TO THE OWNER

M0125

OPERATOR & PARTS MANUAL

Single Frame Planter

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:

Single Frame Pull Type Planter
Model Number PT
Serial Number 11129 and on.

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

Date Purchased _____

Serial Number _____

Model Number _____

(Revised)

5/90 Reprint

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 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, restrictions and exclusions as new machine warranty and carries the same return and reporting requirements.

The foregoing warranty is exclusive and in lieu of all other warranties 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 obligations.

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

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INTRODUCTION

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

GENERAL INFORMATION

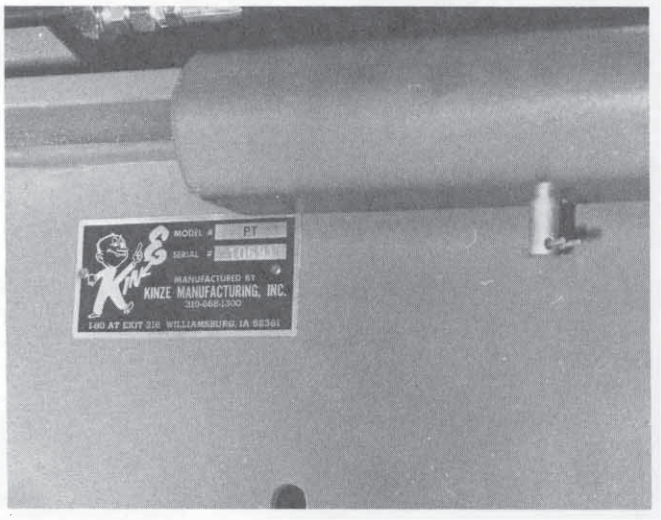
The information and photos used in this manual were current at the time of printing. However, due to Kinze's continual attempt to improve its product, in-line production changes may cause your machine to appear slightly different in detail. Kinze Manufacturing reserves the right to change specifications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

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

SERIAL NUMBER

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

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



SAFETY PRECAUTIONS ⚠

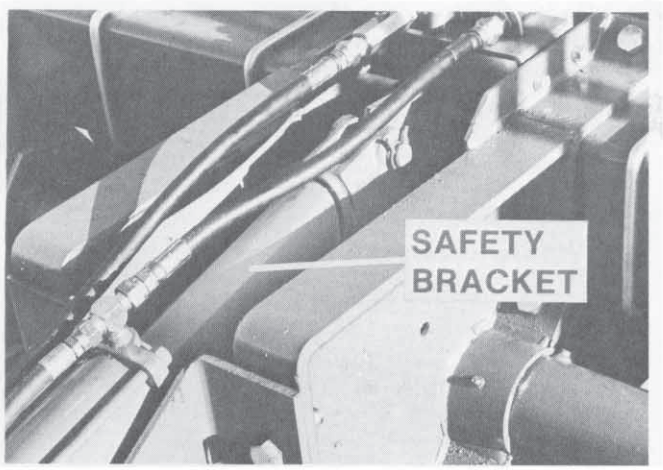
Safe and careful operation of the tractor and planter at all times will contribute significantly to the prevention of accidents.

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

- Never permit any persons other than the operator to ride on the tractor.
- Never ride on the planter frame or allow others to do so.
- Limit towing speeds to 15 MPH. Tow only with farm tractor of at least 50 H.P. size.
- Make sure there are no persons near the planter when markers are in operation.
- Lower the planter when not in use and cycle the hydraulic control lever to relieve pressure in cylinders and hoses.
- 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.
- Observe legal prohibitions and regulations when transporting this machine on public roads.
- Watch for obstructions such as wires, tree limbs, etc., when folding markers.
- Always install marker lockup/safety pins before transporting or parking any planter equipped with conventional markers.
- Always install lift cylinder lockup bracket before towing planter or working under the unit.

("Safety" Position Shown)

Marker Assembly



Planter Lift Cylinder

- 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.
- 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.

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.

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

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

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

TRANSPORTING THE PLANTER

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

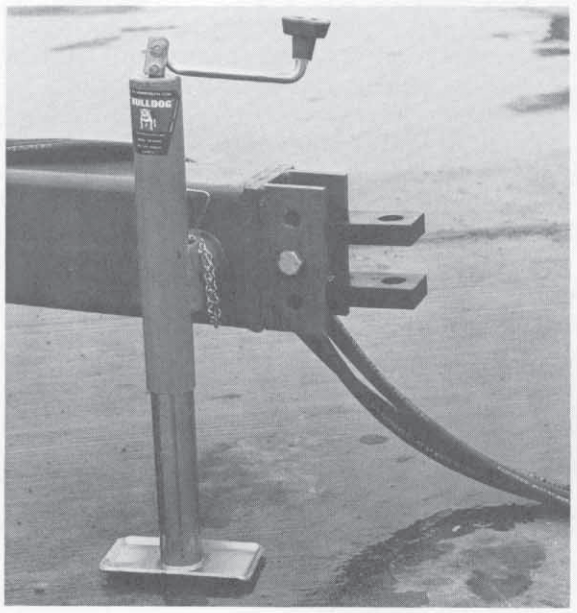
The single frame pull type planter is equipped with a clutch that disconnects the drive when the unit is raised for transportation. However, for safety and to decrease wear, the drive chains should be moved to the side of the drive wheel sprocket prior to towing the machine for any distance.

OPERATION

LEVELING THE PLANTER

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

Unless the tractor drawbar is adjustable for height, the fore and aft level adjustment must be maintained by the position of the hitch clevis. Three holes in the hitch bracket allow the clevis to be raised or lowered. 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.

TIRE PRESSURE

Tire pressure should be checked regularly and maintained as follows:

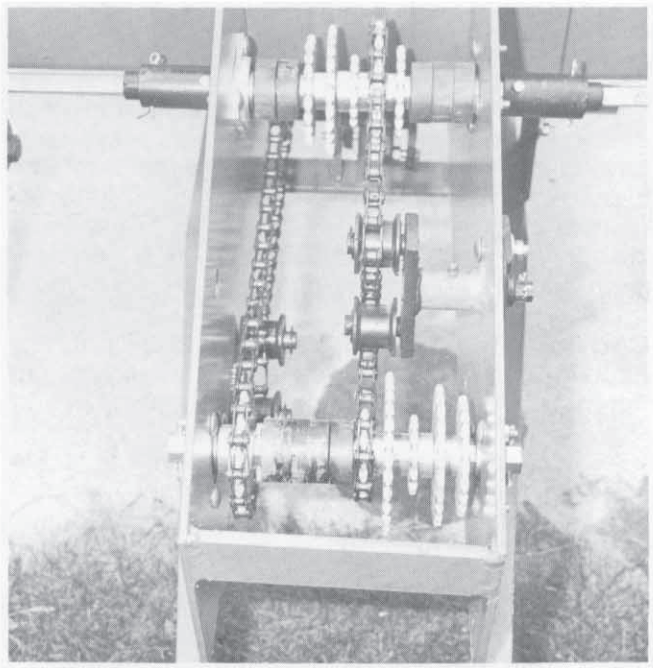
Drive Gauge - 7:60 x 15" 4 Ply 40 PSI

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

TRANSMISSION ADJUSTMENT

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

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



OPERATION

HYDRAULIC OPERATION

All single frame planters may be equipped with either a single or dual valve hydraulic system. The double valve system allows the markers to be operated independently of the planter lift cylinders. Each time a marker is completely raised, the sequencing valve will direct flow to lower the opposite marker.

Planters equipped with a single valve system require the planter be raised in order to lift the marker. Each time the planter is raised, the markers will alternately be raised. Then as the planter is lowered, the opposite marker will lower. For example, if the planter is raised to cross a waterway, the opposite marker will be lowered when the planter is lowered back into the ground. Therefore, it will be necessary to stop, and again raise and lower the planter to restore correct marker operation.

⚠ **WARNING:** Always stand clear of the marker assemblies and blades when the planter is in operation.

Both the left and right marker assemblies on all planters, whether single or dual valve systems, have two flow control valves built into the hydraulic system. This permits the operator to manually adjust the proper speed of "raise" and "lower" for each marker as there is a valve for each direction on both cylinders.

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. The raise or lower time is increased by closing the valve (clockwise). This restricts oil flow and slows the speed of the marker cylinder. To increase the cylinder speed and decrease raise or lower time turn the valve counterclockwise to open the valve.

NOTE: After the flow controls have been adjusted, the marker speed wil decrease with cold oil supply. Make sure that all adjustments are made with warm oil. Do not overtighten lock nut.

⚠ **WARNING:** Always position lock-ups in "Safety" position when transporting or storing planter. See Safety Precautions.

The planter and marker lift systems on the single frame planter may be operated in the float or fixed position.

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. For additional information on marker adjustments see Assembly Section in this manual.

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

- ☐ Hoses - Fittings
- ☐ Bolts - Nuts
- ☐ Drive Chains

OPERATION

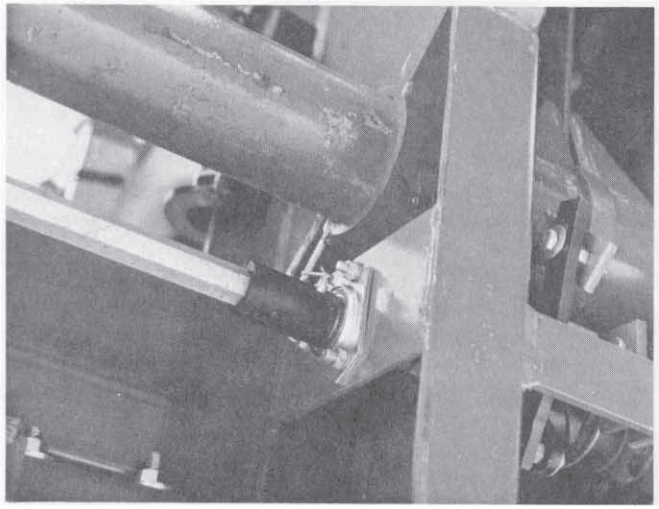
SHEAR PROTECTION

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. Turn the shaft by hand, checking for misalignment and for the possibility of seized parts. When the shaft can be turned by hand (with the aid of a wrench) replace the pin with one of identical size.

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

The Grade 2 hex head cap screws used to mount each marker assembly to the planter frame also serves as a safety shear device when the marker hits an obstacle. When replacing, use identical size and grade.



DOUBLE DISK OPENER

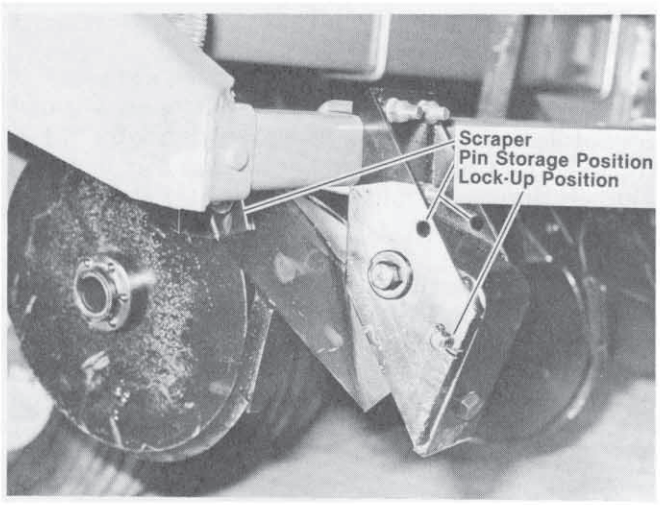
The double disk openers should be positioned during assembly to place the fertilizer approximately 2" to either side of the row and from 4 to 6 inches deep depending upon soil conditions and down pressure.

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

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

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

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



OPERATION

DRY FERTILIZER ATTACHMENT

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

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

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

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

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

Cleaning

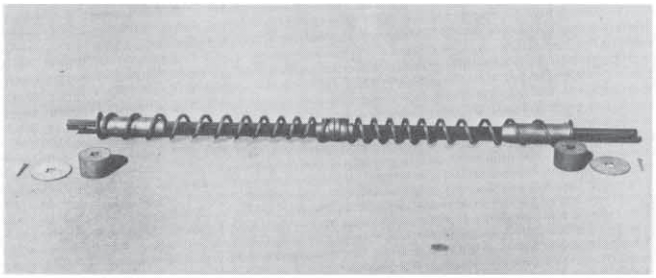
The dry fertilizer hoppers are designed to tip forward for dumping and ease of cleaning. To dump hoppers, first disconnect the drive shaft from the transmission or adjacent hopper. Loosen hose clamps and remove hoses from each hopper.

Finally, remove the two cap screws from the hopper 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.

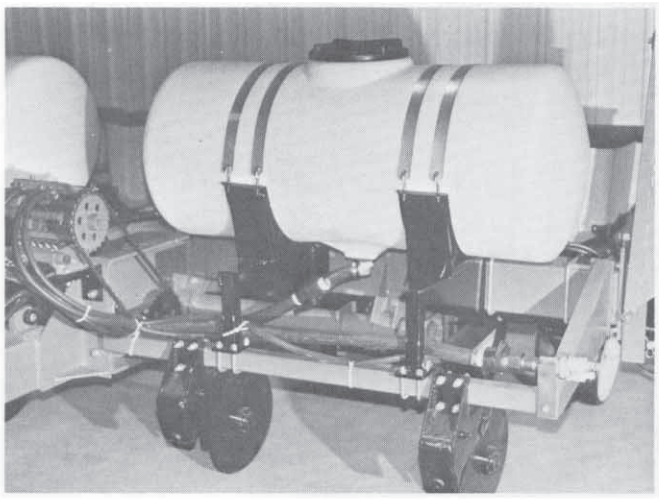
NOTE: Left hand and right hand springs are used on each auger shaft. Make sure springs auger fertilizer to the outer ends of the hopper when rotated in the direction of rotation they turn on the planter.



OPERATION

LIQUID FERTILIZER ATTACHMENT

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



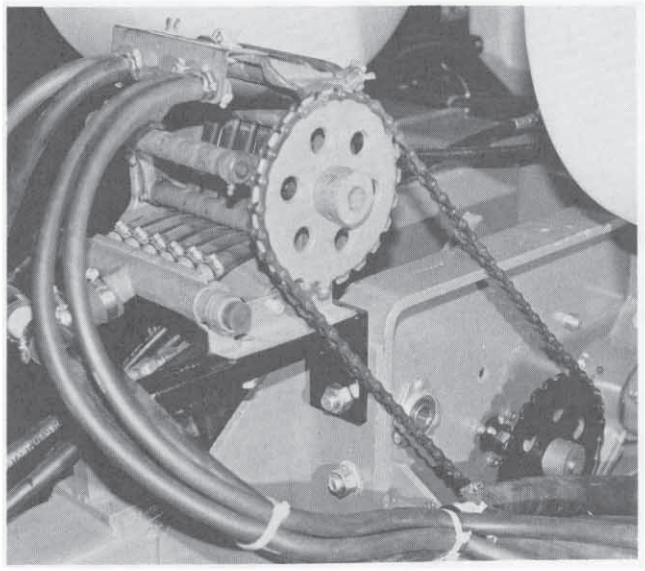
The delivery rate chart found at the end of this section provides an approximate application rate only. Actual delivery will vary with temperature and the particular fertilizer being used.

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

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

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

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



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

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

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

Retighten hose clamp.

Cleaning

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

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

PLANTING RATE FOR PLATELESS CORN METERS

SEED POPULATIONS / ACRE FOR DIFFERENT ROW WIDTHS

30 Inch	36 Inch	38 Inch	40 Inch	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)	Average Seed Spacing In Inches
13,100	10,900	10,300	9,800	14	28	4 to 8	16.0
14,100	11,700	11,100	10,500	14	26	4 to 8	14.9
14,900	12,500	11,800	11,200	16	28	4 to 8	14.0
16,100	13,400	12,700	12,000	16	26	4 to 8	13.0
16,600	13,900	13,100	12,500	14	22	4 to 8	12.6
19,000	15,900	15,000	14,200	16	22	4 to 8	11.0
20,300	17,000	16,100	15,200	14	18	4 to 8	10.3
20,500	17,100	16,200	15,400	22	28	4 to 8	10.2
22,100	18,400	17,400	16,600	22	26	4 to 8	9.5
23,200	19,400	18,300	17,400	16	18	4 to 8	9.0
24,200	20,200	19,100	18,200	26	28	4 to 7 1/2	8.6
26,100	21,800	20,600	19,600	22	22	4 to 7	8.0
28,000	23,400	22,100	21,000	30	28	4 to 6 1/2	7.5
29,800	24,900	23,500	22,400	16	14	3 to 6	7.0
30,100	25,200	23,800	22,600	30	26	3 to 6	6.9
30,800	25,800	24,300	23,100	26	22	3 to 6	6.8
31,900	26,600	25,200	23,900	22	18	3 to 5 1/2	6.5
35,600	29,700	28,100	26,700	30	22	3 to 5	5.9
37,700	31,500	29,800	28,300	26	18	3 to 4 1/2	5.5
41,000	34,300	32,400	30,800	22	14	3 to 4 1/2	5.1
43,500	36,300	34,300	32,600	30	18	2 to 4	4.8
48,500	40,500	38,300	36,400	26	14	2 to 3 1/2	4.3
55,900	46,700	44,100	41,900	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 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 small flat seeds.

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

PLANTING RATE FOR PLATELESS SOYBEAN METERS

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - MEDIUM SEEDS

30 Inch	36 Inch	38 Inch	40 Inch	Transmission Sprockets Drive	Driven	Recommended Speed Range (MPH)
34	28	27	26	14	28	4 to 8
36	30	29	27	14	26	4 to 8
38	32	30	29	16	28	4 to 8
40	33	32	30	16	26	4 to 8
41	34	32	31	14	22	4 to 8
45	38	36	34	16	22	4 to 8
48	40	38	36	14	18	4 to 8
49	41	38	37	22	28	4 to 8
52	44	41	39	22	26	4 to 8
55	46	44	41	16	18	4 to 8
58	48	45	43	26	28	4 to 7 1/2
62	52	49	47	22	22	4 to 7
66	55	52	50	30	28	4 to 6 1/2
71	59	56	53	16	14	3 to 6
72	60	56	54	30	26	3 to 6
73	61	58	55	26	22	3 to 6
76	63	60	57	22	18	3 to 5 1/2
85	70	67	63	30	22	3 to 5
90	75	71	67	26	18	3 to 5
95	79	75	72	22	14	3 to 5
100	84	79	75	30	18	3 to 5
109	91	86	82	26	14	3 to 5
123	102	97	92	30	14	3 to 5

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive 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.

PLANTING RATE FOR PLATELESS SOYBEAN METERS

APPROXIMATE BEANS/ACRE FOR DIFFERENT ROW WIDTHS - SMALL SEEDS

30 Inch	36 Inch	38 Inch	40 Inch	Seeds/ Foot	Seed Spacing (Inches)	Transmission Sprockets Drive	Driven	Recommended Speed Range (MPH)
128,500	107,500	101,500	96,400	7	1.6	14	28	4 to 8
137,700	114,700	108,700	103,300	8	1.5	14	26	4 to 8
144,600	120,500	114,200	108,500	8	1.4	16	28	4 to 8
151,900	126,600	119,900	113,900	9	1.4	16	26	4 to 8
155,100	129,300	122,500	116,300	9	1.4	14	22	4 to 8
170,400	142,000	134,600	127,800	10	1.2	16	22	4 to 8
182,300	151,900	143,900	136,700	10	1.1	14	18	4 to 8
184,100	153,500	145,400	138,100	11	1.1	22	28	4 to 8
198,300	165,300	156,600	148,700	11	1.1	22	26	4 to 8
208,300	173,600	164,500	156,200	12	1.0	16	18	4 to 8
217,600	181,400	171,800	163,200	12	1.0	26	28	4 to 7 1/2
234,400	195,300	185,000	175,800	13	0.9	22	22	4 to 7
251,100	209,300	198,200	188,300	14	0.8	30	28	4 to 6 1/2
267,800	223,200	211,500	200,900	15	0.8	16	14	3 to 6
270,400	225,300	213,500	202,800	15	0.8	30	26	3 to 6
277,000	230,800	218,700	207,700	16	0.8	26	22	3 to 6
286,400	238,700	226,100	214,800	16	0.7	22	18	3 to 5 1/2
319,600	266,300	252,300	239,700	18	0.7	30	22	3 to 5
338,500	282,100	267,300	254,000	19	0.6	26	18	3 to 5
360,500	300,500	284,600	270,400	21	0.6	22	14	3 to 5
379,300	316,100	299,400	284,500	22	0.6	30	18	3 to 5
412,600	343,800	325,700	309,500	24	0.5	26	14	3 to 5
464,500	387,100	366,700	348,400	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. 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.

PLANTING RATE FOR PLATELESS SOYBEAN METERS

APPROXIMATE BEANS/ACRE FOR DIFFERENT ROW WIDTHS · MEDIUM SEEDS

30 Inch	36 Inch	38 Inch	40 Inch	Seeds/ Foot	Seed Spacing (Inches)	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)
85,000	70,800	67,100	63,800	5	2.5	14	28	4 to 8
91,100	75,900	71,900	68,300	5	2.3	14	26	4 to 8
95,700	79,700	75,500	71,700	5	2.2	16	28	4 to 8
100,400	83,700	79,300	75,300	6	2.1	16	26	4 to 8
102,600	85,500	81,000	76,900	6	2.0	14	22	4 to 8
112,700	93,900	89,000	84,500	6	1.9	16	22	4 to 8
120,600	100,500	95,200	90,400	7	1.7	14	18	4 to 8
121,800	101,500	96,100	91,300	7	1.7	22	28	4 to 8
131,200	109,300	103,500	98,400	8	1.6	22	26	4 to 8
137,800	114,800	108,800	103,300	8	1.5	16	18	4 to 8
143,900	119,900	113,600	107,900	8	1.5	26	28	4 to 7 1/2
155,000	129,200	122,400	116,300	9	1.4	22	22	4 to 7
166,100	138,400	131,100	124,600	10	1.3	30	28	4 to 6 1/2
177,100	147,600	139,800	132,900	10	1.2	16	14	3 to 6
178,800	149,000	141,200	134,100	10	1.2	30	26	3 to 6
183,200	152,700	144,600	137,400	10	1.1	26	22	3 to 6
189,400	157,900	149,600	142,100	11	1.1	22	18	3 to 5 1/2
211,400	176,100	166,900	158,500	12	1.0	30	22	3 to 5
223,900	186,900	176,800	167,900	13	0.9	26	18	3 to 5
238,500	198,700	188,300	178,800	14	0.9	22	14	3 to 5
250,800	209,000	198,000	188,100	14	0.8	30	18	3 to 5
272,900	227,400	215,400	204,700	16	0.8	26	14	3 to 5
307.200	256,000	242,600	230,400	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. Recommended tire pressure 40 PSI.

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

PLANTING RATE FOR PLATELESS SOYBEAN METERS

APPROXIMATE BEANS/ACRE FOR DIFFERENT ROW WIDTHS - LARGE SEEDS

30 Inch	36 Inch	38 Inch	40 Inch	Seeds/ Foot	Seed Spacing (Inches)	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)
56,900	47,400	44,900	42,700	3	3.7	14	28	4 to 8
61,000	50,800	48,100	45,700	3	3.4	14	26	4 to 8
64,100	53,400	50,600	48,000	4	3.3	16	28	4 to 8
67,300	56,000	53,100	50,400	4	3.1	16	26	4 to 8
68,700	57,200	54,200	51,500	4	3.1	14	22	4 to 8
75,500	62,900	59,600	56,600	4	2.8	16	22	4 to 8
80,700	67,300	63,700	60,500	5	2.6	14	18	4 to 8
81,500	68,000	64,400	61,200	5	2.6	22	28	4 to 8
87,800	73,200	69,300	65,900	5	2.4	22	26	4 to 8
92,300	76,900	72,800	69,200	5	2.3	16	18	4 to 8
96,400	80,300	76,100	72,300	6	2.2	26	28	4 to 7 1/2
103,800	86,500	81,900	77,800	6	2.0	22	22	4 to 7
111,200	92,700	87,800	83,400	6	1.9	30	28	4 to 6 1/2
118,600	98,800	93,600	89,000	7	1.8	16	14	3 to 6
119,800	99,800	94,500	89,800	7	1.7	30	26	3 to 6
122,700	102,200	96,800	92,000	7	1.7	26	22	3 to 6
126,900	105,700	100,100	95,100	7	1.7	22	18	3 to 5 1/2
141,500	117,900	111,700	106,100	8	1.5	30	22	3 to 5
149,900	124,900	118,400	112,400	9	1.4	26	18	3 to 5
159,700	133,100	126,100	119,800	9	1.3	22	14	3 to 5
168,000	140,000	132,600	126,000	10	1.2	30	18	3 to 5
182,700	152,300	144,300	137,000	10	1.1	26	14	3 to 5
205,700	171,400	162,400	154,300	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. Recommended tire pressure 40 PSI.

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

PLANTING RATE FOR PLATELESS REGULAR RATE SORGHUM METERS

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS — MEDIUM SEEDS

30 Inch	36 Inch	38 Inch	40 Inch	Transmission Sprockets Drive	Transmission Sprockets Driven	Recommended Speed Range (MPH)
8.0	6.7	6.3	6.0	14	28	4 to 8
8.5	7.1	6.7	6.4	14	26	4 to 8
9.0	7.5	7.1	6.7	16	28	4 to 8
9.5	7.9	7.5	7.1	16	26	4 to 8
9.8	8.2	7.7	7.4	14	22	4 to 8
11.0	9.2	8.7	8.2	16	22	4 to 8
11.7	9.8	9.3	8.8	14	18	4 to 8
11.9	9.9	9.4	8.9	22	28	4 to 8
12.8	10.6	10.1	9.6	22	26	4 to 8
13.4	11.2	10.6	10.1	16	18	4 to 8
14.0	11.7	11.1	10.5	26	28	4 to 7 1/2
15.1	12.6	11.9	11.3	22	22	4 to 7
16.2	13.5	12.8	12.1	30	28	4 to 6 1/2
17.3	14.4	13.6	12.9	16	14	3 to 6
17.4	14.5	13.8	13.1	30	26	3 to 6
17.8	14.9	14.1	13.4	26	22	3 to 6
18.5	15.4	14.6	13.8	22	18	3 to 5 1/2
20.6	17.2	16.3	15.4	30	22	3 to 5
21.8	18.2	17.2	16.4	26	18	3 to 5
23.4	19.5	18.5	17.6	22	14	3 to 5
24.6	20.5	19.4	18.5	30	18	3 to 5
26.9	22.4	21.2	20.1	26	14	3 to 5
30.0	25.0	23.7	22.5	30	14	3 to 5

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive 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 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.

PLANTING RATE FOR PLATELESS LOW RATE SORGHUM METERS

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - MEDIUM SEEDS

30 Inch	36 Inch	38 Inch	40 Inch	Transmission Sprockets Drive	Driven	Recommended Speed Range (MPH)
1.5	1.3	1.2	1.2	14	28	4 to 8
1.6	1.4	1.3	1.2	14	26	4 to 8
1.7	1.4	1.4	1.3	16	28	4 to 8
1.8	1.5	1.4	1.4	16	26	4 to 8
1.9	1.6	1.5	1.4	14	22	4 to 8
2.1	1.8	1.7	1.6	16	22	4 to 8
2.3	1.9	1.8	1.7	14	18	4 to 8
2.3	1.9	1.8	1.7	22	28	4 to 8
2.5	2.0	1.9	1.8	22	26	4 to 8
2.6	2.1	2.0	1.9	16	18	4 to 8
2.7	2.2	2.1	2.0	26	28	4 to 7 1/2
2.9	2.4	2.3	2.2	22	22	4 to 7
3.1	2.6	2.5	2.3	30	28	4 to 6 1/2
3.3	2.8	2.6	2.5	16	14	3 to 6
3.3	2.8	2.6	2.5	30	26	3 to 6
3.4	2.9	2.7	2.6	26	22	3 to 6
3.5	3.0	2.8	2.7	22	18	3 to 5 1/2
4.0	3.3	3.1	3.0	30	22	3 to 5
4.2	3.5	3.3	3.1	26	18	3 to 5
4.5	3.7	3.6	3.4	22	14	3 to 5
4.7	3.9	3.7	3.5	30	18	3 to 5
5.2	4.3	4.1	3.9	26	14	3 to 5
5.8	4.8	4.6	4.3	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. Recommended tire pressure 40 PSI.

