

INTRODUCTION

Your new MacDon Model 4000 Mower Conditioner is designed to cut, condition and lay in windrows, a wide variety of grasses and hay crops.

Use this manual as your first source of information about the machine. If you follow the instructions given in this manual, your Mower Conditioner will work well for many years.

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

CAREFULLY READ ALL THE MATERIAL PROVIDED BEFORE ATTEMPTING TO UNLOAD, ASSEMBLE, OR USE THE MACHINE.

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 organised.

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 this 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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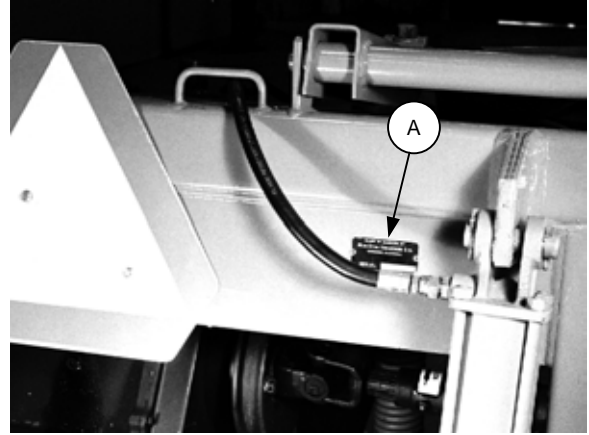
SERIAL NUMBER LOCATION

Record the serial number in the space provided.

Mower Conditioner: _____

Serial number plate (A) is located on the back of the drives frame.

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



SERIAL PLATE LOCATION

SAFETY

SAFETY ALERT SYMBOL



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

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:



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



WARNING – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. It is also used to alert against unsafe practices.



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

SAFETY

SAFETY SIGNS

- The safety signs reproduced below appear on the windrower 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:

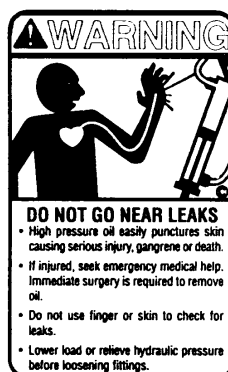
1. Be sure the installation area is clean and dry.
2. Decide on the exact location before you remove the decal backing paper.
3. Remove the smaller portion of the split backing paper.
4. Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.
5. Small air pockets can be smoothed out or pricked with a pin.



DRIVELINES



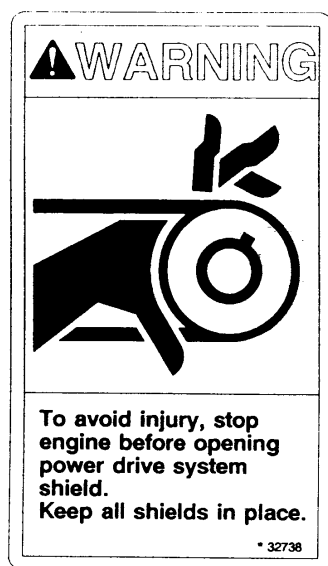
DRIVELINE
(INNER SHAFT)



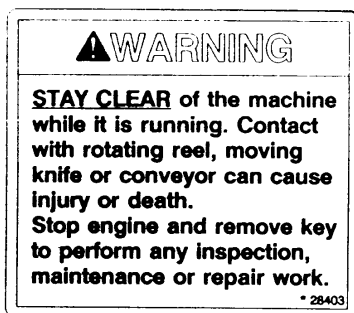
DRIVES FRAME



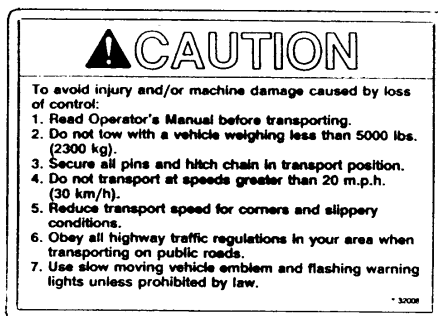
DRIVES FRAME NEAR
LEFT WHEEL SUPPORT



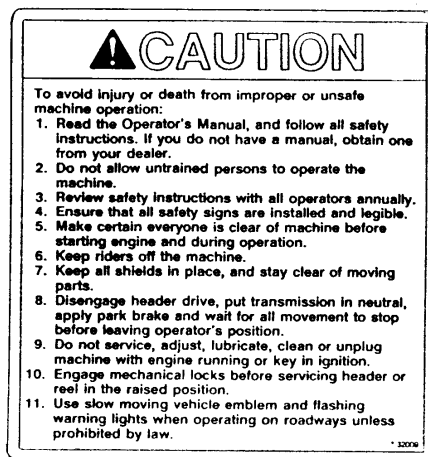
DRIVE SHIELDS



R/H HEADER END FRAME



DRIVES FRAME



DRIVES FRAME

SAFETY

GENERAL SAFETY



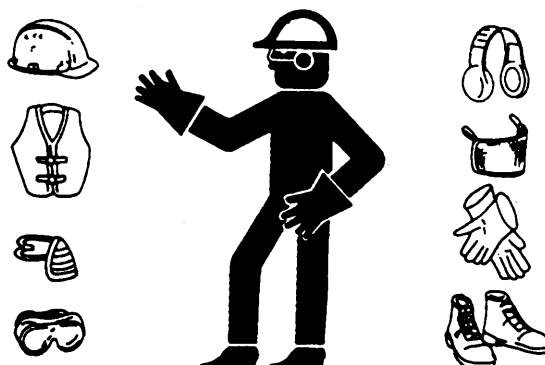
The following are general farm safety precautions that should be part of your operating procedure for all types of machinery.

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.

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 earmuffs (A) or earplugs (B) protects against objectionable or loud noises.



PROTECT YOURSELF



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.

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



BE PREPARED FOR EMERGENCIES

SAFETY

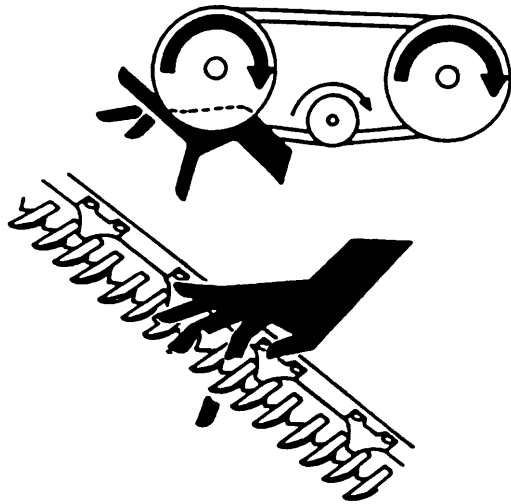


GENERAL SAFETY (continued)

6. Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
7. 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.
8. Keep all shields in place. Never alter or remove safety equipment. Make sure driveline guards can rotate independently of the shaft and can telescope freely.
9. Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.
10. Do not modify the machine. Unauthorized modifications may impair the function and/or safety and affect machine life.
11. 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.
12. 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.
13. Use adequate light for the job at hand.
14. 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.
15. Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
16. 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

DIMENSIONS

Overall Width:	
Transport Position	147.5 in. (3750 mm)
Field Position	167.0 in. (4243 mm)
Overall Length:	
Transport Position	159.8 in. (4059 mm)
Field Position	166.8 in. (4238 mm)
Overall Height:	
Transport Position	59.5 in. (1510 mm)
Field Position	42.6 in. (1083 mm)
Weight	3318 lbs. (1505 kg)

9 FT. MOWER CONDITIONER

CUTTERBAR

Cutterbar Width	111 in. (2819 mm)
Cutting Height (on skids) at 9° guard angle	1 to 4 in. (25 to 100 mm)
Guard Angle (adjustable)	6° to 12° below horizontal

HEADER

Header Flotation	-2.5 to +6.7 in. (-64 to +170 mm)
Maximum Header Lift	21.5 in. (545 mm) to guard tip

KNIFE

Drive Type	Belt driven wobble box (enclosed oil bath)
Speed	1620 strokes or 810 cycles per minute
Stroke	3 in. (76 mm)
Sections	Over-serrated, low shoulder

REEL

Drive Type	Belt primary to chain final
Reel Type	5 bats (4 or 6 bats optional), replaceable steel pick-up tines, cam action, polymer tine tube bearings
Diameter	42.5 in. (1080 mm)
Tine Tip (Peripheral) Speed	6.6, 7.0, 7.5 or 7.9 mph (10.6, 11.3, 12.0 or 12.7 km/h)
Rotational Speed	53, 56, 60 or 63 rpm
Length	104.3 in. (2650 mm)

SPECIFICATIONS

CONDITIONER ROLLS

Drive Type	Gear driven through telescoping u-joints
Roll Type	Helical intermeshing fabric reinforced rubber Or Helical intermeshing steel
Roll Diameter	Rubber: 9.5 in (242 mm) Steel: 10.0 in (254 mm)
Roll Length	105.8 in (2687 mm)
Roll Speed	729 rpm

WHEELS

Tread Width	100 in (2540 mm)
Tires	9.5L – 14 I1 Rib Implement
Tire Pressure	20 psi (138 kPa)

MATERIAL DISCHARGE

Minimum Width	33.3 in (845 mm)
Maximum Width	84.9 in (2156 mm) (wider in heavy crop)
Number of Width Settings	7

OPERATING SPEED

Range	up to 8 mph (13 Km/h)
Recommended Speed for Most Conditions	5 mph (8 Km/h)

TRACTOR REQUIREMENTS

Minimum Power	35 hp (26 kW)
Minimum Weight	5000 lbs. (2268 kg)
PTO	540 rpm with ASAE Standard location
Drawbar	Clevis or straight, ASAE Standard hitch location
Hydraulics:	
Type	Two double acting remote circuits
Minimum Pressure	1350 psi (9300 kPa)

(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 throughout this manual. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

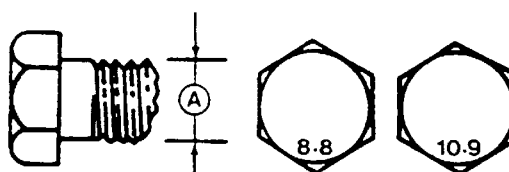
ENGLISH TORQUE SPECIFICATION

Bolt Dia. "A"	NC Bolt Torque*			
	SAE 5		SAE 8	
	N·m	[lb-ft]	N·m	[lb-ft]
1/4"	12	[9]	15	[11]
5/16"	24	[18]	34	[25]
3/8"	43	[32]	56	[41]
7/16"	68	[50]	95	[70]
1/2"	102	[75]	142	[105]
9/16"	149	[110]	202	[149]
5/8"	203	[150]	271	[200]
3/4"	359	[265]	495	[365]
7/8"	569	[420]	813	[600]
1"	867	[640]	1205	[890]



METRIC TORQUE SPECIFICATIONS

Bolt Dia. "A"	Bolt Torque*			
	8.8		10.9	
	N·m	[lb-ft]	N·m	[lb-ft]
M3	0.5	[.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. Do not grease or oil bolts or capscrews unless 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 HYDRAULIC O-RING FITTINGS*

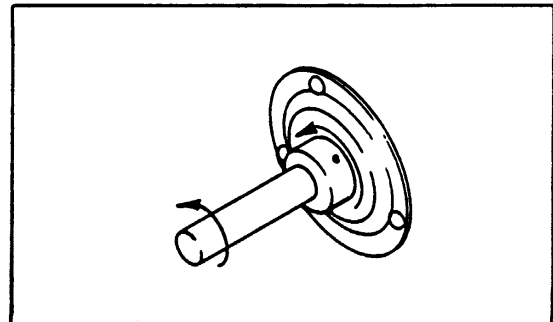
1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back the lock nut off until washer bottoms out at top of groove.
3. Hand tighten fitting until back up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.
4. Position angle fittings by unscrewing 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.

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

Thread Size (in.)	Nut Size Across Flats (in.)	Torque Value*		Recommended Turns 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
1-1/16	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

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 setscrew 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

OPERATION

YOUR RESPONSIBILITIES AS AN OWNER/OPERATOR

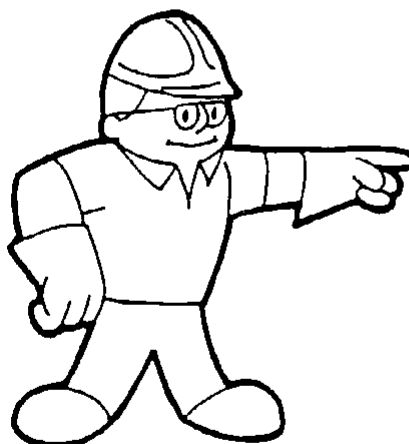


CAUTION:

1. It is your responsibility to read and understand this manual completely before operating the windrower. Contact your dealer if an instruction is not clear to you.
2. Follow all safety messages in the manual and on safety signs on the machine.
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 windrower, 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 windrower by reading the Operator's Manual and safety signs before attempting operation.

OPERATION

PREPARING THE TRACTOR

1. Select proper tractor size. The minimum power required is 35 hp (26 kw). Also, minimum tractor weight is 5000 lbs. (2268 kg) and minimum hydraulic pressure required is 1350 psi (9300 kPa).
2. Adjust tractor drawbar to meet ASAE Standard specifications as listed below. An improperly located drawbar may damage the universal joints of the implement driveline, and/or affect header flotation and guard angle.

Be sure the following specifications are met:

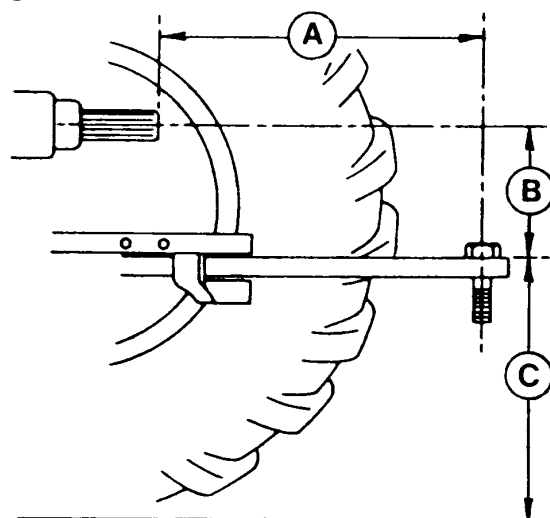
- (A) 14 in. (356 mm) for 540 rpm
- (B) 6 to 12 in. (152 to 305 mm) with 8 in. (203 mm) recommended.
- (C) 13 to 17 in. (330 to 432 mm) from ground with 16 in. (406 mm) recommended.

NOTE: An offset drawbar (D) can be turned over if required to meet specifications (B) and (C).

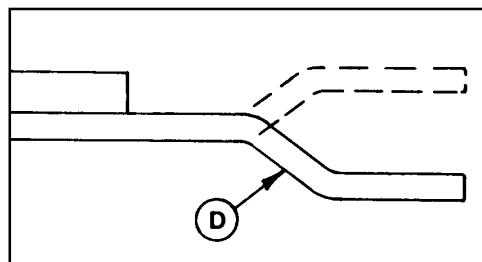
3. Secure the drawbar so the hitch pinhole is directly below the driveline.

NOTE: If the tractor has a 3-point hitch, raise the lower links as high as possible, to prevent damage.

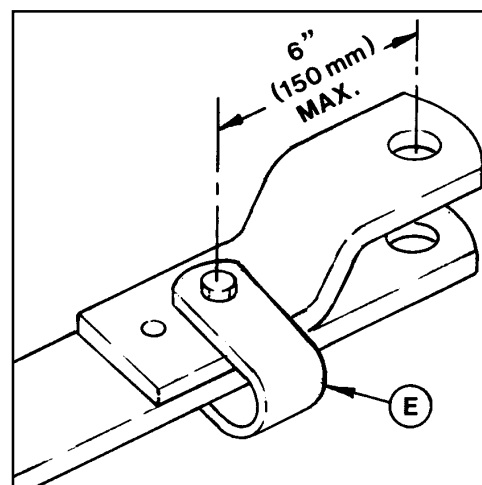
4. Use 540 rpm PTO speed only.
5. Attach support (E) for hitch chain to suitable location on tractor drawbar, maximum 6 in. (150 mm) from hitch pinhole.
6. Tractor must be equipped with a seven terminal electrical outlet (F) to supply power to the mower conditioner warning lights.



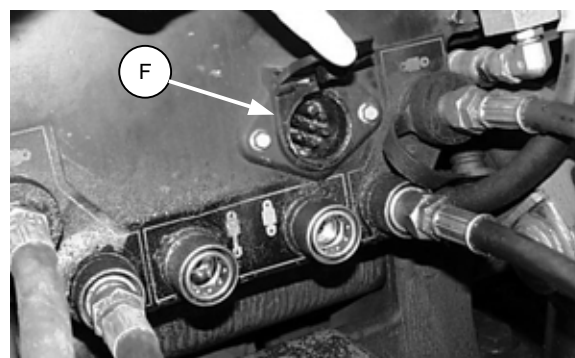
STANDARD DRAWBAR SPECIFICATIONS



OFFSET TRACTOR DRAWBAR



ATTACH SUPPORT FOR HITCH CHAIN



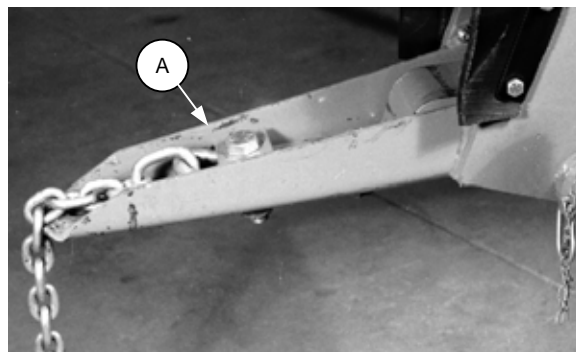
SEVEN TERMINAL ELECTRICAL OUTLET

OPERATION

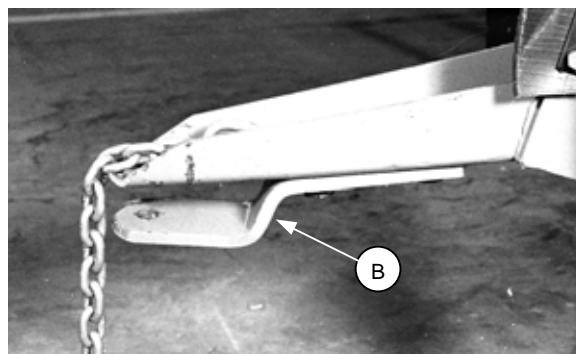
PREPARING THE MOWER CONDITIONER

1. Use correct hitch type:
For tractors with clevis type drawbar, use hitch as shown at (A).

For tractors with straight drawbar, re-position bar (B) to give clevis type hitch.



