

HABAN

owners
manual

MODEL NOS

444-200

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445-540

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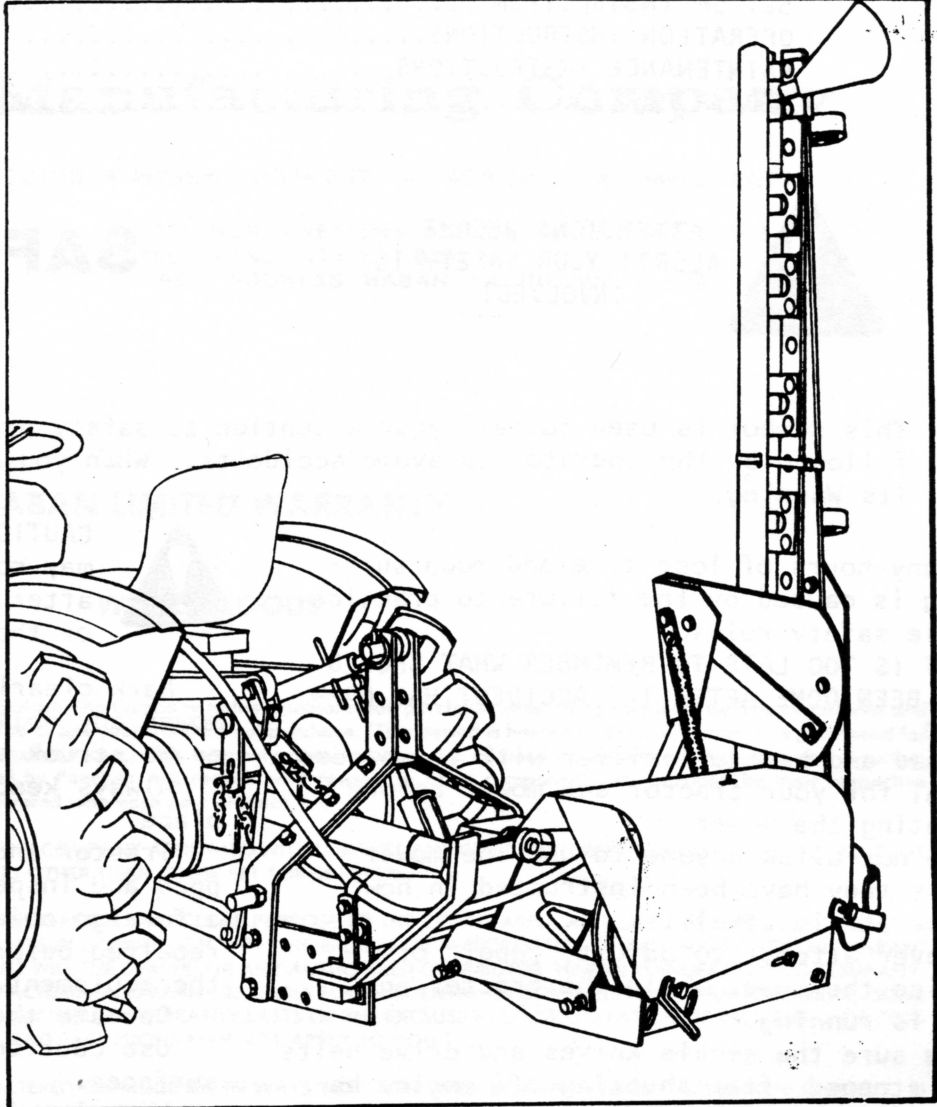
445-541

SERIAL NOS

227082 & UP

CAUTION:

Read Rules for
Safe Operation
and Instructions
Carefully



3 POINT HITCH SICKLE BAR MOWER WITH HYDRAULIC LIFT

- **Set-up**
- **Operation**
- **Maintenance**
- **Repair Parts**

Haban Mfg. Co., Racine, Wis.

Haban Manufacturing Company

INDUSTRIAL MACHINERY — OUTDOOR POWER EQUIPMENT — AGRICULTURAL IMPLEMENTS

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TELEPHONE: (414) 637-8388
CABLE ADDRESS: HABAN, RACINE, WI., U. S. A.

HABAN LIMITED WARRANTY

WHOLE GOODS

All new Haban equipment is warranted by Haban Manufacturing Company to the original retail purchaser only, to be free from defects in material and workmanship under normal use and service for a period of one year from date of purchase. (This period is limited to 30 days if product is purchased for commercial, institutional, industrial, rental or demonstrator use.) This warranty does not apply to engines manufactured by Briggs and Stratton, Tecumseh and Kohler or transmissions manufactured by Peerless. Warranties with respect to these components are provided by their respective manufacturers and copies of such warranties are delivered with each new product.

NEITHER HABAN MANUFACTURING COMPANY NOR ANY COMPANY AFFILIATED WITH IT MAKES ANY WARRANTY, REPRESENTATIONS OR PROMISES AS TO THE QUALITY OR PERFORMANCE OF ITS PRODUCTS OTHER THAN THOSE SET FORTH HEREIN.

IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE TO THE EXTENT APPLICABLE SHALL BE LIMITED IN DURATION TO ONE YEAR. THE ONLY REMEDIES THE PURCHASER HAS IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON "HABAN" PRODUCTS ARE THOSE SET FORTH HEREIN. IN NO EVENT WILL THE DEALER, OR ANY AUTHORIZED DISTRIBUTOR, HABAN MANUFACTURING COMPANY, OR ANY COMPANY AFFILIATED WITH HABAN MANUFACTURING COMPANY BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (NOTE: SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OF OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.)

THIS WARRANTY DOES NOT COVER A) PRODUCTS ALTERED OR MODIFIED IN WAYS NOT APPROVED BY HABAN MANUFACTURING COMPANY, B) DEPRECIATION OR DAMAGE CAUSED BY NORMAL USE, ACCIDENTS, LACK OF REASONABLE AND NECESSARY MAINTENANCE AS SPECIFIED FOR PRODUCTS, IMPROPER MAINTENANCE, IMPROPER PROTECTION IN STORAGE OR IMPROPER PARTS, OR IMPROPER USE OR ABUSE OF PRODUCT, C) NORMAL MAINTENANCE AND REPLACEMENT OF SERVICE ITEMS SUCH AS CUTTING BLADES, V-BELTS, AND DRIVE CHAINS WHICH ARE NOT DEFECTIVE AND D) TRANSPORTATION, MAILING AND SERVICE CALL CHARGES AND WARRANTY SERVICE.

Haban Manufacturing Company's obligation under this warranty is limited to the repair or replacement, at its option by any authorized "Haban" equipment dealer, of any part found to be defective in material or workmanship without charge for parts and labor.

In order to obtain warranty service, the owner is responsible for:

- 1) Providing proof of purchase documentation, owner registration or copy of bill of sale.
- 2) Informing any authorized "Haban" equipment dealer of the defect and making the product available for repair. (Charges for pickup, delivery and service calls are not covered by this warranty.)

This warranty does not cover defects, malfunctions or failures caused by:

- 1) Use of unauthorized accessories or attachments.
- 2) Lack of reasonable and necessary maintenance as specified in the Owners Manual.

The selling dealer makes no warranty of his own on any item warranted by Haban Manufacturing Company and makes no warranty on other items unless he delivers to purchaser a separate written warranty certificate specifically warranting the item. The dealer has no authority to make any representation or promise on behalf of Haban Manufacturing Company to modify the terms or limitations of this warranty in any way.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

If further information is needed to obtain warranty performance, the purchaser should contact the Haban Manufacturing Company home office located at 2100 Northwestern Avenue, Racine, Wisconsin 53404.

P77-30 (8/18/77)



SET UP INSTRUCTIONS.....3-11
 OPERATION INSTRUCTIONS.....12-15
 MAINTENANCE INSTRUCTIONS.....16
 REPAIR PARTS.....18-27



**ATTENTION! BECOME
 ALERT! YOUR SAFETY IS
 INVOLVED!**

SAFETY RULES

This symbol is used to call your attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol - Heed Its Warning.

Many hours of lost time and much suffering is caused by the failure to practice simple safety rules.

IT IS TOO LATE TO REMEMBER WHAT SHOULD HAVE BEEN DONE AFTER THE ACCIDENT HAS HAPPENED.

Read and become familiar with the owners manual for your tractor and mower before operating the mower.

Do not allow anyone to use the mower unless they have been instructed in how to operate it safely.

Never attempt to adjust, repair or service the mower while the tractor engine is running.

Be sure the sickle knives and drive belts have stopped after shutting off engine before attempting to adjust, repair or service the mower.

Do not allow others near the mower when it is operating.

Always stay clear of the drive belts, pulleys and sickle knives when the tractor engine is running.

Always disengage power to the mower and stop the engine before leaving the operators position.

Do not wear loose fitting clothing that may be blown into moving parts.



CAUTION: The sickle knives and belts may continue to move several seconds after the clutch has been disengaged or the engine shut off.

Mark clearly, or remove from area to be mowed any objects which might be caught in or be struck by the sickle bar.

Always keep all shields and guards in place.

Tractor and mower should always be stopped and inspected for damage after striking a foreign object and the damage should be repaired before restarting and operating the equipment.

Operate the mower only in daylight.

Use caution when mowing on sloping surfaces.

When leaving tractor and mower unattended, always disengage PTO clutch, shift into neutral, set parking brake, stop engine and remove key. Install knife guard over sickle.

Always be especially careful when working around, raising or lowering cutter bar to or from transport position. The sickle knife cutting edges are very sharp and can cause injury.

REMEMBER THAT SAFE OPERATION IS NO ACCIDENT.



SAFETY PRECAUTIONS



CAUTION: ALWAYS disengage tractor and/or sickle bar attachment clutch, stop tractor engine and set tractor parking brake before dismounting from tractor.

CAUTION: KEEP HANDS and feet away from the sickle.

CAUTION: DO NOT allow anyone to walk along side, in front of, or behind the machine during operation.

