TWIN-LINE® PLANTER

OPERATOR & PARTS MANUAL

M0129 Reprint 7/98

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

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, on products sold and located within the boundaries of the U.S. and Canada, 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 the alteration, 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, restriction 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 of 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 obligation.

W12187

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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. Do not use or operate this equipment until this manual has been read and understood.

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:

Twin-Line Planter
Model Number TL
Serial Number 30001 - 30071

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

Date Purchased _____

Serial Number _____

Model Number _____

NEW MACHINE WARRANTY

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INTRODUCTION

The Twin-Line planter is available in various configurations with a choice of 38", 36" or 30" row spacing. Optional interplant row spacing of 19", 18" or 15" are obtainable with the addition of pusher type row units.

The Twin-Line planter permits installation of liquid or dry fertilizer application equipment and 1" or 2" no-till coulters. For further information on installation and use of optional equipment on all models, refer to the Assembly and Operation Sections of this manual and your 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, possible 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 throughout 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.

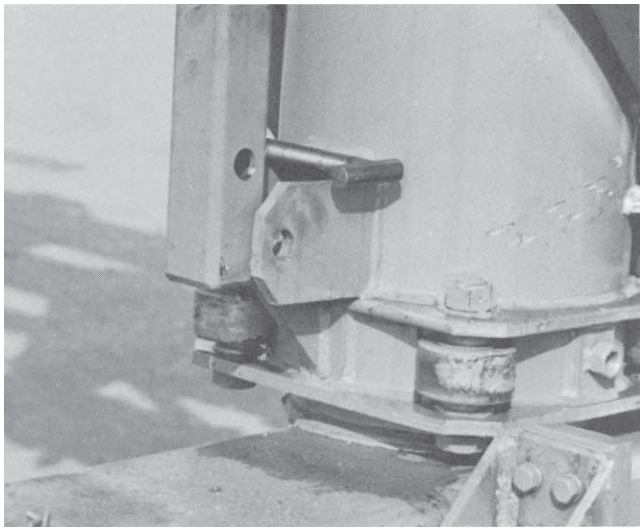
The serial number plate is located on the planter frame to be readily available. It is suggested that the serial number and purchased date also be recorded in the space provided on the inside front cover page of this manual. Always provide the serial number and model number to your Kinze dealer when 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 Kinze 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.
- Always make sure there are no persons near the planter when marker assemblies are in operation or when rotating the planter.
- 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.
- Rear of planter swings wide in turns. Always allow sufficient room to clear obstacles when turning.
- Never work under the planter while in raised position without using support stand.
- Avoid transporting planter with hoppers loaded whenever possible. When it is necessary to transport the planter with the hoppers loaded, the added weight should be distributed evenly on the planter frame before rotating the planter.
- Never allow the planter to be operated by anyone who is unfamiliar with the operation of all functions of the unit. All operators should read and thoroughly understand the instructions given in this manual prior to moving the unit.
- Install lockup brackets on markers prior to towing the planter or working around the unit.



- 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.
- 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.

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 operator's 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.

⚠ WARNING: 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.

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

4. Ensure electrical control harness is securely connected.

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

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

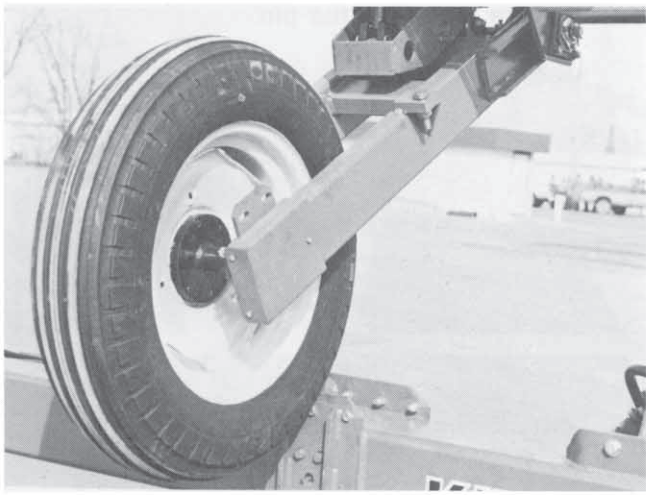
LEVELING THE PLANTER

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

Three holes in the hitch bracket allow the clevis to be raised or lowered. In addition, the clevis may be turned over for a finer adjustment between mounting holes. When installing clevis mounting bolt, make sure lock nut is tightened to proper torque setting.

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

In order to maintain lateral levelness, it is important that tire pressure be maintained at pressures specified. Adjusting bolts on each drive wheel module on 12 row and larger models also allows for additional adjustment for leveling the wings.



TIRE PRESSURE

Tire pressure should be checked regularly and maintained as follows:

Transport - 40 PSI
Drive Gauge - 40 PSI

IMPORTANT: Tire pressure must be correctly maintained in all drive wheel tires to insure level and proper operation of planter. Also all rate charts are based on tire inflation of 40 PSI.

OPERATION

TRANSMISSION ADJUSTMENT

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

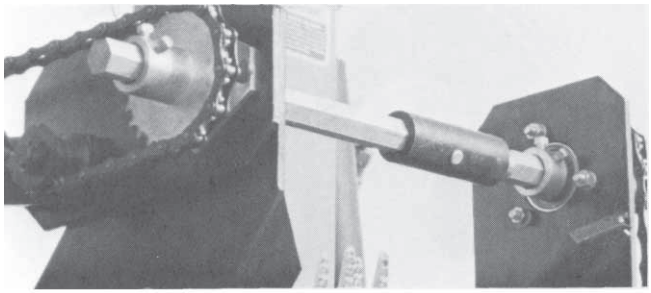
A decal positioned next to the transmission provides proper chain routing. The planting rate charts found at the end of this section will aid you in selecting the correct sprocket combinations. After positioning both sprockets, replace the lynch pins. Then restore tension on the drive chain.

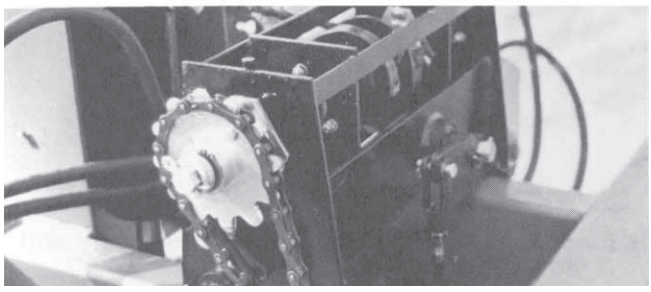
IMPORTANT: After each sprocket combination adjustment, make field check to be sure you are planting at the desired rate.

SHEAR PROTECTION

The planter drive line and row unit and fertilizer components are protected from damage by shear pins.

If excessive load should cause a pin to shear, it is important to determine where binding has occured before replacing the pin.





CAUTION: On each drive clutch assembly a special, grade 2, shear bolt is used on the input sprocket. Never replace this bolt with any other size or grade bolt. Additional bolts of the correct size are stored inside each clutch housing.

To prevent future binding or breakage of components, follow prescribed lubrication schedules.

Be sure universal joints on drives are in time.

HYDRAULIC OPERATION

All Twin-Line planters are equipped for a triple valve hydraulic system.

One set of outlets is used to raise and lower the planter, one set is used to operate the markers and one set in conjunction with the electric control panel is used to operate the rotate to transport functions.

⚠ **WARNING:** Make sure all hydraulic hoses are properly connected before operating the planter. Never connect or disconnect hydraulic hoses without first stopping the tractor engine and moving the hydraulic operating levers in both directions to relieve any pressure in the system.

NOTE: To purge air from the hydraulic hoses, lower the planter to the planting position and hold the tractor hydraulic control lever in that position until the cylinders are fully retracted. Tractor reservoir should be sufficiently full of hydraulic fluid.

MARKER FLOW CONTROL

The arrow on all flow controls should be pointed toward the tractor. The system is designed to restrict the flow of oil back to the tractor.

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 to open the valve. To decrease the cylinder speed, turn the valve clockwise to close the valve.

NOTE: Make sure all adjustments are made with warm oil. Marker speed will decrease with cold oil supply.

MARKER OPERATION

Two solenoid valves along with a three position selector switch permits the operator to raise or lower the desired marker.

1. On the control panel select which marker you want lowered.
2. Operate hydraulic control lever to lower marker.
3. If opposite marker is to be used next, flip control switch to other side.

4. At end of field, using hydraulic control lever raise the down marker.

5. After making the turn, using the hydraulic lever lower the preselected marker.

6. Continue to follow this procedure.

NOTE: Switch should be left in "off" position when planter is not in use. If left in "on" position overnight it will drain the tractor battery.

If the electrical system fails to operate properly:

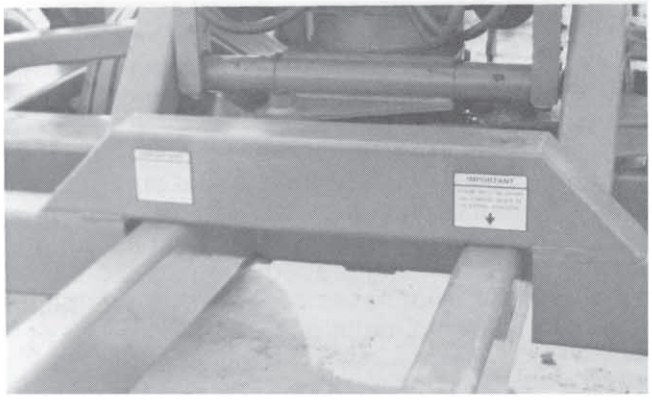
Check fuse
Check wiring connections
Check control switch
Check solenoid - Solenoid housing will be magnetized when energized.

PLANTER OPERATION

The planter lift system on the 12 row and larger planter consists of two master cylinders located near the center of the machine and slave cylinders on the outer wings. The number of slave cylinders used depends on the size of the planter. Due to the rigid design of the 8 row model, only a total of two lift cylinders are used.

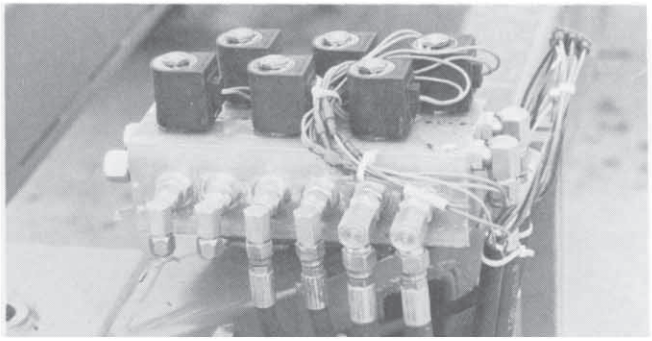
Raised field position —
In making turns or passing over waterways during in-field operations, only partial lift is used. To do this, operate the appropriate tractor hydraulic lever until it kicks out of detent. The master cylinders will extend approximately 10 inches (about half the stroke of the cylinders) while the slave cylinders extend fully.

Planting position —
When lowering the planter to planting position, be sure that the frame rests fully on the tongue (cylinders fully retracted). Failing to completely retract all cylinders when the planter is lowered will result in the cylinders being out of phase. Cylinders are rephased by holding the operating lever in the lowering position until all cylinders are completely retracted. Float position may **NOT** be used.



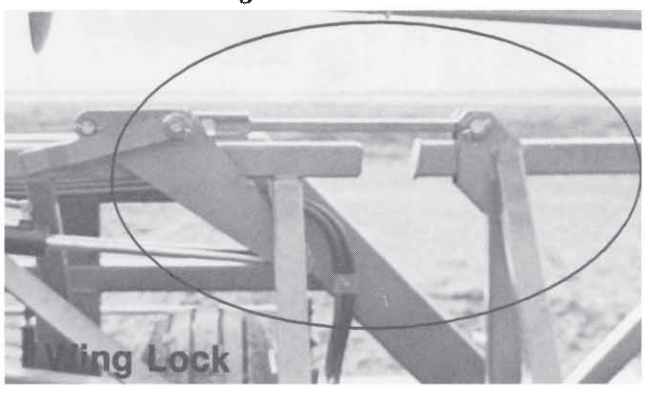
Raised transport position —
When the planter is raised fully for transport, the cylinders are routinely placed out of sequence. It is necessary to rephase the cylinders each time the planter is lowered from the transport position.

Three pairs of electric solenoid valves, each pair controlled by a momentary contact selector switch, allow the operator to hydraulically lock wings rigid on 12 row and larger planters, extend planter tongue and rotate planter to the transport position. Switch must be held, in contact when operated.



Planting to transport operation procedure:

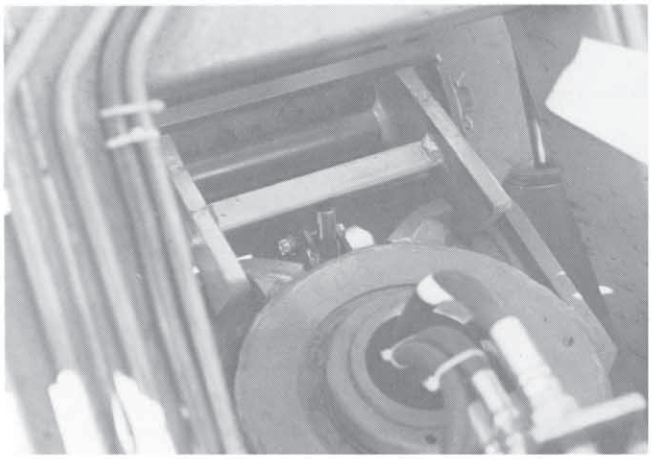
1. Secure wing locks to lock entire frame rigid. (12 row and larger planters)
   a. Press "wing" switch and hold.
   b. Engage and hold hydraulic lever until wing lock cylinders are fully extended and wing locks are locked over center.



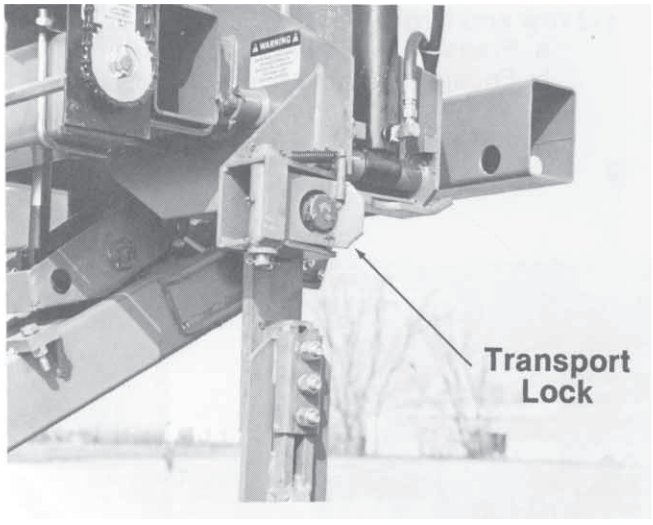
2. Raise row units and fully extend the tongue.
   a. Place hydraulic lift lever in raise position until lever kicks out of detent and row units are raised off ground.
   b. Press "tongue" switch and hold.
   c. Engage hydraulic lever to fully extend tongue.

NOTE: If tongue lock fails to release, reverse tractor to release mechanical pressure against tongue cylinder and then reactivate "tongue" switch.

3. Secure lift lock by raising planter fully until lock drops into place.
   a. Hold hydraulic lift lever until master cylinders are fully extended. This is accomplished by continuing to extend the master cylinders while the slave cylinders bypass oil back to the tractor.
   b. Engagement of the lift lock can be observed from the tractor seat.



4. Rotate planter until transport lock is secured.
   a. Press "rotate" switch and hold.
   b. Engage hydraulic lever to rotate planter until transport lock drops into place.
   c. Engagement of transport lock can be observed from the tractor seat.

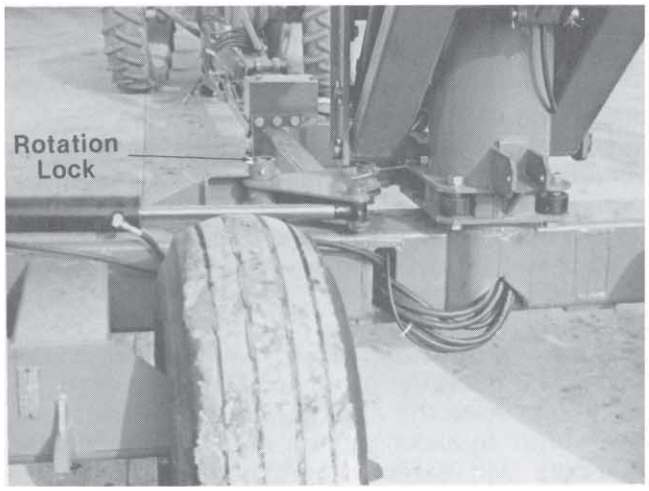


Transport to planting operation procedure:

1. Release transport lock.
   a. Press "tongue" switch and hold.
   b. Engage hydraulic lever until tongue is retracted approximately 1" or only far enough to release lock from circular bracket on planter tongue.

   CAUTION: Retracting tongue too far at this point can cause collision damage to attachments during rotation of planter.

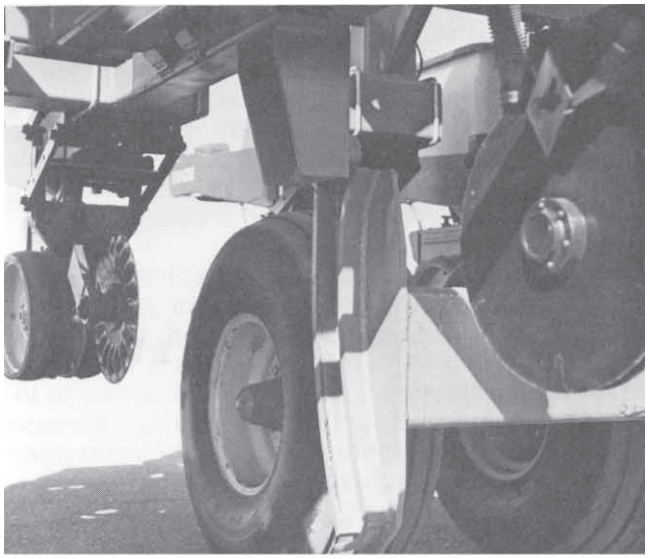
2. Rotate planter into field position.
   a. Press "rotate" switch and hold.
   b. Engage and hold hydraulic lever until rotation cylinder is fully extended and rotation lock is locked over center.



   CAUTION: Failure to rotate completely before lowering planter can damage frame, row units and/or tires.

3. Release lift lock.
   a. Engage and hold hydraulic lift lever in down position momentarily to allow latch release cylinder to move into release position.
   b. Engage hydraulic lift lever to raise planter and allow release cylinder to release lift lock. Lift lock operation can be observed from the tractor seat.
   c. Hold hydraulic lift lever in down position and lower planter to the ground.

   IMPORTANT: To prevent damage to frame, units or tires, make sure frame has been completely rotated (Step 2 above) so that cams on center section are tracking properly in guides on axle and pivot assembly to prevent damage to frame, units or tires.

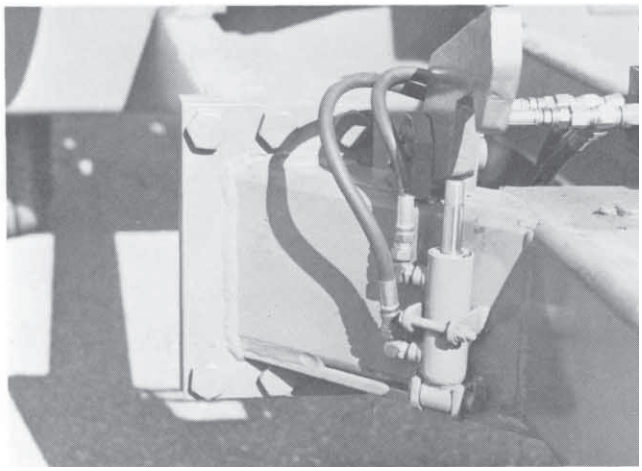


4. Rephase hydraulic lift system.
   Hold hydraulic lift lever in down position until master/slave cylinders are completely retracted. This can take several seconds.
   Center frame of planter will pull down against tongue when cylinders are in phase.

5. Release wing locks so wings may flex.
   a. Press "wing" switch and hold.
   b. Engage and hold hydraulic lever until wing lock cylinders are fully retracted.

6. Raise planter to raised field position.
   Place hydraulic lift lever in raised position until lever kicks out of detent and row units are raised.

7. Retract tongue until tongue lock engages.
   a. Press "tongue" switch and hold.
   b. Engage and hold hydraulic lever until tongue is fully retracted and tongue lock drops into place.



NOTE: The tongue lock locks and unlocks automatically.

If the electrical system fails to operate properly:

Check fuse
Check wiring connections
Check control switch
Check solenoids - Solenoid housing will be magnetized when energized.

NOTE: These solenoids operate in pairs.

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 blade to the center line of the planter 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 blade 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

12 x 30" = 360" Marker Dimension

The marker blade is installed so the concave side of the blade is outward to throw dirt away from the grease seals. The spindle bracket is slotted so the hub and blade can be angled forward or rearward to throw more or less dirt. To adjust the hub and spindle, loosen the ½" x 3½" capscrews and move the bracket as required. Then tighten bolts to the specified torque.

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

OPERATION

TRANSPORTING THE PLANTER

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

CAUTION: Avoid transporting planter with hoppers loaded whenever possible. When it is necessary to transport the planter with the hoppers loaded, the added weight should be distributed evenly on the planter frame before rotating the planter.

TRACTOR SPEED

Planters are designed to operate within a speed range of 2 to 8 M.P.H. 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.

FIELD TEST

We recommend a field test be made to insure proper seed placement and operation of row units. See rate charts at end of this section.

Also check for any marker adjustment that may be needed.

After the planter has been field tested, re-inspect the unit.

☐ Hoses - Fittings

☐ Bolts - Nuts

☐ Drive Chains

DOUBLE DISK OPENER

The double disk openers should be positioned on the opener mounting bar 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.

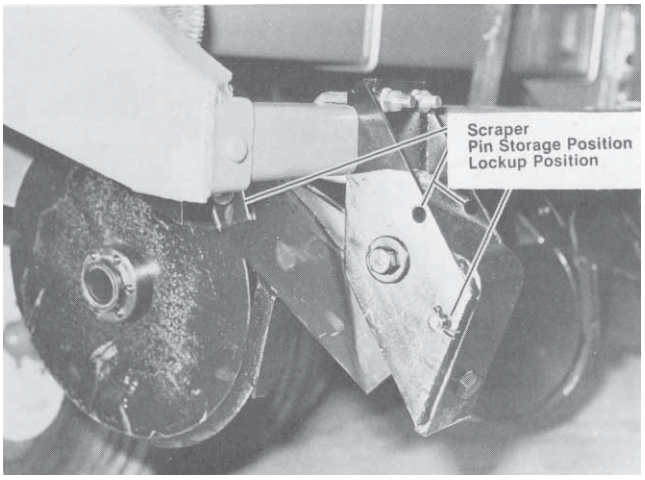
The down pressure springs are factory preset at 250 pounds but may be adjusted for various soil conditions. To adjust spring tension, loosen the jam nut with 15/16" wrench and use a 1" wrench to turn the adjustment bolt. Turn clockwise to increase tension or counterclockwise to decrease tension. Securely 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 scraper on each blade may also be adjusted to make up for wear that may occur. Make sure the scraper is adjusted so it is making slight contact with the blade.

The rear blade should have approximately 2 to 3 inches of circumference contact on the side of the lead blade. To adjust blade contact, machinery bushings (10213) can be added or removed.

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.



DRY FERTILIZER ATTACHMENT

The rate of dry fertilizer application is determined by the drive and driven sprocket combinations on the fertilizer drive. Sprocket combinations are changed in the same manner as the row unit transmission. Loosen the drive chain and slide the selected sprockets into alignment with the idlers. Then restore proper chain tension 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, deposit of fertilizer left in the hopper can cause metal corrosion.

The dry fertilizer attachment uses one fiberglass hopper for every 2 rows. 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 caps screws from the hopper bracket at the rear of each 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.

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 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 at various locations, 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 forward and sideways or rearward 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 ¼ turn in the clockwise direction.

For the *left hand hose* (facing front of pump) twist the hose ¼ 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 extended period of non-use. Do not allow fertilizer to crystallize because of cold temperature or evaporation.

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

PLANTING RATES FOR PLATELESS CORN METERS

SEED POPULATIONS/ACRE FOR DIFFERENT ROW WIDTHS

30 Inch	36 Inch	38 Inch	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)	Average Seed Spacing In Inches
12,200	10,200	9,600	14	30	4 to 8	17.1
13,100	10,900	10,300	14	28	4 to 8	16.0
14,100	11,700	11,100	14	26	4 to 8	14.9
14,900	12,500	11,800	16	28	4 to 8	14.0
15,700	13,100	12,400	18	30	4 to 8	13.3
16,100	13,400	12,700	16	26	4 to 8	13.0
16,600	13,900	13,100	14	22	4 to 8	12.6
18,100	15,100	14,300	18	26	4 to 8	11.6
19,000	15,900	15,000	16	22	4 to 8	11.0
19,100	16,000	15,100	22	30	4 to 8	10.9
20,300	17,000	16,100	14	18	4 to 8	10.3
20,500	17,100	16,200	22	28	4 to 8	10.2
21,400	17,800	16,900	18	22	4 to 8	9.8
22,100	18,400	17,400	22	26	4 to 8	9.5
22,600	18,900	17,900	26	30	4 to 8	9.2
22,800	19,100	18,000	14	16	4 to 8	9.1
23,200	19,400	18,300	16	18	4 to 8	9.0
24,200	20,200	19,100	26	28	4 to 7 1/2	8.6
24,400	20,300	19,200	28	30	4 to 7 1/2	8.6
25,900	21,800	20,600	22	22	4 to 7	8.0
27,800	23,400	22,100	30	28	4 to 6 1/2	7.5
28,100	23,500	22,200	28	26	4 to 6 1/2	7.4
29,400	24,500	23,200	18	16	4 to 6 1/2	7.1
29,800	24,900	23,500	16	14	3 to 6	7.0
30,100	25,200	23,800	30	26	3 to 6	6.9
30,800	25,800	24,300	26	22	3 to 6	6.8
31,900	26,600	25,200	22	18	3 to 5 1/2	6.5
33,200	27,700	26,200	28	22	3 to 5 1/2	6.3
33,600	28,000	26,500	18	14	3 to 5 1/2	6.2
35,600	29,700	28,100	30	22	3 to 5	5.9
35,900	30,000	28,300	22	16	3 to 5	5.8
37,700	31,500	29,800	26	18	3 to 4 1/2	5.5
41,000	34,300	32,400	22	14	3 to 4 1/2	5.1
42,400	35,400	33,500	26	16	3 to 4 1/2	4.9
43,500	36,300	34,300	30	18	2 to 4	4.8
45,700	38,200	36,100	28	16	2 to 4	4.6
48,500	40,500	38,300	26	14	2 to 3 1/2	4.3
52,200	43,600	41,200	28	14	2 to 3 1/2	4.0
55,900	46,700	44,100	30	14	2 to 3	3.7

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50-20 inch drive tires and 14:12 drive/driven sprocket ratio. 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 least desireable. Higher than optimum speeds may result in population rate increases or higher incidence of doubles and triples, particularly with small flat seeds.

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

PLANTING RATES FOR PLATELESS SOYBEAN METERS

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - MEDIUM SEEDS

15 Inch	30 Inch	36 Inch	38 Inch	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)
64	32	27	25	14	30	4 to 8
68	34	28	27	14	28	4 to 8
73	36	30	29	14	26	4 to 8
77	38	32	30	16	28	4 to 8
79	40	33	31	18	30	4 to 8
80	40	33	32	16	26	4 to 8
82	41	34	32	14	22	4 to 8
86	43	36	34	18	26	4 to 8
90	45	38	36	16	22	4 to 8
91	45	38	36	22	30	4 to 8
96	48	40	38	14	18	4 to 8
97	49	41	38	22	28	4 to 8
101	51	42	40	18	22	4 to 8
105	52	44	41	22	26	4 to 8
107	54	45	42	26	30	4 to 8
109	54	45	43	14	16	4 to 8
110	55	46	44	16	18	4 to 8
115	58	48	45	26	28	4 to 7 1/2
116	58	48	46	28	30	4 to 7 1/2
124	62	52	49	22	22	4 to 7
133	66	55	52	30	28	4 to 6 1/2
134	67	56	53	28	26	4 to 6 1/2
140	70	58	55	18	16	4 to 6 1/2
142	71	59	56	16	14	3 to 6
143	72	60	56	30	26	3 to 6
147	73	61	58	26	22	3 to 6
152	76	63	60	22	18	3 to 5 1/2
158	79	66	62	28	22	3 to 5 1/2
159	80	66	63	18	14	3 to 5 1/2
169	85	70	67	30	22	3 to 5
171	85	71	67	22	16	3 to 5
179	90	75	71	26	18	3 to 5
191	95	79	75	22	14	3 to 5
196	98	82	77	26	16	3 to 5
201	100	84	79	30	18	3 to 5
208	104	87	82	28	16	3 to 5
218	109	91	86	26	14	3 to 5
232	116	97	92	28	14	3 to 5
246	123	102	97	30	14	3 to 5

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. Recommended tire pressure 40 PSI.

IMPORTANT: Soybeans vary in size from about 3500 seeds/lb. to about 1800 seeds/lb. The size marked on each bag is an average. Seeds within each bag may vary in size by as much as 50% greater or 50% smaller than the average.

The above chart was based on uniformly sized soybeans. Your actual planting rate will vary somewhat from the above table. Generally, larger beans will give lower rates and smaller beans will give higher rates.

Your actual planting rate must be checked in the field with the beans that you are planting and the transmission sprockets changed to give you the rate that you desire, even if it is different than the above table.

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

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch row spacing.

OPERATION

PLANTING RATES FOR PLATELESS SOYBEAN METERS

APPROXIMATE BEANS/ACRE FOR DIFFERENT ROW WIDTHS - SMALL SEEDS

15 Inch	30 Inch	36 Inch	38 Inch	Seeds/Foot	Seed Spacing (Inches)	Transmission Sprockets		Reccommended Speed Range (MPH)
						Drive	Driven	
241,500	120,700	100,600	95,300	7	1.7	14	30	4 to 8
257,100	128,500	107,100	101,500	7	1.6	14	28	4 to 8
275,400	137,700	114,700	108,700	8	1.5	14	26	4 to 8
289,300	144,600	120,500	114,200	8	1.4	16	28	4 to 8
300,400	150,200	125,100	118,600	9	1.4	18	30	4 to 8
303,700	151,900	126,600	119,900	9	1.4	16	26	4 to 8
310,200	155,100	129,300	122,500	9	1.4	14	22	4 to 8
324,500	162,200	135,200	128,100	9	1.3	18	26	4 to 8
340,900	170,400	142,000	134,600	10	1.2	16	22	4 to 8
343,700	171,900	143,200	135,700	10	1.2	22	30	4 to 8
364,600	182,300	151,900	143,900	10	1.1	14	18	4 to 8
368,300	184,100	153,500	145,400	11	1.1	22	28	4 to 8
383,500	191,700	159,800	151,400	11	1.1	18	22	4 to 8
396,600	198,300	165,300	156,600	11	1.1	22	26	4 to 8
406,200	203,100	169,300	160,400	12	1.0	26	30	4 to 8
410,100	205,100	170,900	161,900	12	1.0	14	16	4 to 8
416,600	208,300	173,600	164,500	12	1.0	16	18	4 to 8
435,200	217,600	181,400	171,800	12	1.0	26	28	4 to 7 1/2
437,500	218,700	182,300	172,700	13	1.0	28	30	4 to 7 1/2
468,700	234,400	195,300	185,000	13	0.9	22	22	4 to 7
502,200	251,100	209,300	198,200	14	0.8	30	28	4 to 6 1/2
504,800	252,400	210,300	199,300	14	0.8	28	26	4 to 6 1/2
527,300	263,700	219,700	208,100	15	0.8	18	16	4 to 6 1/2
535,700	267,800	223,200	211,500	15	0.8	16	14	3 to 6
540,800	270,400	225,300	213,500	15	0.8	30	26	3 to 6
553,900	277,000	230,800	218,700	16	0.8	26	22	3 to 6
572,900	286,400	238,700	226,100	16	0.7	22	18	3 to 5 1/2
596,600	298,300	248,600	235,500	17	0.7	28	22	3 to 5 1/2
602,600	301,300	251,100	237,900	17	0.7	18	14	3 to 5 1/2
639,200	319,600	266,300	252,300	18	0.7	30	22	3 to 5
644,500	322,200	268,500	254,400	18	0.7	22	16	3 to 5
677,000	338,500	282,100	267,300	19	0.6	26	18	3 to 5
721,100	360,500	300,500	284,600	21	0.6	22	14	3 to 5
740,300	370,200	308,500	292,200	21	0.6	26	16	3 to 5
758,500	379,300	316,100	299,400	22	0.6	30	18	3 to 5
787,500	393,700	328,100	310,800	23	0.5	28	16	3 to 5
825,200	412,600	343,800	325,700	24	0.5	26	14	3 to 5
876,500	438,300	365,200	346,000	25	0.5	28	14	3 to 5
929,100	464,500	387,100	366,700	27	0.5	30	14	3 to 5

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. Recommended tire pressure 40 PSI.

IMPORTANT: Soybeans vary in size from about 3500 seeds/lb. to about 1800 seeds/lb. The size marked on each bag is an average. Seeds within each bag may vary in size by as much as 50% greater or 50% smaller than the average.

The above chart was based on uniformly sized soybeans. Your actual planting rate will vary somewhat from the above table. Generally, larger beans will give lower rates and smaller beans will give higher rates.

Your actual planting rate must be checked in the field with the beans that you are planting and the transmission sprockets changed to give you the rate that you desire, even if it is different than the above table.

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

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch row spacing.

PLANTING RATES FOR PLATELESS SOYBEAN METERS

APPROXIMATE BEANS/ACRE FOR DIFFERENT ROW WIDTHS - MEDIUM SEEDS

15 Inch	30 Inch	36 Inch	38 Inch	Seeds/Foot	Seed Spacing (Inches)	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)
159,700	79,900	66,500	63,000	5	2.6	14	30	4 to 8
170,800	85,000	70,800	67,100	5	2.5	14	28	4 to 8
182,100	91,100	75,900	71,900	5	2.3	14	26	4 to 8
191,300	95,700	79,700	75,500	5	2.2	16	28	4 to 8
198,600	99,300	82,800	78,400	6	2.1	18	30	4 to 8
200,900	100,400	83,700	79,300	6	2.1	16	26	4 to 8
205,200	102,600	85,500	81,000	6	2.0	14	22	4 to 8
214,600	107,300	89,400	84,700	6	2.0	18	26	4 to 8
225,500	112,700	93,900	89,000	6	1.9	16	22	4 to 8
227,300	113,700	94,700	89,700	7	1.8	22	30	4 to 8
241,100	120,600	100,500	95,200	7	1.7	14	18	4 to 8
243,600	121,800	101,500	96,100	7	1.7	22	28	4 to 8
253,600	126,800	105,700	100,100	7	1.7	18	22	4 to 8
262,300	131,200	109,300	103,500	8	1.6	22	26	4 to 8
268,700	134,300	111,900	106,100	8	1.6	26	30	4 to 8
271,300	135,600	113,000	107,100	8	1.5	14	16	4 to 8
275,600	137,800	114,800	108,800	8	1.5	16	18	4 to 8
287,900	143,900	119,900	113,600	8	1.5	26	28	4 to 7 1/2
289,300	144,700	120,600	114,200	8	1.4	28	30	4 to 7 1/2
310,000	155,000	129,200	122,400	9	1.4	22	22	4 to 7
332,100	166,100	138,400	131,100	10	1.3	30	28	4 to 6 1/2
333,800	166,900	139,100	131,800	10	1.3	28	26	4 to 6 1/2
348,800	174,400	145,300	137,700	10	1.2	18	16	4 to 6 1/2
354,300	177,100	147,600	139,800	10	1.2	16	14	3 to 6
357,700	178,800	149,000	141,200	10	1.2	30	26	3 to 6
366,400	183,200	152,700	144,600	10	1.1	26	22	3 to 6
378,900	189,400	157,900	149,600	11	1.1	22	18	3 to 5 1/2
394,500	197,300	164,400	155,700	11	1.1	28	22	3 to 5 1/2
398,600	199,300	166,100	157,300	11	1.1	18	14	3 to 5 1/2
422,700	211,400	176,100	166,900	12	1.0	30	22	3 to 5
426,300	213,100	177,600	168,300	12	1.0	22	16	3 to 5
447,800	223,900	186,600	176,800	13	0.9	26	18	3 to 5
476,900	238,500	198,700	188,300	14	0.9	22	14	3 to 5
489,600	244,800	204,000	193,300	14	0.9	26	16	3 to 5
501,700	250,800	209,000	198,000	14	0.8	30	18	3 to 5
520,800	260,400	217,000	205,600	15	0.8	28	16	3 to 5
545,800	272,900	227,400	215,400	16	0.8	26	14	3 to 5
579,700	289,900	241,500	228,800	17	0.7	28	14	3 to 5
614,500	307,200	256,000	242,600	18	0.7	30	14	3 to 5

IMPORTANT: Soybeans vary in size from about 3500 seeds/lb. to about 1800 seeds/lb. The size marked on each bag is an average. Seeds within each bag may vary in size by as much as 50% greater or 50% smaller than the average.

The above chart was based on uniformly sized soybeans. Your actual planting rate will vary somewhat from the above table. Generally, larger beans will give lower rates and smaller beans will give higher rates.

Your actual planting rate must be checked in the field with the beans that you are planting and the transmission sprockets changed to give you the rate that you desire, even if it is different than the above table.

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. Recommended tire pressure 40 PSI.

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

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch row spacing.

PLANTING RATES FOR PLATELESS SOYBEAN METERS

APPROXIMATE BEANS/ACRE FOR DIFFERENT ROW WIDTHS - LARGE SEEDS

15 Inch	30 Inch	36 Inch	38 Inch	Seeds/Foot	Seed Spacing (Inches)	Transmission Sprockets		Recommended Speed Range (MPH)
						Drive	Driven	
106,900	53,500	44,600	42,200	3	3.9	14	30	4 to 8
113,900	56,900	47,400	44,900	3	3.7	14	28	4 to 8
121,900	61,000	50,800	48,100	3	3.4	14	26	4 to 8
128,100	64,100	53,400	50,600	4	3.3	16	28	4 to 8
133,000	66,500	55,400	52,500	4	3.2	18	30	4 to 8
134,500	67,300	56,000	53,100	4	3.1	16	26	4 to 8
137,400	68,700	57,200	54,200	4	3.1	14	22	4 to 8
143,700	71,900	59,900	56,700	4	2.9	18	26	4 to 8
151,000	75,500	62,900	59,600	4	2.8	16	22	4 to 8
152,200	76,100	63,400	60,100	4	2.8	22	30	4 to 8
161,400	80,700	67,300	63,700	5	2.6	14	18	4 to 8
163,100	81,500	68,000	64,400	5	2.6	22	28	4 to 8
169,800	84,900	70,800	67,000	5	2.5	18	22	4 to 8
175,600	87,800	73,200	69,300	5	2.4	22	26	4 to 8
179,900	90,000	75,000	71,000	5	2.3	26	30	4 to 8
181,600	90,800	75,700	71,700	5	2.3	14	16	4 to 8
184,500	92,300	76,900	72,800	5	2.3	16	18	4 to 8
192,700	96,400	80,300	76,100	6	2.2	26	28	4 to 7 1/2
193,700	96,900	80,700	76,500	6	2.2	28	30	4 to 7 1/2
207,600	103,800	86,500	81,900	6	2.0	22	22	4 to 7
222,400	111,200	92,700	87,800	6	1.9	30	28	4 to 6 1/2
223,500	111,800	93,100	88,200	6	1.9	28	26	4 to 6 1/2
233,500	116,800	97,300	92,200	7	1.8	18	16	4 to 6 1/2
237,200	118,600	98,800	93,600	7	1.8	16	14	3 to 6
239,500	119,800	99,800	94,500	7	1.7	30	26	3 to 6
245,300	122,700	102,200	96,800	7	1.7	26	22	3 to 6
253,700	126,900	105,700	100,100	7	1.7	22	18	3 to 5 1/2
264,200	132,100	110,100	104,300	8	1.6	28	22	3 to 5 1/2
266,900	133,400	111,200	105,300	8	1.6	18	14	3 to 5 1/2
283,100	141,500	117,900	111,700	8	1.5	30	22	3 to 5
285,400	142,700	118,900	112,700	8	1.5	22	16	3 to 5
299,800	149,900	124,900	118,400	9	1.4	26	18	3 to 5
319,300	159,700	133,100	126,100	9	1.3	22	14	3 to 5
327,900	164,000	136,600	129,400	9	1.3	26	16	3 to 5
335,900	168,000	140,000	132,600	10	1.2	30	18	3 to 5
348,700	174,400	145,300	137,700	10	1.2	28	16	3 to 5
365,500	182,700	152,300	144,300	10	1.1	26	14	3 to 5
388,200	194,100	161,700	153,200	11	1.1	28	14	3 to 5
411,400	205,700	171,400	162,400	12	1.0	30	14	3 to 5

IMPORTANT: Soybeans vary in size from about 3500 seeds/lb. to about 1800 seeds/lb. The size marked on each bag is an average. Seeds within each bag may vary in size by as much as 50% greater or 50% smaller than the average.

The above chart was based on uniformly sized soybeans. Your actual planting rate will vary somewhat from the above table. Generally, larger beans will give lower rates and smaller beans will give higher rates.

Your actual planting rate must be checked in the field with the beans that you are planting and the transmission sprockets changed to give you the rate that you desire, even if it is different than the above table.

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive sprocket ratio. Recommended tire pressure 40 PSI.

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch row spacing.

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

PLANTING RATES FOR PLATELESS REGULAR RATE SORGHUM METERS

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - MEDIUM SEEDS

15 Inch	30 Inch	36 Inch	38 Inch	Transmission Sprockets Drive	Driven	Recommended Speed Range (MPH)
15.2	7.6	6.3	6.0	14	30	4 to 8
16.1	8.0	6.7	6.3	14	28	4 to 8
17.1	8.5	7.1	6.7	14	26	4 to 8
17.9	9.0	7.5	7.1	16	28	4 to 8
18.7	9.3	7.8	7.4	18	30	4 to 8
19.0	9.5	7.9	7.5	16	26	4 to 8
19.6	9.8	8.2	7.7	14	22	4 to 8
20.9	10.5	8.7	8.3	18	26	4 to 8
22.0	11.0	9.2	8.7	16	22	4 to 8
22.1	11.1	9.2	8.7	22	30	4 to 8
23.5	11.7	9.8	9.3	14	18	4 to 8
23.7	11.9	9.9	9.4	22	28	4 to 8
24.7	12.4	10.3	9.8	18	22	4 to 8
25.6	12.8	10.6	10.1	22	26	4 to 8
26.2	13.1	10.9	10.3	26	30	4 to 8
26.4	13.2	11.0	10.4	14	16	4 to 8
26.8	13.4	11.2	10.6	16	18	4 to 8
28.0	14.0	11.7	11.1	26	28	4 to 7 1/2
28.2	14.1	11.7	11.1	28	30	4 to 7 1/2
30.2	15.1	12.6	11.9	22	22	4 to 7
32.4	16.2	13.5	12.8	30	28	4 to 6 1/2
32.5	16.3	13.6	12.8	28	26	4 to 6 1/2
34.0	17.0	14.2	13.4	18	16	4 to 6 1/2
34.5	17.3	14.4	13.6	16	14	3 to 6
34.8	17.4	14.5	13.8	30	26	3 to 6
35.7	17.8	14.9	14.1	26	22	3 to 6
36.9	18.5	15.4	14.6	22	18	3 to 5 1/2
38.4	19.2	16.0	15.2	28	22	3 to 5 1/2
38.8	19.4	16.2	15.3	18	14	3 to 5 1/2
41.2	20.6	17.2	16.3	30	22	3 to 5
41.5	20.8	17.3	16.4	22	16	3 to 5
43.6	21.8	18.2	17.2	26	18	3 to 5
46.8	23.4	19.5	18.5	22	14	3 to 5
48.2	24.1	20.1	19.0	26	16	3 to 5
49.2	24.6	20.5	19.4	30	18	3 to 5
51.3	25.6	21.4	20.2	28	16	3 to 5
53.7	26.9	22.4	21.2	26	14	3 to 5
57.0	28.5	23.7	22.5	28	14	3 to 5
60.1	30.0	25.0	23.7	30	14	3 to 5

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. Recommended tire pressure 40 PSI.

