REAR FOLDING PLANTER

OPERATOR & PARTS MANUAL

M0122 Reprint 5/98

This manual is applicable to: Model: RF
Serial Number: 107 And On

Record the model number and serial number of your planter with date purchased:

Model Number _____

Serial Number _____

Date Purchased _____

We at KINZE Manufacturing, Inc. wish to thank you for your patronage and appreciate your confidence in KINZE farm machinery. Your KINZE planter has been carefully designed and sturdily built to provide years of dependable operation in return for your investment.

This manual has been prepared to aid you in the assembly, operation and maintenance of the planter. Refer to it when necessary to maintain the machine in efficient operating condition.

Throughout this manual the symbol ⚠ and the words NOTE, CAUTION, WARNING and DANGER are used to call your attention to important safety information. The definition of each of these terms used follows:

NOTE: Indicates a special point of information.

CAUTION: Indicates that a failure to observe can cause damage to the machine or equipment.

⚠ **WARNING: Indicates that a failure to observe can cause damage to the machine or equipment and/or personal injury.**

⚠ **DANGER: Indicates that a failure to observe can cause most serious damage to the machine or equipment and/or most serious personal injury.**


WARNING
THIS MACHINE HAS BEEN DESIGNED AND BUILT WITH YOUR SAFETY IN MIND. ANY ALTERATION TO THE DESIGN OR CONSTRUCTION MAY CREATE SAFETY HAZARDS. DO NOT MAKE ANY ALTERATIONS OR CHANGES TO THE EQUIPMENT, BUT IF ANY ALTERATIONS OR CHANGES ARE MADE YOU MUST FOLLOW ALL APPROPRIATE SAFETY STANDARDS AND PRACTICES TO PROTECT YOU AND OTHERS NEAR THIS MACHINE FROM INJURY.
7100-90


DANGER
THIS PLANTER IS DESIGNED TO BE DRIVEN BY GROUND TIRES ONLY.
THE USE OF HYDRAULIC, ELECTRIC OR PTO DRIVES MAY CREATE SERIOUS SAFETY HAZARDS TO YOU AND THE PEOPLE NEARBY. IF YOU INSTALL SUCH DRIVES YOU MUST FOLLOW ALL APPROPRIATE SAFETY STANDARDS AND PRACTICES TO PROTECT YOU AND OTHERS NEAR THIS PLANTER FROM INJURY.
7100-89

Introduction

This manual has been designed to aid in the set up, service, and operation of the Rear Folding Planter Bar. Numerous pictures, exploded parts drawings, and diagrams have been provided.

Separate operator's manuals for the different manufacturers of individual planting units and seed monitors should be obtained prior to installation and operation.

Most attachments for special crops and field conditions, from the different planting unit manufacturers, can be accommodated on the Rear Folding Planter Bar. Combinations of certain tillage attachments and double disk fertilizer openers will require some advance alterations to the Rear Folding Planter Bar. Specific information for the use of any attachment will be provided upon request.

This safety alert symbol will identify important safety information throughout this manual. Please read and observe all safety information.

Assembly

Although the Rear Folding Planter Bar is produced in many different row widths and sizes, all main parts and components will interchange. This interchangeability greatly simplifies the assembly as well as operation and service of any size planter bar. Obvious changes in parts and components to accommodate the various sizes and row spaces are noted in this manual and the parts diagrams.

Terminology

NOTE: **Numerous references to "right hand" and "left hand" will be made in this manual. The proper side is determined by standing at the rear of the planter bar and facing the direction of travel when in use.**

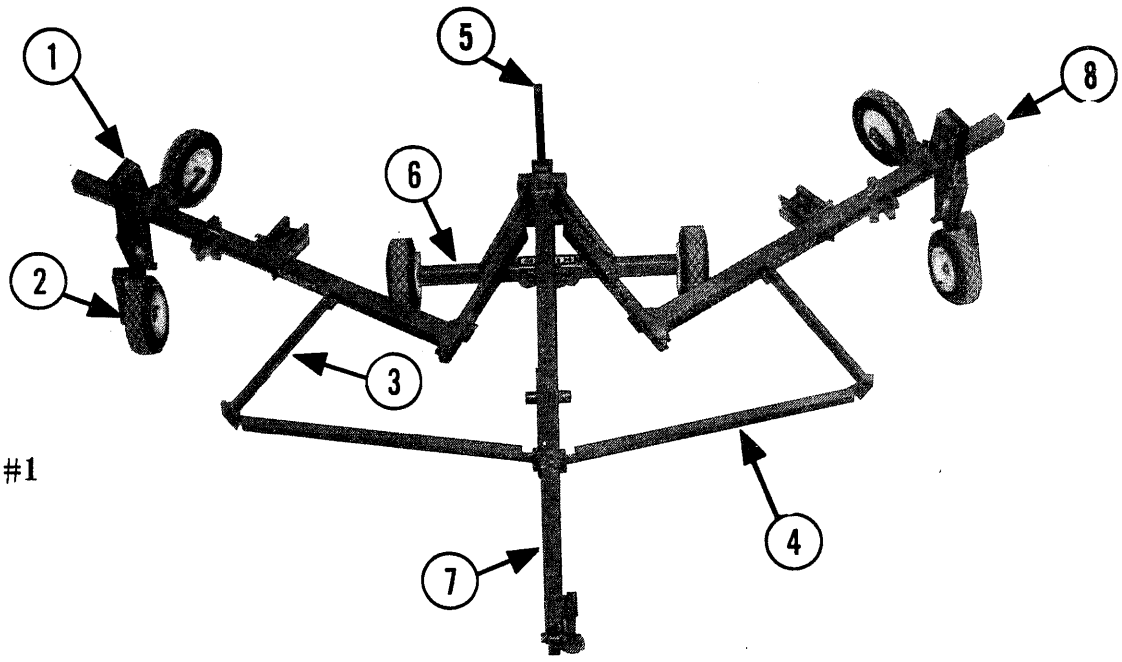
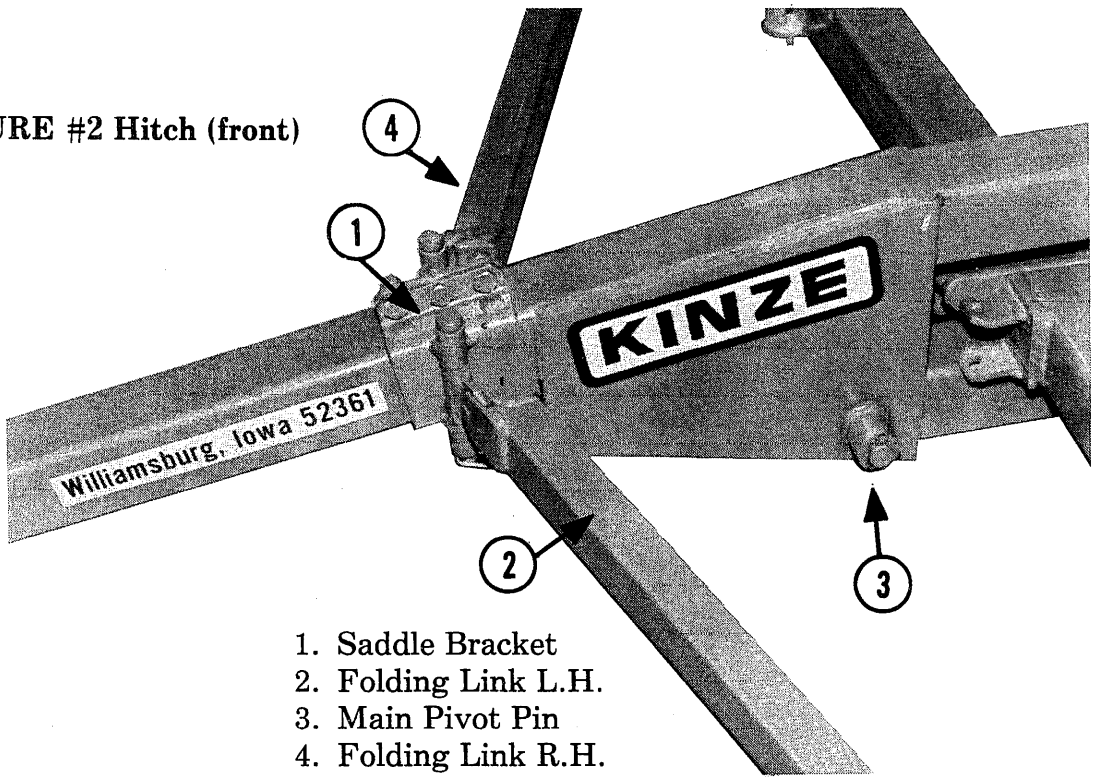


FIGURE #1

1. Transport Wheel Assembly R.H.
2. Spindle Assembly R.H.
3. Articulated Link
4. Folding Link
5. Trunion Cylinder
6. Rear Axle Assembly
7. Hitch Assembly
8. Wing Assembly L.H.

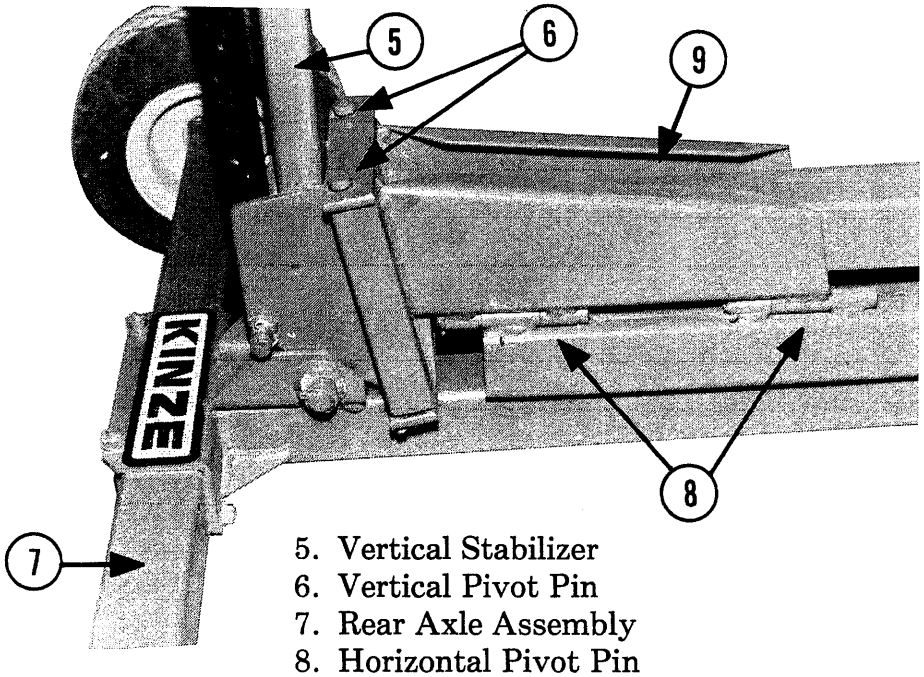
Terminology Continued

FIGURE #2 Hitch (front)



1. Saddle Bracket
2. Folding Link L.H.
3. Main Pivot Pin
4. Folding Link R.H.

FIGURE #3 Hitch (rear)



5. Vertical Stabilizer
6. Vertical Pivot Pin
7. Rear Axle Assembly
8. Horizontal Pivot Pin
9. Wing Gate Assembly

Assembly Of Hitch And Rear Axle

The hitch component is shipped completely assembled with both wing gates and trunion cylinder. The complete hydraulic proportionator system with all marker controls and hydraulic hoses are preassembled to speed set up.

The hitch must be centered on the rear axle as shown in Figure #4. The lift ring (Item 1) should be used to prevent damage to the hydraulic proportionator and hoses.

CAUTION: **The hitch component may scissor apart during loading or set up. Always use a safety chain to tie the hitch components together when lifting. NEVER stand near the hitch or place hands on the vertical stabilizer (Item 2) during lifting.**

Note the position of the rear axle hubs when bolted to the hitch component (Item 3).

FIGURE #4

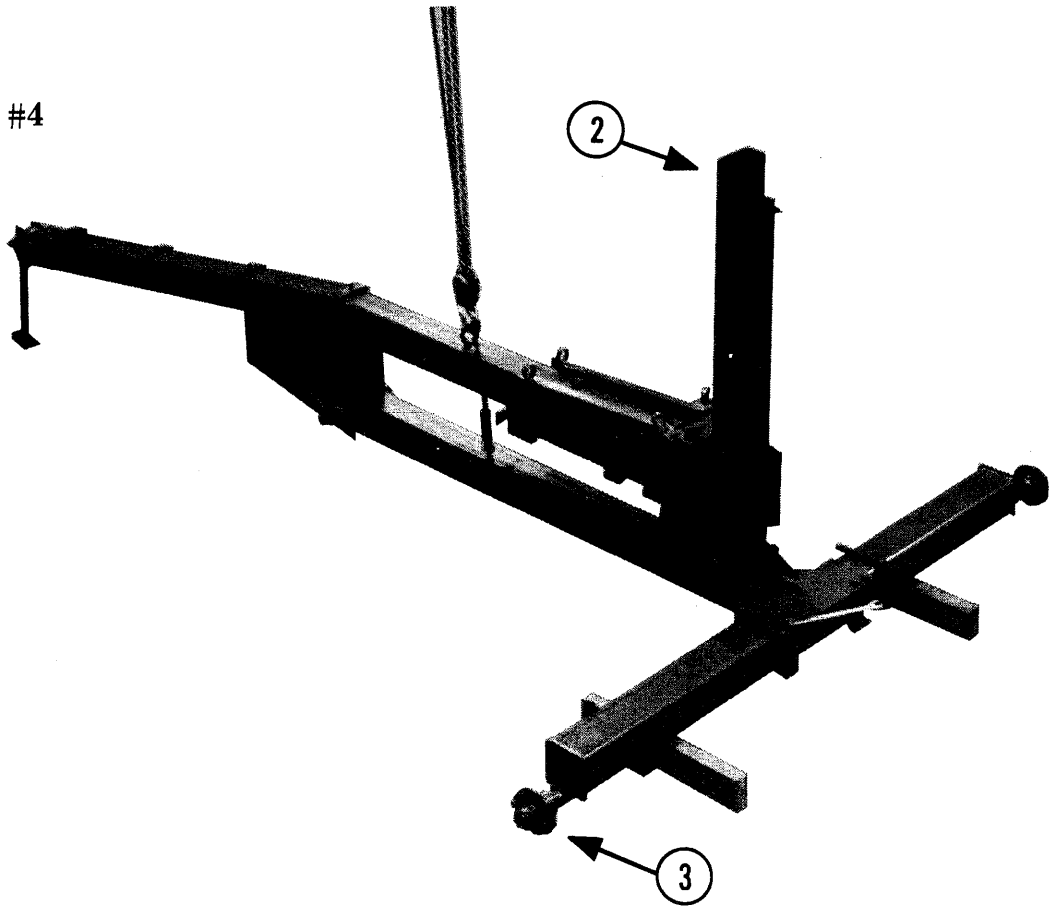
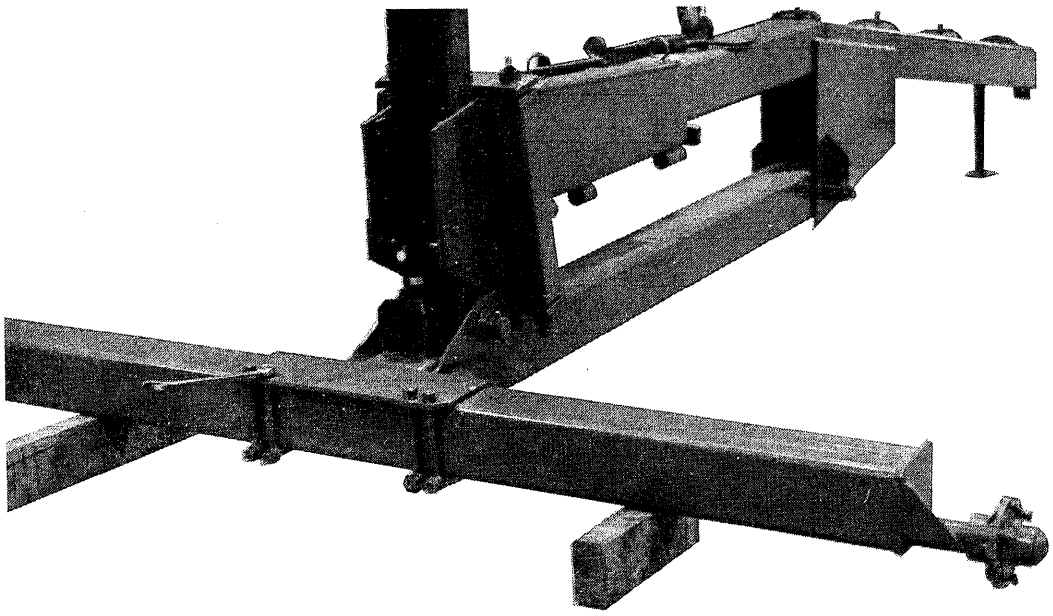


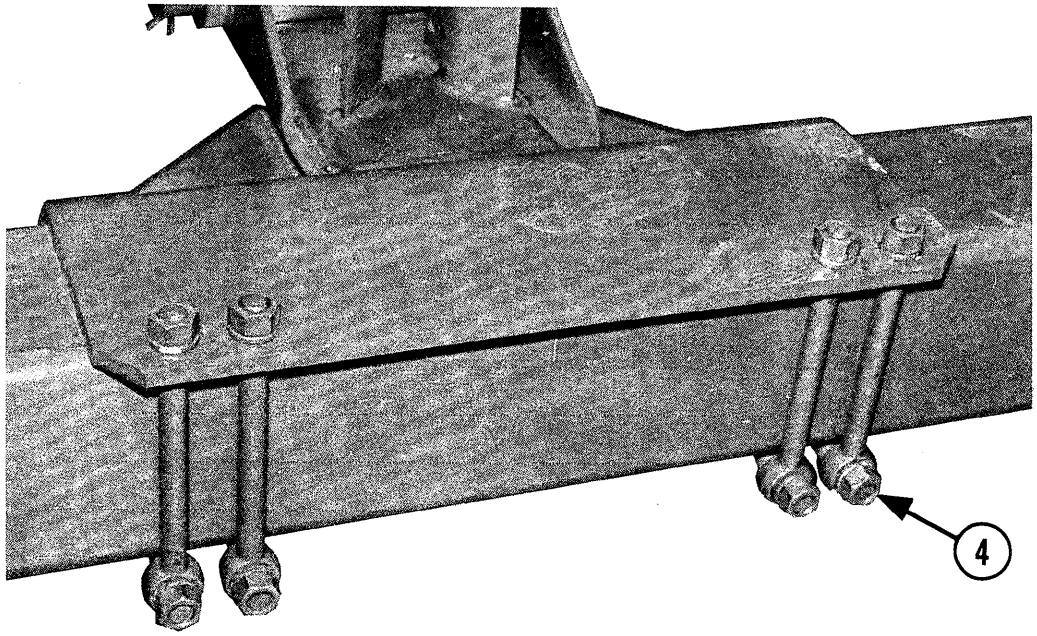
FIGURE #5



Fasten the hitch component to the rear axle with four (4) 3/4'' x 9'' eye bolts and four (4) 3/4'' x 9'' cap screws (Item 4).

The rear axle assembly is designed to straddle four narrow or wide rows when in the planting position. Special width axles can be built to any required row spacings. Both the wide row and narrow row axles can be interchanged on the same hitch component if necessary.

FIGURE #6



Tandem Axle Assembly

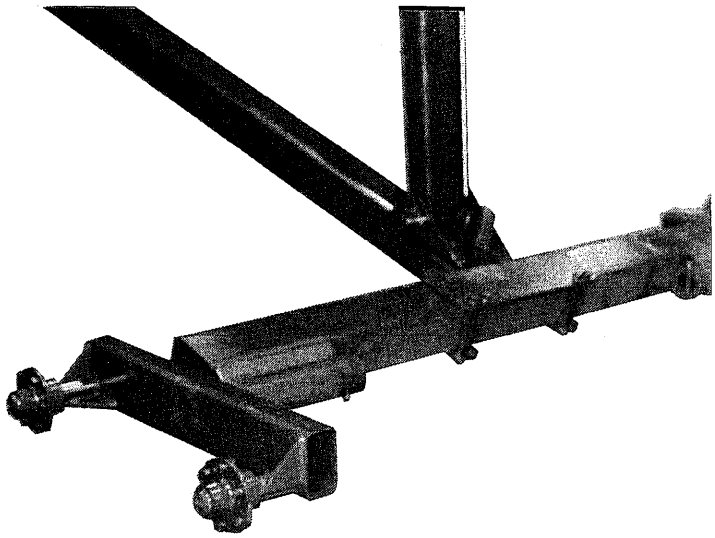


FIGURE #7

The tandem axle assembly is furnished as standard equipment on the 16-row wide and 24-row 30'' planter bars only.

The assembly of the hitch component and tandem axle is identical to the standard axle. It is fastened to the hitch with the same 3/4'' eye bolts and cap screws.

The two walking beam assemblies are fastened to the tandem axle with a retaining ring and one (1) 5/8'' x 5-1/2'' cap screw (Item 5).

NOTE: **The walking beam assemblies must be properly installed on the tandem axle. Figure #8 depicts an <u>improperly</u> installed assembly.**

The tandem axle assembly is offered as optional equipment on all size planter bars. This assembly can provide more stability in transport and greater flotation.

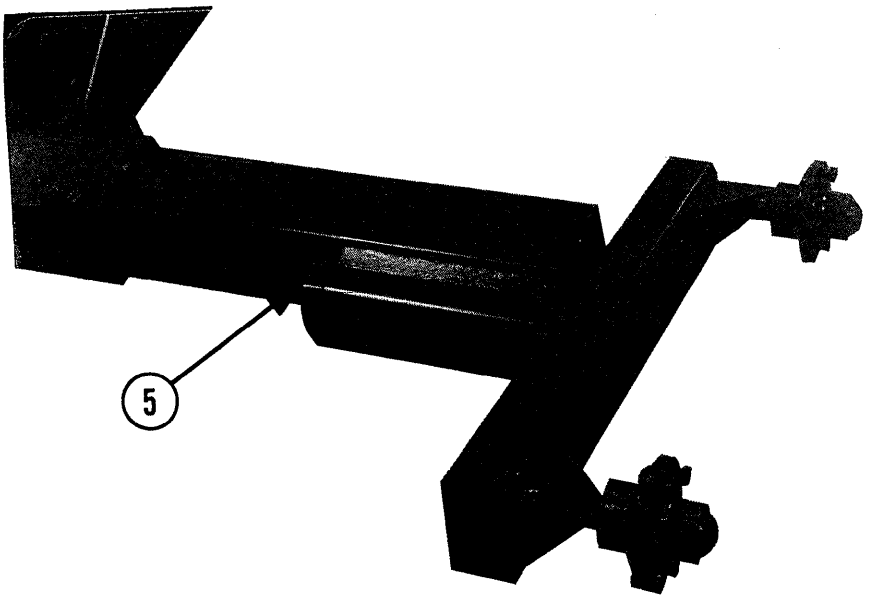
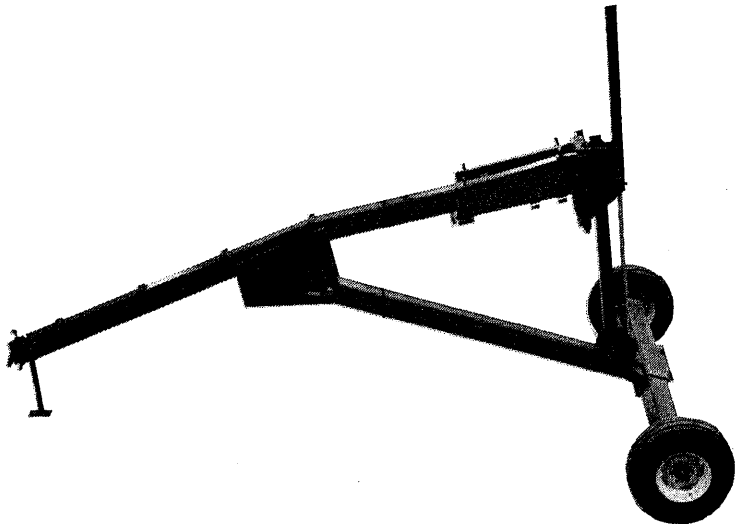


FIGURE #8

FIGURE #9



After the axle assembly has been installed on the hitch component, mount the 11L x 14″ tires to the axle as shown in Figure #9.

The hitch section should then be raised and locked in position by installing the safety pin (Item 6) in vertical stabilizer.

CAUTION: **Secure hitch assembly in upright position with safety pin prior to installing wing assembly. Always install safety pin prior to transporting, storing, or servicing of planter.**

After hitch component has been raised and safety pin installed, both wing gate assemblies (Item 7) should be rotated 45° to 90° prior to installing planter wing components.

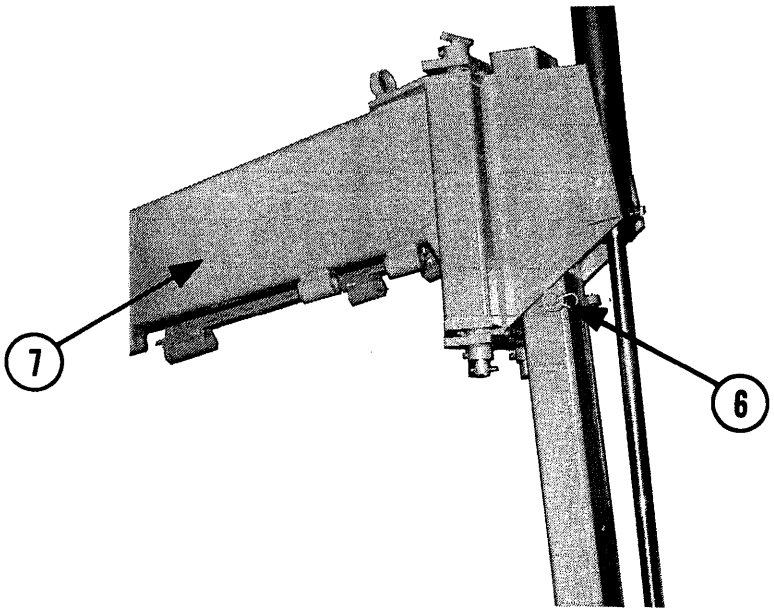


FIGURE #10

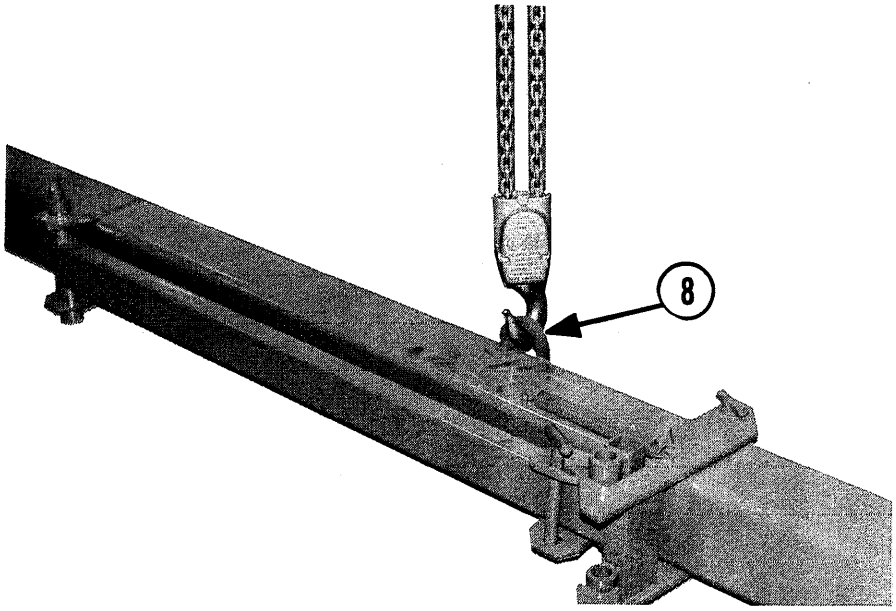


FIGURE #11

Wing component should be lifted into position with use of lift ring. Lift ring is positioned at the balance point of the wing (Item 8).

Articulated link assembly with wing latch and safety pin is preassembled on wing as shown in Figure #11.

Wing is positioned for mounting on hitch component as shown in Figure #12.

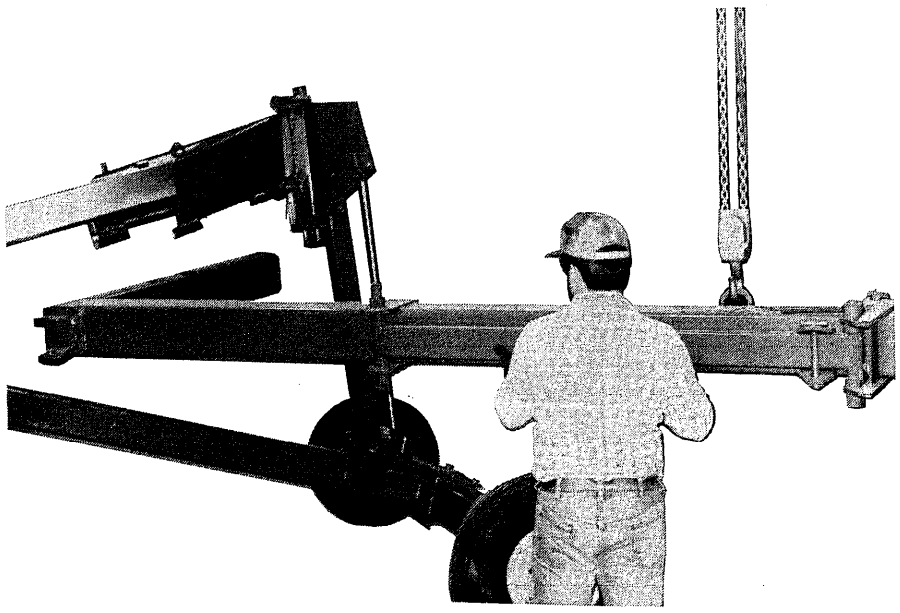
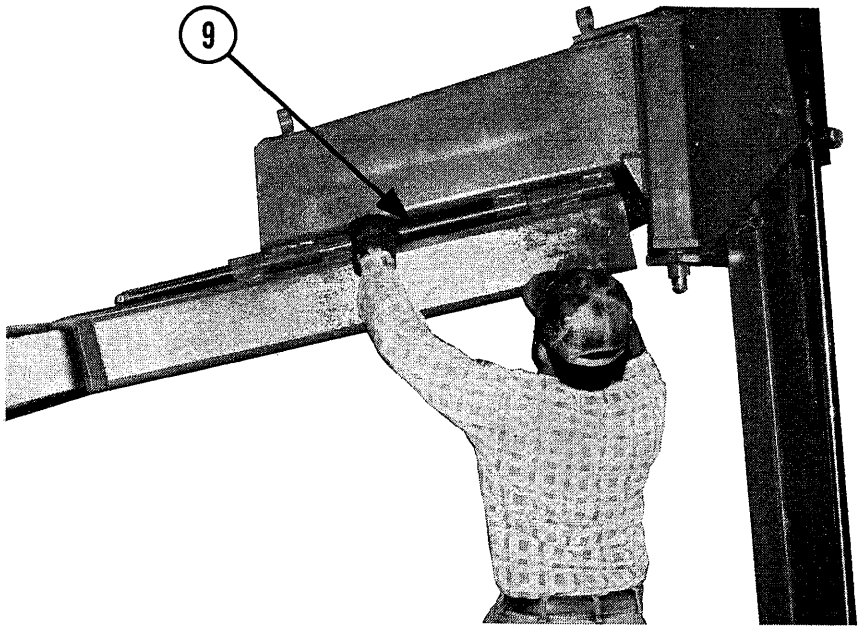


FIGURE #12

FIGURE #13



Wing assembly is attached to wing gate with horizontal pivot pin (Item 9).

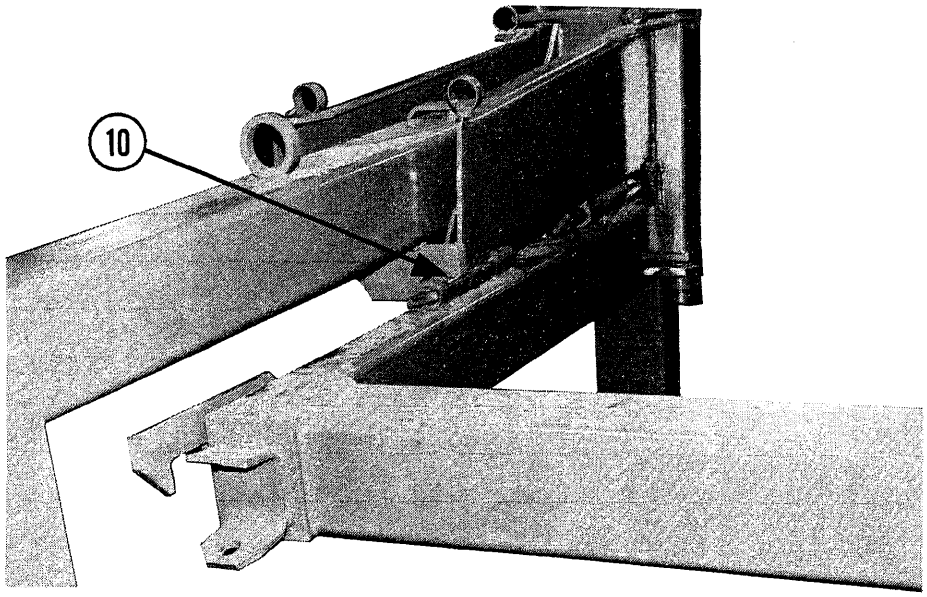
Four (4) 1-1/4'' x 12-3/4'' pins required per planter.

CAUTION: **Make certain that cotter pins are installed in horizontal pivot pins.**

Horizontal pivot pin bushings should be in contact with wing bumper stop (Item 10) when wing is in planting position.

IMPORTANT: **Due to the variations in some wing assemblies, the bumper stop may need to be relieved for proper clearance during initial set up.**

FIGURE #14



Installation Of Folding Link Assembly

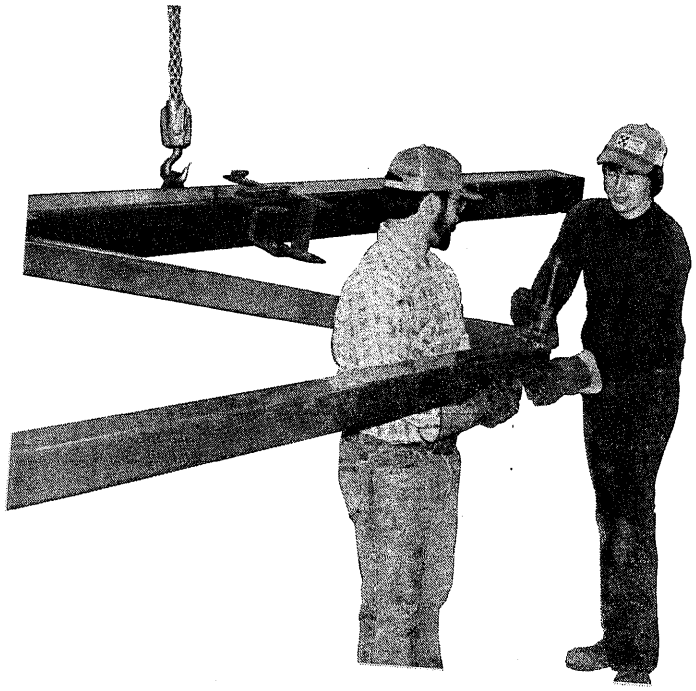


FIGURE #15

After both wing assemblies have been properly installed, the articulated link may be relieved in order to install folding link. Four (4) 1-1/4'' x 12-3/4'' pins are required for installation of folding link assembly.

Figure #16 depicts proper installation of folding link and articulated link assembly.

IMPORTANT: **Note the position of the hinge assembly on the folding link. The hinge on the outer end or wing end of the folding link is placed toward the planter bar (Item 11).**

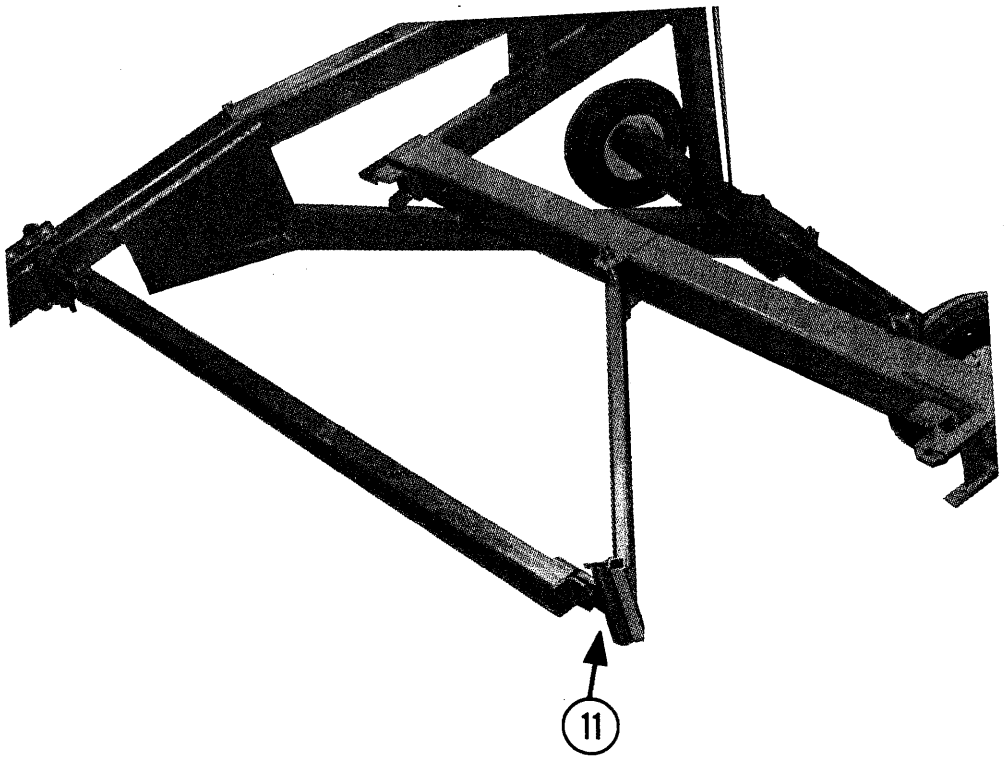
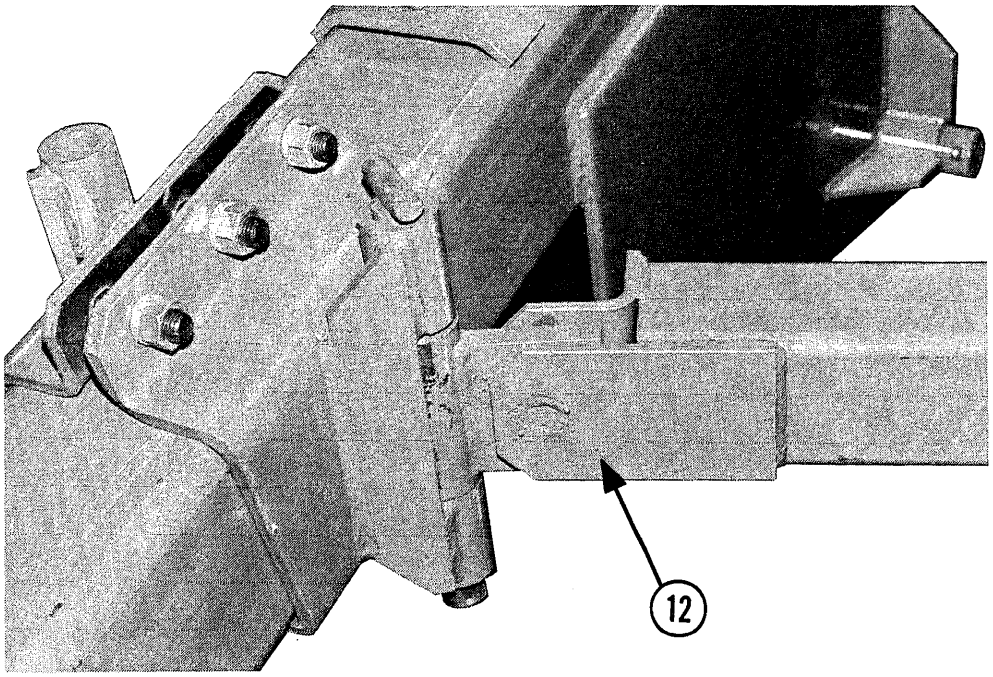


FIGURE #16

FIGURE #17



The hinge on the inner end or toward the saddle bracket (Item 12) is placed out toward the front of the planter hitch.

