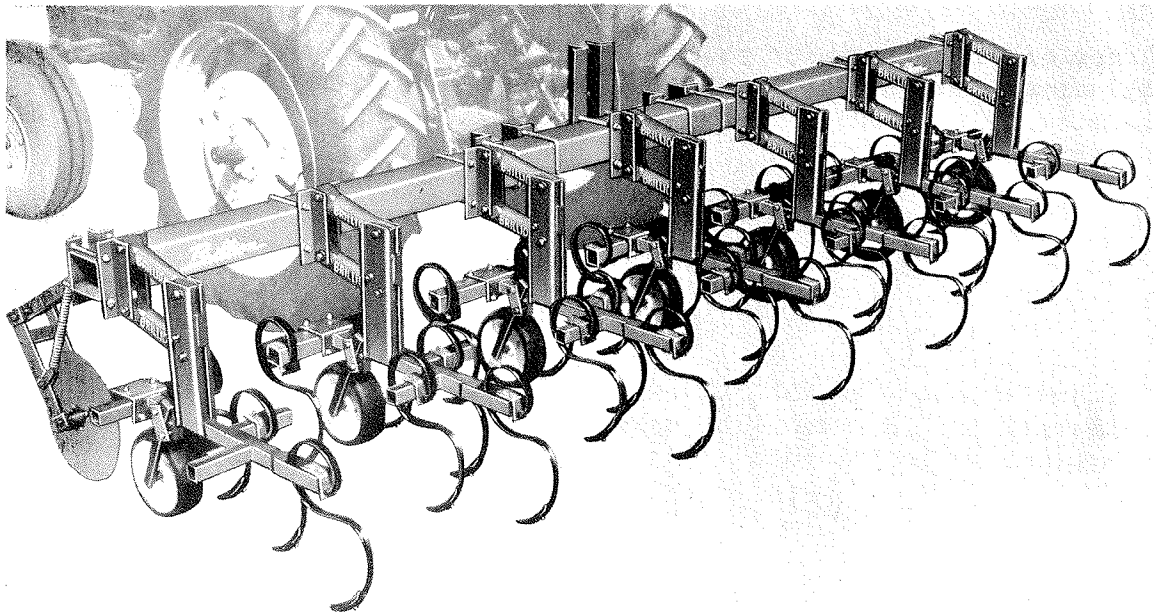


OPERATOR'S MANUAL



RO-CROP CULTIVATORS

MODELS BRS-4402 THRU BRS-12222
MODELS BRSF-6402 THRU BRSF-12302
MODELS BRSH-4402 AND BRSH-6302



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



490
779

3J-914

INTRODUCTION

Your Brillion Ro-Crop Cultivator 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 this machine. A special section of this manual is devoted to assembly of this machine. Refer to the "Setting-Up Instructions" portion of this manual.



This safety alert symbol is used to call your attention to instructions concerning your personal safety. Be sure to observe and follow these instructions.

LOCATION REFERENCE

"Right" and "Left", "Front" and "Rear" refer to operators "Right" and "Left", "Front" and "Rear" when he faces in same direction as the machine will travel in the field.

PARTS ORDERING

When ordering parts for your machine, be sure to include the complete model number and serial number. These numbers are located on the mast assembly. Please read and record these numbers upon taking delivery of this machine.

Cultivator Model _____

Serial Number _____

Date Purchased _____

Be sure to read the Warranty on the Warranty Card which is shipped with this machine. Return the proper portion of the Warranty Card so that your machine will be recorded.

SHIPPING BUNDLES

Your Brillion Ro-Crop Cultivator is shipped in separate assemblies. These assemblies are:

BRS MODELS

<u>Bundle No.</u>	<u>Name</u>	<u>4402</u>	<u>6302</u>	<u>6402</u>	<u>8302</u>	<u>8402</u>	<u>12222</u>
1J-802	Tool Bar 170"	1	-	-	-	-	-
1J-841	Tool Bar 188"	-	1	-	-	-	-
1J-842	Tool Bar 248"	-	-	1	1	-	-
1J-845	Tool Bar 272"	-	-	-	-	-	1
2J-174	Tool Bar 330"	-	-	-	-	1	-
1J-803	Extension Tube	8	12	12	16	16	-
1J-804	Gauge Wheel Assembly	5	7	7	9	9	13
2J-947	Gang Assembly	5	7	7	9	9	13
1J-806	Box - Hitch	1	1	1	1	1	1
3J-785	Box - Hardware	1	1	1	1	1	1
1J-887	Spring Tine	21	31	31	41	41	39
3J-786	Box - Hardware	-	1	1	-	-	-
3J-787	Box - Hardware	-	-	-	1	1	-
2J-956	Box - Hardware	-	-	-	-	-	1
1J-847	Stand Assembly	1	1	1	1	1	1
2J-220	Hitch Bundle	1	1	1	1	1	1
3J-788	Gauge Wheel Arm Box	-	-	-	-	-	1
2J-660	Box Assembly	-	1	-	-	-	-
2J-661	Box Assembly	-	-	-	1	-	-

