mm) blocks (A) under rear of adapter, and 12" (300 mm) blocks (B) under front lip of adapter.

NOTE: Place rear blocks under float links, outside of delivery opening.

NOTE: Hydraulic hose lengths and couplings are provided based on the latest available information from combine manufacturers. Should these not be suitable for a particular model or production series, modify or purchase the necessary components.



BLOCK ADAPTER FRONT AND REAR

ATTACH HEADER



CAUTION: Read the Operator's Manuals carefully to familiarize yourself with procedures and controls before attaching header to combine.

See page 26 for "Attaching Header to Combine". When attached, continue with Assembly Instructions on page 91.

UNLOADING & ASSEMBLY

Preparing for Windrower Use

This page of instructions is related specifically to preparing the windrower tractor for the harvest header.

For other tractor preparation, see Windrower Operator's Manual.



1. CAUTION: For increased tractor stability, add weights to weight bar at rear of tractor.

- 25 ft. header - 150 lbs. (70 kg)
 - 30 ft. header - 350 lbs. (160 kg)
 - 36 ft. header - 450 lbs. (205 kg)
- Additional weight may be required in hilly areas.

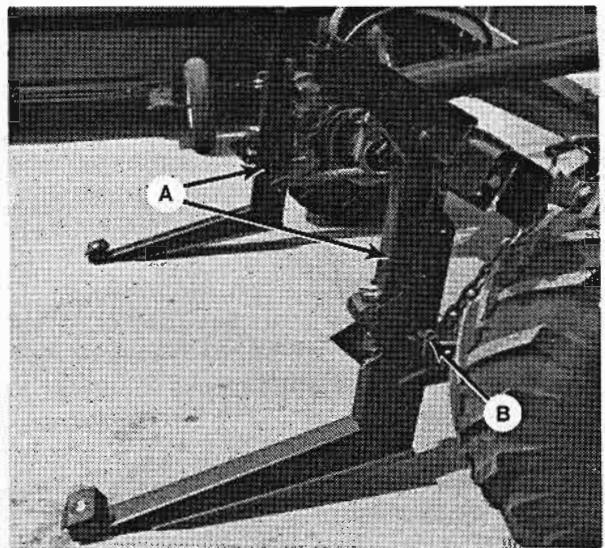
2. Install windrower mounting legs on tractor lift linkages (A).

IMPORTANT: Leg with drive shaft must be installed on left side.

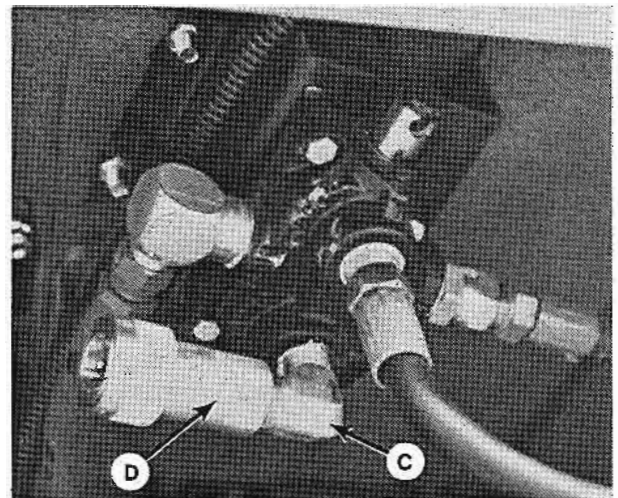
Install retainer pin (B) and secure with hair pin (both sides).

3. At 4-way valve under left front corner of cab:
- a. Remove elbow (C) and female coupler (D).
 - b. Install hose supplied with windrower adapter legs.
 - c. Install coupler (D) on other end of hose.
 - d. Route hoses to left lift leg. See "Attaching the Header". Ensure the extreme left foot pedal in cab is in the "toe-down" position, to allow proper oil flow to the draper drives. Accidental movement of this pedal from the toe-down position will stop or reverse the drapers. A valve position lock is available from your Dealer.

