MODEL 2700
FRONT FOLDING PLANTER

OPERATOR & PARTS MANUAL

M0152 Rev. 1/99

This manual is applicable to: Model: 2700 Front Folding Planters
Serial Number: 750000 and on

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

Model Number 2700

Serial Number _____

Date Purchased _____

SERIAL NUMBER

The serial number plate is located on the planter frame to be readily available. It is suggested that the serial number and purchase date also be recorded above.

The serial number provides important information about your planter and may be required to obtain the correct replacement part. Always provide the serial number and model number to your KINZE® Dealer when ordering parts or anytime correspondence is made with KINZE Manufacturing, Inc.

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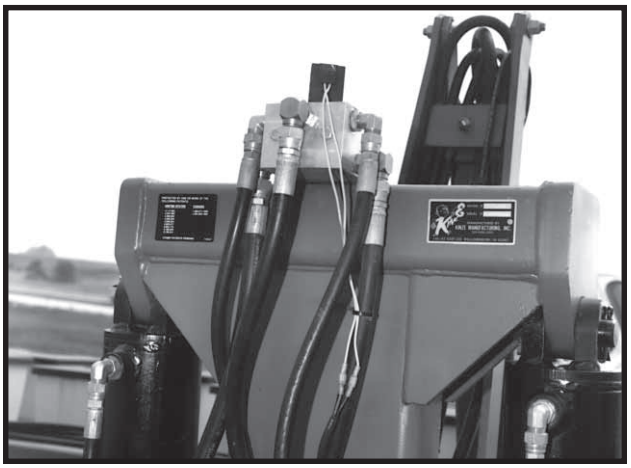

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Rev. 2/98

PREDELIVERY/DELIVERY CHECK LIST

TO THE DEALER

Predelivery service includes assembly, lubrication, adjustment and test. This service helps to ensure that the planter will be delivered to the customer ready for field use.

PREDELIVERY CHECK LIST

After the planter has been completely assembled, use the following check list and inspect the planter. Check off each item as it is found satisfactory or after proper adjustment is made.

❑ Recheck to be sure row units and optional attachments are properly spaced and assembled.

❑ Be sure all grease fittings are in place and lubricated.

❑ Check planter and make sure all working parts are moving freely, bolts are tight and cotter pins are spread.

❑ Check all drive chains for proper tension and alignment.

❑ Check for oil leaks and proper hydraulic operation.

❑ Check to be sure hydraulic hoses are routed correctly to prevent damage to hoses.

❑ Inflate tires to specified PSI air pressure. Tighten wheel bolts to specified torque.

❑ Check to be sure all safety decals are correctly located and legible. Replace if damaged.

❑ Check to be sure SMV sign is in place.

❑ Check to be sure safety/warning lights are installed correctly and working properly.

❑ Paint all parts scratched in shipment or assembly.

❑ Be sure all safety lockups are on the planter and correctly located.

This planter has been thoroughly checked and to the best of my knowledge is ready for delivery to the customer.

_____

(Signature Of Set-Up Person/Dealer Name/Date)

OWNER REGISTER

Name _____ Date Sold _____

Street Address _____ Model _____

City, State/Province & ZIP _____ Serial Number _____

Dealer Name _____ Dealer Number _____

Rev. 1/97

DELIVERY CHECK LIST

At the time the planter is delivered, the following check list is a reminder of very important information which should be conveyed to the customer. Check off each item as it is fully explained to the customer.

❑Advise the customer that the life expectancy of this or any other machine is dependent on regular lubrication as directed in the Operator & Parts Manual.

❑Tell the customer about all applicable safety precautions.

❑Along with the customer, check to be sure the SMV sign is clearly visible with the planter in transport position and attached to the tractor. Check to be sure safety/warning lights are in working condition. Tell the customer to check federal, state/provincial and local regulations before towing or transporting on a road or highway.

❑Give the Operator & Parts Manual to the customer and explain all operating adjustments.

❑Read warranty to customer.

❑Complete Warranty And Delivery Report form.

To the best of my knowledge this machine has been delivered ready for field use and customer has been fully informed as to proper care and operation.

_____

(Signature Of Delivery Person/Dealer Name/Date)

AFTER DELIVERY CHECK LIST

The following is a list of items we suggest to check during the first season of use of the equipment.

❑ Check with the customer as to the performance of the planter.

❑ Review with the customer the importance of proper maintenance and adherence with all safety precautions.

❑ Check for parts that may need to be adjusted or replaced.

❑ Check to be sure all safety decals and SMV sign are correctly located and legible. Replace if damaged or missing.

❑ Check to be sure safety/warning lights are working properly.

_____

(Signature Of Follow-Up Person/Dealer Name/Date)

RETURN THIS COMPLETED FORM TO KINZE® IMMEDIATELY, along with Warranty And Delivery Report. Retain photocopy of this form at dealership for After Delivery Check.

Tear Along Perforation

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TO THE OWNER

KINZE Manufacturing, Inc. would like to thank you for your patronage. We appreciate your confidence in KINZE® farm machinery. Your KINZE® planter has been carefully designed and sturdily built to provide dependable operation in return for your investment.

This manual has been prepared to aid you in the operation and maintenance of the planter. It should be considered a permanent part of the machine and remain with the machine when you sell it.

It is the responsibility of the user to read and understand the Operator & Parts Manual in regards to safety, operation, lubrication and maintenance before operation of this equipment. It is the user's responsibility to inspect and service the machine routinely as directed in the Operator & Parts Manual. We have attempted to cover all areas of safety, operation, lubrication and maintenance; however, there may be times when special care must be taken to fit your conditions.

Throughout this manual the symbol ⚠ and the words NOTE, CAUTION, WARNING and DANGER 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 the machine or equipment and/or personal injury.**

⚠ **DANGER: Indicates that a failure to observe can cause most serious damage to the machine or equipment and/or most serious personal injury.**

⚠ **WARNING: Some photos in this manual may show safety covers, shields or lockups removed for visual clarity. NEVER OPERATE the machine without all safety covers, shields and lockups in place.**

NOTE: Some photos in this manual may have been taken of prototype machines. Production machines may vary in appearance.

NOTE: Some photos and illustrations in this manual show optional attachments installed. Contact your KINZE® Dealer for purchase of optional attachments.

WARRANTY

The KINZE® Limited Warranty for your new machine is stated on the back of the retail purchaser's copy of the Warranty And Delivery Report form.

Warranty, within the warranty period, is provided as part of KINZE's support program for registered KINZE® products which have been operated and maintained as described in this manual. Evidence of equipment abuse or modification beyond original factory specifications will void the warranty. Normal maintenance, service and repair is not covered by KINZE® warranty.

To register your KINZE® product for warranty, a Warranty And Delivery Report form must be completed by the KINZE® Dealer and signed by the retail purchaser, with copies to the Dealer, to the retail purchaser and to KINZE Manufacturing, Inc. Registration must be completed and sent to KINZE Manufacturing, Inc. within 30 days of delivery of the KINZE® product to the retail purchaser. KINZE Manufacturing, Inc. reserves the right to refuse warranty on serial numbered products which have not been properly registered.

Additional copies of the Limited Warranty can be obtained through your KINZE® Dealer.

If service or replacement of failed parts which are covered by the Limited Warranty are required, it is the user's responsibility to deliver the machine along with the retail purchaser's copy of the Warranty And Delivery Report to the KINZE® Dealer for service. KINZE® warranty does not include cost of travel time, mileage, hauling or labor. Any prior arrangement made between the Dealer and the retail purchaser in which the Dealer agrees to absorb all or part of this expense should be considered a courtesy to the retail purchaser.

KINZE® warranty does not include cost of travel time, mileage, hauling or labor.

INTRODUCTION

The Model 2700 Front Folding Planter is available in 16 Row 30", 24 Row 20", 24 Row 30" and 36 Row 20" configurations and permits installation of various row unit attachments.

GENERAL INFORMATION

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

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

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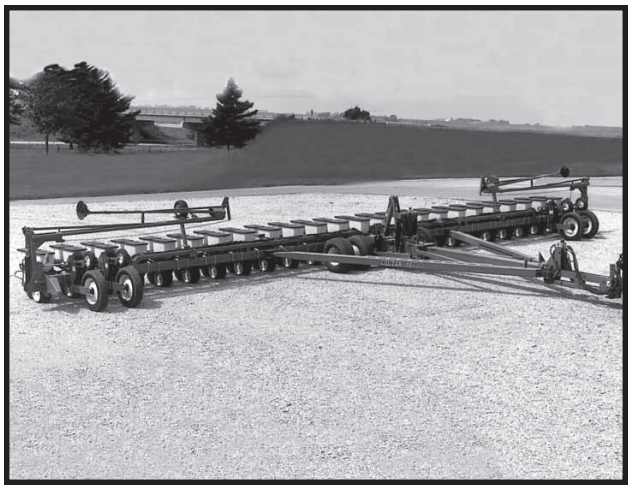

24 Row 30" Machine Shown In Field Operation Position

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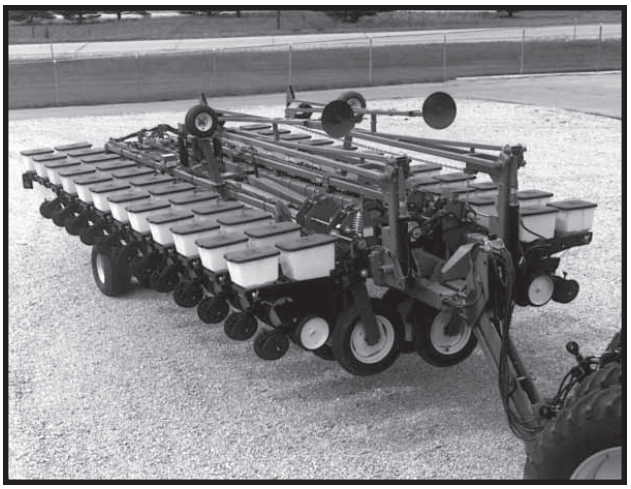

24 Row 30" Machine Shown In Transport Position

SPECIFICATIONS

TYPE Pull type, hydraulic front folding frame for transport.

PLANTING UNIT TYPES Pull Row Units.

ROW SPACING
16 Row - 30" Rows
24 Row - 20" Rows
24 Row - 30" Rows
36 Row - 20" Rows

DRIVE SYSTEM

Four 4.80" x 8" spring loaded contact drive tires driven by four 7.50" x 20" (Prior To SN750062) /four 255-70R x 22.5" (SN750062 And On) ground drive tires.
No. 40 chain with spring-loaded idlers.
Two quick-adjust end-mounted seed transmissions with machined sprockets.
$^{7}/_{8}$" hex drive and drill shafts.
Point row clutches.

TRANSPORT TIRES

Four 36" x 16" x 17.5" Rib Duplex, 8 ply tubeless tires – 16 Row 30", 24 Row 30" And 36 Row 20"
Four 255-70R x 22.5" Load Range H Radial Tubeless – 24 Row 20"

MARKERS

16 Row 30" And 24 Row 20" - Equipped with two-fold markers with 16" concave blade and depth band.
24 Row 30" And 36 Row 20" - Equipped with three-fold markers with 16" concave blade and depth band.

HYDRAULICS

Dual SCV for independent operation of lift and marker/fold functions.
Lift - 4 master cylinders/2 slave cylinders.
Marker/fold functions - Hydraulic lever and electric switch operation. (12 Volts DC Required)
Hydraulic fold system consists of 1 hitch parallel link cylinder, 1 tongue cylinder and 2 helper cylinders.

Dimensions

PLANTER SIZE	16 Row 30"	24 Row 20"	24 Row 30"	36 Row 20"
Operating Width (Markers Folded)	43' 0"	43' 0"	63' 0"	63' 0"
Operating Length	28' 4"	28' 4"	31' 0"	31' 0"
Overall Transport Width	14' 0"	14' 0"	14' 0"	14' 0"
Axle Width (Tires - Outside To Outside)	10' 11"	***	10' 11"	11' 3"
Transport Height	11' 6"	11' 6"	11' 6"	11' 6"
Transport Length	30' 8"	30' 8"	36' 8"	36' 8"
Empty Machine Hitch Weight (Transport)	4850 Lbs.	5400 Lbs.	7150 Lbs.	**8200 Lbs.
Base Machine Weight*	14,528 Lbs.	16,240 Lbs.	21,698 Lbs.	24,466 Lbs.

* Base machine weight includes planter frame including row markers, hydraulic cylinders, hoses, fittings, tires, wheels, drive and drill shafts, sprockets, chains and required drive components, point row clutches, parking jack, safety/warning lights, SMV sign, and KINZE® pull row units (closing wheel arms less closing wheels) with seed hopper and lid and dual quick adjustable down force springs.

** Additional customer-supplied drawbar support required with 36 Row 20" due to heavy transport hitch weights.

***11' 3" with 36" x 16" x 17.5" tires/10' 9" with 255-70R x 22.5" tires.

SPECIFICATIONS

MACHINE OPTIONS

- Electronic Seed Monitors
  16 Row 30" – KM1000, KM3000 With Magnetic Distance Sensor Or KM3000 With Radar Distance Sensor
  24 Row 20" And 24 Row 30" – KM3000 With Magnetic Distance Sensor Or KM3000 With Radar Distance Sensor
  36 Row 20" – (2)KM3000 With Radar Distance Sensor
  (KPM I/KPM II Monitor - See Assembly Instruction IS364)
- Half Rate (2 To 1) Drive Reduction Package
- Piston Pump Package – 16 Row 30", 24 Row 20" And 24 Row 30"
- Rear Trailer Hitch – 16 Row 30" And 24 Row 30"
- Two-Speed Point Row Wrap Spring Clutch Package – Allows Half-Width Planting And Reduced Rate Planting (Available Through KINZE® Repair Parts)
- Row Unit Mounted Notched Single Disc Fertilizer Openers (Available Through KINZE® Repair Parts)

ROW UNIT OPTIONS/ATTACHMENTS

- Finger Pickup Or Brush-Type Seed Meters
- Closing Wheels – Rubber "V", Cast Iron "V" Or Covering Discs/Single Press Wheel
- Gauge Wheel Covers
- Granular Chemical Application Options
- Spring Tooth Incorporator
- Row Unit Mounted No Till Coulter
- Row Unit Mounted Disc Furrowers
- Row Unit Mounted Residue Wheel
- Coulter Mounted Residue Wheels
- Frame Mounted No Till Coulter
- Disc Furrowers For Frame Mounted Coulter
- Seed Firming Wheel

SAFETY PRECAUTIONS

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

Since a large portion of farm accidents occur as a result of fatigue or carelessness, safety practices should be of utmost concern. Read and understand the instructions provided in this manual and on the warning signs. Review these instructions frequently. Listed below are other safety suggestions that should become common practice.

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.

Never permit any persons other than the operator to ride on the tractor.

Never ride on the planter or allow others to do so.

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

Before operating the planter for the first time and periodically thereafter, check to be sure the lug nuts on the transport wheels are tight. This is especially important if the planter is to be transported for a long distance.

Always make sure safety/warning lights, reflectors and SMV emblem are in place and visible prior to transporting the machine on public roads. In this regard, check federal, state/provincial and local regulations.

Limit towing speed to 15 MPH. Tow only with farm tractor of adequate size and weight to maintain control of the weight of the planter.

Always install hitch parallel link lock pin and manual safety lockup pin before transporting the planter.

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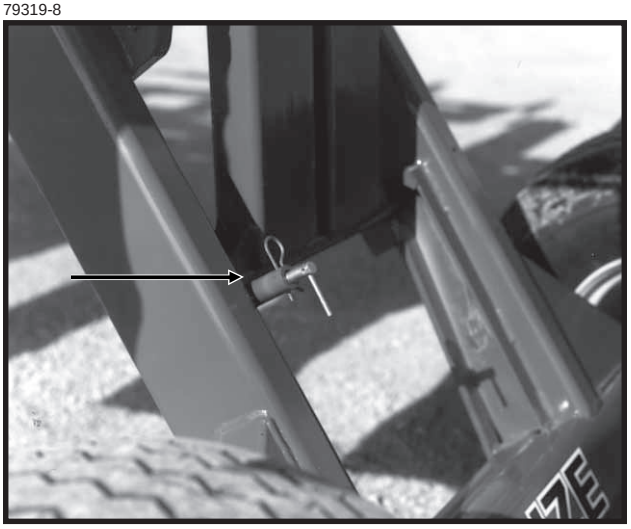
Hitch Parallel Link Lock Pin

79319-8



Manual Safety Lockup Pin

Never work under the planter while in raised position without installing manual safety lockup pin.

Store the planter in an area away from human activity. DO NOT permit children to play in or around the stored unit.

Be aware of bystanders, particularly children! Always look around to make sure it is safe to start the engine of the towing vehicle or move the planter. This is particularly important with higher noise levels and quiet cabs, as you may not hear people shouting.

Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the planter.

SAFETY PRECAUTIONS

Always keep hands, feet and clothing away from moving parts. Do not wear loose fitting clothing which may catch in moving parts.

Always wear protective clothing, substantial shoes and suitable hearing and eye sight protectors applicable for the situation.

Use a tractor equipped with a roll-over-protective-system and fasten your seat belt prior to starting the engine.

Always drive at a safe speed relative to local conditions and ensure your speed is low enough for an emergency stop to be safe and secure. Keep speed to minimum.

Reduce speed prior to turns to avoid the risk of overturning.

Allow for unit length when making turns.

Avoid sudden uphill turns on steep slopes.

Always keep the tractor in gear to provide engine braking when going downhill. Do not coast.

Make sure the parked machine is on a hard, level surface. Wheel chocks may be needed to prevent unit from rolling.

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

This planter has uplift at the drawbar when it is in field raised and full raised positions prior to fold. DO NOT unhook from tractor in these positions. Doing so will cause the machine to tip backwards.

Install safety lockup brackets on markers prior to transporting the planter or working around the unit.

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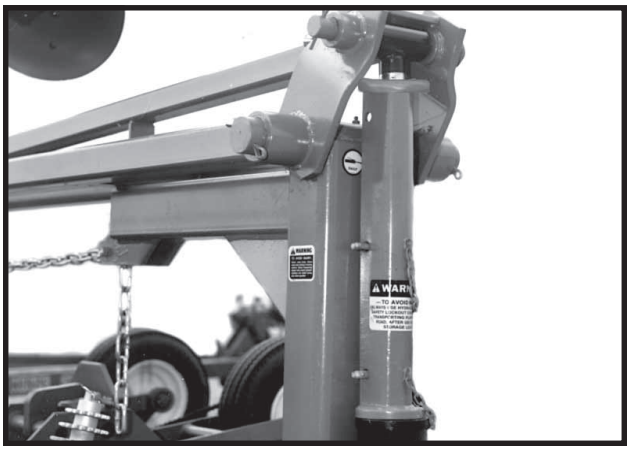


Rim and tire servicing can be dangerous. Explosive separation of a tire and rim parts can cause serious injury or death.

This planter is designed to be DRIVEN BY GROUND TIRES ONLY. The use of hydraulic, electric or PTO drives may create serious safety hazards to you and the people near by. If you install such drives you must follow all appropriate safety standards and practices to protect you and others near this planter from injury.

This machine has been designed and built with your safety in mind. Do not make any alterations or changes to this machine. Any alteration to the design or construction may create safety hazards.

Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.

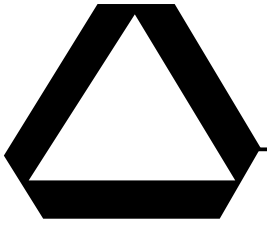
Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

Agricultural chemicals used with this unit can be dangerous. Improper selection or use can seriously injure persons, animals, plants, soil and other property. BE SAFE: Select the right chemical for the job. Handle it with care. Follow the instructions of the chemical manufacturer.

SAFETY WARNING SIGNS

The “WARNING” signs illustrated on these pages are placed on the machine to warn of hazards. The warnings found on these signs are for your personal safety and those around you. OBSERVE THESE WARNINGS!

- **Keep these signs clean so they can be readily observed. Wash with soap and water or cleaning solution as required.**
- **Replace “WARNING” signs should they become damaged, painted over or if they are missing.**
- **Check the SMV sign periodically. Replace if it shows loss of any of its reflective property.**
- **When replacing decals, clean the machine surface thoroughly using soap and water or cleaning solution to remove all dirt and grease.**



Part No. GD2199 (Qty. 1)

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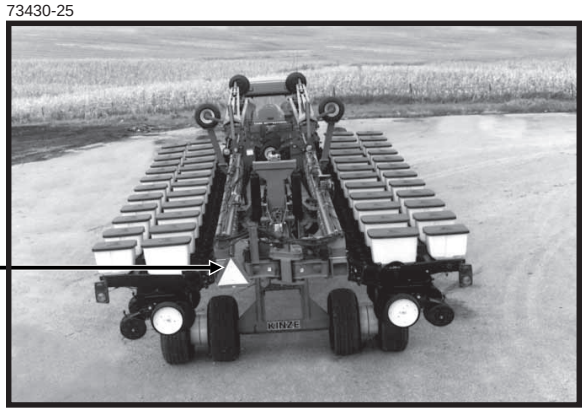

Part No. G7100-89 (Qty. 4)

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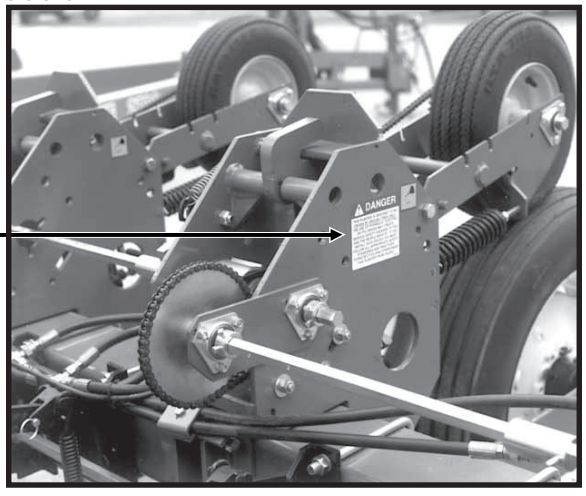
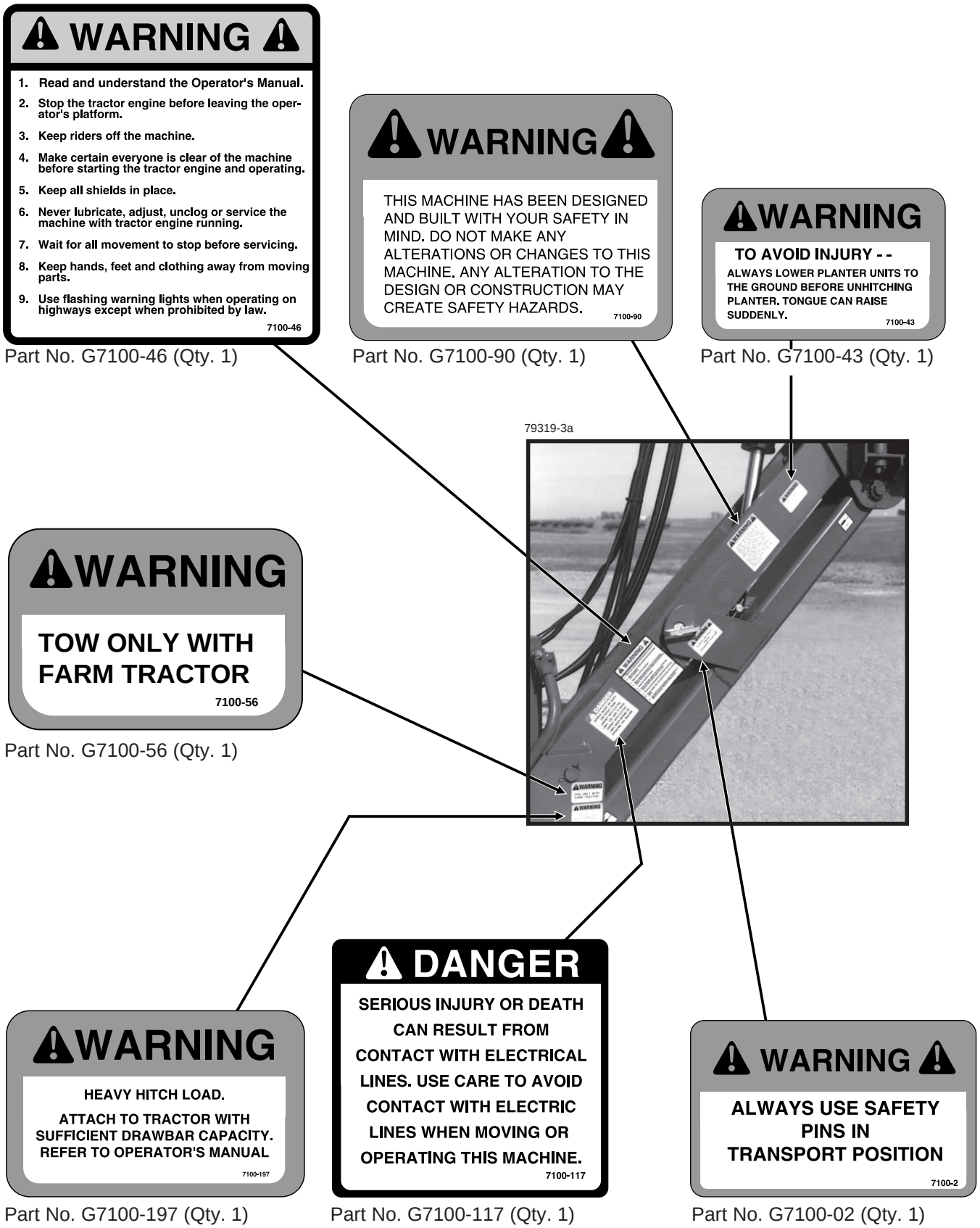


SAFETY WARNING SIGNS



Part No. G7100-46 (Qty. 1)

Part No. G7100-90 (Qty. 1)

Part No. G7100-43 (Qty. 1)

Part No. G7100-56 (Qty. 1)

Part No. G7100-197 (Qty. 1)

Part No. G7100-117 (Qty. 1)

Part No. G7100-02 (Qty. 1)

SAFETY WARNING SIGNS

Part No. G7100-68 (Qty. 1)

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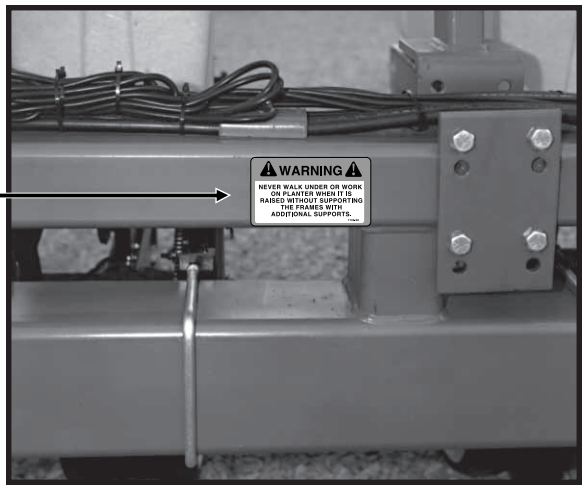

Part No. G7100-42 (Qty. 2 Per Marker)

Part No. G7100-83 (Qty. 1 Per Marker)

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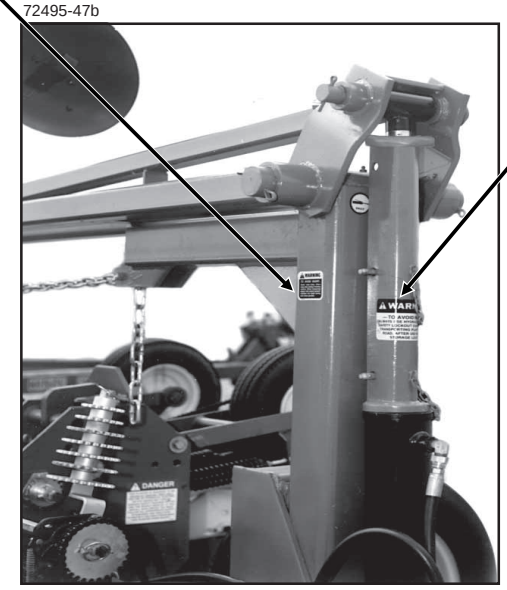


SAFETY WARNING SIGNS ⚠

77178-17a

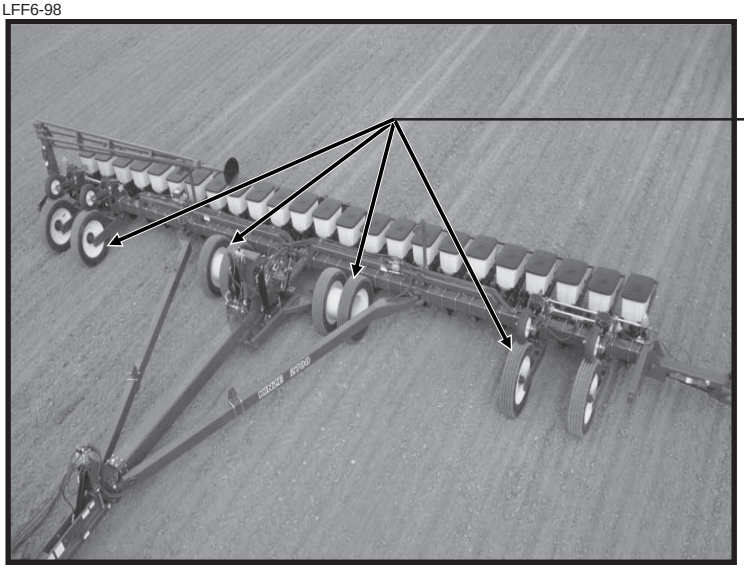
⚠ WARNING ⚠

AGRICULTURAL CHEMICALS CAN BE DANGEROUS. IMPROPER SELECTION OR USE CAN SERIOUSLY INJURE PERSONS, ANIMALS, PLANTS, SOIL OR OTHER PROPERTY. BE SAFE. SELECT THE RIGHT CHEMICAL FOR THE JOB. HANDLE WITH CARE. FOLLOW THE INSTRUCTIONS ON THE CONTAINER LABEL AND OF THE EQUIPMENT MANUFACTURER.

7100-115

Part No. G7100-115 (Qty. 1 Per Lid)
Located on under side of granular chemical hopper lid.

LFF6-98



⚠ WARNING ⚠

MAXIMUM INFLATION PRESSURE 75 PSI

7100-219

Part No. G7100-219 (Qty. 1 Per Tire)
Transport Tire, 24 Row 20", Serial No. 750062 And On.
Ground Drive Tire, All Sizes, Serial No. 750062 And On.

MACHINE OPERATION

The following information is general in nature and was written to aid the operator in preparation of the tractor and planter for use, and to provide general operating procedures. The operator's experience, familiarity with the machine and the following information should combine for efficient planter operation and good working habits.

CAUTION: Always raise the planter out of the ground when making sharp turns or backing up.

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, alignment and lubrication.

TRACTOR REQUIREMENTS

Consult your dealer for information on horsepower requirements and tractor compatibility. Tractor requirements will vary with planter options, tillage and terrain. BE SURE the tractor has an adequate drawbar to carry the weight of the planter. See “Specifications” for weights.

NOTE: Additional customer-supplied drawbar support required with 36 Row 20" due to heavy transport hitch weights.

Two dual remote hydraulic outlets (SCV) are required on all sizes.

12 volt DC electrical system is required on all sizes to operate planter safety/warning lights and electrical control box.

TRACTOR PREPARATION AND HOOKUP

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1. Adjust tractor drawbar in as close to the tractor as practical and to 13-17 inches above the ground. Adjust the drawbar so the hitch pin hole is directly in line with the center of the tractor. Make sure the drawbar is in a stationary position.

NOTE: Check clearance between planter and three point hitch arms on tractor. Additional clearance is required for turning.

2. Install control console on tractor in a convenient location to the right of the operator and close to the hydraulic controls. Mount control console securely and route power cord to the power source.

   The control console operates on 12 volt DC only. The console battery lead has two wires, a BLACK wire and a RED wire (tagged with “+”). Each is terminated in a ring terminal. The BLACK wire should always be connected to the chassis ground battery terminal.

   If two 12 volt batteries are connected in series, ALWAYS make power connection on battery which is grounded to tractor chassis.

   If two 6 volt batteries are connected in parallel, make sure power connection at battery terminals ARE NOT connected to each other.

3. Back tractor to planter and connect with a minimum 1 3/4" diameter hitch pin. Make sure hitch pin is secured with locking pin or cotter pin.

WARNING: This planter has uplift at the drawbar when it is in field raised and full raised positions prior to fold. DO NOT unhook from tractor in these positions. Doing so will cause the machine to tip backwards.

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

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

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

5. Connect ASAE Standards 7 terminal connector for warnings lights on planter to ASAE Standards receptacle on tractor. If your tractor is not equipped with an ASAE Standards receptacle, check with your tractor manufacturer for availability. Check to be sure safety/warning lights on planter are working in conjunction with safety/warning lights on tractor.

6. Raise parking jack fully to prevent damage while operating in uneven field conditions.

NOTE: If using an auxiliary attaching system (safety chain) to retain the connection between the planter and tractor hitch, be sure the auxiliary attaching system is of sufficient strength and length and correctly attached. An auxiliary attaching system is available from KINZE® Repair Parts through your KINZE® Dealer. Attach safety chain using a clevis mounting hole on planter hitch.

LEVELING THE PLANTER

For proper operation of the planter and row units, it is important that the planter frame be level laterally and row unit parallel arms be approximately level. The toolbar should operate at a 20"-22" height, measured to the bottom of the toolbar.

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

With the planter lowered to proper operating depth, check to be sure the frame is level fore and aft. Recheck with planter in the field.

It is important for the planter to operate level laterally. Tire pressure must be maintained at pressures specified. See "Tire Pressure".

If planting in extremely soft soil conditions it may be necessary to move the ground drive tires to one of the lower sets of mounting holes. To allow adequate drive force after lowering the ground drive tires, it may be necessary to lower the contact drive arms to the lower set of holes in the wheel module and lower the down pressure springs to the lower mounting rod on the wheel module.

If after rephasing the planter the center is higher or lower than the wings, consult your KINZE® Dealer for valve adjustment and/or maintenance.

TIRE PRESSURE

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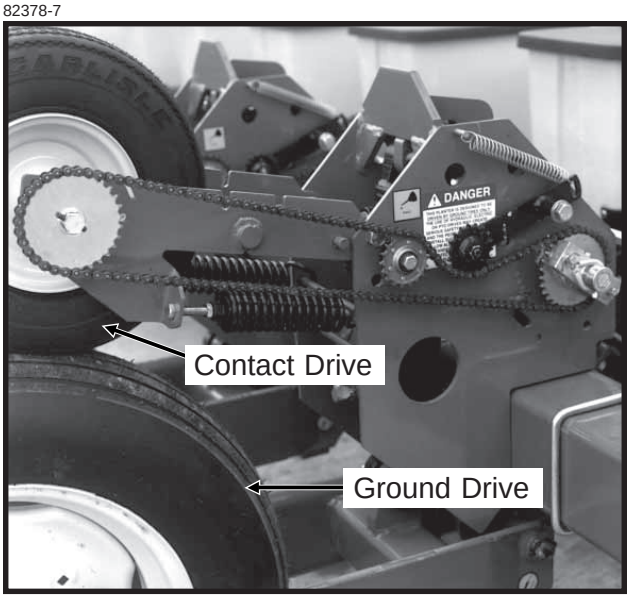
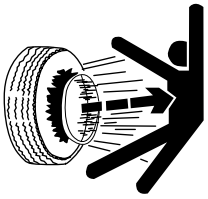


Tire pressure should be checked regularly and maintained as follows:

Transport/Ground Drive 255-70R x 22.5" ..... 75 PSI
Transport 36" x 16" x 17.5" ..... 30 PSI
Ground Drive 7.50" x 20" ..... 40 PSI
Contact Drive 4.80" x 8" ..... 60 PSI
Marker Tire 6.5" x 16" ..... 14 PSI
Contact Drive 4.10" x 6"
(Liquid Fertilizer Piston Pump) ..... 60 PSI



DANGER: Rim and tire servicing can be dangerous. Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. This should only be done by persons properly trained and equipped to do the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure.

When inflating tires, use a clip-on air chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage to enclose the tire and rim assembly when inflating.

Inspect tires and wheels daily. Do not operate with low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

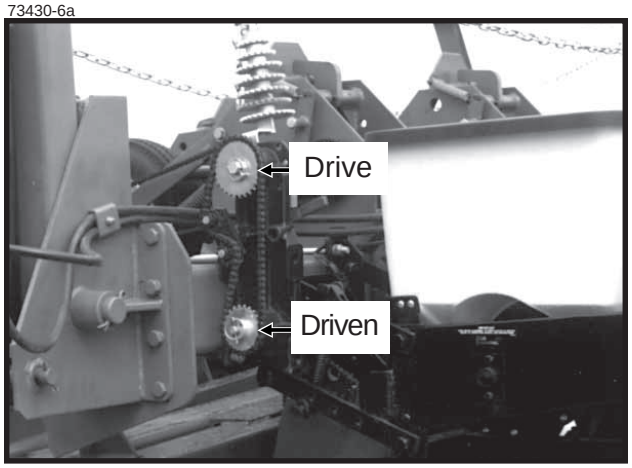
TRANSMISSION ADJUSTMENT

Planting population rate changes are made at the end of each planter wing. The planter is designed to allow simple, rapid changes in sprockets to obtain the desired planting population. By removing the lynch pins on the hexagon shafts, sprockets can be interchanged with those from the sprocket storage rod bolted to the transmissions.

Chain tension is controlled by a spring-loaded dual-sprocket idler. The idler assembly is adjusted with a ratchet arm. This arm has a release position to remove spring tension for replacing sprockets. The amount of spring tension on the chain can be controlled by the ratchet arm.

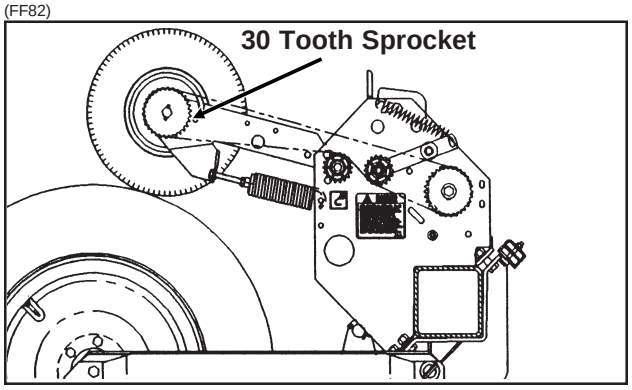
The planting rate charts found at the back of this section will aid you in selecting the correct sprocket combinations.

73430-6a



STANDARD RATE DRIVE

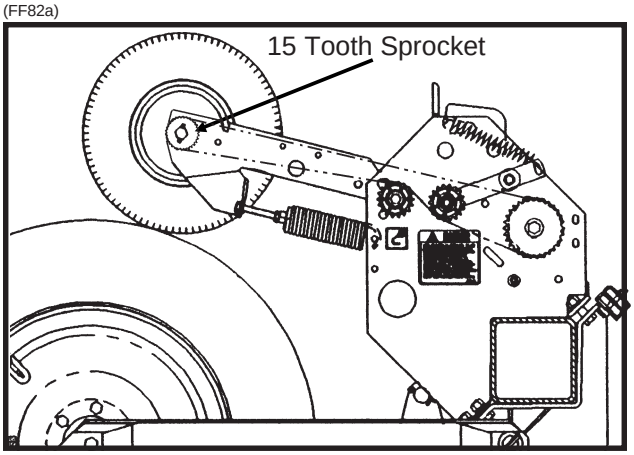
(FF82)



Seed planting rate charts are based on the standard rate drive. The standard rate drive uses a 30 tooth sprocket on each contact drive tire. Using the 15 tooth half rate (2 to 1) drive sprocket in place of the 30 tooth sprocket will reduce the planting rate by approximately 50%. See “Half Rate (2 To 1) Drive”.

HALF RATE (2 TO 1) DRIVE

(FF82a)

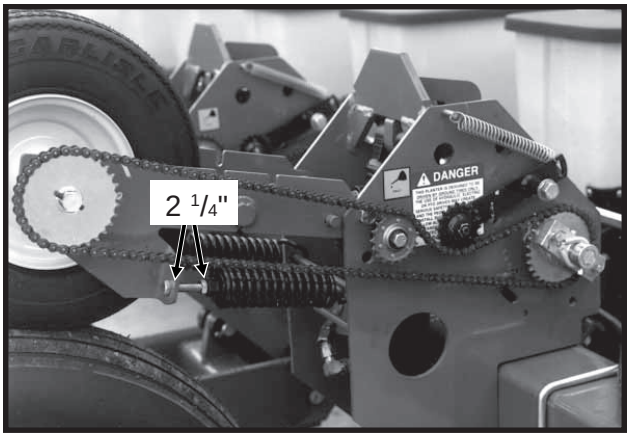


Replacing the 30 tooth standard rate sprocket on each contact wheel with a 15 tooth half rate (2 to 1) sprocket will reduce the planter transmission speed and reduce planting rates by approximately 50%.

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

CONTACT DRIVE WHEEL SPRING ADJUSTMENT

82378-7



There are two down pressure springs on each contact drive wheel. The down pressure is factory preset and should need no further adjustment.

The spring tension is set leaving 2 1/4" between the spring plug and the bolt head.

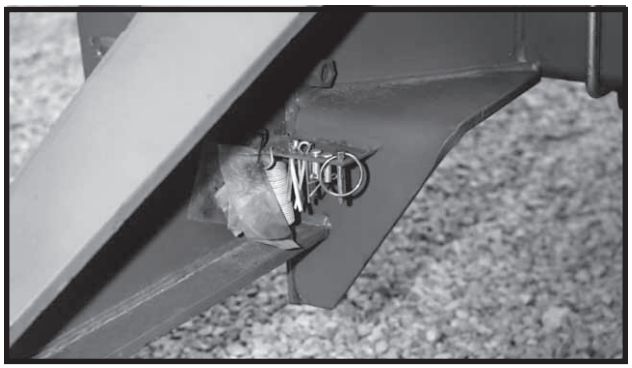
SHEAR PROTECTION

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

If excessive load should cause a pin to shear, it is important to determine where binding has occurred before replacing the pin. Replace shear pins with same size and type.

Additional shear pins can be found in the storage area located at the end of the planter wings on the inboard side of the transport hook.

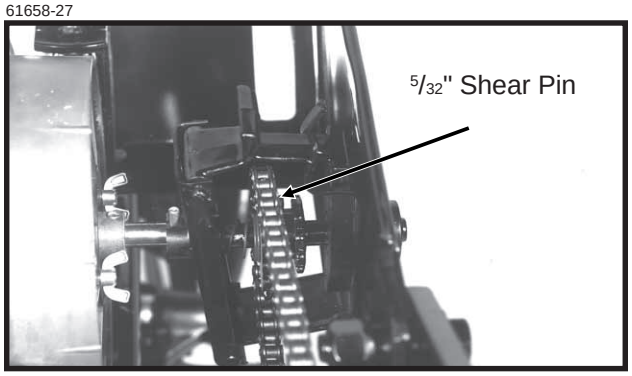
72495-48



To prevent future binding or breakage of components, check drive line alignment and follow prescribed lubrication schedules.

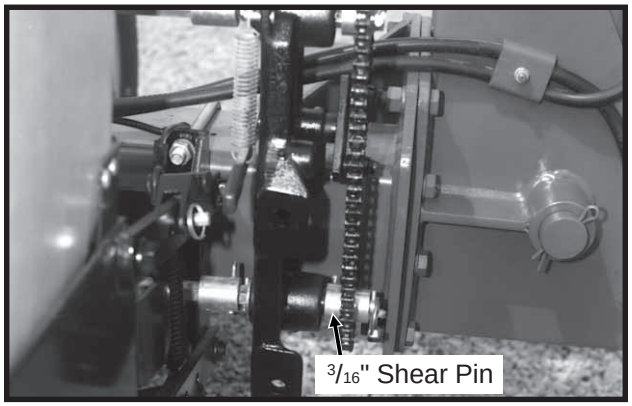
NOTE: Drill shaft/transmission coupler alignment is critical.

61658-27



Row Unit Seed Meter Drive

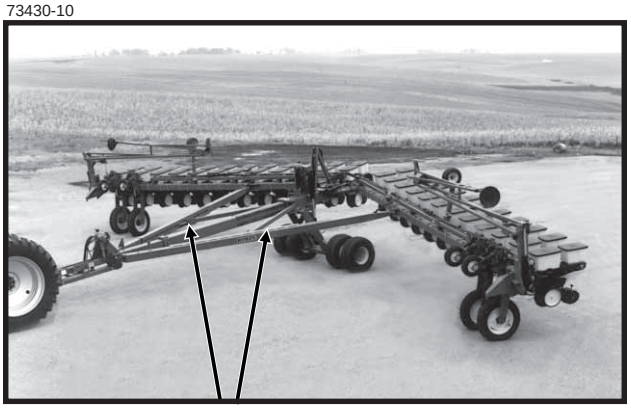
72495-25



Transmission Shaft

MAINTAINING SLIDING HITCH LINKAGE (24 Row 30" And 36 Row 20" Machines Only)

73430-10



All 24 Row 30" and 36 Row 20" planters are equipped with sliding axle links which connect the R.H. and L.H. draft links to the transport axle. As the planter is folded, the axle links move in a slide on the inner side of each draft link. When the axle links reach the end of the slides, the main transport axle is telescoped forward into the transport position or rearward into the field position. In normal operating conditions, the stops at either end of the slides are designed to allow dirt to escape. Under extremely dusty conditions it may be necessary to clean the slides.

IMPORTANT: Inspect daily to ensure free movement of axle links in slides. Keep axle link slides clean. DO NOT GREASE the axle link slides. Powdered graphite may be used if lubrication is desired.

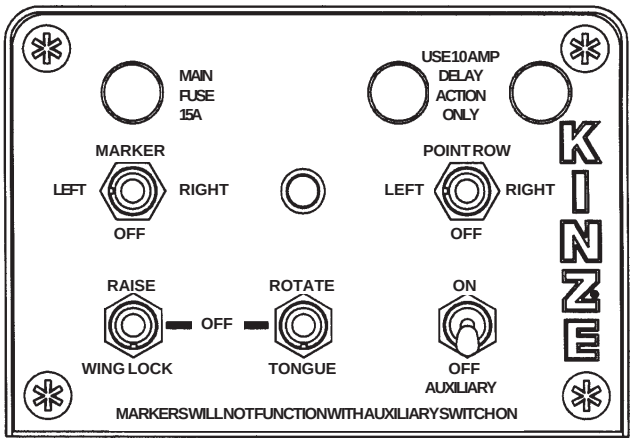
HYDRAULIC/ELECTRIC OPERATION

All Model 2700 planters are equipped for operation from two dual remote hydraulic outlets. One set of outlets is used to operate the lift function and one set is used to operate the markers, tongue and fold/unfold functions.

The markers and fold/unfold functions require the operation of the tractor's hydraulic levers and the electric control console switches. The marker selector switch is an "on-off-on" type. The fold function switches are "momentary on/off/momentary on" type and must be held in position while operating the tractor hydraulic lever. Activating a fold function switch disables the marker circuit. For safety, the marker selector switch should be placed in its "off" (center) position. An indicator light on the control console panel is "on" whenever the marker circuit or point row circuit is energized.

NOTE: ON/OFF switches should be left in OFF position when planter is not in use. If left in ON position, the tractor battery will be drained.

A6865(PLTR67)



NOTE: Since the lift cylinders are port-type re-phasing, it is necessary for the cylinders to travel full stroke. Cylinder stops should not be used.

DANGER: Never work under the planter while in raised position without installing safety lockups.

WARNING: DO NOT LOWER the planter frame onto the transport axle while in the folded transport position or damage to the transport tire(s) and/or row unit(s) will occur.

TRANSPORT TO FIELD SEQUENCE

WARNING: There is potential uplift present on the planter hitch during folding/unfolding. DO NOT fold or unfold the planter without the planter attached to a tractor. DO NOT unhook the planter from the tractor unless it is fully folded for transport or fully unfolded and the planting units are lowered to the ground.

SUMMARIZED TRANSPORT TO FIELD SEQUENCE

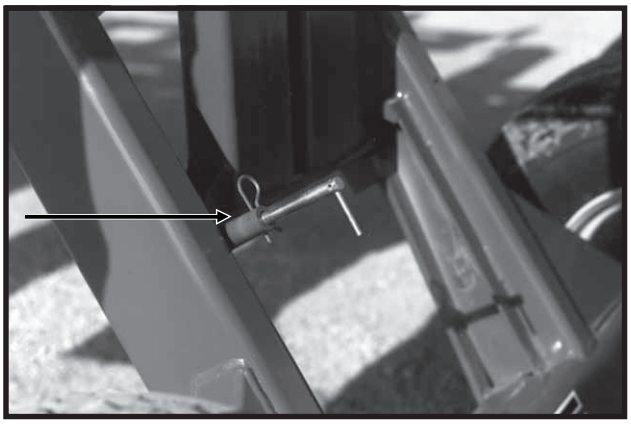
- Position manual safety lockup pin in stored position.
- Remove hitch parallel link lock pin.
- Lower hitch parallel linkage to release wing hooks.
- Unfold planter wings.
- Raise planter to release automatic safety lock on axle.
- Lower planter.
- Remove marker lockups.

NOTE: Read the following information for more detailed instructions.

1. Position the planter in a relatively flat open area. Try to avoid an area with furrows, etc.

2. Position the manual safety lockup pin for the automatic safety lock on the main axle in the stored position as shown below.

79319-5



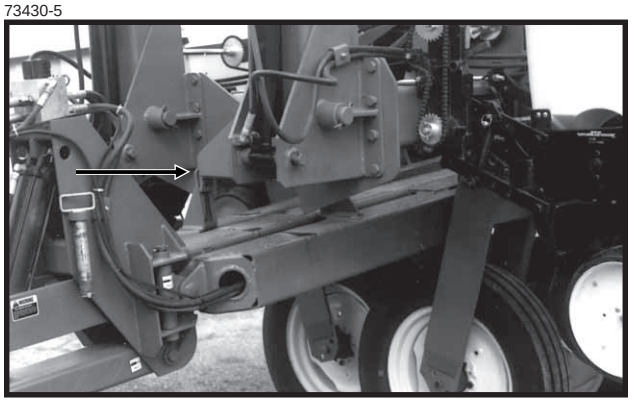
NOTE: Install pin so handle of pin points away from automatic safety lock.

3. Remove the lock pin in the hitch parallel link. Store in storage location provided.

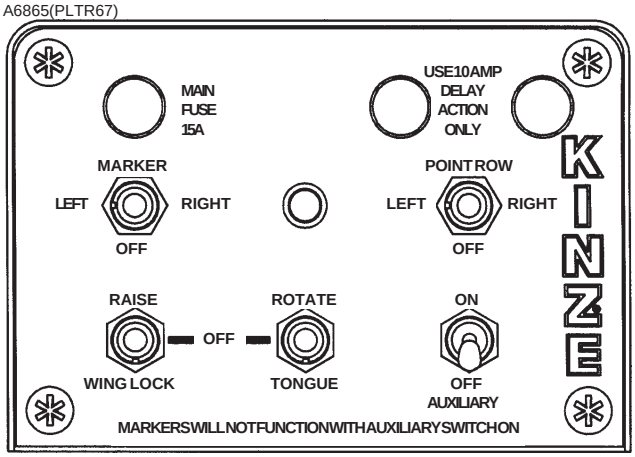
79319-4a

4. Lower the hitch parallel linkage until the wing wheels are on the ground and the hitch has fallen away from the hooks on the ends of the wings. This requires holding the switch on the control box labeled “ROTATE/TONGUE” in the **“tongue”** position while operating the proper tractor hydraulic lever to retract the parallel link cylinder fully.

73430-5

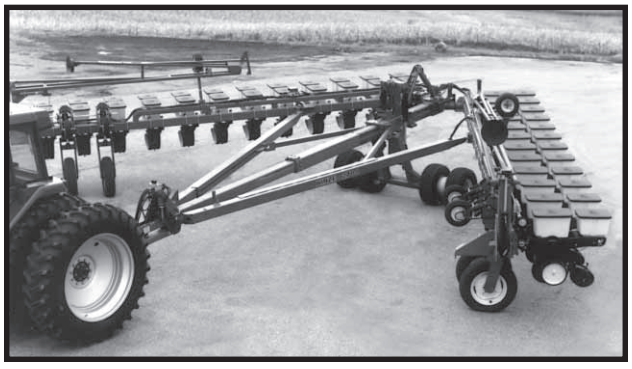


A6865(PLTR67)



5. Hold the control console switch labeled “ROTATE/TONGUE” in **“rotate”** and operate the hydraulic lever. The tongue will begin to retract and the wings will begin to unfold, rolling on the wing wheels. It is necessary to place the tractor transmission in neutral, to allow the tractor to roll in reverse, as you unfold the planter allowing the center axle tires to remain stationary and the wing tires to roll in a continuous arc with minimal side loading on the tires or their mounting structure. Hold the switch in the **“rotate”** position until the tongue cylinder is fully retracted.

73430-15



6. With the planter fully unfolded, raise the planter slightly (1" - 2") to release the automatic safety lock on the main axle. It is only necessary to raise the machine high enough to release the automatic safety lock. Raising it too high will reset the mechanism to engage the automatic safety lock. If you do raise the machine too high simply lower the machine until the hydraulic system stalls against the automatic safety lock and raise the machine again. Once the automatic safety lock is released, lower the machine all the way down. The center should drop until the toolbar is level and then the entire machine should lower evenly. When all lift cylinders are fully retracted, hold the tractor's hydraulic lever 5 to 10 seconds to rephase the system.

73430-30

WARNING: There is potential uplift present on the planter hitch during folding/unfolding. DO NOT fold or unfold the planter without the planter attached to a tractor. DO NOT unhook the planter from the tractor unless it is fully folded for transport or fully unfolded and the planting units are lowered to the ground.

7. Remove and store marker lockups.

FIELD OPERATION

Normal operation in the field while planting requires the use of the tractor's hydraulic lever to raise and lower the planter frame. Field turn around height is set by a stroke limiter valve located at the center of the machine near the tower assembly.

Operate markers with the control console switch for that marker in the “on” (LEFT or RIGHT) position and the tractor's hydraulic valve. Operate three-fold markers in float position. Marker speed is controlled with flow control valves located in the valve block on the right wing. One valve controls the raise speed of both markers while the other valve controls the lower speed of both markers. See “Marker Speed Adjustment”.

FIELD TO TRANSPORT SEQUENCE

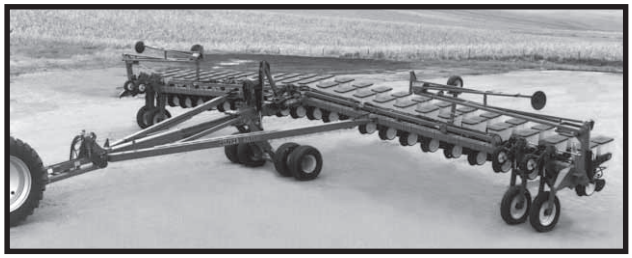
SUMMARIZED FIELD TO TRANSPORT SEQUENCE
- Install marker lockups.
- Raise planter to engage automatic safety lock on axle.
- Fold planter wings.
- Raise hitch parallel link to raise wings.
- Install hitch parallel link lock pin.
- Position manual safety lockup pin in locked position.

NOTE: Read the following information for more detailed instructions.

1. Install lockup brackets on markers to prevent the markers from unfolding when the planter is in the transport position.

2. Raise the planter while holding the "RAISE" switch on the control console in the **"raise"** position. The planter frame should raise level until the lift (master) cylinders at the ends of the wings are fully extended. The center lift (slave) cylinders will continue to extend (at a somewhat slower rate) until they are fully extended. Raise the planter until the center lift cylinders stall to insure the automatic safety lock engages. **Lower the planter until it is sitting on the automatic safety lock.**

73430-35



3. Hold the "ROTATE/TONGUE" switch in the **"rotate"** position and operate the tractor valve to fold the planter. The hooks on the wing ends should pass over the planter hitch and contact the stops on the draft links. (It may be necessary to raise or extend the parallel link cylinder slightly to insure that the hook on the wings contact the stops and don't come in over the top of the stop.) It is necessary to **slowly** idle the tractor forward as you fold the planter, allowing the center axle tires to remain stationary and the wing tires to roll in a continuous arc with minimal side loading on the tires or their mounting structure. When the wings are fully folded, hold the "ROTATE/TONGUE" switch in the **"tongue"** position to extend the parallel link cylinder fully to lift the wing tires off the ground.

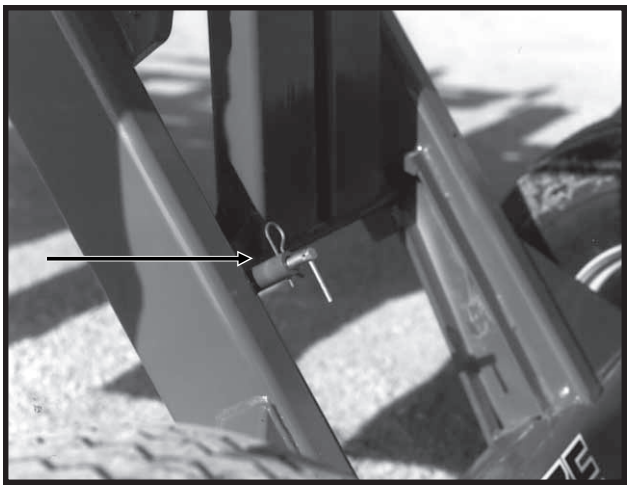
73430-13

4. Place the parallel link lock pin through the holes in the hitch in its "raised" position as shown below.

79319-4a

5. Move the manual safety lockup pin on the main axle to the locked position as shown below to prevent accidental release of the automatic safety lock when the machine is in the raised position.

79319-8

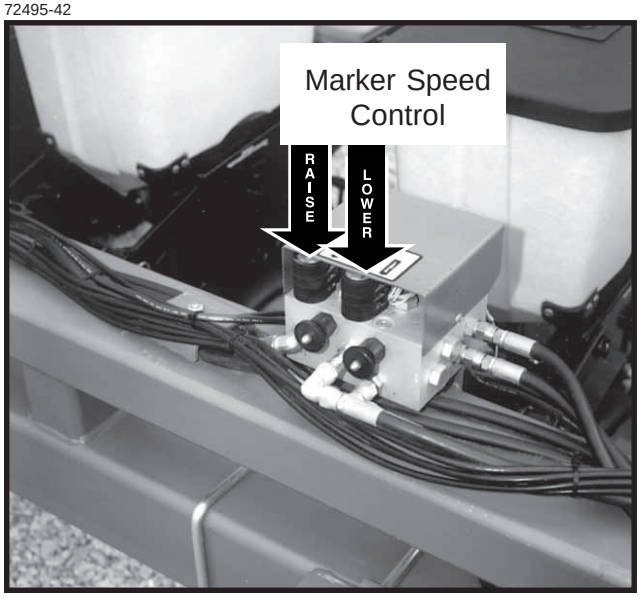


NOTE: Install pin so handle of pin is away from automatic safety lock.

MARKER SPEED ADJUSTMENT

The marker hydraulic system is equipped with two flow control valves. One flow control valve controls the lowering speed of both markers and one controls the raising speed of both markers. To adjust marker speed, loosen the jam nuts and turn the controls clockwise or IN to slow the travel speed and counterclockwise or OUT to increase the travel speed. The flow controls determine the amount of oil flow restriction through the valves, therefore determining travel speed of the markers.

72495-42



DANGER: The flow controls should be properly adjusted before the marker assembly is first put into use. Excessive travel speed of the markers can be dangerous and/or damage the marker assembly.

NOTE: When oil is cold, hydraulics operate slowly. Make sure all adjustments are made with warm oil.

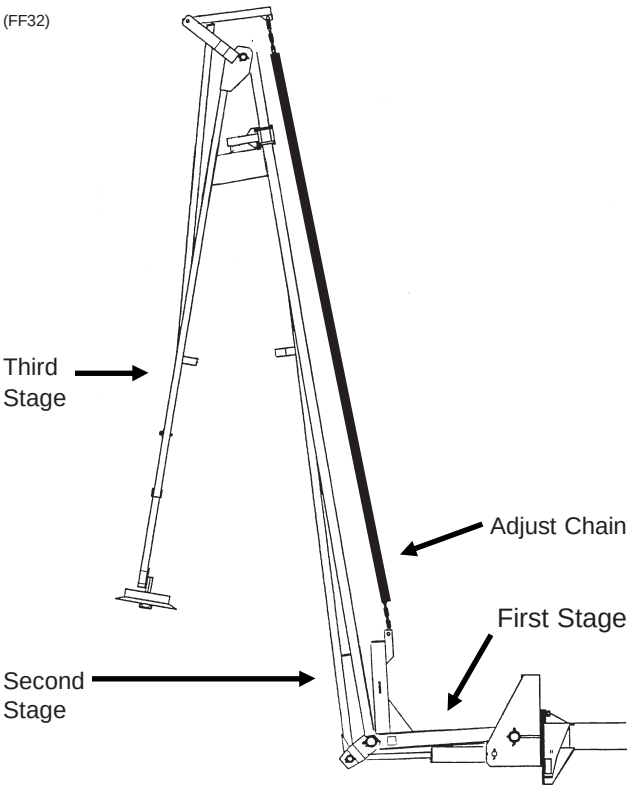
NOTE: On a tractor where the oil flow can not be controlled, the rate of flow of oil from the tractor may be greater than the rate at which the marker cylinder can accept it. The tractor hydraulic control lever will have to be held until the cylinder reaches the end of its stroke. This occurs most often on tractors with an open center hydraulic system.

On tractors equipped with flow control valves, marker speed adjustment should be made with the tractor flow controls in maximum position. After marker speed is set, the tractor flow controls can be adjusted to allow the SCV valve to stay in detent during the marker raise or lower cycle.

MARKER CHAIN ADJUSTMENT (24 Row 30" And 36 Row 20" Machines Only)

Chain adjustment is critical. Adjust chain with the second stage of the marker in the vertical position and the first stage in the horizontal position. The chain must be adjusted so the third stage of the marker is pulled out as soon as the second stage begins outward travel. Chain will stretch with usage and require additional adjustment. It may be necessary to twist the chain for a finer adjustment.

(FF32)



The marker chain is PROPERLY ADJUSTED, if the marker blade pushes approximately 12" or less of dirt as the marker completes the fold into field operating position. The chain should have some slack when the marker is in the field operating position. The marker chain is TOO LOOSE and should be adjusted, if the marker blade pushes more than 12" of dirt as it completes the fold into the field operating position. The marker chain is TOO TIGHT if it will not allow the marker blade to follow the contour of the ground and the chain is tight when the marker is in the field operating postion.

NOTE: Operate three-fold markers with the tractor's hydraulic valve in float position.

WARNING: BE SAFE! Always shut off tractor prior to adjustment.

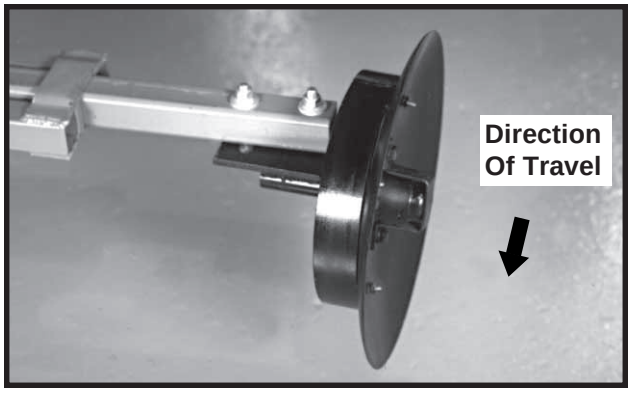
MARKER ADJUSTMENT

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

Number Of Rows	x	Row Spacing (Inches)	=	Dimension Between Planter Center Line And Marker Blade

24 Rows x 30" Spacing = 720" Marker Dimension

60569-53



The marker blade is installed so the concave side of the blade is outward to throw dirt away from the grease seals. The spindle bracket is slotted so the hub and blade can be angled to throw more or less dirt. To adjust the hub and spindle, loosen the $^1/_2$" hardware and move the bracket as required. Tighten bolts to the specified torque.

IMPORTANT: A marker blade assembly that is set at a sharper angle than necessary will add unnecessary stress to the complete marker assembly and shorten the life of bearings and blades. Set the blade angle only as needed to leave a clear mark.

A field test is recommended to ensure the markers are properly adjusted. After the field test is made, make any minor adjustments as necessary.

A notched marker blade is available from KINZE® Repair Parts for use in severe no till conditions.

MARKER SAFETY LOCKUP

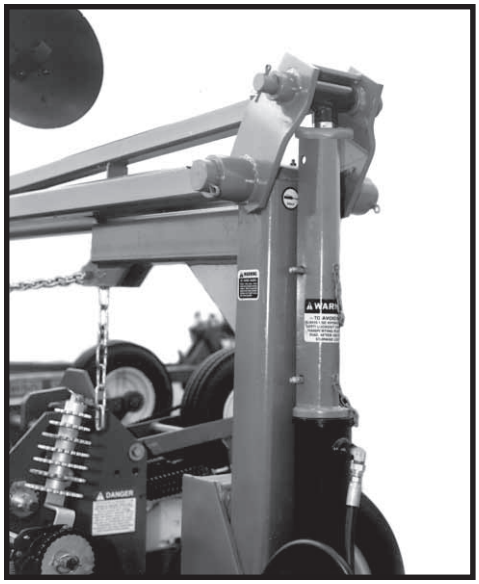
Install marker safety lockups over marker cylinder rods when transporting the planter or working around the planter. When lockups are not in use, store in the storage position provided as shown below.

DANGER: To avoid serious injury, keep others away when raising or lowering markers.

72495-10a

Lockup stored for marker operation.

72495-47a



Marker locked up for transport or working around the machine.

HITCH PARALLEL LINK LOCK PIN

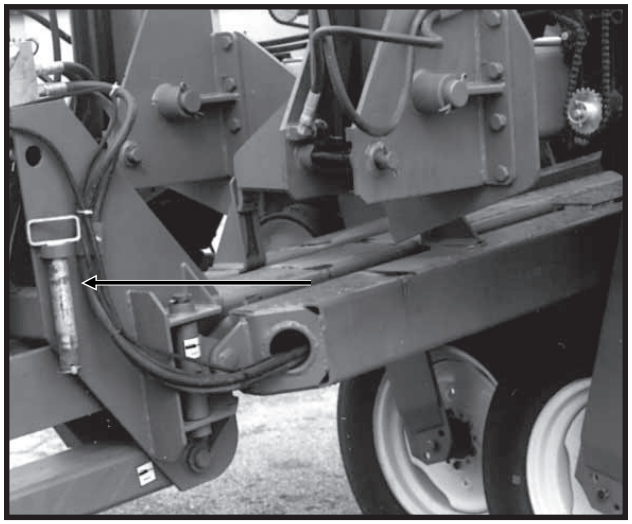
A parallel link lock pin is provided to lock the hitch parallel linkage in raised (transport) position.

NOTE: The parallel link pin must always be used when the planter is being transported or stored in the transport position.

79319-4a

Hitch Parallel Linkage Pin In Transport Position

73430-6b



Hitch Parallel Linkage Pin In Field Position

WARNING: There is potential uplift present on the planter hitch during the folding/unfolding. DO NOT fold or unfold planter without the planter attached to a tractor. DO NOT unhook the planter from the tractor unless it is fully folded for transport or fully unfolded and the planting units are lowered to the ground.

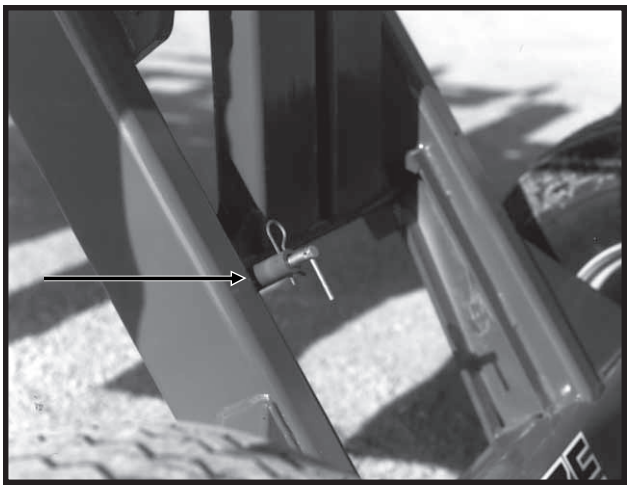
MANUAL SAFETY LOCKUP PIN

The lift system is provided with an automatic safety lock to carry the weight of the machine while it is in the transport position.

A manual safety lockup pin is provided to prevent accidental release of the automatic safety lock. The pin should be positioned as shown below when the machine is in the transport position or is being serviced in the raised position.

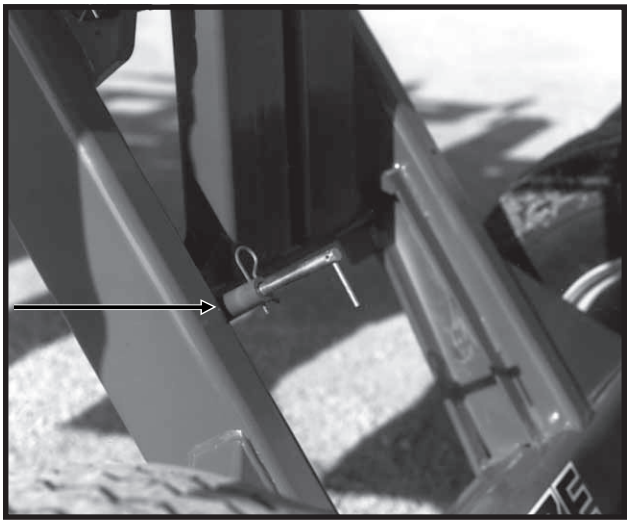
DANGER: Never work under the planter while in raised position without installing all safety lockups.

79319-8



Manual Safety Lockup Pin In Locked Transport Position

79319-5



Manual Safety Lockup Pin In Released Field Operation Position

ELECTRONIC SEED MONITOR SYSTEM

The electronic seed monitor system consists of a console, which is mounted on the tractor; seed tubes with sensors, one of which is installed in each planter row unit; and a planter harness (harness, Y-connector and/or extension cable where applicable), which connects the individual seed tube sensors to the console.

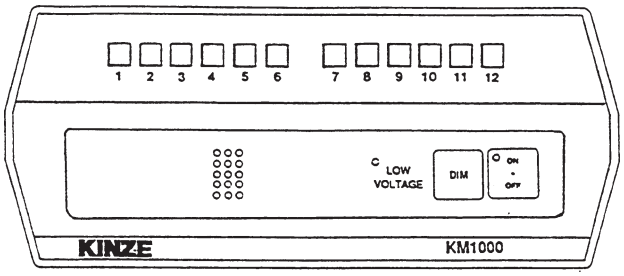
The monitor system is powered by the tractor battery (requires 12 volts DC). The console receives information from each of the sensors and translates this information for the operator, to let him know whether or not all rows are planting.

Located on the bottom of the monitor console is the sound alarm which is equipped with an adjustable sound baffle.

NOTE: The 36 Row 20" size is equipped with two consoles and a single radar distance sensor. Each half of the planter has its own monitor system.

KM1000 MONITOR (16 Row Only)

(PLTR1)



STEP 1 **Turn the console ON by pressing the ON/OFF switch.**

Each time the console is powered up it performs a sensor check and self-check. All row indicator lamps are turned on, the alarm sounds momentarily and then the console enters the operate mode. If a row indicator lamp does not come on when the console is powered up, it indicates that a problem exists with either the sensor, planter harness or a burned out row indicator lamp. See "Troubleshooting" in the Maintenance Section of this manual.

STEP 2 **Begin planting and observe the row indicator lamps.**

All indicator lamps should be flashing at approximately the same rate. If one of the row lamps is flashing at a slower rate than the others it would indicate that row is planting at a slower rate and it should be checked for proper seed population. The monitor continuously checks for seed flow while planting, as indicated by the flashing row indicator lamps on the console. If any planter unit seed sensor is not detecting seeds, the alarm will sound continuously and the row indicator lamp corresponding to the planter row unit will stop flashing. When this happens, stop planting and check to see what is wrong with the row unit.

STEP 3 **Lift the planter at the end of the row.**

When the seed flow stops in all planter units, the alarm will sound and all row indicator lamps will stop flashing. After approximately 2-4 seconds the alarm will stop sounding.

The intensity of the Row Indicator Lamps can be controlled by pressing and holding the switch labeled DIM. To set the intensity, press and hold the DIM switch until the lamps are at the desired intensity and then release the switch. Holding the DIM switch will cause the intensity to decrease to its lowest level and then increase to its maximum level. This cycle will continue as long as the switch is depressed. When the console is turned OFF and then ON the row lamp intensity will return to maximum.

If you are only using a portion of the number of rows on your planter, the alarm can be silenced by disconnecting the seed sensors of the unused rows (Disconnect Interplant® rows at "Y" harness.) and turning the monitor OFF then back ON. The monitor will then ignore these unused rows and monitor the other rows normally.

When disabling planter rows, the monitor may look at the system as a different planter setup. Example: If you have an 8 row planter and you disable the right four rows (for planting point rows, etc.) by unplugging the seed sensors and turning the monitor OFF and back to ON, the monitor will look at it as a 4 row planter and shift the row indicator lamps to the center four positions. Therefore, planter row 1 will be indicated on the monitor as row 3, planter row 2 as row 4, etc. Row lamps 1, 2, 7 and 8 will be off.

If you disable the left four rows (planter rows 1, 2, 3 and 4) the monitor will operate normally as an 8 row system. Row indicators 1, 2, 3 and 4 will be off.

10/96

KM1000 Bezel Decal Selection Chart

NO. ROWS	BEZEL DECAL	ROW LAMPS
4	12	1 2 3 4 5 6 7 8 9 10 11 12
6	6	1 2 3 4 5 6
8	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
*8	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
10	12	1 2 3 4 5 6 7 8 9 10 11 12
12	12	1 2 3 4 5 6 7 8 9 10 11 12
*12	12	1 2 3 4 5 6 7 8 9 10 11 12
16	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
*4 & 3 Solid Interplant®	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
*6 & 3 Skip Row Interplant®	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
*6 & 5 Solid Interplant®	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
*8 & 5 Skip Row Interplant®	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
*8 & 7 Solid Interplant®	16	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

☐ Row lamp indicates planter row in use.

▩ Row lamp not used.

* With Y-connector.

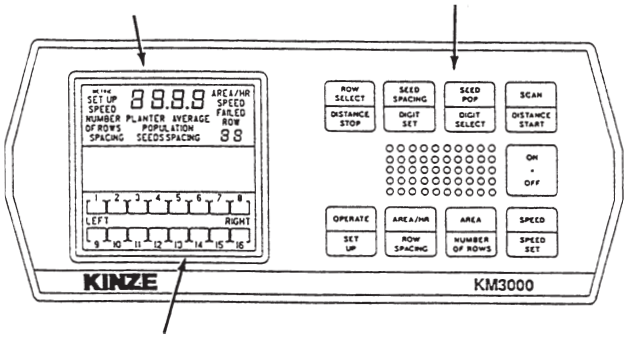
NOTE: Interplant® diagrams assume that first Interplant® row is connected to row 1 of harness and Interplant® harness is connected to R.H. half of Y-connector.

MACHINE OPERATION

KM3000 MONITOR

D-0841-0001(PLTR2)

Upper Display **Pressure Sensitive Switches**



Lower Display

The KM3000 console may be equipped with one of two optional distance sensors, a radar sensor which is mounted on the tractor or a pulse wheel (magnetic distance sensor) which is installed on the planter drive.

The operator's controls on the front panel of the console consist of nine pressure sensitive switches. Eight of the nine switches are dual function switches, performing one function during the OPERATE MODE and another function during the SET UP MODE. All switch functions are color coded to define between the OPERATE and SET UP modes. The upper half of each dual function switch is olive brown in color and contains the Operate functions. The lower half of each dual function switch is tan in color and contains the Set Up functions.

NOTE: The KM3000 is shipped from the factory setup for use with American measures. To convert the console to Metric measures, cut the wire loop (red wire) adjacent to the signal cable on the back of the console and tape the ends of the cut wire to prevent the two ends making contact with each other or the vehicle.

STEP 1 **Turn console ON by pressing the ON-OFF switch.** Note that the upper display shows random segments for a short time then sequences through all entered SET UP constants (SPEED, NUMBER OF ROWS and ROW SPACING). If the constants are not valid the alarm will sound for approximately four seconds and the monitor will enter the SET UP mode. See “Entering Constants”. If all constants are valid (as previously entered) the alarm will sound momentarily and the monitor will enter the OPERATE mode.

NOTE: Monitor will not go from “SET UP” to “OPERATE” unless the planter harness is connected.

STEP 2 **Select the desired OPERATE function to be displayed by pressing the labeled switch.**

In the **ROW SELECT** mode a specific row can be selected and continuously monitored.

SEED SPACING displays the seed spacing of each planter row in inches or centimeters.

SEED POP displays the seed population of each planter row in thousands of seeds per acre or hectare.

In the **SCAN** mode the display will sequence through all planter rows. The display message will be SEED POP or SEED SPACING as previously selected. With SEED POP selected, after the population for the highest planter row number is displayed, the average population for the total planter is shown. With SEED SPACING selected, after the seed spacing for the highest planter row number is displayed, the average seed spacing for the total planter is shown.

AREA/HR displays the predicted area in acres or hectares that will be covered in the next hour if the same planting rate is maintained. This prediction is based on the last 10 seconds of operation.

AREA displays the actual area covered in acres or hectares since the last reset. To reset area to .0, press and hold the AREA switch for approximately 5 seconds.

SPEED displays current vehicle ground speed in MPH or KmPH.

A row failure will be indicated by the FAILED ROW number being displayed in the lower right hand corner of the upper display, the corresponding segment in the lower display will be blank, and the alarm will sound continuously. Failures of more than one row will be indicated by the FAILED ROW number in the upper display sequencing through all failed rows, the corresponding segments of all failed rows in the lower display will be blank, and the alarm will sound continuously. When you lift your planter at the end of a row or stop in the field and seed flow stops in all planter units, the alarm will sound for approximately four seconds and all row indicator segments (lower display) will stop flashing. The upper display will show the FAILED ROW message and will sequence through all planter row numbers.

In the all row failure mode or immediately following power up, the operate functions (population, seed spacing and area) can be displayed by pressing the touch switch labeled with the desired function. This display condition will remain for one minute after the last time a switch is pressed or until seeds are detected by the seed sensors.

A ground speed failure will be indicated by the SPEED FAILED message being displayed in the upper display. To continue using the monitor system until a replacement ground speed sensor is obtained, disconnect the ground speed sensor cable, enter the SET UP mode and enter your normal planting speed in MPH or KmPH in place of the SPEED SET calibration number. IMPORTANT: The accuracy of the POPULATION, SEED SPACING and AREA readouts will depend on the vehicle ground speed. If you do not drive at the speed entered in SPEED SET memory these functions will not be accurate. AREA will not accumulate in this mode.

IMPORTANT: Under normal use the monitor will accumulate area whenever there is seed flow in at least one seed sensor. In the all rows failed condition, such as when turning around at the end of the field, the area accumulation will stop.

The monitor can be used to count seeds in a selected row by performing the following:

1. Place console in SET UP mode. (Before performing Step 2 make sure you have recorded the SPEED constant. See SPEED in "Entering Constants".)
2. Set the SPEED constant to 0000. This can be done by manually setting each digit to zero using the DIGIT SELECT and DIGIT SET switches or by pressing and holding the SPEED SET switch for approximately 5 seconds.
3. Enter the OPERATE mode by pressing the OPERATE switch.
4. Press and release the ROW SELECT switch until the desired planter row number is displayed in the lower right corner of the upper display. The monitor will now show seed count for the selected row.

To reset the display to zero and continue to monitor the same row unit, press the SCAN switch then the ROW SELECT.

To select another row unit, press the ROW SELECT switch until the desired planter row number is displayed. Each time the ROW SELECT switch is pressed the row number will be incremented one unit and the four digit display will be reset to zero.

IMPORTANT: To return to normal operation, enter the SET UP mode and re-enter the SPEED constant.

The lower visual display contains up to sixteen segments with each one corresponding to a planter row unit. When the monitor is turned on the console senses the number of seed sensors connected to the planter harness and activates a segment for each one. The segment flashes dark each time a seed is detected by the seed sensor. If up to 16 seed sensors are sensed the display will show segments for all sensors all the time. If more than 16 (17-32) seed sensors are sensed, then the display is split and up to 16 sensors are shown for the LEFT and RIGHT side of the planter.

EXAMPLE: If a 24 row planter is being used and the display message LEFT is on, the segments are showing seed flow for planter rows 1 through 12. When the display message RIGHT is on, the segments are showing seed flow for planter rows 13 through 24. When the RIGHT planter half is shown, the segment numbers 1 through 12 will represent planter rows 13 through 24 (segment 1 is planter row 13, segment 2 is row 14, up to segment 12 which is row 24).

ENTERING CONSTANTS (KM3000 Only)

Upon initial power-up or whenever memory is lost the following three constants must be entered before the system will enter the "operate" mode. The following examples are for a 16 row planter with 30" row spacing.

1. ***ROW SPACING*** - *The distance between the rows on your planter.*

   Press the "row spacing" switch. The upper display will show "set up", "row spacing" and "000.0".

   Press the "digit select" switch (a short alarm burst will be heard each time the switch activates) until the second "0" to the left of the decimal point is flashing.

   Press the "digit set" switch until a "3" is shown in this location: 030.0.

   NOTE: Holding the "digit set" switch will cause the digit to increment from 0 through 9.

2. NUMBER OF ROWS *- The number of active rows on your planter. (Example for 16 row planter)*

Press the "number of rows" switch. The upper display will show "set up", "number of rows" and "00".

Press the "digit select" switch until the left hand "0" is flashing.

Press the "digit set" switch until a 1 is shown in this location: 16.

Press the "digit select" switch until the right hand "0" is flashing.

Press the "digit set" switch until a 6 is shown in this location: 16.

3. SPEED *- A number that is the result of the speed calibration procedure. Used with either radar or magnetic distance sensors.*

The speed set calibration number matches the console to the ground speed sensor when calibrated over a specified measured distance. When the calibration procedure is completed and the speed set constant established, the value should be written down and retained in the event battery voltage is removed from the console and the information in memory is lost. In this event, the constant may be re-entered manually using the "digit select" and "digit set" switches. The speed set calibration procedure must be repeated and new speed set number established if the radar or magnetic distance sensor mounting is changed for any reason.

NOTE: When obtaining the following speed set number, actual in-field conditions should be simulated as close as possible.

A. Measure an accurate 400 foot (150 meter) in-field course, preferably on level ground. Mark the "start" and "finish" of the course so it will be plainly visible from the cab as you drive past.

B. With the upper display showing messages "set up" and "speed" and the four digit display showing all zeros (to reset four digit display to zeros, press and hold the "speed set" switch for approximately 5 seconds), drive up to the marked course at normal planting speed.

C. When even with the "start" marker, press the "distance start" switch. Four dashes will appear on the console display.

D. Drive at a steady speed through the entire course. When even with the "finish" marker, press the "distance stop" switch.

E. The speed set number will be displayed. Record this number for future reference.

SPEED SET NUMBER _____

IMPORTANT: This procedure may have to be repeated after performing the Radar Vibration Test. See Radar Vibration Test.

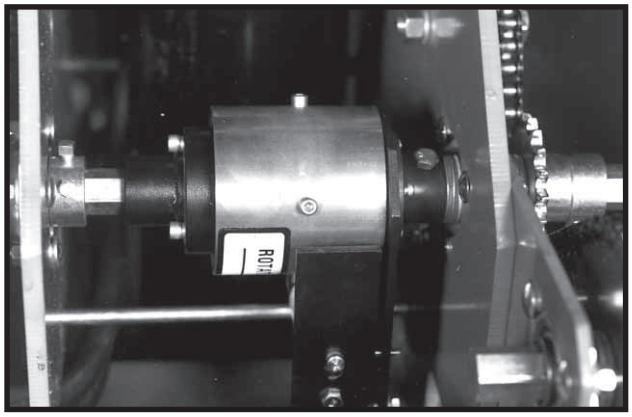
NOTE: The accuracy of the area computations, population, seed spacing and vehicle ground speed readout are dependent upon the accuracy of the operator entered constants. Use care when determining the constants which describe your planter.

RADAR VIBRATION TEST
(KM3000 With Radar Sensor Only)

To check for vibration, start vehicle engine and slowly increase engine RPM (while watching the ground speed readout) to approximately 1800 RPM. If the ground speed readings are above zero, the radar sensor must be mounted in an alternate, more stable location.

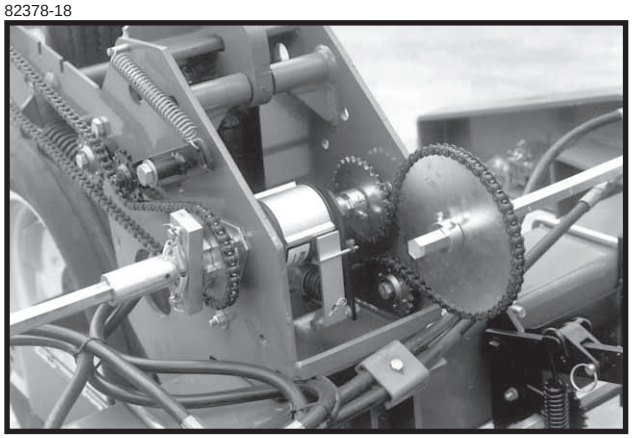
POINT ROW WRAP SPRING CLUTCH

74256-8



Style A

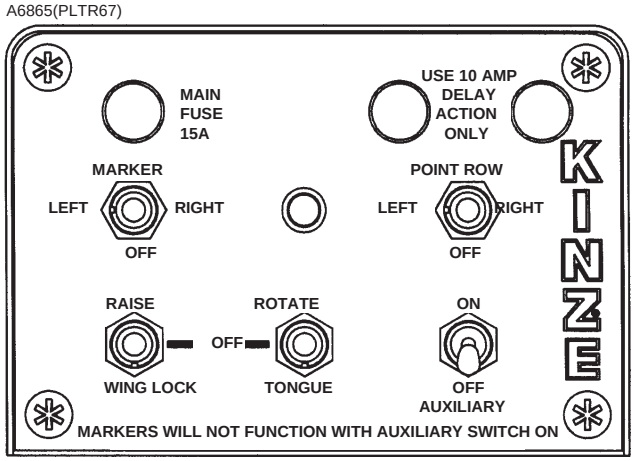
82378-18



Style B

With the use of electric wrap spring clutches which disengage the drive, you have the capability to shut off either half of the planter for finishing up fields or for long point row situations.

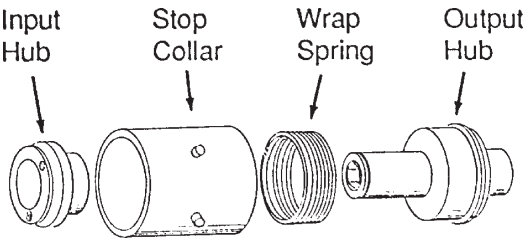
A6865(PLTR67)



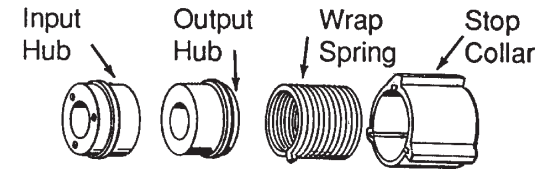
The selector switch for the clutches is located on the planter control console.

NOTE: Switch should be left in OFF position when planter is not in use. If left in ON position, the tractor battery will drain.

PRC018(PLTR64) **STYLE A**



PRC019(PLTR48) **STYLE B**



The wrap spring clutch consists of a wrap spring riding on an input hub and an output hub. During operation the wrap spring is wrapped tightly over the hubs connecting them in a positive engagement. The greater the force of rotation the tighter the grip of the spring on the hubs. Rotation in the opposite direction or stopping the spring from rotating prevents the transmission of torque from the input hub to the output hub stopping the planter drive.

The input end of the spring is bent outward and is referred to as the control tang. The control tang fits into a slot in the stop collar that is located between the input and output hubs and over the wrap spring. If the stop collar is allowed to rotate with the input hub, the clutch is engaged. If the stop collar is stopped from rotating the spring tang connected to it is forced back and the spring opens. This allows the input hub to continue rotating without transmitting torque to the output hub; therefore, stopping the planter drive.

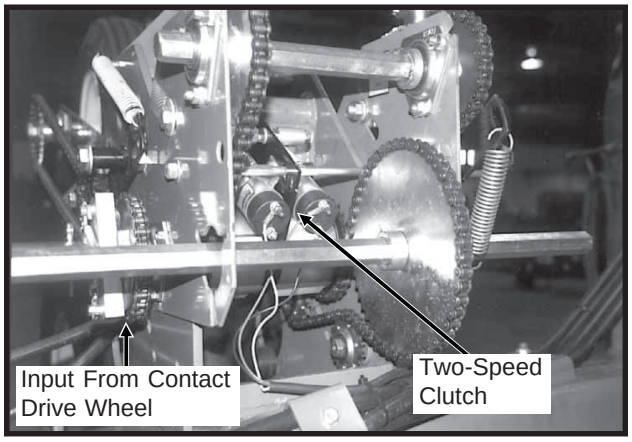
The stop collar is controlled by the use of an electric solenoid and an actuator arm. When the selector switch on the planter control panel is in the OFF position the solenoid coil is NOT ENERGIZED and the actuator arm will not contact the stop on the stop collar allowing it to rotate with the hubs and drive the planter.

When the operational switch is in the “DISENGAGE” (Right or Left) position the solenoid coil IS ENERGIZED and the plunger in the solenoid coil pulls the actuator arm against the stop on the stop collar, disengaging the wrap spring and stopping the planter drive.

TWO-SPEED POINT ROW WRAP SPRING CLUTCH

The Two-Speed Point Row Clutch Package is designed to allow on-the-go population rate adjustment as well as the capability to shut off either half of the planter for finishing up fields or for long point row situations.

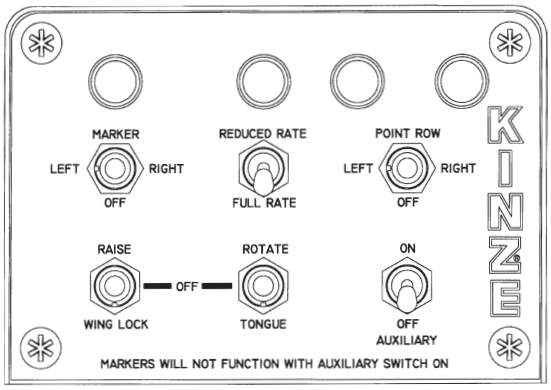
82488-12



The point row clutches are controlled by the point row clutch switch on the control console. Activating the reduced rate switch engages one solenoid on each clutch assembly and reduces the planting rate for the entire planter. The point row switch is used to shut off either the left or right half of the planter.

NOTE: Point row switch should be left in OFF position and rate switch should be left in FULL RATE position when planter is not in use. If left in ON and/or REDUCED RATE positions, the tractor battery will be drained.

A7435(TWL81)



The ratio of population reduction is determined by the sprocket ratio between the drive and driven sprockets on the wheel module extension. A rate reduction decal like the one shown below is located on the wheel module extension.

7100-214

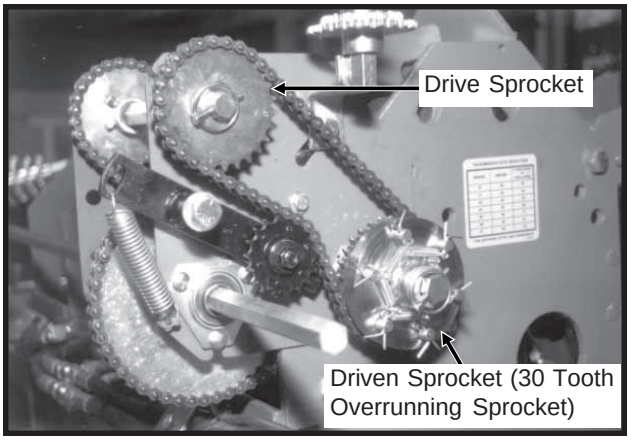
TRANSMISSION RATE REDUCTION

DRIVE	DRIVEN	% REDUCTION IN POPULATION
15	30	50
17	30	43
23*	30	23
24	30	20
25*	30	17
26*	30	13
27	30	10

*** Use sprockets off seed drive transmission**

7100-214

82488-1



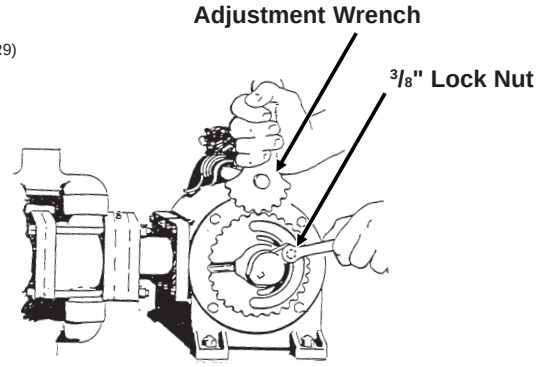
PISTON PUMP PACKAGE

If the machine is equipped with the piston pump option, the rate of liquid fertilizer application is determined by the piston pump settings.

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

To adjust delivery rate, loosen the 3/8" lock nut that secures the arm with the pointer and rotate the scale flange until the pointer is over the desired scale setting. The adjustment wrench will facilitate rotation of the scale flange. Tighten the 3/8" lock nut being careful not to over tighten.

