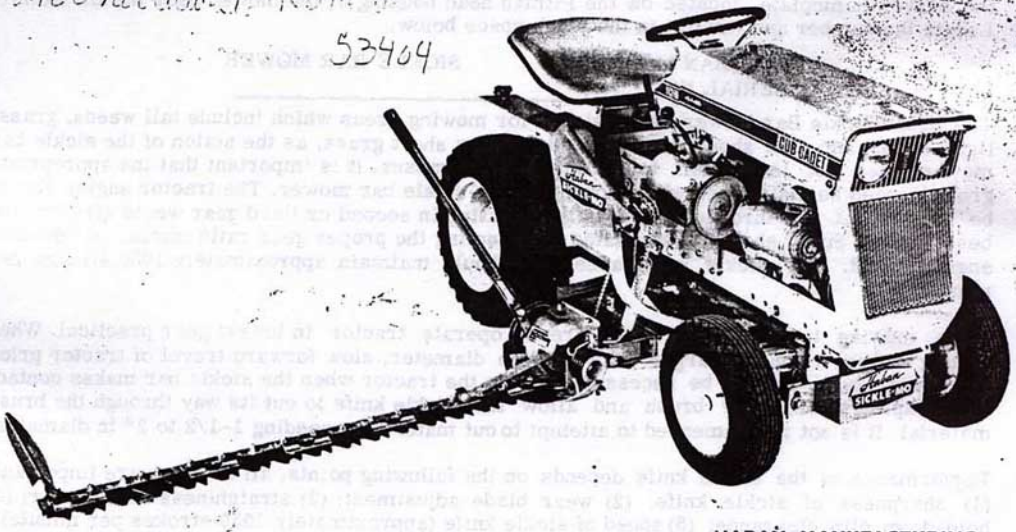
Haban
HABAN MANUFACTURING CO RACINE WIS U.S.A.
SICKLE-MO
PATENTED IN U.S.A. & FOREIGN COUNTRIES

MODEL 402-D
SICKLE BAR MOWER
ATTACHMENT
for

IH CUB CADET
Tractors

(Serial No. 18000_____)

2100 Northwest Hwy
53404



OPERATION and SERVICE MANUAL

HABAN MANUFACTURING COMPANY
Racine, Wisconsin
Form 6109-1 (5/68)
Printed in U.S.A.

Haban
SEAL OF QUALITY
RACINE

General Information

HABAN SICKLE BAR MOWER ATTACHMENT

Your Haban Sickle Bar Mower is the finest sickle bar mower available anywhere for your compact tractor. Here's why: First of all, it is designed specifically to match your Lawn and Garden Tractor. Rugged, long-life construction assures you of highest performance with limited horsepower. It is equipped with anti-friction, heavy duty bearings in all important areas. The Haban Sickle Bar Mower provides more machine for your money, and following the points of service as listed below will give you years of successful operation and satisfaction.

OPERATING SUGGESTIONS

This manual will help you get the most value from your Haban Sickle Bar Mower. Read carefully all assembly, operating, adjusting and service information. You will find many helpful points which will not only save time but will help you operate the mower most efficiently.

Every effort has been made to incorporate all of the safety devices for operator protection. However, careless and negligent operation can still result in serious injury to persons and property. Be sure to read and follow all safety precautions listed in this manual. When in need of parts and major service, see index. Right-hand (R.H.) and left-hand (L.H.) reference is determined by standing at the rear of the tractor or mower and facing the direction of travel. When in need of parts, be prepared to give your dealer the serial number shown on the mower nameplate, located on the Pitman head housing of the mower near the lift handle. Locate the number and write it in the blank space below.

HABAN MODEL SICKLE BAR MOWER

SERIAL NO. _____

The Haban Sickle Bar Mower was designed for mowing areas which include tall weeds, grass, light brush, etc. but should not be used on very short grass, as the action of the sickle bar mower does not lend itself to cutting short grasses. It is important that the appropriate ground speed be maintained when mowing with a sickle bar mower. The tractor engine should be operated at full-throttle, and usually operating in second or third gear would give you the best results. Speed should be regulated by selecting the proper gear ratio instead of reducing engine speed. The sickle knife assembly should maintain approximately 1050 strokes per minute.

When mowing in extremely rough areas, operate tractor in lowest gear practical. When cutting brush which is larger than 1/2" in diameter, slow forward travel of tractor prior to cutting brush. It may be necessary to stop the tractor when the sickle bar makes contact with saplings or heavy brush and allow the sickle knife to cut its way through the brush material. It is not recommended to attempt to cut material exceeding 1-1/2 to 2" in diameter.

Performance of the sickle knife depends on the following points, all of which are important: (1) sharpness of sickle knife; (2) wear blade adjustment; (3) straightness of knife bar; (4) hold-down clip clearance; (5) speed of sickle knife (approximately 1050 strokes per minute); (6) lead adjustment of sickle bar; (7) cutting pitch of shear fingers.

TRANSPORT POSITION:

The sickle bar mower can be transported from one location to another by rasiing the unit with the lift handle and locking it into position. BE SURE TO ALWAYS INSTALL KNIFE GUARD ON MOWER BAR WHEN TRANSPORTING. ALWAYS OPERATE AT CAREFUL SPEEDS IN TRANSPORTING AND AVOID MAKING SUDDEN OR SHARP TURNS WITH THE MOWER IN RAISEL POSITION.

Haban RACINE

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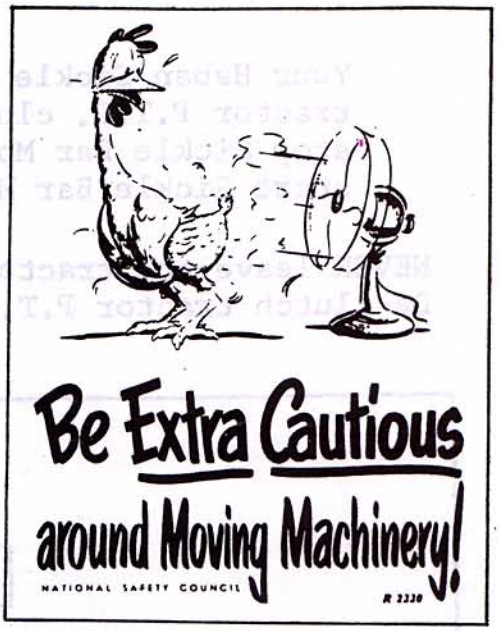


WIDE ANGLE FLEXIBILITY

Sickle bar can be elevated to upright position for hedge trimming or to 45° below horizontal for ditches, hillsides. Locks in vertical position for transport.

Your Haban Sickle Bar Mower attachment is designed specifically for your tractor and is designed with all controls convenient to the operator. It cuts an effective 48" swath and operates from the tractor P.T.O. The tractor should be equipped with a wheel weight on the left rear wheel of the tractor. These can be obtained from your dealer.

The tractor should be operated at full engine throttle for best results, with the sickle knife cutting approximately 1050 strokes per minute.

The sickle bar mower can be operated through a complete arc of 135° (from vertical position to 45° below horizontal - see instructions). Settings are available to change the lead and angle of pitch of the cutter bar and features the spring-controlled safety release swingback cutter bar.

BE SURE TO FOLLOW ALL SAFETY HINTS AND SUGGESTIONS.

SPECIFICATIONS

Length ..... 73"
Clearance Required ..... 3"
Cutting Width ..... Mows 48 "Swathe
Overall Depth ..... 24"
Drive ..... Belt Driven from Tractor P.T.O.
Clutch ..... Belt Type
Suspension ..... Free-Floating, Spring Suspended
Mounting ..... Swivel, Vibration-Dampening
Cutting Speed ..... 900-1100 strokes per minute
Stroke ..... Full 3" width
Shear Knives ..... High Carbon Steel
Guards ..... non-clogging
Vertical Adjustment ..... 135°—45° below horizontal 90° vertical—lever controlled
Transport Position ..... Pin-Locked for Transport
Safety ..... Automatic Spring-Loaded "Swing Back" device protects against damage from solid objects
Construction ..... All-Steel, with Anti-Friction bearings
Weight: Net ..... 160 lbs.; Shipping ..... 175 lbs.

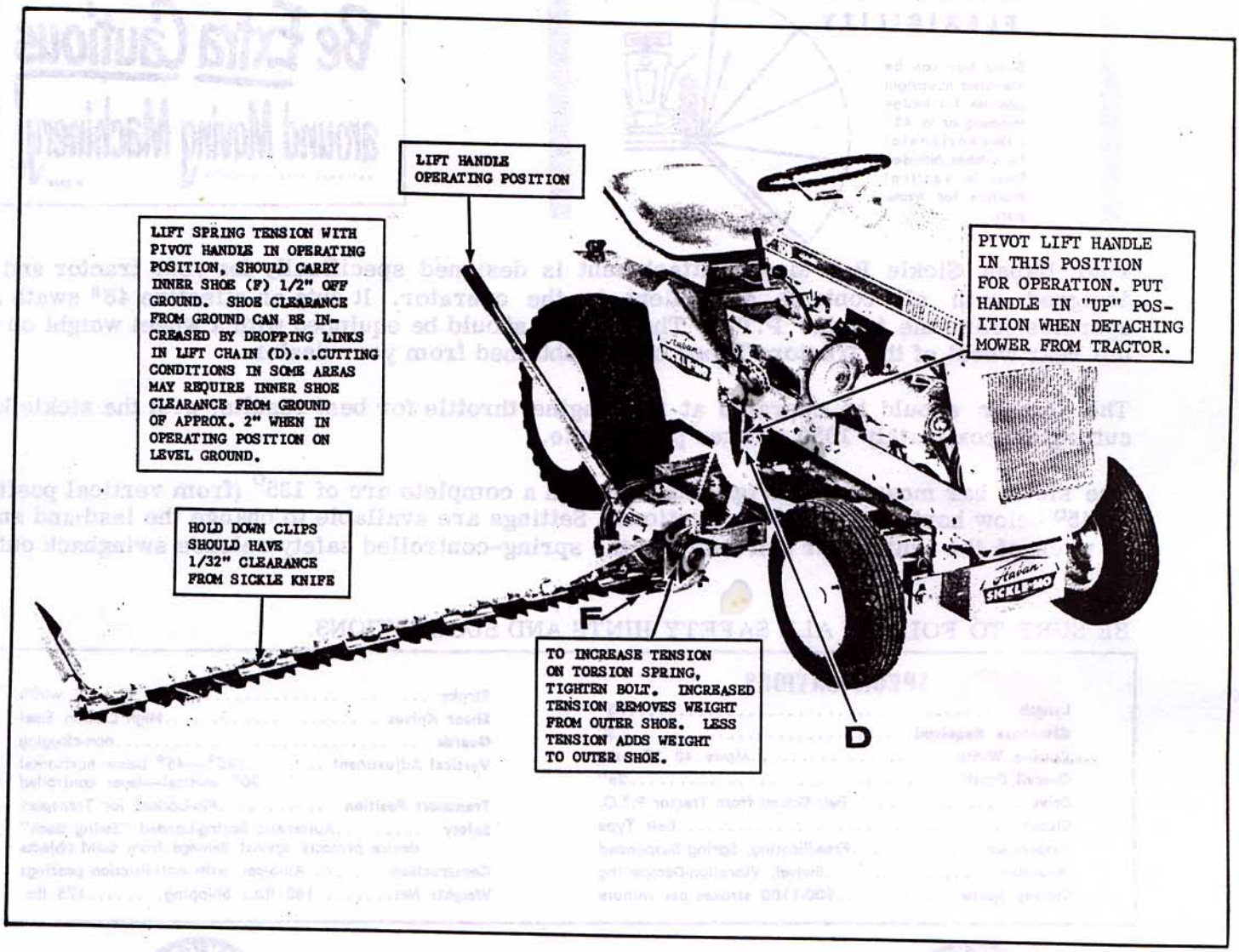
SAFETY SUGGESTIONS

CAUTION: Keep hands and feet away from the sickle until the machine has come to a complete stop.
CAUTION: Always disengage the PTO shaft before dismounting from the tractor.
CAUTION: Do not allow anyone to walk alongside, 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 road speed, also check for proper ground clearance.

OPERATION

Your Haban Sickle Bar Mower can be stopped or started by using the tractor P.T.O. clutch. Push the P.T.O. clutch lever forward to stop Sickle Bar Mower. Pull clutch backward and latch securely to start Sickle Bar Mower.

NEVER leave the tractor engine running when dismounting from the tractor De-clutch tractor P.T.O. clutch as well.