HITCH CONFIGURATION FOR TRACTORS
WITH CLEVIS TYPE DRAWBAR



HITCH CONFIGURATION FOR TRACTORS
WITH STRAIGHT DRAWBAR

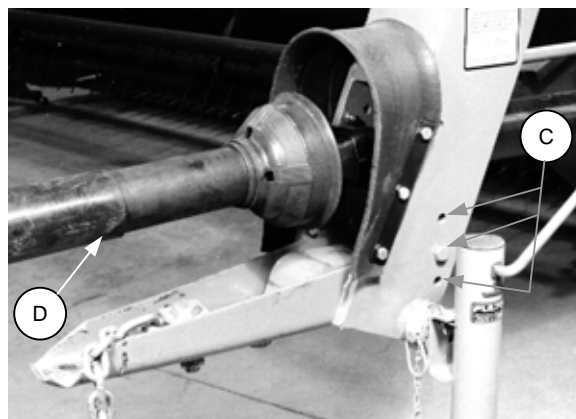
2. With the tractor drawbar adjusted to the recommendations listed under "Preparing the Tractor", use the hanger bearing adjustment (C) so that the implement drive line (D) is as near level as possible going to the tractor.

IMPORTANT: The telescoping implement driveline (D) should slide under hand pressure. Grease if required.

3. Check the tires and inflate if necessary.
Recommended pressure is 20 psi (138 kPa).



CAUTION: When inflating tires, use a clip-on chuck and extension hose long enough to allow you stand to one side and not facing the tire.



ADJUST DRIVELINE HANGER BEARING

4. Check for proper assembly and adjustment and make sure that all bolts are tightened securely.
5. Check the tension of both belts and adjust if required. Check the over-running clutch for proper spring lengths. See Maintenance/Service section.
6. Lubricate the machine completely and check the oil levels of the main gearbox (two places) and the wobble box. Check that breathers have been installed in boxes. See Maintenance/Service section.
7. Install quick coupler tips, matching the tractor to be used, on the hose ends.

OPERATION

ATTACHING MOWER CONDITIONER TO TRACTOR



CAUTION: Shut off tractor, engage parking brake and remove key before working around hitch.



CAUTION: Never attach mower hitch to tractor rear axle or three-point hitch arms.

1. Attach mower conditioner to tractor drawbar with a 3/4 to 1 inch diameter hitch pin and secure with a spring locking pin or other suitable fastener.

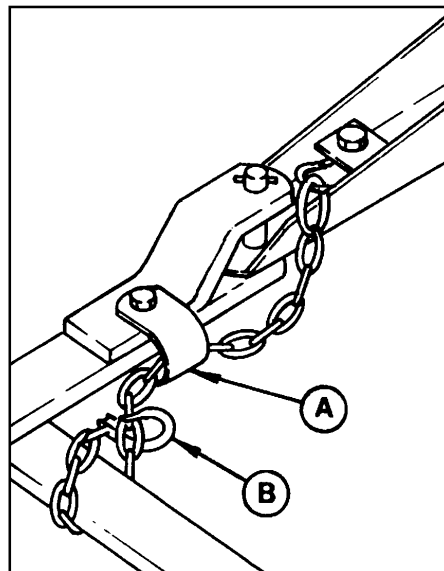


CAUTION: To prevent damage to driveline guards, use a drawbar hitch pin with a low head.

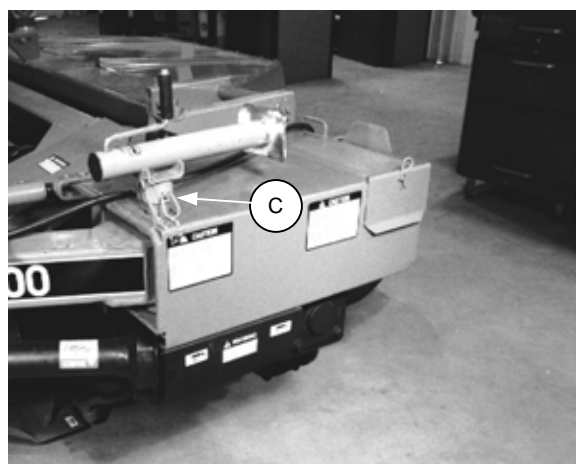
2. Route hitch chain from mower conditioner through chain support (A), around drawbar support and lock hook (B) on chain.

IMPORTANT: Adjust chain length to remove all slack except what is needed for turns.

3. Remove weight from jack. Pull pin securing jack and move to storage position (C) on drives frame.

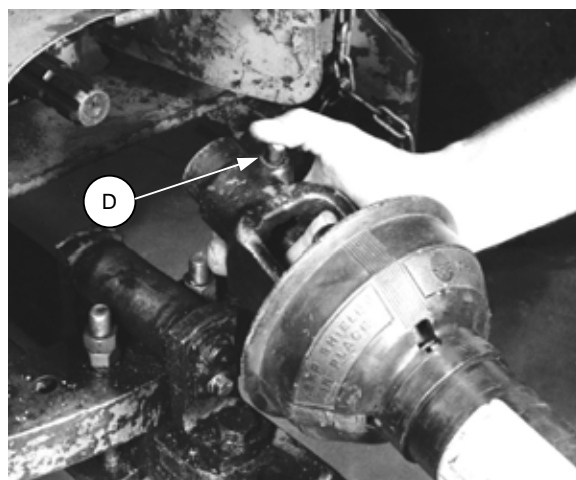


INSTALL HITCH PIN AND CHAIN



JACK STORAGE

4. Push button (D) on telescoping driveline yoke and slide yoke onto tractor PTO shaft. Be sure yoke locks in position on shaft.
5. Connect hydraulic hoses to the remote cylinder control valves on tractor.
6. Connect mower conditioner wiring harness plug to outlet on tractor.



ATTACH DRIVELINE TO PTO

OPERATION

DETACHING MOWER CONDITIONER FROM TRACTOR



CAUTION: To prevent accidental movement of tractor, shut off engine, engage parking brake, and remove key.

To maintain stability, always lower the machine completely. Block mower conditioner wheels before detaching from tractor.

Park machine on flat level surface.

Move remote cylinder control valve lever back and forth to relieve stored hydraulic pressure.

1. Pull pin securing jack and move to working position (A).
2. Lower jack to take weight off tractor drawbar.
3. Push button on telescoping driveline yoke to unlock grip on PTO shaft. Remove driveline from PTO and store in support (B).
4. Disconnect hydraulic hoses and electrical harness. Store so ends are off ground.

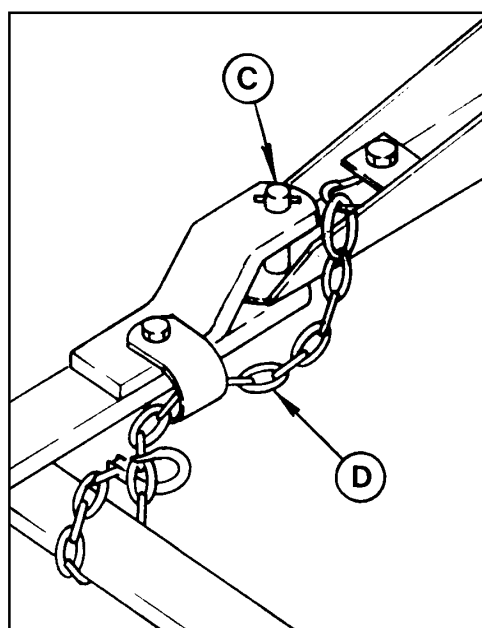


MOVE JACK TO WORKING POSITION



STORE DRIVELINE

5. Remove hitch pin (C) and unhook chain (D) from tractor. Wrap chain around mower conditioner hitch for storage.
6. Slowly drive tractor away from mower conditioner.



REMOVE HITCH PIN AND CHAIN

OPERATION

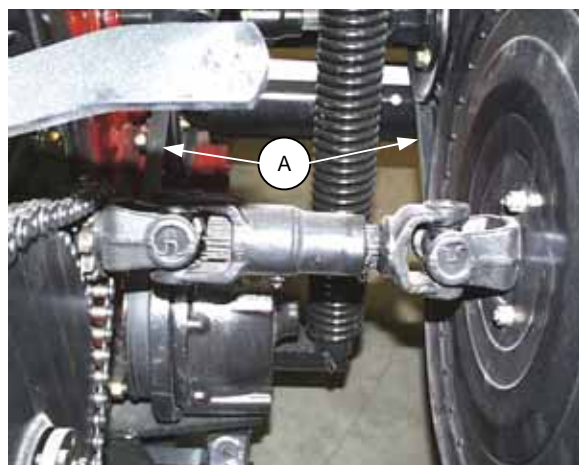
BREAK-IN PERIOD

1. After attaching mower conditioner to tractor for the first time, operate the machine slowly for 5 minutes, watching and listening FROM THE TRACTOR SEAT for binding or interfering parts.



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

2. Check both belts (A) after 5 hours operation for initial stretch. Tighten as necessary. (See Maintenance/Service section). Continue to check the belts periodically for the first 50 hours.



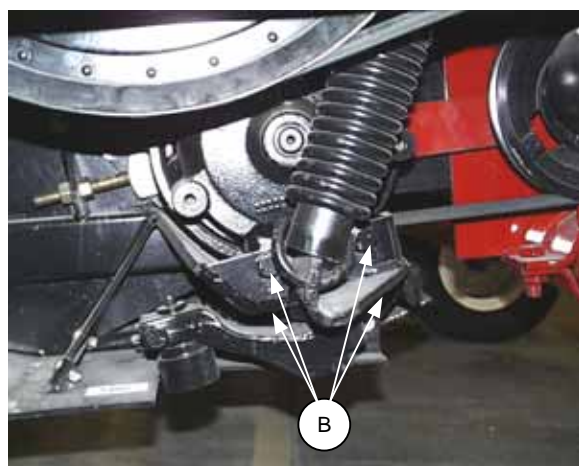
CHECK BELT TENSION

3. Check hardware after 5 hours operation. Tighten as necessary. See Specifications section for recommended torques.

4. Check 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)

5. 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.



CHECK WOBBLE BOX MOUNTING BOLTS

6. Check reel drive chain (C) after 10 hours operation for proper tension. See Maintenance/Service section.

7. Change wobble box lubricant after 50 hours operation and every 1000 hours (or 3 years) thereafter. See Maintenance/Service section.

8. Until you become familiar with the sound and feel of your new mower conditioner, be extra alert and attentive.



CHECK REEL DRIVE CHAIN TENSION

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 mower conditioner 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. Adjust tension on drive belts. See Maintenance/Service section.**
- 7. Perform all Annual maintenance. See Maintenance/Service section.**

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 windrower to be sure no one is under, on or close to it.
2. Remove foreign objects from the machine and surrounding area.
3. Wear close fitting clothing and protective shoes with slip resistant soles.

As well, carry with you any protective clothing and personal safety devices that **COULD** be necessary through the day. Don't take chances.

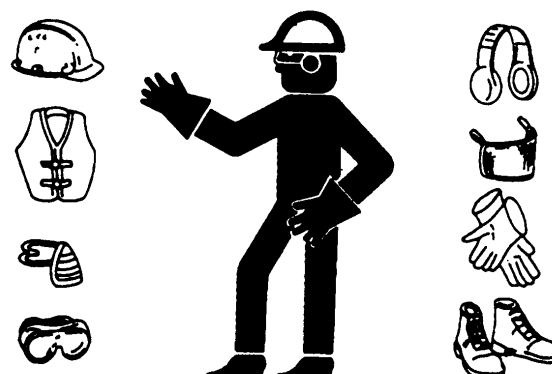
You may need:

- 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 earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.
5. Check the machine for leaks or any parts that are missing, broken, or not working correctly.

NOTE: Use proper procedure when searching for pressurized fluid leaks. See "Hydraulics" in Maintenance/Service section.

6. Be sure tractor and windrower are properly attached, all controls are in neutral and tractor brake is engaged.
7. Clean all lights and reflective surfaces on the machine. Check lights for proper operation.
8. Perform all Daily maintenance. See Maintenance/Service section.



PROTECT YOURSELF



PROTECT AGAINST NOISE

OPERATION

OPERATE CORRECTLY



CAUTION:

1. Follow all safety and operational instructions given in your tractor Operator's Manual. If you do not have a tractor manual, get one from your dealer and read it thoroughly.
2. Never attempt to start the tractor engine or operate the mower conditioner except from the tractor seat.
3. Check the operation of all controls in a safe clear area before starting work.
4. Do not allow riders on tractor or mower conditioner.
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. If mowing ditch banks, use extreme caution. If the mower conditioner hits an obstruction, the front of the tractor will usually swerve towards the ditch.
9. When working on inclines, travel uphill or downhill when possible. Be sure to keep tractor transmission in gear when travelling downhill.
10. Never attempt to get on or off a moving tractor.
11. Do not get off the tractor while the mower conditioner is in operation.
12. Stop tractor engine and remove key before adjusting or removing plugged material from the machine. A child or even a pet could engage the drive.
13. Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure:
 - engage tractor brake
 - disengage PTO
 - turn off engine and remove key
 - wait for all movement to stop
 - dismount and engage cylinder stop before inspecting raised machine.
14. Operate only in daylight or good artificial light.

IMPORTANT: Correct operation reduces crop loss and allows cutting of more acres. The length of service you receive from your mower conditioner depends upon timely maintenance and proper adjustments. Satisfactory function of this machine in all crop conditions requires making proper adjustments to suit various conditions.

OPERATION

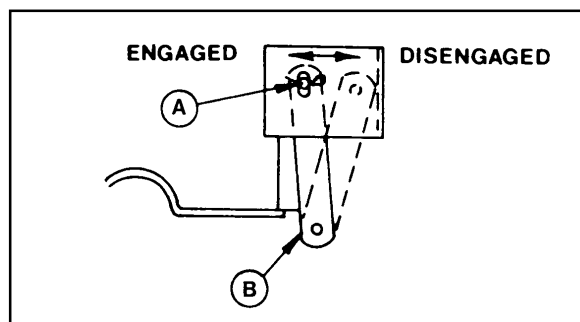
LIFT CYLINDER STOP (RAISING AND LOWERING MOWER CONDITIONER)



WARNING: To avoid bodily injury or death from fall of raised machine, always engage lift cylinder stop before going under mower conditioner for any reason.

To engage cylinder stops:

1. Raise machine to maximum height by activating remote cylinder control valve in tractor.
2. Remove pin (A) and move support (B) forward, aligning hole in support with slot in frame lug.
3. Replace pin (A) to secure the support in the engaged position.
4. Lower machine slightly so support takes some weight.



LIFT CYLINDER STOP

To lower mower conditioner:

1. Raise machine to maximum height to take weight off support (B).
2. Remove pin (A) and move support back to disengaged position.
3. Replace pin (A) to secure the support in disengaged position.
4. Lower machine by activating remote cylinder control valve in tractor.

OPERATION

POSITIONING THE HITCH

The mower conditioner hitch can be moved between transport position (A) and field position (B) with the hitch shift cylinder without moving the tractor.

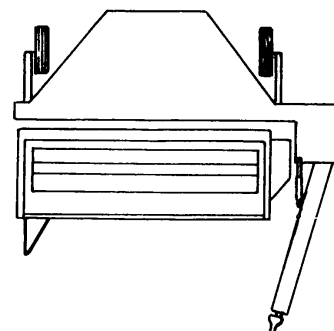
In the field, use a position that allows cutting a full machine width while maintaining clearance between the right tractor tire and the standing material.

IMPORTANT: To avoid machine damage with machine in field position and tractor turned sharply right, do not activate hitch shift cylinder. Tractor tire can contact lean bar.

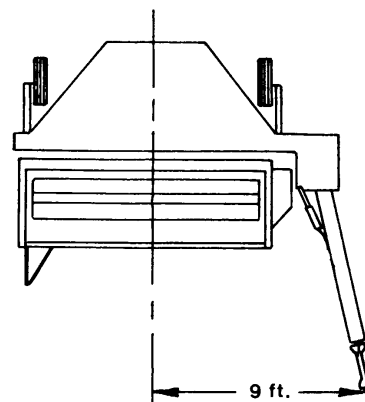


WARNING: Before transporting mower conditioner, close hydraulic valve (C) to prevent inadvertent cylinder extension that would cause machine to swing out unexpectedly. Closed position is with handle at 90° to oil flow direction as shown. Open position is with handle in line with oil flow direction.

(A)
TRANSPORT
POSITION



(B)
FIELD
POSITION



HITCH CYLINDER HYDRAULIC VALVE

OPERATION

ENGAGING THE PTO



DANGER: Be sure all bystanders are clear of the machine before engaging the PTO. Never leave tractor seat with the PTO engaged. Entanglement with rotating driveline will cause serious injury or death.

The PTO should be engaged slowly, just before the mower conditioner is moved up to the standing crop.

Be sure tractor PTO is running at 540 rpm before starting to cut.

Disengage the PTO when not operating the mower conditioner.

OPENING THE FIELD



CAUTION: Check the work area before starting operation. Look for ditches, potholes, drop-offs, steep slopes, stumps, standing water etc. Remove any debris or foreign object that may be picked up and thrown out by the mower conditioner.

If the operator is in familiar territory, the first swath may be cut counter-clockwise (A) around the outside. This allows a full cut for the back swath.

However, if there may be hidden obstacles or holes along the field border it is better to cut the first few swaths clockwise (B), then cut the back swath counter-clockwise after any obstacles have been exposed.

