REAR FOLDING PLANTER

OPERATOR & PARTS MANUAL

M0123 Reprint 03/97

This manual is applicable to: Model: RF
Serial Number: 749 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.

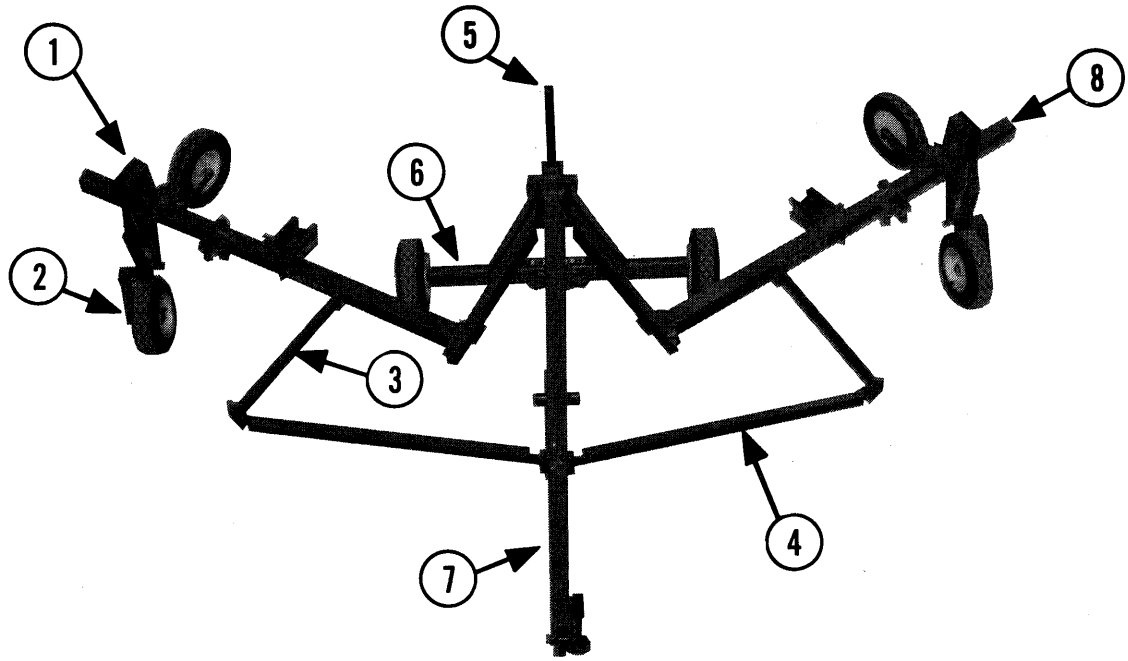
This safety alert symbol will identify important safety information throughout this manual. Please read and observe all safety information.

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

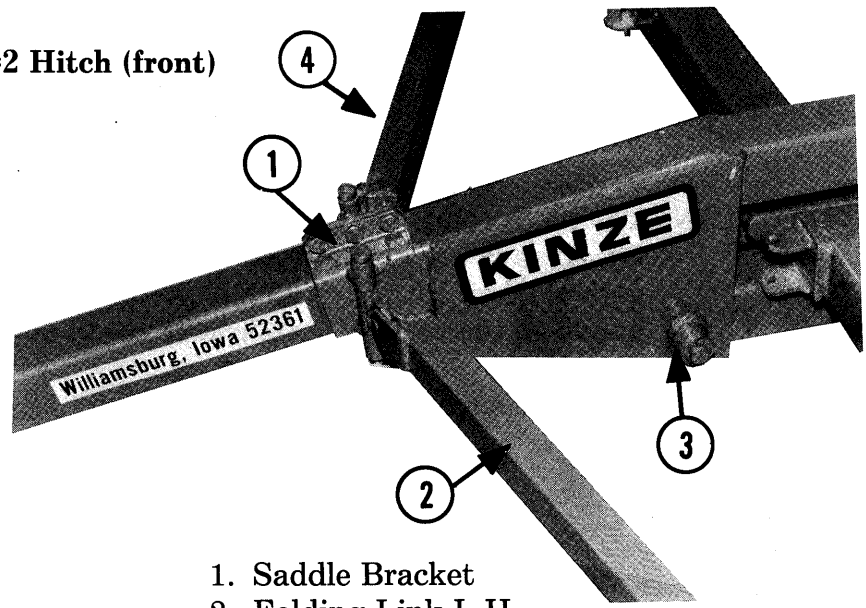
NOTE: **Numerous references to "right hand" and "left hand" will be made in this manual. The proper side is determined by standing at the rear of the planter bar and facing the direction of travel when in use.**



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.

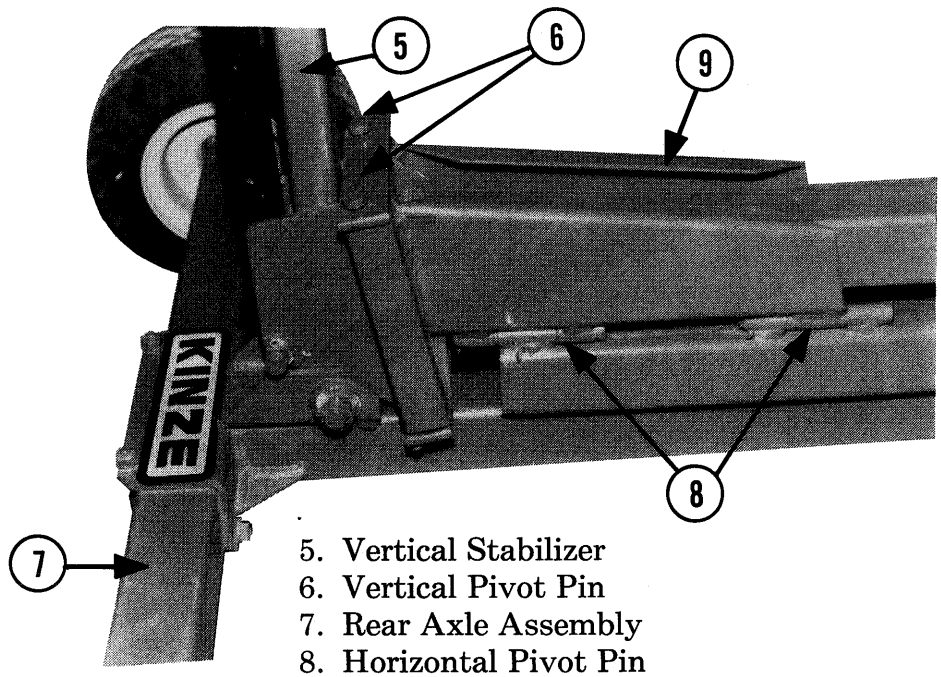
Terminology Continued

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 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 fittings 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

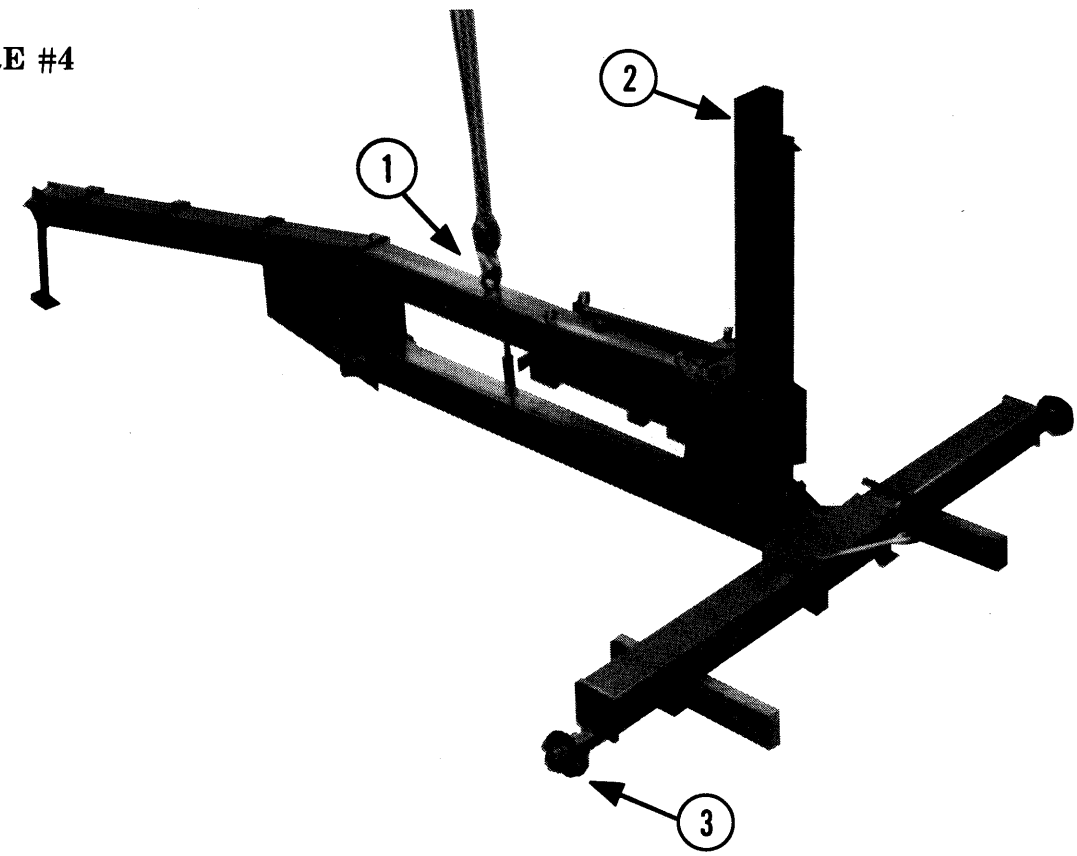
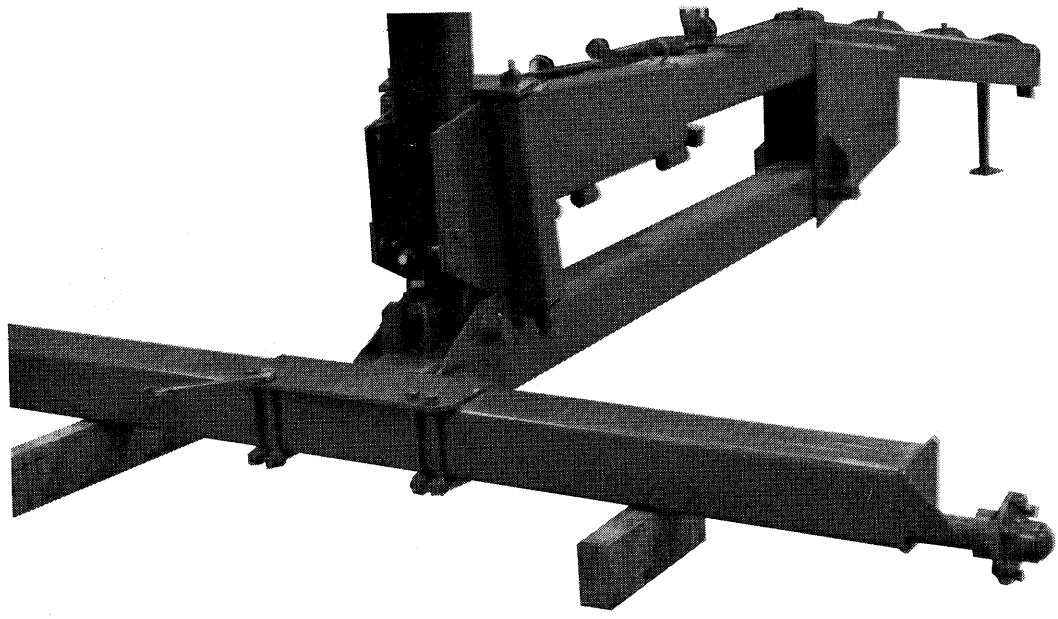


FIGURE #5



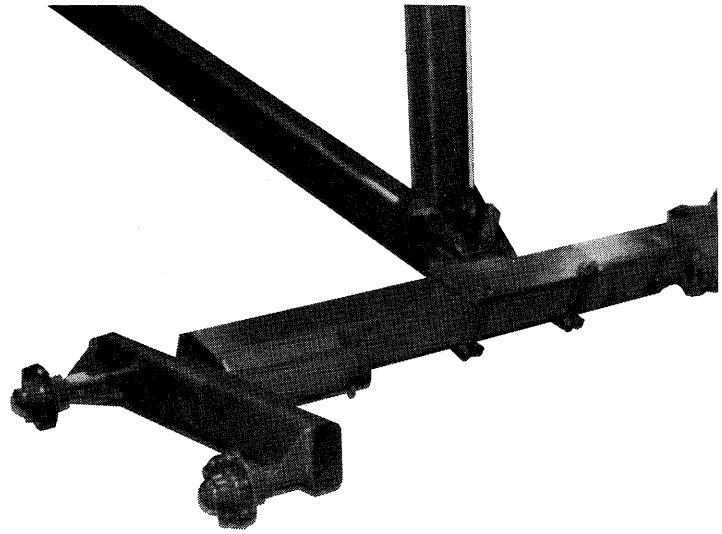
Fasten the hitch component to the rear axle with four (4) 3/4'' x 9'' eye bolts and four (4) 3/4'' x 9'' cap screws (Item 4).

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 18-row 30", 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 improperly 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.

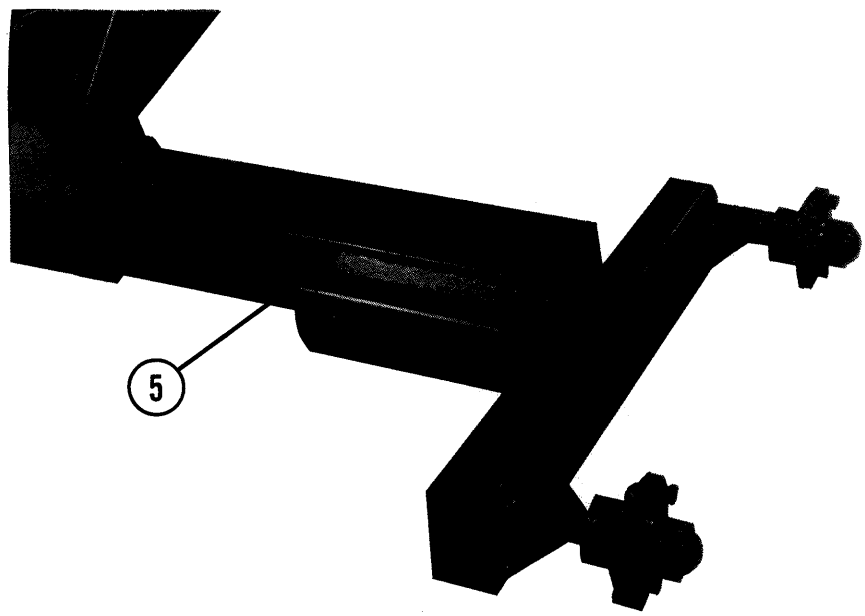


FIGURE #8

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.

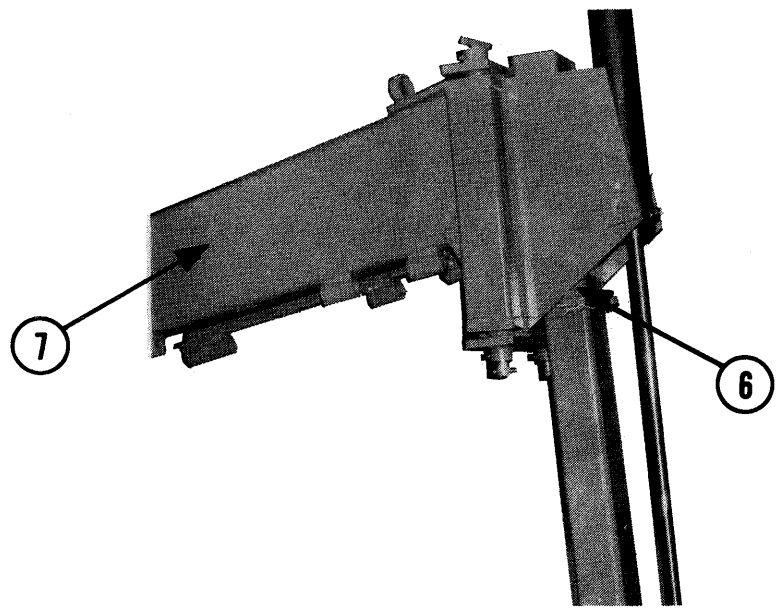


FIGURE #10

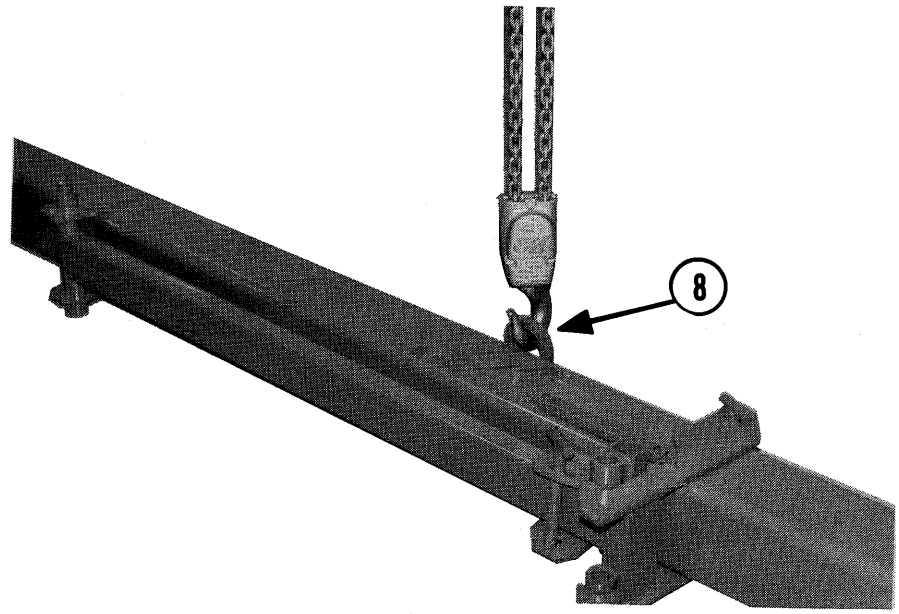


FIGURE #11

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.

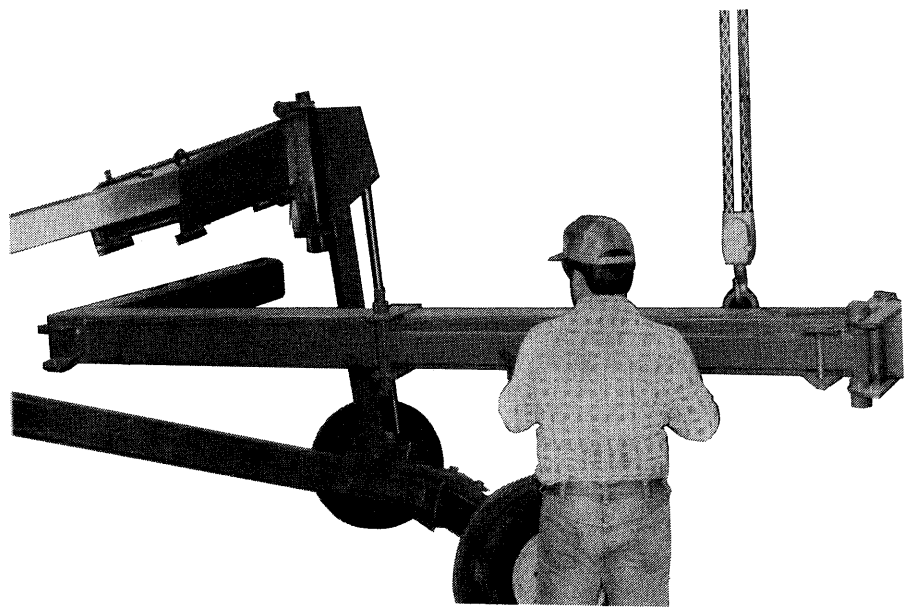
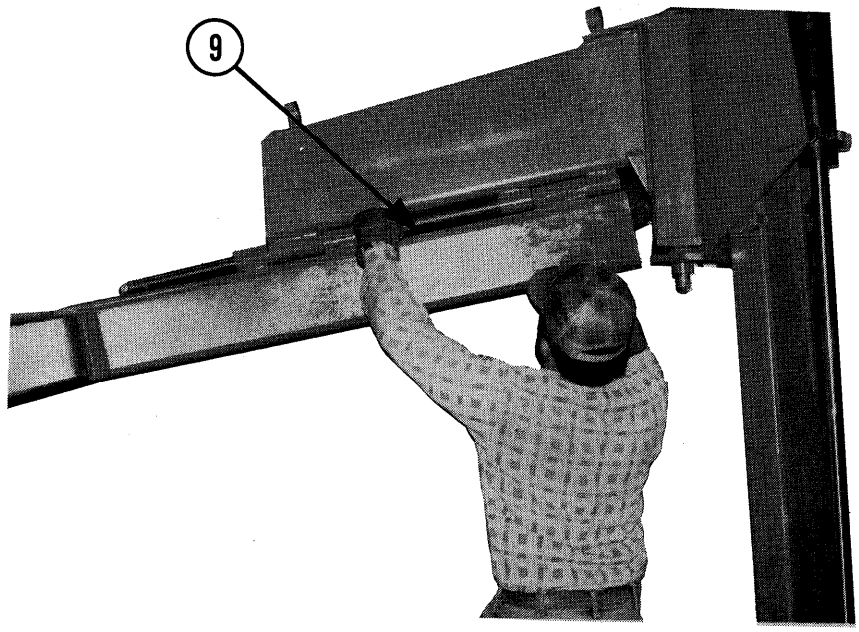


FIGURE #12

FIGURE #13



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

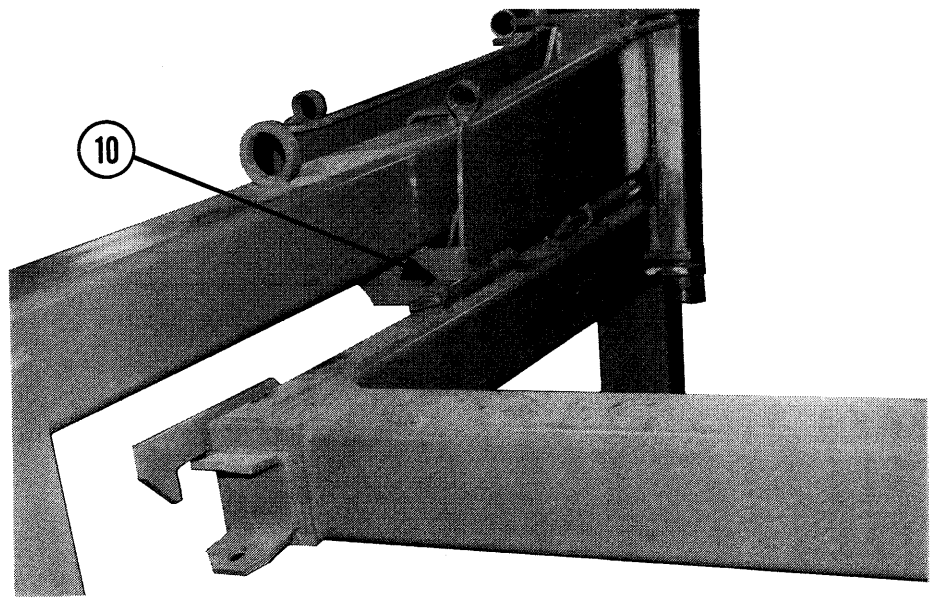
Four (4) 1-1/4'' x 12-3/4'' pins required per planter.

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

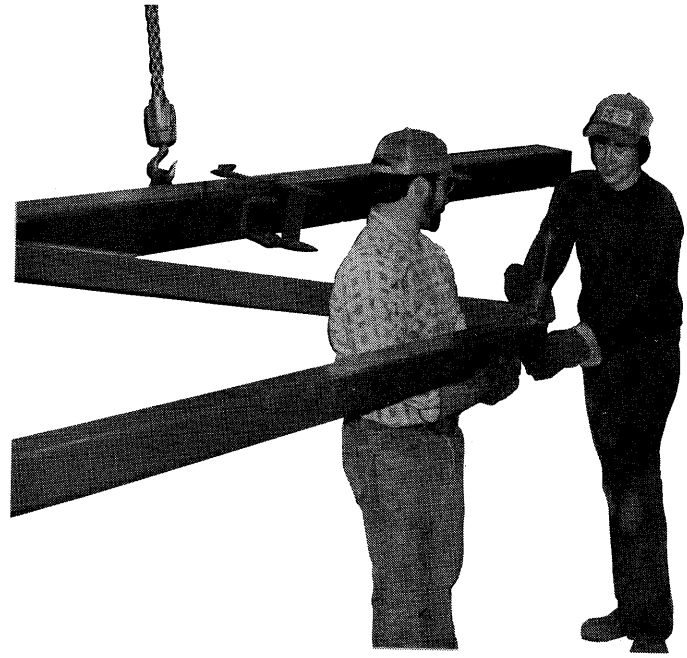


FIGURE #15

After both wing assemblies have been properly installed, the articulated link may be released in order to install folding link. Four (4) 1-1/4" × 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).**

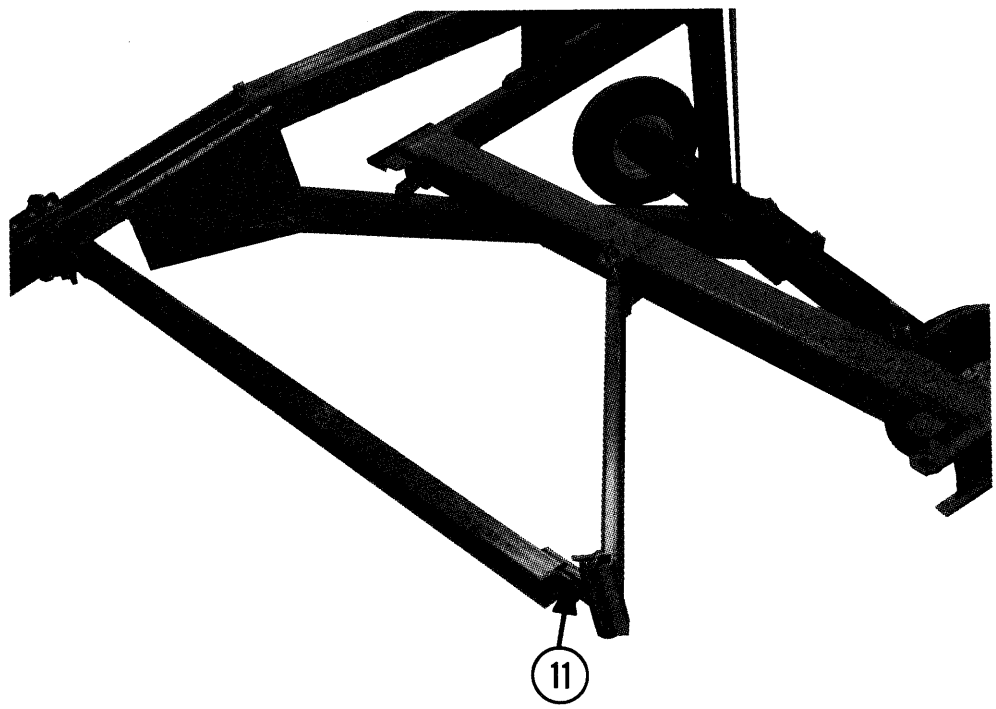
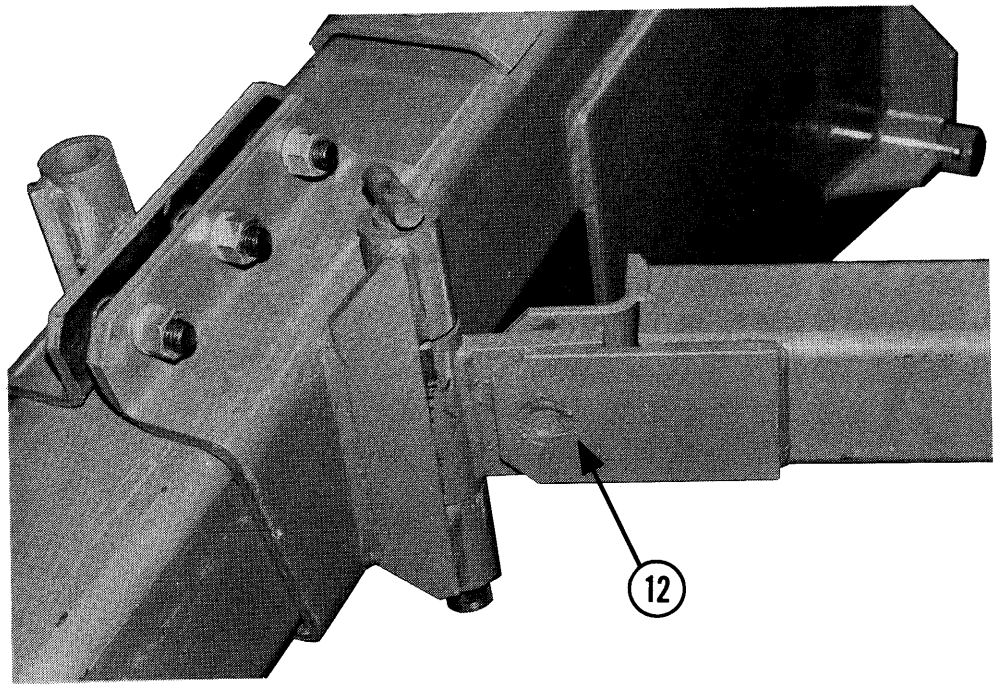


