MODEL 2000
PULL TYPE PLANTER

OPERATOR & PARTS MANUAL

M0154 Rev. 9/98

This manual is applicable to: Model: 2000 Pull Type Planters
Serial Number: 608260 and on

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

Model Number 2000

Serial Number _____

Date Purchased _____

SERIAL NUMBER

The serial number plate is located on the planter hitch 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.

81689-8

Rev. 9/98

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 the red reflectors and amber reflectors are correctly located and visible when the planter is in transport position.
- ❑ 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 red reflectors, amber reflectors and SMV sign are 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, SMV sign and reflectors 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

TABLE OF CONTENTS

TABLE OF CONTENTS

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

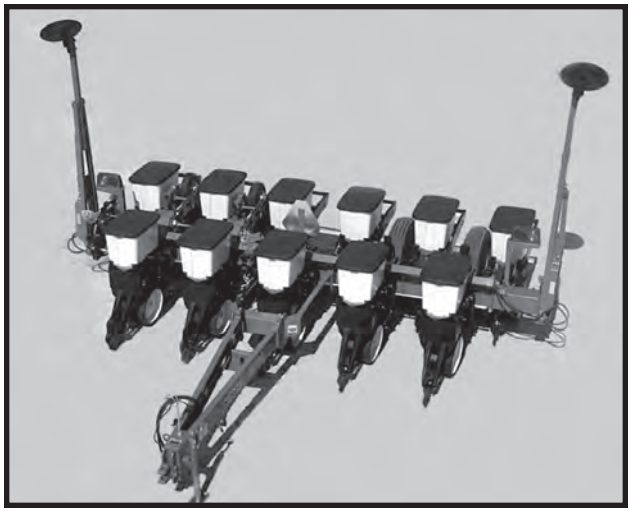
The Model 2000 Pull Type planter is available in various configurations and row spacings. Double Frame® Conversion Packages, Liquid Fertilizer Packages, Dry Fertilizer Packages and/or Interplant® Packages are also available.

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.

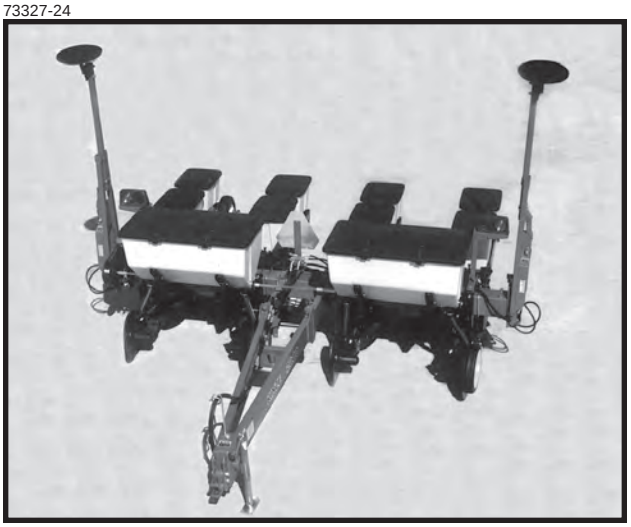
Right hand and left hand as used throughout this manual is determined by facing in the direction the machine will travel when in use unless otherwise stated.

73327-12



Shown With Interplant® Package Installed

73327-24



Shown With Dry Fertilizer Package Installed

SPECIFICATIONS

TYPE - Pull Type (Rigid Frame)

PLANTING UNIT TYPES - Push And Pull Row Units

ROW SPACING	Pull Row Units	Push Row Units
	4 Row Narrow - 30" Rows	7 - 15" Rows
	4 Row Wide - 36" Or 38" Rows	7 - 18" Or 19" Rows
	6 Row Narrow - 30" Rows	11 - 15" Rows
	6 Row Wide - 36" Or 38" Rows	11 - 18" Or 19" Rows
	8 Row Narrow - 30" Rows	15 - 15" Rows

DRIVE SYSTEM

Drive system includes 4.10" x 6" spring-loaded contact drive tire(s) with No. 40 chain, quick-adjust end mounted seed transmission with machined sprockets, and $^{7}/_{8}$" hex drive and drill shafts. One drive tire on 4 row planters and two on 6 and 8 row planters.

TRANSPORT TIRES

Two 7.50" x 20" transport tires on 4 row and four on 6 and 8 row.
Adjustable height wheels allow for ridge planting.

TYPE LIFT Master/slave hydraulics.
4 row planters have 2 master/slave rephasing cylinders.
6 and 8 row planters have 2 master/slave rephasing cylinders and 2 assist cylinders.

MARKERS 4 Row Narrow/Wide and 6 Row Narrow planters use heavy duty conventional markers.
6 Row Wide and 8 Row Narrow planters use two-fold low profile markers.

HYDRAULICS Single SCV is standard. Dual SCV, for independent operation of lift and markers, is optional. Hydraulic sequence valve with flow controls allows alternating marker operation and marker speed adjustment.

Dimensions/Operating

PLANTER SIZE	4 Row 30"	4 Row 36"/38"	6 Row 30"	6 Row 36"/38"	8 Row 30"
Width	12' 8"	14' 8"	17' 8"	20' 2"	21' 10"
Single Frame Length	11' 8"	11' 8"	11' 8"	11' 8"	11' 8"
Double Frame® Length	14' 2"	14' 2"	14' 2"	14' 2"	14' 2"
*Single Frame Weight	2115 lbs.	2205 lbs.	3369 lbs.	3653 lbs.	4759 lbs.
*Double Frame® Weight	2525 lbs.	2653 lbs.	3951 lbs.	4303 lbs.	5493 lbs.

* Base machine weights include planter frame including row markers, drive components, tires and wheels, hydraulic cylinders and KINZE® pull row units (closing wheel arms less wheels) with seed hopper and lid and dual quick adjustable down force springs.

SPECIFICATIONS

MACHINE OPTIONS

- Double Frame® Conversion Package
- Electronic Seed Monitors - KM1000, KM3000 With Magnetic Distance Sensor Or KM3000 With Radar Distance Sensor (KPM I/KPM II Monitor-See Assembly Instruction IS364)
- Dual Valve Conversion Package
- Half Rate (2 To 1) Drive Reduction Package
- Interplant® Package
- Liquid Fertilizer With Fertilizer Opener And Pump Options
- Dry Fertilizer With Fertilizer Opener Options

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
- Spring Tooth Incorporator
- Row Unit Mounted No Till Coulter
- Row Unit Mounted Disc Furrowers
- Row Unit Mounted Bed Leveler
- 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.

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.

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

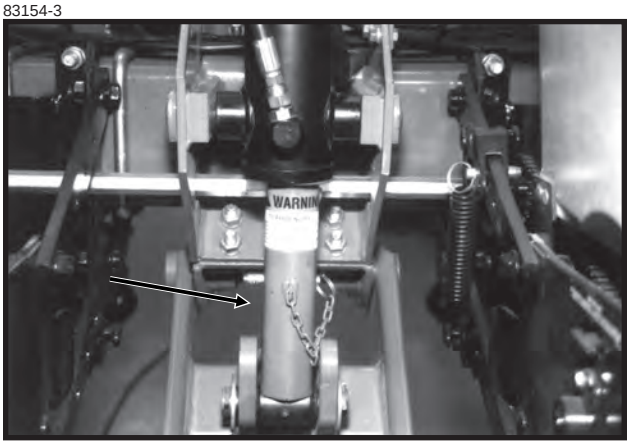
Never ride on the planter or allow others to do so.

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

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

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.

83154-3

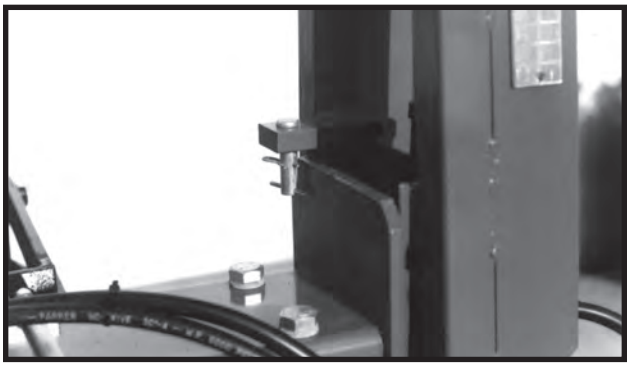


Lift Cylinder Safety Lockup

Always install all cylinder safety lockup brackets before transporting the planter.

Never work under the planter while in raised position without installing cylinder safety lockup brackets.

46331-89



Conventional Marker Lockup

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

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

SAFETY PRECAUTIONS

Limit towing speed to 15 M.P.H.. Tow only with farm tractor of minimum 50 HP.

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.

Check to be sure all safety/warning lights are working before transporting the machine on public roads.

If the planter is going to be transported on a public highway, a safety chain should be obtained and installed. Always follow federal, state/provincial and local regulations regarding a safety chain when towing farm equipment on a public highway. Only a safety chain (not an elastic or nylon/ plastic tow strap) should be used to retain the connection between the towing and towed machines in the event of separation of the primary attaching system.

Allow for unit length when making turns.

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 a minimum.

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

Avoid sudden uphill turns on steep slopes.

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

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

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.

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

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

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.

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

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.

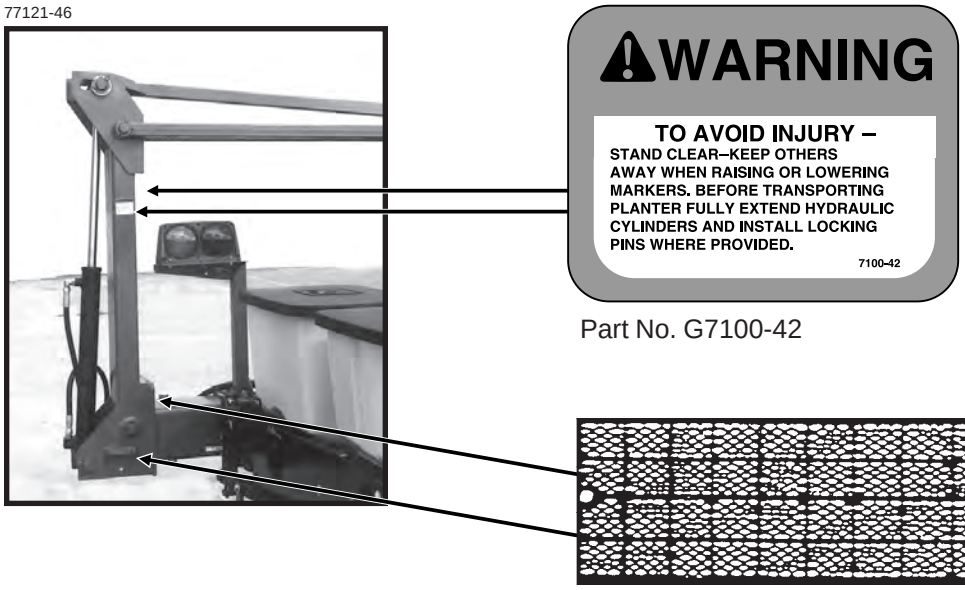
Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

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.**

77121-46

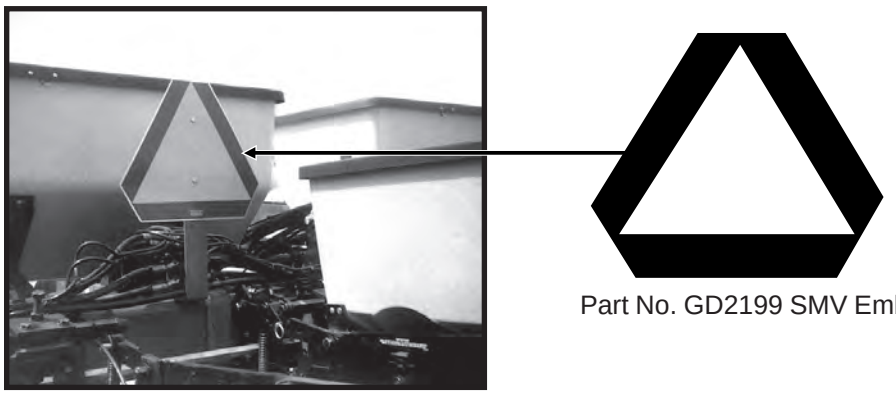


Part No. G7100-42

Part No. G7200-03 Red Reflector (Rear)

Part No. G7200-04 Amber Reflector (Front)

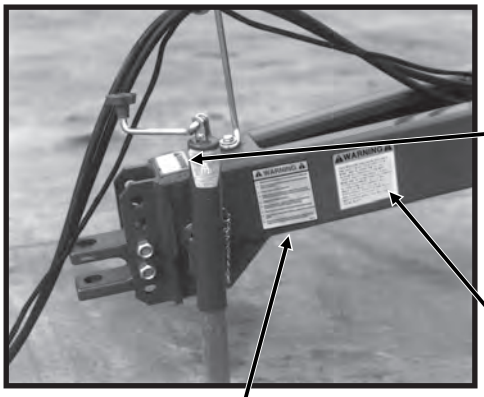
77262-2



Part No. GD2199 SMV Emblem

SAFETY WARNING SIGNS

77178-8



WARNING

TOW ONLY WITH FARM TRACTOR

7100-56

Part No. G7100-56

WARNING

1. Read and understand the Operator's Manual.
2. Stop the tractor engine before leaving the operator's platform.
3. Keep riders off the machine.
4. Make certain everyone is clear of the machine before starting the tractor engine and operating.
5. Keep all shields in place.
6. Never lubricate, adjust, unclog or service the machine with tractor engine running.
7. Wait for all movement to stop before servicing.
8. Keep hands, feet and clothing away from moving parts.
9. Use flashing warning lights when operating on highways except when prohibited by law.

7100-46

Part No. G7100-46

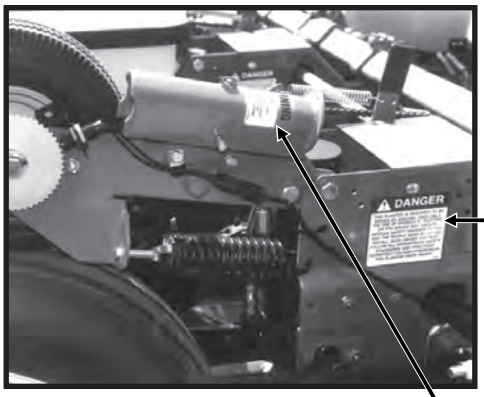
WARNING

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.

7100-90

Part No. G7100-90

83364-8



DANGER

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

7100-89

Part No. G7100-89

WARNING

TO AVOID INJURY ...

ALWAYS USE THE HYDRAULIC CYLINDER SAFETY LOCKUP CHANNEL WHEN SERVICING MACHINE IN RAISED POSITION OR WHEN TRANSPORTING MACHINE ON THE ROAD. AFTER USE RETURN TO STORAGE LOCATION.

7100-47

Part No. G7100-47

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
Located on under side of granular chemical hopper lid.

SAFETY WARNING SIGNS ⚠

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. Requirements will vary with planter options, tillage and terrain. One dual remote hydraulic outlet (SCV) is required on machines equipped with the standard single valve hydraulic system. Two dual remote hydraulic outlets (SCV) are required on machines equipped with the optional dual valve hydraulic system.

TRACTOR PREPARATION AND HOOKUP

61048-31

1. Adjust tractor drawbar so it is 13 to17 inches above the ground. Adjust the drawbar so the hitch pin hole is directly below the center line of the PTO shaft. Make sure the drawbar is in a stationary position.

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

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

NOTE: If tractor is equipped with an adjustable outlet (SCV), adjust to full flow position.

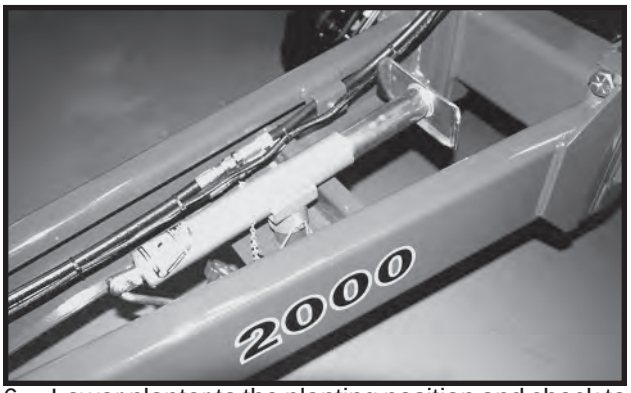
DANGER: Before applying pressure to the hydraulic system, make sure all connections are tight and hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin, causing injury or infection.

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

4. Connect ASAE Standards 7 terminal connector for warning 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 warning lights on planter are working in conjunction with warning lights on tractor.

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

01239805a



6. Lower planter to the planting position and check to be sure planter is level fore and aft. If hitch height is too high or low, disconnect planter and adjust hitch clevis up or down as necessary.

NOTE: If using an auxiliary attaching system 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 (safety chain) is available from KINZE® Repair Parts through your KINZE® Dealer. Attach safety chain using clevis mounting holes on planter hitch.

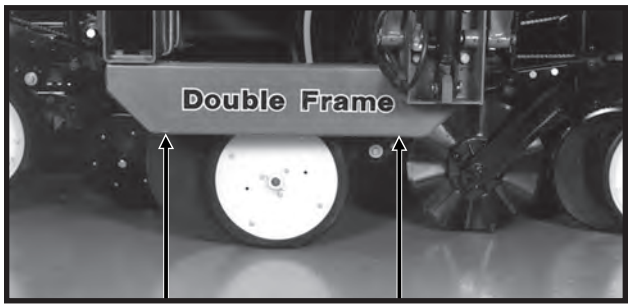
MACHINE OPERATION

LEVELING THE PLANTER

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

Unless the tractor drawbar is adjustable for height, the fore and aft level adjustment must be maintained by the position of the hitch clevis. Holes in the hitch bracket allow the clevis to be raised or lowered. When installing clevis mounting bolts, tighten hex nuts to proper torque setting.

72359-145



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

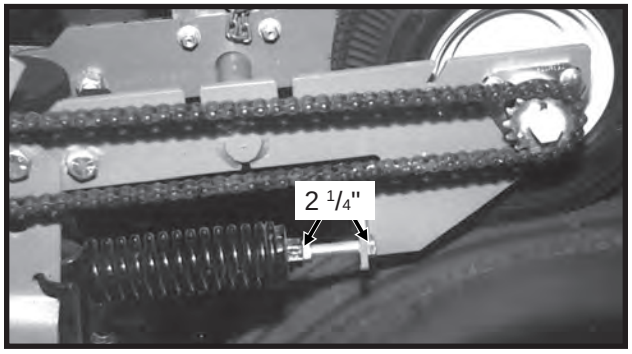
It is important for the planter to operate level laterally. Tire pressure must be maintained at pressures specified. See “Tire Pressure”.

CONTACT DRIVE WHEEL SPRING ADJUSTMENT

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

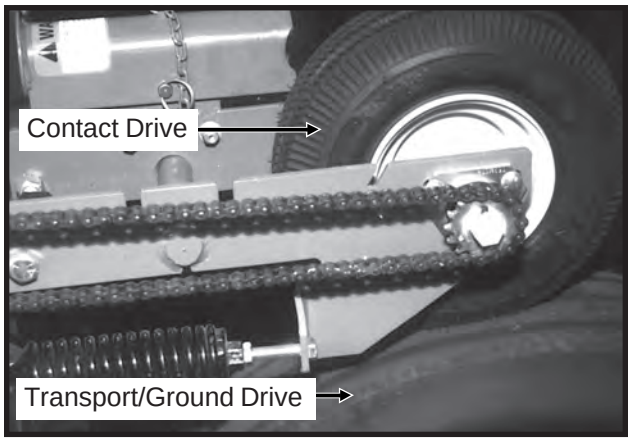
The spring tension is set leaving 2 1/4" between the spring plug and the bolt head.

83154-11



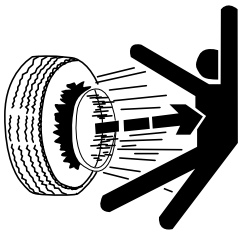
TIRE PRESSURE

83154-11



Tire pressure should be checked regularly and maintained as follows:

Transport/Ground Drive 7.50" x 20" ..... 40 PSI
Contact Drive 4.10" x 6" ..... 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.

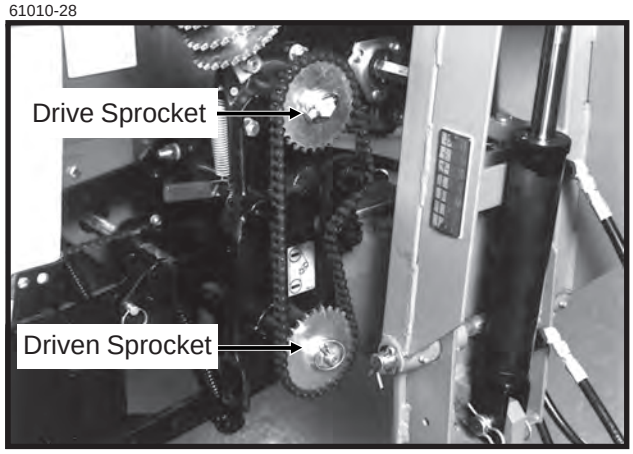
TRANSMISSION ADJUSTMENT

Planting population rate changes are made at the end mounted transmission. 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 transmission.

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 is controlled by the ratchet arm.

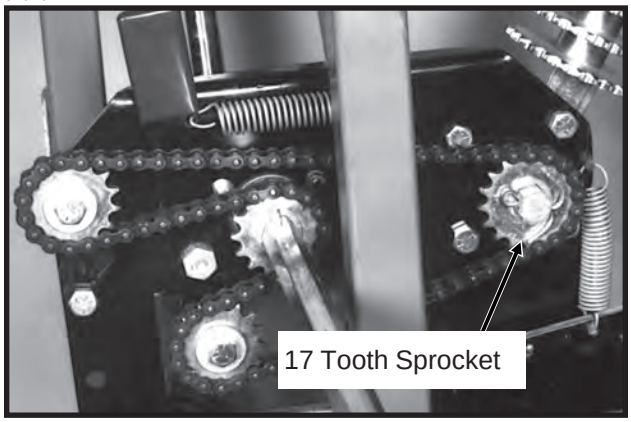
The planting rate charts found at the back of this section will aid you in selecting the correct sprocket combinations.

61010-28



STANDARD RATE DRIVE

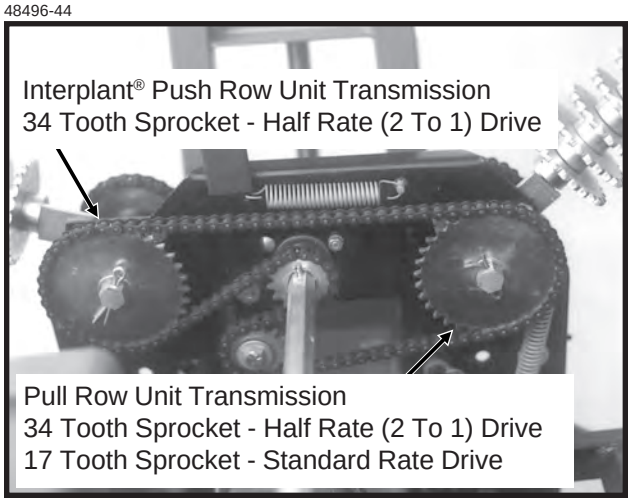
61010-41



Seed planting rate charts are based on the standard rate drive unless specified otherwise. The standard rate drive uses a 17 tooth sprocket as shown above. Using the 34 tooth half rate (2 to 1) drive reduction sprocket in place of the 17 tooth sprocket will reduce the planting rate by approximately 50%. See "Half Rate (2 To 1) Drive".

HALF RATE (2 TO 1) DRIVE

48496-44



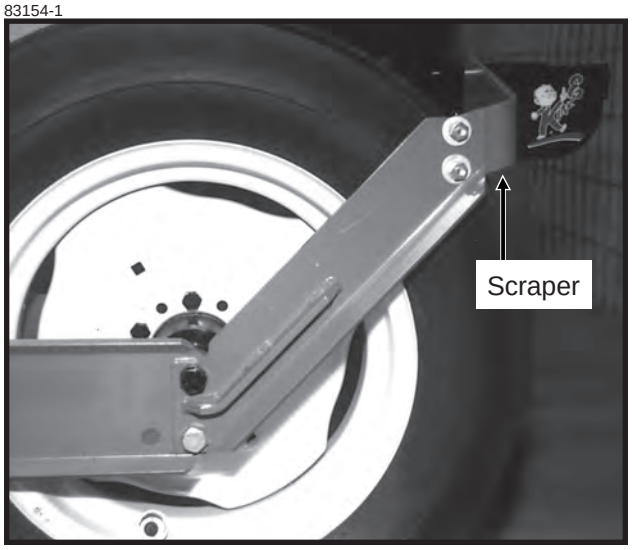
Replacing the 17 tooth drive sprocket located on the inner side of the top transmission shaft, with the 34 tooth half rate (2 to 1) drive reduction sprocket will reduce the planter transmission speed and reduce planting rates by approximately 50%. The half rate drive must always be used when using the Interplant® row units.

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

TIRE SCRAPER

Due to the clearance between the wheel assembly and the transport tire, a tire scraper should always be used. This will prevent a buildup of dirt/mud between the wheel arm assembly and the tire. Adjust the scraper so it does not contact the tire.

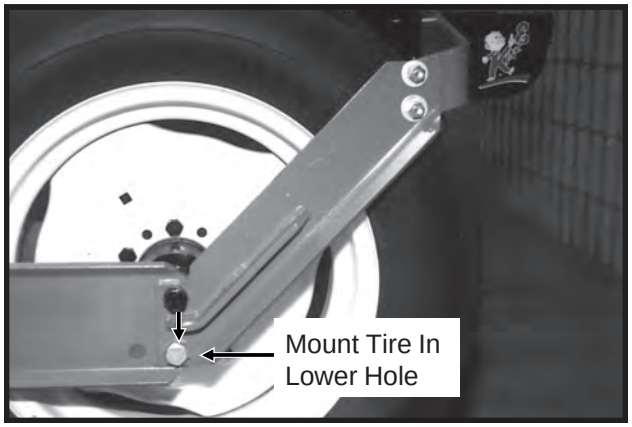
83154-1



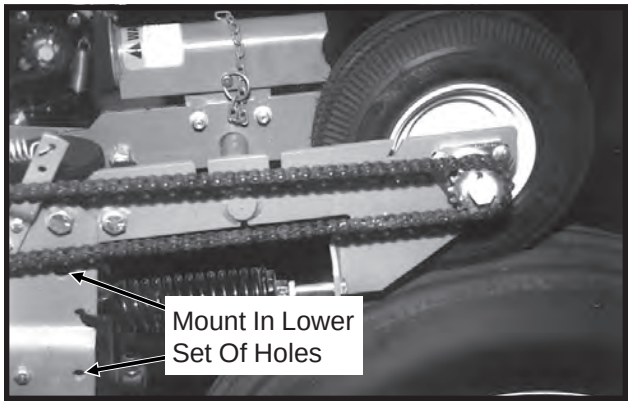
RIDGE PLANTING

To raise the planter frame height 3" for ridge planting, mount the 20" tires in the lower rear holes in the ground drive wheel arm. Mount the contact drive wheel arm and springs in the lower set of mounting holes in the wheel module mount and raise the hitch height to maintain fore and aft levelness.

83154-1



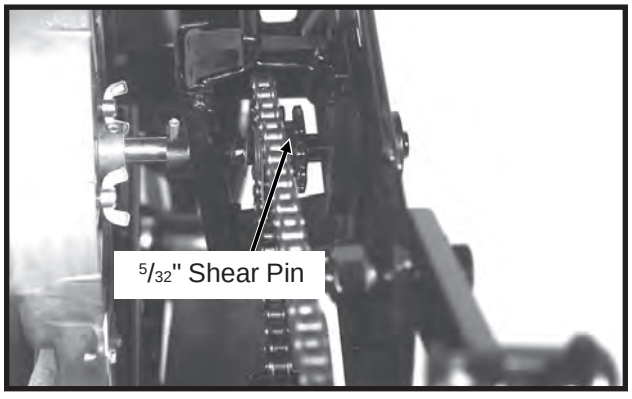
83154-11



SHEAR PROTECTION

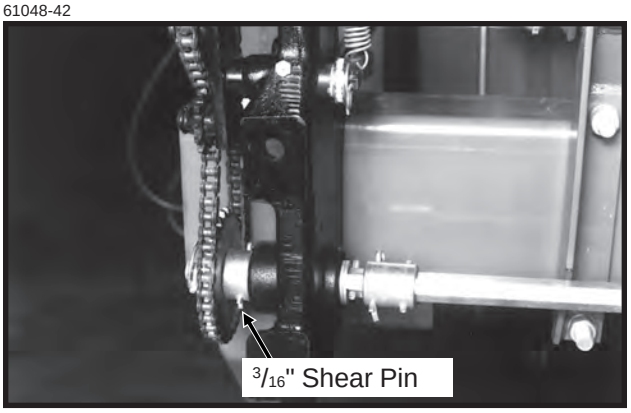
The planter driveline and row unit components are protected from damage by shear pins.

61658-27



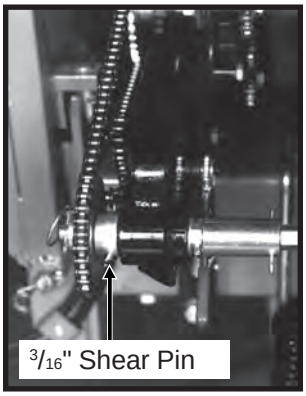
Row Unit Seed Meter Drive

61048-42



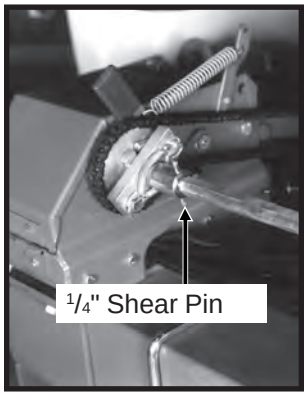
Transmission Shaft

61111-5



Dry Fertilizer Driveline

61111-33

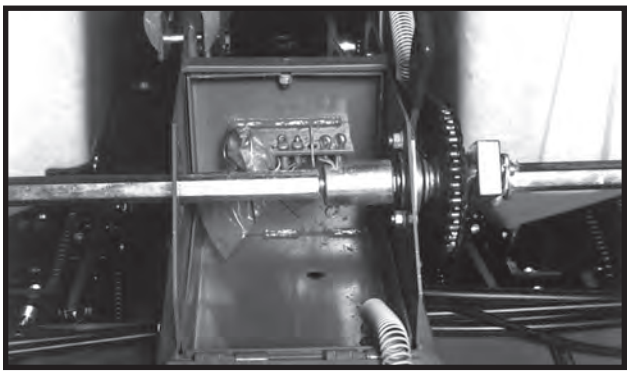


Liquid Fertilizer Driveline

If excessive load should cause a pin to shear, it is important to determine where binding has occurred before replacing the pin. Turn the shaft by hand, checking for misalignment and for the possibility of seized parts. When the shaft can be turned by hand (with the aid of a wrench) replace shear pins with same size and type. To prevent future binding or breakage of components, check driveline alignment and follow prescribed lubrication schedules.

NOTE: Drill shaft/transmission coupler alignment is critical.

61010-1



Additional shear pins can be found in the storage area located on the wheel module.

HYDRAULIC MARKER OPERATION

Model 2000 planters are equipped with a single valve hydraulic system or an optional dual valve hydraulic system. The single valve system requires the planter to be raised in order to lift the markers. Each time the planter is lowered, the markers will alternately be lowered. If the planter is raised to cross a waterway, the opposite marker will be lowered when the planter is lowered back into the ground. Therefore, it will be necessary to stop and again raise and lower the planter to restore correct marker operation.

If planting in this type of situation, dual valve hydraulics are highly recommended. The optional dual valve hydraulic system allows the planter to be raised and lowered independent of the markers. When raising the planter for a waterway the marker that is down will also clear the ground and not disturb the waterway. When the planter is again lowered the same marker will continue to mark the path for the return pass. Each time a marker is raised, the sequencing valve will direct flow to lower the opposite marker.

Both markers can be used at the same time if desired. To do this, lower the planter and the marker that has been selected. Move the tractor control lever to the raise position and immediately return it to the lower position. This will shift the marker control valve and the remaining marker will be lowered. This is useful in planting contours and terraces.

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

HYDRAULIC PLANTER LIFT OPERATION

The planter lift system consists of a master cylinder on one side of the planter and a slave cylinder on the other side of the planter. On 6 row and larger sizes, lift assist cylinders are also used.

With the master/slave hydraulic lift system, oil is forced into the butt end of the master and lift assist cylinders when the the hydraulic lever on the tractor is moved to the raise position. As the master cylinder is extended, oil from the rod end of the master cylinder is forced into the butt end of the slave cylinder. The displacement on the rod end of the master cylinder is equal to the displacement on the butt end of the slave cylinder. This causes the two cylinders to move at the same rate so the planter will raise and lower evenly.

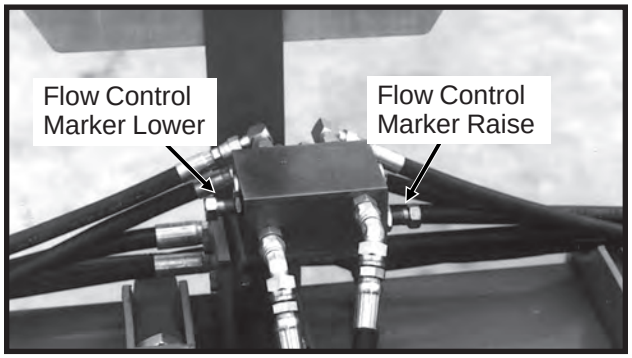
IMPORTANT: The planter lift cylinders may get out of phase resulting in the planter lifting unevenly. In each master cylinder and each slave cylinder a valve located in the piston in the cylinder allows the lift system to be rephased when the cylinders are cycled by lowering the planter to the ground and holding the hydraulic lever for approximately 5-10 seconds. Cycle the system until the planter lifts and lowers evenly.

WARNING: Always position lockups in "safety" position when transporting or storing planter. See "Safety Precautions".

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 nut and turn the control clockwise or IN to slow the travel speed and counterclockwise or OUT to increase the travel speed. The flow control determines the amount of oil flow restriction through the valve, therefore determining travel speed of the markers.

54813-30



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 with a closed center hydraulic system, the tractor's hydraulic flow control can be set so the tractor's detent will function properly.

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.

8 Rows x 30" Spacing = 240" Marker Dimension

72359-61

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 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.

ELECTRONIC SEED MONITOR SYSTEM

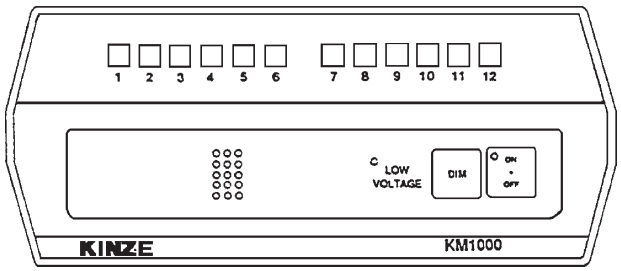
The electronic seed monitor system consists of a console, which is mounted on the tractor; seed tubes with sensors, one of which is installed in each planter row unit; and a planter harness (harness, Y-connector and/or extension cable where applicable), which connects the individual seed tube sensors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

KM1000 MONITOR

(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-connector.) 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.

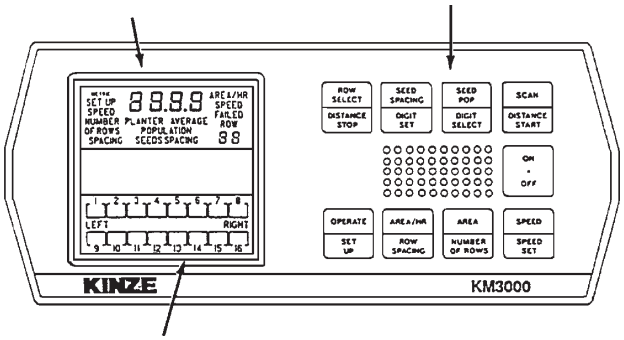
NOTE: Interplant® diagrams assume that first Interplant® row is connected to row 1 of harness and Interplant® harness is connected to R.H. half of Y-connector.

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 an 8 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.

NOTE: If you have a solid row planter of 15", 18", 19", 30", 36" or 38" row spacing, program that number in for row spacing. If you have a skip row planter, determine row spacing by taking the total distance between the two outside rows (in inches) and divide by the number of planter rows minus 1.

EXAMPLE: 8 row 30" planter with 13 row 15" skip row Interplant®

Step 1. Total distance between center of outside row on left end of planter to center of outside row on right end of planter = 210"

Step 2. 13 rows (number of total rows) minus 1 = 12

Step 3. 210" ÷ 12 = 17.5" average row spacing

Step 4. Program 17.5 (round to closest tenth)

2. ***NUMBER OF ROWS*** *- The number of active rows on your planter. (Example for 8 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 right hand "0" is flashing.
   Press the "digit set" switch until an 8 is shown in this location: 08.

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.

INTERPLANT® ROWS

The half of the Y-connector marked row 1 is used for the main rows on the planter and the other half for Interplant® rows. When Interplant® rows are not being used, switch the console to the OFF position and disconnect the Interplant® rows at the Y-connector. Switch the console back ON. It will be necessary to reprogram "row spacing" and "number of rows" on the KM3000 console.

1. Press "SET UP" switch.
2. See ROW SPACING and NUMBER OF ROWS in "Entering Constants".
3. After entering constants press "OPERATE" switch to return to operation mode.

To activate the Interplant® rows, switch the console to the OFF position and reconnect the Interplant® rows at the Y-connector. Switch the console ON. Reprogram "row spacing" and "number of rows" on the KM3000 console.

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.

WARNING: Always install safety lockups on lift cylinders.

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.)

PLANTING SPEED

Planters are designed to operate within a speed range of 2 to 8 MPH. See “Planting And Application 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.

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

DOUBLE DISC FERTILIZER OPENER

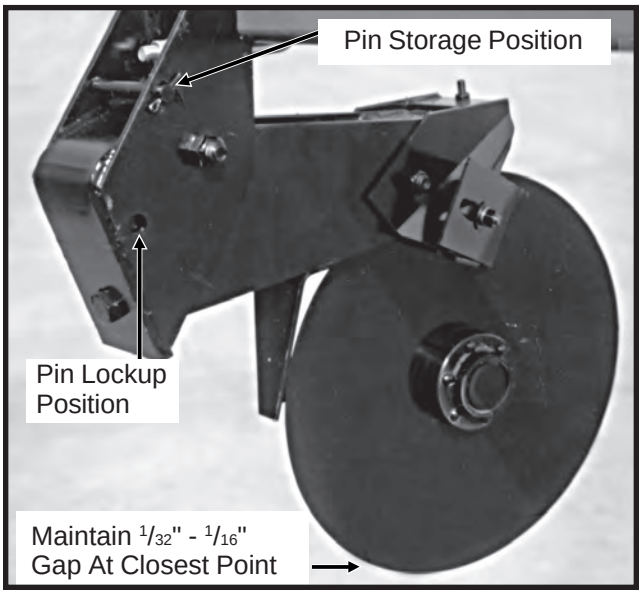
The double disc fertilizer openers should be positioned during assembly **to place the fertilizer no closer than 2" to either side of the row.** If planter frame is level and at proper 20" planting height, fertilizer depth will be approximately 4". Soil conditions can affect depth slightly.

The down pressure spring is factory preset at 250 pounds down pressure but may be adjusted for various soil conditions. To adjust spring tension, loosen the jam nut with $^{15}/_{16}$" wrench and use a 1" wrench to turn the adjustment bolt clockwise to increase tension or counterclockwise to decrease tension. Securely tighten the jam nut upon completion of tension adjustment. Do not attempt to set opener depth with spring pressure. The opener is designed to operate against a depth stop and spring up when encountering a foreign object or hard ground.

CAUTION: Do not operate the double disc openers at full down pressure tension when planting in rocky ground. Chipping of the blades will occur.

A gap of $^{1}/_{32}$" to $^{1}/_{16}$" should be maintained between the opener blades at the closest point. Blade adjustment can be made by moving inside spacer washers to the outer side of the blade. After making this adjustment, check to be sure bearing assembly rivets are not hitting the shank.

60389-23



The outer scrapers on each blade may also be adjusted to make up for wear that may occur. Make sure the scraper is adjusted to allow only slight contact with the blade.

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

DANGER: Always install all cylinder lockup brackets before working under the unit.

NOTCHED SINGLE DISC FERTILIZER OPENER

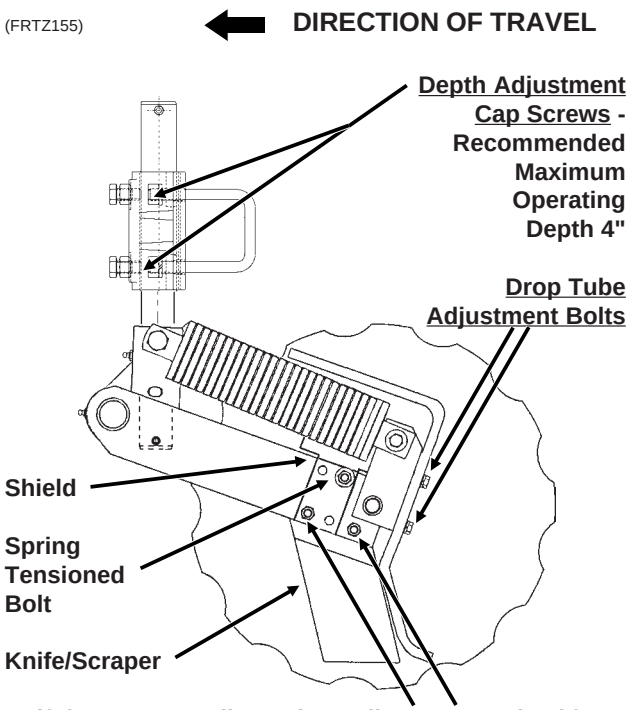
The notched single disc fertilizer opener is designed for use in minimum and no till soil conditions. Placement of fertilizer with the 16 3/4" notched single disc fertilizer opener is recommended at 2 1/2" - 3" from the row. **Never locate the opener to place fertilizer closer than 2".**

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.

