SINGLE FRAME PLANTER

OPERATOR & PARTS MANUAL

M0103

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TO THE OWNER

We at Kinze Manufacturing 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** and **Warning** 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 equipment and/or personal injury.

This manual is applicable to:

Single Frame Pull Type Planter - Model Number PT

Serial Number ~~21860~~ 10860 and on.

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

Date Purchased _____

Serial Number _____

Model Number _____

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 NEAR BY. IF YOU INSTALL SUCH DRIVES YOU MUST FOLLOW ALL APPROPRIATE SAFETY STANDARDS AND PRACTICES TO PROTECT YOU AND OTHERS NEAR THIS PLANTER FROM 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.

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NEW MACHINE WARRANTY

No warranties express or implied are made or will be deemed to have been made by Kinze of the products sold under this Agreement except as follows:

Kinze warrants to the original purchaser for use that if any part of the product proves to be defective in material or workmanship within one year from date of original purchase, and is reported to Kinze within 10 days after such defect is discovered, Kinze will (at our option) either replace or repair said part. Return of the defective part to Kinze and submission of a completed warranty request must be accomplished within 30 days of the date that the replacement is made available.

This warranty does not apply to damage resulting from misuse, neglect, accident or improper installation or maintenance. A part will not be considered defective if it substantially fulfills performance specifications. Labor, shipping, field service, travel or administrative expenses incurred in connection with warranty replacements are not covered. Tires are not warranted by Kinze Manufacturing, Inc. and such claims must be pursued through the tire manufacturer's warranty.

Kinze warrants all replacement parts for a period of 90 days from date of purchase by the customer. Parts warranty is subject to the same provisions, restrictions and exclusions as new machine warranty and carries the same return and reporting requirements.

The foregoing warranty is exclusive and in lieu of all other warranties or merchantability, fitness for purpose and of any other type, whether express or implied. Kinze neither assumes nor authorizes anyone to assume for it any other obligation or liability other than stated above, and will not be liable for consequential damages. Purchaser accepts these terms and warranty limitations unless the product is returned within the fifteen days for full refund of purchase price.

Kinze reserves the right to make changes or to add improvements at any time without notice or obligations.

ATTENTION: Effective 12/1/87 amendments were made to the KINZE New Machine Warranty. Refer to insert W12187.

INTRODUCTION

The single frame pull type planter is available with a choice of 40", 38", 36" or 30" row spacing, liquid or dry fertilizer application equipment and heavy duty coulters. For information on installation and use of optional equipment on all models, refer to the assembly and operation section of this manual or the Kinze Row Unit Manual.

General Information

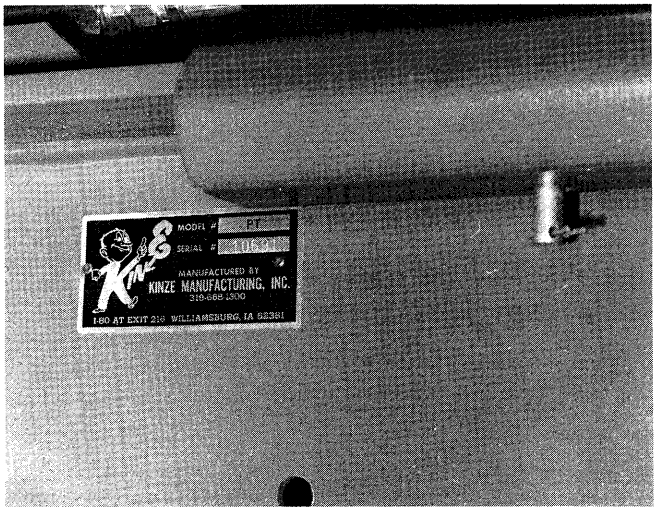
The information and photos used in this manual were current at the time of printing. However, due to Kinze's continual attempt to improve its product, in-line production changes may cause your machine to appear slightly different in detail. Kinze Manufacturing reserves the right to change specifications or design without notice and without incurring obligation to install the same on machines previously manufactured.

Right hand or left hand as used thoughout this manual is determined by facing in the direction the machine will travel when in use, unless otherwise stated.

Serial Number

The serial number provides important information about your planter and may be required to obtain the correct replacement part.

The serial number plate is located on the planter frame to be readily available. It is suggested that the serial number and purchase date also be recorded in the space provided on the inside front cover of this manual. Always provide the serial number and model number to your Kinze dealer when ordering parts or anytime correspondence is made with Kinze Manufacturing.



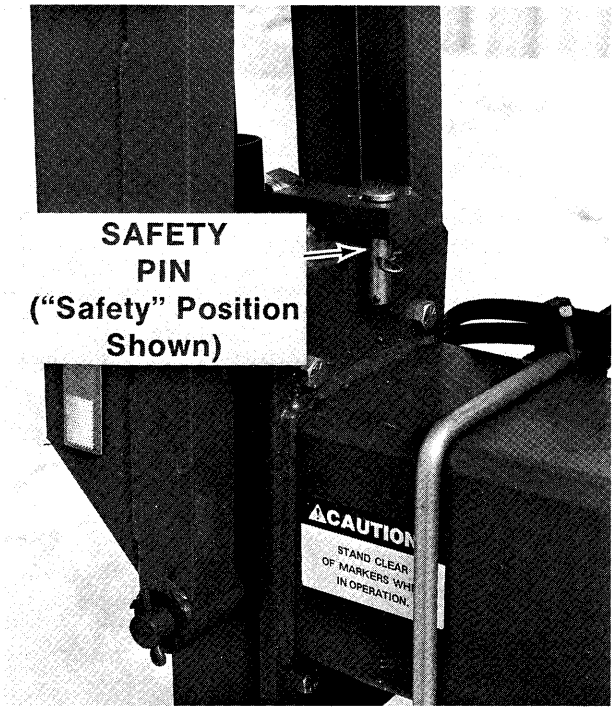
SAFETY PRECAUTIONS ⚠

Safe and careful operation of the tractor and planter at all times will contribute significantly to the prevention of accidents.

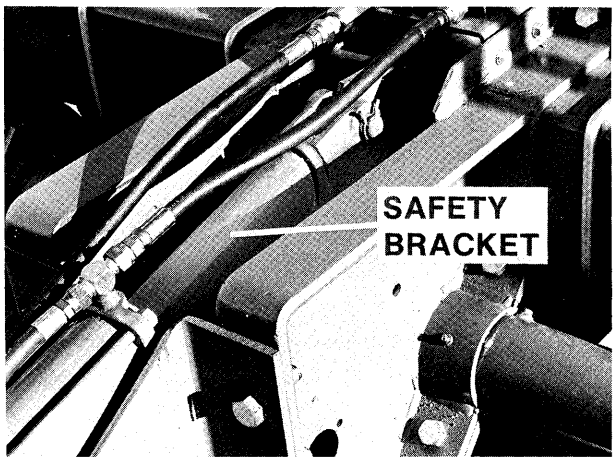
Since a large portion of farm accidents occur as a result of fatigue or carelessness, safety practices should be of utmost concern. Read and understand the instructions provided in this manual as well as those provided in your row unit operator's manual. Listed below are a few other safety suggestions that should become common practice.

- Never permit any persons other than the operator to ride on the tractor.
- Never ride on the planter frame or allow others to do so.
- Limit towing speeds to 15 MPH. Tow only with farm tractor of at least 50 H.P. size.
- Always make sure there are no persons near the planter when gauge marker assemblies are in operation.
- Always lower the planter when not in use and cycle the hydraulic control lever to relieve pressure in cylinders and hoses.
- Always make necessary safety preparations prior to transporting the machine on public roads. This includes installing Slow Moving Vehicle (SMV) emblem and use of adequate lights or safety warnings after dark, except where prohibited by law.
- Watch for obstructions such as wires, tree limbs, etc., when folding marker assemblies.
- Always install marker lock up/safety pins before transporting or parking any planter equipped with conventional marker assemblies.
- Always install all cylinder lock up brackets before towing the planter or working under the unit.

("Safety" Position Shown)



Marker Assembly



Planter Lift Cylinder

ASSEMBLY

The following instructions are provided for assembly of the Kinze single frame pull type planter. Please read through the instructions prior to assembly. Becoming familiar with the procedures before actual set up will facilitate smoother assembly and possibly save time by eliminating backtracking. Although there may be procedures or assembly other than those shown, caution should be taken to avoid unnecessary risk to compensate for the extra time to safely perform each step.

Prior to starting, inspect all components for possible damage incurred during shipment. Notify the freight or carrier agent immediately of any damage found. Any parts shortages should be noted and reported to Kinze Manufacturing, Inc. immediately.

Since the assembly instructions which follow are written for several sizes and configurations of units, they are divided into major components which are interchangeable. The interchangeability designed into each Kinze planter simplifies assembly as well as operation, service, and parts availability for any size and model unit.

Hardware

All bolts furnished with the planter are SAE Grade 5 unless otherwise noted. The 8 bolts used to mount the markers are SAE grade 2 for added shear protection. All bolts are distinguished by the radial lines on the bolt head. (See chart).

In many cases bolts have been pre-installed in the holes in which they go during assembly. It is suggested that bolts be left somewhat loose until parts have been assembled. This especially applies to bearing flanges, idlers, etc. Then tighten all bolts to the torque value specified below unless otherwise noted.

DRY TORQUE VALUES — FT. LBS.		
Bolt Diameter	**Grade 2 No Radial Lines**	**Grade 5 Three Radial Lines**
5/16"	11	17
3/8"	23	35
1/2"	55	85
5/8"		170
3/4"		360
1"		670
1 1/4"		910

NOTE: Bolts having lock nuts should be tightened to approximately 50% of amounts shown in above chart. Also bolts lubricated prior to installation should be torqued to 70% of value shown on chart.

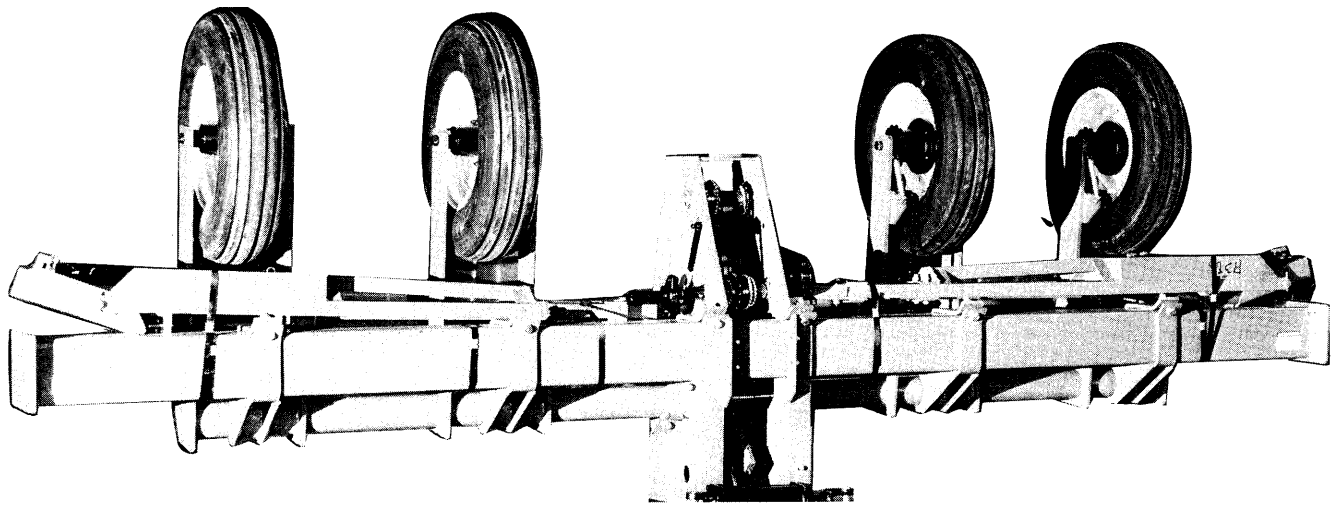
FRAME ASSEMBLY

1. Place the partially assembled planter shipping bundle in your selected assembly area.

2. Unband the planter shipping bundle and inspect for damage.

Each bundle should contain:
A. Basic frame assembly
B. Tongue
C. Two marker assemblies
D. Two marker blades

Also open the two boxes containing the hydraulic hoses and hardware.



ASSEMBLY

3. While supporting the frame, remove the bolts which fasten the frame to the skid. Carefully lower the planter frame assembly to a horizontal position. Level the planter frame.

4. Support the front of the planter frame and bolt on the tongue assembly using six 3/4" x 2 1/2" cap screws, lock washers, and hex nuts. Tighten bolts securely to specified torque.

5. Remove the jackstand from the storage position and place it on the tongue to support the planter.

NOTE: Depending upon the planter size the planter is equipped with either single or double folding markers.

6. Mount the marker assemblies to the planter frame.

   A. Single fold markers are preassembled with the exception of the marker disc. Bolt the single fold marker assembly to the mounting pad using four 1/2" x 2" Grade 2 cap screws, lock washers and hex nuts on each side. Install markers so that spindles project forward.

⚠ WARNING: Always leave the marker assembly laying in the horizontal position or secure it with the safety lock up pin, when the markers are in up position.

   B. On planters using double fold markers, bolt the first stage with the preassembled cylinder to the mounting pad using four 1/2" x 2" Grade 2 cap screws, lock washers and hex nuts on each side.

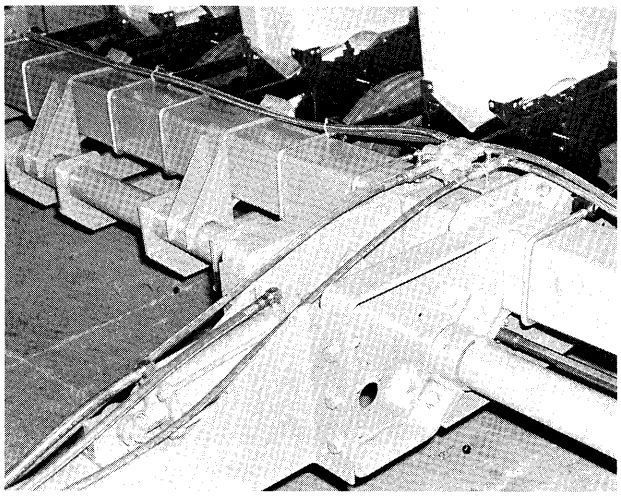
   C. Attach the pre-assembled second stage with pivot pin and cotter pins. Install markers so that spindles project forward.

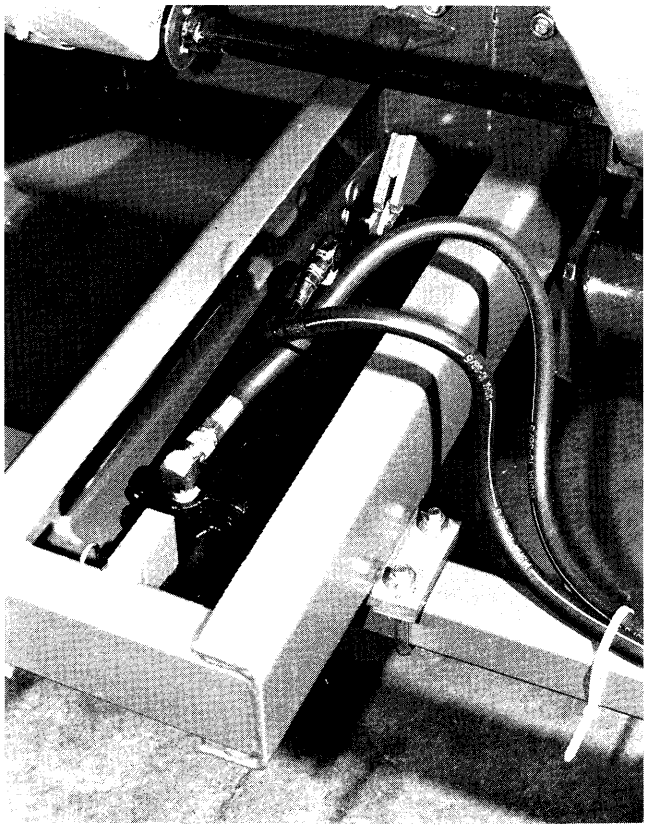
NOTE: We recommend that you do not connect the rod end of the cylinder to the second stage until the hydraulic hoses have been assembled and cycled.

7. Remove the plugs from all cylinder ports. Depending upon the planter model you are assembling, see hydraulic section pages in the parts section of this manual for fitting and hose information.

NOTE: Refer to dual or single valve system as applicable.

8. Mount the sequencing valve, flow controls and valve plate on the center section of the planter frame using the holes provided. (See picture below for proper position of parts.)





9. Install lift cylinder with shaft end pointing toward rear of the planter. Secure in place with clevis pins and lock clips. The shorter of the two clevis pins is installed on the shaft end of the cylinder.

NOTE: The 8 Row 30" model uses two lift cylinders connected by four 3/8" x 76" hydraulic hoses and two tube tee fittings.

10. Attach 3/8" hydraulic hoses to lift cylinder(s).

NOTE: See hydraulic section pages in this manual for proper fitting and hose information. Fittings should be at angles to allow for movement during operation.

11. Secure hydraulic hoses to planter with hose clamps and nylon tie straps.

12. Install customer supplied coupler on tractor end of each hose. The couplers installed must be the SAE type to match the tractor being used.

NOTE: Remove and discard the shipping bracket and attaching hardware located between the axle and main frame of the planter.

13. Prime the hydraulic system

CAUTION: Disconnect the rod end of lift cylinder(s) and both marker cylinders before cycling the cylinders. The flow control valves must be adjusted to prevent damage to the marker assembly. Loosen the lock nut on each knurled adjustment knob and screw the adjustment all the way closed. Open each valve approximately 1/2 turn. Cycle the hydraulic systems several times with the cylinder rods disconnected to purge all air from the hydraulic system. After the cylinders are operating smoothly, attach the rod end of each cylinder.

14. The sequencing valve is used to alternate the marker raise and lowering automatically.

15. The flow control valves are used to regulate the speed of the marker.

WARNING: Always stand clear of the marker assemblies when in operation.

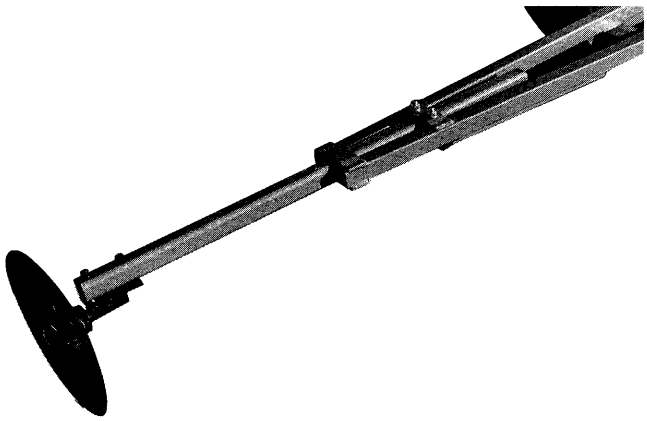
16. Attach the 16" disc to the hub using the preinstalled bolts. Be sure to alternate bolts while tightening to avoid distorting the disc's shape or breaking the marker hub.

NOTE: The marker disc is installed so the concave side of the disc is outward to throw dirt away from the grease seals. The spindle bracket is slotted so the hub and blade can be angled to throw more or less dirt.

WARNING: Always position marker lock up pin in "safety" position when transporting or storing planter. See Safety Precaution.

17. Marker Adjustment
    To determine the correct length at which to set the marker assemblies, multiply the number of rows by the row spacing in inches. This provides the total planting width. Then adjust the marker extension so that the distance from the marker disc to the center line of the planter bar is equal to the total planting width previously obtained. Both the planter and marker assembly should be lowered to the ground when measurements are being taken. Also, the measurement should be taken from the point where the disc contacts the ground. Adjust right and left marker assemblies equally and securely tighten clamping bolts. An example of marker length adjustment follows:

Number of Rows X Row Spacing (Inches)	=	Dimension between planter center line and marker blade
6 x 30" = 180" marker dimension		



ASSEMBLY

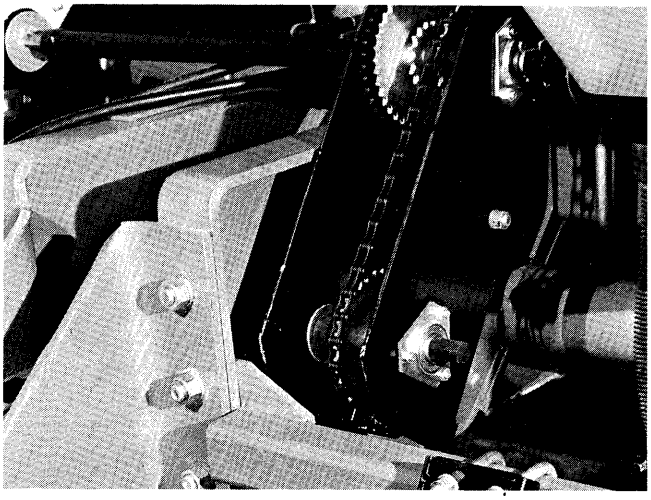
Dry and Liquid Fertilizer Attachment

Fertilizer Bar Installation

1. Attach bar end brackets to the fertilizer bar with 1/2" x 4" cap screws, lock washers and hex nuts.

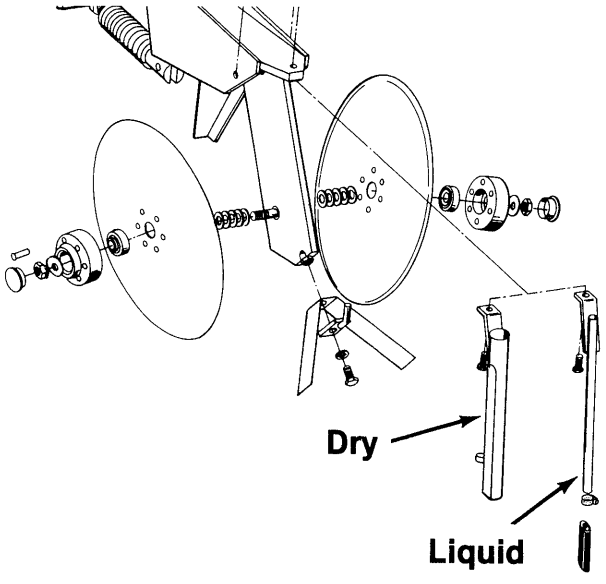
2. Lift right and left bar assemblies into position and attach inside end of each bar to tongue assembly and side panel with two existing tongue mounting bolts on each side.

3. Attach outer end of each bar support to the planter toolbar with one 7" x 7" x 3/4" U-bolt, lock washers and hex nuts.



Double Disk Openers

Both the liquid and dry fertilizer attachments use the same 15" double disk openers. Attach drop tubes to each opener by positioning the bottom of the tube on the drop tube retainer and attaching the top of the tube with one 5/16" x 1 1/2" cap screw and locknut.



Attach disk openers to the fertilizer bar so that disks are positioned two inches to the side of the row unit openers. When installing openers for dry fertilizer, position the opener on the side nearest the hopper outlet.

The down pressure springs on the double disk openers are factory preset at 250 pounds, but may be further adjusted for various soil conditions. To adjust spring tension, loosen the jam nut with a 15/16" wrench and adjust the tension adjustment bolt with a 1" wrench. Turning the adjustment bolt clockwise increases down pressure. Retighten the jam nut upon completion of tension adjustment.

WARNING: Do not operate the double disk openers at full down pressure tension when planting in rocky ground. Chipping of the disk blades may occur.

Dry Fertilizer Attachment Transmission And Drive - 4 Row and 6 Row Models

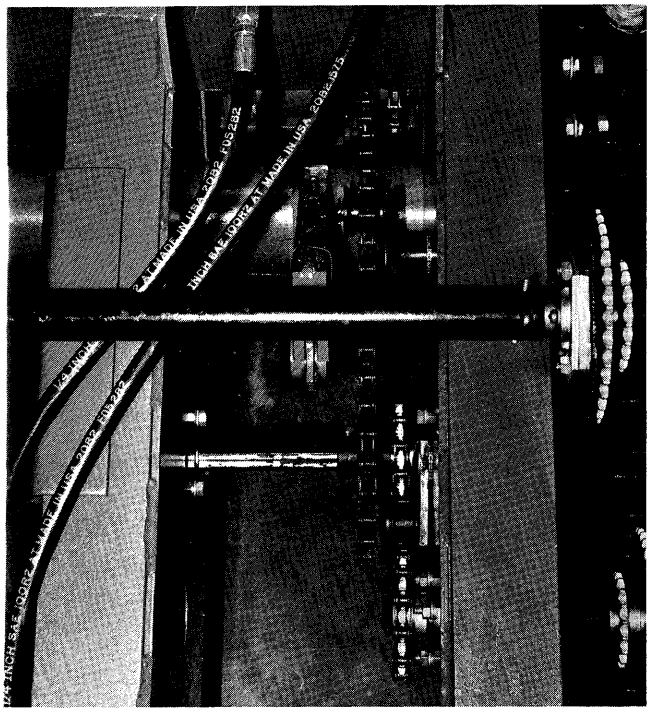
1. Assemble three 7/8" hex bore bearings and six flangettes and install on the outside of the center section side panels - two sets on the left panel and one set on the right panel bottom hole.

2. Install 7/8" x 10" hex jack shaft through left side panel bearing and slide 24 tooth sprocket, 48-tooth sprocket and 7/8" lock collar onto shaft. Then extend shaft on through right side panel bearing. Install cotter pin through left end of shaft, slide all components tight against left sidewall and tighten lock collar.

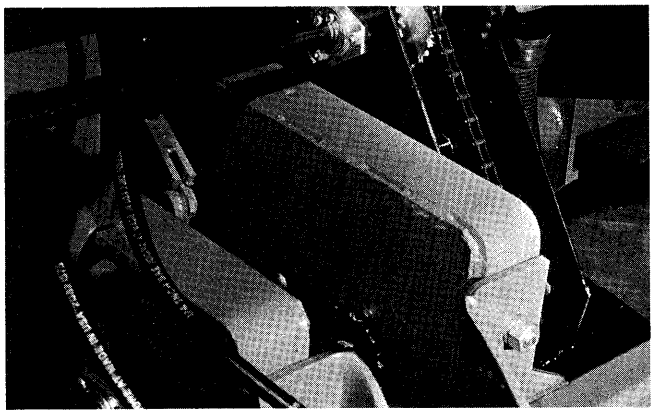
3. Install single spool chain idler to inside of left center section side panel (in hole provided to the rear of the jackshaft) with 1/2" x 3" carriage bolt.

4. Install 50 link drive chain between clutch assembly and 48 tooth sprocket on jackshaft. Route chain under the planter axle, around the clutch sprocket and around the idler spool as shown. Pivot idler bracket to sufficiently tension chain and tighten mounting bolt.

ASSEMBLY



5. Mount fertilizer transmission to frame using mounting bracket. Do not tighten mounting bolts at this time.



6. Install bearings and flangettes on transmission side plates. Insert lower transmission shaft through L.H. bearing and install 24T sprocket, 36/18T sprocket and flat washer on shaft. Continue with shaft through R.H. transmission plate and L.H. center section bearing and install 24T sprocket. Place rubber spacers in transmission.

7. Secure shaft with cotter pin on left side of transmission case.

8. Slide lock collar against 24 tooth sprocket on right end of shaft.

9. Install single spool chain idler to left side panel with 1/2" x 1 1/2" carriage bolt.

10. Install 26 link drive chain between jackshaft drive sprocket and lower transmission drive shaft sprocket. Pivot idler to maintain proper tension.

Transmission and Drive 8 Row Models

1. Assemble four 7/8" hex bore bearings and eight flangettes and install on the outside of the center section side panels - two sets on each side.

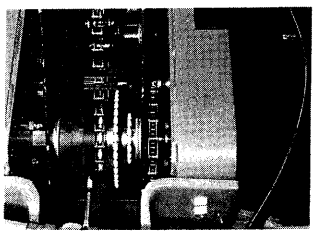
2. Install 7/8" x 10" hex jack shaft through left side panel bearing and slide two 24 tooth sprockets, and 7/8" lock collar onto shaft. Then extend shaft on through right side panel bearing. Install cotter pin through left end of shaft, slide all components tight against left sidewall and tighten lock collar.

3. Install single spool chain idler to inside of left center section side panel (in hole provided to the rear of the jackshaft) with 1/2" x 3" carriage bolt.

4. Install 43 link drive chain between clutch assembly and 24 tooth sprocket on jackshaft. Route chain under the planter axle, around the clutch sprocket and around the idler spool as shown. Pivot idler bracket to sufficiently tension chain and tighten mounting bolt.

5. Attach transmission between center section side panels using 5/8" x 8 1/2" HHCS, flat washers, lock washers and hex nuts and mounting brackets and 3/8" x 1" HHCS. Do not tighten mounting bolts at this time.

6. Install lower transmission shaft thru bearing in left side panel and through 48 tooth sprocket. Then extend shaft on through left transmission side panel, two flat washers, 36/18 tooth sprocket, 24 tooth sprocket, an additional flat washer and finally through the right transmission and center section side panels.



7. Install cotter pin through shaft to secure 48 tooth sprocket in position. (It may be necessary to slide transmission to the right for access.) Install lock collar on end of shaft that extends through left side panel.

8. Install single spool chain idler to left side panel with 1/2" x 1 1/2" carriage bolt.

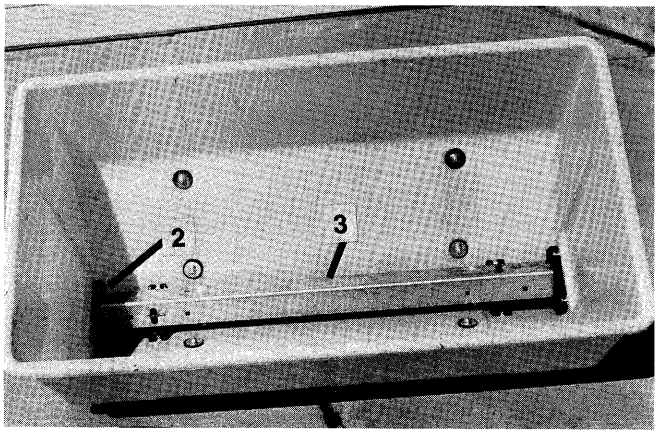
9. Install 32 link drive chain between jackshaft drive sprocket and 48 tooth lower transmission drive shaft sprocket. Pivot idler to maintain proper tension.

10. Make sure transmission is positioned where it won't interfere with the sprockets or chain drive and secure in position.

Hopper Installation

1. Install hoppers on planter frame in the locations illustrated in the fertilizer coupler parts section of this manual. Do not tighten attachment at this time.

2. Remove the cotter pin and flat washer from one end of the fertilizer shaft and slide the entire assembly through the outlet housing into the hopper. Secure in place by reinstalling the washer and cotter pin. Check rotation to make sure the auger springs will carry fertilizer to the outer ends of the hopper when in operation. If rotation is wrong, remove the auger assembly, turn it 180° and reinstall.

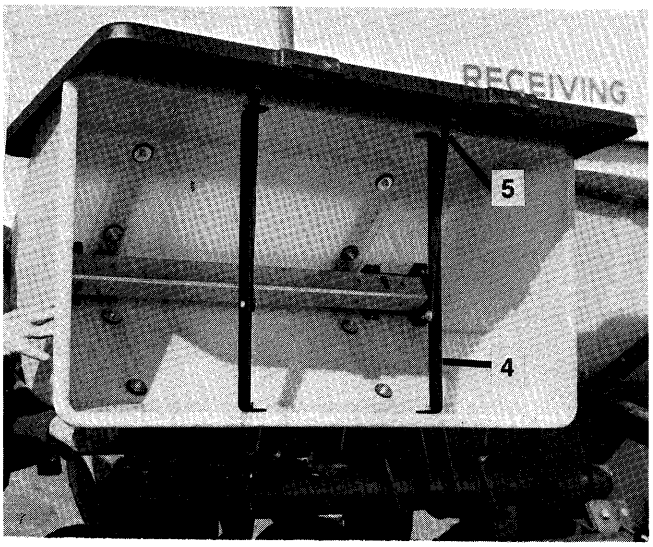


3. Install auger shields over augers and secure in place with two hair pins on each.

4. Install two hoppers braces in hopper with bolts provided. Each brace is drilled for installation of a rubber lid strap. Make sure this hole is closest to the front of the hopper. Place one of the rubber washers between each end of the brace and the inside surface of the hopper. Attaching bolts should be installed with the head to the outside of the hopper and a flat washer between the head and the outside hopper surface.

5. Position the hopper lid so the latches will be to the front of the hopper and install two rubber straps between hopper braces and underside of lid. Install a rubber washer between the bolt head and the rubber strap...and a lock washer and nut on the underside of the braces. The bolt holding the strap to the lid should have a flat washer under the bolt head on the lid top...and a flat washer, lock washer and hex nut next to the strap on the bottom side of the lid.

6. Install the hoppers on the hopper mounts with the round hole in the saddle toward the front. Attach the front side of the hopper to the mount with two 7/16" x 3" clevis pins and cotter pins.



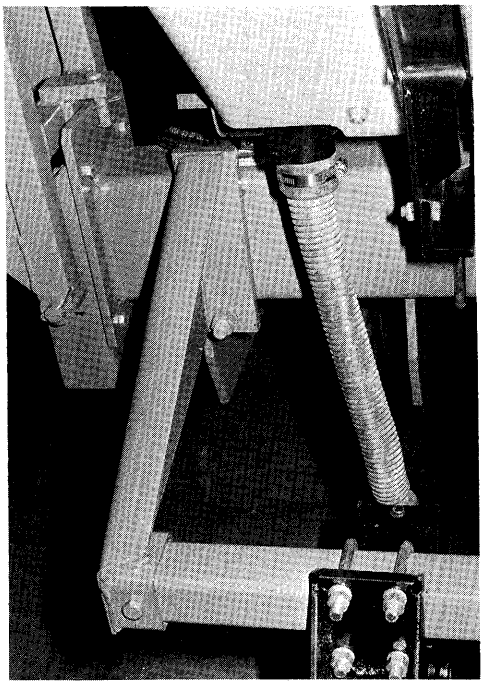
7. Install coupler/drive shafts beginning at the transmission and working outward toward each end. Slide the square end of the coupler over the auger shaft so that at least 3/4" or more of the shaft extends into the coupler. Attach opposite end of the coupler/drive shaft with 3/16" cotter pin. Four holes in the auger shaft allows for 1 1/2" or 3" to extend beyond the end of the hopper. In most installations the short end is toward the transmission. Make sure all coupler/drive shafts are installed with the cotter pin toward the transmission.

