K-IN-LINE PLANTER

OPERATOR & PARTS PRELIMINARY MANUAL

M0110 **6/83**

TO THE OWNER

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

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

This manual contains information that will help you operate your planter in a safe manner.

Throughout this manual the symbol ⚠ and the words **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.

Additional information in regards to service or safe operation of this machine may be obtained through an authorized Kinze Dealer or by contacting the Kinze Service Department at (319) 668-1300.

This manual is applicable to K-In-Line Planter -Model Number KL, Serial Number 20001 and on.

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

Date Purchased _____

Serial Number _____

Model Number _____

WARNING

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

DANGER

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

NEW MACHINE WARRANTY

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

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

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

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

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

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

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 fatique or carelessness, safety precautions should be of utmost concern. Read and understand the instructions provided in this manual. Failure to observe the instructions given may cause personal injury or damage to the equipment.

Listed below are 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.

- Never transport loaded with fertilizer, seed, or chemicals.

- Install all lock up brackets on planter unit sections, markers, and transport stabilizer wheels prior to towing the planter or working around or under the unit.

- Always make necessary safety precautions prior to transporting the machine on public roads. This includes installing Slow Moving Vehicle (SMV) Emblem, reflectors, and use of adequate lights or safety warnings after dark.

- Always make sure there are no persons near the planter when gauge marker assemblies are in operation.

- Watch for obstructions such as wires, tree limbs, etc. when folding marker assemblies.

- Always lower the planter unit sections when not in use and cycle the hydraulic control lever to relieve pressure in cylinders and hoses.

- Never allow the planter to be operated by anyone who is unfamiliar with the operation of all functions of the unit. All operators should read and thoroughly understand the instructions given in this manual prior to moving the unit.

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 and safe planter operation and good working habits.

Initial Preparation of the Planter

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

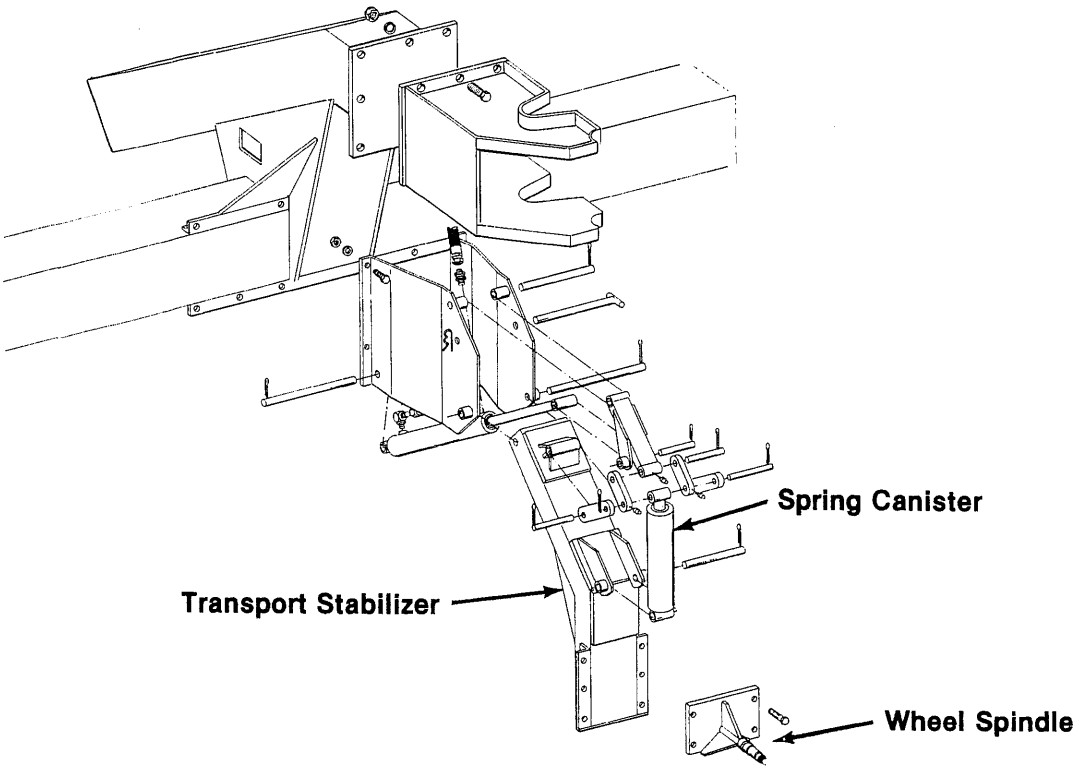
IMPORTANT: The K-In-Line Planter is equipped with front and rear transport stabilizer wheels for safety and stability in the transport position. As your planter may be equipped in a number of different ways, such as with or without dry or liquid fertilizer, the balance of the machine may vary in the transport position. The spring canister and the solid link (dogbone) are interchangeable in the folding linkage of each transport stabilizer wheel. The spring canister and solid link should be installed in the proper linkage at the time of initial predelivery of the K-In-Line Planter. The solid link should be installed on the heavier side of the machine at this time.

⚠ Do not attempt to disassemble the spring canister! Springs inside are highly compressed.

NOTE: Both the front and rear transport stabilizer wheel spindles are height adjustable. Four positions are available on each side of the planter. The heavy side of the planter, in which the solid link was previously installed in the folding linkage, should be adjusted to level the frame and carry the balance weight of the planter. The opposite side spindle should be adjusted in an exact reverse manner. For example, if the right side is adjusted to the lowest spindle position, the left side should then be adjusted to the highest spindle position. Final adjustment of the spindle location may be necessary if difficulty is experienced in attempting to latch the planter hitch into the planting position in soft soil conditions. In the transport position, the spring canister side transport stabilizer wheel should slightly clear the ground on a hard surface.

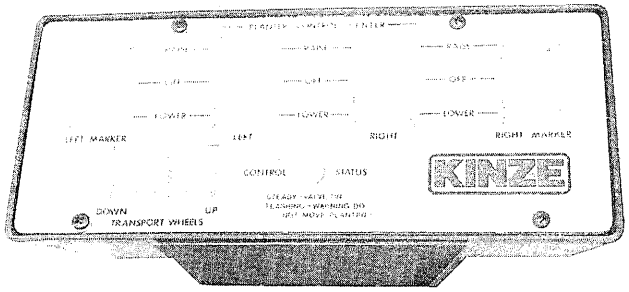
Tire Pressure

Drive Wheels - 2 40 P.S.I.
Transport Wheels - 2 45 P.S.I.
Pivot Wheels - 4 50 P.S.I.



Tractor Preparation and Hookup

1. Install the planter control console on the tractor in such a way that is will be convenient for operator use. Connect the power leads to the tractor battery. Use caution to connect to 12 volts only. Connect the red and green wire leads to the positive battery terminal and the brown, white, and black leads to common (ground).

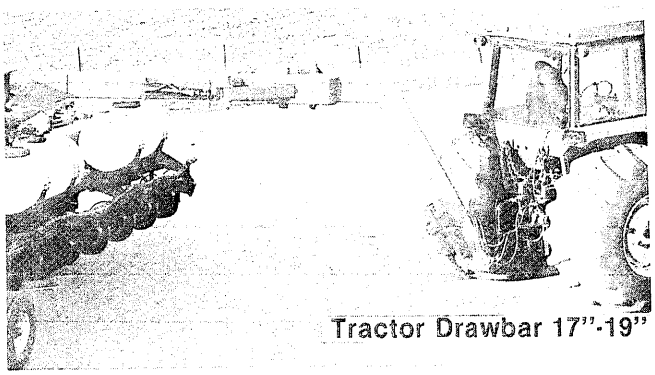


CAUTION: Damage to the control console may result if power leads are inadvertently hooked to reverse polarity.

2. Adjust tractor drawbar so that it is 17 to 19 inches above the ground. Then adjust the drawbar so that the hitch pin hole is directly below the centerline of the PTO shaft. Make sure the drawbar is pinned in a stationary position.

3. Back the tractor up to the planter and connect with a hitch pin. Be certain the pin used is of sufficient strength and secured with a locking pin. It is recommended that pin diameter be not smaller than 1 1/8 inch.

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


Tractor Drawbar 17"-19"

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

⚠ 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.

5. Connect control console cable connectors and route wiring so to avoid damage to the cable.

6. Raise jack stand and remount it on the storage bracket provided.

NOTE: A manual lockout may be installed on the hitch latch cylinder lever to prevent accidental release of the hitch from the latched position while the unit is in the planting position.

Control Console

The control console provided with the K-In-Line Planter is designed to control the five section electro/hydraulic valve mounted on the planter main frame. The five switches on the console face control raising and lowering of the right and left planter unit sections, the right and left guage marker assemblies, and the transport stabilizer wheels.

Operation of any of the functions of the planter is accomplished by depressing a rocker switch into either the up or down position and movement of the proper hydraulic outlet control lever. An indicator light on the console face lights when any switch is in the "on" position. Return all switches to the neutral position after use.

NOTE: The hydraulic system used on the K-In-Line Planter requires that hydraulic oil flow always be one directional. Care should be take during initial hook-up and use to insure that the hydraulic system is operated properly.

The control console is protected by a 15 amp fuse located in a fuse holder on the back side of the console. Routing of all cables should be done with care to insure that cables are not damaged by sharp metal edges or moving parts. Cable connectors at the hitch should be capped with dust covers provided when not in use.

Transporting The Planter

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

Hitch Sequence - Planting Position To Transport

1. Install safety lockups on planter unit sections and marker assemblies prior to transporting the planter.

NOTE: Operation of the planter electro/hydraulic valve system will vary with the style of hydraulic system with which the tractor is equipped. A closed center system may be operated by placing the hydraulic lever in the detent position and depressing the desired function switch or switches on the planter control console. An open center system will require the operator to depress the desired function switch or switches on the planter control console and manual operation of the appropriate hydraulic lever.

2. Depress the transport wheel rocker switch to the "down" position and engage the proper hydraulic lever to lower the front and rear transport wheels to the ground. Return the hydraulic lever and the rocker switch to their neutral positions.

3. Install the safety lockup on the cylinder ram of the rear transport stabilizer wheel linkage and the safety pin under the linkage of the front wheel.

4. Operate the hydraulic valve control lever to release the hitch from the latched position.

5. Drive slowly away from the planter and allow the hitch to steer the planter into the transport position.

CAUTION: Left hand turns are limited by stops located on the hitch and planter main frame which will contact each other when the hitch is steered to an approximate 45 degree angle behind the main frame. Possible damage to the hitch or steering linkage may result if an attempt is made to force the planter to steer at this limit. Left hand turns of this degree should be avoided.

Hitch Sequence - Transport To Planting Position

1. Remove safety lockups from both the front and rear transport stabilizer wheels and store these in their appropriate locations.

NOTE: When folding the planter on hard surface a slight downhill incline may be helpful to keep the planter from rolling as the hitch is backed into the latch location.

2. Place the tractor in reverse and back the hitch around the left end of the planter until the guide sleeves located on the hitch mate with their sockets on the hitch head section.

NOTE: It may be helpful to use the transport wheel switch to raise or lower the height of the head section as the hitch is backed into position.

3. Place the tractor transmission gear selector in the neutral position. Do not force the stabilizer wheels to slide as the hitch latch hinge is pivoted.

4. Operate the hydraulic valve control lever to capture the hitch and lock it into the planting position.

5. Depress the transport wheel rocker switch to the "up" position and operate the hydraulic valve lever to raise the transport stabilizer wheels to their folded planting position.

CAUTION: Do not attempt to move the planter in planting position with the transport stabilizer wheels on the ground.

6. Remove safety lockups from the planter unit sections and gauge marker assemblies.

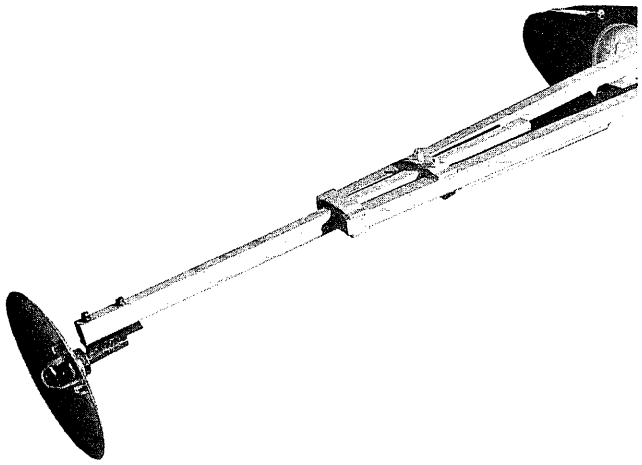
7. Depress the right and left planter unit section switches to the "down" position and operate the hydraulic valve lever to lower the sections to the ground.

Hydraulic Marker Operation

The K-In-Line Planter is equipped with double fold markers which are controlled independently from switches on the planter control console.

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

The markers are operated by depressing the left or right marker rocker switch into the "up" or "down" position and operating the hydraulic control valve lever. Return the switch to the neutral position upon completion of each function.

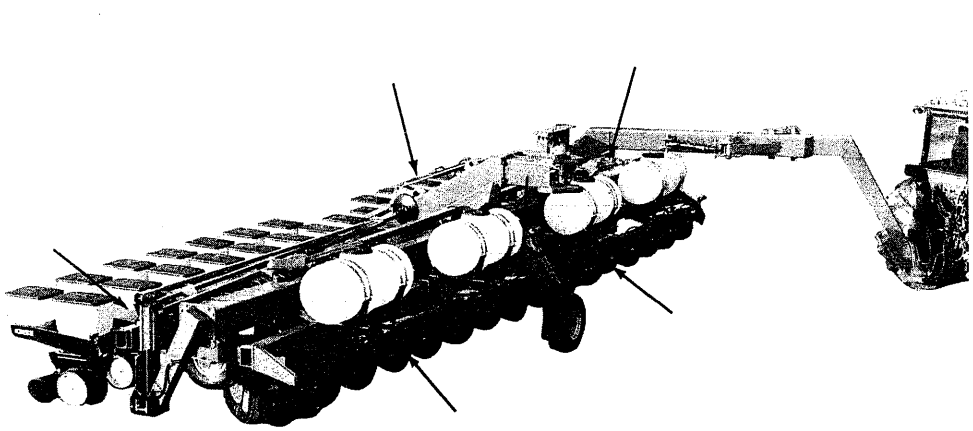


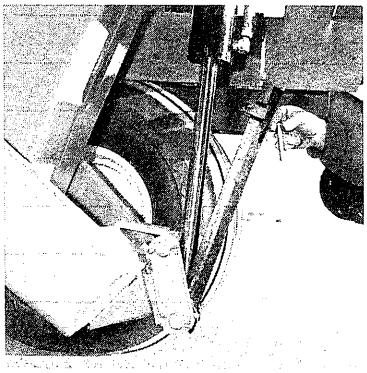
MARKER ADJUSTMENT

The length of the gauge marker assembly is adjustable by sliding the extension tube of each marker to the correct setting.

The marker disk is installed so the concave side of the disk is outward to throw dirt away from the grease seals. To provide variation in the size of the mark, the spindle bracket is slotted so the hub and blade can be angled forward to throw more dirt. To adjust the hub and spindle, loosen the attaching capscrews and move the bracket as required. Retighten all bolts after marker adjustments are completed.

⚠ WARNING: Always use safety lockups when transporting the planter.





Safety Lock-Up Locations Are Marked With Arrows

LUBRICATIONS

The following pages show the locations of all lubrication points. Proper lubrication of all moving parts will help insure efficient operation of your Kinze unit and prolong the life of friction producing parts. Those parts equipped with grease fittings should be lubricated at the frequency indicated with an SAE multi-purpose 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.

Corn Meter Lubrication

To provide efficient operation of finger type plateless corn meters and extend the life of components, sprinkle a teaspoon of powdered graphite over the top of the seed each day. The graphite will filter down into the seed pickup mechanism and insure lubrication.

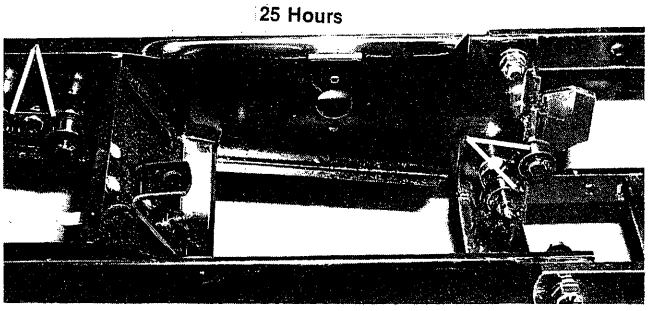
Drive Chains

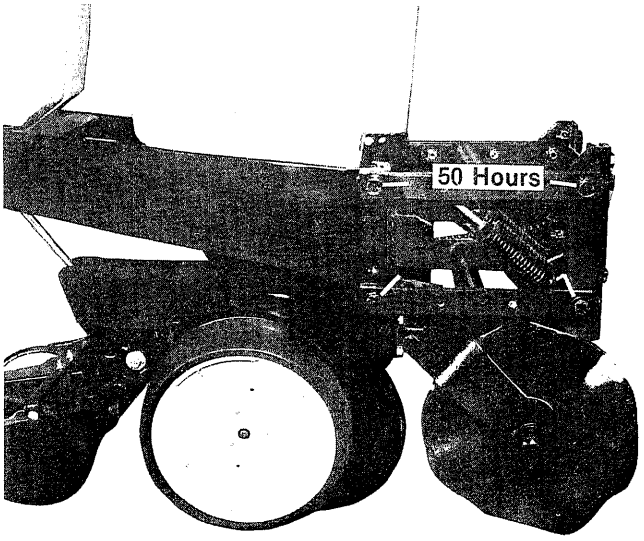
The transmission and row unit drive chains should be lubricated approximately every 8-10 hours with a quality engine oil or equivalent SAE 10 weight oil. A good quality spray lubricant may also be used for periodic chain lubrication. Extreme operating conditions such as dirt, temperature, or speed may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

Wheel Bearings

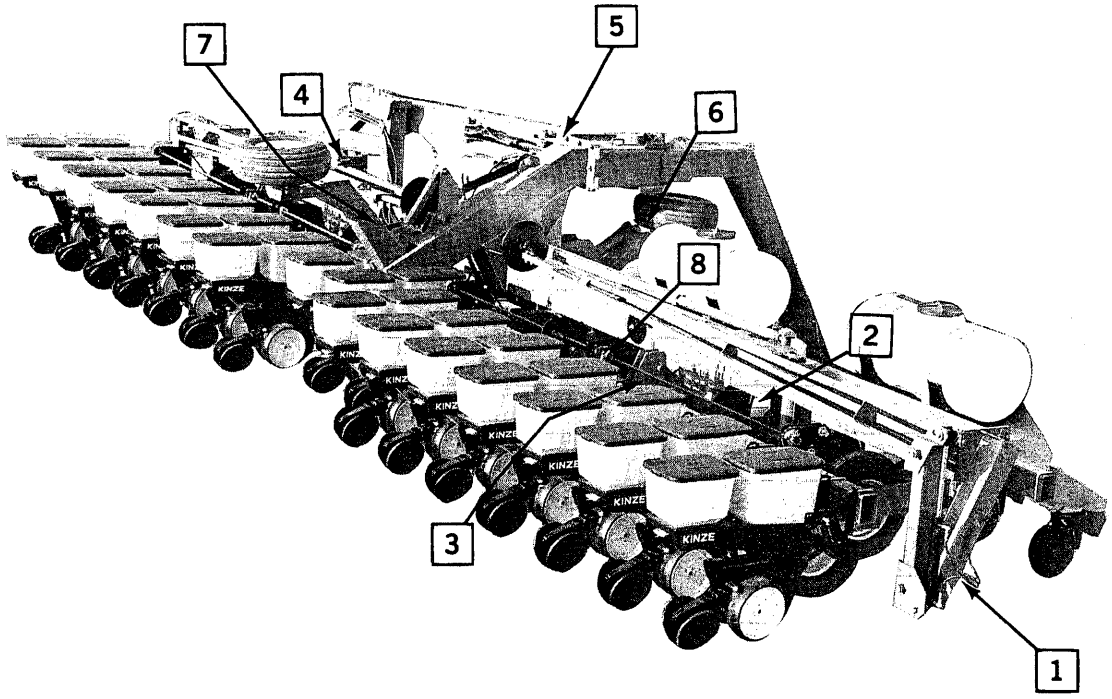
Wheel bearings should be repacked with clean heavy duty axle grease approximately once a year or at the beginning of each planting season. This applies to all drive wheels, transport wheels and marker hubs.

The parallel arm (8) bushings should be lubricated every 50 hours and the idler spools every 25 hours with a quality engine oil or equivalent SAE 10 weight oil.





LUBRICATION



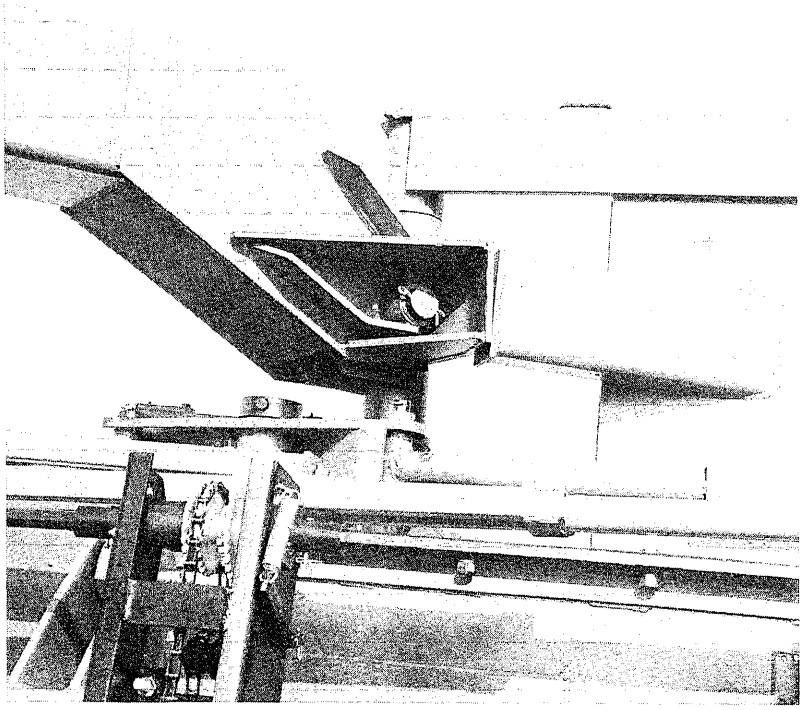
1.	Marker Assembly	4 Zerks	10 Hrs.
2.	A-Frame Unit Lift	4 Zerks	10 Hrs.
3.	A-Frame Linkage	4 Zerks	10 Hrs.
4.	Steering Linkage	15 Zerks	50 Hrs.
5.	Tongue Linkage	4 Zerks	50 Hrs.
6.	Transport Wheel (Nose)	6 Zerks	50 Hrs.
7.	Transport Wheel (Tail)	4 Zerks	50 Hrs.
8.	Transmission Assembly	2 Zerks	10 Hrs.