(FRTZ155)



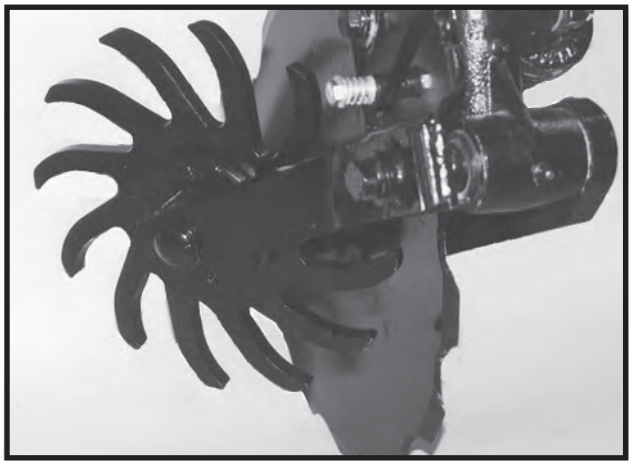
Knife/Scraper Leading Edge Adjustment Bolts (If not equipped with a shield and spring tensioned bolt, the third knife/scraper attachment bolt is also an adjustment bolt.)

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

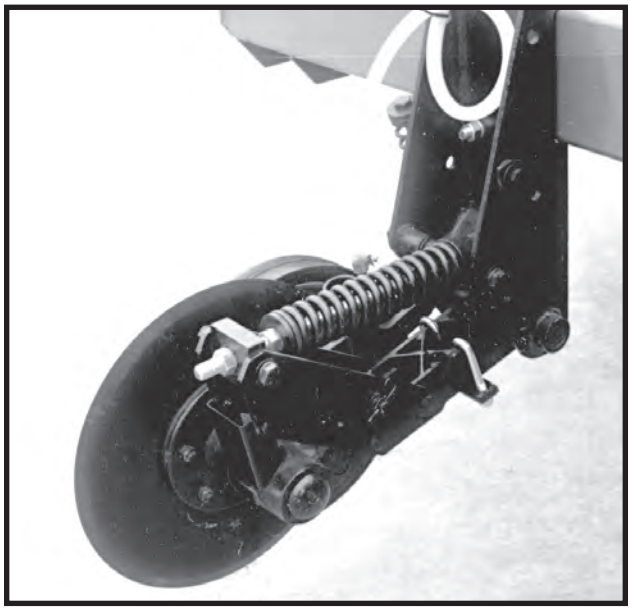


The notched single disc fertilizer opener mounted residue wheel is designed for applications where row unit mounted residue wheel attachments cannot be installed. The residue wheel is attached to the notched single disc fertilizer opener using 5/8" x 3 1/2" and 1/2" x 1 3/4" hardware.

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.

HD SINGLE DISC FERTILIZER OPENER

77899-7

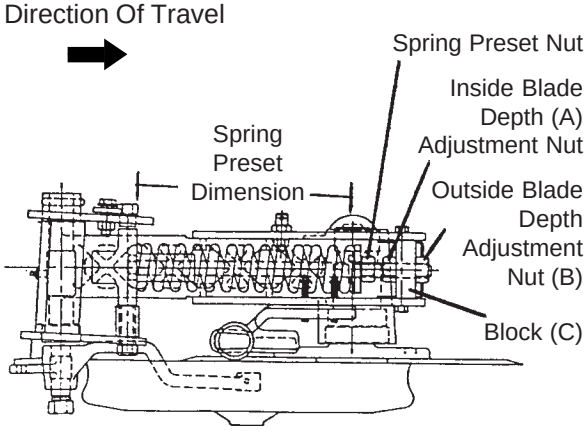


Placement of fertilizer with the HD single disc fertilizer opener is recommended at 3 1/2" - 4" from the row. **Never locate the opener to place fertilizer closer than 3".**

If planter frame is level and at approximately 20" operating height, maximum blade depth for placement of fertilizer is approximately 5". Soil conditions can affect depth slightly.

To adjust blade depth, raise planter to remove weight from the fertilizer opener. Loosen inside adjustment nut (A) with 1 1/8" wrench. Turn outside nut (B) clockwise to decrease blade depth or counterclockwise to increase blade depth. One full turn of blade depth adjustment nut changes blade depth 3/8". Tighten inside nut tight against block (C). Adjust all fertilizer openers to the same depth.

L0114(PLTR3) (Overhead View)



R.H. Configuration Shown

Fertilizer opener down pressure can be adjusted from 250 pounds to 640 pounds. **To make down pressure adjustments**, raise planter to remove weight from the fertilizer opener and turn spring preset nut clockwise to increase down pressure and counterclockwise to decrease down pressure. Adjust all rows to a similar setting. Minimal spring pressure for acceptable operation is recommended. See chart for setting spring length specifications.

SPRING PRESET DIMENSION	DOWN PRESSURE
11"	250 Pounds
10 3/4"	320 Pounds
***10 1/2"**	**370 Pounds**
10 1/4"	450 Pounds
10"	520 Pounds
9 3/4"	580 Pounds
9 1/2"	640 Pounds

* Suggested initial setting.

CAUTION: DO NOT adjust spring preset dimension to less than 9 1/2".

IMPORTANT: Excessive down pressure can cause up-lift on the planter frame and affect performance of the machine. When lowered to planting position, planter frame should be at a height of approximately 20". In loose ground conditions, excessive down pressure can cause openers to run too deep and push dirt ahead of opener and may stop soil press wheel and/or opener blade from turning.

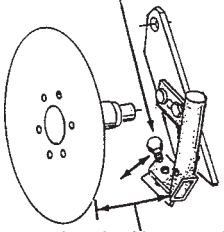
DANGER: Always install all lockup brackets before working under the machine.

CAUTION: Do not operate the HD single disc openers at full down pressure tension when planting in rocky ground. Chipping or breakage of the blade will occur.

The spring loaded dry fertilizer drop tube/scraper should be adjusted periodically to maintain 1/8" gap between drop tube and opener blade. If this dimension is not maintained the fertilizer may not drop into the proper location.

Loosen scraper adjustment bolt. Slotted hole in scraper allows up or down adjustment.

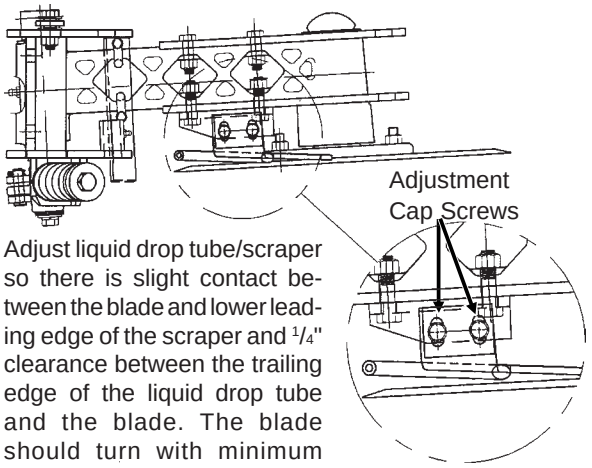
FOC016(PLTR4)



Adjust scraper to maintain 1/8" gap between drop tube and opener blade. Distance is exaggerated in above illustration.

Maintain liquid fertilizer drop tube/scraper adjustment as shown below.

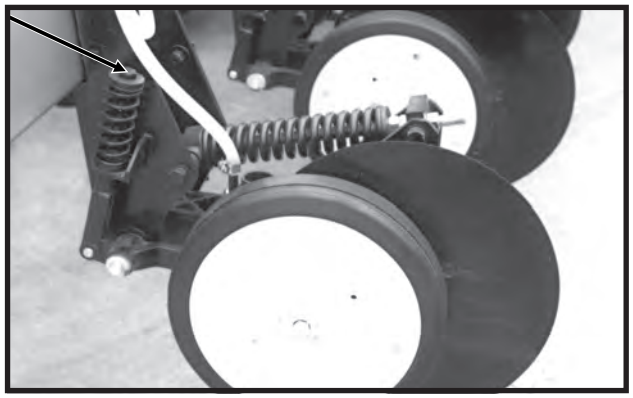
(INS16a)



Adjust liquid drop tube/scraper so there is slight contact between the blade and lower leading edge of the scraper and 1/4" clearance between the trailing edge of the liquid drop tube and the blade. The blade should turn with minimum amount of drag.

Additional press wheel down pressure may be desirable in heavy moist soils. **To increase press wheel spring pressure** turn press wheel spring adjustment bolt clockwise.

77899-4



NOTE: The soil press wheel is not intended to be used for gauging fertilizer opener operating depth.

The HD single disc fertilizer opener is designed to be locked in a raised position when the fertilizer attachment is not in use or during storage.

To lock the HD single disc fertilizer opener in the raised position, proceed as follows:

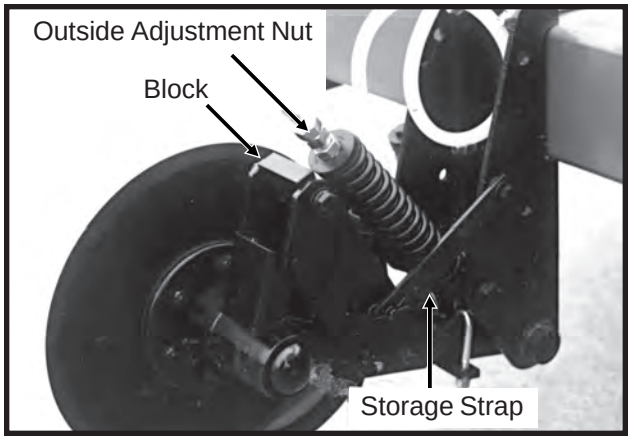
Step 1 With the planter in the planting position, remove outside blade depth adjustment nut. ("B" in illustration on previous page.)

Step 2 Raise planter until adjustment bolt clears adjustment block.

Step 3 Raise spring to clear blade assembly and at the same time raise blade assembly until storage strap can be positioned onto lockup pin and install hair pin clip.

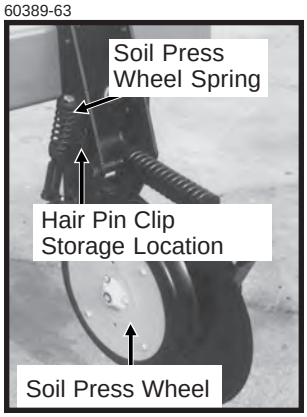
Step 4 Re-install depth adjustment nut and tighten.

77899-12



Step 5 *(Where Applicable - If the HD single disc fertilizer opener is equipped with a lockup bar the soil press wheel is raised and locked automatically when the blade assembly is raised and this step is not necessary.)* Raise soil press wheel until lockup hole in soil press wheel spring adjustment bolt is visible. Remove hair pin clip from storage position and install in lockup hole.

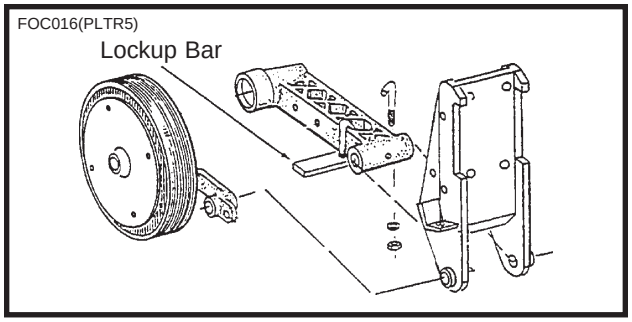
60389-63



60355-32

Manual Soil Press Wheel Lockup

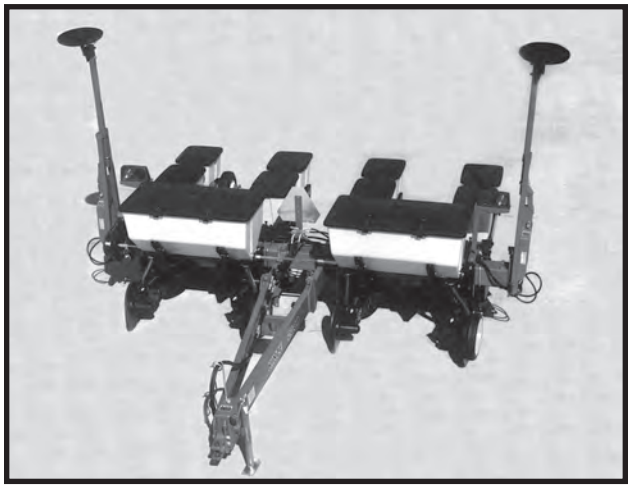
FOC016(PLTR5)



Automatic Soil Press Wheel Lockup

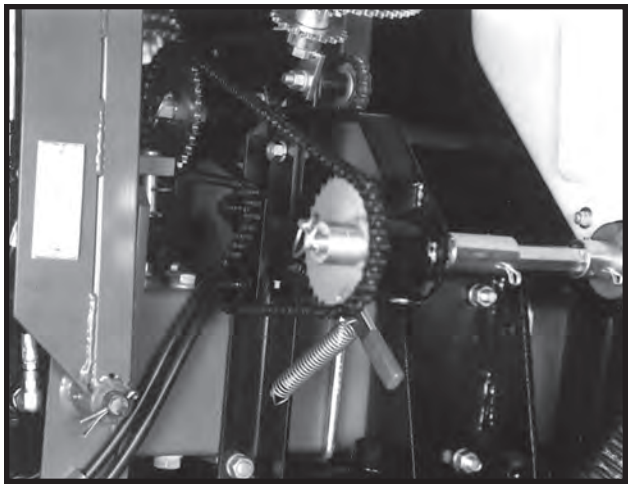
DRY FERTILIZER ATTACHMENT

73327-24



The rate of fertilizer application is determined by the drive/driven sprocket combination on the fertilizer drive and by the auger position in the hopper.

61111-7



(PLTR7)

Shown With Augers Positioned For Low Rate Delivery

(PLTR6)

Shown With Augers Positioned For High Rate Delivery

Remove 1/4" stainless steel cap screws holding augers in place on shaft and reposition augers to change delivery rate.

See Dry Fertilizer Application Rate Chart at the end of this section. Uneven delivery of fertilizer will occur if the high rate position is used at too low a rate setting.

A fertilizer transmission is located on the right side of the planter directly ahead of the row unit transmission on all machines. This transmission is designed to allow simple, rapid changes in sprockets to obtain the desired fertilizer application rates. By removing the pins on the hexagon shafts, sprockets can be interchanged with those on the sprocket storage rod bolted to the transmission plate. Chain tension is controlled by a spring loaded idler. This idler is adjusted with a ratchet arm located to the inside of the transmission. 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 fertilizer application charts found at the end of this section will aid you in selecting the correct sprocket combinations.

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

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

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

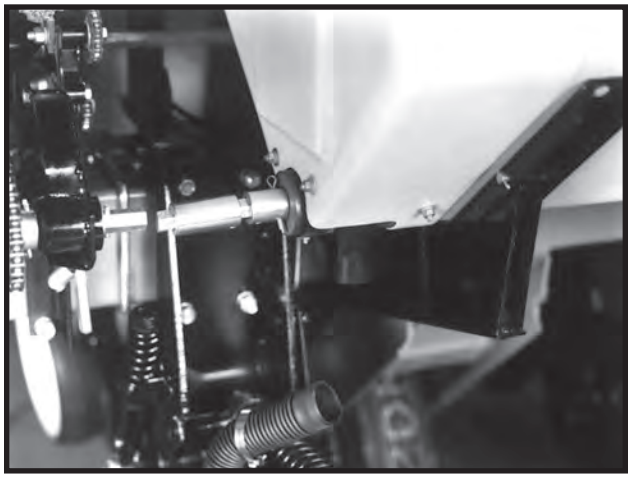
IMPORTANT: Certain analysis of fertilizer, if placed too close to the seed, may cause germination or seedling damage especially if used in amounts in excess of fertilizer manufacturer's recommendations. Check with your fertilizer dealer or manufacturer for the correct amount and placement.

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

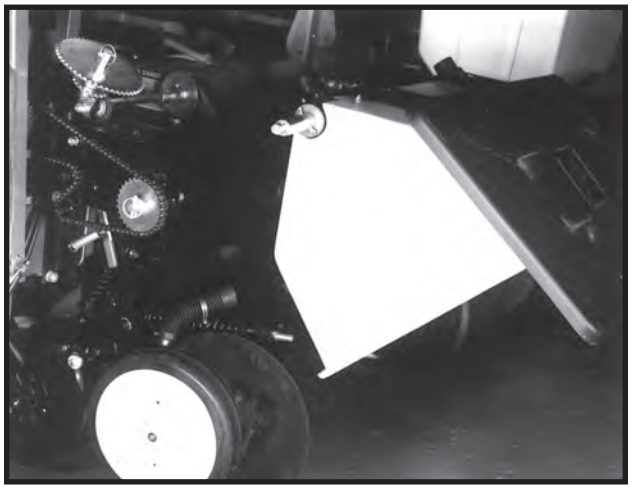
CLEANING

The dry fertilizer hoppers are designed to tip forward for dumping and ease of cleaning. To dump hoppers, first disconnect the drive shaft from the transmission and/or adjacent hopper. LOOSEN HOSE CLAMPS AND REMOVE HOSES FROM EACH HOPPER. Remove the rear 1/2" x 1 1/4" cap screw from between each hopper saddle and hopper mount. Rotate each hopper lid to the back side of the hopper and carefully tip the hopper forward. After dumping contents, flush all loose fertilizer from the hoppers and hoses.

61111-45



61111-14

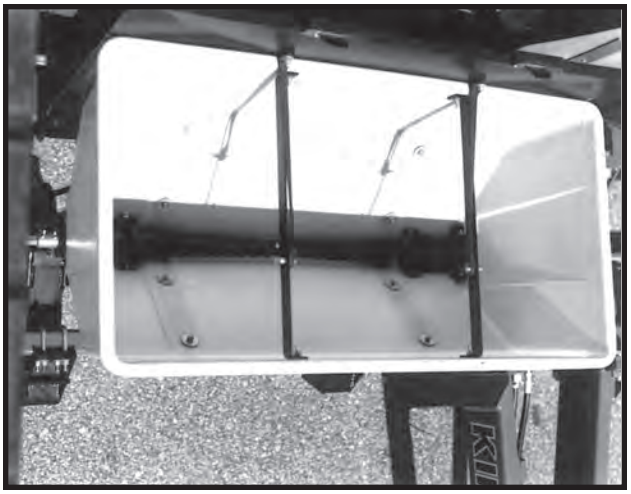


At the end of the planting season, or when fertilizer attachment is not going to be used for a period of time, the hoppers should be disassembled, cleaned and metal surfaces coated with a rust preventative.

To disassemble auger assemblies, remove 1/4" cotter pin and bearing from one end of the shaft. Pull auger assembly from opposite end of hopper. Remove stainless steel cap screws from auger shaft and remove all auger components for cleaning. Coat all parts with rust preventative before reassembly. Reinstall auger halves in proper low rate or high rate position.

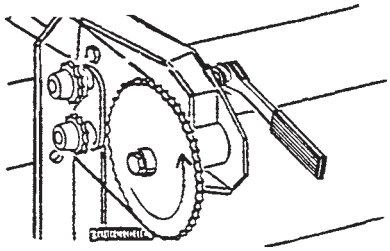
To reassemble, slide auger assembly through the outlet housing back into the hopper. Secure in place by reinstalling the bearing and cotter pin.

59542-38



Check auger installation by rotating the shaft in the direction shown below to see that the spirals on the auger move toward the ends of the hopper. If not, remove auger assembly, turn 180° and reinstall.

(PLTR8a)



DIRECTION OF ROTATION

Be certain augers turn freely. If not, loosen the 5/16" carriage bolts in the outlet housings, rotate the auger several times and retighten the 5/16" carriage bolts. This should allow the housings to realign themselves with the auger.

Install auger baffles over the augers and secure in place with two hair pin clips in each hopper. Do not operate fertilizer attachment without auger baffles in place.

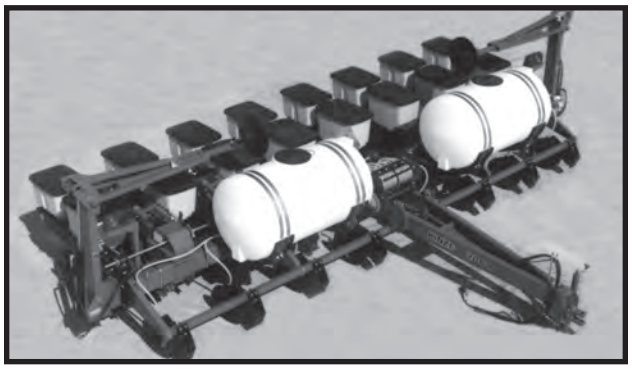
IMPORTANT: Frequent lubrication of auger bearings is critical to ensure that the augers will turn freely. Check lubrication section for frequency.

NOTE: Be sure the auger assembly is installed so the flighting on the augers move material to the outer openings in the hopper when the augers are rotated in the direction they will turn when the planter is in operation.

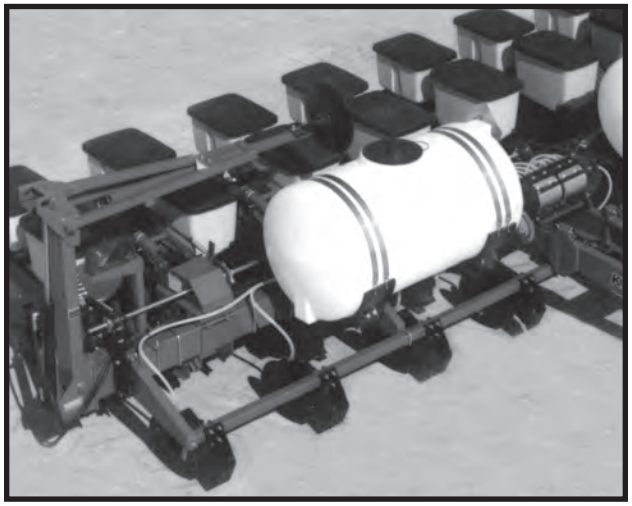
LIQUID FERTILIZER ATTACHMENT

OPTIONAL SQUEEZE PUMP

73327-15



73327-15



Shown With Double Disc Fertilizer Openers Installed

On machines equipped with the squeeze pump option, the rate of liquid fertilizer application is determined by the combination of sprockets on the squeeze pump drive and driven shafts. When changing sprocket combinations, make sure sprockets are in alignment, sprocket retaining collars are tight and chain tension is sufficiently restored.

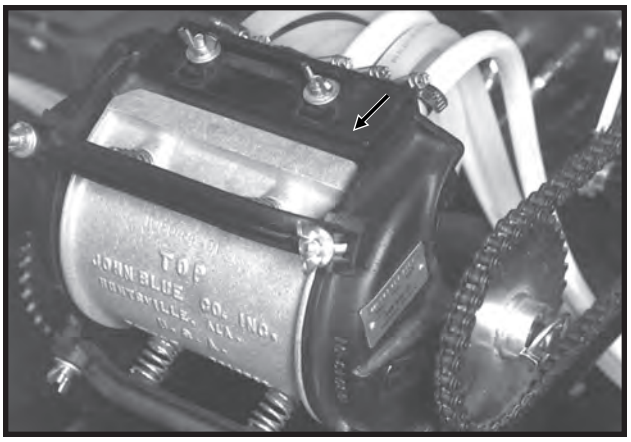
The delivery rate chart found at the end of this section provides an approximate application rate only. Actual delivery will vary with temperature and the particular fertilizer being used.

IMPORTANT: Certain analysis of fertilizer if placed too close to the seed may cause germination or seedling damage especially if used in amounts in excess of fertilizer manufacturer's recommendations. Check with your fertilizer dealer or manufacturer for the correct amount and placement.

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

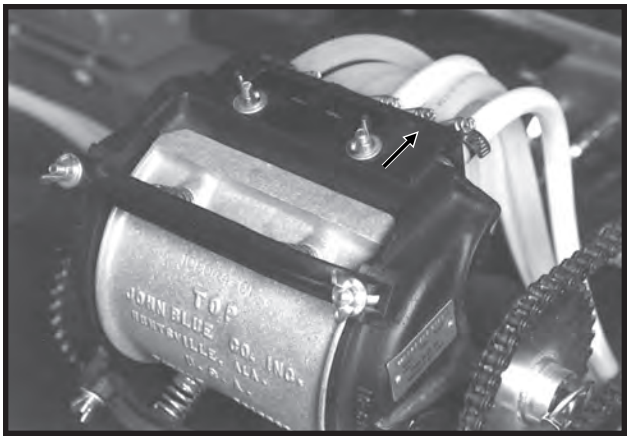
Shut-off valves provided at various locations should be closed to shut off flow when the planter sits overnight or for extended periods of time. It is also important to close the tank valves whenever service on the pump or hoses is being performed. To prolong the life of the hoses in the squeeze pump, the discharge manifold must be repositioned to the rearward position when not in use to prevent hose distortion.

81689-16



Discharge Manifold Rearward

81689-19



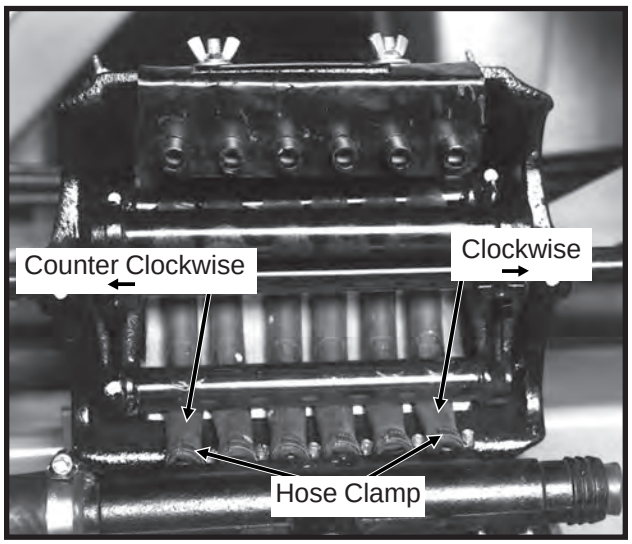
Discharge Manifold Forward

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

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

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

61010-5



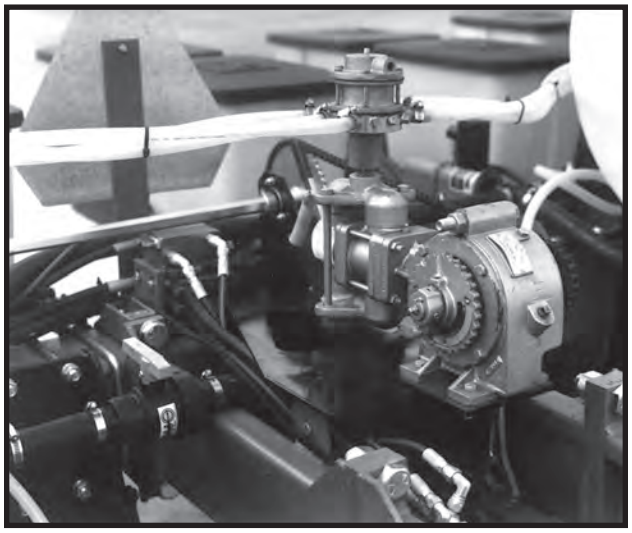
For the right hand hose (facing the pump from front of planter as shown above) twist the hose 1/4 turn in the clockwise direction.

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

Retighten hose clamp.

OPTIONAL PISTON PUMP

69045-6

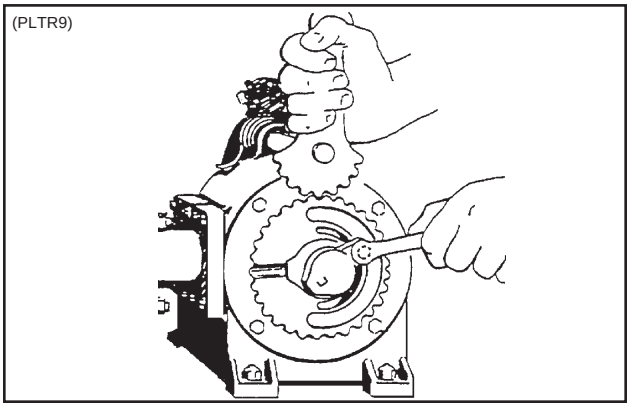


If the machine is equipped with the piston pump option, the rate of liquid fertilizer application is determined by the piston pump settings.

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.

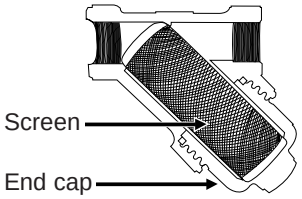
NOTE: Periodically check flow to all rows. If one or more lines are plugged, set rate will be delivered to remaining rows.

CLEANING

The tanks and all hoses are made of sturdy plastic and rubber to resist corrosion. However, the tanks, 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 (On machines equipped with the piston pump.), should be taken apart and cleaned daily. Remove the end cap to clean the screen.

(INS220)

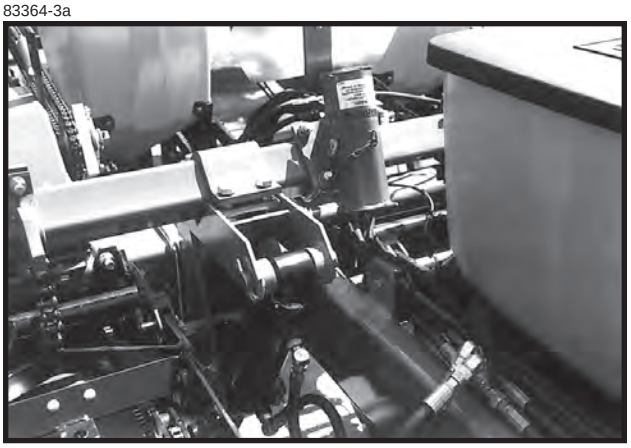


See “Piston Pump Storage” (If Applicable) in the Maintenance Section of this manual.

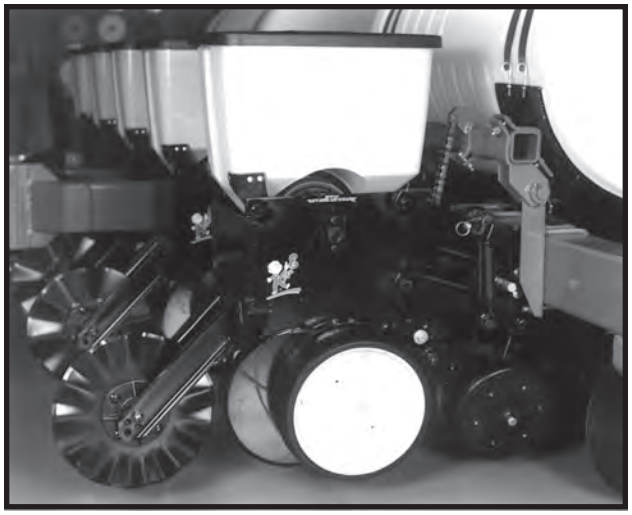
INTERPLANT® ROCK SHAFT ATTACHMENT

The rock shaft is tied to each push row unit parallel arm assembly by a lift chain. The rock shaft lift cylinder is plumbed into the planter lift system. As the planter is raised the rock shaft raises the push units to the maximum upward travel of the parallel arms for clearance in transporting and turning during field operation. By installing the rock shaft cylinder lockup(s), push units are held in the extreme raised position while only the pull row units are being used.

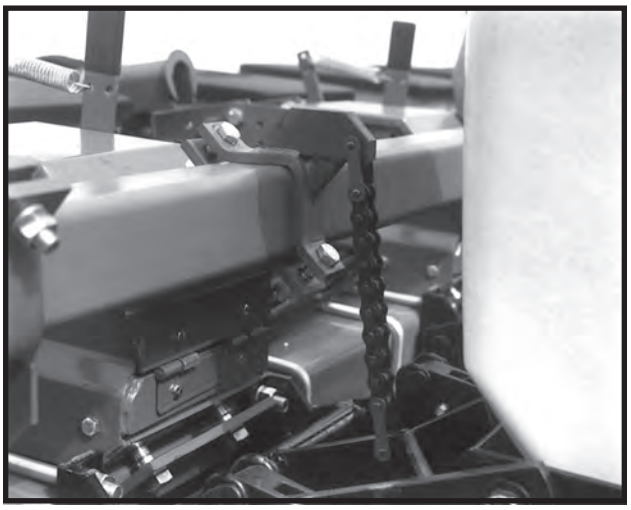
83364-3a



72359-109



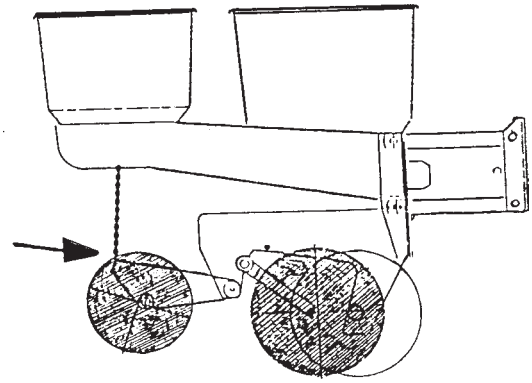
69045-22



CHECKING SEED POPULATION

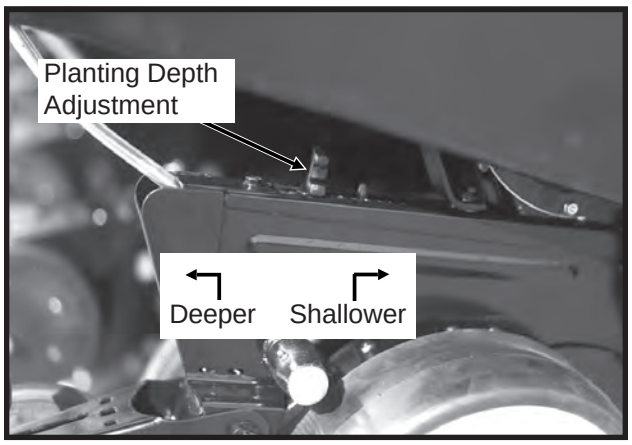
1. Tie up one or more sets of closing wheels by running a light chain or rubber tarp strap between the hopper support panel and closing wheels. It may be necessary to decrease closing wheel arm spring tension.

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	Row Width					
Of Acre	15"	18"	19"	30"	36"	38"
$^{1}/_{1000}$	34' 10"	29' 0"	27' 8"	17' 5"	14' 6"	13' 10"

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.

72359-105

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
30"	0.83
36"	0.69
38"	0.65

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 2000 Pull Type Planters. See “Tire Pressure” for recommended tire pressures.

Not all row spacings listed are applicable to all size planters.

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.

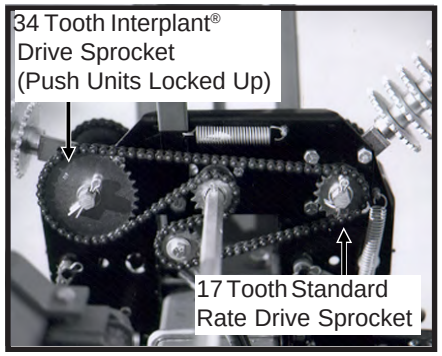
Finger Pickup Seed Meter (Corn, Oil Sunflower)
Larger grades will generally plant more accurately at the high end of the ground speed range than smaller grades. Higher than optimum speeds may result in population rate increase or higher incidence of doubles, particularly with small seed. Medium round 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 the 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/Grain 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.

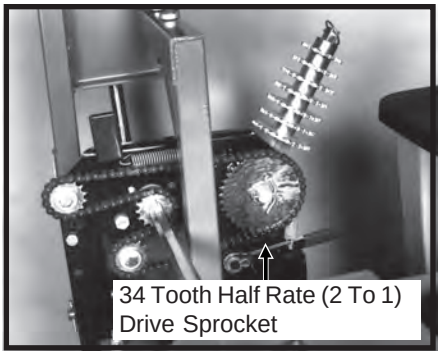
NOTE: Due to a multitude of variables, seed spacing can be adversely affected at speeds above 5.5 MPH.

48496-48



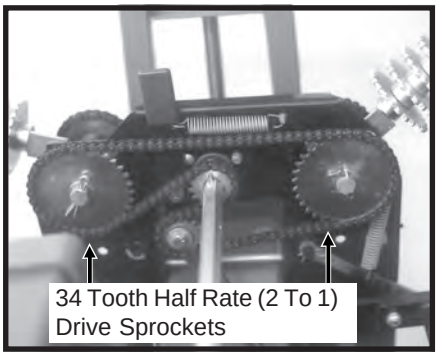
Planting 30"/36"/38" rows using 17 tooth standard rate drive sprocket, use chart on page 6-26.

61010-38



Planting 30"/36"/38" rows using 34 tooth half rate (2 to 1) drive sprocket, use chart on page 6-26 and divide rate shown in chart by 2.

48496-44



Planting 15"/18"/19" rows using 34 tooth half rate (2 to 1) drive sprockets, use chart on page 6-27.

NOTE: 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.

