MOUNTED PLANTER

OPERATOR & PARTS MANUAL

M0108

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TO THE OWNER

We at Kinze Manufacturing wish to thank you for your patronage and appreciate your confidence in Kinze farm machinery. Your Kinze Planter Bar 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 bar. Refer to it when necessary to maintain the machine in efficient operating condition.

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.

This manual is applicable to:

Mounted Planter Bar Number MT, Serial Number 15630 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.

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NEW MACHINE WARRANTY

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

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

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

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

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

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

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

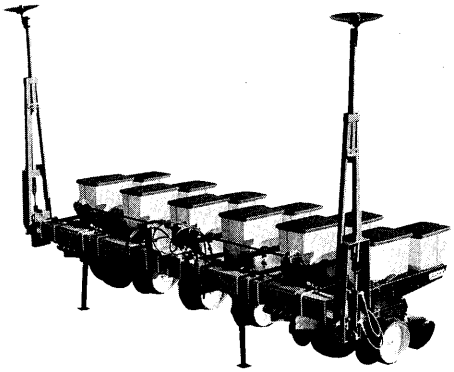
INTRODUCTION

General Information

This manual has been written to provide the instructions for assembly, operation and maintenance of all Kinze mounted planter bars as well as the parts list for each model.

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

Right hand or left hand as used throughout this manual is determined by facing in the direction the machine will travel when in use.



Serial Number

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

The serial number plate is located on the planter bar frame to be readily available. It is suggested that the serial number and purchased date also be recorded in the space provided on the inside front cover 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.

Serial Number Plate Located on Frame.

Available Models	Bar Length	Marker Assembly	Options Available
2 Row 30" & Wide	90"	None	Fluted or Ripple Coulters Automatic Marker Control Down Pressure Springs
4 Row-30"	128"	Conventional	
4 Row-Wide	136"	Conventional	
6 Row-30"	169"	Conventional	
6 Row-Wide	214"	Low Profile-Double Folding	
8 Row-30"	229"	Low Profile-Double Folding	

SAFETY PRECAUTIONS

Safe and careful operation of the tractor and planter bar 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 bar frame or allow others to do so.

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

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

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

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

Always install marker lock up/safety pins before transporting or parking any planter bar equipped with conventional marker assemblies.

Marker Assembly

ASSEMBLY

The following instructions are provided for assembly of the mounted planter bar. 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 it takes to safely perform each step.

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

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

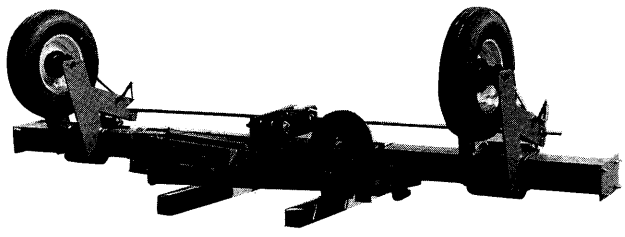
Hardware

All bolts furnished with the planter bar unless otherwise noted are SAE Grade 5. These high strength bolts are distinguished by these radial lines on the head. If bolts must be replaced, be sure to replace them with bolts of equal size and strength.

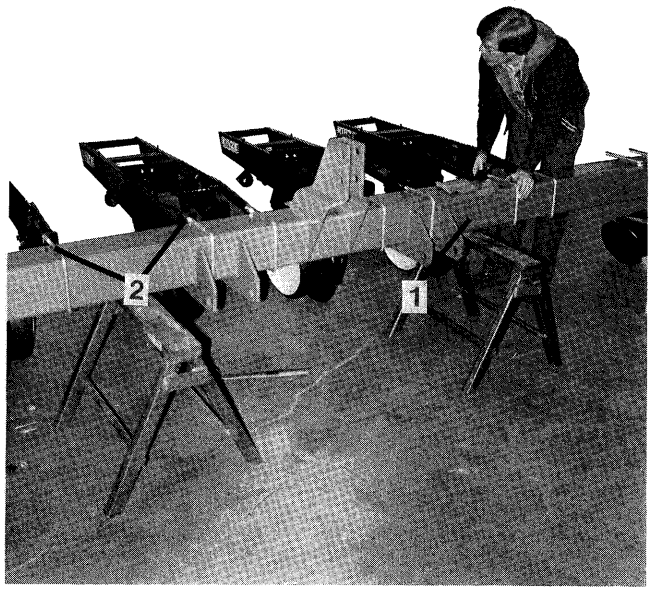
In many cases bolts have been pre-installed in the holes in which they go during assembly. It is suggested that bolts be left somewhat loose until parts have been assembled. This especially applies to bearing flanges, idler sprockets, etc. Then tighten all bolts to the torque valve specified below unless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

TORQUE VALVES		
Bolt Diameter	Grade 5 Three Radial Dashes 	Grade 8 Six Radial Dashes 
	Foot-Pounds	Foot-Pounds
3/8"	30	— —
1/2"	75	— —
5/8"	150	— —
3/4"	270	— —
1"	— —	910

1. Unband the shipping bundle and inspect for damage. Remove marker, hitch and hydraulic package.



2. Position planter bar on two sturdy supports which are positioned equal distance from each end of the bar so as not to interfere with row unit or wheel bracket installation.



ASSEMBLY

ROW UNIT ASSEMBLY AND INSTALLATION

The frame on your Kinze planter bar is constructed of 7"x7" square tubing to accept most popular types of row units.

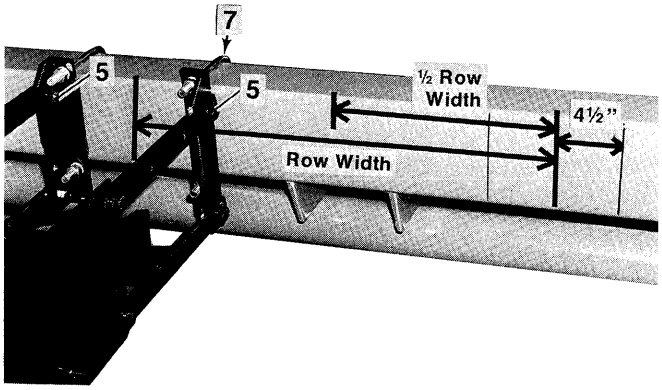
NOTE: If planter units other than Kinze Precision Placement Units are being installed, it is suggested that the manual for the particular brand and model be consulted.

1. Measure the full length of the planter bar and locate center.

2. Mark center of each row by measuring to each side of bar center. The two middle units will be located half the row width from the center. For example, when units are being installed for 30" rows, measure 15" to each side from the center of the bar and every 30" thereafter to the ends of the bar.

3. Mark a squared vertical line 4½" to each side of the row center. This will allow correct positioning and vertical alignment of each row unit as it is being installed.

4. Remove 5/8"x1¾" hex head cap screw, with bushing and lock nut from shipping position on each support bracket.



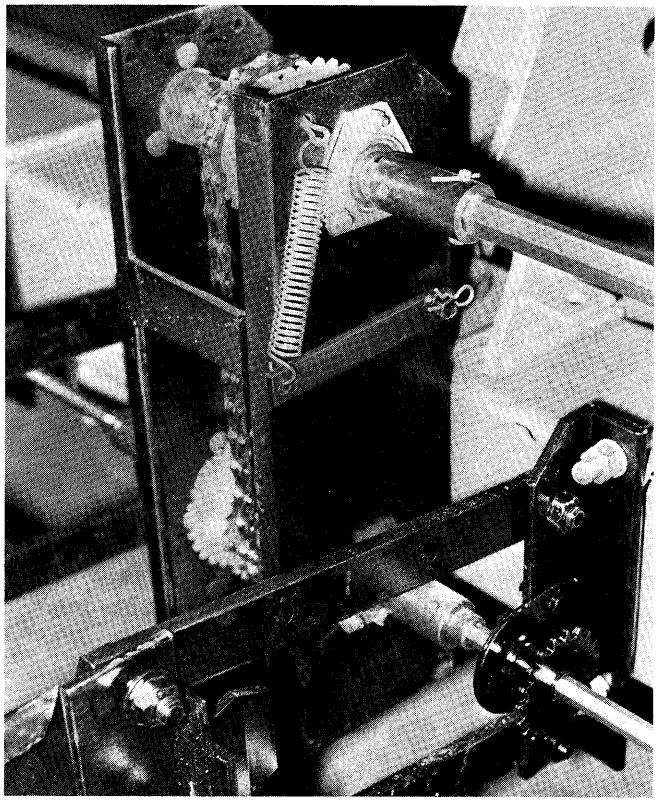
5. Swing right and left upper parallel arms to a position parallel with lower arms and attach to support brackets with bolts and bushings provided.

6. Position row unit on planter bar, aligning inside edge of support brackets with marks made earlier.

7. Attach row units using 5/8" U-bolts, lock washers, and hex nuts.

IMPORTANT: If heavy duty down pressure springs are to be installed, the front support plate must be installed on the U-bolts directly behind the row unit support angles prior to installing lock washers and nuts.

8. Remove plateless drive clutch and drive bearing and sprocket assembly from shipping position on rear of row unit. Both parts are wired to the row unit frame.

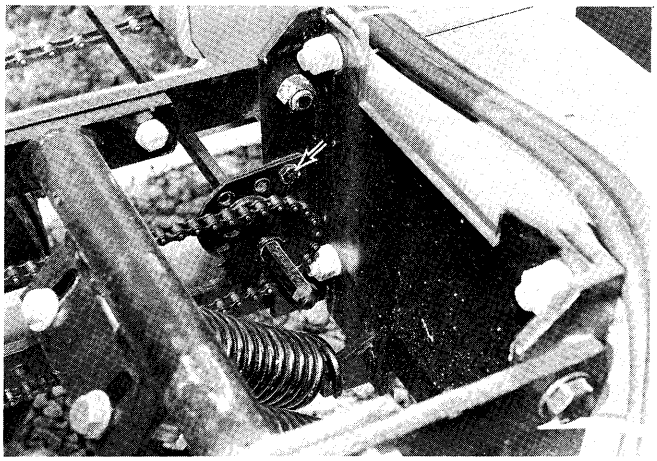


9. Attach drive bearing and sprocket to inside of left support bracket with 3/8"x1" cap screws provided. Do not tighten at this time.

10. Turn all chain idler spools to break loose any paint that may restrict movement.

11. Remove bolts which extend into bearing support on plateless drive and reuse to attach drive to left side panel of hopper support.

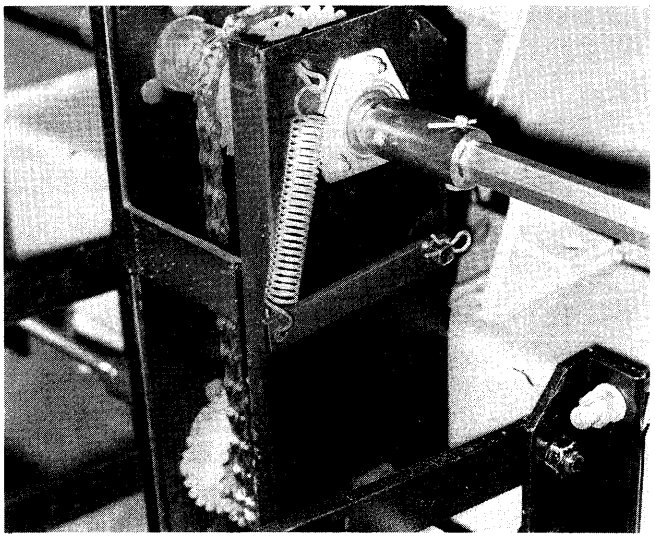
ASSEMBLY



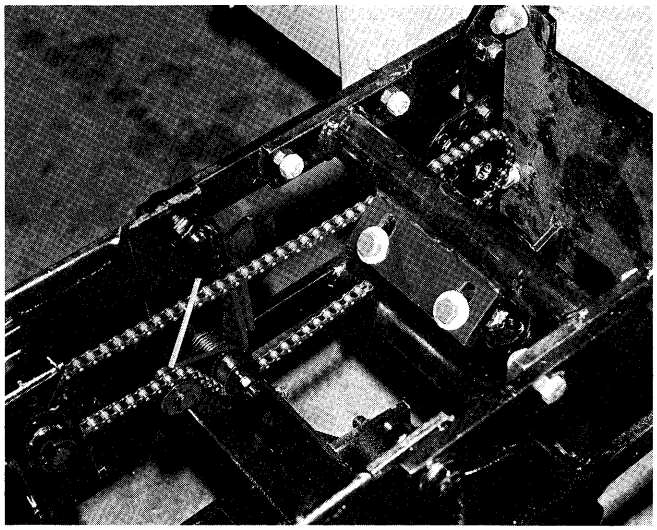
12. Slide drill shafts (hole and first) through the drive bearing/sprocket assemblies on each side of the transmission beginning with the outside row unit on each side.

9/16" Hex Drill Shaft		
Planter Size	3-POINT MOUNTED	
	Left	Right
2R30	21"	12"
2RW	27"	17"
4R30	48"	37"
4RW	60"	48"
6R30	77"	67"
6RW	98"	86"
8R30	107"	98"

13. Remove cotter pin from drill shaft drive and remove driver from transmission coupler. Install driver onto end of drill shaft and slide driver and drill shaft into coupler. Align the hole in all three components and install 3/16"x2" cotter pin.



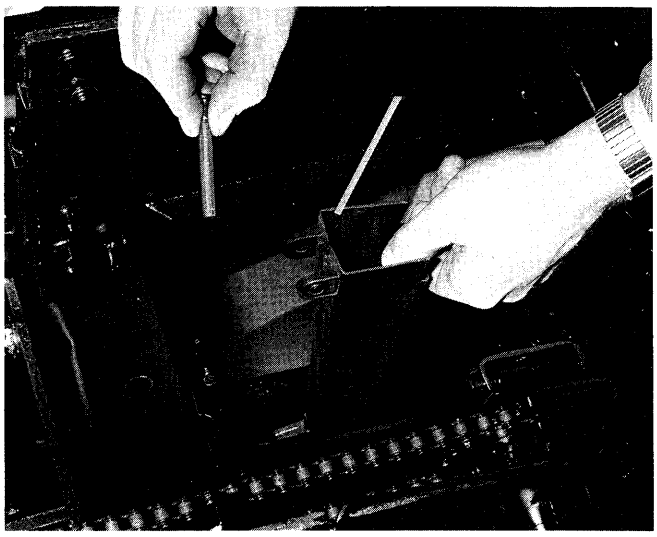
14. Tighten mounting bolts on all drive bearing and sprocket assemblies after insuring the drill shaft is in alignment.



15. Install drive chains around row unit drive sprocket and plateless drive sprocket; then join with connecting link. Position drive chain over and under chain idlers as shown.

16. Remove hold down latch clip from shipping position on inside of seed hopper and reattach to outside of hopper with 3/8"x¾" socket head cap screw, flat washer, lock washer, hex nut...and ¼"x¾" carriage bolt, rubber washer, flat washer and self-locking flange nut.

17. Install seed tube in shank as shown. Position hook on the front of the tube over alignment pin in shank. Then pivot top of tube forward and secure with retainer pin and locking clip. Once the tube has been secured in position, tighten 3/8" nut on bolt at front of shank cover.



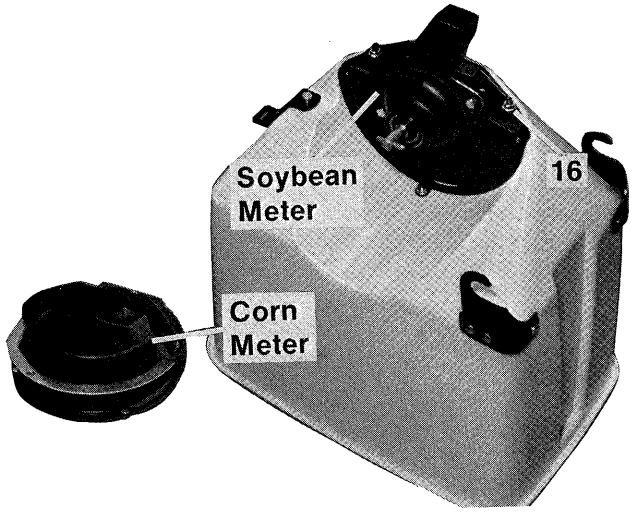
ASSEMBLY

If electronic seed monitor tubes are being installed, refer to the accompanying instructions.

18. Install seed metering unit on hopper bottom with two 5/16" hex flange nuts.

19. Install seed hopper and latch in position. Adjust latch up or down as necessary for a secure fit.

20. Install red reflector on rear corner of hopper support on outside row unit of each side.

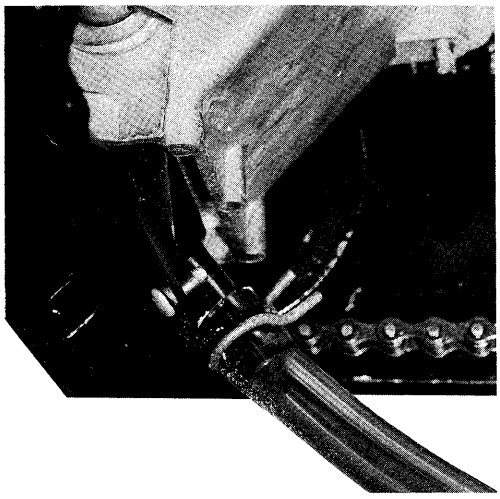


ASSEMBLY

INSECTICIDE AND HERBICIDE ATTACHMENT

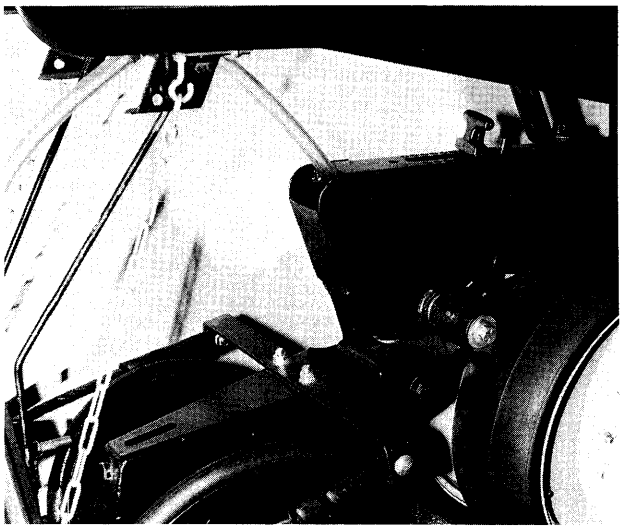
1. Attach insecticide and/or herbicide funnel to hopper support with two No. 10x3/8" self tapping screws. Install insecticide funnel facing forward and herbicide funnel facing rearward.

2. Attach plastic hose(s) to funnel(s) with spring clamp. Hose may be cut if necessary to eliminate bends and provide straight line granule delivery.

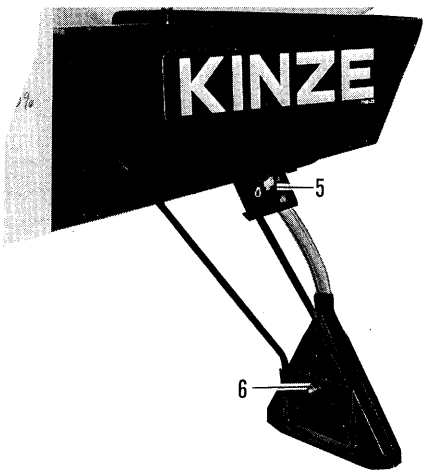


3. Insert adapter tube into insecticide bander and secure bander to shank as illustrated with spring locking clip.

4. Insert insecticide hose into tube and bander assembly. Shorten hose if necessary to eliminate all bends.



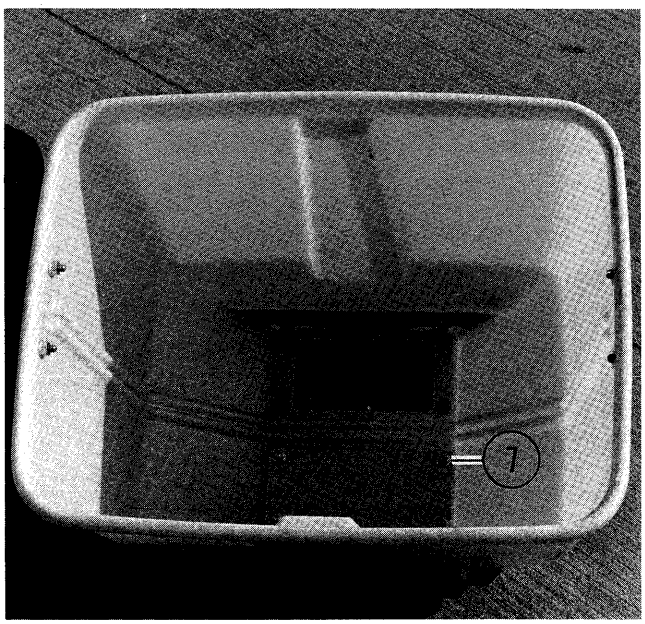
5. Attach herbicide bander hanger brackets to hopper support with four ¼"x¾" carriage bolts, lock washers and hex nuts.



