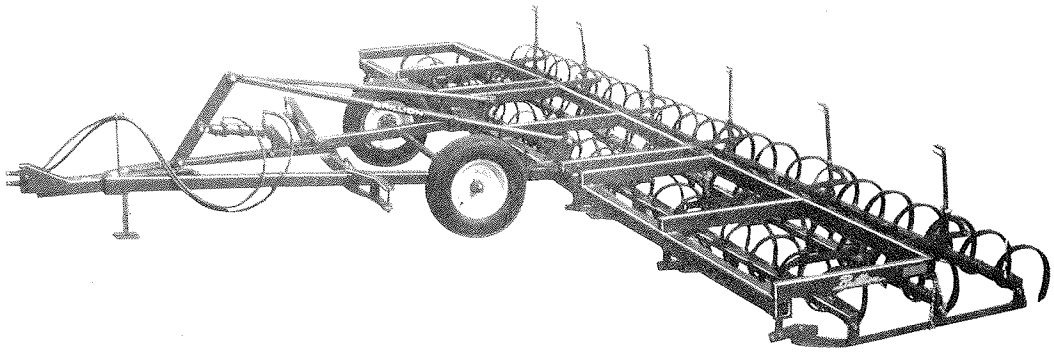
SETTING-UP AND OPERATING MANUAL

Brillion

CART MOUNTED HARROW



MEMBER FEMA

BRILLION IRON WORKS
BRILLION, WISCONSIN 54110
A DIVISION OF BEATRICE FOODS CO.

BEATRICE

981

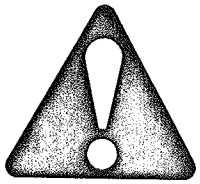
5J-473

TABLE OF CONTENTS

INTRODUCTION

Your Brillion Spring Tooth Harrow is built with the best materials and workmanship available. It has been designed to give years of trouble-free operation. Proper care and operation will insure that you receive the service and long life built into this machine.

Study this manual carefully before attempting to assemble or operate the machine. A special section, "Setting Up Instructions", is included.



This safety alert symbol is used to call your attention to instructions concerning personal safety. Federal law requires you to explain the safety and operating instructions furnished with this machine to all employees before they are allowed to operate the machine. These must be repeated to the employees at the beginning of each season. Be sure to observe and follow the instructions for the safety of anyone operating or near the machine.

Location Reference

Right hand, left hand, and forward designations are those related to the operator when sitting in the operating position.

Parts Ordering

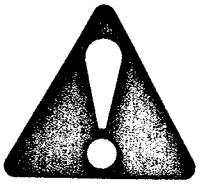
When ordering parts for this machine, include the complete model number and serial number. Refer to the name plate on the drawbar. Please record these numbers upon taking delivery of the unit.

Spring Tooth Harrow Model _____

Serial Number _____

Date Purchased _____

Be sure to read the warranty card which is shipped with the machine. Return the proper portion of the card for recording at the factory.



SAFETY SUGGESTIONS

Investigation has shown that nearly 1/3 of all farm accidents are caused by careless use of machinery. You can do your part in improving safety by observing the following suggestions. Insist that all people working with you or for you abide by them.

1. Do not unfold the wings without first attaching a properly bled hydraulic cylinder between the lift arm and the cylinder anchor.
2. Do not unfold wings unless harrow is attached to a tractor drawbar.
3. Do not stand between the tractor and implement when attaching or detaching implement unless both are not moving.
4. Do not allow anyone near the machine when folding or unfolding the wings.
5. Do not make adjustments while the machine is in motion.
6. Do not allow anyone to ride on tractor or machine.
7. Relieve pressure in hydraulic lines before uncoupling hydraulic hoses from tractor. On most tractors this can be done by operating valves after engine is stopped.
8. Always use transport lock pins for wings when transporting machine.
9. Block machine so it will not roll when unhitched from tractor.
10. Do not transport at speeds over 20 mph.
11. Avoid sudden stops or turns when transporting because weight of machine may cause operator to lose control of tractor. Use a tractor heavier than machine. Do not allow tractor drawbar to swing when transporting.
12. Use caution when towing behind articulated steering tractors; fast or sharp turns may cause the machine to slip sideways.
13. Securely block machine when working on or under it to prevent injury in case of hydraulic failure or inadvertent lowering by another person.
14. Whenever transporting farm implements on public roads it is the responsibility of the operator to abide by state and local laws concerning wide loads, speed, safety emblems, and safety lighting equipment.

OPERATING INSTRUCTIONS

Do not unfold wings nor raise or lower machine unless drawbar is attached to a tractor and a properly bled hydraulic cylinder is connected between lift arm and cylinder anchor.

Inspect the harrow prior to operation to be sure that all nuts and bolts are tight and that it is in good operating condition. After the first few hours of operation, check bolts once again to assure they haven't loosened.

Hitch the harrow to a tractor drawbar. It is not necessary that the unit be exactly level, however several holes are provided for the clevis. The hitch tongue can also be inverted for more adjustment.

Attach a properly bled hydraulic cylinder between the cylinder anchor and the lift arm as shown in Figure 1. A standard 8" stroke ag cylinder is required. Connect the hoses to the tractor outlets.