The saddle bracket is mounted with six (6) 3/4'' x 3'' cap screws.

NOTE: **Proper adjustment of the saddle bracket is very important. To determine the exact position, place the planter wings in the transport position. When properly adjusted, the wings will be parallel.**

Improper adjustment will result in a wider transport width than desired or possible collision of the row units when in the transport position.

FIGURE #18

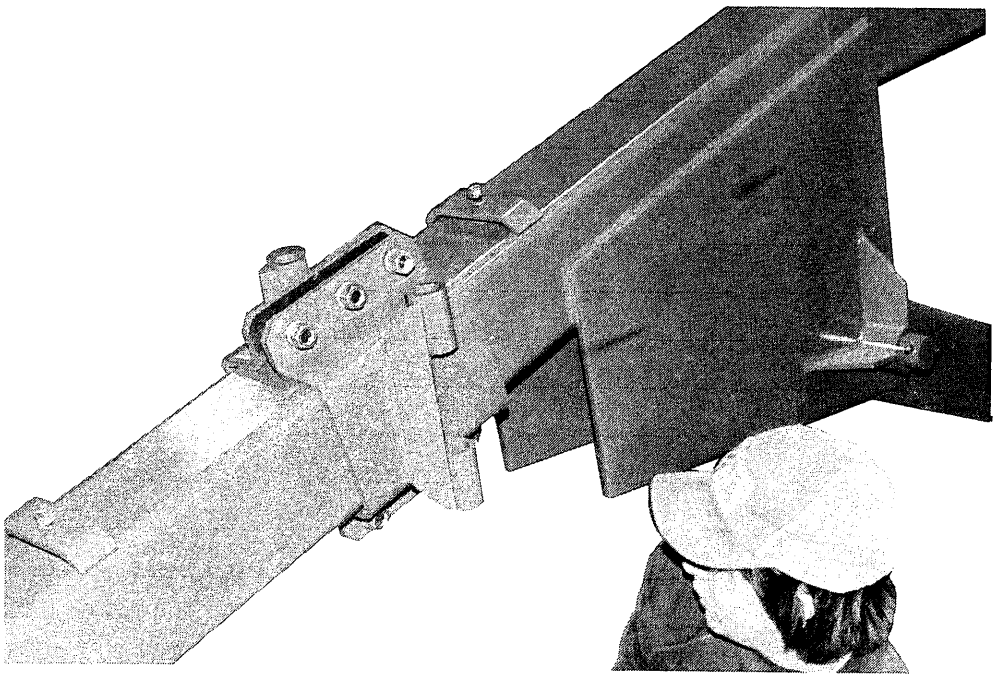
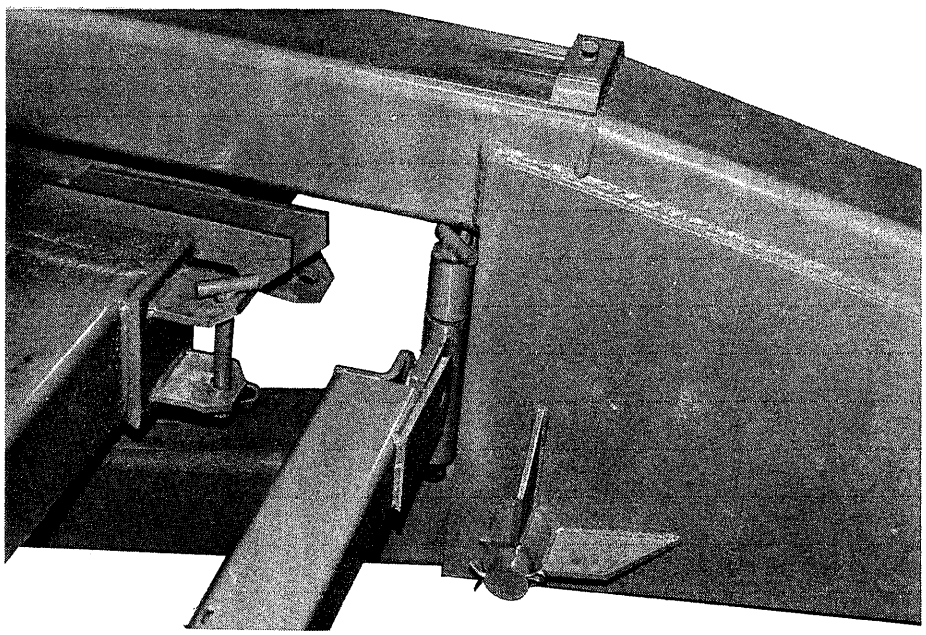


FIGURE #19



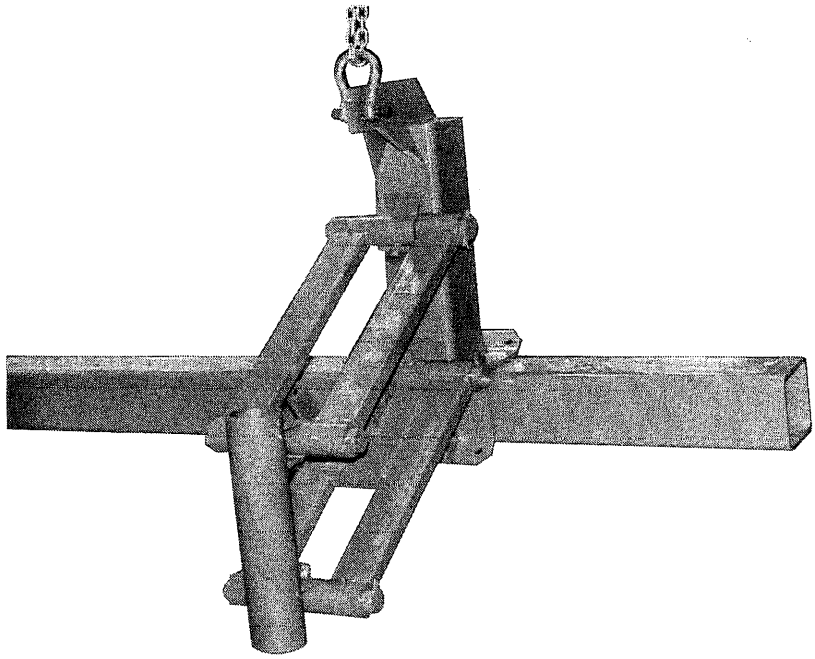
8-ROW 36'' & 38'' PLANTER BARS ONLY:

The saddle bracket assembly is not used for this model planter bar. The folding link is attached directly to the hitch assembly as shown.

Two (2) 1-1/4'' x 12-3/4'' pins are used to secure the folding link to the planter hitch.

Installation Transport Caster Wheel Assemblies

FIGURE #20



The caster wheel assembly is lowered into position as shown in Figure #20. A single caster wheel is used on the 8-row and 12-row planter bars. For most applications, the single caster wheel is centered between the last two rows on both the narrow and wide row planters. The caster wheel assembly is fastened to the drive gauge wheel bracket (Figure #22) with six (6) 3/4'' x 2-1/2'' cap screws.

Two (2) caster wheel assemblies are furnished for all 16-row 30'' and larger size planter bars. The outer caster wheel is centered between the last two rows on each wing assembly. The inner caster wheel is always positioned two row spacings in from the outer caster wheel assembly regardless of either wide or narrow row spacings. Both assemblies are fastened to the drive gauge wheel brackets (Figure #22) with six (6) 3/4'' x 2-1/2'' cap screws each.

FIGURE #21

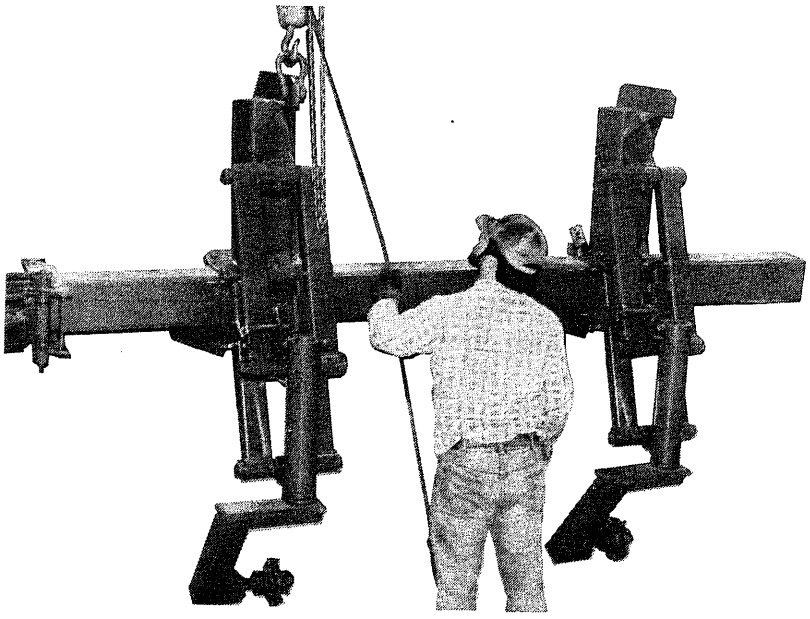
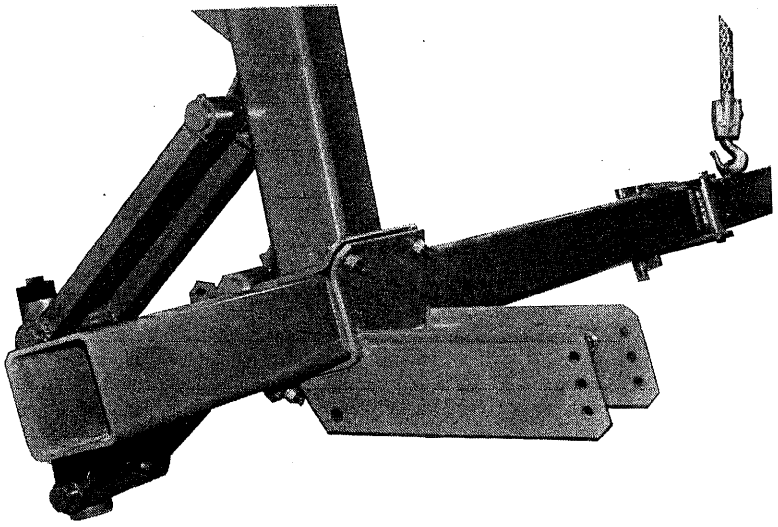


FIGURE #22



As explained, the drive gauge wheel bracket fastens to the caster wheel assembly with six (6) 3/4'' x 2-1/2'' cap screws.

5-bolt fork type drive hub assembly is mounted in drive gauge wheel bracket with two (2) 3/4'' x 2-1/2'' cap screws.

NOTE: **7:60 x 15'' drive tire and wheel must be mounted on hub before final assembly in drive gauge bracket.**

IMPORTANT: **Drive sprocket must be placed toward center of planter on LEFT wing of planter bar.**

Drive sprocket is mounted away from center of planter on RIGHT wing of planter bar.

The drive gauge wheel and hub assembly can be mounted in any of three positions to obtain proper heighth of planter wing assembly. Normally, the drive gauge hub assembly will be mounted in the center hole.

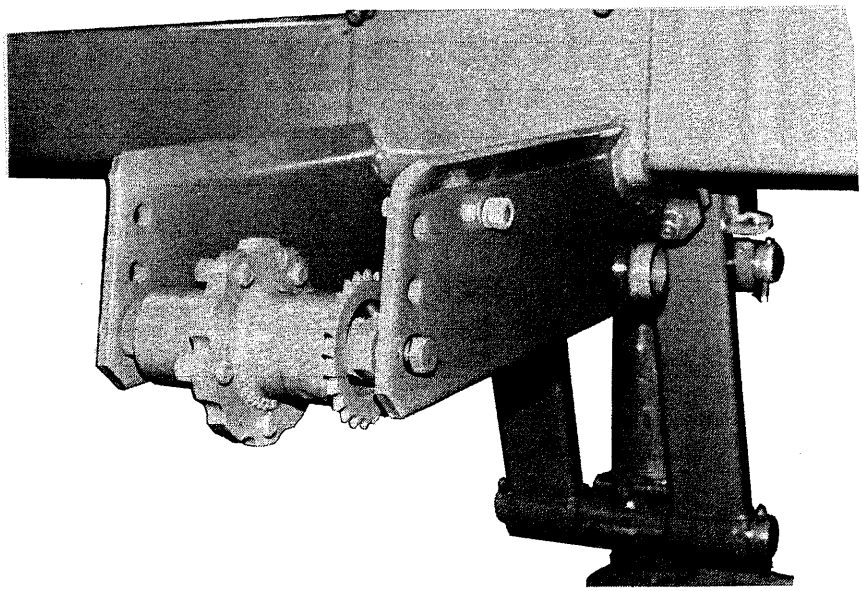
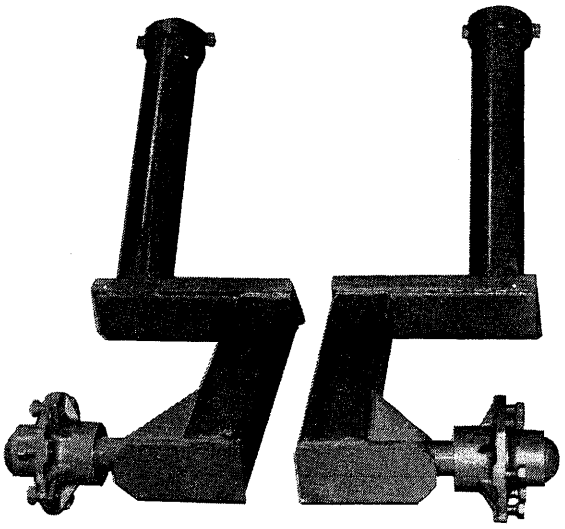


FIGURE #23

FIGURE #24



Prior to the assembly of the caster wheel spindles, it is very important to determine which spindle is used on the left and right hand sides of the planter bar. Figure #24 shows both a left hand and right hand spindle and hub assembly with retaining ring and 5/8'' x 5-1/2'' cap screw.

Once again, it should be noted that for our purposes the left hand and right hand side is determined by standing at the rear of the planter bar and facing the direction of travel when in use.

Figure #25 depicts a typical 12-row 30'' planter bar in the transport position. The position of the spindle assemblies should be noted. Improper installation of the spindles would result in a much wider transport width.

FIGURE #25

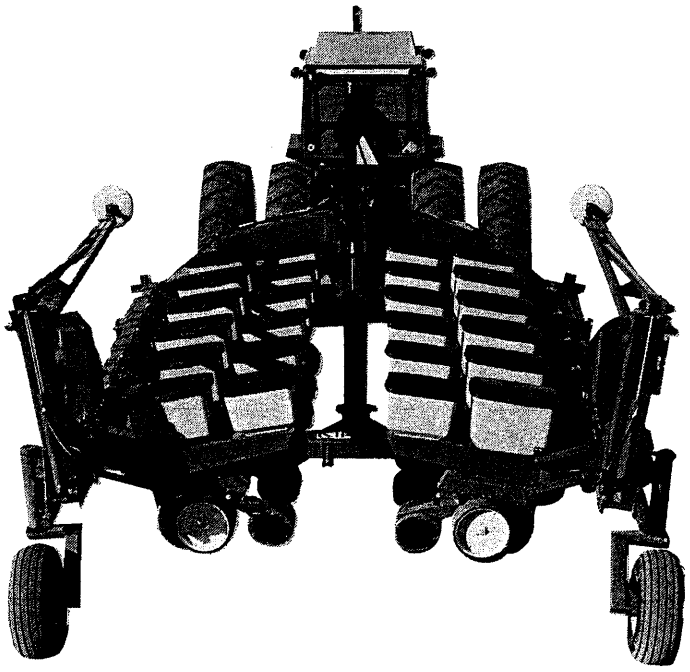
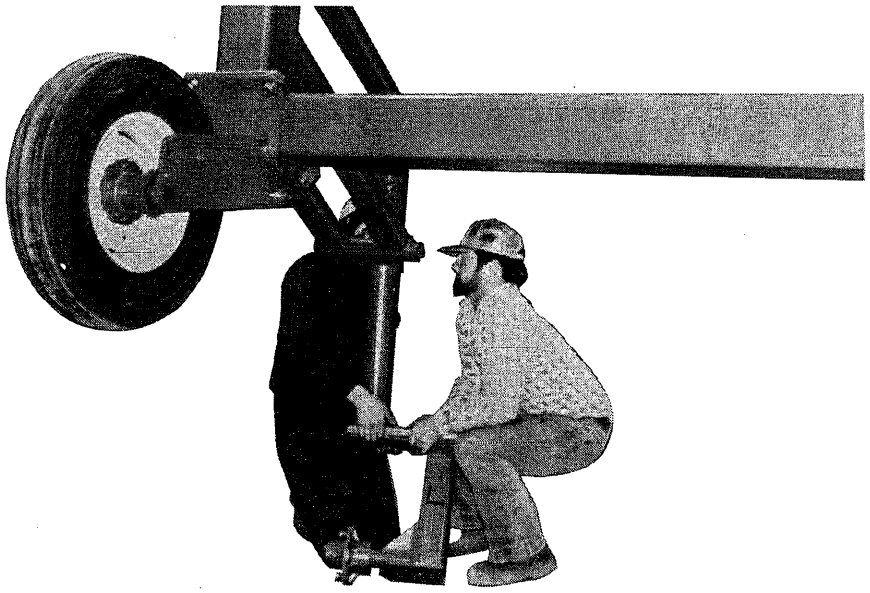
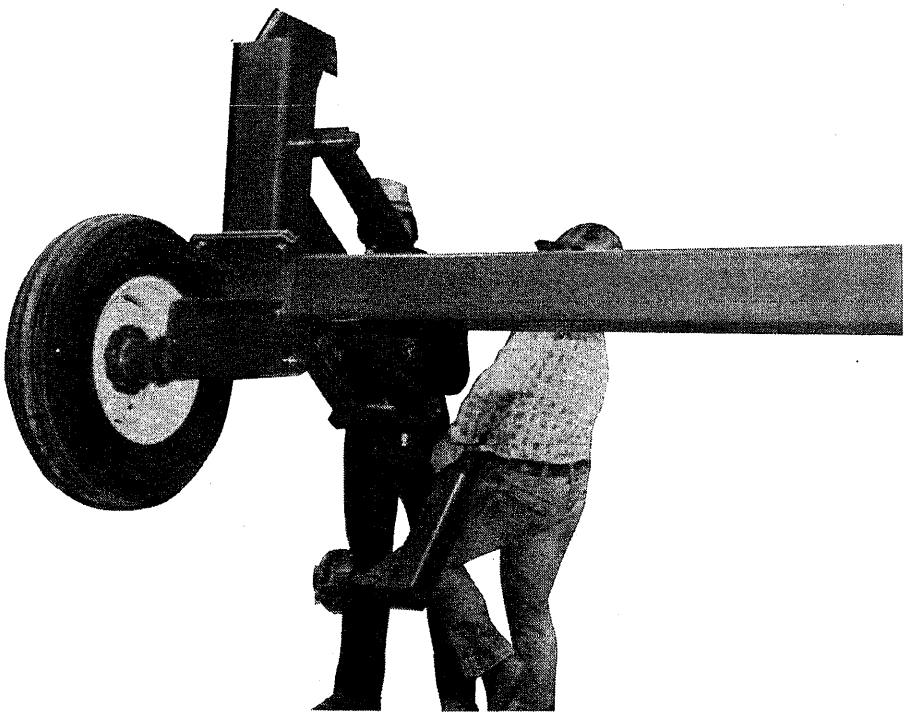


FIGURE #26



The spindle assembly is inserted into the wheel tower as shown in Figures #26 and #27.

FIGURE #27



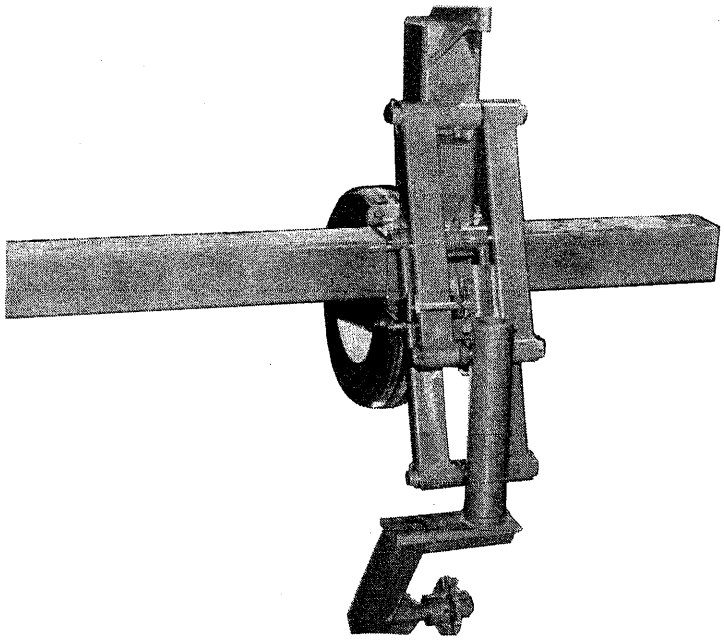


FIGURE #28

Figures #28 and #29 show a properly installed spindle assembly and the retaining ring with the 5/8'' x 5-1/2'' cap screw (Item 13).

Figure #29 (Item 14) depicts the safety pin after it is installed in the caster wheel assembly.

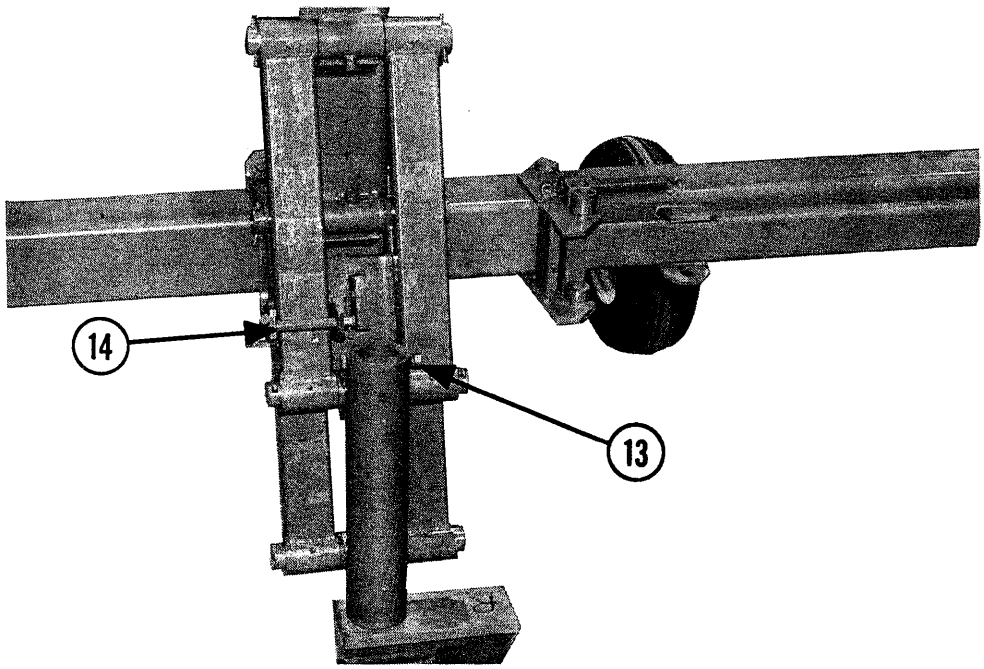


FIGURE #29

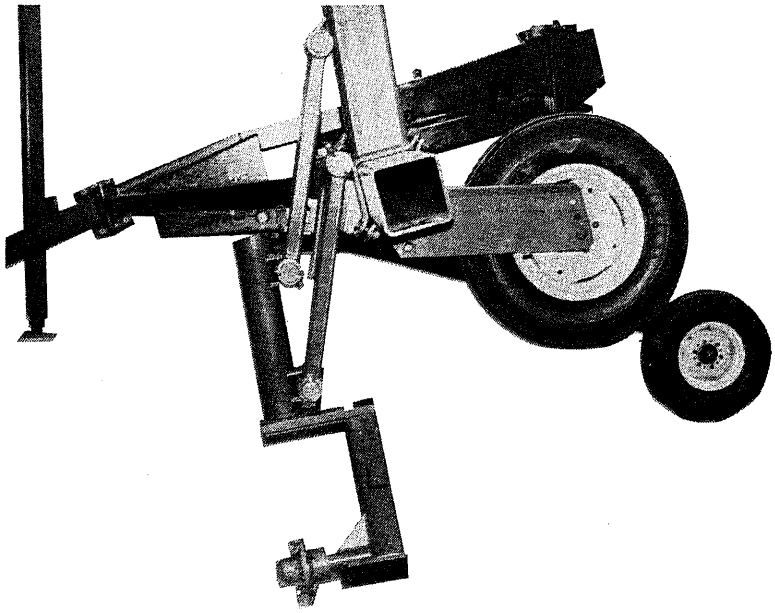


FIGURE #30

Figures #30 and #31 depict the properly installed spindle assembly(s) for various size Rear Folding Planter Bars.

Once the spindle has been installed, the 11L x 14" tire and wheel can be mounted.

After the transport caster wheel assembly and spindle has been properly secured to the planter wing, the safety pin on the caster wheel can be used to support the wing assembly.

The assembly of the main planter frame and wings is complete with the installation of the caster wheels. At this point, the planter bar may be folded or lowered into the planting position prior to mounting the planting units, hydraulics, and market assemblies.

CAUTION: Make certain that all cap screws are properly tightened and cotter pins have been installed before removing support stands used in set up or transporting of planter bar.

WARNING: Make certain that spindle assemblies on caster wheels have been lubricated prior to transport.

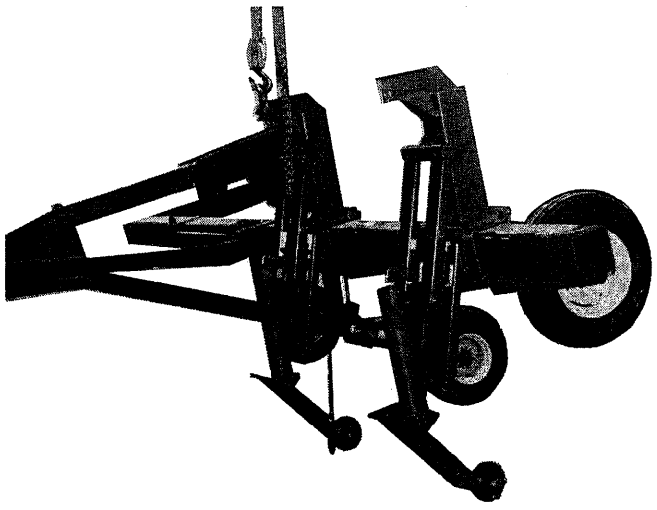


FIGURE #31

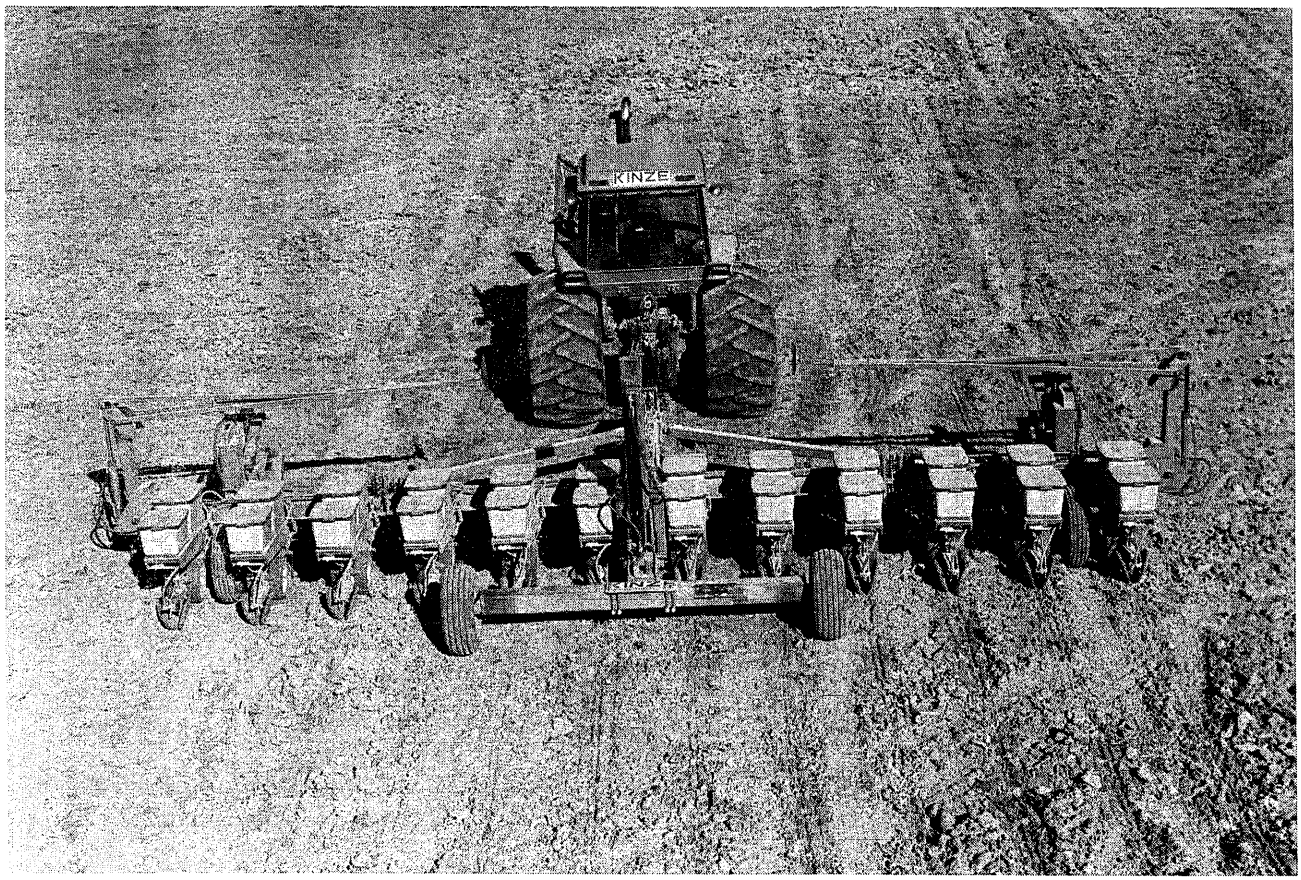
Assembly Of Planting Units And Attachments

Separate manuals for the different brands and models of planting units should be consulted prior to their installation on the Rear Folding Planter Bar.

The Kinze Rear Folding Planter Bar will accept most types of row units that do not exceed an overall dimension of 60 inches maximum. The main planter frame is constructed of 7-inch square tubing to accommodate some of the more popular types of row units. With proper lead time, special mounting brackets can be provided to adapt row units that are normally not used on 7-inch square planter frames.

The installation of the John Deere Max-Emerge Planting Units with appropriate drive mechanisms will be explained in the following.

FIGURE #32



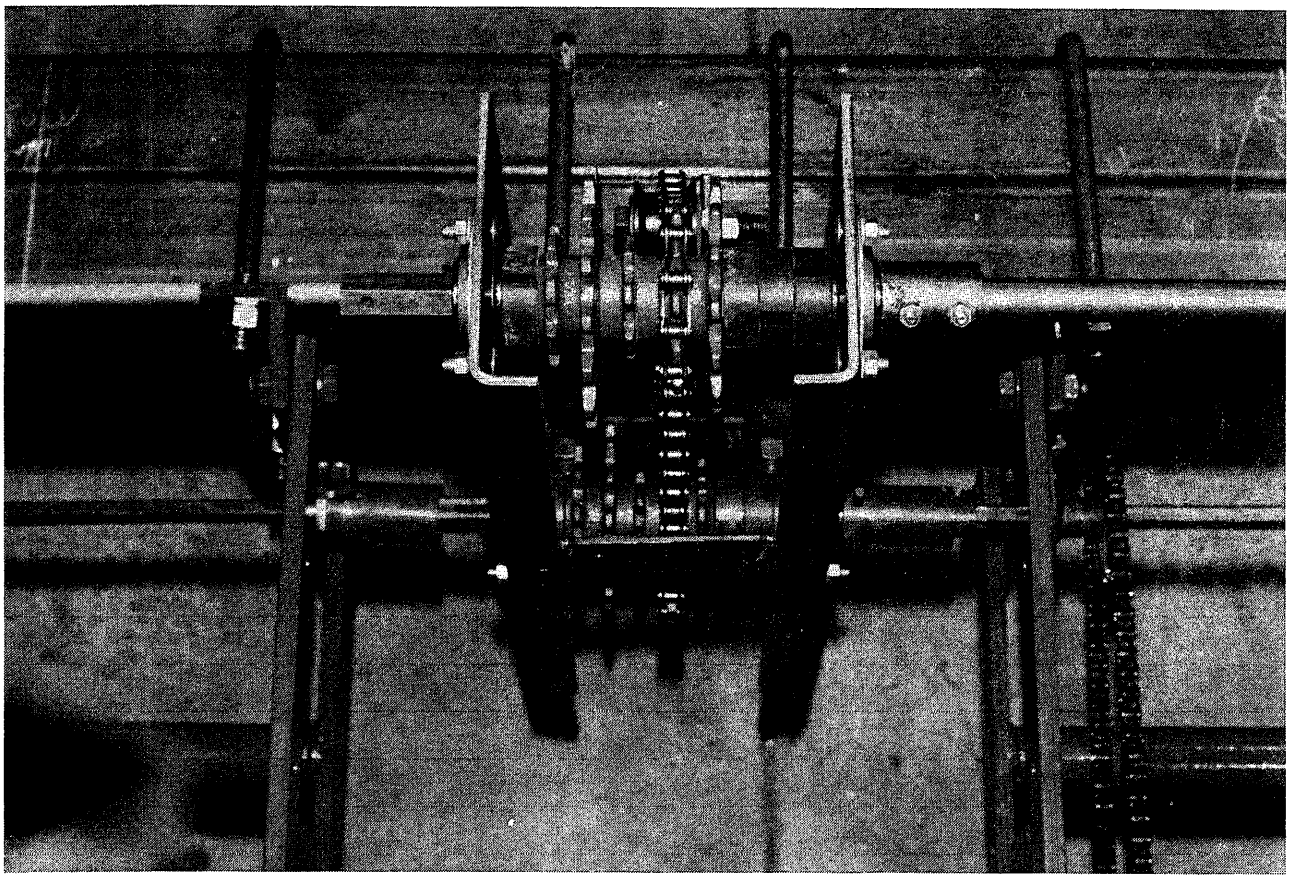


FIGURE #34

NOTE: When Optional "Point Row" clutches are used, it is necessary to determine left and right transmissions.

The seed drive transmission is shipped preassembled with the proper combinations of sprockets for the John Deere Max-Emerge Units. The Transmission is mounted to the back side of the planter wing and is centered between two row units as shown in Figure #34.

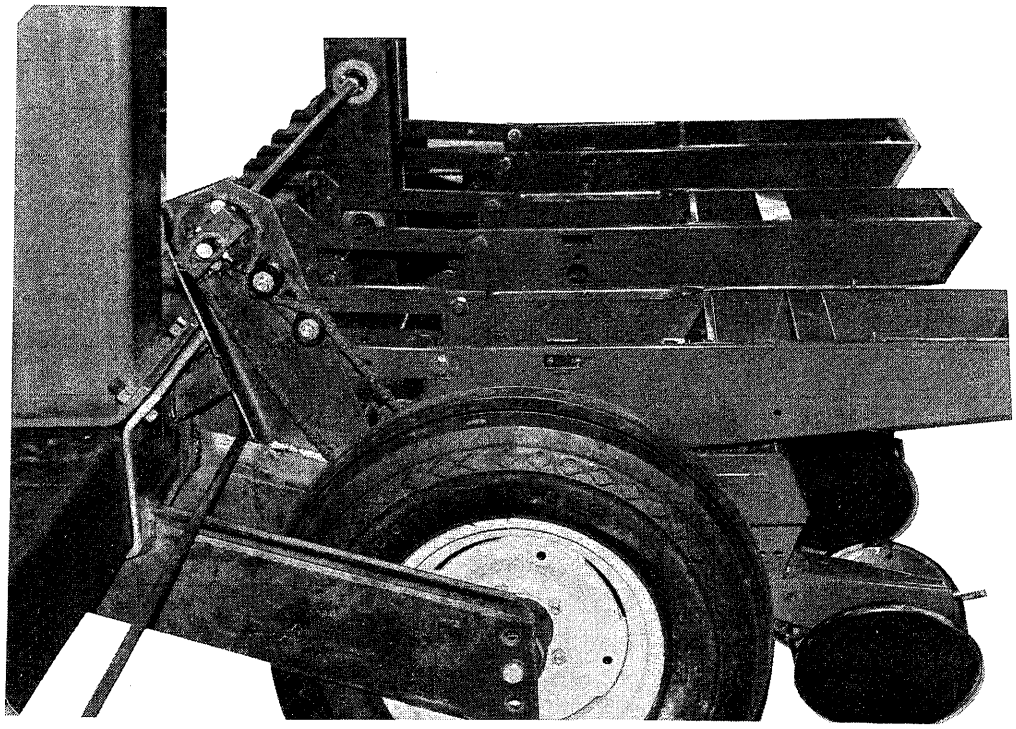
Refer to the chart below for the proper location of the seed drive transmission.