BRSF MODELS

		<u>6402</u>	<u>8302</u>	<u>8362</u>	<u>8402</u>	<u>12302</u>
2J-163	Center Tool Bar - 105"	1	1	1	-	-
1J-848	Center Tool Bar - 137"	-	-	-	1	-
3J-643	Center Tool Bar - 197"	-	-	-	-	1
1J-860	Wing Weldment - 81"	2	2	-	-	-
1J-861	Wing Weldment - 97"	-	-	2	2	-
3J-644	Wing Weldment - 97"	-	-	-	-	2
1J-873	Wing Support	2	2	2	2	-
3J-645	Wing Support	-	-	-	-	2
1J-879	Box Assembly	1	1	1	1	-
3J-660	Box Assembly	-	-	-	-	1
9D-137	Hydraulic Cylinder, 3 x 16	2	2	2	2	-
9D-327	Hydraulic Cylinder, 3 x 24	-	-	-	-	2
1J-883	Support Angle	-	-	-	1	-
2J-164	Support Angle	1	1	1	-	-
2J-947	Gang Assembly	7	9	9	9	13
1J-803	Extension Tube	12	16	16	16	24
1J-887	Spring Tine	31	41	41	41	61
1J-804	Gage Wheel Assembly	7	9	9	9	13
3J-787	Box Assembly	-	1	1	1	-
3J-785	Box Assembly	1	1	1	1	1
3J-786	Box Assembly	1	-	-	-	-
3J-788	Box Assembly	-	-	-	-	1
1J-847	Stand Assembly	2	2	2	2	2
2J-958	Box Assembly	-	-	-	-	1
2J-661	Box Assembly	-	1	-	-	-



SAFETY SUGGESTIONS

Investigation of farm accidents shows that nearly 1/3 of all farm accidents are caused by careless use of farm machinery. You can do your part in making your farm and community safer by following these safety suggestions. Insist that all people working with you or for you abide by these suggestions.

Do not stand between tractor and implement when attaching or detaching implement unless both tractor and implement are not moving.

Do not make adjustments or lubricate machine while it is in motion.

Do not allow anyone to ride on tractor or machine.

When not in use, lower machine to ground.

Block machine up when working under it.

Relieve pressure in hydraulic lines on folding models before uncoupling hydraulic hoses from tractor.

Do not allow anyone to be under wing while folding or unfolding wings.

Do not park or store folding models with the wings folded.

Do not transport at speeds in excess of 20 MPH.

Use slow moving vehicle sign.

OPERATING INSTRUCTIONS

The first step to efficient field operation is to properly prepare the tractor.

Set tractor wheels to the proper spacing for the rows to be cultivated. For most row spacings, the tractor straddles two rows of the crop being cultivated. Best results are usually obtained by running the tractor wheels in the middle of the row space.

Set tractor lower hitch arms at the same height. This is important to insure that the tool bar is level and the gangs have the proper height and freedom to work properly. Adjust sway blocks or chains to allow flexibility between tractor and cultivator while cultivating. Side sway should be eliminated for transporting the cultivator. Refer to your tractor operator's manual for the proper procedure for adjusting the tractor hitch.

Refer to tractor operator's manual for proper method for setting and controlling tractor three point hitch. On cultivators without the optional frame gauge wheels, the tool bar is controlled entirely by the tractor hydraulic system and three point hitch. When the optional frame gauge wheels are used, they will control the working height of the tool bar. The bottom of the tool bar should be 27" above the ground.

Make sure the tractor has sufficient front end weights to keep the tractor front wheels on the ground when raising the cultivator during transport.

FIELD OPERATION

Attach cultivator to tractor hitch. Either a Category II or III three point hitch or Quick Coupler can be used. Adjust top link of three point hitch to level tool bar in operating position. Adjust tractor hydraulics or tool bar gauge wheels to hold tool bar at 27" height. This places tool bar above gangs so that gangs may move up and down to conform to field irregularities.

The spring tine used with this cultivator is designed to work at a high rate of speed, 4 - 7 miles per hour. Speeds slower than this do not cause the tines to vibrate enough to be fully effective.

Raise cultivator before turning.

Reduce speed before turning at end of row or crossing ditches.

Use tractor brakes as necessary for field turns.

Raise cultivator before backing tractor.

TRANSPORTING FOLDING TOOL BAR

Raise cultivator before folding wings. Remove lock pins from bottom holes in hinge plate. Fold wings over.



Do not allow anyone to stand under wings when folding or unfolding wings.