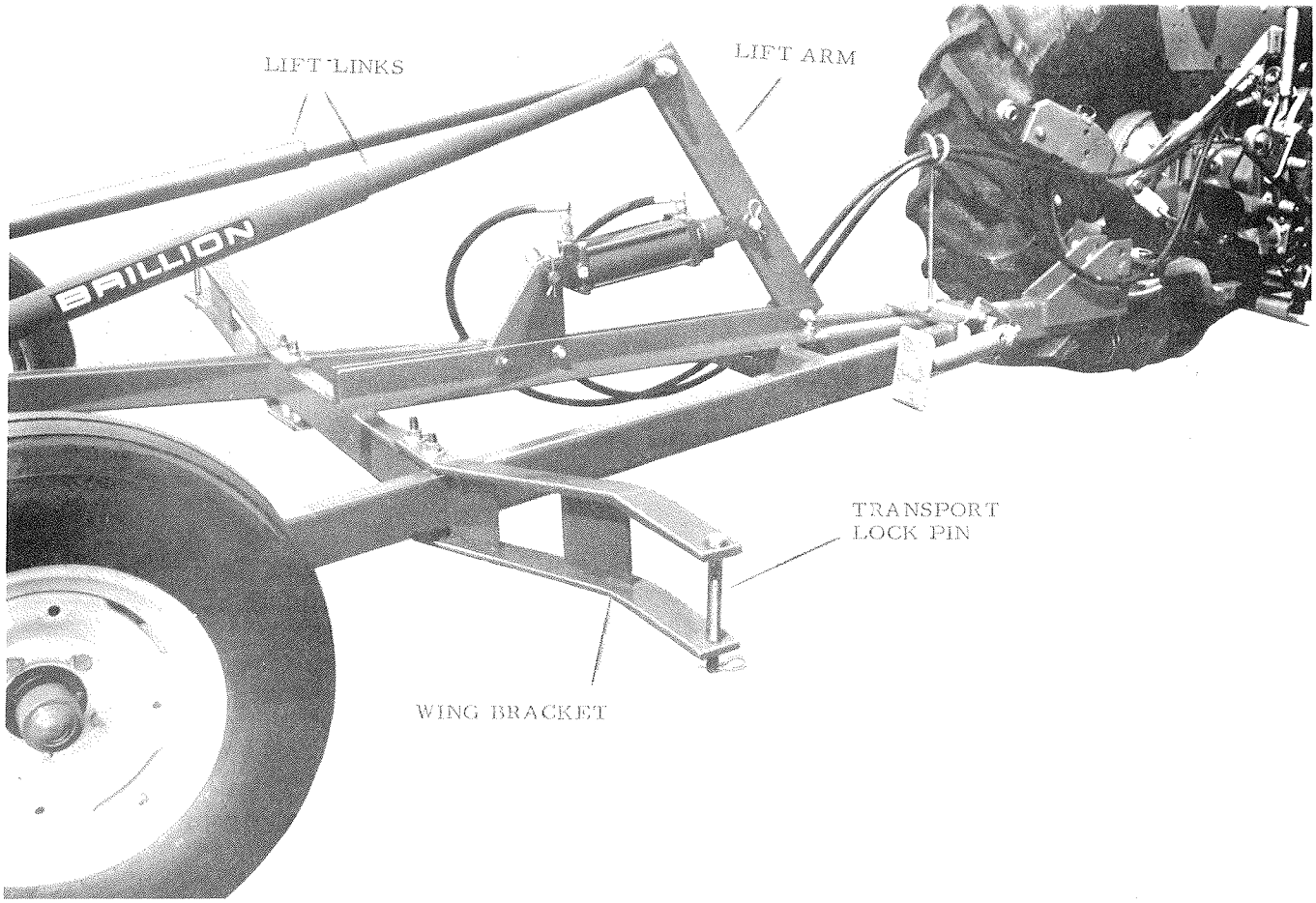


FIGURE 1

Remove the transport lock pins and unfold the wings.

Danger! When unfolding the wings, weight is transferred to the back of the machine. If the harrow is not attached to a tractor drawbar, serious injury could result.

Lower the center frames and wings to the ground by retracting the hydraulic cylinder.

Danger! If air is present in the hoses or the cylinder, the frame will drop too fast. Serious injury or damage to the machine could result. Be sure to bleed air from cylinder before attaching.

Caution! Do not attempt to retract the hydraulic cylinder without first unfolding the wings. Damage to machine will result.

Adjust the control arms to the desired depth.

IMPORTANT Do not operate harrow in the deepest setting when new teeth or new replacement points are being used. Because of the shape of the teeth, no additional operating depth will be obtained and added load will be placed on the teeth and on the frame.

For extended frame life, partially raise frame when turning corners.

The life of the spring teeth is extended through the use of replacement points. Use the teeth without points until the teeth are worn to within one inch of the lower mounting hole. At this time bolt on a 2D-551 replacement point. When this becomes worn down, the point may be reversed.

To transport the harrow, extend the hydraulic cylinder to raise the frame and wings. Fold the wings forward and lock them into place with the drilled bolt and hairpin clip.

Maximum transport speed is 20 miles per hour. It should be towed at much slower speeds when going around corners or when pulling it through hilly and uneven areas.

STORAGE

The Spring Tooth Harrow may be stored in either the operating or transport configuration.

Clean the machine and tighten all nuts before storing. Replace any worn or broken parts. The wear strips on the skid runners can be reversed if either end is worn. The front shoes are slotted and can be adjusted for a better fit or reversed if the lower end is worn.

Repack the transport wheel bearings with a good grade of bearing grease.

ASSEMBLY INSTRUCTIONS

Your Brillion STC Harrow is shipped in separate assemblies according to the following list:

Part No.	Name	STC-8 8' Center	STCW-4 Pair of 4' Wings	STCW-6 Pair of 6' Wings	STCW-8 Pair of 8' Wings
5J-389	Center Frame	1			
5J-392	Runner	3	4	6	6
5J-393	Tooth Bar 4'	6	6		12
5J-404	Tooth Bar 3'			12	
5J-394	Lever	2	2	4	4
5J-395	Drawbar	1			
5J-396	Link Bundle	1			
5J-397	Hitch	1			
5J-398	Hub & Spindle	2			
5J-400	Spring Tooth	24	24	36	48
4C-129	Wheel	2			
5J-451	Tie Bar Bundle	1	1	2	2
5J-453	Wing Bracket	2			
8D-391	Jack	1			
R.H. Wing			5J-405	5J-402	5J-390
L.H. Wing			5J-406	5J-403	5J-391
Box Assembly		3J-399(1)	5J-418	5J-447(2)	5J-399(2)
Box Assembly		5J-401(1)			

NOTE: A 16' machine consists of one STC-8 (8' center) and one STCW-4 (pair of 4' wings).

A 20' machine consists of one STC-8 (8' center) and one STCW-6 (pair of 6' wings).

