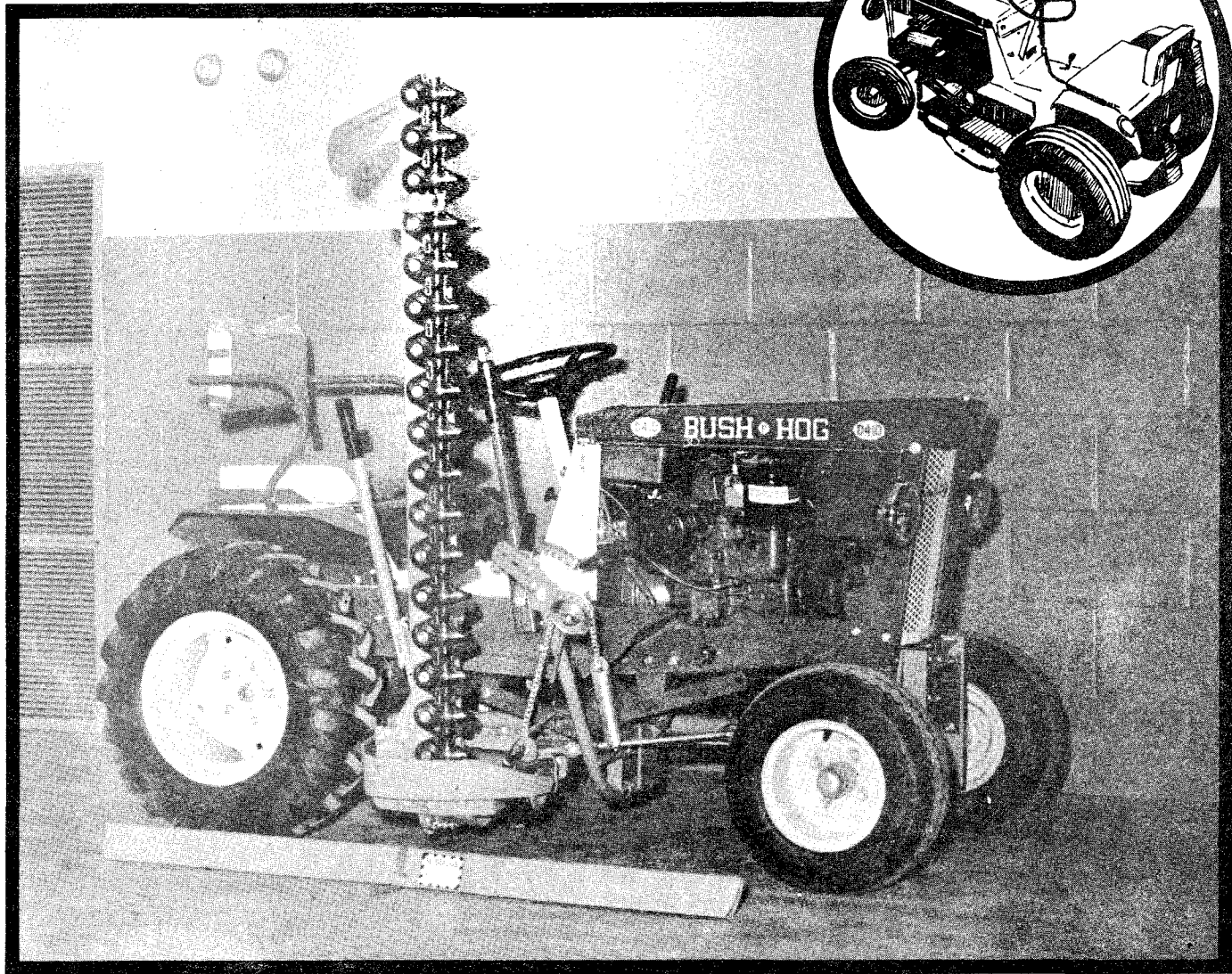
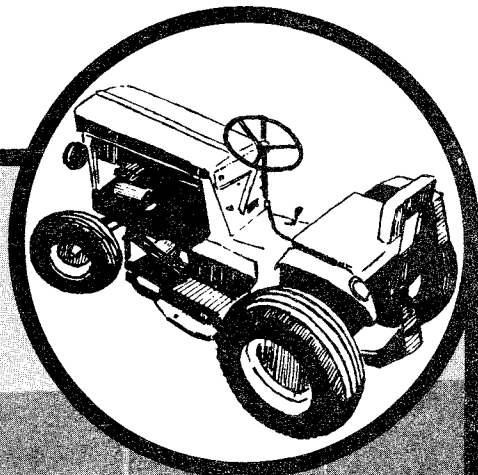