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

IMPORTANT: Seeds vary in size from about 12000 seeds/lb. to about 25000 seeds/lb. The size marked on each bag is an average. Seeds within each bag may vary in size as much as 50% larger or 50% smaller than the average.

The above chart was based on uniformly sized seeds. Your actual planting rate will vary somewhat from the above table. Generally, larger seeds will give lower rates and smaller seeds will give higher rates.

Your actual planting rate must be checked in the field with the seeds that you are planting and the transmission sprockets changed to give you the rate that you desire, even if it is different than the above table.

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch row spacing.

PLANTING RATES FOR PLATELESS LOW RATE SORGHUM METERS

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - MEDIUM SEEDS

15 Inch	30 Inch	36 Inch	38 Inch	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)
2.9	1.5	1.2	1.1	14	30	4 to 8
3.1	1.5	1.3	1.2	14	28	4 to 8
3.3	1.6	1.4	1.3	14	26	4 to 8
3.4	1.7	1.4	1.4	16	28	4 to 8
3.6	1.8	1.5	1.4	18	30	4 to 8
3.6	1.8	1.5	1.4	16	26	4 to 8
3.8	1.9	1.6	1.5	14	22	4 to 8
4.0	2.0	1.7	1.6	18	26	4 to 8
4.2	2.1	1.8	1.7	16	22	4 to 8
4.3	2.1	1.8	1.7	22	30	4 to 8
4.5	2.3	1.9	1.8	14	18	4 to 8
4.6	2.3	1.9	1.8	22	28	4 to 8
4.7	2.4	2.0	1.9	18	22	4 to 8
4.9	2.5	2.0	1.9	22	26	4 to 8
5.0	2.5	2.1	2.0	26	30	4 to 8
5.1	2.5	2.1	2.0	14	16	4 to 8
5.2	2.6	2.1	2.0	16	18	4 to 8
5.4	2.7	2.2	2.1	26	28	4 to 7 1/2
5.4	2.7	2.3	2.1	28	30	4 to 7 1/2
5.8	2.9	2.4	2.3	22	22	4 to 7
6.2	3.1	2.6	2.5	30	28	4 to 6 1/2
6.2	3.1	2.6	2.5	28	26	4 to 6 1/2
6.5	3.3	2.7	2.6	18	16	4 to 6 1/2
6.6	3.3	2.8	2.6	16	14	3 to 6
6.7	3.3	2.8	2.6	30	26	3 to 6
6.9	3.4	2.9	2.7	26	22	3 to 6
7.1	3.5	3.0	2.8	22	18	3 to 5 1/2
7.4	3.7	3.1	2.9	28	22	3 to 5 1/2
7.5	3.7	3.1	2.9	18	14	3 to 5 1/2
7.9	4.0	3.3	3.1	30	22	3 to 5
8.0	4.0	3.3	3.1	22	16	3 to 5
8.4	4.2	3.5	3.3	26	18	3 to 5
9.0	4.5	3.7	3.6	22	14	3 to 5
9.3	4.6	3.9	3.7	26	16	3 to 5
9.5	4.7	3.9	3.7	30	18	3 to 5
9.8	4.9	4.1	3.9	28	16	3 to 5
10.3	5.2	4.3	4.1	26	14	3 to 5
10.9	5.5	4.6	4.3	28	14	3 to 5
11.5	5.8	4.8	4.6	30	14	3 to 5

IMPORTANT: Seeds vary in size from about 12000 seeds/lb. to about 25000 seeds/lb. The size marked on each bag is an average. Seeds within each bag may vary in size by as much as 50% larger or 50% smaller than the average.

The above chart was based on uniformly sized seeds. Your actual planting rate will vary somewhat from the above table. Generally, larger seeds will give lower rates and smaller seeds will give higher rates.

Your actual planting rate must be checked in the field with the seeds that you are planting and the transmission sprockets changed to give you the rate that you desire, even if it is different than the above table.

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. Recommended tire pressure 40 PSI.

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

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch rows.

PLANTING RATES FOR PLATE TYPE METERS

SEED POPULATIONS/ACRE FOR DIFFERENT ROW WIDTHS
16 Cell Plate

30 Inch	36 Inch	38 Inch	Average Seed Spacing In Inches	Transmission Sprockets Drive	Driven	Recommended Speed Range In MPH
30,500	25,400	24,000	6 3/4	30	14	2 to 3
26,400	22,000	20,900	8	26	14	2 to 3 1/2
23,700	19,700	18,700	8 3/4	30	18	3 to 4
22,400	18,600	17,700	9 1/4	22	14	3 to 4 1/2
20,600	17,100	16,200	10 1/4	26	18	3 to 5
19,400	16,100	15,300	10 3/4	30	22	3 to 5
17,400	14,500	13,700	12	22	18	3 to 6
16,800	14,000	13,300	12 1/2	26	22	3 to 6
16,400	13,700	13,000	12 3/4	30	26	3 to 6
16,300	13,500	12,800	13	16	14	3 to 6
15,200	12,700	12,000	13 3/4	30	28	4 to 6 1/2
14,200	11,800	11,200	14 3/4	22	22	4 to 7
13,200	11,000	10,400	15 3/4	26	28	4 to 7 1/2
12,600	10,500	10,000	16 1/2	16	18	4 to 8
12,000	10,000	9,500	17 1/2	22	26	4 to 8
11,200	9,300	8,800	18 3/4	22	28	4 to 8
11,000	9,200	8,700	19	14	18	4 to 8
10,900	9,000	8,200	20 1/4	16	22	4 to 8
9,000	7,500	7,100	23	14	22	4 to 8
8,700	7,300	6,900	24	16	26	4 to 8
8,100	6,800	6,400	25 3/4	16	28	4 to 8
7,700	6,400	6,000	27 1/4	14	26	4 to 8
7,100	5,900	5,600	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 ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. 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 incidence 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.

PLANTING RATES FOR PLATE TYPE METERS

SEED POPULATIONS/ACRE FOR DIFFERENT ROW WIDTHS

24 Cell Plate

30 Inch	36 Inch	38 Inch	Average Seed Spacing In Inches	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)
45,700	38,100	36,100	4 1/2	30	14	2 to 3
39,700	33,100	31,300	5 1/4	26	14	2 to 3 1/2
35,500	29,600	28,000	6	30	18	3 to 4
33,500	27,900	26,500	6 1/4	22	14	3 to 4 1/2
30,800	25,700	24,300	6 3/4	26	18	3 to 5
29,100	24,300	23,000	7 1/4	30	22	3 to 5
26,100	21,800	20,600	8	22	18	3 to 6
25,200	21,000	19,900	8 1/4	30	26	3 to 6
24,600	20,500	19,400	8 1/2	30	26	3 to 6
24,400	20,300	19,300	8 1/2	16	14	3 to 6
22,900	19,100	18,100	9 1/4	30	28	4 to 6 1/2
21,300	17,800	16,800	9 3/4	22	22	4 to 7
19,800	16,500	15,600	10 1/2	26	28	4 to 7 1/2
19,000	15,800	15,000	11	16	18	4 to 8
18,000	15,000	14,200	11 1/2	22	26	4 to 8
16,800	14,000	13,200	12 1/2	22	28	4 to 8
16,600	13,800	13,100	12 1/2	14	18	4 to 8
15,500	12,900	12,300	13 1/2	16	22	4 to 8
13,600	11,300	10,700	15 1/2	14	22	4 to 8
13,100	10,900	10,300	16	16	26	4 to 8
12,200	10,100	9,600	17 1/4	16	28	4 to 8
11,500	9,600	9,100	18 1/4	14	26	4 to 8
10,700	8,900	8,400	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 ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. 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 incidence 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.

DRY INSECTICIDE APPLICATION RATES

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - CLAY GRANULES

Meter Setting	15 Inch	30 Inch	36 Inch	38 Inch
10	10.2	5.1	4.3	4.0
11	11.2	5.6	4.7	4.4
12	12.6	6.3	5.3	5.0
13	14.2	7.1	5.9	5.6
14	15.8	7.9	6.6	6.2
15	17.6	8.8	7.3	6.9
16	19.8	9.9	8.3	7.8
17	22.0	11.0	9.2	8.7
18	23.6	11.8	9.8	9.3
19	27.0	13.5	11.3	10.7
20	29.2	14.6	12.2	11.5
21	32.0	16.0	13.3	12.6
22	33.8	16.9	14.1	13.3
23	35.4	17.7	14.8	14.0
24	38.8	19.4	16.2	15.3
25	43.0	21.5	17.9	17.0
26	47.4	23.7	19.8	18.7
27	49.6	24.8	20.7	19.6
28	52.4	26.2	21.8	20.7
29	57.4	28.7	23.9	22.7
30	61.0	30.5	25.4	24.1

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - SAND GRANULES

5	6.0	3.0	2.5	2.4
6	10.0	5.0	4.2	3.9
7	11.0	5.5	4.6	4.3
8	13.0	6.5	5.4	5.1
9	16.0	8.0	6.7	6.3
10	18.4	9.2	7.7	7.3
11	21.0	10.5	8.8	8.3
12	23.0	11.5	9.6	9.1
13	26.0	13.0	10.8	10.3
14	29.0	14.5	12.1	11.4
15	32.0	16.0	13.3	12.6
16	36.0	18.0	15.0	14.2
17	40.0	20.0	16.7	15.8
18	45.0	22.5	18.8	17.8
19	50.0	25.0	20.8	19.7
20	53.0	26.5	22.1	20.9
21	57.0	28.5	23.8	22.5
22	61.0	30.5	25.4	24.1
23	66.0	33.0	27.5	26.1
24	71.0	35.5	29.6	28.0
25	76.0	38.0	31.7	30.0

IMPORTANT: The above chart represents average values and should be used only as a starting point. Your actual rate will vary depending upon the insecticide you are using, your planting speed, and your plant population.

Your actual rate must be checked in the field with the actual insecticide that you are using and at the speed and population at which you will be planting.

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch row spacing.

DRY HERBICIDE APPLICATION RATES

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS — CLAY GRANULES

Meter Setting	15 Inch	30 Inch	36 Inch	38 Inch
10	9.6	4.8	4.0	3.8
11	10.8	5.4	4.5	4.3
12	12.0	6.0	5.0	4.7
13	13.4	6.7	5.6	5.3
14	15.0	7.5	6.3	5.9
15	17.0	8.5	7.1	6.7
16	18.6	9.3	7.8	7.3
17	20.4	10.2	8.5	8.1
18	22.0	11.0	9.2	8.7
19	24.0	12.0	10.0	9.5
20	26.0	13.0	10.8	10.3
21	28.0	14.0	11.7	11.1
22	30.0	15.0	12.5	11.8
23	32.4	16.2	13.5	12.8
24	35.0	17.5	14.6	13.8
25	37.4	18.7	15.6	14.8
26	40.0	20.0	16.7	15.8
27	43.0	21.5	17.9	17.0
28	46.6	23.3	19.4	18.4
29	50.0	25.0	20.8	19.7
30	55.0	27.5	22.9	21.7

IMPORTANT: The above chart represents average values and should be used only as a starting point. Your actual rate will vary depending upon the herbicide you are using, your planting speed, and your plant population.

Your actual rate must be checked in the field with the actual herbicide that you are using and at the speed and population at which you will be planting.

Rates for 18 and 19 inch row spacing are two times 36 and 38 inch row spacing.

DRY FERTILIZER APPLICATION RATES

Approximate Rate in Pounds Per Acre Regular Rate Augers				
Drive Sprocket	Driven Sprocket	30 Inch Rows	36 Inch Rows	38 Inch Rows
18	36	87	73	68
18	30	101	85	79
24	36	127	107	99
24	30	151	129	118
18	18	181	152	141
18	16	208	175	162
36	30	215	180	168
24	18	242	203	180
24	16	269	225	210
36	18	357	300	278
36	16	390	327	304
High Rate Augers				
18	36	131	110	102
18	30	152	128	119
24	36	191	161	149
24	30	227	194	177
18	18	272	228	212
18	16	312	263	243
36	30	323	270	252
24	18	363	305	284
24	16	404	338	315
36	18	536	450	417
36	16	585	491	456

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. Recommended tire pressure 40 PSI.

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

IMPORTANT: Fertilizer application rates can vary from the weights calculated in the above chart. To prevent application miscalculations, make field checks to be sure you are applying fertilizer at the desired rate.

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 multilply that amount by 100. The result will be the pounds of fertilizer delivered per acre when planting in 40-inch row. To convert this deliver 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

LIQUID FERTILIZER APPLICATION RATES

Drive	Driven	ROW SPACE Gal. Per Acre			Drive	Driven	ROW SPACE Gal. Per Acre		
		38	36	30			38	36	30
8	9	20.4	21.0	25.3	22	8	62.9	65.0	78.0
8	10	18.3	18.9	22.7	22	9	55.8	57.7	69.2
8	15	12.1	12.5	15.0	22	10	50.3	52.0	62.4
8	22	8.2	8.5	10.2	22	15	33.4	34.5	41.4
8	23	8.0	8.3	9.6	22	23	22.0	22.7	27.2
8	26	7.1	7.3	8.8	22	26	19.4	20.1	24.1
8	31	5.9	6.1	7.4	22	31	16.0	16.6	19.9
9	8	25.6	26.5	31.8	23	8	65.9	68.1	81.7
9	10	20.6	21.3	25.5	23	9	58.6	60.5	72.6
9	15	13.7	14.2	17.0	23	10	52.6	54.4	65.3
9	22	9.4	9.7	11.6	23	15	35.0	36.2	43.4
9	23	8.9	9.2	11.1	23	22	24.0	24.8	29.8
9	26	8.0	8.3	9.9	23	26	20.1	20.8	25.0
9	31	6.6	6.9	8.2	23	31	16.9	17.5	21.0
10	8	28.6	29.6	35.5	26	8	74.3	76.8	92.2
10	9	25.4	26.2	31.5	26	9	66.1	68.3	81.7
10	15	15.3	15.8	19.0	26	10	59.5	61.5	73.8
10	22	10.3	10.6	12.8	26	15	39.6	40.9	49.1
10	23	9.8	10.2	12.2	26	22	27.0	27.9	33.5
10	26	8.7	9.0	10.8	26	23	25.8	26.7	32.1
10	31	7.3	7.6	9.1	26	31	19.0	19.6	23.5
15	8	43.0	44.5	53.3	31	8	88.5	91.5	109.8
15	9	38.2	39.5	47.4	31	9	78.7	81.3	97.6
15	10	34.3	35.5	42.6	31	10	70.9	73.3	88.0
15	22	15.6	16.1	19.3	31	15	47.1	48.7	58.4
15	23	14.9	15.4	18.4	31	22	32.0	33.1	39.7
15	26	13.3	13.7	16.5	31	23	30.6	31.7	38.0
15	31	11.0	11.3	13.6	31	26	27.2	28.1	33.8

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket ratio or 7:50 - 20 inch drive tires and 14:12 drive/driven sprocket ratio. Recommended tire pressure 40 PSI.

This chart was calculated based on a solution weighing ten pounds per gallon.

IMPORTANT: Fertilizer application rates can vary from the above chart. To prevent application miscalculations, make field checks to be sure you are applying fertilizer at the desired rate.

LUBRICATION

The following page shows the location of all lubrication points. Proper lubrication of all moving parts will help ensure efficient operation of your Kinze planter and prolong the life of friction producing parts. Those parts equipped with grease fittings 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.

Refer to the Kinze Row Unit Manual for lubrication of all row units.

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 30 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.

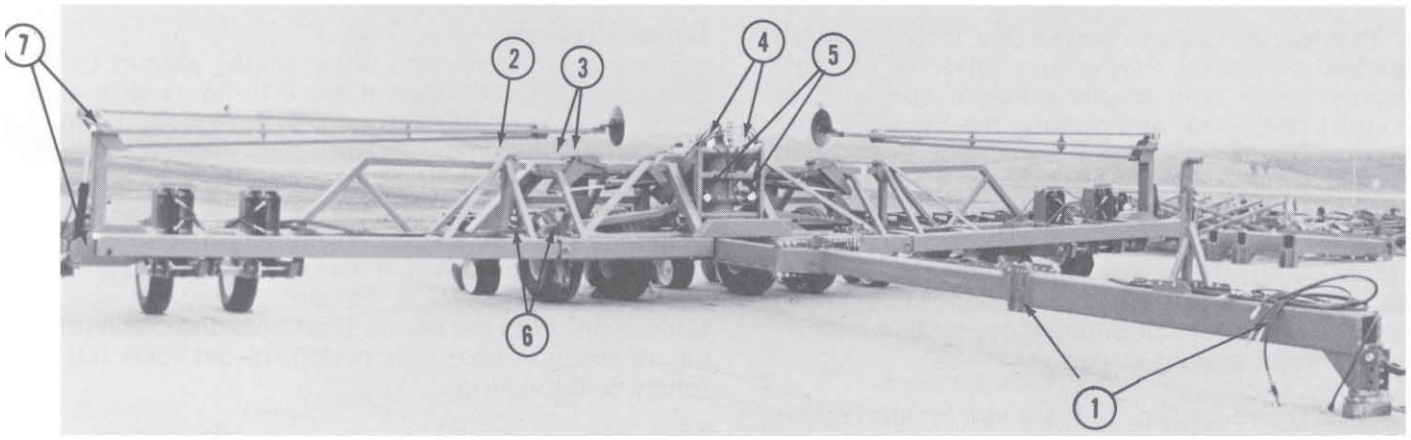
Wheel Bearings

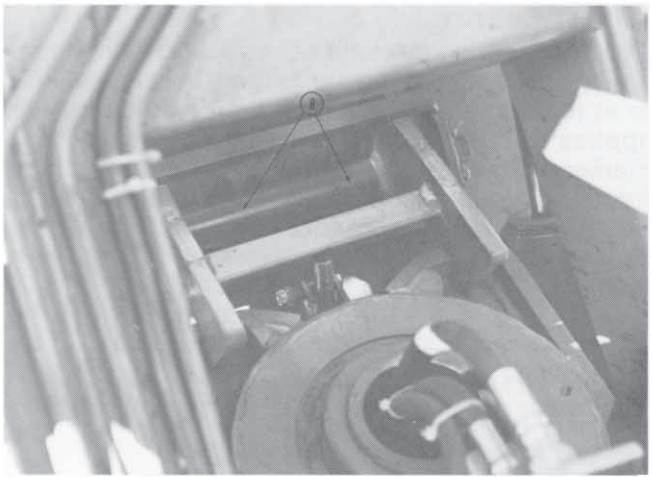
Wheel bearings should be repacked with clean, heavy-duty axle grease approximately once a year or at the beginning of each planting season. This applies to all drive wheels, transport wheels and marker hubs. Transport wheels may require less frequent service depending upon amount of road travel. Follow the procedure outlined for wheel bearing replacement with the exception that bearings and bearing cups are reused.

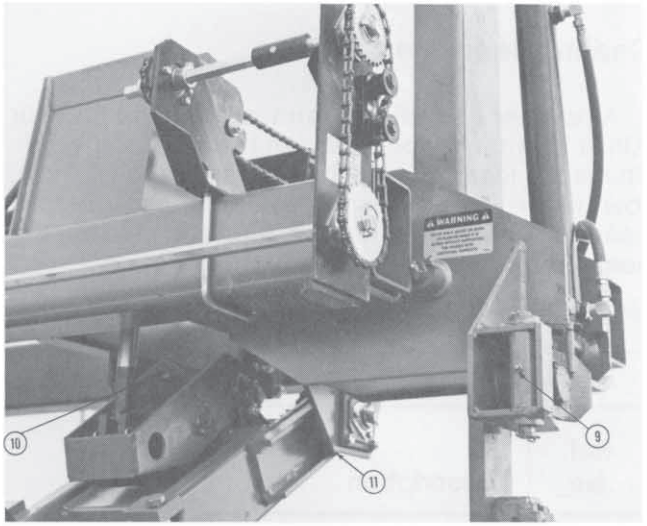
LUBRICATION CHART

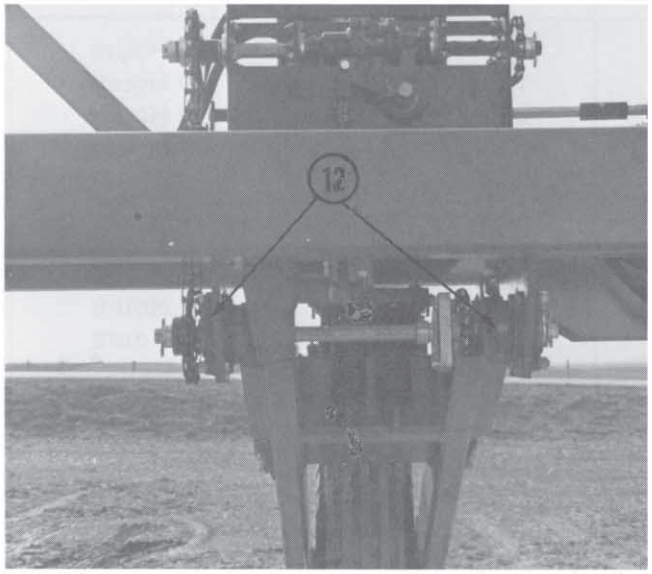
Ref. No.	Description	No. Of Zerks	Frequency
1.	Outer Hitch	4	10 Hours
2.	Wing Lock Link (12 Row and Up)	1 Per Pin	10 Hours
3.	Wing Lock Plate (12 Row and Up)	2 Per Plate	10 Hours
4.	Upper Parallel Lift Arm	5	10 Hours
5.	Lower Parallel Lift Arm	5	10 Hours
6.	Wing Hinge (12 Row and Up)	2 Per Wing	10 Hours
7.	Low Profile Double Fold Marker	2 Per Marker	10 Hours
8.	Lift Lock	2	10 Hours
9.	Catch Bar	1	10 Hours
10.	Drive Wheel Module Spring Mount (12 Row and Up)	1 Per Module	10 Hours
11.	Drive Wheel Module Flange Bearing (12 Row and Up)	2 Per Module	10 Hours
12.	Drive Wheel Module Pivot	2 Per Module	10 Hours
13.	Rotation Lock Link	2	10 Hours
14.	Rotation Lock Plate	1	10 Hours
15.	Hose Take-up	2	10 Hours
16.	Drill Shaft (12 Row and Up)		
	Universal Joint	4	10 Hours
	Coupling Shaft	2	5 Hours
17.	Dry Fertilizer Drive (12 Rows and Up)		
	Universal Joint	4	10 Hours
	Coupling Shaft	2	5 Hours
18.	Dry Fertilizer Hopper	2 Per Hopper	10 Hours
19.	Shut-Off Valve (Liquid Fertilizer)	1 Per Valve	10 Hours
20.	Squeeze Pump	8 Per Pump	10 Hours

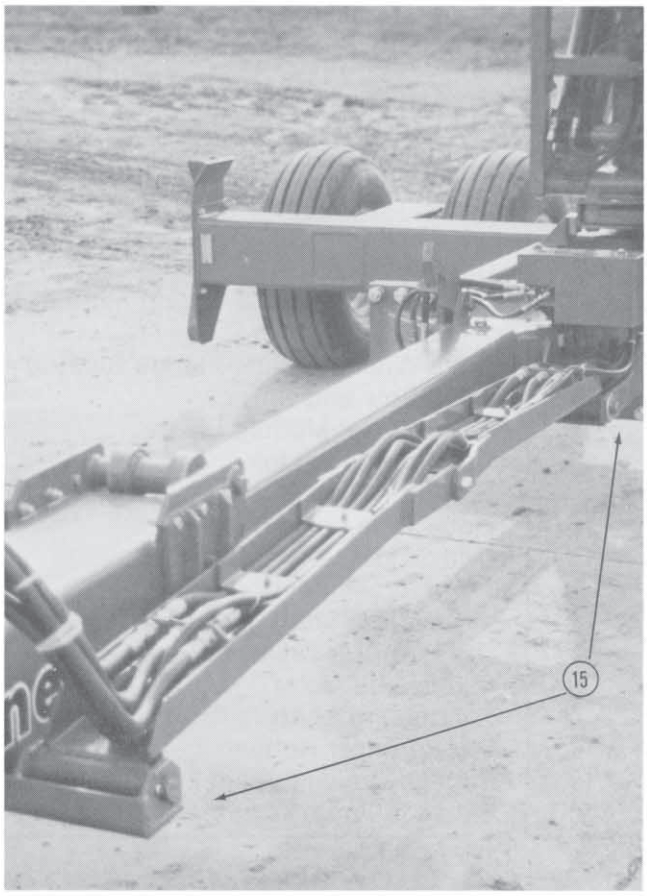
LUBRICATION

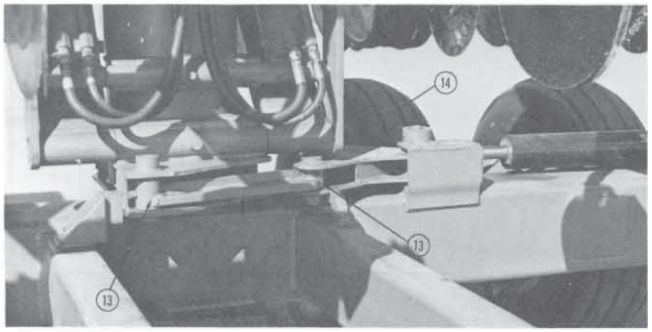




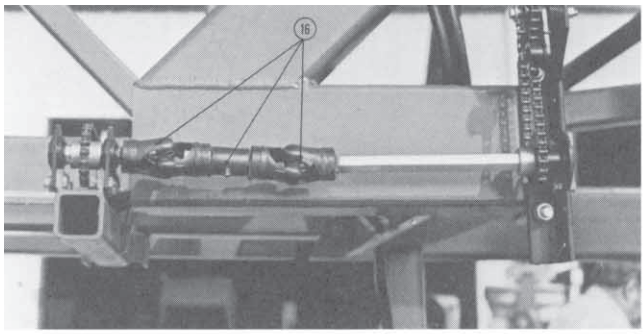


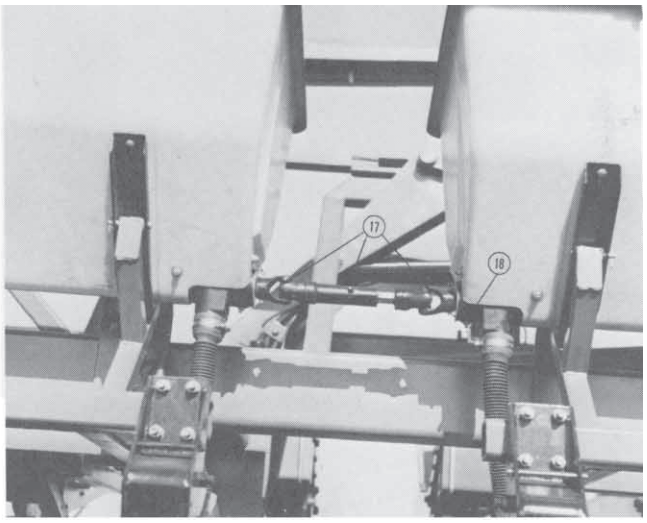


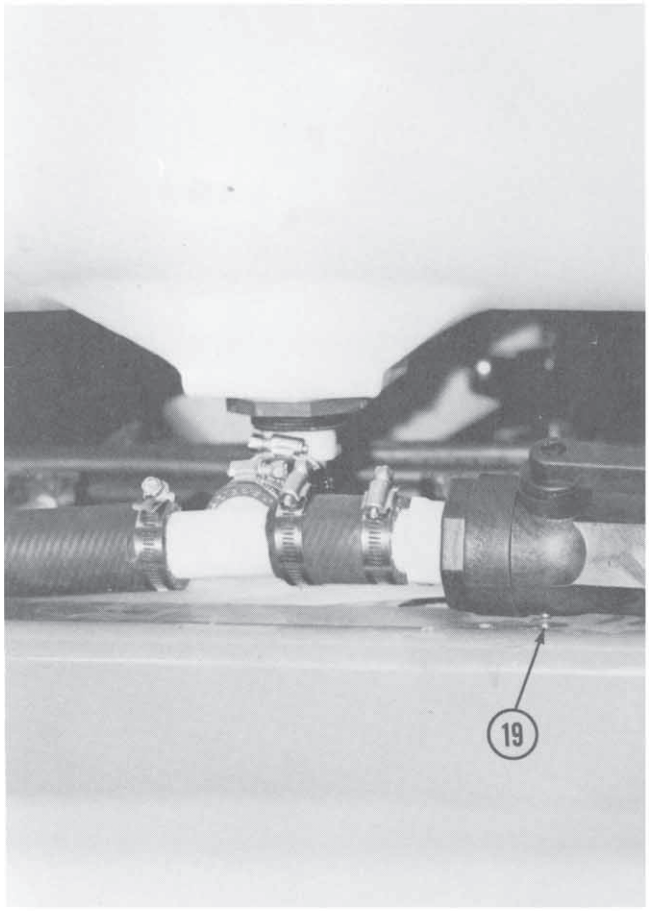


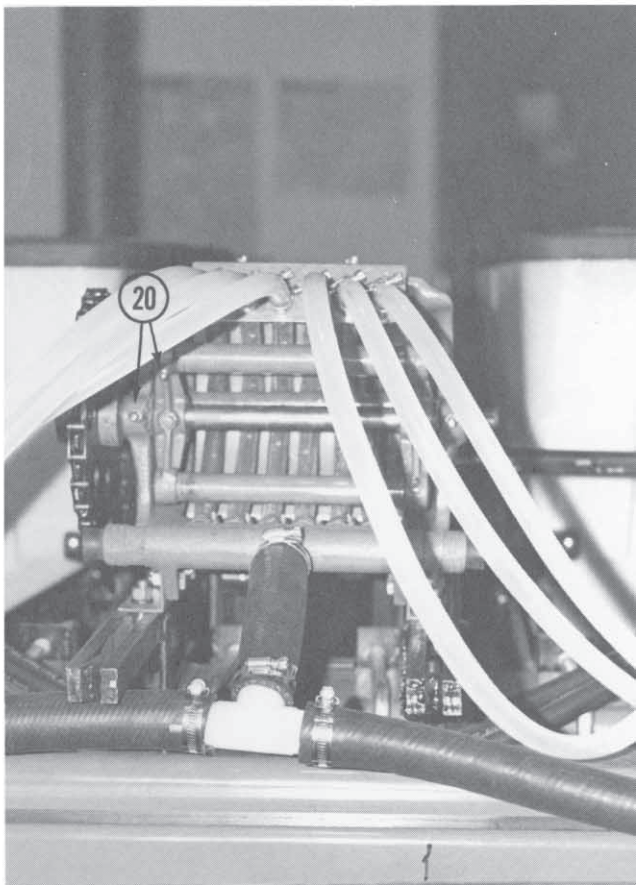


LUBRICATION









MAINTENANCE

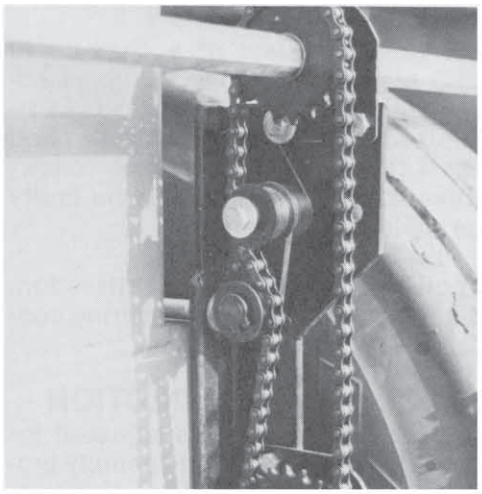
MOUNTING BOLTS AND HARDWARE

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 first 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.

NOTE: R.H. hardware is used to mount the drive chain idler bracket to the row unit transmission on the L.H. side of the planter and L.H. hardware is used to mount the drive chain idler braket to the R.H. side of the planter.

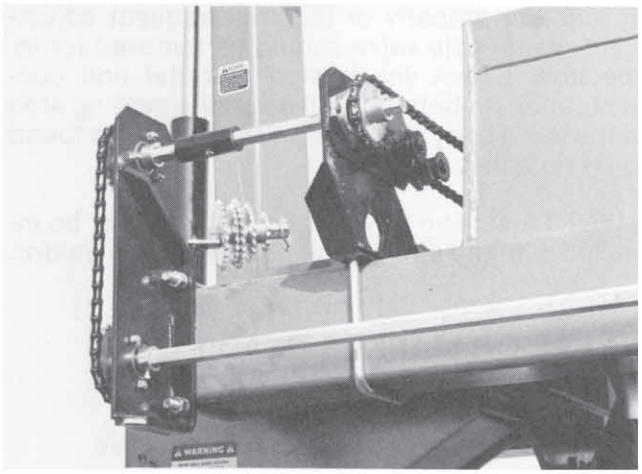


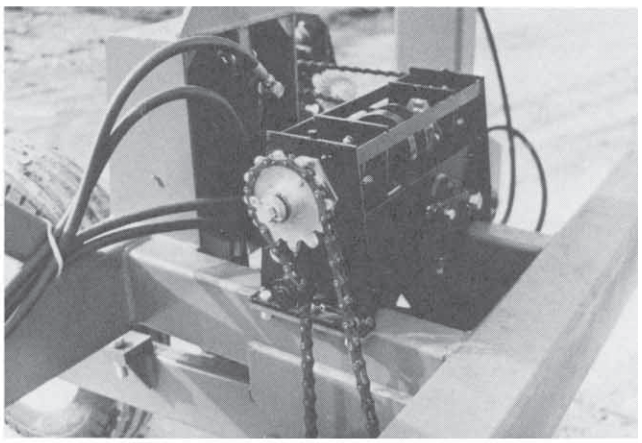
CHAIN TENSION ADJUSTMENT

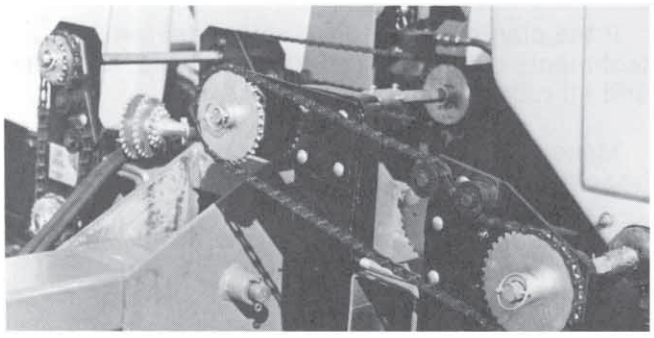
Most of the drive chains from the drive wheel to the transmission are equipped with idler brackets which need only be rotated to desired tension after the mounting nut is loosened. After rotating idler bracket retighten nut.

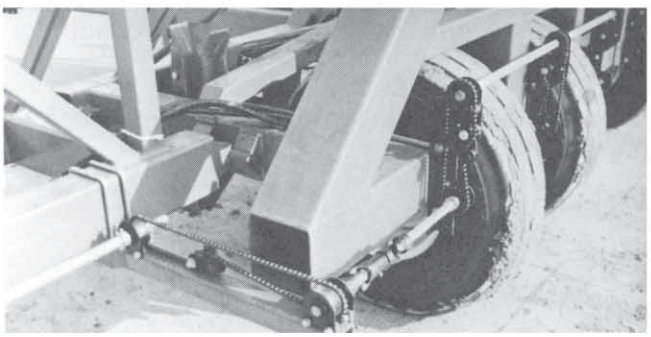
The lower drive chains on 8 row planters are equipped with spring tension idlers. The row unit drive chains are also equipped with spring tension idlers to minimize chain adjustment. Both R.H. and L.H. springs are used depending on application.

See decal located on planter for seed transmission chain routing.









SOLENOID VALVE INSPECTION

The solenoid valve consists of a chambered body containing a cartridge valve which is activated by an electrical coil. If the coil fails to become magnetized when activated it may need to be replaced. If the cartridge does not "click" open when activated by the coil, it may be faulty and need to be replaced.

NOTE: If the coil has poor magnetic attraction, this would indicate low voltage or poor wiring connections.

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.

IMPORTANT: The flow control valves must be installed with the arrows pointed toward the tractor.

WHEEL OR MARKER BEARING LUBRICATION OR REPLACEMENT

1. Raise tire clear of ground and remove wheel or marker blade.
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 cups 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 blade 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 lubrication 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.

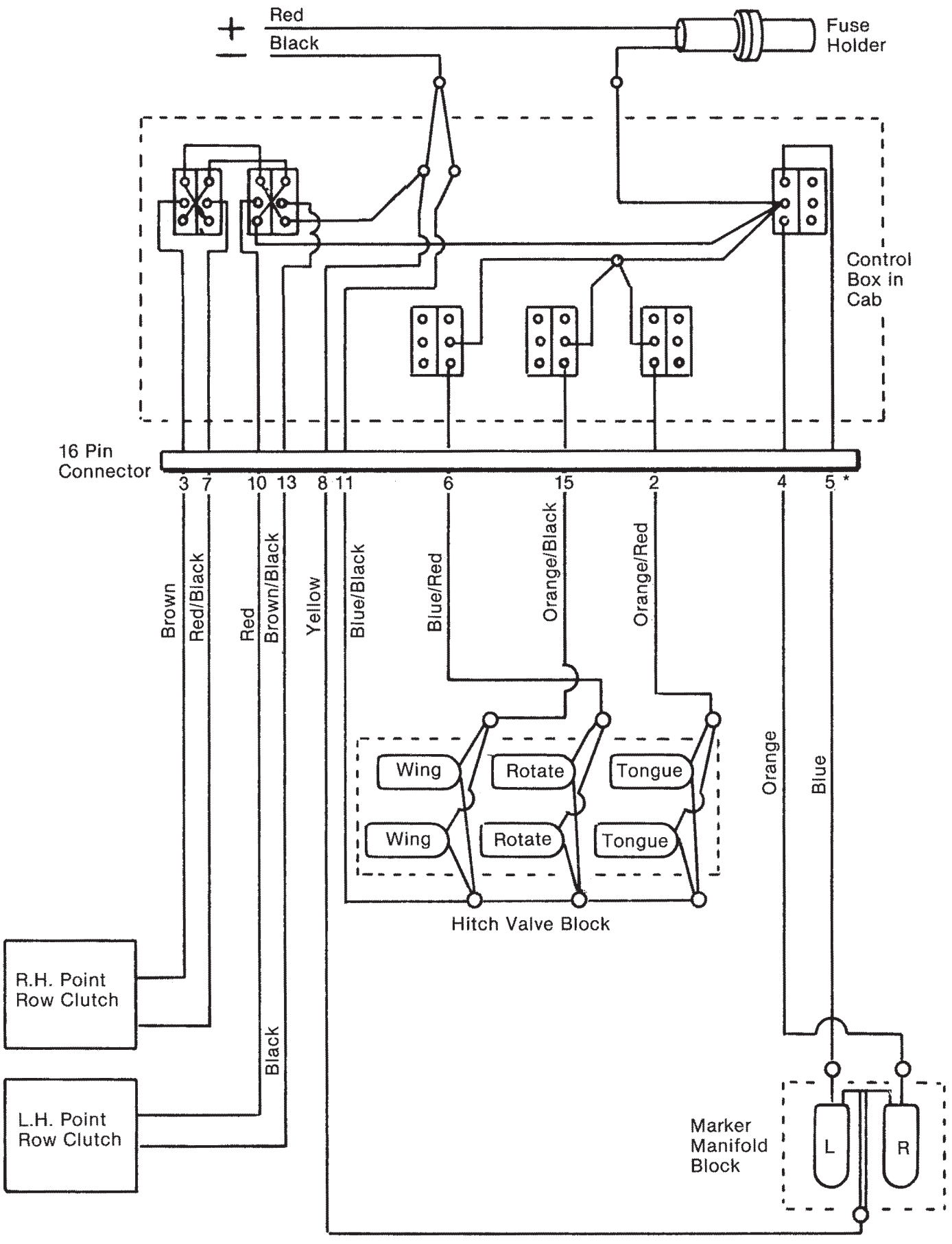
If the planter is equipped with a dry fertilizer attachment, clean the fertilizer hoppers, openers and all rubber spouts.

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

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

Clean seed meters and store in a dry area. (Refer to row unit manual for proper procedures)

Grease exposed areas of cylinder rods before storing planter.



* Numbers on amp connector.

ASSEMBLY

HARDWARE

All bolts furnished with the planter unless otherwise noted are SAE Grade 5. If these high strength bolts must be replaced, be sure to replace them with bolts of equal size and strength.

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, idler sprockets, etc. Then tighten all bolts to the torque specified below unless otherwise noted.

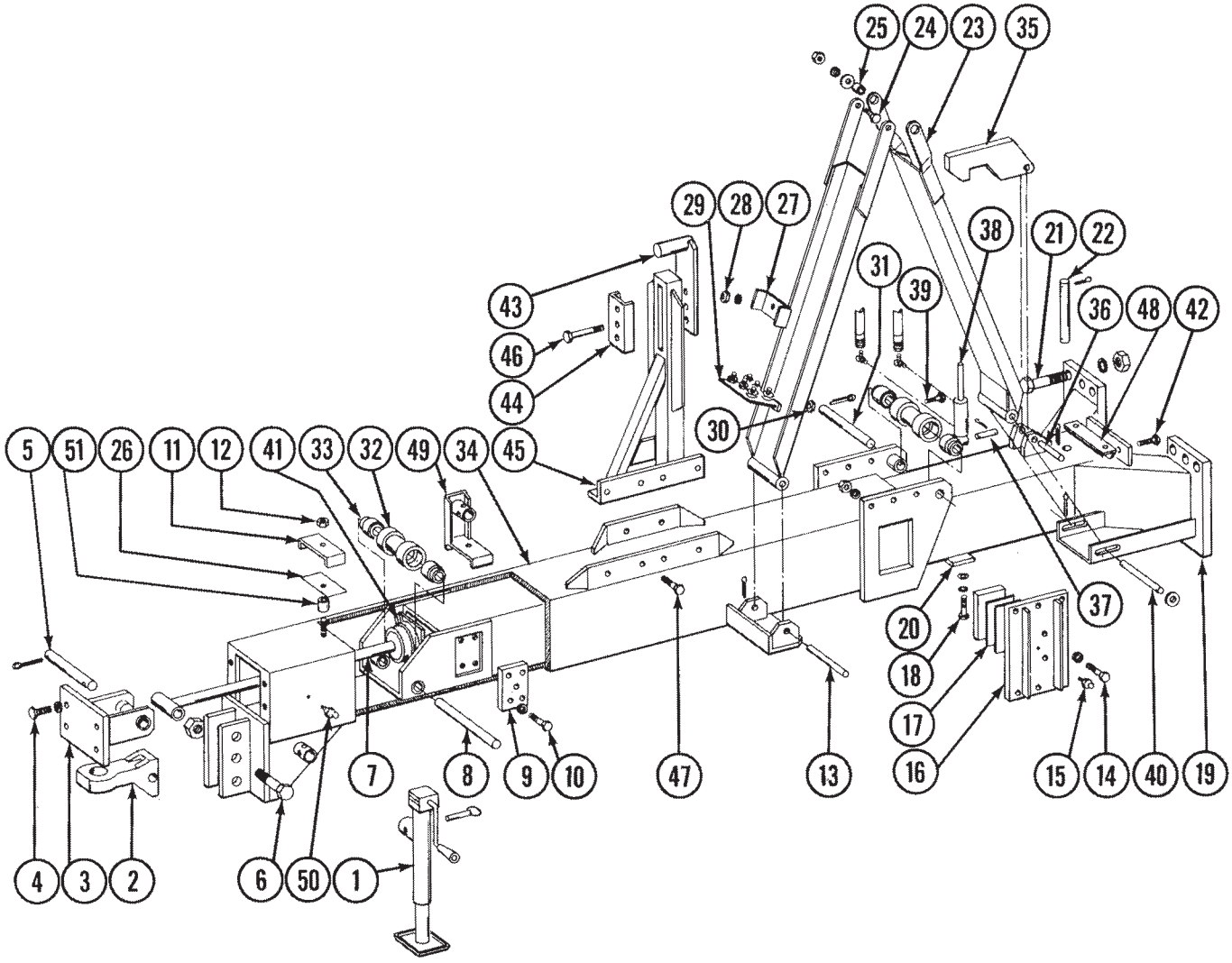
DRY TORQUE VALUES - Ft. Lbs.