Always lock wings in folded position with lock pins provided before transporting.

FIELD OPERATION OF FOLDING TOOL BAR

Lock wings into unfolded position by installing lock pin into bottom hole of hinge plate. Do not allow the wings to float when cultivating. To do so places extra strain on the gangs and the guide coulter and may cause damage to the machine; also permits tearing out crop when gangs move sideways as wings move upward. REMOVE LOCK PINS BEFORE FOLDING WINGS.

OPTIONAL EQUIPMENT

Options available for this cultivator include frame gage wheels, guide coulter, rolling shields, vertical adjusting brackets, gage wheel cranks, and transport kit.

A guide coulter is recommended for all cultivators and two on cultivators over six row width. Without coulters, the cultivator may have a tendency to cut across when cultivating contour rows, and on side hills the cultivator will try to slide down hill. The guide coulter reduces sidewise movement of the cultivator caused by the operator over-correcting driving errors.

Frame gage wheels should be used on eight row and wider cultivators. These wheels will stabilize movement of the tool bar and prevent it from jumping up and down as the tractor goes over rough ground. The gauge wheels also help hold the tool bar at the proper height, taking some of the load off the tractor hydraulic system.

The optional rolling shields allow you to cultivate faster with less damage to young plants. They act as "Guards" between the plants and the cultivator tines.

Vertical adjusting brackets are options available for adjusting the rear tine upward or downward. These are for use in certain crops where it may be desirable to work the center tine between the rows at a different depth setting than the others.

The optional gage wheel crank kits are available for even faster adjustment of gang depth. With these gage wheel crank kits installed, gang depth control can be accomplished without the use of hand tools.

Transport kits are available for use on certain cultivator models (BRS-6402, BRS-8302, BRS-8402, and BRS-12222). These kits mount to the tool bar and allow lengthwise towing of the cultivator.

LUBRICATION

The only areas on your Brillion BRS model Ro-Crop Cultivator that need lubrication are the hubs on the optional coulters and frame gage wheels. Repack these hubs once per season. On the BRSF-models the wing hinges must also be lubricated periodically as required.

SETTING UP INSTRUCTIONS

Using the shipping bundle list, check to make sure that you have the required bundles for your cultivator.

MACHINE ASSEMBLY - BRS MODELS

Set frame tube on saw horses or other substantial supports about 30 inches tall. The wide side of the tube is top and bottom, and the narrow side is front and back.

Measure and locate the center of the tool bar. Make a chalk or pencil mark at the center of the tool bar. From this center, measure and locate the center for the other gang assemblies. The distance between these marks will be equal to the row spacing being cultivated.

Select one of the gang assemblies. Place it behind the tool bar, centered on the center mark. Place the mast angles in front of the tool bar. Use the 5/8 x 9-3/4 studs to fasten the center gang and mast to the frame. See page 7. A lock nut is used on one end of the stud and a lock washer and hex nut on the other end. Place the other gangs behind their respective marks and attach to the tool bar using the large U-bolts so gangs are free to move.

Attach the hitch weldments to the tool bar loosely, using large U-bolts. Adjust position of hitch weldments until the inner edges of the inside hitch angles are 16-1/4" from the center mark for Category II or 19" for Category III. See page 7. Tighten U-bolts. Tighten bolts holding gangs in place. Loosen parallel link bolts and stop tube bolt just enough to free up gang assembly for operation.