ASSEMBLY

NOTE: See dry fertilizer coupler pages in the parts section of this manual for further information on size and location of couplers.

8. Once the coupler/drive shafts have been connected, bolt the rear of the hopper saddle to the hopper support with two 1/2" x 1 1/4" cap screws.

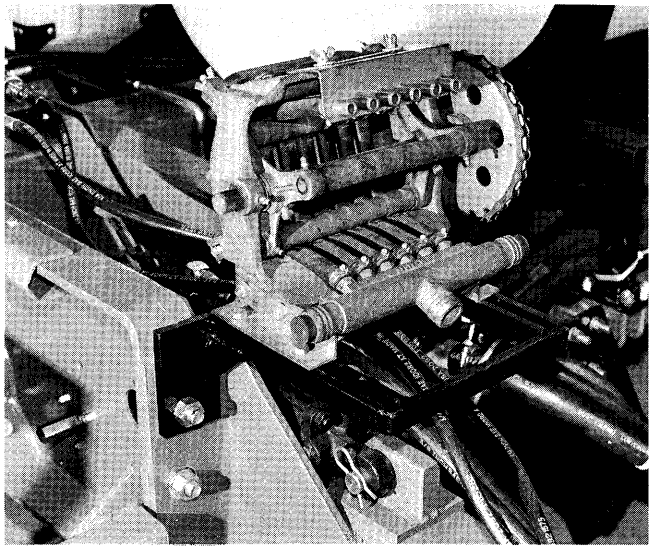
9. Align all hoppers and the transmission both horizontally and vertically and tighten all mounting bolts. Slots in the transmission and mounting bracket allow for up and down and forward and backward adjustment.



10. Connect all fertilizer drop tubes between hopper outlets and double disk opener drop tubes. Make sure tubes are straight; and secure with hose clamps.

Liquid Fertilizer Attachment Squeeze Pump and Drive Installation

1. Install squeeze pump mounting bracket on tongue assembly using top two 3/4" x 2 1/4" tongue mounting bolts.



2. Assembly two 7/8" hex bore bearings and flangettes and install on the inside of both right and left center section side panels.

3. Install 7/8" x 16" hex shaft through left side panel bearing and slide 3/4" spacer, 24 tooth sprocket and 7/8" lock collar onto the shaft. Extend shaft on through bearing in right side panel leaving approximately 5" - 6" exposed on the outboard side of the left panel. Slide lock collar up against sprocket and tighten.

4. Install lock collar, squeeze pump sprocket adapter, selected drive sprocket sprocket retainer on the left end of hex drive shaft.

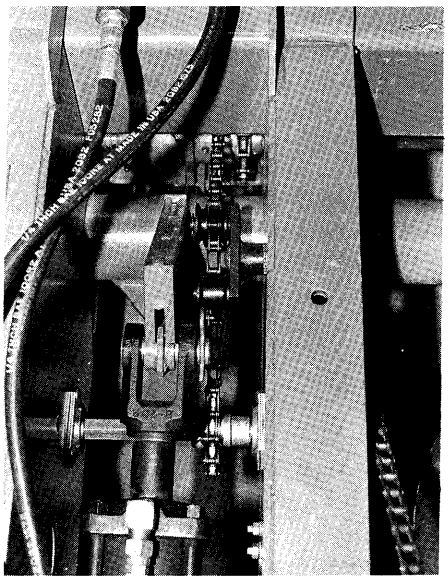
5. Install chain idler to inside of left center section side panel (in hole provided) with 1/2" x 3" carriage bolt.

6. Install 43 link drive chain between clutch assembly and fertilizer drive shaft. Route chain under the planter axle, around the clutch sprocket and between the idler spools as shown. Pivot idler bracket to sufficiently tension chain and retighten mounting bolt.

7. Attach squeeze pump to mounting bracket with four 7/16" x 2" cap screws, lock washers, flat washers and hex nuts. Do not tighten at this time.

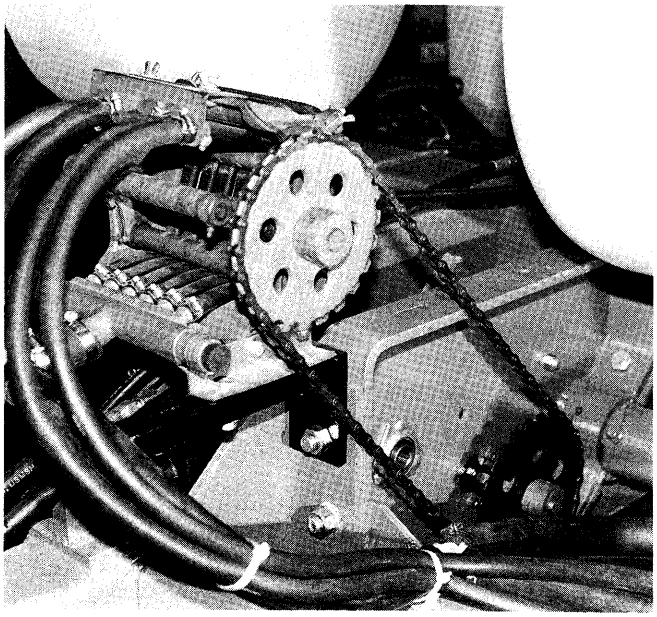
ASSEMBLY

NOTE: The 8 row 30" model requires an additional mounting plate directly under the squeeze pump.



8. Install adapter, driven sprocket and sprocket retainer on left end of squeeze pump shaft. Then install 75 link drive chain between squeeze pump drive and driven sprockets.

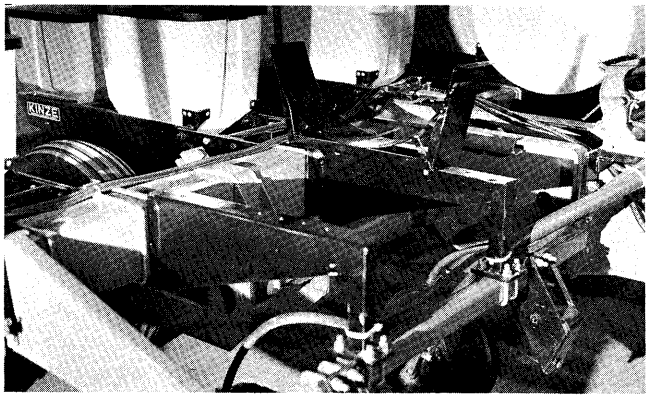
9. Slide squeeze pump forward to obtain approximately 1/4" deflection on the drive chain.



Tank And Hose Installation

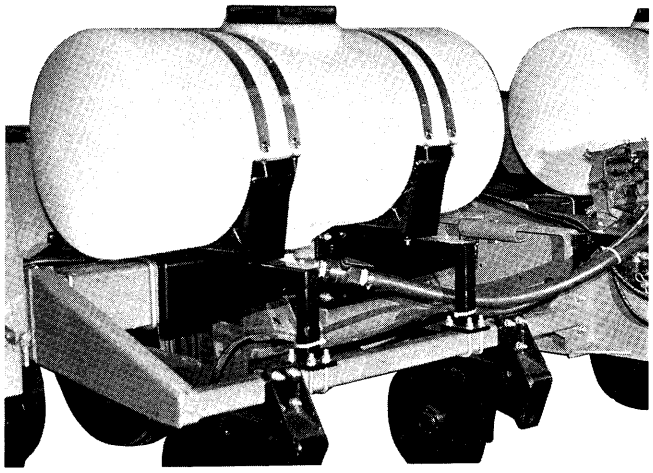
1. Attach two tank saddle brackets for each tank on tool bar and fertilizer bar with 1/2" U-bolts around fertilizer bar and 5/8" U-bolts around tool bar as shown.

2. Attach tank saddle to tank saddle bracket with four 1/2" x 1 1/2" cap screws.



3. Install outlet elbow in bottom of each tank.

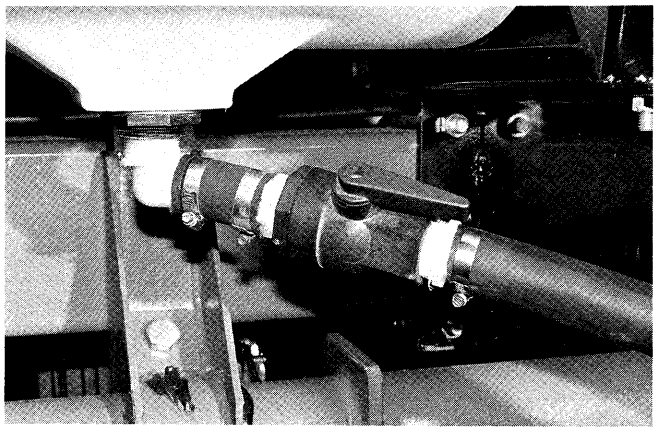
4. Install tanks on tank saddles with U-bolts, lock washers and hex nuts as shown.



5. Attach a short piece of 1 1/4" hose to each outlet elbow and then install adapter fittings and shut-off valve.

NOTE: The 1 1/4" hose for connecting tanks to squeeze pumps is provided in a roll and must be cut to length. Attach hose to each fitting or connection with hose clamps provided.

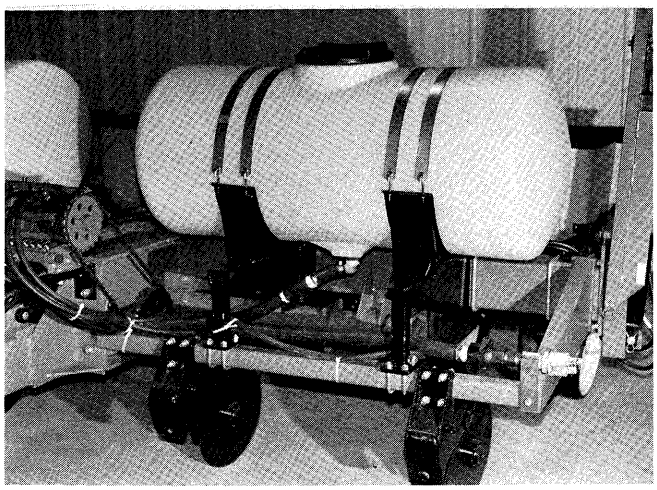
ASSEMBLY

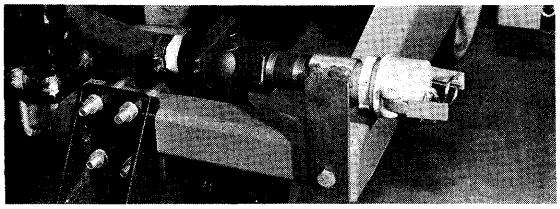


6. Attach additional 1 1/4" hose to each ball valve to extend to center of planter bar. Then join hoses from each tank with 1 1/4" hose barb tee.

NOTE: Make sure hoses between tanks and front of squeeze pump are long enough to allow forward movement of the squeeze pump. This is important to allow for chain tension adjustment.

7. Cut approximately 2" out of left hose and install second 1 1/4" hose barb tee. Then attach sufficient length of hose to extend to outer end of tank for quick fill attachment.





8. Attach quick fill bracket with threaded pipe fitting to fertilizer bar end bracket as shown.

9. Assemble male adapter, 1 1/4" ball valve, pipe nipple and quick fill fitting to bracket as shown.

10. Connect 1 1/4" hose between squeeze pump intake manifold and barb tee which connects tanks. Install rubber plugs in unused manifold inlets.

CAUTION: Avoid excessive pressure when using the quick fill attachment. The rubber plugs installed in the manifold may be forced out under pressure.

11. Connect fertilizer hoses between squeeze pump outlet manifold and double disk openers. The plastic hose comes in a roll and must be cut to length for each row. Begin with the two outside first, allowing enough hose for up and down movement of disk openers.

12. Secure all hoses to the planter frame with nylon tie straps.

Make a final inspection of the assembled planter

☐ Lubricate per instructions.

☐ Check for loose hydraulic hoses and fittings.

☐ Check for loose bolts, nuts, etc.

☐ Check all drive chains for proper alignment and tension.

☐ Make sure all drive shafts and idlers rotate freely and do not bind.

☐ Make sure all row units are mounted properly and that they are squared on the frame.

☐ Cycle all hydraulics to insure all the air has been purged from the hydraulic system.

LUBRICATION

The following pages show the location of all lubrication points. Proper lubrication of all moving parts will help insure efficient operation of your Kinze planter and prolong the life of friction producing parts. Those parts equipped with grease fitting should be lubricated at the frequency indicated with an SAE multipurpose type grease. Be sure to clean the fitting thoroughly before using grease gun. The frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent attention.

Sealed Bearings

A number of sealed bearings are used on your Kinze Planter to provide trouble free operation. These are located in such areas as the drive shaft, row units, and transmission bearings. Sealed bearings are lubricated for life, and due to the seals, relubrication is not practical.

Drive Chains

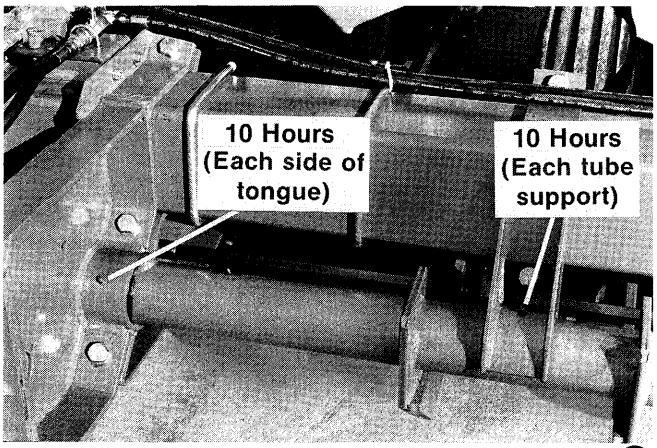
The transmission and drive chains should be lubricated approximately every 8-10 hours with a quality engine oil or equivalent SAE 10 weight oil. A good quality spray lubricant may also be used for periodic chain lubrication. Extreme operating conditions such as dirt, temperature, or speed may require more frequent lubrication. If any of the chains become stiff, it should be removed and soaked and washed in solvent to loosen and remove dirt from the joints. Then soak the chain in oil so the lubricant can penetrate between the rollers and bushings.

Wheel Bearings

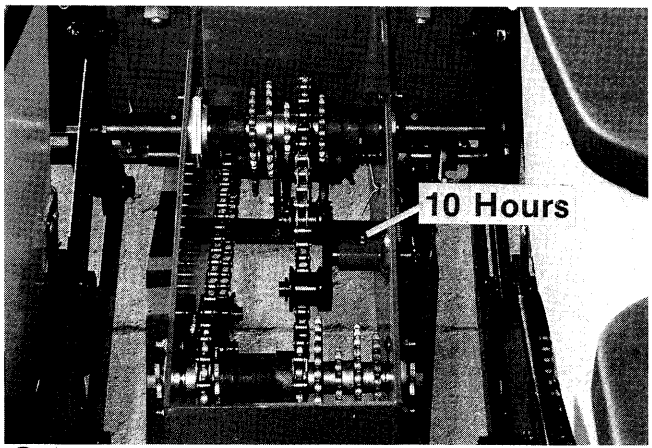
Wheel bearings should be repacked with clean heavy duty axle grease approximately once a year or at the beginning of each planting season. This applies to all drive wheels, transport wheels and marker hubs. Follow the procedure outlined for wheel bearing replacement with the exception that bearings and bearing caps are reused.

Lubrication Chart

Ref. No.	Description	No. of Zerks	Frequency
1.	Hitch Mount	2	10 Hours
	Axle Clamp	1 (Per Clamp)	10 Hours
	Lower Axle Clamp (Transmission Case)	2	10 Hours
2.	Idler Sleeve (Transmission)	1	10 Hours
3.	Transmission Clutch Shaft	3	10 Hours
4.	Lift Cylinder Mount Clamp (8 Row Model Only)	1 (Per Mount)	10 Hours
5.	Double Fold Low Profile Marker	2 (Per Marker)	10 Hours
6.	Conventional Marker	2 (Per Marker)	10 Hours
7.	Liquid Fertilizer Pump	8	10 Hours
8.	Dry Fertilizer Hopper	2 (Per Hopper)	10 Hours

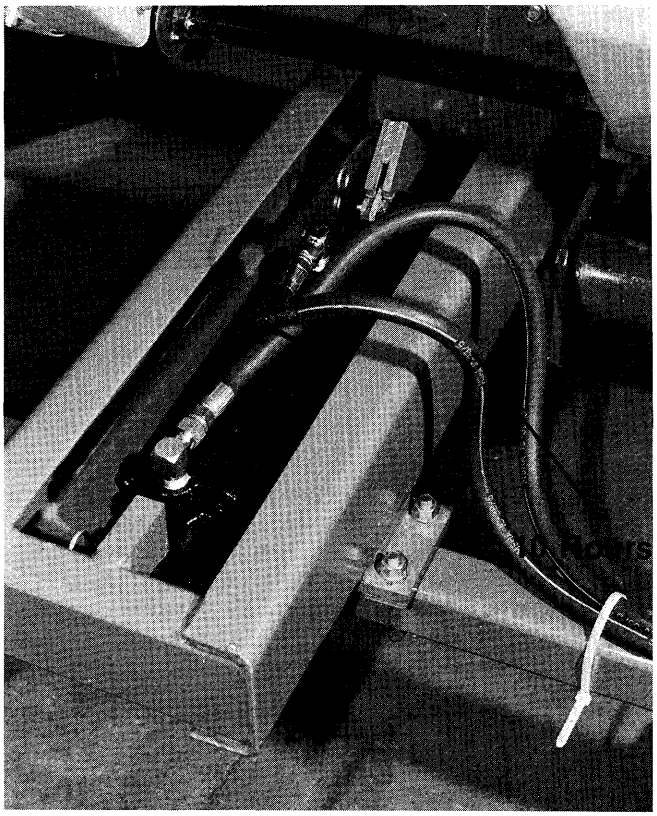


Wheel Bracket Supports ①

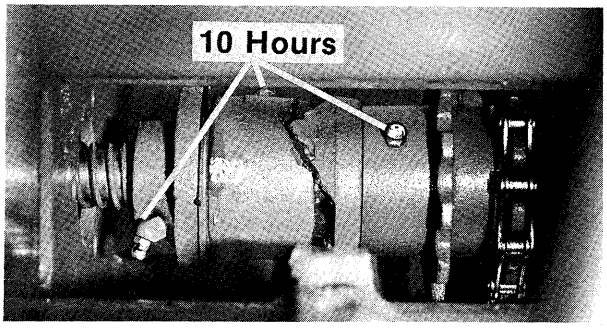


② **Transmission**

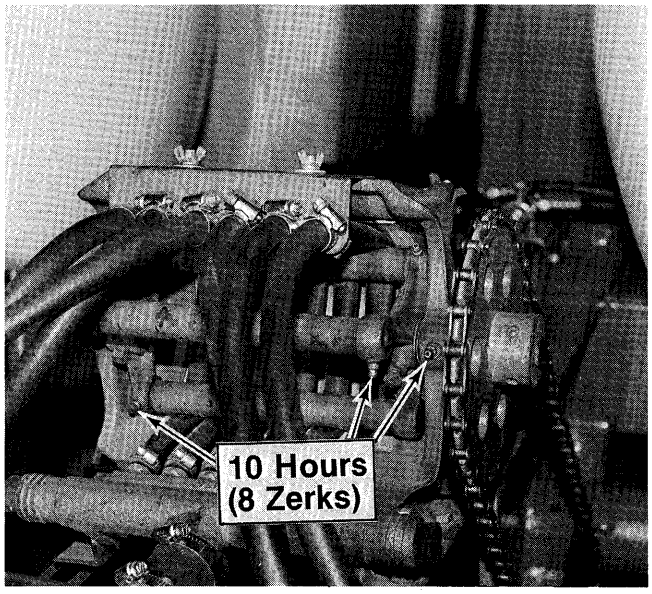
LUBRICATION



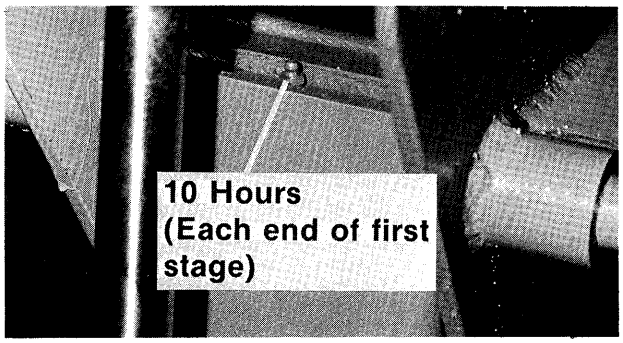
Lift Cylinder Mount Clamp
(8 Row 30" Model Only) ④



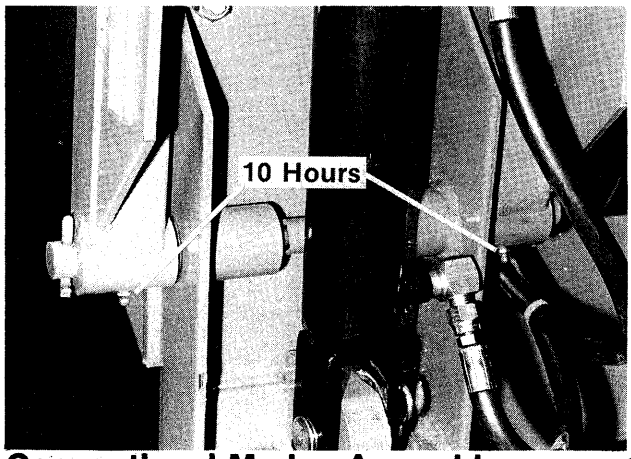
③ **Clutch Assembly**



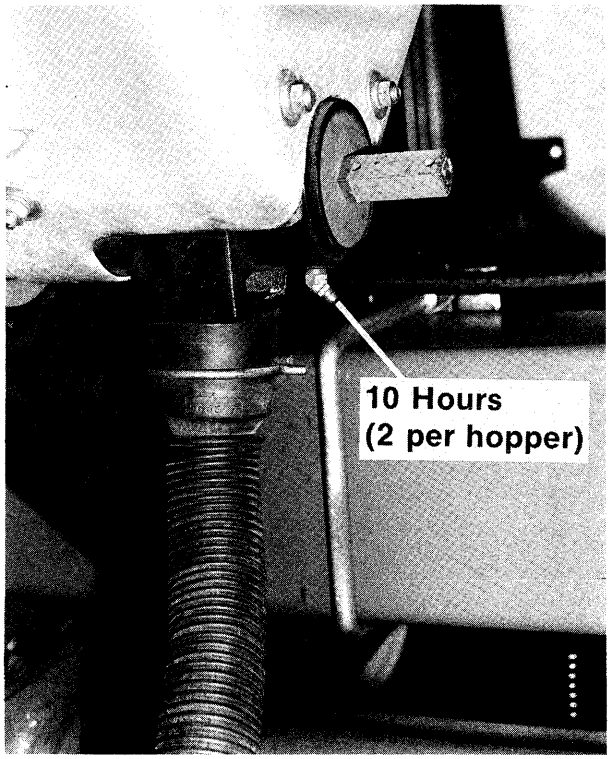
⑦ **Liquid Fertilizer Pump**



Double Folding Low Profile Marker ⑤
(All Applicable Models)



Conventional Marker Assembly ⑥
(All Applicable Models)



⑧ **Dry Fertilizer Hopper**

OPERATION

The following information is general in nature and was written to aid the operator in preparation of the tractor and planter for use, and to provide general operating procedures. The operator's experience, familiarity with the machine and the following information should combine for efficient planter operation and good working habits. The operators manual for the row units used with your Kinze Planter should also be readily available and consulted for planter operation.

Initial Preparation of the Planter

Lubricate the planter and row units per the lubrication information in this manual and the row unit operator's manual. Make sure all tires have been properly inflated. Check all drive chains for proper tension and lubrication.

Tractor Preparation and Hookup

1. Adjust tractor drawbar so that it is 13 to 17 inches above the ground. Then adjust the drawbar so that the hitch pin hole is directly below the center line of the PTO shaft. Make sure the drawbar is in a stationary position.

2. Back tractor to planter and connect with hitch pin. Make sure hitch pin is secured with locking pin or cotter pin.

3. Connect hydraulic hoses to tractor ports in a sequence which is both familiar and comfortable to the operator.

⚠ Before applying pressure to the hydraulic system, make sure all connections are tight and that hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin, causing injury or infection.

IMPORTANT: Always wipe hose ends to remove any dirt before connecting couplers to tractor ports.

4. Raise jack stand and remount horizontally on storage bracket.

5. Lower planter to the planting position and check tongue for levelness. If tongue slopes up or down, disconnect planter and adjust hitch clevis up or down as necessary.

Transporting The Planter

⚠ Always make necessary safety preparations prior to transporting the planter on public roads. This includes installing a Slow Moving Vehicle (SMV) emblem and use of adequate lights or safety warning after dark.

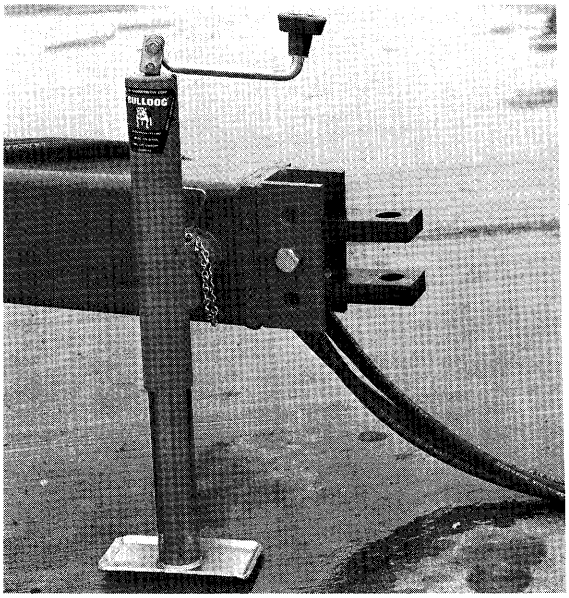
The pull type planter is equipped with a clutch that disconnects the drive when the unit is raised for transportation. However, for safety and to decrease wear, the drive chains should be moved to the side of the drive wheel sprocket prior to towing the machine for any distance.

OPERATION

Leveling The Planter

For proper operation of the planter and row units, it is important that the unit operates level.

Unless the tractor drawbar is adjustable for height, the fore and aft level adjustment must be maintained by the position of the hitch clevis. Three holes in the tongue hitch bracket allow the clevis to be raised or lowered. When installing clevis mounting bolt, make sure lock washer is in place and tighten hex nut to proper torque setting.



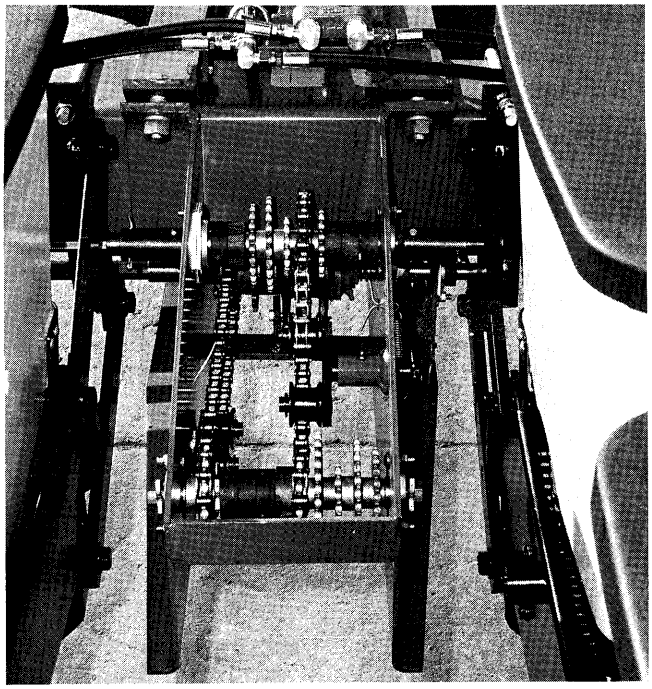
Always check fore and aft levelness with the planter lowered to proper operating depth. Then sight across tongue or place a bubble level on the tongue and frame.

In order to maintain lateral levelness, it is important that tire pressure be maintained at pressures specified.

Transmission Adjustment

The transmission is designed to allow simple and rapid changes in sprocket combination to obtain the desired planting population. Since both the transmission drive shaft and the row unit drive shaft are hexagonal in shape, the sprockets need only be slid into alignment with the idlers after first removing the rubber spacers and loosening the drive chain. The combination of small sprockets may require shortening the drive chain.

A decal positioned next to the transmission and the information provided in your row unit operator's manual or planting rate chart in this manual will aid you in the selection of the correct sprocket combinations. After positioning both sprockets, replace rubber spacers between sprockets or on the ends as necessary. Then restore tension on the drive chain.



Tire Pressure

Tire pressure should be checked regularly and maintained as follows:

Drive Gauge - 7:60 x 15" 4 Ply 40 lbs. PSI

IMPORTANT: Tire pressure must be correctly maintained in all drive wheel tires to insure levelness and proper operation of planter. All rate charts are based on rolling radius of 7:60 x 15 tires inflated to 40 PSI.

Hydraulic Marker Operation

⚠ **WARNING:** Always stand clear of the gauge marker assembly and blade when it is in operation.

CAUTION: The flow controls should be properly adjusted before the marker assembly is first put into use to prevent equipment damage.

To properly match the marker cylinder speed to your tractor's hydraulic system, loosen the lock nut which secures the knurled adjustment knob in place. To increase the cylinder speed turn the valve counterclockwise, opening the valve. To decrease the cylinder speed turn the valve clockwise. This action has no effect on the transport wheel cylinders on single valve systems.

NOTE: Marker speed will decrease with cold oil supply. Make sure that all adjustments are made with warm oil. Do not overtighten locknut.

⚠ **WARNING:** Always position marker lock-up pin in "Safety" position when transporting or storing planter. See Safety Precaution.

Marker Adjustment

We recommend a field test be made to insure the markers are properly adjusted. After the field test is made, make any minor adjustments necessary.

Planters are designed to operate within a speed range of 2 to 7 M.P.H. Optimum speed for most conditions is 5 to 6 M.P.H. Rate charts provided in this manual and in the Kinze Row Unit Manual are based on this optimum speed. Variations in ground speed will produce variations in rates. Corn meter populations will tend to be disproportionately higher at high ground speeds. While soybean and sorghum seed cup populations will tend to be disproportionately lower.

We recommend a field test be made to insure proper seed placement and operation of row units.

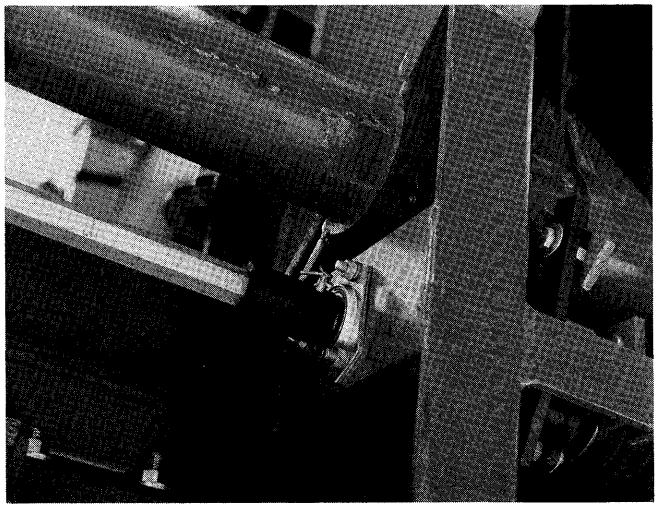
After the planter has been field tested, reinspect the unit.

☐ Hoses - Fittings

☐ Bolts - Nuts

☐ Drive Chains

NOTE: The planter drive line is protected with shear pins. If seed meters on row units fail to operate, check shear pins.



OPERATION

Double Disk Opener

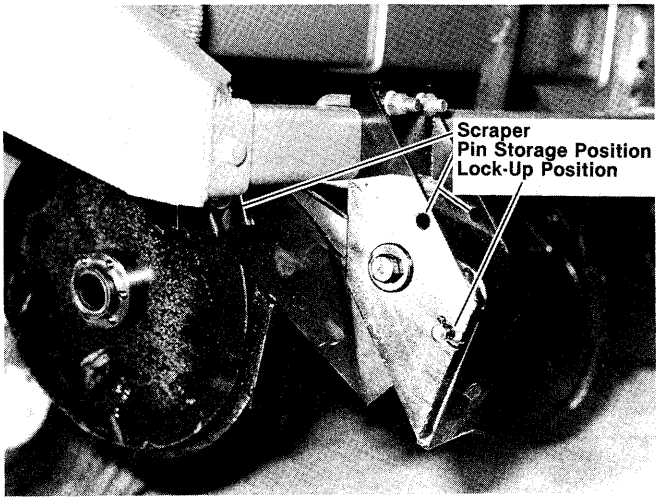
The double disk openers should be positioned during assembly to place the fertilizer approximately 2" to either side of the row and from 4 to 6 inches deep depending upon soil conditions and down pressure.

The down pressure springs are factory preset at 250 pounds but may be adjusted for various soil conditions. To adjust spring tension, loosen the jam nut with a 15/16" wrench and use a 1" wrench to turn the adjustment bolt. Turn clockwise to increase tension or counterclockwise to decrease tension. Securely tighten the jam nut upon completion of tension adjustment.