Bolt Dia.	Grade 2 No Radial Lines 	Grade 5 Three Radial Lines 	Grade 8 Six Radial Lines 
5/16"	11	17	25
3/8"	23	30	45
1/2"	55	75	
5/8"		150	
3/4"		260	
1"		580	
1 1/4"		1120	

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

PARTS LIST INDEX

HITCH ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	A941	Jack, Side Wind
	R517	Pin
	R516	Crank Assembly
	R515	Bevel Gears
2.	D558	Clevis, Single
3.	A2596	Cylinder Mount
4.	10007	HHCS, 5/8"-11 x 1 1/2"
	10230	Lock Washer, 5/8"
5.	D3550	Pin, 1 1/4" x 5 5/8"
	10460	Cotter Pin, 1/4" x 2"
6.	10169	HHCS, 1 1/4"-7 x 6"
	10157	Lock Nut, 1 1/4"-7
7.	A2814	Cylinder, 3" x 24", 8 Row 30
	A2815	Cylinder, 3" x 44", 8 Row Wide
	A2410	Cylinder, 3" x 68", 12 Row 30
	A2813	Cylinder, 3 1/2" x 88", 12 Row Wide
	A2654	Cylinder, 3 1/2" x 98", 16 Row 30
8.	D3537-1	Shaft, 1 1/4" x 8 1/2"
9.	D3478	Wear Plate, Bronze
10.	10014	HHCS, 1/2"-13 x 1"
	10228	Lock Washer, 1/2"
11.	D3548	Clamp

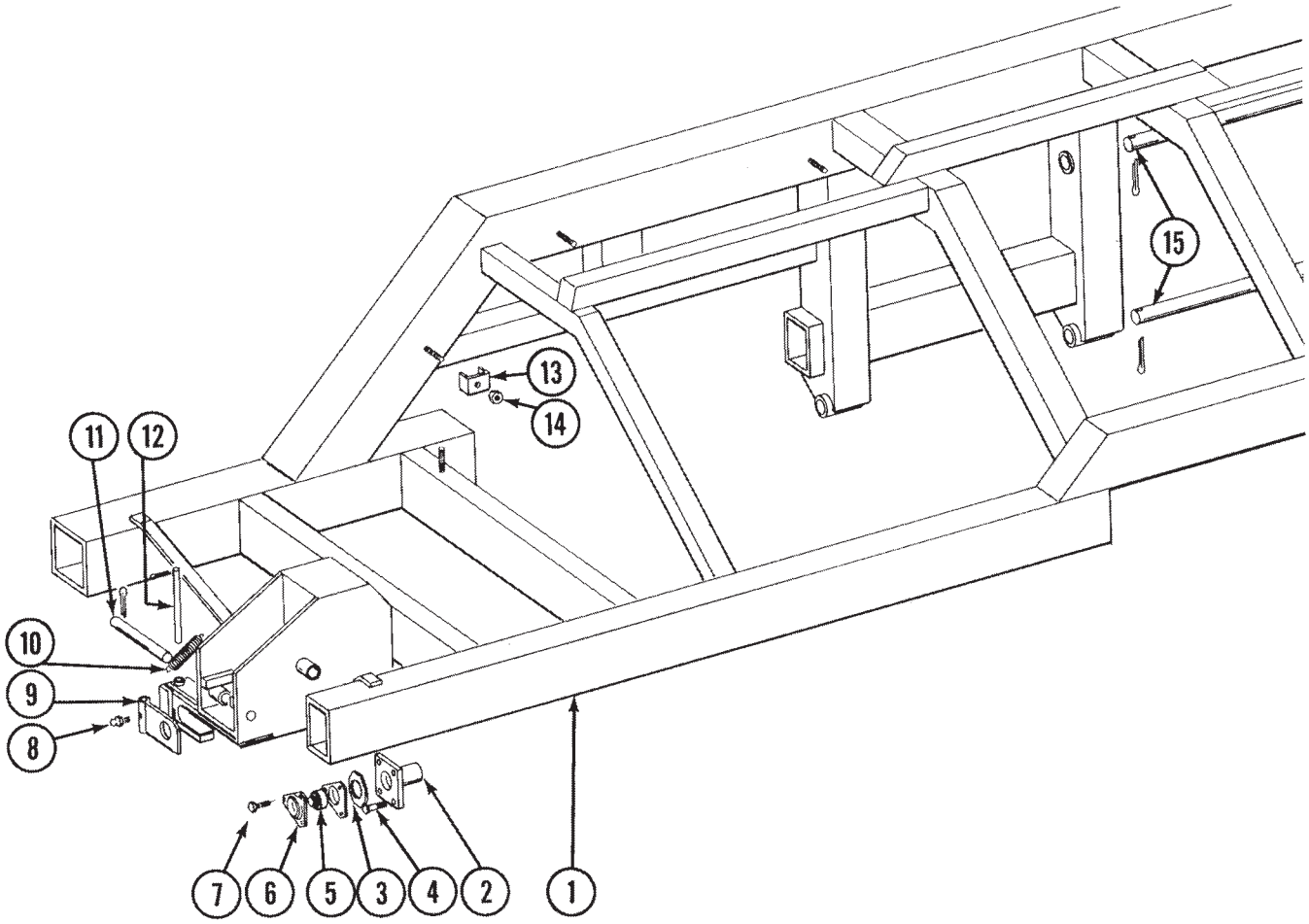
HITCH ASSEMBLY

ITEM	PART NO.	DESCRIPTION
12.	10111	Lock Nut, 1/2"-13
13.	D3561	Pin, 1 1/4" x 9 1/8"
	10460	Cotter Pin, 1/4" x 2"
14.	10014	HHCS, 1/2"-13 x 1"
	10228	Lock Washer, 1/2"
15.	10641	Grease Fitting, 1/8" NPT
16.	A2653	Retainer Assembly, 8 Row Wide thru 16 Row 30
	A2900	Retainer Assembly, 8 Row 30
17.	D3501	Shim
18.	10014	HHCS, 1/2"-13 x 1"
	10228	Lock Washer, 1/2"
	10216	Washer, 1/2" USS
19.	A2877	Inner Hitch, 8 Row 30
	A2858	Inner Hitch, 8 Row Wide
	A2599	Inner Hitch, 12 Row 30
	A2840	Inner Hitch, 12 Row Wide
	A2809	Inner Hitch, 16 Row 30
20.	D3488	Shim, 5" x 6 1/2" x 1/2"
21.	10076	HHCS, 1"-8 x 3 1/2"
	10118	Lock Washer, 1"
	10117	Hex Nut, 1"-8
22.	D2168	Pin, 1 1/4" x 9 3/4"
	10460	Cotter Pin, 1/4" x 2"
23.	A2885	Carrier, Hose Take-up, 8 Row 30
	A2855	Carrier, Hose Take-up, 8 Row Wide
	A2628	Carrier, Hose Take-up, 12 Row 30
	A2816	Carrier, Hose Take-up, 12 Row Wide and 16 Row 30
24.	10008	HHCS, 5/8"-11 x 2"
	10230	Lock Washer, 5/8"
	10217	Washer, 5/8" USS
	10104	Hex Nut, 5/8"-11
25.	B123	Bushing
26.	D3552	Strip, Rubber
27.	D3560	Clamp
28.	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8"-16
29.	A2627	Bulkhead, Less Fittings
30.	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2"-13
31.	D3547	Shaft, 1 1/4" x 12 3/4"
	10460	Cotter Pin, 1/4" x 2"
32.	A2597	Roller
33.	A2565	Bearing-Ball, Adaptor
34.	A2876	Outer Hitch, 8 Row 30
	A2857	Outer Hitch, 8 Row Wide
	A2598	Outer Hitch, 12 Row 30
	A2837	Outer Hitch, 12 Row Wide
	A2810	Outer Hitch, 16 Row 30
35.	A2716	Tongue Lock
36.	D3633	Pin, 1 1/4" x 3 3/4"
	10460	Cotter Pin, 1/4" x 2"
37.	D3637	Pin, 3/4" x 3"
	10457	Cotter Pin, 5/32" x 1 1/2"
38.	A2656	Cylinder, 1 1/2" x 2"
39.	10049	HHCS, 3/8" x 2 1/2"
	10108	Lock Nut, 3/8" -16
40.	D2168	Pin, 1 1/4" x 9 3/4"
	10139	Washer, 1 1/4" USS
	10460	Cotter Pin, 1/4" x 2"
41.	A2600	Stabilizer, 8 Row 30 and Wide and 12 Row 30
	A2807	Stabilizer, 12 Row Wide and 16 Row 30
	10003	HHCS, 3/8" - 16 x 1 1/2"
	10108	Lock Nut, 3/8" - 16

HITCH ASSEMBLY

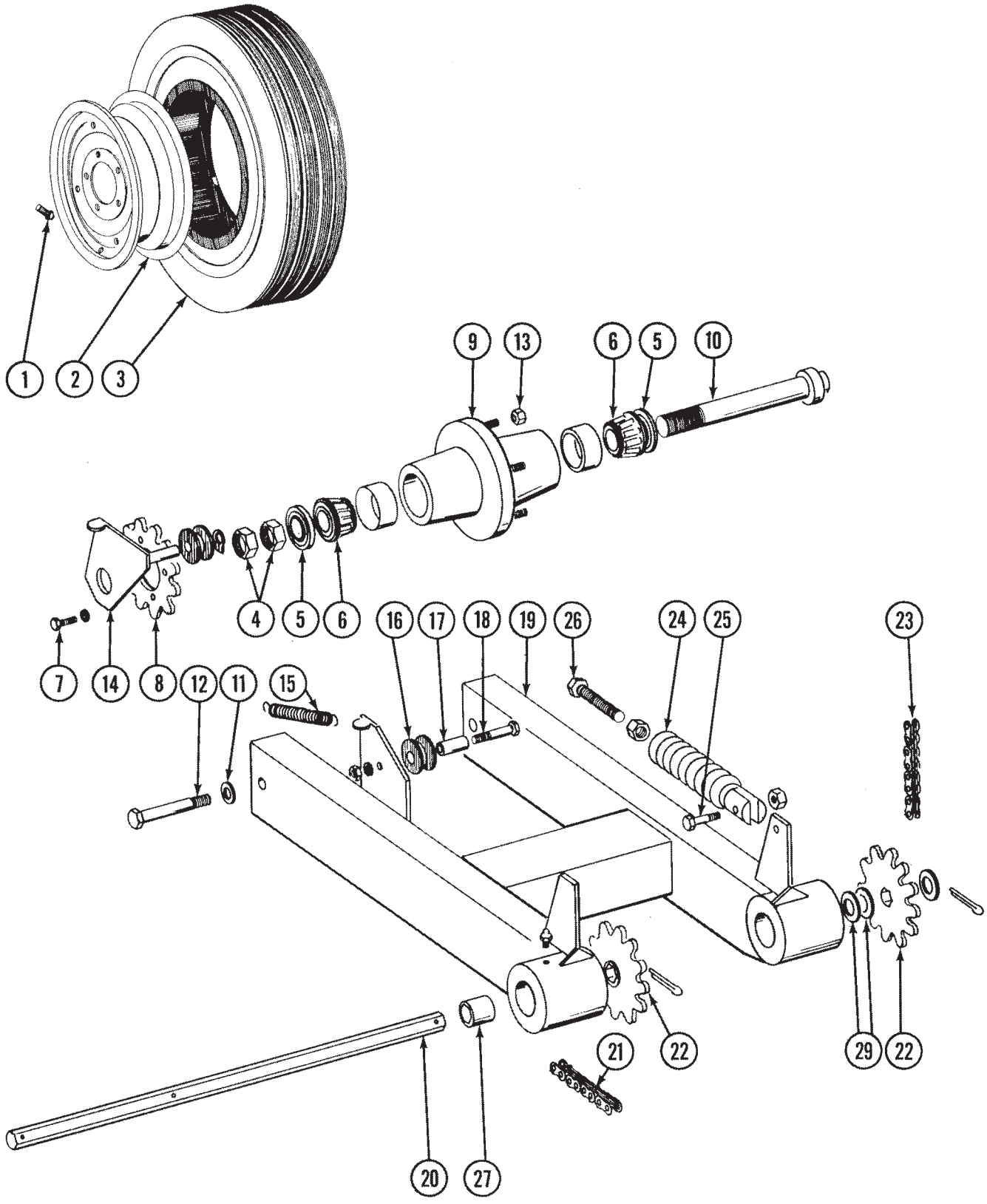
ITEM	PART NO.	DESCRIPTION
42.	10001	HHCS, 3/8" - 16 x 1"
	10108	Lock Nut, 3/8" - 16
43.	A2731	Post, Transport Latch
44.	D3856	Bracket
45.	A2737	Mount
46.	10050	HHCS, 3/4" - 10 x 5"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
47.	10005	HHCS, 5/8" - 11 x 1 3/4"
	10217	Washer, 5/8" USS
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
48.	D3797	Angle
49.	A2749	Bracket, Jack Mount
50.	10640	Grease Fitting, 1/4"-28
51.	D3788-1	Tubing, Plastic

FRAME ASSEMBLY, 8 Row 30 and 8 Row Wide



ITEM	PART NO.	DESCRIPTION
1.	A2869	Frame, 8 Row 30
	A2866	Frame, 8 Row Wide
2.	A2636	Pivot
3.	D3832	Spacer
4.	10017	HHCS, 1/2"-13x1 1/2"
5.	2100-3	Bearing, 7/8" Hex Bore
6.	3400-1	Flangette
7.	10303	Carriage Bolt, 5/16" -18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16"-18
8.	10641	Grease Fitting, 1/8" NPT
9.	A2748	Catch Bar
10.	D3791	Spring
11.	D652	Pin, 1 1/4" x 9 1/2"
	10460	Cotter Pin, 1/4" x 2"
12.	D3818	Pin, 7/8" x 7"
	10460	Cotter Pin, 1/4" x 2"
13.	D3710	Clamp
14.	10111	Lock Nut, 1/2" -13
15.	D3526	Pin, 2 1/8" x 41 1/2"
	10461	Cotter Pin, 3/8" x 3"

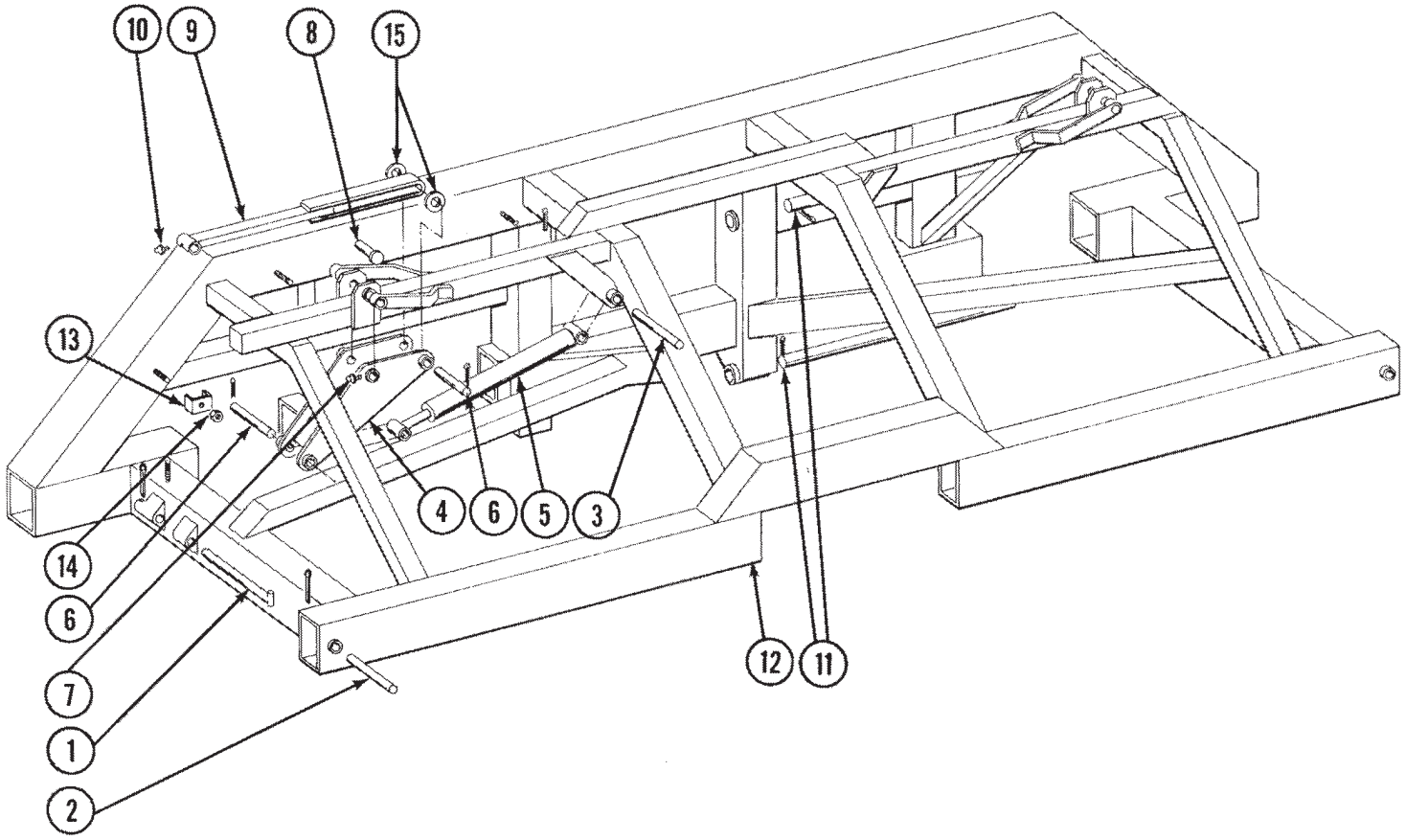
DRIVE WHEEL ASSEMBLY, 8 Row 30 and 8 Row Wide



DRIVE WHEEL ASSEMBLY, 8 Row 30 and 8 Row Wide

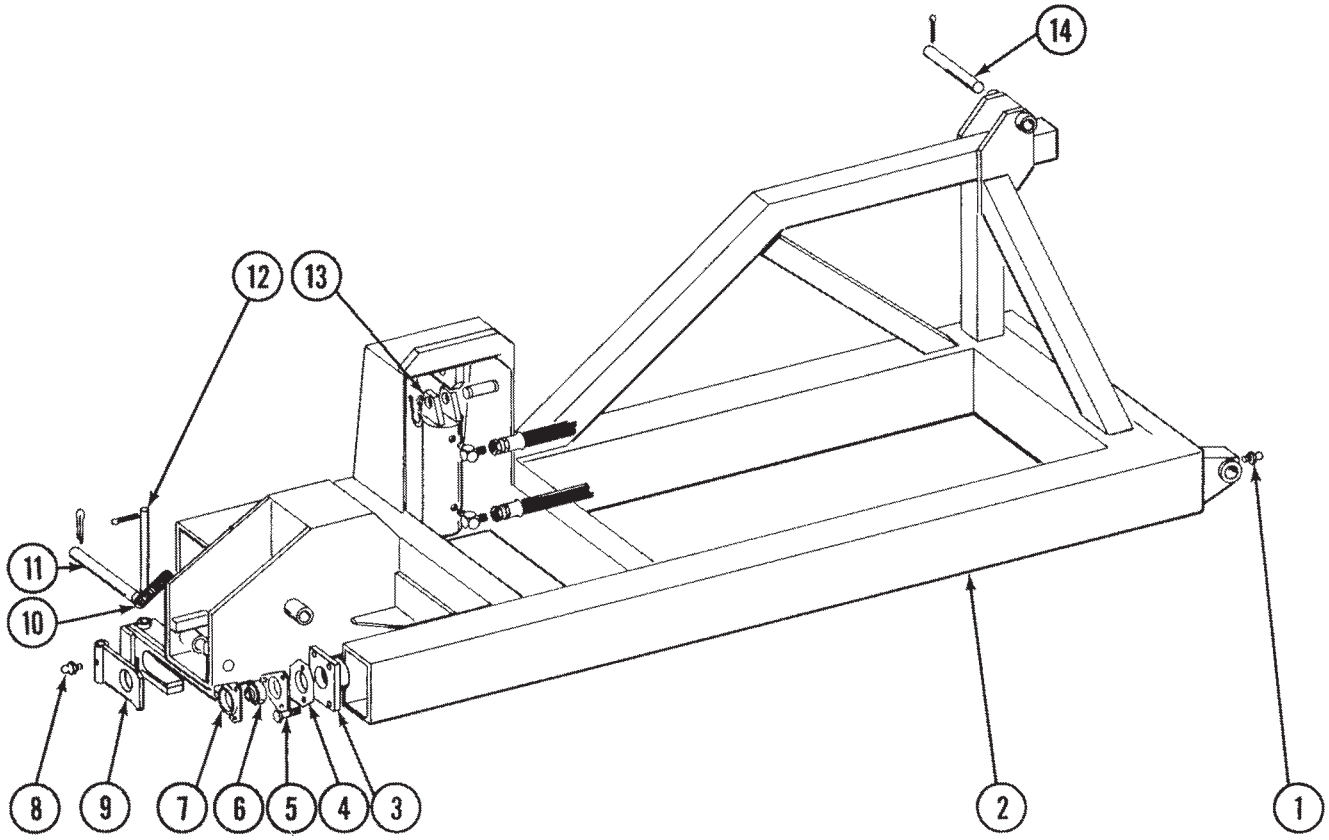
ITEM	PART NO.	DESCRIPTION
1.	D1166	Valve Stem
2.	A241	Rim, 15" x 5", 5 Bolt
3.	D844	Tire, 7.60 x 15", 4 Ply
4.	D831	Nut, 1 1/4"
5.	A252	Seal
6.	A251	Bearing
7.	10019	HHCS, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
8.	2500-17	Sprocket, 12 Tooth
9.	A547	Hub W/Cups and Studs
	R190	Cup
	R204	Stud, 1/2" - 20 UNF x 1 7/8"
10.	A559	Spindle
11.	10231	Lock Washer, 3/4"
12.	10044	HHCS, 3/4" - 10 x 4"
13.	R267	Nut, 1/2" - 20 UNF
14.	A821	Idler, L.H., W/Spool and Ring
	A822	Idler, R.H., W/Spool and Ring
	10435	Ring
	D916	Spool
15.	D913	Spring
16.	D916	Spool
17.	D973	Bushing
18.	10049	HHCS, 3/8" - 16 x 2 1/2"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
19.	A2881	Module, Drive Wheel, L.H.
	A2880	Module, Drive Wheel, R.H.
20.	D4139	Shaft, 7/8" x 25"
	10460	Cotter Pin, 1/4" x 2"
21.	3200-57	Chain, No. 2050, 57 Pitch Including Connector and Offset Link
	R195	Connector Link, No. 2050
	R200	Offset Link, No. 2050
22.	2500-18	Sprocket, 12 Tooth
23.	3200-45	Chain, No. 2050, 45 Pitch Including Connector and Offset Link
	3200-12	Chain, No. 2050, For Use With Extended Drill Sprocket
	R195	Connnector Link, No. 2050
	R200	Offset Link, No. 2050
24.	A328	Spring W/Plug
25.	10016	HHCS, 1/2" - 13 x 2"
	10111	Lock Nut, 1/2" - 13
26.	D962	Bolt, 5/8" - 18 x 3 1/4"
	10499	Jam Nut, 5/8" - 18
27.	D3660-5	Sleeve
28.	10641	Grease Fitting, 1/8" NPT
29.	10233	Bushing, Machinery
A.	A374	Tire and Rim Assembly, 7.60 x 15" (Items 1 thru 3)

CENTER FRAME ASSEMBLY, 12 Row 30 thru 16 Row 30



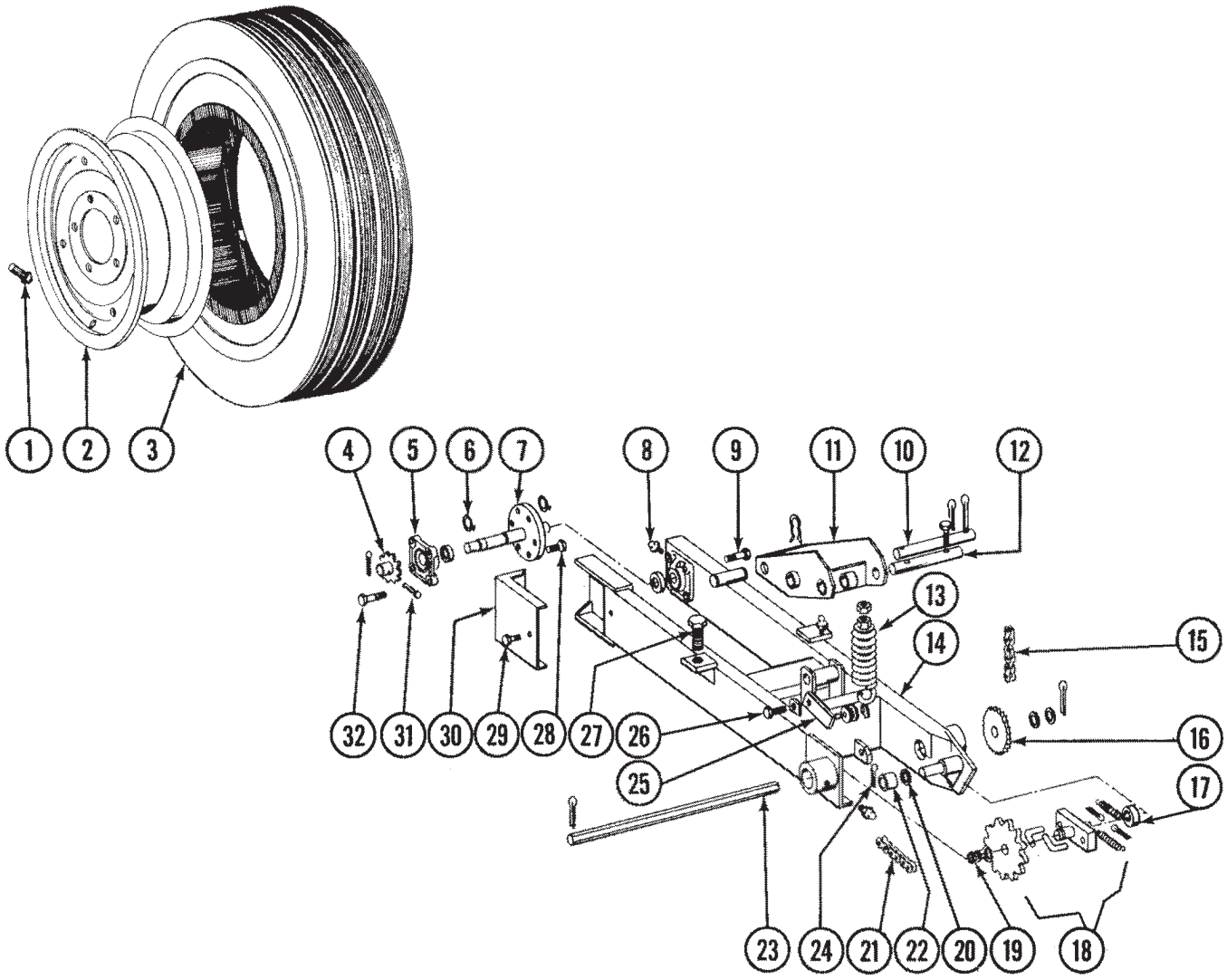
ITEM	PART NO.	DESCRIPTION
1.	A2620	Pin, 1 1/4" x 10 3/4", Hardened
	10460	Cotter Pin, 1/4" x 2"
2.	D3531	Pin, 1 1/4" x 9 1/4", Hardened
	10460	Cotter Pin, 1/4" x 2"
3.	D1701	Pin, 1 1/4" x 6 1/2"
	10460	Cotter Pin, 1/4" x 2"
4.	A3429	Plate, Toggle
5.	A233	Cylinder, 2 1/2" x 20"
6.	D4108	Pin, 1 1/4" x 7"
	10460	Cotter Pin, 1/4" x 2"
7.	10641	Grease Fitting, 1/8" NPT
8.	A2621	Pin, 1 1/4" x 3 1/8"
	10460	Cotter Pin, 1/4" x 2"
9.	A2623	Link, 12 Row 30 and 16 Row 30
	A2845	Link, 12 Row Wide
10.	10640	Grease Fitting, 1/4"-28
11.	D3526	Pin, 2 1/8" x 41 1/2"
	10461	Cotter Pin, 3/8" x 3"
12.	A2606	Center Frame, 12 Row 30
	A2844	Center Frame, 12 Row Wide
	A2788	Center Frame, 16 Row 30
13.	D3710	Clamp
14.	10111	Lock Nut, 1/2" - 13
15.	D4171	Washer, 1 1/4", Hardened

WING ASSEMBLY, 12 Row 30 thru 16 Row 30



ITEM	PART NO.	DESCRIPTION
1.	10643	Grease Fitting, 45° 1/4" - 28
2.	A2648	Wing, R.H., 12 Row 30
	A2649	Wing, L.H., 12 Row 30
	A2846	Wing, R.H., 12 Row 36
	A2847	Wing, L.H., 12 Row 36
	A2838	Wing, R.H., 12 Row 38
	A2839	Wing, L.H., 12 Row 38
	A2778	Wing, R.H., 16 Row 30
	A2779	Wing, L.H., 16 Row 30
3.	A2636	Pivot
4.	D3832	Spacer
5.	10017	HHCS, 1/2" - 13 x 1 1/2"
6.	2100-3	Bearing, 7/8", Hex Bore
7.	3400-1	Flangette
8.	10641	Grease Fitting, 1/8" NPT
9.	A2748	Catch Bar
10.	D3791	Spring
11.	D652	Pin, 1 1/4" x 9 1/2"
	10460	Cotter Pin, 1/4" x 2"
12.	D3818	Pin, 7/8" x 7"
	10460	Cotter Pin, 1/4" x 2"
13.	A2390	Cylinder, 4" x 8", 12 Row 30 and Wide
	A2652	Cylinder, 2 3/4" x 8" W/Bypass, 16 Row 30 (1 Per Wing)
	A2911	Cylinder, 2 3/4" x 8", 16 Row 30 (1 Per Wing)
14.	D1701	Pin, 1 1/4" x 6 1/2"
	10460	Cotter Pin, 1/4" x 2"

DRIVE WHEEL ASSEMBLY, 12 Row 30 thru 16 Row 30

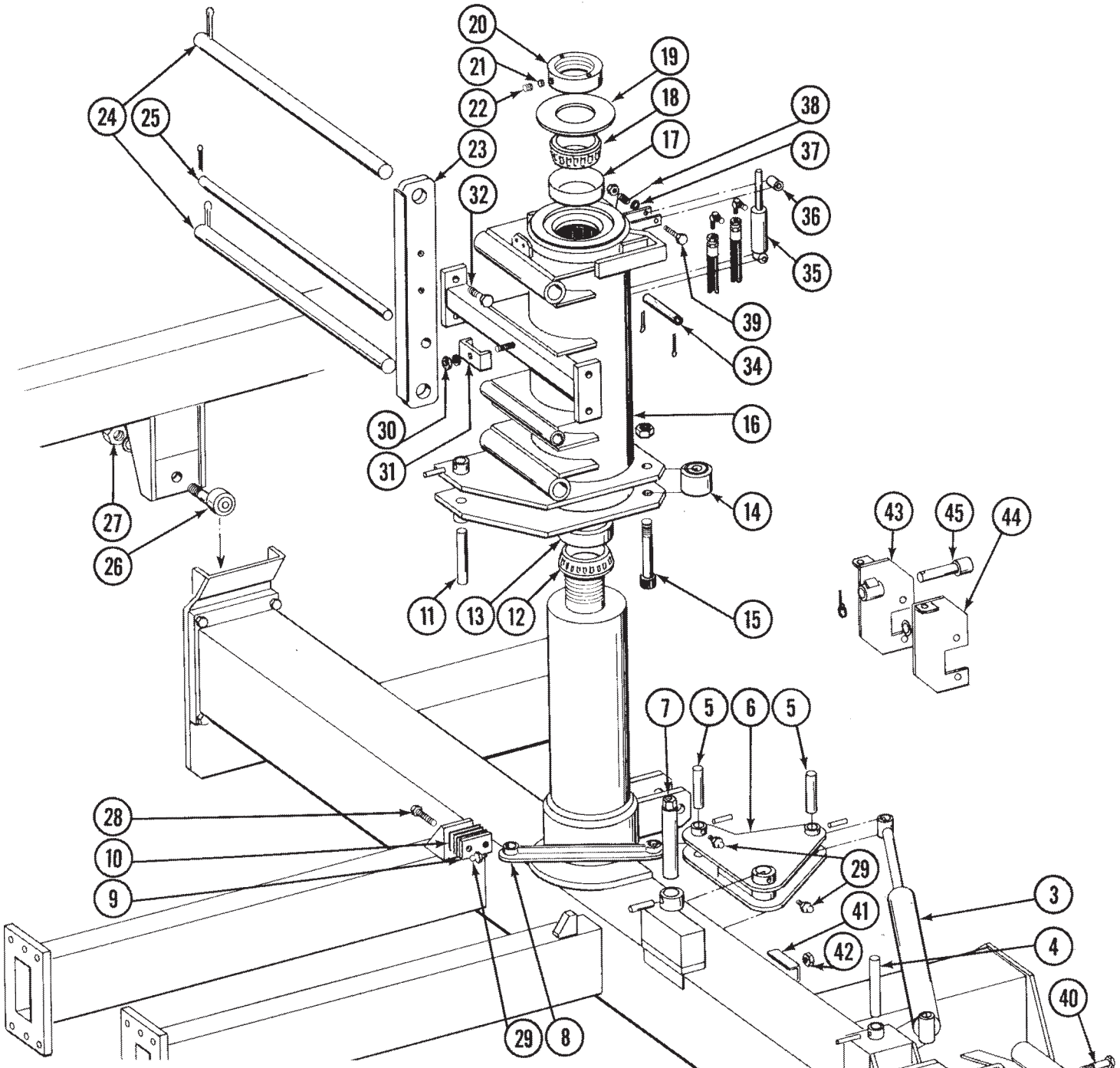


ITEM	PART NO.	DESCRIPTION
1.	D1166	Valve Stem
2.	A2908	Rim, 20 x 5.50F, 6 Bolt
3.	D2648	Tire, 7.50 x 20", 6 Ply Tubeless
4.	2500-23	Sprocket, 12 Tooth
5.	A450	Bearing W/Lock Collar, 1 1/2"
	R266	Lock Collar
6.	10283	Snap Ring, 1 1/2"
7.	A2591	Spindle, 6 Bolt
8.	10641	Grease Fitting, 1/8" NPT
9.	10033	HHCS, 1/2" - 13 x 3 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
10.	D3737	Pin, 1 1/4" x 8 1/2"
	10460	Cotter Pin, 1/4" x 2"
11.	A2633	Bracket
12.	D3568	Pin, 7/8" x 8 1/2"
	10463	Cotter Pin, 1/4" x 1 1/2"
	10016	HHCS, 1/2" - 13 x 2"
13.	A2068	Spring w/Plug
	10501	Jam Nut, 1/2" - 13

DRIVE WHEEL ASSEMBLY, 12 Row 30 thru 16 Row 30

ITEM	PART NO.	DESCRIPTION
14.	A2637	Module, Drive Gauge, L.H., 12 Row 30 thru 16 Row 30 (1Per Wing)
	A2638	Module, Drive Gauge, R.H., 12 Row 30 thru 16 Row 30 (1 Per Wing)
	A2823	Module, Drive Gauge, L.H., 16 Row 30 (Not Shown - 1 Per Wing)
	A2824	Module, Drive Gauge, R.H., 16 row 30 (Not Shown - 1 Per Wing)
15.	3200-44	Chain, No. 2040, 44 Pitch Including Connector Link
	R195	Connector Link, No. 2050
	3200-12	Chain, No. 2050, For Use With Extended Drill Sprocket
16.	2500-32	Sprocket, 28 Tooth
17.	D917	Lock Collar, Less Set Screws
	10145	Set Screws, 5/16" - 18 x 1/2"
18.	A261L	Ratchet Assembly Complete, L.H.
	A261R	Ratchet Assembly Complete, R.H.
	D1256	Spring
	10464	Cotter Pin, 3/16" x 1"
	A378	Block and Hub Assembly
	D1255	"L" Pin
	A376	Hub/Sprocket Assembly
	10430	Ring, Retaining, 1 1/4"
19.	10233	Bushing, Machinery
20.	10159	Washer, 1 1/4" USS
21.	3200-86	Chain, No. 2050, 86 Pitch Including Connector Link
	R195	Connector Link, No. 2050
22.	D3812-1	Sleeve
23.	D3831	Shaft, 7/8" x 25 1/4", 12 Row 30 and Wide
	D3960	Shaft, 7/8" x 53 1/2", 16 Row 30
24.	10460	Cotter Pin, 1/4" x 2"
25.	A2647	Bracket w/Spool and Ring
	D916	Spool
	10435	Ring
26.	10039	HHCS, 1/2" - 13 x 1 3/4"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
27.	10290	Adjusting Bolt, 3/4" - 10 x 3"
28.	R270	Bolt
29.	10020	HHCS, 1/4" - 20 x 5/8"
	10227	Lock Washer, 1/4"
30.	D3764	Cover
31.	10566	Clevis Pin, 5/16" x 2 1/4"
	10452	Cotter Pin, 1/8" x 1/2"
32.	10016	HHCS, 1/2" - 13 x 2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13

AXLE AND PIVOT ASSEMBLY



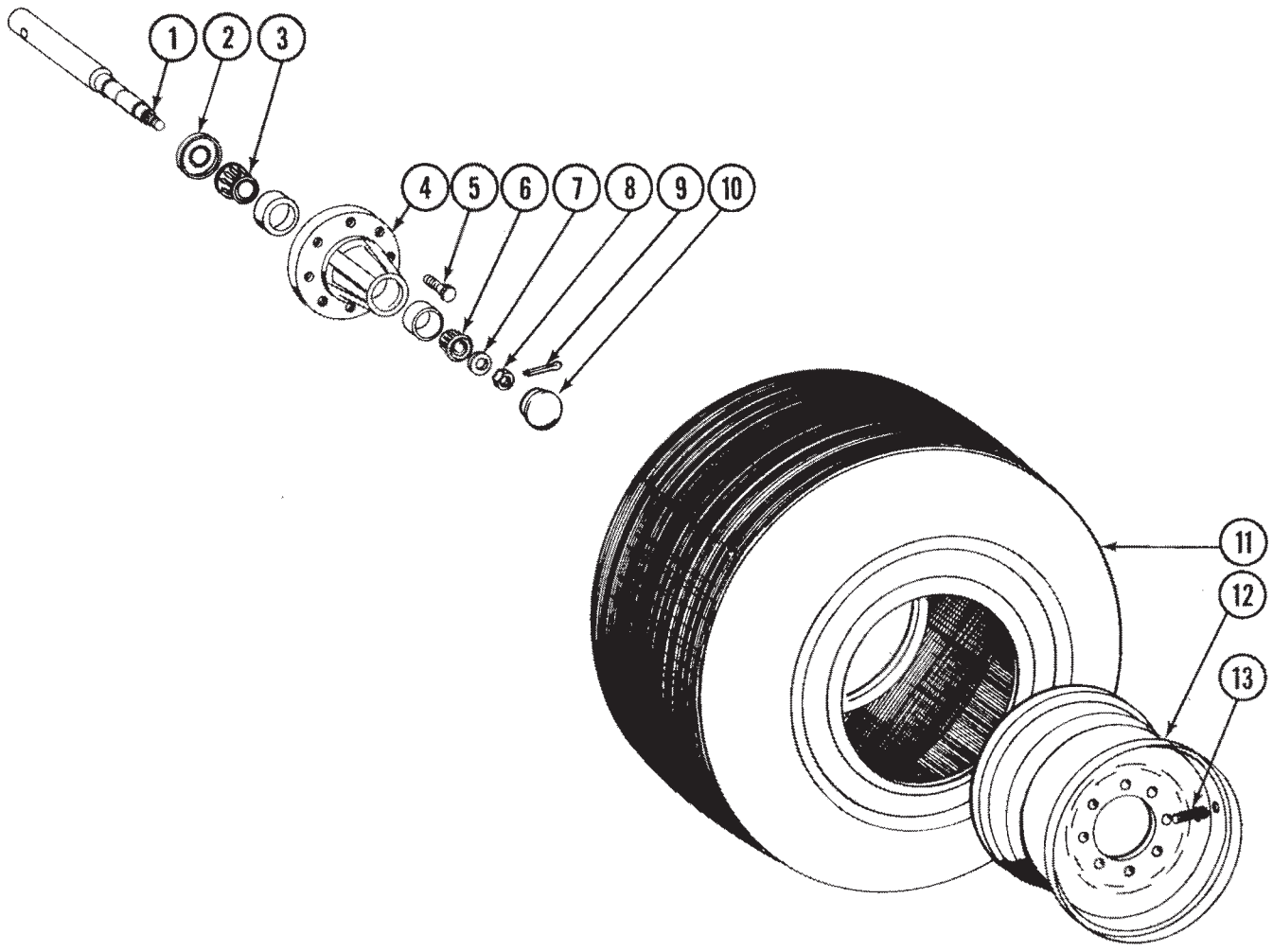
ITEM	PART NO.	DESCRIPTION
1.	A2583	Guide Plate, L.H. (Shown)
	A2584	Guide Plate, R.H.
2.	10007	HHCS, 5/8"-11 x 1 1/2"
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8"-11
3.	A2557	Cylinder, 3 1/2" x 20"
4.	D3394	Pin, 1 1/4" x 6 1/2", Hardened
	10610	Roll Pin, 3/8" x 2"
5.	D3403	Pin, 1 1/4" x 4 1/2", Hardened
	10610	Roll Pin, 3/8" x 2"
6.	A2666	Plate, Toggle w/Bushing
	D3383	Bushing, Spring
7.	A2573	Pin
	10293	Roll Pin, 3/8" x 3"