CUTTING WIDTH

The left side of the machine should be run close to the edge of the standing crop, taking a full cut.

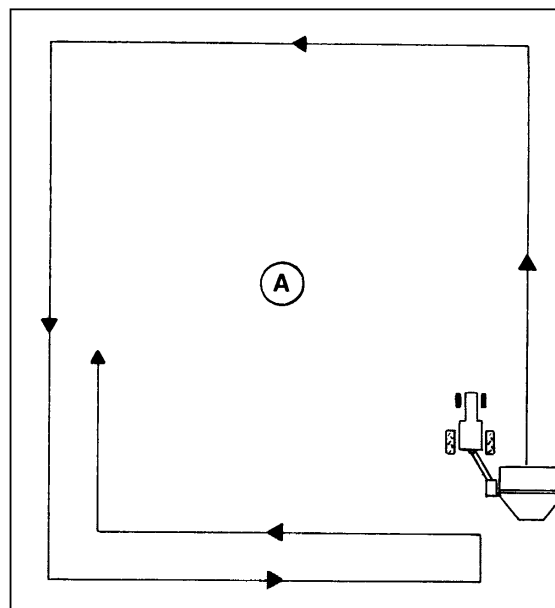
CORNERING

Reduce speed, turn tractor sharply right as the cutterbar comes to the edge of the standing crop.

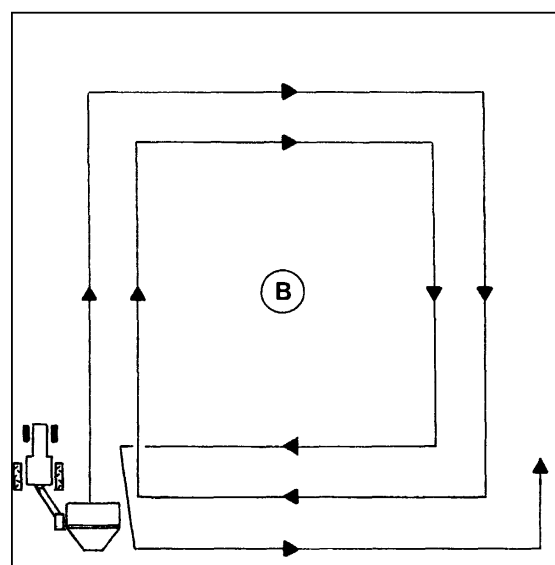
Use the right wheel brake on the tractor to push the machine back, then straighten out the tractor along the new edge of crop. Do not raise mower to make square corners.



CLEAR THE AREA BEFORE ENGAGING PTO



OPENING THE FIELD - A



OPENING THE FIELD - B

OPERATION

OPERATING VARIABLES

The eight variables covered here will affect the operation of your mower conditioner. You will quickly become adept at adjusting the machine to give you the desired results.

1. GROUND SPEED



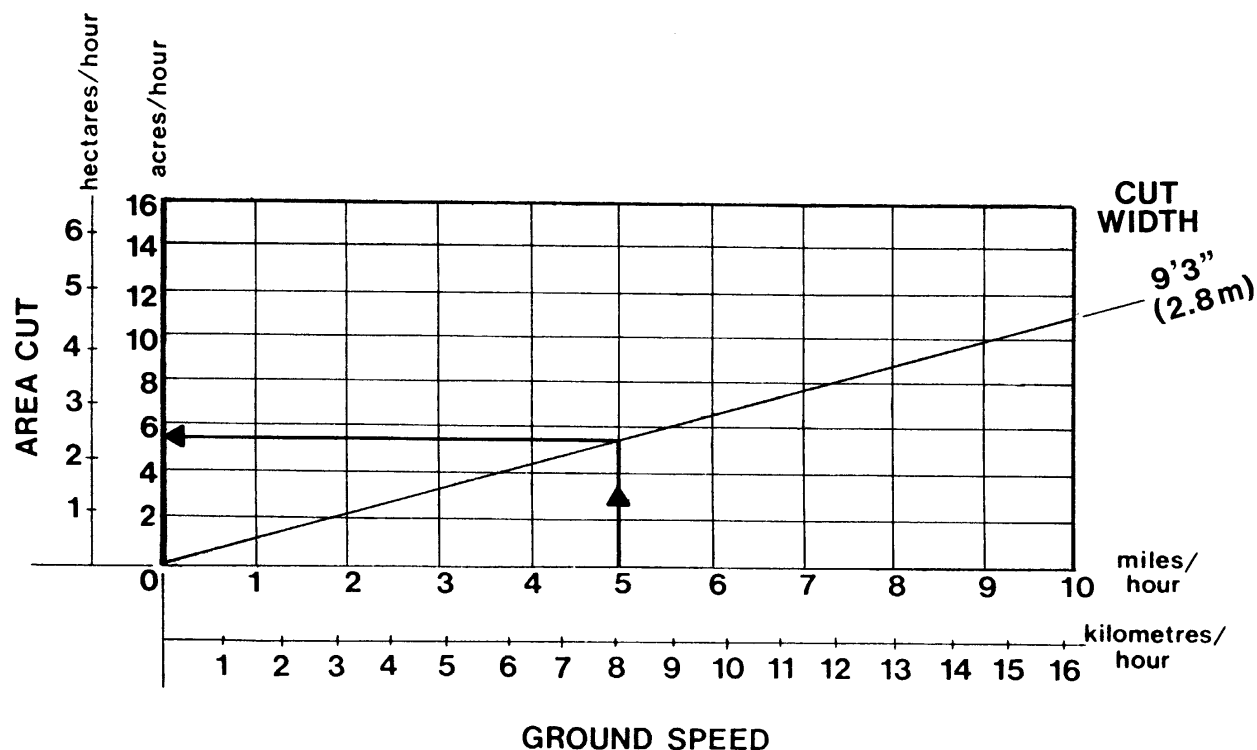
CAUTION: Reduce speed when turning, crossing slopes, or when travelling over rough ground.

Tractor ground speed should not exceed 8 mph (13 km/h). For most crop conditions a ground speed of 5 mph (8 km/h) has been found satisfactory.

Choose a ground speed that allows the knife to cut the crop smoothly and evenly.

The chart below indicates the relationship between ground speed and area cut for the 9 ft. mower conditioner.

Example: At ground speed of 5 mph (8 km/h) with a 9 ft. mower conditioner, the area cut would be approximately 5 1/2 acres (2.3 hectares) per hour.



OPERATION

OPERATING VARIABLES (continued)

2. REEL SPEED

For best feeding of the crop into the conditioning rolls, reel speed should be just faster than ground speed. This gently sweeps material across knife into the rolls.

The reel speed is factory set at 63 rpm. See chart below for reel speed options.

rpm	tine tip speed mph (km/h)	position of:	
		yoke plate (B)	shim (F)
53	6.6 (10.6)	inside	inside
56	7.0 (11.3)	inside	outside
60	7.5 (12.0)	outside	inside
63	7.9 (12.7)	outside	outside

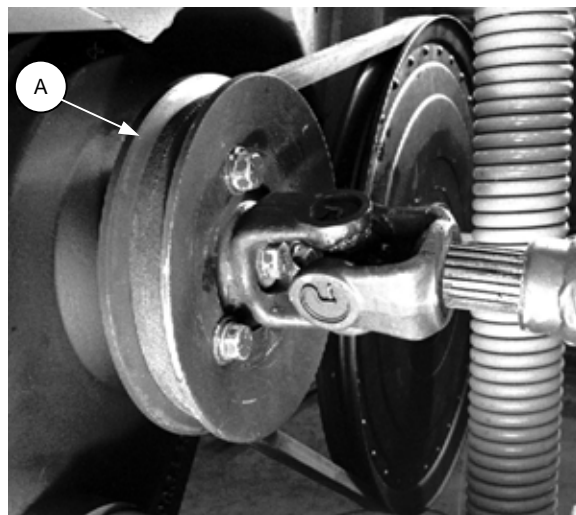
In down and tangled crops, a faster reel speed will result in a more even stubble height.

To change reel speed:

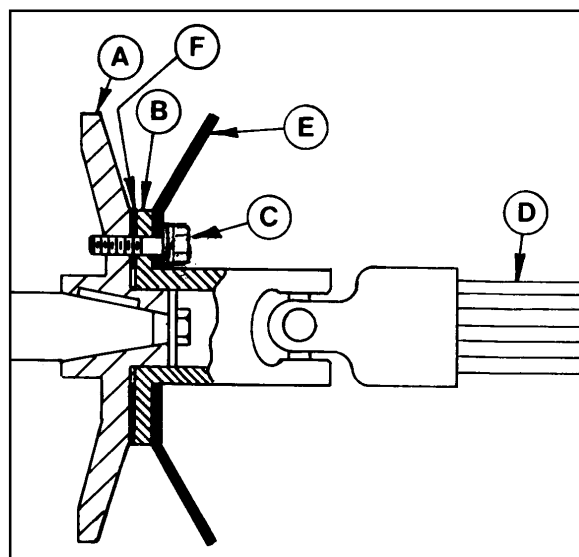
- Loosen reel drive belt enough that it can be removed from drive pulley (A) at main gearbox. See "Reel Drive Belt" in "Maintenance/Service" section for tension adjustment procedure. Do not pry belt over pulley.
- Scratch an alignment mark on pulley half (A) and yoke plate (B) to maintain roll timing on re-assembly. Do not use pulley half (E) for alignment.
- Remove three bolts (C).
- Collapse the driveline at the telescoping shaft (D) and remove pulley half (E).

NOTE: Shim (F) is open one side and can be removed once bolts are removed.

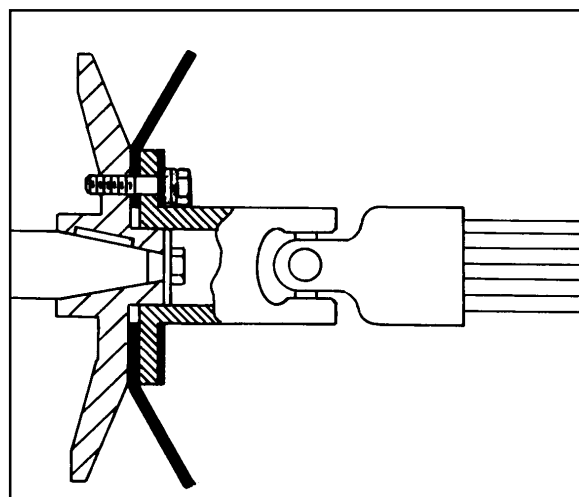
- Re-assemble for desired reel speed, positioning yoke plate (B) and shim (F) inside or outside pulley halves as indicated in chart above. Remember to align marks before tightening bolts.
- Replace belt and adjust belt tension.



REEL DRIVE PULLEY ASSEMBLY



53 RPM REEL SPEED



63 RPM REEL SPEED

OPERATION

OPERATING VARIABLES (continued)

3. REEL POSITION

Reel position has been found to be a critical factor in achieving good results in adverse conditions. The reel position is factory set for average straight standing crop. It can be adjusted both vertically and horizontally (fore-aft) for different crop conditions.

See the chart below for recommended reel position in unusual crop conditions.

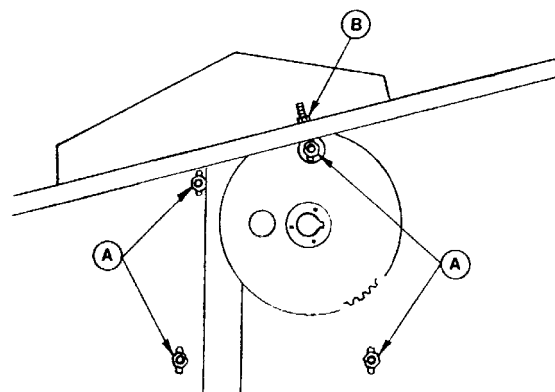
REEL POSITION CHART	
Unusual Crop Condition	Reel Position
Crop down or lodged.	Forward and down (also increase reel speed).
Wet or dead material collects on cutterbar, plugging knife.	Back and down (close to guards).
Short crop.	Back.
Thick stemmed or heavy standing crop.	Up and forward.

To adjust reel horizontal (fore-aft) position:

- Loosen nuts (A), four on L/H side, three on R/H side.
- Move reel to desired position.

NOTE: The reel slides in angled slots which lower the reel as it is moved forward, and raise the reel as it is moved back.

- Tighten nuts (A).

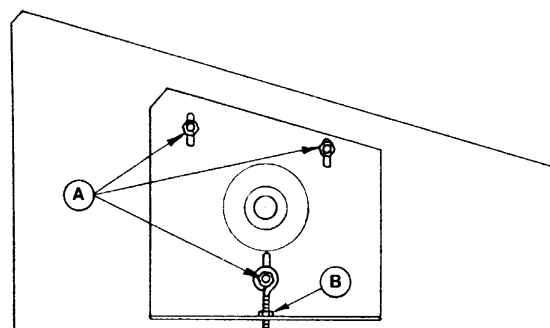


REEL POSITION ADJUSTMENTS - LEFT SIDE

To adjust reel vertical position:

- Loosen nuts (A), four on L/H side, three on R/H side.
- Adjust reel up or down using locknuts (B) on eyebolts, both sides.
- Tighten nuts (A), total 7.

NOTE: Chain tension is not affected by reel position adjustments.



REEL POSITION ADJUSTMENTS - RIGHT SIDE

OPERATION

OPERATING VARIABLES (continued)

3. REEL POSITION (continued)

After adjusting reel position:

- Check that the reel rotates freely. Tines must not contact feed pan, header beam, guards or ground.
 - Check that the reel is adjusted to the same position on both sides. Reel tube should appear parallel to header beam from both side and front.
 - Check header float and adjust if required. See "Header Flotation" in this section.
-

4. CUTTING HEIGHT

Control cutting height with skid plates, not with the hydraulic cylinder. Having the header "ride" on the skid plates allows the three-point float linkage to float header over obstacles and follow ground contours, rather than supporting the header with the cylinder.

NOTE: Lowering the skid plates raises the cutting height. This may be desirable in stony conditions, to reduce damage to cutting components. Also, a longer stubble length helps material dry faster.

To adjust cutting height:

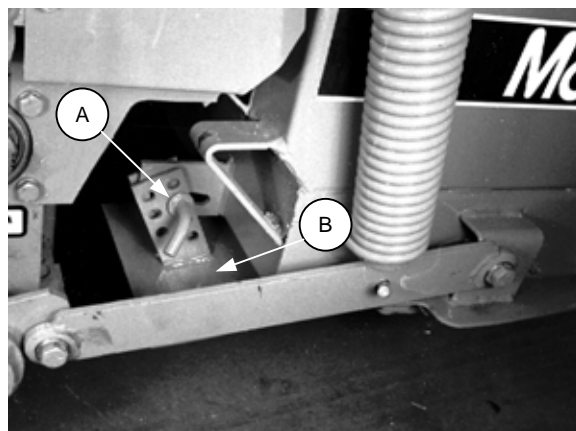


WARNING: To avoid bodily injury or death from unexpected start-up or fall of raised machine, stop engine, remove key and engage lift cylinder stop before going under machine to adjust skid plates or for any reason.

- Remove pin (A) at each skid plate.
- Raise or lower skid plate (B) to desired position.
- Replace pin (A).

After adjusting cutting height:

- Check that skid plates are adjusted to the same position.
- Check header float and adjust if required. See "Header Flotation" in this section.



CUTTING HEIGHT ADJUSTMENT



WARNING: Stones or other foreign objects carried into the conditioner rolls can be ejected with force in ANY direction. Keep everyone several hundred feet away from your operation and be sure you are adequately protected. See "General Safety" in Safety section for recommended protective wear.

OPERATION

OPERATING VARIABLES (continued)

5. CUTTERBAR ANGLE

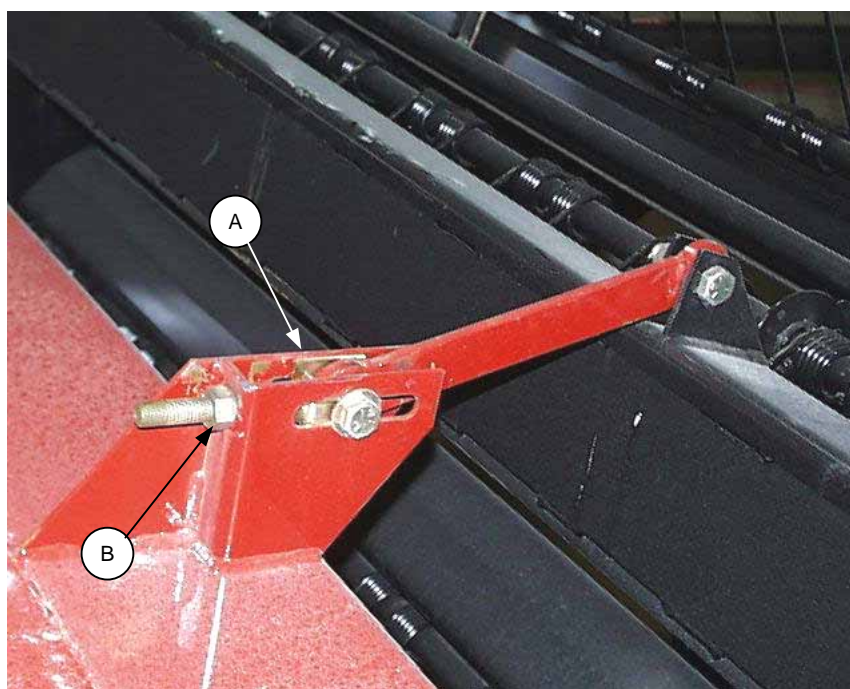
Cutterbar angle can be varied from 6° to 12° below horizontal. Choose an angle that maximizes performance for your crop and field conditions. A flatter guard angle provides better clearance in stony conditions while a steeper guard angle is required in down crops for better lifting action.