CAUTION: The machine should not be lubricated or any adjustment made while it is RUNNING.

CAUTION: AVOID excessive speed.

UNPACKING

The sickle bar mower is packed in three cartons. Unpack the cartons carefully to assure that all parts are present.

The sickle bar mower consists of the following: (See Fig. 1)

- A. Basic Mower Assembly
- B. Main Frame Assembly with Hydraulic Lift
- C. Carrier Arm
- D. Drive Kit (In Carton)
- E. Bag of Parts

NOTE: The adaptor fitting which connects the quick-connector of the sickle hydraulic lift hose to the tractor hydraulic connection is not included with the sickle bar mower.

You will need to purchase a high pressure hydraulic steel fitting to make this connection. This fitting will need a 1/4-18 male pipe thread on one end, and the other end will need to mate with the tractor hydraulic connection.

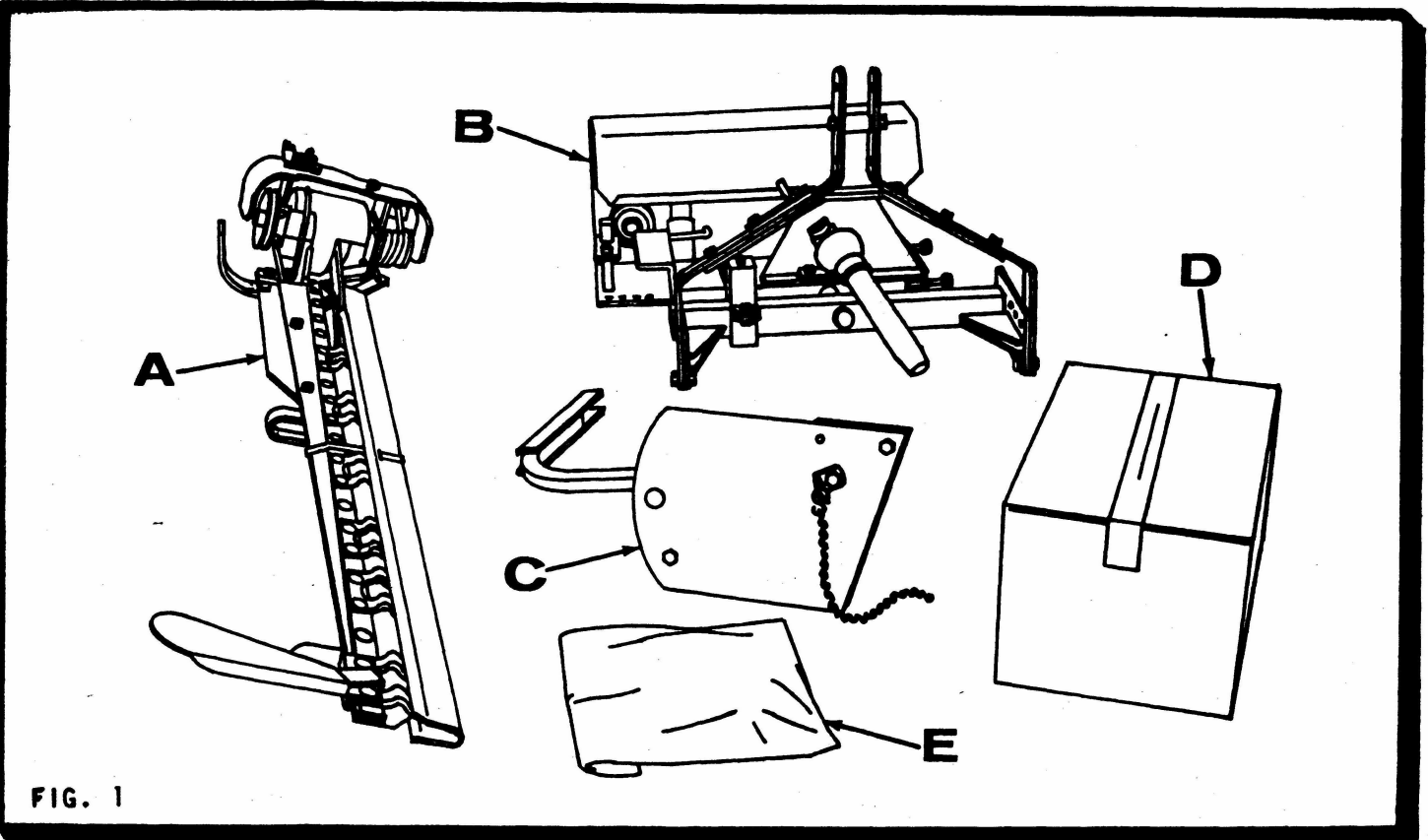


FIG. 1

CAUTION

BEFORE STARTING TO ASSEMBLE SICKLE BAR MOWER TO TRACTOR LOCK THE PARKING BRAKE AND REMOVE THE KEY FROM TRACTOR KEY SWITCH.

PREPARATION OF TRACTOR

Before beginning to assemble the sickle bar mower attachment, remove any other attachments from tractor.

TOOLS

With some tools you already own plus a few inexpensive items that can be purchased at a local hardware store, set-up and maintenance can be accomplished quickly and accurately.

TOOLS NEEDED ARE:

1. 7/16" Open End Wrench.....(2)
2. 15/16" Open End Wrench.....(2)
3. 9/16" Open End Wrench.....(2)
4. 1-5/16" Open End Wrench.....(2)

SET UP

PREPARATION OF MAIN FRAME ASSEMBLY FOR TRACTOR MOUNTING

Loosen two wing nuts (A), remove hair cotter pin (B) and lift off pulley cover (C) for access to main frame assembly. (See Fig. 2)

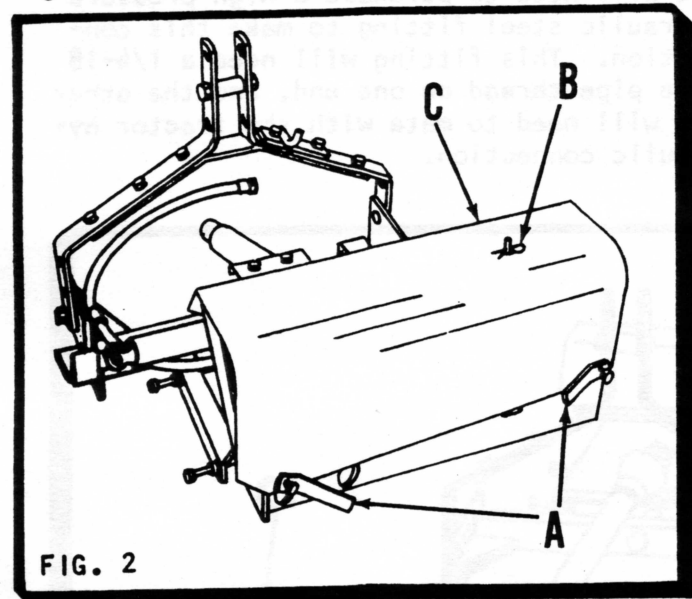


FIG. 2

PREPARATION OF MAIN FRAME ASSEMBLY FOR TRACTORS WITH CATEGORY "0" THREE POINT HITCH (FIG. 3)

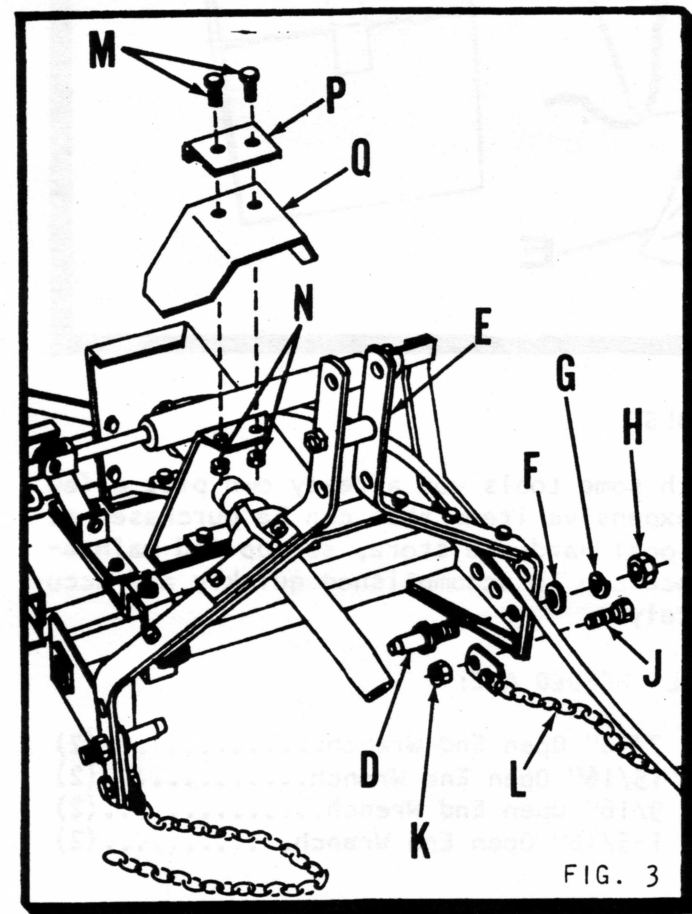


FIG. 3

1. Assemble hitch pin (D) to inside of three point mast (E) securing with flat washer (F), lock washer (G) and nut (H). One hitch pin each side of mast as shown.
2. Remove bolt (J) and lock nut (K) at bottom of mast (E). Install chain assembly (L) to inside of mast (E), replace bolt (J), lock nut (K) and tighten. Install chain assembly to each side of mast as shown.

NOTE: Chain assemblies not required when mounting on Roper or Sears tractors. Height adjustment can be made with tractor height stop.

3. Remove two bolts (M), two nuts (N) and cover bracket (P). Re-install these parts with PTO cover (Q) under cover bracket (P) as shown.