FIGURE #16

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

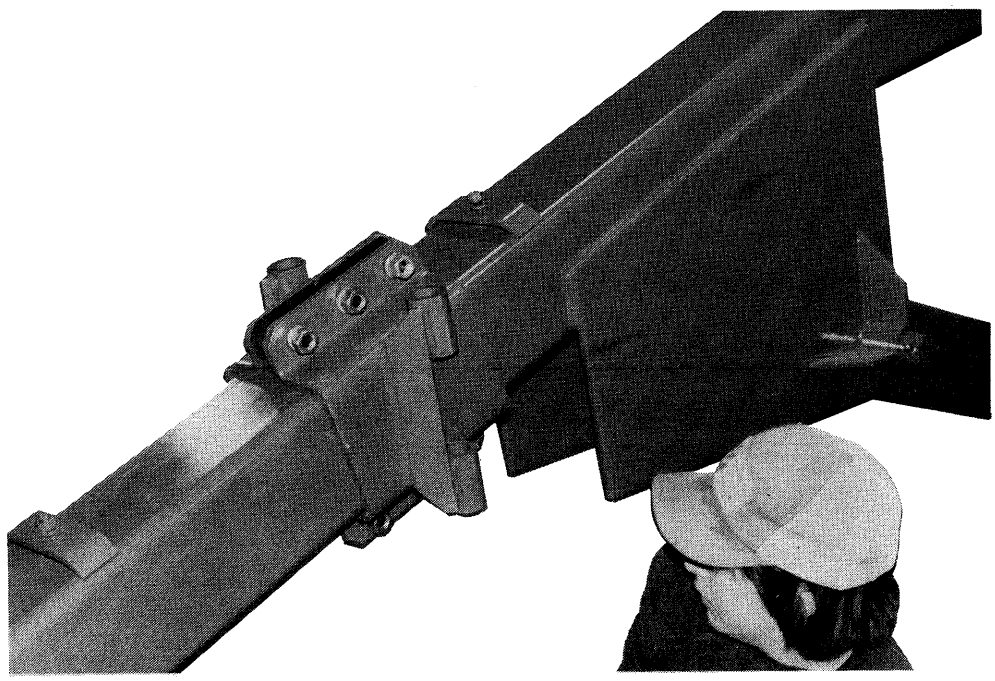
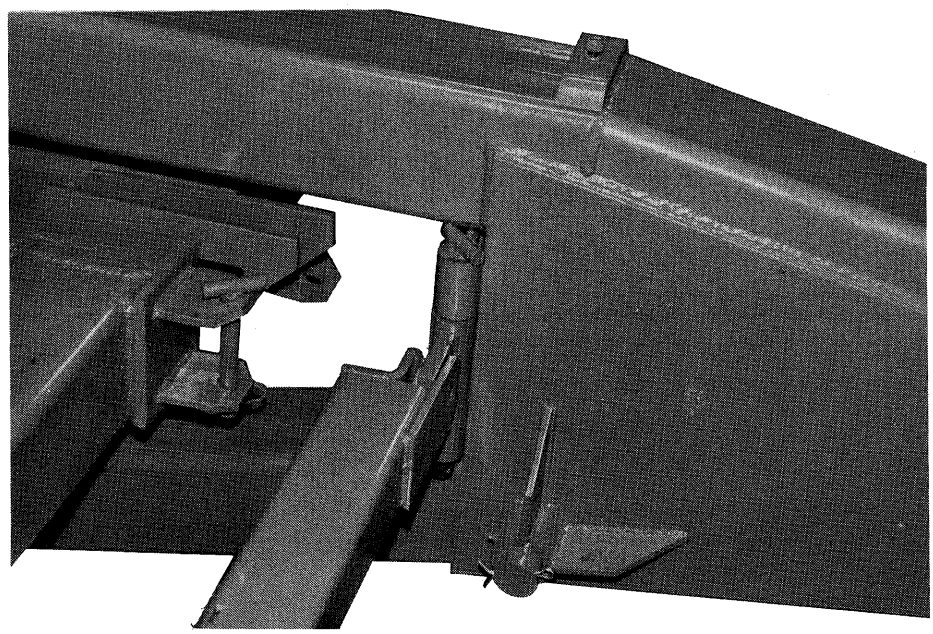


FIGURE #19



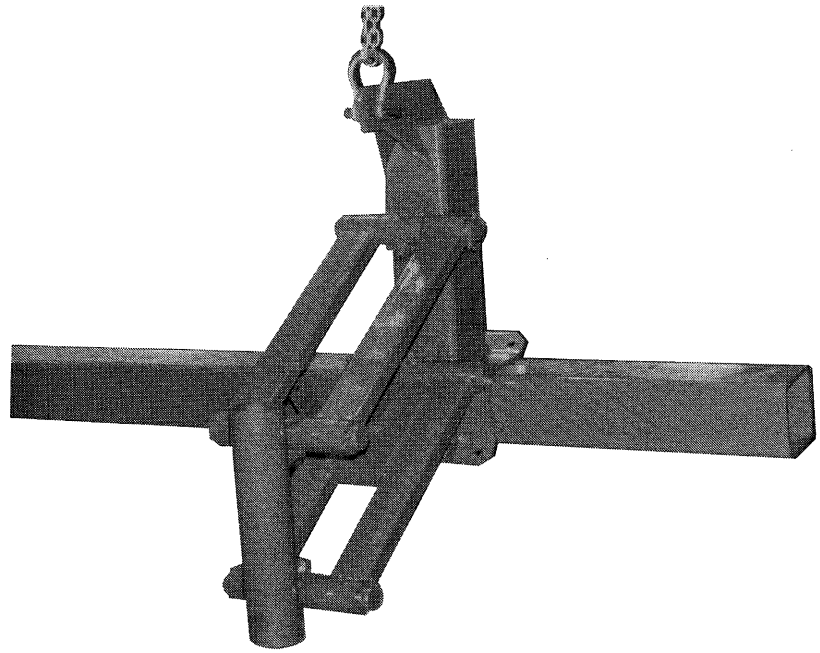
8-ROW 36″ & 38″ PLANTER BARS ONLY:

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

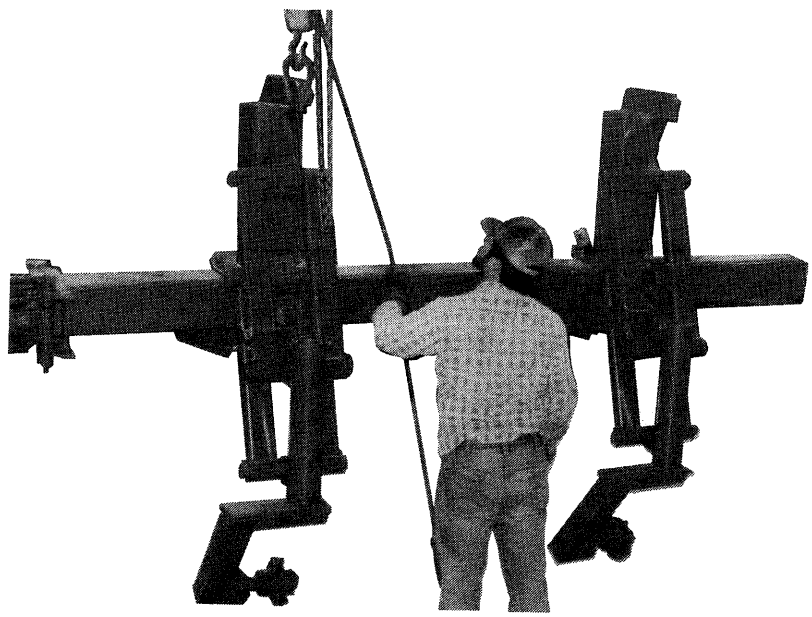
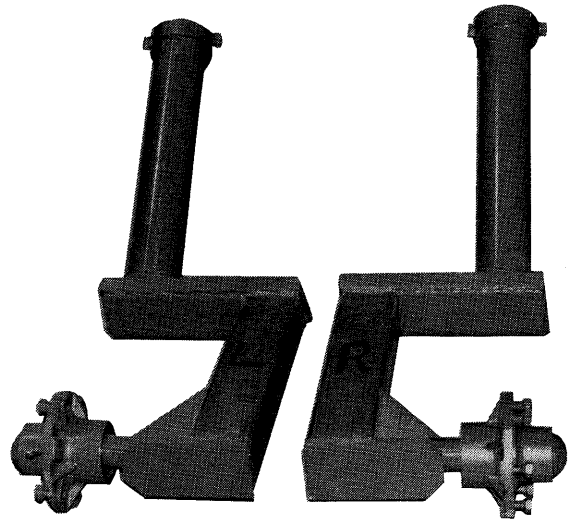


FIGURE #24



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

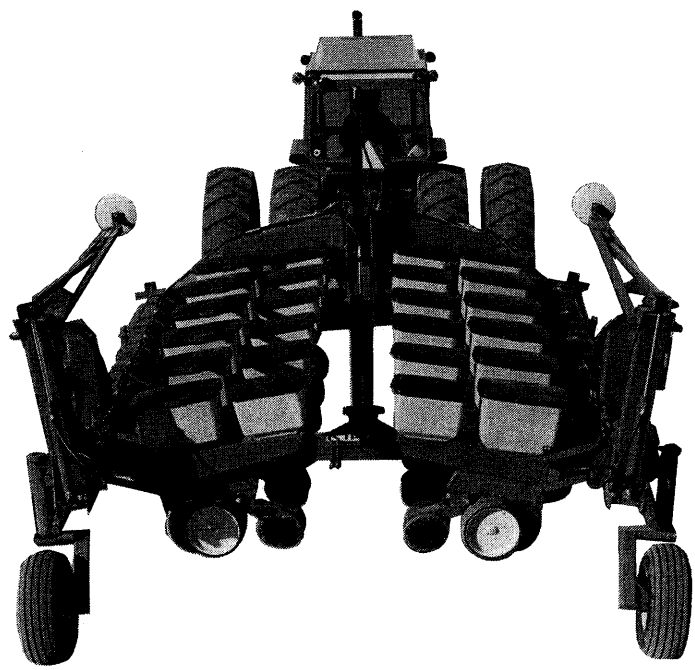
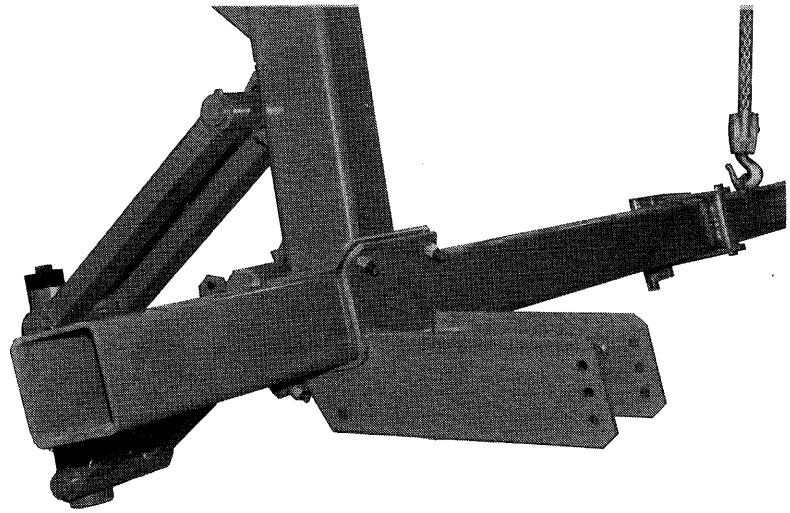


FIGURE #22



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

The 5-bolt fork type drive hub assembly is mounted in drive gauge wheel bracket with two (2) 3/4" × 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.

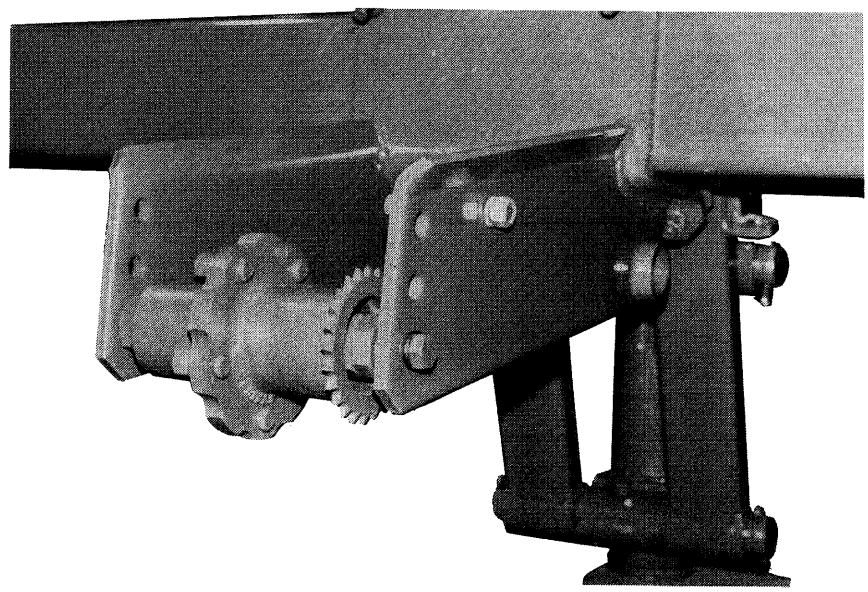
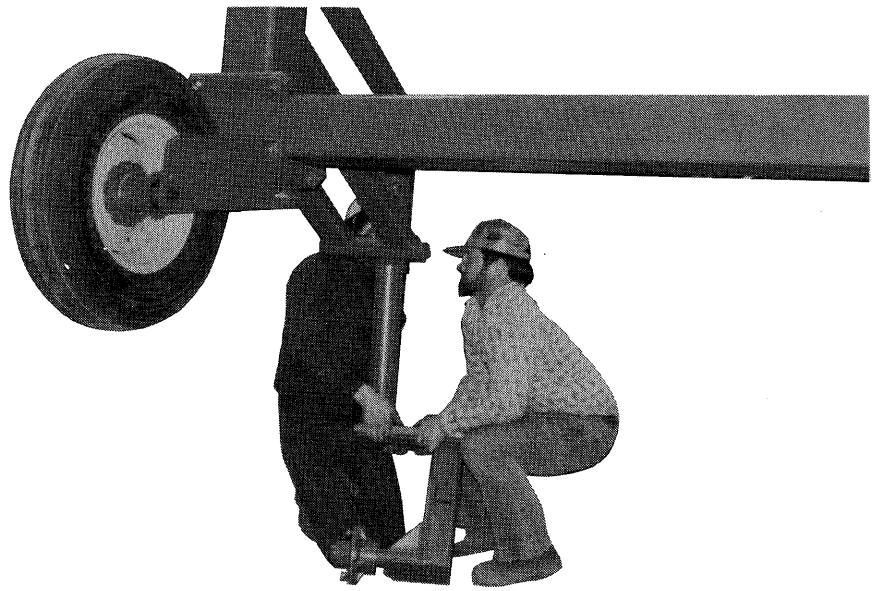


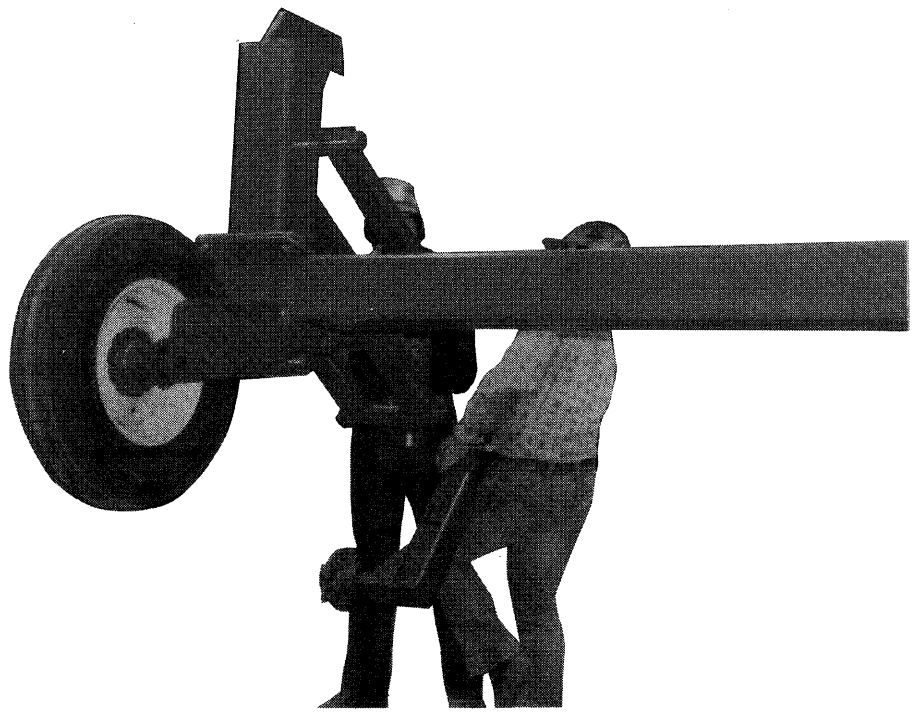
FIGURE #23

FIGURE #26



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

FIGURE #27



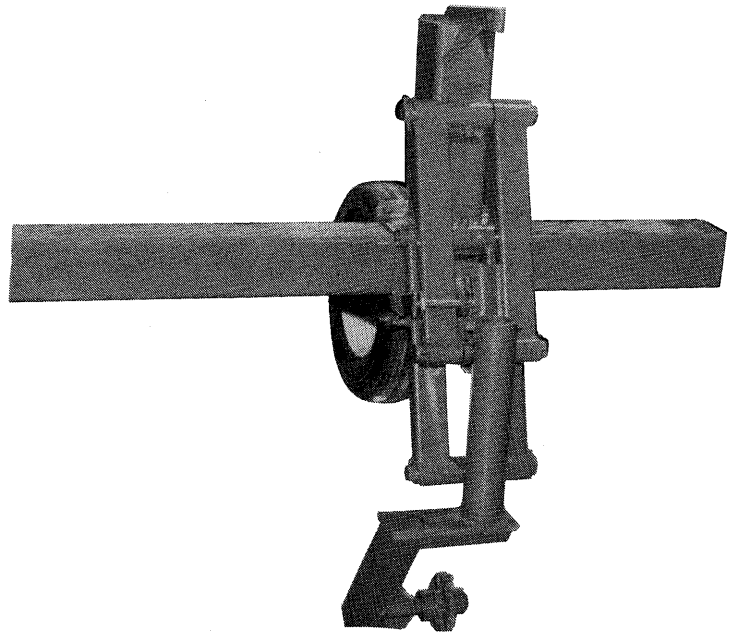


FIGURE #28

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.

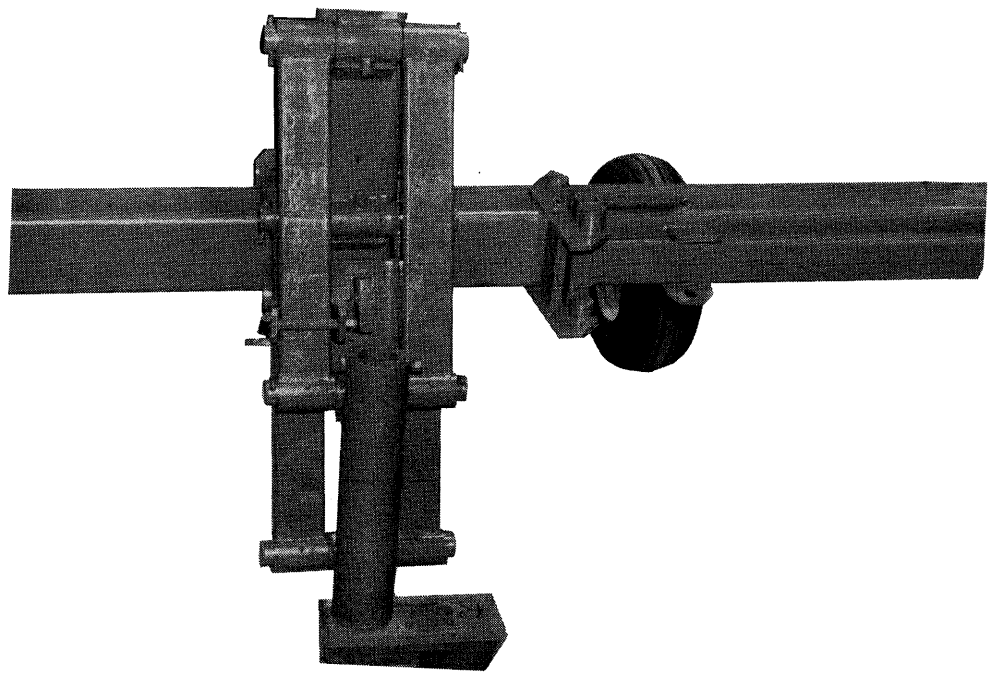


FIGURE #29

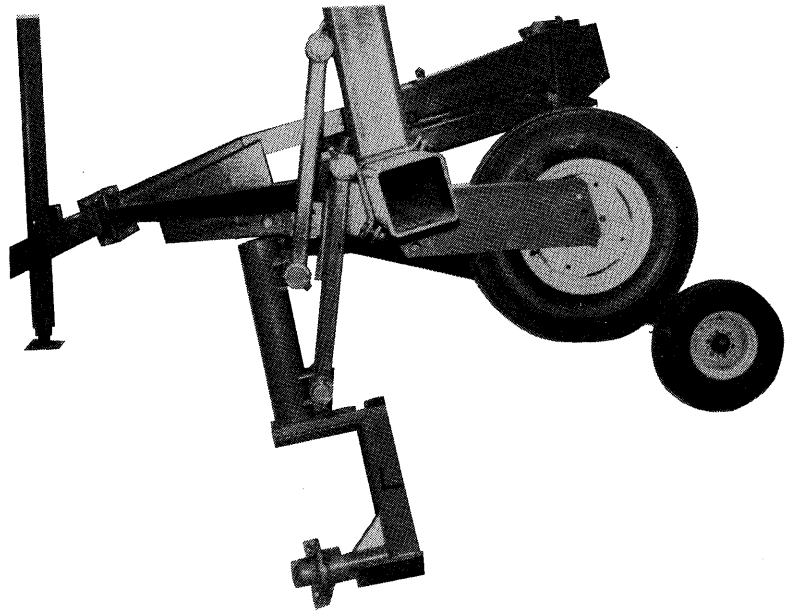


FIGURE #30

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 marker 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

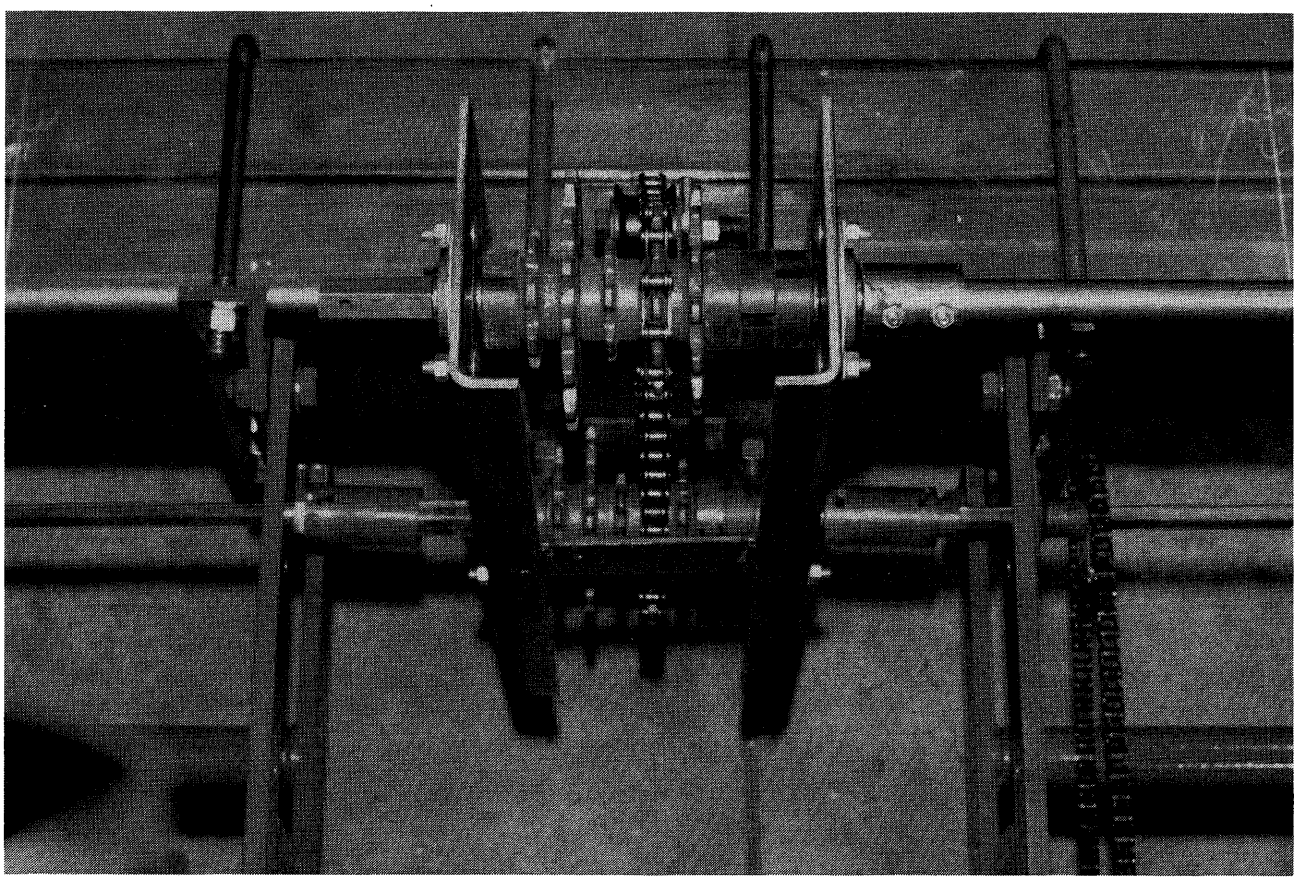


FIGURE #34

The seed drive transmission is shipped preassembled with the proper combinations of sprockets for most common shaft driven planting 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.

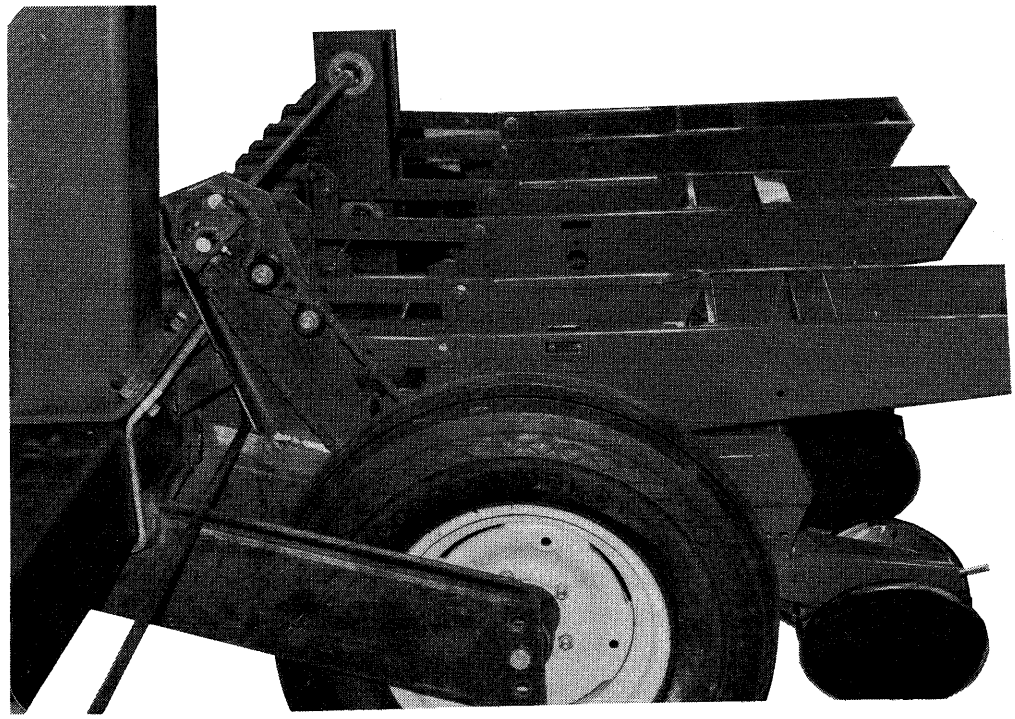
Refer to the chart below for the proper location of the seed drive transmission.

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.

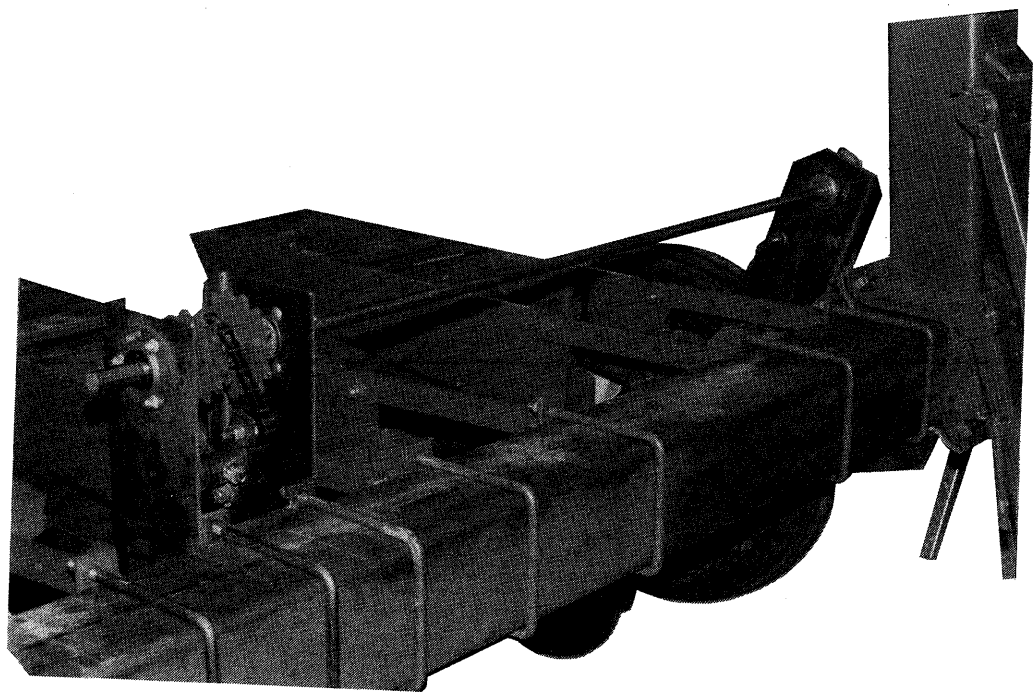
FIGURE #35



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.