To adjust cutterbar angle:

- a. Loosen nut (A).
- b. To decrease (flatten) cutterbar angle, turn nut (B) clockwise.
- c. To increase (steepen) cutterbar angle, turn nut (B) counter-clockwise.
- d. Tighten nut (A) to 160 ft.lbs. (210 N.m)

After adjusting cutterbar angle:

- a. Check cutting height and adjust if required. See "Cutting Height" in this section.
- b. Check header float and adjust if required. See "Header Flotation" in this section.



CUTTERBAR ANGLE ADJUSTMENT

OPERATION

OPERATING VARIABLES (continued)

6. HEADER FLOTATION

Header flotation springs are normally set so 70 lbs. force (311 N) is required to lift each end of the header just off the ground.

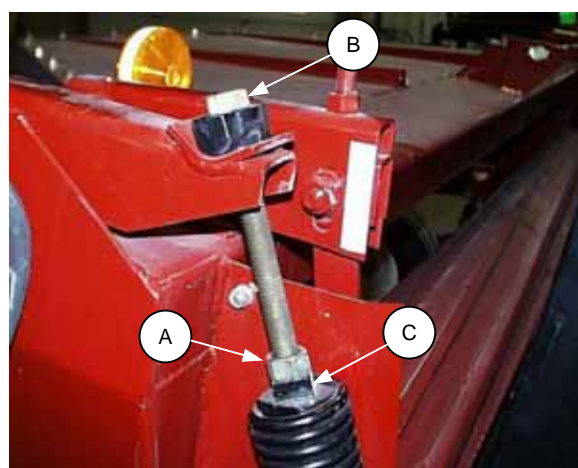
In rough or stony conditions, it may be desirable to change setting to 35-50 lbs. (156-222 N) to protect cutting components.

NOTE: When float setting is light, it may be necessary to use a slower ground speed to avoid excessive bouncing and leaving a ragged cut.

To increase header flotation, which decreases the force required to lift header:

- a. Back jam nut (A) away from spring.
- b. Turn adjuster bolt (B) further into spring to increase flotation.
- c. Tighten jam nut (A) against spring insert (C) to secure the setting.

IMPORTANT: Float setting (or lifting force) must be equal on both springs. Weight difference between left and right ends requires different spring lengths to achieve equal float at both ends. Note that other operating variable adjustments may affect float setting. Check the float and readjust if necessary after adjusting reel position, cutting height, or cutterbar angle. Also, if using a tractor with drawbar height different than 16 inches (406 mm), flotation will be affected. Adjust as required.



HEADER FLOTATION ADJUSTMENT

OPERATION

OPERATING VARIABLES (continued)

7. ROLL GAP



WARNING: To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder stop before going under machine to examine roll gap or for any other reason.

Rubber rolls "condition" the crop by cracking the stems, while steel rolls crimp the stem in several places. Both methods allow moisture release for quicker drying. The degree to which the crop is conditioned as it passes through the rolls is controlled by roll gap (A), measured from lug to groove (or bar to roll tube). The gap is factory set for normal operation at 1/16 inch (1.5 mm) for rubber rolls and 3/8 inch (10 mm) for steel rolls.

Correct conditioning of alfalfa, clover and other legumes is usually indicated when 90% of the stems show cracking, but no more than 5% of the leaves are damaged. Use only enough roll gap to achieve this result.

A slightly larger gap may be desirable in thick stemmed cane-type crops; however, too large a gap will cause feeding problems.

Grass type crops may require less gap for proper feeding.

To adjust roll gap:

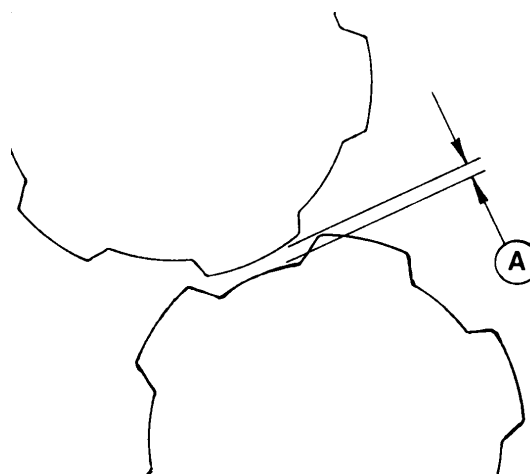
- Loosen nut (B) at both roll support arms.

NOTE: Use roll gap decal (D) to gauge your adjustment. The decal marks roll gap in 1/8 inch (3 mm) increments. The bottom edge of inner channel (E) is the gauge indicator.

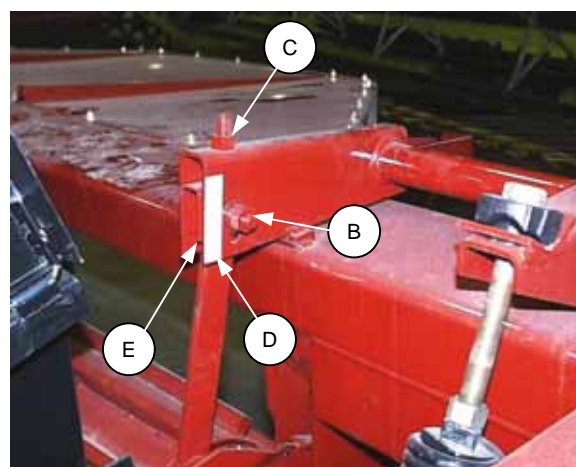
- To increase roll gap, turn nut (C) clockwise.
- To decrease roll gap, turn nut (C) counter-clockwise.
- Tighten nut (B) to 160 ft.lbs. (210 N.m) at both arms.

IMPORTANT: Gap settings must be equal at both ends of roll. To avoid excessive crushing, do not operate rubber rolls at less than 1/32 inch (1 mm) gap.

NOTE: Roll tension (the force holding the rolls together) is factory set and non-adjustable.



ROLL GAP (RUBBER ROLLS SHOWN)



ROLL GAP ADJUSTMENT

OPERATION

OPERATING VARIABLES (continued)

8. FORMING SHIELDS



WARNING: Keep hands and feet away from discharge opening. Keep everyone several hundred feet away from your operation. Never direct the discharge toward anyone. Stones or other foreign objects can be ejected with force.

A baffle inside the forming shields controls the degree to which they narrow the discharge of cut material. The decision to lay a full width swath or narrow windrow (or one of the five intermediate widths) should be based on the following factors:

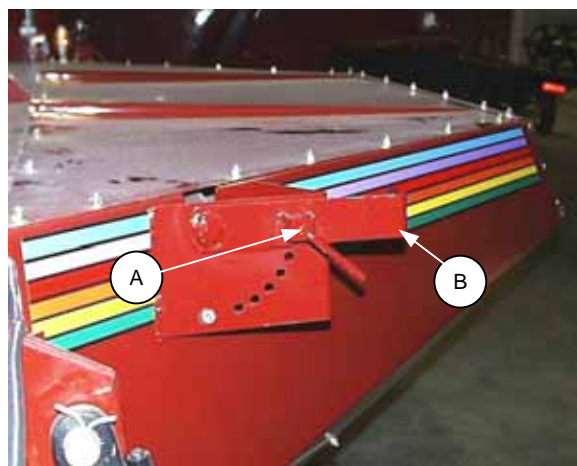
- weather conditions (rain, sun, humidity, wind)
- type and yield of crop
- drying time available
- method of processing (bales, silage, "green-feed")

A wide swath will generally dry faster and more evenly, resulting in less protein loss. Fast drying is especially important in areas where the weather allows only a few days to cut and bale. See "Haying Tips" in this section for more information.

Where weather conditions permit or when drying is not critical, for example, when cutting for silage or "green-feed", a narrower windrow may be preferred for ease of pick-up.

To adjust material discharge width:

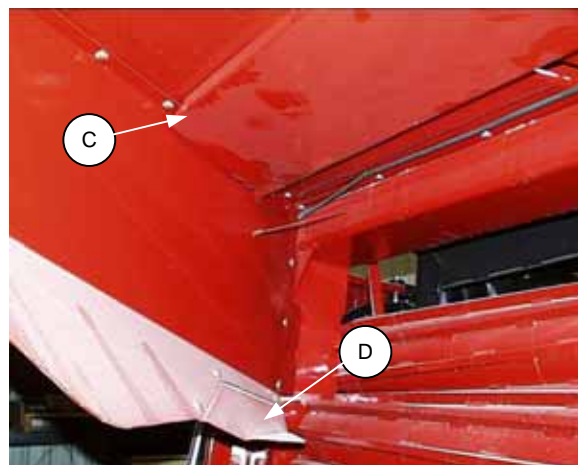
- Pull spring-loaded pin (A) out of adjustment hole.
- Raise or lower handle (B). Handle fully up (as shown) raises baffle (C) completely, producing the narrowest windrow. Handle fully down lowers baffle completely, producing the widest swath. There are five intermediate positions.
- Release pin (A) into desired adjustment hole.



MATERIAL DISCHARGE WIDTH
ADJUSTMENT

Light crop deflectors

Deflectors (D) are only required when windrowing light crop to aid in proper windrow formation. In relatively heavy crops, the deflectors may cause bunching at the sides of the windrow.



BAFFLE (C) CONTROLS DISCHARGE WIDTH /
DEFLECTORS (D) FOR LIGHT CROP

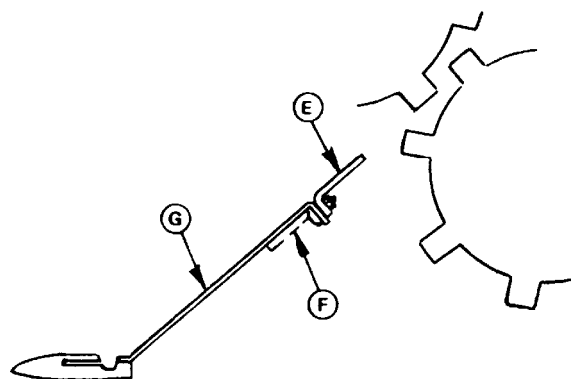
OPERATION

OPERATING VARIABLES

8. FORMING SHIELDS (continued)

Feed Pan Extensions

Extensions should be installed in working position (E) when light crop conditions cause material to fall between feed pan and rolls. Extensions should remain in storage position (F), under feed pan (G) in normal to heavy conditions.



FEED PAN EXTENSIONS FOR LIGHT CROP

HAYING TIPS

There is one certainty when making hay - a quick cure will maintain top quality. It is critical to have the cured hay baled as quickly as possible, for two reasons:

1. Every day that hay lies on the ground, 5% of the protein is lost.
2. The sooner the cut hay is off, the earlier the start for next growth.

Generally, leaving the swath as wide and thin as possible makes for the quickest curing, however there are other factors which affect curing time:

1. TOPSOIL MOISTURE

When the ground is wetter than the hay, moisture from the soil is absorbed by the hay above it. Determine topsoil moisture level before cutting. Use a moisture tester or estimate level:

Over 45% - WET - Soil will be muddy
25 - 45% - DAMP - Walking on soil leaves tracks
Under 25% - DRY - Soil will be dusty on top

When ground is wet due to irrigation, wait until soil moisture drops below 45%. When ground is wet due to frequent rains, cut when weather allows and let the forage lie on wet ground until it dries to the moisture level of the ground. At this point, the cut hay will dry no more until the ground under it dries, so consider moving the windrow to drier ground.

On wet soil, the general rule of "wide and thin" does not apply. A narrower windrow will dry faster than hay left flat on wet ground.

OPERATION

HAYING TIPS (continued)

2. CLIMATE AND TOPOGRAPHY

- a. Try to have as much hay cut as possible by midday, when drying conditions are best.
- b. Fields sloping south get up to 100% more exposure to the sun's heat than do north sloping fields. If you bale and chop, consider baling the south facing fields and chopping those facing north.
- c. When relative humidity is high, the evaporation rate is low and hay dries slower. If there is no wind, saturated air becomes trapped around the swath, further hindering the drying process. Raking or tedding will expose the hay to fresher, less saturated air. Cutting hay perpendicular to the direction of the prevailing winds may also help.

3. SWATH/WINDROW CHARACTERISTICS

See "Operating Variables" in this section. Control the factors listed to produce a windrow or swath with the following characteristics:

- a. High and fluffy for good air flow.
- b. Consistent formation, not bumpy.
- c. Even distribution, not piled in the middle.
- d. Properly conditioned without excessive leaf damage.

4. RUNNING TRACTOR ON PREVIOUSLY CUT SWATH:

This can lengthen drying time by a full day in hay that will not be raked. If practical, set forming shields for a narrower windrow that can be straddled. However, in high-yielding alfalfa, driving on the hay may be unavoidable if a full width swath is necessary.

5. RAKING AND TEDDING

Raking or tedding will speed up drying, however the benefits must be weighed against the additional leaf losses, which will result. When the ground beneath the down hay is dry, raking or tedding is probably not worthwhile.

Big windrows or swaths on damp or wet ground should be turned over when they reach 40-50% moisture. Hay should not be raked or tedded at less than 25% moisture, or excessive yield losses will result.

6. CHEMICAL DRYING AGENTS

Hay drying agents work by removing wax from legume surfaces, enabling water to escape and evaporate faster. However, treated hay lying on wet ground will also absorb ground moisture faster.

Before deciding to use a drying agent, costs and benefits relative to your area should be carefully compared.

OPERATION

UNPLUGGING THE MOWER CONDITIONER



WARNING: Stop tractor engine and remove key before removing plugged material from mower conditioner. A child or even a pet could engage the drive.

If the knife plugs:

1. Stop forward movement of the tractor and stop the PTO.
2. Lift the cutterbar about 12 inches (300 mm).
3. Back up about 3 feet (1 metre) while slowly engaging the PTO.
4. If the plug does not clear; raise machine, shut off engine, remove key and lock tractor brakes.
5. Engage lift cylinder stop.



WARNING: Wear heavy gloves when working around knife.

6. Clean off cutterbar by hand.

If knife plugging persists, see Trouble Shooting section.

If the rolls plug:

1. Stop forward movement of the tractor and stop the PTO.
2. Raise the machine and slowly engage the PTO.

NOTE: Raising the mower conditioner automatically reduces roll tension, to ease plug removal.

3. If plug does not clear: with machine still raised, shut off engine, remove key and lock tractor brakes.
4. Engage lift cylinder stop.



WARNING: Wear heavy gloves when working around knife.

5. Clean off cutterbar and area under reel by hand.
6. Use rocking wrench (A) on right hand end of lower roll to turn rolls forward until plug clears.

NOTE: Wrench is stored in toolbox at left end of main frame.

If roll plugging persists, see Trouble Shooting section.



CLEARING PLUGGED ROLLS

OPERATION

SHUT-DOWN PROCEDURE



CAUTION: Before leaving the tractor seat for any reason:

1. Park on level ground if possible.
2. Lower the mower conditioner fully.
3. Place all controls in NEUTRAL or PARK.
4. Disengage PTO.
5. Engage the park brake.
6. Stop engine and remove key from ignition.
7. Wait for all movement to stop.
8. Lock tractor anti-vandalism covers and closures when leaving the machine unattended.

TRANSPORTING THE MOWER CONDITIONER



CAUTION: Use correct transport procedure as detailed:

1. Shift hitch into transport position and close hydraulic valve at shift cylinder. See "Positioning the Hitch" in this section.
2. Raise the mower conditioner fully and engage lift cylinder stop. See "Lift Cylinder Stop" in this section.
3. Do not tow with a vehicle weighing less than 5000 lbs. (2300 kg).
4. Be sure hitch chain is properly attached to towing vehicle. Provide only enough slack in chain to permit turning. See "Attaching Mower Conditioner to Tractor" in this section.
5. Be sure driveline is properly attached to tractor PTO. See "Attaching Mower Conditioner to Tractor" in this section. If transporting with a truck, remove the front half of the driveline and store the rear half in the driveline support.
6. Check local laws for width regulations and lighting or marking requirements before transporting on roads.
7. Keep Slow Moving Vehicle emblem, reflectors and lights clean and visible.
8. Be aware of roadside obstructions, oncoming traffic and bridges.
9. Travel speed should be such that complete control and machine stability are maintained at all times. Do not exceed 20 mph (30 km/h). Reduce speed for corners and slippery conditions.
10. When transporting on roads, use tractor lights and Mower Conditioner's flashing amber and red tail lights to provide adequate warning to operators of other vehicles.
11. Do not transport the mower conditioner on a road or highway at night, or in conditions which reduce visibility, such as fog or rain.

OPERATION

STORAGE PROCEDURE:

Do the following at the end of each operating season:



CAUTION:

- 1. Clean the mower conditioner 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 in a dry, protected place if possible. If stored outside, always cover mower conditioner with a waterproof canvas or other protective material.
4. If possible, block up the mower conditioner to take weight off tires.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen both drive belts.
7. Lubricate the mower conditioner thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Apply grease to exposed threads and sliding surfaces of components. Oil knife components to prevent rust.
8. Check for worn components and repair.
9. Check for broken components and order replacements from your dealer. Attention to these items right away will save time and effort at beginning of next season.
10. 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 mower conditioner or opening drive covers:

1. Fully lower the mower conditioner. If necessary to service in the raised position, always engage lift cylinder stop.
2. Disengage PTO.
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 if mower conditioner is parked on an incline. Follow all recommendations in your Tractor 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 extinguishers 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.

Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.

Keep the machine 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 SAE Multi-Purpose High Temperature Grease with Extreme Pressure (EP) Performance and containing at least 1.5% molybdenum disulphide.

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

WOBBLE BOX & GEAR BOX LUBRICANT

In knife drive wobble box and main drive gearbox use SAE 85W140 gear lubricant (API Service Classification GL-5)

CAPACITIES

Wobble Box (Knife Drive) - 900 ml (1.0 U.S. quart)
Main Drives Gearbox - Upper Case: 2900 ml (3.1 U.S. quart)
- Lower Case: 700 ml (0.7 U.S. quart)

STORING LUBRICANTS

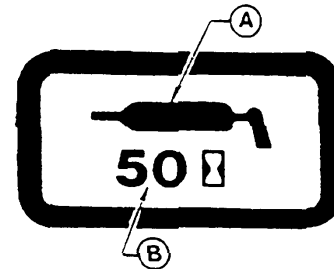
Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contaminants.