(PLTR9)

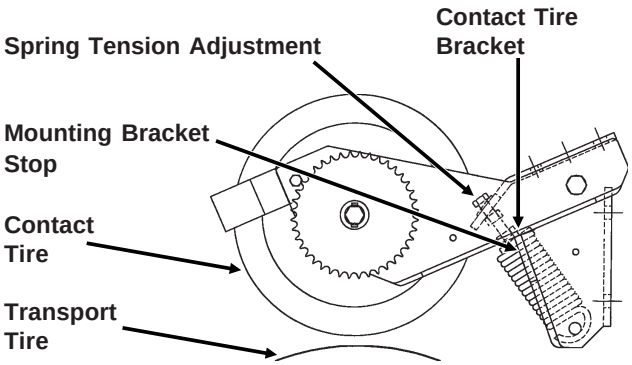


The operator and instruction manual shipped with the pump and flow divider should be kept and stored with this manual for future reference.

NOTE: Periodically check flow to all rows. If one or more lines are plugged, set rate will be delivered to remaining rows.

Spring tension on the piston pump drive should be set so there is no slack in the springs when the contact tire bracket is resting on the mounting bracket stop. Contact tire and transport tire should not be touching.

(FF74)

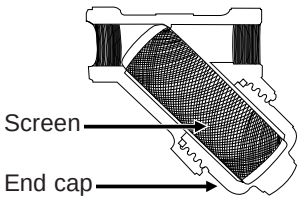


CLEANING

All the hoses are made of sturdy plastic and rubber to resist corrosion. However, the hoses and metering pump should be thoroughly cleaned with water at the end of the planting season or prior to an extended period of non-use. Do not allow fertilizer to crystalize due to cold temperature or evaporation.

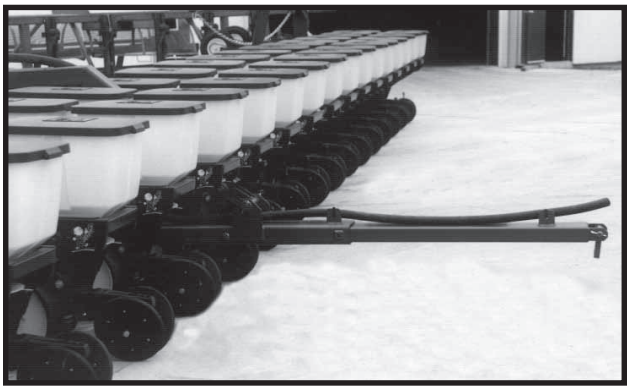
The strainer, located between the piston pump and ball valve, should be taken apart and cleaned daily. Remove the end cap to clean the screen.

(INS220)



REAR TRAILER HITCH (16 Row 30" And 24 Row 30" Machines Only)

CLR1-196



The Rear Trailer Hitch is used to tow a 3 or 4 wheel wagon behind the planter.

Hitch height during field operation and transport is 15". When the planter wings are being folded the hitch height will raise to approximately 42".

NOTE: The rear trailer hitch is designed for use with piston pumps only. Maximum allowable hitch weight is 200 lbs. Gross towing weight should not exceed 6000 lbs. or the equivalent of a loaded 500 gallon tank and running gear.

The length of the rear trailer hitch can be adjusted by loosening the 5/8" set screws at the rear of the outer tube, removing the 1" x 8 1/2" bolt at the center of the hitch and sliding the hitch in or out to one of the 4 sets of adjustment holes. Reinstall and tighten hardware.

NOTCHED SINGLE DISC FERTILIZER OPENER (Row Unit Mounted)

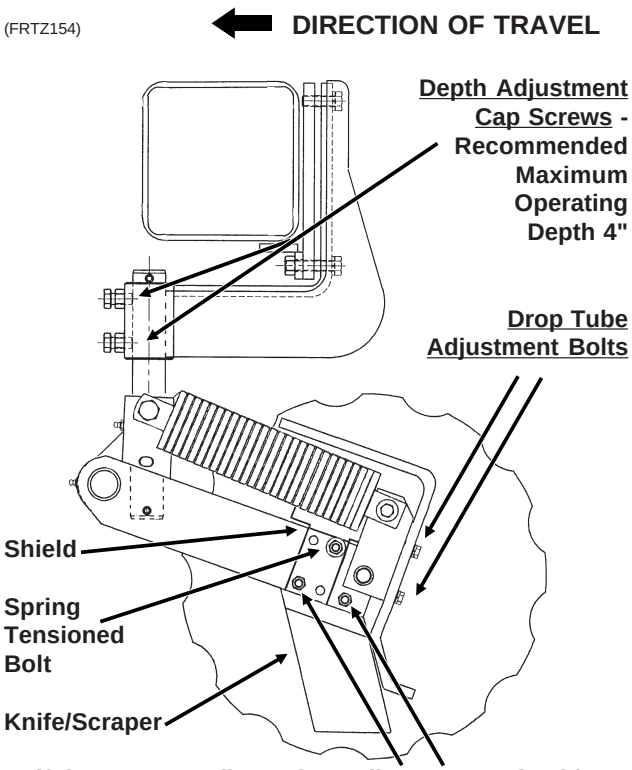
The notched single disc fertilizer opener is designed for use in minimum and no till soil conditions. Placement of fertilizer with the 16 3/4" notched single disc fertilizer opener is recommended at 2 1/2" - 3" from the row. **Never locate the opener to place fertillizer closer than 2".**

Adjust blade depth on each row using the cap screws and jam nuts located on the opener pivot shaft. The blade can be adjusted to allow a maximum 4" blade depth. Be sure the spring pin holes in the pivot post remain parallel with the opener mounting plate. Check fertilizer hose clearance after adjusting opener depth by swiveling the opener left and right. Torque cap screws and jam nuts to 57 ft. lbs.

The opener spring is factory preset at 350 lbs. and requires no additional adjustment.

WARNING: Spring under pressure. DO NOT disassemble.

(FRTZ154)



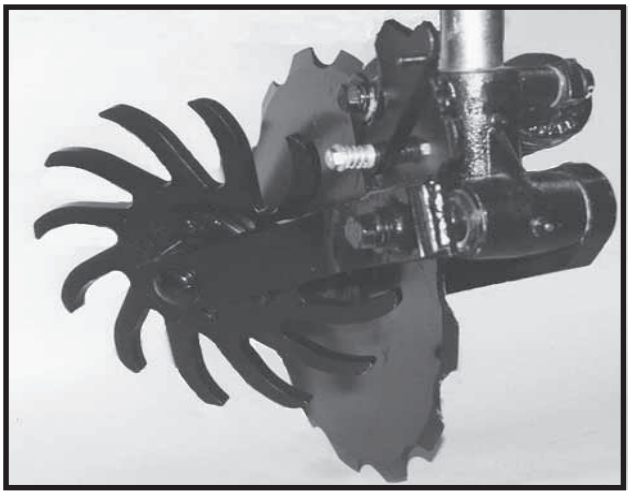
Knife/Scraper Leading Edge Adjustment Bolts (If not equipped with a shield and spring tensioned bolt, the third knife/scraper attachment bolt is also an adjustment bolt.)

Adjust knife/scraper leading edge contact on each row so blade will turn by hand with slight resistance, but will not coast or freewheel. In dry loose soil, knife/scraper adjustment is critical. If adjustment is not maintained, soil or residue may wedge causing the blade to push. If the knife/scraper is adjusted too tight, the blade will not turn causing the blade to push soil and residue. Knife/scraper leading edge adjustment is made using the two lower 3/8" mounting carriage bolts and pivot pad on the knife/scraper. Because of blade runout, rotate blade one full revolution after adjustment. Readjust knife/scraper-to-blade contact at tight spot as required. **Never strike the knife/scraper with a heavy object or damage may occur.**

Adjust drop tube on each row using the slotted mounting holes in the drop tube. Adjust drop tube so it is protected by the knife/scraper from soil contact and wear. The liquid drop tube should be adjusted as far from the opener blade as possible while keeping it behind the knife/scraper. This adjustment prevents the liquid fertilizer from contacting the opener blade.

NOTCHED SINGLE DISC FERTILIZER OPENER MOUNTED RESIDUE WHEEL

12229721



The notched single disc fertilizer opener mounted residue wheel is designed for applications where row unit mounted residue wheel attachments cannot be installed. The residue wheel is attached to the notched single disc fertilizer opener using 5/8" x 3 1/2" and 1/2" x 1 3/4" hardware.

Depth adjustment is made by lifting the residue wheel and moving the adjustment lever down to increase depth or up to decrease depth in 1" increments. Adjust all rows the same.

MACHINE OPERATION

TRANSPORTING THE PLANTER

WARNING: Always make sure safety/ warning lights, reflectors and SMV emblem are in place and visible prior to transporting the machine on public roads. In this regard, check federal, state/provincial and local regulations.

CAUTION: Avoid transporting planter with hoppers loaded. Be sure the tractor the planter is attached to has an adequate drawbar to carry the weight. See "Specifications" for empty machine hitch weight. Set the drawbar in as close to the tractor as practical.

WARNING: Install all safety lockups and safety lock pins.

FIELD TEST

With any change of field and/or planting conditions, seed size or planter adjustment, we recommend a field test be made to ensure proper seed placement and operation of row units. See "Rate Charts", "Checking Seed Population", and "Checking Granular Chemical Application Rate" at end of this section.

- Check the planter for fore to aft and lateral level operation. See "Leveling The Planter".
- Check all row units to be certain they are running level. When planting, the row unit parallel arms should be approximately parallel to the ground.
- Check row markers for proper operation and adjustment. See "Marker Adjustment" and "Marker Speed Adjustment".
- Check for proper application rates and placement of granular chemicals on all rows. See "Checking Granular Chemical Application Rate".
- Check for desired depth placement and seed population on all rows. See "Checking Seed Population".
- Check for proper application rates of fertilizer on all rows. See proper "Fertilizer Application Rate Chart".

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

- Hoses and fittings
- Bolts and nuts
- Cotter pins and spring pins
- Drive chain alignment

PLANTING SPEED

Planters are designed to operate within a speed range of 2 to 8 MPH (See "Rate Charts"). Variations in ground speed will produce variations in rates. Finger pickup seed meter populations will tend to be disproportionately higher at high ground speeds.

NOTE: Due to a multitude of variables, seed spacing can be adversely affected at speeds above 5.5 MPH.

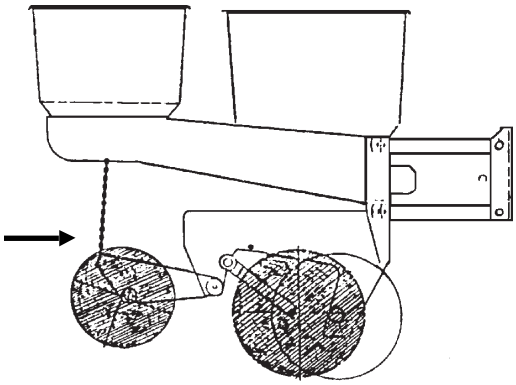
METRIC CONVERSION TABLE

Multiply	By	To Get
Inches (in.)	x 2.54	= centimeters (cm)
Inches (in.)	x 25.4	= millimeters (mm)
Feet (ft.)	x 30.48	= centimeters (cm)
Acres	x 0.405	= hectares (ha)
Miles per hour (mph)	x 1.609	= kilometers per hour (kmph)
Pounds (lbs.)	x 0.453	= kilograms (kg)
Bushels (bu.)	x 35.238	= liters (l)
Gallons (gal.)	x 3.785	= liters (l)
Pounds per square inch (psi)	x 6.894	= kilopascals (kPa) (100 kPa = 1 bar)
Inch pounds (in. lbs.)	x 0.113	= newtons-meters (N•m)
Foot pounds (ft. lbs.)	x 1.356	= newtons-meters (N•m)
Centimeters (cm)	x .394	= inches (in.)
Millimeters (mm)	x .0394	= inches (in.)
Centimeters (cm)	x .0328	= feet (ft.)
Hectares (ha)	x 2.469	= acres
Kilometers per hour (kmph)	x 0.621	= miles per hour (mph)
Kilograms (kg)	x 2.208	= pounds (lbs.)
Liters (l)	x 0.028	= bushels (bu.)
Liters (l)	x 0.264	= gallons (gal.)
Kilopascals (kPa) (100 kPa = 1 bar)	x 0.145	= pounds per square inch (psi)
Newtons-meters (N•m)	x 8.85	= inch pounds (in. lbs.)
Newtons-meters (N•m)	x 0.738	= foot pounds (ft. lbs.)

CHECKING SEED POPULATION

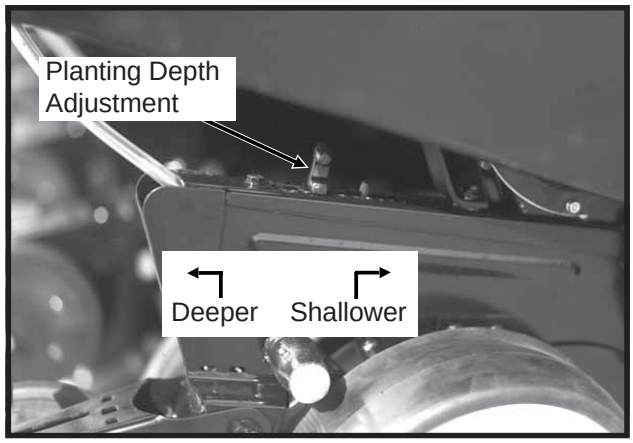
1. Tie up one or more sets of closing wheels by running a light chain or rubber tarp strap between the hopper support panel and closing wheels. It may be necessary to decrease closing wheel arm spring tension.

L0069(PLTR10)



2. Plant a short distance and check to see if seed is visible in the seed trench. Adjust planting depth to a shallower setting if seed is not visible and recheck.

72359-108



3. Measure $^{1}/_{1000}$ of an acre. See chart for correct distance for row width being planted. For example, if planting 30" rows $^{1}/_{1000}$ of an acre would be 17' 5".

LENGTH OF ROW IN FEET AND INCHES		
Fraction Of Acre	Row Width	
	20"	30"
$^{1}/_{1000}$	26' 2"	17' 5"

NOTE: When planting with closing wheels raised and planting depth set shallow, seeds may bounce or roll affecting seed spacing accuracy.

4. Count seeds in measured distance.

5. Multiply the number of seeds placed in the $^{1}/_{1000}$ of an acre by 1000. This will give you total population.

EXAMPLE: With 30" row spacing 17' 5" equals $^{1}/_{1000}$ acre.

26 Seeds Counted	x	1000	=	26,000 Seeds Per Acre

Seed count can be affected by drive ratio between drive wheel and seed meter, tire pressure and/or seed meter malfunction.

If seed check shows the average distance between seeds in inches is significantly different than the seed rate chart indicates, first check drive ratio between drive wheel and seed meter. Check drive wheel air pressure, check for incorrect sprocket(s) in drive line and check drive and driven sprockets on transmission for proper selection.

Second, check for seed meter malfunction. For example, if spacing between kernels of corn at the transmission setting being used is 8" and a gap of 16" is observed, a finger has lost its seed and not functioned properly. If two seeds are found within a short distance of each other, the finger has metered two seeds instead of one.

See “Finger Pickup Seed Meter Troubleshooting” and/or “Brush-Type Seed Meter Troubleshooting” in the Maintenance Section of this manual.

Determining Pounds Per Acre (Brush-Type Seed Meter)

To determine pounds per acre:

Seeds Per Acre On Chart	÷	Seeds Per Pound From Seed Tag On Bag	=	Pounds Per Acre

To determine bushels per acre:

Pounds Per Acre	÷	Unit Weight Of Seed	=	Bushels Per Acre

The unit weight of:

1 Bushel Soybeans = 60 Pounds
1 Bushel Milo = 56 Pounds
1 Bushel Cotton = 32 Pounds

If seeds per pound information is not available the following is an average:

2,600 seeds per pound for medium size soybeans
15,000 seeds per pound for medium size milo
4,500 seeds per pound for medium size cotton

If seed check shows planting rate is significantly different than seed rate chart shows or if a particular meter is not planting accurately, see “Brush-Type Seed Meter Maintenance” and “Brush-Type Seed Meter Troubleshooting”.

CHECKING GRANULAR CHEMICAL APPLICATION RATE

Many things can affect the rate of delivery of granular chemicals such as temperature, humidity, speed, ground conditions, flowability of different material or any obstruction in the meter.

A field check is important to determine correct application rates.

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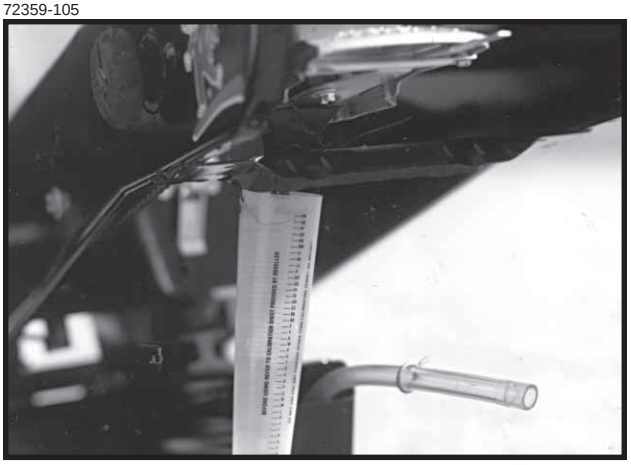

To check, fill insecticide and/or herbicide hoppers. Attach a calibrated vial to each granular chemical meter. Lower the planter and proceed as follows:

NOTE: It is not necessary for seed meter clutch to be engaged during test. Disengage clutch to avoid dropping seed.

Drive 1320 feet at planting speed. Weigh the chemical in ounces that was caught in one vial. Multiply that amount by the factor shown to determine pounds per acre.

LBS. PER ACRE FACTOR FOR GIVEN ROW WIDTH	
Row Width	Factor
20"	1.25
30"	0.83

EXAMPLE: You are planting 30" rows. You have planted for 1320 feet at the desired planting speed. You caught 12.0 ounces of chemical in one vial. 12.0 ounces times 0.83 equals 9.96 pounds per acre.

NOTE: It is important to check calibration of all rows.

Metering Gate

Use the metering gate setting for distributing insecticide or herbicide as a starting point. The charts are based on a 5 miles per hour planting speed. For speeds faster than 5 miles per hour a higher gate setting should be used. For speeds slower than 5 miles per hour a lower gate setting should be used.

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

GENERAL PLANTING RATE INFORMATION

These planting rate charts are applicable to KINZE® Model 2700 Front Folding Planters. See “Tire Pressure” for recommended tire pressures.

IMPORTANT: The sprocket combinations listed in these charts are best for average conditions. Changes in sprocket combinations may be required to obtain desired planting population. TO PREVENT PLANTING MISCALCULATIONS, MAKE FIELD CHECKS TO BE SURE YOU ARE PLANTING AT THE DESIRED RATE.

The size and shape of seed may affect the planting rate.

Finger Pickup Corn Meter (Corn, Oil Sunflower)
Larger grades will generally plant more accurately at the high end of the ground speed range than smaller grades. Higher than optimum speeds may result in population rate increase or higher incidence of doubles, particularly with small seed. Medium round corn seed is most desirable for planting accuracy at optimum speed. Only No. 3 and No. 4 oil sunflower seed are recommended for planting accuracy at optimum speed.

NOTE: Seed additives, added to the seed in the hopper, may adversely affect performance of the finger pickup seed meter and accelerate wear. See “Finger Pickup Seed Meter” in the Row Unit Operation section.

Brush-Type Seed Meter (Soybean, Milo/Sorghum, Acid-Delinted Cotton)
Rate charts are given in seeds per acre as well as seed spacing in inches rounded to the nearest tenth of an inch. Because of the large range in seed size, pounds per acre is not a suggested method of selecting transmission settings. When using smaller size seeds it may appear the pounds per acre is below what was expected and vice versa on large seed. To determine pounds per acre, use the formula given in “Determining Pounds Per Acre (Brush-Type Seed Meter)” in the “Checking Seed Population” section of this manual.

NOTE: Due to a multitude of variables, seed spacing can be adversely affected at speeds above 5.5 MPH.

NOTE: Use of the Half Rate (2 To 1) Drive Reduction Package will reduce the planter transmission speed. The seeding rate will be approximately 50% of the chart reading when using the Half Rate (2 to 1) Drive Reduction Package. Planting speed can affect actual seeding rate. Make a field check and adjust setting in the transmission as needed to obtain the desired seed drop.

EXAMPLE: 30" row machine using 60 cell seed discs in brush-type seed meters.

80,928 ÷ 2 = 40,464 Population
2.6" Seed Spacing x 2 = 5.2" Seed Spacing

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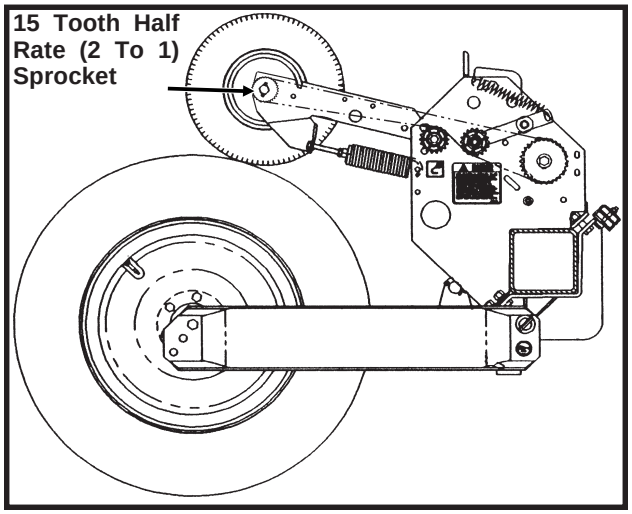

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PLANTING RATES FOR FINGER PICKUP SEED METERS
APPROXIMATE SEEDS/ACRE FOR VAROUS ROW WIDTHS

20" Rows	30" Rows	Transmission Sprockets Drive	Driven	Recommended Speed Range (MPH)	Average Seed Spacing In Inches
24,279	16,186	17	28	4 to 6	12.9
25,178	16,785	17	27	4 to 6	12.5
26,147	17,431	17	26	4 to 6	12.0
27,135	18,090	19	28	4 to 6	11.6
27,192	18,128	17	25	4 to 6	11.5
28,140	18,760	19	27	4 to 6	11.1
28,325	18,883	17	24	4 to 6	11.1
29,222	19,481	19	26	4 to 6	10.7
29,556	19,704	17	23	4 to 6	10.6
30,392	20,261	19	25	4 to 6	10.3
31,656	21,104	19	24	4 to 6	9.9
32,847	21,898	23	28	4 to 6	9.5
33,033	22,022	19	23	4 to 6	9.5
34,064	22,709	23	27	4 to 6	9.2
34,275	22,850	24	28	4 to 6	9.2
35,375	23,583	23	26	4 to 6	8.9
35,546	23,697	24	27	4 to 6	8.8
35,703	23,802	25	28	4 to 6	8.8
35,780	23,853	17	19	4 to 6	8.8
36,789	24,526	23	25	4 to 6	8.5
36,912	24,608	24	26	4 to 6	8.5
37,026	24,684	25	27	4 to 6	8.5
37,133	24,755	26	28	4 to 6	8.4
38,322	25,548	23	24	4 to 6	8.2
38,388	25,592	24	25	4 to 6	8.2
38,450	25,633	25	26	4 to 6	8.2
38,507	25,671	26	27	4 to 6	8.1
38,561	25,707	27	28	4 to 6	8.1
39,989	26,659	23	23	4 to 6	7.8
41,469	27,646	28	27	4 to 6	7.6
41,526	27,684	27	26	4 to 6	7.6
41,655	27,770	25	24	4 to 6	7.5
41,727	27,818	24	23	4 to 6	7.5
43,064	28,709	28	26	4 to 6	7.3
43,187	28,791	27	25	4 to 6	7.3
43,466	28,977	25	23	4 to 6	7.2
44,693	29,795	19	17	4 to 6	7.0
44,787	29,858	28	25	4 to 6	7.0
44,987	29,991	27	24	4 to 6	7.0
45,204	30,136	26	23	4 to 6	7.0
46,653	31,102	28	24	3 to 6	6.7
46,943	31,295	27	23	3 to 6	6.7
48,407	32,271	23	19	3 to 5.5	6.5
48,681	32,454	28	23	3 to 5.5	6.5
50,511	33,674	24	19	3 to 5.5	6.2
52,616	35,077	25	19	3 to 5	6.0
54,102	36,068	23	17	3 to 5	5.8
54,720	36,480	26	19	3 to 5	5.7
56,454	37,636	24	17	3 to 5	5.6
56,825	37,883	27	19	3 to 5	5.5
58,806	39,204	25	17	3 to 4.5	5.3
58,931	39,287	28	19	3 to 4.5	5.3
61,158	40,772	26	17	3 to 4.5	5.1
63,510	42,340	27	17	3 to 4.5	4.9
65,862	43,908	28	17	3 to 4.5	4.8

IMPORTANT: See “General Planting Rate Information” and “Checking Seed Population” pages for additional information. Always check seed population in the field to ensure planting rates are correct.

PLANTING RATES FOR BRUSH-TYPE SEED METERS

APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

Transmission Sprockets		60 Cell Soybean Or High Rate Milo/ Grain Sorghum		Average Seed Spacing In Inches	48 Cell Specialty Soybean Or High Rate Acid-Delinted Cotton		Average Seed Spacing In Inches	Speed Range (MPH)
Drive	Driven	20" Rows	30" Rows		20" Rows	30" Rows		
17	28	121,392	80,928	2.6	97,113	64,742	3.2	2 to 8
17	27	125,889	83,926	2.5	100,712	67,141	3.1	2 to 8
17	26	130,731	87,154	2.4	104,712	69,723	3.0	2 to 8
19	28	135,674	90,449	2.3	108,539	72,359	2.9	2 to 8
19	27	140,699	93,799	2.2	112,559	75,039	2.8	2 to 8
17	24	141,624	94,416	2.2	113,300	75,533	2.8	2 to 8
17	23	147,782	98,521	2.1	118,226	78,817	2.7	2 to 8
19	25	151,955	101,303	2.1	121,563	81,042	2.6	2 to 8
19	24	158,286	105,524	2.0	126,629	84,419	2.5	2 to 8
23	28	164,237	109,491	1.9	131,390	87,593	2.4	2 to 8
19	23	164,168	110,112	1.9	132,135	88,090	2.4	2 to 8
24	28	171,379	114,252	1.8	137,103	91,402	2.3	2 to 8
24	27	177,725	118,483	1.8	142,179	94,786	2.2	2 to 8
17	19	178,895	119,263	1.8	143,115	95,410	2.2	2 to 8
24	26	184,560	123,040	1.7	147,648	98,432	2.1	2 to 8
26	28	185,660	123,773	1.7	148,527	99,018	2.1	2 to 8
24	25	191,943	127,962	1.6	153,555	102,370	2.0	2 to 8
26	27	192,536	128,357	1.6	154,029	102,686	2.0	2 to 8
23	23	199,941	133,294	1.6	159,953	106,635	2.0	2 to 8
27	26	207,630	138,420	1.5	166,104	110,736	1.9	2 to 8
24	23	208,634	139,089	1.5	166,907	111,271	1.9	2 to 8
25	23	217,326	144,884	1.4	173,861	115,907	1.8	2 to 8
19	17	223,463	148,975	1.4	178,770	119,180	1.8	2 to 8
27	24	224,933	149,955	1.4	179,946	119,964	1.7	2 to 8
28	24	233,264	155,509	1.3	186,661	124,407	1.7	2 to 8
23	19	242,033	161,355	1.3	193,626	129,084	1.6	2 to 8
28	23	243,405	162,270	1.3	194,724	129,816	1.6	2 to 8
24	19	252,557	168,371	1.2	202,044	134,696	1.6	2 to 8
25	19	263,079	175,386	1.2	210,464	140,309	1.5	2 to 8
23	17	270,507	180,338	1.2	216,405	144,270	1.5	2 to 8
26	19	273,603	182,402	1.1	218,883	145,922	1.4	2 to 7
27	19	284,126	189,417	1.1	227,301	151,534	1.4	2 to 7
28	19	294,650	196,433	1.1	235,719	157,146	1.3	2 to 7
26	17	305,792	203,861	1.0	244,634	163,089	1.3	2 to 7
27	17	317,553	211,702	0.9	245,043	169,362	1.2	2 to 7
28	17	329,313	219,542	0.9	263,451	175,634	1.2	2 to 7

IMPORTANT: See “General Planting Rate Information” and “Checking Seed Population” pages for additional information.

NOTE: When using the Half Rate (2 To 1) Drive Reduction Package, rates will be approximately 50% of given numbers.

IMPORTANT: Always check seed population in the field to ensure planting rates are correct.

PLANTING RATES FOR BRUSH-TYPE SEED METERS (Continued)

APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

Transmission Sprockets		36 Cell Acid-Delinted Large Cotton		Average Seed Spacing In Inches	30 Cell Milo/Grain Sorghum Or Acid-Delinted Cotton		Average Seed Spacing In Inches	Speed Range (MPH)
Drive	Driven	20" Rows	30" Rows		20" Rows	30" Rows		
17	28	72,836	48,557	4.3	60,696	40,464	5.2	2 to 8
17	27	75,534	50,356	4.2	62,945	41,963	5.0	2 to 8
17	26	78,438	52,292	4.0	65,366	43,577	4.8	2 to 8
19	28	81,404	54,269	3.9	67,838	45,225	4.6	2 to 8
19	27	84,419	56,279	3.7	70,350	46,900	4.5	2 to 8
17	24	84,975	56,650	3.7	70,812	47,208	4.4	2 to 8
17	23	88,670	59,113	3.5	73,892	49,261	4.2	2 to 8
19	25	91,173	60,782	3.4	75,978	50,652	4.1	2 to 8
19	24	94,971	63,314	3.3	79,143	52,762	4.0	2 to 8
23	28	98,543	65,695	3.2	82,119	54,746	3.8	2 to 8
19	23	99,101	66,067	3.2	82,584	55,056	3.8	2 to 8
24	28	102,827	68,551	3.0	85,689	57,126	3.7	2 to 8
24	27	106,635	71,090	2.9	88,863	59,242	3.5	2 to 8
17	19	107,337	71,558	2.9	89,447	59,631	3.5	2 to 8
24	26	110,736	73,824	2.8	92,280	61,520	3.4	2 to 8
26	28	111,396	74,264	2.8	92,829	61,886	3.4	2 to 8
24	25	115,158	76,772	2.7	95,972	63,981	3.3	2 to 8
26	27	115,521	77,014	2.7	96,267	64,178	3.3	2 to 8
23	23	119,964	79,976	2.6	99,971	66,647	3.1	2 to 8
27	26	124,578	83,052	2.5	103,815	69,210	3.0	2 to 8
24	23	125,180	83,453	2.5	104,316	69,544	3.0	2 to 8
25	23	130,395	86,930	2.4	108,663	72,442	2.9	2 to 8
19	17	134,078	89,385	2.3	111,732	74,488	2.8	2 to 8
27	24	134,960	89,973	2.3	112,467	74,978	2.8	2 to 8
28	24	139,958	93,305	2.2	116,633	77,755	2.7	2 to 8
23	19	145,220	96,813	2.2	121,017	80,678	2.6	2 to 8
28	23	146,043	97,362	2.1	121,703	81,135	2.6	2 to 8
24	19	151,535	101,023	2.1	126,278	84,185	2.5	2 to 8
25	19	157,848	105,232	2.0	131,540	87,693	2.4	2 to 8
23	17	162,350	108,233	1.9	135,254	90,169	2.3	2 to 8
26	19	164,162	109,441	1.9	136,802	91,201	2.3	2 to 7
27	19	170,475	113,650	1.8	142,064	94,709	2.2	2 to 7
28	19	176,790	117,860	1.8	147,324	98,216	2.1	2 to 7
26	17	183,476	122,317	1.7	152,895	101,930	2.1	2 to 7
27	17	190,532	127,021	1.6	158,777	105,851	2.0	2 to 7
28	17	197,588	131,725	1.6	164,657	109,771	1.9	2 to 7

IMPORTANT: See "General Planting Rate Information" and "Checking Seed Population" pages for additional information.

NOTE: When using the Half Rate (2 To 1) Drive Reduction Package, rates will be approximately 50% of given numbers.

IMPORTANT: Always check seed population in the field to ensure planting rates are correct.

PLANTING RATES FOR BRUSH-TYPE SEED METERS (Continued)
APPROXIMATE HILLS/ACRE FOR VARIOUS ROW WIDTHS

Due to variations in cotton seed size, meters equipped with the 12 cell acid-delinted hill-drop cotton discs will plant from 3 to 6 seeds per cell. Select proper disc for seed size range to be planted.

To determine planter transmission setting, **determine desired hill spacing and select the transmission ratio closest to the hill spacing in inches on the chart. To decrease population increase spacing. To increase population decrease spacing.**

To determine population per acre, **determine average seeds per hill and hills per acre by doing a field check. Measure $^{1}/_{1000}$ of an acre ($^{1}/_{1000}$ acre = Length of row 17' 5" for 30" row width and 26' 2" for 20" row width). Multiply average seeds per hill by hills per acre. EXAMPLE: 4 seeds per hill x (13 hills x 1000) = 52,000**

Transmission Sprockets		NUMBER OF HILLS PER ACRE 12 Cell Hill-Drop Cotton, Acid-Delinted		Average Hill Spacing In Inches	Speed Range (MPH)
Drive	Drive	20" Rows	30" Rows		
17	28	24,279	16,186	12.9	2 to 8
17	27	25,178	16,785	12.5	2 to 8
17	26	26,147	17,431	12.0	2 to 8
19	28	27,135	18,090	11.6	2 to 8
19	27	28,140	18,760	11.1	2 to 8
17	24	28,325	18,883	11.1	2 to 8
17	23	29,556	19,704	10.6	2 to 8
19	25	30,392	20,261	10.3	2 to 8
19	24	31,658	21,105	9.9	2 to 8
23	28	32,847	21,898	9.5	2 to 8
19	23	33,033	22,022	9.5	2 to 8
24	28	34,275	22,850	9.2	2 to 8
24	27	35,546	23,697	8.8	2 to 8
17	19	35,780	23,853	8.8	2 to 8
24	26	36,912	24,608	8.5	2 to 8
26	28	37,133	24,755	8.4	2 to 8
24	25	38,388	25,592	8.2	2 to 8
26	27	38,507	25,671	8.1	2 to 8
23	23	39,989	26,659	7.8	2 to 8
27	26	41,526	27,684	7.6	2 to 8
24	23	41,727	27,818	7.5	2 to 8
25	23	43,466	28,977	7.2	2 to 8
19	17	44,693	29,795	7.0	2 to 8
27	24	44,987	29,991	7.0	2 to 8
28	24	46,653	31,102	6.7	2 to 8
23	19	48,407	32,271	6.5	2 to 8
28	23	48,681	32,454	6.5	2 to 8
24	19	50,511	33,674	6.2	2 to 8
25	19	52,616	35,077	6.0	2 to 8
23	17	54,102	36,068	5.8	2 to 8
26	19	54,720	36,480	5.7	2 to 7
27	19	56,825	37,883	5.5	2 to 7
28	19	58,931	39,287	5.3	2 to 7
26	17	61,158	40,772	5.1	2 to 7
27	17	63,510	42,340	4.9	2 to 7
28	17	65,862	43,908	4.8	2 to 7

IMPORTANT: See "General Planting Rate Information" and "Checking Seed Population" pages for additional information.

NOTE: When using the Half Rate (2 To 1) Drive Reduction Package, rates will be approximately 50% of given numbers.

IMPORTANT: Always check seed population in the field to ensure planting rates are correct.

DRY INSECTICIDE APPLICATION RATES
APPROXIMATE POUNDS/ACRE AT 5 MPH FOR VARIOUS ROW WIDTHS

Meter Setting	20" Rows	30" Rows
CLAY GRANULES		
10	7.4	4.9
11	8.1	5.4
12	9.2	6.1
13	10.4	6.9
14	11.6	7.7
15	12.8	8.5
16	14.4	9.6
17	16.1	10.7
18	17.1	11.4
19	19.7	13.1
20	21.3	14.2
21	23.3	15.5
22	24.6	16.4
23	25.8	17.2
24	28.2	18.8
25	31.4	20.9
26	34.5	23.0
27	36.2	24.1
28	38.1	25.4
29	41.7	27.8
30	44.4	29.6
SAND GRANULES		
5	4.4	2.9
6	7.4	4.9
7	8.0	5.3
8	9.5	6.3
9	11.7	7.8
10	13.4	8.9
11	15.3	10.2
12	16.8	11.2
13	18.9	12.6
14	21.2	14.1
15	23.3	15.5
16	26.3	17.5
17	29.1	19.4
18	32.7	21.8
19	36.5	24.3
20	38.6	25.7
21	41.4	27.6
22	44.4	29.6
23	48.0	32.0
24	51.6	34.4
25	55.4	36.9

IMPORTANT: The above chart represents average values and should be used only as a starting point. The granular chemical flows through the given meter opening at a nearly uniform rate regardless of roller speed. Your actual rate will vary depending upon the insecticide you are using, your planting speed and your plant population. Planting speed/ground speed has the greatest effect on application rate.

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

DRY HERBICIDE APPLICATION RATES

APPROXIMATE POUNDS/ACRE AT 5 MPH FOR VARIOUS ROW WIDTHS

CLAY GRANULES

Meter Setting	20" Rows	30" Rows
10	7.1	4.7
11	7.8	5.2
12	8.7	5.8
13	9.8	6.5
14	11.0	7.3
15	12.3	8.2
16	13.5	9.0
17	14.9	9.9
18	16.1	10.7
19	17.4	11.6
20	18.9	12.6
21	20.4	13.6
22	21.9	14.6
23	23.6	15.7
24	25.5	17.0
25	27.2	18.1
26	29.1	19.4
27	31.4	20.9
28	33.9	22.6
29	36.5	24.3
30	40.1	26.7

IMPORTANT: The above chart represents average values and should be used only as a starting point. The granular chemical flows through the given meter opening at a nearly uniform rate regardless of roller speed. Your actual rate will vary depending upon the herbicide you are using, your planting speed and your plant population. Planting speed/ground speed has the greatest effect on application rate.

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

LIQUID FERTILIZER PISTON PUMP APPLICATION RATES

GALLONS PER ACRE

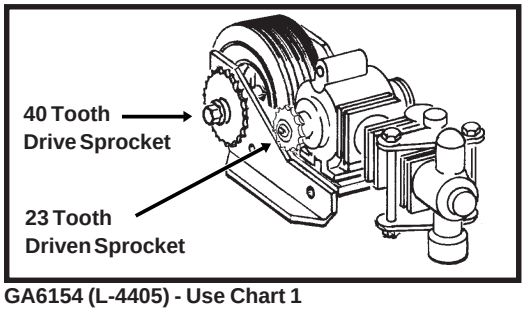
Chart 1
For Planters Equipped With L-4405 Pump With 40 Tooth Drive Sprocket And 23 Tooth Driven Sprocket

Pump Setting	1	2	3	4	5	6	7	8	9	10
16 Row 30"	4.3	8.7	13.0	17.3	21.6	25.9	30.2	34.6	38.9	43.2
24 Row 20"	4.4	8.7	13.1	17.4	21.8	26.1	30.3	34.8	39.2	43.4
24 Row 30"	2.9	5.8	8.7	11.6	14.5	17.4	20.2	23.2	26.1	28.9

Chart 2
For Planters Equipped With LM-2455-R Pump With 40 Tooth Drive Sprocket And 18 Tooth Driven Sprocket

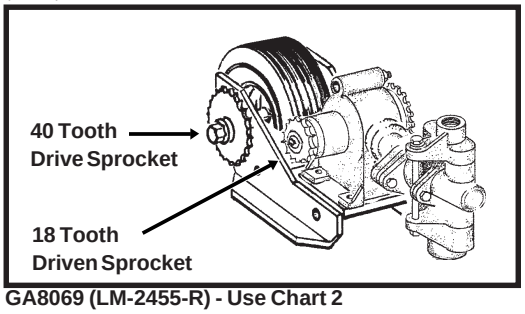
Pump Setting	1	2	3	4	5	6	7	8	9	10
16 Row 30"	3.4	6.9	10.3	13.7	17.1	20.6	24.0	27.5	30.9	34.3
24 Row 20"	3.5	6.9	10.4	13.8	17.3	20.7	24.0	27.6	31.1	34.4
24 Row 30"	2.3	4.6	6.9	9.2	11.5	13.8	16.0	18.4	20.7	22.9

(FF57c)



GA6154 (L-4405) - Use Chart 1

(FF57d)



GA8069 (LM-2455-R) - Use Chart 2

Above charts are for planters equipped with contact drive. See "Tire Pressure" for recommended tire pressures. Charts are based on average wheel slippage and liquid viscosities.

Measure and weigh one gallon of actual fertilizer solution to determine exact application rate. These charts were calculated based on a solution weighing 10 pounds per gallon.

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

NOTE: Flow to all rows should be checked periodically. If one or more lines are plugged, the desired rate will be delivered to the remaining rows keeping total application at the desired rate.

To check the exact number of gallons your fertilizer attachment will actually deliver on a 30" row spacing, proceed as follows:

Remove the hose from one or more of the fertilizer openers and insert it into a collection container which has been secured to the planter frame. Engage the fertilizer attachment and drive forward for 174'. Measure the fluid ounces caught in the container and multiply that amount by 100. Divide that amount by 128. The result will be the gallons of fertilizer delivered per acre when planting in 30" rows. Rinse the collection container and repeat test on other rows if necessary. To convert this delivery rate for other widths, multiply by the following conversion:

20" multiply by 1.50

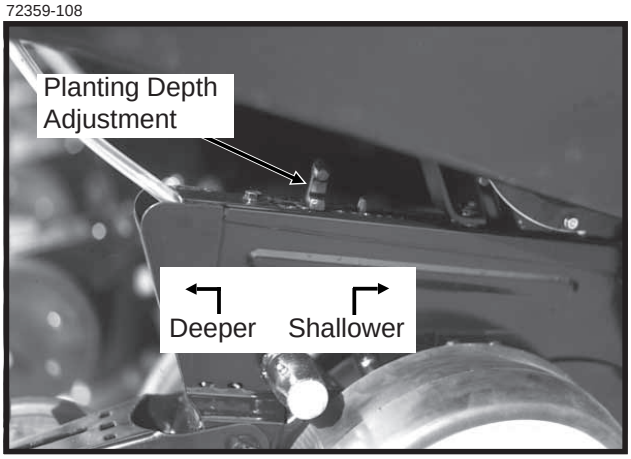
ROW UNIT OPERATION

PLANTING DEPTH

Planting depth is maintained by the row unit gauge wheels. To increase or decrease the planting depth, first raise the planter 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 setting initially. Then lower the planter and check operation and planting depth of all row units. It may be necessary to readjust some rows to obtain uniform operation.

WARNING: Never work under the planter while in raised position without using safety lockups.

72359-108



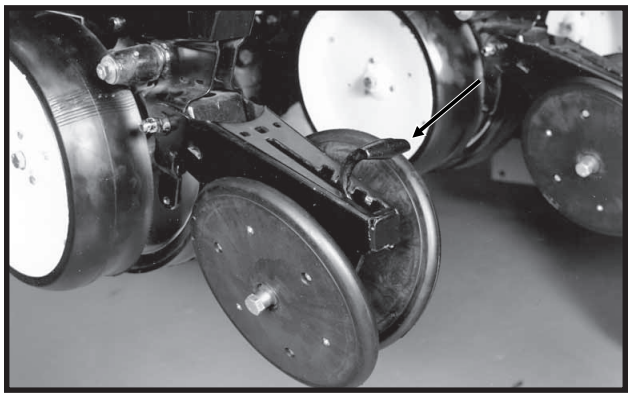
"V" CLOSING WHEEL ADJUSTMENT (Rubber And Cast Iron)

WARNING: Raise planter and install safety lockups before making closing wheel adjustments.

After adjusting planting depth, check the operation of the "V" closing wheels. The "V" closing wheels should have enough down pressure to close the seed trench and ensure good soil to seed contact. To increase spring pressure on the closing wheels, move the 5-position quick adjustable down force lever located on the top of the closing wheel arm to the rear. Moving the lever forward decreases spring tension.

Adjust all row units to a similar setting.

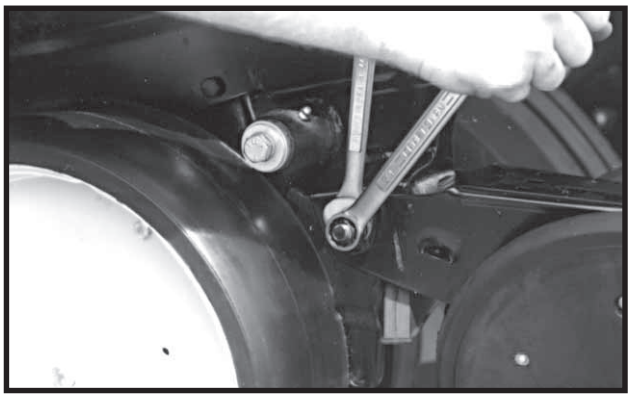
77121-10



Light soil usually requires less down force at average depth (approximately 2") while heavy soil requires increased down force.

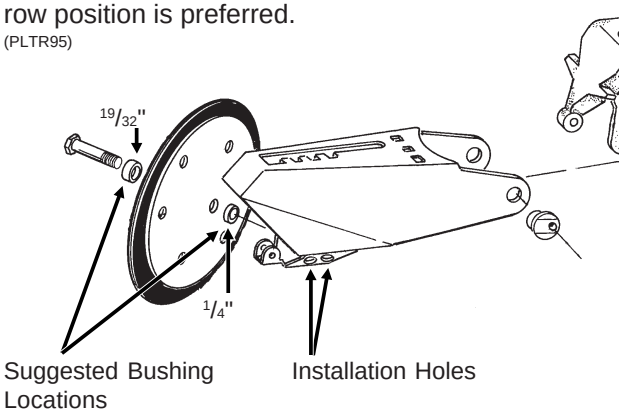
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the "V" closing wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the closing wheel arm to the wheel arm stop. Using another 3/4" wrench turn the eccentric bushings until the **closing wheels are aligned with the seed trench**. Tighten hardware.

72359-129



Bushings used for installation of the closing wheels can be moved from side to side for closing wheel spacing adjustment and the closing wheels can be installed in two locations either "offset" (to improve residue flow) or "directly" opposite. Under normal conditions the narrow position is preferred.

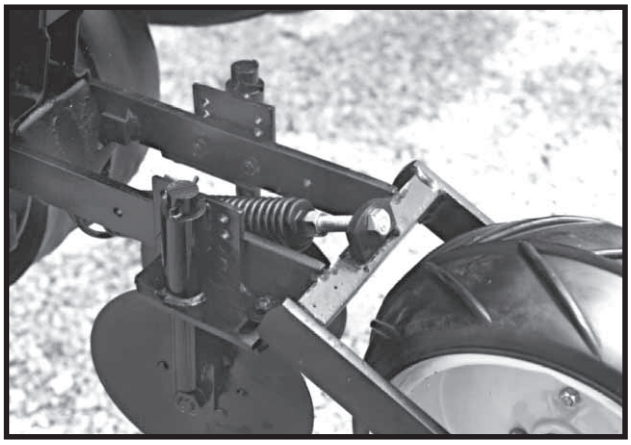
(PLTR95)



COVERING DISCS/SINGLE PRESS WHEEL ADJUSTMENT

WARNING: Raise planter and install safety lockups before making covering discs/ single press wheel adjustments.

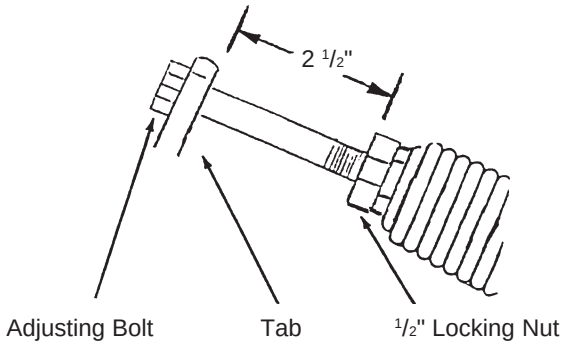
72359-31



After adjusting planting depth, check the operation of the covering discs/single press wheels.

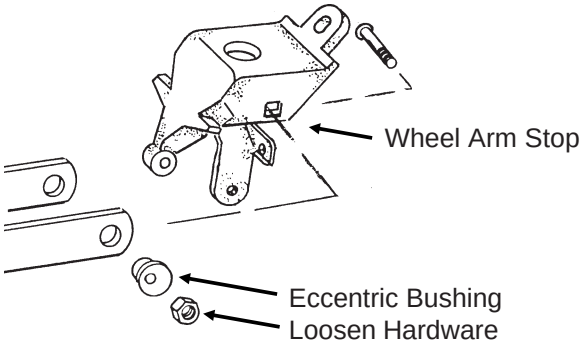
Initial press wheel down force setting should be with 2 1/2" between mounting arm tab and locking nut. To adjust down force spring, loosen 1/2" locking nut and turn adjusting bolt in to increase down force and out to decrease down force. Tighten locking nut against spring plug. Adjust all row units to a similar setting.

RH993(PLTR12)



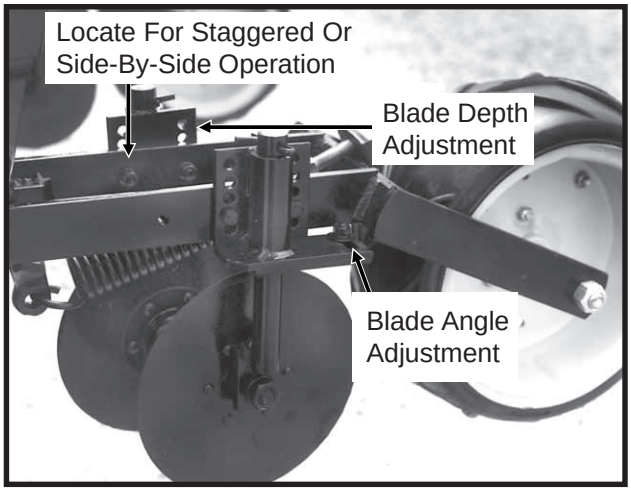
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the covering discs/single press wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another 3/4" wrench, turn the eccentric bushings until the press wheel is aligned with the seed trench.

(PLTR96)



Two sets of holes in the mounting arm allow the covering discs to be located for staggered or side-by-side operation as desired.

72359-35



Five sets of holes in each disc bracket allow for 1/2" incremental blade depth adjustment.

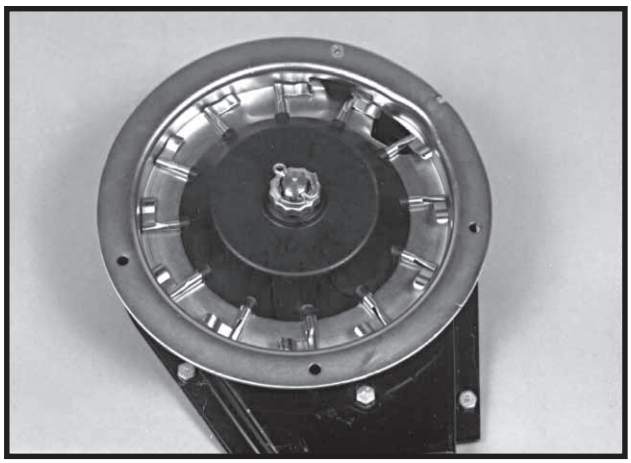
Slotted holes in the disc mount and bracket allow for 0° - 15° blade angle adjustment.

Adjust covering discs on all row units to similar settings.

FINGER PICKUP SEED METER

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

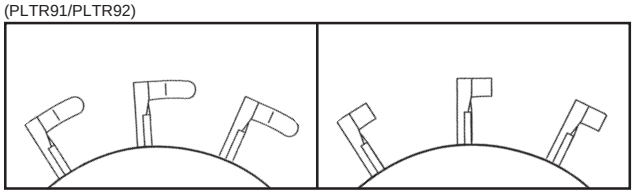
60620-16



Shown With Corn Fingers Installed.

The following seed fingers are available for use with the finger pickup seed meter:

(PLTR91/PLTR92)



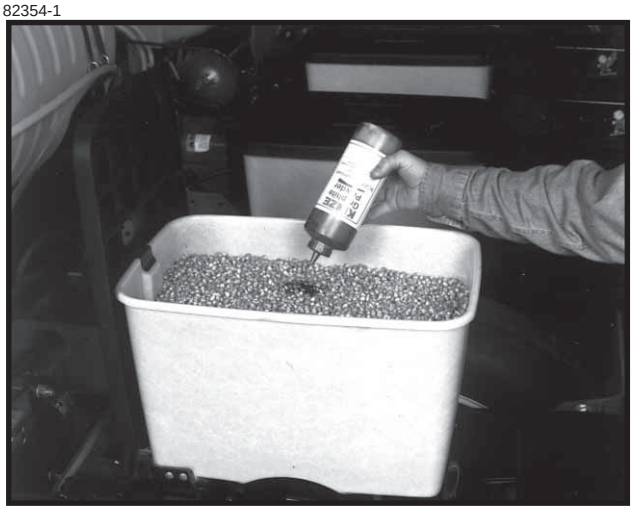
Corn Fingers **Oil Sunflower Fingers**

No. 3 and/or No. 4 size oil sunflower seeds are recommended for use in the finger pickup seed meter equipped with oil sunflower fingers.

IMPORTANT: Always check seed population in the field to ensure planting rates are correct.

IMPORTANT: To ensure efficient operation of the finger pickup seed meter and extend the life of its components, mix one teaspoon of powdered graphite with the seed twice daily. Even distribution of the graphite with the seed is critical with newer seed coatings to provide lubrication for the seed pickup mechanism. Graphite application frequency may need to be increased if using additional seed additives.

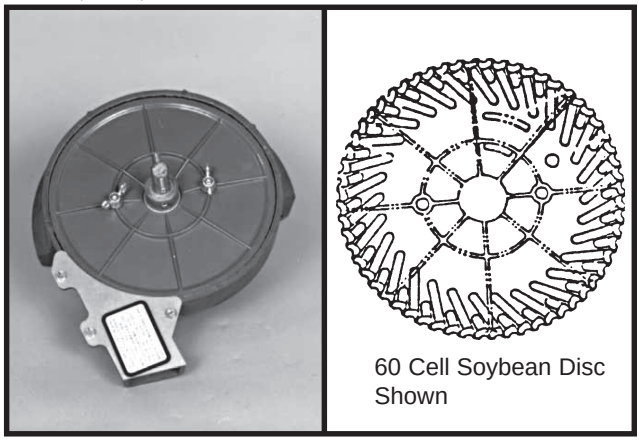
82354-1



See "General Planting Rate Information", "Finger Pickup Seed Meter Troubleshooting" and "Finger Pickup Seed Meter Inspection/Adjustment" for additional information.

BRUSH-TYPE SEED METER

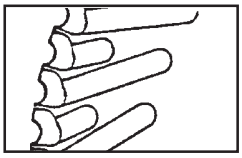
60607-40(PLTR13)



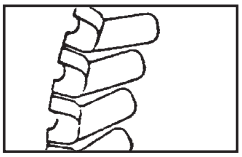
60 Cell Soybean Disc Shown

The following seed discs are available for use with the brush-type seed meter:

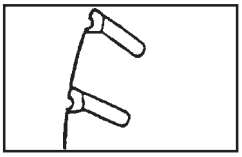
Soybean: *60 cells to meter seed sizes from 2200 to 4000 seeds per pound (Black color-coded).*
(PLTR14)



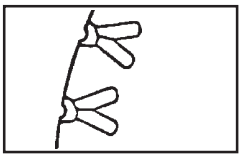
Specialty soybean: *48 cells to meter seed sizes from 1400 to 2200 seeds per pound (Dark blue color-coded).*
(PLTR15)



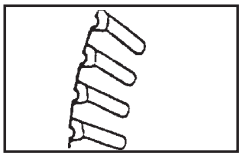
Small milo/grain sorghum: *30 cells to meter seed sizes from 14,000 to 20,000 seeds per pound (Red color-coded).*
(PLTR16)



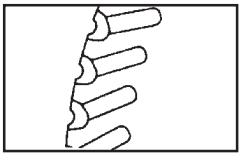
Large milo/grain sorghum: *30 cells to meter seed sizes from 10,000 to 16,000 seeds per pound (Light blue color-coded).*
(PLTR17)



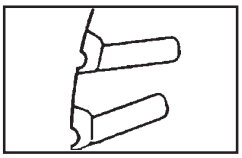
High rate small milo/grain sorghum: *60 cells to meter seed sizes from 12,000 to 18,000 seeds per pound (Red color-coded).*
(PLTR18)



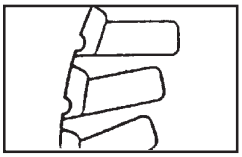
High rate large milo/grain sorghum: *60 cells to meter seed sizes from 10,000 to 14,000 seeds per pound (Yellow color-coded).*
(PLTR19)



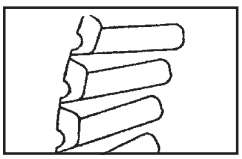
Cotton, acid-delinted: *30 cells to meter seed sizes from 4200 to 5200 seeds per pound (White color-coded).*
(PLTR20)



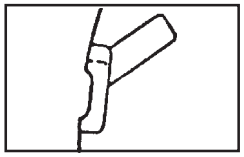
Large cotton, acid-delinted: *36 cells to meter seed sizes from 3800 to 4400 seeds per pound (Tan color-coded).*
(PLTR21)



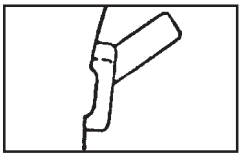
High rate cotton, acid-delinted: *48 cells to meter seed sizes from 4200 to 5200 seeds per pound (Light green color-coded).*
(PLTR22)



Hill-drop cotton, acid-delinted: *12 cells, 3 to 6 seeds/cell, to meter seed sizes from 4000 to 5200 seeds per pound (Brown color-coded).* (PLTR23)



Small hill-drop cotton, acid-delinted: *12 cells, 3 to 6 seeds/cell, to meter seed sizes from 5000 to 6200 seeds per pound (Dark green color-coded).*
(PLTR23)



When installing the seed disc onto the meter hub, turn the disc counterclockwise while tightening the two wing nuts that retain the disc. The seed disc should have only slight resistance when rotated counterclockwise after wing nuts are tight.

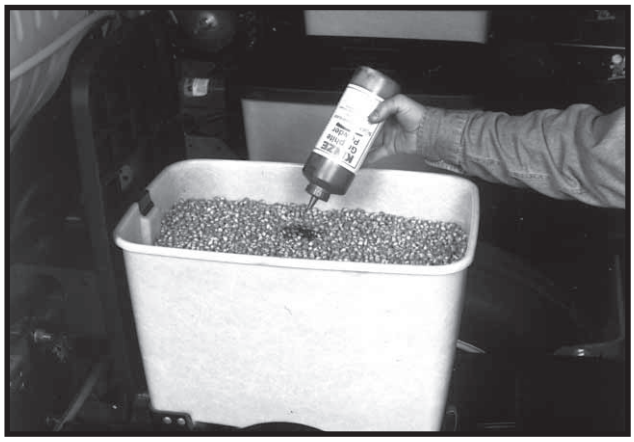
The brush-type seed meter attaches to the seed hopper in the same manner as the finger pickup seed meter. Secure to bottom of seed hopper with two $^{5}/_{16}$" flanged hex nuts. DO NOT OVER TIGHTEN.

Erratic seed spacing may result from misalignment between the drive coupler and seed meter input shaft. Misalignment may cause momentary stoppage of seed disc. Check alignment after initial installation. If adjustment is required, refer to "Meter Drive Adjustment" for correct procedure.

Refer to the planting rate charts in this manual for recommended seed drive transmission sprocket combinations.

IMPORTANT: Use powdered graphite or talc with each hopper fill of seed. Additional graphite or talc may be required to retard buildup of seed treatments on meter components. Frequency of monitor seed tube cleaning may be affected due to use of additional graphite or talc.

82354-1



One tablespoon of **powdered graphite** per hopper fill of seed should be mixed in with the seed each time the hopper is filled. This prolongs the life of the brush-type seed meter components, reduces buildup of seed treatment on components in the meter and improves seed spacing.

Talc seed lubricant may be used in lieu of or in addition to graphite to reduce seed treatment buildup on seed disc and meter components and will improve meter performance. Coat seed disc and brushes with talc before installing meter. Fill hopper 1/2 full of seed, add 1/4 cup of talc and mix thoroughly. Finish filling hopper, add another 1/4 cup of talc and mix thoroughly. Adjust rate of talc use as needed so all seeds are coated, while avoiding a buildup of talc in the bottom of the hopper. Humid conditions and/or small sized seeds with extra seed treatment may require as much as one cup of talc per hopper to prevent seed treatment buildup on seed disc and/or brushes.

CAUTION: Some liquid seed treatments or inoculants may create buildup on the seed disc or brushes. Check frequently for proper population and/or seed delivery when using any liquid seed treatment. All seed treatment should be thoroughly mixed with the seed per the manufacturers' recommendations. Seed treatment dumped on top of the seed after the hopper is filled, and not mixed properly will cause bridging of the seed in the meter, reducing population or stopping the meter from planting. Additional graphite or talc may be required to retard buildup of seed treatments on meter components.

IMPORTANT: Foreign material, such as hulls, stems, etc., may affect seed delivery. Clean seed is required to ensure accurate seed metering from the brush-type seed meter. Seed discs should be removed daily to check for buildup of foreign material, such as hulls, in the seed meter or the brushes.

SEED HOPPER

60620-69

The seed hopper has a capacity of 1.6 bushels.

When filling the seed hopper use clean seed and make certain there are no foreign objects in the hopper. **Replace hopper lids after hoppers are filled to prevent the accumulation of dust or dirt in the seed meter which will cause premature wear.** See "Finger Pickup Seed Meter Lubrication" and/or "Brush-Type Seed Meter Lubrication".

Periodically empty the hoppers completely to remove any foreign objects and to ensure proper seed meter operation. To empty hopper, disengage drive release and hopper latch and lift hopper off the hopper support. See "Meter Drive Release".

ROW UNIT OPERATION

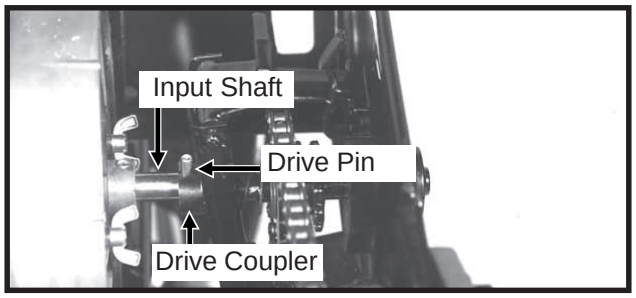
SEED METER DRIVE ADJUSTMENT

IMPORTANT: The seed meter drive coupler must be properly aligned with the meter input shaft.

Improper alignment between the drive coupler and input shaft of the meter can cause the meter housing to flex as the meter rotates. This continual flexing of the meter housing can cause damage to the housing. Any time the hopper support panel is removed or replaced, vertical and horizontal alignment should be checked.

NOTE: It is advised that seed hoppers be numbered and remain with the corresponding row.

61658-27



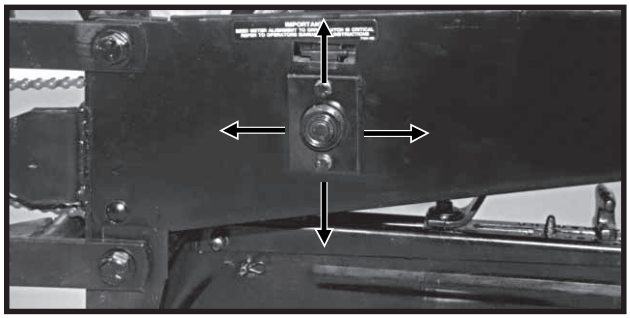
To check alignment:

- Inspect meter input shaft to make sure drive pin is centered.
- Install hopper with meter onto support panel and latch hopper.
- Rotate meter input shaft so drive pin is vertical.
- Rotate drive clutch so slots in coupler are vertical.
- Engage clutch.
- Clutch coupler should engage meter shaft freely with equal amount of pin extending beyond each side of drive coupler.
- Disengage clutch.
- Rotate both meter shaft and drive clutch to the horizontal position.
- Re-engage clutch.
- Clutch coupler should engage meter shaft freely with equal amount of pin extending beyond each side of drive coupler.

To adjust drive clutch:

- Slightly loosen both $^{5}/_{16}$" cap screws.
- Move clutch assembly to correct any misalignment.
- Tighten both $^{5}/_{16}$" cap screws.

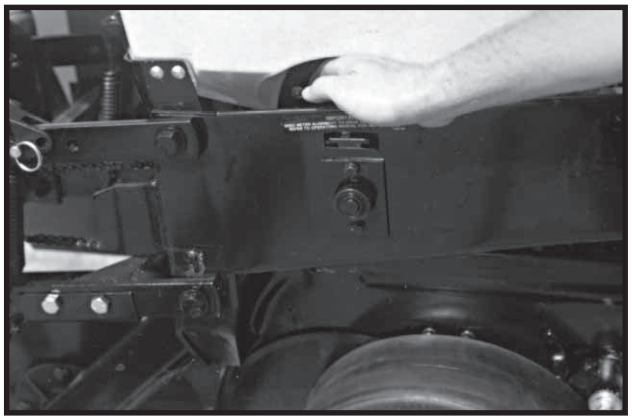
72794-24



SEED METER DRIVE RELEASE

The seed meter drive is equipped with a clutch release mechanism that allows the drive to be disconnected from the seed metering unit for removal of seed hopper. Disconnecting the drive allows the operator to check granular chemical application rates without dropping seed. It also allows one or more of the rows to be disconnected when finishing fields.

72359-164

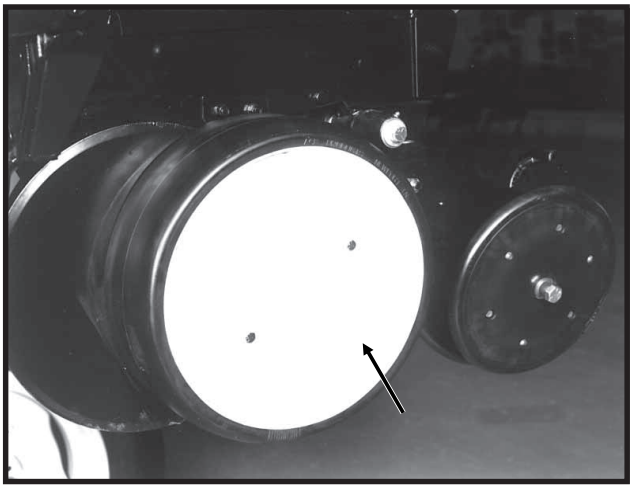


To disengage the drive, lift the release handle and pull outward until the handle locks in the slot in the side of the hopper side panel. To engage the row unit, lift and unlatch the handle. Spring tension will return the mechanism to the drive position.

Erratic seed spacing may result from misalignment between the drive coupler and seed meter input shaft. Misalignment may cause momentary stoppage of brush-type meter seed disc. Check alignment after initial installation. If adjustment is required, refer to “Meter Drive Adjustment” for correct procedure.

ROW UNIT GAUGE WHEEL COVER

78896-6



The row unit gauge wheel cover when installed on the gauge wheels next to the transport and/or drive wheels of the planter will aid in protecting the row units from rock damage.

ROW UNIT OPERATION

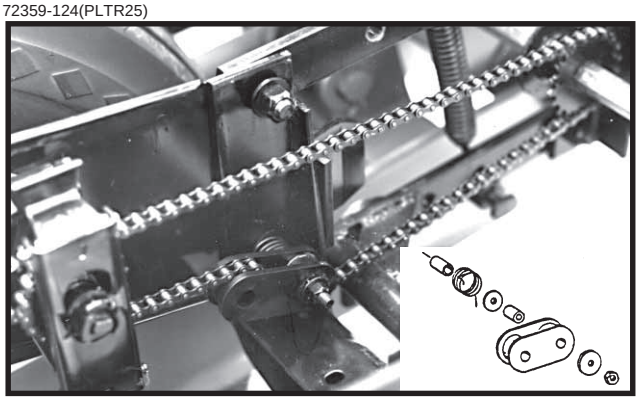
ROW UNIT CHAIN ROUTING

For proper operation and to minimize wear, the row unit drive chains must be properly tensioned and aligned.

Inspect and replace weak, worn or broken springs and/or idlers and idler bushings.

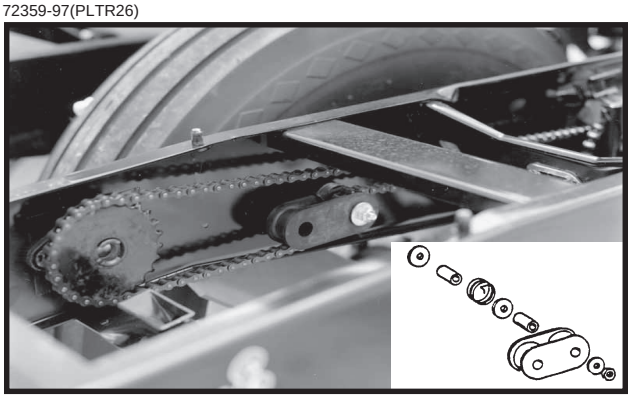
NOTE: When idler shows signs of wear, it can be reversed for prolonged use.

72359-124(PLTR25)



Row Unit Meter Drive

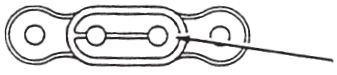
72359-97(PLTR26)



Row Unit Granular Chemical Drive

NOTE: Make sure connector links are installed with closed ends located as shown below.

(PLTR24)



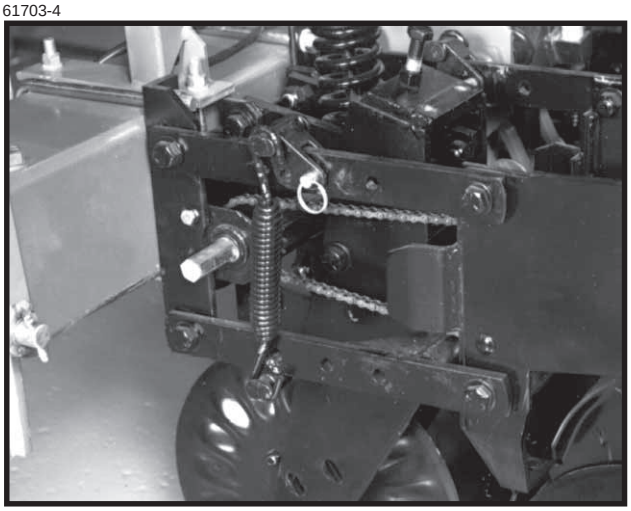
Direction Of Chain Travel

QUICK ADJUSTABLE DOWN FORCE SPRINGS

Quick adjustable down force springs are designed to increase penetration in hard soil and keep the row unit from bouncing in rough field conditions.

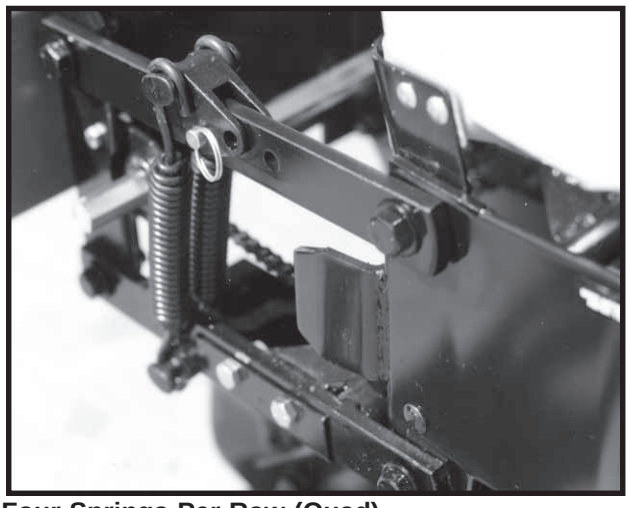
Two springs per row, one on the L.H. parallel arms and one on the R.H. parallel arms, are used unless equipped with row unit mounted no till coulters. Four springs per row are used with row unit mounted no till coulters.

61703-4



Two Springs Per Row (Dual)

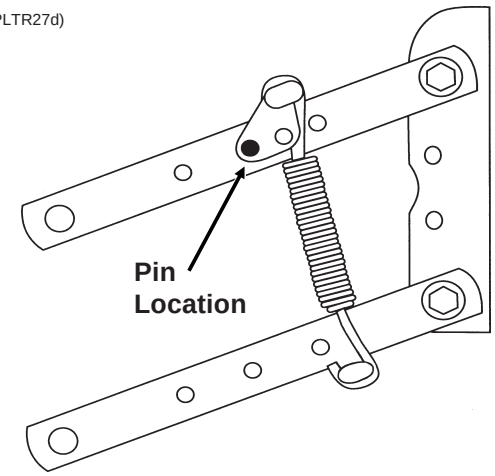
72359-4



Four Springs Per Row (Quad)
(Used only in conjunction with row unit mounted no till coulters)

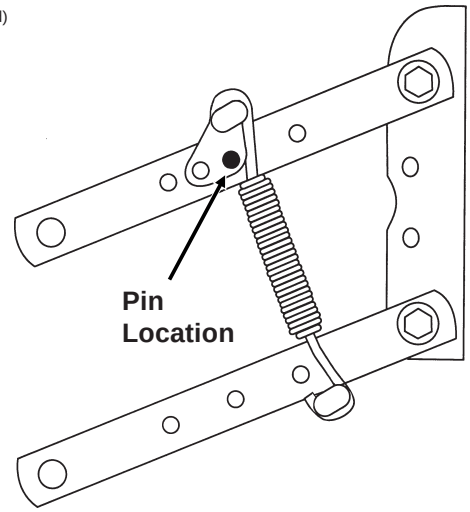
There are four positions for spring tension adjustment. Position 1 allows for minimum down pressure and position 4 for maximum down pressure.

L0096(PLTR27d)



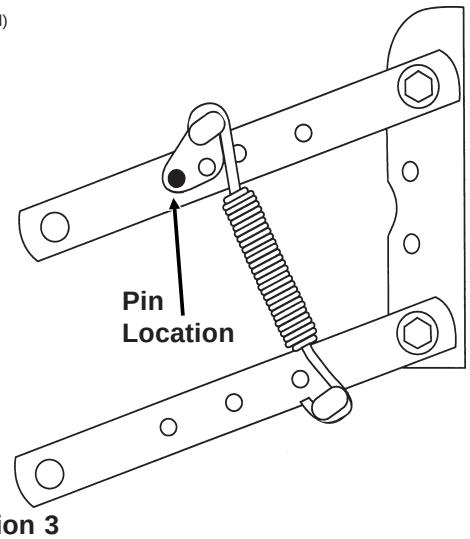
Position 1 (Minimum)

(PLTR28d)



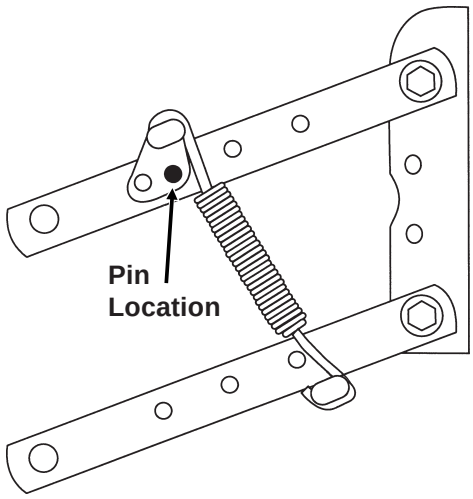
Position 2

(PLTR29d)



Position 3

(PLTR30d)



Position 4 (Maximum)

To adjust spring tension, raise planter and remove spring mount pin at top of spring. Slide mount to desired position and install pin.

NOTE: It is necessary for the operator to adjust springs according to field conditions. If springs are adjusted for too much down pressure for field conditions, it is possible for the row units to lift the planter to the extent that the drive wheels do not make sufficient contact. Too much down pressure in soft field conditions can cause the row unit to run too deep.

DANGER: Always install safety lockups or lower machine to the ground before working under or around the machine.

NOTE: Springs must always be installed with open side of spring hooks toward seed hopper to prevent binding on spring mount adjustment pin.

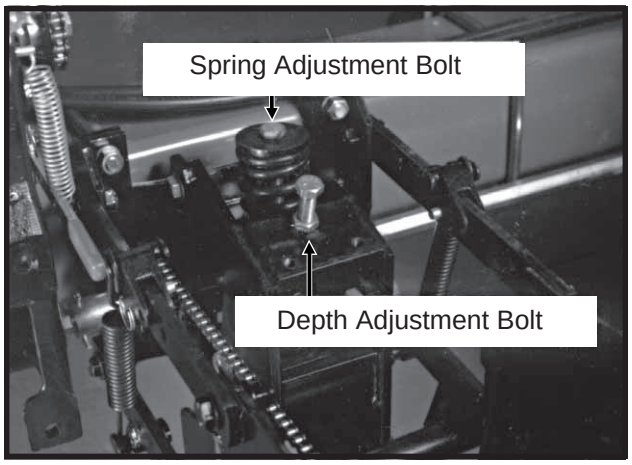
FRAME MOUNTED COULTER

Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on KINZE® pull row units only.

The frame mounted coulter is designed to allow required spring down pressure on the coulter for maximum penetration while exerting less shock load on the row unit.

The frame mounted coulter can be used with or without the depth control bar installed. In most applications, especially in rocky planting conditions, the depth control bar **should not be used**. Use of the depth control bar transfers down force from the coulter to the row unit making less down force available to the coulter blade.

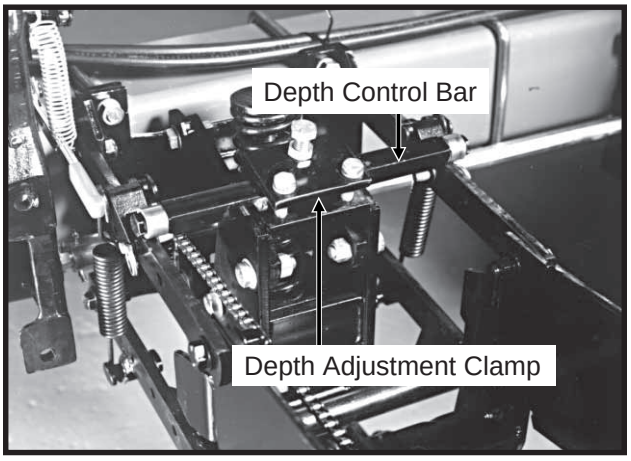
56314-14



DEPTH ADJUSTMENT (Without Depth Control Bar Installed)

When the depth control bar is not used, operating depth of the coulter blade is determined by adjusting the depth adjustment bolt and positioning of the blade assembly in the fork mount. The depth adjustment bolt will stop downward travel of the coulter arm assembly. One turn of the adjusting bolt will change depth setting approximately 1/4". Initial setting of the depth adjustment bolt should be with approximately 1 3/8" of thread showing. With this setting and the bar height at 20", the coulter depth will be approximately 2" with coulter mounting spindle in top hole. Turn the adjustment bolt clockwise to decrease operating depth. Turn the depth adjustment bolt counterclockwise to increase operating depth.

56314-16

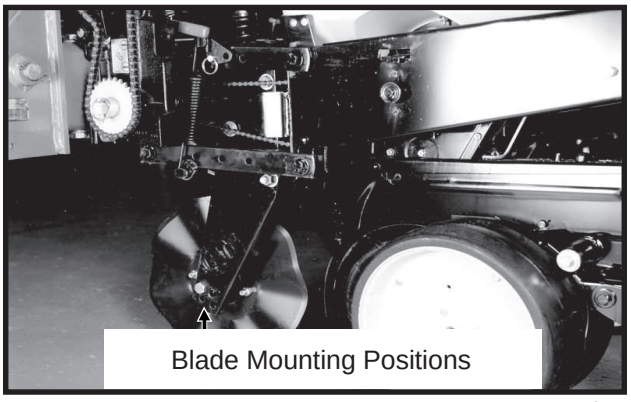


In certain applications it is desirable to use the depth control bar. In uneven terrain, use of the depth control bar allows greater depth control. The up and down movement of the row unit allows the coulter to move up and down at a rate of approximately 1/2 that of the row unit, maintaining a more uniform operating depth. When using the disc furrower attachment, the depth control bar should always be used, as operating depth of the coulter is critical for the disc furrowers to operate with minimal gouging.

DEPTH ADJUSTMENT (With Depth Control Bar Installed)

When using the depth control bar, down force springs must be located in the forward position and the depth adjustment bolt used only to attach the depth adjustment clamp to the coulter assembly. Operating depth of the coulter blade is adjusted by positioning the blade assembly in the fork mount. Four blade mounting adjustment positions are available at 1/2" increments. Initial position of the blade assembly should be in the top hole. This position will locate the coulter blade approximately 1/4" deeper than the row unit opener blade. In heavy residue it may be desirable to position the blade assembly in the second position to insure that the residue is cut and not forced down into the seed zone. Additional holes are used to compensate for coulter blade wear.

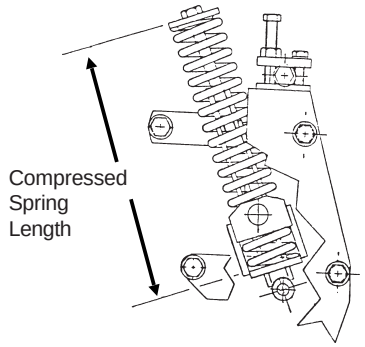
56314-1



Down force adjustment is made by tightening or loosening the spring adjustment bolt. With the planter in the raised position, turn the bolt clockwise to increase down force or counterclockwise to decrease down force. Set all rows equally.

Compressed Spring Length (Including Washer)	Pounds Down Pressure With Blade 1/2" Above Maximum Down Position	Pounds Down Pressure With Blade 4" Above Maximum Down Position
13 5/16"	90	230
12 5/16"	190	330
Suggested initial setting.		
11 5/16"	300	430

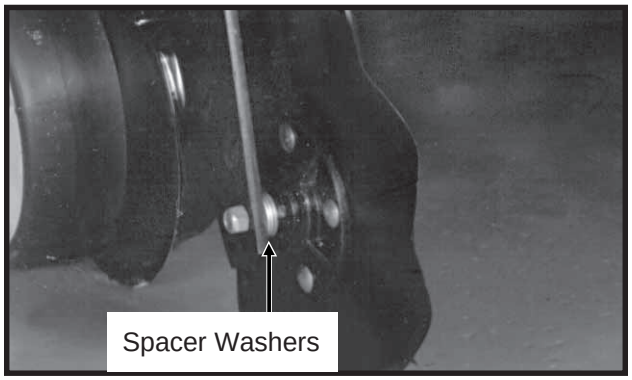
A5649rev.(PLTR44)



NOTE: Excessive down force may cause increased wear on components.

The coulter blade can be aligned with the row unit disc opener by moving the spacer washers from one side of the coulter blade hub to the other.

56314-12



Field adjustment should be made as needed. Operating height of the planter frame will affect operating depth of the frame mounted coulter.

NOTE: Torque 5/8" spindle bolts to 120 ft. lbs.

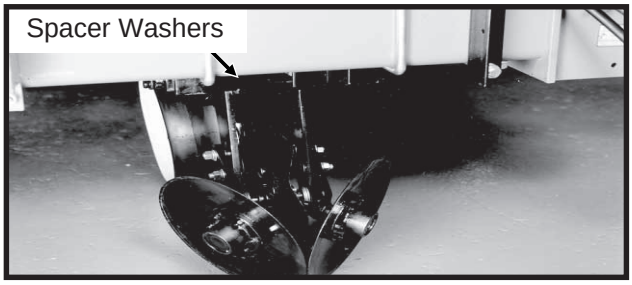
DISC FURROWERS

(For Use With Frame Mounted Coulter)

Disc furrowers for use with the frame mounted coulter may be equipped with either 12" solid blades or 12" notched blades.

Disc furrowers are used to clear crop residue, dirt clods and dry soil from in front of the row units for a clean and smooth seed bed. Notched blades are used for heavier residue conditions. The notched blades cut crop residue and move it aside to prevent plugging or pushing.

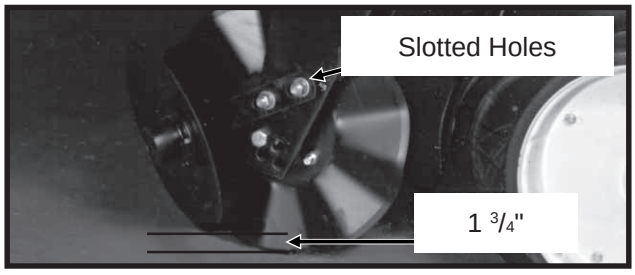
56314-19



Blades can be adjusted so front edges meet by adding spacer washers between the disc furrower arm and frame mounted coulter fork mount.

Slotted holes in the frame mounted coulter fork mount and in the disc furrower arm allow for vertical and horizontal adjustment. Blades can be adjusted so the front edges meet or one blade can be moved to the rear and the other to the front of the slot so the cutting edge of one blade overlaps the edge of the other blade.

56314-17



Initial setting for the disc furrowers is 1 3/4" shallower than the coulter blade. Further adjustment may be desired for various applications.

NOTE: The depth control bar should always be used when the frame mounted coulter is equipped with disc furrowers.

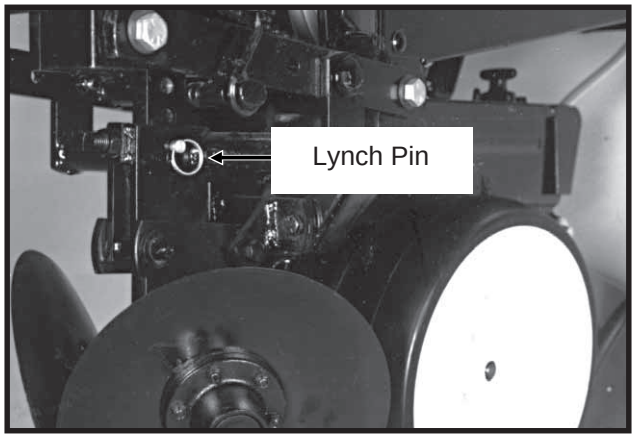
ROW UNIT OPERATION

ROW UNIT MOUNTED DISC FURROWER

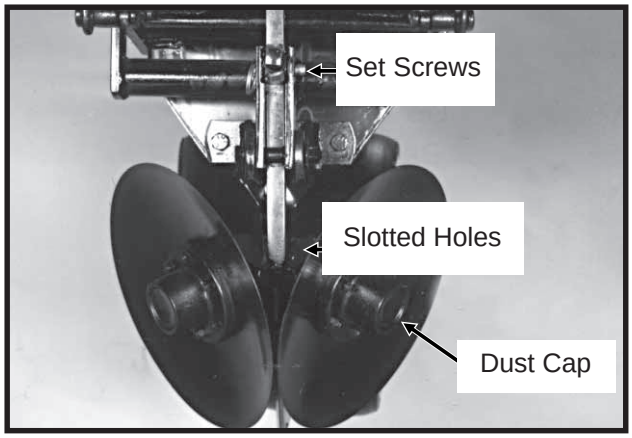
The row unit mounted disc furrower for use on KINZE® pull row units only may be equipped with either 12" solid blades or 12" notched blades.

Disc furrowers are used to clear crop residue, dirt clods and dry soil from in front of the row units for a clean and smooth seed bed. Notched blades are used for heavier residue conditions. The notched blades cut crop residue and move it aside to prevent plugging or pushing.

59386-23



59386-20



Vertical adjustment in 1/3" increments is possible by removing the lynch pin which secures the vertical support arm and moving the support arm up or down as required. Re-install lynch pin. Finer adjustment can be attained by removing the lynch pin and using the 5/8" x 2 1/4" set screw to clamp the support arm in the required position.

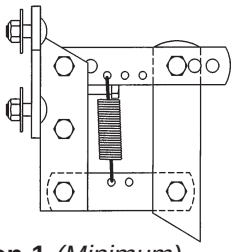
Slotted holes in the support arm where the blades are mounted allow fore and aft adjustment of the discs. Blades can be adjusted so the front edges meet or one blade can be moved to the rear and the other to the front of the slot so the cutting edge of one blade overlaps the edge of the other blade. The dust cap must be removed to make these adjustments.

ROW UNIT OPERATION

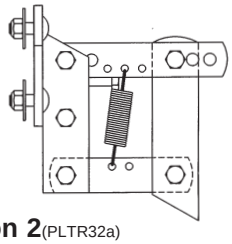
ROW UNIT MOUNTED RESIDUE WHEEL

The row unit mounted residue wheel may be used on KINZE® pull row units.

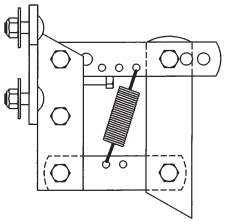
Two adjustable springs on the parallel links on each residue wheel allow for down force adjustment. Position 1 as shown below provides minimum down pressure and position 3 maximum down pressure.



Position 1 *(Minimum)*(PLTR31a)



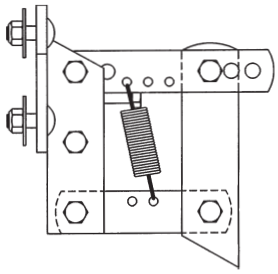
Position 2(PLTR32a)



Position 3 *(Maximum)*(PLTR33a)

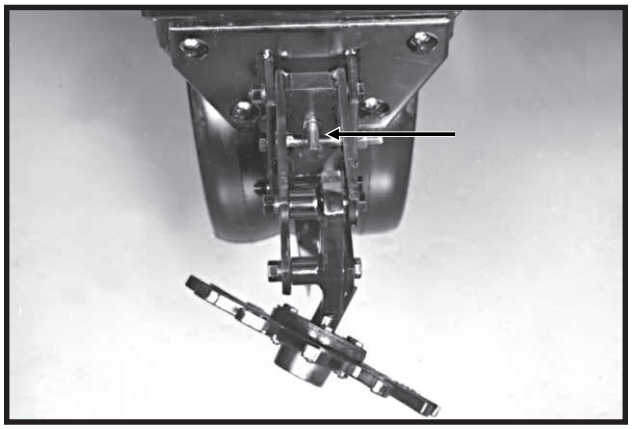
For additional uplift or float, position springs as shown below.

(PLTR34a)



To adjust down force springs, raise the row unit out of the ground and reposition springs as shown for the desired down pressure.

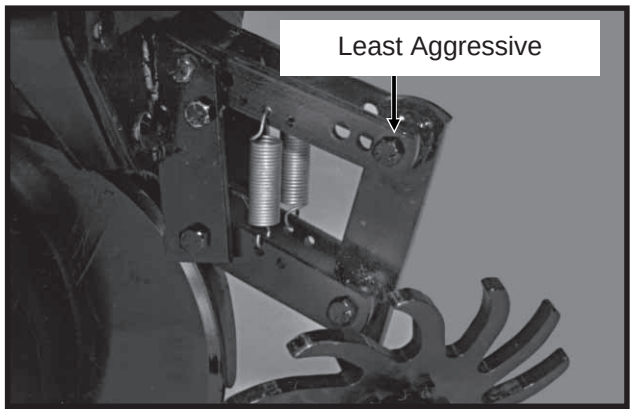
76782-31



A full threaded bolt and jam nut located on the upper link allows maximum depth to be set for loose soil conditions. Initial setting should be 1 3/4" above the depth of the row unit double disc opener.

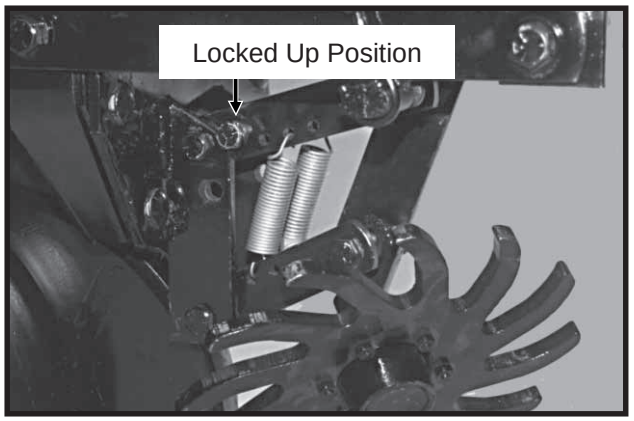
Three holes in the upper link allow for wheel angle adjustment. With the wheel mount in the most vertical position, using the rear hole in the upper link, the residue wheel is most aggressive. Moving the wheel mount to one of the forward holes reduces the aggressiveness of the wheel for use in mulch till applications where the soil is loose.

72794-29



To lock the residue wheel up out of the ground, remove the 1/2" x 5" lockup bolt, raise the residue wheel and install bolt.

72794-31



ROW UNIT OPERATION

ROW UNIT MOUNTED NO TILL COULTER

80367-10

Row unit mounted no till coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units. (3/4" fluted shown)

Four quick adjustable down force springs are required per row when using row unit mounted no till coulters. See “Quick Adjustable Down Force Springs”.

For proper operation the coulter blade should be aligned in relation to the row unit double disc openers. The coulter assembly can be adjusted by loosening the four attaching bolts, moving coulter arm to align and tightening the four attaching bolts.

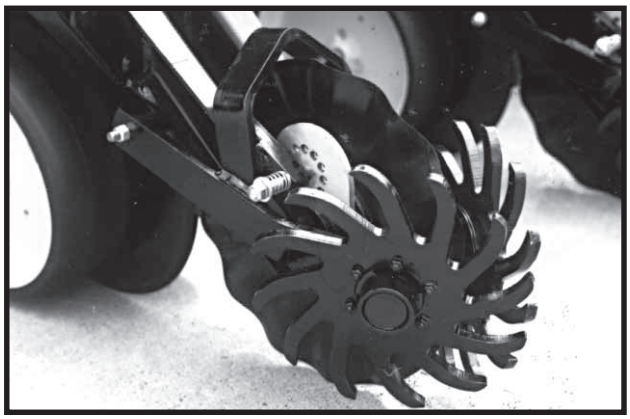
The coulter blade can be adjusted to one of four 1/2" incremental settings in the forked arm. Initial location of the coulter is in the top hole. As the coulter blade wears, the blade should be adjusted downward to one of the three lower settings to maintain the coulter blade at or slightly below the opener discs. In very hard soil conditions such as compacted wheel tracks, opener penetration and cutting of surface residue may be improved by adjusting the coulter to operate below the depth of the double disc opener blades.