After First 100 Hours Check Wheel Bearings

Transmission Adjustment

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

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



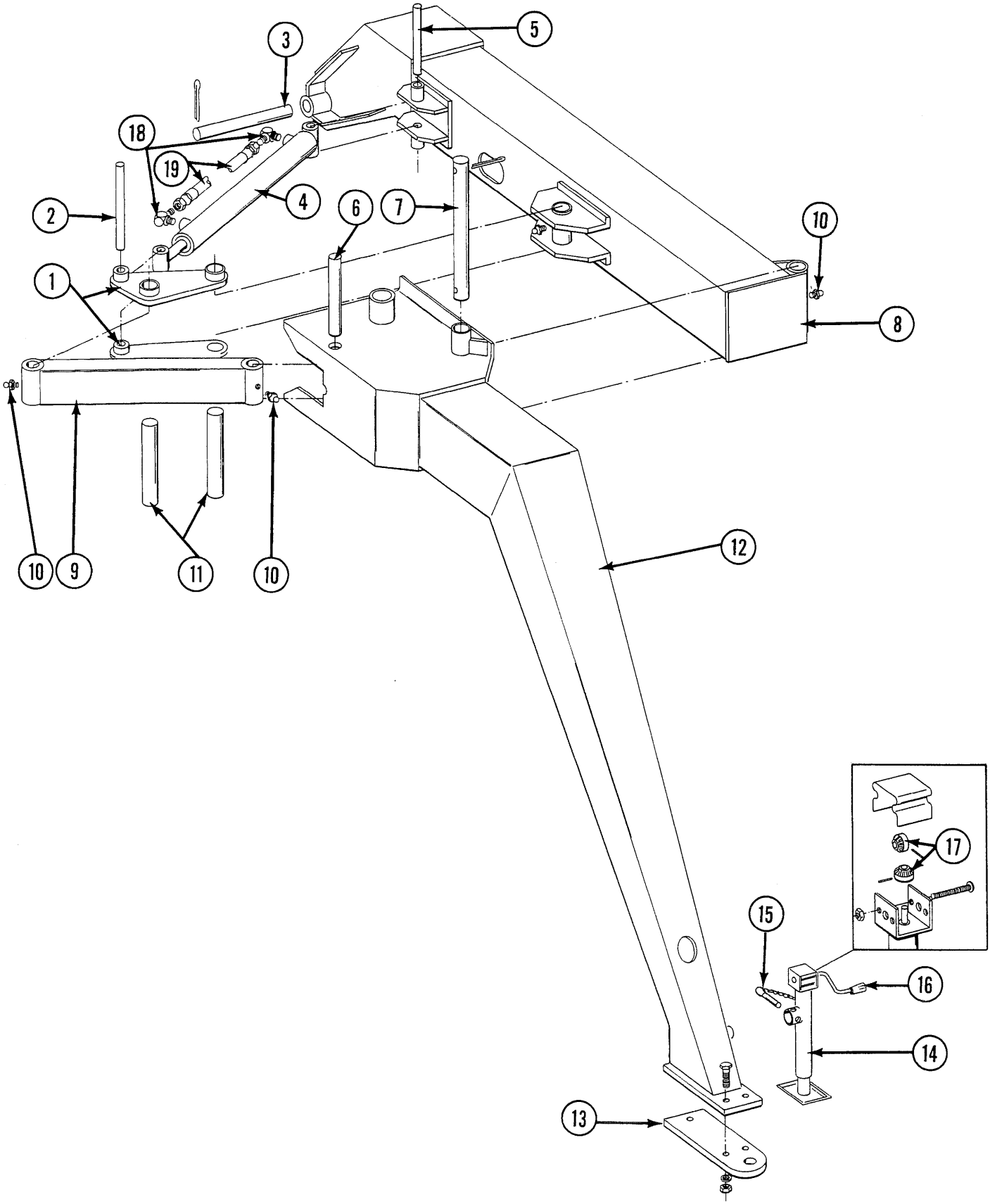
⚠ **Left Hand Turn Stop**

TORQUE VALUES

¾" Pivot Wheel - 8 Bolts 425 Foot-Pounds
1" Head Section - 8 Bolts 600 Foot-Pounds

Grade 5 Three Radial Dashes	Grade 8 Six Radial Dashes

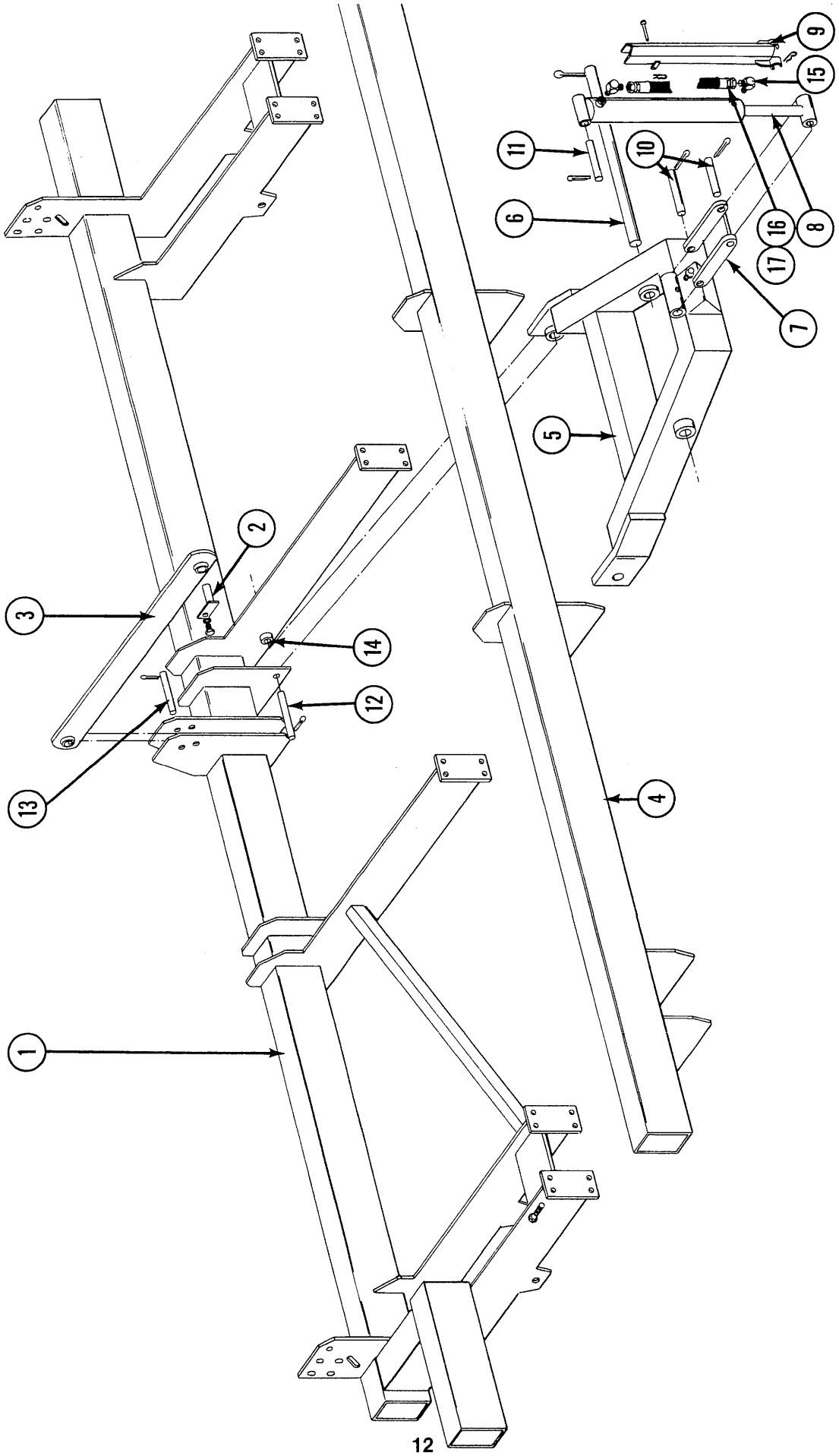
TONGUE ASSEMBLY



TONGUE ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1.	A1279	Toggle Plate Weld, 12R30
	A1259	Toggle Plate Weld, 16R30
2.	D2300	Dog Bone Shaft
3.	D1872	Pin
4.	A234	Cylinder, 3½"x20"
5.	D1702	Pin
6.	D1891	Pin
7.	D1872	Pin
8.	A995	Horizontal Hitch Tube Weld 12 R30
	A1256	Horizontal Hitch Tube Weld R30
9.	A940	Arm Linkage Weld, (Includes grease fittings)
10.	10640	Grease Fitting, ¼ NPT
11.	D2138	Pin, Pivot
12.	A1200	Hitch Section, Front
13.	D2222	Hitch Plate
14.	A941	Jack Assembly
15.	R517	Hitch Pin
16.	R516	Crank Assembly
17.	R515	Bevel Gears
18.	2501-8-8	Elbow, 90°
19.	A1050	Hose Assembly, 3/8"x240"

PLANTER FRAME ASSEMBLY

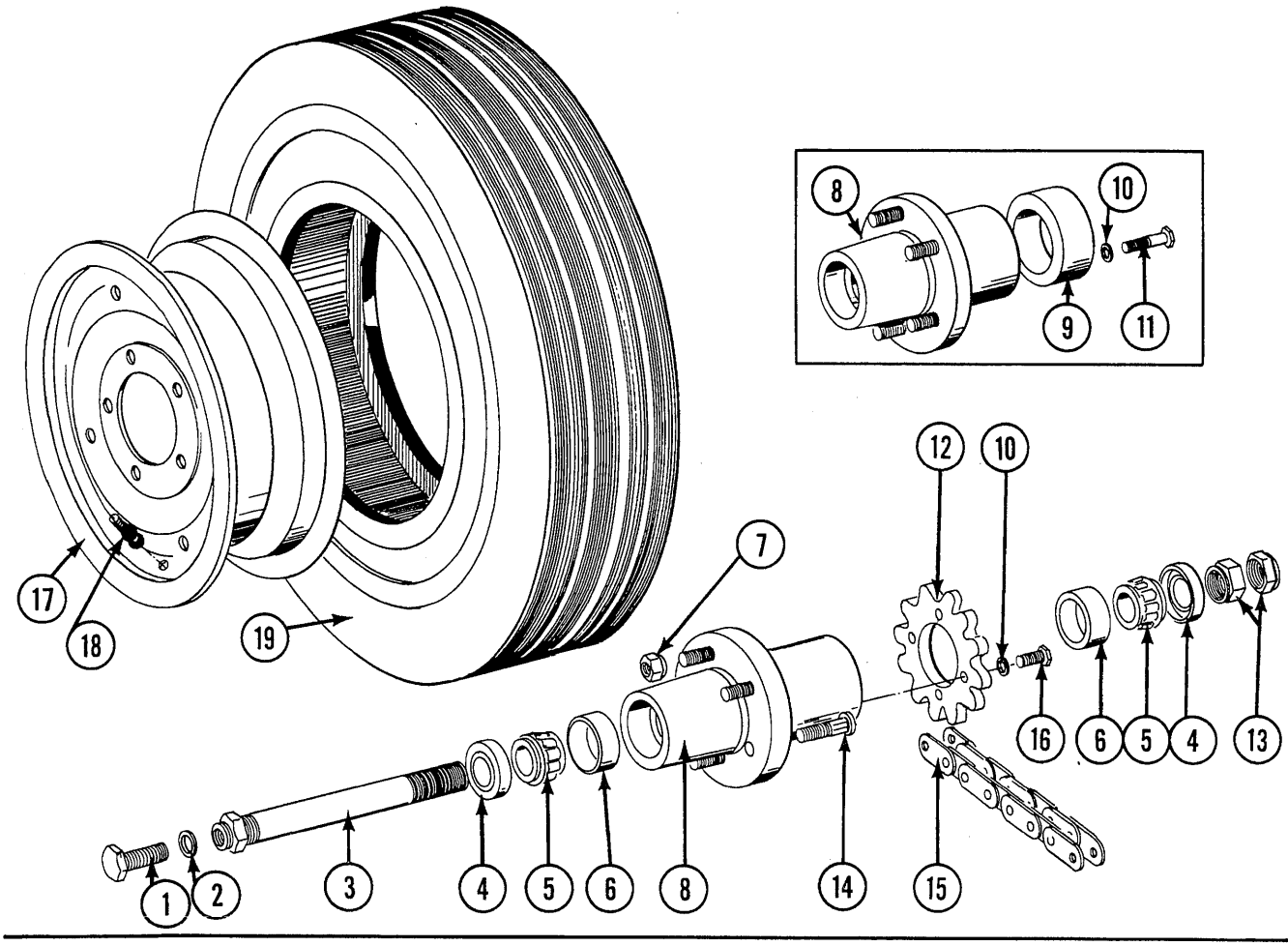


PLANTER FRAME ASSEMBLY

6/83

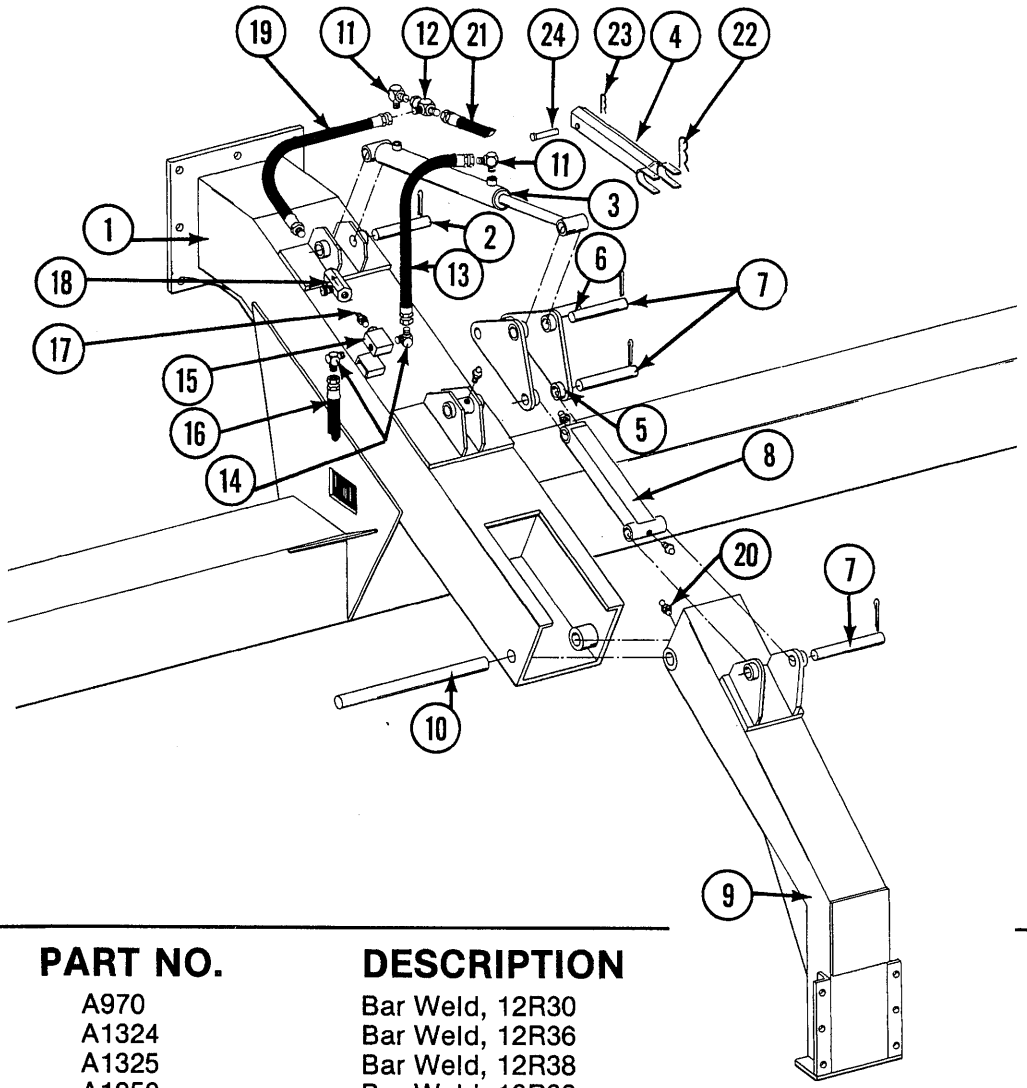
ITEM	PART NO.	DESCRIPTION
1.	A1219	Planter Frame L.H. 12R30
	A1220	Planter Frame R.H. 12R30
	A1341	Planter Frame L.H. 12R36
	A1342	Planter Frame R.H. 12R36
	A1351	Planter Frame L.H. 12R38
	A1352	Planter Frame R.H. 12R38
	A1291	Planter Frame L.H. 16R30
	A1292	Planter Frame R.H. 16R30
2.	A1212	Pin Weld, Top Link
3.	A1213	Top Link Weld, 12R30, 36, and 38
	A1384	Adjustable Link, 16R30 (Optional 12R30, 36 and 38) See Page 62
4.	A1225	Planter Frame, Front Section L.H. 12R30
	A1226	Planter Frame, Front Section R.H. 12R30
	A1311	Planter Frame, Front Section L.H. 12R30 Push Unit
	A1312	Planter Frame, Front Section R.H. 12R30 Push Unit
	A1343	Planter Frame, Front Section L.H. 12R36
	A1344	Planter Frame, Front Section R.H. 12R36
	A1345	Planter Frame, Front Section L.H. 12R36 Push Unit
	A1346	Planter Frame, Front Section R.H. 12R36 Push Unit
	A1353	Planter Frame, Front Section L.H. 12R38
	A1354	Planter Frame, Front Section R.H. 12R38
	A1289	Planter Frame, Front Section L.H. 16R30
	A1290	Planter Frame, Front Section R.H. 16R30
	A1317	Planter Frame, Front Section L.H. 16R30 Push Unit
	A1316	Planter Frame, Front Section R.H. 16R30 Push Unit
5.	A981	A Frame Weld, 12R30 36 and 38
	A1506	A Frame Weld 16R30 (Optional 12R30, 36 and 38) See Page 62
6.	D1993	Pivot Pin
7.	A1376	Pivot Weld
8.	A234	Cylinder, 3½" x 20"
9.	A1231	Cylinder Lockup
10.	D2161	Pin
11.	D2168	Pin
12.	D1701	Pin
13.	D826	Pin
14.	D752-2	Sleeve
15.	2501-8-8	Elbow 90°
16.	A1021	Hose Assembly, 3/8" x 56", 12R30
	A1018	Hose Assembly, 3/8" x 40", 12R36
	A1020	Hose Assembly, 3/8" x 48", 12R38
	A1053	Hose Assembly, 3/8" x 72", 16R30
17.	A1049	Hose Assembly, 3/8" x 160", 12R30
	A1057	Hose Assembly, 3/8" x 216", 12R36 and 38
	A1054	Hose Assembly, 3/8" x 204", 16R30
A.	A1228	Planter Frame Assembly R.H. 12R30 (Items 1 and 4)
	A1227	Planter Frame Assembly L.H. 12R30 (Items 1 and 4)
	A1318	Planter Frame Assembly R.H. 12R30 (Items 1 and 4) Push Unit
	A1319	Planter Frame Assembly L.H. 12R30 (Items 1 and 4) Push Unit
	A1348	Planter Frame Assembly R.H. 12R36 (Items 1 and 4)
	A1347	Planter Frame Assembly L.H. 12R36 (Items 1 and 4)
	A1350	Planter Frame Assembly R.H. 12R36 (Items 1 and 4) Push Unit
	A1349	Planter Frame Assembly L.H. 12R36 (Items 1 and 4) Push Unit
	A1356	Planter Frame Assembly R.H. 12R38 (Items 1 and 4)
	A1355	Planter Frame Assembly L.H. 12R38 (Items 1 and 4)
	A1294	Planter Frame Assembly R.H. 16R30 (Items 1 and 4)
	A1293	Planter Frame Assembly L.H. 16R30 (Items 1 and 4)
	A1320	Planter Frame Assembly R.H. 16R30 (Items 1 and 4) Push Unit
	A1321	Planter Frame Assembly L.H. 16R30 (Items 1 and 4) Push Unit

DRIVE GAUGE WHEEL ASSEMBLY



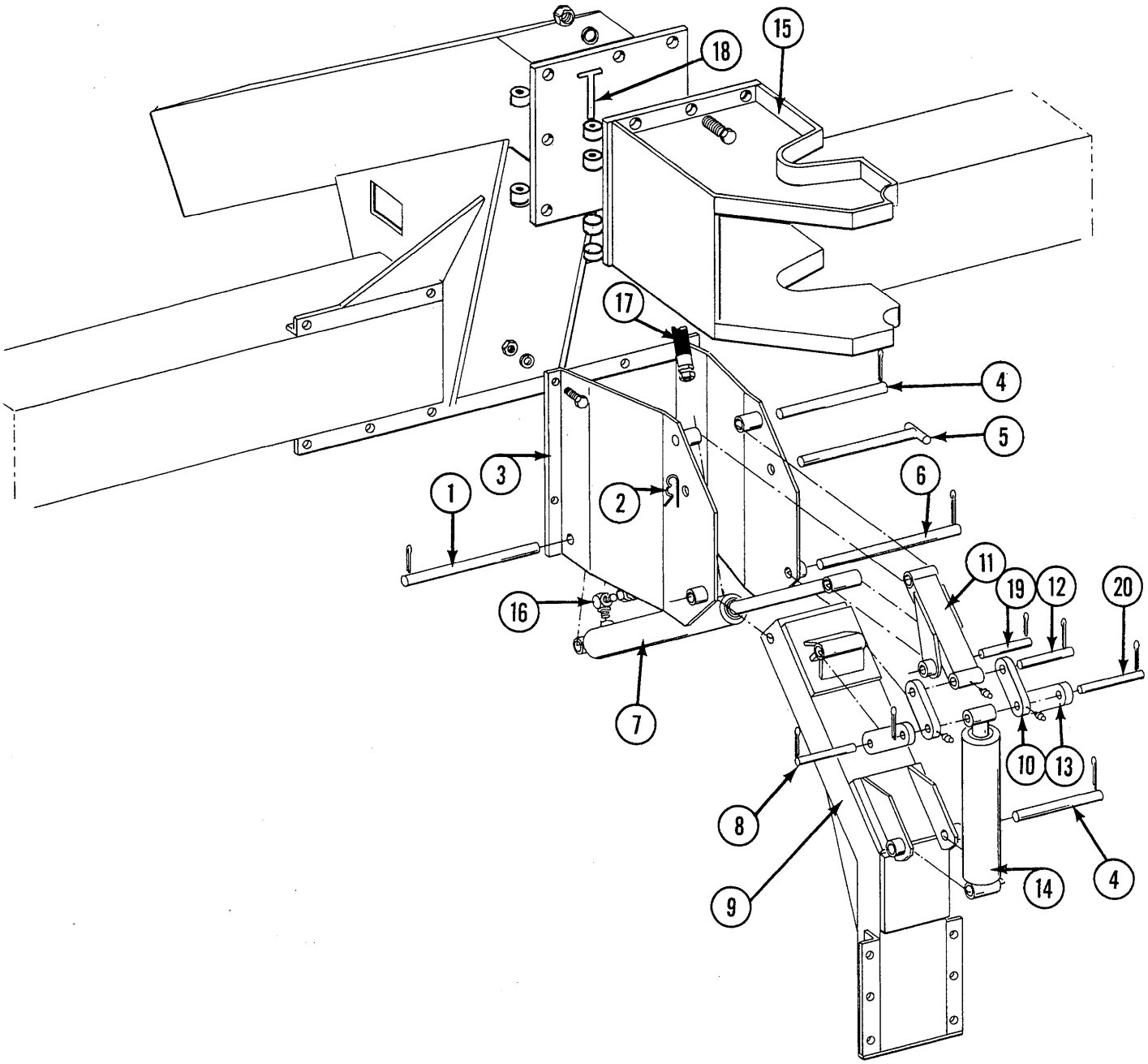
ITEM	PART NO.	DESCRIPTION
1.	10026	HHCS, ¾"-10x2
2.	10231	Lockwasher, ¾"
3.	A652	Spindle Weld
4.	A252	Seal, Grease
5.	A251	Bearing
6.	R190	Cup
7.	R267	Nut, Wheel, ½"-20 UNF
8.	A255	Hub, W Cups and Studs (requires spacer)
	A547	Hub, W Cups and Studs
9.	D915	Spacer
10.	10232	Lockwasher, 5/16"
11.	10031	HHCS, 5/16"-18x1¾"
12.	2500-17	Sprocket, Bolt-on, 12 Tooth
13.	D831	Nut, Shoulder, 1¼"
14.	R204	Stud, Wheel, ½"-20 UNFx1 7/8"
15.	3200-74	Chain No. 2050, 74 Pitch, Includes Connector Link
	3200-6	Chain, No. 2050 (Add to chain when using extended drill spocket)
	R195	Connector Link, No. 2050
16.	10019	HHCS, 5/16"-18x1"
17.	A241	Wheel, 15"x5, 5 bolt
18.	1166	Valve Stem
19.	D844	Tire, 7.60x15", 4 ply
A.	A269	Drive Hub Assembly (Items 1-14)
	A683	Drive Hub Assembly (Items 1-8, 10, 12-14 and 16)
B.	A374	Tire and Rim Assembly, 7.60x15" (Items 17-19)

TAIL WHEEL ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	A970	Bar Weld, 12R30
	A1324	Bar Weld, 12R36
	A1325	Bar Weld, 12R38
	A1252	Bar Weld, 16R30
2.	D2161	Pin
3.	A931	Cylinder, 2 ½" x 18"
4.	A1230	Tail Wheel Cyinder Lockup
5.	A1280	Toggle Plate Weld
6.	D2168	Pin
7.	D653	Pin, Fold Linkage
8.	A952	Link Weld (Optional front or rear)
9.	A1209	Tail Wheel Weld
10.	D1943	Pin
11.	2501-8-8	Elbow, 90°
12.	6602-8	Swivel Run Tee
13.	A1002	Hose Assembly, 3/8" x 20"
14.	2501-8-4	Elbow, 90°
15.	A1381	Pilot Check Valve
16.	A1019	Hose Assembly, 3/8" x 44"
17.	5404-8-4	Pipe Nipple
18.	A248	Flow Control Valve
19.	A1046	Hose Assembly, 3/8" x 14"
20.	10641	Grease Fitting
21.	A1022	Hose Assembly, 3/8" x 60"
22.	10137	Hair Pin Clip, No. 8
23.	10670	Hair Pin Clip, No. 3P
24.	10561	Clevis Pin, ½"x3"
	D2351	Tie Strap, 8" (Not Shown)
	10149	Self Tapping Screw, No. 8-18 (Not Shown)