PREPARATION OF MAIN FRAME ASSEMBLY FOR TRACTORS WITH CATEGORY "1" THREE POINT HITCH (FIG. 4)

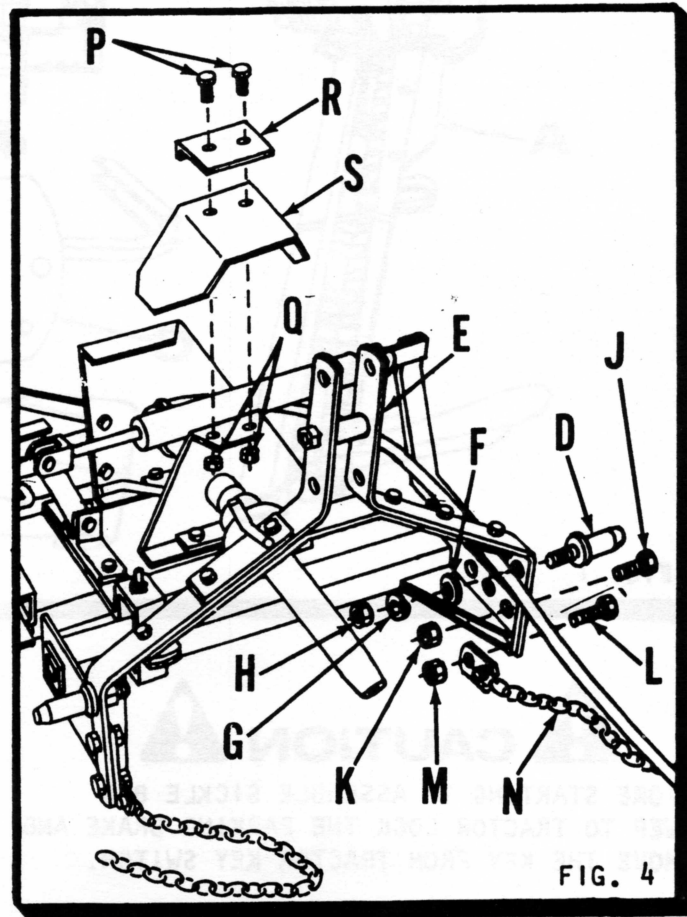


FIG. 4

1. Assemble hitch pin (D) to outside of three point hitch mast (E) securing with flat washer (F), lock washer (G) and nut (H). One hitch pin each side of mast as shown.
2. Install bolt (J) and lock nut (K) in center hole on each side of mast (E).

SET UP

3. Remove bolt (L) and lock nut (M) at bottom of mast. Install chain assembly (N) to inside of mast (E), replace bolt (L), lock nut (M) and tighten. Install chain assembly to each side of mast as shown.
4. Remove two bolts (P), two nuts (Q) and cover bracket (R). Re-install these parts with PTO cover (S) under cover bracket (R) as shown.

INSTALLATION OF IDLER PULLEYS AND V-BELTS

1. Install idler pulley(s) in position as shown in Figure 5 according to rotation and drive speed of your tractor PTO.
2. Place v-belt around drive pulley (A) and around idler pulley(s) and allow v-belt to lay in approximate position shown in Figure 5 for your drive.

INSTALLATION OF DRIVE PULLEY (FIG. 5)

1. Drive pulley (A) is found in Drive Kit. Install drive pulley (A) onto end of jackshaft with hub of pulley to outside and with thick spacer washers (found installed on jackshaft) to inside of pulley.
2. Secure pulley (A) to jackshaft with key, flat washer, lock washer and bolt (B) found assembled on jackshaft.
3. Tighten set screws in pulley hub.

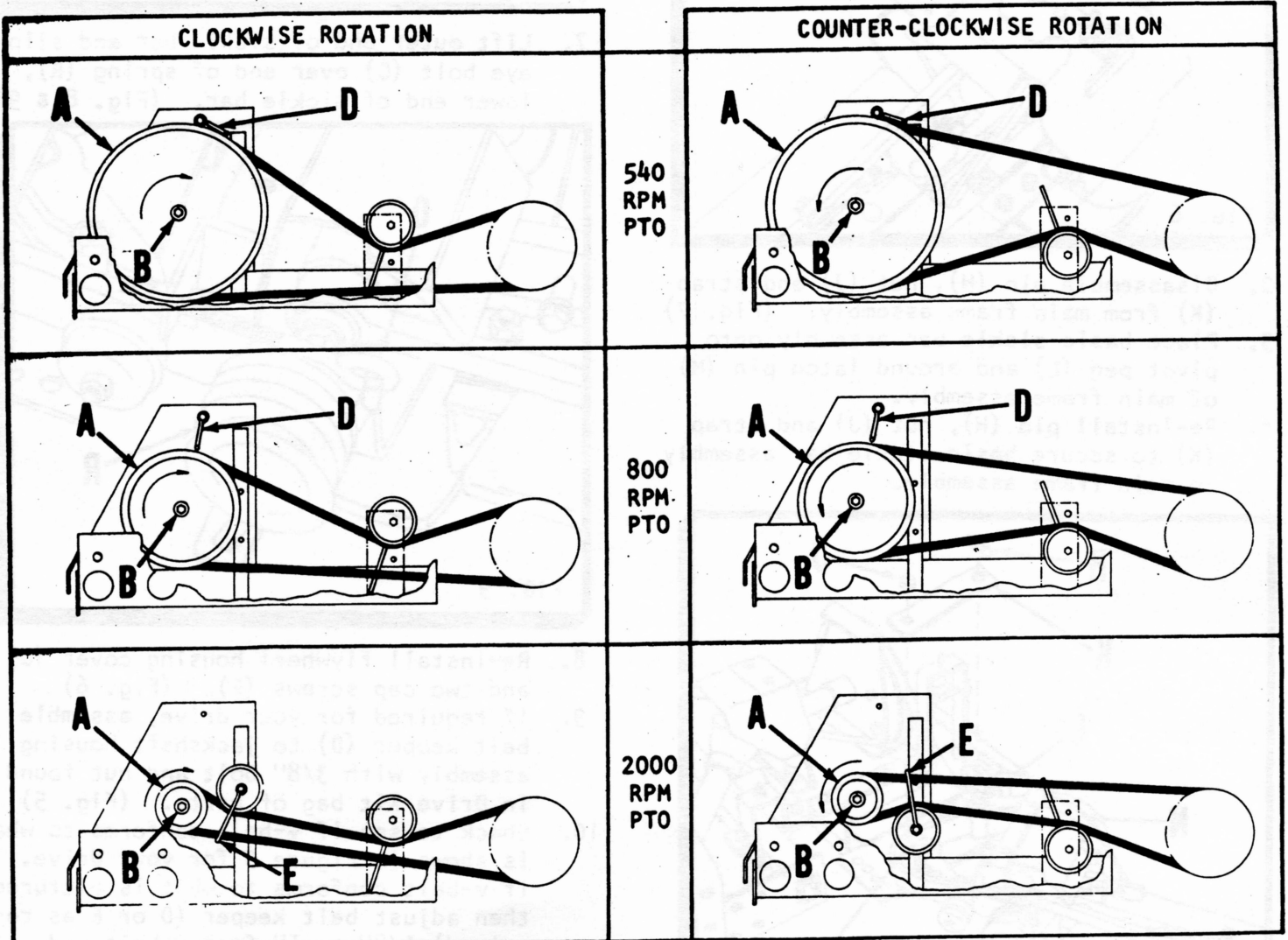
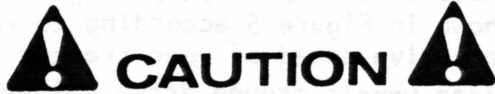


FIG. 5

SET UP

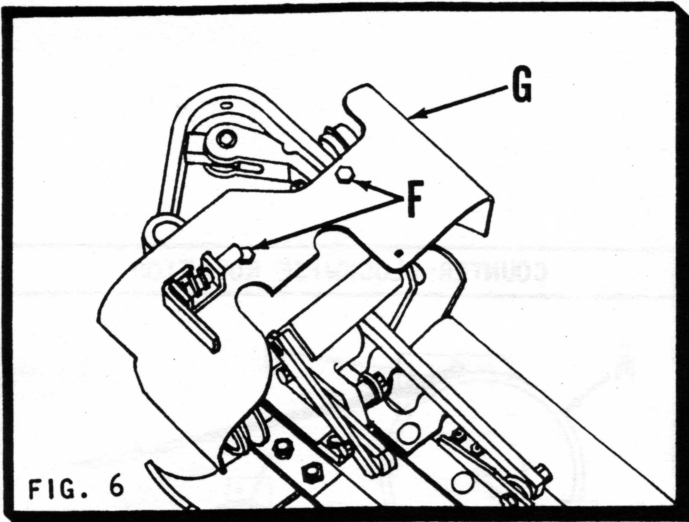
ASSEMBLE BASIC SICKLE BAR TO MAIN FRAME ASSEMBLY



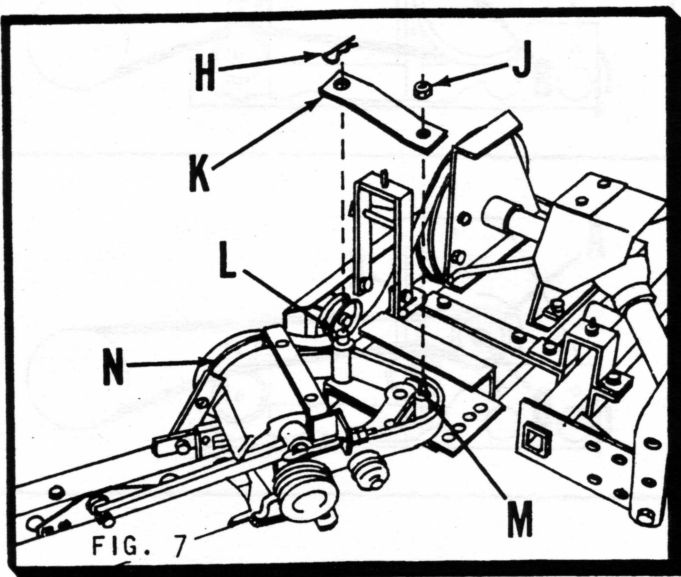
CAUTION

KEEP SICKLE KNIFE SHIELD STRAPPED OVER KNIFE ASSEMBLY WHENEVER WORKING AROUND OR HANDLING SICKLE BAR.