⚠ WARNING: Do not operate the double disk openers at full down pressure tension when planting in rocky ground. Chipping of the disk blades may occur.

The scrapers on each blade may also be adjusted to make up for wear that may occur. Make sure the scraper is adjusted as close as possible to the blade without touching.

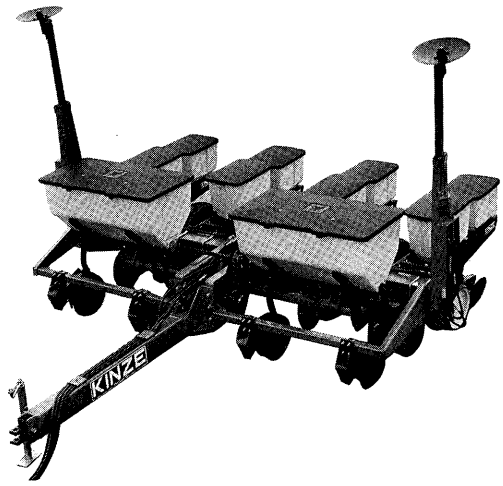
The opener assembly is designed to be locked in a raised position when the fertilizer attachment is not in use or during storage. To lock the opener, first raise the planter and place blocks under the openers. Then lower the planter until the hole in the pivot section aligns with the hole in the mounting bracket. Remove the lockup pin from the storage position in the mounting bracket and install it through the lockup hole and secure with cotter pins.



OPERATION

Dry Fertilizer Attachment

The rate of dry fertilizer application is determined by the drive and driven sprocket combinations on the fertilizer transmission. Sprocket combinations are changed in the same manner as the row unit transmission. After removing the rubber spacers and loosening the drive chain, slide the selected sprockets into alignment with the idlers. Then restore proper chain tension and replace spacers between sprockets. Refer to the application charts at the end of this section for selection of sprocket combinations.



The dry fertilizer attachment meters granules by volume rather than weight. For this reason, and given the variances in brands and fertilizer analysis, the weight metered during actual application may vary considerably. Use the chart for reference only. It is suggested that a container be used to catch and measure application (as explained following the application chart) to obtain a closer estimate.

Since most fertilizers easily absorb moisture, it is important that fertilizer be kept dry during use and storage. In addition to waste, deposits of fertilizer left in the hopper can cause metal corrosion.

The dry fertilizer attachment uses two fiberglass hoppers on the 4 row models, three hoppers on the 6 row models and four hoppers on the 8 row models. Each hopper is designed to hold approximately 550 pounds depending upon the type of fertilizer being used.

⚠ WARNING: Agricultural chemicals can be dangerous if not selected and handled with care. Always read and follow directions supplied by the chemical manufacturer.

Cleaning

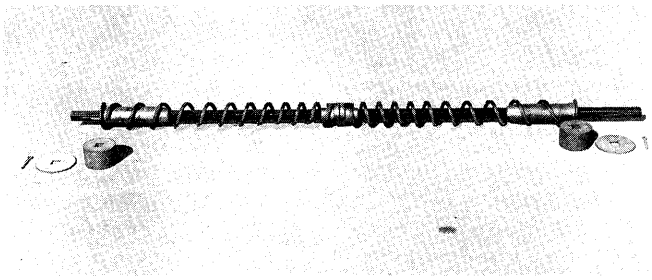
The dry fertilizer hoppers are designed to tip forward for dumping and ease of cleaning. To dump hoppers, first disconnect the drive shaft from the transmission or adjacent hopper. Loosen hose clamps and remove hoses from each hopper.

Finally, remove the two cap screws from the hopper lids to the back side of the hopper. Rotate hopper lids to the back side of the hopper and carefully tip hopper forward. After dumping contents, flush all loose fertilizer from the hopper and hoses.

At the end of the planting season, or when fertilizer attachment is not going to be used for a period of time, the hoppers should be disassembled, cleaned and coated with a rust preventative.

To disassemble spreader assemblies, remove the hairpins and baffle from the top of the auger. Then remove the cotter pin from the auger shaft adjacent to the large flat washer and pull auger assembly from the hopper. The bearings pass through the outer castings and need not be removed. Remove the cotter pin and washer from outer end of the auger shaft and remove all auger components for cleaning. Coat all parts with rust preventative before reassembly.

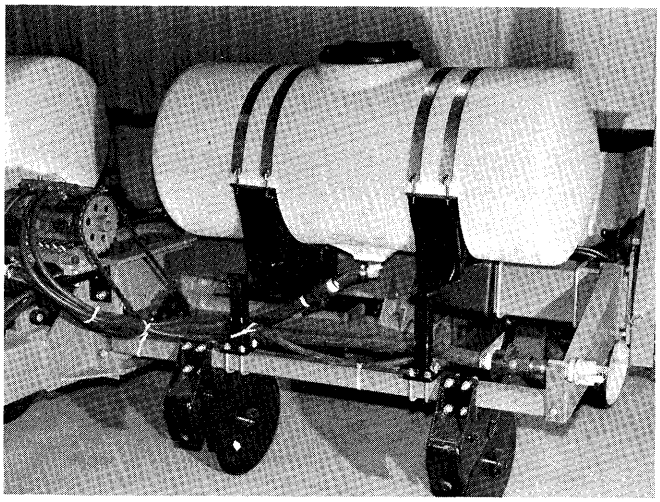
NOTE: Left hand and right hand springs are used on each auger shaft. Make sure springs auger fertilizer to the outer ends of the hopper when rotated in the direction of rotation they turn on the planter.



OPERATION

Liquid Fertilizer Attachment

The rate of liquid fertilizer application is determined by the combination of sprockets on the squeeze pump driven and drive shaft. When changing sprocket combinations, make sure sprockets and idler are in alignment, sprocket retaining collars are tight and chain tension is sufficiently restored.



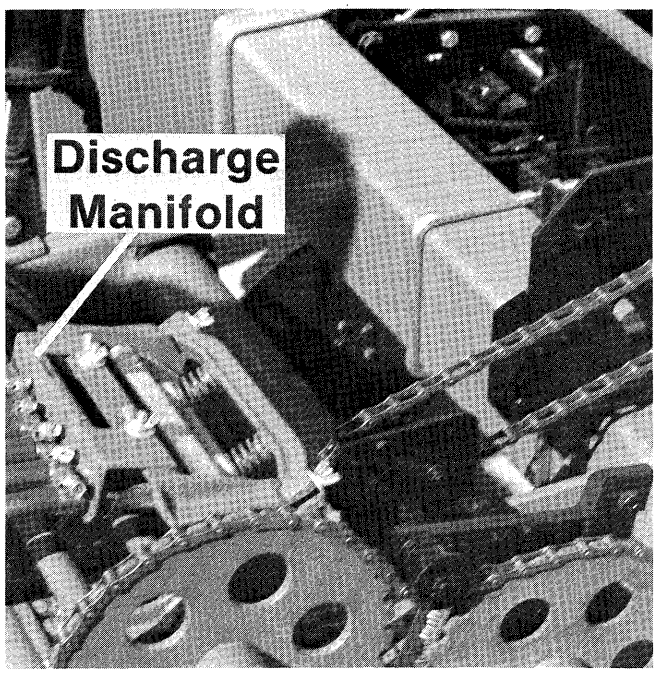
The delivery rate chart found at the end of this section provides an approximate application rate only. Actual delivery will vary with temperature and the particular fertilizer being used.

⚠ WARNING: Agricultural chemicals can be dangerous if not selected and handled with care. Always read and follow directions supplied by the chemical manufacturer.

Shut off valves provided under each tank, should be closed to shut off flow when the planter sets overnight or for extended periods of time. It is also important to close the tank valves whenever service on the pump or hoses is being performed. To prolong the life of the hoses in the squeeze pump, the discharge manifold must be repositioned to the rearward position to prevent hose distortion.

The discharge manifold must be in the forward position when the pump is in operation. To reposition the manifold, loosen the wing nuts and slide the manifold as required and retighten nuts.

CAUTION: Avoid excessive pressure when using the quick fill attachment. The rubber plugs installed in the manifold may be forced out under pressure.



If either of the end pump hoses should run off the back plate, loosen the hose clamp on the intake manifold and rotate the hose as follows.

For *the right hand hose* (facing the pump from front of planter) twist the hose 1/4 turn in the clockwise direction.

For the left hand hose (facing front of pump) twist the hose 1/4 turn in the counter-clockwise direction.

Retighten hose clamp.

Cleaning

The tanks and all hoses are made of sturdy plastic and rubber to resist corrosion. However, the tank should be rinsed with water after each season or before any extended period of non-use. Do not allow sludge to build up in the bottom of the tank or allow fertilizer to crystallize because of cold temperature or evaporation.

At the end of the planting season, thoroughly clean all parts with water. Flush the tanks hoses and metering pump prior to storage.

OPERATION

PLANTING RATE FOR PLATELESS CORN METERS

Seed Populations Per Acre			Average Seed Placement In Inches	Sprocket Combinations		Recommended Speed Range In MPH
30 Inch Rows	36 Inch Rows	38 Inch Rows		Drive Sprocket	Driven Sprocket	
56,200	46,800	44,300	3-3/4	30	14	2 To 3
48,700	40,600	38,510	4-1/4	26	14	2 To 3-1/2
43,700	36,400	34,500	4-3/4	30	18	3 To 4
41,300	34,400	32,600	5-1/8	22	14	3 To 4-1/2
37,800	31,600	29,900	5-1/2	26	18	3 To 4-1/2
35,700	29,800	28,200	5-7/8	30	22	3 To 5
32,100	26,800	25,400	6-1/2	22	18	3 To 5-1/2
30,700	25,800	24,400	6-3/4	26	22	3 To 6
30,100	25,200	23,900	7	30	26	3 To 6
29,950	24,950	23,700	7-1/8	16	14	3 To 6
27,800	23,200	21,950	7-1/2	30	28	4 To 6-1/2
26,200	21,900	20,600	8	22	22	4 To 7
24,300	20,300	19,200	8-5/8	26	28	4 To 7
23,300	19,400	18,400	9	16	18	4 To 7
22,200	18,500	17,600	9-1/2	22	26	4 To 7
20,700	17,200	16,300	10-1/8	22	28	4 To 7
20,400	16,900	16,100	10-1/4	14	18	4 To 7
19,100	15,900	15,100	11	16	22	4 To 7
16,700	13,950	13,200	12-5/8	14	22	4 To 7
16,200	13,500	12,800	13	16	26	4 To 7
14,950	12,500	11,900	14	16	28	4 To 7
14,200	11,800	11,200	14-7/8	14	26	4 To 7
13,200	10,950	10,400	16	14	28	4 To 7

Above chart for planters equipped with 7.60-15 inch drive tires and 1:1 drive sprocket ratios. Recommended tire pressure 40 PSI.

IMPORTANT: The above sprocket combinations are best for average conditions. Changes in sprocket combinations may be required to obtain desired planting population.

The size and shape of seeds will effect the planting rate. Medium round corn is generally the most preferred while small flat is the least desirable. Higher than optimum speeds may result in population rate increases or higher incedents of doubles and triples, particulary with the small flat seeds.

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

OPERATION

PLANTING RATE FOR PLATELESS SOYBEAN METERS

Approximate Pounds Per Acre					Sprocket Combinations			Recommended Speed Range In MPH
Rows					Drive Sprocket		Driven Sprocket	
10"	15"	18"-20"	30"	36"-40"				
375	250	196	125	98	30		14	3 to 5
330	220	176	110	88	26		14	3 to 5
300	200	160	100	80	30		18	3 to 5
288	192	152	96	76	22		14	3 to 5
276	184	146	92	73	26		18	3 to 5
258	172	136	86	68	30		22	3 to 5
234	156	122	78	61	22		18	3 to 5½
225	150	118	75	59	26		22	3 to 6
216	144	116	72	58	30		26	3 to 6
213	142	114	71	57	16		14	3 to 6
201	134	106	67	53	30		28	4 to 6½
189	126	100	63	50	22		22	4 to 7
174	116	92	58	46	26		28	4 to 7
165	110	88	55	44	16		18	4 to 7
162	108	86	54	43	22		26	4 to 7
150	100	80	50	40	22		28	4 to 7
147	98	78	49	39	14		18	4 to 7
144	96	76	48	38	16		22	4 to 7
129	86	68	43	34	14		22	4 to 7
123	82	66	41	33	16		26	4 to 7
120	80	64	40	32	16		28	4 to 7
111	74	60	37	30	14		26	4 to 7
105	70	56	35	28	14		28	4 to 7

Above chart for planters equipped with 7.60-15 inch drive tires and 1:1 drive sprocket ratios. Recommended tire pressure 40 PSI.

IMPORTANT: Soybean rates may vary widely depending upon size of the seed.

If lower rates are desired, special drive sprockets are available on a special order basis.

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

OPERATION

PLANTING RATE FOR PLATELESS REGULAR RATE SORGHUM METERS

Approximate Pounds Per Acre		Sprocket Combinations		Recommended Speed Range In MPH
30 Inch Rows	36 Inch To 40 Inch Rows	Drive Sprocket	Driven Sprocket	
21.0	16.7	30	14	2 To 3
17.5	13.9	26	14	2 To 3½
16.2	12.9	30	18	3 To 4
15.1	12.0	22	14	3 To 4½
13.8	10.9	26	18	3 To 4½
12.9	10.2	30	22	3 To 5
11.8	9.4	22	18	3 To 5½
11.2	8.9	26	22	3 To 6
11.1	8.8	30	26	3 To 6
10.9	8.6	16	14	3 To 6
10.0	7.9	30	28	4 To 6½
9.6	7.9	22	22	4 To 7
9.1	7.2	26	28	4 To 7½
8.8	7.0	16	18	4 To 8
8.5	6.7	22	26	4 To 8
8.0	6.3	22	28	4 To 8
7.9	6.3	14	18	4 To 8
7.6	6.0	16	22	4 To 8
7.0	5.6	14	22	4 To 8
6.8	5.4	16	26	4 To 8
6.3	5.0	16	28	4 To 8
6.2	4.9	14	26	4 To 8
5.9	4.7	14	28	4 To 8

Above chart for planters equipped with 7.60-15 inch drive tires and 1:1 drive sprocket ratios. Recommended tire pressure 40 PSI.

IMPORTANT: To prevent miscalculations, make field checks to be sure you are planting at the desired rate.

OPERATION

PLANTING RATE FOR PLATELESS LOW RATE SORGHUM METERS

Approximate Pounds Per Acre		Sprocket Combinations		Recommended Speed Range In MPH
30 Inch Rows	36 Inch to 40 Inch Rows	Drive Sprocket	Driven Sprocket	
6.2	4.9	30	14	2 to 3
5.4	4.3	26	14	2 to 3½
4.8	3.8	30	18	3 to 4
4.6	3.6	22	14	3 to 4½
4.2	3.3	26	18	3 to 4½
4.0	3.1	30	22	3 to 5
3.6	2.8	22	18	3 to 5½
3.4	2.7	26	22	3 to 6
3.4	2.7	30	26	3 to 6
3.3	2.6	16	14	3 to 6
3.1	2.4	30	28	4 to 6½
2.9	2.3	22	22	4 to 7
2.7	2.1	26	28	4 to 7
2.6	2.1	16	18	4 to 7
2.5	2.0	22	26	4 to 7
2.3	1.8	22	28	4 to 7
2.3	1.8	14	18	4 to 7
2.1	1.7	16	22	4 to 7
1.9	1.5	14	22	4 to 7
1.8	1.4	16	26	4 to 7
1.7	1.3	16	28	4 to 7
1.6	1.2	14	26	4 to 7
1.5	1.2	14	28	4 to 7

Above chart for planters equipped with 7:60-15 inch drive tires and 1:1 drive sprocket ratios. Recommended tire pressure 40 PSI.

IMPORTANT: To prevent planting miscalculation, make field checks to be sure you are planting at the desired rate

OPERATION

PLANTING RATE FOR PLATE TYPE DRIVE

Seed Population and Drilling Distance - 16 Cell Plate

Seed Populations Per Acre				Average Seed Placement In Inches	Sprocket Combinations		Recommended Speed Range In MPH
30"	36"	38"	40"		Drive Sprocket	Driven Sprocket	
30,500	25,400	24,000	22,900	6-3/4	30	14	2 to 3
26,400	22,000	20,900	19,800	8	26	14	2 to 3-1/2
23,700	19,700	18,700	17,800	8-3/4	30	18	3 to 4
22,400	18,600	17,700	16,800	9-1/4	22	14	3 to 4-1/2
20,600	17,100	16,200	15,400	10-1/4	26	18	3 to 5
19,400	16,100	15,300	14,500	10-3/4	30	22	3 to 5
17,400	14,500	13,700	13,000	12	22	18	3 to 6
16,800	14,000	13,300	12,600	12-1/2	26	22	3 to 6
16,400	13,700	13,000	12,300	12-3/4	30	26	3 to 6
16,300	13,500	12,800	12,200	13	16	14	3 to 6
15,200	12,700	12,000	11,400	13-3/4	30	28	4 to 6-1/2
14,200	11,800	11,200	10,700	14-3/4	22	22	4 to 7
13,200	11,000	10,400	9,900	15-3/4	26	28	4 to 7-1/2
12,600	10,500	10,000	9,500	16-1/2	16	18	4 to 8
12,000	10,000	9,500	9,000	17-1/2	22	26	4 to 8
11,200	9,300	8,800	8,400	18-3/4	22	28	4 to 8
11,000	9,200	8,700	8,300	19	14	18	4 to 8
10,900	9,000	8,200	7,800	20-1/4	16	22	4 to 8
9,000	7,500	7,100	6,800	23	14	22	4 to 8
8,700	7,300	6,900	6,600	24	16	26	4 to 8
8,100	6,800	6,400	6,100	25-3/4	16	28	4 to 8
7,700	6,400	6,000	5,700	27-1/4	14	26	4 to 8
7,100	5,900	5,600	5,300	29-1/2	14	28	4 to 8

For 32-inch rows, multiply plant population per acre in 30-inch row spacing column by 0.9375.
For 34-inch rows, multiply plant population per acre in 30-inch row spacing column by 0.8824.
For 32 cell seed plate, multiply population by 2; divide drilling distance by 2.
For 48 cell seed plate, multiply population by 3; divide drilling distance by 3.
For 64 cell seed plate, multiply population by 4; divide drilling distance by 4.

Above chart for planters equipped with 7.60-15 inch drive tires and 1:1 drive sprocket ratios. Recommended tire pressure 40 PSI.

IMPORTANT: The above sprocket combinations are best for average conditions. Changes in sprocket combinations may be required to obtain desired planting population.

The size and shape of seeds will effect the planting rate. Medium round corn is generally the most preferred while small flat is the least desirable. Higher than optimum speeds may result in population rate increases or higher incedents of doubles and triples, particularly with the small flat seeds.

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

OPERATION

PLANTING RATE FOR PLATE TYPE DRIVE

Seed Population and Drilling Distance - 24 Cell Plate

Seed Populations Per Acre				Average Seed Placement In Inches	Sprocket Combinations		Recommended Speed Range In MPH
30"	36"	38"	40"		Drive Sprocket	Driven Sprocket	
45,700	38,100	36,100	34,300	4-1/2	30	14	2 to 3
39,700	33,100	31,300	29,800	5-1/4	26	14	2 to 3-1/2
35,500	29,600	28,000	26,600	6	30	18	3 to 4
33,500	27,900	26,500	25,100	6-1/4	22	14	3 to 4-1/2
30,800	25,700	24,300	23,100	6-3/4	26	18	3 to 5
29,100	24,300	23,000	21,800	7-1/4	30	22	3 to 5
26,100	21,800	20,600	19,600	8	22	18	3 to 6
25,200	21,000	19,900	18,900	8-1/4	26	22	3 to 6
24,600	20,500	19,400	18,400	8-1/2	30	26	3 to 6
24,400	20,300	19,300	18,300	8-1/2	16	14	3 to 6
22,900	19,100	18,100	17,200	9-1/4	30	28	4 to 6-1/2
21,300	17,800	16,800	16,000	9-3/4	22	22	4 to 7
19,800	16,500	15,600	14,900	10-1/2	26	28	4 to 7-1/2
19,000	15,800	15,000	14,200	11	16	18	4 to 8
18,000	15,000	14,200	13,500	11-1/2	22	26	4 to 8
16,800	14,000	13,200	12,600	12-1/2	22	28	4 to 8
16,600	13,800	13,100	12,400	12-1/2	14	18	4 to 8
15,500	12,900	12,300	11,600	13-1/2	16	22	4 to 8
13,600	11,300	10,700	10,200	15-1/2	14	22	4 to 8
13,100	10,900	10,300	9,800	16	16	26	4 to 8
12,200	10,100	9,600	9,100	17-1/4	16	28	4 to 8
11,500	9,600	9,100	8,600	18-1/4	14	26	4 to 8
10,700	8,900	8,400	8,000	19-1/2	14	28	4 to 8

For 12 cell seed plate, divide population by 2; multiply drilling distance by 2.
For 36 cell seed plate, multiply population by 1.5; divide drilling distance by 1.5

Above chart for planters equipped with 7.60-15 inch drive tires and 1:1 drive sprocket ratios. Recommended tire pressure 40 PSI.

IMPORTANT: The above sprocket combinations are best for average conditions. Changes in sprocket combinations may be required to obtain desired planting populations.

The size and shape of seeds will effect the planting rate. Medium round corn is generally the most preferred while small flat is the least desirable. Higher than optimum speeds may result in population rate increases or higher incedents of doubles and triples, particulary with the small flat seeds.

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

OPERATION

DRY INSECTICIDE APPLICATION RATES

Clay Granules Approximate Rate In Pounds Per Acre At 5 MPH			
Meter Setting	30 Inch Rows	36 Inch Rows	38 Inch Rows
10	4.1	3.4	3.3
12	5.4	4.5	4.3
14	6.8	5.7	5.4
16	8.1	6.8	6.5
18	9.4	7.9	7.5
20	10.7	9.0	8.5
22	12.1	10.1	9.6
24	13.4	11.2	10.6
26	14.7	12.3	11.6
28	16.1	13.4	12.7
30	18.1	15.1	14.3
32	20.1	16.8	15.8
34	22.7	19.0	18.0
36	25.4	21.2	20.1

Sand Granules Approximate Rate In Pounds Per Acre At 5 MPH			
Meter Setting	30 Inch Rows	36 Inch Rows	38 Inch Rows
6	4.8	4.0	3.8
8	6.8	5.7	5.4
10	8.6	7.2	6.8
12	10.5	8.7	8.3
14	12.1	10.1	9.6
16	13.7	11.4	10.8
18	16.1	13.4	12.7
20	18.5	15.4	14.6
22	21.4	17.9	16.9
24	24.1	20.1	19.1
26	28.1	23.4	22.2

Variations in pounds per acre may occur with changes in seed planting rates.

Rate is affected by changes in temperature and climatic conditions. Changes in speed or field conditions may also affect metering rates.

IMPORTANT: To prevent application miscalculations, make field checks to be sure you are applying at the desired rate.

OPERATION

DRY HERBICIDE APPLICATIONS RATES

Clay Granules Approximate Rate In Pounds Per Acre At 5 MPH			
Meter Setting	30 Inch Rows	36 Inch Rows	38 Inch Rows
6	4.1	3.4	3.3
8	5.4	4.5	4.3
10	6.7	5.6	5.3
12	8.1	6.7	6.4
14	9.4	7.9	7.5
16	10.7	8.1	8.6
18	12.1	10.1	9.6
20	13.4	11.2	10.6
22	14.4	12.3	11.7
24	16.1	14.5	12.7
26	18.7	15.6	14.8
28	20.4	17.1	16.2
30	23.4	19.5	18.5

Variations in pounds per acre may occur with changes in seed planting rates.

Rate is affected by changes in temperature and climatic conditions. Changes in speed or field conditions may also affect metering rates.

IMPORTANT: To prevent application miscalculations, make field checks to be sure you are applying at the desired rate.

OPERATION

DRY FERTILIZER APPLICATION RATES

Approximate Rate in Pounds Per Acre					
Drive Sprocket	Driven Sprocket	30 Inch Rows	36 Inch Rows	38 Inch Rows	40 Inch Rows
18	36	87	73	68	65
18	30	101	85	79	76
24	36	127	107	99	95
24	30	151	129	118	113
18	18	181	152	141	136
18	16	208	175	162	156
36	30	215	180	168	161
24	18	242	203	189	181
24	16	269	225	210	201
36	18	357	300	278	267
36	16	390	327	304	293

NOTE: Calculated using 7:60 x 15 drive tire with 40 PSI and averaging 95" of planter travel per revolution of drive gauge tire.

This chart was calculated with a bulk density of 65 pounds per cubic foot.

To check the exact number of pounds your fertilizer attachment will actually deliver on a 40 inch row spacing, proceed as follows:

Remove one spout from one of the fertilizer hoppers and attach a container under the opening. Engage the fertilizer attachment and drive forward for 130 feet. Weigh the amount of fertilizer caught in the container and multiply that amount by 100. The result will be the pounds of fertilizer delivered per acre when planting in 40-inch row. To convert this delivery rate for narrow rows, multiply by the following conversion factors:

30" Multiply by 1.33 36" Multiply by 1.11 38" Multiply by 1.05

OPERATION

LIQUID FERTILIZER APPLICATION RATES

Driver	Driven	ROW SPACE Gal. Per Acre				Driver	Driven	ROW SPACE Gal. Per Acre			
		40	38	36	30			40	38	36	30
8	9	19.1	20.4	21.0	25.3	22	23	20.6	22.0	22.7	27.2
8	10	17.2	18.3	18.9	22.7	22	26	18.3	19.4	20.1	24.1
8	15	11.4	12.1	12.5	15.0	22	30	15.1	16.7	17.3	20.7
8	22	7.7	8.2	8.5	10.2	22	31	15.0	16.0	16.6	19.9
8	23	7.5	8.0	8.3	9.6	23	8	61.9	65.9	68.1	81.7
8	26	6.7	7.1	7.3	8.8	23	9	55.0	58.6	60.5	72.6
8	30	5.8	6.2	6.4	7.7	23	10	49.4	52.6	54.4	65.3
8	31	9.9	5.9	6.1	7.4	23	15	32.8	35.0	36.2	43.4
9	8	24.1	25.6	26.5	31.8	23	22	22.6	24.0	24.8	29.8
9	10	19.3	20.6	21.3	25.5	23	26	18.9	20.1	20.8	25.0
9	15	12.9	13.7	14.2	17.0	23	30	16.5	17.6	18.2	21.8
9	22	8.8	9.4	9.7	11.6	23	31	15.9	16.9	17.5	21.0
9	23	8.4	8.9	9.2	11.1	26	8	69.8	74.3	76.8	92.2
9	26	7.5	8.0	8.3	9.9	26	9	62.1	66.1	68.3	81.7
9	30	6.4	6.9	7.1	8.5	26	10	55.9	59.5	61.5	73.8
9	31	6.2	6.6	6.9	8.2	26	15	37.2	39.6	40.9	49.1
10	8	26.9	28.6	29.6	35.5	26	22	25.4	27.0	27.9	33.5
10	9	23.9	25.4	26.2	31.5	26	23	24.3	25.8	26.7	32.1
10	15	14.4	15.3	15.8	19.0	26	30	19.3	19.7	20.3	24.4
10	22	9.7	10.3	10.6	12.8	26	31	18.1	19.0	19.6	23.5
10	23	9.2	9.8	10.2	12.2	30	8	80.1	85.8	88.7	106.4
10	26	8.2	8.7	9.0	10.8	30	9	71.6	76.2	78.7	94.5
10	30	7.1	7.5	7.8	9.4	30	10	64.5	68.6	70.9	85.1
10	31	6.9	7.3	7.6	9.1	30	15	43.0	45.7	47.3	56.7
15	8	40.4	43.0	44.5	53.3	30	22	29.2	31.1	32.2	38.6
15	9	35.9	38.2	39.5	47.4	30	23	27.9	29.7	30.7	36.9
15	10	32.2	34.3	35.5	42.6	30	26	24.7	26.3	27.2	32.6
15	22	14.6	15.6	16.1	19.3	30	31	20.8	22.0	22.7	27.2
15	23	14.0	14.9	15.4	18.4	31	8	83.2	88.5	91.5	109.8
15	26	12.5	13.3	13.7	16.5	31	9	73.9	78.7	81.3	97.6
15	30	10.7	11.4	11.8	14.2	31	10	66.6	70.9	73.3	88.0
15	31	10.3	11.0	11.3	13.6	31	15	44.5	47.1	48.7	58.4
22	8	59.1	62.9	65.0	78.0	31	22	30.3	32.0	33.1	39.7
22	9	52.4	55.8	57.7	69.2	31	23	29.0	30.6	31.7	38.0
22	10	47.3	50.3	52.0	62.4	31	26	25.6	27.2	28.1	33.8
22	15	31.4	33.4	34.5	41.4	31	30	22.1	23.6	24.5	29.2

Approximate application rates using 7.60 x 15 drive tire at 40 PSI and averaging 95" of planter travel per revolution of drive gauge tire.
Based on a solution weighing 10 pounds per gallon.

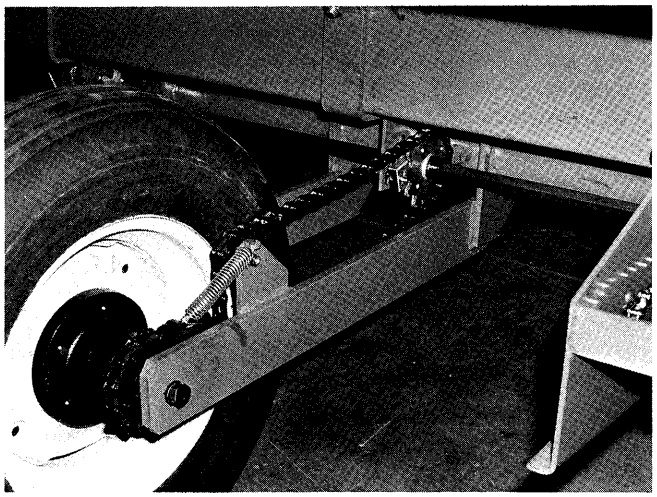
MAINTENANCE

Mounting Bolts and Hardware

Before operating the planter for the first time, check to be sure all nuts and bolts are tight. Check all nuts and bolts again after approximately the fist 50 hours of operation and at the beginning of each planting season thereafter.

All bolts used on the Kinze planter are Grade 5 (high strength) unless otherwise noted. Refer to the torque value chart in the Assembly Section of this manual when tightening bolts.

NOTE: Overtightening bolts can cause as much damage as undertightening. Tightening a bolt beyond the recommended range can reduce its shock load capacity.

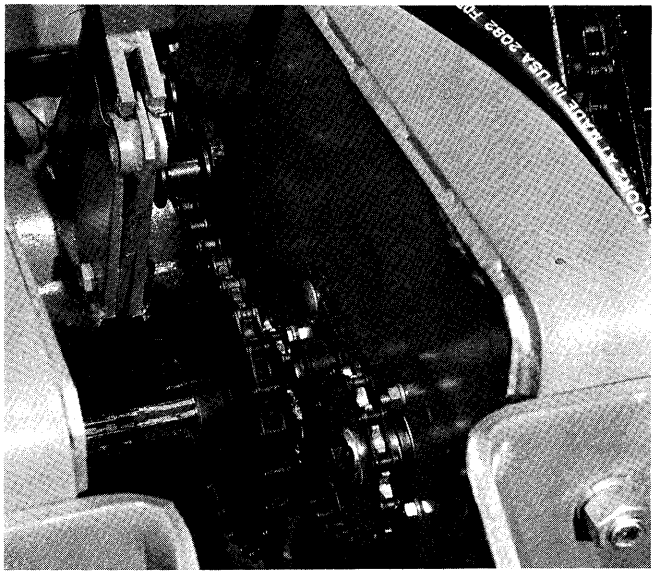


Chain Tension Adjustment

Drive chains from the drive gauge wheels to the clutch assembly are equipped with spring tensioned idlers to minimize chain adjustment.

All other idlers are held in a fixed position by a carriage bolt, washers and hex nut. To increase chain tension, loosen the nut and pivot the idler assembly against the chain to obtain sufficient tension on the longest span. Retighten hex nut.

CAUTION: Do not attempt to shorten the drive chains between the drive wheels and drive shaft. If the chain is being replaced, ensure replacement is the same length. If a shorter chain is used, there is a possibility that the drive shaft could be bent or drive chain broken when the planter is fully raised.



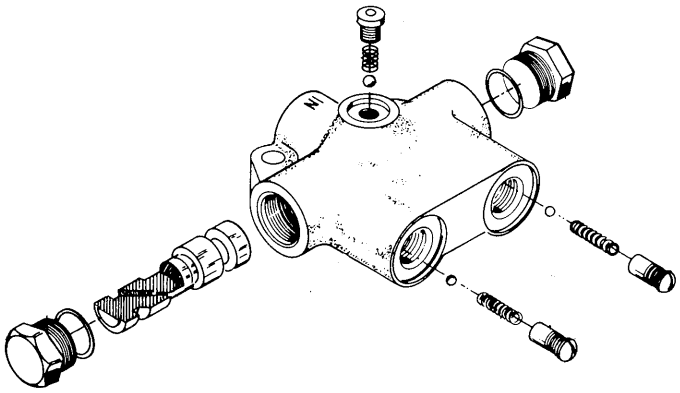
MAINTENANCE

Sequencing Valve Inspection

The sequencing valve consists of a chambered body containing a spool and a series of check valves to direct hydraulic flow. Should the valve malfunction, the components may be removed for inspection. The spool is accessable by removing either side plug and one check valve is accessable from the top of the valve body. It is necessary to disconnect the outlet hoses from the back of the valve to gain access to the remaining retainers and check valves. Inspect all parts for pitting, contamination or foreign material. Also check seating surfaces inside the valve. Replace any parts found to be defective.