SPECIAL CAUTION

Never work around the Sickle Bar Mower for either setting up the mower or dismounting mower from tractor without installing knife guard. Divider wing, at edge of mower bar, should be set straight back for best marking of swath cut.

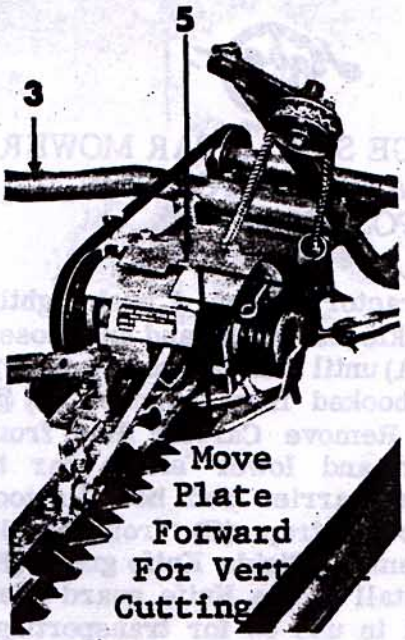


Fig. 16

LIMIT STOP (Figure 16)

NORMAL CUTTING

The limit stop (5) should be set with the pitman clearance slot to the rear, as illustrated. This will limit the travel of the cutter bar in cutting position to approximately 70° above ground level and allow it to function to its maximum below ground level.

CAUTION: Always operate the cutter bar with the limit stop set in rear position except for vertical cutting.

VERTICAL CUTTING (90° only)

The stop (5) should be set with the pitman clearance slot in forward position to cut 90° above ground level or vertical.

TRANSPORTING MOWER:

Shut off tractor engine, and disengage tractor P.T.O. clutch. Install sickle knife cover using retaining strap to secure cover to bar. Set lift handle in transport position (A) taking transport hook in your left hand and standing back of mower bar, raise mower bar with right hand to vertical position -- insert transport hook as illustrated, hooking onto cross bar of mower head -- tighten lock wing nut to position mower bar in desired transport position -- Avoid sudden or sharp turns in transport. (Fig. 17)

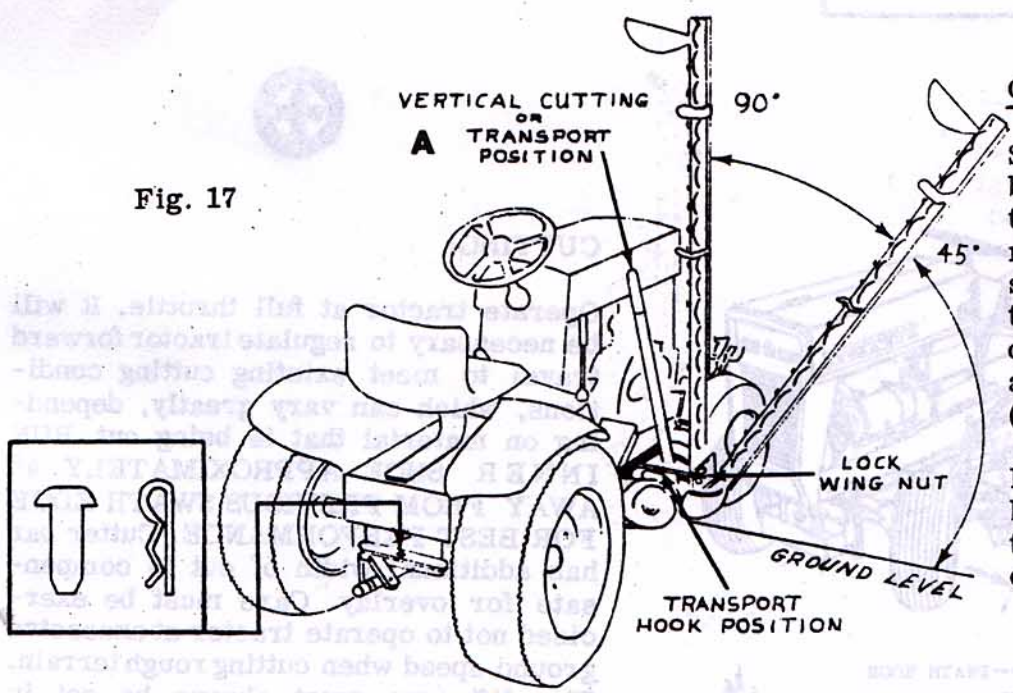


Fig. 17

OUTER SHOE WEIGHT:

Set tension on torsion spring (J) by tightening eyebolt until most of the weight on outer shoe is removed. If torsion spring is loose, sickle bar will be hard to lift. If torsion spring is set too tight, outer end of sickle bar will have a tendency to bounce in operation. (Fig. 18)

Note: For ease of handling sickle bar mower when detached from tractor, raise sickle bar to vertical position and detach eyebolt from torsion spring. Re-install torsion spring after unit is once again hooked back on the tractor.

Note: Be certain chain is assembled per instructions.

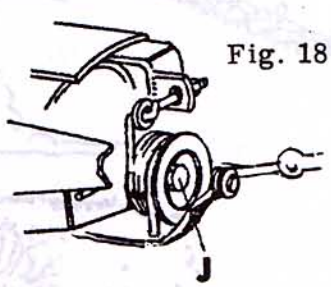


Fig. 18

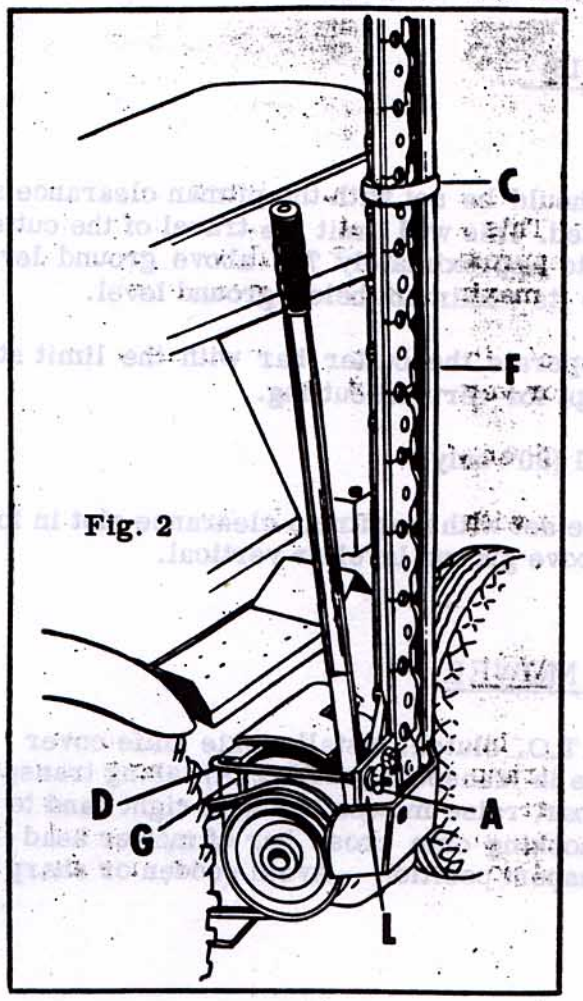


Fig. 2

TO CHANGE SICKLE BAR MOWER FROM TRANSPORT POSITION TO MOWING POSITION:

Shut off tractor engine - push lightly against sickle bar with hand and loosen wing nut (A) until carrier rod-hook (D) can be unhooked from bracket (G) @ point (D). Remove Carrier Rod from sickle Bar and lower sickle bar to ground. Put carrier rod hook in tool box. Remove strap (C) from Sickle Bar and remove Sickle Knife guard (F) Always install Sickle Knife guard when mower not in use or for transporting. Before operation check, complete unit for any looseness which may have occured in shipping. Unit should then be operated a short period to check for proper assembly and adjustments before actual cutting begins. Stop and recheck all parts after 30 minutes of operation and retighten loose parts. Also follow lubricating instructions found on page 15.

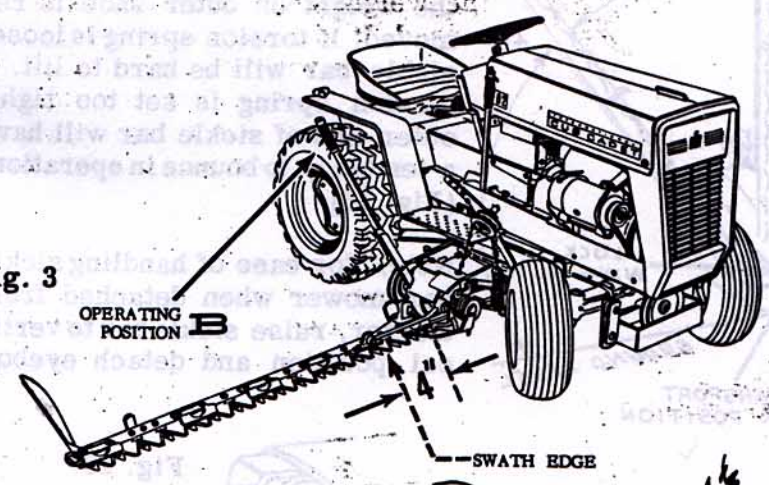
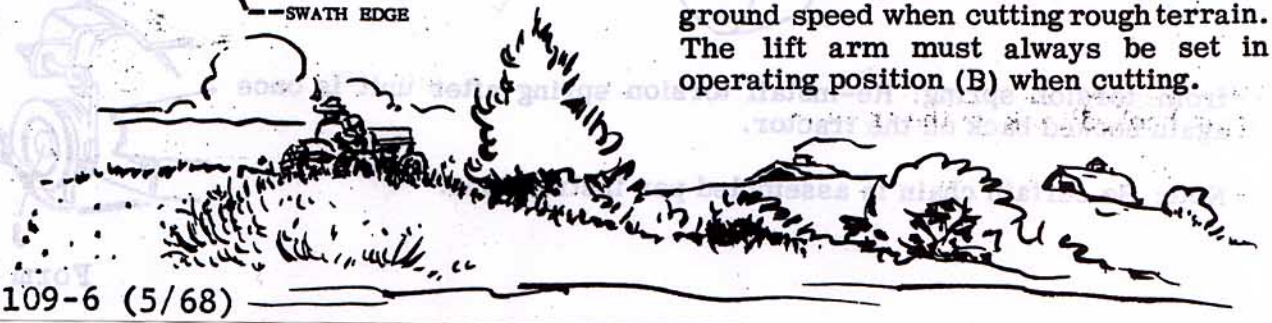


Fig. 3

CUTTING:

Operate tractor at 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. The lift arm must always be set in operating position (B) when cutting.



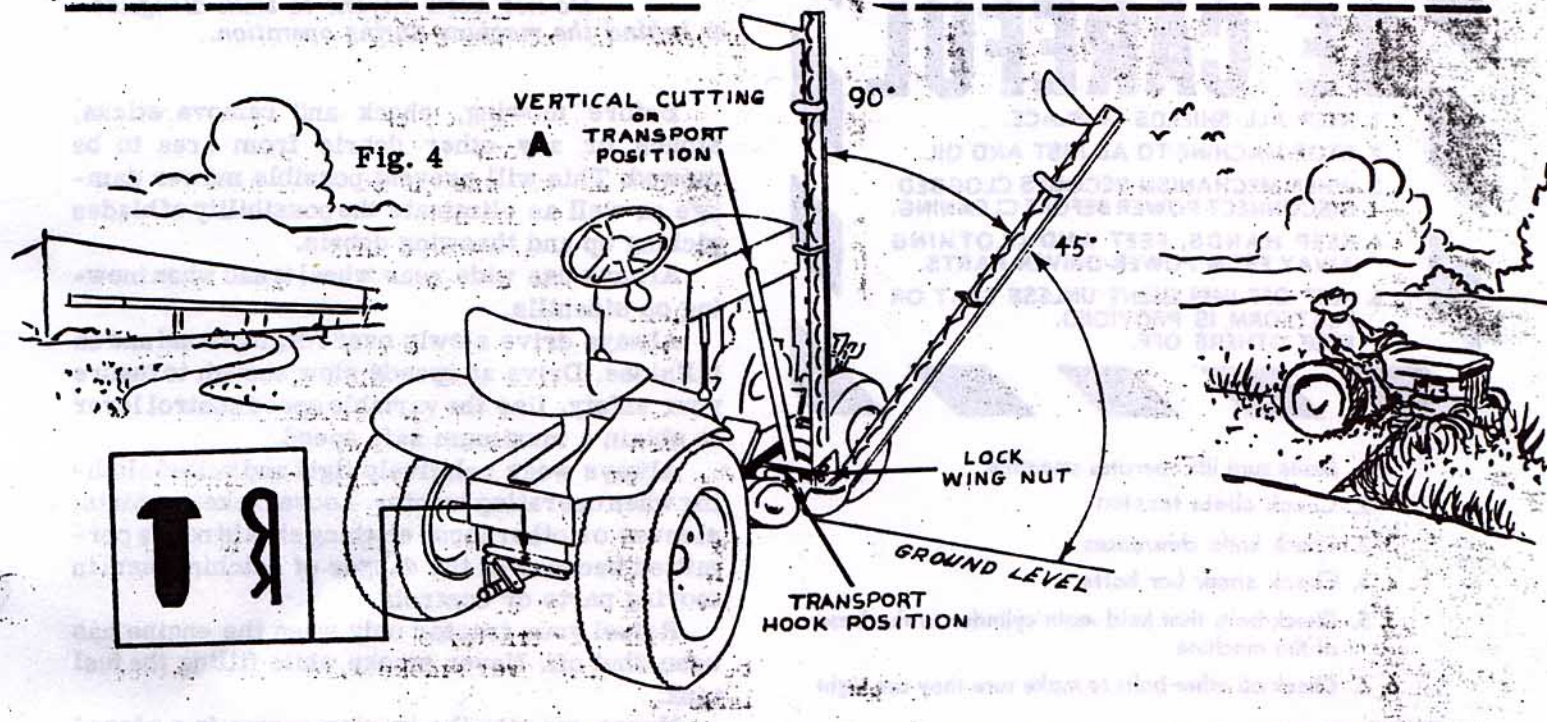
CAUTION

CUTTING (90° Vertical to 45° above level)

Cutting should be done with engine throttle set approximately 1/8 throttle. The lift handle must be set in transport position. (A).