MAINTENANCE/SERVICE

GREASING THE MOWER CONDITIONER

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

The following greasing points are marked on the machine by decals showing a grease gun (A), and grease interval (B) in hours of operation. Log your hours of operation and use the "Maintenance Checklist" provided to keep a record of scheduled maintenance.



SAMPLE GREASE DECAL

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

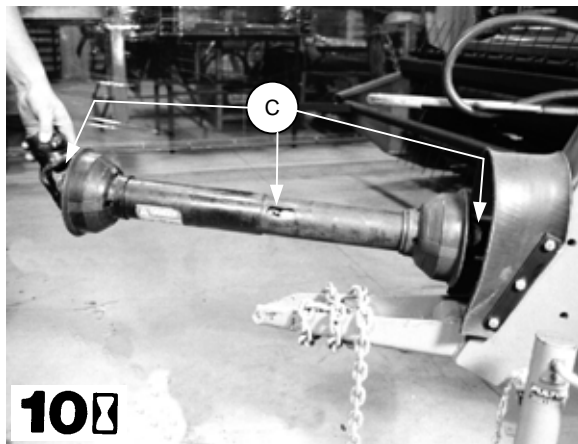


DANGER: Stay clear of drivelines until all movement has stopped. Entanglement with rotating driveline will cause serious personal injury or death. Avoid loose fitting or dangling clothing.



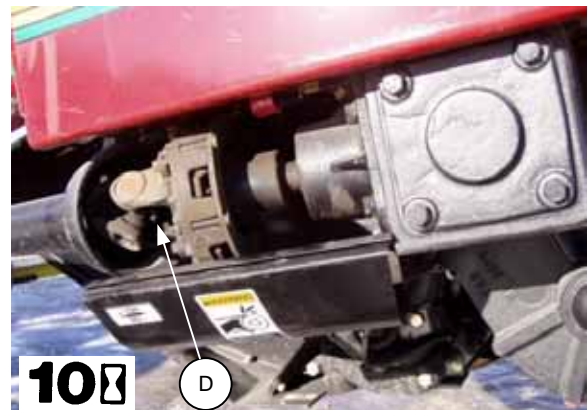
STAY CLEAR OF ROTATING DRIVELINES

1. Telescoping Driveline (C) - three fittings.



TELESCOPING DRIVELINE

2. Fixed Driveline (D) - one fitting



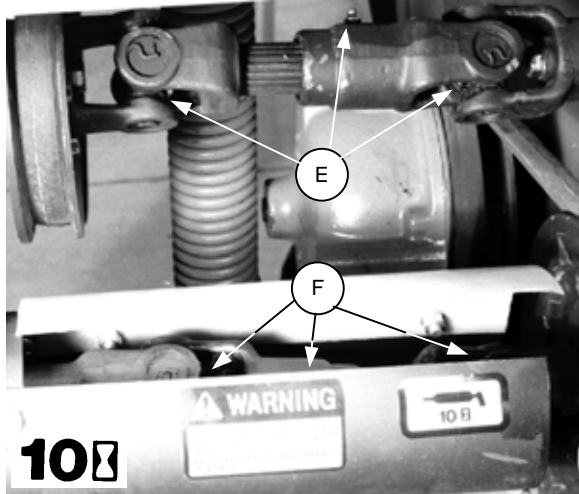
FIXED DRIVELINE

MAINTENANCE/SERVICE

GREASING THE MOWER CONDITIONER

10 Hours or Daily (continued)

3. Upper & Lower Roll Universal Shafts (E) & (F) - three fittings each



ROLL UNIVERSALS

4. Reel Drive Universal Shaft (G) - three fittings

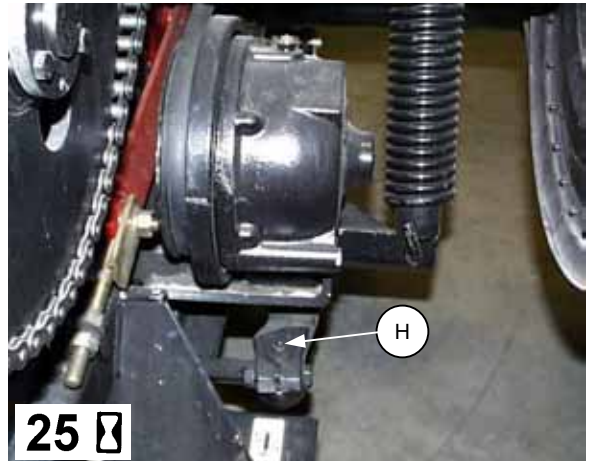


REEL DRIVE UNIVERSAL

25 Hours

1. Knife Head (H) - one fitting

IMPORTANT: To prevent binding and/or excessive wear caused by knife pressing on guards, do not over grease.



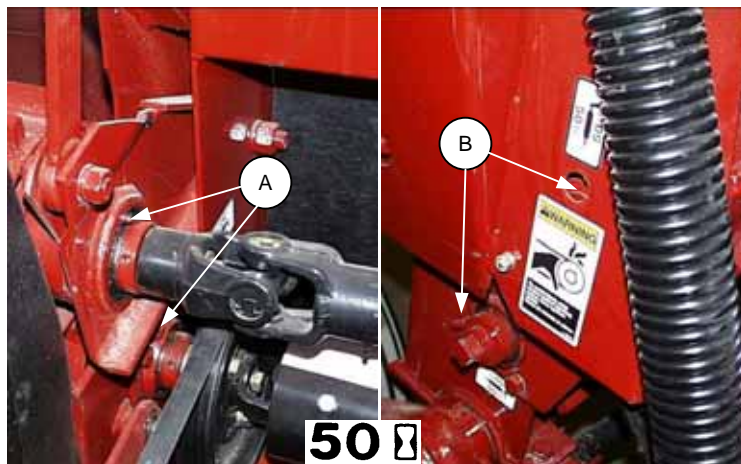
KNIFE HEAD

MAINTENANCE/SERVICE

GREASING THE MOWER CONDITIONER (continued)

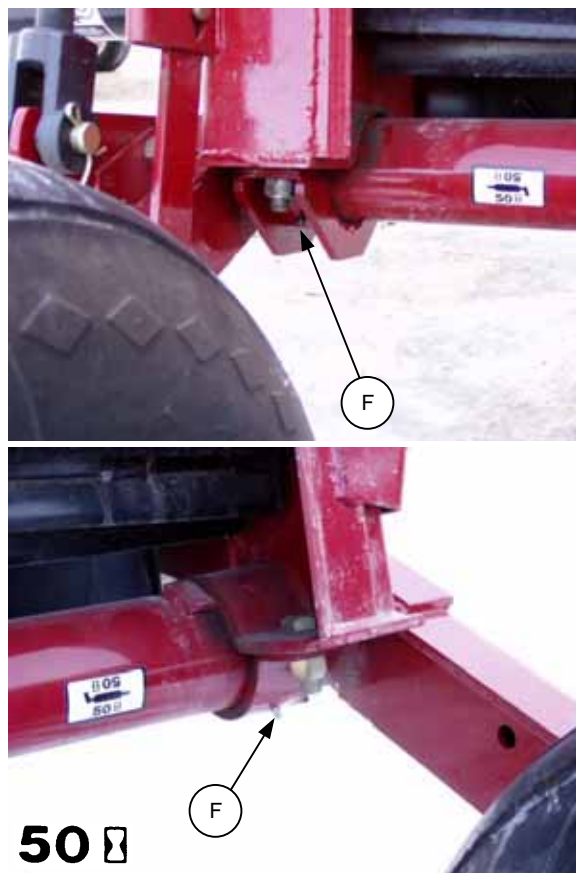
50 Hours:

1. Roll Shaft Bearings (A) & (B) - four fittings



LEFT SIDE RIGHT SIDE
ROLL BEARINGS

2. Left and Right Saddle Bearings (F) - two fittings



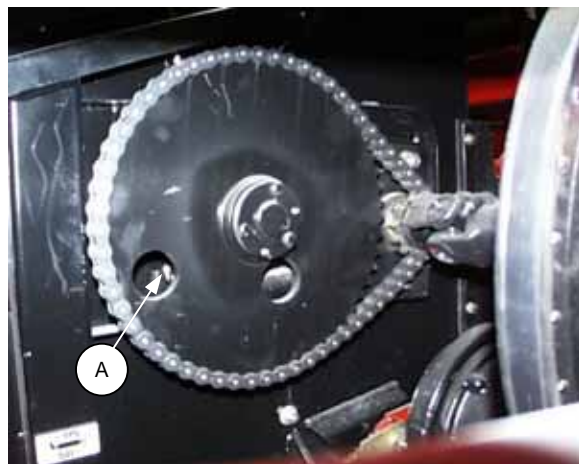
SADDLE BEARINGS

MAINTENANCE/SERVICE

GREASING THE MOWER CONDITIONER (continued)

100 Hours or Annually

1. Reel Shaft Bearing (A) - one fitting



REEL SHAFT BEARING

2. Wheel Hub Bearings (D) - two fittings



WHEEL HUB BEARINGS

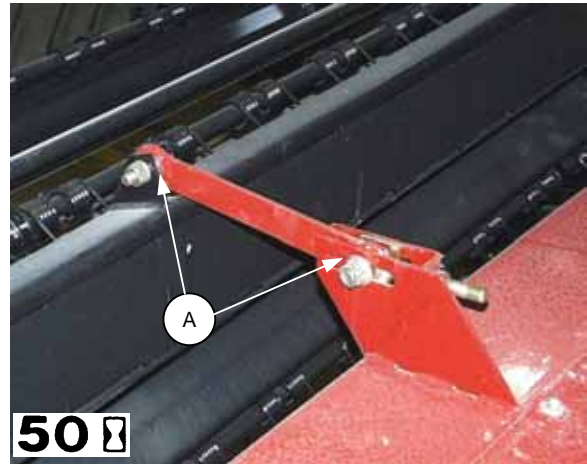
MAINTENANCE/SERVICE

LINKAGE BALL JOINTS

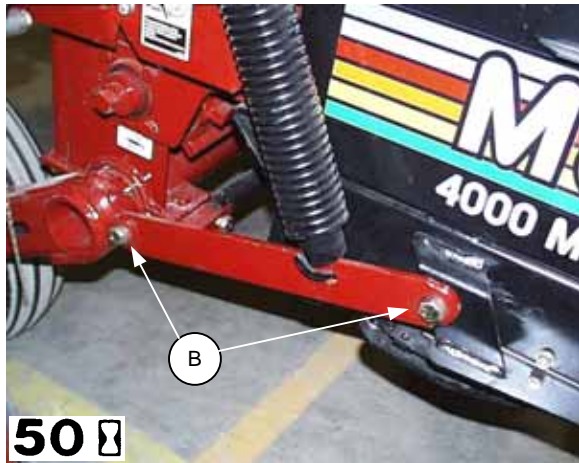
Apply SAE 30 or equivalent lightweight oil to the ball joints every 50 hours.

NOTE: Do not oil ball joints if operating in sandy conditions. Oil will cause sand to adhere to joints, causing excessive wear.

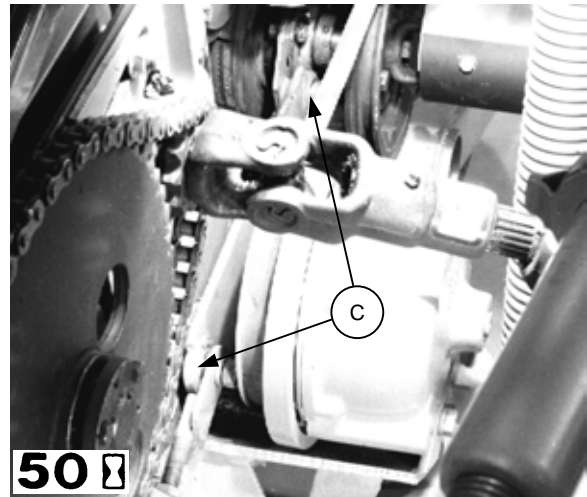
- (A) Top center float link (2 joints)
- (B) Right hand float link (2 joints)
- (C) Left hand float link (2 joints)
- (D) Spring pivot (2 joints)



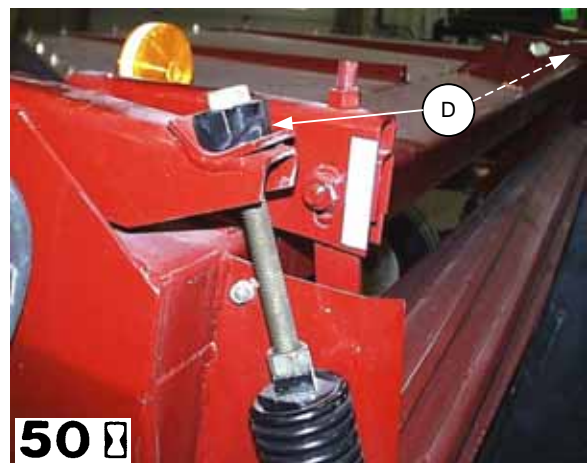
OIL CENTER LINK



OIL R/H LINK



OIL L/H LINK



OIL SPRING PIVOTS

MAINTENANCE/SERVICE

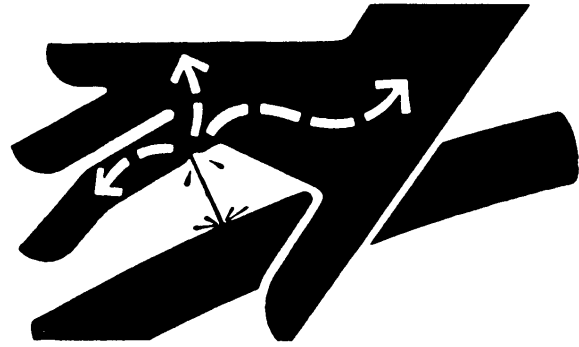
HYDRAULICS

Check hydraulic hoses daily for signs of leaks.

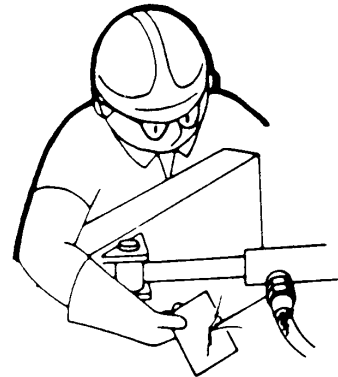


WARNING: Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles, which eject fluids under high pressure. Use a 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.

IMPORTANT: Keep hydraulic coupler tips and connectors clean. Dust, dirt, water and foreign material are the major causes of hydraulic system damage.



AVOID HIGH-PRESSURE FLUIDS



SEARCH PROPERLY FOR LEAKS

ELECTRICAL

Use electrical tape and wire clips as required to prevent wires from dragging or rubbing.

Keep lights clean and replace burnt bulbs.

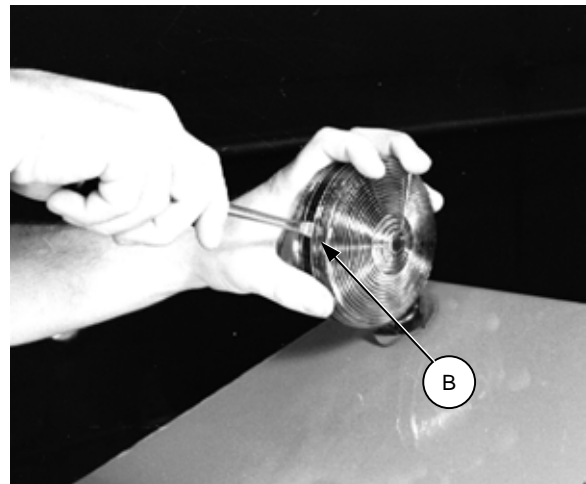
To replace amber or red light bulbs:

1. Using a screwdriver, pry plastic lens (B) from fixture.
2. Replace bulb and plastic lens.

NOTE: Bulb trade #1156.

Wiring Harness:

WHITE - ground
BROWN - red tail light
YELLOW - L/H amber
GREEN - R/H amber



REPLACING AMBER OR RED LIGHTS

MAINTENANCE/SERVICE

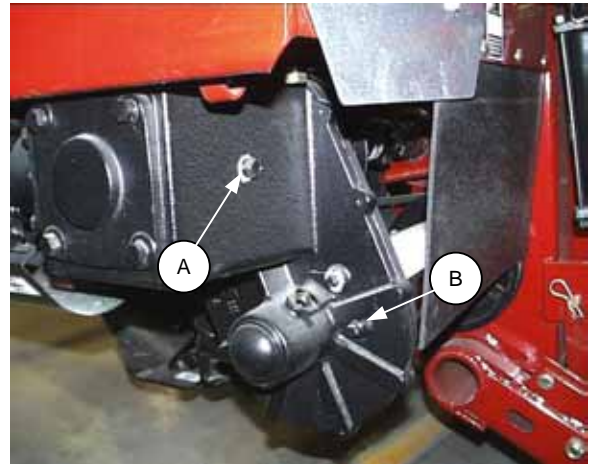
MAIN DRIVE

Main Gearbox Lubricant

The main gearbox consists of two separate cases. Check both lubricant levels before first operation and every 100 hours thereafter.

To check:

1. Lower mower conditioner to ground. Top of gearbox will be approximately level in this position.
2. Remove plug (A) from upper case and plug (B) from lower case.
3. Add lubricant until it overflows at plug ports. See "Recommended Lubricants" for specified gear lube and capacity of box.
4. Replace plugs.



CHECK MAIN GEARBOX OIL

Main Gearbox Removal

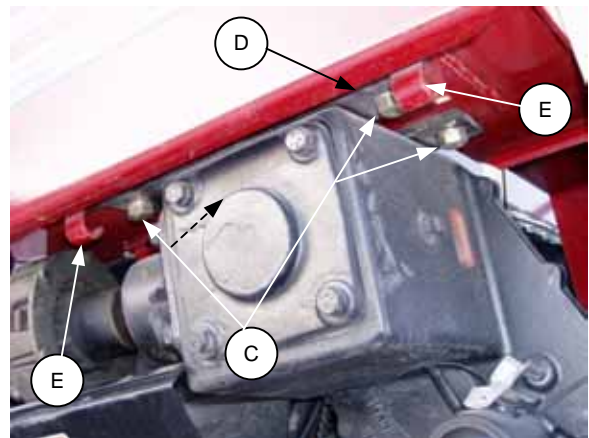
To remove main gearbox:

1. Disconnect driveline input and output yokes.
2. Loosen four mounting bolts (C), lowering box until rod (D) engages hooks (E).
3. Remove mounting bolts completely, allowing box to swing on hooks.

