

**OPERATOR'S MANUAL
ASSEMBLY INSTRUCTIONS**

Brillion

RO-CROP Cultivator

**MODELS: BRH-440 BHFF-830
BRH-630 BHFF-840
BRH-640 BHFF-1230
BRH-830**



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INTRODUCTION

To obtain maximum benefits from the BRILLION Ro-Crop Cultivator, please study this manual carefully before starting assembly or operation. A special section, "Assembly 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 located on the hitch mast of rigid toolbar machines or near the base of one of the hydraulic cylinders on folding toolbar machines.

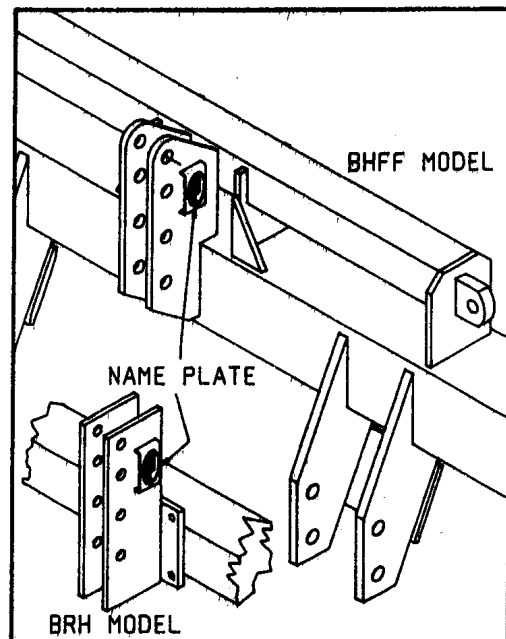
Please record these numbers upon taking delivery of the machine.

Cultivator 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 one third 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 stand between the tractor and implement when attaching or detaching implement unless both are not moving.
2. Do not make adjustments or lubricate machine while it is in motion.
3. Do not allow anyone to ride on tractor or machine.
4. Be sure front end of tractor is heavy enough so that operator can maintain steering control when cultivator is carried.
5. Do not transport at speeds over 20 m.p.h.
6. Avoid sudden stops or turns when transporting because weight of machine may cause operator to lose control of tractor.
7. When transporting the machine on a road or highway, use adequate warning symbols, reflectors, lights, and slow moving vehicle signs as required.
8. Lower machine to ground when not in use.
9. Relieve pressure in hydraulic lines before uncoupling hydraulic hoses from tractor or working on any hoses, cylinders, or related parts. On most tractors this can be done by operating valves after engine is stopped.
10. Securely block machine when working on or under it to prevent injury in case of hydraulic failure or inadvertent lowering by another person.
11. Fill cylinders and hoses with oil and bleed out air before folding or unfolding wings.
12. Do not allow anyone near the machine when folding or unfolding wings.
13. Watch for wires and overhead obstructions when folding or unfolding wings.
14. Escaping fluid under pressure can be nearly invisible and have enough force to penetrate the skin causing serious injury. Use a piece of cardboard, rather than hands, to search for suspected leaks. If injured by fluid, see a doctor at once.

Safety Signs & Decals



There are three levels of hazard intensity that appear with the safety alert symbol on safety decals: DANGER, WARNING, and CAUTION. The level of hazard intensity is determined by the following definitions:

DANGER - Immediate hazards which WILL result in severe personal injury or death.

WARNING- Hazards or unsafe practices which COULD result in severe personal injury or death.

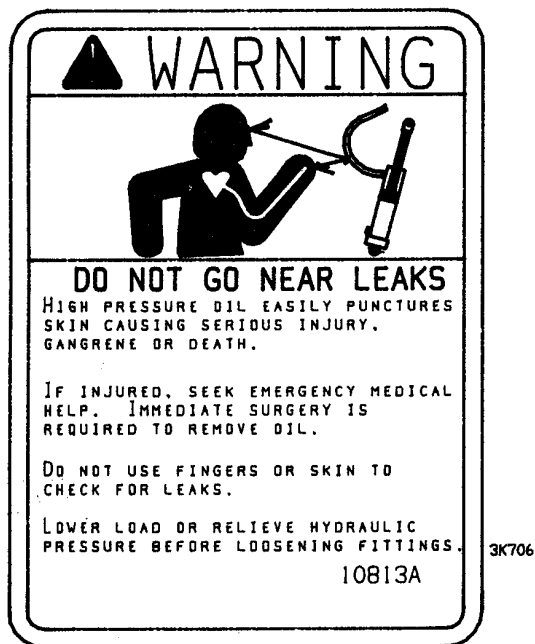
CAUTION- A reminder of safety practices, or an alert to unsafe practices which could result in personal injury.

Examine safety decals and be sure you have the correct safety decals for the machine. Keep these signs clean so they can be observed readily. It is important to keep these decals cleaned more frequently than the machine. Wash with soap and water or cleaning solution as required. Replace decals that become damaged or lost.

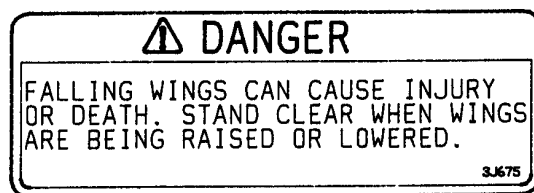
Order decals through your BRILLION dealer.

When applying decals to the machine, be sure to clean the surface to remove any dirt or residue. Where possible, sign placement should protect the sign from abrasion, damage, or obstruction from mud, dirty oil, etc.

Pictured below are the safety signs and other decals provided for the Ro-Crop Cultivator. (Their locations on the machine are illustrated on the next page.)



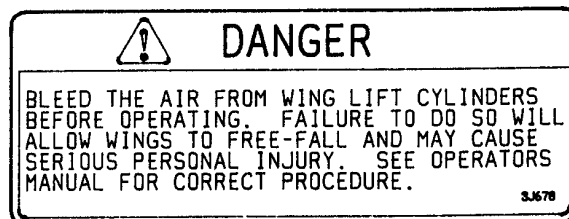
SAFETY DECALS



3J675



2J430-RED
2J431-AMBER



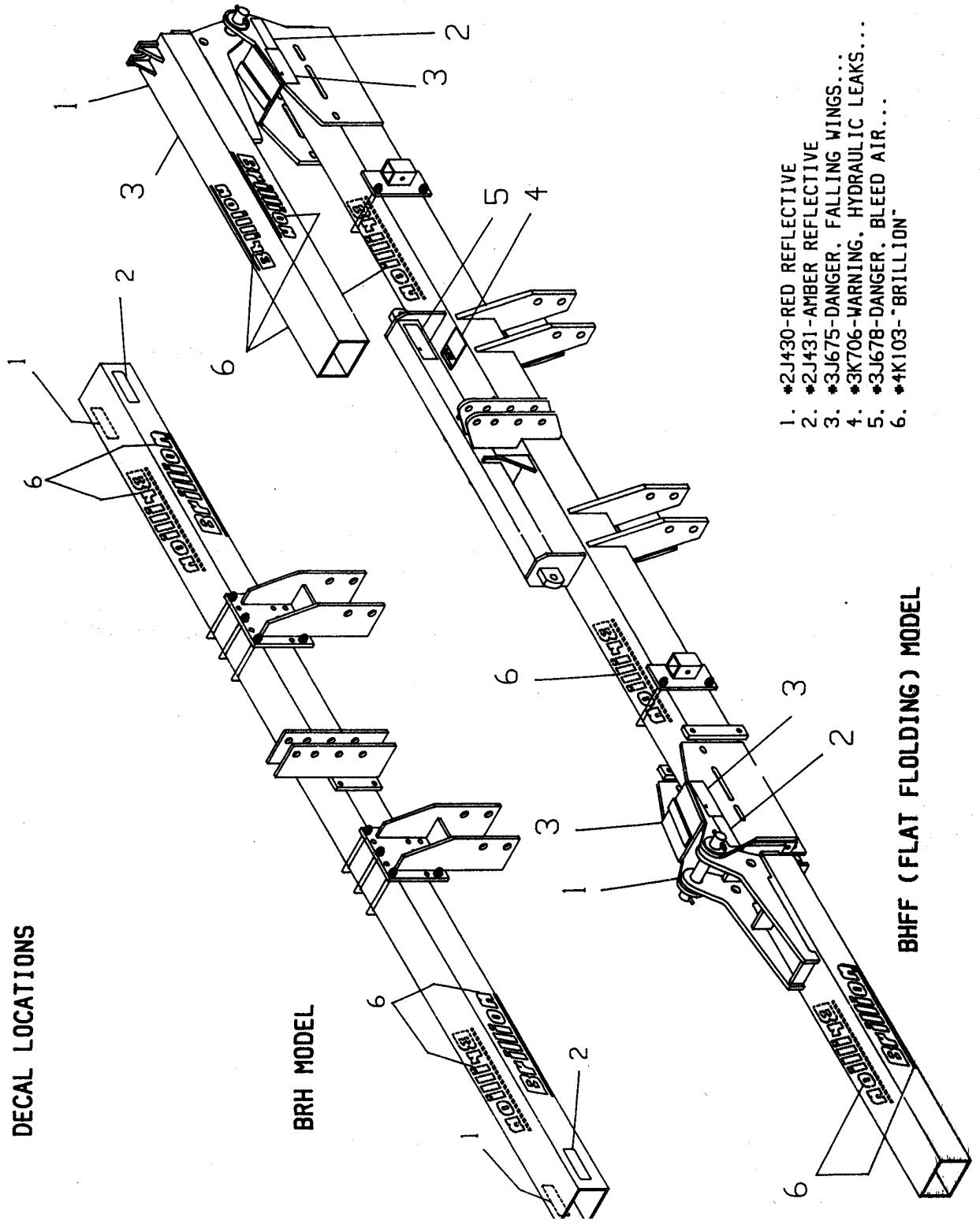
3J678

NAME DECAL

Brillion

4K103

DECAL LOCATIONS



- 1. *2J430-RED REFLECTIVE
- 2. *2J431-AMBER REFLECTIVE
- 3. *3J675-DANGER, FALLING WINGS...
- 4. *3K706-WARNING, HYDRAULIC LEAKS...
- 5. *3J678-DANGER, BLEED AIR...
- 6. *4K103-"BRILLION"

BHFF (FLAT FOLDING) MODEL

OPERATING INSTRUCTIONS

Attaching Tractors With Category II Hitch

See Figures 1 and 2. Use the lower set of holes for the tractor lift arms to provide maximum transport clearance. (Upper holes are for other model cultivators).