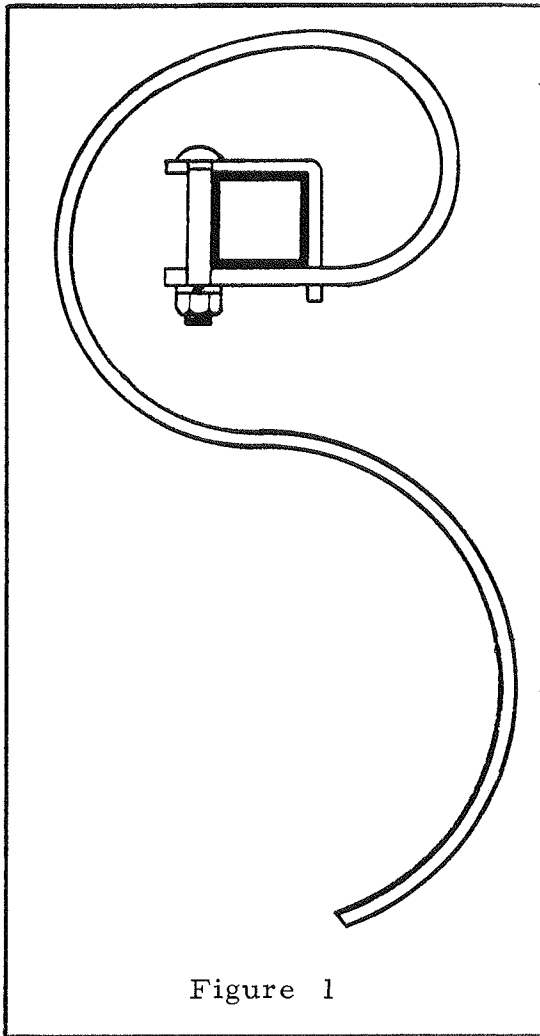


Figure 1

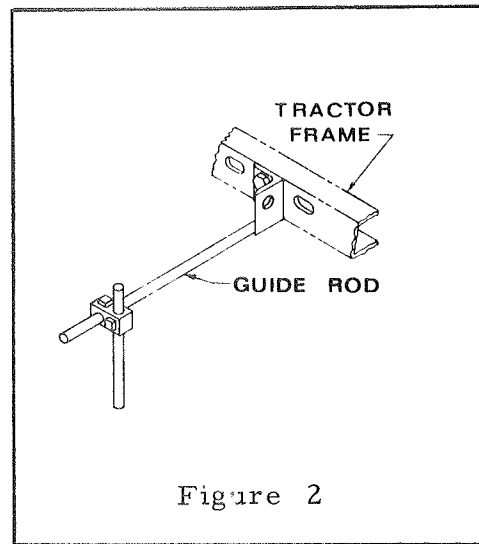


Figure 2

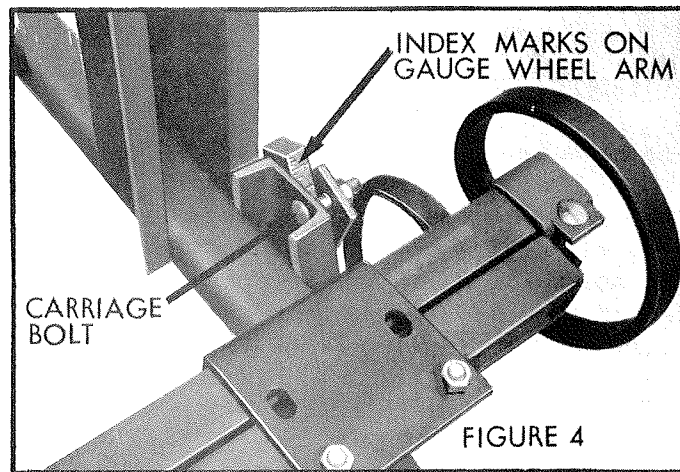


FIGURE 4

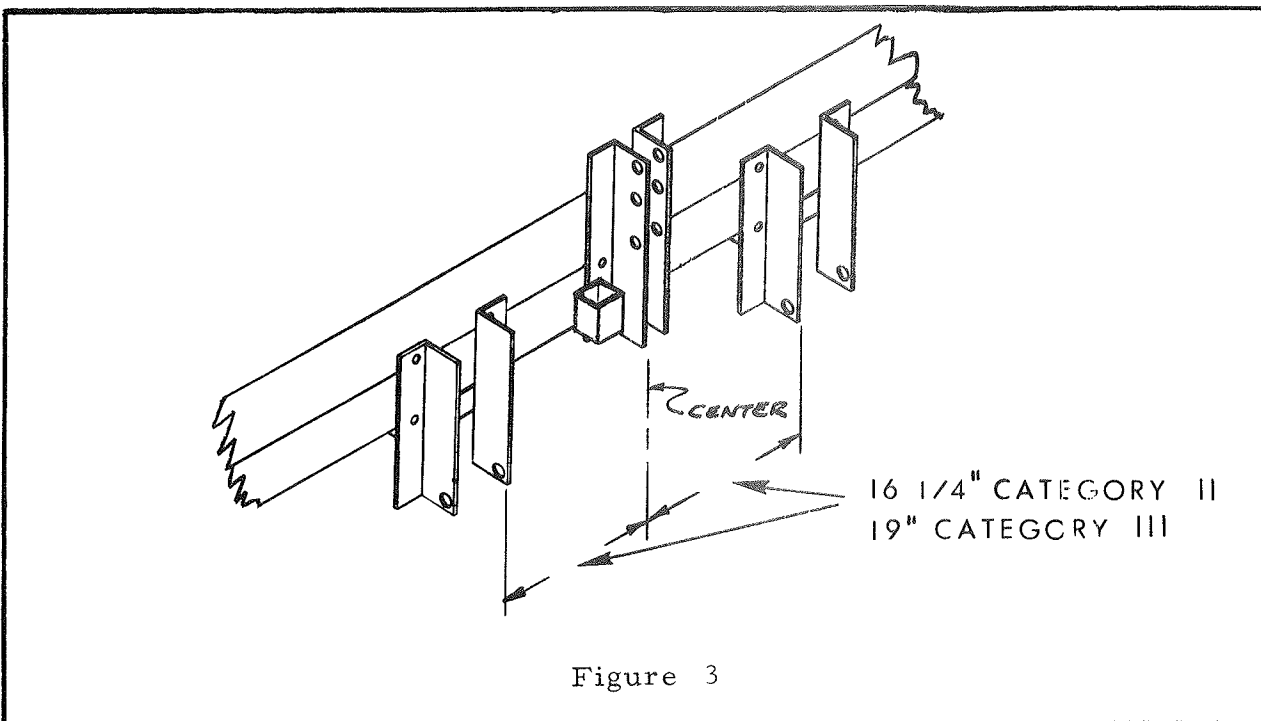


Figure 3

CATEGORY II HITCH

Assemble 1" x 4-1/2" capscrew with 1" pipe spacer 2-1/8 long into bottom hole of mast. Install 1" lock nut and tighten securely. Install 1" x 4-1/2" clevis pin into middle hole of mast and secure with klik pin. The 1-1/4 O.D. sleeve is not used with Category II hitches.

Install the lower hitch clevis pins into the lower hitch weldments. The klik pins are used to secure hitch clevis pins. The 1-7/16 O.D. sleeves are used only with Category II Quick Coupler.

CATEGORY III HITCH

Assemble 1" x 4-1/2" capscrew into middle hole of mast. Slide 2-1/8" long pipe spacer over bolt and between mast angles. Secure with 1" lock nut. Install 1" x 4-1/2" clevis pin with 1-1/4 O.D. sleeve into top of mast. Secure with klik pin.

Install the lower hitch clevis pins into the lower hitch weldments. Install the 1-7/16 O.D. bushings on these hitch pins. Secure with klik pins.

EXTENSION TUBE ASSEMBLY

Extension tubes are not required on cultivators which are used on 22" row spacing. Extension tubes are used on the other row spacings. Two extensions are used on each gang except the end gangs. The L shaped bolts are used to clamp the extensions to the front of the gang. The four short L shaped bolts are used for clamping the individual extension tube to the front of the end gangs. The longer L shaped bolts are used for clamping a pair of extension tubes to the front of the other gangs.

GAUGE WHEEL ASSEMBLY

Take one of the zero pressure gauge wheel assemblies, and insert the bearing shaft into the socket on the gauge wheel arm. When the recess on the bearing shaft is in line with the tapped hole in the socket, insert a square head set screw and jam nut. First tighten the set screw and then the jam nut against the spot-faced surface.

Place the gauge wheel arm against the short channel on the left side of the gang assembly with the tire under the gang tube. Secure gauge wheel arm in place with strap and two 1/2 x 2 carriage bolts. Adjust for proper working depth by lining up the index marks on the wheel arm with the top edge of the channel. See figure 4.