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

30" Rows	36" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
			Drive	Driven		
16,186	13,488	12,778	17	28	4 to 6	12.9
16,785	13,988	13,251	17	27	4 to 6	12.5
17,431	14,526	13,761	17	26	4 to 6	12.0
18,090	15,075	14,281	19	28	4 to 6	11.6
18,128	15,107	14,312	17	25	4 to 6	11.5
18,760	15,633	14,810	19	27	4 to 6	11.1
18,883	15,736	14,908	17	24	4 to 6	11.1
19,481	16,234	15,380	19	26	4 to 6	10.7
19,704	16,420	15,556	17	23	4 to 6	10.6
20,261	16,884	15,995	19	25	4 to 6	10.3
21,104	17,587	16,662	19	24	4 to 6	9.9
21,898	18,249	17,288	23	28	4 to 6	9.5
22,022	18,352	17,386	19	23	4 to 6	9.5
22,709	18,924	17,928	23	27	4 to 6	9.2
22,850	19,042	18,040	24	28	4 to 6	9.2
23,583	19,652	18,618	23	26	4 to 6	8.9
23,697	19,747	18,708	24	27	4 to 6	8.8
23,802	19,835	18,791	25	28	4 to 6	8.8
23,853	19,877	18,831	17	19	4 to 6	8.8
24,526	20,438	19,363	23	25	4 to 6	8.5
24,608	20,507	19,427	24	26	4 to 6	8.5
24,684	20,570	19,487	25	27	4 to 6	8.5
24,755	20,629	19,543	26	28	4 to 6	8.4
25,548	21,290	20,169	23	24	4 to 6	8.2
25,592	21,327	20,205	24	25	4 to 6	8.2
25,633	21,361	20,237	25	26	4 to 6	8.2
25,671	21,393	20,267	26	27	4 to 6	8.1
25,707	21,422	20,295	27	28	4 to 6	8.1
26,659	22,216	21,046	23	23	4 to 6	7.8
27,646	23,038	21,826	28	27	4 to 6	7.6
27,684	23,070	21,856	27	26	4 to 6	7.6
27,770	23,141	21,923	25	24	4 to 6	7.5
27,818	23,181	21,961	24	23	4 to 6	7.5
28,709	23,924	22,665	28	26	4 to 6	7.3
28,791	23,993	22,730	27	25	4 to 6	7.3
28,977	24,147	22,876	25	23	4 to 6	7.2
29,795	24,829	23,522	19	17	4 to 6	7.0
29,858	24,881	23,572	28	25	4 to 6	7.0
29,991	24,993	23,677	27	24	4 to 6	7.0
30,136	25,113	23,792	26	23	4 to 6	7.0
31,102	25,918	24,554	28	24	3 to 6	6.7
31,295	26,079	24,707	27	23	3 to 6	6.7
32,271	26,893	25,477	23	19	3 to 5.5	6.5
32,454	27,045	25,622	28	23	3 to 5.5	6.5
33,674	28,062	26,585	24	19	3 to 5.5	6.2
35,077	29,231	27,693	25	19	3 to 5	6.0
36,068	30,056	28,474	23	17	3 to 5	5.8
36,480	30,400	28,800	26	19	3 to 5	5.7
37,636	31,363	29,713	24	17	3 to 5	5.6
37,883	31,570	29,908	27	19	3 to 5	5.5
39,204	32,670	30,951	25	17	3 to 4.5	5.3
39,287	32,739	31,016	28	19	3 to 4.5	5.3
40,772	33,977	32,189	26	17	3 to 4.5	5.1
42,340	35,284	33,427	27	17	3 to 4.5	4.9
43,908	36,590	34,665	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	30" Rows	36" Rows	38" Rows		30" Rows	36" Rows	38" Rows		
17	28	80,928	67,440	63,891	2.6	64,742	53,952	51,113	3.2	2 to 8
17	27	83,926	69,938	66,257	2.5	67,141	55,950	53,006	3.1	2 to 8
17	26	87,154	72,628	68,805	2.4	69,723	58,102	55,044	3.0	2 to 8
19	28	90,449	75,374	71,407	2.3	72,359	60,299	57,126	2.9	2 to 8
19	27	93,799	78,166	74,052	2.2	75,039	62,533	59,242	2.8	2 to 8
17	24	94,416	78,680	74,539	2.2	75,533	62,944	59,631	2.8	2 to 8
17	23	98,521	82,101	77,780	2.1	78,817	65,681	62,224	2.7	2 to 8
19	25	101,303	84,419	79,976	2.1	81,042	67,535	63,981	2.6	2 to 8
19	24	105,524	87,937	83,309	2.0	84,419	70,350	66,647	2.5	2 to 8
23	28	109,491	91,243	86,440	1.9	87,593	72,994	69,152	2.4	2 to 8
19	23	110,112	91,760	86,931	1.9	88,090	73,408	69,545	2.4	2 to 8
24	28	114,252	95,210	90,199	1.8	91,402	76,168	72,159	2.3	2 to 8
24	27	118,483	98,736	93,539	1.8	94,786	78,989	74,831	2.2	2 to 8
17	19	119,263	99,386	94,155	1.8	95,410	79,509	75,324	2.2	2 to 8
24	26	123,040	102,534	97,137	1.7	98,432	82,027	77,710	2.1	2 to 8
26	28	123,773	103,144	97,715	1.7	99,018	82,515	78,172	2.1	2 to 8
24	25	127,962	106,635	101,023	1.6	102,370	85,308	80,818	2.0	2 to 8
26	27	128,357	106,964	101,334	1.6	102,686	85,571	81,067	2.0	2 to 8
23	23	133,294	111,078	105,232	1.6	106,635	88,862	84,186	2.0	2 to 8
27	26	138,420	115,350	109,279	1.5	110,736	92,280	87,423	1.9	2 to 8
24	23	139,089	115,907	109,807	1.5	111,271	92,726	87,846	1.9	2 to 8
25	23	144,884	120,737	114,382	1.4	115,907	96,590	91,506	1.8	2 to 8
19	17	148,975	124,146	117,612	1.4	119,180	99,317	94,090	1.8	2 to 8
27	24	149,955	124,963	118,386	1.4	119,964	99,970	94,709	1.7	2 to 8
28	24	155,509	129,591	122,770	1.3	124,407	103,673	98,216	1.7	2 to 8
23	19	161,355	134,463	127,386	1.3	129,084	107,570	101,909	1.6	2 to 8
28	23	162,270	135,225	128,108	1.3	129,816	108,180	102,486	1.6	2 to 8
24	19	168,371	140,309	132,924	1.2	134,696	112,247	106,339	1.6	2 to 8
25	19	175,386	146,155	138,463	1.2	140,309	116,924	110,770	1.5	2 to 8
23	17	180,338	150,282	142,372	1.2	144,270	120,226	113,898	1.5	2 to 8
26	19	182,402	152,001	144,001	1.1	145,922	121,601	115,201	1.4	2 to 7
27	19	189,417	157,848	148,540	1.1	151,534	126,278	118,832	1.4	2 to 7
28	19	196,433	163,694	155,078	1.1	157,146	130,955	124,062	1.3	2 to 7
26	17	203,861	169,884	160,943	1.0	163,089	135,907	128,754	1.3	2 to 7
27	17	211,702	176,418	167,133	0.9	169,362	141,134	133,706	1.2	2 to 7
28	17	219,542	182,952	173,323	0.9	175,634	146,362	138,658	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

APPROXIMATE SEEDS/ACRE FOR 15"/18"/19" ROW WIDTHS USING 34 TOOTH HALF RATE (2 TO 1) DRIVE REDUCTION

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	15" Rows	18" Rows	19" Rows		15" Rows	18" Rows	19" Rows		
17	28	80,928	67,440	63,891	5.2	64,742	53,952	51,113	6.4	2 to 8
17	27	83,926	69,938	66,257	5.0	67,141	55,950	53,006	6.2	2 to 8
17	26	87,154	72,628	68,805	4.8	69,723	58,102	55,044	6.0	2 to 8
19	28	90,449	75,374	71,407	4.6	72,359	60,299	57,126	5.8	2 to 8
19	27	93,799	78,166	74,052	4.4	75,039	62,533	59,242	5.6	2 to 8
17	24	94,416	78,680	74,539	4.4	75,533	62,944	59,631	5.6	2 to 8
17	23	98,521	82,101	77,780	4.2	78,817	65,681	62,224	5.4	2 to 8
19	25	101,303	84,419	79,976	4.2	81,042	67,535	63,981	5.2	2 to 8
19	24	105,524	87,937	83,309	4.0	84,419	70,350	66,647	5.0	2 to 8
23	28	109,491	91,243	86,440	3.8	87,593	72,994	69,152	4.8	2 to 8
19	23	110,112	91,760	86,931	3.8	88,090	73,408	69,545	4.8	2 to 8
24	28	114,252	95,210	90,199	3.6	91,402	76,168	72,159	4.6	2 to 8
24	27	118,483	98,736	93,539	3.6	94,786	78,989	74,831	4.4	2 to 8
17	19	119,263	99,386	94,155	3.6	95,410	79,509	75,324	4.4	2 to 8
24	26	123,040	102,534	97,137	3.4	98,432	82,027	77,710	4.2	2 to 8
26	28	123,773	103,144	97,715	3.4	99,018	82,515	78,172	4.2	2 to 8
24	25	127,962	106,635	101,023	3.2	102,370	85,308	80,818	4.0	2 to 8
26	27	128,357	106,964	101,334	3.2	102,686	85,571	81,067	4.0	2 to 8
23	23	133,294	111,078	105,232	3.2	106,635	88,862	84,186	4.0	2 to 8
27	26	138,420	115,350	109,279	3.0	110,736	92,280	87,423	3.8	2 to 8
24	23	139,089	115,907	109,807	3.0	111,271	92,726	87,846	3.8	2 to 8
25	23	144,884	120,737	114,382	2.8	115,907	96,590	91,506	3.6	2 to 8
19	17	148,975	124,146	117,612	2.8	119,180	99,317	94,090	3.6	2 to 8
27	24	149,955	124,963	118,386	2.8	119,964	99,970	94,709	3.4	2 to 8
28	24	155,509	129,591	122,770	2.6	124,407	103,673	98,216	3.4	2 to 8
23	19	161,355	134,463	127,386	2.6	129,084	107,570	101,909	3.2	2 to 8
28	23	162,270	135,225	128,108	2.6	129,816	108,180	102,486	3.2	2 to 8
24	19	168,371	140,309	132,924	2.4	134,696	112,247	106,339	3.2	2 to 8
25	19	175,386	146,155	138,463	2.4	140,309	116,924	110,770	3.0	2 to 8
23	17	180,338	150,282	142,372	2.4	144,270	120,226	113,898	3.0	2 to 8
26	19	182,402	152,001	144,001	2.2	145,922	121,601	115,201	2.8	2 to 7
27	19	189,417	157,848	148,540	2.2	151,534	126,278	118,832	2.8	2 to 7
28	19	196,433	163,694	155,078	2.2	157,146	130,955	124,062	2.6	2 to 7
26	17	203,861	169,884	160,943	2.0	163,089	135,907	128,754	2.6	2 to 7
27	17	211,702	176,418	167,133	1.8	169,362	141,134	133,706	2.4	2 to 7
28	17	219,542	182,952	173,323	1.8	175,634	146,362	138,658	2.4	2 to 7

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

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	30" Rows	36" Rows	38" Rows		30" Rows	36" Rows	38" Rows		
17	28	48,557	40,464	38,335	4.3	40,464	33,720	31,945	5.2	2 to 8
17	27	50,356	41,963	39,754	4.2	41,963	34,969	33,129	5.0	2 to 8
17	26	52,292	43,577	41,283	4.0	43,577	36,314	34,403	4.8	2 to 8
19	28	54,269	45,224	42,844	3.9	45,225	37,687	35,704	4.6	2 to 8
19	27	56,279	46,900	44,431	3.7	46,900	39,083	37,026	4.5	2 to 8
17	24	56,650	47,208	44,723	3.7	47,208	39,340	37,270	4.4	2 to 8
17	23	59,113	49,261	46,668	3.5	49,261	41,051	38,890	4.2	2 to 8
19	25	60,782	50,651	47,986	3.4	50,652	42,210	39,988	4.1	2 to 8
19	24	63,314	52,762	49,985	3.3	52,762	43,968	41,654	4.0	2 to 8
23	28	65,695	54,746	51,864	3.2	54,746	45,621	43,220	3.8	2 to 8
19	23	66,067	55,056	52,159	3.2	55,056	45,880	43,465	3.8	2 to 8
24	28	68,551	57,126	54,119	3.0	57,126	47,605	45,099	3.7	2 to 8
24	27	71,090	59,242	56,123	2.9	59,242	49,368	46,770	3.5	2 to 8
17	19	71,558	59,632	56,493	2.9	59,631	49,693	47,077	3.5	2 to 8
24	26	73,824	61,520	58,282	2.8	61,520	51,267	48,569	3.4	2 to 8
26	28	74,264	61,886	58,629	2.8	61,886	51,572	48,858	3.4	2 to 8
24	25	76,772	63,981	60,614	2.7	63,981	53,317	50,511	3.3	2 to 8
26	27	77,014	64,178	60,800	2.7	64,178	53,482	50,667	3.3	2 to 8
23	23	79,976	66,647	63,139	2.6	66,647	55,539	52,616	3.1	2 to 8
27	26	83,052	69,210	65,567	2.5	69,210	57,675	54,640	3.0	2 to 8
24	23	83,453	69,544	65,884	2.5	69,544	57,954	54,904	3.0	2 to 8
25	23	86,930	72,442	68,629	2.4	72,442	60,368	57,191	2.9	2 to 8
19	17	89,385	74,488	70,567	2.3	74,488	62,073	58,806	2.8	2 to 8
27	24	89,973	74,978	71,032	2.3	74,978	62,481	59,193	2.8	2 to 8
28	24	93,305	77,755	73,662	2.2	77,755	64,796	61,385	2.7	2 to 8
23	19	96,813	80,678	76,432	2.2	80,678	67,231	63,693	2.6	2 to 8
28	23	97,362	81,135	76,864	2.1	81,135	67,613	64,054	2.6	2 to 8
24	19	101,023	84,185	79,754	2.1	84,185	70,155	66,462	2.5	2 to 8
25	19	105,232	87,693	83,078	2.0	87,693	73,078	69,231	2.4	2 to 8
23	17	108,233	90,169	85,423	1.9	90,169	75,141	71,186	2.3	2 to 8
26	19	109,441	91,201	86,401	1.9	91,201	76,001	72,001	2.3	2 to 7
27	19	113,650	94,709	89,124	1.8	94,709	78,924	74,770	2.2	2 to 7
28	19	117,860	98,216	93,047	1.8	98,216	81,847	77,539	2.1	2 to 7
26	17	122,317	101,930	96,566	1.7	101,930	84,942	80,471	2.1	2 to 7
27	17	127,021	105,851	100,280	1.6	105,851	88,209	83,566	2.0	2 to 7
28	17	131,725	109,771	103,994	1.6	109,771	91,476	86,661	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 widths, 14' 6" for 36" row widths and 13' 10" for 38" row widths). 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	Driven	30" Rows	36" Rows	38" Rows		
17	28	16,186	13,488	12,778	12.9	2 to 8
17	27	16,785	13,988	13,251	12.5	2 to 8
17	26	17,431	14,526	13,761	12.0	2 to 8
19	28	18,090	15,075	14,281	11.6	2 to 8
19	27	18,760	15,633	14,810	11.1	2 to 8
17	24	18,883	15,736	14,908	11.1	2 to 8
17	23	19,704	16,420	15,556	10.6	2 to 8
19	25	20,261	16,884	15,995	10.3	2 to 8
19	24	21,105	17,587	16,662	9.9	2 to 8
23	28	21,898	18,249	17,288	9.5	2 to 8
19	23	22,022	18,352	17,386	9.5	2 to 8
24	28	22,850	19,042	18,040	9.2	2 to 8
24	27	23,697	19,747	18,708	8.8	2 to 8
17	19	23,853	19,877	18,831	8.8	2 to 8
24	26	24,608	20,507	19,427	8.5	2 to 8
26	28	24,755	20,629	19,543	8.4	2 to 8
24	25	25,592	21,327	20,205	8.2	2 to 8
26	27	25,671	21,393	20,267	8.1	2 to 8
23	23	26,659	22,216	21,046	7.8	2 to 8
27	26	27,684	23,070	21,856	7.6	2 to 8
24	23	27,818	23,181	21,961	7.5	2 to 8
25	23	28,977	24,147	22,876	7.2	2 to 8
19	17	29,795	24,829	23,522	7.0	2 to 8
27	24	29,991	24,993	23,677	7.0	2 to 8
28	24	31,102	25,918	24,554	6.7	2 to 8
23	19	32,271	26,893	25,477	6.5	2 to 8
28	23	32,454	27,045	25,622	6.5	2 to 8
24	19	33,674	28,062	26,585	6.2	2 to 8
25	19	35,077	29,231	27,693	6.0	2 to 8
23	17	36,068	30,056	28,474	5.8	2 to 8
26	19	36,480	30,400	28,800	5.7	2 to 7
27	19	37,883	31,570	29,908	5.5	2 to 7
28	19	39,287	32,739	31,016	5.3	2 to 7
26	17	40,772	33,977	32,189	5.1	2 to 7
27	17	42,340	35,284	33,427	4.9	2 to 7
28	17	43,908	36,590	34,665	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	30" Rows	36" Rows	38" Rows
CLAY GRANULES			
10	4.9	4.1	3.9
11	5.4	4.5	4.3
12	6.1	5.1	4.8
13	6.9	5.7	5.4
14	7.7	6.4	6.0
15	8.5	7.1	6.7
16	9.6	8.0	7.6
17	10.7	8.9	8.4
18	11.4	9.5	9.0
19	13.1	10.9	10.3
20	14.2	11.8	11.2
21	15.5	12.9	12.3
22	16.4	13.7	12.9
23	17.2	14.3	13.6
24	18.8	15.7	14.9
25	20.9	17.4	16.5
26	23.0	19.2	18.1
27	24.1	20.0	19.0
28	25.4	21.2	20.1
29	27.8	23.2	22.0
30	29.6	24.7	23.4
SAND GRANULES			
5	2.9	2.4	2.3
6	4.9	4.0	3.8
7	5.3	4.4	4.2
8	6.3	5.3	5.0
9	7.8	6.5	6.1
10	8.9	7.4	7.0
11	10.2	8.5	8.0
12	11.2	9.3	8.8
13	12.6	10.5	10.0
14	14.1	11.7	11.1
15	15.5	12.9	12.3
16	17.5	14.6	13.8
17	19.4	16.2	15.3
18	21.8	18.2	17.2
19	24.3	20.2	19.1
20	25.7	21.4	20.3
21	27.6	23.0	21.8
22	29.6	24.7	23.4
23	32.0	26.7	25.3
24	34.4	28.7	27.2
25	36.9	30.7	29.1

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	30" Rows	36" Rows	38" Rows
10	4.7	3.9	3.7
11	5.2	4.4	4.1
12	5.8	4.9	4.6
13	6.5	5.4	5.1
14	7.3	6.1	5.7
15	8.2	6.9	6.5
16	9.0	7.5	7.1
17	9.9	8.2	7.8
18	10.7	8.9	8.4
19	11.6	9.7	9.2
20	12.6	10.5	10.0
21	13.6	11.3	10.7
22	14.6	12.1	11.5
23	15.7	13.1	12.4
24	17.0	14.1	13.4
25	18.1	15.1	14.3
26	19.4	16.2	15.3
27	20.9	17.4	16.5
28	22.6	18.8	17.8
29	24.3	20.2	19.1
30	26.7	22.2	21.1

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.

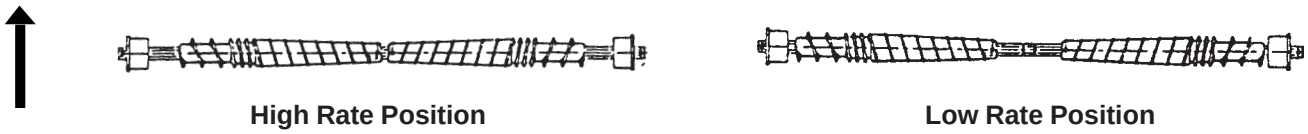
DRY FERTILIZER APPLICATION RATES

APPROXIMATE RATE IN POUNDS PER ACRE

Drive Sprocket	Driven Sprocket	Low Rate Setting			High Rate Setting		
		30" Rows	36" Rows	38" Rows	30" Rows	36" Rows	38" Rows
15	35	32	26	25	94	78	74
15	33	36	30	28	109	91	86
15	30	39	33	31	120	100	95
19	33	45	37	36	135	114	107
19	30	50	42	39	153	126	120
15	19	58	48	46	174	144	136
30	35	61	51	48	188	156	148
30	33	67	55	52	200	166	157
33	35	69	58	55	206	172	163
35	33	76	63	61	214	193	183
33	30	81	67	64	241	200	190
19	15	93	77	73	278	230	219
30	19	116	96	91	347	288	274
33	19	127	105	100	382	317	301
35	19	133	111	106	402	335	318
30	15	146	121	115	440	365	347
33	15	161	134	127	482	400	380
35	15	168	141	133	510	424	403

NOTE: Uneven delivery may result from attempting to use lower rates than indicated by the chart.

Direction Of Rotation



High Rate Position **Low Rate Position**

(PLTR6/PLTR7)

Above chart for planters equipped with contact drive. See "Tire Pressure" for recommended tire pressures.

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

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

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

Remove one spout from one of the fertilizer hoppers and attach a container under the opening. Engage the fertilizer attachment and drive forward for 174'. Weigh the amount of fertilizer caught in the container and multiply that amount by 100. The result will be the pounds of fertilizer delivered per acre when planting in 30" rows. To convert this delivery rate for wider rows, multiply by the following conversion factors:

36" multiply by 0.83
38" multiply by 0.79

LIQUID FERTILIZER SQUEEZE PUMP APPLICATION RATES

GALLONS PER ACRE

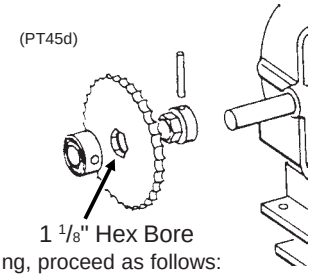
Drive	Driven	30" Rows	36" Rows	38" Rows	Drive	Driven	30" Rows	36" Rows	38" Rows
16	62	6.2	5.0	4.9	46	44	25.3	20.2	20.0
16	*60	6.4	5.1	5.1	20	18	26.8	21.4	21.2
18	62	7.0	5.6	5.5	18	16	27.2	21.7	21.5
18	*60	7.2	5.8	5.7	52	46	27.3	21.8	21.6
16	52	7.4	5.9	5.9	*60	52	27.9	22.4	22.0
20	62	7.8	6.2	6.2	52	44	28.5	22.8	22.5
18	52	8.4	6.7	6.6	62	52	28.8	23.1	22.7
16	46	8.4	6.7	6.6	20	16	30.2	24.1	23.8
16	44	9.2	7.0	7.0	*60	46	31.5	25.2	24.9
20	52	9.3	7.5	7.3	62	46	32.6	26.0	25.7
18	46	9.4	7.6	7.5	*60	44	32.9	26.3	26.0
18	44	9.9	7.9	7.8	62	44	34.1	27.3	26.8
20	46	10.5	8.4	8.3	44	30	35.5	28.3	28.0
20	44	11.0	8.8	8.7	30	20	36.3	29.0	28.6
30	62	11.7	9.3	9.2	46	30	37.0	29.7	29.2
30	*60	12.1	9.7	9.5	30	18	40.3	32.2	31.8
16	30	12.8	10.3	10.2	52	30	41.9	33.5	33.1
30	52	13.9	11.1	11.0	30	16	45.3	36.3	35.7
18	30	14.5	11.6	11.4	*60	30	48.3	38.6	38.2
30	46	15.8	12.6	12.4	62	30	49.9	40.0	39.4
20	30	16.1	12.8	12.8	44	20	53.2	42.5	42.0
30	44	16.5	13.2	13.0	46	20	55.5	44.4	43.9
44	62	17.2	13.7	13.6	44	18	59.0	47.3	46.6
44	*60	17.7	14.2	14.0	46	18	61.8	49.5	48.8
46	62	18.0	14.3	14.2	52	20	62.8	50.2	49.6
46	*60	18.5	14.8	14.6	44	16	66.4	52.8	52.4
16	20	19.4	15.5	15.2	46	16	69.4	55.5	54.8
52	62	20.2	16.2	16.0	52	18	69.8	55.8	55.1
44	52	20.4	16.4	16.1	*60	20	72.5	58.0	57.2
52	*60	20.9	16.7	16.5	62	20	74.9	60.0	59.1
46	52	21.4	17.1	16.9	52	16	78.5	62.8	62.0
16	18	21.5	17.2	17.0	*60	18	80.5	64.4	63.6
18	20	21.7	17.4	17.2	62	18	83.2	66.6	65.7
44	46	23.1	18.5	18.2	*60	16	90.6	72.5	71.5
*60	62	23.4	18.7	18.5	62	16	93.6	74.9	73.9
62	*60	25.0	20.0	19.7					

***Optional sprocket.**

Above chart for planters equipped with contact drive. See "Tire Pressure" for recommended tire pressures.

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

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



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 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 wider rows, multiply by the following conversion factors:

36" multiply by 0.83
38" multiply by 0.79

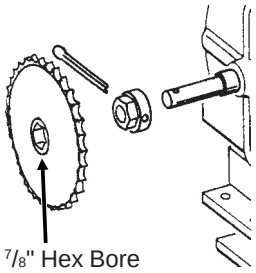
LIQUID FERTILIZER SQUEEZE PUMP APPLICATION RATES

GALLONS PER ACRE

Drive	Driven	30" Rows	36" Rows	38" Rows	Drive	Driven	30" Rows	36" Rows	38" Rows
15	*62	6.9	5.8	5.5	46	*62	21.2	17.7	16.7
19	*62	8.8	7.3	6.9	15	19	22.5	18.8	17.8
15	46	9.3	7.8	7.4	32	34	26.9	22.4	21.2
19	46	11.8	9.8	9.3	34	32	30.3	25.3	24.0
15	34	12.6	10.5	9.9	19	15	36.2	30.1	28.6
15	32	13.4	11.2	10.6	46	34	38.6	32.2	30.5
32	*62	14.7	12.3	11.6	46	32	41.0	34.2	32.4
19	34	16.0	13.3	12.6	32	19	48.1	40.1	38.0
19	32	17.0	14.1	13.4	34	19	51.1	42.6	40.3
32	46	19.9	16.6	15.7	*62	34	52.1	43.4	41.1
34	46	21.1	17.6	16.7					

***Optional sprocket.**

(PT45e)



Above chart for planters equipped with contact drive. See "Tire Pressure" for recommended tire pressures.

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

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

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 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 wider rows, multiply by the following conversion factors:

36" multiply by 0.83
38" multiply by 0.79

LIQUID FERTILIZER PISTON PUMP APPLICATION RATES
GALLONS PER ACRE

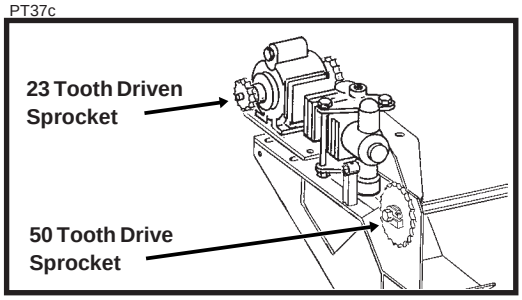
Chart 1
For Planters Equipped With L-4405 Pump With 50 Tooth Drive Sprocket And 23 Tooth Driven Sprocket

Pump Setting	1	2	3	4	5	6	7	8	9	10
4 Row 30"	10.4	20.8	31.2	41.6	52.0	62.4	72.8	83.2	93.6	104.0
4 Row 36"	8.7	17.3	26.0	34.7	43.3	52.0	60.7	69.3	78.0	86.7
4 Row 38"	8.2	16.4	24.6	32.8	41.1	49.3	57.5	65.7	73.9	82.1
6 Row 30"	6.9	13.9	20.8	27.7	34.7	41.6	48.5	55.5	62.4	69.3
6 Row 36"	5.8	11.6	17.3	23.1	28.9	34.7	40.4	46.2	52.0	57.8
6 Row 38"	5.5	11.0	16.4	21.9	27.4	32.8	38.3	43.8	49.3	54.7
8 Row 30"	5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8	52.0

Chart 2
For Planters Equipped With LM-2455-R Pump With 50 Tooth Drive Sprocket And 18 Tooth Driven Sprocket

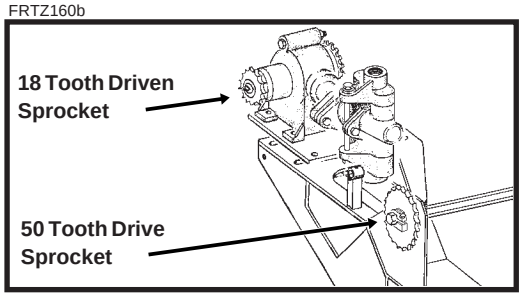
Pump Setting	1	2	3	4	5	6	7	8	9	10
4 Row 30"	8.3	16.5	24.8	32.6	41.3	49.5	57.8	66.0	74.3	83.5
4 Row 36"	6.9	13.7	20.6	27.5	34.4	41.3	48.2	55.0	61.9	68.8
4 Row 38"	6.5	13.0	19.5	26.0	32.6	39.1	45.6	52.1	58.7	65.2
6 Row 30"	5.5	11.0	16.5	22.0	27.5	33.0	38.5	44.0	49.5	55.0
6 Row 36"	4.6	9.2	13.7	18.3	22.9	27.5	32.1	36.7	41.3	45.9
6 Row 38"	4.4	8.7	13.0	17.4	21.7	26.0	30.4	34.8	39.1	43.4
8 Row 30"	4.1	8.3	12.4	16.5	20.6	24.8	28.9	33.0	37.1	41.3

PT37c



GA6145 (L-4405) - Use Chart 1

FRTZ160b



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 ten 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 rate at 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 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 wider rows, multiply by the following conversion factors:

36" multiply by 0.83 38" multiply by 0.79

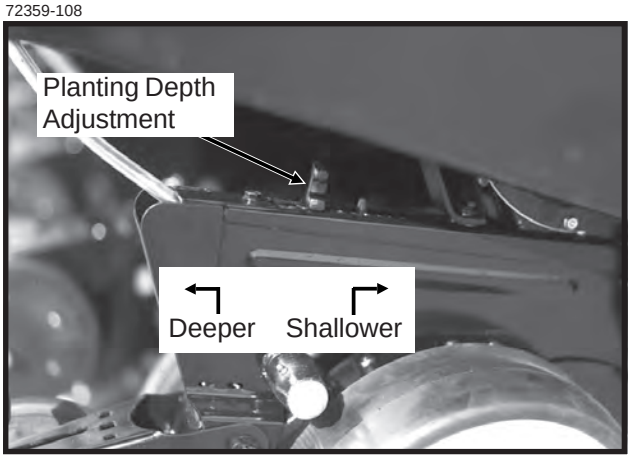
ROW UNIT OPERATION

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



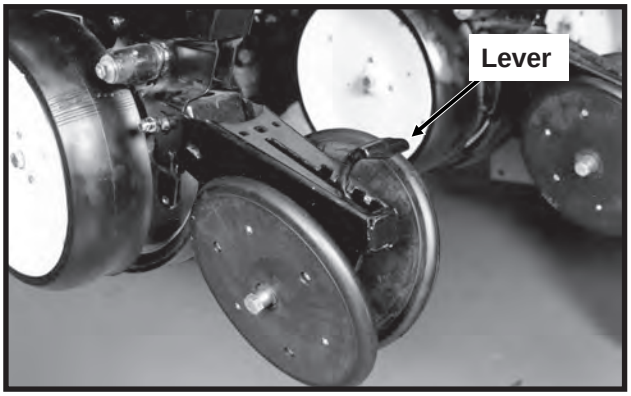
"V" CLOSING WHEEL ADJUSTMENT (Rubber And Cast Iron)

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.

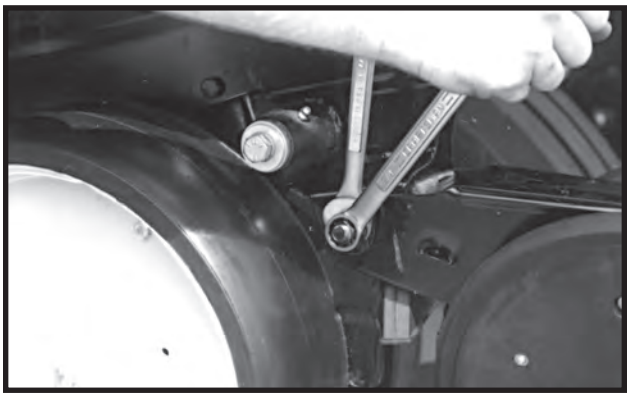
77121-10



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

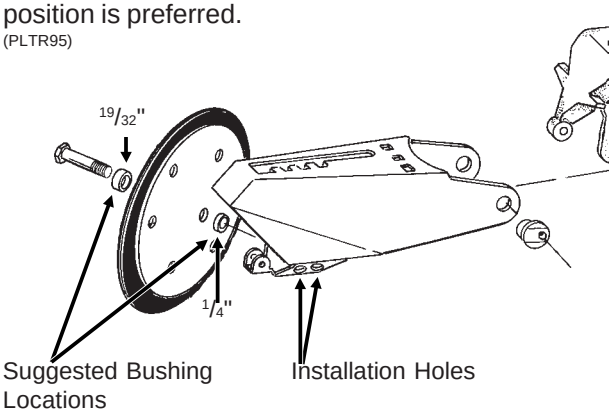
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the "V" closing wheel assembly. Using a $^{3}/_{4}$" wrench, loosen the hardware which attaches the closing wheel arm to the wheel arm stop. Using another $^{3}/_{4}$" wrench turn the eccentric bushings until the **closing wheels 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

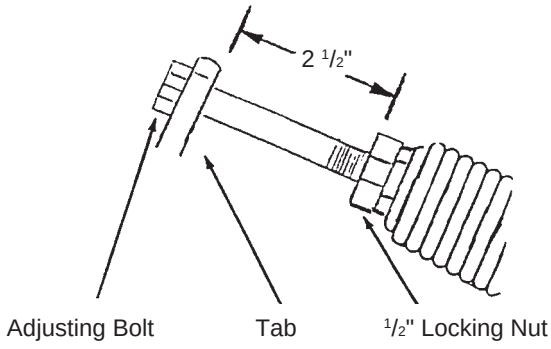
WARNING: Raise planter and install safety lockups before making covering discs/ single press wheel adjustments.

72359-31

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

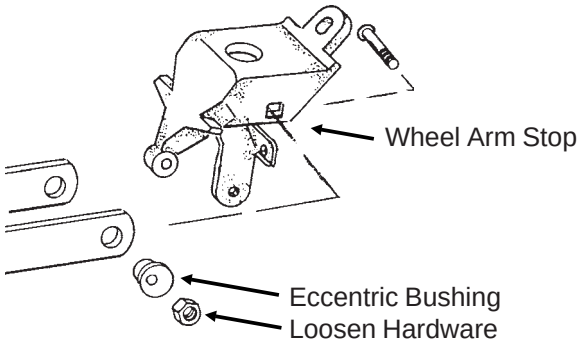
Initial press wheel down force setting should be with 2 1/2" between mounting arm tab and locking nut. To adjust down force spring, loosen 1/2" locking nut and turn adjusting bolt in to increase down force and out to decrease down force. Tighten locking nut against spring plug. Adjust all row units to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

RH993(PLTR12)



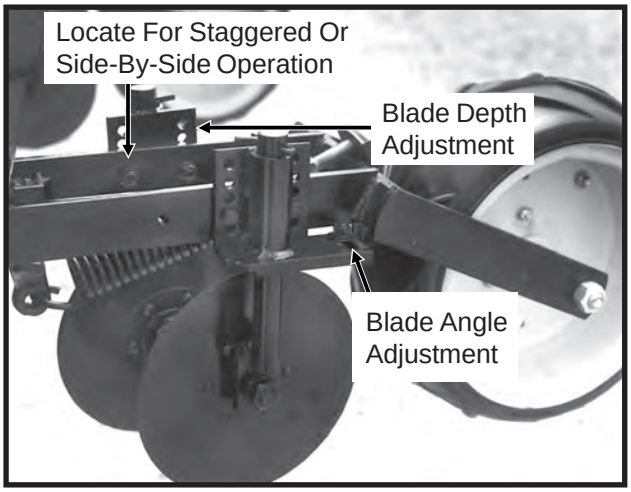
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the covering discs/single press wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another 3/4" wrench, turn the eccentric bushings until the press wheel is aligned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

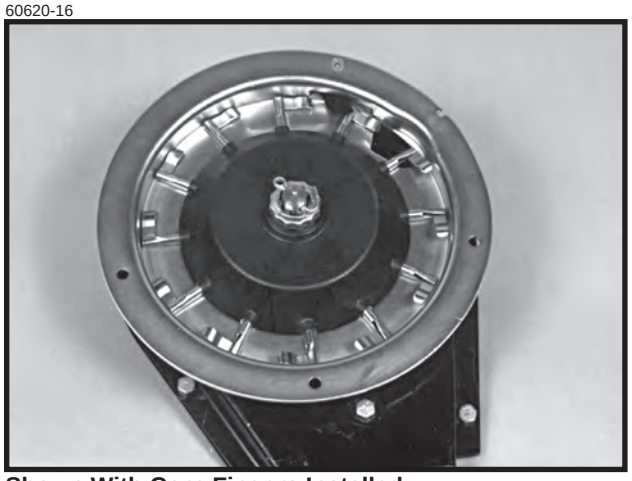
Slotted holes in the disc mount and bracket allow for 0° - 15° blade angle adjustment.

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.

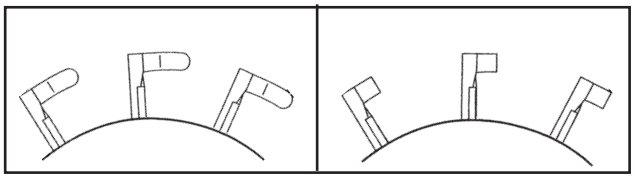
60620-16



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.

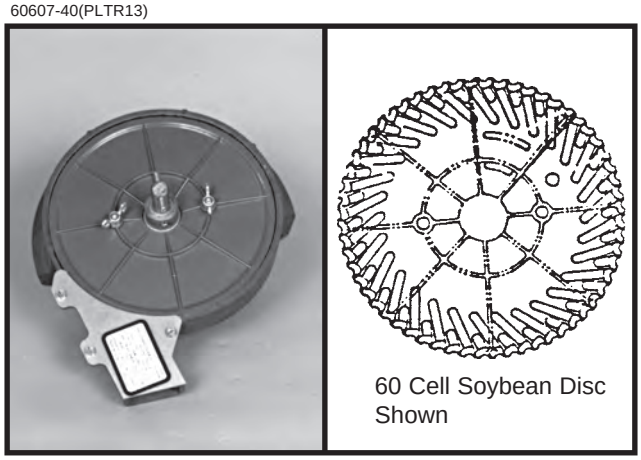
IMPORTANT: To ensure efficient operation of the finger pickup seed meter and extend the life of its components, mix one teaspoon of powdered graphite with the seed twice daily. Even distribution of the graphite with the seed is critical with newer seed coatings to provide lubrication for the seed pickup 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

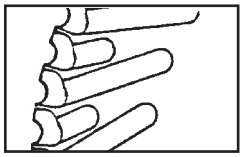
60607-40(PLTR13)



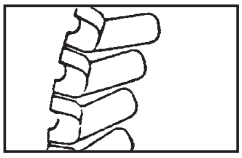
60 Cell Soybean Disc Shown

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

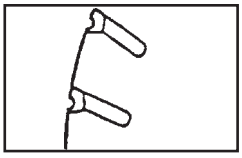
Soybean: *60 cells to meter seed sizes from 2200 to 4000 seeds per pound (Black color-coded).* (PLTR14)



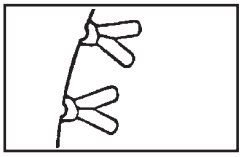
Specialty soybean: *48 cells to meter seed sizes from 1400 to 2200 seeds per pound (Dark blue color-coded).* (PLTR15)



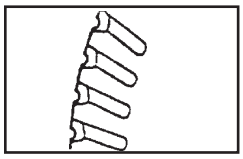
Small milo/grain sorghum: *30 cells to meter seed sizes from 14,000 to 20,000 seeds per pound (Red color-coded).* (PLTR16)



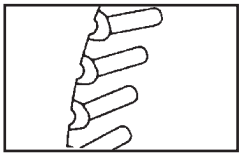
Large milo/grain sorghum: *30 cells to meter seed sizes from 10,000 to 16,000 seeds per pound (Light blue color-coded).* (PLTR17)



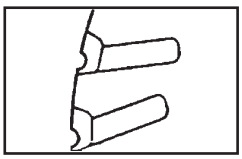
High rate small milo/grain sorghum: *60 cells to meter seed sizes from 12,000 to 18,000 seeds per pound (Red color-coded).* (PLTR18)



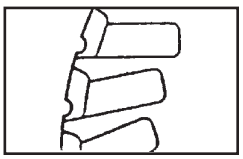
High rate large milo/grain sorghum: *60 cells to meter seed sizes from 10,000 to 14,000 seeds per pound (Yellow color-coded).* (PLTR19)



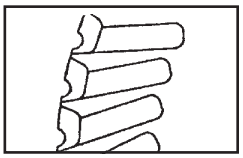
Cotton, acid-delinted: *30 cells to meter seed sizes from 4200 to 5200 seeds per pound (White color-coded).* (PLTR20)



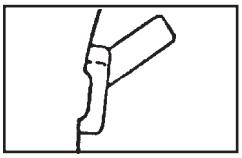
Large cotton, acid-delinted: *36 cells to meter seed sizes from 3800 to 4400 seeds per pound (Tan color-coded).* (PLTR21)



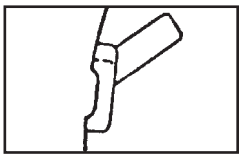
High rate cotton, acid-delinted: *48 cells to meter seed sizes from 4200 to 5200 seeds per pound (Light green color-coded).* (PLTR22)



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 "Seed Meter Drive Release".

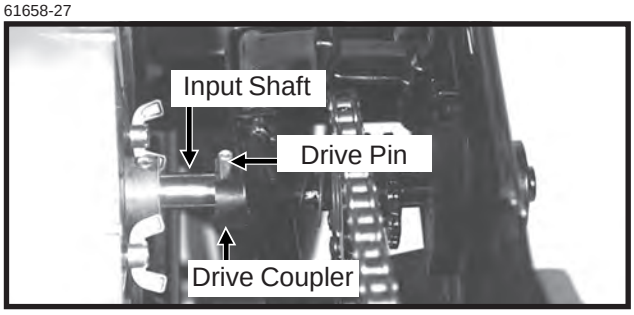
ROW UNIT OPERATION

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.

61658-27



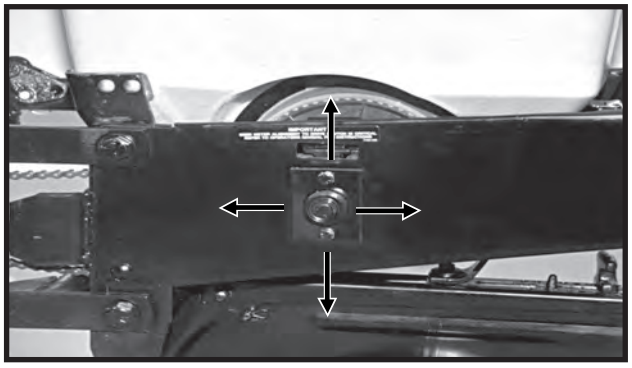
To check alignment:

- 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.

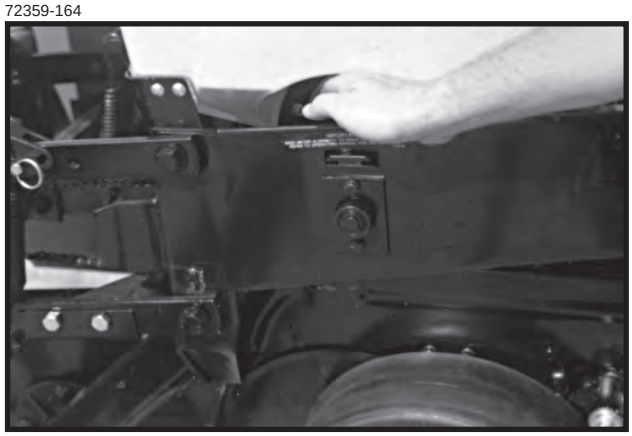
72794-24



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

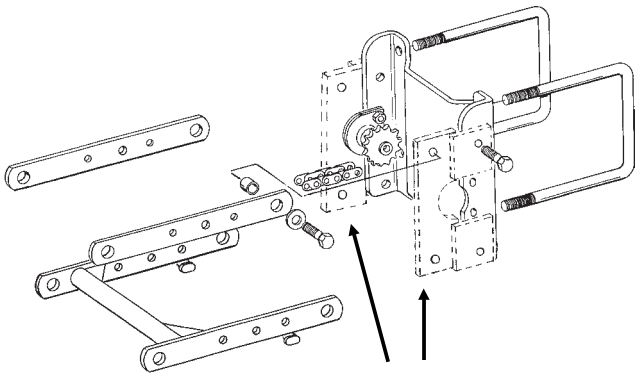


To disengage the drive, lift the release handle and pull outward until the handle locks in the slot in the side of the hopper side panel. To engage the row unit, lift and unlatch the handle. Spring tension will return the mechanism to the drive position.

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 EXTENSION BRACKETS

RUB005/RUB007/RUB015(INS33)

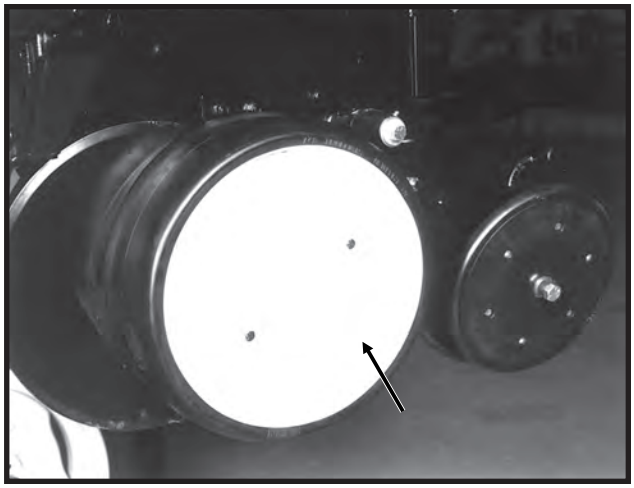


Row unit extension brackets are required on all pull row units if the Model 2000 planter is equipped with the coulter mounted residue wheels and HD single disc fertilizer openers. The brackets extend the row units rearward 4" to provide required clearance.

ROW UNIT OPERATION

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.