**BUSH-HOG**  
INCORPORATED

# OWNER'S MANUAL



## SICKLE BAR MOWER ATTACHMENT

SHAW MANUFACTURING CO.  
GALESBURG, KANSAS

DIVISION OF BUSH HOG, INC., SELMA, ALABAMA 36701

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## UNPACKING

Your Sickle Bar Attachment comes packed in one carton. The carton contains only the parts pertaining to the unit packed within. Unpack carton carefully to insure that all parts are accounted for. The carton contains the following parts: Sickle Bar Unit Assembly, Frame Assembly, large and small bag of parts, Breakaway Housing, and Carriage Plate.

Open carton and remove all parts. Arrange the main units on the floor near tractor. Arrange all parts from bags so they can easily be identified.

## SICKLE BAR ASSEMBLY

Place the Carriage Adjusting Plate with the slotted holes beneath the main Frame Support Plate. Attach Carriage adjusting Plate to the Frame Assembly with  $\frac{1}{2}$ " x  $1\frac{1}{4}$ " Carriage Bolts and secure with Nuts and Lock Washers provided.

Attach the Breakaway Latch Frame Assembly to the Breakaway Housing. Insert Spacer into Breakaway Latch Frame. The spacer must be flush with the top and bottom of Breakaway Latch Frame Assembly. With the Spacer in place, align housing. A tapered drift pin would help in aligning the holes. Insert  $\frac{1}{2}$ " x 3" Hex Hd. Bolt into the hole from the top and secure with Lockwasher and Nut provided.

Place second Spacer between the Breakaway Latch and the Latch Frame. Tighten Breakaway Latch Bolt until it holds the Spacer in position. Align with holes in Breakaway Housing. Next, slip the Anchor Assembly Yoke into position and insert  $\frac{1}{2}$ " x  $3\frac{1}{2}$ " Hex. Hd. Bolt and secure with Lockwasher and Nut provided.

Next, attach the Tie Rod to the Sleeve of the Front Main Frame with a  $\frac{1}{2}$ " x  $1\frac{1}{2}$ " Hex. Hd Bolt, Flatwasher and Lock Nut.

**NOTE:** Bolt should be inserted with the threaded portion downward. This bolt should be tightened securely and then backed off slightly to allow Sleeve to revolve. Attach rod Yoke to the Anchor Assembly Yoke with Clevis Pin and Cotter Pin.

## BELT INSTALLATION

To install the sickle drive belt set sickle bar in break-back position. Remove belt retainer and guide, Install V-Belt over pulley and reposition sickle bar in normal cutting position. Install belt retainer and guide and secure with washer and nut provided.

To tighten the sickle drive belt loosen the carriage bolts which connect the carriage adjusting plate to the frame assembly. Extend by turning it in the breakaway assembly until required tension is obtained on belt, then secure the carriage bolts.

## SICKLE BAR LEAD & PITCH ADJUSTMENT

The sickle bar now attached to the frame should be adjusted so the outer end will lead the inner end of sickle bar about 2 inches. Brackets are joined with  $\frac{1}{2}$ " x  $1\frac{1}{4}$ " carriage bolts mounted in slotted holes. To adjust pitch of cutting fingers, adjust in slots to desired position. Tighten bolts. Attach outer divider wing to the sickle bar to the bolt and secure with nut provided.

## MOUNTING TO TRACTOR

Slide frame assembly under tractor, between the wheels, lift tight rear wheel, and slide the rear main frame under tractor.

Fasten rear mounting clamps on pipe as illustrated with rubber connector facing up. Tighten clamp on tube, bolt bracket to rubber connector. Mount vibration dampening connector to rear tractor frame. Install carrier arm.

