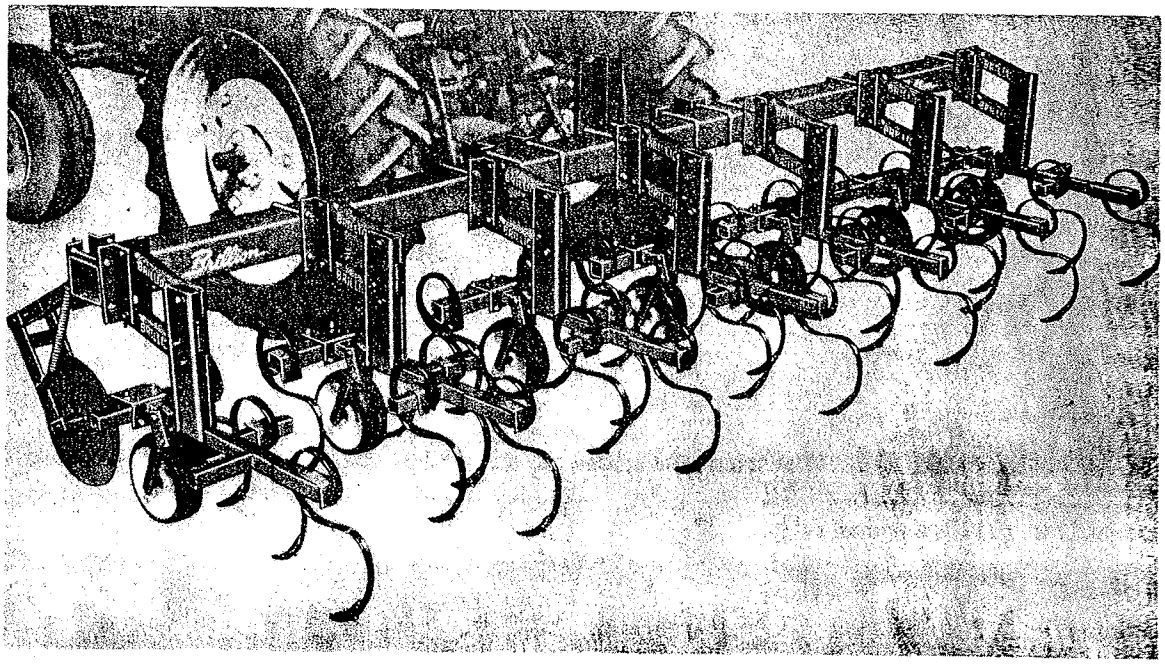
OPERATOR'S MANUAL
REPAIR PARTS CATALOG

Brillion

BRS RO-CROP CULTIVATORS,
MODELS: 4401, 6301, 6401, 8301, 8401, 12221

BRSF RO-CROP CULTIVATORS,
MODELS: 6401, 8301, 8361, 8401, 12302



IMPORTANT! Repairs cannot be purchased retail direct from factory. Order through your Brillion dealer or any established implement dealer.

FEMA

BRILLION IRON WORKS
BRILLION, WISCONSIN 54110

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.

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

BRS MODELS

Bundle No.	Name	4401	6301	6401	8301	8401	12221
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
2J-951	Box - Hardware	1	1	1	1	1	1
1J-887	Spring Tine	21	31	31	41	41	39
2J-952	Box - Hardware	-	1	1	-	-	-
2J-955	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
2J-957	Gauge Wheel Arm Box	-	-	-	-	-	1
2J-660	Box Assembly	-	1	-	-	-	-
2J-661	Box Assembly	-	-	-	1	-	-

BRSF MODELS

		6401	8301	8361	8401	12302
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
1J-844	Box Assembly	-	1	1	1	-
2J-951	Box Assembly	1	1	1	1	-
3J-785	Box Assembly	-	-	-	-	1
2J-952	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	-	-	-

SPECIFICATIONS

Model	Tool Bar Size	Row Spacing	No. of Shanks
BRS-4401	5 x 7 x 170	(4) 30" to 40"	21
BRS-6301	5 x 7 x 188	(6) 20" to 30"	31
BRS-6401	5 x 7 x 248	(6) 30" to 40"	31
BRS-8301	5 x 7 x 248	(8) 20" to 30"	41
BRS-8401	5 x 7 x 330	(8) 30" to 40"	41
BRS-12221	5 x 7 x 272	(12) 22"	39
BRSF-6401	5 x 7 x 267	(6) 30" to 40"	31
BRSF-8301	5 x 7 x 267	(8) 30" & 32"	41
BRSF-8361	5 x 7 x 299	(8) 30" to 36"	41
BRSF-8401	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-6401, BRS-8301, and BRS-8401)

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

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 slowing 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

Optional equipment for this Brillion Ro-Crop cultivator includes guide coulter and frame gauge wheels.

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 gauge 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.

LUBRICATION

The only areas on your Brillion BRS model Ro-Crop Cultivator that need lubrication are the hubs on the optional coulters and frame gauge 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 12. 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 10. 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.

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 1-1/4" 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

GUIDE COULTER

The optional guide coulter is mounted directly in front of the gang assembly. Remove the U-bolts holding the gang to the tool bar. Using studs provided with coulter, attach coulter to tool bar. Use lock nuts on one end of studs. Studs will pass through gang angles, across tube and through mounting angles of coulter frame. See page 18. Do not mount coulter 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. See page 20. Gauge wheels should be between the two outermost 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.