A 24' machine consists of one STC-8 (8' center) and one STCW-8 (pair of 8' wings).

NOTE: Refer to the Repair Parts Catalog for identification of parts and their relative location in the machine.

1. Assemble the drawbar.

Mount a pair of 7.60-15 or 6.70-15 tires on the rims and bolt to the hubs using the wheel bolts provided. Insert the spindles into the pipe on the drawbar and secure with 1/2" x 3" long capscrews, lockwashers and nuts.

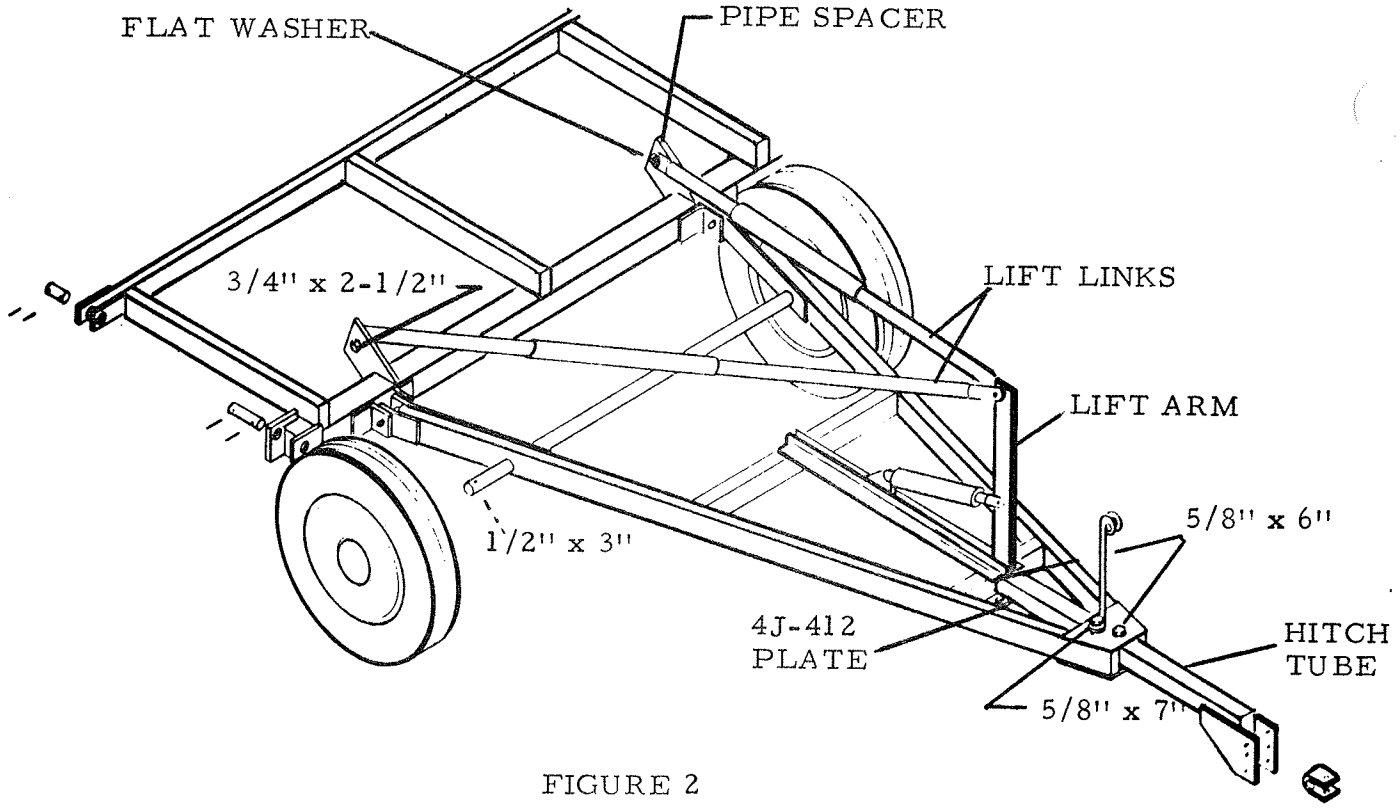


FIGURE 2

Block the tires and install the hitch tube into the drawbar. If the tractor drawbar height is 14 inches or less from the ground, install the tube with the hitch plates down as in Figure 2. If the tractor drawbar is higher than 14 inches, install the hitch tube with the plates to the top. Secure the hitch tube with a 5/8" x 6" long bolt through the front hole on the drawbar plates. Use a 5/8" x 7" long bolt and a flat washer to mount the hose holder to the drawbar assembly. Trap the rear of the hitch tube by using two 5/8" x 6" long bolts through the holes in the angles and through the 4J-412 plate. Tighten 5/8" lockwashers and nuts to all 4 bolts.

2. Attach drawbar jack and hitch clevis.

The jack is attached with a snap ring. Attach the hitch clevis in the desired hole with the 1" x 5-1/2" long bolt and a lock nut.

3. Attach lift arm and lift links.

Bolt the cylinder anchor and the lift arm between the angles on the drawbar frame with 3/4" x 3" long bolts and locknuts. The lift arm must be installed with the small hole between the frame angles and the 1-3/8" dimension to the rear as shown in Figure 3. Be sure that the lift arm is free to pivot.

Bolt the two lift links to the lift arm using the 1" x 4-1/2" long bolt and locknut. Place flat washers between the lift arm and each link. The links must be free to pivot.