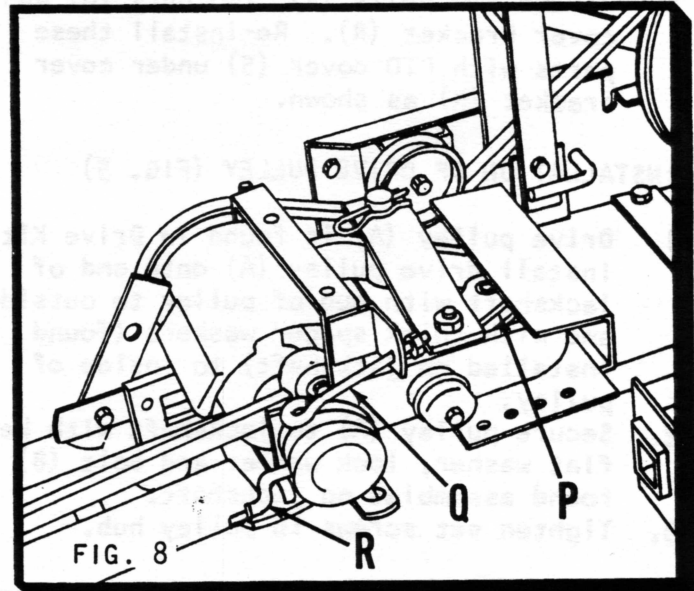
1. Disassemble two cap screws (F) and flywheel housing cover (G) from basic sickle bar assembly. (Fig. 6)



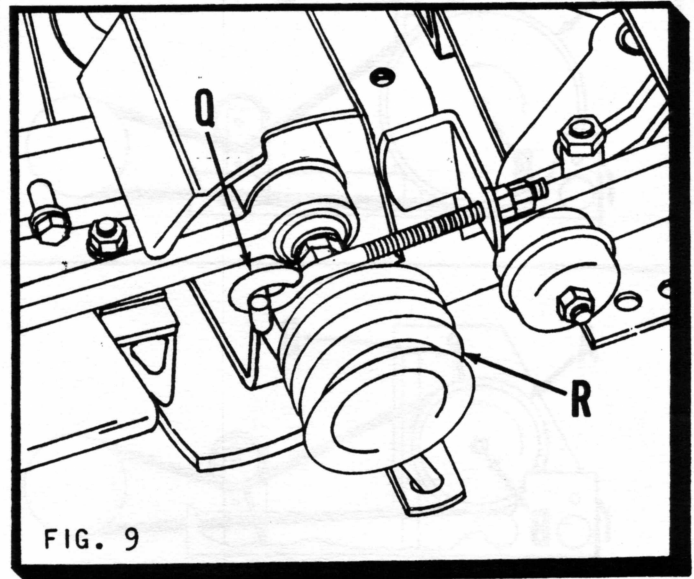
2. Disassemble pin (H), nut (J) and strap (K) from main frame assembly. (Fig. 7)
3. Place basic sickle bar assembly onto pivot peg (L) and around latch pin (M) of main frame assembly.
4. Re-install pin (H), nut (J) and strap (K) to secure basic sickle bar assembly to main frame assembly.



5. Place v-belt around pulley (N) of flywheel housing on basic sickle bar assembly. (Fig. 7)
6. Pivot basic sickle bar forward until it locks into breakaway latch (P). (Fig. 8)



7. Lift outer end of sickle bar and slip eye bolt (Q) over end of spring (R), lower end of sickle bar. (Fig. 8 & 9)

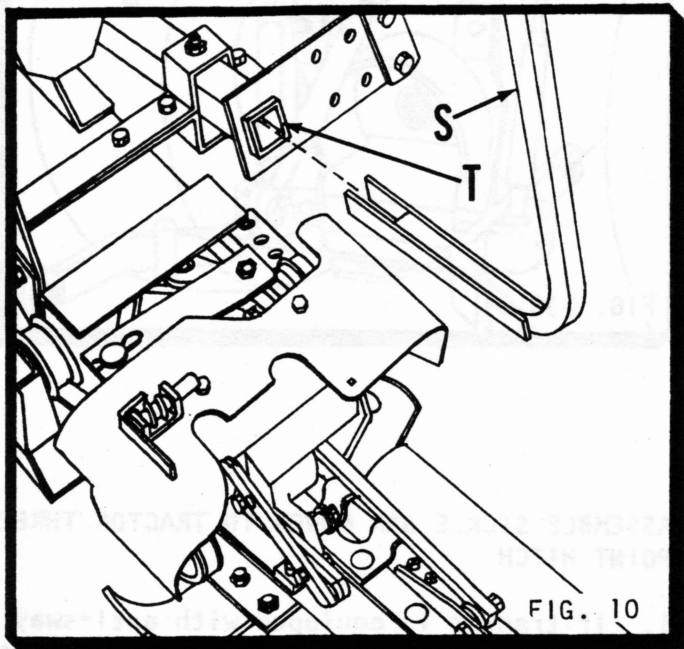


8. Re-install flywheel housing cover (G) and two cap screws (F). (Fig. 6)
9. If required for your drive, assemble belt keeper (D) to jackshaft housing assembly with 3/8" bolt and nut found in Drive Kit bag of parts. (Fig. 5)
10. Check to see if v-belt conforms to what is shown in Figure 5 for your drive. If v-belt conforms to what is pictured then adjust belt keeper (D or E as required) 1/8" to 1/4" from v-belt and tighten.

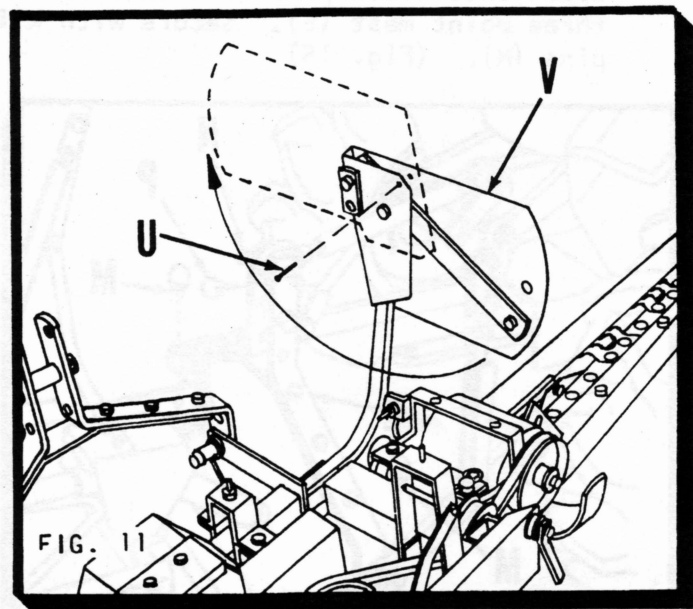
NOTE: See V-Belt Adjustment (Page 12).

INSTALLATION OF CARRIER ARM AND CARRIER SPRING

1. Insert end of carrier arm (S) into square hole (T) in main frame assembly. (Fig. 10)



2. Remove safety clevis pin (U) and rotate carrier arm shield (V) into position shown by dotted line in Figure 11.

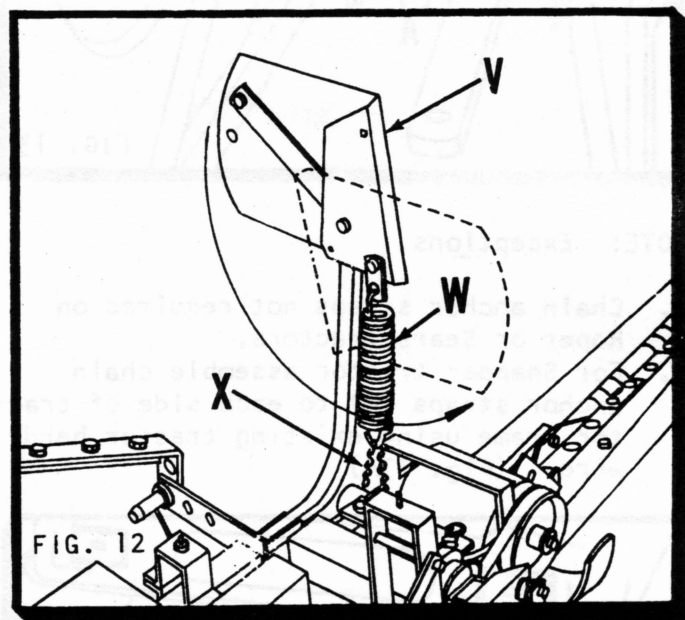


3. Hook carrier spring (W) into strap of carrier arm shield (V) and into fourth or fifth link of carrier chain (X).
4. Apply tension to carrier spring (W) by rotating carrier arm shield (V) to position shown by dotted line in Figure 12.



USE EXTREME CARE WHEN APPLYING OR RELEASING TENSION TO CARRIER SPRING. CARRIER SPRING CAN CAUSE CARRIER ARM SHIELD TO ROTATE VERY RAPIDLY AND INFLICT SEVERE INJURY.