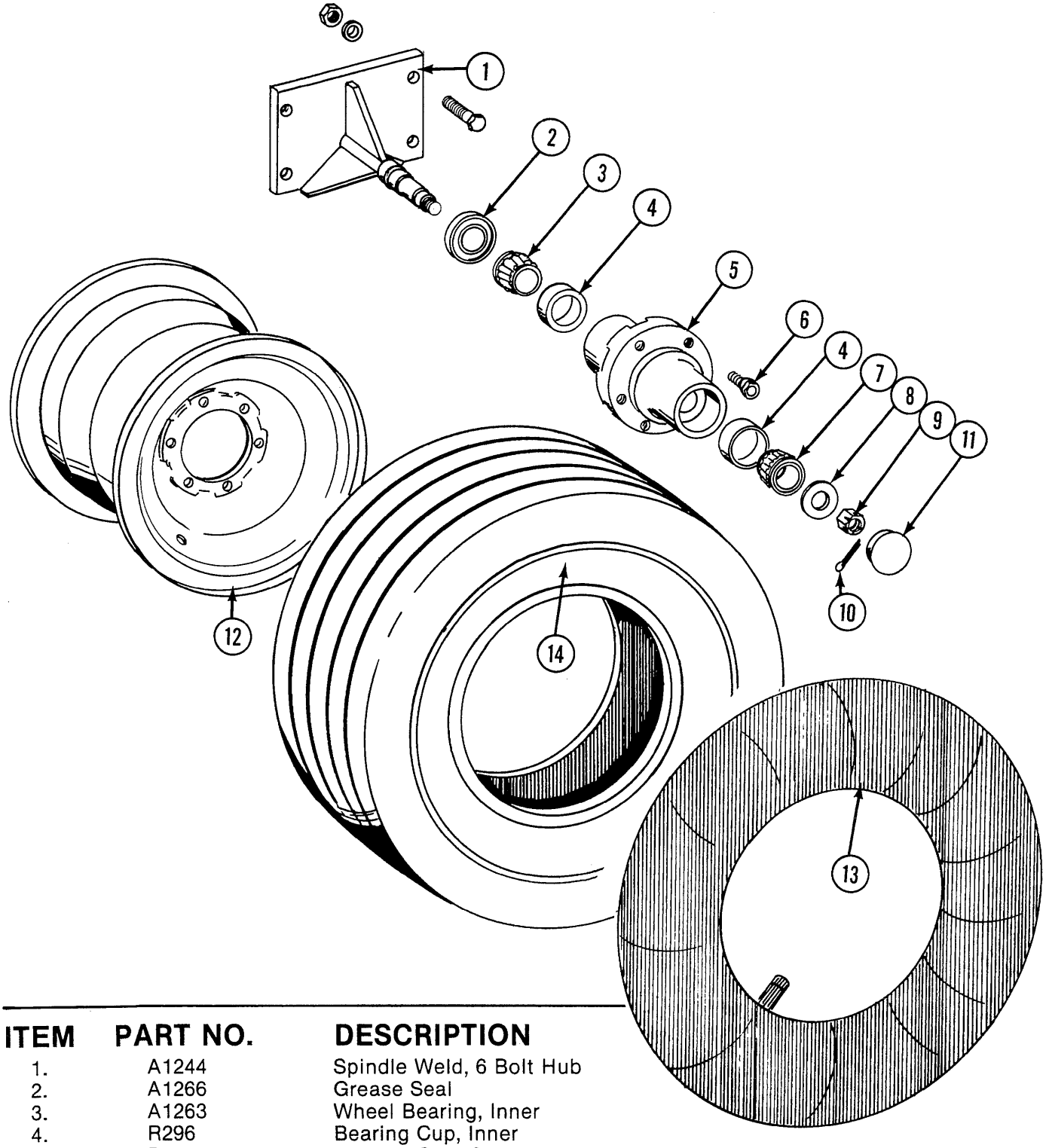
FRONT WHEEL ASSEMBLY AND HEAD SECTION



FRONT WHEEL ASSEMBLY AND HEAD SECTION

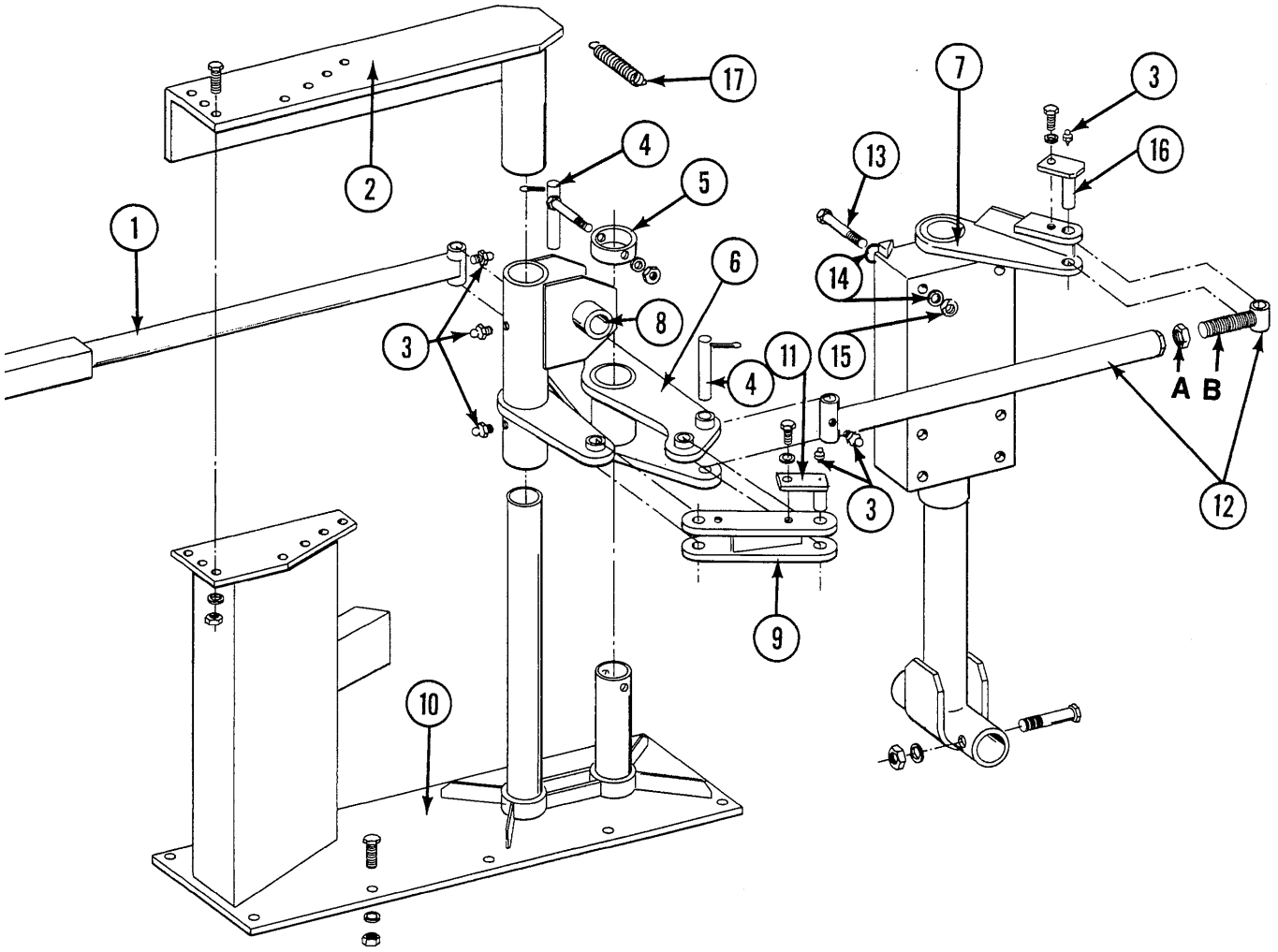
ITEM	PART NO.	DESCRIPTION
1.	D2164	Pin
2.	10670	Hair Pin Clip, No. 6
3.	A1204	Front Wheel Mount
4.	D671	Shaft
5.	A1267	Pin, Lockup
6.	D2163	Pin
7.	A977	Cylinder, 3"x8"
8.	D2161	Pin
9.	A1203	Front Wheel Arm
10.	D1997	Link
11.	A972	Dog Bone Weld
12.	D4108	Shaft
13.	D1996	Link
14.	A1207	Spring Canister Weld (Optional front or rear)
15.	A985	Head Section, Weld
16.	2501-8-8	Elbow, 90°
17.	A1044	Hose Assembly, 3/8"x34"
18.	A1269	Pin, Tee
19.	D653	Pin
20.	D2288	Pin

6 BOLT WHEEL ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1.	A1244	Spindle Weld, 6 Bolt Hub
2.	A1266	Grease Seal
3.	A1263	Wheel Bearing, Inner
4.	R296	Bearing Cup, Inner
	R527	Bearing Cup, Outer
5.	A1265	Wheel Hub w/bearing cups, 6 bolt
6.	R435	Hub Bolt
7.	A1264	Wheel Bearing, Outer
8.	10082	Washer, 1" SAE
9.	10146	Slotted Hex Nut, 1"-14 UNS
10.	10462	Cotter Pin, 3/16"x2"
11.	D2255	Hub Cap
12.	A240	Wheel, 14"x8", 6 Bolt
13.	D2217	Tube
14.	D839	Tire, 11Lx14"

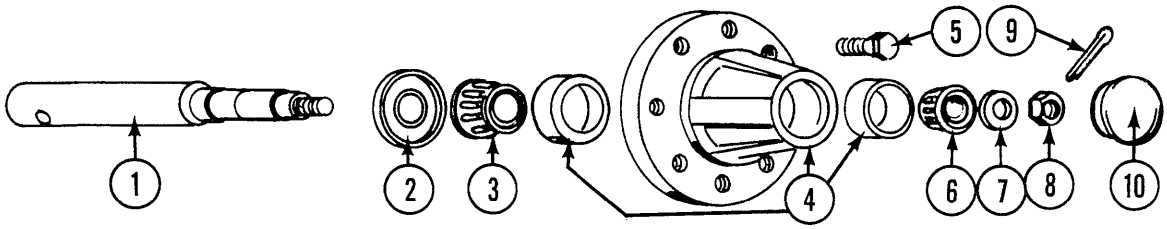
STEERING MODULE ASSEMBLY

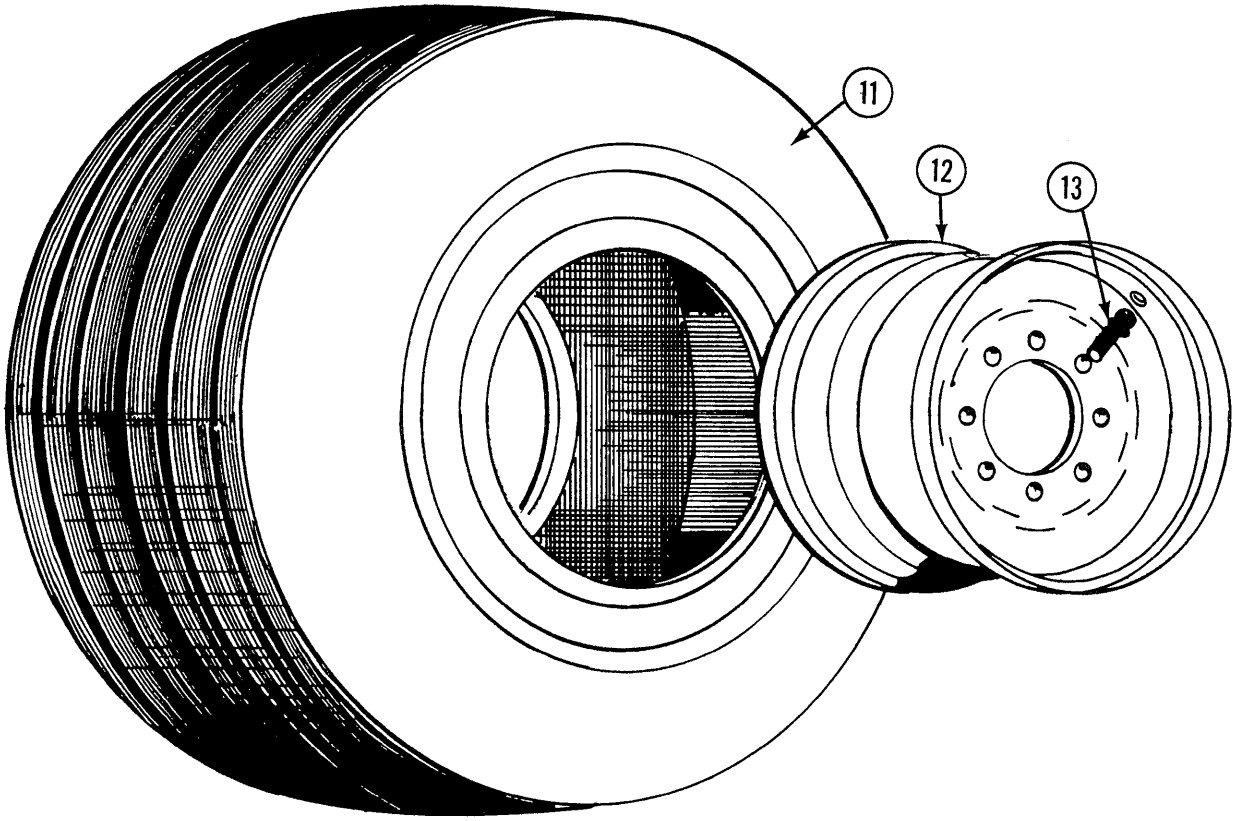


ITEM	PART NO.	DESCRIPTION
1.	A1211	Tie Rod Weld Complete, 12R30
	A1261	Tie Rod Weld Complete, 16R30
2.	A998	Tower Cup Weld Complete
3.	10641	Grease Fitting
4.	D2161	Pin
5.	D575	Cap
6.	A980	Center Pivot
7.	A930	Wheel Tower Weld, R.H., 12R30
	A1215	Wheel Tower Weld, L.H., 12R30
	A1250	Wheel Tower Weld, R.H., 16R30
	A1249	Wheel Tower Weld, L.H., 16R30
8.	A984	Steering Arm Pivot Tube Weld, 12R30
	A1257	Steering Arm Pivot Tube Weld, 16R30
9.	A978	Steering Link Weld, 12R30
	A1288	Steering Link Weld, 16R30
10.	A1206	Steering Module Weld
11.	A933	Pin Weld
12.	A992	Tie Rod Weld with Nut and Tie Rod End
A.	10087	Jam Nut, 1½"-12
B.	A988	Tie Rod End
13.	10097	HHCS, ¾"-16x2½", Grade 8
14.	D2169	Washer, Hardened
15.	10098	Hex Nut, ¾"-16, Grade 8
16.	A934	Pin Weld
17.	D829	Spring

8 BOLT WHEEL HUB AND SPINDLE ASSEMBLY

12R30 ONLY

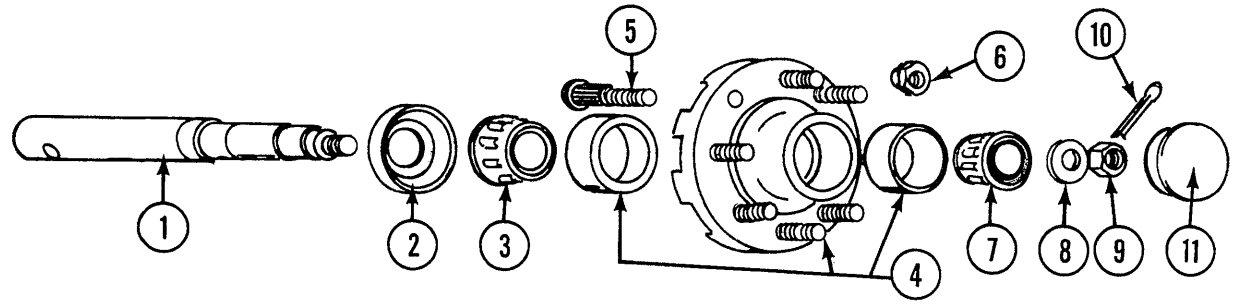


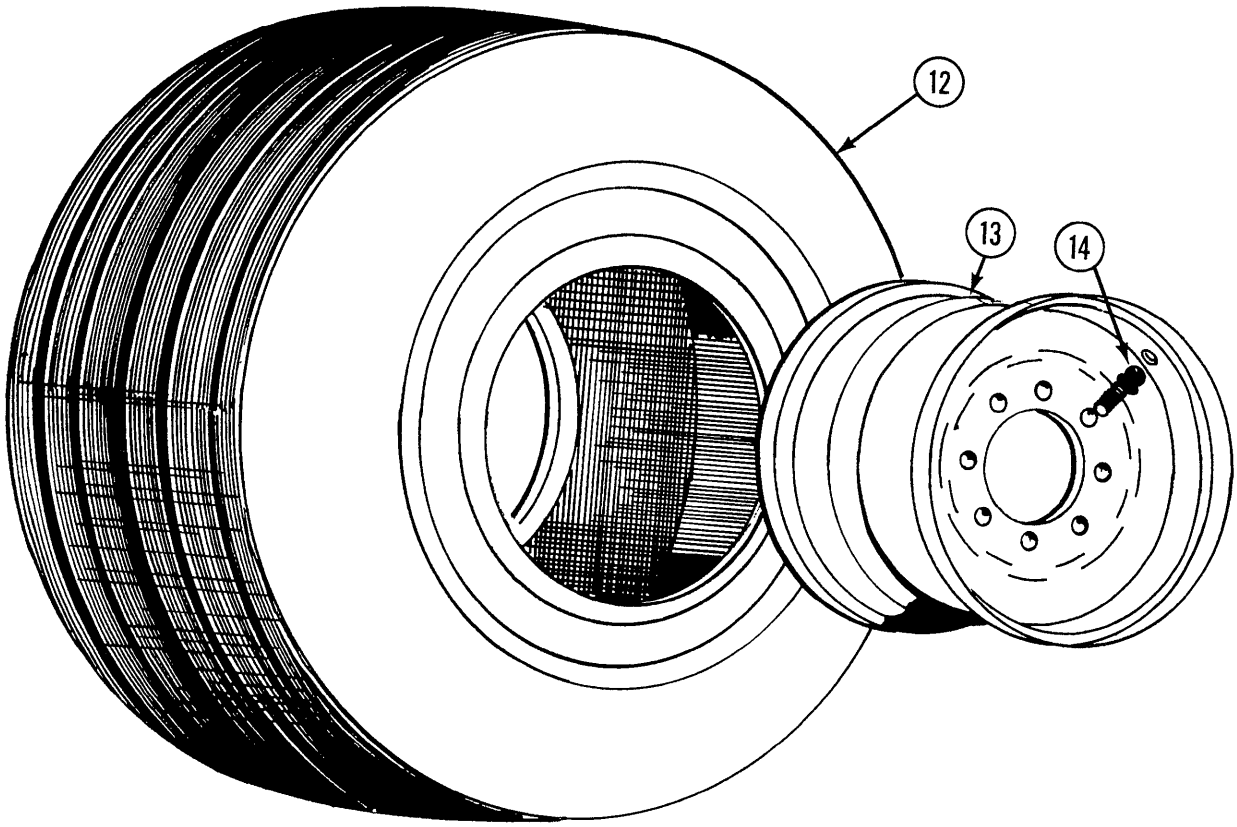


ITEM	PART NO.	DESCRIPTION
1.	D1354	Spindle
2.	A867	Seal
3.	A866	Bearing Cone, Tapered
4.	A513	Hub w/cups
	R296	Cup, Inner
	R522	Cup, Outer
5.	R433	Lug Bolt, 9/16"-18x1 3/16"
6.	A865	Bearing Cone, Tapered
7.	10084	Spindle Washer, 7/8"
8.	10083	Hex Slotted Nut, 7/8"-14
9.	10459	Cotter Pin, 3/16"x1½"
10.	D1741	Hub Cap
11.	D1966	Tire, 14Lx16.1
12.	A964	Wheel
13.	D1166	Valve Stem
A.	A304	Hub Assembly Complete with Spindle

8 BOLT WHEEL HUB AND SPINDLE ASSEMBLY

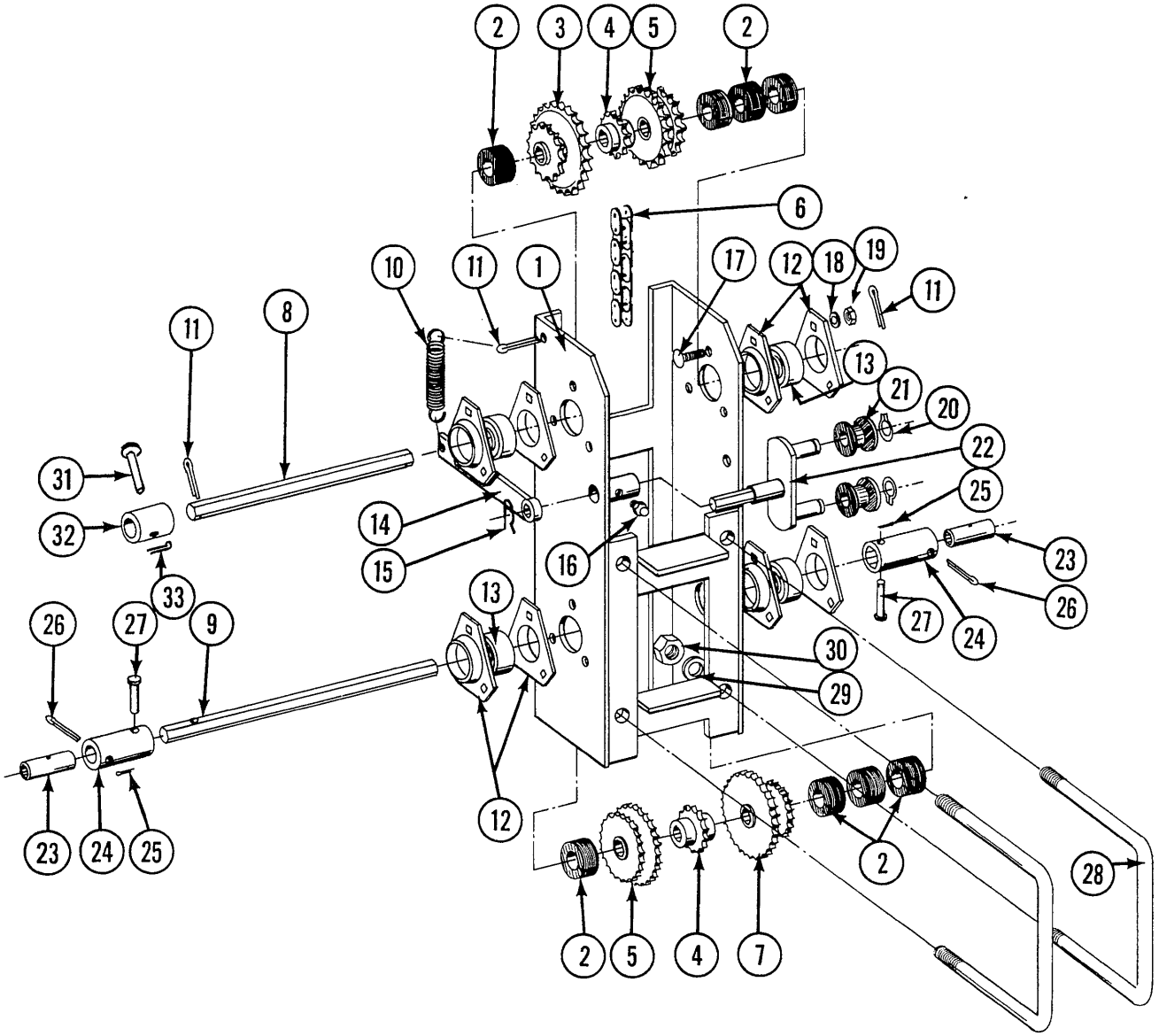
16R30 ONLY





ITEM	PART NO.	DESCRIPTION
1.	D2292	Spindle
2.	A1308	Seal
3.	A1309	Bearing Cone, Tapered
4.	A1295	Hub w/cups
	R529	Cup, Inner
	R530	Cup, Outer
5.	R528	Wheel Bolt
6.	R531	Lug Nut, 5/8"-18
7.	A1310	Bearing Cone, Tapered
8.	10082	Spindle Washer, 1" SAE
9.	10146	Hex Slotted Nut, 1"-14 UNS
10.	10462	Cotter Pin, 3/16"x2"
11.	D2310	Hub Cap
12.	D1966	Tire, 14Lx16.1
13.	A964	Wheel
14.	D1166	Valve Stem
A.	A1313	Hub Assembly Complete With Spindle

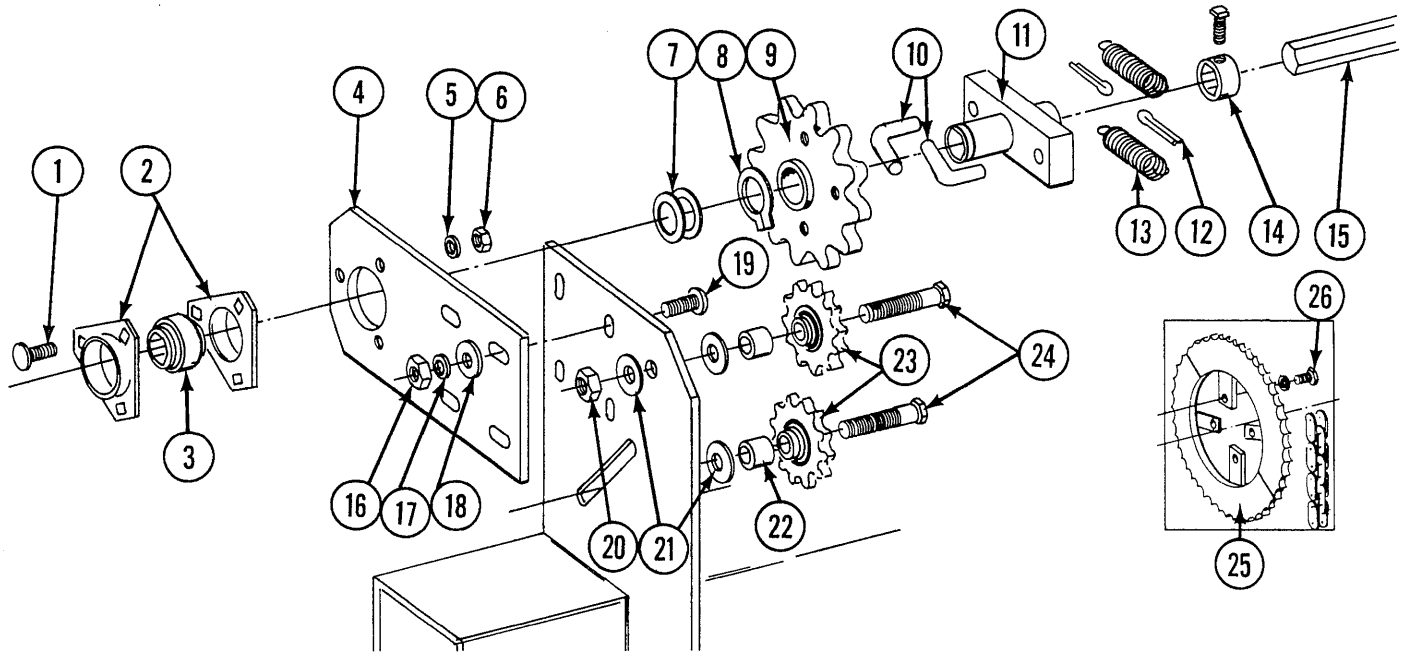
TRANSMISSION ASSEMBLY



TRANSMISSION ASSEMBLY

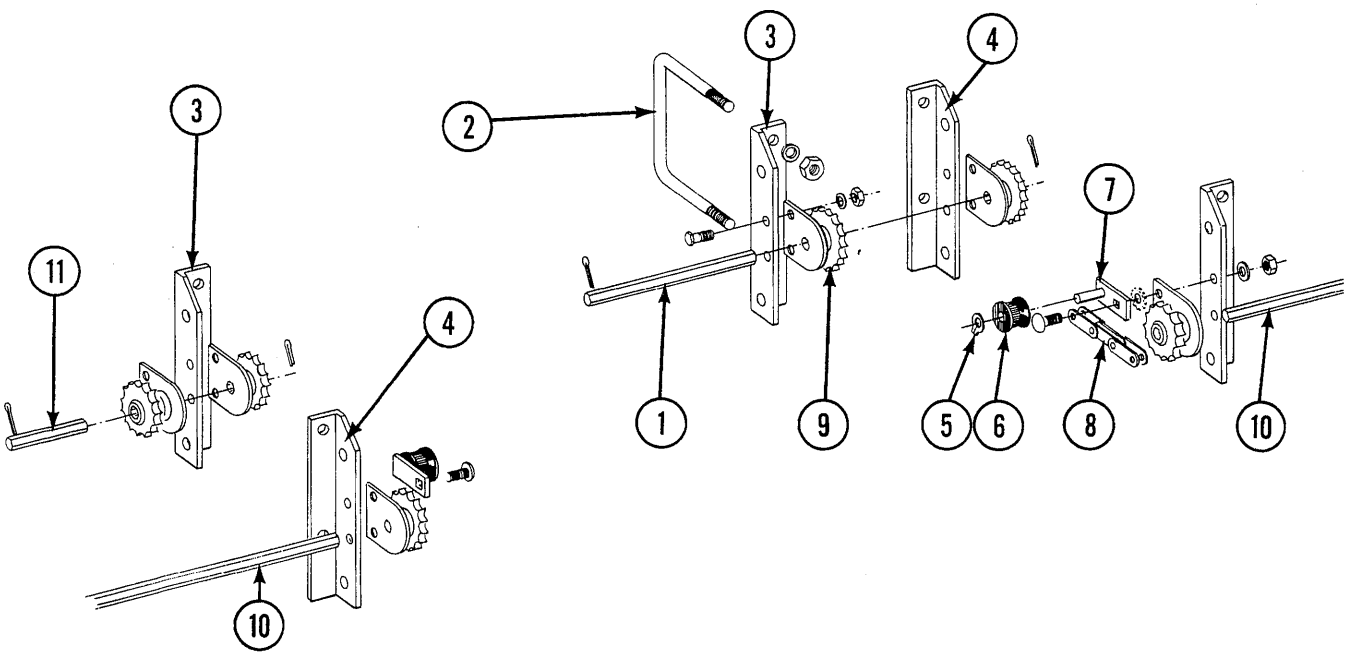
ITEM	PART NO.	DESCRIPTION
1.	A177	Transmission Case
2.	D832	Spacer, Rubber
3.	2500-3	Sprocket, 16-30 Tooth
4.	2500-1	Sprocket, 14 Tooth
5.	2500-2	Sprocket, 22-26 Tooth
6.	3300-40	Chain, No. 2040, 40 Pitch Including Connector Link
	R194	Connector Link
7.	2500-6	Sprocket, 18-28 Tooth
8.	D925	Upper Shaft
9.	D926	Lower Shaft
10.	D913	Spring
11.	10463	Cotter Pin, ¼"x1½"
12.	3400-1	Flangette
13.	2100-3	7/8 Hex Bore Bearing
14.	A272	Idler Arm
15.	10670	Hair Pin Clip, No. 3
16.	10640	Grease Fitting, ¼"
17.	10303	Carriage Bolt, 5/16"-18x1"
18.	10232	Lock Washer, 5/16"
19.	10106	Hex Nut, 5/16"-18
20.	10435	Retaining Ring
21.	D1067	Idler Roller
22.	A242	Tightener Weld
23.	D747	Drill Shaft Drive 9/16"
24.	D748	Coupler, Drill Shaft Drive
25.	10455	Cotter Pin, 1/16"x½"
26.	10462	Cotter Pin, 3/16"x2"
27.	10548	Clevis Pin, ¼"x1¾'
28.	D1113	U-Bolt 5"x7"x5/8"-11
29.	10230	Lock Washer, 5/8"
30.	10104	Hex Nut, 5/8"-11
31.	10558	Clevis Pin 5/16"x1¾"
32.	D1649	Coupler
33.	10456	Cotter Pin 1/8"x3/4"
A.	A503	Idler Assembly (Includes Items 20-22)
B.	R445	Idler Assembly Complete (Includes Items 10, 11, 14, 15 and 20 thru 22)
C.	A277	Transmission Assembly (Includes Items 1-27)