Operating depth can be checked by setting the planter down on a level concrete floor and checking the relationship between the coulter blade and row unit opener blade. Make sure the planter is level and coulter is square with the planter frame and aligned with the row unit disc opener.

NOTE: Torque 5/8" spindle bolts to 120 ft. lbs.

COULTER MOUNTED RESIDUE WHEELS

80376-15



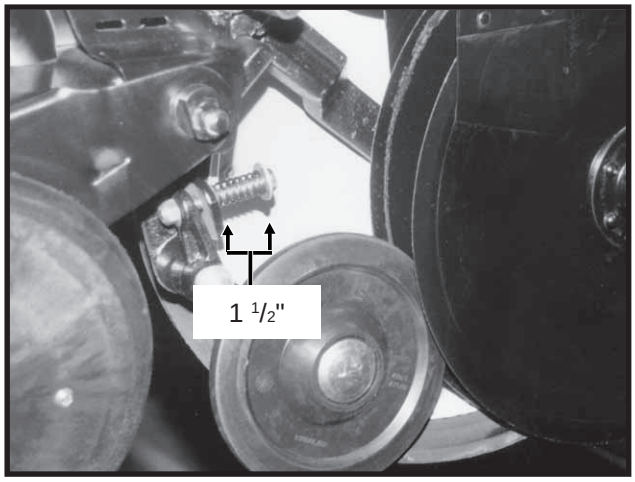
Coulter mounted residue wheels are designed for use on pull row units.

The coulter mounted residue wheels are attached to the row unit mounted no till coulter with one cap screw and sleeve allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in 1/4" increments. A high point on the cam allows the wheels to be locked up so they do not contact the ground.

ROW UNIT OPERATION

SEED FIRMING WHEEL

02209715



Shown with gauge wheel removed.

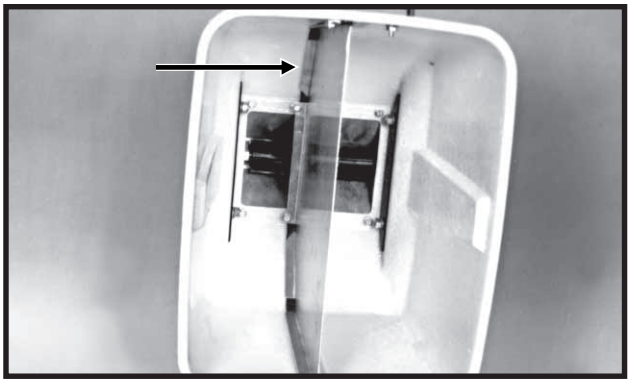
The seed firming wheel is designed for use on KINZE® pull row units. Seed firming wheels are for use in dry loose soil conditions to gently and firmly press the seed into the seed bed before the closing wheels close the seed trench.

NOTE: Certain soil types and moisture conditions may lead to erratic performance resulting in irregular seed placement.

Initial spring tension is set leaving 1 1/2" between the washers.

GRANULAR CHEMICAL HOPPER

61766-2



The granular chemical hopper has a 70 pound capacity. With the use of a hopper divider the hopper has two compartments with a 35 pound capacity in each.

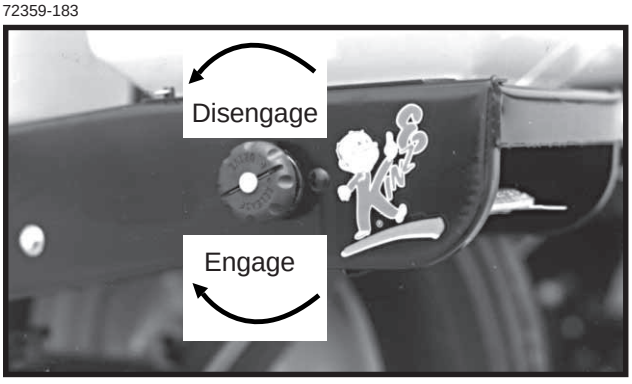
Be sure no foreign objects get into the hopper when it is being filled. Replace the hopper lids after filling the hoppers to prevent the accumulation of dirt and moisture.

The metering gate located on the bottom of the hopper regulates the application rate. See “Dry Insecticide And Dry Herbicide Application Rate Charts” in this manual. Calibrate using the chemical manufacturers' instructions.

DANGER: Agricultural chemicals can be dangerous. Improper selection or use can seriously injure persons, animals, plants, soil or other property. BE SAFE: Select the right chemical for the job. Handle it with care. Follow the instructions on the container label.

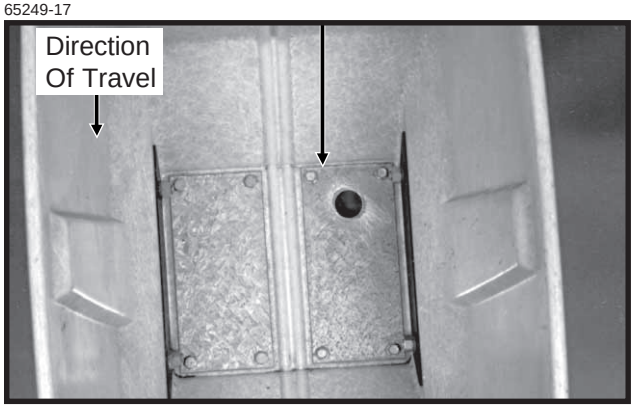
The granular chemical clutch drive coupler and meter shaft can be disengaged and engaged by turning the throwout knob located at the rear of the hopper support panel. To engage the drive, turn the knob 1/4 turn clockwise. To disengage the drive, turn the knob 1/4 turn counterclockwise. Slotted holes in the hopper support panel and clutch housing allow for alignment adjustment between the clutch drive coupler and meter shaft.

72359-183



GRANULAR CHEMICAL RESTRICTOR PLATE

65249-17



The granular chemical restrictor plate is designed for use in the granular chemical hopper when granular chemical application rates below 4 pounds per acre are desired. The plate restricts chemical flow to the meter outlet to prevent grinding of the material.

IMPORTANT: Check application rate of all rows in the field with the granular chemical you are using and at the speed and population at which you will be planting. See "Checking Granular Chemical Application Rate".

DANGER: Agricultural chemicals can be dangerous. Improper selection or use can seriously injure persons, animals, plants, soil or other property. BE SAFE: Select the right chemical for the job. Handle it with care. Follow the instructions on the container label.

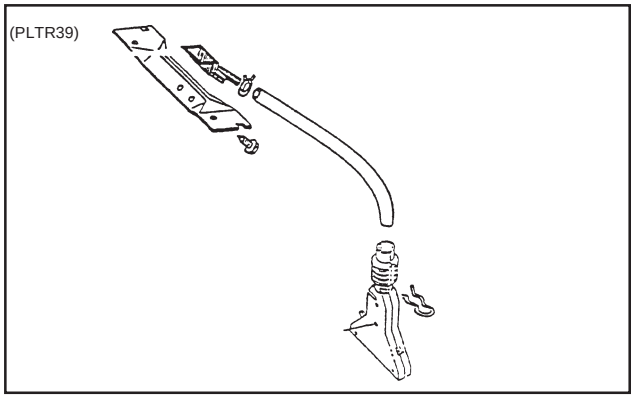
GRANULAR CHEMICAL BANDING OPTIONS

Granular chemical banding options allow front and/or rear banding.

With use of the granular chemical hopper divider and second meter, two banding applications may be utilized.

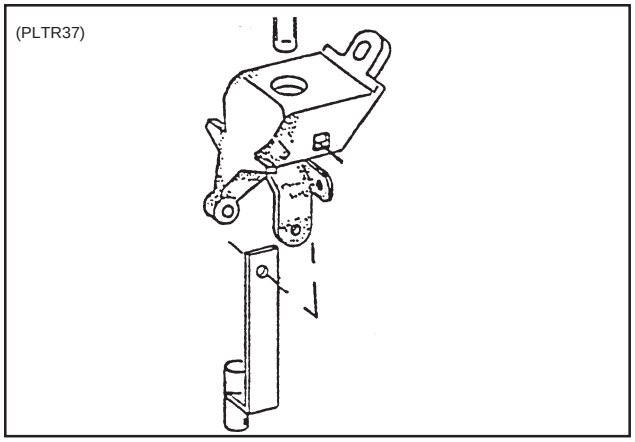
NOTE: The granular chemical rear bander is not compatible with the covering discs/single press wheel option

(PLTR39)



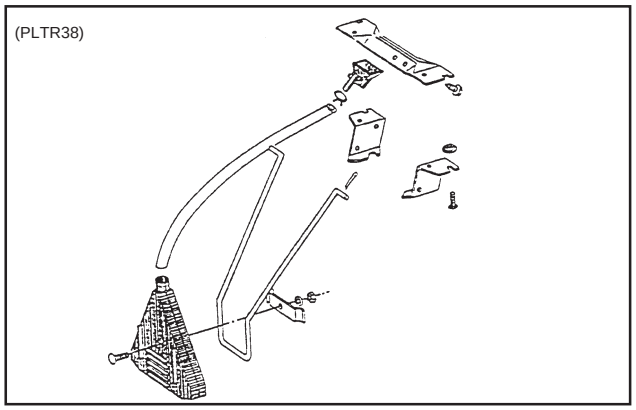
4 1/2" Slope-Compensating Bander

(PLTR37)



Straight Drop In-Furrow Placement

(PLTR38)



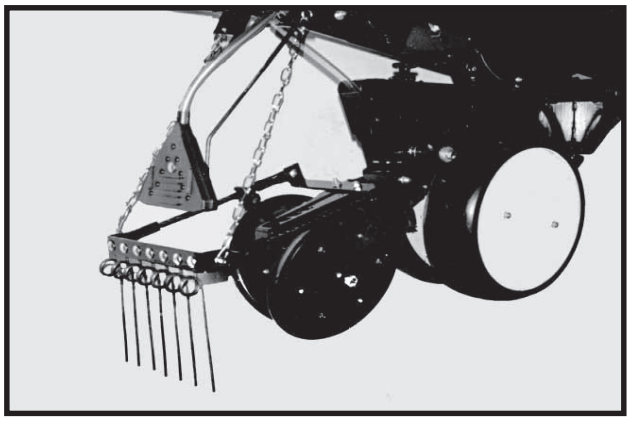
14" Rear Banding

SPRING TOOTH INCORPORATOR

The spring tooth incorporator smooths the soil behind the row unit and incorporates granular chemicals. The two mounting chains on each spring tooth incorporator should be adjusted so there is approximately 1/8" slack in the chain when the unit is lowered to planting position.

NOTE: The spring tooth incorporator is not compatible with the covering discs/single press wheel option.

73090-4a

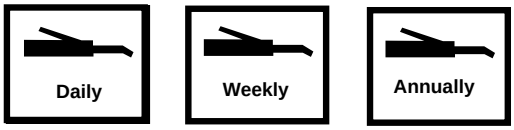


LUBRICATION

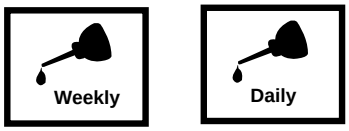
The following pages show the locations of all lubrication points. Proper lubrication of all moving parts will help ensure efficient operation of your KINZE® planter and prolong the life of friction producing parts.

DANGER: Always install safety lockups or lower to the ground before working under the machine.

LUBRICATION SYMBOLS



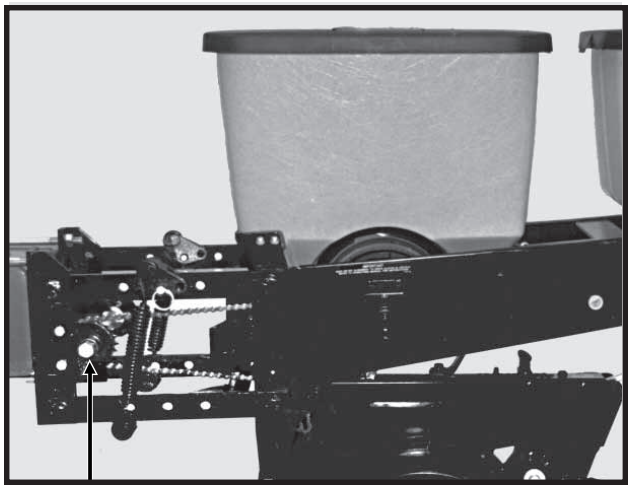
Lubricate at frequency indicated with an SAE multipurpose type grease.



Lubricate at frequency indicated with a high quality SAE 10 weight oil or a quality spray lubricant.

SEALED BEARINGS

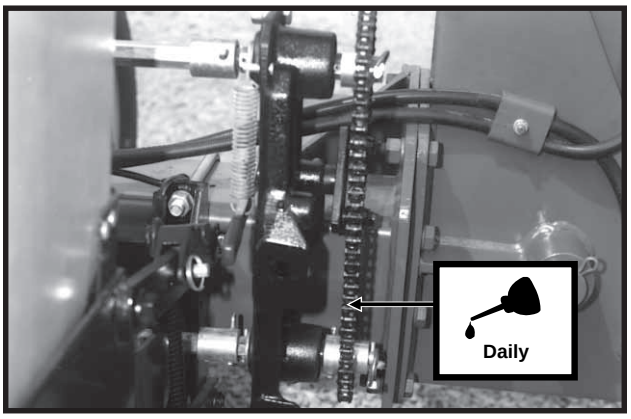
72794-21a



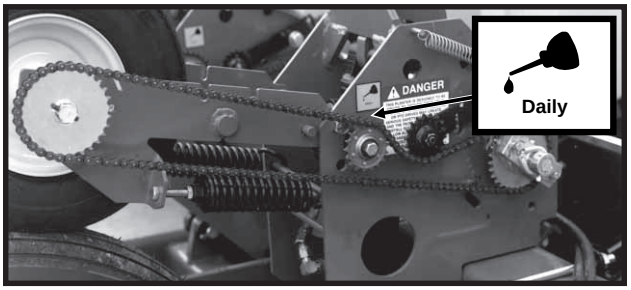
A number of sealed bearings are used on your KINZE® planter to provide trouble free operation. These are located in such areas as the drive shaft, row units and transmission bearings. Sealed bearings are lubricated for life, and due to the seals, relubrication is not practical.

DRIVE CHAINS

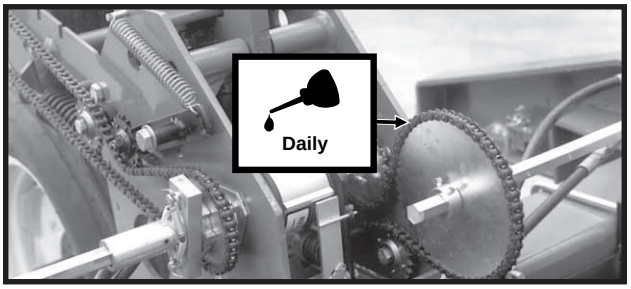
72495-25



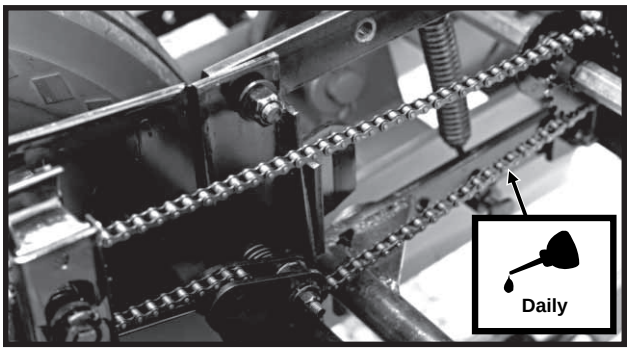
82378-7



82378-18



72359-123



All transmission and drive chains should be lubricated daily with a high quality SAE 10 weight oil or a quality spray lubricant. Extreme operating conditions such as dirt, temperature or speed may require more frequent lubrication. If a chain becomes stiff, it should be removed, 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.

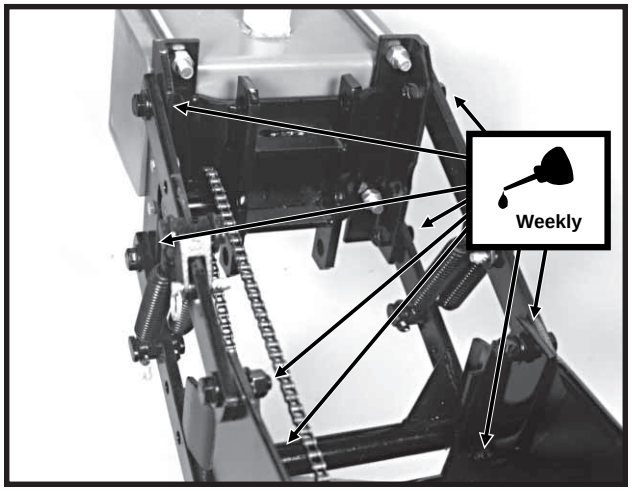
LUBRICATION

BUSHINGS

Lubricate bushings at the frequency indicated.

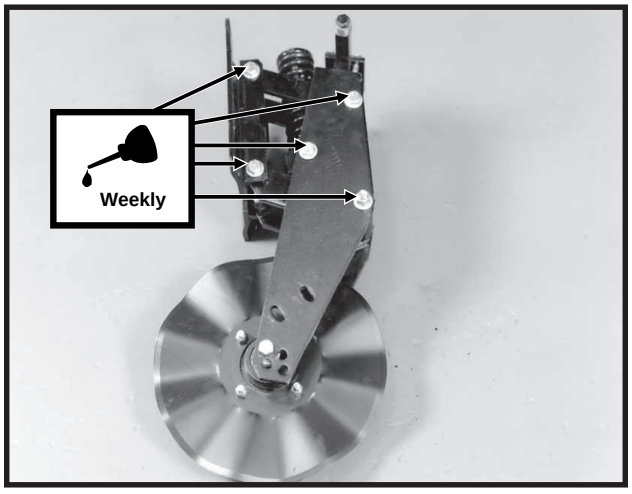
Using a torque wrench, check each bolt for proper torque. If bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushing if necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque bolts to 130 ft. lbs.**

59386-43



Row Unit Parallel Linkage (8 Per Row)

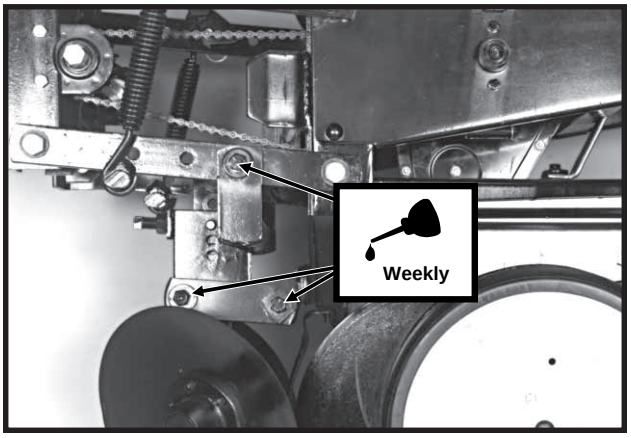
56314-8



Frame Mounted Coulter Parallel Linkage (10 Per Row)

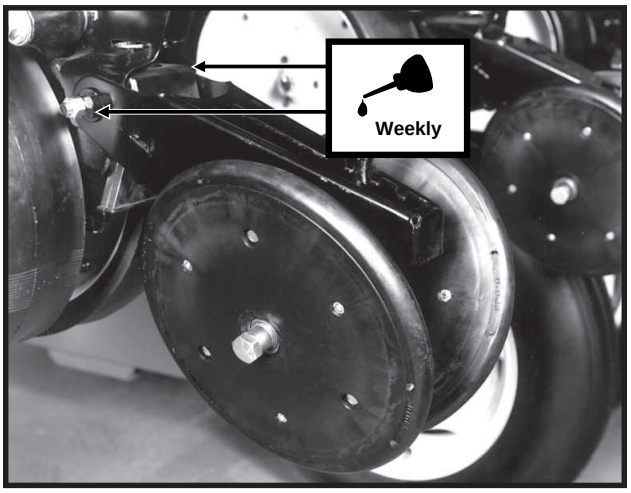
Shown not installed on row unit for visual clarity.

59386-18



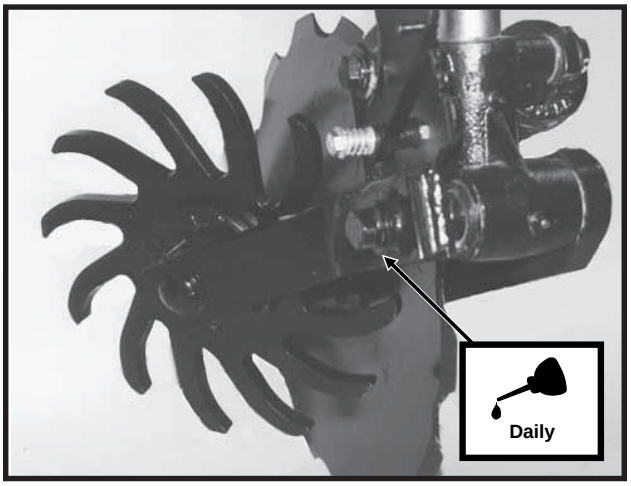
Row Unit Mounted Disc Furrower Parallel Linkage (6 Per Row)

78896-18



Row Unit Closing Wheel Eccentric Bushings (2 Per Row)

12229721

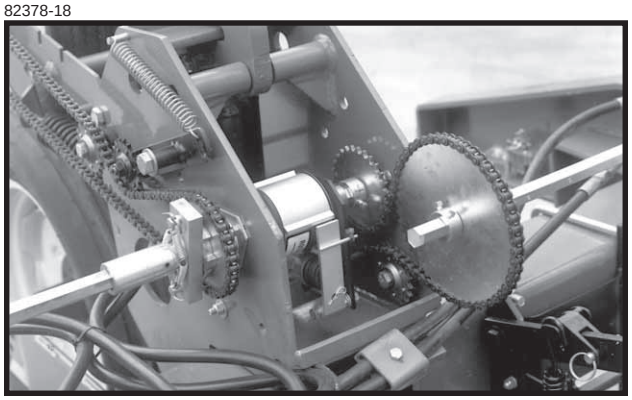


Notched Single Disc Fertilizer Opener Residue Wheel (1 Per Row)

LUBRICATION

POINT ROW WRAP SPRING CLUTCHES

82378-18

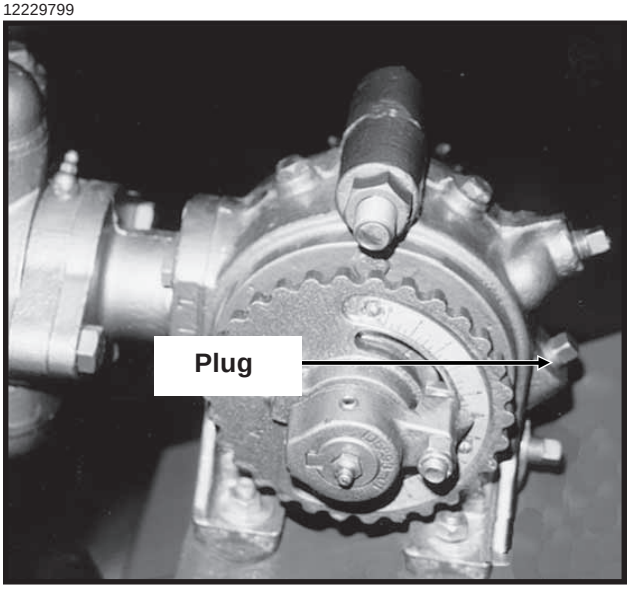


Style B Shown

The point row wrap spring clutches are permanently lubricated and require no periodic maintenance. DO NOT LUBRICATE. KEEP CLUTCHES CLEAN.

LIQUID FERTILIZER PISTON PUMP

12229799



Check crankcase oil daily and maintain at plug level. Fill as needed with EP 90 weight gear oil.

Refer to operator and instruction manual supplied with the pump and flow divider for additional information.

LUBRICATION

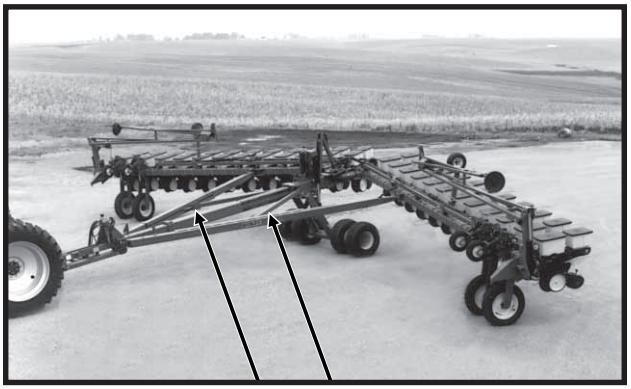
WHEEL BEARINGS

Wheel bearings should be checked annually. Inspect for lubrication. The transport wheel hubs are equipped with grease fittings. Pump grease into the hub until grease comes out around the seals. See “Grease Fittings” for lubrication frequency.

Jack wheel off the ground. Check for endplay in the bearings by moving the tire in and out. Rotate the tire to check for roughness in the bearings. If bearings sound rough, the hub should be removed and the bearings inspected and replaced if necessary. See “Wheel Bearing Packing Or Replacement”.

SLIDING HITCH LINKAGE (24 Row 30" And 36 Row 20" Machines Only)

73430-10



Inspect linkage daily to ensure free movement of axle links in slides. Keep axle link slides clean. DO NOT GREASE the axle link slides. Powdered graphite may be used if lubrication is desired.

GREASE FITTINGS

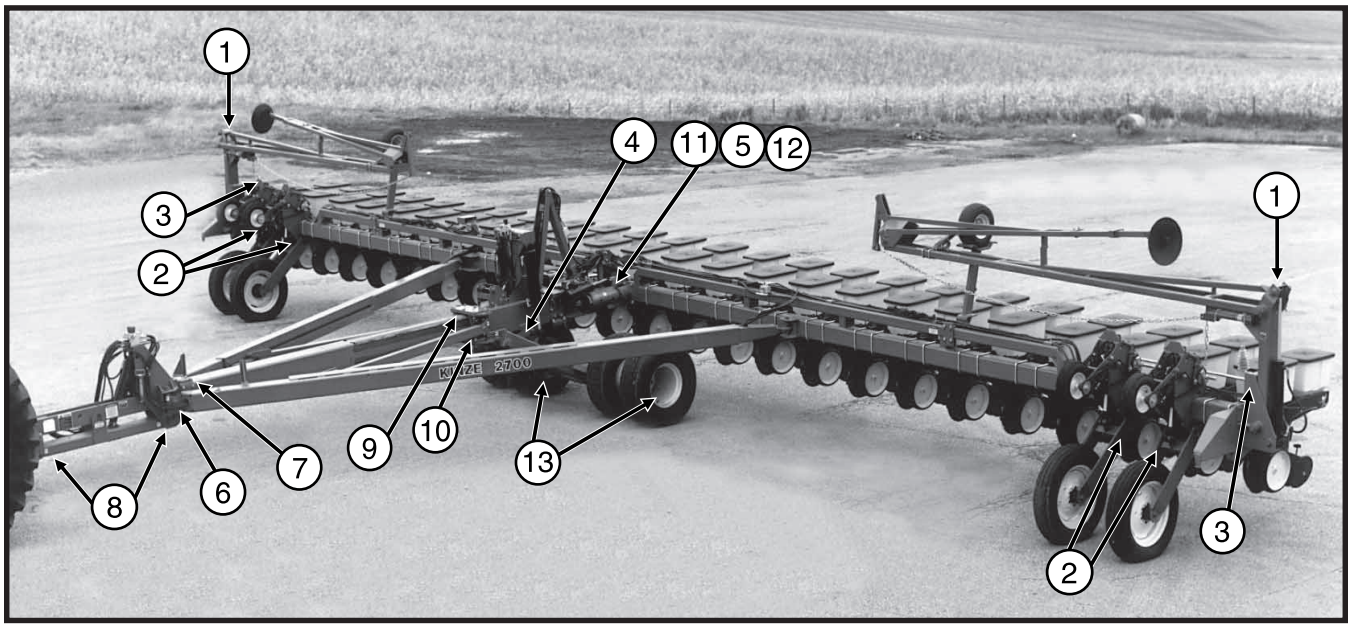
Those parts equipped with grease fittings should be lubricated at the frequency indicated with an SAE multipurpose type grease. Be sure to clean the fitting thoroughly before using grease gun. The frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent attention.

DANGER: Always install safety lockups or lower to the ground before working under or around the machine.

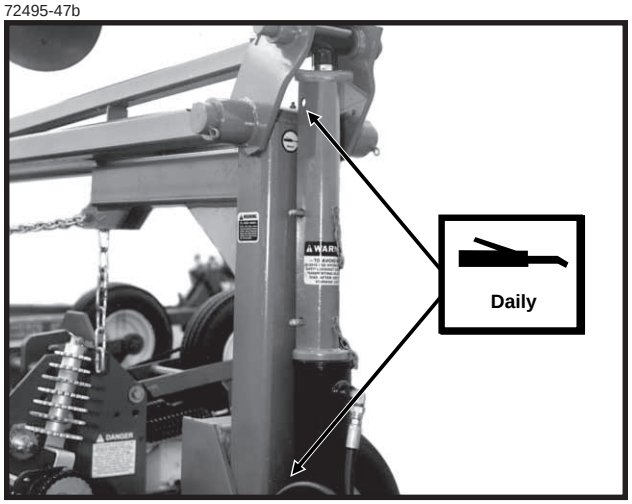
NOTE: Numbers on photo below correspond to photos on following pages showing lubrication frequencies.

24 Row 30" Machine Shown

73430-34

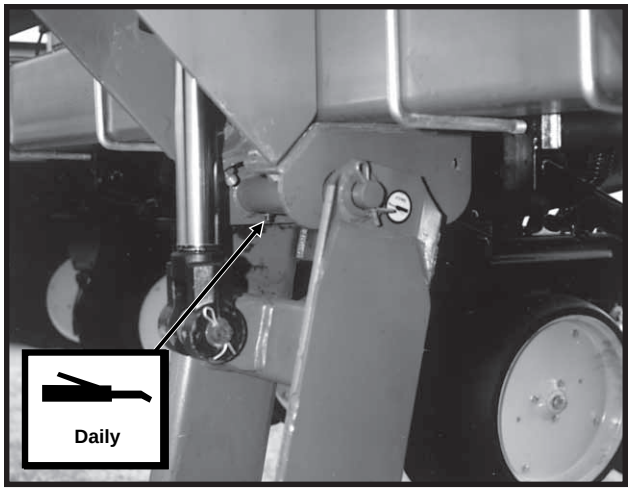


72495-47b



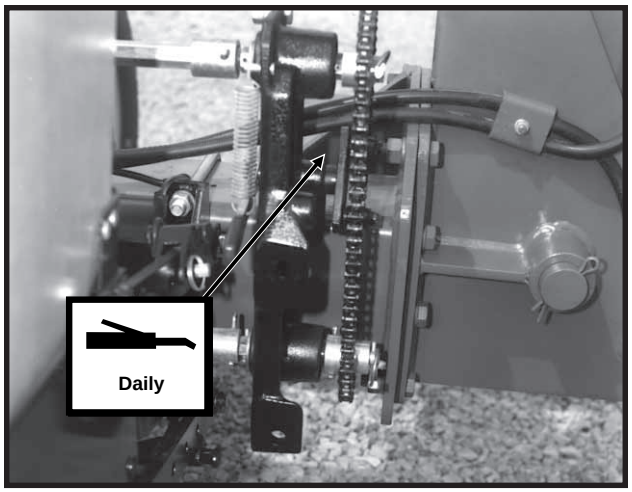
1. Marker Assemblies - 13 Zerks Per Side On Three-Fold Assembly; 2 Zerks Per Side OnTwo-Fold Assembly. **(Three-Fold Assembly Shown)**

72495-34



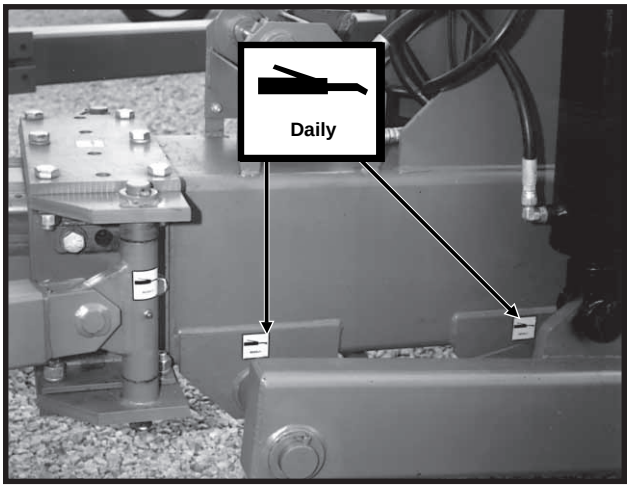
2. Ground Drive Wheel Pivot - 2 Zerks Per Wheel Module

72495-25



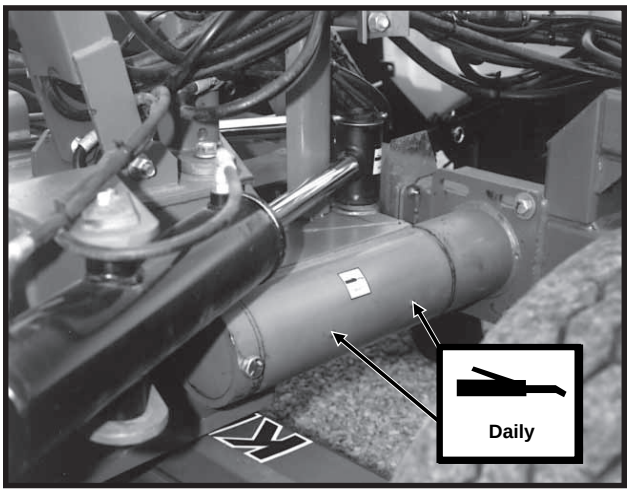
3. Transmission Assembly Idler Pivot - 1 Zerk Per Transmission Assembly

72495-21



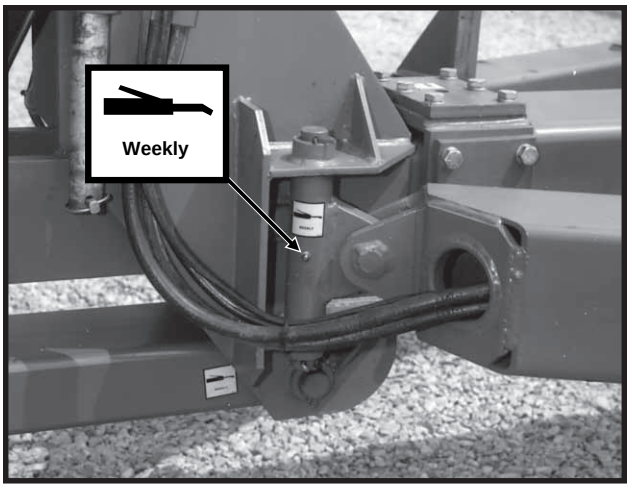
4. Axle And Automatic Safety Lock Pivots - 7 Zerks

72495-24



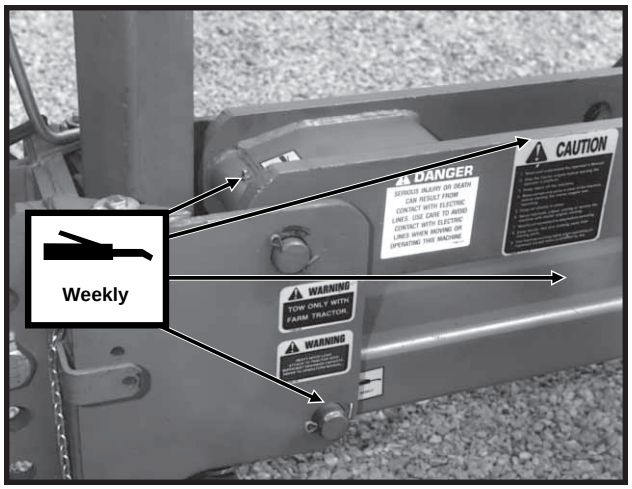
5. Wing Pivot Knuckle - 2 Zerks Per Knuckle On Horizontal Shaft

72495-15



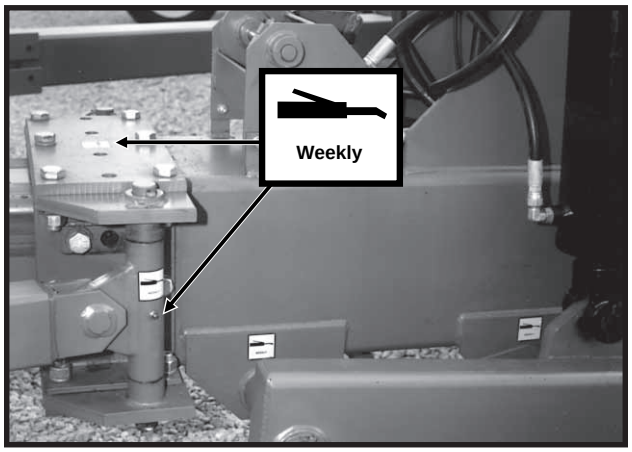
6. Link Assemblies - 1 Zerk Per Assembly
7. Front Wear Pads - 4 Zerks (24 Row 30" And 36 Row 20" Only)

72495-16



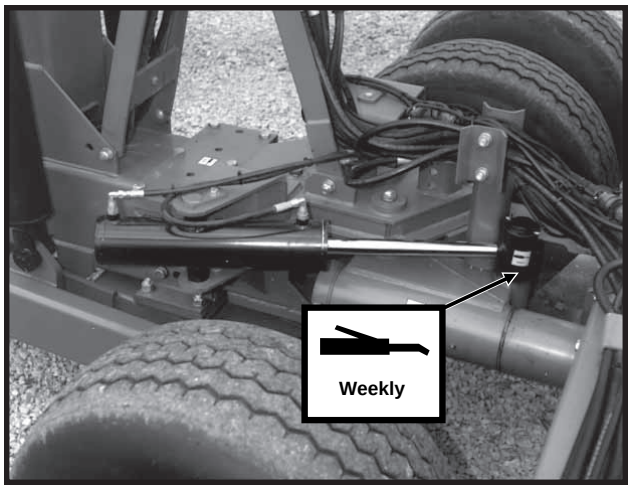
8. Upper And Lower Hitch Links - 2 Zerks Per Link

72495-21



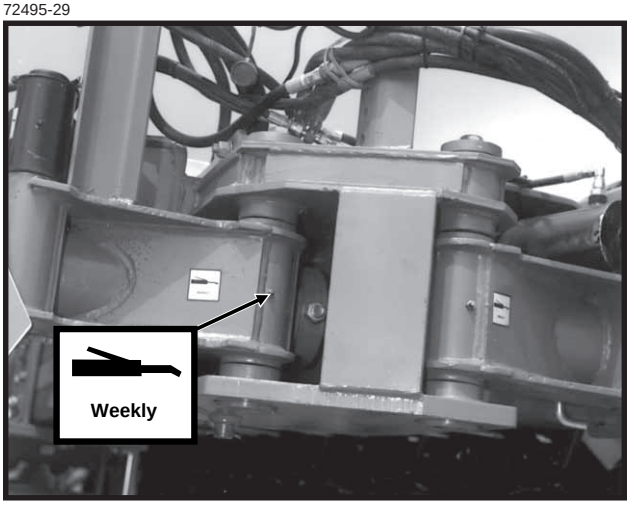
9. Rear Wear Pads (2 Sets) - 16 Zerks (24 Row 30" And 36 Row 20" Machines Only)
10. Axle Link Assemblies - 1 Zerk Per Assembly

72495-37



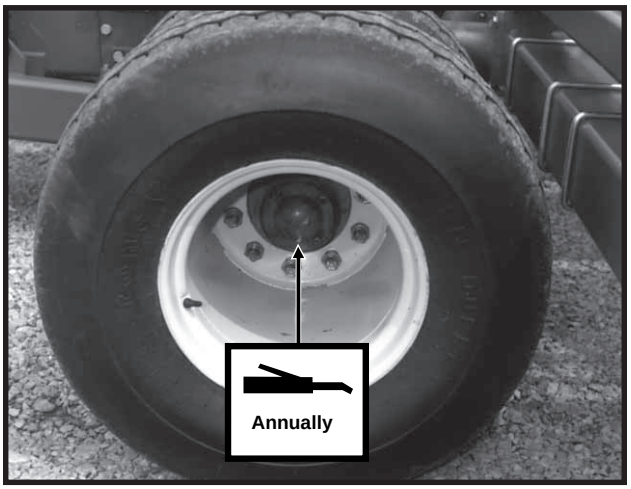
11. Helper Cylinders - 1 Zerk Per Cylinder

72495-29



12. Wing Pivot Knuckle - 1 Zerk Per Knuckle On Vertical Shaft

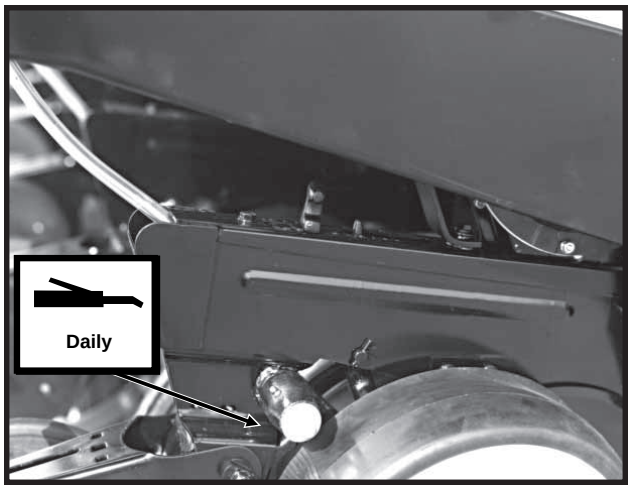
72495-5



13. Transport Wheel Bearing - 1 Zerk Per Wheel Hub

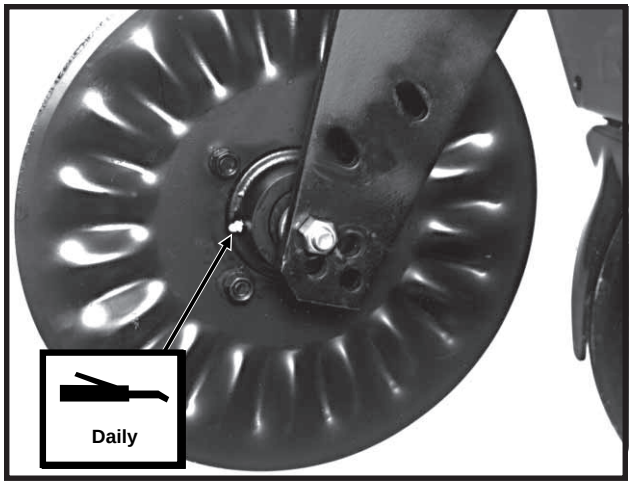
Row Unit

72359-106



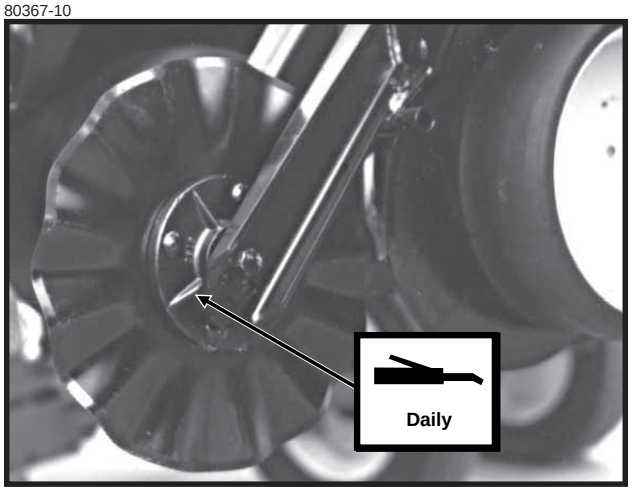
Gauge Wheel Arms - 1 Zerk Per Arm

56673-6



Frame Mounted Coulter Hubs - 1 Zerk Per Hub (Pump grease into hub until grease comes out around the seals. Spin hub while filling with grease.)

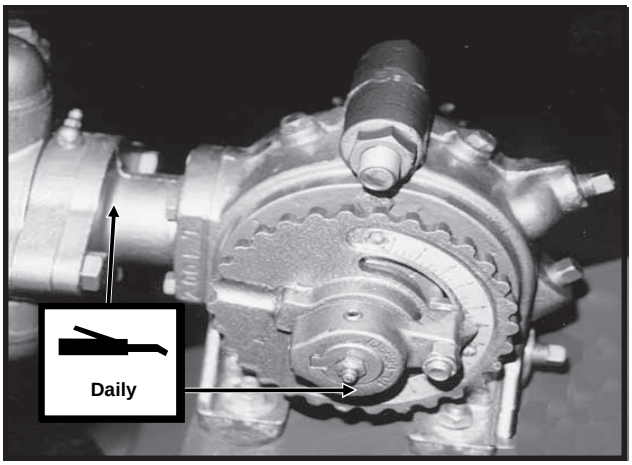
80367-10



Row Unit Mounted No Till Coulter Hubs - 1 Zerk Per Hub (Pump grease into hub until grease comes out around the seals. Spin hub while filling with grease.)

Liquid Fertilizer Piston Pump

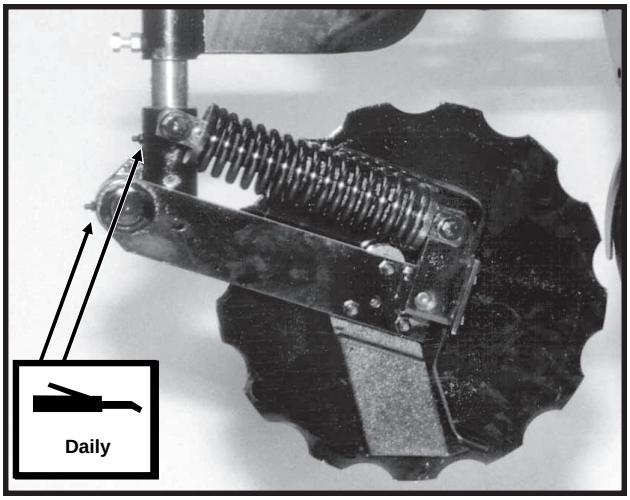
12229799



Piston Pump - 2 Zerks (Fill zerk on outboard stuffing box until lubricant seeps out of drain hole in bottom.)

Notched Single Disc Fertilizer Opener

010997a



Notched Single Disc Fertilizer Opener - 2 Zerks

MAINTENANCE

MOUNTING BOLTS AND HARDWARE

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

All bolts used on the KINZE® planter are Grade 5 (high strength) unless otherwise noted. Refer to the torque values chart when tightening bolts.

Row unit parallel linkage bushing bolts - 130 Ft. Lbs. (See "Bushings" in the Lubrication Section of this manual.)

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

WARNING: Before operating the planter for the first time and periodically thereafter, check to be sure the lug nuts on the transport wheels are tight. This is especially important if the planter is to be transported for a long distance.

Transport Tire Lug Nuts – 425 Ft. Lbs.
5/8" No Till Coulter Spindle Bolts – 120 Ft. Lbs.

TORQUE VALUES CHART - PLATED HARDWARE

Bolt Diameter	Grade 2		Grade 5		Grade 8	
	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4"	50 In. Lbs.	56 In. Lbs.	76 In. Lbs.	87 In. Lbs.	9 Ft. Lbs.	10 Ft. Lbs.
5/16"	8 Ft. Lbs.	9 Ft. Lbs.	13 Ft. Lbs.	14 Ft. Lbs.	18 Ft. Lbs.	20 Ft. Lbs.
3/8"	15 Ft. Lbs.	17 Ft. Lbs.	23 Ft. Lbs.	26 Ft. Lbs.	33 Ft. Lbs.	37 Ft. Lbs.
7/16"	25 Ft. Lbs.	27 Ft. Lbs.	37 Ft. Lbs.	41 Ft. Lbs.	52 Ft. Lbs.	58 Ft. Lbs.
1/2"	35 Ft. Lbs.	40 Ft. Lbs.	57 Ft. Lbs.	64 Ft. Lbs.	80 Ft. Lbs.	90 Ft. Lbs.
9/16"	50 Ft. Lbs.	60 Ft. Lbs.	80 Ft. Lbs.	90 Ft. Lbs.	115 Ft. Lbs.	130 Ft. Lbs.
5/8"	70 Ft. Lbs.	80 Ft. Lbs.	110 Ft. Lbs.	125 Ft. Lbs.	160 Ft. Lbs.	180 Ft. Lbs.
3/4"	130 Ft. Lbs.	145 Ft. Lbs.	200 Ft. Lbs.	220 Ft. Lbs.	280 Ft. Lbs.	315 Ft. Lbs.
7/8"	125 Ft. Lbs.	140 Ft. Lbs.	320 Ft. Lbs.	350 Ft. Lbs.	450 Ft. Lbs.	500 Ft. Lbs.
1"	190 Ft. Lbs.	205 Ft. Lbs.	480 Ft. Lbs.	530 Ft. Lbs.	675 Ft. Lbs.	750 Ft. Lbs.
1 1/8"	265 Ft. Lbs.	300 Ft. Lbs.	600 Ft. Lbs.	670 Ft. Lbs.	960 Ft. Lbs.	1075 Ft. Lbs.
1 1/4"	375 Ft. Lbs.	415 Ft. Lbs.	840 Ft. Lbs.	930 Ft. Lbs.	1360 Ft. Lbs.	1500 Ft. Lbs.
1 3/8"	490 Ft. Lbs.	560 Ft. Lbs.	1100 Ft. Lbs.	1250 Ft. Lbs.	1780 Ft. Lbs.	2030 Ft. Lbs.
1 1/2"	650 Ft. Lbs.	730 Ft. Lbs.	1450 Ft. Lbs.	1650 Ft. Lbs.	2307 Ft. Lbs.	2670 Ft. Lbs.

NOTE: Unplated hardware and bolts with lock nuts should be torqued approximately 1/3 higher than the above values. Bolts lubricated prior to installation should be torqued to 70% of value shown in chart.

GRADE 2
No Marks

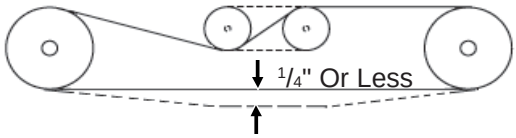
GRADE 5
3 Marks

GRADE 8
6 Marks

CHAIN TENSION ADJUSTMENT

Most drive chains have a spring loaded idler and therefore are self-adjusting. The only adjustment needed is to shorten the chain if wear stretches the chain and reduces spring tension. The pivot point of these idlers should be checked periodically to ensure they rotate freely. On chains that have slotted idlers for adjustment, adjust so chain has 1/4" or less sag at longest span.

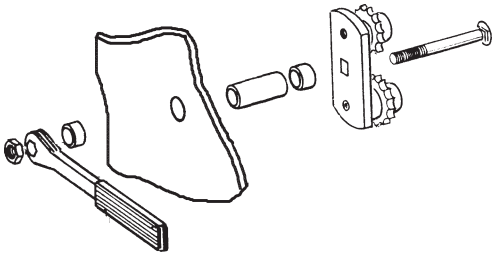
RU55



72495-48

Additional chain links can be found in the storage area located at the end of the planter frame on the inboard side of the transport hook.

(MT18a)

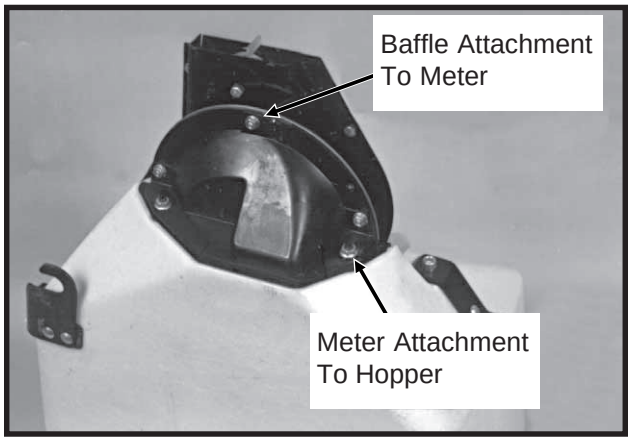


Note: The nut on the mounting bolt (on applicable idler assemblies) must be kept tight or chain tension will not be maintained and adjustment wrench will not function properly.

FINGER PICKUP SEED METER INSPECTION/ADJUSTMENT

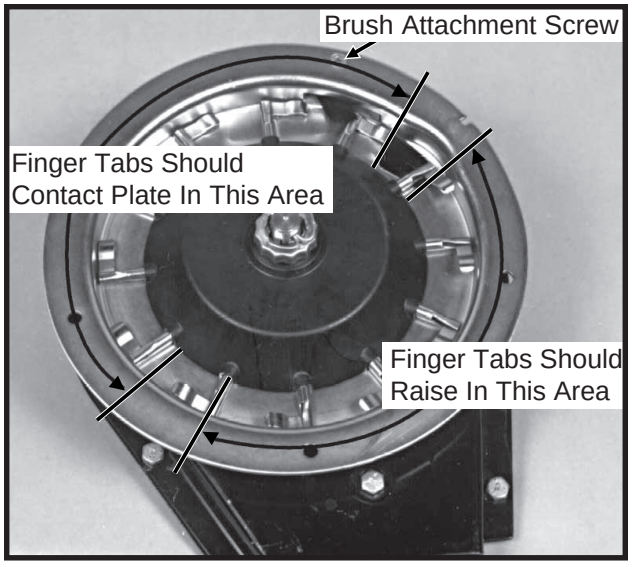
To inspect or service the finger pickup seed meter, remove the meter from the seed hopper by removing the two nuts which secure the mechanism to the hopper. Remove the baffle from the meter assembly by removing three cap screws. This will permit access to the finger pickup.

60620-8



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.

60620-16a

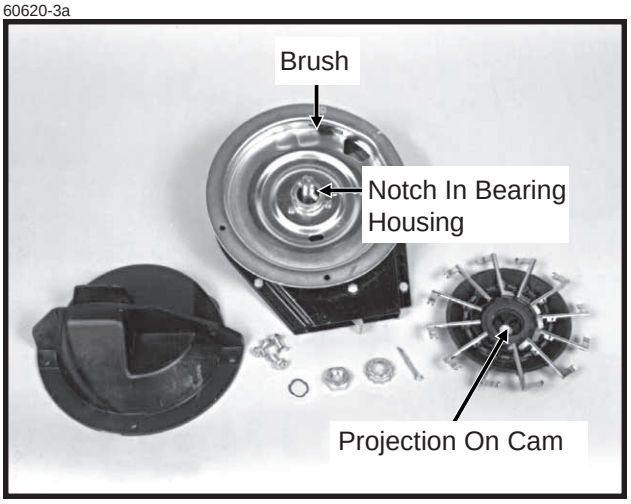


A build-up of debris or chaff may prevent proper finger operation and will require disassembly and cleaning of the corn meter as follows:

1. Remove cotter pin, cage nut and adjusting nut and wave washer (If Applicable) from drive shaft.

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

60620-3a



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

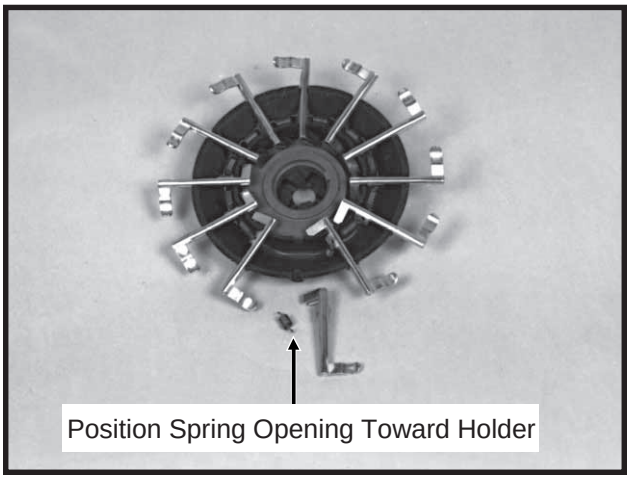
EXAMPLE: Approximately 800 acres of corn on an 8 row machine or 1200 acres on a 12 row machine.

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

4. To replace fingers or springs, remove springs from fingers and remove finger from holder by lifting it out of the friction fit slot. Under average conditions, life expectancy of these parts should be 600-900 acres per row of operation.

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.

60620-22



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 mating notch in the bearing housing to ensure proper operation when assembled.

50725-4

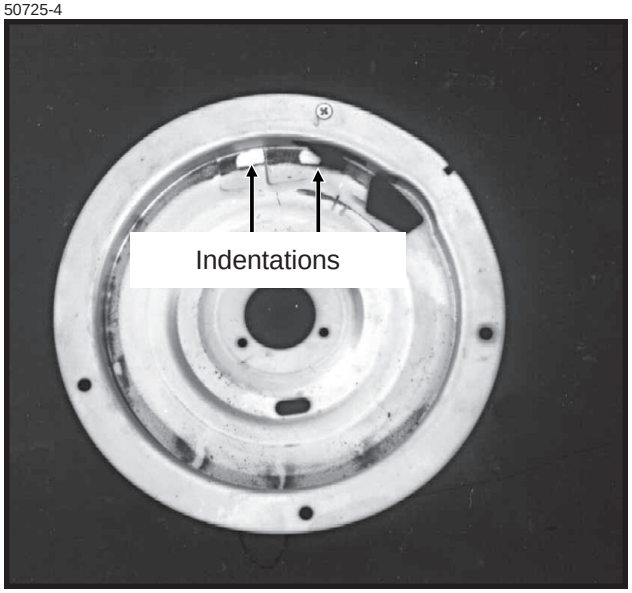


Photo Shows Worn Plate

7. Before installing the finger holder on the carrier plate, check the indentations on the carrier plate for wear. Excessive wear of the carrier plate at the indentations will cause over planting especially when using small sizes of seed corn.

   Inspect the carrier plate annually. Under average conditions, the life expectancy of the carrier plate should be 250-300 acres per row of operation.

8. With finger holder flush against the carrier, install wave washer and adjusting nut. Tighten adjusting nut to fully compress wave washer. Then back off nut 1/2 to 2 flats (1/12 to 1/3 turn) to obtain rolling torque of 14 to 22 inch pounds.

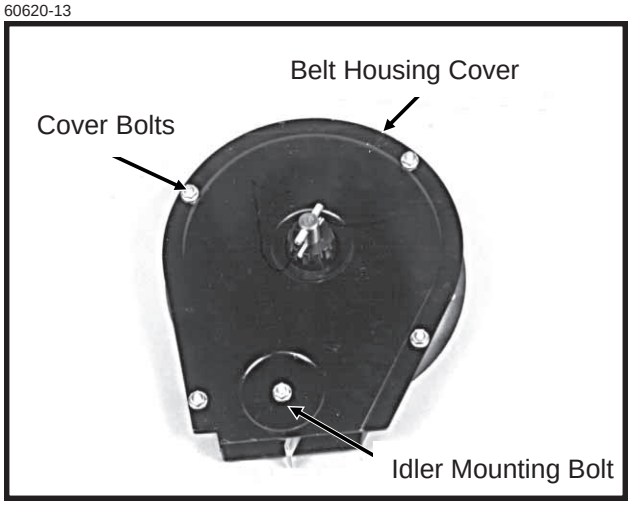
9. Turn finger holder by hand to make sure it is positioned firmly against the carrier, but is not over tightened and can be rotated with moderate force.

10. Install cage nut and cotter pin and reinstall housing.

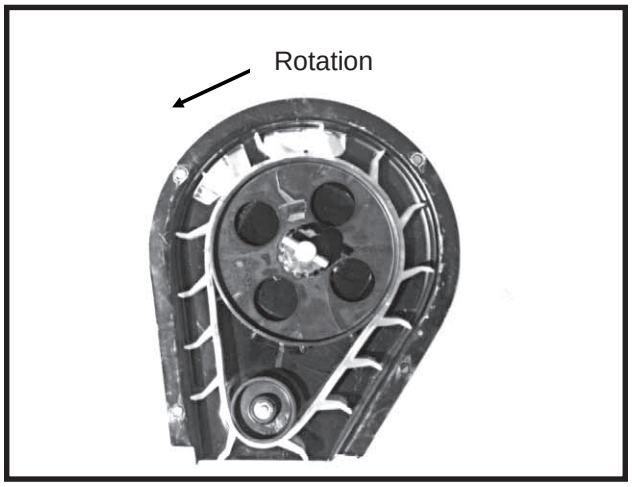
NOTE: Check tightness of adjusting nut on each unit after first day of use and periodically thereafter.

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

60620-13



60887-97



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

CAUTION: Do not over tighten hardware.

FINGER PICKUP SEED METER CLEANING

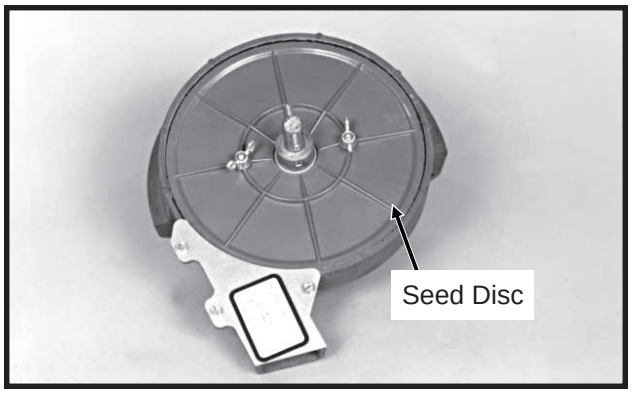
1. Disassemble meter.
2. Blow out any foreign material present in the meter mechanism.
3. Wash in mild soap and water. DO NOT USE GASOLINE, KEROSENE OR ANY OTHER PETROLEUM BASED PRODUCT.
4. Dry thoroughly.
5. Coat lightly with a rust inhibiter.
6. Reassemble and store in a dry place.

FINGER PICKUP SEED METER TROUBLESHOOTING

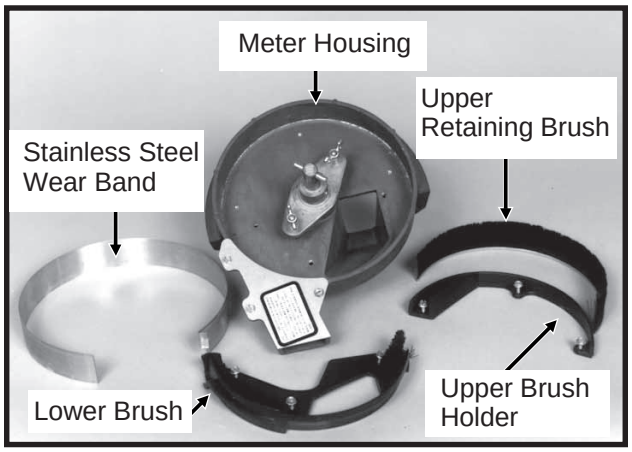
PROBLEM	POSSIBLE CAUSE	SOLUTION
One row not planting seed.	Drive release not engaged.	Engage drive release mechanism.
	Foreign material in hopper.	Clean hopper and finger carrier mechanism.
	Seed hopper empty.	Fill seed hopper.
	Pin sheared in drive release sprocket.	Replace pin. Inspect meter for obstructions or defective parts.
	Row unit drive chain off of sprocket or broken.	Check drive chain.
Drive release does not engage properly.	Drive release shaft is not aligned properly with meter drive shaft.	Align drive mechanism. See “Seed Meter Drive Adjustment”.
Unit is skipping.	***Foreign material or obstruction in meter.***	***Clean out and inspect.***
	Finger holder improperly adjusted.	***Adjust to proper setting. (22 to 25 in. lbs. rolling torque)***
	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. (22 to 25 in. lbs. rolling torque)***
	Worn brush in carrier plate.	***Inspect and replace if necessary.***
Over planting.	***Worn carrier plate.***	***Inspect and replace if necessary.***
	Seed hopper additive being used.	***Reduce or eliminate additive or increase graphite***
Under planting.	***Belt installed backwards.***	***Remove and install correctly.***
	Weak or broken springs.	***Replace.***
	Spring not properly installed.	***Remove finger holder and correct.***
	Seed belt catching or dragging.	***Replace belt.***
	Brush dislodging seed.	***Replace brush.***
Irregular or incorrect seed spacing.	Driving too fast.	Check chart for correct speed.
	Wrong tire pressure.	Inflate tires to correct air pressure.
	Drive wheels slipping.	Reduce down pressure on row unit down force springs.
	Wrong sprockets.	Check seed rate charts for correct sprocket combinations.
Seed spacing not as indicated in charts.	Wrong tire pressure.	Inflate tires to correct air pressure.
	Inconsistent seed size.	Do field check and adjust sprockets accordingly.
	Wrong sprockets.	Check chart for correct sprocket combination.
	Charts are approximate.	Slight variations due to wear in meter components and tire slippage due to field conditions may produce seed spacing variations.
	Stiff or worn drive chains.	Replace chains.
Scattering of seeds.	Planting too fast.	Reduce planting speed.
	Seed tube improperly installed.	Check seed tube installation.
	Seed tube worn or damaged.	Replace seed tube.
Seed tubes and/or openers plugging.	Allowing planter to roll backward when lowering.	Lower planter only when tractor is moving forward.
Inconsistent seed depth.	Rough seed bed.	Adjust down pressure springs. Reduce planting speed.
	Partially plugged seed tube.	Inspect and clean.
	Seed tube improperly installed.	Install properly.

BRUSH-TYPE SEED METER MAINTENANCE

60607-10

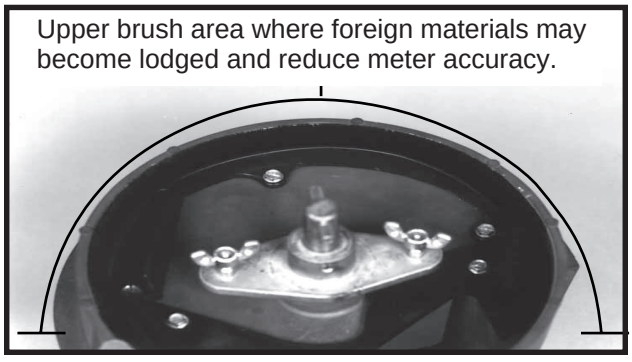


60607-3



Only clean, high quality seed should be used for maximum meter accuracy. Damaged or cracked seed, hulls or foreign materials may become lodged in the upper seed retaining brush and greatly reduce meter accuracy. It is suggested that the seed disc be removed daily, inspected and cleaned. Check for buildup of foreign material on the seed disc, particularly in the seed loading slots. Clean the disc by washing it with soap and water. Check for cracked seed, hulls, etc. lodged between the brush holder and stainless steel wear band which can greatly reduce the accuracy of the meter because the retaining brush will not be able to retain the seed in the seed disc pocket. Use compressed air to clean the brush areas of the meter housing.

60607-8/60607-8L



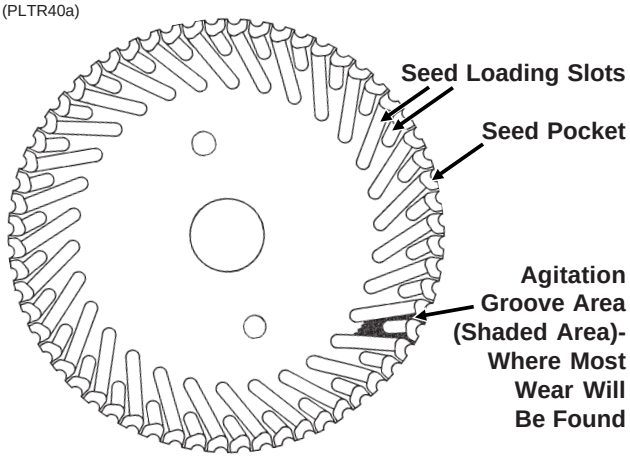
NOTE: Replace hopper lids after hoppers are filled to prevent accumulation of dust or dirt in the seed meter which will cause premature wear.

Cleaning brush-type seed meter for storage:

1. Remove meter from seed hopper by removing the two nuts which secure the meter to the hopper.
2. Remove seed disc and wash with soap and water and dry thoroughly.
3. Remove upper retaining brush by removing the three hex head screws from the brush holder and removing brush holder and retaining brush.
4. Remove the three hex head screws from the lower brush and remove lower brush and stainless steel wear band.
5. Wash all parts and meter housing with soap and water and dry thoroughly.
6. Inspect all parts for wear and replace worn parts.
7. Reassemble meter except for seed disc. **Meter should be stored in a rodent-free space with seed disc removed.**

Seed Disc Wear

(PLTR40a)

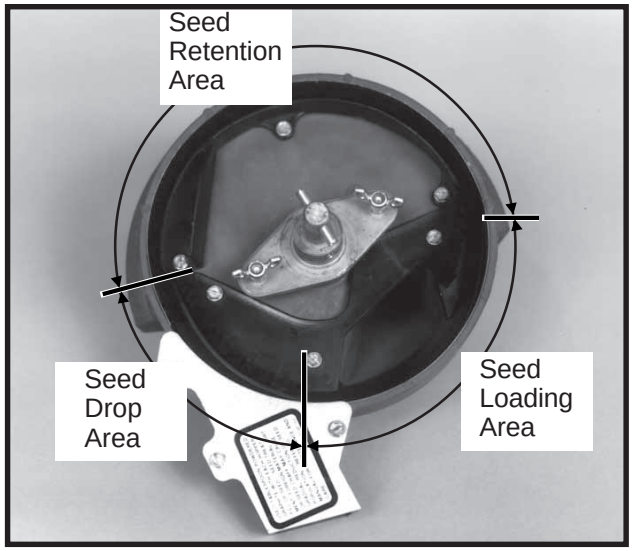


Most wear on the seed disc will be found in the agitation groove area (area between the seed loading slots). Wear will affect planting accuracy at high RPM. To measure for wear, lay a straight edge across the surface of the disc and measure the gap between the disc (at the agitation groove area) and the straight edge. If the agitation groove areas are worn in excess of .030" and accuracy starts to drop off at higher meter RPM, the seed disc should be replaced.

Estimated life expectancy of the seed disc under normal operating conditions should be approximately 200 acres per row. Severe operating conditions such as dust, lack of lubrication or abrasive seed coating could greatly reduce life expectancy of the seed disc.

Upper Retaining Brush

60607-21



The upper retaining brush holds seed in the seed disc pocket in the seed retention area.

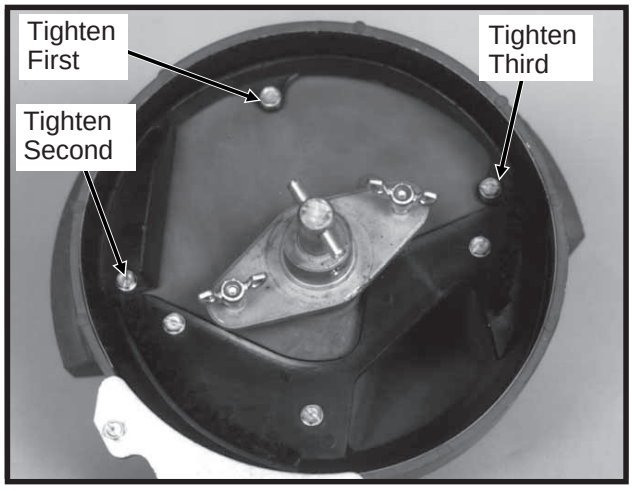
The retaining brush must apply enough pressure against the seed in the seed disc pocket as the disc rotates through the seed retention area to prevent the seed from dropping out of the disc pocket. A damaged spot, excessive wear on the brush or foreign material lodged in the brush may greatly reduce meter performance.

The upper retaining brush should be replaced at approximately 120-400 acres per row of use or sooner if damage or excessive wear is found.

Installation Of Upper Retaining Brush

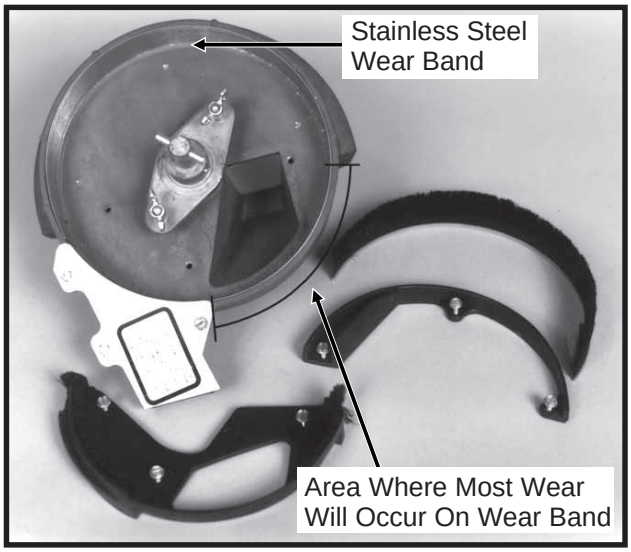
Position retaining brush into inner perimeter of seed retention area. Make sure the base of the brush is tight against the bottom of the meter housing. Install brush holder and three hex head screws. Tighten center screw first, left screw second and right screw last.

60607-21



Stainless Steel Wear Band

60607-38a

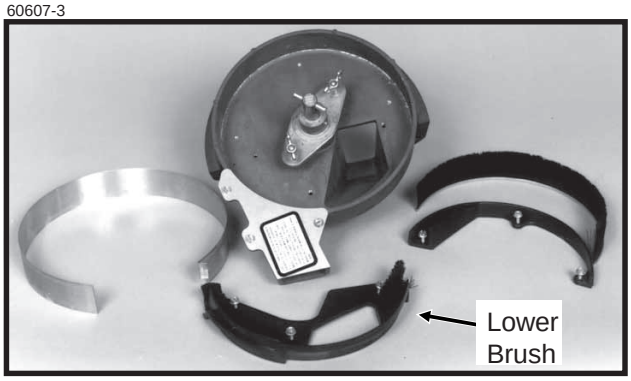


The purpose of the stainless steel wear band is to protect the meter housing from wear. The band is .030" thick and should be replaced when approximately .020" of wear is found in the primary area of wear. If the wear band is allowed to wear through or if the meter is used without the wear band in place, damage to the meter housing may occur.

Estimated life expectancy of the stainless steel wear band is 240-800 acres per row.

Lower Brush

60607-3



The lower brush has several functions. One function is to move seed down the seed loading slots to the seed pockets. The second function is to isolate seed from the reservior from entering the seed tube and a third is to clean the seed loading slots.

Estimated life expectancy of the lower brush is 240-800 acres per row. The lower brush should be replaced if the bristles are deformed or missing or if there are cracks in the brush holder.

BRUSH-TYPE SEED METER TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Low count.	Meter RPM too high.	Reduce planting speed.
	Misalignment between drive clutch and meter.	See “Seed Meter Drive Adjustment”.
	Seed sensor not picking up all seeds dropped.	Clean seed tube. Switch meter to different row. If problem stays with same row, replace sensor.
	Lack of lubrication causing seeds not to release from disc properly.	Use graphite or talc as recommended.
	Seed size too large for seed disc being used.	Switch to smaller seed or appropriate seed disc. See “Brush-Type Seed Meter” for proper seed disc for size of seed being used.
	Seed treatment buildup in meter.	Reduce amount of treatment used and/or thoroughly mix treatment with seed.
Low count at low RPM and higher count at higher RPM.	Foreign material lodged in upper retaining brush.	Remove seed disc and remove foreign material from between brush holder and bristles. Clean with compressed air.
	Worn upper retaining brush.	Replace. See “Maintenance”.
Low count at higher RPM and normal count at low RPM.	Seed disc worn in the agitation groove area.	Replace disc. See “Maintenance”.
High count.	Seed size too small for seed disc.	Switch to larger seed or appropriate seed disc.
	Incorrect seed rate transmission setting.	Reset transmission. Refer to proper rate chart in “Machine Operation” section of manual.
	Upper brush too wide (fanned out) for small seed size.	Replace upper brush.
Upper retaining brush laid back.	Seed treatment buildup on brush.	Remove brush. Wash with soap and water. Dry thoroughly before reinstalling. See “Maintenance”.
	Buildup of foreign material at base of brush.	Remove brush holder and brush. Clean with compressed air. Reinstall.

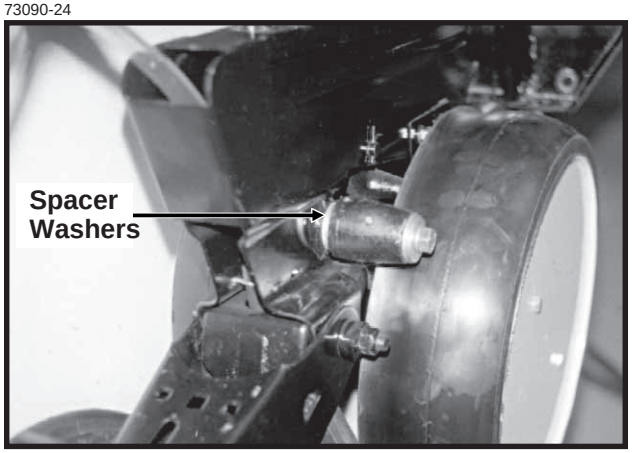
CLOSING WHEEL TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Closing wheel(s) leave severe imprint in soil.	Too much closing wheel down pressure.	Adjust closing wheel pressure.
Closing wheel(s) not firming soil around seed.	Insufficient closing wheel down pressure.	Adjust closing wheel pressure. Severe no till conditions may require use of cast iron closing wheels.
“V” closing wheel running on top of seed furrow.	Improper centering.	Align. See “V Closing Wheel Adjustment”.
Single closing wheel not directly over seed.	Improper centering.	Align. See “Covering Discs/Single Press Wheel Adjustment”.

GAUGE WHEEL ADJUSTMENT

To prevent an accumulation of dirt or trash, gauge wheels should lightly contact the opener blades. Gauge wheels and opener blades should turn with only slight resistance.

73090-24



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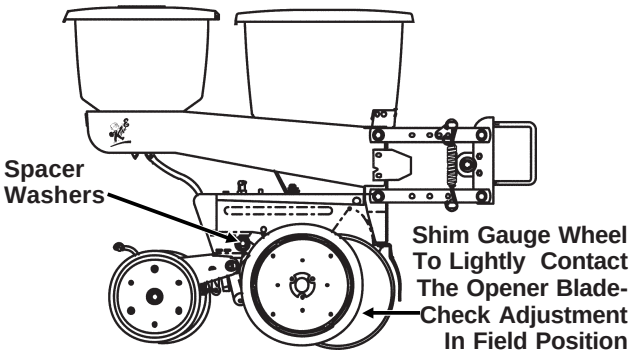


To adjust clearance between gauge wheels and opener blades, add or remove spacer washers between the shank and gauge wheel arm. Store remaining spacer washers between gauge wheel arm and flat washer on outer side of gauge wheel arm.

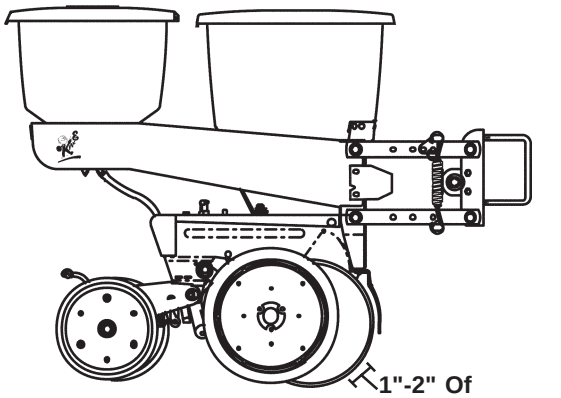
NOTE: It may be desirable to space gauge wheel further from blade when operating in sticky soils.

15" SEED OPENER DISC/BEARING ASSEMBLY

1"-2" of blade-to-blade contact should be maintained to properly open and form the seed trench. As the blade diameter decreases due to wear, it will be necessary to remove spacer washers to maintain 1"-2" of contact.

If 1"-2" of blade-to-blade contact cannot be maintained after removing spacer washers or if blade diameter falls below 14 1/2", the blade should be replaced.

(RU61a)



To replace disc/bearing assembly:

1. Remove gauge wheel.
2. Remove scraper.
3. Remove bearing dust cap.
4. Remove jam nut and washer from outside of disc/bearing assembly.

NOTE: Left hand side of opener uses a left hand threaded nut. DO NOT OVER TIGHTEN. Damage to mounting spindle will require replacement of row unit shank assembly.

5. Remove disc/bearing assembly. The spacer bushings between the shank and disc are used to maintain the 1"-2" blade-to-blade contact.
6. After installing new disc/bearing assembly, install washer and jam nut to secure disc/bearing assembly. Torque 5/8"-11 Grade 2 nut to value shown in "Torque Values Chart".
7. Replace bearing dust cap.
8. Install scraper.
9. Install gauge wheel.

It may be necessary to replace only the bearing if there is excessive endplay or if the bearing sounds rough when the disc is rotated.

To replace bearing:

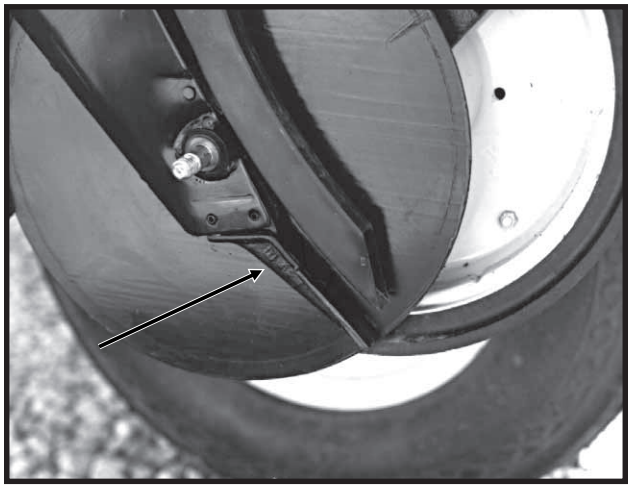
1. Remove gauge wheel, scraper, bearing cap, jam nut, washer and disc/bearing assembly.
2. Remove 1/4" rivets from bearing housing to expose bearing.
3. After installing new bearing, install three evenly spaced 1/4" bolts into three of the six holes in the bearing housing to hold the bearing and bearing housing in place. Install rivets in the other three holes. Remove 1/4" bolts and install rivets in those three holes.
4. Reinstall disc/bearing assembly, washer and jam nut. Torque 5/8"-11 Grade 2 nut to value shown in "Torque Values Chart" at the beginning of this section.
5. Replace bearing dust cap.
6. Install scraper and gauge wheel.

SEED TUBE GUARD/INNER SCRAPER

The seed tube guard protects the seed tube and acts as the inner scraper for the disc opener blades.

Remove the seed tube and check for wear. Excessive wear on the seed tube indicates a worn seed tube guard.

50881-9



NOTE: No till planting or planting in hard ground conditions will increase seed tube guard wear and necessitate more frequent inspection.

The gauge wheels and seed opener discs must be removed before the seed tube guard can be replaced.

ROW UNIT MOUNTED NO TILL COULTER

80367-10

Lubricate at frequency indicated in the lubrication section of this manual. Check periodically to be sure nuts and hardware are tightened to proper torque specification.

NOTE: Torque $^{5}/_{8}$" spindle bolts to 120 ft. lbs.

Be sure the coulter is positioned square with the row unit and aligned in front of row unit disc opener.

The coulter blade can be adjusted to one of four settings. Initially the blade is set in the highest position. As the blade wears it can be adjusted to one of the three lower settings. See “Row Unit Mounted No Till Coulter” in Operation Section of this manual.

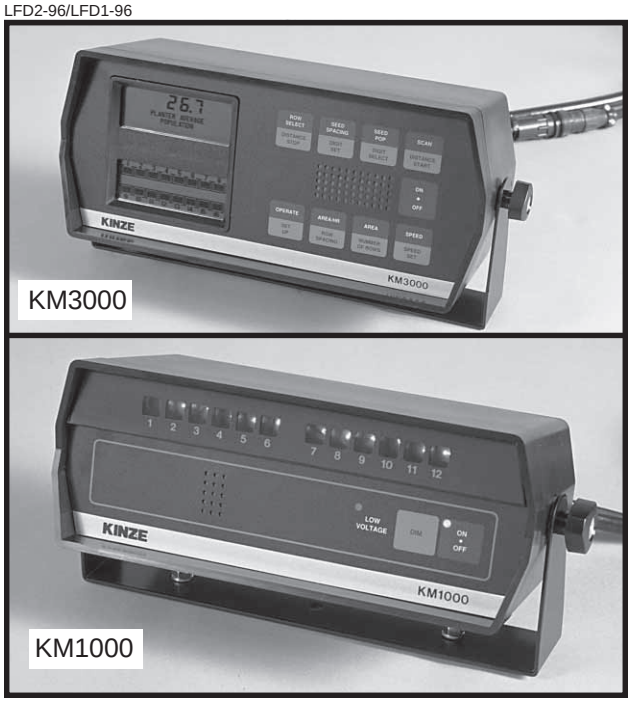
When the 16" diameter coulter blade is worn to a 14 $^{1}/_{2}$" diameter (maximum allowable wear), it should be replaced.

Timely lubrication at the frequency indicated in the lubrication section of this manual is necessary to purge moisture and dirt from bearing and seal. This will also lubricate the seal.

NOTE: Add grease until it comes out around the seal. Spin hub while filling with grease.

ELECTRONIC SEED MONITOR SYSTEM TROUBLESHOOTING

LFD2-96/LFD1-96



The general procedure to use, if a problem occurs, is to isolate the cause to a sensor, sensor lead, planter harness, console cable or the console, in that order. Make necessary repairs after problem has been isolated.

NOTE: The 36 Row 20" size is equipped with two consoles and a single radar distance sensor. Each half of the planter has its own monitor system.

1. Sensors

Check for excessive dirt inside sensor. Check for cut or damaged wires. Connect sensor to the planter harness in a row that is operating properly. If it then operates correctly, sensor is good.

In some cases static electricity may cause dust and seed treatment to accumulate on the sensing elements in the sensor. Enough may accumulate to cause the sensor to malfunction, which can cause monitor to indicate a fault condition. Low humidity and dry soil conditions tend to cause this condition. When this occurs, clean the inside of the sensors, using a dry bottle brush.

If, for any reason a sensor becomes inoperative and a replacement sensor is not immediately available, disconnect the sensor lead connector from the planter harness, turn monitor OFF and then back ON. This will keep the alarm from sounding for this row only. Replace the defective seed sensor (using high rate seed sensor only) as soon as possible. After sensor is replaced make certain the monitor is turned OFF and back ON to reactivate the sensor position.

If sensor leads are damaged, carefully cut away the cable covering at the damaged area. Repair damaged wire or wires by soldering wires together with rosin core solder, being sure to match wire colors, then tape each repaired wire. Finally, tape over cut portion of the cable cover. If necessary, relocate and secure cable so that the same type of damage will not occur again.

2. Planter Harness And Console Cable

Carefully examine planter harness and console cable for damage. If harness and/or cable is cut or pinched, carefully cut away the harness/cable covering. Repair cut or damaged wire by soldering wires together with rosin core solder, being sure to match wire colors. Tape each repaired wire, then tape over cut harness/cable covering. If necessary, relocate and secure harness/cable so that the same type damage will not occur again.

3. Console

Check for a blown fuse, located on the console rear panel. Check battery connections and make certain they are clean and tight. Make certain battery is fully charged.

If console fuse is blown replace with a 5-amp type AGC. If fuse blows again, console needs repair or replacement.

CAUTION: DO NOT REPLACE FUSE WITH A FUSE HAVING A HIGHER AMPERAGE RATING.

If the battery cable is not damaged, battery connections are clean and tight and the battery is fully charged, the console is defective and needs to be repaired or replaced.

KM1000 TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE	SOLUTION
1. Low Voltage Indicator is ON.	Connected to 6 volt battery.	Connect to 12 volt battery.
	System voltage insufficient.	Insure greater than 11.0 volts.
	Battery connection corroded.	Inspect battery connections. If console power cable terminals or battery terminals are dirty or corroded, clean terminals as required.
	Console defective.	Repair or replace console. Contact your KINZE® Dealer.
2. One row indicator lamp fails to flash when planting. Alarm does not sound.	Burned out row indicator lamp.	Replace row indicator lamp with a No. 1892 lamp only. (Part No. GR0595).
3. One row indicator lamp fails to flash when planting. Alarm sounds continuously. Seeds are being planted by the row unit.	Sensing elements inside seed sensor are dirty.	Clean sensing elements using a dry bottle brush. NOTE: Some seed treatment chemicals are detrimental to the operation of seed sensors and refuse to be removed by dry brushing. To remove such treatment from the inside of a sensor, proceed as follows: Wet a bottle brush with water, then apply a moderate amount of kitchen cleanser (such as Ajax® or Comet®) to the brush. Scrub inside of sensor until treatment is removed, then rinse sensor in clear cold water. Dry thoroughly.
	Defective sensor.	Plug suspect sensor cable into an adjacent row that is operating correctly. If sensor does not operate, sensor is defective. If you wish to continue planting and a replacement sensor is not available, disconnect the defective sensor cable from the planter harness, turn the monitor OFF and then back ON. The monitor will ignore the disconnected row sensor and you can continue to monitor all other rows.

KM1000 TROUBLESHOOTING CHART (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
4. One row indicator lamp fails to come on when the console is powered up.	Burned out row indicator lamp.	Replace row indicator lamp with a number 1892 lamp only. (Part No. GR0595)
	Defective seed sensor or planter harness.	Disconnect the suspected sensor from the planter harness row lead. Disconnect the sensor from the planter harness of an adjacent row. Reverse the harness row leads to the sensors (connect the suspected sensor to the adjacent row planter harness lead and the adjacent sensor to the suspected row harness lead). Turn console power OFF then back ON. If the symptom moves to the adjacent row, the seed sensor is defective and needs replaced. If the symptom does not move, the planter harness or console is defective and needs repaired. Visually inspect the planter harness for cuts, pinching, etc., if damage is found, repair by cutting away the cable covering and splicing the wires (being sure to match wire colors). Solder the splices and tape each wire individually. Tape over repaired cable.
	Console defective.	Repair or replace console. Contact your KINZE® Dealer.
5. Monitor completely “dead”.	Blown fuse.	Check fuse, located on rear panel of console. If fuse is blown, replace with a 5-amp, type AGC. If fuse blows again, check power connection to battery. If connections are reversed fuse will blow. If battery connections are correct, console needs repair or replacement. Contact your KINZE® Dealer.
	Poor battery connections.	Check battery connections. Connections must be clean and tight.

KM1000 TROUBLESHOOTING CHART (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
5. (Continued)	Cut or broken battery cable.	Visually inspect the battery cable for a cut or broken wire. If wires are cut or broken, splice the wires being sure to match wire colors. Solder the splices and tape each wire individually. USE ONLY ROSIN CORE SOLDER.
	Console defective.	Repair or replace console. Contact your KINZE® Dealer.
6. When monitor is turned ON, row indicator lamps are dark, green power indicator is ON and monitor will not enter operate mode.	Console not connected to planter harness.	Connect console cable to planter harness.
	Defective (shorted) seed sensor.	Leave monitor turned on. Unplug seed sensors one at a time starting with row 1. When you disconnect a sensor and the remaining row indicator lamps come on, the sensor or its cable is defective. Visually inspect the sensor cable. If damaged, repair. If no cable damage is found, the sensor is defective and needs to be replaced. If all but the last sensor is disconnected and the problem still exists, reconnect a sensor before disconnecting the last sensor. If the last sensor is disconnected and the problem still exists, the planter harness, console cable or console is at fault.
	Planter harness shorted.	Visually inspect the planter harness (including all row unit cables) for cuts, pinching and other types of damage. If damage is found, cut away cable covering and repair the individual wires. Tape over repaired wire and cable.
	Console defective.	If the console cable, planter harness, and seed sensors are normal, the console is at fault and needs to be repaired or replaced. Contact your KINZE® Dealer.

KM3000 TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE	SOLUTION
1. Display readout incomplete (fragmented) alarm sounds continuously.	Low battery voltage.	Recharge or replace battery.
	Battery connections corroded.	Inspect battery connection. If console power cable terminals or battery terminals are dirty or corroded, clean terminals as required.
	Console defective.	Repair or replace console. Contact your KINZE® Dealer.
2. One row indicator segment (lower display) fails to flash when planting. Population readout for the planter row is .0. Alarm sounds continuously. Seeds are being planted by the row unit.	Sensing elements inside seed sensor are dirty.	Clean sensing elements using a dry bottle brush. NOTE: Some seed treatment chemicals are detrimental to the operation of seed sensors and refuse to be removed by dry brushing. To remove such treatment from the inside of a sensor proceed as follows: Wet a bottle brush with water, then apply a moderate amount of kitchen cleanser (such as Ajax® or Comet®) to the brush. Scrub inside of sensor until treatment is removed, then rinse sensor in clear cold water. Dry thoroughly.
	Defective sensor.	Plug suspect sensor cable into an adjacent row that is operating correctly. If sensor does not operate, sensor is defective. If you wish to continue planting and a replacement sensor is not available, disconnect the defective sensor cable from the planter harness, turn the monitor OFF and then back ON. The monitor will ignore the disconnected row sensor and you can continue to monitor all other rows.
3. Display will not accumulate area planted.	Both radar ground and magnetic distance sensors are connected to the monitor at the same time.	Disconnnect either the radar ground sensor or the magnetic distance sensor.