Install lower hitch pins with cast iron spacers toward outside of machine. Secure with klik pins. The 1-7/16" O.D. Sleeves are not used.

For the Quick Coupler:

Use the bottom mast hole. Install the 1" x 4-1/2" cap screw, 1" x 2-1/8" pipe spacer, 1" lock nut, and tighten securely. Unused pin and sleeve may be stored in top hole.

For the Three-Point Free Link Hitch:

Use the second lower mast hole for the 1" clevis pin and klik pin. Install 1" x 4-1/2" cap screw and 1" x 2-1/8" pipe spacer in the bottom hole, attach lock nut, and tighten securely. The 1-1/4" O.D. x 1-15/16" sleeve is not used.



Be sure all hitch points seat properly. Watch for possible interference between cultivator, tractor, and linkages when raising the first time.

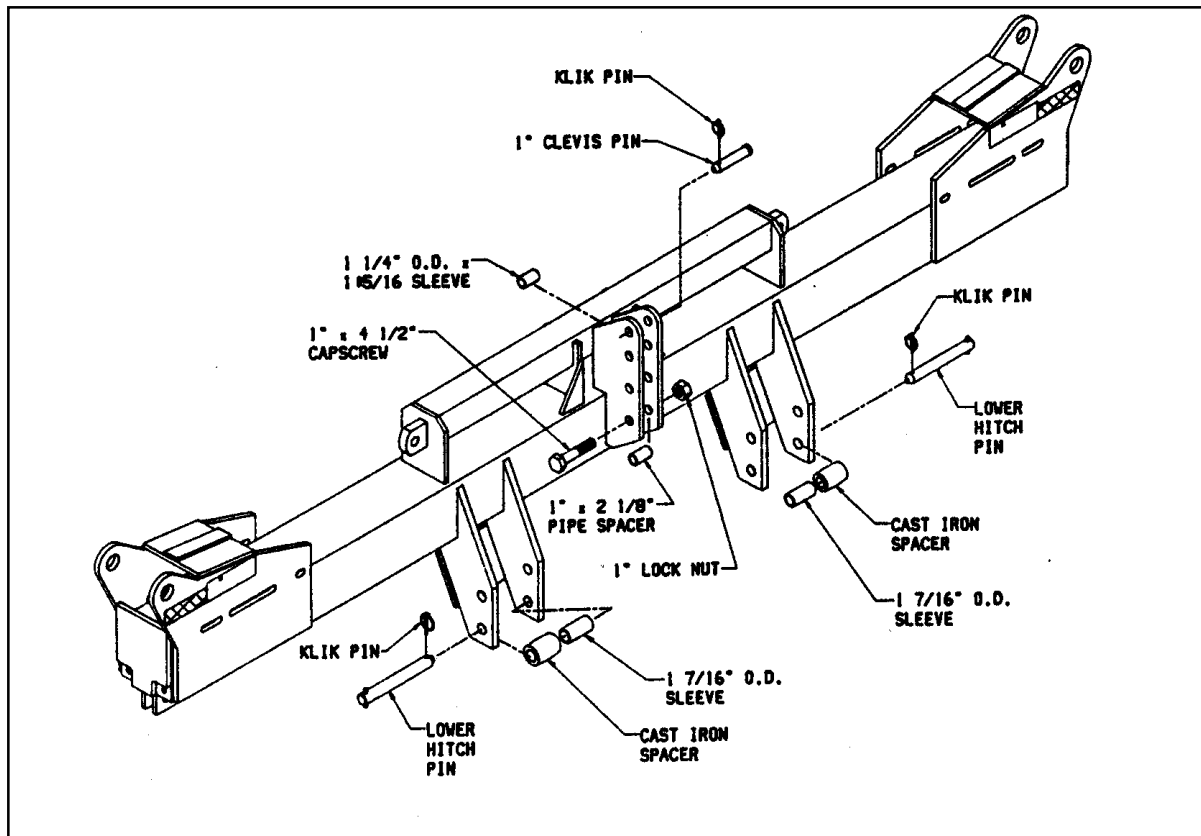


FIGURE 1

Attaching Tractors With Category III Hitch

See Figures 1 and 2. Use the lower set of holes for the tractor lift arms to provide maximum transport clearance. (Upper holes are for other model cultivators).

Install lower hitch pins with cast iron spacers inside of machine and 1-7/16" O.D. sleeves toward outside. Secure with klik pins.

For the Quick Coupler:

Use the second lowest mast hole for the 1" x 4-1/2" cap screw and 1" x 2-1/8" pipe spacer. Install the lock nut and tighten securely. Unused pin may be stored in top hole.

For the Three-Point Free Link Hitch:

Use the second highest mast hole and install the 1" clevis pin, 1-1/4" O.D. x 1-15/16" sleeve, and klik pin. Install 1" x 4-1/2" cap screw and 1" x 2-1/8" pipe spacer in the bottom hole, attach lock nut, and tighten securely.



Be sure all hitch points seat properly. Watch for possible interference between cultivator, tractor, and linkages when raising the first time.

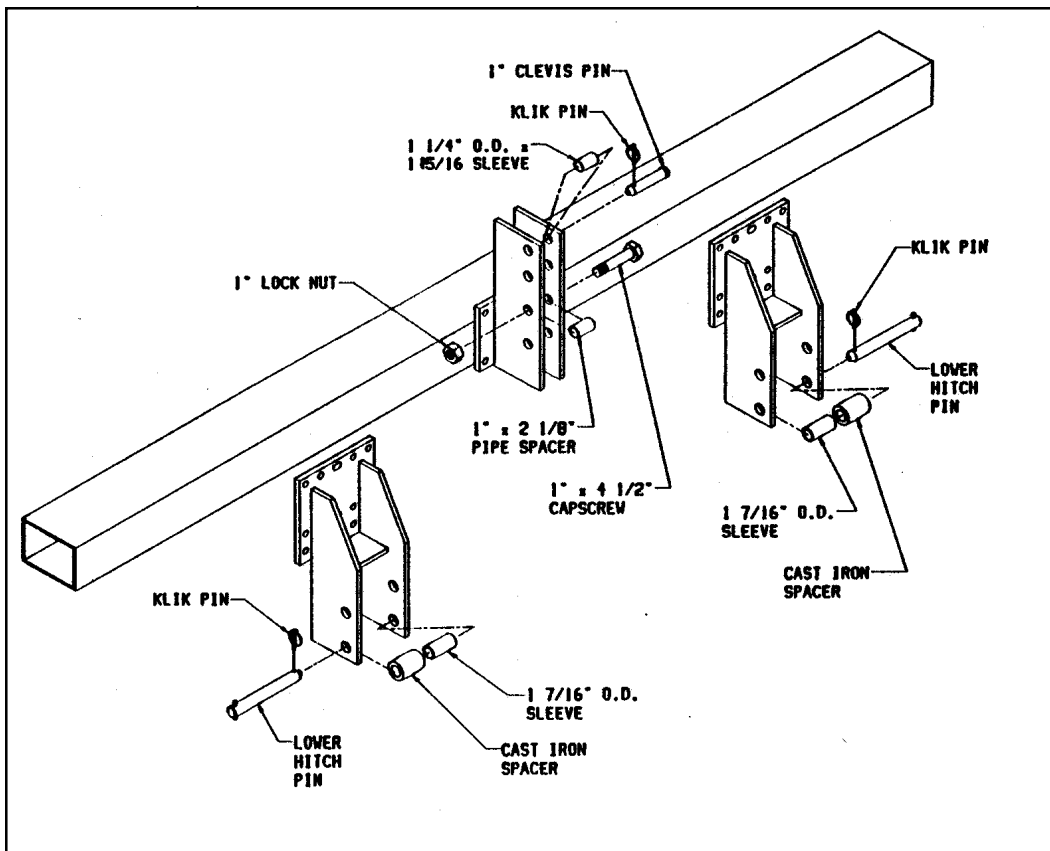


FIGURE 2

Bleeding Hydraulic System (Folding Toolbar)

When the machine is assembled, or any time the hydraulic circuit is opened, air must be bled from the system. Otherwise, when wings are folded over center, air will compress, allowing wings to free fall.

Bleeding can be done by partially folding and unfolding the wings seven or eight times, taking care not to fold either wing up to 90°.

Check hydraulic fluid level after cylinders have been bled.



Relieve pressure in hydraulic lines before attempting to work with, connect, or disconnect hoses.

Transporting Folding Toolbar



Do not allow anyone to stand under or near the wings during folding or unfolding.

Raise cultivator clear of the ground before folding or unfolding wings. Be sure wing lock-down bolts are disengaged before folding.



Fold wings very slowly the first time to be sure no part of cultivator will strike tractor cab.

Watch for wires and overhead obstructions when folding wings.