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

PLANTING RATE FOR PLATE TYPE DRIVE

Seed Population and Drilling Distance - 16 Cell Plate

SEED POPULATIONS/ACRE FOR DIFFERENT ROW WIDTHS

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

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

Above chart for planters equipped with 7:60 - 15 inch drive tires and 1:1 drive sprocket 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 RATE FOR PLATE TYPE DRIVE

Seed Population and Drilling Distance · 24 Cell Plate

SEED POPULATIONS/ACRE FOR DIFFERENT ROW WIDTHS

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

For 12 cell seed plate, divide population by 2; multiply drilling distance by 2.
For 36 cell seed plate, multiply population by 1:5; divide drilling distance by 1.5

Above chart for planters equipped with 7:60-15 inch drive tires and 1:1 drive sprocket 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, particulary 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	30 Inch	36 Inch	38 Inch	40 Inch
10	5.1	4.3	4.0	3.8
11	5.6	4.7	4.4	4.2
12	6.3	5.3	5.0	4.7
13	7.1	5.9	5.6	5.3
14	7.9	6.6	6.2	5.9
15	8.8	7.3	6.9	6.6
16	9.9	8.3	7.8	7.4
17	11.0	9.2	8.7	8.3
18	11.8	9.8	9.3	8.9
19	13.5	11.3	10.7	10.1
20	14.6	12.2	11.5	11.0
21	16.0	13.3	12.6	12.0
22	16.9	14.1	13.3	12.7
23	17.7	14.8	14.0	13.3
24	19.4	16.2	15.3	14.6
25	21.5	17.9	17.0	16.1
26	23.7	19.8	18.7	17.8
27	24.8	20.7	19.6	18.6
28	26.2	21.8	20.7	19.7
29	28.7	23.9	22.7	21.5
30	30.5	25.4	24.1	22.9

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS · SAND GRANULES

5	3.0	2.5	2.4	2.3
6	5.0	4.2	3.9	3.8
7	5.5	4.6	4.3	4.1
8	6.5	5.4	5.1	4.9
9	8.0	6.7	6.3	6.0
10	9.2	7.7	7.3	6.9
11	10.5	8.8	8.3	7.9
12	11.5	9.6	9.1	8.6
13	13.0	10.8	10.3	9.8
14	14.5	12.1	11.4	10.9
15	16.0	13.3	12.6	12.0
16	18.0	15.0	14.2	13.5
17	20.0	16.7	15.8	15.0
18	22.5	18.8	17.8	16.9
19	25.0	20.8	19.7	18.8
20	26.5	22.1	20.9	19.9
21	28.5	23.8	22.5	21.4
22	30.5	25.4	24.1	22.9
23	33.0	27.5	26.1	24.8
24	35.5	29.6	28.0	26.6
25	38.0	31.7	30.0	28.5

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.

DRY HERBICIDE APPLICATION RATES

APPROXIMATE POUNDS/ACRE FOR DIFFERENT ROW WIDTHS - CLAY GRANULES

Meter Setting	30 Inch	36 Inch	38 Inch	40 Inch
10	4.8	4.0	3.8	3.6
11	5.4	4.5	4.3	4.1
12	6.0	5.0	4.7	4.5
13	6.7	5.6	5.3	5.0
14	7.5	6.3	5.9	5.6
15	8.5	7.1	6.7	6.4
16	9.3	7.8	7.3	7.0
17	10.2	8.5	8.1	7.7
18	11.0	9.2	8.7	8.3
19	12.0	10.0	9.5	9.0
20	13.0	10.8	10.3	9.8
21	14.0	11.7	11.1	10.5
22	15.0	12.5	11.8	11.3
23	16.2	13.5	12.8	12.2
24	17.5	14.6	13.8	13.1
25	18.7	15.6	14.8	14.0
26	20.0	16.7	15.8	15.0
27	21.5	17.9	17.0	16.1
28	23.3	19.4	18.4	17.5
29	25.0	20.8	19.7	18.8
30	27.5	22.9	21.7	20.6

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.

OPERATION

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	40 Inch Rows
18	36	87	73	68	65
18	30	101	85	79	76
24	36	127	107	99	95
24	30	151	129	118	113
18	18	181	152	141	136
18	16	208	175	162	156
36	30	215	180	168	161
24	18	242	203	180	181
24	16	269	225	210	201
36	18	357	300	278	267
36	16	390	327	304	293
High Rate Augers					
18	36	131	110	102	98
18	30	152	128	119	114
24	36	191	161	149	143
24	30	227	194	177	170
18	18	272	228	212	204
18	16	312	263	243	234
36	30	323	270	252	242
24	18	363	305	284	272
24	16	404	338	315	302
36	18	536	450	417	401
36	16	585	491	456	440

Above chart for planters equipped with Kinze drive. 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 multiply that amount by 100. The result will be the pounds of fertilizer delivered per acre when planting in 40-inch row. To convert this deliver rate for narrow rows, multiply by the following conversion factors:

30" Multiply by 1.33

36" Multiply by 1.11

38" Mulitiply by 1.05

OPERATION

LIQUID FERTILIZER APPLICATION RATES

Drive	Driven	ROW SPACE Gal. Per Acre				Drive	Driven	ROW SPACE Gal. Per Acre			
		40	38	36	30			40	38	36	30
8	9	19.1	20.4	21.0	25.3	22	8	59.1	62.9	65.0	78.0
8	10	17.2	18.3	18.9	22.7	22	9	52.4	55.8	57.7	69.2
8	15	11.4	12.1	12.5	15.0	22	10	47.3	50.3	52.0	62.4
8	22	7.7	8.2	8.5	10.2	22	15	31.4	33.4	34.5	41.4
8	23	7.5	8.0	8.3	9.6	22	23	20.6	22.0	22.7	27.2
8	26	6.7	7.1	7.3	8.8	22	26	18.3	19.4	20.1	24.1
8	31	5.6	5.9	6.1	7.4	22	31	15.0	16.0	16.6	19.9
9	8	24.1	25.6	26.5	31.8	23	8	61.9	65.9	68.1	81.7
9	10	19.3	20.6	21.3	25.5	23	9	55.0	58.6	60.5	72.6
9	15	12.9	13.7	14.2	17.0	23	10	49.4	52.6	54.4	65.3
9	22	8.8	9.4	9.7	11.6	23	15	32.8	35.0	36.2	43.4
9	23	8.4	8.9	9.2	11.1	23	22	22.6	24.0	24.8	29.8
9	26	7.5	8.0	8.3	9.9	23	26	18.9	20.1	20.8	25.0
9	31	6.2	6.6	6.9	8.2	23	31	15.9	16.9	17.5	21.0
10	8	26.9	28.6	29.6	35.5	26	8	69.8	74.3	76.8	92.2
10	9	23.9	25.4	26.2	31.5	26	9	62.1	66.1	68.3	81.7
10	15	14.4	15.3	15.8	19.0	26	10	55.9	59.5	61.5	73.8
10	22	9.7	10.3	10.6	12.8	26	15	37.2	39.6	40.9	49.1
10	23	9.2	9.8	10.2	12.2	26	22	25.4	27.0	27.9	33.5
10	26	8.2	8.7	9.0	10.8	26	23	24.3	25.8	26.7	32.1
10	31	6.9	7.3	7.6	9.1	26	31	18.1	19.0	19.6	23.5
15	8	40.4	43.0	44.5	53.3	31	8	83.2	88.5	91.5	109.8
15	9	35.9	38.2	39.5	47.4	31	9	73.9	78.7	81.3	97.6
15	10	32.2	34.3	35.5	42.6	31	10	66.6	70.9	73.3	88.0
15	22	14.6	15.6	16.1	19.3	31	15	44.5	47.1	48.7	58.4
15	23	14.0	14.9	15.4	18.4	31	22	30.3	32.0	33.1	39.7
15	26	12.5	13.3	13.7	16.5	31	23	29.0	30.6	31.7	38.0
15	31	10.3	11.0	11.3	13.6	31	26	25.6	27.2	28.1	33.8

Above chart for planters equipped with Kinze drive. Recommended tire pressure 40 PSI.

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

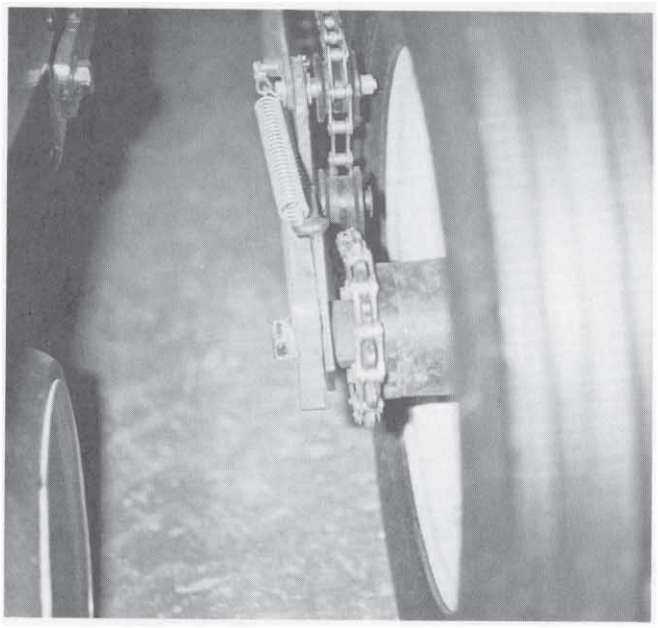
MAINTENANCE

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.

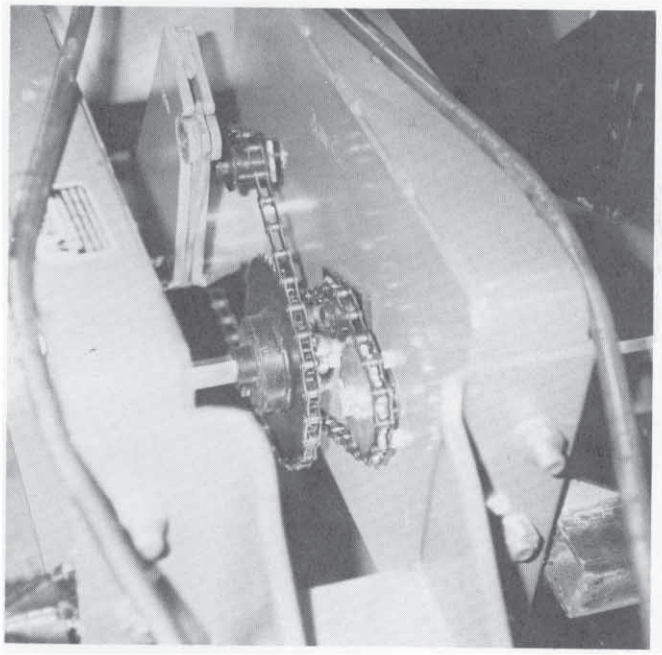


CHAIN TENSION ADJUSTMENT

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

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

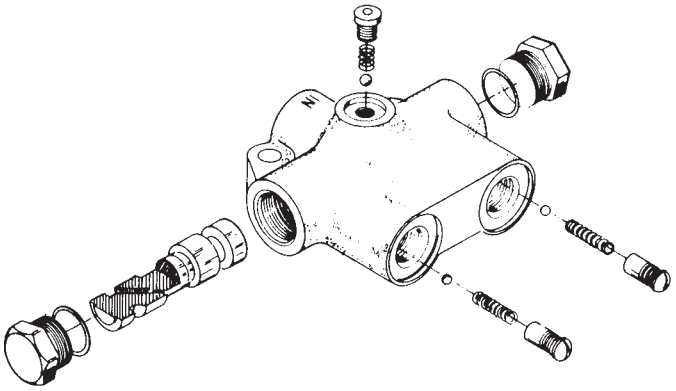
CAUTION: Do not attempt to shorten the drive chains between the drive wheels and drive shaft. If the chain is being replaced, ensure replacement is the same length. If a shorter chain is used, there is a possibility that the drive shaft could be bent or drive chain broken when the planter is fully raised.



SEQUENCING VALVE INSPECTION

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

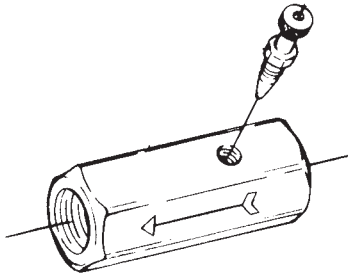
IMPORTANT: Make sure correct check ball and spring are installed in each check valve bore upon reassembly.



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.



MAINTENANCE

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

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

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

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

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

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

Clean seed meters and store in a dry area.

LUBRICATION

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

SEALED BEARINGS

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

DRIVE CHAINS

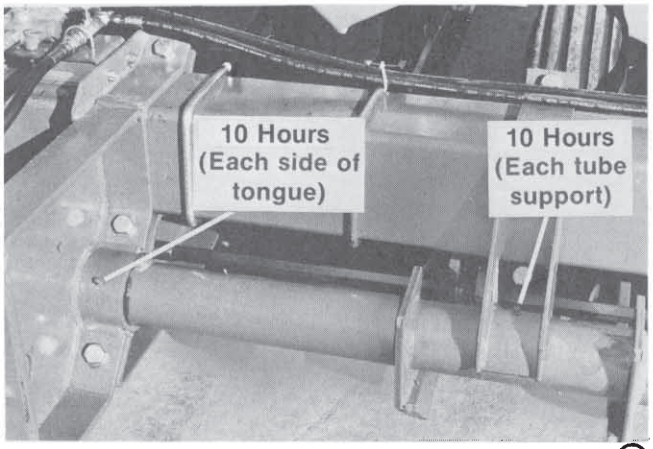
The transmission and row unit drive chains should be lubricated approximately every 8 - 10 hours with a quality engine oil or equivalent SAE 10 weight oil. A good quality spray lubricant may also be used for periodic chain lubrication. Extreme operating conditions such as oil, temperature, or speed may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

WHEEL BEARINGS

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

LUBRICATION CHART

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



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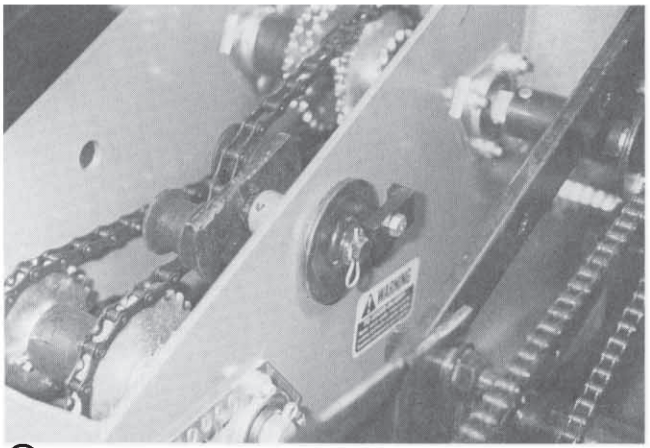
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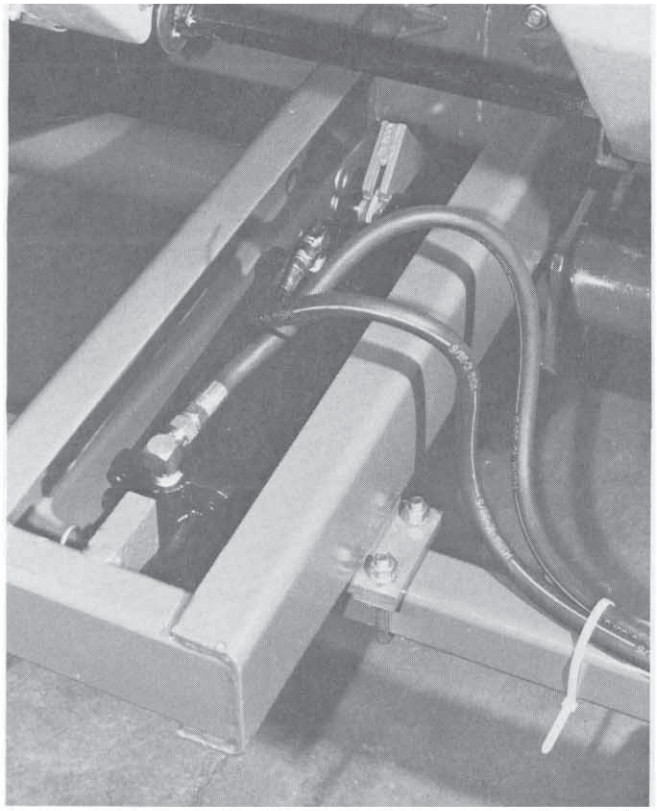
LUBRICATION



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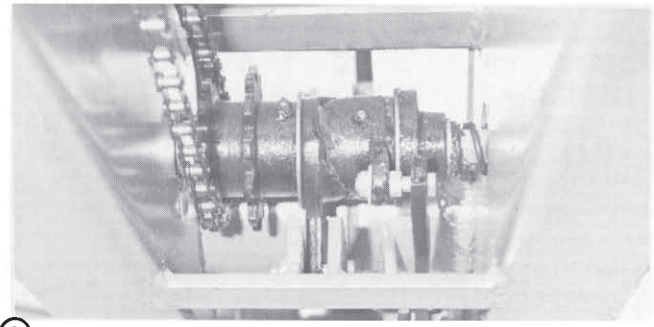

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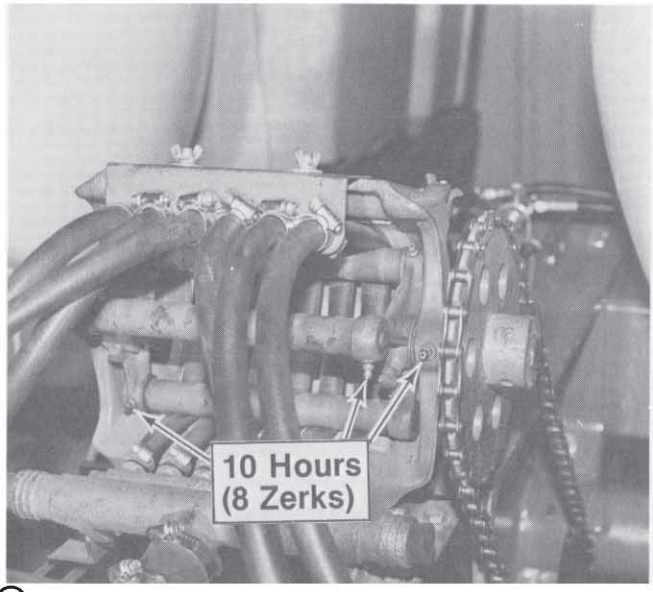

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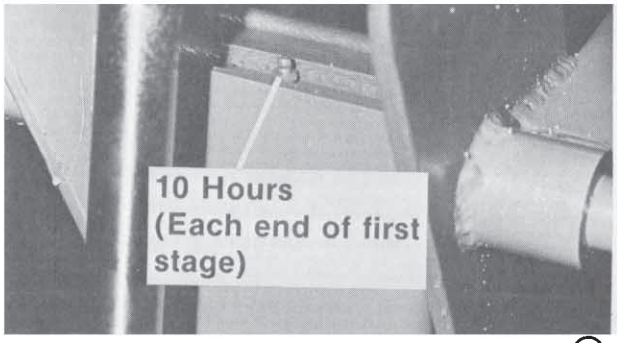

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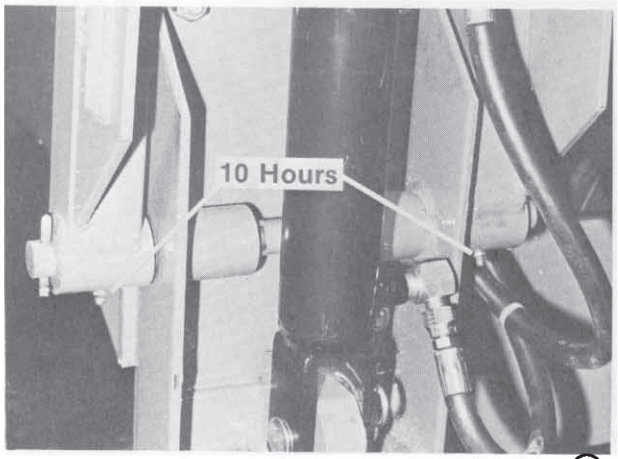

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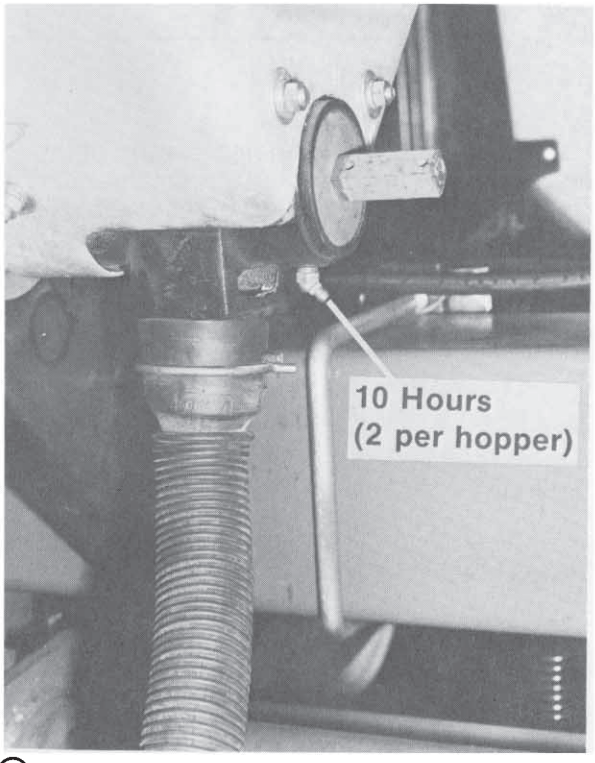

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ASSEMBLY

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

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

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

HARDWARE

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

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

DRY TORQUE VALUES — FT. LBS.

Bolt Dia.	Grade 2 No Radial Lines	Grade 5 Three Radial Lines	Grade 8 Six Radial Lines
5/16"	11	17	25
3/8"	23	35	45
1/2"	55	85	
5/8"		170	
3/4"		360	
1"		670	
1 1/4"		910	

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

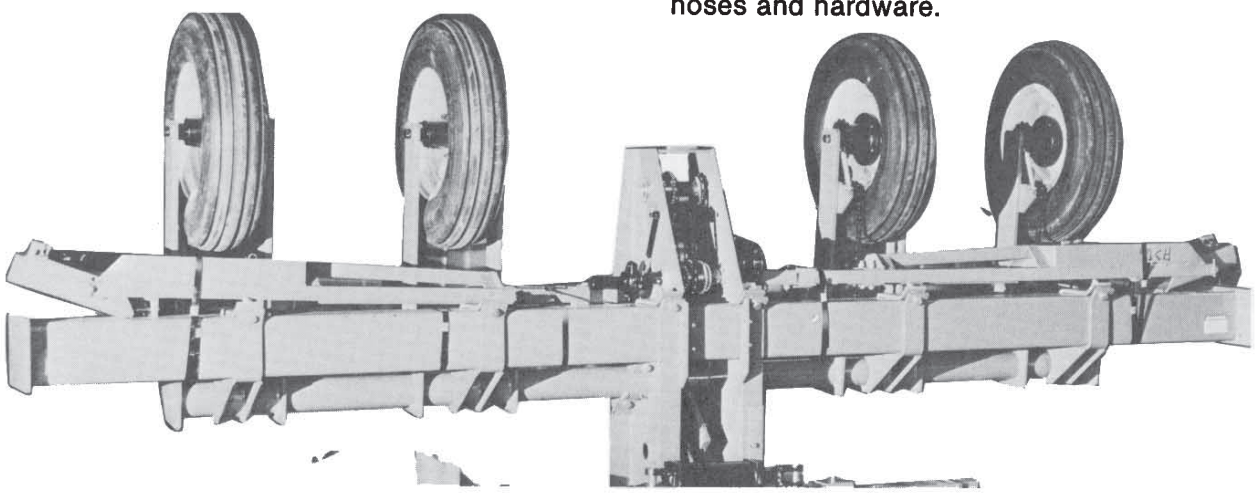
FRAME ASSEMBLY

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

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

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

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



3. While supporting the frame with an overhead hoist or front end loader, remove the bolts which fasten the frame to the skid. Carefully lower the planter frame assembly to a horizontal position.

NOTE: If planter is to be equipped with liquid or dry fertilizer attachment, assemble fertilizer bar at this time. See Fertilizer Bar Installation in Assembly Section of this manual.

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

5. Remove the jackstand from the storage position and place it on the hitch to support the planter. Level the planter frame.

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

6. Mount the marker assemblies to the planter frame.

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

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

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

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

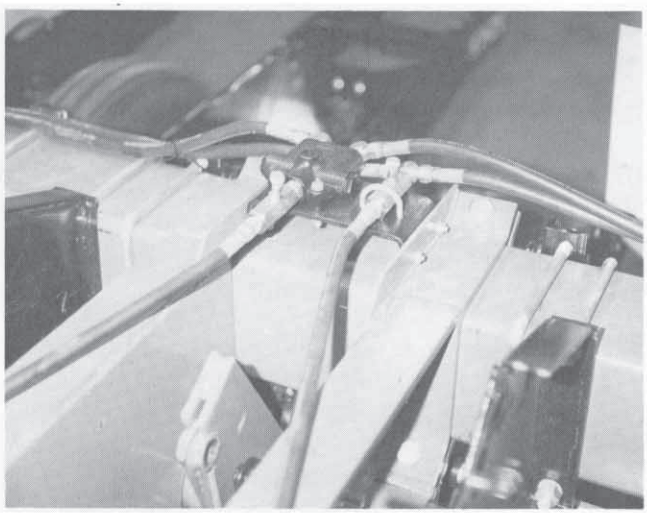
NOTE: We recommend that you do not connect the rod end of the cylinder to the second stage until the hydraulic hoses have been assembled and cycled.

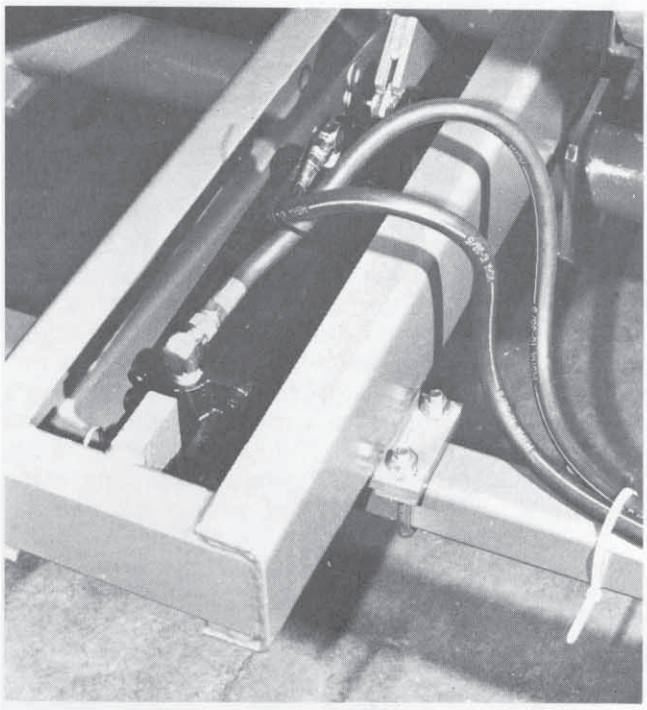
7. Remove the plugs from all cylinder ports. Depending upon the planter model you are assembling, see Hydraulic System pages in the Parts Section of this manual for fitting and hose information.

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

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

NOTE: The flow controls must be mounted so the arrows point toward the tractor.





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

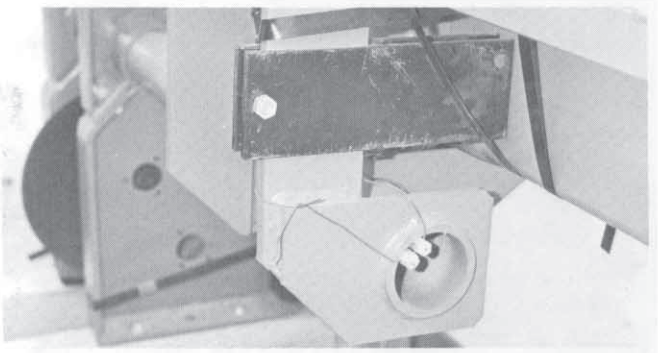
NOTE: The 8 row 30" model uses two lift cylinders connected by four 3/8" x 76" hydraulic hoses and two tube tee fittings.

10. Attach 3/8" hydrualic hoses to lift cylinders.

NOTE: Fittings should be at angles to allow for movement during operation.

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

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



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

13. Prime the hydraulic system

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

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

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

NOTE: The flow controls must be mounted with the arrows pointed toward the tractor.

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

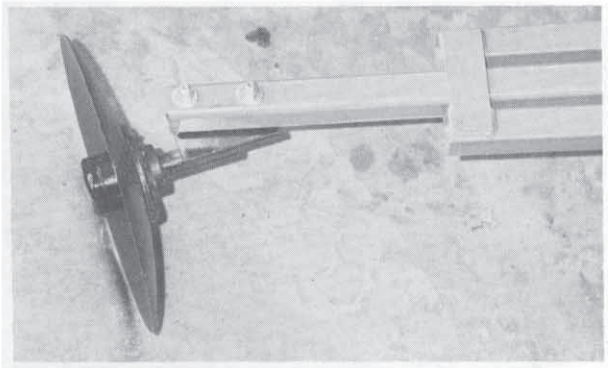
16. Attach the 16" blade to the hub using the preinstalled bolts. Be sure to alternate bolts while tightening to avoid distorting the blade's shape or breaking the marker hub.

NOTE: 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 to throw more or less dirt.

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

17. Marker Adjustment
    To determine the correct length at which to set the marker assemblies, multiply the number of rows by the row spacing in inches. This provides the total planting width. Then adjust the marker extension so that the distance from the marker 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
6 x 30" = 180" marker dimension		



ROW UNIT

See Kinze Row Unit Manual for row unit mounting instructions.

NOTE: On some models with dry fertilizer the fertilizer hopper mounts must be installed prior to installation of row units. See Hopper Installation Instructions in Assembly Section of this manual.