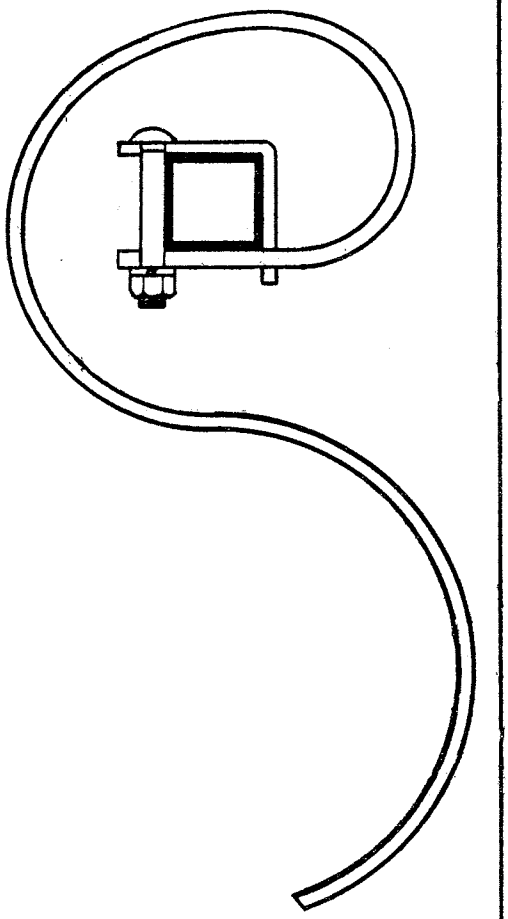


Figure 1

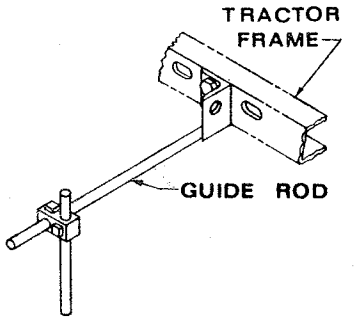
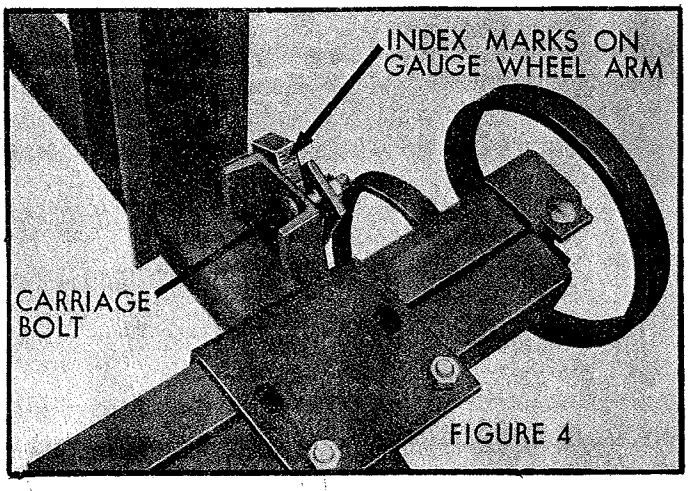


Figure 2



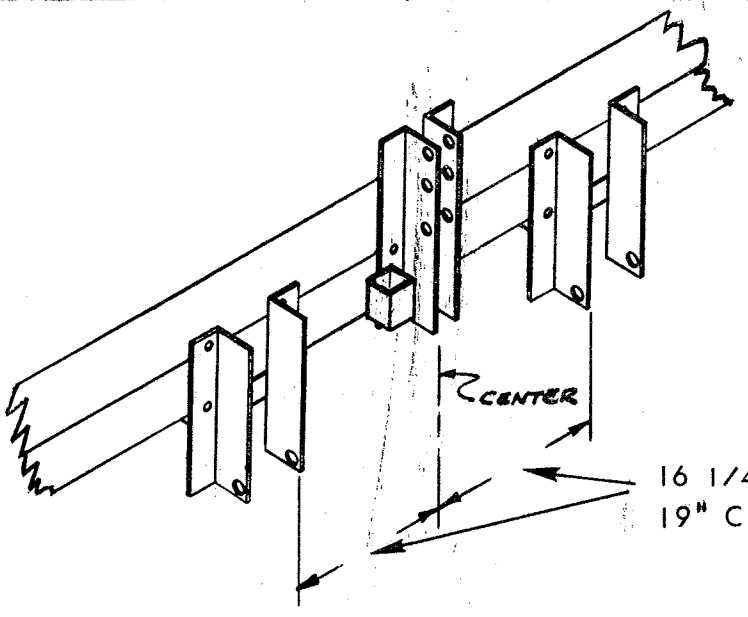
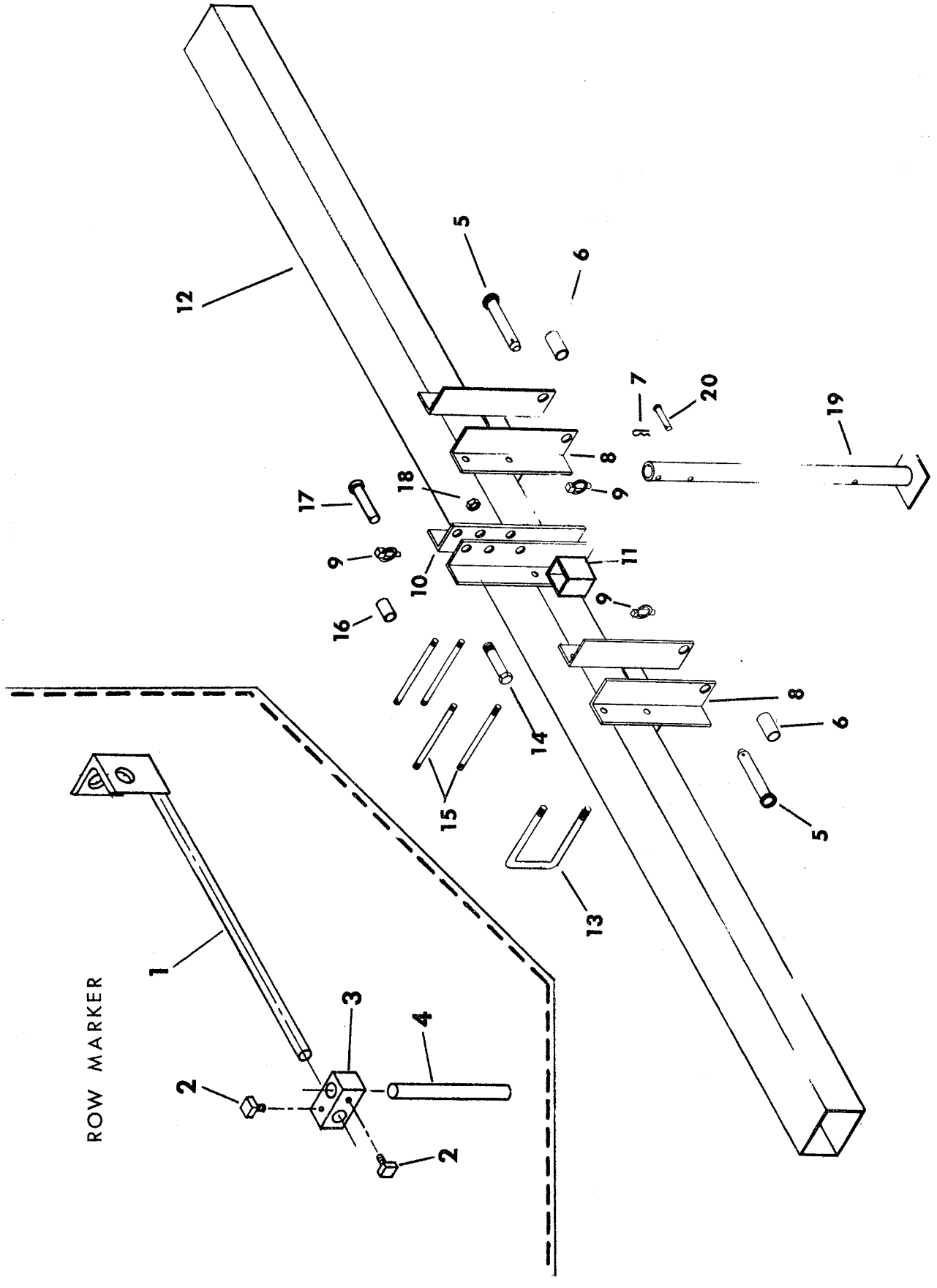