SPRING TINE INSTALLATION

See figure 1 for installation of spring tines on extension tubes. Locate the spring tines near the outer ends of the extension tubes. Final adjustment of spring tines will take place in the field.

ROW MARKER ASSEMBLY

The row marker is used as a guide for the tractor operator to follow the row without the need for looking back over his shoulder. Attach the angle bracket with rod to any suitable location on the tractor frame. Set the block with two holes on the rod and insert second rod into remaining set of holes. Adjust holder and rod so that pointer is over a row. Tighten set screws. See figure 2.

MAINTENANCE & STORAGE

Clean dirt, weeds, dried grease and rust from cultivator before storing. Apply light coating of oil or grease to points to prevent rusting. Repaint Areas where paint has worn off. Repair or replace any broken or damaged parts. Place board under points to prevent contact with damp ground. Raise gang gauge wheels to prevent ground contact. Store in a dry, protected place.

MACHINE ASSEMBLY - BRSF MODELS

Set center section on sawhorses or other substantial supports about 30 inches tall. Position one of the wing assemblies over the hinge tube on the center tool bar. Slide the hinge pin (1-1/2 dia.) through the holes in the wing hinge and the center hinge tube. Use machinery bushings as needed to take up any space between the hole in the hinge pin and the wing frame. Secure with a 1/2 x 2 roll pin. Repeat for the second wing.

Clamp the wing supports to the top of the 3-1/2" square tube located above the tool bar. The wing supports should fit tight against the stops on top of the tube. (On the shorter center section, the wing supports should fit tight against the upper mast gussets.) A plate with four holes and four 1/2 x 5-1/2" capscrews are used to clamp the wing support to the tube. Wing supports should point toward the wings. Install the tie angle between the wing supports using 1/2 x 1-1/2" bolts. This angle is placed on top of the bracket extending inward from the wing supports.

Attach the anchor end clevises of the cylinders to the lugs on the center section and attach rod end clevises to wing lugs. Install flow restrictor in outer end (rod end) of hydraulic cylinders. Install grease fittings in hinge tubes on center section.