IMPORTANT: Make sure correct check ball and spring are installed in each check valve bore upon reassembly.

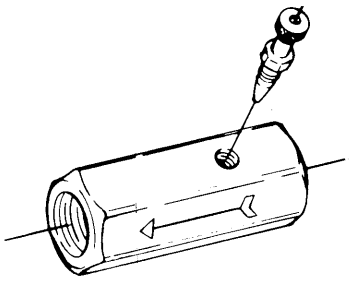
SEQUENCING VALVE



Flow Control Valve Inspection

The flow control valves should be adjusted for raise and lower speed as part of the assembly procedure or upon initial operation. If the valve fails to function properly or requires frequent adjustment, the needle valve should be removed for inspection. Check for foreign material and contamination on both the valve and the seating area of the valve body. Replace any components found to be defective.

Flow Control Valve



MAINTENANCE

Wheel or Marker Bearing Lubrication or Replacement

1. Jack tire clear of ground and remove wheel or marker disk.
2. Remove hub cap from hub.
3. Remove cotter pin, axle nut, and washer.
4. Slide hub from axle or spindle.
5. Remove bearing cups and discard if bearings are being replaced. Clean hub and dry.
6. Press in new bearing cups with thickest edge facing in.
7. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.
8. Place inner bearing in place and press in new grease seal.
9. Clean axle or spindle and install hub.
10. Install outer bearing, washer, or outer seal and slotted hex nut. Tighten slotted hex nut while rotating hub until there is some drag. This assures that all bearing surfaces are in contact. Back off slotted nut to nearest locking slot and install cotter pin.
11. Fill hub caps approximately 3/4 full of wheel bearing grease and install on hub.
12. Install wheel or disk on hub and tighten evenly and securely.

Storage

Store the planter in a dry sheltered area if possible.

Remove all trash that may be wrapped on sprockets or shafts and remove dirt that can draw and hold moisture.

Clean all drive chains and coat with a rust preventative spray, or better yet, remove chains and submerge in oil.

Lubricate planter and row units at all lubrications points.

If possible, remove weight from all tires particularly if the unit is stored outdoors, in which case it is best to remove wheels and tires for storage in a cool dry area.

Inspect the planter and row units for parts that are in need of replacement and order during the "off" season.

If the planter is equipped with a dry fertilizer attachment, clean the fertilizer hoppers, openers and all rubber spouts.

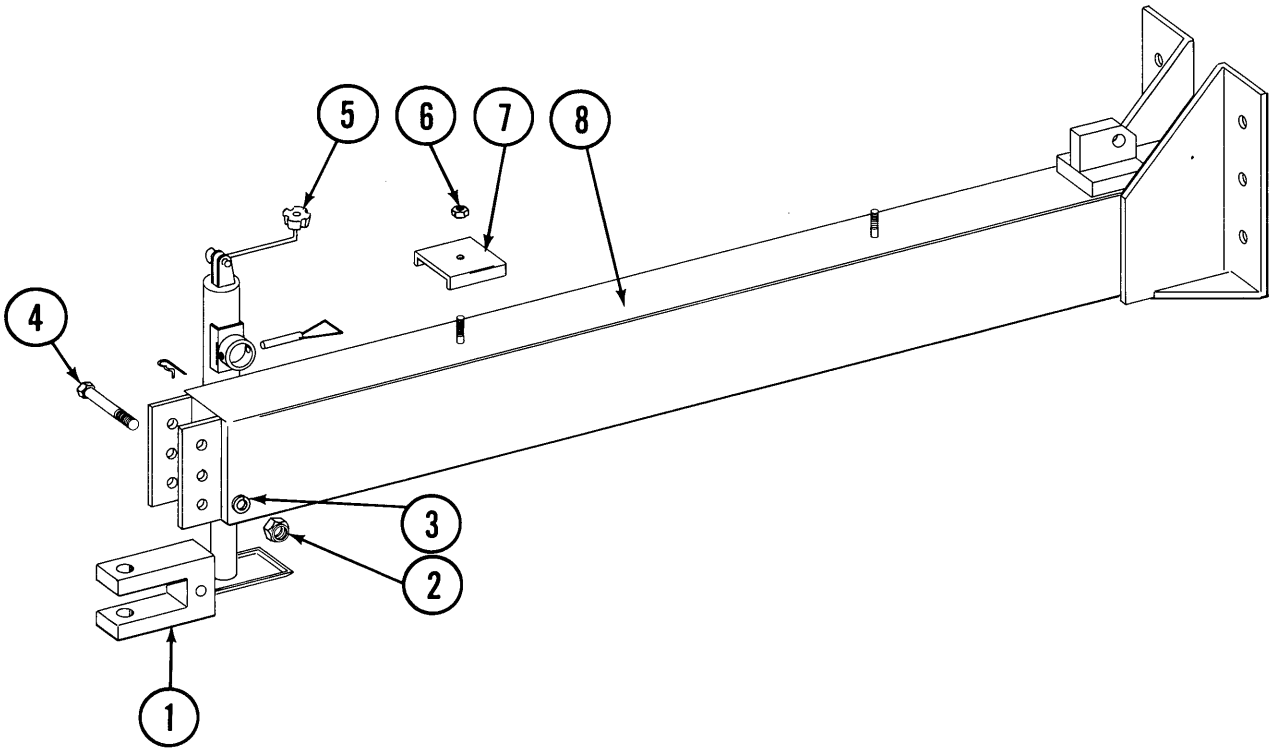
Make sure all seed, herbicide and insecticide hoppers are empty and clean.

If the planter is equipped with a liquid fertilizer attachment, open the shut off valve and flush water through the system.

Clean plateless seed meters and store in a dry area.

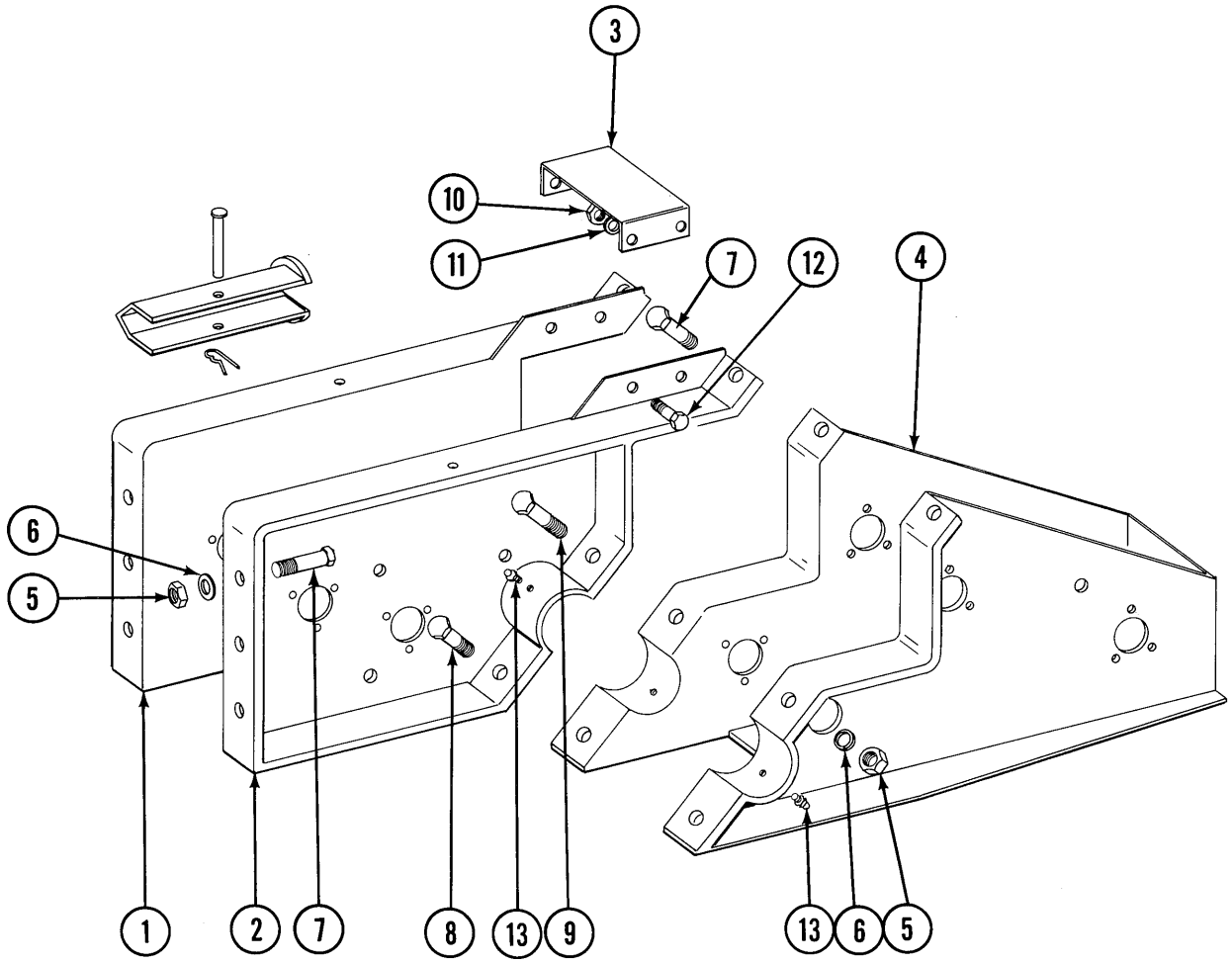
Parts List Index

TONGUE ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	A346	Clevis
2.	10105	Hex Nut, 3/4" - 10
3.	10231	Lock Washer, 3/4"
4.	10029	HHCS, 3/4" - 10 x 4 1/2"
5.	4100-1	Jack
	R255	Repair Kit (Pin and Chain)
6.	10111	Lock Nut, 1/2" - 13
7.	D740	Clamp, Hose
8.	A788	Tongue

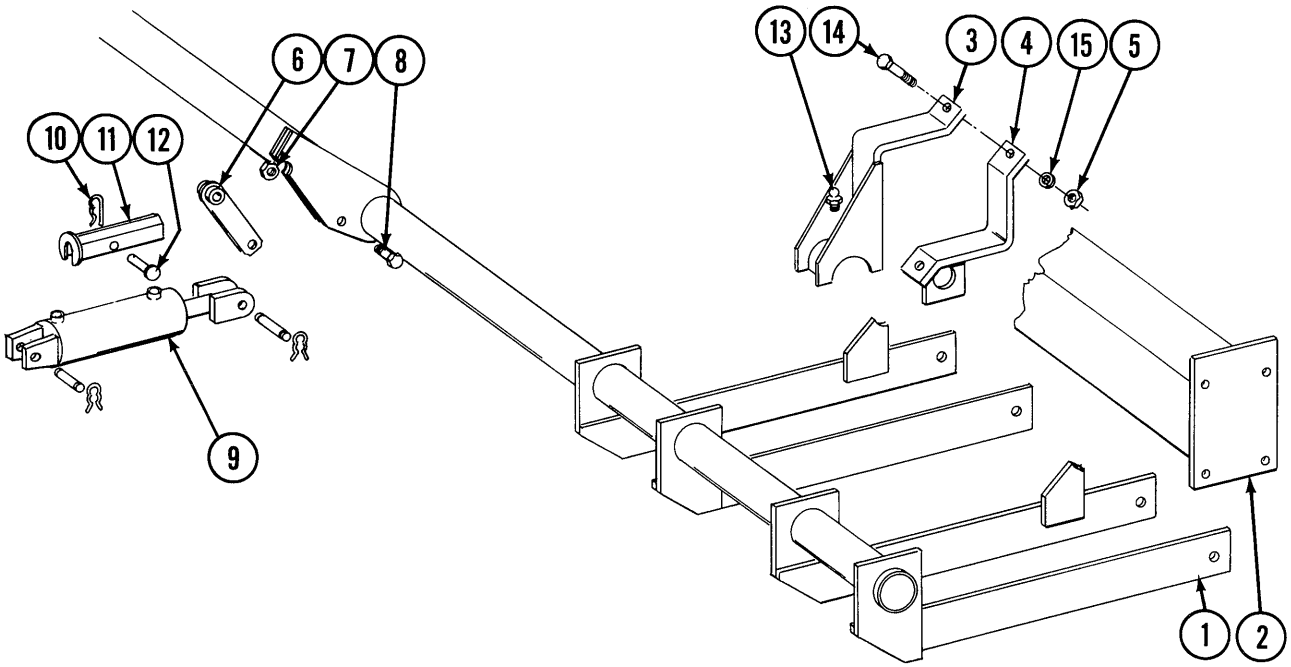
HITCH MOUNT ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	A808	Hitch Mount, R.H.
2.	A809	Hitch Mount, L.H.
3.	D965	Plate, Valve
4.	A350	Case, Transmission
5.	10105	Hex Nut, 3/4" - 10
6.	10231	Lock Washer, 3/4"
7.	10027	HHCS, 3/4" - 10 x 2 1/2"
8.	10026	HHCS, 3/4" - 10 x 2"
9.	10028	HHCS, 3/4" - 10 x 3"
10.	10106	Hex Nut, 5/16" - 18
11.	10232	Lock Washer, 5/16"
12.	10019	HHCS, 5/16" - 18 x 1", 4R30, 4RW, 6R30
	10133	HHCS, 5/16" - 18 x 1 1/2", 6RW and 8R30
13.	10641	Fitting, Grease, 1/8" NPT

FRAME AND AXLE ASSEMBLY

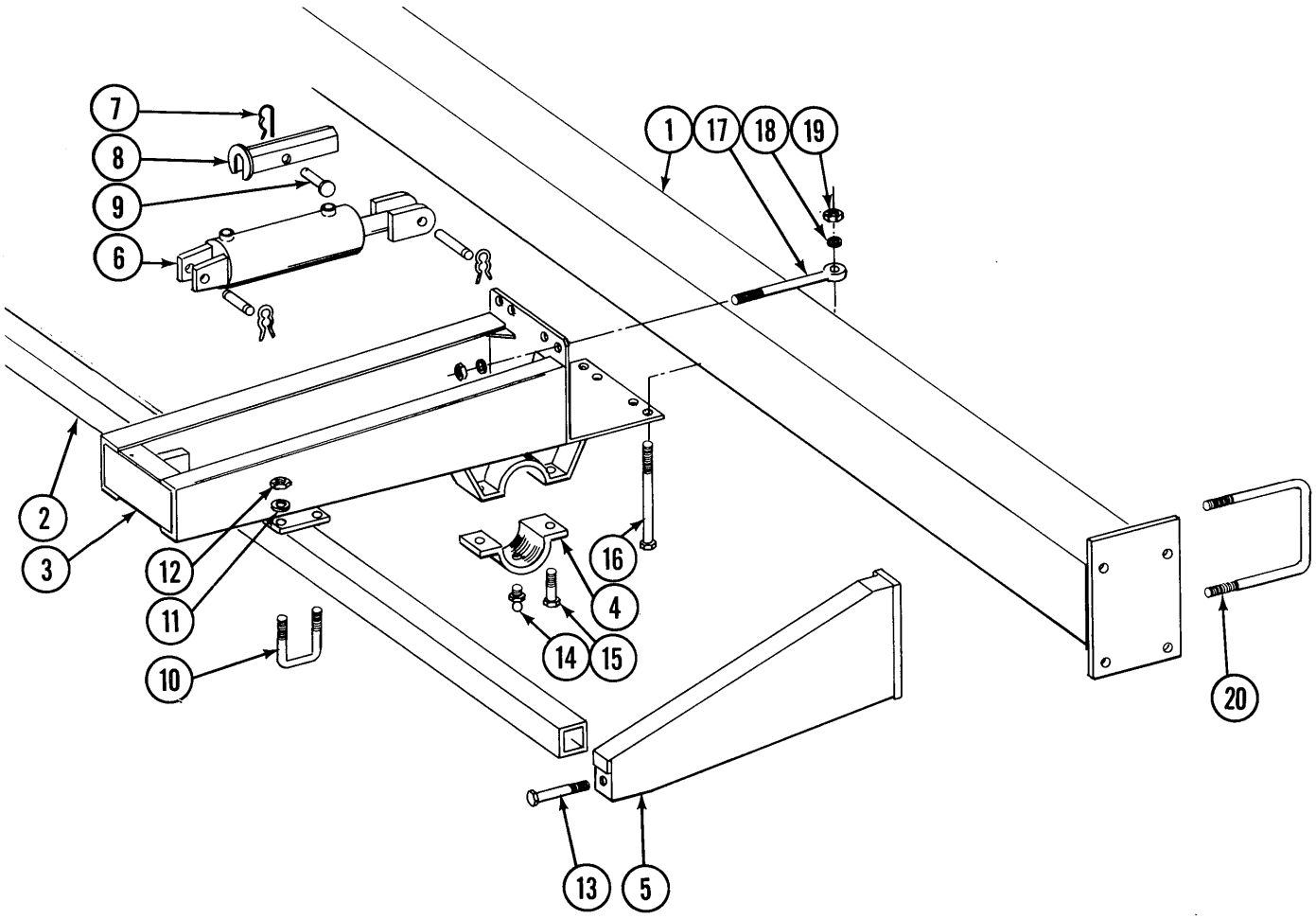
4 Row 30", 4 Row Wide
6 Row 30", 6 Row Wide



ITEM	PART NO.	DESCRIPTION
1.	A338	Axle, 4R30
	A352	Axle, 4R Wide
	A354	Axle, 6R30
	A356	Axle, 6R Wide
2.	A336	Frame, 128", 4R30
	A524	Frame, 136", 4R Wide
	A525	Frame, 169", 6R30
	A526	Frame, 214", 6R Wide
3.	A335	Axle Clamp, Front
4.	A333	Axle Clamp, Rear, L.H. (Shown)
	A332	Axle Clamp, Rear, R.H.
5.	10105	Hex Nut, 3/4" - 10
6.	A341	Mount, Cylinder
7.	10111	Lock Nut, 1/2" - 13
8.	10017	HHCS, 1/2" - 13 x 1 1/2"
9.	A1803A	Cylinder Assembly, 3 1/2" x 8"
	A1803B	Cylinder Assembly, 3 1/2" x 8"
	A747	Cylinder Assembly, 3 1/2" x 8"
10.	10670	Clip Pin, No. 3
11.	A1785	Lock Up
12.	10561	Clevis Pin, 1/2" x 3"
13.	10641	Fitting, Grease, 1/8" NPT
14.	10027	HHCS, 3/4" - 10 x 2 1/2"
15.	10231	Lock Washer, 3/4"

FRAME ASSEMBLY

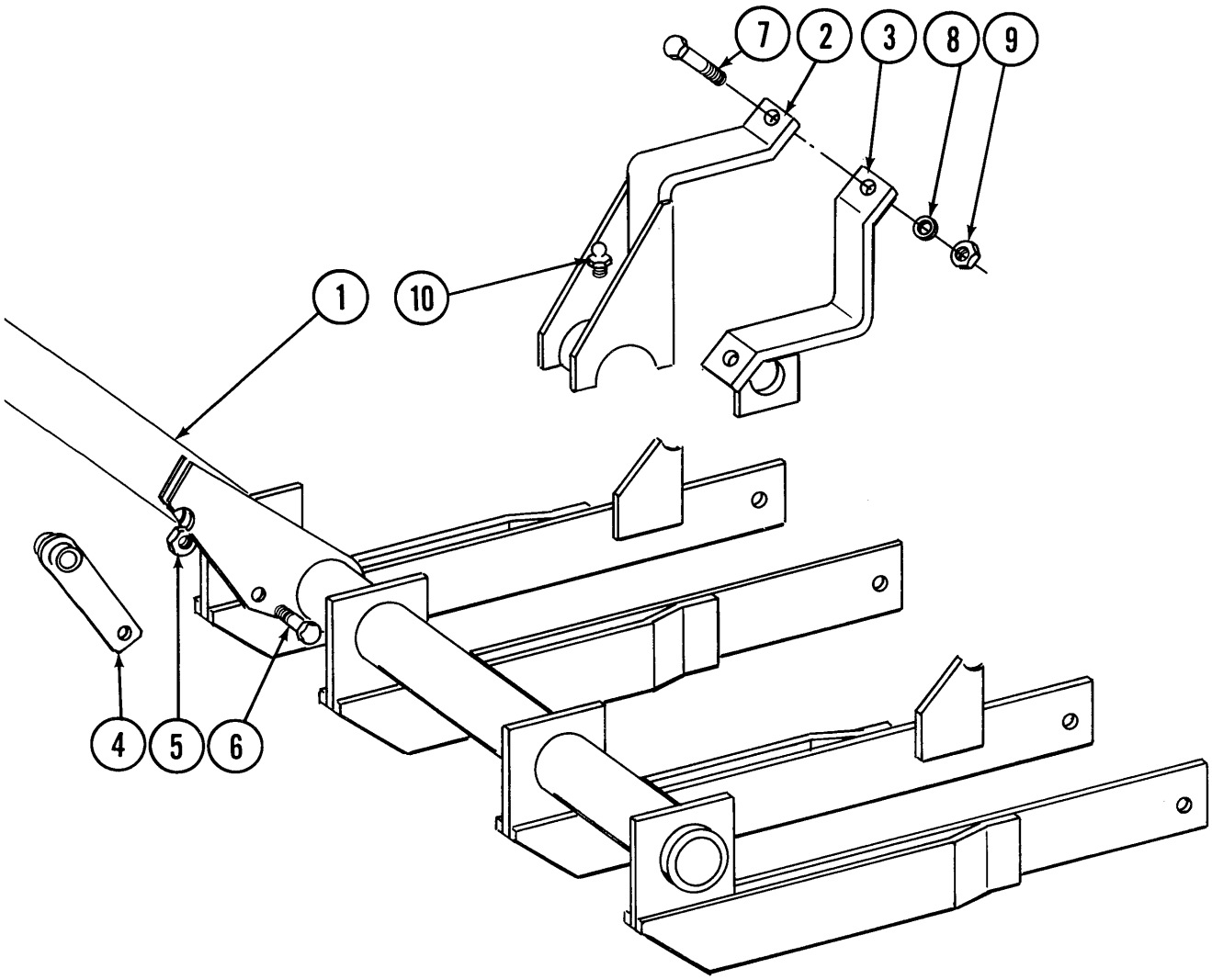
8 Row 30"



ITEM	PART NO.	DESCRIPTION
1.	A527	Frame, 229"
2.	A877	Bar, Fertilizer
3.	A880L	Bracket, Cylinder Mounting, L.H.
	A880R	Bracket, Cylinder Mounting, R.H.
4.	A663	Clamp, Half
5.	A1872	Support, Fertilizer, R.H.
	A1873	Support, Fertilizer, L.H.
6.	A1803A	Cylinder Assembly, 3 1/2" x 8"
	A1803B	Cylinder Assembly, 3 1/2" x 8"
	A747	Cylinder Assembly, 3 1/2" x 8"
7.	10670	Clip Pin, No. 3
8.	A1785	Lock Up
9.	10561	Clevis Pin, 1/2" x 3"
10.	D1138	U-bolt, 2 1/2" x 2 1/2" x 1/2" - 13
11.	10228	Lock Washer, 1/2"
12.	10102	Hex Nut, 1/2" - 13
13.	10035	HHCS, 1/2" - 13 x 4"
14.	10641	Fitting, Grease, 1/4"
15.	10027	HHCS, 3/4" - 10 x 2 1/2"
16.	10030	HHCS, 3/4" - 10 x 9"
17.	D830	Eye Bolt, 3/4" - 10 x 9"
18.	10231	Lock Washer, 3/4"
19.	10105	Hex Nut, 3/4" - 10
20.	D1748	U-bolt, 7" x 7" x 3/4" - 10

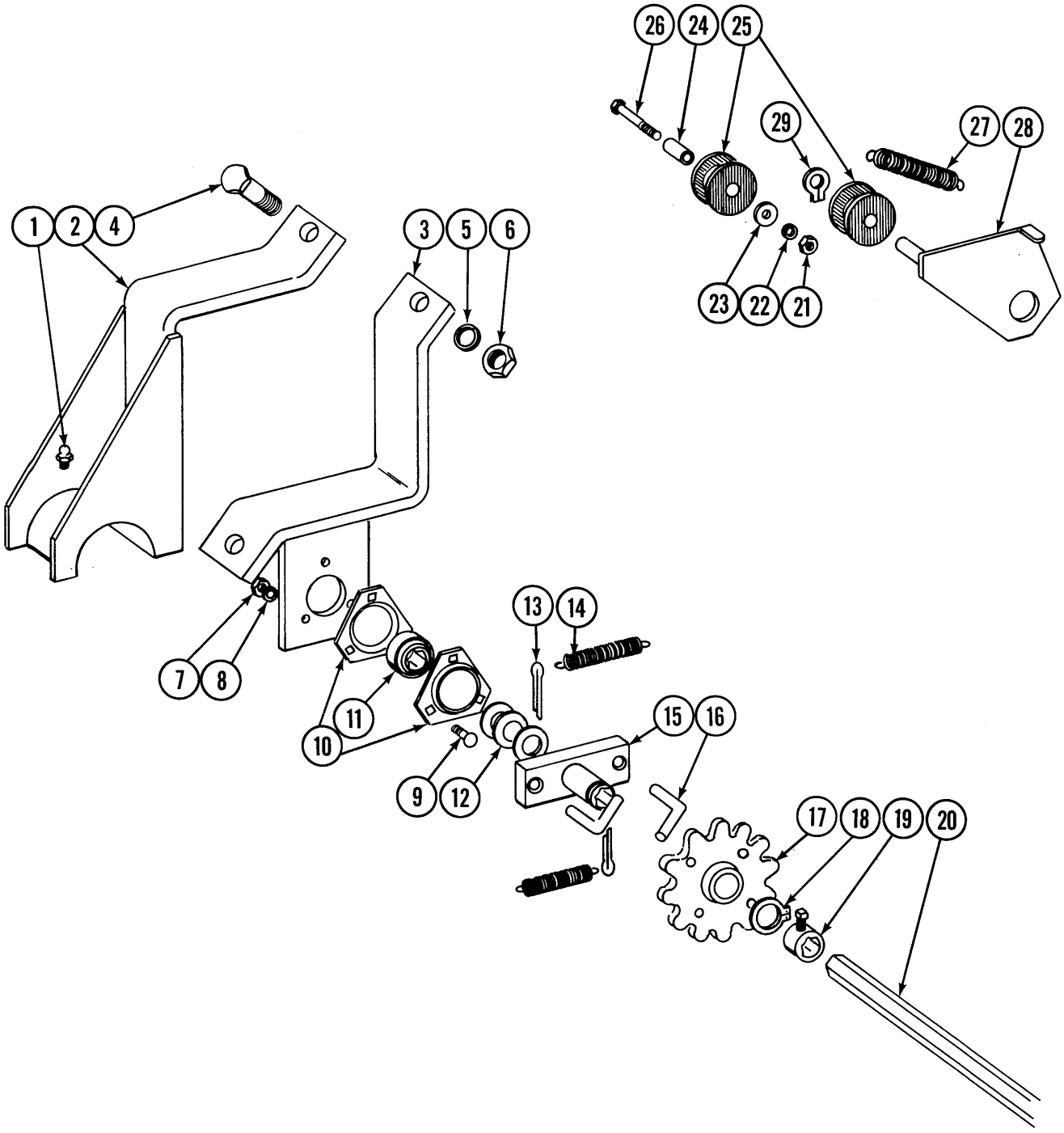
AXLE ASSEMBLY

8 Row 30"



ITEM	PART NO.	DESCRIPTION
1.	A661	Axle
2.	A335	Axle Clamp, Front
3.	A332	Axle Clamp, Rear, R.H.
	A333	Axle Clamp, Rear, L.H. (Shown)
4.	A341	Mount, Cylinder
5.	10111	Lock Nut, 1/2" - 13
6.	10017	HHCS, 1/2" - 13 x 1 1/2"
7.	10027	HHCS, 3/4" - 10 x 2 1/2"
8.	10231	Lock Washer, 3/4"
9.	10105	Hex Nut, 3/4" - 10
10.	10641	Fitting, Grease, 1/8" NPT

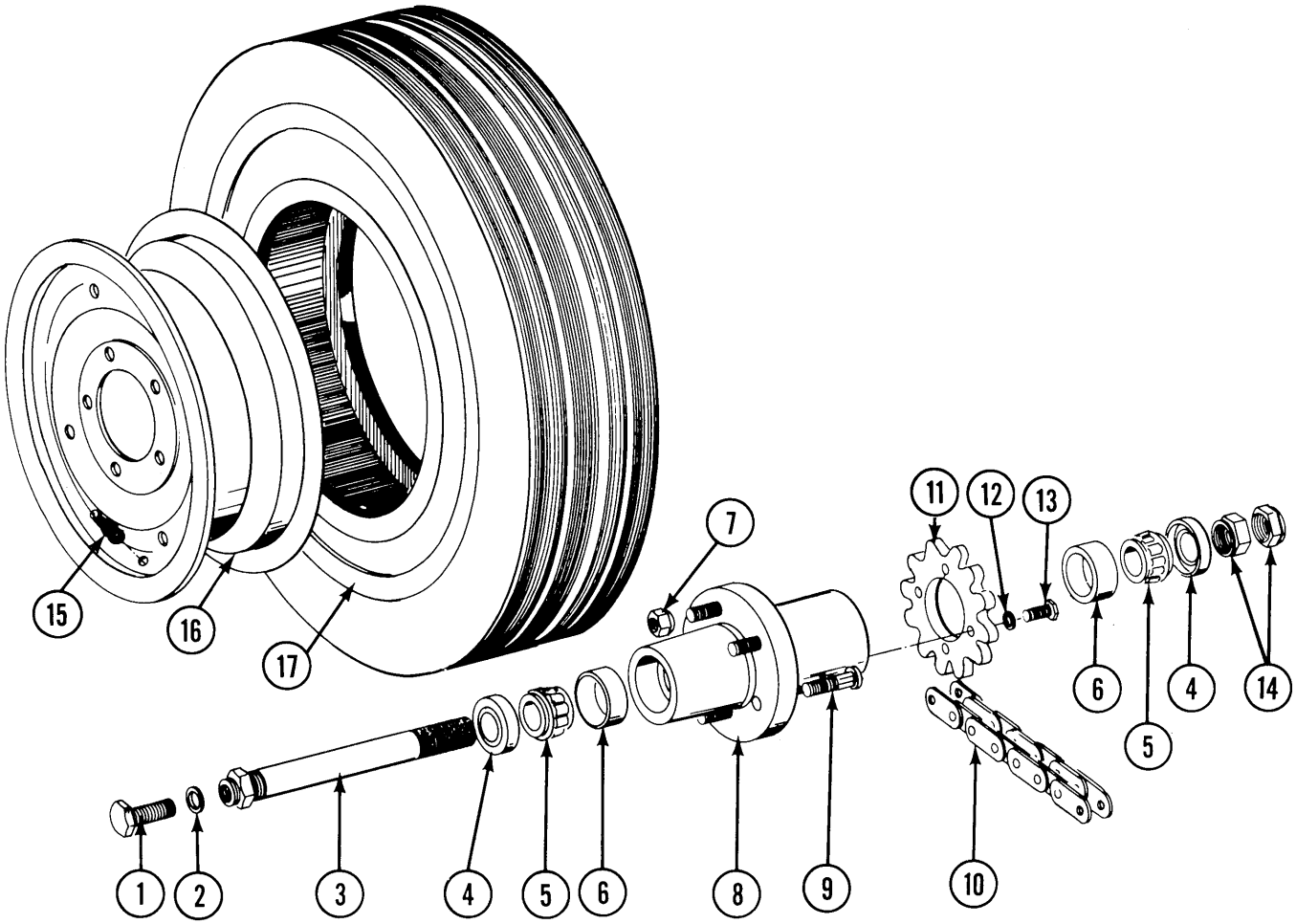
DRIVE LINE



DRIVE LINE

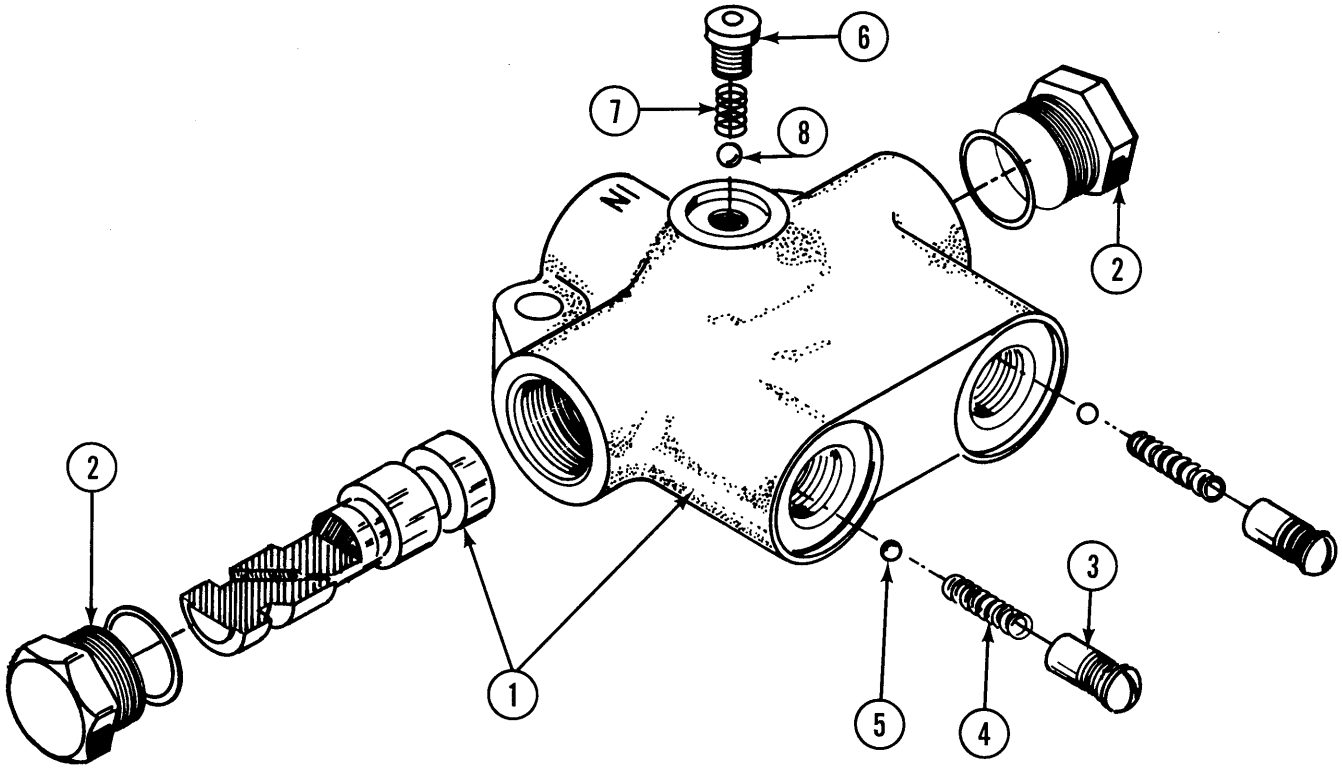
ITEM	PART NO.	DESCRIPTION
1.	10641	Fitting, Grease, 1/8" NPT
2.	A335	Axle Clamp, Front
3.	A332	Axle Clamp, Rear, R.H. (Shown)
	A333	Axle Clamp, Rear, L.H.
4.	10027	HHCS, 3/4" - 10 x 2 1/2"
5.	10231	Lock Washer, 3/4"
6.	10105	Hex Nut, 3/4" - 10
7.	10106	Hex Nut, 5/16" - 18
8.	10232	Lock Washer, 5/16"
9.	10312	Carriage Bolt, 5/16" - 18 x 3/4"
10.	3400-1	Flangette
11.	2100-3	Bearing, 7/8" Hex Bore
12.	10233	Bushing, Machinery, As Required
13.	10464	Cotter Pin, 3/16" x 1"
14.	D1256	Spring
15.	A378	Block and Hub Assembly
16.	D1255	"L" Pin
17.	A376	Hub/Sprocket Assembly
18.	10430	Ring, Retaining
19.	A271	Lock Collar
20.	D914-25	Drive Shaft, 7/8" Hex, L.H. and R.H., 4R30"
	D914-35	Drive Shaft, 7/8" Hex, L.H., 4RW
	D914-30	Drive Shaft, 7/8" Hex, R.H., 4RW
	D914-55	Drive Shaft, 7/8" Hex, L.H. and R.H., 6R30"
	D914-75	Drive Shaft, 7/8" Hex, L.H. and R.H., 6RW
	D914-85	Drive Shaft, 7/8" Hex, L.H. and R.H., 8R30"
21.	10101	Hex Nut, 3/8" - 16
22.	10229	Lock Washer, 3/8"
23.	10210	Flat Washer, 3/8" USS
24.	D973	Bushing, Idler
25.	D916	Spool
26.	10049	HHCS, 3/8" - 16 x 2 1/2"
27.	D913	Spring
28.	A819	Bracket, Idler, R.H.
	A820	Bracket, Idler, L.H. (shown)
29.	10435	Ring, Retaining
A.	A821	Idler Assembly, L.H. (Items 25, 28 and 29)
	A822	Idler Assembly, R.H. (Items 25, 28 and 29)
B.	A261L	Ratchet Assembly Complete, L.H. (Items 13 thru 18)
	A261R	Ratchet Assembly Complete, R.H. (Items 13 thru 18)