Figure 3

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)

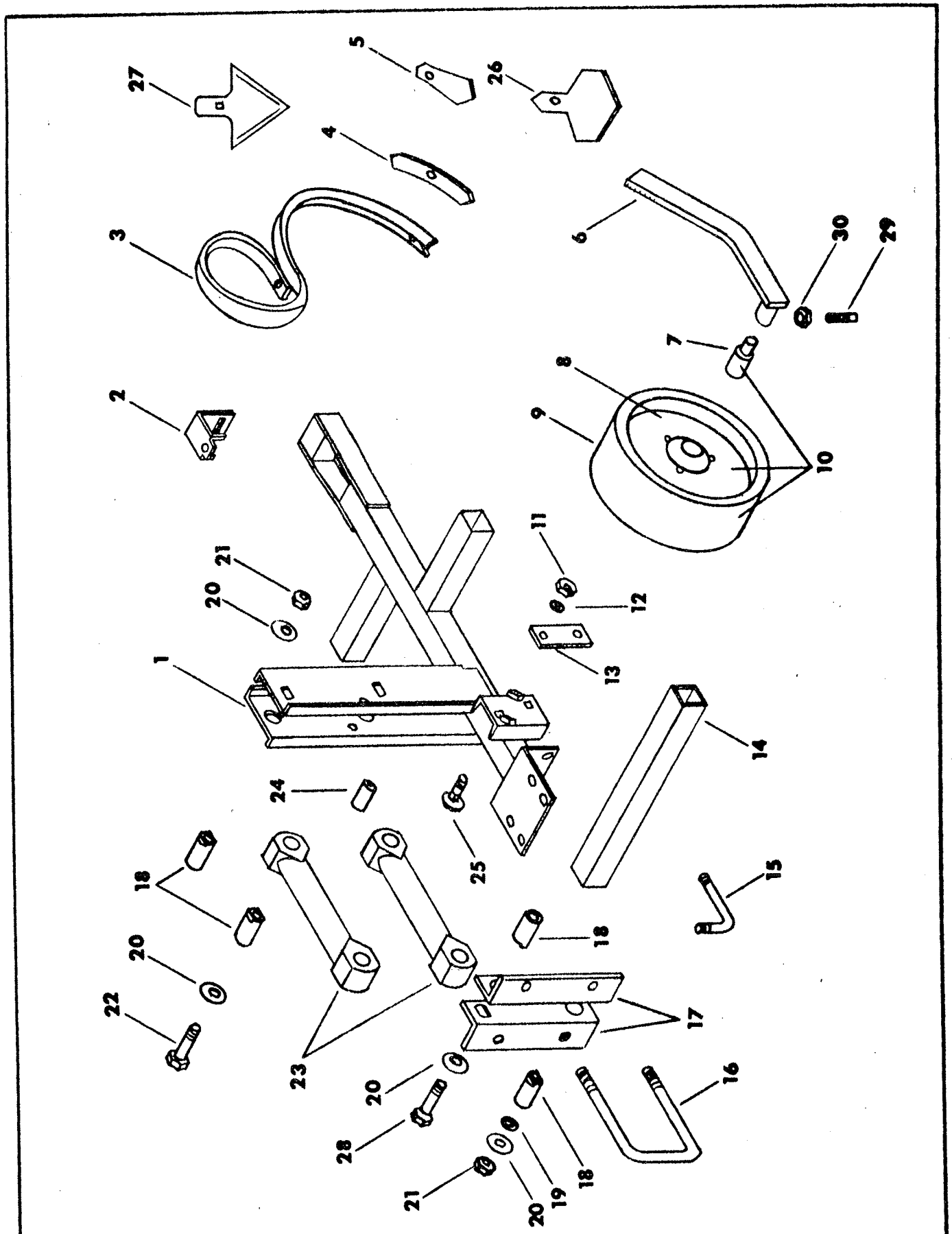

ROW MARKER
1
2
2
3
4
5
5
6
6
7
8
8
9
9
9
10
11
12
13
14
15
16
17
18
19
20

ROW MARKER

Index No.	Part No.	Description	Qty.	Weight
1	8D-941	Marker Bracket	1	1.5
2	1C-235	Set Screw (1/4-20 x 1/2" Long)	2	
3	8D-942	Pivot Block	1	.4
4	8D-943	Rod	1	.8