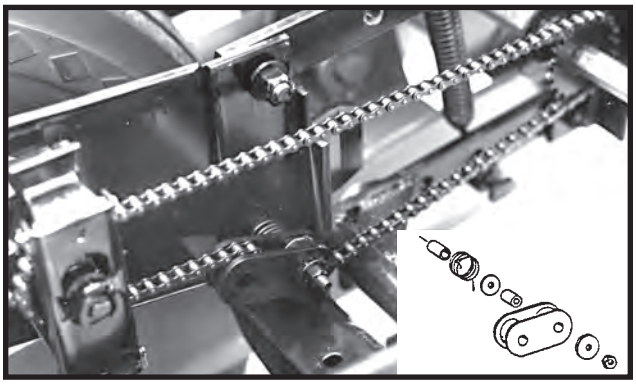
ROW UNIT CHAIN ROUTING

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.

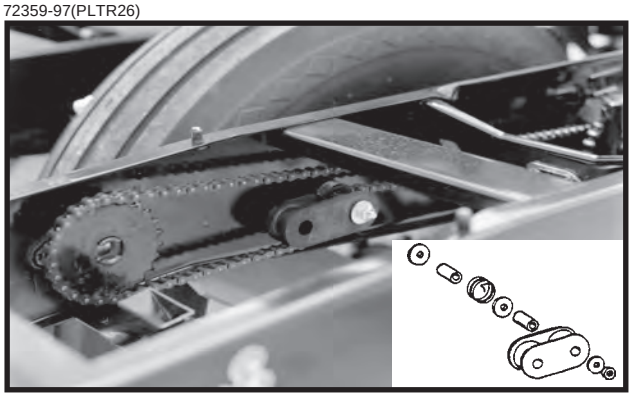
NOTE: When idler shows signs of wear, it can be reversed for prolonged use.

72359-124(PLTR25)



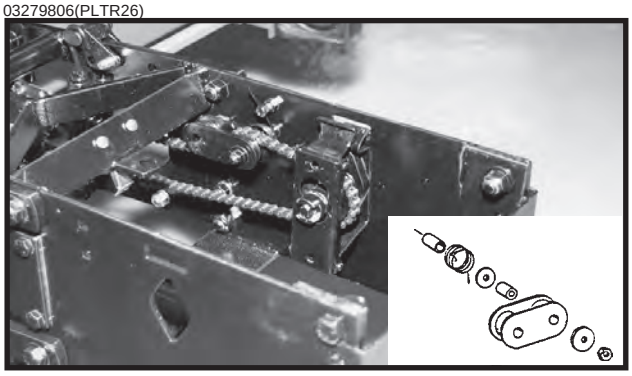
Pull Row Unit Meter Drive

72359-97(PLTR26)



Row Unit Granular Chemical Drive

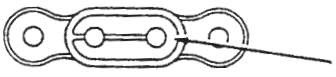
03279806(PLTR26)



Push Row Unit Meter Drive

NOTE: Make sure connector link is installed with closed end located as shown below.

(PLTR24)



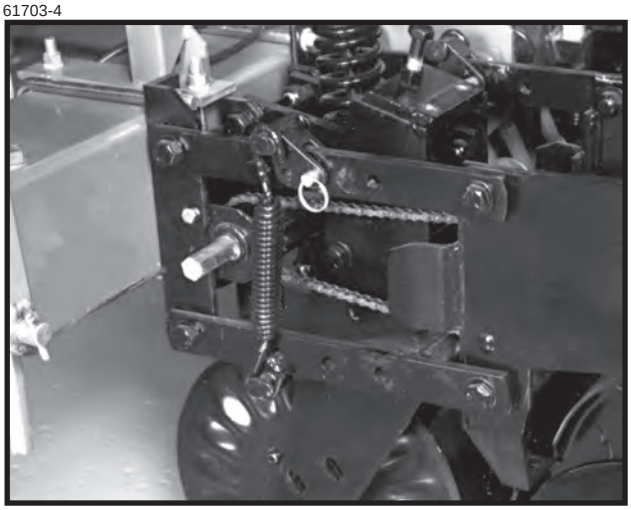
Direction Of Chain Travel ➡

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.

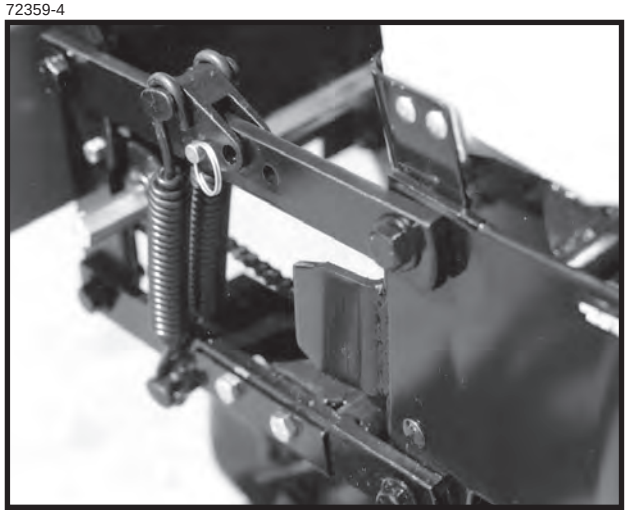
Two springs per row, one on the L.H. parallel arms and one on the R.H. parallel arms, are used unless equipped with row unit mounted no till coulters. Four springs per row are used with row unit mounted no till coulters.

61703-4



Two Springs Per Row (Dual)

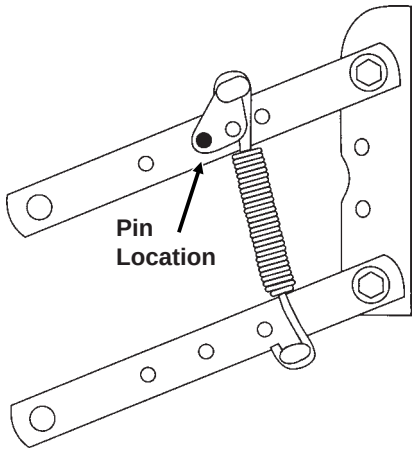
72359-4



Four Springs Per Row (Quad)
(Used Only In Conjunction With Row Unit Mounted No Till Coulters)

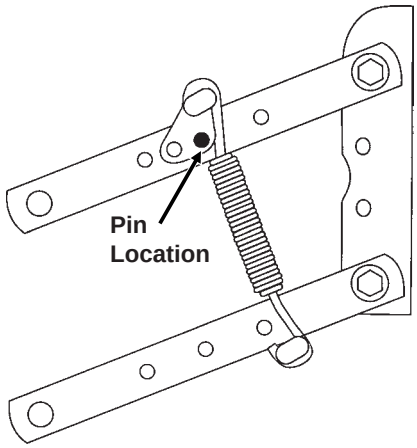
There are four positions for spring tension adjustment. Position 1 allows for minimum down pressure and position 4 for maximum down pressure.

L0096(PLTR27d)



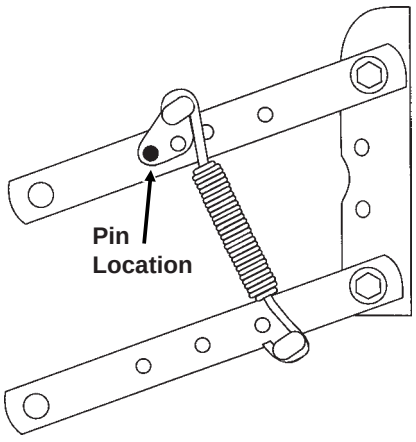
Position 1 (Minimum)

(PLTR28d)



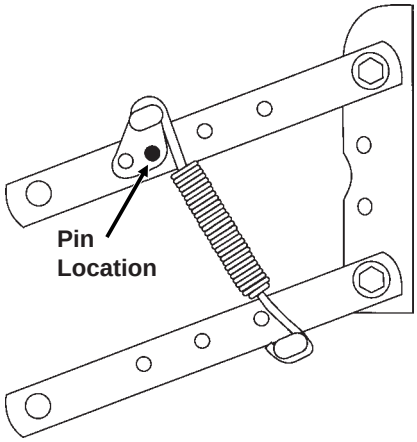
Position 2

(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.

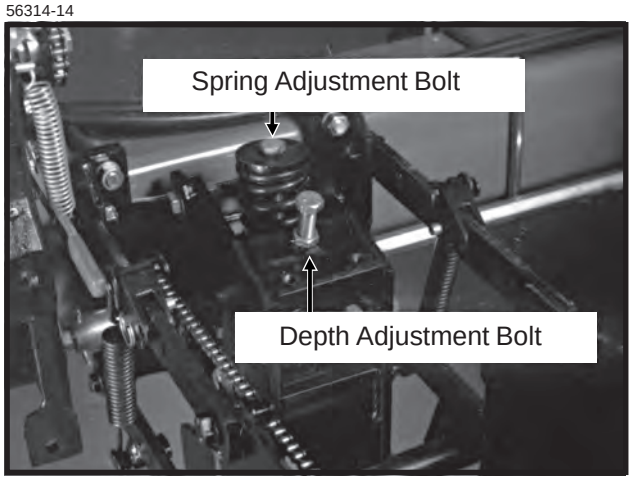
FRAME MOUNTED COULTER

Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units only. (Not compatible with push row units.)

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.

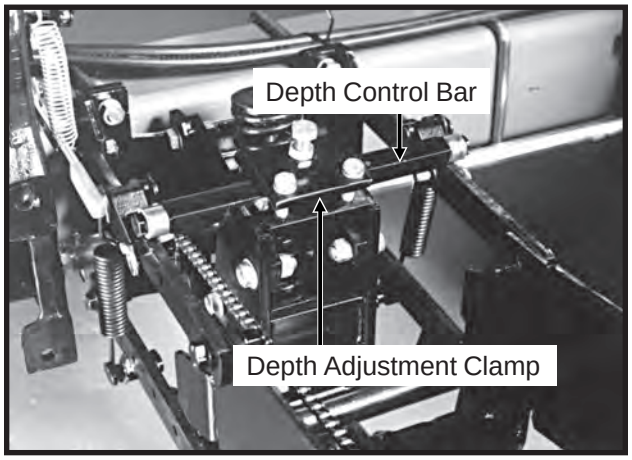
56314-14



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

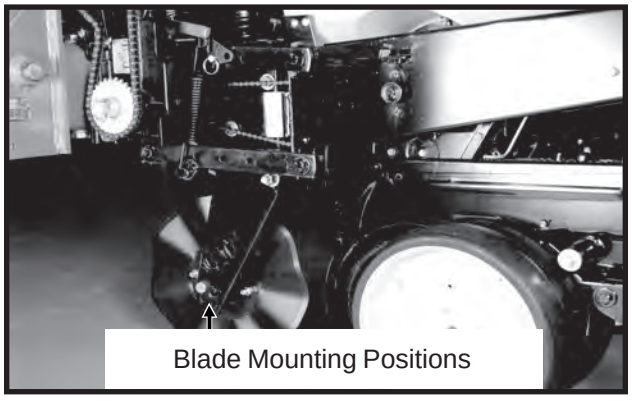


In certain applications it is desirable to use the depth control bar. In uneven terrain, use of the depth control bar allows greater depth control. The up and down movement of the row unit allows the coulter to move up and down at a rate of approximately 1/2 that of the row unit, maintaining a more uniform 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.

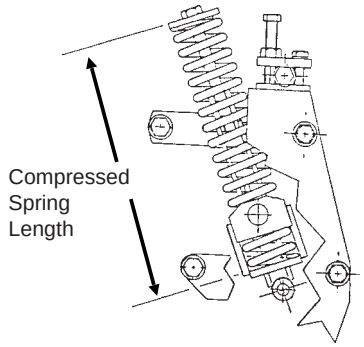
56314-1



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

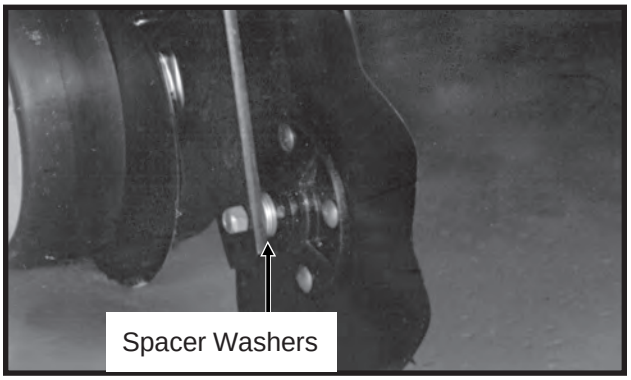
A5649rev.(PLTR44)



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.

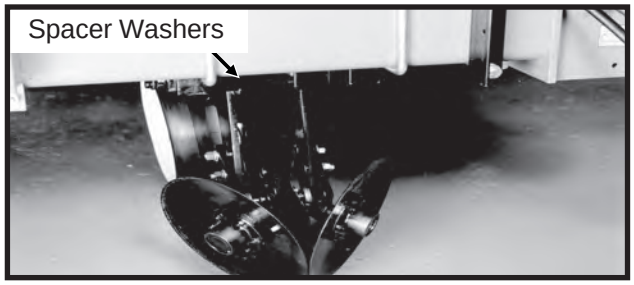
ROW UNIT OPERATION

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.

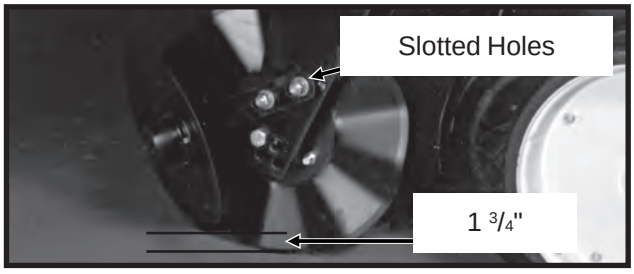
56314-19



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.

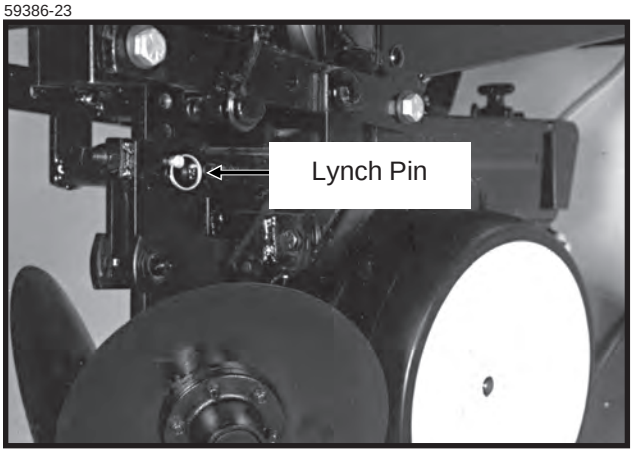
NOTE: The depth control bar should always be used when the frame mounted coulter is equipped with disc furrowers.

ROW UNIT MOUNTED DISC FURROWER

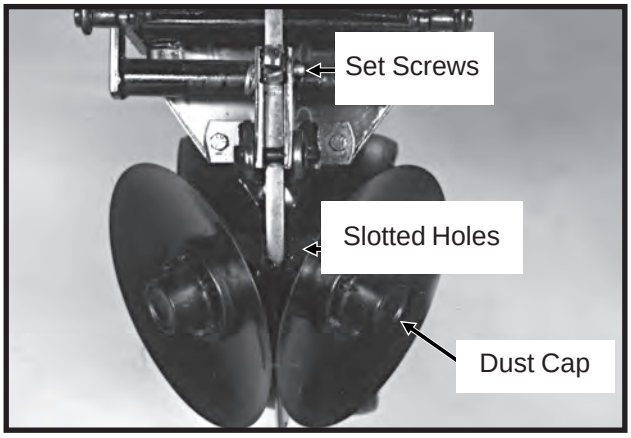
The row unit mounted disc furrower for use on pull row units only (Not compatible with Interplant® push row units.) may be equipped with either 12" solid blades or 12" notched blades.

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



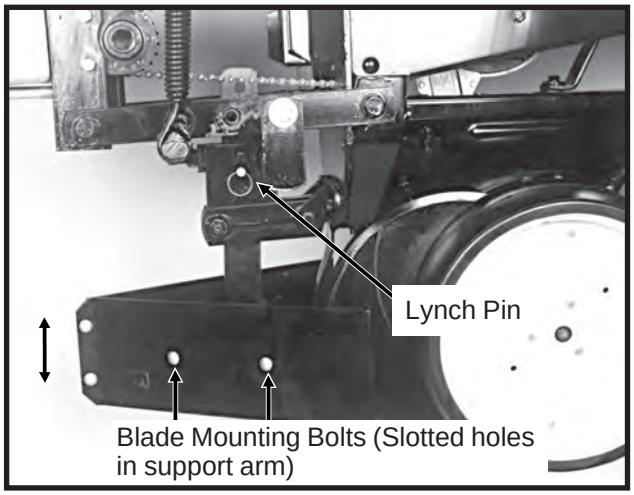
Vertical adjustment in 1/3" increments is possible by removing the lynch pin which secures the vertical support arm and moving the support arm up or down as required. Re-install lynch pin. Finer adjustment can be attained by removing the lynch pin and using the 5/8" x 2 1/4" set screw to clamp the support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

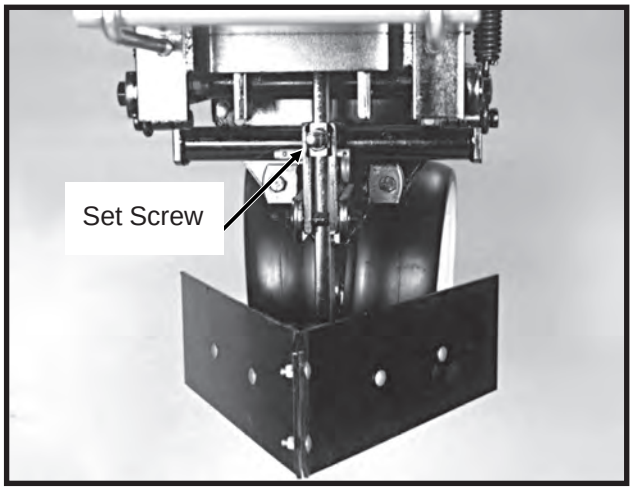
ROW UNIT OPERATION

ROW UNIT MOUNTED BED LEVELER

59386-26



59386-30



Row unit mounted bed levelers may be used on pull row units only. They are not compatible with push row units.

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.

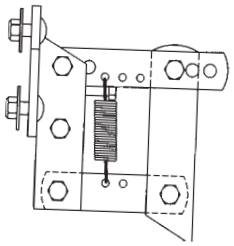
Slotted holes in the support arm where the blades are mounted allow tilting of the blades. The blades can be tilted up or down at the front for desired adjustment.

NOTE: The row unit mounted bed leveler is not compatible with row spacings less than 36".

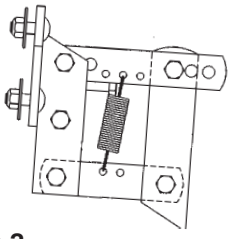
ROW UNIT MOUNTED RESIDUE WHEEL

The row unit mounted residue wheel may be used on pull row units and push row units.

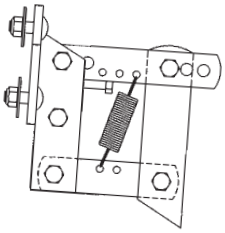
Two adjustable springs on the parallel links on each residue wheel allow for down force adjustment. Position 1 as shown below provides minimum down pressure and position 3 maximum down pressure.



Position 1 *(Minimum)*(PLTR31a)



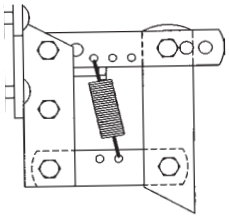
Position 2(PLTR32a)



Position 3 *(Maximum)*(PLTR33a)

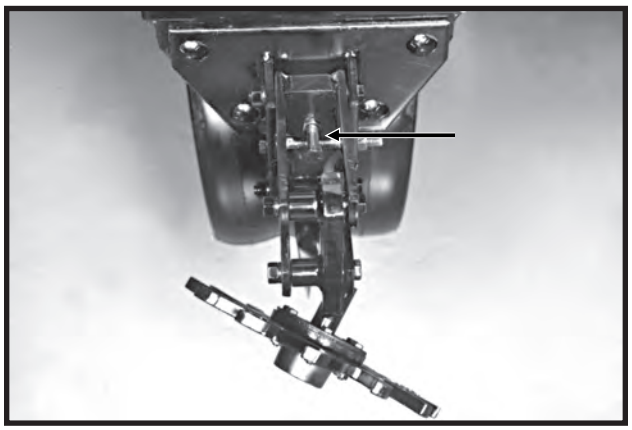
For additional uplift or float, position springs as shown below.

(PLTR34a)



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

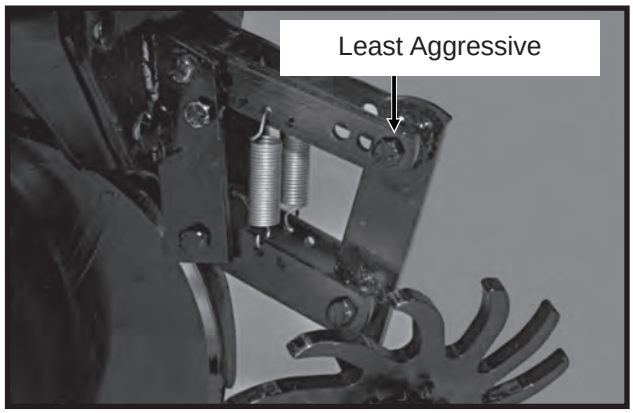
76782-31



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.

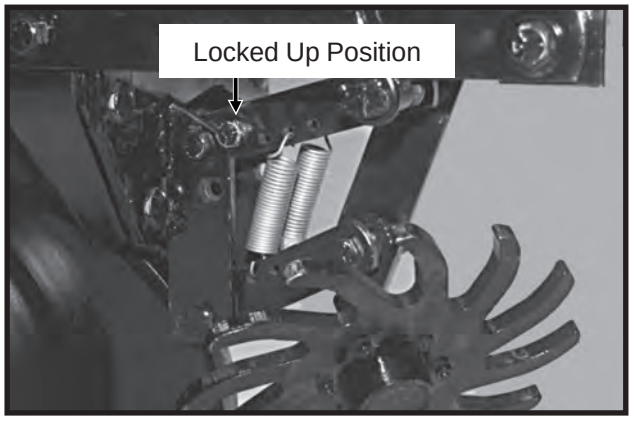
Three holes in the upper link allow for wheel angle adjustment. With the wheel mount in the most vertical position, using the rear hole in the upper link, the residue wheel is most aggressive. Moving the wheel mount to one of the forward holes reduces the aggressiveness of the wheel for use in mulch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

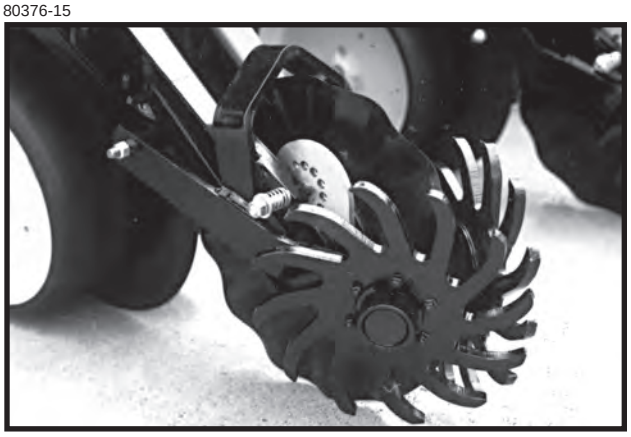
Operating depth can be checked by setting the planter down on a level concrete floor and checking the relationship between the coulter blade and row unit opener blade. Make sure the planter is level and coulter is square with the planter frame and aligned with the row unit disc opener.

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

ROW UNIT OPERATION

COULTER MOUNTED RESIDUE WHEELS

80376-15

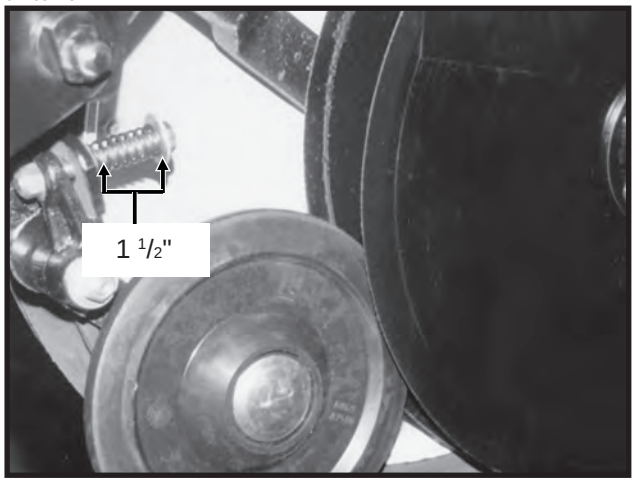


Coulter mounted residue wheels are designed for use on pull row unit and push row units. Row unit extension brackets are required on all the pull row units if the planter is equipped with the coulter mounted residue wheels and HD single disc fertilizer openers.

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.

SEED FIRMING WHEEL

02209715



Shown With Gauge Wheel Removed

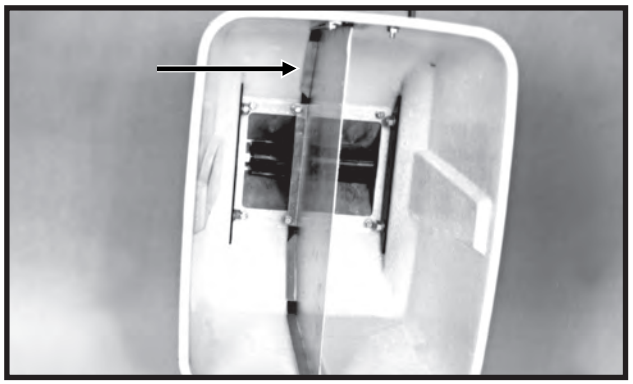
The seed firming wheel is designed for use on pull row units and push row units. Seed firming wheels are for use in dry loose soil conditions to gently and firmly press the seed into the seed bed before the closing wheels close the seed trench.

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.

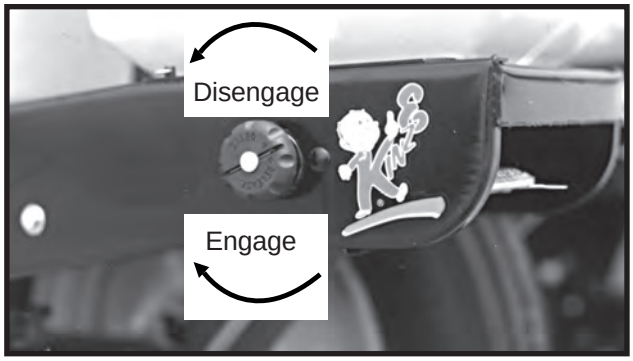
Be sure no foreign objects get into the hopper when it is being filled. Replace the hopper lids after filling the hoppers to prevent the accumulation of dirt and moisture.

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.

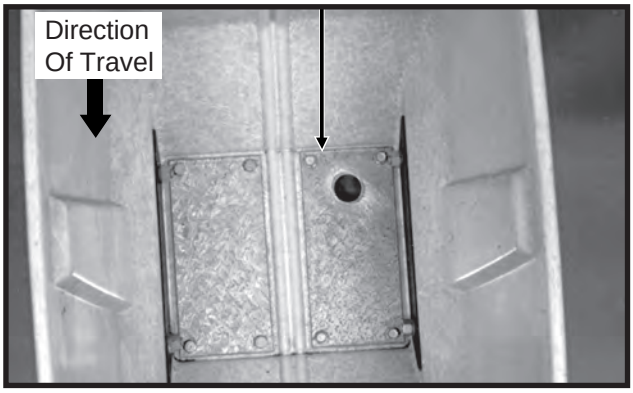
The granular chemical clutch drive coupler and meter shaft can be disengaged and engaged by turning the throwout knob located at the rear of the hopper support panel. To engage the drive, turn the knob 1/4 turn clockwise. To disengage the drive, turn the knob 1/4 turn counterclockwise. Slotted holes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

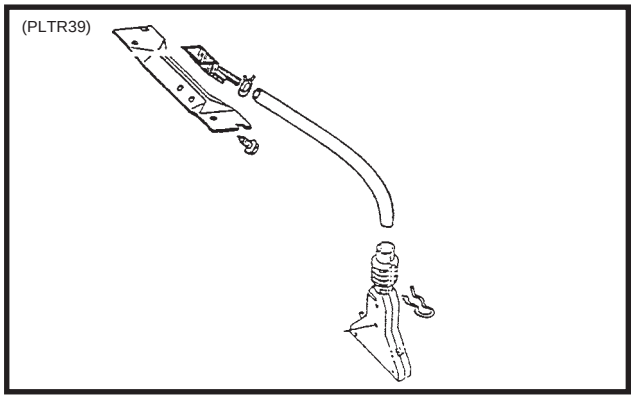
DANGER: Agricultural chemicals can be dangerous. Improper selection or use can seriously injure persons, animals, plants, soil or other property. BE SAFE: Select the right chemical for the job. Handle it with care. Follow the instructions on the container label.

GRANULAR CHEMICAL BANDING OPTIONS

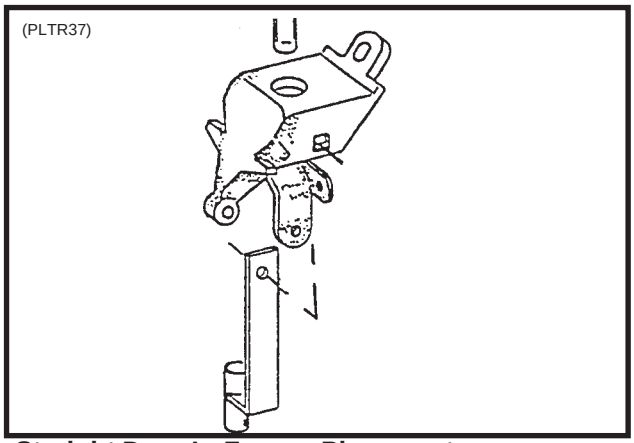
Granular chemical banding options allow front and/or rear banding.

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

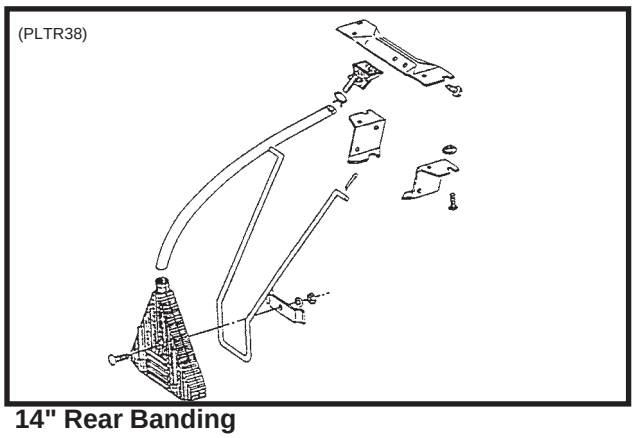
NOTE: The granular chemical rear bander is not compatible with the covering discs/single press wheel option.



4 1/2" Slope-Compensating Bander



Straight Drop In-Furrow Placement



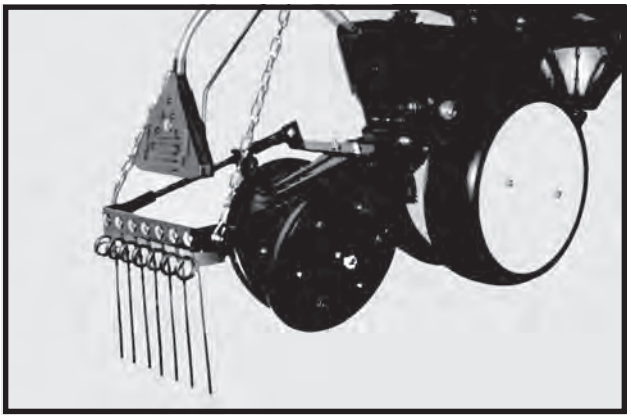
14" Rear Banding

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

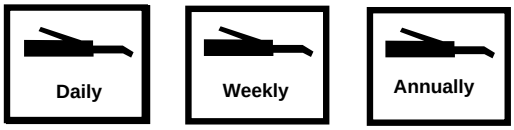


LUBRICATION

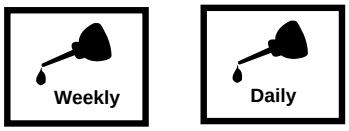
The following pages show the locations of all lubrication points. Proper lubrication of all moving parts will help ensure efficient operation of your KINZE® planter and prolong the life of friction producing parts.

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

LUBRICATION SYMBOLS



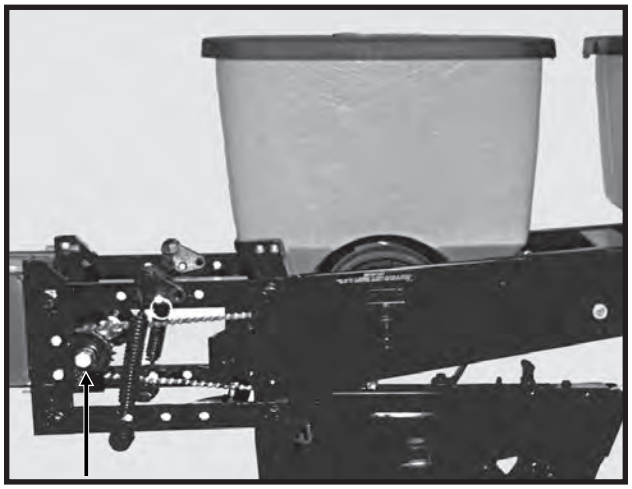
Lubricate at frequency indicated with an SAE multipurpose type grease.



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

SEALED BEARINGS

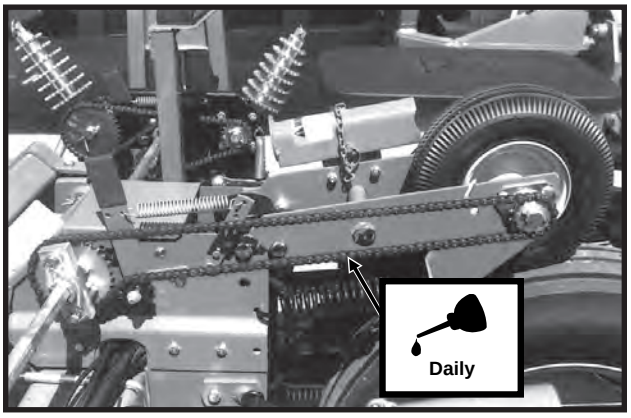
72794-21a



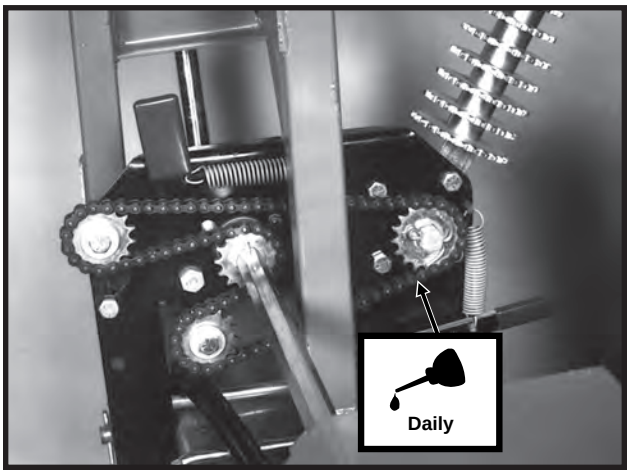
A number of sealed bearings are used on your KINZE® planter to provide trouble free operation. These are located in such areas as the drive shaft, row units and transmission bearings. Sealed bearings are lubricated for life, and due to the seals, relubrication is not practical.

DRIVE CHAINS

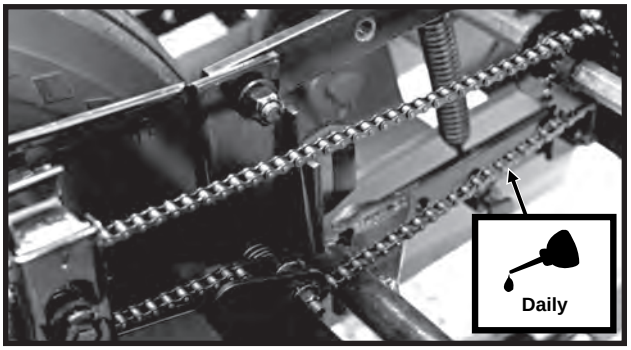
83364-9



61010-41



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.

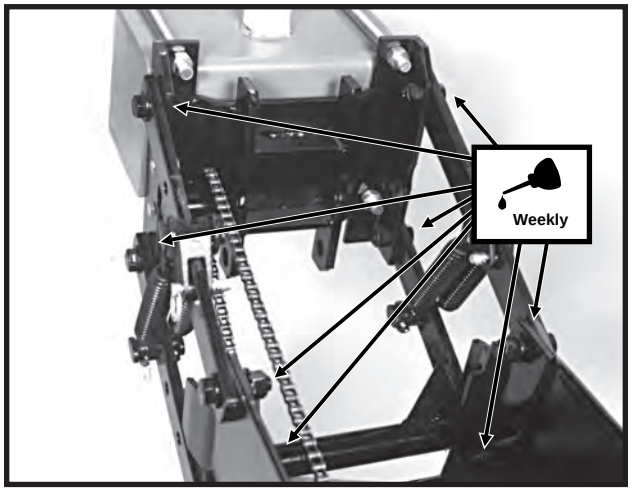
LUBRICATION

BUSHINGS

Lubricate bushings at the frequency indicated.

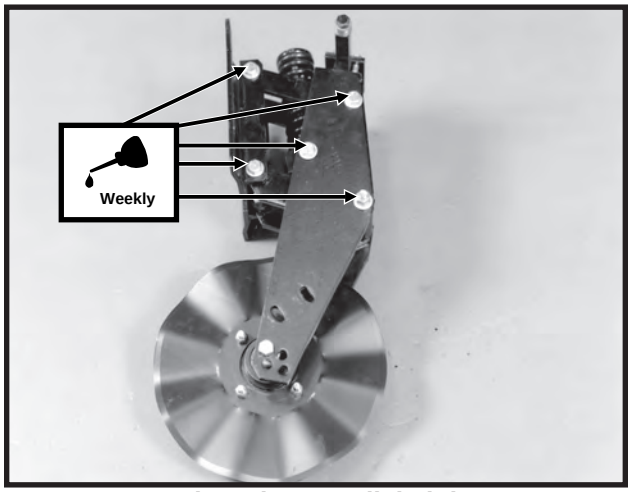
Using a torque wrench, check each bolt for proper torque. If bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushing if necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque bolts to 130 ft. lbs.**

59386-43



Pull Row Unit and/or Push Row Unit Parallel Linkage (8 Per Row)

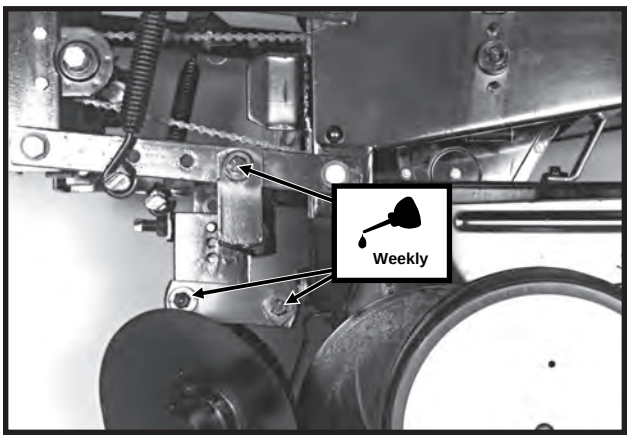
56314-8



Frame Mounted Coulter Parallel Linkage (10 Per Row)

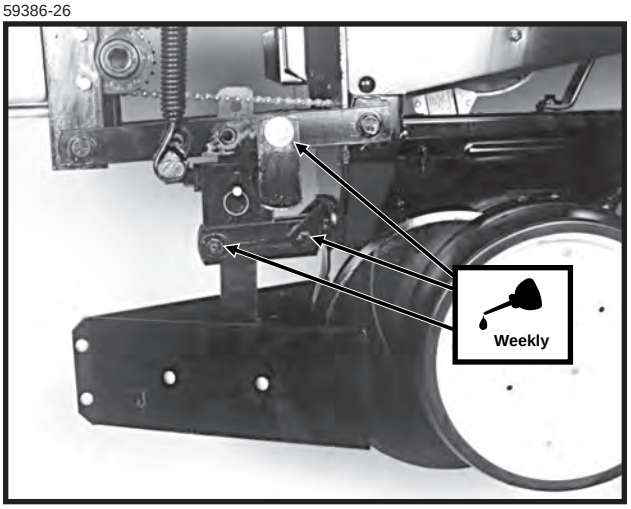
Shown not installed on row unit for visual clarity.