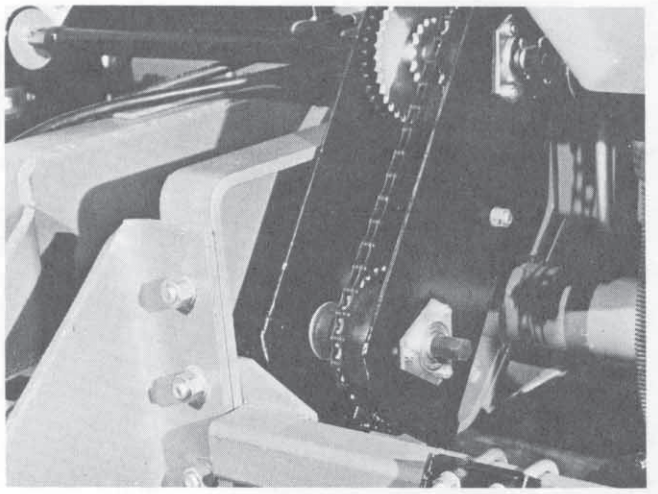
DRY AND LIQUID FERTILIZER ATTACHMENT

Fertilizer Bar Installation

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

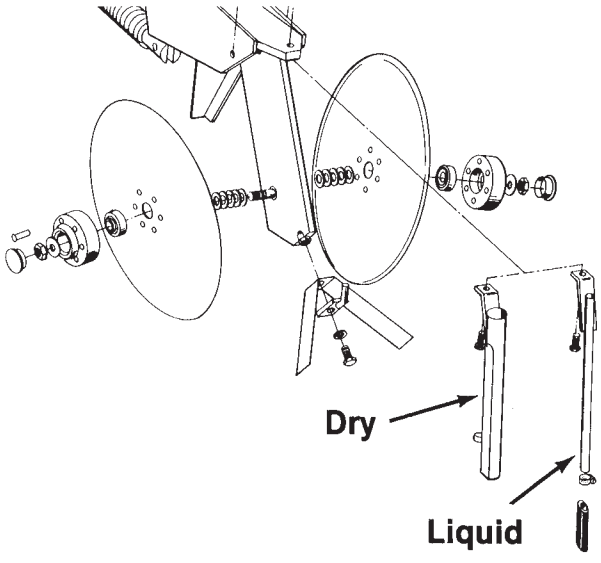
2. Lift right and left bar assemblies into position and attach inside end of each bar to hitch assembly and side panel with two existing hitch mounting bolts on each side.

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



Double Disk Openers

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



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

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

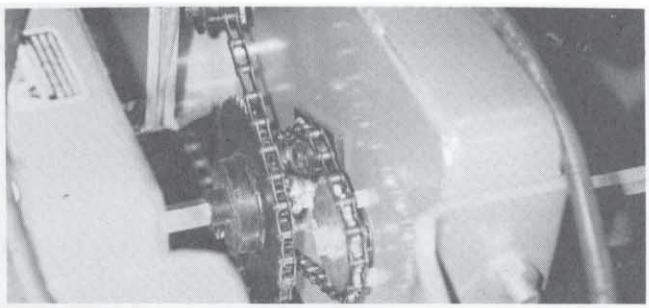
WARNING: Do not operate the double disk openers at full down pressure tension when planting in rocky ground. Chipping of the disk blades may occur.

Dry Fertilizer Transmission And Drive 2 Row, 4 Row and 6 Row Models:

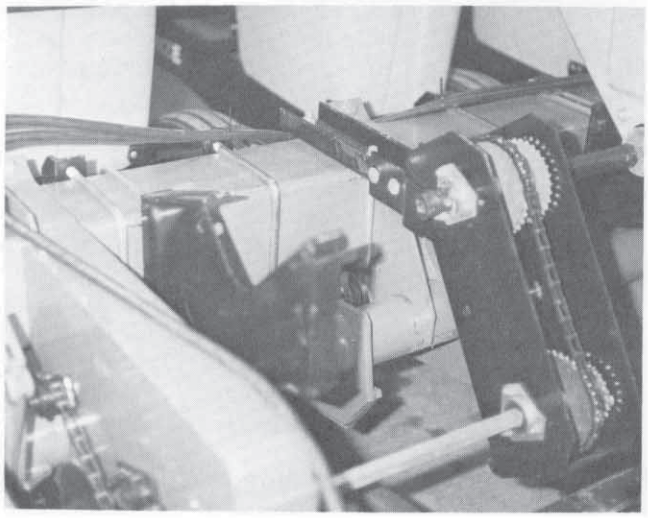
1. Assemble three 7/8" hex bore bearings and six flangettes and install on the center section side panels - two sets on the outside of the left panel and one set on the inside of the right panel rear hole.

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

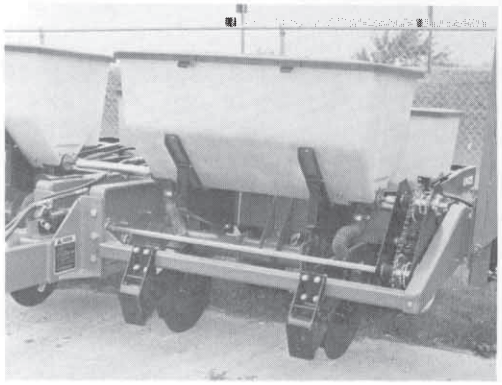
3. Install single spool chain idler to inside of left center section side panel (in hole provided to the rear of the jackshaft) with 1/2" x 3" carriage bolt, internal/external washer, lock washer and hex nut.



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



5. Mount fertilizer transmission to frame using a 7" x 7" U-bolt, flat washers, lock washers and hex nuts and mounting bracket. On 4 row wide and 6 row models mount the transmission just to the left of the center section. On the 4 row 30 model mount the transmission to the left end of the frame. Refer to Dry Fertilizer Drive and Dry Fertilizer Coupler pages in Parts Section of this manual for additional information.



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

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

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

9. Install single spool chain idler to left side panel with 1/2" x 1 1/2" carriage bolt, internal/external washer, lock washer and hex nut.

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

11. Install 44 link drive chain between drive and driven sprockets within the transmission. Pivot idler bracket to sufficient chain tension and tighten idler mounting bolt.

8 Row Models:

1. Assemble four 7/8" hex bore bearings and eight flangettes and install on the center section side panels - one set on the inside right panel in the rear hole and the other three sets on the outside of the panels.

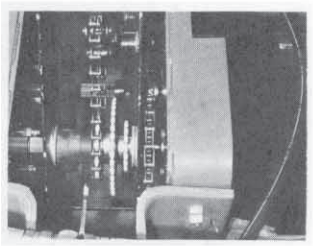
2. Install 7/8" x 10" hex jack shaft through left rear panel bearing and slide two 24 tooth sprockets, and 7/8" lock collar onto shaft. Then extend shaft on through right side panel bearing. Install cotter pin through left end of shaft, slide all components tight against left sidewall and tighten lock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

3. Install single spool chain idler to inside of left center section side panel (in hole provided to the rear of the jackshaft) with 1/2" x 3" carriage bolt, internal/external washer, lock washer and hex nut.

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

5. Attach transmission between center section side panels using 5/8" x 8 1/2" HHCS, flat washers, lock washers and hex nuts and mounting brackets. Do not tighten mounting bolt, at this time. Refer to the Dry Fertilizer Drive pages in Parts Section of this manual for more information.

6. Install 7/8" x 12" lower transmission shaft through bearing in left side panel and through 48 tooth sprocket. Then extend shaft on through left transmission side panel, two flat washers, 36/18 tooth sprocket, 24 tooth sprocket, and additional flat washer and finally through the right transmission and center section side panels.



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

8. Install single spool chain idler to left side panel with 1/2" x 1 1/2" carriage bolt, internal/external washer, lock washer and hex nut.

9. Install 32 link drive chain between jackshaft drive sprocket and 48 tooth sprocket located on lower transmission shaft between transmission case and left hitch mount plate. Pivot idler to maintain proper tension.

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

11. Install 44 link drive chain between drive and driven sprockets within the transmission. Pivot idler bracket to sufficient chain tension and tighten idler mounting bolt.

Hopper Installation

1. Install the hopper mounting brackets on planter frame so hoppers will be centered over every two rows. Do not tighten attachment hardware at this time.

NOTE: If heavy duty down pressure springs are to be used on the row units of your planter, the fertilizer hopper mounting U-bolts will be located between the down pressure spring support plate and the tool bar. We recommend installing the fertilizer hopper mounting U-bolts prior to mounting the row units in this case.

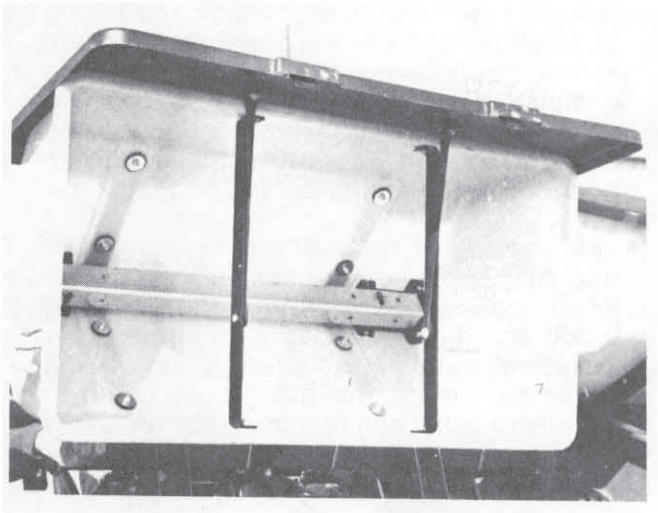
2. Remove the cotter pin and flat washer from one end of the fertilizer shaft and slide the entire assembly through the outlet housing into the hopper. Secure in place by reinstalling the washer and cotter pin. Check rotation to make sure the auger springs will carry fertilizer to the outer ends of the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

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

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

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

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

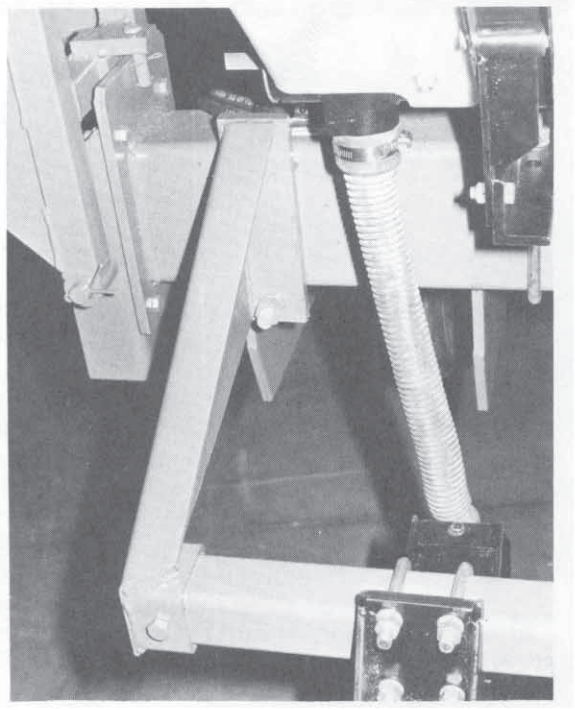


7. Install coupler/drive shafts beginning at the transmission and working outward toward each end. Refer to Dry Fertilizer Coupler pages in Parts Section of this manual for coupler sizes and locations. Slide the square end of the coupler over the auger shaft so that at least 3/4" of the shaft extends into the coupler. Attach opposite end of the coupler/drive shaft and round insert with 3/16" cotter pin. Four holes in the auger shaft allows for 1 1/2" or 3" to extend beyond the end of the hopper. In most installations the short end is toward the transmission. On coupler/drive shafts between two hoppers, a square insert is used in place of the round insert. Make sure all coupler/drive shafts are installed with the cotter pin nearest the transmission.

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

9. Align all hoppers and the transmission both horizontally and vertically. Loosen hardware that mounts transmission and transmission mounting bracket. Position transmission so that the lower transmission shaft is properly aligned and the chain fits the sprockets correctly. Snug, DO NOT TIGHTEN, nuts. Loosen mounting hardware for hoppers and hopper mounting brackets. Rotate hoppers and hopper mounting brackets. Rotate hoppers on pins to bring the hopper shafts into close alignment with the transmission shaft. Rotate the transmission about the shaft to complete alignment. Tighten hardware that mounts transmission mounting bracket and hopper mounting brackets. Tighten hardware that mounts transmission and hoppers.

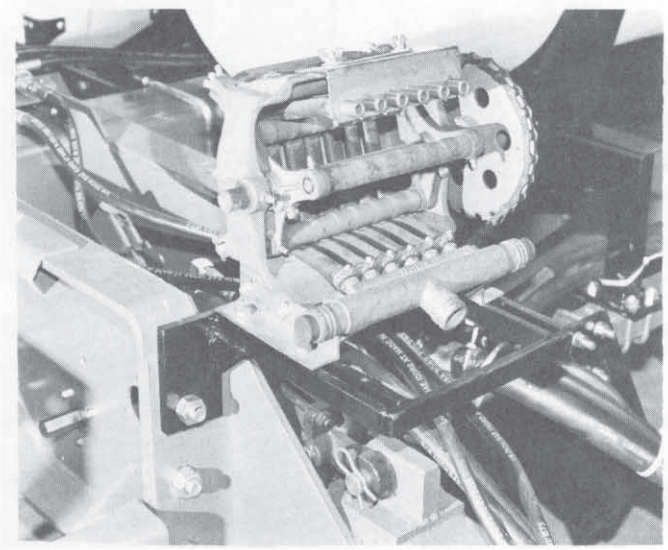
   The position of the fertilizer hopper mounting brackets can be changed slightly by loosening one of the nuts on the mounting U-bolt and drawing the one up tighter. This will allow the bracket to rotate slightly. Using a hammer, move the bracket up or down slightly to aid in aligning hopper shafts. This may be necessary on 4 row wide models.



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

Liquid Fertilizer Squeeze Pump and Drive Installation

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



2. Assembly two 7/8" hex bore bearings and flangettes and install on the inside rear holes of both right and left center section side panels.
3. Install 7/8" x 16" hex shaft through left side panel bearing and slide 3/4" spacer, 24 tooth sprocket and 7/8" lock collar onto the shaft. Extend shaft on through bearing in right side panel leaving approximately 5" - 6" exposed on the outboard side of the left panel. Slide lock collar up against sprocket and tighten.

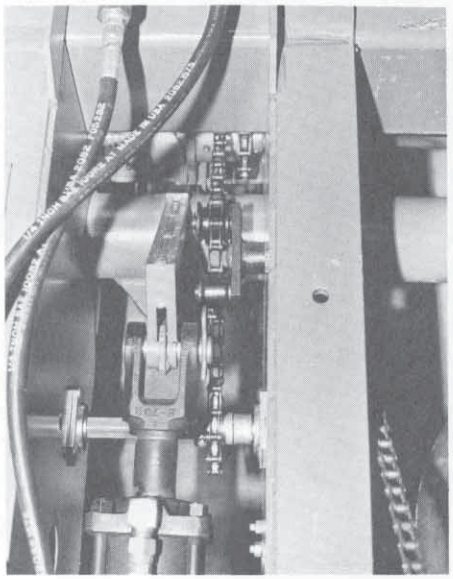
4. Install lock collar, squeeze pump sprocket adapter, selected drive sprocket and sprocket retainer on the left end of hex drive shaft. Slide lock collar against left center section and tighten.

5. Install chain idler to inside of left center section side panel (in hole provided) with 1/2" x 3" carriage bolt, internal/external washers, flat washer, lock washer and hex nut.

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

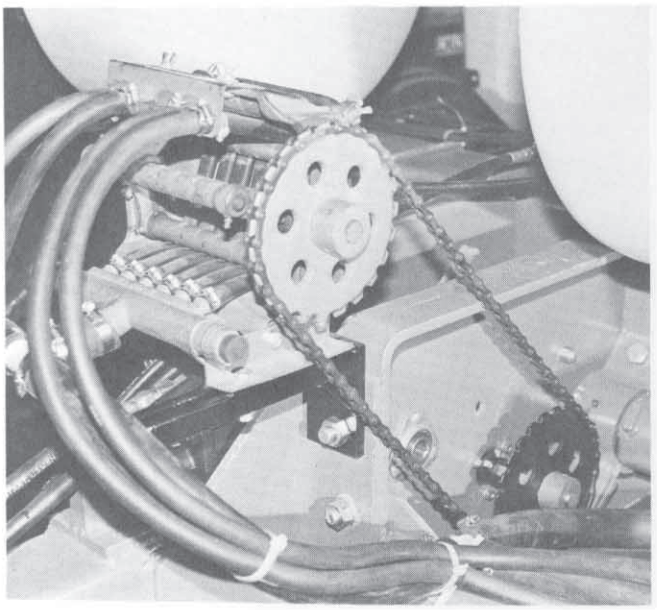
7. Attach squeeze pump to mounting bracket with four 7/16" x 2" cap screws, lock washers, flat washers and hex nuts. Do not tighten at this time.

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



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

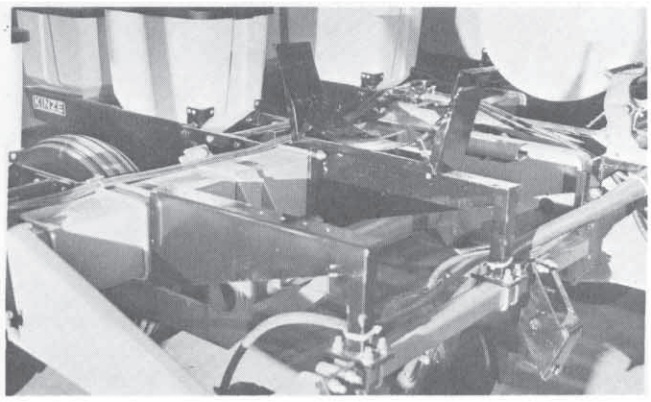
9. Slide squeeze pump forward to obtain approximately 1/4" deflection on the drive chain.



Tank And Hose Installation

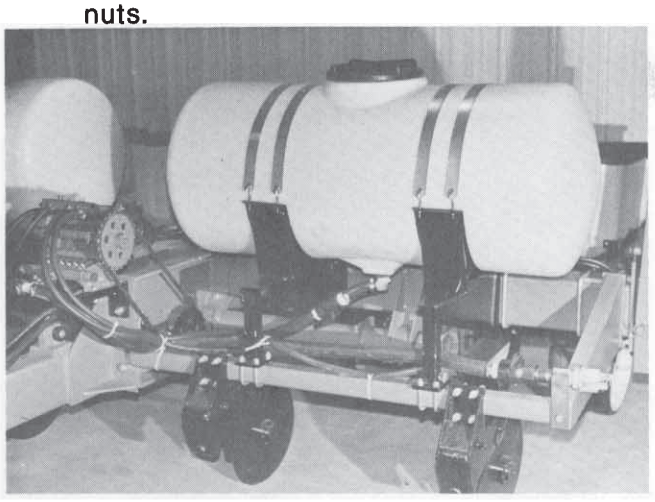
1. Attach two tank saddle brackets for each tank on toolbar using 1/2" U-bolts around fertilizer bar and 5/8" U-bolts around toolbar.

2. Attach tank saddle to tank saddle bracket with four 1/2" x 1 1/2" cap screws, lock washers and hex nuts.



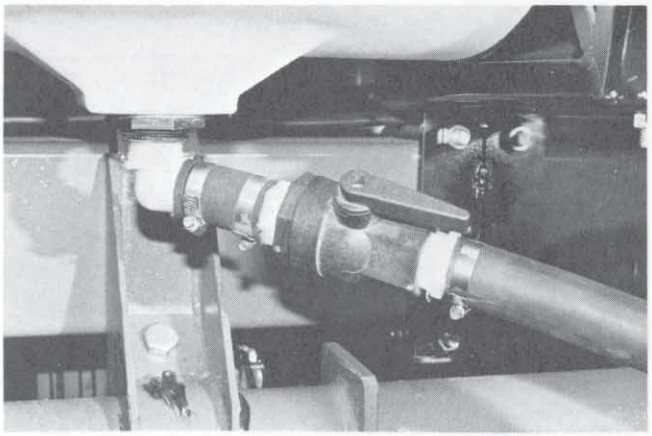
3. Install outlet elbow in bottom of each tank.

4. Install tanks and pads on tank saddles and straps and J-bolts, lock washers and hex nuts.



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

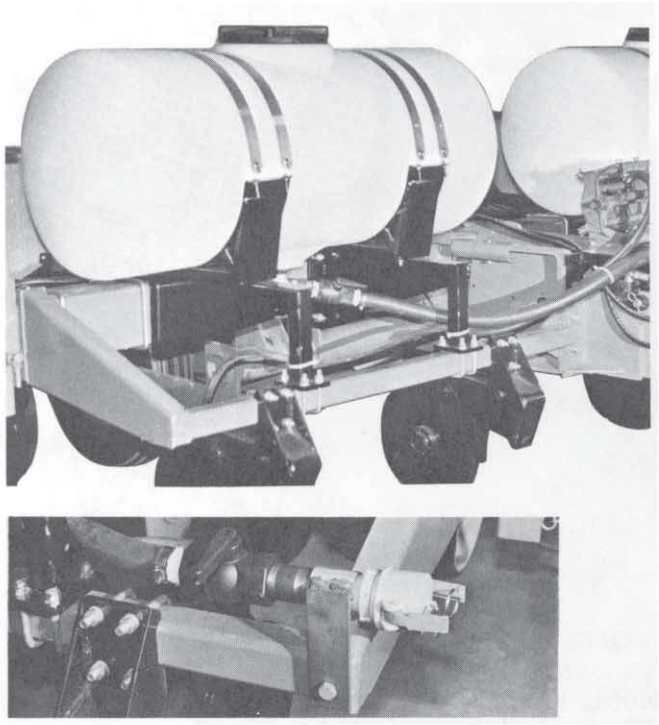
NOTE: The 1 1/4" hose for connecting tanks to squeeze pumps is provided in a roll and must be cut to length. Attach hose to each fitting or connection with hose clamps provided.



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

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

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



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

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

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

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

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

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

FINAL INSPECTION

☐ Lubricate per instructions.

☐ Check for loose hydraulic hoses and fittings.

☐ Check for loose bolts, nuts, etc.

☐ Check all drive chains for proper alignment and tension.

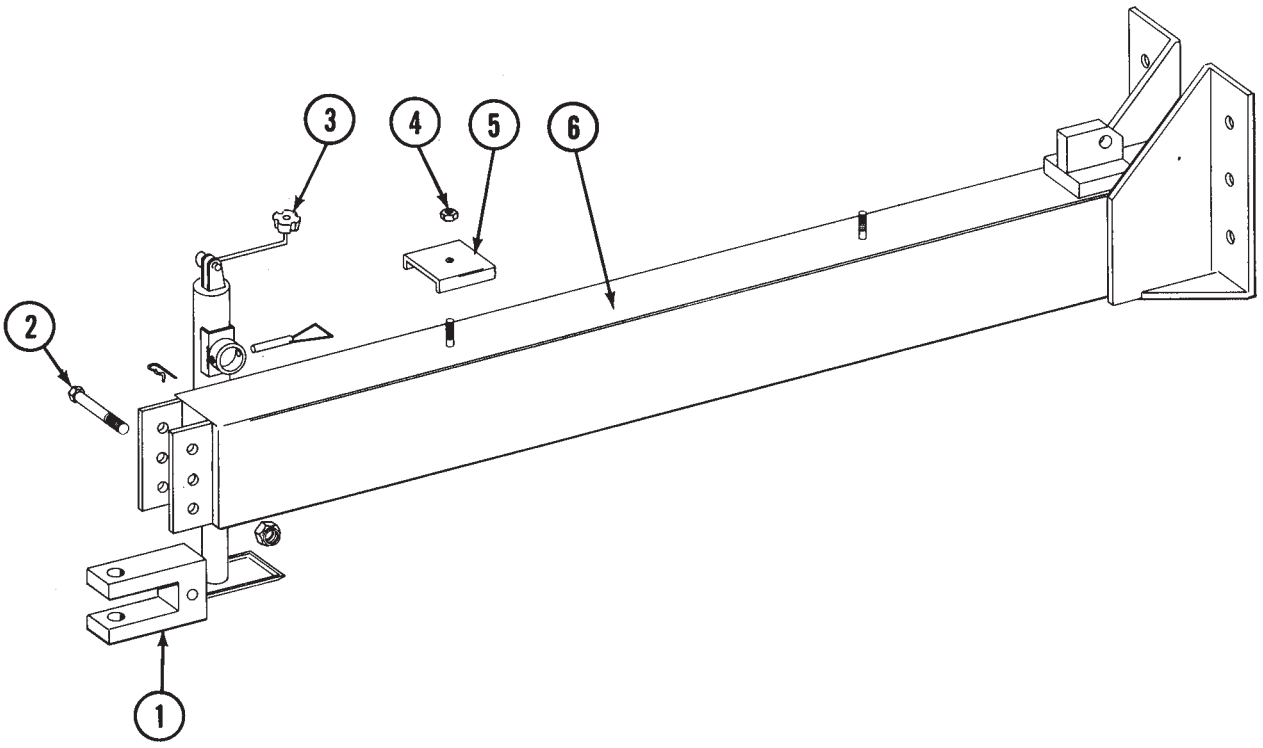
☐ Make sure all drive shafts and idlers rotate freely and do not bind.