Planter Size	Mount transmission between following rows on each wing
8-row 30''	2 & 3
8-row Wide	2 & 3
12-row 30''	3 & 4
12-row Wide	3 & 4
16-row 30''	3 & 4
18-row 30''	5 & 6
16-row Wide	4 & 5
24-row 30''	6 & 7

Row units are counted from the center of the planter bar first.

The caster wheel assemblies with drive wheels should already be properly located on the planter wing assemblies as explained in Figures #20 and #21.

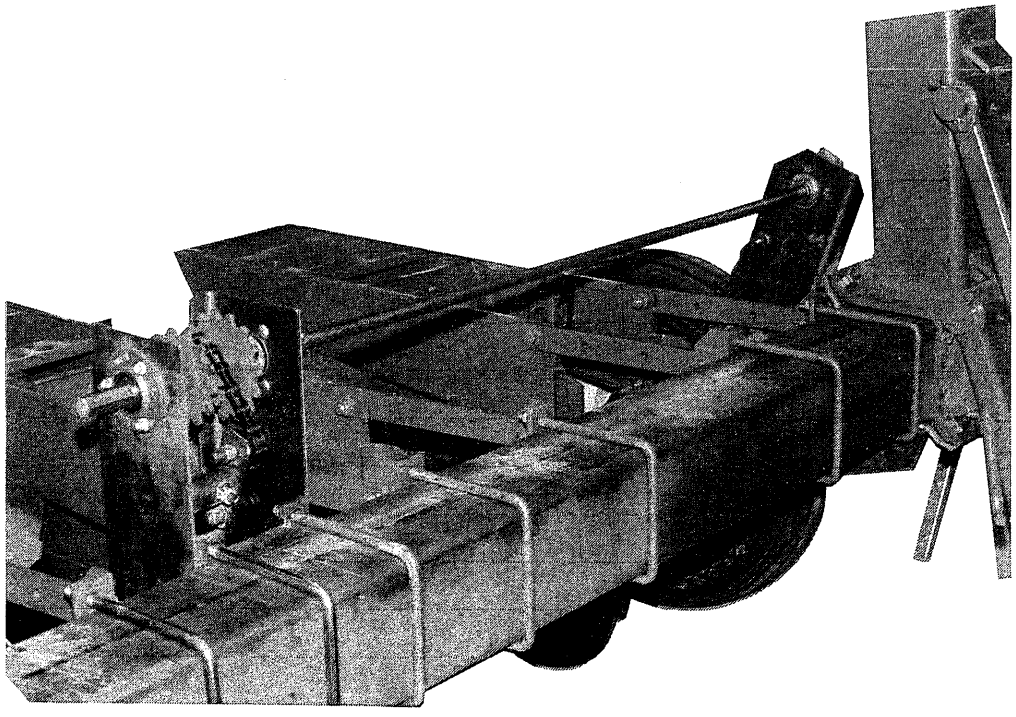
FIGURE #35



After the seed drive transmission has been properly installed, the 7/8 inch common shaft may be connected between the drive gauge wheel assembly(s) and the transmission.

The common shaft has been precut and drilled to the correct length for each individual planter bar.

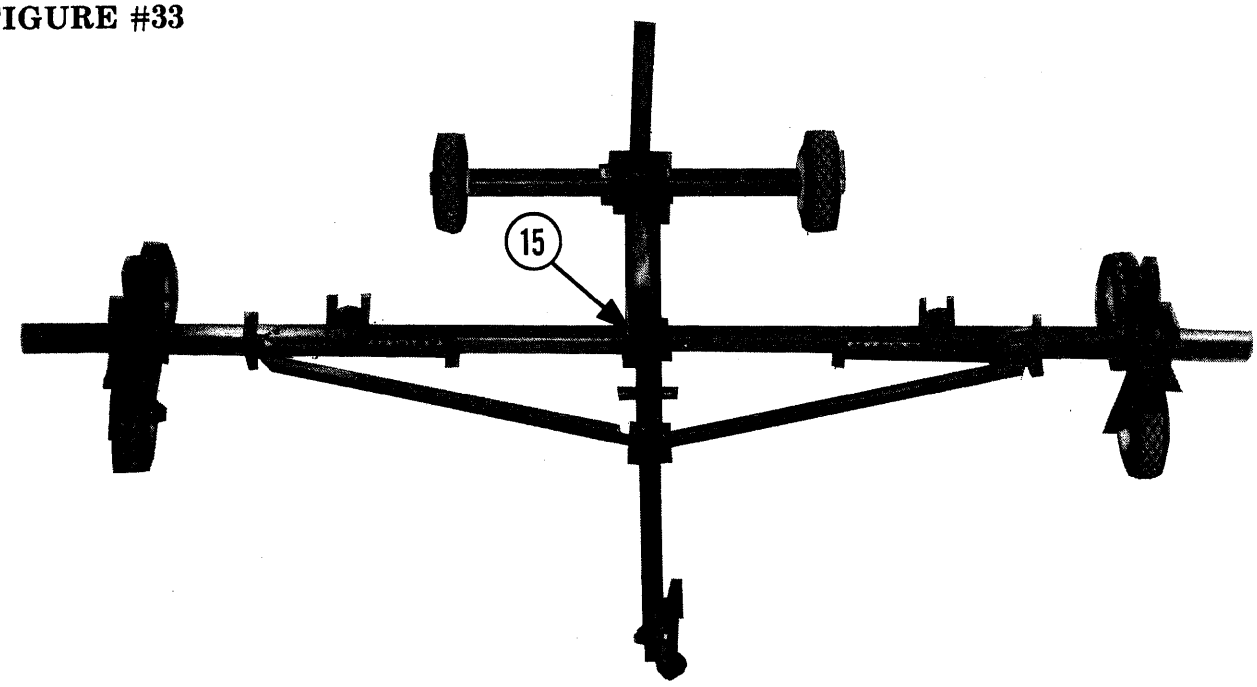
FIGURE #36



The unique folding feature of the Kinze Rear Folding Planter Bar requires two entirely separate drive mechanisms when the planter bar is used with John Deere Max-Emerge Units. Each half or wing assembly of the planter is furnished with its own separate drive gauge wheel assembly(s), common shaft, transmission, and drill shafts.

After the planter bar has been assembled and lowered into the planting position, the wing assemblies should be measured and marked to show the exact location of the individual row units. The easiest way to determine the exact location of the row, or center of row, is to place both wings in their actual planting position. The exact center of the planter bar can be determined by measuring from the center of the main frame or hitch component (Point A). This hitch component measures 7 inches in total width. The exact center would be determined by measuring 3-1/2 inches from either side. From this location, the first row center on a standard 30 inch planter bar would be located 15 inches to both the left and right side. The wide row planters would be either 18 inches or 19 inches. The rest of the row centers can then be marked as required down the entire length of the planter wings.

FIGURE #33



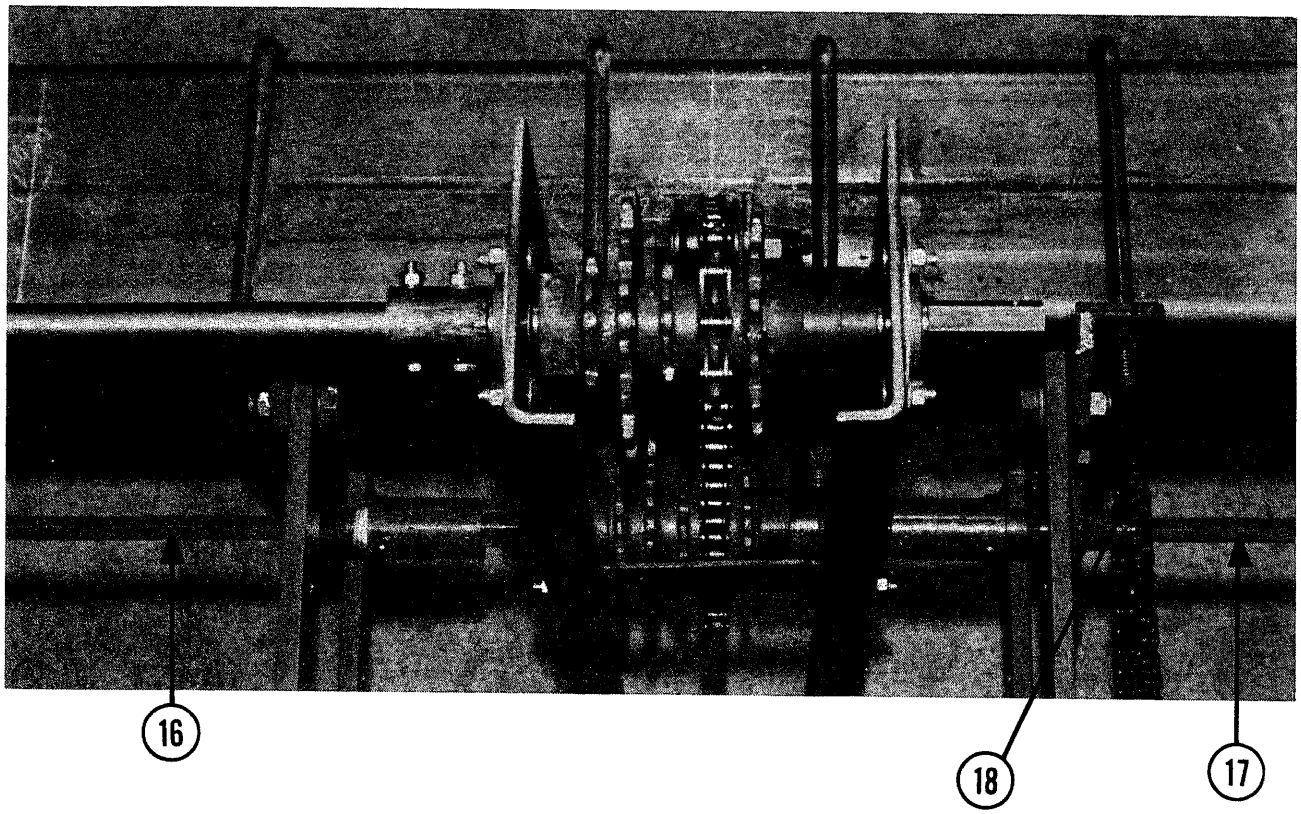


FIGURE #37

The 9/16-inch diameter hex unit drill shaft should be installed (Item 16 and Item 17).

The individual unit drive sprockets (Item 18 and Item 19) are furnished with the John Deere Max-Emerge Units. Refer to the John Deere operator's manual for proper installation of unit drive sprockets.

IMPORTANT: **On certain planter bars, the seed drive transmission is not centered on the planter wing. This will create differences in the 9/16-inch hex drill shafts. Appropriate drill shafts are precut and drilled to match each individual planter bar.**

FIGURE #38

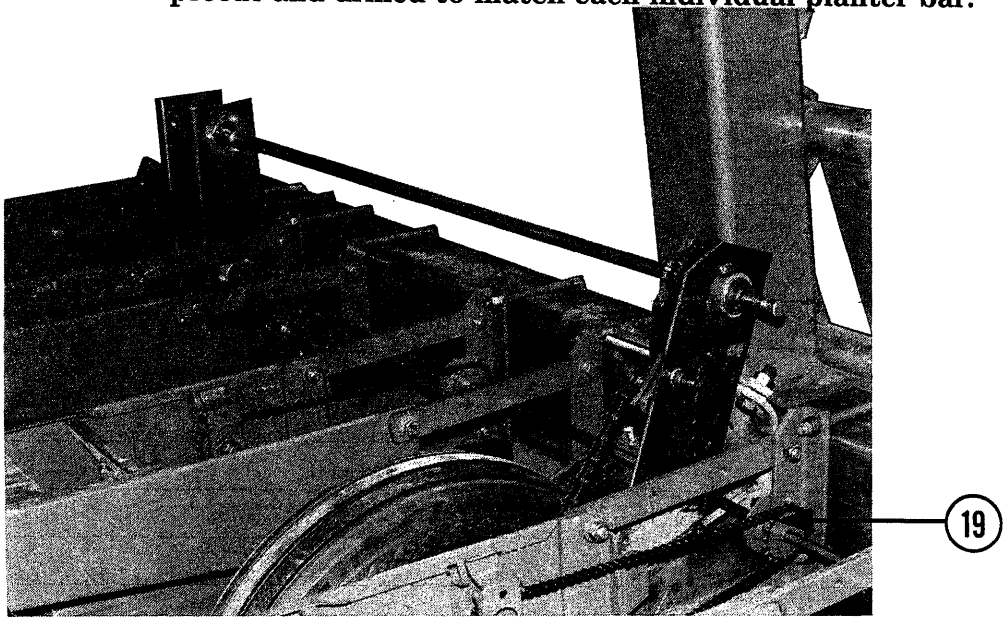


FIGURE #38-A

9/16'' HEX DRILL SHAFTS

Planter Size	Left Wing		Right Wing	
	Inner	Outer	Inner	Outer
8-row 30''	37''	47''	47''	37''
8-row Wide	48''	60''	60''	48''
12-row 30''	67''	77''	77''	67''
12-row Wide	86''	98''	98''	86''
16-row 30''	66''	137''	77''	127''
18-row 30''	127''	107''	137''	98''
16-row Wide	127''	137''	137''	127''
20-row 30''	127''	137''	137''	127''
24-row 30''	157''	167''	167''	157''

7/8'' COMMON SHAFTS

Planter Size	Left Wing	Right Wing	Wheel to Wheel Shaft
8-row 30''	55''	65''	--
8-row Wide	33''	43''	--
12-row 30''	55''	65''	--
12-row Wide	71''	81''	--
16-row 30''	55''	65''	60'' both sides
18-row 30''	25''	35''	60'' both sides
16-row Wide	33''	43''	76'' both sides
20-row 30''	55''	65''	60'' both sides
24-row 30''	85''	95''	60'' both sides

NOTE: Special compact marker assembly requires extra length common shafts.

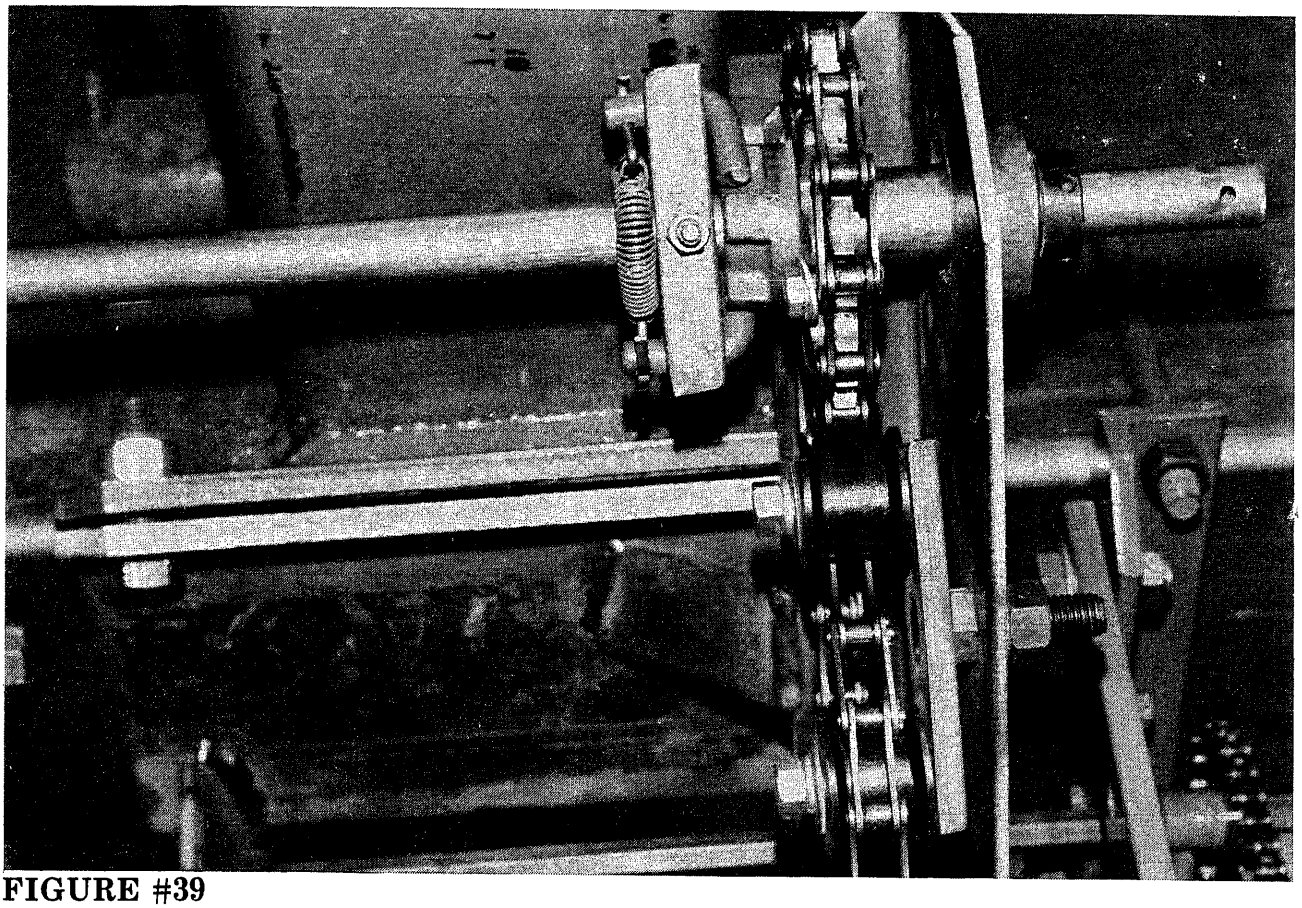


FIGURE #39

Figures #39 and #40 show the proper installation of the drive chain and ratchet clutch assembly.

The ratchet clutch assembly is used on all planters that require two drive gauge wheels per planter wing.

On planters that use a single drive gauge wheel per wing, the ratchet clutch assembly is required when the optional point row clutch mechanism is not used.

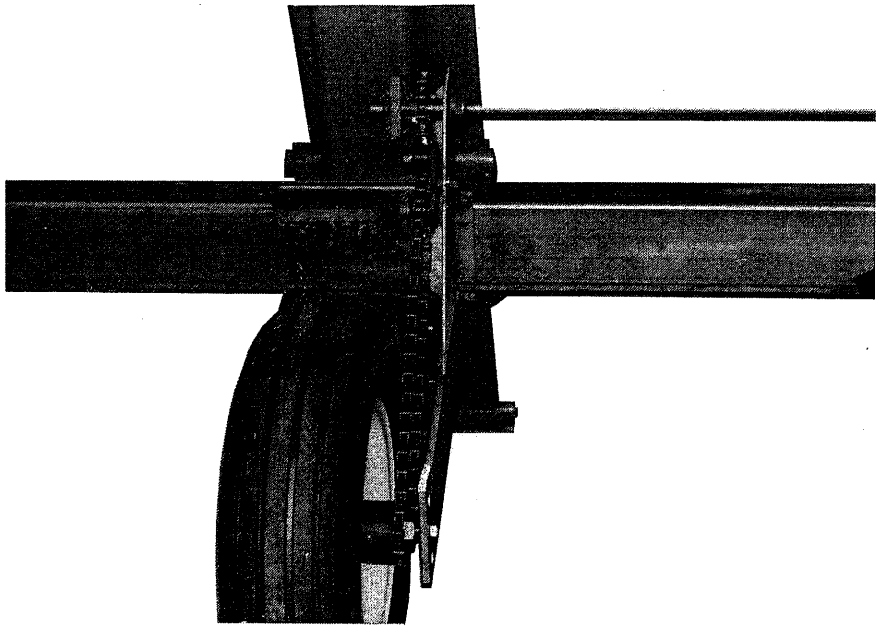
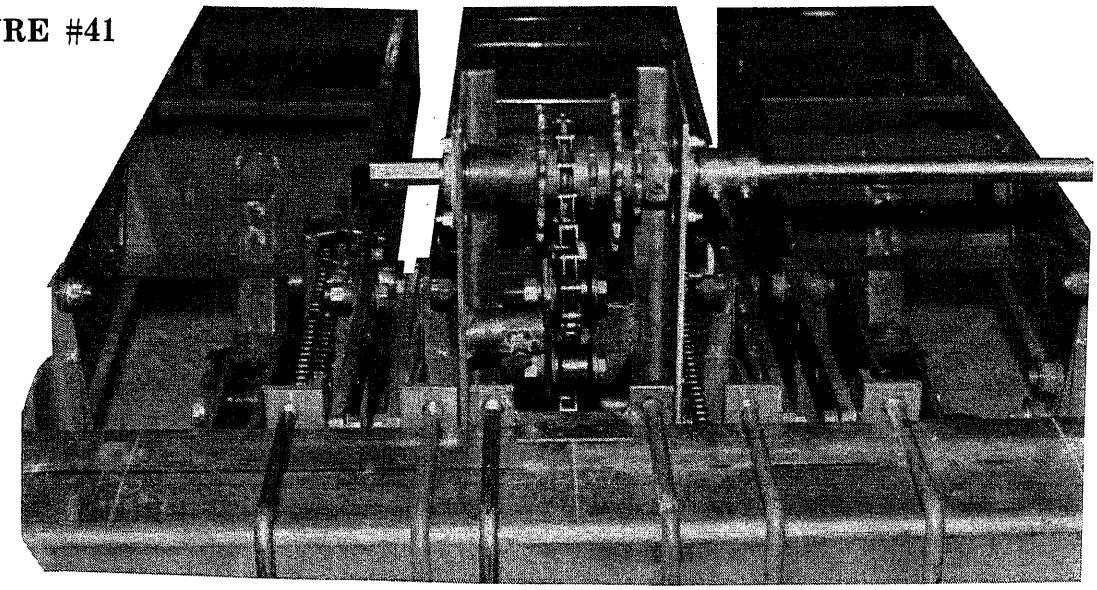


FIGURE #40

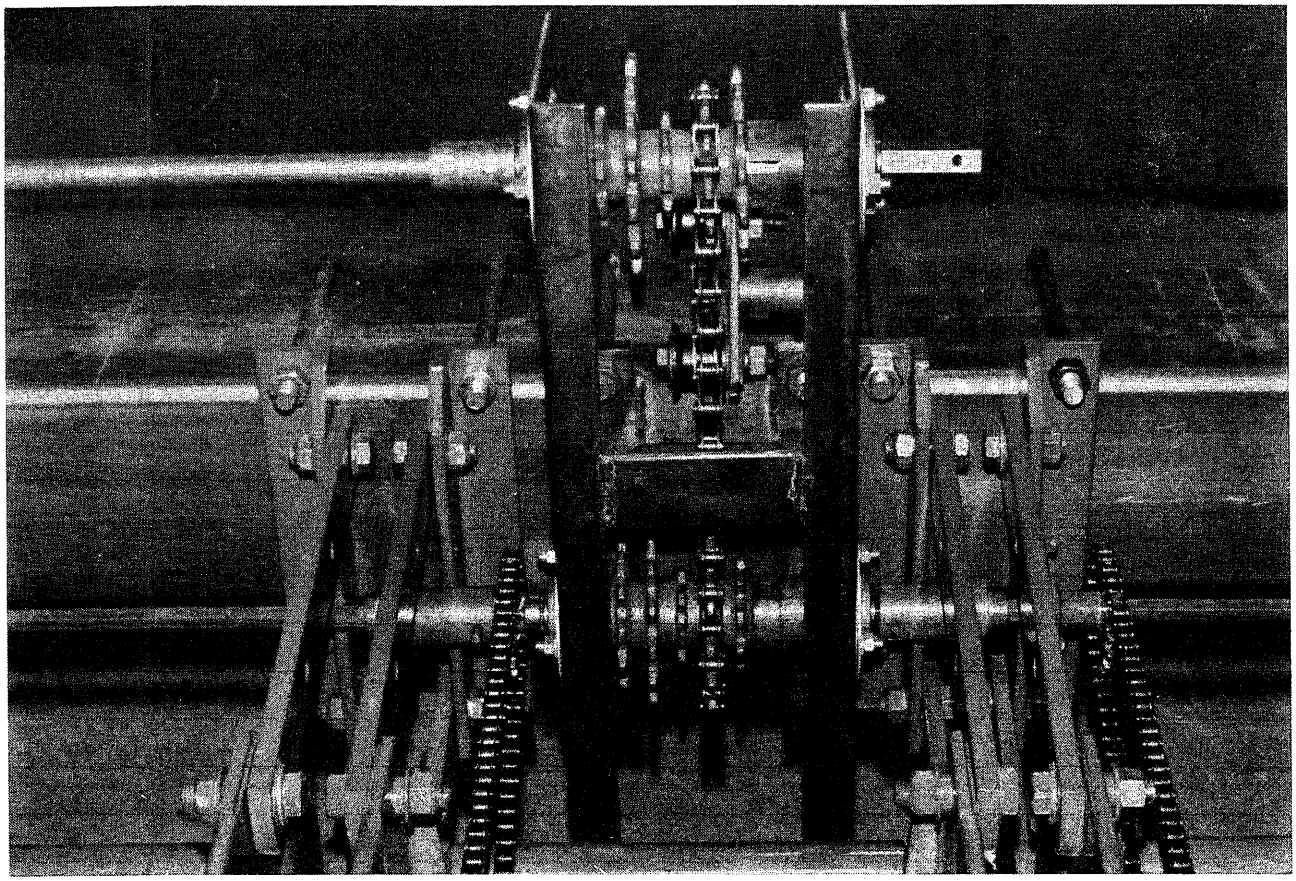
Special Drive Applications

FIGURE #41



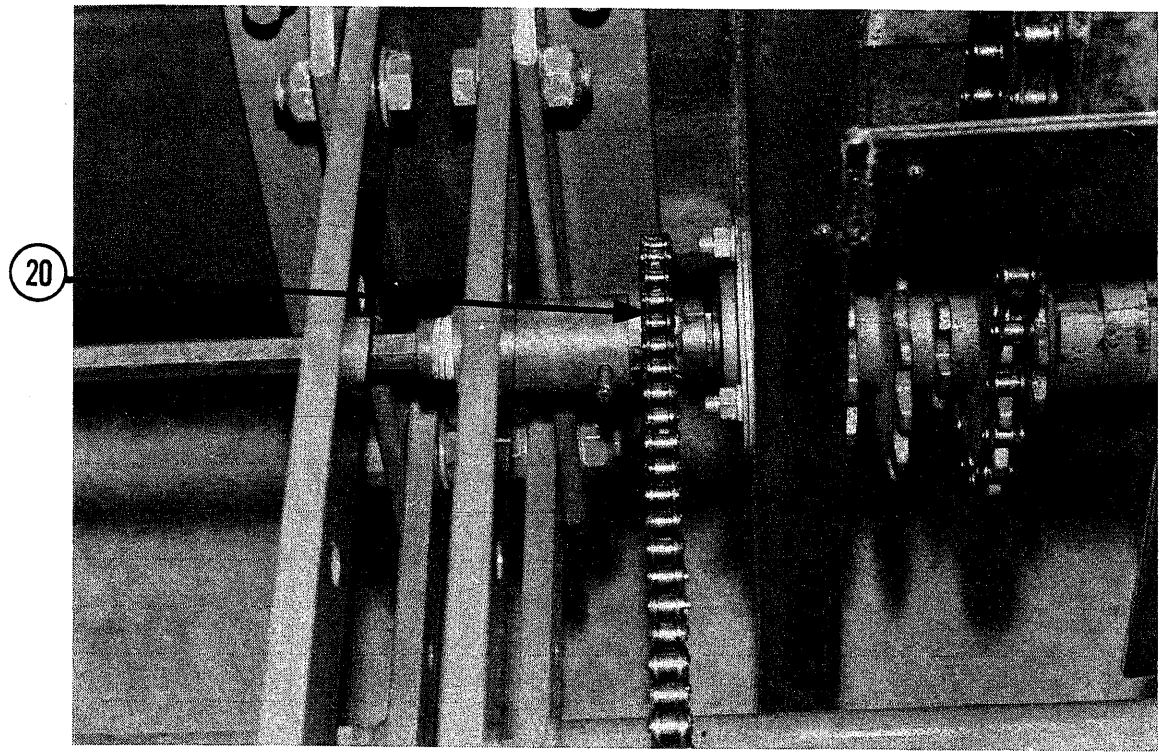
For narrow row applications or special uses that require additional planting units, the seed drive transmission may be straddled by the Max-Emerge Row Unit.

FIGURE #42



Special Drive Applications Continued

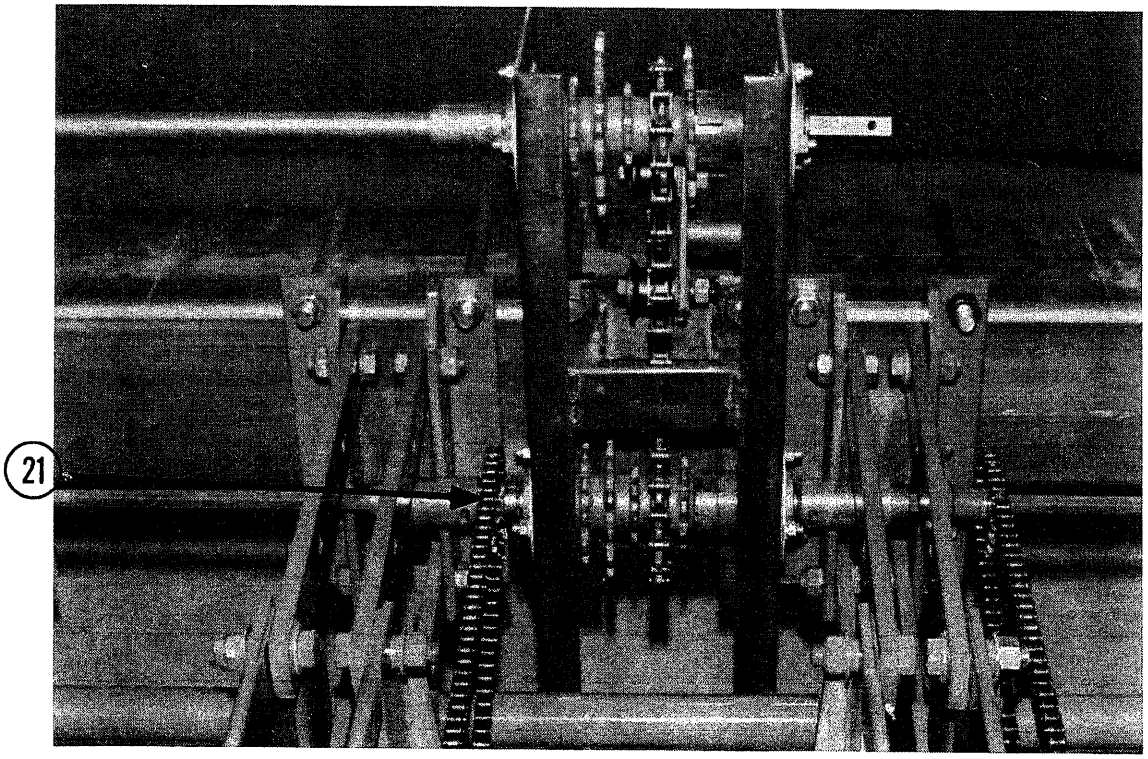
FIGURE #43



To properly drive the additional row unit that straddles the seed drive transmission, a special machined unit drive sprocket must be installed (Item 20 and Item 21).

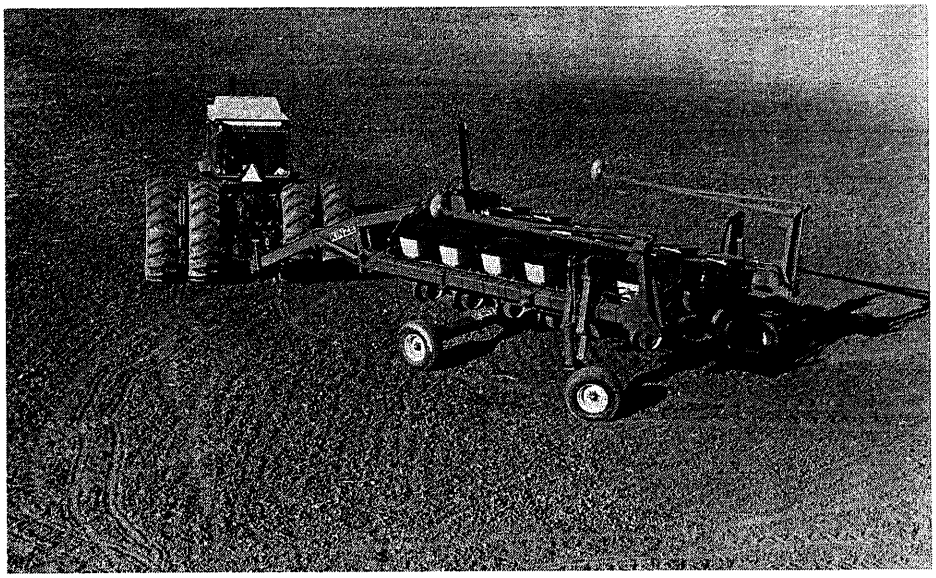
Refer to parts section under seed drive transmission.

FIGURE #44



Low Profile Gauge Marker Assemblies

FIGURE #45



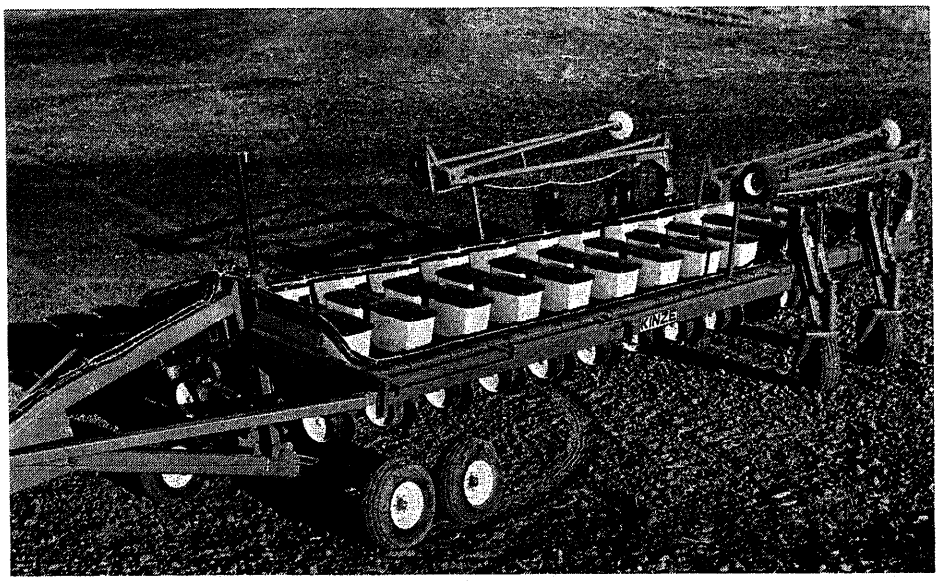
Depending upon the size of the Rear Folding Planter Bar, the low profile gauge marker assemblies are furnished with either a double or triple folding design.

All 8-row, 12-row, and 16-row 30″ planter bars are furnished with the double folding or two-stage marker assemblies.

The 18-row 30″, 16-row wide, and 24-row 30″ planter bars have triple folding or three-stage marker assemblies.

Figures #45 and #46 depict both the double and triple folding marker assemblies in the "low profile" position.

FIGURE #46



The low profile marker system is preassembled into two or three stages depending upon the size of the marker system.

The 1st stage, or mounting bracket, is slid into position over the planter wing assembly. It is fastened with either four (4) or six (6) cap screws depending upon size of marker (Figure #47).