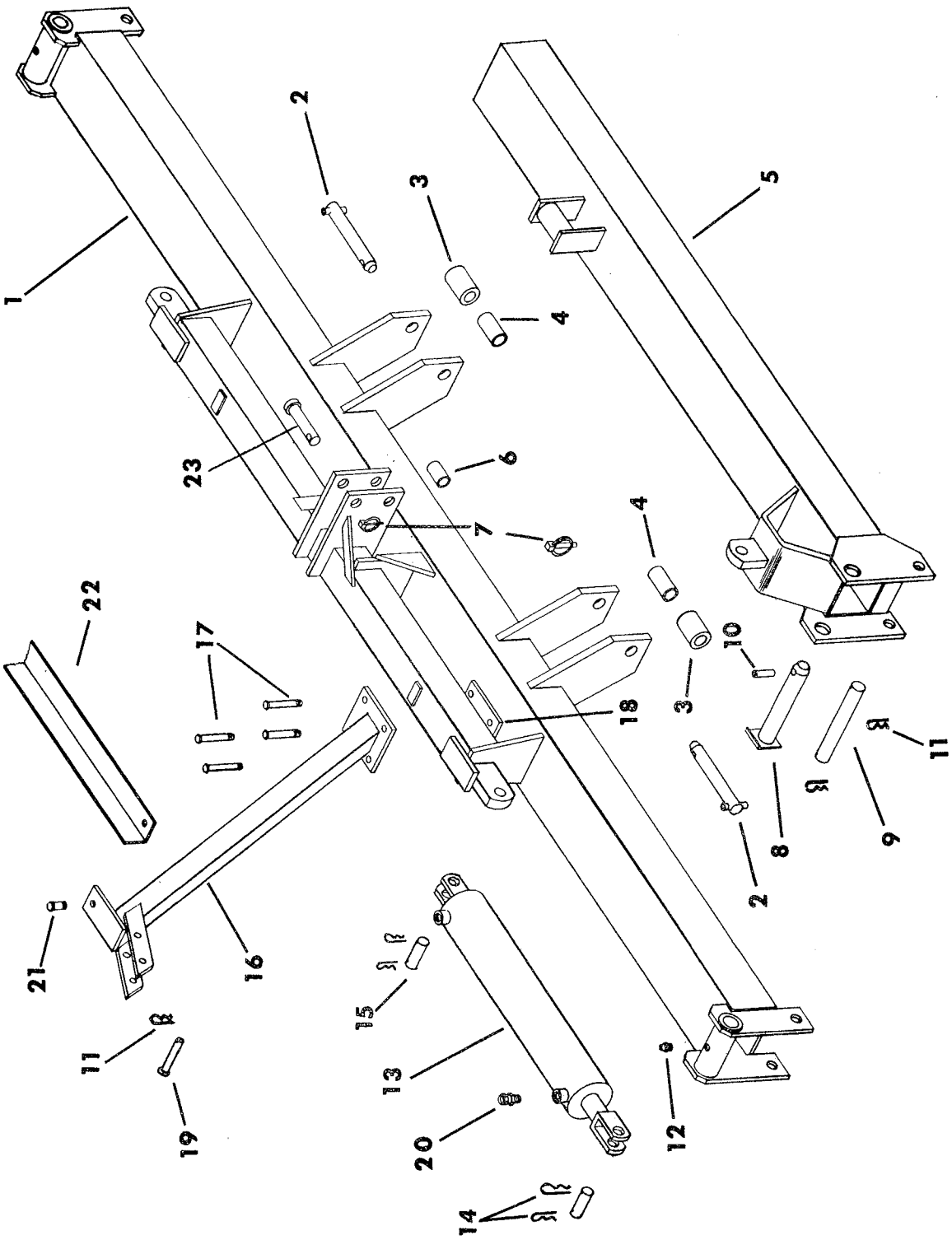
BRS MODEL TOOL BARS & HITCH

5	5D-156	Clevis Pin (1-1/8 x 5" Long)	2	1.5
6	5D-158	Sleeve	2	.5
7	6C-400	Hairpin Cotter	1	
8	2J-190	Hitch Weldment	2	29.4
9	5D-110	Klik - Pin	3	.1
10	1J-980	Mast Angle - L.H.	1	12.3
11	1J-831	Mast Angle Weldment	1	14.5
12	1J-802	Tool Bar (BRS-440)	1	204.0
	1J-841	Tool Bar (BRS-630)	1	226.0
	1J-842	Tool Bar (BRS-640 & BRS-830)	1	298.0
	2J-174	Tool Bar (BRS-840)	1	518.0
	1J-845	Tool Bar (BRS-1222)	1	427.0
13	1J-801	U-Bolt, 5 x 7 x 5/8"	4	1.6
14	8D-922	Capscrew, (1"-8 NC x 4-1/2" Lg.)	1	1.3
15	8D-900	Stud, (5/8-11 NC x 9-3/4" Lg.)	4	.7
16	6D-988	Spacer, 2-1/8" Long	1	.3
17	6D-529	Clevis Pin (1 x 4-1/2" Long)	1	1.3
18	6D-306	Hex Lock Nut, 1-8 NC	1	.1
19	9D-47	Stand	1	9.4
20	3C-335	Clevis Pin, 1/2 x 3	1	.1


27
5
26
4
3
6
30
29
7
8
2
9
10
11
21
20
12
1
13
14
24
25
18
15
20
18
22
17
23
20
16
28
18
21
19
20