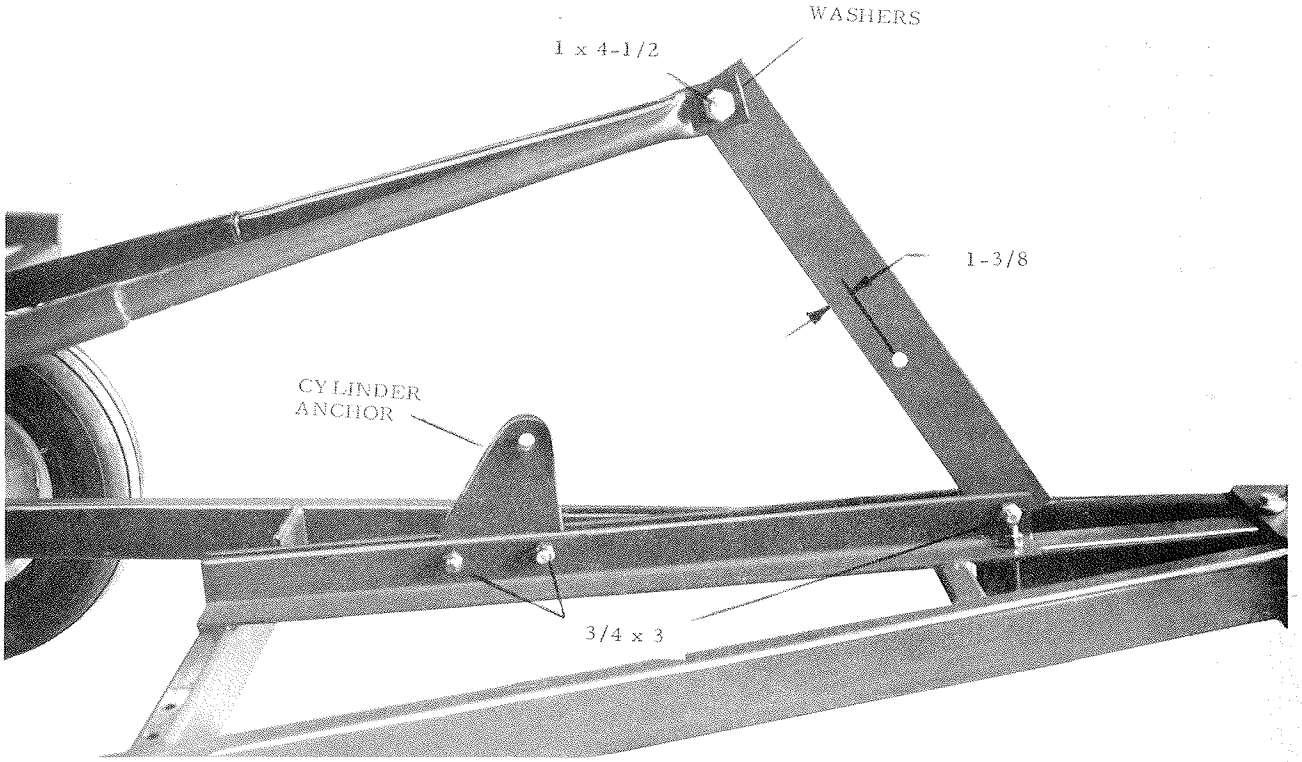


FIGURE 3

4. Attach the center frame.

Use two 1" diameter x 6-5/16" long pins and 5/16" diameter x 1-1/2" roll pins to attach the center frame to the drawbar.

Raise or lower the rear of the center frame so that the lift links can be attached to the inside of the lugs welded to the center frame. Insert a pipe spacer into each lift link and bolt together with 3/4" x 2-1/2" long bolts, flat washers and locknuts.

5. Attach the wings.

Pin the wings to the center frame with 1" diameter x 6-5/16" long pins in the front and 1" diameter x 4-1/2" long pins in the rear. Secure the pins with 5/16" x 1-1/2" long roll pins.

6. Assemble the tooth bars to the skids.

The 8 foot wings and the center section consist of 4 foot tooth bars bolted together. The 6 foot wings consist of two 3 foot sections. Follow these instructions when assembling skids for the 6 foot and 8 foot sections.

Arrange three skids approximately 3 or 4 feet apart depending on whether you are assembling 6 foot or 8 foot sections. Start with the front of the left skid. Insert a 1/2" x 1-3/4" long capscrew through the front triangular bracket on the skid. Place one of the 7/8" outside diameter (O. D.) x 5/8" long bushings over the bolt and place one of the 7/8" washers over the bushing. Then place the lug of the tooth bar over the bushing. Next, install one of the special 17/32" inside diameter x 1-1/4" outside x 3/16" thick washers on the bolt and secure with a 1/2" locknut.

Now assemble two tooth bars to the front bracket of the middle skid. Place one of the 3/16" thick washers and a 7/8" O. D. bushing on a 1/2" x 2-3/4" long capscrew. Extend this through the lug on the tooth bar. Place a 7/8" washer over the bushing and extend the bolt through the bracket on the skid. Now place a bushing over the bolt and a 7/8" washer over the bushing. Slide the lug of the tooth bar over the bushing. Place a 3/16" thick washer over the bolt and secure with a 1/2" locknut. See Figure 4.

Assemble the tooth bar to the right skid in the same manner as the left side.