NOTE: **It is not important to determine either RIGHT or LEFT sides as all marker components are interchangeable from side to side.**

FIGURE #47

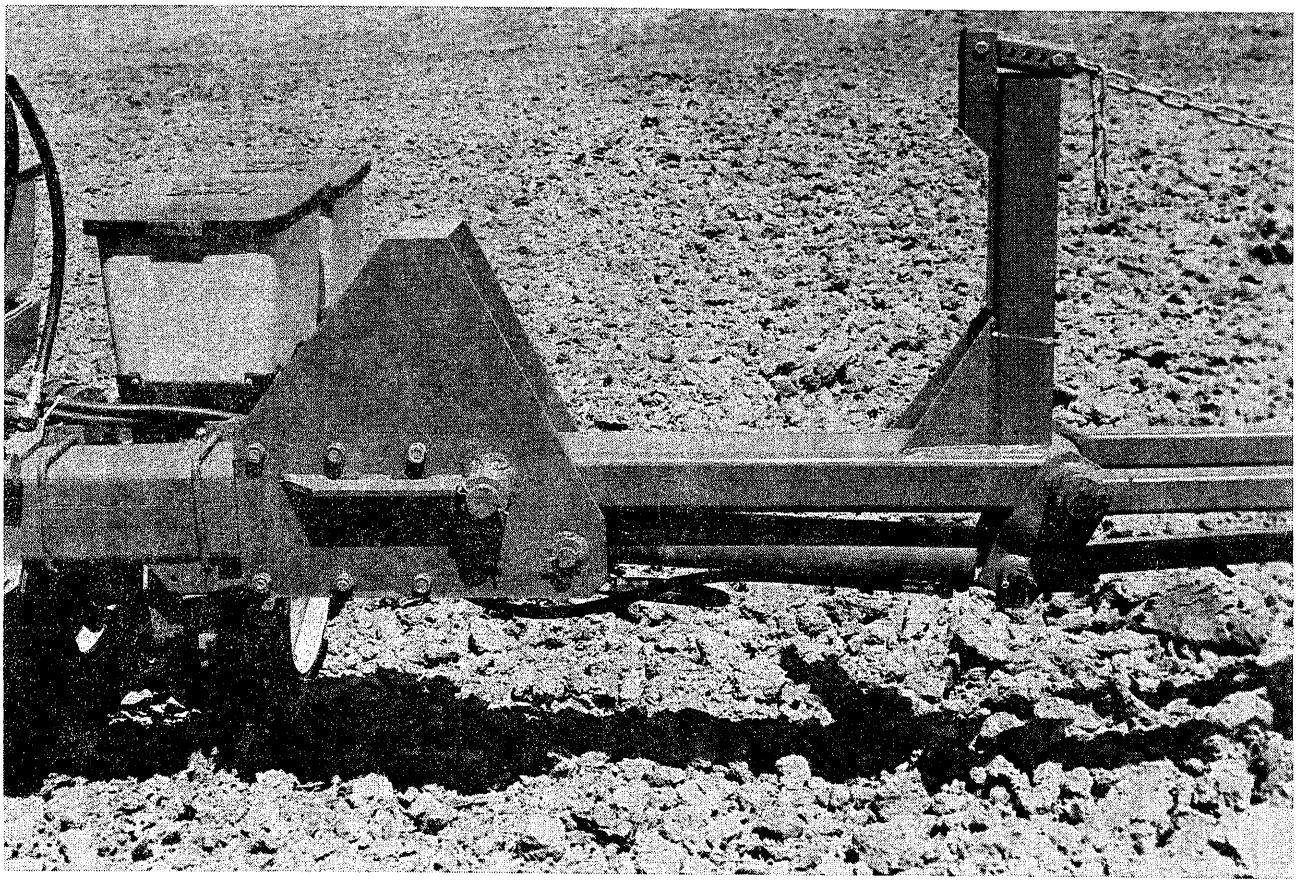


FIGURE #48

The 1st and 2nd Stages of the Double Folding Marker System are noted below:

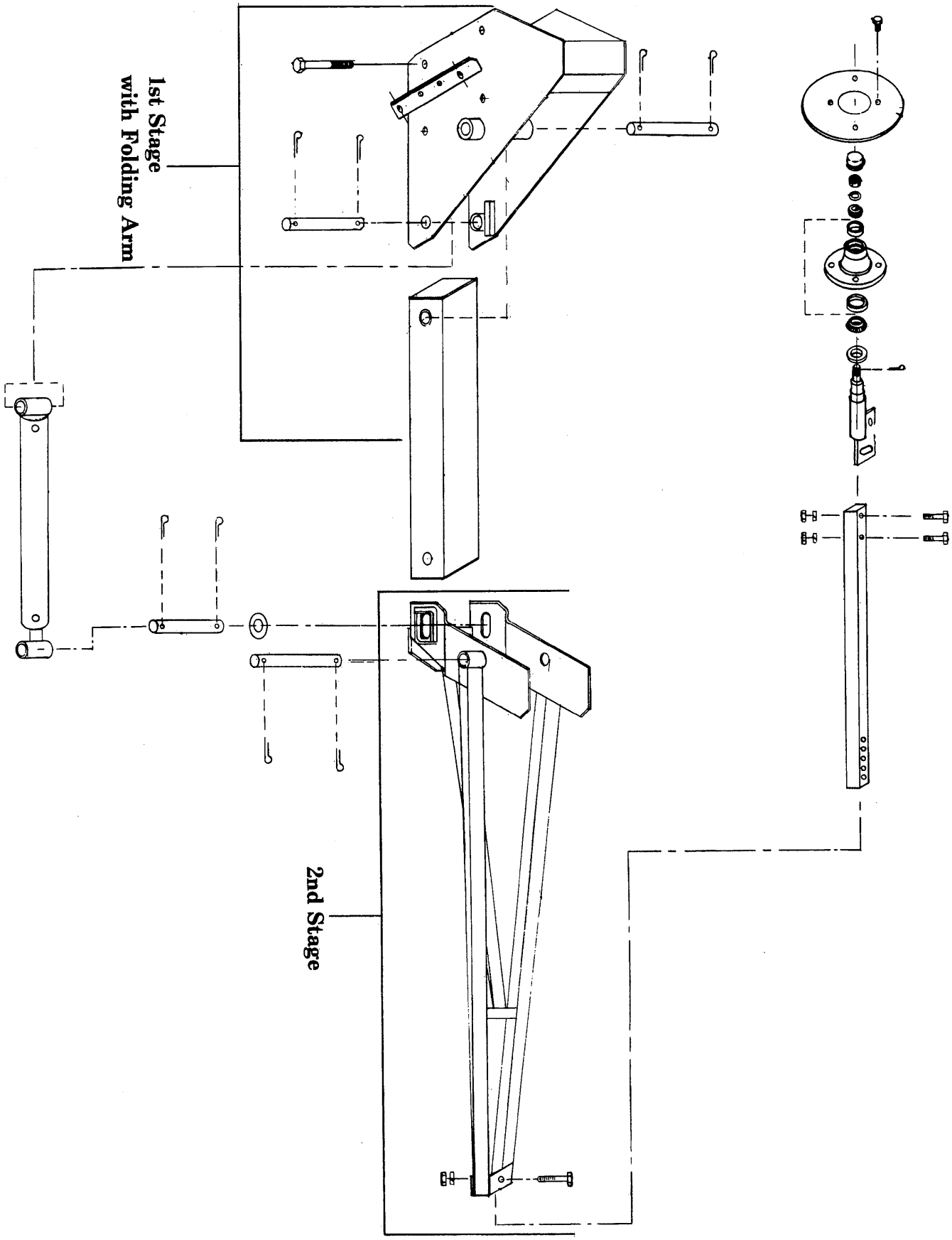


FIGURE #49

The Triple Folding Marker System with the three (3) stages are noted below:

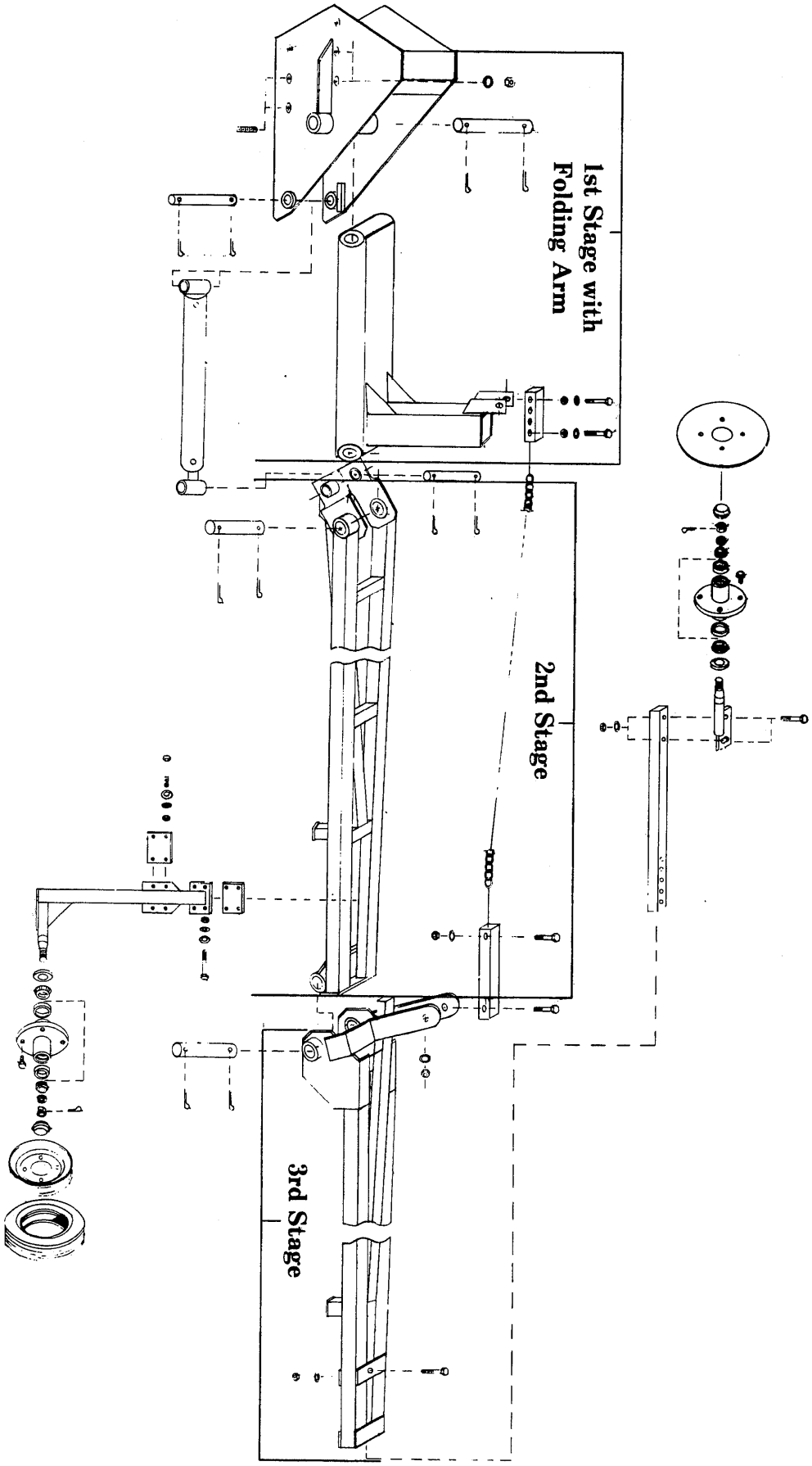
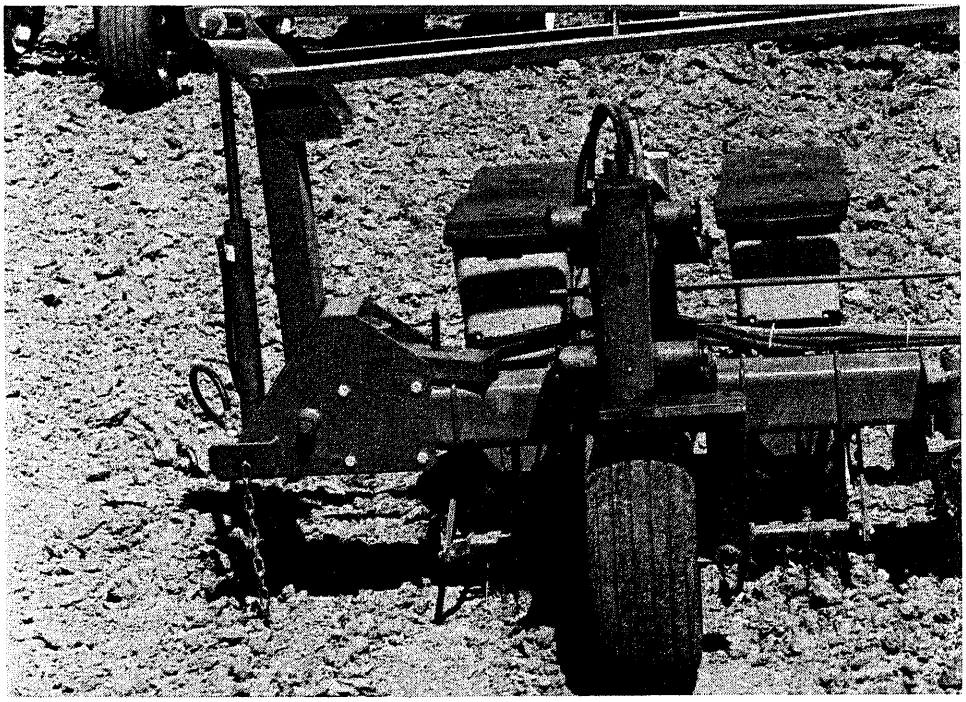


FIGURE #50



Figures #50 and #51 show the complete double folding marker system with the 2nd stage properly installed.

FIGURE #51

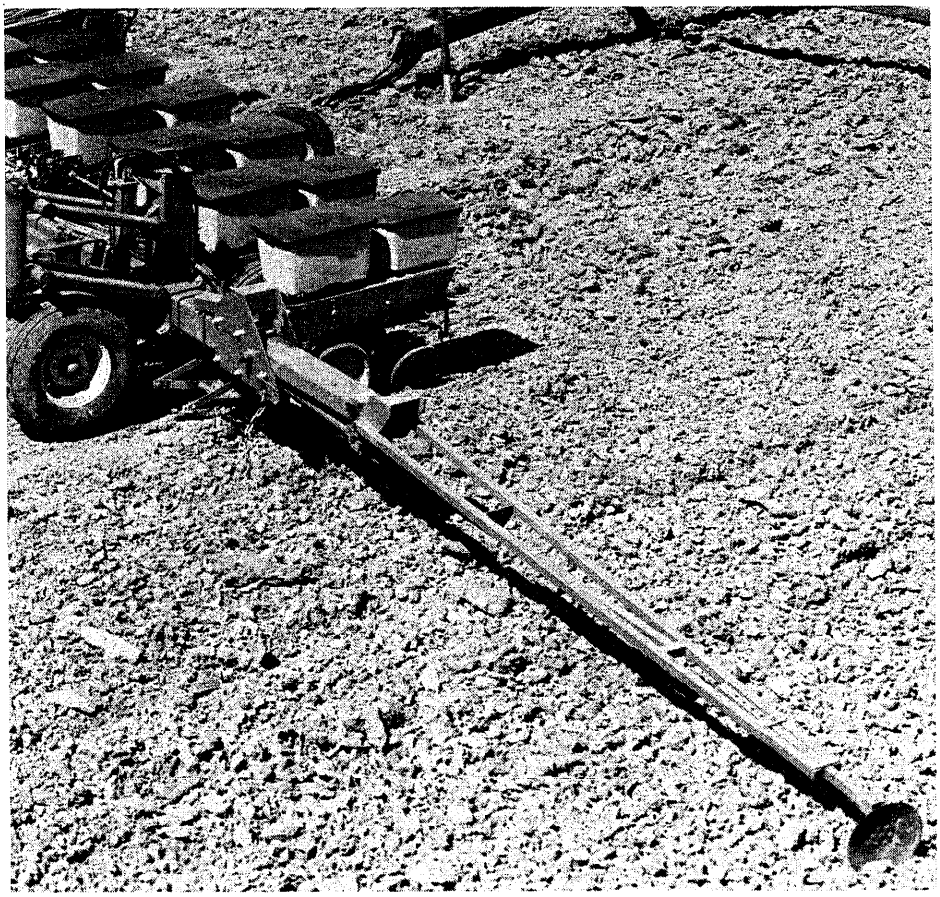
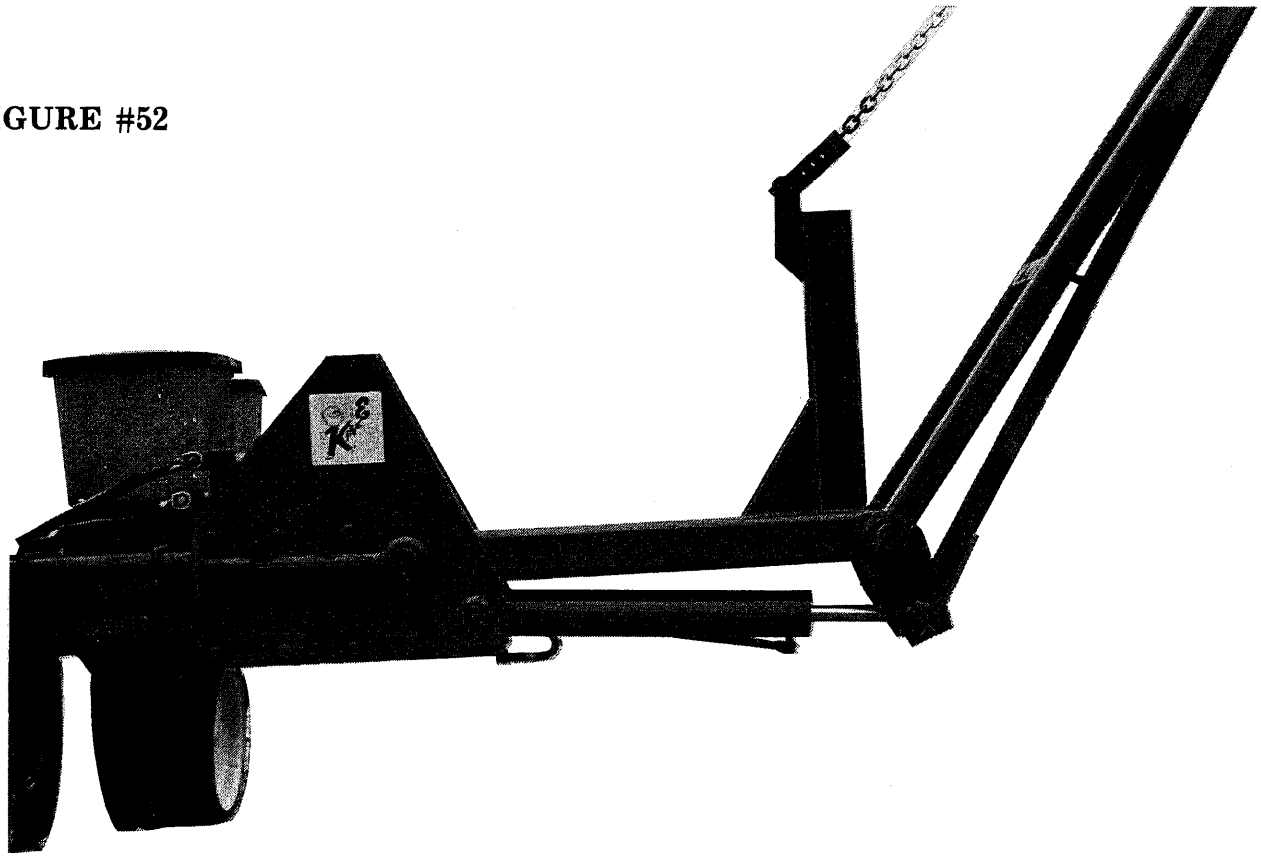
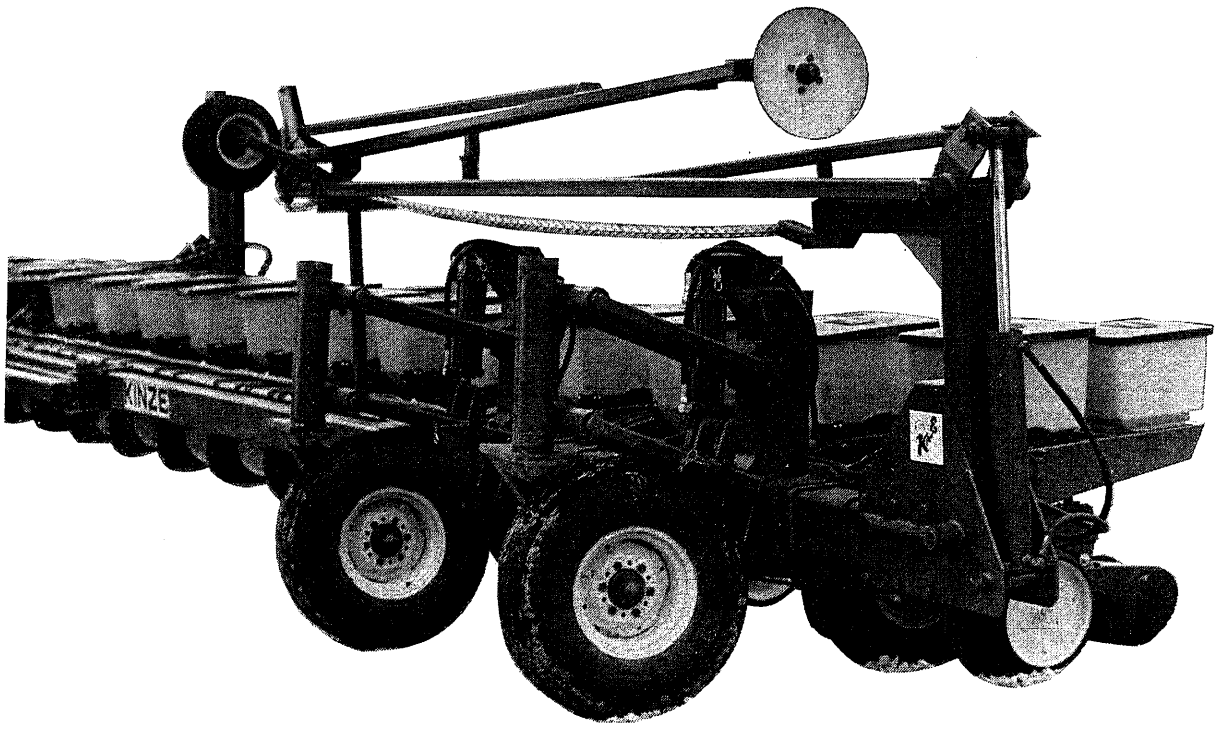


FIGURE #52



Figures #52 and #53 show the proper method of installing the 1st and 2nd stage of the triple folding marker system.

FIGURE #53



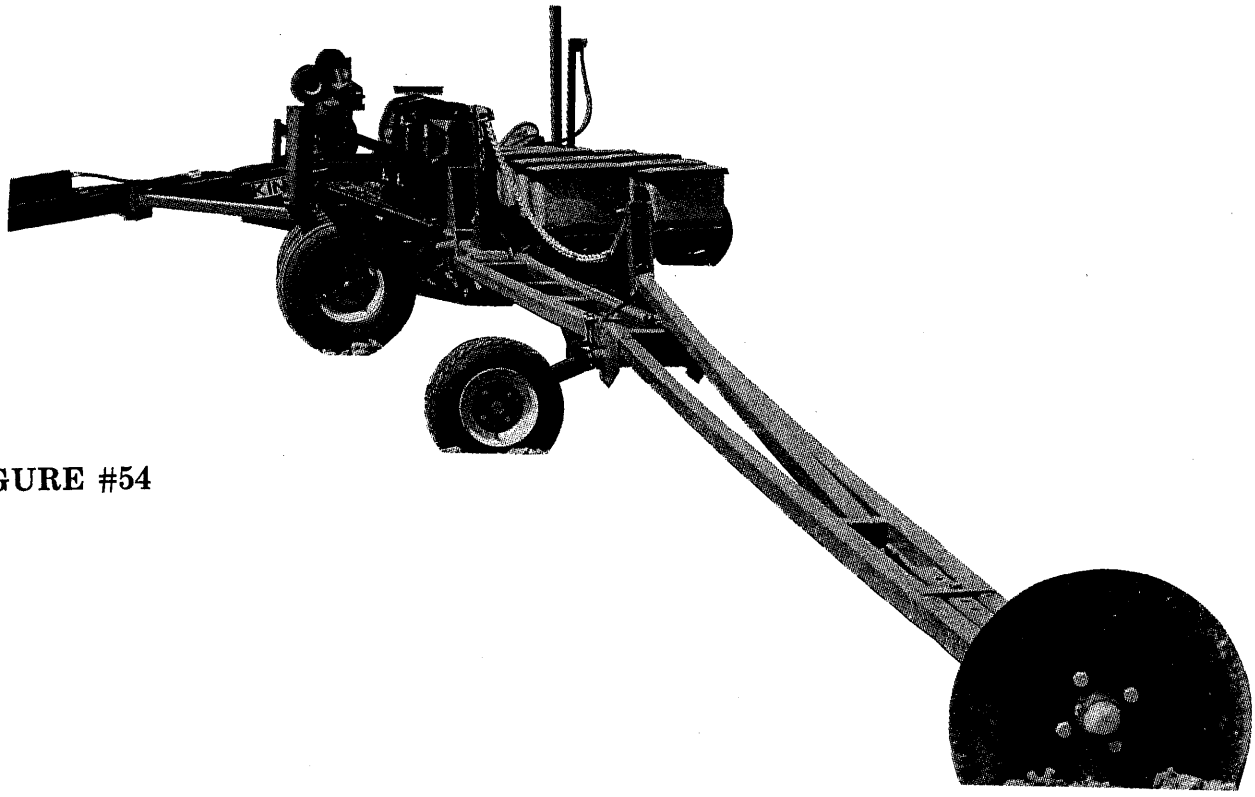


FIGURE #54

The 16″ x 6:50 x 8″ wide gauge wheel is installed on the 2nd stage of the triple folding marker assembly. The mounting bracket for the gauge wheel assembly is installed on the front side of the marker. It is normally positioned near the hinge point of the 2nd and 3rd stage and is adjustable to match exact row centers is required. **Gauge wheel mounting bracket is furnished in both left and right sides.**

The 3rd state of the marker assembly is installed as shown in Figures #54 and #55. The marker chain can be installed as shown.

FIGURE #55

Gauge Marker Assemblies: Hydraulic System

Both the double and triple folding low profile marker assemblies are hydraulically powered separately from the planter bar lift system.

CAUTION: **Before the gauge marker assemblies are hydraulically operated, make certain that all hydraulic hoses are properly connected.**

Never connect any hydraulic hoses without first stopping tractor engine and then moving hydraulic operating levers in both positions to relieve any pressure in hydraulic system.

For most double folding marker systems, which are used on the smaller planter bars, dual hydraulic outlets are required on the tractor hydraulic system. One outlet is used to power the planter lift system, while the second outlet is used entirely for the marker system.

When the dual valve hydraulic system is used on the planter bar, electric solenoid valves with a 3-position selector switch is furnished to lower the desired marker or markers. To lower the desired marker, the operator must first select either the left or right marker by flipping the selector switch to the left or right position. The control lever is then put in the "lower" position. To lower both markers, the selector switch can be flipped to the other side and the control lever re-engaged.

NOTE: **Once the marker or markers have been lowered, the selector switch must be put in the center of "OFF" position. If the selector switch is not turned "OFF" the marker assemblies will not lift properly when the control lever is engaged.**

When a triple valve hydraulic system is used with either the double or triple folding marker system, the selector switch and electrical solenoid valves can be eliminated.

When triple valve hydraulics are used, the planter lift system is normally placed on the center valve while the two individual marker assemblies are connected to the respective left and right valves. The use of triple valve hydraulics on the larger triple folding marker system will provide better operator control.

IMPORTANT: **Both the double and triple folding gauge marker systems have separate speed controls for each individual marker. These speed controls, or flo-controls, are located in the hydraulic proportionator package on the planter hitch assembly.**

(Refer to hydraulic schematic)

Both the left and right marker assemblies have two (2) flo-controls. This permits the operator to manually adjust the proper rate of "LIFT" or "LOWER" for each marker.

WARNING: **Before the marker assembly is first put in use, the flo-controls should be properly adjusted to prevent damage to the marker system.**

Each flo-control has a knurled knob with a lock nut. The lock nut should be loosened and the flo-control closed by turning the knurled knob clockwise. After the flo-control is closed, it can be partially opened (approximately 1/2 turn counter-clockwise) to permit oil flow. After the marker has been cycled several times, the final adjustments can be made on the flo-controls.

NOTE: **After the flo-controls have been set, the marker speed will decrease with cold oil supply. Make certain that all adjustments are made with warm hydraulic oil.**

CAUTION: ALWAYS STAND CLEAR OF THE GAUGE MARKER ASSEMBLY AND BLADE WHEN IN OPERATION.

The marker support stand can be fastened to the wing assembly as shown (Item 22). The support stand is attached with a 7'' u-bolt.

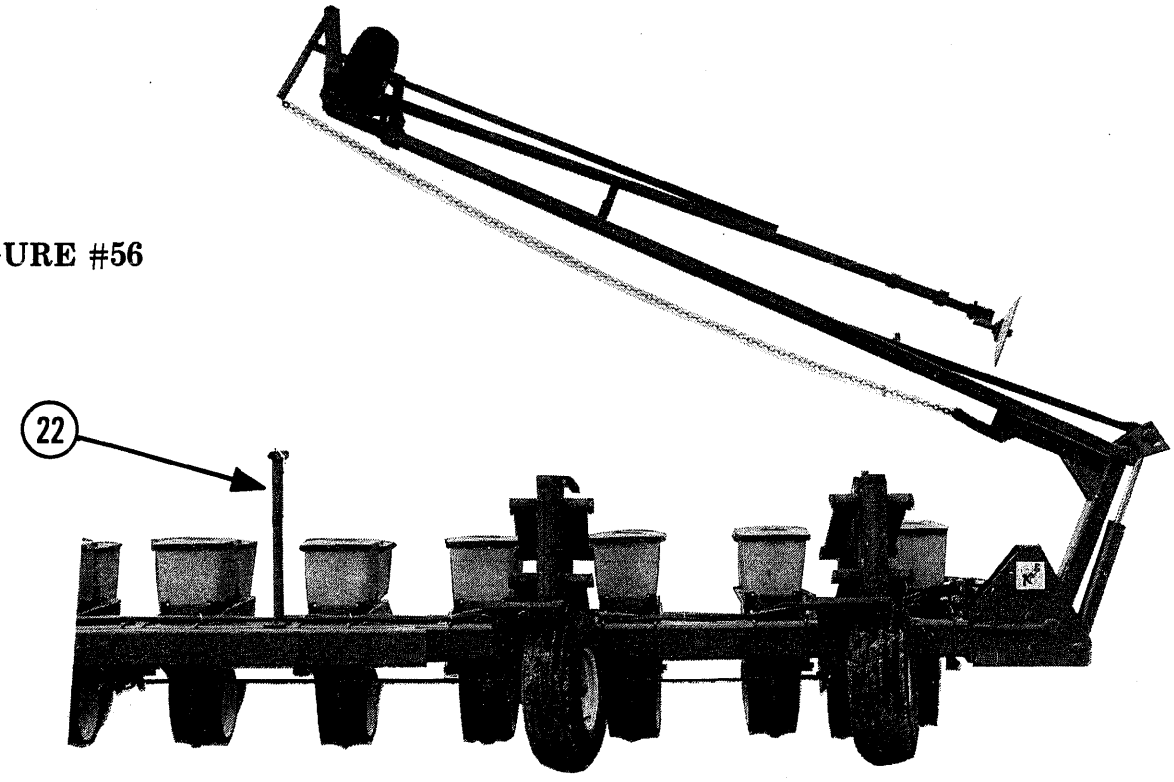


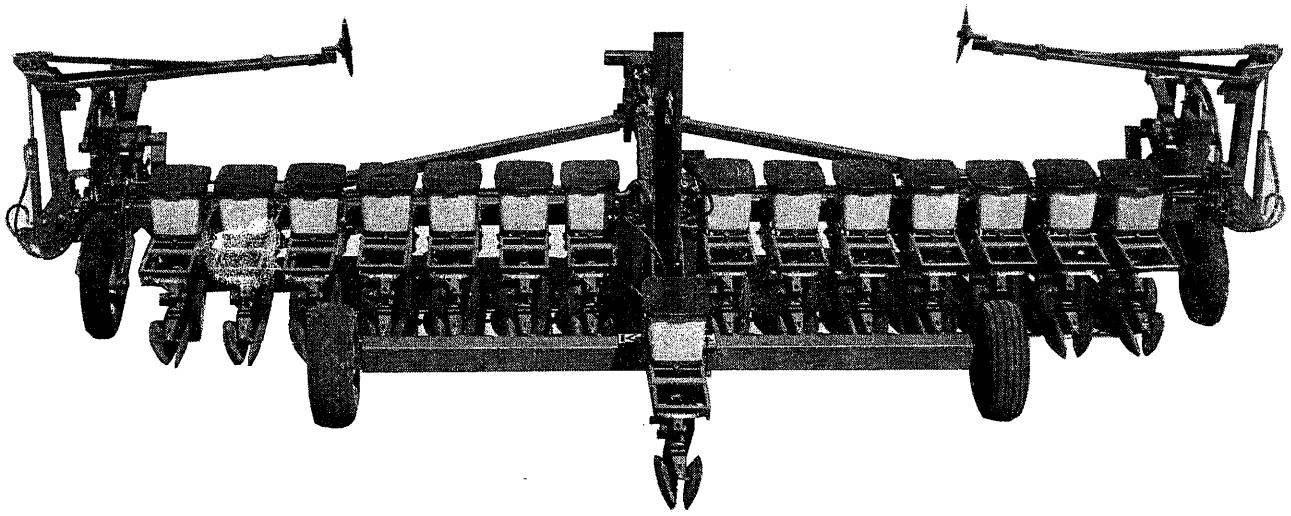
FIGURE #56

Special Marker Applications

For certain special applications, it is necessary to mount the transport caster wheel and drive gauge wheel assembly on the outside end of the planter wing. This will permit the mounting of additional rows or special equipment.

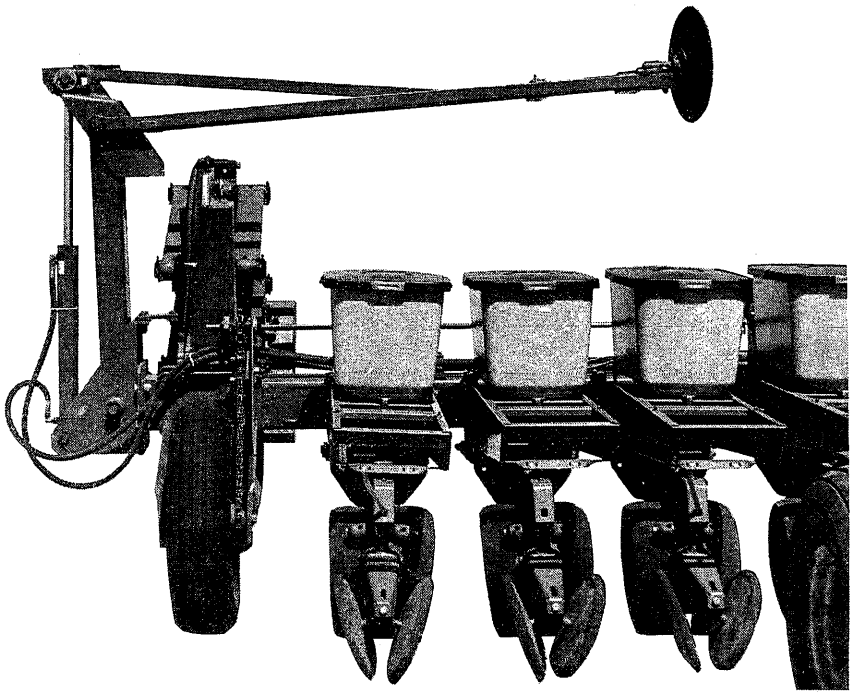
An 8-row 36″ planter with fifteen 18-inch row spacings is shown in Figure #57.

FIGURE #57



Special Marker Applications Continued

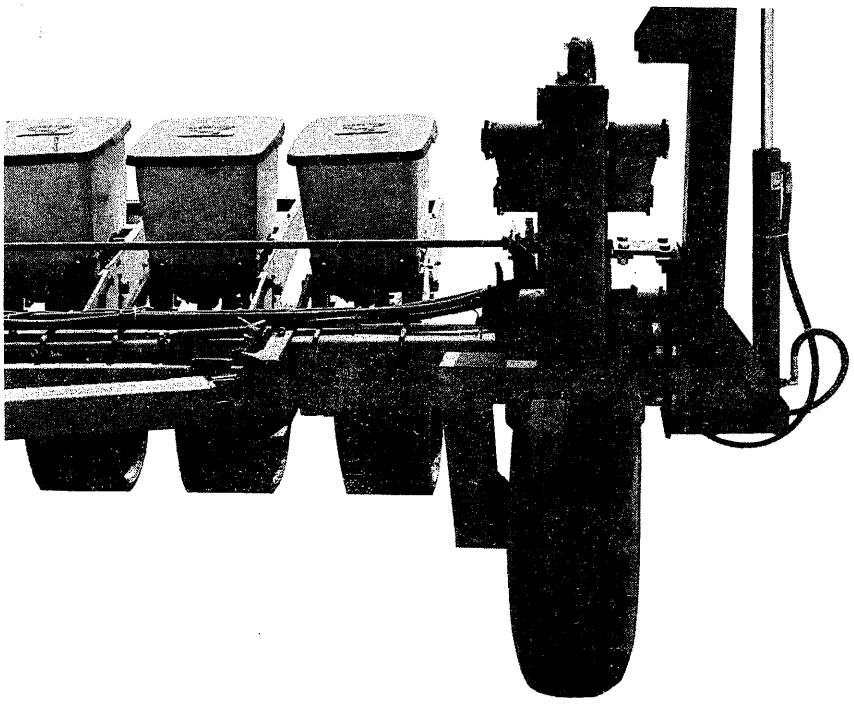
FIGURE #58



The standard gauge marker mounting bracket is replaced with a compact marker bracket that fastens directly to the transport caster wheel assembly.

The complete compact marker assembly is preassembled and ready to bolt to the caster wheel. Longer gauge marker hoses must be used when the compact marker assembly is installed. The remainder of the marker system and hydraulic system is standard.

FIGURE #59



CAUTION: Never connect hydraulic hoses under pressure. Shut off tractor and cycle remote cylinder operating levers in both directions before connecting or disconnecting hydraulic hoses.

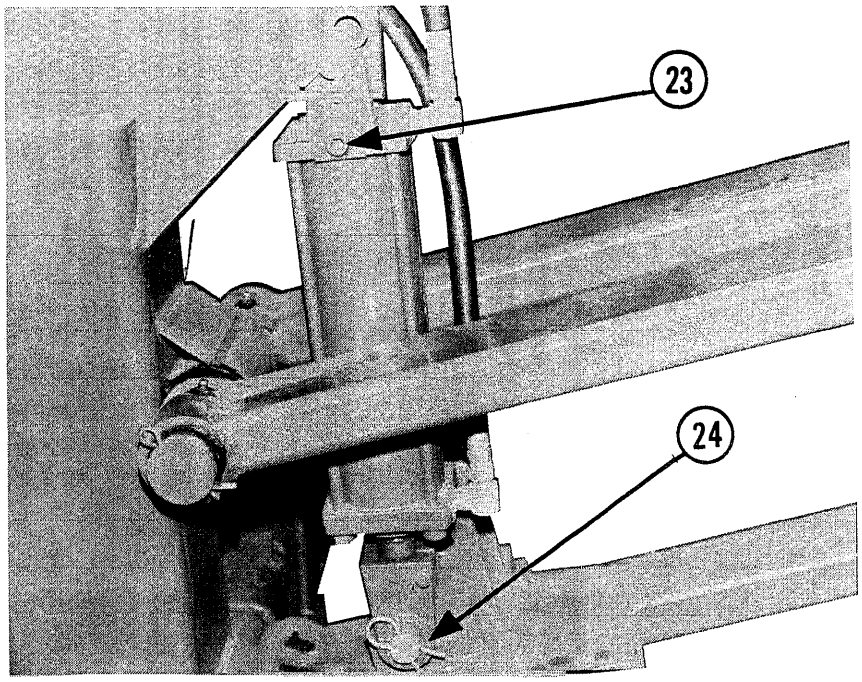


FIGURE #60

CAUTION: Remove plastic shipping plugs from ports in all caster wheel cylinders (Item 23) and install 1/2'' NPT pipe plugs. These plugs are furnished in the standard hydraulic cylinder package.

NOTE: It may be necessary to adjust the Clevis Ends on the PMC 9310 Transport Wheel Cylinders. (Fig. 60 Item 24-). If the Clevis Ends are improperly adjusted it will be difficult to install the Safety Pins in the Transport Wheels. (See Fig. #29)

To adjust; loosen the cap screw or set screw in the Clevis End and rotate cylinder ram in either direction: Rotating cylinder ram in counter-clockwise direction will increase cylinder lift height.