DRIVE LINE



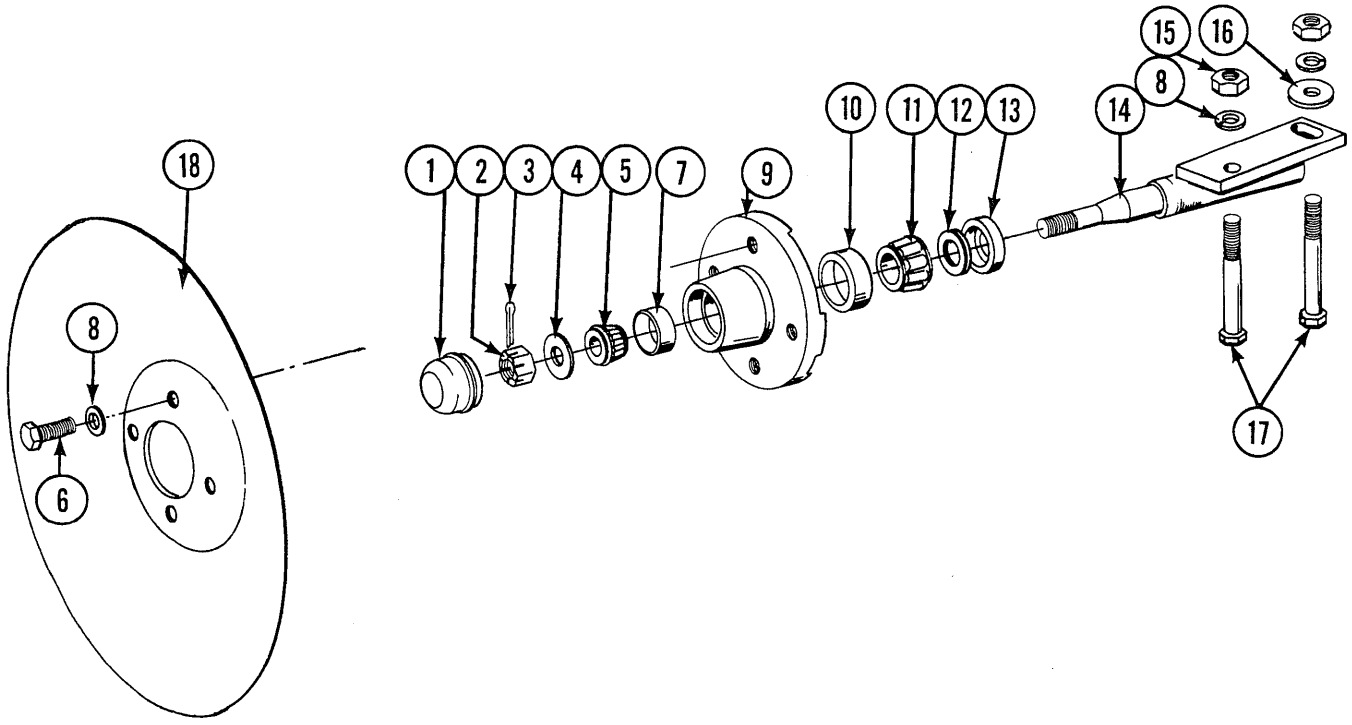
ITEM	PART NO.	DESCRIPTION
1.	10303	Carriage Bolt, 5/16"-18x1"
2.	3400-1	Flangette
3.	2100-3	Bearing, 7/8", Hex Bore
4.	D1663	Bearing Plate
5.	10232	Lockwasher, 5/16"
6.	10106	Hex Nut, 5/16"-18
7.	10233	Machinery Bushing, As Required
8.	10430	Retaining Ring, 1¼"
9.	A376	Hub/Sprocket Assembly
10.	D1255	"L" Pin
11.	A378	Block and Hub Assembly
12.	10464	Cotter Pin, 3/16"x1"
13.	D1256	Spring
14.	A271	Lockcollar
15.	D914-55	Hex Drive Shaft, Inside, 12R30
	D914-85	Hex Drive Shaft, Outside, 12R30
	D914-87	Hex Drive Shaft, Inside, 16R30
	D914-84	Hex Drive Shaft, Outside, 16R30
16.	10101	Hex Nut, 3/8"-16
17.	10229	Lockwasher, 3/8"
18.	10210	Washer, 3/8" USS
19.	10301	Carriage Bolt, 3/8"-16x1½"
20.	10107	Locknut, 5/8"-11
21.	10205	Flat Washer 5/8" SAE
22.	B123	Bushing
23.	A262	Sprocket, Idler, 15 Tooth
24.	10009	HHCS, 5/8"-11x2½"
25.	R460	Sprocket, 48T (Extended Drill Sprocket)
26.	10002	HHCS, 3/8"-16x3/4"
A.	3200-74	Chain, 74 Pitch, No. 2050, Includes Connector Link
	R195	Connector Link, No. 2050
B.	A261L	Ratchet Clutch Assembly Complete, L.H. (Items 8-13)
	A261R	Ratchet Clutch Assembly Complete, R.H. (Items 8-13)

DRILL SHAFT DRIVE LINE



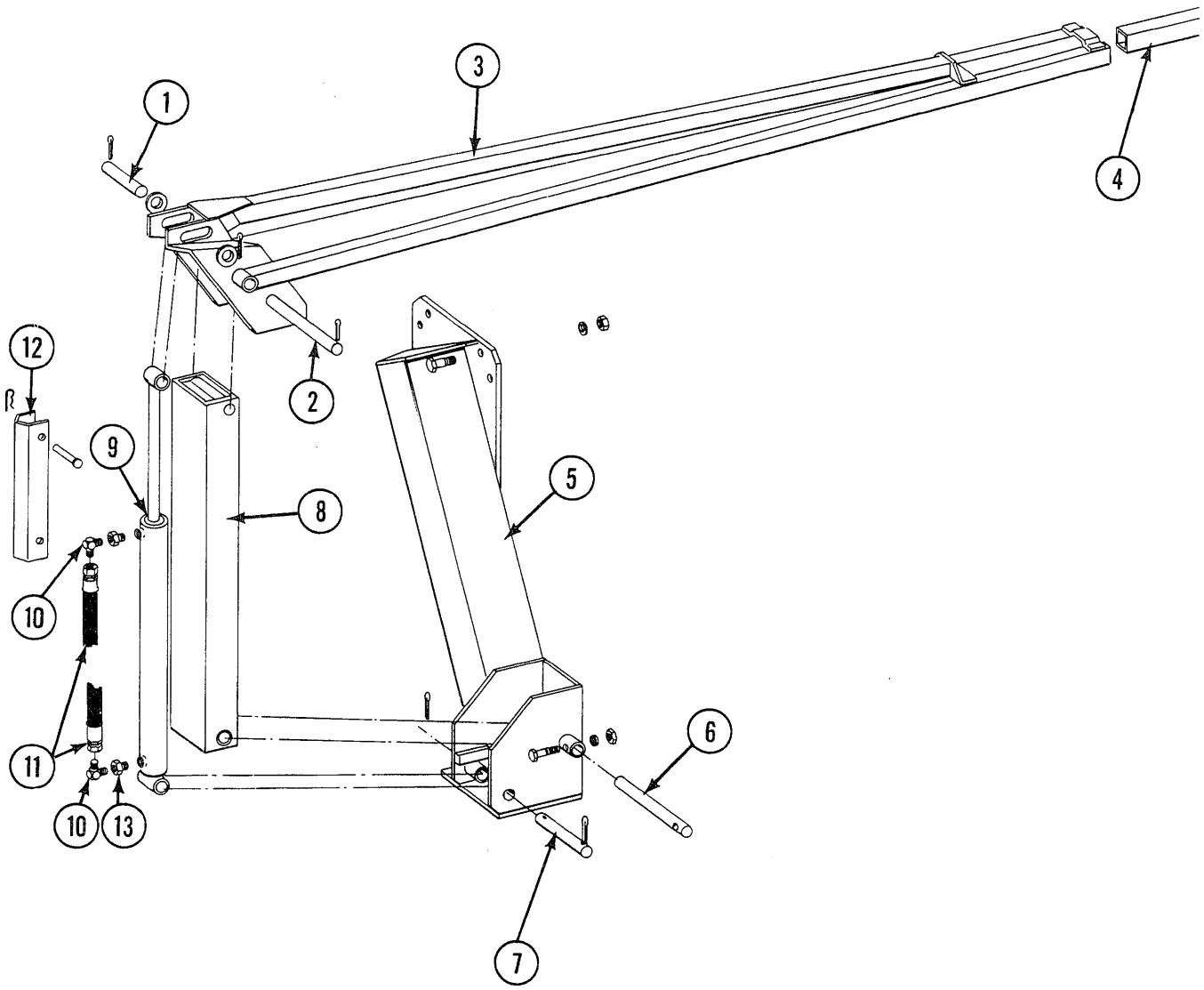
ITEM	PART NO.	DESCRIPTION
1.	D2256	Off Set Unit Shaft, R.H.
2.	D1113	U-Bolt
3.	D1022L	Mount Bracket, L.H.
4.	D2298	Mount Bracket, R.H., Special
5.	10435	Retaining Ring, 5/8"
6.	D1067	Idler Spool
7.	A1281	Idler Arm Weld
8.	3303-92	Chain, 92 Pitch, No. 41 Includes Connector Links
	R196	Connector Link, No. 41
9.	A2057	Bearing and Sprocket, 19 Tooth
10.	D739-62	Hex Drll Shaft, 9/16", Inside, 12R30
	D739-84	Hex Drill Shaft, 9/16", Outside, 12R30
	D739	Hex Drill Shaft, 9/16", Inside, 16R30
	D739	Hex Drill Shaft, 9/16" Outside, 16R30
11.	D2257	Off Set Unit Shaft, L.H.
A.	A1282	Idler Assembly (Items 5, 6 and 7)

MARKER HUB ASSEMBLY



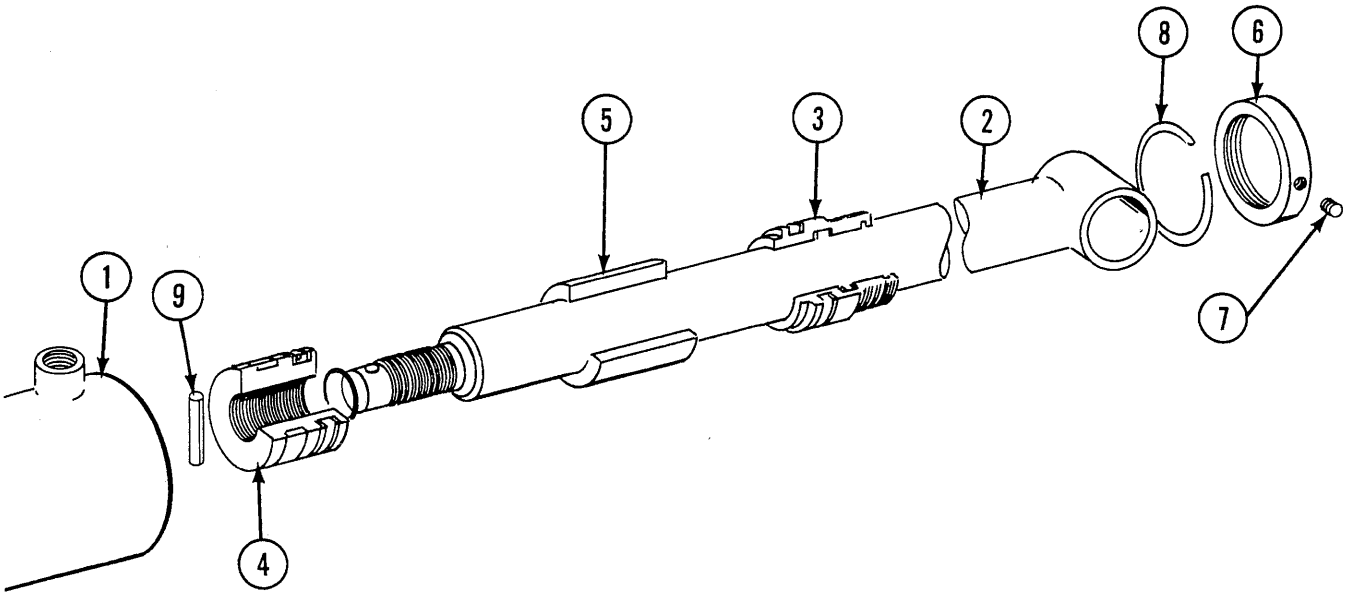
ITEM	PART NO.	DESCRIPTION
1.	D840	Hub Cap
2.	10725	Hex Nut, Slotted, 5/8"-18
3.	10470	Cotter Pin, 5/32"x1"
4.	10724	Washer, 5/8"
5.	A257	Bearing, Outer
6.	10722	HHCS, ½"-20x1"
7.	R151	Cup, Outer
8.	10228	Lockwasher, ½"
9.	A167	Hub w/cups
10.	R150	Cup, Inner
11.	A245	Bearing, Inner
12.	A899	Seal, Rubber
13.	A243	Seal, Grease
14.	A172L	Spindle Assembly, L.H. (shown)
	A172R	Spindle Assembly, R.H.
15.	10102	Hex Nut, ½"-13
16.	10216	Washer, ½" USS
17.	10033	HHCS, ½"-13c3½"
18.	D746	Disc 16"
A.	A305	Hub and Spindle Assembly L.H. Less Disc
	A306	Hub and Spindle Assembly R.H. Less Disc

DOUBLE FOLD MARKER ASSEMBLY



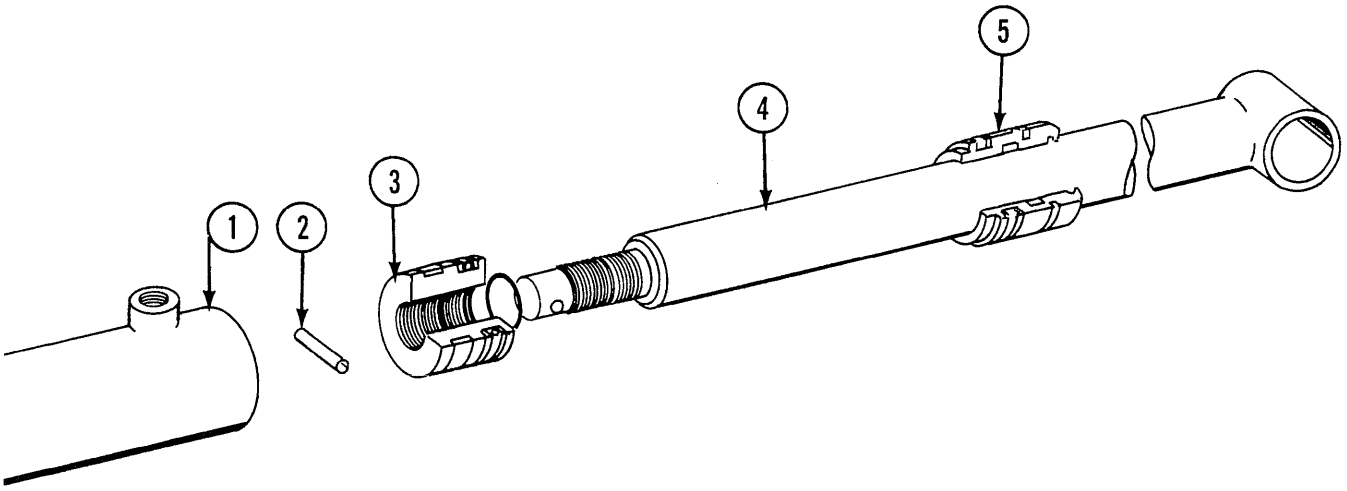
ITEM	PART NO.	DESCRIPTION
1.	D826	Cylinder Pin, Upper
2.	D737	Pivot Pin
3.	A962	Marker Arm Weld, 2nd Stage, 12R30
	A1251	Marker Arm Weld, 2nd Stage, 16R30
4.	D453-3	Extension Tube, 50", 16R30
	D453-4	Extension Tube, 60", 12R30
5.	A956	Marker Mount Sub Weld, R.H.
	A955	Marker Mount Sub Weld, L.H.
6.	D1952	Pin, Marker
7.	D652	Pin, Cylinder, Lower
8.	A957	Tube Weldment, 1st Stage
9.	A931	Cylinder, 2 ½"x18"
10.	2501-6-6	Elbow, 90°
11.	A1117	Hose Assembly, ¼"x192", 12R30, Left Side Only
		Hose Assembly, 16R30, Left Side Only
	A1118	Hose Assembly, ¼"x295", 12R30, Right Side Only
		Hose Assembly, 16R30, Right Side Only
12.	D2203	Cylinder Lock-Up
13.	2404-6-8	Reducer

FRONT WHEEL LIFT CYLINDER



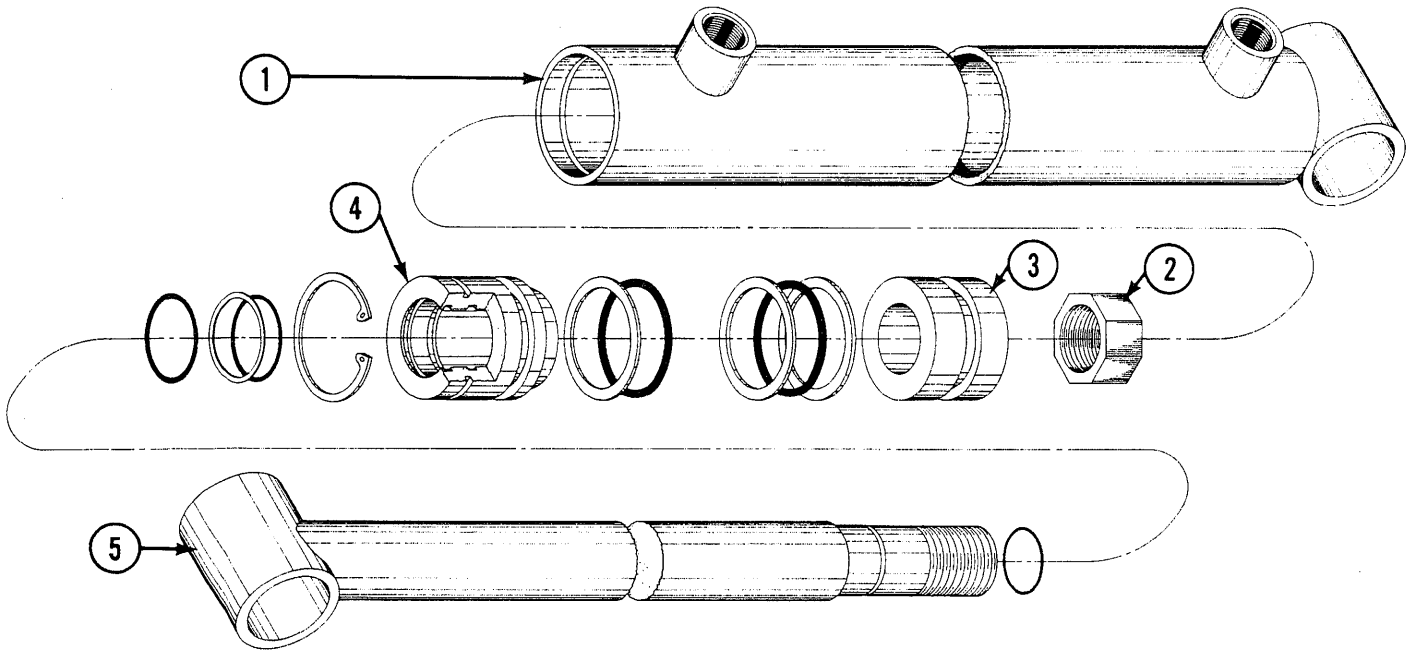
ITEM	PART NO.	DESCRIPTION
1.	R519	Tube Assembly
2.	R518	Shaft Assembly
3.	R128	Head Gland
4.	R129	Piston
5.	R130	Stroke Collar
6.	R131	Head Gland Nut
7.	10114	Set Screw, No. 10-32 x ¼
8.	R132	Wire Ring
9.	10604	Roll Pin
	R133	Seal Kit
A.	A977	Cylinder Assembly Complete, 3"x8"

A FRAME LIFT CYLINDER
TONGUE ASSEMBLY LOCK CYLINDER



ITEM	PART NO.	DESCRIPTION
1.	R112	Cylinder Tube Assembly
2.	10604	Roll Pin, 3/16'x1½"
3.	R115	Piston
4.	R113	Shaft Assembly
5.	R114	Head Gland
	R116	Seal Kit
A.	A234	Cylinder Assembly, Complete 3½"x20"

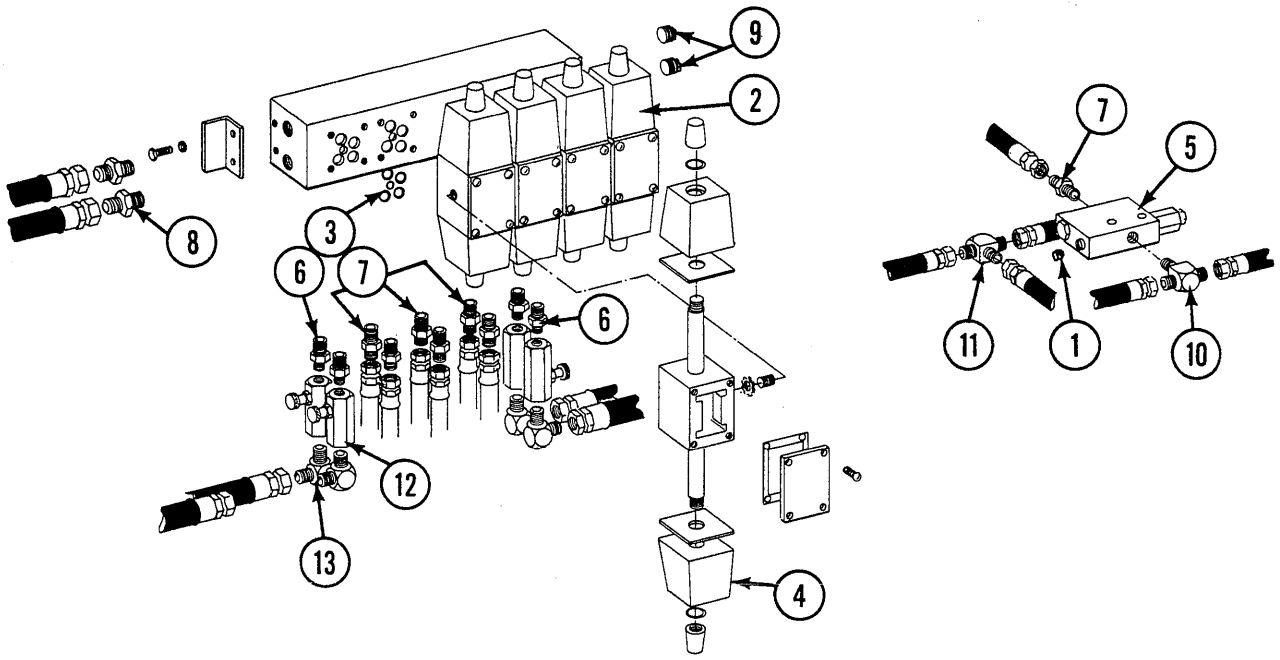
TAIL WHEEL CYLINDER
LOW PROFILE — MARKER CYLINDER



ITEM	PART NO.	DESCRIPTION
1.	R437	Cylinder Tube Assembly
2.	R138	Hex Nut, 7/8" UNF
3.	R137	Piston
4.	R136	Head Gland
5.	R436	Shaft Assembly
	R139	Seal Kit
A.	A931	Cylinder Assembly, Complete, 2½"x18"