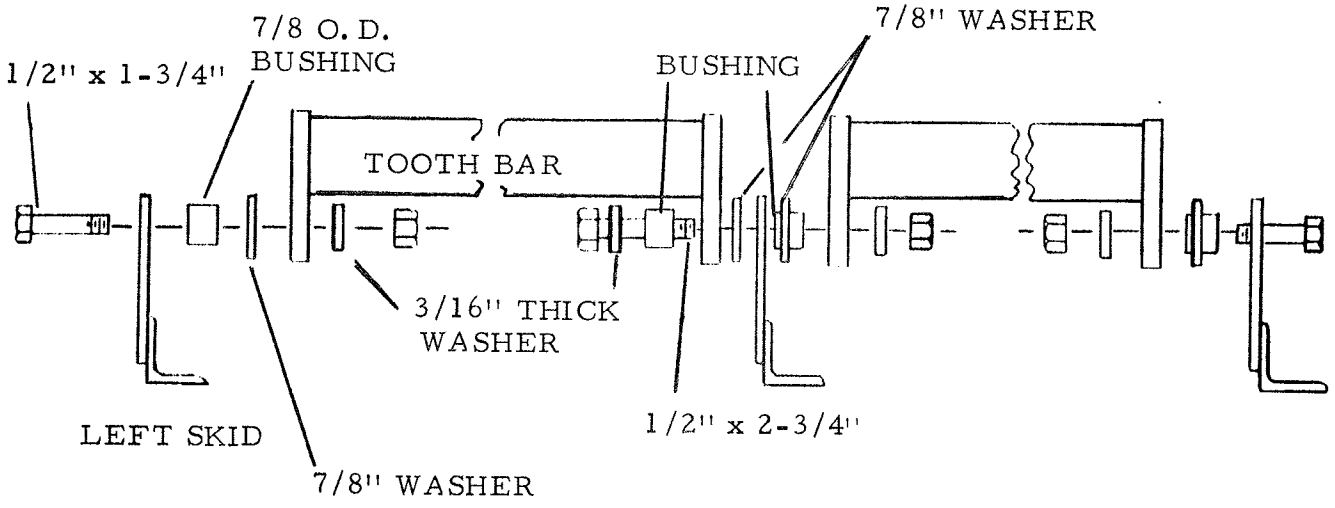


FIGURE 4

Next, mount a tooth bar to the middle bracket of the left skid. Figure 5.

Place a 3/16" thick washer and a 7/8" O.D. bushing on a 1/2" x 2-3/4" capscrew, then slide two 7/8" washers over the bushing and extend the bushing through the large diameter hole of a 5J-448 strap. Insert the bolt through the bracket on the skid. Place a bushing over the bolt and slide another strap over the bushing. Then, mount a tooth bar lug over the bushing and secure with a 3/16" thick washer and a 1/2" locknut.

Now, assemble two tooth bars to the middle bracket of the center skid. Place a 3/16" thick washer and a bushing on a 1/2" x 2-3/4" capscrew. Extend the bushing through the tooth bar lug and through the large diameter hole of a 5J-448 strap. Extend the bolt through the bracket on the skid. Place a bushing over the bolt and a strap over the bushing. Mount the lug of the next tooth bar over the bushing. Place a 3/16" thick washer over the bolt and fasten with a 1/2" locknut.

Assemble the tooth bar to the right skid in the same manner as the left side.

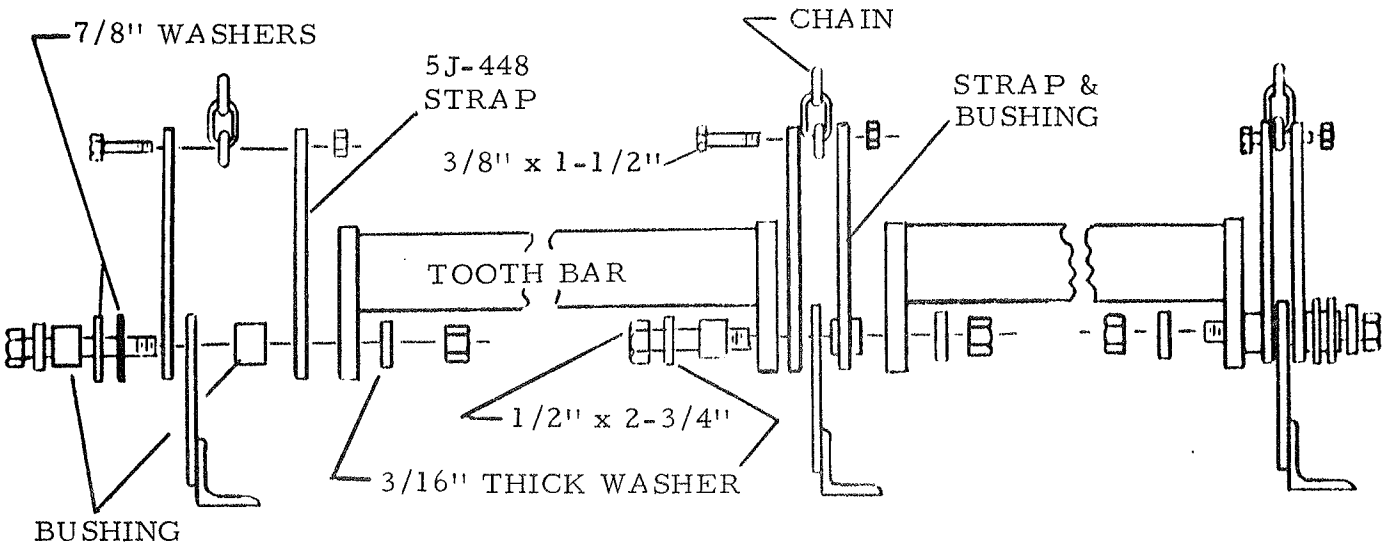


FIGURE 5

Now, attach a chain between each pair of straps. Use a 3/8" x 1-1/2" long capscrew. Extend the capscrew through one of the 5J-448 straps, then the end link of a chain and then, through the other strap. Tighten with a 3/8" lock nut so that the chain does not bind.

The rear tooth bars are attached to the skids in the same manner as the front row.

When assembling sections for a 4 foot wing, follow the instructions for the two outside skids.