Figures #61, #62, and #63 show the various locations of the safety pins which must be used prior to transport, storage, or service of the planter bar. The wing lock safety pins (Item 25) should be used in the planting position to prevent possible damage to the row units should the wing latch fail.

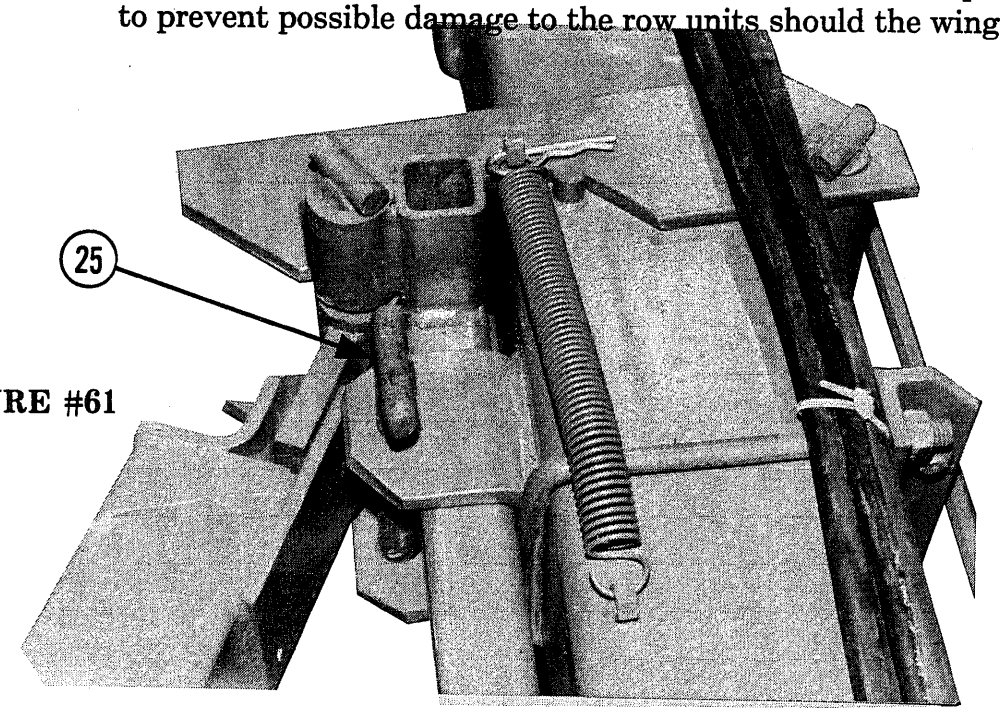
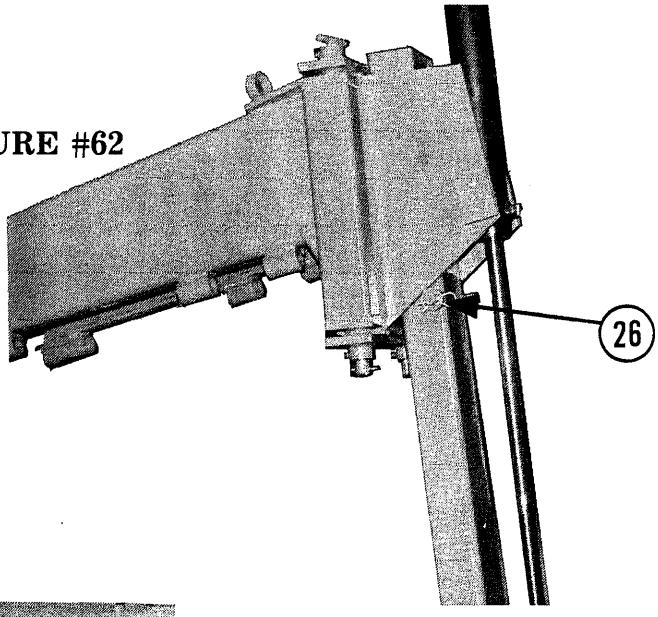


FIGURE #61

FIGURE #62



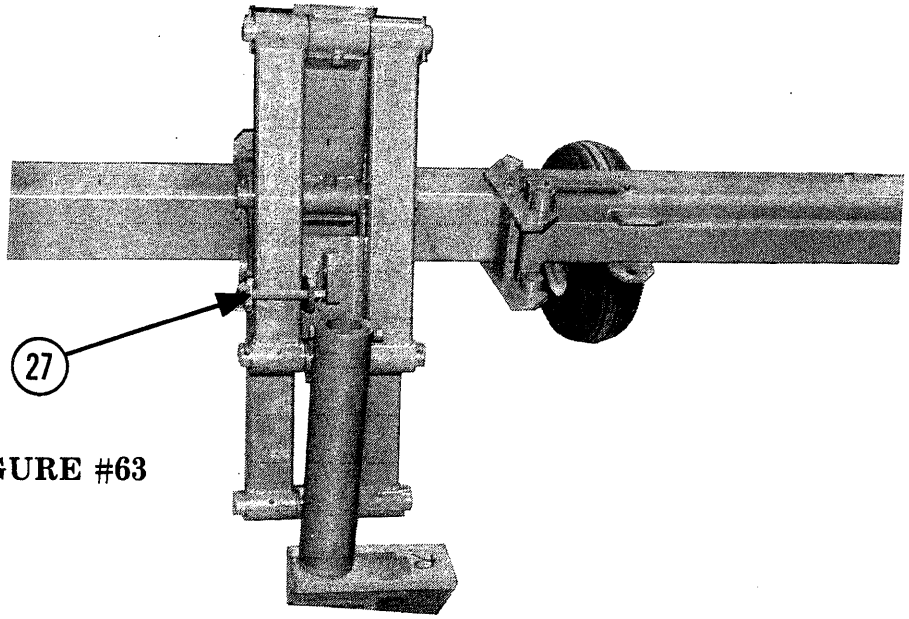


FIGURE #63

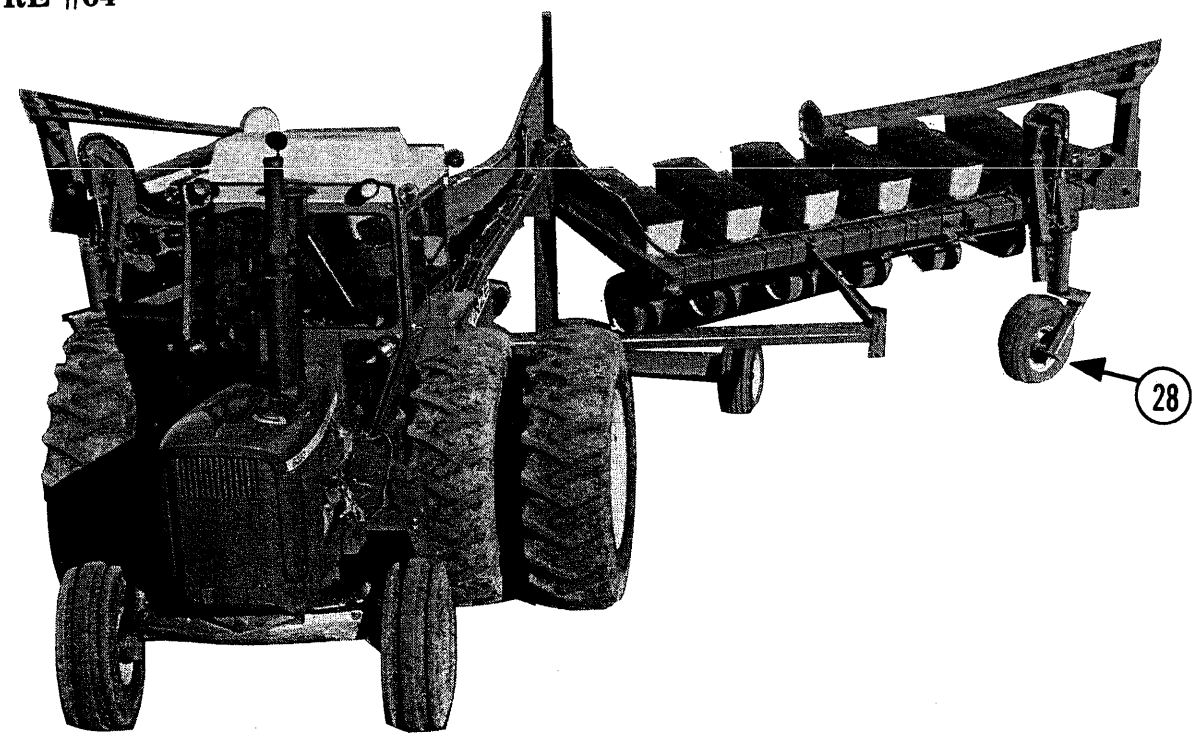
Folding Of The Planter Bar

WARNING: The planter must be fully raised prior to folding. Attempting to fold the planter in any other position will cause the row units to strike the rear axle assembly.

The planter bar is folded with a simple mechanical linkage and the forward or rearward movement of the tractor. After the safety pins have been released and the wing latches tripped, the tractor is driven forward and the planter wings will rotate rearward into the transport position. The rotation of the wings into the transport position is dependent upon the "rolling resistance of the transport caster wheels" on each wing assembly (Item 28).

Before attempting to fold the planter into the transport position, it is helpful to first back the planter up until the caster wheel(s) on each wing assembly have completely reversed. This will increase the rolling resistance of the caster wheel and cause the wing to rotate into the transport position. Before removing the safety pins and tripping the wing latches, drive the tractor forward a few inches to tighten the folding mechanism. This will cause the wing latches to "pop open" when they are released. It is very helpful to take advantage of a slight grade when folding the planter into the transport position. If the planter is initially backed down the grade prior to folding, the tractor may be driven "up the grade" which will again increase resistance on the caster wheel.

FIGURE #64



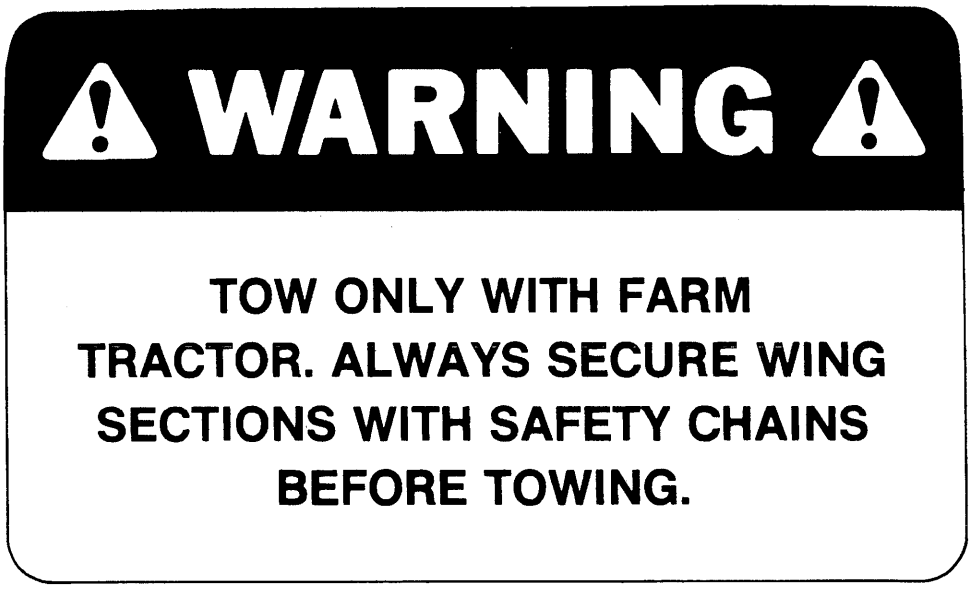
You will find that it is much easier to fold the planter into the transport position in plowed or soft field conditions as this obviously increases the rolling resistance on the caster wheels. The weight of the seed, chemicals, etc. on the planter wings will also create rolling resistance and aid in the rear folding of the wings.

If it is necessary to fold the planter on a hard flat surface, each wing latch assembly can be released separately to fold one wing at a time. After an individual latch has been released, the tractor can be driven away from the wing. This procedure can be repeated for the second wing.

To fold the planter bar into the planting position, the transport safety pins must be removed and the latches released. The rearward movement of the tractor will force the planter wings forward. The wing assemblies will easily rotate into the planting position and the wing latches will automatically catch.

CAUTION: **Never release the wing or transport latches when anyone is standing near the wing assembly. On uneven ground, the wing may automatically rotate into either position without movement of the tractor.**

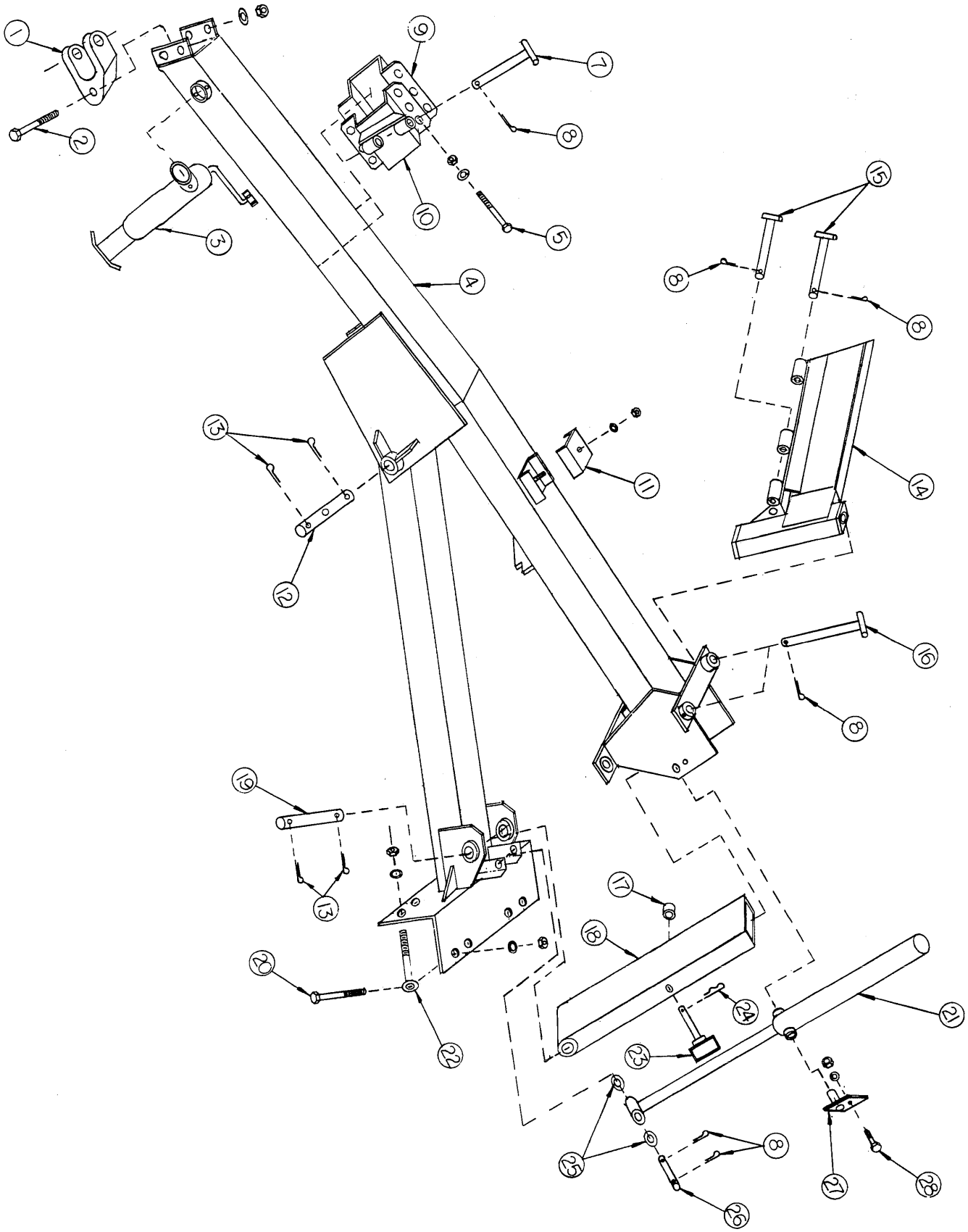
The following decals will be provided for each planter bar and should be placed in a location visible to the operator.



HITCH ASSEMBLY

Key	Part Number	Description
1	D557	Double Hitch Clevis (single clevis available)
2	D556	1-1/4'' x 6-1/2'' Special Bolt, Washer, Nut
3	4100-1	Jack Assembly
4	A176	Hitch Center Section (specify planter size)
5		3/4'' x 3'' Cap Screw, Lock Washer, Nut
7	A135	Folding Link Pin 1-1/4'' x 12-3/4''
8		1/4'' x 2'' Cotter Pin
9	A148R	Saddle Clamp Right
10	A148L	Saddle Clamp Left
11	D740	Hose Holder Clamp
12	D551	Center Pivot Pin 2-1/8'' x 16-1/8''
13		3/8'' x 3'' Cotter Pin
14	A131	Wing Gate Assembly (specify left or right)
15	A135	Wing Pin 1-1/4'' x 12-3/4''
16	A113	Vertical Pivot Pin 1-1/4'' x 27''
17	D526	Pin Sleeve
18	A116	Vertical Stabilizer
19	D536	Vertical Stabilizer Pivot Pin 2-1/8'' x 13-5/8''
20		3/4'' x 9'' Cap Screw, Lock Washer, Nut
21	R868	Trunion Cylinder
22		3/4'' x 9'' Eye Bolt, Lock Washer, Nut
23	A112	Safety Pin
24		No. 6 Hair Pin Clip
25	D749	1-1/4'' Washer
26	D535	Trunion Cylinder Pin
27	A115	Trunion Cylinder Mounting Bracket (2 used)
28		1/2'' x 1-1/2'' Cap Screw, Lock Washer, Nut

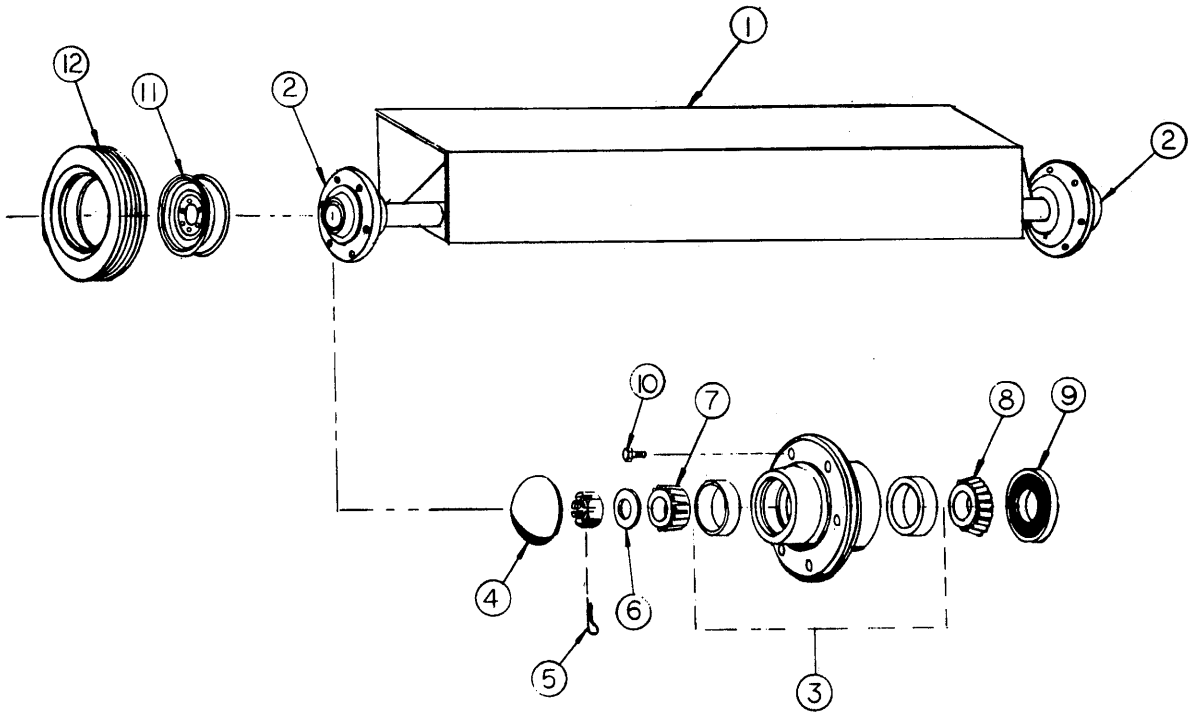
Hitch Assembly – Figure #100



STANDARD AXLE ASSEMBLY

Key	Part Number	Description
1	A129	Standard Axle with Spindles (specify planter size)
2	A126	6-Bolt Hub Assembly
3	2700-4	6-Bolt Hub with Cups (F&H 106686)
4	2800-1	Hub Cap
5		3/16'' x 1-1/2'' Cotter Pin
6		Special Washer (F&H 104581)
7	LM67048	Timkin Bearing
8	LM501349	Timkin Bearing
9	CR20044	Seal
10		1/2'' x 1'' Hub Bolt fine thread
11	14x8x6KB	Wheel (F&H 106630)
12	11Lx14	6-ply Tubeless Tire

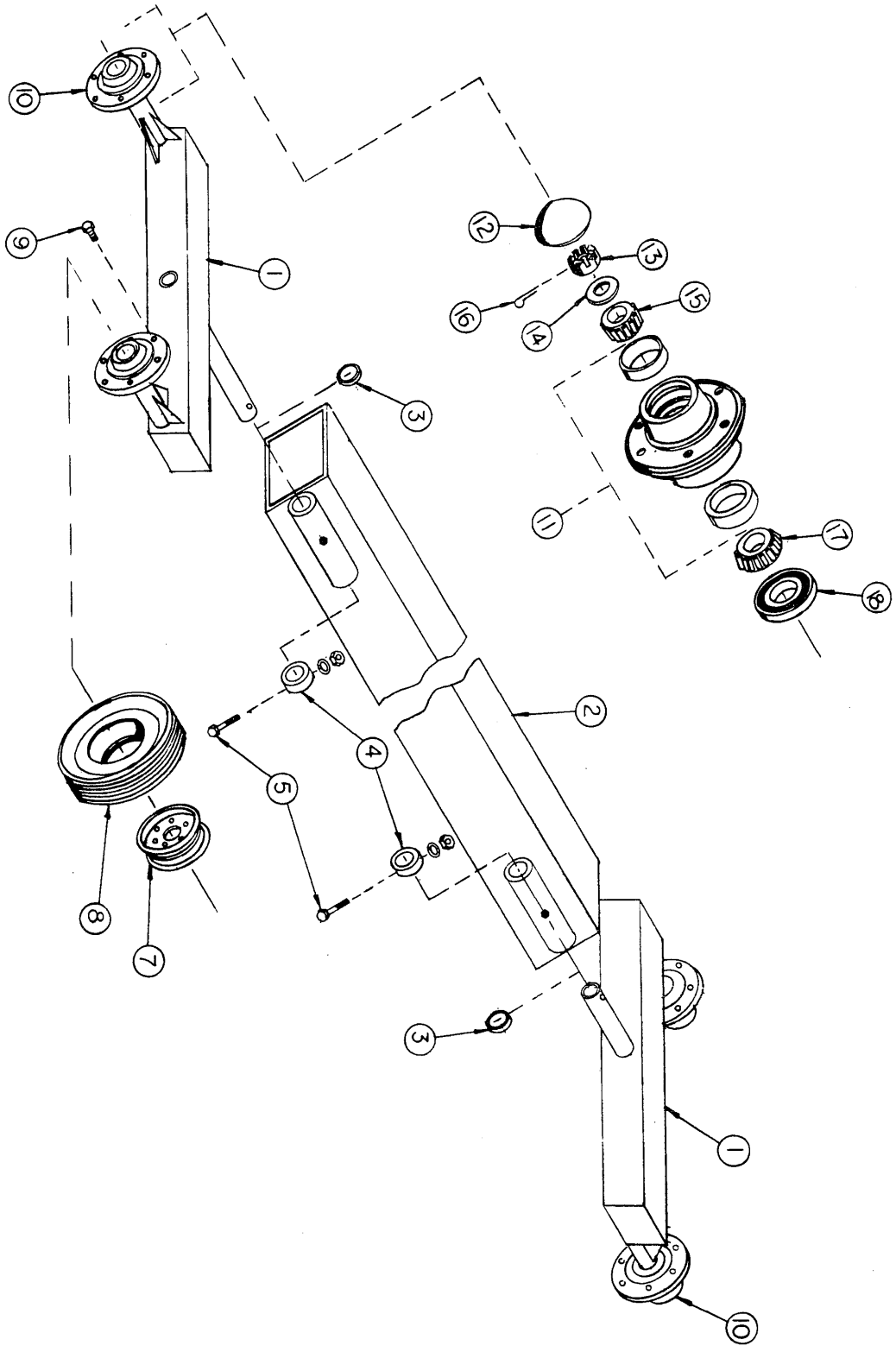
Standard Axle Assembly – Figure #101



TANDEM AXLE ASSEMBLY

Key	Part Number	Description
1	A123	Walking Beam with Spindles
2	A125	Tandem Axle Tube (specify planter size)
3	D576	Thrust Washer
4	D575	Retaining Ring
5		5/8" x 5-1/2" Cap Screw, Lock Washer, Nut
7	14x8x6KB	Wheel (F&H 106630)
8	11Lx14	6-ply Tubeless Tire
9		1/2" x 1" Hub Bolt fine thread
10	A126	6-Bolt Hub Assembly
11	2700-4	6-Bolt Hub with Cups (F&H 106686)
12	2800-1	Hub Cap
13		Slotted Hex Nut (F&H 103289)
14		Special Washer (F&H 104581)
15	LM67048	Timkin Bearing
16		3/16" x 1-1/2" Cotter Pin
17	LM501349	Timkin Bearing
18	CR20044	Seal

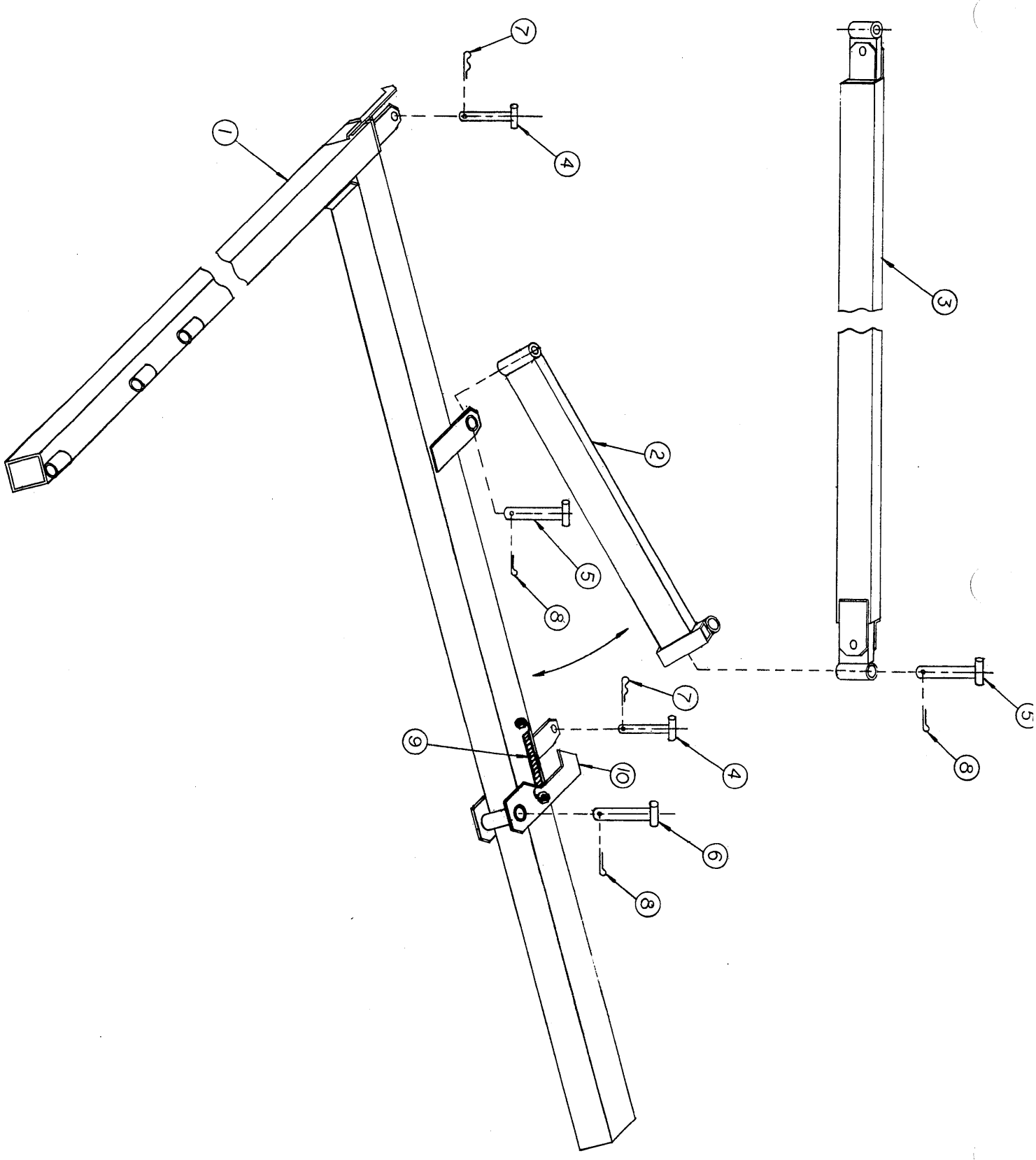
Tandem Axle Assembly – Figure #102



STANDARD WING ASSEMBLY

Key	Part Number	Description
1	A133	Wing (specify right or left)
2	A149	Articulated Link
3	A147	Folding Link (specify planter size)
4	A166	Safety Pin 7/8'' x 12-3/4''
5	A135	Articulated Link Pin 1/4'' x 12-3/4''
6		Wing Latch Pin (specify planter size)
7		No. 6 Hair Pin Clip
8		1/4'' x 2'' Cotter Pin
9		Wing Latch Spring
10	A137	Wing Latch Assembly

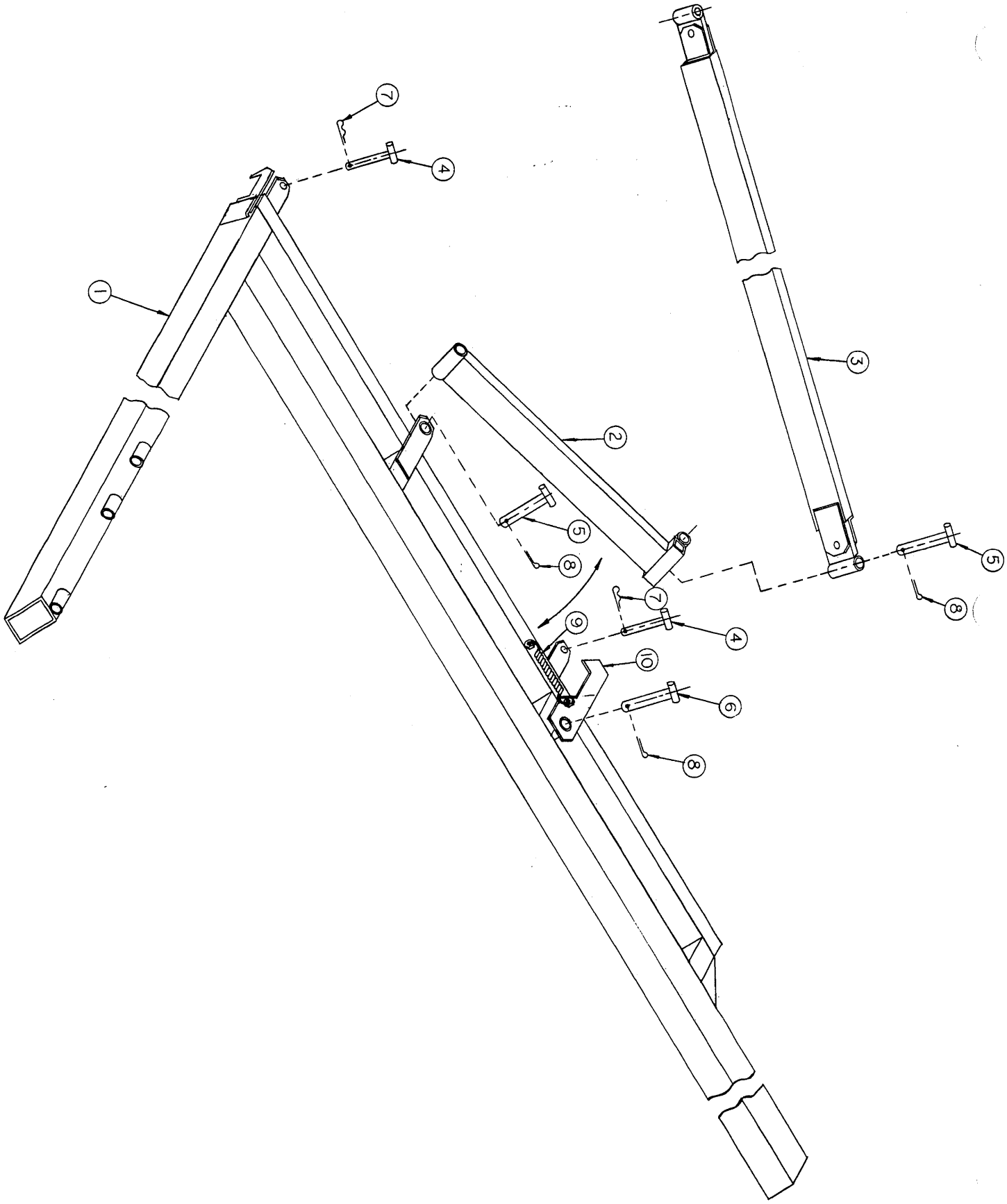
Standard Wing Assembly — Figure #103



SPECIAL WING ASSEMBLY

Key	Part Number	Description
1	A142	Wing (specify right or left)
2	A149	Articulated Link
3	A147	Folding Link (specify planter size)
4	A166	Safety Pin 7/8'' x 6-1/2''
5	A135	Articulated Link Pin 1-1/4'' x 12-3/4''
6	A136	Wing Latch Pin (specify planter size)
7		No. 6 Hair Pin Clip
8		1/4'' x 2'' Cotter Pin
9		Wing Latch Spring
10	A140	Wing Latch Assembly

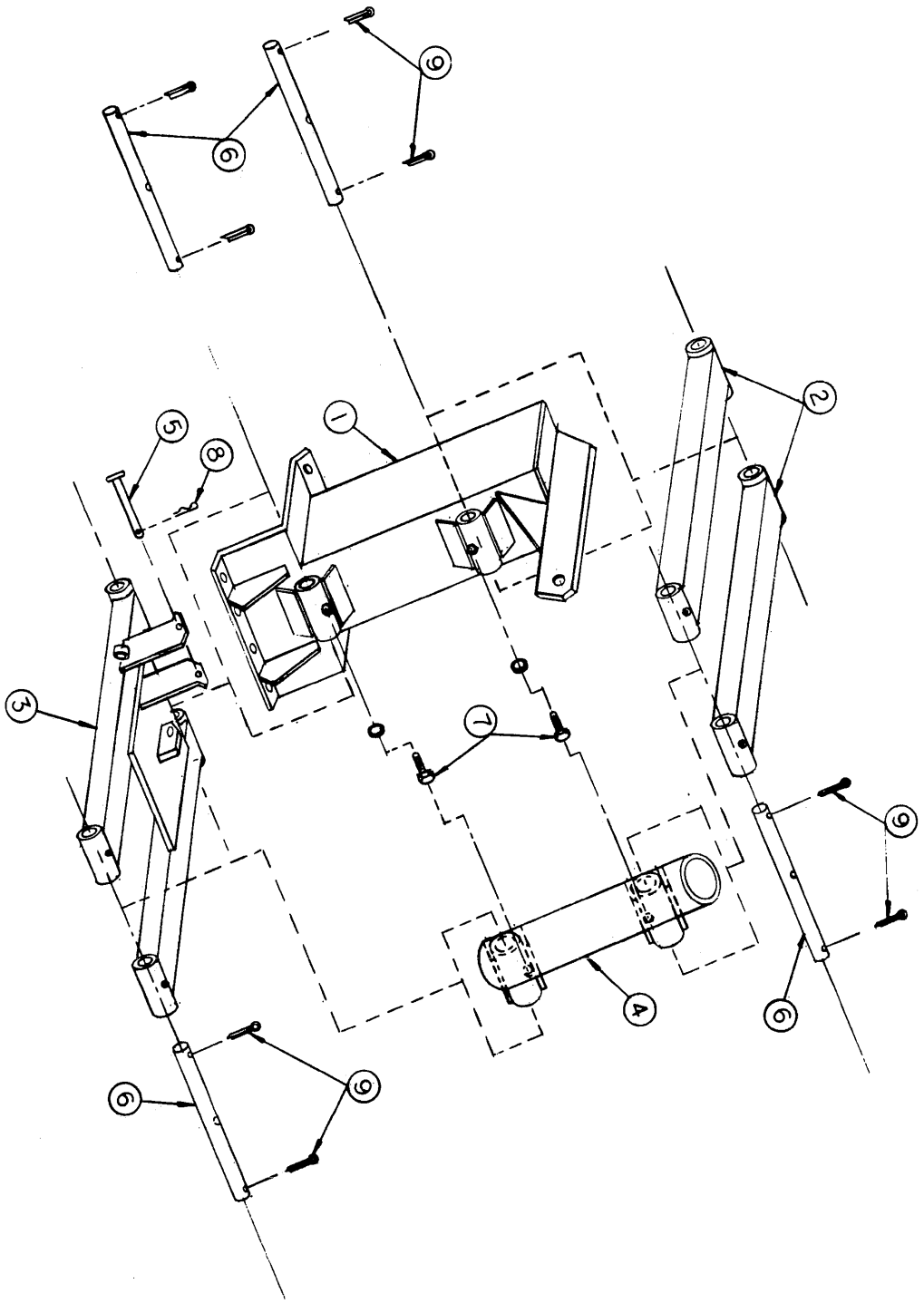
Special Wing Assembly — Figure #104



CASTER WHEEL TOWER ASSEMBLY

Key	Part Number	Description
1	A102	Wheel Tower Assembly
2	A103	Parallel Arm (2 used)
3	A104	Lower Paralled Arm Assembly
4	A105	Pivot Tube
5	A166	Safety Pin 7/8'' x 6-1/2''
6	D519	Parallel Arm Pin 2-1/8'' x 15-1/2'' (4 used)
7		5/8'' x 1-3/4'' Cap Screw, Lock Washer
8		No. 6 Hair Pin Clip
9		3/8'' x 3'' Cotter Pins