The hitch arms and mast are integral with the center section. The only assembly required is to install the hitch pins. There are only two holes provided on the mast. Use the bottom hole for Category II Quick Coupler. Use the top hole for Category III Quick Coupler and hitching without Quick Coupler.

OPTIONAL EQUIPMENT ATTACHMENT

GUIDE COULTER

The optional guide coultter is mounted in front of the gang assembly. Remove the U-bolts holding the gang to the tool bar. Using studs provided with coultter, attach coultter to tool bar. Refer to instructions provided with kit. Use lock nuts on one end of studs. Studs will pass through gang angles, across tube and through mounting angles of coultter frame. Do not mount coultter where it will interfere with tractor tires.

FRAME GAUGE WHEEL

Attach the frame gauge wheels to the tool bar with U-bolts provided. Position gauge wheel brackets between two gangs with axle and wheel toward outside of machine. Gauge wheels should be between the two outer most gangs.

When gauge wheels or coulters are used with folding tool bars, the hinges must be pinned rigid. Failure to pin hinges rigid can cause problems cultivating and may damage coulters or gauge wheels when operating in rough ground.

ROLLING SHIELDS

The rolling shields mount to the tool bar between the cultivator gangs. Complete instructions are provided with the kit for assembly and operation.

VERTICAL ADJUSTING BRACKETS

The vertical adjusting brackets assemble to the rear (center) tooth bar of each gang. Attach as shown in figure 6 using the plate, U-bolts, nuts and lock washers provided with each kit.

GAUGE WHEEL CRANK KITS

Newer models of the BRS are equipped with gauge wheel arms which can be used with a gauge wheel crank kit to simplify adjustment of working depth. The arm required for use with the crank kit has a 13/32" diameter hole drilled through it at the top end. See figure 5.

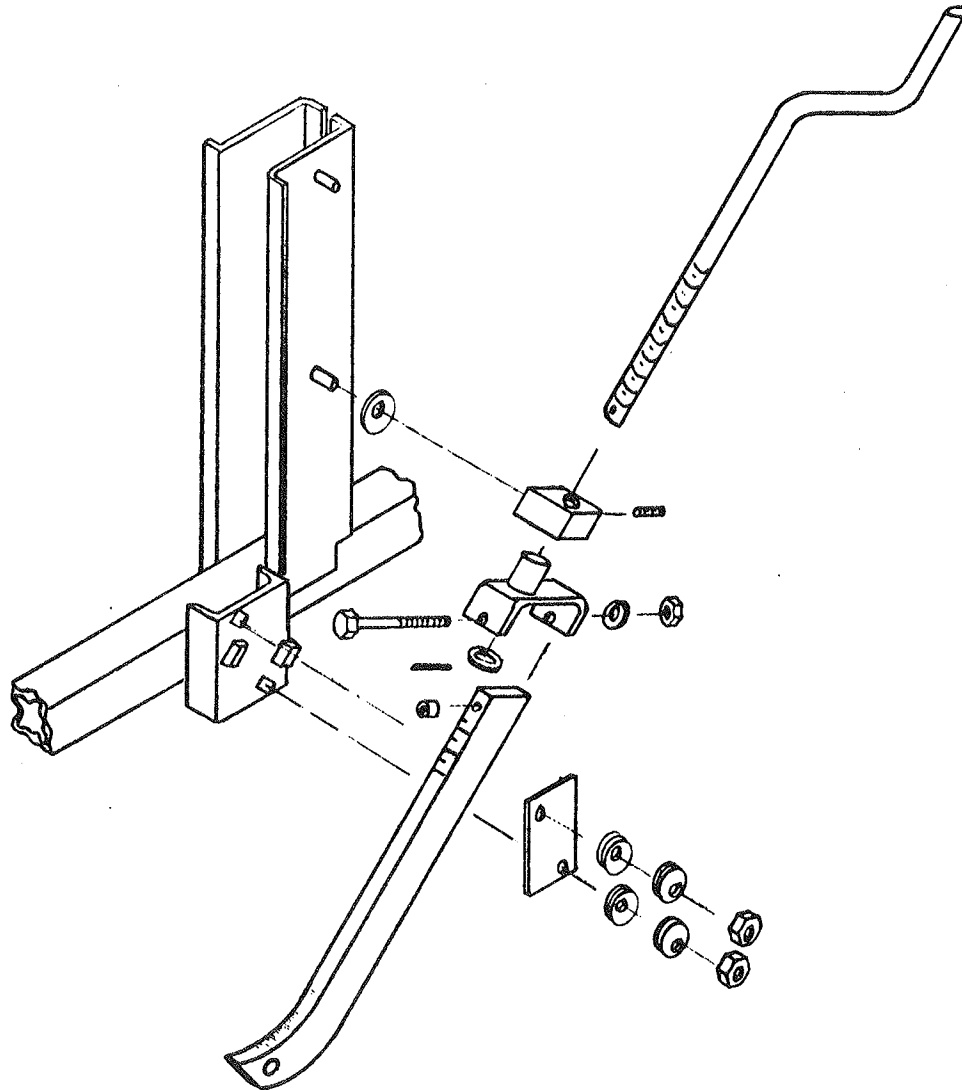
To mount the gauge wheel crank kit to your BRS, proceed as follows:

1. Remove the 3/8" capscrew from the yoke of the crank kit, saving the capscrew, lockwasher, nut, spacer, and 8 spring washers for later use.
2. Remove the nuts and lockwashers from the carriage bolts which clamp the 1J-835 strap to the gauge wheel arm and substitute 4 spring washers for each lockwasher. (Be sure to arrange the spring washers as shown in figure 5.) Replace the nuts and tighten only finger tight.
3. Remove the nut from the bottom rear parallel link pivot bolt.
4. Make sure that the set screw is not extended to the threads of the crank mounting block. Turn the parallel link pivot bolt into the crank mounting block.
5. Fasten the yoke to the gauge wheel arm with the 3/8" capscrew. (Be sure to assemble with the spacer to the top of the arm and with the tube portion of the yoke offset to the top. See figure 5.) Fasten the lock washer and nut to the capscrew.
6. Tighten the parallel link pivot bolt into the crank mounting block so that the parallel link is just free to pivot. Tighten the set screw so that the pivot bolt cannot loosen.
7. Tighten the nuts on the plate which clamps the gauge wheel arm in position. The belleville washers should be compressed so that they hold the gauge wheel arm firmly yet permit it to slide while cranking.

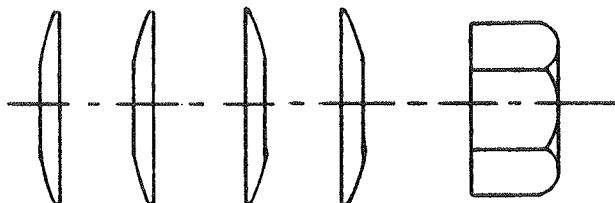
TRANSPORT KIT

The transport kit attaches to the tool bar. Complete instructions are provided with the kit for assembly and operation.