Folding Toolbar Operation

The folding toolbar is designed to allow the wings to droop 5° to better follow the contour of the ground. Adjusting screws at each hinge allow the user to eliminate all or part of this droop. Loosen the lock nut and screw the bolts out until the wing is level then re-tighten the lock nuts. By backing the rear bolt out slightly farther than the front one, some of the spring-back in the wings can be overcome.

Eye bolts are provided to lock the wings rigid in operation if desired. If the following procedure is used the lock can be put in and out without tools:

1. Raise the toolbar off the ground with the wings unfolded.
2. Adjust the leveling screws until there is only a slight droop in the wings.
3. Install the lock as shown below.
4. Tighten the nut until snug and then loosen 1/8 to 1/4 turn.
5. It should now be possible to position the lock by removing the hairpin cotter and clevis pin as needed.

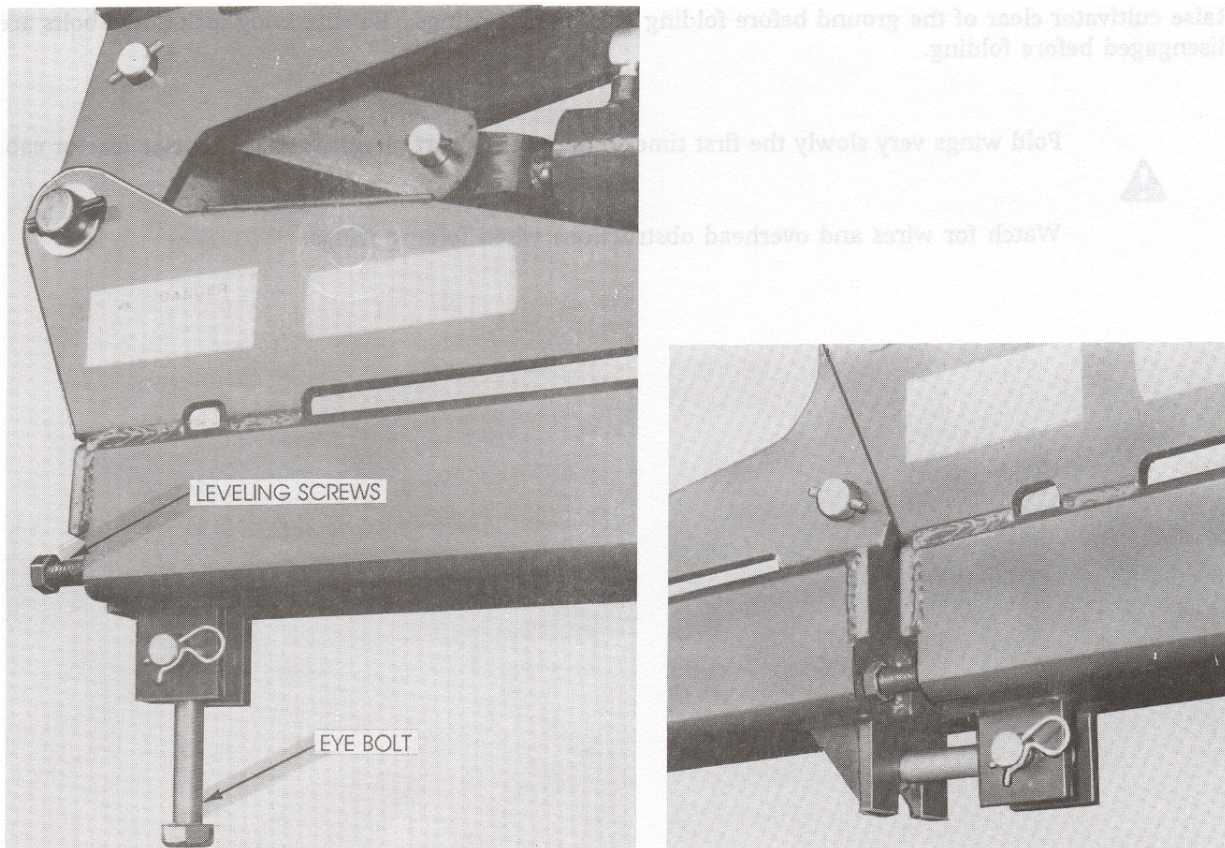


FIGURE 3

Toolbar Height

Using either tractor hydraulics or frame gage wheels if so equipped, toolbar should be operated with 28-1/2" ground clearance for 7" x 7" tubes or 30-1/2" for 5" x 7" tubes. This is to allow adequate up-float over field irregularities.

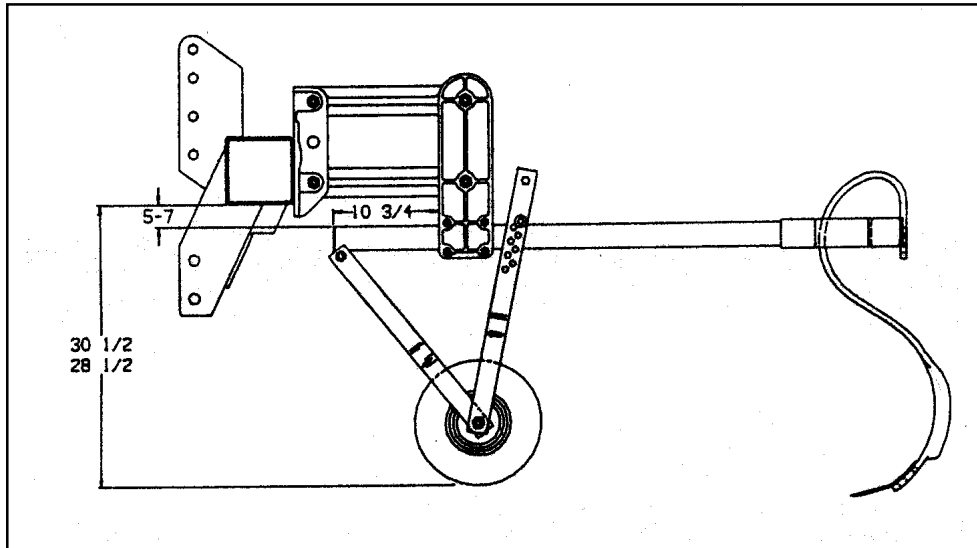


FIGURE 4

Upper Link Adjustment

The upper link of the tractor hitch can be used to control the pitch angle of the cultivator sweeps as needed. Preferred setting is such that when a sweep's tip touches the ground, the back edge clears by 1/8" to 1/4".

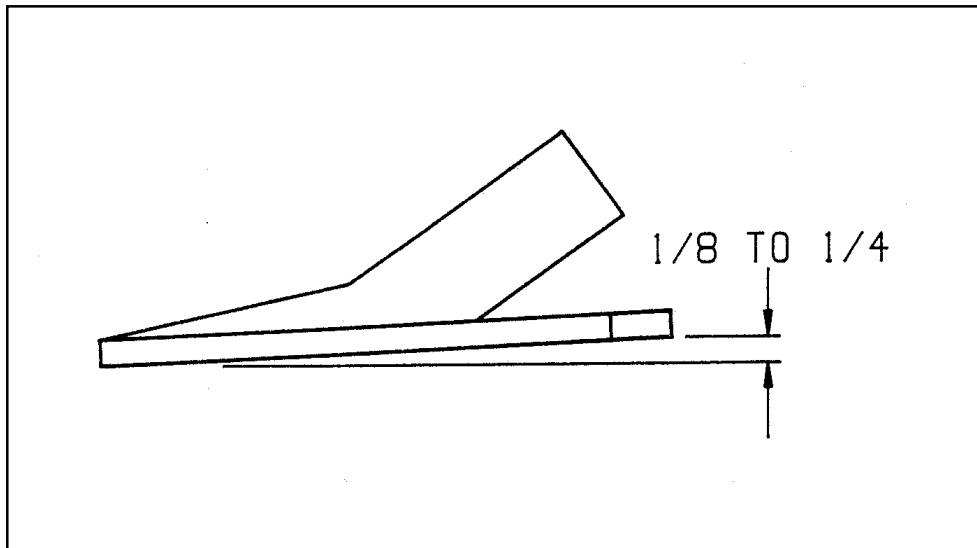


FIGURE 5

Disk Hillers (optional)

Disk hillers can also be assembled as cut-away disks. To do so requires turning horizontal support tubes upside down and turning the disk and post assemblies with the concave side toward the row. Horizontal supports may be shortened if necessary to obtain desired position. However, be sure they are long enough to be clamped by u-bolts on both sides of gang tubes.

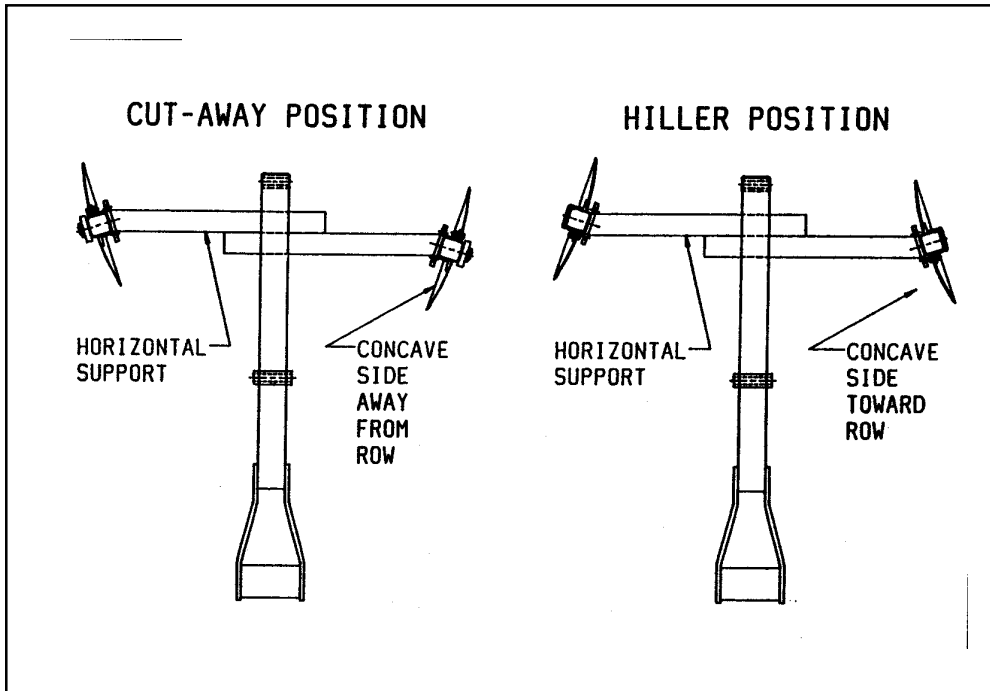


FIGURE 6

Row Marker (optional)

Attach the row marker bracket to a suitable location on the tractor frame. Assemble the block and rod as shown and adjust as needed.