AXLE AND PIVOT ASSEMBLY

ITEM	PART NO.	DESCRIPTION
8.	A2592	Link Assembly w/Bushings
	D3376	Bushing, Spring
9.	D3389	Tap Block
10.	D3398	Shim
11.	D3404	Pin, 1 1/4" x 5 1/2", Hardened
	10610	Roll Pin, 3/8" x 2"
12.	A2508	Bearing Cone
13.	D3239	Bearing Cup
14.	A2567	Cam Follower
15.	D3443	Bolt, Special, 1"-8 x 5 1/2"
	10118	Lock Washer, 1"
	10082	Washer, 1" SAE
	10117	Hex Nut, 1"-8
16.	A2575	Outer Bell
17.	D3302	Bearing Cup
18.	A2520	Bearing Cone
19.	D3238	Washer
20.	D3237	Nut, Spanner
21.	D3452	Insert, Nylon
22.	10264	Hex Socket Set Screw, Cup Point, 1/2"-13 x 1/2"
23.	A2614	Brace Bar
24.	D3275	Pin, 2 1/8" x 30 1/2"
	10461	Cotter Pin, 3/8" x 3"
25.	D3527	Pin, 1 1/4" x 30 1/4", Cylinder
	10468	Cotter Pin, 3/8" x 2"
26.	A2566	Cam Follower
27.	10139	Washer, 1 1/4" USS
	10281	Hex Nut, 1 1/4"-12 NF
28.	10016	HHCS, 1/2" - 13 x 2"
	10228	Lock Washer, 1/2"
29.	10641	Grease Fitting, 1/8" NPT
30.	10111	Lock Nut, 1/2"-13
31.	D3711	Clamp, Hose
32.	10025	HHCS, 3/4"-10 x 1 1/2"
	10231	Lock Washer, 3/4"
	10028	HHCS, 3/4" -10 x 3"
	10218	Washer, 3/4" USS
	10105	Hex Nut, 3/4" -10
33.	A2579	Axle/Pivot Tube, 8 Row 30 and 12 row 30
	A2836	Axle/Pivot Tube, 8 Row Wide and 12 Row Wide
	A2768	Axle/Pivot Tube, 16 Row 30
34.	D3637	Pin, 3/4" x 3"
	10457	Cotter Pin, 5/32" x 1 1/2"
35.	A2656	Cylinder, 1 1/2" x 2"
36.	D2971-1	Sleeve, 1 1/8"
37.	D2971-3	Sleeve, 7/16"
38.	D3751	Spring
39.	10049	HHCS, 3/8"-16 x 2 1/2"
	10108	Lock Nut, 3/8"-16
40.	10036	HHCS, 5/8" - 11 x 4"
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
41.	D2357	Clamp, Hose
42.	10108	Lock Nut, 3/8" -16
43.	A2902	Bracket, R.H., Standard on 8 Row Models
44.	A2903	Bracket, L.H., Standard on 8 Row Models
45.	A2904	Pin
	D2558	Pin, Lynch, 1/4"
A.	6608X	Detent Kickout Kit, Includes: (4) 10028, (4) 10105, (8) 10218, (1) A2902, (1) A2903, (2) A2904 and (2) D2558

8 BOLT TRANSPORT WHEEL ASSEMBLY

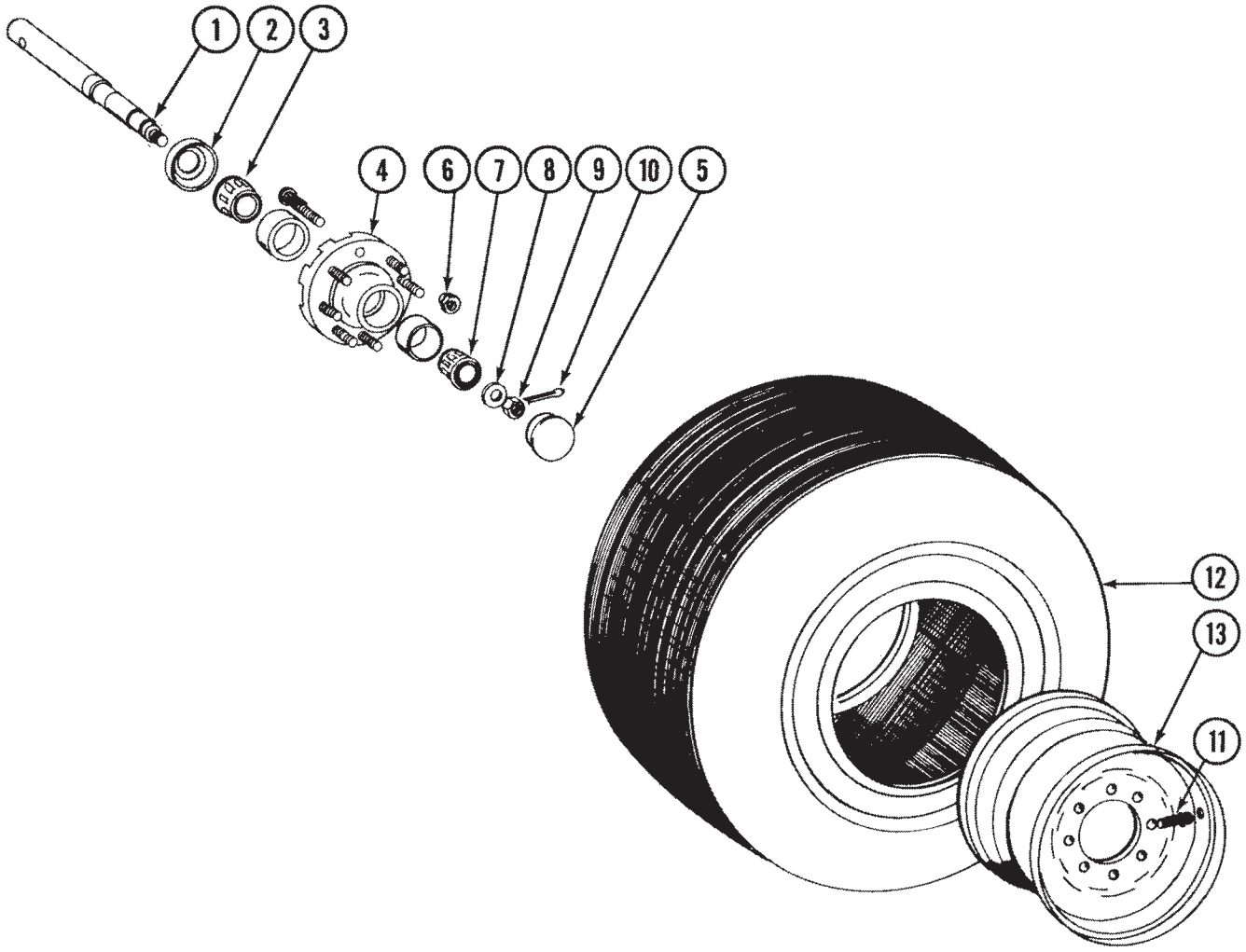
8 Row 30 thru 12 Row Wide



ITEM	PART NO.	DESCRIPTION
1.	D1354	Spindle
2.	A867	Seal
3.	A866	Bearing
4.	A513	Hub w/Cups, Less Bolts
	R296	Cup, Inner
	R522	Cup, Outer
5.	R270	Bolt, 9/16"-18 x 1 3/16"
6.	A865	Bearing
7.	10084	Spindle Washer, 7/8"
8.	10083	Hex Slotted Nut, 7/8"-14
9.	10459	Cotter Pin, 3/16" x 1 1/2"
10.	D1741	Hub Cap
11.	D1966	Tire, 14L x 16.1
12.	A964	Wheel, W11C x 16.1
13.	D1166	Valve Stem
A.	A304	Hub Assembly (Items 1 thru 10)

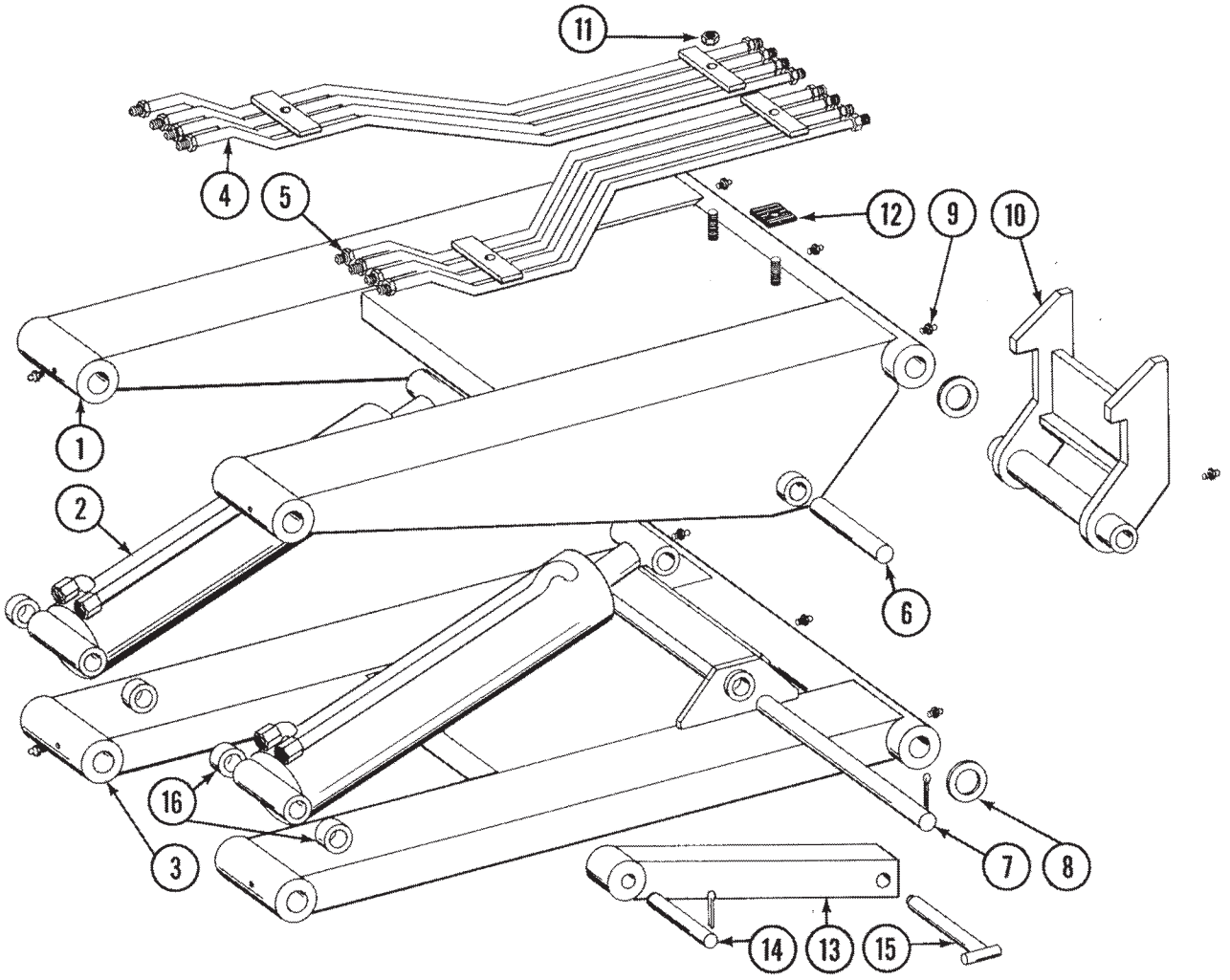
8 BOLT TRANSPORT WHEEL ASSEMBLY

16 Row 30 Only



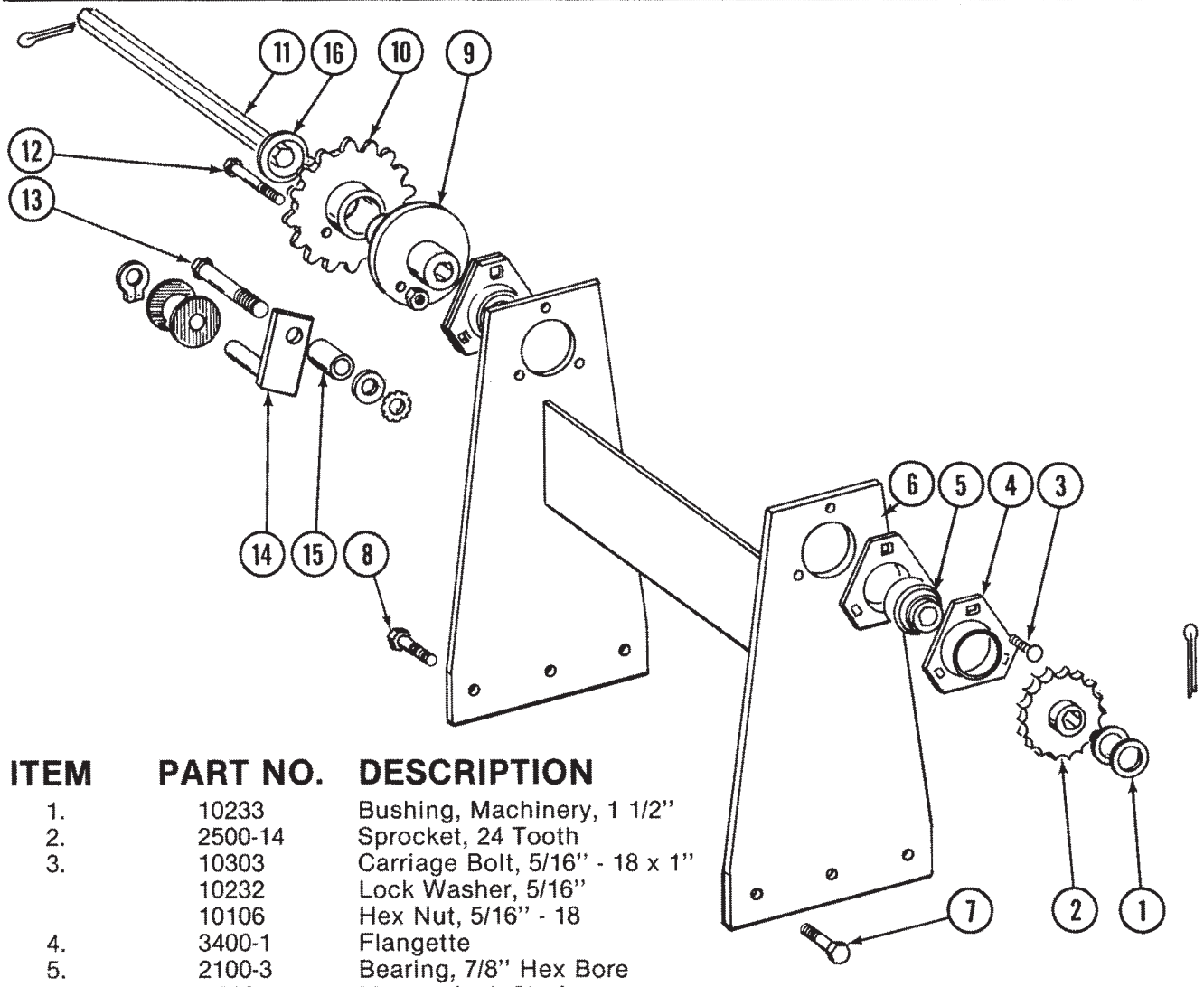
ITEM	PART NO.	DESCRIPTION
1.	D2292	Spindle
2.	A1308	Seal
3.	A1309	Bearing
4.	A1295	Hub w/Cups and Bolts
	R529	Cup, Inner
	R189	Cup, Outer
	R528	Bolt
5.	D2310	Cap
6.	R531	Lug Nut, 5/8" - 18
7.	A238	Bearing
8.	10082	Washer, 1" SAE
9.	10146	Hex Slotted Nut, 1" - 14 UNS
10.	10462	Cotter Pin, 3/16" x 2"
11.	D1166	Valve Stem
12.	D1966	Tire, 14L x 16.1
13.	A964	Wheel, W11C x 16.1
A.	A1313	Hub Assembly (Items 1 thru 10)

LIFT ARMS, UPPER AND LOWER



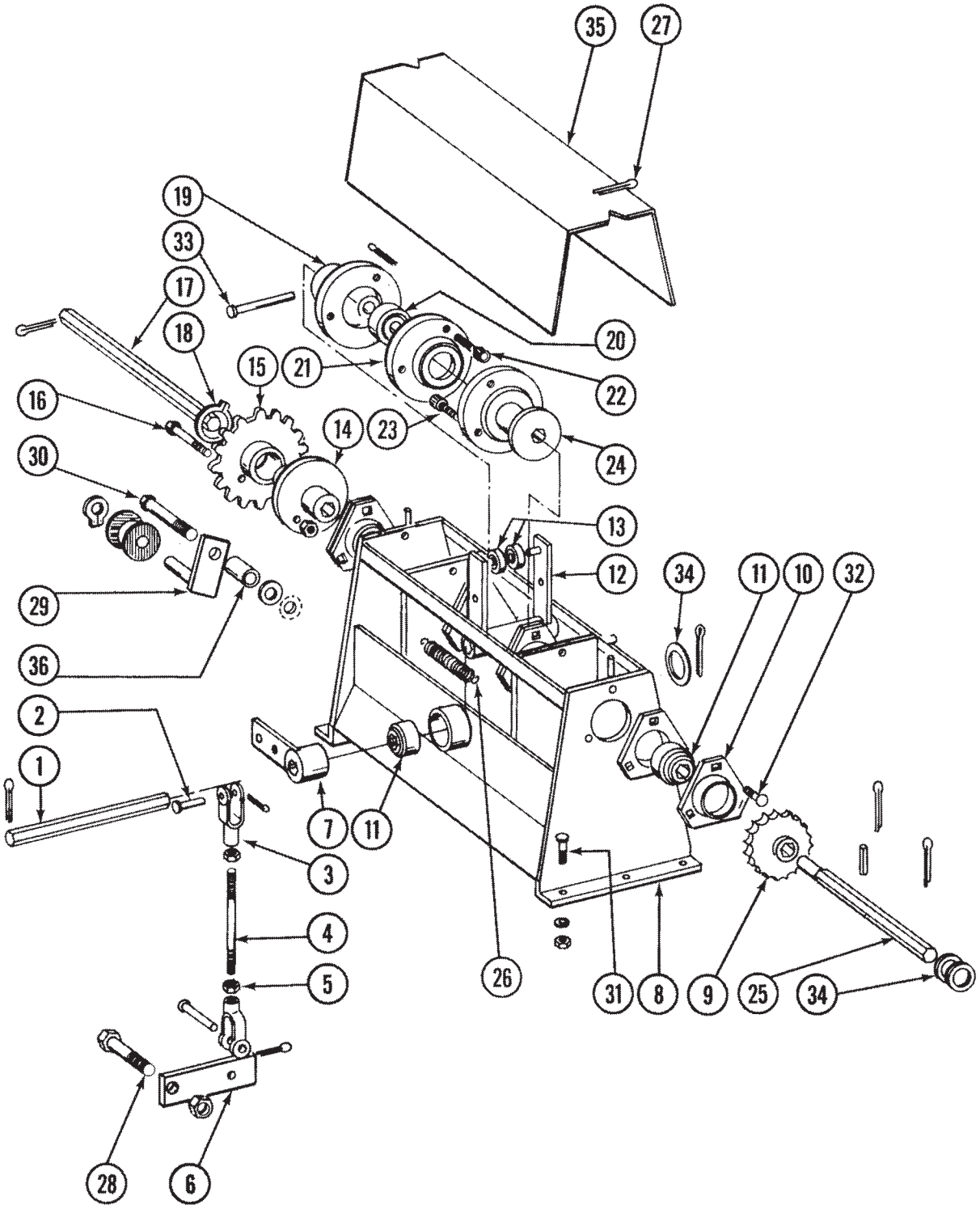
ITEM	PART NO.	DESCRIPTION
1.	A2615	Upper Parallel Arm, 8 Row 30 thru 12 Row Wide
	A2775	Upper Parallel Arm, 16 Row 30
2.	A234	Cylinder, 3 1/2" x 20", 8 Row 30 and Wide
	A2389	Cylinder, 4 1/2" x 20", 12 Row 30 thru 16 Row 30 (Shown)
3.	A2696	Lower Parallel Arm, 8 Row 30 thru 12 Row Wide
	A2783	Lower Parallel Arm, 16 Row 30
4.	A2582	Tube Assembly, R.H., 12 Row 30 thru 16 Row 30 (Shown)
	A2892	Tube Assembly, R.H., 8 Row 30 and Wide
5.	A2581	Tube Assembly, L.H., 12 Row 30 thru 16 Row 30 (Shown)
	A2891	Tube Assembly, L.H., 8 Row 30 and Wide
6.	D3421	Pin, 1 1/4" x 8 3/4"
	10460	Cotter Pin, 1/4" x 2"
7.	D3606	Pin, 1 1/4" x 18 1/4"
	10460	Cotter Pin, 1/4" x 2"
8.	10234	Machinery Bushing, 2 1/8"
9.	10641	Grease Fitting, 1/8" NPT
10.	A2694	Lock
11.	10111	Lock Nut, 1/2"
12.	D3773	Strip, Rubber
13.	A2736	Bar, Support
14.	D1701	Pin, 1 1/4" x 6 1/2"
	10460	Cotter Pin, 1/4" x 2"
15.	A741	"T" Pin, 7/8" x 4 3/4"
	10671	Hair Pin Clip, No. 6
16.	D752-7	Sleeve, Used With A234 Cylinder Only

JACK SHAFT MOUNT ASSEMBLY, 8 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	10233	Bushing, Machinery, 1 1/2"
2.	2500-14	Sprocket, 24 Tooth
3.	10303	Carriage Bolt, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
4.	3400-1	Flangette
5.	2100-3	Bearing, 7/8" Hex Bore
6.	A2867	Mount, Jack Shaft
7.	10017	HHCS, 1/2" - 13 x 1 1/2", 8 Row Wide
	10045	HHCS, 1/2" - 13 x 4 1/2", 8 Row 30
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
8.	10017	HHCS, 1/2" - 13 x 1 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
9.	A2687	Hub, Shear
10.	2500-31	Sprocket, Shear, 12 Tooth
	2500-33	Sprocket, 48 Tooth, Extended Drill Sprocket
11.	D4138	Shaft, 7/8" x 25"
	10460	Cotter Pin, 1/4" x 2"
12.	10282	HHCS, 1/4" - 20 x 1", Special Shear
	10110	Lock Nut, 1/4" - 20
13.	10053	HHCS, 1/2" - 13 x 2 1/2"
	10527	Washer, Int./Ext., 1/2"
	10228	Lock Washer, 1/2" - 13
	10102	Hex Nut, 1/2" - 13
14.	A291	Idler w/Spool and Ring
	D1067	Spool
	10435	Ring
15.	D3180-2	Sleeve
16.	10283	Ring, Retaining, 1 1/2"
A.	6569X	Extended Drill Sprocket Package Includes: (2) 2500-33 and (2) 3200-12

CLUTCH ASSEMBLY 12 Row 30 thru 16 Row 30

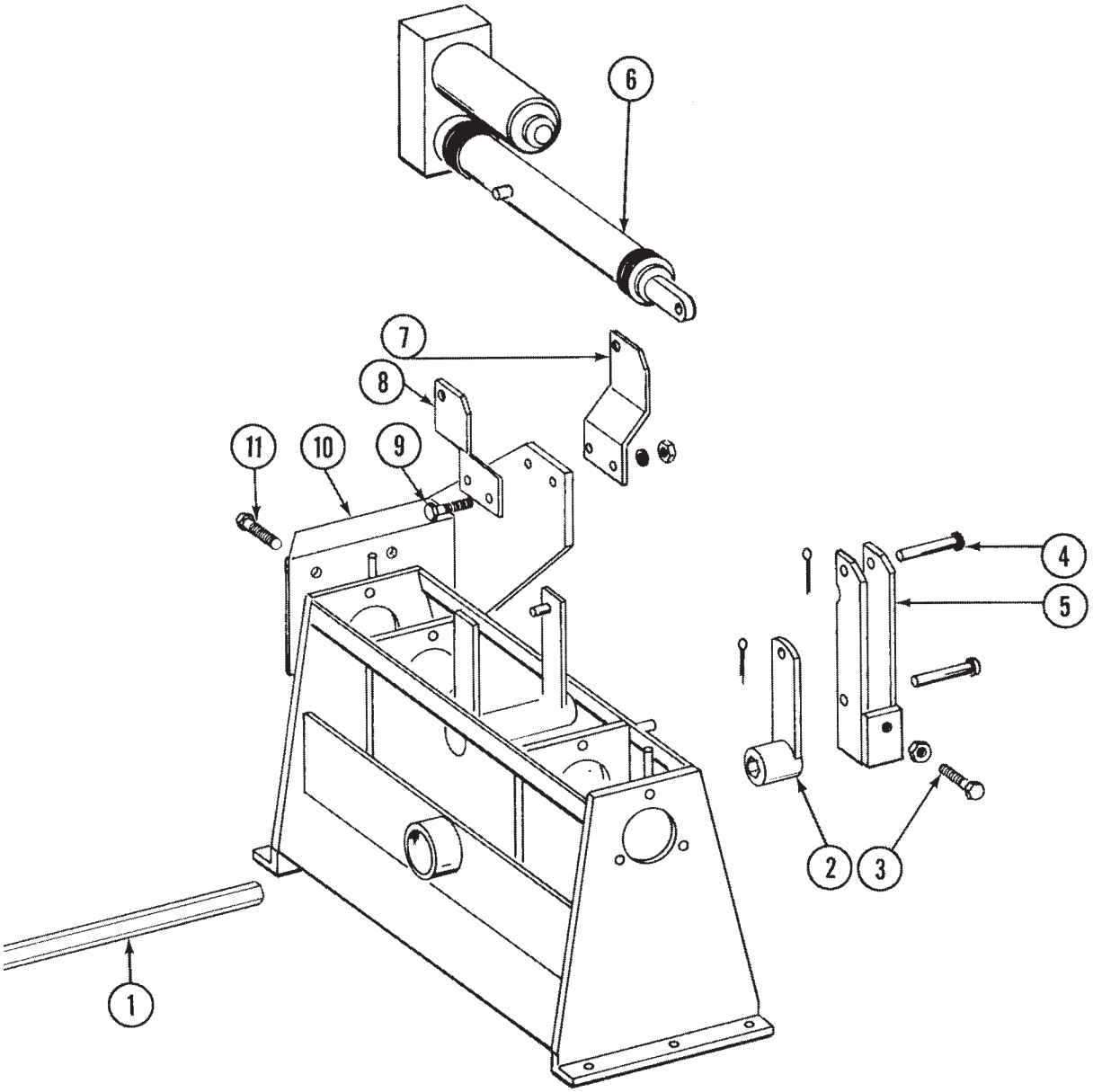


CLUTCH ASSEMBLY 12 Row 30 thru 16 Row 30

ITEM	PART NO.	DESCRIPTION
1.	D3658	Shaft
	10463	Cotter Pin, 1/4" x 1 1/2"
2.	10284	Clevis Pin, 1/2" x 1 1/2"
	10470	Cotter Pin, 5/32" x 1"
3.	D3517	Yoke End
4.	D3662	Rod, Linkage
5.	10289	Hex Nut, 1/2" - 20
6.	D3775	Lever
7.	A2688	Arm
8.	A2692	Housing
9.	2500-14	Sprocket, 24 Tooth
10.	3400-1	Flangette
11.	2100-3	Bearing, 7/8" Hex Bore
12.	A2689	Arm, Throw Out
13.	A2271	Bearing
14.	A2687	Hub, Shear
15.	2500-31	Sprocket, Shear, 12 Tooth
	2500-33	Sprocket, 48 Tooth, Extended Drill Sprocket
16.	10282	HHCS, 1/4"-20 x 1", Special Shear
	10110	Lock Nut, 1/4"-20
17.	D3782	Shaft, Input, 11 1/2"
	10460	Cotter Pin, 1/4" x 2"
18.	10283	Retaining Ring, 1 1/2"
19.	A2691	Hub
20.	A2272	Bearing
21.	D2792	Plate
22.	10181	Cap Screw, Hex Socket Head, 1/2"-13 x 1/2"
23.	10182	Cap Screw, Hex Socket Head, 1/2"-13 x 1"
24.	A2273	Hub, Throw Out
25.	D3661	Shaft, Output
	10463	Cotter Pin, 1/4" x 1 1/2"
	10603	Roll Pin, 1/4" x 1 1/4"
26.	D3783	Spring
27.	10670	Hair Pin Clip, No. 3
28.	10006	HHCS, 5/8" - 11 x 2 1/4"
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
29.	A291	Idler w/Spool and Ring
	D1067	Spool
	10435	Ring
30.	10053	HHCS, 1/2" - 13 x 2 1/2"
	10527	Washer, Int./Ext, 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
31.	10017	HHCS, 1/2" - 13 x 1 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
32.	10303	Carriage Bolt, 5/16"-18x1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
33.	10547	Clevis Pin, 5/16" x 2 3/4"
	10456	Cotter Pin, 1/8" x 3/4"
34.	10233	Bushing, Machinery, 1 1/2"
35.	D3644	Cover
36.	D3180-2	Sleeve
A.	6569X	Extended Drill Sprocket Package, Includes: (2) 2500-33 and (2) 3200-12

POINT ROW CLUTCH ASSEMBLY

12 Row 30 thru 16 Row 30

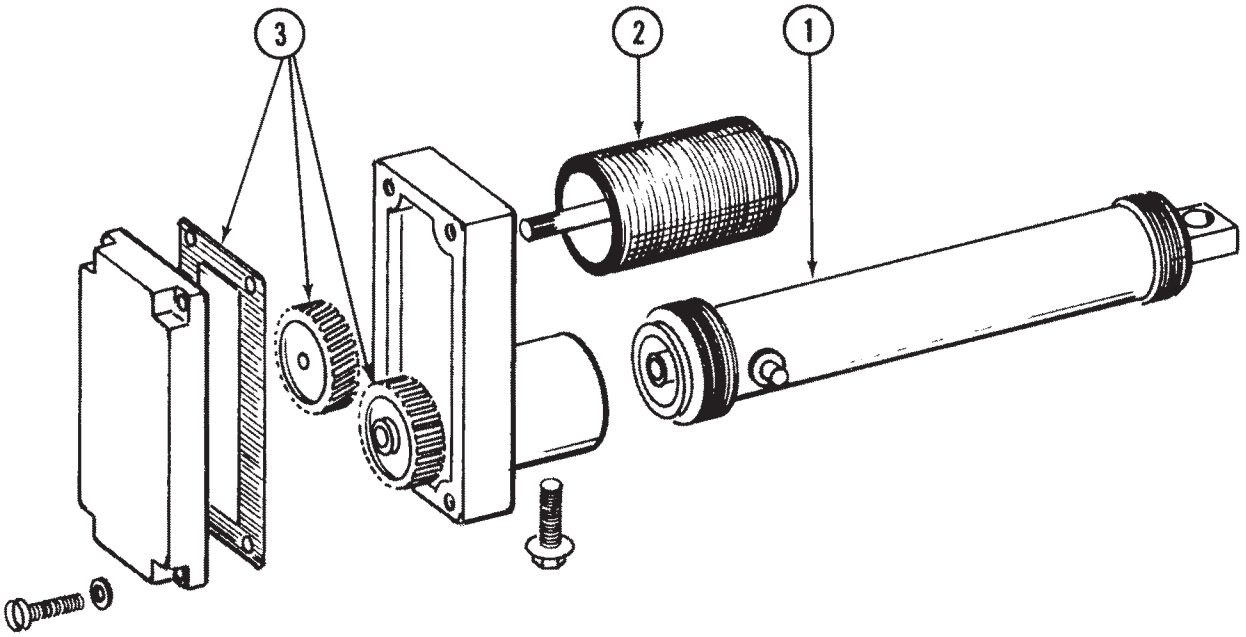


POINT ROW CLUTCH ASSEMBLY

12 Row 30 thru 16 Row 30

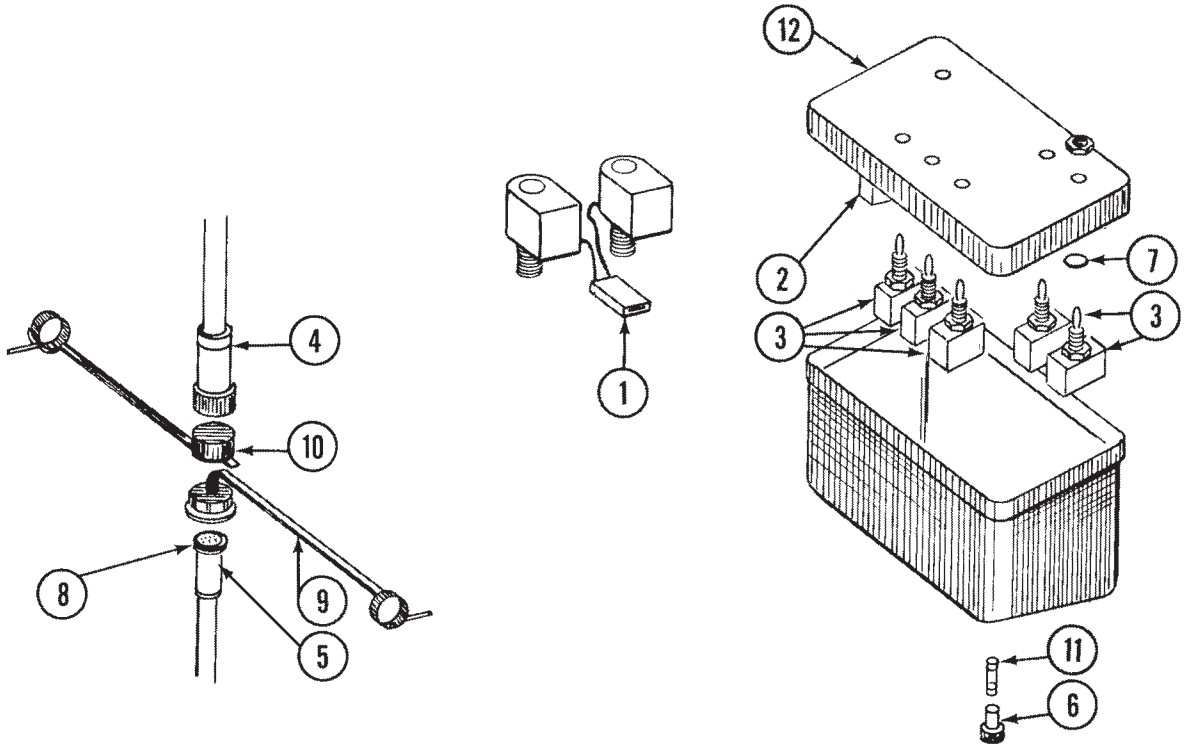
ITEM	PART NO.	DESCRIPTION
1.	D3884	Shaft, 7/8" x 11 1/2"
	10463	Cotter Pin, 1/4" x 1 1/2"
2.	A2688	Arm, Throw Out
3.	10299	Hex Head Adjusting Bolt, 3/8" - 16 x 2 1/4"
	10101	Hex Nut, 3/8" - 16
4.	10560	Clevis Pin, 1/2" x 1 3/4"
	10456	Cotter Pin, 1/8" x 3/4"
5.	A2865	Link Arm
6.	A2514	Actuator
7.	D3985	Bracket, L.H.
8.	D3986	Bracket, R.H.
9.	10003	HHCS, 3/8" - 16 x 1 1/2"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
10.	A2863	Bracket, Mounting, L.H.
	A2864	Bracket, Mounting, R.H.
11.	10037	HHCS, 1/2" - 13 x 1 1/4"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
A.	6589X	Point Row Clutch Assembly w/Wiring Harness, 12 Row 30 (Items 1 thru 10 Plus Wiring Harness)
	6606X	Point Row Clutch Assembly w/Wiring Harness, 12 Row 36 (Items 1 thru 10 Plus Wiring Harness)
	6607X	Point Row Clutch Assembly w/Wiring Harness, 12 Row 38 (Items 1 thru 10 Plus Wiring Harness)
	6590X	Point Row Clutch Assembly w/Wiring Harness, 16 Row 30 (Items 1 thru 10 Plus Wiring Harness)
B.	A2782	Point Row Wiring Harness, 12 Row 30 (Not Shown)
	A2899	Point Row Wiring Harness, 12 Row 36 (Not Shown)
	A2901	Point Row Wiring Harness, 12 Row 38 (Not Shown)
	A2808	Point Row Wiring Harness, 16 Row 30 (Not Shown)

ACTUATOR



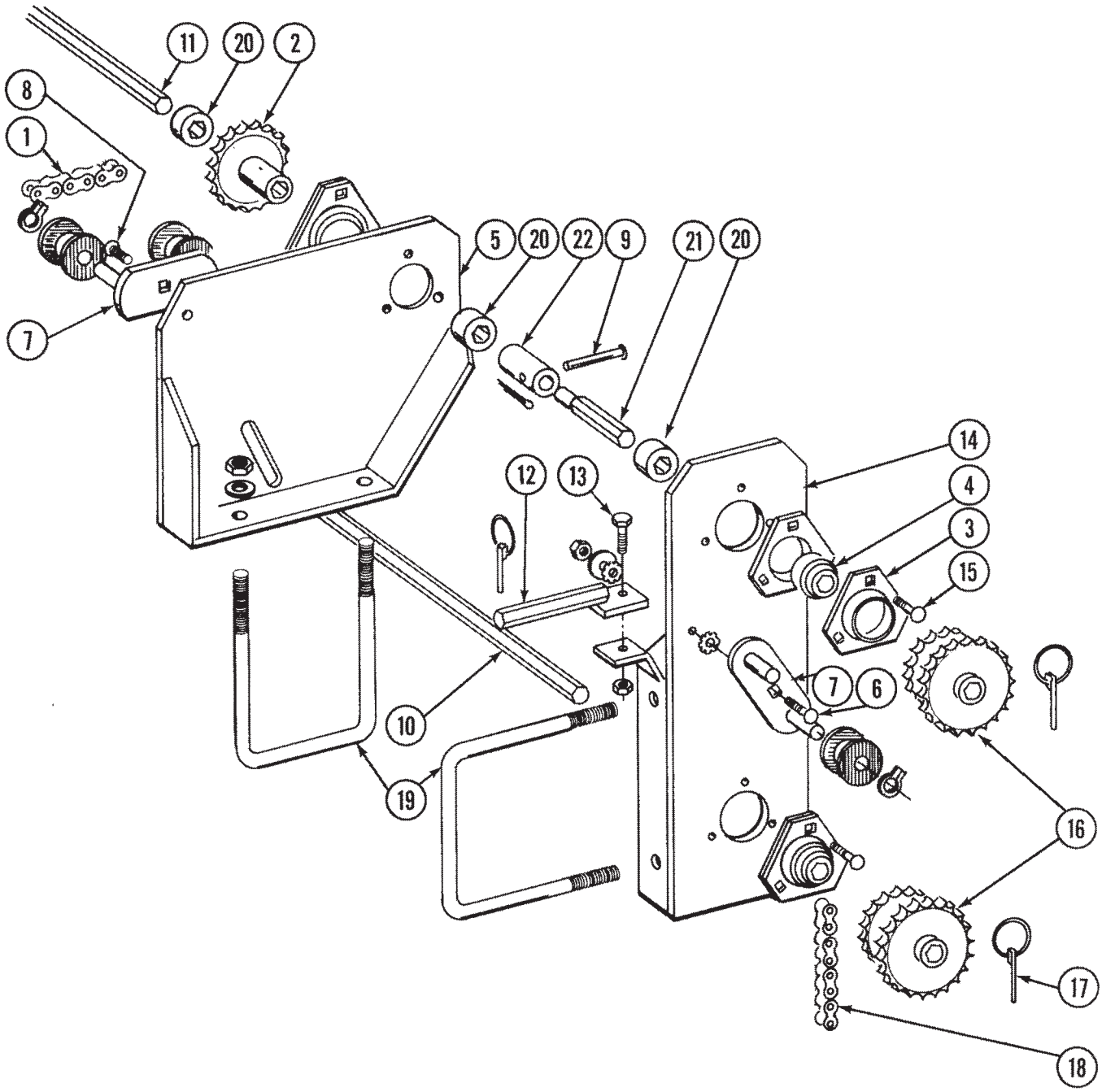
ITEM	PART NO.	DESCRIPTION
1.	R719	Acutuator Kit, 4"
2.	R720	Motor, Electric 12V DC
3.	R721	Gear Set
A.	A2514	Actuator Complete
B.	R722	Motor and Gearbox Complete, Less Item 1 Actuator Kit

THREE VALVE ELECTRICAL KIT



ITEM	PART NO.	DESCRIPTION
1.	10269	Terminal, Male Tab
2.	A2528	Switch, 3 Position Toggle
3.	A2526	Switch, 2 Way Momentary Contact
4.	D3297	Connector, 16 Pin
5.	D3296	Connector, 16 Pin
6.	A2612	Fuse Holder
7.	D3860	O-Ring
8.	D3816	Seal, Peripheral
9.	D3765	Dust Cap
10.	D3766	Dust Cover
11.	D2829	Fuse, AGC-15
12.	D3448	Front Panel, Brushed Aluminum
A.	A2889	Control Box Assembly w/Short Harness. Marker and Rotation Functions, 8 Row 30, 8 Row 36 and 8 Row 38
	A2525	Control Box Assembly w/Short Harness, Marker and Rotation Functions, 12 Row 30, 12 Row 36, 12 Row 38 and 16 Row 30
B.	A2741	Control Box Assembly w/Short Harness, Marker, Rotation and Point Row Clutch Functions, 12 Row 30 thru 16 Row 30
C.	A2888	Wiring Harness, Tractor to Valve Block Assembly on Hitch, 8 Row 30
	A2884	Wiring Harness, Tractor to Valvve BLock Assembly on Hitch, 8 Row 36 and 8 Row 38
	A2701	Wiring Harness, Tractor to Valve Block Assembly on Hitch, 12 Row 30
	A2854	Wiring Harness, Tractor to Valve Block Assembly on Hitch, 12 Row 36 and 12 Row 38
	A2702	Wiring Harness, Tractor to Valve Block Assembly on Hitch, 16 Row 30
D.	A2725	Wiring Harness, Valve Block Assembly on Hitch to Valve Block Assembly on Main Frame, 8 Row 30 thru 16 Row 30