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

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

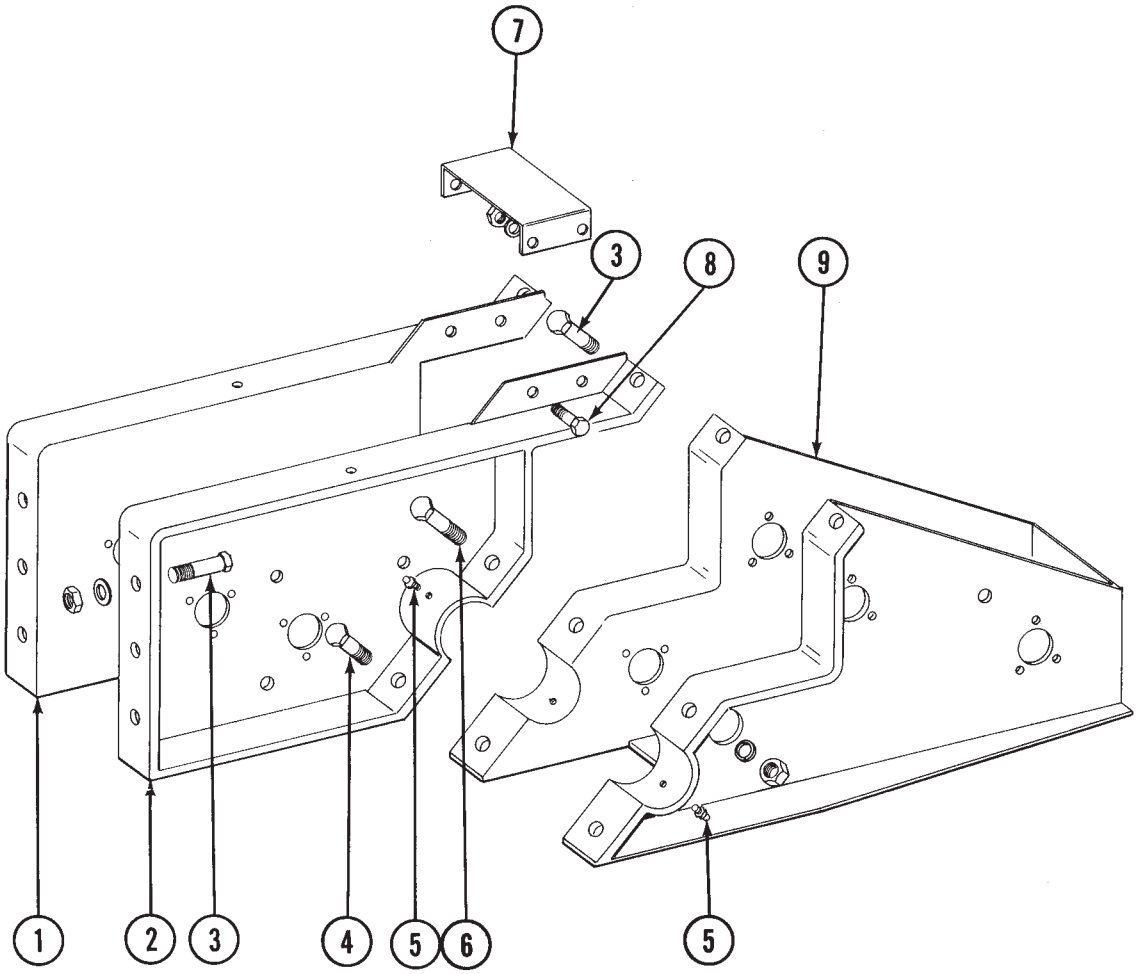
Parts List Index

HITCH ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	A346	Clevis
2.	10029	HHCS, 3/4" - 10 x 4 1/2"
	10112	Lock Nut, 3/4" - 10
3.	4100-1A	Jack (Shown)
	R255	Repair Kit (Pin and Chain)
	4100-1B	Jack
	R765	Repair Kit, Pin
4.	10111	Lock Nut, 1/2" - 13
5.	D740	Clamp, Hose
6.	A788	Hitch

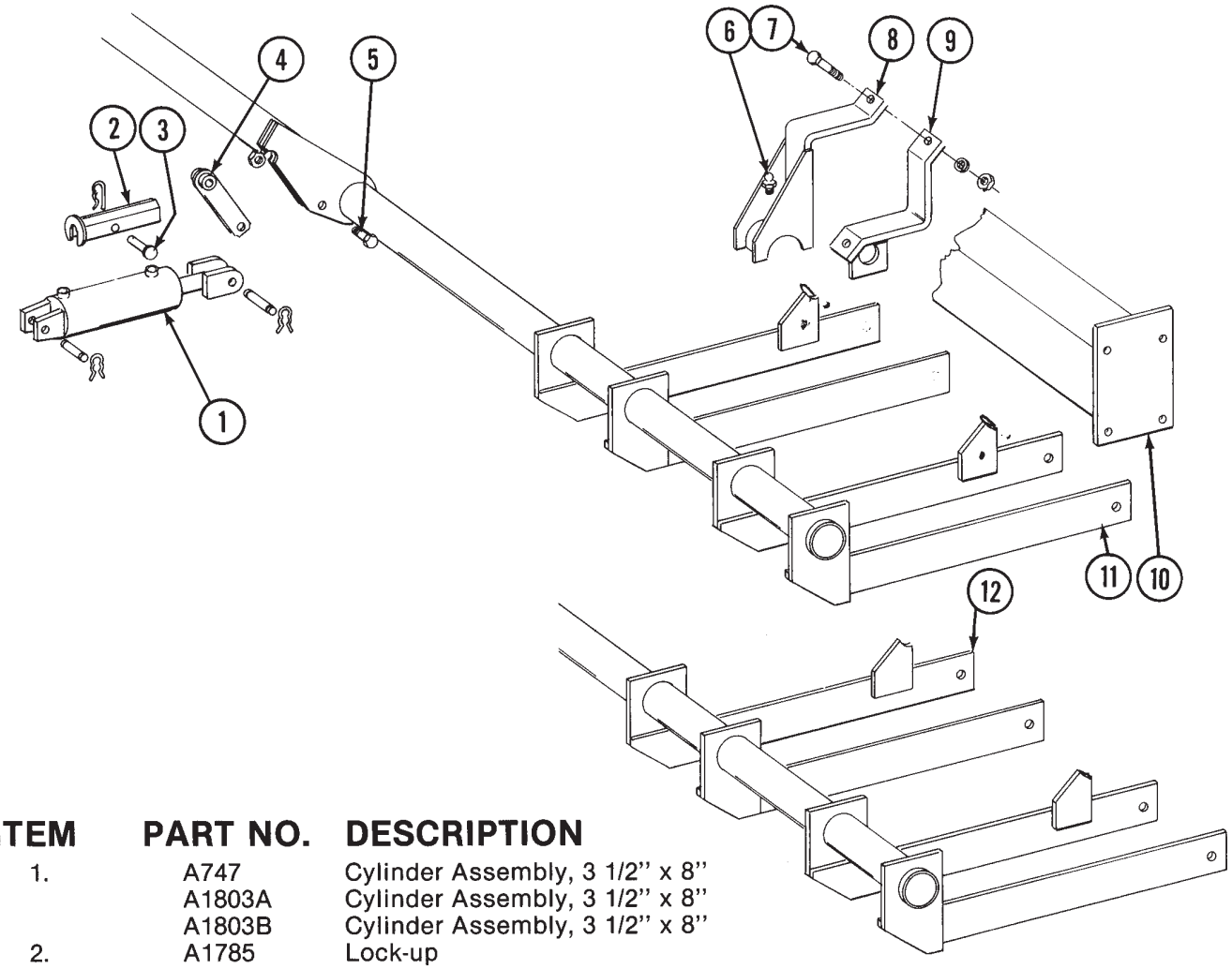
HITCH MOUNT ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	A808	Hitch Mount, R.H.
2.	A809	Hitch Mount, L.H.
3.	10027	HHCS, 3/4" - 10 x 2 1/2"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
4.	10026	HHCS, 3/4" - 10 x 2"
	10112	Lock Nut, 3/4" - 10
5.	10641	Fitting, Grease, 1/8" NPT
6.	10028	HHCS, 3/4" - 10 x 3"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
7.	D965	Plate, Valve
8.	10019	HHCS, 5/16" - 18 x 1" 4 Row 30, 4 Row Wide, 6 Row 30
	10133	HHCS, 5/16" - 18 x 1 1/2", 6 Row Wide and 8 Row 30
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
9.	A350	Case, Transmission

FRAME AND AXLE ASSEMBLY

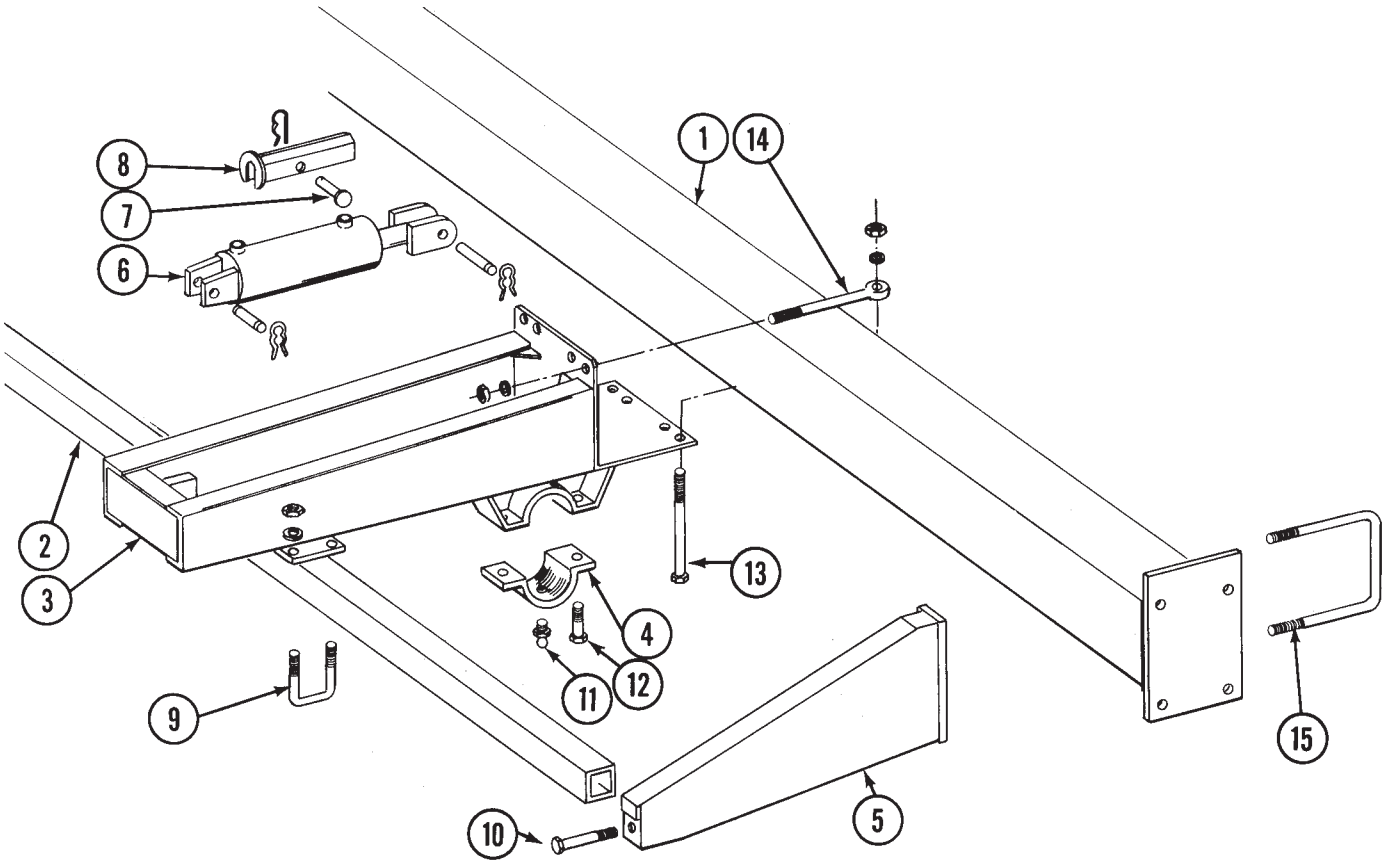
2 Row,
4 Row 30", 4 Row Wide
6 Row 30", 6 Row Wide



ITEM	PART NO.	DESCRIPTION
1.	A747	Cylinder Assembly, 3 1/2" x 8"
	A1803A	Cylinder Assembly, 3 1/2" x 8"
	A1803B	Cylinder Assembly, 3 1/2" x 8"
2.	A1785	Lock-up
3.	10561	Clevis Pin, 1/2" x 3"
	10670	Clip Pin, No. 3
4.	A341	Mount, Cylinder
5.	10017	HHCS, 1/2" - 13 x 1 1/2"
	10111	Lock Nut, 1/2" - 13
6.	10641	Fitting, Grease, 1/8" NPT
7.	10027	HHCS, 3/4" - 10 x 2 1/2"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
8.	A335	Axle Clamp, Front
9.	A333	Axle Clamp, Rear, L.H. (Shown)
	A332	Axle Clamp, Rear, R.H.
10.	A336	Frame, 128", 4 Row 30
	A524	Frame, 136", 4 Row Wide
	A525	Frame, 169", 6 Row 30
	A526	Frame, 214", 6 Row Wide
	A2500	Frame, 90 1/2", 2 Row
11.	A338	Axle, 74", 4 Row 30
	A352	Axle, 90", 4 Row Wide
	A354	Axle, 134", 6 Row 30
	A356	Axle, 166", 6 Row Wide
12.	A2424	Axle, 74", 4 Row 30
	A2425	Axle, 90", 4 Row Wide, 2 Row Wide
	A2426	Axle, 134", 6 Row 30
	A2427	Axle, 166", 6 Row Wide

FRAME ASSEMBLY

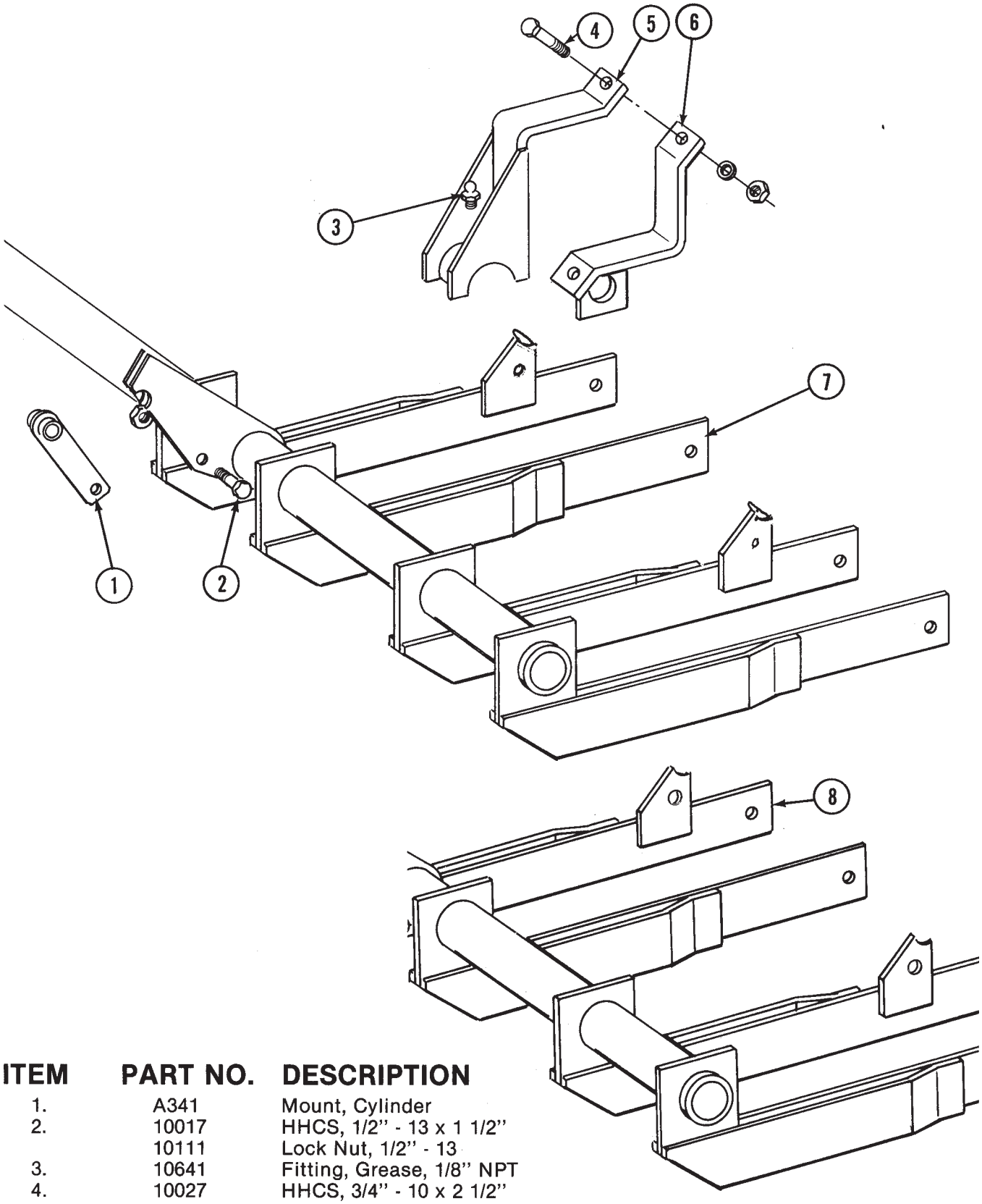
8 Row 30"



ITEM	PART NO.	DESCRIPTION
1.	A527	Frame, 229"
2.	A877	Bar, Fertilizer
3.	A880L	Bracket, Cylinder Mounting, L.H.
	A880R	Bracket, Cylinder Mounting, R.H.
4.	A663	Clamp, Half
5.	A1872	Support, Fertilizer, R.H.
	A1873	Support, Fertilizer, L.H. (shown)
6.	A1803A	Cylinder Assembly, 3 1/2" x 8"
	A1803B	Cylinder Assembly, 3 1/2" x 8"
	A747	Cylinder Assembly, 3 1/2" x 8"
7.	10561	Clevis Pin, 1/2" x 3"
	10670	Clip Pin, No. 3
8.	A1785	Lock-Up
9.	10339	U-Bolt, 2 1/2" x 2 1/2" x 1/2" - 13
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
10.	10035	HHCS, 1/2" - 13 x 4"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
11.	10641	Fitting, Grease, 1/4"
12.	10027	HHCS, 3/4" - 10 x 2 1/2"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
13.	10030	HHCS, 3/4" - 10 x 9"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
14.	D830	Eye Bolt, 3/4" - 10 x 9"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
15.	D1748	U-bolt, 7" x 7" x 3/4" - 10
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10

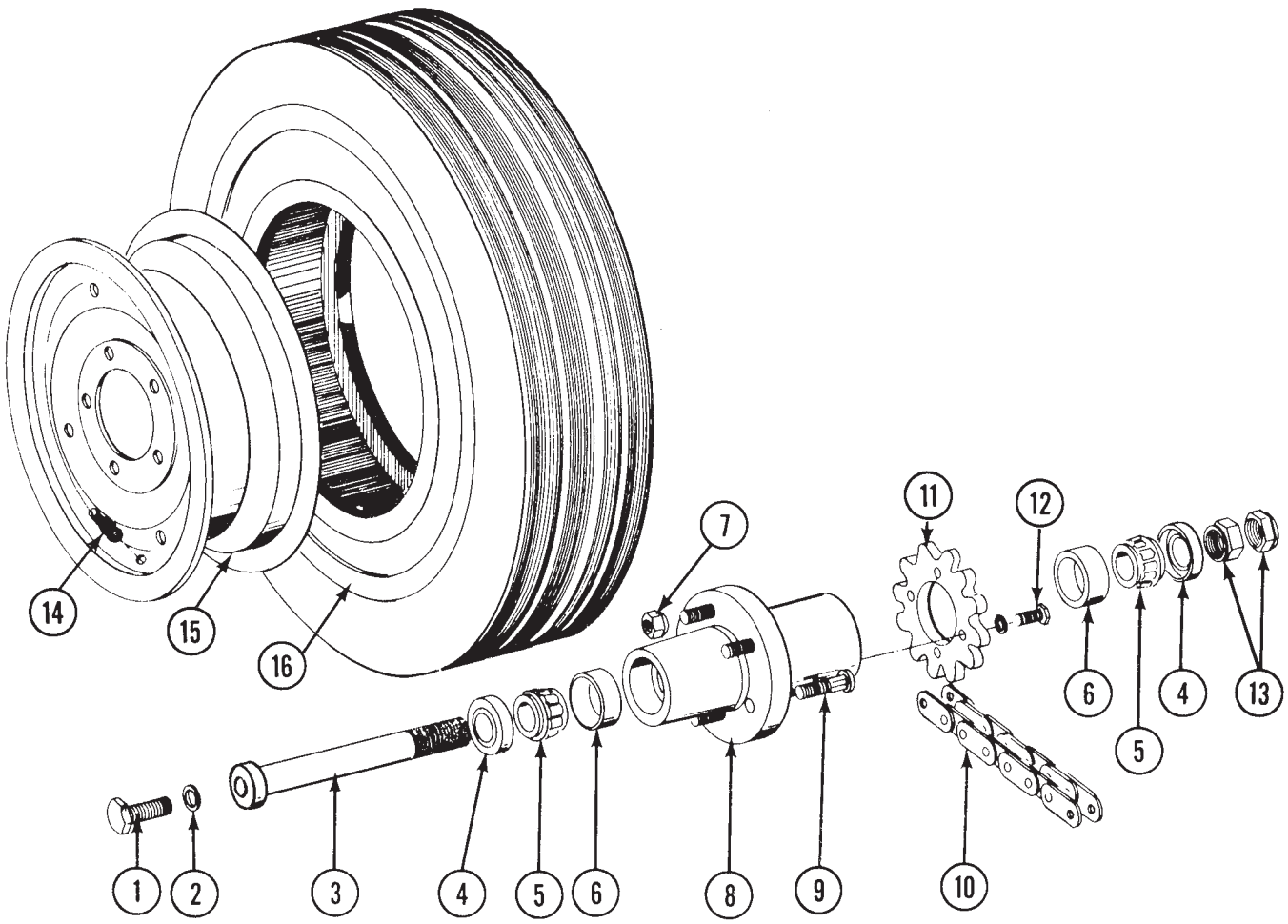
AXLE ASSEMBLY

8 Row 30"



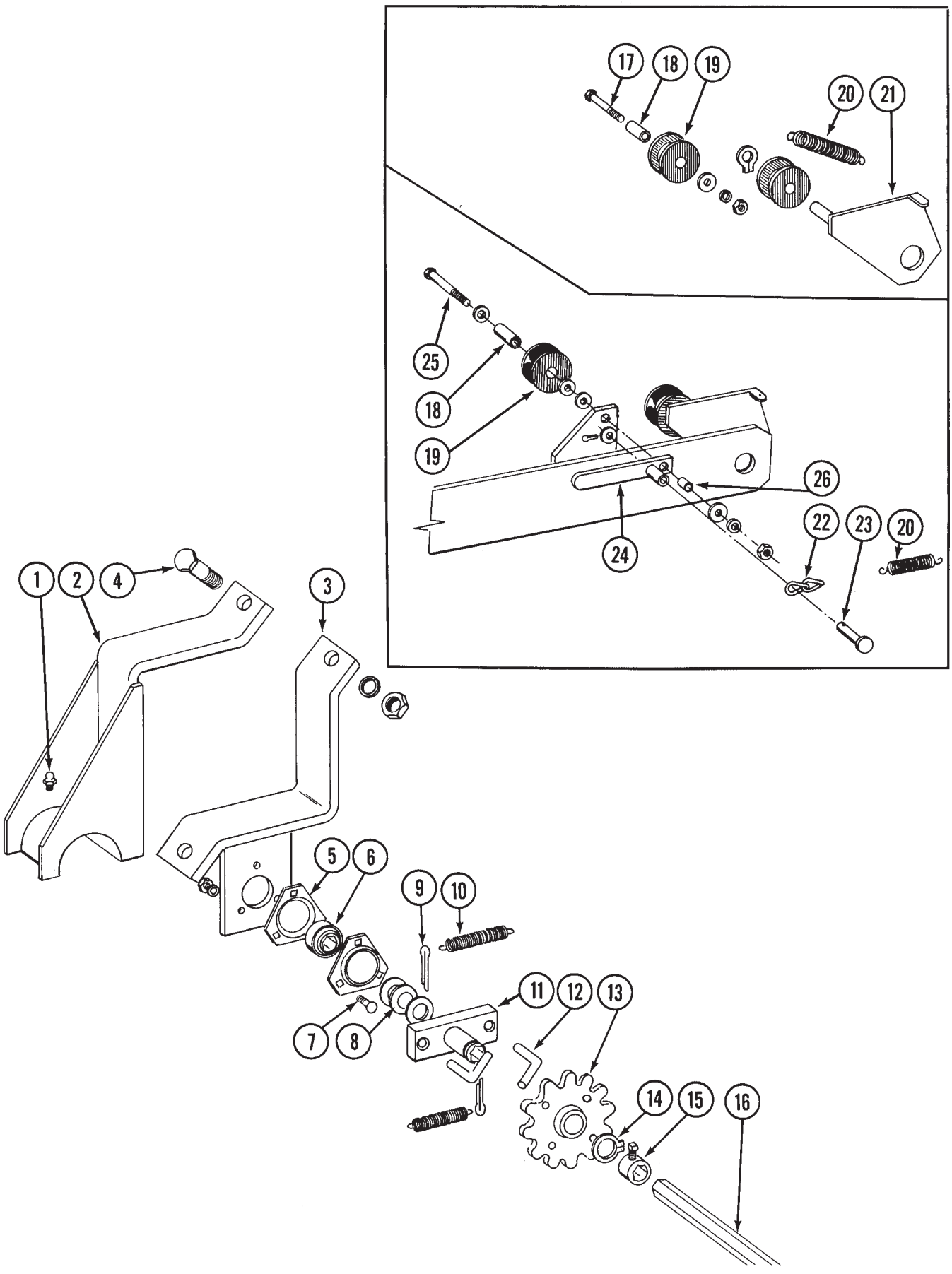
ITEM	PART NO.	DESCRIPTION
1.	A341	Mount, Cylinder
2.	10017	HHCS, 1/2" - 13 x 1 1/2"
	10111	Lock Nut, 1/2" - 13
3.	10641	Fitting, Grease, 1/8" NPT
4.	10027	HHCS, 3/4" - 10 x 2 1/2"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
5.	A335	Axle Clamp, Front
6.	A332	Axle, Clamp, Rear, R.H.
	A333	Axle, Clamp, Rear, L.H. (Shown)
7.	A661	Axle, 194"
8.	A2428	Axle, 194"

DRIVE GAUGE WHEEL ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	10026	HHCS, 3/4" - 10 x 2"
2.	10231	Lock Washer, 3/4"
3.	A2257	Spindle
4.	A252	Seal, Grease
5.	A251	Bearing
6.	R190	Cup
7.	R267	Nut, 1/2" - 20 UNF
8.	A547	Hub, w/Cups and Studs
9.	R204	Stud, 1/2" - 20 UNF x 1 7/8"
10.	3200-58	Chain, No. 2050, 58 Pitch Including Connector Link
	3200-6	Chain, No. 2050 (Add to chain when using extended drill sprocket)
	R195	Connector Link, No. 2050
11.	2500-17	Sprocket, Bolt-on, 12 Tooth
12.	10019	HHCS, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
13.	D831	Nut, Shoulder, 1 1/4"
14.	D1166	Valve Stem
15.	A241	Wheel, 15" x 5, 5 bolt
16.	D844	Tire, 7.60 x 15", 4 ply
A.	A683	Drive Hub Assembly (Items 1-9 and 11-13)
B.	A374	Tire and Rim Assembly, 7.60 x 15" (Items 14-16)

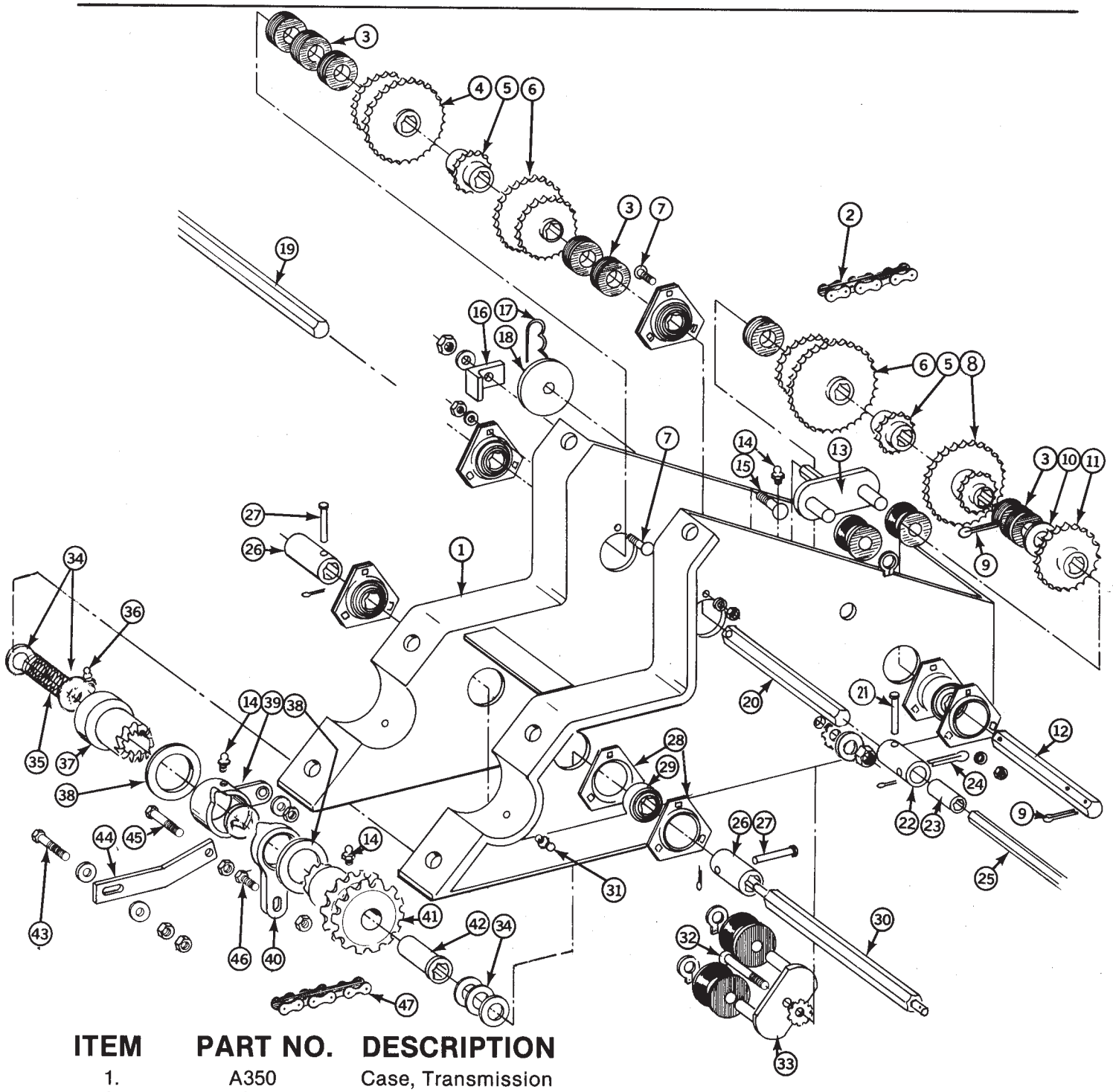
DRIVE LINE



DRIVE LINE

ITEM	PART NO.	DESCRIPTION
1.	10641	Fitting, Grease, 1/8" NPT
2.	A335	Axle Clamp, Front
3.	A332	Axle Clamp, Rear, R.H. (Shown)
	A333	Axle Clamp, Rear, L.H.
4.	10027	HHCS, 3/4" - 10 x 2 1/2"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
5.	3400-1	Flangette
6.	2100-3	Bearing, 7/8" Hex Bore
7.	10312	Carriage Bolt, 5/16" - 18 x 3/4"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
8.	10233	Bushing, Machinery, as required
9.	10464	Cotter Pin, 3/16" x 1"
10.	D1256	Spring
11.	A378	Block and Hub Assembly
12.	D1255	"L" Pin
13.	A376	Hub/Sprocket Assembly
14.	10430	Ring, Retaining
15.	D917	Lock Collar, Less Set Screws
	10145	Set Screw, 5/16" - 18 x 1/2"
16.	D914-25	Drive Shaft, 7/8" Hex, L.H. and R.H., 4 Row 30"
	D914-35	Drive Shaft, 7/8" Hex, L.H., 4 Row Wide, 2 Row
	D914-30	Drive Shaft, 7/8" Hex, R.H., 4 Row Wide, 2 Row
	D914-55	Drive Shaft, 7/8" Hex, L.H. and R.H., 6 Row 30
	D914-75	Drive Shaft, 7/8" Hex, L.H. and R.H., 6 Row Wide
	D914-85	Drive Shaft, 7/8" Hex, L.H. and R.H., 8 Row 30
17.	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
18.	D973	Bushing, Idler
19.	D916	Spool
20.	D913	Spring
21.	A821	Idler, L.H., with Spool and Ring
	A822	Idler, R.H. (Shown), with Spool and Ring
	10435	Ring
	D916	Spool
22.	3307-2	Chain, Twist Link
23.	10558	Clevis Pin, 5/16" x 1 3/4"
	10221	Washer, 5/16" SAE
	10452	Cotter Pin, 1/8" x 1/2"
24.	A2357	Arm, Drive Throw
25.	10062	HHCS, 3/8" - 16 x 3"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
26.	D2971-2	Sleeve, 9/32"
A.	A261L	Ratchet Assembly Complete, L.H. (Items 9 thru 14)
	A261R	Ratchet Assembly Complete, R.H. (Items 9 thru 14)
B.	1K125	Drive Throwout Kit (Items 22 thru 26)