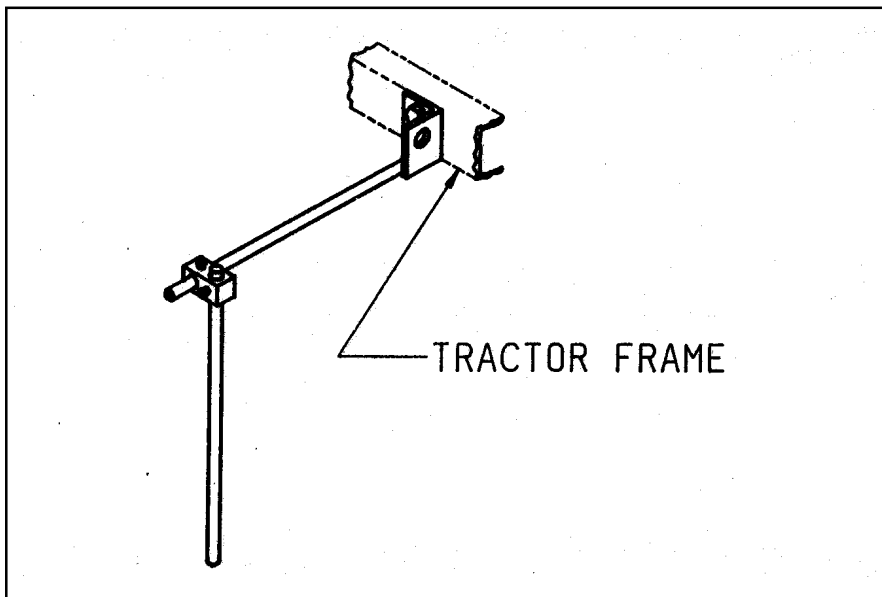


FIGURE 7

MAINTENANCE

Fasteners

After a few hours' use, check entire machine and tighten any loose nuts or bolts. Daily or period checks should be made thereafter.

Tires

Recommended inflation pressure is as follows:

13 x 5.00-6	4 ply - 40 psi - some models use zero pressure (semi-pneumatic) tires which do not require inflation.
7.60 x 15	6 ply - 36 psi

Gang gage wheel tires (13 x 5.00-6) are tubeless, and it is important to maintain air pressure to keep them seated. Tubes may be used if needed.

Lubrication

Fittings on parallel links (4 per gang) should be greased every 4-5 hours of operation.

Grease gang gage wheels and colter bearings daily (Wheels for 4 x 16 zero pressure tires are not regreaseable).

Toolbar gage wheel bearings should be repacked once per season.

Disk hiller bearings are not regreaseable.

When folding toolbar machines are not used for some time, exposed portion of cylinder rods should be cleaned and covered with a thick coat of grease. This is to prevent corrosion which will damage seals.

SHIPPING BUNDLES

	<u>BRH-440</u>	<u>BRH-630</u>	<u>BHFF-830</u>	<u>BHFF-840</u>	<u>BHFF-1230</u>
1J802 5" x 7" x 170" Toolbar	1				
8D988 5" x 7" x 190" Toolbar		1			
6J417 152" Center Frame			1		
6J418 176" Center Frame				1	
6J419 200" Center Frame					1
6J365 70" Wing			2		
6J366 81" Wing				2	
6J367 88" Wing					2
9D137 3" x 16" Cylinder				2	2
9D524 3-1/2" x 16" Cylinder					2
1K269 Gang Assembly	5	7	5	5	9
1K270 Gang Assembly			4	4	4
1K249 25" Shank	13	19	25	25	37
1K255 10" Extension		12	16		24
1K295 14-3/4" Extension	8			16	
1K263 Colter Assembly	2	2	2	2	2
1K271 Gage Wheel Assembly	5	7	9	9	13
1K260 Left Gage Wheel Bundle			1	1	1
1K261 Right Gage Wheel Bundle			1	1	1
4C129 15" Wheel			2	2	2
1J847 Stand Assembly			2	2	2
7J375 Stand Bracket			2	2	2
7J474 Hydraulic Box Assembly			1		
7J475 Hydraulic Box Assembly				1	
7J476 Hydraulic Box Assembly					1
1K277 Hitch Bundle	1	1			
1K252 Toolbar Hardware			1	1	1
1K254 Hardware Box Assembly					1
1K275 Hardware Box Assembly		1			
1K273 Hardware Box Assembly			1		
1K301 Hardware Box Assembly				1	
1K311 Hardware Box Assembly	1				
1K250 Clamp Box Assembly (12)					1
1K251 Clamp Box Assembly (25)			1	1	1
1K310 Clamp Box Assembly (13)	1				
1K274 Clamp Box Assembly (19)		1			

ASSEMBLY INSTRUCTIONS

Folding Toolbar

1. Place center frame on supports about 30" high. Be sure they are strong enough to support 1000 pounds each.
2. Position one of the wings between the hinge plates on the center section and install 1-3/4" x 10-5/16" hinge pin. Place a 1-3/4" x 2-1/2" x #14 machinery bushing over each end and drive in a 1/2" x 3" roll pin. Repeat for second wing. See Figure 8.

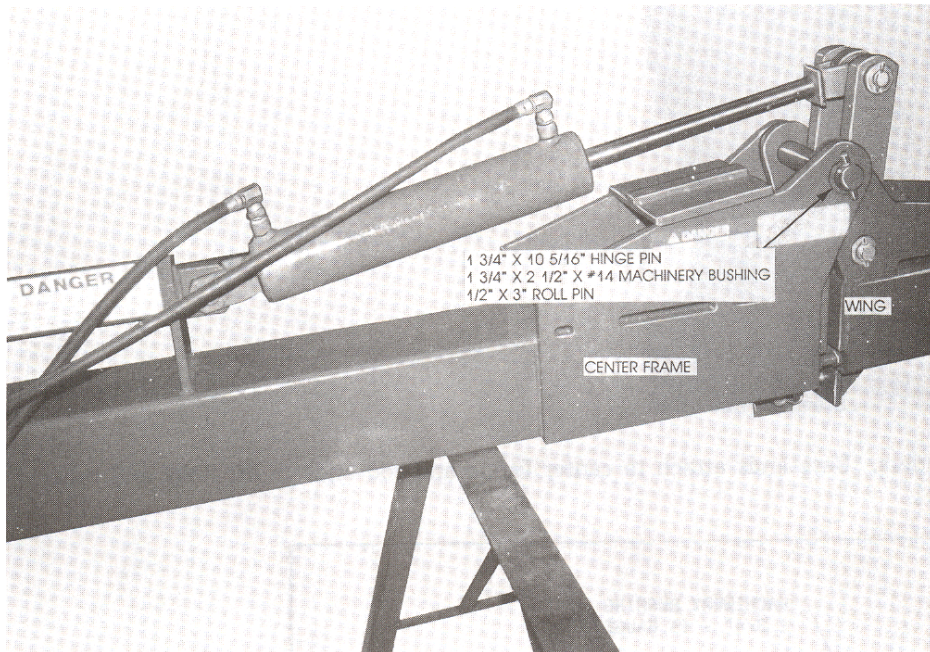


FIGURE 8

3. If wing hold-downs are to be used, please refer to Figure 3 on page 8.
4. Install two lift links between the hinges on each wing, using 1-1/4" x 8-3/4" pins. Use a 1-1/4" x 1-7/8" x #14 machinery bushing and a 5/16" x 1-3/4" roll pin on each end. See Figures 9 and 10.

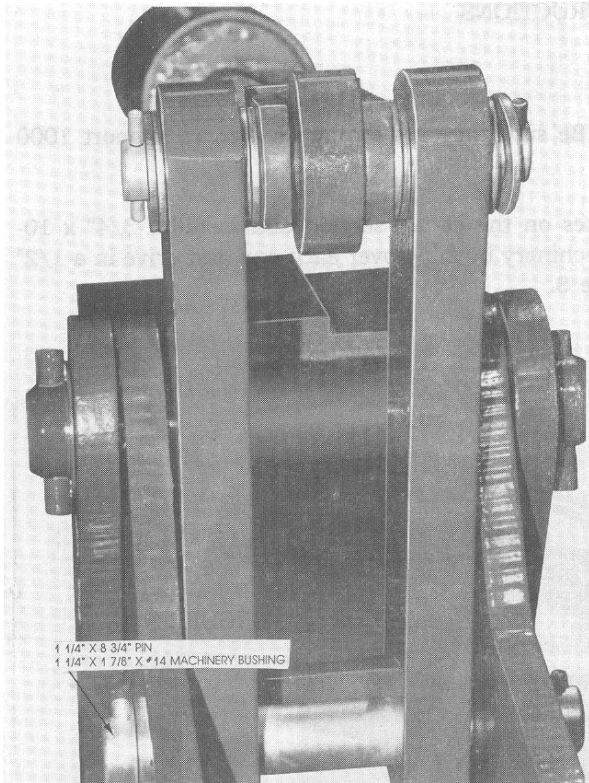


FIGURE 9

5. Install wing fold cylinders. Base ends attach to center frame and rod ends to lift links and rollers. See Figures 9 and 10.