59386-18



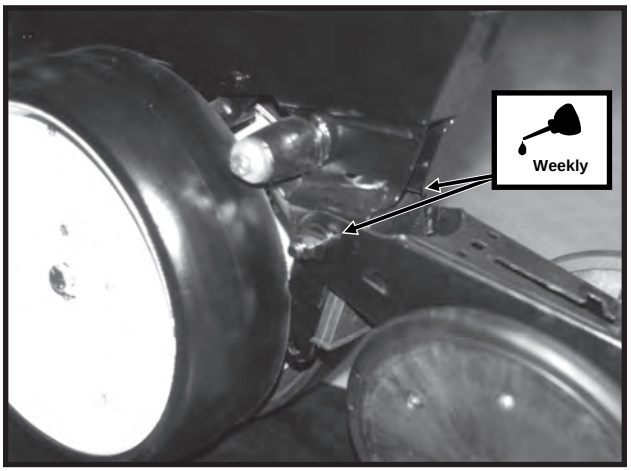
Row Unit Mounted Disc Furrower Parallel Linkage (6 Per Row)

59386-26



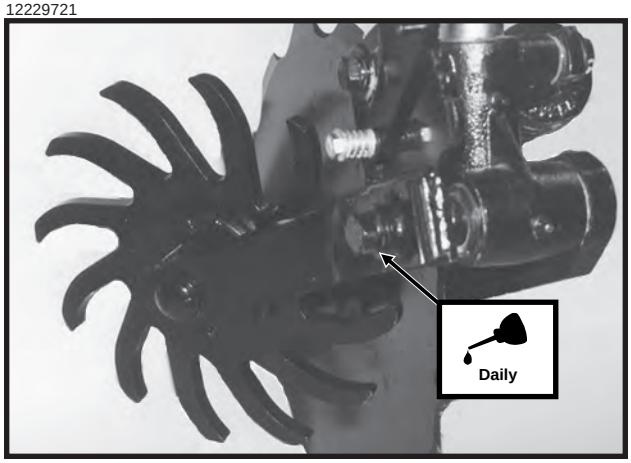
Row Unit Mounted Bed Leveler Parallel Linkage (6 Per Row)

8/30/93-4



Row Unit Closing Wheel and/or Covering Discs/ Single Press Wheel Eccentric Bushings (2 Per Row)

12229721



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

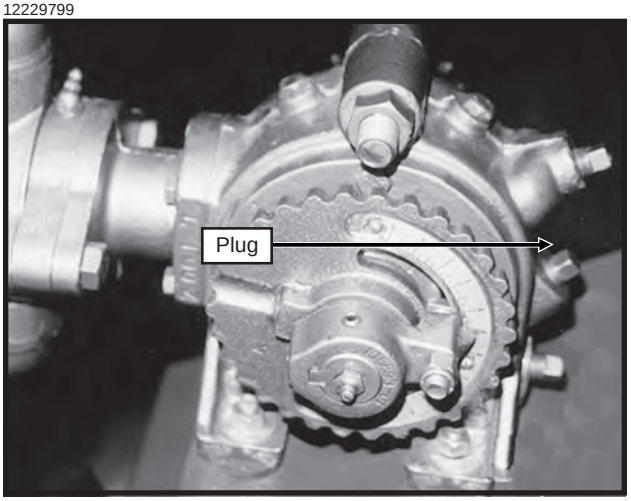
LUBRICATION

WHEEL BEARINGS

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

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.

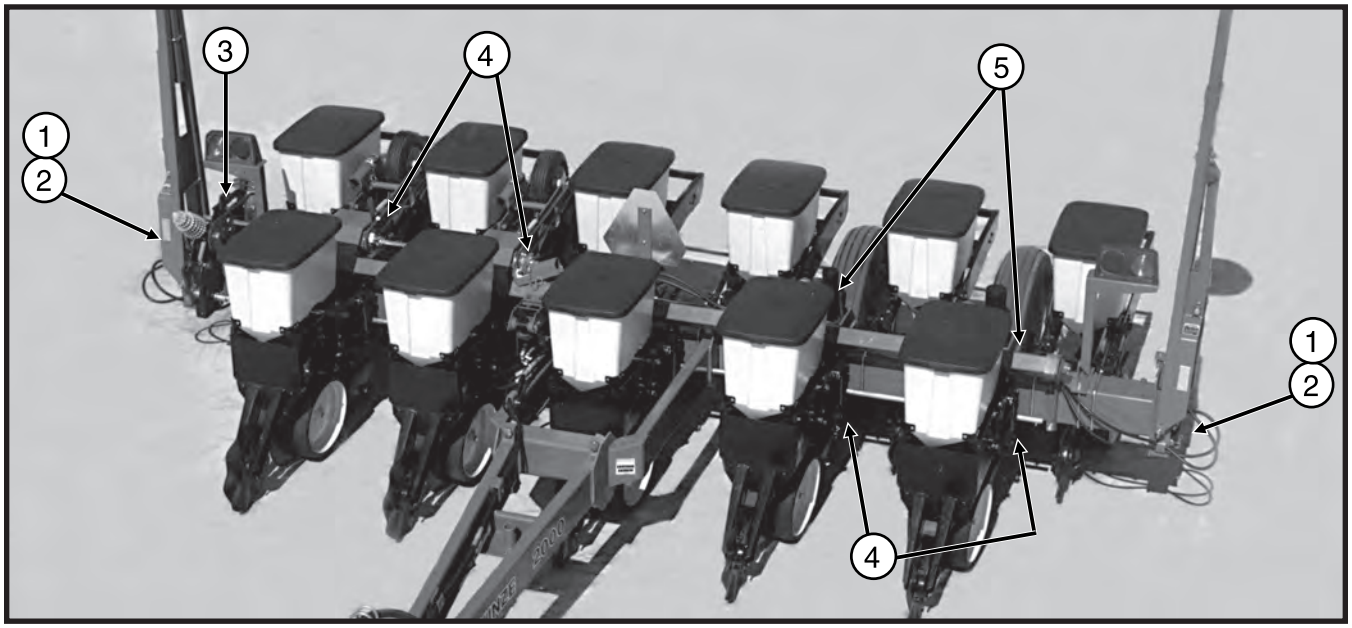
GREASE FITTINGS

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.

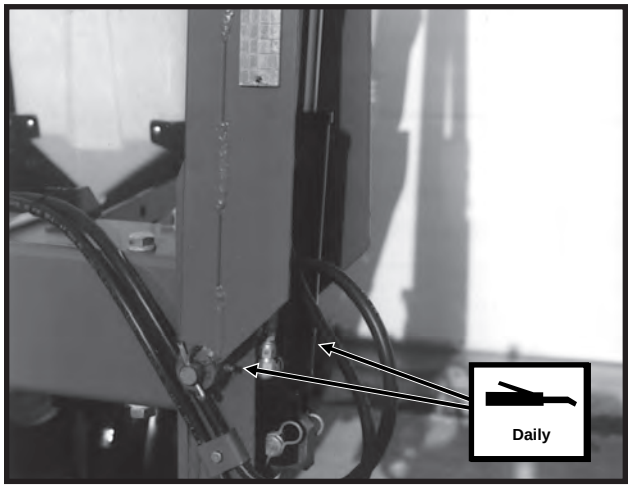
NOTE: Numbers on below photo correspond to photos on following pages showing lubrication frequencies.

73327-12



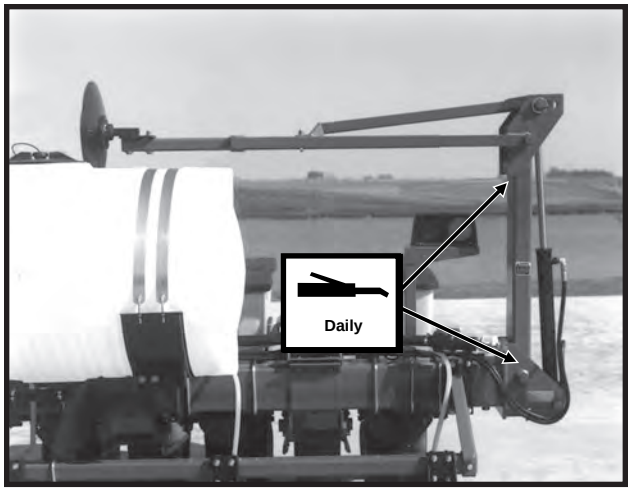
6 Row 30" Size Shown With Interplant® Push Row Units And Row Unit Mounted No Till Coulters

46331-86



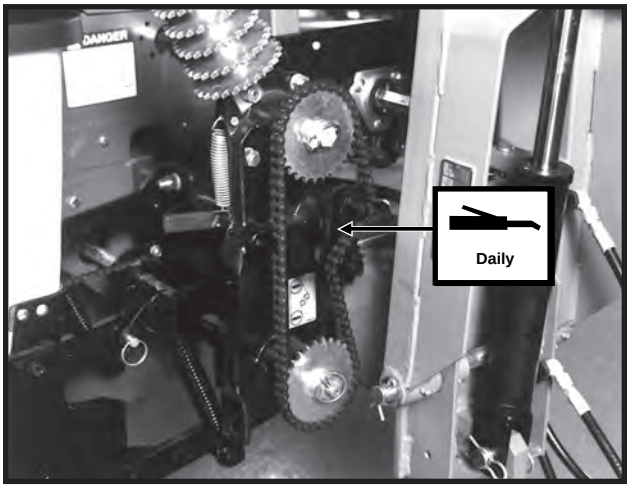
1. Conventional Marker Assembly - 4 Zerks Per Assembly

73327-18



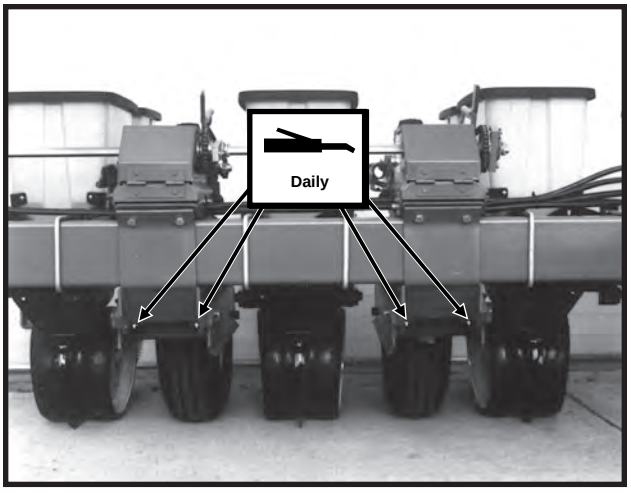
2. Low Profile Marker Assembly - 2 Zerks Per Assembly

61010-28



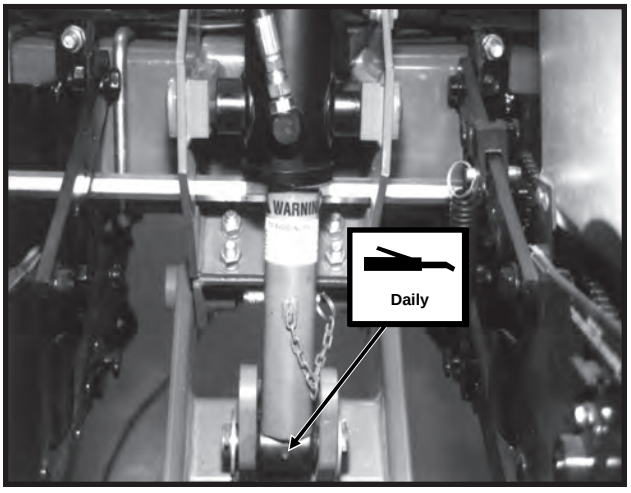
3. Transmission Assembly - 1 Zerk (Idler)

46331-83



4. Wheel Module Assembly - 2 Zerks Per Module

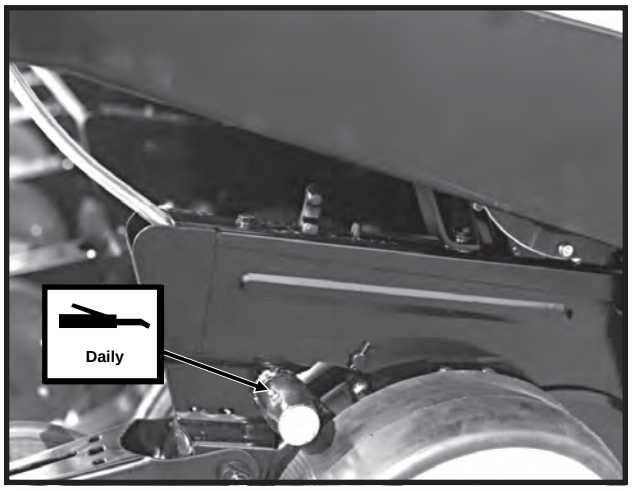
83154-3



5. Planter Lift Cylinders (Master, Slave And Assist)- 1 Zerk Per Cylinder.

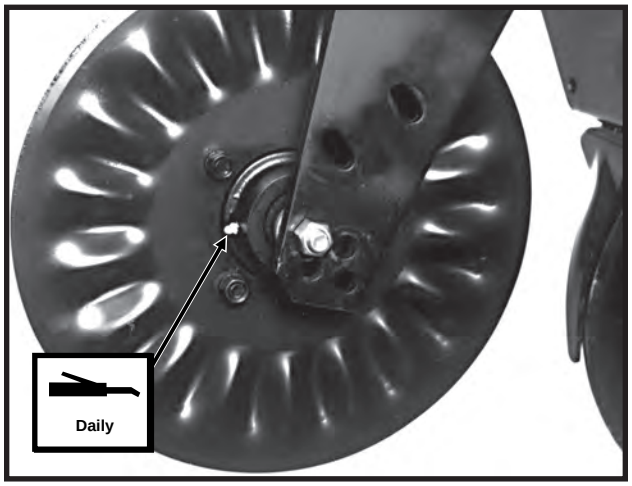
Row Unit

72359-106



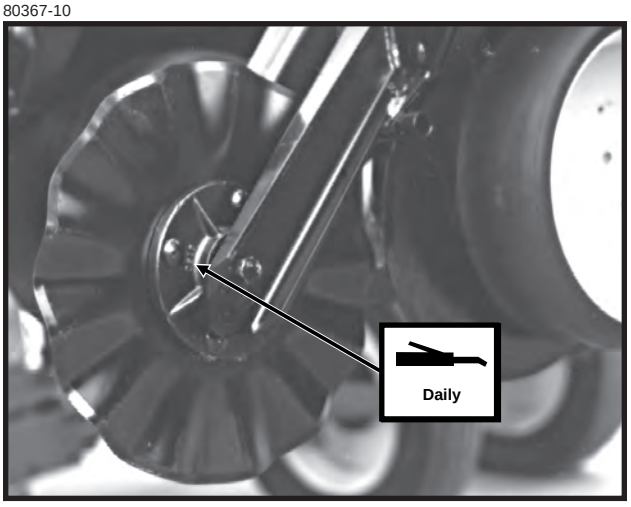
Gauge Wheel Arms - 1 Zerk Per Arm

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.)

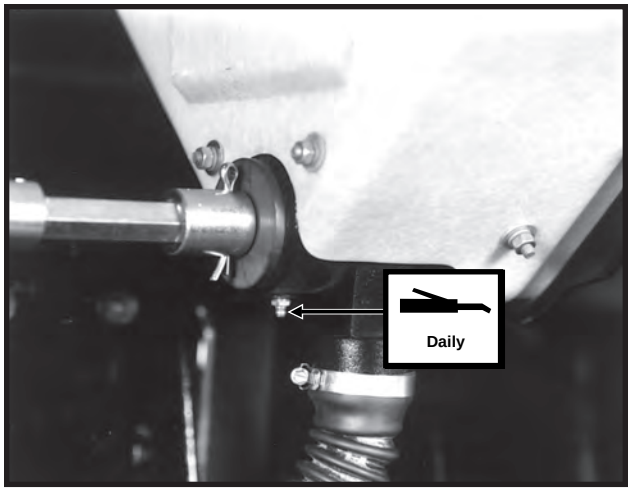
80367-10



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.)

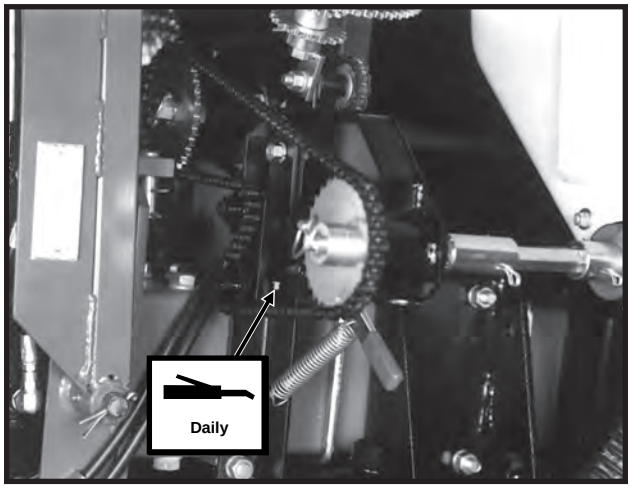
Dry Fertilizer Attachment

61111-28



Fertilizer Hopper - 2 Zerks Per Hopper

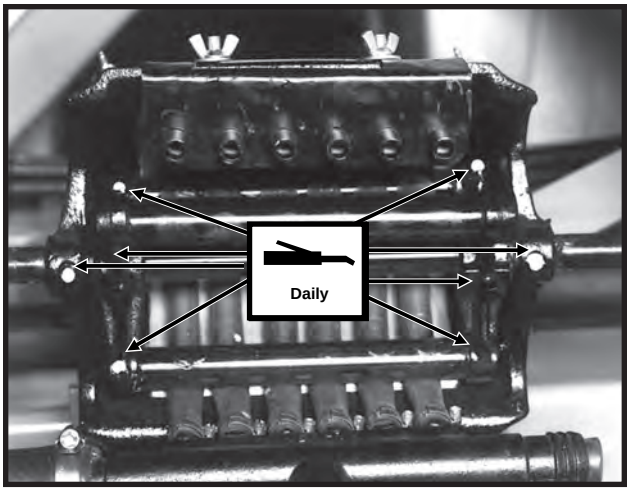
61111-7



Fertilizer Transmission - 1 Zerk Per Transmission

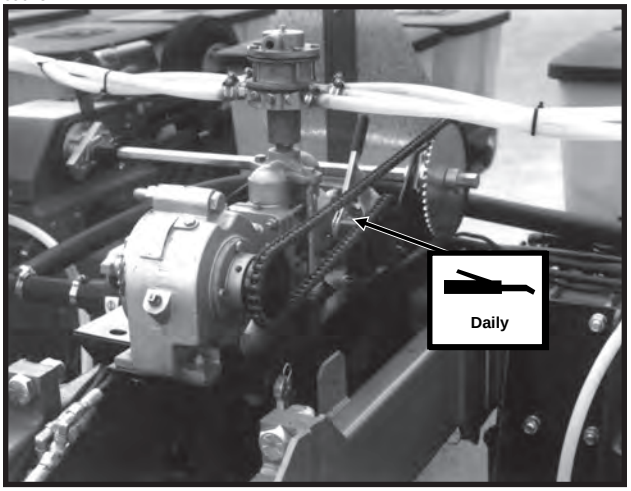
Liquid Fertilizer Attachment

61010-6



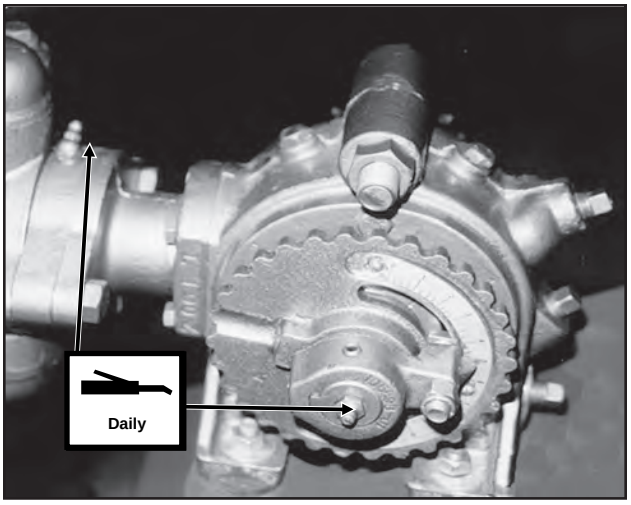
Squeeze Pump - 8 Zerks Per Pump

69045-4



Piston Pump Drive Chain Idler - 1 Zerk

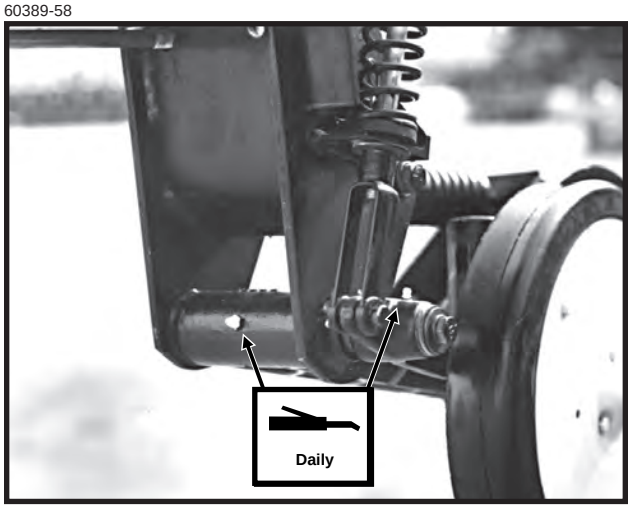
12229799



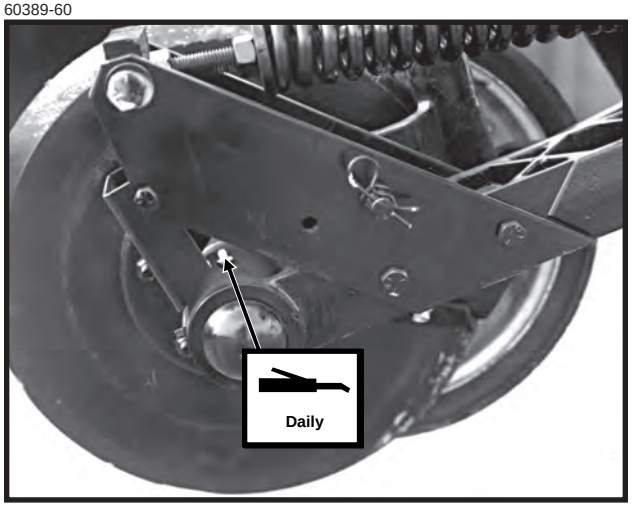
Piston Pump - 2 Zerks (Fill zerk on outboard stuffing box until lubricant seeps out of drain hole in bottom.)

HD Single Disc Fertilizer Opener

60389-58



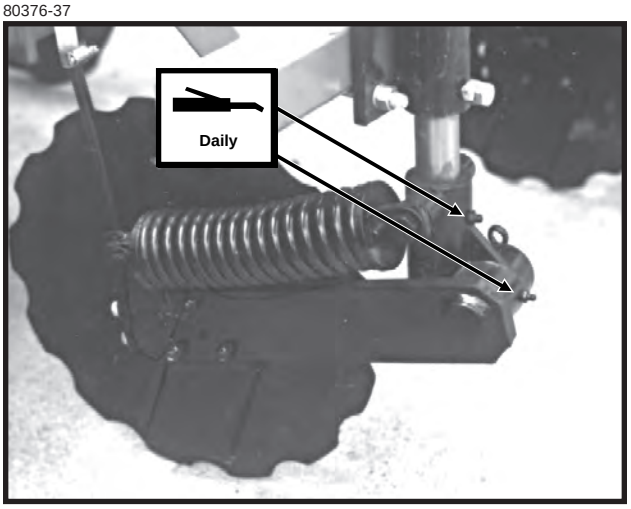
60389-60



HD Single Disc Fertilizer Opener - 3 Zerks

Notched Single Disc Fertilizer Opener

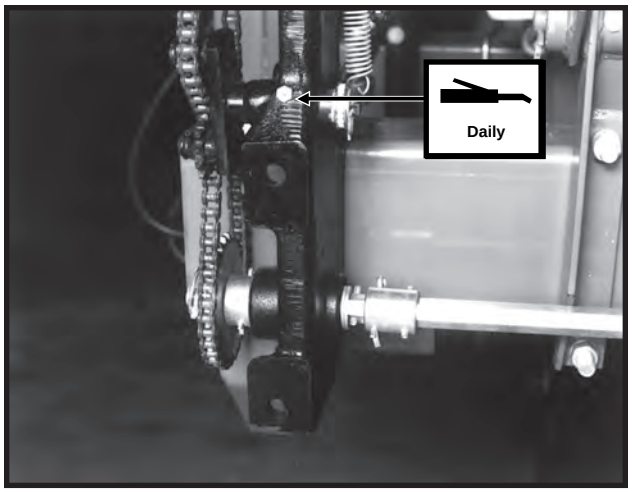
80376-37



Notched Single Disc Fertilizer Opener - 2 Zerks

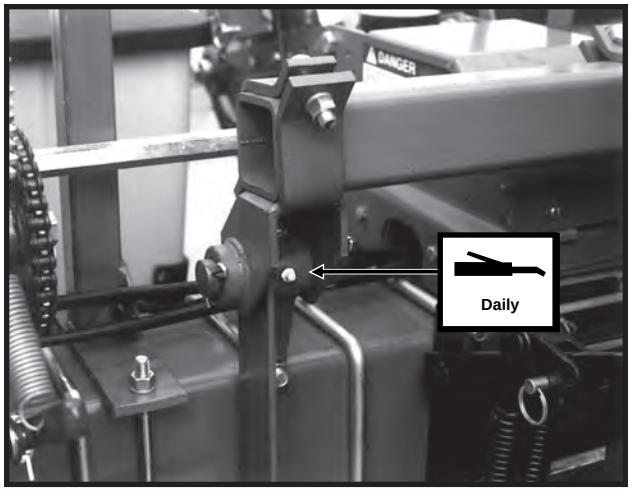
Interplant® Attachment

61048-42



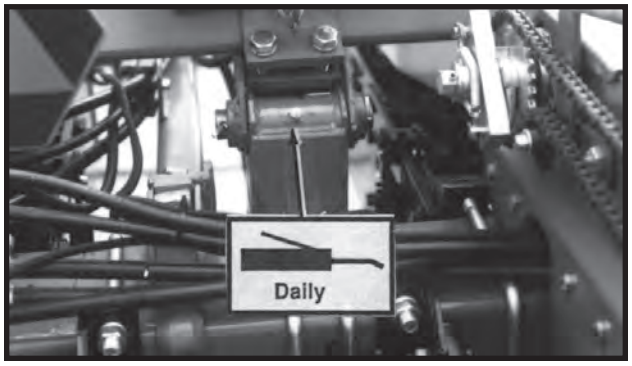
Push Unit Transmission Assembly - 1 Zerk (Idler)

69045-20



Rock Shaft End Mount - 1 Zerk Per Mount

69045-25



Rock Shaft Cylinder Mount - 1 Zerk Per Mount

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.

5/8" No Till Coulter Spindle Bolt - 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

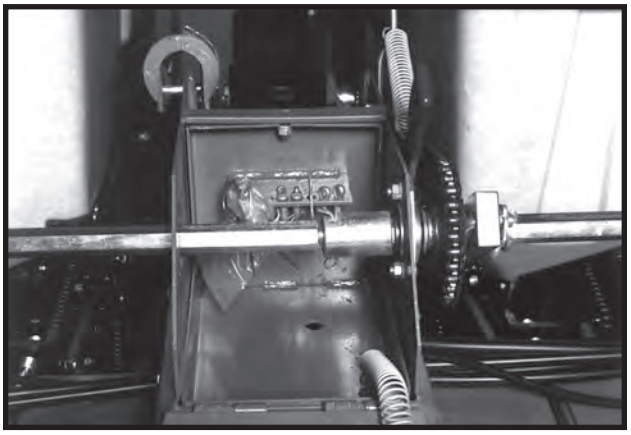
GRADE 8
6 Marks

CHAIN TENSION ADJUSTMENT

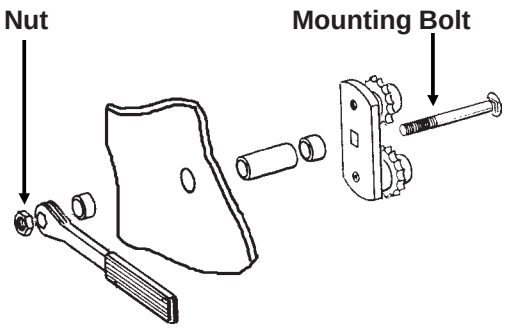
The drive chains have a spring loaded idler and therefore are self-adjusting. The only adjustment needed is to shorten the chain if wear stretches the chain and reduces spring tension. The pivot point of these idlers should be checked periodically to ensure they rotate freely.

Additional chain links can be found in the storage box located inside the wheel module.

61010-1



(MT18a)

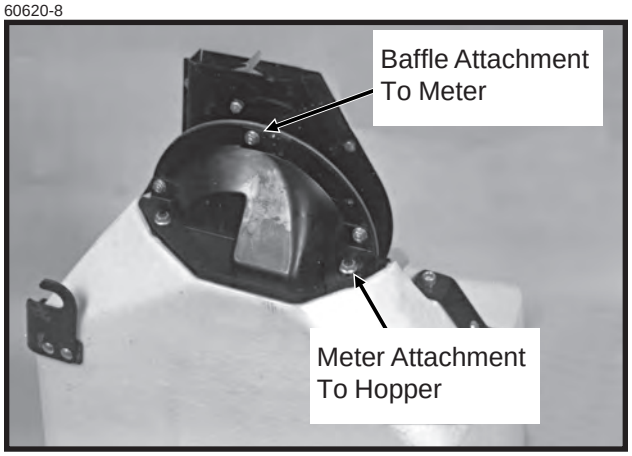


NOTE: The nut on the mounting bolt (on applicable idler assemblies) must be kept tight or chain tension will not be maintained and adjustment wrench will not function properly.

FINGER PICKUP SEED METER INSPECTION/ADJUSTMENT

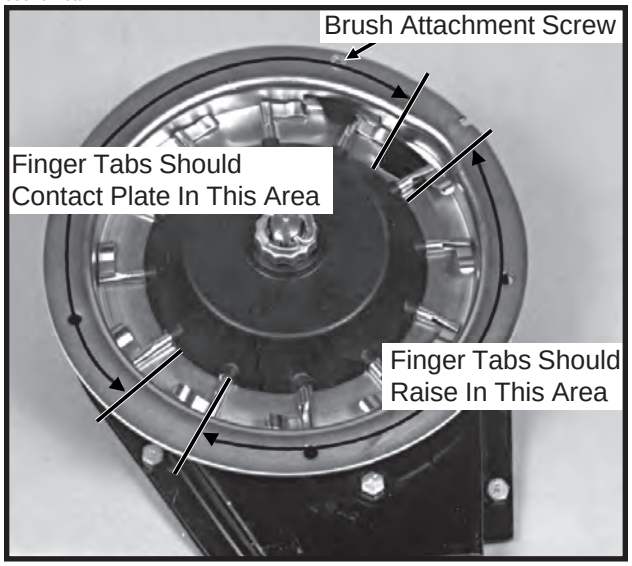
To inspect or service the finger pickup seed meter, remove the meter from the seed hopper by removing the two nuts which secure the mechanism to the hopper. Remove the baffle from the meter assembly by removing three cap screws. This will permit access to the finger pickup.

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

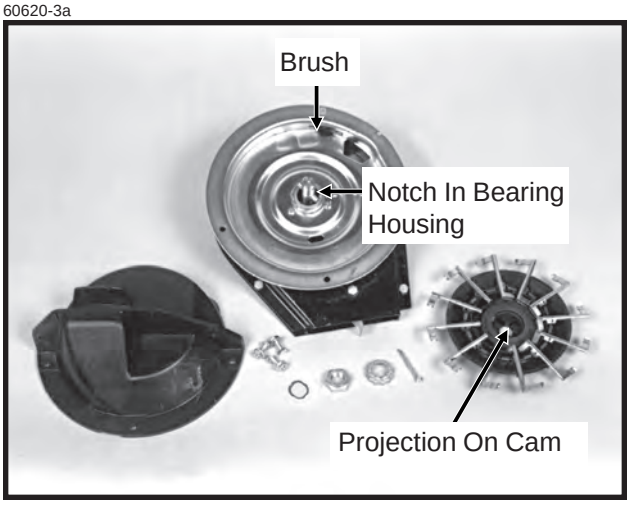


A build-up of debris or chaff may prevent proper finger operation and will require disassembly and cleaning of the corn meter as follows:

1. Remove cotter pin, cover 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.

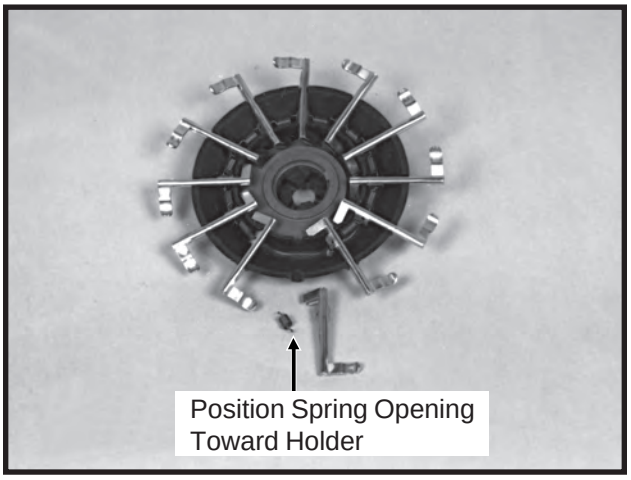
EXAMPLE: Approximately 600 acres of corn on a 6 row machine or 800 acres on an 8 row machine.

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

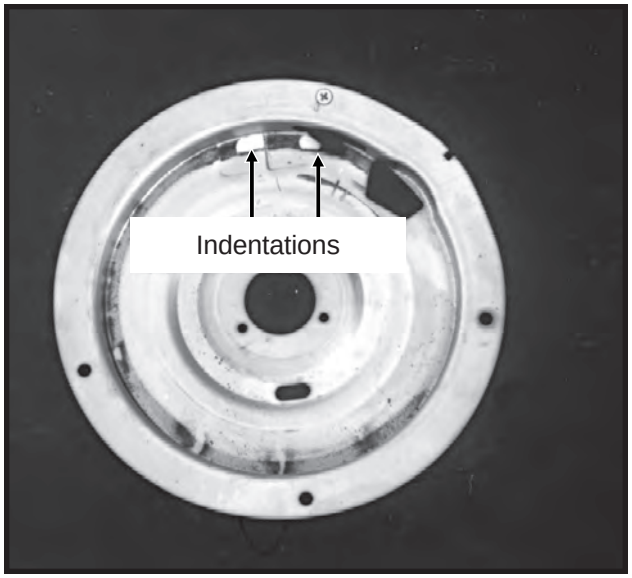


Photo Shows Worn Plate

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.

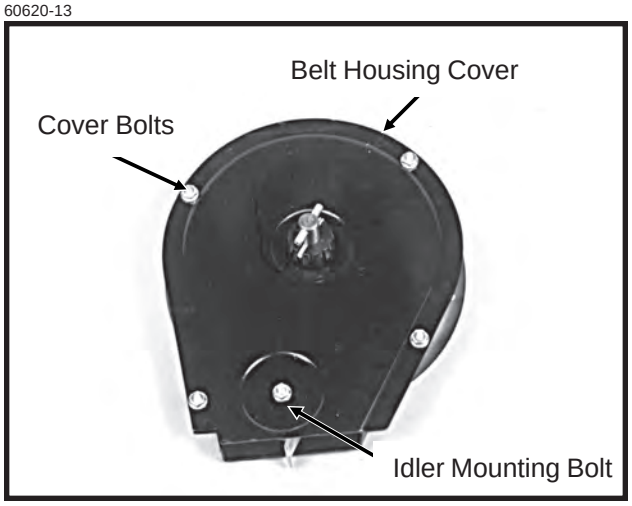
9. Turn finger holder by hand to make sure it is positioned firmly against the carrier, but is not over tightened and can be rotated with moderate force.

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

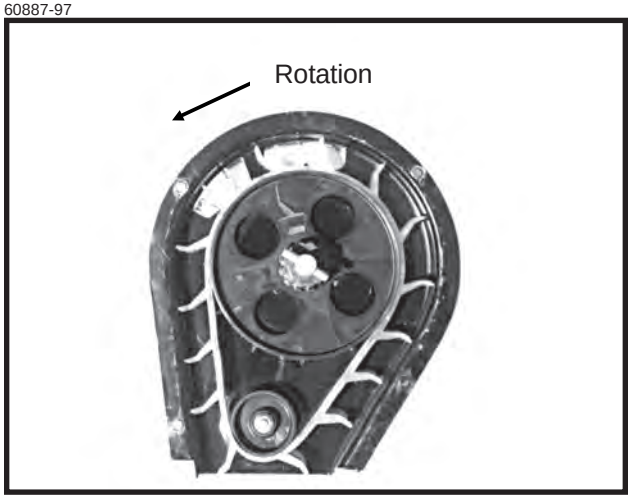
NOTE: Check tightness of adjusting nut on each unit after first day of use and periodically thereafter.

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

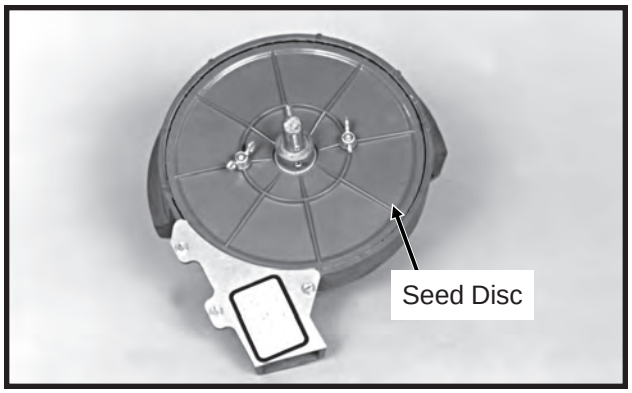
1. Disassemble meter.
2. Blow out any foreign material present in the meter mechanism.
3. Wash in mild soap and water. DO NOT USE GASOLINE, KEROSENE OR ANY OTHER PETROLEUM BASED PRODUCT.
4. Dry thoroughly.
5. Coat lightly with a rust inhibiter.
6. Reassemble and store in a dry place.

FINGER PICKUP SEED METER TROUBLESHOOTING

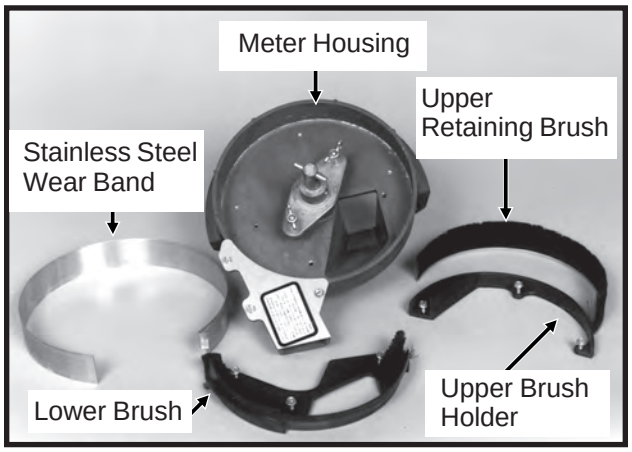
PROBLEM	POSSIBLE CAUSE	SOLUTION
One row not planting seed.	Drive release not engaged.	Engage drive release mechanism.
	Foreign material in hopper.	Clean hopper and finger carrier mechanism.
	Seed hopper empty.	Fill seed hopper.
	Pin sheared in drive release sprocket.	Replace pin. Inspect meter for obstructions 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. (14 to 22 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. (14 to 22 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

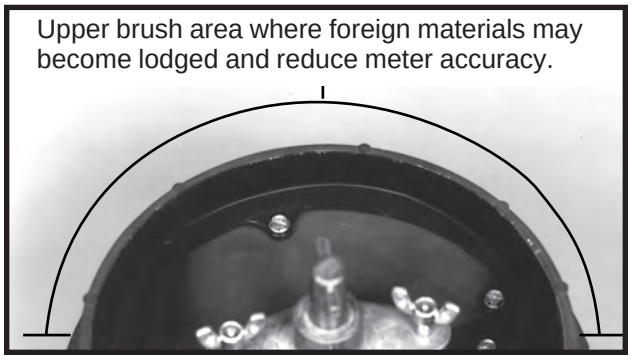


60607-3



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



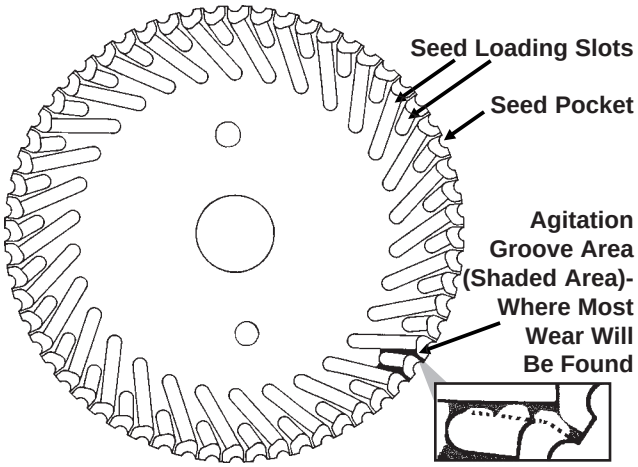
NOTE: Replace hopper lids after hoppers are filled to prevent accumulation of dust or dirt in the seed meter which will cause premature wear.

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

HD112690(PLTR40b)

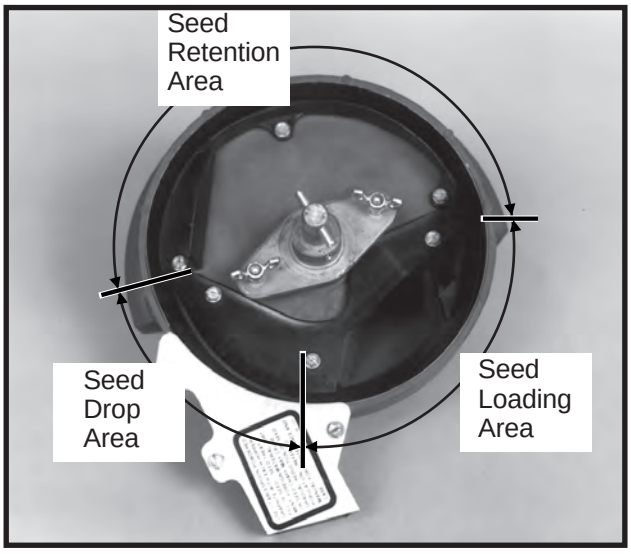


Most wear on the seed disc will be found in the agitation groove area (area between the seed loading slots). Wear will affect planting accuracy at high RPM. To measure for wear, lay a straight edge across the surface of the disc and measure the gap between the disc (at the agitation groove area) and 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.