Bolt lift spring eccentric and pulley assembly to carrier arm at point with  $\frac{3}{8}$ " x 1" Hex Hd. Bolts, Nuts, and Lockwashers provided. Position pivot handle in "UP-POSITION". Connect lift chain with half-link to flywheel housing. Thread lift chain pulley and connect to lift spring, dropping necessary chain links so that all slack in chain and spring assembly is taken up. Hook lift spring to tie rod yoke. To put inner shoe in "float" position or "operating position," set pivot arm in "operating position,". Minimum clearance of one half inch from inner shoe to ground is recommended. Shoe clearance from ground can be made by dropping links in lift chain. (Cutting conditions in some areas may require inner shoe clearance above ground of up to 2" when in "operating position" on level ground).

## TRANSPORT POSITION (Late Production)

Sickle Bar Mower should be put in transport position when moving from one job to another, and should be prepared as follows: Install Sickle Knife Cover and fasten securely with Strap. Insert Carrier Rod Hook into base of sickle bar. With hook threaded through hole, push rod through to Wing Nut. Place lift handle in lowest position and raise sickle bar into vertical position. Place hook of Carrier Rod over Bracket. Hole sickle bar upright, tighten Wing Nut until sickle bar stands in vertical or near vertical position.

Be certain P T O Clutch is disengaged prior to starting tractor. Proceed slowly over any area of ground that is rough and uneven.

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 until Carrier Rod Hook can be unhooked from Bracket. Remove Carrier Rod from sickle bar. Lower sickle bar to the ground and set Life Handle in highest position. Remove sickle bar Knife Cover.

Do not allow anyone to walk near sickle bar mower when in operation.

Always shut off tractor engine prior to any maintenance or repairs on sickle bar mower.

Before operating 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 and recheck all parts after 30 minutes of operation and re-tighten loose parts. Also follow lubrication instructions.

## CUTTING

Operate tractor at three-quarter to full throttle in low range. 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 overlap. Care must be exercised not to operate tractor at excessive speed when cutting rough terrain. The lift handle must always be set in operating position when cutting.

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.

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

### AUTOMATIC BREAK-BACK

The break-back automatically releases sickle bar into break-back position when hitting obstruction. The 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 should be increased.

### SICKLE BAR ADJUSTMENT

The pitch of the cutting fingers on sickle bar can be adjusted by re-positioning the breakaway housing. For normal cutting the shear fingers should be positioned with a downward pitch of approximately 1/4". It may be necessary to increase downward pitch of shear fingers when cutting extremely heavy, tangled, or matted grass. If green undergrowth is intermingled heavily with dry grass and weeds from previous seasons (particularly on hills or slopes) it may be necessary to test cut the area to determine most effective path of cutting. In extreme conditions it may be necessary to cut in only one direction.

### SICKLE BAR LEAD INSTRUCTIONS

The sickle bar now attached to the frame should be adjusted so the outer end will lead the inner end of sickle bar about 2". To adjust lead, loosen vertical bolts in plates. Set sickle bar in position and tighten bolts.

### OUTER SHOE WEIGHT

Set tension on torsion spring 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.

**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.

### INNER SHOE WEIGHT

Weight can be increased or decreased on inner shoe by changing the tension on transport spring, which is connected to the lift chain. Shortening the chain lessens the weight,

while extending the chain results in more weight being gained.

**Note:** Be certain chain is assembled per instructions.

### NORMAL CUTTING

The limit stop should be set with the pitman clearance slot to the rear. 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 forward position except for vertical cutting.

### VERTICAL CUTTING (90° only)

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

### LUBRICATION

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 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 every two hours of machine operation:

- A Pitman crank pin
- B Crankshaft
- C Jackshaft

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

- D Pitman head
- E Sickle clips
- F Two inner shoe pivots
- G Break-back spring latch pivot
- H Torsional lift spring
- I Wear plate and moving joints
- J Transport spring pulley

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

### MAINTENANCE

Adjust the belt tension as described under "Belt Adjusting" on page 2. Proper tension allows for approximately one-half inch deflection when finger 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 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.

**CAUTION**

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

**REPAIR PARTS LIST**

The following pages contain a parts list and views of the various units so that parts desired may be easily located.

Do not order repair parts from illustrations only. Also refer to the description of the part.