TRANSMISSION AND DRIVE LINE, 8 Row 30 and Wide

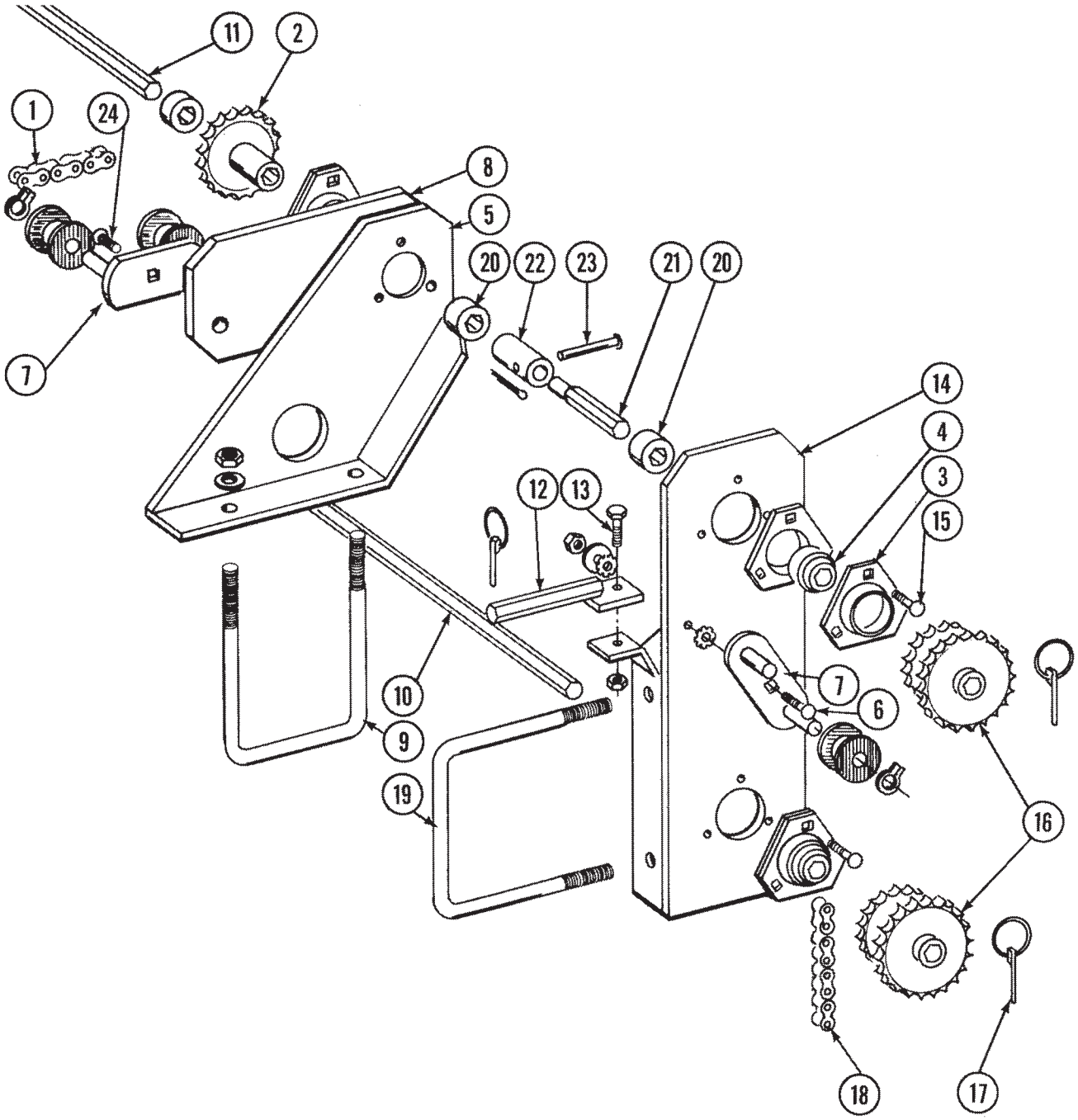


TRANSMISSION AND DRIVE LINE, 8 Row 30 and Wide

ITEM	PART NO.	DESCRIPTION
1.	3300-108	Chain, No. 2040, 108 Pitch Including Connector Link
	R194	Connector Link, No. 2040
2.	2500-14	Sprocket, 24 Tooth
3.	3400-1	Flangette
4.	2100-3	Bearing, 7/8" Hex
5.	A327	Support, Bearing, L.H. Side of Planter
	A326	Support, Bearing, R.H. Side of Planter
6.	10313	Carriage Bolt, 1/2"-13 x 1 1/2"
	10088	Carriage Bolt, 1/2"-13 x 11 1/2", L.H.
	10527	Lock Washer, 1/2" Int./Ext.
	10216	Washer, 1/2" USS
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2"-13
	10086	Hex Nut, 1/2" - 13 L.H.
7.	A289	Idler w/Spools and Rings
	D1067	Spool
	10435	Ring
8.	10313	Carriage Bolt, 1/2" -13 x 1 1/2"
	10527	Lock Washer, 1/2" Int./Ext.
	10216	Washer, 1/2" USS
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" -13
9.	10558	Clevis Pin, 5/16" x 1 3/4"
	10456	Cotter Pin, 1/8" x 3/4"
10.		Shaft, Drill, See Drill Shaft Drive Line Page
11.	D914-16	Shaft, 7/8", 8 Row 36
	D914-22	Shaft, 7/8", 8 Row 30 and 8 Row 38
12.	A1786	Rod, Sprocket Storage
13.	10019	HHCS, 5/16"-18 x 1"
	10109	Lock Nut, 5/16"-18
14.	A2202	Plate (Shown)
	A1729	Plate
15.	10303	Carriage Bolt, 5/16"-18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16"
16.	2500-25	Sprocket, 14 Tooth
	2500-26	Sprocket, 18-28 Tooth
	2500-27	Sprocket, 16-30 Tooth
	2500-28	Sprocket, 22-26 Tooth
17.	D2558	Pin, Lynch, 1/4"
18.	3300-40	Chain, No. 2040,40 Pitch Including Connector Link
	R194	Connector Link, No. 2040
19.	D1114	U-Bolt, 7" x 7" x 5/8"-11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8"-11
20.	D917	Lock Collar, Less Set Screws
	10145	Set Screw, 5/16"-18 x 1/2"
21.	D2543	Shaft, Transmission
22.	D2567	Coupler

TRANSMISSION AND DRIVE LINE

12 Row 30 thru 16 Row 30

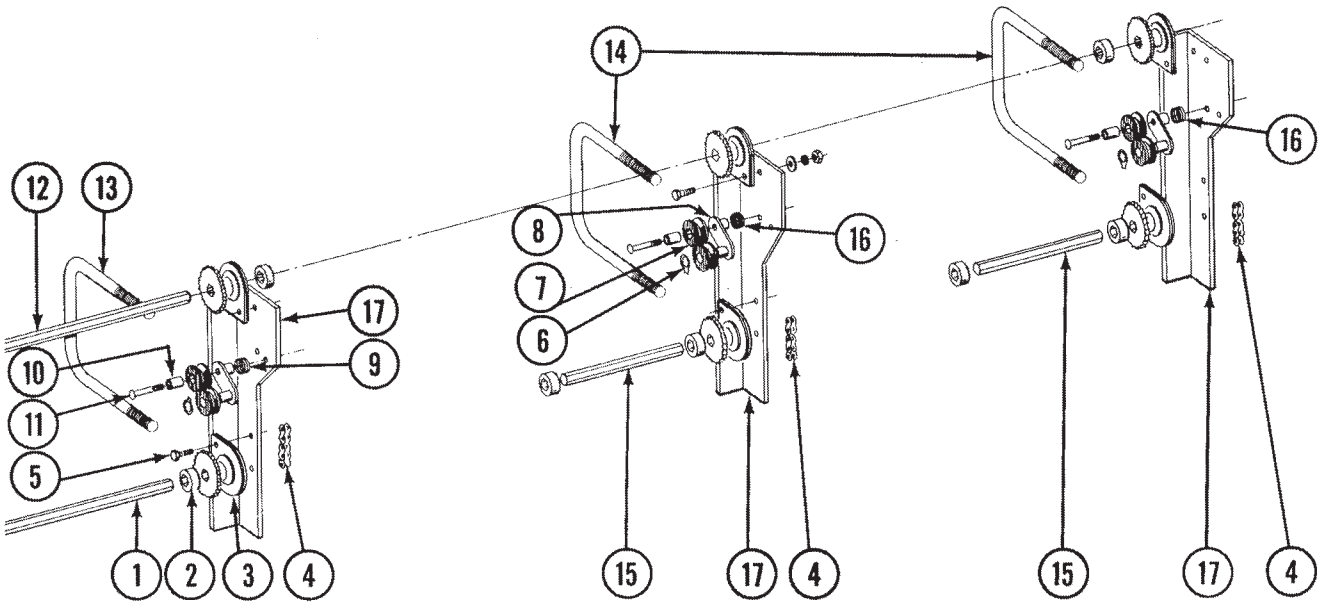


TRANSMISSION AND DRIVE LINE

12 Row 30 thru 16 Row 30

ITEM	PART NO.	DESCRIPTION
1.	3300-61	Chain, No. 2040, 61 Pitch Including Connector Link and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
2.	2500-14	Sprocket, 24 Tooth
3.	3400-1	Flangette
4.	2100-3	Bearing, 7/8" Hex
5.	A1784	Support, Bearing, L.H. Side of Planter
	A2721	Support, Bearing, R.H. Side of Planter
6.	10313	Carriage Bolt, 1/2" - 13 x 1 1/2"
	10088	Carriage Bolt, 1/2" - 13 x 1 1/2", L.H.
	10527	Lock Washer, 1/2" Int./Ext.
	10216	Washer, 1/2" USS
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
	10086	Hex Nut, 1/2" - 13 L.H.
7.	A289	Idler w/Spools and Rings
	D1067	Spool
	10435	Ring
8.	D2972	Bracket
9.	D1134	U-Bolt, 7" x 5" x 5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
10.		Shaft Drill, See Drill Shaft Drive Line (Wing Section) Page
11.	D914-12	Shaft, 7/8", 12 Row 30 and 16 Row 30
	D914-16	Shaft, 7/8", 12 Row 36
	D914-18	Shaft, 7/8", 12 Row 38
12.	A1786	Rod, Sprocket Storage
13.	10019	HHCS, 5/16" - 18 x 1"
	10109	Lock Nut, 5/16" - 18
14.	A2202	Plate (Shown)
	A1729	Plate
15.	10303	Carriage Bolt, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16"
16.	2500-25	Sprocket, 14 Tooth
	2500-26	Sprocket, 18-28 Tooth
	2500-27	Sprocket, 16-30 Tooth
	2500-28	Sprocket, 22-26 Tooth
17.	D2558	Pin, Lynch, 1/4"
18.	3300-40	Chain, No. 2040,40 Pitch Including Connector Link
	R194	Connector Link, No. 2040
19.	D1113	U-Bolt, 5" x 7" x 5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
20.	D917	Lock Collar, Less Set Screws
	10145	Set Screw, 5/16" - 18 x 1/2"
21.	D2543	Shaft, Transmission
22.	D2567	Coupler
23.	10558	Clevis Pin, 5/16" x 1 3/4"
	10456	Cotter Pin, 1/8" x 3/4"
24.	10313	Carriage Bolt, 1/2" - 13 x 1 1/2"
	10527	Lock Washer, 1/2", Int./Ext.
	10216	Washer, 1/2" USS
	10228	Lock Washer, 1/2"
	10101	Hex Nut, 1/2" - 13

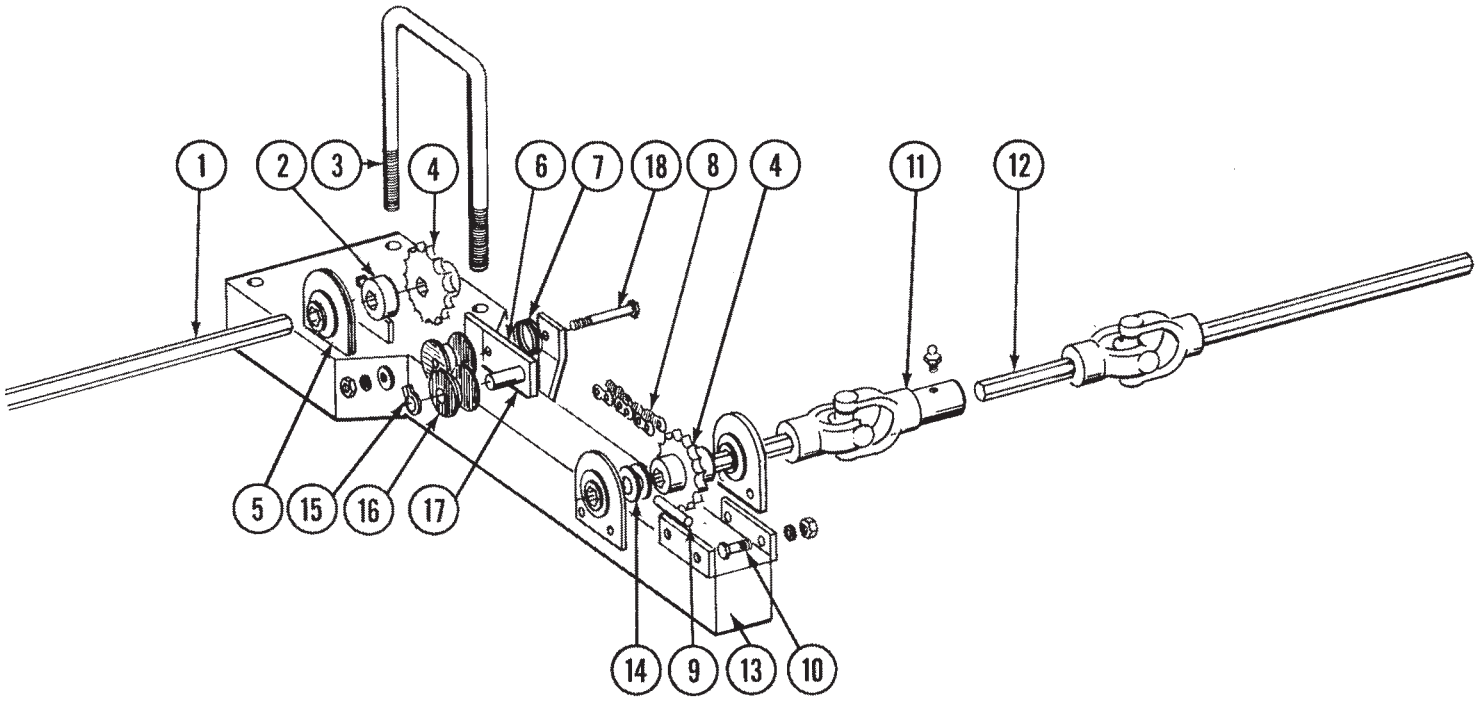
DRILL SHAFT DRIVE LINE, 8 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	D2548-52	Shaft, 7/8" Hex, 8 Row 30
	D2548-63	Shaft, 7/8" Hex, 8 Row 36
	D2548-58	Shaft, 7/8" Hex, 8 Row 38
2.	D917	Lock Collar, Less Set Screws
	10145	Set Screws, 5/16" - 18 x 1/2"
3.	A1720	Bearing and Sprocket, 7/8"
4.	3303-67	Chain, No. 41, 67 Pitch Including Connector Link and Offset Link
	R196	Connector Link, No. 41
	R201	Offset Link, No. 41
5.	10001	HHCS, 3/8" - 16 x 1"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
6.	10435	Ring
7.	D1068	Spool
8.	A2056	Idler, Less Spools and Rings
9.	D1065	Spring
10.	D1026	Bushing
11.	10061	HHCS, 3/8" - 16 x 3 1/2"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
12.	D914-63	Shaft, 7/8" Hex, 8 Row 30
	D914-75	Shaft, 7/8" Hex, 8 Row 36
	D914-79	Shaft, 7/8" Hex, 8 Row 38
13.	D1114	U-Bolt, 7"x7"x5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
14.	D3887	U-Bolt, 7" x 5" x 5/8" - 11, Special
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
15.	D914-12.25	Shaft, 7/8" Hex
16.	D2134	Spring
17.	A2766	Bracket

DRILL SHAFT DRIVE LINE, WING SECTION

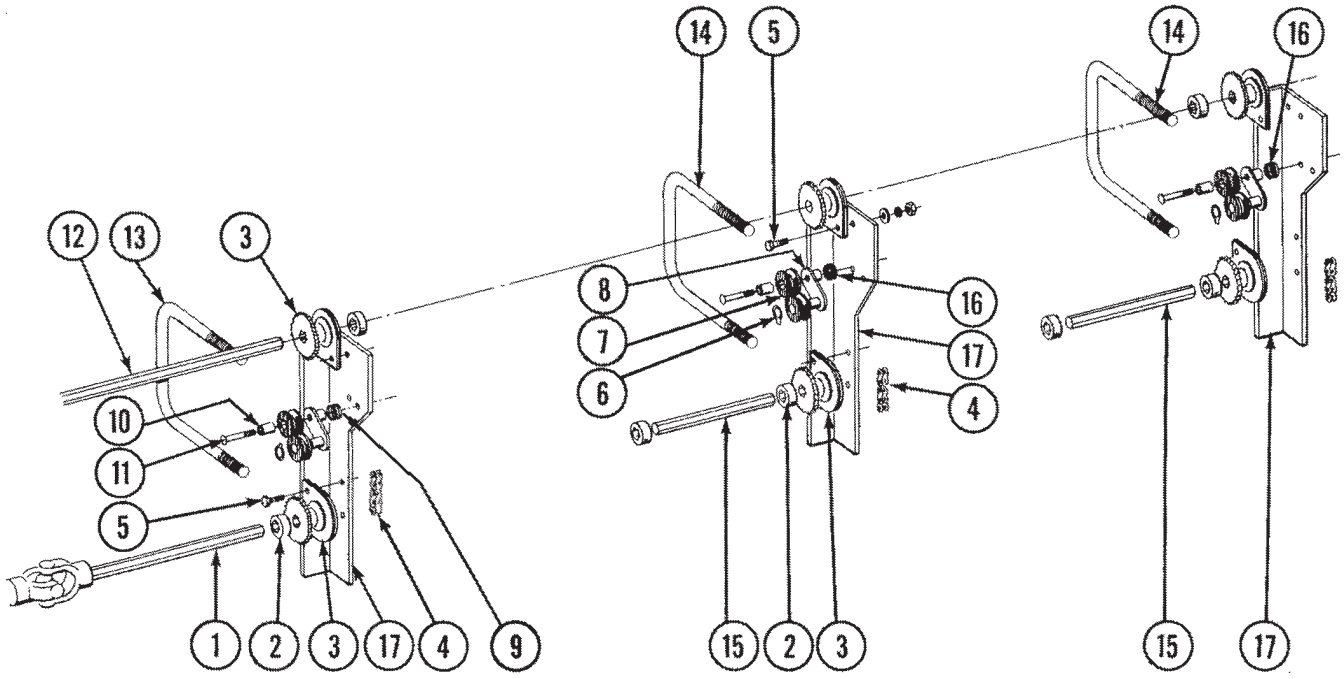
12 Row 30 thru 16 Row 30



ITEM	PART NO.	DESCRIPTION
1.	D2548-86	Shaft, 7/8" Hex, 12 Row 30
	D2548-102	Shaft, 7/8" Hex, 12 Row 36
	D2548-112	Shaft, 7/8" Hex, 12 Row 38
	D2548-146	Shaft, 7/8" Hex, 16 Row 3
2.	D917	Lock Collar, Less Set Screws
	10145	Set Screws, 5/16"-18 x 1/2"
3.	D1134	U-Bolt, 7" x 5" x 5/8"-11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8"-11
4.	2500-19	Sprocket, 19 Tooth
5.	A2180	Hanger Bearing
6.	D1026	Bushing
7.	D1065	Spring, L.H. Side of Planter
	D2134	Spring, R.H. Side of Planter
8.	3303-111	Chain, No. 41, 111 Pitch Including Connector Link and Offset Link
	R196	Connector Link, No. 41
	R201	Offset Link, No. 41
9.	10602	Roll Pin, 1/4" x 1 1/2"
10.	10001	HHCS, 3/8"-16 x 1"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8"-16
11.	A2718	Universal Joint w/Shaft and Grease Fittings
	10640	Grease Fitting, 1/4"-28
	10643	Grease Fitting, 1/4"-28, 45°
12.		Universal Joint w/Shaft and Grease Fitting, See Drill Shaft Drive Line (Center Section) Page
13.	A2643	Bracket, (Shown)
	A2644	Bracket
14.	10233	Bushing, Machinery
15.	10435	Ring
16.	D1068	Spool
17.	A2056	Idler, Less Spools and Rings
18.	10061	HHCS, 3/8"-16 x 3 1/2"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16

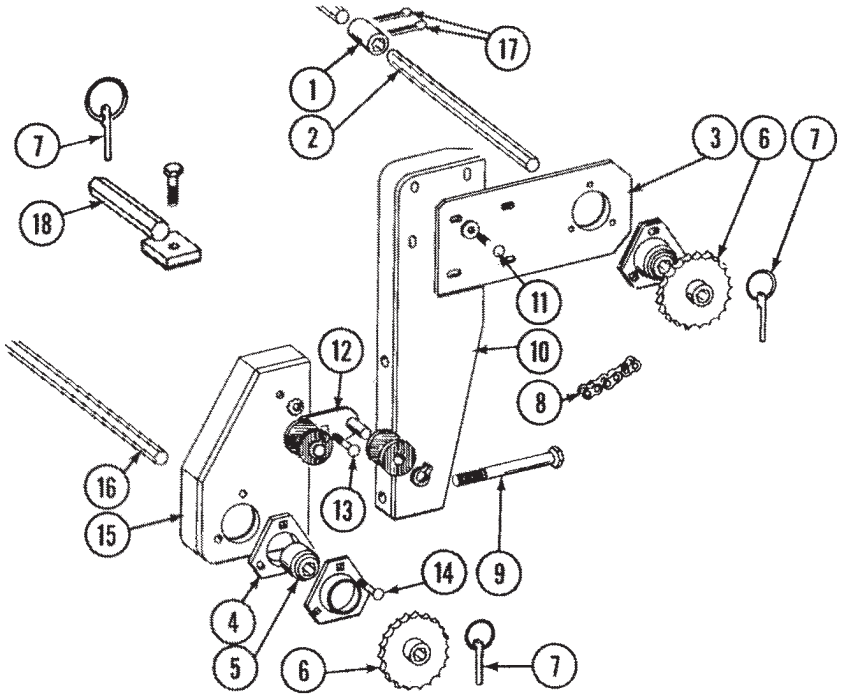
DRILL SHAFT DRIVE LINE, CENTER SECTION

12 Row 30 thru 16 Row 30



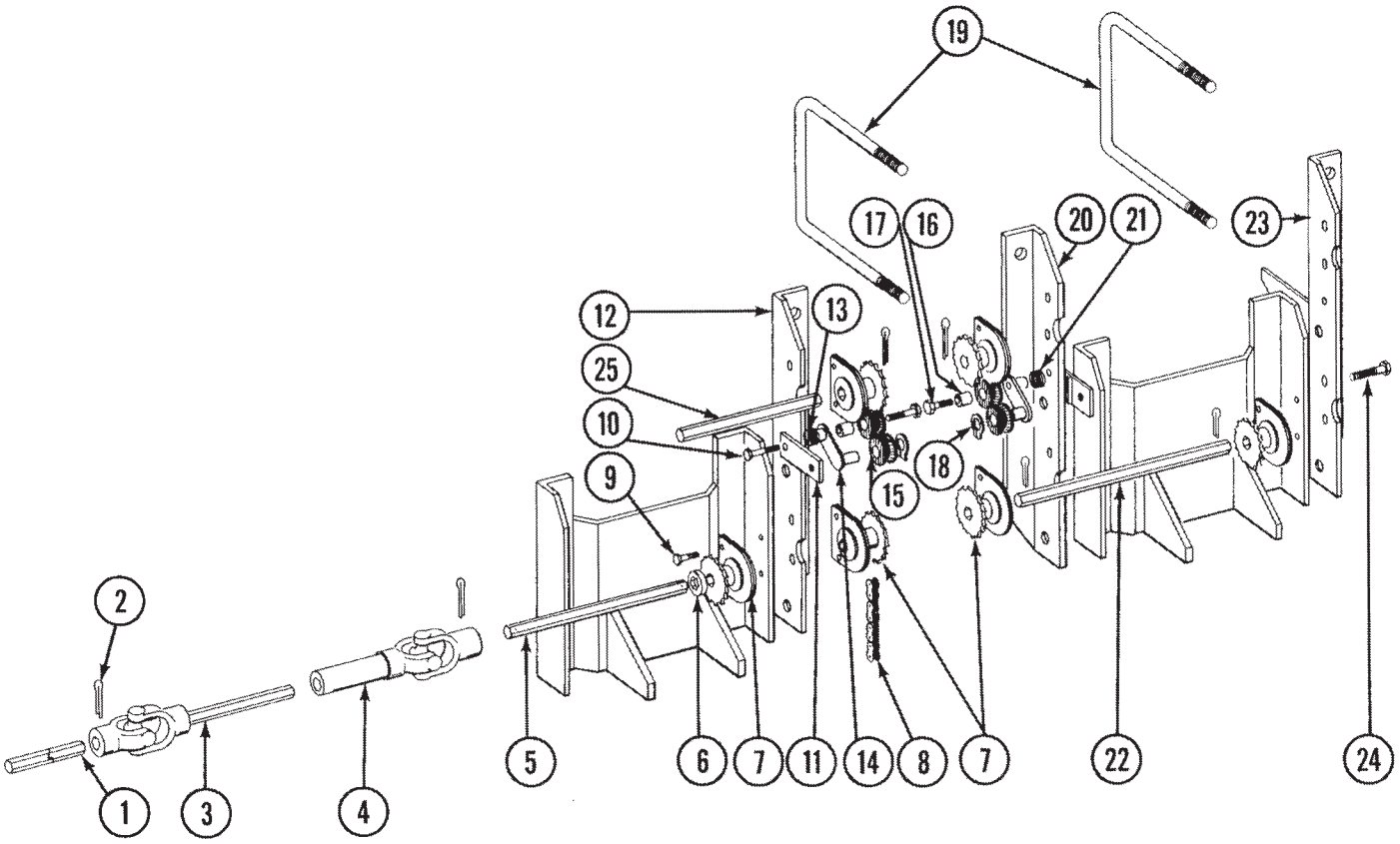
ITEM	PART NO.	DESCRIPTION
1.	A2717	Universal Joint w/Shaft and Grease Fitting, 12 Row 30, 12 Row 38 and 16 Row 30
	A2861	Universal Joint w/Shaft and Grease Fitting, 12 Row 36
	10643	Grease Fitting, 1/4" - 28, 45°
2.	D917	Lock Collar, Less Set Screws
	10145	Set Screws, 5/16" - 18 x 1/2"
3.	A1720	Bearing Sprocket, 7/8" Hex
4.	3303-67	Chain, No. 41, 67 Pitch Including Connector Link and Offset Link
	R196	Connector Link, No. 41
	R201	Offset Link, No. 41
5.	10001	HHCS, 3/8" - 16 x 1"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
6.	10435	Ring
7.	D1068	Spool
8.	A2056	Idler, Less Spools and Rings
9.	D1065	Spring
10.	D1026	Bushing
11.	10061	HHCS, 3/8" - 16 x 3 1/2"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
12.	D914-63	Shaft, 12 Row 30 and 16 Row 30, R.H. and L.H.
	D914-75	Shaft, 12 Row 36, R.H. and L.H.
	D914-79	Shaft, 12 Row 38, R.H. and L.H.
13.	D1114	U-Bolt, 7" x 7" x 5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
14.	D3887	U-Bolt, 7" x 5" x 5/8" - 11, Special
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
15.	D914-12.25	Shaft, 7/8" Hex
16.	D2134	Spring
17.	A2766	Bracket

PUSH UNIT TRANSMISSION ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	D3839	Coupler, 2"
2.	D3838	Shaft, 7/8" x 20", 12 Row 30 and 12 Row 36
	D4169	Shaft, 7/8" x 24" 1/2", 8 Row 30
	D4170	Shaft, 7/8" x 29", 8 Row 36 and 8 Row 38
3.	D1663	Plate
4.	3400-1	Flangette
5.	2100-3	Bearing, 7/8" Hex
6.	2500-25	Sprocket, 14 Tooth
	2500-26	Sprocket, 18-28 Tooth
	2500-27	Sprocket, 16-30 Tooth
	2500-28	Sprocket, 22-26 Tooth
7.	D2558	Pin, Lynch, 1/4"
8.	3300-64	Chain, No. 2040, 64 Pitch Including Connector Link
	R194	Connector Link, No. 2040
9.	10012	HHCS, 5/8" - 11 x 6 1/2"
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
10.	A2708	Bracket
	A2707	Bracket (Shown)
11.	10305	Carriage Bolt, 3/8" - 16 x 1"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
12.	A289	Idler w/Spools and Rings
	D1067	Spool
	10435	Ring
13.	10313	Carriage Bolt, 1/2" - 13 x 1 1/2"
	10527	Lock Washer, Int./Ext. 1/2"
	10216	Washer, 1/2" USS
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
14.	10303	Carriage Bolt, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
15.	A2703	Bracket (Shown)
	A2704	Bracket
16.		Shaft, 7/8" Hex, See Push Unit Drive Line Page
17.	10460	Cotter Pin, 1/4" x 2"
18.	A1786	Rod, Sprocket Storage

PUSH UNIT DRIVE LINE R.H. Side Shown

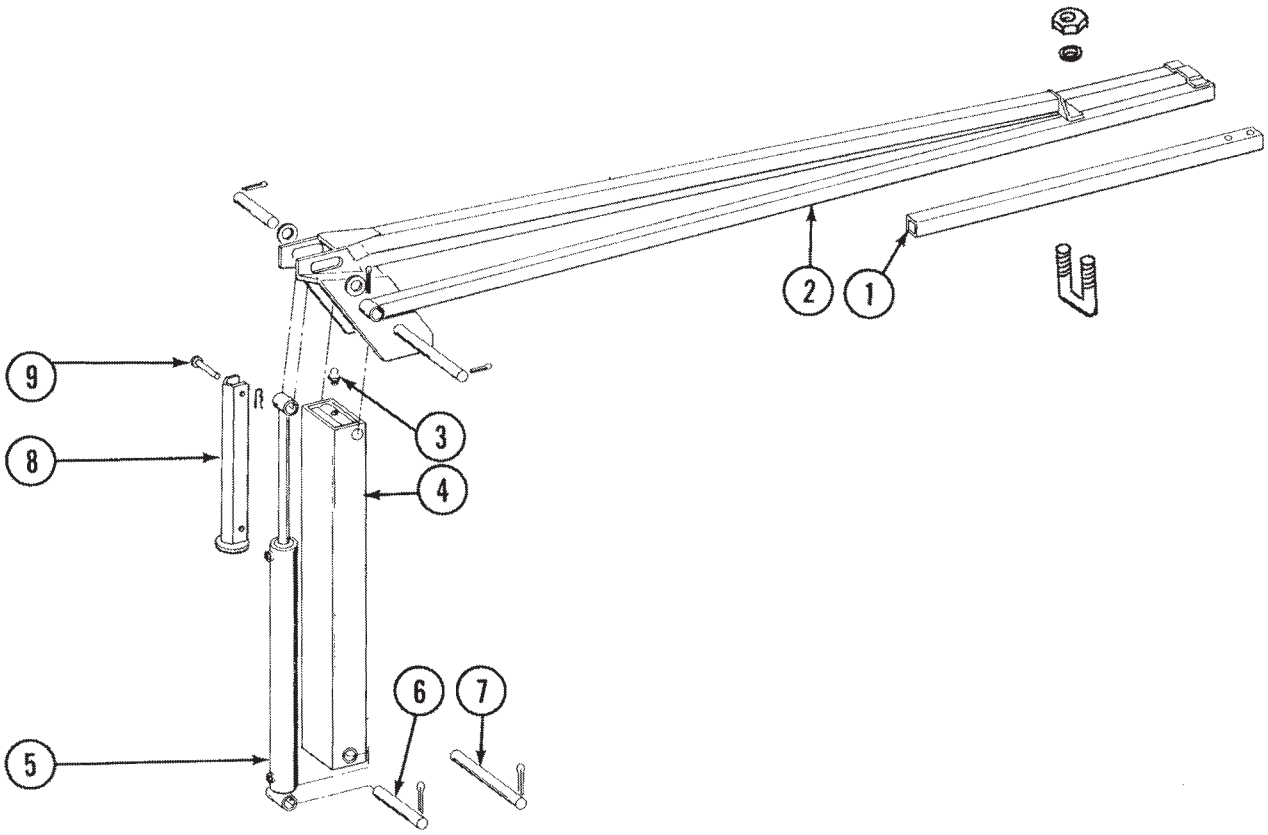


PUSH UNIT DRIVE LINE

ITEM	PART NO.	DESCRIPTION
1.	D3927	Wing Shaft, 100.5", 12 Row 30, R.H. and L.H.
	D4143	Wing Shaft, 115.5", 12 row 36, R.H. and L.H.
2.	10460	Cotter Pin, 1/4" x 2"
3.	A2801	Universal Joint w/Grease Fitting, 12 Row 30 and Wide
	10643	Grease Fitting, 1/4" - 28 45°
4.	A2800	Universal Joint w/Grease Fittings, 12 Row 30 and Wide
	10640	Grease Fitting, 1/4" - 28
	10643	Grease Fitting, 1/4" - 28 45°
5.	D4159	Hex Shaft, 102", 8 Row 30
	D4160	Hex Shaft, 124.5", 8 Row 36
	D4161	Hex Shaft, 122.5", 8 Row 38
	D3928	Hex Shaft, 48.5", 12 Row 30
	D4144	Hex Shaft, 57.5", 12 Row 36
6.	D917	Lock Collar, Less Set Screws
	10145	Set Screws, 5/16" - 18 x 1/2"
7.	A1720	Bearing/Sprocket, 7/8" Hex
8.	3303-56	Chain, No. 41, 56 Links, Including Connector Link
	R196	Connector Link, No. 41
9.	10001	HHCS, 3/8" - 16 x 1"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
10.	10004	HHCS, 3/8" - 16 x 1 1/4"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
11.	A2787	Mount, Idler
12.	D3899	Mount, L.H.
13.	D1065	Spring
14.	A2056	Idler, Less Spools and Rings
15.	D1068	Spool
16.	D1026	Bushing
17.	10061	HHCS, 3/8" - 16 x 3 1/2"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
18.	10435	Ring
19.	D3887	U-Bolt, Speical, 7" x 5" x 5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
20.	A2786	Mount, R.H. Center Row
21.	D2134	Spring
22.	D3921	Shaft, 14 3/8", Less Pins
	10463	Cotter Pin, 1/4" x 1 1/2"
23.	A2785	Mount, L.H. Center Row
24.	10008	HHCS, 5/8" - 11 x 2"
	10107	Lock Nut, 5/8" - 11
25.	D4145	Shaft, Less Pins, 23 3/4", 8 Row 36, 8 Row 38 and 12 Row 36
	D3923	Shaft, Less Pins, 15 3/4", 8 Row 30 and 12 Row 30
	10463	Cotter Pin, 1/4" x 1 1/2"

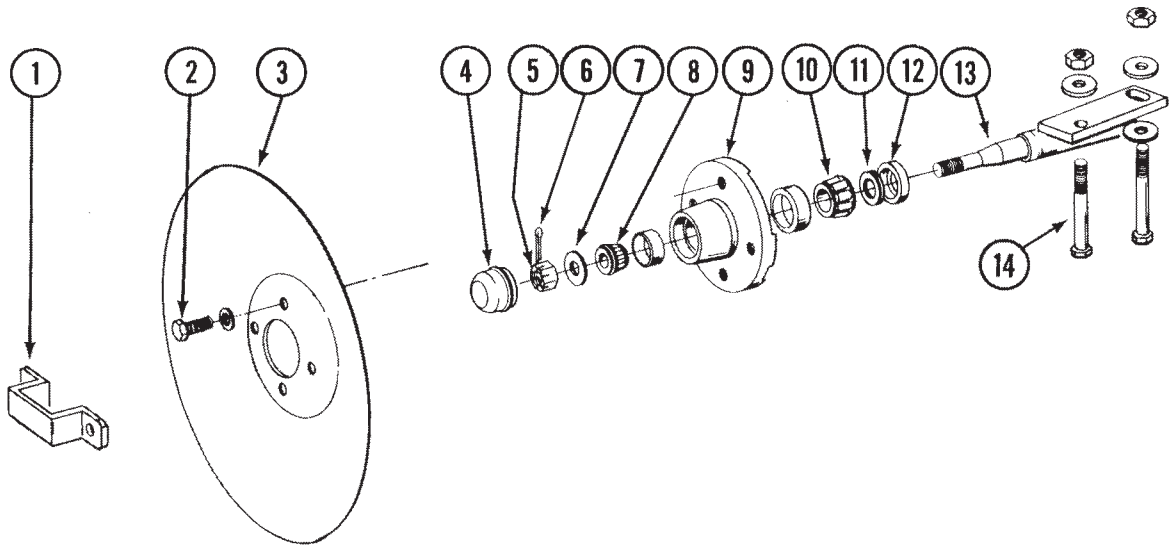
LOW PROFILE - DOUBLE FOLD MARKER ASSEMBLY

8 Row 30 thru 16 Row 30



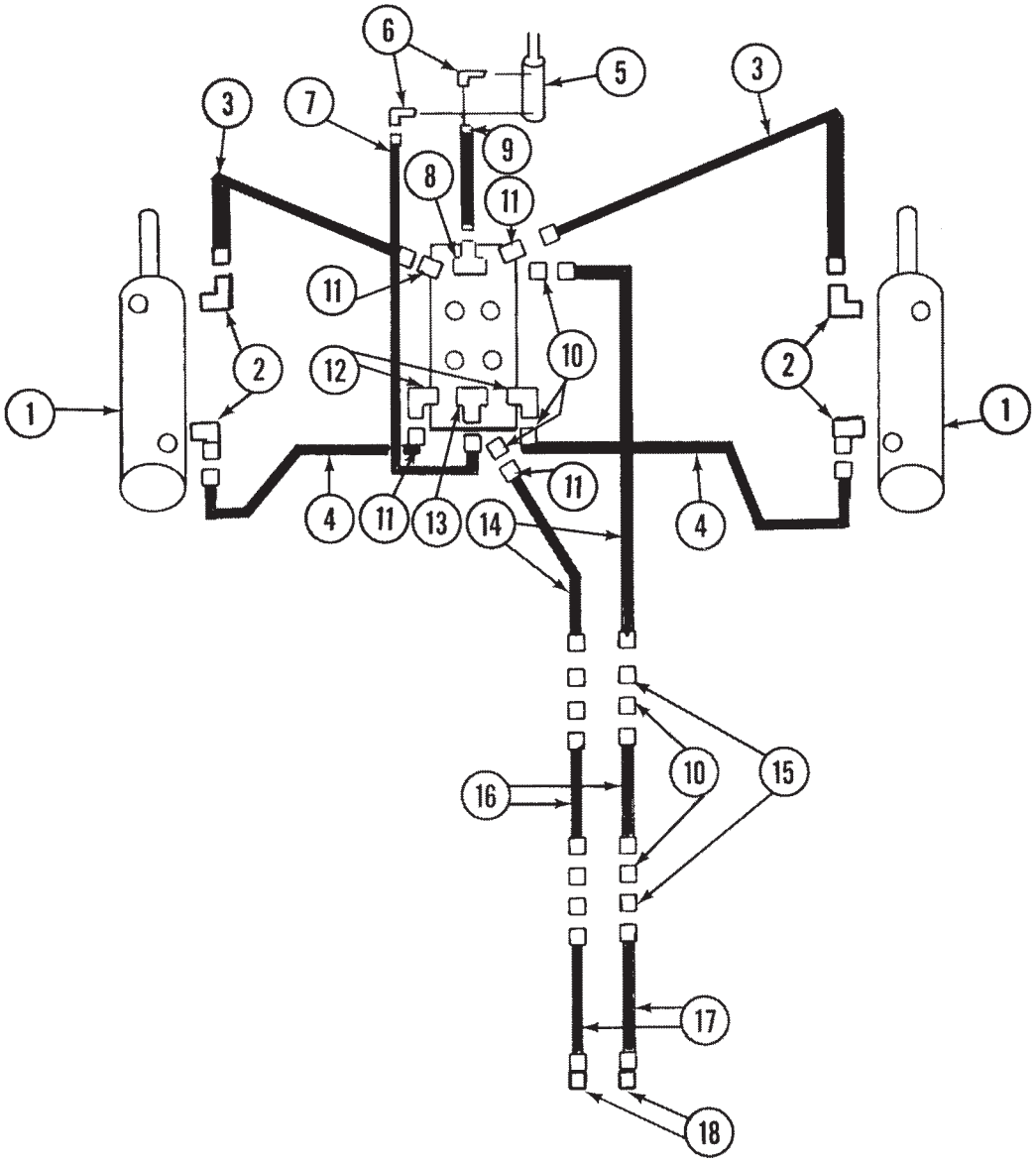
ITEM	PART NO.	DESCRIPTION
1.	D453-3	Extension, 50", 8 Row 30, 12 Row 30, 12 Row Wide and 16 Row 30
	D453-4	Extension, 60", 8 Row Wide
2.	A2835	Arm, Second Stage, W/Pins and U-Bolt, 8 Row 30
	A2834	Arm, Second Stage, W/Pins and U-Bolt, 8 Row Wide
	A2590	Arm, Second Stage, W/Pins and U-Bolt, 12 Row 30
	A2833	Arm, Second Stage, W/Pins and U-Bolt, 12 Row 36
	A2832	Arm, Second Stage, W/Pins and U-Bolt, 12 Row 38
	A2781	Arm, Second Stage, W/Pins and U-Bolt, 16 Row 30
	D2721	U-Bolt, 2" x 2" x 1/2"-13
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2"
	D737	Pin, 1 1/4" x 13 1/4"
	D826	Pin, 1 1/4" x 5 1/2"
	10460	Cotter Pin, 1/4" x 2"
	10226	Washer, 1 1/4" SAE
3.	10641	Grease Fitting, 1/8" NPT
4.	A151	Arm, First Stage
5.	A233	Cylinder, 2 1/2" x 20"
6.	D652	Pin, 1 1/4" x 9 1/2"
	10460	Cotter Pin, 1/4" x 2"
7.	D737	Pin, 1 1/4" x 13 1/4"
	10460	Cotter Pin, 1/4" x 2"
8.	A2913	Lockup
9.	10561	Clevis Pin, 1/2" x 3"
	10670	Hair Pin Clip, No. 3

MARKER HUB ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	D2597	Retainer
2.	10722	HHCS, 1/2" - 20 x 1"
	10228	Lock Washer, 1/2"
3.	D746	Blade, 16"
4.	D840	Cap
5.	10725	Hex Nut, Slotted, 5/8" - 18
6.	10470	Cotter Pin, 5/32" x 1"
7.	10724	Washer, 5/8"
8.	A257	Bearing, Outer
9.	A167	Hub w/Cups
	R151	Cup, Outer
	R150	Cup, Inner
10.	A245	Bearing, Inner
11.	A899	Seal, Rubber
12.	A243	Seal, Grease
13.	A1677	Spindle, L.H., Less Hardware (Shown)
	A1676	Spindle, R.H. Less Hardware
14.	10033	HHCS, 1/2" - 13 x 3 1/2"
	10168	Machinery Bushing, 1/2", 7 Ga.
	10102	Hex Nut, 1/2" - 13
A.	A1679	Hub and Spindle Assembly L.H. (Items 2 and 4-13)
	A1678	Hub and Spindle Assembly R.H. (Items 2 and 4-13)

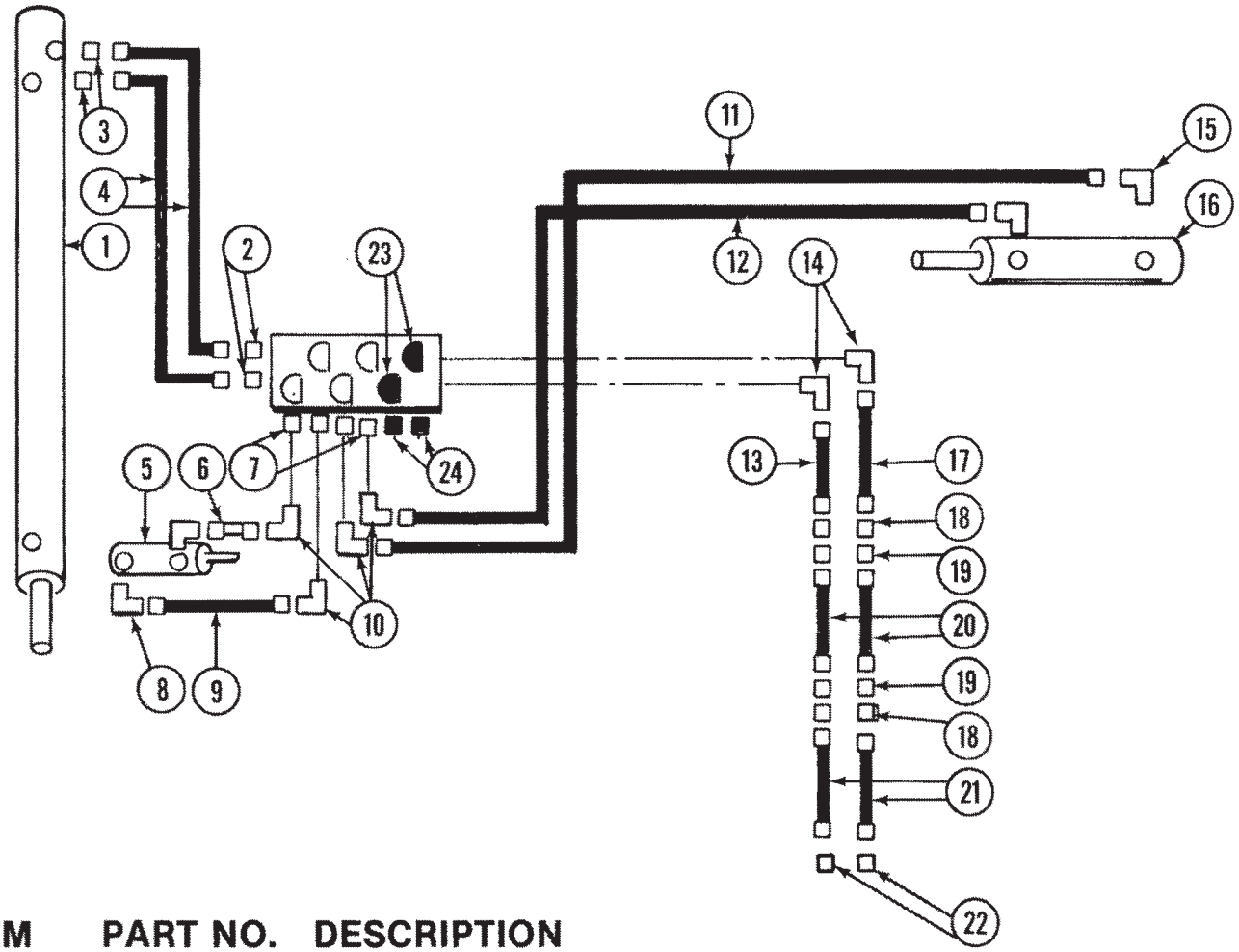
HYDRAULIC SYSTEM, PLANTER LIFT,8 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	A234	Cylinder, 3 1/2" x 20", Center Section Lift
2.	2501-8-8	Elbow
3.	A1055	Hose Assembly, 3/8" x 66"
4.	A1018	Hose Assembly, 3/8" x 40"
5.	A2656	Cylinder, 1 1/2" x 2", Lift Lock
6.	2501-6-4	Elbow
7.	A1139	Hose Assembly, 1/4" x 40"
8.	A2645	Tee, Bulkhead
9.	A1140	Hose Assembly, 1/4" x 52"
10.	306-10	Lock Nut, 7/8" - 14
11.	2406-10-8	Tube, Reducer
12.	6500-10	Elbow, Swivel
13.	A2657	Tee, Bulkhead
14.	A1402	Hose Assembly, 1/2" x 162"
15.	2700-10	Bulkhead Tube Union
16.	A1413	Hose Assembly, 1/2" x 26", 8 Row 30
	A1411	Hose Assembly, 1/2" x 50 1/2", 8 Row Wide
17.	A1414	Hose Assembly, 1/2" x 108"
18.	D4086	Tip, Pioneer Male