KM3000 TROUBLESHOOTING CHART (Continued)

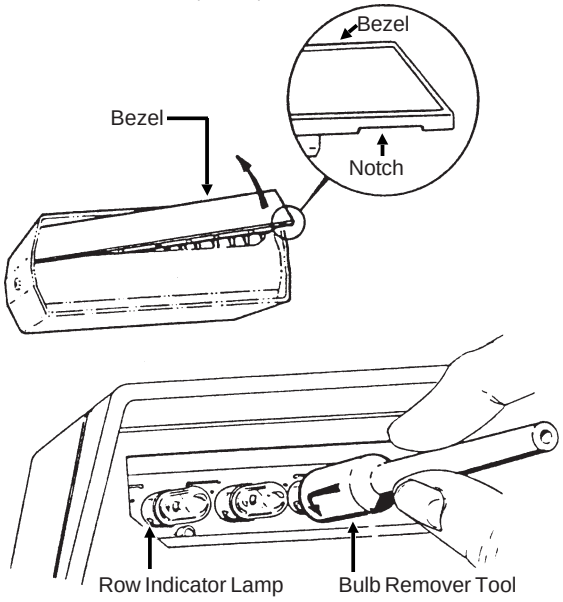
PROBLEM	POSSIBLE CAUSE	SOLUTION
4. Monitor completely "dead".	Blown console fuse.	Check fuse, located on rear panel of console. If fuse is blown, replace with a 5-amp, type AGC. If fuse blows again, check power connection to battery. If connections are reversed fuse will blow. If battery connections are correct, console needs to be repaired or replaced. Contact your KINZE® Dealer.
	Poor battery connections.	Check battery connections. Connections must be clean and tight.
	Cut or broken battery cable.	Visually inspect the battery cable for a cut or broken wire. If wires are cut or broken, splice the wires being sure to match wire colors. Solder the splices and tape each wire individually. USE ONLY ROSIN CORE SOLDER.
	Low battery voltage.	Check battery voltage. Must be at least 12 volts. If not, recharge or replace battery.
	Console defective.	Repair or replace console. Contact your KINZE® Dealer.
5. When monitor is turned ON, row display (lower display) remains blank. Upper display shows SPEED, NUMBER OF ROWS, and ROW SPACING constants. Monitor will not enter OPERATE mode.	Console not connected to planter harness.	Connect console cable to planter harness.
	Defective (shorted) seed sensor.	Leave monitor turned ON. Unplug seed sensors one at a time starting with row 1. When you disconnect a sensor and the remaining row display segments come on and the monitor enters the operate mode, the sensor or its cable is defective. Visually inspect the sensor cable, if damaged repair. If no cable damage is found, the sensor is defective and needs replaced. If all sensors are disconnected and problem still exists, the planter harness, console cable or console is at fault.

KM3000 TROUBLESHOOTING CHART (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
5. (Continued) When monitor is turned ON, row display (lower display) remains blank. Upper display shows SPEED, NUMBER OF ROWS, and ROW SPACING constants. Monitor will not enter OPERATE mode.	Planter harness shorted.	Visually inspect the planter harness (including all row unit cables) for cuts, pinching and other types of damage. If damage is found, cut away cable covering and repair the individual wires. Tape over repaired wire and cable.
	Console cable shorted.	Visually inspect the console cable for cuts, pinching and other types of damage. If damage is found, cut away cable covering and repair the individual wires. Tape over repaired wire and cable.
	Console defective.	If the console cable, planter harness and seed sensors are normal, the console is at fault and needs to be repaired or replaced. Contact your KINZE® Dealer.

SEED MONITOR ROW INDICATOR BULB REPLACEMENT (KM1000 Only)

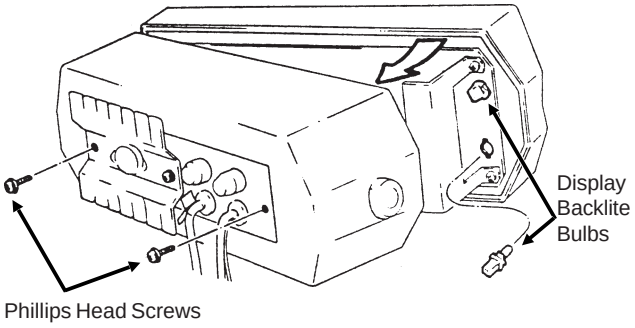
D-0802-0002/D-0802-0003(PLTR41)



Carefully remove the row indicator bezel as shown. Use your fingernail to pry up along the lower outside edge of the bezel. Remove bezel. Remove burned out bulb using a bulb remover tool. Press in on bulb, turn 1/4 turn counterclockwise and remove bulb. Replace bulb with a No. 1892 (Part No. GR0595) only.Install bezel.

SEED MONITOR DISPLAY BACKLITE BULB REPLACEMENT (KM3000 Only)

D-0841-0006(PLTR42)

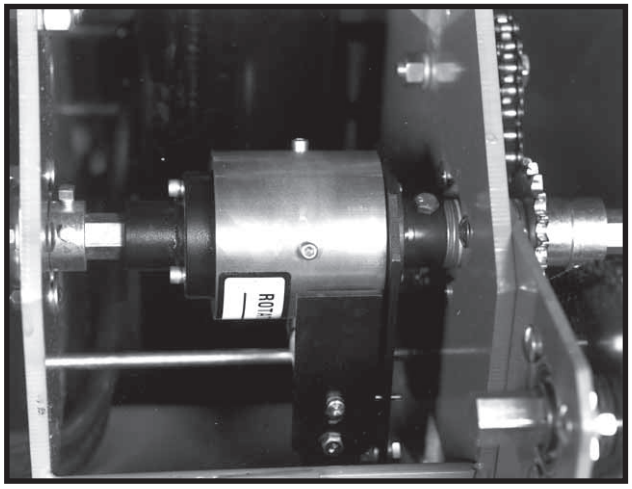


Remove the two outside Phillips head screws. NOTE: DO NOT REMOVE THE CENTER PHILLIPS HEAD SCREW. Carefully separate the console case from the front panel. Remove the defective bulb by turning the lamp assembly 1/4 turn counterclockwise and pulling straight out. Replace bulb with a GE No. 73 bulb (Part No. GR1084). Carefully assemble the console front panel, case and rear panel and install the two Phillips head screws. **CAUTION: Make sure that all wires are located where they will not be pinched or cut.**

POINT ROW WRAP SPRING CLUTCH INSPECTION

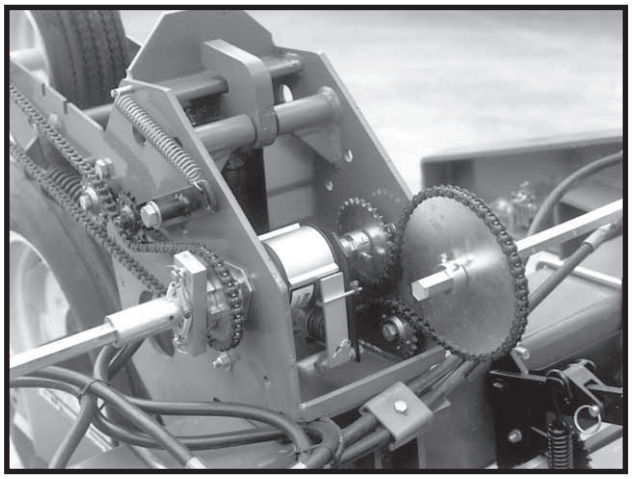
The point row wrap spring clutch is permanently lubricated and requires no periodic maintenance.

74256-8



Style A

82378-18



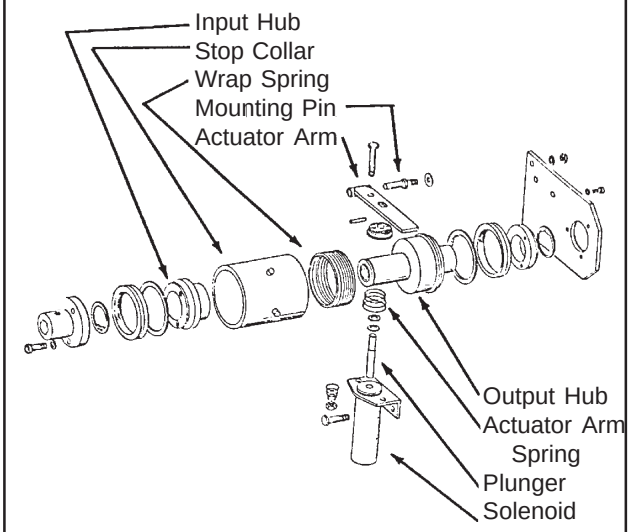
Style B

The wrap spring point row clutch on the R.H. side of the planter and the wrap spring point row clutch on the L.H. side of the planter, both operate counterclockwise.

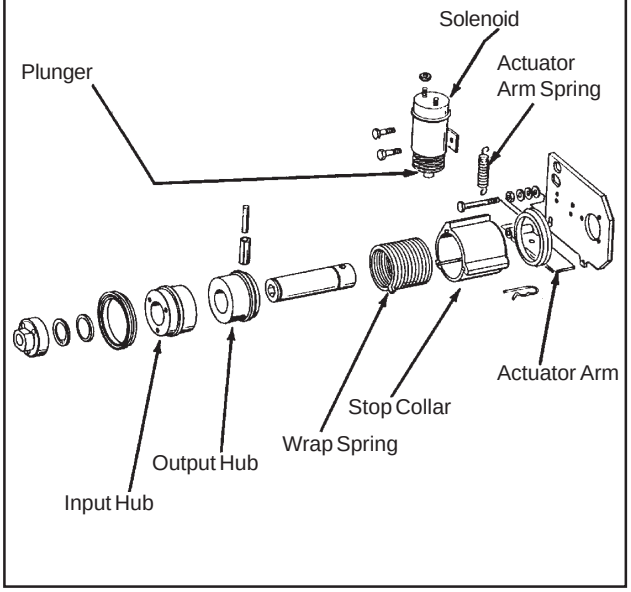
If the clutch or clutches fail to operate first determine if the problem is electrical or mechanical. Place the operational switch in the RIGHT or LEFT position. When the switch is in the RIGHT or LEFT position and the main fuse on the front of the control console is in working condition, the red indicator light on the control console should be lighted. If light does not come on, check the 10 amp (delay action) slow blow fuses on the front of the control console. See “Point Row Wrap Spring Clutch Troubleshooting” chart. If fuses are not blown, check the clutch and wiring harness for power with a test light or volt meter. If the solenoid is operating properly, the plunger on the solenoid will retract causing a clicking sound. The plunger will also be magnetized which can be checked by touching the plunger with a metal object.

NOTE: Always replace fuse with proper size and type when replacing fuses. Use AGC-15 amp main fuse and MDL-10 amp slow blow fuses.

PRC018(PLTR65) **STYLE A**



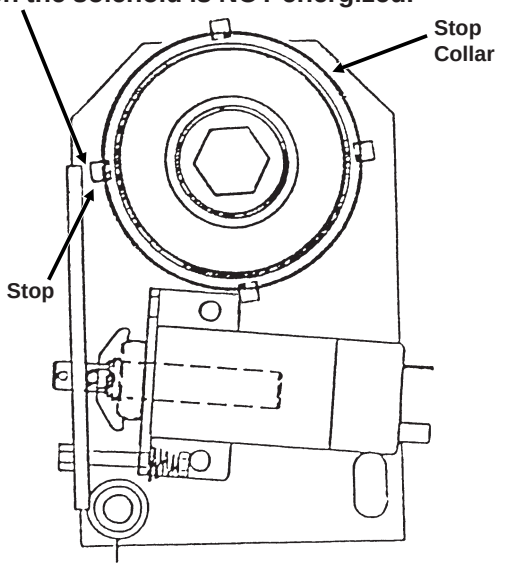
PRC019(PLTR53) **STYLE B**



(PLTR66a) **STYLE A**

ACTUATOR ARM ADJUSTMENT

NOTE: Gap between actuator arm and stop on stop collar should be not less than 1/16" (.063") when the solenoid is NOT energized.

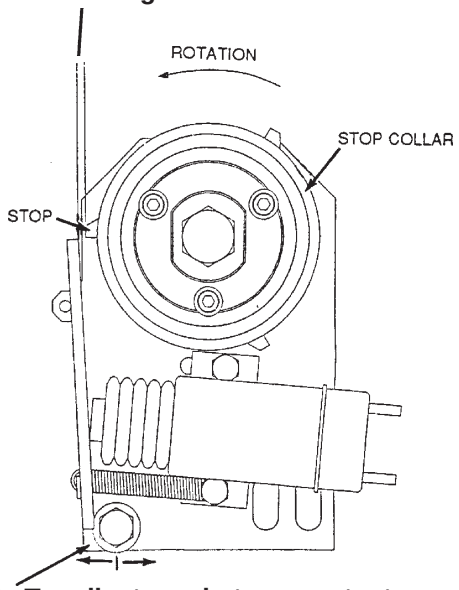


NOTE: To adjust gap between actuator arm and stop, loosen nut on mounting pin and move pin in slot until there is at least 1/16" gap between arm and stop on stop collar. Retighten nut.

(PLTR54) **STYLE B**

ACTUATOR ARM ADJUSTMENT

NOTE: Gap between actuator arm and stop on stop collar should be 1/8" (± 1/32") when the solenoid is NOT energized.



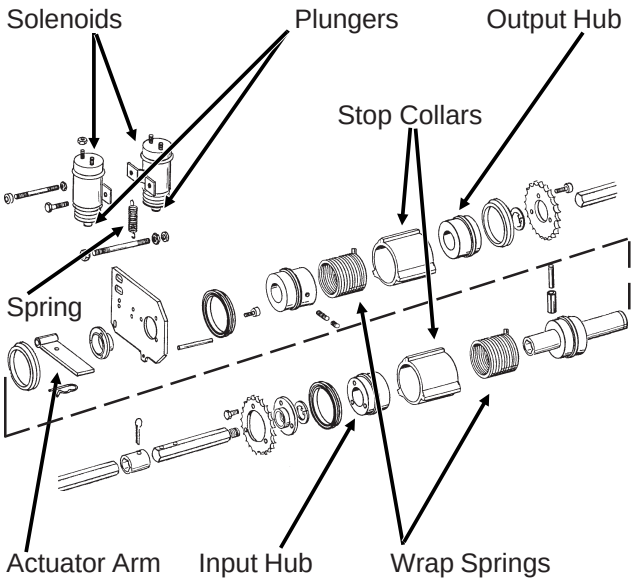
NOTE: To adjust gap between actuator arm and stop, loosen nut on mounting pin and move pin in slot until there is at least 1/8" (± 1/32") gap between arm and stop on stop collar. Retighten nut.

TWO-SPEED POINT ROW WRAP SPRING CLUTCH

The two-speed point row wrap spring clutch is similar in design and operation to the standard point row wrap spring clutch except for the two-speed function. If a two-speed clutch or clutches fail to operate properly, refer to "Point Row Wrap Spring Clutch Inspection" and "Point Row Wrap Spring Clutch Troubelshooting" for additional information.

NOTE: If the "Reduced Rate/Full Rate" functions fail to engage or disengage, see troubleshooting chart for possible cause.

(FF47)



POINT ROW WRAP SPRING CLUTCH TROUBLESHOOTING

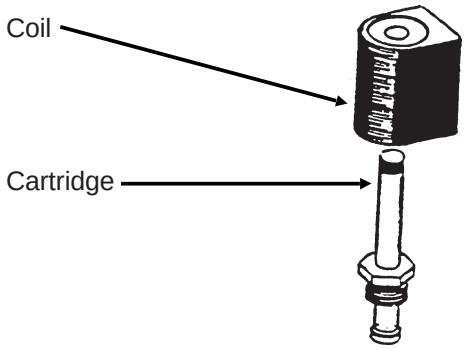
PROBLEM	POSSIBLE CAUSE	SOLUTION
Neither clutch will disengage.	Main fuse blown in control console.	Replace defective main fuse.
	Poor terminal connection in wiring harness.	Repair or replace.
	Wiring damage in wiring harness.	Repair or replace.
	Low voltage at coil. (12 volts required)	Check battery connections.
One side of planter will not re-engage.	Shear pin in seed drive transmission sheared.	Replace with one of equal size and grade.
One clutch will not engage.	Fuse blown in control console.	Replace defective fuse.
	Actuator arm and plunger stuck in disengaged position.	Remove, free up and reinstall.
	Actuator arm out of adjustment.	Adjust actuator arm mounting pin in slot so actuator arm clears stop on stop collar as shown in “Point Row Wrap Spring Clutch Inspection.”
	Wrap spring broken or stretched.	Disassemble clutch and replace spring.
	Foreign substance such as oil or grease on the input or output hubs.	Disassemble clutch. Clean hubs and spring and reassemble.
	Something touching the stop collar.	Check to ensure collar is free to turn with clutch.
	Clutch assembled incorrectly.	Check clutch and diagram for correct assembly.
Clutch slipping.	Wrap spring stretched.	“Lock” clutch output shaft from turning. Place torque wrench on input shaft and rotate in direction of drive. After input shaft has rotated a short distance the wrap spring should tighten onto the input hub. If slippage occurs at less than 100 ft. lbs. replace spring. If spring still slips after installing new spring, replace input hub.
Planter will not re-engage while planter is moving forward.	Spring in actuator arm not strong enough to push arm away from stop collar when the operational switch is turned to the ON position.	Remove spring from inside solenoid and stretch spring slightly or replace. Reinstall spring. If that fails, file the stop on the stop collar slightly so that the stop is not as aggressive.
Frequent solenoid burnout.	Fuses too large.	Replace fuses in control console with proper size and type.
Frequent fuse burnout.	Low voltage (12 volts required).	Check power source voltage for partially discharged battery, etc.
	Damage to wiring harness.	Locate damage and repair or replace harness.
Clutch or clutches will not disengage.	Input and output shafts out of alignment.	Align input and output shafts to prevent drag.
	Input or output shaft is pushed in too far creating a coupler.	Reposition input and output shafts.

SOLENOID VALVE INSPECTION

The solenoid valve consists of a chambered body containing a cartridge valve which is activated by an electrical coil.

If the solenoid or solenoids fail to operate, first determine if the problem is electrical or hydraulic. If the valve is working properly, a click will be heard when the solenoid coil is energized. This will be the valve stem opening up. If no sound is heard, check the solenoid coil by touching the top of the coil housing with a metallic object such as a pliers or screwdriver. If the coil is working properly, the coil housing will be strongly magnetized when energized. If the voltage to the coil is low, the coil will be weakly magnetized when energized and no click will be heard.

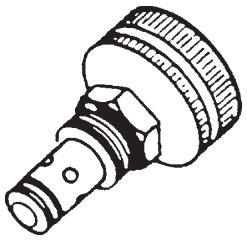
VVB019(PLTR55)



SOLENOID VALVE TROUBLESHOOTING		
PROBLEM	**POSSIBLE CAUSE**	**SOLUTION**
None of the solenoids will operate.	Low voltage.	Must be connected to 12 volt DC only. Negative ground.
	Blown fuse.	Replace fuse in control console on tractor with AGC-15 amp only.
	Battery connection.	Clean and tighten.
	Wiring harness damaged.	Repair or replace.
One solenoid valve will not operate.	Bad switch.	Replace on control console.
	Cut wire in harness.	Locate and repair.
	Bad coil.	Replace.
	Poor connection at coil.	Check.
Valve operating when not energized.	Valve stem stuck open.	Replace cartridge.
	O-ring leaking.	Install new o-ring kit.
	Foreign material under poppet.	Remove cartridge and clean.

FLOW CONTROL VALVE INSPECTION

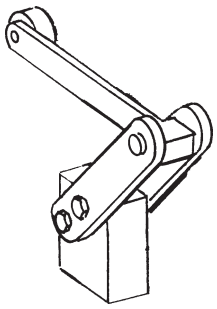
VVB020(TWL28)



The row marker flow control valves, located in the valve block on the right wing of the planter, should be adjusted for raise and lower speed as part of the assembly procedure or upon initial operation. If a valve fails to function properly or requires frequent adjustment, it 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.

DETENT LEVER VALVE

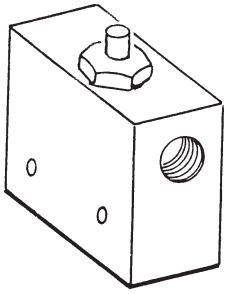
PHA031(PLTR68)



The detent lever valve, located near the tower assembly, blocks the oil flow from the master cylinders until the slave cylinders are at the same height as the master cylinders when the planter is coming from transport into field position. Consult your KINZE® Dealer for service.

STROKE LIMITER VALVE

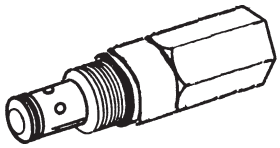
VVB037rev(PLTR69)



The stroke limiter valve, located near the tower assembly, limits the height the planter will raise during turn around when the planter is in field operation. Consult your KINZE® Dealer for service.

PRESSURE RELIEF VALVE

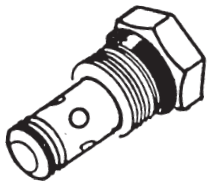
(FF46)



The pressure relief valve, located in the valve block on the left wing of the planter, functions during the lowering out of raised transport sequence. The valve is factory set and should require no additional adjustment. Consult your KINZE® Dealer for service.

CHECK VALVE

VVB020(PLTR70)



The check valves, located in the valve block on the left wing of the planter, trap oil flow in the planter's lift system to keep the toolbar level during field operation. Consult your KINZE® Dealer for service.

MARKER CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Right marker lowering slower than left marker.	Solenoid valve cartridge in port V1 not opening completely.	Switch cartridge with one in port V2. If problem follows cartridge, replace cartridge.
	Hose pinched or collapsed.	Inspect hose routing. Replace or repair hoses as required.
Left marker lowering slower than right marker.	Solenoid valve cartridge in port V2 not opening completely.	Switch cartridge with one in port V1. If problem follows cartridge, replace cartridge.
	Hose pinched or collapsed.	Inspect hose routing. Replace or repair hoses as required.
Both markers lowering.	Solenoid valve cartridge stuck open. If marker switch is in the left marker position, the right cartridge (V1) is defective. If the marker switch is in the right marker position, the left cartridge (V2) is defective.	Replace solenoid valve cartridge.
Neither marker will lower.	Blown fuse.	Check red light on control console. It should be on if switch is on. If light is not on, switch to opposite marker position. If light comes on, switch may be defective. Replace switch. Otherwise replace fuse.
	Coils at V1 and V2 not energized.	Poor ground on wire, bad wire connection or damaged wire. Repair as required.
	Marker flow control valve closed too far.	See Operation Section for adjustment.
Neither marker will raise.	Marker flow control valve closed too far.	See Operation Section for adjustment.
Right marker will not lower.	Solenoid coil in port V1 not energized.	Check switch on control console. Replace if defective. Check coil ground wire. Check for poor connection or damaged wire.
	Solenoid cartridge in port V1 stuck closed.	Switch cartridge with one on the planter you know is operating properly. If right marker lowers, replace defective cartridge.
Left marker will not lower.	Solenoid coil in port V2 not energized.	Check switch on control console. Replace if defective. Check coil ground wire. Check for poor connection or damaged wire.
	Solenoid cartridge in port V2 stuck closed.	Switch cartridge with one on the planter you know is operating properly. If right marker lowers, replace defective cartridge.
Markers traveling too fast and damaging rubber stop on transport stands and/or damaging pivot at rod end of marker cylinders.	Marker transport stand not adjusted correctly to allow marker cushion cylinders to operate as designed.	See “Marker Transport Stand Adjustment.”
	Marker flow control valve out of adjustment.	See Operation Section for adjustment.

LIFT CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Field turn around tool bar height is not 39"–41".	Stroke limiter valve is out of adjustment.	Consult your KINZE® Dealer for service.
Planter is not levelling out when lowering from transport.	Detent lever valve is out of adjustment.	Consult your KINZE® Dealer for service.
Planter settles.	Lift cylinder leaking.	Repair or replace cylinder.

MARKER TRANSPORT STAND ADJUSTMENT

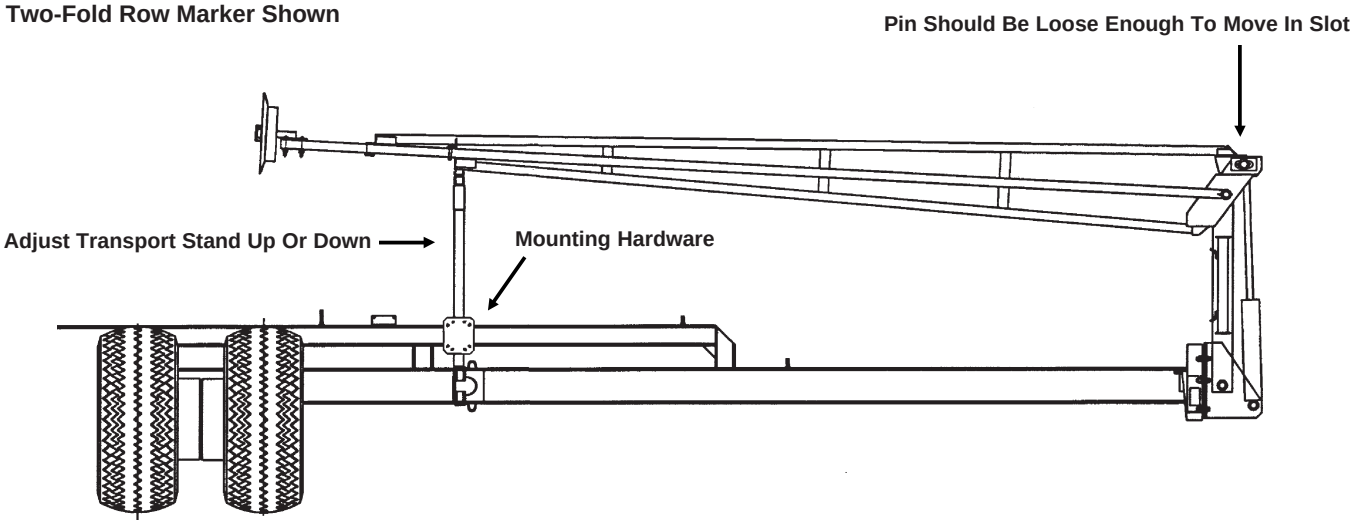
It is critical that the marker transport stands are adjusted correctly to allow the marker cushion cylinders used on - two-fold and three-fold low profile row markers to function as cushion cylinders.

To adjust the transport stands:

1. Fold markers to transport position.
2. Loosen mounting hardware to allow transport stands to drop down or remove transport stands.
3. With tractor engine shut off, release hydraulic pressure on marker cylinders.
4. Locate transport stands so marker arm rests lightly on transport stand. When the transport stands are correctly adjusted the pin at the rod end of the cylinder should be loose enough to rotate and move back and forth in the mounting slot.

(TWL100)

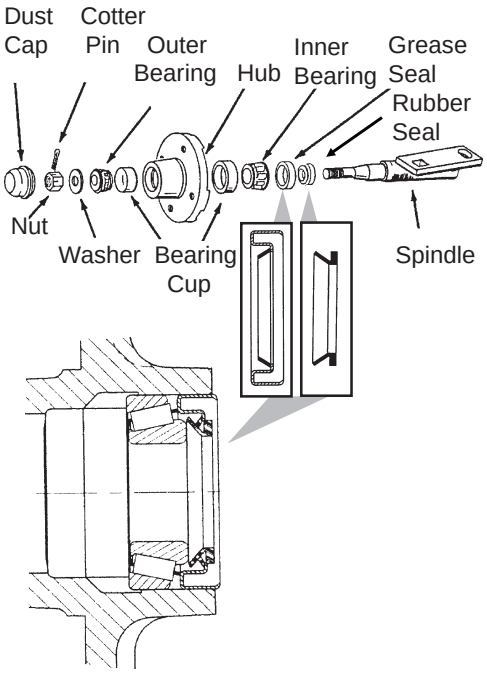
Two-Fold Row Marker Shown



MARKER BEARING LUBRICATION OR REPLACEMENT

1. Remove marker blade.
2. Remove dust cap from hub.
3. Remove cotter pin, nut and washer.
4. Slide hub from spindle.
5. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
6. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
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 rubber seal and grease seal.
9. Clean spindle and install hub.
10. Install outer bearing, washer 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 dust caps approximately 3/4 full of wheel bearing grease and install on hub.
12. Install blade and dust cap retainer on hub and tighten evenly and securely.

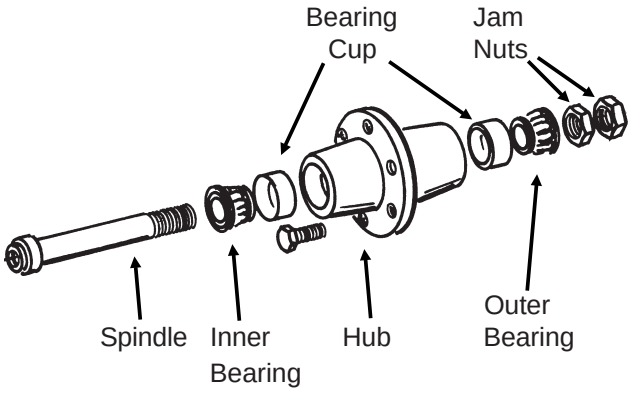
(PLTR45/PLTR99/PLTR98)



GROUND DRIVE WHEEL BEARING LUBRICATION OR REPLACEMENT

1. Raise tire clear of ground and remove wheel.
2. Remove double jam nuts and slide hub from spindle.
3. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
4. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
5. 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.
6. Place inner bearing and seal in place.
7. Clean spindle and install hub.
8. Install outer bearing, seal and jam nut. Tighten jam nut while rotating hub until there is some drag. This assures that all bearing surfaces are in contact. Back off jam nut 1/4 turn or until there is only slight drag when rotating the hub. Install second jam nut to lock against first.
9. Install wheel on hub and tighten evenly and securely.

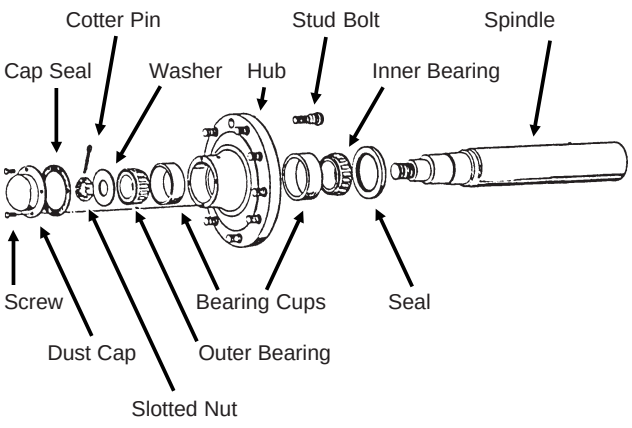
PTD057(PLTR46)



TRANSPORT WHEEL BEARING REPLACEMENT

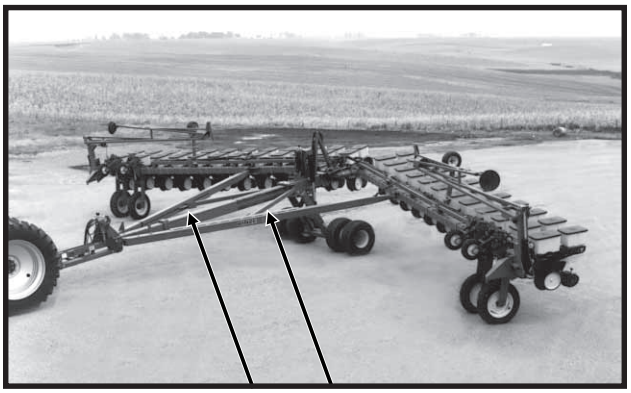
1. Raise tire clear of ground and remove wheel.
2. Remove dust cap attachment hardware and remove cap from wheel hub.
3. Remove cotter pin, axle nut and 2" washer.
4. Slide hub from axle spindle, using a hub puller if necessary.
5. Remove bearings and cups from hub and discard. Thoroughly clean and dry wheel hub.
6. Press in new bearing cups with thickest edges facing in.
7. Pack bearing 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 hub and press in new grease seal with lip pointing towards bearing.
9. Clean axle spindle and install hub.
10. Install outer bearing, 2" washer and slotted hex nut. Tighten slotted hex nut while rotating the 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. Check for endplay in bearings.
11. Fill dust cap half full of wheel bearing grease and install on hub with attachment bolts.
12. Install wheel and remove jack. Torque inner and outer budd nuts to 450-500 ft. lbs.

HTA002(PLTR71)



SLIDING HITCH LINKAGE (24 Row 30" And 36 Row 20" Machines Only)

73430-10



Inspect linkage daily to ensure free movement of axle links in slides. Keep axle link slides clean. DO NOT GREASE the axle link slides. Powdered graphite may be used if lubrication is desired.

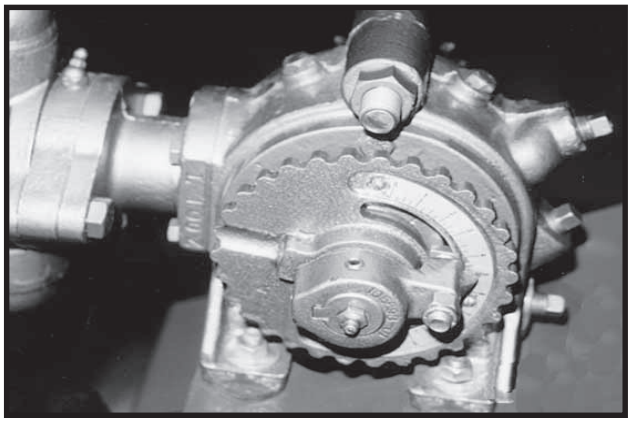
PISTON PUMP STORAGE

KEEP AIR OUT OF PUMP! This is the only way to prevent corrosion. Even for short periods of storage, the entrance of air into the pump, will cause RAPID AND SEVERE CORROSION.

Overnight Storage
SUSPENSION FERTILIZER must be flushed from the pump for ANY storage period.

Winter Storage
1. Flush pump thoroughly with 5 to 10 gallons of fresh water and circulate until all corrosive salts are dissolved in the pump.
2. With the pump set on 10, draw in a mixture of half diesel fuel and half 10 weight oil until the discharge is clean. Then plug inlet and outlet.

12229799



PISTON PUMP TROUBLESHOOTING		
PROBLEM	**POSSIBLE CAUSE**	**SOLUTION**
Pump hard or impossible to prime.	Valves fouled or in wrong place.	Inspect and clean valves.
	Air leak in suction line.	Repair leak.
	Pump set too low.	Adjust pump setting.
	Packing washers worn out.	Replace.
Low metering.	Valves fouled or in wrong place.	Inspect and clean valves.
	Air leak in suction line.	Repair leak.
	Pump set too low.	Adjust pump setting.
	Broken valve spring.	Replace spring.
Over meters.	Broken discharge valve spring.	Replace spring.
	Trash under valves.	Inspect and clean valves.
	Improper rate setting.	Adjust pump setting.
Leaks through when stopped.	Broken discharge valve spring.	Replace spring.
	Trash under valves.	Inspect and clean valves.
Fertilizer solution leaking under stuffing box.	Packing washers worn out.	Replace.
Pump using excessive oil.	Oil seals or o-ring worn and leaking.	Replace.
Pump operates noisily.	Crankcase components worn excessively.	Inspect and replace if necessary.

PREPARATION FOR STORAGE

Store the planter in a dry sheltered area if possible.

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

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

Lubricate planter and row units at all lubrication points.

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

Inspect the planter for parts that are in need of replacement and order during the “off” season.

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

Clean seed meters and store in a rodent-free dry area.

Remove seed discs from brush-type seed meter, clean and store meters with discs removed.

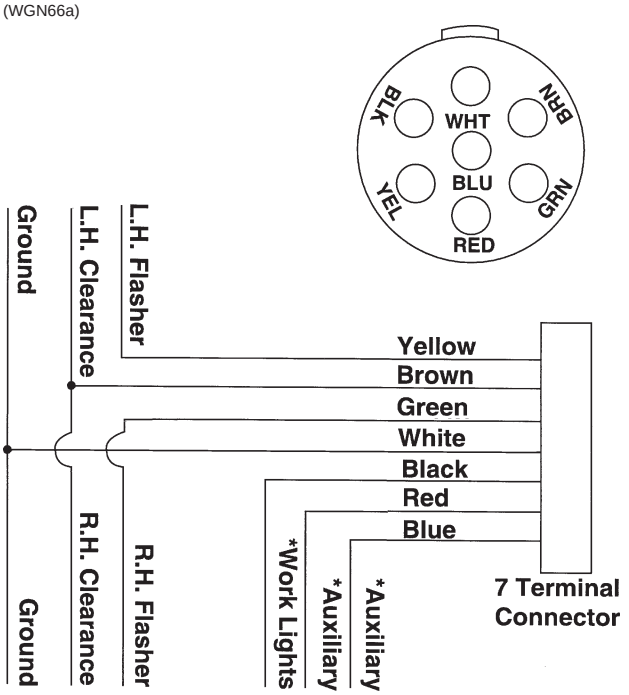
Grease exposed areas of cylinder rods before storing planter.

Grease or paint disc openers and marker blades to prevent rust.

Flush hoses and metering pumps with clear water. See “Piston Pump Storage” if applicable.

ELECTRICAL WIRING DIAGRAM FOR LIGHT PACKAGE

(WGN66a)



*Optional lights and wires (to be supplied by customer) may be wired into existing plug terminals.

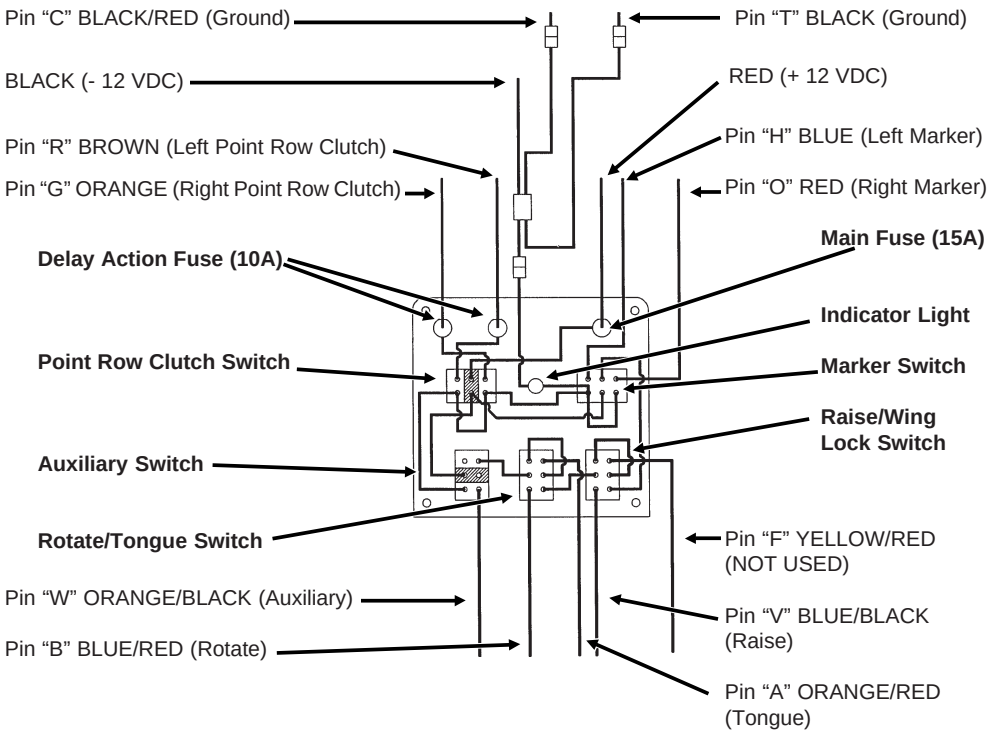
Light package supplied on the Model 2700 Front Folding Planter meets ASAE Standards. For the correct wiring harness to be wired into the lights on your tractor, check with the tractor manufacturer.

69922-35

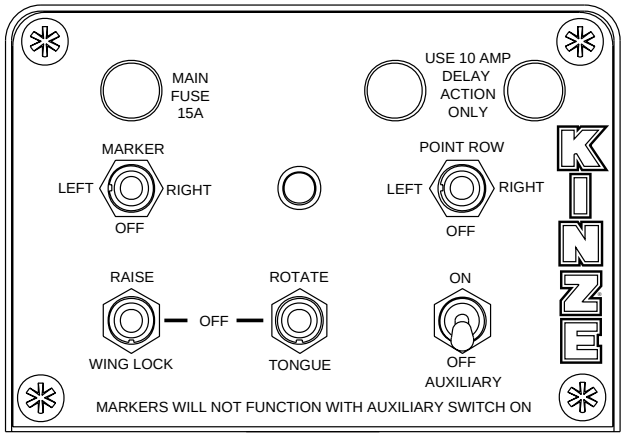
ELECTRICAL CONTROL CONSOLE SCHEMATIC

NOTE: Before doing any electrical work, disconnect the control console from the tractor battery. Keep wiring harnesses away from high temperature areas or sharp edges. DO NOT route the wiring harnesses along battery cables. Use tie straps to keep wire harness away from moving parts on tractor and planter. Be sure ground connections to the tractor frame are clean to provide good electrical contact.

(PLTR82a)



(INS238)



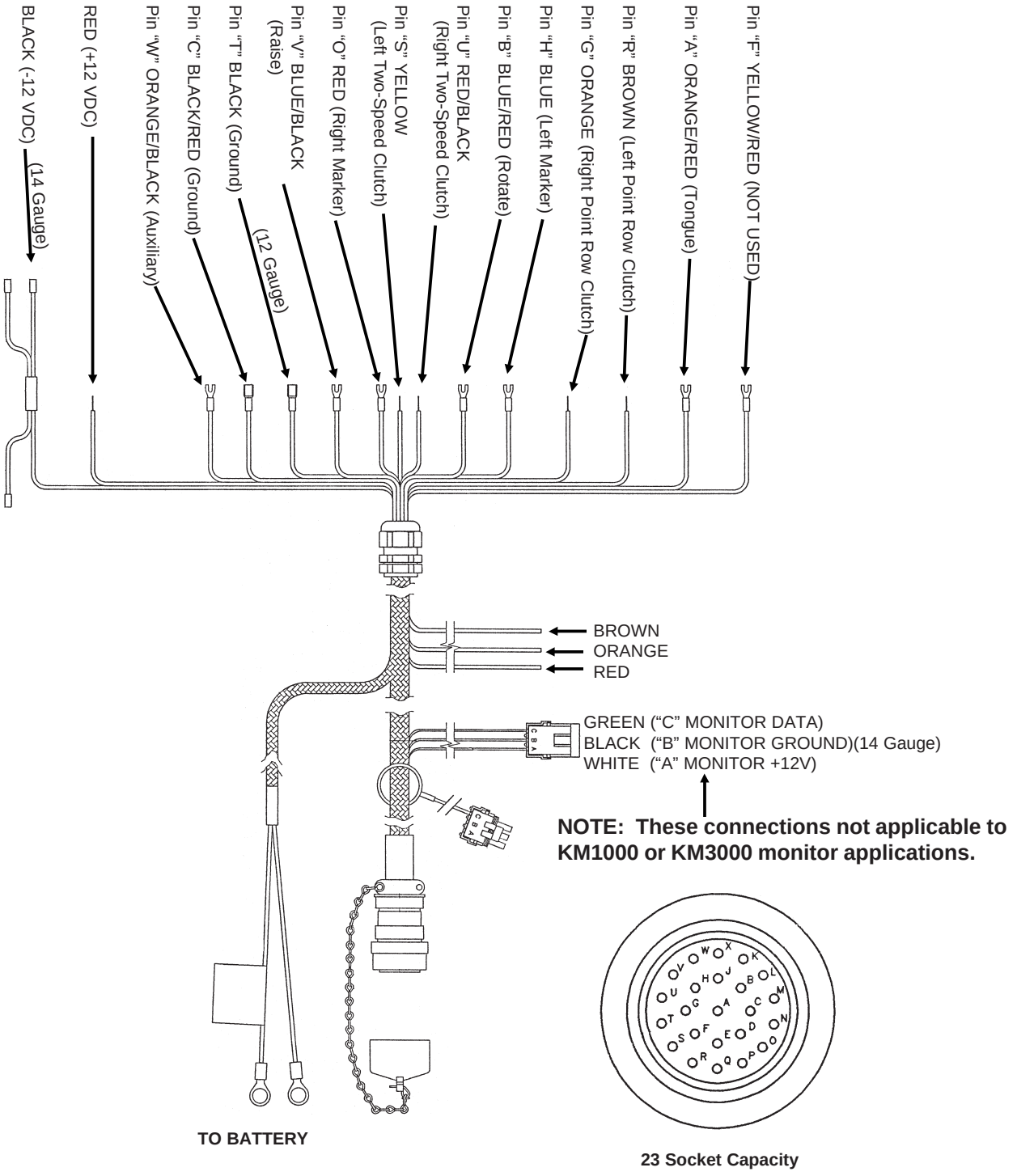
NOTE:

1. Operating marker or point row switch in either direction lights panel light.
2. Point row clutch switch operates independently of the rest of the control box.
3. Power to the marker switch is fed through the auxiliary switch and the two transport function switches. Operating any of the switches in the lower row disables the marker function and turns off the panel light. (If the point row clutch switch is in the "off" position.)

See page 9-31 for electrical control console schematic and wiring harness to two-speed point row clutch solenoids for planter equipped with the optional Two-Speed Point Row Clutch Package.

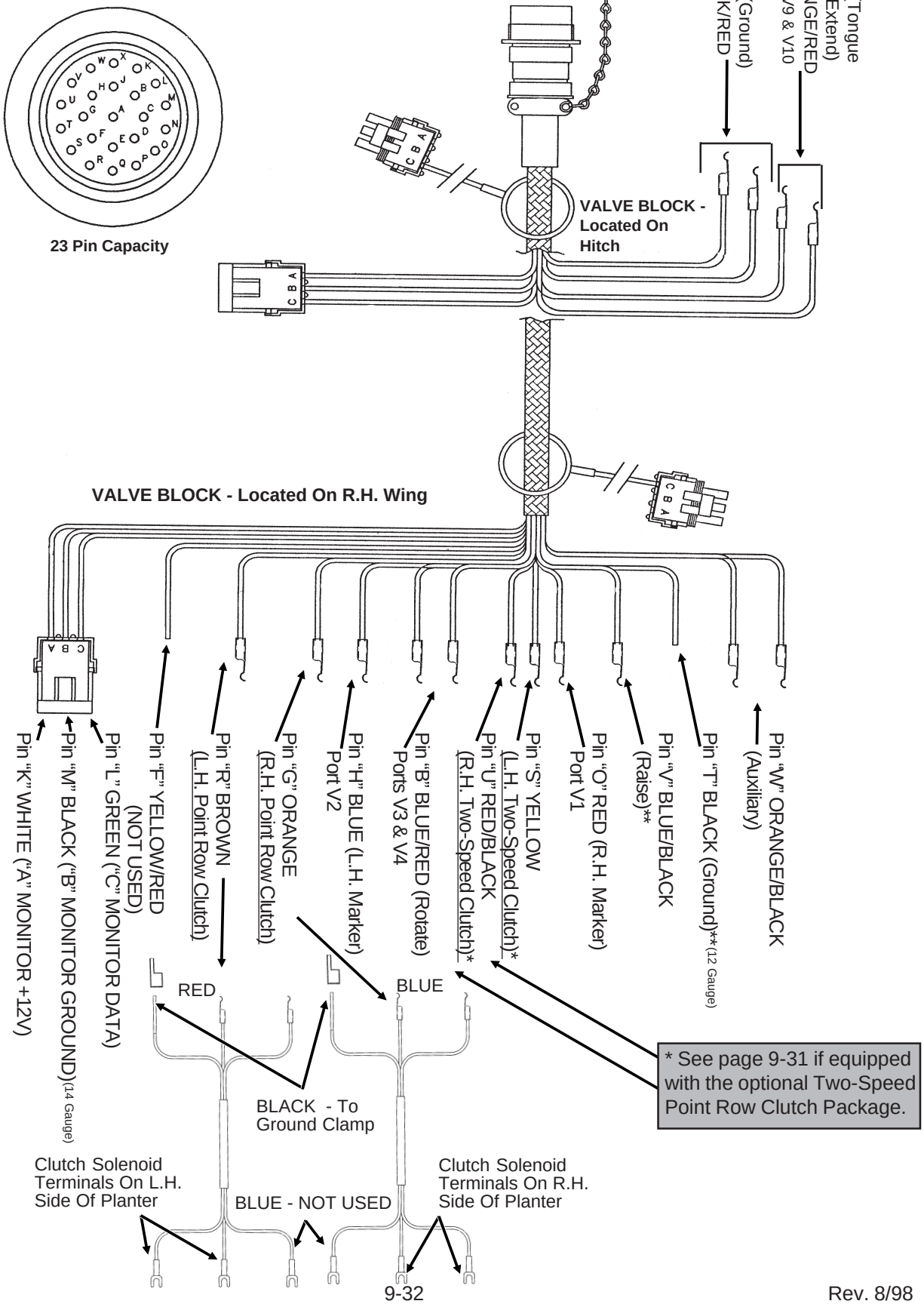
ELECTRICAL WIRING HARNESS SCHEMATIC (On Tractor)

(ELC10/ELC13)

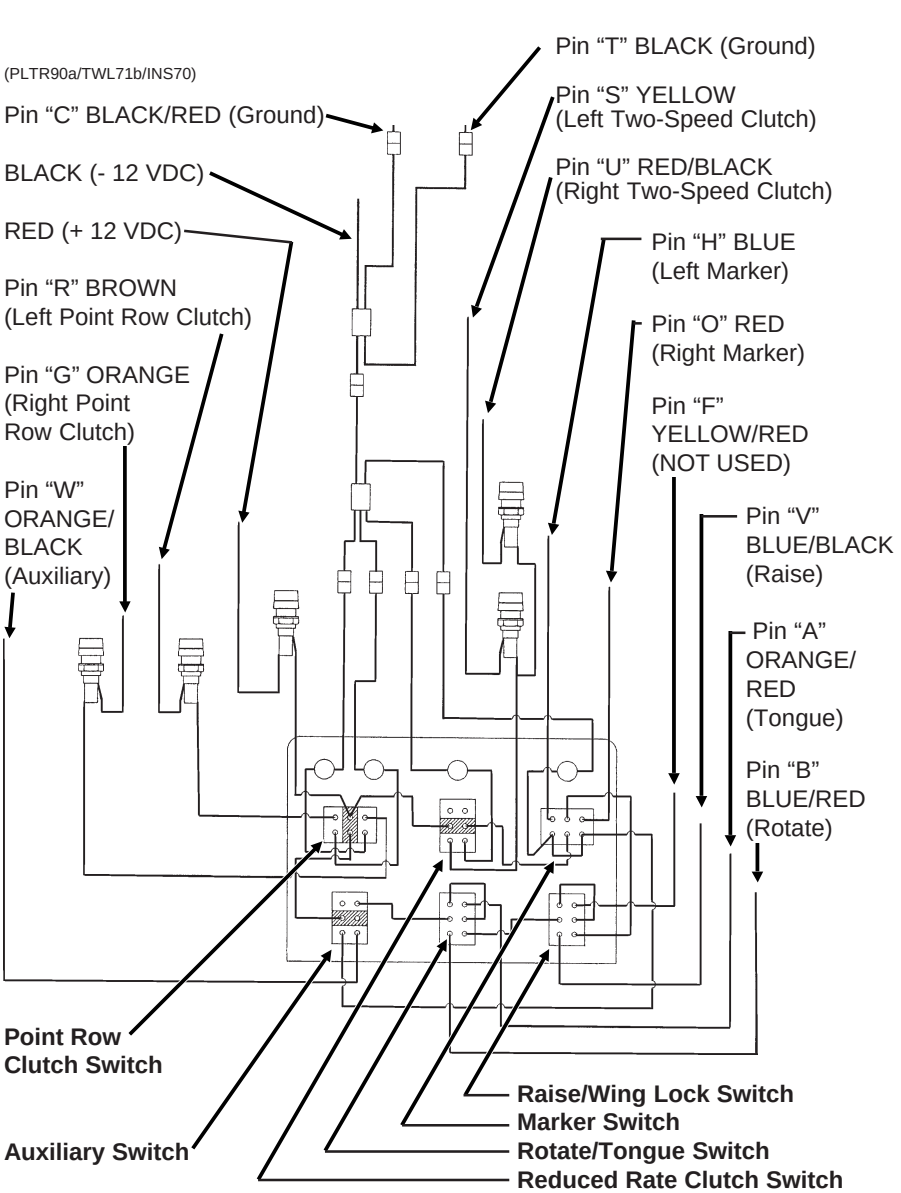


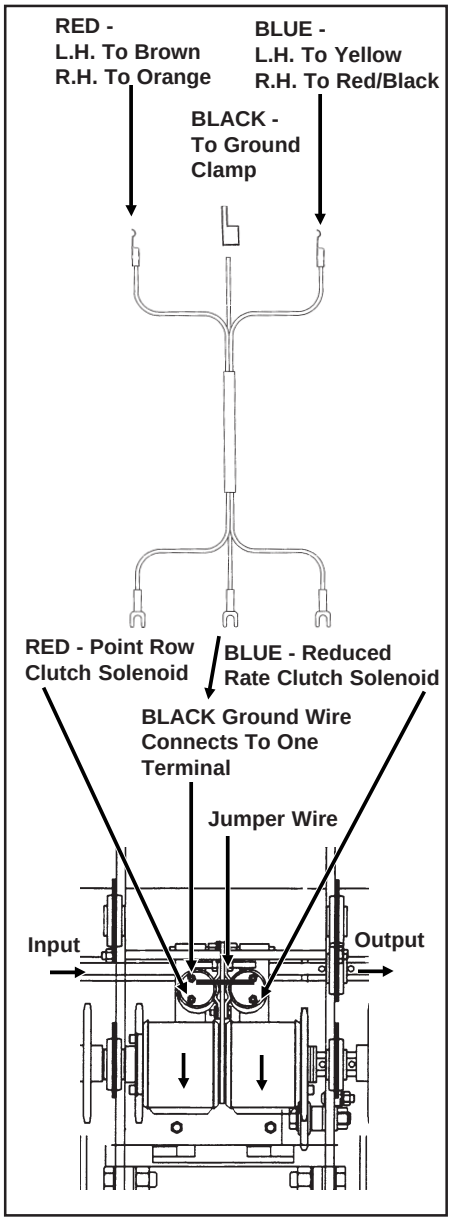
ELECTRICAL WIRING HARNESS SCHEMATIC (On Planter)

(ELC13/ELC11/TWL71)

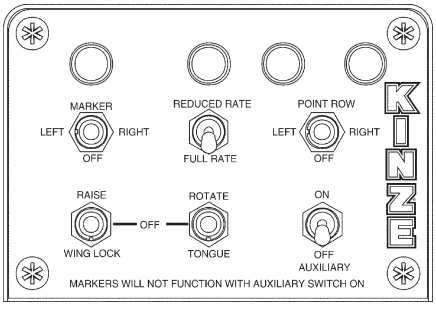


ELECTRICAL CONTROL CONSOLE SCHEMATIC (With Optional Two-Speed Point Row Clutch Package) AND WIRING HARNESS AT TWO-SPEED POINT ROW CLUTCH SOLENOIDS





(INS260)



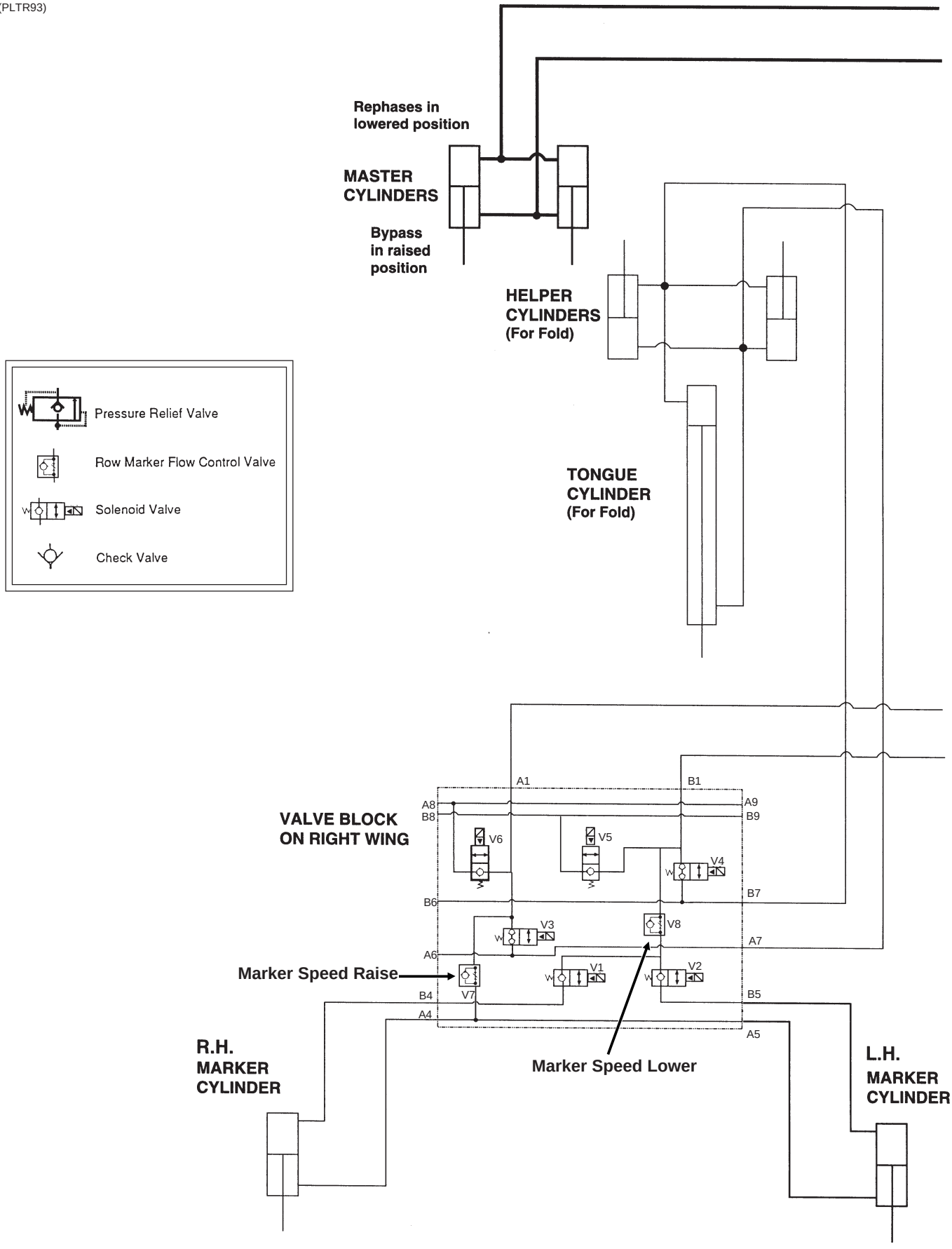
NOTE:

1. Point row and reduced rate clutch switches operate independently of the rest of the control console.
2. Power to the marker switch is fed through the auxiliary switch and the two transport function switches. Operating any of the switches in the lower row disables the marker function and turns off the panel light for the markers.

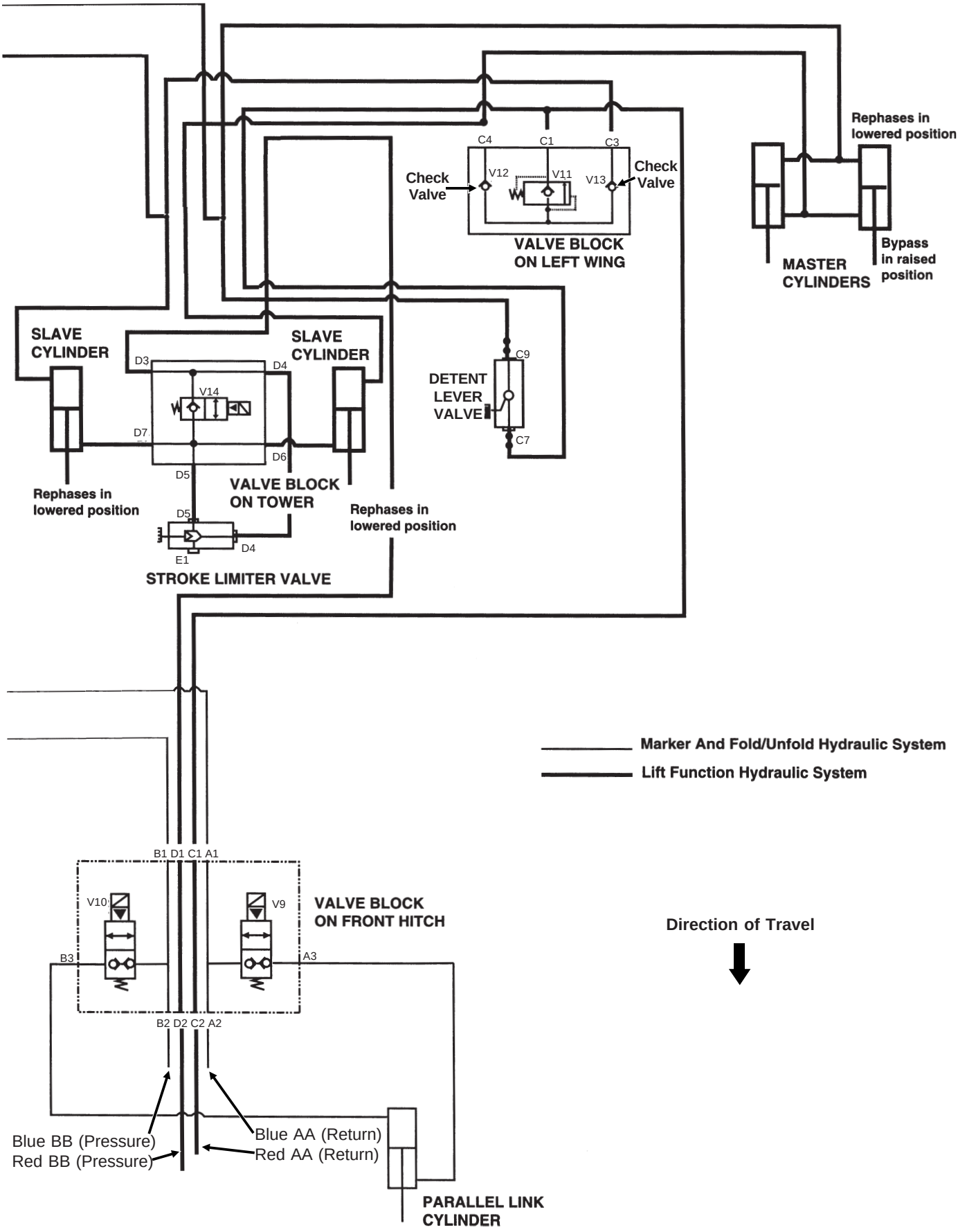
NOTE: Before doing any electrical work, disconnect the control console from the tractor battery. Keep wiring harnesses away from high temperature areas or sharp edges. DO NOT route the wiring harnesses along battery cables. Use tie straps to keep wire harness away from moving parts on tractor and planter. Be sure ground connections to the tractor frame are clean to provide good electrical contact.

HYDRAULIC SYSTEM SCHEMATIC (16 Row 30" And 24 Row 20" Machines)

(PLTR93)



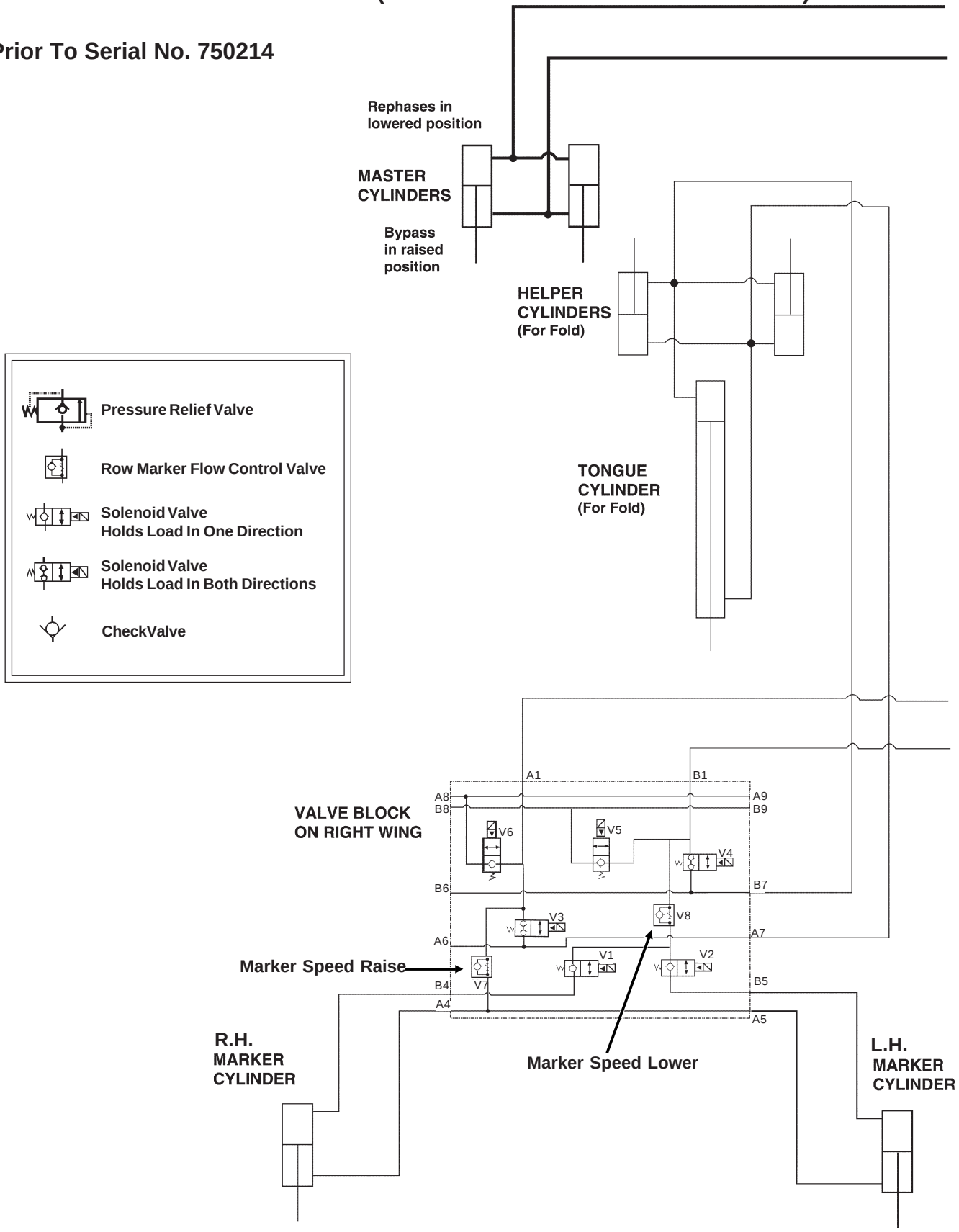
(PLTR94)


Rephases in lowered position
C4
C1
C3
Check Valve
V12
V11
V13
Check Valve
VALVE BLOCK ON LEFT WING
MASTER CYLINDERS
Bypass in raised position
SLAVE CYLINDER
SLAVE CYLINDER
D3
D4
V14
D7
D6
D5
C9
DETENT LEVER VALVE
C7
Rephases in lowered position
VALVE BLOCK ON TOWER
Rephases in lowered position
D5
D4
E1
STROKE LIMITER VALVE
Marker And Fold/Unfold Hydraulic System
Lift Function Hydraulic System
B1 D1 C1 A1
V10
V9
VALVE BLOCK ON FRONT HITCH
B3
A3
B2 D2 C2 A2
Direction of Travel
Blue BB (Pressure)
Red BB (Pressure)
Blue AA (Return)
Red AA (Return)
PARALLEL LINK CYLINDER

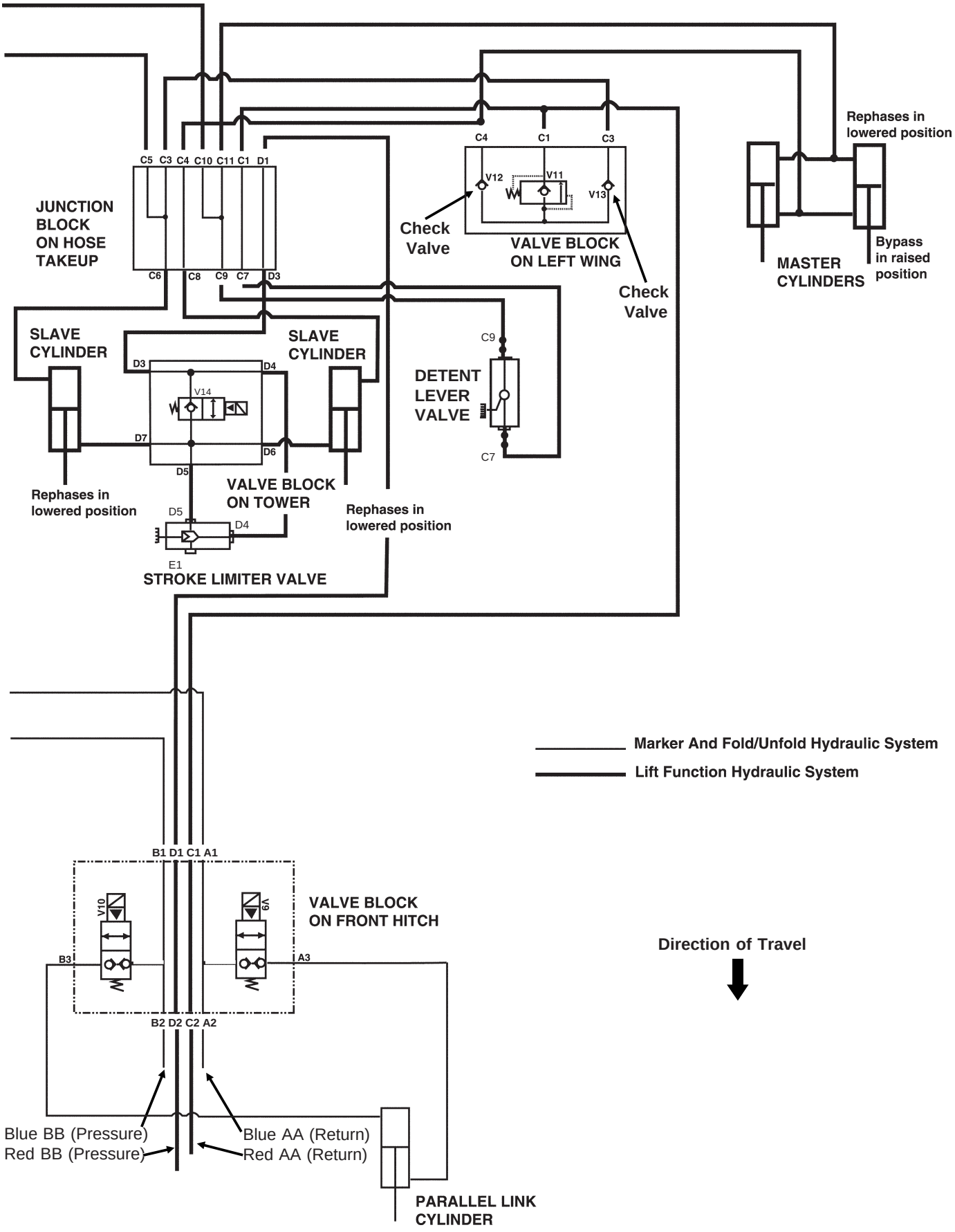
(PLTR74a)

HYDRAULIC SYSTEM SCHEMATIC (24 Row 30" And 36 Row 20" Machines)

Prior To Serial No. 750214



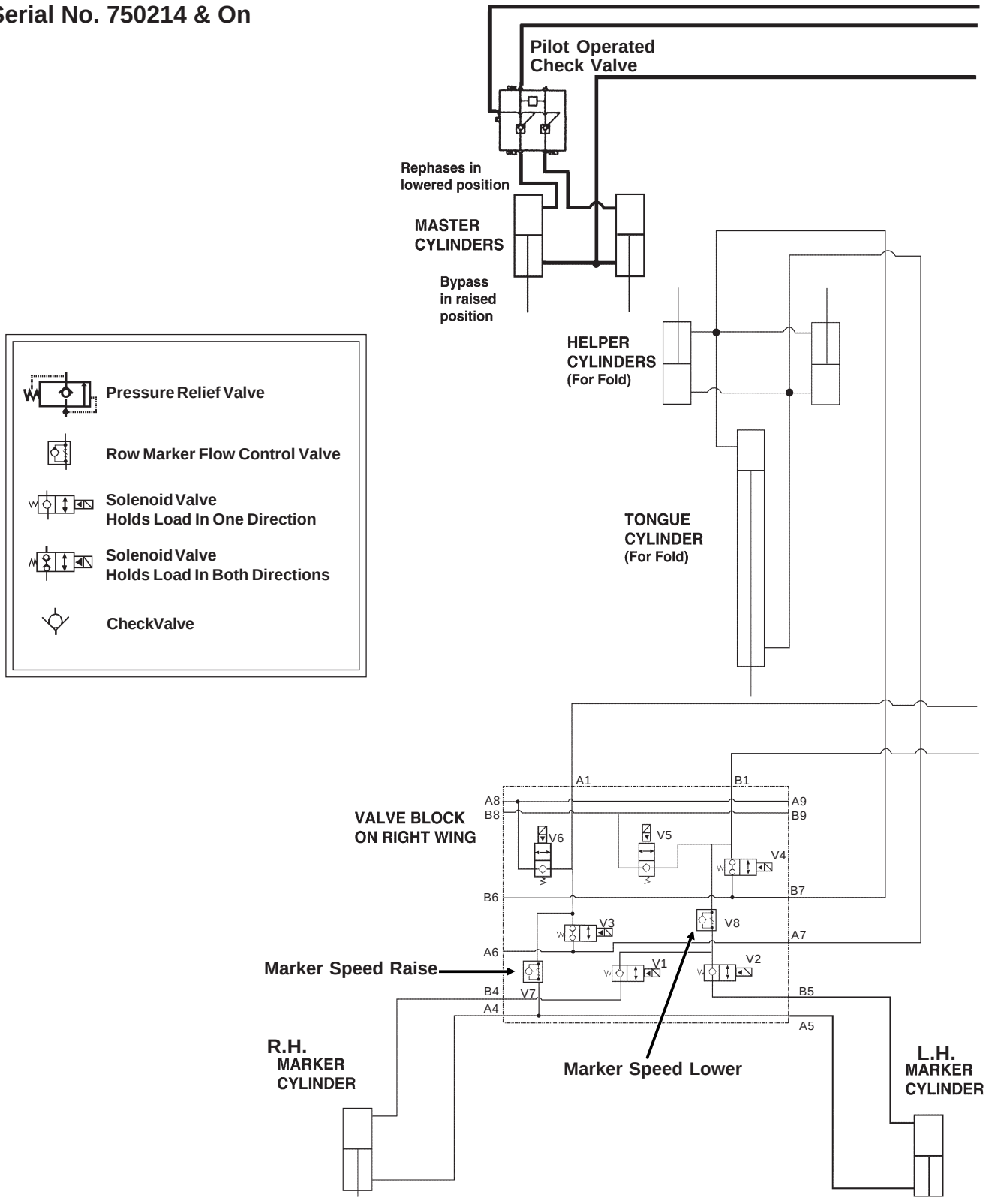
(PLTR75)


JUNCTION BLOCK ON HOSE TAKEUP
C5 C3 C4 C10 C11 C1 D1
C6 C8 C9 C7 D3
C4 C1 C3
V12 V11 V13
Check Valve
VALVE BLOCK ON LEFT WING
Check Valve
Rephases in lowered position
MASTER CYLINDERS
Bypass in raised position
SLAVE CYLINDER
SLAVE CYLINDER
D3 D4
V14
D7 D6
D5
DETENT LEVER VALVE
C9
C7
Rephases in lowered position
VALVE BLOCK ON TOWER
D5 D4
E1
STROKE LIMITER VALVE
Rephases in lowered position
Marker And Fold/Unfold Hydraulic System
Lift Function Hydraulic System
B1 D1 C1 A1
V10
V9
VALVE BLOCK ON FRONT HITCH
B3
A3
B2 D2 C2 A2
Direction of Travel
Blue BB (Pressure)
Red BB (Pressure)
Blue AA (Return)
Red AA (Return)
PARALLEL LINK CYLINDER

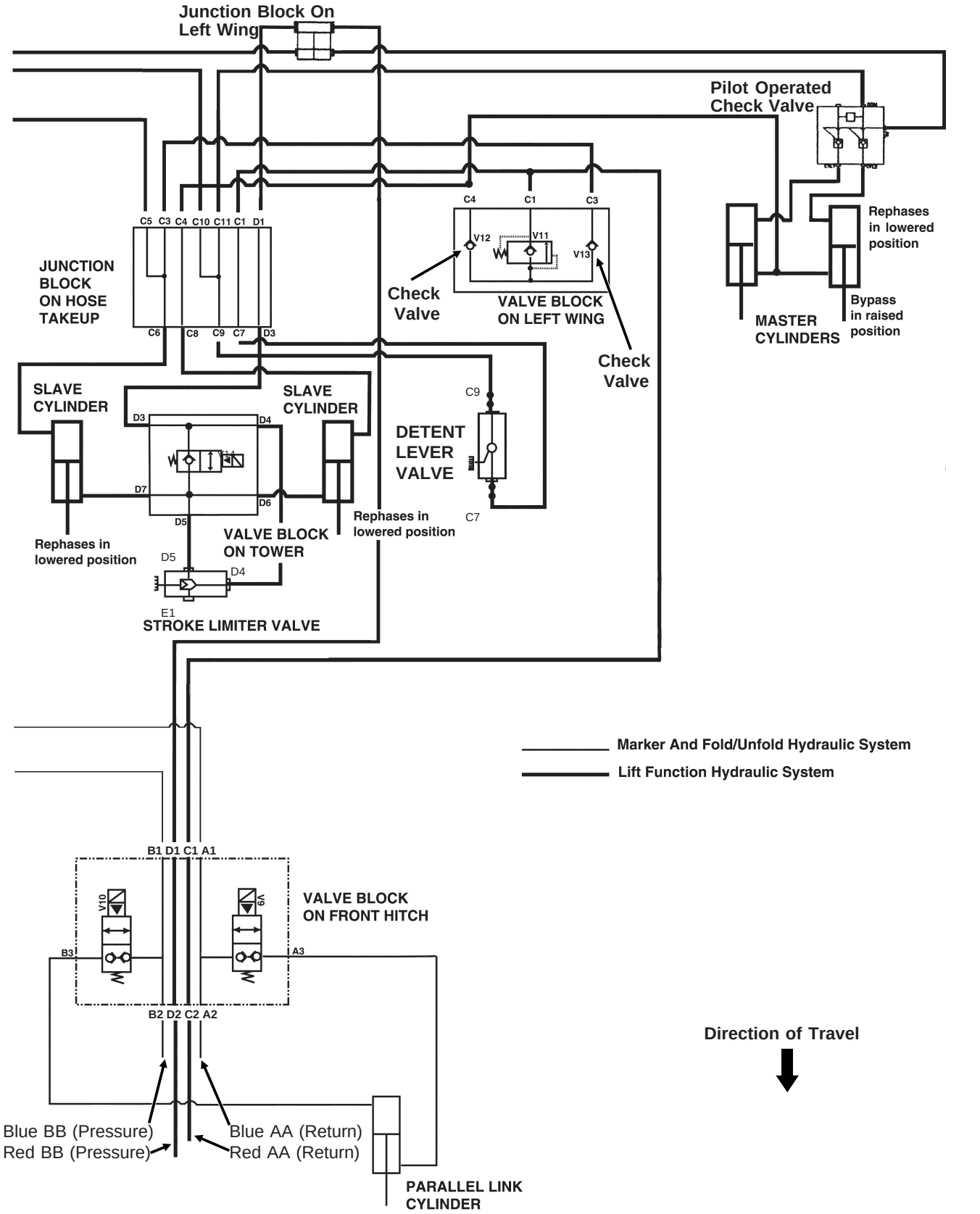
(PLTR74b)

HYDRAULIC SYSTEM SCHEMATIC (24 Row 30" And 36 Row 20" Machines)

Serial No. 750214 & On



(PLTR75b)

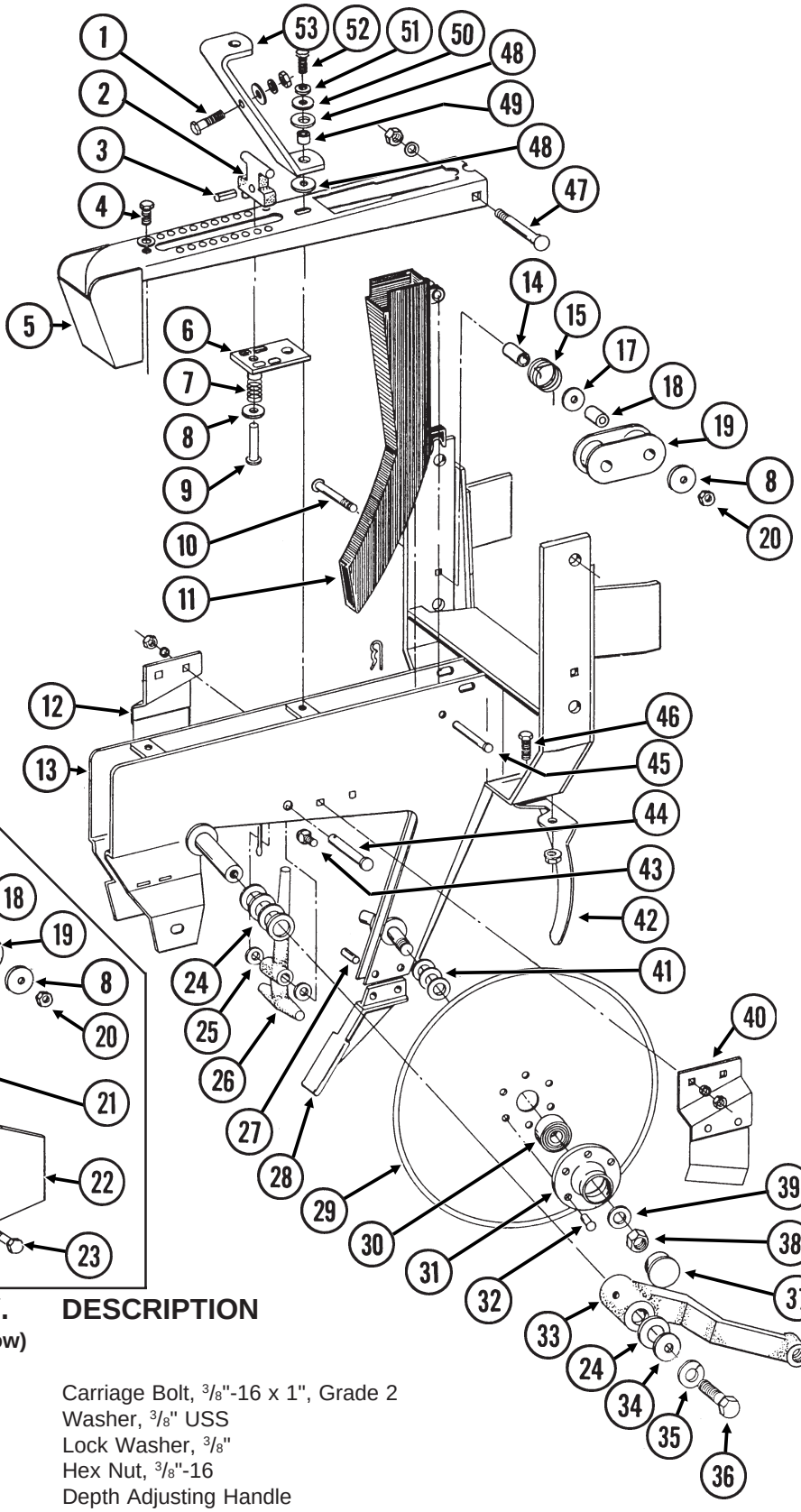

Junction Block On Left Wing
Pilot Operated Check Valve
Rephases in lowered position
Bypass in raised position
MASTER CYLINDERS
C5 C3 C4 C10 C11 C1 D1
JUNCTION BLOCK ON HOSE TAKEUP
C6 C8 C9 C7 D3
C4 C1 C3
V12 V11 V13
Check Valve
VALVE BLOCK ON LEFT WING
Check Valve
SLAVE CYLINDER
SLAVE CYLINDER
D3 D4 D7 D6 D5
V14
C9
DETENT LEVER VALVE
C7
Rephases in lowered position
Rephases in lowered position
VALVE BLOCK ON TOWER
D5 D4
E1
STROKE LIMITER VALVE
Marker And Fold/Unfold Hydraulic System
Lift Function Hydraulic System
B1 D1 C1 A1
V10 V9
VALVE BLOCK ON FRONT HITCH
B3 A3
B2 D2 C2 A2
Direction of Travel
Blue BB (Pressure)
Red BB (Pressure)
Blue AA (Return)
Red AA (Return)
PARALLEL LINK CYLINDER

PARTS LIST INDEX

SHANK ASSEMBLY

RUB006/RUA044(RU1c/RU1d)

STYLE A



STYLE B

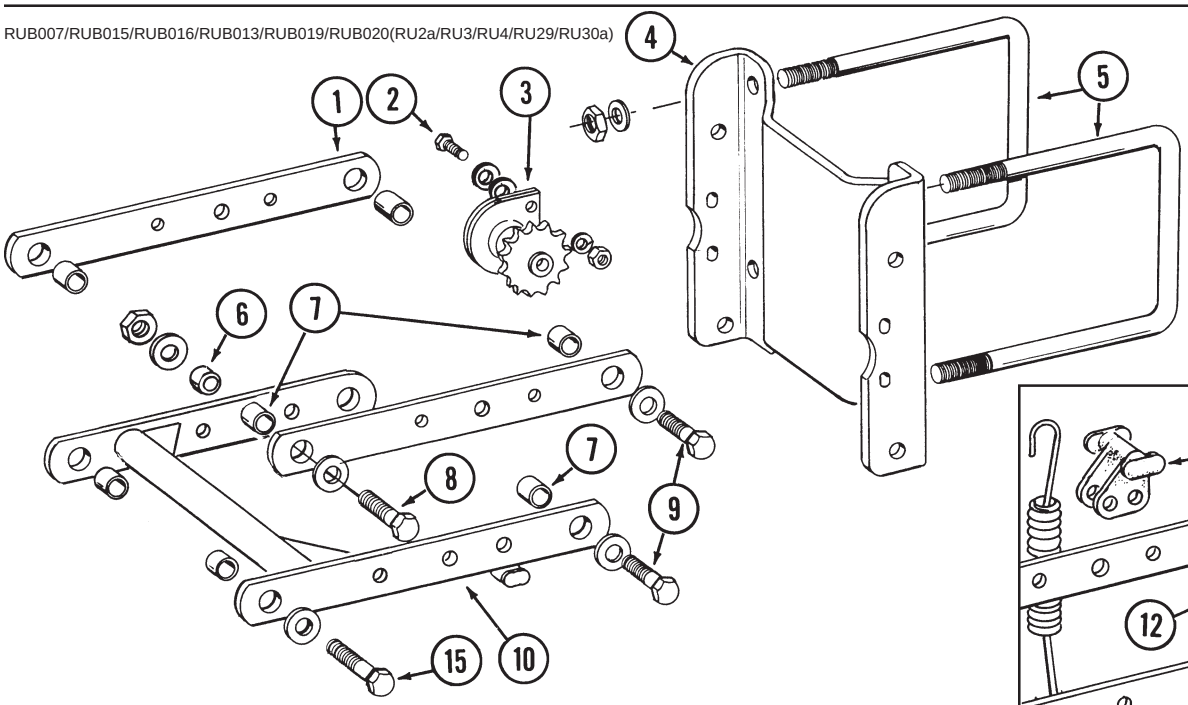
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10305	2	Carriage Bolt, 3/8"-16 x 1", Grade 2
	G10210	2	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
2.	GB0102	1	Depth Adjusting Handle
3.	G10605	1	Spring Pin, 5/32" x 3/4"
4.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	1	Lock Washer, 3/8"
5.	GA0811	1	Shank Cover
6.	GB0105	1	Depth Adjusting Slide

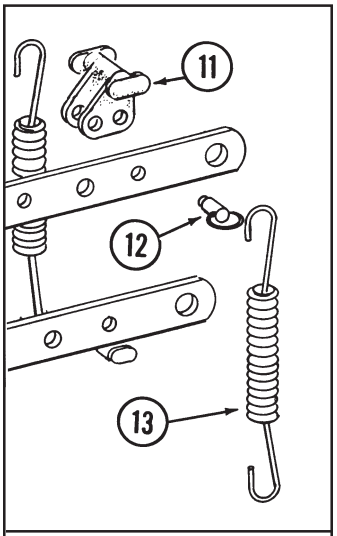
SHANK ASSEMBLY

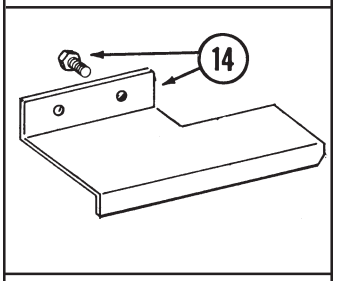
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
7.	GD1066	1	Compression Spring
8.	G10210	1	Washer, 3/8" USS
9.	G10552	1	Clevis Pin, 3/8" x 2"
10.	G10307	1	Carriage Bolt, 3/8"-16 x 3 1/2", Grade 2
11.	GD1130	-	Seed Tube, Regular
	GA5880	-	Seed Tube W/High Rate Sensor
	GR1062	-	Seed Tube (With Holes For High Rate Sensor Installation)
	GR1087	-	Sensor Only (For GA5880)
12.	GA2012L	1	Disc Scraper, L.H.
13.	GA0860	1	Shank **(Sub G1K272)**
14.	GD7318	1	Bushing, 1"
15.	GD1065	1	Idler Spring
16.	G10326	1	Hex Head Cap Screw, 3/8"-16 x 3 3/4"
17.	G10201	1	Special Washer
18.	GD1026	1	Spacer, 1 3/16"
19.	GD9240	1	Idler
20.	G10108	1	Lock Nut, 3/8"-16
21.	GA1306	1	Shank
22.	GD10867	2	Stop
23	G10004	3	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	3	Lock Washer, 3/8"
	G10101	3	Hex Nut, 3/8"-16
24.	G10526	-	Spacer Washer, .048" Gauge (As Required)
25.	G10206	2	Washer, 1/2" SAE
26.	GB0104	1	Depth Adjusting Stop
27.	G10814	2	Spring Pin, 1/4" x 7/8"
28.	GB0103	1	Seed Tube Guard/Inner Scraper
29.	GD1030	2	Disc, 15"
30.	GA2014	2	Bearing
31.	GD10473	2	Housing
32.	G10427	12	Rivet, 1/4" x 1/2"
33.		-	See “Gauge Wheel”, Page P5
34.	G10216	2	Washer, 1/2" USS
35.	G10228	2	Lock Washer, 1/2"
36.	G10014	2	Hex Head Cap Screw, 1/2"-13 x 1"
37.	GD6533	2	Dust Cap
38.	G10503	1	Jam Nut, 5/8"-11, R.H.
	G10504	1	Jam Nut, 5/8"-11, L.H.
39.	G10204	2	Machine Bushing, 21/32"
40.	GA2012R	1	Disc Scraper, R.H.
41.	G10213	-	Machine Bushing, .030" Gauge (As Required)
42.	GD1033	1	Shield
43.	G10328	4	Hex Head Cap Screw, 3/8"-16 x 5/8"
	G10622	4	Flange Nut, 3/8"-16
44.	G10555	1	Clevis Pin, 1/2" x 2 1/2"
	G10451	1	Cotter Pin, 1/8" x 1"
45.	G10551	1	Clevis Pin, 1/4" x 2 1/2"
	G10669	1	Hair Pin Clip, No. 22
46.	G10312	2	Carriage Bolt, 5/16"-18 x 3/4", Grade 2
	G10620	2	Flange Nut, 5/16"-18
47.	G10304	1	Carriage Bolt, 3/8"-16 x 3", Grade 2
	G10108	1	Lock Nut, 3/8"-16
48.	GD1120	2	Rubber Washer
49.	GD1110	1	Bushing, 1/2"
50.	G10208	1	Special Washer, 13/32"
51.	G10229	1	Lock Washer, 3/8"
52.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
53.	GD1027	1	Stabilizer Bracket
A.	GA2013	-	Disc And Bearing Assembly, Less Bearing Cap (Items 29-32)
B.	G1K212	-	Meter Drive Idler Kit (Items 8 And 14-20)
C.	G1K272	-	Row Unit Shank Replacement Kit (Items 16 And 20-23)

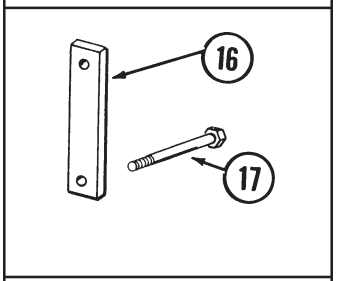
PARALLEL ARMS, MOUNTING SUPPORT PLATE AND QUICK ADJUSTABLE DOWN FORCE SPRINGS

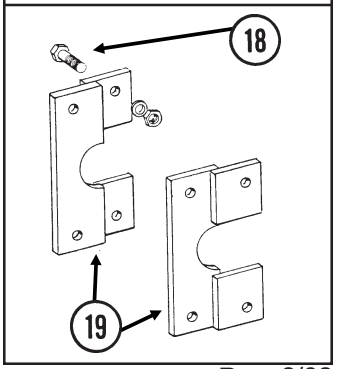
RUB007/RUB015/RUB016/RUB013/RUB019/RUB020(RU2a/RU3/RU4/RU29/RU30a)