TRANSMISSION ASSEMBLY



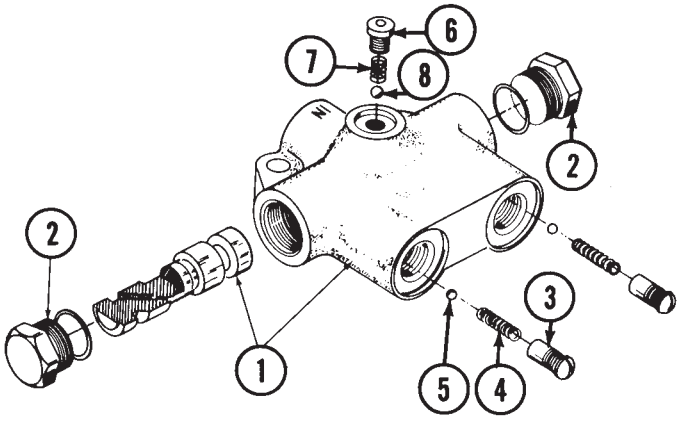
ITEM	PART NO.	DESCRIPTION
1.	A350	Case, Transmission
2.	3300-40	Chain, No. 2040, 40 Pitch Including Connector Link
	R194	Connector Link, No. 2040
3.	D832	Spacer, Rubber
4.	2500-6	Sprocket, 18T-28T
5.	2500-1	Sprocket, 14T
6.	2500-2	Sprocket, 22T - 26T
7.	10303	Carriage Bolt, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
8.	2500-3	Sprocket, 16T-30T
9.	10465	Cotter Pin, 1/4" x 1 1/4"
10.	10233	Bushing, Machinery, For use With Extended Drill Sprocket Only
11.	2500-14	Sprocket, 24T
	B138	Sprocket, 48T, Extended Drill

TRANSMISSION ASSEMBLY

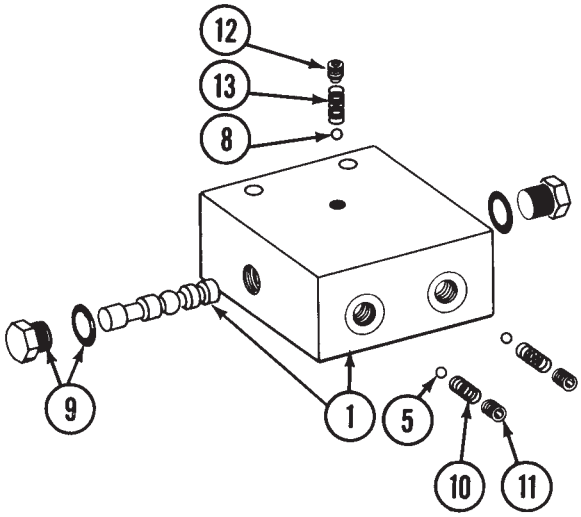
ITEM	PART NO.	DESCRIPTION
12.	D946	Shaft, 10 3/4"
13.	A503	Idler w/Spools and Rings
	D1067	Spool
	10435	Ring
14.	10640	Fitting, Grease, 1/4" - 28
15.	10301	Carriage Bolt, 3/8" - 16 x 1 1/2"
	10210	Washer, 3/8" USS
	10101	Hex Nut, 3/8" - 16
16.	D2495	Angle, Idler Lock
17.	10670	Hair Pin Clip, No. 3
18.	A1668	Tightener, Chain
19.	D739-10	Drill Shaft, 9/16" Hex R.H., 2 Row
	D739-40	Drill Shaft, 9/16" Hex R.H., 4 Row 30
	D739-50	Drill Shaft, 9/16" Hex, R.H., 4 Row Wide
	D739-67	Drill Shaft, 9/16" Hex, R.H., 6 Row 30"
	D739-90	Drill Shaft, 9/16" Hex, R.H., 6 Row Wide
	D739-100	Drill Shaft, 9/16" Hex, R.H., 8 Row 30"
20.	D926	Shaft, 11 1/2"
21.	10548	Clevis Pin, 1/4" x 1 3/4"
	10466	Cotter Pin, 1/16" x 1 1/2"
22.	D748	Coupler
23.	D747	Coupler, 9/16" Hex
24.	10462	Cotter Pin, 3/16" x 2"
25.	D739-20	Drill Shaft, 9/16" Hex, L.H., 2 Row
	D739-50	Drill Shaft, 9/16" Hex, L.H., 4 Row 30
	D739-60	Drill Shaft, 9/16" Hex, L.H. 4 Row Wide
	D739-77	Drill Shaft, 9/16" Hex, L.H. 6 Row 30
	D739-100	Drill Shaft, 9/16" Hex, L.H., 6 Row Wide
	D739-110	Drill Shaft, 9/16" Hex, L.H., 8 Row 30
26.	D1653	Coupler, 7/8" Hex
27.	10565	Clevis Pin, 5/16" x 2"
	10456	Cotter Pin, 1/8" x 3/4"
28.	3400-1	Flangette
29.	2100-3	Bearing, 7/8" Hex Bore
30.	D2576	Shaft, Clutch
31.	10641	Fitting, Grease, 1/8" NPT
32.	10305	Carriage Bolt, 3/8" - 16 x 1"
	10524	Lock Washer, Internal/External, 3/8"
	10210	Washer, 3/8" USS
	10101	Hex Nut, 3/8" - 16
33.	A2008	Idler w/Spools and Rings
	D1067	Spool
	10435	Ring
34.	10233	Bushing, Machinery
35.	D2962	Spring
36.	10643	Fitting, Grease, 45°, 1/4" - 28
37.	B158	Hub, Clutch
38.	10234	Washer, 2 5/32" I.D.
39.	B129	Cam, Floating
40.	B130	Cam, Fixed
41.	B157	Sprocket/Hub, 12T
42.	D2517	Bushing
43.	10048	HHCS, 3/8" - 16 x 2"
	10210	Washer, 3/8" USS
	10101	Hex Nut, 3/8" - 16
	10108	Lock Nut, 3/8" - 16
44.	D498	Bar, Linkage
45.	10047	HHCS, 3/8" - 16 x 1 3/4"
	10101	Hex Nut, 3/8" - 16
	10210	Washer, 3/8" USS
	10108	Lock Nut, 3/8" - 16
46.	10048	HHCS, 3/8" - 16 x 2"
	10108	Lock Nut, 3/8" - 16
47.	3300-52	Chain, No. 2040, 52 Pitch Including Connector Link
	R194	Connector Link, No. 2040
	3300-6	Chain, No. 2040, Add to Chain When Using Extended Drill Sprocket

SEQUENCING VALVE

Style A

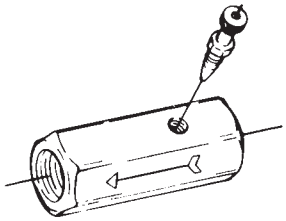


Style B



ITEM	PART NO.	DESCRIPTION
1.		Valve Body and Spool
2.	R271	Plug Assembly, O-Ring Boss
3.	R273	Retainer, Check Valve
4.	R277	Spring, Check Valve
5.	R275	Ball, Check 3/16" Diameter
6.	R274	Plug Assembly, O-Ring Boss
7.	R278	Spring
8.	R276	Ball, 1/4" Diameter
9.	R811	Plug Assembly, O-Ring Boss
10.	R812	Spring
11.	R813	Set Screw, Special
12.	10334	Hex Socket Pipe Plug, 1/16"
13.	R814	Spring
A.	A282A	Sequencing Valve, Complete, Style A
B.	A282B	Sequencing Valve, Complete, Style B

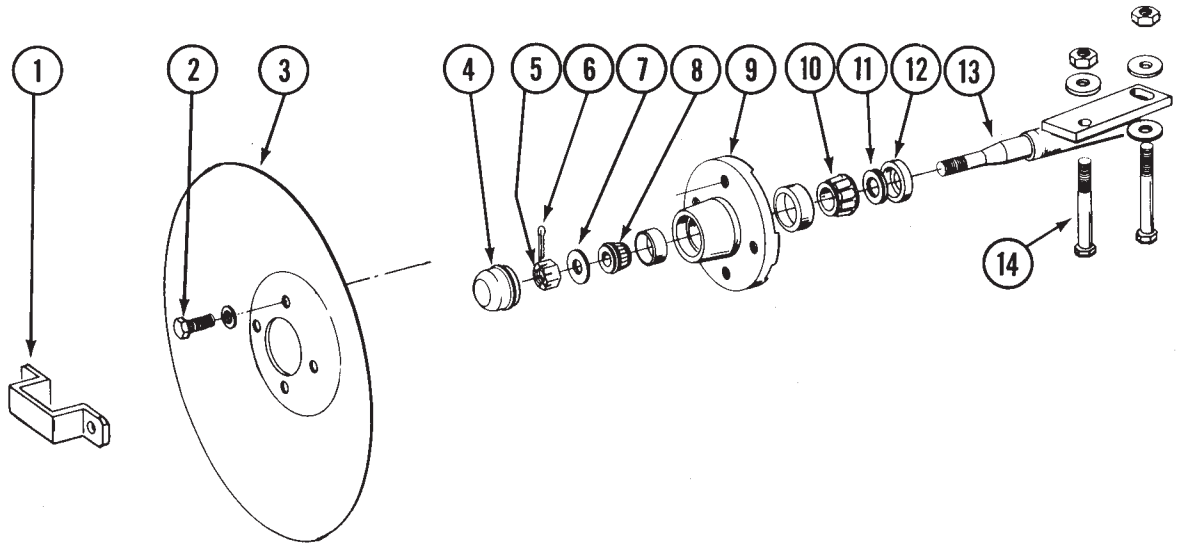
FLOW CONTROL VALVE



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

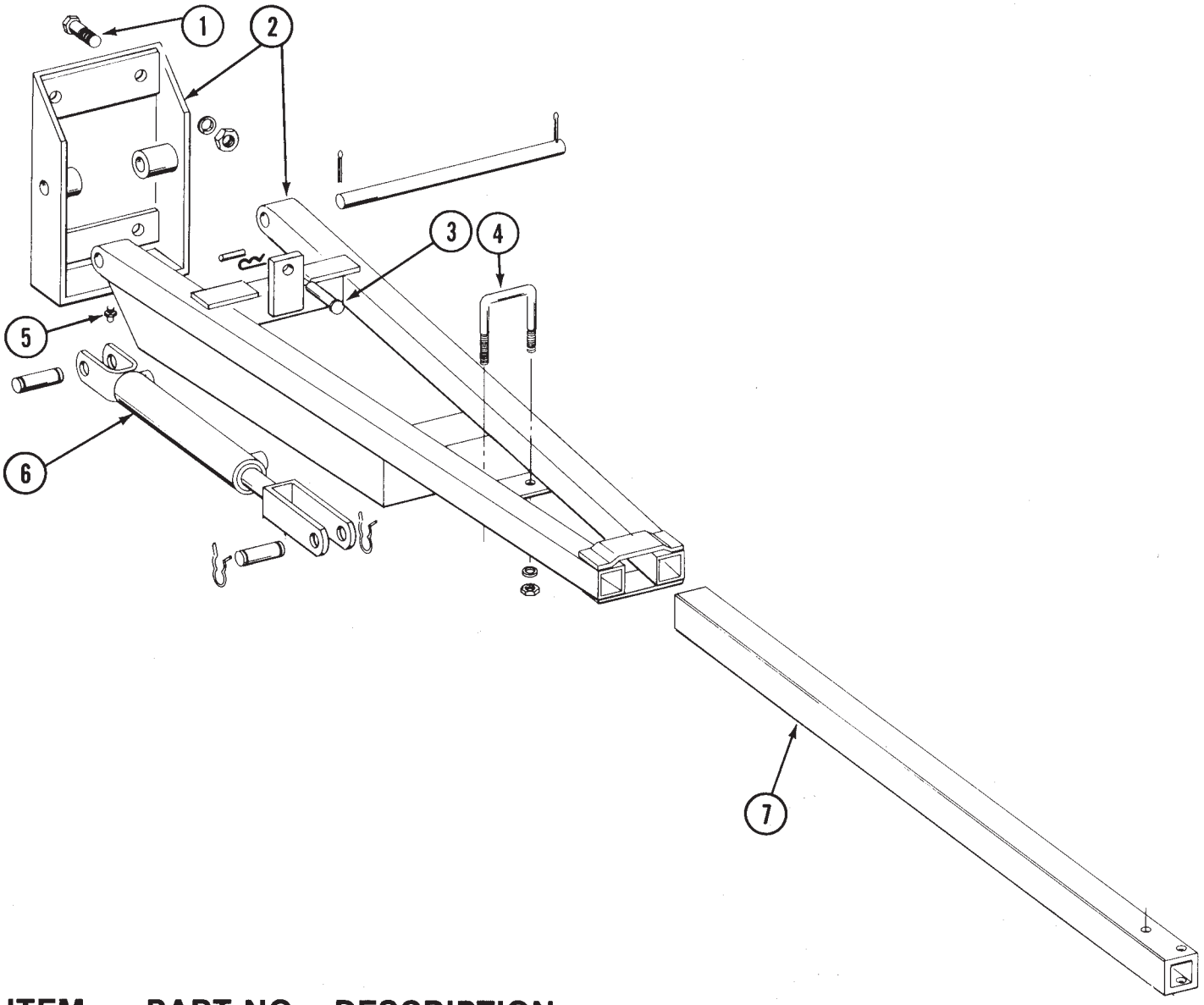
* To identify - RegoKLF375 stamped on valve body.
** To identify - Deltrol stamped on valve body.
*** To identify - Partrol stamped on valve body.

MARKER HUB ASSEMBLY



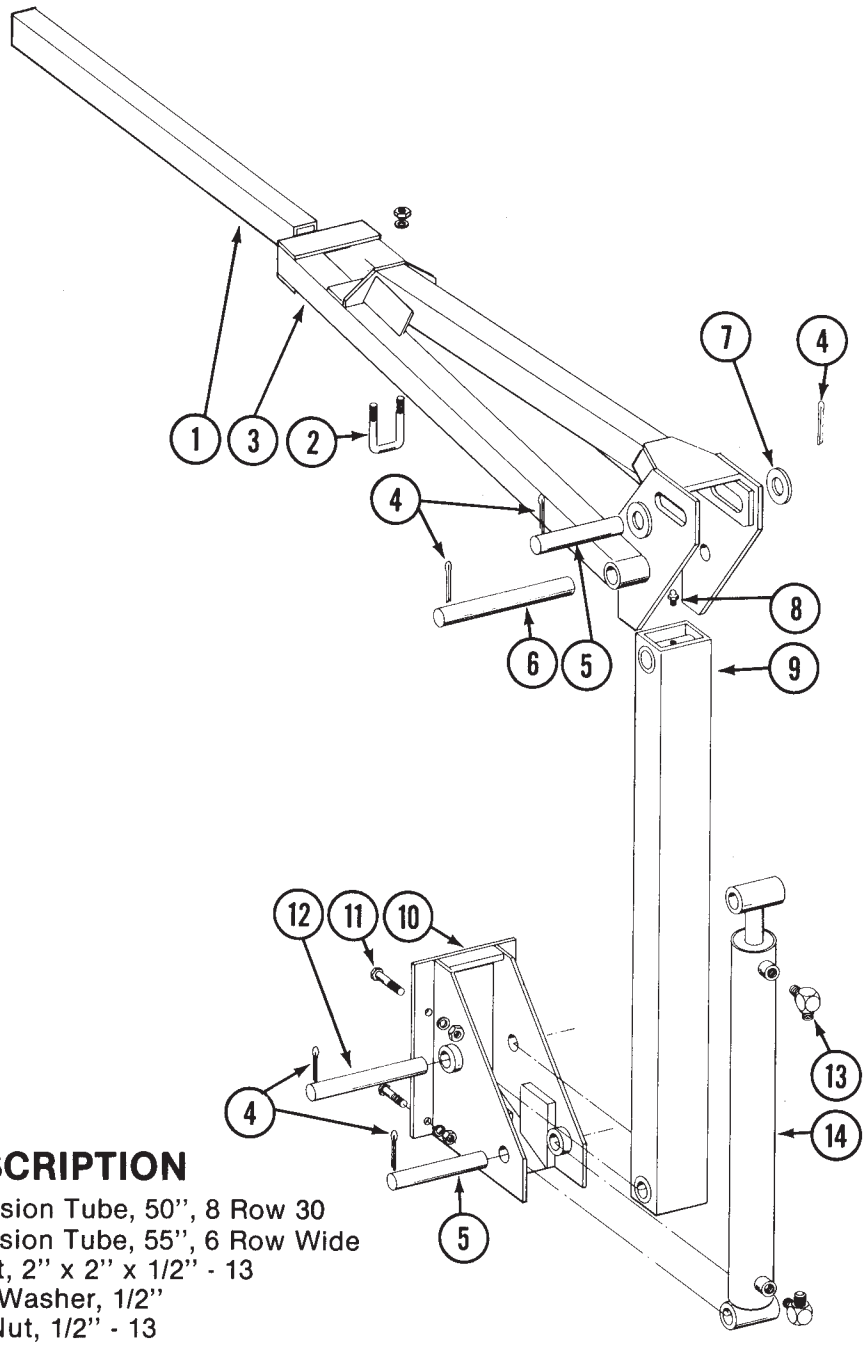
ITEM	PART NO.	DESCRIPTION
1.	D2597	Retainer
2.	10722	HHCS, 1/2" - 20 x 1"
	10228	Lock Washer, 1/2"
3.	D746	Blade, 16"
4.	D840	Cap
5.	10725	Hex Nut, Slotted, 5/8" - 18
6.	10470	Cotter Pin, 5/32" x 1"
7.	10724	Washer, 5/8"
8.	A257	Bearing, Outer
9.	A167	Hub w/cups
	R151	Cup, Outer
	R150	Cup, Inner
10.	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)

CONVENTIONAL MARKER ASSEMBLY



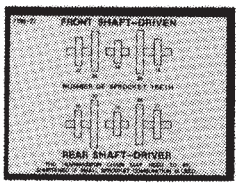
ITEM	PART NO.	DESCRIPTION
1.	10167	HHCS, 1/2" - 13 x 2", Grade 2
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
2.	A2292	Arm w/Mount and Pin, 45", 4 Row 30 and 4 Row Wide
	A2293	Arm w/Mount and Pin, 64", 6 Row 30
	A2294	Mount
	D438	Pin, 13 1/2"
	10460	Cotter Pin, 1/4" x 2"
3.	D462	Pin, Lock-Up
	10670	Hair Pin Clip, No. 3
	10187	Roll Pin, 5/32" x 1"
4.	D2721	U-Bolt, 2" x 2" x 1/2" - 13
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
5.	10640	Grease Fitting, 1/4" - 28
6.	A1674A	Cylinder, 2" x 8"
	A1674B	Cylinder, 2" x 8"
7.	D453-6	Extension Tube, 30", 4 Row 30
	D453-2	Extension Tube, 40", 6 Row 30
	D453-3	Extension Tube, 50", 4 Row Wide

DOUBLE FOLD MARKER ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	D453-3	Extension Tube, 50", 8 Row 30
	D453-5	Extension Tube, 55", 6 Row Wide
2.	D2721	U-Bolt, 2" x 2" x 1/2" - 13
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
3.	A2299	Arm, Second Stage, 35", 6 Row Wide
	A2300	Arm, Second Stage, 46", 8 Row 30
4.	10460	Cotter Pin, 1/4" x 2"
5.	D1701	Pin, 1 1/4" x 6 1/2"
6.	D1702	Pin, 1 1/4" x 10 1/4"
7.	10226	Washer, 1 1/4" SAE
8.	10641	Grease Fitting, 1/8" NPT
9.	A828	Arm, First Stage, 38"
10.	A827	Mount
11.	10167	HHCS, 1/2" - 13 x 2", Grade 2
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
12.	D653	Pin, 1 1/4" x 7 3/4"
13.	2501-8-8	Elbow, 90°
14.	A1659	Cylinder, 2" x 20"

DECALS, REFLECTORS AND TIE STRAPS



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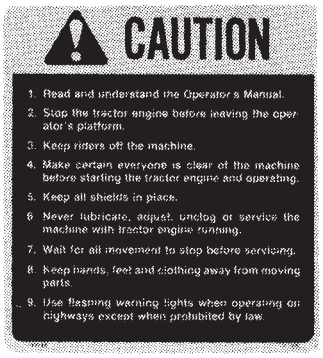

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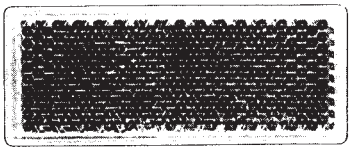
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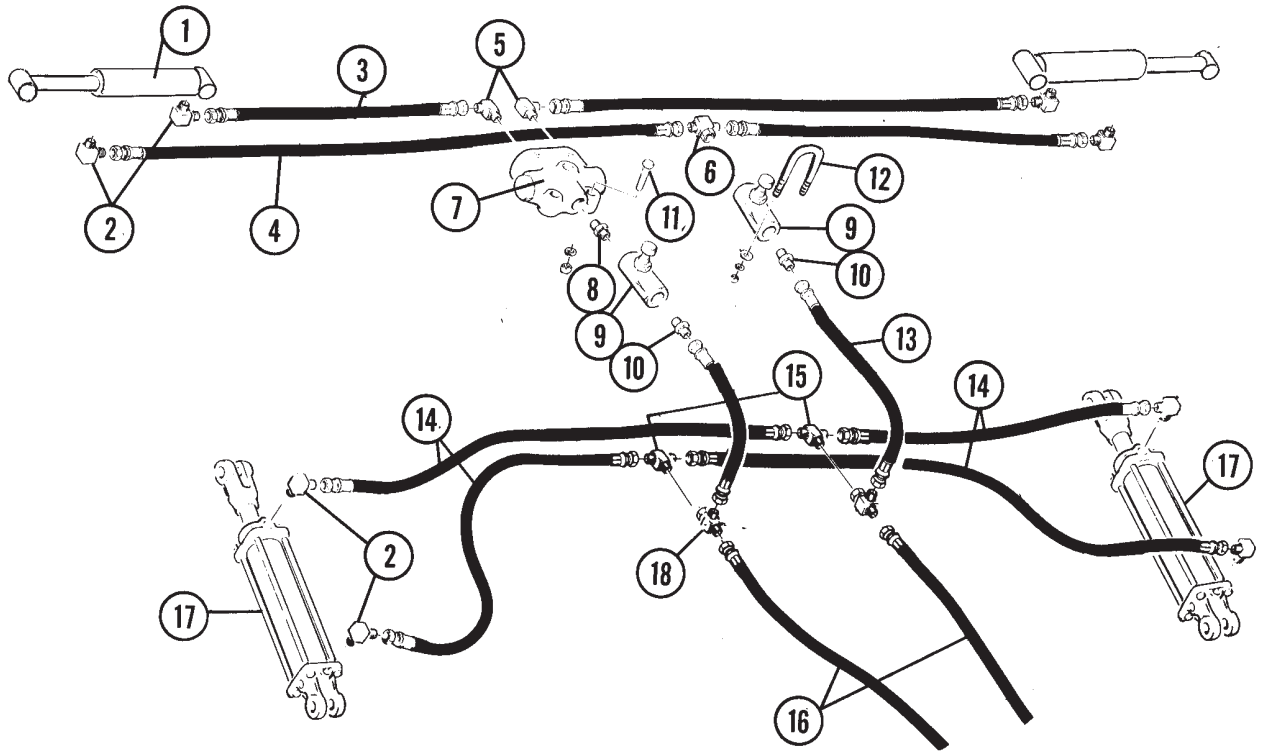
12

13

ITEM	PART NO.	DESCRIPTION
1.	7100-22	Decal, Sprocket Combination
2.	7100-41	Decal, Warning
3.	7100-42	Decal, Warning
4.	7100-43	Decal, Warning
5.	7100-46	Decal, Caution
6.	7100-47	Decal, Warning
7.	7100-54	Decal, KINZE, 4 3/16" x 17 3/16"
8.	7100-56	Decal, Warning
9.	7200-3	Reflector, Red
	7200-4	Reflector, Amber
10.	D1512	Tie Strap, 6"
	D2177	Tie Strap, 14 1/2"
	D1162	Tie Strap, 28"
11.	R155	Blue Paint, Aerosol (Not Shown)
	R439	Blue Paint, Quart
	R440	Blue Paint, Gallon
12.	7100-89	Decal, Danger
13.	7100-90	Decal, Warning

HYDRAULIC SYSTEM

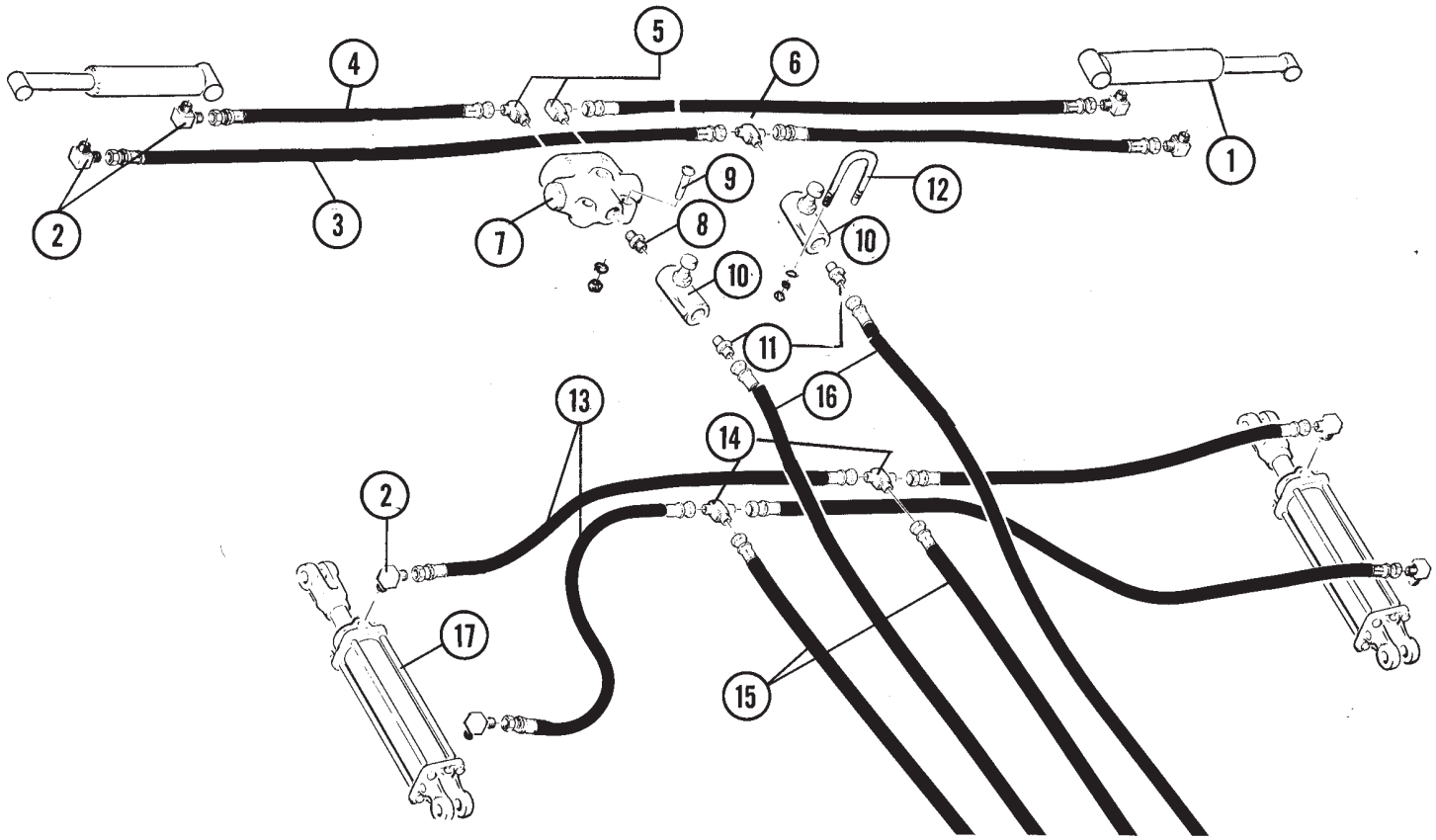
SINGLE VALVE
LOW PROFILE DOUBLE FOLD MARKER
8 ROW 30"



ITEM	PART NO.	DESCRIPTION
1.	A1659	Cylinder, Marker, 2" x 20"
2.	2501-8-8	Elbow, 90°
3.	A1025	Hose Assembly, 3/8" x 148"
4.	A1026	Hose Assembly, 3/8" x 152"
5.	6801-8	Elbow, 90°
6.	2601-8-6	Side Tee, Male
7.	A282	Valve, Sequence
8.	6401-8-6	Adapter, Straight
9.	A270	Valve, Flow Control
10.	2404-8-6	Adapter, Straight
11.	10048	HHCS, 3/8" - 16 x 2"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
12.	D1253	U-Bolt, 5/16" - 18 x 2 1/4" x 1 1/2"
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
13.	A1044	Hose Assembly, 3/8" x 34"
14.	A1039	Hose Assembly, 3/8" x 76"
15.	2603-8	Tube Tee, 37°
16.	A1043	Hose Assembly, 3/8" x 125"
17.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder, Lift, 3 1/2" x 8"
	A747	Cylinder, Lift, 3 1/2" x 8"
18.	6602-8	Tee, Swivel