6. Install/herbicide bander hanger in brackets and secure in place with cotter pins. Attach bander to hanger with strap, 3/8"x2" carriage bolt, lock washer and hex nut. The bander may be adjusted for height on the hanger.

   The insecticide/herbicide hopper is shipped for use as a single granular spreader. If the hopper is to be used with both insecticide and herbicide a second granular spreader and a hopper divider must be installed as follows:

7. Remove ¼" cap screws, flange nuts and cover plate from inside of hopper.



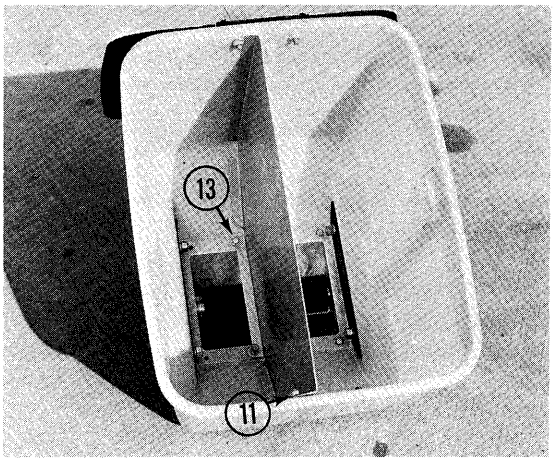
8. Remove cotter pin and washer(s) from roller shaft on existing granualr housing.

9. Attach drive coupler to both granular housings with 5/32"x 1½" cotter pins.

10. Attach second granular housing to hopper with four ¼"x¾" self tapping screws. Do not install the two inboard screws at this time.

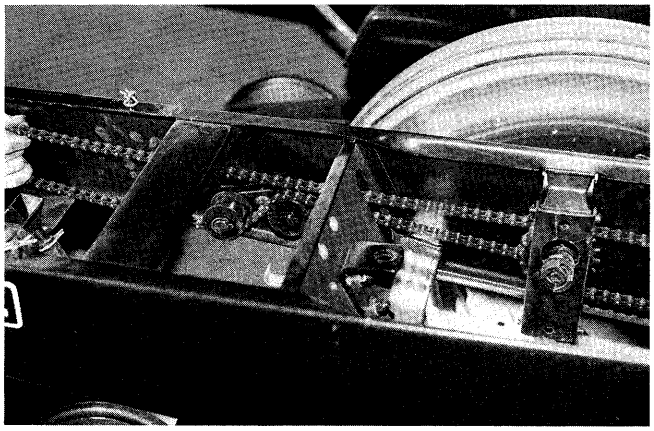
11. Remove right plug from front of hopper and remove ¼" nut and washer from right hinge screws.

12. Install hopper divider. Secure divider to front of hopper with ½"x¾" cap screw, washer and nut. Rear of hopper is secured with existing hinge screw and hardware. Seal divider with silicone.



13. Install two remaining housing attachment screws through divider tabs and granular housing. Be certain roller shafts are in alignment and turn freely before tightening screws.

14. Route insecticide and/or herbicide drive chain around 11 tooth part of double sprocket seed hopper drive. Run both upper and lower halves of chain through slot in hopper support and around idlers as shown.



15. Position hopper on rear of support panel and install drive chain around sprocket. Then lower hopper until side brackets seat on support pins. Secure in place with spring locking pins.

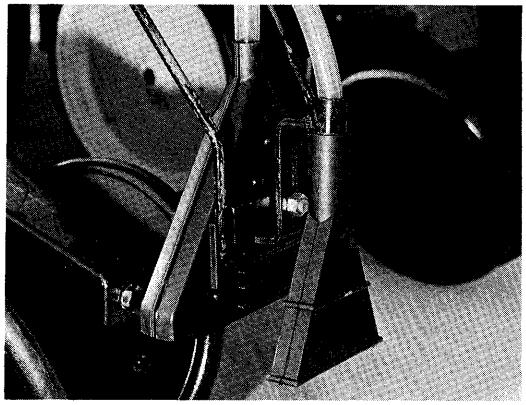
16. If necessary, reposition spouts so they are directly beneath and snub against the granular housing openings.

Rear Mount Insecticide Spreader

To attach the insecticide spreader to an existing herbicide diffuser, proceed as follows:

1. Attach welded bracket to herbicide diffuser with 3/8"x2½" carriage bolt provided.

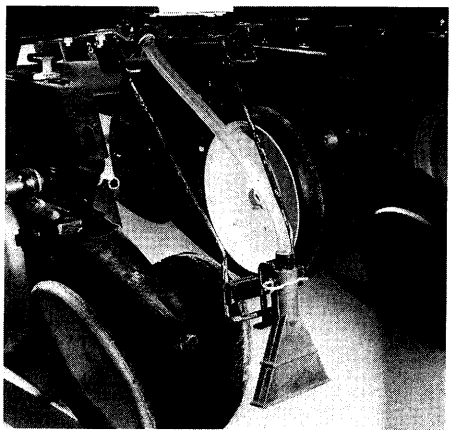
2. Attach insecticide spreader to welded bracket as shown.



3. Removing tapping screw from hopper funnel and turn funnel 180 degrees so that insecticide exits out the rear of the planter unit.

4. Insert hose into welded bracket. Then attach other end of hose to funnel with hose clamp.

The insecticide spreader may also be rear mounted on units not equipped with the herbicide diffuser. Simply install the diffuser hanger as instructed for the herbicide package and attach welded bracket to hanger with clamp and 3/8" x 1½" carriage bolt provided. Make sure funnel projects to the rear of the row unit.



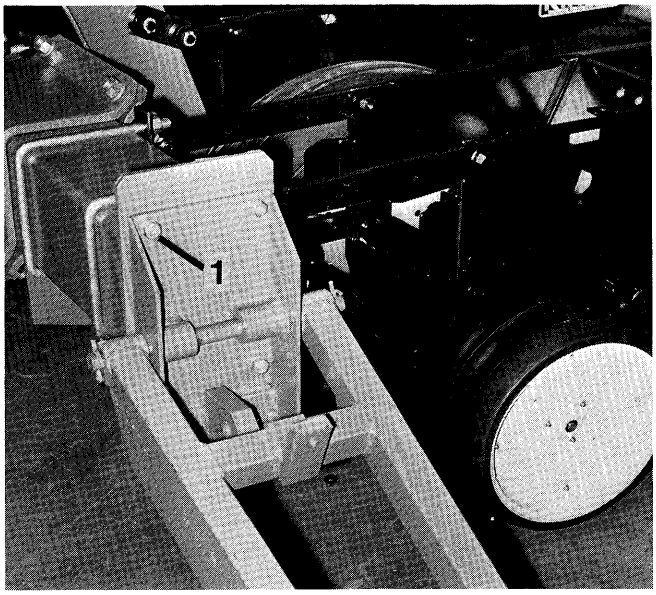
ASSEMBLY

MARKER ASSEMBLY INSTALLATION

Depending upon the size of the planter bar, the marker assemblies will be either a conventional or double folding low profile design. Refer to model configurations following "Introduction" for the type of marker used on each model.

Conventional Marker Assembly

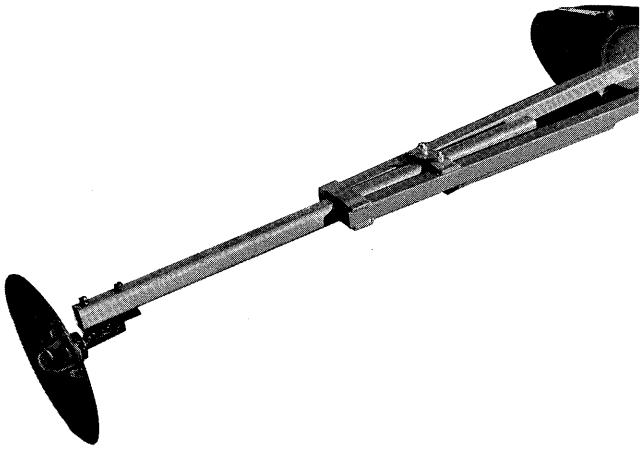
1. The conventional marker assemblies are pre-assembled with the exception of installing the marker disk and hydraulic components. The hub on each marker assembly is designed for either right or left hand installation. Make sure the marker is mounted on the correct side that the spindle and blade project forward. Attach bracket to mounting pad on end of planter bar with four ½"x1½" cap screws, lock washers and hex nuts.



2. Using the bolts pre-installed in the hub, attach the 16" disk to throw dirt out away from the hub and grease seals. Be sure to alternate bolts while tightening to avoid distorting the disk's shape or breaking the marker hub. The spindle bracket has slotted mounting holes which allow the angle of the blade to be increased or decreased.

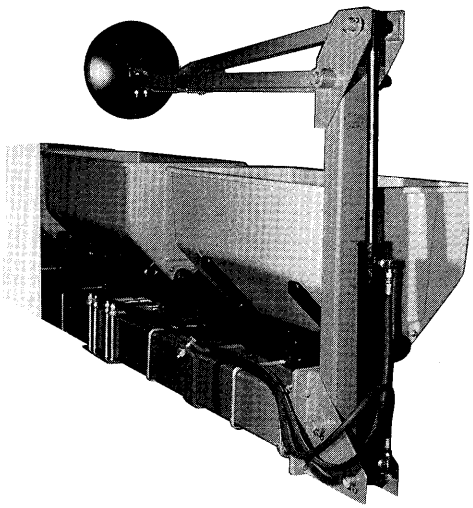
3. Final position of the extension must be set by the operator and is discussed in the operation section of this manual.

4. Refer to the "Marker Hydraulics section which follows for connection of the marker cylinders, hoses and additional hydraulic components.



Double Folding -Low Profile Marker Assembly

1. Install mounting bracket/first stage to mounting pad on end of planter bar with four ½"x1½" cap screws, lock washers and hex nuts. This assembly is interchangeable between the right and left sides.

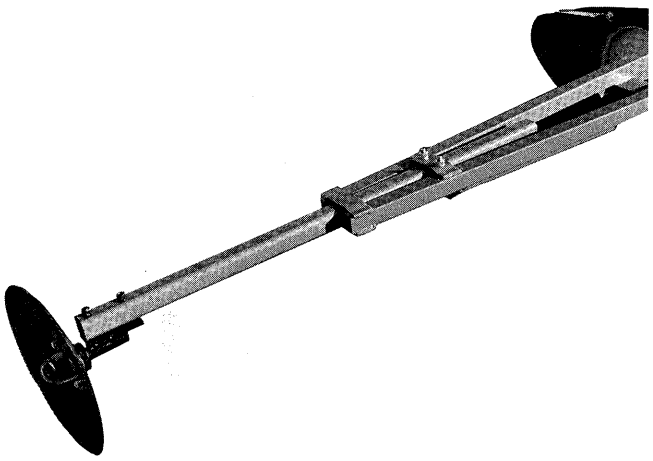


2. Attach pre-assembled second stage of marker with extension and hub to first stage with pivot pin and cotter pins.

IMPORTANT: The hub on each second stage is designed for either right or left hand installation. Make sure this stage is mounted on the correct side so that the spindle and blade project forward. The spindle bracket has slotted mounting holes which allow the angle of the blade to be increased or decreased.

3. Using the bolts pre-installed in the hub attach the 16" disk to throw dirt out away from the hub and grease seals. Be sure to alternate bolts while tightening to avoid distorting the disk's shape or breaking the marker hub.

4. Final position of the extension must be set by the operator and is discussed in the operation section of this manual.



5. Refer to the "Marker Hydraulics" section which follows for connection of the marker cylinders, hoses and additional hydraulic components.

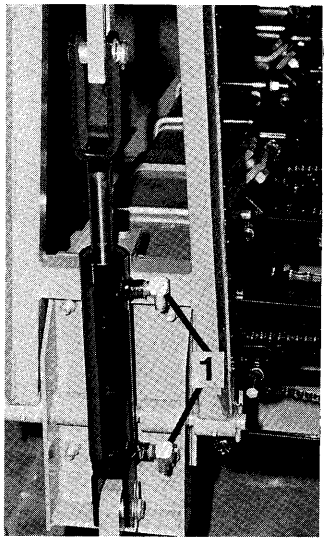
6. Install amber reflector to front lower portion of marker arm on each side.

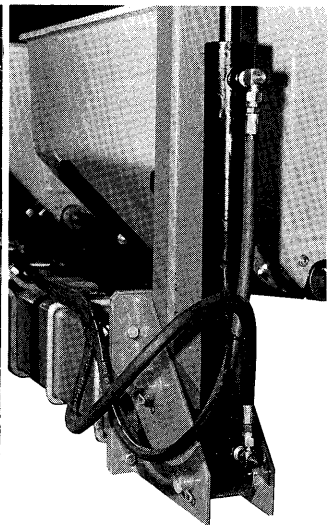
MARKER HYDRAULICS

Both the single and double folding marker assemblies are hydraulically operated. All double frame planters are also available with a single or double valve hydraulic system. The double valve system requires dual hydraulic outlets on the tractor. One pair of outlets is used to power the planter lift system, while the second outlet is used entirely for the marker system. The single valve system ties the marker cylinders in with the planter bar lift system. As the planter bar is raised, one of the marker assemblies is also lifted. Marker assemblies then alternate raising and lower each time the planter bar is raised and lowered.

Proceed with installation of the marker cylinders and hydraulic system as follows:

Warning: Always leave the marker assembly laying horizontally or secured with safety pin when installing hydraulics. Never rely on the hydraulic cyclinder to hold the marker in the raised or folded position while working on or around planter.





1. Install 90° 3/8" male pipe x 9/16"-18JIC elbow in each port of 2"x 8" conventional hydraulic cylinder ...or 90°½" NPT x ¾"-16JIC elbow in each port of 2½" x 20" low profile hydraulic cylinder.

2. Attach base end of cylinder to marker mounting bracket. Then turn elbow fittings, if necessary, to project rearward and down.

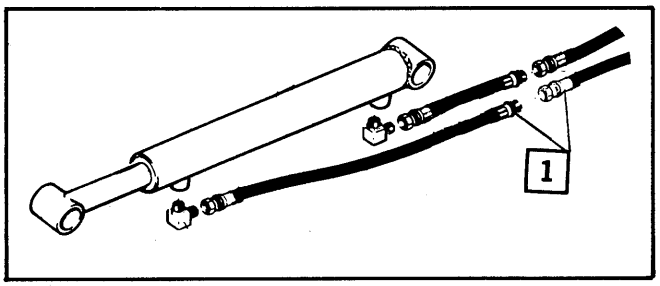
3. Attach hoses to each elbow, routing them around the back of the marker and along the frame bar. When securing hoses to the frame, allow for flexing at marker arm.

4. Assemble sequencing valve, flow control valves, and fittings as shown for your particular unit. Due to the variations between single and dual valve systems, refer to the appropriate illustration for correct assembly of all hydraulic hardware.

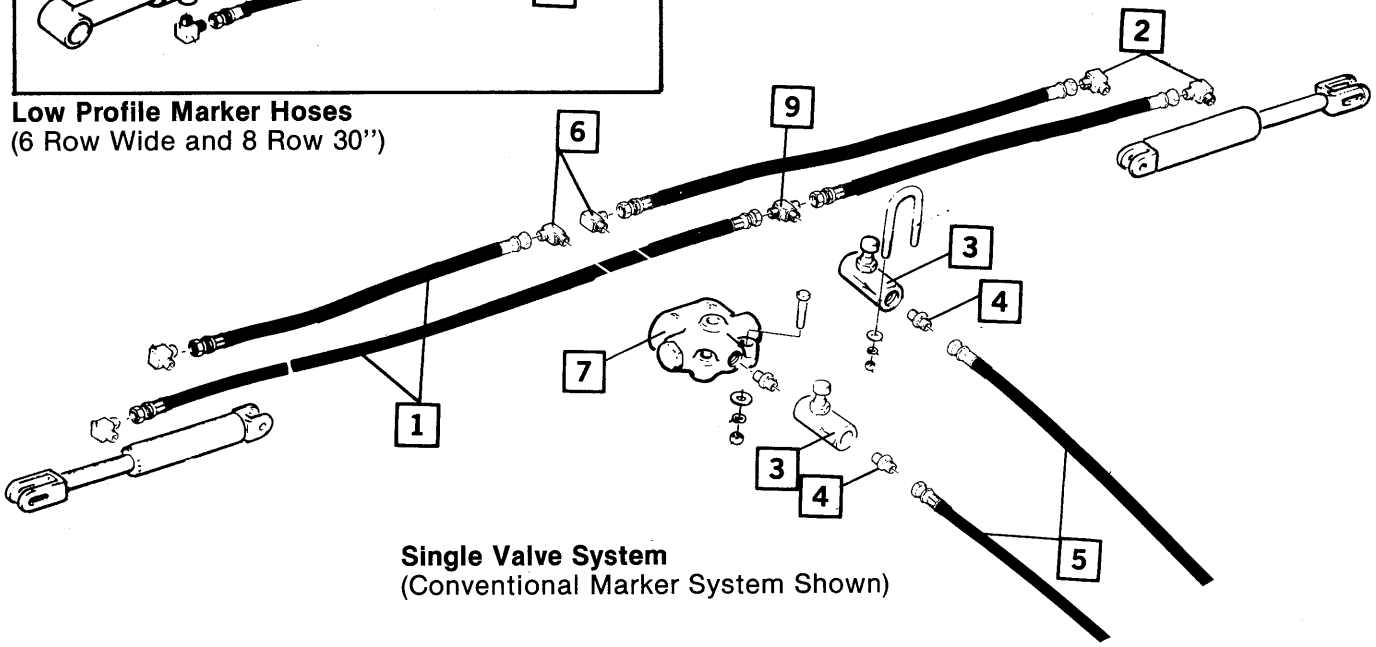
5. Secure all hydraulic hoses to planter bar frame with nylon tie straps. Route hoses to tractor under clamps on planter and tighten clamp bolts.

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

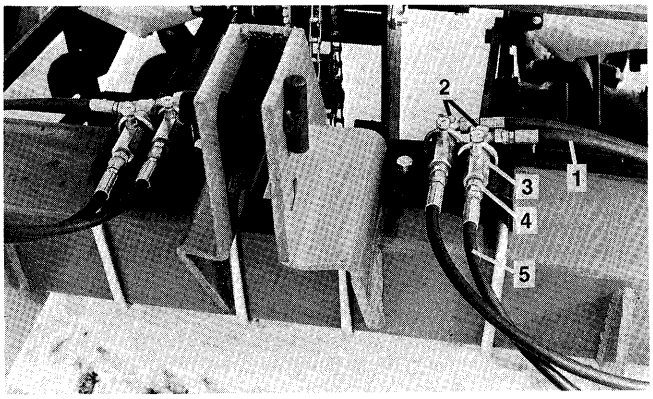
ASSEMBLY



Low Profile Marker Hoses
(6 Row Wide and 8 Row 30")



Single Valve System
(Conventional Marker System Shown)



Dual Valve System

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

CAUTION: Before the marker assembly is first put into use, 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. Then open each valve approximately ½ turn. After the marker has been cycled several times, final adjustments can be made.

Before operating the marker assemblies, first connect all hydraulic hoses and cycle the cylinder several times with ram end disconnected to purge air from the system. After the cylinders are operating smoothly, attach the ram end clevis to the marker arm.