5 STAGE MANIFOLD VALVE ASSEMBLY AND OVER CENTER VALVE

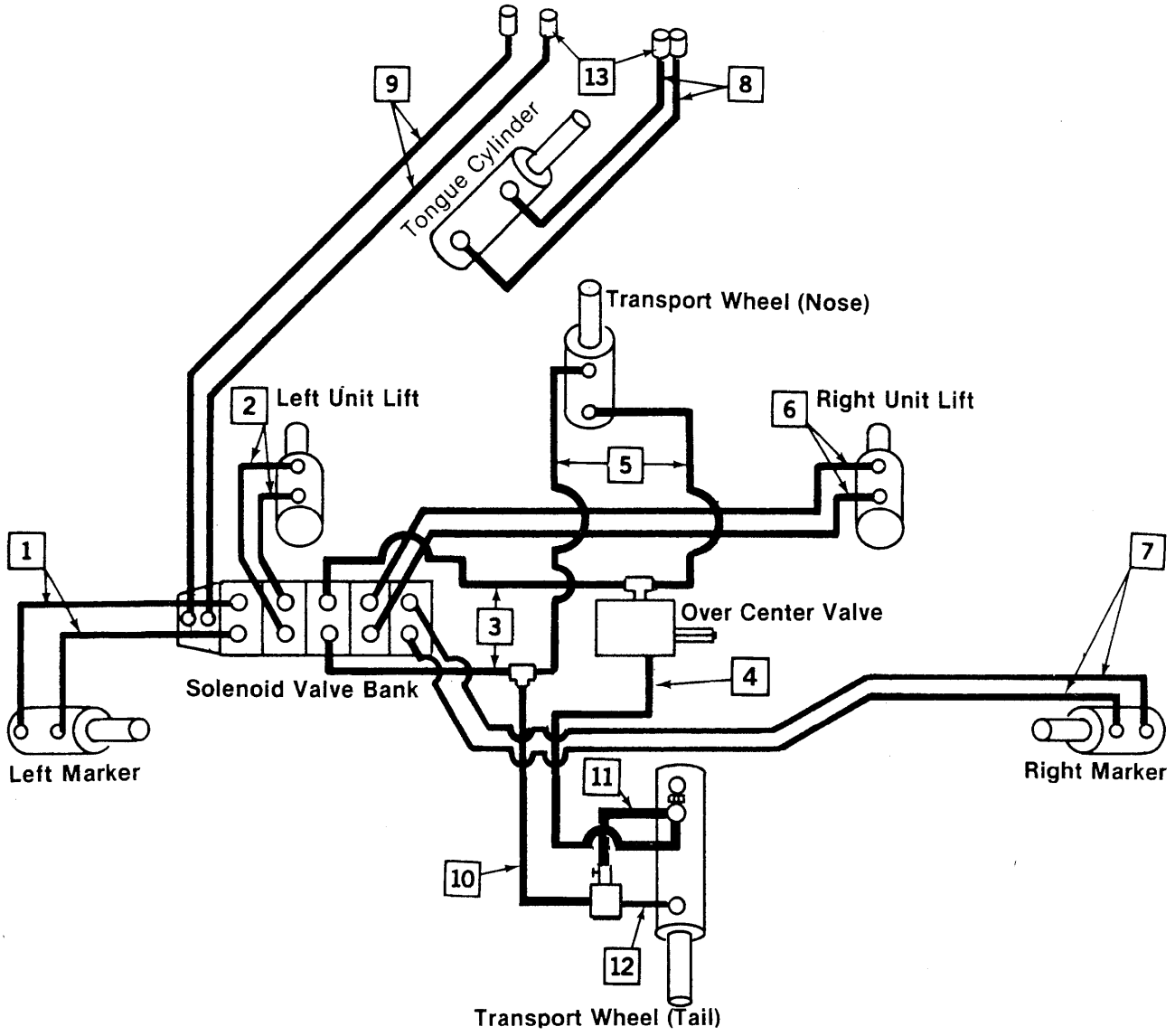
6/83



ITEM	PART NO.	DESCRIPTION
1.	10150	Pipe Plug, Hex Socket Head
2.	R525	Operating Valve, Solenoid
3.	R523	Seal Kit
4.	R524	Valve, Solenoid
5.	A1232	Over Center, Valve
6.	5404-8-6	Adapter, Straight
7.	2404-8-8	Adapter, Straight
8.	2404-10-12	Adapter, Straight
9.	10147	Pipe Plug, Hex Socket Head
10.	2601-8-8	Side Tee
11.	2603-8	Tube Tee
12.	A270	Flow Control, KLF375
13.	2501-6-6	Elbow, 90°
A.	A936	5 Stage Manifold Valve (Includes Items 2, 3, and Valve Body)

12R30 HOSE CHART

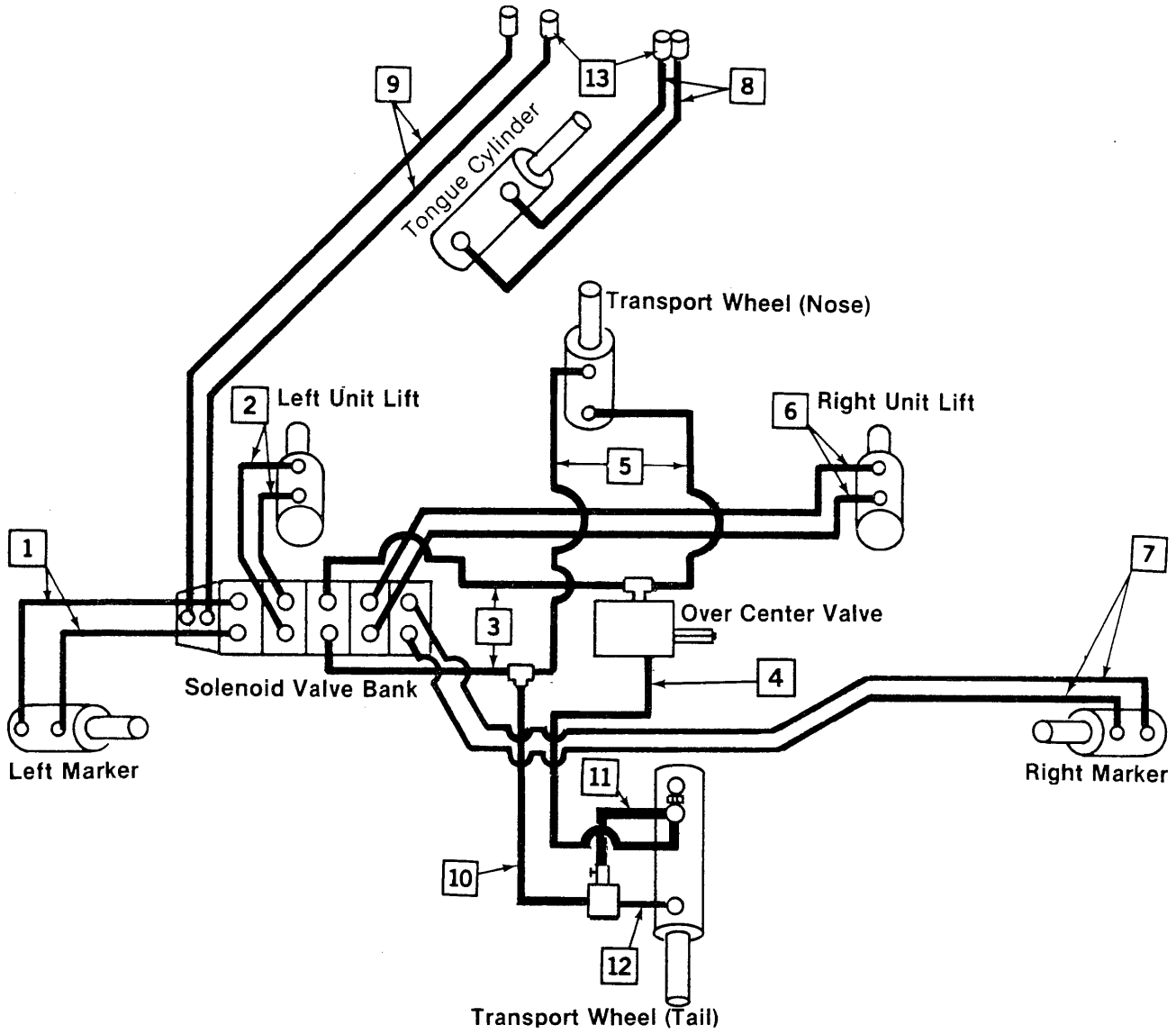
6/83



ITEM	PART NO.	DESCRIPTION
1.	A1117	Hose Assembly, 1/4" x 192"
2.	A1021	Hose Assembly, 3/8" x 56"
3.	A1020	Hose Assembly, 3/8" x 48"
4.	A1022	Hose Assembly, 3/8" x 60"
5.	A1044	Hose Assembly, 3/8" x 34"
6.	A1049	Hose Assembly, 3/8" x 160"
7.	A1118	Hose Assembly, 1/4" x 295"
8.	A1050	Hose Assembly, 3/8" x 240"
9.	A1400	Hose Assembly, 1/2" x 360"
10.	A1019	Hose Assembly, 3/8" x 44"
11.	A1046	Hose Assembly, 3/8" x 14"
12.	A1002	Hose Assembly, 3/8" x 20"
13.	D4086	Male Pioneer Tip
Items below are not shown on drawing		
A.	D2269	Hose Channel, 66"
B.	D2272	Hose Clamp, 6"
C.	D2357	Hose Channel, 1½"
D.	D740	Hose Channel, 4"
E.	A1270	Hose Channel, 66"
F.	A1271	Hose Channel, 12"
G.	A1272	Hose Channel, 6"

12R36 HOSE CHART

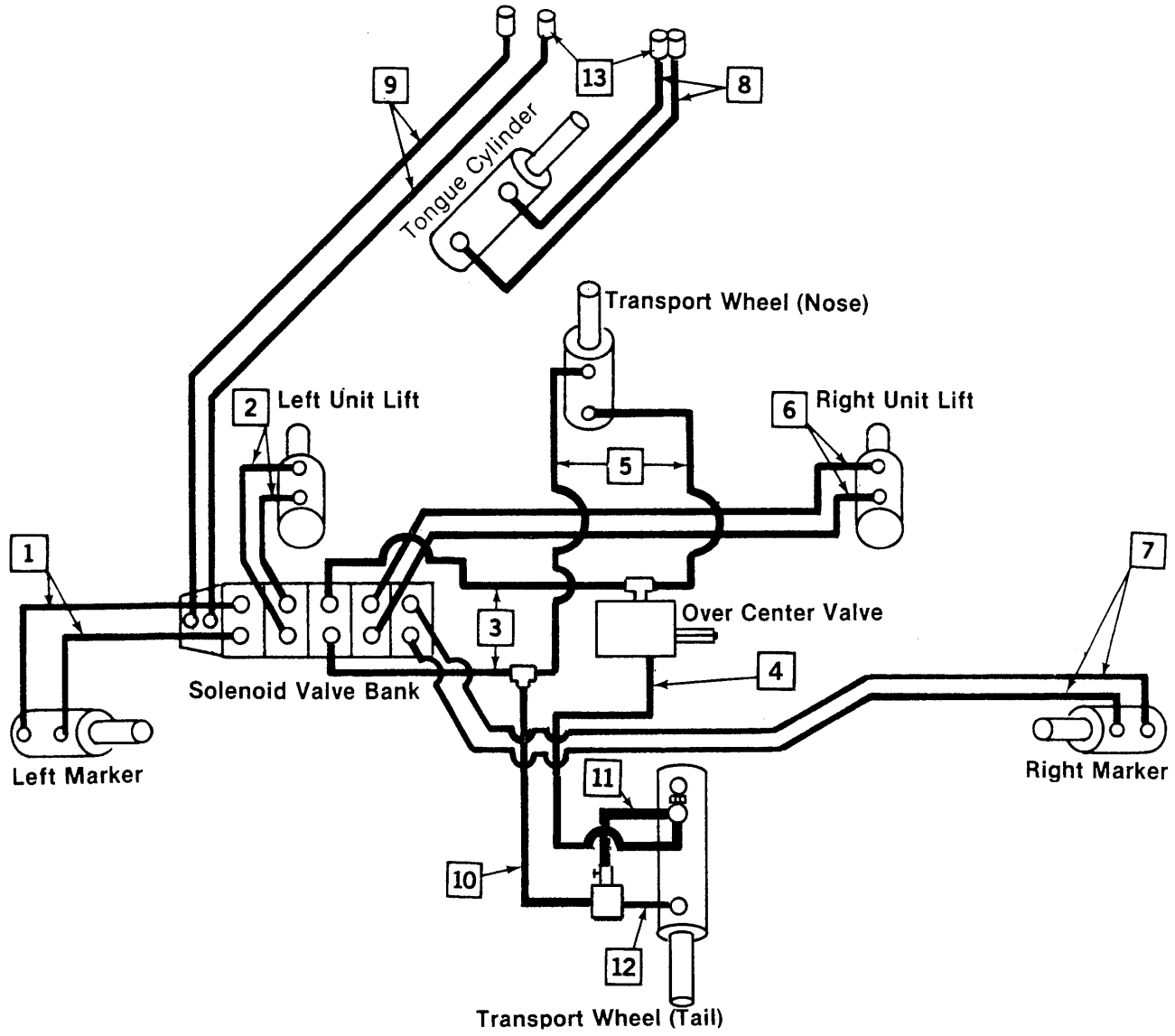
6/83



ITEM	PART NO.	DESCRIPTION
1.	A1121	Hose Assembly, 1/4" x 180"
2.	A1018	Hose Assembly, 3/8" x 40"
3.	A1039	Hose Assembly, 3/8" x 78"
4.	A1022	Hose Assembly, 3/8" x 60"
5.	A1044	Hose Assembly, 3/8" x 34"
6.	A1057	Hose Assembly, 3/8" x 216"
7.	A1122	Hose Assembly, 1/4" x 354"
8.	A1050	Hose Assembly, 3/8" x 240"
9.	A1401	Hose Assembly, 1/2" x 360"
10.	A1019	Hose Assembly, 3/8" x 44"
11.	A1046	Hose Assembly, 3/8" x 14"
12.	A1002	Hose Assembly, 3/8" x 20"
13.	D4086	Male Pioneer Tip
Items below are not shown on drawing		
A.	D740	Hose Channel, 4"
B.	D2272	Hose Clamp, 6"
C.	D2309	Hose Channel, 84"
D.	D2357	Hose Clamp, 1½"
E.	A1296	Hose Channel, 84"
F.	A1361	Hose Channel, 48"

12R38 HOSE CHART

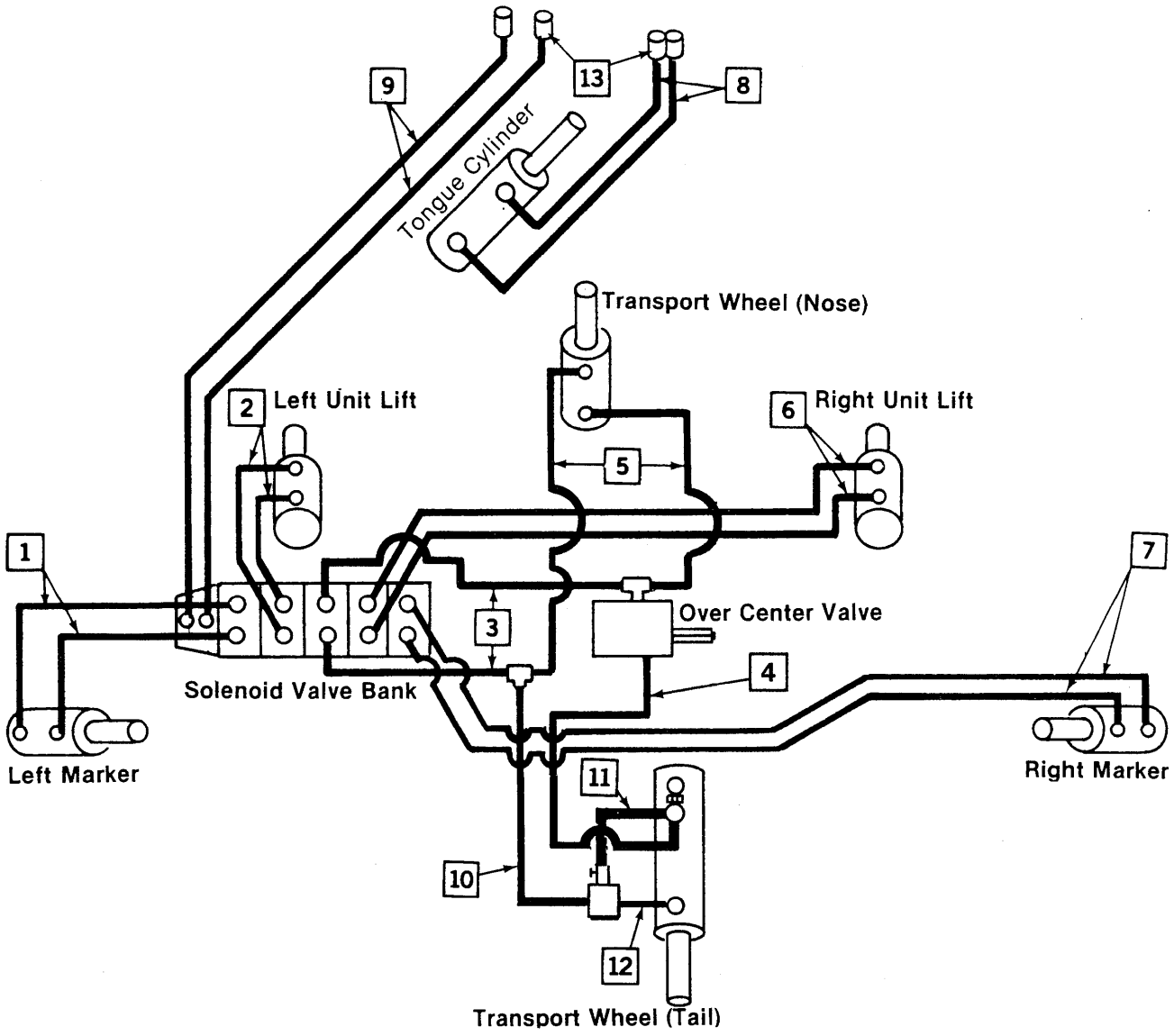
6/83



ITEM	PART NO.	DESCRIPTION
1.	A1117	Hose Assembly, 1/4" x 192"
2.	A1020	Hose Assembly, 3/8" x 48"
3.	A1039	Hose Assembly, 3/8" x 78"
4.	A1022	Hose Assembly, 3/8" x 60"
5.	A1044	Hose Assembly, 3/8" x 34"
6.	A1057	Hose Assembly, 3/8" x 216"
7.	A1123	Hose Assembly, 1/4" x 366"
8.	A1050	Hose Assembly, 3/8" x 240"
9.	A1401	Hose Assembly, 1/2" x 375"
10.	A1019	Hose Assembly, 3/8" x 44"
11.	A1046	Hose Assembly, 3/8" x 14"
12.	A1002	Hose Assembly, 3/8" x 20"
13.	D4086	Male Pioneer Tip
Items below are not shown on drawing		
A.	D740	Hose Channel, 4"
B.	D2272	Hose Clamp, 6"
C.	D2309	Hose Channel, 84"
D.	D2357	Hose Clamp, 1 ½"
E.	A1272	Hose Clamp, 6"
F.	A1296	Hose Channel, 84"
G.	A1361	Hose Channel, 48"

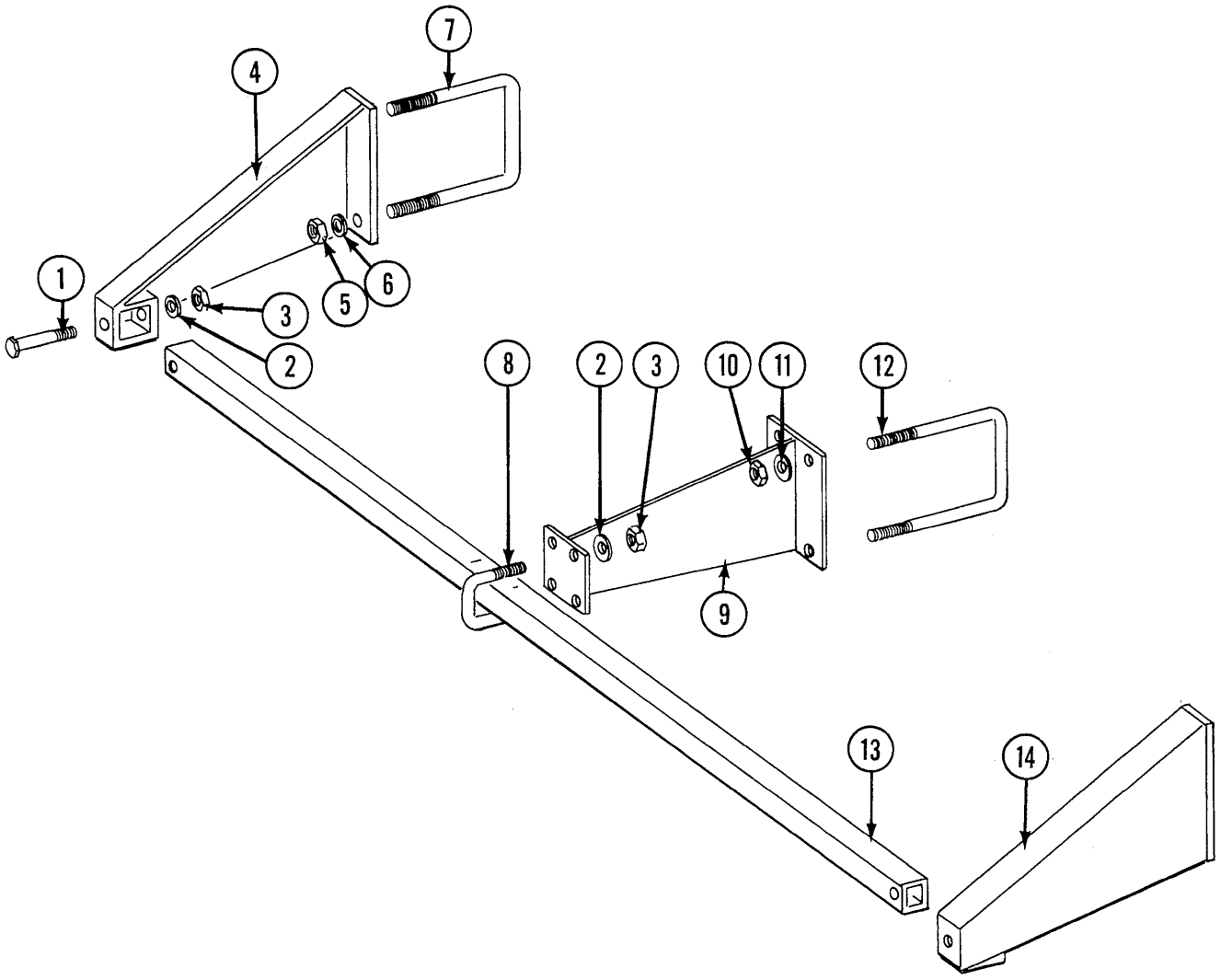
16R30 HOSE CHART

6/83



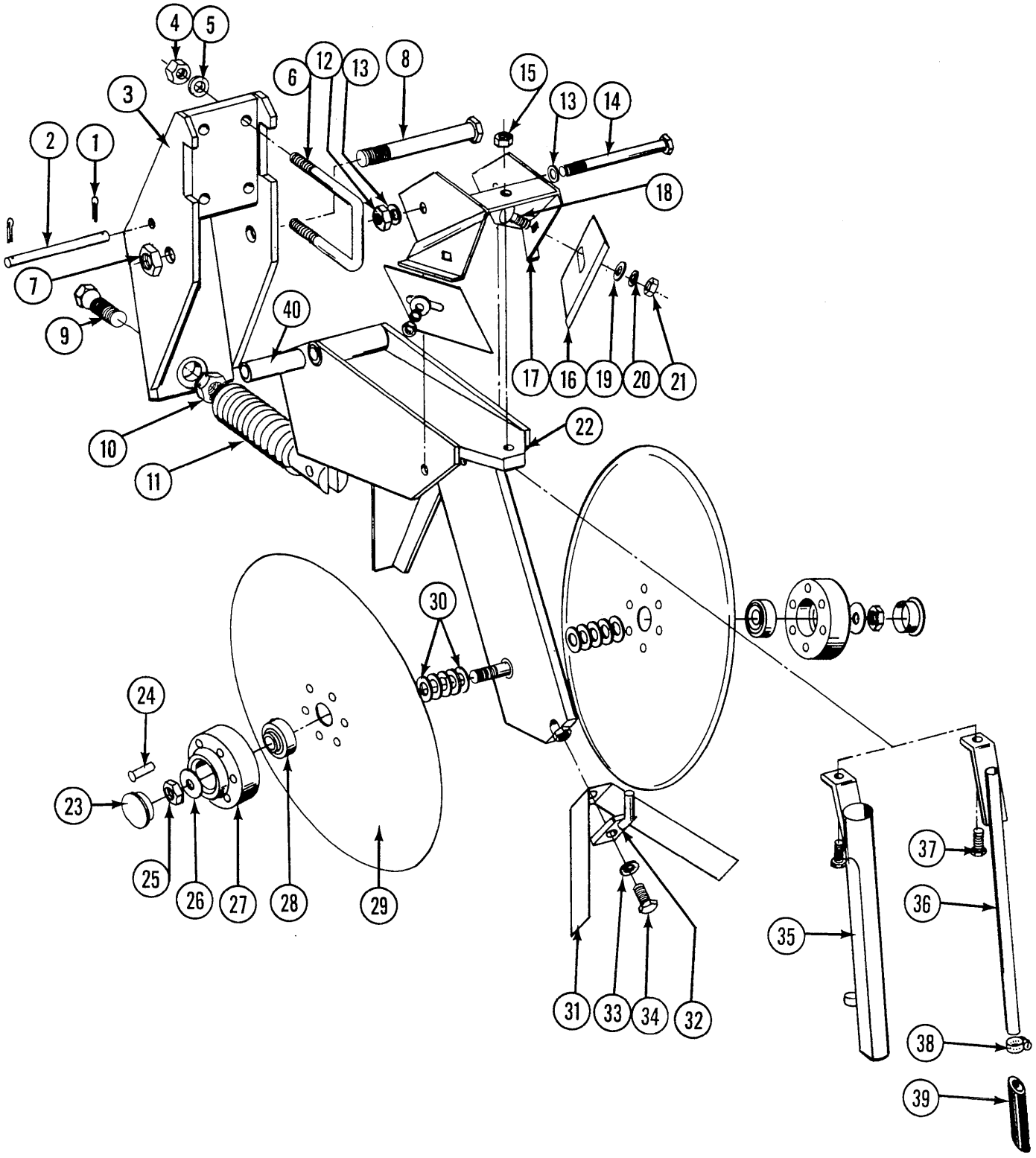
ITEM	PART NO.	DESCRIPTION
1.	A1119	Hose Assembly, 1/4" x 216"
2.	A1053	Hose Assembly, 3/8" x 72"
3.	A1055	Hose Assembly, 3/8" x 66"
4.	A1022	Hose Assembly, 3/8" x 60"
5.	A1044	Hose Assembly, 3/8" x 34"
6.	A1054	Hose Assembly, 3/8" x 204"
7.	A1120	Hose Assembly, 1/4" x 348"
8.	A1050	Hose Assembly, 3/8" x 240"
9.	A1401	Hose Assembly, 1/2" x 375"
10.	A1019	Hose Assembly, 3/8" x 44"
11.	A1046	Hose Assembly, 3/8" x 14"
12.	A1002	Hose Assembly, 3/8" x 20"
13.	D4086	Male Pioneer Tip
Items below are not shown on drawing		
A.	D740	Hose Channel, 4"
B.	D2272	Hose Clamp, 6"
C.	D2309	Hose Channel, 84"
D.	D2357	Hose Channel, 1½"
E.	A1272	Hose Channel, 6"
F.	A1296	Hose Channel, 84"
G.	A1297	Hose Channel, 36"

FERTILIZER BAR



ITEM	PART NO.	DESCRIPTION
1.	10032	HHCS, ½"-13x3¾
2.	10228	Lockwasher, ½"
3.	10102	Hex Nut, ½"-13
4.	A812	Bracket, Fertilizer Bar R.H.
5.	10105	Hex Nut, ¾"-10
6.	10231	Lockwasher, ¾"
7.	D1747	U-Bolt, 5"x7"x¾"-10
8.	D1138	U-Bolt, 2½"x2½"x½'-13
9.	A925	Fertilizer Bar Support
10.	10104	Hex Nut, 5/8"-11
11.	10230	Lockwasher, 5/8"
12.	D1113	U-Bolt, 5"x7"x5/8"-1
13.	D1685-7	Fertilizer Bar, 12R30, 166"
	D1685-8	Fertilizer Bar, 16R30, 221"
14.	A813	Bracket, Fertilizer Bar, L.H.