NOTE: This should be done by an experienced operator only, using extreme caution.

Fig. 4



AUTOMATIC BREAK-BACK (Figure 5)

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 (F) should be increased.

To disengage safety break-back manually, insert screw driver at (G) and pry break-back pivot open - at same time push sickle bar back to release catch.
Fig. 6

Fig. 5

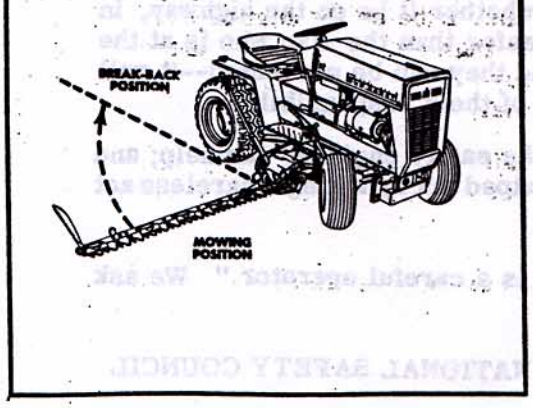
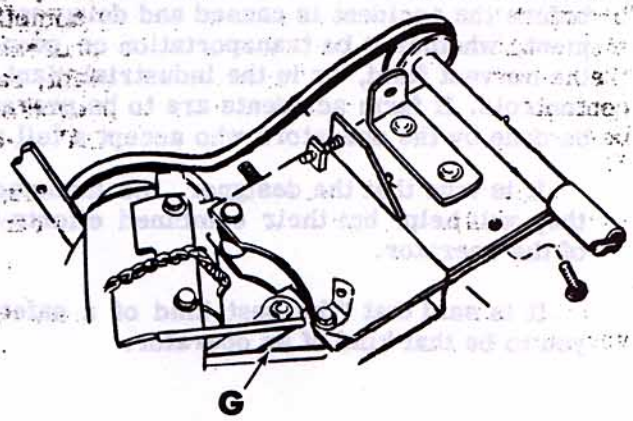


Fig. 6



SAFETY IS NO ACCIDENT !!

Read Carefully

BE CAREFUL

1. KEEP ALL SHIELDS IN PLACE.
2. STOP MACHINE TO ADJUST AND OIL.
3. WHEN MECHANISM BECOMES CLOGGED DISCONNECT POWER BEFORE CLEANING.
4. KEEP HANDS, FEET AND CLOTHING AWAY FROM POWER-DRIVEN PARTS.
5. KEEP OFF IMPLEMENT UNLESS SEAT OR PLATFORM IS PROVIDED. KEEP OTHERS OFF.

1. Make sure lift operates smoothly
2. Check chain tension
3. Check knife clearances
4. Check shear bar bolts
5. Check bolts that hold main cylinder to the base of the machine
6. Check all other bolts to make sure they are tight

CAUTION: *Keep hands and feet away from the knives until the machine has come to a complete stop. Never open the inspection panels when the machine is running.*

CAUTION: *Always disengage the PTO shaft before dismounting from the tractor.*

Do not allow anyone to walk alongside or behind the machine during operation.

Before mowing, check and remove sticks, stones or any other debris from area to be mowed. This will prevent possible mower damage as well as eliminate the possibility of blades picking up and throwing debris.

Always use wide rear wheel tread when mowing on sidehills.

Always drive slowly over rough ground and on hillsides. Drive at speeds slow enough to insure your safety. Use the variable speed control lever to obtain a maximum safe speed.

Always wear relatively tight and belted clothing when operating tractor. Loose jackets, shirts, sleeves or other loose clothing should not be permitted because of the danger of catching them in moving parts or controls.

Refuel your tractor only when the engine has been shut off. Never smoke while filling the fuel tank.

Never operate the tractor engine in a closed building.

Before leaving tractor seat, always disengage mower drive clutch and stop tractor engine.

AVOID ACCIDENTS

BE A SAFE OPERATOR

No accident prevention program can be successful without the whole-hearted cooperation of the person who is directly responsible for the operation of equipment.

To read accident reports from all over the Country is to be convinced that a large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it. No power-driven equipment, whether it be transportation or processing, whether it be on the highway, in the harvest field, or in the industrial plant, can be safer than the man who is at the controls. If farm accidents are to be prevented--and they can be prevented--it will be done by the operators who accept a full measure of their responsibility.

It is true that the designer, the manufacturer, the safety engineer can help; and they will help, but their combined efforts can be wiped out by a single careless act of the operator.

It is said that "the best kind of a safety device is a careful operator." We ask you to be that kind of an operator.

NATIONAL SAFETY COUNCIL

Sickle Knife Adjustment

Check the position of the forward ends of the live knife sections (B) to make sure that they protrude past the forward ends of the shear finger plates (E). For cutting loose precut hay, dense, fine and loose under growths, etc., without clogging, the live moving knives must contact the material ahead of any stationary member. Thus, the material to be cut is forced into the cutting area instead of being pushed forward by stationary shear-plate. 1/32" to 1/16" protrusion of the live knife is sufficient. If your "wear-plates" (A) are worn half way thru 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.

KNIFE ASSEMBLY REMOVAL

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

ALIGNMENT OF LEDGER PLATE SURFACES

Remove the knife assembly. Check all guards for alignment of ledger plate surfaces. This alignment may be checked by using a straight edge or drawing a string tightly across these surfaces. Any one guard being too high will create excess clearance between the ledger plates of adjoining guards and the knife sections. Misalignment can be corrected by bending guards up or down, as required. Hammer only on solid portion of the guard beyond the lip.

WEAR PLATE ADJUSTMENT (Fig. 18)

The wear plates (A) support the back of the knife sections (B) and guide the knife bar in the guard recess. Wear plates have elongated holes for adjustment against the knife 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 knife bar. Avoid a tight fit. Check the top surface of the wear plate with the ledger plate surface (E). These two surfaces must be even. A low wear plate should be shimmed.

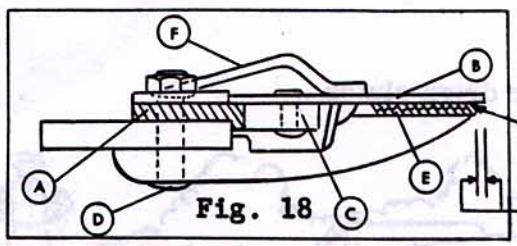


Fig. 18

1/32 MAXIMUM CLEARANCE

LIVE SICKLE SECTIONS TO PROTRUDE 1/32 " to 1/16" OVER SHEAR Plate.

KNIFE CLEARANCE (Fig. 18)

If the knife fits too loosely, in most cases clearance can be obtained by hammering down or prying up the front end of the hold down clips (F). The suggested method is to remove the knife assembly. Reinsert the knife and adjust each clip as it is reached, for the entire length of the bar. Bend each clip up or down as required. The approximate 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 knife 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)

2. Replace damaged sections.

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

1. Alignment of ledger plate surfaces.
2. Wear plate adjustment.
3. Straightness of knife bar.
4. Pitch of shear fingers.
5. Hold down clip clearance.
6. Proper lead setting of mower.
7. Improper speed of sickle knife in relation to forward travel of tractor.

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

OPERATING THE MOWER:

Follow tractor break-in instructions as explained in your Tractor Operator's manual. Do not operate mower or any other attachments during this period. Check all other tractor and engine operating adjustments before starting to mow.

PRE-STARTING INSPECTION:

1. Be sure mower has been properly assembled to tractor. Assembly instructions start on page 16.
2. Be sure mower is adjusted.
3. Check condition of mower blades. Keep blades sharp.

STARTING THE MOWER

1. Start tractor engine at half throttle. Always advance throttle lever to full position when mowing.

2. Engage mower clutch.

NOTE: Prolong the life of mower drive belts by engaging mower slowly.

STOPPING THE MOWER:

To stop sickle bar mower, disengage mower drive clutch .

MOWING

METHOD OF MOWING:

Before mowing a new plot of grass, always stop to analyze the area of field 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 rock or trash. Each condition will require certain adjustments or precautions, as outlined in the following pages.

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

CAUTION: Before servicing machine, disengage power, shut off engine, and disconnect engine spark plug cable.

Sickle bar mower can operate from 90° vertical to 45° below horizontal. It may be necessary to release some tension on the torsion spring to allow mower bar to drop to lowest angle of cutting. Sickle knife should have a clearance of 1/32" from hold-down clips. If hold-down clips are too tight, excessive vibration will occur and sickle knife assembly will run hot.

If several years of dead grass has 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 knife to cut cleanly. Test pattern cutting will

soon show you the most appropriate way to approach the task. Remember, proper settings, sharp sickles, correct forward speed, and attention to general maintenance will enable you to cut any reasonable patch of ground with satisfaction. Overlooking any one of the above points may deter from the machine's performance. A few points are listed below:

PROBLEM	SOLUTION
1. Cutter bar outer shoes bounces or digs into ground surface.	Adjust torsion spring as indicated
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 shear knife - cutting pattern shows blank or skipping points.	Adjust forward travel of 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 approx. 4" overlap.
5. Failure to cut grass and weeds.	Check clearance of sickle knife to shear finger - fit should be snug, 1/32" clearance. Tap metal hold-down plates with hammer to adjust. Sharpen sickle knives if dull. Check pitch of shear fingers and lead of sickle bar.

OPERATING SICKLE BAR MOWER ON TRACTORS WITH HYDROSTATIC DRIVE:
Proper ground speed for mowing depends upon (1) the height, density, and type of grass to be cut and (2) field or yard conditions.

When mowing, always operate engine at full throttle. This is necessary to maintain proper blade speed and to cause maximum flow of air to cool engine.