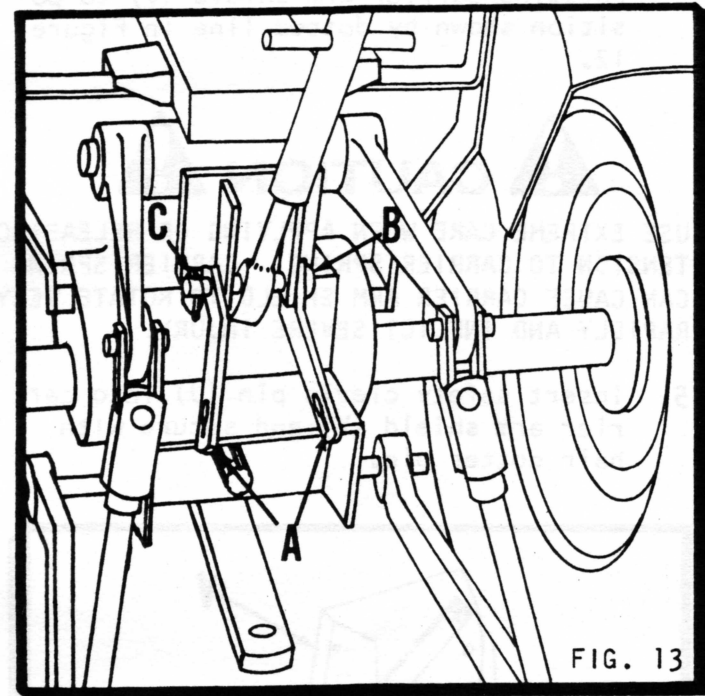
5. Insert safety clevis pin (U) into carrier arm shield (V) and secure with hair cotter pin.



SET UP

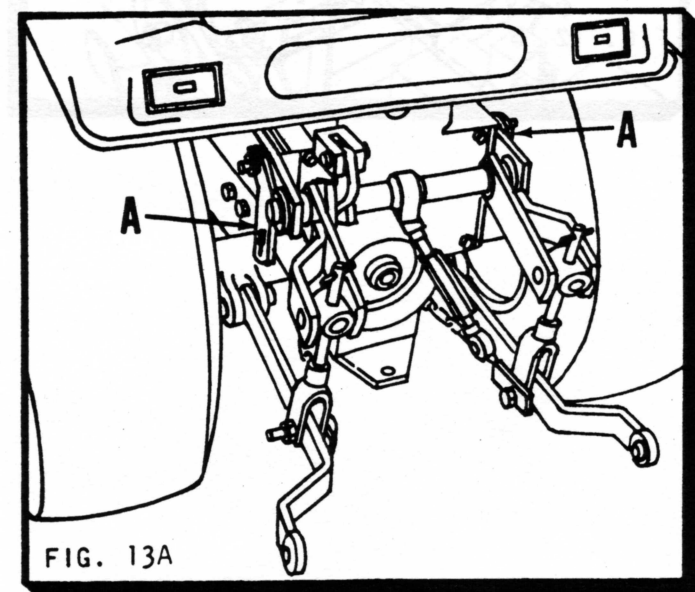
INSTALLATION OF CHAIN ANCHOR STRAPS

1. Assemble chain anchor straps (A) to tractor using existing tractor standard clevis pin (B) and tractor klik pin (C). (See Fig. 13)

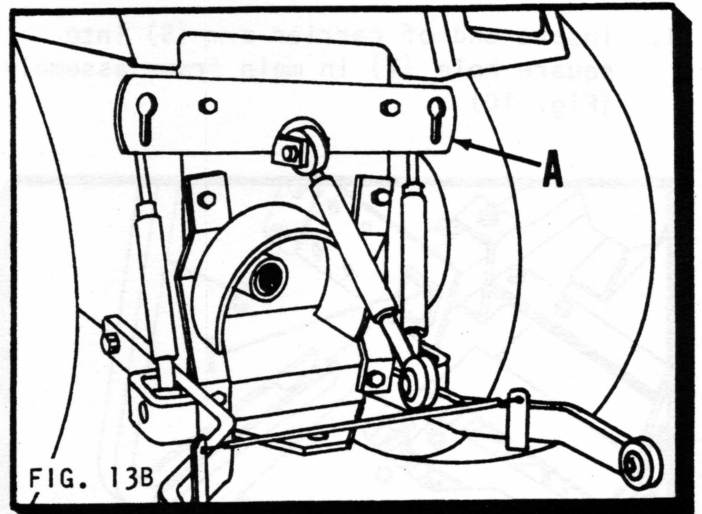


NOTE: Exceptions

1. Chain anchor straps not required on Roper or Sears tractors.
2. For Snapper tractor assemble chain anchor straps (A) to each side of tractor frame using existing tractor hardware. (Fig. 13A)

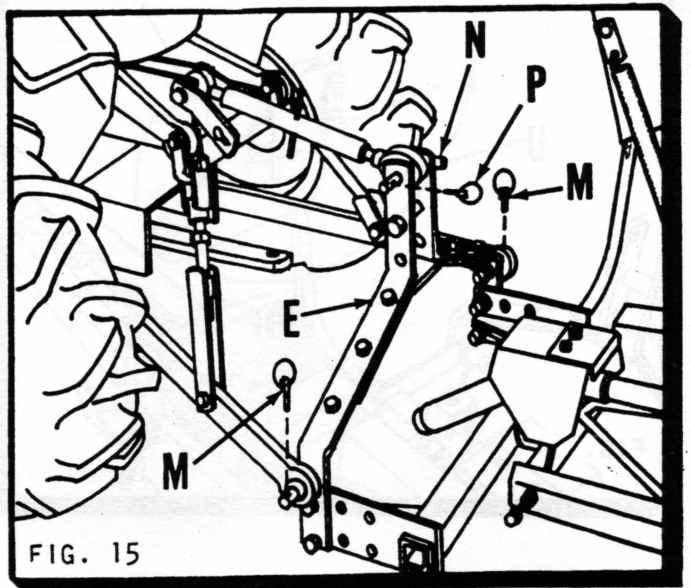


3. For Cub Cadet tractor assemble chain anchor plate (A) to back of tractor frame using existing tractor hardware. (Fig. 13B)



ASSEMBLE SICKLE BAR MOWER TO TRACTOR THREE POINT HITCH

1. If tractor is equipped with anti-sway chains on lower three point hitch arms, loosen anti-sway chains to allow arms to be placed on hitch pins of sickle bar three point mast.
2. Place lower arms of tractor three point hitch onto hitch pins of sickle bar three point mast (E). Secure with klik pins (M). (Fig. 15)



SET UP

3. Attach third member of tractor three point hitch to upper part of sickle bar three point mast (E) using locating pin (N) and klik pin (P). Category "1" third member pins into uppermost hole in sickle bar three point mast, and category "0" third member pins into lower hole of top part of sickle bar three point mast. (Fig. 15)

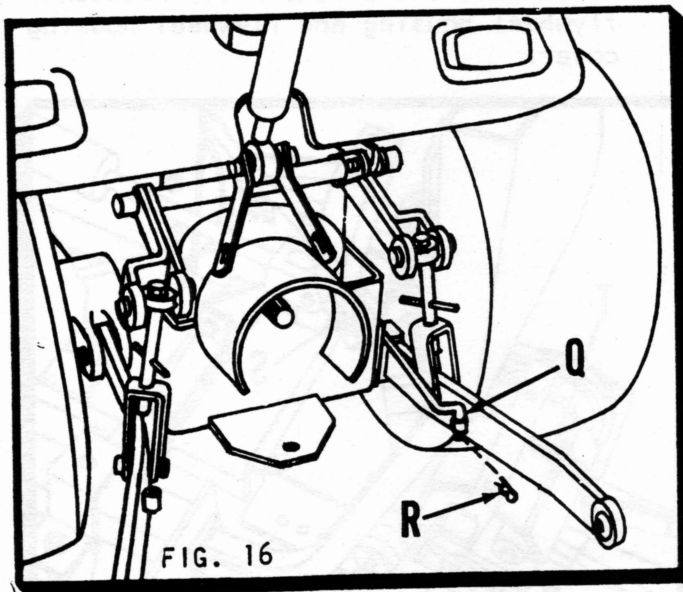
NOTE: Exception - Third member of Satoh "Beaver" three point hitch pins into uppermost hole of sickle bar three point mast.

CENTERING OF SICKLE BAR MOWER MAIN FRAME ON TRACTOR

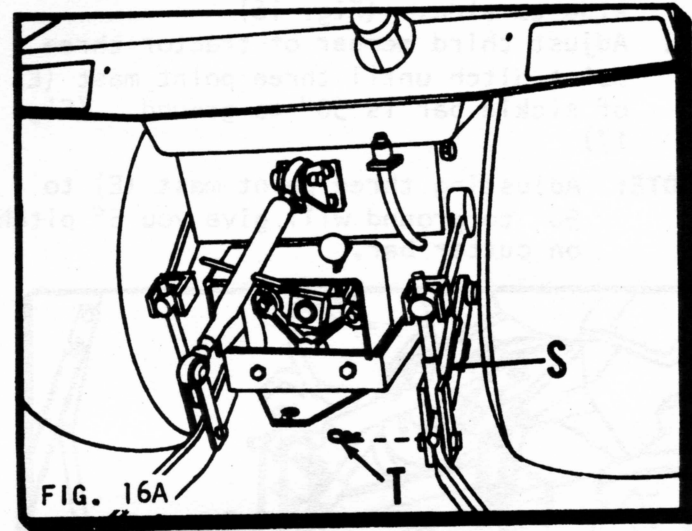
1. Adjust anti-sway chains of tractor lower three point hitch arms until main frame of sickle bar mower is centered side to side on tractor and both chains are tight.