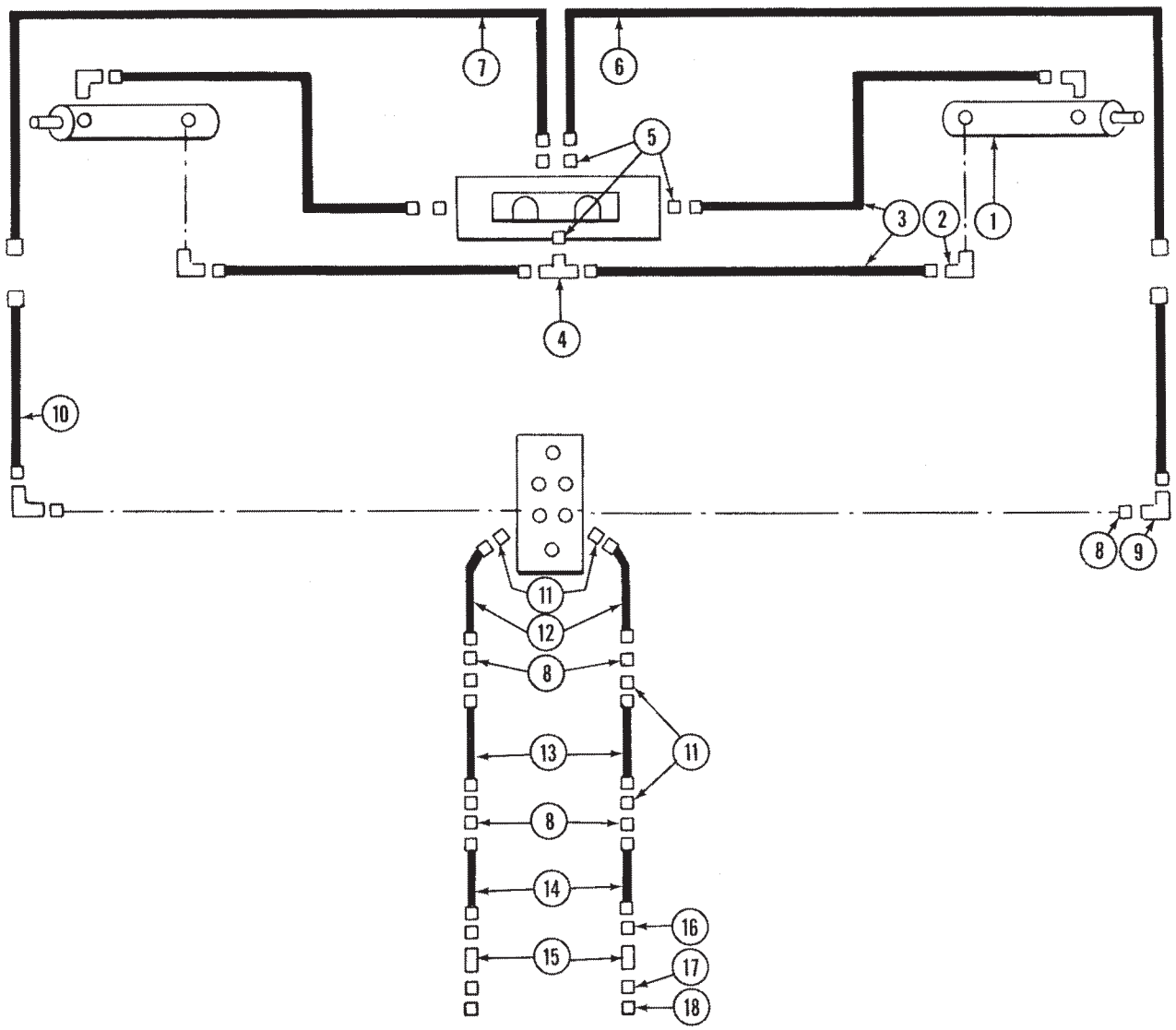
HYDRAULIC SYSTEM, ROTATE TO TRANSPORT

8 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	A2814	Cylinder, 3" x 24", 8 Row 30, Tongue
	A2815	Cylinder, 3" x 44", 8 Row 36 and 8 Row 38, Tongue
2.	6400-8	Connector, Male O-Ring
3.	2404-8-8	Adapter, Straight Male
4.	A1021	Hose Assembly, 3/8" x 56", 8 Row 30
	A1044	Hose Assembly, 3/8" x 34", 8 Row 36 and 8 Row 38
5.	A2656	Cylinder, 1 1/2" x 2", Tongue Lock
6.	A1137	Hose Assembly, 1/4" x 23"
7.	6400-6-8	Connector, Male O-Ring
8.	2501-6-4	Elbow
9.	A1138	Hose Assembly, 1/4" x 29"
10.	6500-6	Elbow
11.	A1133	Hose Assembly, 1/4" x 138"
12.	A1134	Hose Assembly, 1/4" x 116"
13.	A1003	Hose Assembly, 3/8" x 27"
14.	6801-8	Elbow
15.	2501-6-8	Elbow
16.	A2557	Cylinder, 3 1/2" x 20", Rotation
17.	A1076	Hose Assembly, 3/8" x 30"
18.	2700-8	Union, Bulkhead Tube, 3/4" - 16
19.	306-8	Lock Nut, 3/4" - 16
20.	A1098	Hose Assembly, 3/8" x 26", 8 Row 30
	A1096	Hose Assembly, 3/8" x 50 1/2", 8 Row 36 and 8 Row 38
21.	A1046	Hose Assembly, 3/8" x 108"
22.	D4086	Tip, Pioneer Male
23.	6408-10	Plug, O-Ring, 7/8" - 14
24.	6408-8	Plug, O-Ring, 3/4" - 16

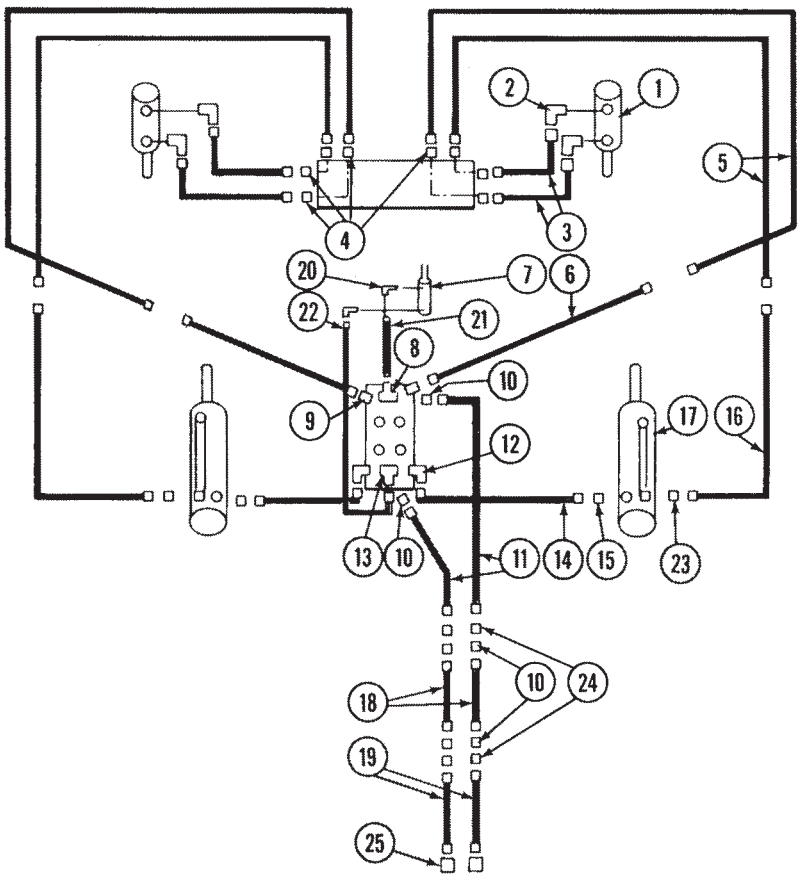
HYDRAULIC SYSTEM, MARKER, 8 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	A233	Cylinder, 2 1/2" x 20"
2.	2501-8-8	Elbow
3.	A1027	Hose Assembly, 3/8" x 182", 8 Row 30
	A1057	Hose Assembly, 3/8" x 216", 8 Row Wide
4.	6600-8	Tee, Swivel
5.	6400-8	Connector, Male, O-Ring
6.	A1086	Hose Assembly, 3/8" x 28"
7.	A1076	Hose Assembly, 3/8" x 30"
8.	2700-8	Bulkhead Tube Union, 3/4" - 16
9.	6500-8	Elbow, Swivel
10.	A1083	Hose Assembly, 3/8" x 21"
11.	306-8	Lock Nut, 3/4" - 16
12.	A1090	Hose Assembly, 3/8" x 162"
13.	A1098	Hose Assembly, 3/8" x 26", 8 Row 30
	A1096	Hose Assembly, 3/8" x 50 1/2", 8 Row Wide
14.	A1046	Hose Assembly, 3/8" x 108"
15.	A270A	Valve, Flow Control
	A270B	Valve, Flow Control
	A270C	Valve, Flow Control
16.	5405-6-8	Pipe Bushing
17.	5404-8-6	Pipe Coupling
18.	D4086	Tip, Pioneer Male

HYDRAULIC SYSTEM, PLANTER LIFT

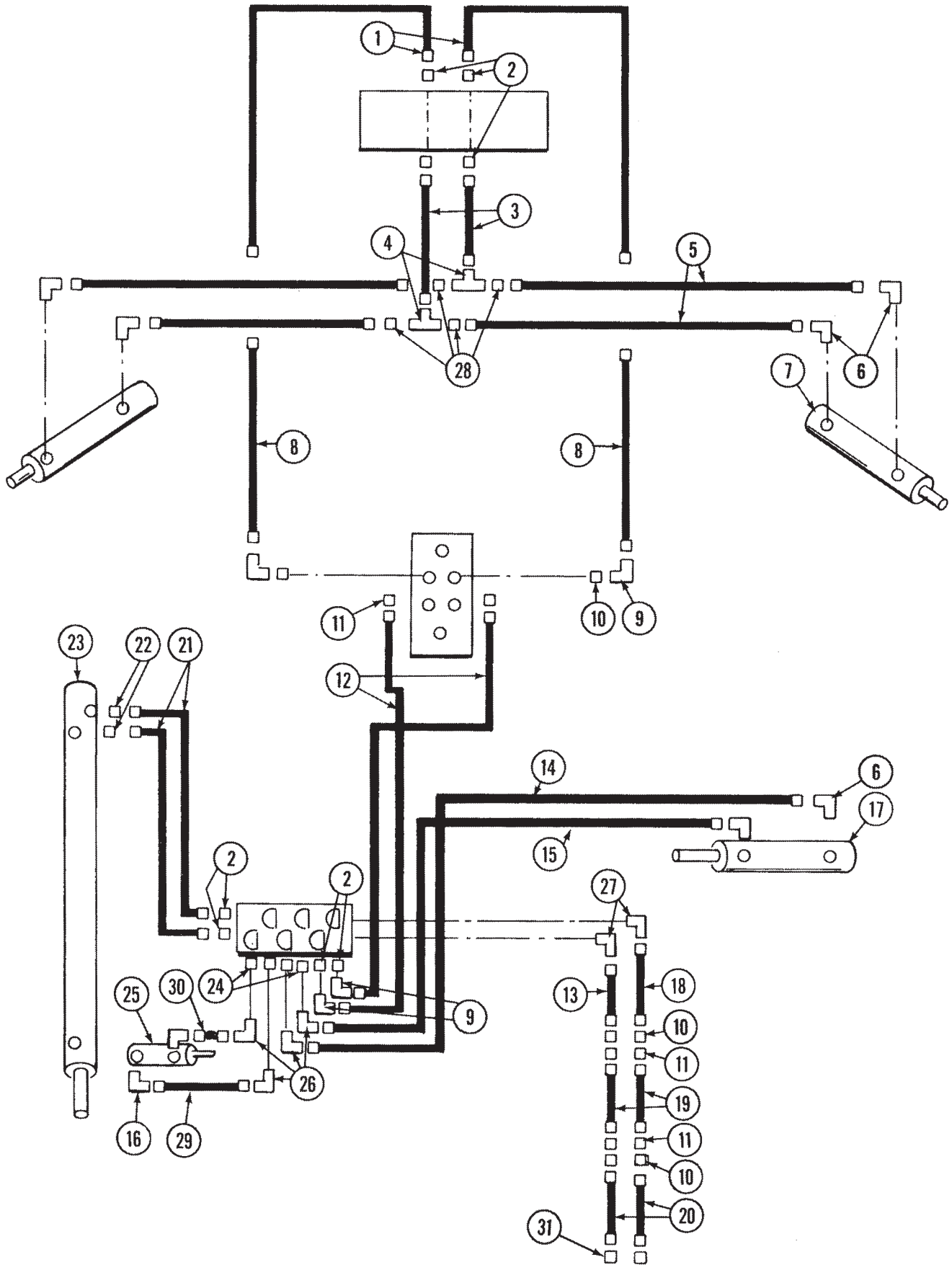
12 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	A2390	Cylinder, 4" x 8", Drive Wheel Lift
2.	2501-8-8	Elbow
3.	A1030	Hose Assembly, 3/8" x 192", 12 Row 30
	A1057	Hose Assembly, 3/8" x 216", 12 Row 36
	A1093	Hose Assembly, 3/8" x 230", 12 Row 38
4.	6400-8	Connector, Male, O-Ring
5.	A1085	Hose Assembly, 3/8" x 24 1/2"
6.	A1084	Hose Assembly, 3/8" x 23 1/4"
7.	A2656	Cylinder, 1 1/2" x 2", Lift Lock
8.	A2645	Tee, Bulkhead
9.	2406-10-8	Tube, Reducer
10.	306-10	Lock Nut, 7/8" - 14
11.	A1402	Hose Assembly, 1/2" x 162"
12.	6500-10	Elbow, Swivel
13.	A2657	Tee, Bulkhead
14.	A1404	Hose Assembly, 1/2" x 41"
15.	2404-10-8	Adapter, Straight
16.	A1021	Hose Assembly, 3/8" x 56"
17.	A2389	Cylinder, 4 1/2" x 20", Center Section Lift
18.	A1406	Hose Assembly, 1/2" x 74", 12 Row 30
	A1409	Hose Assembly, 1/2" x 104", 12 Row 36 and 38
19.	A1405	Hose Assembly, 1/2" x 120", 12 Row 30
	A1412	Hose Assembly, 1/2" x 130", 12 row 36 and 38
20.	2501-6-4	Elbow
21.	A1140	Hose Assembly, 1/4" x 52"
22.	A1139	Hose Assembly, 1/4" x 40"
23.	2404-8-8	Adapter, Straight
24.	2700-10	Bulkhead Tube Union, 7/8" - 14
25.	D4086	Tip, Pioneer Male

HYDRAULIC SYSTEM, ROTATE TO TRANSPORT

12 Row 30 and Wide

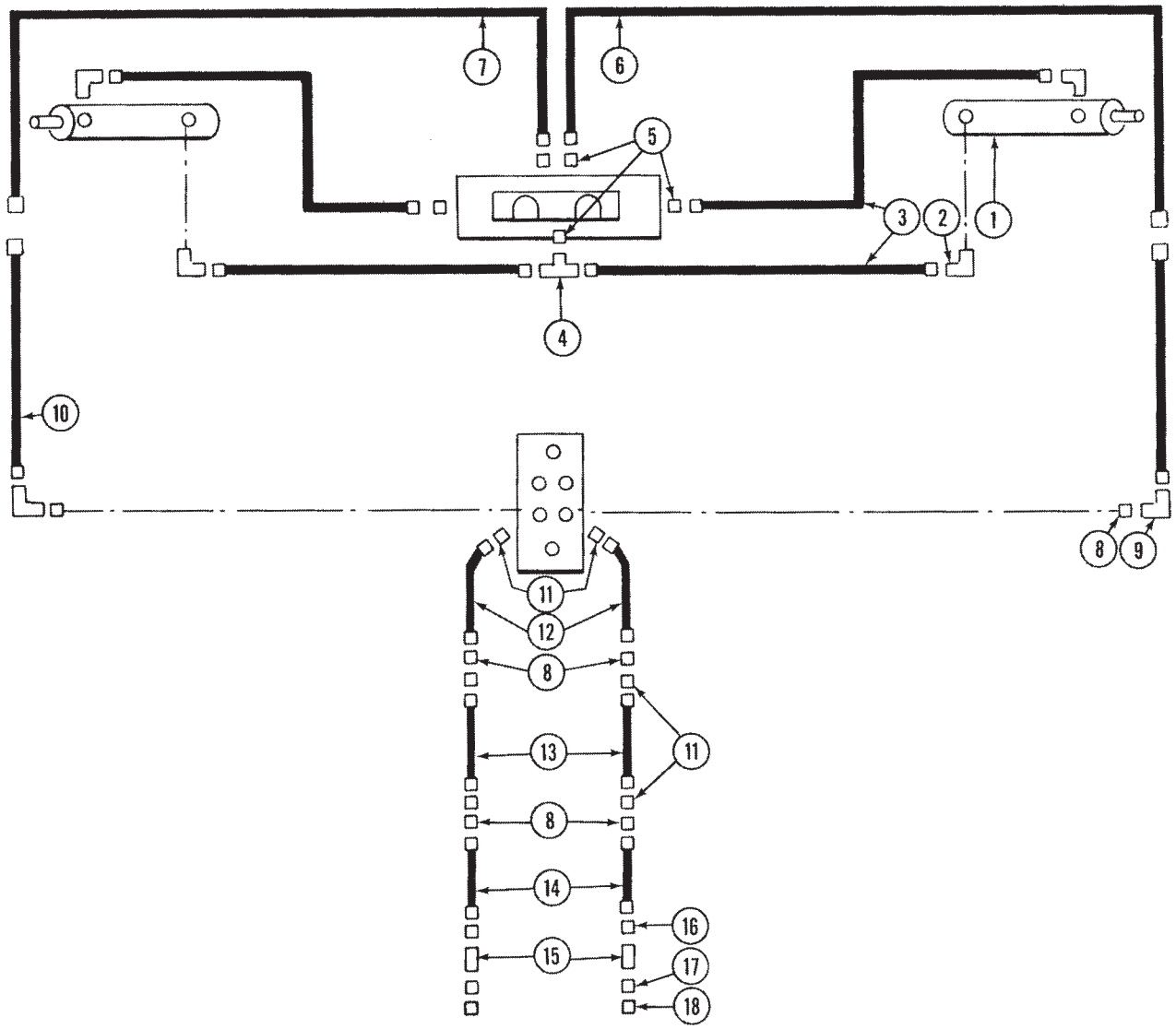


HYDRAULIC SYSTEM, ROTATE TO TRANSPORT

12 Row 30 and Wide

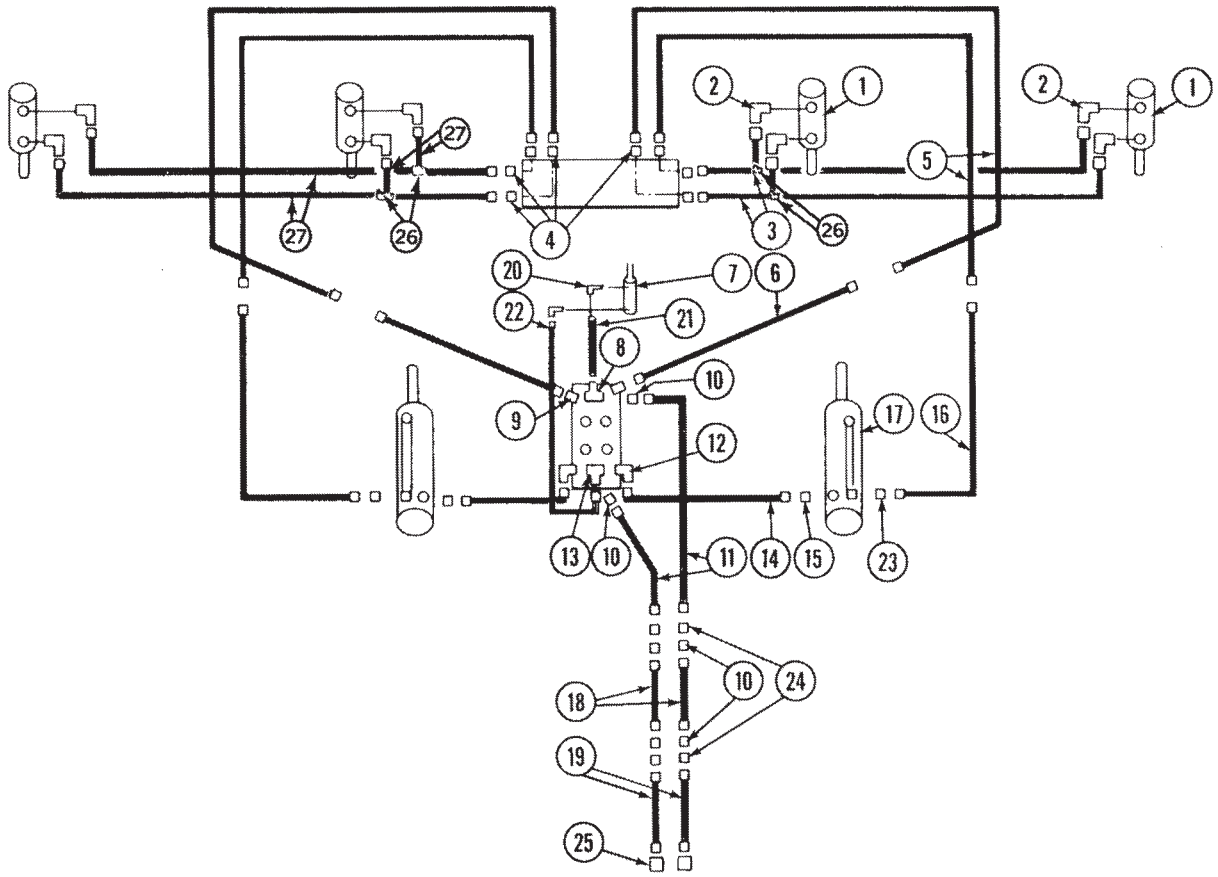
ITEM	PART NO.	DESCRIPTION
1.	A1085	Hose Assembly, 3/8" x 24 1/2"
2.	6400-8	Connector, Male, O-Ring
3.	A1088	Hose Assembly, 3/8" x 15 3/4"
4.	2603-8	Tee, Tube
5.	A1132	Hose Assembly, 1/4" x 44"
6.	2501-6-8	Elbow
7.	A233	Cylinder, 2 1/2" x 20", Wing Lock
8.	A1083	Hose Assembly, 3/8" x 21"
9.	6500-8	Elbow, Swivel
10.	2700-8	Bulkhead Tube Union, 3/4" - 16
11.	306-8	Lock Nut, 3/4" - 16
12.	A1013	Hose Assembly, 3/8" x 150"
13.	A1003	Hose Assembly, 3/8" x 27"
14.	A1133	Hose Assembly, 1/4" x 138"
15.	A1134	Hose Assembly, 1/4" x 116"
16.	2501-6-4	Elbow
17.	A2557	Cylinder, 3 1/2" x 20", Rotation
18.	A1076	Hose Assembly, 3/8" x 30"
19.	A1087	Hose Assembly, 3/8" x 74", 12 Row 30
	A1092	Hose Assembly, 3/8" x 104", 12 Row 36 and 38
20.	A1014	Hose Assembly, 3/8" x 120", 12 Row 30
	A1099	Hose Assembly, 3/8" x 130", 12 Row 36 and 38
21.	A1044	Hose Assembly, 3/8" x 34"
22.	2404-8-8	Adapter, Straight, Male
23.	A2410	Cylinder, 3" x 68", Tongue, 12 Row 30
	A2813	Cylinder, 3 1/2" x 88", Tongue, 12 Row 36 and 38
24.	6400-6-8	Connector, Male, O-Ring
25.	A2656	Cylinder, 1 1/2" x 2", Tongue Lock
26.	6500-6	Elbow, Swivel
27.	6801-8	Elbow, O-Ring
28.	2406-8-6	Tube Reducer
29.	A1138	Hose Assembly, 1/4" x 29"
30.	A1137	Hose Assembly, 1/4" x 23"
31.	D4086	Tip, Pioneer Male

HYDRAULIC SYSTEM, MARKER, 12 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	A233	Cylinder, 2 1/2" x 20"
2.	2501-8-8	Elbow
3.	A1089	Hose Assembly, 3/8" x 240", 12 Row 30
	A1036	Hose Assembly, 3/8" x 280", 12 Row 36
	A1097	Hose Assembly, 3/8" x 288", 12 Row 38
4.	6600-8	Tee, Swivel
5.	6400-8	Connector, Male, O-Ring
6.	A1086	Hose Assembly, 3/8 x 28"
7.	A1076	Hose Assembly, 3/8 x 30"
8.	2700-8	Bulkhead Tube Union, 3/4" - 16
9.	6500-8	Elbow, Swivel
10.	A1082	Hose Assembly, 3/8" x 19"
11.	306-8	Lock Nut, 3/4" - 16
12.	A1090	Hose Assembly, 3/8" x 162"
13.	A1087	Hose Assembly, 3/8" x 74", 12 Row 30
	A1092	Hose Assembly, 3/8" x 104", 12 Row 36 and 38
14.	A1014	Hose Assembly, 3/8" x 120", 12 Row 30
	A1099	Hose Assembly, 3/8" x 130", 12 row 36 and 38
15.	A270A	Valve, Flow Control
	A270B	Valve, Flow Control
	A270C	Valve, Flow Control
16.	5405-6-8	Pipe Bushing
17.	5404-8-6	Pipe Coupling
18.	D4086	Tip, Pioneer Male

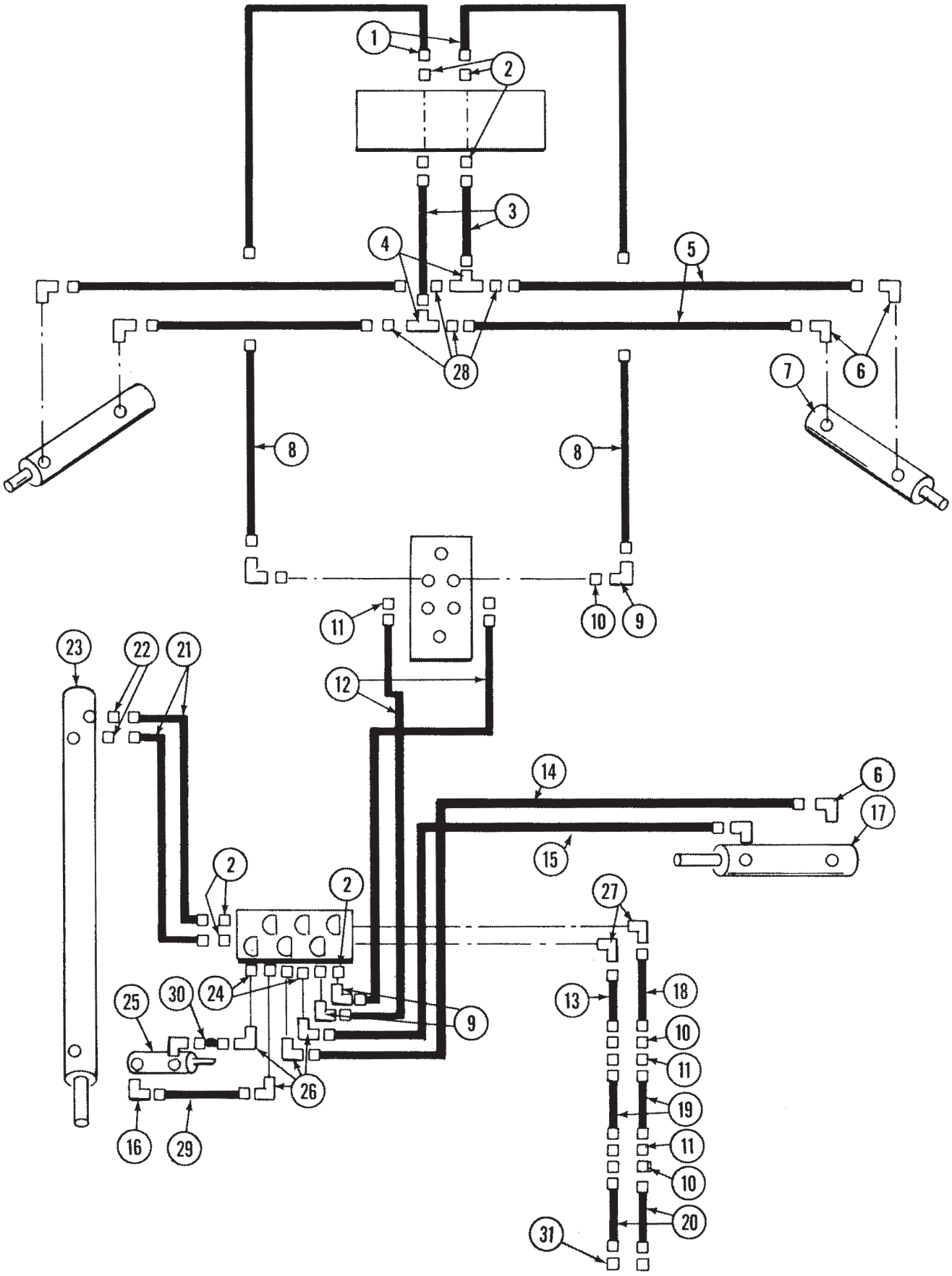
HYDRAULIC SYSTEM, PLANTER LIFT, 16 Row 30



ITEM	PART NO.	DESCRIPTION
1.	A2652	Cylinder w/Bypass, 2 3/4" x 8", Drive Wheel Lift, (2 Used Per Planter)
	A2911	Cylinder, 2 3/4" x 8", Drive Wheel Lift, (2 Used Per Planter)
2.	2501-8-8	Elbow
3.	A1093	Hose Assembly, 3/8" x 230"
4.	6400-8	Connector, Male, O-Ring
5.	A1085	Hose Assembly, 3/8" x 24 1/2"
6.	A1084	Hose Assembly, 3/8" x 23 1/4"
7.	A2656	Cylinder, 1 1/2" x 2", Lift Lock
8.	A2645	Tee, Bulkhead
9.	2406-10-8	Tube, Reducer
10.	306-10	Lock Nut, 7/8" - 14
11.	A1402	Hose Assembly, 1/2" x 162"
12.	6500-10	Elbow, Swivel
13.	A2657	Tee, Bulkhead
14.	A1404	Hose assembly, 1/2" x 41"
15.	2404-10-8	Adapter, Straight
16.	A1021	Hose Assembly, 3/8" x 56"
17.	A2389	Cylinder, 4 1/2" x 20", Center Section Lift
18.	A1409	Hose Assembly, 1/2" x 104"
19.	A1410	Hose Assembly, 1/2" x 156"
20.	2501-6-4	Elbow
21.	A1140	Hose Assembly, 1/4" x 52"
22.	A1139	Hose Assembly, 1/4" x 40"
23.	2404-8-8	Adapter, Straight
24.	2700-10	Bulkhead Tube Union, 7/8" - 14
25.	D4086	Tip, Pioneer Male
26.	2603-8	Tee
27.	A1082	Hose Assembly, 3/8" x 19"

HYDRAULIC SYSTEM, ROTATE TO TRANSPORT

16 Row 30

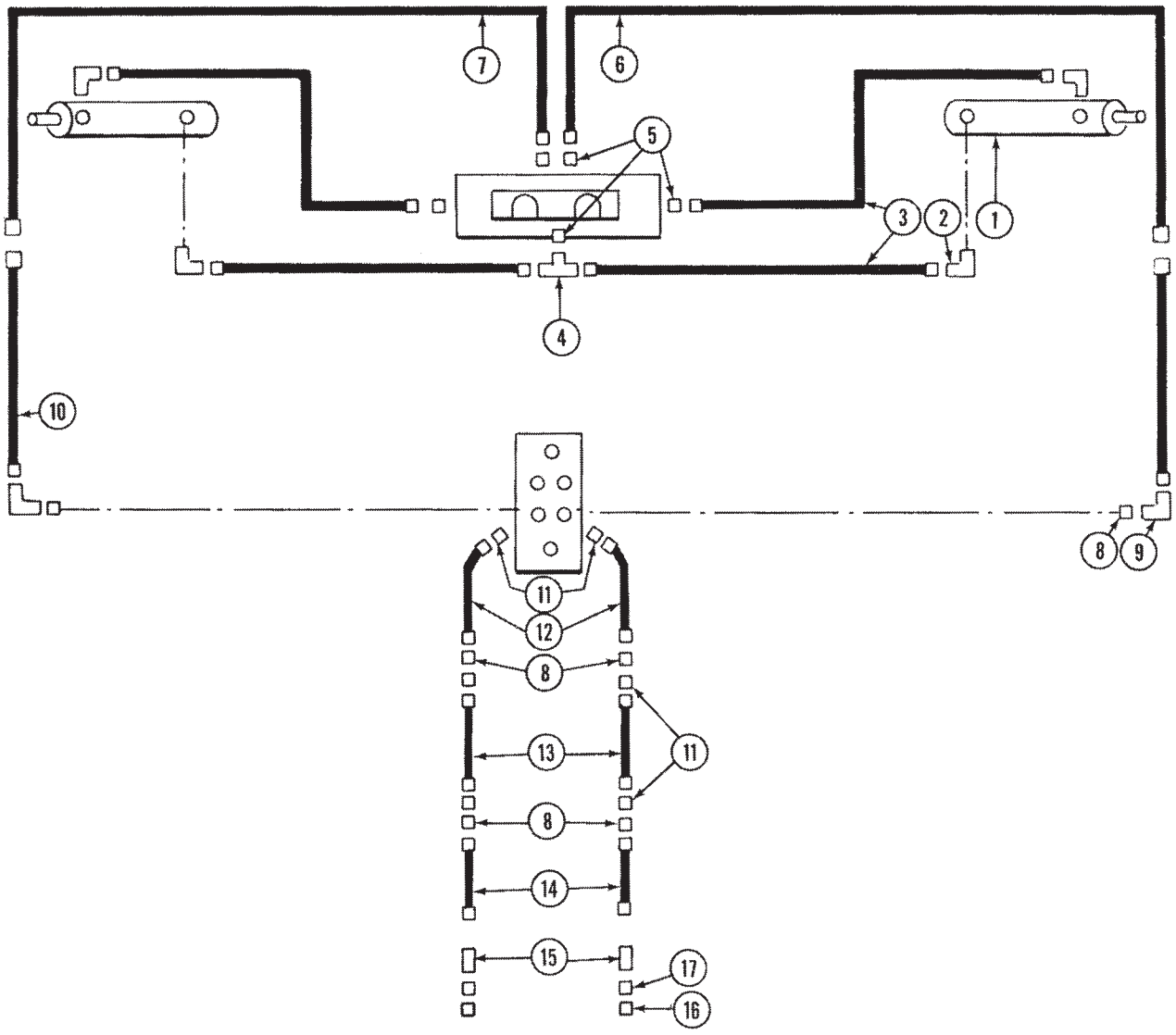


HYDRAULIC SYSTEM, ROTATE TO TRANSPORT

16 Row 30

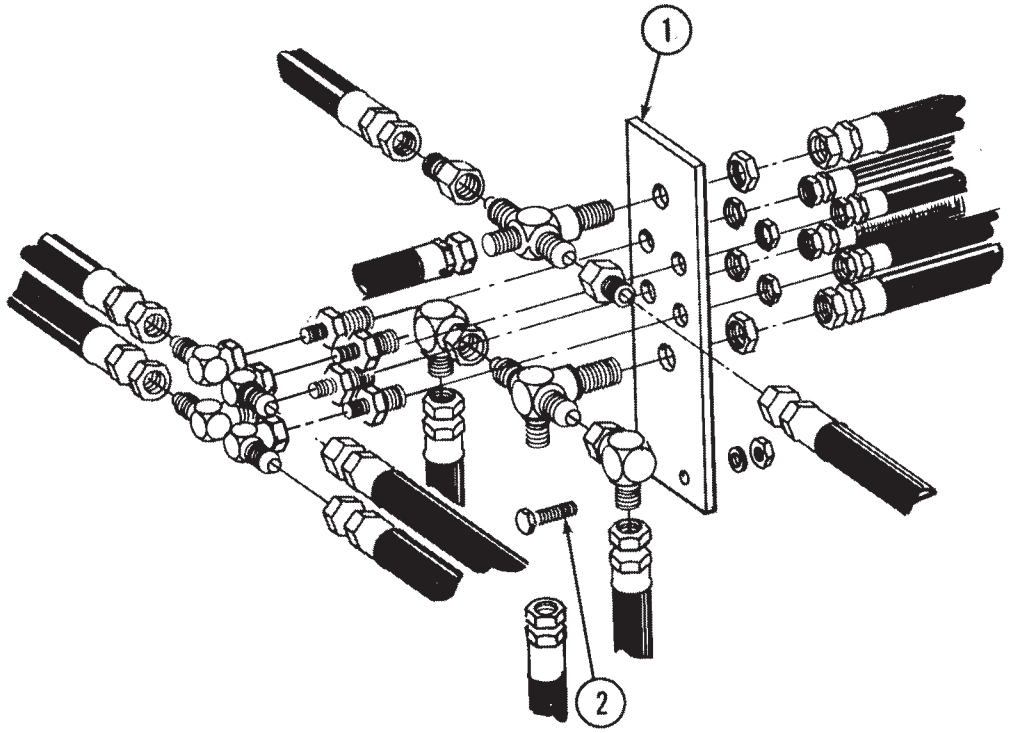
ITEM	PART NO.	DESCRIPTION
1.	A1085	Hose Assembly, 3/8" x 24 1/2"
2.	6400-8	Connector, Male, O-Ring
3.	A1088	Hose assembly, 3/8" x 15 3/4"
4.	2603-8	Tee Tube
5.	A1132	Hose Assembly, 1/4" x 44"
6.	2501-6-8	Elbow
7.	A233	Cylinder, 2 1/2" x 20", Wing Lock
8.	A1083	Hose Assembly, 3/8" x 21"
9.	6500-8	Elbow, Swivel
10.	2700-8	Bulkhead Tube Union, 3/4" - 16
11.	306-8	Lock Nut, 3/4" - 16
12.	A1013	Hose Assembly, 3/8" x 150"
13.	A1003	Hose Assembly, 3/8" x 27"
14.	A1133	Hose Assembly, 1/4" x 138"
15.	A1134	Hose Assembly, 1/4" x 116"
16.	2501-6-4	Elbow,
17.	A2557	Cylinder, 3 1/2" x 20", Rotation
18.	A1076	Hose Assembly, 3/8" x 30"
19.	A1092	Hose Assembly, 3/8" x 104"
20.	A1075	Hose Assembly, 3/8" x 156"
21.	A1044	Hose Assembly, 3/8" x 34"
22.	2404-8-8	Adapter, Straight, Male
23.	A2654	Cylinder, 3 1/2" x 98", Tongue
24.	6400-6-8	Connector, Male, O-Ring
25.	A2656	Cylinder, 1 1/2" x 2", Tongue Lock
26.	6500-6	Elbow, Swivel
27.	6801-8	Elbow, O-Ring
28.	2406-8-6	Tube Reducer
29.	A1138	Hose Assembly 1/4" x 29"
30.	A1137	Hose Assembly, 1/4" x 23"
31.	D4086	Tip, Pioneer Male

HYDRAULIC SYSTEM, MARKER, 16 Row 30



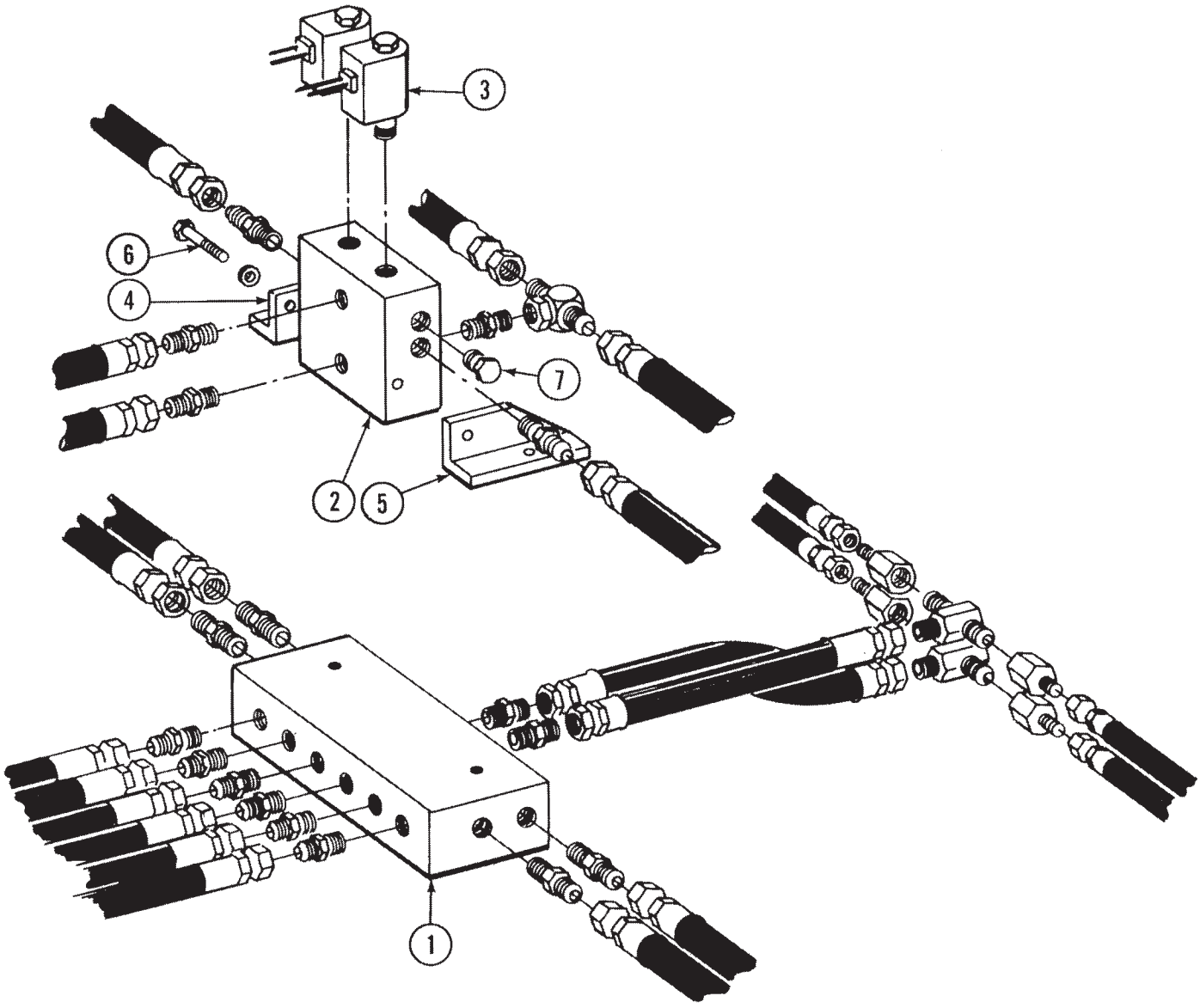
ITEM	PART NO.	DESCRIPTION
1.	A233	Cylinder, 2 1/2" x 20"
2.	2501-8-8	Elbow
3.	A1094	Hose Assembly, 3/8" x 310"
4.	6600-8	Tee, Swivel
5.	6400-8	Connector, Male, O-Ring
6.	A1086	Hose Assembly, 3/8" x 28"
7.	A1076	Hose Assembly, 3/8" x 30"
8.	2700-8	Bulkhead Tube Union, 3/4" - 16
9.	6500-8	Elbow, Swivel
10.	A1082	Hose Assembly, 3/8" x 19"
11.	306-8	Lock Nut, 3/4" - 16
12.	A1090	Hose Assembly, 3/8" x 162"
13.	A1092	Hose Assembly, 3/8" x 104"
14.	A1095	Hose Assembly, 3/8" x 156"
15.	A270A	Valve, Flow Control
	A270B	Valve, Flow Control
	A270C	Valve, Flow Control
16.	D4086	Tip, Pioneer Male
17.	5404-8-6	Pipe Coupling