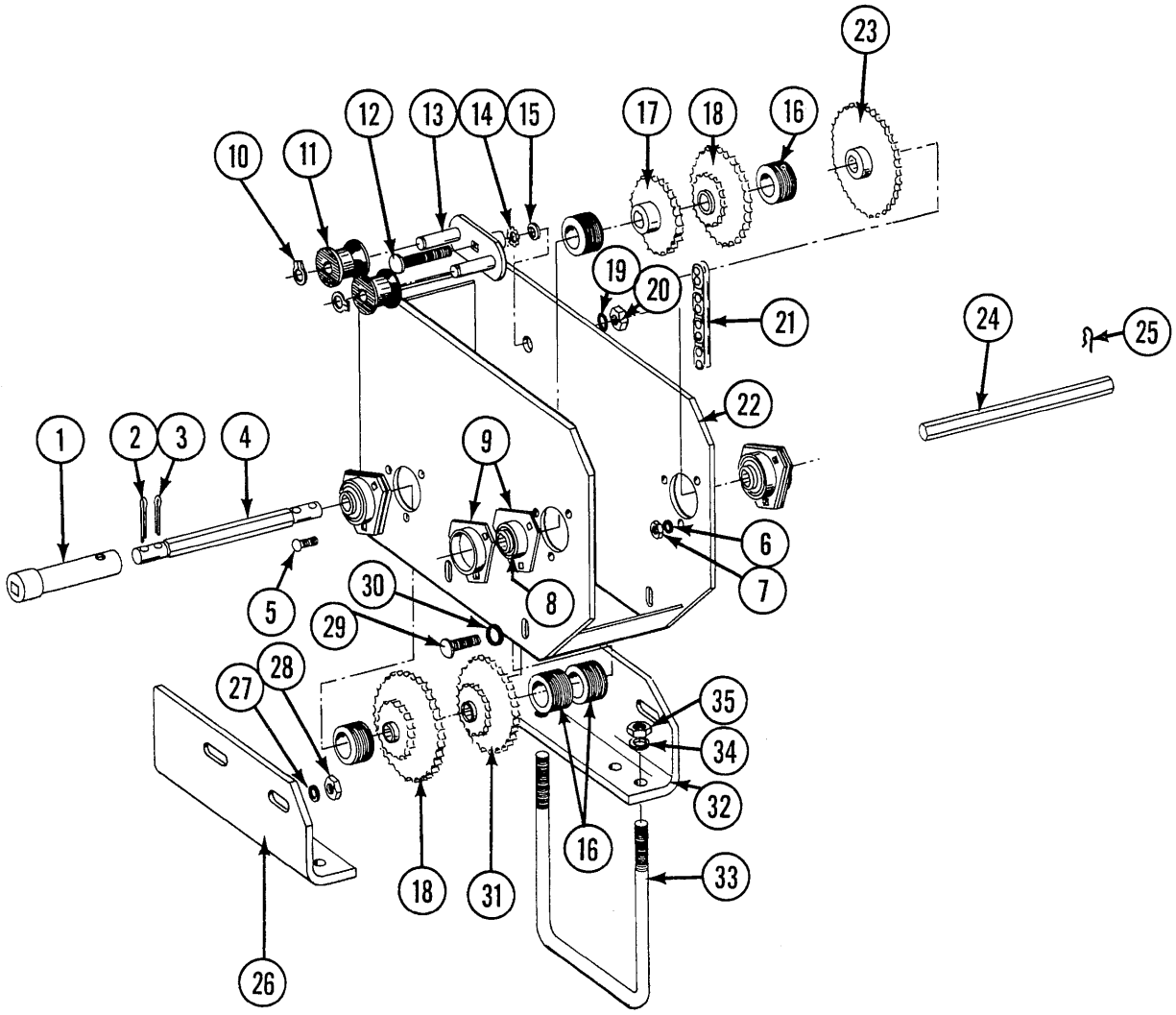
DOUBLE DISK FERTILIZER OPENER



DOUBLE DISK FERTILIZER OPENER

ITEM	PART NO.	DESCRIPTION
1.	10451	Cotter Pin, 1/8"x1"
2.	D1657	Lock Up Pin
3.	A785	Mounting Bracket Weld
4.	10102	Hex Nut, ½"-13
5.	10228	Lockwasher, ½"
6.	D1138	U-Bolt, 2½"x2½"x½"-13
7.	10107	Hex Lock Nut, 5/8"-11
8.	10046	HHCS, 5/8"-11x5"
9.	D962	Hex Head Adjusting Bolt, 5/8"-18
10.	10499	Jam Nut, 5/8"-18
11.	A328	Spring
12.	10111	Lock Nut, ½"-13
13.	10216	Flatwasher ½"
14.	10045	HHCS, ½"-13x4½
15.	10109	Hex Lock Nut, 5/16"-18
16.	D1673	Scraper
17.	A810	Scraper Mount
18.	10305	Carriage Bolt, 3/8"-16x1"
19.	10210	Flat Washer, 3/8" USS
20.	10229	Lockwasher, 3/8"
21.	10101	Hex Nut, 3/8"-16
22.	A308	Fertilizer Opener Weld
23.	D1132	Hub Cap
24.	10651	Rivet, ½"x13/8"
25.	10503	Jam Nut, R.H. 5/8"-11
	10504	Jam Nut, L.H. 5/8"-11
26.	10217	Washer, 5/8" USS
27.	B134	Bearing Hub
28.	A2014	Bearing
29.	D1030	Disk Blade
30.	10213	Machine Bushing, 1 3/64x11/16x.030
31.	D1163	Scraper, Inner
32.	A312	Mount, Tube, Weld
33.	10232	Lockwasher, 5/16"
34.	10019	HHCS, 5/16"-18x1"
35.	A310	Drop Tube, Dry Fertilizer
36.	A318	Drop Tube, Liquid Fertilizer
37.	10133	HHCS, 5/16"-18x1 ½"
38.	10673	Hose Clamp
39.	D1797	Drop Tube Extension
40.	D487	Bushing
A.	A320	Disk and Brg. Assembly (Items 24, 27-29)
B.	A786	Double Disk Fertilizer Opener, Less Drop Tubes and U-Bolts

DRY FERTILIZER TRANSMISSION

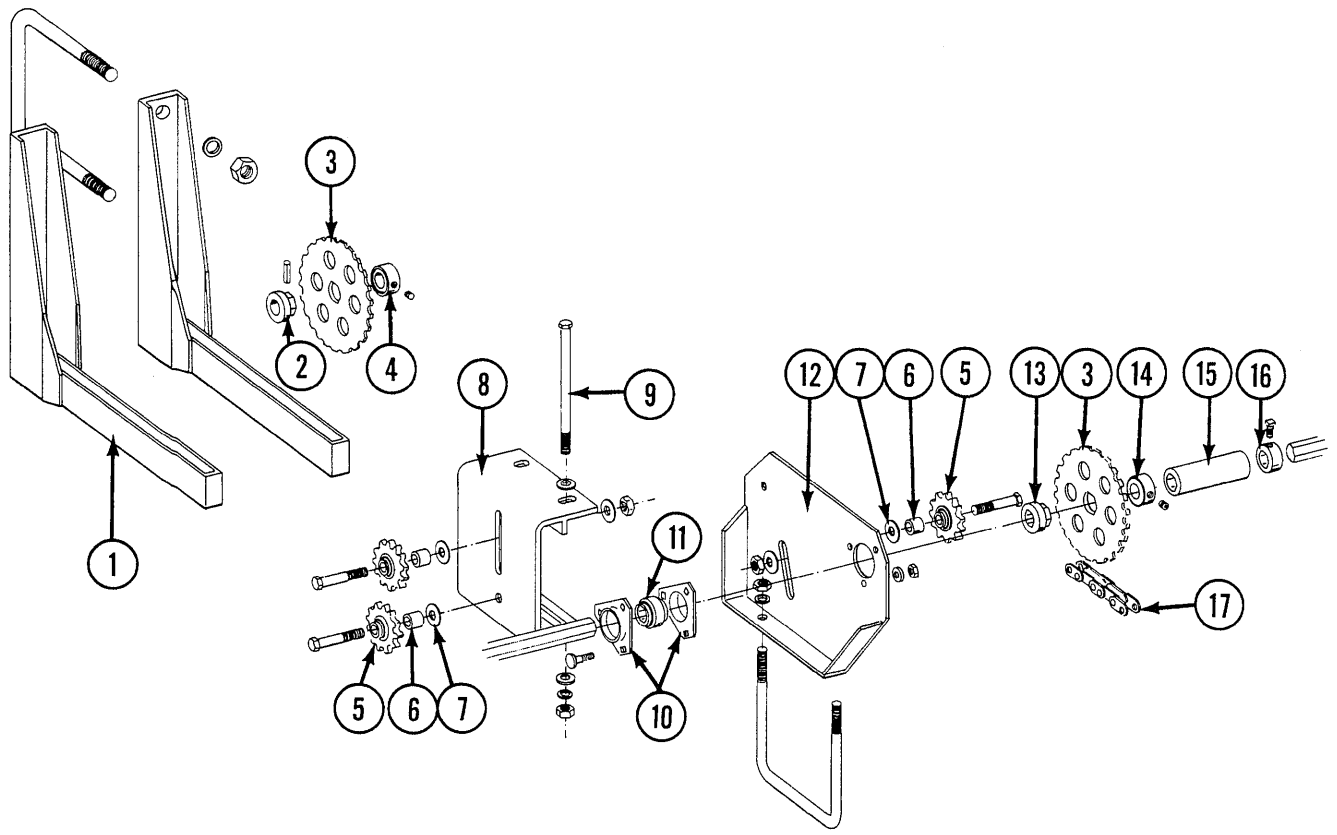


DRY FERTILIZER TRANSMISSION

ITEM	PART NO.	DESCRIPTION
1.	A881	Drive Coupling 1 5/8"
	A555	Drive Coupling, 16 1/8"
2.	10462	Cotter Pin, 3/16"x2"
3.	10459	Cotter Pin, 3/16"x1½"
4.	D943	Shaft, Driven
5.	10312	Carriage Bolt, 5/16"-18x¾"
6.	10232	Lockwasher, 5/16"
7.	10106	Hex Nut, 5/16"-18
8.	2100-3	Bearing 7/8" Hex Bore
9.	3400-1	Flangette
10.	10435	Ring, Retainer
11.	D1067	Spool, Idler
12.	10314	Carriage Bolt, ½"-13x3"
13.	A285	Bracket, Idler
14.	10527	Lock Washer, Internal/External, ½"
15.	10216	Washer, ½"
16.	D832	Spacer, Rubber
17.	2500-14	Sprocket, 24 Tooth
18.	2500-12	Sprocket, 18-36 Tooth
19.	10228	Lockwasher, ½"
20.	10102	Nut, ½"-13
21.	3300-43	Chain, No. 2040, 43 Links Includes Connector and Offset Link
	R194	Connector Link, No. 2040
	R199	Offset Link, No. 2040
22.	A249	Transmission Case
23.	2500-15	Sprocket, 32 Tooth
24.	D942	Shaft, Drive
25.	10465	Cotter Pin, ¼"x1¼"
26.	D1715	Angle Support, L.H.
27.	10210	Flat Washer, 3/8" USS
28.	10101	Hex Nut, 3/8"-16
29.	10301	Carriage Bolt, 3/8"-16x1½
30.	10229	Lockwasher, 3/8"
31.	2500-3	Sprocket, 16-30 Tooth
32.	D1716	Angle Support, R.H.
33.	D1134	U-Bolt, 7"x5"x5/8"-11
34.	10230	Lockwasher, 5/8"
35.	10104	Hex Nut, 5/8"-11

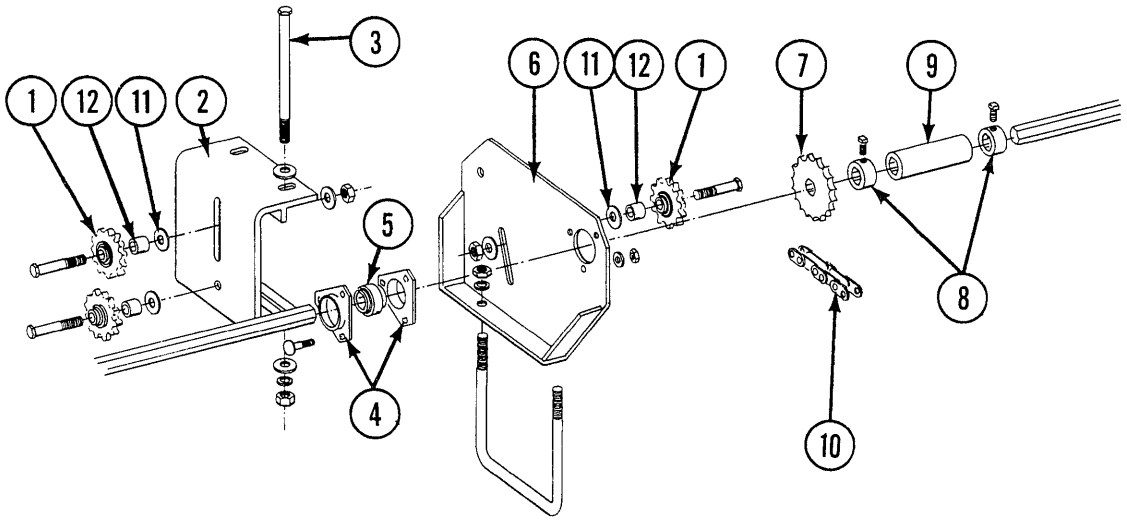
A.	A284	Idler Assembly (Items 10, 11 and 13)
B.	A1360	Transmission Assembly Right, Items 3-32
C.	A1359	Transmission Assembly Left, Items 3-32

FERTILIZER DRIVE - LIQUID



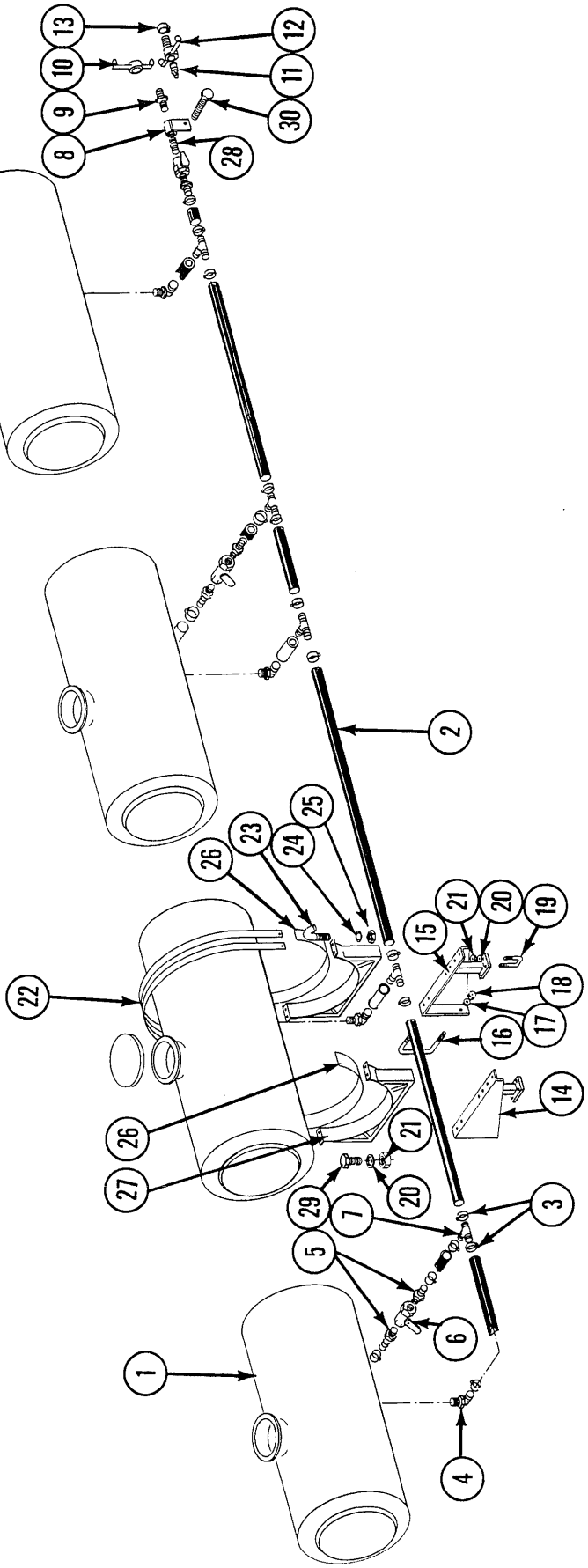
ITEM	PART NO.	DESCRIPTION
1.	A1268	Mounting Bracket, Squeeze Pump
2.	D1216	Sprocket Adapter, Less Roll Pin
	10600	Roll Pin
3.	D1217	Sprocket, 8 Tooth
	D1218	Sprocket, 9 Tooth
	D1219	Sprocket, 10 Tooth
	D1220	Sprocket, 15 Tooth
	D1221	Sprocket, 22 Tooth
	D1222	Sprocket, 23 Tooth
	D1223	Sprocket, 26 Tooth
	D1224	Sprocket, 30 Tooth
	D1225	Sprocket, 31 Tooth
4.	D1215	Sprocket Retainer
5.	A268	Sprocket, Idler
6.	B123	Bushing
7.	10205	Flat Washer, 5/8" SAE
8.	A1287	Idler Mount Weld
9.	10148	HHCS, ½"-13x9½"
10.	3400-1	Flangette
11.	2100-3	Bearing, 7/8" Hex Bore
12.	A326	Bracket, Bearing Support, R.H.
	A325	Bracket, Bearing Support, L.H.
13.	D1720	Sprocket Adapter, Less Roll Pin
	10600	Roll Pin
14.	D1724	Sprocket Retainer
15.	D1716	Coupler
16.	A271	Lock Collar
17.	3300-140	Chain, No. 2040, 140 Pitch Including Connector
	R194	Connector Link, No. 2040
A.	A886	Sprocket and Adapter Package (Items 2, 3, 4, 13 and 14)

FERTILIZER DRIVE - DRY



ITEM	PART NO.	DESCRIPTION
1.	A268	Sprocket, Idler
2.	A1287	Idler Mount Weld
3.	10148	HHCS, ½"-13x9 ½"
4.	3400-1	Flangette
5.	2100-3	Bearing, 7/8" Hex Bore
6.	A326	Bracket, Bearing Support, R.H.
	A325	Bracket, Bearing Support, L.H.
7.	2500-16	Sprocket, 16 Tooth
8.	A271	Lockcollar
9.	D1716	Coupler
10.	3300-156	Chain, No. 2040, 156 Links, Includes Connector Link
	R 194	Connecting Link, No. 2040
11.	10205	Flat Washer, 5/8" SAE
12.	B123	Bushing

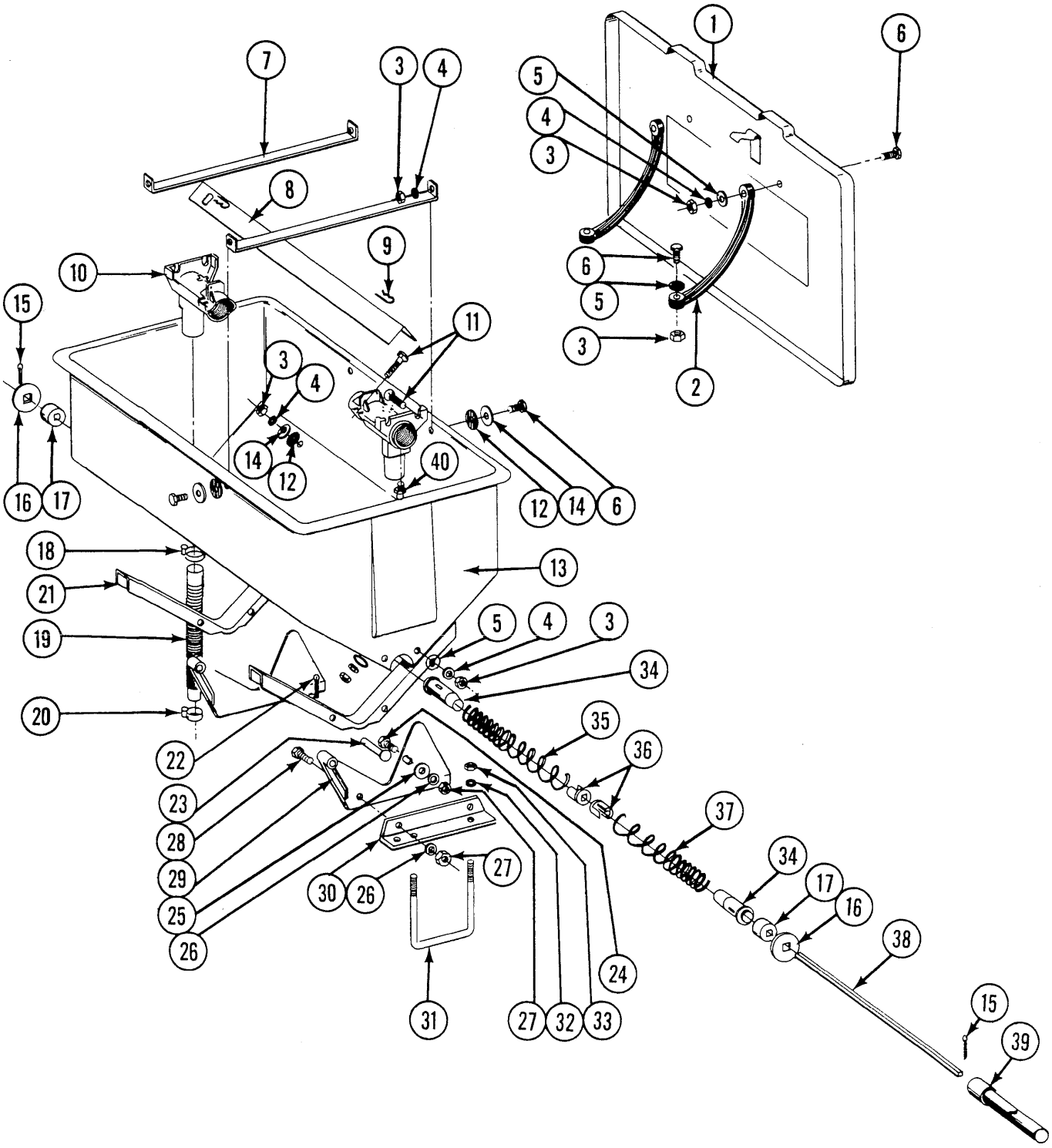
LIQUID FERTILIZER TANKS AND MOUNTING BRACKETS



LIQUID FERTILIZER TANKS AND MOUNTING BRACKETS

ITEM	PART NO.	DESCRIPTION
1.	D1808	Tank w/lid and 1¾ Pipe Boss, 24"x100 Gal.,
	R511	1¼ Pipe Boss
	R512	Lid, 13"
2.	4200-5	Hose, 12R30, ¼"x50'
	4200-4	Hose, 16R30, ¼"x55'
3.	10674	Hose Clamp, No. 24
4.	10742	Elbow, 90°, 1¼" NPT to 1¼" Barb
5.	10745	Adapter, 1¼" NPT to 1¼" Barb Fitting
6.	A499	Ball Valve, 1¼" Nylon
7.	10750	Tee, 1¼", Plastic
8.	A918	Quick Fill Adapter Mount
9.	D1514	Q Cam, 1¼"
10.	D1515	Dust Cap, 1¼"
11.	D1517	Dust Plug
12.	D1516	QCHB, 1½"
13.	10672	Hose Clamp, No. 28
14.	A844	Tank Mounting Bracket, R.H.
15.	A843	Tank Mounting Bracket, L.H.
16.	D1113	U-Bolt, 5/8"-11x5"x7"
17.	10230	Lock Washer, 5/8"
18.	10104	Hex Nut, 5/8"-11
19.	D1339	U-Bolt, ½"-13-3"x2½"
20.	10228	Lock Washer, ½"
21.	10102	½"-13 Nut
22.	D1335	Tank Band, 24"
23.	D1337	J-Bolt, 5/16"
24.	10232	Lock Washer, 5/16"
25.	10106	Hex Nut, 5/16"-18
26.	D1807	Tank Pad, 6" width 14' Roll
27.	A919	Tank Saddle, 24"
28.	10094	Pipe Nipple, 1¼"x3"
29.	10017	HHCS, ½'-13x1½"
30.	10032	HHCS, ½"-13x3¾"
	D1162	28" Tie Strap (Not Shown)
	D1512	6" Tie Strap (Not Shown)
	D2117	14½" Tie Strap (Not Shown)