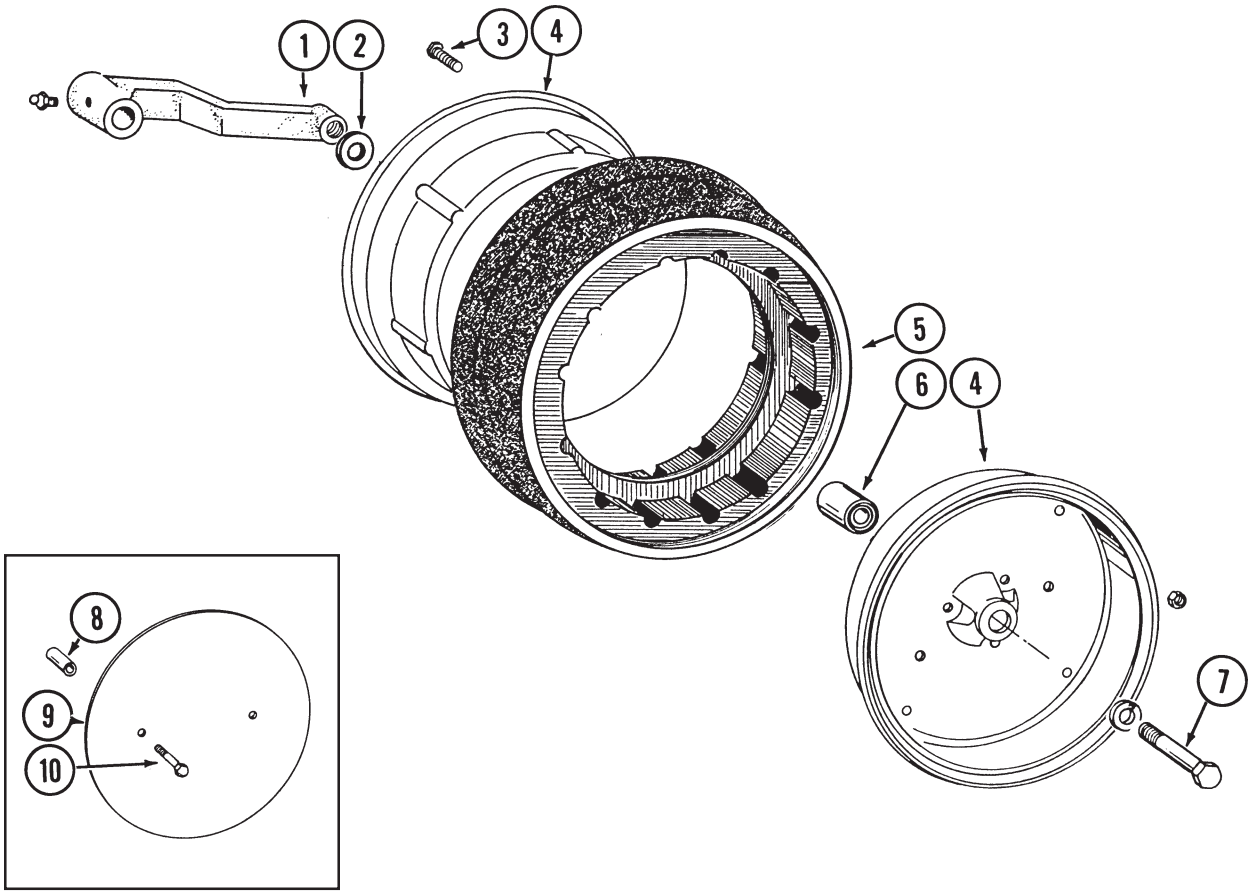




ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD7619	2	Upper Parallel Arm
2.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	-	Washer, 3/8" USS (As Required)
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
3.	GA1720	1	Bearing/Sprocket, 7/8" Bore
4.	GD10036	1	Mounting Support Plate
5.	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
6.	GD1109	2	Pivot Bushing, 1/4"
7.	GB0218	8	Bushing, 19/32"
8.	G10752	2	Hex Head Cap Screw, 5/8"-18 x 2 1/4"
	GD7805	4	Special Washer
	G10412	2	Lock Nut, 5/8"-18
9.	G10732	4	Hex Head Cap Screw, 5/8"-18 x 2"
	GD7805	4	Special Washer
	G10412	4	Lock Nut, 5/8"-18
10.	GA5651	1	Lower Parallel Arm
11.	GB0186	2	Spring Anchor
12.	G10545	2	Detent Pin, 1" Grip
13.	GD8249	-	Spring
14.	G7192X	-	Chain Shield Package With Hardware
	G10037	-	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
15.	G10751	2	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	GD7805	2	Special Washer
	G10412	2	Lock Nut, 5/8"-18
16.	GD1908	1	Mounting Bracket
17.	G10152	2	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
18.	G10007	4	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
19.	GA7410	2	Extension Bracket

GAUGE WHEEL

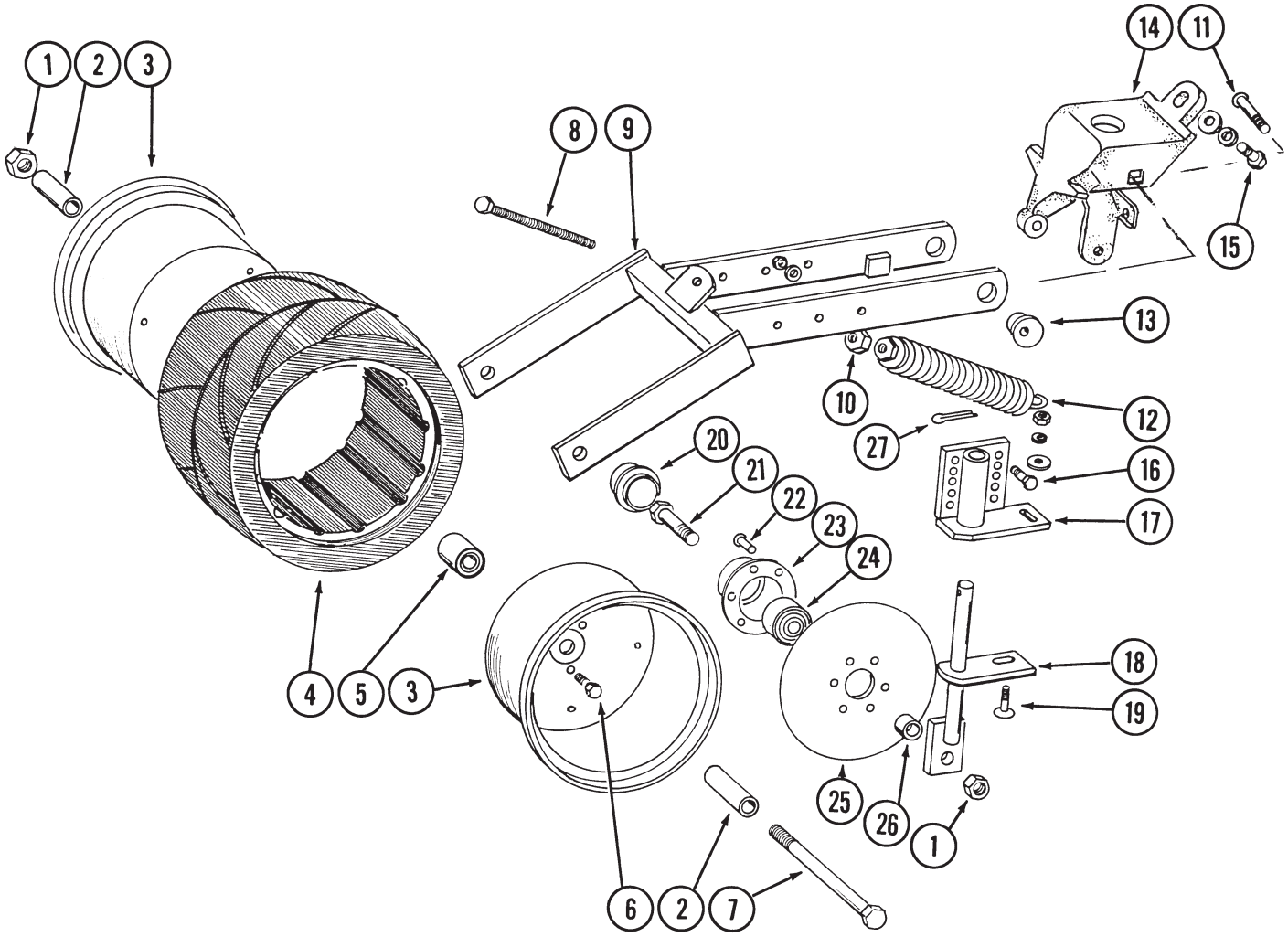
RUB001/RUB018/RUA039/RUB018/RUA044(RU5a/RU6)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GA6614	2	Wheel Arm With Grease Fitting
	G10640	2	Grease Fitting, 1/4"-28
2.	G10204	1	Machine Bushing, 21/32"
3.	G10018	14	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	14	Lock Nut, 5/16"-18
4.	GD1048	4	Half Wheel
5.	GD1086	2	Tire
6.	GA6171	2	Bearing
7.	G10010	2	Hex Head Cap Screw, 5/8"-11 x 3"
	G10230	2	Lock Washer, 5/8"
8.	GD0973	4	Wheel Cover Sleeve, 1 1/2" (Optional)
9.	GD1353	2	Wheel Cover (Optional)
10.	G10069	4	Hex Head Cap Screw, 5/16"-18 x 2 1/4"
	G10232	4	Lock Washer, 5/16"
	G10106	4	Hex Nut, 5/16"-18
A.	GA6615	-	Gauge Wheel Complete (Items 3-6)

COVERING DISCS/SINGLE PRESS WHEEL

RUA042/RUA044(RU8)

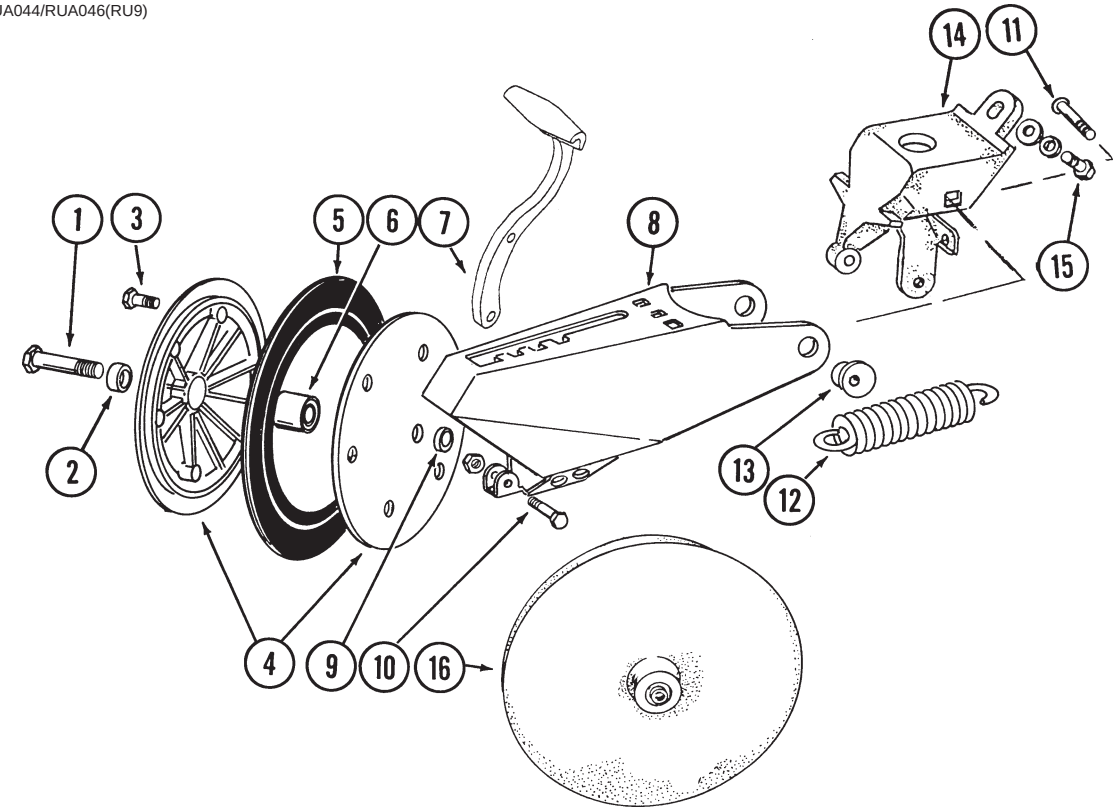


COVERING DISCS/SINGLE PRESS WHEEL

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10107	3	Lock Nut, 5/8"-11
2.	GD3181-12	2	Spacer, 2 7/8"
3.	GD9562	2	Half Wheel
4.	GD9305	1	Tire
5.	GA6171	1	Bearing
6.	G10018	7	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	7	Lock Nut, 5/16"-18
7.	G10152	1	Hex Head Cap Screw, 5/8"-11 x 9"
8.	G10015	1	Adjusting Bolt, 1/2"-13 x 5"
9.	GA6619	1	Mounting Arm
10.	G10102	1	Hex Nut, 1/2"-13
11.	G10801	2	Carriage Bolt, 1/2"-13 x 2 1/4"
	G10315	-	Carriage Bolt, 1/2"-13 x 2 1/2"
	G10216	2	Washer, 1/2" USS
	G10102	2	Hex Nut, 1/2"-13
12.	GA2054	1	Spring
13.	GB0239	2	Eccentric Bushing
14.	GB0233	1	Wheel Arm Stop
15.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	1	Lock Washer, 3/8"
	G10210	2	Washer, 3/8" USS
16.	G10171	4	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10232	4	Lock Washer, 5/16"
	G10106	4	Hex Nut, 5/16"-18
17.	GA6620	2	Bracket
18.	GA6618	2	Mount
19.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10219	2	Washer, 5/16" USS
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18
20.	GD6533	2	Cap
21.	G10006	2	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
22.	G10427	12	Rivet, 1/4" x 1/2"
23.	GD10473	2	Bearing Housing
24.	GA2014	2	Bearing
25.	GD9290	2	Blade, 8" Diameter
26.	GD1109	2	Spacer, 1/4"
27.	G10463	2	Cotter Pin, 1/4" x 1 1/2"
A.	GA6733	-	Single Press Wheel Complete With Bearing (Items 3-6)
B.	GA6801	-	Covering Disc Complete With Bearing (Items 22-25)

“V” CLOSING WHEELS

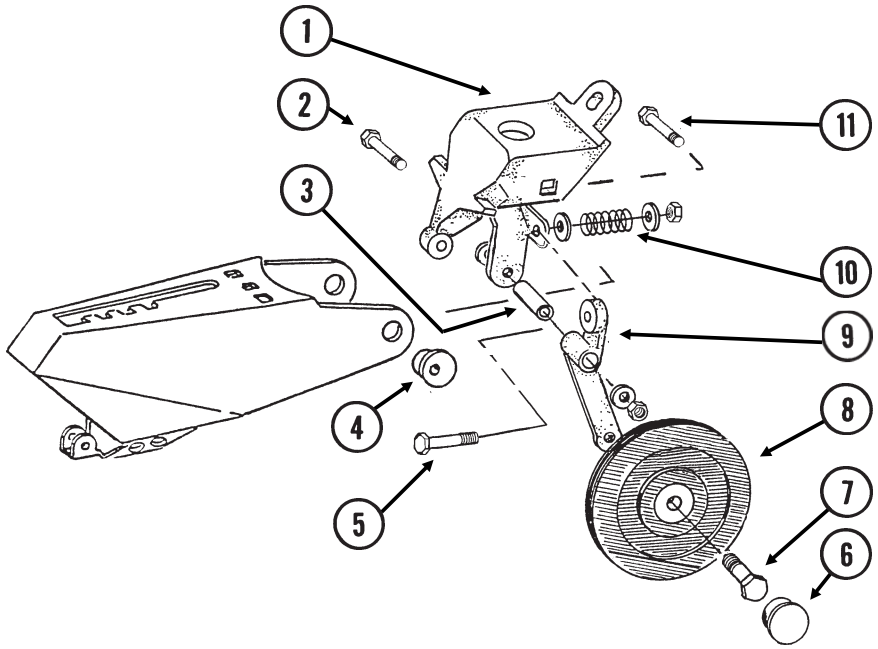
RUB004/RUA044/RUA046(RU9)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10013	2	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10107	2	Lock Nut, 5/8"-11
2.	GB0218	2	Bushing, 19/32"
3.	G10064	6	Hex Head Cap Screw, 1/4"-20 x 1"
	G10103	6	Hex Nut, 1/4"-20
4.	GD9120	4	Nylon Half Wheel
5.	GD1085	2	Rubber Tire, 1" x 12"
6.	GA6171	2	Bearing
7.	GB0254	1	Lever
8.	GA6613	1	Arm
9.	GD1109	2	Bushing, 1/4"
10.	G10133	1	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	1	Lock Nut, 5/16"-18
11.	G10747	2	Carriage Bolt, 1/2"-13 x 2"
	G10111	2	Lock Nut, 1/2"-13
12.	GD8460	1	Spring
13.	GB0219	2	Eccentric Bushing
14.	GB0233	1	Wheel Arm Stop
15.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	1	Lock Washer, 3/8"
	G10210	2	Washer, 3/8" USS
16.	GA6597	-	Cast Iron Closing Wheel W/Bearing
	GA6171	-	Bearing
A.	GA6434	-	Rubber Closing Wheel Complete With Bearing (Items 3-6)

SEED FIRMING WHEEL

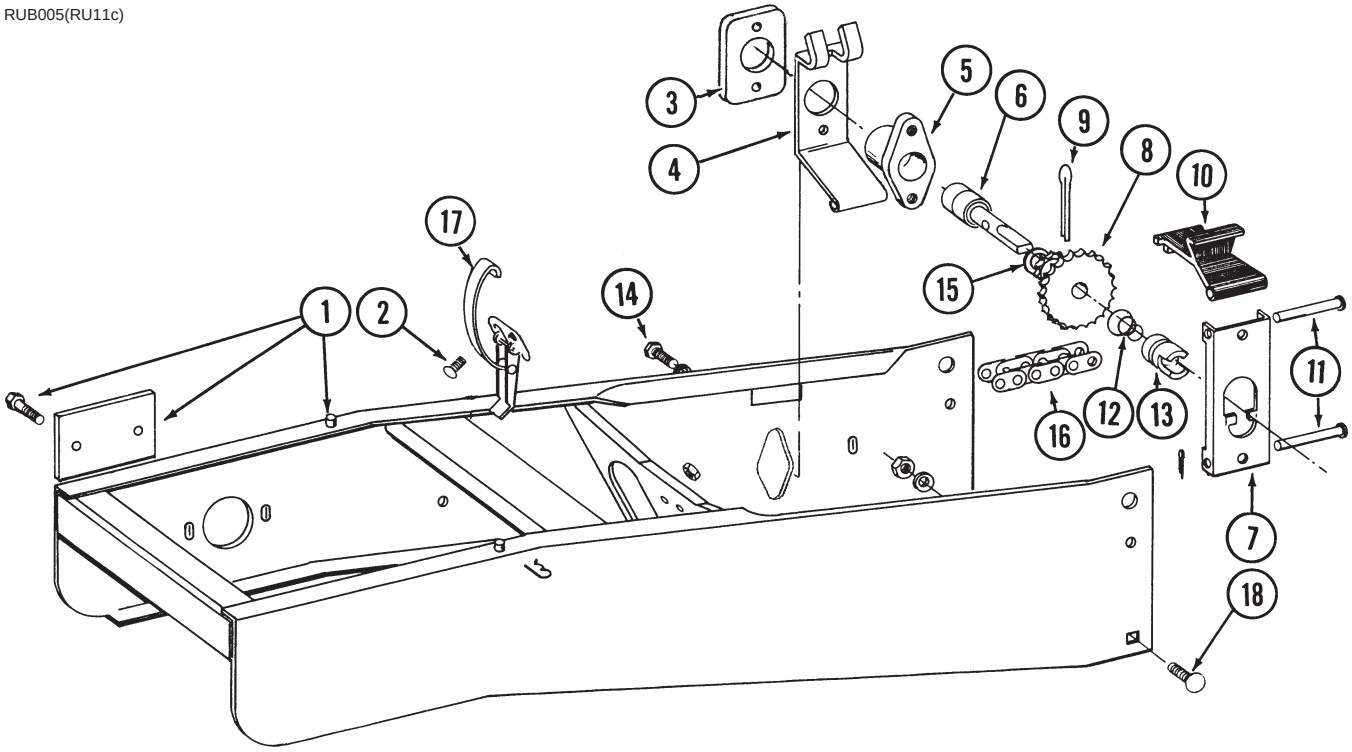
RUB006/RUA044(RU10b)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GB0233	1	Wheel Arm Stop
2.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10210	2	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
3.	GD9786	1	Bushing
4.	GB0219	2	Eccentric Bushing
5.	G10062	1	Hex Head Cap Screw, 3/8"-16 x 3"
	G10210	2	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
6.	GD1079	1	Dust Cap
7.	G10055	1	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
8.	GA7580	1	Seed Firming Wheel W/Bearing And Snap Ring
	GA2014	-	Bearing
	G10770	-	Snap Ring
9.	GB0245	1	Arm
10.	GD9787	1	Spring
11.	G10747	2	Carriage Bolt, 1/2"-13 x 2"
	G10111	2	Lock Nut, 1/2"-13
A.	GA6937	-	Seed Firming Wheel Retrofit Package (Items 1-11)

HOPPER SUPPORT AND METER DRIVE

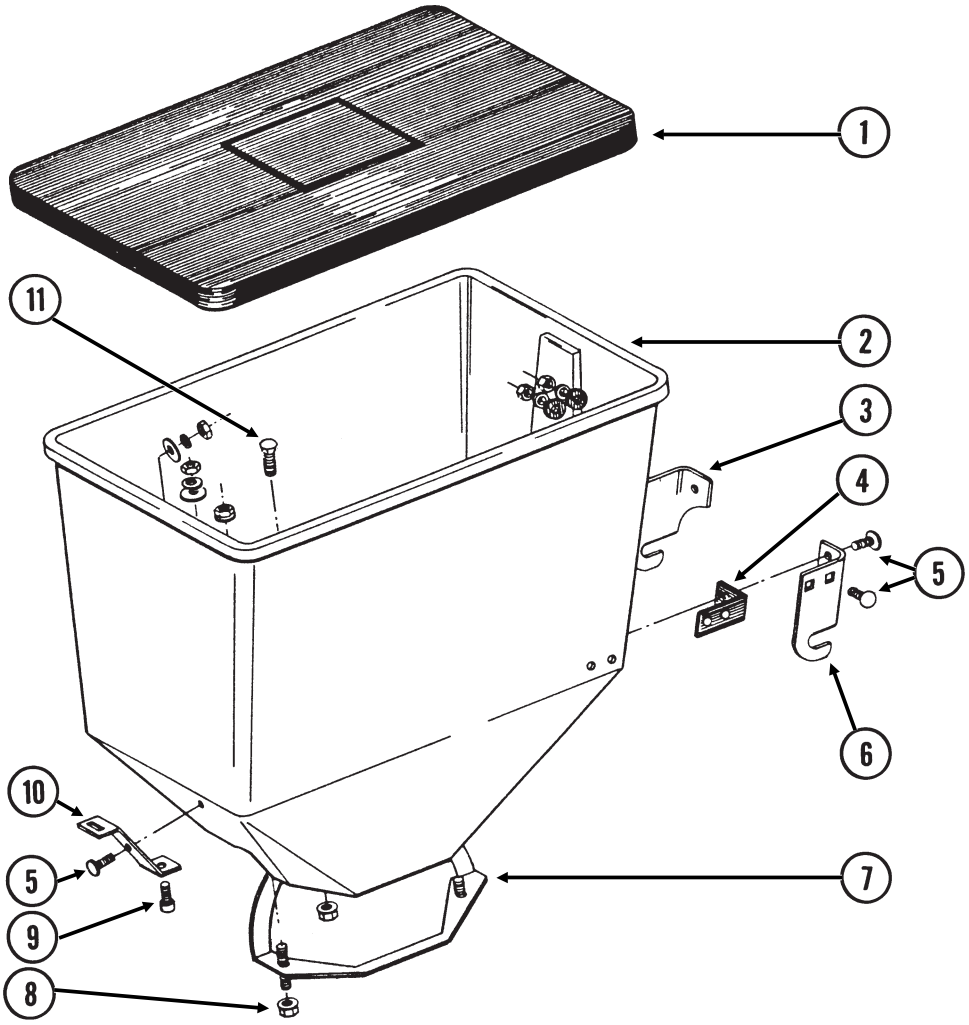
RUB005(RU11c)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GR1066	1	Hopper Support W/Cover And Hardware
	GD7618	1	Cover
	G10312	2	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	2	Flange Nut, 5/16"-18
2.	G10309	2	Carriage Bolt, 1/4"-20 x 5/8", Grade 2
	G10621	2	Flange Nut, 1/4"-20
3.	GD2128	1	Plate
4.	GD1037	1	Bearing Support
5.	GB0108	1	Bearing Housing
6.	GA2016	1	Bearing
7.	GD1036	1	Drive Release Lever
8.	GB0107	1	Sprocket, 11/19 Tooth
9.	G10457	1	Cotter Pin, 5/32" x 1 1/2"
10.	GD1035	1	Release Handle
11.	G10553	2	Clevis Pin, 1/4" x 2 5/8"
	G10455	2	Cotter Pin, 1/16" x 1/2"
12.	GD10464	1	Compression Spring
13.	GB0243	1	Drive Coupler
14.	G10019	2	Hex Head Cap Screw, 5/16"-18 x 1"
	G10232	2	Lock Washer, 5/16"
15.	G10204	-	Machinery Bushing, 21/32" (As Required)
16.	G3303-98	1	Roller Chain, No. 41, 98 Links Including Connector Link
	GR0196	1	Connector Link, No. 41
17.	GA2007	1	Hopper Hold Down Latch
18.	G10305	1	Carriage Bolt, 3/8"-16 x 1", Grade 2
	G10004	-	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
A.	GA4822	-	Meter Drive Assembly Complete (Items 3-14)

SEED HOPPER

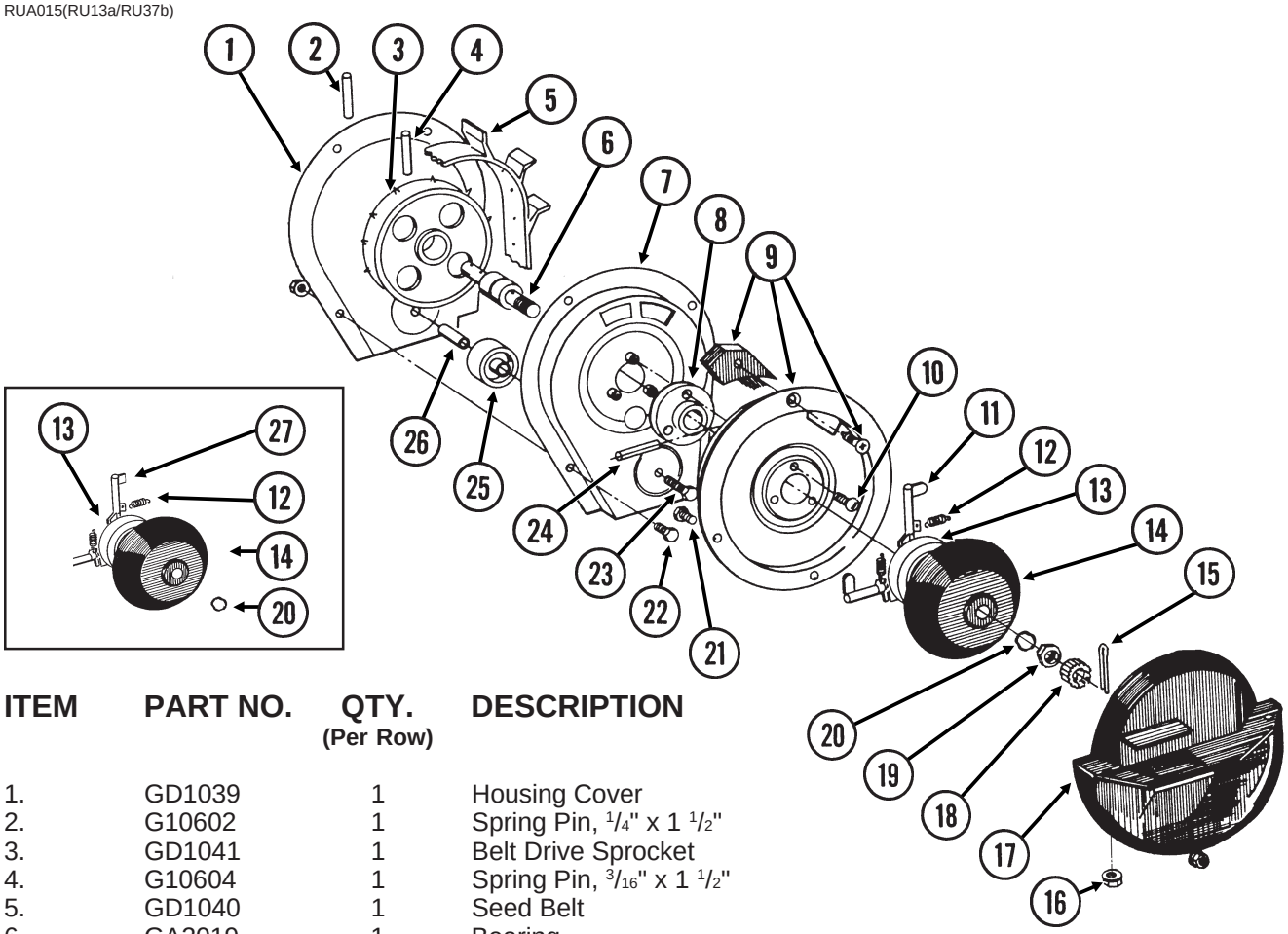
RUA015(RU12b)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GA2327	1	Lid With Clip
2.	GD1053	1	Seed Hopper
3.	GD1051L	1	Bracket, Left Hand
4.	GD1054	2	Mounting Pad
5.	G10310	7	Carriage Bolt, 1/4"-20 x 3/4", Grade 2
	GD1121	7	Rubber Washer
	G10209	7	Washer, 1/4" USS
	G10110	7	Self Locking Nut, 1/4"-20
6.	GD1051R	1	Bracket, Right Hand
7.	GA2027	1	Retainer
8.	G10620	4	Flange Nut, 5/16"-18
9.	G10520	1	Hex Socket Head Cap Screw, 3/8"-16 x 3/4", Grade 8
	G10210	1	Washer, 3/8" USS
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
10.	GD1055	1	Clip
11.	G10310	1	Carriage Bolt, 1/4"-20 x 3/4", Grade 2
	G10621	1	Flange Nut, 1/4"-20
A.	GA2058	-	Seed Hopper With Hardware, Less Lid (Items 2-11)

FINGER PICKUP SEED METER

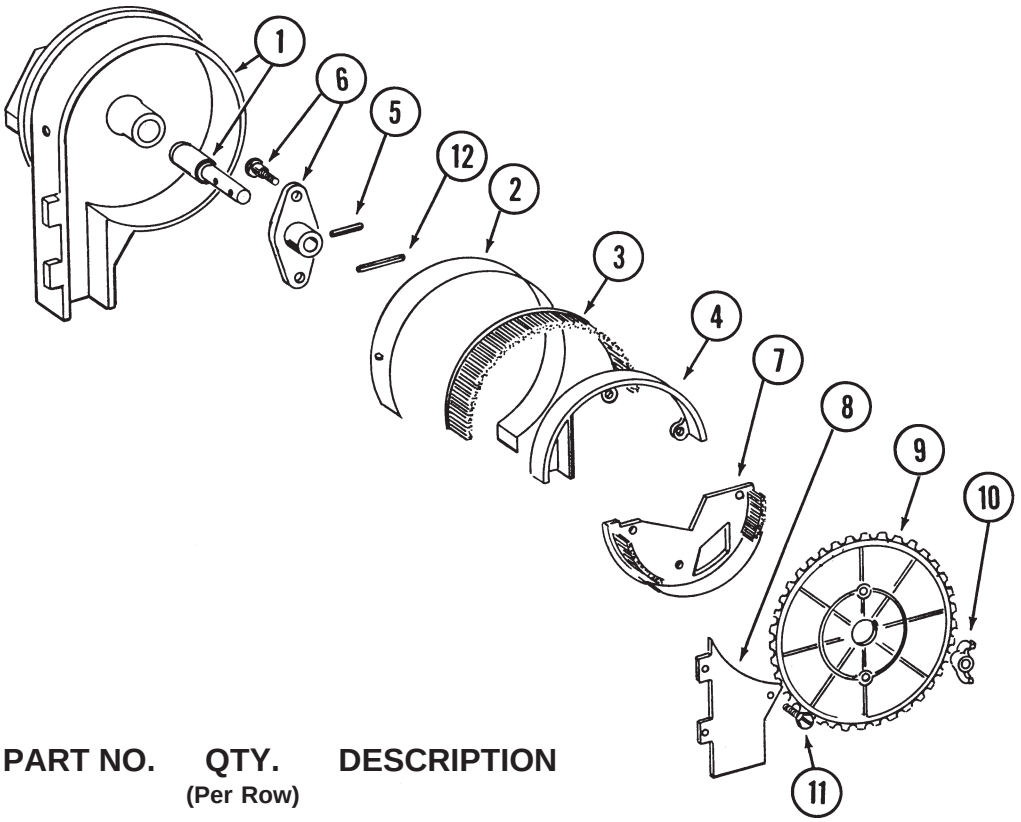
RUA015(RU13a/RU37b)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1039	1	Housing Cover
2.	G10602	1	Spring Pin, 1/4" x 1 1/2"
3.	GD1041	1	Belt Drive Sprocket
4.	G10604	1	Spring Pin, 3/16" x 1 1/2"
5.	GD1040	1	Seed Belt
6.	GA2019	1	Bearing
7.	GA2018	1	Conveyor Housing
8.	GB0110	1	Bearing Housing
9.	GR0664	1	Carrier With Brush And Screw
	GA2020	-	Brush
	G10690	-	Rolling Thread Screw, No. 10 x 3/4"
10.	G10401	3	Screw, No. 10-32 x 5/8"
11.	GD10733	12	Finger, Corn
12.	GD6501	12	Spring
13.	GB0111	1	Cam
14.	GD1045	1	Finger Holder
15.	G10470	1	Cotter Pin, 5/32" x 1"
16.	G10620	2	Flange Nut, 5/16"-18
17.	GD1046	1	Seed Baffle
18.	GD1083	1	Cover Nut, 5/8"-18
19.	G10500	1	Jam Nut, 5/8"-18 UNF
20.	GA8343	1	Wave Washer, 5/8" (Triple Wave)
21.	G10020	3	Hex Head Cap Screw, 1/4"-20 x 5/8"
	G10323	3	Hex Flange Nut, 1/4"-20
22.	G10022	4	Hex Head Cap Screw, 1/4"-20 x 1/2"
	G10621	4	Flange Nut, 1/4"-20
23.	G10021	1	Hex Head Cap Screw, 1/4"-20 x 1 1/2"
	G10621	1	Flange Nut, 1/4"-20
24.	G10603	1	Spring Pin, 1/4" x 1 1/4"
25.	GD1042	1	Idler
26.	GB0120	1	Bushing
27.	GD10226	12	Finger, Oil Sunflower
A.	GR0933	-	Finger Assembly, Corn (Items 11-14 And 20)
B.	GR1327	-	Finger Assembly, Oil Sunflower (Items 12-14, 20 And 27)

BRUSH-TYPE SEED METER

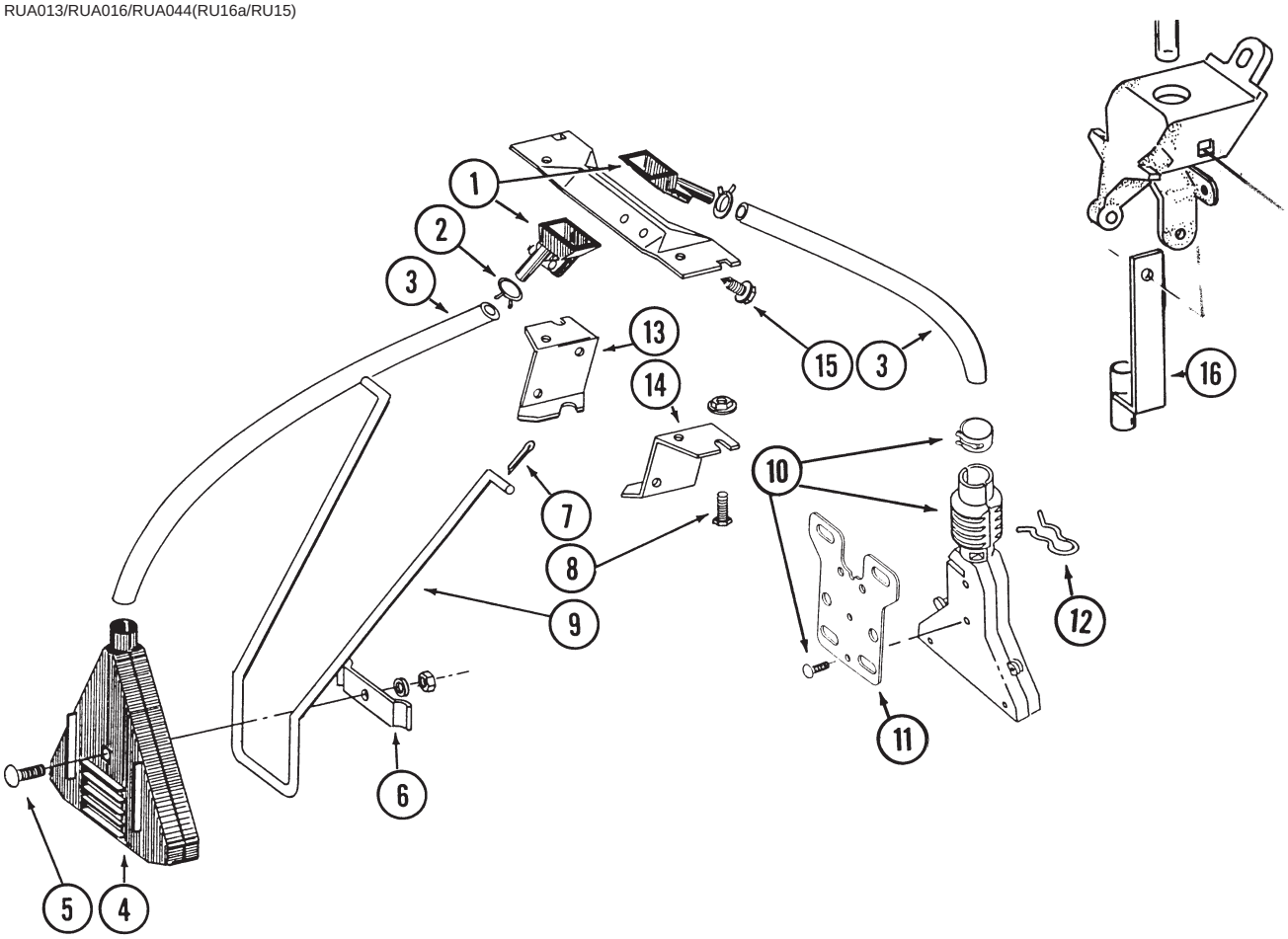
RUA037(RU14)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GA6027	1	Housing W/Bearing
	GA5698	-	Bearing
2.	GD8778	1	Wear Strip
3.	GA5699	1	Upper Retaining Brush
4.	GD8237	1	Retaining Brush Holder
5.	G10603	1	Spring Pin, 1/4" x 1 1/4"
6.	GA6038	1	Hub W/Shoulder Bolts
	GD1755	2	Shoulder Bolt, 1/4"-20
7.	GA5834	1	Lower Brush
8.	GD7878	1	Cover
9.	GA5794	-	Seed Disc, Soybean, 60 Cell, Black Color-Coded
	GA6184	-	Seed Disc, Specialty Soybean, 48 Cell, Dark Blue Color-Coded
	GA5982	-	Seed Disc, Small Milo/Grain Sorghum, 30 Cell, Red Color-Coded
	GA6187	-	Seed Disc, Large Milo/Grain Sorghum, 30 Cell, Light Blue Color-Coded
	GA5795	-	Seed Disc, High Rate Small Milo/Grain Sorghum, 60 Cell, Red Color-Coded
	GA6633	-	Seed Disc, High Rate Large Milo/Grain Sorghum, 60 Cell, Yellow Color-Coded
	GA5796	-	Seed Disc, Cotton, Acid-Delinted, 30 Cell, White Color-Coded
	GA6168	-	Seed Disc, Large Cotton, Acid-Delinted, 36 Cell, Tan Color-Coded
	GA6478	-	Seed Disc, High Rate Cotton, Acid-Delinted, 48 Cell, Light Green Color-Coded
	GA6182	-	Seed Disc, Hill-Drop Cotton, Acid-Delinted, 12 Cell, Brown Color-Coded
	GA7255	-	Seed Disc, Small Hill-Drop Cotton, Acid-Delinted, 12 Cell, Dark Green Color-Coded
10.	G10531	2	Nylon Insert Wing Nut, 1/4"-20
11.	G10584	9	Slotted Tap Screw, No. 10-24 x 1/2"
12.	G10602	1	Spring Pin, 1/4" x 1 1/2"

GRANULAR CHEMICAL BANDERS

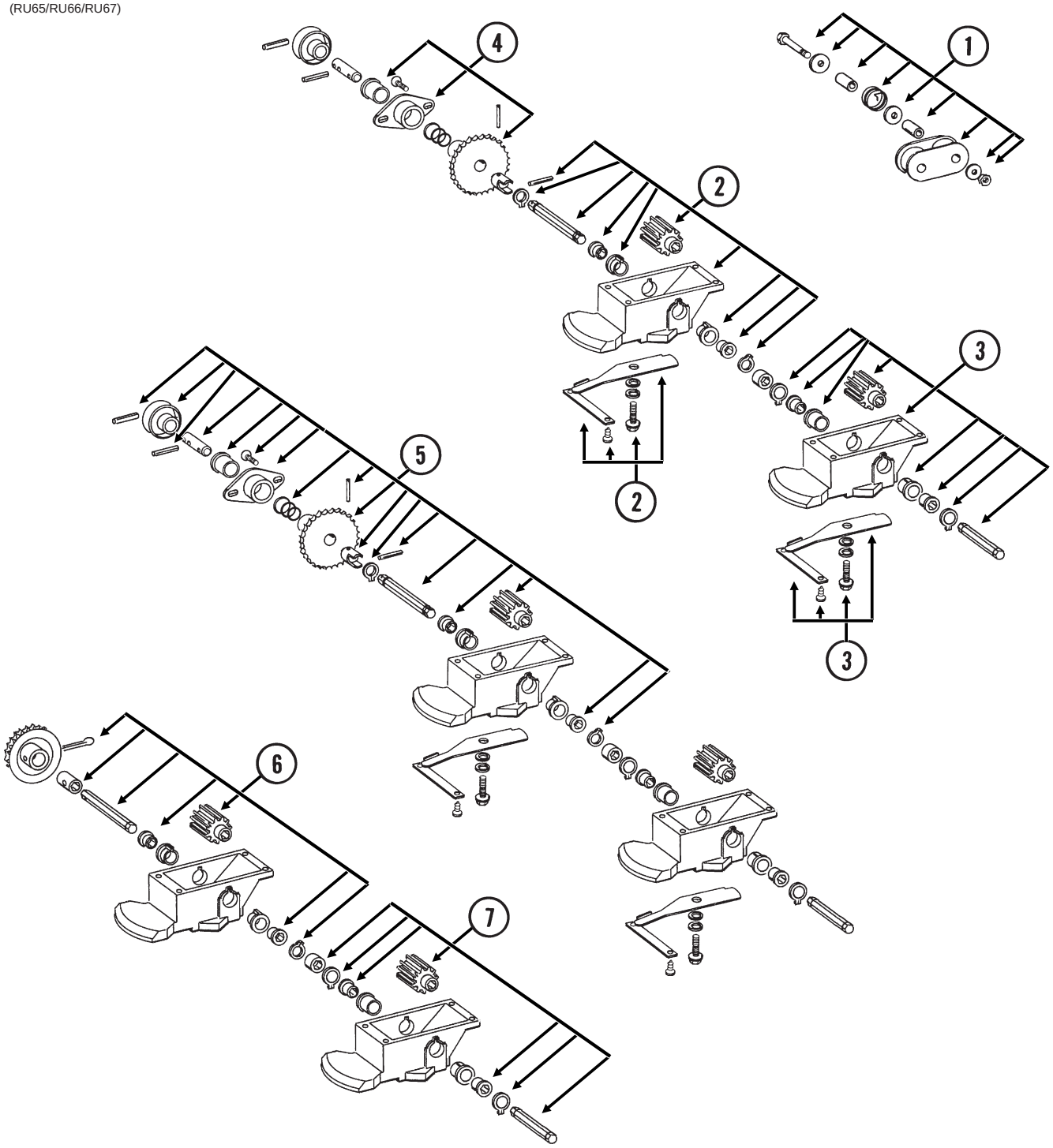
RUA013/RUA016/RUA044(RU16a/RU15)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2423	-	Funnel
2.	G10680	-	Hose Clamp, 7/16"
3.	GD2947	-	Hose, 7/16" x 28"
4.	GA2075	-	Diffuser, 14" Band
5.	G10306	-	Carriage Bolt, 3/8"-16 x 2", Grade 2
	G10229	-	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
6.	GD1118	-	Clamp
7.	G10452	-	Cotter Pin, 1/8" x 1/2"
8.	G10310	-	Carriage Bolt, 1/4"-20 x 3/4", Grade 2
	G10227	-	Lock Washer, 1/4"
	G10103	-	Hex Nut, 1/4"-20
9.	GD1116	-	Hanger
10.	GA6907	-	Slope-Compensating Bander W/Hardware (4 1/2" Band Width)
	G10864	-	Uni-Clamp
	G10757	2	Screw, No. 10-32 x 1 1/4"
	G10758	2	Hex Nut, No. 10-32
11.	GD9816	-	Bander Mounting Bracket
12.	GD1090	-	Spring Clip
13.	GD1115L	-	Hanger Bracket, L.H.
14.	GD1115R	-	Hanger Bracket, R.H. (For Some Non-KINZE® Applications)
15.	G10523	-	Self Tapping Screw, No. 10 x 1/2"
16.	GA6741	-	Bracket (Straight Drop In-Furrow)

GRANULAR CHEMICAL SUB-ASSEMBLIES AND KITS

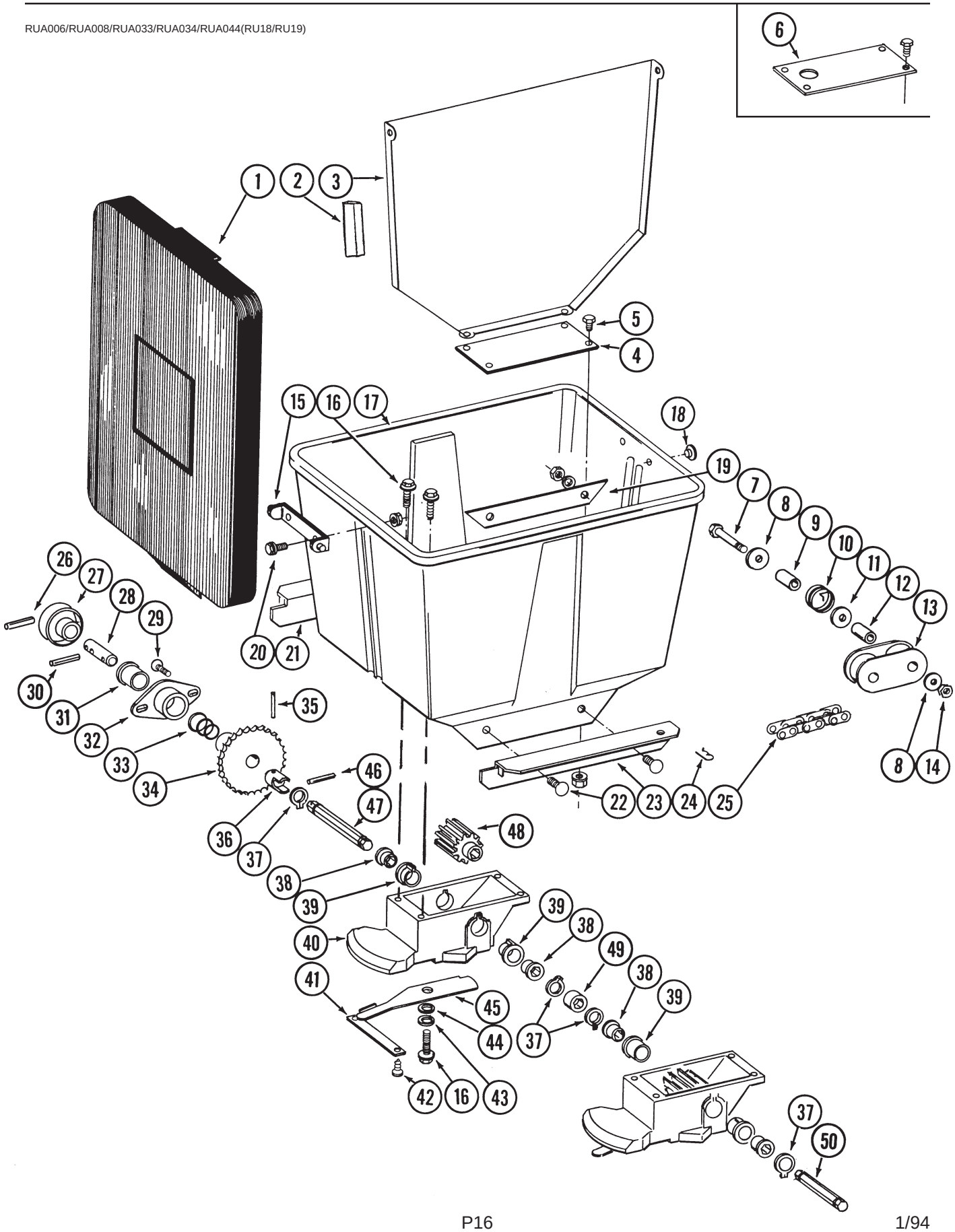
(RU65/RU66/RU67)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G1K213	1	Granular Chemical Idler Kit W/Instruction
2.	GA5553	1	Insecticide Housing Sub-Assembly
3.	GA5554	1	Herbicide Housing Sub-Assembly
4.	GA5746	1	Sprocket Sub-Assembly
5.	GA5623	1	Throwout Update Kit W/Instructions And Template
6.	GA5560	1	Primary Meter Roller Replacement Kit W/Instruction (Update For Non-Current Design)
7.	GA5561	1	Secondary Meter Roller Replacement Kit W/Instruction (Update For Non-Current Design)

GRANULAR CHEMICAL HOPPER WITH METER(S) & THROWOUT

RUA006/RUA008/RUA033/RUA034/RUA044(RU18/RU19)

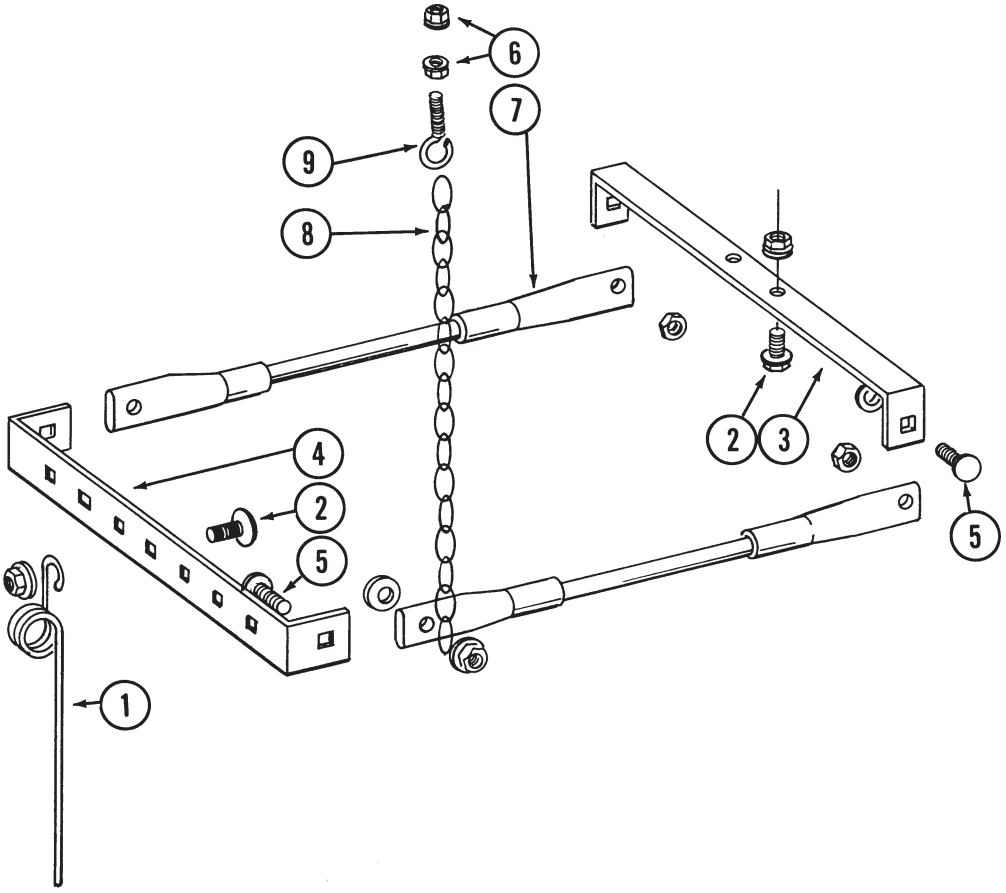


GRANULAR CHEMICAL HOPPER WITH METER(S) & THROWOUT

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GA4444	1	Lid
2.	G3314-40	-	Foam Strip, 40"
3.	GA2076	1	Divider (Used With Two Meters)
4.	GD1056	-	Cover Plate (1 Used With One Meter)
5.	G10022	4	Hex Head Cap Screw, 1/4"-20 x 1/2"
	G10621	4	Flange Nut, 1/4"-20
6.	GD8750	-	Restrictor Plate (Optional)
7.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
8.	G10210	2	Washer, 3/8" USS
9.	GD2971-10	1	Bushing, 9/16"
10.	GD11219	1	Spring
11.	G10201	1	Special Washer
12.	GD1026	1	Spacer, 1 3/16"
13.	GD9240	1	Idler
14.	G10108	1	Lock Nut, 3/8"-16
15.	GD1060	1	Hinge
16.	G10570	-	Self Tapping Screw, 1/4" x 3/4" (4 Used Per Meter)
17.	GD1058	1	Hopper
18.	GD1089	2	Plug
19.	GD1072	2	Strap
20.	G10023	2	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10621	2	Flange Nut, 1/4"-20
21.	GD1059L	1	Support, L.H.
22.	G10311	4	Carriage Bolt, 3/8"-16 x 3/4" Short Necked, Grade 2
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
23.	GD1059R	1	Support, R.H.
24.	G10670	2	Spring Locking Pin, No. 3
25.	G3303-114	1	Roller Chain, No. 41, 114 Pitch Including Connector Link
	GR0196	1	Connector Link, No. 41
26.	G10637	1	Spring Pin, 1/8" x 1 1/2"
27.	GD11239	1	Knob
28.	GD7589	1	Throwout Pin
29.	G10312	2	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	2	Flange Nut, 5/16"-18
30.	G10602	1	Spring Pin, 1/4" x 1 1/2"
31.	GB0121	1	Bearing
32.	GB0183	1	Bearing Mount
33.	GD10464	1	Spring
34.	GA5533	1	Sprocket, 24 Tooth
35.	G10609	1	Spring Pin, 5/32" x 1"
36.	GB0184	1	Coupling
37.	G10567	1	Retaining Ring
38.	GD7258	-	Hex Bushing (2 Used Per Meter)
39.	GB0115	-	Bearing (2 Used Per Meter)
40.	GB0116	-	Granular Housing (1 Used Per Meter)
41.	GD1061	-	Support Strap (1 Used Per Meter)
42.	G10521	1	Self Tapping Screw, No. 10 x 3/8" (2 Used Per Meter)
43.	G10209	-	Washer, 1/4" USS (1 Used Per Meter)
44.	G10660	-	Wave Washer (1 Used Per Meter)
45.	GD1063	-	Metering Gate (1 Used Per Meter)
46.	G10546	1	Spring Pin, 3/16" x 1 1/4"
47.	GD7588	1	Shaft
48.	GD7148	-	Feed Roller, Hex Bore (1 Used Per Meter)
49.	GD7592	1	Coupler, Hex Bore (With 2nd Meter)
50.	GD7591	-	Shaft (1 Used In 2nd Meter)

SPRING TOOTH INCORPORATOR

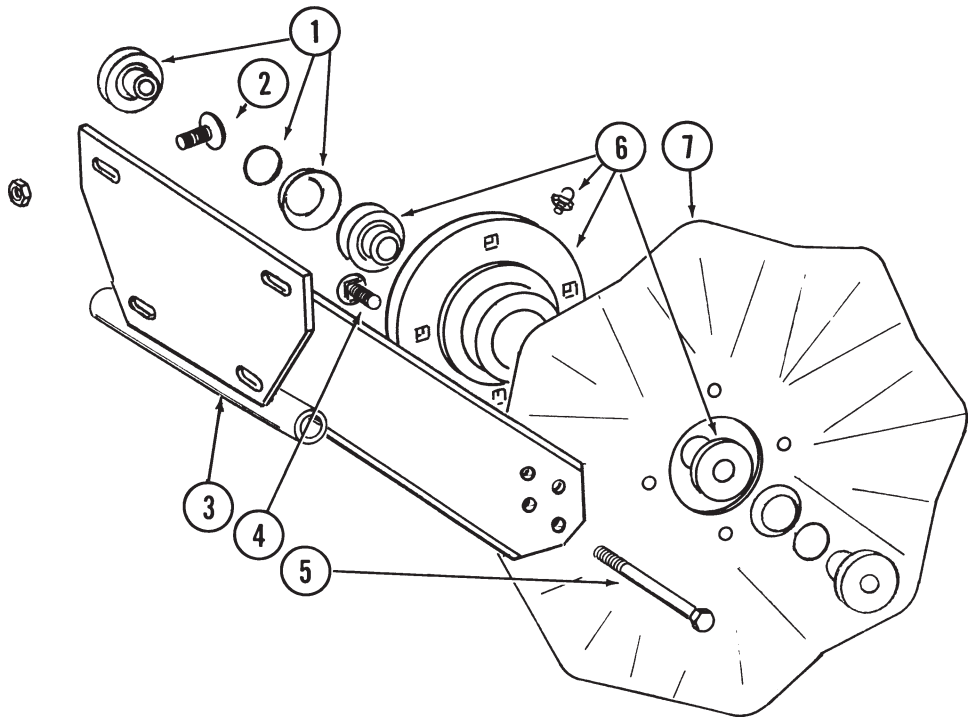
RUA011(RU20)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1145	7	Spring Tooth
2.	G10308	9	Carriage Bolt, 3/8"-16 x 3/4", Grade 2
	G10622	9	Flange Lock Nut, 3/8"-16
3.	GD1143	1	Front Bracket
4.	GD1144	1	Rear Bracket
5.	G10305	4	Carriage Bolt, 3/8"-16 x 1", Grade 2
	G10529	4	External Tooth Lock Washer, 3/8"
	G10622	4	Flange Lock Nut, 3/8"-16
6.	G10621	4	Flange Lock Nut, 1/4"-20
7.	GA2094	2	Cable Assembly
8.	G3305-01	4	Chain
9.	GD2460	2	Eyebolt, 1/4"-20

NO TILL COULTER, ROW UNIT MOUNTED

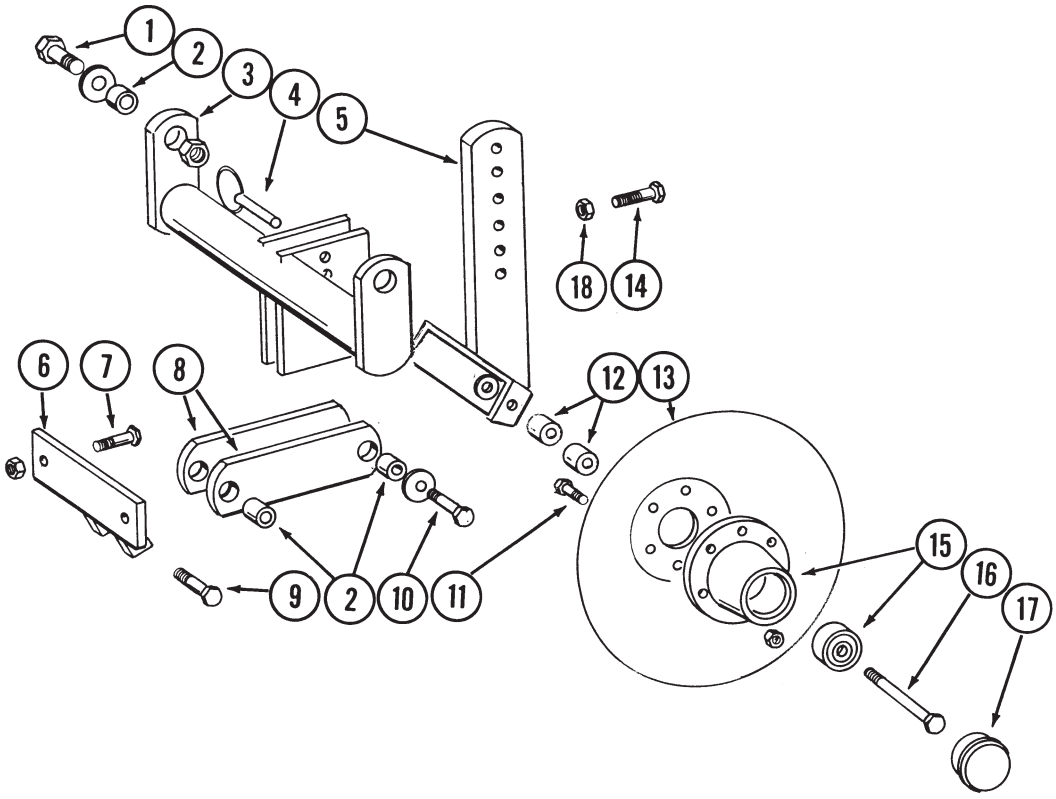
RUA036(RU21a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GB0227	2	Adapter W/O-Ring And Spring Washer
	GD8844	2	O-Ring
	GD8843	2	Spring Washer
2.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
3.	GA5625	1	Arm
4.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
5.	G10036	1	Hex Head Cap Screw, 5/8"-11 x 4"
	G10107	1	Lock Nut, 5/8"-11
6.	GA5640	1	Hub W/Bearings And Grease Fitting
	GA5622	-	Bearing (2 Used)
	G10640	-	Grease Fitting, 1/4"-28
7.	GD7803	-	Fluted Blade, 1", 8 Flutes (Shown)
	GD7804	-	Bubbled Blade, 1"
	GD9254	-	Fluted Blade, 3/4", 13 Flutes

DISC FURROWER, ROW UNIT MOUNTED

RUA038/RUA040(RU23)

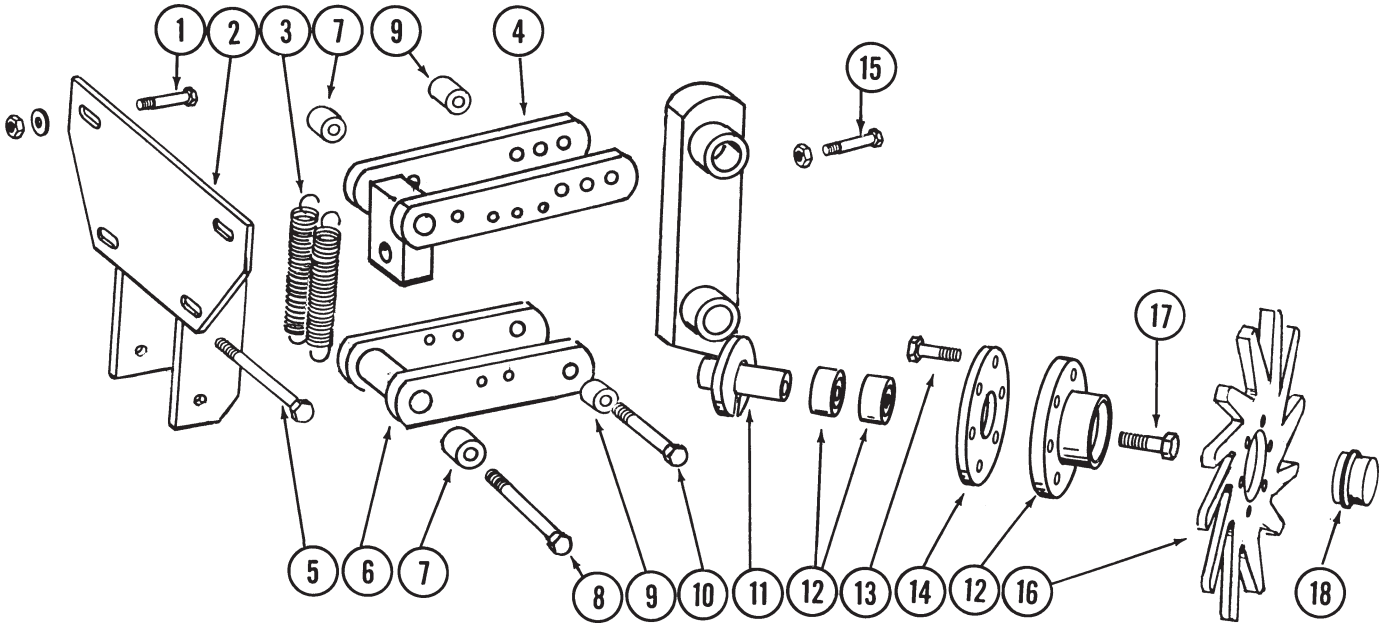


DISC FURROWER, ROW UNIT MOUNTED

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10216	2	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
2.	GD7889	6	Bushing
3.	GA5719	1	Mounting Bracket
4.	G10536	1	Pin
5.	GA5718	1	Support Arm
6.	GA5715	1	Anchor
7.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	2	Lock Nut, 1/2"-13
8.	GD7890	2	Link
9.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10216	2	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
10.	G10585	1	Hex Head Cap Screw, 1/2"-13 x 3 1/4"
	G10216	2	Washer, 1/2" USS
	G10111	1	Lock Nut, 1/2"-13
11.	G10572	6	Truss Head Slotted Machine Screw, 5/16"-18 x 7/8"
	G10106	6	Hex Nut, 5/16"-18
12.	GD7817-01	2	Spacer, 3/4"
	GD7817-04	2	Spacer, 1/2"
13.	GD7823	-	Solid Blade, 12" (Shown)
	GD8307	-	Notched Blade, 12"
14.	G10597	1	Set Screw, 5/8"-11 x 2 1/4"
15.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
16.	G10318	2	Hex Head Cap Screw, 5/8"-11 x 4 1/2"
	GD7805	2	Special Washer
	G10107	2	Lock Nut, 5/8"-11
17.	GD1132	2	Dust Cap
18.	G10503	1	Jam Nut, 5/8"-11

RESIDUE WHEEL, ROW UNIT MOUNTED

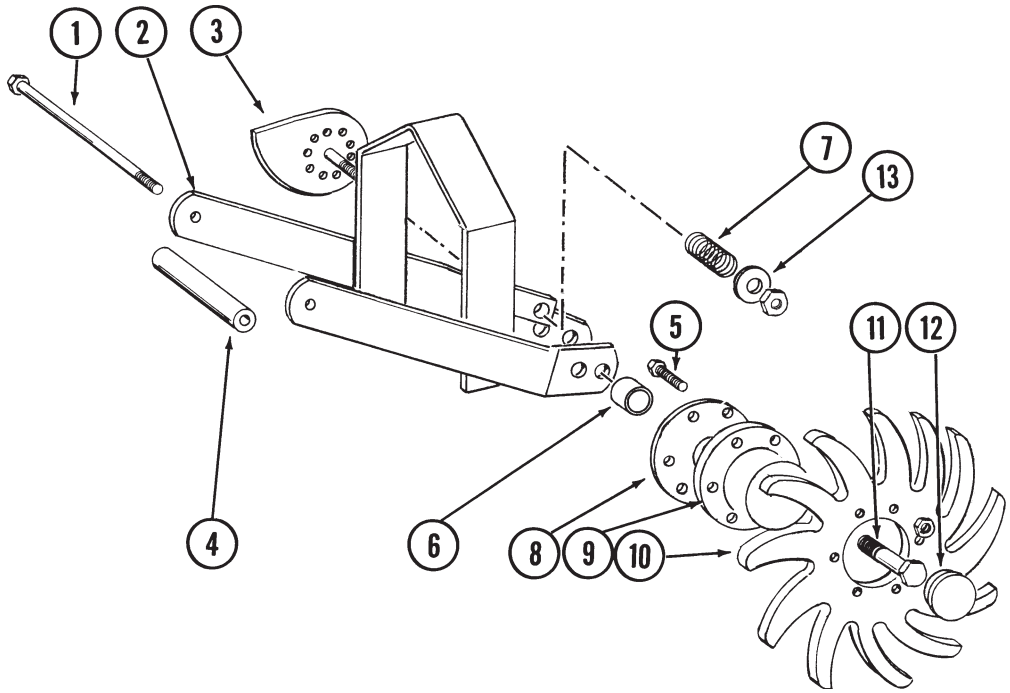
RUA041/RUA045(RU24a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10216	4	Washer, 1/2" USS
	G10111	4	Lock Nut, 1/2"-13
2.	GA6832	1	Mount
3.	GD5857	2	Spring
4.	GA6833	1	Upper Link
5.	G10348	1	Hex Head Cap Screw, 1/2"-13 x 5" (Lockup Bolt)
	G10111	1	Lock Nut, 1/2"-13
6.	GA6834	1	Lower Link
7.	GD9715	2	Spacer, 3"
8.	G10045	2	Hex Head Cap Screw, 1/2"-13 x 4 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
9.	GD9720	2	Spacer, 2 3/16"
10.	G10033	2	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
11.	GA6838	1	Wheel Mount
12.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
13.	G10133	6	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	6	Lock Nut, 5/16"-18
14.	GD9724	1	Backing Plate
15.	G10371	1	Hex Head Cap Screw, 1/2"-13 x 3", Full Thread
	G10501	1	Jam Nut, 1/2"-13
16.	GD10552	1	Wheel, 3/8" x 12"
17.	G10006	1	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
18.	GD1132	1	Dust Cap
A.	GA7446	-	Wheel Assembly (Items 12-14 And 16)

RESIDUE WHEELS, COULTER MOUNTED

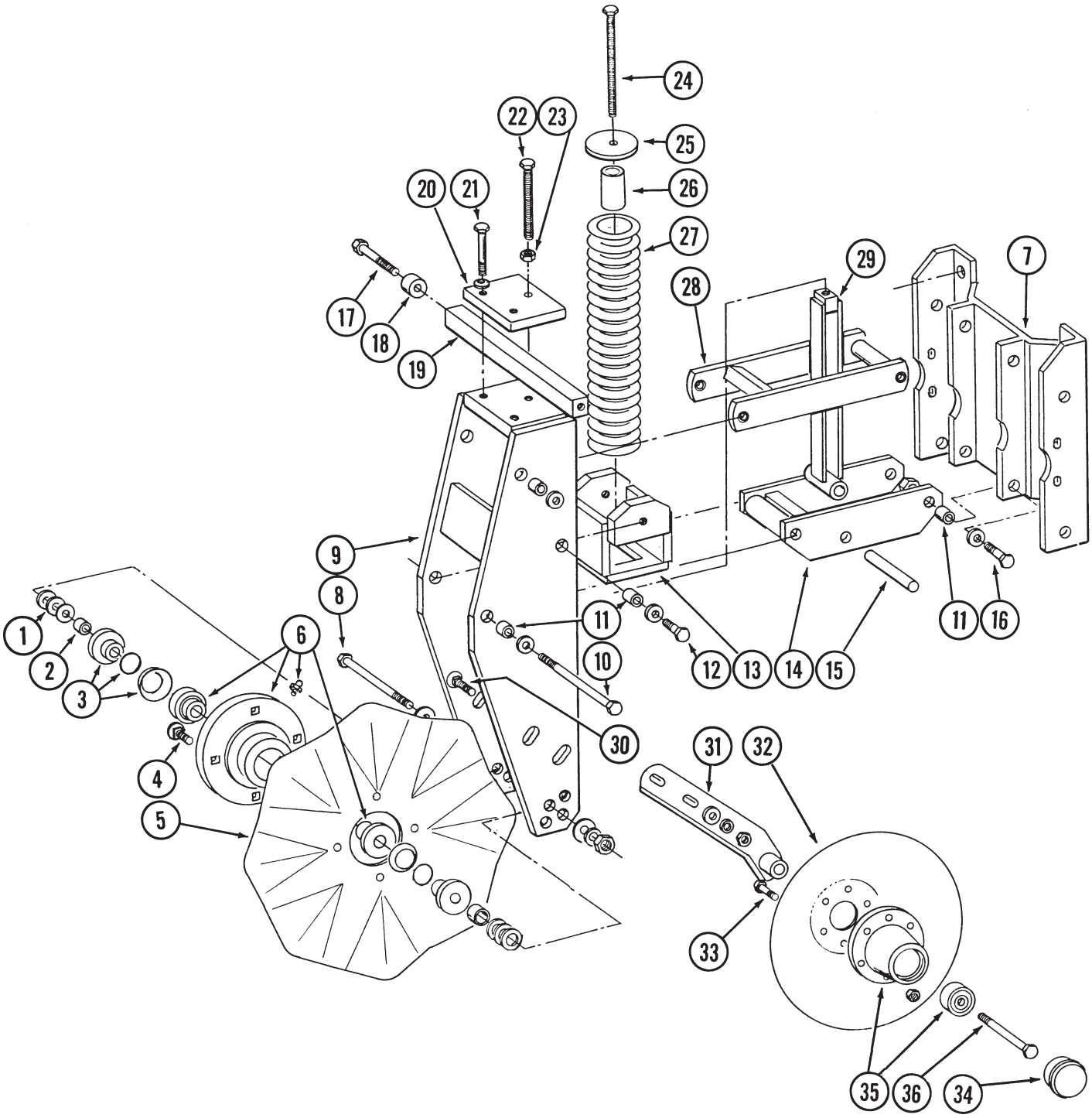
RUA047(RU31a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10148	1	Hex Head Cap Screw, 1/2"-13 x 9 1/2"
	G10111	1	Lock Nut, 1/2"-13
2.	GA7271	1	Mount
3.	GA7412	1	Cam
4.	GD10526	1	Sleeve, 7 1/2"
5.	G10133	12	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	12	Lock Nut, 5/16"-18
6.	GD7817-04	2	Spacer, 1 1/4" O.D. x 1/2" Long
7.	GD10519	1	Spring
8.	GD9724	2	Backing Plate
9.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
10.	GD10552	2	Wheel, 3/8" x 12"
11.	G10009	2	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
12.	GD1132	2	Dust Cap
13.	G10206	1	Washer, 1/2" SAE
	G10111	1	Lock Nut, 1/2"-13
A.	GA7446	-	R.H. Wheel Assembly (Items 5 And 8-10) (Shown)
	GA7445	-	L.H. Wheel Assembly (Items 5 And 8-10)

FRAME MOUNTED COULTER W/DISC FURROWER

RUA035/RUB016(RU25)

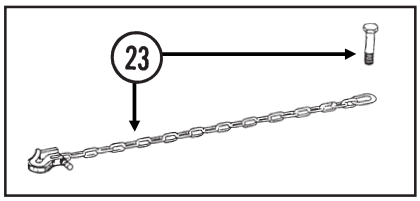


FRAME MOUNTED COULTER W/DISC FURROWER

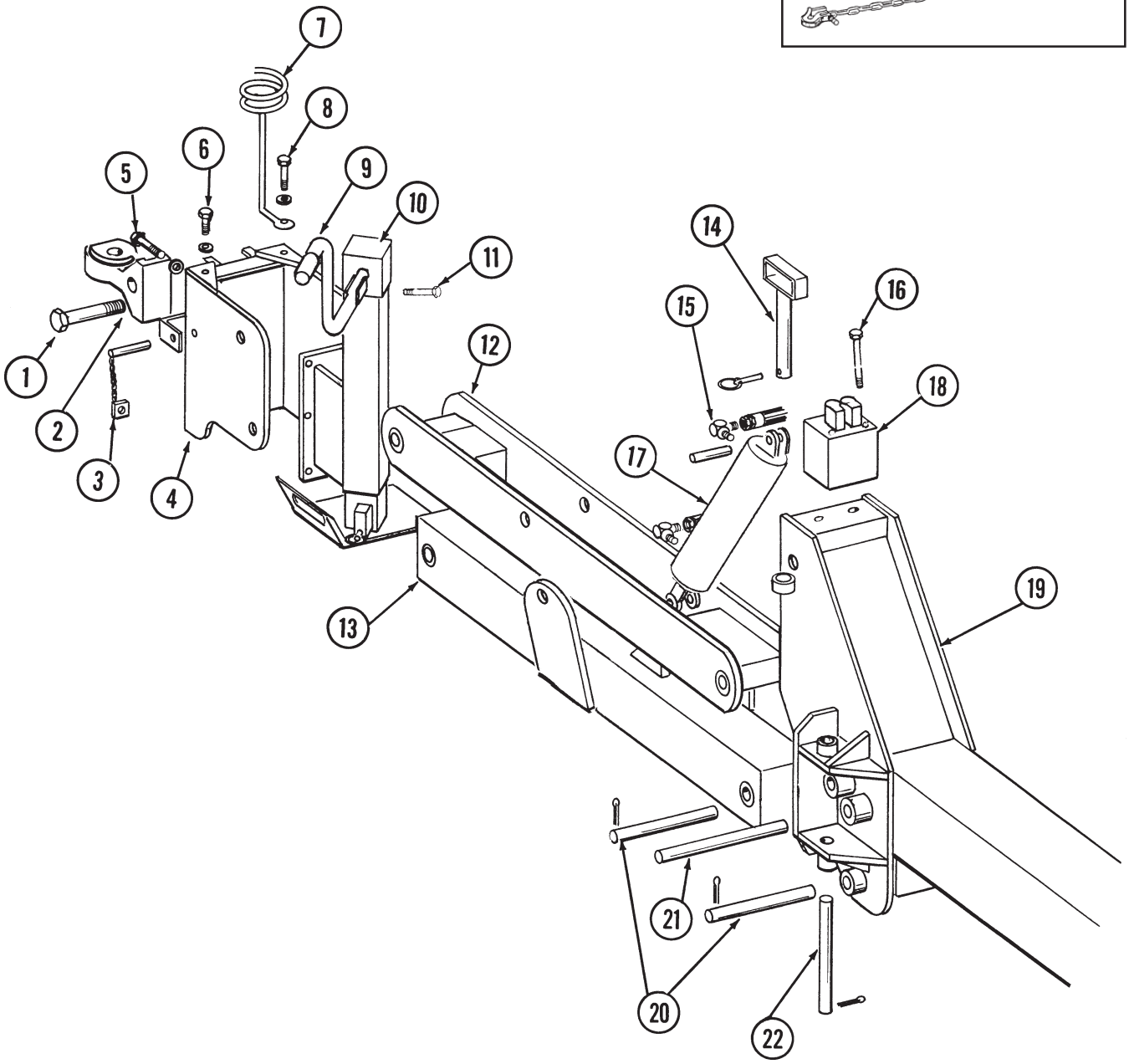
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10217	-	Washer, 5/8" USS (As Required)
2.	GD7817-04	2	Spacer, 1/2"
3.	GB0227	2	Adapter W/O-Ring And Spring Washer
	GD8844	-	O-Ring
	GD8843	-	Spring Washer
4.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
5.	GD7803	-	Fluted Blade, 1", 8 Flutes (Shown)
	GD7804	-	Bubbled Blade, 1"
	GD9254	-	Fluted Blade, 3/4", 13 Flutes
6.	GA5640	1	Hub W/Bearings And Grease Fitting
	GA5622	-	Bearing (2 Used Per Hub)
	G10640	-	Grease Fitting, 1/4"-28
7.	GA5798	1	Support Plate
8.	G10068	1	Hex Head Cap Screw, 5/8"-11 x 6"
	G10107	1	Lock Nut, 5/8"-11
9.	GA5643	1	Fork Mount
10.	G10012	1	Hex Head Cap Screw, 5/8"-11 x 6 1/2"
	GD7805	2	Washer
	G10107	1	Lock Nut, 5/8"-11
11.	GB0218	10	Bushing, 19/32"
12.	G10055	2	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	GD7805	2	Washer
13.	GA5637	1	Spring Socket
14.	GA5631	1	Lower Parallel Link
15.	GD7815	1	Pin, 5/8" x 4 1/4"
16.	G10008	6	Hex Head Cap Screw, 5/8"-11 x 2"
	GD7805	6	Washer
	G10107	4	Lock Nut, 5/8"-11 (As Required)
17.	GD7818	2	Special Bolt
18.	GD7817-01	2	Roller, 3/4"
19.	GD7816	1	Depth Control Bar
20.	GD7811	1	Depth Adjustment Clamp
21.	G10581	2	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10228	2	Lock Washer, 1/2"
22.	G10582	1	Hex Head Cap Screw, 5/8"-11 x 4", Full Thread
23.	G10104	1	Hex Nut, 5/8"-11
24.	G10573	1	Hex Head Cap Screw, 5/8"-11 x 5 1/2", Full Thread
25.	GB0196	1	Washer
26.	GD7817-09	1	Stop, 1 3/4"
27.	GD7831	1	Compression Spring
28.	GA5630	1	Upper Parallel Link
29.	GA5635	1	Spring Guide
30.	G10747	4	Carriage Bolt, 1/2"-13 x 2"
	G10206	-	Washer, 1/2" SAE (As Required)
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
31.	GA5636	2	Arm
32.	GD7823	-	Solid Blade, 12" (Shown)
	GD8307	-	Notched Blade, 12"
33.	G10572	12	Truss Head Slotted Machine Screw, 5/16"-18 x 7/8"
	G10106	12	Hex Nut, 5/16"-18
34.	GD1132	2	Dust Cap
35.	GA5654	2	Hub W/Bearings
	GA2014	4	Bearing
36.	G10036	2	Hex Head Cap Screw, 5/8"-11 x 4"
	G10107	2	Lock Nut, 5/8"-11

FRONT HITCH ASSEMBLY/SAFETY CHAIN

PHA029(FF1/WGN47a)



24 Row 30"/36 Row 20" Shown



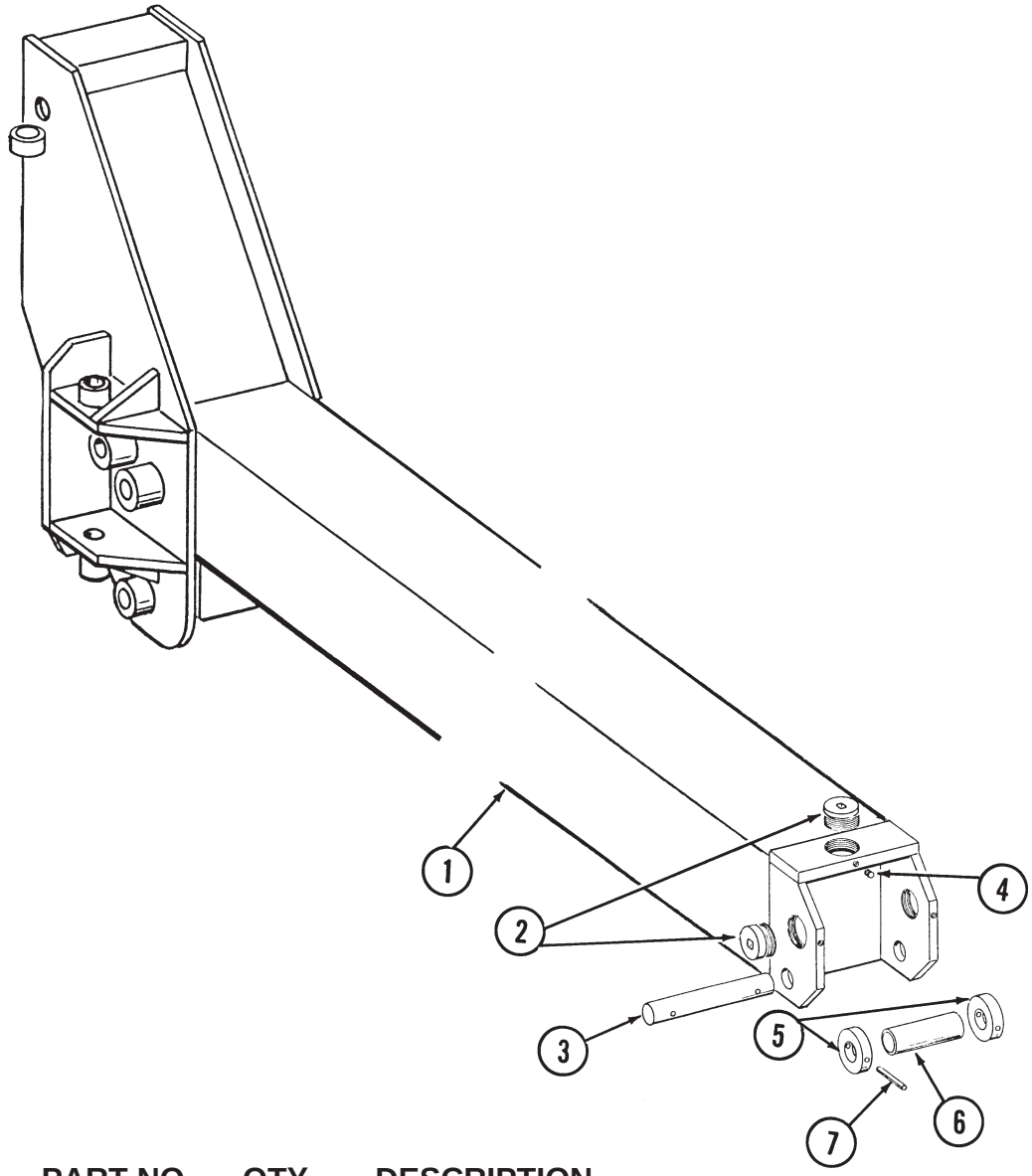
FRONT HITCH ASSEMBLY/SAFETY CHAIN

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10042	1	Hex Head Cap Screw, 1 1/4"-7 x 6 1/2"
	G10157	1	Lock Nut, 1 1/4"-7
2.	GA7203	1	Hitch
	G1K270	-	Washer Kit, Includes: (2)Washers And (1)Instruction Sheet
3.	GA4733	1	Detent Pin W/Chain
4.	GA6644	1	Hitch Cap
5.	G10006	4	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
6.	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
7.	GD9349	1	Hose Holder
8.	G10006	1	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
	G10230	1	Lock Washer, 5/8"
	G10217	1	Washer, 5/8" USS
	G10104	1	Hex Nut, 5/8"-11
9.	GD1350	1	Handle
10.	GA6727	1	Jack
11.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10210	1	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
12.	GA6642	1	Upper Hitch Link, All Sizes
13.	GA6643	1	Lower Hitch Link W/Grease Fittings, 24 Row 30" And 36 Row 20"
	GA7488	-	Lower Hitch Link W/Grease Fittings, 16 Row 30" And 24 Row 20"
	G10641	-	Grease Fitting, 1/8" NPT
14.	GA6813	1	Parallel Link Lock Pin
	GD2557	1	Clip Pin
15.	G6801-08	2	Elbow, 3/4"-16 O-Ring To JIC
16.	G10754	2	Hex Head Cap Screw, 5/16"-18 x 8"
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18
17.		-	See “Parallel Link Cylinder”, Pages P86 And P87
18.		-	See “Valve Block On Front Hitch”, Page 66
19.		-	See “Front Hitch Assembly (Rear Section)”, Page P28
20.	GD9464-01	4	Pin, 1 1/2" x 11 1/4"
	G10460	8	Cotter Pin, 1/4" x 2"
21.	GD0671	1	Pin, 1 1/4" x 10 3/4"
	G10460	2	Cotter Pin, 1/4" x 2"
22.	GD4014	2	Pin, 1 1/4" x 12"
	G10460	4	Cotter Pin, 1/4" x 2"
23.	G1K233	1	Safety Chain Kit W/Hardware, 1/2" (Optional)
	G10042	1	Hex Head Cap Screw, 1 1/4"-7 x 6 1/2"
	G10157	1	Lock Nut, 1 1/4"-7

FRONT HITCH ASSEMBLY (REAR SECTION)

PHA029/PFA057(FF2)

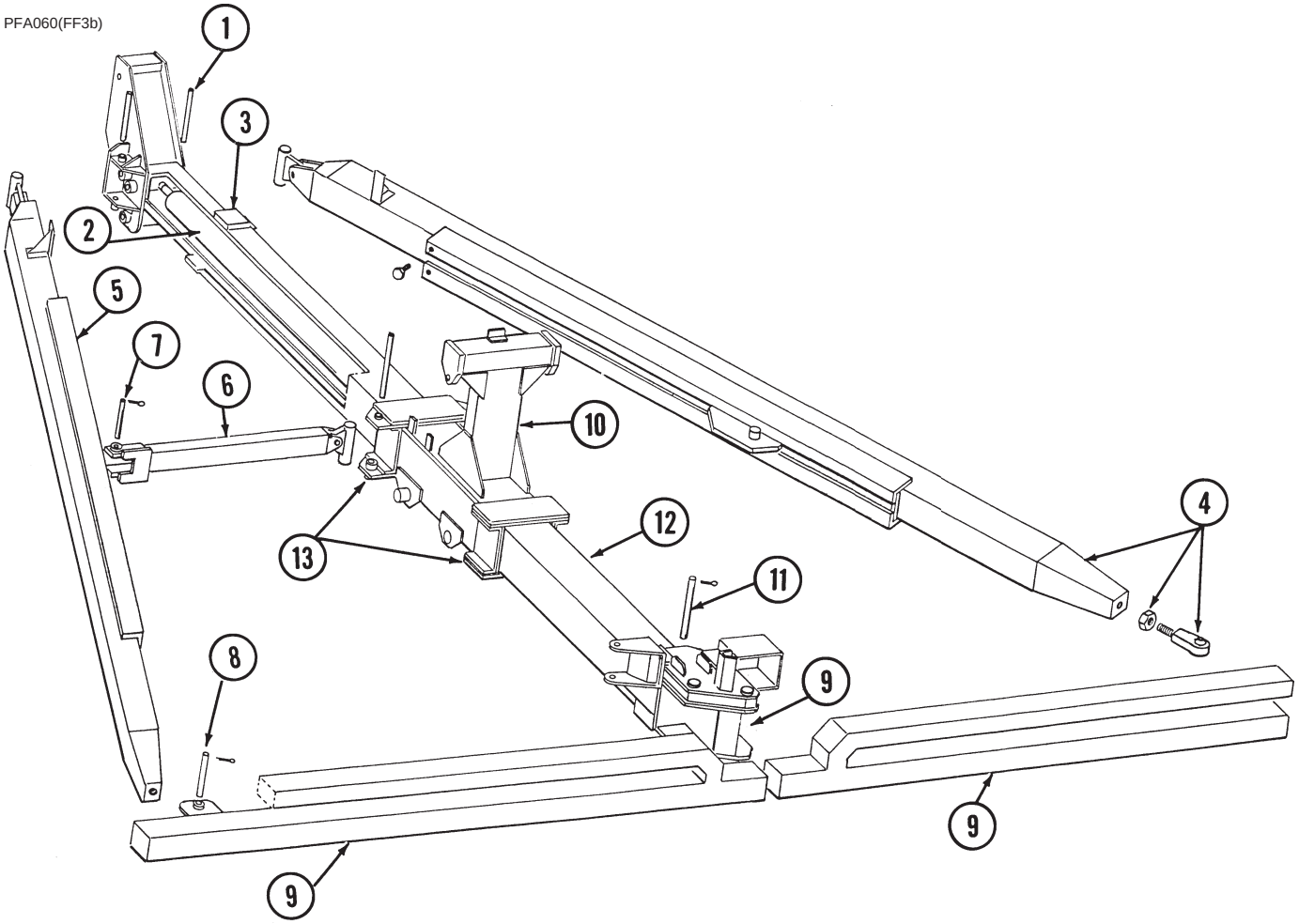
24 Row 30"/36 Row 20" Shown



ITEM	PART NO.	QTY.	DESCRIPTION
1.	A6636	1	Front Hitch, 199 5/8", 24 Row 30" And 36 Row 20" **(Non-Stock Item)**
	A7470	1	Front Hitch, 166 5/8", 16 Row 30" And 24 Row 20" **(Non-Stock Item)**
2.	GD9357	3	Bronze Adjusting Plug
3.	GD9362	1	Mounting Pin
4.	G10760	3	Hex Socket Set Screw, 3/8" x 1 1/2"
5.	GD9366	2	Roller
6.	GD9367	1	Sleeve
7.	G10293	2	Spring Pin, 3/8" x 3"

HITCH AND LINKAGE ASSEMBLY, 24 ROW 30" AND 36 ROW 20"