MANIFOLD, OUTER BELL



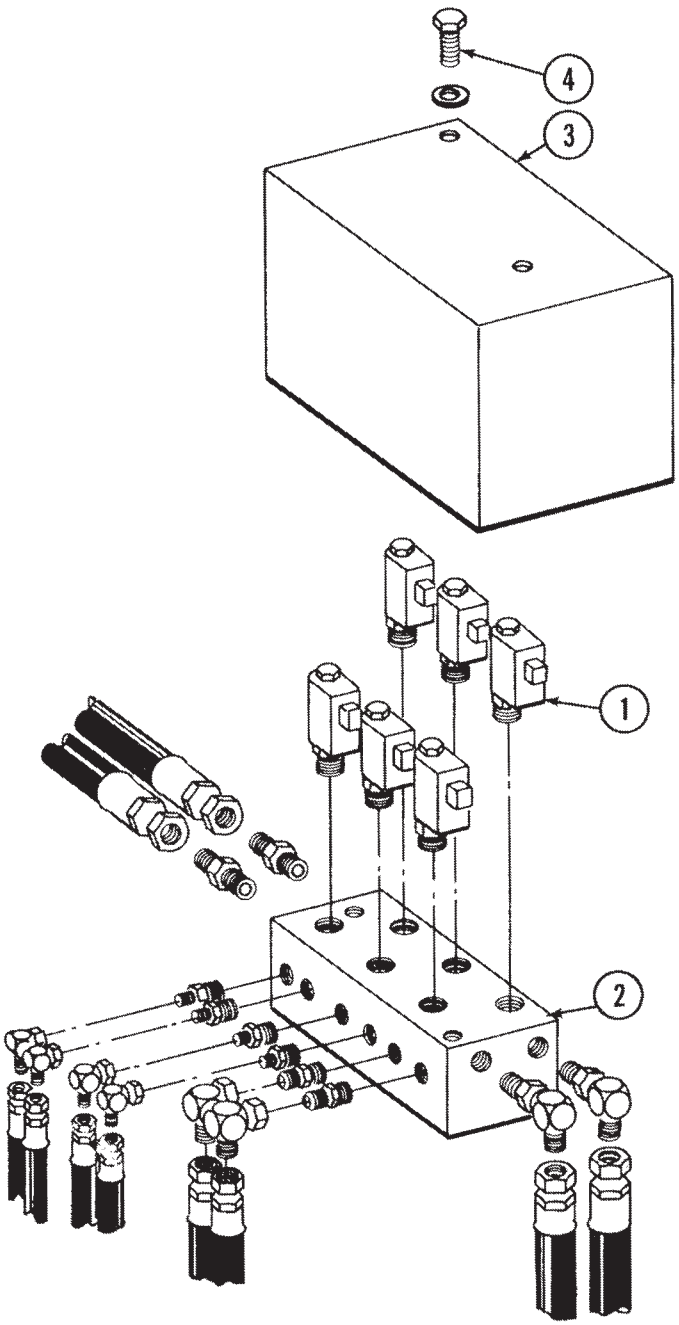
ITEM	PART NO.	DESCRIPTION
1.	D3724	Plate, Manifold
2.	10017	HHCS, 1/2"-13 x 1 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2"-13

VALVE BLOCK, MAIN FRAME



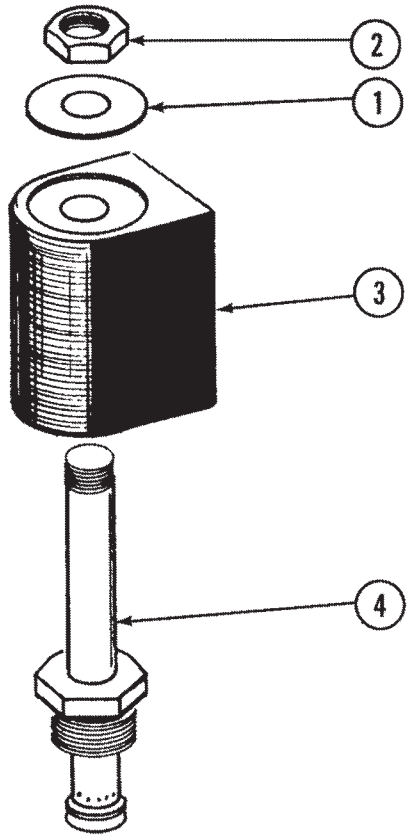
ITEM	PART NO.	DESCRIPTION
1.	D3455	Junction Block, 12 Row 30 thru 16 Row 30
2.	D3454	Manifold Block
3.	A2484	Solenoid Valve
4.	D3743	Mount
5.	D3744	Mount
6.	10001	HHCS, 3/8" - 16 x 1"
	10229	Lock Washer, 3/8"
7.	10292	Pipe Plug

VALVE BLOCK, HITCH



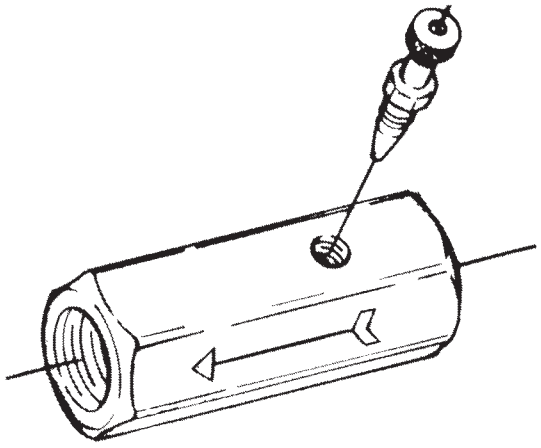
ITEM	PART NO.	DESCRIPTION
1.	A2484	Solenoid Valve
2.	D3456	Manifold Block
3.	A2738	Cover
4.	10061	HHCS, 3/8" - 16 x 3 1/2"
	10229	Lock Washer, 3/8"

SOLENOID VALVE



ITEM	PART NO.	DESCRIPTION
1.	R760	Name Plate
2.	R761	Hex Nut
3.	R762	Coil
4.	R763	Cartridge
A.	A2484	Solenoid Valve Complete
B.	R764	Seal Kit, Includes: (2) O-Rings (1) Backup Ring

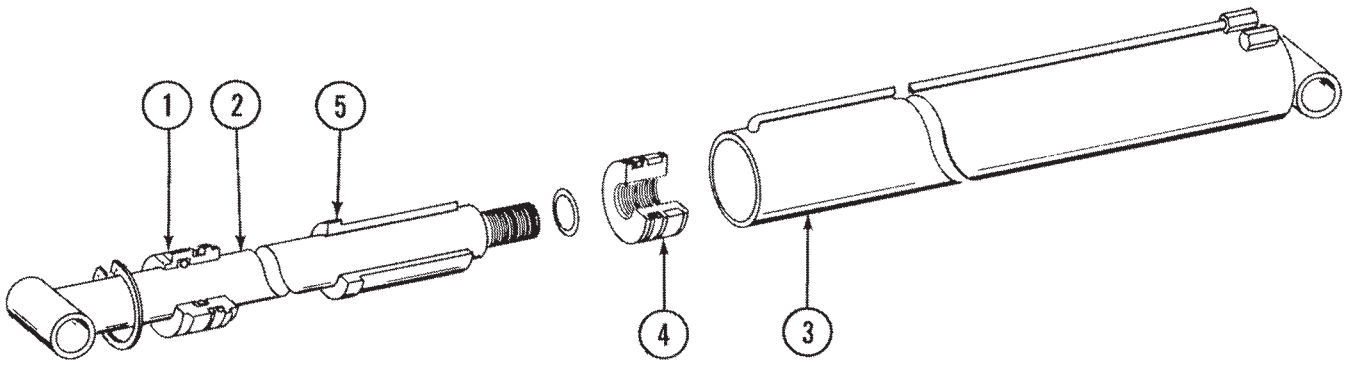
FLOW CONTROL VALVE



ITEM	PART NO.	DESCRIPTION
*A.	A270A	Flow Control Valve Assembly
	R103	Needle Valve Only
**B.	A270B	Flow Control Valve Assembly
	R642	Needle Valve Only
***C.	A270C	Flow Control Valve Assembly
	R767	Needle Valve Only

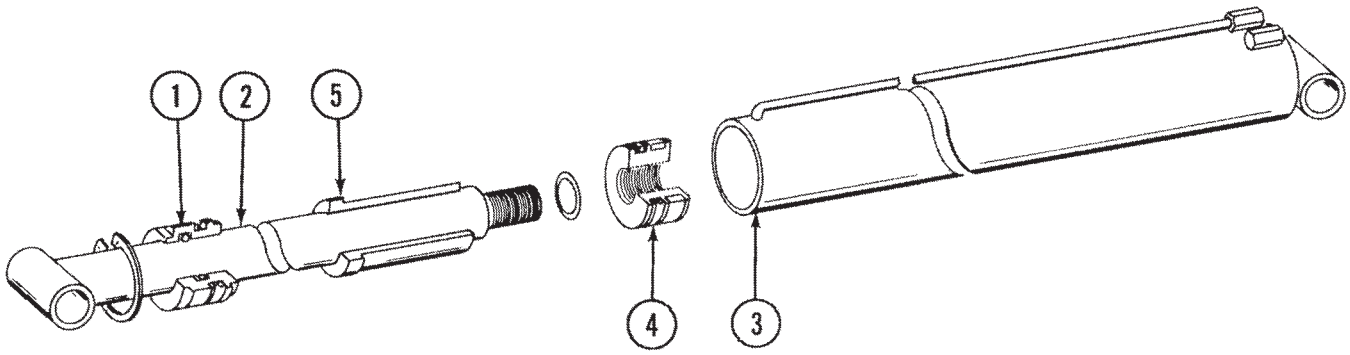
*To identify - Rego KLF375 stamped on valve body.
**To identify - Deltrol stamped on valve body.
***To identify - Partrol stamped on valve body.

TONGUE CYLINDER, 8 Row 30



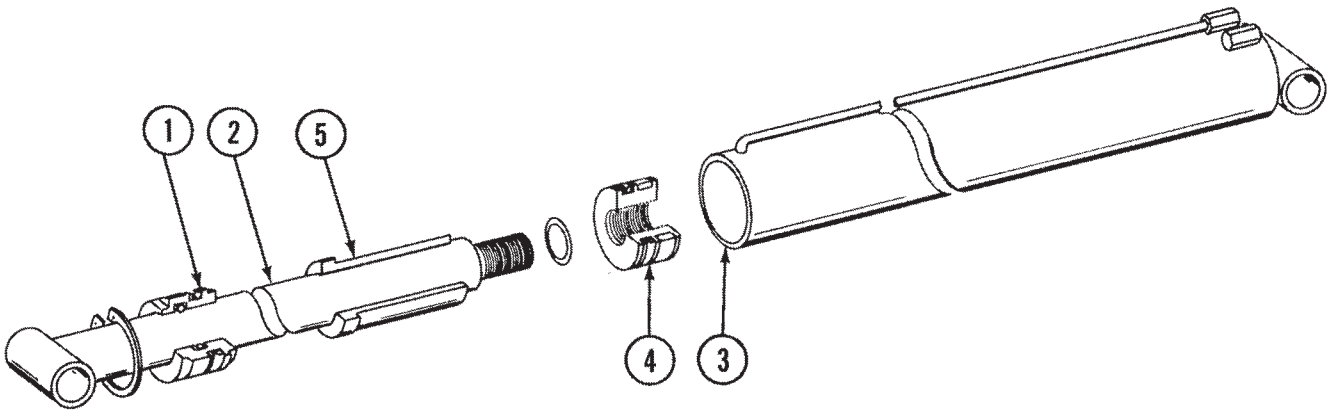
ITEM	PART NO.	DESCRIPTION
1.	R781	Head Gland
2.	R818	Shaft Assembly
3.	R817	Tube Assembly
4.	R780	Piston
5.	A3445	Stroke Collar
A.	A2814	Cylinder, 3" x 24"
B.	R672	Seal Kit, Includes: (4) O-Ring (3) BU Rings (1) Wiper (1) Retaining Ring (1) Wear Ring (1) BU Washer

TONGUE CYLINDER, 8 Row Wide



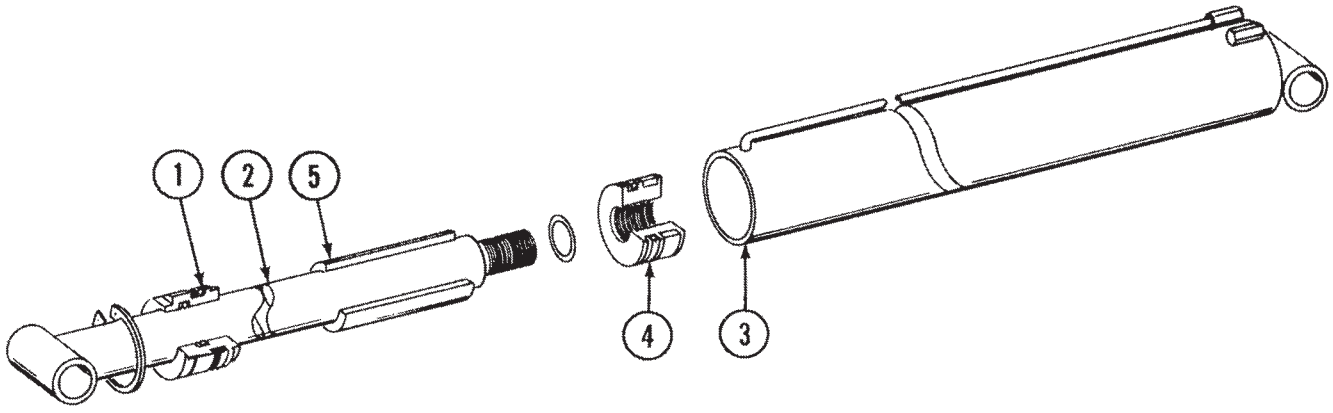
ITEM	PART NO.	DESCRIPTION
1.	R781	Head Gland
2.	R820	Shaft Assembly
3.	R819	Tube Assembly
4.	R780	Piston
5.	A3445	Stroke Collar
A.	A2815	Cylinder, 3" x 44"
B.	R672	Seal Kit, Includes: (4) O-Ring (3) BU Rings (1) Wiper (1) Retaining Ring (1) Wear Ring (1) BU Washer

TONGUE CYLINDER, 12 Row 30



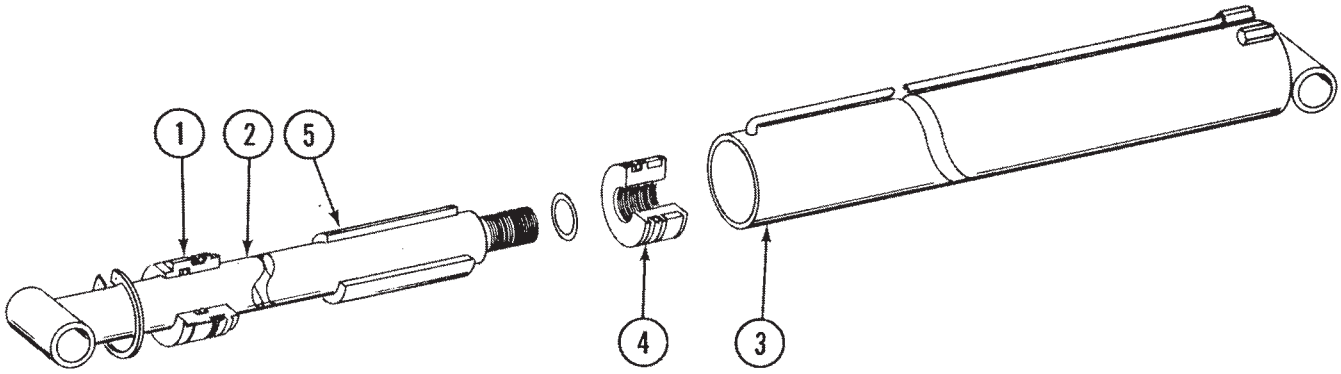
ITEM	PART NO.	DESCRIPTION
1.	R781	Head Gland
2.	R782	Shaft Assembly
3.	R783	Tube Assembly
4.	R780	Piston
5.	A3445	Stroke Collar
A.	A2410	Cylinder, 3" x 68"
B.	R672	Seal Kit, Includes: (4) O-Ring (3) BU Rings (1) Wiper (1) Retaining Ring (1) Wear Ring (1) BU Washer

TONGUE CYLINDER, 12 Row Wide



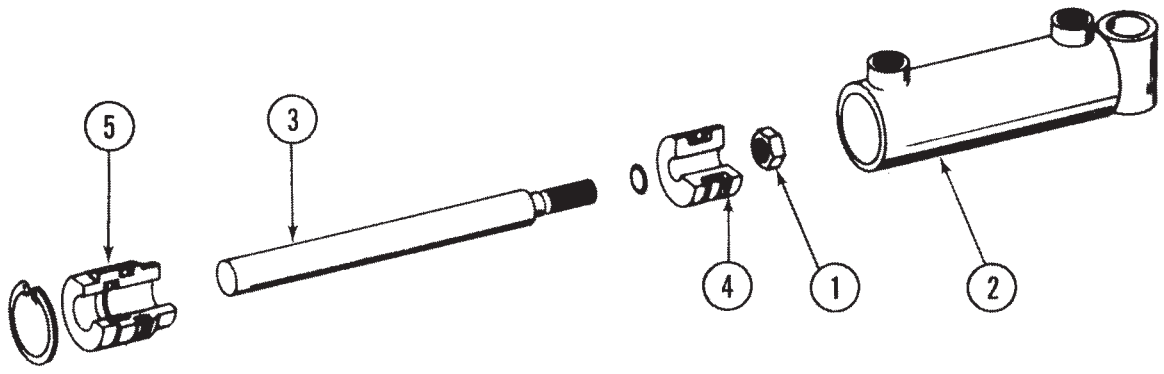
ITEM	PART NO.	DESCRIPTION
1.	R769	Head Gland
2.	R816	Shaft Assembly
3.	R815	Tube Assembly
4.	R772	Piston
5.	R773	Stroke Collar
A.	A2813	Cylinder, 3 1/2" x 98"
B.	R674	Seal Kit, Includes: (4) O-Ring (4) BU Rings (1) Wiper (1) Retaining Ring (1) Wear Ring

TONGUE CYLINDER, 16 Row 30



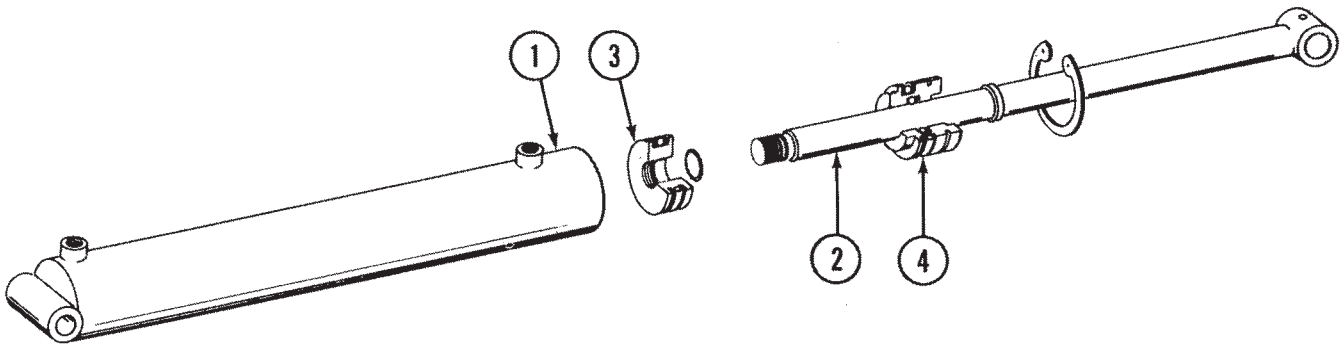
ITEM	PART NO.	DESCRIPTION
1.	R769	Head Gland
2.	R770	Shaft Assembly
3.	R771	Tube Assembly
4.	R772	Piston
5.	R773	Stroke Collar
A.	A2654	Cylinder, 3 1/2" x 98"
B.	R674	Seal Kit, Includes: (4) O-Ring (4) BU Rings (1) Wiper (1) Retaining Ring (1) Wear Ring

TONGUE LOCK CYLINDER, 8 Row 30 thru 16 Row 30
LIFT LOCK CYLINDER, 8 Row 30 thru 16 Row 30



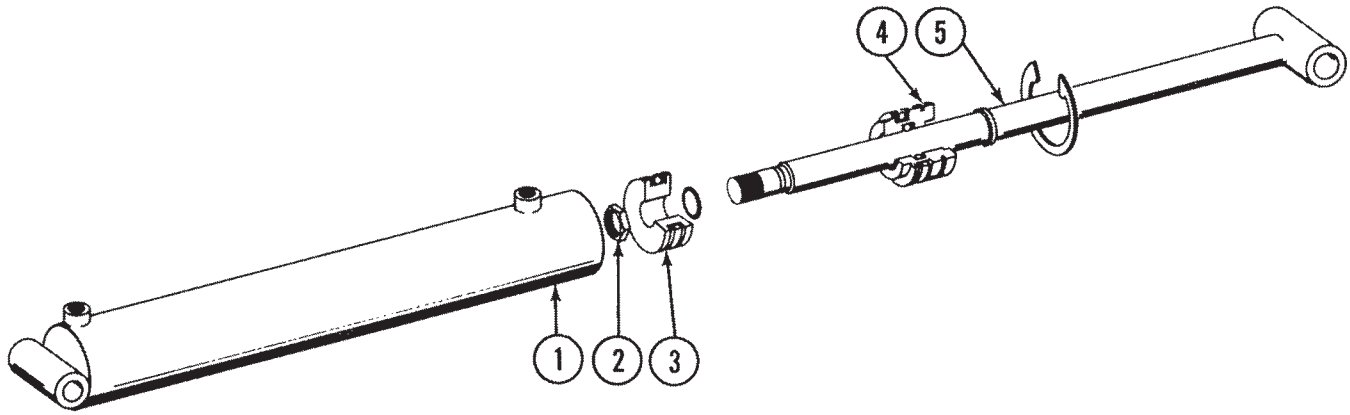
ITEM	PART NO.	DESCRIPTION
1.	10289	Hex Nut, 1/2" - 20
2.	A3442	Tube Assembly
3.	D4522	Shaft Assembly
4.	R775	Piston
5.	R776	Gland
A.	A2656	Cylinder, 1 1/2" x 2"
B.	R671	Seal Kit, Includes: (4) O-Rings (2) BU Washers (1) BU Ring (1) Wiper (1) Retaining Ring

ROTATION CYLINDER, 8 Row 30 thru 16 Row 30



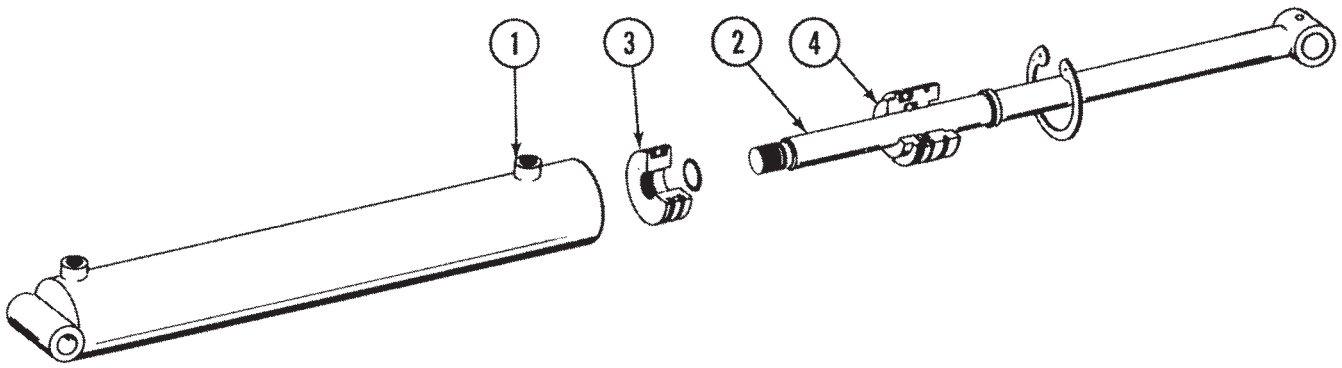
ITEM	PART NO.	DESCRIPTION
1.	R650	Tube Assembly
2.	R649	Shaft Assembly
3.	R115	Piston
4.	R371	Head Gland
A.	A2557	Cylinder, 3 1/2" x 20"
B.	R116	Seal Kit, Includes: (4) O-Rings (4) BU Rings (1) Wiper (1) Lock Ring

LOW PROFILE DOUBLE FOLDING MARKER CYLINDER, 8 Row 30 thru 16 Row 30
WING LOCK CYLINDER, 12 Row 30 thru 16 Row 30



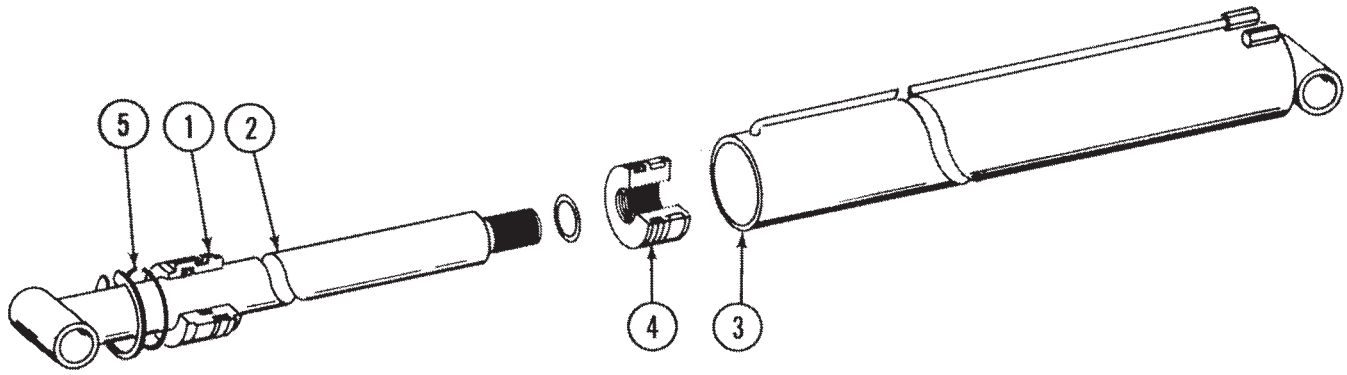
1.	R134	Tube Assembly
2.	R138	Hex Nut, 7/8" UNF
3.	R137	Piston
4.	R136	Head Gland
5.	R135	Shaft Assembly
A.	A233	Cylinder, 2 1/2" x 20"
B.	R139	Seal Kit, Includes: (4) O-Rings (4) BU Washers (1) Wiper (1) Lock Ring

CENTER SECTION LIFT CYLINDER, 8 Row 30 and Wide



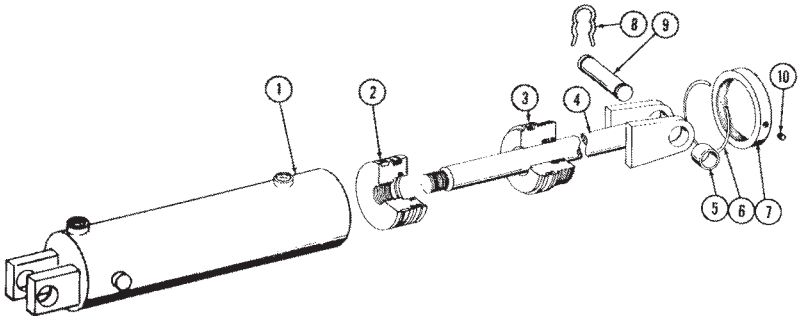
ITEM	PART NO.	DESCRIPTION
1.	R112	Tube Assembly
2.	R113	Shaft Assembly
3.	R115	Piston
4.	R371	Head Gland
A.	A234	Cylinder, 3 1/2" x 20"
B.	R116	Seal Kit, Includes: (4) O-Rings (4) BU Rings (1) Wiper (1) Lock Ring

CENTER SECTION LIFT CYLINDER, 12 Row 30 and Wide and 16 Row 30



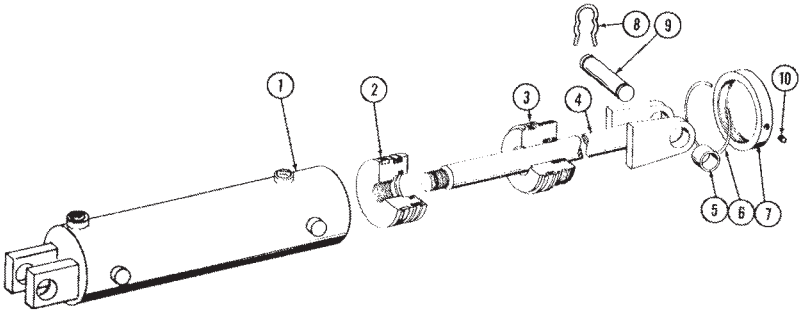
ITEM	PART NO.	DESCRIPTION
1.	R804	Head Gland
2.	R805	Shaft Assembly
3.	R806	Tube Assembly
4.	R803	Piston
5.	R793	Wire Ring
A.	A2389	Cylinder, 4 1/2" x 20"
B.	R673	Seal Kit, Includes: (4) O-Rings (4) BU Washers (1) Wiper (1) Retaining Ring (1) Wear Ring

DRIVE WHEEL LIFT CYLINDER, 16 Row 30



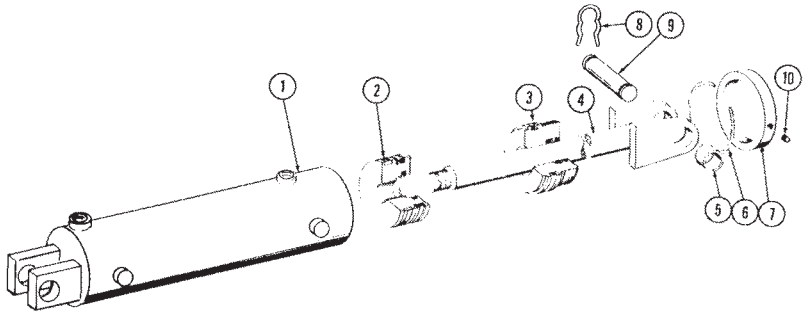
ITEM	PART NO.	DESCRIPTION
1.	R799	Tube Assembly
2.	R797	Piston
3.	R798	Head Gland
4.	R796	Shaft Assembly
5.	R374	Bushing
6.	R802	Wire Ring
7.	R801	Head Nut
8.	R193	Clip
9.	R375	Pin
10.	10114	Set Screw, No. 10-32
A.	A2911	Cylinder, 2 3/4" x 8"
B.	R670	Seal Kit, Includes: (4) O-Rings (3) BU Washers (1) Wiper (1) Wear Ring

DRIVE WHEEL LIFT CYLINDER - WITH BYPASS, 16 Row 30



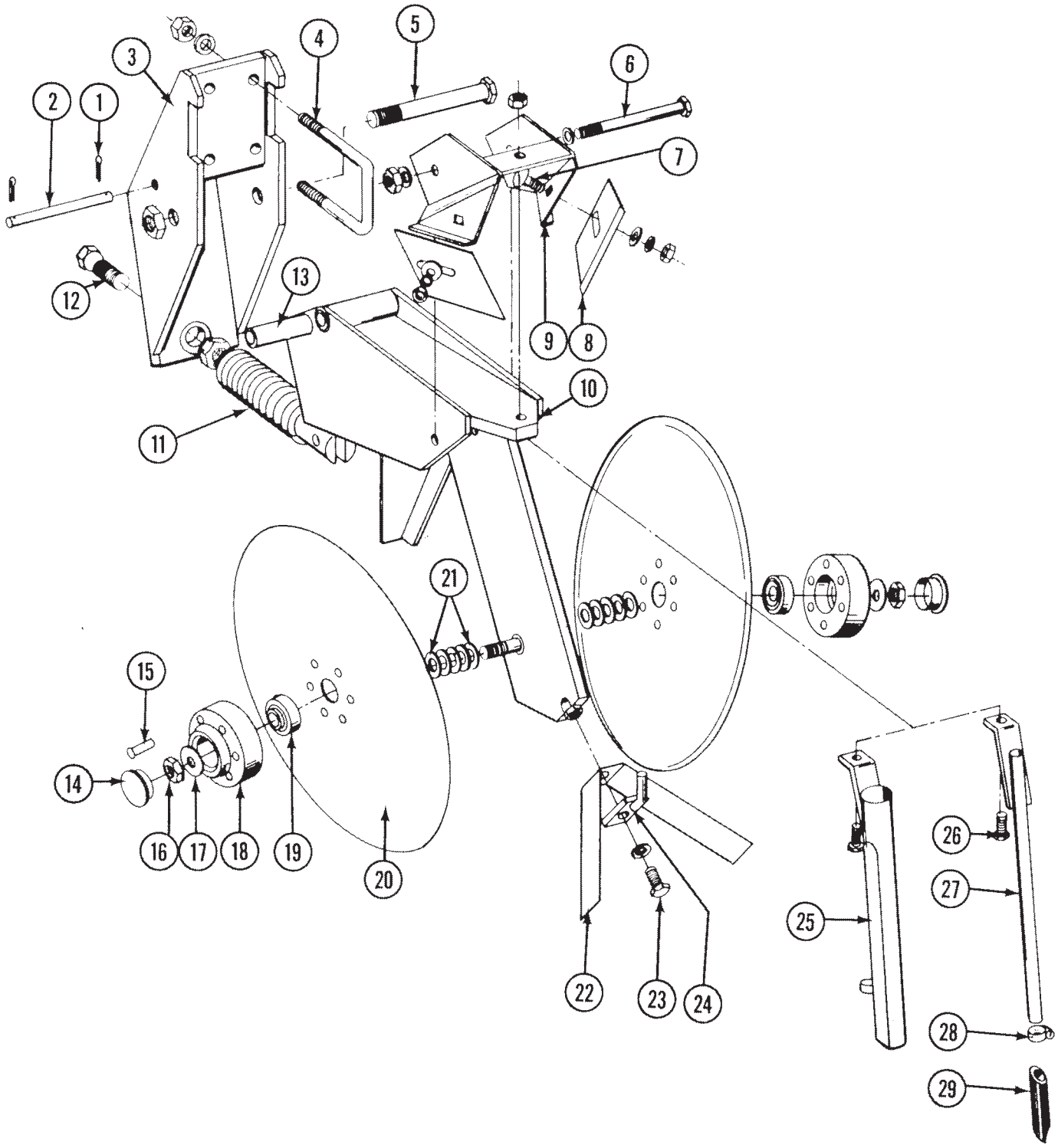
ITEM	PART NO.	DESCRIPTION
1.	R800	Tube Assembly
2.	R797	Piston
3.	R798	Head Gland
4.	R796	Shaft Assembly
5.	R374	Bushing
6.	R802	Wire Ring
7.	R801	Head Nut
8.	R193	Clip
9.	R375	Pin
10.	10114	Set Screw, No. 10-32
A.	A2652	Cylinder, 2 3/3" x 8"
B.	R670	Seal Kit, Includes: (4) O-Rings (3) BU Washer (1) Wiper (1) Wear Ring

DRIVE WHEEL LIFT CYLINDER, 12 Row 30 and Wide



ITEM	PART NO.	DESCRIPTION
1.	R789	Tube Assembly
2.	R786	Piston
3.	R787	Head Gland
4.	R560	Shaft Assembly
5.	R374	Bushing
6.	R110	Wire Ring
7.	R788	Head Nut
8.	R193	Clip
9.	R375	Pin
10.	10114	Set Screw, No. 10-32
A.	A2390	Cylinder, 4" x 8"
B.	R111	Seal Kit, Includes: (4) O-Rings (4) BU Rings (1) Wiper (1) Wear Ring

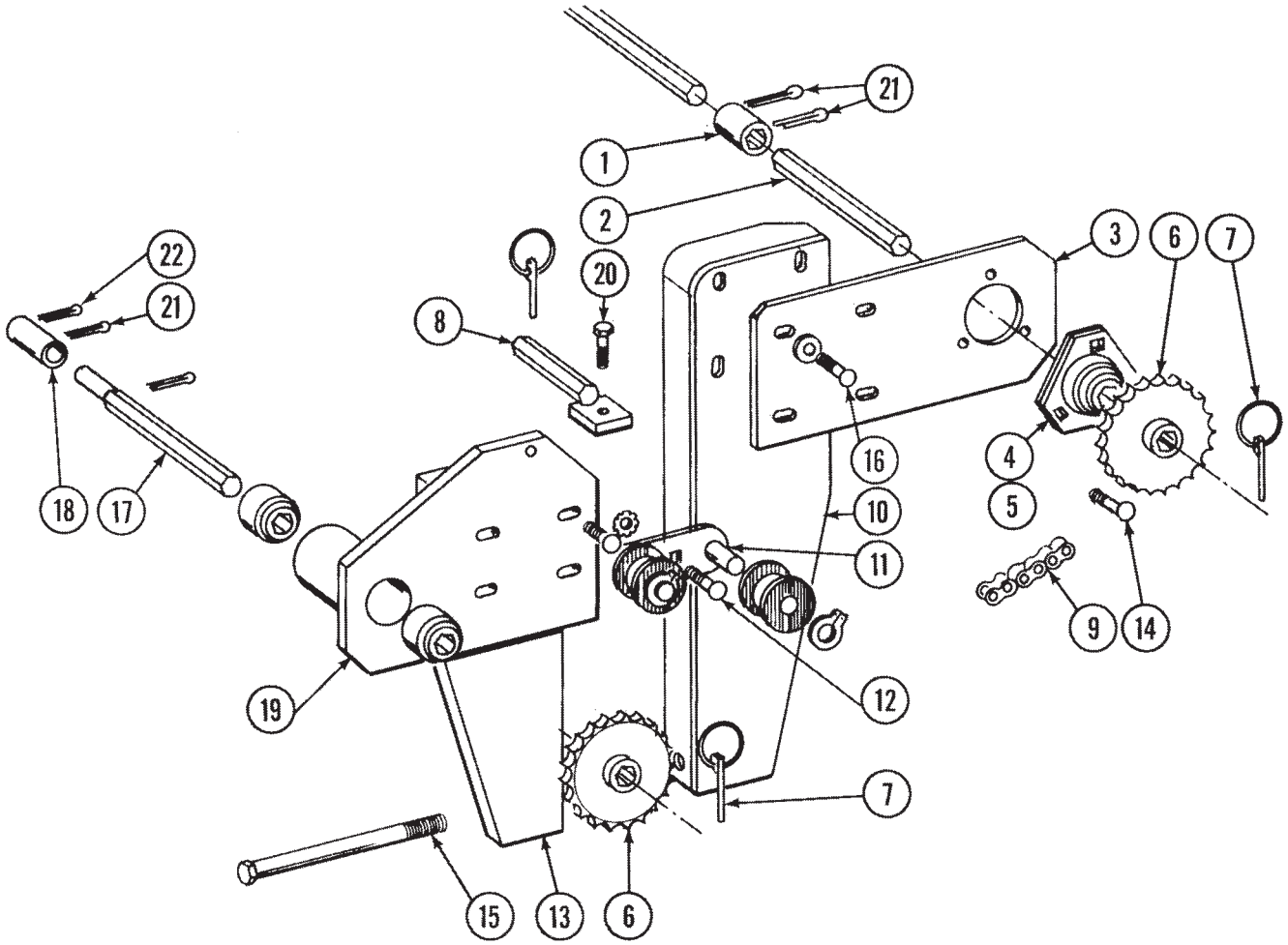
DOUBLE DISK FERTILIZER OPENER



DOUBLE DISK FERTILIZER OPENER

ITEM	PART NO.	DESCRIPTION
1.	10451	Cotter Pin, 1/8" x 1"
2.	D1657	Pin, Lockup
3.	A785	Bracket, Mounting
4.	D1339	U-Bolt, 2 1/2" x 2 1/2"-13
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2"-13
5.	10046	HHCS, 5/8" - 11 x 5"
	10107	Lock Nut, 5/8" - 11
6.	10045	HHCS, 1/2" - 13 x 4 1/2"
	10216	Flat Washer, 1/2"
	10111	Lock Nut, 1/2" - 13
7.	10305	Carriage Bolt, 3/8" - 16 x 1"
	10210	Flat Washer 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
8.	D1673	Scraper
9.	A810	Mount, Scraper
10.	A308	Shank
11.	A328	Spring
12.	D962	Hex Head Adjusting Bolt, 5/8" -18
	10499	Jam Nut, 5/8" - 18
13.	D487	Bushing
14.	D1132	Cap
15.	10651	Rivet, 1/4" x 1 3/8"
16.	10503	Jam Nut, R.H., 5/8" - 11
	10504	Jam Nut, L.H. 5/8" - 11
17.	10204	Machinery Bushing, 21/32"
18.	B134	Hub
19.	A2014	Bearing (Sub 1K139)
20.	D1030	Blade
21.	10213	Machine Bushing, 11/16"
22.	D2589	Scraper, Inner
23.	10019	HHCS, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
24.	A312	Mount
25.	A1369	Drop Tube, Dry Fertilizer
26.	10133	HHCS, 5/16" - 18 x 1 1/2"
	10109	Lock Nut, 5/16" - 18
27.	A318	Drop Tube, Liquid Fertilizer
28.	10673	Clamp, Hose
29.	D1797	Extension
A.	A320	Disk and Bearing Assembly (Items 15 and 18 thru 20)
B.	6156X	Double Disk Fertilizer Opener with U-Bolts, less Drop Tubes
C.	IK139	Bearing Repair Kit, Includes: (1) A2014 (1) D1132 (6) 10651