DRIVE GAUGE WHEEL ASSEMBLY



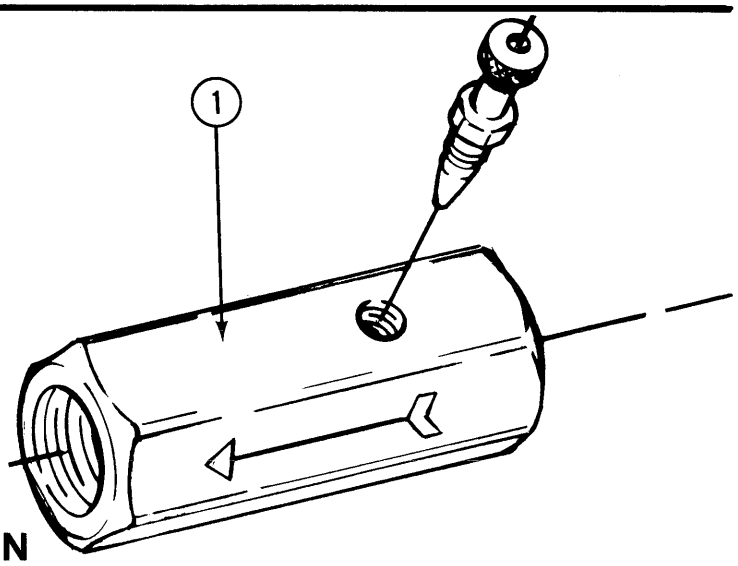
ITEM	PART NO.	DESCRIPTION
1.	10026	HHCS, 3/4" - 10 x 2"
2.	10231	Lockwasher, 3/4"
3.	A652	Spindle Weld
4.	A252	Seal, Grease
5.	A251	Bearing
6.	R190	Cup
7.	R267	Nut, Wheel, 1/2" - 20 UNF
8.	A547	Hub, w/Cups and Studs
9.	R204	Stud Wheel, 1/2" - 20 UNF x 1 7/8"
10	3200-58	Chain, No. 2050, 58 Pitch Including Connector Link
	3200-6	Chain, No. 2050 (Add to chain when using extended drill sprocket)
	R195	Connector Link, No. 2050
11.	2500-17	Sprocket, Bolt-on, 12 Tooth
12.	10232	Lockwasher, 5/16"
13.	10019	HHCS, 5/16" - 18 x 1
14.	D831	Nut, Shoulder, 1 1/4"
15.	D1166	Valve Stem
16.	A241	Wheel, 15" x 5, 5 bolt
17.	D844	Tire, 7.60 x 15", 4 ply
A.	A683	Drive Hub Assembly (Items 1-9 and 11-14)
B.	A374	Tire and Rim Assembly, 7.60 x 15" (Items 15-17)

SEQUENCING VALVE



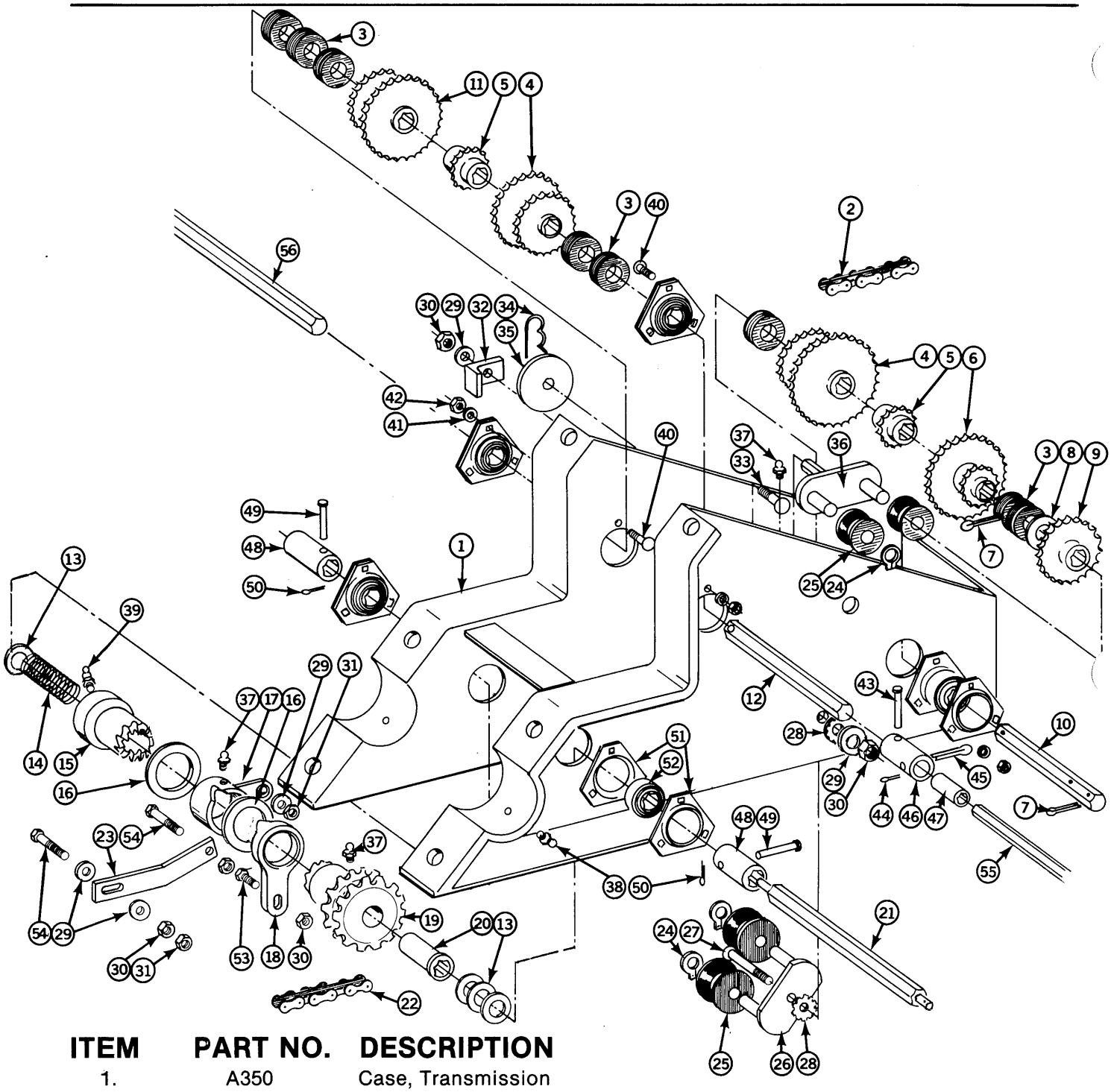
ITEM	PART NO.	DESCRIPTION
1.		Valve Body and Spool
2.	R271	Plug Assembly, O-Ring Boss
3.	R273	Retainer, Check Valve
4.	R277	Spring, Check Valve
5.	R275	Ball, Check 3/16" Diameter
6.	R274	Plug Assembly, O-Ring Boss
7.	R278	Spring
8.	R276	Ball, 1/4" Diameter
A.	A282	Sequencing Valve, Complete

FLOW CONTROL VALVE



ITEM	PART NO.	DESCRIPTION
1.	A270	Flow Control Valve Assembly, 3/8" NPT (KLF 375)

TRANSMISSION ASSEMBLY

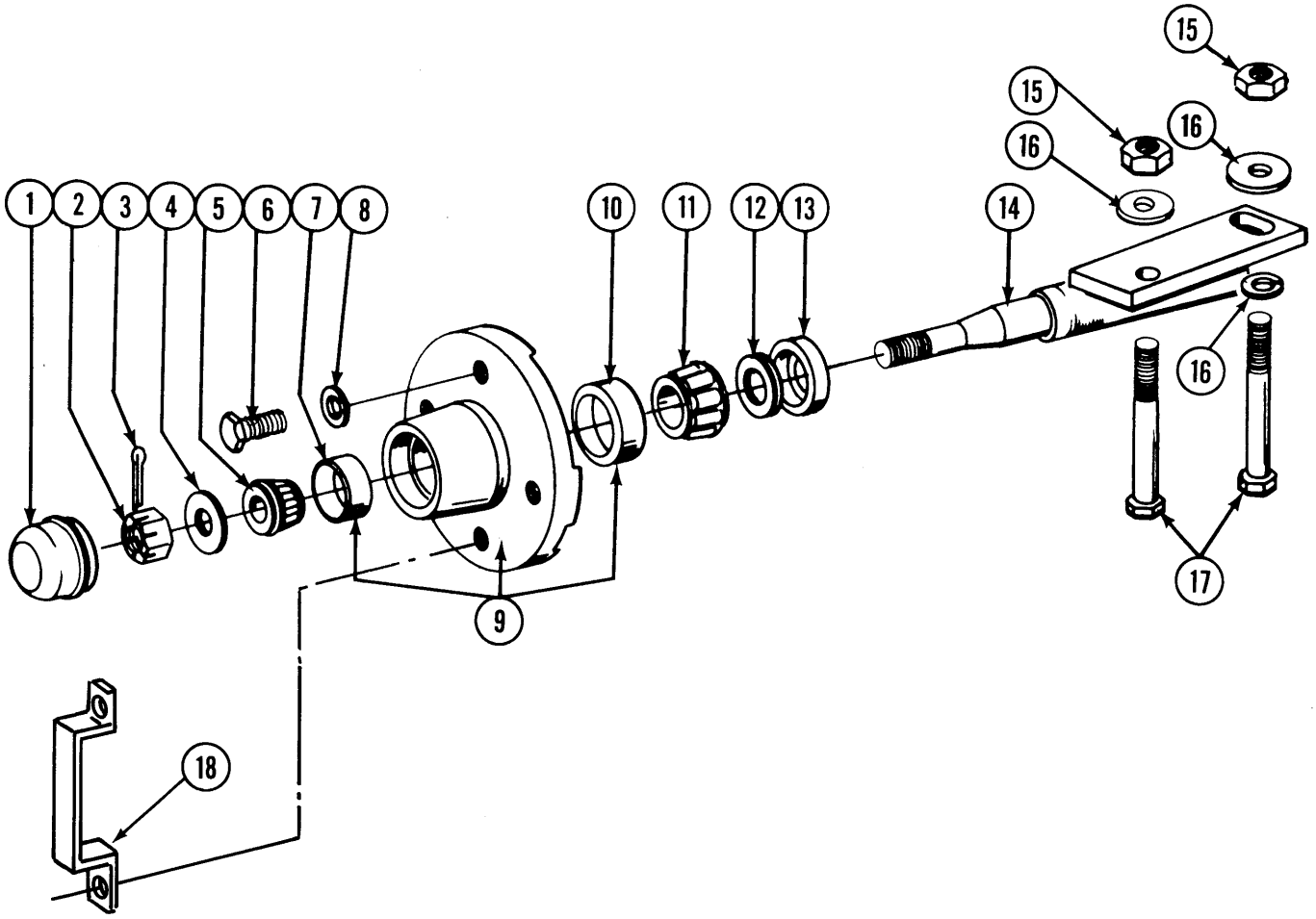


ITEM	PART NO.	DESCRIPTION
1.	A350	Case, Transmission
2.	3300-40	Chain, No. 2040, 40 Pitch Including Connector Link
	R194	Connector Link, No. 2040
3.	D832	Spacer, Rubber
4.	2500-2	Sprocket, 22T-26T
5.	2500-1	Sprocket, 14T
6.	2500-3	Sprocket, 16T - 30T
7.	10465	Cotter Pin, 1/4" x 1 1/4"
8.	10233	Bushing, Machinery, For Use With Extended Drill Sprocket Only
9.	2500-14	Sprocket, 24T
	B138	Sprocket, 48T, Extended Drill
10.	D946	Shaft, 10 3/4"
11.	2500-6	Sprocket, 18T-28T
12.	D926	Shaft, 11 1/2"

TRANSMISSION ASSEMBLY

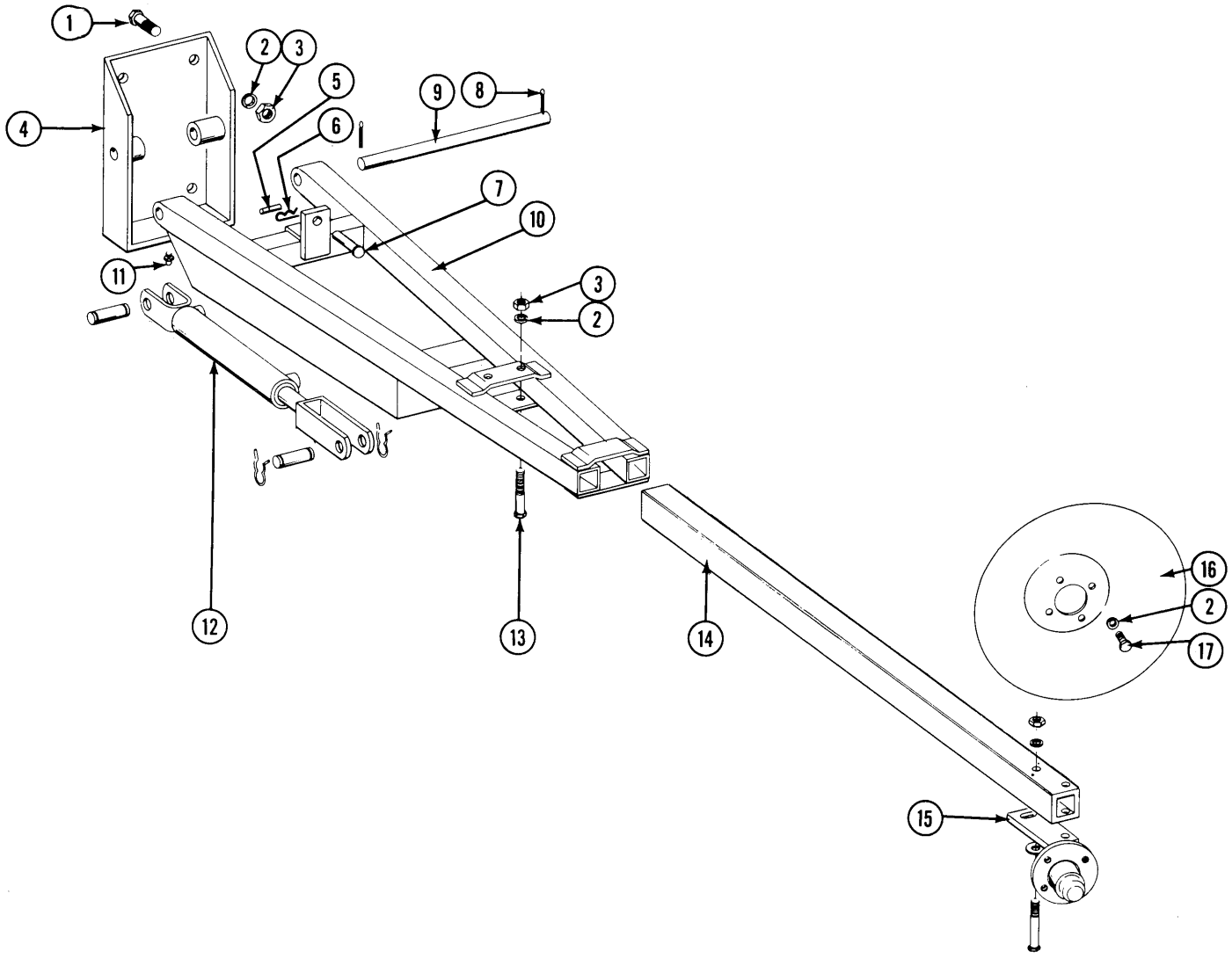
ITEM	PART NO.	DESCRIPTION
13.	10233	Bushing, Machinery
14.	D2599	Spring
15.	B158	Hub, Clutch
16.	10234	Washer, 2 5/32" I.D.
17.	B129	Cam, Floating
18.	B130	Cam, Fixed
19.	B157	Sprocket/Hub, 12T
20.	D2517	Bushing
21.	D2576	Shaft, Clutch
22.	3300-50	Chain, No. 2040, 50 Pitch Including Connector Link
	R194	Connector Link, No. 2040
	3300-6	Chain, No. 2040, Add To Chain When Using Extended Drill Sprocket
23.	D498	Bar, Linkage
24.	10435	Ring, Retaining
25.	D1067	Spool
26.	A2009	Bracket, Idler
27.	10305	Carriage Bolt, 3/8" - 16 x 1"
28.	10524	Lock Washer, Internal/External, 3/8"
29.	10210	Flat Washer, 3/8"
30.	10101	Hex Nut, 3/8" - 16
31.	10108	Hex Lock Nut, 3/8" - 16
32.	D2495	Angle, Idler Lock
33.	10301	Carriage Bolt, 3/8" - 16 x 1 1/2"
34.	10670	Hair Pin, No. 3
35.	A1668	Tightener, Chain
36.	A242	Bracket, Idler
37.	10640	Fitting, Grease, 1/4" - 28
38.	10641	Fitting, Grease, 1/8" NPT
39.	10643	Fitting, Grease, 45°, 1/4" - 28
40.	10303	Carriage Bolt, 5/16" - 18 x 1"
41.	10232	Lock Washer, 5/16"
42.	10106	Hex Nut, 5/16" - 18
43.	10548	Clevis Pin, 1/4" x 1 3/4"
44.	10466	Cotter Pin, 1/16" x 1 1/2"
45.	10462	Cotter Pin, 3/16" x 2"
46.	D748	Coupler
47.	D747	Coupler, 9/16" Hex
48.	D1653	Coupler
49.	10565	Clevis Pin, 5/16" x 2"
50.	10456	Cotter Pin, 1/8" x 3/4"
51.	3400-1	Flangette
52.	2100-3	Bearing, 7/8" Hex Bore
53.	10048	HHCS, 3/8" - 16 x 2"
54.	10047	HHCS, 3/8" - 16 x 1 3/4"
55.	D739-50	Drill Shaft, 9/16" Hex, L.H., 4R30"
	D739-60	Drill Shaft, 9/16" Hex, L.H., 4RW
	D739-80	Drill Shaft, 9/16" Hex, L.H., 6R30"
	D739-100	Drill Shaft, 9/16" Hex, L.H., 6RW
	D739-110	Drill Shaft, 9/16" Hex, L.H., 8R30"
56.	D739-40	Drill Shaft, 9/16" Hex, R.H., 4R30"
	D739-50	Drill Shaft, 9/16" Hex, R.H., 4RW
	D739-70	Drill Shaft, 9/16" Hex, R.H., 6R30"
	D739-90	Drill Shaft, 9/16" Hex, R.H., 6RW
	D739-100	Drill Shaft, 9/16" Hex, R.H., 8R30"
A.	A2008	Idler Assembly (Items 24, 25 and 26)
B.	A503	Idler Assembly (Items 24, 25 and 36)
C.	R4002	Extended Drill Sprocket Package Includes: (1) B138 (1) 3300-6 (1) 10233

MARKER HUB ASSEMBLY



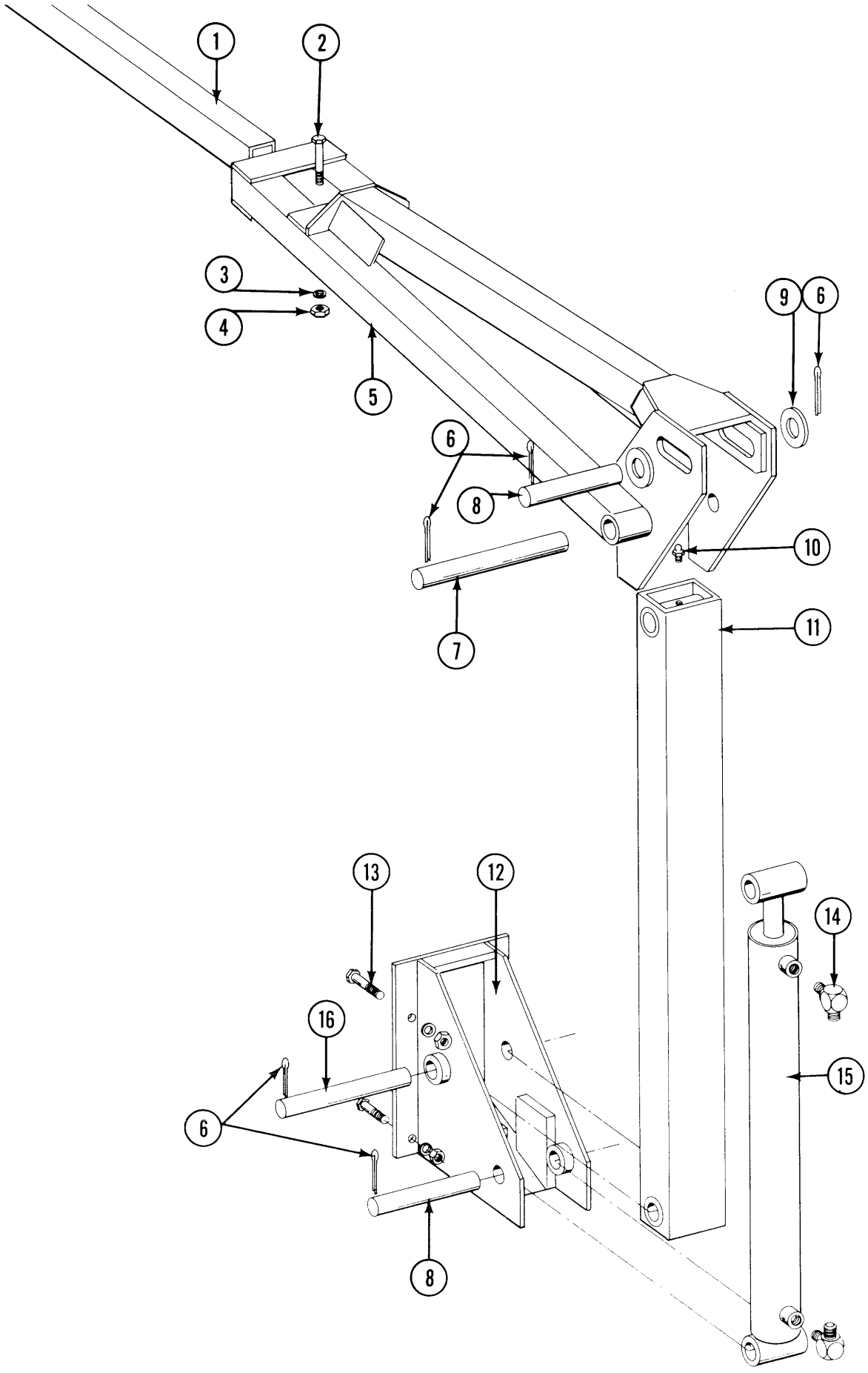
ITEM	PART NO.	DESCRIPTION
1.	D840	Hub Cap
2.	10725	Hex Nut, Slotted, 5/8" - 18
3.	10470	Cotter Pin, 5/32" x 1"
4.	10724	Washer, 5/8"
5.	A257	Bearing, Outer
6.	10722	HHCS, 1/2" - 20 x 1"
7.	R151	Cup, Outer
8.	10228	Lockwasher, 1/2"
9.	A167	Hub w/cups
10.	R150	Cup, Inner
11.	A245	Bearing Inner
12.	A899	Seal, Rubber
13.	A243	Seal, Grease
14.	A1677	Spindle Weld, L.H., Less Hardware (shown)
	A1676	Spindle Weld, R.H. Less Hardware
15.	10102	Hex Nut, 1/2" - 13
16.	10168	Machinery Bushing, 1/2" x 7 Ga.
17.	10033	HHCS, 1/2" - 13 x 3 1/2"
18.	D2597	Retainer
A.	A1679	Hub and Spindle Assembly L.H. (Items 1-14)
	A1678	Hub and Spindle Assembly R.H. (Items 1-14)

CONVENTIONAL MARKER ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	10167	HHCS, 1/2" - 13 x 2", Grade 2
2.	10228	Lockwasher, 1/2"
3.	10102	Hex Nut, 1/2" - 13
4.	A224	Marker Mount
5.	10609	Roll Pin, 5/32" x 1"
6.	10670	Hair Pin Clip, No. 3
7.	D462	Marker Lockup Pin
8.	10460	Cotter Pin, 1/4" x 2"
9.	D438	Shaft
10.	A225	Marker Arm Weld, 45", 4R30 and 4RW
	A538	Marker Arm Weld, 64", 6R30
11.	10640	Grease Fitting, 1/4" - 28
12.	A1674A	Cylinder Assembly, 2 x 8
	A1674B	Cylinder Assembly, 2 x 8
13.	10033	HHCS, 1/2" - 13 x 3 1/2"
14.	D453-1	Extension Tube, 20", 4R30
	D453-2	Extension Tube, 40", 6R30
	D453-3	Extension Tube, 50", 4RW
15.	A1679	Marker Hub Assembly, L.H. (Less Hardware)
	A1678	Marker Hub Assembly, R.H. (Less Hardware)
16.	D746	Disc, 16"
17.	10722	HHCS, 1/2" - 20 x 1"

LOW PROFILE — DOUBLE FOLD MARKER ASSEMBLY

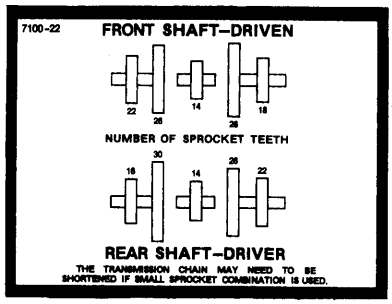


LOW PROFILE - DOUBLE FOLD MARKER ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1.	D453-3	Extension Tube, 50", 8R30
	D453-5	Extension Tube, 55", 6RW
2.	10033	HHCS, 1/2" - 13 x 3 1/2"
3.	10228	Lockwasher, 1/2"
4.	10102	Hex Nut, 1/2" - 13
5.	A831	Marker Arm, 34", 6RW
	A832	Marker Arm, 45", 8R30
6.	10460	Cotter Pin, 1/4" x 2"
7.	D1702	Pivot Pin
8.	D1701	Pin
9.	10226	Washer, 1 1/4" SAE
10.	10641	Grease Fitting, 1/8" NPT
11.	A828	Arm, First Stage
12.	A827	Marker Mount
13.	10167	HHCS, 1/2" - 13 x 2", Grade 2
14.	2501-8-8	Elbow, 90°
15.	A1659	Cylinder, 2" x 20"
16.	D653	Pin

DECALS AND REFLECTORS

1



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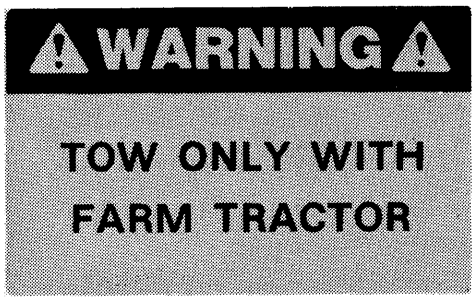

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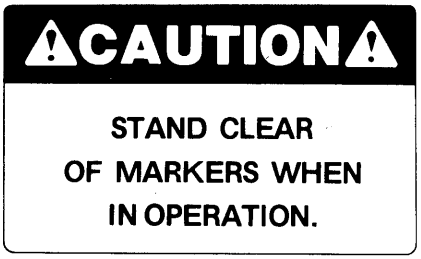

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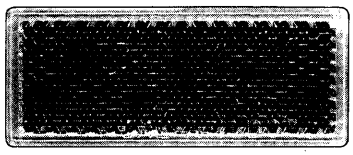
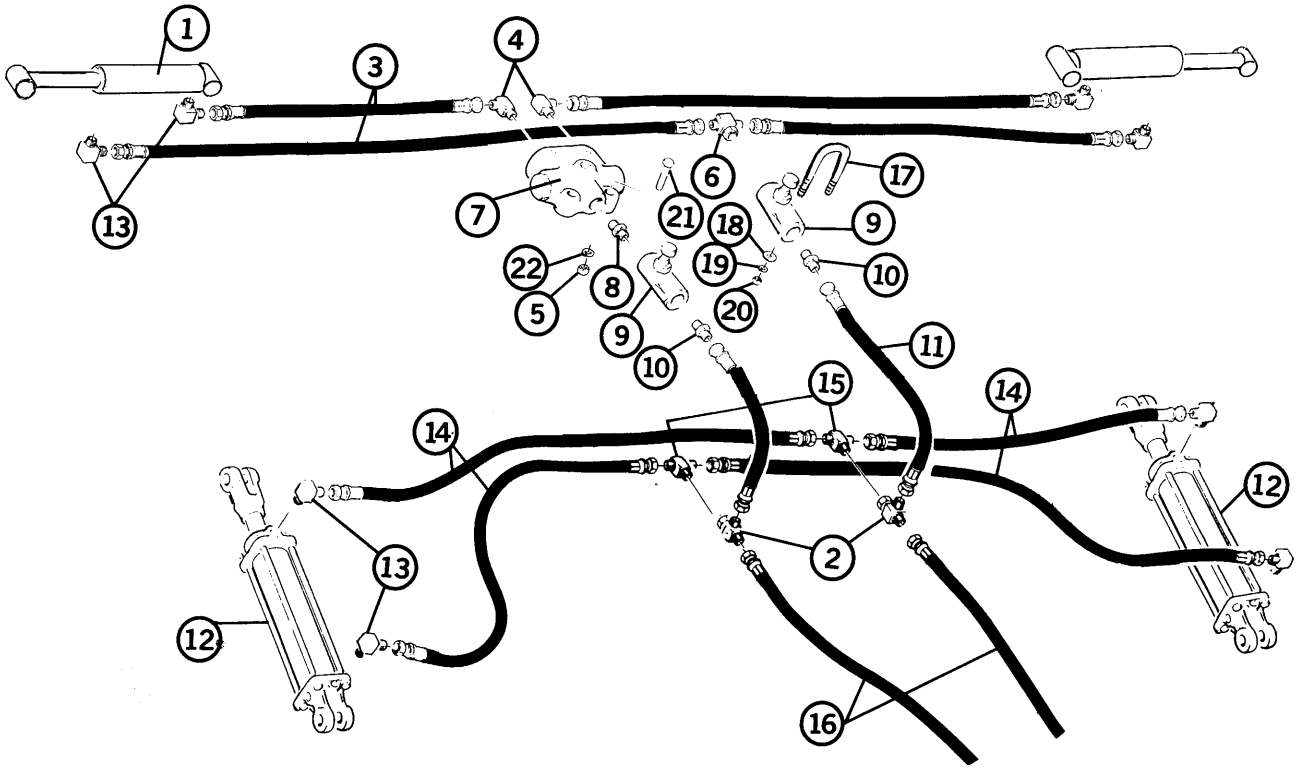