Legend

1. 1/4" Hydraulic Hose w/9/16"-18JIC Swivel Both Ends (4 Used)
   4 Row 30"-95"
   4 Row Wide-95"
   6 Row 30" - 110"
   3/8" Hydraulic Hose w/¾"-16JIC Swivel Both Ends
   6 Row Wide 110" and 36" (4 Each)
   8 Row 30" 120" and 36" (4 Each)
2. 90° 3/8" NPTx9/16"-18JIC Elbow (4 Row Wide and 6 Row 30")
   90° 3/8" NPT- ¾"- 16 JIC Elbow (6 Row Wide and 8 Row 30")
3. KLF 375 Flow Control Valve
4. 3/8" NPTx9/16"-18JIC Straight Adapter
   3/8" NPTx3/4"-18JIC Straight Adapter
5. 1/4"x48" Hose 1/2" NPT 9/16"-18JIC Swivel (4 Row and 6 Row 30")
   3/8"x48" Hose 1/2" NPT-3/4"-16JIC Swivel (6 Row Wide and 8 Row 30")
6. 90° 3/4"-16 O-Ring x9-16"-18JIC Elbow (4 Row and 6 Row 30")
   90° 3/4"-16 O-Ring x3/4"-16JIC Elbow (6 Row Wide and 8 Row 30")
7. Sequencing Valve
8. 3/4"-16 O-Ringx3/8"NPT Straight Adapter
9. 3/8"NPTx9/16"-18JIC Male Side Tee
   (4 Row 30", 4 Row Wide and 6 Row 30")
   3/8" NPTx3/4"-16JIC Male Side Tee
   (6 Row Wide and 8 Row 30")
10. 3/8"x2" Cap Screw, Lock Washer, Hex Nut
11. 5/16" U-bolt, Flat Washer, Lock Washer, Hex Nut

OPTIONAL EQUIPMENT ASSEMBLY

Regular Duty Down Pressure Springs

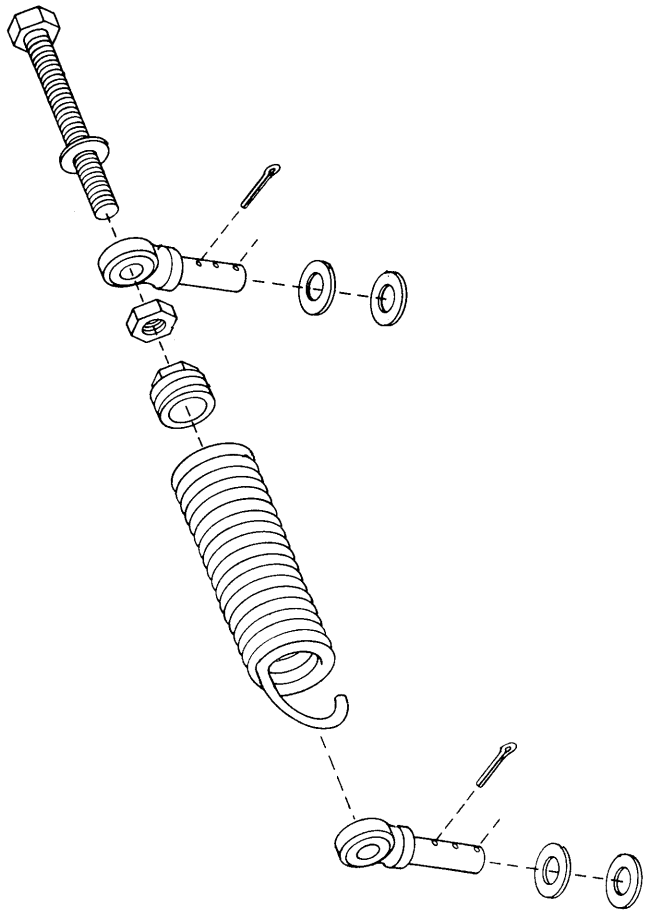
If extra row units are to be installed between the regularly spaced planter units, the springs should be installed on the inside of the row unit frame. Otherwise, they should be installed on the outside of the frame as instructed below:

1. Install eyebolt in top and bottom support arms with a flat washer on each side of support and secure in place with cotter pin.

2. Hook down pressure spring in lower eyebolt.

2. Place flat washer on 7/16" x 4" full thread capscrew and install through top eyebolt, 7/16" jam nut and spring plug. Tighten bolt until sufficient down pressure is obtained.

Important: Make sure length of stretched spring is equal on each side of row unit. Spring tension must be further adjusted by the operator to match ground conditions.



Heavy Duty Down Pressure Springs

1. Install support plate on U-bolts directly behind support angles as part of row unit installation procedure. (The support plate is held in place with the same hardware that is used to attach row unit.)

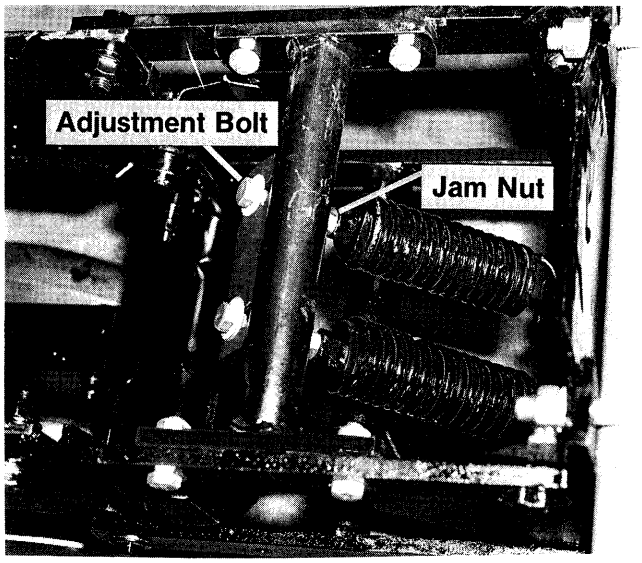
2. Attach spring tube to upper row unit support arms with four-½" x 1½" cap screws and locknuts.

3. Hook tension springs to support plates. Then install ½" x3" cap screws, flat washers, and jam nuts as shown; threading cap screw into spring plug.

Note: It may be necessary to lift planter bar to start the bolts into the spring plugs.

4. Equally tighten both adjustment bolts to obtain the desired amount of down pressure tension.

IMPORTANT: It is necessary for the operator to adjust springs for ground conditions. If springs are overtightened, it is possible in some cases that the row units actually lift the planter bar to the point that the drive wheel do not contact the ground sufficently for proper operation.



ASSEMBLY

Coulters

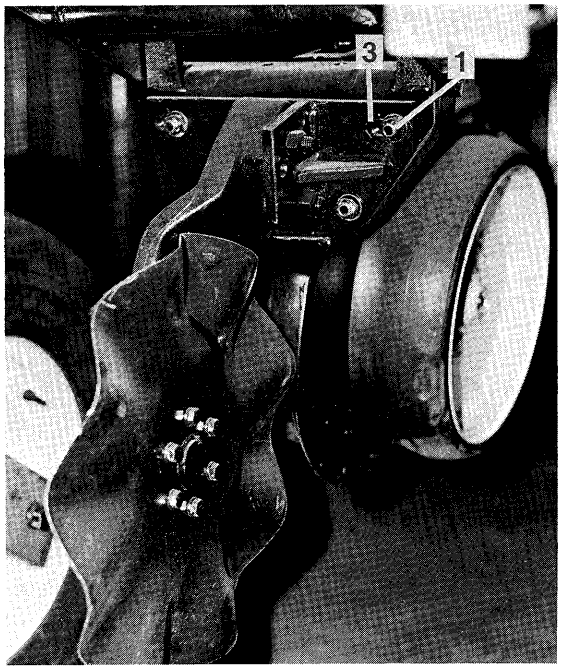
The heavy duty coulter attachment is available with either a 16" fluted blade or rippled blade for no till or minimum till planting.

1. Attach coulter bracket to row unit frame with four ½" x 1¼" cap screws and locknuts, but do not tighten completely at this time.

2. Install coulter blade with six-3/8" x 1" cap screws. Tighten bolts alternately to avoid distorting the blade.

3. Shift mounting bracket within the limits of the adjustment slots until coulter is aligned with row opener disks. Then finish tightening mounting bolts.

4. Three positions are provided for adjustment of coulter operating depth. To change depth position, loosen the locknut that secures the ¾" x 3½" cap screw. Then loosen and remove 5/8" x 4" cap screw and reposition coulter as desired. Reinstall 5/8" cap screw and tighten both locknuts securely.



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 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 Bar 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

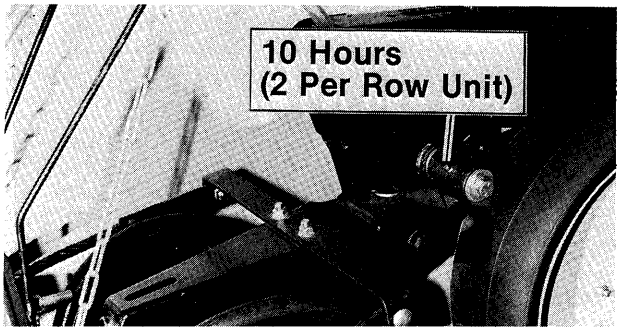
To provide efficient operation of the finger type plateless corn meters and extend the life of components, sprinkle a teaspoon of powdered graphite over the top of the seed each day. The graphite will filter down into the seed pickup mechanism and insure lubrication.

Drive Chains

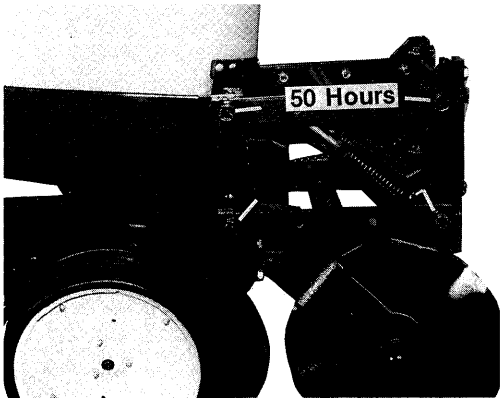
The transmission and row unit drive chains should be lubricated approximately every 8-10 hours with a quality engine oil or equivalent SAE 10 weight oil. A good quality spray lubricant may also be used for periodic chain lubrication. Extreme operating conditions such as dirt, temperature, or speed may 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.

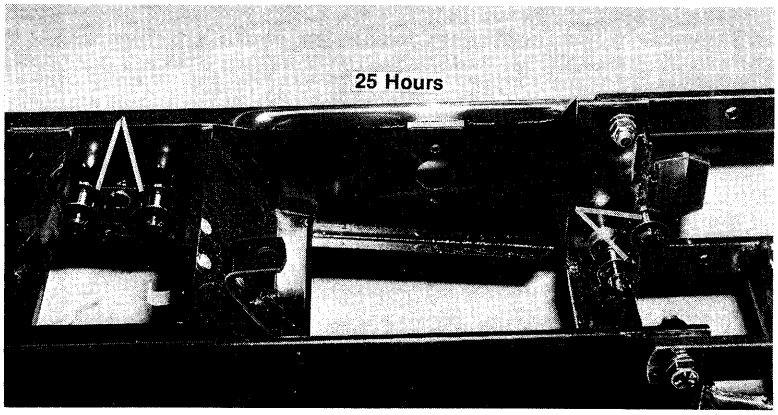
Wheel Bearings

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. Transport wheels on the double frame planter bar may require less frequent service depending upon amount of road travel. Follow the procedure outlined for wheel bearing replacement with the exception that bearings and bearing caps are reused.

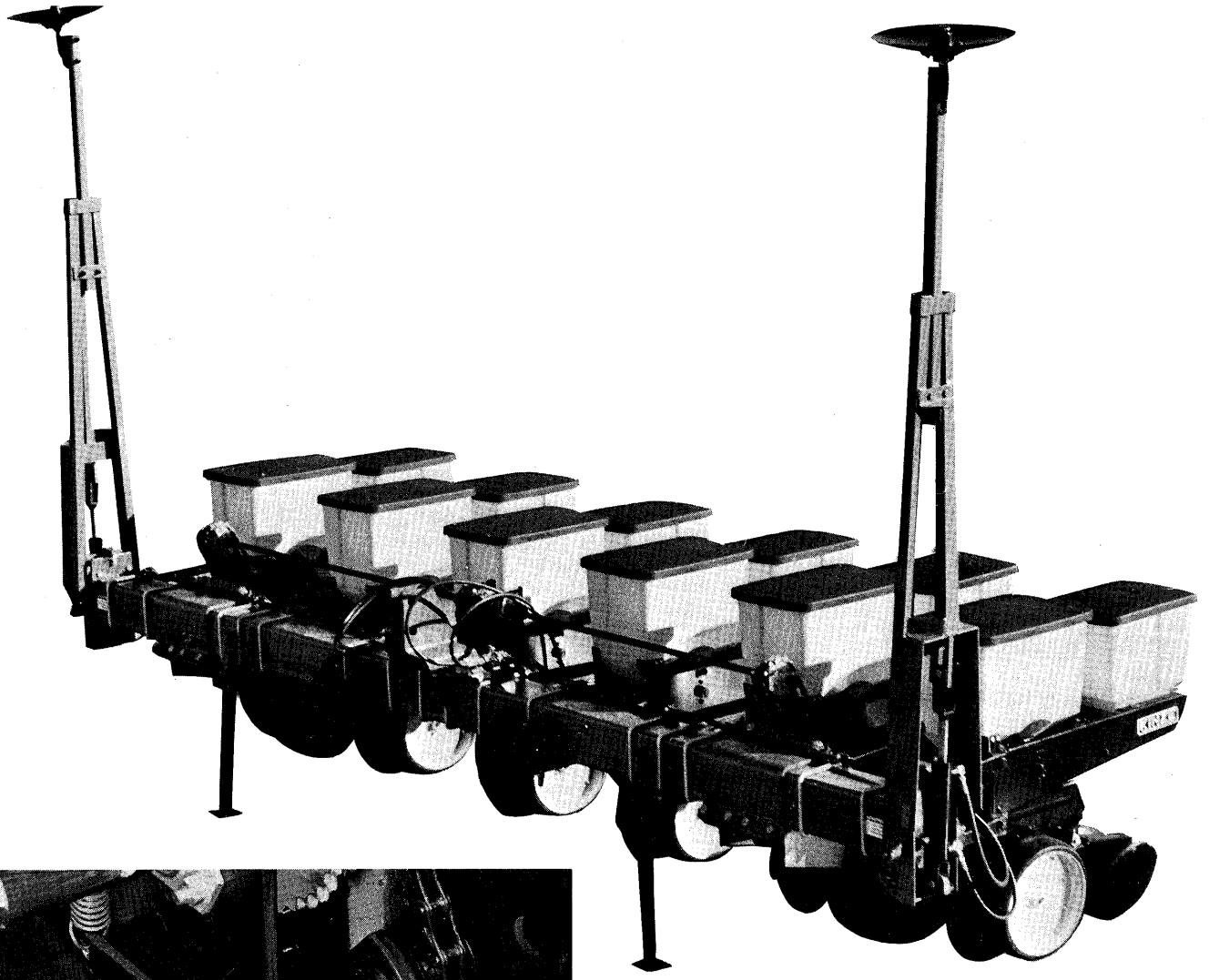


The parallel arm (8) bushings should be lubricated every 50 hours and the idler spools every 25 hours with a quality engine oil or equivalent SAE 10 weight oil.

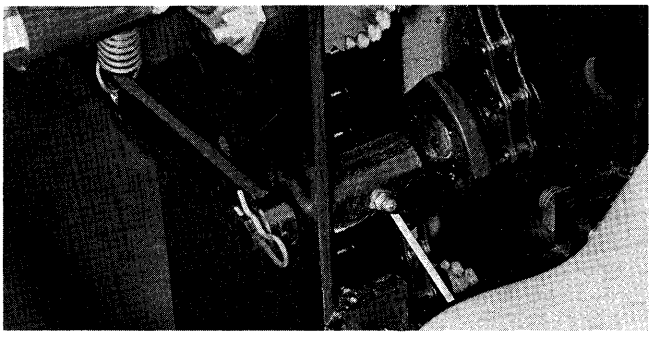




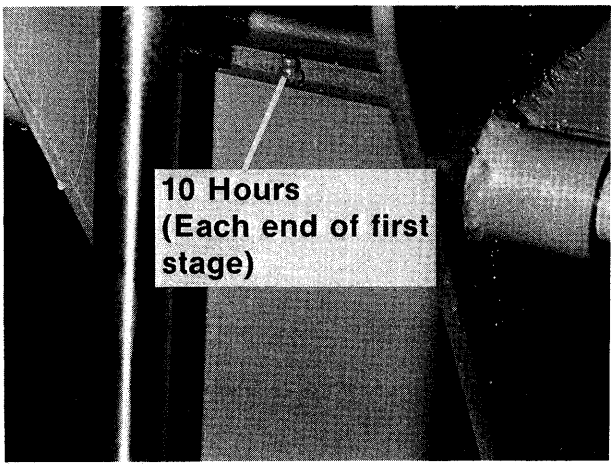
LUBRICATION



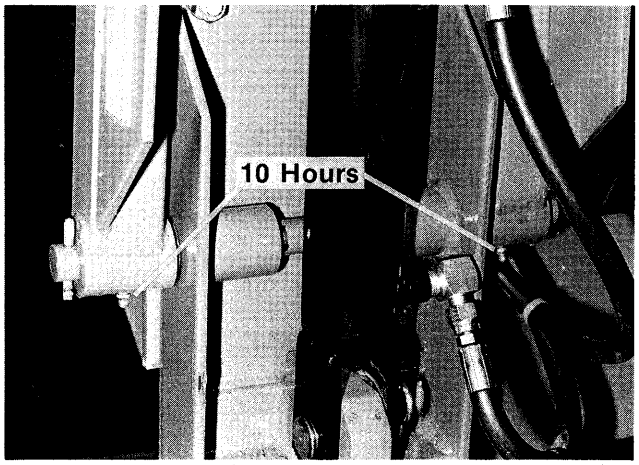
Conventional Marker Shown



Transmission



Double folding Low Profile Marker Assembly



Conventional Marker Assembly
(All applicable models)

OPERATION

The following information is general in nature and was written to aid the operator in preparation of the tractor and planter bar 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 Bar should also be readily available and consulted for planter operation.

Initial Preparation of the Planter Bar

Lubricate the Planter Bar 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. (See page 46). Check all drive chains for proper tension and lubrication. (See page 61).

Mounted Planter Bar Attachment

1. Tractor front end stability is necessary for safe and efficient operation. Therefore, it may be necessary to add front ballast to your tractor for satisfactory field operation, as well aS adequate transport stability. Refer to your tractor operator's manual for front ballast recommendations.

2. Adjust the length of the lift links.

3. Back tractor up to planter bar and raise draft links between hitch plates. Line up holes and insert hitch pins. Lock hitch pins in place with pins provided.

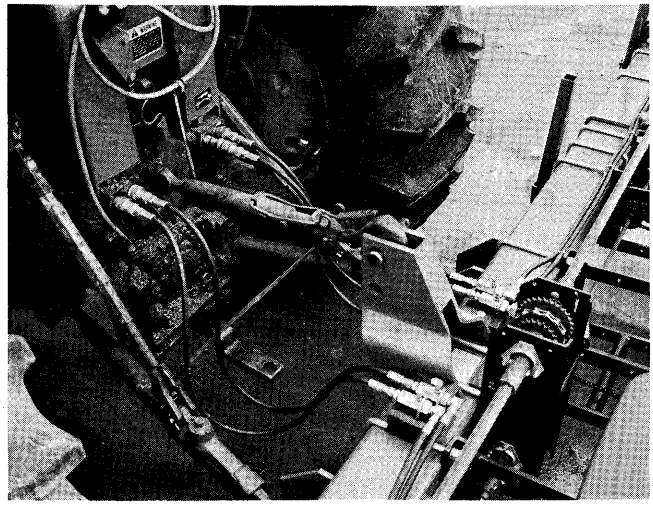
4. Connect center link to planter bar mast. It may be necessary to change the length of the center link with the adjusting handle.

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

Before attaching hoses, move remote hydraulic levers back and forth to relieve any pressure in the tractor hydraulic system.