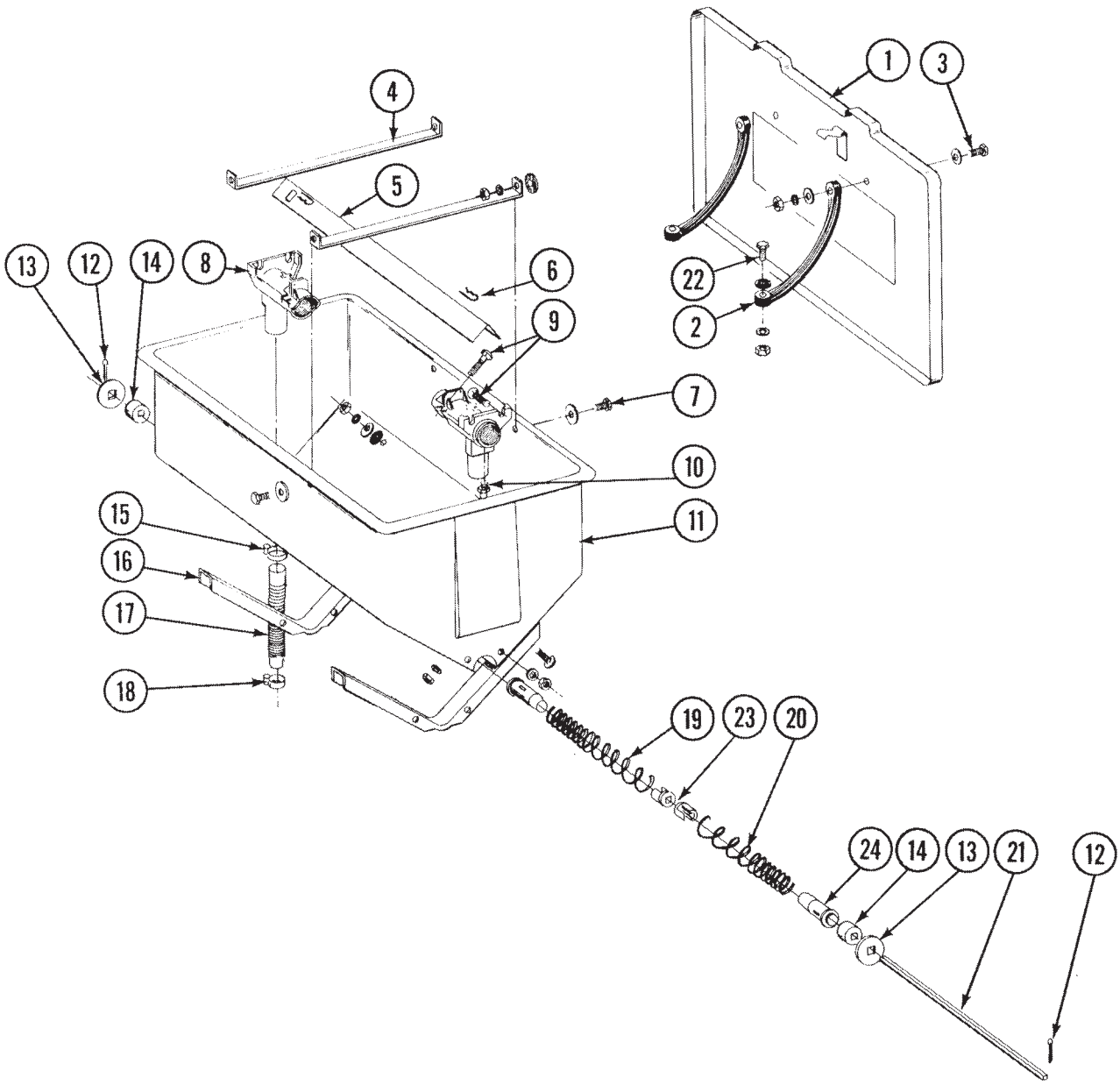
DRY FERTILIZER TRANSMISSION AND DRIVE LINE



DRY FERTILIZER TRANSMISSION AND DRIVE LINE

ITEM	PART NO.	DESCRIPTION
1.	D3839	Coupler, 2"
2.	D3838	Shaft, 21 1/4"
3.	D1663	Plate
4.	3400-1	Flangette
5.	2100-3	Bearing, 7/8" Hex
6.	2500-3	Sprocket, 16-30 Tooth
	2500-12	Sprocket, 18-36 Tooth
	2500-14	Sprocket, 24 Tooth
7.	D2558	Pin, Lynch, 1/4"
8.	A1786	Rod, Sprocket Storage
9.	3300-64	Chain, No. 2040, 64 Pitch Including Connector Link
	R194	Connector Link, No. 2040
10.	A2708	Bracket
	A2707	Bracket (Shown)
11.	A289	Idler W/Spools and Rings
	D1067	Spools
	10435	Rings
12.	10313	Carriage Bolt, 1/2"-13 x 1 1/2"
	10527	Lock Washer, Int./Ext., 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2"-13
13.	A2705	Bracket (Shown)
	A2706	Bracket
14.	10303	Carriage Bolt, 5/16"-18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16"-18
15.	10012	HHCS, 5/8" - 11 x 6 1/2"
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
16.	10305	Carriage Bolt, 3/8"-16 x 1"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8"-16
17.	D3836	Shaft
	10460	Cotter Pin, 1/4" x 2"
18.	D3837	Coupler, 2 1/4"
19.	A2712	Bracket
	A2713	Bracket (Shown)
20.	10019	HHCS, 5/16" - 18 x 1"
	10109	Lock Nut, 5/16" - 18
21.	10460	Cotter Pin, 1/4" x 2"
22.	10459	Cotter Pin, 3/16" x 1 1/2"

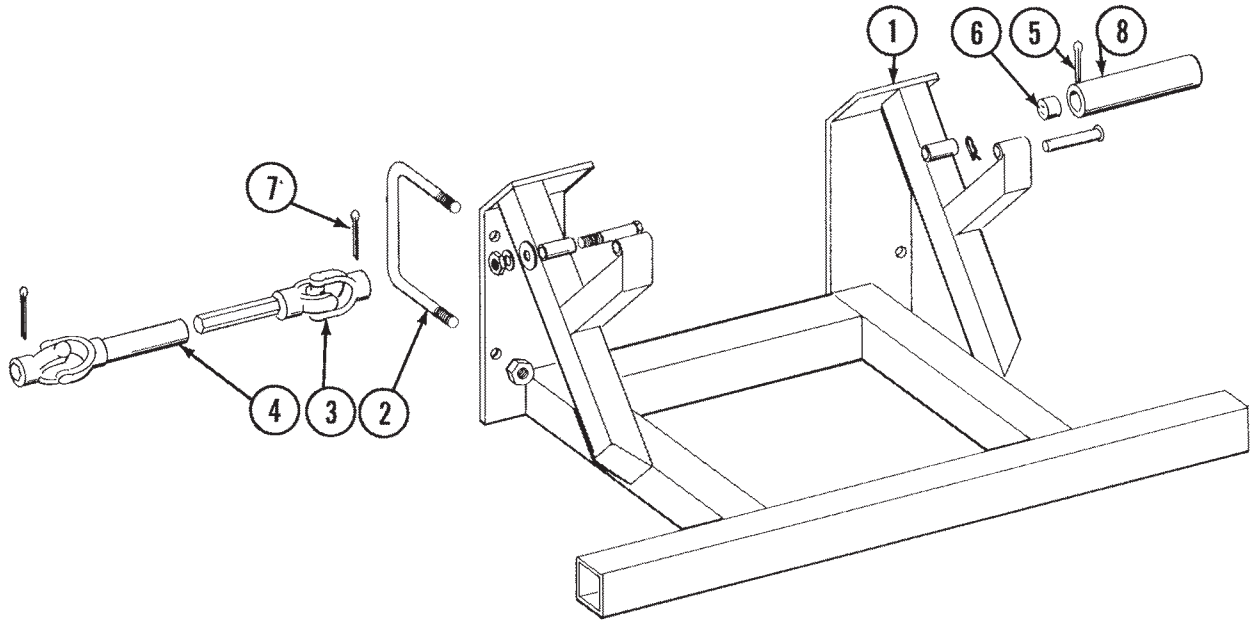
DRY FERTILIZER HOPPER



DRY FERTILIZER HOPPER

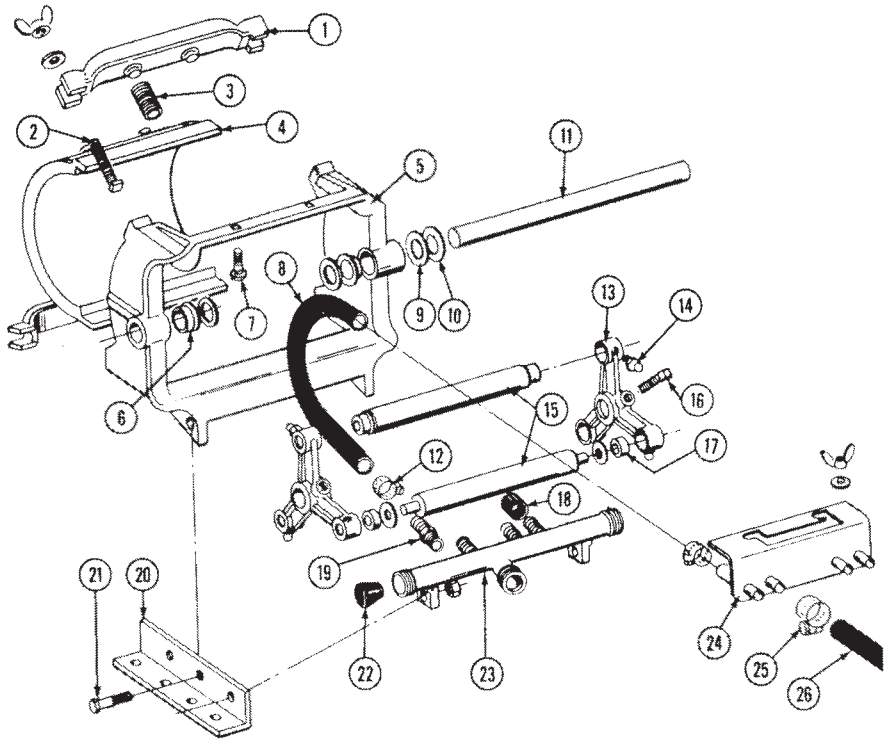
ITEM	PART NO.	DESCRIPTION
1.	A2101	Lid, Includes Clips and Pop Rivets
	D1380	Clip
	10655	Pop Rivet, 3/16" x 13/32"
2.	D1210	Strap, Rubber
3.	10171	HHCS, 5/16" - 18 x 1 1/4"
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5 1/16" - 18
4.	D1209	Strap, Reinforcing
5.	D1207	Raffle
6.	10670	Hair Pin Clip, No. 3
7.	10171	HHCS, 5/16" - 18 x 1 1/4"
	10201	Washer, Special
	D1213	Washer, Rubber
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
8.	D1200	Housing, Outlet
9.	10303	Carriage Bolt, 5/16" - 18 x 1", Grade 2
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
10.	10641	Grease Fitting, 1/8" NPT, 45°
11.	D1379	Hopper
12.	10464	Cotter Pin, 3/16" x 1"
13.	D1212	Washer, Special
14.	D1206	Bearing
15.	10676	Clamp, No. 36
16.	D1208	Saddle
17.	D3790	Tube, Rubber
18.	10672	Clamp, No. 28
19.	D1204	Spring, R.H., Regular Rate
	D4476	Spring, R.H., High Rate
20.	D1205	Spring, L.H. Regular Rate
	D4477	Spring, L.H., High Rate
21.	D3709	Shaft, 45 1/2", 12 Row 30 and Wide and 16 Row 30 (1 Per Hopper)
	D3708	Shaft, 46", 8 Row Wide (2 Per Hopper) 12 Row 30 and Wide and 16 Row 30 (1 Per Hopper)
22.	10133	HHCS, 5/16" - 18 x 1 1/2"
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
23.	D1203	Plug
24.	D1202	Guide

DRY FERTILIZER HOPPER/OPENER MOUNT AND COUPLERS



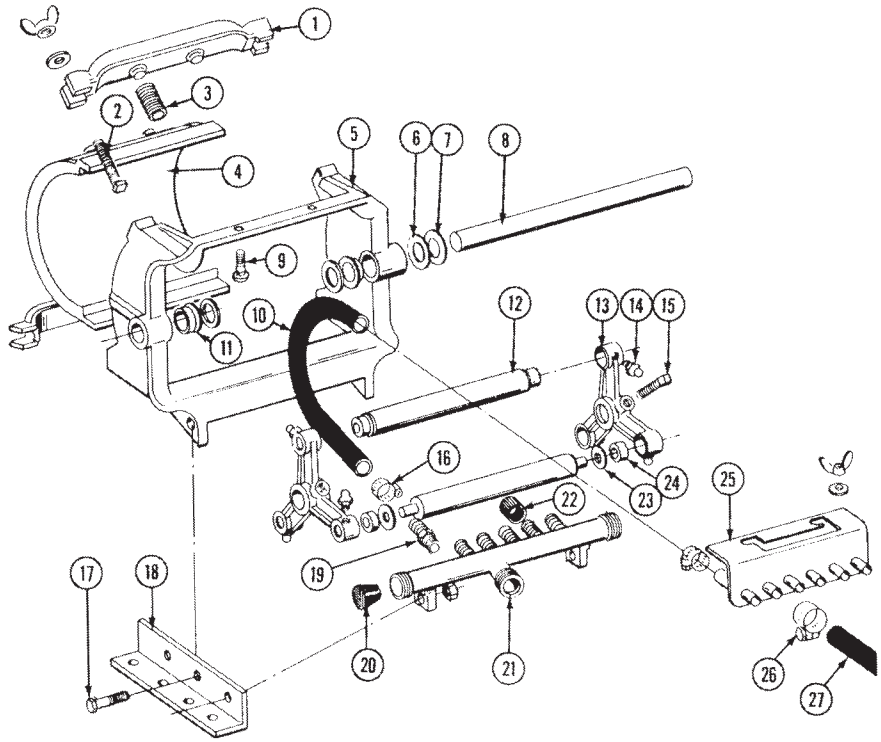
ITEM	PART NO.	DESCRIPTION
1.	A2756	Mount w/Hardware
	10033	HHCS, 1/2" - 13 x 3 1/2"
	10206	Washer, 1/2" SAE
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
	10561	Clevis, Pin, 1/2" x 3"
	10451	Cotter Pin, 1/8" x 1"
2.	D1747	U-Bolt, 5" x 7" x 3/4" - 10
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
3.	A2760	Universal Joint w/Shaft and Grease Fitting, 12 Row 30 thru 16 Row 30
	10643	Grease Fitting, 1/4" - 28, 45°
4.	A2761	Universal Joint w/Shaft and Grease Fittings, 9 5/8" 12 Row 30 and 16 Row 30
	A2893	Universal Joint w/Shaft and Grease Fittings, 27 3/8" 12 Row Wide
	10643	Grease Fitting, 1/4" - 28, 45°
	10640	Grease Fitting, 1/4" - 28
5.	10462	Cotter Pin, 3/16" x 2"
6.	D2768	Insert, Square
7.	10460	Cotter Pin, 1/4" x 2"
8.	A2757	Coupler, 13 3/8", 8 Row 30, 12 Row 30 and 16 Row 30
	A2315	Coupler, 30 5/8", 8 Row Wide
	A2313	Coupler, 24 5/8", 12 Row 36

LIQUID FERTILIZER SQUEEZE PUMP
Used On 8 Row Model



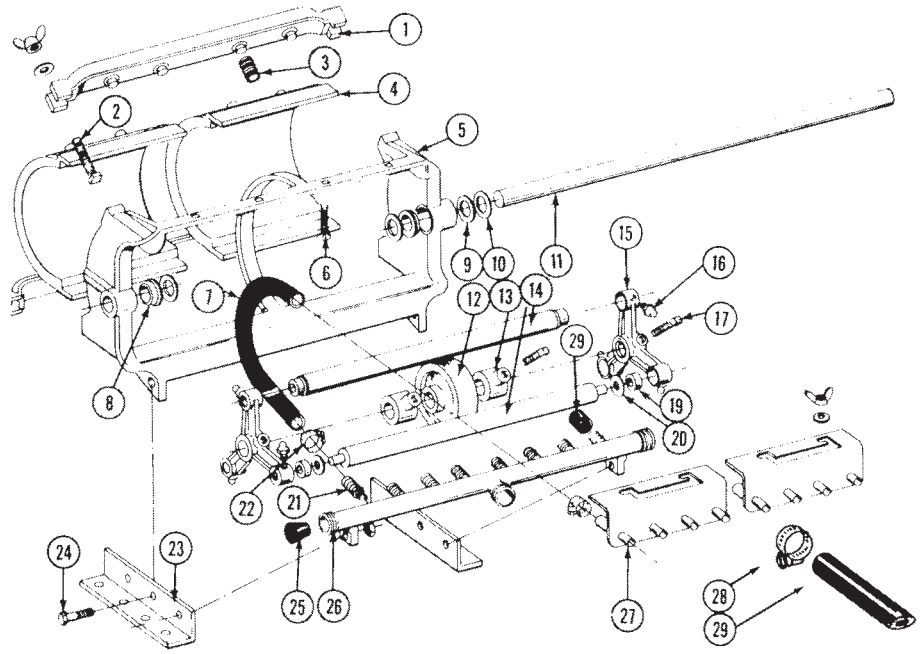
ITEM	PART NO.	DESCRIPTION
1.	R216	Spring Anchor Bar
2.	10130	Sq. Head Machine Bolt, 5/16" - 18 x 1 3/4"
	10219	Washer, 5/16" USS
	10144	Wing Nut, 5/16" - 18
3.	R214	Spring
4.	R212	Plate
5.	R208	Frame
6.	R207	Bushing (Nylon)
7.	10303	Round Head Machine Bolt, 5/16" - 18 x 1"
	10219	Washer, 5/16" USS
	10144	Wing Nut, 5/16" - 18
8.	R215	Metering Hose, 1/2" x 13"
9.	R225	Shim 1/32"
10.	R226	Shim, 3/64"
11.	R210	Shaft
12.	10681	Clamp, No. 6
13.	R223	Roller Arm
14.	10640	Grease Fitting, 1/4" - 28
15.	R209	Roller
16.	10131	Set Screw, 5/16" - 18 x 3/4"
17.	R227	Bushing, Nylon
18.	R211	Rubber Cap
19.	R232	Hose Adapter
20.	R213	Base Angle
21.	10004	HHCS, 3/8" - 16 x 1 1/4"
	10101	Hex Nut, 3/8" - 16
22.	R217	Manifold Plug
23.	R228	Intake Manifold
24.	R224	Discharge Manifold
25.	10673	Clamp, No. 8
26.	4300-10	Hose, 1/2" x 60'
A.	A321	Squeeze Pump Complete, 4 Rows

LIQUID FERTILIZER SQUEEZE PUMP
Used On 12 Row Model



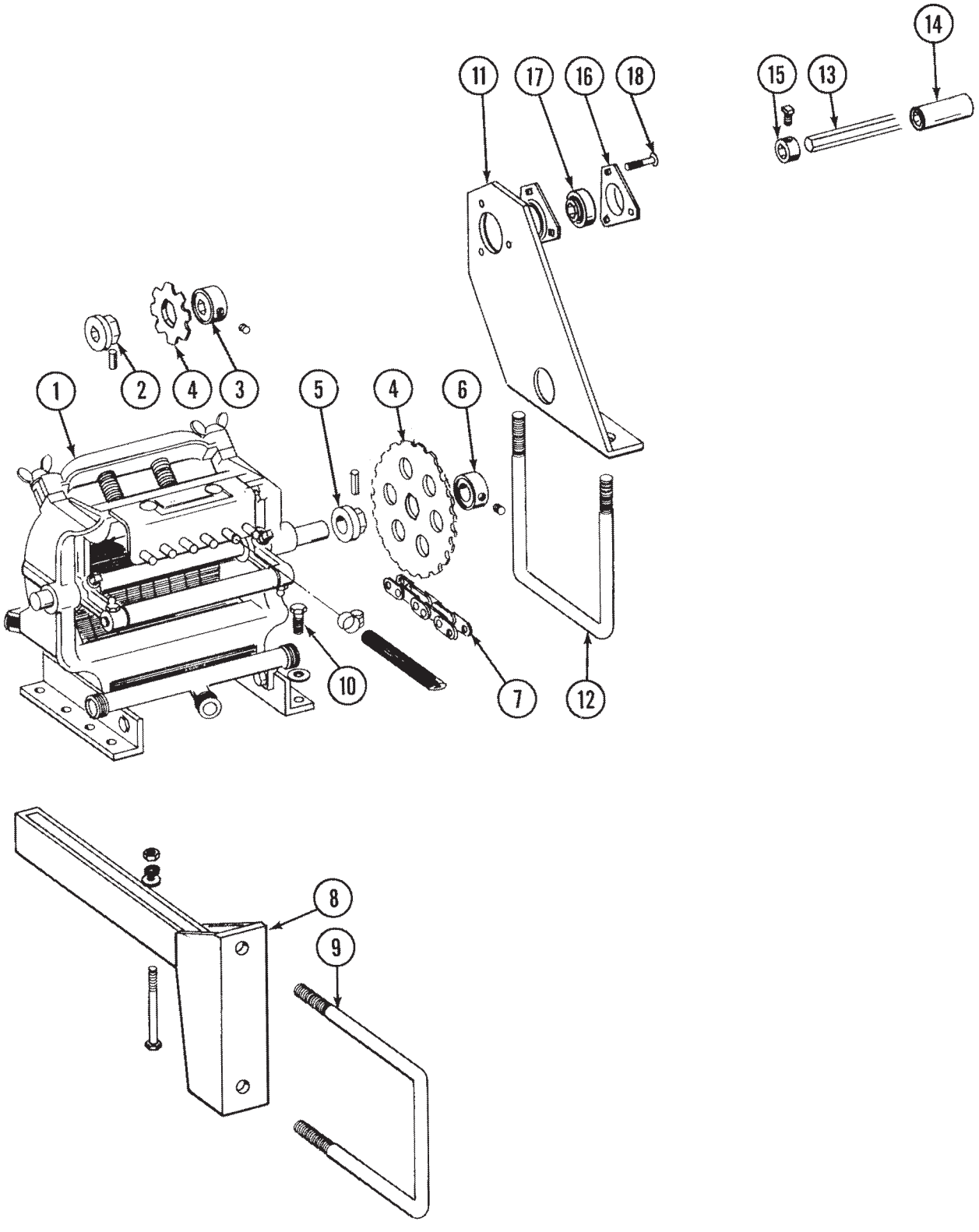
ITEM	PART NO.	DESCRIPTION
1.	R216	Spring Anchor Bar
2.	10130	Square Head Machine Bolt, 5/16" - 18 x 1 3/4"
	10219	Washer, 5/16" USS
	10144	Wing Nut, 5/16" - 18
3.	R214	Spring
4.	R212	Plate
5.	R208	Frame
6.	R225	Shim, 1/32"
7.	R226	Shim, 3/64"
8.	R210	Shaft
9.	10303	Round Head Machine Bolt, 5/16" - 18 x 1"
	10219	Washer, 5/16" USS
	10144	Wing Nut, 5/16" - 18
10.	R215	Metering Hose, 1/2" x 13"
11.	R207	Bushing, Nylon
12.	R233	Roller
13.	R231	Roller Arm
14.	10640	Grease Fitting, 1/4" - 28
15.	10131	Set Screw, 5/16" - 18 x 3/4"
16.	10681	Clamp, No. 6
17.	10004	HHCS, 3/8" - 16 x 1 1/4"
	10101	Hex Nut, 3/8" - 16
18.	R213	Base Angle
19.	R232	Hose Adapter
20.	R217	Manifold Plug
21.	R228	Intake Manifold
22.	R211	Rubber Cap
23.	R229	Washer, Nylon
24.	R230	Bearing, Roller
25.	R224	Discharge Manifold
26.	10673	Clamp, No. 8
27.	4300-8	Hose, 1/2" x 70'
A.	A322	Squeeze Pump Complete, 6 Rows

LIQUID FERTILZER SQUEEZE PUMP
Used On 16 Row Model



ITEM	PART NO.	DESCRIPTION
1.	R221	Spring Anchor Bar
2.	10130	Square Head Machine Bolt, 5/16" - 18 x 1 3/4"
	10219	Flat Washer, 5/16"
	10144	Wing Nut, 5/16" - 18
3.	R214	Spring
4.	R212	Plate
5.	R222	Frame
6.	10303	Round Head Machine Bolt, 5/16" - 18 x 1"
	10219	Washer, 5/16" USS
	10144	Wing Nut, 5/16" - 18
7.	R215	Metering Hose, 1/2" x 13"
8.	R207	Bushing, Nylon
9.	R225	Shim, 1/32"
10.	R226	Shim, 3/64"
11.	R220	Shaft
12.	R281	Back Up Roller
13.	R282	Set Collar
14.	R283	Roller
15.	R231	Roller Arm
16.	10640	Grease Fitting, 1/4" - 28
17.	10131	Set Screw, 5/16" - 18 x 3/4"
18.	R211	Rubber Cap
19.	R230	Bearing
20.	R229	Washer, Nylon
21.	R232	Hose Adapter
22.	10681	Clamp, No. 6
23.	R279	Base Angle, Left
	R280	Base Angle, Right
24.	10004	HHCS, 3/8" - 16 x 1 1/4"
	10101	Hex Nut, 3/8" - 16
25.	R217	Manifold Plug
26.	R284	Intake Manifold
27.	R236	Discharge Manifold
28.	10673	Clamp, No. 8
29.	4300-9	Hose, 1/2" x 80'
A.	A323	Squeeze Pump Complete, 8 Rows

SQUEEZE PUMP MOUNTING BRACKETS, SPROCKET AND ADAPTER PACKAGE AND DRIVE LINE

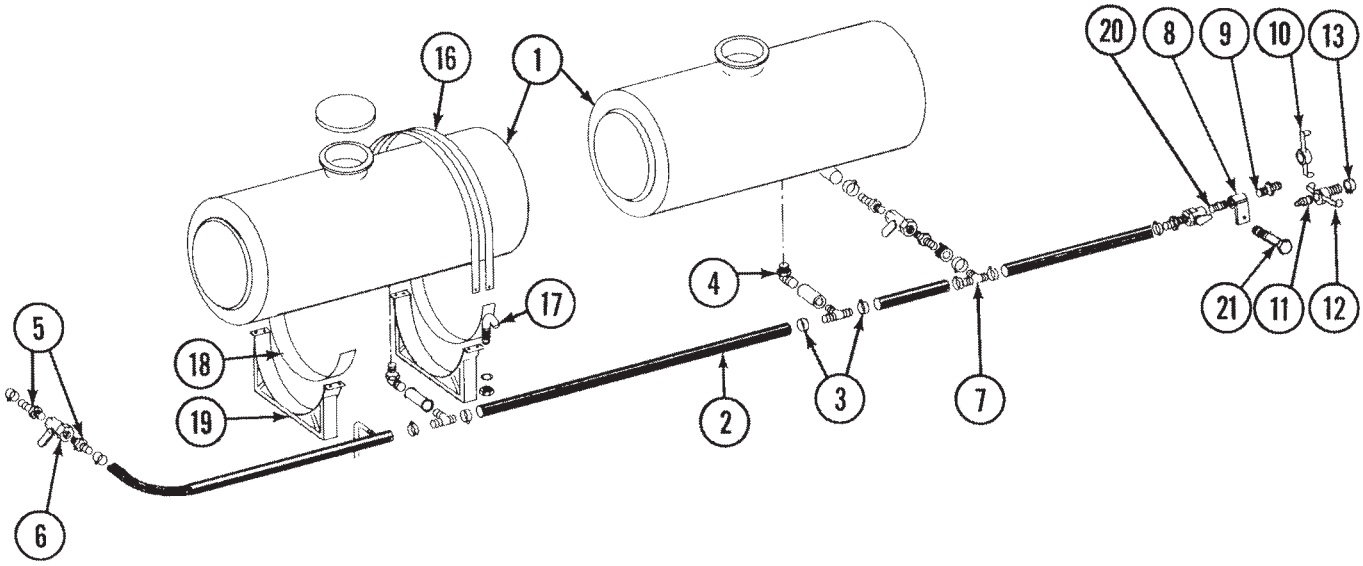


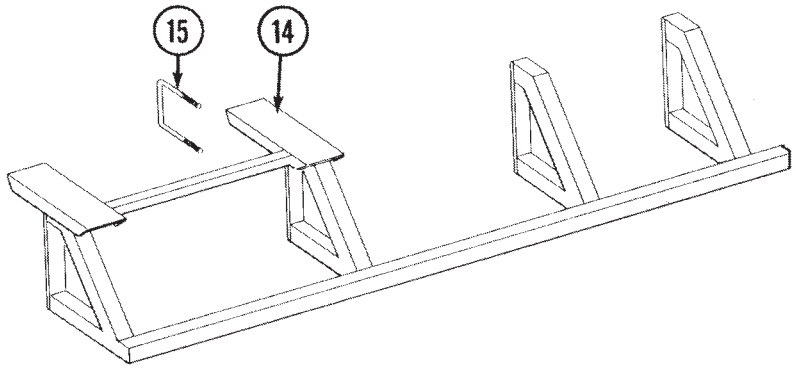
SQUEEZE PUMP MOUNTING BRACKETS, SPROCKET AND ADAPTER PACKAGE AND DRIVE LINE

ITEM	PART NO.	DESCRIPTION
1.	A321	Squeeze Pump, 4 Rows, Used on 8 Row Models
	A322	Squeeze Pump, 6 Rows, Used on 12 Row Models
	A323	Squeeze Pump, 8 Rows, Used on 16 Row Models
2.	A2354	Adapter w/Set Screws
	10120	Set Screw, 3/8" - 16 x 1/2"
3.	A2355	Lock Collar w/Set Screws
	10120	Set Screw, 3/8" - 16 x 1/2"
4.	D1217	Sprocket, 8 Tooth
	D1218	Sprocket, 9 Tooth
	D1219	Sprocket, 10 Tooth
	D1220	Sprocket, 15 Tooth
	D1221	Sprocket, 22 Tooth
	D1222	Sprocket, 23 Tooth
	D1223	Sprocket, 26 Tooth
	D1225	Sprocket, 31 Tooth
5.	D1216	Adapter (Less Roll Pin) w/Set Screws
	10600	Roll Pin, 5/16" x 2 1/4"
	10120	Set Screw, 3/8" - 16 x 1/2"
6.	D1215	Lock Collar w/Set Screws
	10120	Set Screw, 3/8" - 16 x 1/2"
7.	3300-64	Chain, No. 2040, 64 Pitch Including Connector link
	R194	Connector Link, No. 2040
8.	A2793	Mount
9.	D1113	U-Bolt, 5" x 7" x 5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
10.	10067	HHCS, 7/16" - 14 x 3"
	10081	Washer, 7/16" USS
	10237	Lock Washer, 7/16"
	10100	Hex Nut, 7/16" - 14
11.	A1784	Bracket (Shown), 12 and 16 Row Models Only
	A2721	Bracket, 12 and 16 Row Models Only
12.	D1134	U-Bolt, 7" x 5" x 5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
13.	D914-48	Shaft, 7/8" Hex, 12 Row 30
	D914-72	Shaft, 7/8" Hex, 16 Row 30
14.	D2219	Coupler, 3", Less Set Screws, 12 and 16 Row Models Only
	10145	Set Screw, 5/16" - 18 x 1/2"
15.	D917	Lock Collar, Less Set Screws
	10145	Set Screws, 5/16" - 18 x 1/2"
16.	3400-1	Flangette
17.	2100-3	Bearing, 7/8" Hex
18.	10303	Carriage Bolt, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
A.	6485X	Sprocket and Adapter Package, Includes: (1) 10600, (1) D1215, (1) D1216, (1) D1217, (1) D1218, (1) D1219, (1) D1220, (1) D1221, (1) D1222, (1) D1223, (1) D1225, (1) A2354 and (1) A2355

LIQUID FERTILIZER TANKS AND TANK/OPENER MOUNTING BRACKETS

8 Row





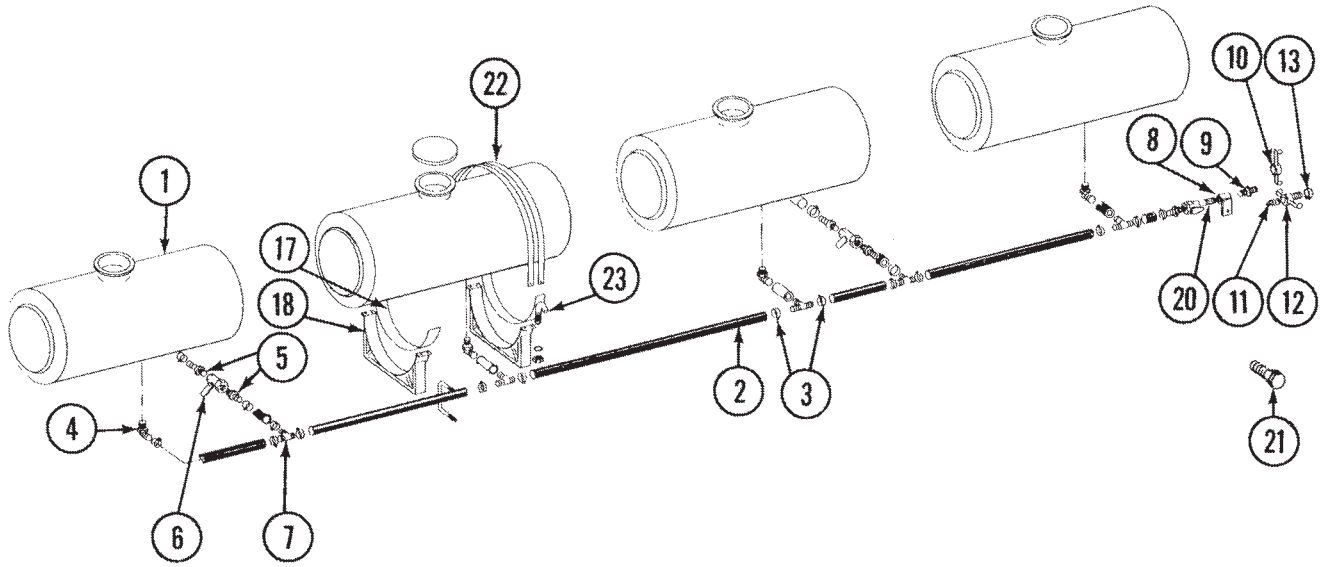
LIQUID FERTILIZER TANKS AND TANK/OPENER MOUNTING BRACKETS

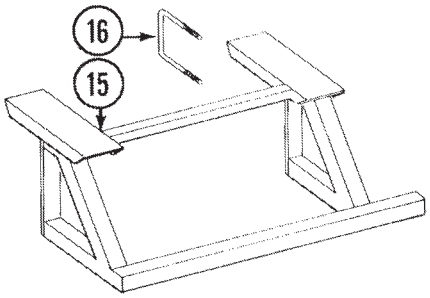
8 Row

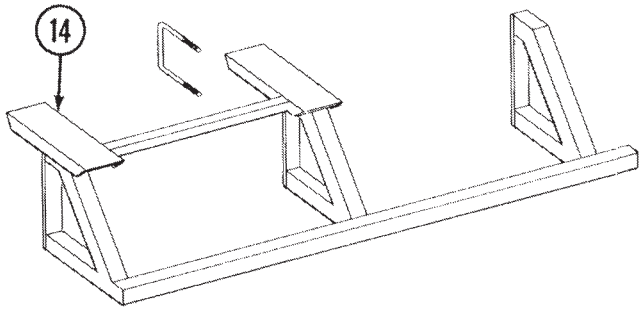
ITEM	PART NO.	DESCRIPTION
1.	D1812	Tank w/Lid and Fitting, 30" x 150 Gal.
	R509	Fillwell, 10"
	R510	Lid, 10"
	R508	1 1/4" E-Fitting
	R513	3/4" E-Fitting
2.	4200-6	Hose, 1 1/4" x 40'
3.	10674	Clamp, No. 24
4.	10742	Elbow, 90°, 1 1/4" NPT to 1 1/4" Barb
5.	10745	Adapter, 1 1/4" NPT to 1 1/4" Barb Fitting
6.	A499	Ball Valve, 1 1/4" Nylon
7.	10750	Tee, 1 1/4" Plastic
8.	A918	Mount
9.	D1514	Q Cam, 1 1/4"
10.	D1515	Dust Cap, 1 1/4"
11.	D1517	Dust Plug
12.	D1516	QCHB, 1 1/2"
13.	10672	Clamp, No. 28
14.	A2896	Mounting Bracket, R.H. (Shown),36/38" Rows (1 Per Planter)
	A2897	Mounting Bracket, L.H., 36/38" Rows (1 Per Planter)
15.	D1747	U-Bolt, 5" x 7" x 3/4" - 10
	10231	Lock Washer, 3/4" - 10
	10105	Hex Nut, 3/4" - 10
16.	D1520	Tank Band, 30"
17.	D1337	J-Bolt, 5/16"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
18.	D1862	Pad, 8" Wide x 14'
19.	A2529	Saddle, 30"
20.	10094	Pipe Nipple, 1 1/4" x 3"
21.	10017	HHCS, 1/2" - 13 x 1 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13

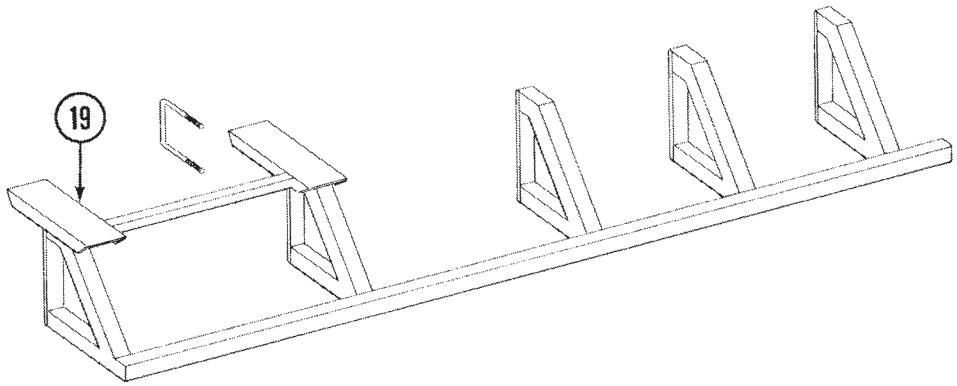
LIQUID FERTILIZER TANKS AND TANK/OPENER MOUNTING BRACKETS

12 and 16 Row







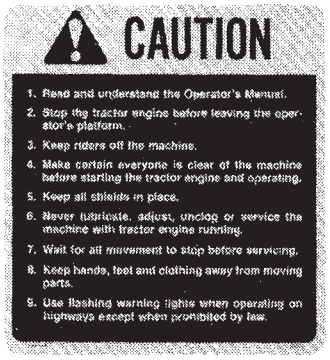


LIQUID FERTILIZER TANKS AND TANK/OPENER MOUNTING BRACKETS

12 and 16 Row

ITEM	PART NO.	DESCRIPTION
1.	A2203	Tank w/Lid and 1 1/4" Pipe Outlet, 24" x 110 Gal.
	D2728	1 1/4" Pipe Outlet
	D1340	Lid, 5", w/Splash Guard
2.	4200-5	Hose, 1 1/4" x 50', 12 Row
	4200-4	Hose, 1 1/4" x 55', 16 Row
3.	10674	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	Mount
9.	D1514	Q Cam, 1 1/4"
10.	D1515	Dust Cap, 1 1/4"
11.	D1517	Dust Plug
12.	D1516	QCHB, 1 1/2"
13.	10672	Clamp, No. 28
14.	A2806	Mounting Bracket, R.H. (Shown) 30" Rows (12 Row Model - 1 Per Planter)
	A2821	Mounting Bracket, L.H. 30" Rows (12 Row Model - 1 Per Planter)
15.	A2803	Mounting Bracket, 30" Rows (12 and 16 Row Models - 2 Per Planter)
16.	D1747	U-Bolt, 5" x 7" x 3/4" - 10
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
17.	D1334	Pad, 4" Wide x 14'
18.	A2530	Saddle, 24"
19.	A2826	Mounting Bracket, R.H., 30" Rows (16 Row Model - 1 Per Planter)
	A2827	Mounting Bracket, L.H. (Shown), 30" Rows (16 Row Model - 1 Per Planter)
20.	10094	Pipe Nipple, 1 1/4" x 3"
21.	10017	HHCS, 1/2" - 13 x 1 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
22.	D1335	Tank Band, 24"
23.	D1337	J-Bolt, 5/16"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18

DECALS, REFLECTORS AND TIE STRAPS



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KINZE®

Twin • Line

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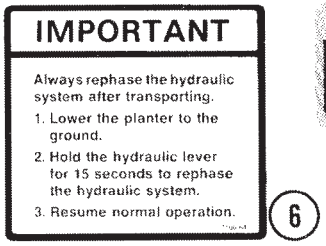

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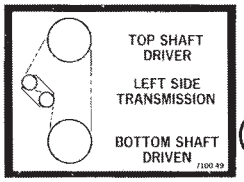

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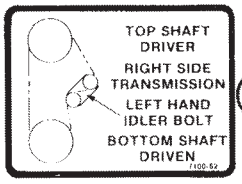

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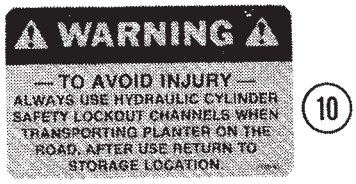

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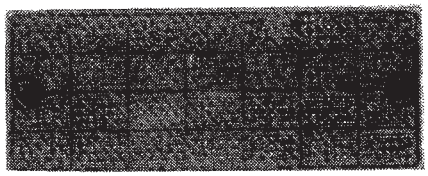

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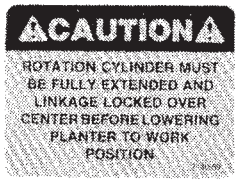

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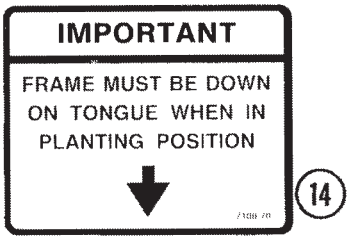

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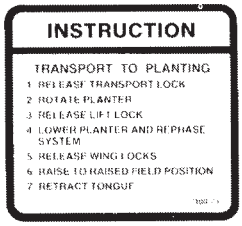

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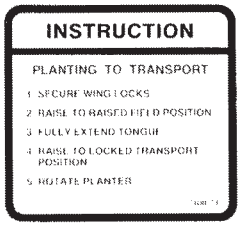

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DECALS, REFLECTORS AND TIE STRAPS

ITEM	PART NO.	DESCRIPTION
1.	7100-46	Decal, Caution
2.	7100-56	Decal, Caution
3.	7100-54	Decal, Kinze
4.	7100-65	Decal, Twin-Line
5.	7100-63	Decal, Caution
6.	7100-64	Decal, Important
7.	7100-42	Decal, Warning
8.	7100-49	Decal, Transmission, L.H.
9.	7100-62	Decal, Transmission, R.H.
10.	7100-83	Decal, Warning
11.	7200-3	Reflector, Red
	7200-4	Reflector, Amber
12.	7100-68	Decal, Warning
13.	7100-69	Decal, Caution
14.	7100-70	Decal, Note
15.	7100-75	Decal, Caution
16.	7100-73	Decal, Transport to Planting
17.	7100-74	Decal, Planting To Transport
18.	7100-72	Decal, Shear Bolt
19.	D1512	Tie Strap, 7"
	D2117	Tie Strap, 14 1/2"
	D1162	Tie Strap, 28"
	D2984	Tie Strap, 33"
20.	R155	Blue Paint, Aeroso
	R439	Blue Paint, Quart
	R440	Blue Paint, Gallon
		(Not Shown)
21.	7100-89	Decal, Danger

PART NO. PAGE

PART NO. PAGE