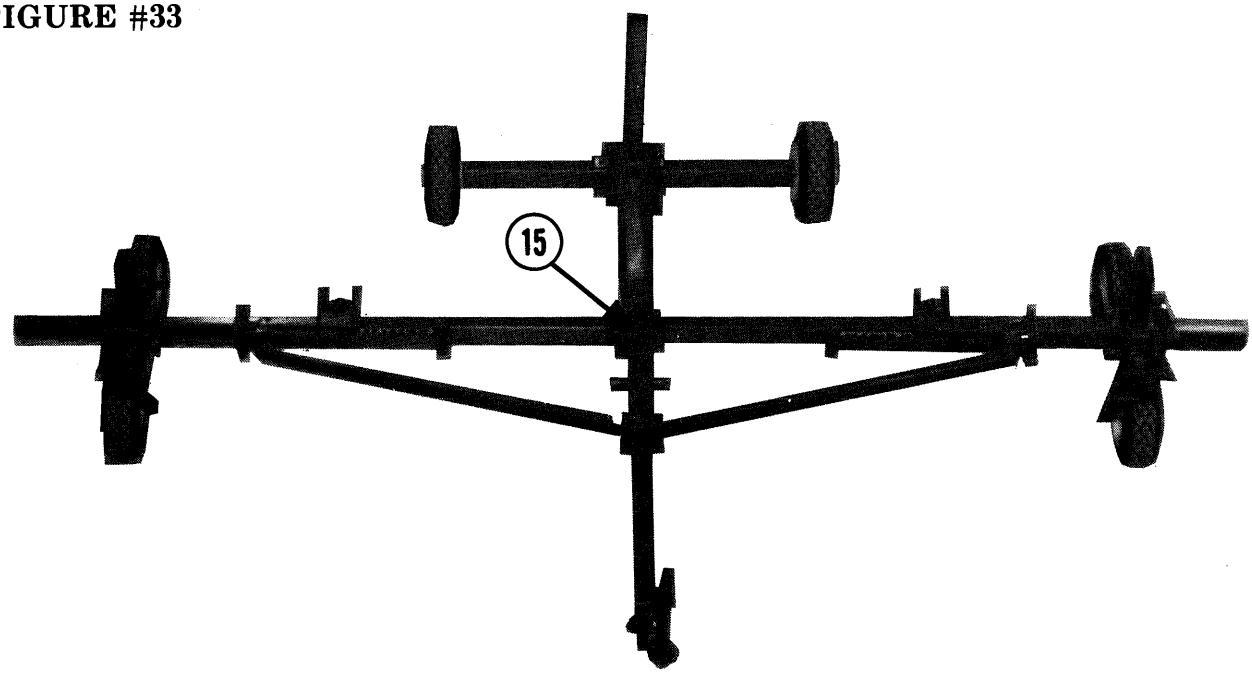
FIGURE #36



The unique folding feature of the Kinze Rear Folding Planter Bar requires two entirely separate drive mechanisms when the planter bar is used with common shaft driven 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



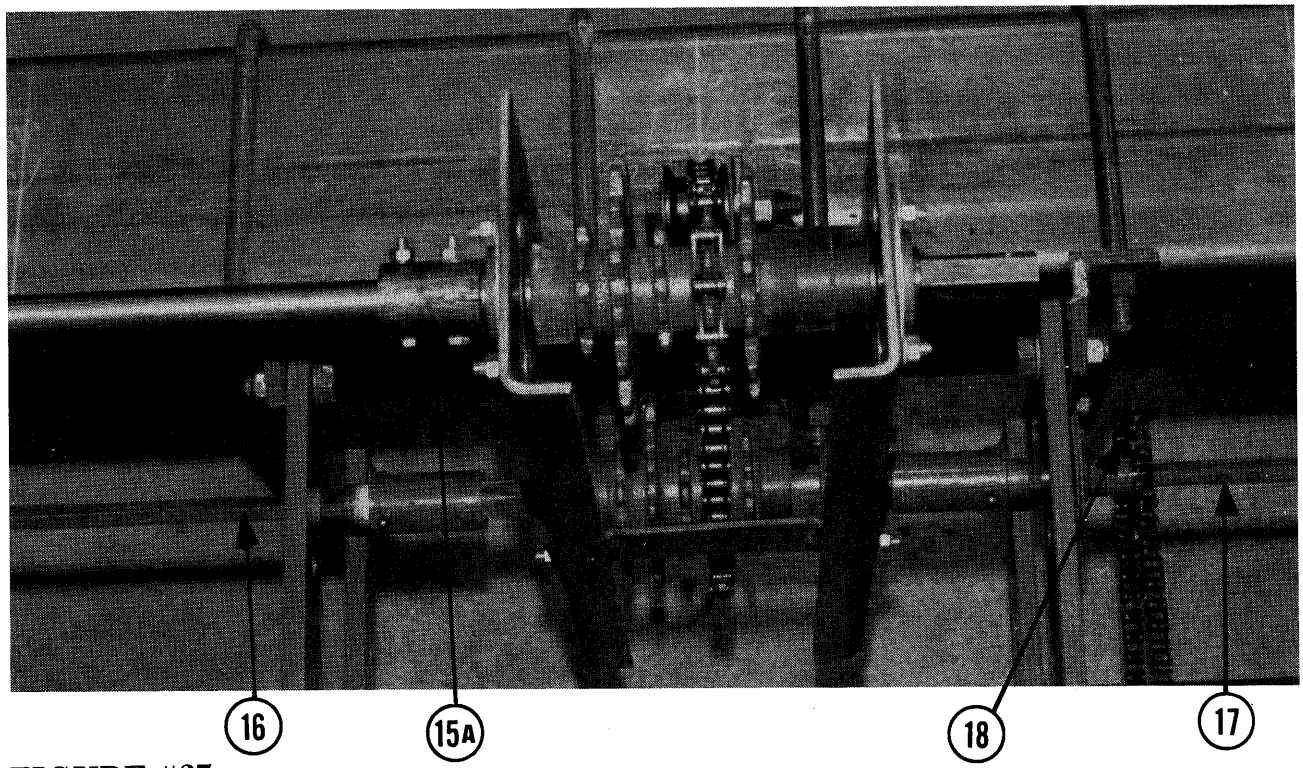


FIGURE #37

Optional point row clutch mechanism mounts to side of drive transmission. Standard 7/8 inch I.D. drive coupler (Item 15-A) is not required with clutch assembly.

NOTE: A **counterclockwise** rotation clutch is required on the **left** transmission and a **clockwise** rotation clutch is required on the **right** transmission.

The 9/16 inch diameter hex drill shaft should be installed as shown (Item 16 and Item 17). The individual unit drive sprockets (Item 18 and Item 19) are furnished with most common shaft driven units."

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

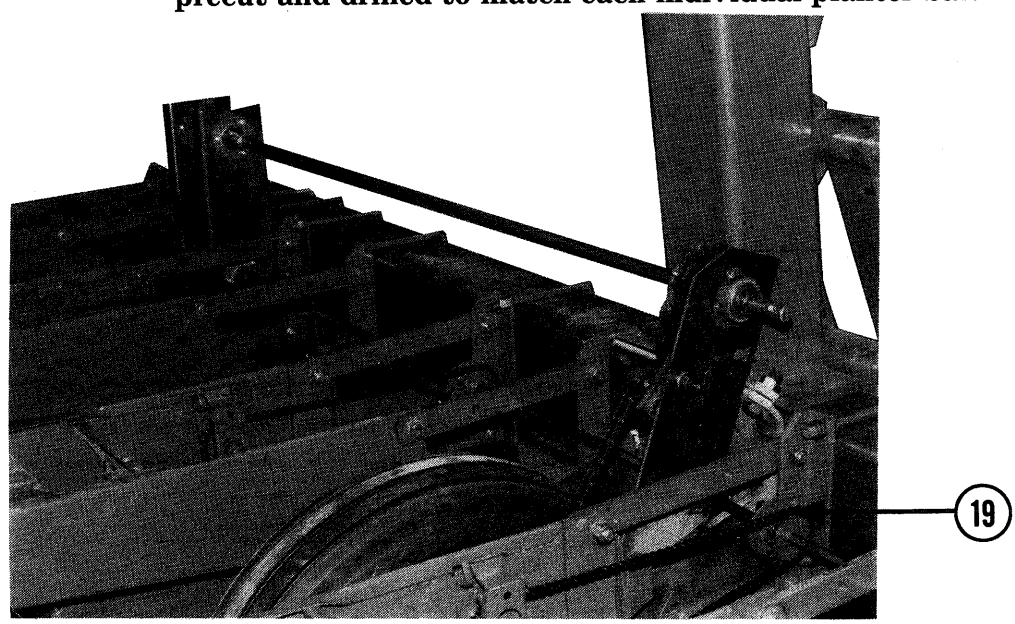


FIGURE #38-A

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.

IMPORTANT: When the optional point row clutches are installed, disregard the standard transmission to common shaft couplers (Figure #37, Item 15-A). The 5/16 inch diameter hole for both the standard and heavy duty optional clutch drive must be bored in the 7/8 inch common shaft.

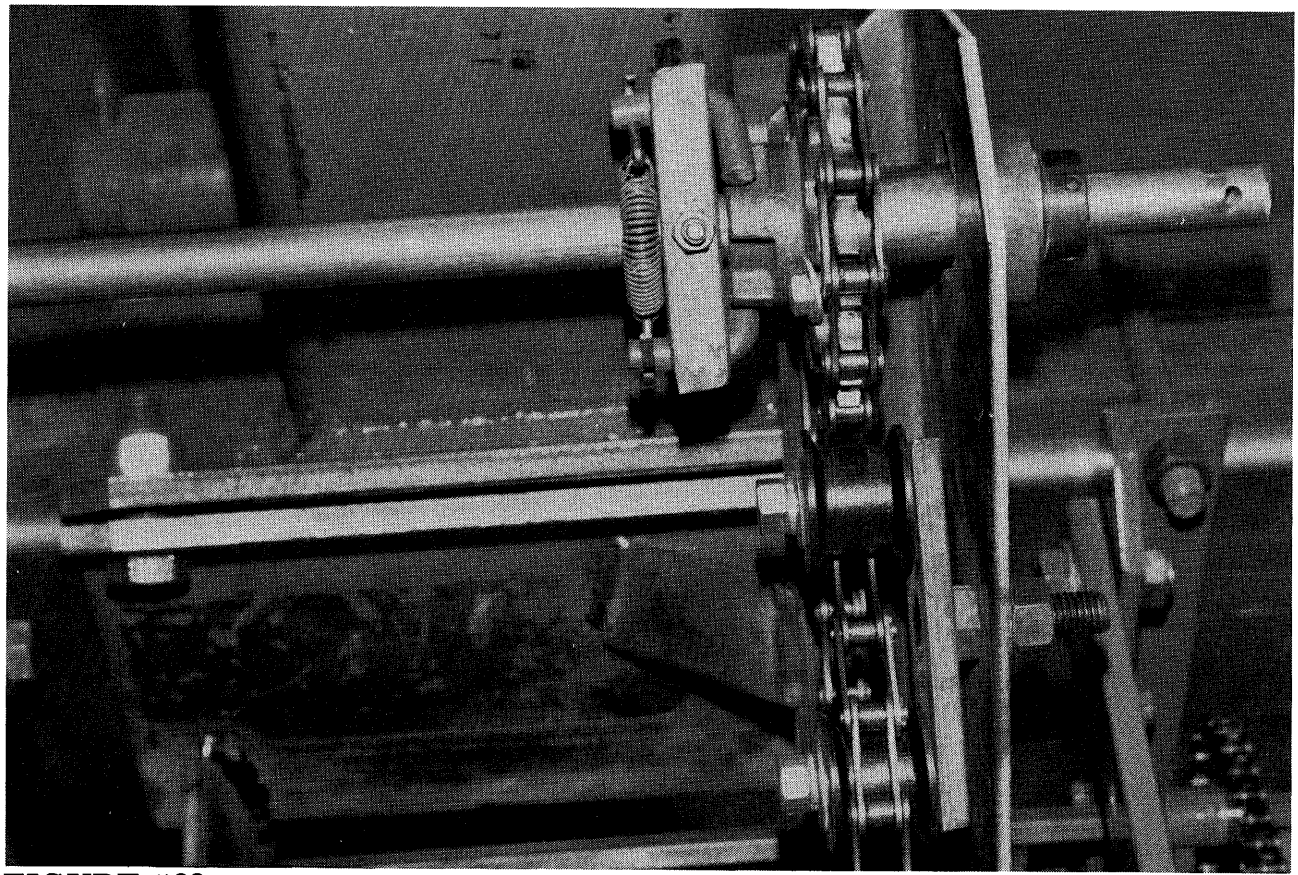


FIGURE #39

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. The 5/16 inch diameter hole for the ratchet clutch drive must be bored in the 7/8 inch common shaft.

On planters that use a single drive gauge wheel per side, either the standard drive sprocket or ratchet clutch assembly can be used.

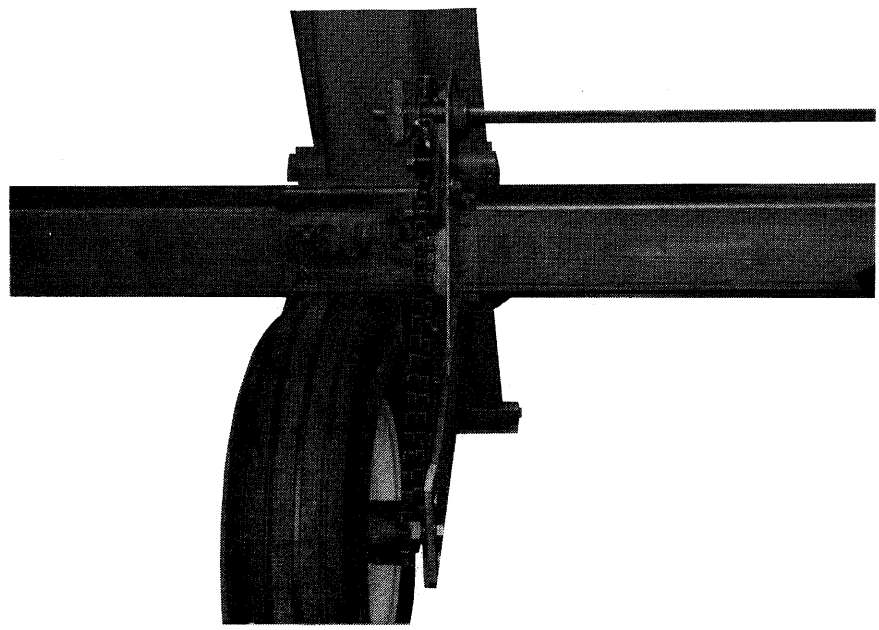
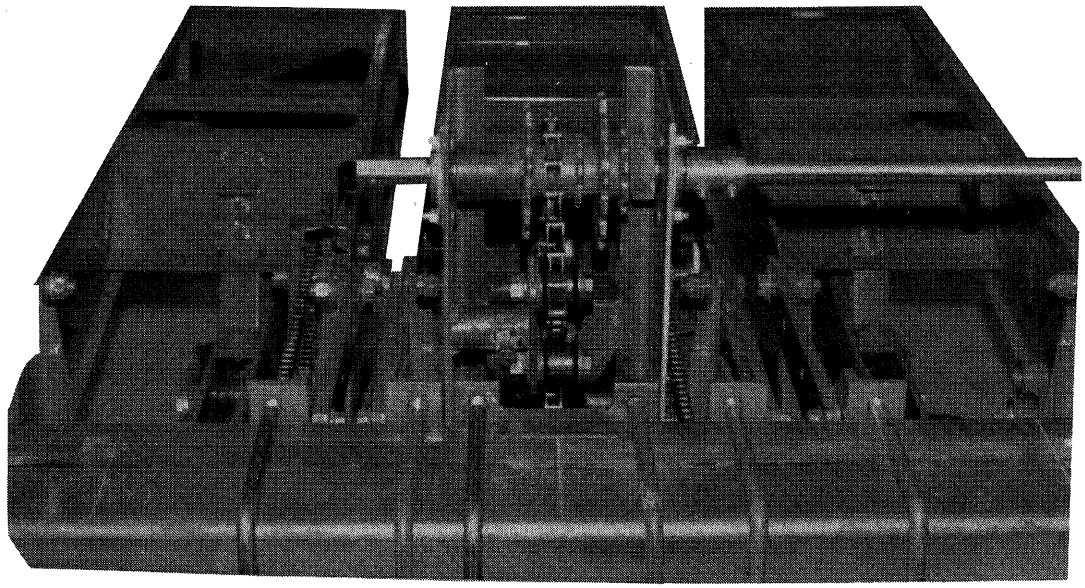


FIGURE #40

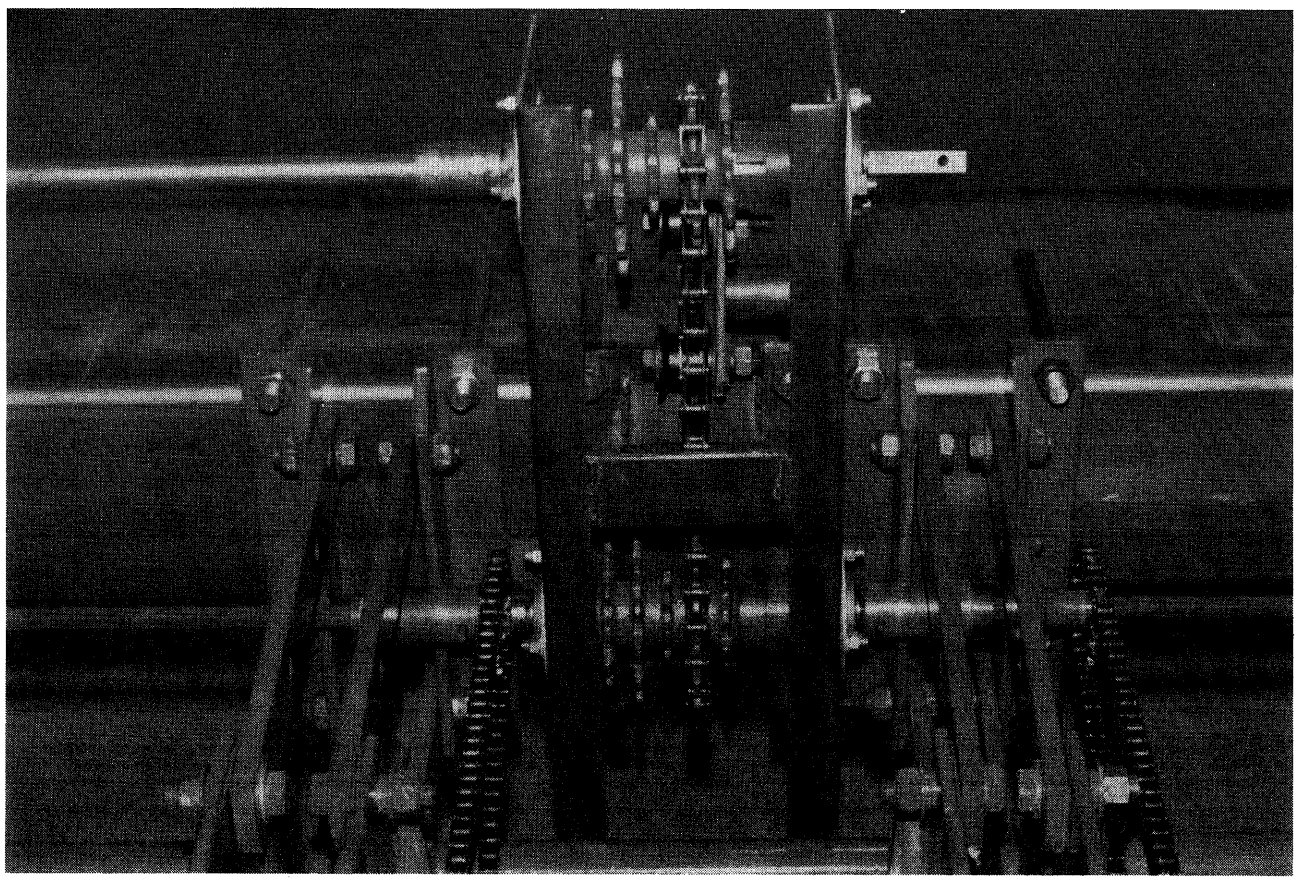
Special Drive Applications

FIGURE #41



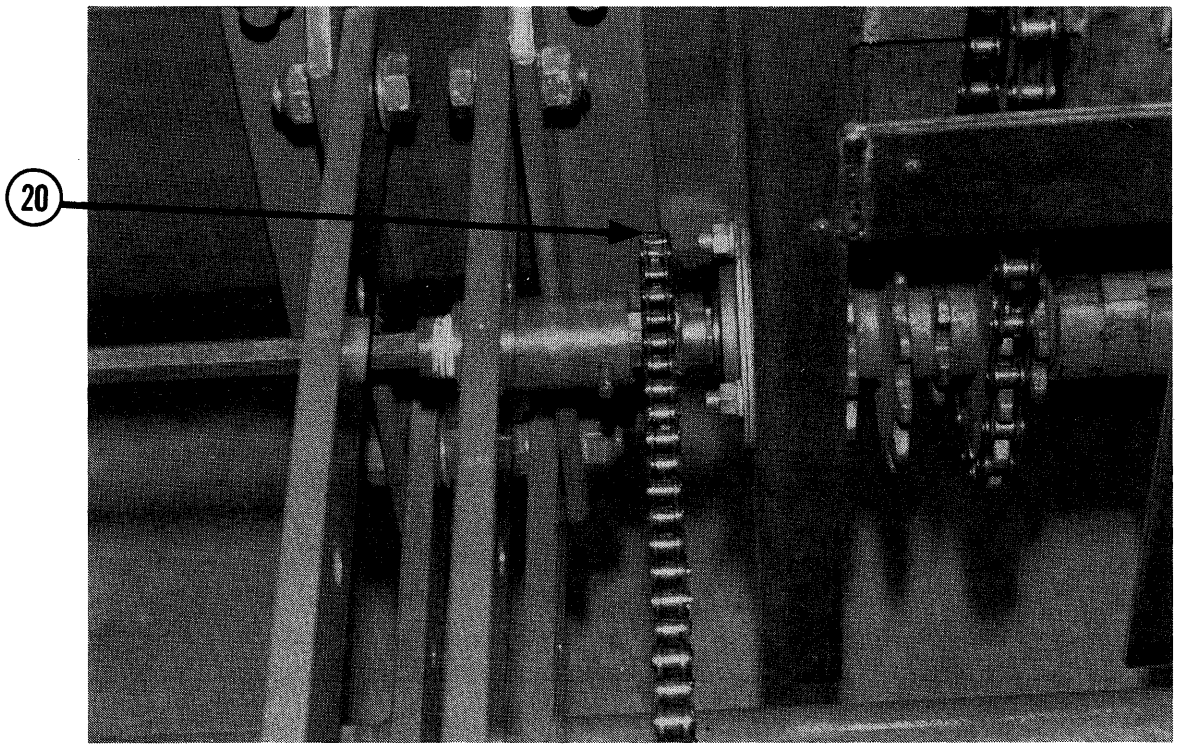
For narrow row applications or special uses that require additional planting units, the seed drive transmission may be straddled by the Kinze or John Deere Max-Emerge Row Unit.

FIGURE #42



Special Drive Applications Continued

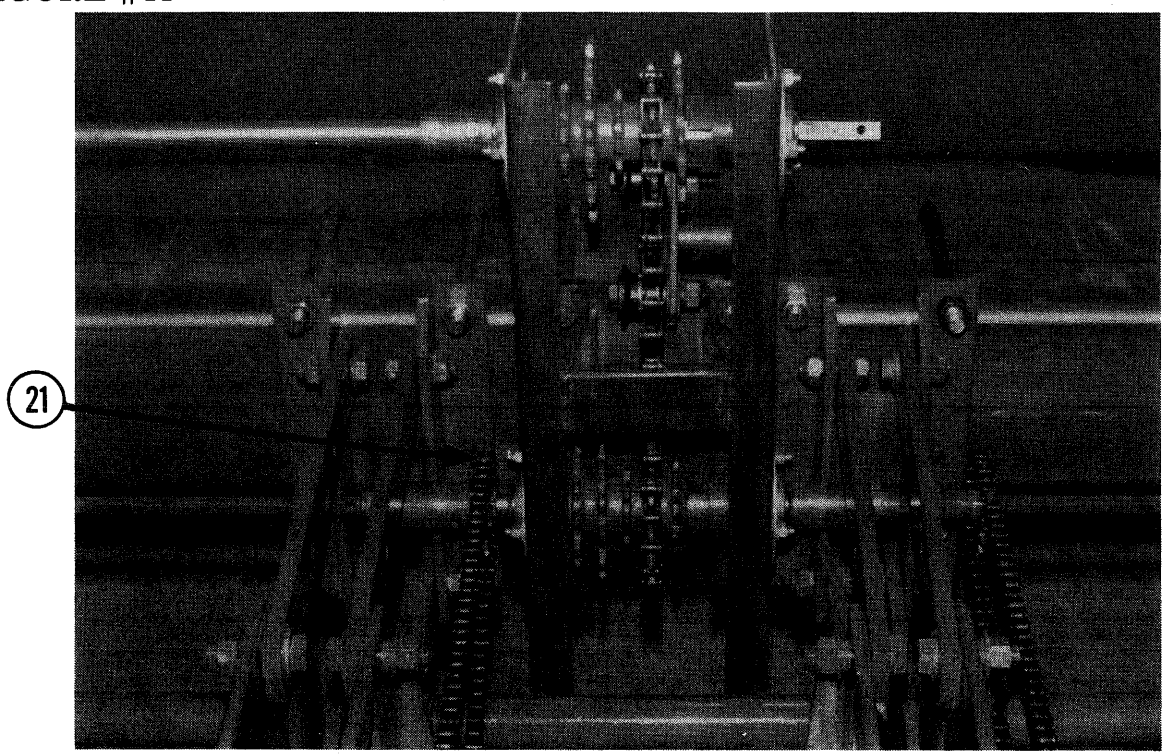
FIGURE #43



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).

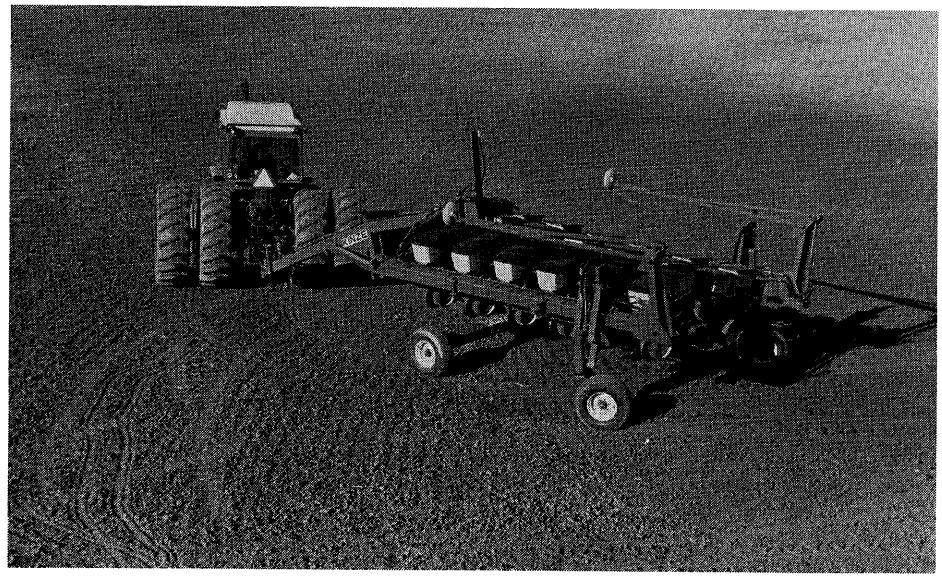
Refer to parts section under seed drive transmission.

FIGURE #44



Low Profile Gauge Marker Assemblies

FIGURE #45



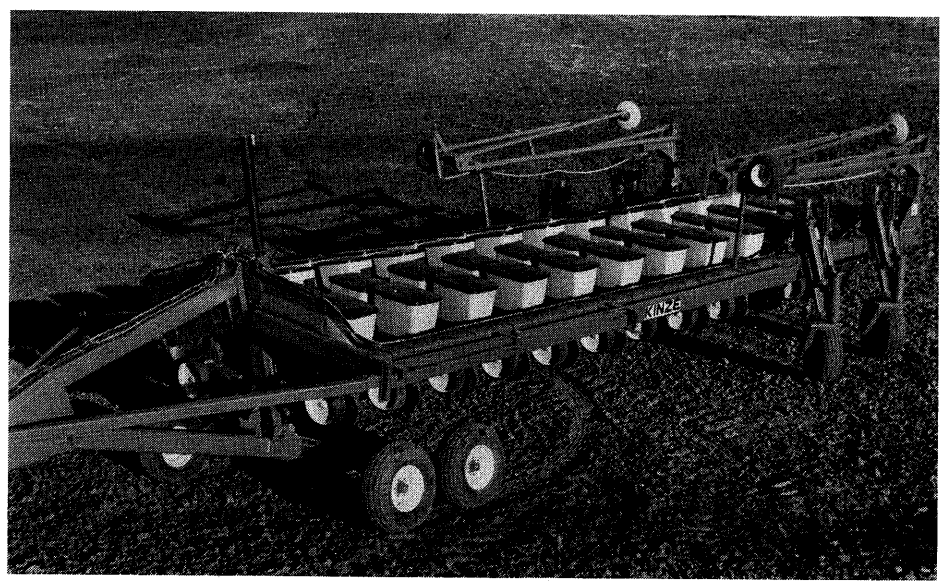
Depending upon the size of the Rear Folding Planter Bar, the low profile gauge marker assemblies are furnished with either a double or triple folding design.