NOTE: Exceptions

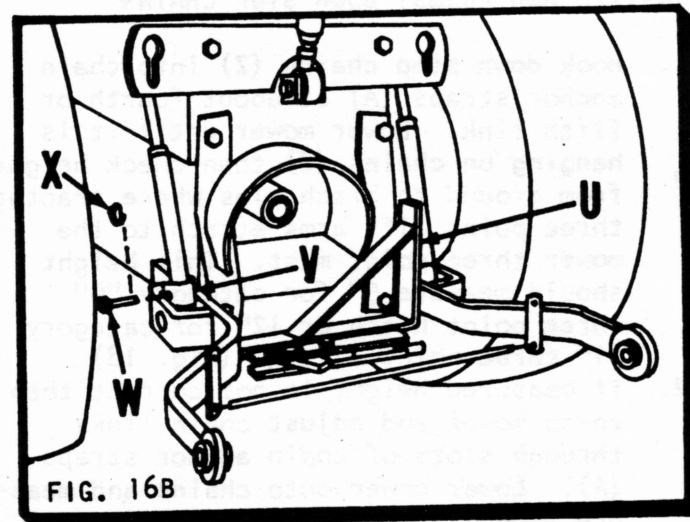
1. For John Deere tractor assemble anti-sway bracket (Q) between right hand tractor three point hitch arm and tractor frame. Secure with hair cotter pin (R). (Fig. 16)



2. For Sears tractor assemble anti-sway bracket (S) between right hand tractor three point hitch arm and tractor frame. Secure with hair cotter pin (T). (Fig. 16A)



3. For Cub Cadet tractor assemble anti-sway bracket (U) into tractor drawbar behind lift cable anchor with vertical part of anti-sway bracket between right hand tractor three point hitch arm and right side of tractor frame. Place stabilizer bracket (V) around bottom of lift link on left hand tractor three point hitch arm. Secure stabilizer bracket to lift link with clevis pin (W) and slip ring (X). (Fig. 16B)



SET UP

LEVELING SICKLE BAR MOWER MAIN FRAME ASSEMBLY

1. Adjust lift links (A) on tractor three point hitch arms until sickle bar three point mast assembly (E) is level from side to side. (Fig. 16)
2. Adjust third member of tractor three point hitch until three point mast (E) of sickle bar is 90° to ground. (Fig. 17)

NOTE: Adjusting three point mast (E) to 90° to ground will give you 5° pitch on cutter bar.

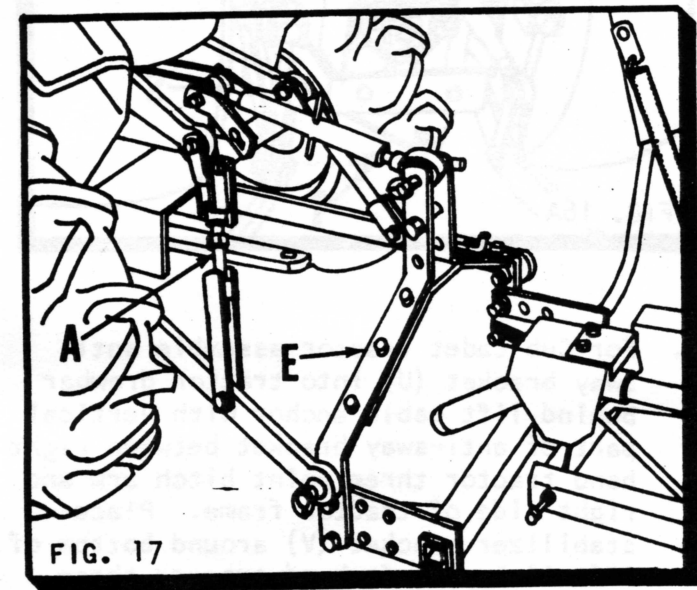


FIG. 17

INSTALL AND ADJUST DOWN STOP CHAINS

1. Hook down stop chains (Z) into chain anchor straps (A) at about fourth or fifth link. Lower mower until it is hanging on chains (Z) then check height from ground to hitch pins where tractor three point lift arms attach to the mower three point mast. This height should measure 9" for category "0" three point hitch or 12" for category "1" three point hitch. (Fig. 18)
2. If measured height is not correct then raise mower and adjust chain links through slots of chain anchor straps (A). Lower mower onto chains and measure again, repeating raise, adjust, lower and measure as required to attain correct height.

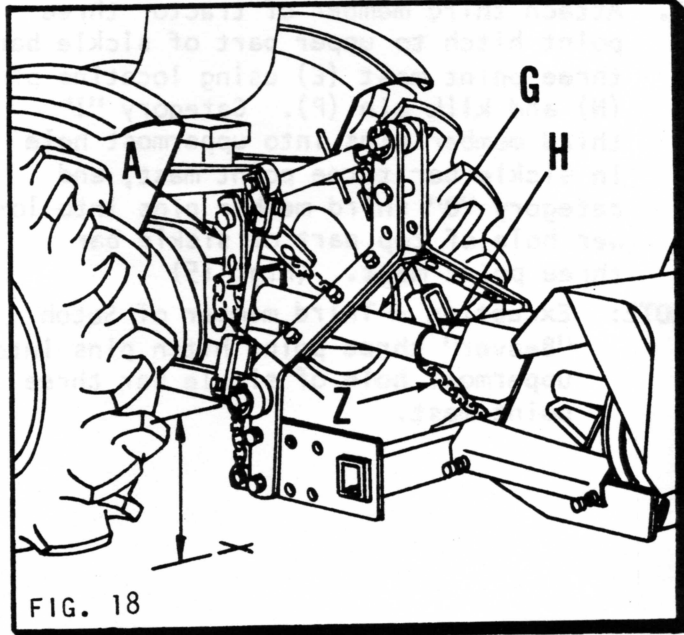


FIG. 18

INSTALLATION OF PTO DRIVE SHAFT

1. Slide half of PTO drive shaft (G) found in Drive Kit into half of PTO drive shaft (H) attached to front of sickle mower. (Fig. 18)
2. Connect PTO drive shaft to tractor PTO shaft.

ATTACH CUTTER BAR LIFT CHAIN

1. Disassemble bolt, lock washer, flat washer, and spacer (R) from flywheel housing. (Fig. 19)
2. Slide free end of chain (T) between flywheel housing and flywheel housing cover.

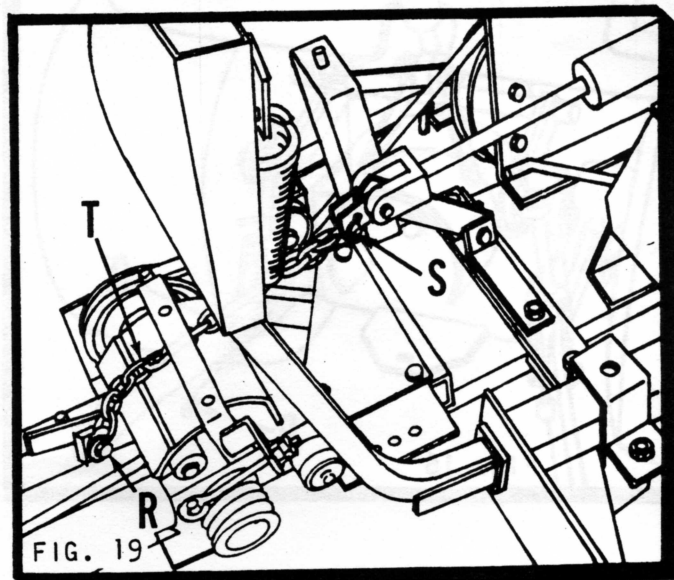


FIG. 19

3. Place enlarged end link of chain (T) onto spacer and re-assemble bolt, lock washer, flat washer and spacer (R) into flywheel housing. (Fig. 19)

CONNECT SICKLE HYDRAULIC LIFT HOSE

1. Connect hydraulic hose to tractor three point lift hydraulic system or to other controlled hydraulic system using purchased adaptor fitting to connect hose quick-connect to tractor connection.

NOTE: Be sure all fittings, hose ends, and connections are clean before installing. Dirt and contaminants are extremely destructive to hydraulic systems.

2. Attach hose clip from bag of parts to appropriate place on tractor to keep hydraulic hose from rubbing on moving parts.

LIFT ASSIST SPRING

(Used on 6 foot bars ONLY)

1. Lift assist spring can be installed by first removing clevis pins from each end of the hydraulic cylinder. Place hook at blank end of cylinder and "L" bracket at rod end, then re-install clevis pins.
2. Stretch spring between hook and bracket.

RAISE CUTTER BAR TO TRANSPORT POSITION

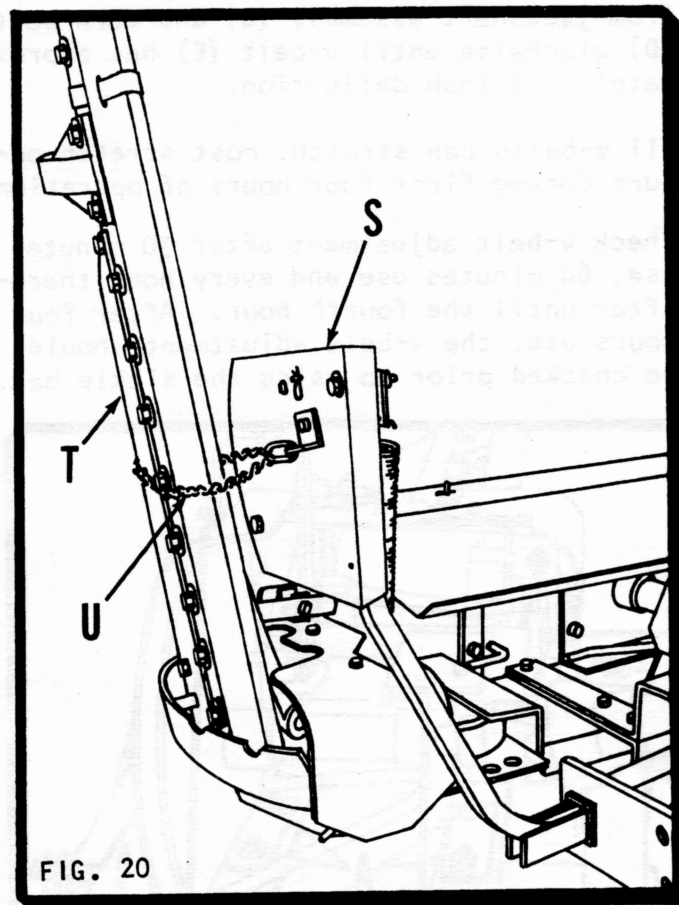
1. Replace pulley cover (C), insert hair cotter pin (B), and tighten two wing nuts (A). (See Fig. 2)
2. Start tractor engine and hydraulically raise mower to up position.