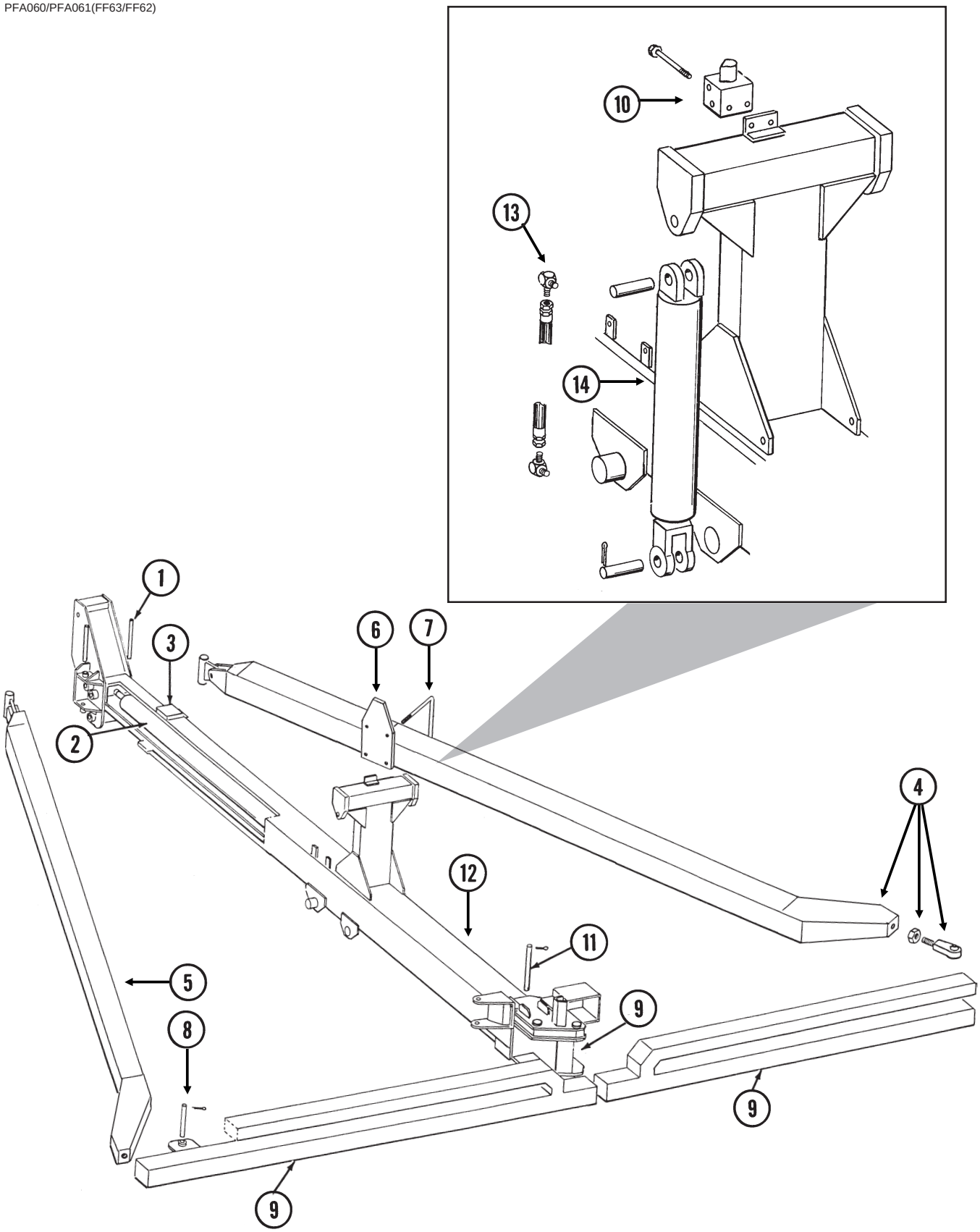
PFA060(FF3b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Front Hitch Assembly”, Pages P26 And P27
2.		-	See “Tongue Cylinder”, Page P85
3.		-	See “Front Wear Pads”, Page P32
4.	GA7454	1	Right Draft Link W/Split Locking Nut, Socket Head Screw And Joint
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
5.	GA7453	1	Left Draft Link W/Split Locking Nut, Socket Head Screw And Joint
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
6.	GA6654	2	Axle Link
7.	GD9542-03	2	Pin, 1 1/4" x 6 1/8"
	G10460	4	Cotter Pin, 1/4" x 2"
8.	GD3421	2	Pin, 1 1/4" x 8 3/4"
	G10460	4	Cotter Pin, 1/4" x 2"
9.		-	See “Hinge And Wing Assemblies”, Pages P38 And P39
10.		-	See “Tower Assembly”, Page P34
11.	GD5506	1	Pin, 1 1/4" x 16"
	G10460	2	Cotter Pin
12.	A6634	1	Rear Hitch **(Non-Stock Item)**
13.		-	See “Rear Wear Pads”, Page P33
14.	GD9542-02	2	Pin, 1 1/4" x 14 1/2"
	G10460	4	Cotter Pin, 1/4" x 2"

HITCH, LINKAGE AND TOWER ASSEMBLY
16 ROW 30" AND 24 ROW 20"

PFA060/PFA061(FF63/FF62)

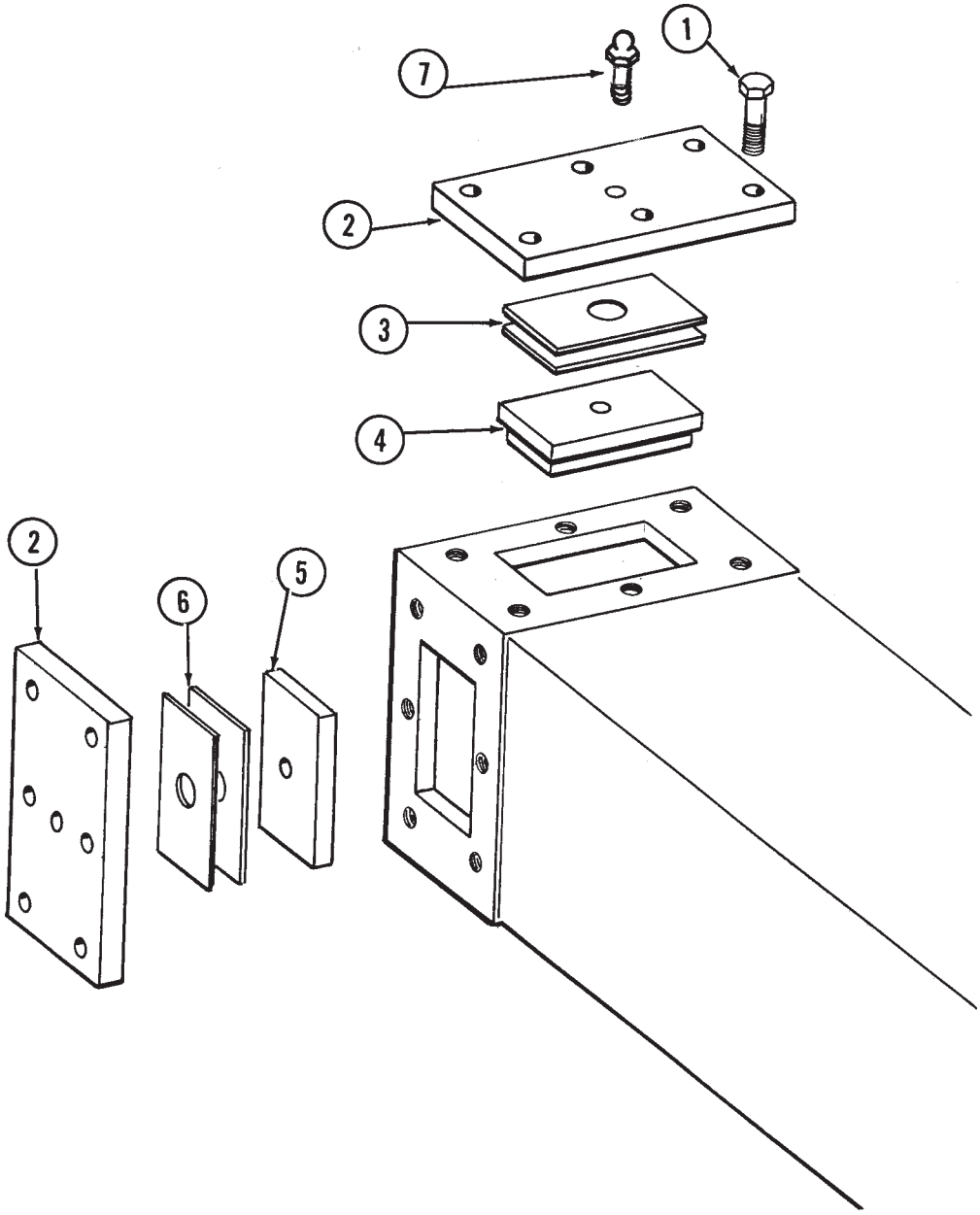


HITCH, LINKAGE AND TOWER ASSEMBLY
16 ROW 30" AND 24 ROW 20"

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Front Hitch Assembly”, Pages P26 And P27
2.		-	See “Tongue Cylinder”, Page P85
3.		-	See “Front Wear Pads”, Page P32
4.	GA7476	1	Right Draft Link W/Split Locking Nut, Socket Head Screw And Joint
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
5.	GA7475	1	Left Draft Link W/Split Locking Nut, Socket Head Screw And Joint
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
6.	GA7490	2	Stop
7.	GD1113	4	U-Bolt, 5" x 7" x 5/8"-11
	G10230	8	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
8.	GD3421	2	Pin, 1 1/4" x 8 3/4"
	G10460	4	Cotter Pin, 1/4" x 2"
9.		-	See “Hinge And Wing Assemblies”, Pages P38 And P39
10.		-	See “Valve Block On Tower Assembly”, Page P66
11.	GD5506	1	Pin, 1 1/4" x 16"
	G10460	2	Cotter Pin
12.	A7473	1	Rear Hitch **(Non-Stock Item)**
13.	G6801-08	4	Elbow, 3/4"-16 O-Ring To JIC
14.		-	See “Slave Cylinder”, Page P81

FRONT WEAR PADS, ALL SIZES

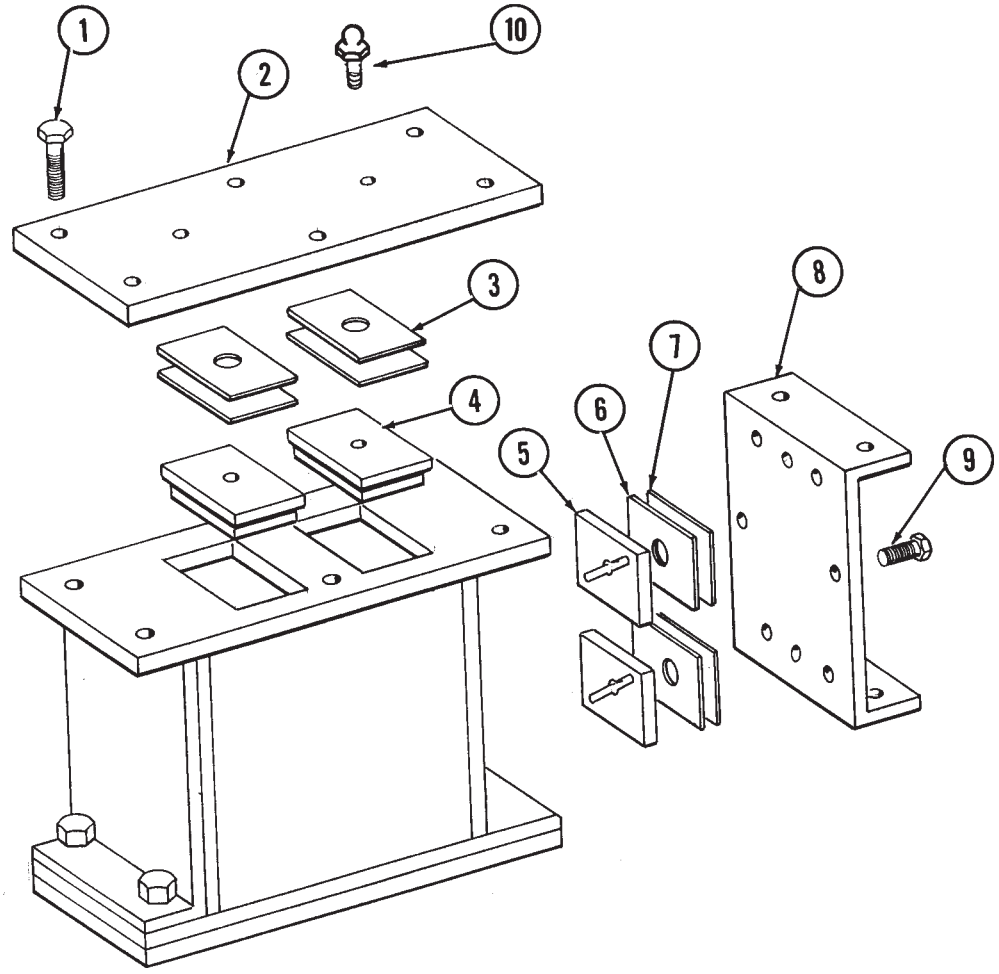
PFA059(FF4)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10007	16	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	16	Lock Washer, 5/8"
2.	GD9467	4	Cap
3.	GD9498	6	Shim, 12 Gauge
4.	GA6655	2	Retainer Pad
5.	GD9468	2	Bearing Pad
6.	GD9465	2	Shim, 3/8"
	GD10981	-	Shim, 1/4" (As Required)
7.	G10763	4	Extended Zerk

REAR WEAR PADS, 24 ROW 30" AND 36 ROW 20"

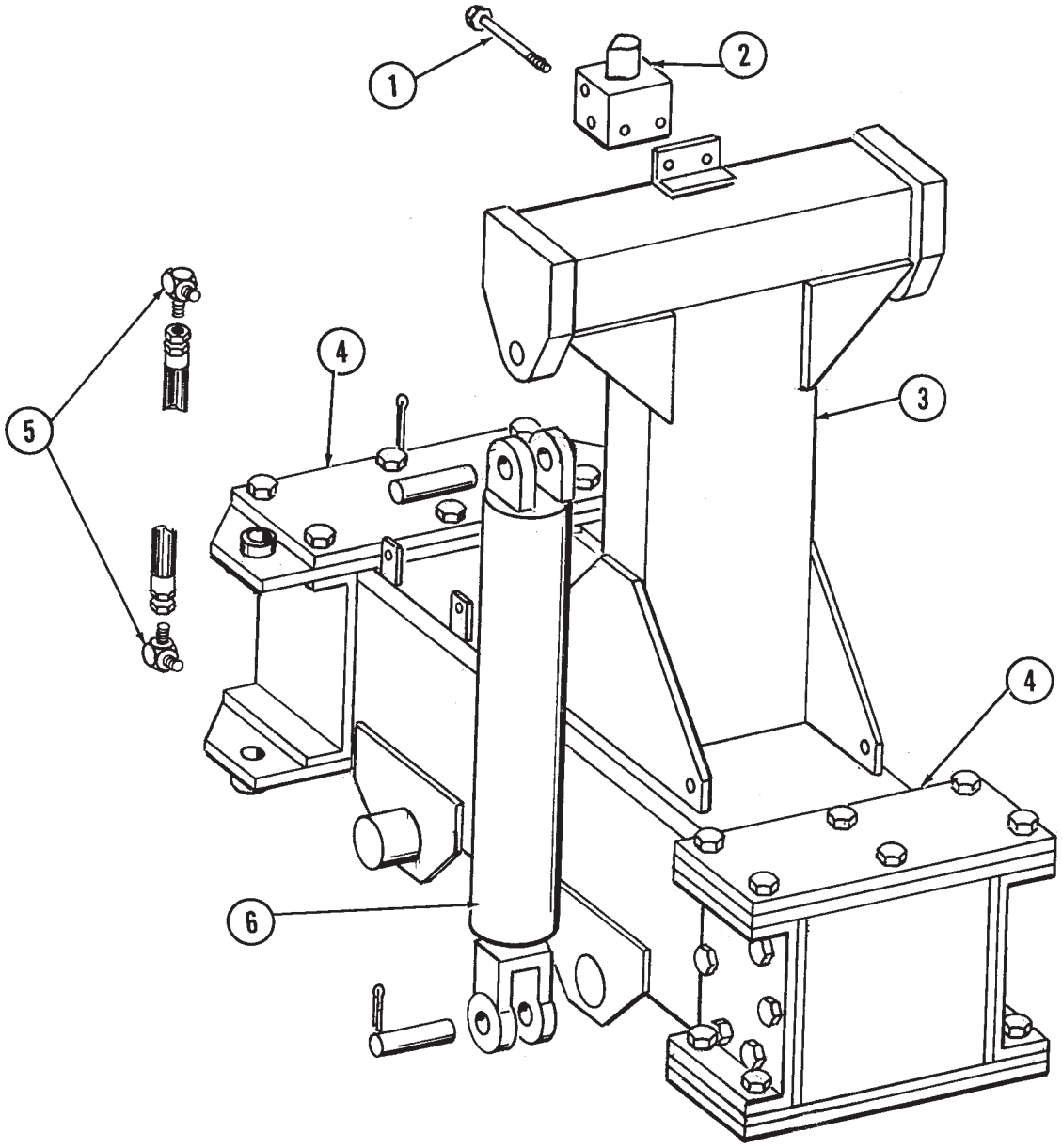
PFA058(FF5)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10802	16	Hex Head Cap Screw, 3/4"-10 x 2 3/4"
	G10231	16	Lock Washer, 3/4"
	G10218	16	Washer, 3/4" USS
	G10105	16	Hex Nut, 3/4"-10
2.	GD9469	4	Retainer
3.	GD9498	16	Shim, 12 Gauge
4.	GA6655	8	Retainer Pad
5.	GD9468	8	Bearing Pad
6.	GD9465	8	Shim, 3/8"
	GD10981	-	Shim, 1/4" (As Required)
7.	GD9498	8	Shim, 12 Gauge
8.	GA6731	4	Retainer
9.	G10025	32	Hex Head Cap Screw, 3/4"-10 x 1 1/2"
	G10231	32	Lock Washer, 3/4"
	G10215	32	Machine Bushing, 14 Gauge
10.	G10763	16	Extended Zerk

TOWER ASSEMBLY, 24 ROW 30" AND 36 ROW 20"

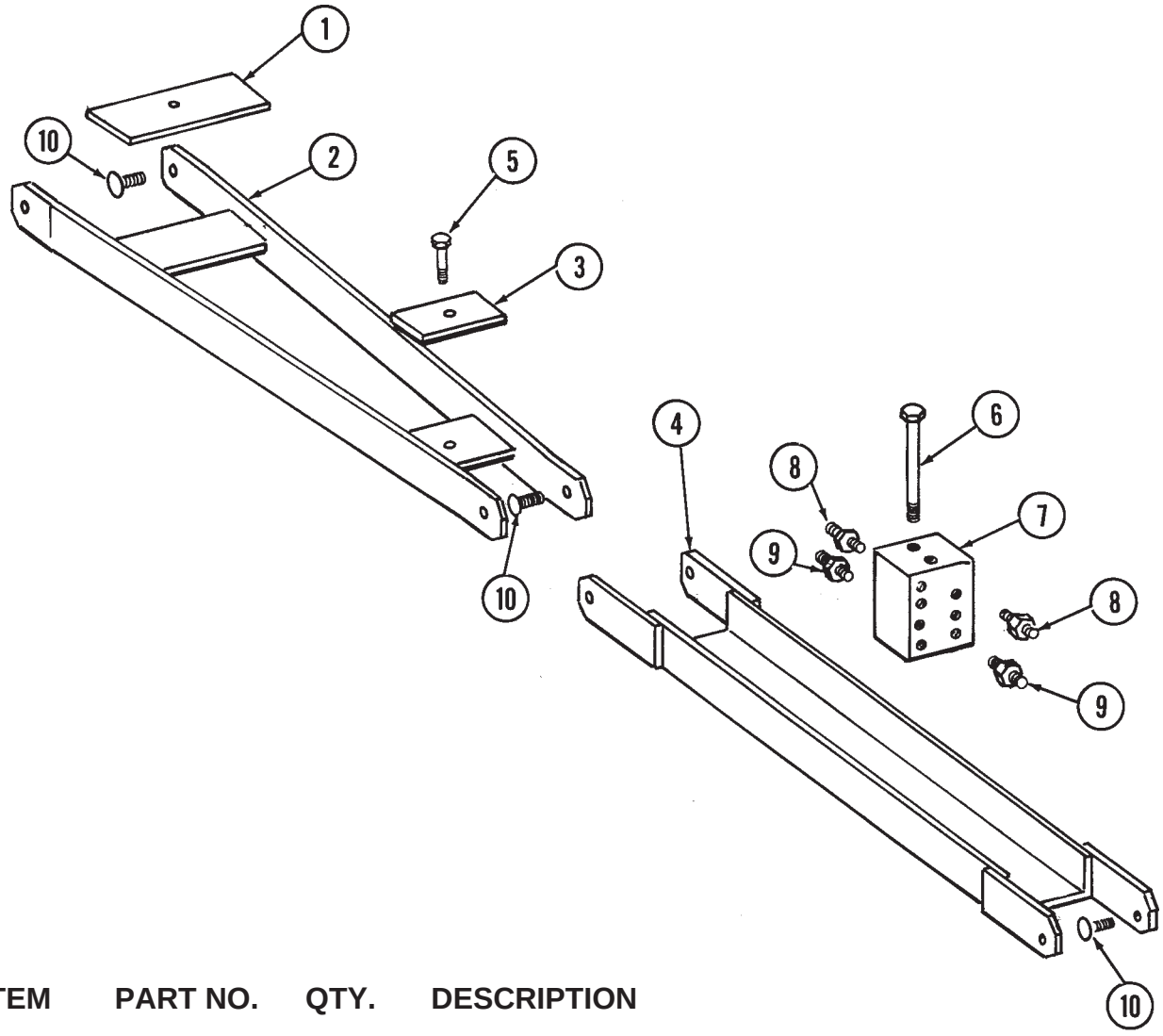
PFA061(FF6)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10326	2	Hex Head Cap Screw, 3/8"-16 x 3 3/4"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
2.		-	See “Valve Block On Tower Assembly”, Page P66
3.	A6639	1	Axle Mount **(Non-Stock Item)**
4.		-	See “Rear Wear Pads”, Page P33
5.	G6801-08	4	Elbow, 3/4"-16 O-Ring To JIC
6.		-	See “Slave Cylinder”, Page P80

HOSE TAKE-UP, 24 ROW 30" AND 36 ROW 20"

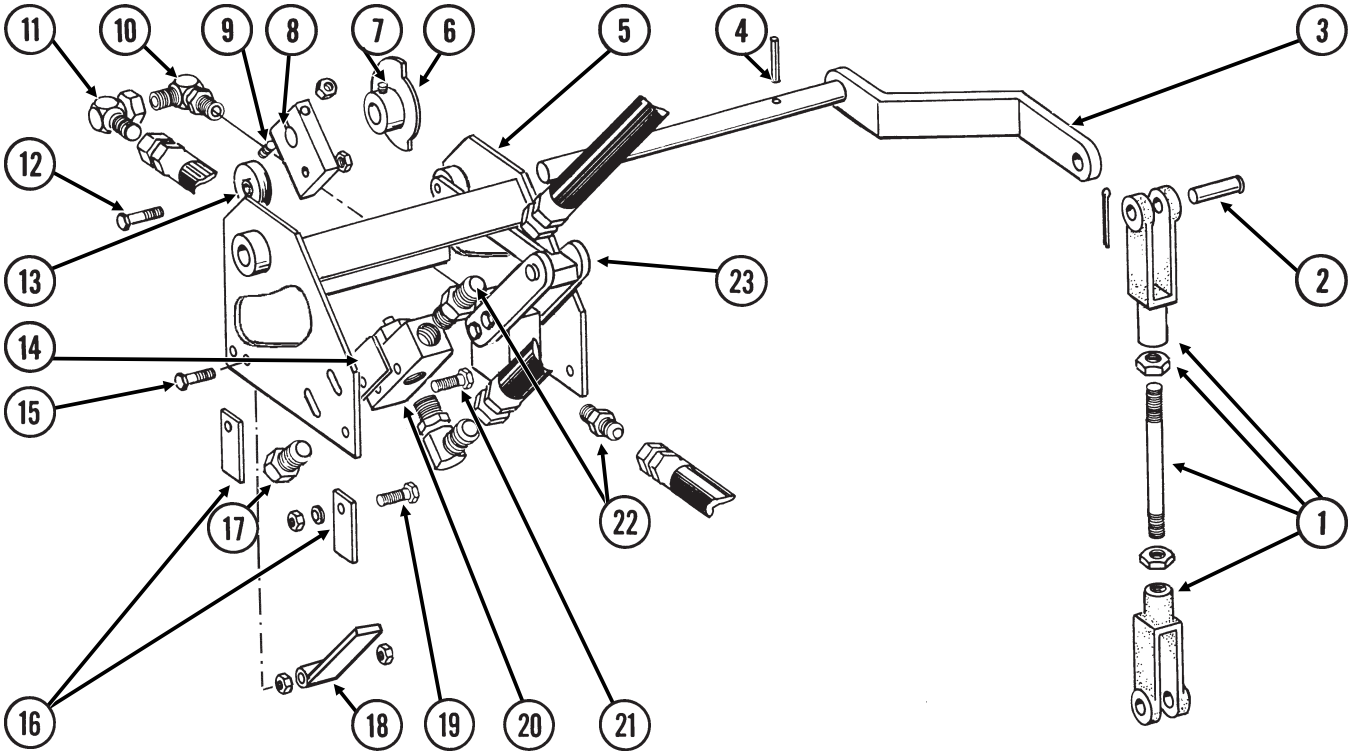
PHA030(FF7)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9417	1	Spacer, 4" x 8 5/8"
2.	GA6656	1	Front Hose Take-Up
3.	GD9416	1	Spacer, 4" x 5 7/8"
4.	GA6657	1	Rear Hose Take-Up
5.	G10038	2	Hex Head Cap Screw, 1/2"-13 x 3"
	G10111	2	Lock Nut, 1/2"-13
6.	G10756	2	Hex Head Cap Screw, 3/8"-16 x 6"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
7.	GD9537	1	Block
8.	G6400-10-08	5	Connector, 7/8"-14 JIC To 3/4" O-Ring
9.	G6400-08	7	Connector, 3/4"-16 JIC To O-Ring
10.	G10415	6	Carriage Bolt, 5/8"-11 x 2 1/4"
	GB0218	6	Bushing, 19/32"
	GD7805	6	Special Washer
	G10107	6	Lock Nut, 5/8"-11

STROKE LIMITER/DETENT VALVE ASSEMBLY AND LINKAGE

PHA031(FF8e)



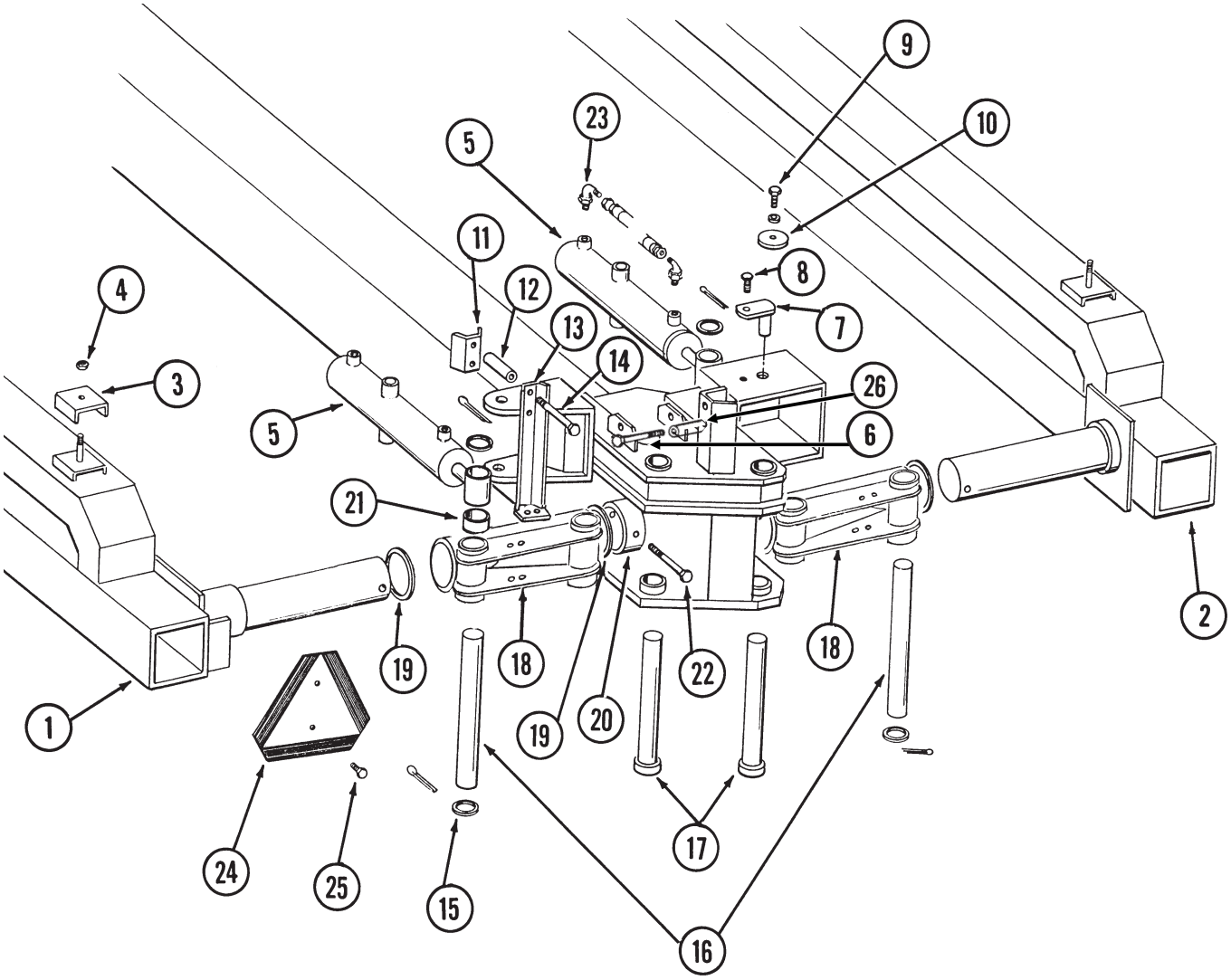
STROKE LIMITER/DETENT VALVE ASSEMBLY AND LINKAGE

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6646	1	Rod Assembly
	GD8218	-	Yoke
	GD9499	-	Stud
	G10104	-	Hex Nut, 5/8"-11
2.	G10284	2	Clevis Pin, 1/2" x 1 1/2"
	G10451	2	Cotter Pin, 1/8" x 1"
3.	GA6685	1	Cam Activator
4.	G10606	1	Spring Pin, 1/4" x 2"
5.	GA6687	1	Housing
6.	GA6686	1	Cam
7.	G10120	2	Set Screw, 3/8"-16 x 1/2"
8.	GD9511	1	Detent Arm
9.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10108	1	Lock Nut, 3/8"-16
10.	G6801-10-08	1	Elbow, 7/8"-14 JIC To 3/4"-16 O-Ring
11.	G6500-10	1	Elbow, 7/8"-14 JIC Male To Female
12.	G10009	1	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
	G10107	1	Lock Nut, 5/8"-11
13.	GA2014	1	Bearing Assembly
14.	GD10714	-	Spacer
15.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	2	Hex Nut, 3/8"-16
16.		-	See “Hitch And Linkage Assembly”, Pages P29-P31
17.	G6408-08	1	Plug, 3/4"-16 O-Ring
18.	GA7153	1	Plunger Arm (If Applicable)
19.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
20.		-	See “Stroke Limiter Valve”, Page P69
21.	G10069	2	Hex Head Cap Screw, 5/16"-18 x 2 1/4"
	G10620	2	Flange Nut, 5/16"-18
22.	G6400-10-08	1	Connector, 7/8"-14 JIC To 3/4"-16 O-Ring
23.		-	See “Detent Lever Valve”, Page P70

HINGE AND WING ASSEMBLIES

PFA062/PFA052(FF9a/FF35)

24 Row 30"/36 Row 20" Shown

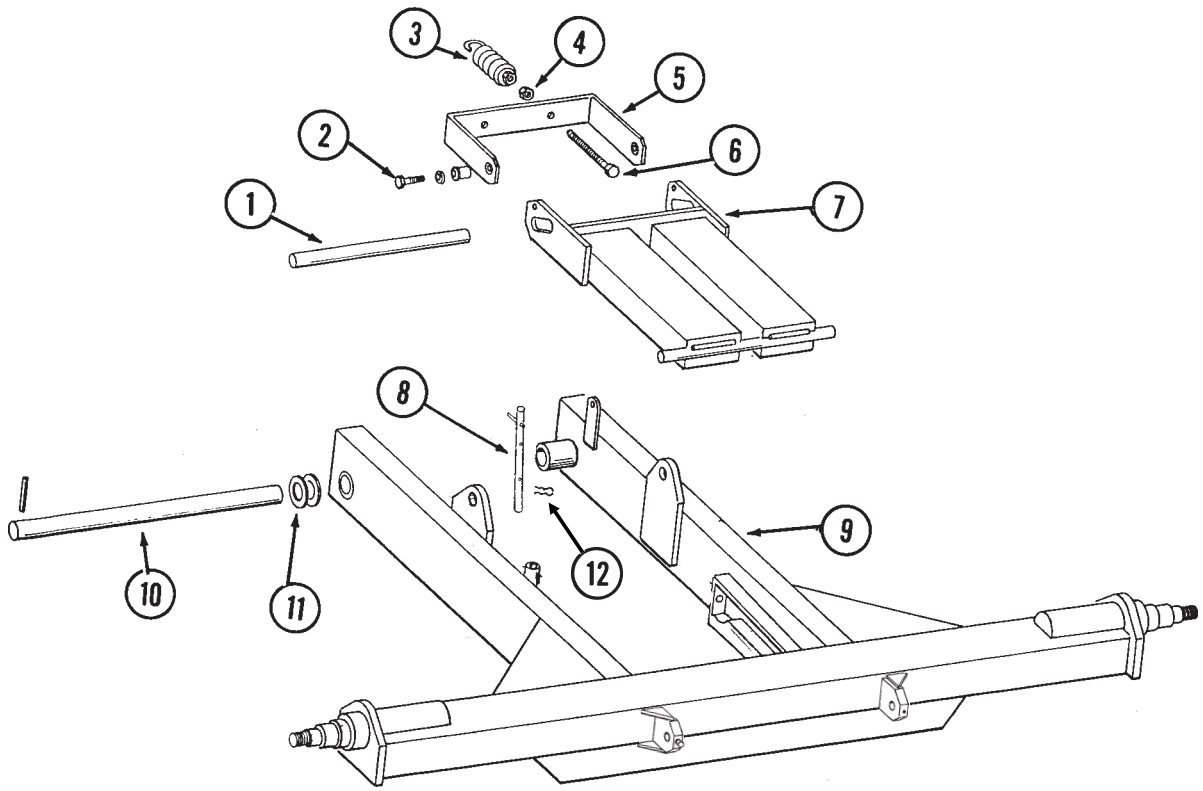


HINGE AND WING ASSEMBLIES

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6665	1	Left Wing, 360", 24 Row 30" And 36 Row 20"
	GA7459	1	Left Wing, 246 3/8", 16 Row 30" And 24 Row 20"
2.	GA6664	1	Right Wing, 357", 24 Row 30" And 36 Row 20"
	GA7462	1	Right Wing, 243 3/8", 16 Row 30" And 24 Row 20"
3.	GD0740	-	Hose Clamp, 3/4" x 4" x 3 1/2"
	GD0776	-	Hose Clamp, 3/4" x 2" x 2 1/2"
4.	G10111	-	Lock Nut, 1/2"-13
5.		-	See “Helper Cylinder”, Page P84
6.	G10013	2	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10036	-	Hex Head Cap Screw, 5/8"-11 x 4"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
7.	GA6761	4	Cylinder Pin
8.	G10016	4	Hex Head Cap Screw, 1/2"-13 x 2"
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
9.	G10025	2	Hex Head Cap Screw, 3/4"-10 x 1 1/2"
	G10231	2	Lock Washer, 3/4"
10.	GD9516	2	Pivot Washer
11.	GD9361	2	Hose Guide
12.	GD3180-13	4	Sleeve, 4"
13.	GA6640	1	Bracket
14.	G10011	2	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
15.	G10360	4	Shim, 10 Gauge
16.	GD9726	2	Pin, 2 1/2" x 13 1/8"
	G10461	4	Cotter Pin, 3/8" x 3"
17.	GA6696	2	Vertical Pin (Prior To Serial No. 750165)
	GA8136	-	Vertical Pin W/Spring Pin (Serial No. 750165 & On)
	G10911	-	Spring Pin, 3/8" x 3 1/2"
18.	GA7125	2	Knuckle Less Grease Fittings (Prior To Serial No. 750165)
	GA8137	-	Knuckle Less Grease Fittings (Serial No. 750165 & On)
	G10640	3	Grease Fitting, 1/4"-28
19.	GD9462	4	Washer
20.	GD9463	2	Washer
21.	GD9727	2	Spacer
22.	G10057	2	Hex Head Cap Screw, 3/4"-10 x 7"
	G10231	2	Lock Washer, 3/4"
	G10105	2	Hex Nut, 3/4"-10
23.	G6801-06-08	4	Elbow, 9/16"-18 JIC To 3/4"-16 O-Ring
24.	GD2199	1	SMV Sign
25.	G10022	2	Hex Head Cap Screw, 1/4"-20 x 1/2"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
26.	GD3180-06	2	Sleeve, 1 3/4"

AXLE AND TRANSPORT LOCKUP

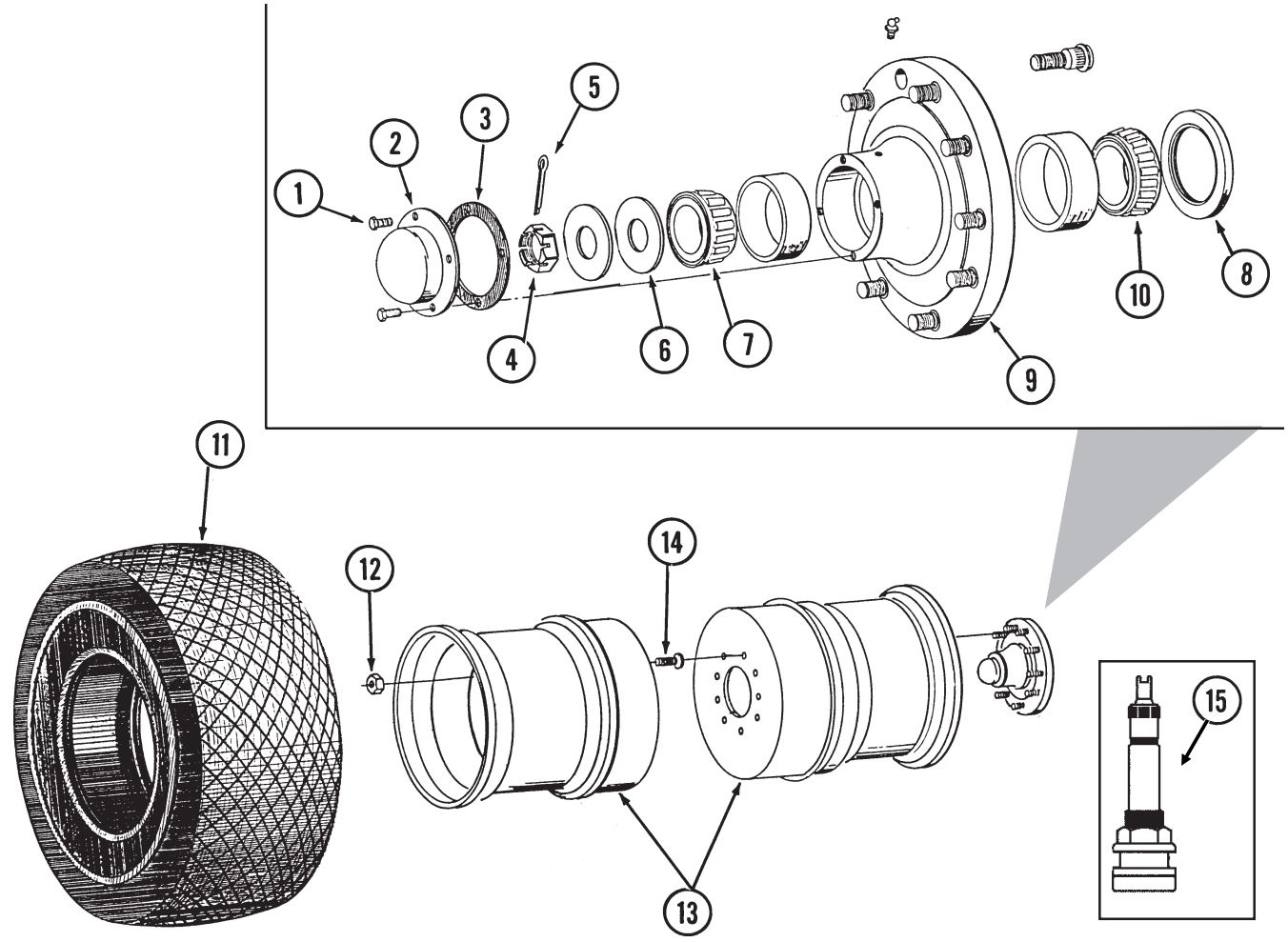
HTA042/PHA042(FF10/FF40)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9554	1	Transport Rod, 1 1/2" x 15 7/16"
2.	G10055	2	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	GB0218	2	Bushing, 19/32"
	GD7805	2	Hardened Washer
3.	GA2068	2	Spring
4.	G10102	2	Hex Nut, 1/2"-13
5.	GA6725	1	Mechanical Trip Actuator
6.	G10015	2	Hex Head Cap Screw, 1/2"-13 x 5", Full Thread
7.	GA6658	1	Automatic Safety Lock
8.	GA6689	1	Manual Safety Lockup Pin W/Spring Pin
	G10191	-	Spring Pin, 1/4" x 2 3/4"
9.	A6641	1	Axle W/Grease Fittings, 86 3/4", 16 Row 30" And 24 Row 30" **(Non-Stock Item)**
	A7451	-	Axle W/Grease Fittings, 96 3/4", 24 Row 20" And 36 Row 20" **(Non-Stock Item)**
	G10641	2	Grease Fitting, 1/8" NPT
10.	GD9566-01	1	Pin, 2 1/8" x 31 3/8"
	G10461	2	Cotter Pin, 3/8" x 3"
11.	G10234	4	Machine Bushing, 10 Gauge
12.	G10671	1	Hair Pin Clip

TRANSPORT WHEEL AND HUB ASSEMBLY

HTA002/HTA004/HTA041(FF11b/A7434)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10376	4	Hex Head Cap Screw, 5/16"-18 x 3/4"
2.	GD1529	1	Dust Cap
3.	GD1536	1	Seal
4.	G10070	1	Slotted Hex Nut, 1 1/4"-12
5.	G10460	1	Cotter Pin, 1/4" x 2"
6.	G10139	2	Washer, 1 1/4"
7.	GA0705	1	Outer Bearing
8.	GA5988	1	Seal
9.	GA5965	1	Hub W/Cups, Grease Fitting And Stud Bolts (10 Bolt)
	GR0322	-	Outer Cup
	GD8532	-	Inner Cup
	G10373	-	Grease Fitting, 1/8"-27, 45°
	GR0257	-	Stud Bolt, 3/4"-16 x 2 1/2"
10.	GA5987	1	Inner Bearing
11.	GD9480	1	Tire, 36" x 16" x 17.5", 8 Ply, Tubeless (Specify Brand*), All Sizes (Prior To Serial No. 750062)/16 Row 30", 24 Row 30" And 36 Row 20" (Serial No. 750062 & On)
	GD10485	-	Tire, 255-70R x 22.5" (Specify Brand*), 24 Row 20" (Serial No. 750062 & On)
12.	GD9509	10	Outer Budd Nut
13.	GA6738	2	Rim, 18 1/2" Deep, 16 Row 30" And 24 Row 30"
	GA7448	-	Rim, 16" Deep, 24 Row 20" (Prior To Serial No. 750062) And 36 Row 20"
	GA7551	-	Rim, 13 1/2" Deep, 24 Row 20" (Serial No. 750062 & On)
14.	GD9508	10	Inner Budd Nut
15.	GA7434	1	Valve Stem

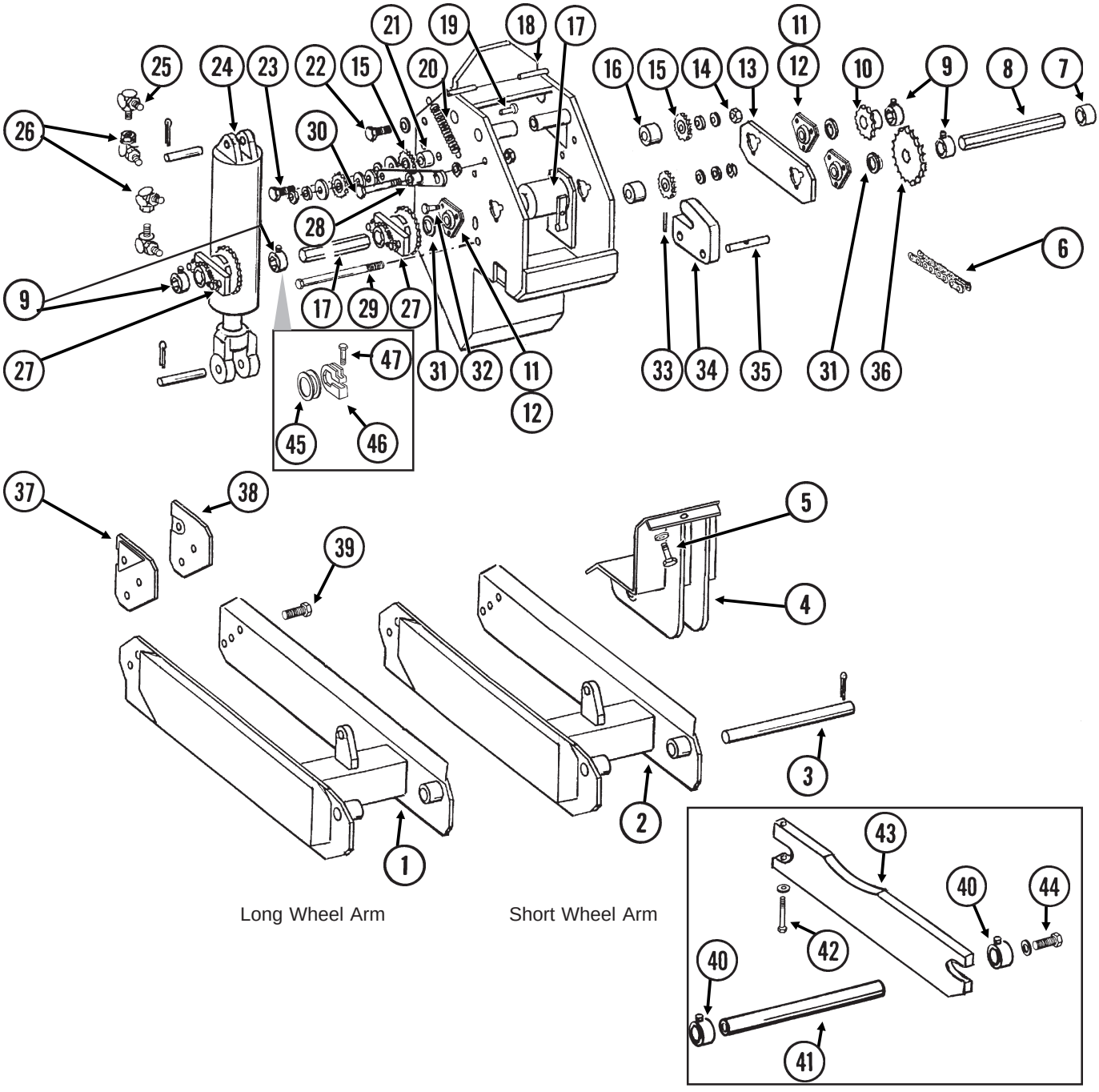
*** Specify brand requests will be supplied only as availble from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied.**

WHEEL MODULE ASSEMBLY

PFA056(FF83)

R.H. Side Shown

To Transmission



Long Wheel Arm

Short Wheel Arm

WHEEL MODULE ASSEMBLY

ITEM	PART NO.	QTY. (Per Machine)	DESCRIPTION
1.	GA6678	2	Long Wheel Arm (Prior To Serial No. 750062)
	GA7586	-	Long Wheel Arm (Serial No.750062 - 750164)
	GA8132	-	Long Wheel Arm (Serial No. 750165 & On)
2.	GA6677	2	Short Wheel Arm (Prior To Serial No. 750062)
	GA7585	-	Short Wheel Arm (Serial No. 750062 - 750164)
	GA8133	-	Short Wheel Arm (Serial No. 750165 & On)
3.	GD9542-01	4	Pin, 1 1/4" x 13"
	G10460	8	Cotter Pin, 1/4" x 2"
4.	GA7324	4	Bracket W/Grease Fittings
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fitting, 1/4"-28
5.	G10006	40	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
	G10230	40	Lock Washer, 5/8"
	G10104	40	Hex Nut, 5/8"-11
6.	G3310-84	-	Chain, No. 40, 84 Pitch Including Connector Link, Style A
	G3310-82	-	Chain, No. 40, 82 Pitch Including Connector Link, Style B
	GR0912	-	Connector Link, No. 40
	G10460	16	Cotter Pin, 1/4" x 2"
7.		-	See “Transmission And Driveline”, Pages P56-P58
8.	GD0914-24	1	Shaft, R.H., 24 Row 30" And 36 Row 20"
	GD0914-25	1	Shaft, R.H., 16 Row 30" And 24 Row 20"
	GD0914-63	1	Shaft, L.H., 16 Row 30", 24 Row 20" And 24 Row 30"
	GD0914-72	1	Shaft, L.H., 36 Row 20"
9.	GD0917	-	Lock Collar, Less Set Screws **(Sub G1K269)**
	G10145	-	Set Screw, 5/16"-18 x 1/2"
10.	GA5107	-	Sprocket, 19 Tooth, Style A
	GA5113	-	Sprocket, 28 Tooth, Style B
11.	G3400-01	-	Flangette
12.	G2100-03	-	Bearing, 7/8" Hex
13.	GD9482	2	Plate
14.	G10053	8	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10235	16	Machine Bushing
	G10228	8	Lock Washer, 1/2"
	G10102	8	Hex Nut, 1/2"-13
15.	GA7154	8	Idler Sprocket W/Bearing, 18 Tooth
16.	GD10132	8	Spacer, 3/4"
17.		-	See “Point Row Wrap Spring Clutch, Style A Or Style B”, Pages P48-P51, Or “Two-Speed Point Row Wrap Spring Clutch”, Pages P52 And P53
18.	A7323	-	Wheel Tower **(Non-Stock Item)**
19.	G10860	4	Retaining Ring
	G10166	4	Clevis Pin, 3/8" x 1 1/2"
20.	GD5857	4	Spring
21.	GB0258	4	Spacer
22.		-	See “Contact Drive Wheel Assembly”, Pages P46 And P47
23.	G10397	4	Hex Head Cap Screw, 1/2"-13 x 2 3/4"
	G10216	4	Washer, 1/2" USS
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
24.		-	See “Master Cylinder”, Pages P78 And P79
25.	G6801-08	8	Elbow, 90°, 3/4"-16 O-RIng To JIC
26.	G6502-08	8	Elbow, 45°, 3/4"-16 JIC Female To Male
27.		2	See “Ratchet/Sprocket Assembly”, P59
28.	GA6534	4	Idler W/Sprocket And Hardware
	GA7154	-	Sprocket, 18 Tooth
	G10017	-	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10128	-	Machine Bushing, 1/2"
	G10501	-	Lock Nut, 1/2"-13

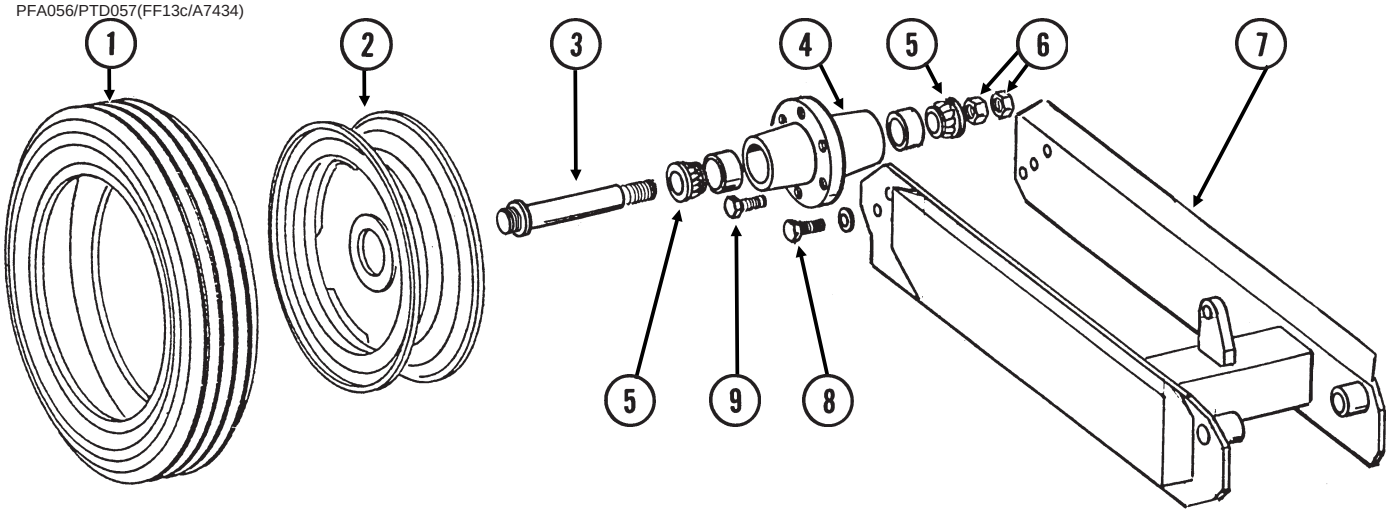
(Continued)

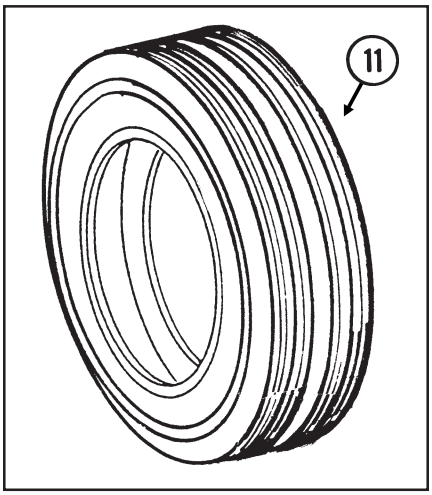
WHEEL MODULE ASSEMBLY

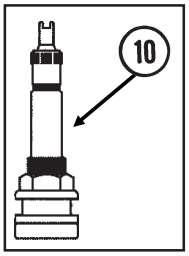
ITEM	PART NO.	QTY. (Per Machine)	DESCRIPTION
29.	G10595	2	Hex Head Cap Screw, 3/8"-16 x 10"
	G10203	4	Washer, 3/8" SAE
	G10108	2	Lock Nut, 3/8"-16
30.	G10743	4	Hex Head Cap Screw, 5/8"-11 x 3 3/4"
	G10918	8	Machine Bushing, 5/8", 14 Gauge
	G10104	4	Hex Nut, 5/8"-11
	G10107	4	Lock Nut, 5/8"-11
31.	G10233	-	Machine Bushing (As Required)
32.	G10338	6	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10303	18	Carriage Bolt, 5/16"-18 x 1"
	G10232	24	Lock Washer, 5/16"
	G10106	24	Hex Nut, 5/16"-18
33.	G10606	4	Spring Pin, 1/4" x 2"
34.	GD9514	4	Cylinder Pivot Mount
35.	GD9515	4	Cylinder Anchor Pin, 1" x 6"
36.	GA5115	-	Sprocket, 33 Tooth, Style A
	GA5194	-	Sprocket, 50 Tooth, Style B
37.	GA8066	4	Wheel Mount, R.H., Serial No. 750062-750164
38.	GA8067	4	Wheel Mount, L.H., Serial No. 750062-750164
39.	G10026	16	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	16	Lock Washer, 3/4"
	G10105	16	Hex Nut, 3/4"-10
40.	GD10686	-	Special Lock Collar, Less Set Screws
	G10145	-	Set Screw, 5/16"-18 x 1/2"
41.	GD10317	-	Shaft, Special Row Spacing Only
42.	G10035	-	Hex Head Cap Screw, 1/2"-13 x 4"
	G10228	-	Lock Washer, 1/2"
43.	GD10316	-	Plate, Special Row Spacing Only
44.	G10017	-	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	-	Lock Washer, 1/2"
45.	G10233	-	Machine Bushing
46.	GD11045	-	Lock Clamp
47.	G10031	-	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	-	Flange Nut, 5/16"-18
A.	G1K269	-	Lock Clamp Kit (Items 46 And 47)

GROUND DRIVE TIRE ASSEMBLY

PFA056/PTD057(FF13c/A7434)







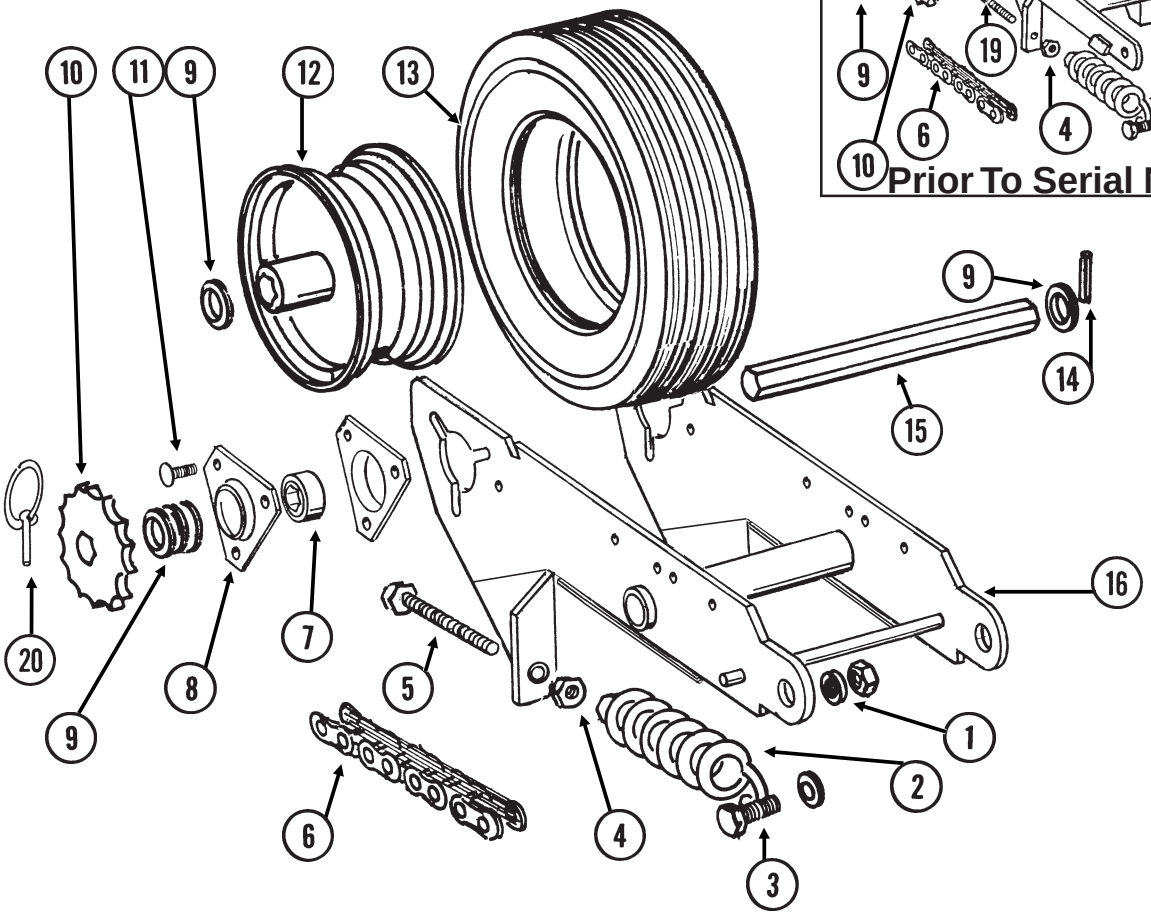
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	D9645	1	Tubeless Tire, 7.50" x 20" (Specify Brand*) (Prior To Serial No. 750062) **(Non-Stock Item Sub. GD10795)**
	GD10485	1	Tubeless Tire, 255-70R x 22.5" (Serial No. 750062 & On)
2.	GA2908	1	Rim, 5.5" x 20" (Prior To Serial No. 750062)
	GA7531	-	Rim, 5.5" x 22.5" (Serial No. 750062 & On)
3.	GA4376	1	Spindle
4.	GA2148	1	Hub W/Cups, 6 Bolt
	GR0434	-	Cup
5.	GA0895	2	Cone
6.	G10087	2	Hex Jam Nut, 1 1/2"-13
7.		-	See “Wheel Module Assembly”, Page P42
8.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
9.	GR0270	6	Lug Bolt, 9/16"-18
10.	GD1166	-	Valve Stem (Prior To Serial No. 750062)
	GA7434	-	Valve Stem (Shown) (Serial No. 750062 & On)
11.	GD10795	1	Tubeless Tire, 7.50" x 20" W/O Center Rib (Specify Brand*) (Prior To Serial No.750062)
A.	GA7997	-	Tire And Rim Assembly (Items 2, 10 And 11) (Prior To Serial No. 750062) (Specify Brand*)
B.	GA7530	-	Tire And Rim Assembly (Items 1, 2 And 10 (Serial No. 750062 & On) (Specify Brand*)

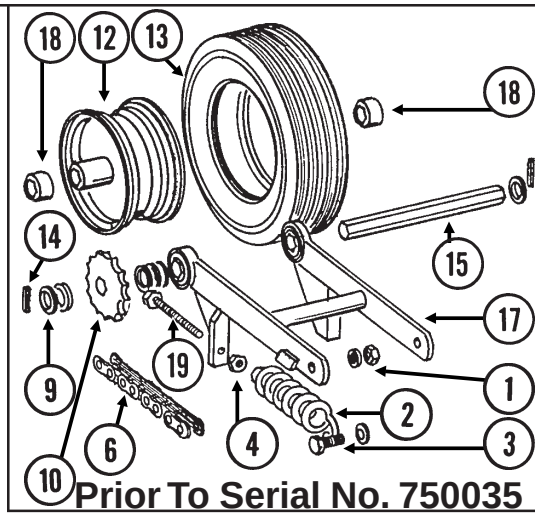
*** Specify brand requests will be supplied only as availble from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied.**

CONTACT DRIVE WHEEL ASSEMBLY

PFA056/PLA32/PLA33(FF43a/FF14a)

Serial No. 750035 & On





ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GB0218	2	Bushing, 19/32"
2.	GA2068	2	Spring
3.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10235	4	Machine Bushing
	GD7805	2	Special Washer
	G10107	2	Lock Nut, 5/8"-11
4.	G10501	2	Jam Nut, 1/2"-13
5.	G10890	2	Hex Head Adjusting Bolt, 1/2"-13 x 4", Grade 2
6.	G3310-152	1	Chain, No. 40, 152 Pitch Including Connector Link
	G3310-144	-	Chain, No. 40, 144 Pitch Including Connector Link, Half Rate (2 To 1) Drive
	GR0912	-	Connector Link, No. 40
7.	G2100-03	2	Bearing, 7/8" Hex
8.	G3400-01	4	Flangette

CONTACT DRIVE WHEEL ASSEMBLY

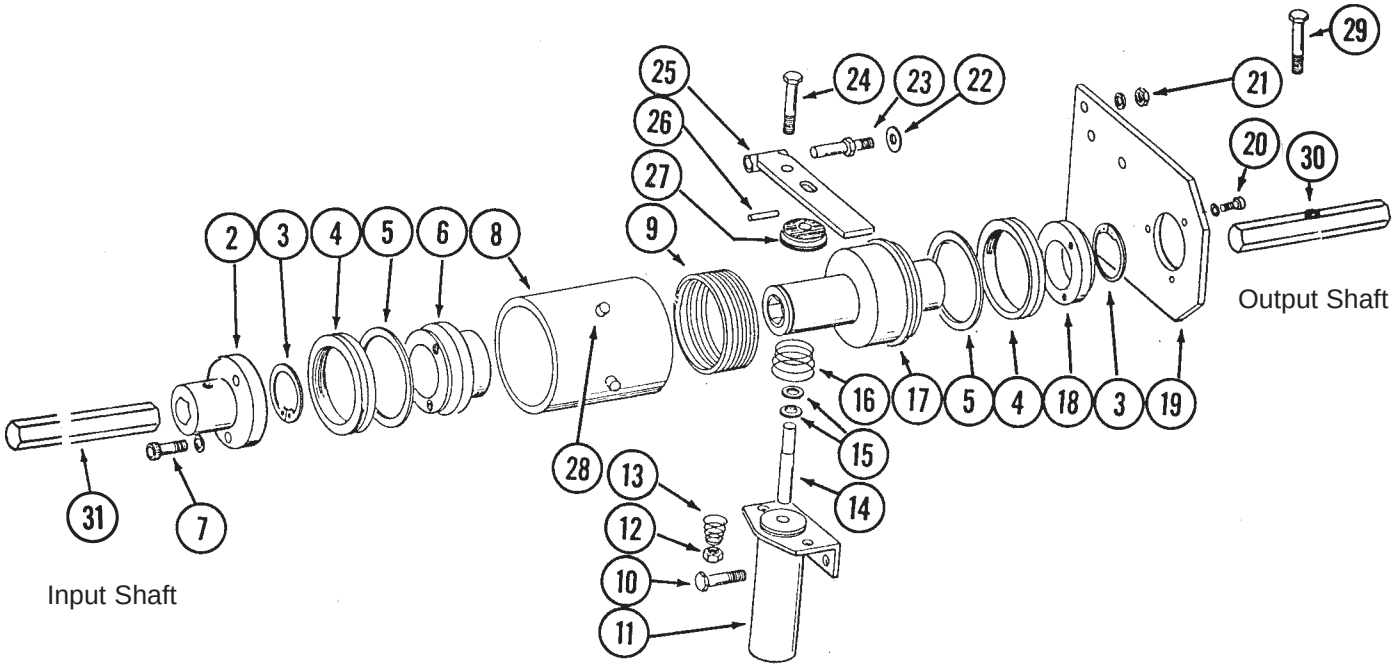
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
9.	G10233	-	Machine Bushing (As Required)
10.	GA5114	1	Sprocket, 30 Tooth
	GA5105	-	Sprocket, 15 Tooth, Half Rate (2 To 1) Drive
11.	G10303	6	Carriage Bolt, 5/16"-18 x 1"
	G10219	6	Washer, 5/16" USS
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
12.	GA3553	1	Rim 3.75" x 8"
13.	GD4700	1	Tire, 4.8" x 8", 6 Ply, Rib Implement (Specify Brand*)
	GD4701	-	Valve Stem
14.	G10602	2	Spring Pin, 1/4" x 1 1/2"
15.	GD6775	1	Hex Shaft, 7/8" x 11 3/4"
16.	GA7372	1	Arm
17.	GA4388	1	Wheel Arm W/Bearings
	GA5116	-	Bearing, 7/8" Hex Bore
18.	GD1199-03	-	Spacer, 5/8" (As Required)
19.	G10038	2	Hex Head Cap Screw, 1/2"-13 x 3"
20.	GD2558	1	Lynch Pin, 1/4"
A.	GA3552	-	Tire And Rim Assembly (Items 12 And 13)(Specify Brand*)

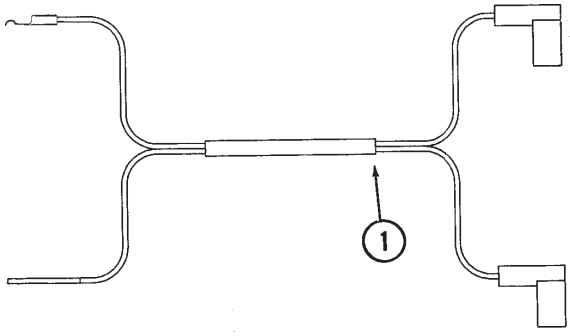
*** Specific brand requests will be supplied only as available from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand could result in rate changes. To maintain consistent planting rates throughout all rows, it is recommended that all contact tires be of the same brand and be equally inflated.**

POINT ROW WRAP SPRING CLUTCH

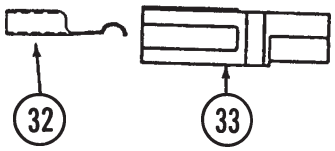
PRC018(FF15/FF16/TWL18)

STYLE A





Harness Between Clutch Solenoid And Valve Block On Right Wing



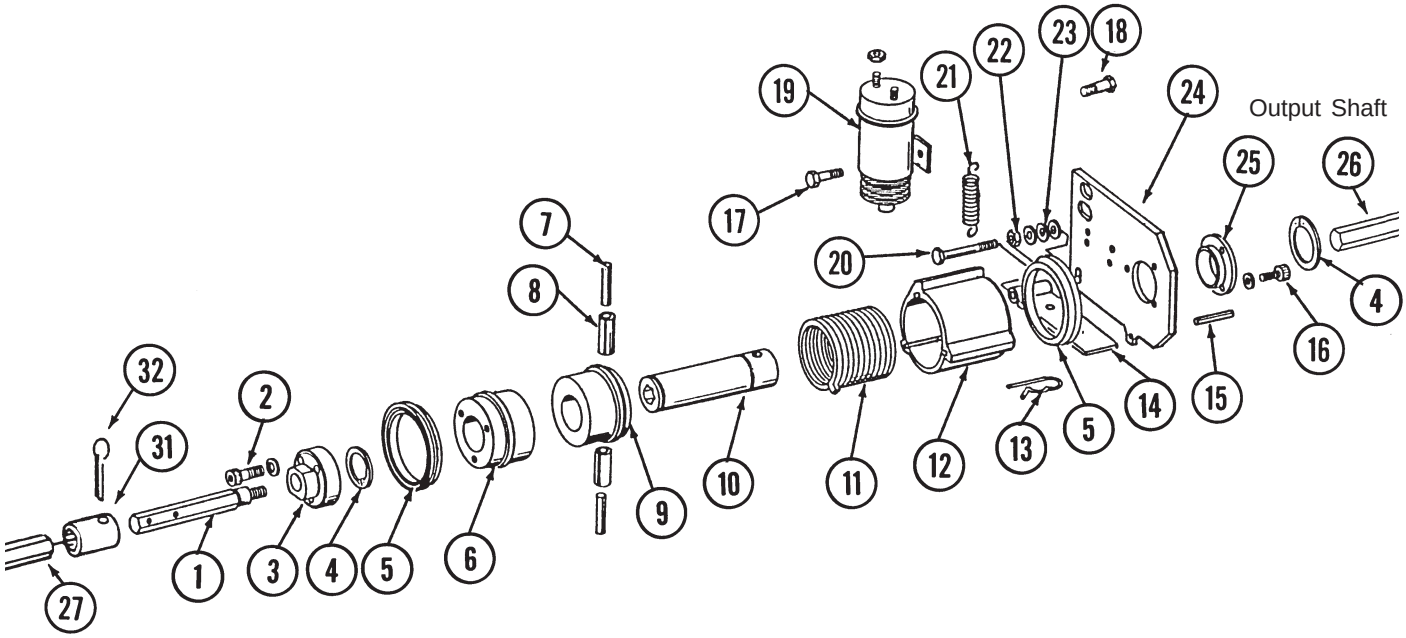
POINT ROW WRAP SPRING CLUTCH

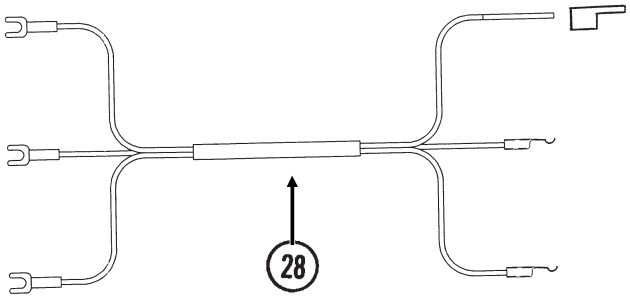
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA6846	-	Wiring Harness, 216", R.H. Side Of Machine
	GA6847	-	Wiring Harness, 492", L.H. Side Of Machine
2.	GA6786	1	Coupler
3.	G10496	2	Inverted Snap Ring
4.	GD9664	2	V-Ring Seal
5.	GD9674	2	Teflon Ring
6.	GD9670	1	Input Hub
7.	G10374	7	Hex Socket Screw, 1/4"-20 x 1"
	G10227	3	Lock Washer, 1/4"
8.	GD9668	1	Stop Collar
9.	GD9671	1	Spring, L.H.
10.	G10023	2	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
11.	GA5557	1	Solenoid
12.	G10110	1	Lock Nut, 1/4"-20
13.	GD9216	1	Spring
14.	GD9689	1	Plunger
15.	G10203	1	Washer, 3/8" SAE
16.	GD8458PRC	1	Spring
17.	GA6785	1	Output Hub
18.	GD9667	1	Bushing
19.	GD9665	1	Mounting Plate
20.	G10253	3	Socket Screw, No.10-32 x 1/2"
	G10257	3	Lock Washer, No.10
21.	G10229	1	Lock Washer, 3/8"
	G10497	1	Jam Nut, 3/8"-16
22.	G10203	1	Washer, 3/8" SAE
23.	GD9679	1	Mounting Pin
24.	G10040	1	Hex Head Cap Screw, 1/2"-20 x 1 3/4"
25.	GA6787	1	Actuator Arm
26.	G10187	1	Spring Pin, 5/32" x 2"
27.	GR0646	1	Boot
28.	GD9781	4	Hex Socket Cap Screw, 1/4"-20 x 3/16" (Stop On Stop Collar)
29.	G10041	1	Hex Head Cap Screw, 5/16"-18 x 2"
	G10109	1	Lock Nut, 5/16"-18
30.	GD9725	1	Output Shaft
31.	GD0914-40	1	Input Shaft
32.	GD9530	-	Contact
33.	GD9529	-	Housing

POINT ROW WRAP SPRING CLUTCH

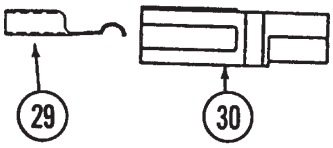
PRC018/ECP013(TWL70a/TWL71/TWL18)

STYLE B





Harness Between Clutch Solenoid And Valve Block On Right Wing

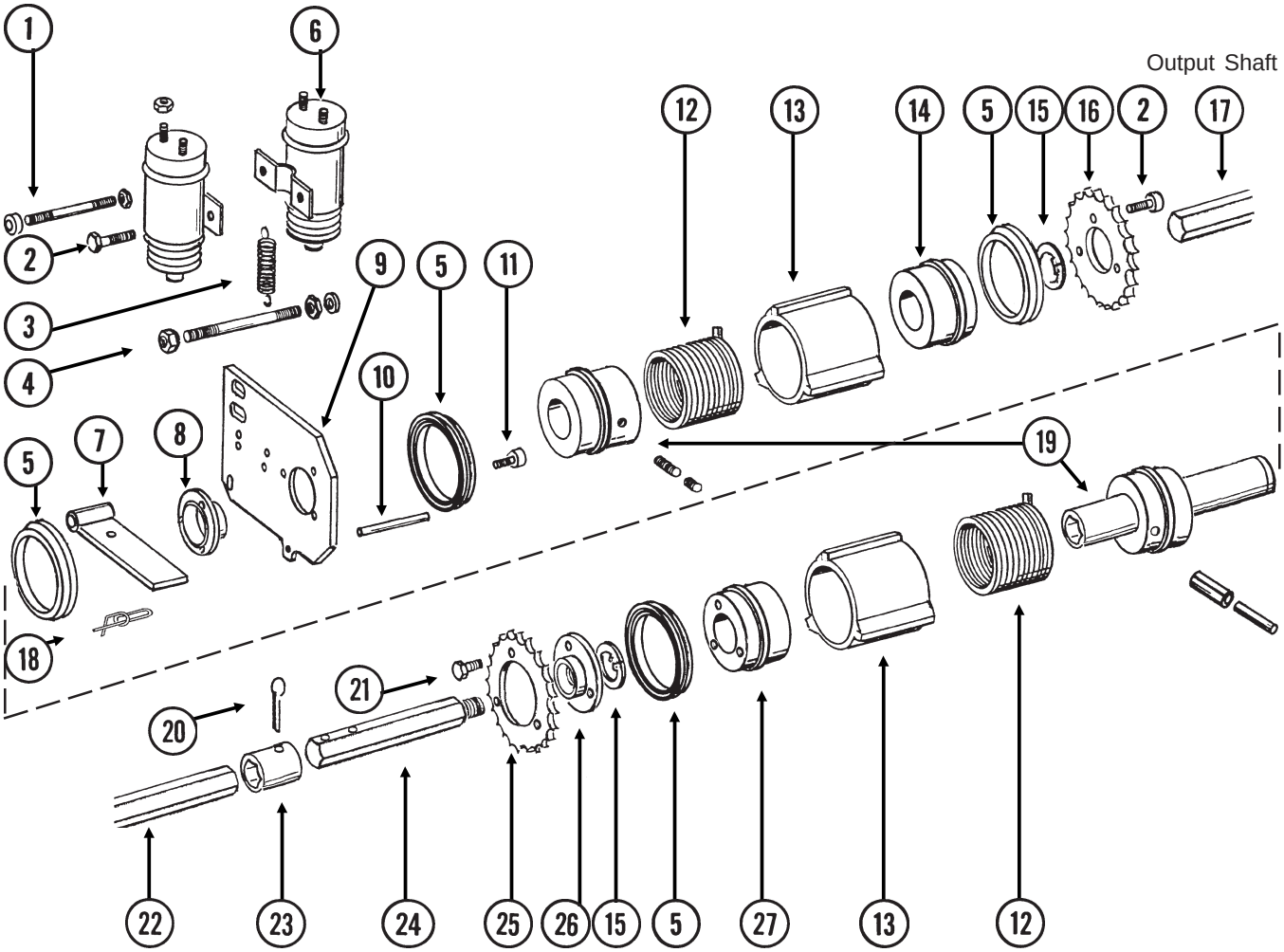


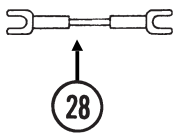
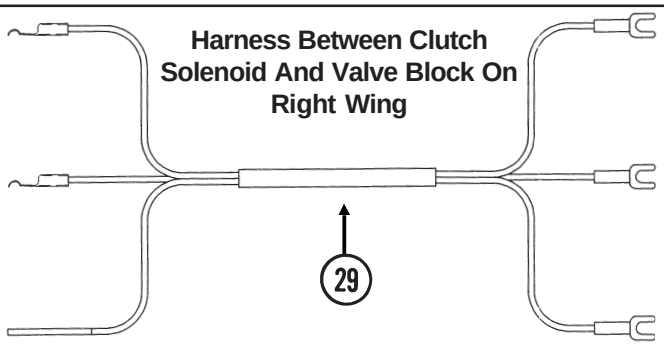
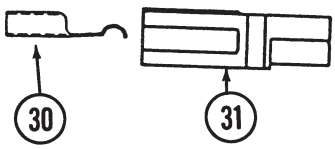
POINT ROW WRAP SPRING CLUTCH

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD10068	1	Input Shaft, R.H. Thread (L.H. And R.H. Side Of Machine)
2.	G10374	3	Socket Head Screw, 1/4"-20 x 1"
	G10227	3	Lock Washer, 1/4"
3.	GD10070	1	Coupler W/R.H. Threads (L.H. And R.H. Side Of Machine)
4.	G10496	2	Snap Ring
5.	GD10120	2	Seal
6.	GD10104	1	Input Hub
7.	G10804	2	Spring Pin, 5/32" x 7/8"
8.	G10765	2	Spring Pin, 1/4" x 1"
9.	GD10105	1	Output Hub
10.	GD10106	1	Sleeve
11.	GD9671	-	Spring, L.H. (L.H. And R.H. Side Of Machine)
12.	GD10102	1	Stop Collar
13.	G10816	1	Hair Pin Clip
14.	GD10510	1	Actuator Arm
15.	G10859	1	Spring Pin, 3/16" x 2 1/4"
16.	G10253	3	Socket Head Screw, No. 10-32 x 1/2"
	G10257	3	Lock Washer, No. 10
17.	G10023	1	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	1	Lock Washer, 1/4"
	G10103	1	Hex Nut, 1/4"-20
18.	G10843	1	Hex Head Adjustment Bolt, 1/4"-20 x 2"
	G10209	1	Washer, 1/4" USS
	G10227	1	Lock Washer, 1/4"
	GD10282	1	Allen Nut, 1/4"-20
	G10103	1	Hex Nut, 1/4"-20
19.	GA7143	1	Solenoid
	GR1306	1	Snap Ring
	GR1303	1	Spring
	GR1304	1	Boot
	GR1305	1	Plunger
	GR1307	1	Body
20.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10229	2	Lock Washer, 3/8"
	G10497	1	Hex Nut, 3/8"-16
21.	GD10123	1	Spring
22.	G10101	1	Hex Nut, 3/8"-16
23.	G10203	1	Washer, 3/8" SAE
24.	GD10103	1	Mounting Plate
25.	GD9667	1	Bushing
26.	GD0914-10	1	Output Shaft
27.	GD0914-32	1	Input Drive Shaft, 24 Row 30"
	GD0914-40	-	Input Drive Shaft, 16 Row 30" And 24 Row 20"
	GD0914-42	-	Input Drive Shaft, 36 Row 20"
28.	GA7405	1	Wiring Harness, 228", R.H. Side Of Machine, 16 Row 30", 24 Row 20" And 24 Row 30"
	GA7403	-	Wiring Harness, 252", R.H. Side Of Machine, 36 Row 20"
	GA7406	-	Wiring Harness, 492", L.H. Side Of Machine, All Sizes
29.	GD9530	-	Contact
30.	GD9529	-	Housing
31.	GD7867	1	Coupler, 3"
32.	G10460	1	Cotter Pin, 1/4" x 2"
A.	GA7111	-	Point Row Wrap Spring Clutch Assembly, L.H. Clutch, Used On L.H. And R.H. Side Of Machine (Items 1-25)

TWO-SPEED POINT ROW WRAP SPRING CLUTCH

PRC023(FF47a/TWL76/TWL71/TWL18)



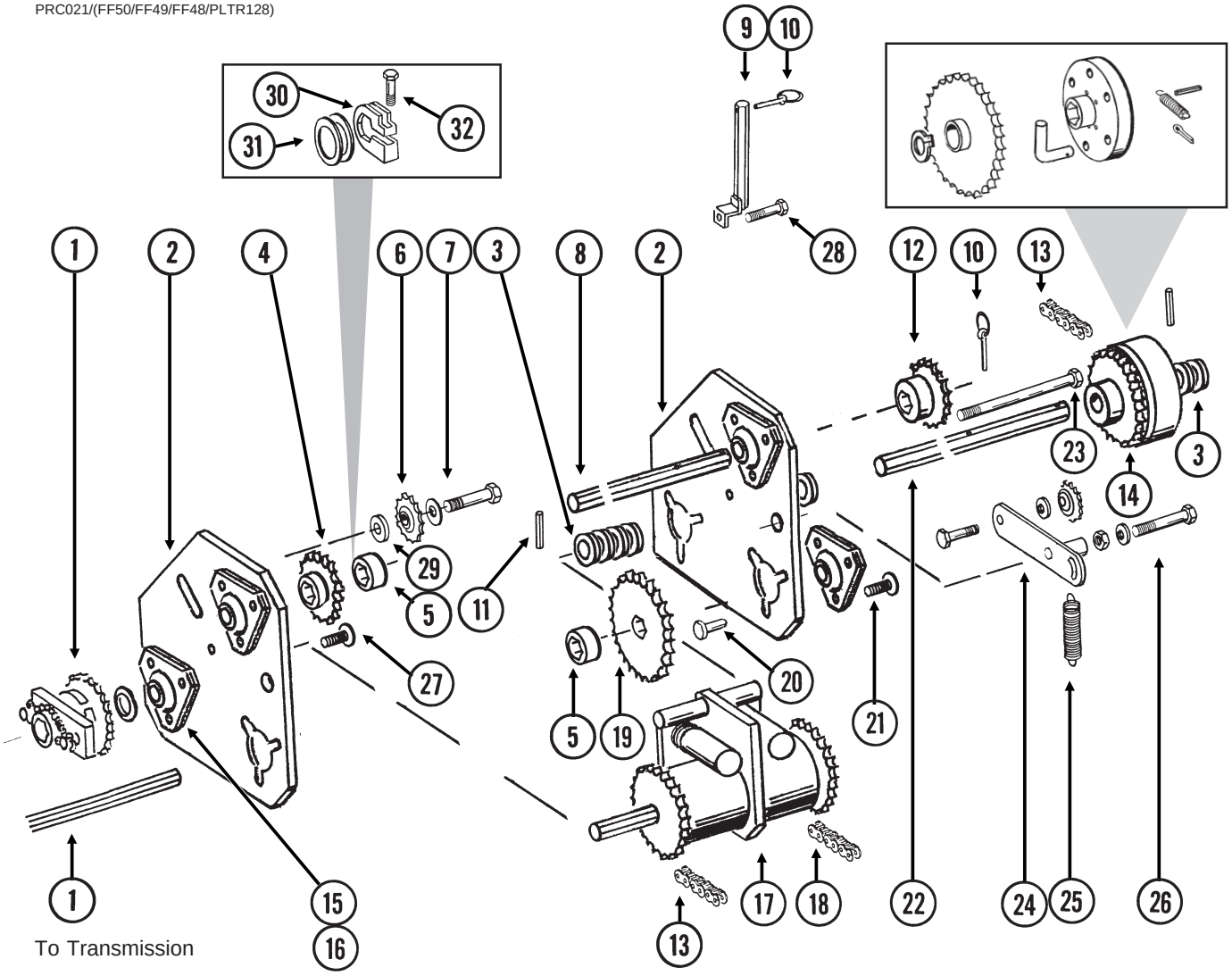
Jumper Wire Between Point Row Clutch Solenoids	Harness Between Clutch Solenoid And Valve Block On Right Wing	
		

TWO-SPEED POINT ROW WRAP SPRING CLUTCH

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD10635	1	Threaded Bar, 1/4"-20 x 3 1/2"
	G10103	2	Hex Nut, 1/4"-20
	G10227	2	Lock Washer, 1/4"
	GD10282	2	Allen Nut, 1/4"-20
2.	G10023	4	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	4	Lock Washer, 1/4"
	G10103	1	Hex Nut, 1/4"-20
3.	GD10123	2	Spring
4.	GD10636	1	Threaded Bar, 3/8"-16 x 4 1/4"
	G10108	2	Lock Nut, 3/8"-16
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
5.	GD10120	4	Seal
6.	GA7143	2	Solenoid Complete
	GR1306	-	Snap Ring
	GR1303	-	Spring
	GR1304	-	Boot
	GR1305	-	Plunger
	GR1307	-	Body
7.	GD10510	2	Actuator Arm
8.	GD10586	1	Bushing
9.	GD10103	1	Mounting Plate
10.	G10859	1	Spring Pin, 3/16" x 2 1/4"
11.	G10876	3	Hex Socket Head Screw, No. 10-32 x 1/4"
12.	GD9671	2	Spring, L.H.
13.	GD10585	2	Stop Collar
14.	GD10583	1	Driven Hub
15.	G10496	2	Snap Ring
16.	GD10579	1	Output Sprocket, 28 Tooth
17.	GD0914-10	1	Output Shaft
18.	GD11120	2	Rue Ring Cotter
19.	GA7463	1	Hub/Sleeve Assembly W/Pins And Screws
	G10873	-	Hex Socket Set Screw, 5/16"-18 x 3/4"
	G10872	-	Hex Socket Set Screw, 5/16"-18 x 1/4"
	G10804	-	Spring Pin, 5/32" x 7/8"
	G10765	-	Spring Pin, 1/4" x 1"
20.	G10460	1	Cotter Pin, 1/4" x 2"
21.	G10374	3	Hex Socket Head Screw, 1/4"-20 x 1"
	GD10588	3	Key
22.	GD0914-32	1	Input Drive Shaft, 24 Row 30"
	GD0914-40	-	Input Drive Shaft, 24 Row 20" And 16 Row 30"
	GD0914-42	-	Input Drive Shaft, 36 Row 20"
23.	GD7867	1	Coupler, 3"
24.	GD10068	1	Input Shaft, R.H. Thread
25.	GD10578	1	Input Sprocket, 28 Tooth
26.	GD10638	1	Coupler W/R.H. Thread
27.	GD10580	1	Drive Hub
28.	GA7274	1	Jumper Wire, Between Solenoids
29.	GA7405	1	Wiring Harness, 228", R.H. Side Of Machine
	GA7406	-	Wiring Harness, 492", L.H. Side Of Machine
30.	GD9530	-	Contact
31.	GD9529	-	Housing

TWO-SPEED POINT ROW WRAP SPRING CLUTCH WHEEL MODULE EXTENSIONS

PRC021/(FF50/FF49/FF48/PLTR128)

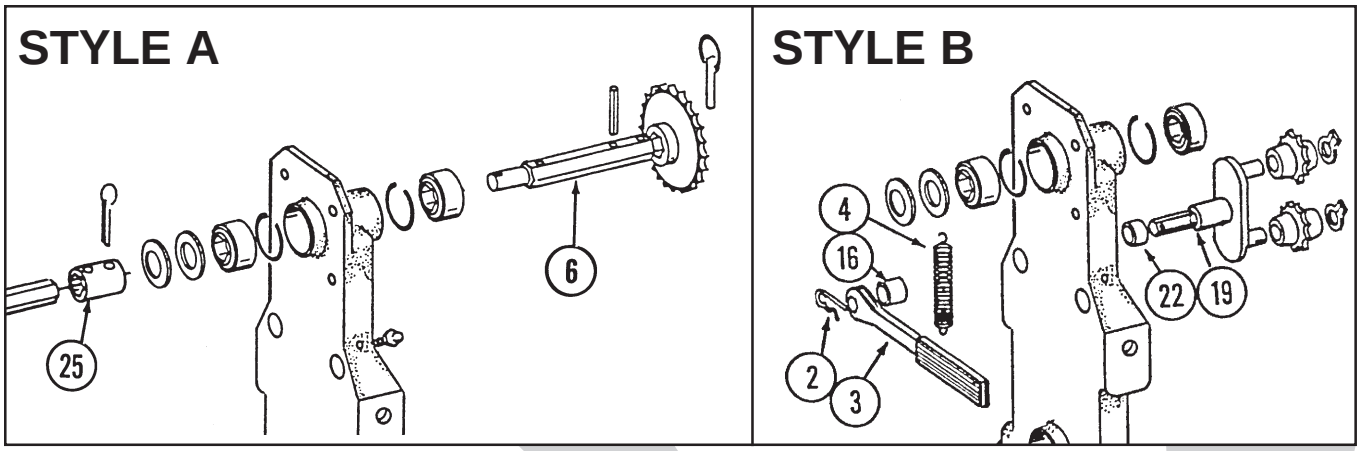


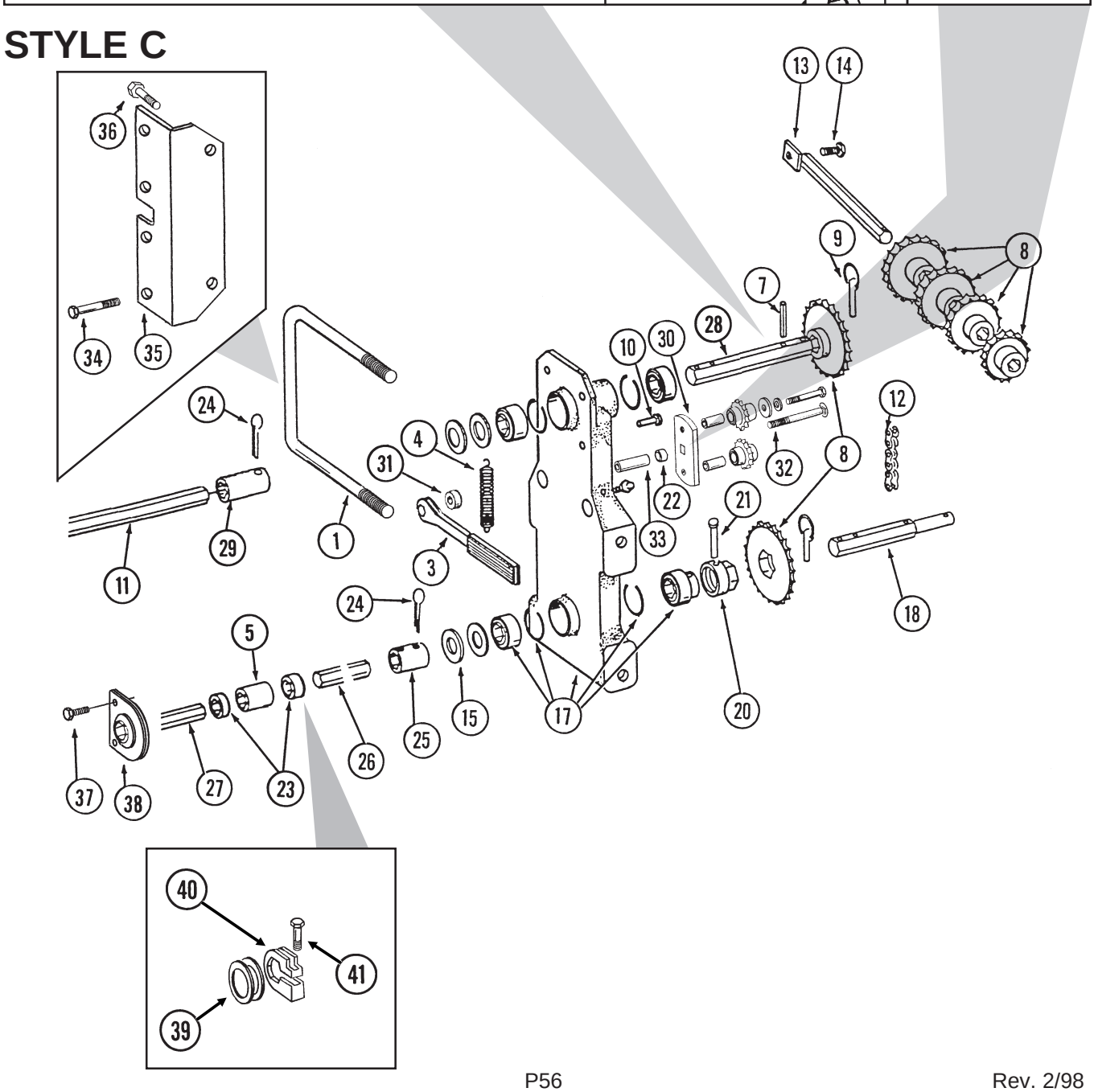
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.		-	See “Wheel Module Assembly”, Pages P42-P44
2.	GD10327	2	Extension Plate
3.	G10233	-	Machine Bushing (As Required)
4.	GA5113	1	Sprocket, 28 Tooth
5.	GD0917	1	Lock Collar, Less Set Screws **(Sub G1K269)**
	G10145	-	Set Screw, $^{5}/_{16}$"-18 x $^{1}/_{2}$"
6.	GA7154	1	Sprocket, 18 Tooth
7.	G10053	1	Hex Head Cap Screw, $^{1}/_{2}$"-13 x 2 $^{1}/_{2}$"
	G10216	1	Washer, $^{1}/_{2}$" USS
	G10206	3	Washer, $^{1}/_{2}$" SAE
	G10228	1	Lock Washer, $^{1}/_{2}$"
	G10102	1	Hex Nut, $^{1}/_{2}$"-13
8.	GD10547	1	Jack Shaft, $^{7}/_{8}$" x 13"
9.	GA7313	1	Sprocket Storage Rod
10.	GD2558	2	Lynch Pin, $^{1}/_{4}$"
11.	G10602	2	Spring Pin, $^{1}/_{4}$" x 1 $^{1}/_{2}$"