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

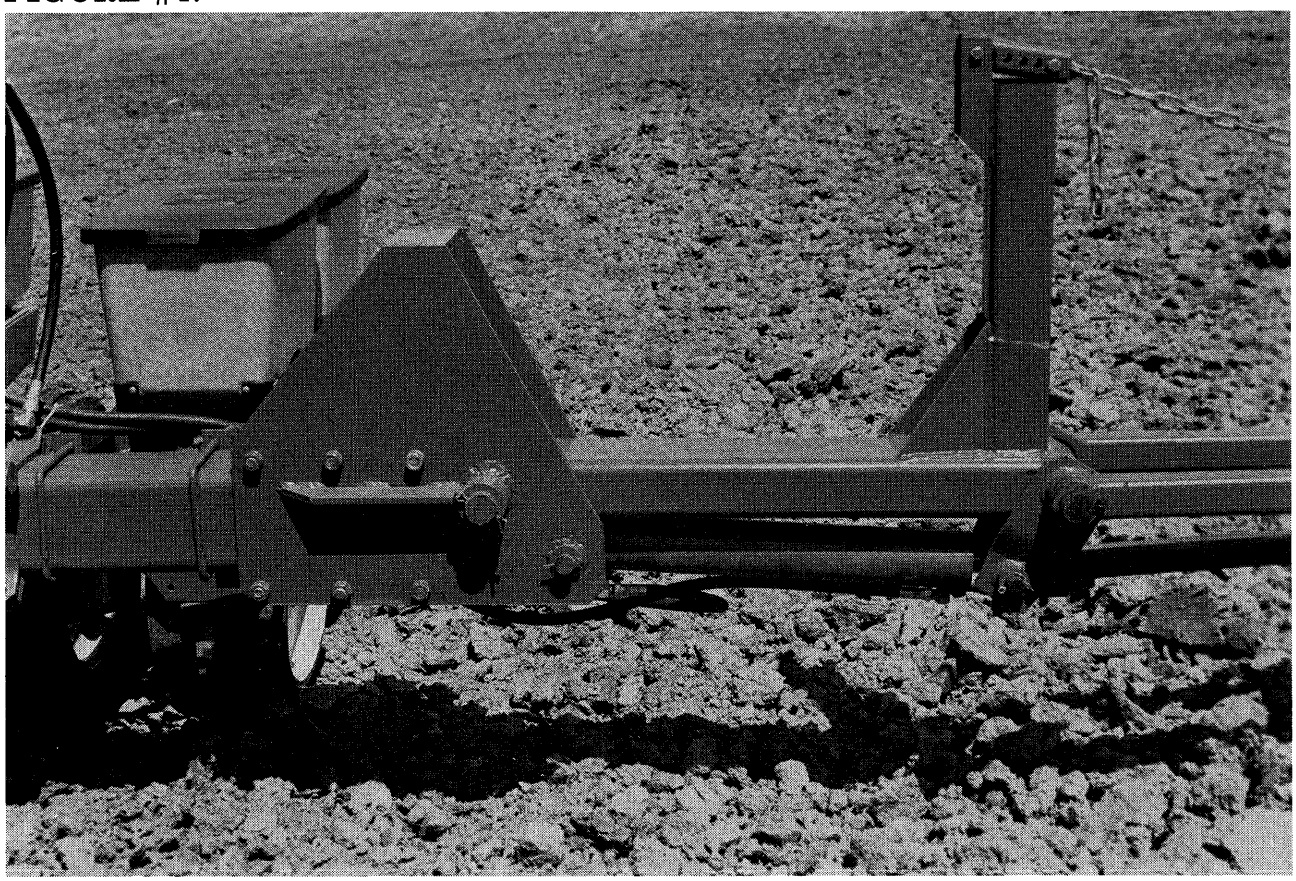


FIGURE #48

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

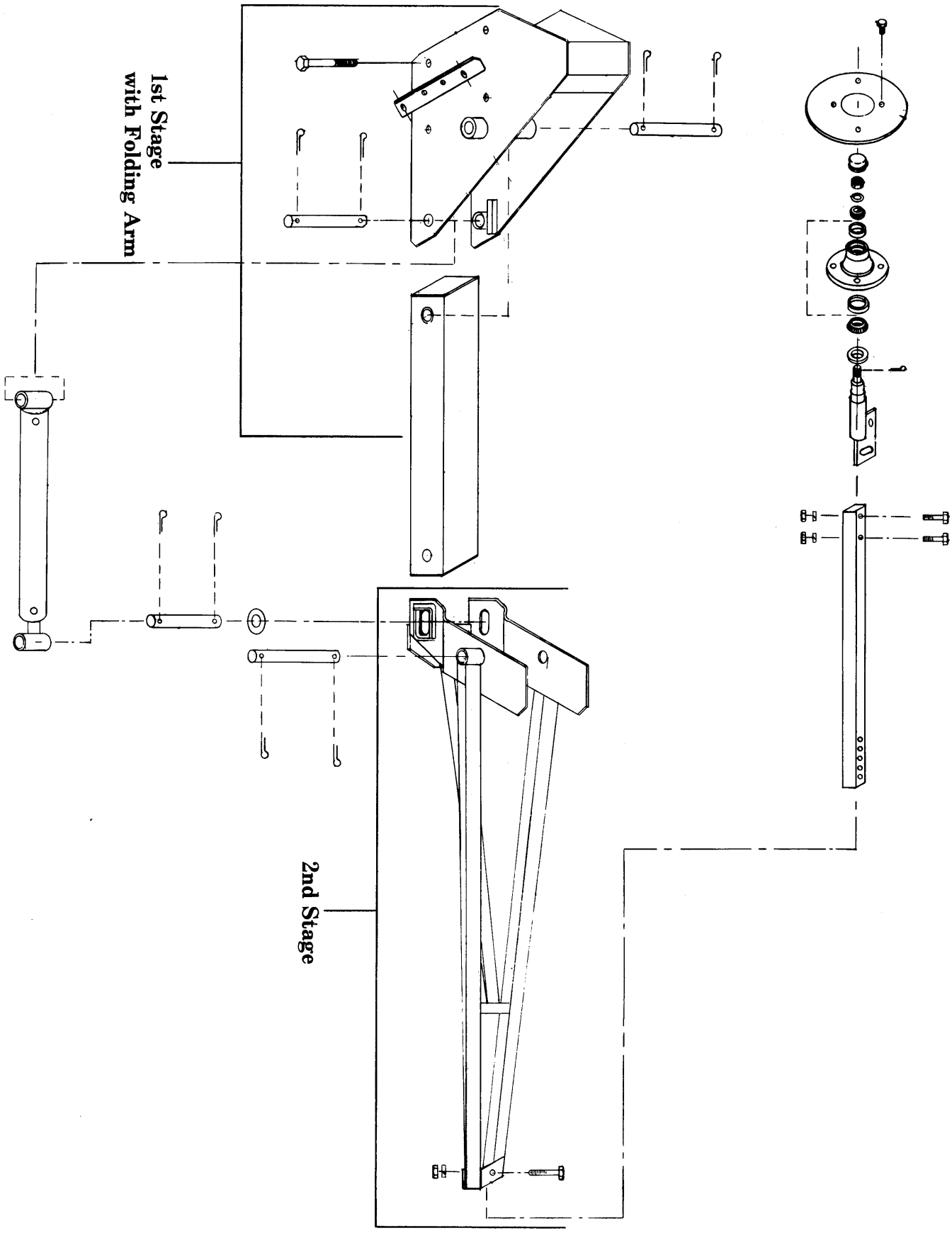


FIGURE #49

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

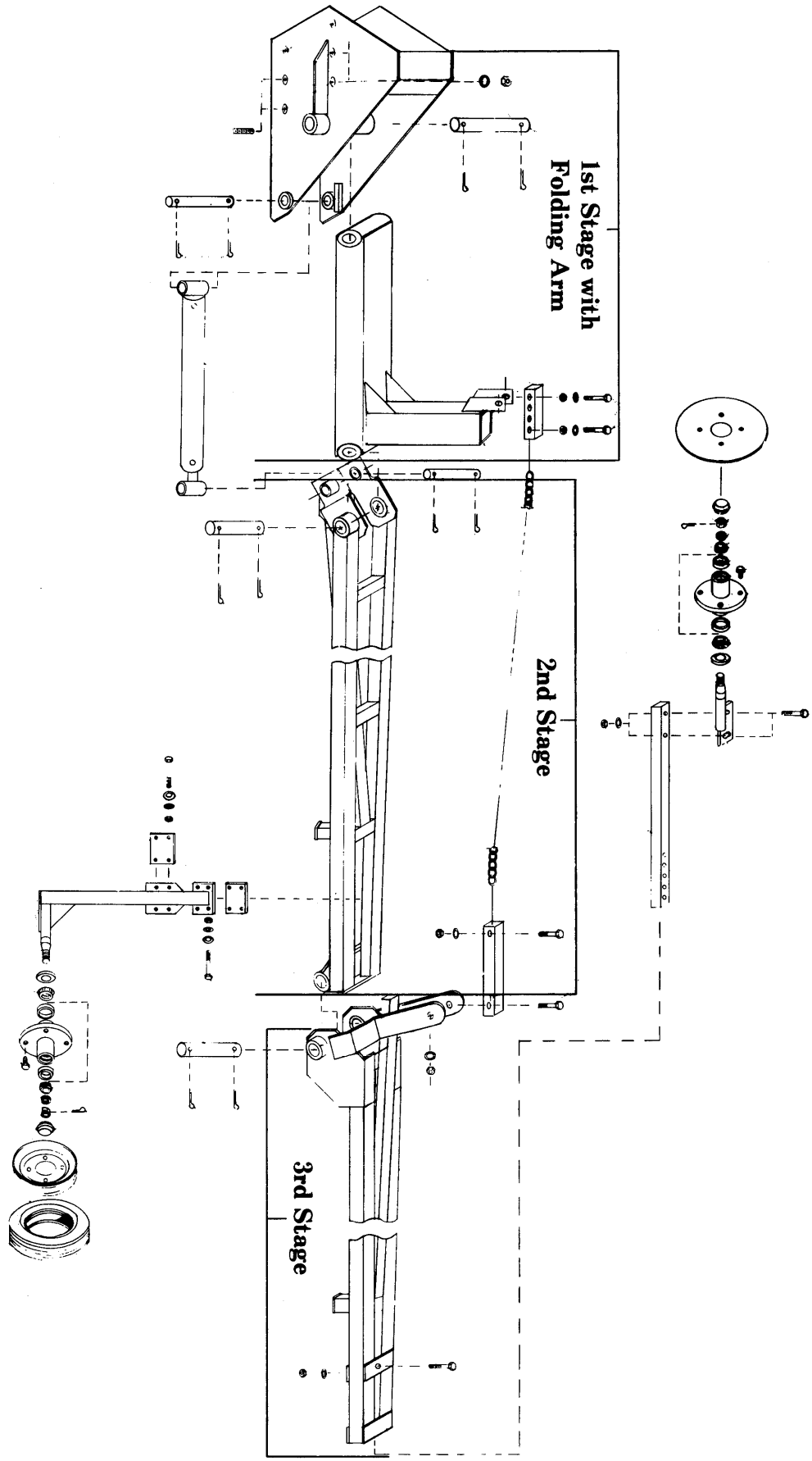
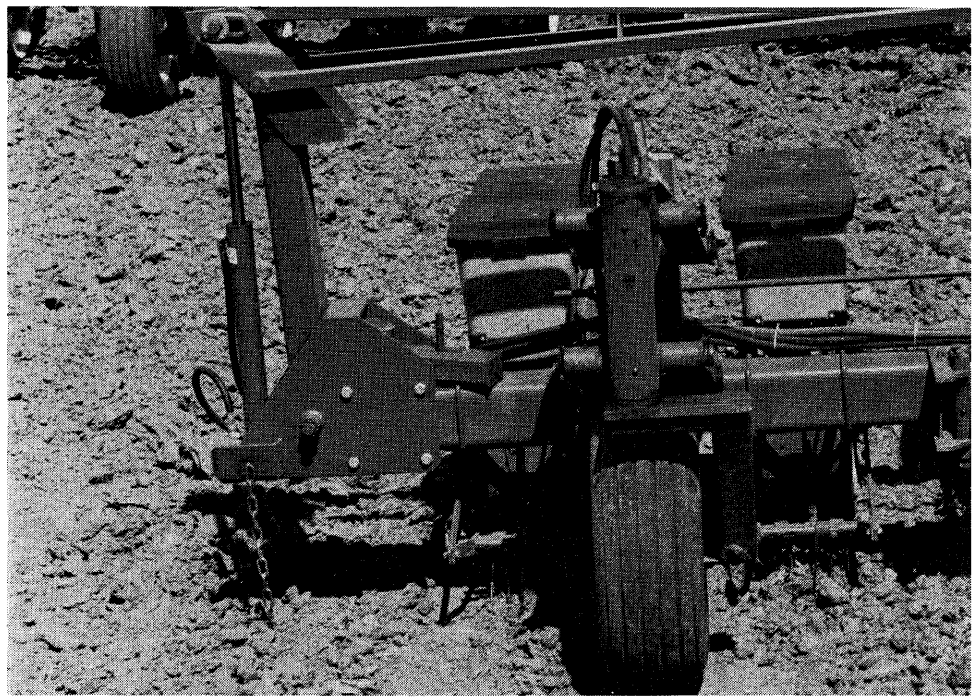


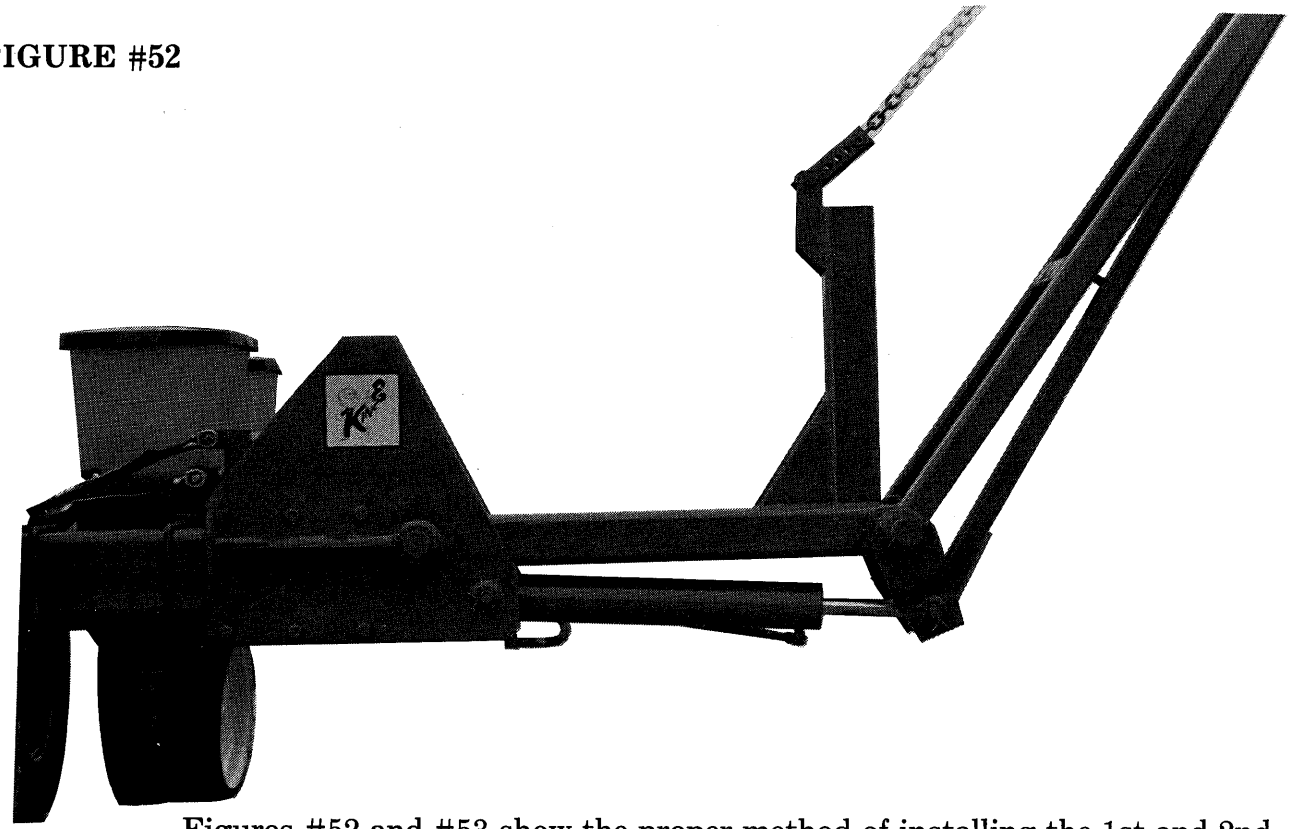
FIGURE #50



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

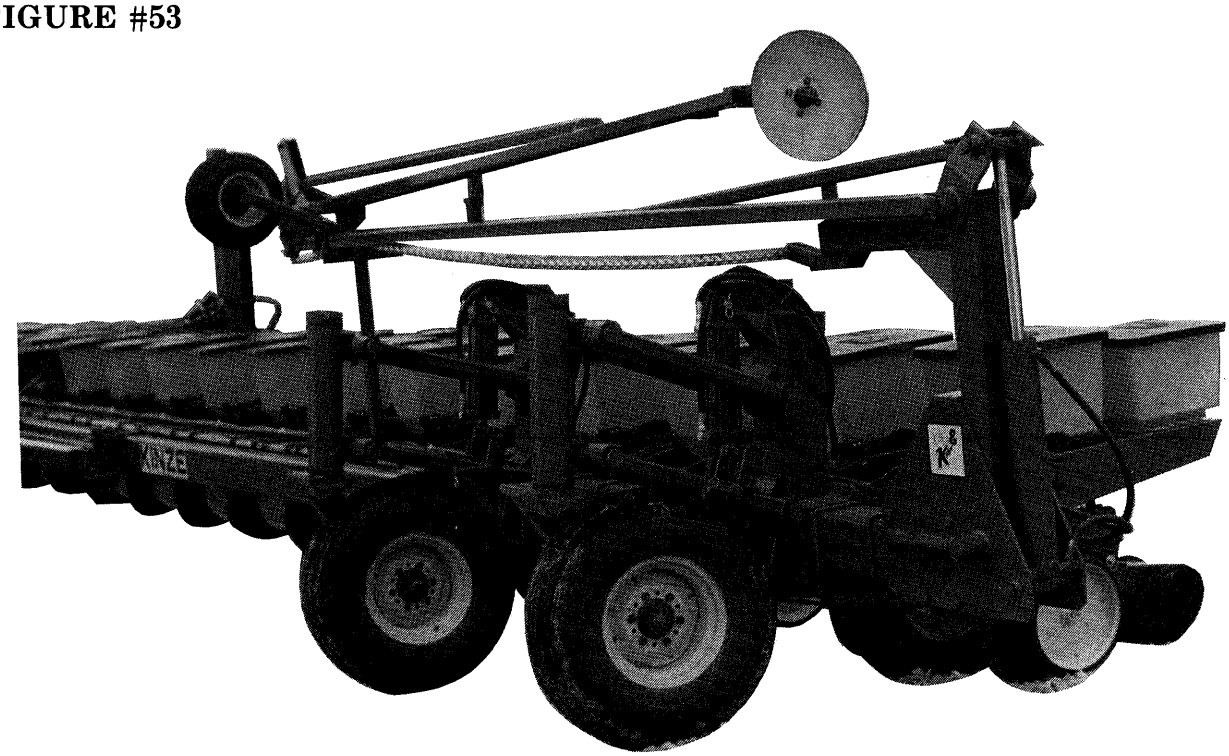


FIGURE #54

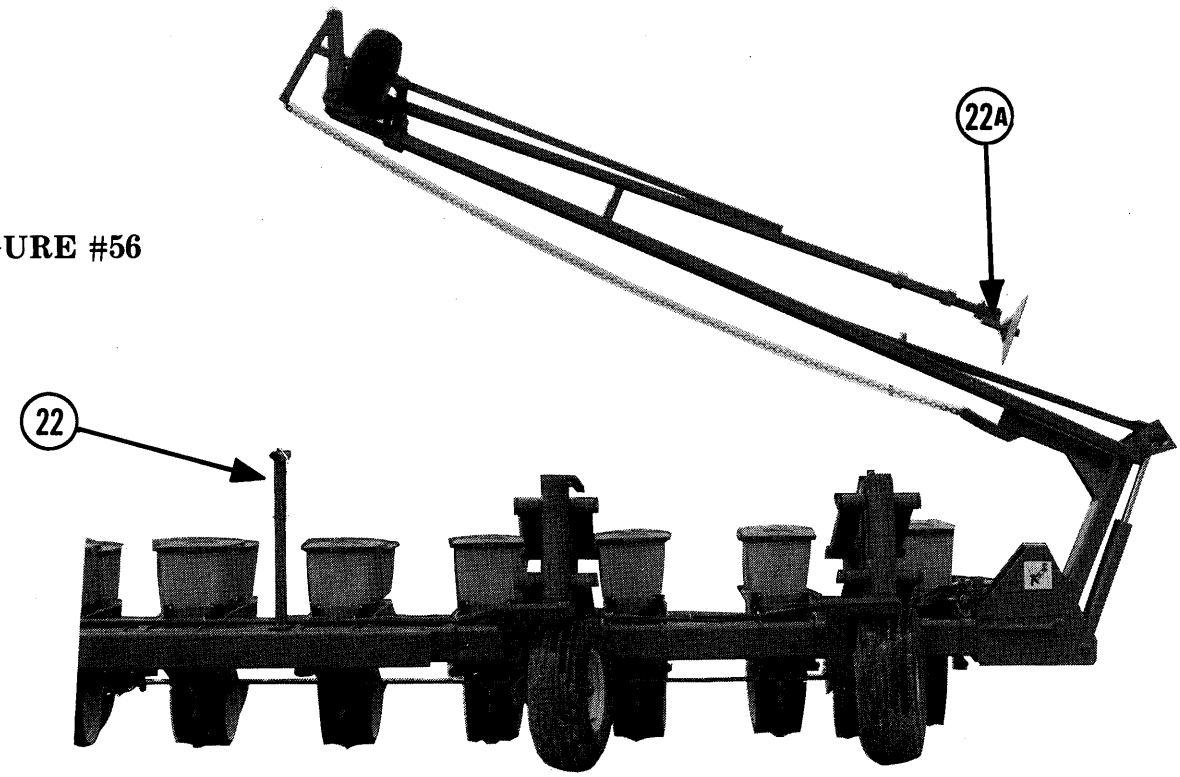
The 16" × 6:50 × 8" wide gauge wheel is installed on the 2nd stage of the triple folding marker assembly. The mounting bracket for the gauge wheel assembly is installed on the front side of the marker. It is normally positioned near the hinge point of the 2nd and 3rd stage and is adjustable to match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

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

FIGURE #55

The marker support stand for the triple folding marker should be fastened to the wing assembly as shown (Item 22). The support stand is attached with a 7 inch U-bolt.

FIGURE #56



NOTE: The marker hub assembly (Item 22-A) is furnished with opposite LEFT and RIGHT spindles. The spindles should be mounted "forward" for normal operation.

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 or "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.

CAUTION: Before operating the individual marker assemblies, first connect the hydraulic hoses to the individual marker cylinders and cycle them several times. After the cylinders are operating smoothly, attach the ram ends to the marker arms.

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 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.

Planter Electrical System

Three separate electrical harnesses are used on the planter bars. All planter bars equipped for **dual** valve outlets require the **TWO VALVE** electrical diagram (Figure #56-A). All planter bars equipped for **dual** valve outlets and optional point row electric clutches require the **TWO VALVE POINT ROW** electrical diagram (Figure #56-B). Planter bars equipped for **triple** valve outlets and optional point row electric clutches require the **THREE VALVE POINT ROW** electrical diagram (Figure #56-C).

NOTE: All planter bars equipped for TRIPLE valve outlets and NOT using optional point row electric clutches DO NOT require an electrical harness.

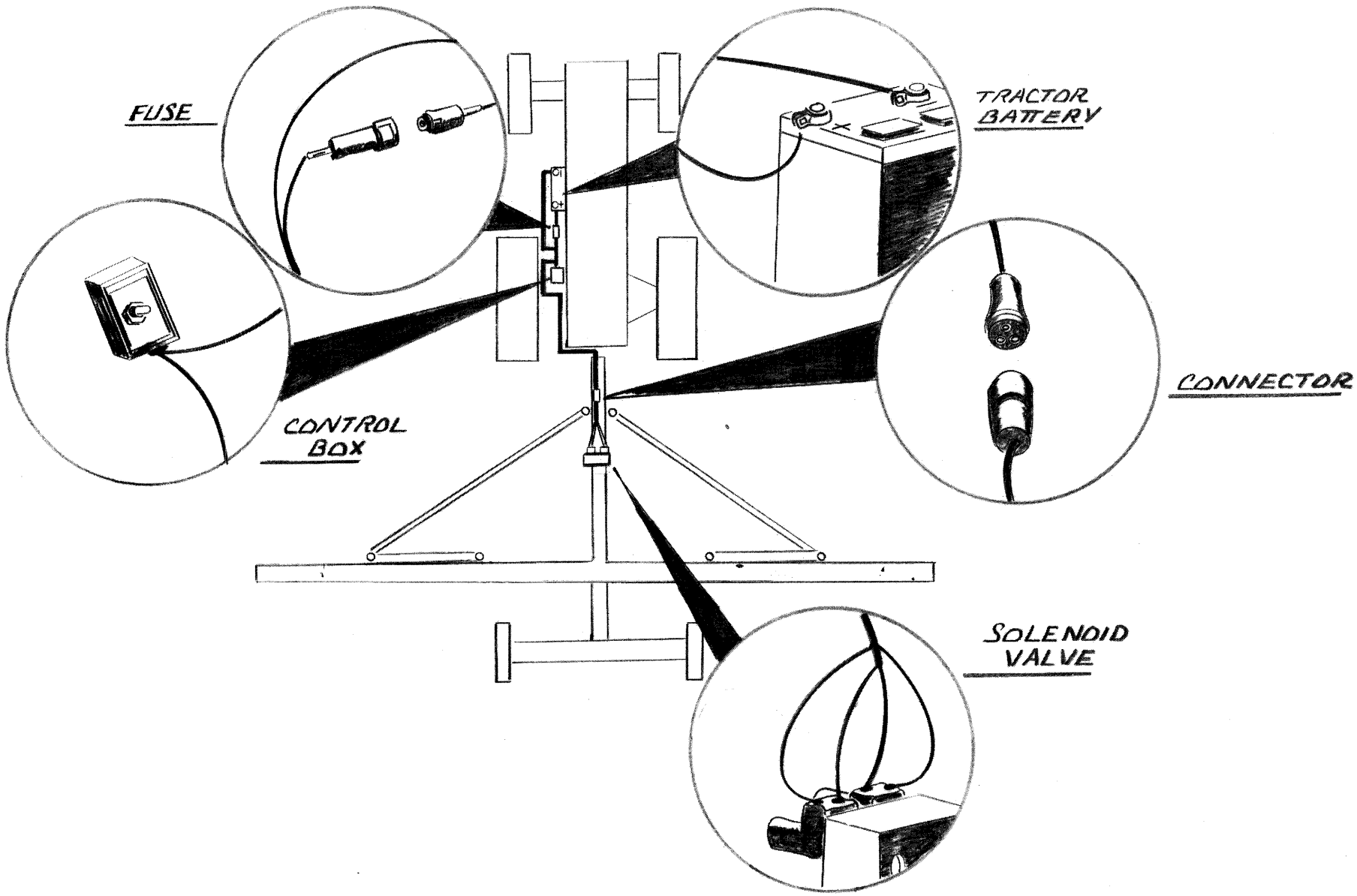
All planter bars equipped for **two** valve outlets are preassembled with the electrical solenoid valves on the planter hitch assembly. To connect the solenoid valves to the tractor electrical system refer to Figure #56-A or #56-B. The optional point row electric clutches require either a TWO VALVE POINT ROW (Figure #56-B) or THREE VALVE POINT ROW (Figure #56-C) electrical harness.

To install any electrical harness, make certain that the fuse lead is connected to the positive side of the battery. On tractors using two 6-volt batteries, make certain that a 12-volt connection is made. To avoid a poor ground connection, attach the white ground wire to the negative side of the battery only.

After the fuse lead and ground have been connected, place the marker and/or clutch control switch(s) in the center or "off" position. Each solenoid on the marker and electric clutches have either two wires or spade connections. The "hot" lead for the "left" marker and/or "left" clutch can be connected to either lead on the "left" solenoid. Connect the "right" side in the same manner. The marker control solenoid ground wires are attached to the same "common" white ground wire on the electrical harness. Each clutch solenoid has a separate "hot" and ground wire in the electrical harness.

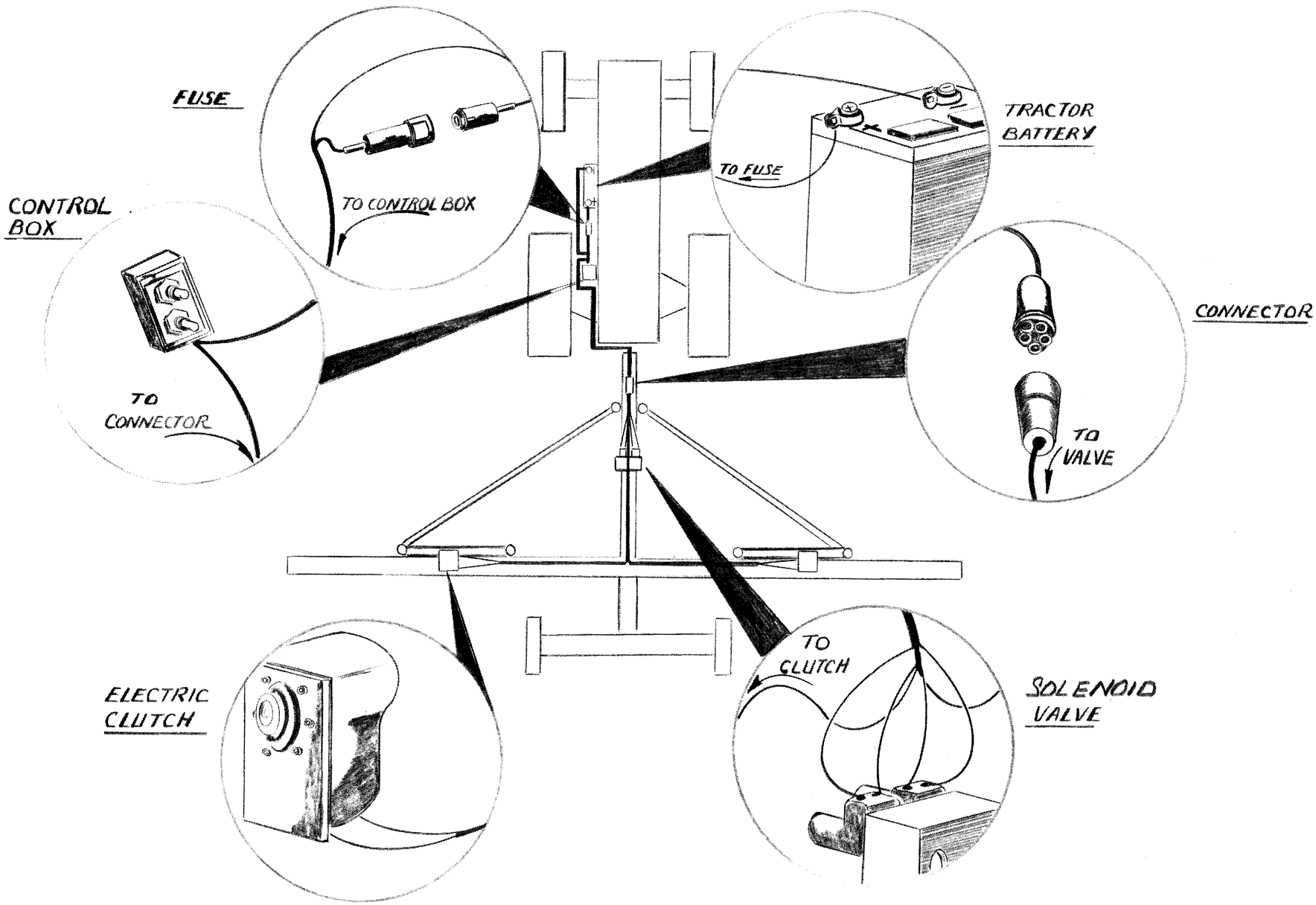
To test the electrical system, turn the control box switch for the markers to the "left" position. With the switch in the "left" position, the marker solenoid will "click" open. The left solenoid will be magnetized when energized. Poor magnetic attraction would indicate low voltage. The operating lever on the electric clutch will function when energized. Slow or partial operation of the operating lever would indicate low voltage.