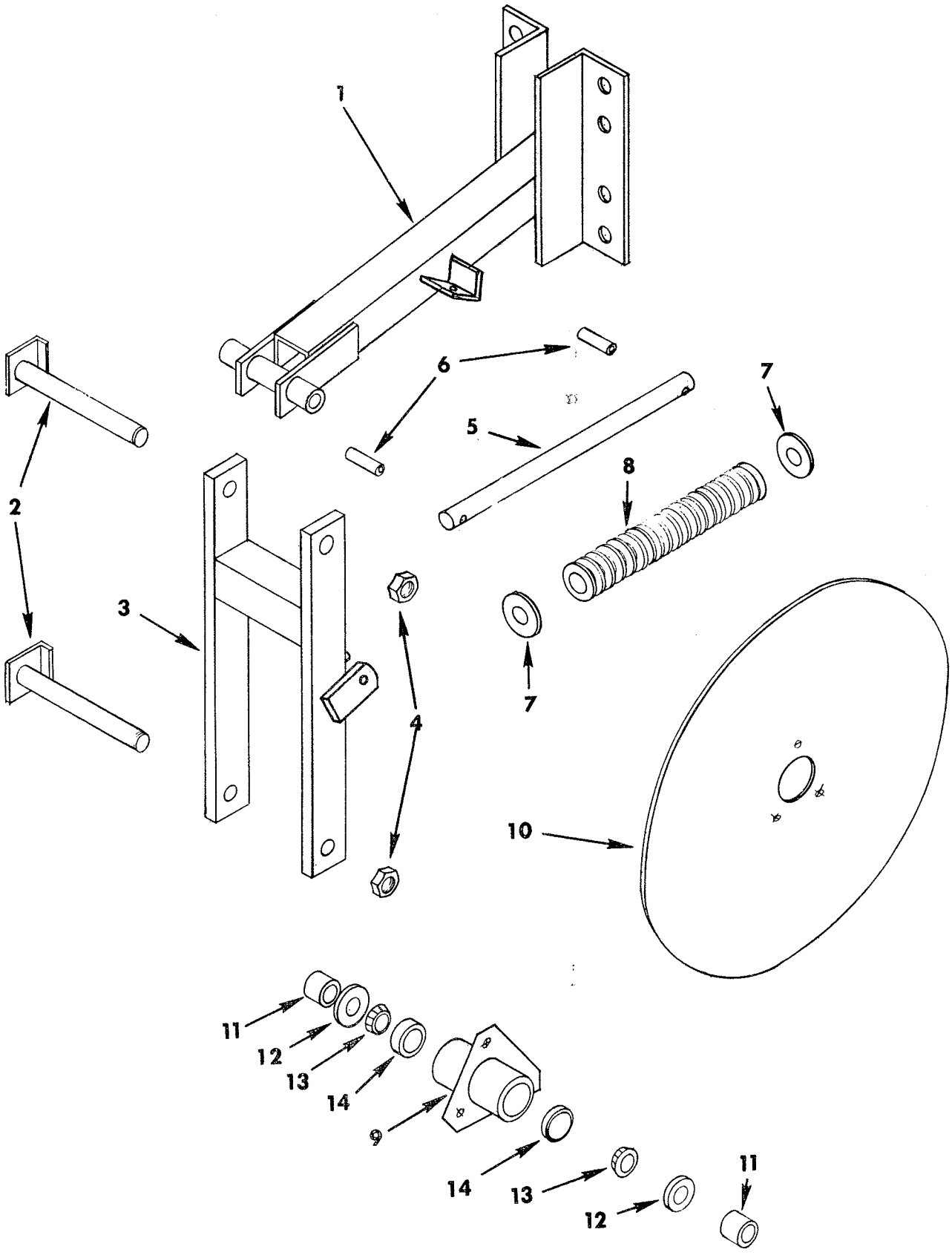
GANG ASSEMBLY

Index No.	Part No.	Description	Qty. Per Gang	Weight
1	1J-815	Gang Tube Weldment Obsolete, Used	1	34.0
	1J-805	Gang Assembly Before 11-1-77		69.0
	2J-946	Gang Tube Weldment	1	34.0
	2J-947	Gang Assembly		69.0
2	1J-834	Clamp	5	.8
	2J-241	Carriage Bolt, 7/16-14 NC x 3-1/2" Lg.	5	
	1C-314	Lockwasher, 7/16" Std.	5	
	1D-14	Hex Lock Nut, 7/16 - 14 NC	5	
3	1J-887	Spring Tine - Less Point	5	6.0
	7D-728	Cultivator Bolt, 3/8-16 NC x 1-1/2" Lg.	5	
	7D-729	Flat Washer, Heavy 3/8"	5	
	7D-730	Nut, 3/8-16 NC Heavy Hex	5	
4	2J-155	Reversible, 1-3/8" Point	5	.7
5	7D-14	Duck Foot Point 2-1/2"	5	.5
6	3J-85	Gauge Wheel Arm - Curved	1	5.0
	1J-838	Gauge Wheel Arm - Straight (Obsolete)	1	5.0
7	1J-808	Bearing (3J-784) replaces	1	1.0
8	1J-810	Wheel Half	2	3.0
9	1J-809	Tire	1	3.0
	1C-237	Capscrew, 5/16-18 NC x 3/4" Lg.	3	
	3C-127	Lockwasher, 5/16" Std.	3	
	1C-385	Hex Nut, 5/16-18 NC	3	
10	1J-804	Gage Wheel Assembly (#7, #8 & #9)	1	10.0
11	1C-390	Hex Nut, 1/2-13 NC	2	
12	1C-109	Lockwasher, 1/2" Std.	2	
13	1J-835	Strap	1	.6
14	1J-803	Extension Tube	2	4.6
15	1J-836	Clamp Bolt - Long	2	.4
	1J-837	Clamp Bolt - Short (Used on end gangs with one extension tube.)		.3
16	1J-801	U-Bolt, 5 x 7 x 5/8"	2	1.6
	1B-166	Lockwasher, 5/8" Std.	4	
	1C-392	Hex Nut, 5/8-11 NC	4	
17	1J-811	Gang Angle	2	4.4
18	1J-814	Pivot Tube	4	.1
19	8C-892	Machinery Bushing	2	
20	1C-122	Flat Washer, 5/8"	8	
21	5C-461	Locknut, 5/8-11 NC	5	
22	2C-302	Capscrew, 5/8-11 NC x 3-1/2 Long	3	.1
23	1J-812	Parallel Link	2	12.0
24	1J-813	Stop Tube	1	.3
25	1D-237	Capscrew, 1/2-13 NC x 2 Lg. (Obsolete)	2	.1
	2J-950	Carriage Bolt, 1/2-13 NC x 2 Lg.	2	.1
26	1J-914	4" Shovel	5	1.0
27	2J-154	7" Sweep	5	1.2
28	7D-247	Capscrew, 5/8-11 NC x 3-3/4" Long	2	.2
29	6C-222	Set Screw, 5/16-18 NC x 3/4 Long, Sq. Head	1	
30	6C-223	Jam Nut, 5/16-18 NC Hex	1	