4.



CAUTION: Use proper lifting methods and apparatus when removing box from hooks. Box weighs approximately 170 lbs. (77 kg).



REMOVING MAIN GEARBOX

MAINTENANCE/SERVICE

MAIN DRIVE (continued)

Over-running/Slip Clutch

The clutch is designed to protect the machine against damage from overloading.

It is factory set, and with the exception of replacing friction discs, should require no further service.

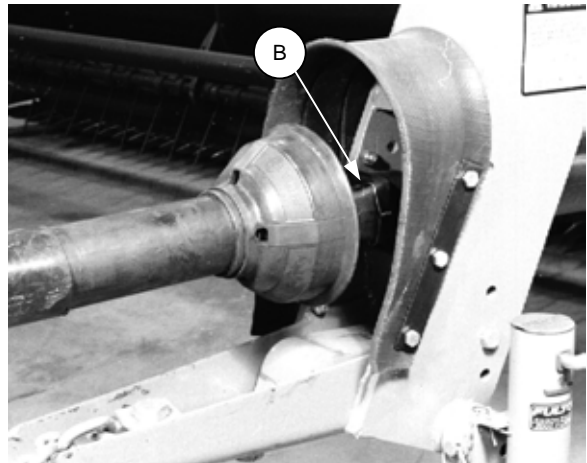
IMPORTANT: Should the clutch slip during operation, determine the cause and remove the obstruction. See "Unplugging the Mower Conditioner" in Operation section.



OVER-RUNNING/SLIP CLUTCH

Telescoping Driveline

If telescoping driveline is removed, ensure when replacing that bolt (B) is wired to yoke to prevent bolt from backing out.



SECURE BOLT TO YOKE WITH WIRE

MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE



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



CAUTION: Wear heavy gloves when working around or handling knives.

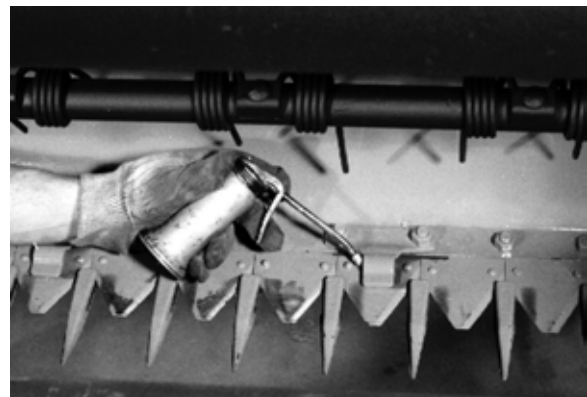


KEEP HANDS AWAY FROM KNIFE

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.



OIL KNIFE DAILY EXCEPT IN SANDY SOIL

Knife Sections

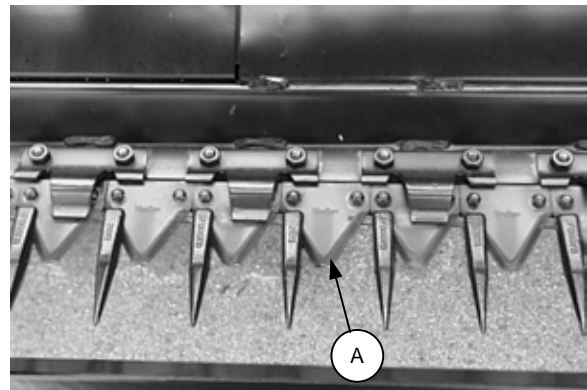
Check daily that sections are firmly bolted to the knife back and are not worn or broken. Replace as required.

To replace knife section:

1. A worn or broken knife section (A) can be replaced without removing knife from cutterbar.
2. Remove locknuts and lift section off of bolts.

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

3. Clean any dirt off of knife back and position new knife section on bolts. Secure with locknuts.



BOLT-ON SECTIONS

MAINTENANCE/SERVICE

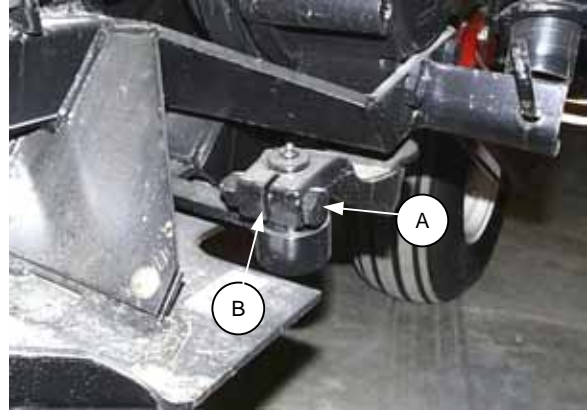
KNIFE AND KNIFE DRIVE (continued)

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.
4. Cover knife head to shield bearing from dirt.



REMOVING KNIFE

To Install Knife



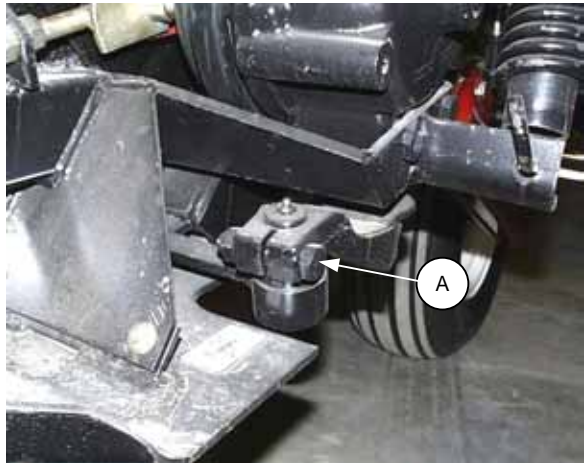
WARNING: Always stand to rear of knife during installation to reduce risk of injury from cutting edges. Wear heavy gloves when handling knife.

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).

IMPORTANT: To avoid premature knife head or wobble box failure, be sure there is no looseness in:

- a) Fit of knife head pin and needle bearing.
- b) Fit of knife head pin and pitman arm.



INSTALLING KNIFE

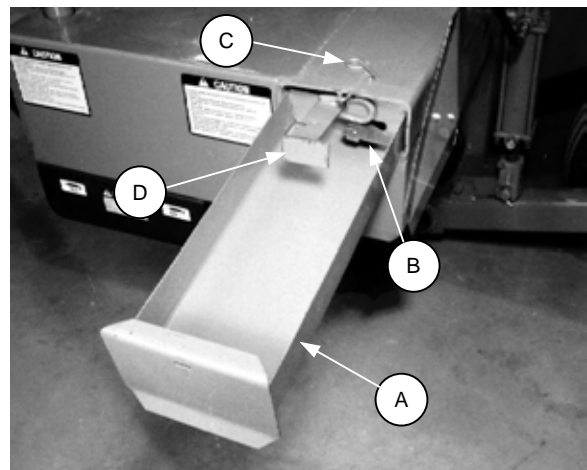
Knife Storage - Tool Box

A spare knife can be stored in the main frame tube with access at toolbox (A) at left end of frame.

Hook last section (B) into slot in toolbox so knife slides in and out with box.

Latch box with hairpin (C).

NOTE: Box is also used for storage of tool (D) for guard straightening or rocking wrench.



KNIFE STORAGE - TOOL BOX

MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE (continued)

Guards

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.

Align guards with the guard-straightening tool provided as shown:

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

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

NOTE: Tool is stored in toolbox at left end of main frame.

TIP: If trouble is encountered cutting tangled, but easy to cut material (canola, peas, grain) replace guards with stub guards and install a sickle hold-down on every guard. If material is tough to cut, install stub guards with top guard and adjuster plate from the MacDon 930 Series "Grass Seed Special" Headers. A stub guard kit for the 4000 Mower Conditioner is available from your dealer.

Excessive Breakage

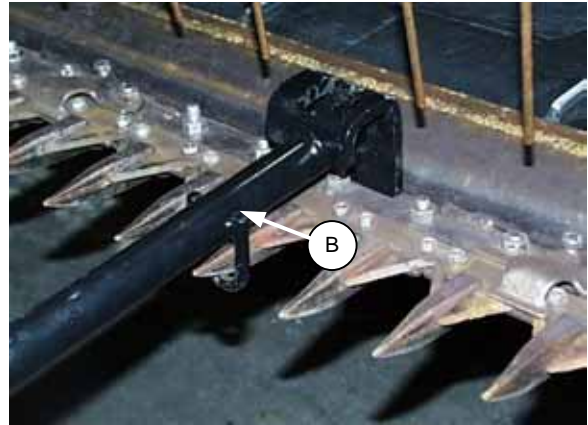
Excessive breakage of knife sections and guards can be controlled by several factors. See "Cutting Height", "Cutterbar Angle" and "Header Flotation" in Operation section for recommendations.

Knife Clips

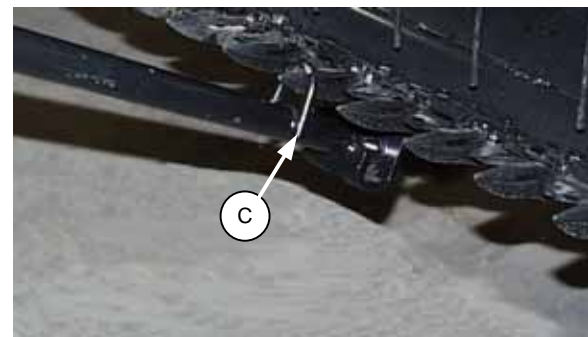
Check daily that knife clips are set to prevent knife sections from lifting off guards but still permit knife to slide without binding. Set clips after guards are aligned.

To set clips:

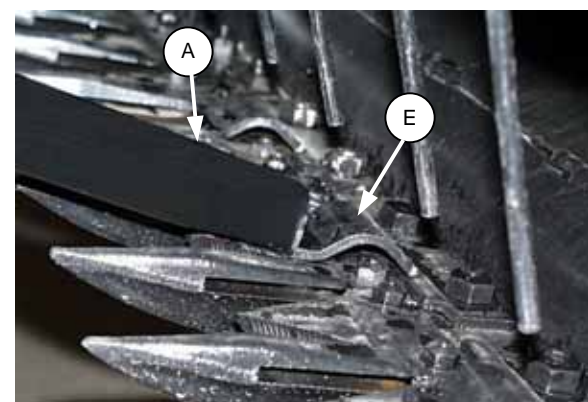
1. Use tool (A) as shown, butting flattened end against front edge of clip. Strike the end of the tool with a heavy hammer. This allows adjustment of clip arch (E) without "pinching" knife. Clearance from clip to knife section should be 0.020 inch (0.5 mm).
2. After adjusting all clips, run knife at a low engine speed and listen for noise due to insufficient clearance. Re-adjust as necessary by placing a 0.020 inch (0.5 mm) shim between clip and section, then striking the clip arch (E) with a hammer.



BENDING GUARD TIPS UP



BENDING GUARD TIPS DOWN



SETTING KNIFE CLIPS

MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE (continued)

Knife Drive Belt Tension

IMPORTANT: To prolong belt and drive life, do not over-tighten belt.

To adjust:

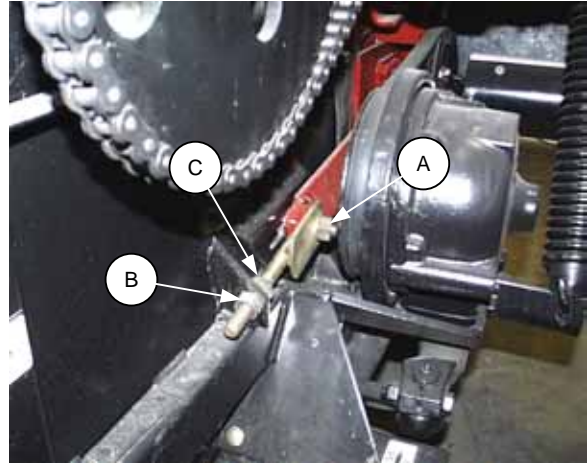
1. Loosen nut (A).
2. Back off nut (B).
3. Turn adjuster nut (C) until recommended tension is reached.

RECOMMENDED TENSION:

New belt - a force of 20 lbs. (90 N) deflects belt 1/4 in. (6 mm) at mid-span.

Used belt - a force of 12 lbs. (55 N) deflects belt 1/4 in. (6 mm) at mid-span.

4. Tighten nuts (A) and (B).
5. Re-adjust tension of a new belt after a short run-in period, (about 5 hours) to used belt specifications.

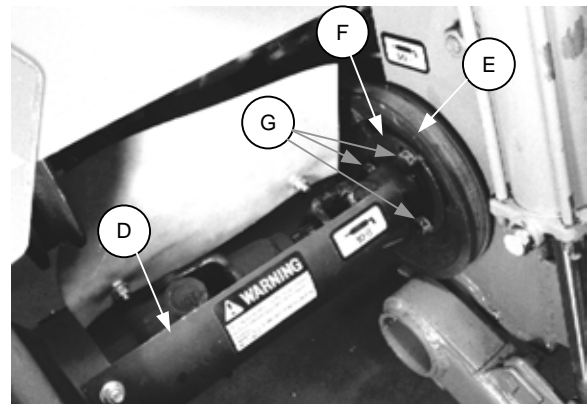


KNIFE DRIVE BELT
TENSION ADJUSTMENT

Knife Drive Belt Replacement

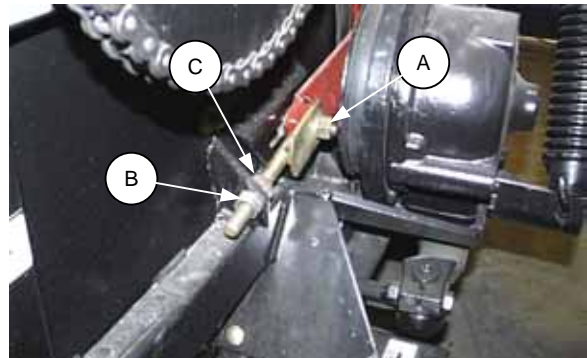
To remove belt:

1. Remove shield (D).
2. Scratch an alignment mark on pulley (E) and yoke plate (F) to maintain roll timing on re-assembly.
3. Remove three bolts (G) and remove yoke plate.
4. Slacken the belt as follows:
 - loosen nut (A)
 - back off nut (C)
 - turn nut (B) until nut (A) clears wobble box pulley
5. Remove belt.



When installing new belt, be sure to:

1. Align marks on pulley and yoke plate.
NOTE: Spline shaft and yoke will mate in one position only.
2. Tighten three bolts (G) to 70 ft.lbs. (95 N.m).
3. Install shield (D).
4. Properly adjust belt tension. Never pry belt over pulley.



KNIFE DRIVE BELT REMOVAL

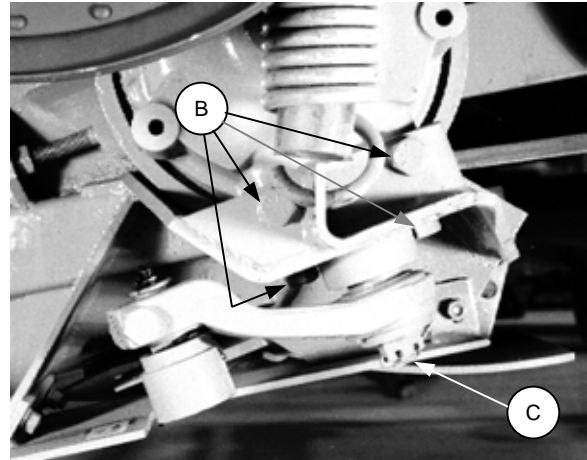
MAINTENANCE/SERVICE

KNIFE AND KNIFE DRIVE (continued)

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. Lower mower conditioner to ground.
2. Remove breather (A) and measure down. Oil level should be 2 1/2 to 3 1/2 inches (65 to 90 mm) from top of hole.

NOTE: Use a somewhat flexible measuring device to allow insertion past internal components.

3. Add as required. See "Recommended Lubricants" for specified gear lube and capacity of box.
4. Replace breather.



CHECK WOBBLE BOX OIL

Change wobble box lubricant after the first 50 hours operation and every 1000 hours (or 3 years) thereafter.

MAINTENANCE/SERVICE

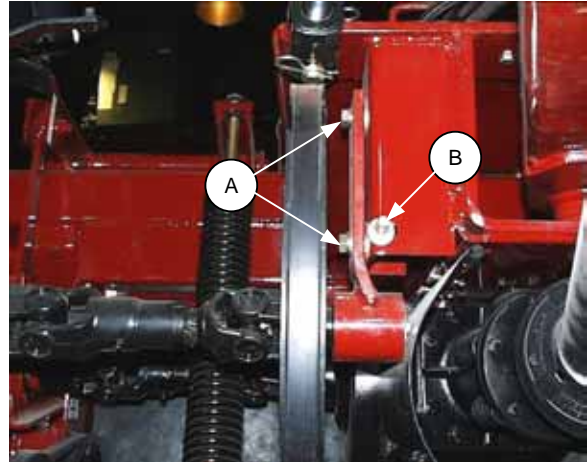
REEL AND REEL DRIVE

Reel Drive Belt Tension

IMPORTANT: To prolong belt and drive life, do not over-tighten belt. Operate at minimum tension required to prevent slipping under normal load. This also protects the reel from over-loading. Recommended tension: A force of 12 lbs. (55 N) deflects belt 1/4 inch (6 mm) at mid-span.

To adjust:

1. Loosen two bolts (A).
2. Turn adjuster nut (B) until desired tension is reached.
3. Tighten bolts (A).
4. Re-adjust tension of a new belt after a short run-in period (about 5 hours).