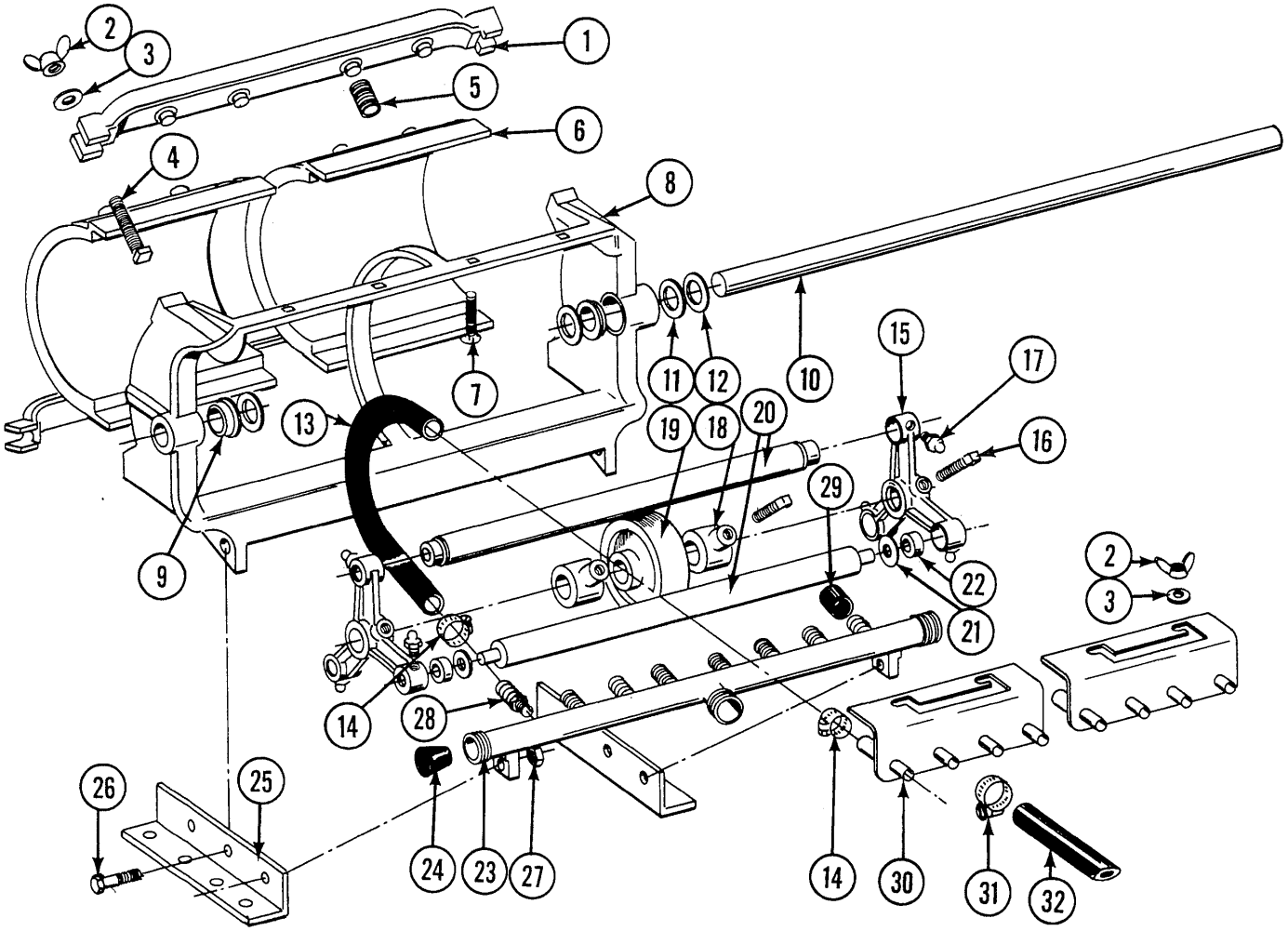
DRY FERTILIZER HOPPER AND MOUNT



DRY FERTILIZER HOPPER AND MOUNT

ITEM	PART NO.	DESCRIPTION
1.	A2101	Lid, Includes clips and pop rivets
	D1380	Clip
	10655	Pop rivet, 3/16"x13/32"
2.	D1210	Strap, Rubber
3.	10106	Hex Nut, 5 1/16"-18
4.	10232	Lockwasher, 5/16"
5.	10219	Washer, 5/16" USS
6.	10019	HHCS, 5/16"-18x1"
7.	D1209	Strap, Reinforcing
8.	D1207	Baffle
9.	10670	Hair Pin Clip, No. 3
10.	D1200	Housing, Outlet
11.	10303	Carriage Bolt, 5/16"-18x1"
12.	D1213	Washer, Rubber
13.	D1379	Hopper, Dry Fertilizer
14.	10201	Washer Special
15.	10464	Cotter Pin, 3/16"x1"
16.	D1212	Washer, Special
17.	D1206	Bearing, Shaft
18.	10676	Hose Clamp, No. 36
19.	D1214	Tube, Rubber
20.	10675	Hose Clamp, No. 20
21.	D1208	Saddle
22.	10456	Cotter Pin, 1/8"x ¾"
23.	10562	Clevis Pin, 7/16"x3"
24.	10037	HHCS, ½"-13x1¼"
25.	10206	Washer, ½" SAE
26.	10228	Lockwasher, ½"
27.	10102	Hex Nut, ½"-13
28.	10017	HHCS, ½"-13x1½"
29.	A839	Mount, Hopper L.H.
	A840	Mount Hopper R.H.
30.	D1707	Angle, L.H.
	D1706	Angle, R.H.
31.	D1134	U-Bolt, 7"x5" x 5/8"-11
32.	10230	Lockwasher, 5/8"
33.	10104	Hex Nut, 5/8"-11
34.	D1202	Guide, Auger
35.	D1204	Spring, Auger, R.H.
36.	D1203	Plug, Spring
37.	D1205	Spring, Auger, L.H.
38.	D1201	Shaft, Auger
39.		Drive Coupler
40.	10641	Grease Fitting, 1/8" NPT x 45°
A.	A896	Hopper Assembly, Dry Fertilizer (Items 3, 4, 5, 9 - 14 and 21)
B.	A581	Auger Assembly, Complete (Items 15, 16, 17, and 34 - 38)

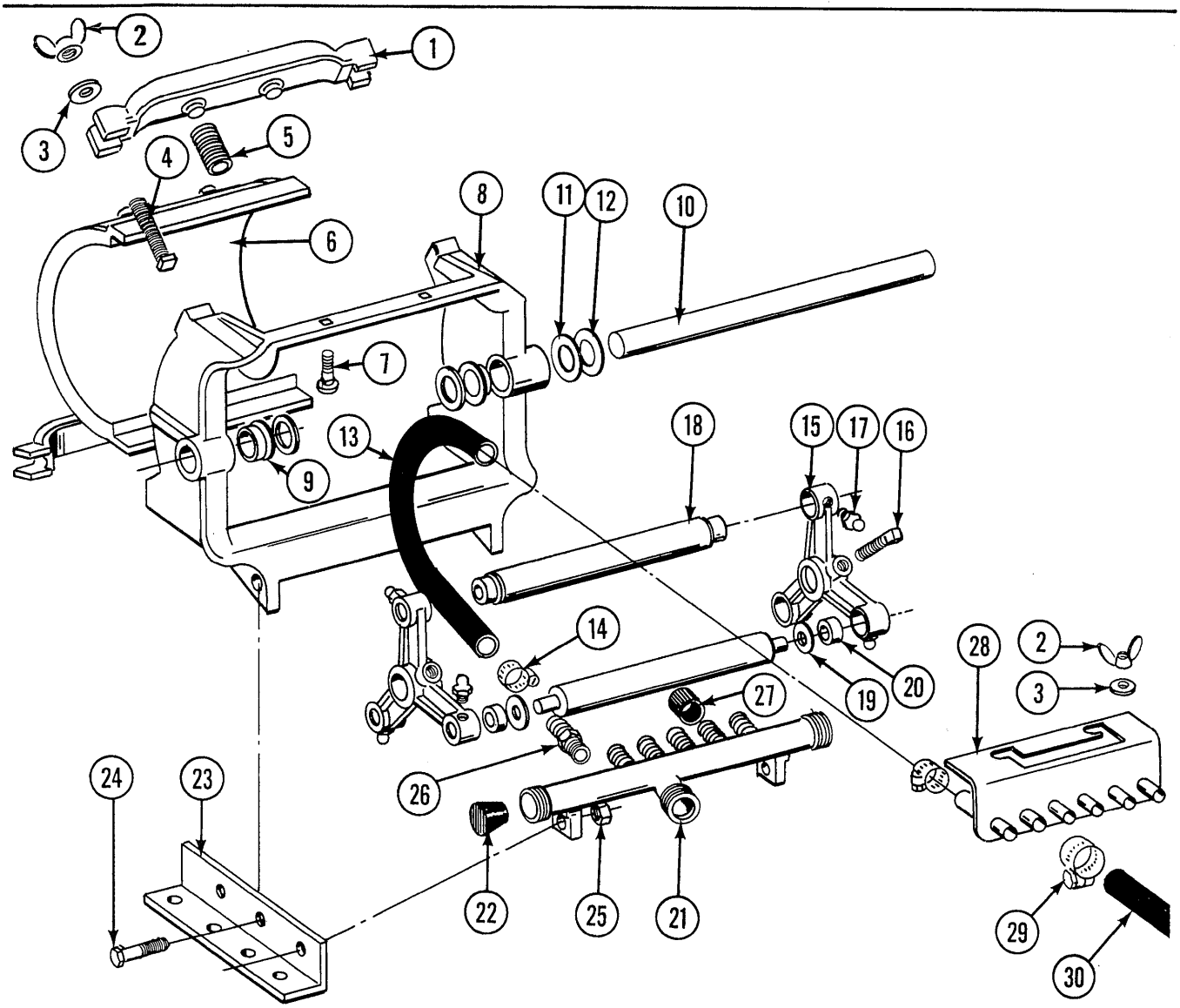
LIQUID FERTILIZER SQUEEZE PUMP - 8 ROW MODEL



LIQUID FERTILIZER SQUEEZE PUMP — 8 ROW MODEL

ITEM	PART NO.	DESCRIPTION
1.	R221	Spring Anchor Bar
2.	10144	Wing Nut, 5/16"-18
3.	10219	Flat Washer, 5/16"
4.	10130	Square Head Machine Bolt, 5/16"-18x1¾"
5.	R214	Back Spring
6.	R212	Back Plate
7.	10303	Round Head Machine Bolt 5/16"-18x1"
8.	R222	Pump Frame
9.	R207	Bushing, Nylon
10.	R220	Pump Shaft
11.	R225	Shim, 1/32"
12.	R226	Shim, 3/64"
13.	R215	Metering Hose, ½"x13"
14.	10681	Hose Clamp
15.	R231	Roller Arm
16.	10131	Set Screw, 5/16"-18x¾"
17.	10640	Grease Fitting, ¼"-28
18.	R282	Set Collar
19.	R281	Back Up Roller
20.	R283	Roller
21.	R229	Washer, Nylon
22.	R230	Bearing, Roller
23.	R284	Intake Manifold
24.	R217	Manifold Plug
25.	R279	Base Angle, Left
	R280	Base Angle, Right
26.	10004	HHCS, 3/8"-16x1¼"
27.	10101	Hex Nut, 3/8"-16
28.	R232	Hose Adapter
29.	R211	Rubber Cap
30.	R236	Discharge Manifold
31.	10673	Hose Clamp, No. 8
32.	4400-4	Hose, ½"x80'
A.	A323	Squeeze Pump Complete

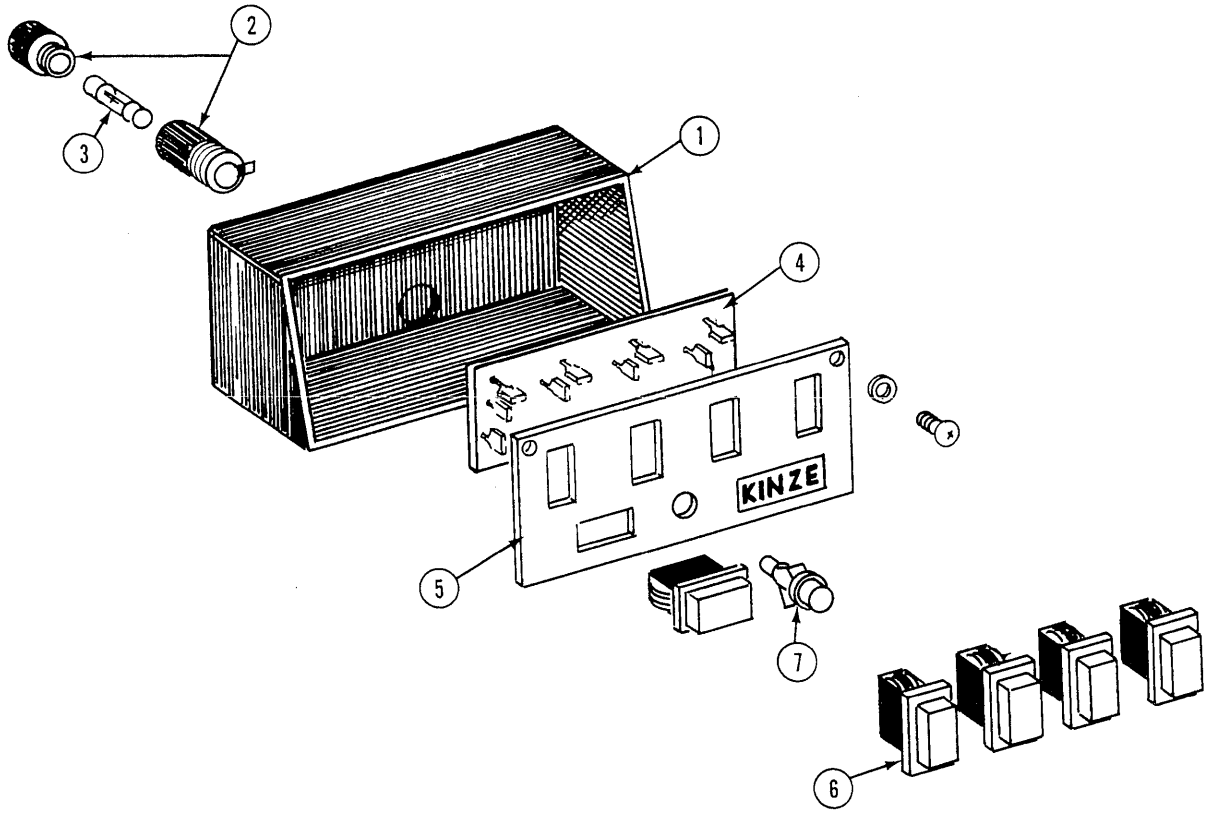
LIQUID FERTILIZER SQUEEZE PUMP - 6 ROW MODEL



LIQUID FERTILIZER SQUEEZE PUMP — 6 ROW MODEL

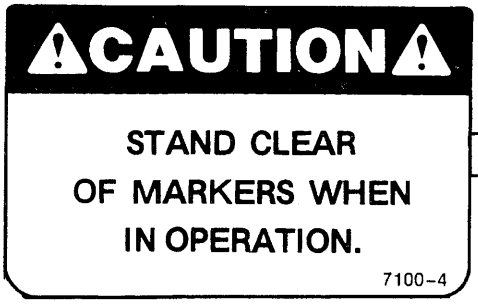
ITEM	PART NO.	DESCRIPTION
1.	R216	Spring Anchor Bar
2.	10144	Wing Nut, 5/16"-18
3.	10219	Flat Washer, 5/16"
4.	10130	Square Head Machine Bolt, 5/16"-18x1 3/4"
5.	R214	Back Spring
6.	R212	Back Plate
7.	10303	Round Head Machine Bolt, 5/16"-18-1"
8.	R208	Pump Frame
9.	R207	Bushing, Nylon
10.	R210	Pump Shaft
11.	R225	Shim, 1/32"
12.	R226	Shim, 3/64"
13.	R215	Metering Hose, 1/2"x13"
14.	10681	Hose Clamp
15.	R231	Roller Arm
16.	10131	Set Screw, 5/16"-18x3/4"
17.	10640	Grease Fitting, 1/4"-28
18.	R233	Roller
19.	R229	Washer, Nylon
20.	R230	Bearing, Roller
21.	R228	Intake Manifold
22.	R217	Manifold Plug
23.	R213	Base Angle
24.	10004	HHCS, 3/8"-16x1 1/4"
25.	10101	Hex Nut, 3/8"-16
26.	R232	Hose Adapter
27.	R211	Rubber Cap
28.	R224	Discharge Manifold
29.	10673	Hose Clamp, No. 8
30.	4400-5	Hose, 1/2"x70
A.	A322	Squeeze Pump Complete

CONTROL BOX ASSEMBLY



ITEM	DESCRIPTION
1.	Control Box
2.	Fuse Holder
3.	Fuse
4.	Printed Circuit Board
5.	Switch Mounting Plate
6.	Switch Rocker
7.	Indicator Light
8.	Wiring Harness (Not Shown)

DECALS AND REFLECTORS



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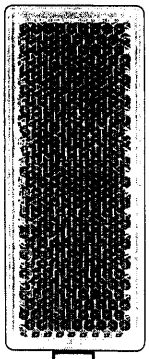

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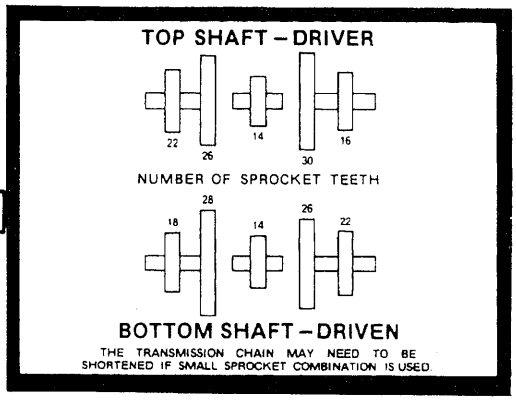

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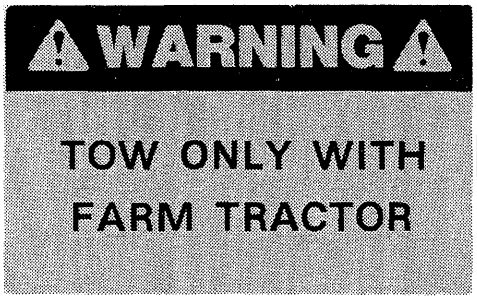

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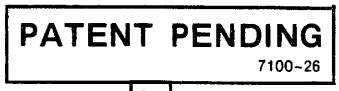

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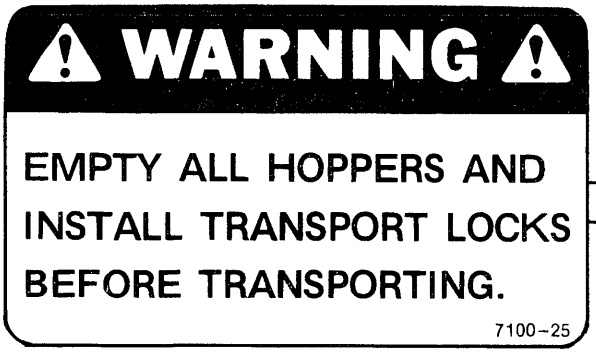

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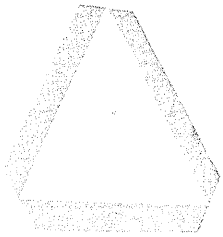


11

ITEM	PART NO.	DECRIPTION
1.	7100-4	Decal, Caution-Markers
2.	7100-3	Decal, Warning - Hitch
3.	7100-6	Decal Sprocket Combination - Seed Drive Transmission
4.	7100-1	Kinze Decal
5.	7200-1	Reflector, Red (Used on Rear of Planter Box)
	7200-2	Reflector, Amber (Used on Front of Toolbar)
6.	D937	Serial Number Plate
7.	7100-21	Decal, K-In-Line
8.	7100-24	Decal, Warning Spring Under Pressure
9.	7100-25	Decal, Warning-Install Transport Locks
10.	7100-26	Decal, Patent Pending
11.	A1229	SMV Emblem

Planting Rate for Plateless Corn Meter

Seed Populations Per Acre			Average Seed Placement In Inches	Sprocket Combinaitons		Recommended Speed Range In MPH
30 Inch Rows	36 Inch Rows	38 Inch Rows		Drive Sprocket	Driven Sprocket	
56,200	46,800	44,300	3-3/4	30	14	2 to 3
48,700	40,600	38,510	4-¼	26	14	2 to 3½
43,700	36,400	34,500	4 ¾	30	18	3 to 4
41,300	34,400	32,600	5 1/8	22	14	3 to 4½
37,800	31,600	29,900	5 ½	26	18	3 to 4½
35,700	29,800	28,200	5 7/8	30	22	3 to 5
32,100	26,800	25,400	6 ½	22	18	3 to 5½
30,700	25,800	24,400	6 ¾	26	22	3 to 6
30,100	25,200	23,900	7	30	26	3 to 6
29,950	24,950	23,700	7 1/8	16	14	3 to 6
27,800	23,200	21,950	7 ½	30	28	4 to 6½
26,200	21,900	20,600	8	22	22	4 to 7
24,300	20,300	19,200	8 5/8	26	28	4 to 7
23,300	19,400	18,400	9	16	18	4 to 7
22,200	18,500	17,600	9½	22	26	4 to 7
20,700	17,200	16,300	10 1/8	22	28	4 to 7
20,400	16,900	16,100	10 ¼	14	18	4 to 7
19,100	15,900	15,100	11	16	22	4 to 70
16,700	13,950	13,200	12 5/8	14	22	4 to 7
16,200	13,500	12,800	13	16	26	4 to 7
14,950	12,500	11,900	14	16	28	4 to 7
14,200	11,800	11,200	14 7/8	14	26	4 to 7
13,200	10,950	10,400	16	14	28	4 to 7

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

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

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

Planting Rate For Plateless Soybean Meters

Approximate Pounds Per Acre		Sprocket Combinations		Recommended Speed Range In MPH
30 Inch Rows	36 Inch To 40 Inch Rows	Drive Sprocket	Driven Sprocket	
125	98	30	14	3 to 5
110	88	26	14	3 to 5
100	80	30	18	3 to 5
96	76	22	14	3 to 5
92	73	26	18	3 to 5
86	68	30	22	3 to 5
78	61	22	18	3 to 5½
75	59	26	22	3 to 6
72	58	30	26	3 to 6
71	57	16	14	3 to 6
67	53	30	28	4 to 6½
63	50	22	22	4 to 7
58	46	26	28	4 to 7
55	44	16	18	4 to 7
54	43	22	26	4 to 7
50	40	22	28	4 to 7
49	39	14	18	4 to 7
48	38	16	22	4 to 7
43	34	14	22	4 to 7
41	33	16	26	4 to 7
40	32	16	28	4 to 7
37	30	14	26	4 to 7
35	28	14	28	4 to 7

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

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

Approximate rates for row spacings, other than those shown above, may be calculated using the rate setting that is one half the desired setting. Refer to the following example:

15-inch rows at a desired planting rate of 80 lbs. per acre. Use the 30" chart since 15" spacing is ½ of 30". Then follow the column down to the 40 lbs. per acre setting, which is ½ of the desired 80 lbs. per acre rate. This indicates that the 16 tooth drive sprocket/28 tooth driven sprocket will provide the desired planting rate.

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 Per Acre		Sprocket Combinations		Recommended Speed Range In MPH
30 Inch Rows	36 Inch To 40 Inch Rows	Drive Sprocket	Driven Sprocket	
21	16.7	30	14	2 to 3
17.5	13.9	26	14	2 to 3½
16.2	12.9	30	18	3 to 4
15.1	12.0	22	14	3 to 4½
13.8	10.9	26	18	3 to 4½
12.9	10.2	30	22	3 to 5
11.8	9.4	22	18	3 to 5½
11.2	8.9	26	22	3 to 6
11.1	8.8	30	26	3 to 6
10.9	8.6	16	14	3 to 6
10.0	7.9	30	28	4 to 6½
9.6	7.6	22	22	4 to 7
9.1	7.2	26	28	4 to 7½
8.8	7.0	16	18	4 to 8
8.5	6.7	22	26	4 to 8
8.0	6.3	22	28	4 to 8
7.9	6.3	14	18	4 to 8
7.6	6.0	16	22	4 to 8
6.8	5.4	16	26	4 to 8
6.3	5.0	16	28	4 to 8
6.2	4.9	14	26	4 to 8
5.9	4.7	14	28	4 to 8

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

Planting Rate For Plateless Low Rate Sorghum Meters

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

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

DRY INSECTICIDE APPLICATION RATES

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

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

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

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

DRY HERBICIDE APPLICATION RATES

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

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

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

OPERATION

DRY FERTILIZER APPLICATION RATES

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

NOTE: Calculated using 7:60 x 15 drive tire with 40 PSI.

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

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

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

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

LIQUID FERTILIZER APPLICATION RATES

Driver	Driven	ROW SPACE Gal. Per Acre				Driver	Driven	ROW SPACE Gal. Per Acre			
		40	38	36	30			40	38	36	30
8	9	19.1	20.4	21.0	25.3	22	23	20.6	22.0	22.7	27.2
8	10	17.2	18.3	18.9	22.7	22	26	18.3	19.4	20.1	24.1
8	15	11.4	12.1	12.5	15.0	22	30	15.1	16.7	17.3	20.7
8	22	7.7	8.2	8.5	10.2	22	31	15.0	16.0	16.6	19.9
8	23	7.5	8.0	8.3	5.6	23	8	61.9	65.9	68.1	81.7
8	26	6.7	7.1	7.3	8.8	23	9	55.0	58.6	60.5	72.6
8	30	5.8	6.2	6.4	7.7	23	10	49.4	52.6	54.4	65.3
8	31	9.9	5.9	6.1	7.4	23	15	32.8	35.0	36.2	43.4
9	8	24.1	25.6	26.5	31.8	23	22	22.6	24.0	24.8	29.8
9	10	19.3	20.6	21.3	25.5	23	26	18.9	20.1	20.8	25.0
9	15	12.9	13.7	14.2	17.0	23	30	16.5	17.6	18.2	21.8
9	22	8.8	9.4	9.7	11.6	23	31	15.9	16.9	17.5	21.0
9	23	8.4	8.9	9.2	11.1	26	8	69.8	74.3	76.8	92.2
9	26	7.5	8.0	8.3	9.9	26	9	62.1	66.1	68.3	81.7
9	30	6.4	6.9	7.1	8.5	26	10	55.9	59.5	61.5	73.8
9	31	6.2	6.6	6.9	8.2	26	15	37.2	39.6	40.9	49.1
10	8	26.9	28.6	29.6	35.5	26	22	25.4	27.0	27.9	33.5
10	9	23.9	25.4	26.2	31.5	26	23	24.3	25.8	26.7	32.1
10	15	14.4	15.3	15.8	19.0	26	30	19.3	19.7	20.3	24.4
10	22	9.7	10.3	10.6	12.8	26	31	18.1	19.0	19.6	23.5
10	23	9.2	9.8	10.2	12.2	30	8	80.1	85.8	88.7	106.4
10	26	8.2	8.7	9.0	10.8	30	9	71.6	76.2	78.7	94.5
10	30	7.1	7.5	7.8	9.4	30	10	64.5	68.6	70.9	85.1
10	31	6.9	7.3	7.6	9.1	30	15	43.0	45.7	47.3	56.7
15	8	40.4	43.0	44.5	53.3	30	22	29.2	31.1	32.2	38.6
15	9	35.9	38.2	39.5	47.4	30	23	27.9	29.7	30.7	36.9
15	10	32.2	34.3	35.5	42.6	30	26	24.7	26.3	27.2	32.6
15	22	14.6	15.6	16.1	19.3	30	31	20.8	22.0	22.7	27.2
15	23	14.0	14.9	15.4	18.4	31	8	83.2	88.5	91.5	109.8
15	26	12.5	13.3	13.7	16.5	31	9	73.9	78.7	81.3	97.6
15	30	10.7	11.4	11.8	14.2	31	10	66.6	70.9	73.3	88.0
15	31	10.3	11.0	11.3	13.6	31	15	44.5	47.1	48.7	58.4
22	8	59.1	62.9	65.0	78.0	31	22	30.3	32.0	33.1	39.7
22	9	52.4	55.8	57.7	69.2	31	23	29.0	30.6	31.7	38.0
22	10	47.3	50.3	52.0	62.4	31	26	25.6	27.2	28.1	33.8
22	15	31.4	33.4	34.5	41.4	31	30	22.1	23.6	24.5	29.2

Approximate application rates using 7.60 x 15 drive tire at 40 PSI and based on a solution weighing 10 pounds per gallon.