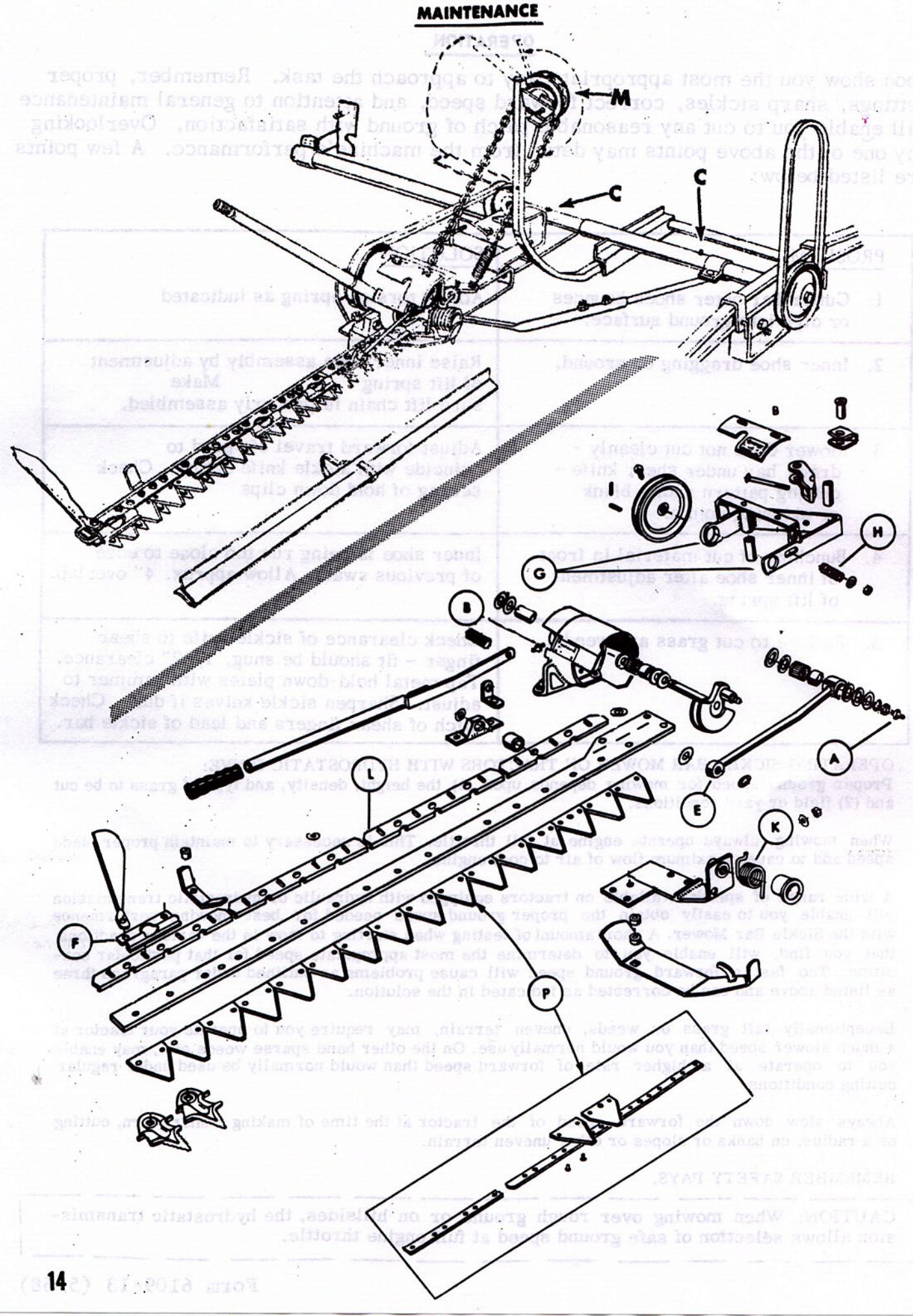
A wide range of speeds available on tractors equipped with hydraulic or hydrostatic transmission will enable you to easily obtain the proper ground speed needed for best mowing performance with the Sickle Bar Mower. A short amount of testing when starting to mow in the various condtions that you find, will enable you to determine the most appropriate speed for that particular condition. Too fast a forward ground speed will cause problems as outlined under paragraph three as listed above and can be corrected as indicated in the solution.

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 regular cutting conditions.

Always slow down the forward speed of the tractor at the time of making a sharp turn, cutting on a radius, on banks or slopes or other uneven terrain.

REMEMBER SAFETY PAYS.

CAUTION: When mowing over rough ground or on hillsides, the hydrostatic transmission allows selection of safe ground speed at full engine throttle.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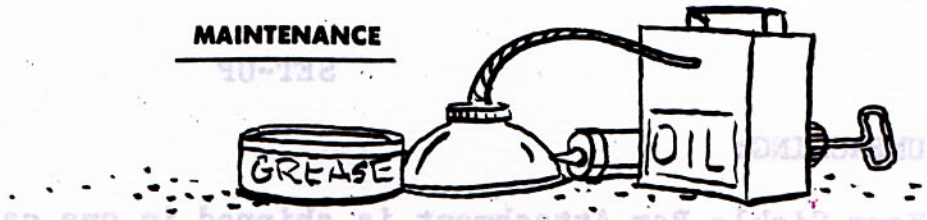


LUBRICATION

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

The following fittings require grease ever two hours of machine operation:

(A) Pitman crank pin
(B) Crankshaft
(C) Jackshaft

REMEMBER: Too much oil and grease will do no harm, but lack of it means excessive wear and machine failure.

The following points require oil can lubrication every two hours of machine operation:

(E) Pitman head
(F) Sickle clips
(G) Two inner shoe pivots
(H) break-back spring latch pivot
(K) Torsional lift spring
(L) Wear plate and moving joints
(M) Transport spring pulley

MAINTENANCE

Adjust the belt tension as described under "Belt Adjusting" on page 9. Proper tension allows for approximately one-half inch deflection when fingers pressure is applied midway between pulleys. Check V-belt for wear. Replace worn belts, using belts only supplied by the manufacturer.

SICKLE

For efficient cutting and for best service from unit, the cutting knives must be kept sharp.

It is suggested an extra sickle knife assembly (P) be kept on hand for easy and immediate replacement. Additional knives and rivets are available for repairs, which makes it possible to always have a sickle knife assembly in good repair if one becomes damaged or worn. Under severe conditions the sickle knives should be sharpened after every four hours of operation.

CLEANING

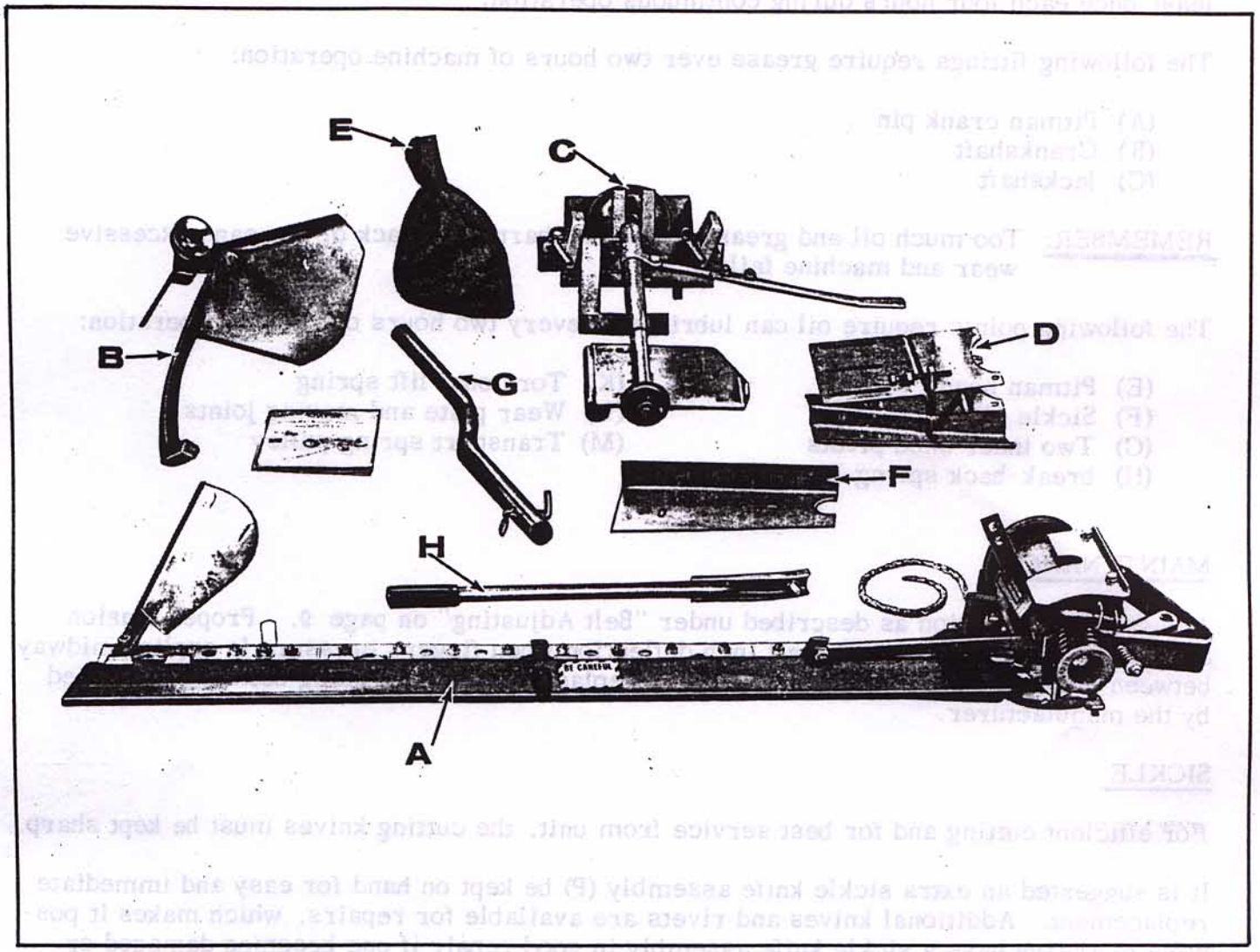
Do not attempt to clean the machine while it is operating. STOP MACHINE. For best and lasting results, the machine should have all dirt accumulations removed from sickle bar. Do not allow machine to stand for long periods without cleaning. Inside storage will also prolong its operating expectations.

Do not allow anyone to walk in front of, alongside, or behind machine during operation. Keep hands and feet away from knives until machine has come to a complete stop and the engine has been stopped.

SET-UP

UNPACKING:

Your Sickle Bar Attachment is shipped in one carton and contains only parts pertaining to the unit. Unpack carton carefully to insure that all parts are accounted for.



The Sickle Bar Mower consists of the following (Fig. 15):

A - Basic Sickle Assembly
B - Carrier Arm Assembly
C - Main Frame Assembly
D - Carriage Plate Assembly
E - Bag of Parts
F - V-Belt Guard Assembly
G - Extension Pivot Pipe
H - Lift Handle

SET-UP

PARTS LIST - NO. 6107 BAG OF PARTS
FOR HABAN MODEL 402-D SICKLE MO

The bag of parts for Haban Model 402-D Sickle-Mo consists of the following:

NOTE: The following parts are for the Small Bag #6108
(6 x 10 Plastic) #4333

6073	Anchor	Spring	1
GM120917	Bolt	1/2-13 x 1-1/2 Carr	3
GM138549	Washer	1/2 Shakeproof Lock	6
GM120378	Nut	1/2-13 Lt. Hx	5
3554	Spacer	Breakaway Housing	2
GM180190	Bolt	1/2-13 x 3 Hx. Hd	1
GM180192	Bolt	1/2-13 x 3-1/2 Hx. Hd	1
GM180120	Bolt	3/8-16 x 3/4 Hx. Hd	1
GM120382	Washer	3/8 Med. Lock	1
GM120388	Washer	3/8 Flat (7/16 x 1 x .083	1
GM120238	Nut	1/2-13 Half Hex	2
GM120396	Washer	1/2 Flat (17/32 x 1-1/16 x .095)	5

The small bag as listed above is stapled and put into the large bag (12 x 20) #4418 along with the following parts:

6097	Assem.	Drawbar Hitch (Complete)	1
3434	Spring	Lift & Transport	1
6104	Bracket	Guard Mounting	1
4677-A	Hook	Transport	1
GM120388	Washer	3/8 Flat (7/16 x 1 x .083)	1
GM126032	Nut	3/8-16 Wing	1
6106	V-Belt	Engine to J'Shaft (3V - 33.5 O.C.)	1
S-188	V-Belt	J'Shaft to Sickle (B-51 - 53.8 O.C.)	1

SICKLE BAR ASSEMBLY (FIGURE 21)

Place the carriage plate assembly (A) with the (3) slotted holes beneath the main frame support (B) as shown in Figure 21. Attach carriage plate (A) and belt guard bracket (D) onto plate (B) with (3) 1/2" x 1-1/2" carriage bolts. Secure bolts with (3) 1/2" hex nuts and lock washers as furnished. Leave bolts slightly loose at this point.

INSTALLATION OF SICKLE BAR ASSEMBLY TO MOUNTING FRAME:

To attach the Sickle Bar Mower to the mounting frame assembly, attach the Sickle Bar breakaway latch frame assembly (E) to the breakaway housing (F), as follows: Insert spacer tube into tube (H) - holding tube in position, slide mower assembly into breakaway plate (F) until holes (H) and (J) are in alignment. Insert 1/2" x 3" hex bolt from the top side at this point. Secure bolt with 1/2" nut and lock washer provided - fasten securely.

Move Sickle Bar Assembly forward until latch frame (E) slides into opening of plate (F) - insert spacer (K) through latch frame at (N) and align with hole (L). Insert 1/2" x 3-1/2" hex head bolt through spring anchor (M), through top of plate (F), through spacer (K), and through bottom side of plate (F). Loosen set screws (R) in tie rod (P) to allow free movement of tie rod. Install tie rod (P) onto 1/2" bolt at (L) bottom and secure with 1/2" hex nut and lock washer as provided. Leave set screws (R) loose temporarily - leave Sickle Bar in "break-back" position.