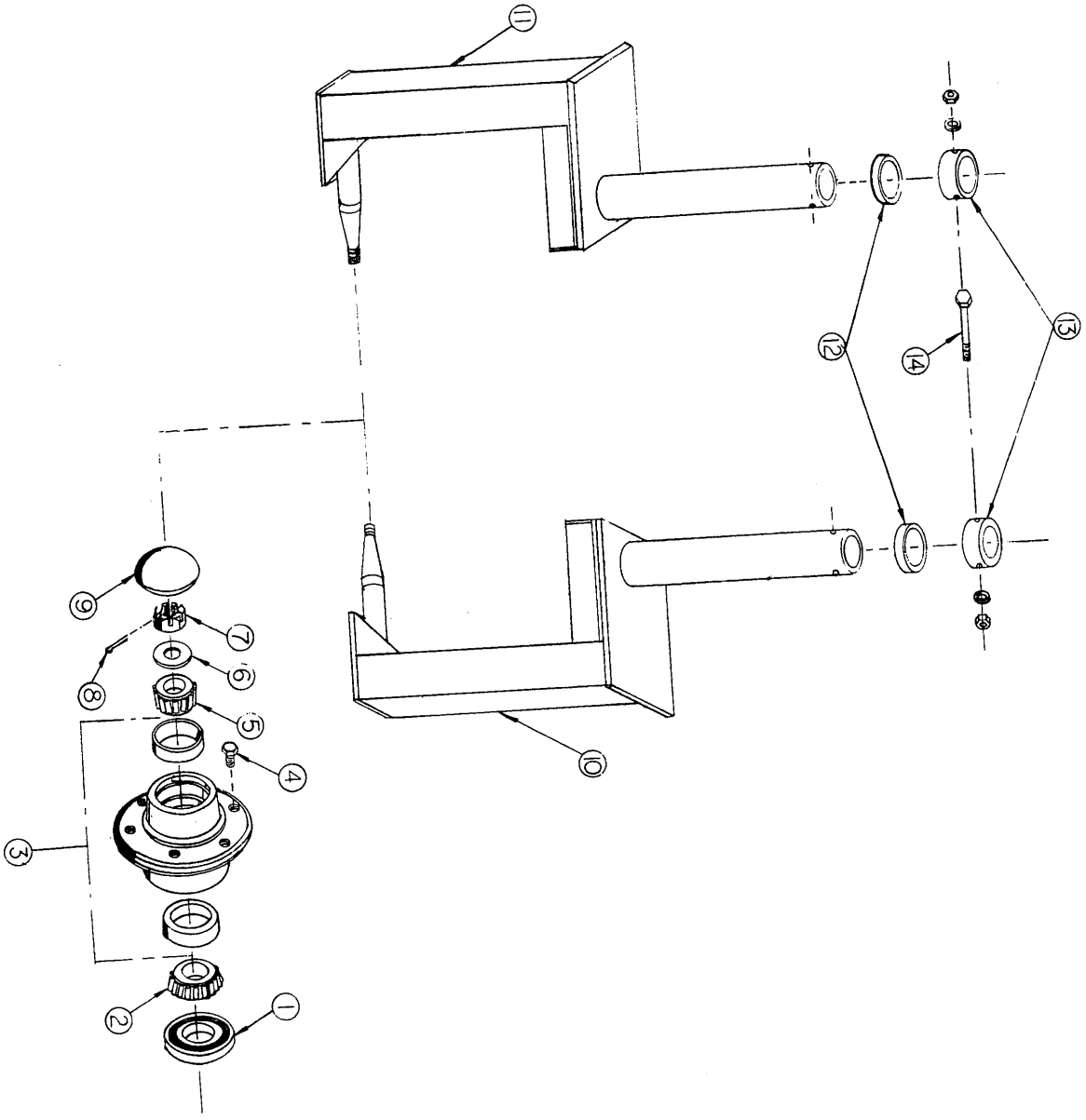
Caster Wheel Tower Assembly – Figure #105



CASTER WHEEL SPINDLE ASSEMBLY

Key	Part Number	Description
1	CR20044	Seal
2	LM501349	Timkin Bearing
3	2700-5	6-Bolt Hub with Cup (F&H 106686)
4		1/2'' x 1'' Hub Bolt fine thread
5	LM67048	Timkin Bearing
6		Special Washer (F&H 104581)
7		Slotted Hex Nut (F&H 103289)
8		3/16'' x 1-1/4'' Cotter Pin
9	2800-1	Hub Cap
10	A127L	Spindle Assembly Left
11	A127R	Spindle Assembly Right
12	D576	Thrust Washer
13	D575	Retaining Ring
14		5/8'' x 5-1/2'' Cap Screw, Lock Washer, Nut

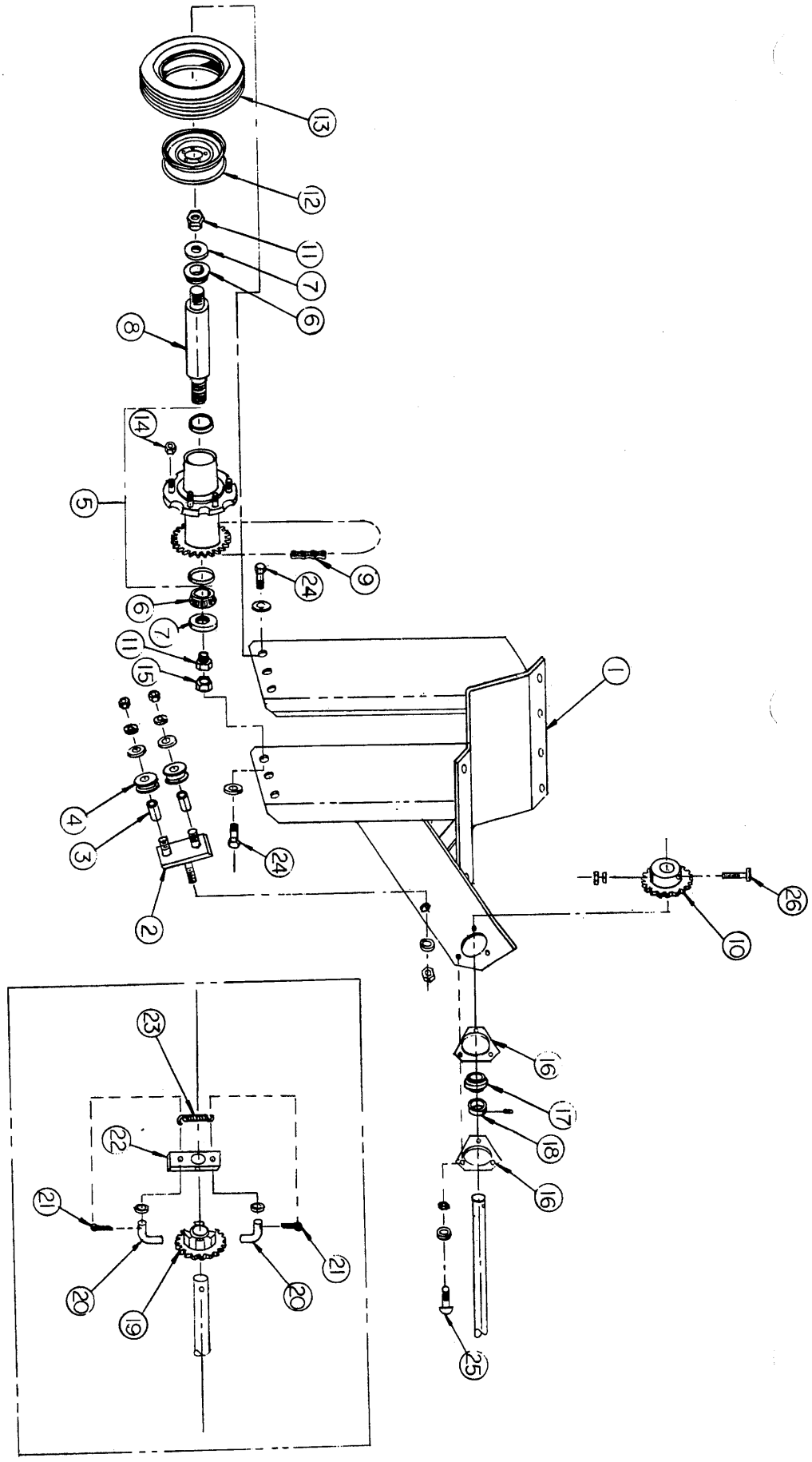
Caster Wheel Spindle Assembly – Figure #106



DRIVE GAUGE WHEEL ASSEMBLY

Key	Part Number	Description
1	A168	Drive Gauge Bracket
2	A169	Idler Bracket
3	D745	Idler Spool Bushing
4	3700-1	Idler Spool (JD B30969)
5	A170	Drive Hub
6	14136A	Timkin Bearing
7	2200-2	Grease Seal
8	3500-1	Spindle
9	3301-60	2050 Chain 59 link and connector
10	2500-5	Sprocket 24 tooth (specify planter size, see Key 19)
11		1-1/4" Shoulder Nut Special
12	15x5x5	Wheel (F&H 102597)
13	7:60x15	4-ply Tubeless Tire
14		1/2" Hub Nut fine thread
15		1-1/4" Jam Nut (2 used)
16	3400-1	Flangette (JD B32429)
17	2100-1	7/8" Bore Bearing
18	3600-1	7/8" Locking Collar
19	A174	Clutch and Sprocket Assembly (specify planter size, assembly required on all planters that do not use "point row" option)
20	D743	Clutch Dog (JD B32701)
21		1/8" x 1" Cotter Pin
22	D742	Carrier (JD A22513), Bushing (JD 24H1338)
23	D744	Spring 1" (JD ~~B121516~~) B12516)
24		3/4" x 2-1/2" Cap Screw, Lock Washer
25		5/16" x 1" Carriage Bolt

Drive Gauge Wheel Assembly – Figure #107



TRANSMISSION

Key	Part Number	Description
1	A177	Transmission Case (Specify Left or Right)
2	A164	Tightener Assembly
3	2500-1	Single Sprocket 14 tooth (JD A24956)
4	2500-2	Double Sprocket 22-26 tooth (JD A24943)
5	3300-39	2040 Chain 39 link and connector
6	2500-3	Double Sprocket 16-30 tooth (JD A24942)
7		1/4" x 1-3/4" Clevis Pin
8	2500-6	Double Sprocket 18-28 tooth (JD A24958)
9		Spacer (JD A20337)
10	3400-1	Flangette (JD B32429)
11	2100-3	7/8" Self Centering Hex Bearing (JD AA22097)
12	D724	15/16" ID Coupling Sleeve
13	D747	Drill Shaft Driver 9/16 hex bore (JD A22390)
14	D748	Coupler Drill Shaft Drive (JD A22392)
15	D745	Idler Spool Sleeve
16	3700-1	Idler Spool (JD B30969)
17	D723	Upper Shaft
18	D722	Lower Shaft
19		5/8" U-bolt, Lock Washer, Nut (JD A22561)
20		1/4" x 1-1/2" Cotter Pin
21	D738	7/8" Shaft (specify planter size, see Figure #109)
22	D739	9/16" Hex Shaft (specify planter size, see Figure #109)
23		5/16" x 1-3/4" Cap Screw, Lock Washer, Nut
24		3/8" x 3/4" Cap Screw
25		1/4" x 1-3/4" Clevis Pin
26		5/16" x 1" Cap Screw, Lock Washer, Nut
27		Unit Drive Sprocket (special application only)

Transmission – Figure #108 (Specify Left or Right)

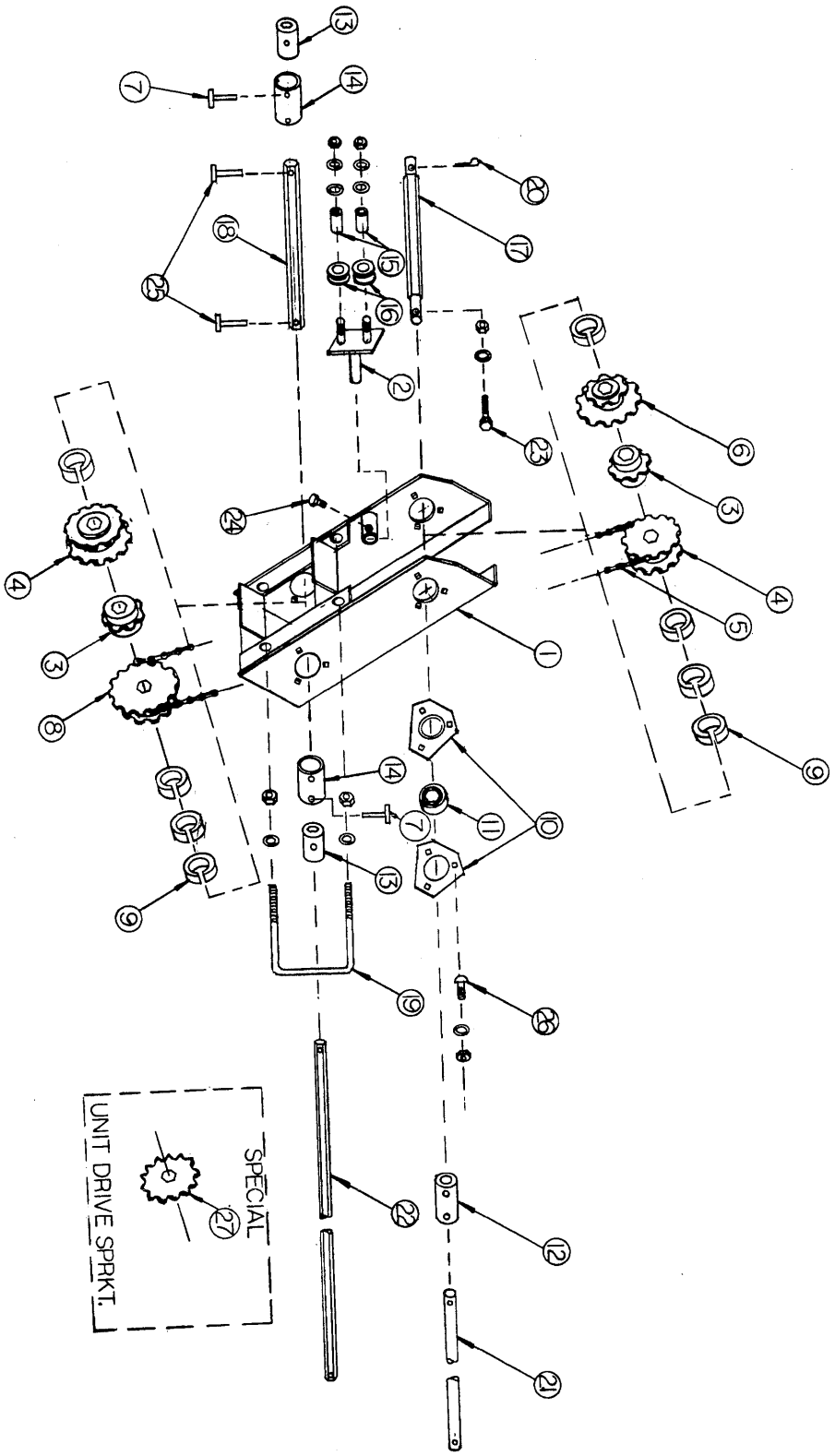


FIGURE #109

9/16'' HEX DRILL SHAFTS

Planter Size	Left Wing		Right Wing	
	Inner	Outer	Inner	Outer
8-row 30''	37''	47''	47''	37''
8-row Wide	48''	60''	60''	48''
12-row 30''	67''	77''	77''	67''
12-row Wide	86''	98''	98''	86''
16-row 30''	66''	137''	77''	127''
18-row 30''	127''	107''	137''	98''
16-row Wide	127''	137''	137''	127''
20-row 30''	127''	137''	137''	127''
24-row 30''	157''	167''	167''	157''

7/8'' COMMON SHAFTS

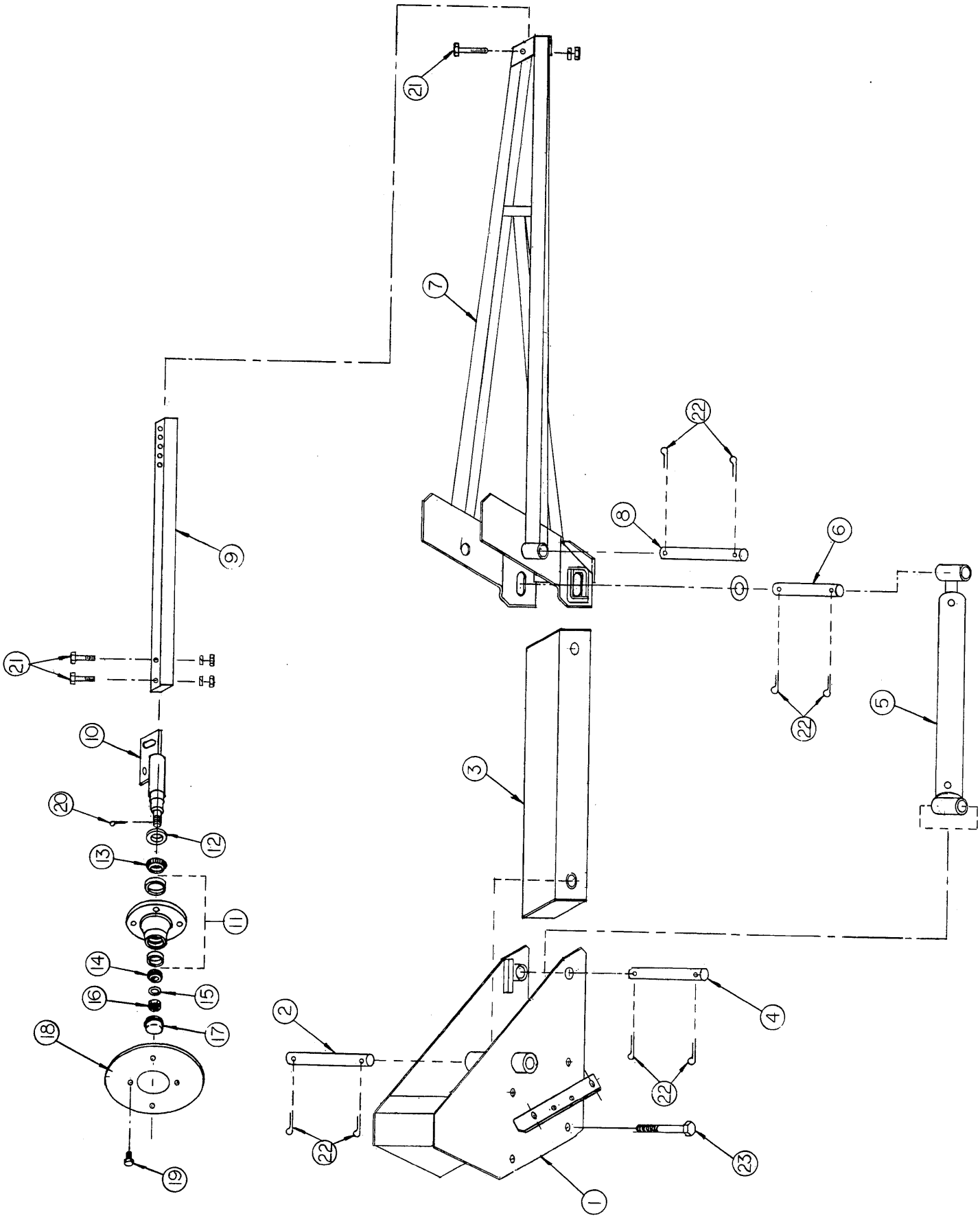
Planter Size	Left Wing	Right Wing	Wheel to Wheel Shaft
8-row 30''	55''	65''	--
8-row Wide	33''	43''	--
12-row 30''	55''	65''	--
12-row Wide	71''	81''	--
16-row 30''	55''	65''	60'' both sides
18-row 30''	25''	35''	60'' both sides
16-row Wide	33''	43''	76'' both sides
20-row 30''	55''	65''	60'' both sides
24-row 30''	85''	95''	60'' both sides

NOTE: Special compact marker assembly requires extra length common shafts.

DOUBLE FOLDING LOW PROFILE MARKER ASSEMBLY

Key	Part Number	Description
1	A165	Marker Mounting Bracket
2	D737	Pivot Pin 1-1/4'' x 13-1/2''
3	A151	First Stage
4	D652	Cylinder Pin 1-1/4'' x 9-1/2''
5	T-65	Cylinder
6	D653	Cylinder Pin Outer End 1-1/4'' x 7-1/2''
7	A171	Second Stage (specify planter size)
8	D652	First and Second Stage Pivot Pin 1-1/4'' x 9-1/2''
9	D710	Extension Tube
10	A172	Bracket with Spindle (specify left or right)
11	2700-6	4-Bolt Hub with Cups
12		Seal
13	L44643	Timkin Bearing (Wilton Hub)
14	L44643	Timkin Bearing (Wilton Hub)
15		3/4'' Washer (Wilton)
16		3/8'' Slotted Hex Nut (Wilton)
17		Hub Cap (Wilton)
18	D746	16'' Disc Blade
19		3/4'' Hub Bolt
20		Cotter Pin
21		1/2'' x 3-3/4'' Cap Screw, Lock Washer, Nut
22		1/4'' x 2'' Cotter Pin
23		3/4'' x 9'' Cap Screw, Lock Washer, Nut (4 used)

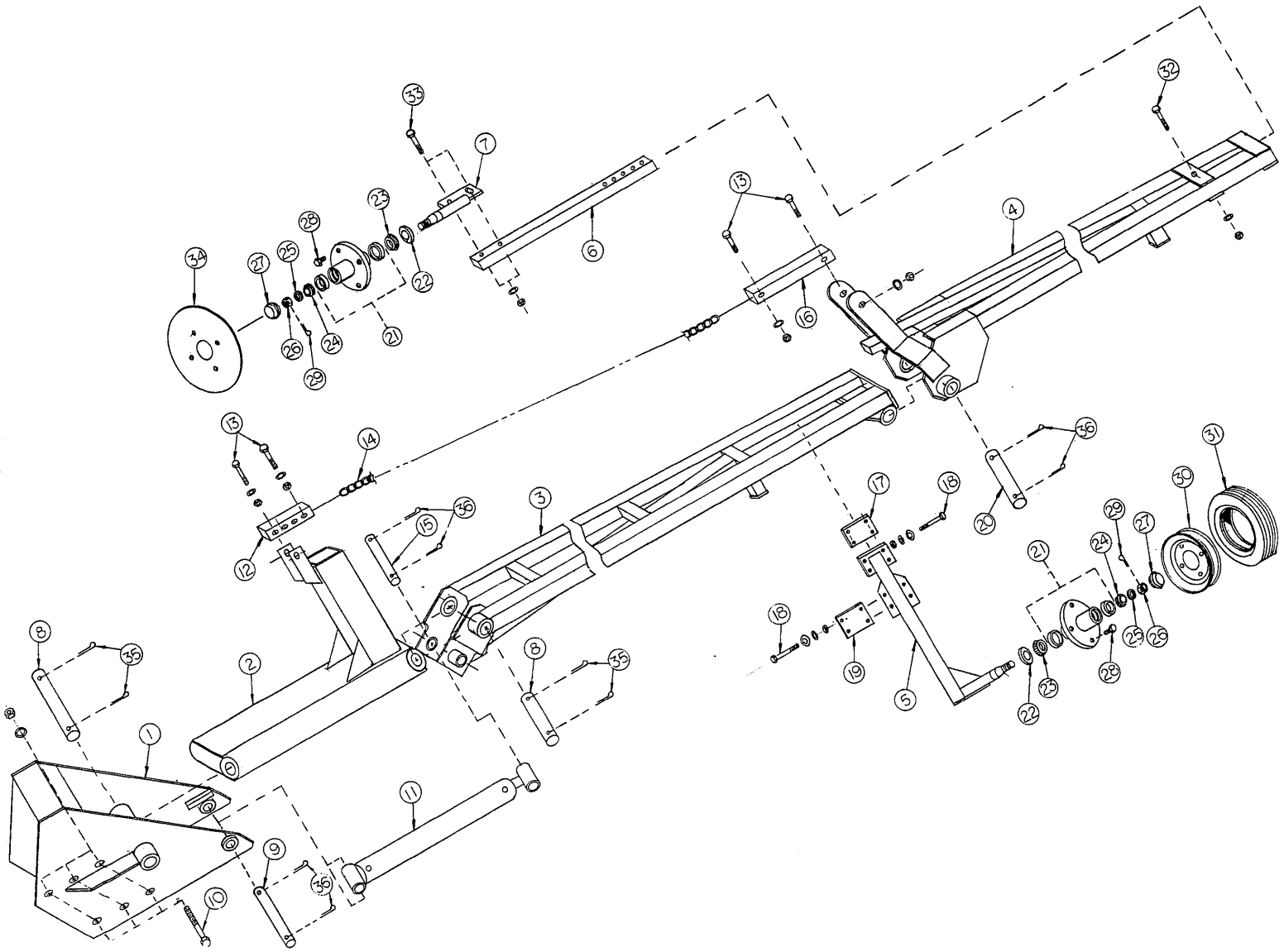
Double Folding Low Profile Marker Assembly – Figure #110



TRIPLE FOLDING LOW PROFILE MARKER ASSEMBLY

Key	Part Number	Description
1	A157	Marker Mounting Bracket
2	A158	First Stage
3	A175	Second Stage (specify planter size)
4	A178	Third Stage (specify planter size)
5	A160	Gauge Wheel Spindle Assembly
6	D710	Extension Tube
7	A172	Bracket with Spindle (specify left or right)
8	D677	Pivot Pin 2-1/8" x 15-1/2"
9	D671	Cylinder Pin 1-1/4" x 10-1/2"
10		3/4" x 9" Cap Screw, Lock Washer, Nut (6 used)
11	T-66	Cylinder
12		Chain Adjustment Bracket (prior 1979)
13		1/2" x 3-1/2" Cap Screw, Lock Washer, Nut
14		7/OS Coil Chain
15	D725	Outer Cylinder Pin 1-1/4" x 11"
16	D757	Marker Chain Bracket
17	D692	Spindle Assembly Mounting Plate
18		3/8" x 15" Cap Screw, Lock Washer, Nut
19	D692	Spindle Assembly Mounting Plate
20	D704	Second and Third Stage Pivot Pin 1-1/4" x 14"
21	2700-6	4-Bolt Hub with Cups (Wilton)
22		Seal (Wilton)
23	L44643	Timkin Bearing
24	L44643	Timkin Bearing
25		3/4" Washer (Wilton)
26		3/4" Slotted Hex Nut (Wilton)
27	909900	Hub Cap (Wilton)
28		3/4" Hub Bolt
29		Cotter Pin
30	T8x7x4	Wheel (Dico 6926)
31	16x6.5x8	Tube Type Tire
32		1/2" x 4" Cap Screw, Lock Washer, Nut
33		1/2" x 4" Cap Screw, Lock Washer, Nut
34	D746	16" Disc Blade

Triple Folding Low Profile Marker Assembly – Figure #111



HYDRAULIC SYSTEM

The hydraulic system used on all Rear Folding Planter Bars consists of the planter lift system and an entirely separate system for the low profile gauge marker assemblies.

Planter Lift System

The independent planter lift system includes a hydraulic proportionator with safety relief valves, a center trunion lift cylinder, and the individual caster wheel cylinder(s) for each wing assembly.

Due to the design of the wing assemblies, all planter bars have three separate lift points. Each wing is equipped with one or two identical caster wheel cylinder(s). A much larger center trunion cylinder is used on the hitch assembly.

Due to the differences in size of the caster wheel cylinders, and the center trunion cylinder, it is necessary to equalize the oil flow to assure even raising and lowering of the planter bar. The hydraulic proportionator is used to "split" the oil flow between the three lift points on the planter bar.

The hydraulic proportionator consists of a common shaft with three separate gears. Each gear is cut to size to match the cubic inch volume of the respective cylinders located on each planter lift point. The center gear is much wider as it services the large center trunion lift cylinder. The two side gears are equal in width as they service the identical caster wheel cylinders.

IMPORTANT: **Never substitute other types or sizes of cylinders as the gears in the hydraulic proportionator are cut in "proportion" for the specific cylinder(s) that they service.**

Assembly of Planter Lift System

All hydraulic hoses, gauge marker controls, and the hydraulic proportionator are preassembled on each planter hitch. All planters are furnished with a separate hydraulic hose kit. Each kit will contain the necessary hoses to connect the transport wheel cylinders and gauge marker cylinders with the hitch assembly. A separate hydraulic fittings kit is provided to make the necessary connections between cylinders and hoses. A separate triple valve hydraulic hose kit is provided when the planter will be connected to a triple valve hydraulic system.

Hydraulic System Cont'd

After the proper hydraulic diagram has been selected for the size planter being assembled, make certain that it specifies either "Double" or "Triple" valve outlets.

Due to the fact that all hoses will be pre-assembled on the planter hitch, it will only be necessary to "hook-up" the Transport wheels and Marker cylinders.

The Hydraulic diagrams that follow list the description, part number, and length of the hydraulic hoses. The exact USE and LOCATION of each hydraulic hose has been presented on the drawing as well.

NOTE: **It is very important that the proper "pressure" and "return" lines are connected as shown in the following hydraulic diagrams. DO NOT attempt to activate the hydraulic system without first double checking all hydraulic hoses and fittings.**

Pressure Relief Line:

A pressure relief line has been pre-assembled on the planter hitch system as explained. It is necessary to connect this line to the tractor hydraulic resevoir. The line is easily identified, as it is furnished with a SAFEWAY hydraulic coupler for easy installation.

NOTE: **All Hydraulic hoses on the planter bar are constructed of 3/8'' 100 R2 material, unless specified otherwise on the separate hydraulic diagrams.**

All hoses will be furnished with either a 1/2'' Male Pipe Thread (1/2 NPTM) rigid end or J.I.C. Female Swivel Ends (3/4-16).

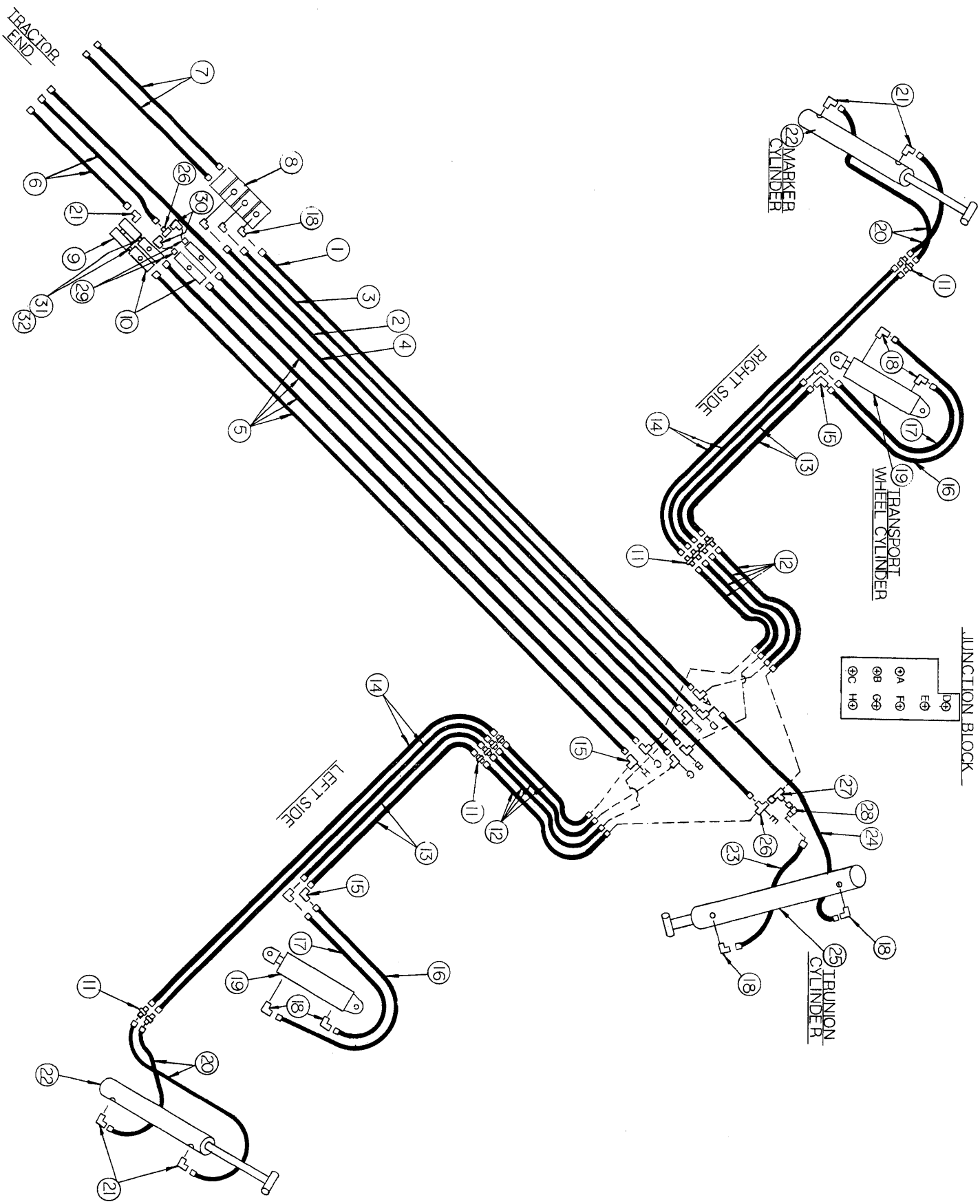
All planter bars are furnished with high quality "Hydraulic Tube Fittings". All part numbers in this booklet conform to all S.A.E. and J.I.C. standards for hydraulic tube fittings.

DO NOT confuse JIC threads with O-ring or O.R.B. threads.