HYDRAULIC SYSTEM

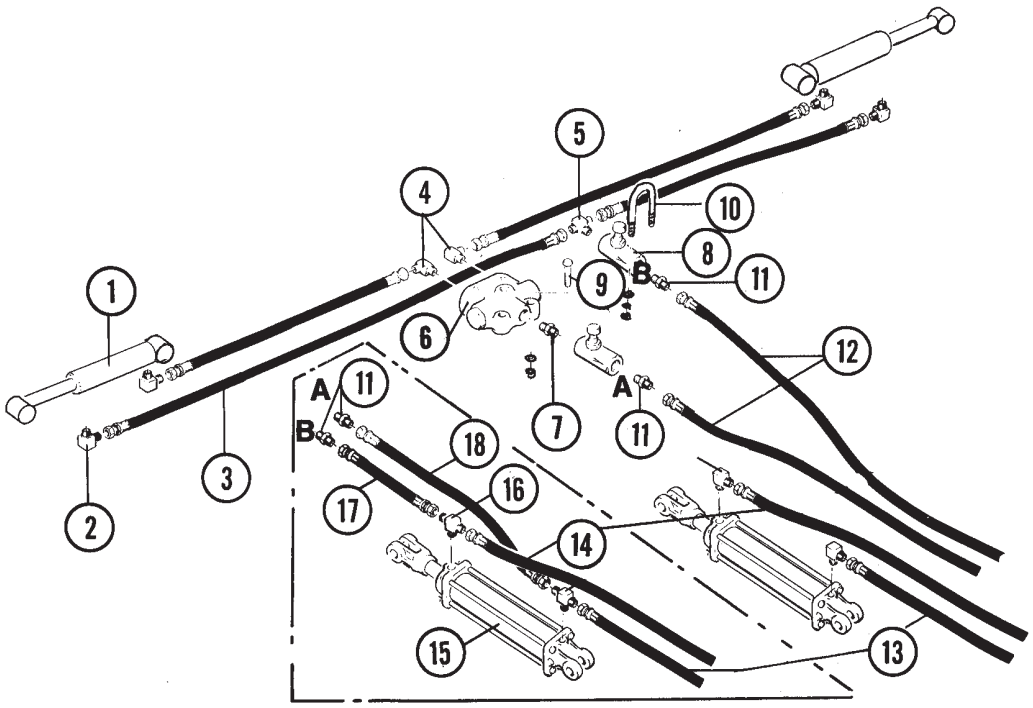
DUAL VALVE
LOW PROFILE DOUBLE FOLD MARKER
8 ROW 30"



ITEM	PART NO.	DESCRIPTION
1.	A1659	Cylinder, Marker, 2" x 20"
2.	2501-8-8	Elbow, 90°
3.	A1026	Hose Assembly, 3/8" x 152"
4.	A1025	Hose Assembly, 3/8" x 148"
5.	6801-8	Elbow, 90°
6.	2601-8-6	Side Tee, Male
7.	A282	Valve, Sequence
8.	6401-8-6	Adapter, Straight
9.	10048	HHCS, 3/8" - 16 x 2"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
10.	A270	Valve, Flow Control
11.	2404-8-6	Adapter, Straight
12.	D1253	U-Bolt, 5/16" - 18 x 2 1/4" x 1 1/2"
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
13.	A1039	Hose Assembly, 3/8" x 76"
14.	2603-8	Tube Tee, 37°
15.	A1043	Hose Assembly, 3/8" x 125"
16.	A1012	Hose Assembly, 3/8" x 140"
17.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder, Lift, 3 1/2" x 8"
	A747	Cylinder, Lift, 3 1/2" x 8"

HYDRAULIC SYSTEM

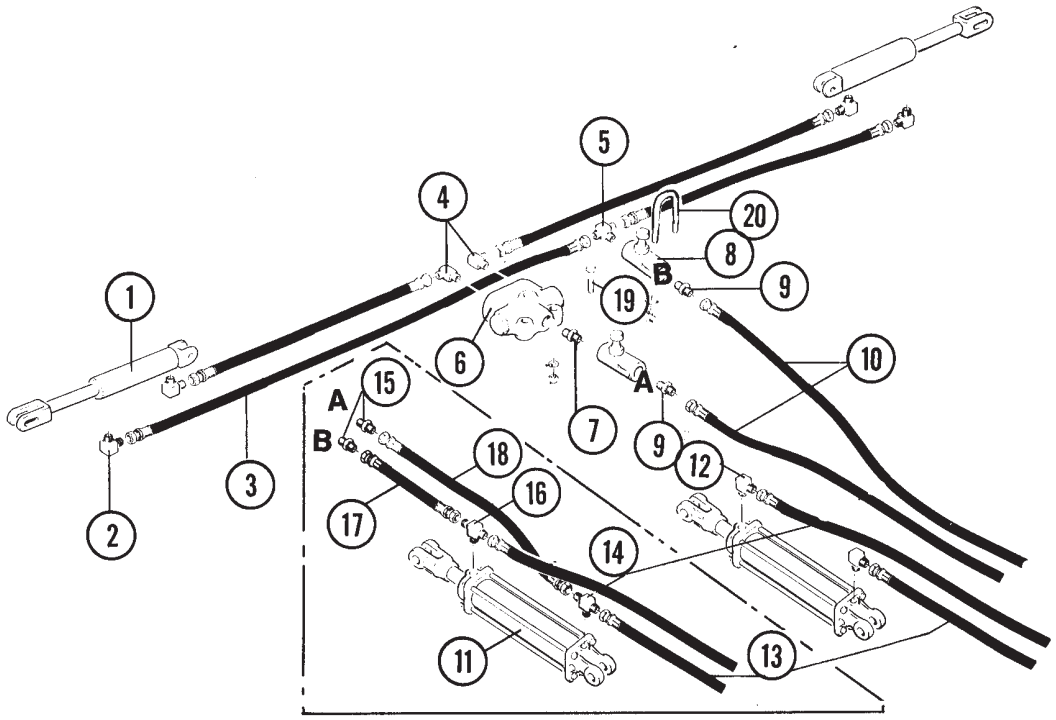
SINGLE AND DUAL VALVE
LOW PROFILE DOUBLE FOLD MARKER
6 ROW WIDE



ITEM	PART NO.	DESCRIPTION
1.	A1659	Cylinder, Marker, 2" x 20"
2.	2501-8-8	Elbow, 90°
3.	A1041	Hose Assembly, 3/8" x 130"
4.	6801-8	Elbow, 90°
5.	2601-8-6	Side Tee, Male
6.	A282	Valve, Sequence
7.	6401-8-6	Adapter, Straight
8.	A270	Valve, Flow Control
9.	10048	HHCS, 3/8" - 16 x 2"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
10.	D1253	U-Bolt, 5/16" - 18 x 2 1/4" x 1 1/2"
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
11.	2404-8-6	Adapter, Straight
12.	A1012	Hose Assembly, 3/8" x 140"
13.	A1007	Hose Assembly, 3/8" x 105"
14.	A1009	Hose Assembly, 3/8" x 117"
15.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder, Lift, 3 1/2" x 8"
	A747	Cylinder, Lift, 3 1/2" x 8"
16.	2601-8-8	Side Tee, Male
17.	A1079	Hose Assembly, 3/8" x 24"
18.	A1003	Hose Assembly, 3/8" x 27"

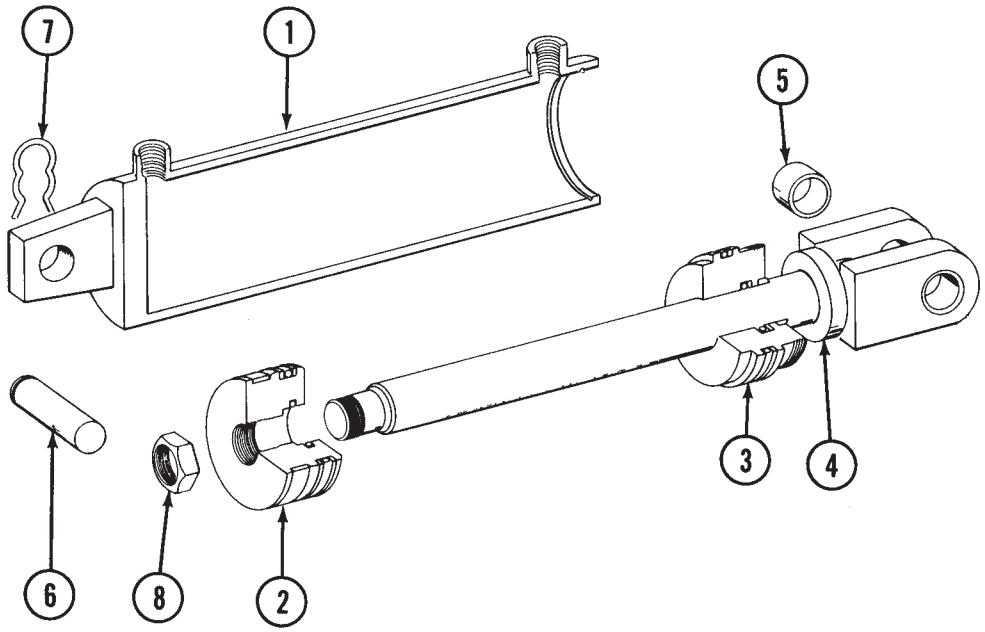
HYDRAULIC SYSTEM

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



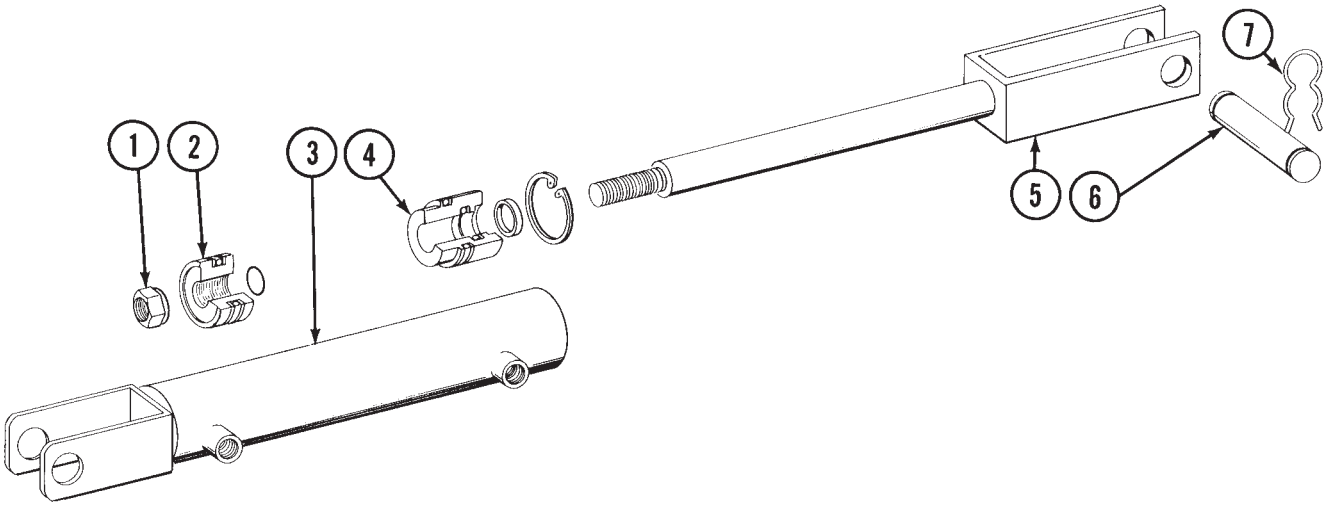
ITEM	PART NO.	DESCRIPTION
1.	A1674A	Cylinder, Marker, 2" x 8"
	A1674B	Cylinder, Marker, 2" x 8"
2.	2501-6-6	Elbow, 90°
3.	A1102	Hose Assembly, 1/4" x 95", 4 Row 30, 4 Row Wide
	A1103	Hose Assembly, 1/4" x 110", 6 Row 30
4.	6801-6-8	Elbow, 90°
5.	2601-6-6	Side Tee, Male
6.	A282	Valve, Sequence
7.	6401-8-6	Adapter, Straight
8.	A270	Valve, Flow Control
9.	2404-6-6	Adapter, Straight
10.	A1108	Hose Assembly, 1/4" x 140"
11.	A1803A	Cylinder, Lift, 3 1/2" x 8"
	A1803B	Cylinder, Lift, 3 1/2" x 8"
	A747	Cylinder, Lift, 3 1/2" x 8"
12.	2501-8-8	Elbow, 90°
13.	A1007	Hose Assembly, 3/8" x 105"
14.	A1009	Hose Assembly, 3/8" x 117"
15.	2404-8-6	Adapter, Straight
16.	2601-8-8	Side Tee, Male
17.	A1079	Hose Assembly, 3/8" x 24"
18.	A1003	Hose Assembly, 3/8" x 27"
19.	10048	HHCS, 3/8" x 16 x 2"
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
20.	D1253	U-bolt, 5/16" x 2 1/4" x 1 1/2"
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18

LIFT CYLINDER



ITEM	PART NO.	DESCRIPTION
1.	A3522	Tube Assembly
2.	D4510	Piston
3.	D4509	Head Gland
4.	A3431	Shaft Assembly w/Bushings
5.	R374	Bushing
6.	R375	Clevis Pin
7.	R193	Clip, Hair Pin
8.	10509	Hex Jam Nut, 1 1/4" - 12
A.	A3471	Cylinder, 3 1/2" x 8" (Less Pins and Clips)
B.	R774	Seal Kit

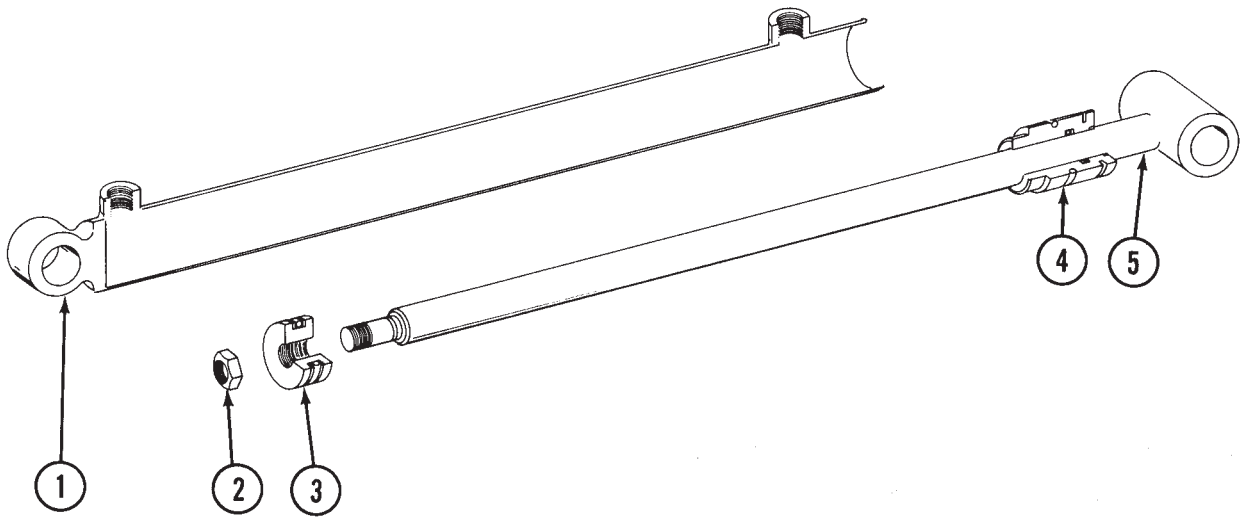
CONVENTIONAL MARKER CYLINDER



ITEM	PART NO.	DESCRIPTION
1.	10327	Hex Nut, 3/4" - 16 UNF
2.	D4632	Piston
3.	A3512	Tube Assembly
4.	D4633	Head Gland
5.	A3513	Shaft Assembly
6.	R367	Clevis Pin
7.	R193	Clip, Hair Pin
*A.	A3438	Cylinder, 2" x 8" (Less Pins and Clips)
B.	R808	Seal Kit

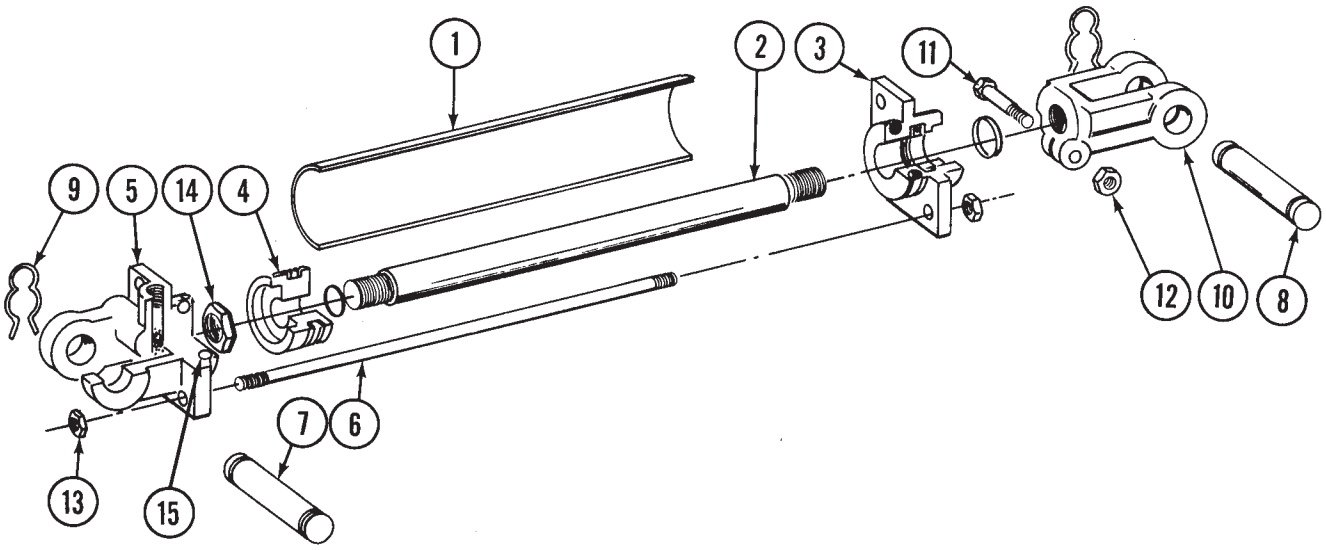
* To identify Kinze part number stamped on barrel.

DOUBLE FOLDING MARKER CYLINDER



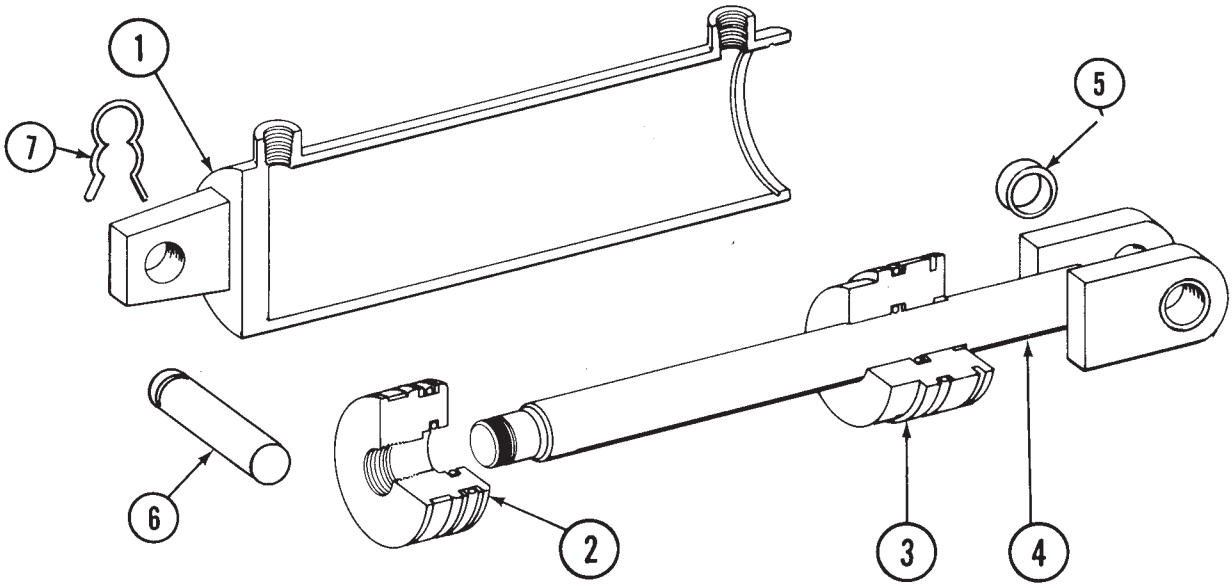
ITEM	PART NO.	DESCRIPTION
1.	A3514	Tube Assembly
2.	10327	Hex Nut, 3/4" - 16 UNF
3.	D4632	Piston
4.	D4634	Head Gland
5.	A3515	Shaft Assembly
*A.	A3439	Cylinder, 2" x 20"
B.	R808	Seal Kit

LIFT CYLINDER



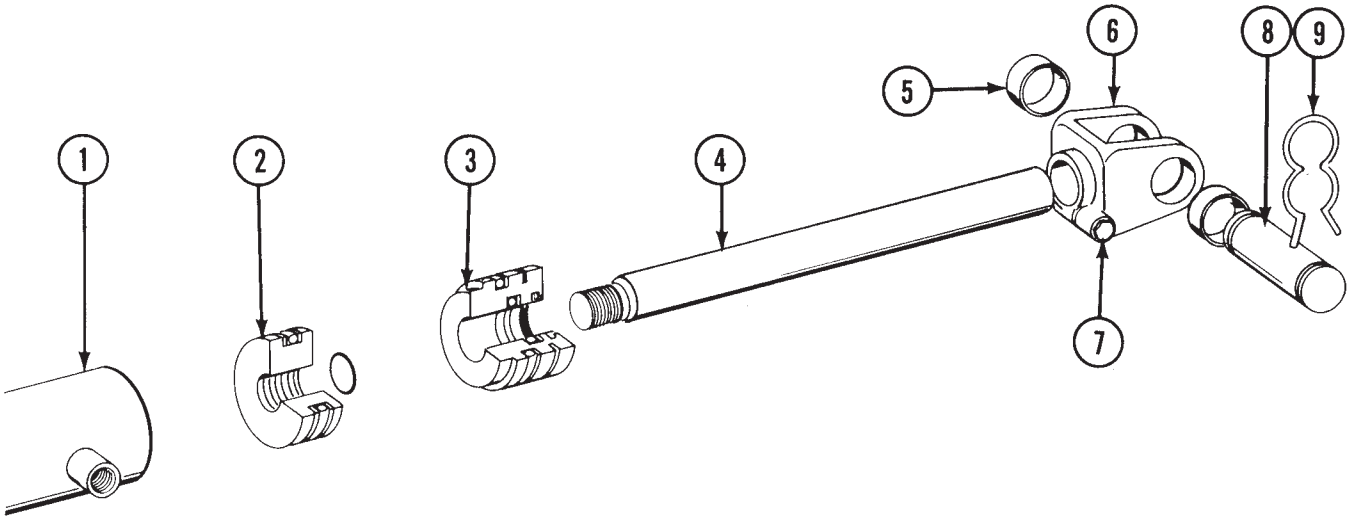
ITEM	PART NO.	DESCRIPTION
1.	R173	Tube Assembly
2.	R174	Shaft Assembly
3.	R175	Guide, Piston Rod
4.	R176	Piston
5.	R177	Clevis, Bottom
6.	R178	Tie Rod
7.	R179	Clevis Pin, w/Clips
8.	R180	Clevis Pin, w/Clips
9.	R193	Clip, Hair Pin
10.	R456	Clevis, Shaft End
11.	10047	Screw, Hex Head Cap, 3/8" - 16 x 1 3/4"
12.	10101	Hex Nut, 3/8" - 16
13.	R181	Hex Nut, 1/2" - 13, Grade 5
14.	R203	Hex Lock Nut, 1" - 14 UNF, Grade 5
15.	10170	Pipe Plug, 1/2"
A.	A1803A	Cylinder, Lift, Complete, 3 1/2" x 8"
B.	R153	Seal Kit Includes (1) Rod Wiper - 1 1/2" (2) Back Up Washer, 3 1/8 I.D. x 3 1/2 O.D. (1) Back Up Washer, 1 1/2" I.D. x 1 7/8 O.D. (3) O-Ring, 3 1/8 I.D. x 3 1/2 O.D. (1) O-Ring, 1 1/2 I.D. x 1 7/8 O.D. (1) O-Ring, 7/8 I.D. x 1 O.D.

LIFT CYLINDER



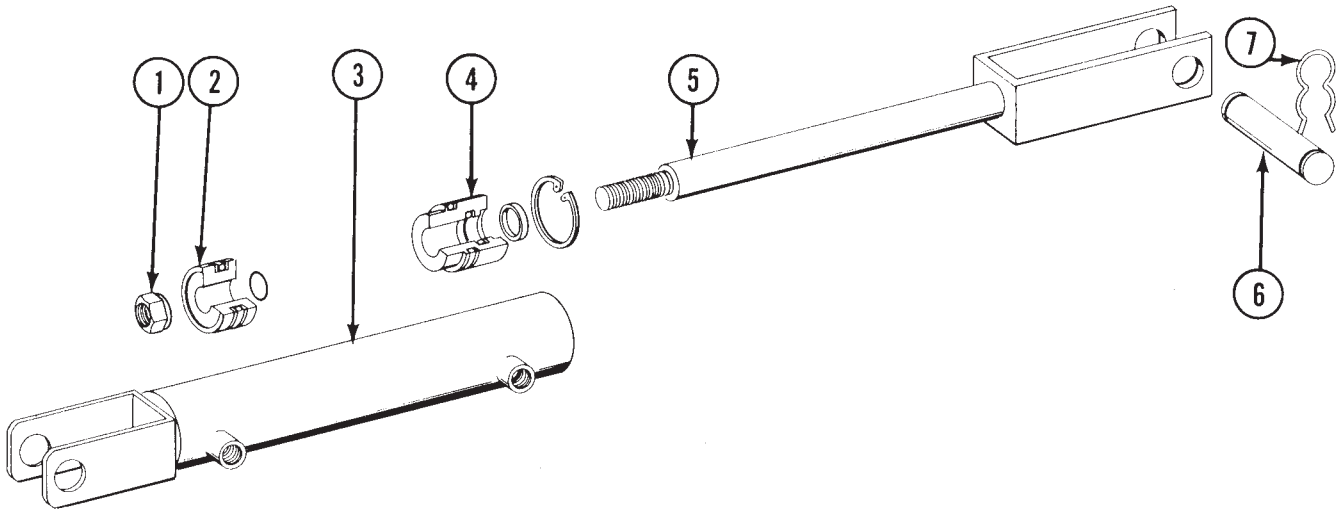
ITEM	PART NO.	DESCRIPTION
1.	R377	Tube Assembly
2.	R561	Piston
3.	R371	Head Gland
4.	R560	Shaft Assembly
5.	R374	Bushing
6.	R375	Clevis Pin
7.	R193	Clip, Hair Pin
A.	A1803B	Cylinder, Lift, Complete, 3 1/2 x 8
B.	R606	Seal Kit Includes (4) O-Rings (4) Back Up Washers (1) Rod Wiper (1) Retaining Ring, Int. 3 1/2" (1) Wear Ring 3 1/2" O.D.