REEL DRIVE BELT TENSION ADJUSTMENT

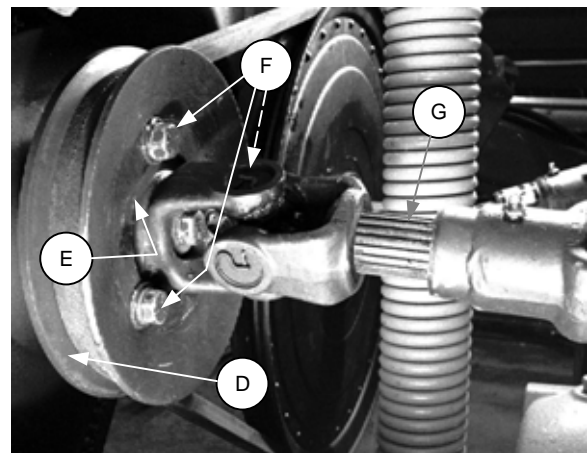
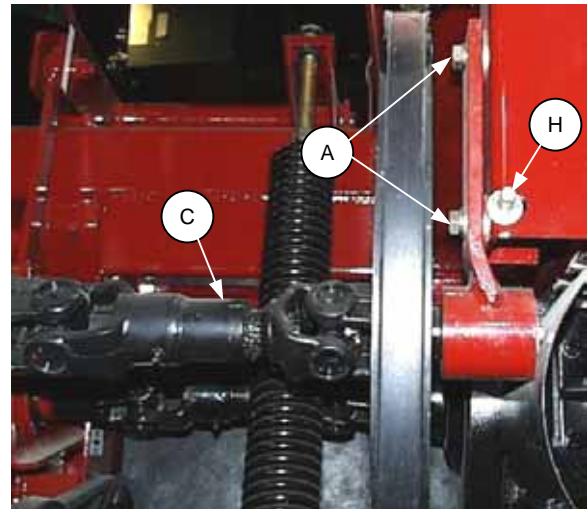
Reel Drive Belt Replacement

To remove belt:

1. Remove bolts (A) from swing arm.
2. Collapse telescoping shaft (C) to allow belt to pass between frame and swing arm.
3. Scratch an alignment mark on pulley half (D) and yoke plate (E) to maintain roll timing on re-assembly.
4. Remove three bolts (F) and collapse telescoping shaft (G) to allow belt removal.

When installing new belt, be sure to:

1. Align marks on pulley half and yoke plate.
NOTE: Spline shaft and yoke will mate in one position only.
2. Tighten three bolts (F) to 70 ft.lbs. (95 N.m).
3. Engage lower bolt (A) in adjuster eyebolt (H) when re-fastening swing arm.
4. Properly adjust belt tension as described. Never pry belt over pulley.



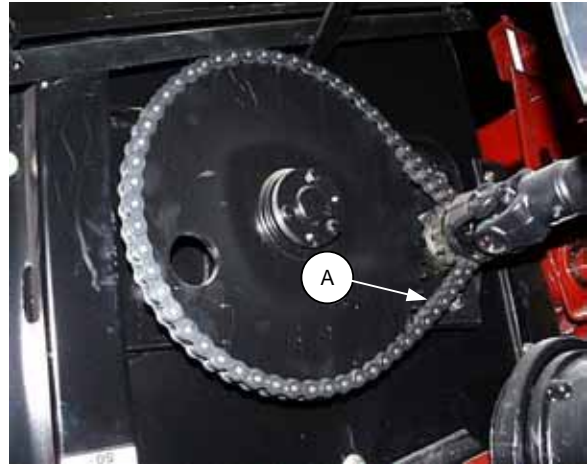
REEL DRIVE BELT REMOVAL

MAINTENANCE /SERVICE

REEL AND REEL DRIVE (continued)

Reel Drive Chain Lubrication

Lubricate chain daily with lightweight oil (SAE 30). Apply oil to upper edge of lower chain span (A).



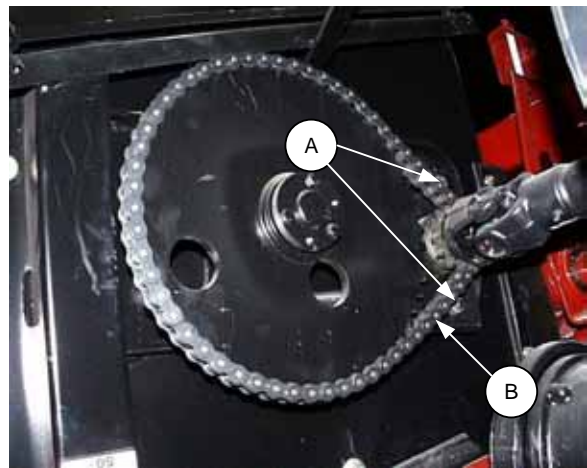
OIL REEL DRIVE CHAIN

Reel Drive Chain Tension

To tighten reel drive chain:

1. Loosen two nuts (A).
2. Use a pry bar between sprockets to tighten chain until deflection at (B) is 1/8 in. (3 mm).
3. Tighten nuts (A) to 70 ft.lbs. (95 N.m).

NOTE: Chain adjustment does not affect other reel settings.



REEL DRIVE CHAIN TENSION ADJUSTMENT

R/H Reel Shaft Bearing Access

Remove plug (A) for access to reel shaft bearing on right side of reel.

Reel Tines

Keep reel tines in good condition. Straighten or replace as required.



R/H REEL SHAFT BEARING ACCESS

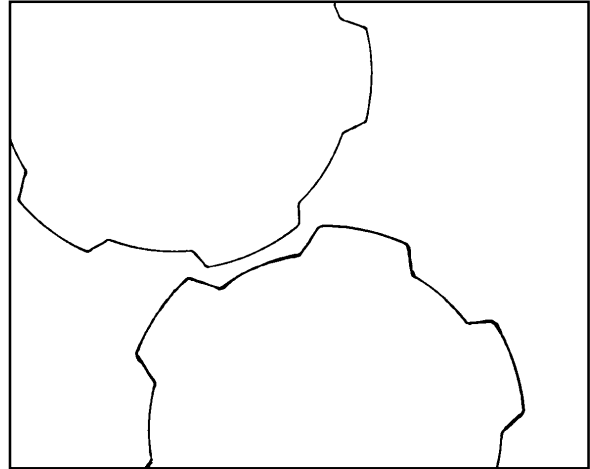
MAINTENANCE/SERVICE

ROLL TIMING

For proper conditioning, the rolls must be timed with the rubber lug (or steel bar) on one roll centered on the groove of the other roll.



WARNING: To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder stop before going under machine to examine roll timing, or for any reason.

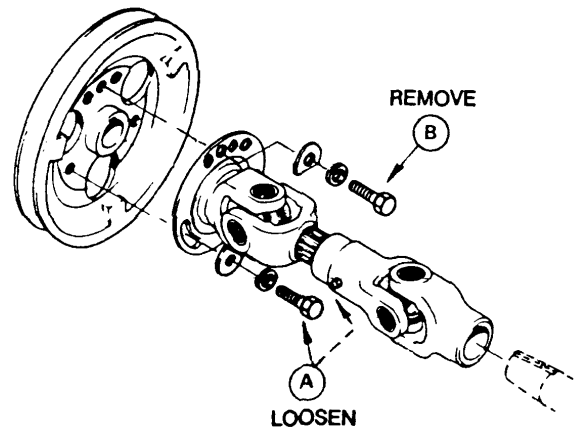


ROLL TIMING (RUBBER ROLLS SHOWN)

Examine roll timing along the length of the rolls and adjust to desired position as follows:

1. Loosen two bolts (A) in slots at yoke plate on either upper or lower roll universal shaft.
2. Remove one bolt (B) in hole at yoke plate.
3. Turn rolls to achieve best timing, aligning one of the other holes in yoke plate.
4. If more range is required, repeat steps 1 - 3 at the other yoke plate.
5. If range is still insufficient to achieve adequate roll timing, remove all three bolts at one of the yoke plates and rotate the roll 1/3 turn.
6. When roll timing is satisfactory, replace and tighten all bolts to secure the position.

NOTE: This adjustment should be made in conjunction with the "Roll Gap" adjustment, detailed in Operation section.



ROLL TIMING ADJUSTMENT

MAINTENANCE/SERVICE

WHEELS AND TIRES

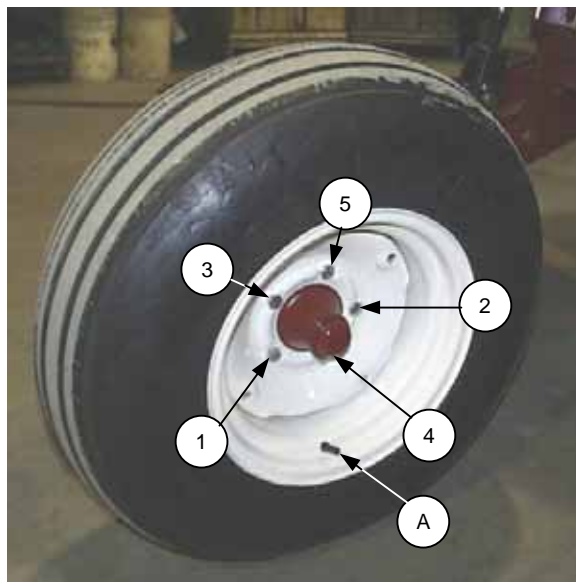
Wheel Bolts

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 shown.

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



WHEEL BOLT TIGHTENING SEQUENCE

MAINTENANCE/SERVICE

WHEELS AND TIRES (continued)

Tire Inflation

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

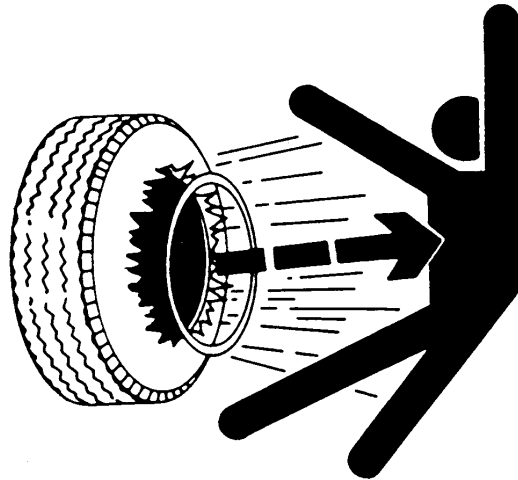


WARNING: Service tires safely. A tire can explode during inflation and cause serious injury or death. Never increase air pressure beyond 35 psi (241 kPa) to seat the bead on the rim. Replace the tire if it has a defect. Replace a wheel rim, which has cracks, wear or severe rust. Never weld a wheel rim. 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.

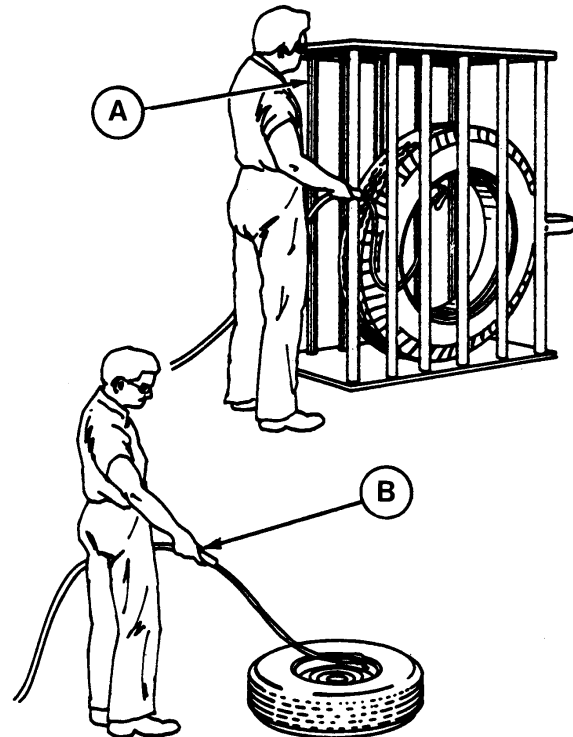
Do not remove, install or make repairs to a tire on a rim unless you have the proper equipment and experience to perform the job. Take the tire and rim to a qualified tire repair shop. If the tire is not in correct position on the rim, or is too full of air, the tire bead can loosen on one side, causing 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 instructions, 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.

IMPORTANT: Recommended intervals are for average conditions. Service the machine 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 machine 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 Mower Conditioner" and "Break-In Period" in Operation section.

10 HOURS OR DAILY

- | | |
|---------------------------------------|--|
| 1. Grease telescoping driveline. | 6. Check hydraulic hoses for leaks. |
| 2. Grease fixed driveline. | 7. Oil knife (except in sandy conditions). |
| 3. Grease upper roll universal shaft. | 8. Check knife sections, guards and clips. |
| 4. Grease lower roll universal shaft. | 9. Oil reel drive chain. |
| 5. Grease reel drive universal shaft. | 10. Check tire pressure |
-

25 HOURS

1. Grease knife head.
-

50 HOURS

1. Grease roll shaft bearings.
 2. Grease left and right saddle bearings.
 3. Oil linkage ball joints (except in sandy conditions).
-

100 HOURS OR ANNUALLY *

- | | |
|---|--|
| 1. Grease reel shaft bearing. | 4. Check wobble box mounting bolt torques. |
| 2. Grease wheel hub bearings. | 5. Check wobble box lubricant level. |
| 3. Check main gearbox lubricant levels. | 6. Check wheel bolt torques. |

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

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

1000 HOURS OR 3 YEARS

1. Change wobble box lubricant.

MAINTENANCE RECORD

Mower Conditioner Serial No. _____

See Maintenance/Service section for details of each procedure. Copy this page to continue record.

ACTION:	✓ - Check	● - Lubricate	▲ - Change	
Hour Meter Reading:				
Serviced By:				
Maintenance Procedure				
BREAK-IN	See "Preparing the Mower Conditioner" and "Break-In Period" in Operation section.			
10 HOURS OR DAILY				
● Telescoping Driveline				
● Fixed Driveline				
● Upper Roll Universal Shaft				
● Lower Roll Universal Shaft				
● Reel Drive Universal Shaft				
✓ Hydraulic Hoses for Leaks				
● Knife Assembly				
✓ Sections, Guards, Hold-downs				
● Reel Drive Chain				
✓ Tire Pressure				
25 HOURS				
● Knife Head				
50 HOURS				
● Roll Shaft Bearings				
● Left & Right Saddle Bearings				
● Linkage Ball Joints				
100 HOURS OR ANNUALLY				
● Reel Shaft Bearings				
● Wheel Hub Bearings				
✓ Main Gearbox Lube Levels				
✓ Wobble Box Bolt Torque				
✓ Wobble Box Lubricant Level				
✓ Wheel Bolt Torque				
1000 HOURS OR 3 YEARS				
▲ Wobble Box Lubricant				

TROUBLE SHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
Excessive breakage of knife sections or guards.	Cutting height too low in stony conditions.	Raise cutting height with skid plates.	28
	Cutterbar angle too steep in stony conditions.	Decrease cutterbar angle	29
	Header flotation too heavy in stony conditions	Adjust to lighter float setting.	30
	Guards, knife and hold-downs misaligned.	Straighten guards, align hold-downs.	50
	Ground speed too high in stony conditions.	Reduce ground speed.	25
	Knife speed too slow.	Maintain 540 RPM on PTO.	---
Knife back breakage.	Bent or broken guard.	Straighten or replace.	50
	Worn knife head pin.	Replace.	49
	Dull knife.	Replace.	49
Ragged or uneven cutting of crop.	Cutterbar angle too flat for guards to pick up down crop.	Increase cutterbar angle.	29
	Reel position incorrect.	Move reel forward and down.	27
	PTO speed too slow.	Maintain 540 RPM on PTO.	---
	Knife sections or guards are worn or broken.	Replace worn or broken parts.	48
	Bent knife causing binding.	Straighten a bent knife. Check alignment and adjust if necessary.	49
	Knife hold-downs improperly adjusted.	Adjust hold-downs so knife works freely, but still keep sections from lifting off guards.	50
	Bent or misaligned guards causing poor shearing action.	Align guards for proper shearing action.	50

TROUBLE SHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
Ragged or uneven cutting of crop. (continued)	Bent or misaligned guards causing poor shearing action.	Align guards for proper shearing action.	30
	Ground speed too fast.	Slow down. Ground speed should not exceed 8 mph (13 km/h).	25
	Knife drive belt too loose.	Increase belt tension.	51
	Reel drive belt too loose.	Increase belt tension.	53
Long stubble in down crop.	Reel position incorrect.	Move reel forward and down.	27
	Cutterbar angle too flat for guards to pick up down crop.	Increase cutterbar angle.	29
	Ground speed too fast.	Slow down.	25
	Cutting height too high.	Lower cutting height with skid plates.	28
Excessive vibration of cutting parts.	Incorrect PTO speed.	Maintain 540 RPM on PTO.	---
	Excessive looseness of knife and knife drive parts.	Remove all excessive play from cutterbar and knife drive to reduce vibration, then adjust cutting components and drive.	48
Knocking in knife drive.	Worn knife head pin.	Replace.	49
	Worn needle bearing in knife head.	Replace.	49
Pulling material by the roots or tall material leaning into machine.	Reel position incorrect.	Move reel forward and down.	27
	Ground speed too slow.	Increase ground speed.	25
	Reel speed too fast.	Reduce reel speed.	26

TROUBLE SHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
Leaving small strip of flattened, uncut material.	Ground speed too fast.	Slow down.	25
	Crowding of the uncut material.	Steer tractor slightly away from uncut crop.	---
	Reel position incorrect.	Move reel forward and down.	27
	Knife sections or guards are worn or broken.	Replace worn or broken parts.	48
Knife plugging	Extremely thick or wet undergrowth.	Raise cutting height to clear undergrowth.	28
		Move reel back and down (close to guards).	27
		Cut when undergrowth is dry.	---
	Knife sections or guards are worn or broken.	Replace worn or broken parts.	48
	Bent or misaligned guards.	Align guards.	50
	Knife hold-downs improperly adjusted.	Adjust hold-downs so knife works freely.	50
	Knife drive belt too loose.	Adjust belt tension.	51
	Header flotation too heavy.	Adjust to lighter float setting.	30
	PTO speed too slow.	Maintain 540 RPM on PTO.	---
Rolls plugging.	Roll gap too large for proper feeding.	Decrease roll gap.	31
	Roll gap too small in thick stemmed cane-type crops.	Increase roll gap.	31
	Ground speed too fast.	Slow down.	25
	Rolls improperly timed.	Adjust roll timing.	55
	Over-running clutch components worn.	Replace friction discs.	---

TROUBLE SHOOTING

<u>SYMPTOM</u>	<u>PROBLEM</u>	<u>SOLUTION</u>	<u>REF.</u>
Leaves damaged, crushed or stripped off stems.	Roll gap too small.	Increase roll gap.	31
	Rolls improperly timed.	Adjust roll timing.	55
	Reel speed too fast.	Reduce reel speed.	56
Insufficient conditioning of stems.	Roll gap too large.	Decrease roll gap.	31
Bunchy, uneven swath in medium to heavy crop.	Material catching on light crop deflectors.	Remove light crop deflectors.	32
Poorly formed windrow.	PTO speed too slow.	Maintain 540 rpm on PTO.	---
	Light crop.	Install light crop deflectors.	32
	Light material falling between pan and rolls.	Install feed pan extensions.	33

ATTACHMENTS

The following attachments are available from your Dealer:

FOUR OR SIX BAT REEL

WholeGoods order number: B2028

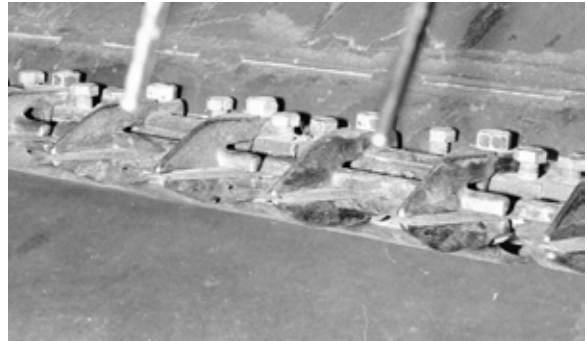
A complete bat assembly can be added to or removed from the standard five bats without changes to the reel body.