6

ITEM	PART NO.	DESCRIPTION
1.	7100-1	Decal - KINZE
2.	7100-3	Decal - Warning
3.	D937	Serial Number Plate
4.	7100-22	Decal, Sprocket Combination - Seed Drive Transmission
5.	7100-4	Decal, Caution - Markers
6.	7200-1	Reflector, Red
	7200-2	Reflector, Amber

HYDRAULIC SYSTEM

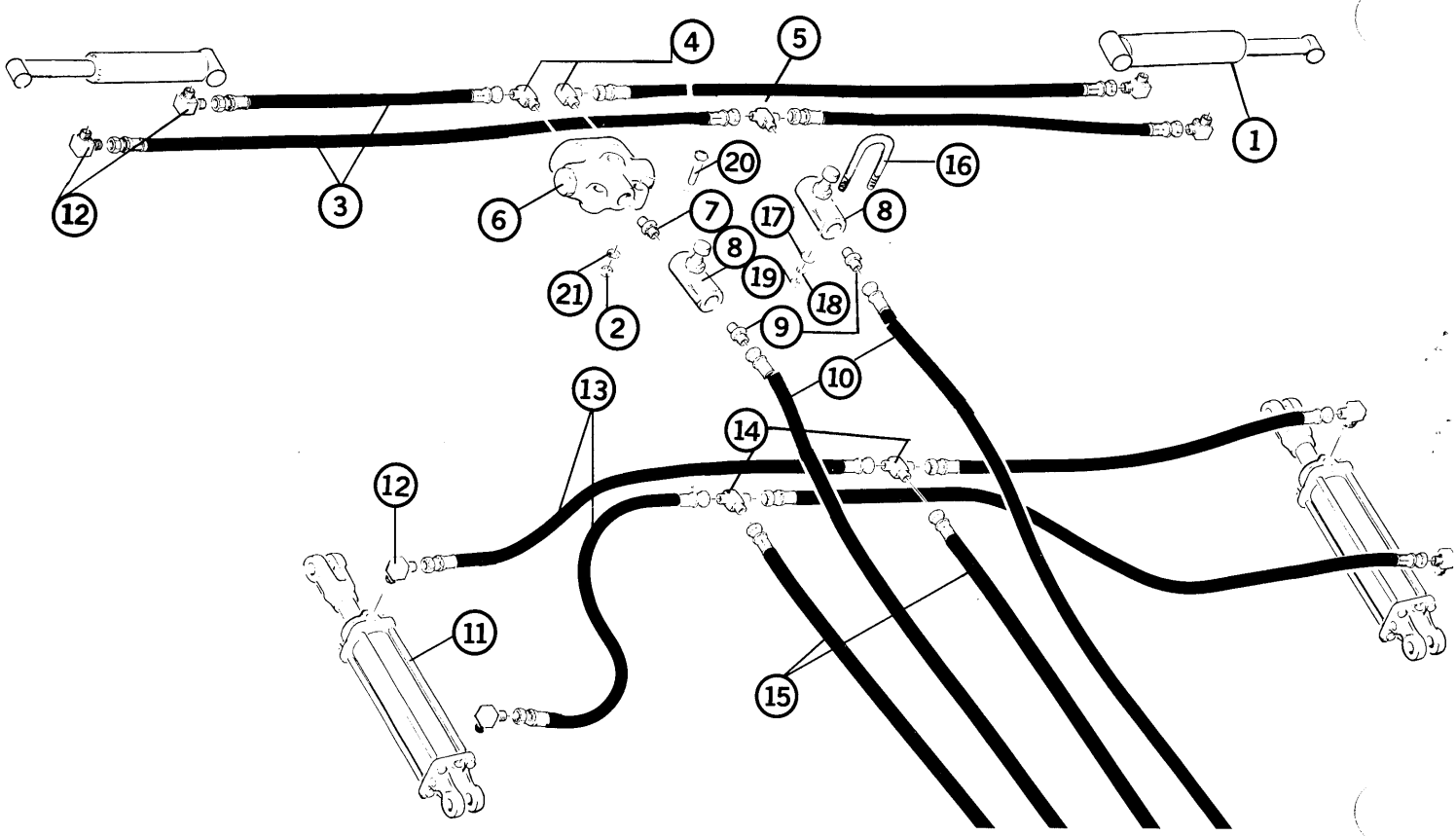
SINGLE VALVE LOW PROFILE MARKER 8 ROW 30"



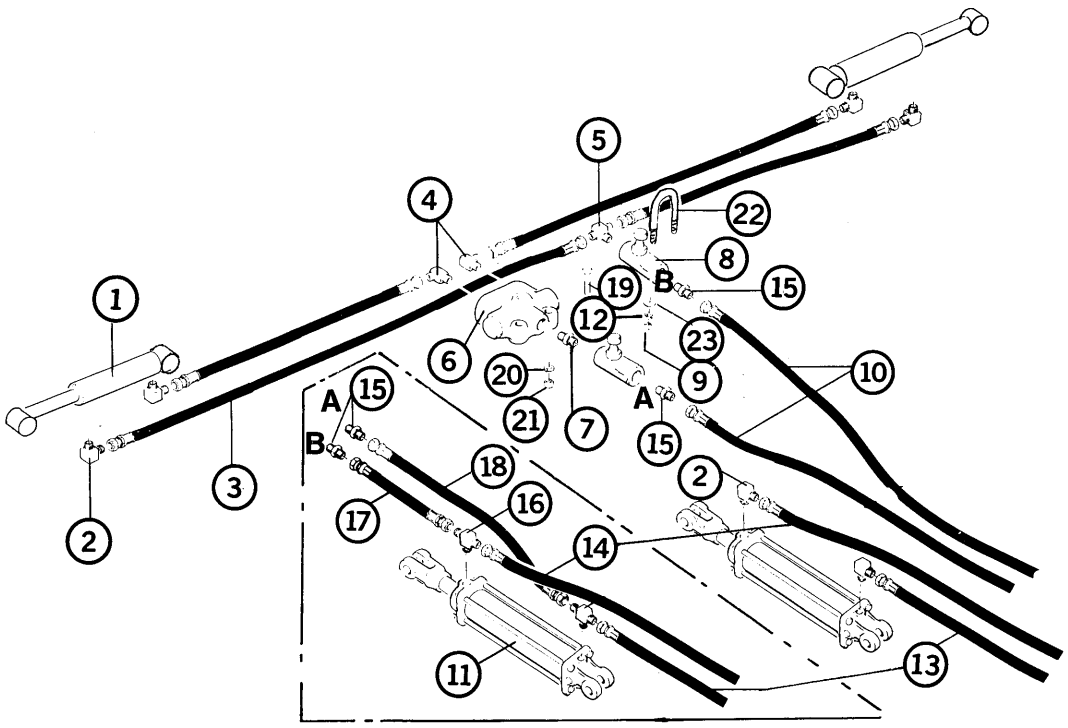
ITEM	PART NO.	DESCRIPTION
1.	A1659	Cylinder, Marker, 2" x 20"
2.	6602-8	Swivel Tee
3.	A1025	Hose Assembly, 3/8" x 148" (2 used)
	A1026	Hose Assembly, 3/8" x 152" (2 used)
4.	6801-8	Elbow, 90°
5.	10101	Hex Nut, 3/8" - 16
6.	2601-8-6	Side Tee, Male
7.	A282	Valve, Sequence
8.	6401-8-6	Adapter, Straight
9.	A270	Valve, Flow Control
10.	2404-8-6	Adapter, Straight
11.	A1044	Hose Assembly, 3/8" x 34"
12.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder Lift, 3 1/2" x 8"
13.	2501-8-8	Elbow, 90°
14.	A1039	Hose Assembly, 3/8" x 76"
15.	2603-8	Tube Tee, 37°
16.	A1043	Hose Assembly, 3/8" x 125"
17.	D1253	U-bolt, 5/16" - 18 x 2 1/4" x 1 1/2"
18.	10219	Flat Washer, 5/16" USS
19.	10232	Lock Washer, 5/16"
20.	10106	Hex Nut, 5/16" - 18
21.	10048	HHCS, 3/8" - 16 x 2"
22.	10229	Lock Washer, 3/8"
	D1512	Tie Strap, 6" (Not Shown)

HYDRAULIC SYSTEM

DUAL VALVE
LOW PROFILE MARKER
8 ROW 30"



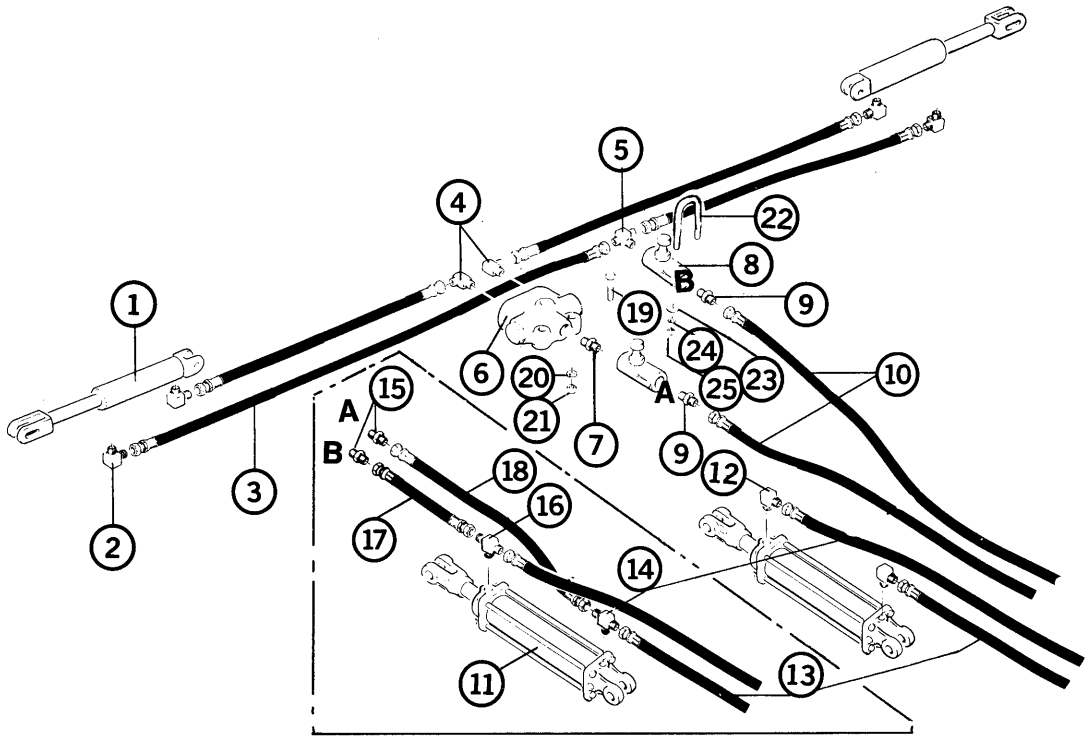
ITEM	PART NO.	DESCRIPTION
1.	A1659	Cylinder, Marker, 2" x 20"
2.	10101	Hex Nut, 3/8" - 16
3.	A1025	Hose Assembly, 3/8" x 148" (2 Used)
	A1026	Hose Assembly, 3/8" x 152" (2 Used)
4.	6801-8	Elbow 90°
5.	2601-8-6	Side Tee, Male
6.	A282	Valve, Sequence
7.	6401-8-6	Adapter, Straight
8.	A270	Valve, Flow Control
9.	2404-8-6	Adapter, Straight
10.	A1012	Hose Assembly, 3/8" x 140"
11.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder, Lift, 3 1/2" x 8"
12.	2501-8-8	Elbow, 90°
13.	A1039	Hose Assembly, 3/8" x 76"
14.	2603-8	Tube Tee, 37°
15.	A1043	Hose Assembly, 3/8" x 125"
16.	D1253	U-bolt, 5/16" - 18 x 2 1/4" x 1 1/2"
17.	10219	Flat Washer, 5/16" USS
18.	10232	Lock Washer, 5/16"
19.	10106	Hex Nut, 5/16" - 18
20.	10048	HHCS, 3/8" - 16 x 2"
21.	10229	Lock Washer, 3/8"
	D1512	Tie Strap, 6" (Not Shown)



ITEM	PART NO.	DESCRIPTION
1.	A1659	Cylinder, Marker, 2" x 20"
2.	2501-8-8	Elbow, 90°
3.	A1041	Hose Assembly, 3/8" x 130"
4.	6801-8	Elbow, 90°
5.	2601-8-6	Side Tee, Male
6.	A282	Valve, Sequence
7.	6401-8-6	Adapter, Straight
8.	A270	Valve, Flow Control
9.	10106	Hex Nut, 5/16" - 18
10.	A1012	Hose Assembly, 3/8" x 140"
11.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder, Lift, 3 1/2" x 8"
12.	10232	Lock Washer, 5/16"
13.	A1007	Hose Assembly, 3/8" x 105"
14.	A1009	Hose Assembly, 3/8" x 117"
15.	2404-8-6	Adapter, Straight
16.	2601-8-8	Side Tee, Male
17.	A1002	Hose Assembly, 3/8" x 20"
18.	A1003	Hose Assembly, 3/8" x 27"
19.	10048	HHCS, 3/8" - 16 x 2"
20.	10229	Lock Washer, 3/8"
21.	10101	Hex Nut, 3/8" - 16
22.	D1253	U-bolt, 5/16" - 18 x 2 1/4" x 1 1/2"
23.	10219	Washer, 5/16" USS
	D1512	Tie Strap, 6" (Not Shown)

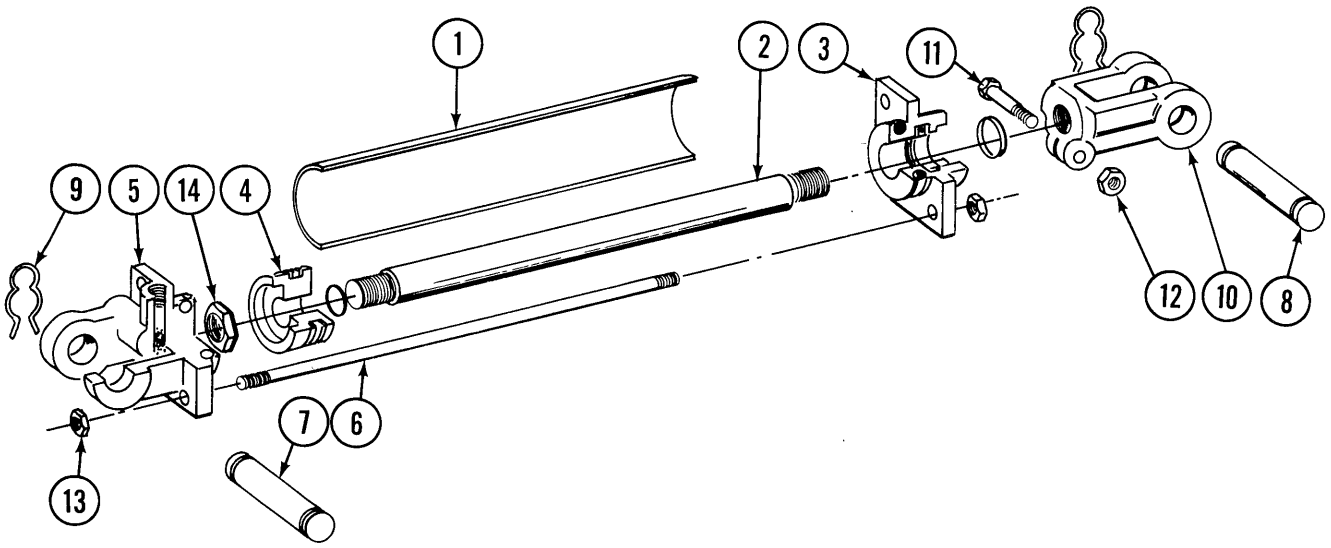
HYDRAULIC SYSTEM

SINGLE AND DUAL VALVE CONVENTIONAL MARKER 4 ROW 30", 4 ROW WIDE, 6 ROW 30"



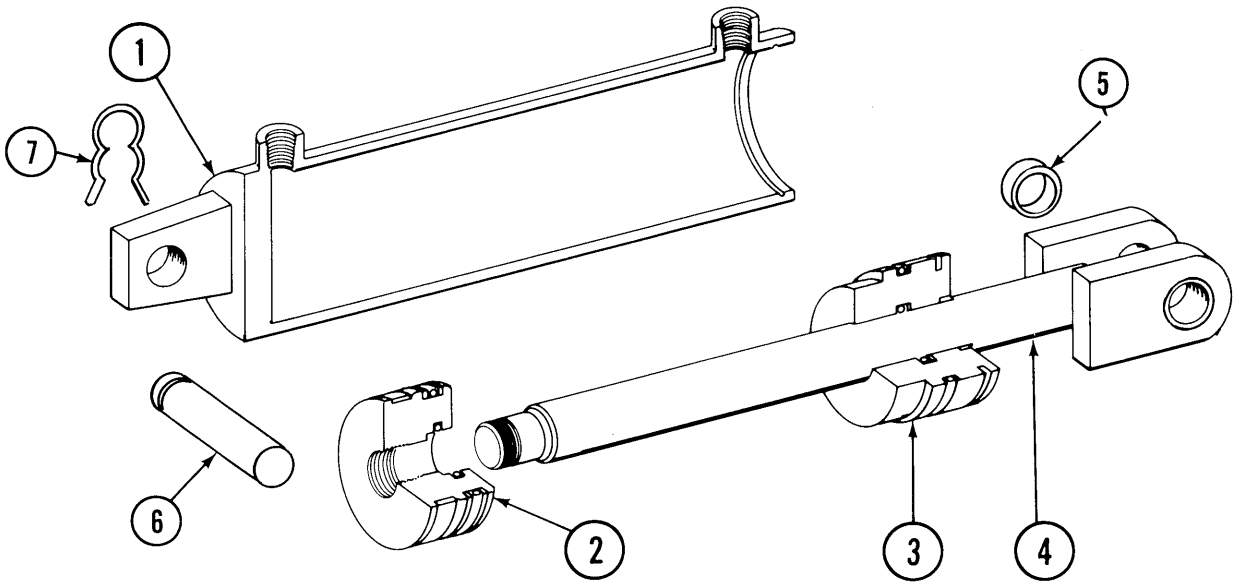
ITEM	PART NO.	DESCRIPTION
1.	A1674A	Cylinder, Marker, 2" x 8"
	A1674B	Cylinder, Marker, 2" x 8"
2.	2501-6-6	Elbow, 90°
3.	A1102	Hose Assembly, 1/4" x 95", 4R30, 4RW
	A1103	Hose Assembly, 1/4" x 110", 6R30
4.	6801-6-8	Elbow, 90°
5.	2601-6-6	Side Tee, Male
6.	A282	Valve, Sequence
7.	6401-8-6	Adapter, Straight
8.	A270	Valve, Flow Control
9.	2404-6-6	Adapter, Straight
10.	A1108	Hose Assembly, 1/4" x 140"
11.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder, Lift, 3 1/2" x 8"
12.	2501-8-8	Elbow, 90°
13.	A1007	Hose Assembly, 3/8" x 105"
14.	A1009	Hose Assembly, 3/8" x 117"
15.	2404-8-6	Adapter, Straight
16.	2601-8-8	Side Tee, Male
17.	A1002	Hose Assembly, 3/8" x 20"
18.	A1003	Hose Assembly, 3/8" x 27"
19.	10048	HHCS, 3/8" x 16 x 2"
20.	10229	Lock Washer, 3/8"
21.	10101	Hex Nut, 3/8" - 16
22.	D1253	U-bolt, 5/16" x 2 1/4" x 1 1/2"
23.	10219	Washer, 5/16" USS
24.	10232	Lock Washer, 5/16"
25.	10106	Hex Nut, 5/16" - 18
	D1512	Tie Strap, 6" (Not Shown)

LIFT CYLINDER



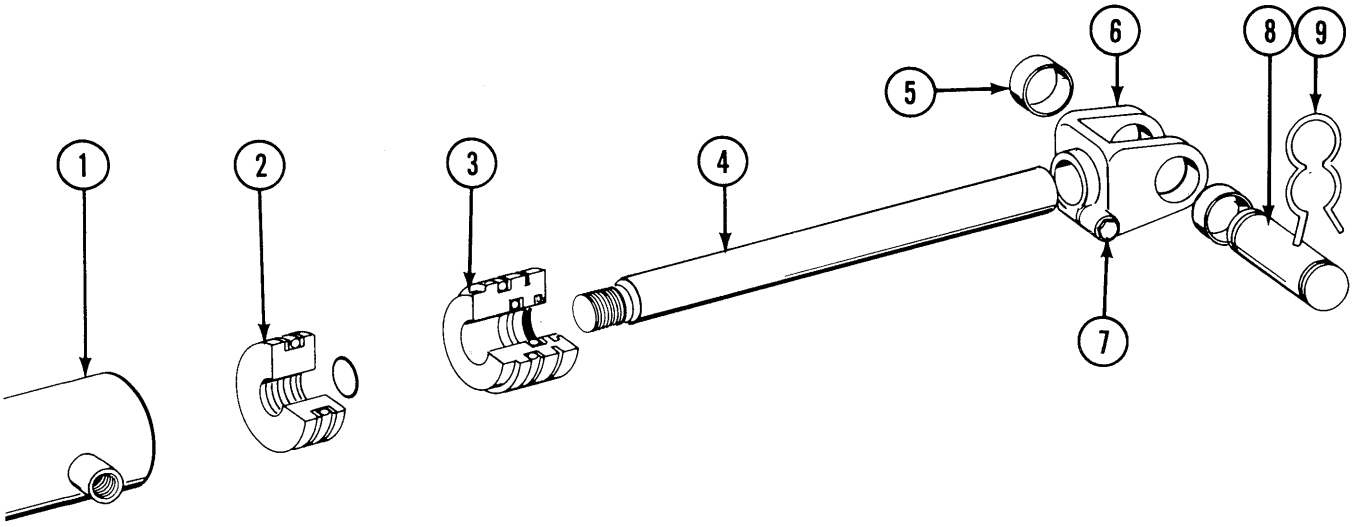
ITEM	PART NO.	DESCRIPTION
1.	R173	Tube Assembly
2.	R174	Shaft Assembly
3.	R175	Guide, Piston Rod
4.	R176	Piston
5.	R177	Clevis, Bottom
6.	R178	Tie Rod
7.	R179	Clevis Pin, w/Clips
8.	R180	Clevis Pin, w/Clips
9.	R193	Clip, Hair Pin
10.	R456	Clevis, Shaft End
11.	10047	Screw, Hex Head Cap, 3/8" - 16 x 1 3/4"
12.	10101	Hex Nut, 3/8" - 16
13.	R181	Hex Nut, 1/2" - 13, Grade 5
14.	R203	Hex Lock Nut, 1" - 14 UNF, Grade 5
A.	A1803A	Cylinder, Lift, Complete, 3 1/2" x 8"
	R153	Seal Kit Includes (1) Rod Wiper - 1 1/2" (2) Back Up Washer, 3 1/8 I.D. x 3 1/2 O.D. (1) Back Up Washer, 1 1/2" I.D. x 1 7/8 O.D. (3) O-Ring, 3 1/8 I.D. x 3 1/2 O.D. (1) O-Ring, 1 1/2, I.D. x 1 7/8 O.D. (1) O-Ring, 7/8 I.D. x 1 O.D.

LIFT CYLINDER



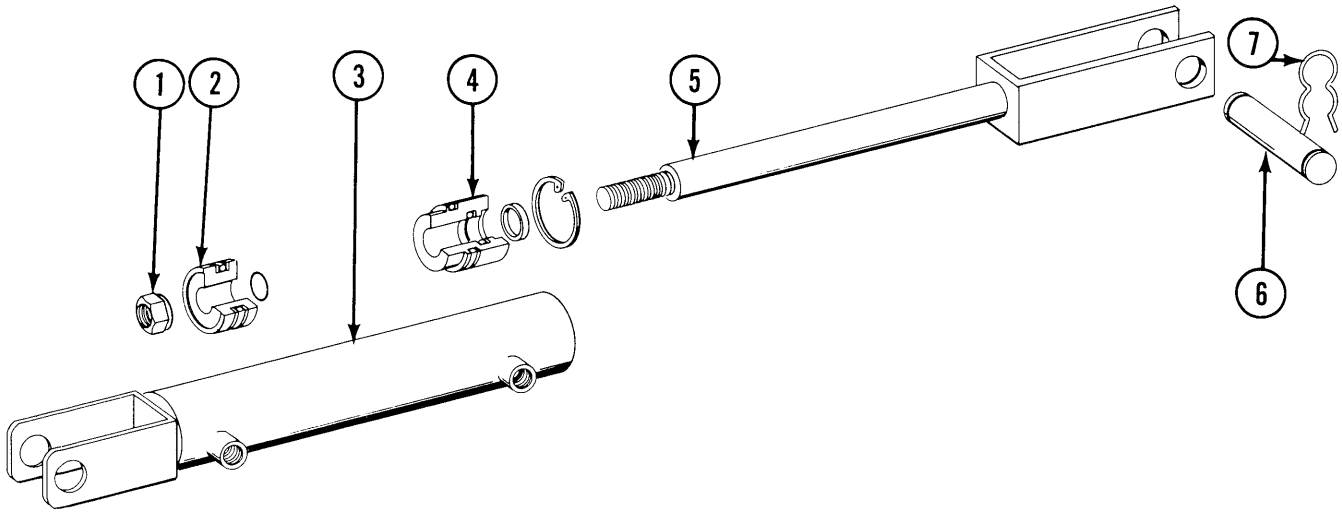
ITEM	PART NO.	DESCRIPTION
1.	R377	Tube Assembly
2.	R561	Piston
3.	R371	Head Gland
4.	R560	Shaft Assembly
5.	R374	Bushing, Steel
6.	R375	Clevis Pin
7.	R193	Clip, Hair Pin
A.	A1803B	Cylinder, Lift, Complete, 3 1/2 x 8
	R562	Seal Kit Includes (1) O-Ring 1.14 I.D. x 1.254 O.D. (1) O-Ring 1.475 I.D. x 1.895 O.D. (2) O-Ring 3.10 I.D. x 3.52 O.D. (1) Back Up Washer 1 1/2 I.D. x 1 7/8 O.D. (3) Back Up Washer 3 1/8 I.D. x 3 1/2 O.D. (1) Rod Wiper (1) Retaining Ring, Int. 3 1/2" (1) Wear Ring 3 1/2" O.D.

LIFT CYCLINDER



ITEM	PART NO.	DESCRIPTION
1.	R377	Tube Assembly
2.	R372	Piston
3.	R371	Head Gland
4.	R378	Shaft Assembly
5.	R374	Bushing Steel
6.	R373	Clevis
7.	10075	Clevis Bolt 3/8" - 24 x 1 3/4"
8.	R375	Clevis Pin
9.	R193	Clip, Hair Pin
A.	A747	Cylinder, Lift, Complete, 3 1/2 x 8
	R376	Seal Kit Includes (1) O-Ring 1.14 I.D. x 1.254 O.D. (1) O-Ring 1.475 I.D. x 1.895 O.D. (1) O-Ring 3.10 I.D. x 3.52 O.D. (1) Back Up Washer 1 1/2 I.D. x 1 7/8 O.D. (3) Back Up Washer 3 1/8 I.D. x 3 1/2 O.D. (1) Rod Wiper (1) Retaining Ring, Int. 3 1/2"

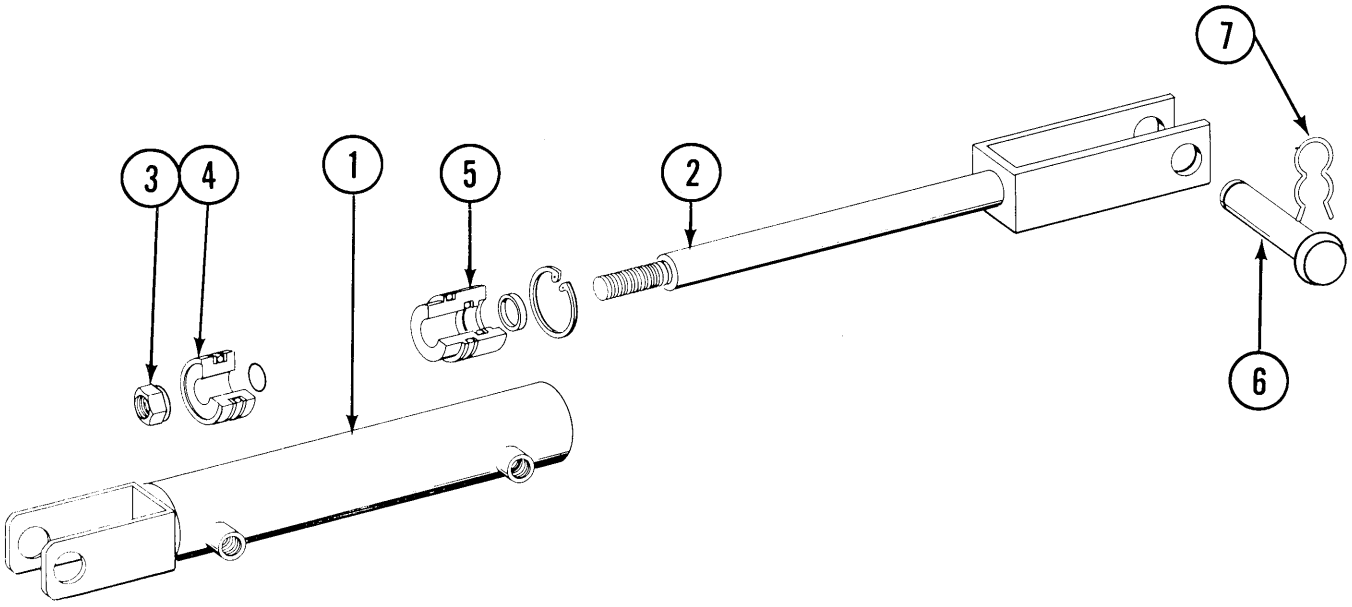
CONVENTIONAL MARKER CYLINDER



ITEM	PART NO.	DESCRIPTION
1.	R366	Hex Nut, 3/4" NF
2.	R365	Piston
3.	R362	Tube Assembly
4.	R364	Head Gland
5.	R363	Shaft Assembly
6.	R367	Clevis Pin
7.	R193	Clip, Hair Pin Only
	R368	Seal Kit Includes (1) O-Ring .614 I.D. x .754 O.D. (1) O-Ring 1.109 I.D. x 1.387 O.D. (2) O-Ring 1.600 I.D. x 2.200 O.D. (1) Back Up Washer 1 1/8" I.D. x 1 3/8" O.D. (1) Rod Wiper 2" I.D. (1) Retaining Ring Internal 2" (2) Back Up Washer 1 5/8" O.D. x 2 O.D.
*A.	A1674A	Cylinder, Complete, 2" x 8", Style No. 1

* To identify - Super Draulic Stamped on Barrel

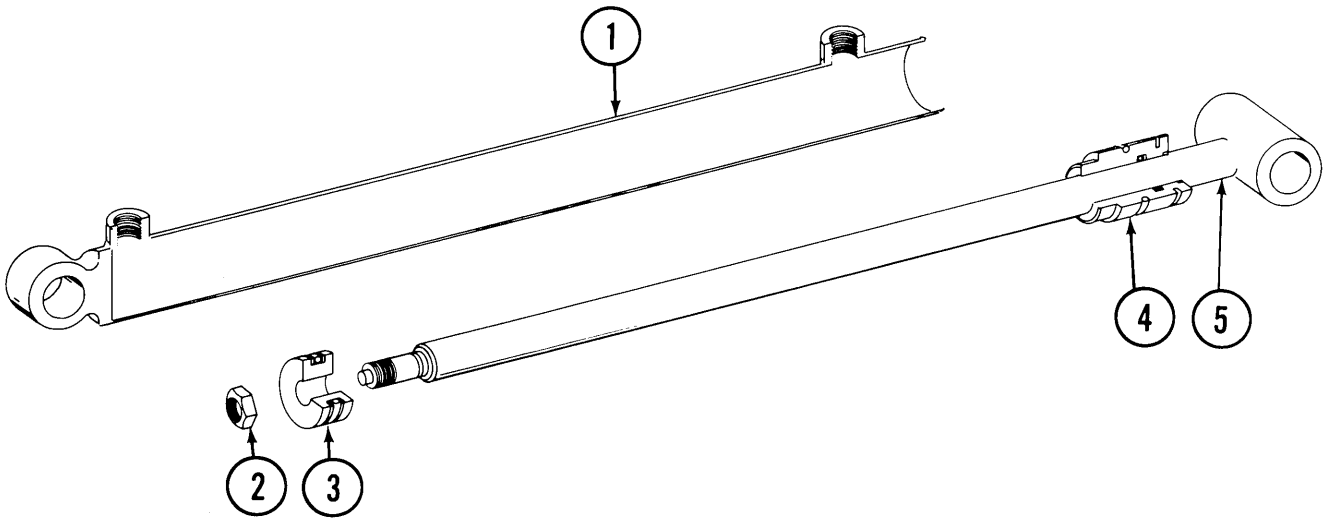
CONVENTIONAL MARKER CYLINDER



ITEM	PART NO.	DESCRIPTION
1.	R157	Cylinder Body
2.	R158	Piston Rod
3.	R159	Hex Nut, 7/8" UNF
4.	R160	Piston
5.	R161	Piston Rod Guide
6.	R162	Clevis Pin w/Clip
7.	R193	Clip, Hair Pin, Only
	R154	Seal Kit Includes (1) O-Ring, 3/4" I.D. x 7/8" O.D. (1) O-Ring, 1 1/8" I.D. x 1 3/8" O.D. (1) Back Up Washer (1) Rod Wiper (2) Back Up Washer (2) O-Ring, 1 5/8" I.D. x 2" O.D. (1) Retaining Ring
*A.	A1674B	Cylinder - Complete 2" x 8", Style No. 2