INSTALLATION OF PITMAN DRIVE BELT AND ADJUSTMENTS: (FIG. 22)

Next, install pitman drive belt (S) on pulleys (T) and (U). Then slide carriage plate assembly (A) in slots (C1) until pitman drive belt (S) slack has been removed. Make certain at this point that carriage plate assembly (A) is in line with main frame plate (B) - secure vertical carriage bolts (C) at this point. Tighten nuts on bolts (C) securely. Standing in back of Sickle Bar Assembly push Sickle Bar Assembly forward until breakaway latch engages into operating position in notch (V) at this point. Pitman drive belt should also be snug at this point. Proper tension of drive belt (S) will allow approximately 1/2" deflection of belt using firm finger pressure midway between pulleys (T) and (U). (See Figure 21A.) Tighten set screws on tie rod (P) at this point.

If pitman drive belt needs further adjustment, make final adjustment by loosening vertical bolts (C) slightly and taking up final belt adjustment on adjusting bolt (W) as illustrated.

Pitman drive belt tension when properly adjusted should allow approximately 1/2" deflection when exerting firm finger pressure between pulleys (T) and (U). After checking pitman drive belt tension install belt guard (X) using welded stud (Y) and 3/8" x 3/4" bolt on bracket (Z) for position. Secure guard with 1/2" nut and washer at (V) and 3/8" x 3/4" stud at (Z).

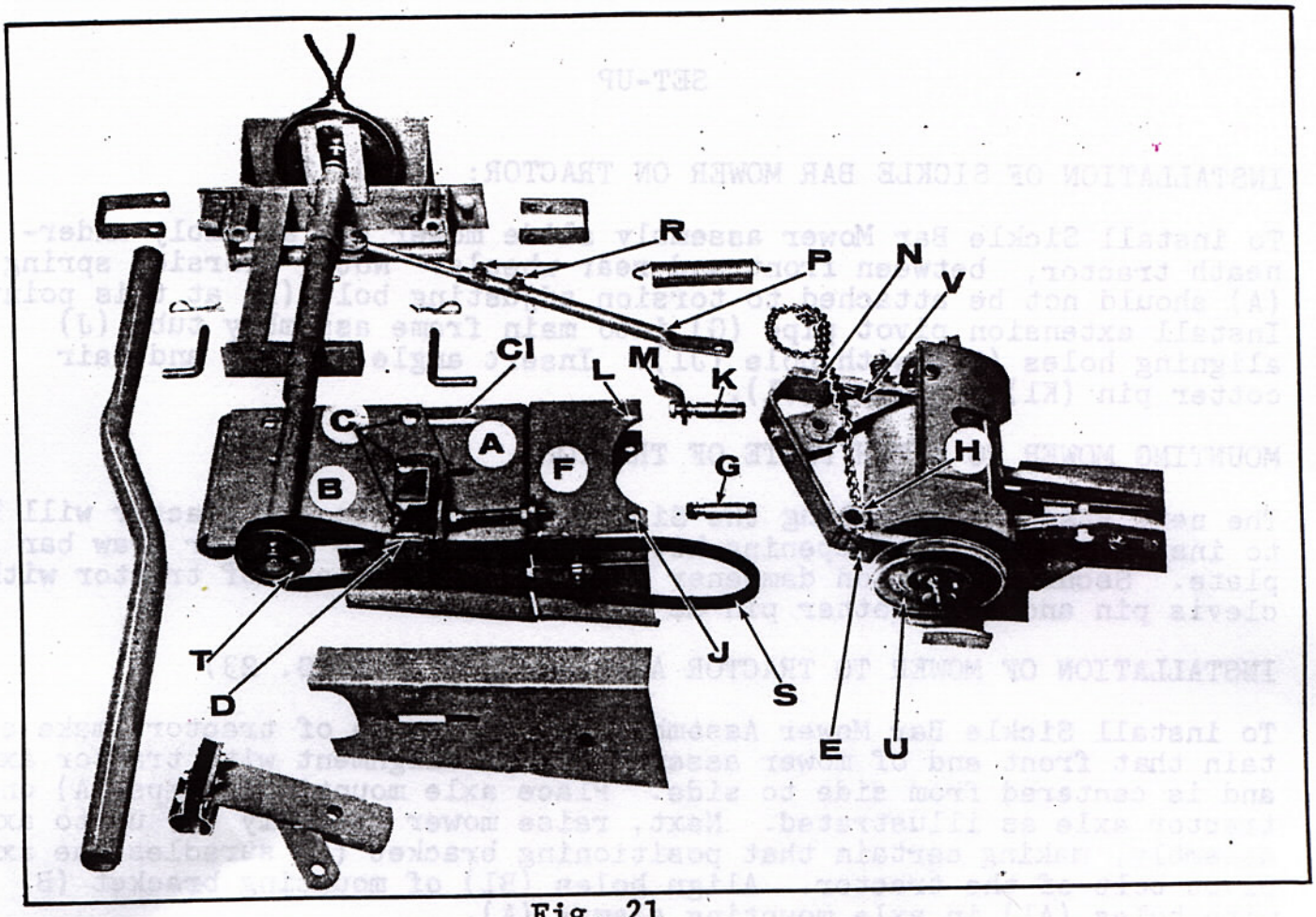

R
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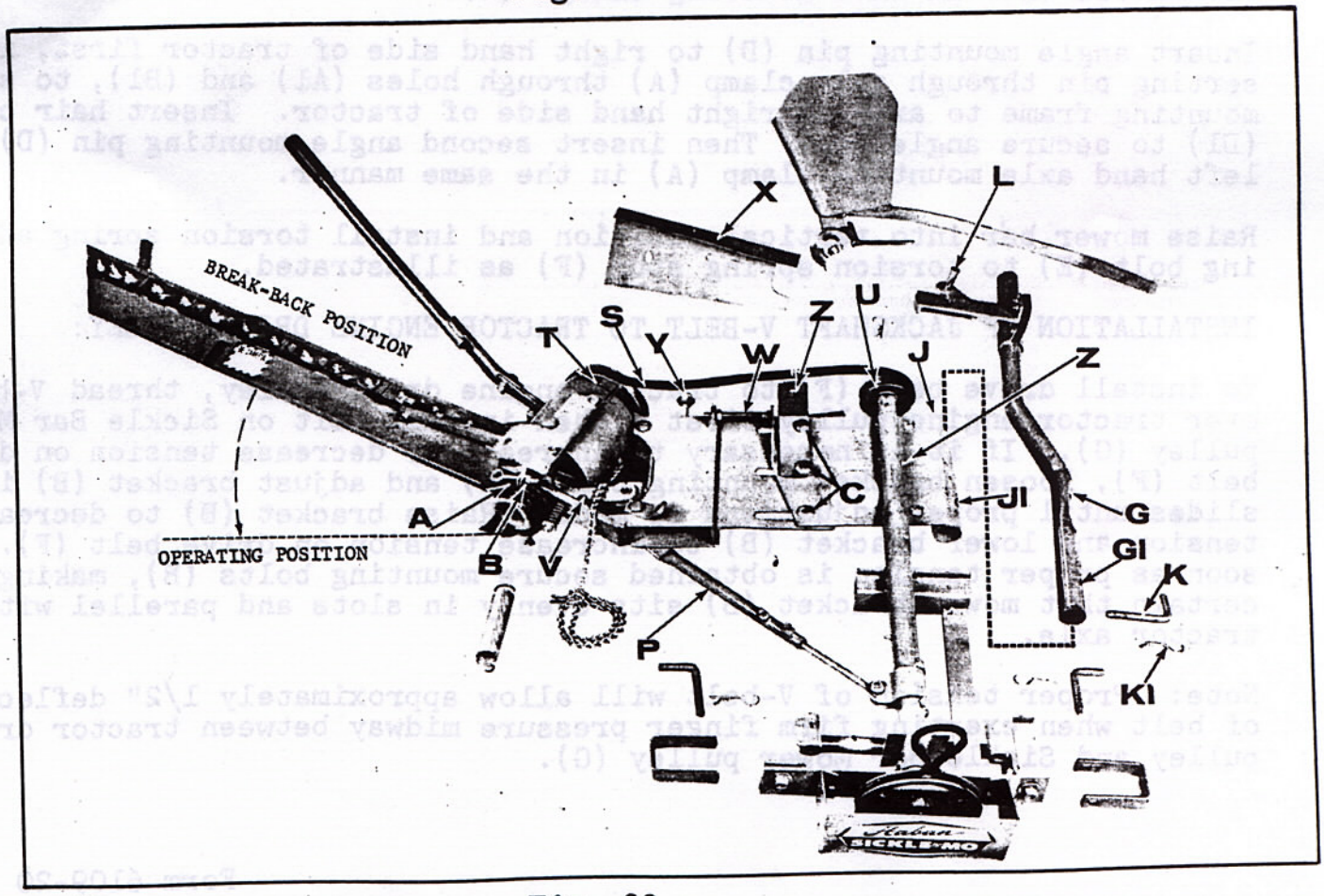
Fig. 21


BREAK-BACK POSITION
OPERATING POSITION
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W
Z
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Fig. 22

INSTALLATION OF SICKLE BAR MOWER ON TRACTOR: (FIG. 22)

To install Sickle Bar Mower assembly slide mower bar assembly underneath tractor, between front and rear wheels. Note: Torsion spring (A) should not be attached to torsion adjusting bolt (B) at this point. Install extension pivot pipe (G) into main frame assembly tube (J) aligning holes (G1) with hole (J1). Insert angle pin (K) and hair cotter pin (K1) at point (J1).

MOUNTING MOWER TO HITCH PLATE OF TRACTOR:

The next step in installing the Sickle Bar Mower to the tractor will be to install vibration dampening hitch clamp (L) onto tractor draw bar plate. Secure vibration dampener plate to hitch plate of tractor with clevis pin and hair cotter pin as illustrated.

INSTALLATION OF MOWER TO TRACTOR AXLE ASSEMBLY: (FIG. 23)

To install Sickle Bar Mower Assembly to front axle of tractor, make certain that front end of mower assembly is in alignment with tractor axle and is centered from side to side. Place axle mounting clamps (A) on tractor axle as illustrated. Next, raise mower assembly (B) up to axle assembly, making certain that positioning bracket (C) stradles the axle pivot bolt of the tractor. Align holes (B1) of mounting bracket (B) with holes (A1) in axle mounting clamps (A).

Insert angle mounting pin (D) to right hand side of tractor first, inserting pin through axle clamp (A) through holes (A1) and (B1), to secure mounting frame to axle on right hand side of tractor. Insert hair cotter (D1) to secure angle pin. Then insert second angle mounting pin (D) into left hand axle mounting clamp (A) in the same manner.

Raise mower bar into vertical position and install torsion spring adjusting bolt (E) to torsion spring spur (F) as illustrated.

INSTALLATION OF JACKSHAFT V-BELT TO TRACTOR ENGINE DRIVE PULLEY:

To install drive belt (F) to tractor engine drive pulley, thread V-belt over tractor engine pulley first - then install belt on Sickle Bar Mower pulley (G). If it is necessary to increase or decrease tension on drive belt (F), loosen bracket mounting bolts (H) and adjust bracket (B) in slides until proper adjustment is made. Raise bracket (B) to decrease tension and lower bracket (B) to increase tension on drive belt (F). As soon as proper tension is obtained secure mounting bolts (B), making certain that mower bracket (B) sits evenly in slots and parellel with tractor axle.

Note: Proper tension of V-belt will allow approximately 1/2" deflection of belt when exerting firm finger pressure midway between tractor drive pulley and Sickle Bar Mower pulley (G).

SET-UP REVISION AFTER SER.# (196,189 -)

SICKLE BAR ASSEMBLY (Fig. 1): Place the breakaway housing plate (D) with the three slotted holes beneath the main frame support plate (M). Thread two $\frac{1}{2}$" x $1\frac{1}{4}$" carriage bolts through top of Guard Mounting (V) in slotted holes (T) down through support brace (K) as shown. Slide washer (R) 1-3/4" over slotted hole (S) threading bolt $\frac{1}{2}$ x $1\frac{1}{4}$ down through support brace (K). Secure assemblies in place with lock washer and nut.