CAUTION

WHEN MOWER IS RAISED THE CUTTER BAR WILL FOLD UP TOWARD THE TRANSPORT POSITION. ALWAYS BE AWARE OF THIS.

3. Shut off tractor engine. Push cutter bar (T) toward carrier arm (S) until safety chain (U) can be hooked around cutter bar (S). (Fig. 20)



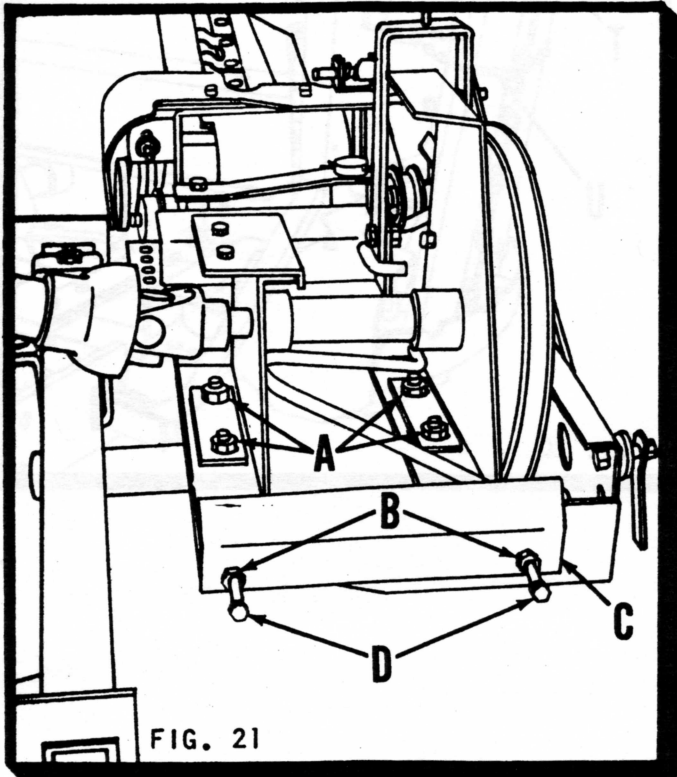
OPERATION

V-BELT ADJUSTMENT (See Fig. 21)

Loosen four nuts (A), back nuts (B) away from jackshaft assembly (C) and turn bolts (D) clockwise until v-belt (E) has approximately 1/2 inch deflection.

All v-belts can stretch, most stretch occurs during first four hours of operation.

Check v-belt adjustment after 30 minutes use, 60 minutes use and every hour thereafter until the fourth hour. After four hours use, the v-belt adjustment should be checked prior to using the sickle bar.



PRESTARTING INSPECTION

1. Be sure mower has been properly assembled to tractor. Set-up instructions start on page 3.
2. Be sure mower is properly adjusted. See set-up section.
3. Check condition of sickle sections. Keep them sharp.
4. Be sure sickle bar mower is lubricated. See "Maintenance".

With tractor engine throttle set just above idle, engage tractor attachment clutch lever slowly. Advance throttle to 3/4 to full.

METHOD OF MOWING

Before mowing a new plot of grass, always stop to analyze the area for best mowing procedure. Consider also the height of grass to be mowed, type of terrain (level, hilly or pitted), as well as the presence of rocks or trash. Each condition will require certain adjustments or precautions, as outlined in the following pages.

Pick up all rocks, stones and other debris you can find before mowing in a new area. Enter the area cautiously.

If several years of dead grass have accumulated in areas being cut, particularly on hills or slopes, it may be necessary to cut against the slope due to dead material leaning forward, thereby not allowing the sickle to cut cleanly.

Test pattern cutting will soon show you the most appropriate way to approach the task. Remember, the proper settings, a sharp sickle, correct forward speed, and good general maintenance will enable you to cut any reasonable patch of grass with satisfaction. Over looking any one of the above points may detract from the machine's performance. A few points are listed below.

Exceptionally tall grass or weeds, uneven terrain, may require you to operate your tractor at a much slower speed than you would normally use. On the other hand, sparse weeds, etc., may enable you to operate at a higher rate of forward speed than would normally be used under ordinary cutting conditions.

OPERATION

The operation of your sickle bar mower is controlled through the tractor PTO clutch lever. To start the sickle bar, push the clutch lever forward to the "IN" position. To stop sickle bar mower, pull lever back to the "OUT" position.

Raise mower bar until spring loaded pin (C) snaps into strap (D). Avoid sudden or sharp turns with mower in transport position. Connect safety chain (E) to carrier arm (F) to keep unit from swaying in transport position.

LOWERING SICKLE BAR MOWER FROM TRANSPORT POSITION TO MOWING POSITION (See Fig. 22)

Stop tractor engine. Standing behind mower, push inward on mower bar, disconnect safety chain (E) from carrier arm (F). Slide transport pin (C) out of strap (D) and lower sickle bar to ground level. Loosen retaining strap (B) and remove sickle cover (A). When mower is not in use or when transporting unit always keep sickle cover (A) in place.

MOWING ON LEVEL GROUND

Before operation, check complete unit for any looseness which may have occurred in shipping. Unit should then be operated a short period to check for proper assembly and adjustments before actual cutting begins. Stop engine and recheck all parts after 30 minutes of operation. Also follow lubricating instructions under maintenance. Operate tractor at 3/4 to full throttle. It will be necessary to regulate tractor forward travel to meet existing cutting conditions, which can vary greatly, depending on material that is being cut. RUN INNER SHOE APPROXIMATELY 4" AWAY FROM PREVIOUS SWATH EDGE FOR BEST PERFORMANCE. Cutter bar has additional width of cut to compensate for overlay. Care must be exercised not to operate tractor at excessive ground speed when cutting rough terrain.

MOWING DITCH SIDES OR BANK SIDES

Cutter bar can be adjusted to mow at any angle from approximately 45° below horizontal to 65° above horizontal. Adjustment can be made to any angle by removing hair cotter pin and eye bolt (S) and placing through desired link of lift chain. (Fig. 19)

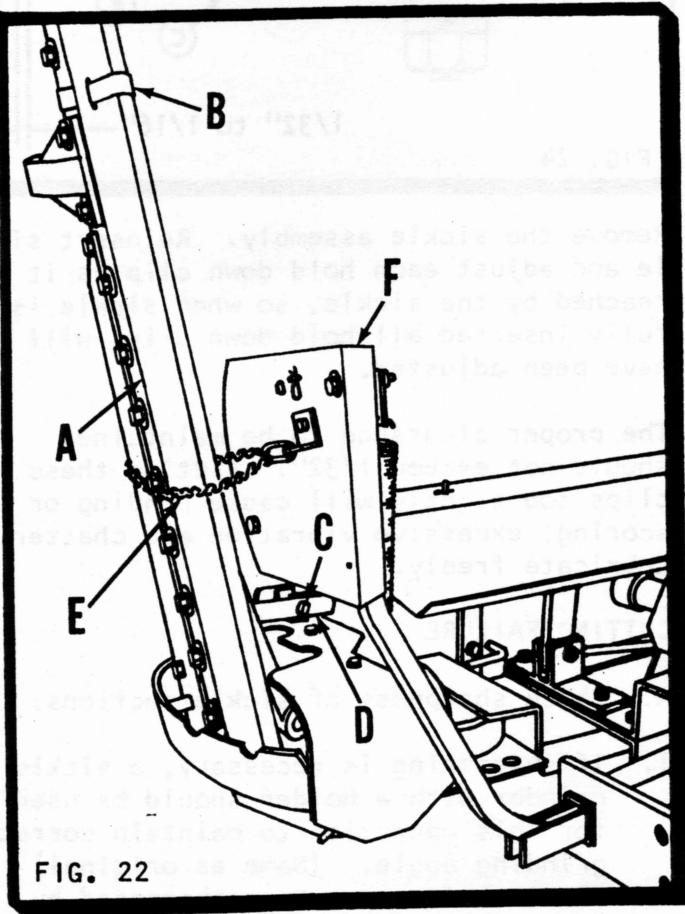
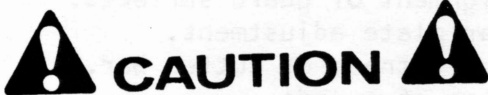


FIG. 22

TRANSPORTING MOWER

Stop tractor engine, place tractor attachment clutch lever in "Out" position, and set parking brake. Install sickle knife cover (A) using retaining strap (B) to secure cover to bar. (Fig. 22)



CAUTION

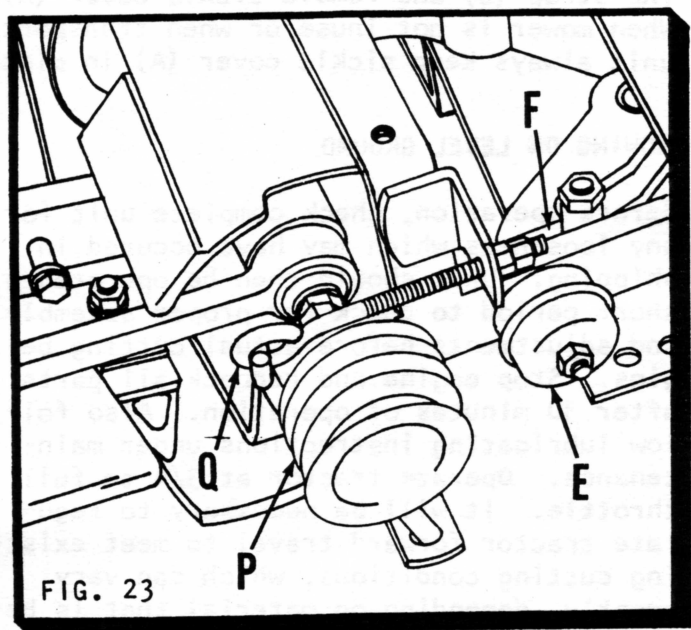
ALWAYS STOP TRACTOR ENGINE, DECLUTCH SICKLE BAR, AND SET PARKING BRAKE BEFORE DISMOUNTING FROM THE TRACTOR.