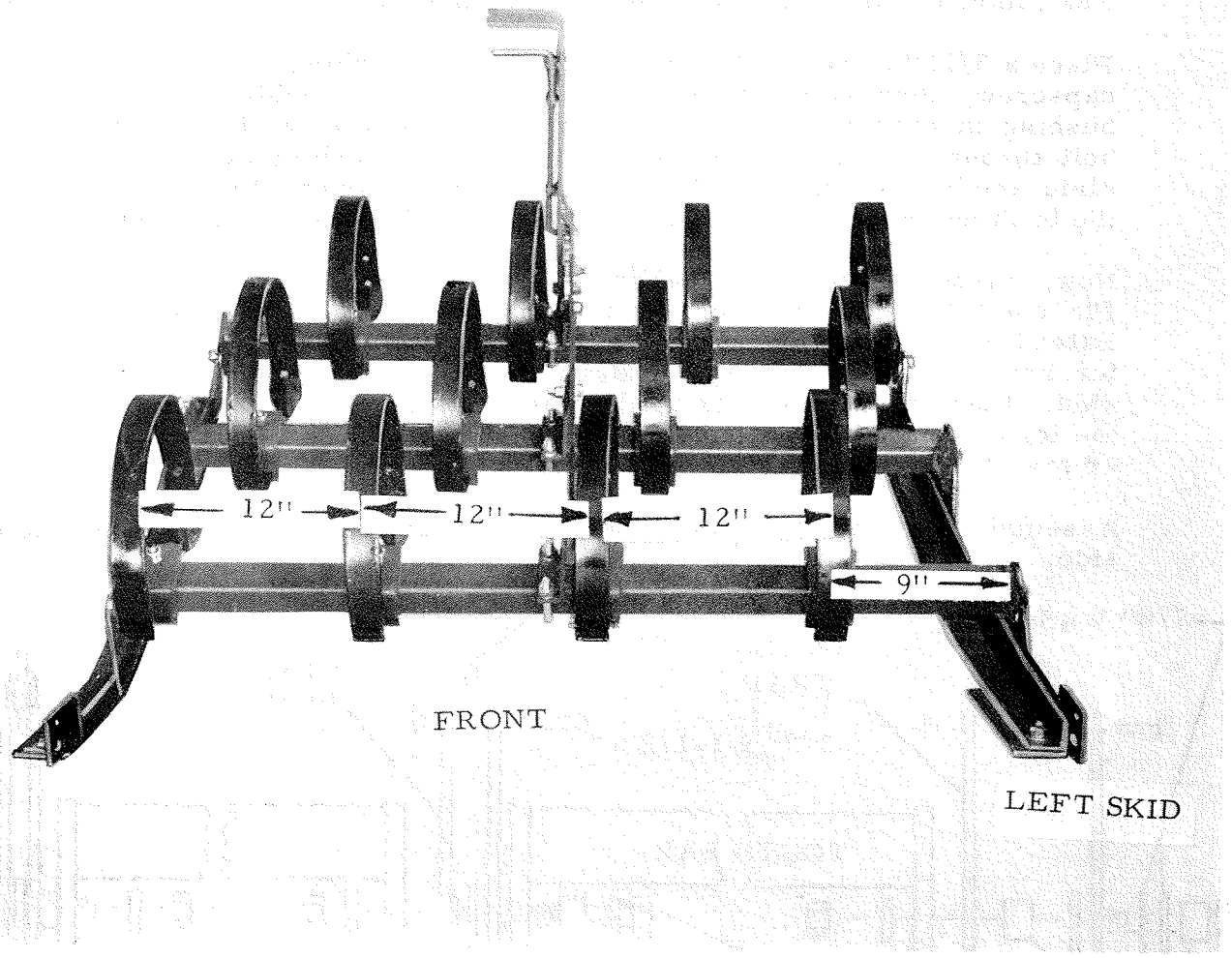


FIGURE 6

7. Mount the teeth on the tooth bars.

Start at the left side of each rear tooth bar. Measure 1-1/2 inches from the tooth bar lug and make a mark. From there, mark off 12 inch intervals from left to right.

Measure 5 inches from the left end of each middle tooth bar and make a mark. From there, mark of 12 inch intervals from left to right.

Measure 9 inches from the left end of each front row tooth bar and make a mark. From there, mark off 12 inch intervals from left to right.

Center a tooth on each mark and clamp into position. Use 1/2" x 3-1/2" long bolts, lockwashers and nuts. The shims are used to assure a tight fit between the tooth and tooth bar.