FIGURE #56-A



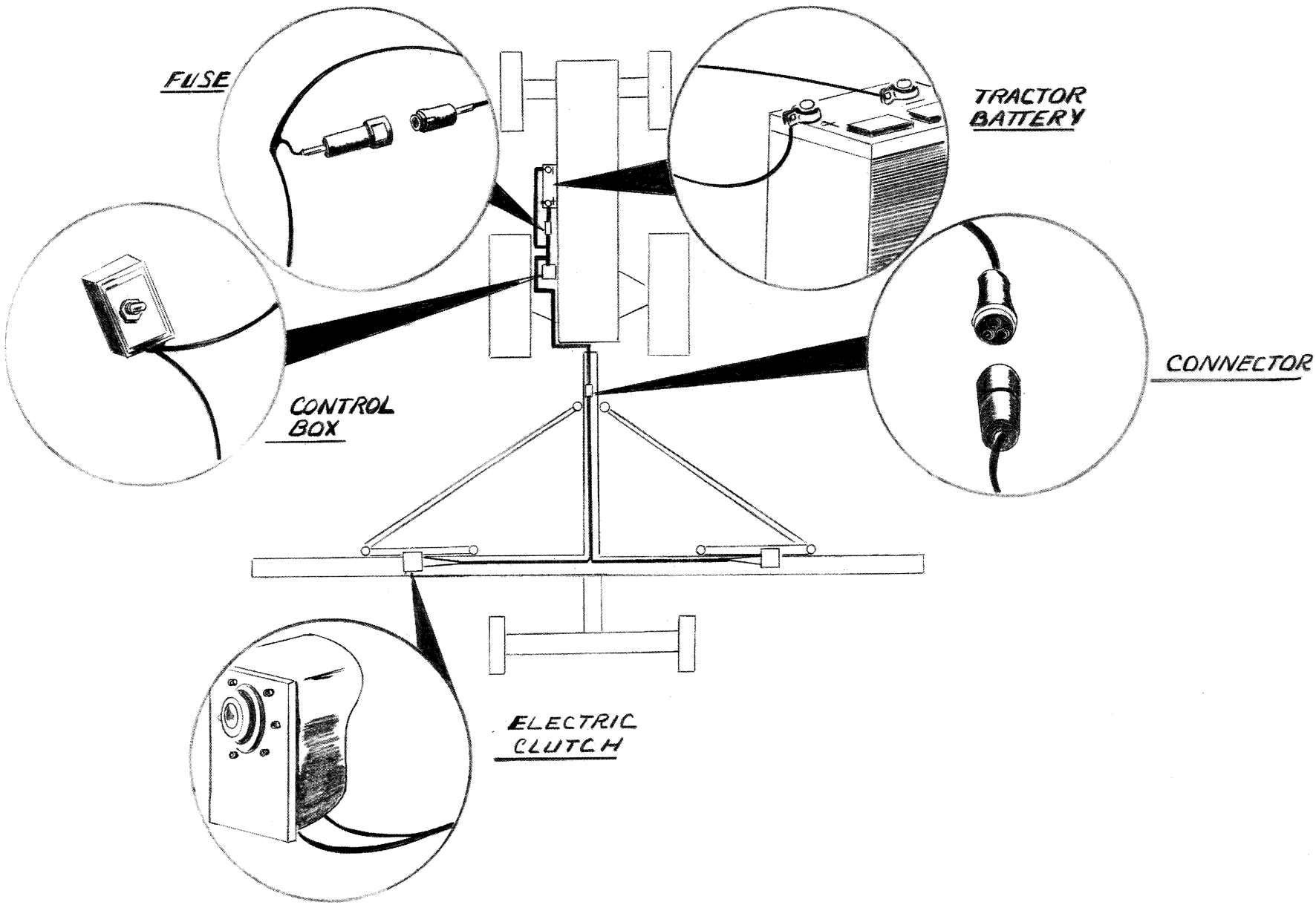
TWO VALVE
ELECTRICAL DIAGRAM

FIGURE #56-B



TWO VALVE POINT ROW
ELECTRICAL DIAGRAM

FIGURE #56-C



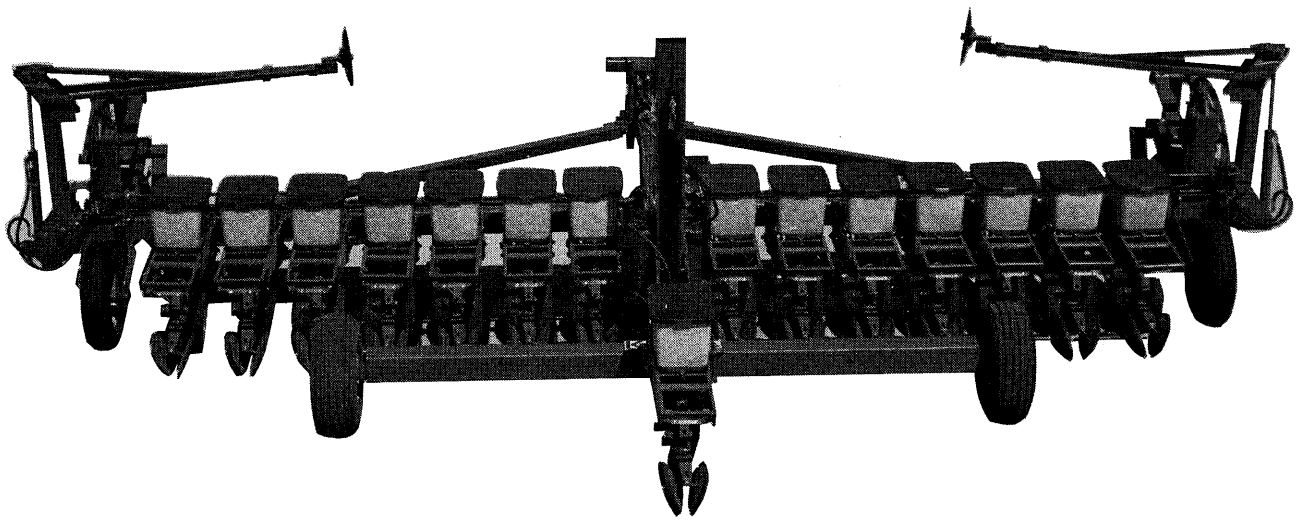
THREE VALVE POINT ROW
ELECRICAL DIAGRAM

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.

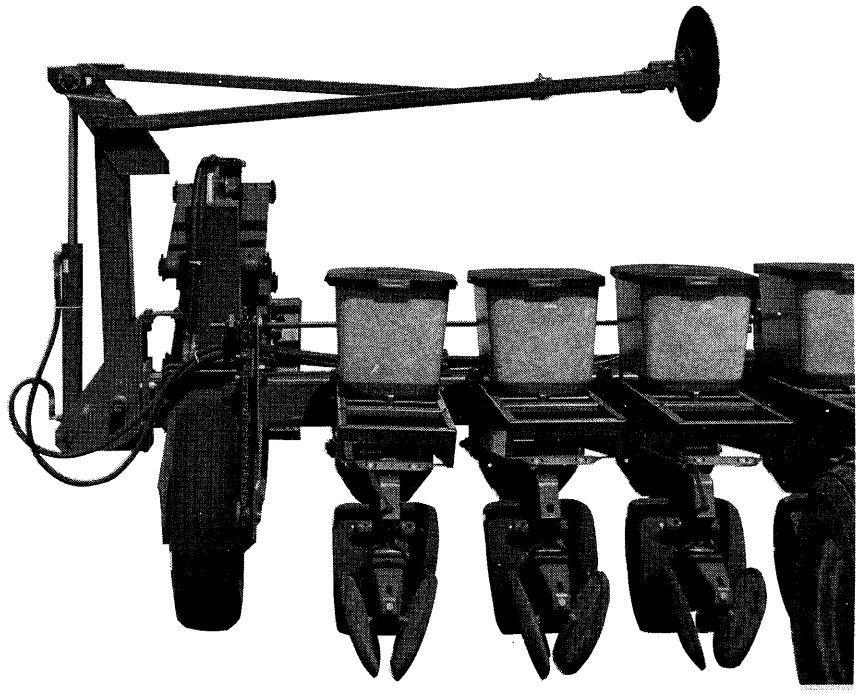
An 8-row 36″ planter with fifteen 18-inch row spacings is shown in Figure #57.

FIGURE #57



Special Marker Applications Continued

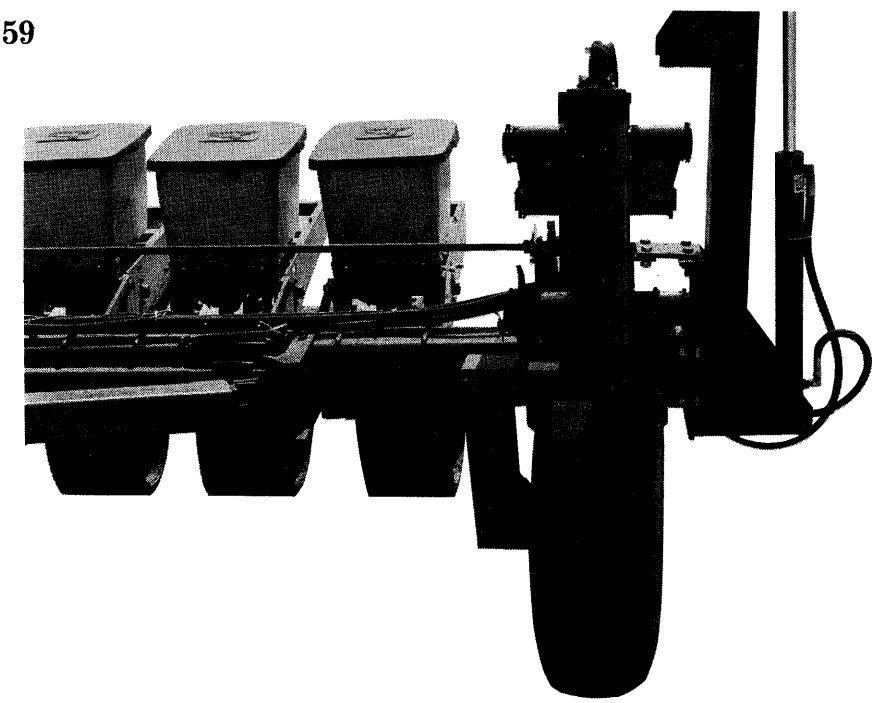
FIGURE #58



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

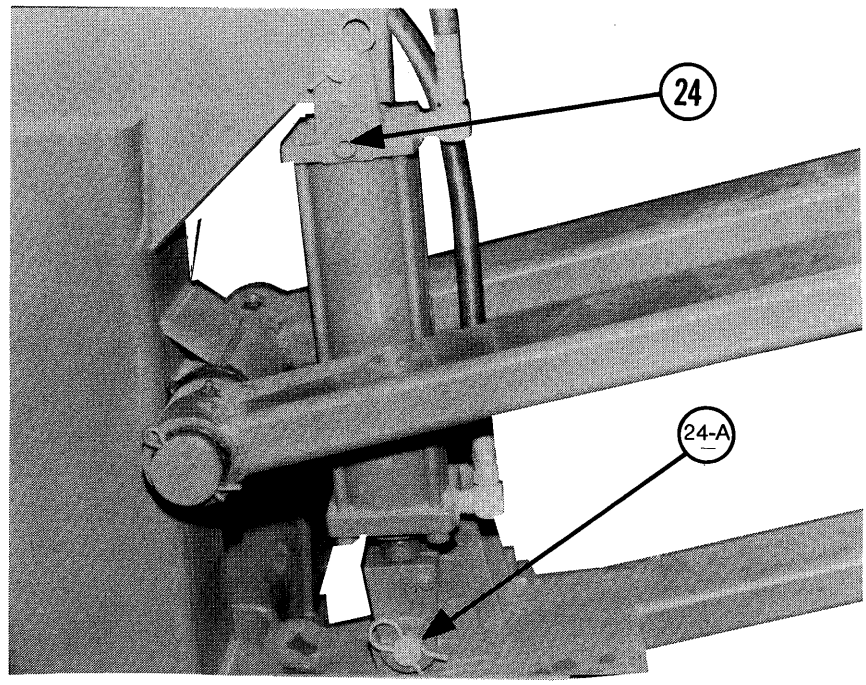
The complete compact marker assembly is preassembled and ready to bolt to the caster wheel. Longer gauge marker hoses must be used when the compact marker assembly is installed. On planters using common shaft driven units, the 7/8 inch drive shaft must be lengthened. The remainder of the marker system 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 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. #27)

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 24) should be used in the planting position to prevent possible damage to the row units should the wing latch fail.

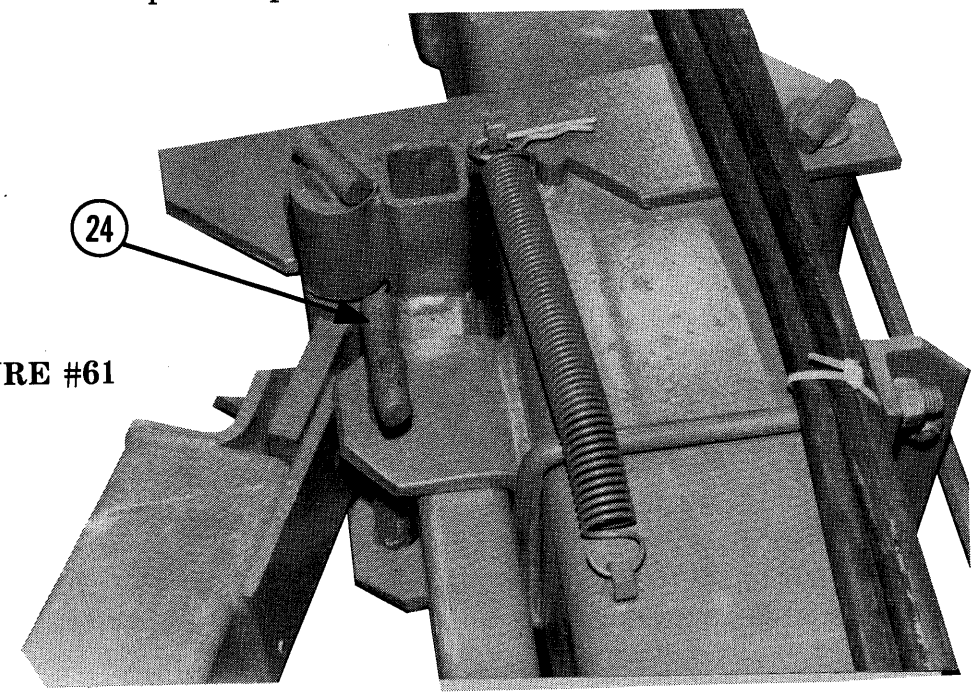
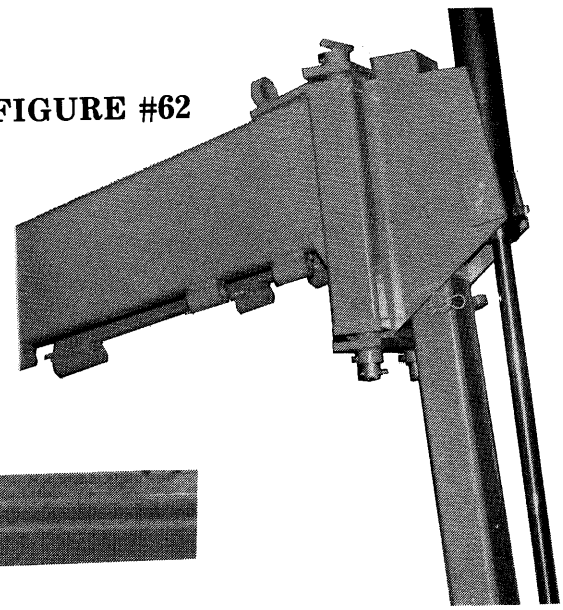


FIGURE #61

FIGURE #62



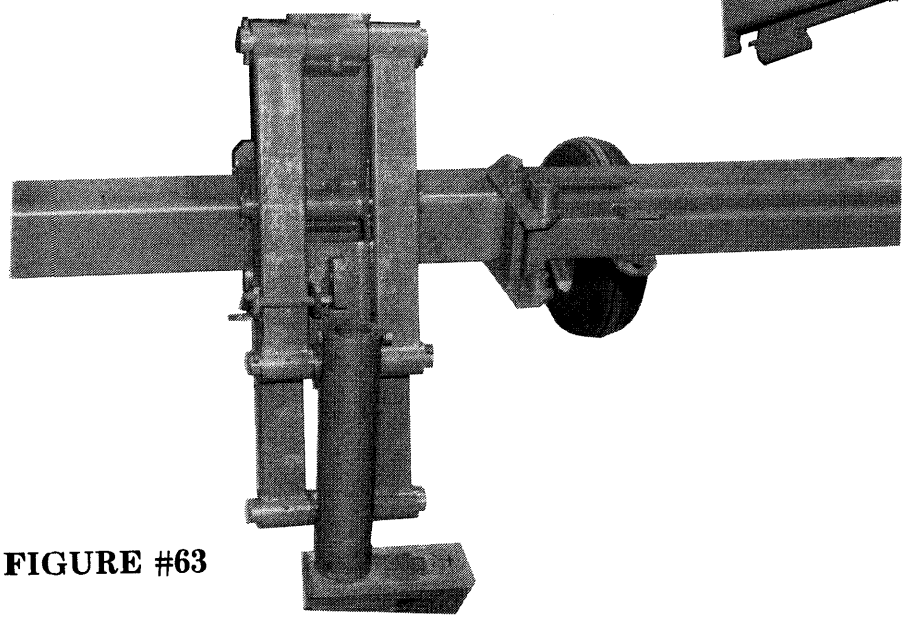


FIGURE #63

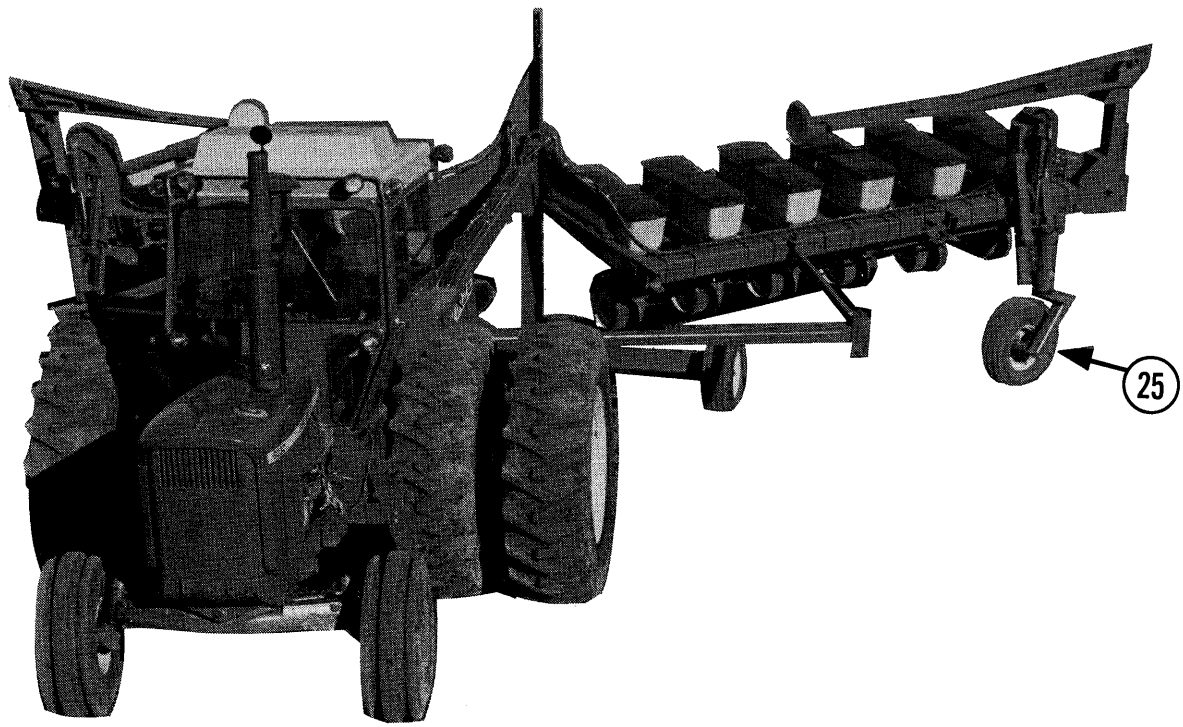
Folding Of The Planter Bar

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 25).

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



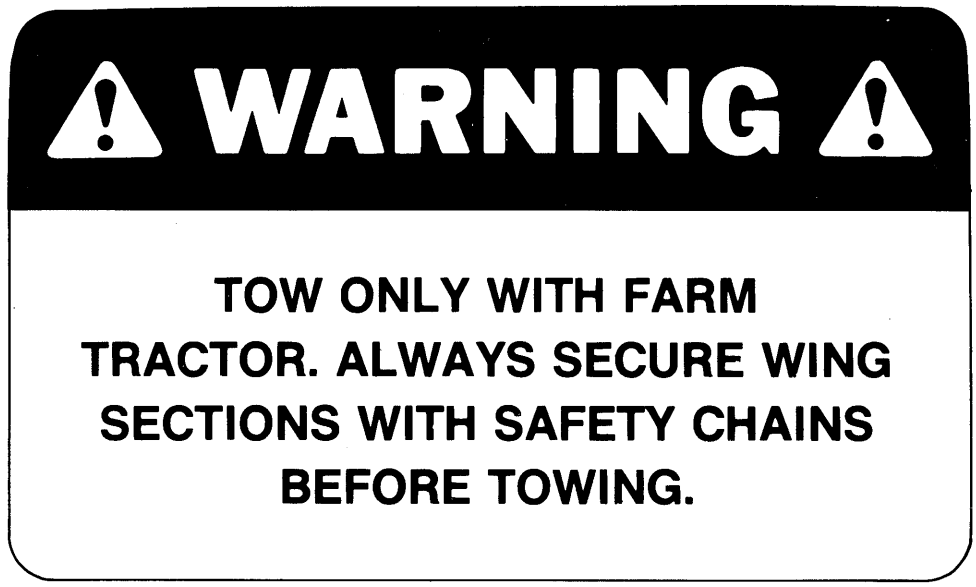
You will find that it is much easier to fold the planter into the transport position in plowed or soft field conditions as this obviously increases the rolling resistance on the caster wheels. The weight of the seed, chemicals, etc. on the planter wings will also create rolling resistance and aid in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

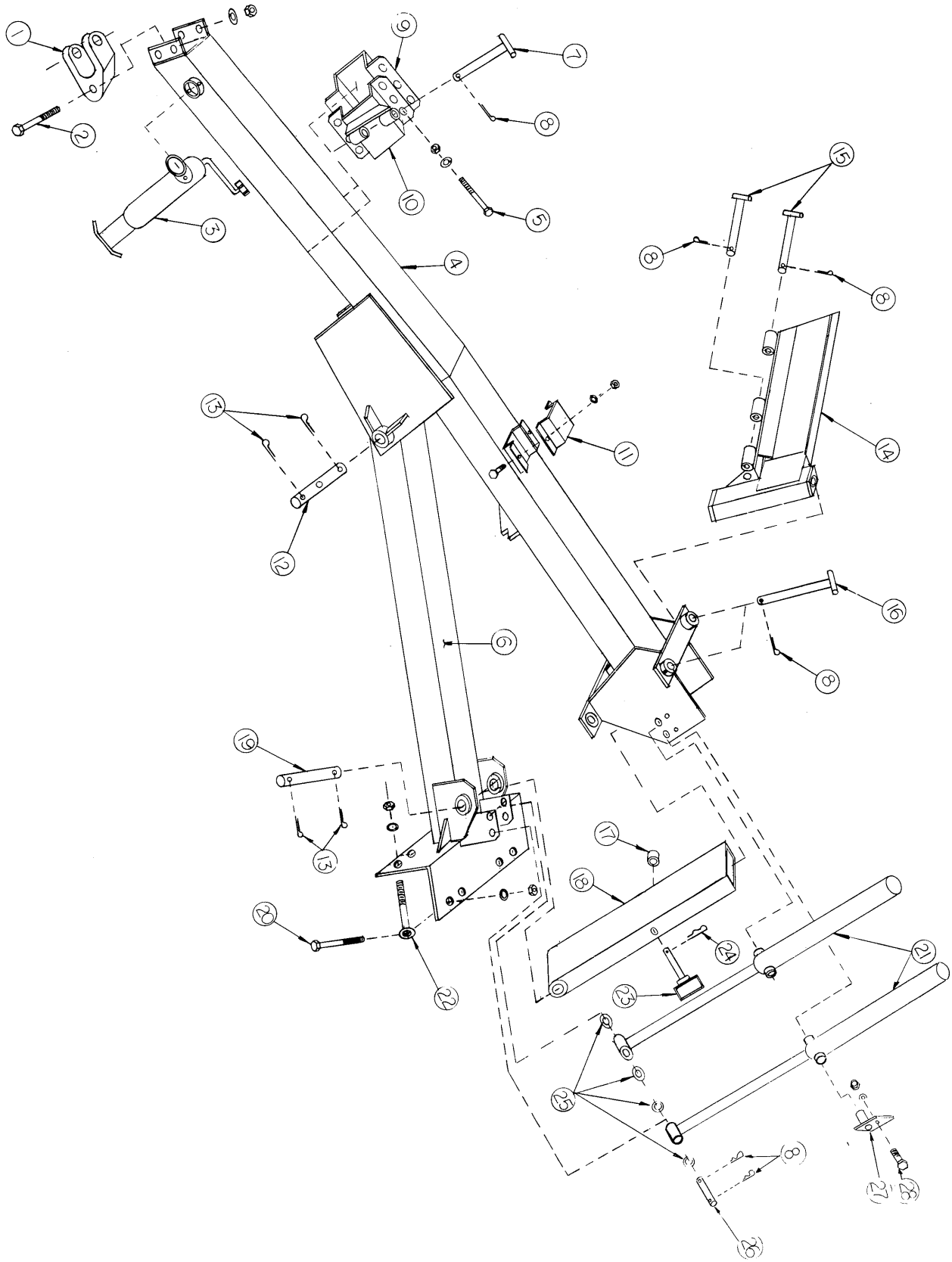
The following decals will be provided for each planter bar and should be placed in a location visible to the operator.