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

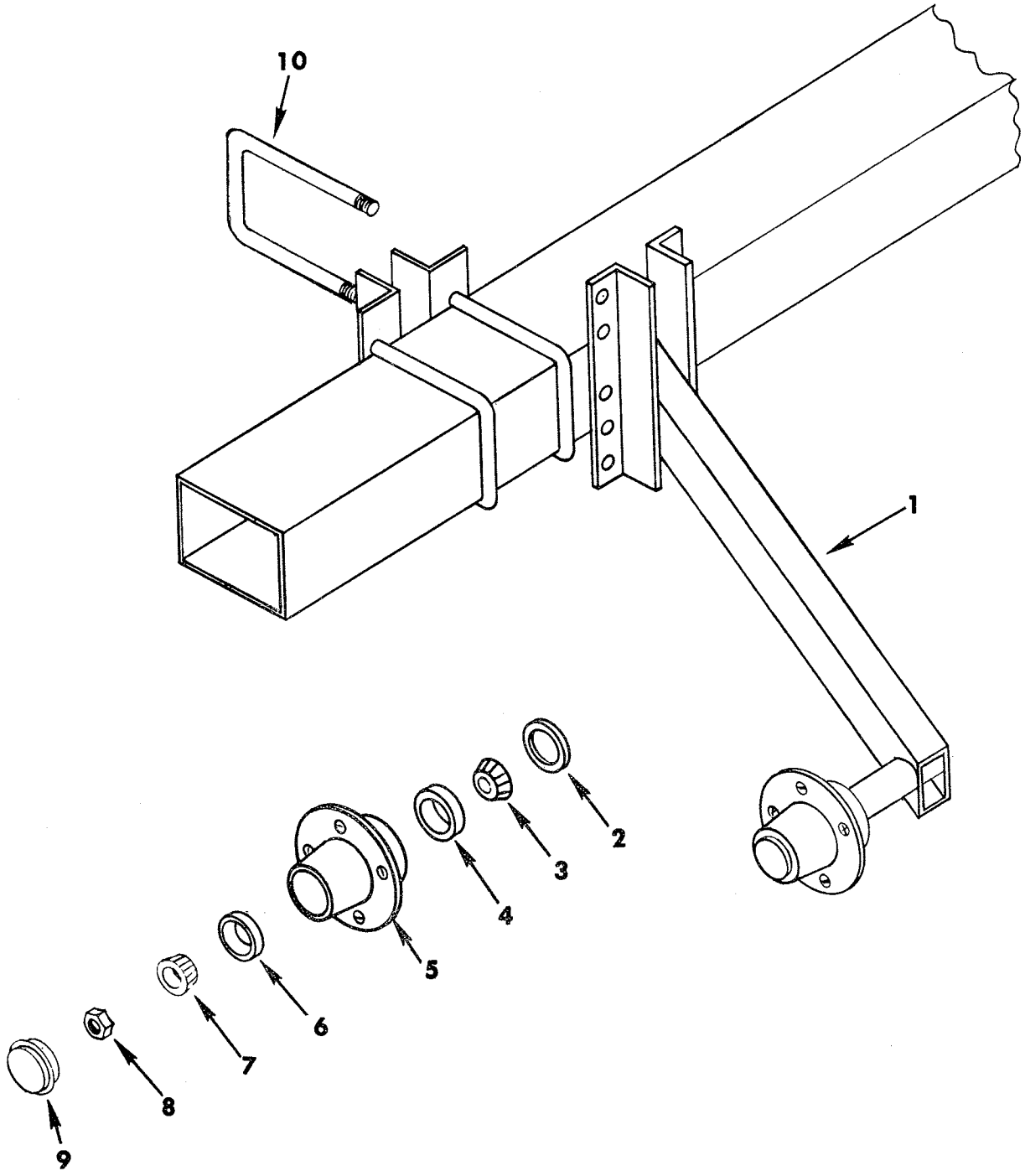
BRSF FOLDING TOOL BAR MODELS

Index No.	Part No.	Description	Qty.	Weight
1	3J-643	Center Tool Bar (BRSF Model: 12302)	1	684.0
	2J-163	Center Tool Bar (BRSF Models: 640, 6401, 830, 8301, 836, 8361)	1	336.0
	1J-848	Center Tool Bar (BRSF Models: 840, 8401, 1230, 12301)	1	414.0
2	8D-424	Hitch Pin Assembly	2	2.5
3	8D-425	Spacer	2	1.6
4	5D-158	Sleeve	2	.5
5	3J-644	Wing Weldment (BRSF Model: 12302)	2	204.0
	1J-860	Wing Weldment (BRSF Models: 640, 6401, 830, 8301)	2	156.0
	1J-861	Wing Weldment (BRSF Models: 836, 8361, 840, 8401)	2	181.0
	1J-862	Wing Weldment (BRSF Models: 1230, 12301)	2	212.0
6	5D-157	Sleeve	1	.3
7	5D-110	Klik Pin	3	.1
8	3J-646	Hinge Pin (BRSF Model: 12302)	2	5.5
	1J-880	Hinge Pin (BRSF Models: All Except 12302)	2	5.0
9	3J-647	Pin, 1" Dia. x 11" Long (BRSF Model: 12302)	2	2.5
	2J-153	Pin, 1" Dia. x 9" Long (BRSF Models: All Except 12302)	2	2.0
10	6D-854	Roll Pin, 1/2" x 3"	2	.1
	6D-966	Machinery Bushing	6	
11	4C-856	Hair Pin Cotter	6	
12	9D-923	Grease Fitting, 1/8 NPT	2	
13	9D-327	Hydraulic Cylinder, 3" Dia. x 24" Stroke (BRSF Model: 12302)	2	42.0
	9D-137	Hydraulic Cylinder, 3" Dia. x 16" Stroke (BRSF Models: All Except 12302)	2	29.0
14	6D-413	Hair Pin Clip	4	
15	6D-412	Cylinder Pin	2	.3
16	3J-645	Wing Support (BRSF Model: 12302)	2	32.7
	1J-873	Wing Support (BRSF Models: All Except 12302)	2	32.7
17	1C-266	Capscrew, 1/2-13 NC x 5-1/2" Lg.	8	.3
18	1J-918	Plate	2	2.3
	1C-109	Lockwasher, 1/2" Std.	10	
	1C-390	Hex Nut 1/2-13 NC	10	
19	8D-382	Clevis Pin, 1/2 x 4"	2	.5
20	6D-716	Flow Restrictor	2	.1
21	1C-334	Capscrew, 1/2-13 NC x 1-1/4" Lg.	2	.1
22	2J-164	Support Angle (BRSF Models: 640, 6401, 830, 8301, 836, 8361)	1	20.5
	1J-883	Support Angle (BRSF Models: 840, 8401, 1230, 12301)	1	31.3
23	6D-529	Clevis Pin, 1 x 4-1/2"	1	.6


1
2
3
4
5
6
7
7
8
9
10
11
12
13
14
14
13
12
11

1J-776 COULTER ASSEMBLY - OPTIONAL

Index No.	Part No.	Description	Qty.	Weight
	1J-776	Coulter Assembly - Complete	1	56.0
1	2J-185	Support Frame	1	20.5
2	1J-787	Pivot Shaft	2	.5
3	2J-186	Pivot Frame	1	16.0
4	6C-729	Hex Locknut, 3/4-10 NC	2	
5	2J-184	Spring Rod	1	1.8
6	4C-864	Roll Pin, 3/8 x 1-3/4"	2	
7	2C-458	Flat Washer, 3/4" S.A.E.	2	
8	6D-362	Spring	1	1.3
9	1J-786	Hub (Includes 5C-911 Bearing Cone and 5C-912 Bearing Cup)	1	2.8
	1C-183	Lockwasher, 3/8" Std.	3	
	1J-928	Nut, 3/8-24 NF Hex	3	
10	1J-785	Coulter Blade	1	10.4
11	8D-914	Spacer	2	.1
12	9D-76	Seal (CR#11164)	2	
13	5C-911	Bearing Cone (#LM11949)	2	.2
14	5C-912	Bearing Cup (#LM11910)	2	.1


10
1
2
3
4
5
6
7
8
9

1J-799 GAGE WHEEL KIT - OPTIONAL

Index No.	Part No.	Description	Qty.	Weight
1	2J-345	R.H. Wheel Arm (Less Hubs) - Shown	1	38.6
	2J-344	L.H. Wheel Arm (Less Hubs) - Opposite	1	38.6
2	8D-511	Seal	1	.1
3	5C-480	Bearing Cone (#LM48548)	1	.2
4	5C-479	Bearing Cup (#LM48510)	1	.2
5	1J-390	Wheel Hub	1	8.6
6	5C-912	Bearing Cup (#LM11910)	1	.2
7	5C-911	Bearing Cone (#LM11949)	1	.3
8	3C-173	Slotted Nut, 3/4-16 N.F.	1	
	3C-350	Cotter Pin, 5/32 x 1"	1	
9	1J-463	Hub Cap	1	
10	1J-801	U-Bolt	4	1.6
	1B-166	Lockwasher, 5/8"	8	
	1C-392	Nut, 5/8-11 NC Hex		
*	4C-129	Wheel, 15 x 5 (5 Bolt)	2	16.0
*	5C-100	Wheel Bolt	10	.1

*Not Shown

ROLLING SHIELD EXTENSION KIT

When using the rolling shield kit with your Ro-Crop Cultivator, it may be necessary to use an extension plate for certain row spacings. The extension plates and necessary hardware are included in all Ro-Crop box assemblies.