Standard bolts, nuts, and rivets having no number, should be ordered by size. Always order repairs by number and give the description of the part, where used and whether it is a right or left hand part. Right or left parts can be determined by standing back of the machine looking in the direction of travel

and then parts on the right are right hand parts and those on the left are left hand parts. Also give the model and serial number. The model and serial number plate will be found on the right front corner of the main frame angle.

Specify shipping instructions. Where more than 1 part is used (in each group) it is so indicated in the description of the part.

We reserve the right to change specifications on design at any time without incurring the obligation to install such changes on machines previously manufactured.

**ORDER REPAIR PARTS FROM HABAN MFG. CO.**

(Refer to Parts Drawing - Page 5)

Racine, Wisconsin

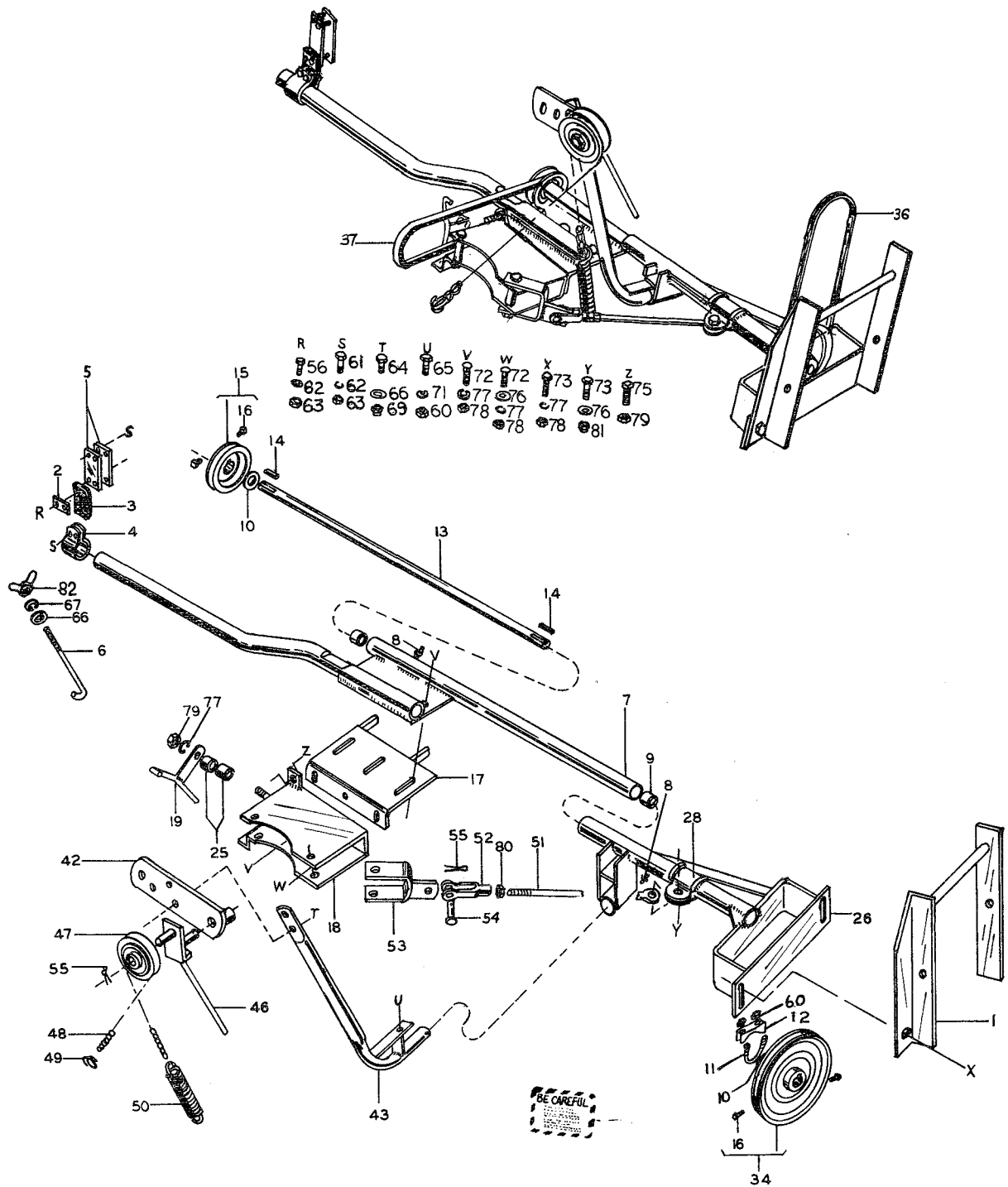
Ref. No.	Part No.	Description	No. Reqd.
2	3977	Absorber - Shock	1
3	3978	Clamp-Shock Absorber	1
4	3976	Clamp-Main Frame	1
5	3980	Pin - Hitch	3
6	3341	Pin - Hair Cotter	4
7	4319	Assm. - Pivot Pipe	1
8	GM9411027	Fitting - Grease 1/4 - 28 Std.	2
9	3034	Bushing - Housing	2
10	3396	Washer - Shaft Shield	2
11	S-96	Stop - Jackshaft Hsg.	1
12	GM142671	Screw 5/16 x 1/2 Sq. Hd. Set	5
13	4301	Jackshaft - Main Drive	1
14	3259	Key - Jackshaft	2
15	3970	Pulley - Jackshaft	1
16	4677-A	Hook - Transport	1
17	4016	Assm. - Carriage Adjusting Plate	1
18	4020	Assm. - Breakaway Housing	1
19	3996	Assm. - "V" Belt Retainer	1
20	3346	Spacer - "V" Belt Retainer	1
28	4304	Sleeve - Front Hanger	1
29	4307	Assm. - Hanger Mtg. Front	1
30	4306	V - Bolt - Hanger Yoke	2
31	4303	Extension - Front Hanger	4
34	4329	Pulley - Jackshaft	1
37	4577	"V" Belt 46" O.C.	1
42	4664	Assm. - Pulley Brkt.	1
43	4076-A	Assm. - Carrier Bar	1
46	4673	Assm. - Pulley Mtg. Brkt.	1
47	4676	Pulley - Lift	1
48	4716	Chain - Lift Spring 40"	1
49	3436	Anchor - Chain	1
50	3434	Spring - Transport	1
51	3431	Rod - Front Tie	1
52	3432	Clevis - Tie Rod	1
53	3993	Assm. - Hanger Mtg. Front	1