HITCH ASSEMBLY

Key	Part Number	Description
1	D557	Double Hitch Clevis (single clevis available)
2	D556	1-1/4" × 6-1/2" Special Bolt, Washer, Nut
3	4100-1	Jack Assembly
4	A176	Hitch Center Section (upper member) (specify planter size)
5		3/4" × 3" Cap Screw, Lock Washer, Nut (6 used)
6		Hitch Center Section (lower member)
7	A135	Folding Link Pin 1-1/4" × 12-3/4" (4 used)
8		1/4" × 2" Cotter Pin
9	A148R	Saddle Clamp Right
10	A148L	Saddle Clamp Left
11	D786	Hose Clamp
12	D551	Center Pivot Pin 2-1/8" × 16-1/8"
13		3/8" × 3" Cotter Pin (4 used)
14	A131	Wing Gate Assembly (specify left or right)
15	A135	Wing Pin 1-1/4" × 12-3/4" (4 used)
16	A113	Vertical Pivot 1-1/4" × 27" (2 used)
17	D526	Pin Sleeve
18	A116	Vertical Stabilizer
19	D536	Vertical Stabilizer Pivot Pin 2-1/8" × 13-5/8"
20		3/4" × 9" Cap Screw, Lock Washer, Nut (4 used)
21		Trunion Cylinders (specify planter size)
22		3/4" × 9" Eye Bolt, Lock Washer, Nut (4 used)
23	A112	Safety Pin
24		No. 6 Hair Pin Clip
25	D749	1-1/4" Washer (4 used)
26	D535	Trunion Cylinder Pin (2 used)
27	A115	Trunion Cylinder Mounting Bracket (4 used)
28		1/2" × 1-1/2" Cap Screw, Lock Washer, Nut (4 used)

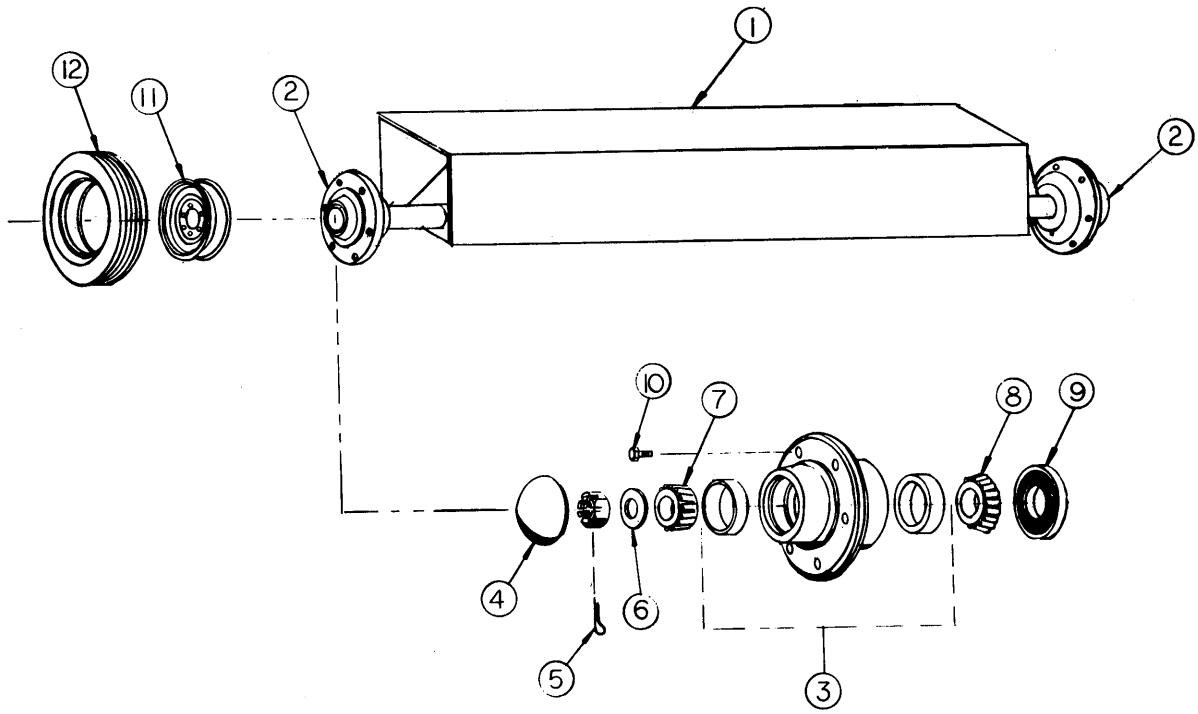
Hitch Assembly – Figure #100



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

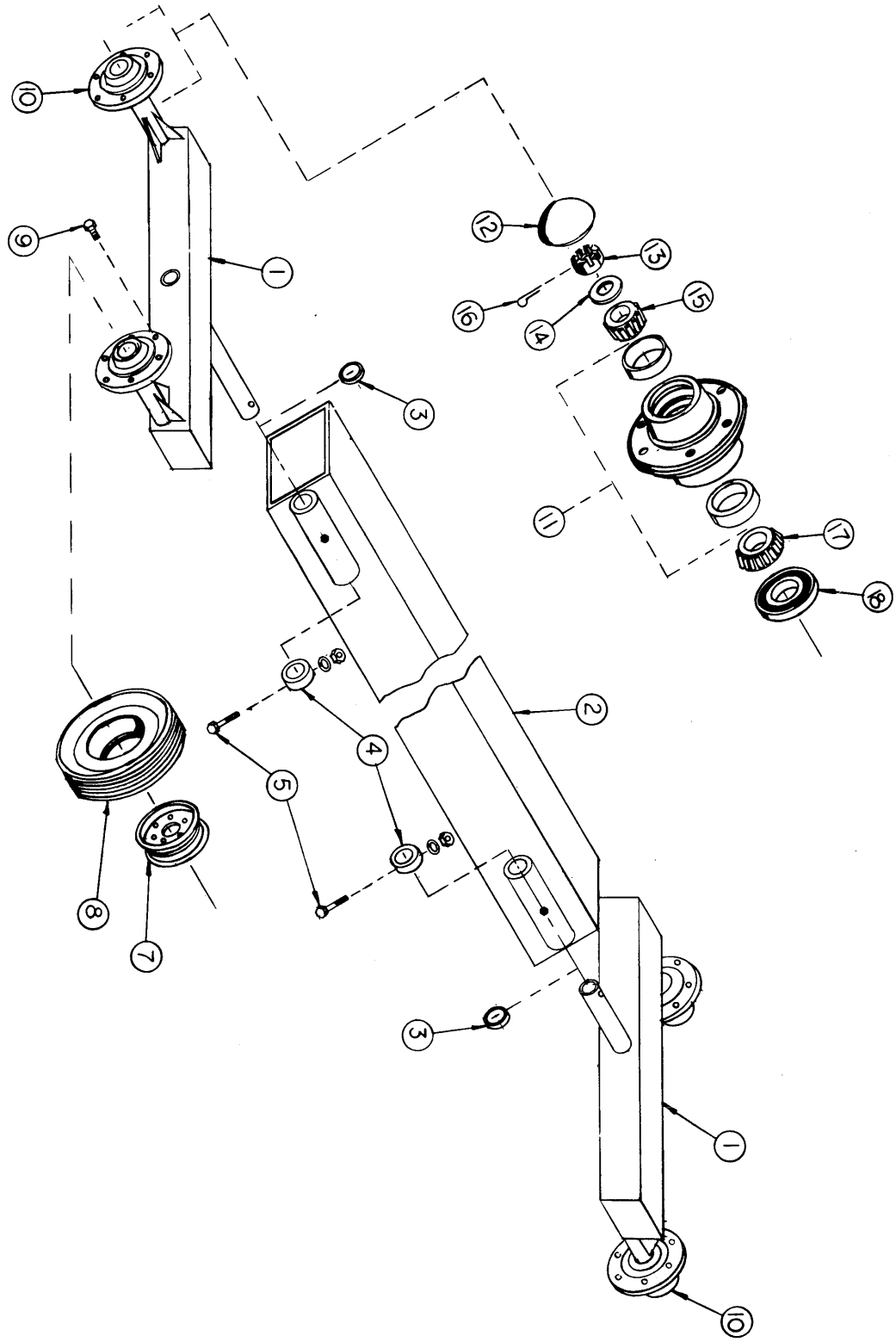
Standard Axle Assembly — Figure #101



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

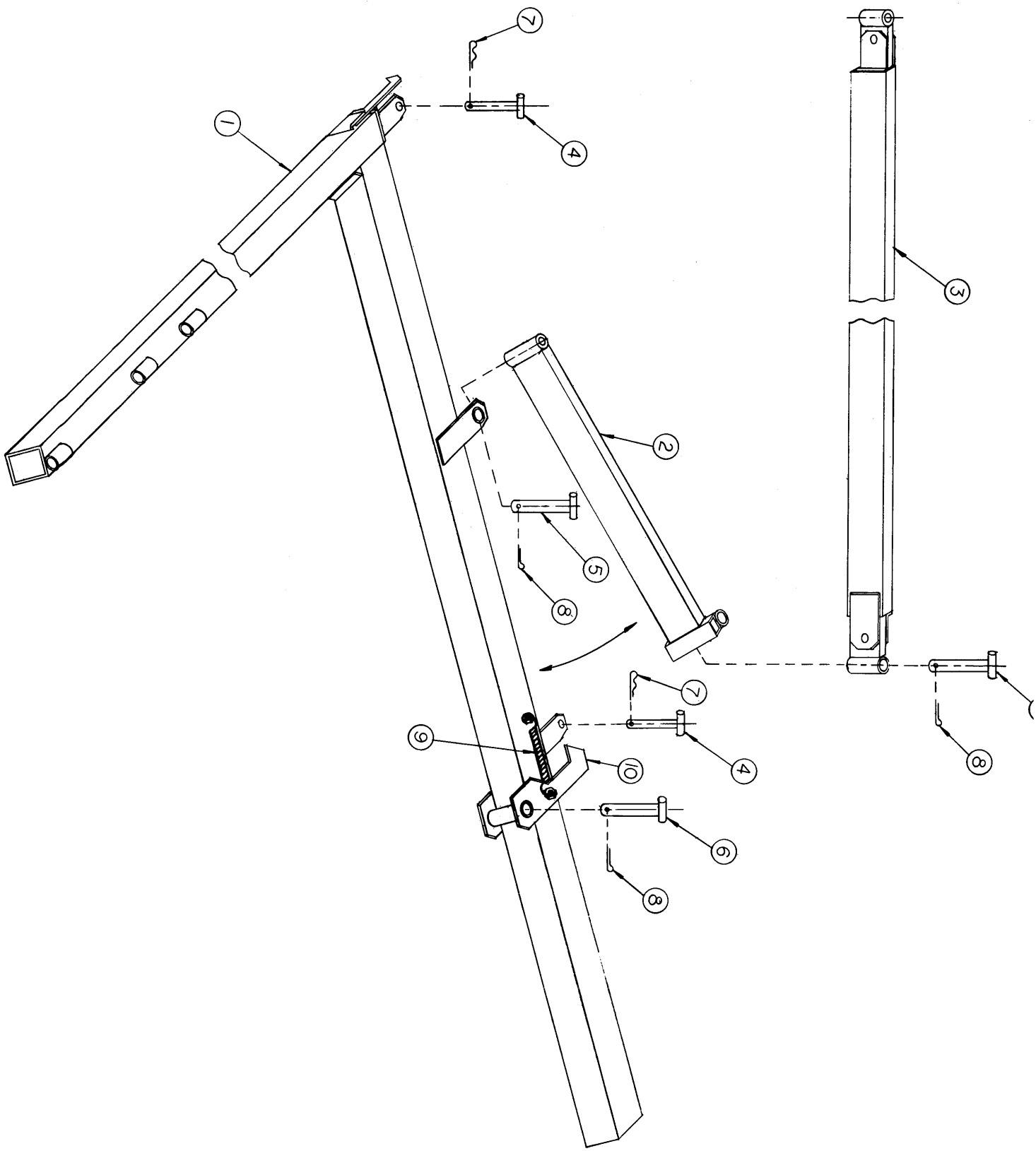
Tandem Axle Assembly – Figure #102



STANDARD WING ASSEMBLY

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

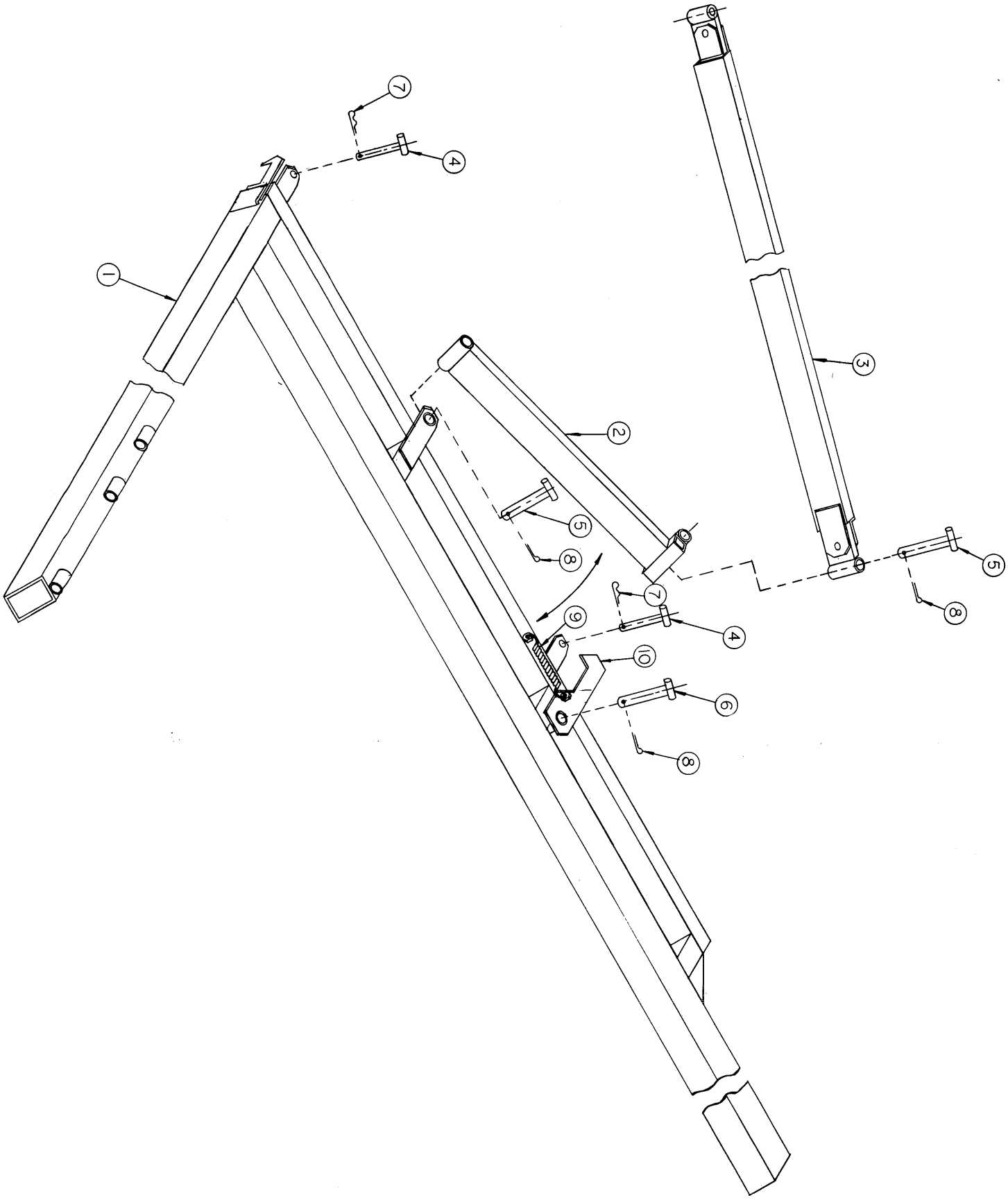
Standard Wing Assembly — Figure #103



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

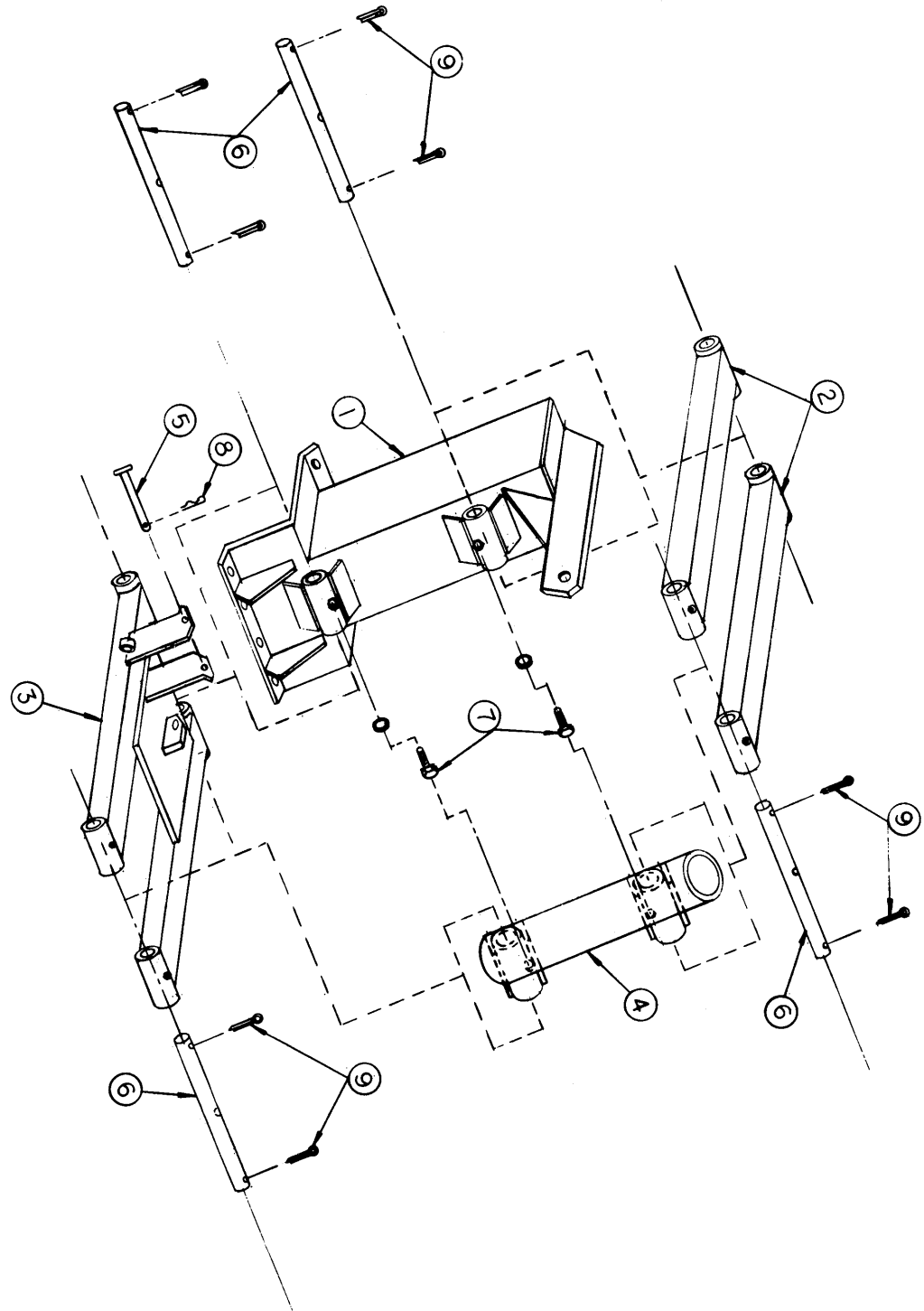
Special Wing Assembly — Figure #104



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

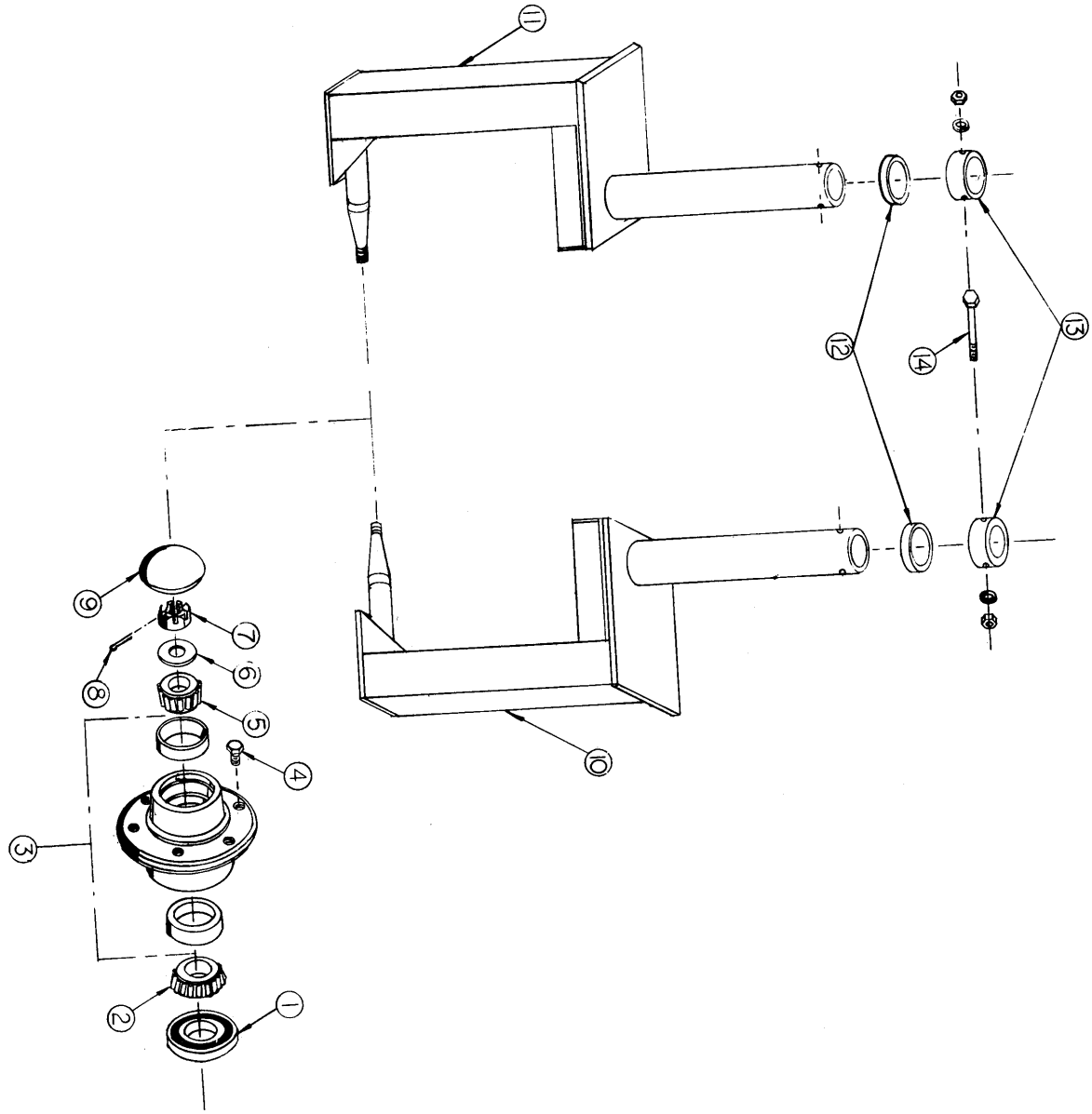
Caster Wheel Tower Assembly — Figure #105



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

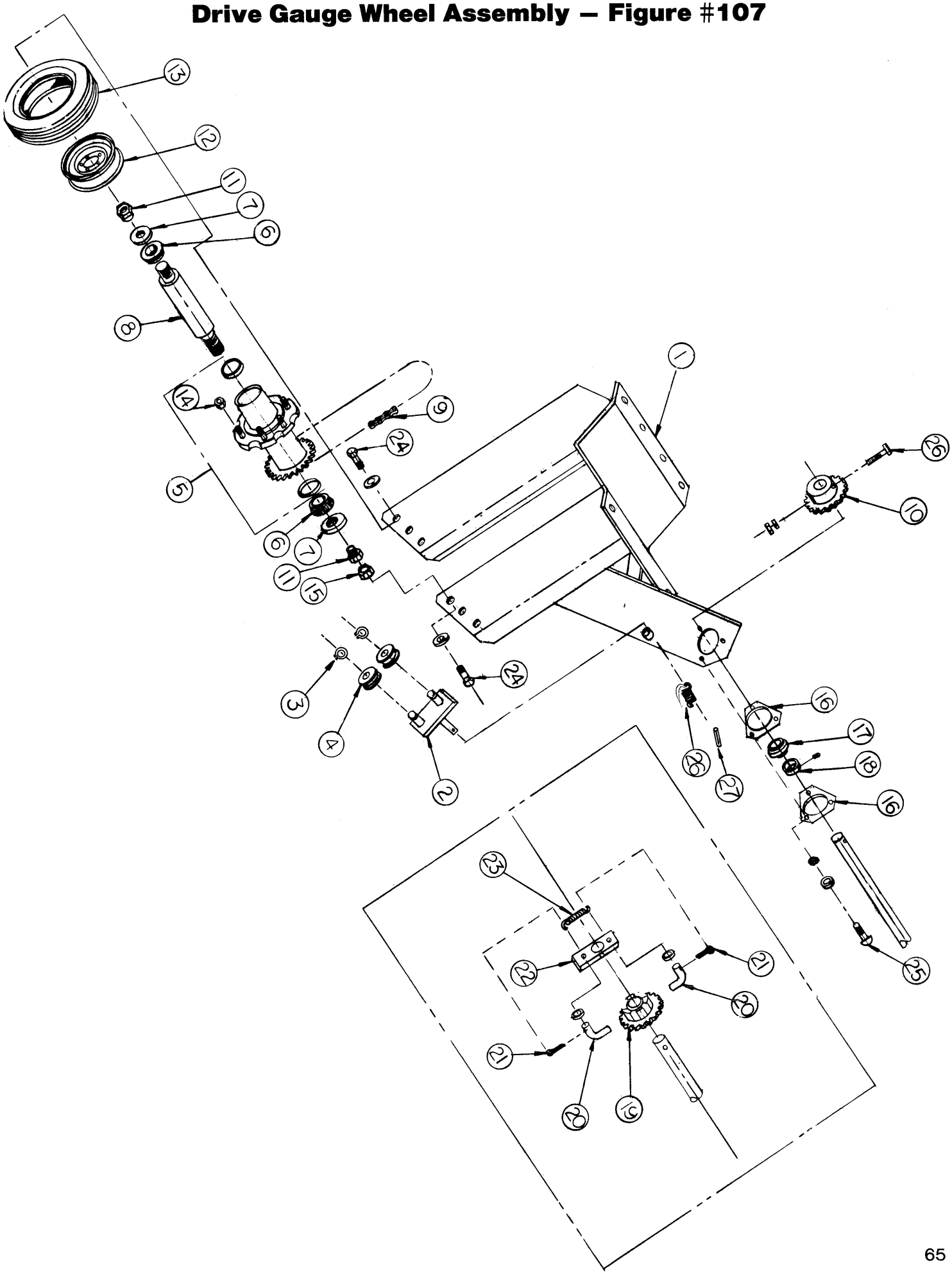
Caster Wheel Spindle Assembly — Figure #106



DRIVE GAUGE WHEEL ASSEMBLY

Key	Part Number	Description
1	A168	Drive Gauge Bracket
2	A182	Idler Bracket
3		Snap Ring (2 used) (JD B14203)
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)
24		3/4" x 2-1/2" Cap Screw, Lock Washer
25		5/16" x 1" Carriage Bolt
26	D799	Spring
27		1/4" × 1-1/4" Pin

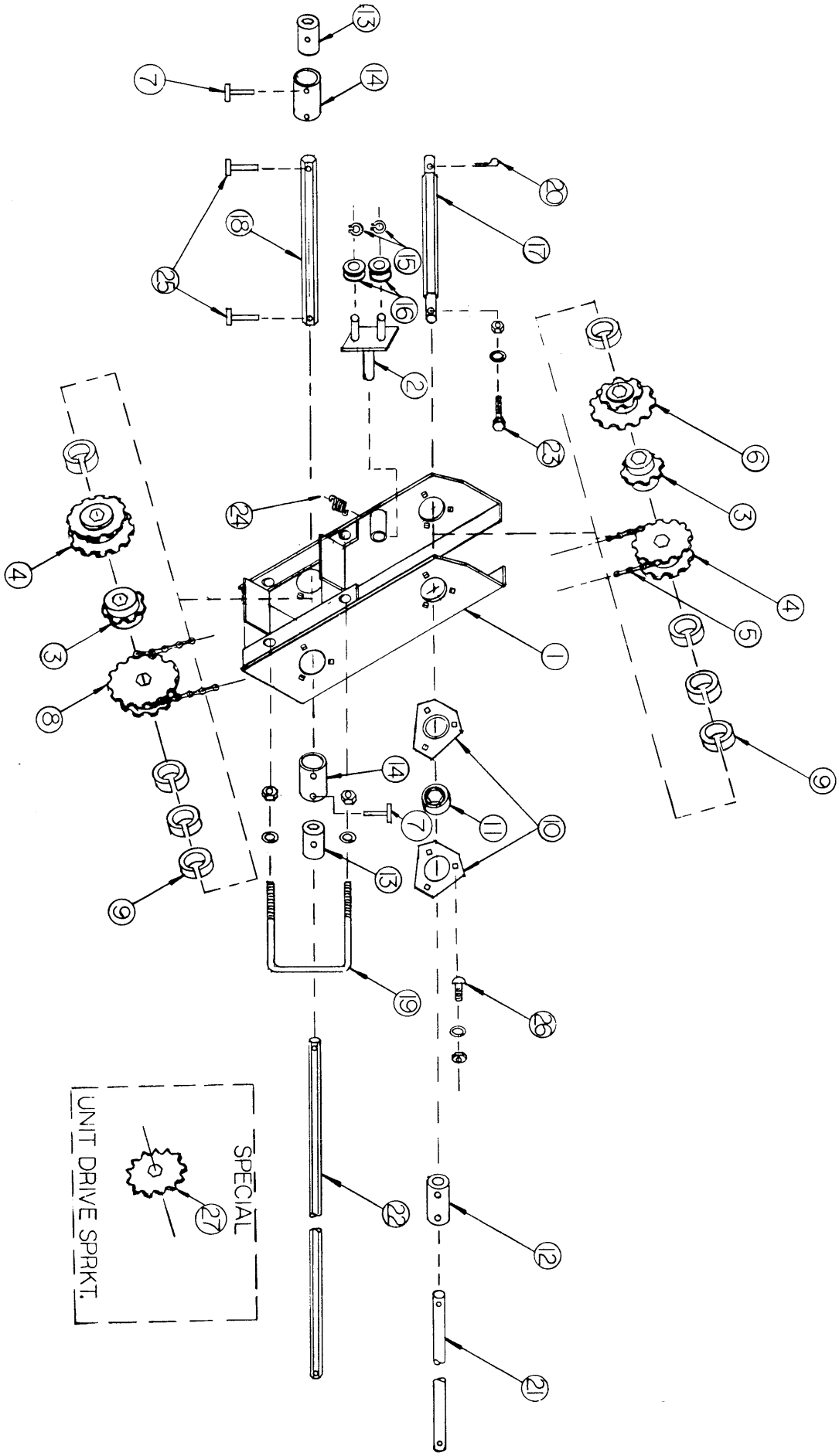
Drive Gauge Wheel Assembly — Figure #107



TRANSMISSION

Key	Part Number	Description
1	A177	Transmission Case
2		Tightener Assembly
3	2500-1	Single Sprocket 14 tooth (JD AA26805)
4	2500-2	Double Sprocket 22-26 tooth (JD AA26795)
5	3300-39	2040 Chain 39 link and connector
6	2500-3	Double Sprocket 16-30 tooth (JD AA26794)
7		3/16" × 2" Cotter Pin
8	2500-6	Double Sprocket 18-28 tooth (JD AA26796)
9		Spacer (JD A20337) (8 used)
10	3400-1	Flangette (JD A31800)
11	2100-3	7/8" Self Centering Hex Bearing (JD AA22097)
12	D724	15/16" ID Coupling Sleeve (not used with optional electric clutches)
13	D747	Drill Shaft Driver 9/16 hex bore (JD A22390)
14	D748	Coupler Drill Shaft Drive (JD A22392)
15	D745	Snap Ring (JD B14203)
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) (2 used)
20		1/4" × 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" × 1-3/4" Cap Screw, Lock Washer, Nut
24		Spring
25		1/4" × 2" Clevis Pin
26		5/16" × 1" Carriage Bolt, Lock Washer, Nut
27		Unit drive Sprocket (special application only)
28	D798	Spring

Transmission – Figure #108



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

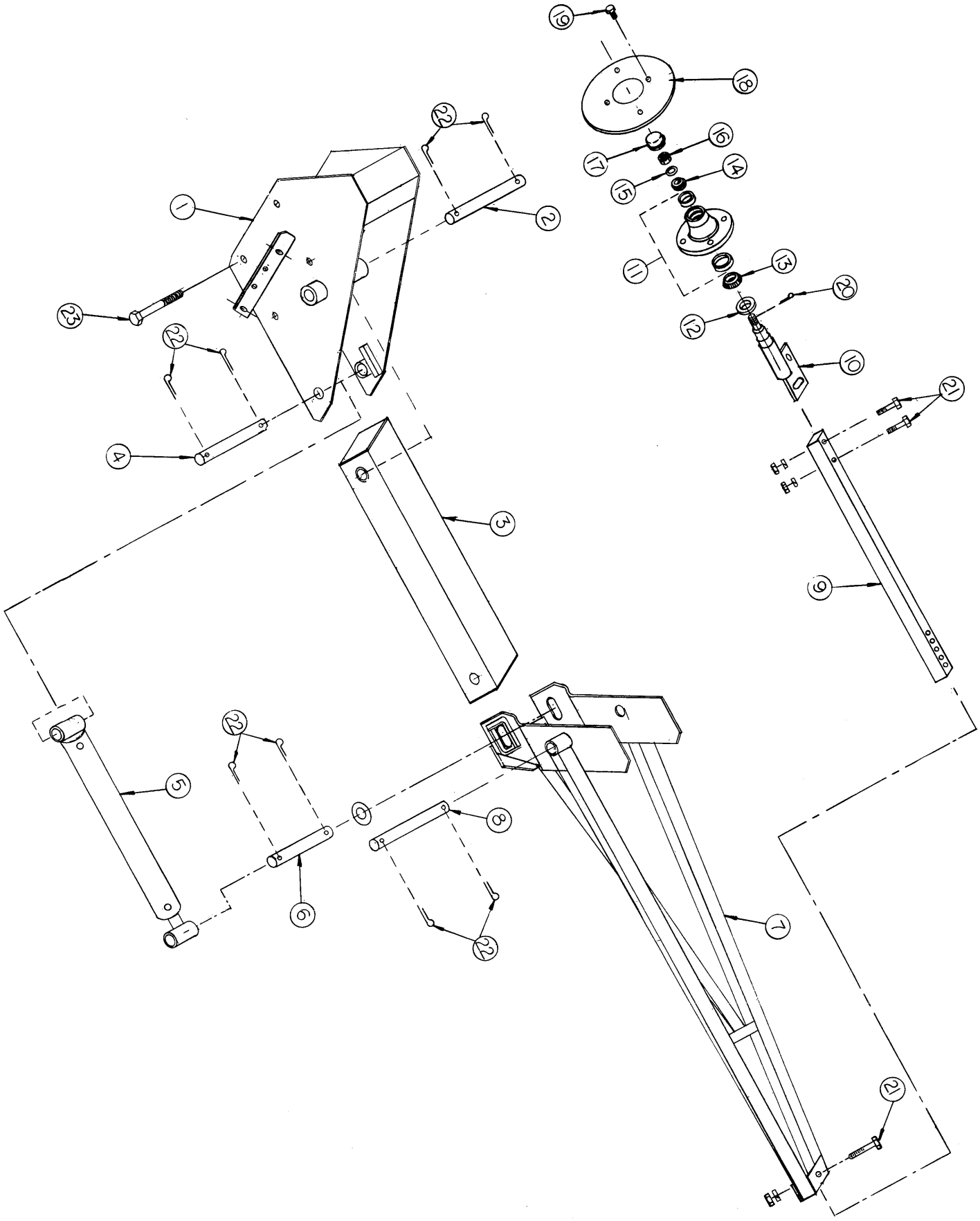
NOTE: Special compact marker assembly requires extra length common shafts.