LIFT CYCLINDER



ITEM	PART NO.	DESCRIPTION
1.	R377	Tube Assembly
2.	R372	Piston
3.	R371	Head Gland
4.	R370	Shaft Assembly
5.	R374	Bushing
6.	R373	Clevis
7.	10075	Clevis Bolt 3/8" - 24 x 1 3/4"
8.	R375	Clevis Pin
9.	R193	Clip, Hair Pin
A.	A747	Cylinder, Lift, Complete, 3 1/2 x 8
B.	R376	Seal Kit Includes (1) O-Ring 1.14 I.D. x 1.254 O.D. (1) O-Ring 1.475 I.D. x 1.895 O.D. (1) O-Ring 3.10 I.D. x 3.52 O.D. (1) Back Up Washer 1 1/2 I.D. x 1 7/8 O.D. (3) Back Up Washer 3 1/8 I.D. x 3 1/2 O.D. (1) Rod Wiper (1) Retaining Ring, Int. 3 1/2"

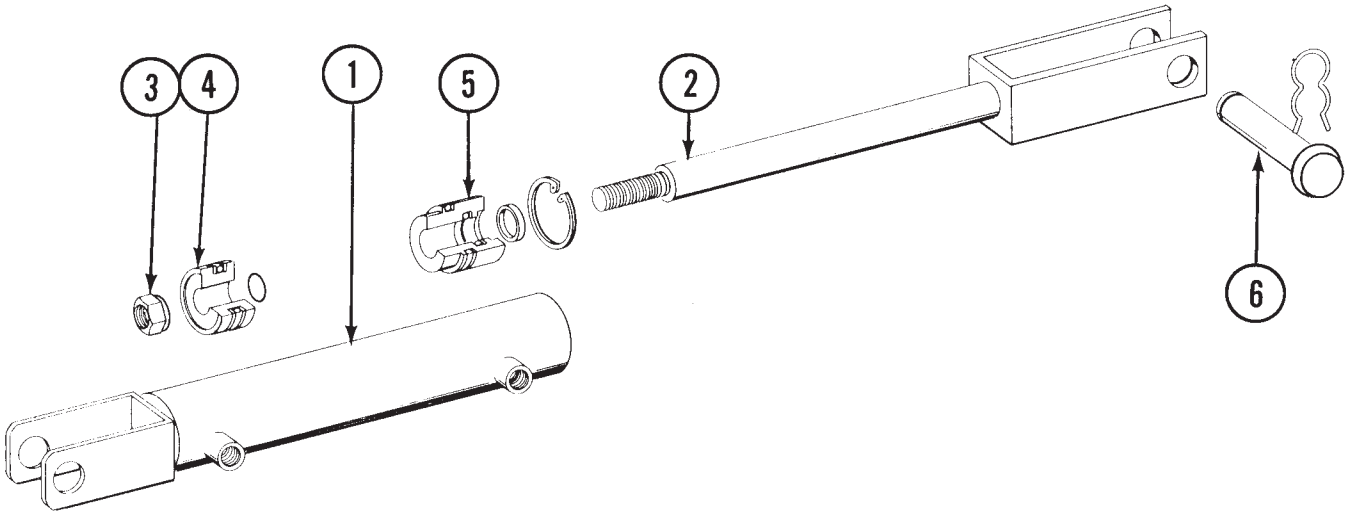
CONVENTIONAL MARKER CYLINDER



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

* To identify - DN13081 stamped on barrel.

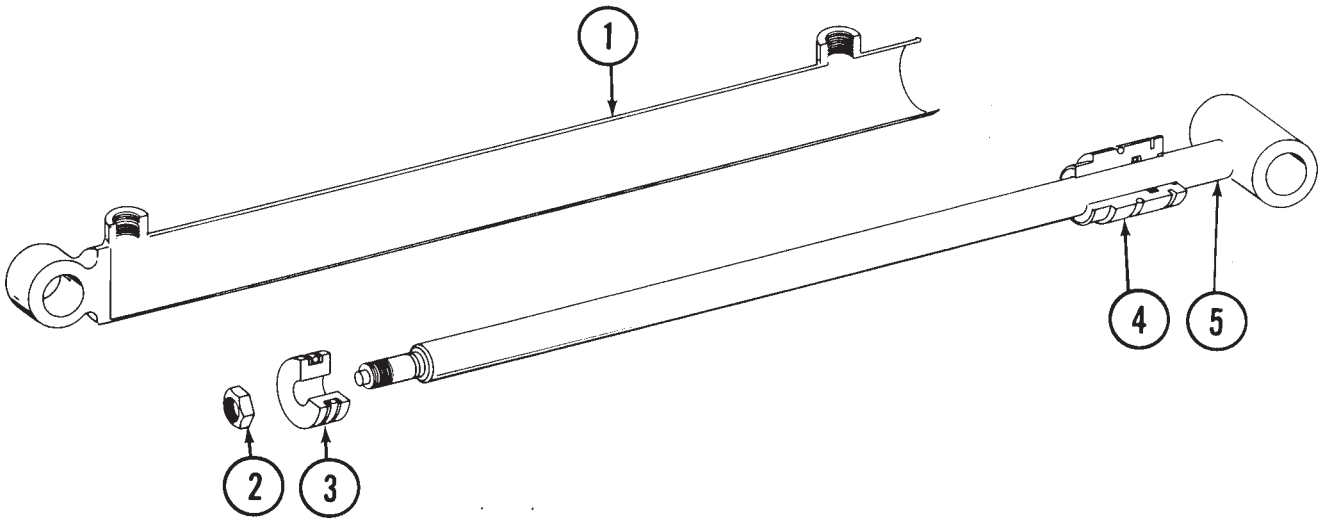
CONVENTIONAL MARKER CYLINDER



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

* To identify - No markings on barrel.

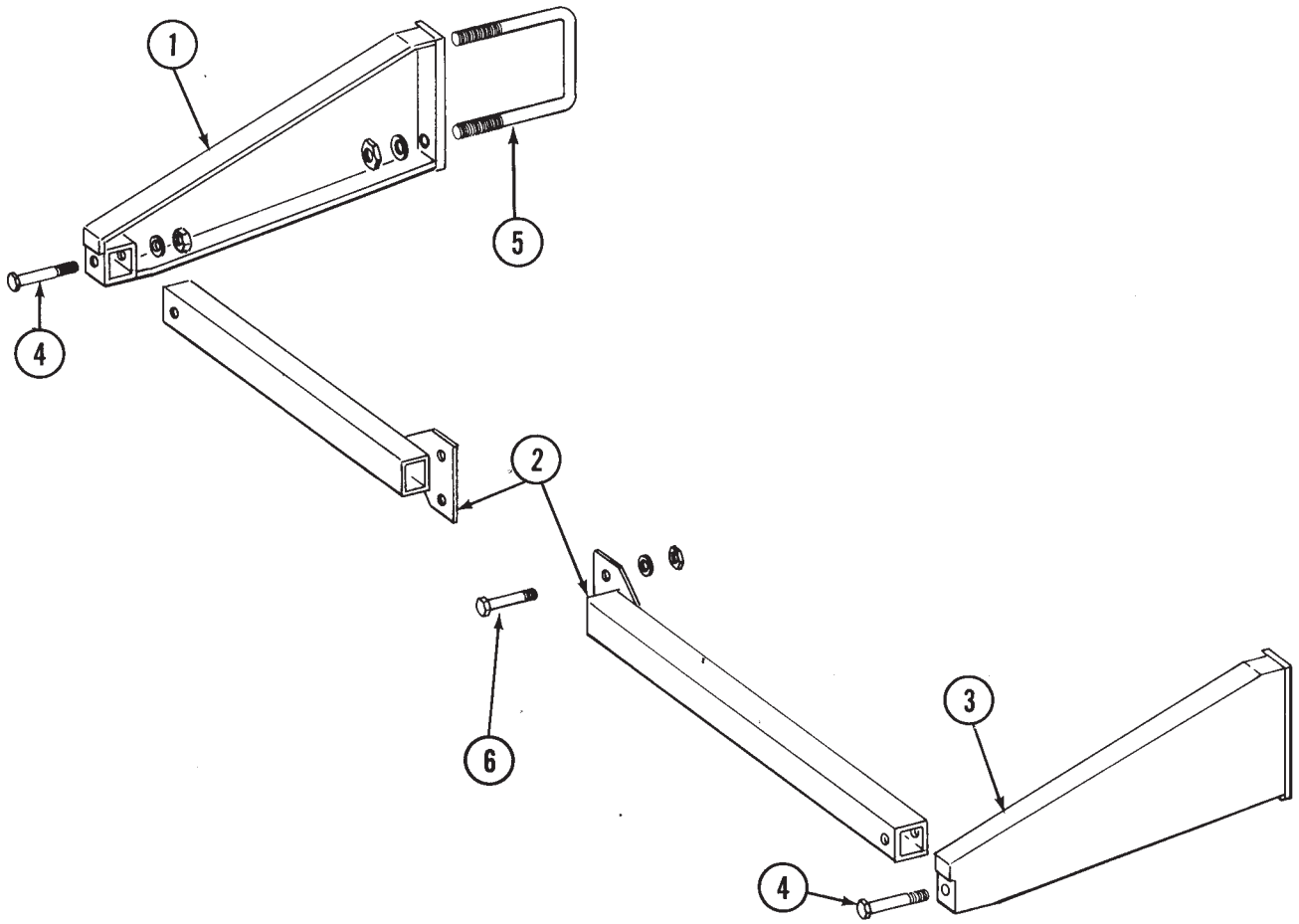
LOW PROFILE - DOUBLE FOLD MARKER CYLINDER



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

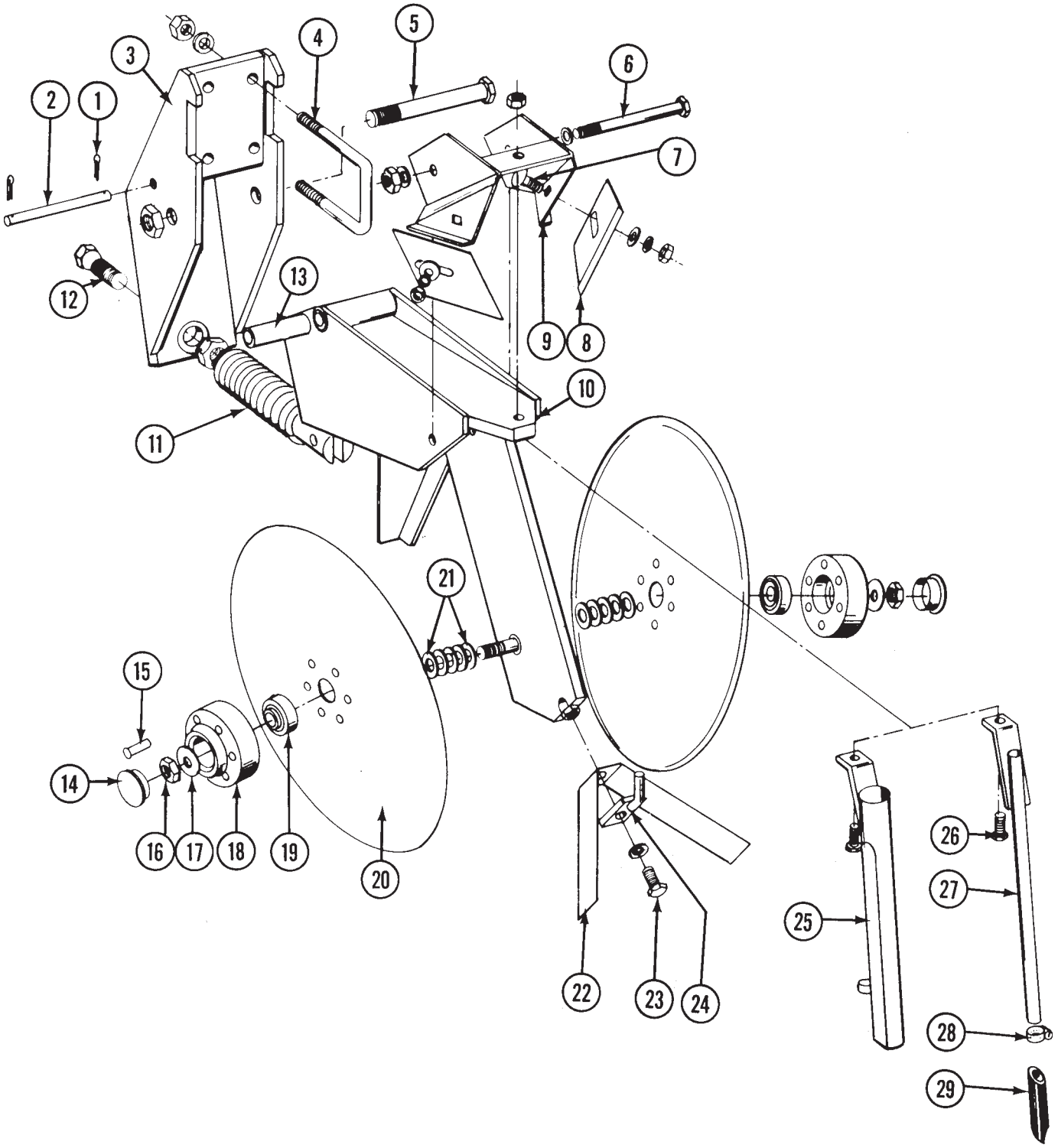
* To identify - DN 13107 stamped on barrel.

FERTILIZER BAR



ITEM	PART NO.	DESCRIPTION
1.	A1872	Support, R.H.
2.	A873	Bar, 56 1/4", 4 Row 30
	A874	Bar, 60 1/4" 4 Row Wide
	A875	Bar, 76 3/4", 6 Row 30
	A876	Bar, 99 1/4" 6 Row Wide
	A877	Bar, 106 3/4", 8 Row 30
	A2501	Bar, 36 3/4", 2 Row
3.	A1873	Support, L.H.
4.	10035	HHCS, 1/2" - 13 x 4"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
5.	D1748	U-Bolt, 7" x 7" x 3/4" - 10
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10
6.	10027	HHCS, 3/4" - 10 x 2 1/2"
	10231	Lock Washer, 3/4"
	10105	Hex Nut, 3/4" - 10

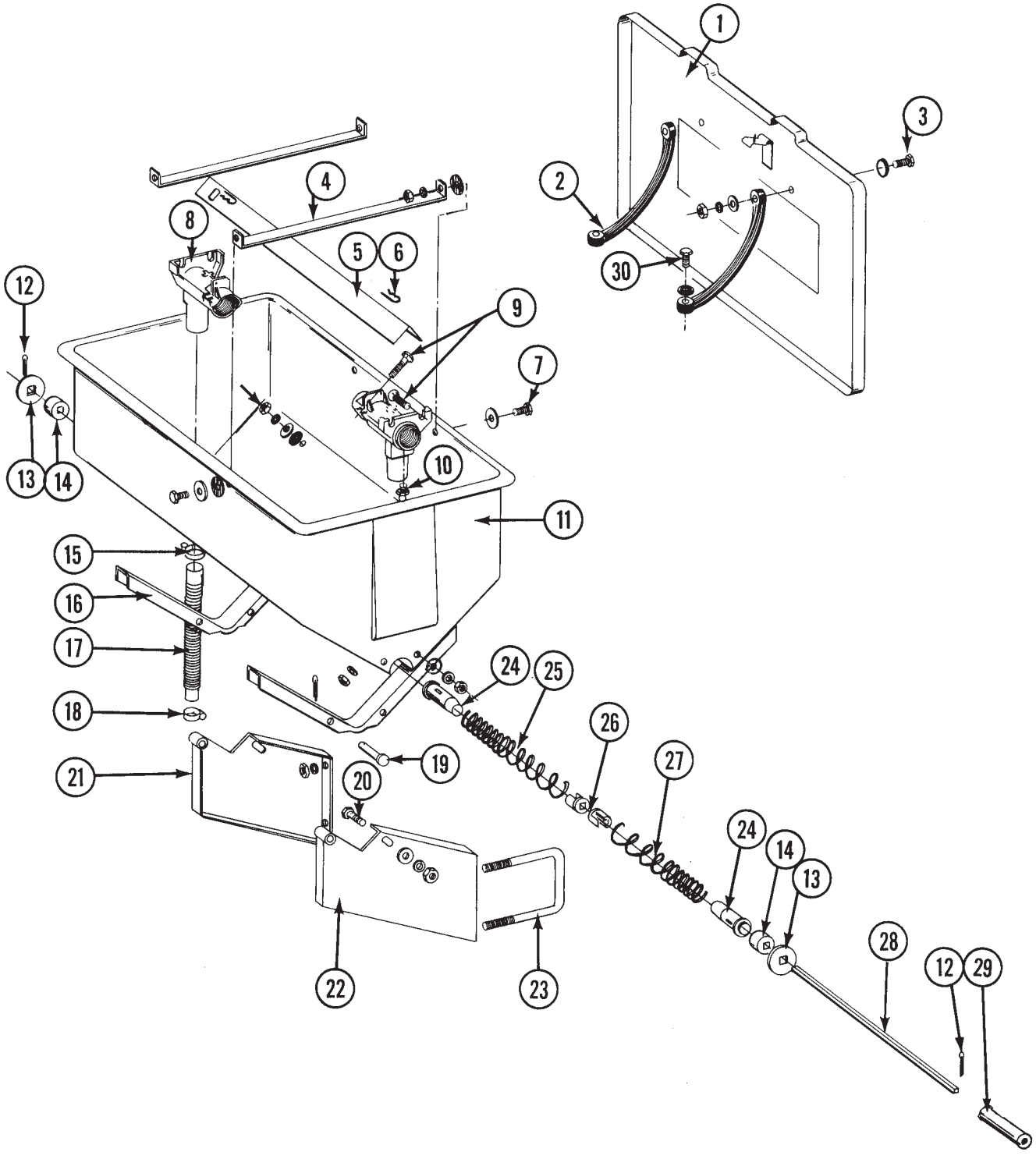
DOUBLE DISK FERTILIZER OPENER



DOUBLE DISK FERTILIZER OPENER

ITEM	PART NO.	DESCRIPTION
1.	10451	Cotter Pin, 1/8" x 1"
2.	D1657	Pin, Lock-Up
3.	A785	Bracket, Mounting
4.	D1339	U-Bolt, 2 1/2" x 2 1/2" x 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
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, 18-20)
B.	6156X	Double Disk Fertilizer Open with U-Bolts, less Drop Tubes

DRY FERTILIZER HOPPER AND MOUNT

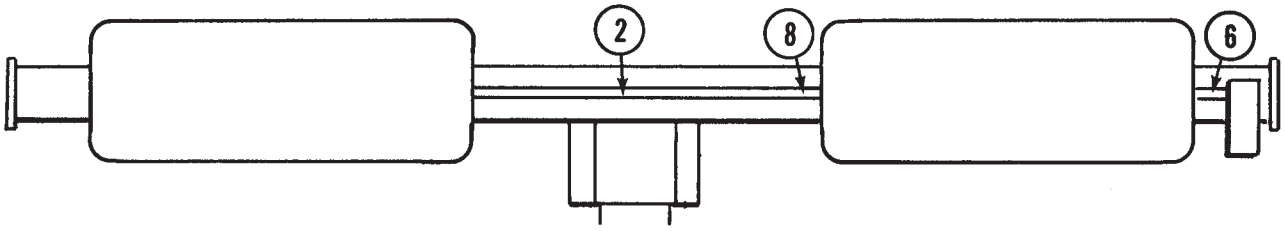


DRY FERTILIZER HOPPER AND MOUNT

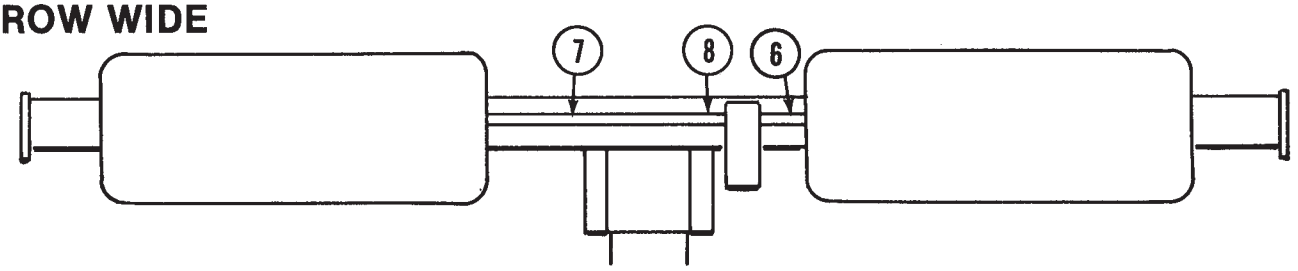
ITEM	PART NO.	DESCRIPTION
1.	A2101	Lid, Includes Clips and Pop Rivets
	D1380	Clip
	10655	Pop Rivet, 3/16" x 13/32"
2.	D1210	Strap, Rubber
3.	10171	HHCS, 5/16" - 18 x 1 1/4"
	10219	Washer, 5/16" USS
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
4.	D1209	Strap, Reinforcing
5.	D1207	Baffle
6.	10670	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.	10561	Clevis Pin, 1/2" x 3"
	10451	Cotter Pin, 1/8" x 1"
20.	10037	HHCS, 1/2" - 13 x 1 1/4"
	10206	Washer, 1/2" SAE
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
21.	A864	Mount, Hopper R.H.
22.	A863	Mount, Hopper L.H.
23.	D1114	U-Bolt, 7" x 7" x 5/8" - 11
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
24.	D1202	Guide
25.	D1204	Spring R.H., Regular Rate
	D4476	Spring, R.H., High Rate
26.	D1203	Plug
27.	D1205	Spring, L.H., Regular Rate
	D4477	Spring, L.H., High Rate
28.	D1201	Shaft
29.		Drive Coupler (See Dry Fertilizer Coupler pages)
30.	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

DRY FERTILIZER COUPLERS

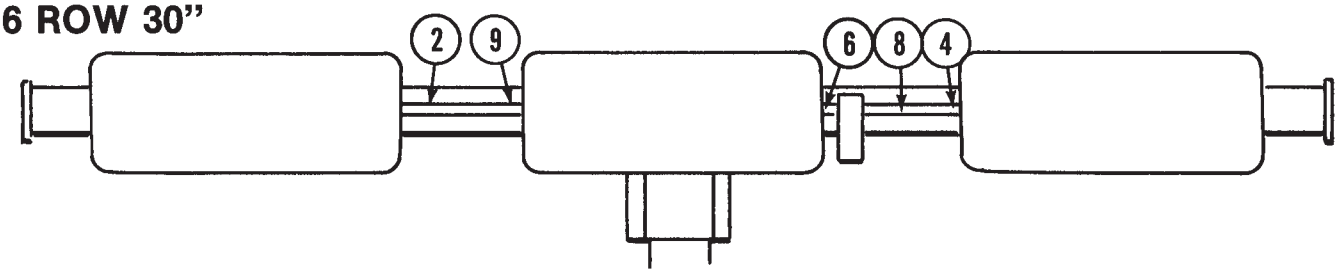
4 Row 30"



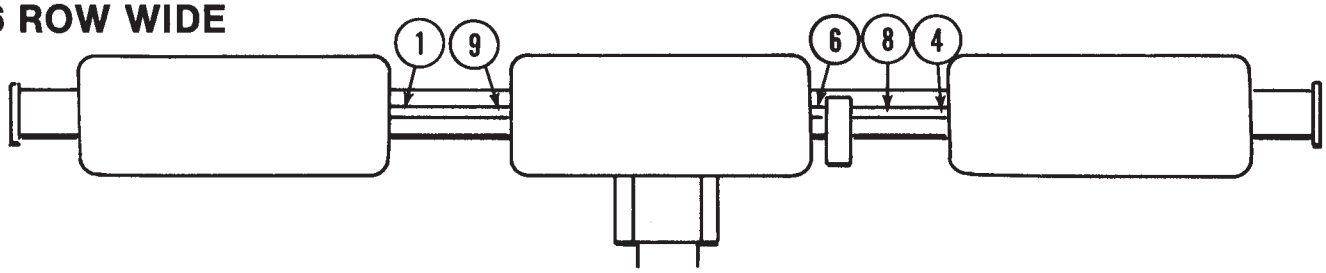
4 ROW WIDE



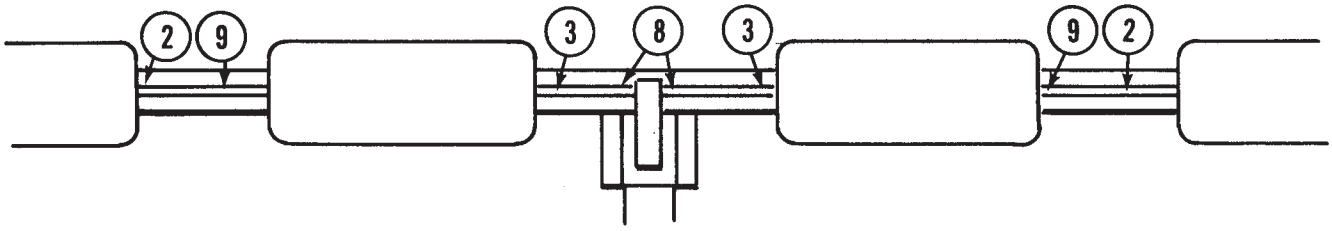
6 ROW 30"



6 ROW WIDE

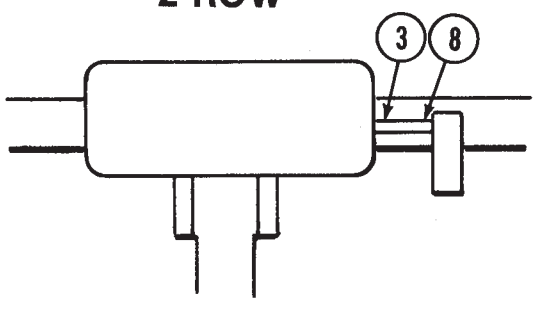


8 Row 30"

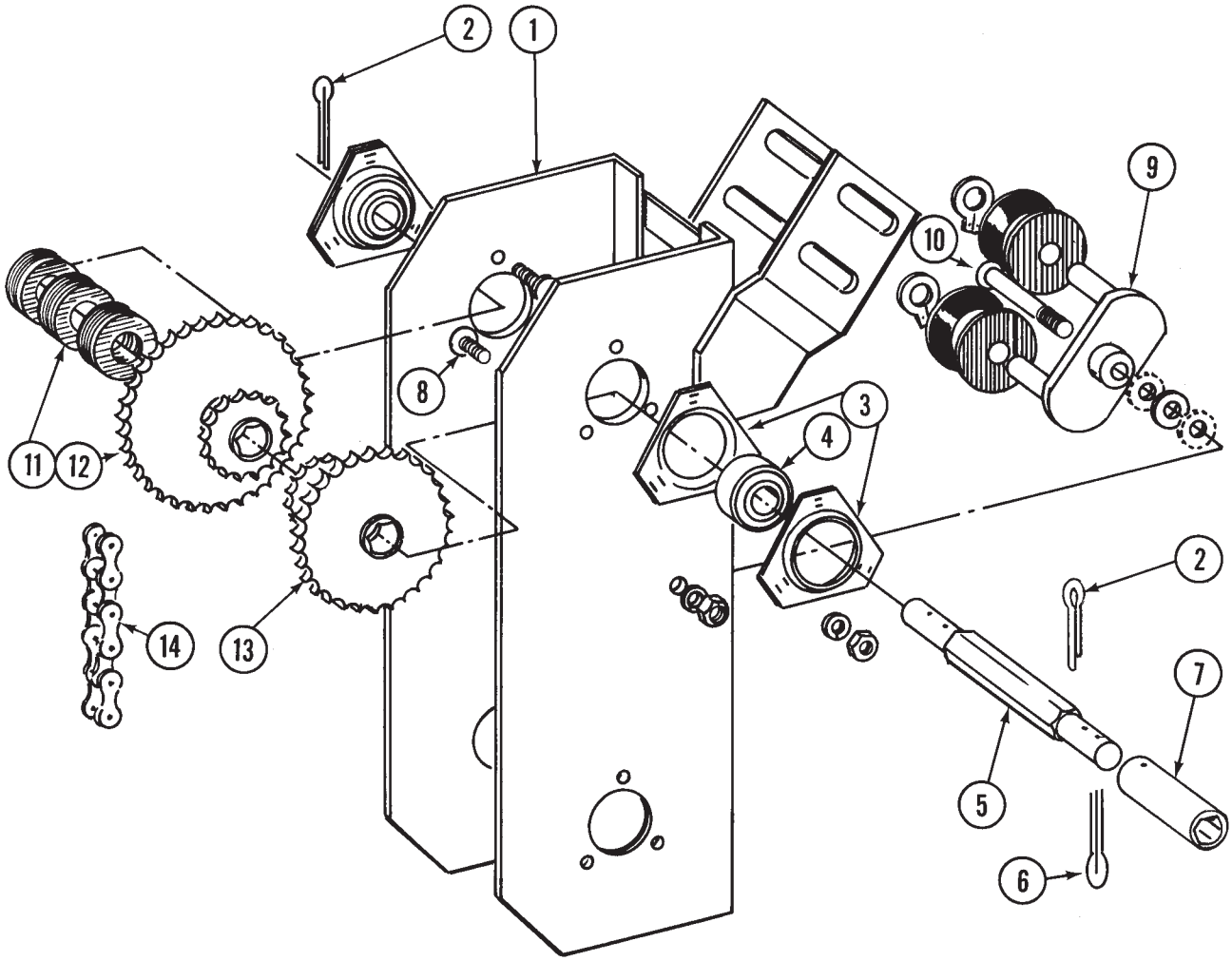


ITEM	PART NO.	DESCRIPTION
1.	A2315	Coupler, 30 5/8"
2.	A2309	Coupler, 16 1/8"
3.	A2305	Coupler, 4 5/8"
4.	A2312	Coupler, 23 1/8"
5.	A2306	Coupler, 7 5/8"
6.	D2948	Coupler, 1 5/8"
7.	A2311	Coupler, 22"
8.	D2769	Insert, Round
9.	D2768	Insert, Square