The sickle knife cover (A) is provided to protect the operator and others from serious injury. It should be in place whenever the sickle bar is not in use or is being transported from one area to another. (Fig. 22)

OPERATION

AUTOMATIC BREAK BACK (See Fig. 23)

The break back automatically releases sickle bar into break back position when hitting obstruction. The sickle mower unit should be immediately DE-CLUTCHED. Return sickle bar to normal cutting position, engaging break back. This may be done by reversing tractor with sickle bar on ground, or manually. Unwarranted or frequent break back releases indicate tension on the spring under cup (E) Figure 23 should be increased. To disengage safety break back manually, insert screw driver at (F) Figure 23 and pry break back pivot open; at same time push sickle bar back to release catch.

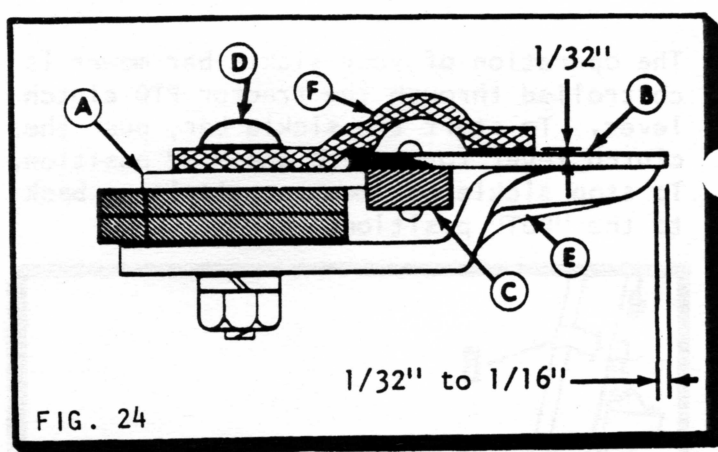


SICKLE ASSEMBLY REMOVAL

When it becomes necessary to remove the sickle for sharpening, section replacement or complete sickle replacement, remove the bolts holding the sickle head to bar and slide sickle out of guard assembly.

SICKLE CLEARANCE (See Fig. 24)

If the sickle fits too loosely, in most cases proper clearance can be obtained by tapping down or prying up the front end of the hold down clips (F).



Remove the sickle assembly. Reinsert sickle and adjust each hold down clip as it is reached by the sickle, so when sickle is fully inserted all hold down clips will have been adjusted.

The proper clearance to be maintained should not exceed 1/32". Fitting these clips too tightly will cause binding or scoring, excessive vibration and chatter. Lubricate freely.

CUTTING FAILURE

A. Check sharpness of sickle sections.

1. If sharpening is necessary, a sickle grinder with a holder should be used for this operation to maintain correct grinding angle. (Same as original) Sickle knives can be resharpened by your local store.
2. Replace damaged sickle sections.

B. Check fit of sickle sections to guards and wear plates. If the sickle sections are sharp, clean cutting is entirely dependent upon the following:

1. Alignment of guard surfaces.
2. Wear plate adjustment.
3. Straightness of cutter bar.
4. Pitch of guards.
5. Hold down clip clearance.
6. Proper lead setting of mower.
7. Improper speeds of sickle in relation to forward travel of tractor.

Be sure the sickle sections are sharp at all times and held close to the guards by the sickle clips. Be careful, however, of having them too tight as this will cause binding. Always lubricate well with oil at the point on the bar and guard assembly where the clips contact the sickle assembly

OPERATION

Check the position of the forward ends of the sickle sections (B) to make sure that they protrude past the forward ends of the guards (E) Figure 24. For cutting loose pre-cut hay, dense, fine and loose under growths, etc.; without clogging, the sickle must contact the material ahead of any guard. 1/32" to 1/16" protrusion of the sickle beyond the guard is sufficient. If your wear plates (A) Figure 41 are worn half way through on the front edge, moving the wear plate forward will place the sickle in the proper position. If the wear plate is worn too much for making the proper adjustment, they should be replaced.

WEAR PLATE ADJUSTMENT (See Fig. 41)

The wear plates (A) support the back of the sickle sections (B) and guide the sickle bar in the guard recess. Wear plates have elongated holes for adjustment against the sickle bar (C) to prevent it from drifting forward and backward. Adjust by loosening the guard bolts (D) and sliding the wear plate forward against the sickle bar. Avoid a tight fit. Check the top surface of the wear plate with the guard surface (E). These two surfaces must be even.

ALIGNMENT OF CUTTING SURFACES

Remove the sickle assembly and check all guards for alignment of surfaces. The alignment may be checked by using a straight edge or drawing a string tightly across these surfaces. Any guard being too high

will create excessive clearance between the guard and the sickle sections. Misalignment can be corrected by bending guards up or down, as required. Hammer only on solid portion of guard beyond the lip.

SERVICE TIPS FOR SICKLE BAR MOWER OPERATION

Listed below are some of the tell-tale signs which will indicate when you are operating your tractor in too fast forward gear:

1. Jagged or uneven cutting indicates too fast a forward ground speed.
2. Plugging sickle assembly could be created by either excessive forward speed, improperly installed hold down clips, or dull sickle knife.



CAUTION



Never attempt to force the sickle bar mower to raise if the outer end of the bar is lodged or caught in foreign debris, dirt, or heavy underbrush. Give your tractor and equipment every possible opportunity to operate efficiently. Try to reverse tractor or move forward carefully until sickle bar is released from entanglement, or -- stop engine -- set parking brake, disengage attachment clutch lever, dismount from tractor and release mower bar from obstruction manually.

SERVICE TIPS FOR SICKLE BAR MOWER OPERATION

PROBLEM	SOLUTION
1. Cutter bar outer shoe bounces or digs into ground surface.	Adjust torsion spring.
2. Inner shoe dragging on ground.	Raise inner shoe assembly by adjustment of lift spring. Make sure lift chain is properly assembled.
3. Mower does not cut cleanly, drags hay under sickle, cutting pattern shows blank or skipping points.	Adjust forward speed to coincide with sickle knife action. Check setting of hold down clips.
4. Bunching of cut material in front of inner shoe after adjustment of lift spring.	Inner shoe is being run too close to edge of previous swath. Allow approximately 4" overlap, on previous cut.
5. Failure to cut grass and weeds.	Check clearance between sickle knife and guards - fit should be snug, approximately 1/32". Tap metal hold down clips with hammer to adjust. Sharpen sickle section if dull.

MAINTENANCE

CLEANING

For best results, the unit should have all dirt accumulation removed from sickle bar. Do not allow the machine to stand for long periods without cleaning. Inside storage will also prolong its operating life.



CAUTION
BEFORE SERVICING MACHINE, DE-CLUTCH ATTACHMENT, STOP ENGINE, REMOVE KEY AND SET PARKING BRAKE.

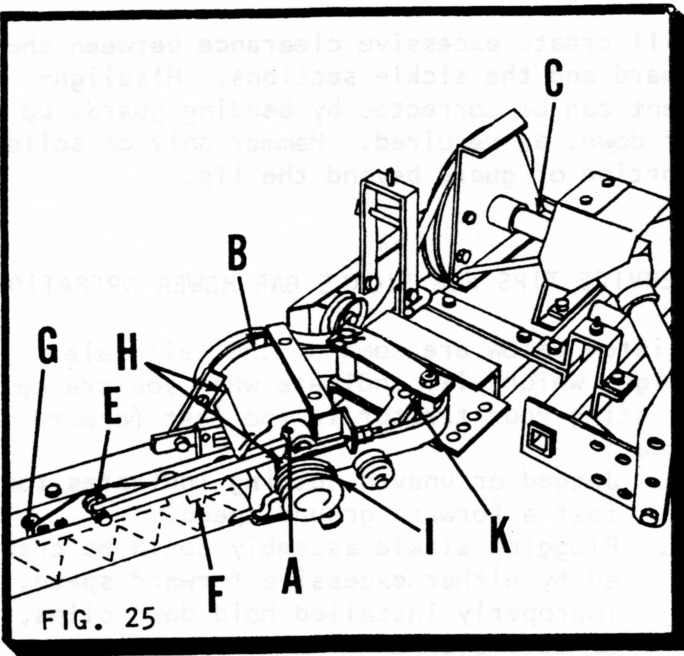


FIG. 25

LUBRICATION (See Fig. 25)

Before starting, it is important that the machine is thoroughly lubricated. Give each fitting a few shots of grease. Grease all points at one-hour intervals the first two days. Thereafter, entire unit should be greased at least once each four hours during continuous operation.

Using Amoco EP#2 Amolith grease or equal the following fittings require grease every four hours of machine operation:

- A. Pitman Crank Pin
- B. Crankshaft Assy.
- C. Jackshaft

The following points require light weight lubricating oil every four hours:

- E. Pitman Head
- F. Sickle Clips
- G. Wear Plates

Every eight hours:

- H. Inner Shoe Pivots
- I. Torsional Life Spring
- K. Spring Release Pivot

HABAN

MODEL NOS

444-200

444-800

444-540

445-540

444-541

445-541

HOW TO ORDER REPAIR PARTS

MODEL NUMBER

The Serial Number is located on the pivot stabilizer anchor strap of the sickle bar mowers main frame.

REPAIR PARTS

WHEN ORDERING REPAIR PARTS, ALWAYS GIVE THE FOLLOWING INFORMATION:

- THE PART NUMBER
- THE PART DESCRIPTION
- THE MODEL NUMBER
- THE NAME OF MERCHANDISE
- ORDER PARTS FROM:

Haban Manufacturing Company
2100 Northwestern Avenue
Racine, Wisconsin 53404

Your Tractors Model Number

Your Tractors Serial Number

Your Sickle Bar Mower Serial Number