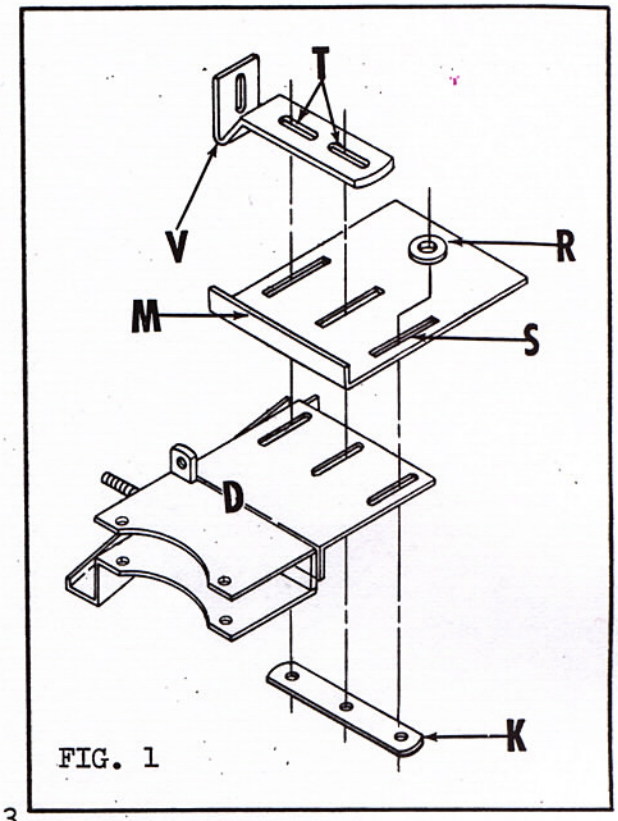


FIG. 1

INSTALLATION OF MOWER TO TRACTOR AXLE ASSEMBLY: (FIG. 2)

To install Sickle Bar Mower Assembly to front axle of tractor, make certain that front end of mower assembly is in alignment with tractor axle and is centered from side to side. Next, raise mower assembly on the underside of axle frame. Insert angle mounting pins (D) through axle clamps (A) securing pin (D) in place with hair cotter pins.

FIG. 2

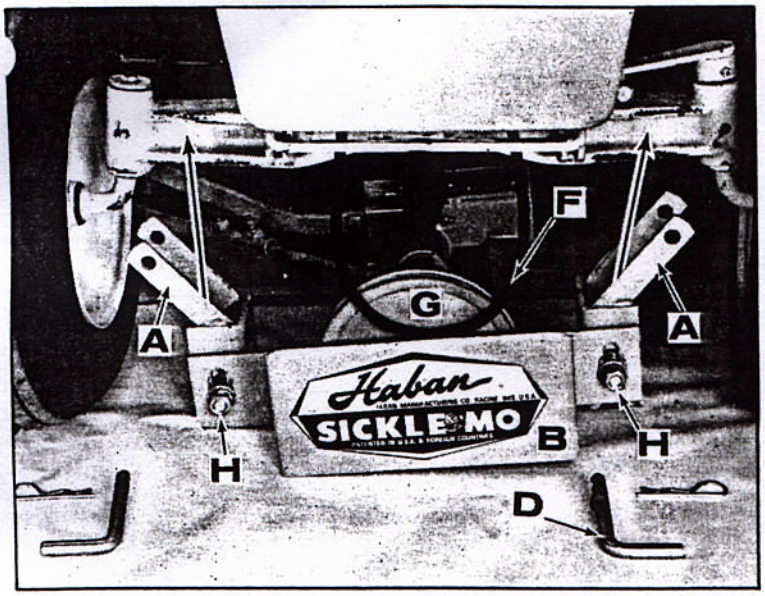
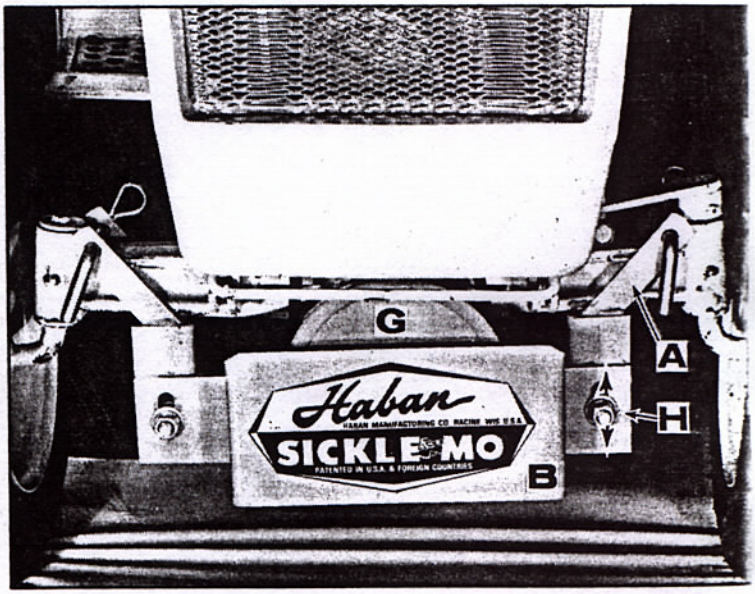


FIG. 3



Raise mower bar into vertical position and install torsion spring adjusting bolt (E) to torsion spring spur (F) as illustrated. (Fig. 23, Page 21)

INSTALLATION OF JACKSHAFT V-BELT TO TRACTOR ENGINE DRIVE PULLEY: FIG. 2 & 3

To install drive belt (F) to tractor engine drive pulley, thread V-belt over tractor engine pulley first - then install belt on Sickle Bar Mower pulley (G). If it is necessary to increase or decrease tension on drive belt (F), loosen bracket mounting bolts (H) and adjust bracket (B). Raise bracket (B) to decrease tension and lower bracket (B) to increase tension on drive belt (F). As soon as proper tension is obtained, secure mounting bolts (H).

NOTE: Proper tension of V-blet will allow approximately 1/2" deflection of belt when exerting firm finger pressure midway between tractor drive pulley and Sickle Bar Mower pulley (G).

SET-UP (PRIOR TO SER# - 194,935)

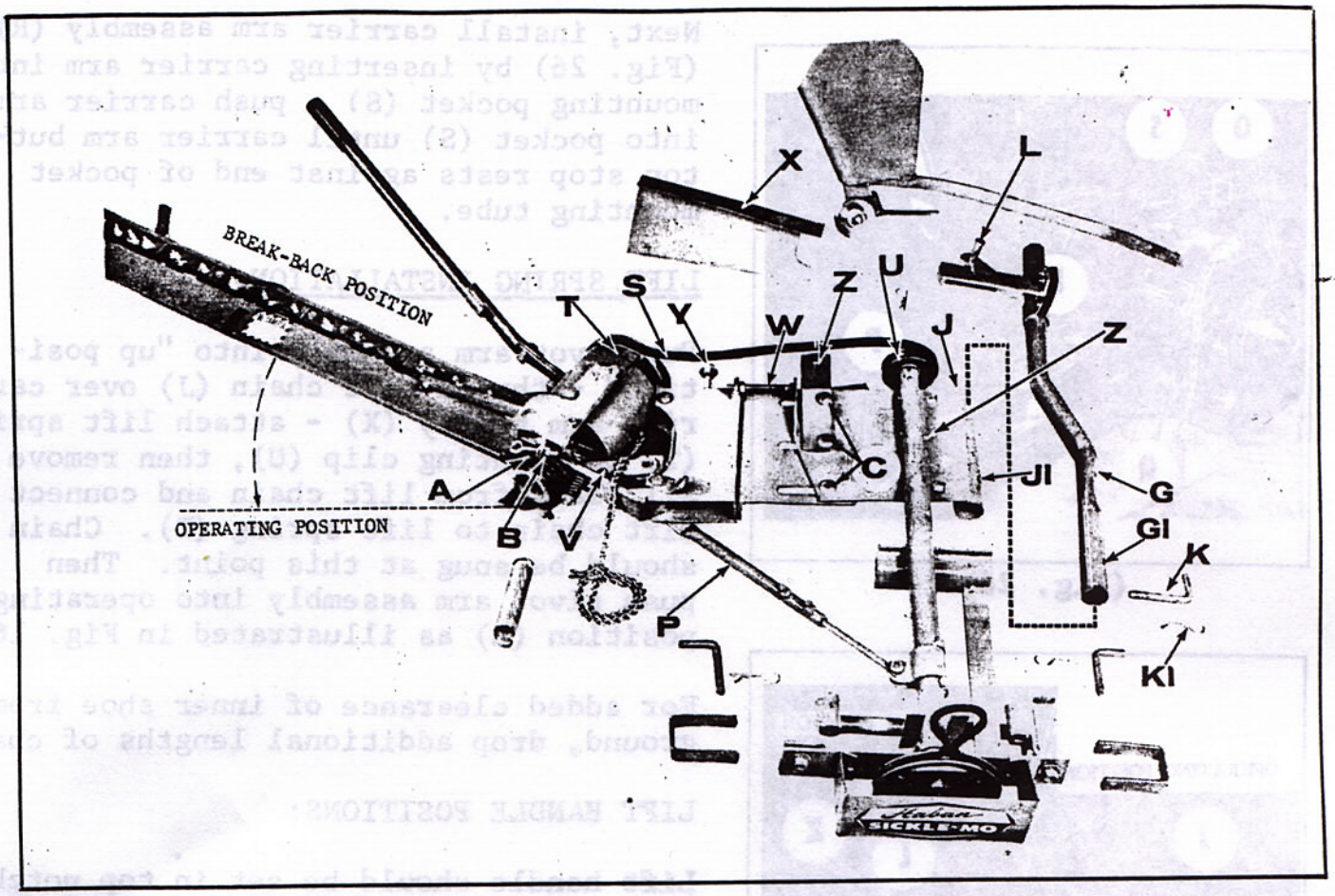


Fig. 22

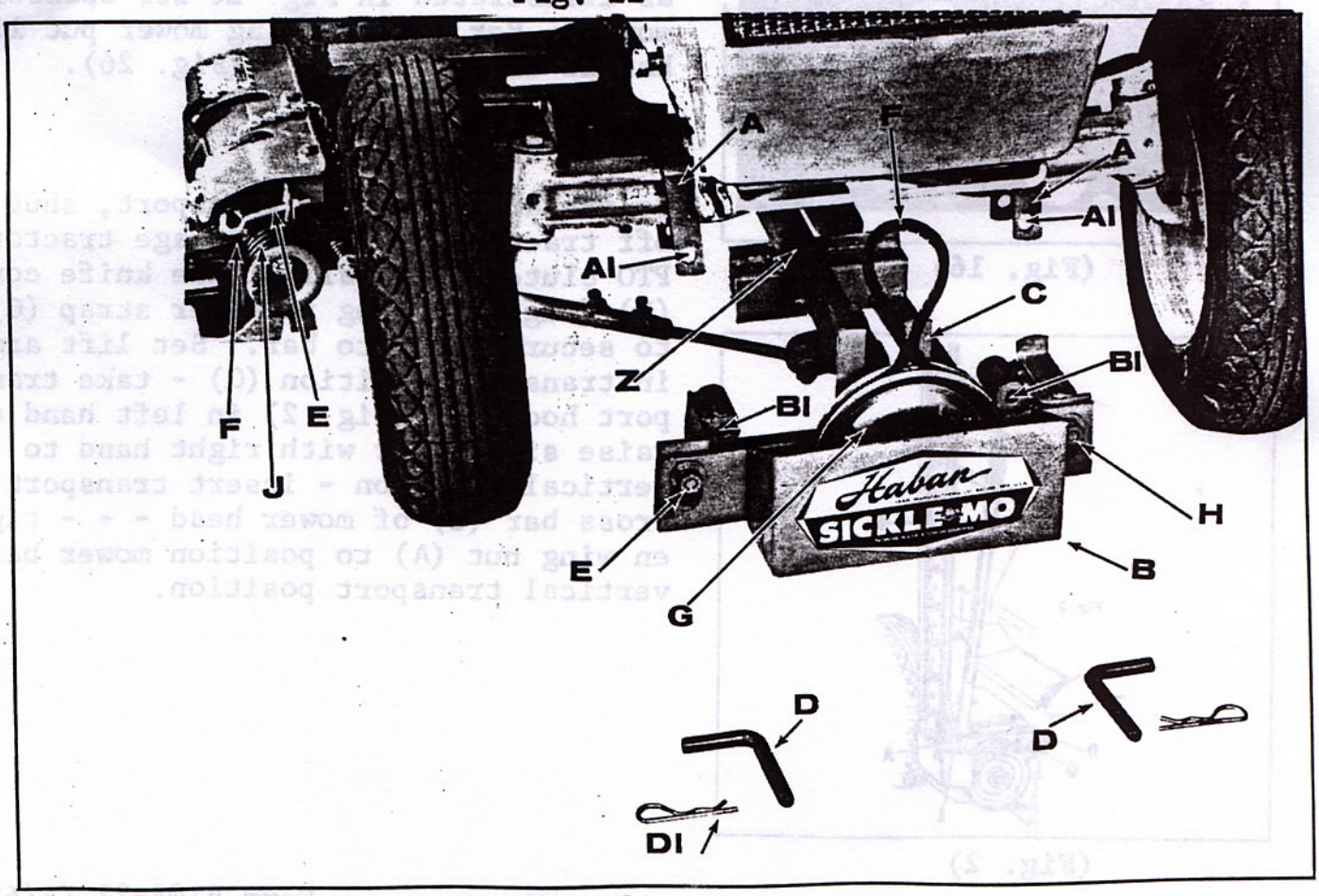
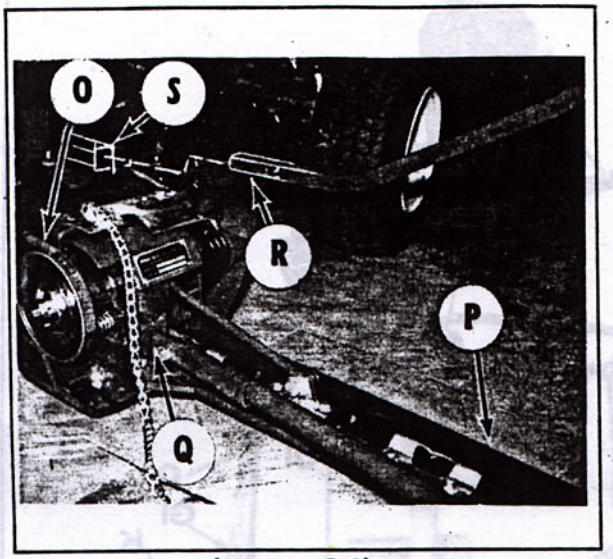
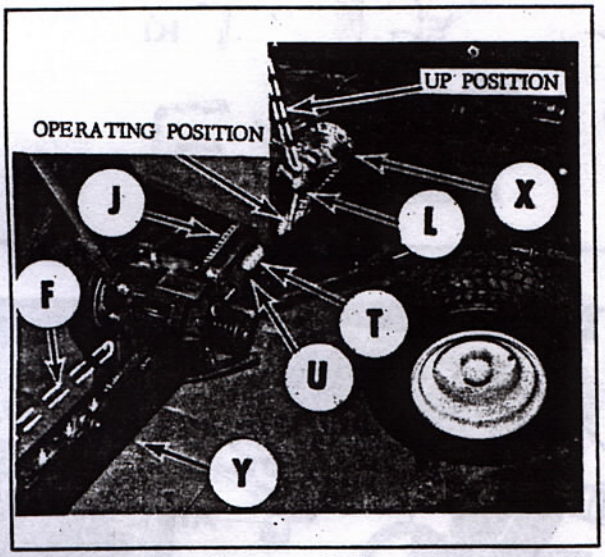