Ref. No.	Part No.	Description	No. Reqd.
54	3433	Pin - Clevis	1
55	GM120123	Pin - Cotter	3
56		Bolt 1/4 - 20 x 2 1/4	2
60	GM120376	Nut 5/16 - 18 Lt. Hx.	1
61	GM180024	Bolt 1/4 x 1 1/4 Hx.	4
62	GM120380	Washer 1/4 Med. Lk.	6
63	GM124818	Nut 1/4 - 20 Lt. Hx.	6
64	GM180122	Bolt 3/8 x 1 Hx.	2
65	GM180075	Bolt 5/16 x 5/8 Hx.	1
66	GM120388	Washer 3/8 Med. Flat	5
67	GM120382	Washer 3/8 Med. Lock	7
68	GM120377	Nut 3/8 - 16 Lt. Hx.	6
69	GM9413534	Nut 3/8 - 16 Self Lk.	2
70	GM9420165	Nut 5/16 - 18 Hx.	1
71	GM120214	Washer 5/16 Med. Lk.	1
72	GM126485	Bolt 1/2 x 1 1/4 Carr.	6
73	GM120917	Bolt 1/2 x 1 1/2 Carr.	2
74	GM180177	Bolt 1/2 x 1 1/2 Hx.	1
75	4570	Bolt 1/2 x 2 Hx.	1
76	GM120390	Washer 1/2 Med. Flat	3
77	GM120384	Washer 1/2 Med. Lk.	9
78	GM120378	Nut 1/2 - 13 Lt. Hx.	8
79	GM120238	Nut 1/2 - 13 Hx. Jam.	2
80	GM124934	Nut 1/2 - 20 Hex. Jam.	1
81	GM9414074	Nut 1/2 - 13 Self Lk.	1
82	GM126032	Nut 3/8 - 16 Wing	1

Order the following parts from:  
Shaw Mfg. Co., Galesburg, Kansas

1	S-3260	Mount Welded Assy.
26	S-3263	Front Hanger Assy.
36	S-3299	V-Belt Primary D 4-10
36-A	S-3204	V-Belt Primary HD-12
	S-3461	Slip Pipe HD-12
	S-3462	Mount Extension HD-12

# MOUNTING FRAME



# 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.

## BE A SAFE OPERATOR

### AVOID ACCIDENTS

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.