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

Caution: Before the gauge markers are hydraulically operated, make sure that all hydraulic hoses are properly connected and marker lock-up pins are in working position.



6. Raise planter bar slowly and watch for any interference. Remove pin from each support stand and raise each to the transport position. Secure stands in raised position with pin in lowest hole.

7. Lower planter so that drive wheels rest on ground and check for planter levelness. Readjust top link as required to level row units.

Caution: As a general safety practice and to avoid damage to the tractor hydraulic system, always lower the planter bar when not in use.

Transporting The Planter Bar

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

OPERATION

Leveling The Planter Bar

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

When operating the mounted planter bar, make sure the right and left arms are adjusted equally before attaching the planter unit. After the planter bar has been lowered to the correct operating depth, stop the tractor and stand behind the planter to check for level operation laterally. Then walk around to the side and check fore and aft levelness. If the row units seem to angle up or downward, adjust the center link on the tractor accordingly.

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

Tire Pressure

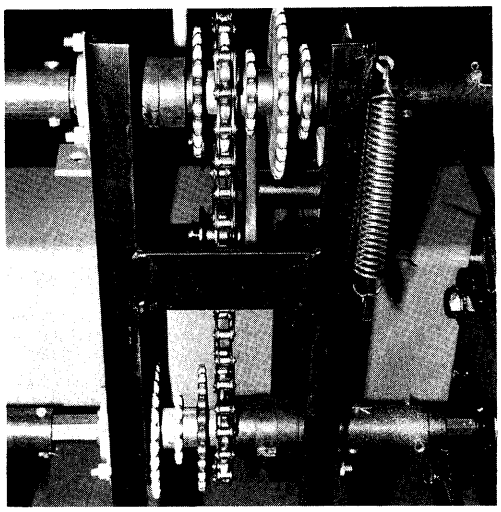
Tire pressure should be checked regularly and maintained as follows:

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

IMPORTANT: Tire pressure must be correctly maintained in all drive wheel tires to insure levelness of planter bar and proper operation of planter. Also, 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 combination to obtain the desired planting population. Since both the transmission drive shaft and the row unit drive shaft are hexagonal in shape, the sprockets need only be slid into alignment with the idlers after first removing the rubber spacers and loosening the drive chain. The combination of small sprockets may require shortening the drive chain.



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

Hydraulic Marker Operation

All mounted planter bar models may be equipped for either single or dual valve operation. Units designed for single valve operation are equipped with a sequencing valve which causes the markers to alternate in operation each time the control valve is activated. Each time a marker is completely raised, the sequencing valve will direct flow to lower the opposite marker.

The dual valve system requires that each marker be connected to a separate pair of hydraulic outlets. Each marker is consequently operated independently with the appropriate tractor control.

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

Both the left and right marker assemblies on all planter bars, 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 "lift" 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. This action has no effect on the transport wheel cylinders on single valve systems.

NOTE: After the flow controls have been adjusted, the marker speed will decrease with cold oil supply. Make sure that all adjustments are made with warm oil.

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

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 disk to the center line of the planter bar is equal to the total planting width previously obtained. Both the planter and marker assembly should be lowered to the ground when measurements are being taken. Also, the measurement should be taken from the point where the disk 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 bar center line and marker blade
6	x	30"	=	180" marker dimension

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

Tractor Speed

Depending upon seed population being planted and sprocket combinations, ground seeds may range from 2 to 7 miles per hour. However, optimum speed for most conditions is 5 to 5.5 MPH. Seed population may increase at higher planting speed, particularly at higher population rate settings.

Consult the operator's manual and planting rate charts for your row units for further tractor speed information. Planting rate charts for Kinze row units equipped with plateless corn or soybean meters can be found at the end of the operation section of this manual.

Planting Depth

Planting depth is maintained by the row unit gauge wheels. To increase or decrease the planting depth, first raise the planter bar to remove weight from the wheels. Then lift the depth adjustment handle and reposition it forward to decrease depth or rearward to increase planting depth. Adjust all units to the same depth initially. Then lower the planter bar and check operation and planting depth of all row units. It may be necessary to readjust certain rows to obtain consistant operation.

OPERATION

Closing Wheel Pressure

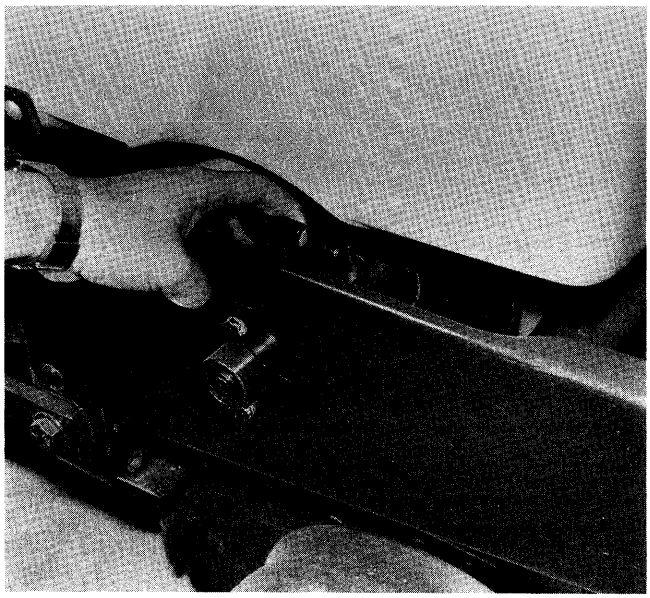
After adjusting for planting depth, check the operation of the closing wheels. The closing wheels should gently close the row without sinking in or compacting the soil. To increase spring pressure on the closing wheels, turn the adjustment bolt, located at the rear of the closing wheel arm, in a clockwise direction. Turning the bolt in the counterclockwise direction decreases spring tension.

Adjust all row units to a similar setting. Tension setting can be determined by checking the position of the tension spring through the viewing slot on top of the closing wheel arm.

Plateless Drive Release

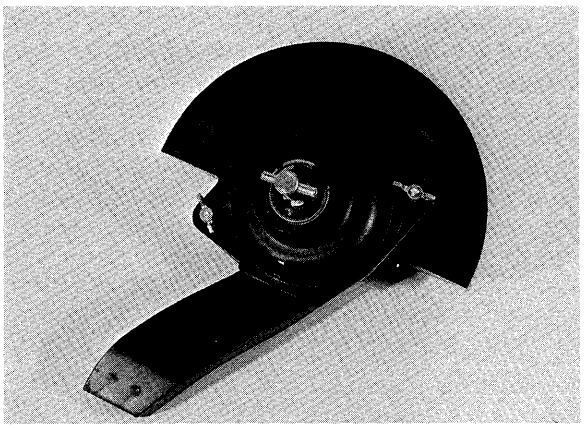
The plateless drive clutch is equipped with a release mechanism that allows the drive to be disconnected from the seed metering unit. Disconnecting the drive allows the operator to check insecticide and/or herbicide application rates without dropping seed. It also allows one or more of the rows to be disconnected when finishing fields.

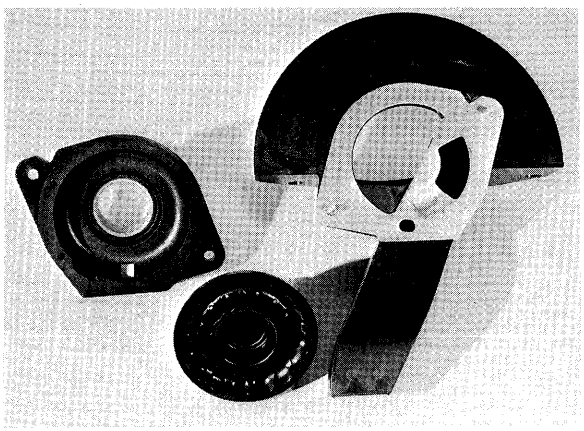
To disengage the drive, lifT the release handle and pull outward until the handle locks in the slot in the side of the hopper side panel. To engage the row unit, simply lift and unlatch the handle. Spring tension will return the mechanism to the drive position.



Feed Cup Meters

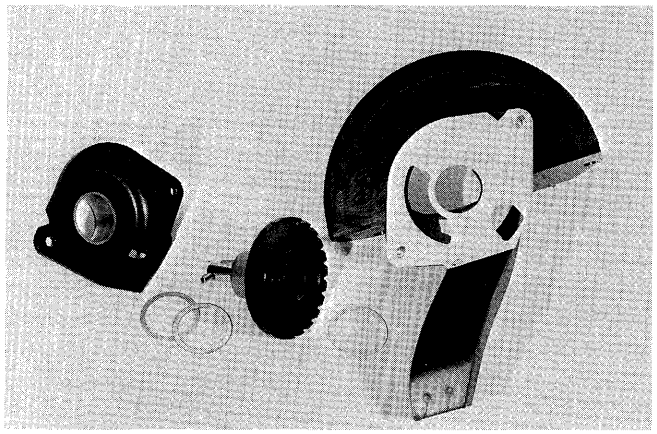
The feed cup meters consist of the feed cup adapter, feed cup housing and an interchangeable feed cup and seed guide. Seed cups and seed guiDes are available for planting soybeans, sorghum-regular rate or sorghum-low rate. The seed guide and seed cup housing are both notched to insure correct installation by aligning with a projection on the feed cup adapter. Make sure all parts are seated when assembling the meter.





When planting low rate sorghum or milo, it may be necessary to adjust the seed clearance to obtain the desired planting rates. Three washer shims have been supplied with each seed meter, and must be used on either side of the feed cup.

For precision planting of small seeds (9/64" in diameter or smaller) place all three shims between the feed cup and the housing. When seeds are approximately 10/64" in diameter, place one washer between the feed cup and the housing and two washers between the feed cup and seed guide. Progressively larger seeds (11/64" or larger) will require one washer shim between the feed cup and housing and two between the feed cup and seed guide; or all three shims between the feed cup and seed guide.



Assemble the feed housing, shims, feed cup and seed guide insuring that notches in parts are aligned. Make sure seed cup housing and seed guide are seated and secure seed meters together with wing nuts.

Refer to planting rate chart for recommended seed drive transmission sprocket combinations.

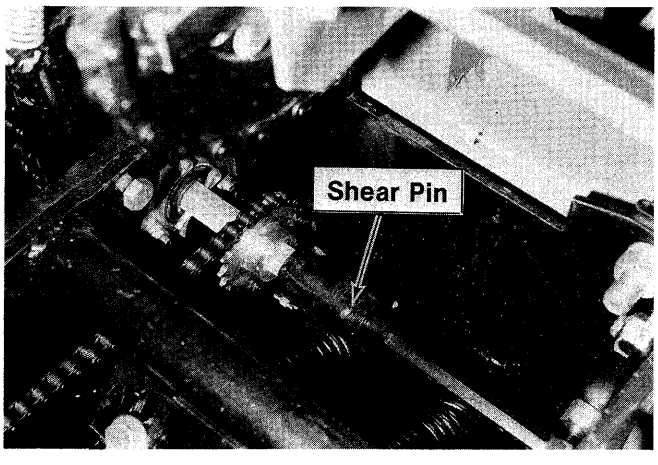
Shear Pin Protection

The transmission and row unit components are proteced from damage by the cotter shear pin which connects each drill shaft to the transmisson.

If excessive load on the drill shaft should cause the pin to shear, it is important to determine where binding has occured before replacing the pin. Turn the drill shaft by hand, checking for misalignment of the shaft and for the possibility of seized parts. If necessary, loosen the mounting bolts on each bearing drive sprocket assembly; then align sprockets and retighten mounting bolts.

When the drill shaft can be turned by hand (with the aid of a wrench) replace the cotter pin with one of identical 3/16" x 2" size.

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

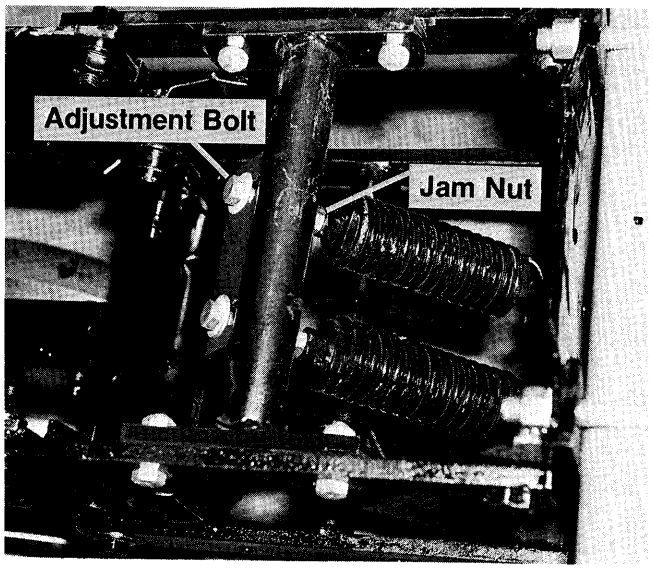


Down Pressure Spring Adjustment

The optional conventional or heavy duty down pressure springs are designed to increase penetration in hard soil and keep the row unit from bouncing in rough field conditions.

To increase down pressure with either type of system, loosen the jam nuts and turn the adjusting bolts clockwise. Tighten lock nuts as soon as desired down pressure is obtained to maintain setting.

IMPORTANT: Do not attempt to set down pressure at maximum pressure in hard soil conditions. This can cause the row units to carry the planter and raise the drive wheels to the point that excessive slippage may occur.



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 Cominiations		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.

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

Mounting Bolts and Hardware

Before operating the planter bar 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 Kinze planter bars are Grade 5 (high strength) as indicated by three radial dashes on the bolt head. Refer to the torque valve chart in the "Assembly" Section of this manual when tightening bolts.

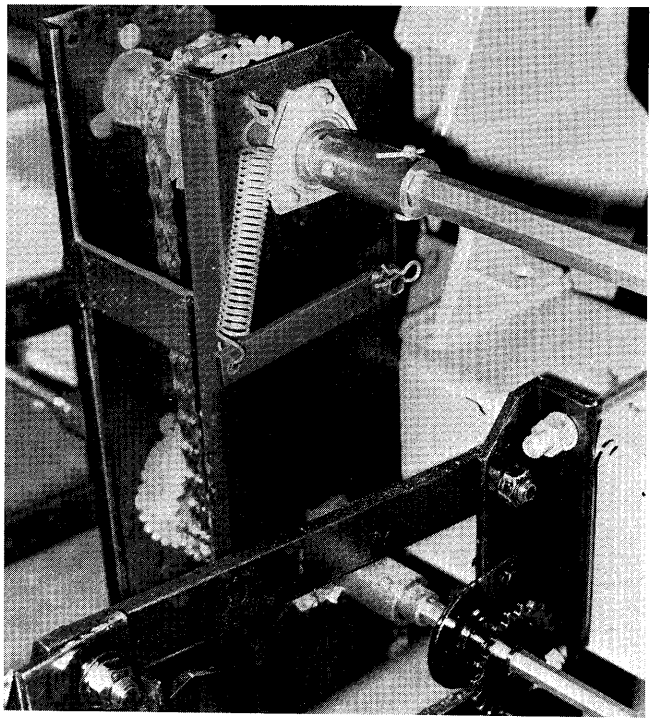
NOTE: Overtightening bolts can cause as much damage as undertightening. Tightening a bolt beyond the recommended range can reduce its shock load capacity.

Chain Tension Adjustment

All drive chains are equipped with spring tensioned idlers to minimize chain adjustment.

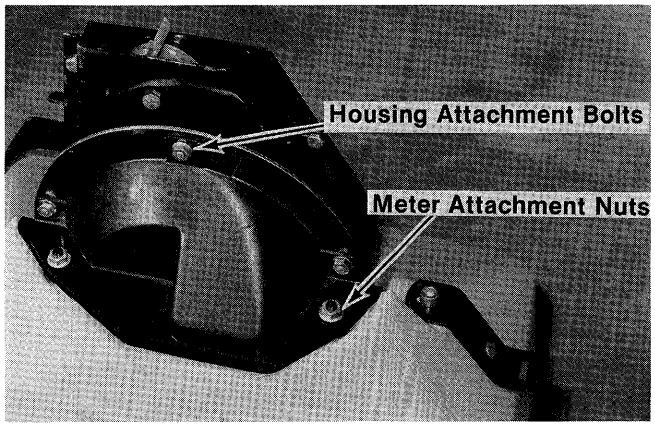
To increase the tension on spring tensioned idlers, proceed as follows.

1. Remove clip pin from tightener assembly shaft and remove spring arm.
2. Rotate arm counterclockwise to the next notch for increased tension. The arm can be turned over for half notch increments.
3. Replace arm and spring clip and reconnect tension spring to check chain tension.

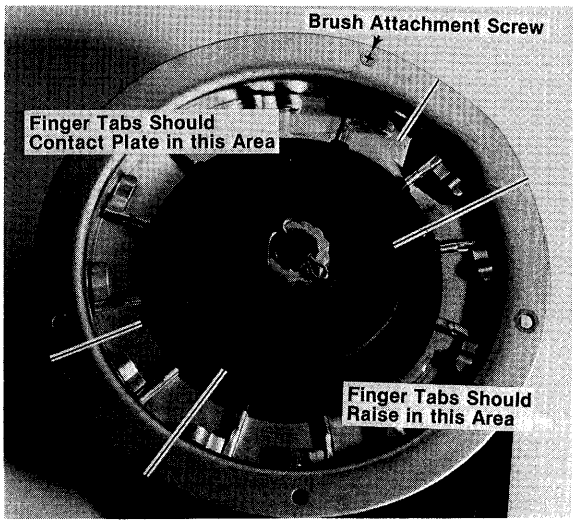


Corn Meter Inspection/Cleaning

To inspect or service the finger pickup corn meter, remove the meter from the seed hopper by removing the two 5/16" nuts which secure the mechanism to the hopper. Remove the housing from the meter assembly by removing three ¼"x5/8" cap screws. This will permit access to the finger pickup.



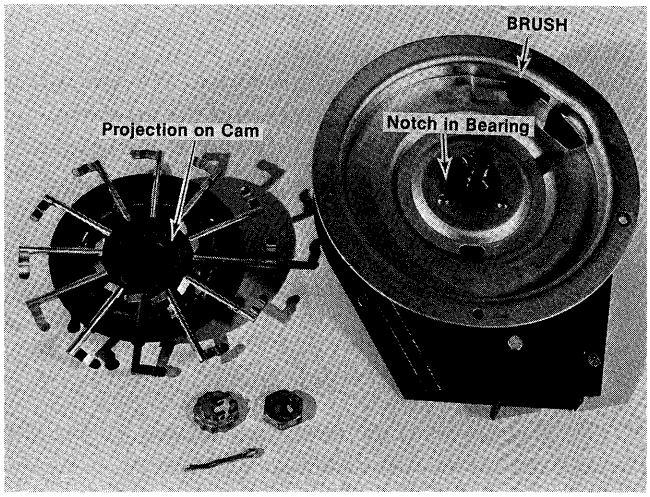
Rotate the seed meter drive by hand to ensure that the springs are holding the tabs of the fingers against the carrier plate where indicated in the photo and that the fingers are being raised in the correct area.



A build-up of debris or chaff may prevent proper finger operation and will require disassembly and cleaning of the corn meter as follows:

1. Remove cotter pin, lock nut and adjusting nut from drive shaft.

2. Carefully lift finger holder, along with fingers and cam off of the shaft and clean.

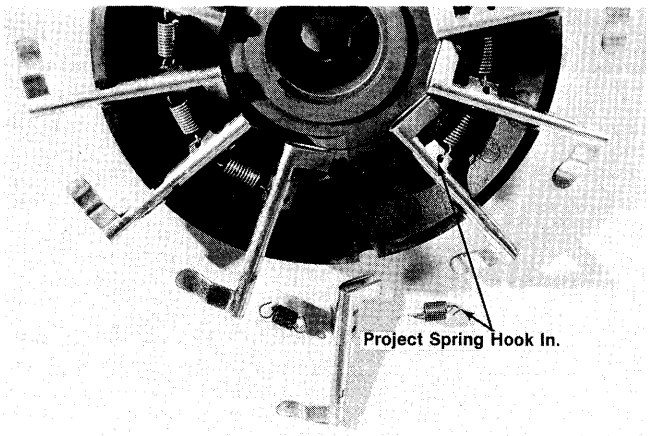


3. Check brush for wear and replace if necessary or following every 100 hours of operation.

NOTE: It is not necessary to remove finger holder to remove brush at prescribed intervals.