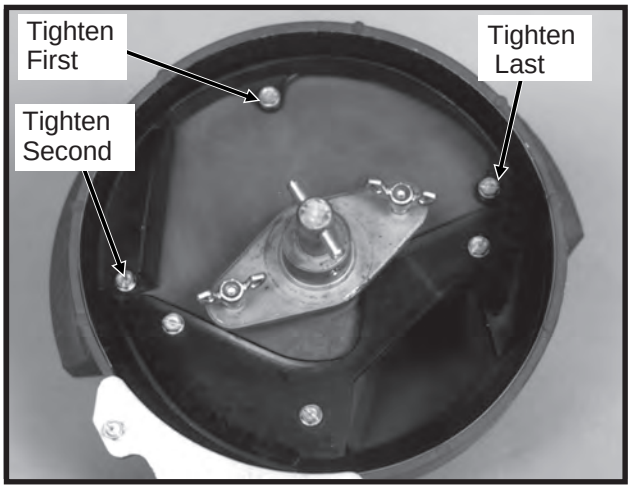
The retaining brush must apply enough pressure against the seed in the seed disc pocket as the disc rotates through the seed retention area to prevent the seed from dropping out of the disc pocket. A damaged spot, excessive wear on the brush or foreign material lodged in the brush may greatly reduce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

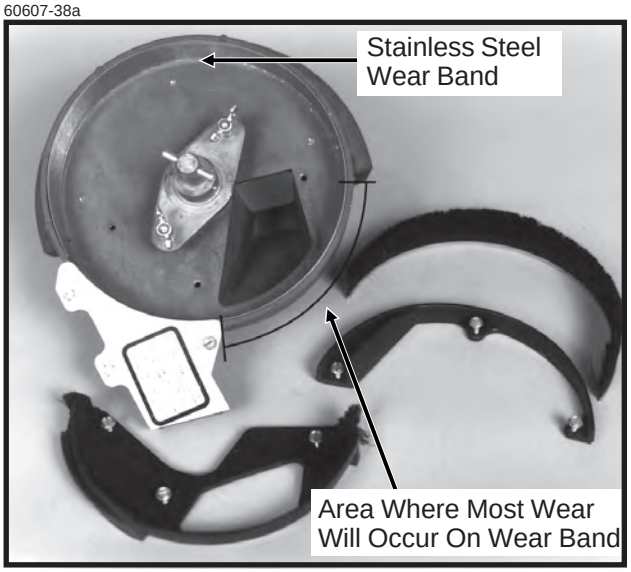
Position retaining brush into inner perimeter of seed retention area. Make sure the base of the brush is tight against the bottom of the meter housing. Install brush holder and three hex head screws. Tighten center screw first, left screw second and right screw last.

60607-21



Stainless Steel Wear Band

60607-38a

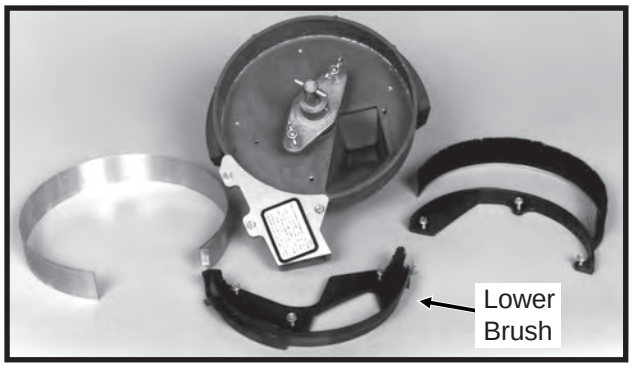


The purpose of the stainless steel wear band is to protect the meter housing from wear. The band is .030" thick and should be replaced when approximately .020" of wear is found in the primary area of wear. If the wear band is allowed to wear through or if the meter is used without the wear band in place, 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 in 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. Add talc.
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
	Worn upper retaining brush.	holder and bristles. Clean thoroughly. 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 thoroughly. Reinstall.

CLOSING WHEEL TROUBLESHOOTING

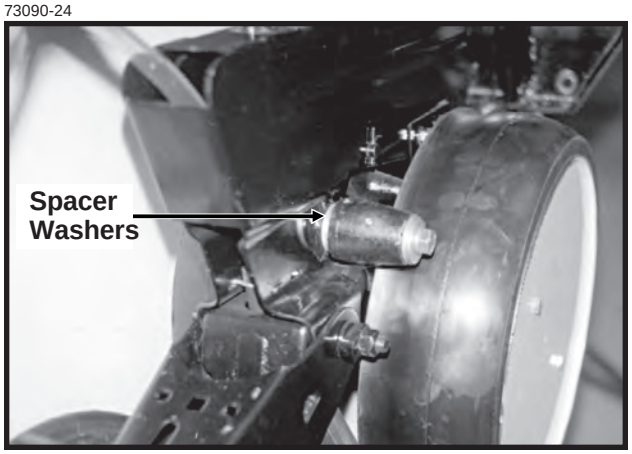
PROBLEM	POSSIBLE CAUSE	SOLUTION
Closing wheel(s) leave severe imprint in soil.	Too much closing wheel down pressure.	Adjust closing wheel pressure.
Closing wheel(s) not firming soil around seed.	Insufficient closing wheel down pressure.	Adjust closing wheel pressure. Severe no till conditions may require 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”.

MAINTENANCE

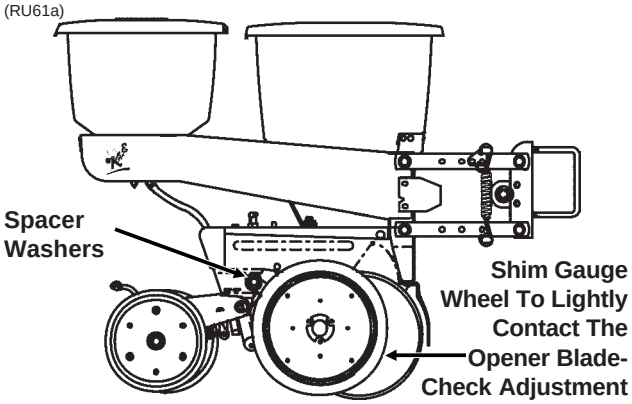
GAUGE WHEEL ADJUSTMENT

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



(RU61a)



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.

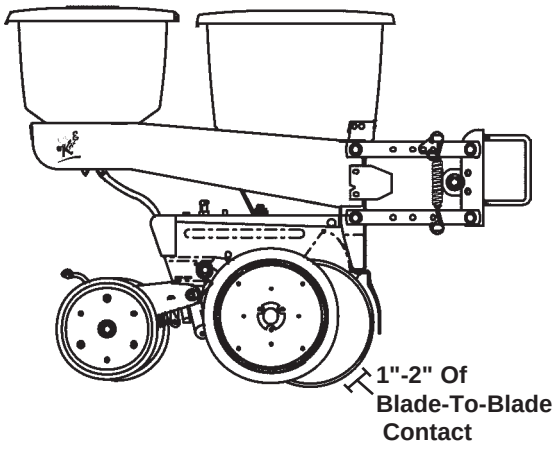
NOTE: It may be desirable to space gauge wheel further from blade when operating in sticky soils.

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 wears 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:

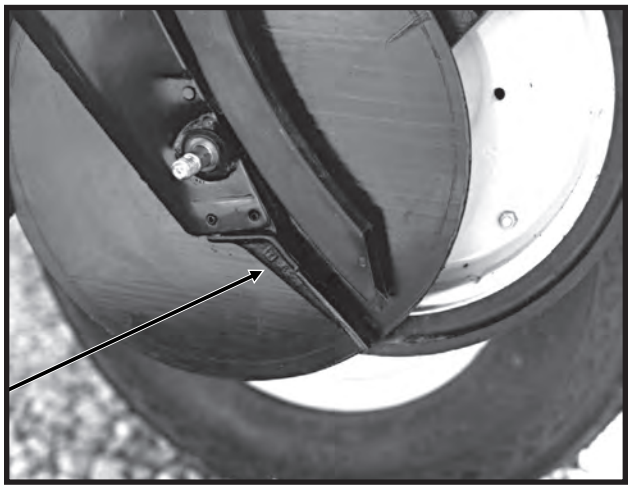
1. Remove gauge wheel, scraper, bearing cap, jam nut, washer and disc/bearing assembly.
2. Remove 1/4" rivets from bearing housing to expose bearing.
3. After installing new bearing, install three evenly spaced 1/4" bolts into three of the six holes in the bearing housing to hold the bearing and bearing 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



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.

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 No. 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. (Cont'd.)	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.	Disconnect either the radar ground sensor or the magnetic distance sensor.

KM3000 TROUBLESHOOTING CHART (Continued)

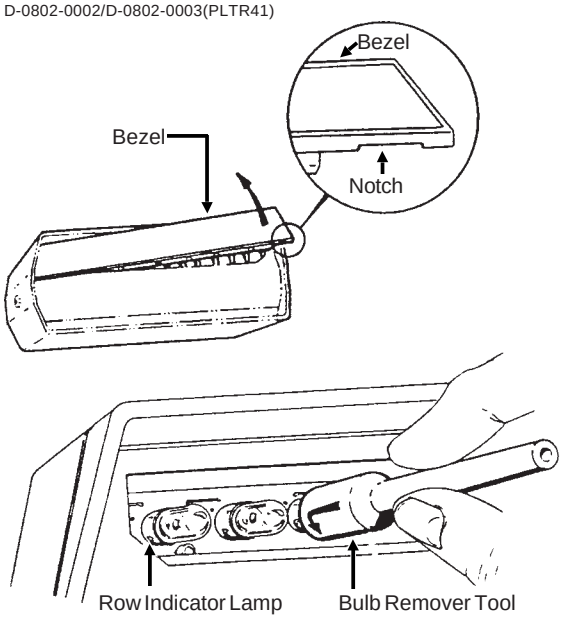
PROBLEM	POSSIBLE CAUSE	SOLUTION
4. Monitor completely "dead".	Blown console fuse.	Check fuse located on rear panel of console. If fuse is blown, replace with a 5 amp, type AGC. If fuse blows again, check power connection to battery. If connections are reversed fuse will blow. If battery connections are 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. (Cont'd.) 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)

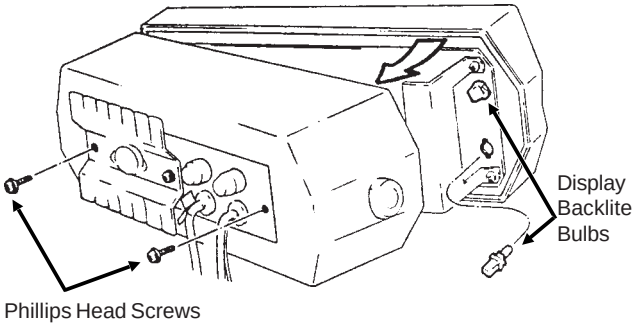
D-0802-0002/D-0802-0003(PLTR41)



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.**

VALVE BLOCK ASSEMBLY INSPECTION

The valve block assembly consists of the marker sequencing and flow control valves in one assembly.

The sequencing valve portion consists of a chambered body containing a spool and series of check valves to direct hydraulic oil flow. Should the valve malfunction, the components may be removed for inspection.

1. Remove valve block assembly from planter.
2. Remove detent assembly and port adapter assemblies from rear of valve block.

IMPORTANT: Damage to the spool may occur if the detent assembly and port adapter assemblies are not removed prior to removal of the spool.

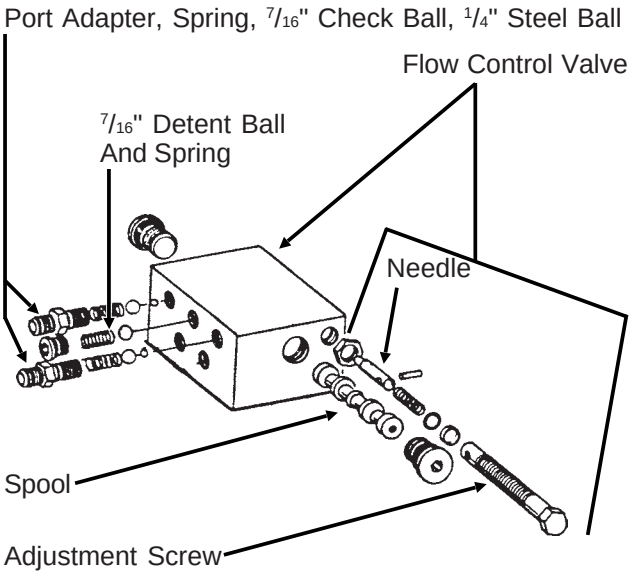
3. Remove plug from both sides of valve block and remove spool.
4. Inspect all parts for pitting, contamination or foreign material. Also check seating surfaces inside the valve. Replace any parts found to be defective.
5. Lubricate spool with a light oil and reinstall. Check to be sure spool moves freely in valve body.

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

A flow control valve is located on each side of the block assembly. The flow control valves should be adjusted for raise and lower speed as part of the assembly procedure or upon initial operation. If the valve fails to function properly or requires frequent adjustment, the needle valve should be removed for inspection. Check for foreign material and contamination. Be sure needle moves freely in adjustment screw. Replace any components found to be defective.

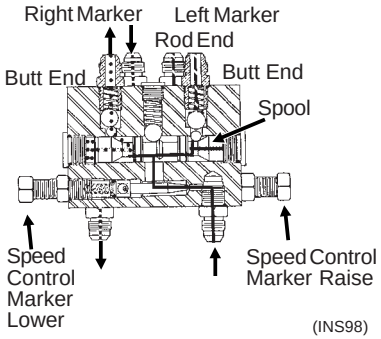
NOTE: When oil is cold, hydraulics operate slowly. Make sure all adjustments are made with warm oil.

(PLTR43)



LIFT CIRCUIT OPERATION TROUBLESHOOTING			
PROBLEM	**POSSIBLE CAUSE**	**TROUBLESHOOTING***	**SOLUTION**
Planter raising uneven.	Master cylinder is leaking.	Raise planter **slowly** until master cylinder reaches end of stroke. If master cylinder is leaking it will lag behind the slave cylinder, causing the tire to squat less. If planter settles when hydraulic lever is released, check assist cylinders.	Check for contamination in rephasing valve in piston. Prior to removing rephasing valve, measure the set screw setting by turning the set screw clockwise and counting the revolutions until it bottoms out. After cleaning rephasing valve, bottom the screw out and back it out the same number of revolutions as the original setting. Replace rephasing valve and adjust as stated above or replace piston. Install seal kit. Consult your KINZE® Dealer for leak testing and rephasing valve adjustment if necessary.
	Slave cylinder is leaking.	Raise and lower planter. As planter lowers, the side with leaking slave cylinder will drop rapidly. Install wheel lockups on master and assist cylinders. Retract slave cylinder and observe which tire settles. If planter settles when hydraulic lever is released, check assist cylinders.	Check for contamination in rephasing valve in piston. Prior to removing rephasing valve, measure the set screw setting by turning the set screw clockwise and counting the revolutions until it bottoms out. After cleaning rephasing valve, bottom the screw out and back it out the same number of revolutions as the original setting. Replace rephasing valve and adjust as stated above or replace piston. Install seal kit. Consult your KINZE® Dealer for leak testing and rephasing valve adjustment if necessary.
Planter raising even; however, planter settles when hydraulic lever is released.	Assist cylinder is leaking.	Install lockups on the master cylinder. Retract assist cylinder and observe which tire settles.	Seal on piston is leaking. Install seal kit.

* Operate hydraulics slowly to accentuate the problem. Rephase after each lowering cycle.

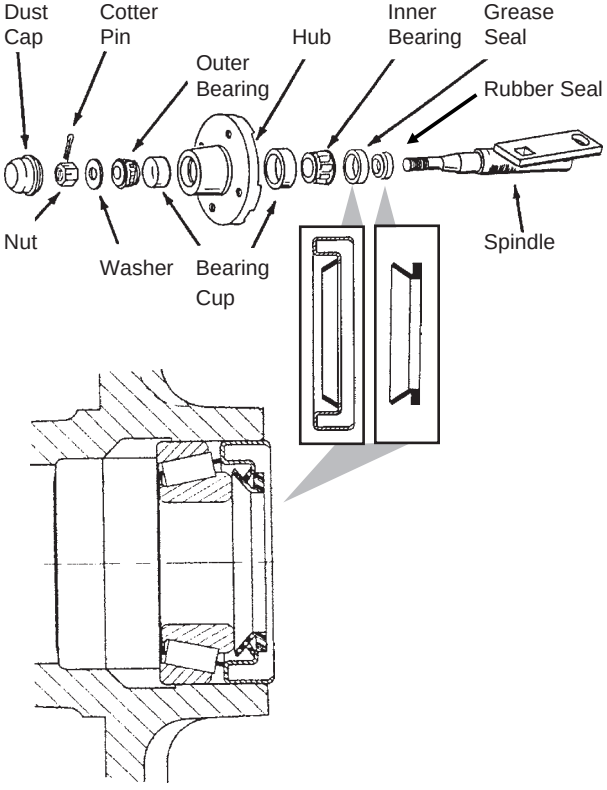
MARKER OPERATION TROUBLESHOOTING		
PROBLEM	**POSSIBLE CAUSE**	**SOLUTION**
Same marker always operating.  	Inadequate oil flow to sequencing valve. Most commonly associated with single valve system (lift and markers on same remote).	**TEST: Raise planter and install transport lockups. Attempt to raise and lower planter. All hydraulic oil will be directed to markers. If markers function properly, the sequence valve is OK.** Slow raising of marker arm so the planter is up before the marker arm is completely up.
	Spool in sequencing valve not shifting.	Remove spool. Inspect for foreign material, making sure all ports in spool are open. Clean and reinstall.
Both markers lowering and only one raising at a time.	Hoses from cylinders to valve connected backwards.	Check hosing diagram in manual and correct.
Both markers lower and raise at same time	Foreign material under check ball in sequencing valve.	Remove hose fitting, spring and balls. Clean. May be desirable to remove spool and clean as well.
	Check ball missing or installed incorrectly in sequencing valve.	Disassemble and correct. See above illustration.
Marker (in raised position) settling down.	Damaged o-ring in marker cylinder or cracked piston.	Disassemble cylinder and inspect for damage and repair.
	Spool in sequencing valve not shifting completely because detent ball or spring is missing.	Check valve assembly and install parts as needed.
	Spool in sequencing valve shifting back toward center position.	Restrict flow of hydraulic oil from tractor to sequencing valve.
Neither marker will move.	Flow control closed too far.	Loosen locking nut and turn flow control adjustment bolt out or counterclockwise until desired speed is set.
Markers moving too fast.	Flow control open too far.	Loosen locking nut and turn flow control adjustment bolt in or clockwise until desired speed is set.
Sporadic marker operation speed.	Needle sticking open in flow control valve.	Remove flow control, inspect and repair or replace.

MAINTENANCE

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. Install rubber seal into grease seal. Place inner bearing in place and press in new rubber seal/ grease seal.
9. Clean spindle and install hub.
10. Install outer bearing, washer or outer seal and slotted hex nut. Tighten slotted hex nut while rotating hub until there is some drag. This assures that all bearing surfaces are in contact. Back off slotted nut to nearest locking slot and install cotter pin.
11. Fill 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.

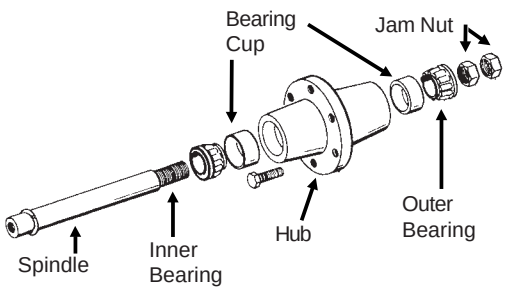
(PLTR45/PLTR99/PLTR98/PLTR102)



WHEEL BEARING LUBRICATION OR REPLACEMENT

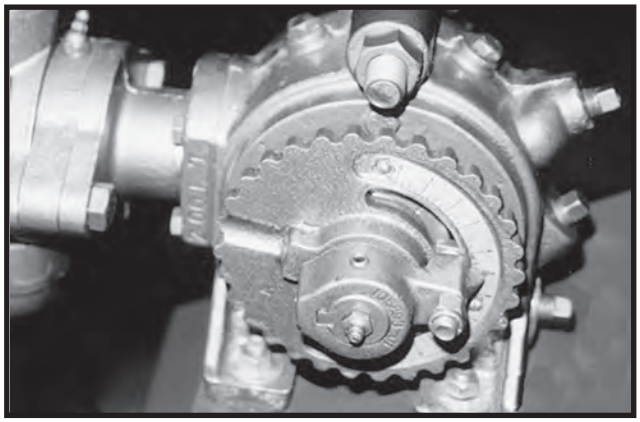
1. Raise tire clear of ground and remove wheel.
2. Remove double jam nuts and slide hub from spindle.
3. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
4. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
5. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Fill the space between the bearing cups in the hub with grease.
6. Place inner bearing in place.
7. Clean spindle and install hub.
8. Install outer bearing 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(EF35e)



PISTON PUMP STORAGE

12229799



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.

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.

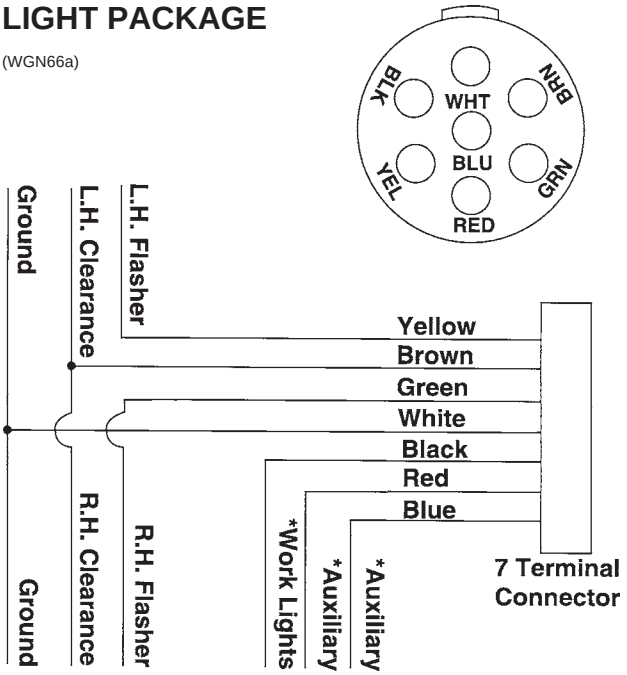
Grease or paint disc openers and marker blades to prevent rust.

Flush liquid fertilizer tanks, hoses and metering pump with clean water. See “Piston Pump Storage” if applicable.

Empty dry fertilizer hoppers. Clean hoppers. Disassemble and clean metering augers. Reassemble, coating all metal parts with rust preventative.

ELECTRICAL WIRING DIAGRAM FOR LIGHT PACKAGE

(WGN66a)

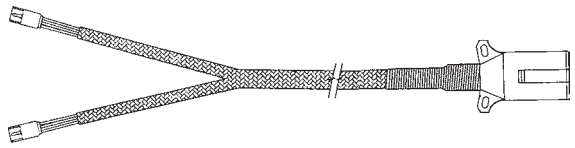


*** Optional lights and wires (to be supplied by customer) may be wired into existing plug terminals.**

Light package supplied on the Model 2000 planter meets ASAE Standards. For the correct wiring harness to be wired into the lights on your tractor, check with the tractor manufacturer.

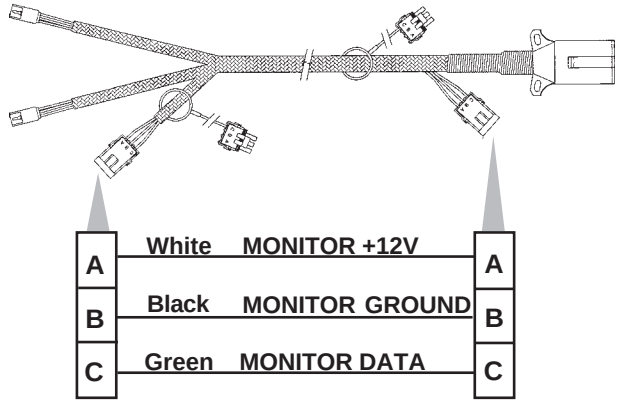
STYLE A Harness

(PT50)



STYLE B Harness

(ELC9)



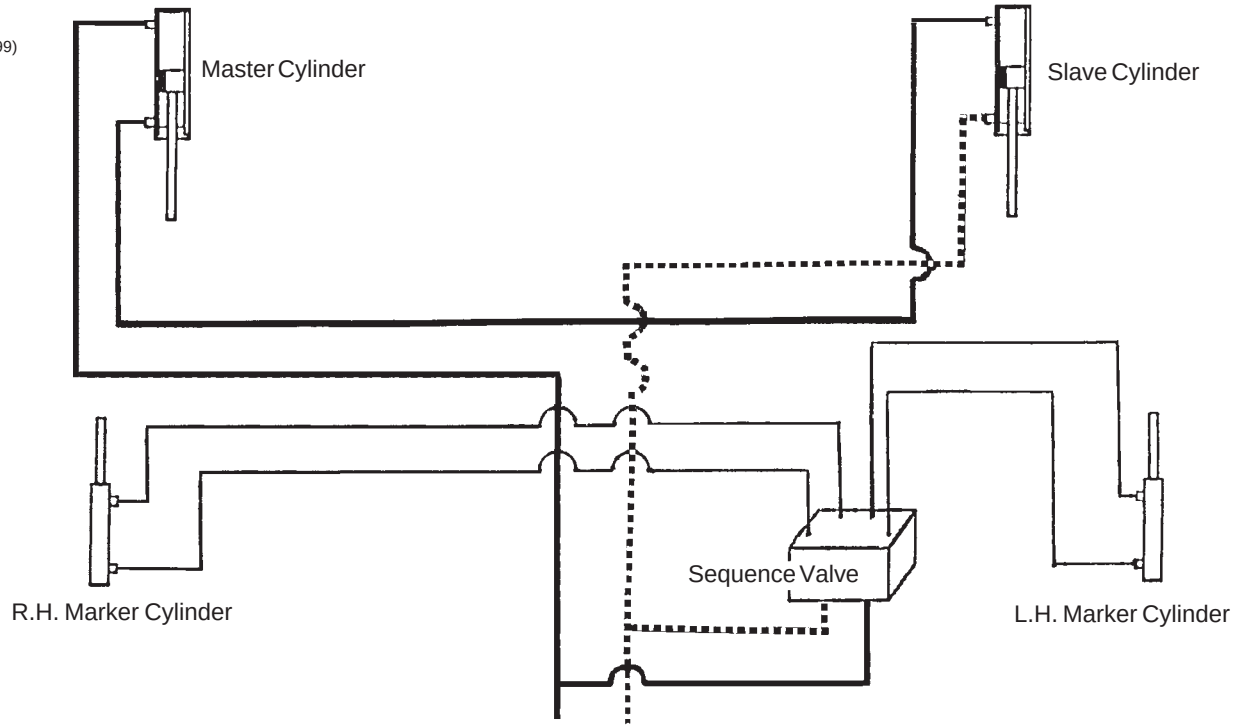
3 Pin Connector 3 Pin Connector

NOTE: These connectors not applicable to KM1000 or KM3000 monitor applications.

HYDRAULIC SYSTEM SCHEMATIC

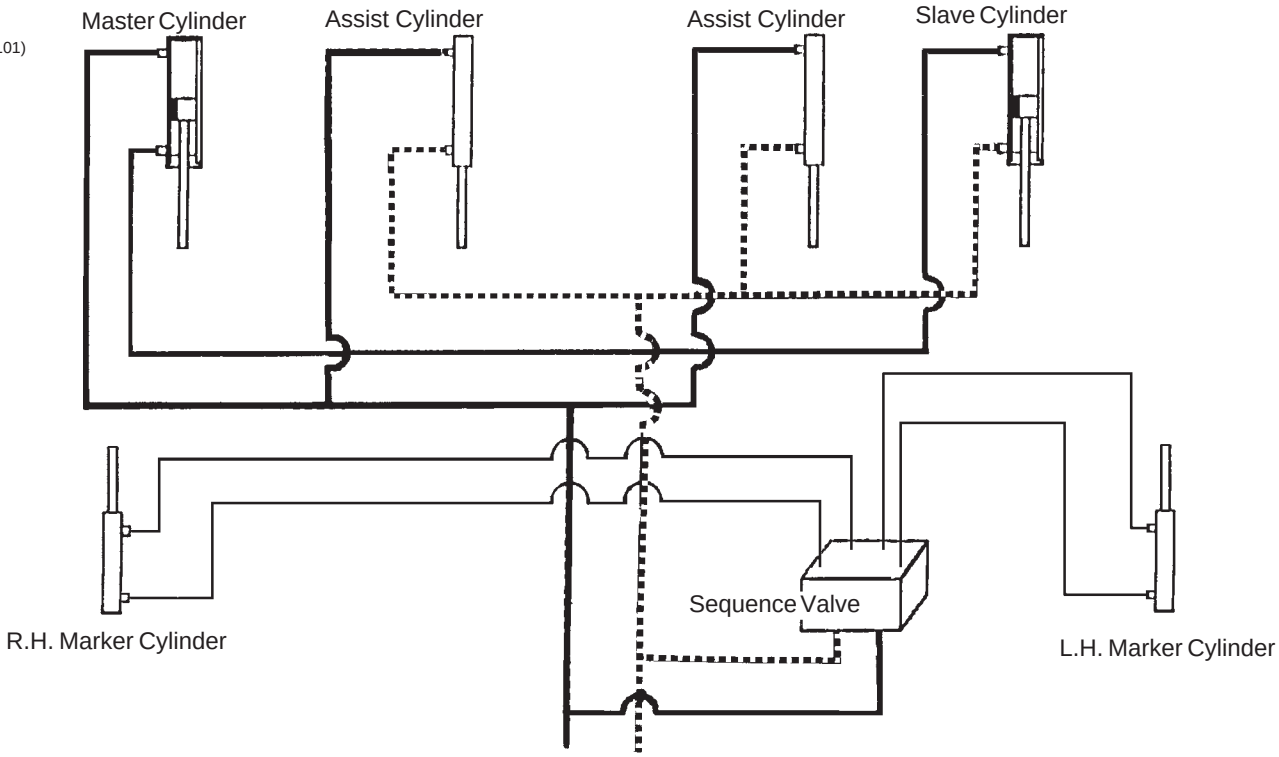
4 Row - Planter Raising

(INS99)



6/8 Row - Planter Raising

(INS101)



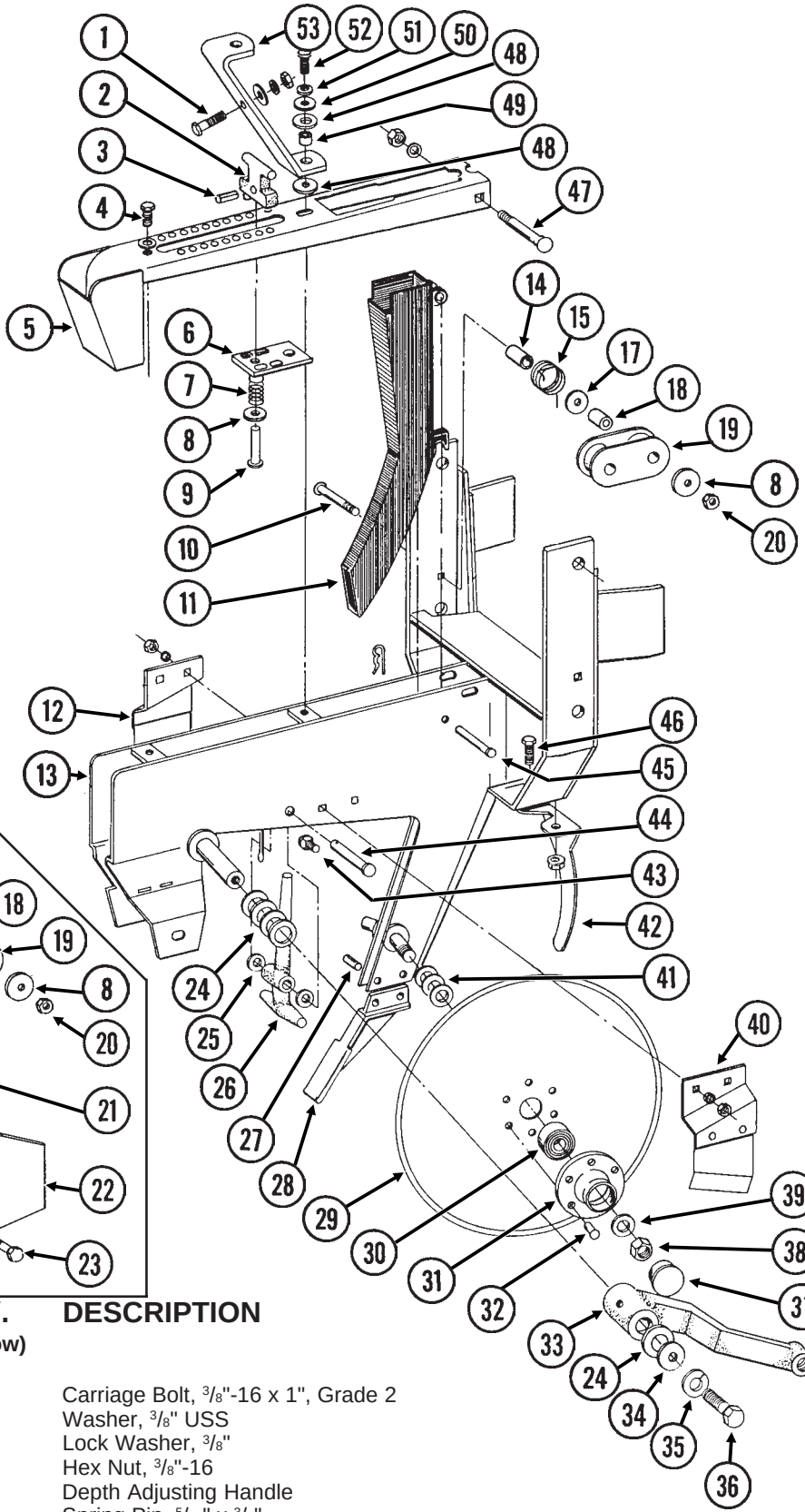
Return Oil
Pressure Oil

PARTS LIST INDEX

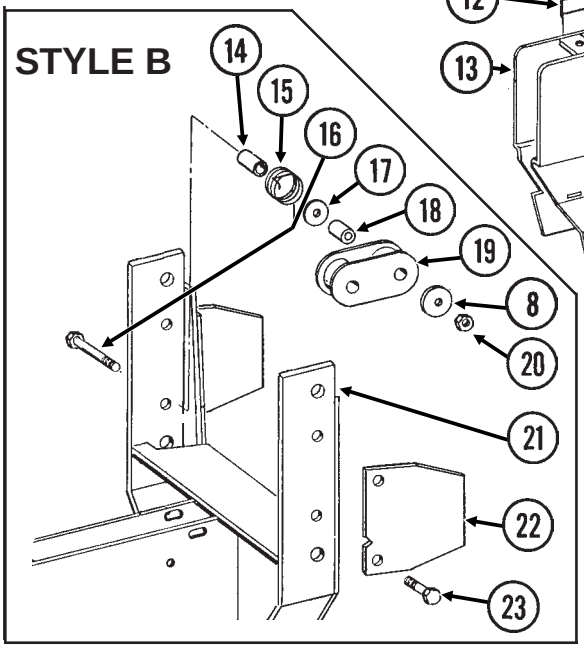
SHANK ASSEMBLY

RUB006/RUA044(RU1c/RU1d)

STYLE A



STYLE B



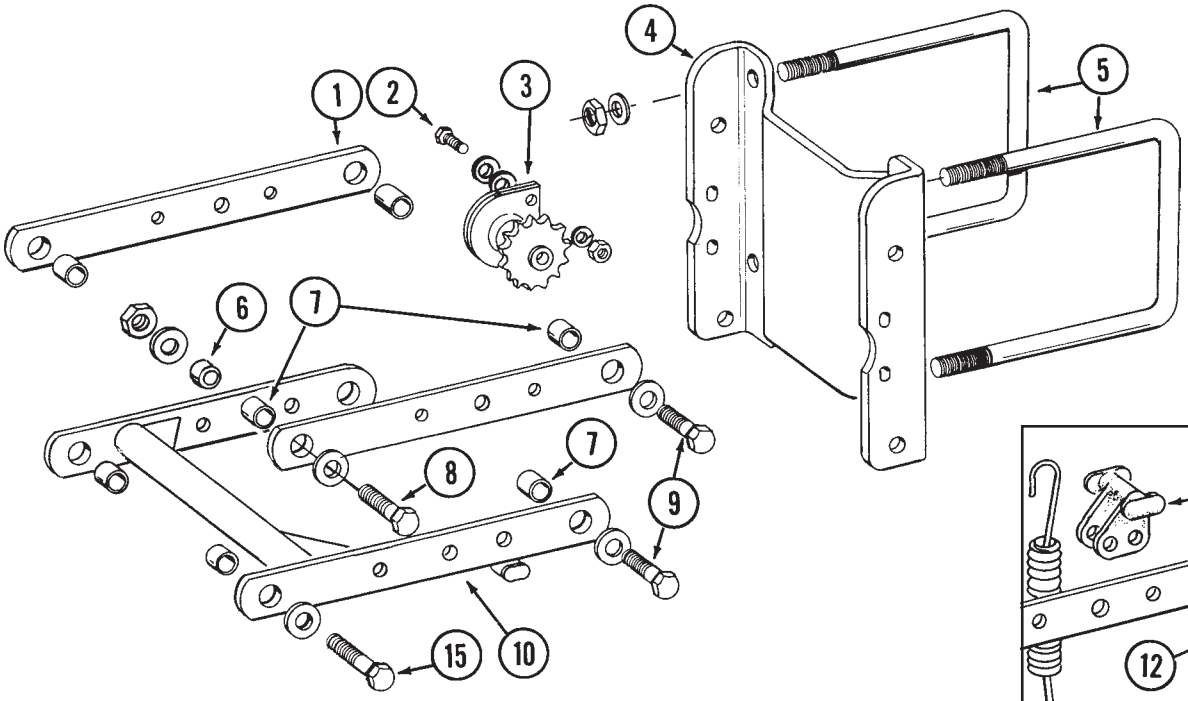
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10305	2	Carriage Bolt, 3/8"-16 x 1", Grade 2
	G10210	2	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
2.	GB0102	1	Depth Adjusting Handle
3.	G10605	1	Spring Pin, 5/32" x 3/4"
4.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	1	Lock Washer, 3/8"
5.	GA0811	1	Shank Cover
6.	GB0105	1	Depth Adjusting Slide
7.	GD1066	1	Compression Spring

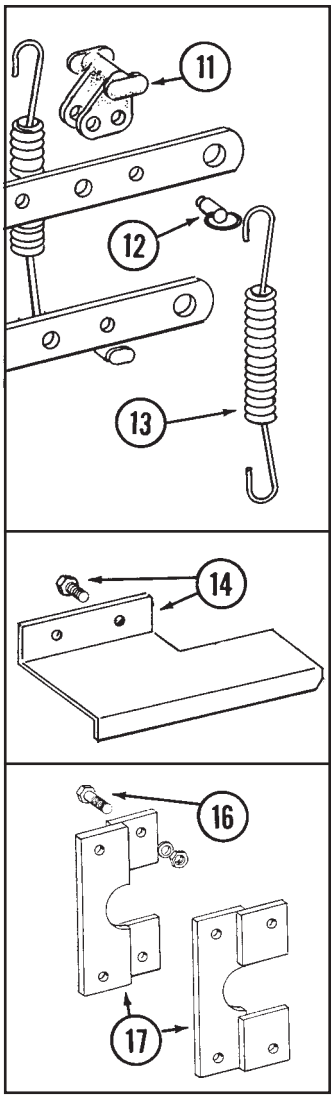
SHANK ASSEMBLY

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
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	-	Machine Bushing, 1" (.048" Thick) (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	Special 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/RU30)

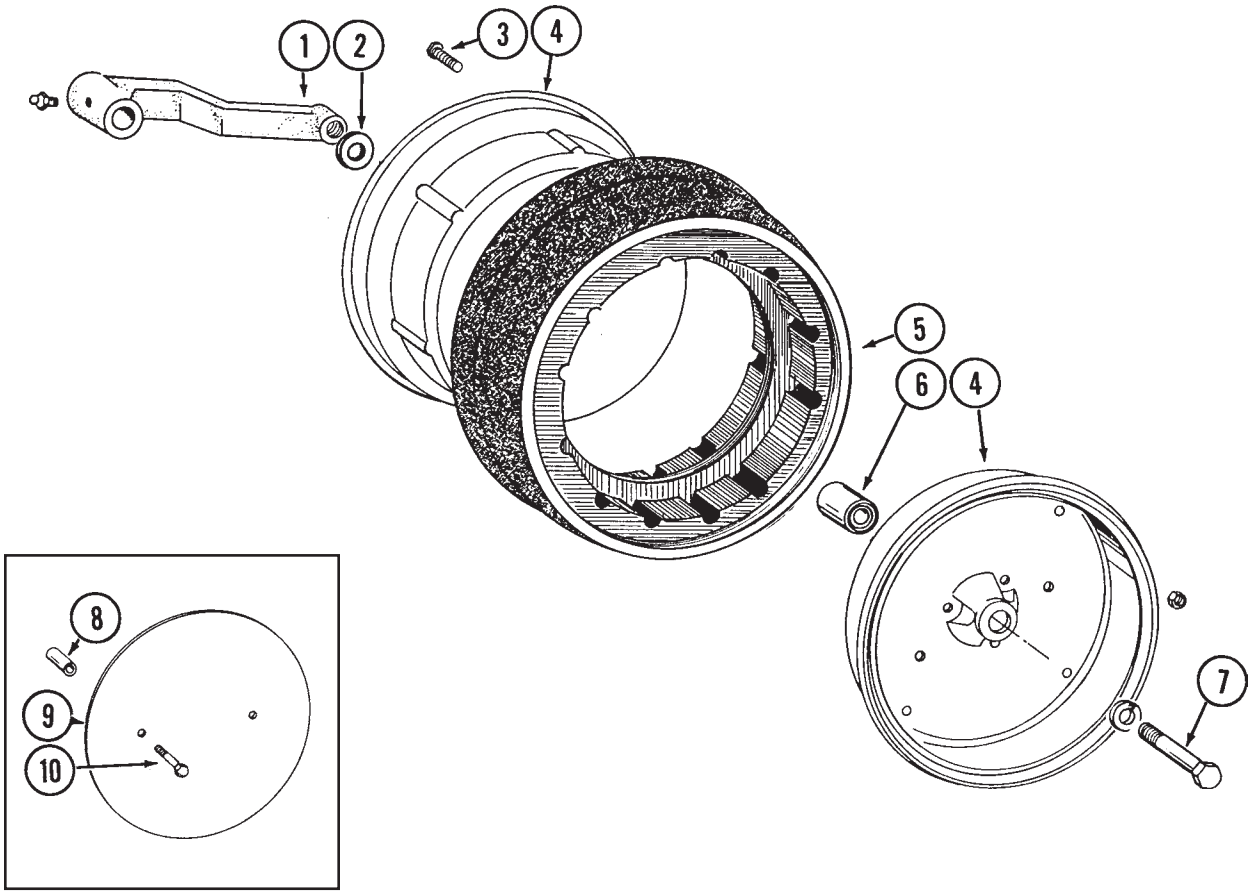




ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD7619	2	Upper Parallel Arm
2.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	-	Washer, 3/8" USS (As Required)
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
3.	GA1720	1	Bearing/Sprocket, 7/8" Bore
4.	GD10036	1	Mounting Support Plate
5.	GD1114	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.	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
17.	GA7410	2	Extension Bracket