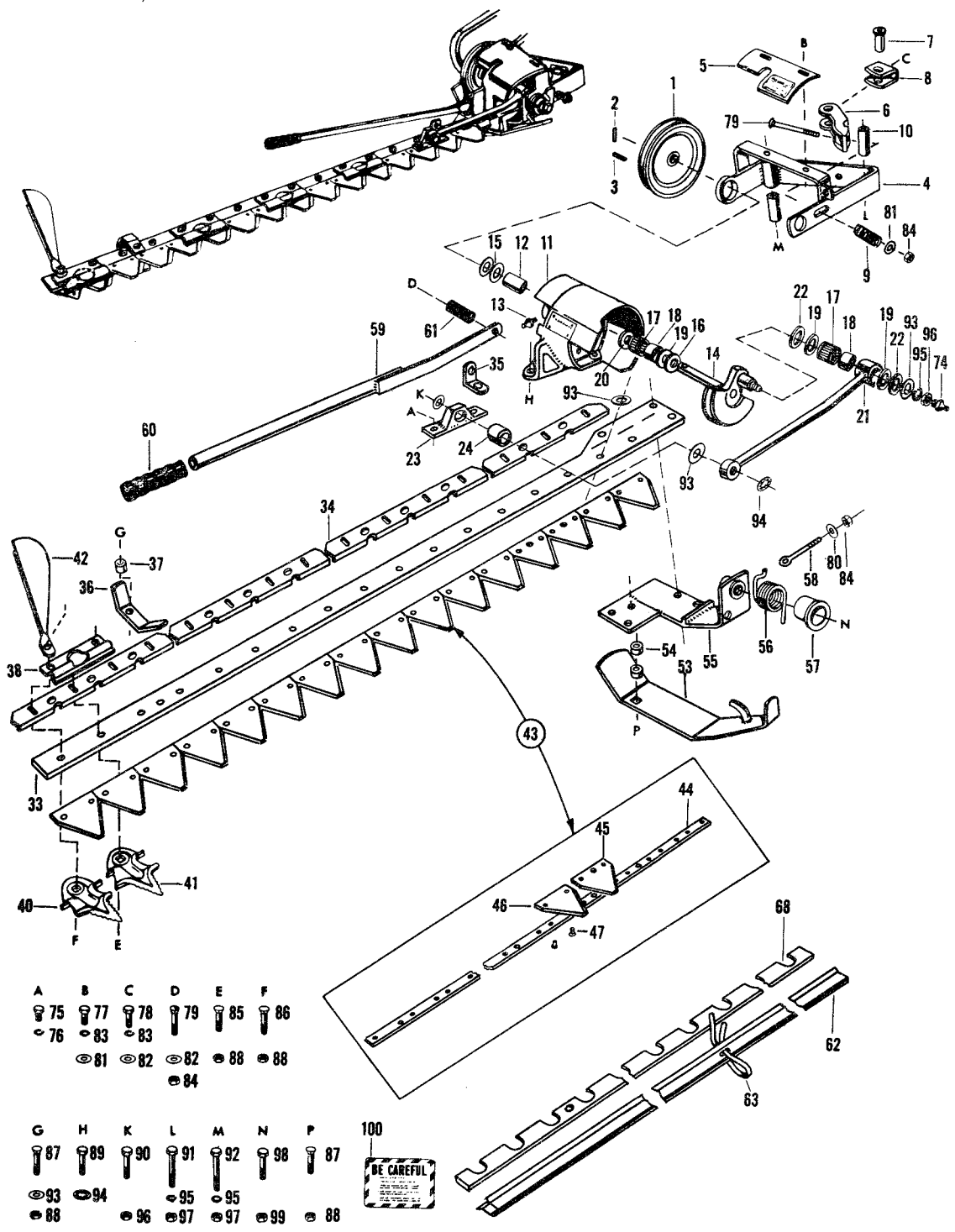
It is said that "the best kind of a safety device is a careful operator." We ask you to be that kind of an operator.