4. To replace fingers or springs, remove springs from fingers and remove finger from holder by lifting it out of the friction fit slot.

5. After cleaning and/or replacing defective parts, reassemble the meter in the reverse order. When replacing fingers, make sure the open end of the spring loop is toward the inside of the finger holder.



6. Make sure fingers are installed in holder so that holder will be positioned flush with the carrier plate when assembled. A projection on the cam is designed to align with a notch in the bearing to insure proper operation when assembled.

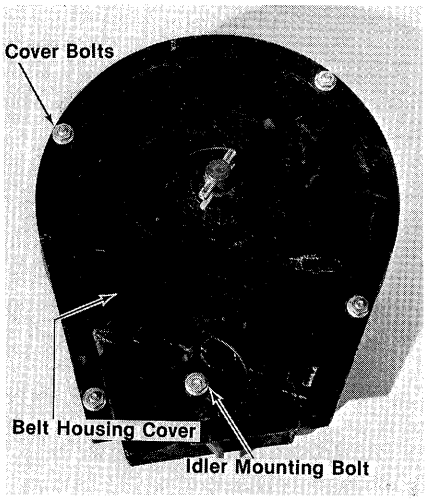
7. With finger holder flush against the carrier, install adjusting nut until it contacts the finger holder with a slight resistance. Continue to turn the nut an additional ⅓ turn.

8. Turn finger holder by hand to make sure it is positioned firmly against the carrier, but is not overtighted and can be rotated with moderate force.

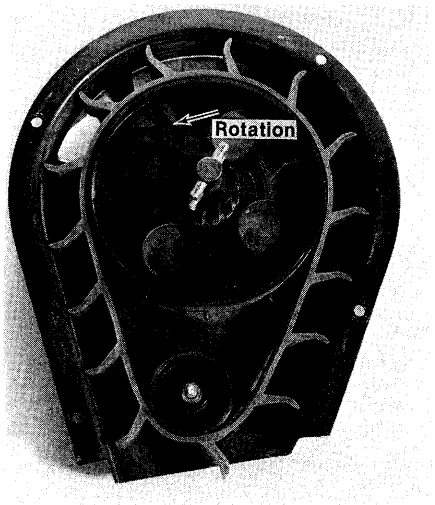
9. Install lock nut and cotter pin and reinstall housing.

SEED BELT

To inspect or replace the seed belt, remove the four ¼"x½" cap screws around the edge of the housing cover and the nut from the belt idler mounting bolt.



If the belt is being replaced, make sure it is reinstalled to correctly orient the paddles as shown. A diagram molded into the drive wheel also illustrates the correct orientation.

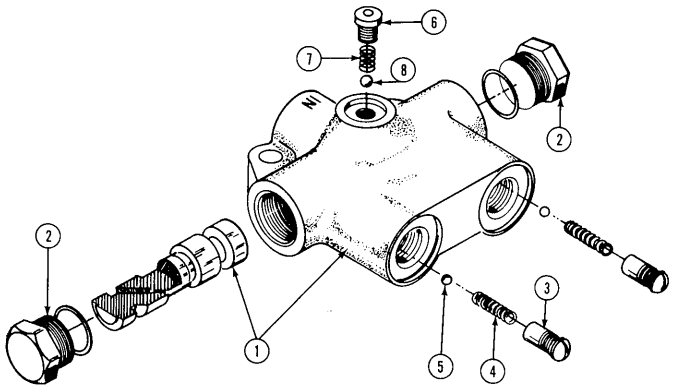


SEQUENCING VALVE INSPECTION

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

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

SEQUENCING VALVE

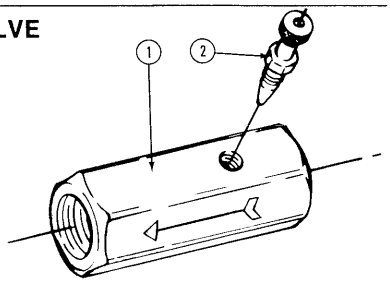


ITEM	PART NO.	DESCRIPTION
1.	R272	Valve Body and Spool
2.	R271	Plug Assembly, O-Ring Boss
3.	R273	Retainer, Check Valve
4.	R277	Spring, Check Valve
5.	R275	Ball, Check, 3/16" Diameter
6.	R274	Plug Assembly, O-Ring Boss
7.	R278	Spring
8.	R276	Ball, ¼" Diameter

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 (see page 42) If the valve fails to function properly or requires frequent adjustment, the needle valve should be removed for inspection. Check for foreign material and contamination on both the valve and the seating area of the valve body. Replace any components found to be defective.

FLOW CONTROL VALVE



ITEM	PART NO.	DESCRIPTION
1.	A270	Flow Control Valve Assembly, 3/8" NPT (KLF 375)
2.	R103	Needle Valve Assembly

MAINTENANCE

Wheel or Marker Bearing Lubrication or Replacement

1. Jack tire clear of ground and remove wheel or marker disk.
2. Remove hub cap from hub.
3. Remove cotter pin, axle nut, and washer.
4. Slide hub from axle or spindle.
5. Remove bearing cups and discard if bearings are being replaced. Clean hub and dry.
6. Press in new bearing cups with thickest edge facing in.
7. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.
8. Place inner bearing in place and press in new grease seal.
9. Clean axle or spindle and install hub.
10. Install outer bearing, washer, or outer seal and slotted hex nut. Tighten slotted hex nut while rotating hub until there is some drag. This assures that all bearing surfaces are in contact. Back off slotted nut to nearest locking slot and install cotter pin.
11. Fill hub caps approximately ¾ full of wheel bearing grease and install on hub.
12. Install wheel or disk on hub and tighten evenly and securely.

Storage

Store the planter bar 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 bar 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.

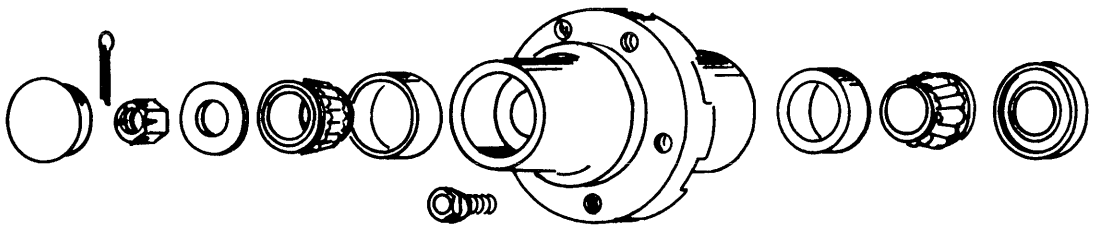
Inspect the planter bar and row units for parts that are in need of replacement and order during the "off" season.

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

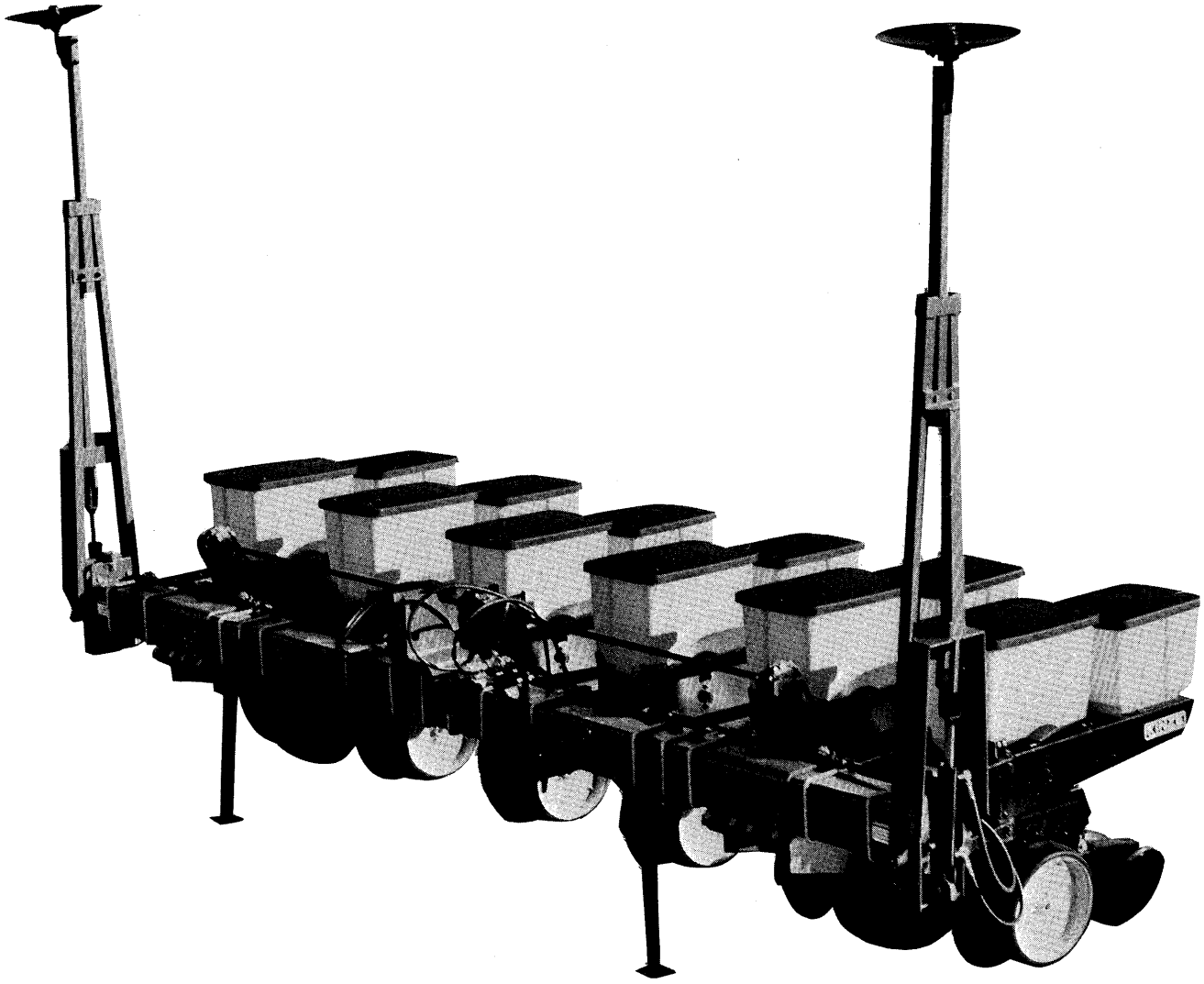
Make sure all seed, herbicide and insecticide hoppers are empty and clean.

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

Clean plateless seed meters and store in a dry area.



PARTS LIST INDEX



DESCRIPTION	MODELS AFFECTED
Main Frame Assembly	All
Gauge Drive Wheel Assembly	All
Seed Drive Transmission	All
Conventional Marker Assembly	4 Row 30", 4 Row Wide and 6 Row 30"
Low Profile Marker Assembly	6 Row Wide and 8 Row 30"
Conventional Marker Cylinder	4 Row 30", 4 Row Wide and 6 Row 30"
Low Profile Marker Cylinder	6 Row Wide and 8 Row 30"
Hydraulic System	All

DRIVE SHAFTS/DRILL SHAFTS - ALL MODELS

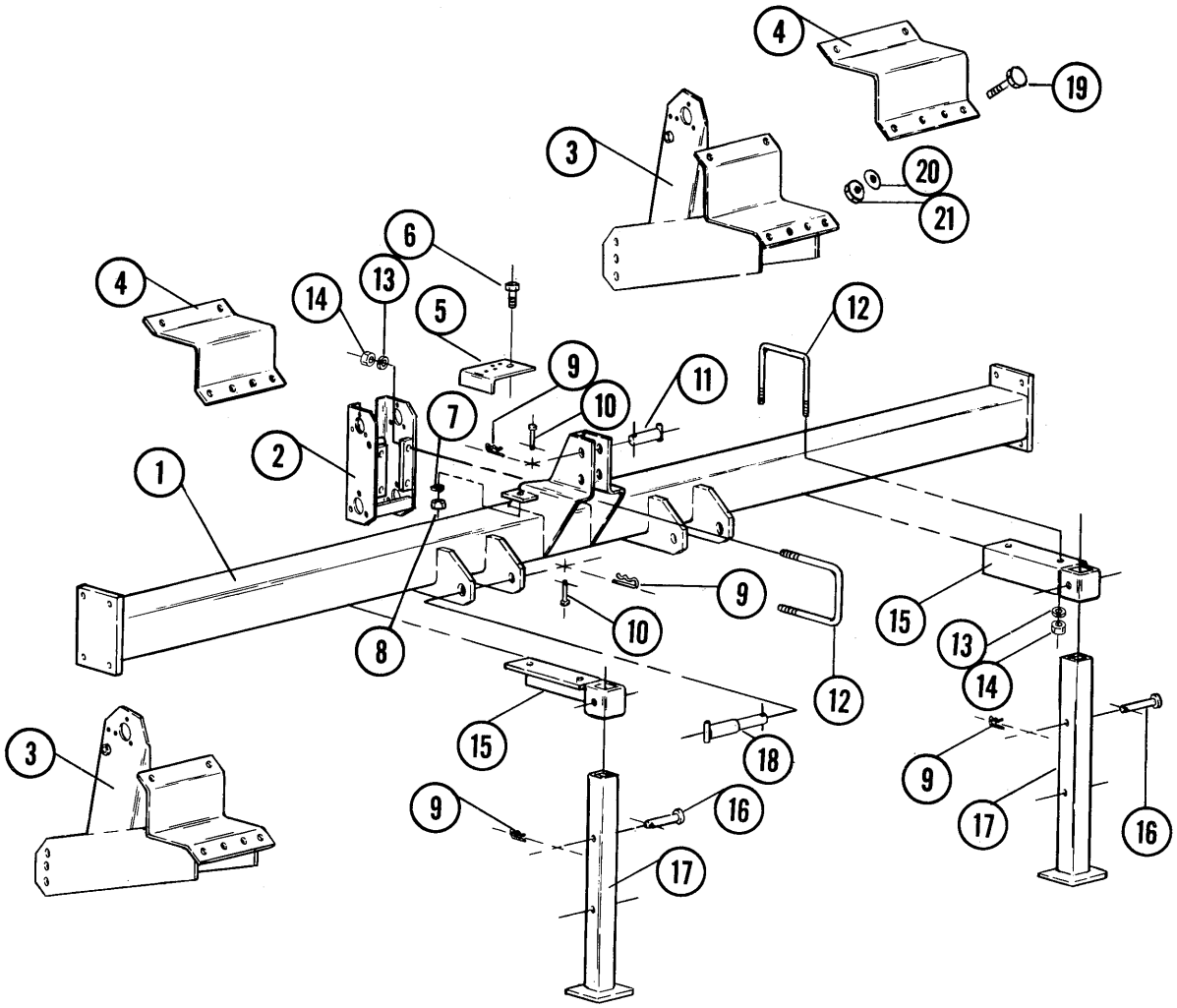
7/8" Hex Drive Shaft

Planter Size	Left Hand		Right Hand	
	Length	Part #	Length	Part #
2 & 4 Row 30"	17"	D914-17	27"	D914-27
2 & 4 Row Wide	33"	D914-33	43"	D914-43
6 Row 30"	55"	D914-55	65"	D914-65
6 Row Wide	71"	D914-71	81"	D914-81
8 Row 30"	85"	D914-85	95"	D914-95

9/16" Hex Drill Shaft

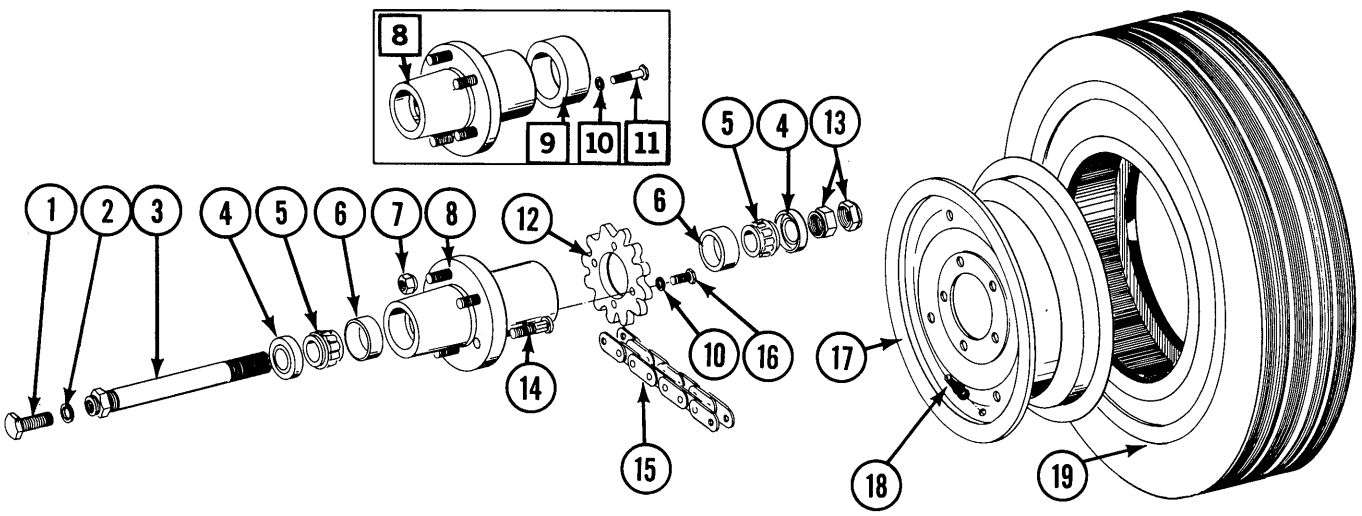
Planter Size	Left Hand		Right Hand	
	Length	Part #	Length	Part #
2 Row 30"	21"	D739-21	12"	D739-12
2 Row Wide	27"	D739-27	17"	D739-17
4 Row 30"	48"	D739-48	37"	D739-37
4 Row Wide	60"	D739-60	48"	D739-48
6 Row 30"	77"	D739-77	67"	D739-67
6 Row Wide	98"	D739-98	86"	D739-86
8 Row 30"	107"	D739-107	98"	D739-98