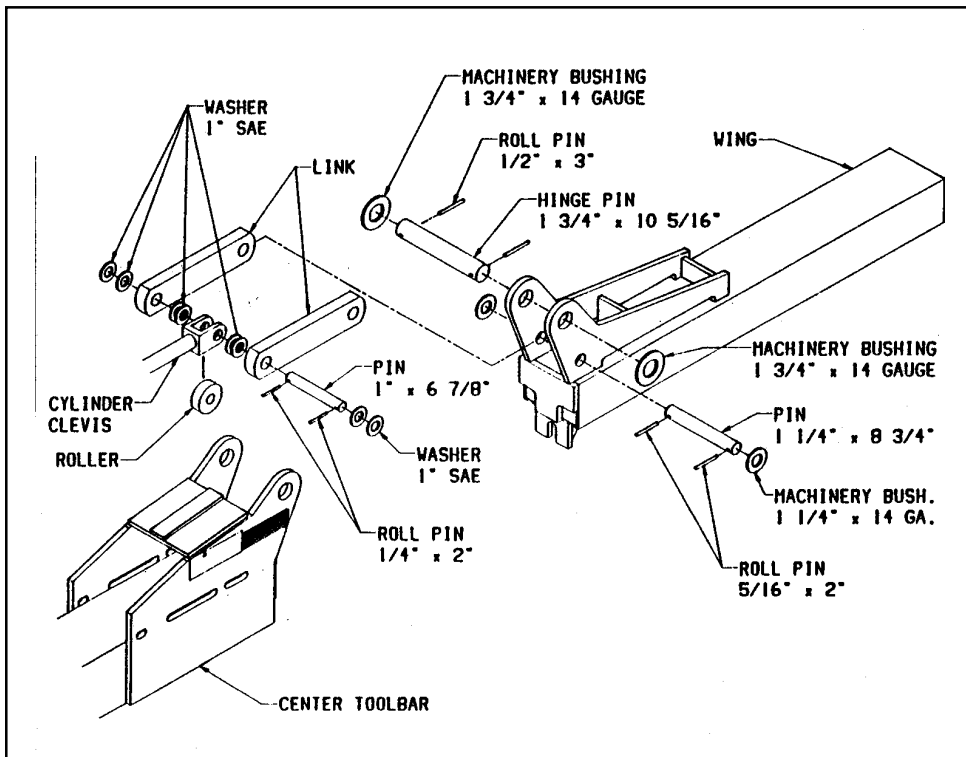


FIGURE 10

6. Mount the wing stops on top of the 3-1/2" square center frame tube using 1/2" u-bolts, lock washers, and nuts. Exact location will vary with row spacing, but stops should be as close as possible to wing ends without hitting gang mounting bolts. See Figure 11.

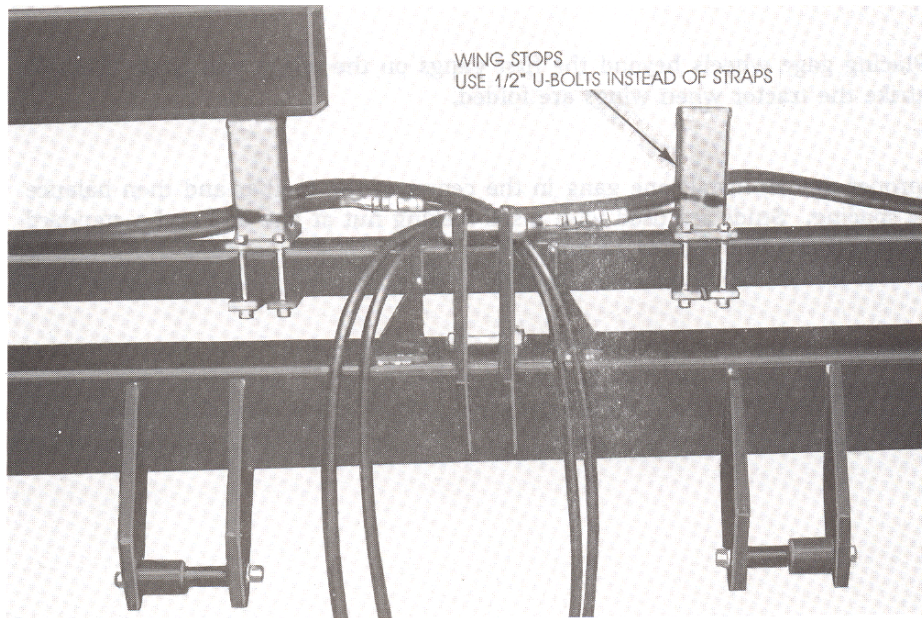


FIGURE 11

7. Install hydraulic lines as shown in Figure 12.

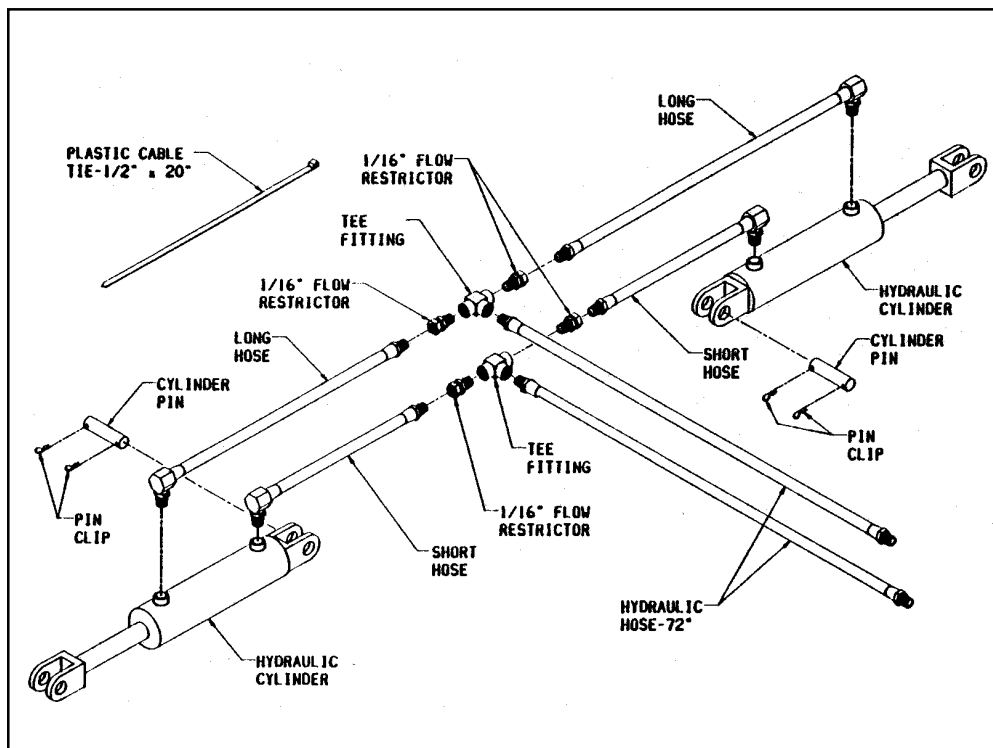


FIGURE 12

8. Colters and frame gage wheels are installed using studs which also mount gangs. Two different gang assemblies are provided, 1K269 and 1K270. The 1K270 does not have the alignment lug on the gang hanger. This lug fits on top of the toolbar and would interfere with wing hinges.
9. Colters are mounted on the center section and gage wheels on the wings on gangs closest to hinges.



WARNING: Placing gage wheels beyond the first gangs on the wings will cause them to strike the tractor when wings are folded.

10. Selecting diagram for proper model, install one gang in the center of the toolbar and then balance of gangs at desired row spacing. Studs are used with a self-locking nut at one end and a standard nut and lock washer at the other. See Figures 13 and 14.