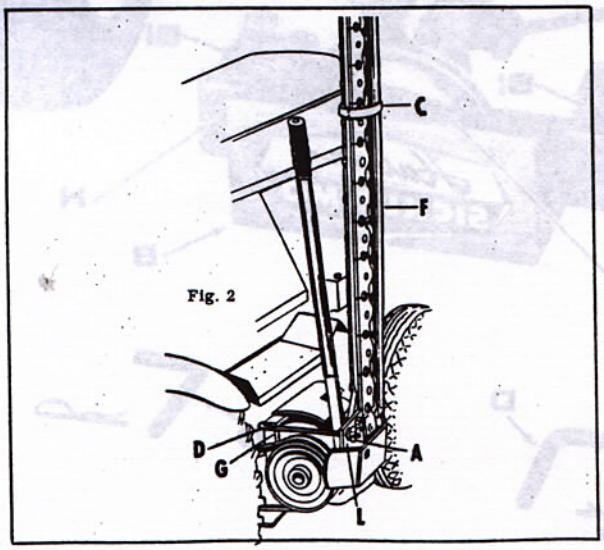
Fig. 23



(Fig. 26)



(Fig. 16)



(Fig. 2)

Next, install carrier arm assembly (R) (Fig. 26) by inserting carrier arm into mounting pocket (S) - push carrier arm into pocket (S) until carrier arm button stop rests against end of pocket mounting tube.

LIFT SPRING INSTALLATION:

Put pivot arm assembly into "up position" - thread lift chain (J) over carrier arm pulley (X) - attach lift spring (T) to mounting clip (U), then remove all slack from lift chain and connect lift chain to lift spring (T). Chain should be snug at this point. Then push pivot arm assembly into operating position (L) as illustrated in Fig. 16.

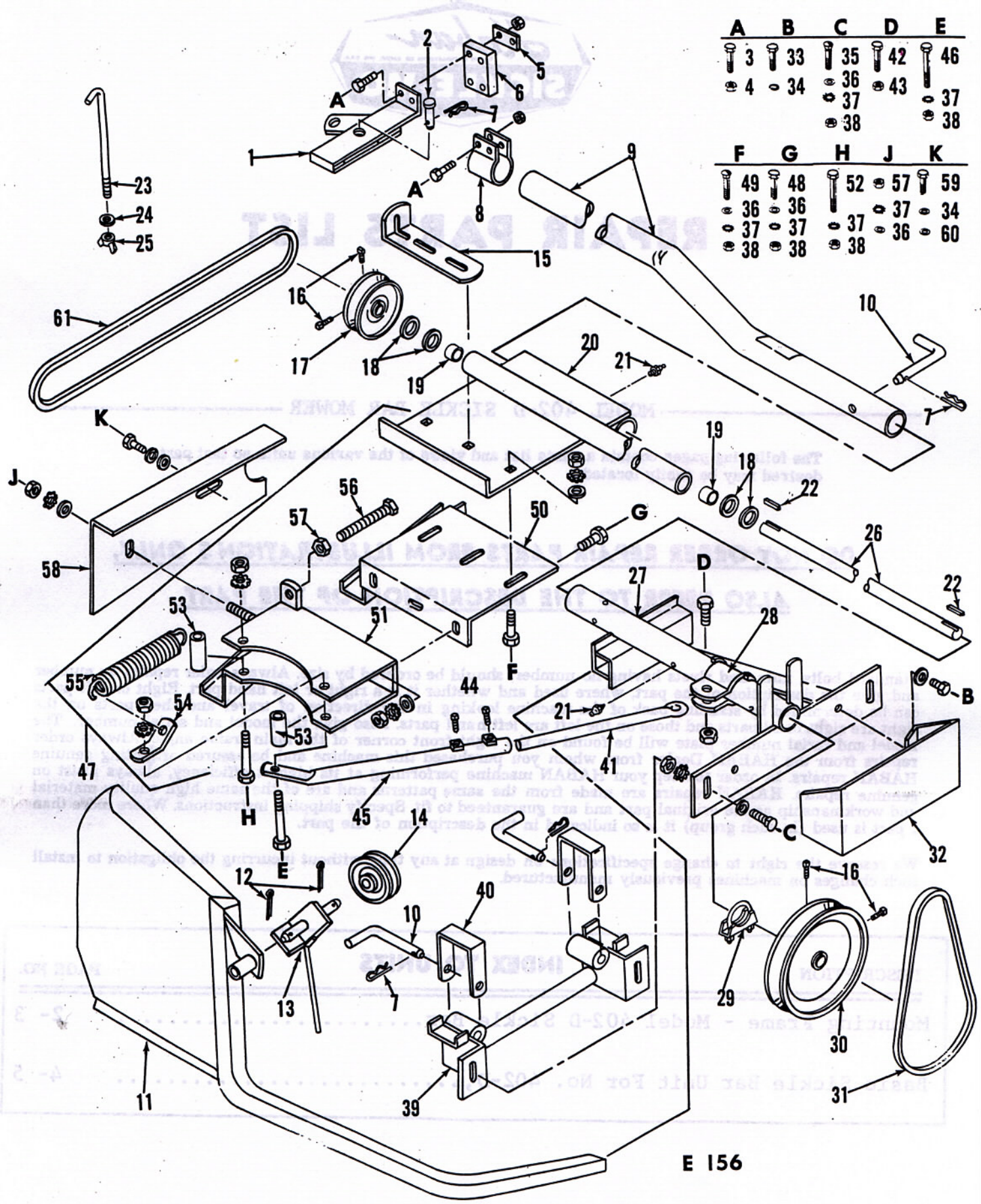
For added clearance of inner shoe from ground, drop additional lengths of chain.

LIFT HANDLE POSITIONS:

Lift handle should be set in top notch as illustrated in Fig. 16 for operating mower. For transporting mower put lift handle in position (Q) (Fig. 26).

TO TRANSPORT MOWER:

To prepare mower for transport, shut off tractor engine, disengage tractor PTO clutch. Install sickle knife cover (F) (Fig. 2) using retainer strap (C) to secure cover to bar. Set lift arm in transport position (Q) - take transport hook (D) (Fig. 2) in left hand and raise sickle bar with right hand to vertical position - insert transport cross bar (G) of mower head - - - tighten wing nut (A) to position mower bar in vertical transport position.


A B C D E
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4 34 36 43
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37 37 37 36 60
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E 156

REPAIR PARTS LIST

HABAN MODEL 402 SICKLE BAR MOWER ATTACHMENT
(Serial No. 186,000 -)

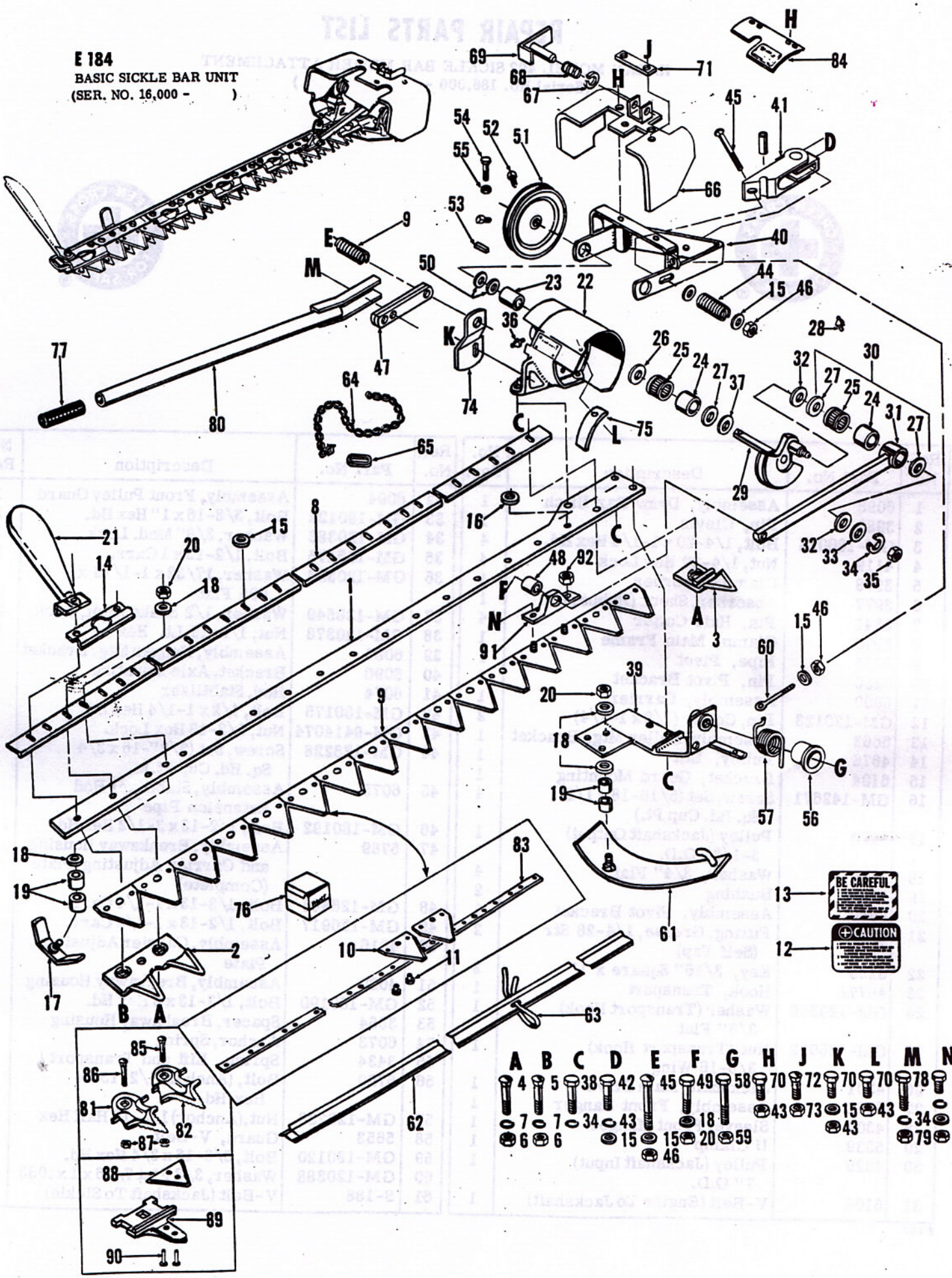
Ref. No.	Part No.	Description	No. Req.
1	6098	Assembly, Draw Bar Hitch	1
2	3980	Pin, Clevis	1
3	GM-180024	Bolt, 1/4-20 x 1-1/4 Hex Hd.	4
4	4119	Nut, 1/4-20 Hex Lock	4
5	3978	Clamp, Absorber	1
6	3977	Absorber, Shock (Rubber)	1
7	3341	Pin, Hair Cotter	4
8	3976	Clamp, Main Frame	1
9	5235	Pipe, Pivot	1
10	5236	Pin, Pivot Bracket	3
11	5660	Assembly, Carrier	1
12	GM-120123	Pin, Cotter (1/8 x 1-1/4)	2
13	5663	Assembly, Pulley Mtg. Bracket	1
14	4676	Pulley, Lift	1
15	6104	Bracket, Guard Mounting	1
16	GM-142671	Screw, Set (5/16-18 x 1/2 Sq. Hd. Cup Pt.)	4
17	3970	Pulley (Jackshaft Output) 3-1/2" O.D.	1
18	3396	Washer, 3/4" Flat	4
19	3034	Bushing	2
20	6080	Assembly, Pivot Bracket	1
21	5074	Fitting, Grease, 1/4-28 Str (Self Tap)	2
22	3259	Key, 3/16" Square x 1"	2
23	4677A	Hook, Transport	1
24	GM-120388	Washer (Transport Hook) 3/8" Flat	1
25	GM-126032	Nut (Transport Hook) 3/8-16 Wing	1
26	4301	Jackshaft, Main Drive	1
27	6082	Assembly, Front Hanger	1
28	4304	Sleeve, Front Hanger	1
29	5339	U Clamp	1
30	4329	Pulley (Jackshaft Input) 7" O.D.	1
31	6106	V-Belt (Engine To Jackshaft)	1