FIGURE 5



PROPER ARRANGEMENT
OF SPRING WASHERS



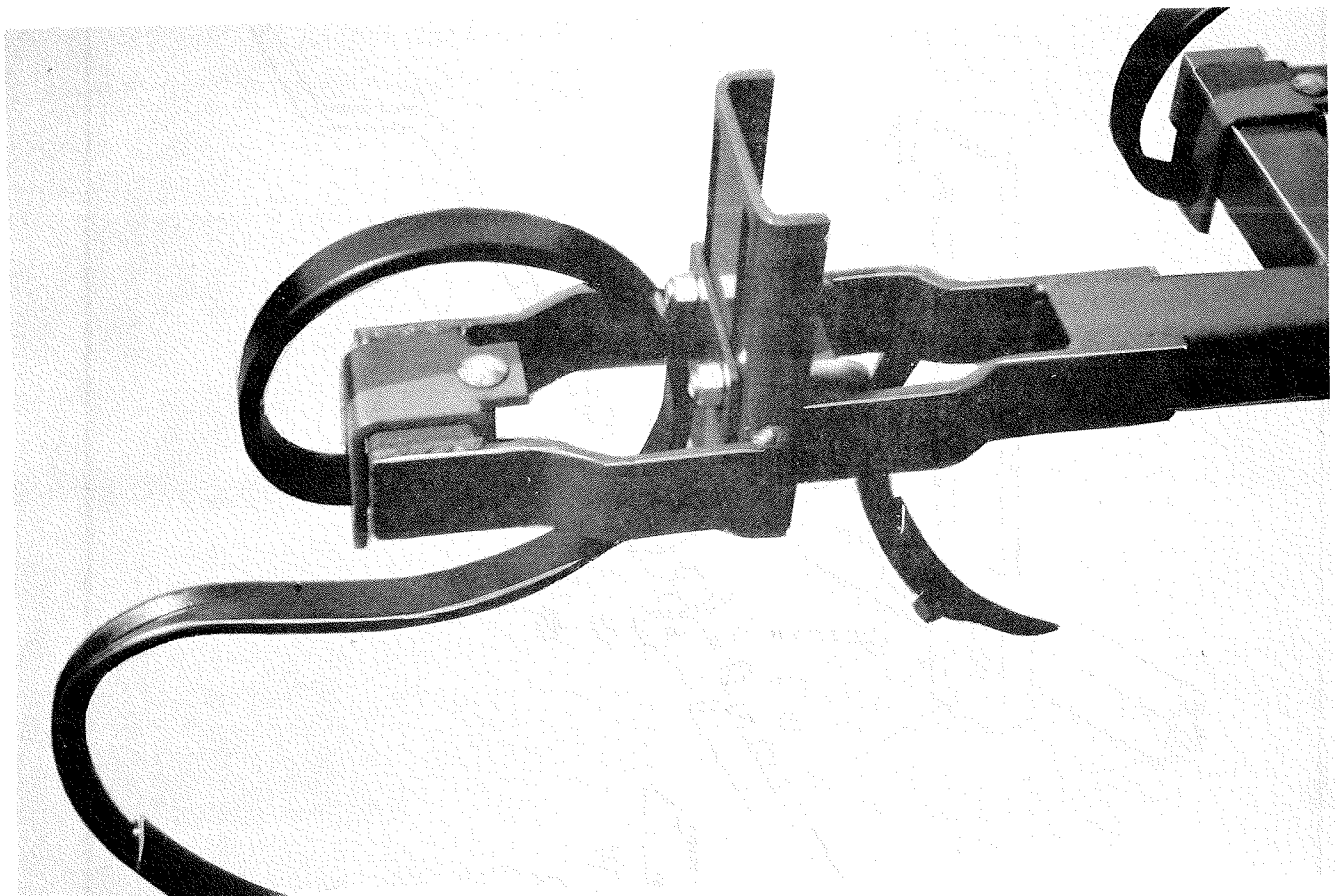


FIGURE 6

TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
Cultivator Drifting to One Side	3 Point Hitch not Centered	Center Hitch
	Different size of Shovels on Different Gangs	Use Equal Quantities of same size shovels on each Gang
	Gangs Running at Uneven Depths	See "Uneven Penetration of Gangs" Below
	Uneven Ground	Use Guide Coulters
	3 Point on Tractor not Square	Adjust lower three point links on tractor until cultivator is square to tractor
Uneven Penetration of Gangs	Gage Wheels Set Unevenly	Set all Gage Wheels at Same Depth
	Different size of shovels on Different Gangs	Use equal quantities of same Size Shovels on each Gang
Uneven Front to Rear Tine Penetration	Tool Bar not Level	Adjust Top Link of Three Point Hitch on Tractor
Excessive Side Sway on Gangs	Worn Parallel Bar Bushings	Replace Bushings
	Parallel Bar Bolts too Loose	Tighten Bolts
Gangs do not Move Up and Down Freely	Parallel Bar Bolts too Tight	Loosen Slightly
Poor Weed Coverage	Shovel too Narrow	Use Wider Shovels
	Speed too Slow	Increase Speed (4 to 7 MPH)

SPECIFICATIONS

<u>Model</u>	<u>Tool Bar Size</u>	<u>Row Spacing</u>	<u>No. of Shanks</u>
BRS-4402	5 x 7 x 170	(4) 30" to 40"	21
BRS-6302	5 x 7 x 188	(6) 20" to 30"	31
BRS-6402	5 x 7 x 248	(6) 30" to 40"	31
BRS-8302	5 x 7 x 248	(8) 20" to 30"	41
BRS-8402	5 x 7 x 330	(8) 30" to 40"	41
BRS-12222	5 x 7 x 272	(12) 22"	39
BRSF-6402	5 x 7 x 267	(6) 30" to 40"	31
BRSF-8302	5 x 7 x 267	(8) 30" & 32"	41
BRSF-8362	5 x 7 x 299	(8) 30" to 36"	41
BRSF-8402	5 x 7 x 331	(8) 38" & 40"	41
BRSF-12302	5 x 7 x 391	(12) 28" & 30"	61

Gage Wheels 4 x 12 Semi-Pneumatic

Gage Wheel Bearings Double Row Ball Bearings

OPTIONAL EQUIPMENT

- 1J-776 Coulter Stabilizer Assembly (Has 18" Dia. Coulter With Tapered Roller Bearing.)
- 1J-799 Tool Bar Gage Wheel Kit (Set of 2). Includes 15" Rims, Less Tires
- 2J-157 Transport Kit (For Endwise Towing of BRS-6402, BRS-8302, and BRS-8402)
- 2J-959 Rolling Shields (Includes Components For Two Rows)
- 3J-261 Vertical Adjusting Bracket (For Rear Tine)
- 3J-782 Gage Wheel Crank Kit (For Fast Adjustment of Working Depth without the Use of Hand Tools.)

OPTIONAL POINTS OR SHOVELS (All Include Attaching Hardware)

- 2J-149 1-3/8" Heavy Duty Reversible Point
- 2J-150 2-1/2" Shovel
- 2J-151 4" Shovel
- 2J-152 7" Sweep