Category II Three Point Hitch

If the three point hitch on your tractor is a Category II, you will need the extension plate for 30 inch row spacing. The extension plate is used as shown in Figure 5. Use the 3/8" x 1-1/2" long capscrews provided. For 32, 34, 36, 38 and 40 inch row spacings, the shield bracket can be mounted between the lower hitch angles as shown in Figure 6. A hole has been provided in the cross angle of later models for this purpose (see Figure 6).

Category III Three Point Hitch

If the three point hitch on your tractor is a Category III, you will need the extension plate for 34 and 36 inch row spacings. The extension plate is used as shown in Figure 5. For 30 and 32 inch row spacings, mount the shield bracket as shown in Figure 5, but do not use the extension plate. For 38 and 40 inch row spacings, mount the shield bracket between the lower hitch angles as shown in Figure 6.

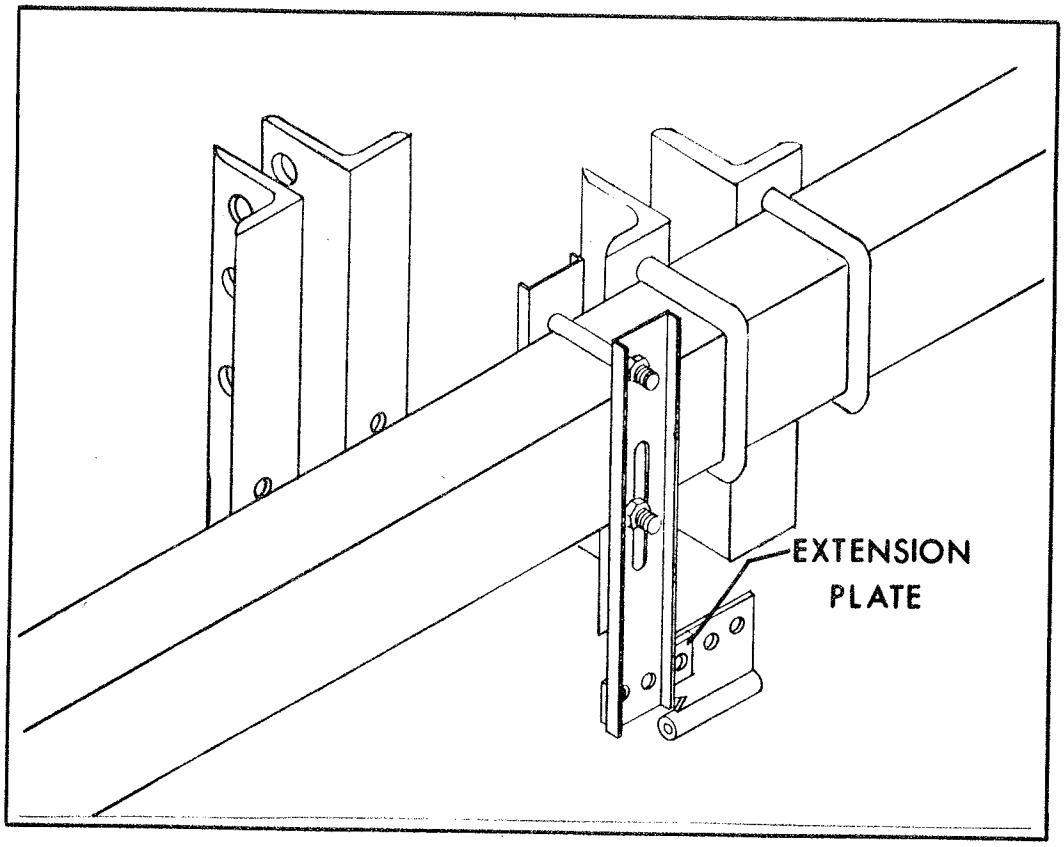


Figure 5

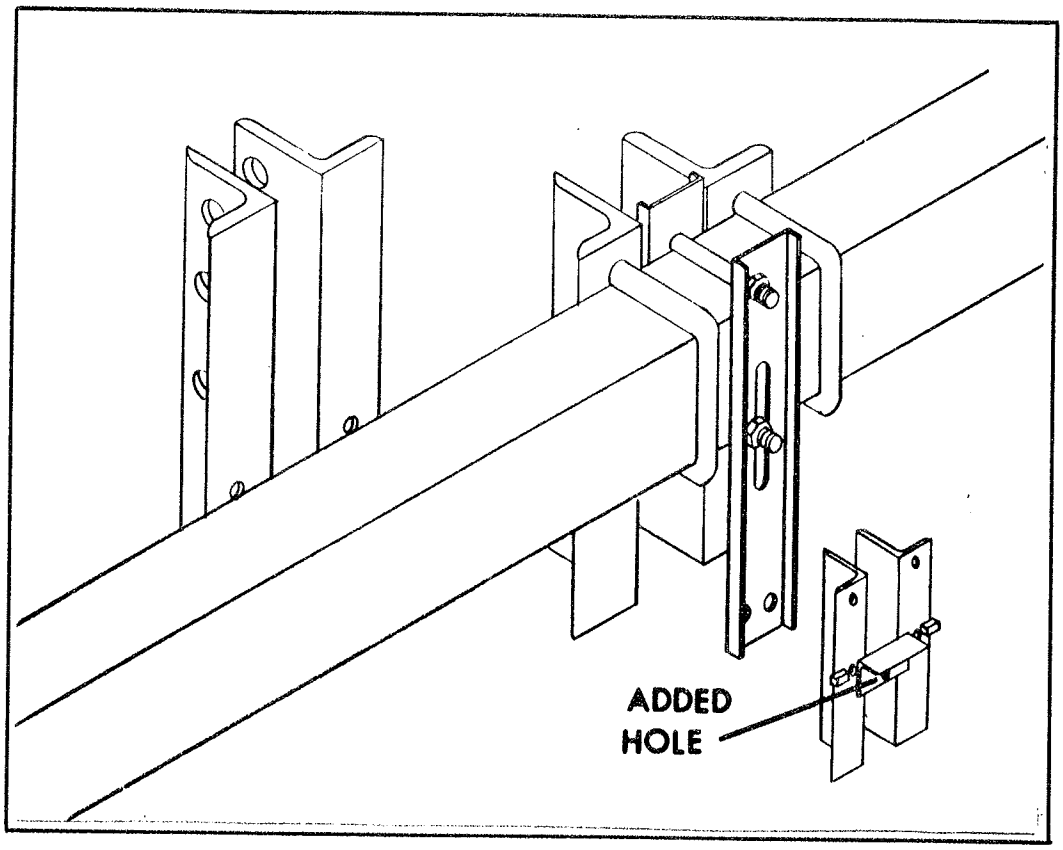


Figure 6

CYLINDER IDENTIFICATION

1. Determine style of cylinder. Welded construction or tie rod construction. Tie rod construction has four long bolts running the length of the cylinder to hold the cylinder together. Welded construction has base welded to the tube.