PLANTER BAR FRAME



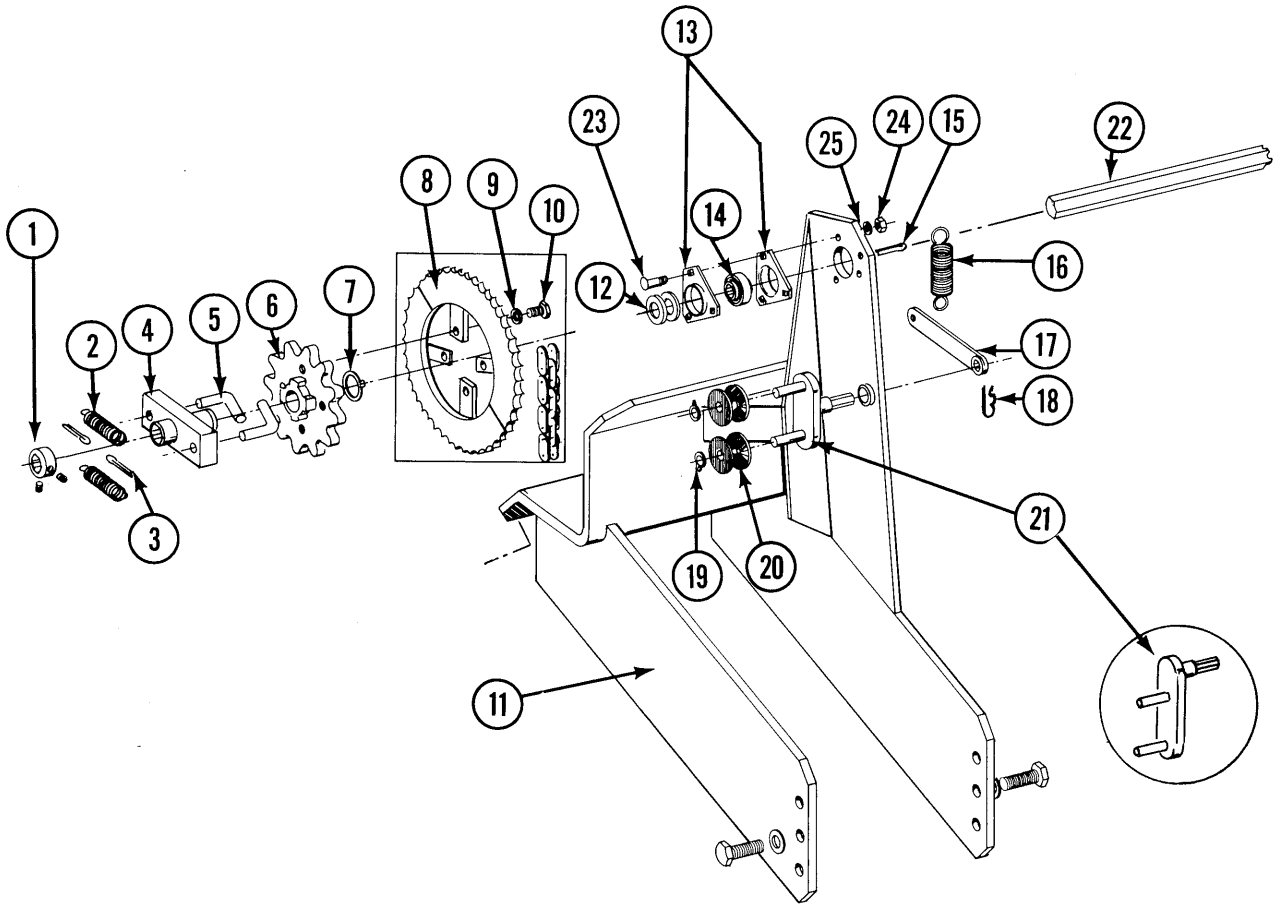
ITEM	PART NO.	DESCRIPTION
1.	A727	Tool Bar, 90", 2 R30 and 2 RW
	A669	Tool Bar, 128", 4R30
	A670	Tool Bar, 136", 4 RW
	A671	Tool Bar, 169", 6R30
	A923	Tool Bar, 214", 6RW
	A924	Tool Bar, 229", 8R30
2.	A277	Transmission Assembly, Seed Drive
3.	A168	Drive Gauge Bracket
4.	D503	Clamp
5.	D979	Valve Plate Bracket, L.H.
	D978	Valve Plate Bracket, R.H. (Shown)
6.	10037	HHCS, ½"-13 x 1¼"
7.	10228	Lockwasher, ½"
8.	10102	Hex Nut, ½" - 13
9.	10670	Clip Pin, No. 3
10.	10558	Clevis Pin, 5/16" x 1 3/4"
11.	A501	Center Link Pin Weld
12.	D1114	U-Bolt, 5/8" - 11 x 7" x 7"
13.	10230	Lockwasher, 5/8"
14.	10104	Hex Nut, 5/8" - 11
15.	A667	Bracket, Support Stand
16.	10561	Clevis Pin, ½" x 3"
17.	A668	Stand Weld
18.	A502	Lower Link Pin Weld
19.	10027	HHCS, ¾"-10x2½"
20.	10231	Lock Washer, ¾"
21.	10105	Hex Nut, ¾"-10

DRIVE GAUGE WHEEL



ITEM	PART NO.	DESCRIPTION
1.	10026	HHCS, ¾" - 10 x 2
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" - 18 x 1¾"
12.	2500-17	Sprocket, Bolt-on, 12 Tooth
13.	D831	Nut, Shoulder, 1¼"
14.	R204	Stud, Wheel, ½" - 20 UNF x 1 7/8"
15.	3200-60	Chain, #2050, 60 Pitch, Incl. Connector Link and Offset Link
	3200-6	Chain, #2050 (Add to chain when using extended drill sprocket)
	R195	Connector Link, #2050
16.	10019	HHCS, 5/16" - 18 x 1"
17.	A241	Wheel, 15" x 5, 5 Bolt
18.	D1166	Valve Stem
19.	D844	Tire, 7.60 x 15", 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, 7.60 x 15" (Items 17-19)

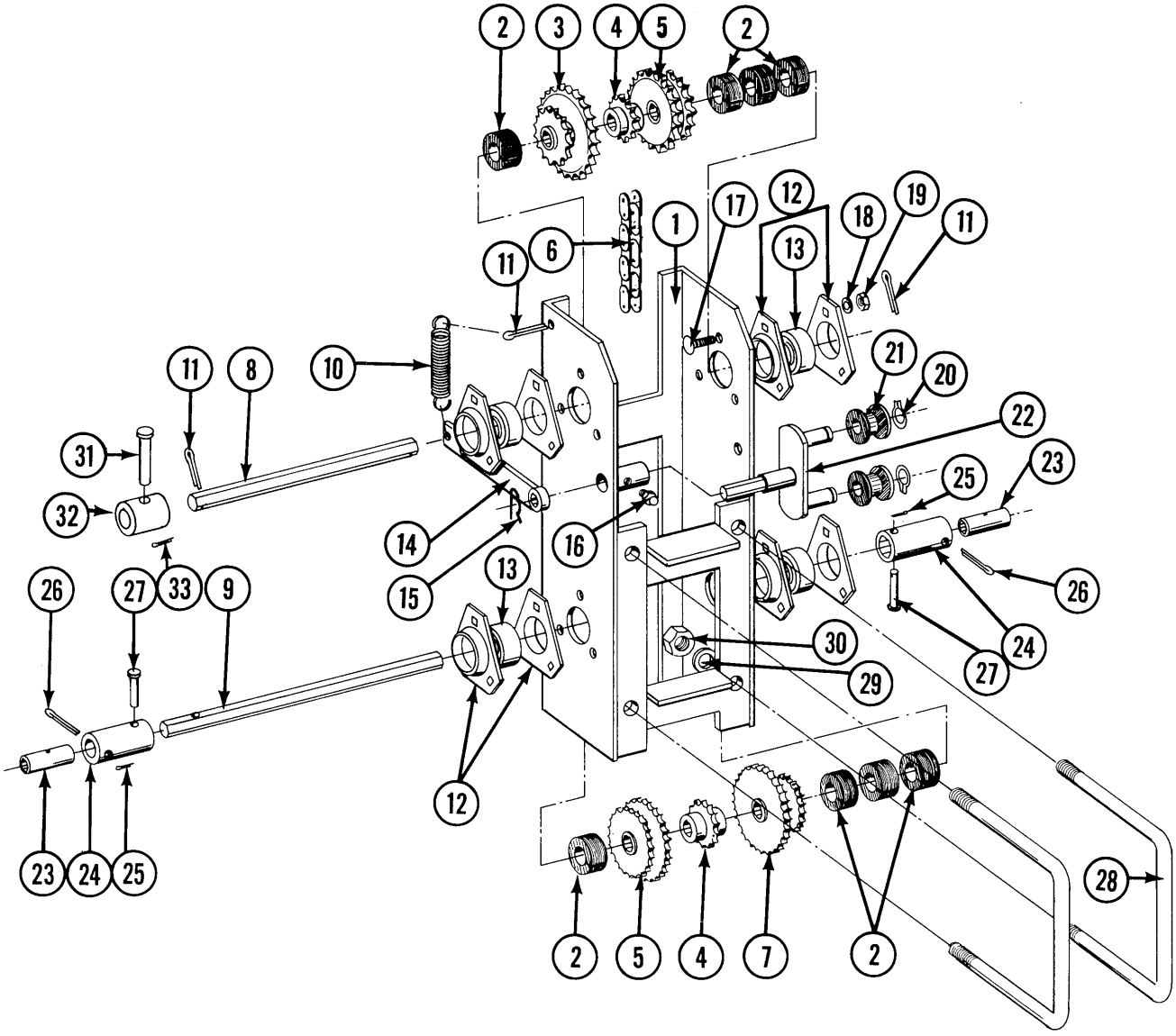
DRIVE GAUGE BRACKET ASSEMBLY



DRIVE GAUGE BRACKET ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1.	A271	Lock Collar, Hex Bore with Set Screw
2.	D1256	Spring
3.	10464	Cotter Pin, 3/16" x 1"
4.	A378	Block and Hub Assembly
5.	D1255	"L" Pin
6.	A376	Hub/Sprocket Assembly
7.	10430	Retaining Ring, 1¼"
8.	R460	Extended Drill Sprocket, 48T
9.	10229	Lockwasher, 3/8"
10.	10002	HHCS, 3/8" - 16 x 3/4"
11.	A168	Drive Gauge Bracket
12.	10233	Machinery Bushing
13.	3400-1	Flangette
14.	2100-3	Bearing, 7/8" Hex
15.	10466	Cotter Pin, ¼" x ¾"
16.	D913	Spring
17.	A272	Idler Arm
18.	10670	Hairpin Clip, #3
19.	10435	Snap Ring
20.	D916	Idler Spool
21.	A182	Idler Bracket
	A852	Idler Bracket (for use with extended drill sprocket)
22.	D914-17	Hex Drive Shaft, 2R30 and 4R30, L.H., 17"
	D914-27	Hex Drive Shaft, 2R30 and 4R30, R.H., 27"
	D914-33	Hex Drive Shaft, 2R wide and 4R wide, L.H., 33"
	D914-43	Hex Drive Shaft, 2R wide and 4R wide, R.H., 43"
	D914-55	Hex Drive Shaft, 6R30, L.H. 55"
	D914-65	Hex Drive Shaft, 6R30, R.H., 65"
	D914-71	Hex Drive Shaft, 6RW, L.H., 71"
	D914-81	Hex Drive Shaft, 6RW, R.H., 81"
	D914-85	Hex Drive Shaft, 8R30, L.H., 85"
	D914-95	Hex Drive Shaft, 8R30, R.H., 95"
23.	10303	Carriage Bolt 5/16" - 18 x 1"
24.	10106	Hex Nut, 5/16" - 18
25.	10232	Lock Washer, 5/16"
A	A261L	Ratchet and Sprocket Assembly, L.H. (Items 2-7)
B	R444	Idler Assembly, (Items 15-21)

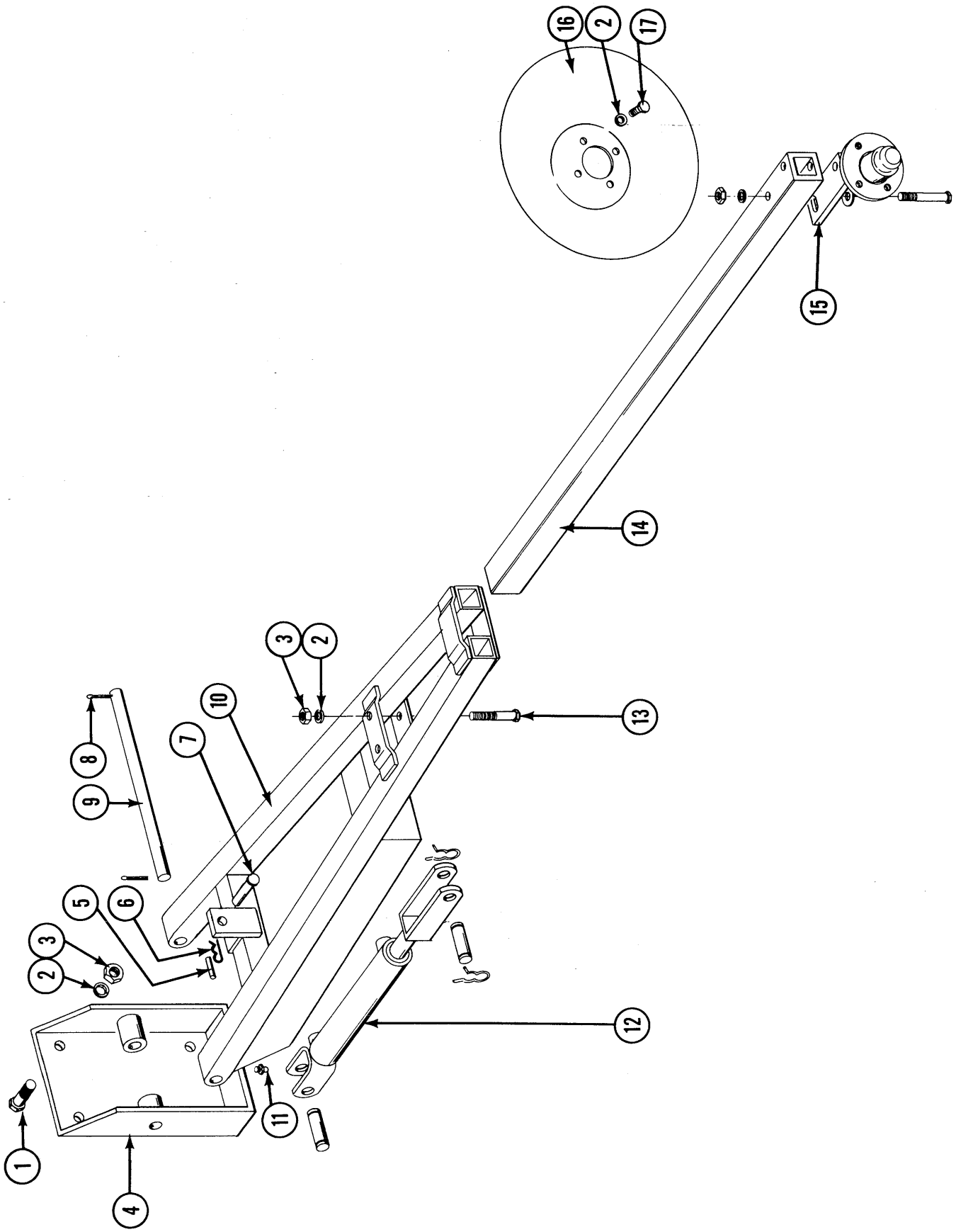
TRANSMISSION ASSEMBLY



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, #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" x 1½"
12.	3400-1	Flangette
13.	2100-3	7/8 Hex Bore Bearing
14.	A272	Idler Arm
15.	10670	Hair Pin Clip, #3
16.	10640	Grease Fitting, ¼"
17.	10303	Carriage Bolt, 5/16"-18 x 1"
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" x ½"
26.	10462	Cotter Pin, 3/16" x 2"
27.	10548	Clevis Pin, ¼" x 1¾"
28.	D1114	U-Bolt, 7" x 7" x 5/8"-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)

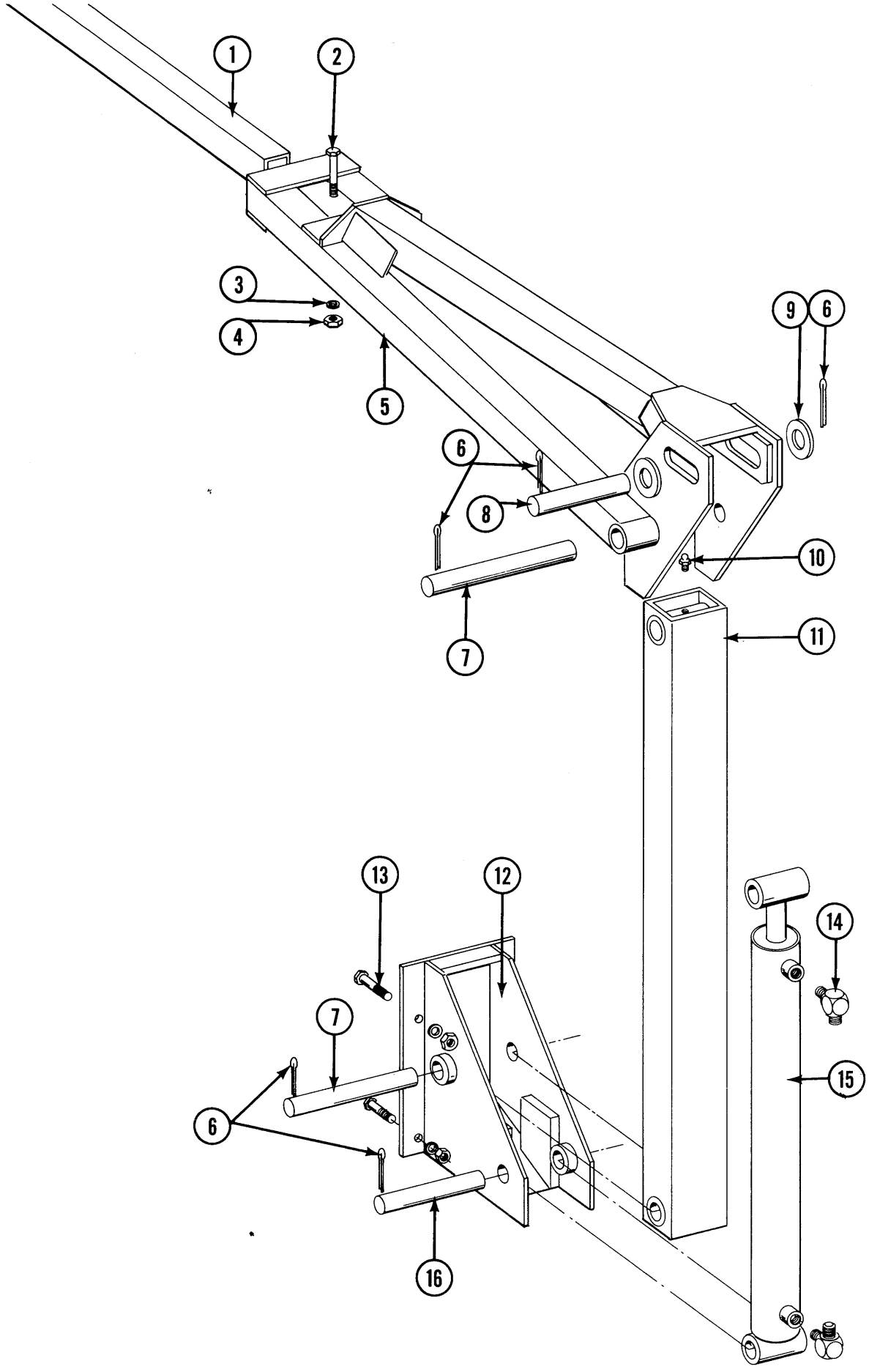
CONVENTIONAL MARKER ASSEMBLY



CONVENTIONAL MARKER ASSEMBLY

ITEM	PART NO.	DESCRIPTION
1.	10039	HHCS, ½"-13x1¾"
2.	10228	Lockwasher, ½"
3.	10102	Hex Nut, ½"-13
4.	A224	Marker Mount
5.	10609	Roll Pin, 5/32"x1"
6.	10670	Hair Pin Clip, No. 3
7.	D462	Marker Lockup Pin
8.	10460	Cotter Pin, ¼"x2"
9.	D438	Shaft
10.	A225	Marker Arm Weld, 45", 4R30 and 4RW
	A538	Marker Arm Weld, 64"x 6R30
11.	10640	Grease Fitting, ¼"-28
12.	A211	Cylinder Assembly, 2x8
	A745	Cylinder Assembly, 2x8
13.	10033	HHCS, ½"-13x3½"
14.	D453-1	Extension Tube, 20", 4R30
	D453-2	Extension Tube, 40", 6R30
	D453-3	Extension Tube, 50", 4RW
15.	A305	Marker Hub Assembly, L.H. (Includes Hardware)
	A306	Marker Hub Assembly, R.H. (Includes Hardware)
16.	D746	Disc, 16"
17.	10722	HHCS, ½"-20x1"
A.	A563	Lockup Pin Assembly (Includes Items 5, 6, and 7)