8-ROW WIDE HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9001	Proportionator/relief valves (See Fig. #130)
9		12V DC Solenoid Valve (2-used) (See Fig. #131)
10		KLF 500 Flow Control (4-used) (See Fig. #132)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-116	116'' - 3/4-16 JIC Female (4-used)
14	5000-148	148'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (2-used)
17	5000-44	44'' - 3/4-16 JIC Female (2-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (9-used)
19	PMC-9310	Transport Wheel Cylinder (2-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8	90° Male Elbow (3/8'' MPT) (5-used)
22	T-65	Marker Cylinder
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (2-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29		3/8'' - 1/2'' Hex Bushing (2 used)
30	6501-8	90° Swivel Adapter
31		3/8'' Close Nipple (2 used)
32		3/8'' - 1/2'' Hex Bushing (2 used)

8-Row Wide Hydraulics Diagram For Dual Valve Outlets – Figure #115

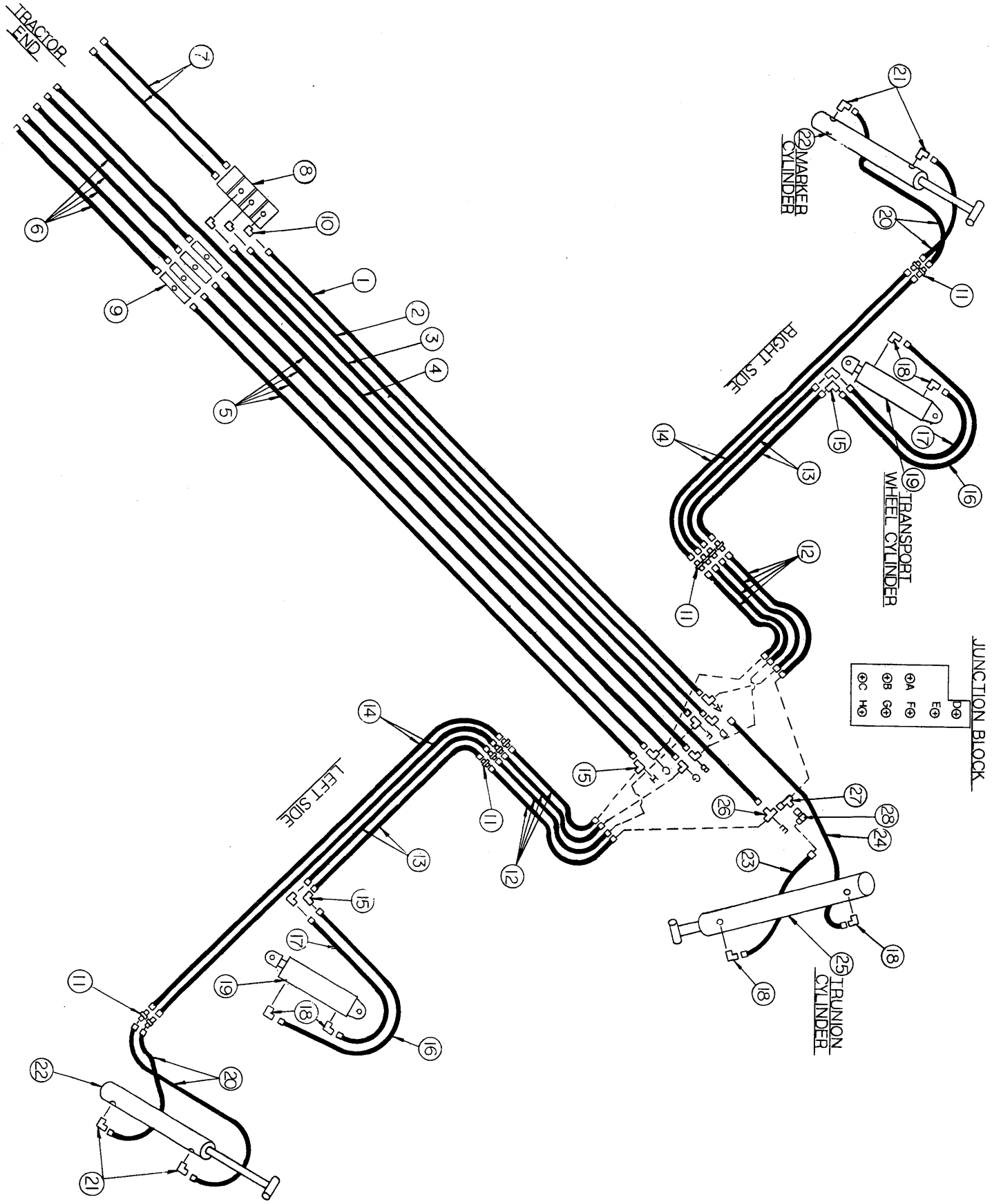


8-ROW WIDE HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (4-used) ** (See Triple Valve Host Kit Below)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9001	Proportionator/relief valves (See Fig. #130)
9		KLF 500 Flow Controls (4-used) (See Fig. #132)
10	2501-8-8	90° Male Elbow (1/2'' MPT) (3-used)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-116	116'' - 3/4-16 JIC Female (4-used)
14	5000-148	148'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (2-used)
17	5000-44	44'' - 3/4-16 JIC Female (2-used)
18	2501-8-8	90° Male Elbow (6-used)
19	PMC-9310	Transport Wheel Cylinder (2-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8	90° Male Elbow (3/8'' MPT) (4-used)
22	T-65	Marker Cylinder
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow

Key	Part Number	Description
6	5000-96	96'' - 1/2 NPTM - 3.4-16 JIC Female
		Two (2) hoses are furnished in the "Triple Valve Kit", when ordered separately. When the planter bar is ordered for use with Triple Valve Hydraulics, all four (4) hoses, Part No. 5000-96 will be furnished.
6	2404-8-8	Straight Adaptor - Male (4-used)
		Must be used to connect Triple Valve Hoses to Flow Control Valves, when Triple Valve Hydraulics is used: (Not shown on drawing)

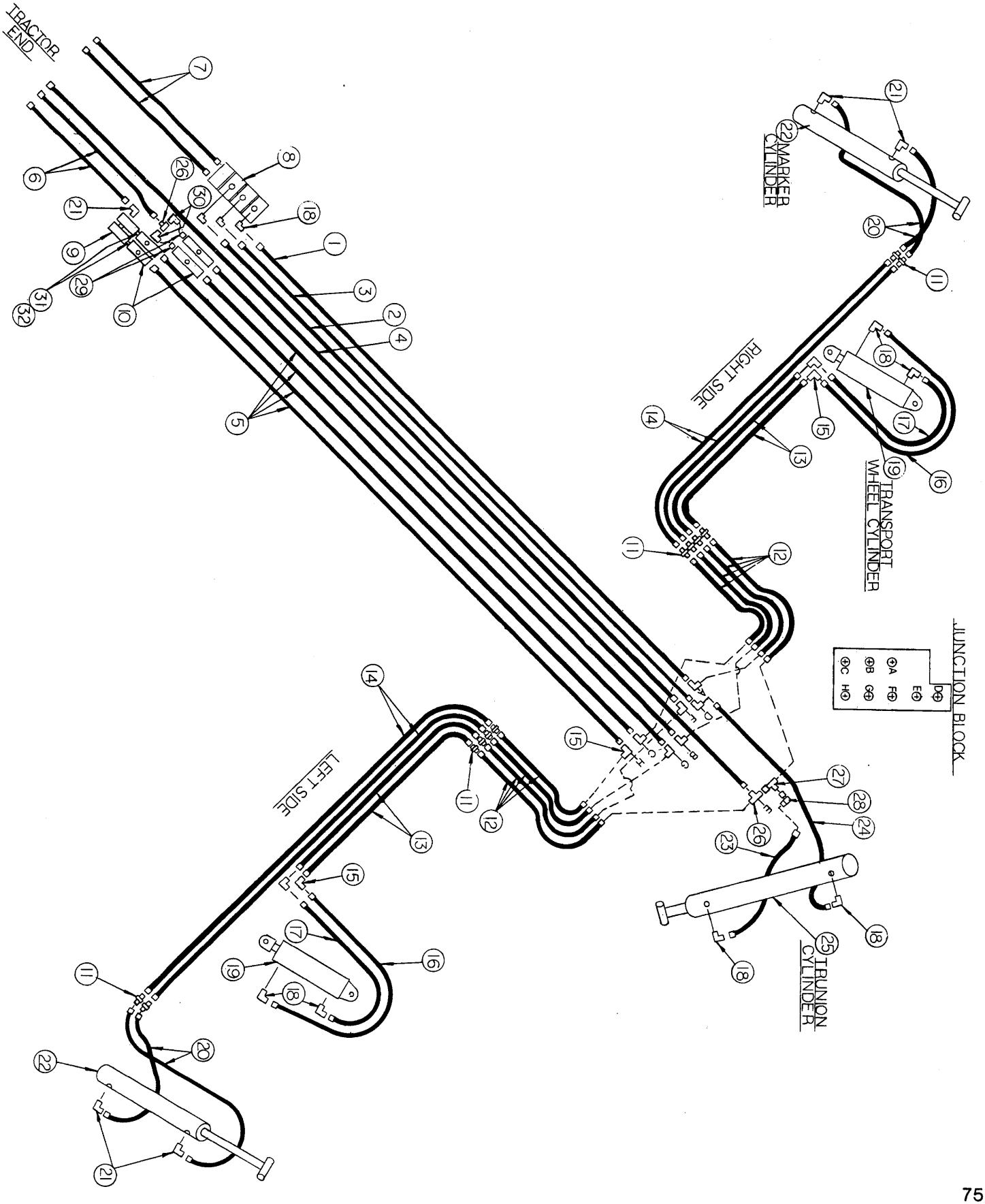
8-Row Wide Hydraulics Diagram For Triple Valve Outlets – Figure #116



12-ROW 30'' HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9001	Proportionator/relief valves (See Fig. #130)
9		12V DC Solenoid Valve (2-used) (See Fig. #131,
10		KLF 500 Flow Control (4-used) (See Fig. #132)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-152	152'' - 3/4-16 JIC Female (4-used)
14	5000-190	190'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (2-used)
17	5000-44	44'' - 3/4-16 JIC Female (2-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (9-used)
19	PMC-9310	Transport Wheel Cylinder (2-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8	90° Male Elbow (3/8'' MPT) (5-used)
22	T-65	Marker Cylinder
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (2-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29		3/8'' - 1/2'' Hex Bushing (2 used)
30	6501-8	90° Swivel Adapter
31		3/8'' Close Nipple (2 used)
32		3/8'' - 1/2'' Hex Bushing (2 used)

12-Row 30'' Hydraulics Diagram For Dual Valve Outlets – Figure #117



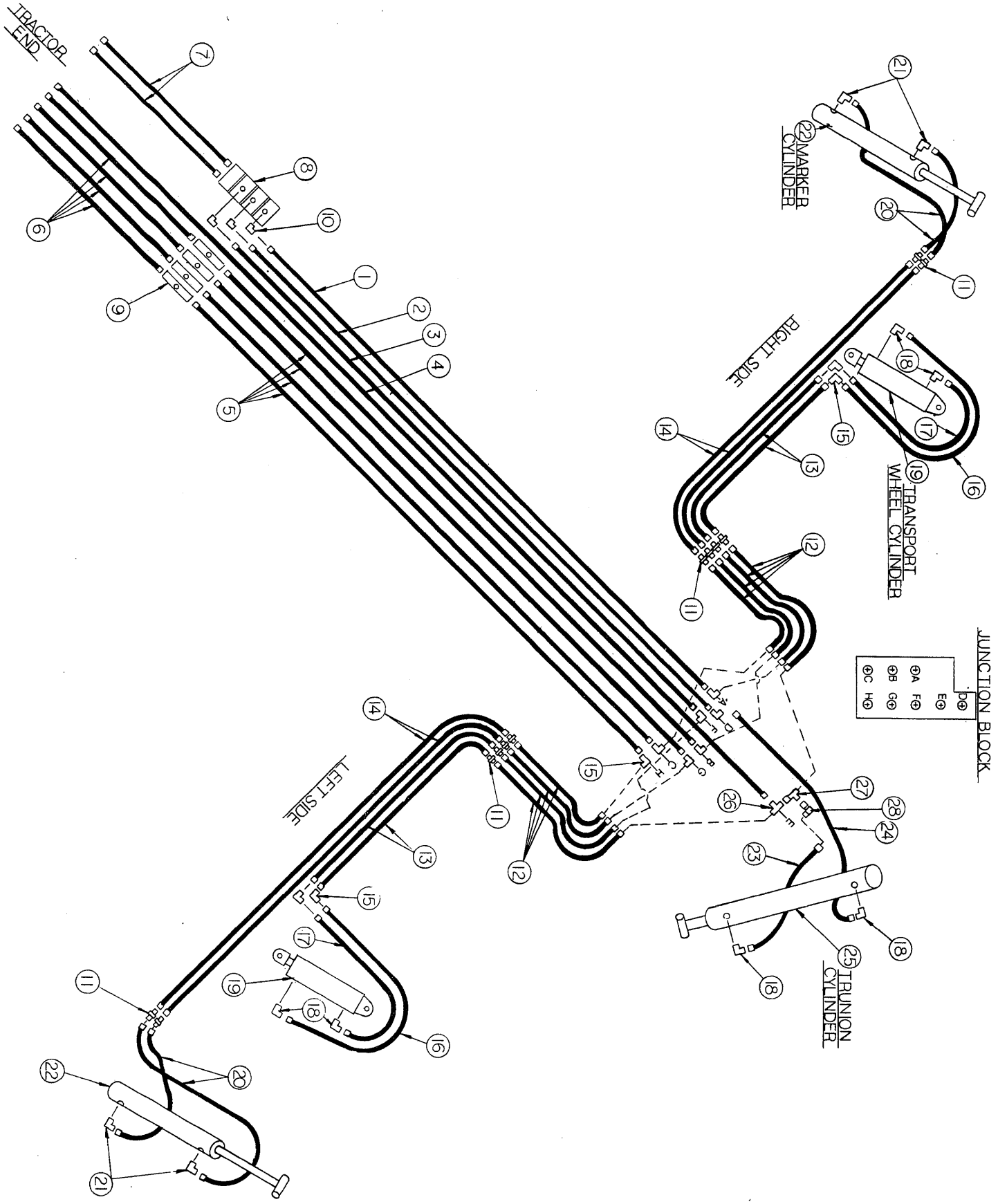
12-ROW 30'' HYDRAULICS DIAGRAM FOR TRIPLE VALVE HYDRAULICS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (4-used) ** (See Triple Valve Host Kit Below)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9001	Proportionator/relief valves (See Fig. #130)
9		KLF 500 Flow Control (4-used) (See Fig. #132)
10	2501-8-8	90° Male Elbow (1/2'' MPT) (3-used)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-152	152'' - 3/4-16 JIC Female (4-used)
14	5000-190	190'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (2-used)
17	5000-44	44'' - 3/4-16 JIC Female (2-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (6-used)
19	PMC-9310	Transport Wheel Cylinders (2-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8	90° Male Elbow (3/8'' MPT) (4-used)
22	T-65	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow

** TRIPLE VALVE HYDRAULICS KIT:

Key	Part Number	Description
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female
		Two (2) hoses are furnished in the "Triple Valve Kit", when ordered separately. When the planter bar is ordered for use with Triple Valve Hydraulics, all four (4) hoses Part No. 5000-96, are furnished.
6	2404-8-8	Straight Adaptor - Male (4-used)
		Must be used to connect Triple Valve Hoses To Flow Control Valves, when Triple Valve Hydraulics is used: (Not shown on drawing)

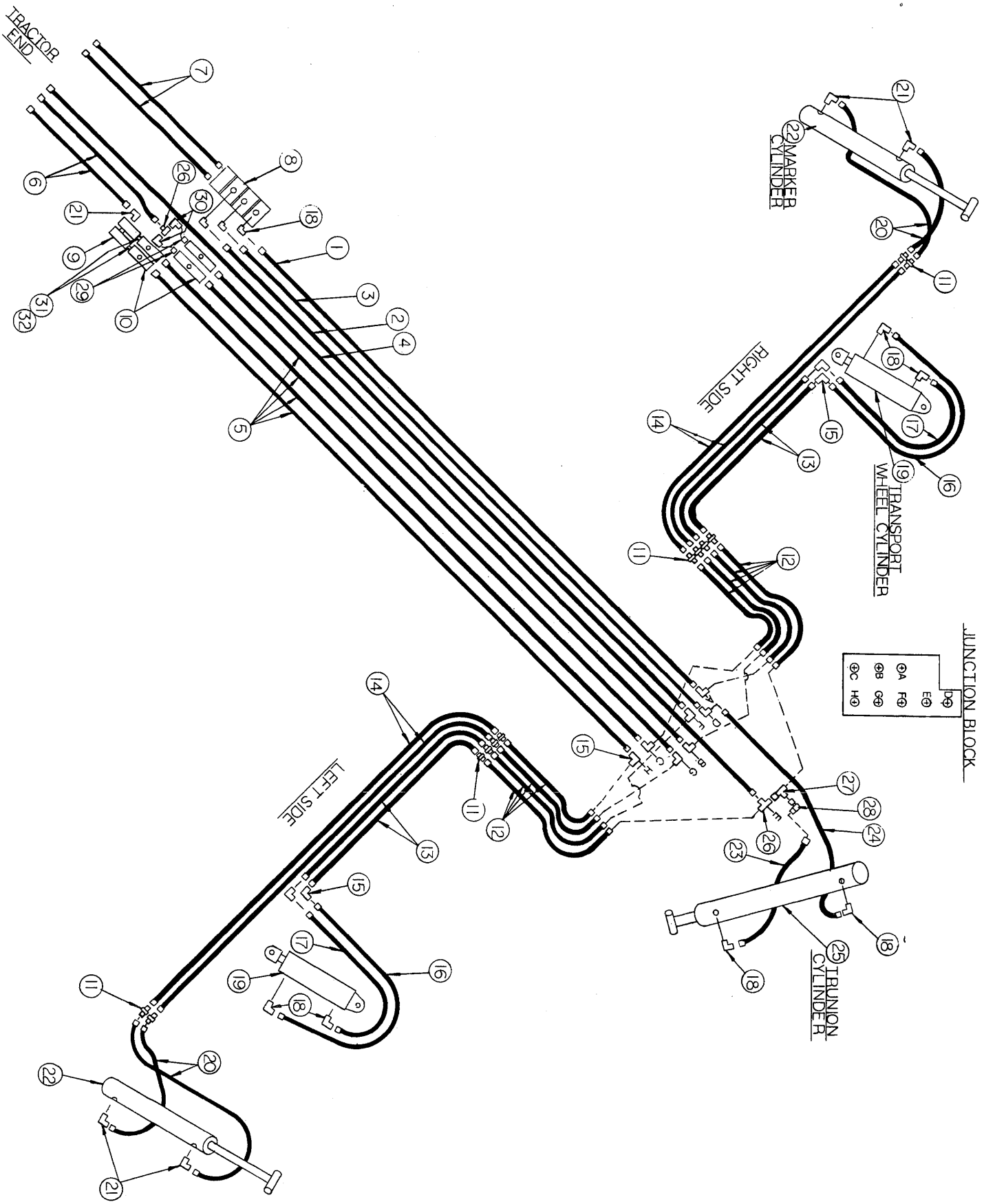
12-Row 30'' Hydraulics Diagram For Triple Valve Outlets – Figure #118



12-ROW WIDE HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9001	Proportionator/relief valves (See Fig. #130)
9		12V DC Solenoid Valve (2-used) (See Fig. #131)
10		KLF 500 Flow Control (4-used) (See Fig. #132)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-192	192'' - 3/4-16 JIC Female (4-used)
14	5000-234	234'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (2-used)
17	5000-44	44'' - 3/4-16 JIC Female (2-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (9-used)
19	PMC-9310	Transport Wheel Cylinder (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8	90° Male Elbow (3/8'' MPT) (5-used)
22	T-65	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29		3/8'' - 1/2'' Hex Bushing (2 used)
30	6501-8	90° Swivel Adapter
31		3/8'' Close Nipple (2 used)
32		3/8'' - 1/2'' Hex Bushing (2 used)

12-Row Wide Hydraulics Diagram For Dual Valve Outlets – Figure #119

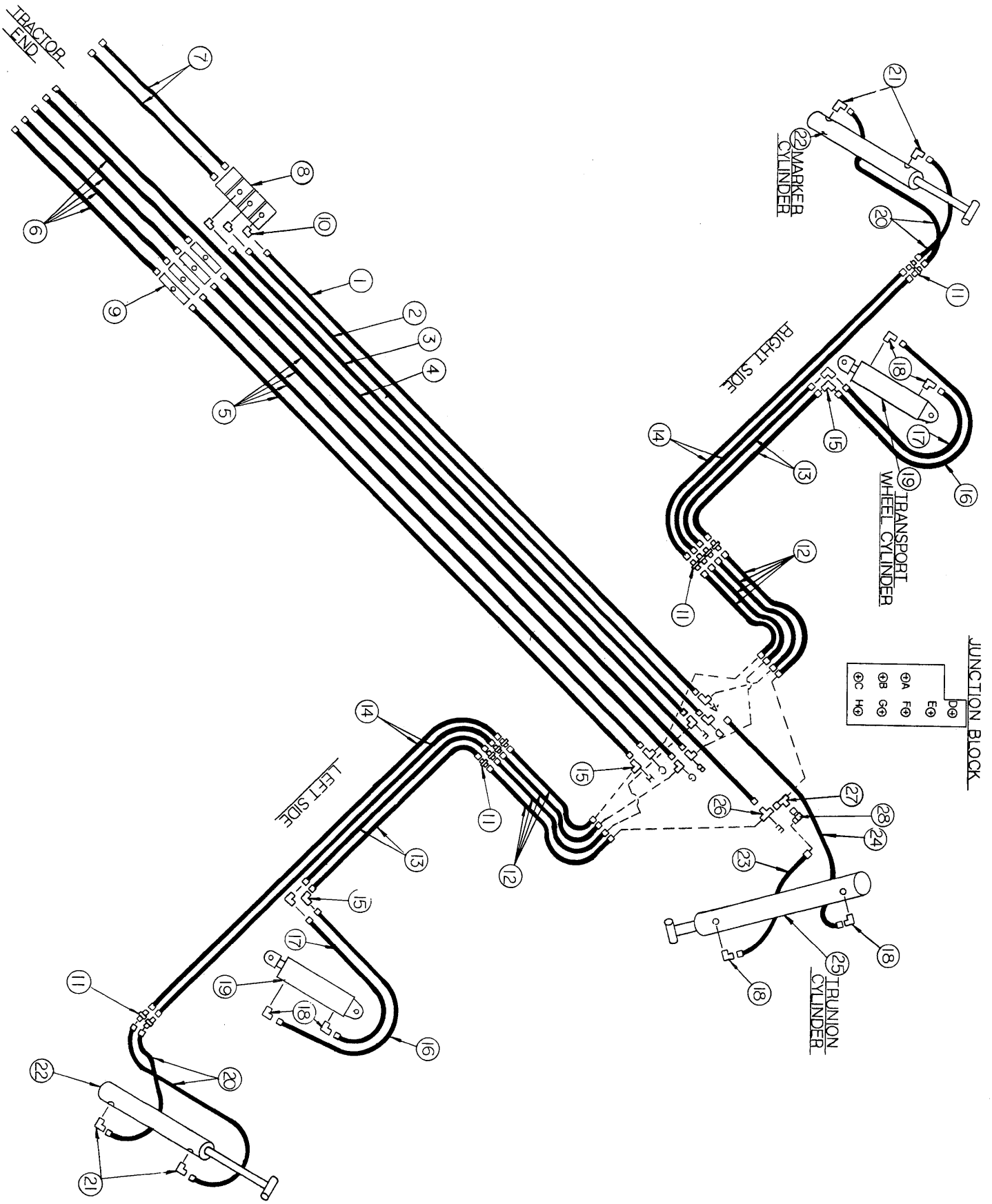


12-ROW WIDE HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (4-used) ** (See Triple Valve Host Kit Below)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9001	Proportionator/relief valves (See Fig. #130)
9		KLF 500 Flow Control (4-used) (See Fig. #132)
10	2501-8-8	90° Male Elbow (1/2'' MPT) (3-used)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-192	192'' - 3/4-16 JIC Female (4-used)
14	5000-234	234'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (2-used)
17	5000-44	44'' - 3/4-16 JIC Female (2-used)
18	2501-8-8	90° Male Elbow (6-used) (1/2'' MPT)
19	PMC-9310	Transport Wheel Cylinders (2-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8	90° Male Elbow (3/8'' MPT) (4-used)
22	T-65	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow

Key	Part Number	Description
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female
		Two (2) hoses are furnished in the "Triple Valve Kit", when ordered separately. When the planter bar is ordered for use with Triple Valve Hydraulics, all four (4) hoses, Part No. 5000-96, are furnished.
6	2404-8-8	Straight Adaptor - Male (4-used)
		Must be used to connect Triple Valve Hoses to Flow Control Valves, when Triple Valve Hydraulics is used: (Not shown on drawing)

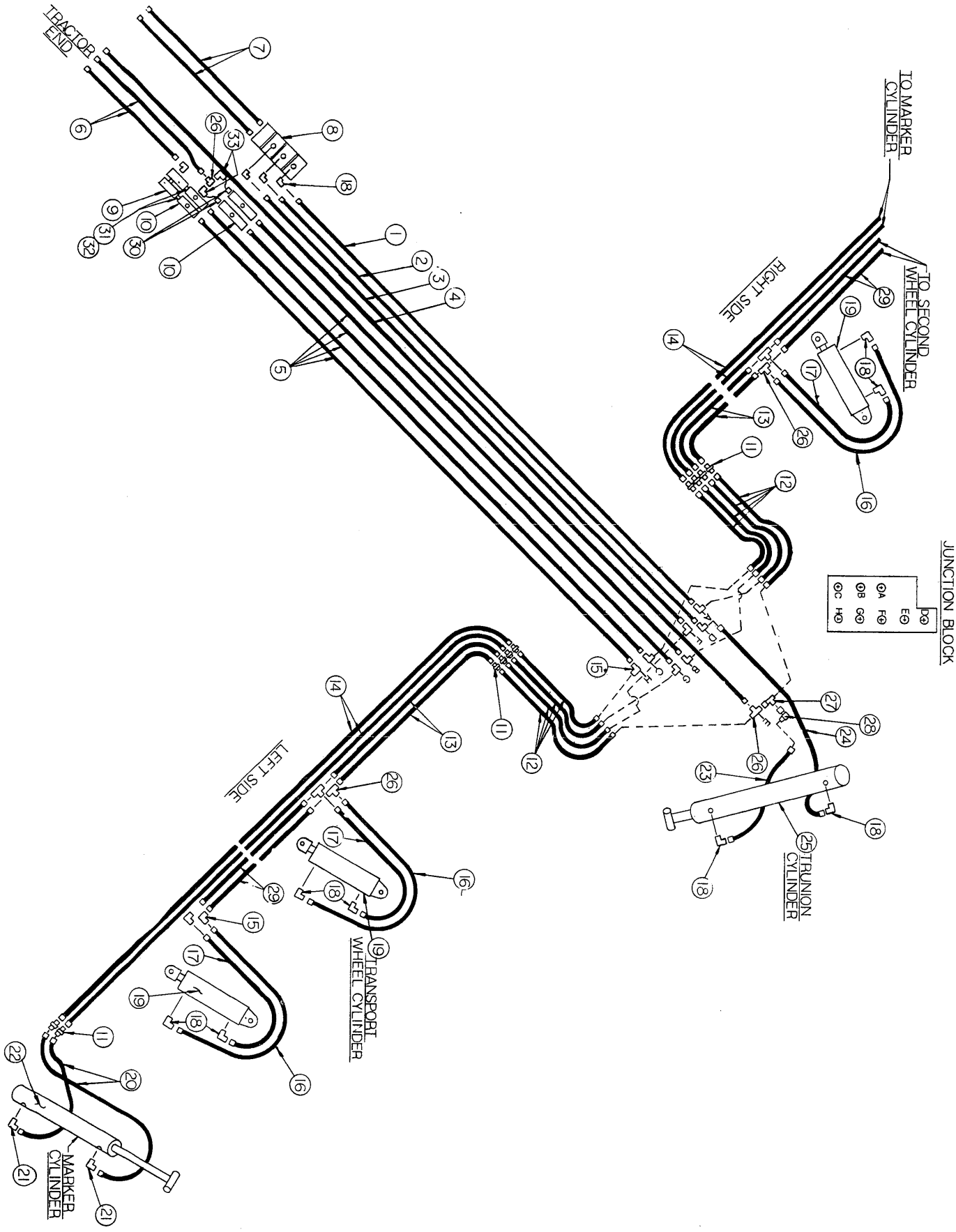
12-Row Wide Hydraulics Diagram For Triple Valve Outlets – Figure #120



16-ROW 30'' HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9002	Proportionator/relief valves (See Fig. #130)
9		12V DC Solenoid Valve (2-used) (See Fig. #131)
10		KLF 500 Flow Control (4-used) (See Fig. #132)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-152	152'' - 3/4-16 JIC Female (4-used)
14	5000-250	250'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (13-used) (1/2'' MPT)
19	PMC 9310	Transport Wheel Cylinder (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8-8	90° Male Elbow (5-used) (3/8'' MPT)
22	T-65	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (6-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29	5000-60	60'' - 3/4-16 JIC Female (4-used)
30		3/8'' - 1/2'' Hex Bushing (2-used)
31		3/8'' - 1/2'' Hex Bushing (2-used)
32		3/8'' Close Nipple (2-used)
33	6501-8	90° Swivel Adapter (2-used)

16-Row 30'' Hydraulics Diagram For Dual Valve Outlets – Figure #121



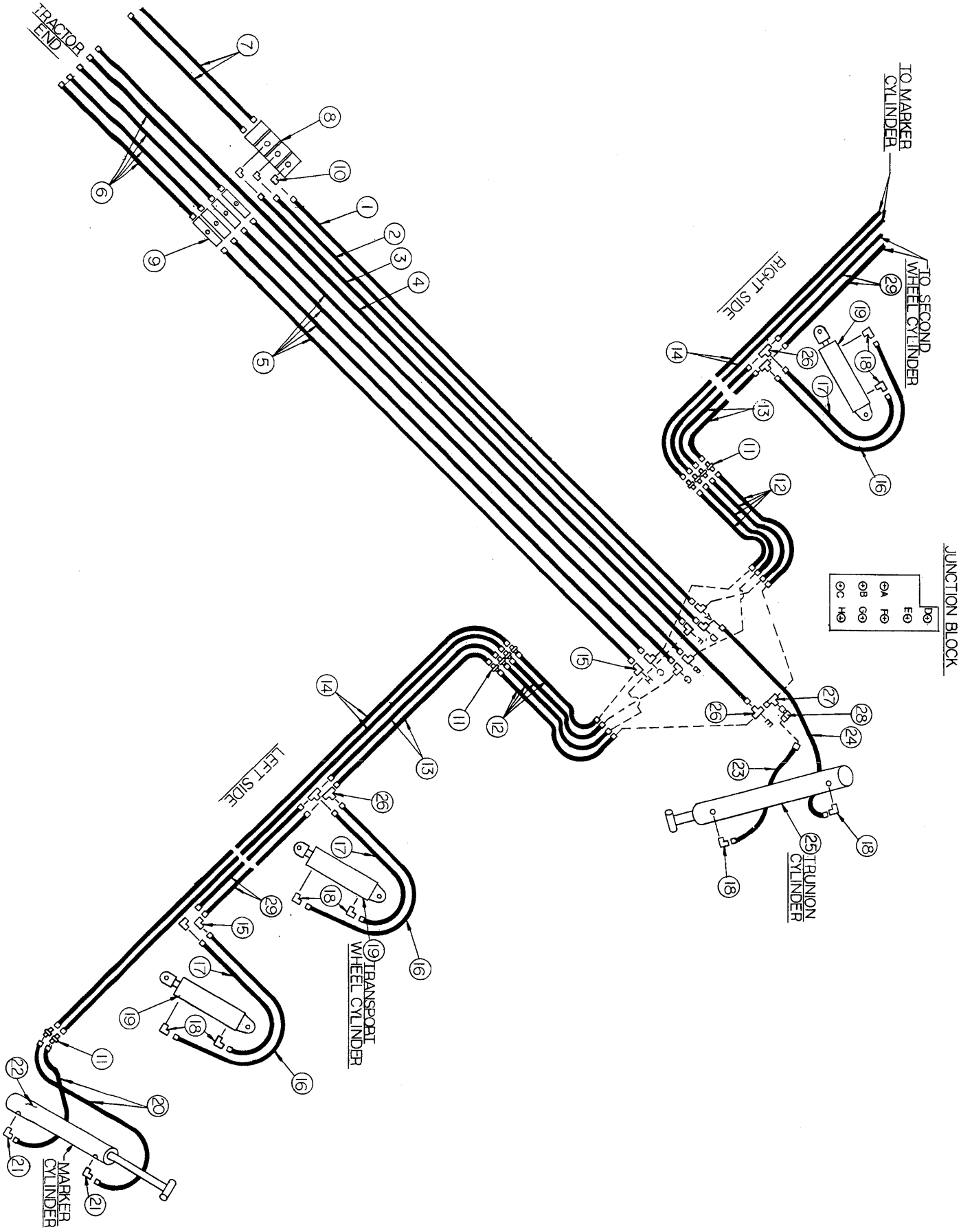
16-ROW 30'' HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS

Key	Part Number	Description
1	5000-150	150'' - 3/4-16 JIC Female
2	5000-155	155'' - 3/4-16 JIC Female
3	5000-154	154'' - 3/4-16 JIC Female
4	5000-240	240'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-140	140'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (4-used) **(See Triple Valve Hose Kit Below)
7	5000-80	80'' - 1/2-NPTM - 3/4-16 JIC Female (2-used)
8	9002	Proportionator/relief valves (See Fig. #130)
9		KLF 500 Flow Control (4-used) (See Fig. #132)
10	2501-8-8	90° Male Elbow (1/2'' MPT) (3-used)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-152	152'' - 3/4-16 JIC Female (4-used)
14	5000-250	250'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (10-used)
19	PMC-9310	Transport Wheel Cylinders (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8	90° Male Elbow (3/8'' MPT) (4-used)
22	T-65	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (5-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29	5000-60	60'' 3/4-16 JIC Female (4-used)

** TRIPLE VALVE HYDRAULICS KIT:

Key	Part Number	Description
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female Two (2) hoses are furnished in the "Triple Valve Kit", when ordered separately. When the planter bar is ordered for use with Triple Valve Hydraulics, all four (4) hoses, Part No. 5000-96, are furnished.
6	2404-8-8	Straight Adaptor - Male (4-used) Must be used to connect Triple Valve Hoses to Flow Control Valves, when Triple Valve Hydraulics is used: (Not shown on drawing)

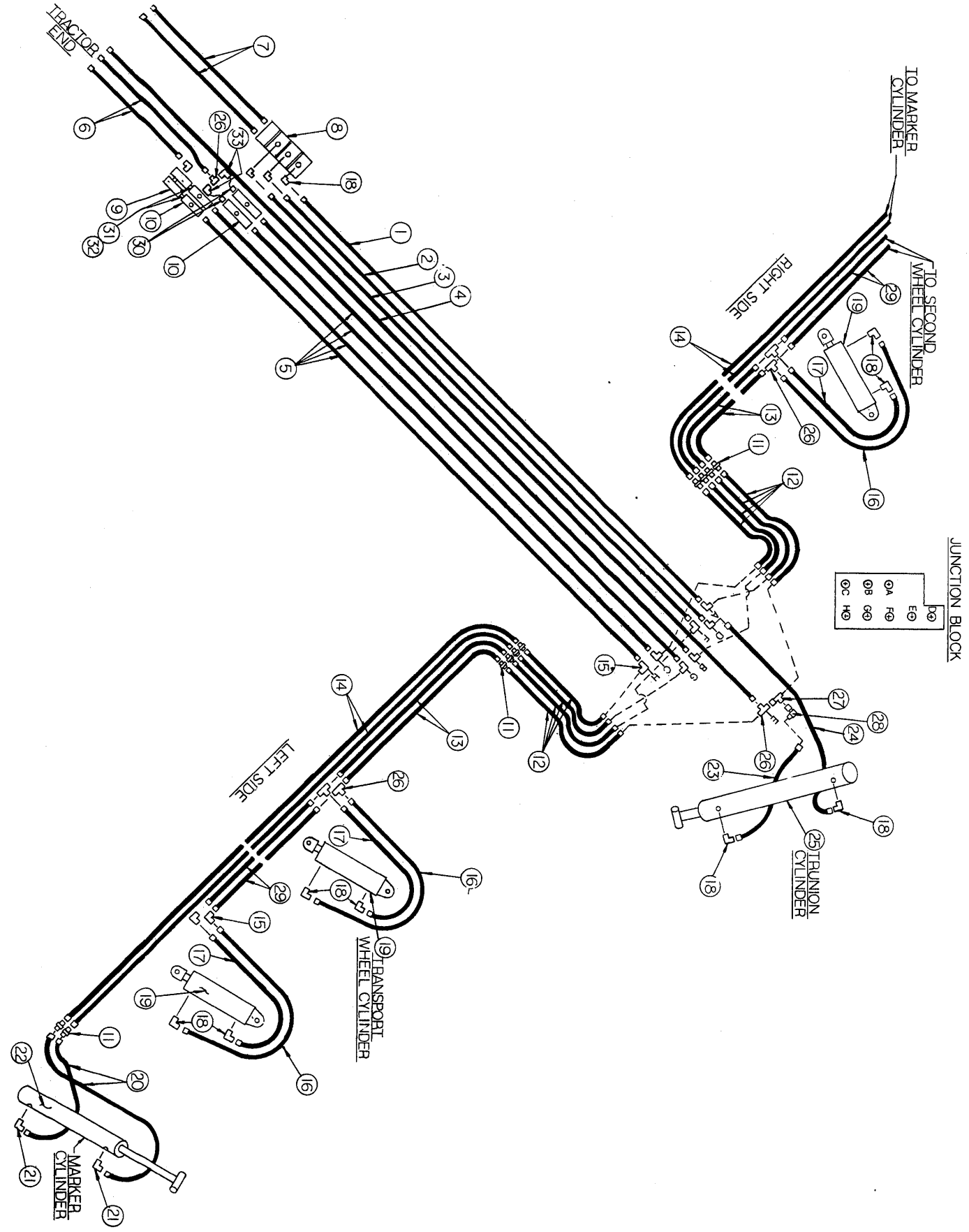
16-Row 30" Hydraulics Diagram For Triple Valve Outlets – Figure #122



18-ROW 30'' HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS

Key	Part Number	Description
1	5000-186	186'' - 3/4-16 JIC Female
2	5000-190	190'' - 3/4-16 JIC Female
3	5000-191	191'' - 3/4-16 JIC Female
4	5000-276	276'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-176	176'' - 1/2 NPTM - 3/4-16 JIC Female
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9002	Proportionator/relief valves (See Fig. #130)
9		12V DC Solenoid Valve (2-used) (See Fig. #131)
10		KLF 500 Flow Control (4-used) (See Fig. #132)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-182	182'' - 3/4-16 JIC Female (4-used)
14	5000-280	280'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (13-used) (1/2'' MPT)
19	PMC 9310	Transport Wheel Cylinder (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	22501-8-8	90° Male Elbow (4-used) (1/2'' MPT)
22	T-66	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (6-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29	5000-60	60'' - 3/4-16 JIC Female (4-used)
30		3/8'' - 1/2'' Hex Bushing (2-used)
31		3/8'' - 1/2'' Hex Bushing (2-used)
32		3/8'' Close Nipple (2-used)
33	6501-8	90° Swivel Adapter (2-used)

18-Row 30'' Hydraulics Diagram For Dual Valve Outlets – Figure #123



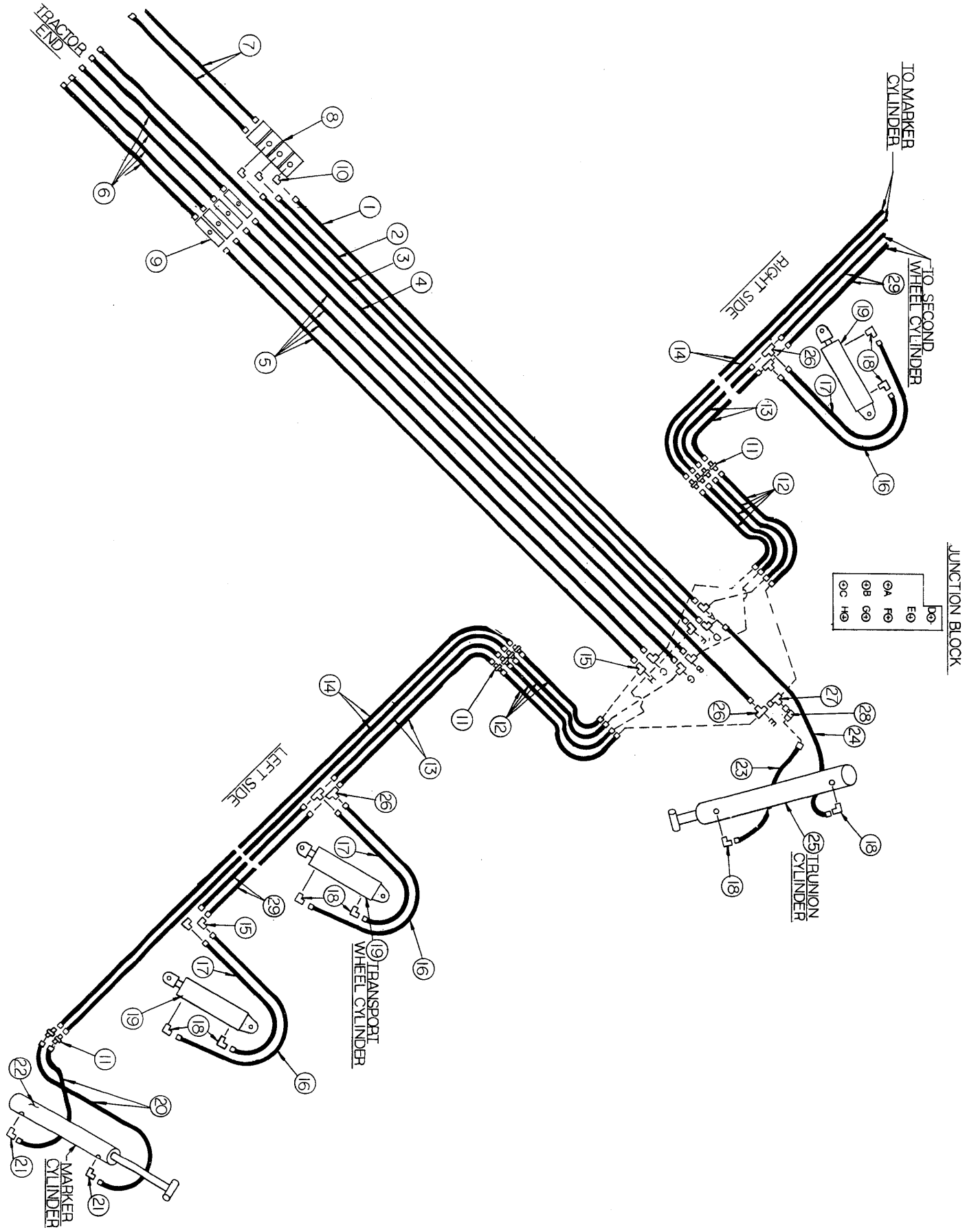
18-ROW 30'' HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS

Key	Part Number	Description
1	5000-186	186'' - 3/4-16 JIC Female
2	5000-190	190'' - 3/4-16 JIC Female
3	5000-191	191'' - 3/4-16 JIC Female
4	5000-276	276'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-176	176'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (4-used) **(See Triple Valve Hose Kit Below)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9002	Proportionator/relief valves (See Fig. #130)
9		KLF 500 Flow Control (4-used) (See Fig. #132)
10	2501-8-8	90° Male Elbow (1/2'' MPT) (3-used)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-182	182'' - 3/4-16 JIC Female (4-used)
14	5000-280	280'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (10-used)
19	PMC-9310	Transport Wheel Cylinders (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8-8	90° Male Elbow (1/2'' MPT) (4-used)
22	T-66	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (5-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90'' Swivel Elbow
29	5000-60	60'' 3/4-16 JIC Female (4-used)

** TRIPLE VALVE HYDRAULICS KIT:

Key	Part Number	Description
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female
		Two (2) hoses are furnished in the "Triple Valve Kit", when ordered separately. When the planter bar is ordered for use with Triple Valve Hydraulics, all four (4) hoses, Part No. 5000-96, are furnished.
6	2404-8-8	Straight Adaptor - Male (4-used)
		Must be used to connect Triple Valve Hoses to Flow Control Valves, when Triple Valve Hydraulics is used: (Not shown on diagram)

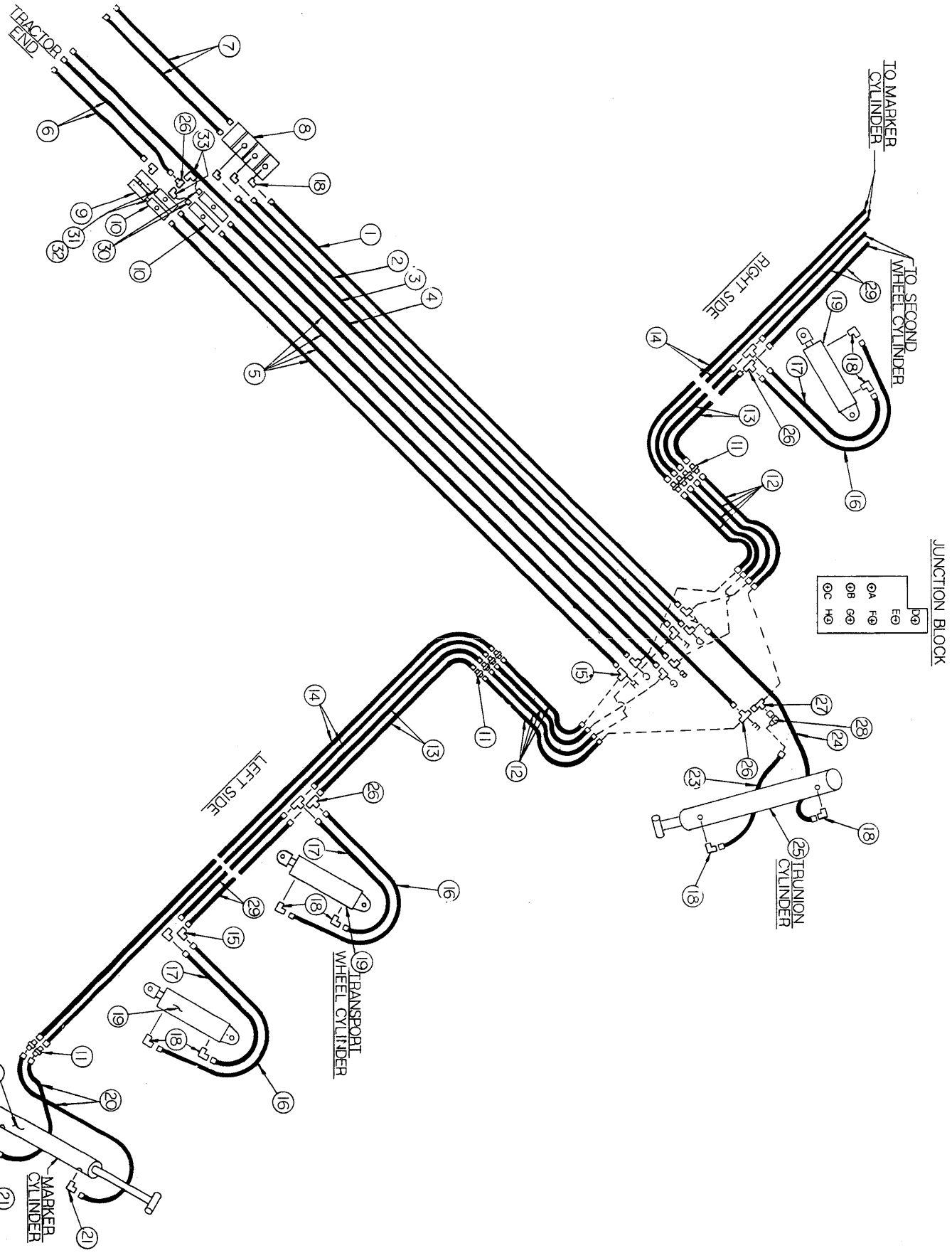
18-Row 30'' Hydraulics Diagram For Triple Valve Outlets – Figure #124



16-ROW WIDE HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS

Key	Part Number	Description
1	5000-186	186'' - 3/4-16 JIC Female
2	5000-190	190'' - 3/4-16 JIC Female
3	5000-191	191'' - 3/4-16 JIC Female
4	5000-276	276'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-176	176'' - 1/2 NPTM - 3/4-16 JIC Female
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9002	Proportionator/relief valves (See Fig. #130)
9		12V DC Solenoid Valve (2-used) (See Fig. #131)
10		KLF 500 Flow Control (4-used) (See Fig. #132)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-192	192'' - 3/4-16 JIC Female (4-used)
14	5000-310	310'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (13-used) (1/2'' MPT)
19	PMC 9310	Transport Wheel Cylinder (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8-8	90° Male Elbow (4-used) (1/2'' MPT)
22	T-66	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (6-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29	5000-76	76'' - 3/4-16 JIC Female (4-used)
30		3/8'' - 1/2'' Hex Bushing (2-used)
31		3/8'' - 1/2'' Hex Bushing (2-used)
32		3/8'' Close Nipple (2-used)
33	6501-8	90° Swivel Adaptor (2-used)

16-Row Wide Hydraulics Diagram For Dual Valve Outlets – Figure #125



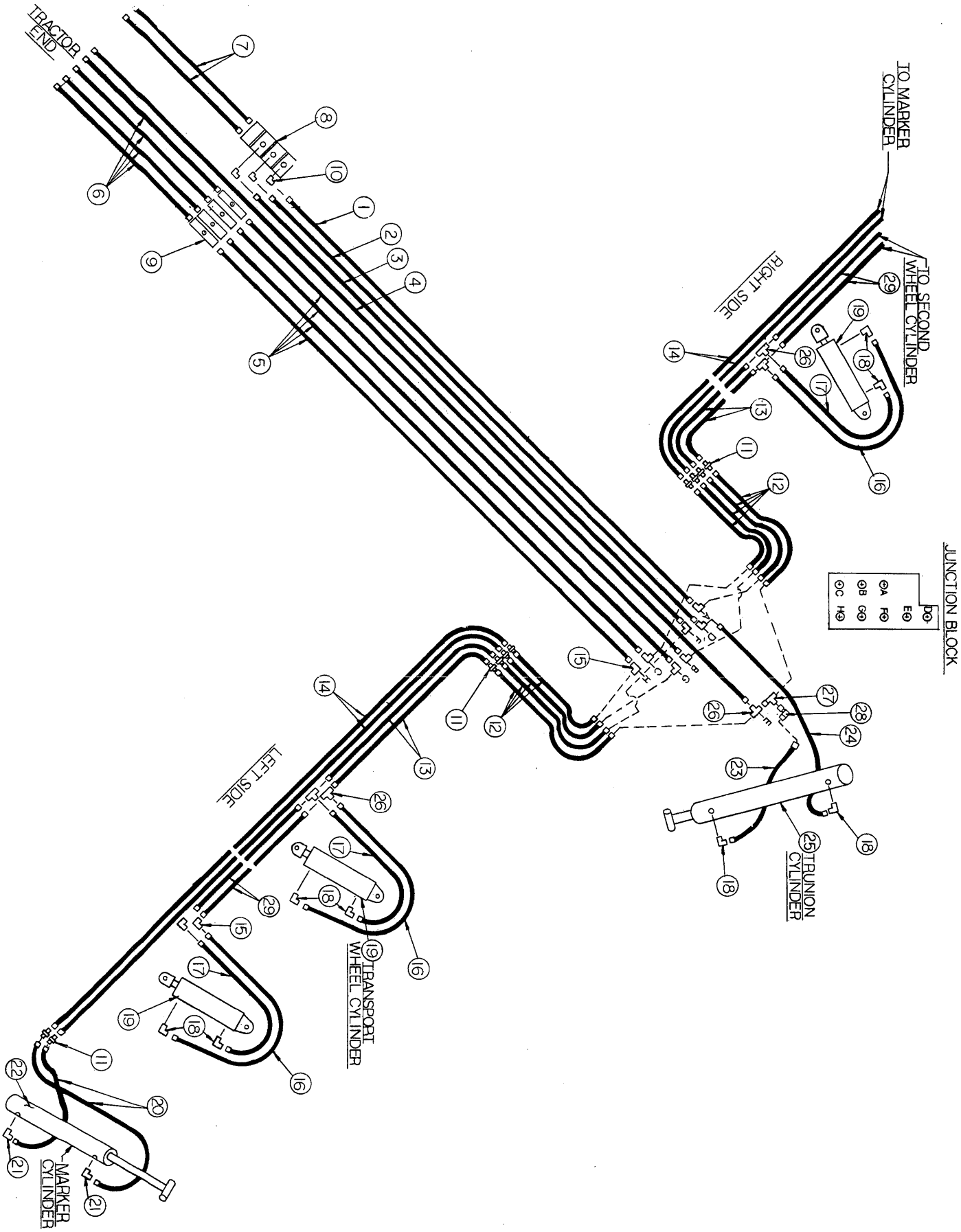
16-ROW WIDE HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS

Key	Part Number	Description
1	5000-186	186'' - 3/4-16 JIC Female
2	5000-190	190'' - 3/4-16 JIC Female
3	5000-191	191'' - 3/4-16 JIC Female
4	5000-276	276'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-176	176'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (4-used) **(See Triple Valve Host Kit Below)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9002	Propportionator/relief valves (See Fig. #130)
9		KLF 500 Flow Control (4-used) (See Fig. #132)
10	2501-8-8	90° Male Elbow (1/2'' MPT) (3-used)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-192	192'' - 3/4-16 JIC Female (4-used)
14	5000-310	310'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (10-used)
19	PMC-9310	Transport Wheel Cylinders (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8-8	90° Male Elbow (1/2'' MPT) (4-used)
22	T-66	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (5-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29	5000-76	76'' 3/4-16 JIC Female (4-used)

** TRIPLE VALVE HYDRAULICS KIT:

Key	Part Number	Description
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female
		Two (2) hoses are furnished in the "Triple Valve Kit", when ordered separately. When the planter bar is ordered for use with Triple Valve Hydraulics, all four (4) hoses, Part No. 5000-96, are furnished.
6	2404-8-8	Straight Adaptor - Male (4-used)
		Must be used to connect Triple Valve Hoses to Flow Control Valves, when Triple Valve Hydraulics is used: (Not shown on diagram)

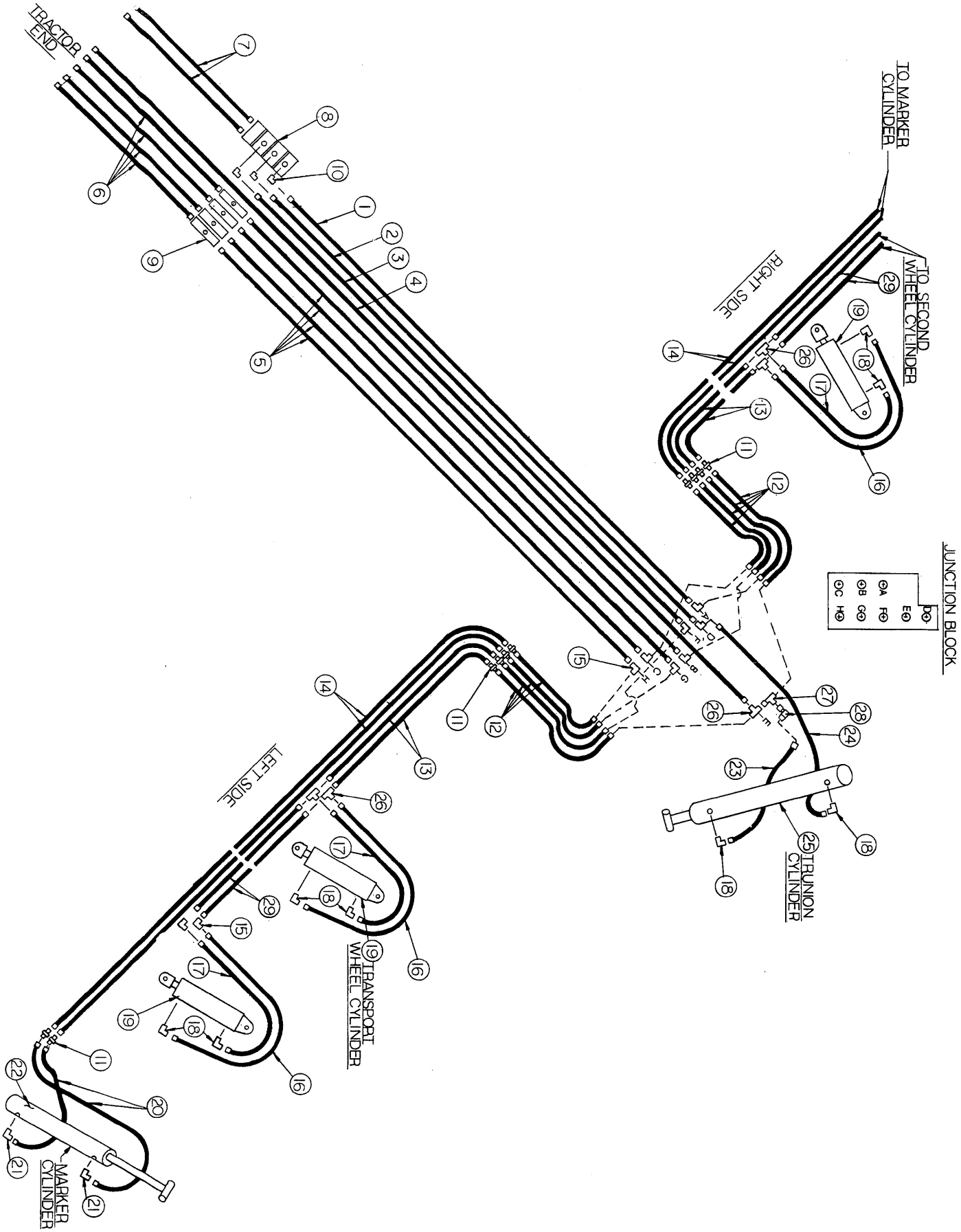
16-Row Wide Hydraulics Diagram For Triple Valve Outlets–Figure #126



24-ROW 30'' HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS

Key	Part Number	Description
1	5000-186	186'' - 3/4-16 JIC Female
2	5000-190	190'' - 3/4-16 JIC Female
3	5000-191	191'' - 3/4-16 JIC Female
4	5000-276	276'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-176	176'' - 1/2 NPTM - 33/4-16 JIC Female
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9002	Proportionator/relief valves (See Fig. #130)
9		12V DC Solenoid Valve (2-used) (See Fig. #131)
10		KLF 500 Flow Control (4-used) (See Fig. #132)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-272	272'' - 3/4-16 JIC Female (4-used)
14	5000-370	370'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (13-used) (1/2'' MPT)
19	PMC 9310	Transport Wheel Cylinder (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8-8	90° Male Elbow (4-used) (1/2'' MPT)
22	T-66	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (6-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29	5000-60	60'' - 3/4-16 JIC Female (4-used)
30		3/8'' - 1/2'' Hex Bushing (2-used)
31		3/8'' - 1/2'' Hex Bushing (2-used)
32		3/8'' Close Nipple (2-used)
33	6501-8	90° Swivel Adapter (2-used)

24-Row 30'' Hydraulics Diagram For Dual Valve Outlets – Figure #127



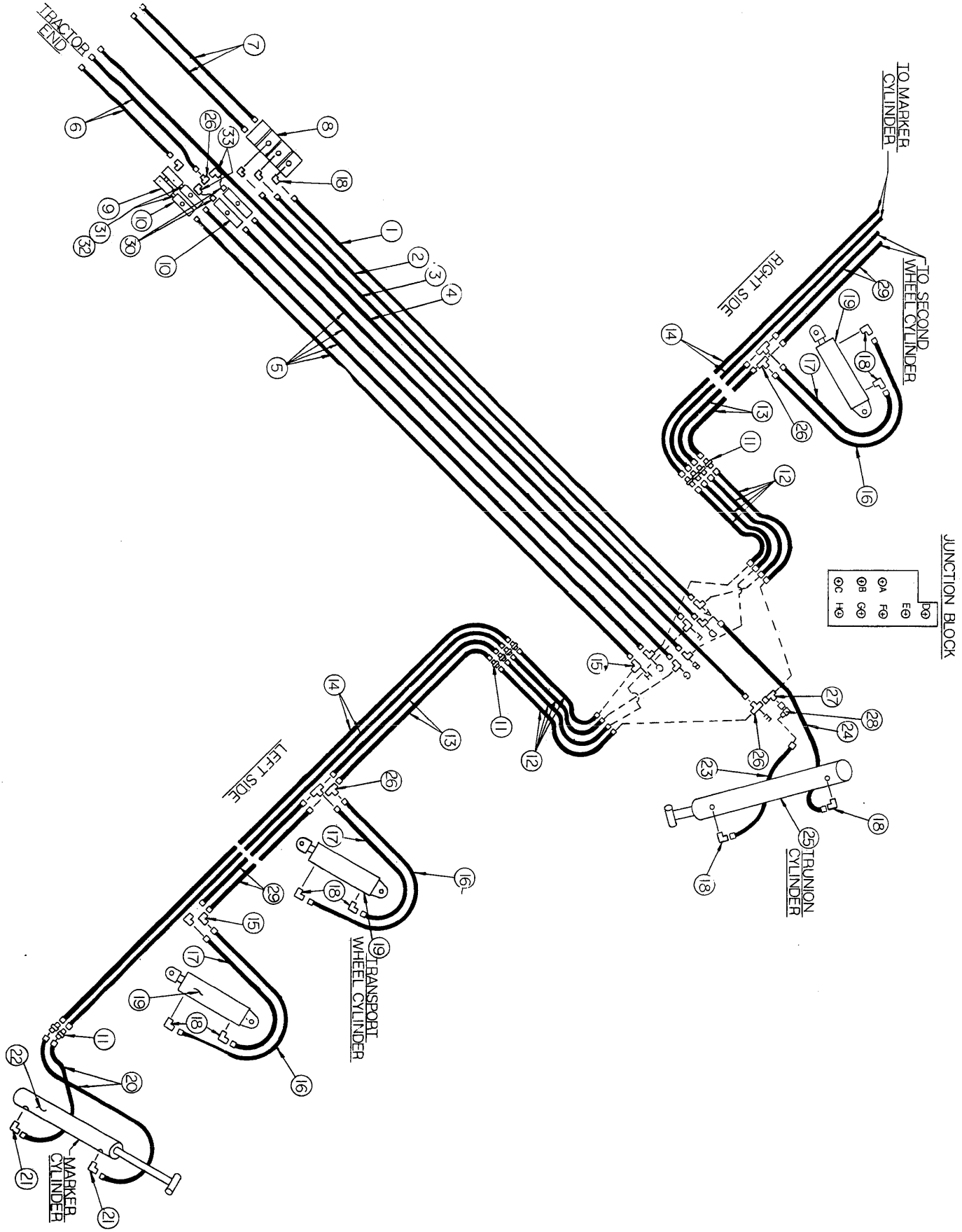
24-ROW 30'' HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS

Key	Part Number	Description
1	5000-186	186'' - 3/4-16 JIC Female
2	5000-190	190'' - 3/4-16 JIC Female
3	5000-191	191'' - 3/4-16 JIC Female
4	5000-276	276'' - 1/2 NPTM - 3/4-16 JIC Female
5	5000-176	176'' - 1/2 NPTM - 3/4-16 JIC Female (4-used)
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female (4-used) **(See Triple Valve Hose Kit Below)
7	5000-80	80'' - 1/2 NPTM - 3/4-16 JIC Female (2-used)
8	9002	Proportionator/relief valves (See Fig. #130)
9		KLF 500 Flow Control (4-used) (See Fig. #132)
10	2501-8-8	90° Male Elbow (1/2'' MPT) (3-used)
11	2403-8	Straight Tube - Union (12-used)
12	5000-60	60'' - 3/4-16 JIC Female (8-used)
13	5000-272	272'' - 3/4-16 JIC Female (4-used)
14	5000-370	370'' - 3/4-16 JIC Female (4-used)
15	2500-8	90° Tube Elbow (11-used)
16	5000-56	56'' - 3/4-16 JIC Female (4-used)
17	5000-44	44'' - 3/4-16 JIC Female (4-used)
18	2501-8-8	90° Male Elbow (1/2'' MPT) (10-used)
19	PMC-9310	Transport Wheel Cylinders (4-used)
20	5000-36	36'' - 3/4-16 JIC Female (4-used)
21	2501-8-8	90° Male Elbow (1/2'' MPT) (4-used)
22	T-66	Marker Cylinders
23	5000-36	36'' - 3/4-16 JIC Female
24	5000-44	44'' - 3/4-16 JIC Female
25	R-868	Trunion Cylinder
26	2603-8	Tube Tee (5-used)
27	6602-8	Swivel Tee - Run
28	6500-8	90° Swivel Elbow
29	5000-76	76'' - 3/4-16 JIC Female (4-used)

** TRIPLE VALVE HYDRAULICS KIT:

Key	Part Number	Description
6	5000-96	96'' - 1/2 NPTM - 3/4-16 JIC Female
		Two (2) hoses are furnished in the "Triple Valve Kit", when ordered separately. When the planter bar is ordered for use with Triple Valve Hydraulics, all four (4) hoses, Part No. 5000-96, are furnished.
6	2404-8-8	Straight Adaptor - Male (4-used)
		Must be used to connect Triple Valve Hoses to Flow Control Valves, when Triple Valve Hydraulics is used: (Not shown on diagram)

24-Row 30'' Hydraulics Diagram For Triple Valve Outlets – Figure #128



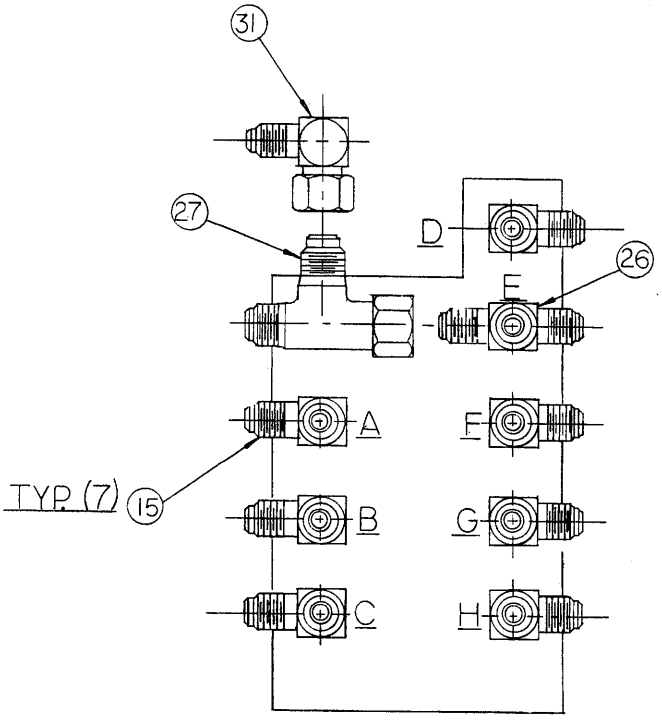
JUNCTION BLOCK

Key	Part Number	Description
15	2500-8	90° Tube Elbow (7 used)
26	2603-8	Tube Tee
27	6602-8	Swivel Tee - Run
31	6500-8	90° Swivel Elbow (shown as #28 on all hydraulic diagrams)

Junction block hydraulic fittings as shown on individual diagrams.

NOTE: Fittings A - H on junction block are identical to fittings A - H on individual hydraulic diagrams.

Junction Block – Figure #129

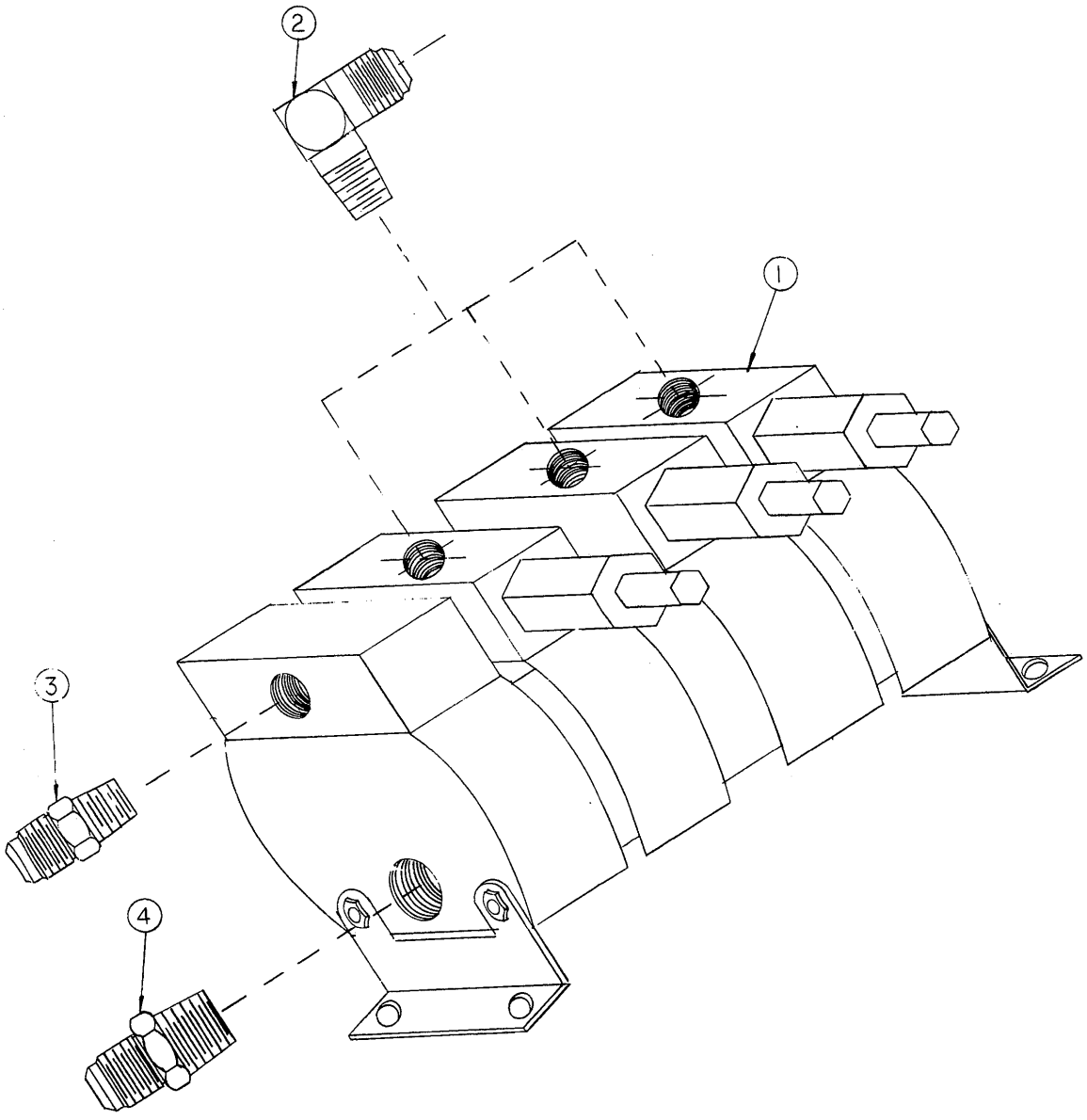


JUNCTION BLOCK

HYDRAULIC PROPORTIONATOR

Key	Part Number	Description
1	A2553 9001	P300-2477 Proportionator/Relief Valves (Specify planter size)
	9002	P300-2476 Proportionator/Relief Valves (Specify planter size)
		O-Ring Packing Kit for Proportionators
2	2501-8-8	90° Male Elbow (3-used)
3	2404-8-12	Straight Adaptor - Male
4	2404-8-16	Straight Adaptor - Male

Hydraulic Proportionator – Figure #130



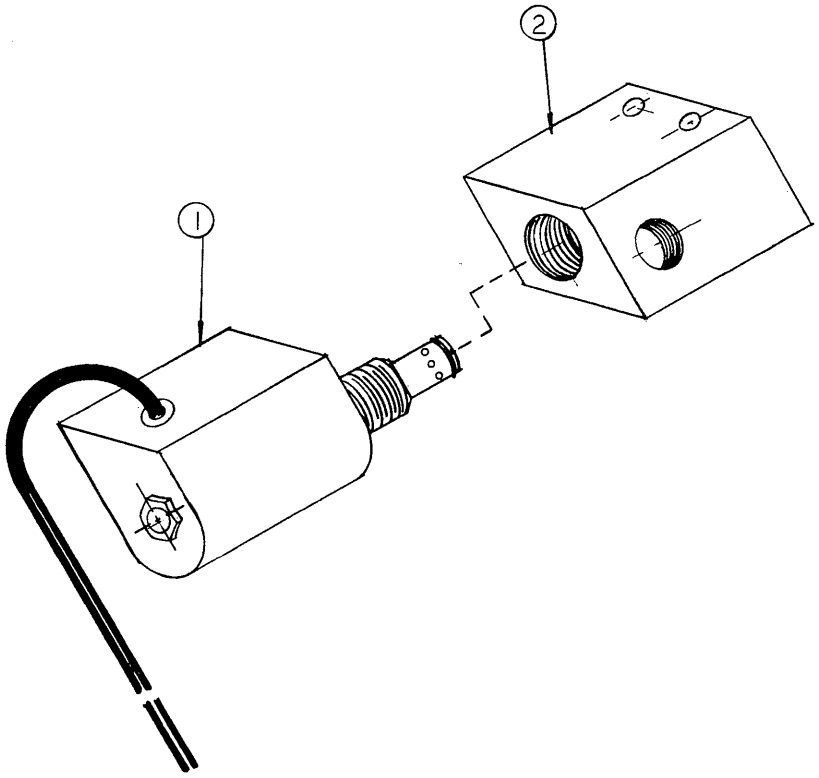
12V DC ELECTRIC SOLENOID VALVE

Key	Part Number	Description
1		Solenoid/operating valve
2		Valve Body

KLF 500 FLOW CONTROL

Key	Part Number	Description
1		Valve Body
2		Needle Valve Assembly

12V DC Electric Solenoid Valve – Figure #131



KLF 500 FLOW CONTROL

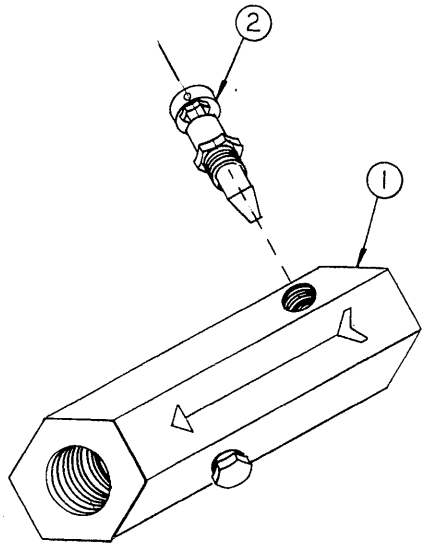
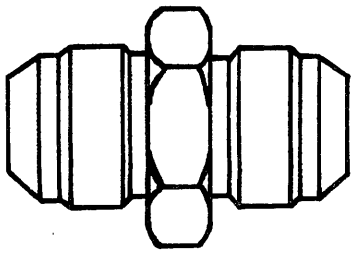


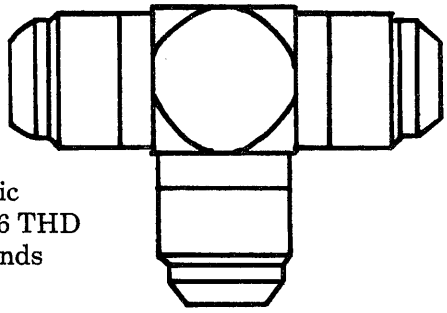
Figure #133

2403-8



Straight Tube - Union
37° Both Ends
3/4-16 THD

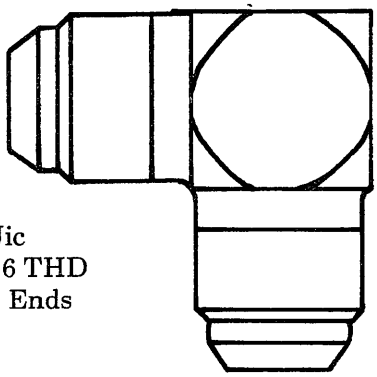
2603-8



37° Jic
3/4-16 THD
All Ends

Tube Tee

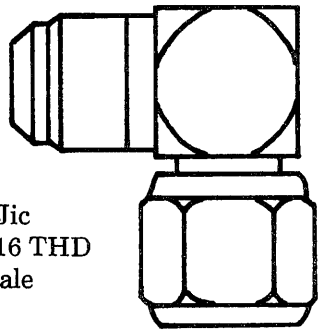
2500-8



37° Jic
3/4-16 THD
Both Ends

90° Tube Elbow

6500-8

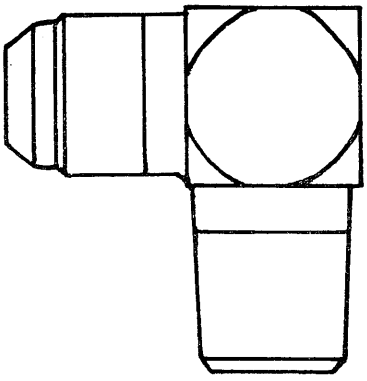


37° Jic
3/4-16 THD

37° Jic
3/4-16 THD
Female

90° Swivel Elbow

2501-88

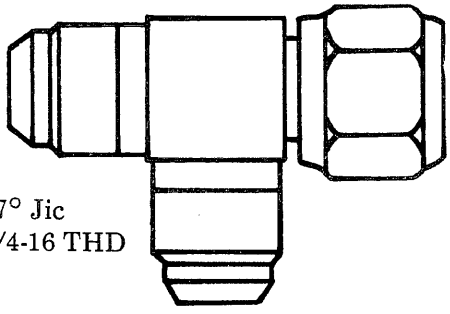


37° Jic
3/4-16
THD

1/2'' NPT

90° Male Elbow

6602-8



37° Jic
3/4-16 THD

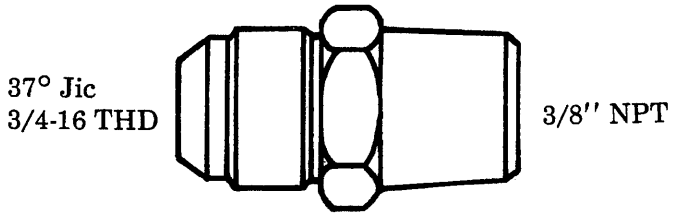
37° Jic
3/4-16
THD
Female

37° Jic
3/4-16 THD

Swivel Tee-Run

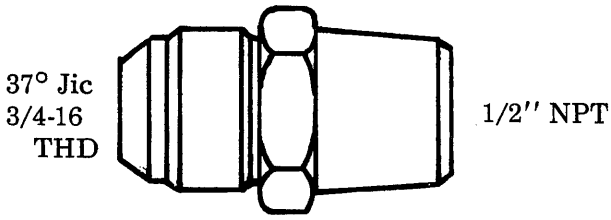
Figure #134

2404-8



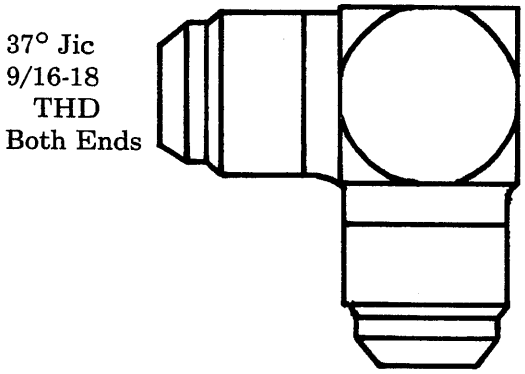
Straight Adaptor - Male

2404-88



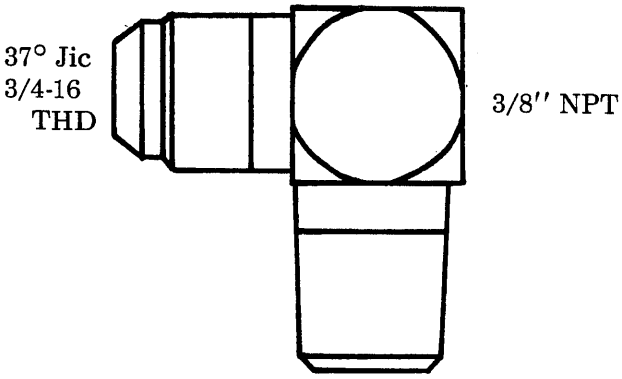
Straight Adaptor - Male

2500-6



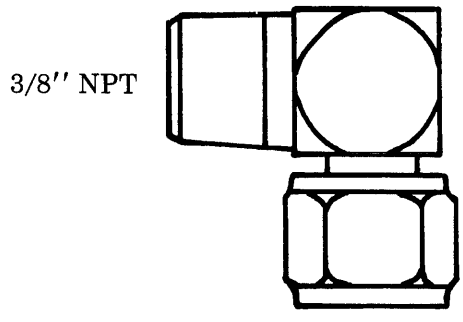
90° Male Elbow

2501-8



90° Tube Elbow

6501-8



37° Jic
3/4-16 THD
Female

90° Swivel Adaptor

ELECTRIC CLUTCH ASSEMBLY

Key	Part Number	Description
1		Modified Lovejoy Coupling
2		Spider
3		Clutch Body (Specify clockwise or counterclockwise rotation)
4		Set Screw
5		Cam - Operating lever
6		Cam Mount
7		Clutch Bracket (Specify Right or Left)
8		Operating Lever
9		Retainer clip
10		Spacer
11		12V DC Solenoid
12		Roll Pin

NOTE: **It is very important to specify either clockwise or counterclockwise rotation when ordering the clutch assemblies.**

Electric Clutch Assembly — Figure #135