Ref. No.	Part No.	Description	No. Req.
32	6094	Assembly, Front Pulley Guard	1
33	GM-180122	Bolt, 3/8-16 x 1" Hex Hd.	2
34	GM-120382	Washer, 3/8" Med. Lock.	3
35	GM-126475	Bolt, 1/2-13 x 1 Carr.	2
36	GM-120396	Washer, 17/32 x 1-1/16 x .095 Flat	10
37	GM-138549	Washer, 1/2 Shakeproof, Lock	11
38	GM-120378	Nut, 1/2-13 Lt. Hex	10
39	6089	Assembly, Hanger Mtg. Bracket	1
40	6096	Bracket, Axle Mounting	2
41	6074	Rod, Stabilizer	1
42	GM-180175	Bolt, 1/2 x 1-1/4 Hex Hd.	1
43	GM-9414074	Nut, 1/2-13 Hex Lock.	1
44	GM-128228	Screw, Set (3/8"-16 x 3/4 Sq. Hd. Cup Pt.)	2
45	6075	Assembly, Stabilizer Rod Extension Pipe	1
46	GM-180192	Bolt, 1/2-13 x 3-1/2 Hex Hd.	1
47	5789	Assembly, Breakaway Housing and Carrier Adjusting Plate (Complete)	1
48	GM-126485	Bolt, 1/2-13 x 1-1/4 Carr.	3
49	GM-120917	Bolt, 1/2-13 x 1-1/2 Carr.	3
50	4016	Assembly, Carrier Adjusting Plate	1
51	4020	Assembly, Breakaway Housing	1
52	GM-180190	Bolt, 1/2-13 x 3 Hex Hd.	1
53	3554	Spacer, Breakaway Housing	2
54	6073	Anchor, Spring	1
55	3434	Spring, Lift and Transport	1
56	5790	Bolt, (Anchor) 1/2-13 x 4 Hex Hd.	1
57	GM-120238	Nut, (Anchor) 1/2-13 Half Hex	3
58	5653	Guard, V-Belt	1
59	GM-180120	Bolt, 3/8-16 x 3/4 Hex Hd.	1
60	GM-120388	Washer, 3/8 Flat 7/16 x 1 x .083	1
61	S-188	V-Belt (Jackshaft To Sickle)	1

REVISED REPAIR PARTS NUMBERS PAGE

REF. NO.	PART	DESCRIPTION	QUANTITY	SERIAL NUMBER ON DATE OF PRODUCTION
23		Replaced by 7323 Housing Stop & Quick Pin		196,189
24		Replaced by 7323 Housing Stop & Quick Pin		196,189
25		Replaced by 7323 Housing Stop & Quick Pin		
27	8312	Assembly - Front Hanger	1	196,189
31	5771	V-Belt (Engine to Jackshaft)	1	196,189
37	GM-120384	Washer - 1/2 Med. Lock	10	196,189
39	8316	Assembly - Hanger Mtg. Bracket	1	196,189
41	3431	Rod - Stabilizer	1	196,189
58	6740	Guard - V-Belt	1	196,189
[illegible]	GM-120915	Bolt - 3/8-16 x 1 Carriage	1	196,189
60	6515	Washer- Flat (13/32 x 2-3/8 x 7 Ga.)	1	196,189
61	S-191	V-Belt (Jackshaft to Sickle)	1	196,189
NP	GM-130999	Washer - 1/2 Flat	1	196,189
NP	8243	Strap - Locator	1	196,189
NP	GM-271190	Nut & Lock Washer Assy. (3/8-16 Hex.)	1	196,189
NP	7328	Belt - Retainer	1	196,189

E 184
BASIC SICKLE BAR UNIT
(SER. NO. 16,000 -)



A	B	C	D	E	F	G	H	J	K	L	M	N
4	5	38	42	45	49	58	70	72	70	70	78	94
7	7	34	43		18		43	73	15	43	34	95
6	6		15	15	20	59			43		79	96
				46								93

HABAN SICKLE BAR MOWER
REPAIR PARTS LIST
SER. NO. (16,000 -)
MODELS 42005/42007/42008/42009/42010

Ref. No.	Part No.	Description	No. Req.
1	3592	Sickle Bar	1
2	6732	Finger-Shear	8
3	7188	Shear Finger	1
4	GM126452	Bolt 7/16-14 x 1 1/2 Carr.	16
5	GM120916	Bolt 7/16-14 x 1 3/4 Carr.	1
6	GM271501	Nut-7/16-14 Lt. Hex.	17
7	GM120383	Washer 7/16 Med. Lock	17
8	3597A	Plate-Universal Wear	4
9	3622	Assem., Sickle Knife & Pitman Pivot (Comp)	1
9A	6612	Assem. SickleKnife Only (Less Pitman Pivot)	1
10	3928	Knife-Sickle (3-Hole)	16
11	6066	Rivet-Sickle Knife	32
12	6625	Decal Caution	1
13	S 820	Decal Be Careful	1
14	3598 A	Clip Knife	5
15	GM120388	Washer 3/8 Flat 7/16 x 1 x .083	18
16	GM120389	Washer 7/16 Flat 1/2 x 1 1/4 x .083	1
17	5571	Assem. Outer Shoe	1
18	GM120396	Washer 7/16 Flat 1/2 x 1 1/16 x .095	6
19	3346	Spacer (Outer Shoe) 1/2 Long	4
20	GM9414074	Nut 1/2-13 Hex. Lock	3
21	4648	Grass Divider Board	1
22	4707	Assem. Flywheel Housing	1
23	3034	Bushing-Flywheel Housing	1
24	4683	Race-Bearing (Outer)	2
25	4684	Bearing-Roller	2
26	4653	Washer (Flat) 1 5/16 x 15/16 x 11 GA	1
27	4656	Seal-Bearing Oil	3
28	5074	Fitting-Grease (1/4-28 Str.)	1
29	4641	Crankshaft	1
30	4685	Pitman & Bearings (Comp.)	1
31	4629	Pitman (Less Bearings)	1
32	4654	Washer (Flat) (15/16 x 1 1/2 x .0299)	2
33	GM120390	Washer (1/2 Flat) (9/16 x 1 3/8 x .109)	1
34	GM120384	Washer 1/2 Med. Lock	5
35	GM124934	Nut 1/2-20 Half Hex.	1
36	5074	Fitting-Grease (1/4-28 Str.)	1
37	4719	Washer (Flat) (15/16 x 2 x .0299)	1
38	GM180177	Bolt 1/2-13 x 1 1/2 Hex. Head	3
39	3570	Assem. Sickle Mounting Bracket	1
40	3555 A	Assem. Breakaway Pivot	1
41	5602	Assem. Latch (Comp.)	1
42	GM180122	Bolt-3/8-16 x 1 Hex. Head	2
43	GM120382	Washer 3/8 Med. Lock	5
44	3411	Spring-Latch & Lift Strap	2
45	GM126705	Bolt 3/8-16 x 3 Carriage	2
46	GM9413534	Nut 3/8-16 Hex. Lock	3
47	5626	Arm-Lift (Ser. No. 186,000)	2
48	1094	Bushing-Pitman Pivot	1
49	GM180179	Bolt 1/2-13 x 1 3/4 Hex. Head	1

Ref. No.	Part No.	Description	No Req
50	3396	Washer (49/64 x 1 1/2 x .0598)	2
51	4638	Pulley (Crankshaft)	1
52	GM142671	Screw-Set (5/16-18 x 1/2 Sq. Head)	2
53	4585	Key-Pulley (3/16 Sq. x 1 1/2)	1
54	GM180042	Bolt 1/4-20 x 1 3/4 Hex. Head	1
55	4119	Nut 1/4-20 Hex. Lock	1
56	4645	Retainer-Torsion Spring	1
57	4655	Spring-Torsion	1
58	GM271724	Bolt 5/8-11 x 2 1/4 Hex. Head	1
59	GM124847	Nut 5/8-11 Half Hex.	1
60	3058	Eye Bolt-Spring	1
61	3604 A	Inner Skid Shoe	1
62	4690	Guard-Sickle Bar	1
63	4686	Guard Strap	1
64	4716	Chain-Transport	1
65	3436	Anchor-Chain	1
66	7323	Assem. Housing Stop & Quick Pin	1
67	6795	Snap Ring	1
68	5681	Spring-Coupler	1
69	6791	Assem. Quick Pin	1
70	GM180120	Bolt-3/8-16 x 3/4 Hex. Head	3
71	6691	Strap-Housing Stop	1
72	7090	Bolt 1/4-20 x 5/8 Carr.	2
73	GM271178	Nut & Bolt Washer Assem. 1/4-20 Hex	2
74	6850	Vertical Position Stop	1
75	7326	Shield-Pitman Side	1
76	8163	Rivets-16 oz. Box #6066 Rivets (Repairs)	1
77	3339	Grip-Handle	1
78	GM180175	Bolt 1/2-13 x 1 1/4 Hex. Head	1
79	GM120378	Nut 1/2-13 Lt. Hex.	1
80	4723	Handle-Lift (Ser. No.-185,999)	1
80	6077	Handle-Lift (Ser. No. 186,000) Grip Handle	1
81	3599 B	Shear Finger-Early Production (END) (Replaced by 7188)	1
82	3599 A	Shear Finger-Early Production (Replaced by 6732)	16
83	4631	Back-Sickle Knife	1
84	5174	Stop-Housing	1
85	4670	Bolt (7/16 x 1 1/2) (Plow)	16
86	4669	Bolt (7/16 x 1 3/4)	1
87	GM274655	Nut (7/16 Lock)	17
88	4007	Ledger Plate-For 4008 Shear Finger	17
89	4008	Shear Finger-Early Production (Replaced by 6732 and 7188)	17
90	GM120744	River-Finger	17
91	8224	Pitman Pivot Kit Consisting of:	
92	FOR LATE PRODUCTION	1 6614 Pivot 2 6617 Cone Nuts	
93			
94	FOR EARLY PRODUCTION	2 8223 Spacer Nuts 2 GM180018 Bolt 5/8 Hex. Hd. 2 GM120380 Washer Lock 1/4 2 446188 Washer Flat 1/4	
95			
96			

There is no page 9 or 10 they were left blank in the manual for notes!