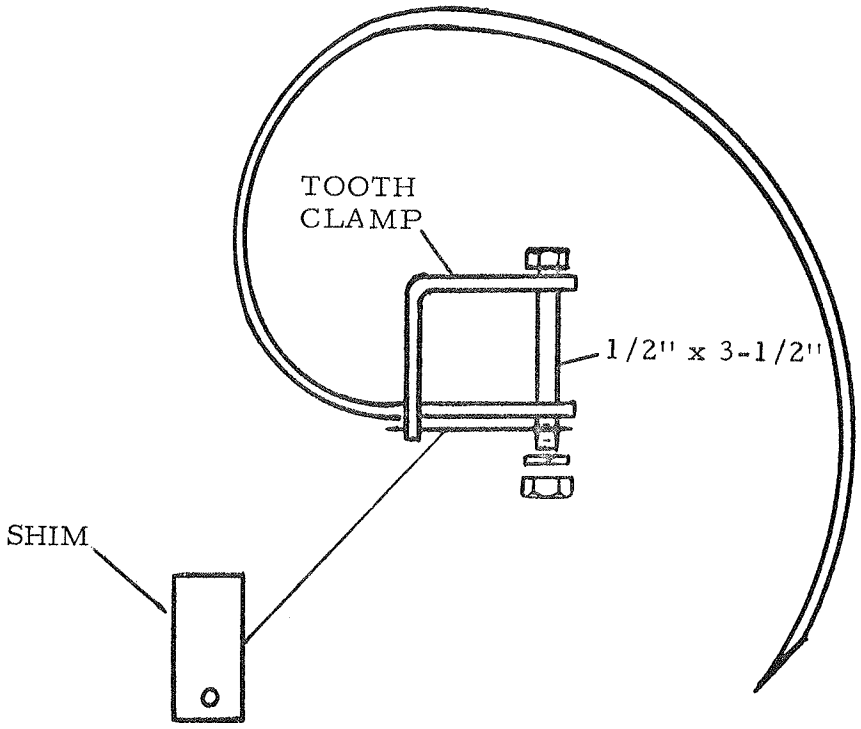


FIGURE 7

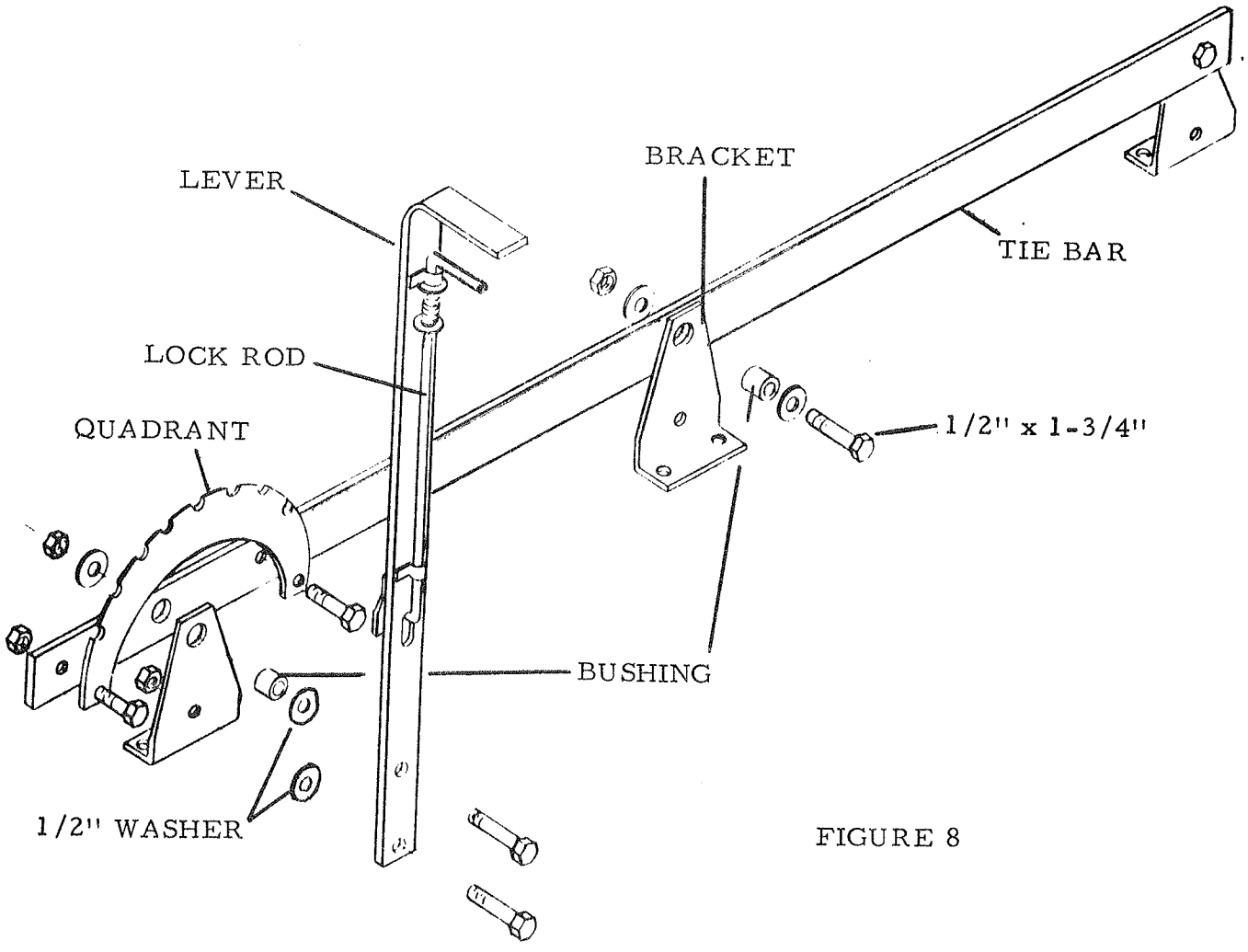


FIGURE 8

8. Attach levers to tooth bars.

Bolt a quadrant to each control tie bar with two 1/2" x 1-3/4" long capscrews and locknuts. Attach a lever assembly to the quadrant and tie bar. Extend a 1/2" x 1-3/4" long capscrew through both of the holes on the bottom of the lever assembly. Then place a 1/2" washer over the bolts. Place a 7/8" O.D. x 5/8" long bushing over the top bolt and place a bracket over the bushing and the bolt. Tighten a 1/2" locknut to the bottom bolt. Clip the lock rod of the lever assembly into a notch of the quadrant and insert the bolt and bushing through the hole in the tie bar. Secure with a 1/2" flatwasher and a locknut.

Attach the bracket loosely near the center of a rear tooth bar. Fasten with a U-bolt and lockwashers and nuts. Be sure there is room for the tie bar to extend forward between the teeth. Attach the tie bar to the two remaining tooth bars. Place a 1/2" flat washer and a 5/8" long bushing over a 1/2" x 1-3/4" bolt. Insert the bolt and bushing through the bar and bracket. Tighten with a 1/2" washer and a lock nut. The bracket may be attached to either side of the tie bar and the bend of the bracket can face in either direction. Choose whichever arrangement provides the most clearance. Fasten the clamps to the tooth bars with U-bolts, lockwashers and nuts.