TWO-SPEED POINT ROW WRAP SPRING CLUTCH WHEEL MODULE EXTENSIONS

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
12.	GA5105	1	Sprocket, 15 Tooth
	GA5106	1	Sprocket, 17 Tooth
	GA5109	-	Sprocket, 24 Tooth
	GA5112	1	Sprocket, 27 Tooth
	GA5108	-	Sprocket, 23 Tooth (From Transmission)
	GA5110	-	Sprocket, 25 Tooth (From Transmission)
	GA5111	-	Sprocket, 26 Tooth (From Transmission)
13.	G3310-68	2	Chain, No. 40, 68 Pitch Including Connector Link And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
14.	GA7321	-	Overrunning Sprocket Assembly, L.H.
	G10430	1	Ring
	GD1255	6	“L” Pin
	G10546	6	Spring Pin, 3/16" x 1 1/4"
	G10470	6	Cotter Pin, 5/32" x 1"
	GD10366	6	Spring
	GA7317	1	Block
	GA7319	1	Sprocket W/Bushing, 30 Tooth
15.	G3400-01	-	Flangette
16.	G2100-03	-	Bearing, 7/8" Hex
17.		-	See “Two-Speed Point Row Wrap Spring Clutch”, Pages P52 And P53
18.	G3310-82	1	Chain, No. 40, 82 Pitch Including Connector Link And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
19.	GA5194	1	Sprocket, 50 Tooth
20.	G10408	1	Clevis Pin, 5/16" x 3/4"
	G10409	1	Ring
21.	G10302	9	Carriage Bolt, 5/16"-18 x 7/8"
	G10232	9	Lock Washer, 5/16"
	G10221	-	Washer, 5/16" SAE
	G10106	9	Hex Nut, 5/16"-18
22.	GD10548	1	Output Shaft, 7/8" x 12"
23.	G10595	1	Hex Head Cap Screw, 3/8"-16 x 10"
	G10108	1	Lock Nut, 3/8"-16
24.	GA7444	1	Idler W/Bolt-On Sprocket And Hardware
	GA7154	1	Sprocket, 18 Tooth
	G10128	1	Machine Bushing, 1/2" x .068" Thick
	G10017	1	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10501	1	Hex Nut, 1/2"-13
25.	GD5857	2	Spring
26.	G10013	1	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10205	1	Washer, 5/8" SAE
	G10107	1	Lock Nut, 5/8"-11
	G10104	1	Hex Nut, 5/8"-11
27.	G10338	3	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18
28.	G10037	1	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10216	1	Washer, 1/2" USS
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
29.	GD10637	1	Stepped Spacer, 1/2"
30.	GD11045	1	Lock Clamp
31.	G10233	1	Machine Bushing
32.	G10031	1	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	1	Flange Nut, 5/16"-18
A.	G1K269	-	Lock Clamp Kit (Items 30 And 32)

R.H. Side Shown





TRANSMISSION AND DRIVELINE

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD1114	1	U-Bolt, 7" x 7" x 5/8"-11
	G10107	2	Lock Nut, 5/8"-11
2.	G10670	1	Hair Pin Clip, No. 3
3.	GA4235	1	Ratchet Wrench W/Protective Closure
	G10445	-	Protective Closure
4.	GD5857	1	Spring
5.	GD1719	1	Coupler, 4", 24 Row 30" And 36 Row 20" Only
6.	GD5215	1	Shaft, 7/8" x 6 3/8"
7.	G10602	3	Spring Pin, 1/4" x 1 1/2"
8.	GA5106	1	Sprocket, 17 Tooth
	GA5107	1	Sprocket, 19 Tooth
	GA5108	2	Sprocket, 23 Tooth
	GA5109	1	Sprocket, 24 Tooth
	GA5110	1	Sprocket, 25 Tooth
	GA5111	1	Sprocket, 26 Tooth
	GA5112	1	Sprocket, 27 Tooth
	GA5113	1	Sprocket, 28 Tooth
9.	GD2558	3	Lynch Pin, 1/4"
10.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Retaining Ring, 5/16"
11.		-	See “Wheel Module Assembly”, Pages P42-P44
12.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
13.	GA5146	1	Sprocket Storage Rod
14.	G10017	1	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
15.	G10233	4	Machine Bushing
16.	GD6819	1	Sleeve, 7/16"
17.	GA5629	1	Transmission Plate W/Bearings, Grease Fittings And Retaining Rings
	GA5116	3	Bearing, 7/8" Hex Bore, Cylindrical
	GA5624	1	Special Bearing, 7/8" Hex Bore x 1.6"
	GD6551	4	Ring
	G10641	-	Grease Fitting, 1/8" NPT
18.	GD7822	1	Shaft, 7/8" x 7"
19.	GA5628	1	Idler W/Sprockets And Rings
	GD7426	-	Sprocket
	G10435	-	Ring
20.	GD7127	1	Shear Coupler
21.	G10821	1	Clevis Pin, 3/16" x 2"
	G10099	1	Cotter Pin, 3/32" x 1/2"
22.	GD2734-01	1	Sleeve, 1/2"
23.	GD0917	-	Lock Collar , Less Set Screws **(Sub G1K269)**
	G10145	-	Set Screw, 5/16"-18 x 1/2"
24.	G10460	2	Cotter Pin, 1/4" x 2"
25.	GD5886	1-2	Coupler, 1 3/4", 16 Row 30", 24 Row 20" And 24 Row 30"
	GD7867	-	Coupler, 3", 36 Row 20"
26.	GD0914-198	2	Drill Shaft, 198", 24 Row 30" Only
	GD0914-208	-	Drill Shaft, 208", 36 Row 20", R.H. Side
	GD0914-198	-	Drill Shaft, 198", 36 Row 20", L.H. Side
27.	GD0914-152	1	Drill Shaft, 144", L.H. Side, 24 Row 30" And 36 Row 20"
	GD0914-224	-	Drill Shaft, 224", L.H. Side, 24 Row 20" And 16 Row 30"
	GD0914-152	1	Drill Shaft, 152", R.H. Side, 24 Row 30" And 36 Row 20"
	GD0914-234	-	Drill Shaft, 234", R.H. Side, 24 Row 20" And 16 Row 30"
28.	GD5835	1	Shaft, 7/8" x 7"
29.	GD7867	-	Coupler, 3"

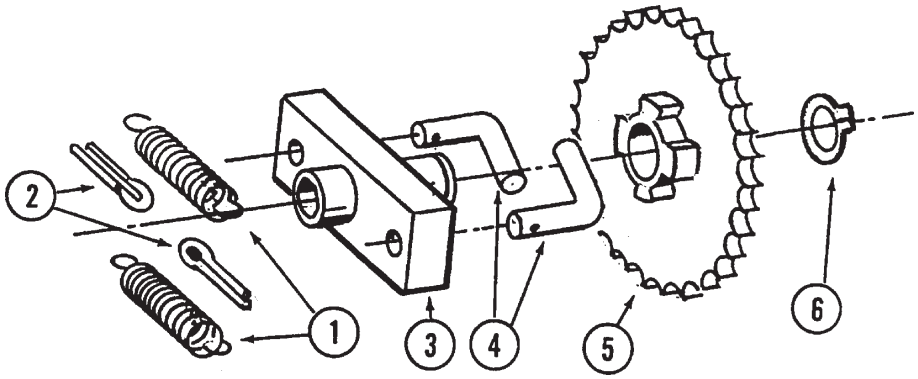
(Continued)

TRANSMISSION AND DRIVELINE

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
30.	GA7336	1	Idler W/Bolt-On Sprockets
	GD7426	-	Sprocket
	GD1026	-	Spacer, 1 3/16"
	G10210	-	Washer, 3/8" USS
	G10229	-	Lock Washer, 3/8"
	G10047	-	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
31.	GD10161	1	Spacer, 3/8"
32.	G10867	1	Carriage Bolt, 1/2"-13 x 5"
	G10111	1	Lock Nut, 1/2"-13
33.	GD3180-16	1	Sleeve, 2 13/16"
34.	G10028	4	Hex Head Cap Screw, 3/4"-10 x 3"
	G10231	4	Lock Washer, 3/4"
	G10105	2	Hex Nut, 3/4"-10
35.	GD10315	1	Mount, 36 Row 20" Only
36.	G10007	2	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
37.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
38.	GA2180	1	Bearing Hanger, 7/8" Hex
39.`	G10233	1	Machine Bushing
40.	GD11045	1	Lock Clamp
41.	G10031	1	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	1	Flange Nut, 5/16"-18
A.	G1K269	-	Lock Clamp Kit (Items 40 And 41)

RATCHET/SPROCKET ASSEMBLY

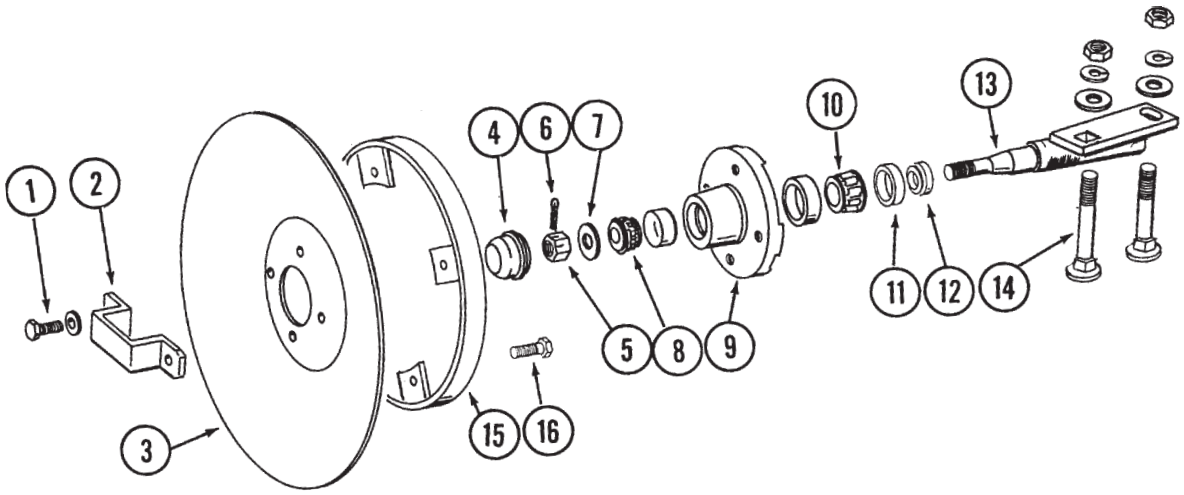
PTD016(TWL12)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD1256	2	Spring
2.	G10464	2	Cotter Pin, $^{3}/_{16}$" x 1"
3.	GA0378	1	Block
4.	GD1255	2	“L” Pin
5.	GA5165	1	Sprocket, 30 Tooth
6.	G10430	1	Ring
A.	GA5164	-	Ratchet/Sprocket Assembly Complete

MARKER SPINDLE/HUB/BLADE

MKR020(MKR4)



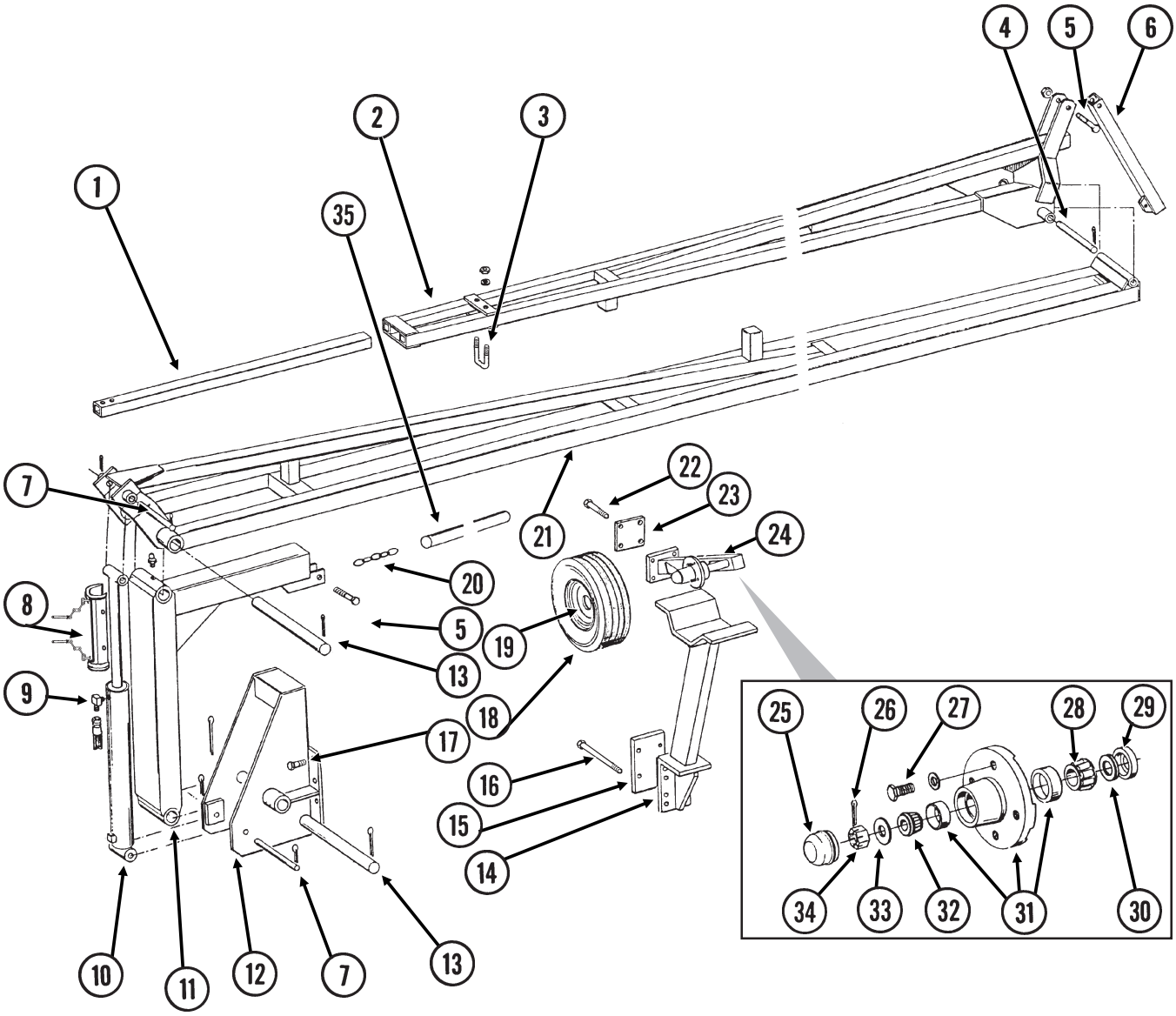
MARKER SPINDLE/HUB/BLADE

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10722	4	Hex Head Cap Screw, 1/2"-20 x 1"
	G10228	4	Lock Washer, 1/2"
2.	GD2597	1	Retainer
3.	GD0746	1	Solid Blade, 16" (Shown)
	GD10283	-	Notched Blade, 16" (Optional)
4.	GD0840	1	Cap
5.	G10725	1	Hex Slotted Nut, 5/8"-18
6.	G10544	1	Cotter Pin, 5/32" x 1
7.	G10724	1	Washer,5/8"
8.	GA0257	1	Outer Bearing
9.	GA0167	1	Hub With Cups
	GR0151	-	Outer Cups
	GR0150	-	Inner Cups
10.	GA0245	1	Inner Bearing
11.	GA0243	1	Grease Seal
12.	GA0899	1	Rubber Seal
13.	GA1677	1	Spindle, L.H. (Shown)
	GA1676	-	Spindle, R.H.
14.	G10844	2	Carriage Bolt,1/2"-13 x 3 1/2"
	G10168	2	Machine Bushing, 1/2", 7 Gauge
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
15.	GA5853	1	Depth Band
16.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
	G10109	4	Lock Nut, 5/16"-18
A.	GA1679	-	Hub And Spindle Assembly, L.H. (Items 1,2 And 4-13)
	GA1678	-	Hub And Spindle Assembly, R.H. (Items 1,2 And 4-13)

MARKER ASSEMBLY, 24 ROW 30" AND 36 ROW 20"

MKR004/MKR013(FF18c)

L.H. Side Shown



MARKER ASSEMBLY, 24 ROW 30" AND 36 ROW 20"

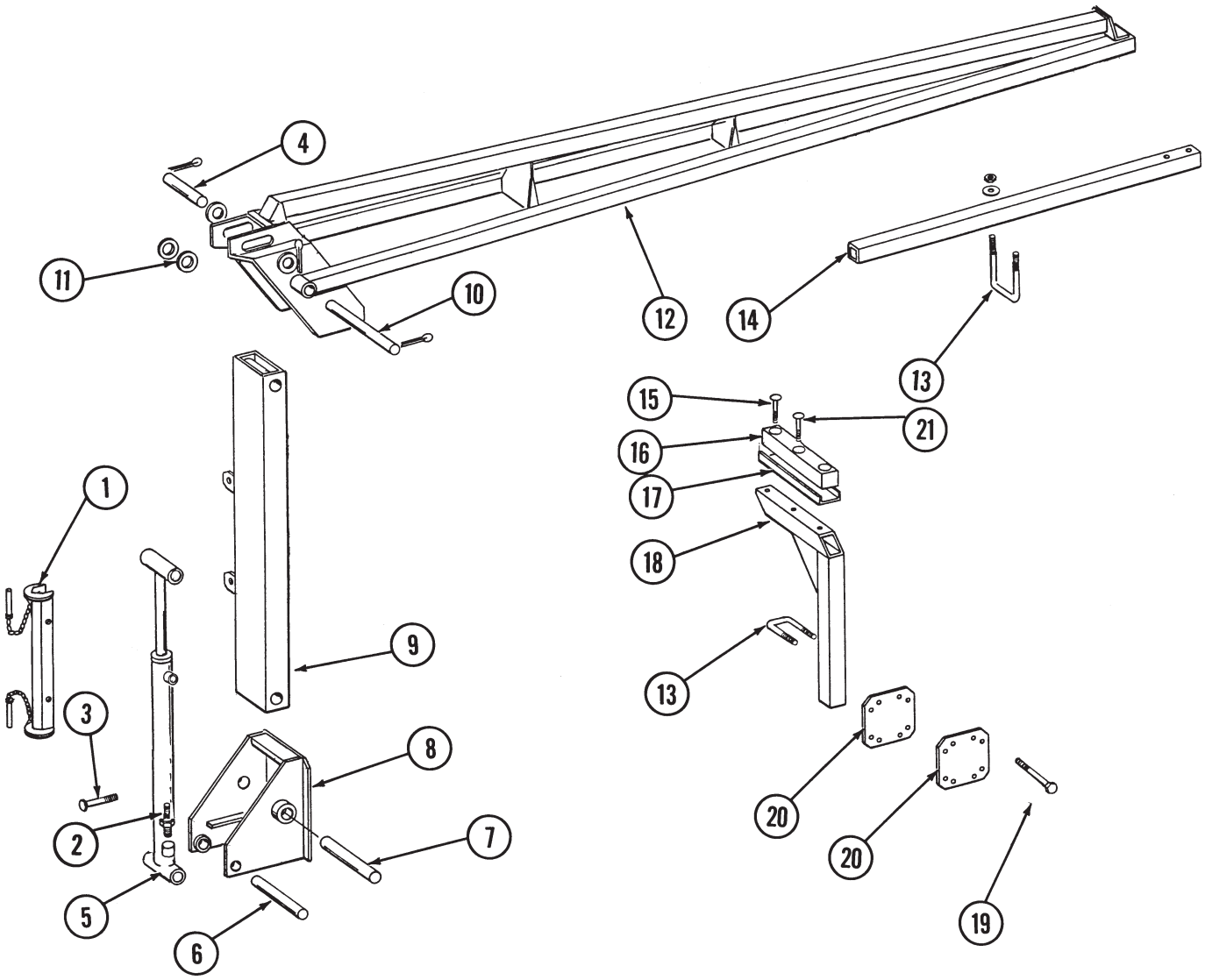
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD0453-07	1	Extension Tube, 45"
2.	GA0178-04	1	Arm W/Grease Fittings, Third Stage
	G10641	2	Grease Fitting, 1/8" NPT
3.	GD2721	1	U-Bolt, 2" x 2" x 1/2"-13
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
4.	GD0704	1	Pin, 1 1/4" x 14"
	G10460	2	Cotter Pin, 1/4" x 2"
5.	G10033	3	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10111	3	Lock Nut, 1/2"-13
6.	GA6860	1	Bracket
7.	GD10186	2	Pin, 1 1/4" x 10 3/4"
	G10460	4	Cotter Pin, 1/4" x 2"
8.	GA8172	1	Safety Lockup W/Detent Pins, 20"
	G10536	-	Detent Pin, 1/2" x 2 1/2"
9.	G6801-08	-	Elbow, 3/4"-16 JIC To 3/4"-16 O-Ring
	G6400-08	-	Adapter, 3/4"-16 JIC To 3/4"-16 O-Ring
10.		-	See “Marker Cylinder”, Page P82
11.	GA6870	1	Arm, First Stage
12.	GA4031	1	Mount W/Grease Fittings
	G10641	4	Grease Fitting, 1/8" NPT
13.	GD0677	2	Pin, 2 1/8" x 15 3/4"
	G10461	4	Cotter Pin, 3/8" x 3"
14.	GA6720	1	Tire Support
15.	GD9622	1	Plate, 5 1/2" x 7 1/4"
16.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10217	4	Washer, 5/8"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
17.	G10027	8	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
	G10028	-	Hex Head Cap Screw, 3/4"-10 x 3"
	G10231	8	Lock Washer, 3/4"
	G10105	6	Hex Nut, 3/4"-10
18.	GD0841	1	Tube Type Tire, 6.5" x 16" (Specify Brand*)
	GD1364	1	Tube (Not Shown)
19.	GA0246	1	Rim 5.38" x 4"
20.	G3302-05	1	Coil Chain, No. 9/0, 79 Links
21.	GA0175-03	1	Arm W/Grease Fittings, Second Stage
	G10641	5	Grease Fitting, 1/8" NPT
22.	G10063	8	Hex Head Cap Screw, 3/8"-16 x 4"
	G10229	8	Lock Washer, 3/8"
	G10101	8	Hex Nut, 3/8"-16
23.	GD0692	2	Mounting Plate, 5" x 4"
24.	GA0160R	1	Support, R.H.
	GA0160L	-	Support, L.H. (Shown)
25.	GD0840	1	Dust Cap
26.	G10544	1	Cotter Pin, 5/32" x 1"
27.	G10722	4	Hex Head Cap Screw, 1/2"-20 x 1"
	G10228	4	Lock Washer, 1/2"
28.	GA0245	1	Inner Bearing
29.	GA0243	1	Seal
30.	GA0899	1	Seal
31.	GA0167	1	Hub W/Cups
	GR0151	-	Outer Cup
	GR0150	-	Inner Cup
32.	GA0257	1	Bearing
33.	G10724	1	Washer, 5/8" SAE
34.	G10725	1	Slotted Hex Nut, 5/8"-18
35.	GD10674-01	1	Nylon Cover, 141"
A.	GA0542	-	Tire And Rim Assembly (Items 18 And 19)

*** Specific brand requests will be supplied only as available from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand could result in rate changes. To maintain consistent planting rates throughout all rows, it is recommended that all contact tires be of the same brand and be equally inflated.**

MARKER ASSEMBLY, 16 ROW 30" AND 24 ROW 20"

MKR019/MKR023/MKR27(MKR16a)

L.H. Side Shown

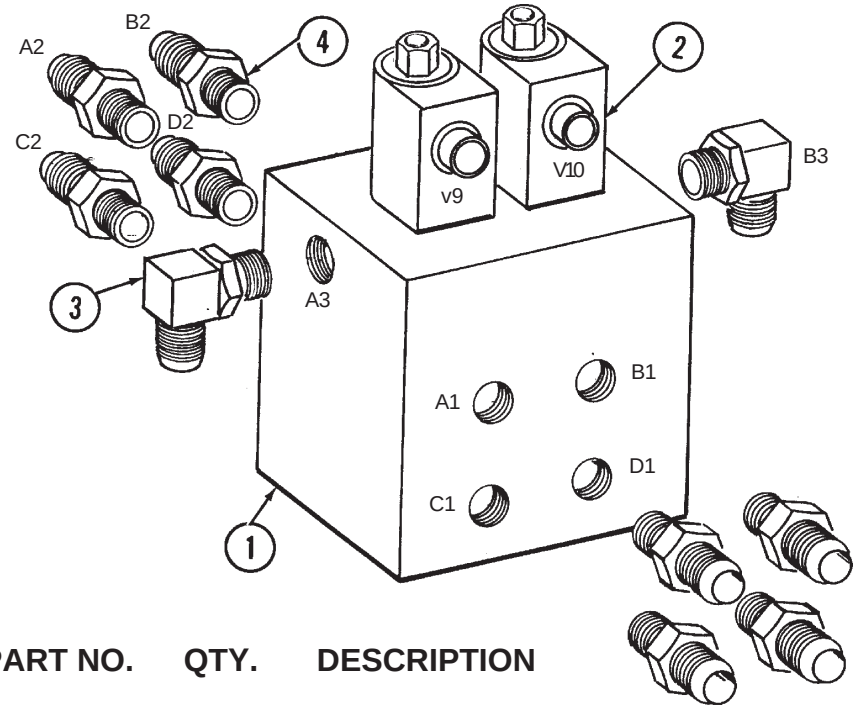


MARKER ASSEMBLY, 16 ROW 30" AND 24 ROW 20"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA8170	1	Safety Lockup W/Detent Pins, 19 3/8"
	G10536	-	Detent Pin, 1/2" x 2 1/2"
2.	G6801-08	-	Elbow, 3/4"-16 JIC To 3/4"-16 O-Ring
	G6400-08-04	-	Adapter, 3/4"-16 JIC To 7/16"-20 O-Ring
3.	G10879	6	Flanged 12 Point Bolt, 5/8"-11 x 2", Special Hardened
	G10230	6	Lock Washer, 5/8"
	G10104	5	Hex Nut, 5/8"-11
4.	GD1701	1	Pin, 1 1/4" x 6 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
5.		-	See “Marker Cylinder”, Page P83
6.	GD0652	1	Pin, 1 1/4" x 9 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
7.	GD7209	1	Pin, 1 1/4" x 11 1/2"
	G10049	2	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10108	2	Lock Nut, 3/8"-16
8.	GA4877	1	Mount
9.	GA4878	1	First Stage W/Grease Fittings, R.H.
	GA4983	-	First Stage W/Grease Fittings, L.H.
	G10641	-	Grease Fitting, 1/8" NPT
10.	GD0737	1	Pin, 1 1/4" x 13 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
11.	G10226	-	Washer, 1 1/4" SAE
	G10159	-	Machine Bushing, 10 Gauge
	G10322	-	Machine Bushing, 18 Gauge
12.	GA7118	-	Arm, 172 1/4"
13.	GD2721	3	U-Bolt, 2" x 2" x 1/2"-13
	G10228	6	Lock Washer, 1/2"
	G10102	6	Hex Nut, 1/2"-13
14.	GD0453-03	-	Extension Tube, 50"
15.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10206	2	Washer, 1/2" SAE
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
16.	GD4512	1	Rubber Stop
17.	GD6772	1	Retainer
18.	GA7562	1	Stand, 38"
19.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
20.	GD10645	2	Bar
21.	G10033	1	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10206	1	Washer, 1/2" SAE
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13

VALVE BLOCK ON FRONT HITCH

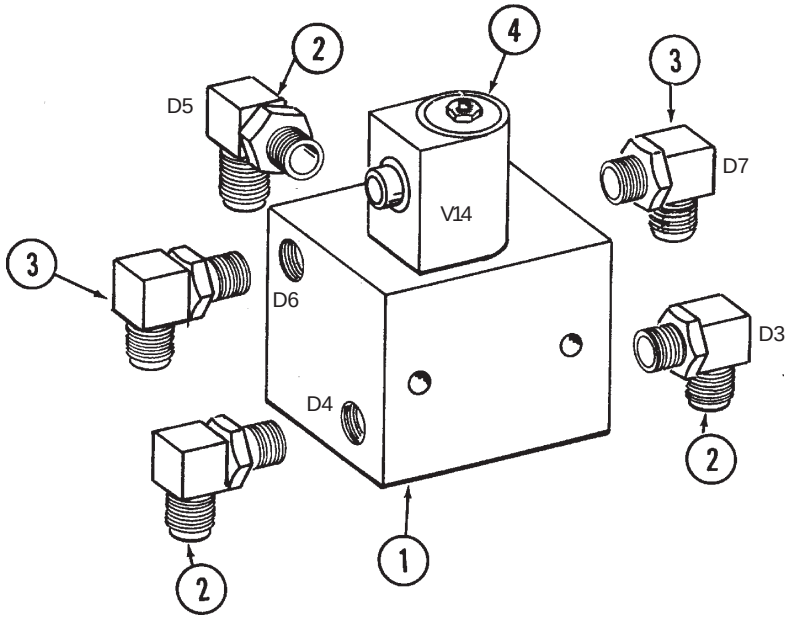
VVB029(FF19)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9531	1	Block
2.		-	See “GA7202 Solenoid Valve”, Page P71
3.	G6801-08	2	Elbow, 90°, 3/4"-16 O-Ring To JIC
4.	G6400-10-08	8	Connector, 7/8"-14 JIC To 3/4"-16 O-Ring

VALVE BLOCK ON TOWER ASSEMBLY

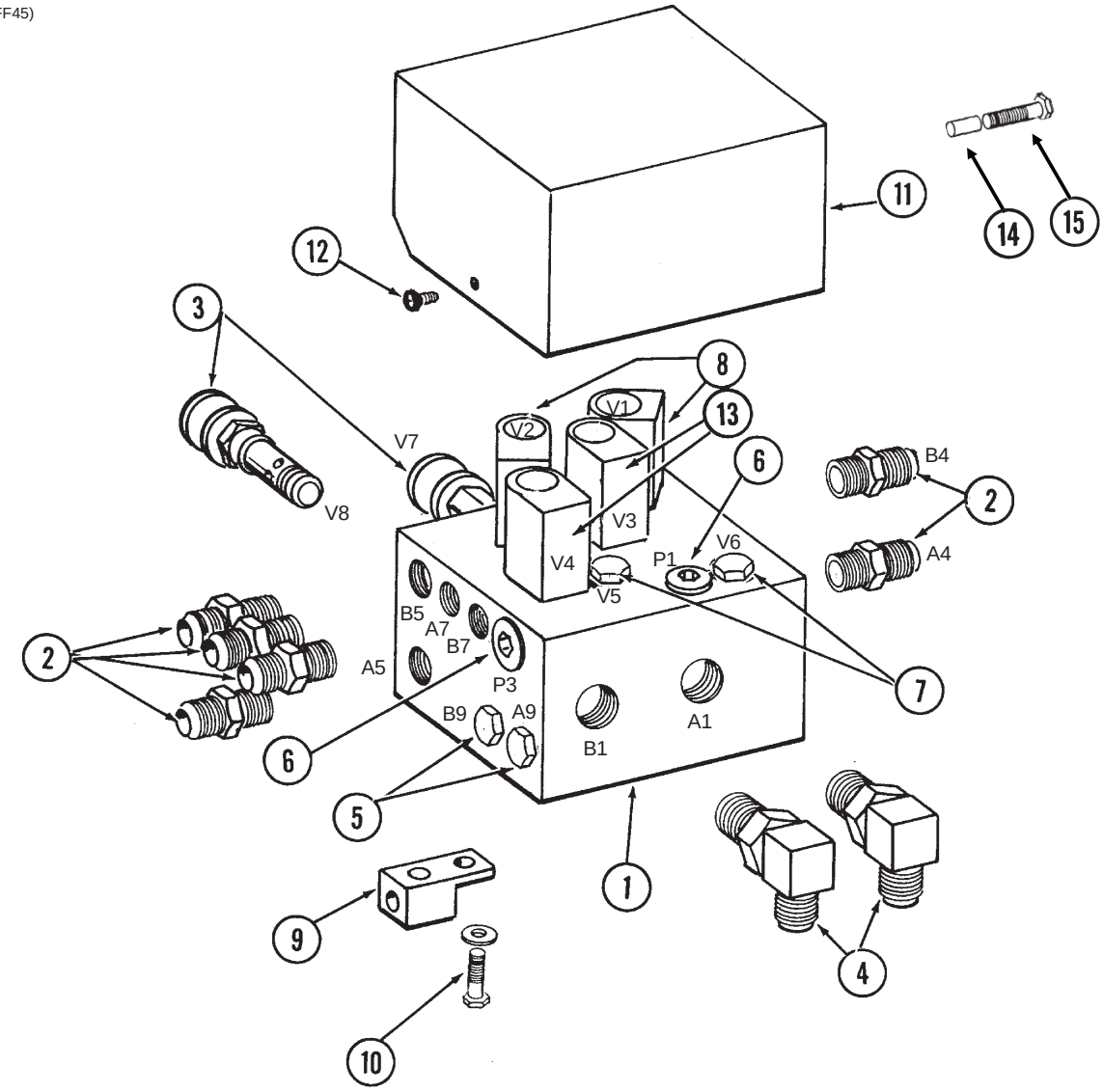
VVB031(FF20)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9536	1	Block
2.	G6801-10-08	3	Elbow, 90°, 3/4"-16 O-Ring To 7/8"-14 JIC
3.	G6801-08	2	Elbow, 90°, 3/4"-16 O-Ring To 3/4"-16 JIC
4.		-	See “GA2484 Solenoid Valve”, Page P71

VALVE BLOCK ON RIGHT WING

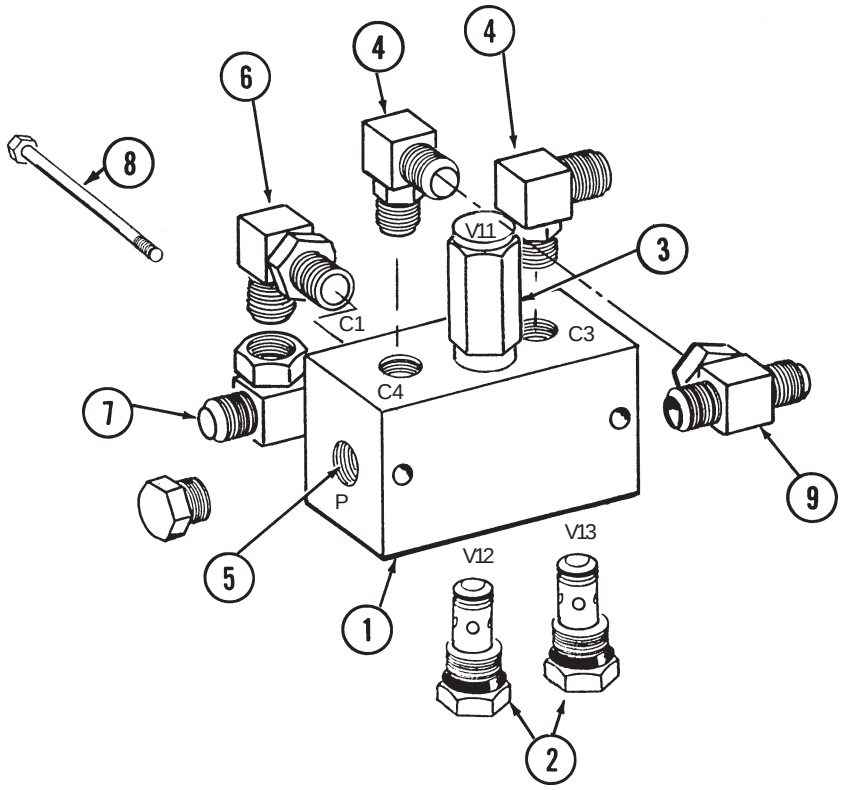
VVB032(FF21/FF45)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9533	1	Block
2.	G6400-08	6	Connector, 3/4"-16 JIC To O-Ring
3.		-	See “Flow Control Valve”, Page P72
4.	G6801-10	2	Elbow, 7/8"-14 O-Ring To JIC
5.	G6408-08	6	Plug, 3/4"-16 O-Ring
6.	G6408-H06-O	5	Plug, 9/16"-18 Socket Head
7.	G6408-10	2	Plug, 7/8"-14 O-Ring
8.		-	See “GA2484 Solenoid Valve”, Page P71
9.	GA3584	1	Ground Clamp
10.	G10019	2	Hex Head Cap Screw, 5/16"-18 x 1"
	G10232	2	Lock Washer
11.	GD10179	1	Cover
12.	G10248	2	Slotted Screw, No. 10-24 x 1/2"
13.		-	See “GA7202 Solenoid Valve”, Page P71
14.	GD7363-04	1	Sleeve
15.	G10767	1	Slotted Pan Head Screw, No. 10-24 x 1 1/2"

VALVE BLOCK ON LEFT WING

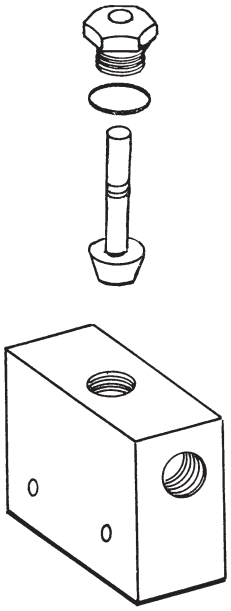
VVB030(TWL25/FF22a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9535	1	Block
2.		-	See “Check Valve”, Page P73
3.		-	See “Pressure Relief Valve”, Page P72
4.	G6801-08	1	Elbow, 90°, 3/4"-16 O-Ring To JIC
5.	G6408-06	1	Plug, 9/16"-18 O-Ring
6.	G6801-10-08	1	Elbow, 3/4"-16 O-Ring To 7/8"-14 JIC
7.	G6600-10	1	Tee, 7/8"-14 JIC Swivel
8.	G10746	2	Hex Head Cap Screw, 1/4"-20 x 2 3/4"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
9.	G6600-08	1	Elbow, 3/4"-16 JIC Swivel

STROKE LIMITER VALVE

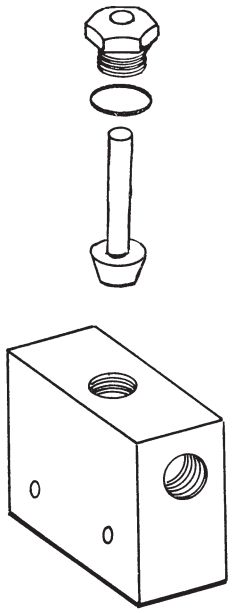
VVB027rev(FF23a)



ITEM	PART NO.	QTY.	DESCRIPTION
A.	A7864	-	Stroke Limiter Valve Complete (*Part Number Stamped On Valve Block*) **(Sub. GA8127)**
B.	G1K244	-	Repair Kit, Includes: (1) Adapter, (1) Poppet, (1) Seal Kit With O-Rings And BU Ring

STROKE LIMITER VALVE

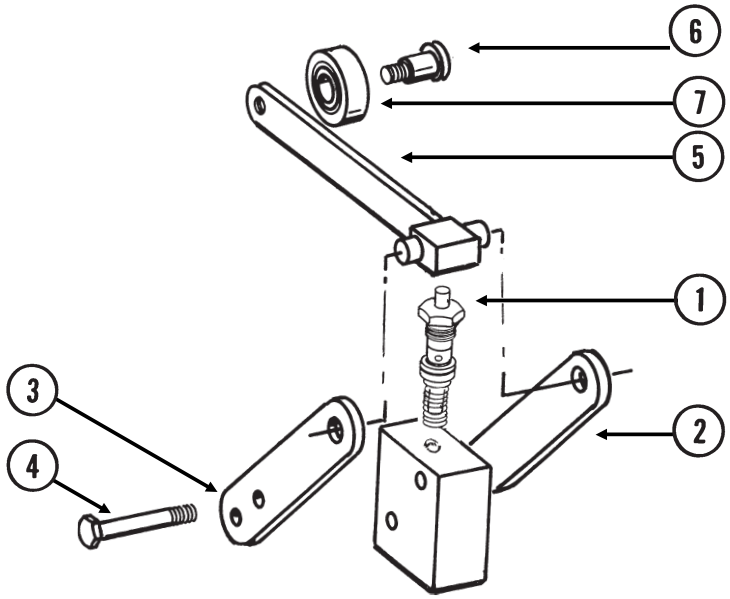
(FF23b)



ITEM	PART NO.	QTY.	DESCRIPTION
A.	GA8127	-	Stroke Limiter Valve Complete (*Part Number Stamped On Valve Block*)
B.	G1K255	-	Repair Kit, Includes: (1)Adapter, (1)Poppet, (1)Seal Kit With O-Rings And BU Ring

DETENT LEVER VALVE

VVB033(FF24)

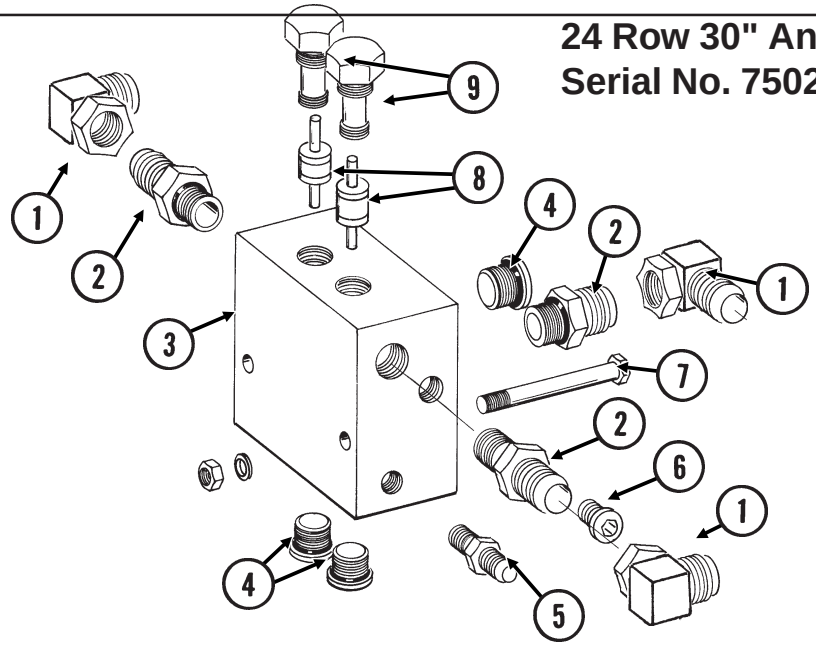


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1254	1	Valve
2.	GR1259	1	Bar
3.	GR1255	1	Bar
4.	G10060	2	Hex Head Cap Screw, $^{5}/_{16}$"-18 x 2 $^{1}/_{2}$"
	G10232	2	Lock Washer, $^{5}/_{16}$"
	G10106	2	Hex Nut, $^{5}/_{16}$"-18
5.	GR1256	1	Arm
6.	GR1258	1	Socket Shoulder Screw, $^{1}/_{2}$"
7.	GR1257	1	Stainless Bushing
A.	GA6782	-	Detent Lever Valve Complete
B.	GR1260	-	Seal Kit (For GR1254 Valve), Includes: (2) BU Rings, (3) O-Rings

PILOT OPERATED CHECK VALVE

VVB039(HYD30)

24 Row 30" And 36 Row 20" Only
Serial No. 750214 & On



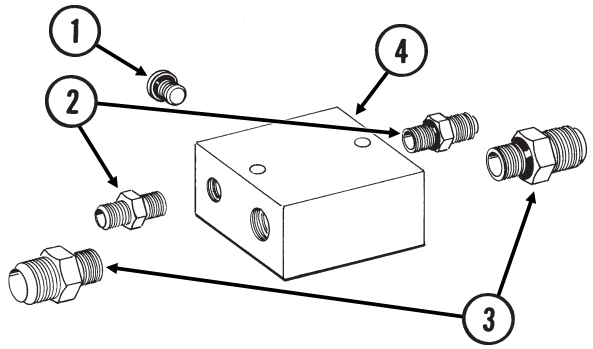
Not Used On L.H. Side Of Planter

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6500-08	2-3	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
2.	G6400-08	3	Connector, 3/4"-16 Male JIC To O-Ring
3.	R1455	1	Block **(Non-Stock Item)**
4.	GR1047	3	Hex Socket Plug W/O-Ring
	GR1037	-	O-Ring
5.	G6400-04	1	Connector, 7/16"-20 Male JIC To O-Ring
6.	GR1034	1	Hex Socket Plug W/O-Ring
	GR1035	-	O-Ring
7.	G10062	1	Hex Head Cap Screw, 3/8"-16 x 3"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
8.	R1457	2	Pilot Piston **(Non-Stock Item)**
9.	R1456	2	Cartridge **(Non-Stock Item)**
A.	GA8409	-	Pilot Operated Check Valve (Items 3,4,6, 8 And 9)
B.	GR1458	-	Seal Kit, Includes: (2)Cartridge Seal Kits, (4)O-Rings

JUNCTION BLOCK - LOCATED ON LEFT WING

VVB038(HYD31)

24 Row 30" And 36 Row 20" Only
Serial No. 750214 & On



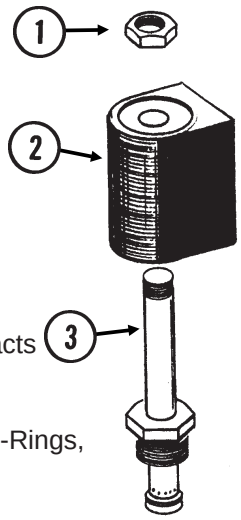
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6408-H04-0	1	Plug, 7/16"-20 O-Ring, Hex Socket Head
2.	G6400-04	2	Connector, 7/16"-20 Male JIC To O-Ring
3.	G6400-10	2	Connector, 7/8"-14 Male JIC To O-Ring
4.	GD11492	1	Block

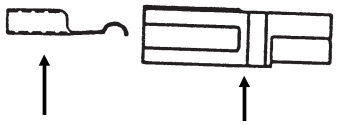
SOLENOID VALVE (G1K275)

VVB019(TWL27c/TWL18/PLTR75c)

Solenoid Valve Holds Load In One Direction

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0761	1	Hex Nut
2.	G1K274	1	Coil Kit W/Housings And Contacts
	GR9529	2	Housing
	GR9530	2	Contact
3.	GR0763	1	Cartridge
A.	G1K275	-	Solenoid Valve Kit W/Housings And Contacts
	GD9529	2	Housing
	GD9530	2	Contact
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

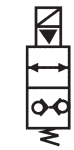




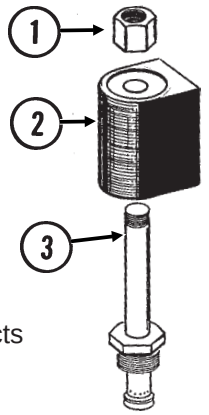
SOLENOID VALVE (G1K276)

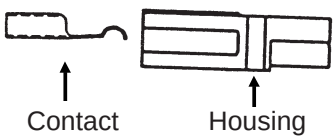
VVB019(FF25/TWL18/PLTR75c)

Solenoid Valve Holds Load In Both Directions



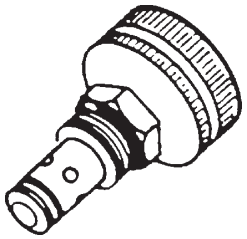
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1322	1	Hex Nut
2.	G1K274	1	Coil Kit W/Housings And Contacts
	GR9529	2	Housing
	GR9530	2	Contact
3.	GR1321	1	Cartridge
A.	G1K276	-	Solenoid Valve Kit W/Housings And Contacts
	GD9529	2	Housing
	GD9530	2	Contact
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring





FLOW CONTROL VALVE

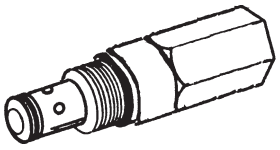
VVB020(TWL28)



ITEM	PART NO.	QTY.	DESCRIPTION
A.	GA3413	-	Flow Control Valve
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

PRESSURE RELIEF VALVE

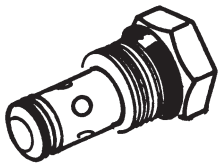
VVB020(FF46)



ITEM	PART NO.	QTY.	DESCRIPTION
A.	GA7489	-	Pressure Relief Valve, 1750 PSI
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

CHECK VALVE

VVB020(TWL30)

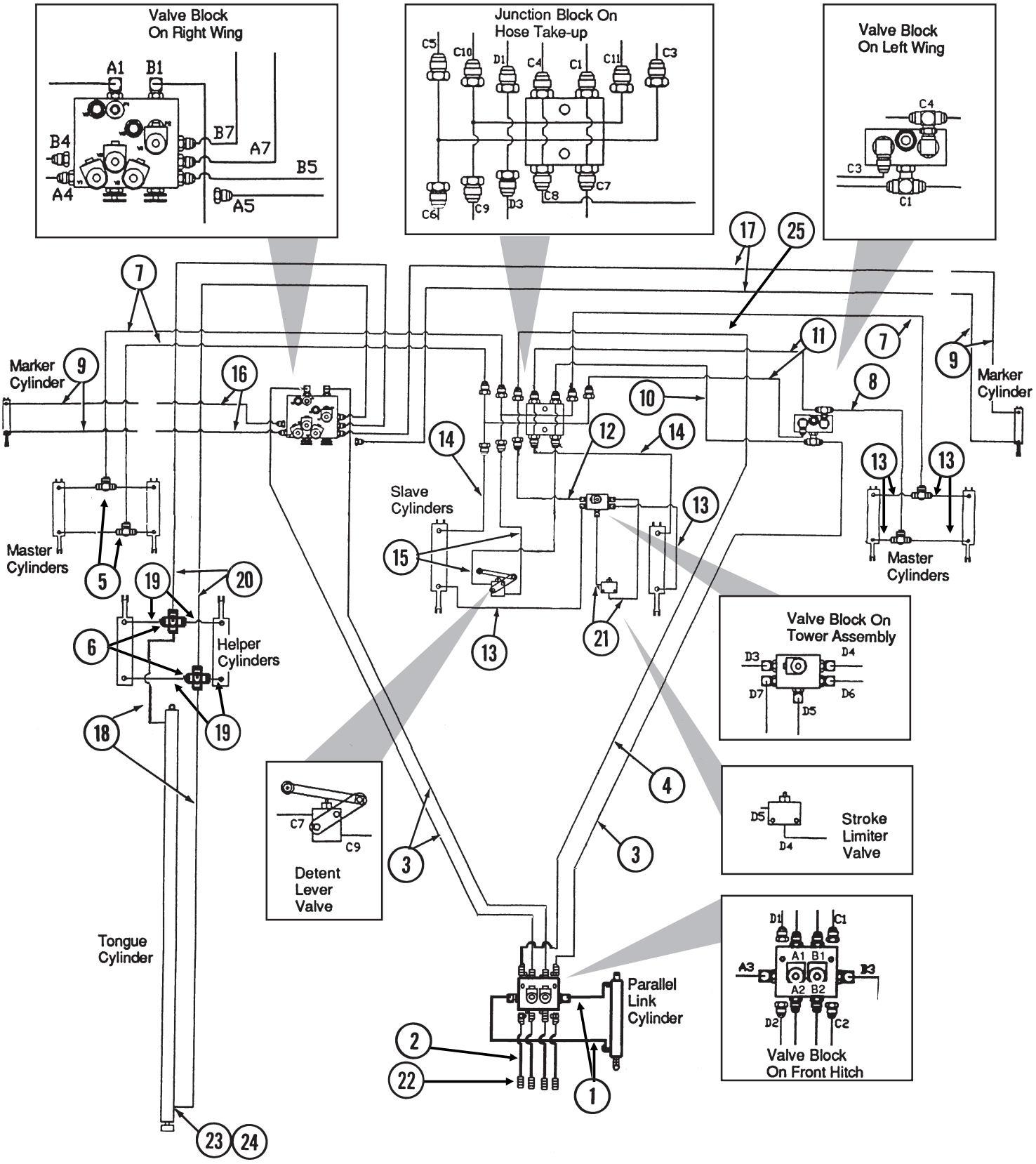


ITEM	PART NO.	QTY.	DESCRIPTION
A.	GA4293	-	Check Valve Complete
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

HYDRAULIC SYSTEM, 24 ROW 30" AND 36 ROW 20"

A7522(FF26f)

Prior To Serial No. 750214



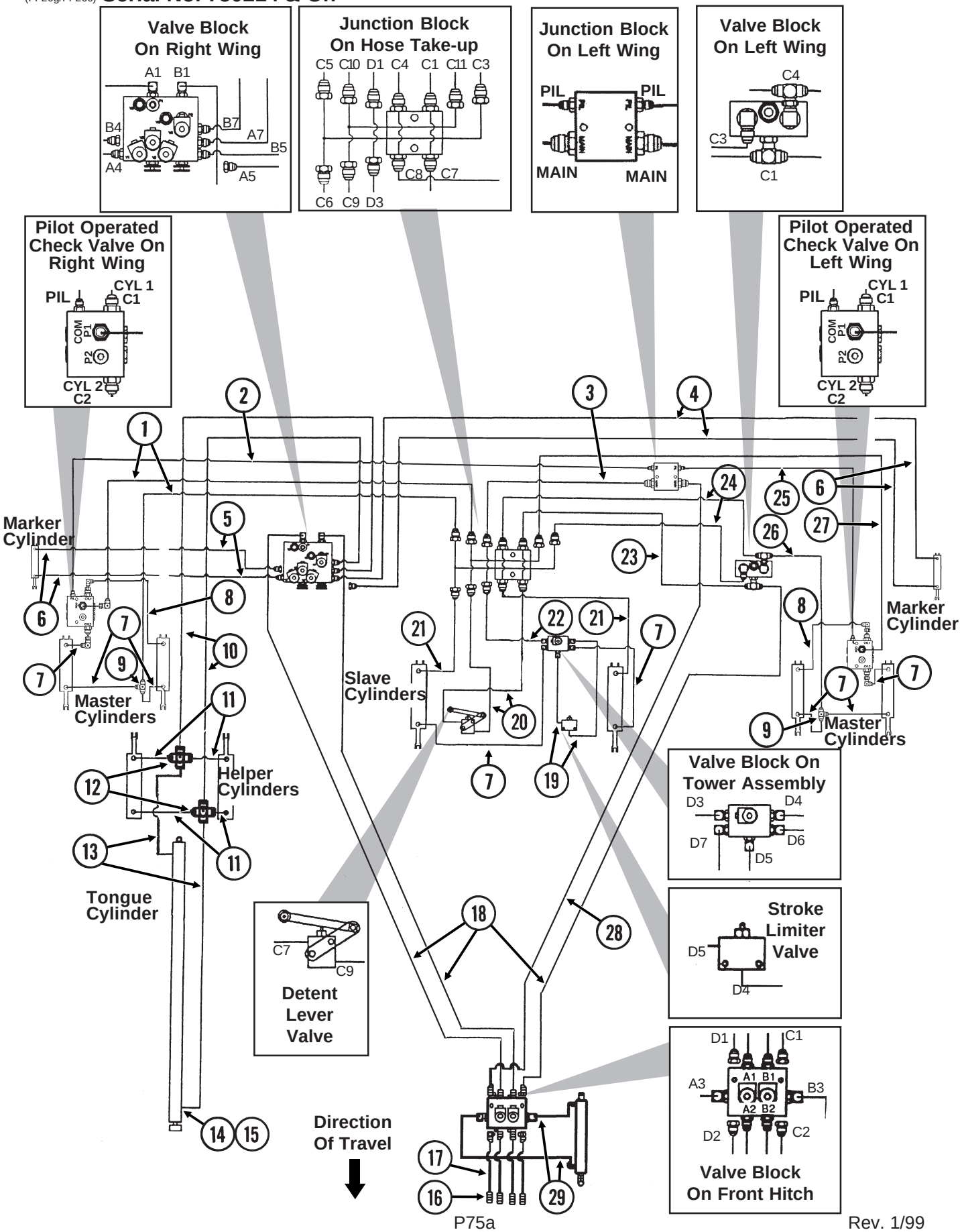
HYDRAULIC SYSTEM, 24 ROW 30" AND 36 ROW 20"

ITEM	PART NO.	QTY.	DESCRIPTION
1.	*A1076	2	Hose Assembly, 3/8" x 30"
2.	*A1412	4	Hose Assembly, 1/2" x 130"
3.	*A1485	3	Hose Assembly, 1/2" x 330"
4.	*A8208	1	Hose Assembly, 1/2" x 374"
5.	G2603-08	4	Tee, 3/4"-16 JIC
6.	G2650-06	2	Cross Fitting, 9/16"-18 JIC
7.	*A1051	3	Hose Assembly, 3/8" x 360", 24 Row 30"
	*A1038	3	Hose Assembly, 3/8" x 350", 36 Row 20"
8.	*A3161	1	Hose Assembly, 3/8" x 210", 24 Row 30"
	*A1057	1	Hose Assembly, 3/8" x 216", 36 Row 20"
9.	*A1072	4	Hose Assembly, 3/8" x 48"
10.	*A1487	1	Hose Assembly, 1/2" x 150"
11.	*A1026	2	Hose Assembly, 3/8" x 152"
12.	*A1421	1	Hose Assembly, 1/2" x 104"
13.	*A3119	10	Hose Assembly, 3/8" x 36"
14.	*A3140	2	Hose Assembly, 3/8" x 94"
15.	*A1465	2	Hose Assembly, 1/2" x 84"
16.	*A3109	2	Hose Assembly, 3/8" x 222"
17.	*A3178	2	Hose Assembly, 3/8" x 536"
18.	*A1146	2	Hose Assembly, 1/4" x 12"
19.	*A1189	4	Hose Assembly, 1/4" x 36"
20.	*A3179	2	Hose Assembly, 3/8" x 152"
21.	*A1424	2	Hose Assembly, 1/2" x 30"
22.	GD4086	4	ISO Coupler
23.	G6400-06	2	Connector, 9/16"-18 JIC To O-Ring
24.	G6502-06	2	Elbow, 45°, 9/16"-18 JIC Male To Female
25.	*A8209	1	Hose Assembly, 1/2" x 108"

*** Hydraulic hose is not stocked by KINZE® Repair Parts, but can be made available on a special order basis. Call for quote.**

HYDRAULIC SYSTEM, 24 ROW 30" AND 36 ROW 20"

(FF26g/FF26c) **Serial No. 750214 & On**



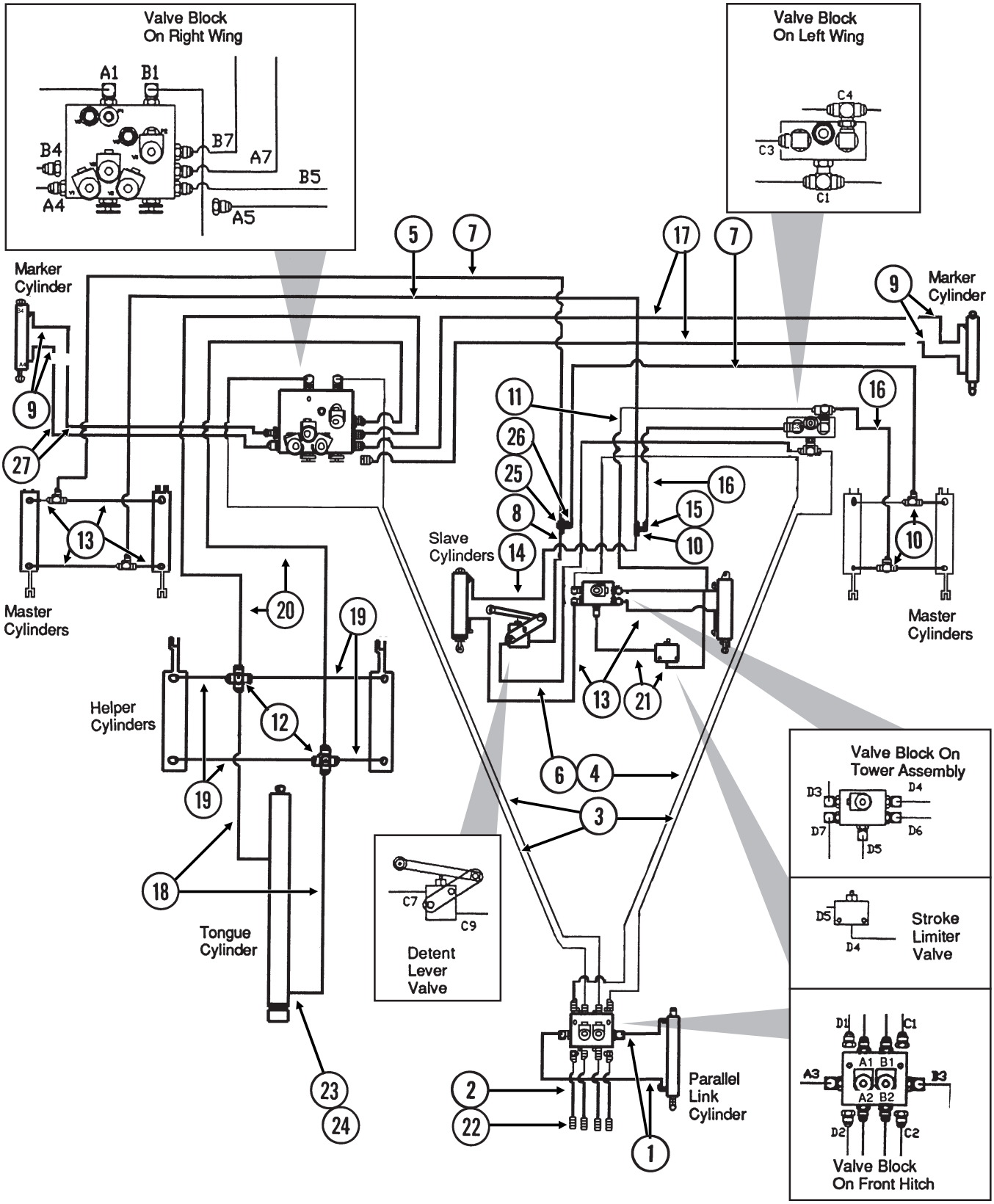
HYDRAULIC SYSTEM, 24 ROW 30" AND 36 ROW 20"

ITEM	PART NO.	QTY.	DESCRIPTION
1.	*A1051	2	Hose Assembly, 3/8" x 360", 24 Row 30"
	*A1038	2	Hose Assembly, 3/8" x 350", 36 Row 20"
2.	*A8501	1	Hose Assembly, 3/16" x 426", 24 Row 30"
	*A8503	1	Hose Assembly, 3/16" x 436", 36 Row 20"
3.	*A1475	1	Hose Assembly, 1/2" x 108"
4.	*A3178	2	Hose Assembly, 3/8" x 536"
5.	*A3109	2	Hose Assembly, 3/8" x 222"
6.	*A1072	4	Hose Assembly, 3/8" x 48"
7.	*A3119	8	Hose Assembly, 3/8" x 36"
8.	*A3119	2	Hose Assembly, 3/8" x 36", 24 Row 30"
	*A1019	2	Hose Assembly, 3/8" x 44", 36 Row 20"
9.	G2603-08	2	Tee, 3/4"-16 JIC
10.	*A3179	2	Hose Assembly, 3/8" x 152"
11.	*A1189	4	Hose Assembly, 1/4" x 36"
12.	G2650-06	2	Cross Fitting, 9/16"-18 JIC
13.	*A1146	2	Hose Assembly, 1/4" x 12"
14.	G6400-06	2	Connector, 9/16"-18 JIC To O-Ring
15.	G6502-06	2	Elbow, 45°, 9/16"-18 JIC Male To Female
16.	GD4086	4	ISO Coupler
17.	*A1412	4	Hose Assembly, 1/2" x 130"
18.	*A1485	3	Hose Assembly, 1/2" x 330"
19.	*A1424	2	Hose Assembly, 1/2" x 30"
20.	*A1465	2	Hose Assembly, 1/2" x 84"
21.	*A3140	2	Hose Assembly, 3/8" x 94"
22.	*A1421	1	Hose Assembly, 1/2" x 104"
23.	*A1487	1	Hose Assembly, 1/2" x 150"
24.	*A1026	2	Hose Assembly, 3/8" x 152"
25.	*A1038	1	Hose Assembly, 3/8" x 370", 24 Row 30"
	*A3197	1	Hose Assembly, 3/8" x 388", 36 Row 20"
26.	*A3161	1	Hose Assembly, 3/8" x 210", 24 Row 30"
	*A1057	1	Hose Assembly, 3/8" x 216", 36 Row 20"
27.	*A8500	1	Hose Assembly, 3/16" x 260", 24 Row 30"
	*A8502	1	Hose Assembly, 3/16" x 270", 36 Row 20"
28.	*A8208	1	Hose Assembly, 1/2" x 374"
29.	*A1076	2	Hose Assembly, 3/8" x 30"

*** Hydraulic hose is not stocked by KINZE® Repair Parts, but can be made available on a special order basis. Call for quote.**

HYDRAULIC SYSTEM, 16 ROW 30" AND 24 ROW 20"

A7522(FF52/FF53/FF51/FF54/FF55/FF56)



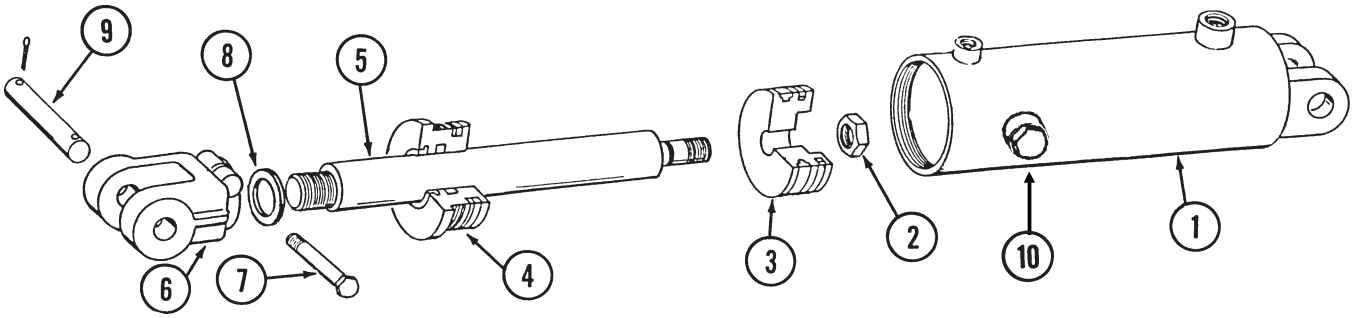
HYDRAULIC SYSTEM, 16 ROW 30" AND 24 ROW 20"

ITEM	PART NO.	QTY.	DESCRIPTION
1.	*A1044	2	Hose Assembly, 3/8" x 34"
2.	*A1412	4	Hose Assembly, 1/2" x 130"
3.	*A1499	3	Hose Assembly, 1/2" x 280"
4.	*A1498	1	Hose Assembly, 1/2" x 452"
5.	*A1089	1	Hose Assembly, 3/8" x 240"
6.	*A1487	1	Hose Assembly, 1/2" x 150"
7.	*A3196	2	Hose Assembly, 3/8" x 240"
8.	*A1404	1	Hose Assembly, 1/2" x 41"
9.	*A1072	4	Hose Assembly, 3/8" x 48"
10.	G2603-08	5	Tee, 3/4"-16 JIC
11.	*A1049	1	Hose Assembly, 3/8" x 160"
12.	G2650-06	2	Cross Fitting, 9/16"-18 JIC
13.	*A3119	10	Hose Assembly, 3/8" x 36"
14.	*A1020	1	Hose Assembly, 3/8" x 48"
15.	G6500-08	1	Elbow, 3/4"-16 JIC Male To Female
16.	*A1010	2	Hose Assembly, 3/8" x 120"
17.	*A3197	2	Hose Assembly, 3/8" x 388"
18.	*A1146	2	Hose Assembly, 1/4" x 12"
19.	*A1189	4	Hose Assembly, 1/4" x 36"
20.	*A3195	2	Hose Assembly, 3/8" x 136"
21.	*A1424	2	Hose Assembly, 1/2" x 30"
22.	GD4086	4	ISO Coupler
23.	G6400-06	2	Connector, 9/16"-18 JIC To O-Ring
24.	G6502-06	2	Elbow, 45°, 9/16"-18 JIC Male To Female
25.	G2603-10	1	Tee, 7/8"-14 JIC
26.	G6500-10	1	Elbow, 7/8"-14 JIC Male To Female
27.	*A3199	2	Hose Assembly, 3/8" x 132"

*** Hydraulic hose is not stocked by KINZE® Repair Parts, but can be made available on a special order basis. Call for quote.**

MASTER CYLINDER, 24 ROW 30" AND 36 ROW 20"

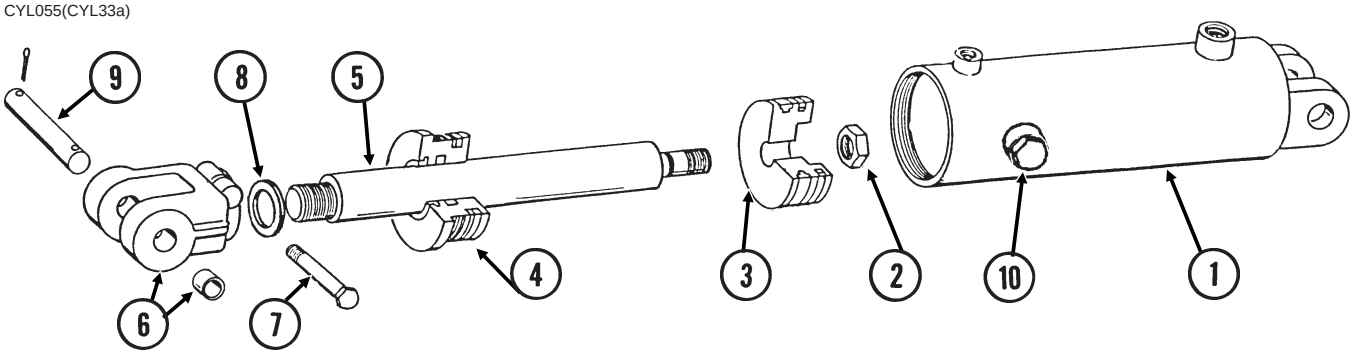
CYL055(CYL33)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6862	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD9756	1	Piston
4.	GD9757	1	Gland
5.	GD9753	1	Rod
6.	GD9755	1	Clevis
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pins, 1/4" x 2"
10.	GR1356	1	Hex Socket O-Ring Plug, 1 5/16"-12
A.	GA6627	-	Cylinder Complete, 4 1/2" x 10" *(Part Number Stamped On Barrel)*
B.	GR1265	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip, (1) Piston Seal Package

MASTER CYLINDER, 24 ROW 30" AND 36 ROW 20"

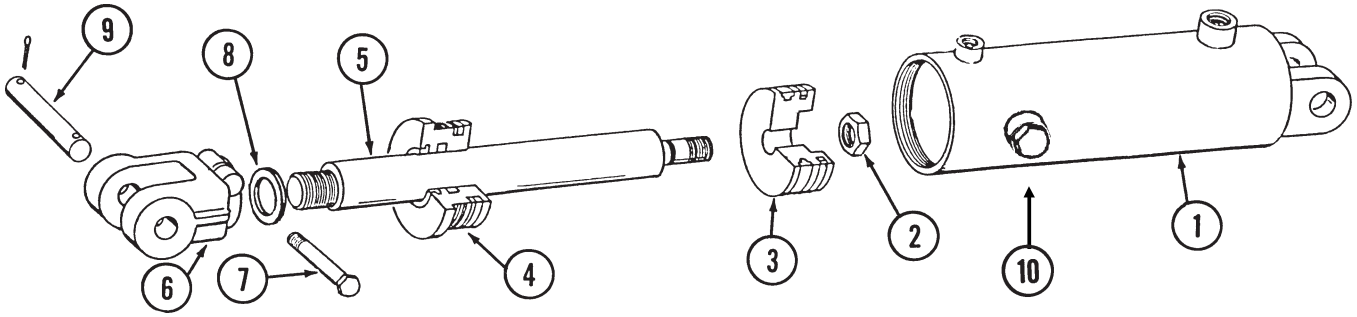
CYL055(CYL33a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7904	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD9756	1	Piston
4.	GD10826	1	Gland
5.	GD9753	1	Rod
6.	GA8130	1	Clevis W/Bushings
	GR1401	-	Bushing
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pins, 1/4" x 2"
10.	GR1356	1	Hex Socket O-Ring Plug, 1 5/16"-12
A.	GA7878	-	Cylinder Complete, 4 1/2" x 10" *(Part Number Stamped On Barrel)*
B.	GR1265	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip, (1) Piston Seal Package

MASTER CYLINDER, 16 ROW 30" AND 24 ROW 20"

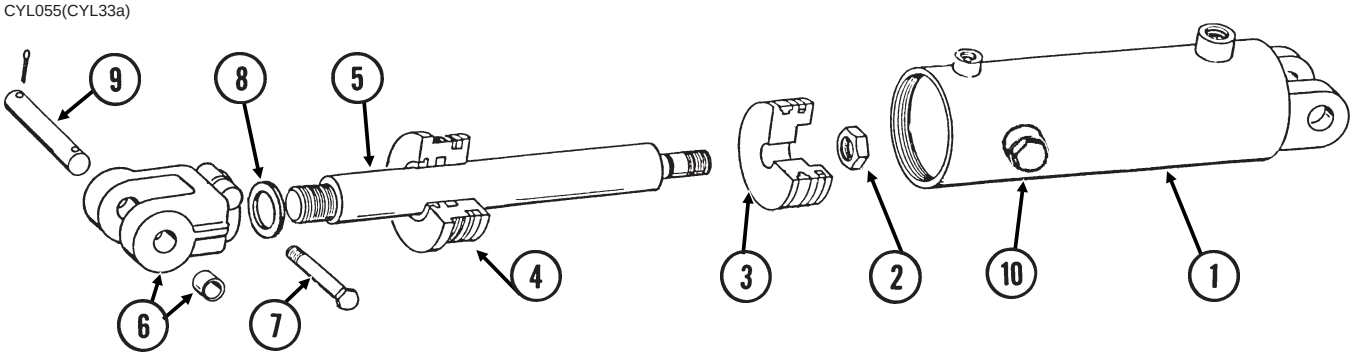
CYL055(CYL33)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7519	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD10630	1	Piston
4.	GD10648	1	Gland
5.	GD10647	1	Rod
6.	GD9755	1	Clevis
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pins, 1/4" x 2"
10.	GR1356	1	Hex Socket O-Ring Plug, 1 5/16"-12
A.	GA6962	-	Cylinder Complete, 4" x 10" *(Part Number Stamped On Barrel)*
B.	GR1358	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip

MASTER CYLINDER, 16 ROW 30" AND 24 ROW 20"

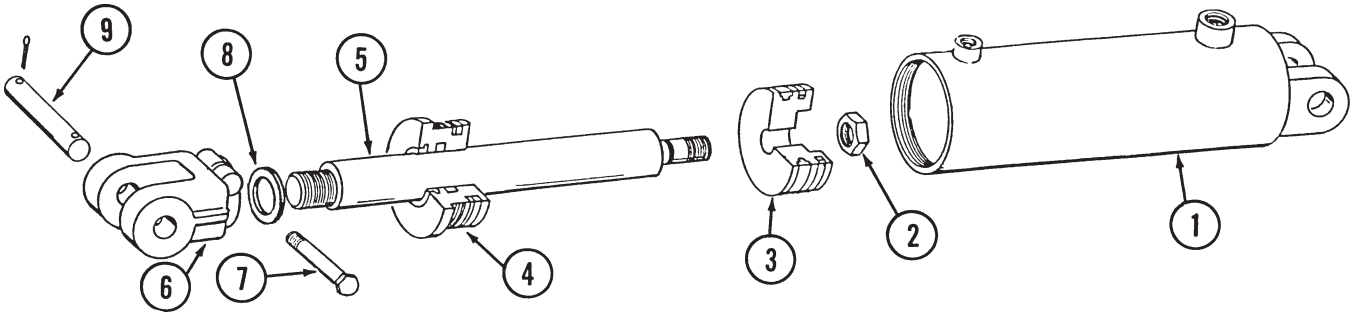
CYL055(CYL33a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7902	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD10630	1	Piston
4.	GD10823	1	Gland
5.	GD10647	1	Rod
6.	GA8130	1	Clevis W/Bushings
	GR1401	-	Bushing
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pins, 1/4" x 2"
10.	GR1356	1	Hex Socket O-Ring Plug, 1 5/16"-12
A.	GA7876	-	Cylinder Complete, 4" x 10" *(Part Number Stamped On Barrel)*
B.	GR1358	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip

SLAVE CYLINDER, 24 ROW 30" AND 36 ROW 20"

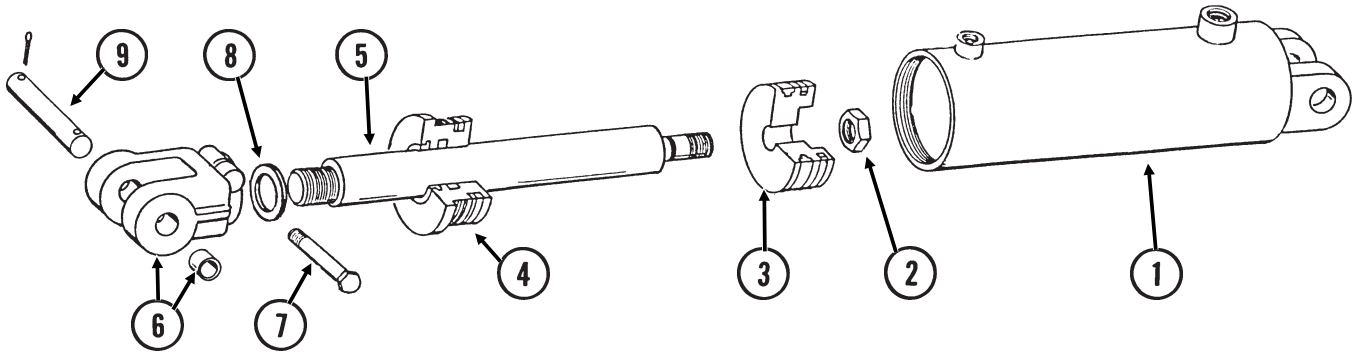
CYL055(CYL15)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6863	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD9758	1	Piston
4.	GD9759	1	Gland
5.	GD9754	1	Rod
6.	GD9755	1	Clevis
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pin, 1/4" x 2"
A.	GA6628	-	Cylinder Complete, 4 3/4" x 20" *(Part Number Stamped On Barrel)*
B.	GR1266	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip

SLAVE CYLINDER, 24 ROW 30" AND 36 ROW 20"

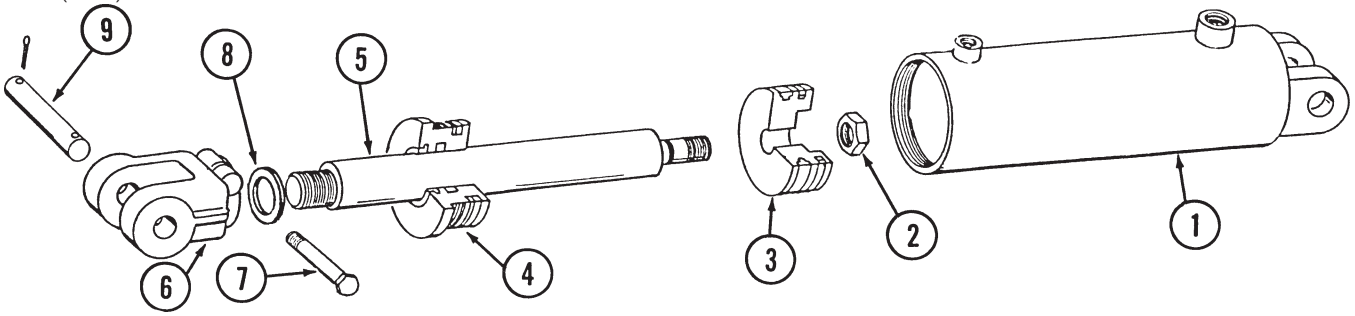
CYL055(CYL15a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7905	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD9758	1	Piston
4.	GD10830	1	Gland
5.	GD9754	1	Rod
6.	GA8130	1	Clevis W/Bushings
	GR1401	-	Bushing
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pin, 1/4" x 2"
A.	GA7879	-	Cylinder Complete, 4 3/4" x 20" *(Part Number Stamped On Barrel)*
B.	GR1266	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip, (1) Piston Seal Package

SLAVE CYLINDER, 16 ROW 30" AND 24 ROW 20"

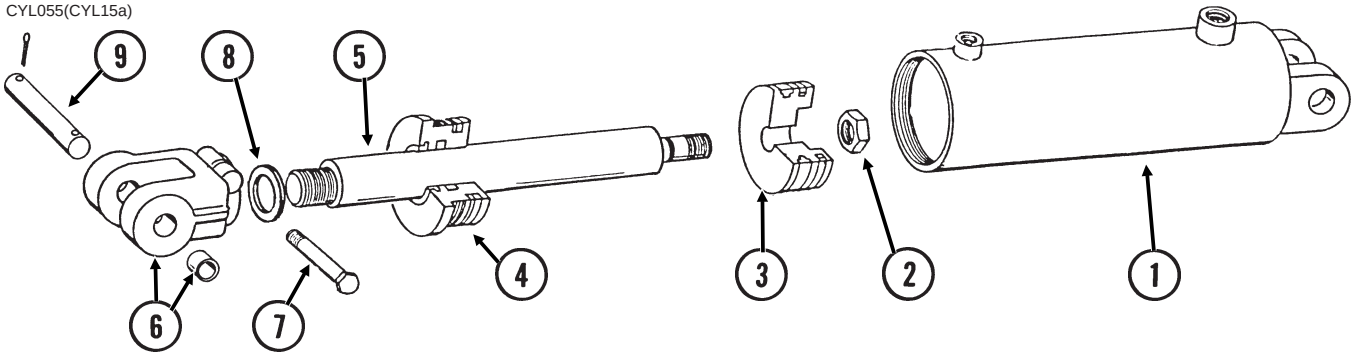
CYL055(CYL15)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7520	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD10649	1	Piston
4.	GD10651	1	Gland
5.	GD10652	1	Rod
6.	GD9755	1	Clevis
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pins, 1/4" x 2"
A.	GA6963	-	Cylinder Complete, 4 1/4" x 20" *(Part Number Stamped On Barrel)*
B.	GR1359	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip

SLAVE CYLINDER, 16 ROW 30" AND 24 ROW 20"

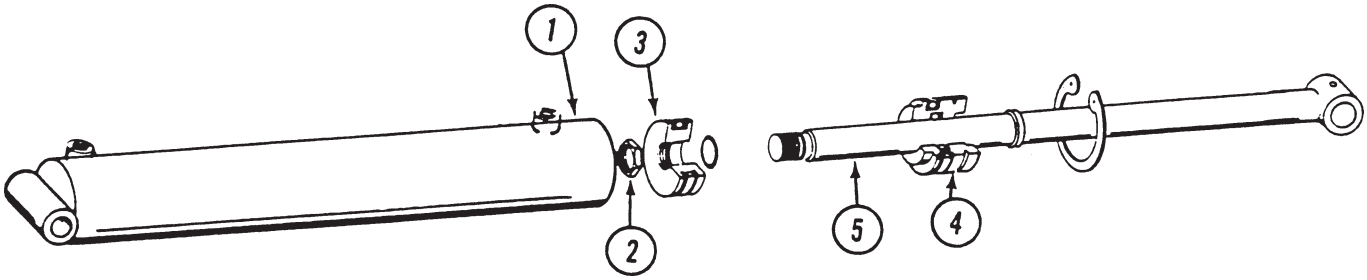
CYL055(CYL15a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7903	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD10649	1	Piston
4.	GD10824	1	Gland
5.	GD10652	1	Rod
6.	GA8130	1	Clevis W/ Bushings
	GR1401	-	Bushing
7.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1264	-	Steel Shim (As Required)
9.	GR1287	2	Pin W/Cotter Pins
	G10460	-	Cotter Pins, 1/4" x 2"
A.	GA7877	-	Cylinder Complete, 4 1/4" x 20" *(Part Number Stamped On Barrel)*
B.	GR1359	-	Seal Kit, Includes: (2) O-Rings, (1) Seal, (1) Wiper, (1) BU Ring, (1) U-Cup Lip

MARKER CYLINDER, 24 ROW 30"

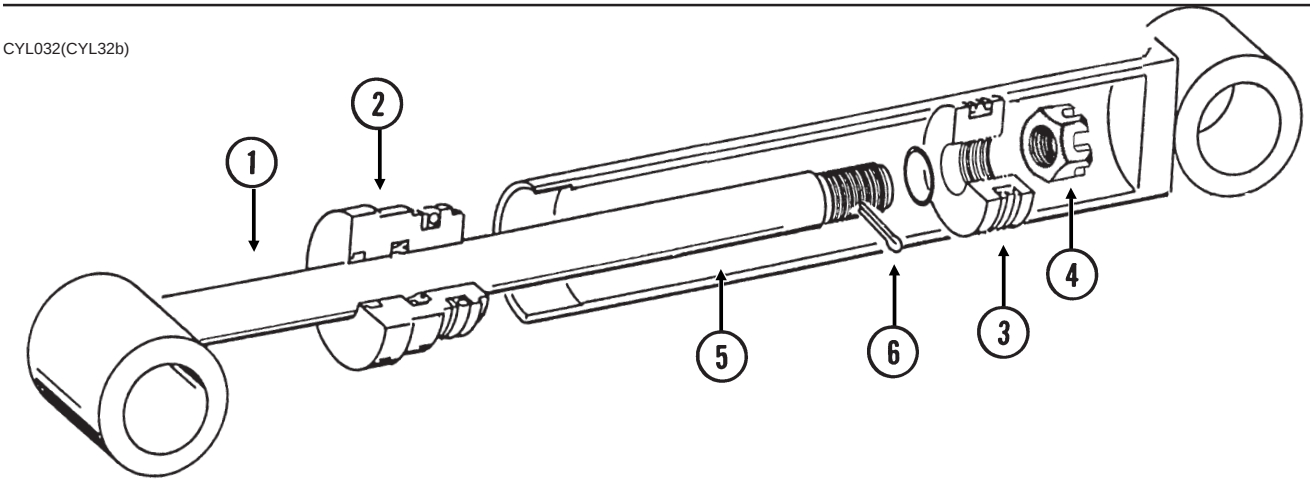
CYL029(CYL16)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA4311	1	Barrel
2.	GR0987	1	Lock Nut, 1 1/4"-12
3.	GD6568	1	Piston
4.	GD6569	1	Gland
5.	GA4312	1	Rod Assembly
A.	GA4249	-	Cylinder Complete, 3 1/2" x 20" *(Part Number Stamped On Barrel)*
B.	GR0988	-	Seal Kit, Includes: (2) O-Rings, (1) Uniring, (1) Wiper, (1) U-Cup, (1) BU Ring

MARKER (Cushion) CYLINDER, 24 ROW 30" AND 36 ROW 20"

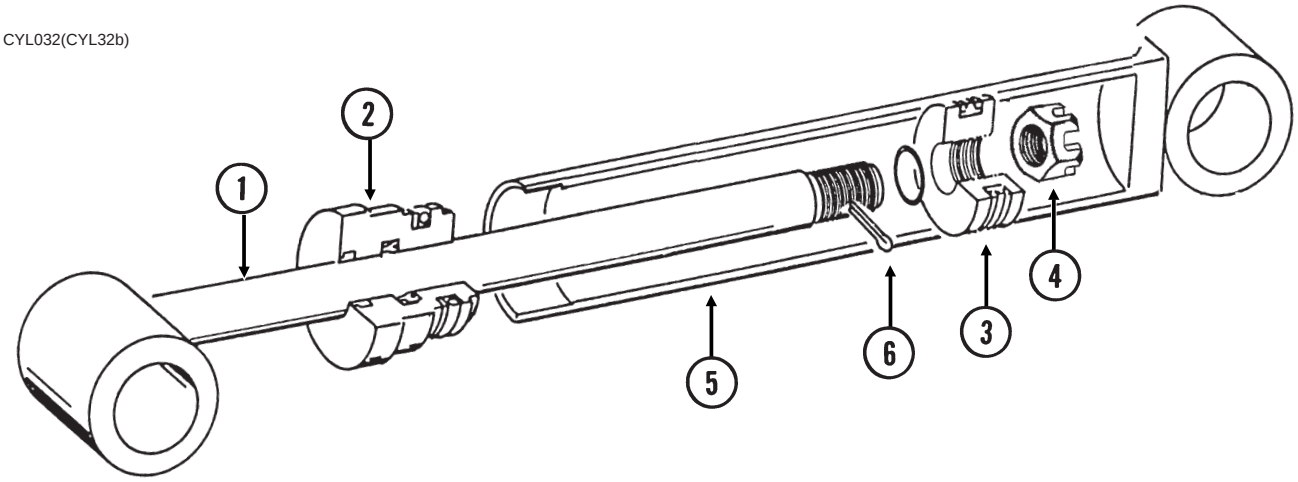
CYL032(CYL32b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7251	1	Rod Assembly
2.	GD10261	1	Gland
3.	GD10260	1	Piston
4.	GR1319	1	Slotted Hex Nut, 1 1/8"-12
5.	GA7250	1	Barrel
6.	GR1320	1	Cotter Pin, 3/16" x 2 1/2"
A.	GA6971	-	Cylinder Complete, 3 1/2" x 20" *(Part Number Stamped On Barrel)*
B.	GR1318	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Wiper, (1) Piston Seal, (1) BU Ring, (1) Piston Ring

MARKER (Cushion) CYLINDER, 16 ROW 30" AND 24 ROW 20"

CYL032(CYL32b)

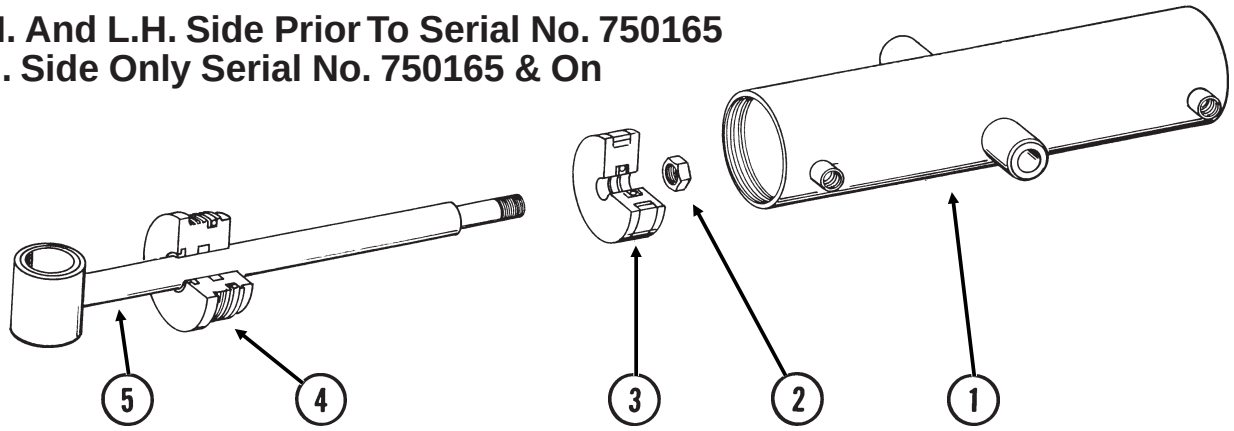


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7219	1	Rod Assembly
2.	GD10207	1	Gland
3.	GD10206	1	Piston
4.	GR1308	1	Slotted Hex Nut, 7/8"-14
5.	GA7524	1	Barrel
6.	G10827	1	Cotter Pin, 1/8" x 1 3/4"
A.	GA7523	-	Cylinder Complete, 2 1/2" x 20 1/16" *(Part Number Stamped On Barrel)*
B.	GR1309	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Wiper, (1) Crown Seal, (1) BU Ring, (1) Piston Ring

HELPER CYLINDER, ALL SIZES

CYL055(CYL17)

R.H. And L.H. Side Prior To Serial No. 750165
L.H. Side Only Serial No. 750165 & On