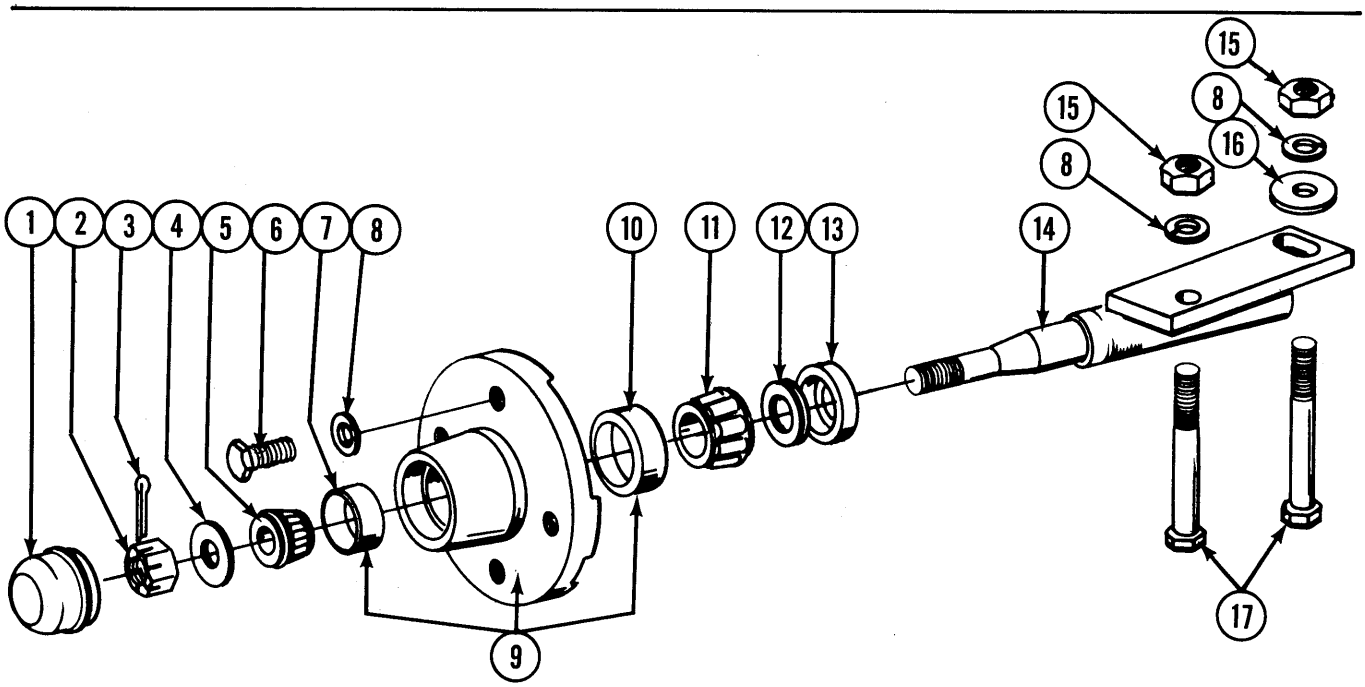
LOW PROFILE - DOUBLE FOLD MARKER ASSEMBLY



LOW PROFILE - DOUBLE FOLD MARKER ASSEMBLY

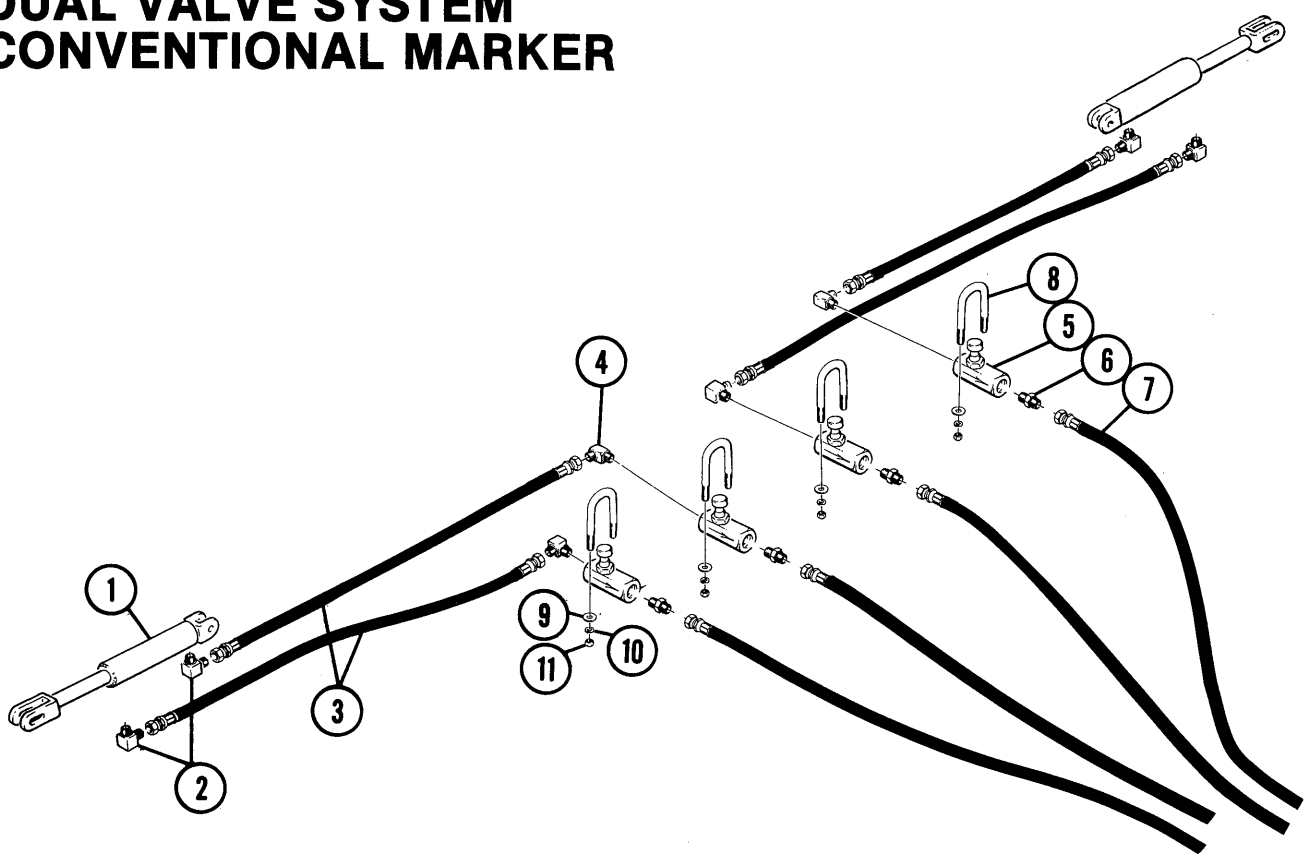
ITEM	PART NO.	DESCRIPTION
1.	D453-3	Extension Tube, 50", 8R30
	D453-5	Extension Tube, 55", 6RW
2.	10033	HHCS, ½"-13x3½"
3.	10228	Lockwasher, ½"
4.	10102	Hex Nut, ½"-13
5.	A831	Marker Arm, 34", 6RW
	A832	Marker Arm, 45", 8R30
6.	10460	Cotter Pin, ¼"x2"
7.	D1702	Pivot Pin
8.	D1701	Pin, Cylinder, Upper
9.	10226	Washer, 1¼" SAE
10.	10641	Grease Fitting, 1/8" NPT
11.	A828	Arm, First Stage
12.	A827	Marker Mount
13.	10039	HHCS, ½"- 13x1¾"
14.	2501-8-8	Elbow, 90°, ½" NPT to 37°¾"-16JIC
15.	A233	Cylinder, 2½"x20"
16.	D653	Pin, Cylinder, Lower

MARKER HUB ASSEMBLY CONVENTIONAL AND LOW PROFILE



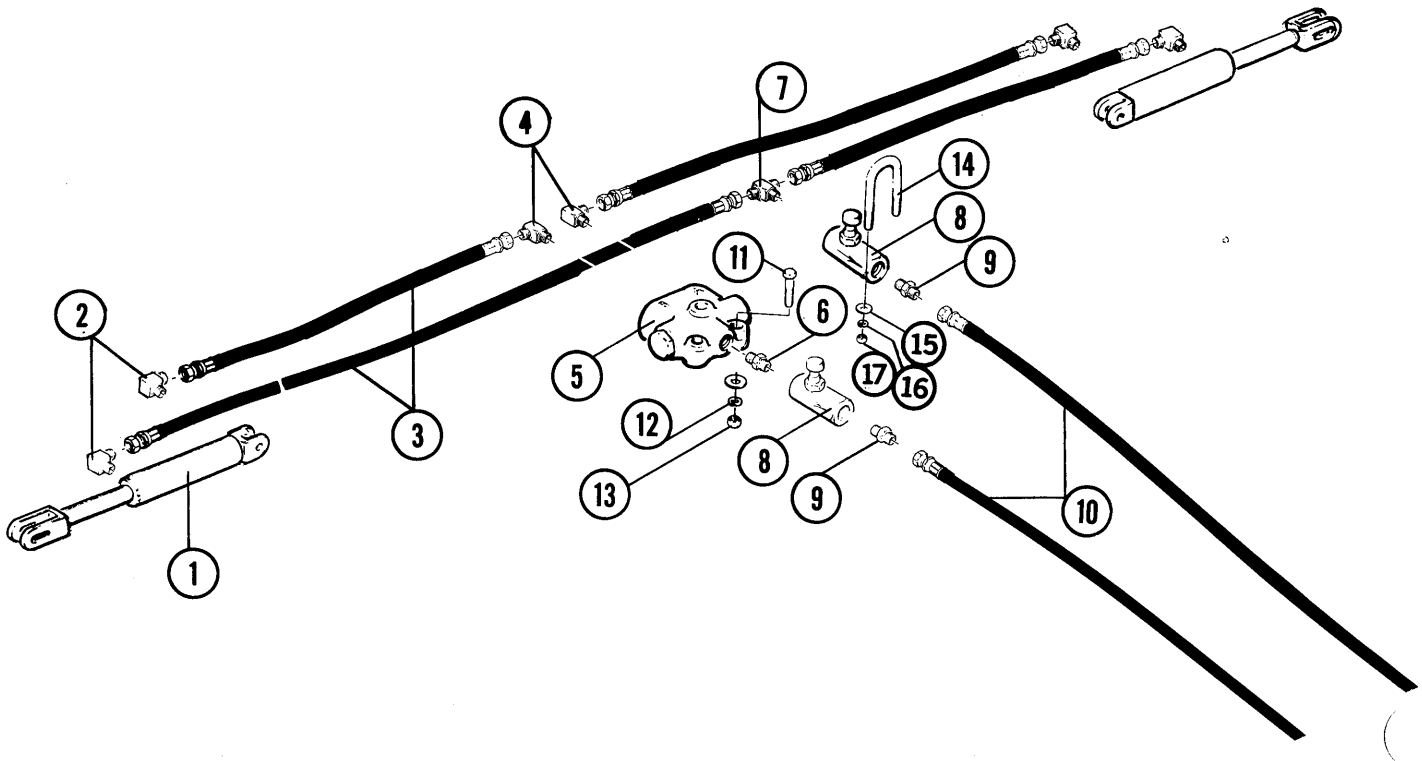
ITEM	PART NO.	DESCRIPTION
1.	D840	Hub Cap
2.	10725	Hex Nut, Slotted, 5/8"-18
3.	10470	Cotter Pin, 5/32"x1"
4.	10724	Washer, 5/8"
5.	A257	Bearing, Outer
6.	10722	HHCS, ½"-20x1"
7.	R151	Cup, Outer
8.	10228	Lockwasher, ½"
9.	A167	Hub w/cups
10.	R150	Cup, Inner
11.	A245	Bearing, Inner
12.	A899	Seal, Rubber
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"-13x3½"
A.	A305	Hub and Spindle Assembly L.H.
	A306	Hub and Spindle Assembly R.H.

DUAL VALVE SYSTEM CONVENTIONAL MARKER



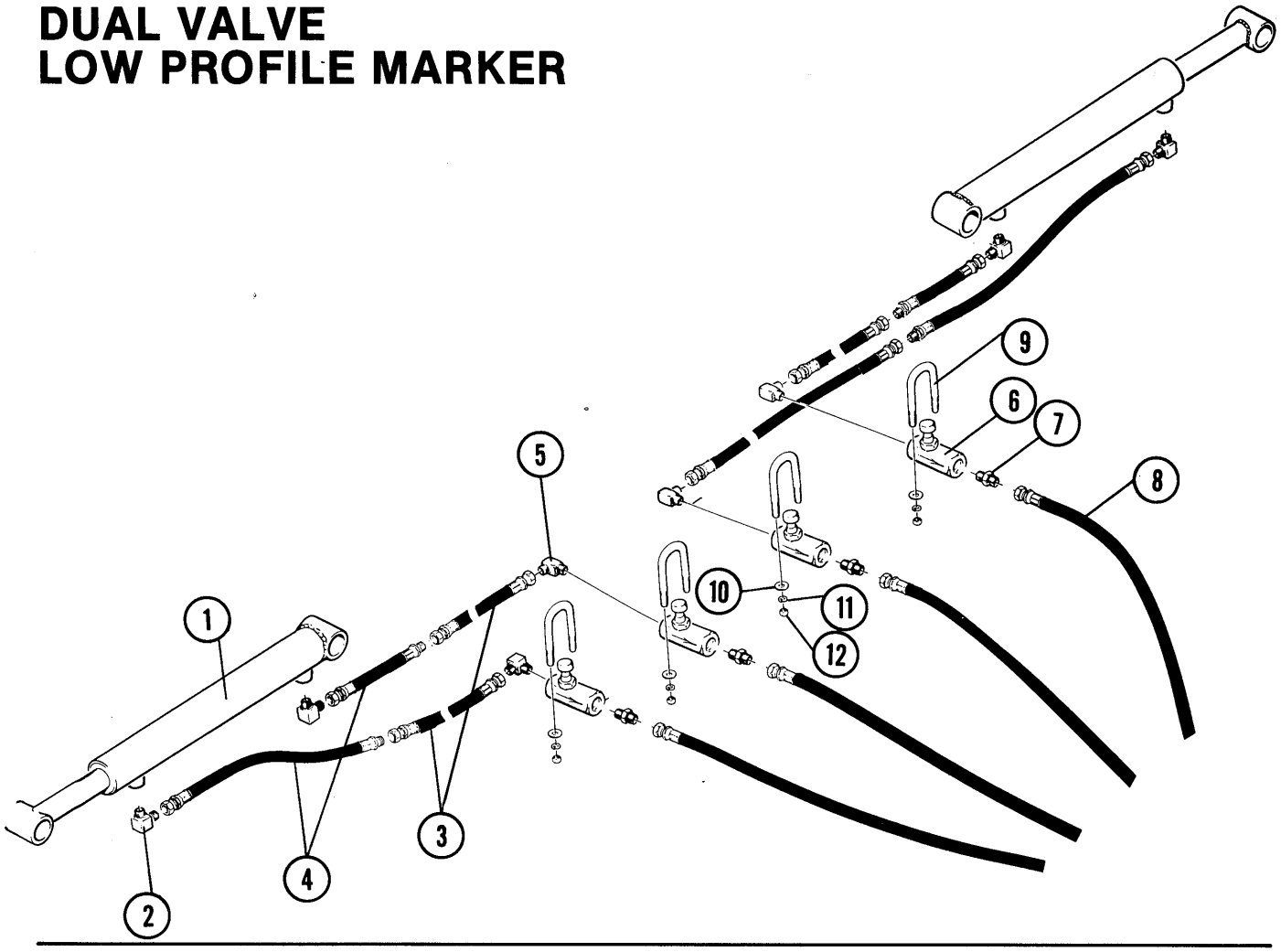
ITEM	PART NO.	DESCRIPTION
1.	A211	Cylinder, Marker, 2" x 8"
	A745	Cylinder, Marker, 2" x 8"
2.	2501-6-6	Elbow, 90°
3.	A1102	Hose Assembly, ¼" x 95", 4R30 and 4 RW
	A1103	Hose Assembly, ¼" x 110", 6R30
4.	2501-6-6	Elbow, 90°
5.	A270	Valve, Flow Control
6.	2404-6-6	Adapter, Straight
7.	A1101	Hose Assembly, ¼" x 48"
8.	D1253	U-Bolt, 5/16" - 18 x 2¼" x 1½"
9.	10219	Flat Washer, 5/16"
10.	10232	Lock Washer, 5/16"
11.	10106	Hex Nut, 5/16" - 18
	D1512	Tie Strap, 6" (Not Shown)

SINGLE VALVE CONVENTIONAL MARKER



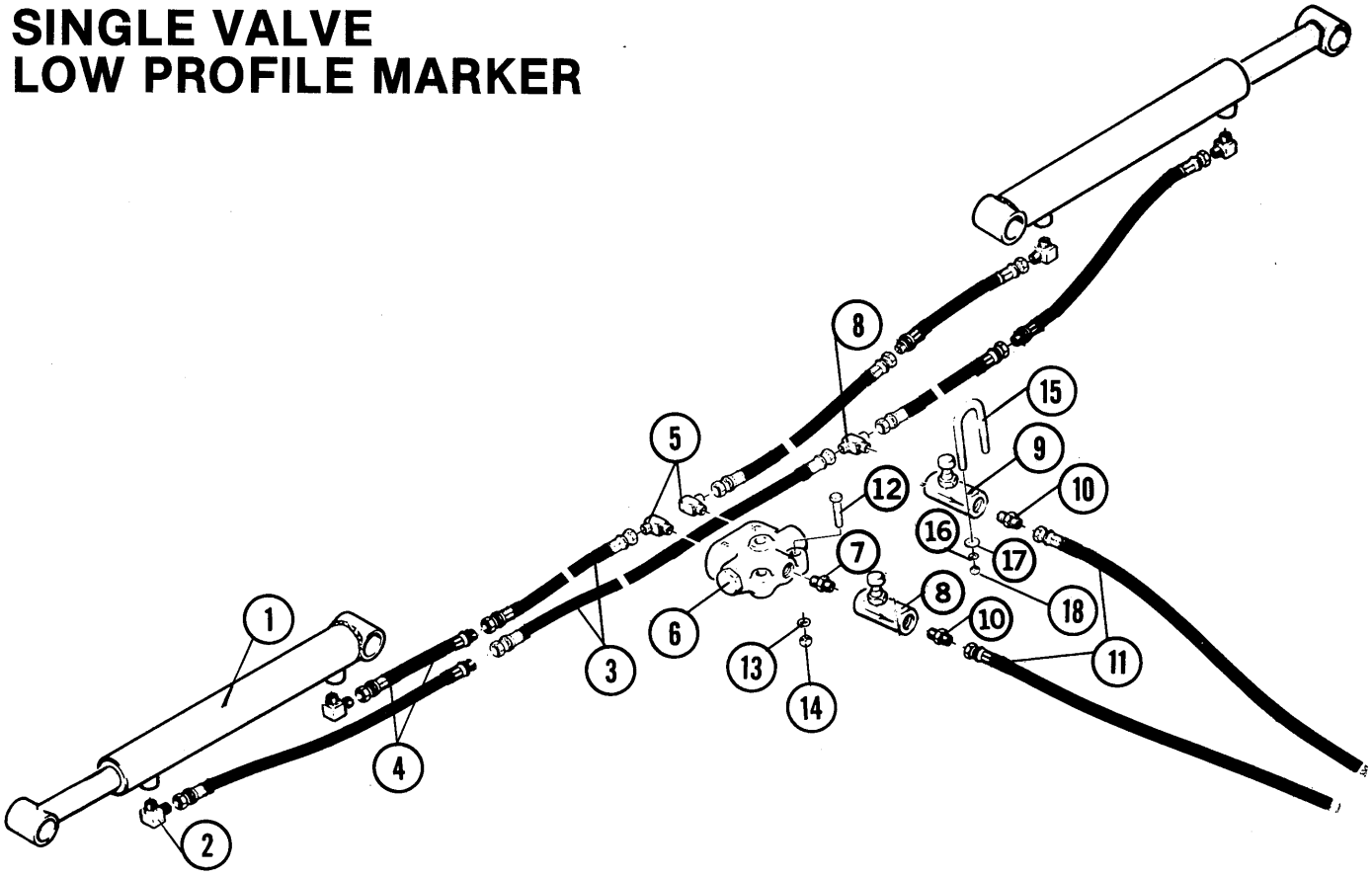
ITEM	PART NO.	DESCRIPTION
1.	A211	Cylinder, Marker, 2" x 8"
	A745	Cylinder, Marker 2" x 8"
2.	2501-6-6	Elbow, 90°
3.	A1102	Hose Assembly, ¼" x 95", 4R30, 4RW
	A1103	Hose Assembly, ¼" x 110", 6R30
4.	6801-6-8	Elbow, 90°
5.	A282	Valve, Seq.
6.	6401-8-6	Adapter Straight
7.	2601-6-6	Side Tee, Male
8.	A270	Valve, Flow Control
9.	2404-6-6	Adapter, Straight
10.	A1101	Hose Assembly, ¼" x 48"
11.	10048	HHCS, 3/8" - 16 x 2"
12.	10229	Lock Washer, 3/8"
13.	10101	Hex Nut, 3/8" - 16
14.	D1253	U-Bolt, 5/16" - 18 x 2¼" x 1½"
15.	10219	Flat Washer, 5/16"
16.	10232	Lock Washer, 5/16"
17.	10106	Hex Nut, 5/16" - 18
	D1512	Tie Strap, 6" (Not Shown)