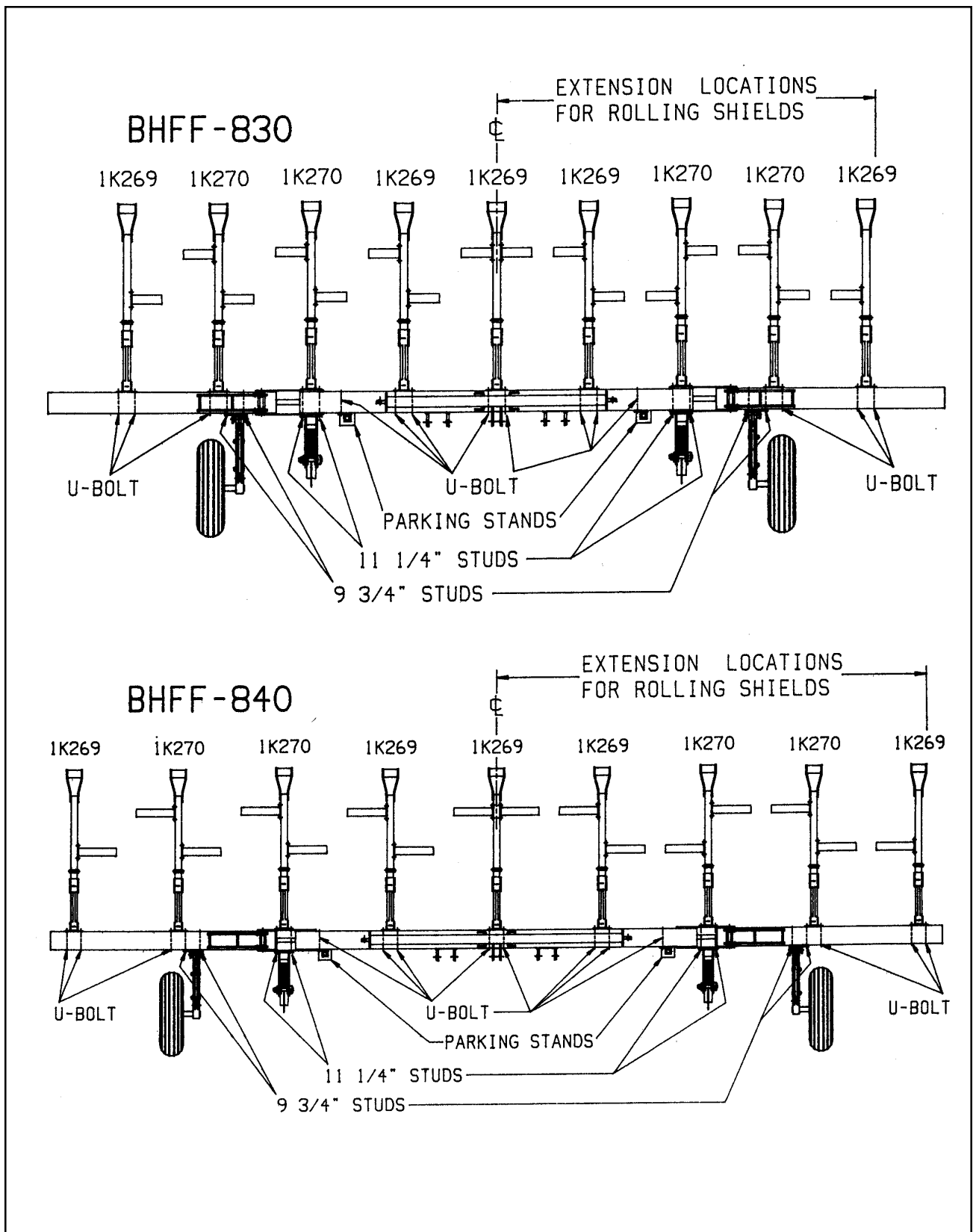


FIGURE 13

1. Install gang gage wheel assemblies using 5/8" x 4-1/2" cap screws. Cap screw and tube on upper end must be removed temporarily for installation. Insert depth pin and klik pin. See Figure 15.

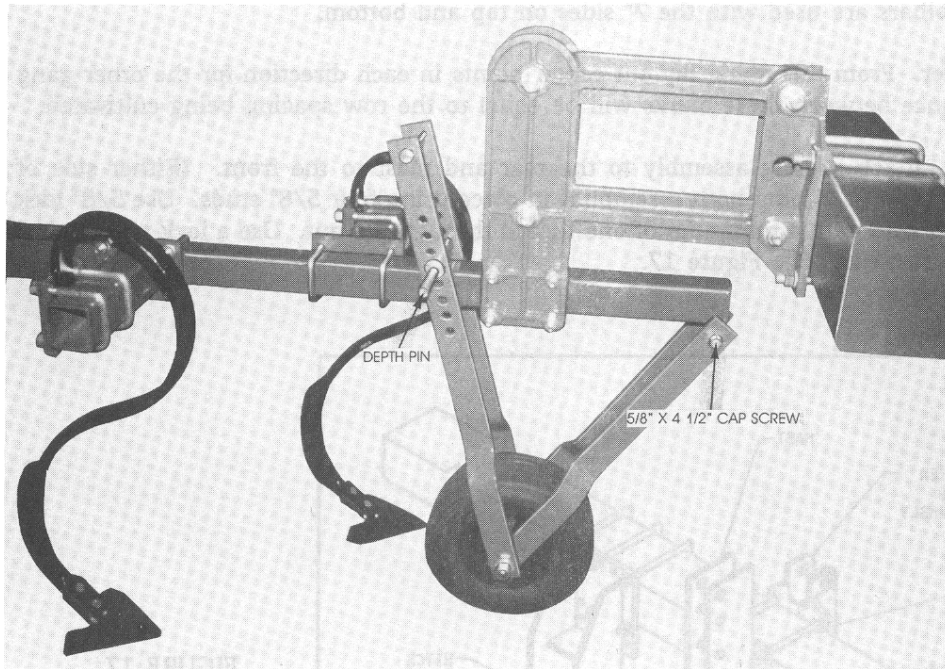


FIGURE 15

12. Install shank extensions using 1/2" u-bolts, lock washers, and nuts. Figures 13 and 14 show suggested pattern.
13. In each shank clamp, assemble a 3/8" x 3/4" cap screw with a lock nut. This bolt head fits in the lowest shank hole to serve as an index. Assemble desired sweeps on shanks. Install clamps and shanks as shown in Figure 16.

EXCEPTION: Do not assemble rear clamp on each gang if open top shields are to be used. They require a special clamp and bracket provided with that kit.

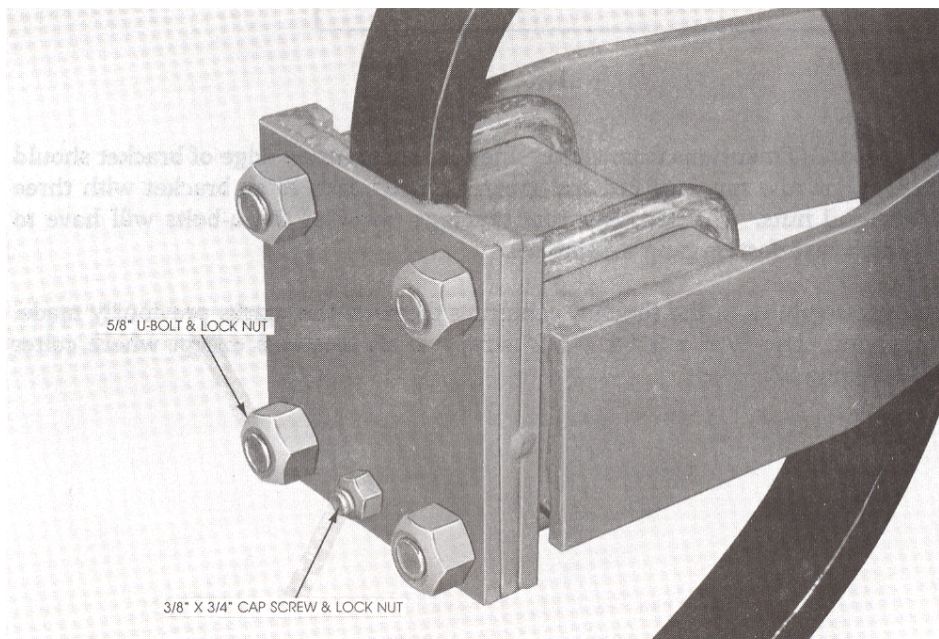


FIGURE 16

1 Rigid Toolbar

1. Place toolbar on supports about 30" high. Be sure they are strong enough to support 1000 pounds each. Rectangular toolbars are used with the 7" sides on top and bottom.
2. Mark the toolbar center. From this mark, lay out center points in each direction for the other gang assemblies. The distance between these marks will be equal to the row spacing being cultivated.
3. At the toolbar center, attach a gang assembly to the rear and mast to the front. (Either side of toolbar may be used as front). Clamp both assemblies in place using four 5/8" studs. Use 5/8" lock nut on one end of each stud with a minimum of one thread through the nut. Use a lock washer and standard nut on the other end. See Figure 17.

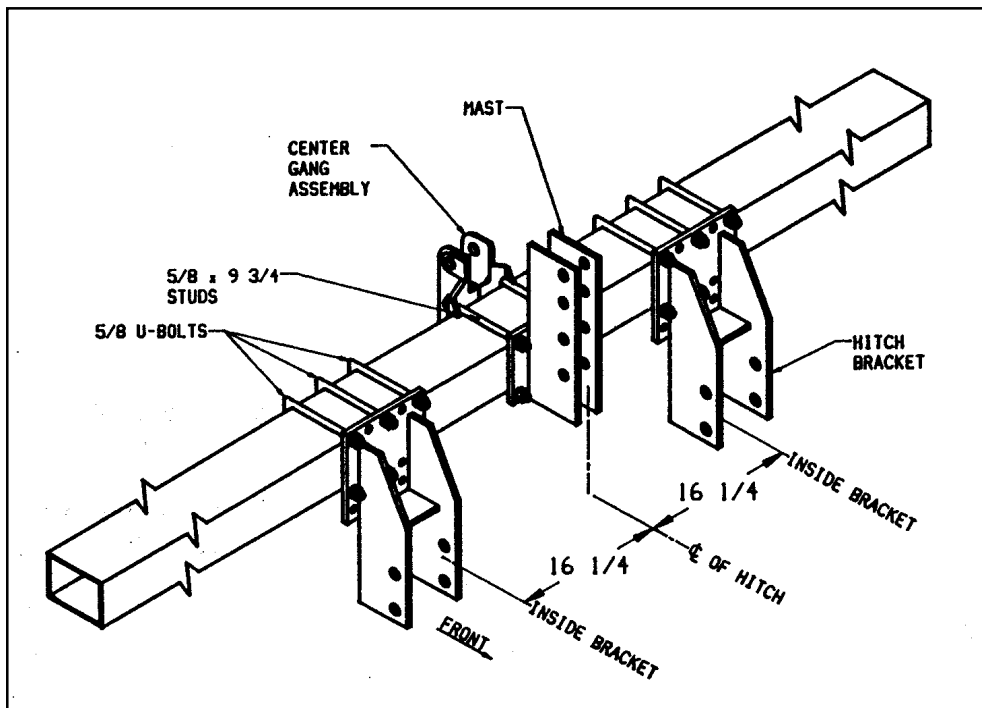


FIGURE 17

4. Attach hitch brackets to toolbar. Dimensions from center line to nearest inside edge of bracket should be 16-1/4". See Figure 17. For row spacings 28" and greater, fasten each hitch bracket with three 5/8" u-bolts, lock washers, and nuts. For narrower row spacings, some of the u-bolts will have to be replaced with studs which also fasten gang assemblies.
5. Clamp the remaining gang assemblies to the toolbar, centering them on the marks previously made. Use studs as mentioned above. Use 5/8" x 3" x 7-1/2" straps at all locations except where colter assemblies are used. See Figure 18.