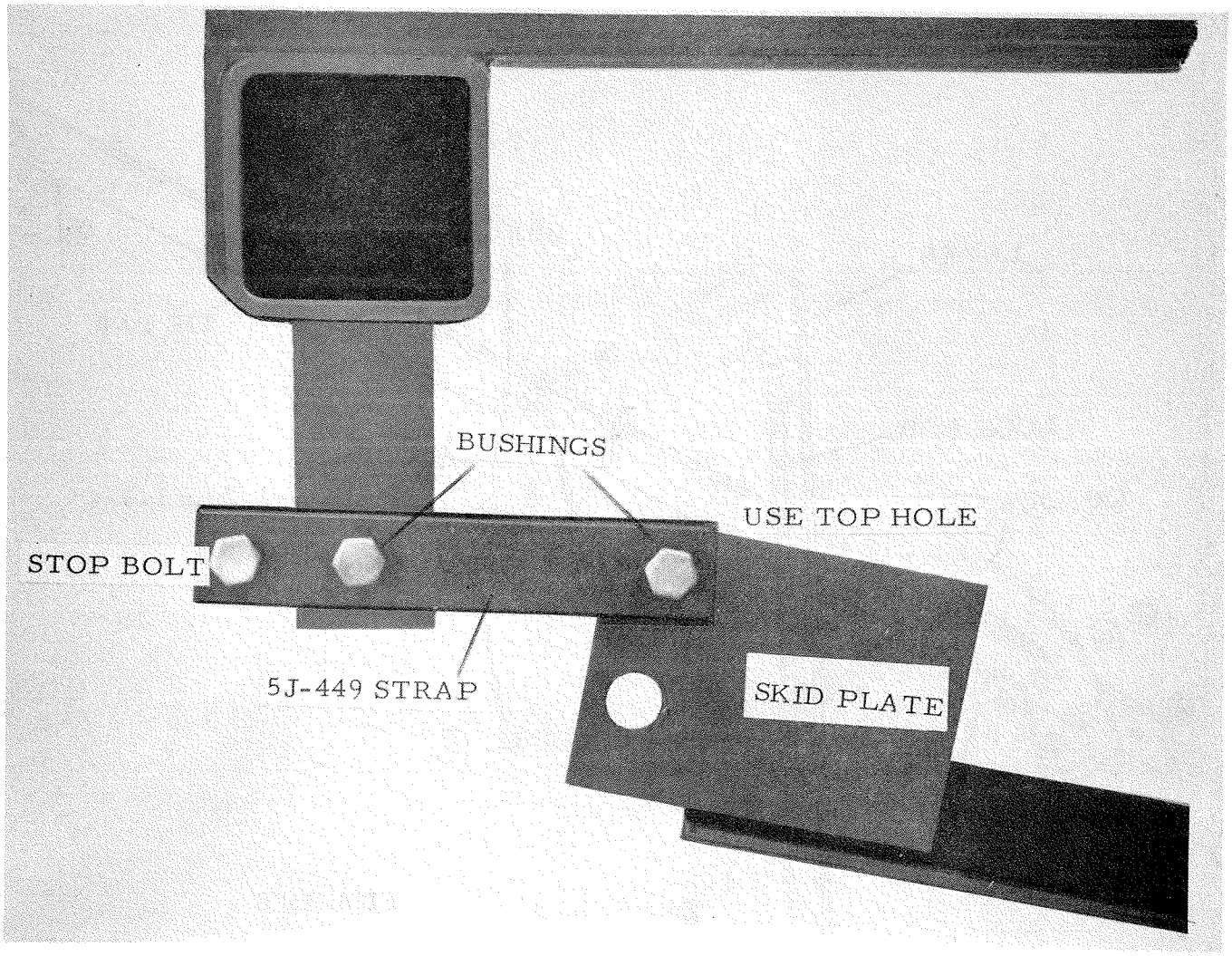


FIGURE 9

9. Attach the skid assemblies to the frame.

Position the skid assemblies under the center frame and wing assemblies so that the angles welded to the bottom of the 4 x 4 frame members are directly above the plates welded to the skid angles.

Place one of the 5/8" long bushings in the top hole of the skid plate. Bolt a 5J-449 strap to each end of this bushing using a 1/2" x 2-1/4" capscrew. Secure the bolt loosely with a 1/2" locknut. Bolt this pair of straps to the angle on the underside of the frame member. Use a bushing in this hole also. Now tighten the two locknuts. Insert a bolt without a bushing through the third hole of the straps and fasten with a locknut. This bolt is to act as a stop when the machine is picked up.

Place the end link of the chain through the slot in the plate on the back of the machine. Secure the chain with the klik pin. The operator can choose how short the chain should be attached for the field conditions.

10. Attach the wing brackets to the drawbar.

Danger! Harrow must be attached to a tractor drawbar before raising center frame.

Fold the center frame up and swing the wings forward. Attach the wing brackets to the drawbar so that the bracket is centered on the wing frame member. Use the 5/8" washers to shim the bracket to its correct location. Fasten the bracket with 5/8" x 7" bolts, lockwashers and nuts. Use the 5/8" bolt with the hole drilled in and the hair pin clip to lock the wings in position.

Addendum to 5J-473 Operator's Manual

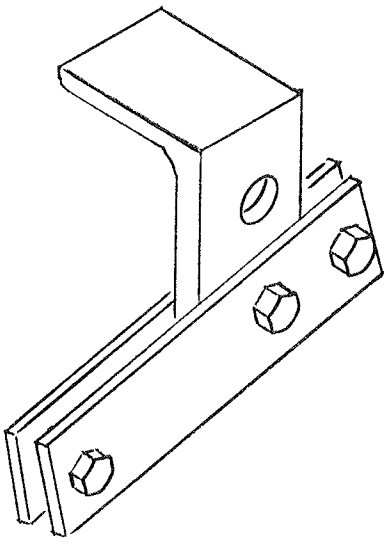
1) Page 5, Paragraph 4: When attaching a hydraulic cylinder to the machine, be sure that the flow restrictor is installed in the port on the lowering end of the cylinder.

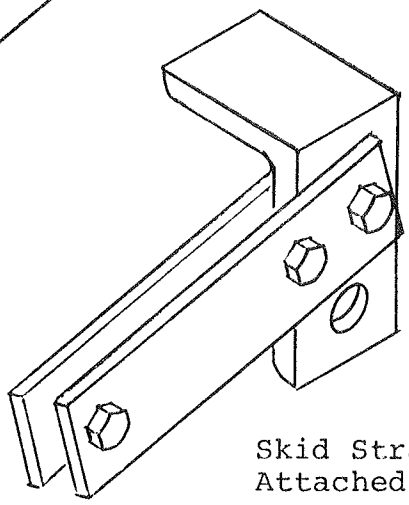
2) Page 7, Item 1: 15 x 8 rims accomodate 9, 5L-15 or 11L-15 tires.

3) Page 9, Item 4: Bolt the lift links to the lugs on the center frame with the 3/4" x 2½" long bolt with a hole drilled in the end. Use the 7/8" long by 1" outside diameter pipe spacer. Tighten the slotted nut onto the bolt, and lock in place with the 5/32 x 1½" long cotter pin.

4) Page 15, Item 9 & Page 14,Figure 9: When attaching the 5J-449 straps to the skids, use the lower hole in the skid plate. 2 holes are provided in the angles on the underside of the front frame tubes. If the top hole is used, attach the straps as shown in the sketch below.

Skid Straps Attached to Lower Hole





Skid Straps Attached to Upper Hole