DUAL VALVE LOW PROFILE MARKER



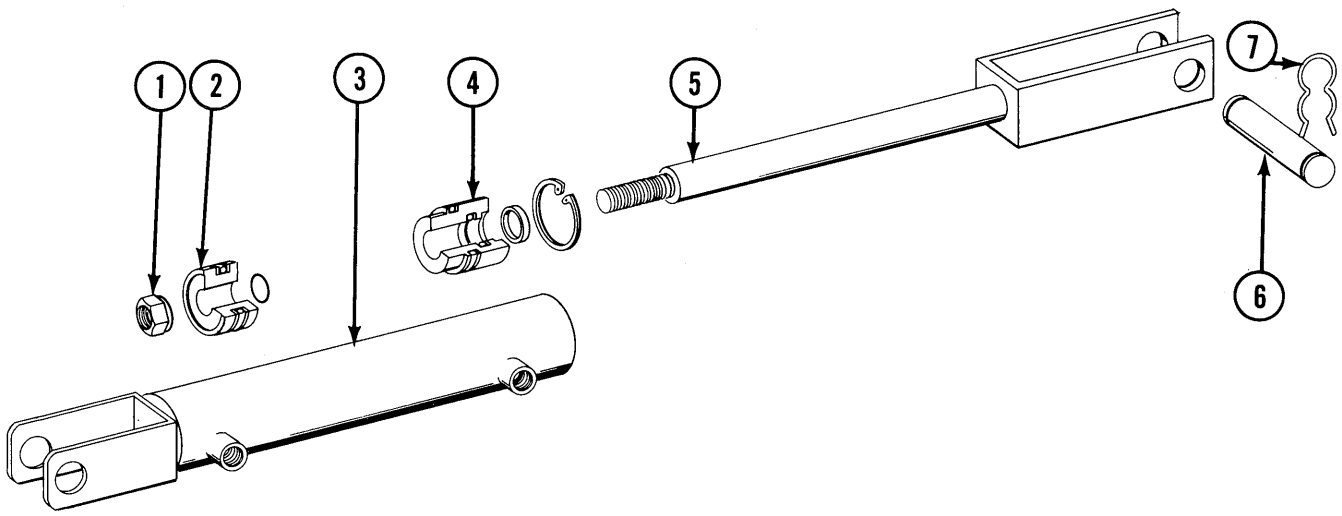
ITEM	PART NO.	DESCRIPTION
1.	A233	Cylinder, Marker, 2½" x 20"
2.	2501-8-8	Elbow, 90°
3.	A1008	Hose Assembly, 3/8" x 110", 6RW
	A1010	Hose Assembly, 3/8" x 120", 8R30
4.	A1004	Hose Assembly, 3/8" x 36"
5.	2501-8-6	Elbow, 90°
6.	A270	Valve, Flow Control
7.	2404-8-6	Adapter, Straight
8.	A1005	Hose Assembly, 3/8" x 48"
9.	D1253	U-Bolt, 5/16" - 18 x 2¼" x 1½"
10.	10219	Flat Washer, 5/16"
11.	10232	Lock Washer, 5/16"
12.	10106	Hex Nut, 5/16" - 18
	D1512	Tie Straps, 6" (Not Shown)

SINGLE VALVE LOW PROFILE MARKER



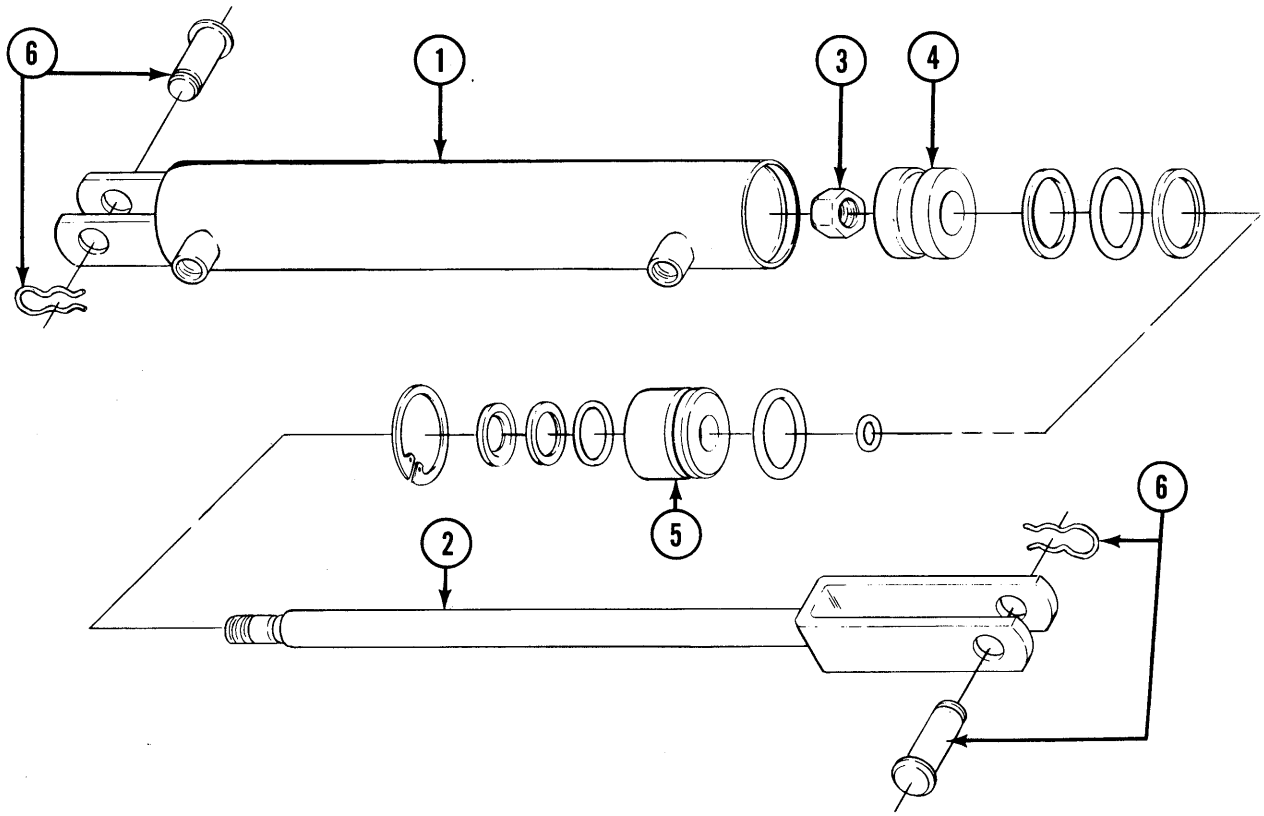
ITEM	PART NO.	DESCRIPTION
1.	A233	Cylinder, Marker, 2½" x 20"
2.	2501-8-8	Elbow, 90°
3.	A1008	Hose Assembly, 3/8" x 110", 6RW
	A1010	Hose Assembly, 3/8" x 120", 8R30
4.	A1004	Hose Assembly, 3/8" x 36"
5.	6801-8	Elbow, 90°
6.	A282	Valve, Seq.
7.	6401-8-6	Adapter, Straight
8.	2601-8-6	Side Tee, Male
9.	A270	Valve, Flow Control
10.	2404-8-6	Adapter, Straight
11.	A1005	Hose Assembly, 3/8" x 48"
12.	10048	HHCS, 3/8" - 16 x 2"
13.	10229	Lock Washer, 3/8"
14.	10101	Hex Nut, 3/8" - 16
15.	D1253	U-Bolt, 5/16" - 18 x 2¼" x 1½"
16.	10219	Flat Washer, 5/16"
17.	10232	Lock Washer, 5/16"
18.	10106	Hex Nut, 5/16" - 18
	D1512	Tie Strap, 6" (Not Shown)

CONVENTIONAL MARKER CYLINDER



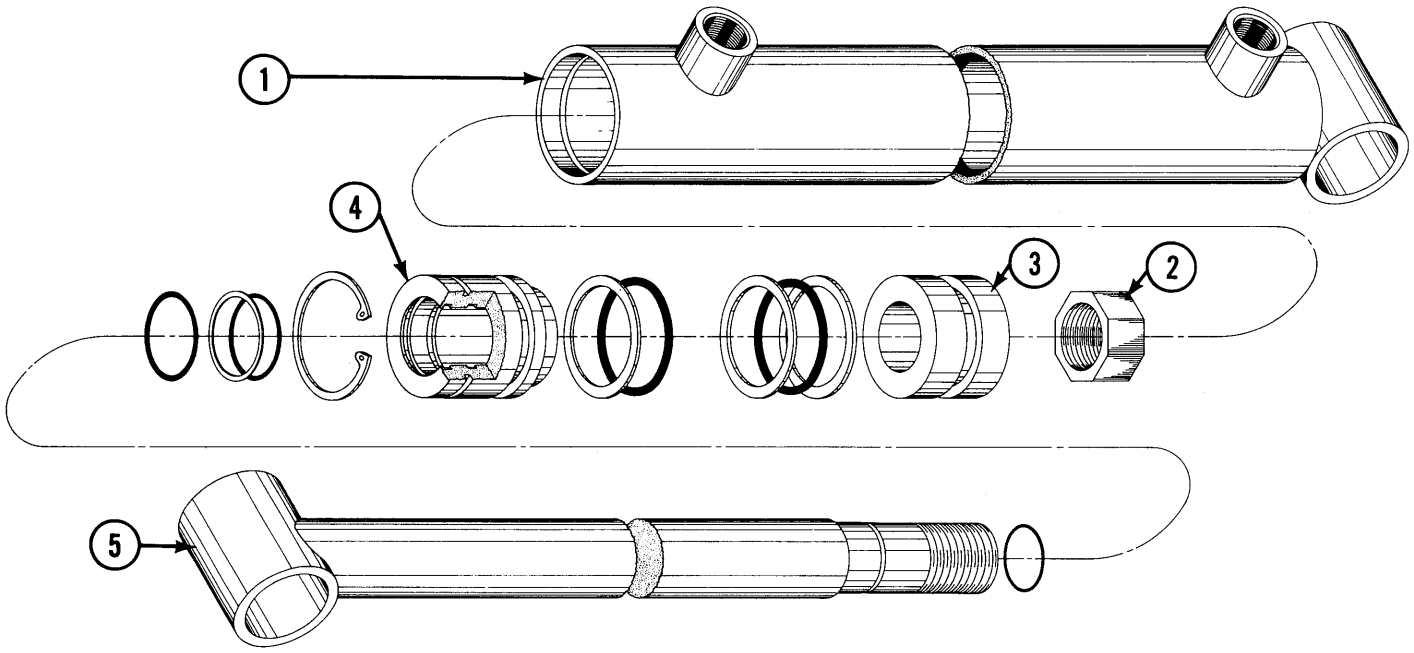
ITEM	PART NO.	DESCRIPTION
1.	R366	Hex Nut, ¾" NF
2.	R365	Piston
3.	R362	Tube Assembly
4.	R364	Head Gland
5.	R363	Shaft Assembly
6.	R367	Clevis Pin
7.	R193	Clip, Hair Pin Ony
	R368	Seal Kit Includes (1) O-Ring .614 I.D. x .754 O.D. (1) O-Ring 1.109 I.D. x 1.387 O.D. (2) O-Ring 1.600 I.D. x 2.200 O.D. (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.
A.	A745	Cylinder, Complete, 2"x8"

CONVENTIONAL MARKER CYLINDER



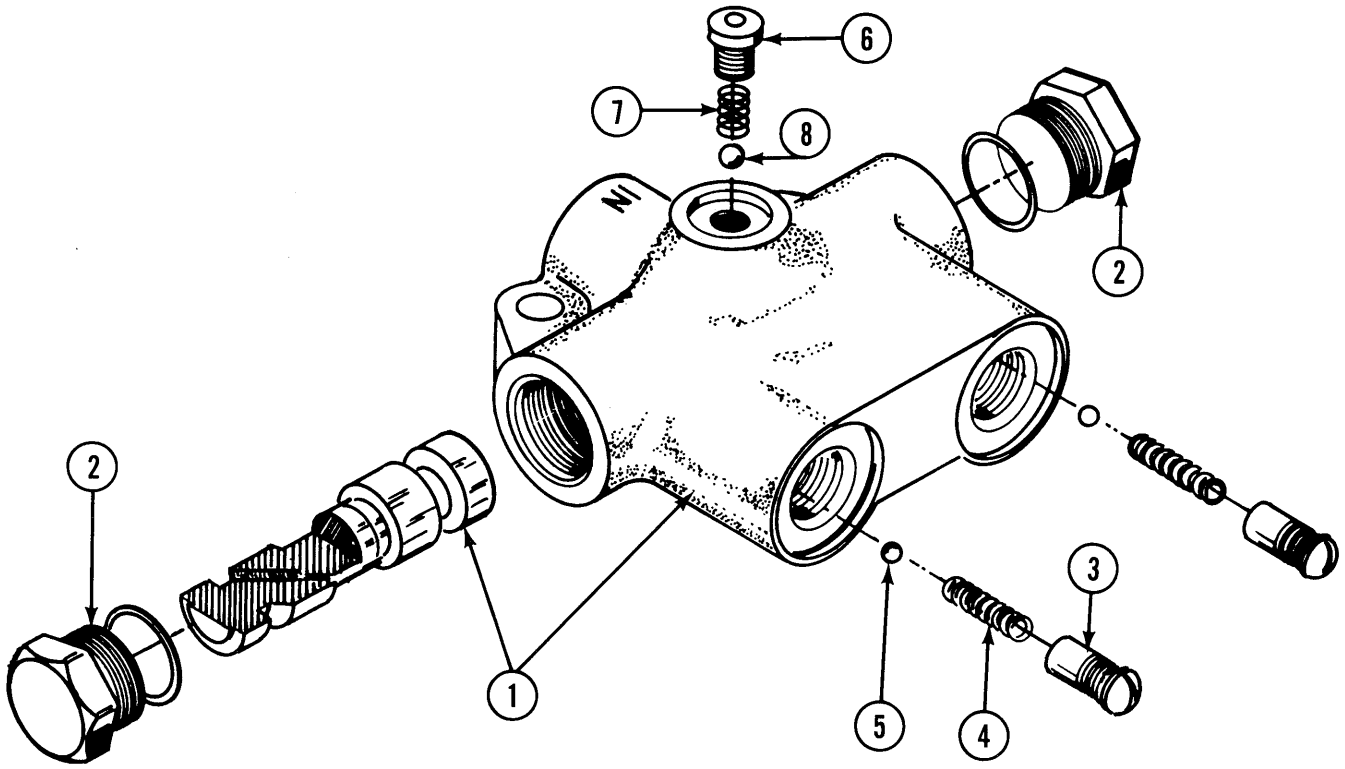
ITEM	PART NO.	DESCRIPTION
1.	R157	Cylinder Body
2.	R158	Piston Rod
3.	R159	Hex Nut, 7/8" UNF
4.	R160	Piston
5.	R161	Piston Rod Guide
6.	R162	Clevis Pin W/Clip
	R193	Clip, Hair Pin, Only
	R154	Seal Kit Includes (1) O-Ring, ¾" I.D x 7/8" O.D. (1) O-Ring, 1 1/8" I.D. x 1 3/8" O.D. (1) Back Up Washer (1) Rod Wiper (2) Back Up Washer (2) O-Ring, 1 5/8" I.D. x 2" O.D. (1) Retaining Ring
A.	A211	Cylinder - Complete 2"x8"

LOW PROFILE - DOUBLE FOLDING MARKER CYLINDER



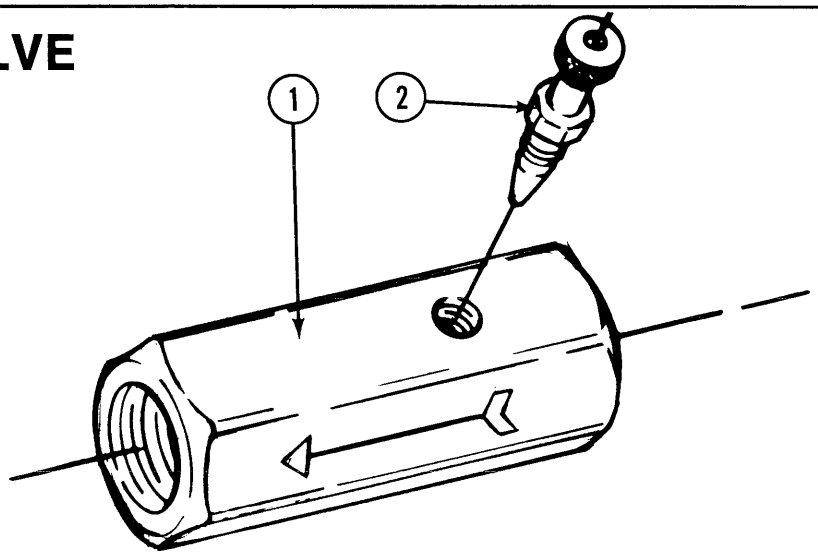
ITEM	PART NO.	DESCRIPTION
1.	R134	Cylinder Tube Assembly
2.	R138	Hex Nut, 7/8" UNF
3.	R137	Piston
4.	R136	Head Gland
5.	R135	Shaft Assembly
A.	A233	Cylinder Assembly, Complete, 2½" x 20"
	R139	Seal Kit Includes (1) Lock Ring (1) O-Ring (018) (1) O-Ring (218) (1) Back Up (23) (2) O-Ring (330) (3) Back Up (33) (1) Wiper

SEQUENCING VALVE



ITEM	PART NO.	DESCRIPTION
1.	R272	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, ¼" Diameter
A.	A282	Sequencing Valve, Complete

FLOW CONTROL VALVE

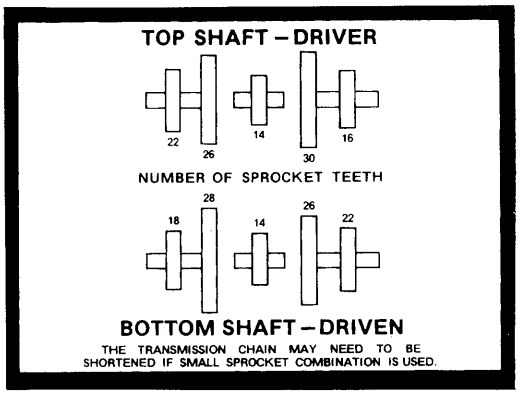


ITEM	PART NO.	DESCRIPTION
1.	A270	Flow Control Valve Assembly, 3/8" NPT (KLF 375)
2.	R103	Needle Valve Assembly

DECALS AND REFLECTORS

1

2



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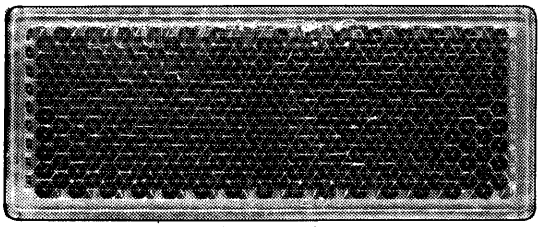

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ITEM	PART NO.	DESCRIPTION
1.	7100-4	Decal, Caution-Markers
2.	7100-14	Kinze Decal
3.	7100-6	Decal, Sprocket Combination - Seed Drive Transmission.
4.	D937	Serial Number Plate
5.	7200-1	Reflector, Red (Used on Rear of Planter Box)
	7200-2	Reflector, Amber (Used on Front of Toolbar)

NUMERICAL INDEX

A

D

R