GAUGE WHEEL

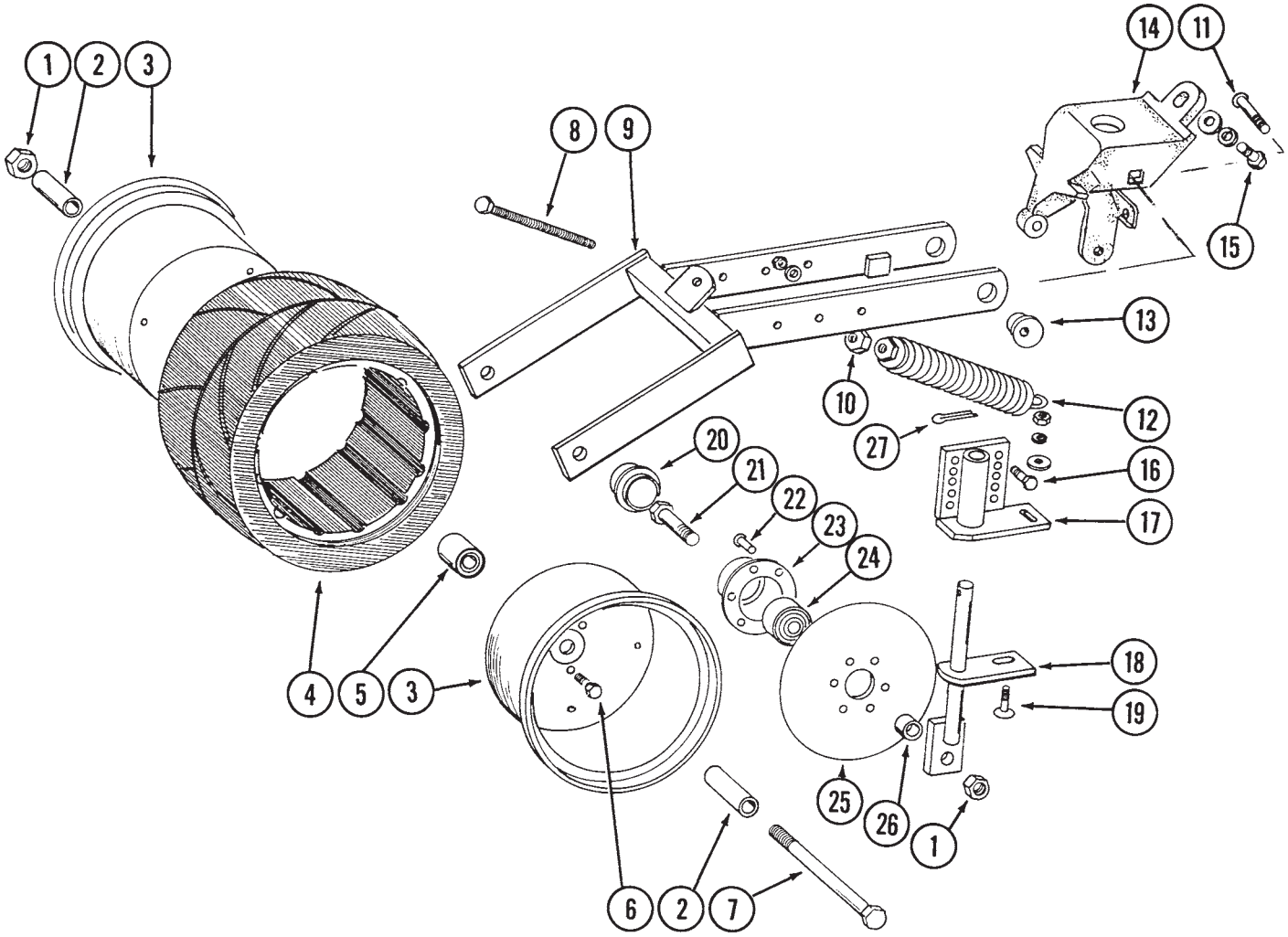
RUB001/RUB018/RUA039/RUB018/RUA044(RU5a/RU6)



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

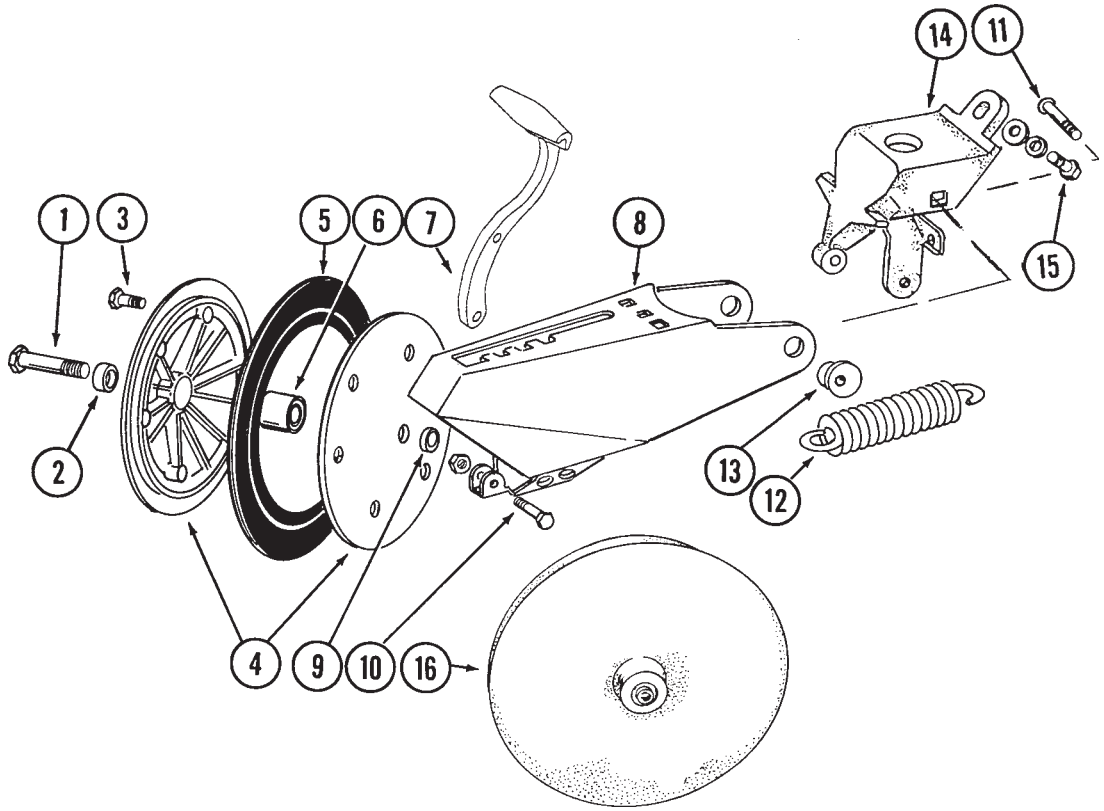
RUA042/RUA044(RU8)



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)

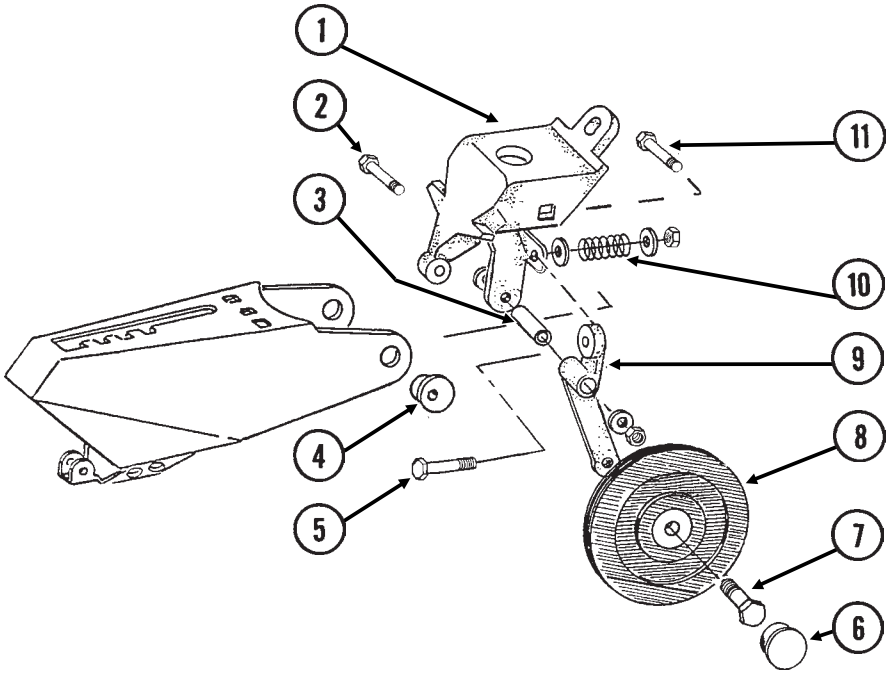
“V” CLOSING WHEELS



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

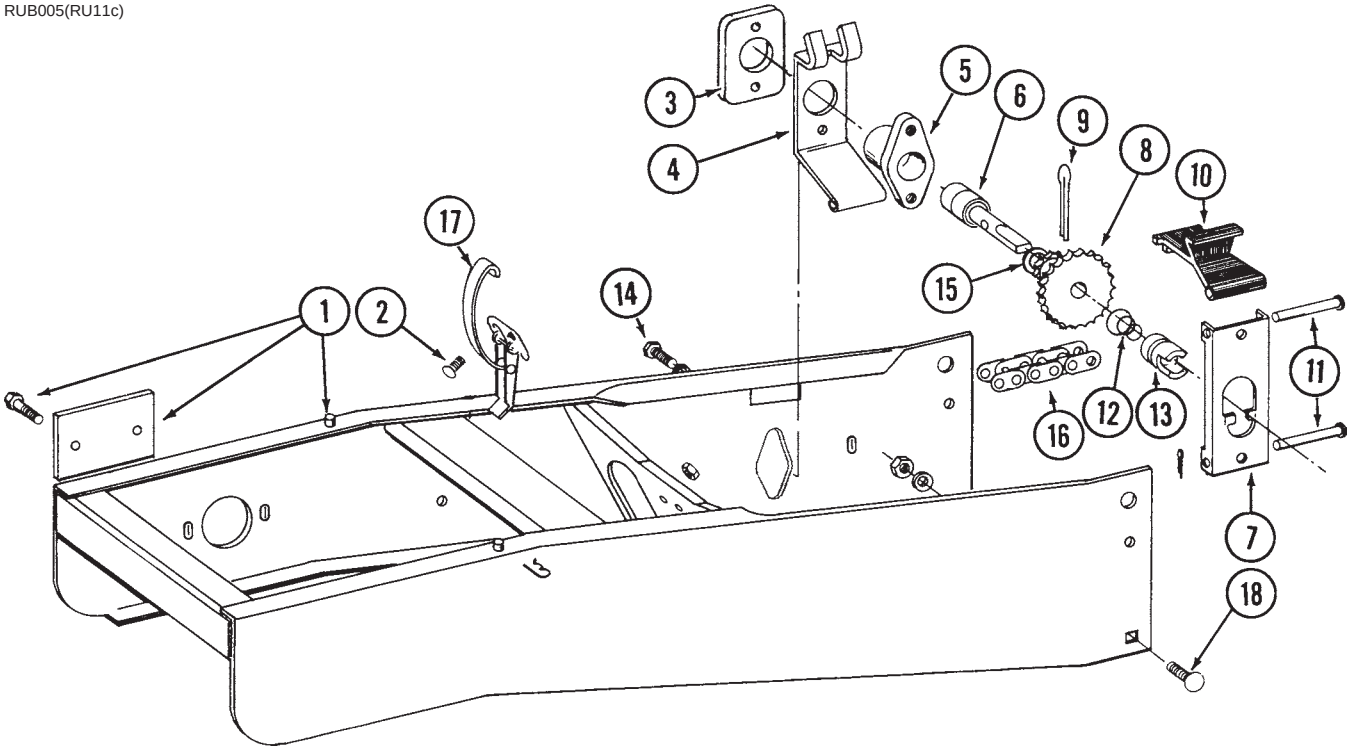
RUB006/RUA044(RU10b)



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, 1 11/16"
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

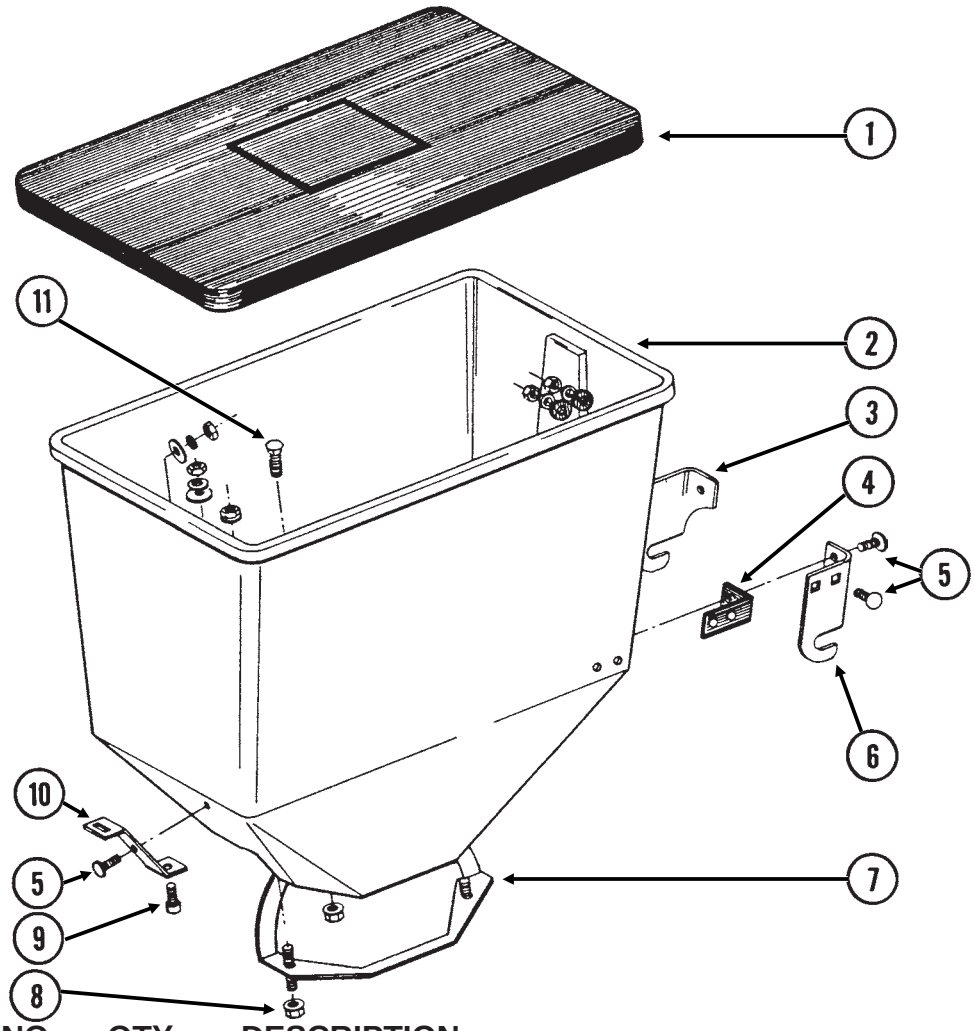
RUB005(RU11c)



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
	G3303-16	-	Roller Chain, No. 41, 16 Links Including Connector Link (Used W/Row Unit Extension Brackets)
	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

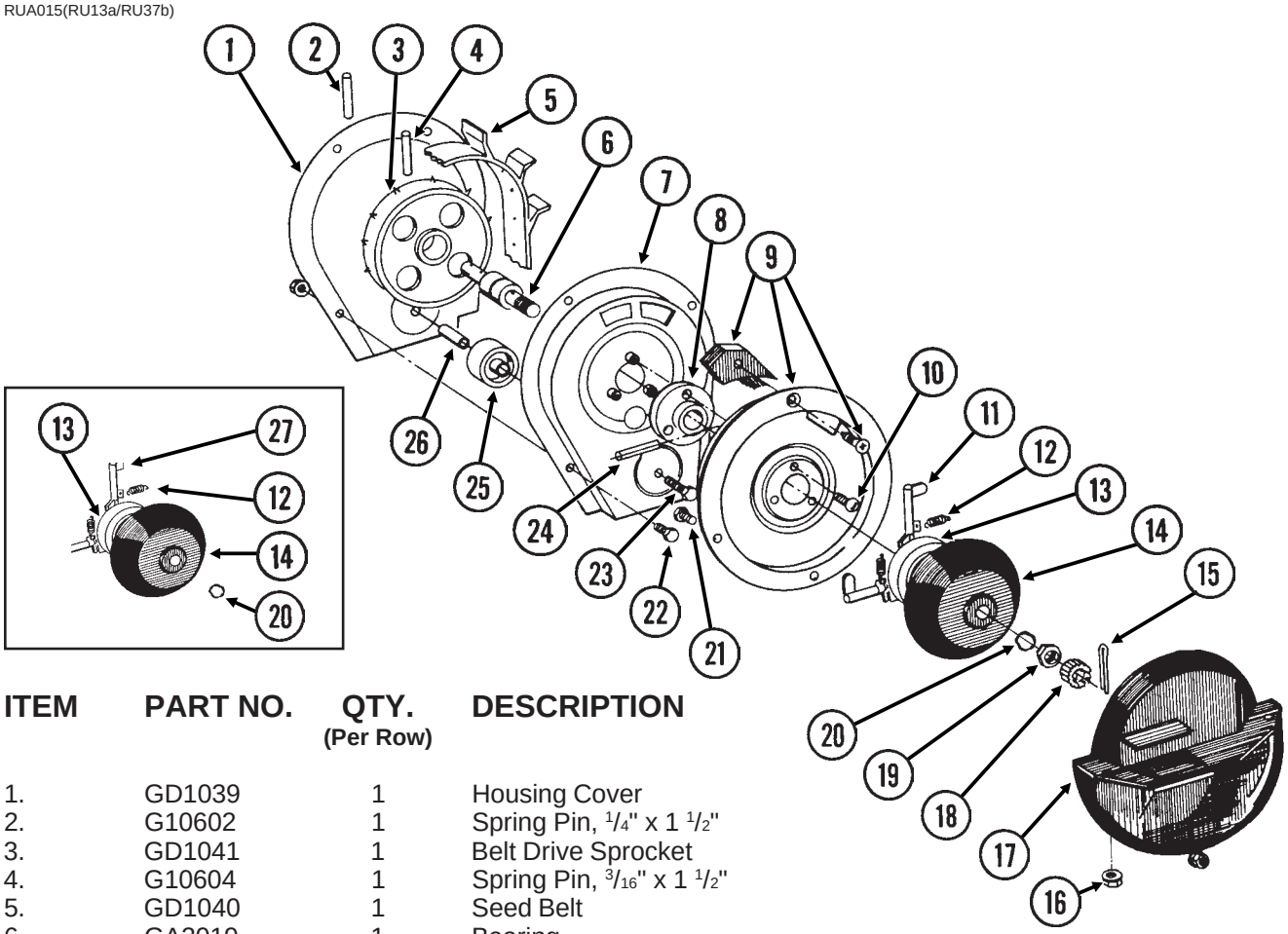
RUA015(RU12b)



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 PICK-UP SEED METER

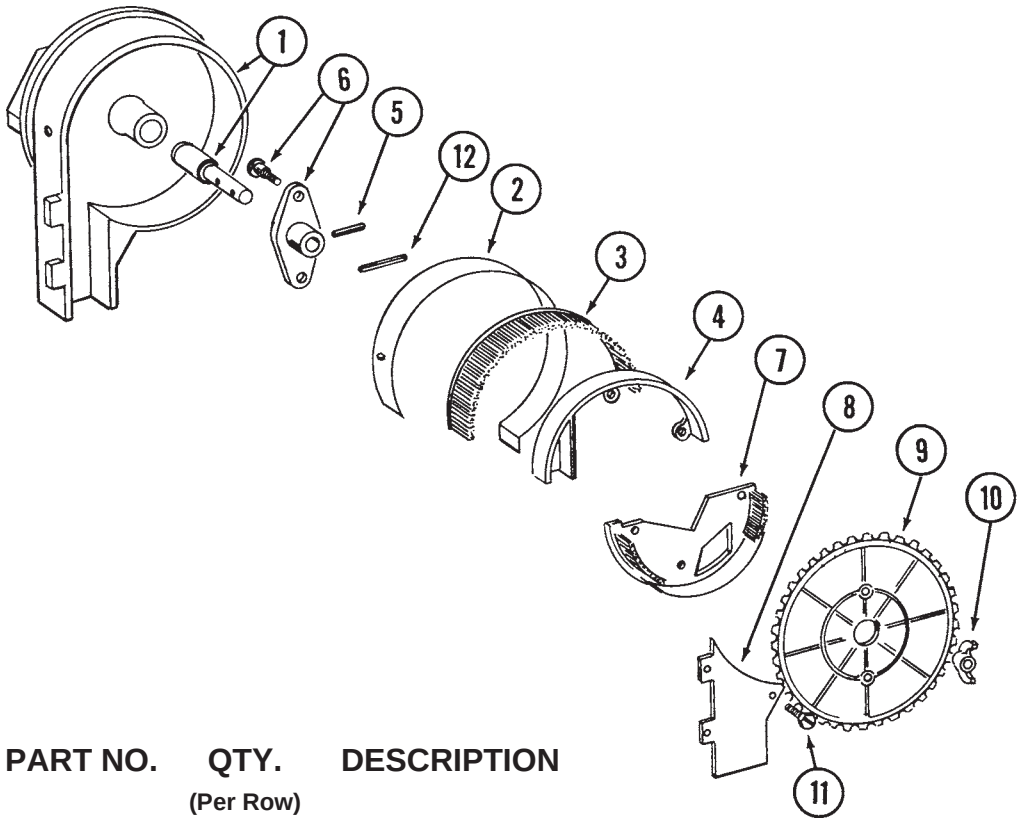
RUA015(RU13a/RU37b)



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	Slotted Hex Washer Head 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

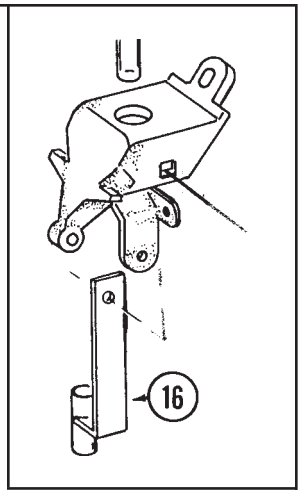
RUA037(RU14)

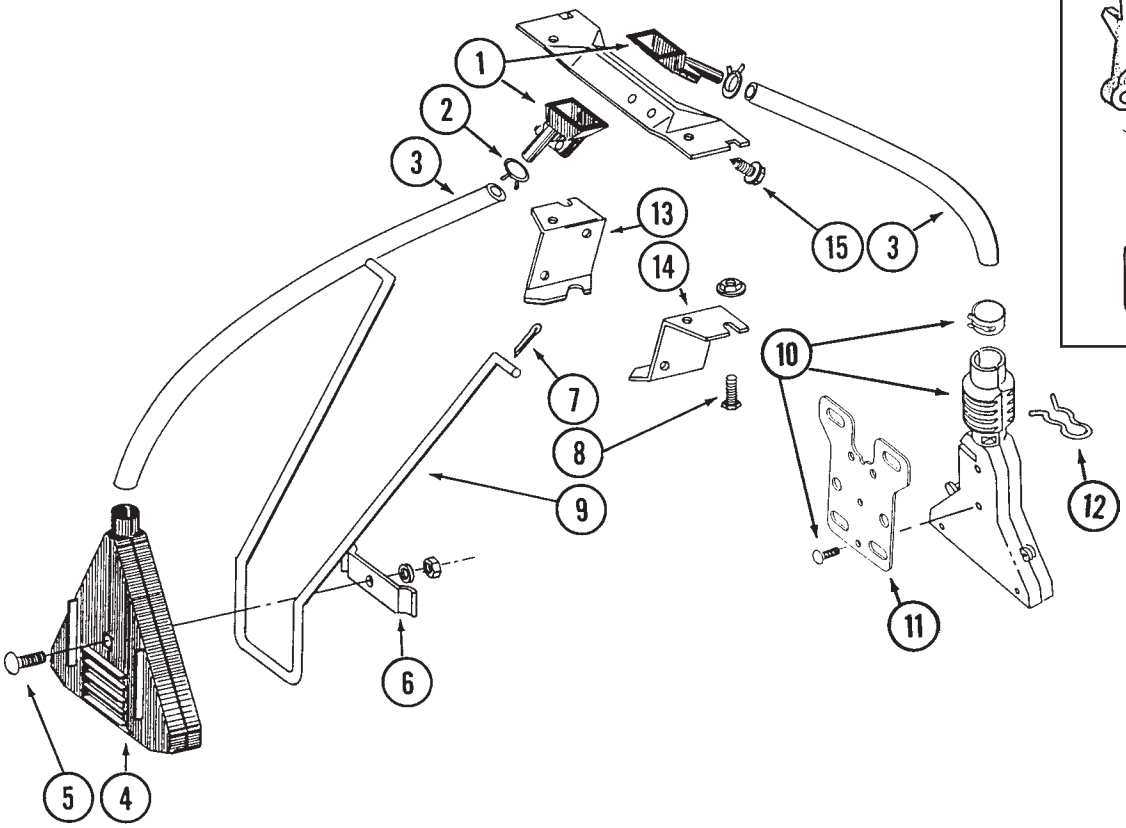


ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GA6027	1	Housing W/Bearing
	GA5698	-	Bearing
2.	GD8778	1	Wear Strip
3.	GA5699	1	Upper Retaining Brush
4.	GD8237	1	Retaining Brush Holder
5.	G10603	1	Spring Pin, 1/4" x 1 1/4"
6.	GA6038	1	Hub W/Shoulder Bolts
	GD1755	-	Shoulder Bolt, 1/4"-20 (2 Used)
7.	GA5834	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)

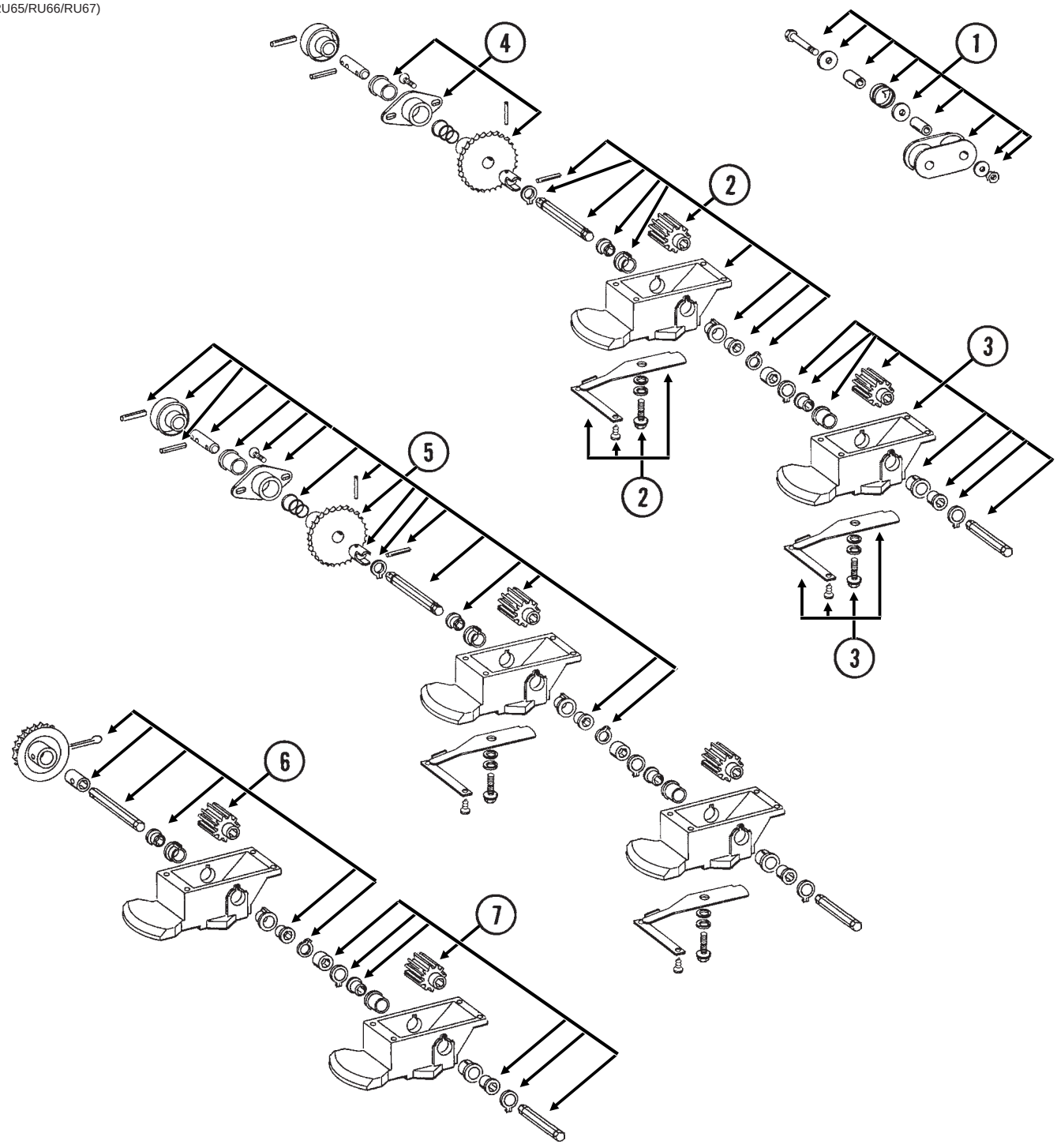




ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2423	-	Funnel
2.	G10680	-	Hose Clamp, 7/16"
3.	GD2947	-	Hose, 7/16" x 28"
4.	GA2075	-	Diffuser, 14" Band
5.	G10306	-	Carriage Bolt, 3/8"-16 x 2", Grade 2
	G10229	-	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
6.	GD1118	-	Clamp
7.	G10452	-	Cotter Pin, 1/8" x 1/2"
8.	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 (For Some Non-KINZE® Applications)
12.	GD1090	-	Spring Clip
13.	GD1115L	-	Hanger Bracket, L.H.
14.	GD1115R	-	Hanger Bracket, R.H.
15.	G10523	-	Self Tapping Screw, No. 10 x 1/2"
16.	GA6741	-	Bracket (Straight Drop In-Furrow)

GRANULAR CHEMICAL SUB-ASSEMBLIES AND KITS

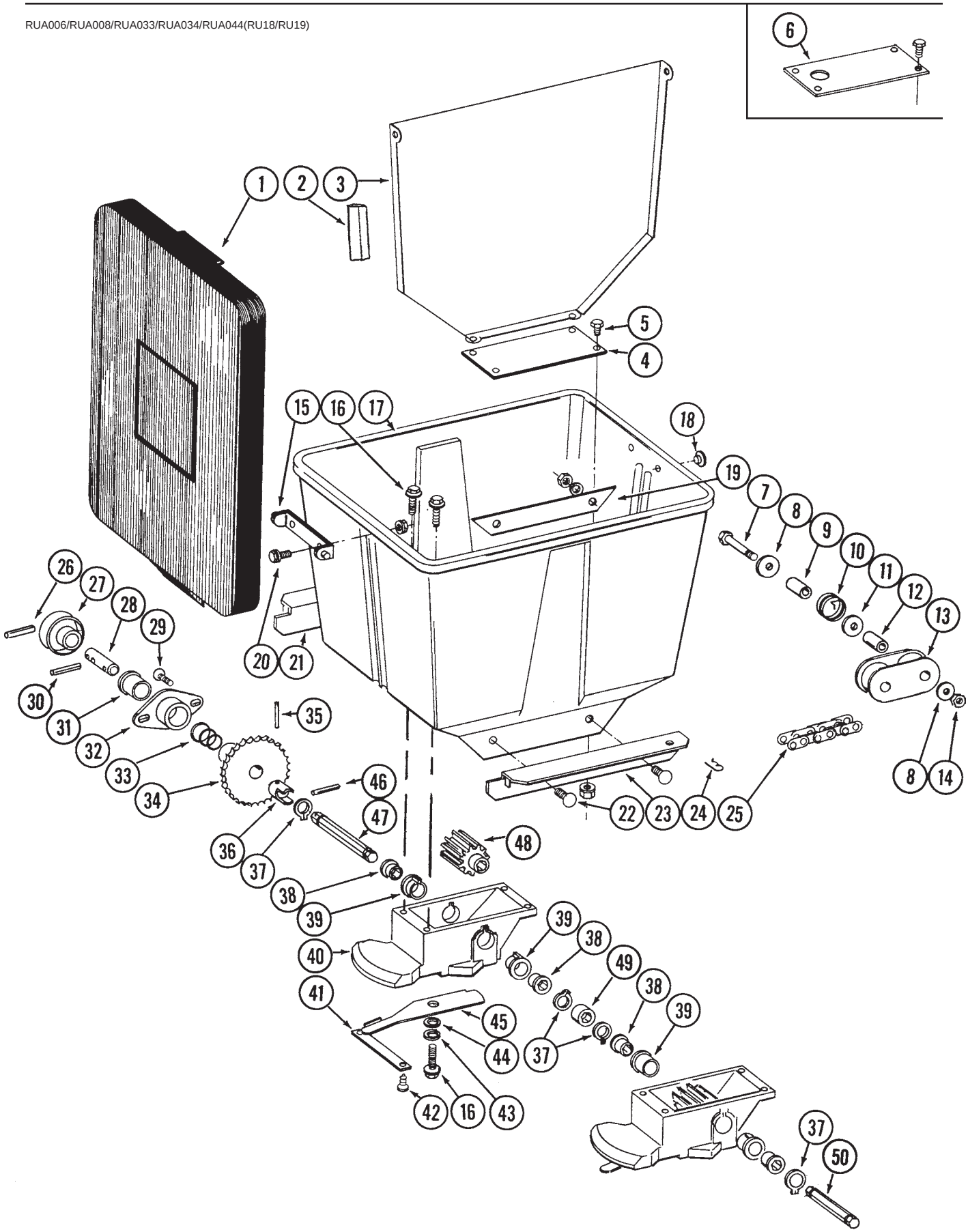
(RU65/RU66/RU67)



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)

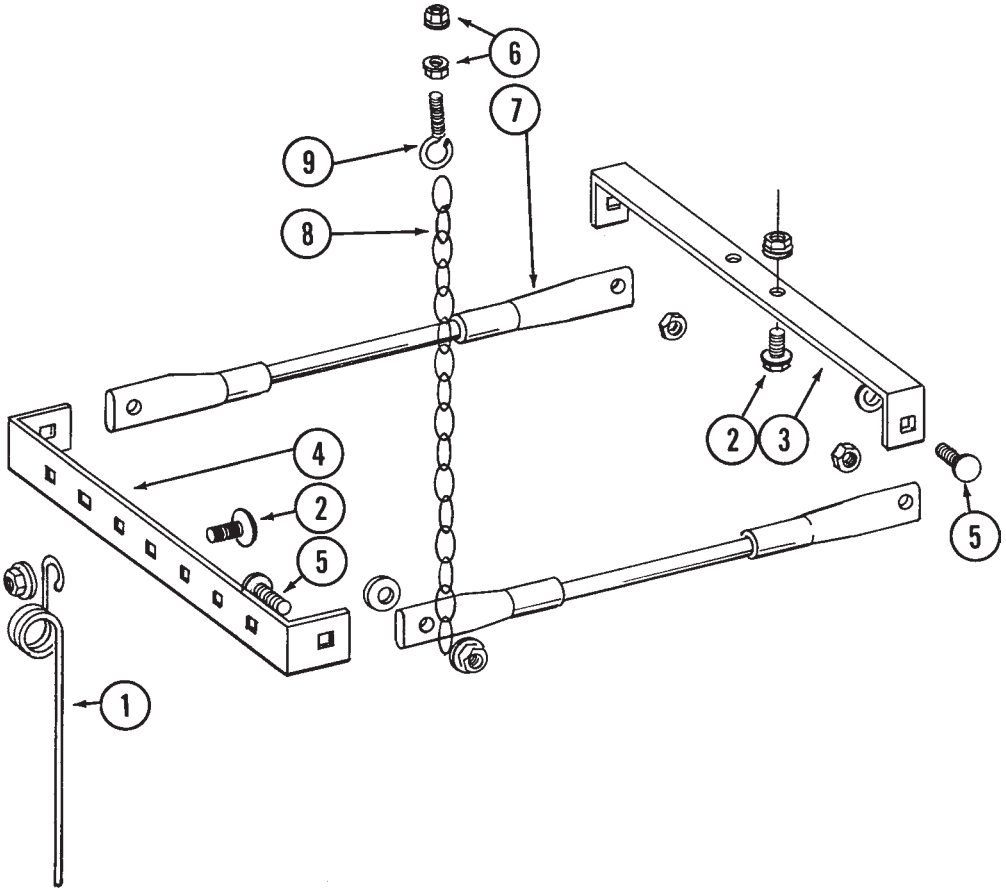


GRANULAR CHEMICAL HOPPER WITH METER(S) & THROWOUT

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

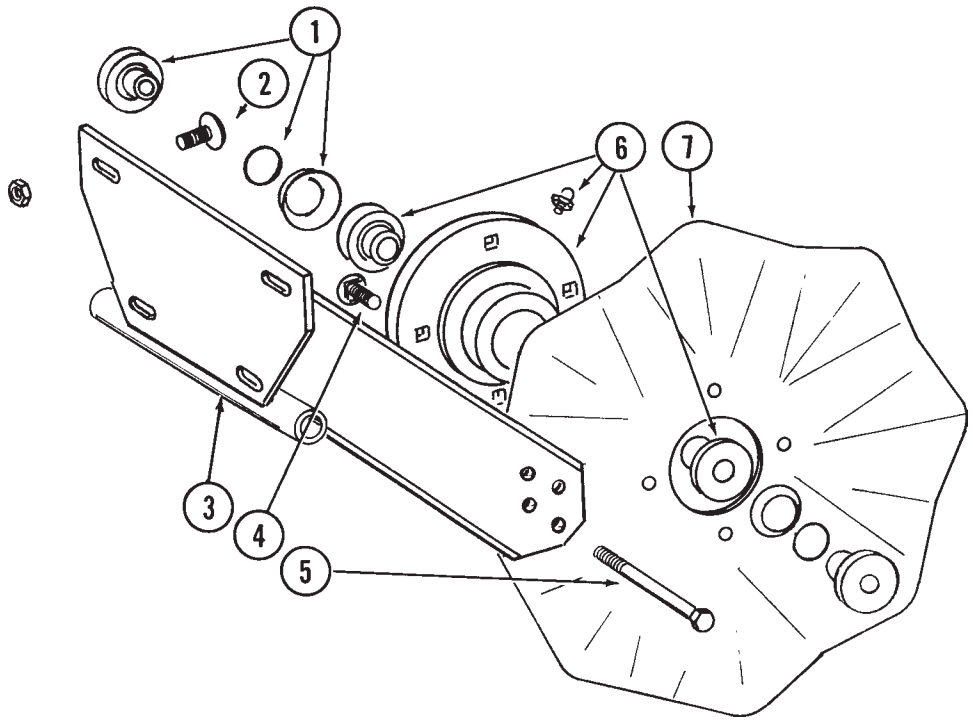
RUA011(RU20)



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 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 Nut, 3/8"-16
6.	G10621	4	Flange 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

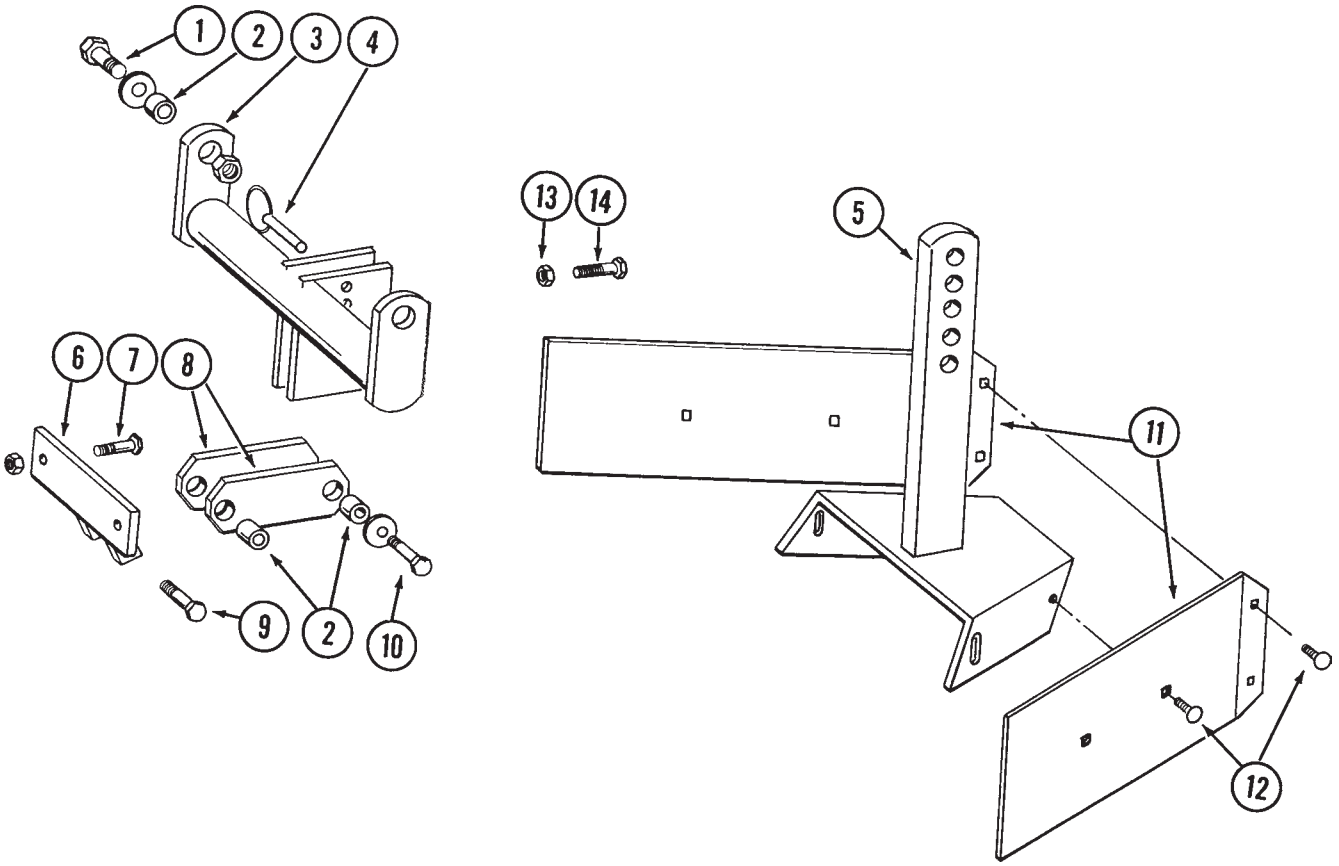
RUA036(RU21a)