National Safety Council

## BASIC SICKLE BAR UNIT

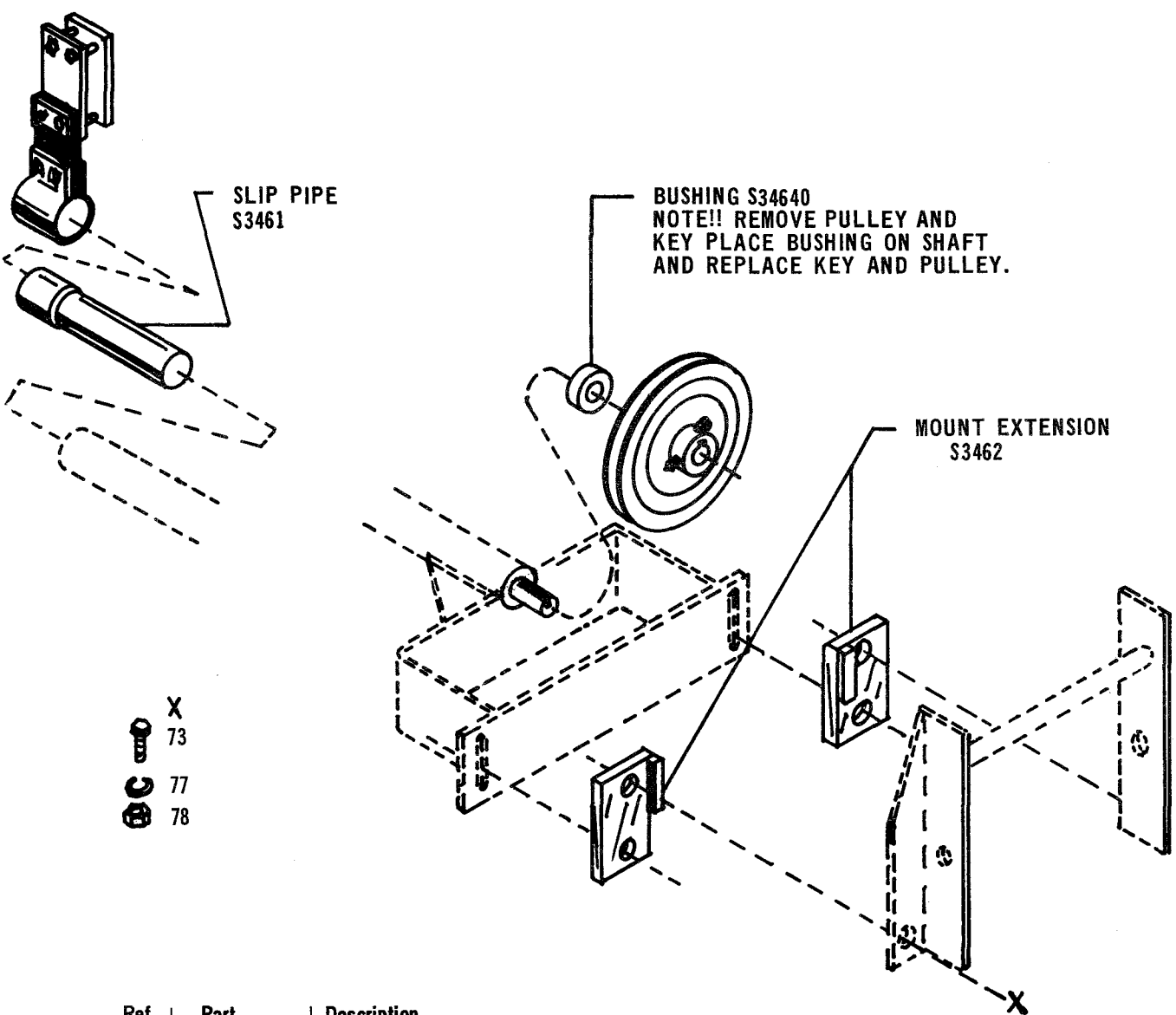
Ref. No.	Part No.	Description	No. Reqd.	Ref. No.	Part No.	Description	No. Reqd.
1	4638	Pulley - Crankshaft	1	46	3596	Knife-Sickle 2 Hole	14
2	GM142358	Pin - Groove ¼ x 1 ½	1	47	GM452099	Rivet-Knife to Bar ½ x ½	32
3	4585	Key 3/16 Sq. x 1 ½	1	53	3604-A	Shoe-Inner Skid	1
4	3555-A	Pivot Assembly-Break	1	54	3346	Spacer - Inner Shoe	2
5	3935-B	Stop-Housing	1	55	3570	Bracket-Mtg.	1
6	3562	Latch-Pivot	1	56	4655	Spring-Torsion	1
7	3936	Pin-Pivot Latch	1	57	4645	Retainer-Spring	1
8	3567	Bracket-Pivot	1	58	3058	Eyebolt	1
9	3411	Spring-Latch	2	59	4723	Handle-Lift	1
10	3554	Spacer-Pivot Frame	2	60	3339	Grip-Handle	1
11	3577-A	Flywheel-Housing	1	62	4690	Guard-Sickle Blade	1
12	3626	Bushing-Crankshaft	1	63	4686	Cover-Strap	1
13	4123	Grease Fitting ¼ Dr.	1	73	GM120396	Washer	2
14	4641	Crankshaft Assembly	1	74	GM9411027	Fitting-Grease ¼ - 28 Str.	1
15	3396	Washer-Pulley	2	75	GM186676	Bolt ¼ x 5/8 Hx.	2
16	4719	Washer-Thrust	1	76	GM120380	Washer ¼ Lock	2
17	4684	Bearing-Roller	2	77	GM180120	Bolt 3/8 x ¾ Hx.	2
18	4683	Race-Outer Bearing	2	78	GM180122	Bolt 3/8 x 1 Hex.	2
19	4656	Seal-Bearing	3	79	GM126705	Bolt 3/8 x 3 Carr.	2
20	4653	Washer-Spacer	1	80	4506	Washer 3/8 Special	1