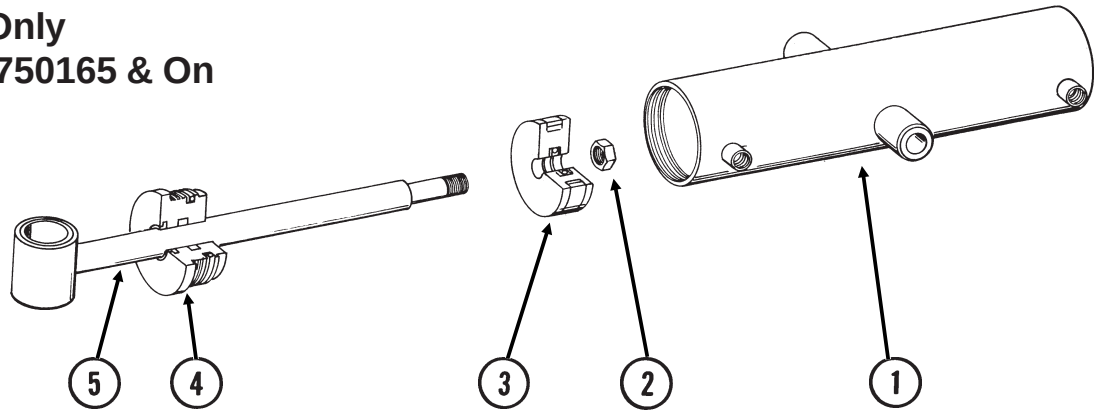


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6852	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD9740	1	Piston
4.	GD6571	1	Gland
5.	GA6853	1	Rod Assembly W/Grease Fitting
	G10449	-	Grease Fitting, $^{3}/_{16}$" Drive-In
A.	GA6734	-	Cylinder Complete, 4" x 15"
B.	GR1249	-	Seal Kit, Includes: (2) O-Rings, (3) BU Rings, (1) Uniring, (1) U-Cup, (1) Wiper

HELPER CYLINDER, ALL SIZES

(CYL17a)

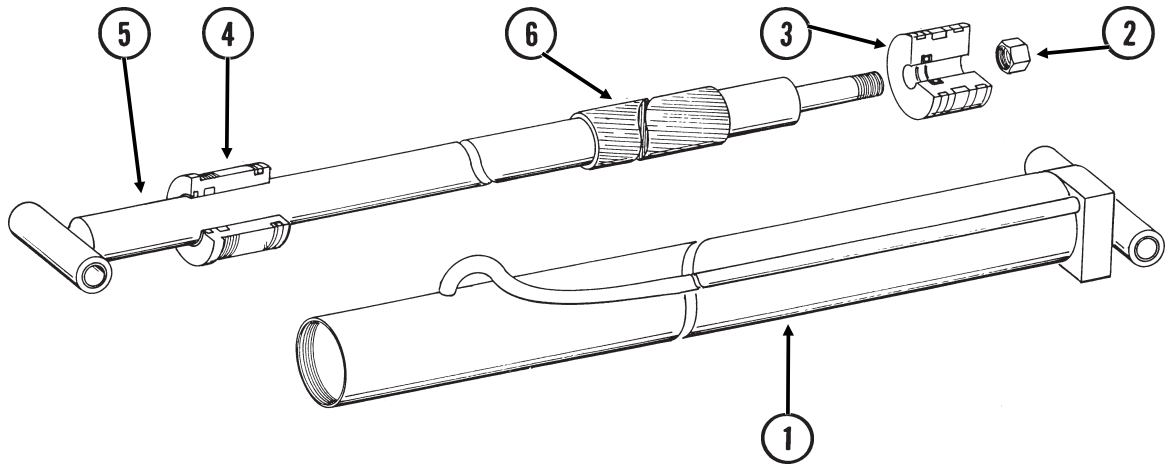
R.H. Side Only
Serial No. 750165 & On



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8300	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD9740	1	Piston
4.	GD6571	1	Gland
5.	GA8301	1	Rod Assembly W/Grease Fitting
	G10449	-	Grease fitting, $^{3}/_{16}$" Drive-In
A.	GA8139	-	Cylinder Complete, 4" x 13 $^{5}/_{8}$"
B.	GR1249	-	Seal Kit, Includes: (2) O-Rings, (3) BU Rings, (1) Uniring, (1) U-Cup, (1) Wiper

TONGUE CYLINDER, 16 ROW 30" AND 24 ROW 20"

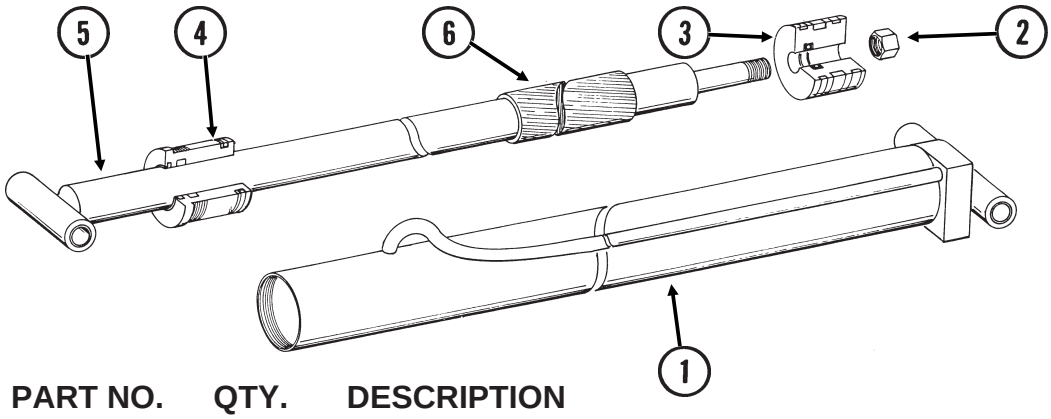
CYL055(CYL18a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7528	1	Barrel
2.	GR0987	1	Lock Nut, 1 1/4"-12
3.	GD9743	1	Piston
4.	GD9745	1	Gland
5.	GA7527	1	Rod Assembly
6.	GD10665	1	Spacer
A.	GA7234	-	Cylinder Complete, 4" x 132 1/2"
B.	GR1261	-	Seal Kit, Includes: (2) O-Rings, (3) BU Rings, (2) Wear Rings, (1) Uniring, (1) U-Cup, (1) Wiper

TONGUE CYLINDER, 24 ROW 30" AND 36 ROW 20"

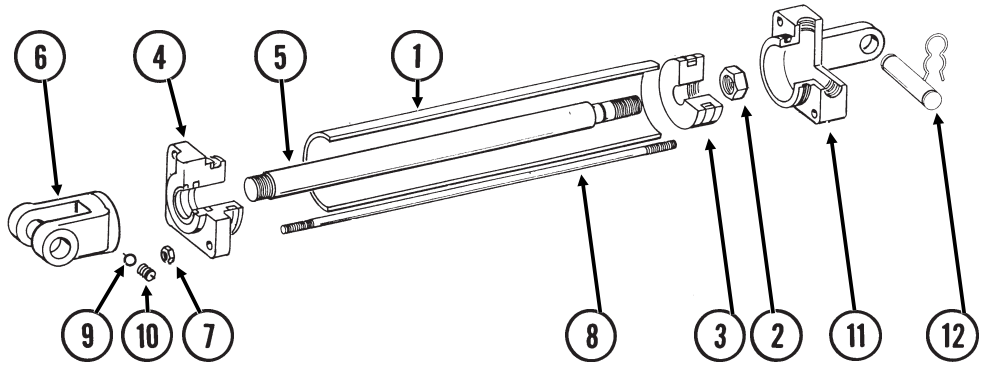
CYL055(CYL18a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6856	1	Barrel
2.	GR0987	1	Lock Nut, 1 1/4"-12
3.	GD9743	1	Piston
4.	GD9745	1	Gland
5.	GA6857	1	Rod Assembly
6.	GD9744	1	Spacer
A.	GA6446	-	Cylinder Complete, 4" x 162"
B.	GR1261	-	Seal Kit, Includes: (2) O-Rings, (3) BU Rings, (2) Wear Rings, (1) Uniring, (1) U-Cup, (1) Wiper

PARALLEL LINK CYLINDER, 24 ROW 30"

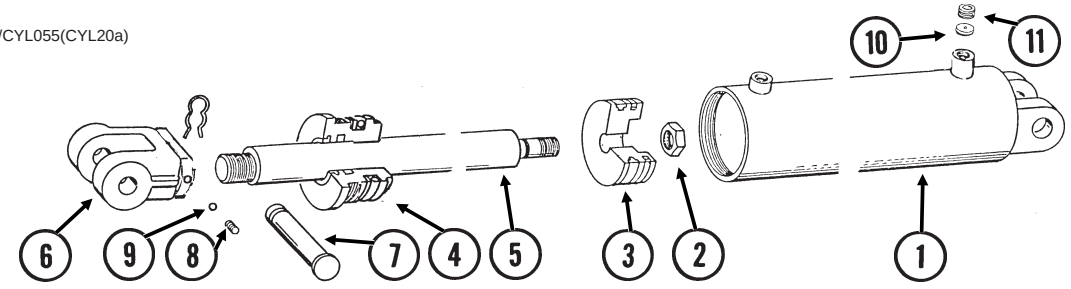
CYL056(CYL19a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9769	1	Barrel
2.	GR0983	1	Lock Nut, 1"-14
3.	GD9767	1	Piston
4.	GD9768	1	Gland
5.	GD9764	1	Rod
6.	GD9766	1	Clevis
7.	G10102	8	Hex Nut, 1/2"-13
8.	GR1269	4	Tie Rod
9.	GR1268	1	Nylon Ball
10.	G10072	1	Set Screw, 3/8"-16 x 3/8"
11.	GD9765	1	Bottom Clevis
12.	GR0717	2	Pin W/Clip
	GR0193	-	Clip
A.	GA6629	-	Cylinder Complete, 3 1/2" x 16"
B.	GR1267	-	Seal Kit, Includes: (3) O-Rings, (2) Seals, (2) BU Rings, (1) Wiper

PARALLEL LINK CYLINDER, 24 ROW 30" AND 36 ROW 20"

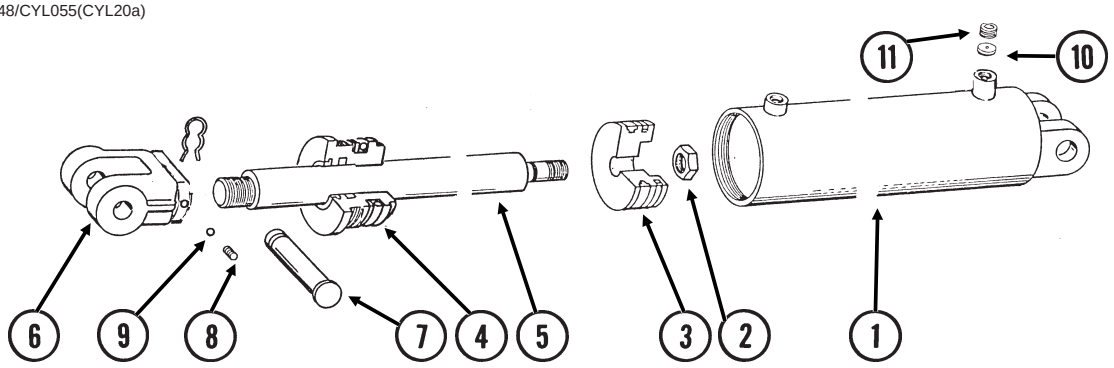
CYL048/CYL055(CYL20a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7247	1	Barrel
2.	G10869	1	Lock Nut, 7/8"-14
3.	GD10257	1	Piston
4.	GD10258	1	Gland
5.	GD10256	1	Rod
6.	GD9766	1	Clevis
7.	GR0717	2	Clevis Pin W/Clip
	GR0193	-	Clip
8.	G10072	1	Set Screw, 3/8"-16 x 3/8"
9.	GR1268	1	Nylon Ball
10.	GR1317	1	Orifice Plate
11.	GR1316	1	Hollow Lock Screw, 3/4"-16 x 3/8"
A.	GA7164	-	Cylinder Complete, 3 1/2" x 16" *(Part Number Stamped On Barrel)*
B.	GR1315	-	Seal Kit, Includes: (2) O-Rings, (2) Seals, (2) BU Rings, (1) Wiper

PARALLEL LINK CYLINDER, 16 ROW 30" AND 24 ROW 20"

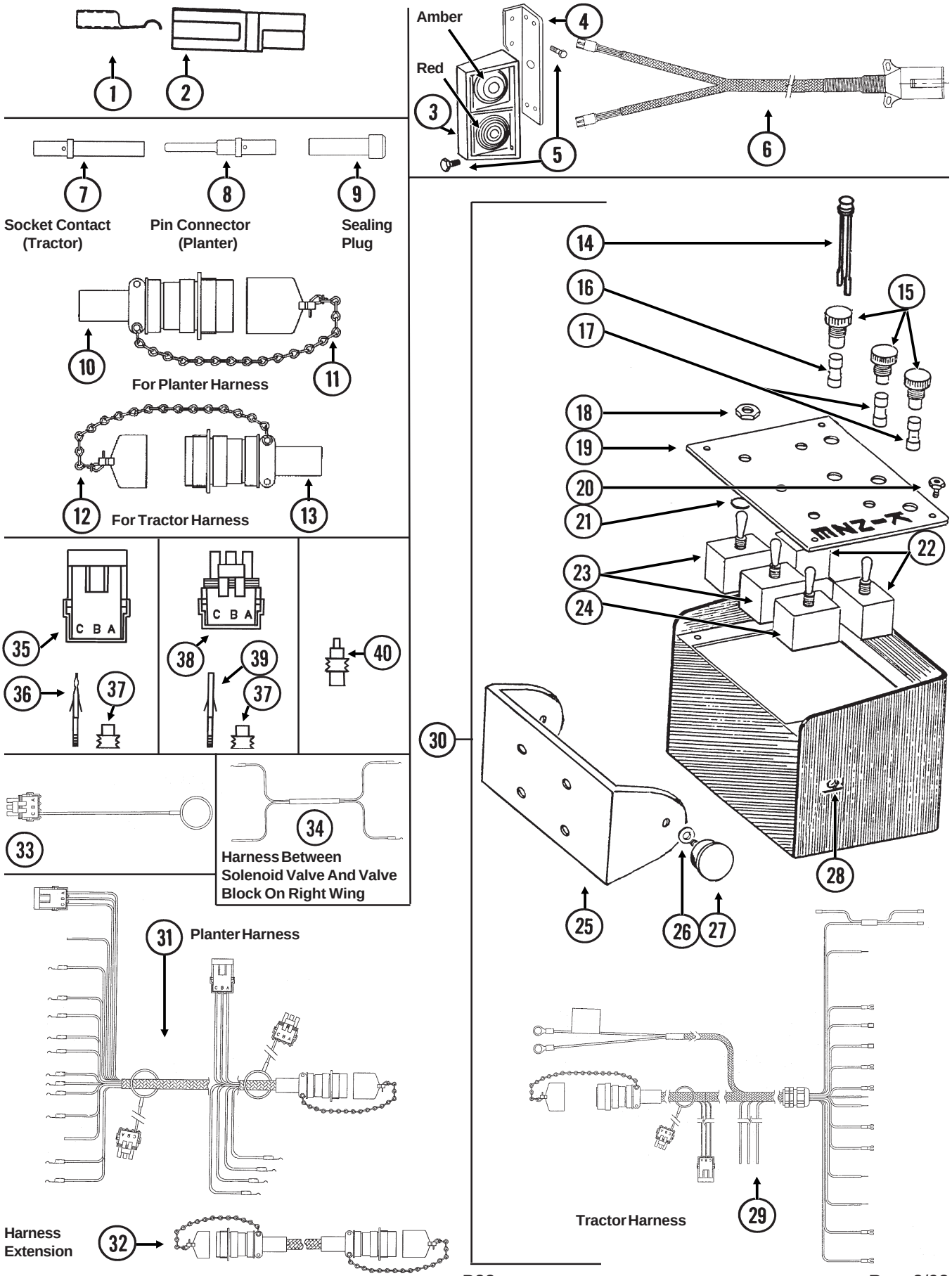
CYL048/CYL055(CYL20a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7511	1	Barrel
2.	G10869	1	Lock Nut, 7/8"-14
3.	GD10257	1	Piston
4.	GD10258	1	Gland
5.	GD10662	1	Rod
6.	GD9766	1	Clevis
7.	GR0717	2	Clevis Pin W/Clip
	GR0193	-	Clip
8.	G10072	1	Set Screw, 3/8"-16 x 3/8"
9.	GR1268	1	Nylon Ball
10.	GR1317	1	Orifice Plate
11.	GR1316	1	Hollow Lock Screw, 3/4"-16 x 3/8"
A.	GA7249	-	Cylinder Complete, 3 1/2" x 20" *(Part Number Stamped On Barrel)*
B.	GR1315	-	Seal Kit, Includes: (2) O-Rings, (2) Seals, (2) BU Rings, (1) Wiper

ELECTRICAL COMPONENTS

ECP010/ECP011/ECP018/ECP023(TWL18/FF27a/PT50/ELC14/ELC3a/ELC5c/MTR27a/ELC8/ELC11/FF29/ELC4/TWL20a/ELC10)



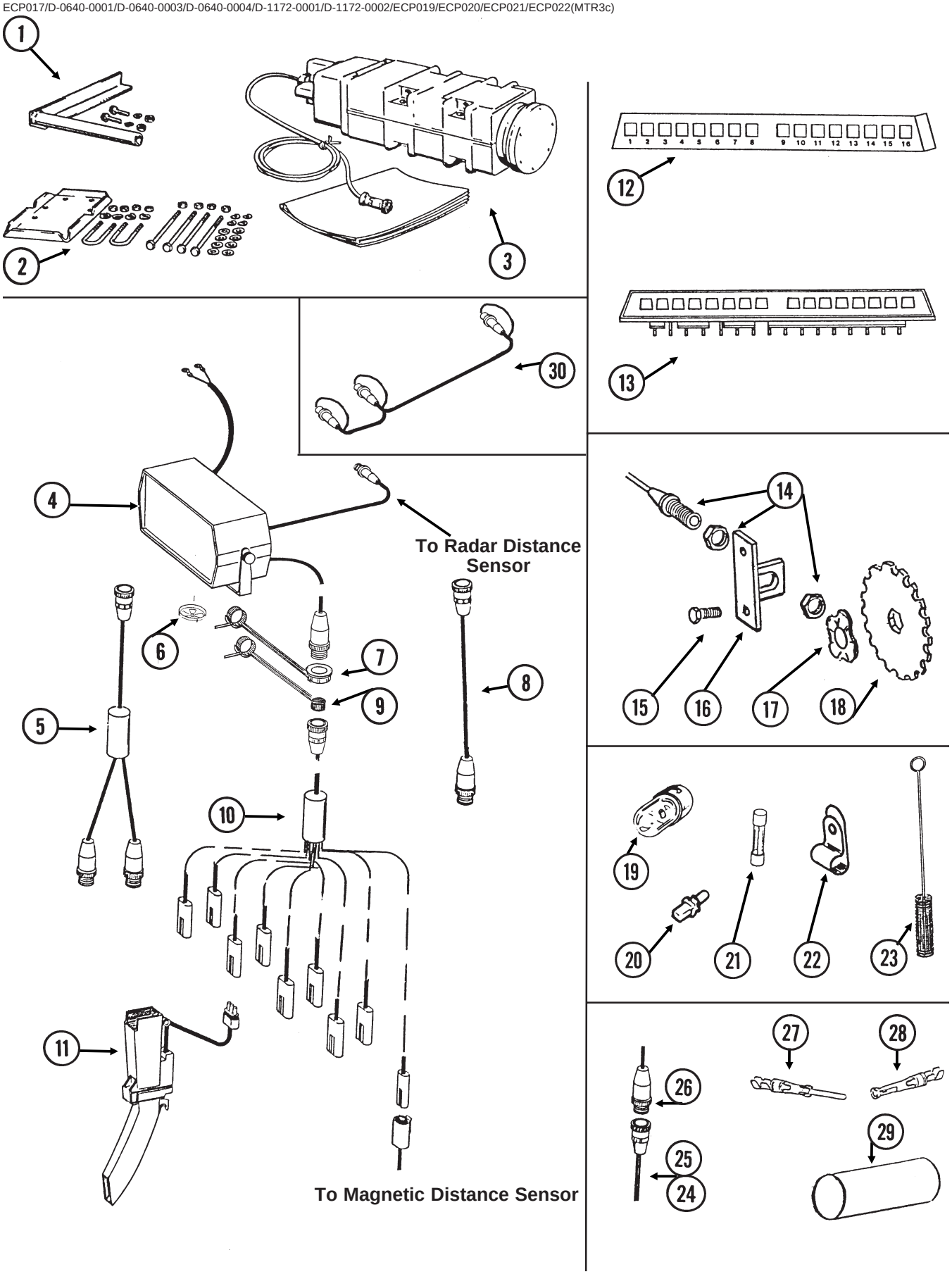
ELECTRICAL COMPONENTS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9530	-	Contact
2.	GD9529	-	Housing
3.	GA6699	1	Double Light Assembly (Shown)
	GA6700	1	Double Light Assembly
	GR1203	-	Red Lens
	GR1204	-	Amber Lens
	GR1205	-	Cover
	GR1206	-	Rubber Grommet (4)
	GR1207	-	Lamp Unit
	GR1208	-	Bulb
4.	GD9708	2	Bracket
5.	G10064	12	Hex Head Cap Screw, 1/4"-20 x 1"
	G10209	12	Washer, 1/4" USS
	G10110	12	Lock Nut, 1/4"-20
6.	GA6707	1	Light Wiring Harness W/7 Terminal Female Connector, 60'
	GA5385	-	7 Terminal Female Connector
7.	GD8740	-	Socket Contact, No. 14
8.	GD8741	-	Pin Connector , No. 14
9.	GD8739	-	Sealing Plug, No. 12
10.	GA6109	1	Connector With Cable Clamp, 23 Pin Capacity
11.	GA7862	-	Dust Cap W/Chain
12.	GA7863	-	Dust Cap W/Chain
13.	GA6108	1	Connector With Cable Clamp, 23 Socket Capacity
14.	GA7077	1-4	Indicator Light
15.	GA2612	3-5	Fuse Holder W/Spade
16.	GD2829	1-2	Fuse, 15 Amp, Type AGC
17.	GD10243	2-6	Fuse, MOL 10 Amp Delay Action
18.	GR1363	5	Hex Face Nut, 15/32"-32
	GR1364	5	Internal Tooth Lock Washer, 15/32"
19.	GD9897	1	Cover Plate (Shown)
	GD10318	-	Cover Plate, Planters Equipped With Two-Speed Point Row Clutch
20.	GR1292	4	Pan Head Screw, No. 8-32 x 1/2"
21.	GD3860	-	O-Ring (If Applicable)
22.	GA2528	2	Switch, 3 Position Toggle, On/Off/On
23.	GA6978	2	Switch, 3 Position Momentary On/Off/ Momentary On
24.	GA6977	1-2	Switch, 2 Position Toggle, On/Off
25.	GD9896	1	Mounting Bracket
26.	G10211	4	Washer, 1/4" SAE
27.	GA6975	2	Knob
28.	GR1290	2	Cage Nut, 1/4"-20
29.	GA7368	1	Harness W/Dust Cap And Power Cable
30.	G7408X	-	Control Console Assembly With Mounting Brackets, Short Harness W/Dust Cap And Power Cable (Shown)
	G7409X	-	Control Console Assembly With Mounting Brackets, Short Harness W/Dust Cap And Power Cable, Planters Equipped With Two-Speed Point Row Clutch
31.	GA7365	1	Hydraulic Wiring Harness W/Dust Cap, 39'
32.	GA7399	-	Harness Extension W/Dust Caps, 15'
33.	GA8047	-	Dust Plug
34.	GA6848	1	Wiring Harness, 24', Routes From Valve Block On Right Wing To Tower Assembly
35.	GD11079	-	Housing
36.	GD11080	-	Pin Contact, No. 18
37.	GD11081	-	Seal
38.	GD11090	-	Housing
39.	GD11091	-	Socket Contact, No. 18
40.	GD11089	-	Sealing Plug
A.	G1K248	-	Harness Ends Repair Kit (3 Housings, 9 Seals, 9 Pin Contacts) (Items 35-37)
B.	G1K252	-	Harness Ends Repair Kit (3 Housings, 9 Seals, 9 Socket Contacts) (Items 37-39)

NOTE: See "Point Row Wrap Spring Clutch or Two-Speed Point Row Wrap Spring Clutch" for R.H. and L.H. Wiring Harness for the point row clutches. See "Electronic Seed Monitor" for those components.

ELECTRONIC SEED MONITOR

ECP017/D-0640-0001/D-0640-0003/D-0640-0004/D-1172-0001/D-1172-0002/ECP019/ECP020/ECP021/ECP022(MTR3c)

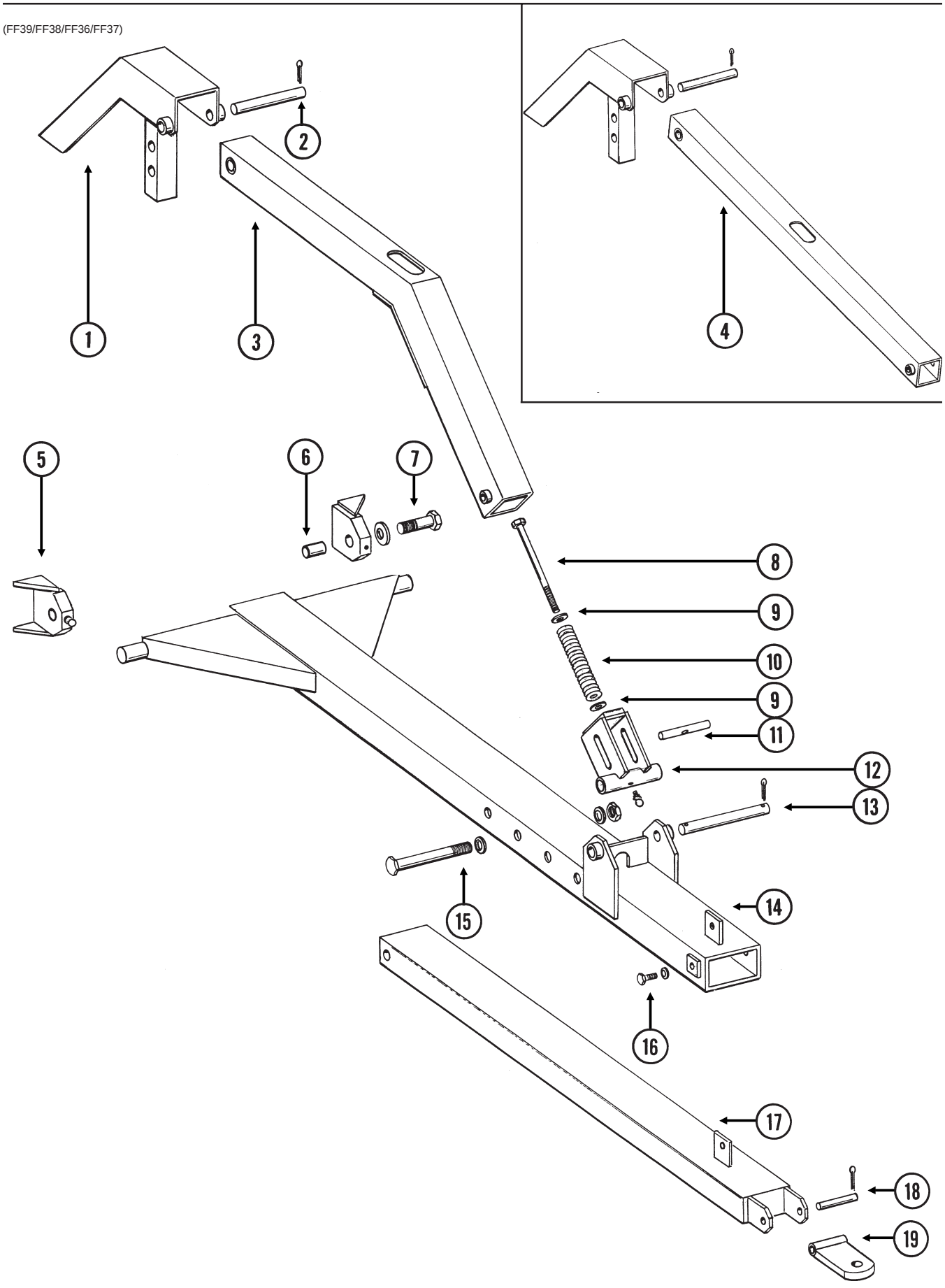


ELECTRONIC SEED MONITOR

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA4230	-	Radar Sensor Pipe Mounting Package
2.	GA4229	-	Radar Sensor Mounting Bracket Package
3.	GA4223	-	Radar Distance Sensor (Use W/KM3000 Console Only)
4.	GA5873	1	Console W/Mounting Bracket, KM1000, 16 Row
	GA5874	-	Console W/Mounting Bracket, KM3000, 16 Row, 24 Row And 36 Row (2 Required on 36 Row)
	GR1077	-	Mounting Bracket, KM1000, 16 Row
	GR1078	-	Mounting Bracket, KM3000, 16 Row, 24 Row And 36 Row
	GR1079	-	Console Mounting Bracket Hardware Package (Includes 2 Wellnuts, 2 Knobs And 1/4" Hardware)
5.	GA5884	1	Y-Connector, 16 Row
	GA5885	-	Y-Connector, 24 Row (36 Row Uses 2)
6.	GR1348	-	Sound Baffle W/Pin
7.	GD4563	-	Dust Cap
8.	GA5881	-	Extension Cable, 15', 1-32 Rows
	GA5882	-	Extension Cable, 30', 1-32 Rows
9.	GD4564	-	Dust Cover
10.	GA5877	2	Planter Harness (8 Rows), 16 Row
	GA5878	-	Planter Harness (12 Rows), 24 Row And 36 Row
	GA5876	-	Planter Harness (6 Rows), 36 Row
11.	GA5880	-	Seed Tube W/High Rate Sensor
	GR1062	-	Seed Tube (With Holes For High Rate Sensor Installation)
	GR1087	-	Sensor Only (For GA5880)
	GR0676	-	Sunshade
	GD2117	-	Tie Strap, 14 1/2"
12.	GR1083	-	KM1000 Bezel Decal, 16 Row
13.	GR1080	1	KM1000 Bezel, 16 Row
14.	GA5600	1	Magnetic Distance Sensor (Use W/KM3000 Console Only)
15.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
16.	GD8770	1	Bracket
17.	GD8771	1	Spring Wave Washer
18.	GD8751	-	Magnetic Distance Sensor Pulse Wheel (Use W/KM3000 Console Only)
19.	GR0595	1	Bulb, KM1000 Row Lamp
20.	GR1084	1	Bulb, KM3000 Backlite
21.	GR0866	1	Fuse, 5 Amp, Type AGC
	GR1085	1	Fuse, 2 Amp, Type AGC
22.	GD6291	-	Insulated Clamp
23.	GR0594	-	Brush
24.	GR0807	-	Coupling Ring
25.	GR0582	-	Harness Connector Kit W/ 37 Female Socket Contacts, Coupling Ring And Shrink Tube
26.	GR0583	-	Console Connector Kit W/ 37 Pins And Shrink Tube
27.	GR1067	-	Pin
28.	GR1171	-	Female Socket Contact
29.	GR1069	-	Shrink Tube, 2 1/2"
30.	GR0586	-	Radar Y-Cable (Between Consoles And Radar Ground Speed Sensor On 36 Row 20" Machine)
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 14-18 And 22)

REAR TRAILER HITCH, 16 ROW 30" AND 24 ROW 30"

(FF39/FF38/FF36/FF37)



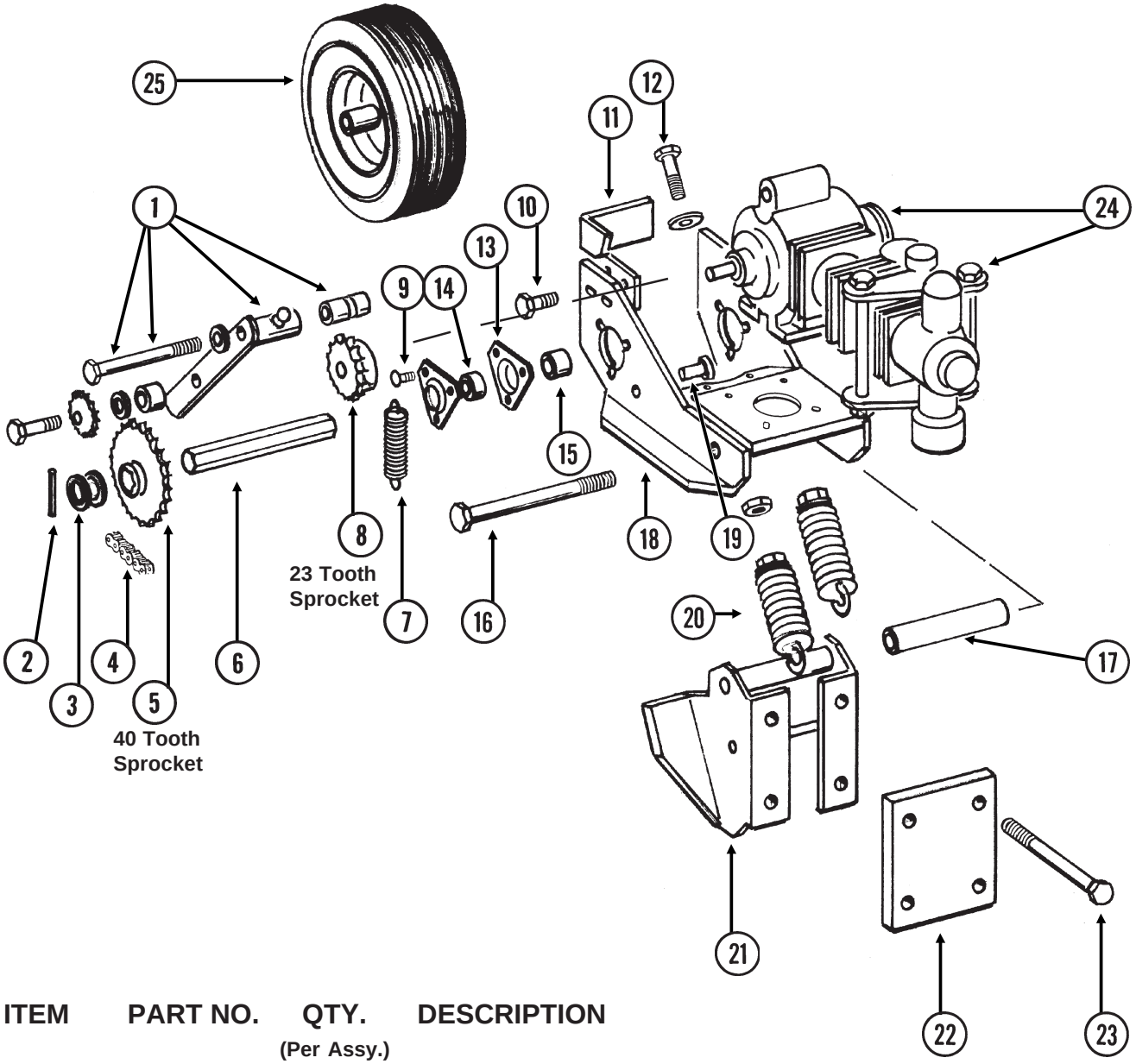
REAR TRAILER HITCH, 16 ROW 30" AND 24 ROW 30"

ITEM	PART NO.	QTY.	DESCRIPTION
1.	A7252	1	Link Mount **(Non-Stock Item)**
2.	GD3547	1	Shaft, 1 1/4" x 12 3/4"
	G10460	2	Cotter Pin, 1/4" x 2"
3.	GA7257	1	Top Link W/Grease Fitting, 16 Row 30 And 24 Row 30"
	G10641	-	Grease Fitting, 1/8" Pipe NPT
4.	GA7310	1	Top Link W/Grease Fitting, 16 Row 30" **(Sub GA7257)**
	G10641	-	Grease Fitting, 1/8" NPT
5.		-	See “Axle And Transport Lockup”, Page P40
6.	GD10297	2	Bushing, 1 3/4"
7.	G10837	2	Hex Head Cap Screw, 7/8"-9 x 3"
	G10330	2	Lock Washer, 7/8"
8.	GD7907	1	Special Bolt
9.	GB0213	2	Spring Seat
10.	GD10273	1	Spring
11.	GD10296	1	Pin, 1 1/4" x 5 1/2"
12.	GA7258	1	Side Link W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
13.	GD1702	1	Pin, 1 1/4" x 10 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
14.	GA7254	1	Front Hitch
15.	G10838	1	Hex Head Cap Screw, 1"-8 x 8 1/2"
	G10200	2	Washer, 1" USS
	G10396	1	Lock Nut, 1"-8
16.	G10055	2	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	G10230	2	Lock Washer, 5/8"
17.	GA7256	1	Rear Hitch
18.	GD8839	1	Pin, 1 1/4" x 6 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
19.	GA6177	1	Clevis W/Grease Fitting
	G10640	-	Grease Fitting, 1/4"-28

LIQUID FERTILIZER PISTON PUMP DRIVE

(FF57a)

40 Tooth Drive Sprocket And 23 Tooth Driven Sprocket



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA7244	1	Idler W/Sprocket, Bushing, Spacer And Hardware
	GA7154	-	Sprocket, 18 Tooth
	GD7889	-	Bushing
	G10581	-	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10216	-	Washer, 1/2" USS
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
	G10830	-	Hex Head Cap Screw, 5/8"-11 x 7 1/2"
	G10205	-	Washer, 5/8" SAE
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
	GD10254	-	Spacer, 2 3/4"
	G10640	-	Grease Fitting, 1/4"-28

LIQUID FERTILIZER PISTON PUMP DRIVE

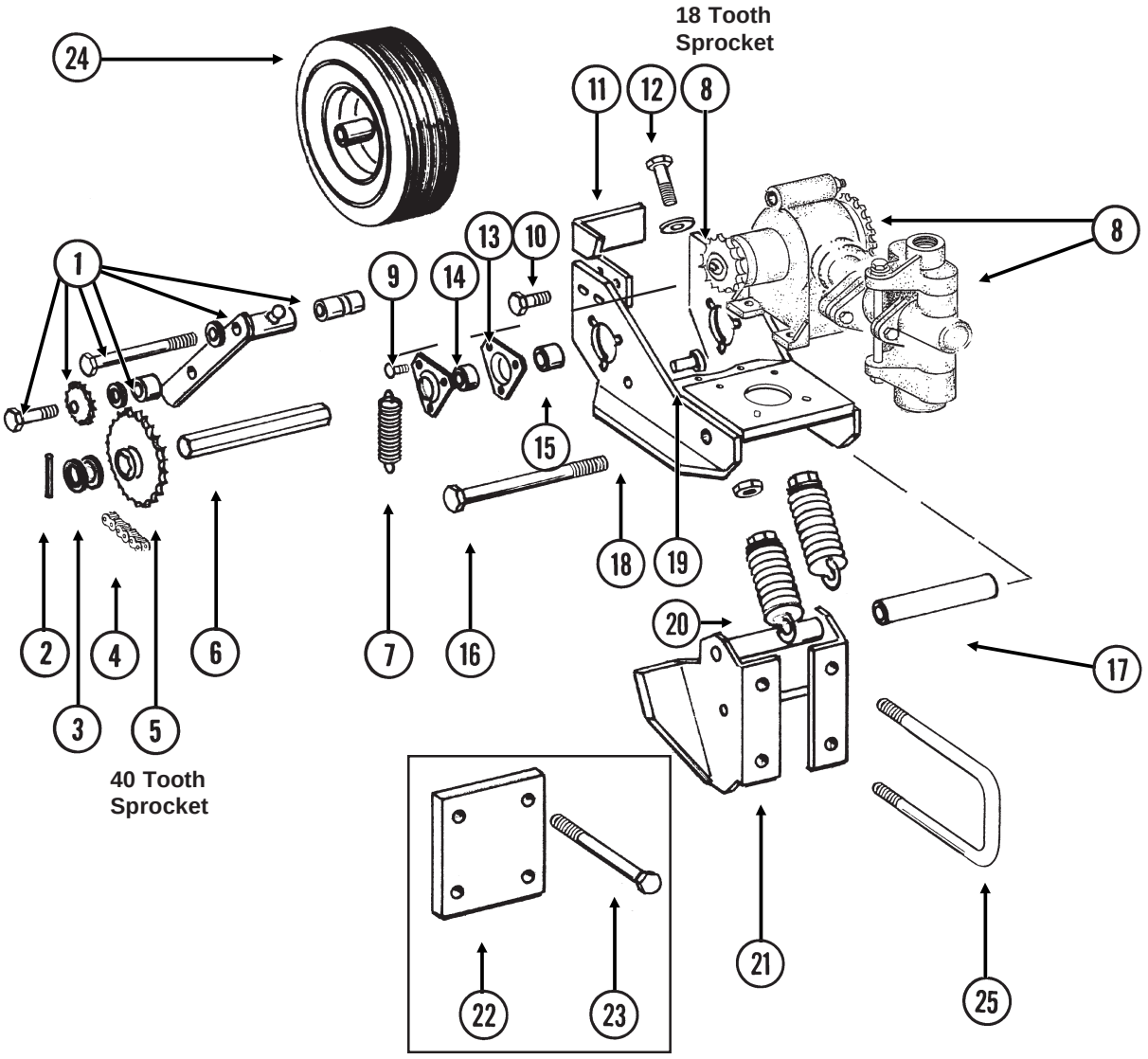
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
2.	G10602	2	Spring Pin, 1/4" x 1 1/2"
3.	G10233	5	Machine Bushing
4.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
5.	GA7180	1	Sprocket, 40 Tooth
6.	GD6825-11.25	1	Shaft, 7/8" x 11 1/4"
7.	GD5857	1	Spring
8.	GA6509	1	Sprocket W/Set Screw
9.	G10302	6	Carriage Bolt, 5/16"-18 x 7/8"
	G10221	6	Washer, 5/16" SAE
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
10.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	4	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
11.	GD10550	1	Scraper
12.	G10053	2	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10216	2	Washer, 1/2" USS
	G10102	2	Hex Nut, 1/2"-13
13.	G3400-01	4	Flangette
14.	G2100-03	2	Bearing, 7/8" Hex Bore, Spherical
15.	GD10200	2	Sleeve
16.	G10093	1	Hex Head Cap Screw, 5/8"-11 x 8 1/2"
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
17.	GD10244-01	1	Sleeve, 7 1/16"
18.	GA7246	1	Base Mount
19.	G10478	2	Clevis Pin, 5/16" x 1"
	G10409	2	Retaining Ring
	G10670	1	Hair Pin Clip, No. 3
20.	GA2068	2	Spring
21.	GA7245	1	Pump Mount W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
22.	GD9622	1	Clamp Plate
23.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
24.		-	See “Liquid Fertilizer Piston Pump”, Pages P100-P103
25.	GA5090	-	Tire And Rim Assembly (Specify Brand*)
	GD5753	1	Tire, 4.10" x 6" (Specify Brand*)
	GD5752	1	Tube

*** Specific brand requests will be supplied only as available from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand could result in rate changes. To maintain consistent application rates throughout all rows, it is recommended that all contact tires be of the same brand and be equally inflated.**

LIQUID FERTILIZER PISTON PUMP DRIVE

(FF57e)

40 Tooth Drive Sprocket And 18 Tooth Driven Sprocket



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA7244	1	Idler W/Sprocket, Bushing, Spacer And Hardware
	GA7154	-	Sprocket, 18 Tooth
	GD7889	-	Bushing
	G10581	-	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10216	-	Washer, 1/2" USS
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
	G10830	-	Hex Head Cap Screw, 5/8"-11 x 7 1/2"
	G10205	-	Washer, 5/8" SAE
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
	GD10254	-	Spacer, 2 3/4"
	G10640	-	Grease Fitting, 1/4"-28

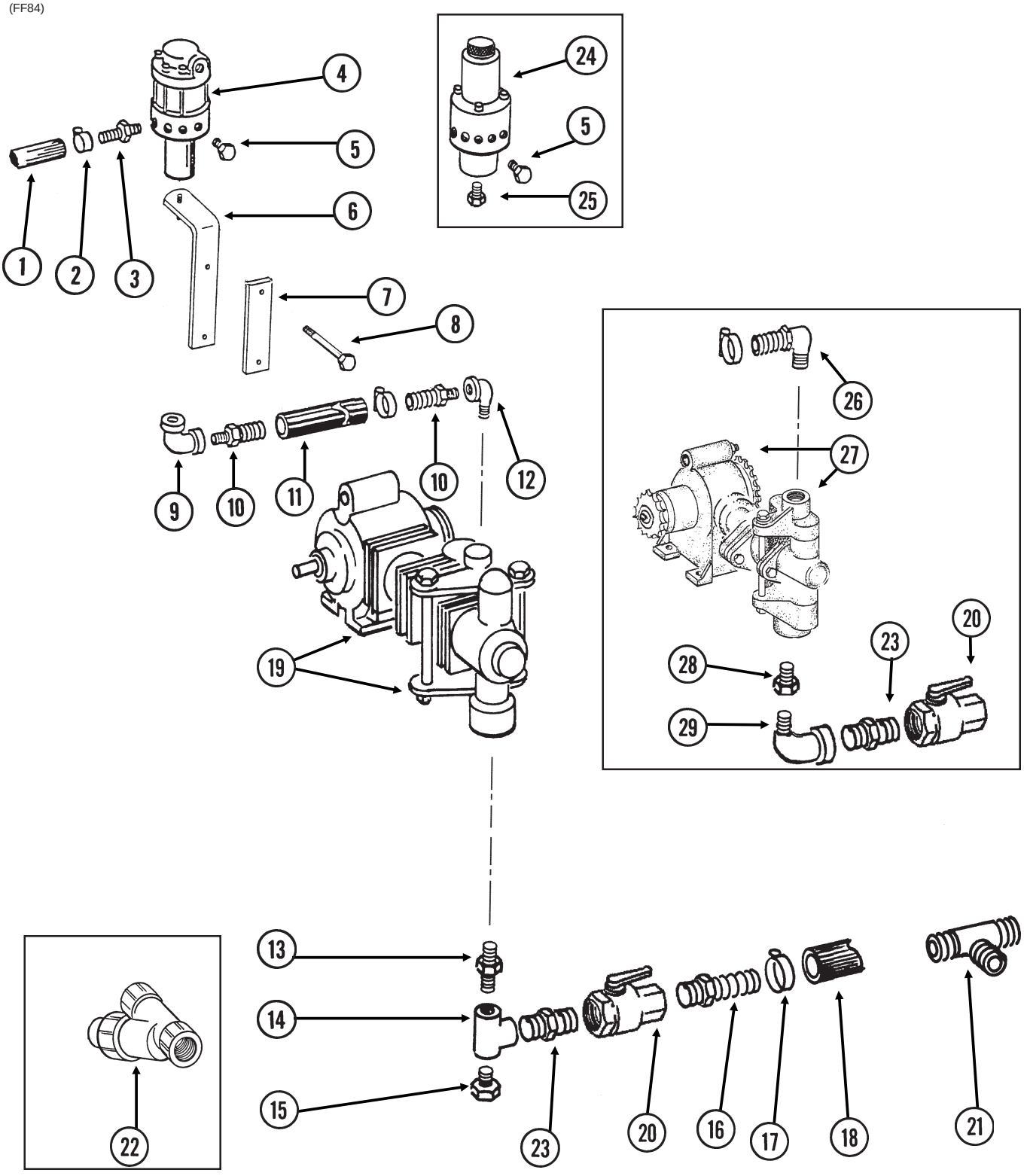
LIQUID FERTILIZER PISTON PUMP DRIVE

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
2.	G10602	2	Spring Pin, 1/4" x 1 1/2"
3.	G10233	5	Machine Bushing
4.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
5.	GA7180	1	Sprocket, 40 Tooth
6.	GD6825-11.25	1	Shaft, 7/8" x 11 1/4"
7.	GD5857	1	Spring
8.		-	See “Liquid Fertilizer Piston Pump, Pages P104-P107
9.	G10302	6	Carriage Bolt, 5/16"-18 x 7/8"
	G10221	6	Washer, 5/16" SAE
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
10.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	4	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
11.	GD10550	1	Scraper
12.	G10053	2	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10216	2	Washer, 1/2" USS
	G10102	2	Hex Nut, 1/2"-13
13.	G3400-01	4	Flangette
14.	G2100-03	2	Bearing, 7/8" Hex Bore, Spherical
15.	GD10200	2	Sleeve
16.	G10093	1	Hex Head Cap Screw, 5/8"-11 x 8 1/2"
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
17.	GD10244-01	1	Sleeve, 7 1/16"
18.	GA7246	1	Base Mount
19.	G10478	2	Clevis Pin, 5/16" x 1"
	G10409	2	Retaining Ring
	G10670	1	Hair Pin Clip, No. 3
20.	GA2068	2	Spring
21.	GA7245	1	Pump Mount W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
22.	GD9622	1	Clamp Plate
23.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
24.	GA5090	-	Tire And Rim Assembly (Specify Brand*)
	GD5753	1	Tire, 4.10" x 6" (Specify Brand*)
	GD5752	1	Tube
25.	GD11289	2	U-Bolt, 7" x 4" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11

*** Specific brand requests will be supplied only as available from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand could result in rate changes. To maintain consistent application rates throughout all rows, it is recommended that all contact tires be of the same brand and be equally inflated.**

LIQUID FERTILIZER HOSES AND FITTINGS

(FF84)



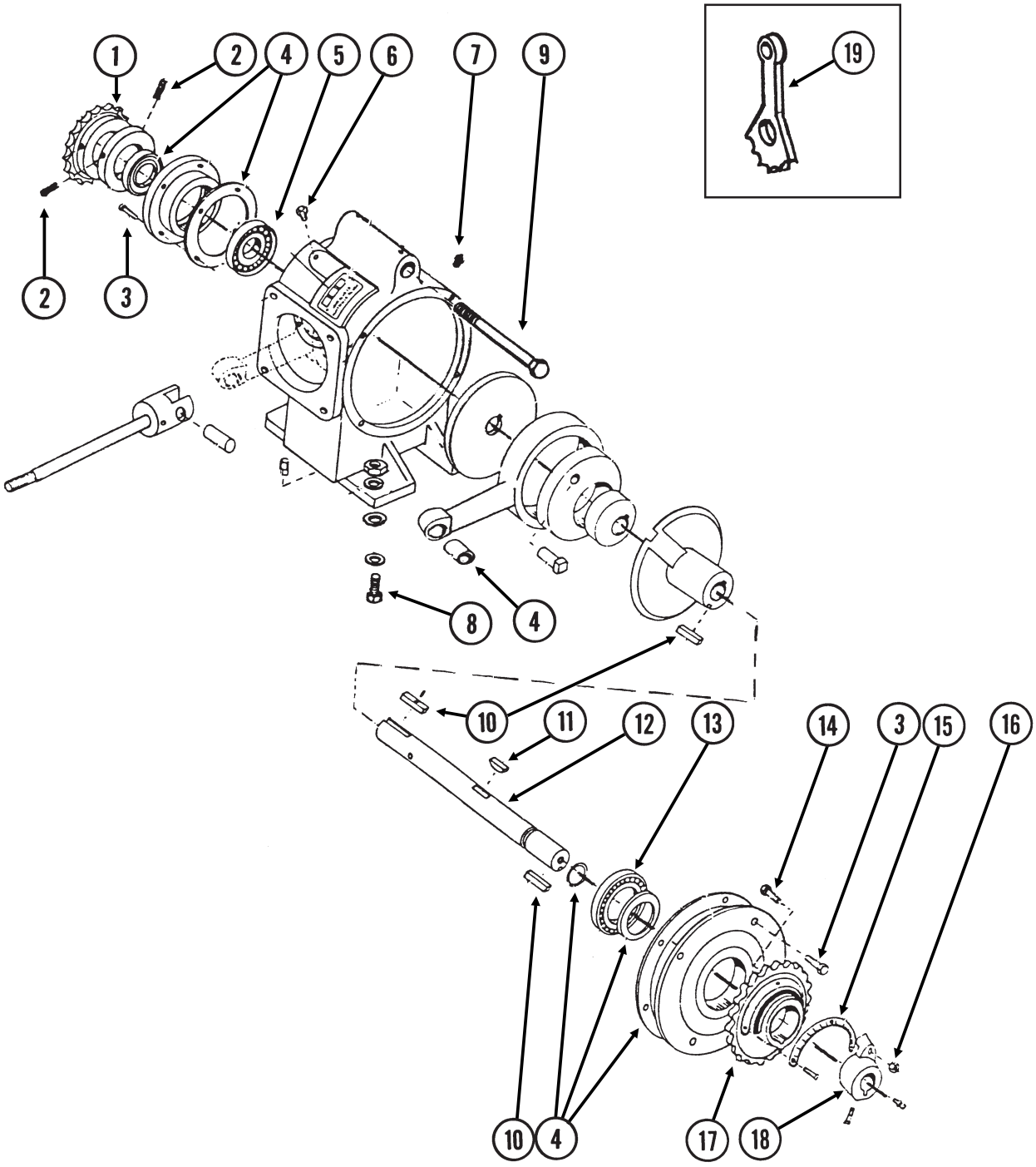
LIQUID FERTILIZER HOSES AND FITTINGS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G4300-07	1	Hose, 7/16" x 200', 16 Row
	G4300-13	-	Hose, 7/16" x 250', 24 Row
2.	G10673	-	Clamp, No. 8
3.	GD8816	18-24	Adapter, 1/4" NPT To 1/2" Barb
4.		-	See “Liquid Fertilizer Piston Pump Flow Divider”, Pages P108 And P109
5.	G10292	-	Plug, 1/4" NPT
6.	GA6527	2	Support
7.	GD10248	2	Bar
8.	G10152	2	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
9.	G10733	2	Elbow, 90°, 3/4" NPT Female
10.	G10734	4	Adapter, 3/4" NPT Male To Female
11.	G4205-08	2	Hose, 3/4" x 150"
12.	G10735	2	Elbow, 90°, 3/4" NPT Male To Female
13.	G10728	2	Pipe Nipple, 1 1/2" To 1 1/4" NPT
14.	G10719	2	Tee, 1 1/4"
15.	G10739	2	Pipe Plug, 1 1/4"
16.	G10626	4	Adapter, 1 1/4" NPT To Barb Fitting
17.	G10674	2	Clamp, No. 24
18.	G4200-01	1	Hose, 1 1/4" x 22'
19.		-	See “Liquid Fertilizer Piston Pump”, Pages P100-P103
20.	GA4976	2	Shut Off Valve, 1/4"
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle
21.	G10633	1	Tee, 1 1/4" Barb
22.	GA3893	1	Strainer Complete
	GR0880	-	Screen, No. 40 Mesh
	GR0881	-	Gasket
	GR0882	-	“Y” Body
	GR0883	-	End Cap
23.	G10619	2	Close Nipple, 1 1/4"
24.		-	See “Liquid Fertilizer Piston Pump Flow Divider”, Pages P110 And P111
25.	G10613	1	Reducing Bushing, 1" Male x 3/4" Female
26.	G10896	-	Adapter, 1" NPT To 3/4" Barb
27.		-	See “Liquid Fertilizer Piston Pump”, Pages P104-P107
28.	G10615	2	Reducing Bushing, 1 1/2" Male To 1 1/4" Female
29.	G10887	2	Elbow, 90°, 1 1/4" Male To Female

LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 23 Tooth Sprocket

JB-L4400-991/CCU077(FRTZ174)

John Blue® Model L-4405

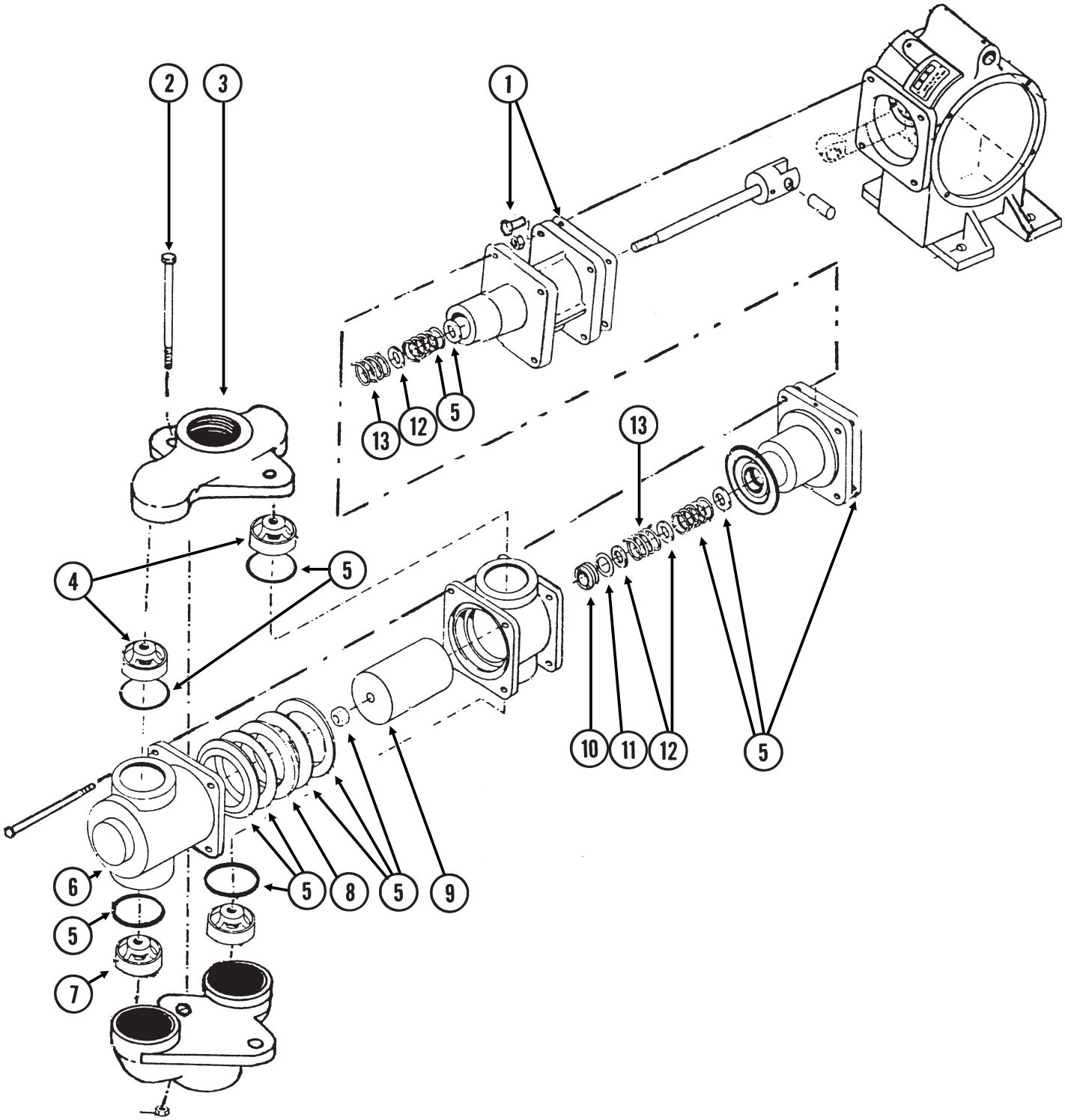


LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 23 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Liquid Fertilizer Piston Pump Drive”, Pages P94-P97
2.	G10688	2	Hex Socket Head Set Screw, 3/8"-16 x 5/8"
3.	G10019	4	Hex Bolt, 5/16"-18 x 1"
4.	GR1173	-	Repair Kit, Also Includes Item 5 On Pages P102 And P103
5.	GR1104	1	Bearing
6.	G10054	2	Hex Bolt, 5/16"-18 x 1/2"
7.	GR1107	1	Vent Plug
8.		-	See “Liquid Fertilizer Piston Pump Drive”, Pages P94-P95
9.	G10318	1	Hex Head Cap Screw, 5/8"-11 x 4 1/2"
	G10104	1	Hex Nut, 5/8"-11
10.	GR1118	3	Setting Arm Key
11.	GR1112	1	Woodruff Key
12.	GR1148	1	Crankshaft
13.	GR1116	1	Bearing
14.	GR1167	1	Square Head Bolt, 3/8"-16 x 1 3/4"
15.	GR1168	1	Scale
16.	G10108	1	Lock Nut, 3/8"-16
17.	GR1114	1	Flange
18.	GR1165	1	Arm
19.	GR1100	1	Adjustment Wrench
A.	GA6154	-	Piston Pump Complete Less 23 Tooth Sprocket (L-4405), Includes Crankcase Assembly On This Page And Cylinder Assembly On Pages P102 And P103

LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 23 Tooth Sprocket

John Blue® Model L-4405



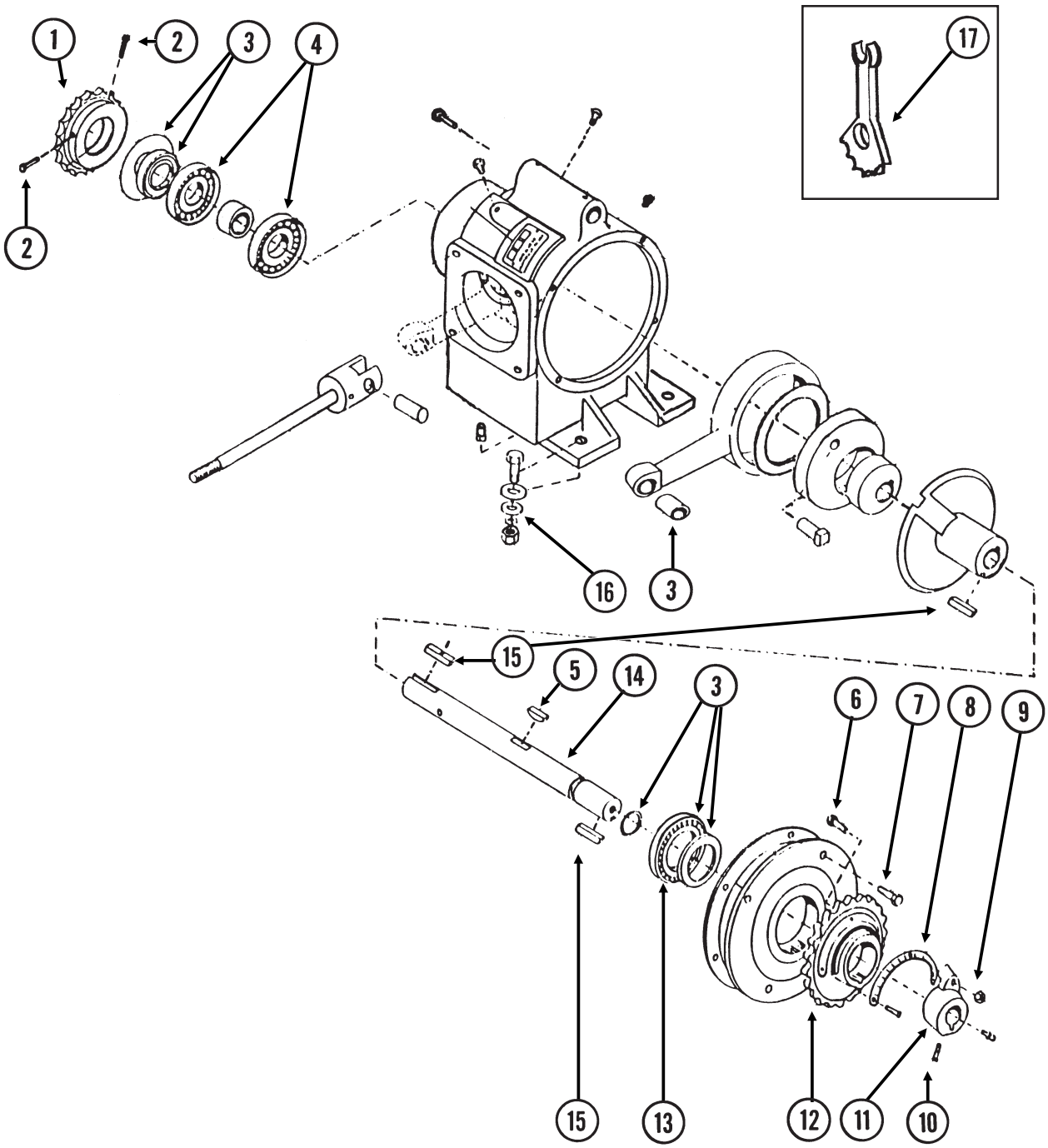
LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 23 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
2.	G10686	2	Hex Head Cap Screw, 3/8"-16 x 8"
	G10101	2	Hex Nut, 3/8"-16
3.	GR1145	1	Discharge Manifold
4.	GR1144	2	Discharge Valve
5.	GR1173	-	Repair Kit, Also Includes Item 4 On Pages P100 And P101
6.	GR1143	1	Outboard Cylinder
7.	GR1142	2	Suction Valve
8.	GR1137	1	Flange Packing Washer
9.	GR1136	1	Plunger
10.	GR1134	1	Stuffing Box Insert
11.	GR1133	1	Retaining Ring
12.	GR1129	3	Washer
13.	GR1130	2	Packing Spring

LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 18 Tooth Sprocket

JB-L4400-991/CCU077(FRTZ172a)

John Blue® Model LM-2455-R



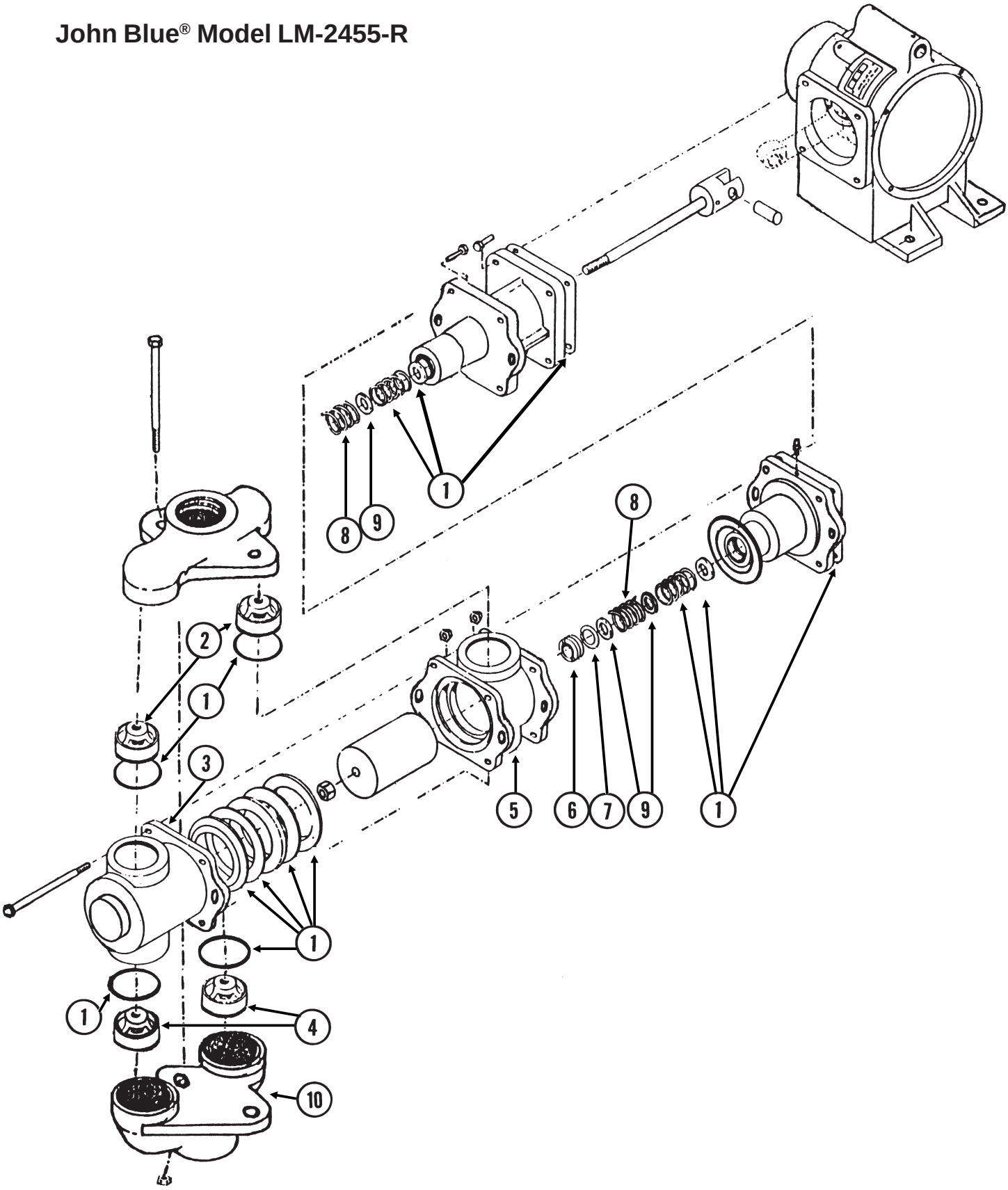
LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 18 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1389	1	Sprocket, 18 Tooth
2.	G10688	2	Hex Socket Head Set Screw, 3/8"-16 x 5/8"
3.	GR1425	1	Repair Kit, Also Includes Item 1 On Pages P106 And P107
4.	GR1427	2	Bearing
5.	GR1420	1	Woodruff Key, 3/8"-16 x 1 3/4"
6.	GR1167	1	Square Head Bolt
7.	G10043	4	Hex Bolt, 5/16"-18 x 3/4"
8.	GR1426	1	Scale
9.	G10108	1	Lock Nut, 3/8"-16
10.	G10693	3	Hex Socket Head Set Screw, 5/16"-18 x 3/8"
11.	GR1165	1	Arm
12.	GR1114	1	Flange
13.	GR1116	1	Bearing
14.	GR1421	1	Crankshaft
15.	GR1118	2	Setting Arm Key
16.		-	See “Liquid Fertilizer Piston Pump Drive”, Pages P96 And P97
17.	GR1424	1	Adjustment Wrench
A.	GA8069	-	Piston Pump Complete With 18 Tooth Sprocket (LM-2455-R), Includes Crankcase Assembly On This Page And Cylinder Assembly On Pages P106 And P107

LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 18 Tooth Sprocket

JB-L2190-991(FRTZ171)

John Blue® Model LM-2455-R



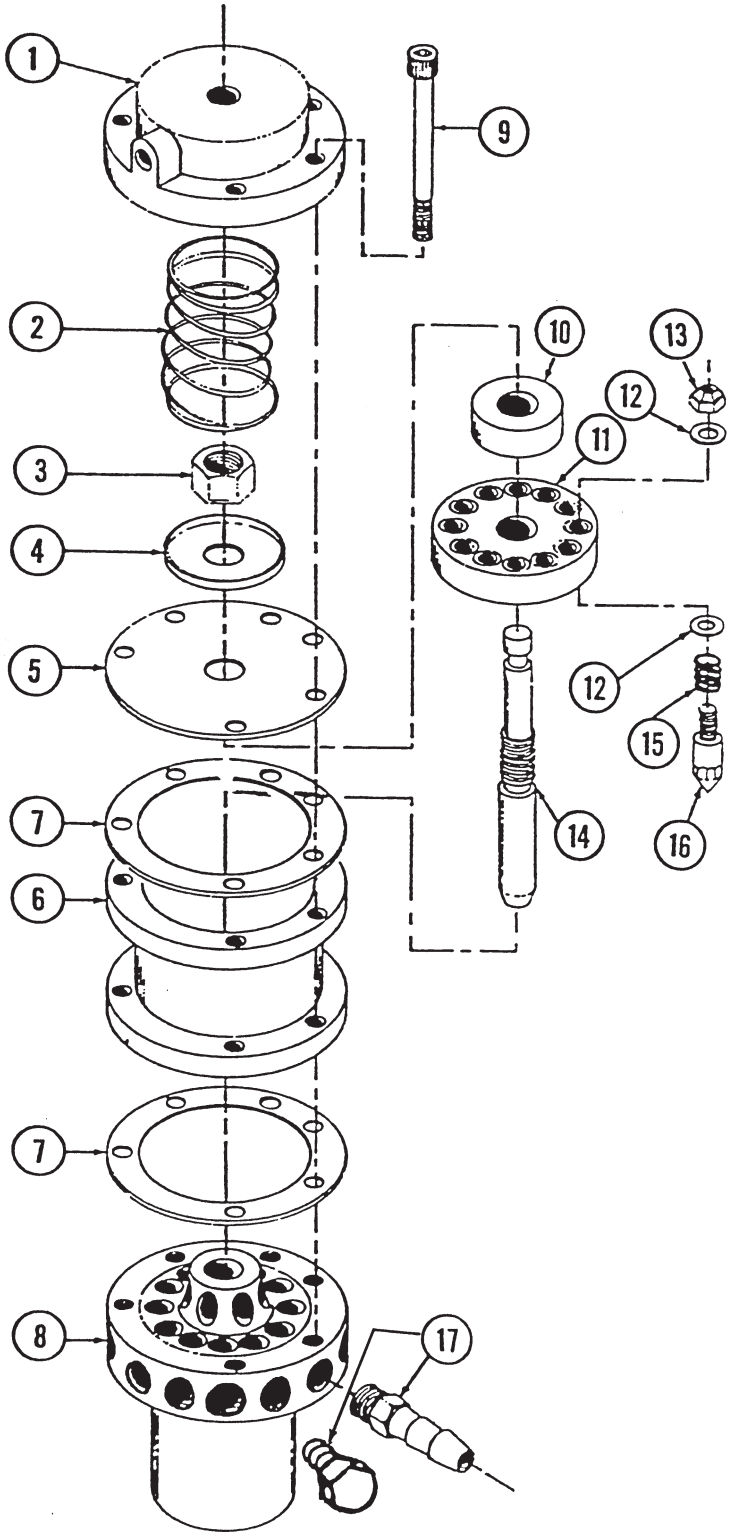
LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 18 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1425	1	Repair Kit, Also Includes Item 3 On Pages P104 And P105
2.	GR1144	2	Discharge Valve
3.	GR1423	1	Outboard Cylinder
4.	GR1142	2	Suction Valve
5.	GR1422	1	Inboard Cylinder
6.	GR1134	1	Stuffing Box Insert
7.	GR1133	1	Retaining Ring
8.	GR1130	2	Packing Spring
9.	GR1129	3	Washer
10.	GR1451	1	Suction Manifold

LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER

JB-L2190-991(PT40)

John Blue® Flow Divider



LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER

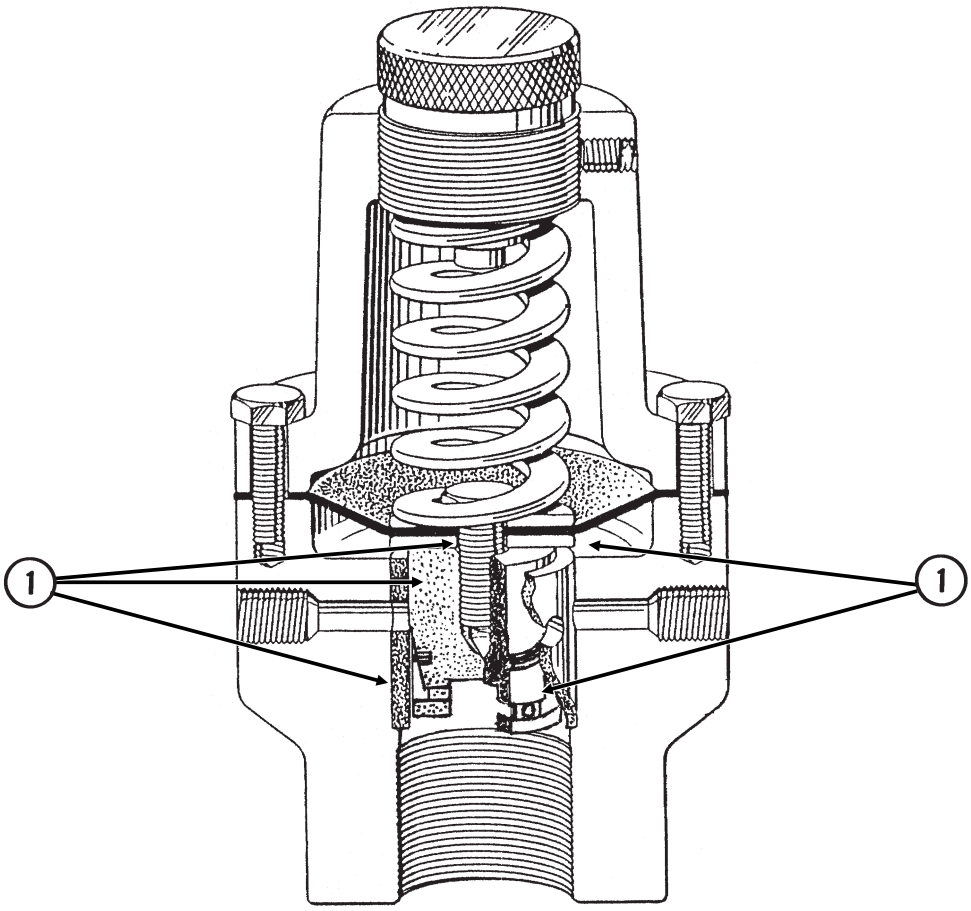
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1150	1	Cap
2.	GR1151	1	Spring
3.	G10358	1	Hex Nut, 9/16"-18
4.	GR1152	1	Plate
5.	GR1153	1	Diaphram
6.	GR1154	1	Housing
7.	GR1155	2	Gasket
8.	*	1	Manifold
9.	GR1157	6	Socket Screw, 1/4"
10.	GR1158	1	Lock
11.	*	1	Disk
12.	*	24	Stainless Steel Washer
13.	*	12	Valve Nut
14.	GR1162	1	Plunger
15.	*	12	Spring
16.	*	12	Valve
17.		-	See “Liquid Fertilizer Hoses And Fittings”, Pages P98 And P99
A.	GA6158	1	Liquid Fertilizer Piston Pump Flow Divider Complete, 16 Outlet

***Factory calibration required. Replacement not recommended. Always be sure timing marks on disk and manifold line up.**

LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER

(FRTZ159)

CDS® Flow Divider

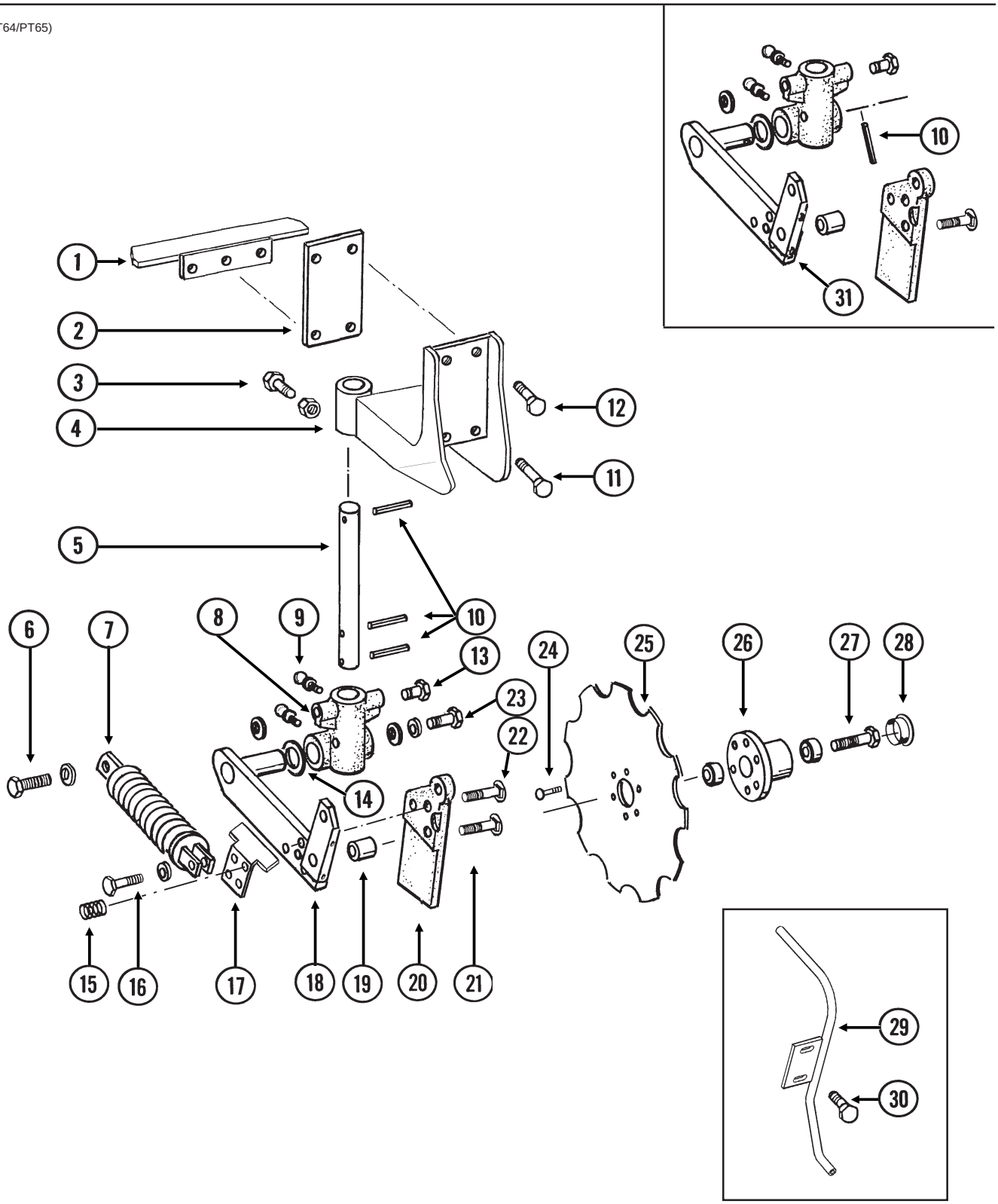


LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1388	1	Repair Kit, Includes: (2)Washers, (1)Piston, (1)O-Ring, (1)Piston Bolt, (1)Piston Ring
A.	GA8068	1	Liquid Fertilizer Piston Pump Flow Divider Complete, 12 Outlet

NOTCHED SINGLE DISC FERTILIZER OPENER AND MOUNT (Row Unit Mounted)

(PT64/PT65)

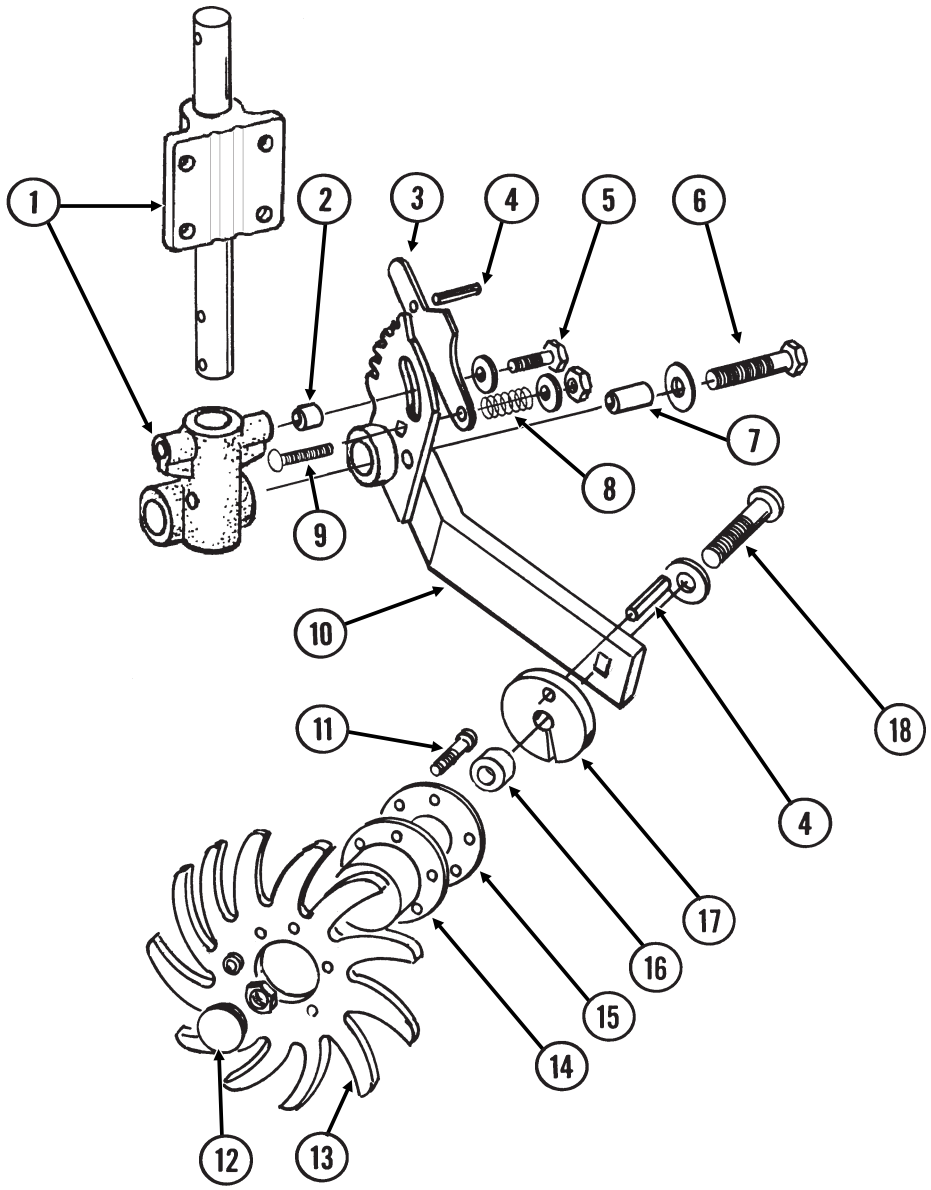


NOTCHED SINGLE DISC FERTILIZER OPENER AND MOUNT (Row Unit Mounted)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA7844	1	Angle
2.	GD10307	1	Bar, 4" x 9"
3.	G10014	2	Hex Head Cap Screw, 1/2"-13 x 1"
	G10102	2	Hex Nut, 1/2"-13
4.	GA7263	1	Mount, L.H. (Shown)
	GA7262	-	Mount, R.H.
5.	GD10306	1	Shaft, 1 1/2" x 11 1/2"
6.	GD7818	1	Special Bolt
	GD7805	2	Special Washer
7.	GA6966	1	Compression Spring Assembly
8.	GB0250	1	Pivot
9.	G10641	2	Grease Fitting, 1/8" NPT
10.	G10476	3-4	Spring Pin, 3/8" x 2 1/4"
11.	G10581	2	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
12.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	2	Lock Washer, 1/2"
13.	G10438	1	Hex Head Cap Screw, 1/2"-13 x 3/4"
14.	G10450	2	Machine Bushing
15.	GD11106	1	Spring
16.	G10047	1	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10210	2	Washer, 3/8"
	GD1026	1	Spacer, 1 3/16"
	G10108	1	Lock Nut, 3/8"-16
17.	GD11097	1	Shield
18.	GA8007	1	Pivot Arm, L.H. (Shown)
	GA8008	-	Pivot Arm, R.H.
19.	GD7817-05	1	Spacer, 1 1/4"
20.	GB0249	1	Knife/Scraper, L.H. (Shown)
	GB0248	-	Knife/Scraper, R.H.
21.	G10306	2-3	Carriage Bolt, 3/8"-16 x 2"
	G10108	2-3	Lock Nut, 3/8"-16
22.	G10898	1	Carriage Bolt, 3/8"-16 x 2 3/4"
	G10210	1	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
23.	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	1	Lock Washer, 5/8"
	G10217	1	Washer, 5/8" USS
24.	G10886	6	Truss Head Bolt, 5/16"-18 x 1"
	G10106	6	Hex Nut, 5/16"-18
25.	GD9934	1	Blade, 16 3/4"
26.	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
27.	G10013	1	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
28.	GD1132	1	Dust Cap
29.	GA6985	1	Liquid Drop Tube, L.H. (Shown)
	GA6984	-	Liquid Drop Tube, R.H.
30.	G10043	2	Hex Head Cap Screw, 5/16"-18 x 3/4"
	G10232	2	Lock Washer, 5/16"
	G10219	2	Washer, 5/16" USS
31.	GA6967	1	Pivot Arm, L.H. (Shown)
	GA6968	-	Pivot Arm, R.H.

RESIDUE WHEEL, NOTCHED SINGLE DISC FERTILIZER OPENER MOUNTED

DFC024(FRTZ165f)



RESIDUE WHEEL, NOTCHED SINGLE DISC FERTILIZER OPENER MOUNTED

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.		-	See “Notched Single Disc Fertilizer Opener And Mount”, Pages P112 And P113
2.	GD11053	1	Bushing, 7/8" Long
3.	GD11178	1	Adjustment Lever
4.	G10603	2	Spring Pin, 1/4" x 1 1/4"
5.	G10919	1	Self-Locking Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10216	1	Washer, 1/2" USS
6.	G10920	1	Self-Locking Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	GD7805	1	Special Washer
7.	GD11358	1	Hardened Bushing, 2 1/8" Long
8.	GD7962	1	Spring
9.	G10306	1	Carriage Bolt, 3/8"-16 x 2"
	G10203	1	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
10.	GA7999	1	Mount, L.H. (Shown)
	GA7998	-	Mount, R.H.
11.	G10133	6	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	6	Lock Nut, 5/16"-18
12.	GD1132	2	Dust Cap
13.	GD10552	2	Wheel, 3/8" x 12"
14.	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
15.	GD9724	1	Backing Plate
16.	GD7817-04	1	Spacer, 1 1/4" O.D. x 1/2" Long
17.	GD11188	1	Spacer
18.	G10908	1	Carriage Bolt, 5/8"-11 x 3"
	G10503	1	Hex Jam Nut, 5/8"-11
A.	GA7445	-	L.H. Wheel Assembly (Items 11 And 13-15)(Shown)
	GA7446	-	R.H. Wheel Assembly (Items 11 And 13-15)

SMV, DECALS, REFLECTORS AND TIE STRAPS

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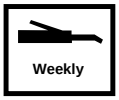

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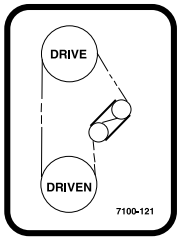

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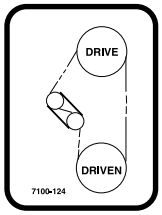

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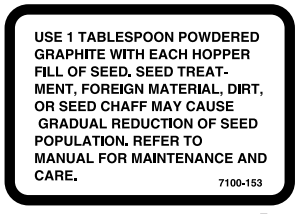

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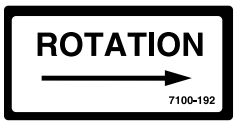
SMV, DECALS, REFLECTORS AND TIE STRAPS



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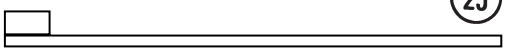

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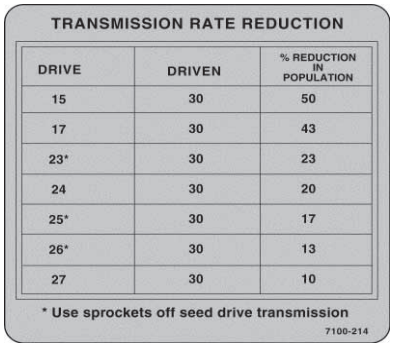

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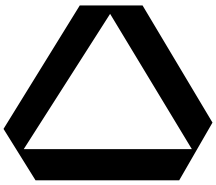

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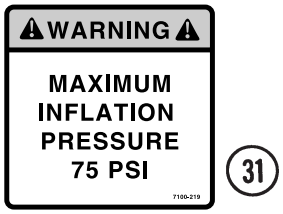

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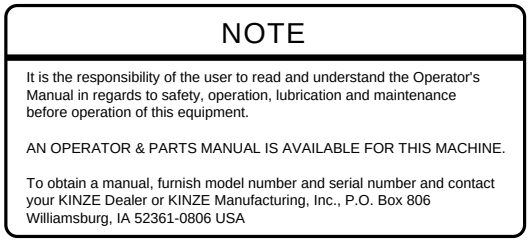

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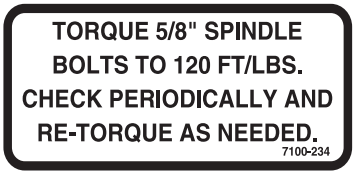

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	G7100-02	1	Decal, Warning
2.	G7100-42	4	Decal, Warning
3.	G7100-43	1	Decal, Warning
4.	G7100-46	1	Decal, Warning
5.	G7100-54	1	Decal, KINZE®, 4 $^{3}/_{16}$" x 17 $^{3}/_{16}$"
6.	G7100-56	1	Decal, Warning
7.	G7100-68	2	Decal, Warning
8.	G7100-83	2	Decal, Warning
9.	G7100-89	4	Decal, Danger
10.	G7100-90	1	Decal, Warning
11.	G7100-110	-	Decal, Grease Weekly
12.	G7100-111	-	Decal, Oil Daily
13.	G7100-115	-	Decal, Warning (1 Per Granular Chemical Hopper)

(Continued)

SMV, DECALS, REFLECTORS AND TIE STRAPS

ITEM	PART NO.	QTY.	DESCRIPTION
14.	G7100-116	-	Decal, Grease Daily
15.	G7100-117	1	Decal, Danger
16.	G7100-121	1	Decal, Transmission
17.	G7100-124	1	Decal, Transmission
18.	G7100-153	-	Decal, Information (1 Per Brush-Type Seed Meter)
19.	G7100-160	-	Decal, Flow Control
20.	G7100-182	-	Decal, Meter Alignment (1 Per Row Unit)
21.	G7100-192	-	Decal, Point Row Clutch Rotation
22.	G7100-195	-	Decal, Logo (2 Per Row Unit)
23.	G7100-196	2	Decal, 2700
24.	G7100-197	1	Decal, Warning
25.	GD1512	-	Tie Strap, 7"
	GD2117	-	Tie Strap, 14 1/2"
26.	G7100-214	1	Decal, Two-Speed Point Row Clutch Rate Reduction
27.	GD2199	1	SMV Sign
28.	GR0146	-	Powdered Graphite, 1 Pound
29.	GR1367	-	Talc Seed Lubricant, 8 Pounds
30.	GR0155	-	Blue Paint, Aerosol
31.	G7100-219	-	Decal, 75 PSI Warning
32.	G7100-217	-	Decal, Note
33.	G7100-234	-	Decal, Bolt Torque
34.	GD10057-01	-	Hose Identification Sleeve, Red AA
	GD10057-02	-	Hose Identification Sleeve, Red BB
	GD10057-03	-	Hose Identification Sleeve, Blue AA
	GD10057-04	-	Hose Identification Sleeve, Blue BB

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