SEED METER TROUBLESHOOTING

Finger Pick-Up Meter

Problem	Possible Cause	Probable Remedy
One row not planting seed	Drive release not engaged	Engage drive release mechanism
	Foreign material in hopper	Clean hopper and finger pick-up mechanism
	Pin sheared in drive release sprocket	Replace pin—inspect meter for obstructions or defective parts
Drive release does not engage properly	Drive release shaft is not aligned properly with finger pick-up drive shaft	Align drive mechanism by shifting hopper support
Unit is skipping	Foreign material or obstruction in meter	Clean out and inspect
	Finger holder improperly adjusted	Adjust to proper setting
	Broken fingers	Replace fingers and/or springs as required
	Planting too slowly	Increase planting speed to within recommended range
Planting too many doubles	Planting too fast	Stay within recommended speed range
	Loose finger holder	Adjust to specs.
	Worn brush in finger pick-up	Replace brush

Feed Cup Meter

Problem	Possible Cause	Probable Remedy
One row not planting seed	Drive release not engaged	Engage drive release mechanism
	Pin sheared in drive release sprocket	Replace pin—inspect for obstructions in meter
	Foreign material in hopper	Inspect hopper & meter for foreign material (such as paper)

Feed Cup Meter

(continued)

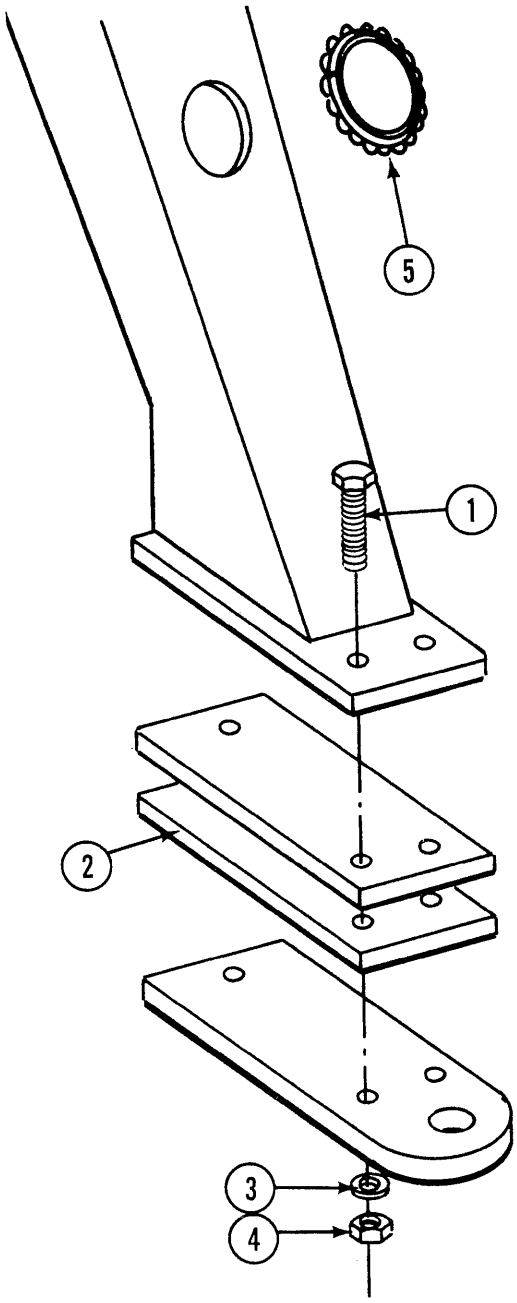
Problem	Possible Cause	Probable Remedy
Drive release parts breaking	Drive coupler not aligned properly with feed cup shaft	Align drive mechanism by shifting hopper support
	Feed cup not turning freely	Inspect feed cup and bushings carefully
Planting lower rate than desired	Worn feed cup	Replace feed cup
	Obstruction in feed cup or hopper	Clean and inspect
	Wrong feed cup	Replace with proper feed cup for seed being planted
	Seed treatment building up in feed cup	Clean thoroughly
	Wrong seed guide plate used with bean cup	Replace with proper guide/ cup combination
	Improper number of shims used with low-rate sorghum feed cup	Adjust number of shims as required
Planting higher rate than desired	Wrong feed cup	Replace with proper feed cup
	Feed cup housing not installed correctly	Inspect feed cup installation Check for proper seating of feed cup housing
	Improper number of shims used with low-rate sorghum feed cup	Adjust number of shims as required
Bunching of seed	Drive coupler not aligned properly	Align drive mechanism by shifting hopper support
	Feed cup housing not seated properly	Check installation of feed cup housing
	Weak idler spring	Replace as required
	Obstruction in hopper	Clean hopper and meter of all foreign material

Feed Cup Meter

(continued)

Problem	Possible Cause	Probable Remedy
Feed cup meters hard driving	Build up of seed treatment in feed cups	Clean feed cups and housings
	Drive not properly aligned with meter input shaft	Align drive mechanism by shifting hopper support
	Planter drive rusty and dirty	Clean and lubricate or replace drive chain

TONGUE ASSEMBLY - OPTIONAL HITCH RAISING 6/83

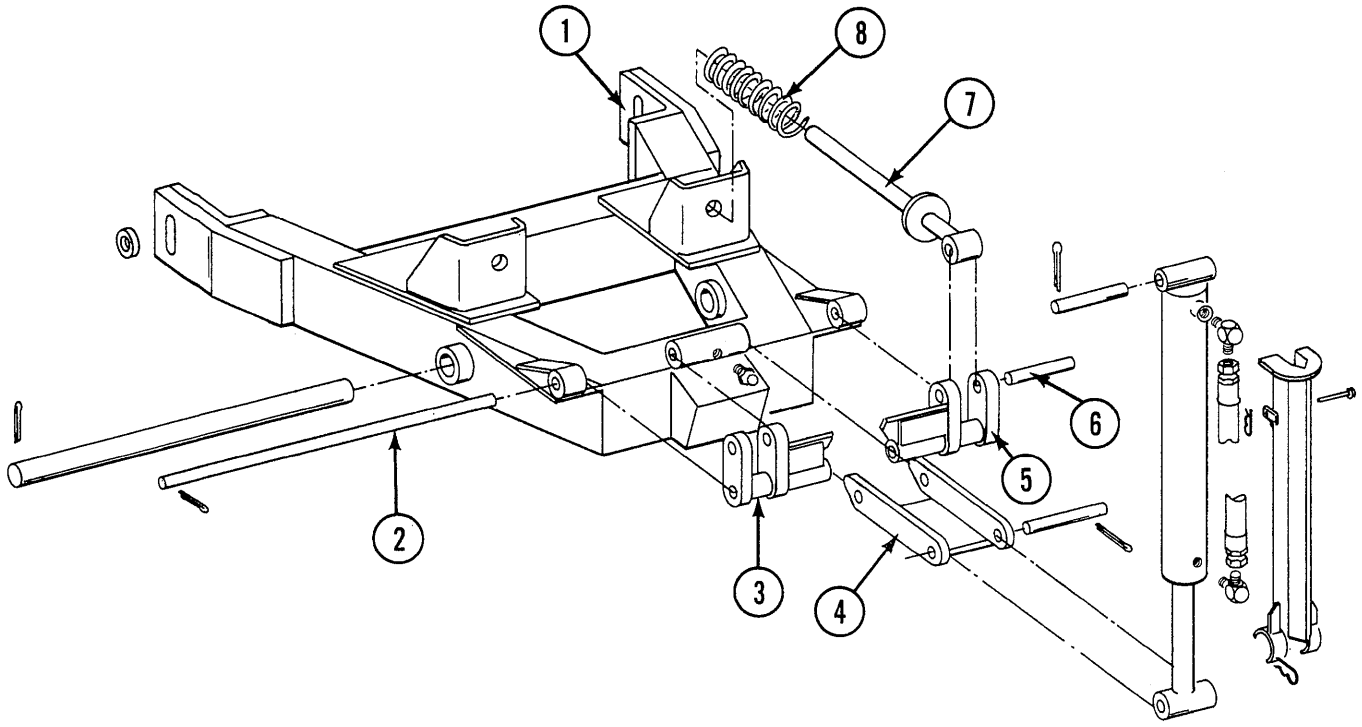


ITEM	PART NO.	DESCRIPTION
1.	10151	HHCS, 1" - 8 x 6"
2.	D2221	Hitch Plate
3.	10118	Lock Washer, 1"
4.	10117	Hex Nut, 1" - 8
5.	D2349	Grommet

PLANTER FRAME ASSEMBLY

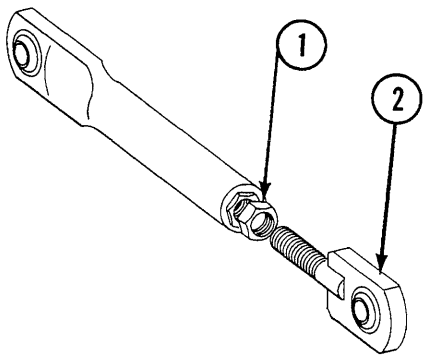
6/83

A FRAME - WEIGHT TRANSFER SYSTEM - 16R30 - OPTIONAL 12R



ITEM	PART NO.	DESCRIPTION
1.	A1506	A Frame Weld
2.	D2335	Pin, 1¼" x 28"
3.	A1394	Link, Down Pressure, R.H.
4.	A1376	Pivot Weld
5.	A1393	Link, Down Pressure, L.H.
6.	D826	Pin
7.	A1395	Rod Weld
8.	D2115	Spring, 1/2" Wire
	D2116	Spring, 5/8" Wire (Optional)
A.	1K110	Weight Transfer System Kit

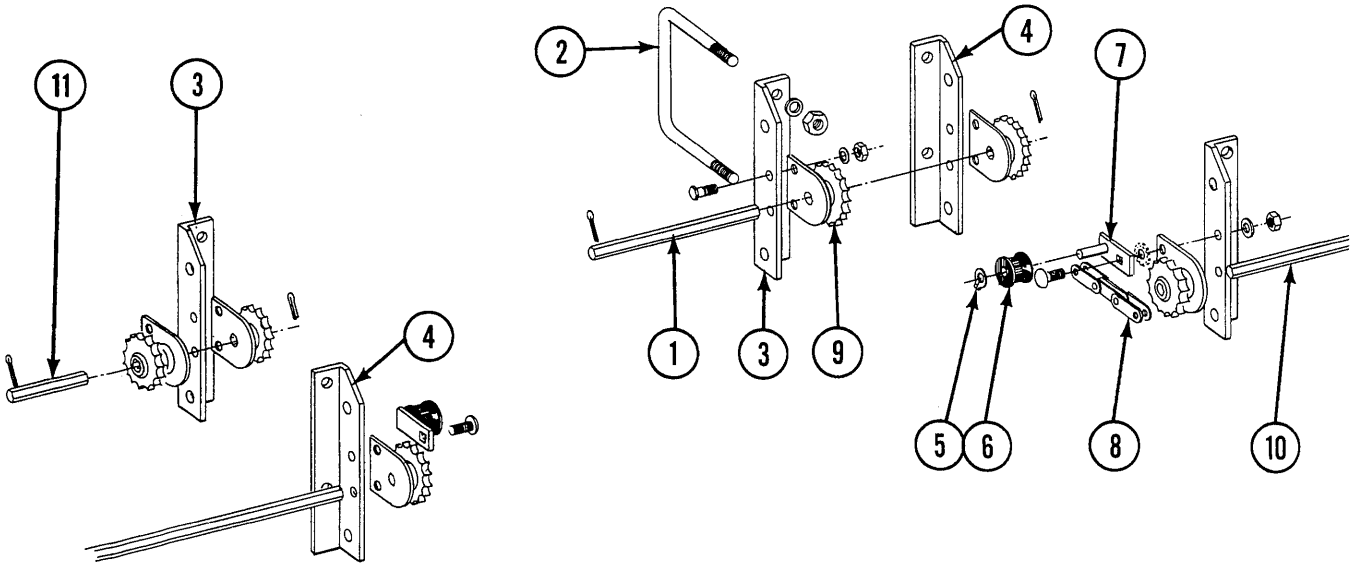
ADJUSTABLE TOP LINK



ITEM	PART NO.	DESCRIPTION
1.	10087	Jam Nut
2.	A1385	Tie Rod End
A.	A1384	Adjustable Top Link Complete

DRILL SHAFT DRIVE LINE, PUSH UNIT, FRONT

6/83

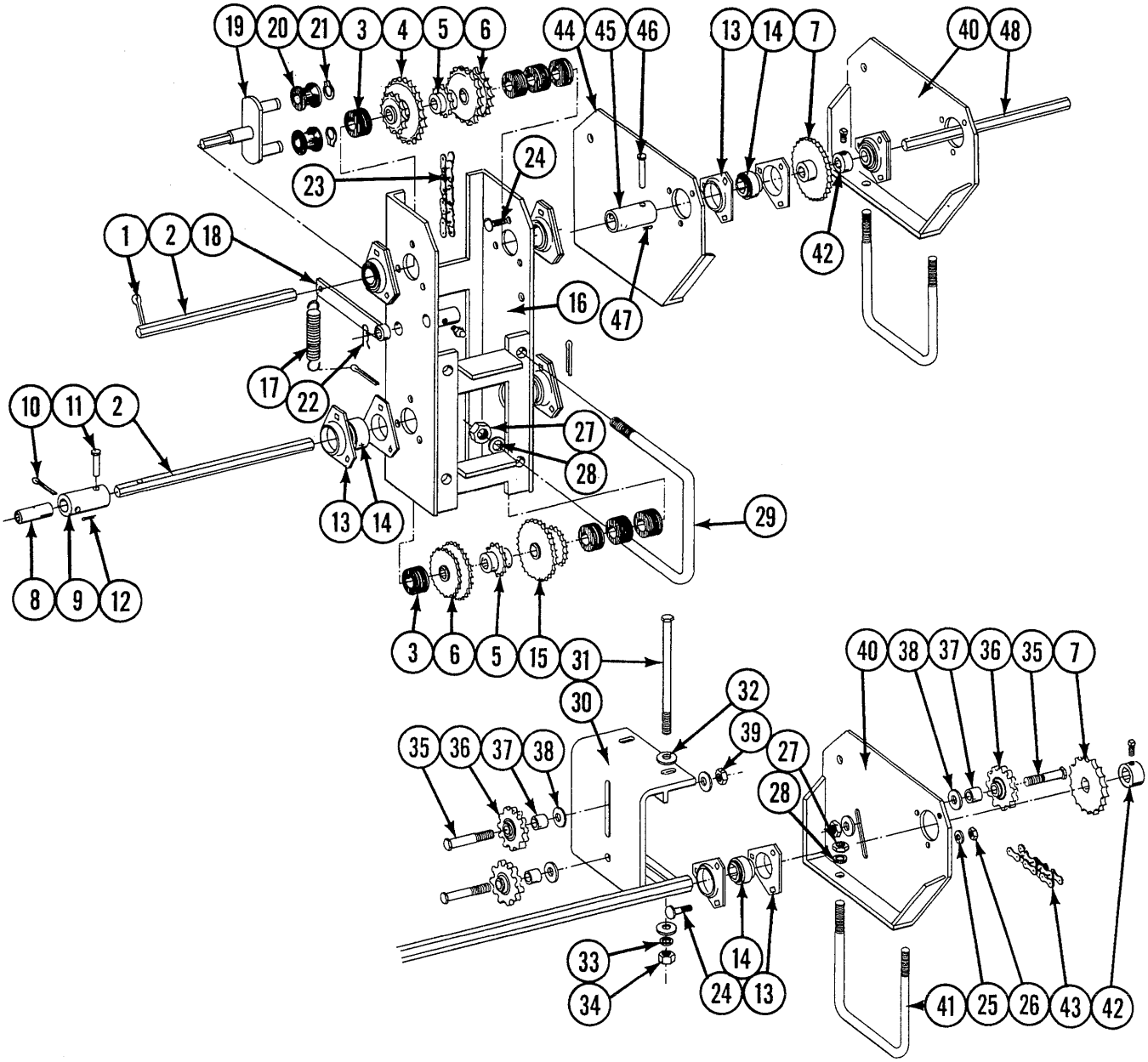


VIEW FROM FRONT

ITEM	PART NO.	DESCRIPTION
1.	D2256	Off Set Unit Shaft
2.	D1113	U-Bolt
3.	D1022L	Mount Bracket
4.	D2298	Mount Bracket, Special
5.	10435	Retaining Ring, 5/8"
6.	D1067	Idler Spool
7.	A1281	Idler Arm Weld
8.	3303-58	Chain, 58 Pitch, No. 41 Includes Connector Link
	R196	Connector Link, N0. 41
9.	A2057	Bearing and Sprocket, 19 Tooth
10.	D739-180	Hex Drill Shaft, 9/16", 12R30
	D739-240	Hex Drill Shaft, 9/16", 16R30
	D739-200	Hex Drill Shaft, 9/16", 12R36
	D739-60	Hex Drill Shaft, 9/16", 12R36 w/single push unit
11.	D2257	Off Set Unit Shaft
A.	A1282	Idler Assembly (Items 5, 6 and 7)

PUSH UNIT DRIVE — 12R30 and 16R30

6/83



PUSH UNIT DRIVE — 12R30 and 16R30

6/83

ITEM	PART NO.	DESCRIPTION
1.	10463	Cotter Pin, 1/4"x 1 1/2"
2.	D926	Shaft
3.	D832	Spacer, Rubber
4.	2500-3	Sprocket, 16-30 Tooth
5.	2500-1	Sprocket, 14 Tooth
6.	2500-2	Sprocket, 22-26 Tooth
7.	2500-15	Sprocket, 32 Tooth
8.	D747	Drill Shaft, Drive, 9/16"
9.	D748	Coupler, Drill Shaft
10.	10462	Cotter Pin, 3/16" x 2"
11.	10548	Clevis Pin, 1/4" x 1 3/4"
12.	10455	Cotter Pin, 1/16" x 1/2"
13.	3400-1	Flangette
14.	2100-3	Bearing, 7/8 Hex Bore
15.	2500-6	Sprocket, 18-28 Tooth
16.	A1363	Transmission Case
17.	D913	Spring
18.	A272	Idler Arm
19.	A242	Tightener Weld
20.	D1067	Idler Spool
21.	10435	Retaining Ring
22.	10670	Hair Pin Clip, No. 3
23.	3300-40	Chain, No. 2040, 40 Pitch, Includes Connector Link
	R194	Connector Link, No. 2040
24.	10303	Carriage Bolt, 5/16" -18x1"
25.	10232	Lock Washer, 5/16"
26.	10106	Hex Nut, 5/16"-18
27.	10104	Hex Nut, 5/8" - 11
28.	10230	Lock Washer, 5/8"
29.	D1113	U-Bolt, 5"x7"x5/8" - 11
30.	A1287	Idler Bracket Weld
31.	10148	HHCS, 1/2"-13x9 1/2"
32.	10216	Flat Washer, 1/2"
33.	10228	Lock Washer, 1/2"
34.	10102	Hex Nut, 1/2"-13
35.	10009	HHCS, 5/8" - 11 x 2 1/2"
36.	A268	Idler Sprocket, 16 Tooth
37.	B123	Bushing
38.	10205	Flat Washer, 5/8"
39.	10107	Lock Nut, 5/8"-11
40.	A326	Bracket Bearing Support
41.	D1134	U-Bolt, 7"x5" x 5/8"-11
42.	A271	Lock Collar
43.	3300-164	Chain, No. 2040, 164 Pitch, Includes Connector Link
	R194	Connector Link, No. 2040
44.	A327	Bearing Support Bracket
45.	D1649	Coupler
46.	10558	Clevis Pin, 5/16" x 1 3/4"
47.	10456	Cotter Pin, 1/8" x 3/4"
48.	D914-12	Hex Shaft, 12"
A.	A503	Idler Assembly (Items 19 thru 21)
B.	A1535	Transmission Assembly, (Items 1 thru 6 and 8 thru 26)

PUSH UNIT DRIVE –12R36 and 38 & SINGLE PUSH UNIT

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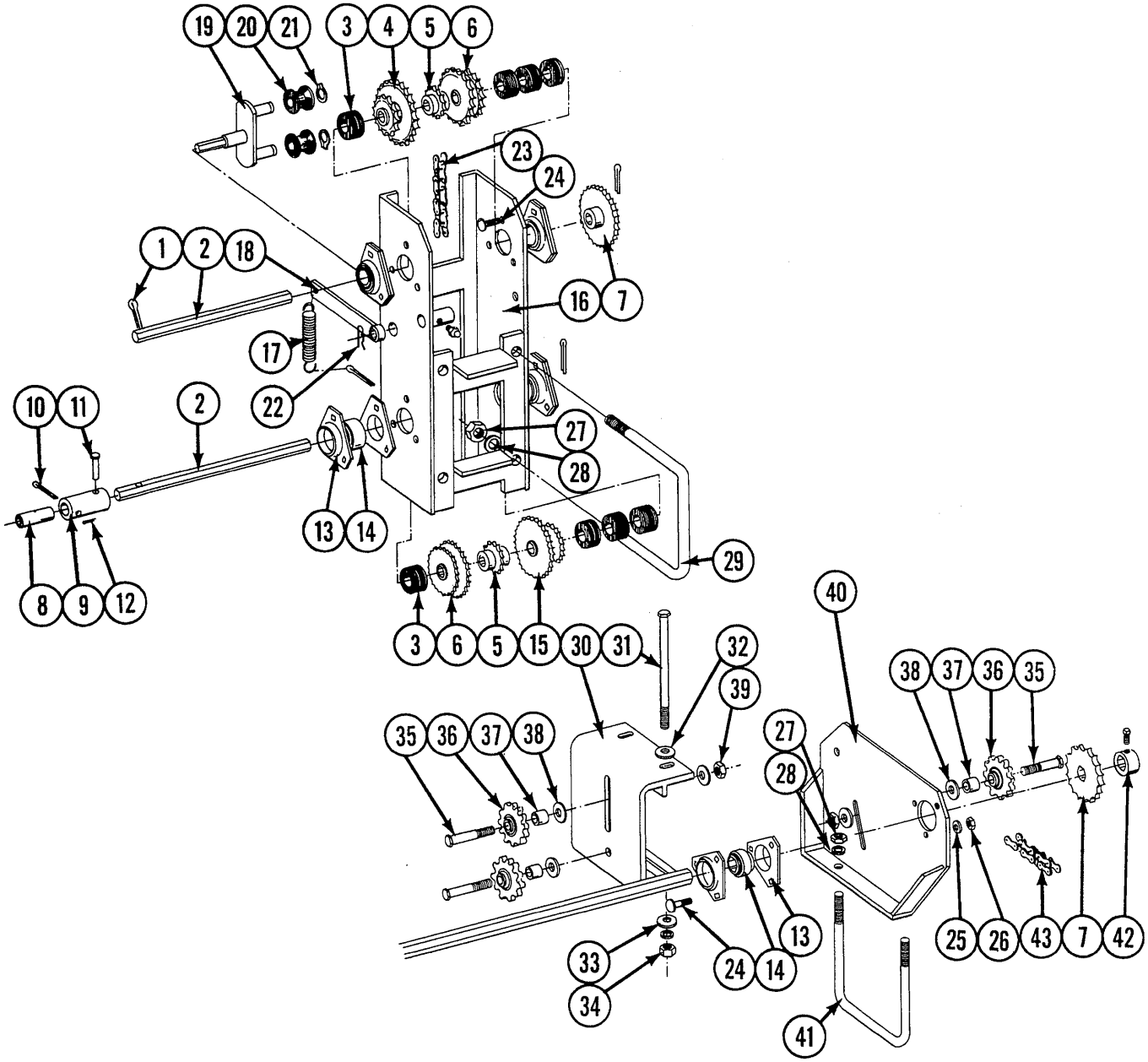

PUSH UNIT DRIVE - 12R36 and 38 & SINGLE PUSH UNIT

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ITEM	PART NO.	DESCRIPTION
1.	10463	Cotter Pin, 1/4" x 1 1/2"
2.	D926	Shaft
3.	D832	Spacer, Rubber
4.	2500-3	Sprocket, 16-30 Tooth
5.	2500-1	Sprocket, 14 Tooth
6.	2500-2	Sprocket, 22-26 Tooth
7.	2500-15	Sprocket, 32 Tooth
8.	D747	Drill Shaft, Drive, 9/16"
9.	D748	Coupler, Drill Shaft
10.	10462	Cotter Pin, 3/16" x 2"
11.	10548	Clevis Pin, 1/4"x1 3/4"
12.	10455	Cotter Pin, 1/16" x 1/2"
13.	3400-1	Flangette
14.	2100-3	Bearing, 7/8" Hex Bore
15.	2500-6	Sprocket, 18-28 Tooth
16.	A1363	Transmission Case
17.	D913	Spring
18.	A272	Idler Arm
19.	A242	Tightener Weld
20.	D1067	Idler Spool
21.	10435	Retaining Ring
22.	10670	Hair Pin Clip, No. 3
23.	3300-40	Chain, No. 2040, 40 Pitch, Includes Connector Link
	R194	Connector Link, No. 2040
24.	10303	Carriage Bolt, 5/16"-18x1"
25.	10232	Lock Washer, 5/16"
26.	10106	Hex Nut, 5/16"-18
27.	10104	Hex Nut, 5/8"-11
28.	10230	Lock Washer, 5/8"
29.	D1113	U-Bolt, 5"x7"x5/8"-11
30.	A1287	Idler Bracket Weld
31.	10148	HHCS, 1/2"-13x9 1/2"
32.	10216	Flat Washer, 1/2"
33.	10228	Lock Washer, 1/2"
34.	10102	Hex Nut, 1/2"-13
35.	10009	HHCS, 5/8"-11x2½"
36.	A268	Idler Sprocket, 16 Tooth
37.	B123	Bushing
38.	10205	Flat Washer, 5/8"
39.	10107	Lock Nut, 5/8"-11
40.	A326	Bracket Bearing Support
41.	D1134	U-Bolt, 7"x5"x5/8"-11
42.	A271	Lock Collar
43.	3300-164	Chain, No. 2040, 164 Pitch, Includes Connector Link
	R194	Connector Link, No. 2040
A.	A503	Idler Assembly (Items 19 thru 21)
B.	A1357	Transmission Assembly, L.H. (Shown) (Items 1 thru 26)
C.	A1358	Transmission Assembly, R.H. (Items 1 thru 26) (Single Push Unit)

WIRING DIAGRAM