21	4629	Pitman Assembly	1	81	GM120388	Washer 3/8 Flat	20
22	4654	Washer-Thrust	2	83	GM120382	Washer 3/8 Lock	4
23	3600-A	Pivot Assembly	1	84	GM9413534	Nut 3/8 Lock	3
24	1094	Bushing	1	85	4670	Bolt 7/16 x 1 ½ Plow	16
25	4685	Pitman & Brg. Assembly	1	86	4669	Bolt 7/16 x 1 ¾	1
33	3592	Bar Assem. Sickle	1	87	4353	Bolt 7/16 x 2 ½	2
34	3597-A	Plate-Univ. Wear	4	88	GM9414073	Nut 7/16 Lock	19
35	3603	Angle-Sickle Anchor	1	89	GM180177	Bolt ½ x 1 ½ Hex.	3
36	3607-A	Shoe - Outer	1	90	GM180179	Bolt ½ x 1 ¾ Hex.	1
37	3394	Spacer 7/8" Long	1	91	GM180190	Bolt ½ x 3 Hex.	1
38	3598-A	Clip-Knife	5	92	GM180192	Bolt ½ x 3 ½ Hex.	1
39	GM142671	Setscrew Outer	2	93	GM120389	Washer 7/16 Flat	7
40	3599-B	Shear Finger End	1	94	GM138549	Washer ½ Star	5
41	3599-A	Shear Finger	16	95	GM120384	Washer ½ Lock	2
42	4648	Board-Grass Divider	1	96	GM120238	Nut ½ Half Hex.	2
43	3622	Sickle Knife Incl. Ref. Nos. 75 & 76	1	97	GM120378	Nut ½ Light Hex.	2
44	4631	Back-Sickle Knife	1	98	GM271725	Bolt 5/8 x 2 ½ Hex.	1
45	3928	Knife-Sickle 3 Hole	2	99	GM124847	Nut 5/8 Half Hex.	1
				100	4725	Decal - Caution	1

# BASIC SICKLE BAR UNIT





**PARTS USED ONLY IN ATTACHING  
SICKLE BAR MOWER ON HD-12**



Ref. No.	Part No.	Description
73	GM120917	Bolt 1/2 x 1 1/2 Carr.
77	GM120384	Washer 1/2 Med. Lk.
78	GM120378	Nut 1/2 - 13 Lt. Hx.