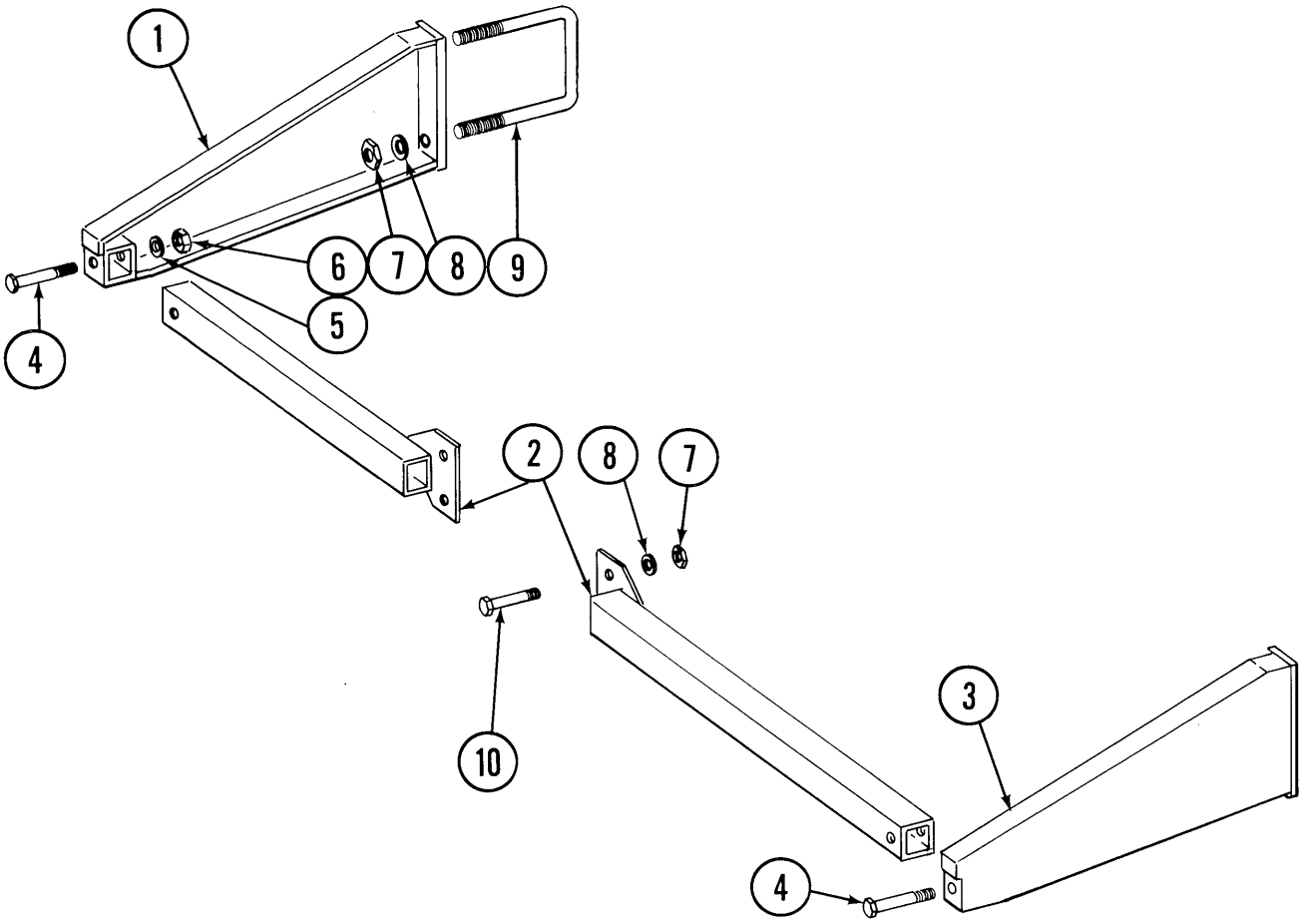
* To identify - No markings on barrel

LOW PROFILE - DOUBLE FOLDING MARKER CYLINDER



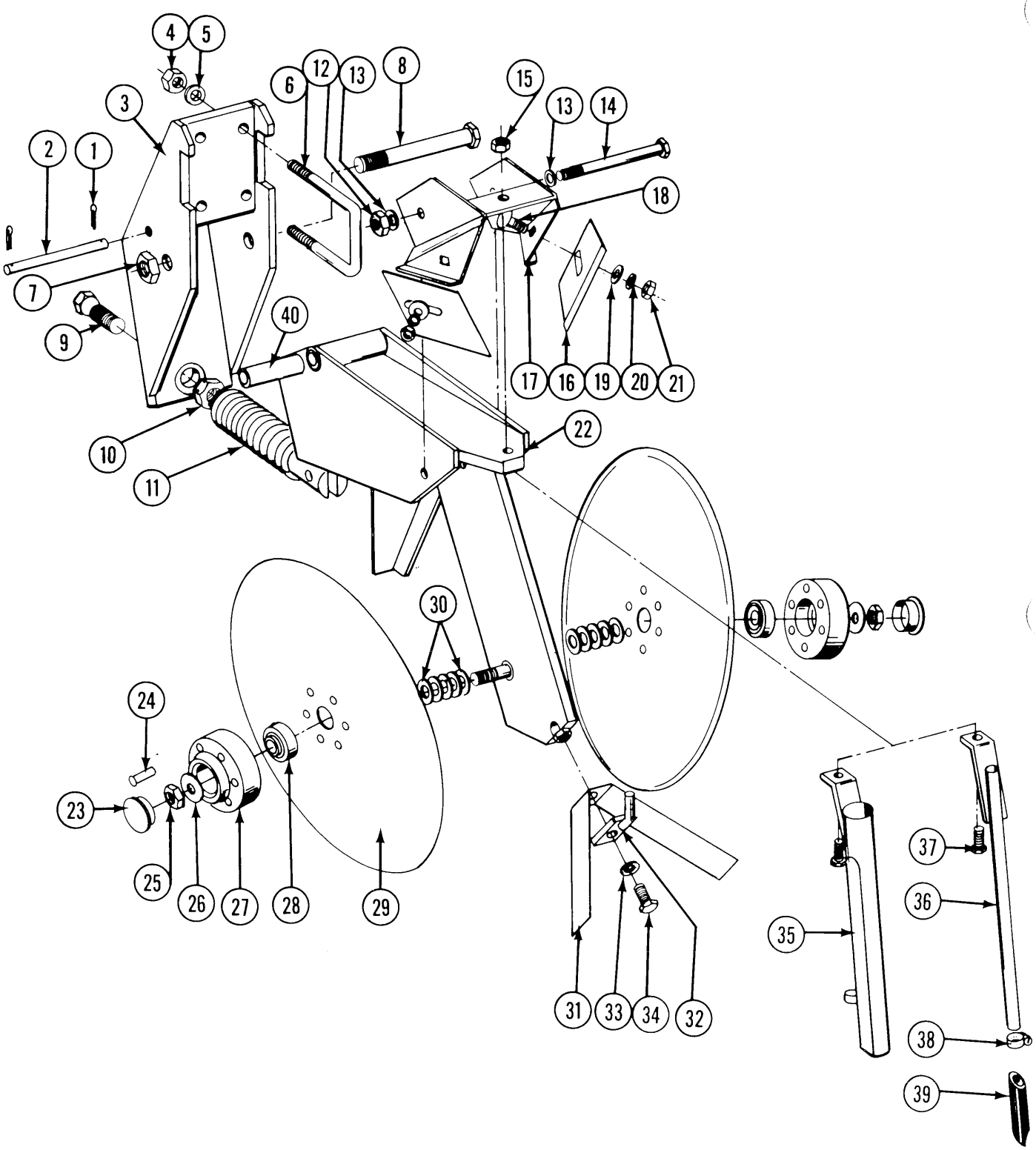
ITEM	PART NO.	DESCRIPTION
1.	R553	Tube Assembly
2.	R366	Nut, 3/4" - 16 NF
3.	R365	Piston
4.	R552	Head Gland
5.	R551	Shaft Assembly
A.	A1659	Cylinder Assembly, Complete 2" x 20"
	R368	Seal Kit Includes (1) O-Ring, 614 I.D. x .754 O.D. (1) O-Ring, 1.109 I.D. x 1.387 O.D. (2) O-Ring, 1.600 I.D. x 2.200 O.D. (1) Back Up Washer, 1 1/8" I.D. x 1 3/8" O.D. (1) Rod Wiper 2" I.D. (1) Retaining Ring Internal 2" (2) Back Up Washer 1 5/8" I.D. x 2" O.D.

FERTILIZER BAR



ITEM	PART NO.	DESCRIPTION
1.	A1872	Fertilizer Bar Support, Right Side
2.	A873	Bar Weld, 56 1/4", 4R30
	A874	Bar Weld, 60 1/4" 4RW
	A875	Bar Weld, 76 3/4", 6R30
	A876	Bar Weld, 99 1/4" 6RW
	A877	Bar Weld, 106 3/4", 8R30
3.	A1873	Fertilizer Bar Support, Left Side
4.	10035	HHCS, 1/2" - 13 x 4"
5.	10228	Lockwasher, 1/2"
6.	10102	Hex Nut, 1/2" - 13
7.	10105	Hex Nut, 3/4" - 10
8.	10231	Lockwasher, 3/4"
9.	D1748	U-bolt 7" x 7" x 3/4" - 10
10.	10027	HHCS, 3/4" - 10 x 2 1/2"

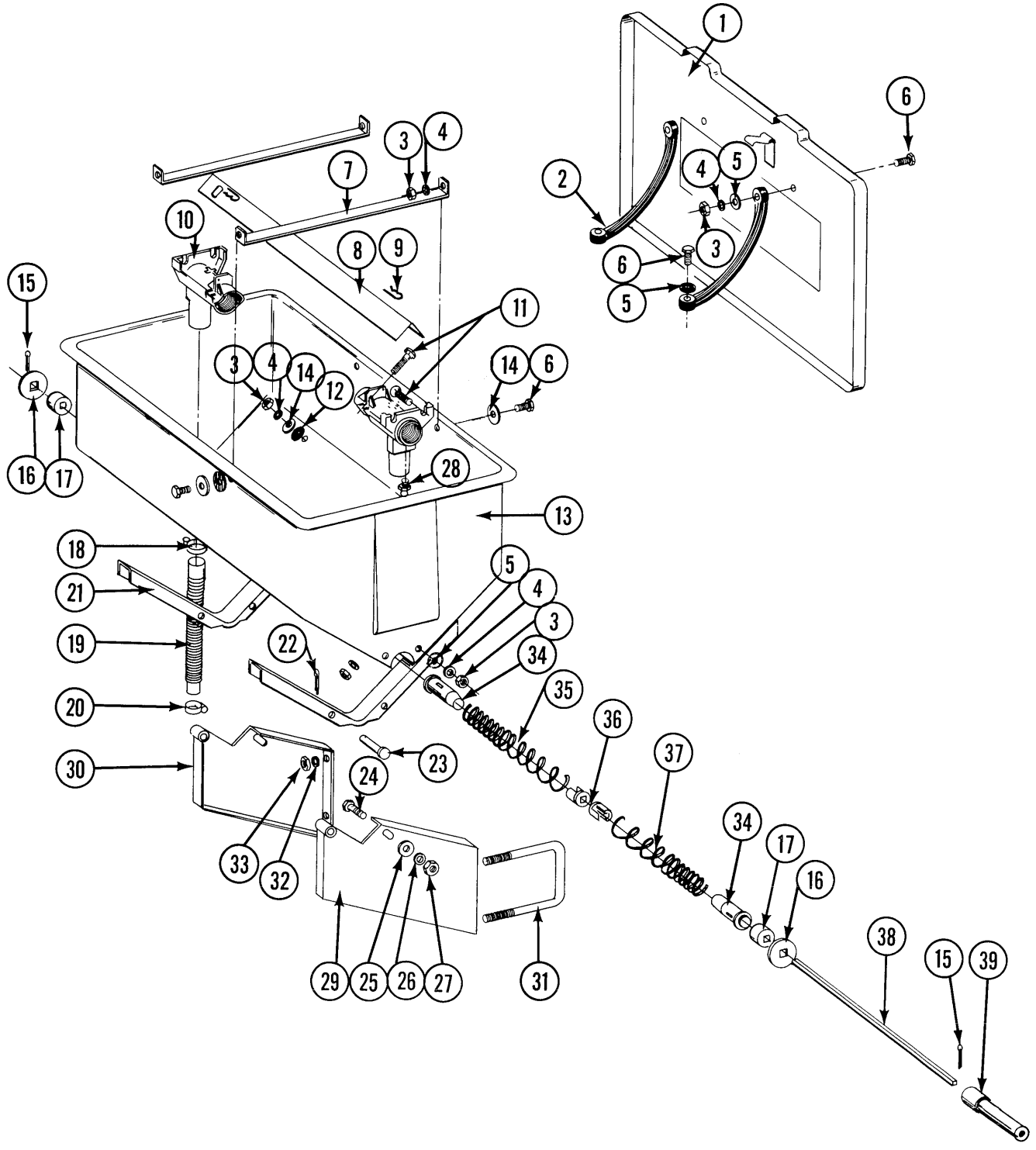
DOUBLE DISK FERTILIZER OPENER



DOUBLE DISK FERTILIZER OPENER

ITEM	PART NO.	DESCRIPTION
1.	10451	Cotter Pin, 1/8" x 1"
2.	D1657	Lock Up Pin
3.	A785	Mounting Bracket Weld
4.	10102	Hex Nut, 1/2" - 13
5.	10228	Lockwasher, 1/2"
6.	D1138	U-bolt, 2 1/2" x 2 1/2" x 1/2" - 13
7.	10107	Hex Lock Nut, 5/8" - 11
8.	10046	HHCS, 5/8" - 11 x 5"
9.	D962	Hex Head Adjusting Bolt, 5/8" - 18
10.	10499	Jam Nut, 5/8" - 18
11.	A328	Spring
12.	10111	Lock Nut, 1/2" - 13
13.	10216	Flatwasher, 1/2"
14.	10045	HHCS, 1/2" - 13 x 4 1/2"
15.	10109	Hex Lock Nut, 5/16" - 18
16.	D1673	Scraper
17.	A810	Scraper Mount
18.	10305	Carriage Bolt, 3/8" - 16 x 1"
19.	10210	Flat Washer, 3/8" USS
20.	10229	Lockwasher, 3/8"
21.	10101	Hex Nut, 3/8" - 16
22.	A308	Fertilizer Opener Weld
23.	D1132	Hub Cap
24.	10651	Rivet, 1/4" x 1 3/8"
25.	10503	Jam Nut, R.H., 5/8" - 11
	10504	Jam Nut, L.H. 5/8" - 11
26.	10204	Bushing, Machinery
27.	B134	Bearing Hub
28.	A2014	Bearing
29.	D1030	Disk Blade
30.	10213	Machine Bushing, 1 3/64 x 11/16 x .030
31.	D2589	Scraper, Inner
32.	A312	Mount, Tube, Weld
33.	10232	Lockwasher, 5/16"
34.	10019	HHCS, 5/16" - 18 x 1"
35.	A310	Drop Tube, Dry Fertilizer
36.	A318	Drop Tube, Liquid Fertilizer
37.	10133	HHCS, 5/16" - 18 x 1 1/2"
38.	10673	Hose Clamp
39.	D1797	Drop Tube Extension
40.	D487	Bushing
A.	A320	Disk and Brg. Assembly (Items 24, 27 - 29)
B.	A786	Double Disk Fertilizer Opener, Less Drop Tubes and U-bolts

DRY FERTILIZER HOPPER AND MOUNT

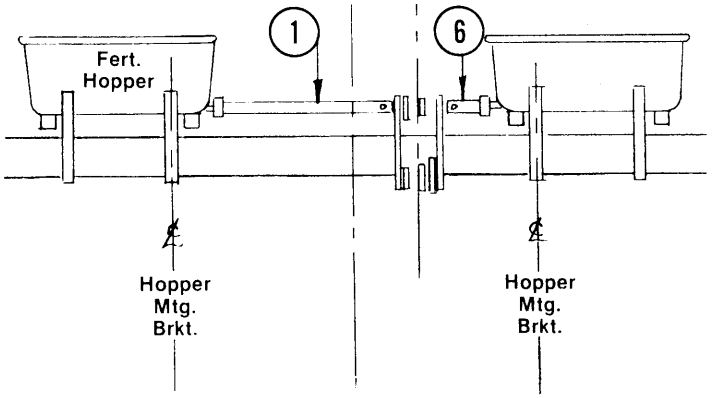


DRY FERTILIZER HOPPER AND MOUNT

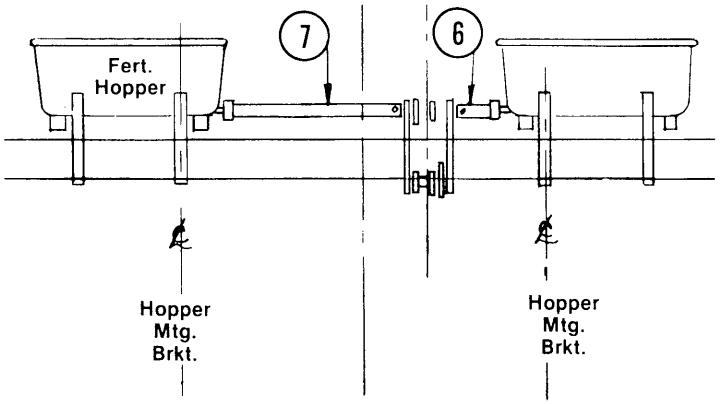
ITEM	PART NO.	DESCRIPTION
1.	A2101	Lid, Includes Clips and Pop Rivets
	D1380	Clip
	10655	Pop Rivet, 3/16" x 13/32"
2.	D1210	Strap, Rubber
3.	10106	Hex Nut, 5/16" - 18
4.	10232	Lockwasher, 5/16"
5.	10219	Washer, 5/16" USS
6.	10019	HHCS, 5/16" - 18 x 1"
7.	D1209	Strap, Reinforcing
8.	D1207	Baffle
9.	10670	Hair Pin Clip, No. 3
10.	D1200	Housing, Outlet
11.	10303	Carriage Bolt, 5/16" - 18 x 1"
12.	D1213	Washer, Rubber
13.	D1379	Hopper, Dry Fertilizer
14.	10201	Washer, Special
15.	10464	Cotter, Pin, 3/16" x 1"
16.	D1212	Washer, Special
17.	D1206	Bearing, Shaft
18.	10676	Hose Clamp, No. 36
19.	D1214	Tube, Rubber
20.	10675	Hose Clamp, No. 20
21.	D1208	Saddle
22.	10456	Cotter Pin, 1/8" x 3/4"
23.	10562	Clevis Pin, 7/16" x 3"
24.	10037	HHCS, 1/2" - 13 x 1 1/4"
25.	10206	Washer, 1/2" SAE
26.	10228	Lockwasher, 1/2"
27.	10102	Hex Nut, 1/2" - 13
28.	10641	Grease Fitting, 1/8" NPT
29.	A863	Mount, Hopper L.H.
30.	A864	Mount, Hopper R.H.
31.	D1114	U-bolt, 7" x 7" x 5/8" - 11
32.	10230	Lockwasher, 5/8"
33.	10104	Hex Nut, 5/8" - 11
34.	D1202	Guide, Auger
35.	D1204	Spring, Auger, R.H.
36.	D1203	Plug, Spring
37.	D1205	Spring, Auger, L.H.
38.	D1201	Shaft, Auger
39.		Drive Coupler

DRY FERTILIZER COUPLERS

4 ROW 30"



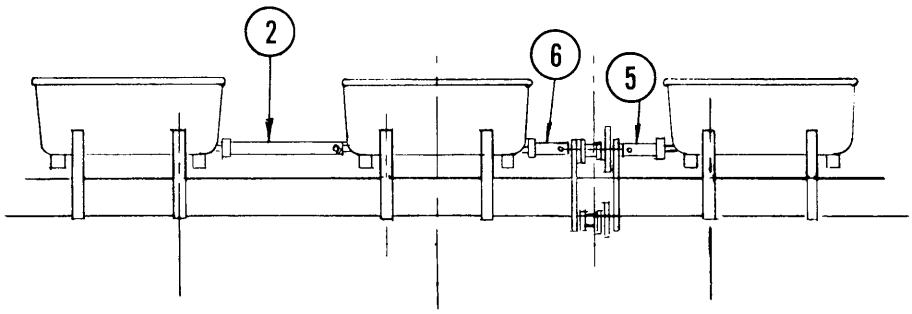
4 ROW WIDE



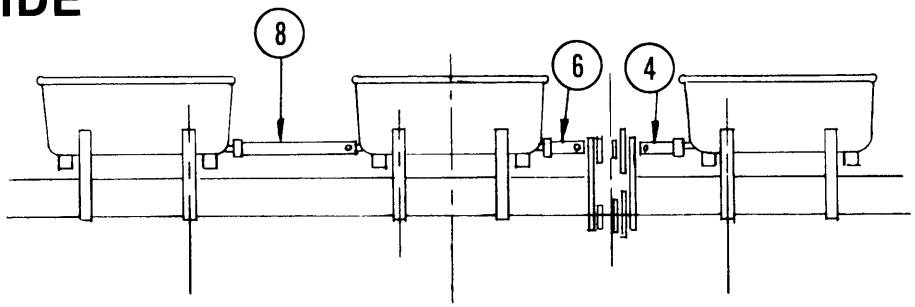
ITEM	PART NO.	DESCRIPTION
1.	A684	Drive Coupling, 24 5/8"
2.	A555	Drive Coupling, 16 1/8"
3.	A554	Drive Coupling, 4 5/8"
4.	A557	Drive Coupling, 23 1/8"
5.	A665	Drive Coupling, 7 5/8"
6.	A881	Drive Coupling, 1 5/8"
7.	A884	Drive Coupling, 22"
8.	A561	Drive Coupling, 30 5/8"

DRY FERTILIZER COUPLERS

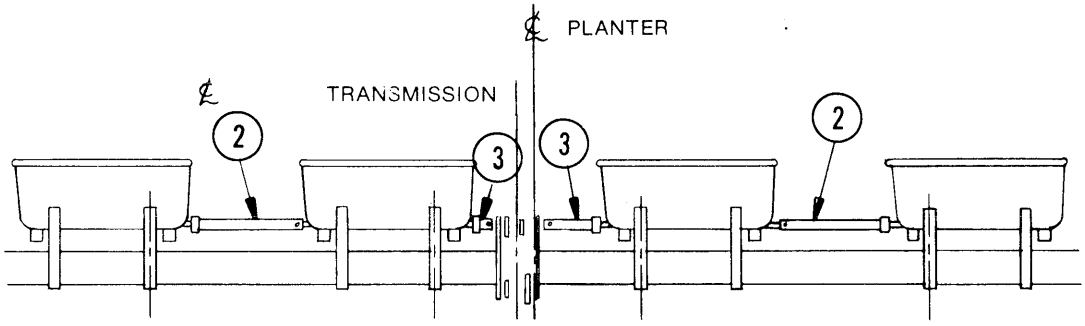
6 ROW 30"



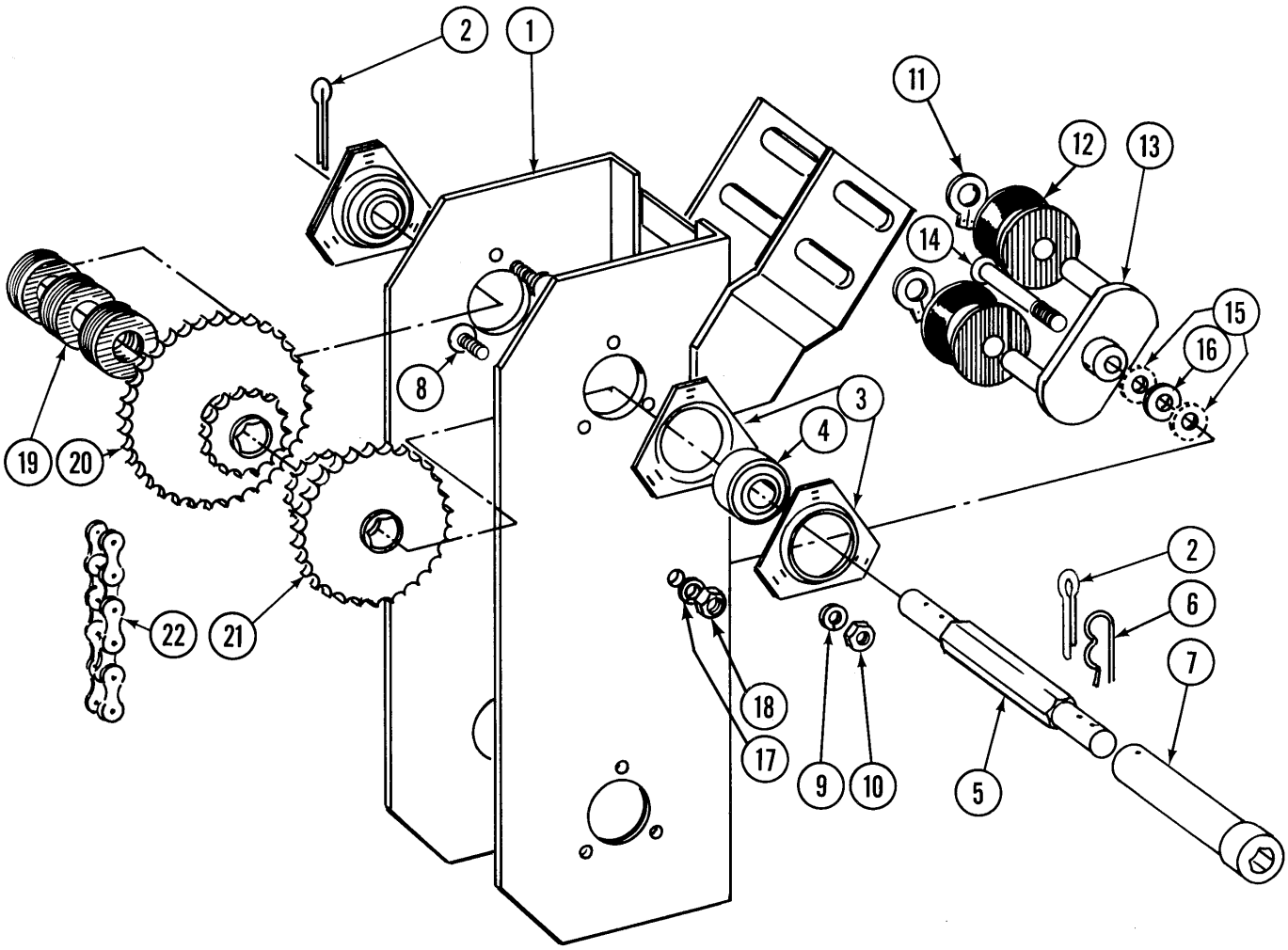
6 ROW WIDE



8 ROW 30"



DRY FERTILIZER TRANSMISSION

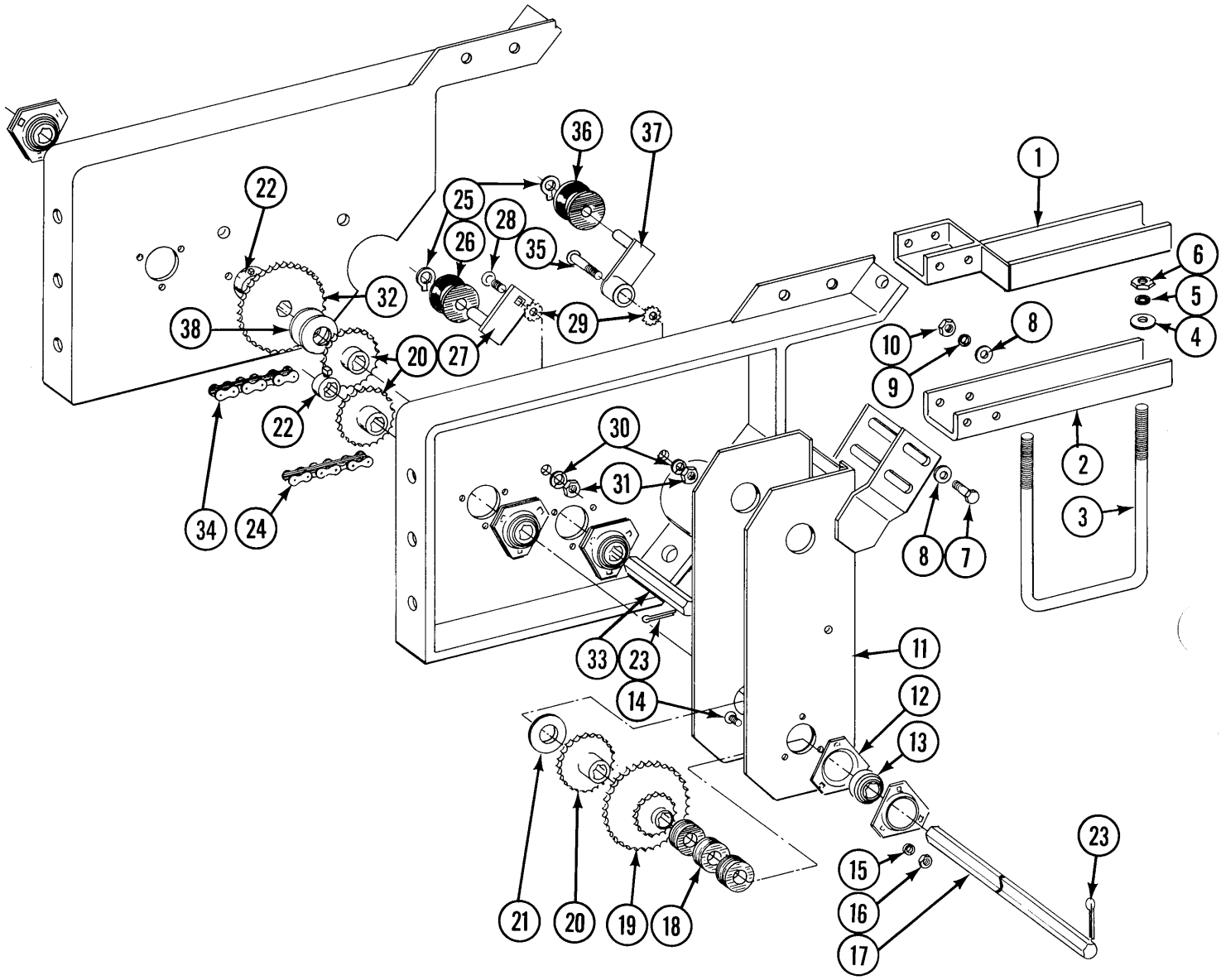


DRY FERTILIZER TRANSMISSION

ITEM	PART NO.	DESCRIPTION
1.	A859	Case, Transmission
2.	10459	Cotter Pin, 3/16" x 1 1/2"
3.	3400-1	Flangette
4.	2100-3	Bearing, 7/8" Hex Bore
5.	D943	Shaft, Upper
6.	10462	Cotter Pin, 3/16" x 2"
7.		Coupler
8.	10312	Carriage Bolt, 5/16" - 18 x 3/4"
9.	10232	Lockwasher, 5/16"
10.	10106	Hex Nut, 5/16" - 18
11.	10435	Ring, Retaining
12.	D1067	Spool
13.	A293	Bracket, Idler
14.	10314	Carriage Bolt, 1/2" - 13 x 3"
15.	10527	Lock Washer, Int./Ext., 1/2"
16.	10216	Washer, 1/2" USS
17.	10228	Lock Washer, 1/2"
18.	10102	Hex Nut, 1/2" - 13
19.	D832	Spacer, Rubber
20.	2500-12	Sprocket, 18 - 36T
21.	2500-3	Sprocket, 16 - 30 T
22.	3300-44	Chain, No. 2040, 44 Pitch Including Connector Link
	R194	Connector Link, No. 2040
A.	A294	Idler Assembly (Items 11, 12 and 13)