2 ROW



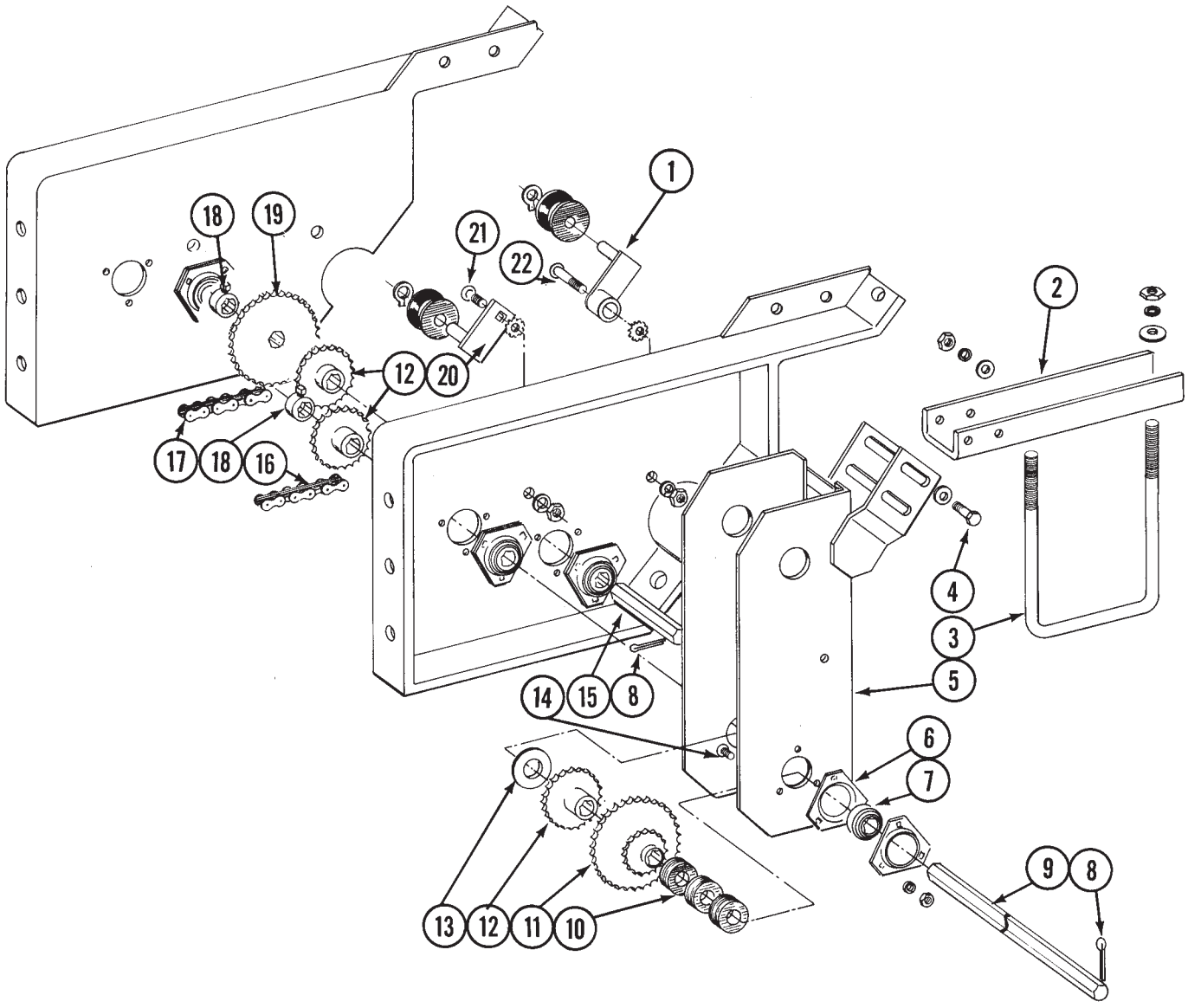
DRY FERTILIZER TRANSMISSION



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

DRY FERTILIZER DRIVE

2, 4 and 6 ROW MODELS



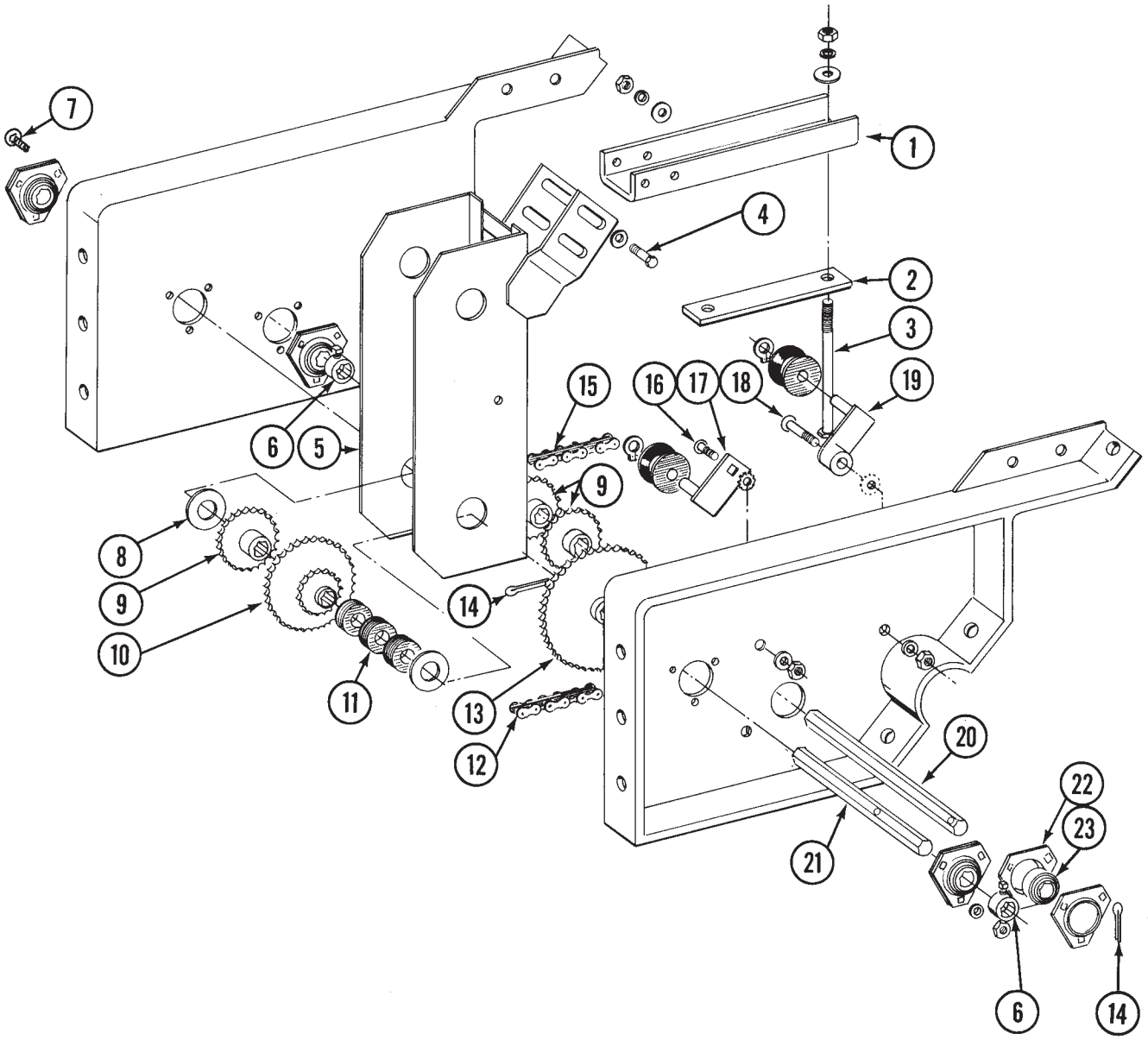
DRY FERTILIZER DRIVE

2, 4 and 6 ROW MODELS

ITEM	PART NO.	DESCRIPTION
1.	A582	Idler w/Spool and Ring
	D1067	Spool
	10435	Ring
2.	D1736	Bracket, Transmission Mounting
3.	D1114	U-Bolt, 7" x 7" x 5/8" - 11
	10217	Washer, 5/8" USS
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
4.	10001	HHCS, 3/8" - 16 x 1"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
5.	A859	Case, Transmission
6.	3400-1	Flangette
7.	2100-3	Bearing, 7/8" Hex Bore
8.	10465	Cotter Pin, 1/4" x 1 1/4"
9.	D1750	Shaft, 12", 4 Row Wide
	D1753	Shaft, 30", 6 Row Models
	D3162	Shaft, 59 1/2" 4 Row 30
	D3226	Shaft, 33", 2 Row
10.	D832	Spacer, Rubber
11.	2500-12	Sprocket, 18T-36T
12.	2500-14	Sprocket, 24T
13.	10200	Washer, 1" USS
14.	10312	Carriage Bolt, 5/16" - 18 x 3/4"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
15.	D1751	Shaft, 10"
16.	3300-26	Chain, No. 2040, 26 Pitch Including Connector Link
	R194	Connector Link, No. 2040
17.	3300-50	Chain, No. 2040, 50 Pitch Including Connector Link
	R194	Connector Link, No. 2040
18.	D917	Lock Collar Less Set Screws
	10145	Set Screws, 5/16" - 18 x 1/2"
19.	B138	Sprocket, 48T
20.	A883	Idler w/Spool and Ring
	D1068	Spool
	10435	Ring
21.	10313	Carriage Bolt, 1/2" - 13 x 1 1/2"
	10527	Washer, Int./Ext., 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
22.	10314	Carriage Bolt, 1/2" - 13 x 3"
	10527	Washer, Int./Ext., 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13

DRY FERTILIZER DRIVE

8 ROW MODELS

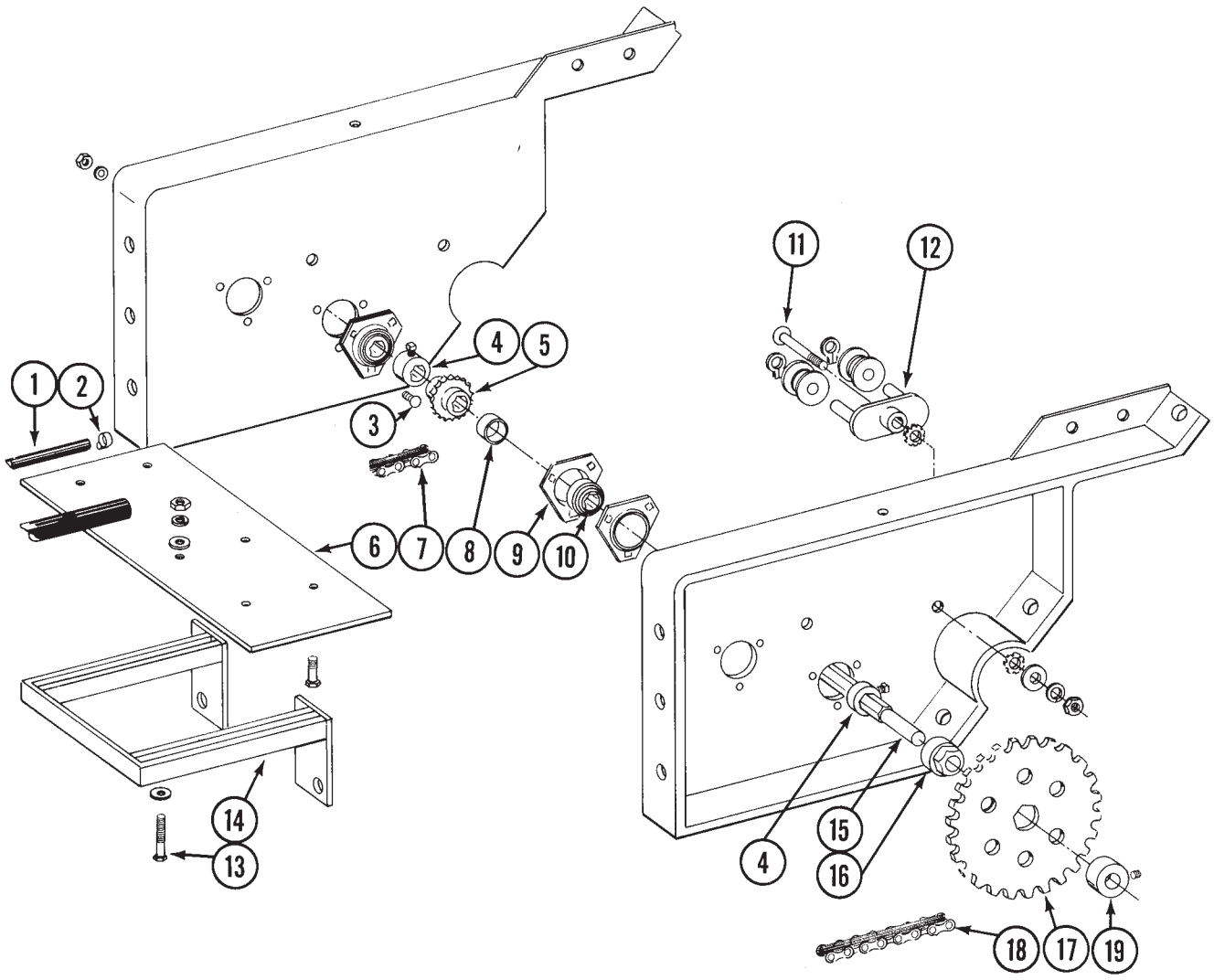


DRY FERTILIZER DRIVE

8 ROW MODELS

ITEM	PART NO.	DESCRIPTION
1.	D1736	Bracket, Transmission Mounting
2.	D1908	Bracket, Mounting
3.	10093	HHCS, 5/8" - 11 x 8 1/2"
	10217	Washer, 5/8" USS
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
4.	10001	HHCS, 3/8" - 16 1"
	10210	Washer, 3/8" USS
	10229	Lock Washer, 3/8"
	10101	Hex Nut, 3/8" - 16
5.	A859	Case, Transmission
6.	D917	Lock Collar, Less Set Screw
	10145	Set Screw, 5/16" - 18 x 1/2"
7.	10312	Carriage Bolt, 5/16" - 18 x 3/4"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
8.	10200	Washer, 1" USS
9.	2500-14	Sprocket, 24T
10.	2500-12	Sprocket, 18T-36T
11.	D832	Spacer, Rubber
12.	3300-32	Chain, No. 2040, 32 Pitch Including Connector Link
	R194	Connector Link, No. 2040
13.	B138	Sprocket, 48T
14.	10465	Cotter Pin, 1/4" x 1 1/4"
15.	3300-43	Chain, No. 2040, 43 Pitch Including Connector and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
16.	10313	Carriage Bolt, 1/2" - 13 x 1 1/2"
	10527	Washer, Int./Ext., 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
17.	A883	Idler w/Spool and Ring
	D1068	Spool
	10435	Ring
18.	10314	Carriage Bolt, 1/2" - 13 x 3"
	10527	Washer, Int./Ext., 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
19.	A582	Idler w/Spool and Ring
	D1067	Spool
	10435	Ring
20.	D1751	Shaft, 10"
21.	D1907	Shaft, 12"
22.	3400-1	Flangette
23.	2100-3	Bearing, 7/8" Hex Bore

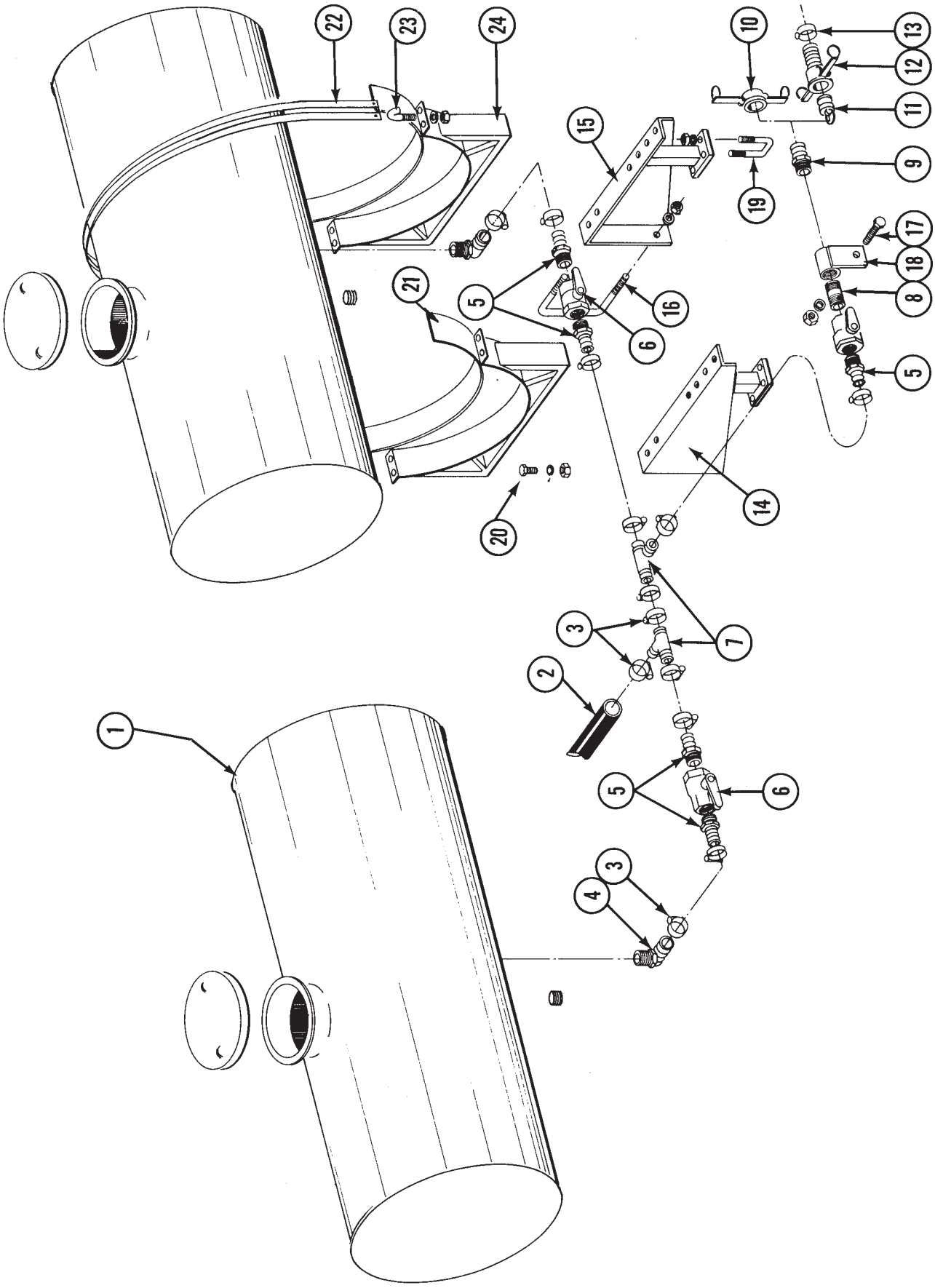
LIQUID FERTILIZER DRIVE



LIQUID FERTILIZER DRIVE

ITEM	PART NO.	DESCRIPTION
1.	4300-3	Hose, 1/2" x 30', 4 Row
	4300-4	Hose, 1/2" x 50', 6 Row
	4300-5	Hose, 1/2" x 100', 8 Row
2.	10673	Clamp, No. 8
3.	10303	Carriage Bolt, 5/16" - 18 x 1"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
4.	D917	Lock Collar, Less Set Screws
	10145	Set Screw, 5/16" - 18 x 1/2"
5.	2500-14	Sprocket, 24T
6.	D1714	Plate, Squeeze Pump (8 Row 30 Only)
7.	3300-43	Chain, No. 2040, 43 Pitch Including Connector and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
8.	D1199-2	Spacer, 3/4"
9.	3400-1	Flangette
10.	2100-3	Bearing, 7/8" Hex Bore
11.	10314	Carriage Bolt, 1/2" - 13 x 3"
	10527	Washer, Int./Ext., 1/2"
	10216	Washer, 1/2" USS
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
12.	A294	Idler w/Spools and Rings
	D1067	Spool
	10435	Ring
13.	10066	HHCS, 7/16" - 14 x 2"
	10199	Washer, 7/16" SAE
	10237	Lock Washer, 7/16"
	10100	Hex Nut, 7/16" - 14
14.	A549	Bracket, Mounting
15.	D1248	Shaft, 16"
16.	D1216	Adapter, Less Roll Pin, With Set Screws
	10600	Roll Pin, 5/16" x 2 1/4"
	10120	Set Screws, 3/8" - 16 x 1/2"
17.	D1217	Sprocket, 8T
	D1218	Sprocket, 9T
	D1219	Sprocket, 10T
	D1220	Sprocket, 15T
	D1221	Sprocket, 22T
	D1222	Sprocket, 23T
	D1223	Sprocket, 26T
	D1225	Sprocket, 31T
18.	3300-75	Chain, No. 2040, 75 Pitch Including Connector and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
19.	D1215	Retainer, w/Set Screws
	10120	Set Screw, 3/8" - 16 x 1/2"
A.	6486X	Sprocket and Adapter Package Includes: (2) 10600, (2) D1215, (2) D1216, (1) D1217, (1) D1218, (1) D1219, (1) D1220, (1) D1221, (1) D1222, (1) D1223, (1) D1225

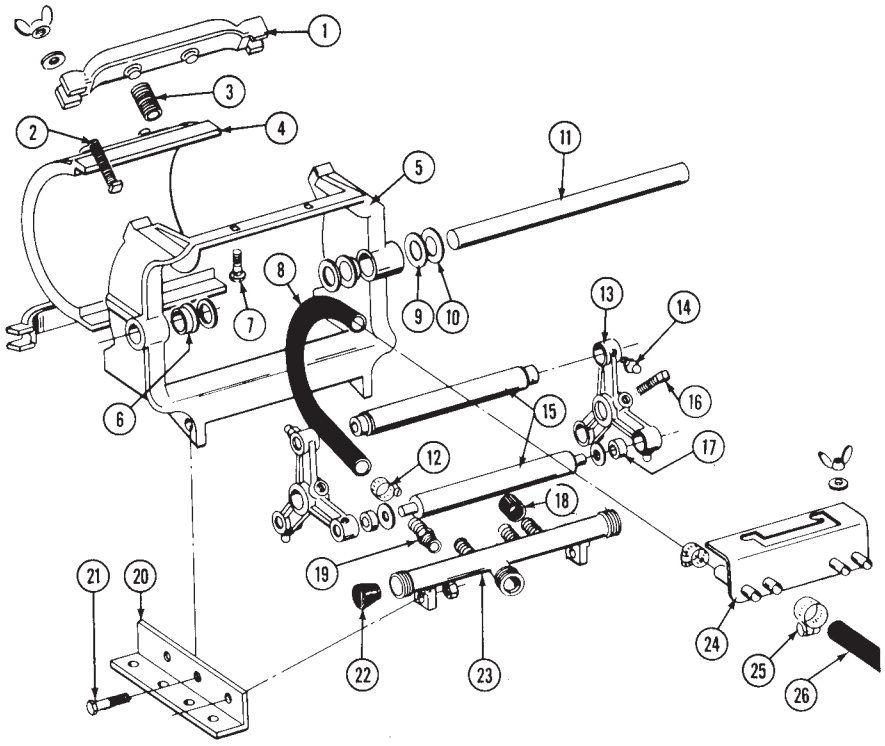
LIQUID FERTILIZER TANKS AND MOUNTING BRACKETS



LIQUID FERTILIZER TANKS AND MOUNTING BRACKETS

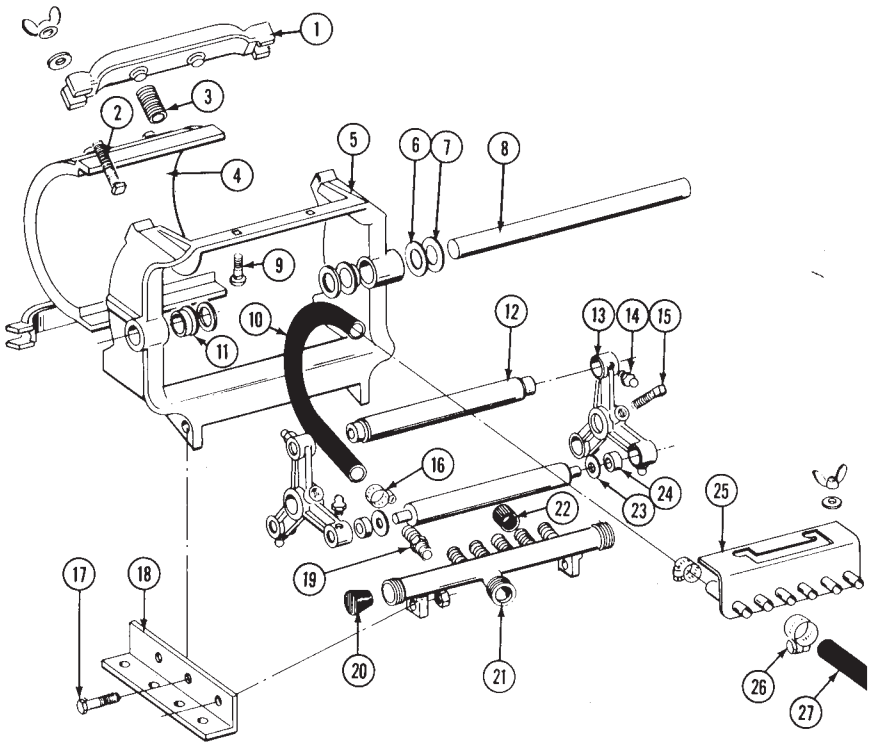
ITEM	PART NO.	DESCRIPTION
1.	A2203	Tank w/Lid and 1 1/4" Tank Fitting Assembly, 24" x 110 gallon
	D2728	1 1/4" Tank Fitting Assembly
	D1340	Lid, 5" w/Splash Guard
2.	4200-1	Hose, 1 1/4" x 22', 4 Row
	4200-2	Hose, 1 1/4" x 27', 6 Row
	4200-3	Hose, 1 1/4" x 32', 8 Row
3.	10674	Clamp, No. 24
4.	10742	Elbow, 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.	10094	Pipe Nipple, 1 1/4" x 3"
9.	D1514	Q Cam, 1 1/4"
10.	D1515	Cap, 1 1/4"
11.	D1517	Plug
12.	D1516	QCHB, 1 1/4"
13.	10672	Clamp, No. 28
14.	A878	Bracket, R.H.
15.	A879	Bracket, L.H.
16.	D1114	U-Bolt, 5/8 - 11 x 7" x 7"
	10230	Lock Washer, 5/8"
	10104	Hex Nut, 5/8" - 11
17.	10032	HHCS, 1/2" - 13 x 3 3/4"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
18.	A918	Mount, Quick Fill
19.	D1339	U-Bolt, 1/2" - 13 x 2 1/2" x 2 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
20.	10017	HHCS, 1/2" - 13 x 1 1/2"
	10228	Lock Washer, 1/2"
	10102	Hex Nut, 1/2" - 13
21.	D1807	Tank Pad, 6" Width (14' Roll)
22.	D1335	Band, 24"
23.	D1337	J-Bolt, 5/16"
	10232	Lock Washer, 5/16"
	10106	Hex Nut, 5/16" - 18
24.	A919	Saddle, 24", 4 Row Models
	A937	Saddle, 30", 6 Row and 8 Row Models

LIQUID FERTILIZER SQUEEZE PUMP - 4 ROW MODEL



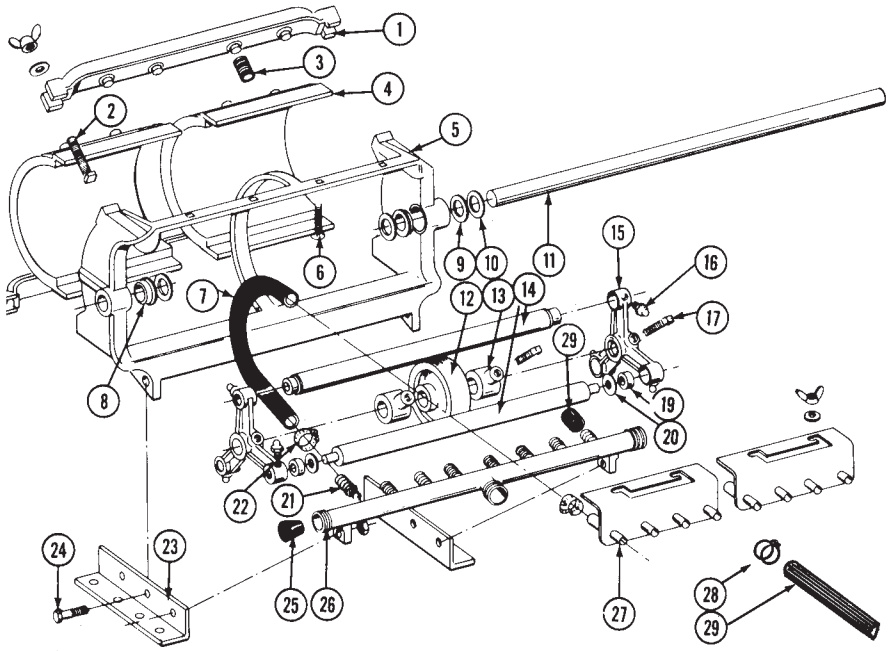
ITEM	PART NO.	DESCRIPTION
1.	R216	Spring Anchor Bar
2.	10130	Sq. Head Machine Bolt, 5/16" - 18 x 1 3/4"
	10219	Washer, 5/16" USS
	10144	Wing Nut, 5/16" - 18
3.	R214	Spring
4.	R212	Plate
5.	R208	Frame
6.	R207	Bushing (Nylon)
7.	10303	Round Head Machine Bolt, 5/16" - 18 x 1"
	10219	Washer, 5/16" USS
	10144	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.	4300-3	Hose, 1/2" x 30'
A.	A321	Squeeze Pump Complete

LIQUID FERTILIZER SQUEEZE PUMP - 6 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.	4300-4	Hose, 1/2" x 50'
A.	A322	Squeeze Pump Complete

LIQUID FERTILIZER SQUEEZE PUMP - 8 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.	4300-5	Hose, 1/2" x 100'
A.	A323	Squeeze Pump Complete

NUMERICAL INDEX

NUMERICAL INDEX