2. Determine size of cylinder - completely retract cylinder measure distance from center of one attaching pin to other attaching pin. Measure outside diameter of tube and subtract 3/8" or 1/2" to get even dimension. The cylinder diameter is in even sizes - 3", 3-1/2", 4". So a tube that measures 3-7/8" O.D. is a 3-1/2" cylinder. Series cylinders are an exception, and are usually sized in 1/4" increments such as 5", 4-3/4", 4-1/2", etc.

3. Measure rod size.

4. Look in index of this book to find machine used and location of cylinder on machine. Turn to the particular cylinder and find cylinder type. Check cylinder size, retracted length and rod size. When all these items check, the cylinder is identified.

Study cylinder construction, these drawings reflect as accurately as possible the actual construction of the cylinder.

HYDRAULIC CYLINDER USAGE INDEX

Code Letter	Manufacturer
BIW	Brillion Iron Works
G	Hydraulic Gear
L	Lantex
P	Prince

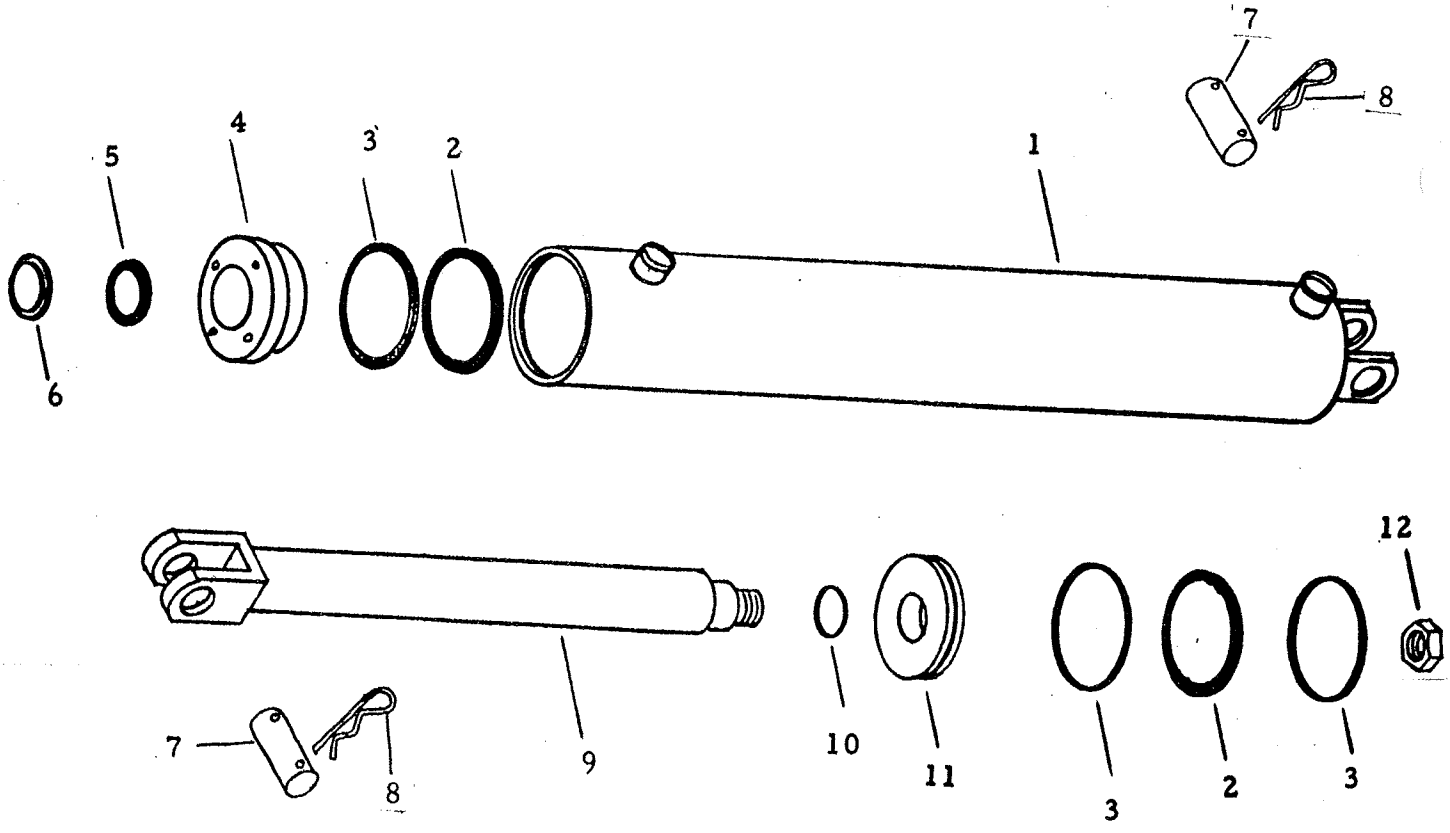
9D137 G Hydraulic Cylinder 3 x 16

Hydraulic Gear #3016-01 Painted Red

1-3/8 Dia. Rod, 26-1/4 Retracted, 42-1/4 Extended Length

Item	Part No.	Description	Qty.
1	1J-962	Tube Assembly	1
*2	NSS	O Ring	2
*3	NSS	Back-Up Ring	3
4	1J-963	Gland	1
*5	NSS	Rod Seal &Back-Up Rings	1
*6	NSS	Wiper	1
7	5J-650	Cylinder Pin	2
8	4C-856	Hairpin Cotter	4
9	1J-964	Rod Assembly	1
*10	NSS	O Ring	1
11	1J-965	Piston	1
12	6C-750	Hex Nut 7/8-14 Lock	1
*	1J-966	Seal Kit (Items Marked "*")	

NSS - Not Serviced Separately



9D-327 G Hydraulic Cylinder 3 x 24

Hydraulic Gear #3024-01 Painted Red

1-1/8 Dia. Rod, 34-1/4 Retracted, 58-1/4 Extended Length

Item	Part No.	Description	Qty.
1	3J-264	Tube Assembly	1
*2	NSS	O Ring	2
*3	NSS	Back-Up Ring	3
4	3J-266	Packing Gland	1
*5	NSS	Rod Seal & Back-Up Rings	1
*6	NSS	Wiper	1
7	5J-650	Cylinder Pin	2
8	1D-594	Hairpin Cotter	4
9	3J-262	Rod Assembly	1
*10	NSS	Seal	1
11	3J-265	Piston	1
12	6D-918	Hex Nut 3/4-16 Lock	1
*	3J-263	Seal Kit (Items Marked "*")	

NSS - Not Serviced Separately