STUB GUARD CONVERSION KIT

WholeGoods order number: B2514

Stub guards, complete with top guides and adjuster plates are designed to cut tough crops.

Installation and adjustment instructions are included with the kit.



STUB GUARDS

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 and block trailer wheels.
2. Lower trailer storage stands.



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.



PREPARE TO UNLOAD

LIFTING VEHICLE REQUIREMENTS

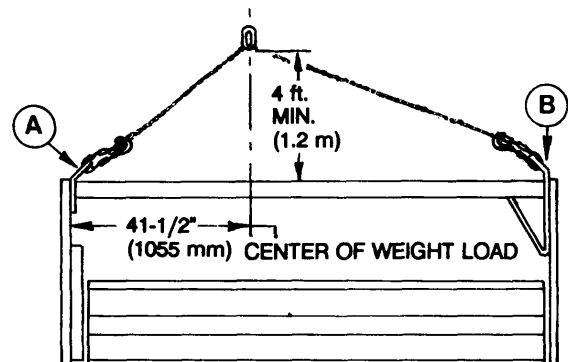
Use a lifting vehicle with a minimum 4600 lb. (2085 kg) lifting capacity and minimum 15 ft. (4.5 m) lifting height.

UNLOADING MOWER CONDITIONER: USING LIFT LUGS



CAUTION: Be sure hooks are secure before moving away from load. Stand clear when lifting, machine may swing.

1. Attach chain hooks to lean bar at lugs (A) and (B).
2. Remove hauler's tie down straps and chains.
3. Raise mower conditioner 12 inches (300 mm), remove from trailer.
4. Take to storage or set-up area.
5. Set machine down securely on level ground. Check for shipping damage and missing parts.
6. Remove chain hooks.



ATTACH CHAIN HOOKS

UNLOADING & ASSEMBLY

UNLOADING MOWER CONDITIONER: LIFTING AT 2 X 4

NOTE: Use these instructions if lifting vehicle does not provide adequate lift height to allow use of lift lugs on lean bar for removal from trailer.

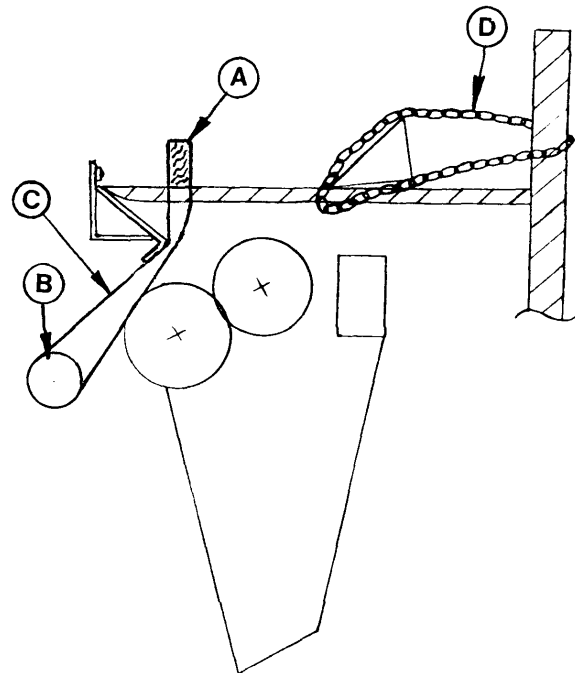


CAUTION: Be sure forks are securely engaged under 2 x 4 before moving away from load. Stand clear when lifting, machine may swing.

1. Set forks on lifting vehicle to 36 inches (920 mm) center-to-center width.

IMPORTANT: 2 x 4 (A) is shipped in proper position for lifting, based on the weight distribution of the unit.

2. Drive forklift forward and position forks under 2 x 4 (A) as close to banding (C) as possible. Be sure the 2 x 4 is properly banded to cross-shaft (B).
3. Install two chains (D) around header beam and secure to forklift near each fork.
4. Remove hauler's tie down straps and chains.
5. Raise mower conditioner 12 inches (300 mm), remove from trailer.
6. Take to storage or set-up area.
7. Set machine down securely on level ground. Check for shipping damage and missing parts.
8. Remove wires, banding, 2 x 4 and chains.



LIFTING AT 2 X 4

IMPORTANT: To avoid forming shield damage from storing machine in an upright position, proceed with instructions to "Lower Mower Conditioner to Ground" (next page) before leaving machine in storage. If it is necessary to store machine upright on shipping stands, ensure that the ground is firm and level. Take the effects of snowmelt and ground thaw into consideration.

UNLOADING & ASSEMBLY

LOWER MOWER CONDITIONER TO GROUND

1. Drive lifting vehicle to approach mower conditioner from its "underside".

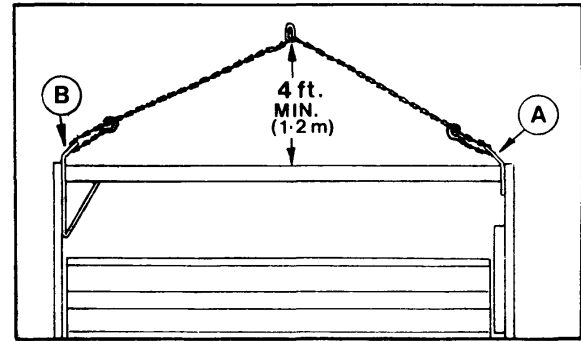
Attach chain hooks to lean bar at lugs (A) and (B).

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

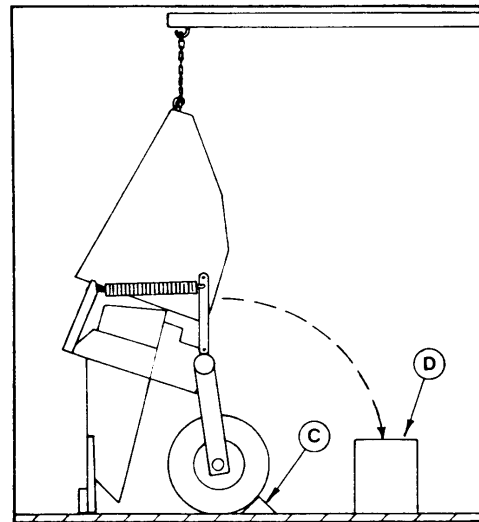
2. Block wheels at (C) and set 20 inch (500 mm) blocks (D) to support each end of cutterbar.
3. Raise lifting apparatus to take most of the weight off mower conditioner wheels and back up SLOWLY to lower machine onto blocks (D).



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



ATTACH CHAIN HOOKS



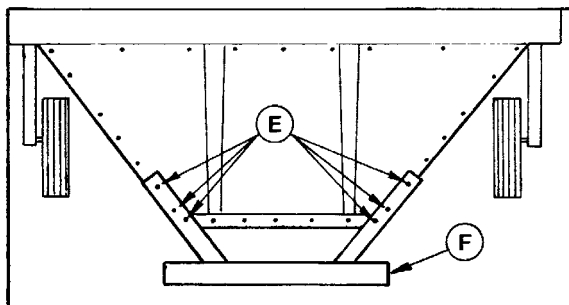
LOWER ONTO BLOCKS

REMOVE SHIPPING STAND



CAUTION: There are two reinforcing bars on the underside of hood for shipping purposes. Stand clear when loosening bolts (E), as bars will fall to ground.

1. Remove six bolts (E), remove shipping stand (F) and replace bolts with six 3/8 x 3/4 carriage bolts provided.



REMOVE SHIPPING STAND

ROTATE LEAN BAR

1. Remove bolts securing lean bar to header.
2. Roll lean bar over so right hand crop divider (A) points forward.
3. Replace bolts securing lean bar to header.



ROTATE LEAN BAR

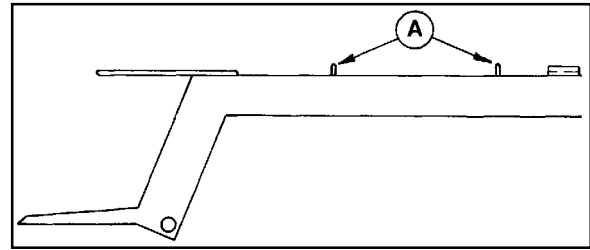
UNLOADING & ASSEMBLY

INSTALL HITCH AND DRIVELINE

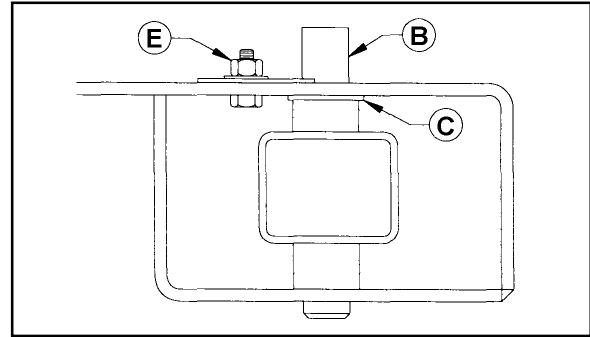
NOTE: Hitch may be lifted at hose loops (A) for positioning.

1. Position hitch so it is resting partially in the frame socket.
2. Slide the clutch hub over the spline shaft at gearbox, at the same time pushing hitch into its final position.
3. Insert hitch pin (B), positioning 3 inch O.D. washer (C) as shown.
4. Secure hitch pin (B) with 3/8 x 1-1/2 capscrew flatwasher and locknut (E).
5. Connect the clutch to the gearbox shaft by tightening bolt (F).

IMPORTANT: Bolt (F) must be securely tightened. It will be necessary to jam the U-joint at (G) to prevent clutch "free-wheeling" during tightening.



HITCH MAY BE LIFTED AT LOOPS



INSTALL HITCH PIN

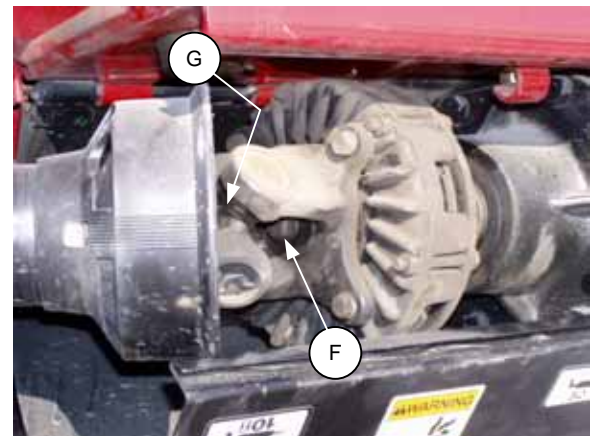
DEFLATE TIRES

Tires have been over-inflated for shipping. Deflate to 20 psi (138 kPa).

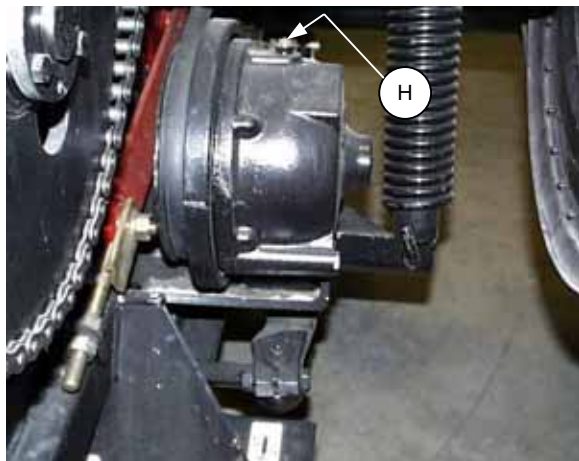
INSTALL BREATHERS IN DRIVE CASES

1. Untie plastic bag at wobble box and replace pipe plug with breather (H) from bag.
2. Untie plastic bag at main gearbox and replace pipe plug with breather (J) from bag.

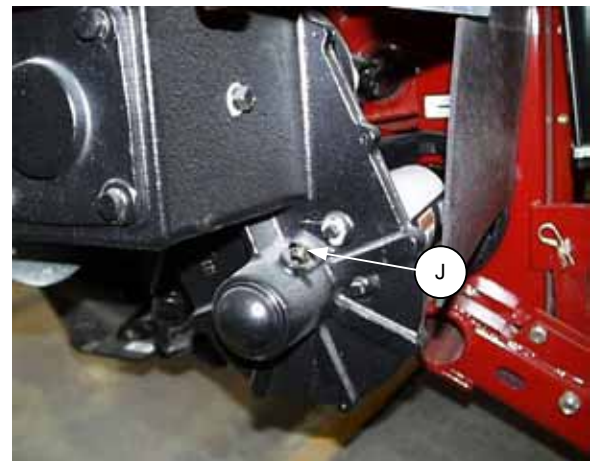
NOTE: Do not engage tractor PTO prior to installing breathers.



CONNECT CLUTCH



INSTALL BREATHER IN WOBBLE BOX



INSTALL BREATHER IN GEARBOX

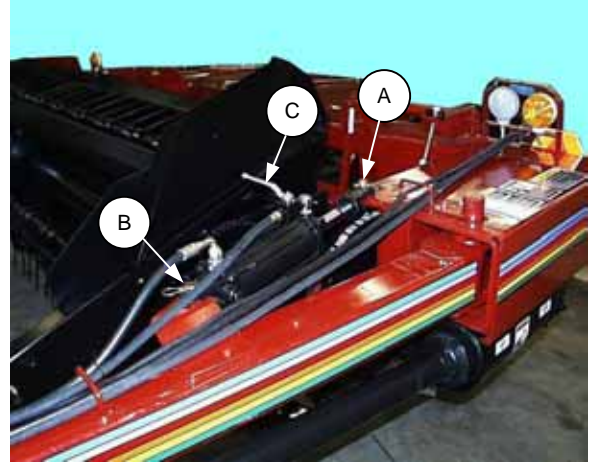
UNLOADING & ASSEMBLY

INSTALL HITCH SHIFT CYLINDER

1. Move hitch to transport position.
2. Install hydraulic cylinder with rod end at position (A) and barrel end at position (B).



WARNING: Before transporting mower conditioner, close hydraulic valve (C) to prevent inadvertent cylinder extension that would cause machine to swing out unexpectedly. Closed position is with handle at 90° to oil flow direction as shown. Open position is with handle in line with oil flow direction.



INSTALL HITCH SHIFT CYLINDER

ROUTE HOSES AND ELECTRICAL HARNESS

1. Route hoses for hitch shift and header lift cylinders and electrical harness through hitch loops, securing harness to hydraulic hoses with nylon ties.



ROUTE HOSES AND HARNESS

ADJUSTMENTS AND CHECKS

Perform the final checks and adjustments as listed on the "Pre-Delivery Checklist" (yellow sheet) to ensure the machine is field-ready.

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Model 4000 Mower Conditioner Pre-Delivery Checklist

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



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

Mower Conditioner Serial Number: _____

- ☐ Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.
- ☐ Check sickle drive belt tension.
- ☐ Check reel drive belt tension.
- ☐ Set header flotation. (70 lbs. [311 N])
- ☐ Set cutterbar angle to middle of adjustment range.
- ☐ Check skid plates are evenly adjusted at a setting appropriate for first crop.
- ☐ Adjust material discharge width to wide open position. (Baffle handle fully down.)
- ☐ Grease all bearings and drivelines.
- ☐ Install breather in wobble box.
- ☐ Check wobble box lube level.
- ☐ Install breather in main gearbox
- ☐ Check main gearbox lube level - 2 places.
- ☐ Deflate tires to operating pressure. (20 psi [138 kPa])
- ☐ Check wheel bolt torque. (50 - 60 ft.lbs. [68 - 81 N·m])
- ☐ Attach machine to tractor and adjust hanger bearing to level driveline.
- ☐ Run machine for 15 minutes, STOP ENGINE and check belt and chain drives for heated bearings. Check knife sections for discolouration caused by misalignment of components.
- ☐ Check hydraulic hose and wiring harness routing.
- ☐ Check lights are functional.

Date Checked: _____

Checked by: _____