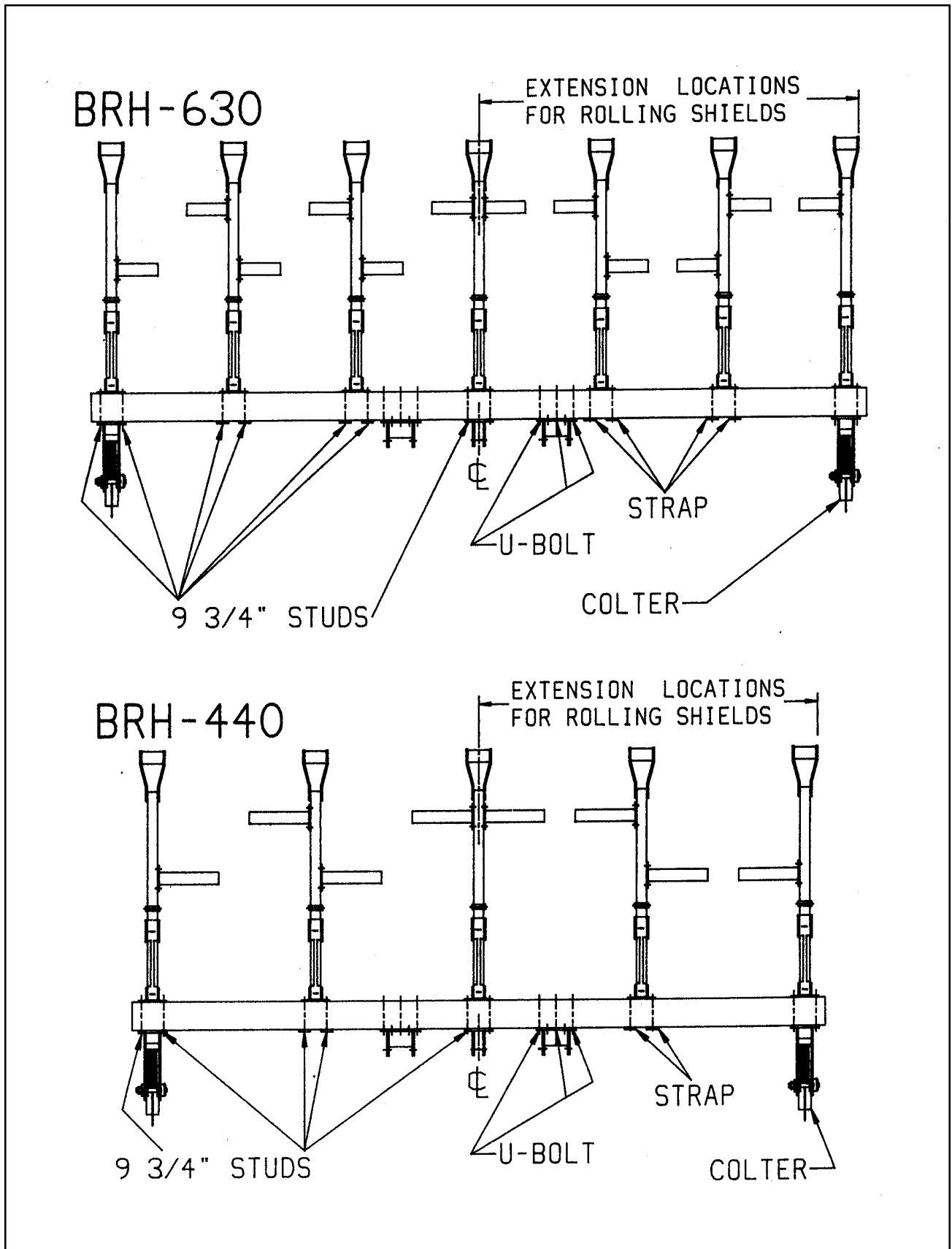


FIGURE 18

6. Attach colters to the gangs just outside of the tractor rear wheels. If frame gage wheels are used, they should be located on the gangs just outside of the colters. See Figure 18.
7. Install gang gage wheel assemblies using 5/8" x 4-1/2" cap screws provided. Cap screw and tube on upper end must be removed temporarily for installation. Install depth pin and klik pin. See Figure 15 on page 19.
8. Install shank extensions using 1/2" u-bolts, lock washers, and nuts. Figure 18 shows suggested pattern.
9. In each shank clamp, assemble a 3/8" x 3/4" cap screw with a lock nut. This bolt head fits in the lowest shank hole to serve as an index. Assemble desired sweeps on shanks. Install clamps and shanks as shown in Figure 16 on page 19.

EXCEPTION: Do not assemble rear clamp on each gang if open top shields are to be used. They require a special clamp and bracket provided with that kit.

10. Install decals. Reflective decals should be placed as close to ends of toolbar as practical, red to be on the rear and amber on the front. "BRILLION" decals can be centered between gangs, preferable on the right rear and the left front.

Disk Hiller (optional)

Disk hillers can be assembled to move soil either toward or away from row crop. Figure 6 on page 10 shows both positions. Note that both horizontal support and entire disk and post assembly are reversed to go from one method to the other. Figure 19 shows the cut-away position.

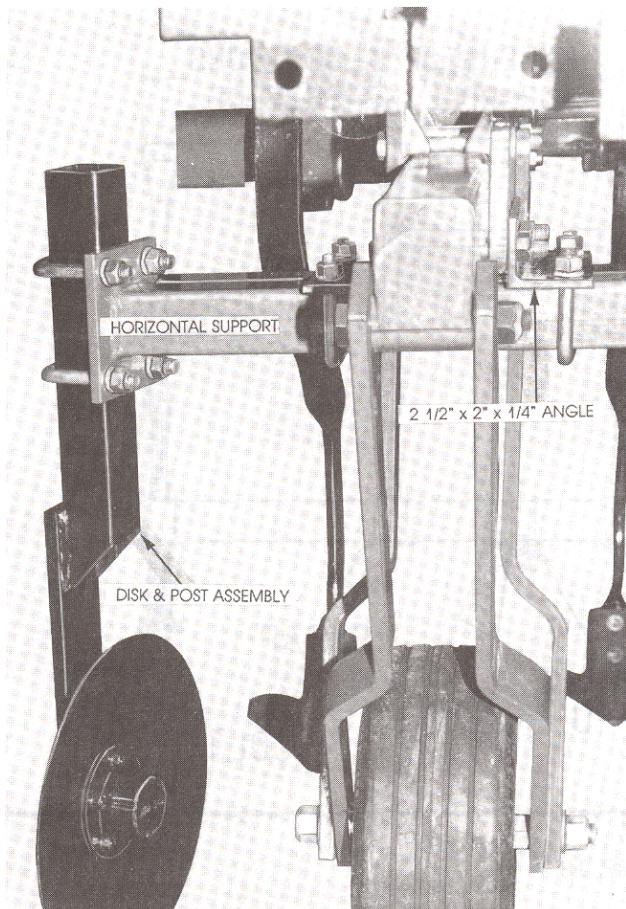


FIGURE 19

1. Remove the two lower bolts which attach the cast iron riser to the 2-1/2" square gang tube. Install a 2-1/2" x 2" x 1/4" angle with the horizontal leg on the bottom on each side using the original bolts. The four angles with the 1-1/4" long slots are used on the two outside cultivator gangs.
2. Attach horizontal supports - one on each outside gang, two on all others - using 1/2" u-bolts, lock washers, and nuts.
3. Clamp disk and post assemblies to horizontal supports using 1/2" u-bolts, lock washers, and nuts.