DRY FERTILIZER DRIVE

4 and 6 ROW MODELS



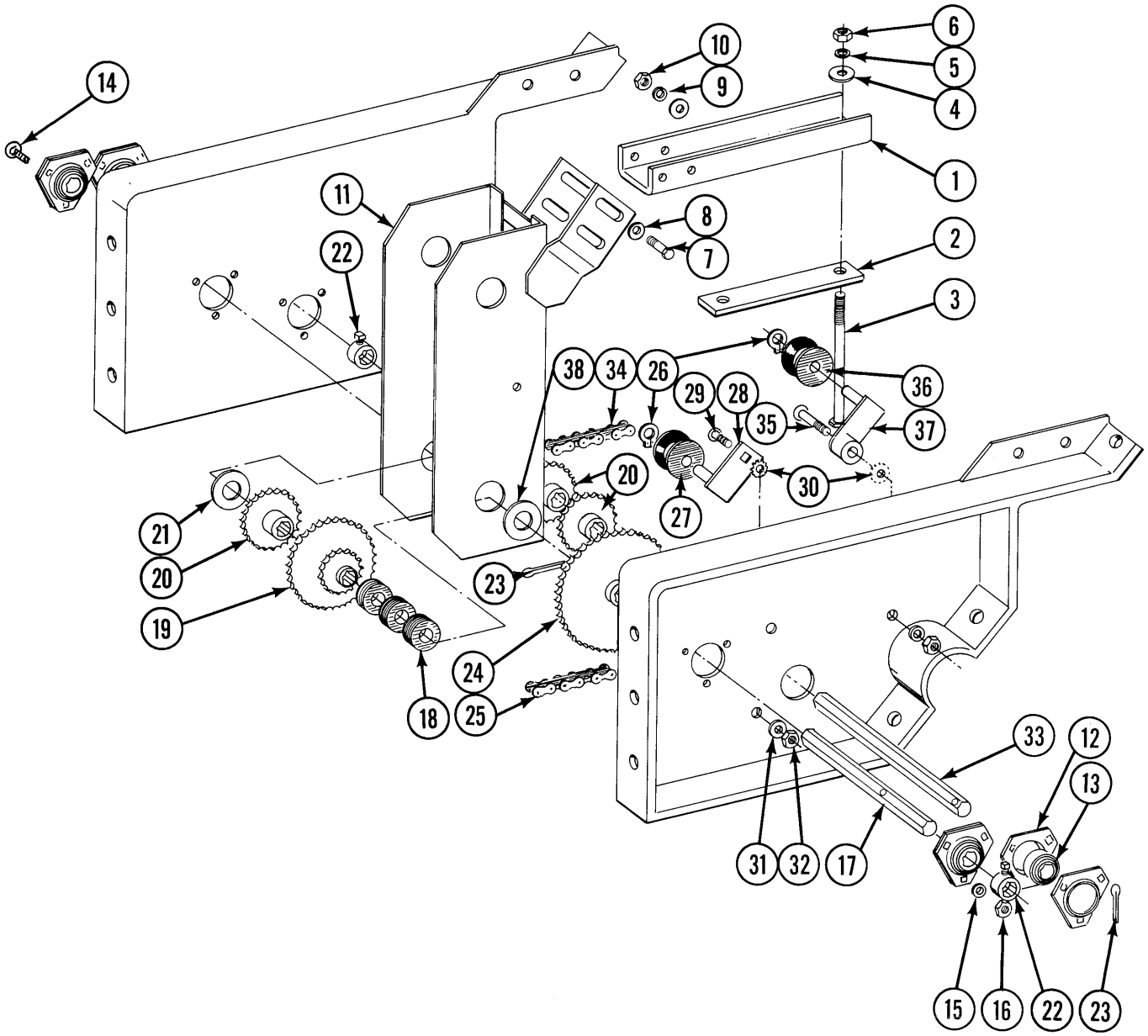
DRY FERTILIZER DRIVE

4 and 6 ROW MODELS

ITEM	PART NO.	DESCRIPTION
1.	A917	Bracket, Transmission Mounting, Used on 4R30
2.	D1736	Bracket, Transmission Mounting, Used on 4RW, 6R30 and 6RW
3.	D1114	U-Bolt, 7" x 7" x 5/8" - 11
4.	10217	Flat Washer, 5/8" USS
5.	10230	Lock Washer, 5/8"
6.	10104	Hex Nut, 5/8" - 11
7.	10001	HHCS, 3/8" - 16 x 1"
8.	10210	Flat Washer, 3/8" USS
9.	10229	Lock Washer, 3/8"
10.	10101	Hex Nut, 3/8" - 16
11.	A859	Case, Transmission
12.	3400-1	Flangette
13.	2100-3	Bearing, 7/8" Hex Bore
14.	10312	Carriage Bolt, 5/16" - 18 x 3/4"
15.	10232	Lock Washer, 5/16"
16.	10106	Hex Nut, 5/16" - 18
17.	D1750	Shaft, 12", 4 Row Models
	D1753	Shaft, 30", 6 Row Models
18.	D832	Spacer, Rubber
19.	2500-12	Sprocket, 18 - 36T
20.	2500-14	Sprocket, 24T
21.	10200	Flat Washer, 1" USS
22.	A271	Lock Collar
23.	10465	Cotter Pin, 1/4" x 1 1/4"
24.	3300-26	Chain, No. 2040, 26 Pitch Including Connector Link
	R194	Connector Link, No. 2040
25.	10435	Ring, Retaining
26.	D1068	Spool
27.	A882	Bracket, Idler
28.	10313	Carriage Bolt, 1/2" - 13 x 1 1/2"
29.	10527	Lock Washer, Int./Ext., 1/2"
30.	10228	Lock Washer, 1/2"
31.	10102	Hex Nut, 1/2" - 13
32.	B138	Sprocket, 48T
33.	D1751	Shaft, 10"
34.	3300-50	Chain, No. 2040, 50 Pitch Including Connector Link
	R194	Connector Link, No. 2040
35.	10314	Carriage Bolt, 1/2" - 13 x 3"
36.	D1067	Spool
37.	A302	Bracket, Idler
38.	10233	Bushing, Machinery, 1" (As Required)
A.	A883	Idler Assembly (Items 25, 26 & 27)
B.	A582	Idler Assembly (Items 25, 36 & 37)

DRY FERTILIZER DRIVE

8 ROW MODELS

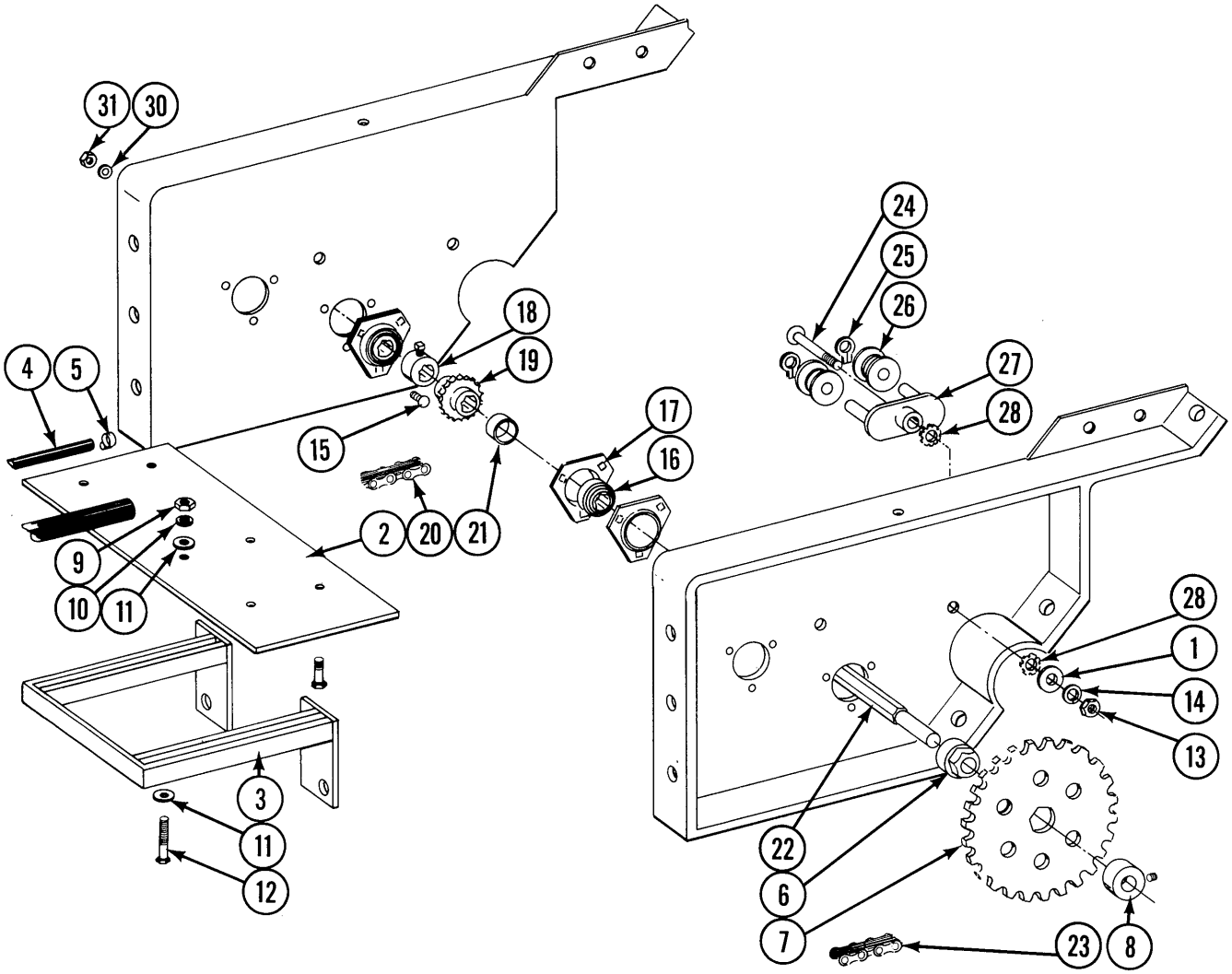


DRY FERTILIZER DRIVE

8 ROW MODELS

ITEM	PART NO.	DESCRIPTION
1.	D1736	Bracket, Transmission Mounting
2.	D1908	Bracket, Mounting
3.	10093	HHCS, 5/8" - 11 x 8 1/2"
4.	10217	Flat Washer, 5/8" USS
5.	10230	Lock Washer, 5/8"
6.	10104	Hex Nut, 5/8" - 11
7.	10001	HHCS, 3/8" - 16 1"
8.	10210	Flat Washer, 3/8" USS
9.	10229	Lock Washer, 3/8"
10.	10101	Hex Nut, 3/8" - 16
11.	A859	Case, Transmission
12.	3400-1	Flangette
13.	2100-3	Bearing, 7/8" Hex Bore
14.	10312	Carriage Bolt, 5/16" - 18 x 3/4"
15.	10232	Lock Washer, 5/16"
16.	10106	Hex Nut, 5/16" - 18
17.	D1907	Shaft, 12"
18.	D832	Spacer, Rubber
19.	2500-12	Sprocket, 18 - 36T
20.	2500-14	Sprocket, 24T
21.	10200	Flat Washer, 1" USS
22.	A271	Lock Collar
23.	10465	Cotter Pin, 1/4" x 1 1/4"
24.	B138	Sprocket, 48T
25.	3300-32	Chain, No. 2040, 32 Pitch Including Connector Link
	R194	Connector Link, No. 2040
26.	10435	Ring, Retaining
27.	D1068	Spool
28.	A882	Bracket, Idler
29.	10313	Carriage Bolt, 1/2" - 13 x 1 1/2"
30.	10527	Lock Washer, Int./Ext., 1/2"
31.	10228	Lock Washer, 1/2"
32.	10102	Hex Nut, 1/2" - 13
33.	D1751	Shaft, 10"
34.	3300-43	Chain, No. 2040, 43 Pitch Including Connector and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
35.	10314	Carriage Bolt, 1/2" - 13 x 3"
36.	D1067	Spool
37.	A302	Bracket, Idler
38.	10233	Bushing, Machinery, 1" (As Required)
A.	A883	Idler Assembly (Items 26, 27 and 28)
B.	A582	Idler Assembly (Items 26, 36 and 37)

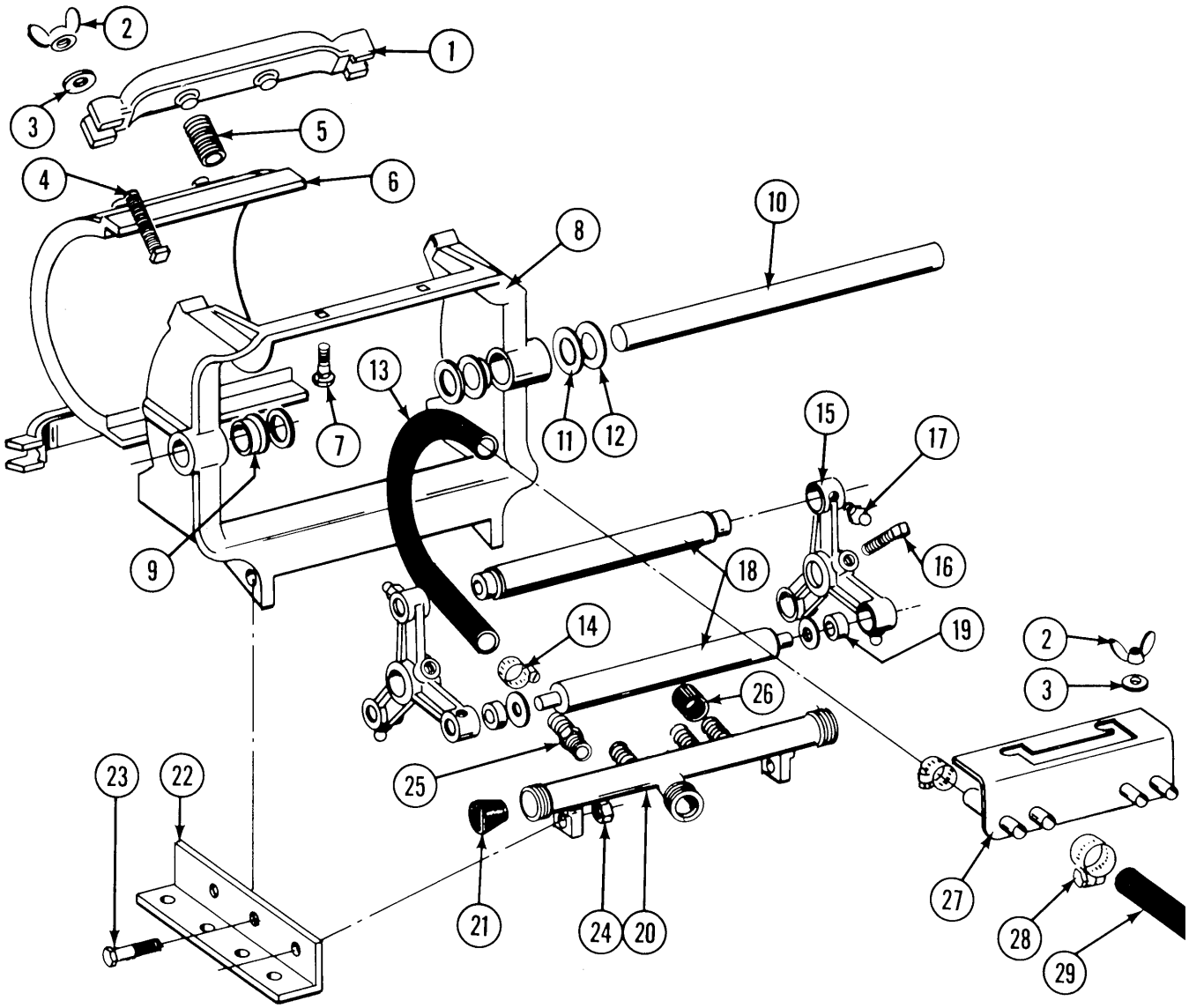
LIQUID FERTILIZER DRIVE



LIQUID FERTILIZER DRIVE

ITEM	PART NO.	DESCRIPTION
1.	10216	Flat Washer, 1/2" USS
2.	D1714	Plate, Squeeze Pump (8R30 Only)
3.	A549	Bracket, Mounting
4.	4300-3	Hose, 1/2" x 30', 4 Row
	4300-4	Hose, 1/2" x 50', 6 Row
	4300-5	Hose, 1/2" x 100', 8 Row
5.	10673	Hose Clamp, No. 8
6.	D1216	Adapter, Sprocket
	10600	Roll Pin, 5/16" x 2 1/4"
7.	D1217	Sprocket, 8T
	D1218	Sprocket, 9T
	D1219	Sprocket, 10T
	D1220	Sprocket, 15T
	D1221	Sprocket, 22T
	D1222	Sprocket, 23T
	D1223	Sprocket, 26T
8.	D1215	Retainer, Sprocket
9.	10100	Hex nut, 7/16" - 14
10.	10237	Lock Washer, 7/16"
11.	10199	Flat Washer, 7/16"
12.	10066	HHCS, 7/16" - 14 x 2"
13.	10102	Hex Nut, 1/2" - 13
14.	10228	Lock Washer, 1/2"
15.	10303	Carriage Bolt, 5/16" - 18 x 1"
16.	2100-3	Bearing, 7/8" Hex Bore
17.	3400-1	Flangette
18.	A271	Lock Collar
19.	2500-14	Sprocket, 24T
20.	3300-43	Chain, No. 2040 - 43 Pitch Including Connector and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
21.	D1199-2	Spacer, 3/4"
22.	D1248	Shaft, 16"
23.	3300-75	Chain, No. 2040, 75 Pitch Including Connector and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
24.	10314	Carriage Bolt, 1/2" - 13 x 3"
25.	10435	Ring, Retaining
26.	D1067	Spool
27.	A293	Bracket, Idler
28.	10527	Lock Washer, Int./Ext., 1/2"
A.	A294	Idler Assembly, (Items 25 thru 27)

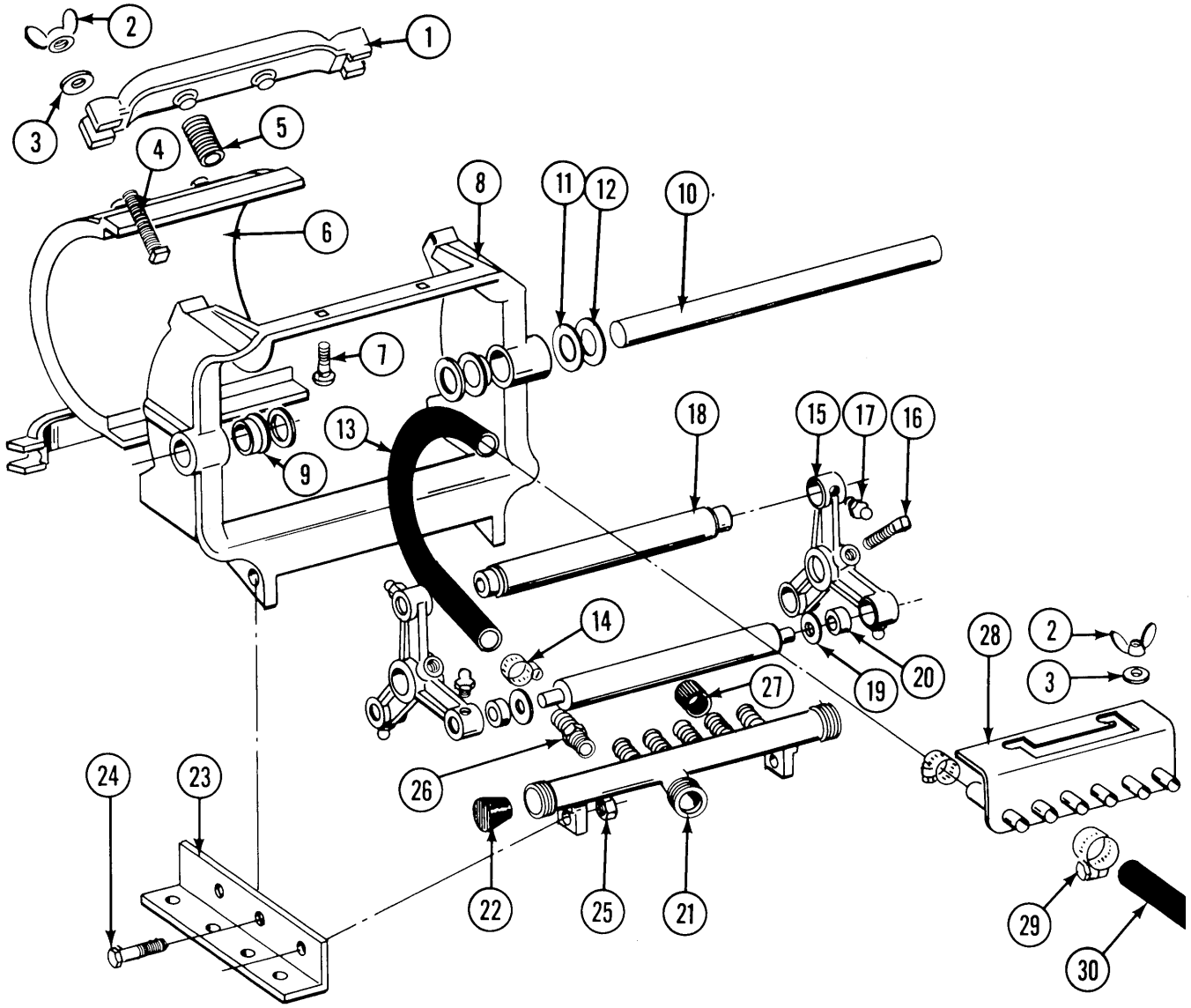
LIQUID FERTILIZER SQUEEZE PUMP - 4 ROW MODEL



LIQUID FERTILIZER SQUEEZE PUMP - 4 ROW MODEL

ITEM	PART NO.	DESCRIPTION
1.	R216	Spring Anchor Bar
2.	10144	Wing Nut, 5/16" - 18
3.	10219	Flat Washer, 5/16" USS
4.	10130	Sq. Head Machine Bolt 5/16" - 18 x 1 3/4"
5.	R214	Back Spring
6.	R212	Back Plate
7.	10303	Round Head Machine Bolt, 5/16" - 18 x 1"
8.	R208	Pump Frame
9.	R207	Bushing (Nylon)
10.	R210	Pump Shaft
11.	R225	Shim 1/32"
12.	R226	Shim, 3/64"
13.	R215	Metering Hose, 1/2" x 13"
14.	10681	Hose Clamp
15.	R223	Roller Arm
16.	10131	Set Screw, 5/16" - 18 x 3/4"
17.	10640	Grease Fitting, 1/4" - 28
18.	R209	Roller
19.	R227	Bushing, Nylon
20.	R228	Intake Manifold
21.	R217	Manifold Plug
22.	R213	Base Angle
23.	10004	HHCS, 3/8" - 16 x 1 1/4"
24.	10101	Hex Nut, 3/8" - 16
25.	R232	Hose Adapter
26.	R211	Rubber Cap
27.	R224	Discharge Manifold
28.	10673	Hose Clamp, No. 8
29.	4300-3	Hose, 1/2" x 30'
A.	A321	Squeeze Pump Complete

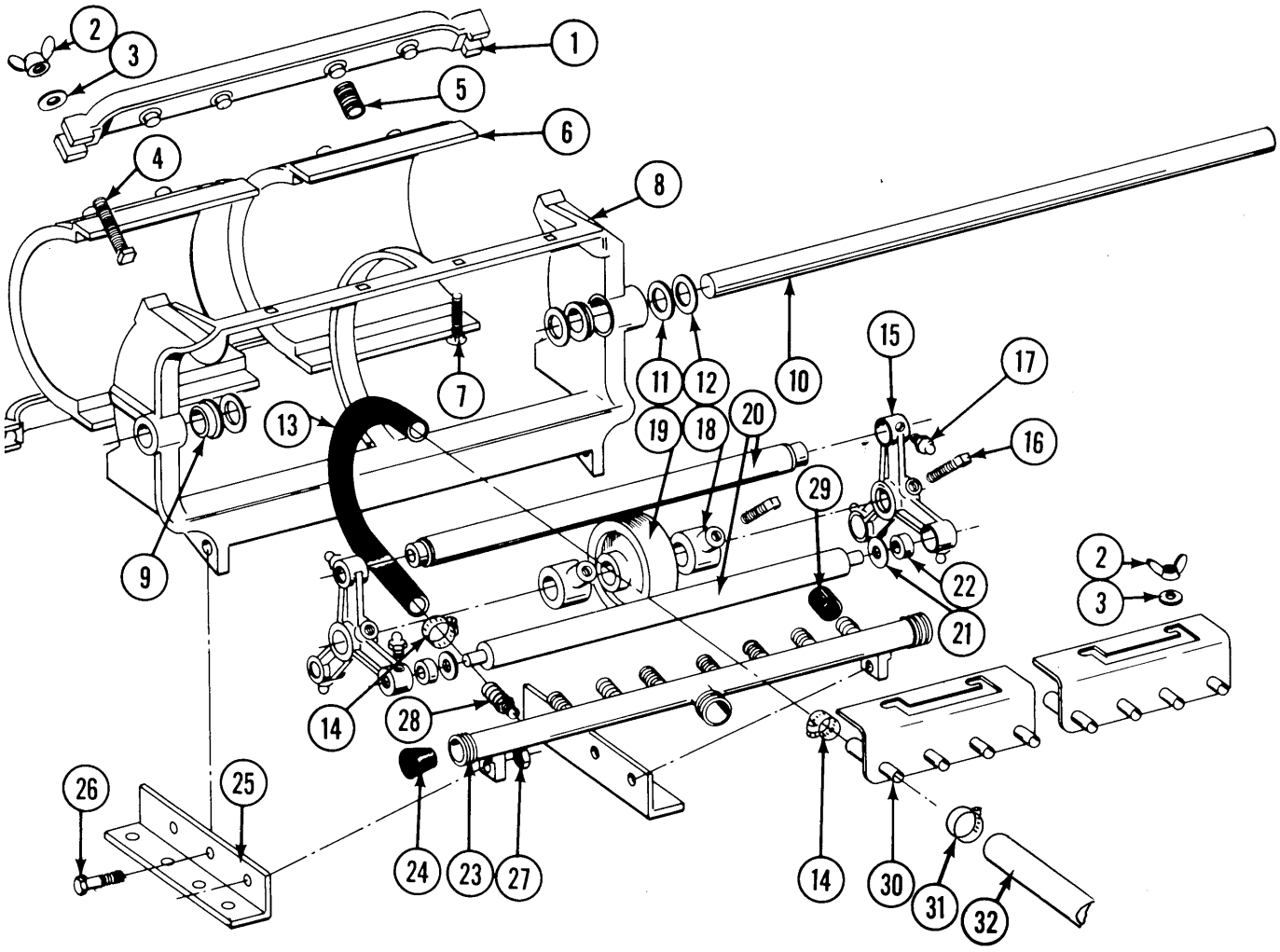
LIQUID FERTILIZER SQUEEZE PUMP - 6 ROW MODEL



LIQUID FERTILIZER SQUEEZE PUMP - 6 ROW MODEL

ITEM	PART NO.	DESCRIPTION
1.	R216	Spring Anchor Bar
2.	10144	Wing Nut 5/16" - 18
3.	10219	Flat Washer, 5/16"
4.	10130	Square Head Machine Bolt, 5/16" - 18 x 1 3/4"
5.	R214	Back Spring
6.	R212	Back Plate
7.	10303	Round Head Machine Bolt, 5/16" - 18 x 1"
8.	R208	Pump Frame
9.	R207	Bushing, Nylon
10.	R210	Pump Shaft
11.	R225	Shim, 1/32"
12.	R226	Shim, 3/64"
13.	R215	Metering Hose, 1/2" x 13"
14.	10681	Hose Clamp
15.	R231	Roller Arm
16.	10131	Set Screw, 5/16" - 18 x 3/4"
17.	10640	Grease Fitting, 1/4" - 28
18.	R233	Roller
19.	R229	Washer, Nylon
20.	R230	Bearing, Roller
21.	R228	Intake Manifold
22.	R217	Manifold Plug
23.	R213	Base Angle
24.	10004	HHCS, 3/8" - 16 x 1 1/4"
25.	10101	Hex Nut, 3/8" - 16
26.	R232	Hose Adapter
27.	R211	Rubber Cap
28.	R224	Discharge Manifold
29.	10673	Hose Clamp, No. 8
30.	4300-4	Hose, 1/2" x 50'
A.	A322	Squeeze Pump Complete

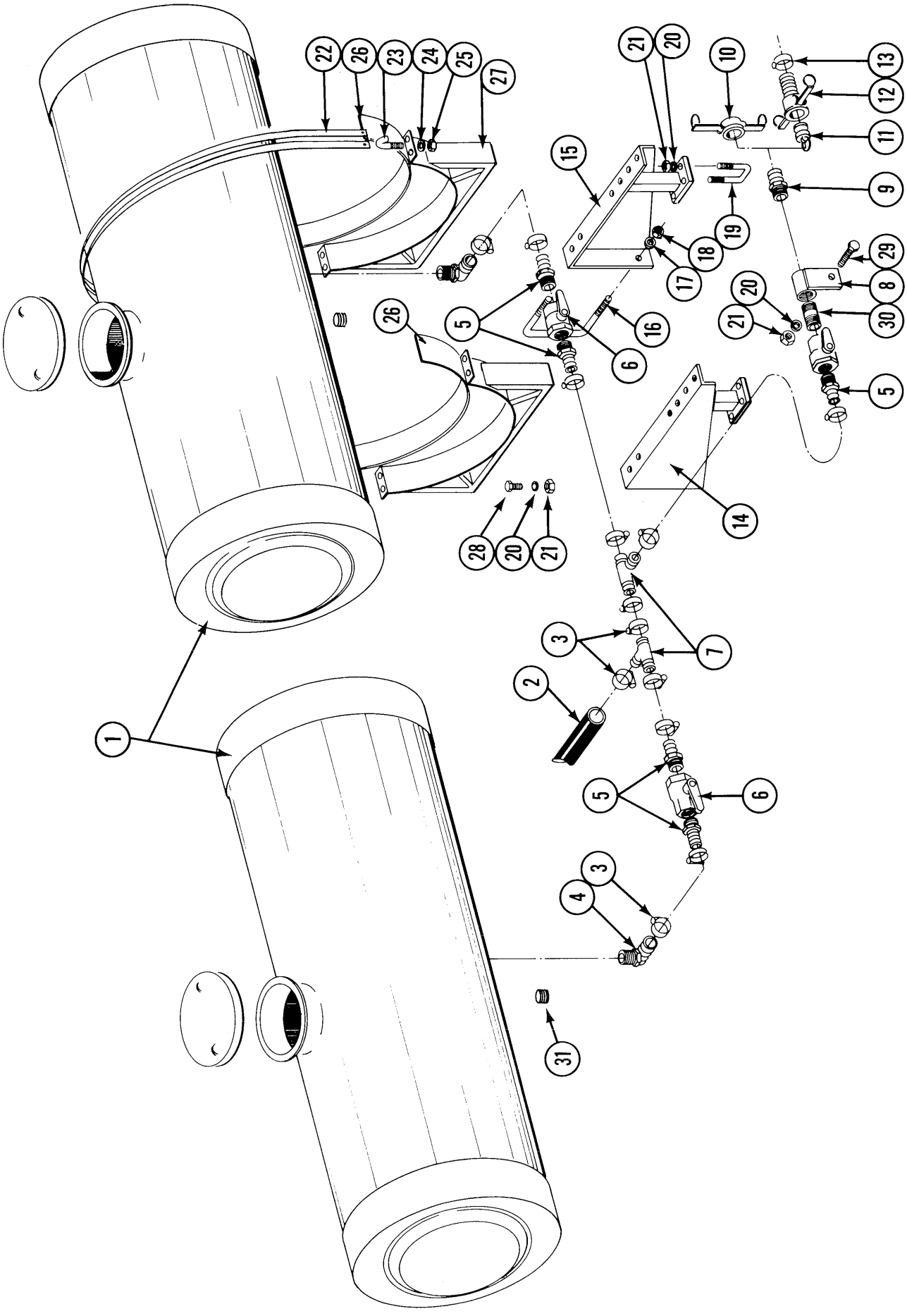
LIQUID FERTILIZER SQUEEZE PUMP - 8 ROW MODEL



LIQUID FERTILIZER SQUEEZE PUMP - 8 ROW MODEL

ITEM	PART NO.	DESCRIPTION
1.	R221	Spring Anchor Bar
2.	10144	Wing Nut, 5/16" - 18
3.	10219	Flat Washer, 5/16"
4.	10130	Square Head Machine Bolt, 5/16" - 18 x 1 3/4"
5.	R214	Back Spring
6.	R212	Back Plate
7.	10303	Round Head Machine Bolt 5/16" - 18 x 1"
8.	R222	Pump Frame
9.	R207	Bushing, Nylon
10.	R220	Pump Shaft
11.	R225	Shim, 1/32"
12.	R226	Shim, 3/64"
13.	R215	Metering Hose, 1/2" x 13"
14.	10681	Hose Clamp
15.	R231	Roller Arm
16.	10131	Set Screw, 5/16" - 18 x 3/4"
17.	10640	Grease Fitting, 1/4" - 28
18.	R282	Set Collar
19.	R281	Back Up Roller
20.	R283	Roller
21.	R229	Washer, Nylon
22.	R230	Bearing, Roller
23.	R284	Intake Manifold
24.	R217	Manifold Plug
25.	R279	Base Angle, Left
	R280	Base Angle, Right
26.	10004	HHCS, 3/8" - 16 x 1 1/4"
27.	10101	Hex Nut, 3/8" - 16
28.	R232	Hose Adapter
29.	R211	Rubber Cap
30.	R236	Discharge Manifold
31.	10673	Hose Clamp, No. 8
32.	4300-5	Hose, 1/2"x 100'
A.	A323	Squeeze Pump Complete

LIQUID FERTILIZER TANK ASSEMBLY



LIQUID FERTILIZER TANK ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1.	D1808	Tank w/lid and 1 1/4" Pipe Boss, 24" x 100 gal.
	R511	1 1/4" Pipe Boss
	R512	Lid, 13"
2.	4200-1	Hose, 1 1/4" x 22', 4R
	4200-2	Hose, 1 1/4" x 27', 6R
	4200-3	Hose, 1 1/4" x 32', 8R
3.	10674	Hose Clamp, No. 24
4.	10742	Elbow, 90°, 1 1/4" NPT to 1 1/4" Barb
5.	10745	Adapter, 1 1/4" NPT to 1 1/4" Barb Fitting
6.	A499	Ball Valve, 1 1/4" Nylon
7.	10750	Tee, 1 1/4", Plastic
8.	A918	Quick Fill Adapter Mount
9.	D1514	Q Cam, 1 1/4"
10.	D1515	Dust Cap, 1 1/4"
11.	D1517	Dust Plug
12.	D1516	Q CHB, 1 1/2"
13.	10672	Hose Clamp, No. 28
14.	A878	Tank Mounting Bracket, R.H.
15.	A879	Tank Mounting Bracket, L.H.
16.	D1114	U-Bolt, 5/8" - 11 x 7 x 7
17.	10230	Lock Washer, 5/8"
18.	10104	Hex Nut, 5/8" - 11
19.	D1339	U-bolt, 1/2" - 13 x 3" x 2 1/2"
20.	10228	Lock Washer, 1/2"
21.	10102	Hex Nut, 1/2" - 13
22.	D1335	Tank Band, 24"
23.	D1337	J-Bolt, 5/16"
24.	10232	Lock Washer, 5/16"
25.	10106	Hex Nut, 5/16" - 18
26.	D1807	Tank Pad, 6" width (14' Roll)
27.	A919	Tank Saddle, 24"
28.	10017	HHCS, 1/2" - 13 x 1 1/2"
29.	10032	HHCS, 1/2" - 13 x 3 3/4"
30.	10094	Pipe Nipple, 1 1/4" x 3"
	D1162	28" Tie Strap (Not Shown)
	D1512	6" Tie Strap (Not Shown)
	D2117	14 1/2" Tie Strap (Now Shown)

NUMERICAL INDEX