DOUBLE FOLDING LOW PROFILE MARKER ASSEMBLY

Key	Part Number	Description
1	A165	Marker Mounting Bracket
2	D737	Pivot Pin 1-1/4" × 13-1/2"
3	A151	First Stage
4	D652	Cylinder Pin 1-1/4" × 9-1/2"
5	T-65	Cylinder
6	D653	Cylinder Pin Outer End 1-1/4" × 7-1/2"
7	A171	Second Stage (specify planter size)
8	D652	First and Second Stage Pivot Pin 1-1/4" × 9-1/2"
9	D710	Extension Tube
10	A172	Bracket with Spindle (specify left or right)
11	2700-6	4-Bolt Hub with Cups (specify Wilton or F&H)
12	CR12411	Seal (F&H)
	NOK34823	Seal (Wilton-sub CR12407)
13	L44643	Timkin Bearing (Wilton and F&H)
14	L44643	Timkin Bearing (Wilton Only)
	LM11749	Timkin Bearing (F&H Only)
15		Washer (specify Wilton or F&H Hub)
16		Slotted Hex Nut (specify Wilton or F&H Hub)
17		Hub Cap (specify Wilton or F&H Hub)
18	D746	16" Disc Blade
19		3/4" Hub Bolt
20		Cotter Pin
21		1/2" × 3-3/4" Cap Screw, Lock Washer, Nut
22		1/4" × 2" Cotter Pin
23		3/4" × 9" Cap Screw, Lock Washer, Nut (4 used)

NOTE: Check back of hub casting to determine manufacturer of marker hub. French & Hecht is marked F&H and Wilton has no mark in casting.

Double Folding Low Profile Marker Assembly – Figure #110

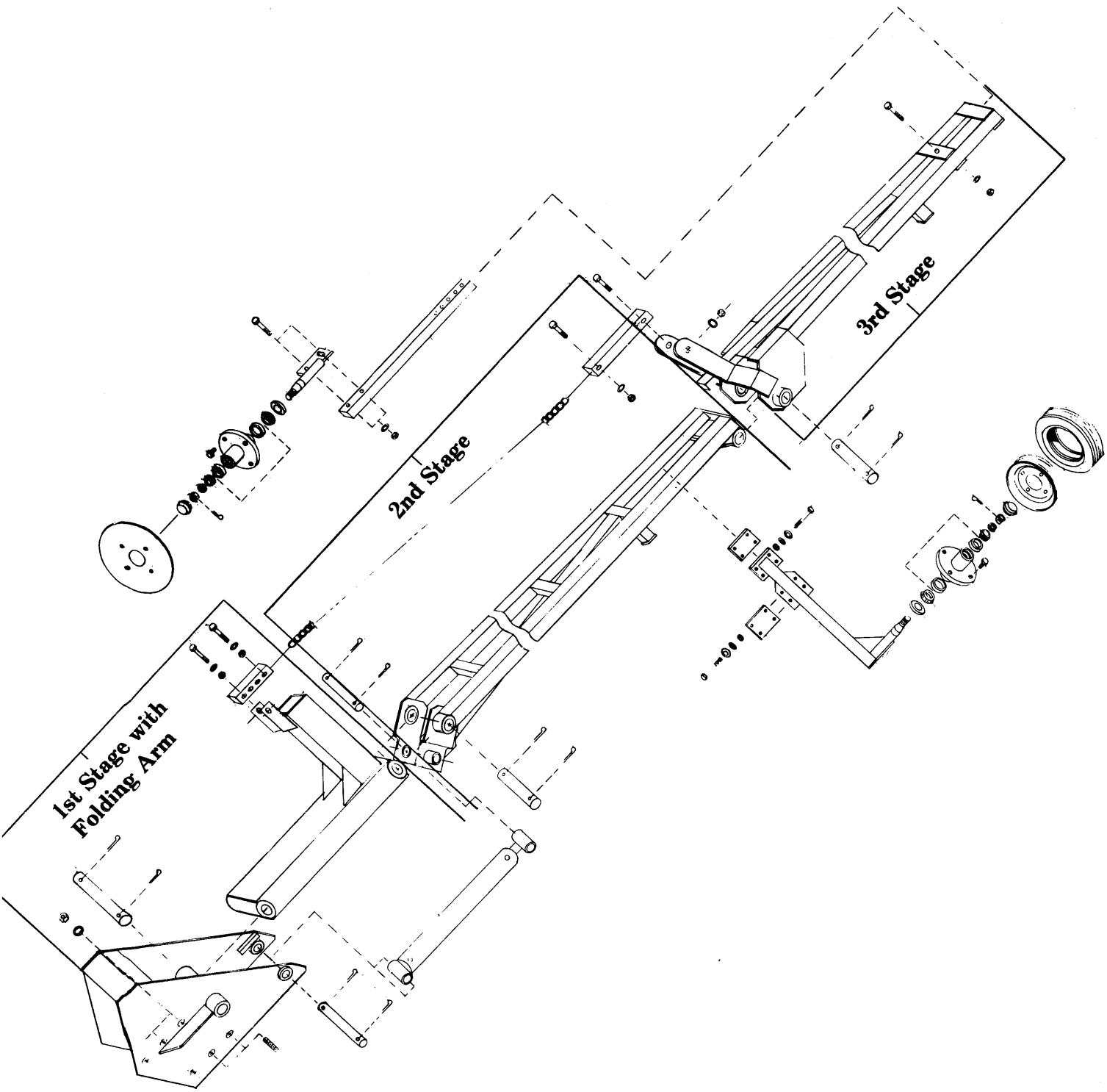


TRIPLE FOLDING LOW PROFILE MARKER ASSEMBLY

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" × 15-1/2"
9	D671	Cylinder Pin 1-1/4" × 10-1/2"
10		3/4" × 9" Cap Screw, Lock Washer, Nut (6 used)
11	T-66	Cylinder
12		Chain Adjustment Bracket (prior 1979)
13		1/2" × 3×1/2" Cap Screw, Lock Washer, Nut
14		7/OS Coil Chain (specify planter size)
15	D725	Outer Cylinder Pin 1-1/4" × 11"
16	D757	Marker Chain Bracket
17	D692	Spindle Assembly Mounting Plate
18		3/8" × 4" Cap Screw, Lock Washer, Nut
19	D692	Spindle Assembly Mounting Plate
20	D704	Second and Third Stage Pivot Pin 1-1/4" × 14"
21	2700-6	4-Bolt Hub with Cups (specify Wilton or F&H)
22	CR12411	Seal (F&H)
	NOK34823	Seal (Wilton-sub CR12407)
23	L44643	Timkin Bearing (Wilton and F&H)
24	L44643	Timkin Bearing (Wilton Only)
	LM11749	Timkin Bearing (F&H Only)
25		Washer (specify Wilton or F&H Hub)
26		Slotted Hex Nut (specify Wilton or F&H Hub)
27		Hub Cap (specify Wilton or F&H Hub)
28		3/4" Hub Bolt
29		Cotter Pin
30	T8×7×4	Wheel (Dico 6926)
31	16×6.5×8	Tube Type Tire
32		1/2" × 4" Cap Screw, Lock Washer, Nut
33		1/2" × 4" Cap Screw, Lock Washer, Nut
34	D746	16" Disc Blade

NOTE: Check back of hub casting to determine manufacturer of marker hub. French & Hecht is marked F&H and Wilton has no mark in casting.

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 separate planter lift system is composed of two trunion mounted master cylinders and two or four individually mounted 4" × 10" stroke slaved cylinders.
On all planter bars that implement two 4" × 10" slaved wheel cylinders, the trunion mounted master cylinders are 2 1/2" × 50". All larger planter bars implementing four 4" × 10" slaved wheel cylinders use two 3" × 50" trunion mounted master cylinders.

IMPORTANT: Do not interchange or substitute incorrect size trunion mounted master cylinders.

Assembly of Planter Lift System

The planter hitch assemblies are shipped with all hydraulic hoses and fittings installed. Each hitch will be preassembled for either a 2-valve or 3-valve hydraulic system.

For a 2-valve hydraulic system, the planter hitch will be furnished with four hoses at the tractor end. Two hoses will be used to operate the separate planter lift system. The second set of hoses is used in conjunction with an electric solenoid selector valve to operate the individual gauge markers. The solenoid valve is preassembled on the planter hitch (see appropriate hydraulic diagram). The tractor mounted operator switch for the marker solenoid valve is furnished in the planter electrical kit.

For a 3-valve hydraulic system, the hitch will be preassembled with six hoses at the tractor end. The planter lift system and each marker will connect to a separate hydraulic outlet on the tractor. The electric solenoid selector valve is not required with 3-valve hydraulics.

All planter toolbars are shipped with a separate hydraulic hose kit. This kit contains the proper hoses for the planter transport wheel cylinders and gauge marker assemblies. An additional hydraulic fittings kit is furnished to make the necessary hose connections.

Select the proper hydraulics diagram for the size planter being assembled. Make certain that it specifies either "dual" or "triple" valve outlets. Each diagram will list the correct description.

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: **Do not attempt to activate the hydraulic system without first checking all hydraulic hoses and connections for proper assembly.**

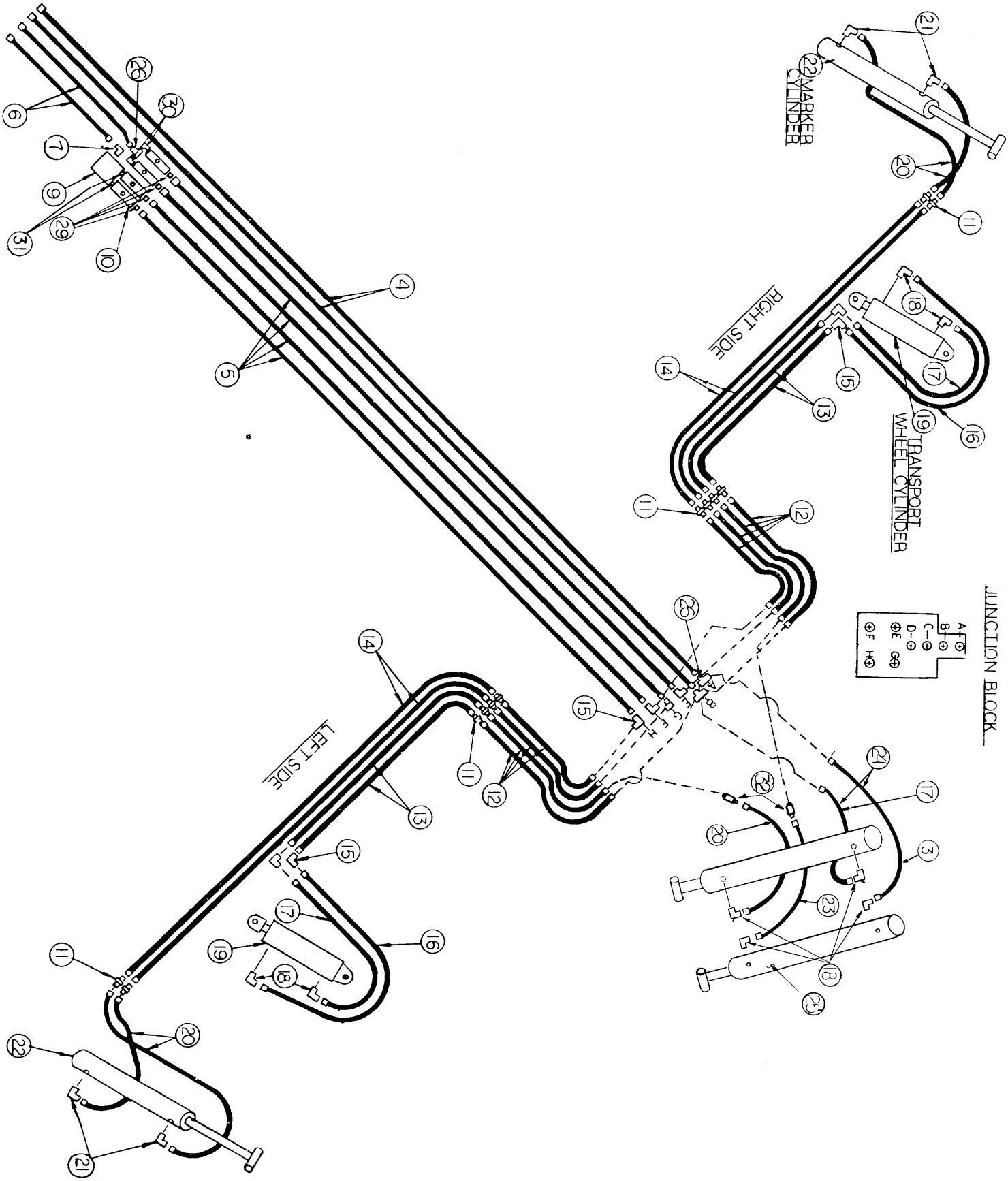
CAUTION: **NEVER substitute any other types or sizes of hydraulic cylinders on the planter bar. All cylinders used on the planter bar are equipped with a special bypass. Conventional cylinders will damage the hydraulic system.**

HYDRAULICS DIAGRAM FOR DUAL VALVE OUTLETS AND SINGLE TRANSPORT WHEEL CYLINDER

Key	Part Number	Description
3	5000-48	48" - 3/4-16 JIC
4	5000-240	240" - 1/2" MPT — 3/4-16 JIC (2 used)
5	5000-150	150" - 3/4-16 JIC (4 used)
6	5000-76	76" - 1/2" MPT - 3/4-16 JIC (2 used)
7	6801-8	90° Adjustable Elbow - 3/4-16 JIC — O-ring Male
9		12V DC Solenoid Valve (see Figure #131)
10		KLF 500 Flow Control (4 used) (see Figure #132)
11	2403-8	Straight Tube — Union (12 used)
12	5000-60	60" - 3/4-16 JIC (8 used)
13	5000-116	116" - 3/4-16 JIC (4 used) (8-ROW WIDE)
	5000-152	152" - 3/4-16 JIC (4 used) (12-ROW 30")
	5000-192	192" - 3/4-16 JIC (4 used) (12-ROW WIDE)
14	5000-148	148" - 3/4-16 JIC (4 used) (8-ROW WIDE)
	5000-190	190" - 3/4-16 JIC (4 used) (12-ROW 30")
	5000-234	234" - 3/4-16 JIC (4 used) (12-ROW WIDE)
15	2500-8	90° Tube Elbow (8 used)
16	5000-56	56" - 3/4-16 JIC (2 used)
17	5000-44	44" - 3/4-16 JIC (3 used)
18	2501-8-8	90° Male Elbow (8 used)
19	U-364	Transport Wheel Cylinder (2 used)
20	5000-36	36" - 3/4-16 JIC (5 used)
21	2501-8	90° Male Elbow (4 used)
22	T-65	Marker Cylinder (2 used)
23	5000-40	40" - 3/4-16 JIC
25	U-363	2-1/2" × 50" Trunion Cylinder (2 used)
26	2603-8	Tube Tee (3 used)
29	2404-8-8	Straight Male Adaptor (4 used)
30	6501-8-8	90° Swivel Adaptor (2 used)
31	6401-8-8	Male O-ring Adaptor (2 used)
32	2700-8	Bulkhead - Tube Union (2 used)
	306-8	Locknut (2 used)

Hydraulics Diagram for Dual Valve Outlets and Single Transport Wheel Cylinder

Figure #115

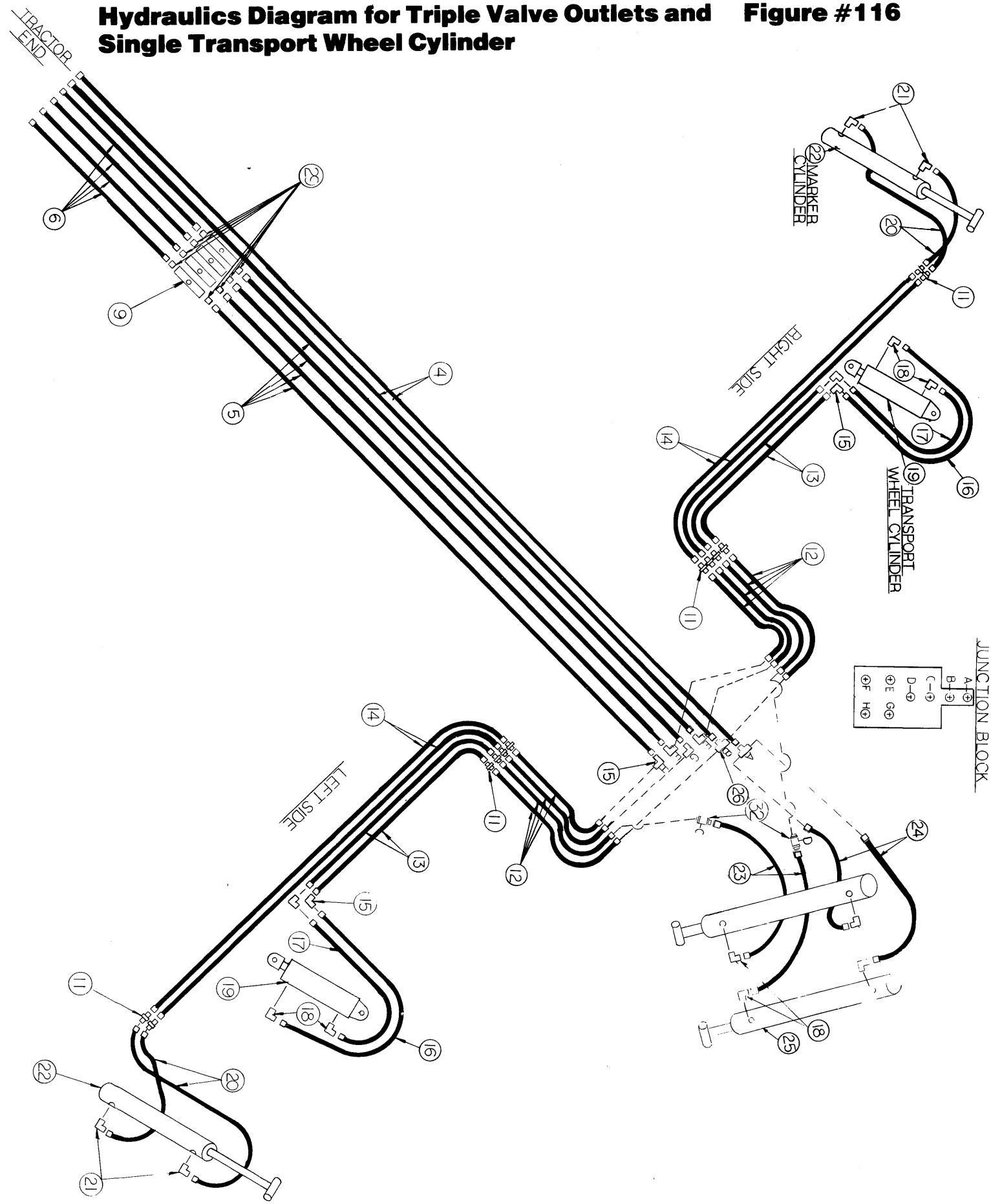


HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS AND SINGLE TRANSPORT WHEEL CYLINDER

Key	Part Number	Description
3	5000-48	48" - 3/4-16 JIC
4	5000-240	240" - 1/2" MPT - 3/4-16 JIC (2 used)
5	5000-150	150" - 3/4-16 JIC (4 used)
6	5000-76	76" - 1/2" MPT - 3/4-16 JIC (4 used)
9		KLF 500 Flow Control (4 used) (see Figure #132)
11	2403-8	Straight Tube - Union (12 used)
12	5000-60	60" - 3/4-16 JIC (8 used)
13	5000-116	116" - 3/4-16 JIC (4 used) (8-ROW WIDE)
	5000-152	152" - 3/4-16 JIC (4 used) (12-ROW 30")
	5000-192	192" - 3/4-16 JIC (4 used) (12-ROW WIDE)
14	5000-148	148" - 3/4-16 JIC (4 used) (8-ROW WIDE)
	5000-190	190" - 3/4-16 JIC (4 used) (12-ROW 30")
	5000-234	234" - 3/4-16 JIC (4 used) (12-ROW WIDE)
15	2500-8	90° Tube Elbow (8 used)
16	5000-56	56" - 3/4-16 JIC (2 used)
17	5000-44	44" - 3/4-16 JIC (3 used)
18	2501-8-8	90° Male Elbow (8 used)
19	U-364	Transport Wheel Cylinder (2 used)
20	5000-36	36" - 3/4-16 JIC (5 used)
21	2501-8	90° Male Elbow (4 used)
22	T-65	Marker Cylinder (2 used)
23	5000-40	40" - 3/4-16 JIC
25	U-363	2-1/2" × 50" Trunion Cylinder (2 used)
26	2603-8	Tube Tee (2 used)
29	2404-8-8	Straight Male Adaptor (8 used)
32	2700-8	Bulkhead - Tube Union (2 used)
	306-8	Locknut (2 used)

Hydraulics Diagram for Triple Valve Outlets and Single Transport Wheel Cylinder

Figure #116

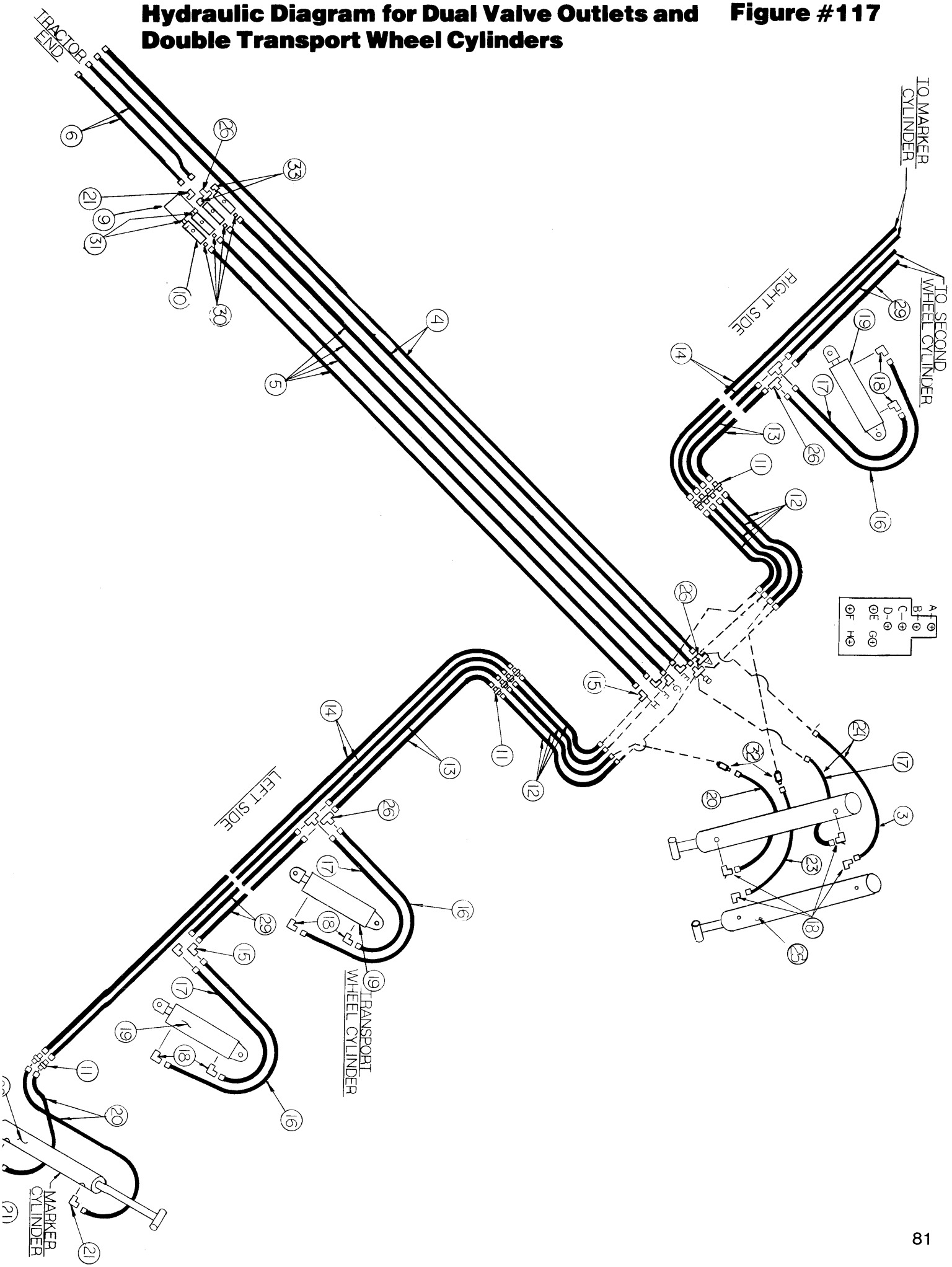


HYDRAULIC DIAGRAM FOR DUAL VALVE OUTLETS AND DOUBLE TRANSPORT WHEEL CYLINDERS

Key	Part Number	Description
3	5000-48	48" - 3/4-16 JIC
4	5000-240	240" - 1/2" MPT - 3/4-16 JIC (2 used) (16-ROW 30")
	5000-240	240" - 1/2" MPT - 3/4-16 JIC (2 used) (18-ROW 30")
	5000-276	276" - 1/2" MPT - 3/4-16 JIC (2 used) (16-ROW WIDE)
	5000-276	276" - 1/2" MPT - 3/4-16 JIC (2 used) (24-ROW 30")
5	5000-150	150" - 3/4-16 JIC (4 used) (16-ROW 30")
	5000-150	150" - 3/4-16 JIC (4 used) (18-ROW 30")
	5000-186	186" - 3/4-16 JIC (4 used) (16-ROW WIDE)
	5000-186	186" - 3/4-16 JIC (4 used) (24-ROW 30")
6	5000-76	76" - 1/2" MPT - 3/4-16 JIC (2 used)
7	6801-8	90° Adjustable Elbow - 3/4-16 JIC - O-ring Male
9		12V DC Solenoid Valve (see Figure #131)
10		LKF 500 Flow Control (4 used) (see Figure #132)
11	2403-8	Straight Tube - Union (12 used)
12	5000-60	60" - 3/4-16 JIC (8 used)
13	5000-152	152" - 3/4-16 JIC (4 used) (16-ROW 30")
	5000-182	182" - 3/4-16 JIC (4 used) (18-ROW 30")
	5000-192	192" - 3/4-16 JIC (4 used) (16-ROW WIDE)
	5000-272	272" - 3/4-16 JIC (4 used) (24-ROW 30")
14	5000-250	250" - 3/4-16 JIC (4 used) (16-ROW 30")
	5000-280	280" - 3/4-16 JIC (4 used) (18-ROW 30")
	5000-310	310" - 3/4-16 JIC (4 used) (16-ROW WIDE)
	5000-370	370" - 3/4-16 JIC (4 used) (24-ROW 30")
15	2500-8	90° Tube Elbow (8 used)
16	5000-56	56" - 3/4-16 JIC (4 used)
17	5000-44	44" - 3/4-16 JIC (5 used)
18	2501-8-8	90° Male Elbow (12 used)
19	U-364	Transport Wheel Cylinder (4 used)
20	5000-36	36" - 3/4-16 JIC (5 used)
21	2501-8	90° Male Elbow (4 used) (16-ROW 30")
	2501-8-8	90° Male Elbow (4 used) (18-ROW 30", 16-ROW WIDE, 24-ROW 30")
22	T-65	Marker Cylinder (2 used) (16-ROW 30")
	T-66	Marker Cylinder (2 used) (18-ROW 30", 16-ROW WIDE, 24-ROW 30")
23	5000-40	40" - 3/4-16 JIC
25	T-632	3" × 50" Trunion Cylinder (2 used)
26	2603-8	Tube Tee (7 used)
29	5000-60	60" - 3/4-16 JIC (4 used) (16-ROW 30", 18-ROW 30", 24-ROW 30")
	5001-76	76" - 3/4-16 JIC (4 used) (16-ROW WIDE)
30	2404-8-8	Straight Male Adaptor (4 used)
31	6401-8-8	Male O-ring Adaptor (2 used)
32	2700-8	Bulkhead - Tube Union (2 used)
	306-8	Locknut (2 used)
33	6501-8-8	90° Swivel Adaptor (2 used)