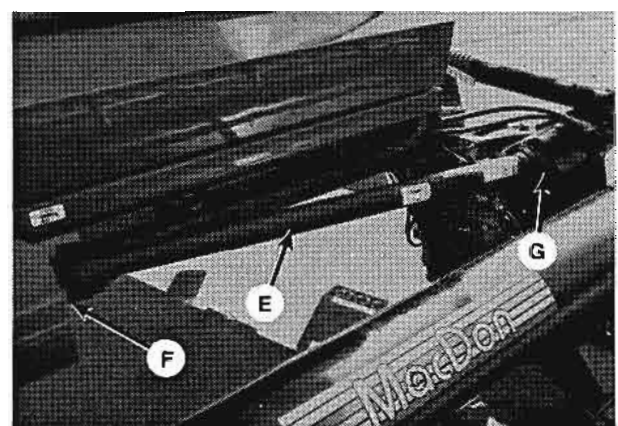
4. If a pick-up reel is to be installed, it may be necessary to add an "Auxiliary Float Spring Kit" to the tractor to achieve required float. Installation instructions are included with the kit, available from your Windrower dealer.
5. Attach driveline (E) to header drive pulley shaft (F) on tractor and to shaft (G) at left mounting leg. Tighten clamp yoke bolts, both sides.
6. To prevent improper mixing of oils, if header is to be switched back and forth from combine to windrower, change oil in windrower hydraulic system to match combine hydraulic system. See Windrower Operator's Manual for oil change details.



INSTALL MOUNTING LEGS ON LINKAGE



REMOVE ELBOW AND COUPLER -
INSTALL HOSE



ATTACH DRIVELINE

UNLOADING & ASSEMBLY

ATTACH HEADER



CAUTION: Read the Operator's Manuals carefully to familiarize yourself with procedures and controls before attaching header to windrower or combine.

See page 13 for "Attaching Header to Windrower Tractor" or page 26 for "Attaching Header to Combine".

BLEED HYDRAULIC SYSTEM

Header Lift Cylinders

Raise and lower header a few times to allow trapped air to pass back to the reservoir.

Reel Lift Cylinders



CAUTION: Take care during this procedure as air in the system can cause the reel to raise and lower erratically. Keep body and hands out from under reel and reel support arms.

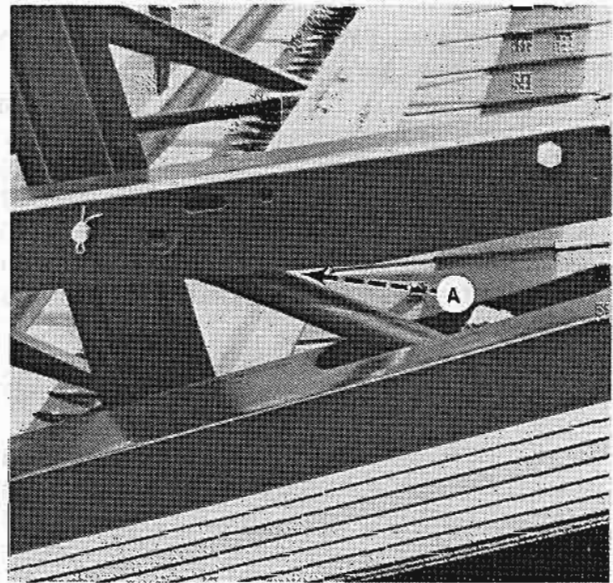
IMPORTANT: If a pick-up reel is installed: To prevent twisting damage to reel, complete this procedure before installing finger pitch adjustment bolts. See Pick-Up Reel Operator's Manual.

1. Fully lower header and reel.



CAUTION: Bleed screw (A) may be forced from hole by hydraulic pressure. Do not loosen screw too quickly or too far.

2. SLOWLY loosen bleed screw (A) in left hand reel lift cylinder.
3. Start engine and activate reel lift. Right hand cylinder will reach full extension first, then oil will pass to left hand cylinder. (For 36 ft. header, sequence will be: center cylinder, R/H cylinder, L/H cylinder.)
4. Continue to activate reel lift until oil comes out around bleed screw.
5. Tighten bleed screw.



REEL LIFT CYLINDER BLEED SCREW

ADJUSTMENTS & CHECKS

Perform final adjustments and checks as listed on the "Pre-Delivery Checklist" (yellow insert) to ensure the machine is field-ready. Use the Operator's Manual for directions.

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more profitable farming."