Rolling Shields (optional)

1. Clamp the bracket between the shank tube extension and u-bolts. See Figure 20.

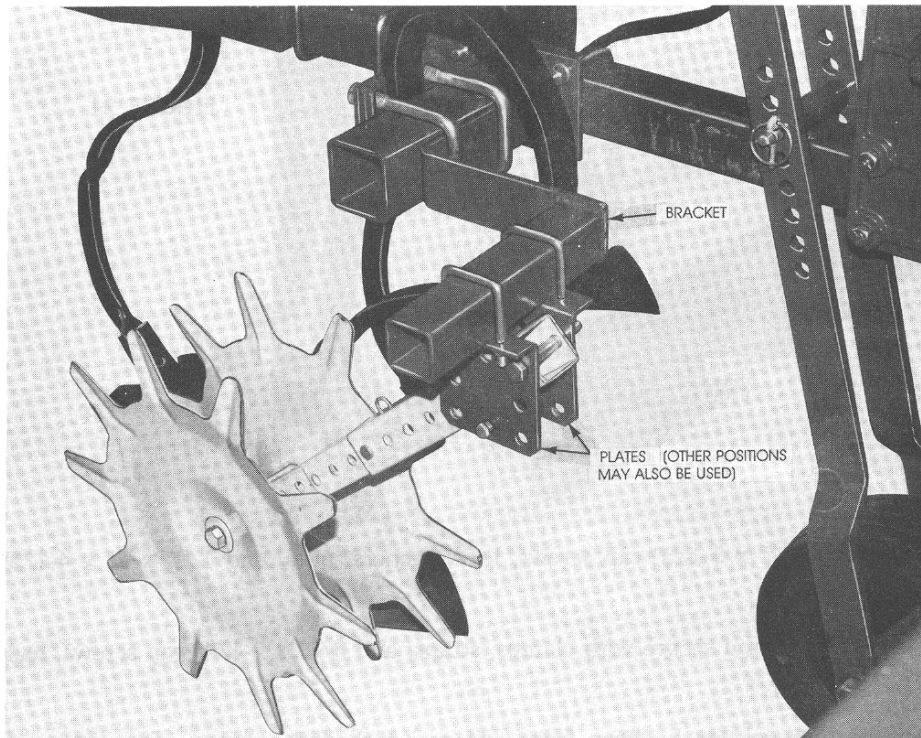


FIGURE 20

2. Fasten plates to the bracket with 3/8" u-bolts, lock washers, and nuts.
3. Attach shield assembly between plates using 1/2" x 3" cap screw and lock nut. Extra hardware is provided to serve as stops.
4. Adjust shield length and position as needed.

Open Top Shields (optional)

1. Install 2 hole channel against nuts already on u-bolts. Secure with lock nuts. See Figure 21.

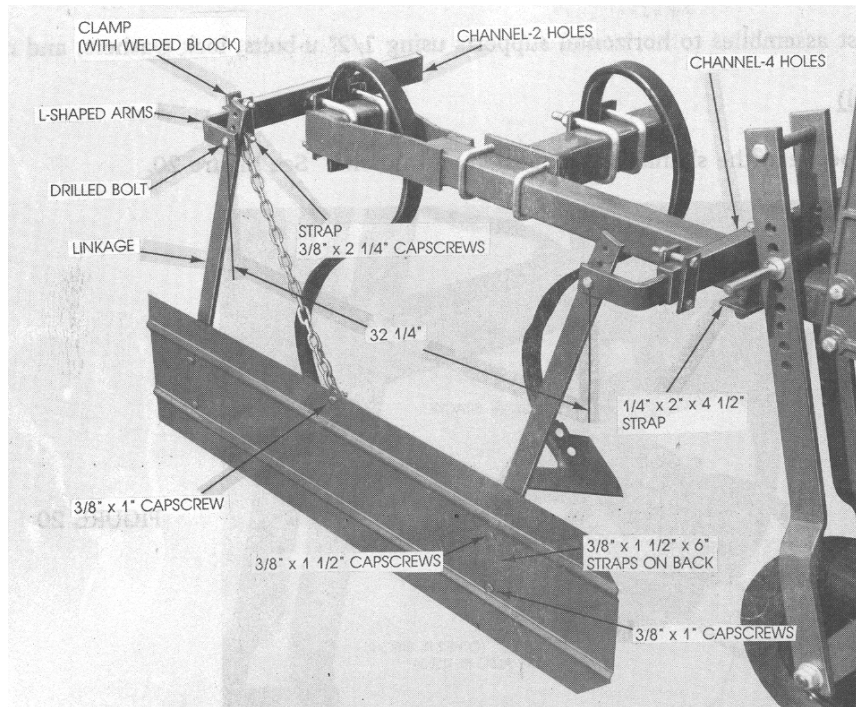


FIGURE 21

2. Install 4 hole channel using 1/2" x 5-1/2" cap screws, lock washers, nuts, and 1/4" x 2" x 4-1/2" strap. Do not tighten nuts.
3. Place L-shaped arms in channels and secure with clamps, straps, and 3/8" x 2-1/4" cap screws, lock washers, and nuts.
4. Adjust 4 hole channel so hole centers between front and rear L-shaped arms are 39-1/4" apart. Tighten 4 hole channel in place.
5. Bolt 3/8" x 1-1/2" x 6" straps to shields using 32-1/4" hole centers. Use 3/8" x 1" cap screws with lock nuts for lower holes. In upper holes, use 3/8" x 1-1/2" cap screws and add linkages before lock nuts. Tighten lower nuts securely and upper nuts to just allow free movement of linkages.
6. Attach linkages to L-shaped arms, noting that linkages are on "inside" of arms. Use 3/8" x 1-1/4" cap screws with lock nuts in front. At the rear, use drilled bolts and lock nuts, again allowing linkages to swing freely.
7. Slide one end of the chain over the drilled bolt and add a flat washer and hairpin cotter.
8. Fasten the other end of the chain to the shield using a 3/8" x 1" cap screw, flat washer, and lock nut.
9. As an alternate installation, front L-shaped arms may be pointed forward and shields assembled to use holes at 39-1/4". L-shaped arms may be shortened to move shields closer to center of gangs.

Down-Pressure Springs (optional)

1. See Figure 22. Lower cultivator to ground. Remove lower front gang bolt and replace with new 5-1/2" cap screw. Install spring tab and replace nut. Save the washer for the upper end.

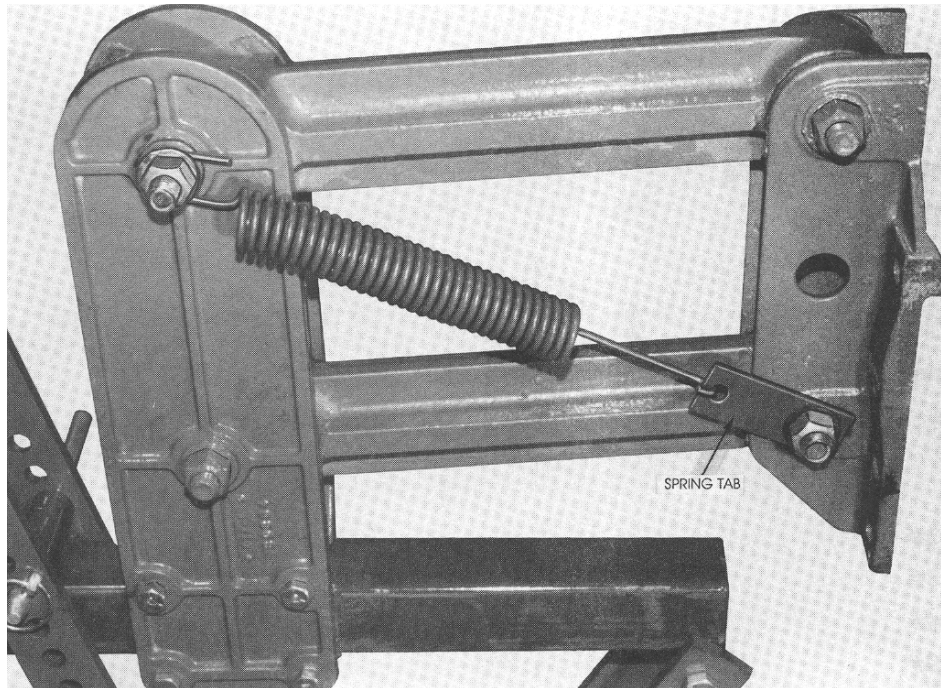


FIGURE 22

2. On rear upper gang bolt, remove only the nut.
3. Raise cultivator toolbar so that gangs barely rest on the ground.
4. Hook spring in tab and over upper gang bolt. Replace washer and nut.
5. Tighten nuts as needed.

(Subject to change without notice)

Model Designation

BRH = basic model
BHFF = BRH with a flat-folding toolbar
First one or two digits - number of rows
Next two digits - nominal row spacing

Selected Dimensions

Toolbar size - 5" x 7" or 7" x 7"
Shank cross section - 5/8" x 1-3/4"
Shank height - 25" under gang tube
Toolbar gage wheels - 15 x 5 KB for 7:60 x 15 6 ply tire

Shipping Weights

BRH-440	1502#
BRH-640	2023#
BHFF-830	3484#
BHFF-840	3599#
BHFF-1230	4850#

Optional Equipment

8J794	7:60 x 15 6 ply tire	27#
4J800	1-3/4" x 11" reversible point	1#
4J801	2" heavy duty reversible point	2#
4J802	4" full sweep	2#
4J803	7" full sweep	2#
4J805	7" clipped sweep, R.H.	2#
4J806	7" clipped sweep, L.H.	2#
4J804	9" full sweep	2#
6J373	10" full sweep	2#
1K304	Rolling Shield Kit for BRH Cultivator (requires 1 kit per row)	30#
1K352*	Disk Hiller Kit for 4 Row Cultivator	182#
1K353*	Disk Hiller Kit for 6 Row Cultivator	270#
1K354*	Disk Hiller Kit for 8 Row Cultivator	359#
1K355*	Disk Hiller Kit for 12 Row Cultivator	536#
1K365*	Open Top Shield Kit for 4 Row Cultivator	415#

SPECIFICATIONS

1K366*	Open Top Shield Kit for 6 Row Cultivator	581#
1K367*	Open Top Shield Kit for 8 Row Cultivator	747#
1K368*	Open Top Shield Kit for 12 Row Cultivator	1079#
1K391	Down-Pressure Spring Kit (requires 1 kit per gang)	2.3#
1K394**	Extension and Shank Kit (converts 3 shank gangs to 5 shank gangs) (requires 1 kit per row)	55#

* These kits are for cultivators with 3 shanks per gang only.

** Can not be used with disk hillers or with open top shield kits shown above.