Hydraulic Diagram for Dual Valve Outlets and Double Transport Wheel Cylinders

Figure #117

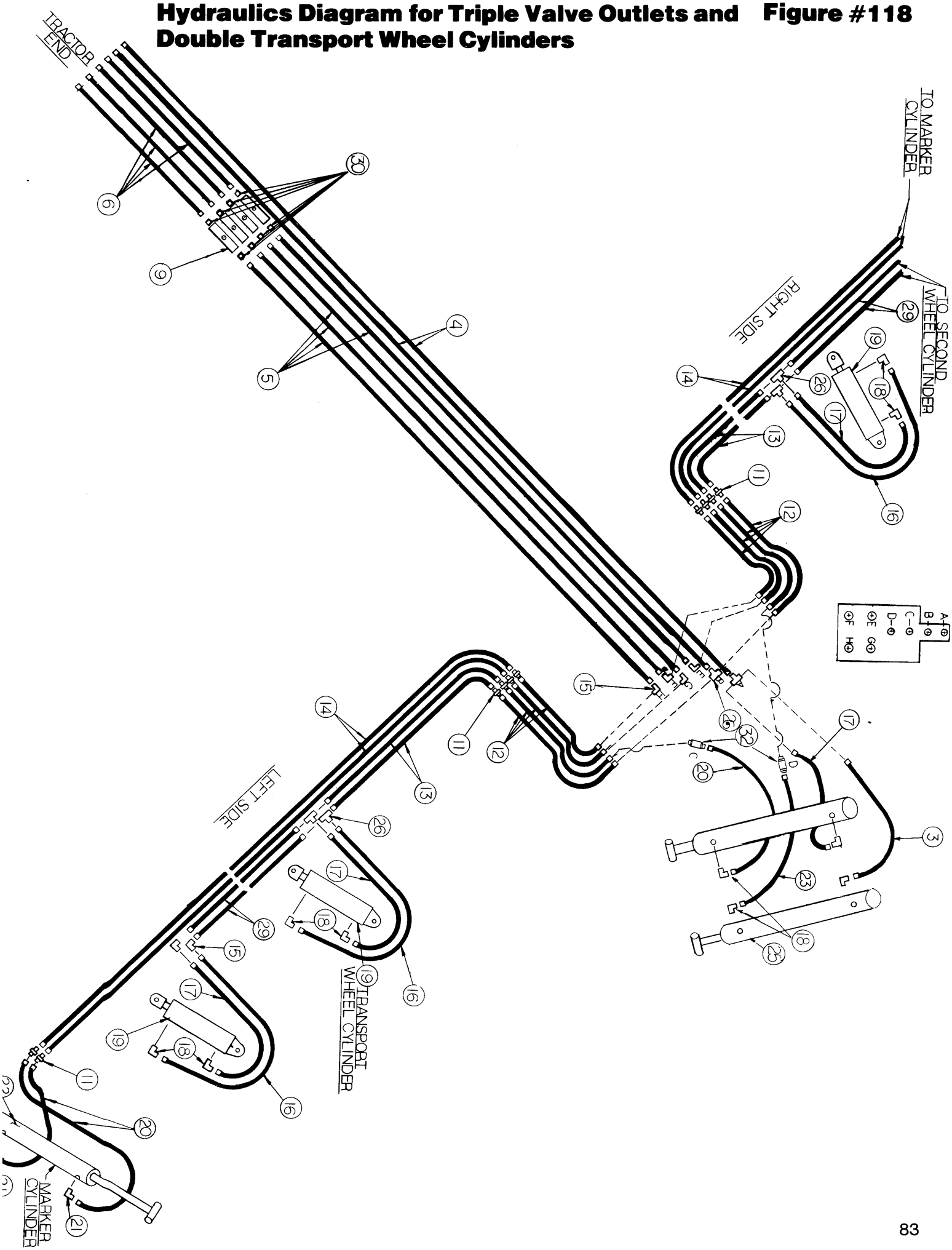


HYDRAULICS DIAGRAM FOR TRIPLE VALVE OUTLETS AND DOUBLE TRANSPORT WHEEL CYLINDERS

Key	Part Number	Description
3	5000-48	48" - 3/4-16 JIC
4	5000-240	240" - 1/2" MPT - 3/4-16 JIC (2 used) (16-ROW 30")
	5000-240	240" - 1/2" MPT - 3/4-16 JIC (2 used) (18-ROW 30")
	5000-276	276" - 1/2" MPT - 3/4-16 JIC (2 used) (16-ROW WIDE)
	5000-276	276" - 1/2" MPT - 3/4-16 JIC (2 used) (24-ROW 30")
5	5000-150	150" - 3/4-16 JIC (4 used) (16-ROW 30")
	5000-150	150" - 3/4-16 JIC (4 used) (18-ROW 30")
	5000-186	186" - 3/4-16 JIC (4 used) (16-ROW WIDE)
	5000-186	186" - 3/4-16 JIC (4 used) (24-ROW 30")
6	5000-76	76" - 1/2" MPT - 3/4-16 JIC (4 used)
9		LKF 500 Flow Control (4 used) (see Figure #132)
11	2403-8	Straight Tube - Union (12 used)
12	5000-60	60" - 3/4-16 JIC (8 used)
13	5000-152	152" - 3/4-16 JIC (4 used) (16-ROW 30")
	5000-182	182" - 3/4-16 JIC (4 used) (18-ROW 30")
	5000-192	192" - 3/4-16 JIC (4 used) (16-ROW WIDE)
	5000-272	272" - 3/4-16 JIC (4 used) (24-ROW 30")
14	5000-250	250" - 3/4-16 JIC (4 used) (16-ROW 30")
	5000-280	280" - 3/4-16 JIC (4 used) (18-ROW 30")
	5000-310	310" - 3/4-16 JIC (4 used) (16-ROW WIDE)
	5000-370	370" - 3/4-16 JIC (4 used) (24-ROW 30")
15	2500-8	90° Tube Elbow (8 used)
16	5000-56	56" - 3/4-16 JIC (4 used)
17	5000-44	44" - 3/4-16 JIC (5 used)
18	2501-8-8	90° Male Elbow (12 used)
19	U-364	Transport Wheel Cylinder (4 used)
20	5000-36	36" - 3/4-16 JIC (5 used)
21	2501-8	90° Male Elbow (4 used) (16-ROW 30")
	2501-8-8	90° Male Elbow (4 used) (18-ROW 30", 16-ROW WIDE, 24-ROW 30")
22	T-65	Marker Cylinder (2 used) (16-ROW 30")
	T-66	Marker Cylinder (2 used) (18-ROW 30", 16-ROW WIDE, 24-ROW 30")
23	5000-40	40" - 3/4-16 JIC
25	T-632	3" × 50" Trunion Cylinder (2 used)
26	2603-8	Tube Tee (6 used)
29	5000-60	60" - 3/4-16 JIC (4 used) (16-ROW 30", 18-ROW 30", 24-ROW 30")
	5001-76	76" - 3/4-16 JIC (4 used) (16-ROW WIDE)
30	2404-8-8	Straight Male Adaptor (8 used)
32	2700-8	Bulkhead - Tube Union (2 used)
	306-8	Locknut (2 used)

Hydraulics Diagram for Triple Valve Outlets and Double Transport Wheel Cylinders

Figure #118

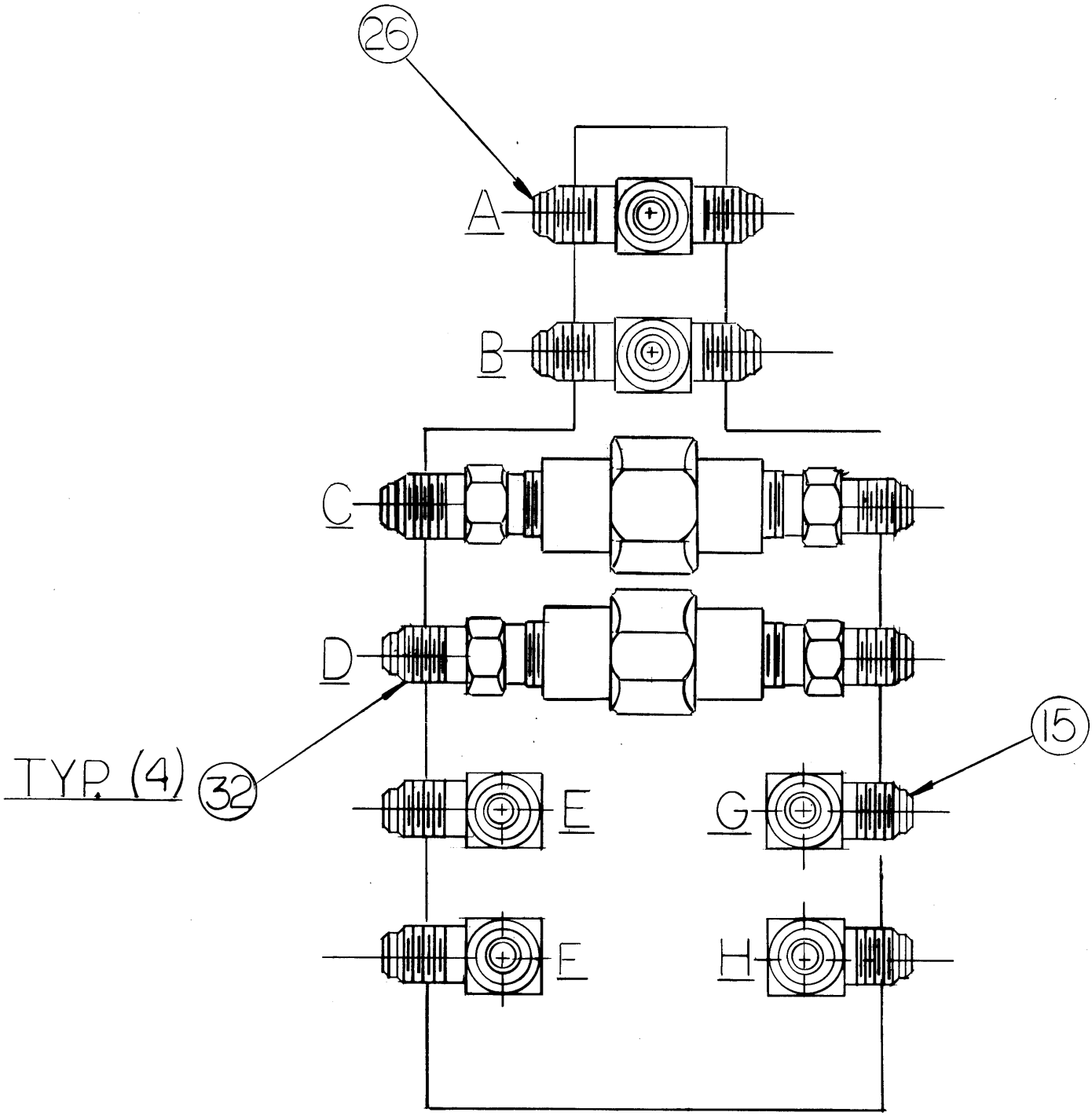


JUNCTION BLOCK

Key	Part Number	Description
15	2500-8	90° Tube Elbow (4 used)
26	2603-8	Tube Tee (2 used)
32	2700-8	Bulkhead - Tube Union (2 used)
	306-8	Locknut (2 used)

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

Junction Block — Figure #119

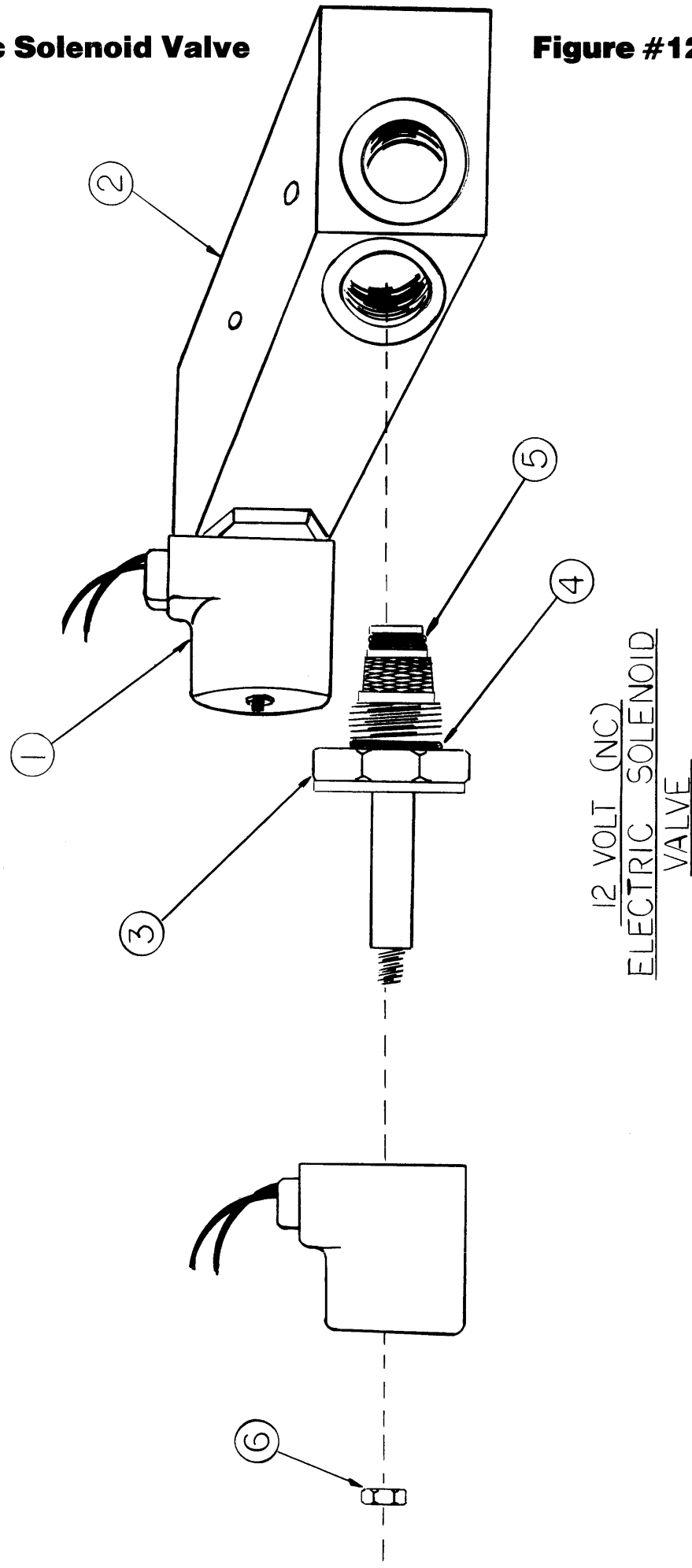


JUNCTION BLOCK

12V DC ELECTRIC SOLENOID VALVE

Key	Part Number	Description
1		Solenoid
2		Valve Body
3		Operating Valve
4		Bottom O-ring
5		Top O-ring
6		Nut

12V DC Electric Solenoid Valve **Figure #120**



KLF 500 FLOW CONTROL

Key	Part Number	Description
1		Valve Body
2		Needle Valve Assembly

KLF 500 Flow Control Figure #121

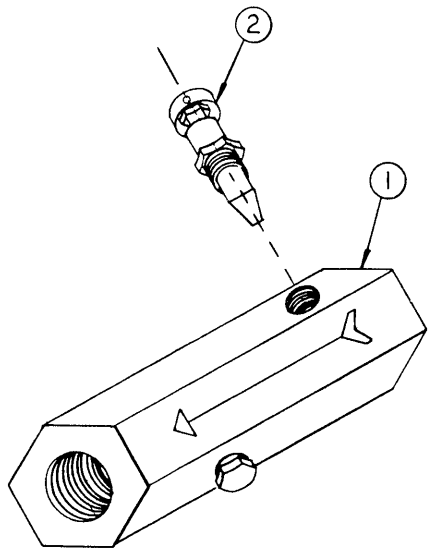
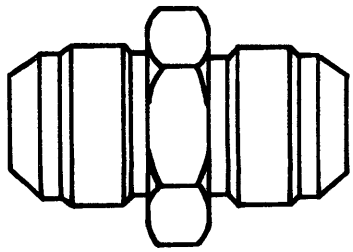


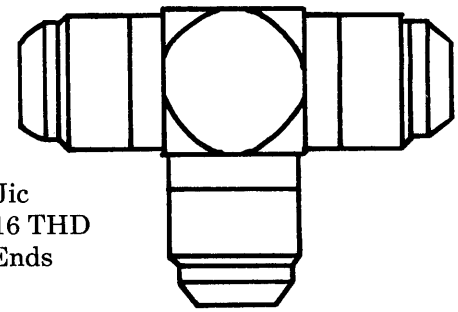
Figure #122

2403-8



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

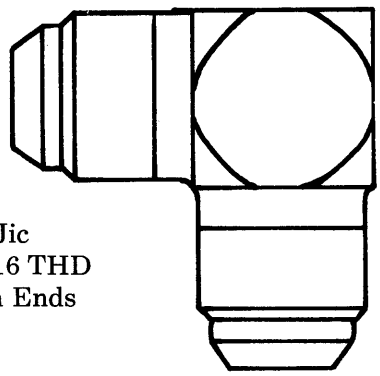
2603-8



37° Jic
3/4-16 THD
All Ends

Tube Tee

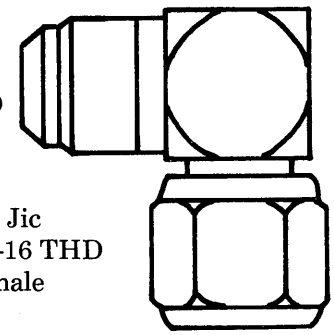
2500-8



37° Jic
3/4-16 THD
Both Ends

90° Tube Elbow

6500-8

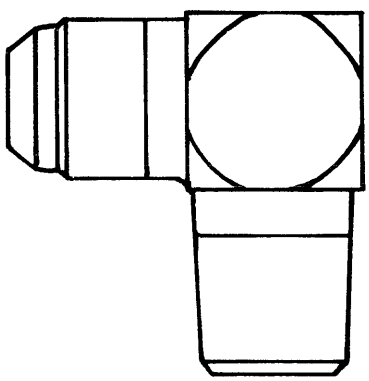


37° Jic
3/4-16 THD

37° Jic
3/4-16 THD
Female

90° Swivel Elbow

2501-88



37° Jic
3/4-16
THD

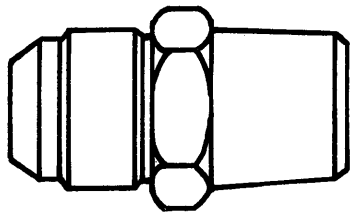
1/2'' NPT

90° Male Elbow

Figure #123

2404-8

37° Jic
3/4-16 THD

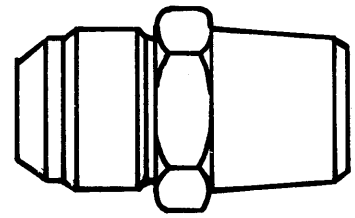


3/8'' NPT

Straight Adaptor - Male

2404-88

37° Jic
3/4-16
THD

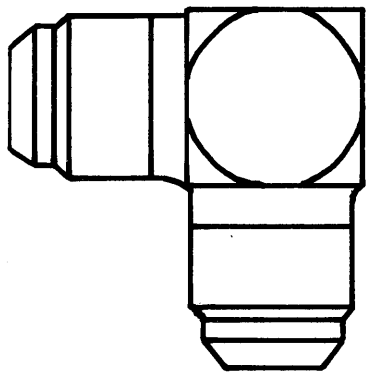


1/2'' NPT

Straight Adaptor - Male

2500-6

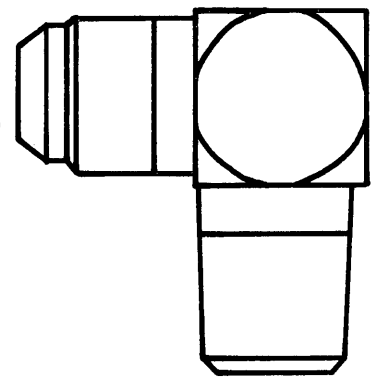
37° Jic
9/16-18
THD
Both Ends



90° Tube Elbow

2501-8

37° Jic
3/4-16
THD

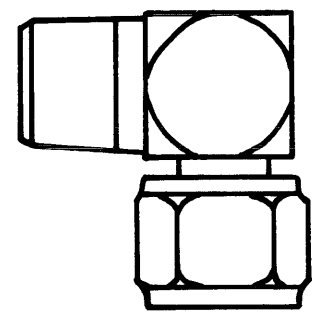


3/8'' NPT

90° Male Elbow

6501-8-8

1/2" NPT



37° Jic
3/4-16 THD
Female

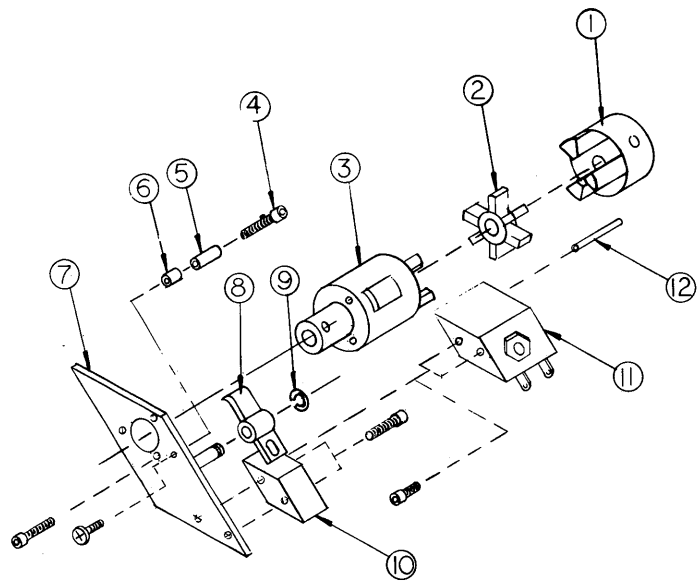
90° Swivel Adaptor

STANDARD 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 #124

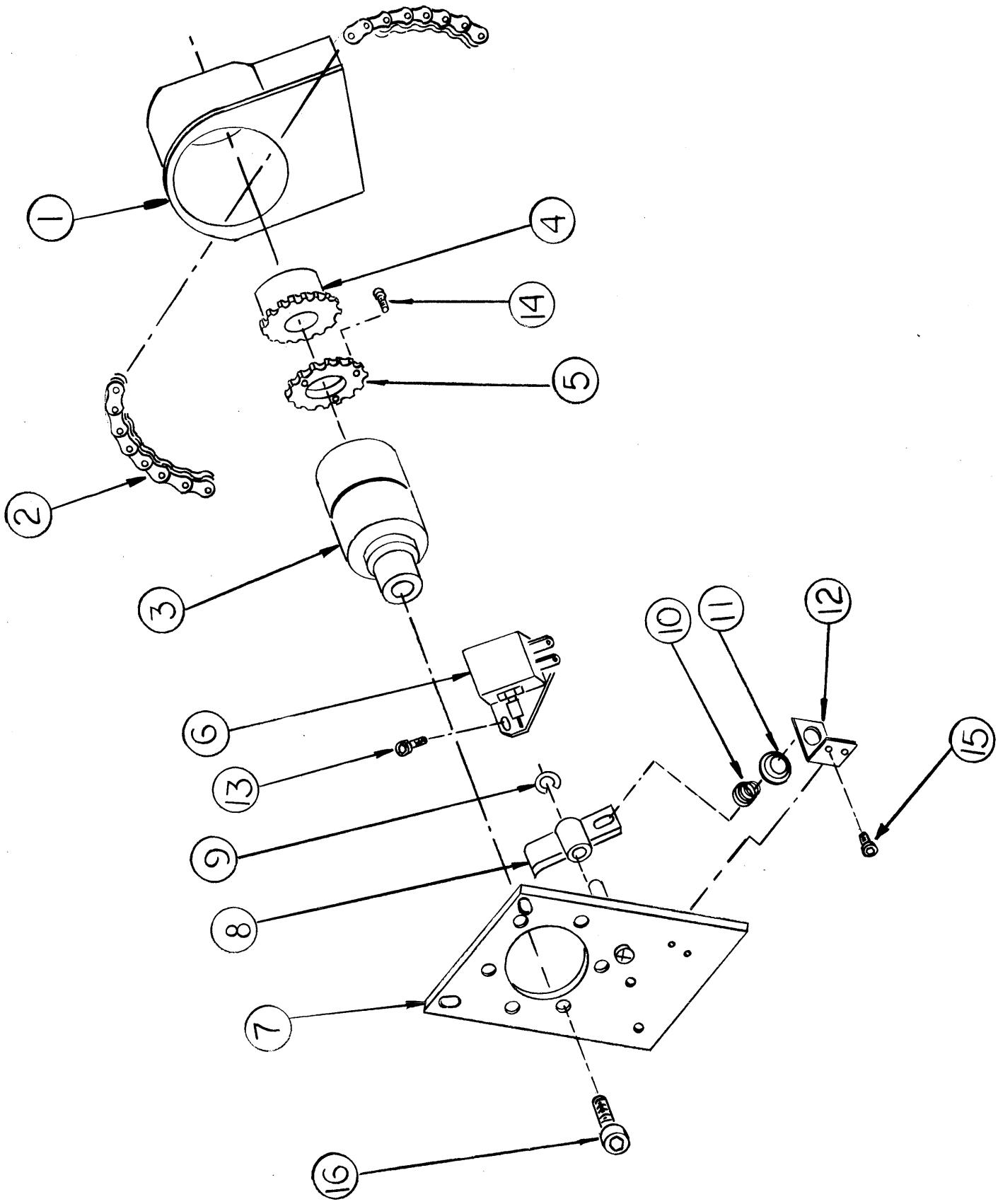


HEAVY DUTY ELECTRIC CLUTCH ASSEMBLY

Key	Part Number	Description
1		Cover
2		Coupling Chain
3		Clutch Body Assembly
4		Coupling Sprocket
5		Clutch Drive Sprocket
6		12V DC Solenoid
7		Clutch Mounting Bracket
8		Operating Lever
9		Retainer Clip
10		Spring
11		Gasket
12		Bracket
13		10-32 × 1/2 Socket Head Cap Screw
14		1/4-20 × 3/4 Socket Head Cap Screw
15		6-32 × 3/8 Socket Head Cap Screw
16		5/16-18 × 1/2 Socket Head Cap Screw

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

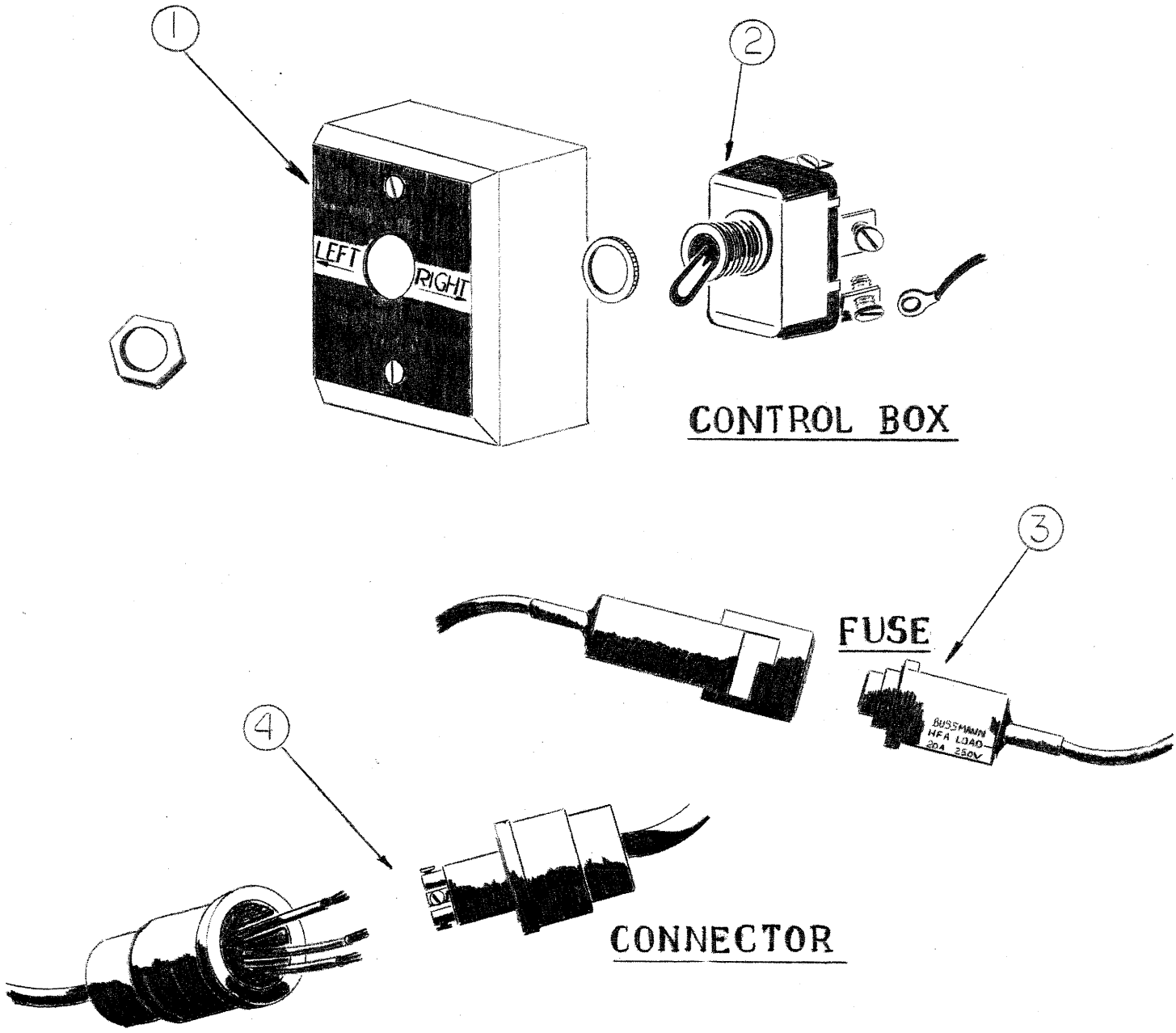
Heavy Duty Electric Clutch Assembly Figure #125



Key	Part Number	Description
1		Electrical Control Box (specify type of electrical harness)
2		3-position Toggle Switch
3		Bussman Fuse Lead/10-amp fuse
4		Connector (specify type of electrical harness)

NOTE: To order complete harness, specify type and size.

Figure #126


1
2
LEFT
RIGHT
CONTROL BOX
3
FUSE
BUSSMANN
HFA LOAD
20A 250V
4
CONNECTOR