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

BED LEVELER, ROW UNIT MOUNTED

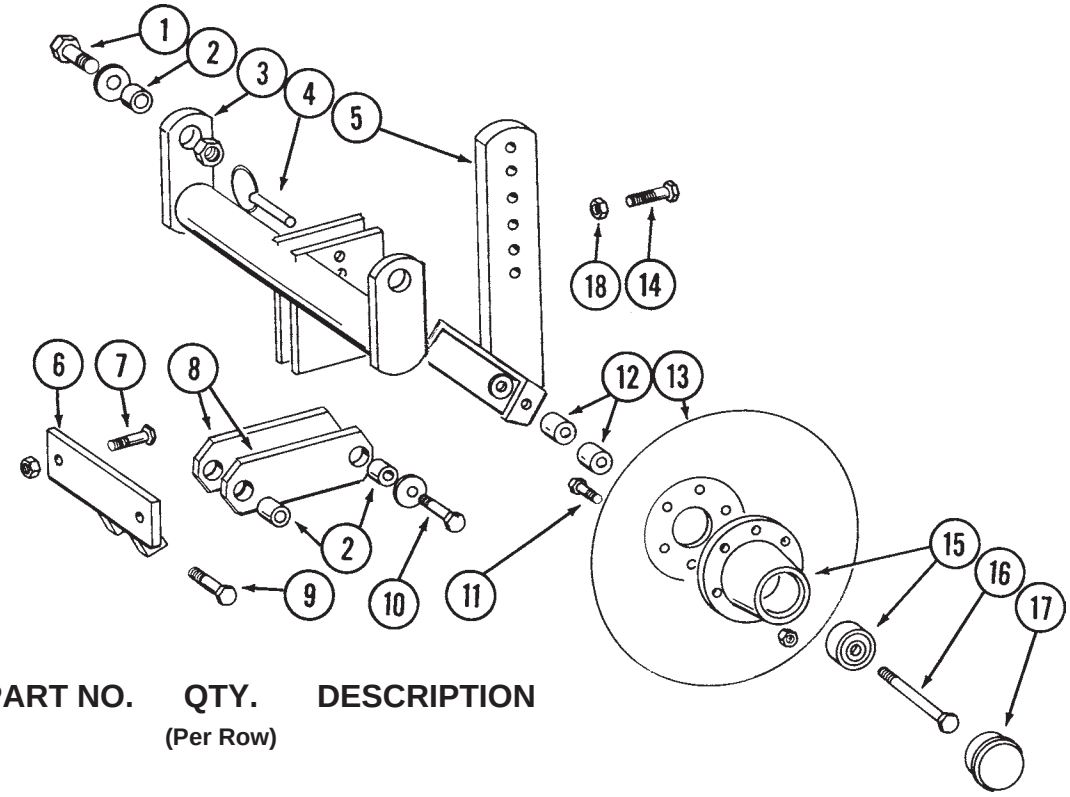
RUA038/RUA040(RU22a)



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.	GA5892	1	Leveler
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.	GD8266	2	Blade
12.	G10303	6	Carriage Bolt, 5/16"-18 x 1"
	G10219	4	Washer, 5/16" USS
	G10109	6	Lock Nut, 5/16"-18
13.	G10503	1	Jam Nut, 5/8"-11
14.	G10597	1	Set Screw, 5/8"-11 x 2 1/4"

DISC FURROWER, ROW UNIT MOUNTED

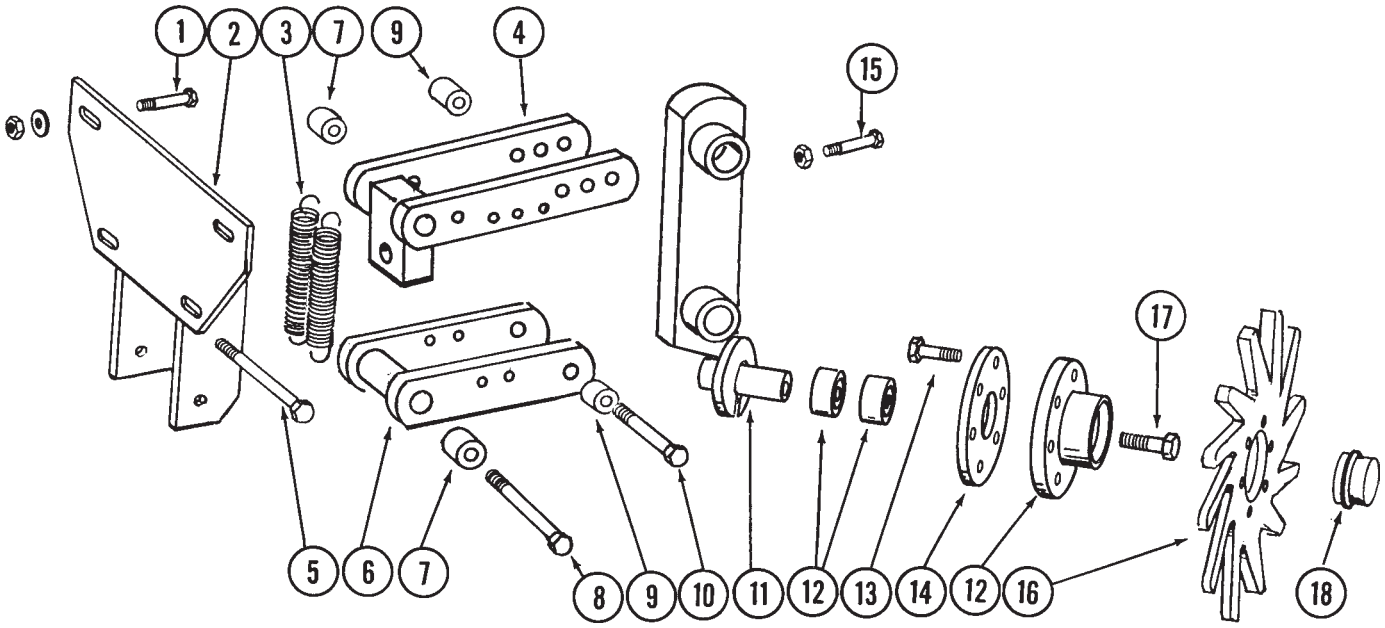
RUA038/RUA040(RU23a)



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

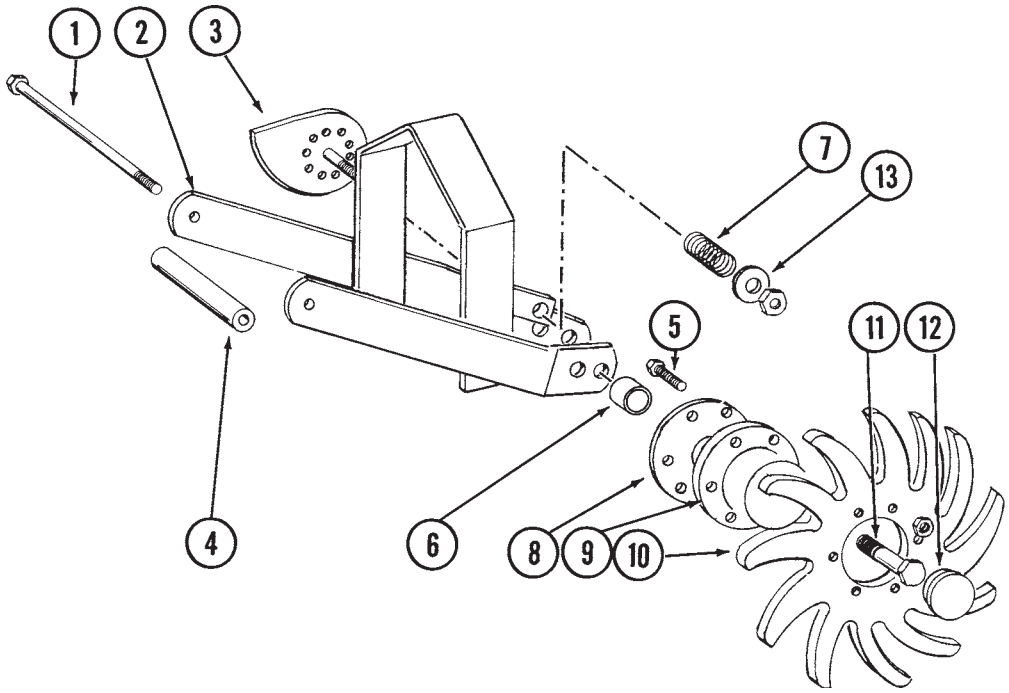
RUA041/RUA045(RU24a)



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

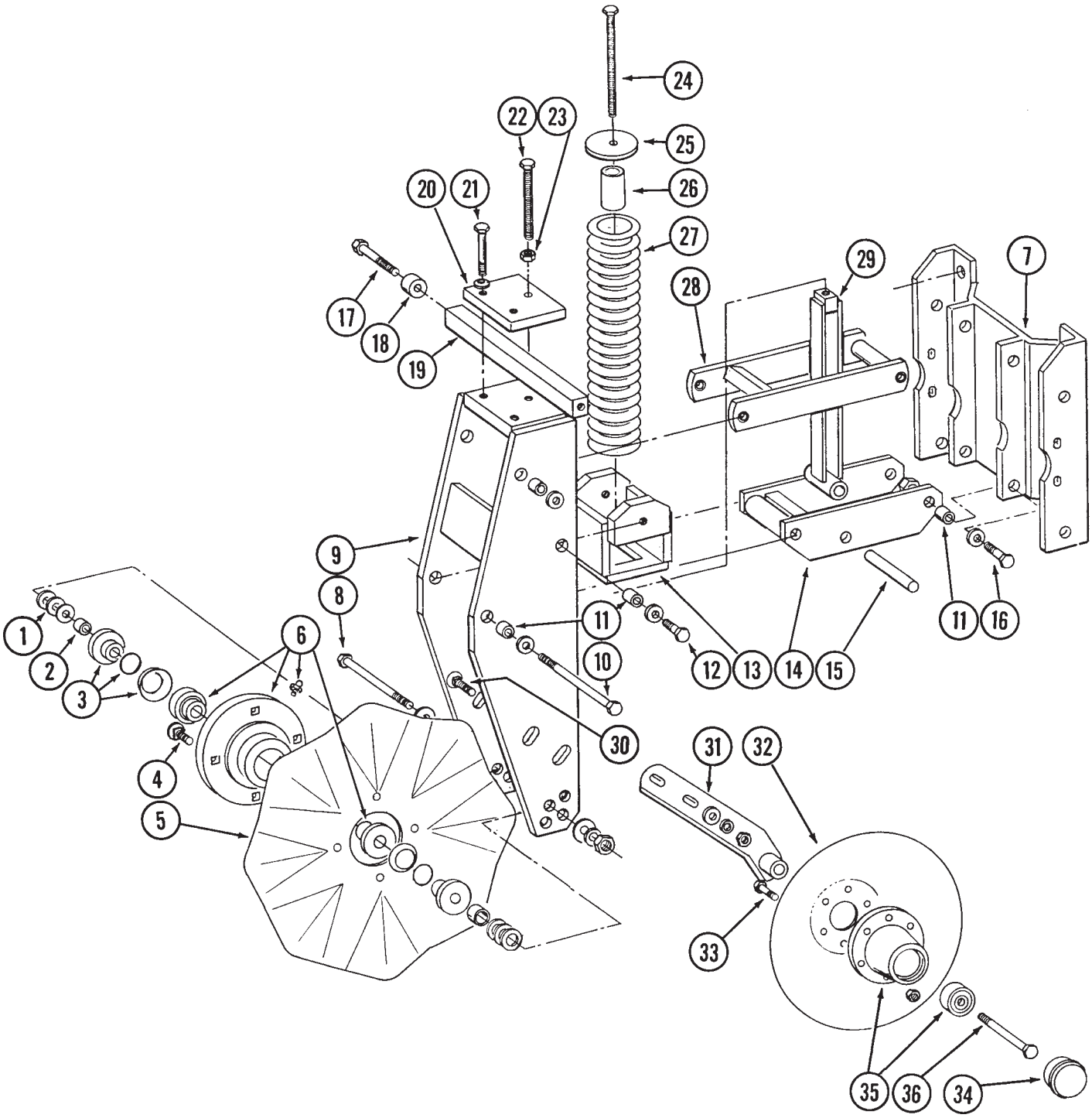
RUA047(RU31a)



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)



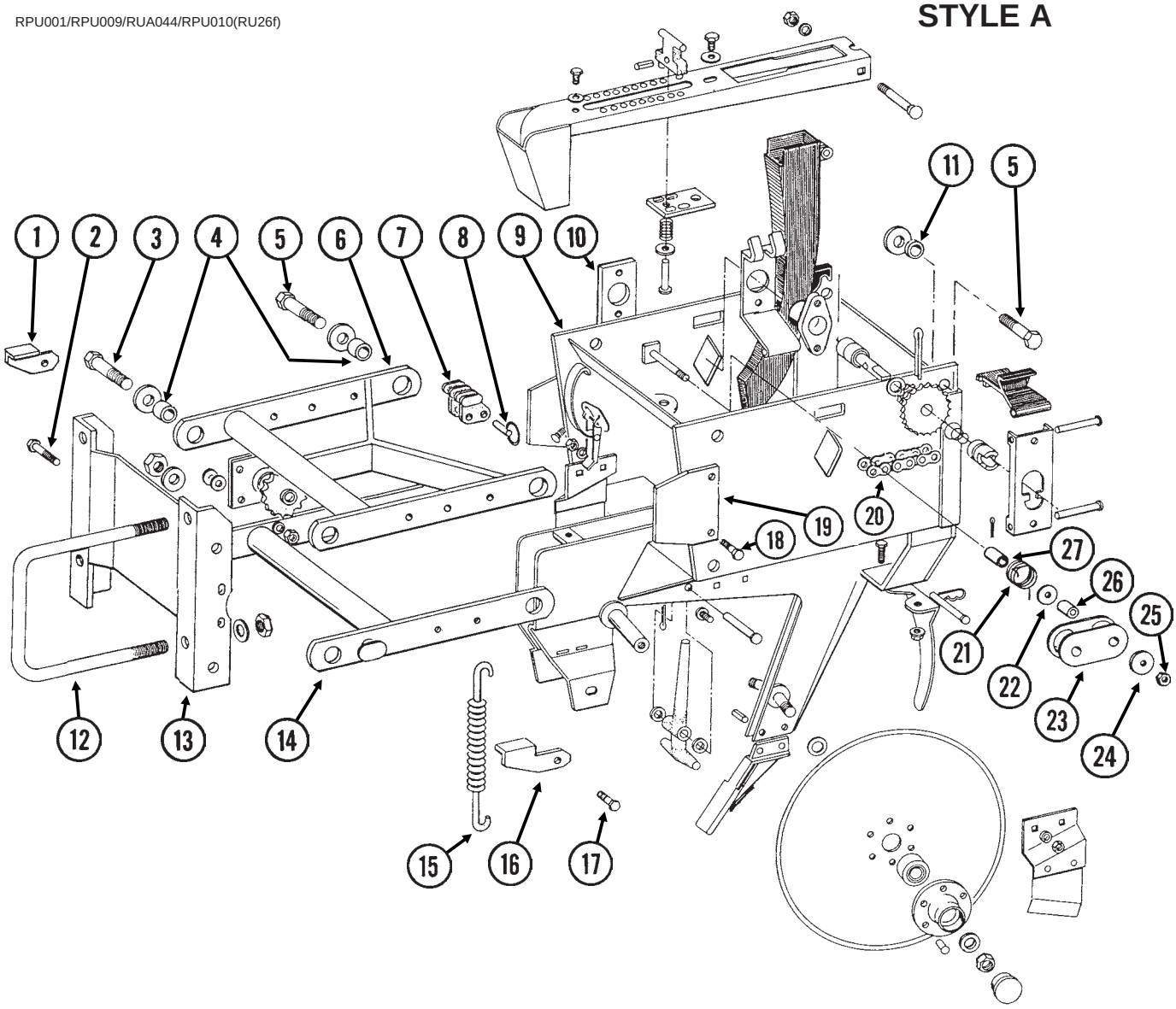
FRAME MOUNTED COULTER W/DISC FURROWER

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

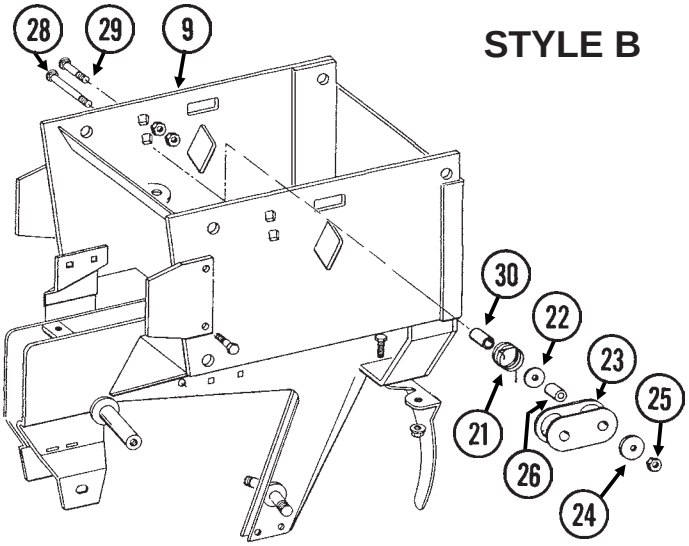
INTERPLANT® PUSH ROW UNIT

RPU001/RPU009/RUA044/RPU010(RU26f)

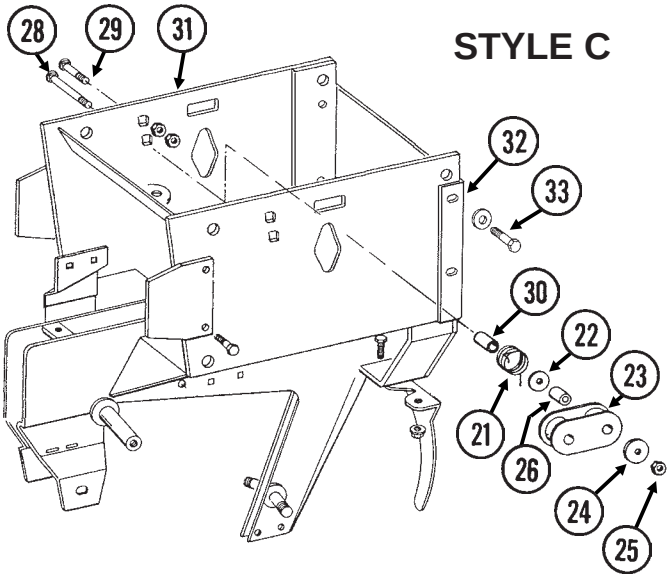
STYLE A



STYLE B



STYLE C



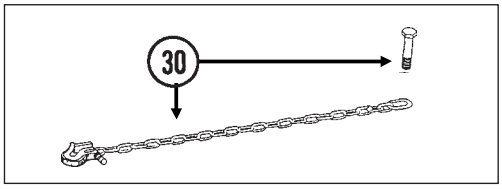
INTERPLANT® PUSH ROW UNIT

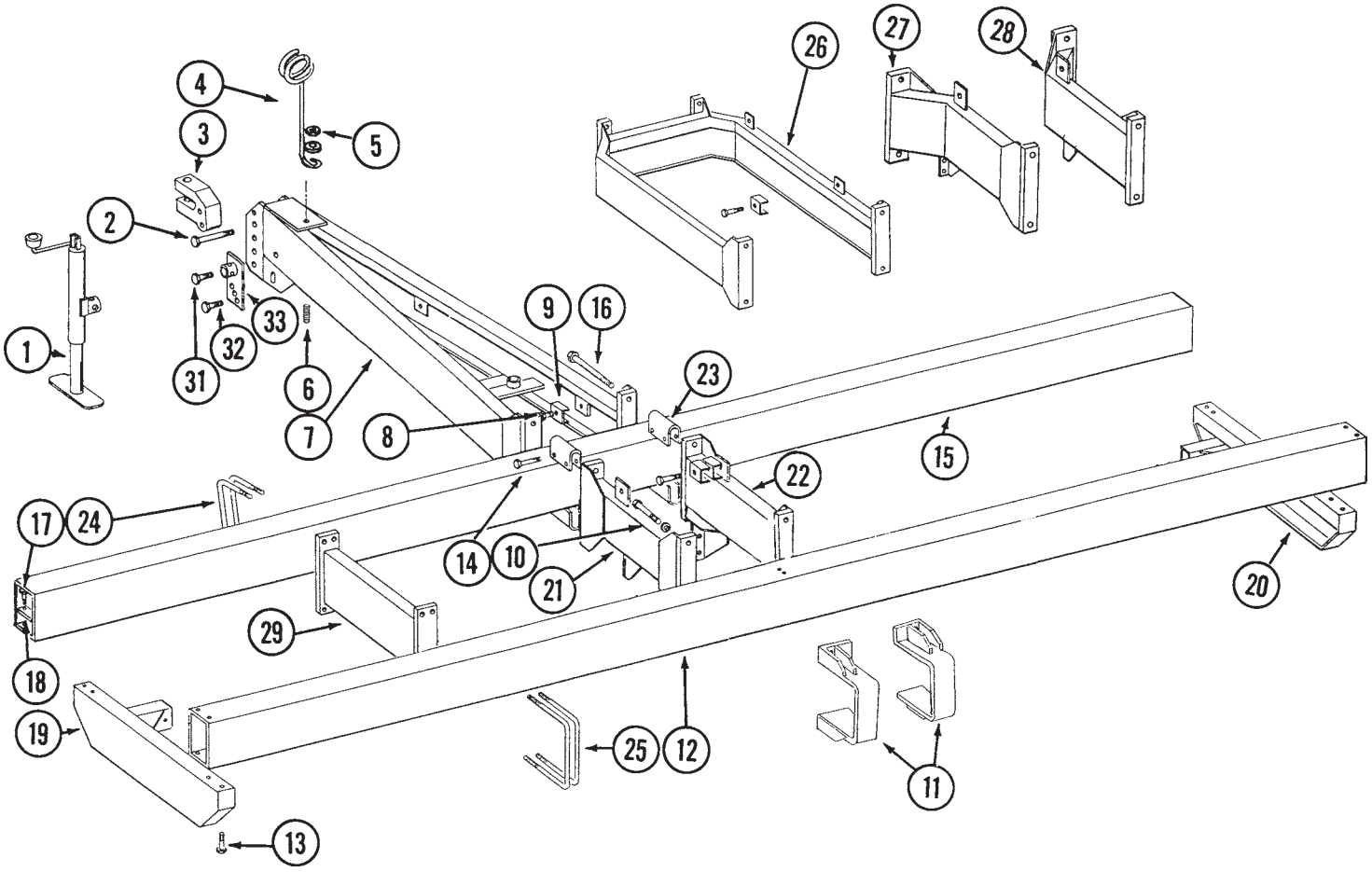
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	D7627	1	Lockup, L.H. **(Non-Stock Item Sub GA5564)**
2.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	-	Washer, 3/8" USS (As Required)
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
3.	G10732	4	Hex Head Cap Screw, 5/8"-18 x 2"
	GD7805	4	Special Washer
	G10412	4	Lock Nut, 5/8"-18
4.	GB0218	8	Bushing, 19/32"
5.	G10751	6	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	GD7805	6	Special Washer
	G10412	6	Lock Nut, 5/8"-18
6.	GA5788	1	Upper Arm
7.	GB0186	2	Spring Anchor
8.	G10545	2	Detent Pin, 1" Grip
9.	GA5846	1	Push Unit Shank **(Sub G1K273)**
10.	GD2128	1	Plate
11.	GD1109	2	Pivot Bushing, 1/4"
12.	GD1113	2	U-Bolt, 5" x 7" x 5/8"-11
	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
13.	GA5786	1	Mounting Plate
14.	GA5787	1	Lower Arm
15.	GD8249	-	Spring
16.	D7626	1	Lockup, R.H. **(Non-Stock Item Sub GA5564)**
17.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	2	Lock Washer, 1/2"
	G10111	2	Lock Nut, 1/2"-13
18.	G10037	4	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
19.	GD10710	2	Stop Bar
20.	G3303-96	1	Roller Chain, No. 41, 96 Links Including Connector Link
	GR0196	1	Connector Link, No. 41
21.	GD11218	1	Spring
22.	G10201	1	Special Washer
23.	GD9240	1	Idler
24.	G10210	1	Washer, 3/8" USS
25.	G10108	1	Lock Nut, 3/8"-16
26.	GD1026	1	Spacer, 1 3/16"
27.	GD7318	1	Bushing, 1"
28.	G10307	1	Carriage Bolt, 3/8"-16 x 3 1/2"
29.	G10599	1	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10101	1	Hex Nut, 3/8"-16
	G10108	1	Lock Nut, 3/8"-16
30.	GD8893-01	1	Bushing, 1 3/8"
31.	GA8167	-	Push Unit Shank
32.	GD11233	-	Cover
33.	G10003	4	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10210	4	Washer, 3/8" USS
	G10622	4	Flange Nut, 3/8"-16
A.	GA5564	-	Lockup Package, Includes: (1) GD7627, (1) GD7626, (2) G10228, (2) G10017, (2) G10111
B.	G1K273	-	Push Row Unit Shank Replacement Kit (Items 18, 19, 24, 25 And 28-33)

HITCH AND FRAME ASSEMBLY/SAFETY CHAIN

PFA027rev(WGN47a/PT1a)

Prior To Serial No. 640672





ITEM	PART NO.	QTY.	DESCRIPTION
1.	G4100-02	1	Jack Assembly
	GR0255	-	Repair Kit (Chain And Pin)
2.	G10417	2	Hex Head Cap Screw, 7/8"-9 x 4 1/2"
	G10418	2	Lock Nut, 7/8"-9
3.	GB0181	1	Clevis
4.	GD7140	1	Hose Holder
5.	G10348	1	Hex Head Cap Screw, 1/2"-13 x 5"
	G10216	1	Washer, 1/2" USS
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
6.	GD5888	1	Spring
7.	GA7193	1	Hitch
8.	G10047	-	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10108	-	Lock Nut, 3/8"-16
9.	GD5875	-	Hose Clamp, 9/16" x 2 1/2" x 2"
10.	G10645	4	Hex Head Cap Screw, 1"-8 x 3", Grade 8
	G10822	-	Hex Head Cap Screw, 1"-8 x 4", Grade 8
	G10698	4	Square Nut, 1"-8, Grade C

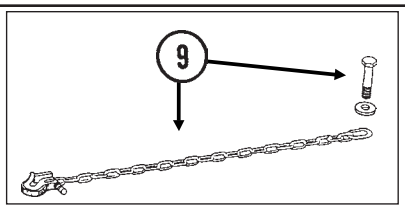
HITCH AND FRAME ASSEMBLY/SAFETY CHAIN

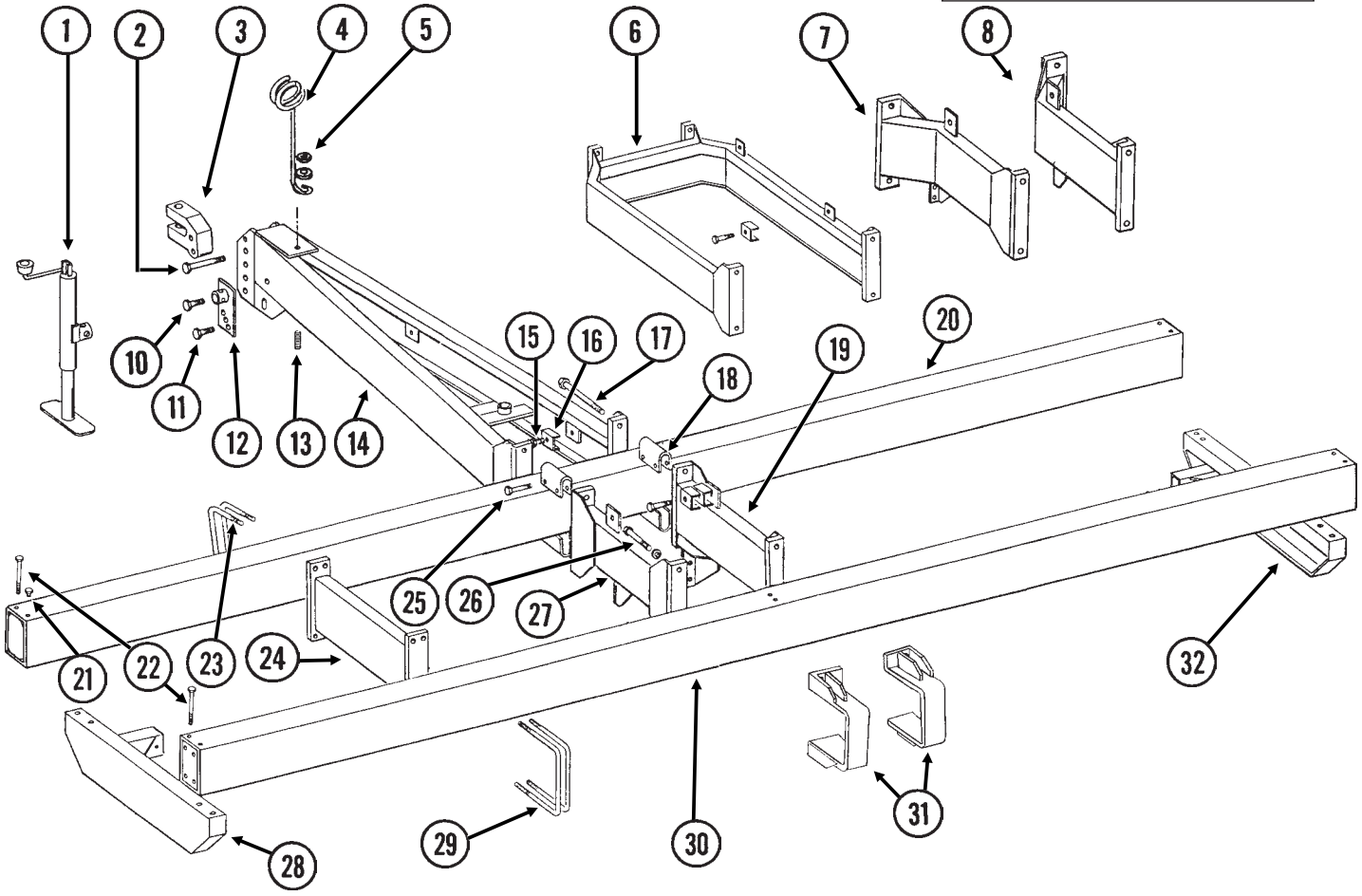
ITEM	PART NO.	QTY.	DESCRIPTION
11.	GA7210	2	Hitch Clamp
12.	D9738-02	1	Toolbar, 7" x 7" x 120", 4 Row 30" **(Non-Stock Item)**
	D9738-03	-	Toolbar, 7" x 7" x 144", 4 Row 36"/38" **(Non-Stock Item)**
	D9738-01	-	Toolbar, 7" x 7" x 180", 6 Row 30" **(Non-Stock Item)**
	D9738-05	-	Toolbar, 7" x 7" x 220", 6 Row 36"/38" **(Non-Stock Item)**
	D9738-07	-	Toolbar, 7" x 7" x 240", 8 Row 30" **(Non-Stock Item)**
13.	G10026	-	Hex Head Cap Screw, 3/4"-10 x 2", Single Frame Planter
	G10027	-	Hex Head Cap Screw, 3/4"-10 x 2 1/2", Double Frame® Planter
	G10231	-	Lock Washer, 3/4"
	G10105	-	Hex Nut, 3/4"-10
14.	G10061	4	Hex Head Cap Screw, 3/8"-16 x 3 1/2"
	G10210	4	Washer, 3/8" USS
	G10108	4	Lock Nut, 3/8"-16
15.	D5924-01	1	Double Frame® Toolbar, 7" x 5" x 120", 4 Row 30" **(Non-Stock Item)**
	D5924-02	-	Double Frame® Toolbar, 7" x 5" x 144", 4 Row 36"/38" **(Non-Stock Item)**
	D5924-04	-	Double Frame® Toolbar, 7" x 5" x 180", 6 Row 30" **(Non-Stock Item)**
	D5924-05	-	Double Frame® Toolbar, 7" x 5" x 220", 6 Row 36"/38" **(Non-Stock Item)**
	D5924-07	-	Double Frame® Toolbar, 7" x 5" x 240", 8 Row 30" **(Non-Stock Item)**
16.	G10646	4	Hex Head Cap Screw, 1"-8 x 8", Grade 8
	G10738	-	Hex Head Cap Screw, 1"-8 x 9", Grade 8
	G10647	4	Hex Nut, 1"-8, Grade 8
17.	G10026	-	Hex Head Cap Screw, 3/4"-10 x 2"
	G10112	-	Lock Nut, 3/4"-10
18.	GD5930	1	Bar
19.	GA5199	-	End Extension, L.H.
20.	GA5198	-	End Extension, R.H.
21.	GA7205	-	Hitch/Center Extension, L.H., Straight, 24"
22.	GA7204	-	Hitch/Center Extension, R.H., Straight, 24"
23.	GA5197	-	Spacer
24.	GD1113	-	U-Bolt, 5" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
25.	GD1114	-	U-Bolt, 7" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
26.	GA4262	-	Hitch Extension W/Hose Clamps And Hardware, Push Unit (15" Rows), 46" x 26 1/2"
	GA4264	-	Hitch Extension W/Hose Clamps And Hardware, Push Unit (18"/19" Rows), 46" x 23 1/2"
	GD6027	-	Hose Clamp, 3/4" x 2 1/2" x 2 1/2"
	G10048	-	Hex Head Cap Screw, 3/8"-16 x 2"
	G10108	-	Lock Nut, 3/8"-16
27.	GA7207	-	Center Extension, L.H., Offset, 24"
28.	GA7206	-	Center Extension, R.H., Offset, 24"
29.	GA4265	-	Straight Extension
30.	G1K234	1	Safety Chain Kit, 3/8" (Optional)
	G10417	1	Hex Head Cap Screw, 7/8"-9 x 4 1/2"
	G10418	1	Lock Nut, 7/8"-9
31.	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10107	1	Lock Nut, 5/8"-11
32.	G10017	1	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	1	Lock Nut, 1/2"-13
33.	GA7909	1	Jack Adjustment Bracket

HITCH AND FRAME ASSEMBLY/SAFETY CHAIN

PFA027rev(WGN47a/PT1b)

Serial No. 640672 And On





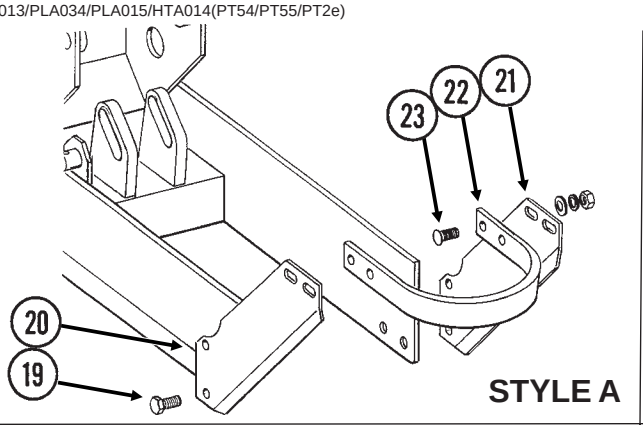
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G4100-02	1	Jack Assembly
	GR0255	-	Repair Kit (Chain And Pin)
2.	G10417	2	Hex Head Cap Screw, 7/8"-9 x 4 1/2"
	G10418	2	Lock Nut, 7/8"-9
3.	GB0181	1	Clevis
4.	GD7140	1	Hose Holder
5.	G10348	1	Hex Head Cap Screw, 1/2"-13 x 5"
	G10216	1	Washer, 1/2" USS
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
6.	GA4262	-	Hitch Extension W/Hose Clamps And Hardware, Push Unit (15" Rows), 46" x 26 1/2"
	GA4264	-	Hitch Extension W/Hose Clamps And Hardware, Push Unit (18"/19" Rows), 46" x 23 1/2"
	GD6027	-	Hose Clamp, 3/4" x 2 1/2" x 2 1/2"
	G10048	-	Hex Head Cap Screw, 3/8"-16 x 2"
	G10108	-	Lock Nut, 3/8"-16

HITCH AND FRAME ASSEMBLY/SAFETY CHAIN

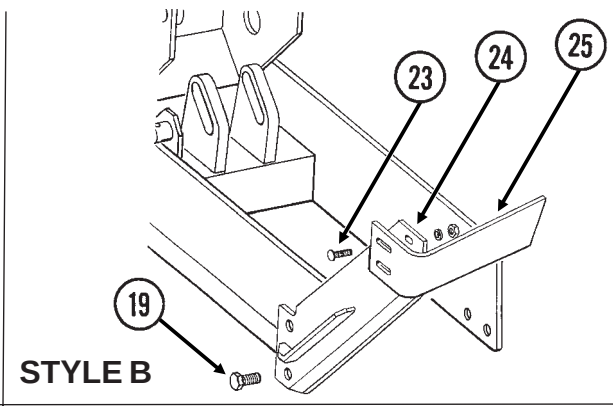
ITEM	PART NO.	QTY.	DESCRIPTION
7.	GA7207	-	Center Extension, L.H., Offset, 24"
8.	GA7206	-	Center Extension, R.H., Offset, 24"
9.	G1K234	1	Safety Chain Kit, 3/8" (Optional)
	G10417	1	Hex Head Cap Screw, 7/8"-9 x 4 1/2"
	G10418	1	Lock Nut, 7/8"-9
10.	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10107	1	Lock Nut, 5/8"-11
11.	G10017	1	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	1	Lock Nut, 1/2"-13
12.	GA7909	1	Jack Adjustment Bracket
13.	GD5888	1	Spring
14.	GA7193	1	Hitch
15.	G10047	-	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10108	-	Lock Nut, 3/8"-16
16.	GD5875	-	Hose Clamp, 9/16" x 2 1/2" x 2"
17.	G10646	4	Hex Head Cap Screw, 1"-8 x 8", Grade 8
	G10738	-	Hex Head Cap Screw, 1"-8 x 9", Grade 8
	G10647	4	Hex Nut, 1"-8, Grade 8
18.	GA5197	-	Spacer
19.	GA7204	-	Hitch/Center Extension, R.H., Straight, 24"
20.	A8011	1	Double Frame® Toolbar, 7" x 5" x 120", 4 Row 30" **(Non-Stock Item)**
	A8012	-	Double Frame® Toolbar, 7" x 5" x 144", 4 Row 36"/38" **(Non-Stock Item)**
	A8013	-	Double Frame® Toolbar, 7" x 5" x 180", 6 Row 30" **(Non-Stock Item)**
	A8014	-	Double Frame® Toolbar, 7" x 5" x 220", 6 Row 36"/38" **(Non-Stock Item)**
	A8015	-	Double Frame® Toolbar, 7" x 5" x 240", 8 Row 30" **(Non-Stock Item)**
21.	G10903	-	Cap Plug
22.	G10895	8	Hex Head Cap Screw, 3/4"-10 x 8 1/2"
	G10112	8	Lock Nut, 3/4"-10
23.	GD1113	-	U-Bolt, 5" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
24.	GA4265	-	Straight Extension
25.	G10061	4	Hex Head Cap Screw, 3/8"-16 x 3 1/2"
	G10210	4	Washer, 3/8" USS
	G10108	4	Lock Nut, 3/8"-16
26.	G10645	4	Hex Head Cap Screw, 1"-8 x 3", Grade 8
	G10822	-	Hex Head Cap Screw, 1"-8 x 4", Grade 8
	G10698	4	Square Nut, 1"-8, Grade C
27.	GA7205	-	Hitch/Center Extension, L.H., Straight, 24"
28.	GA5199	-	End Extension, L.H.
29.	GD1114	-	U-Bolt, 7" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
30.	A8016	1	Toolbar, 7" x 7" x 120", 4 Row 30" **(Non-Stock Item)**
	A8017	-	Toolbar, 7" x 7" x 144", 4 Row 36"/38" **(Non-Stock Item)**
	A8018	-	Toolbar, 7" x 7" x 180", 6 Row 30" **(Non-Stock Item)**
	A8019	-	Toolbar, 7" x 7" x 220", 6 Row 36"/38" **(Non-Stock Item)**
	A8020	-	Toolbar, 7" x 7" x 240", 8 Row 30" **(Non-Stock Item)**
31.	GA7210	2	Hitch Clamp
32.	GA5198	-	End Extension, R.H.

TRANSPORT AND GROUND DRIVE WHEEL ASSEMBLY

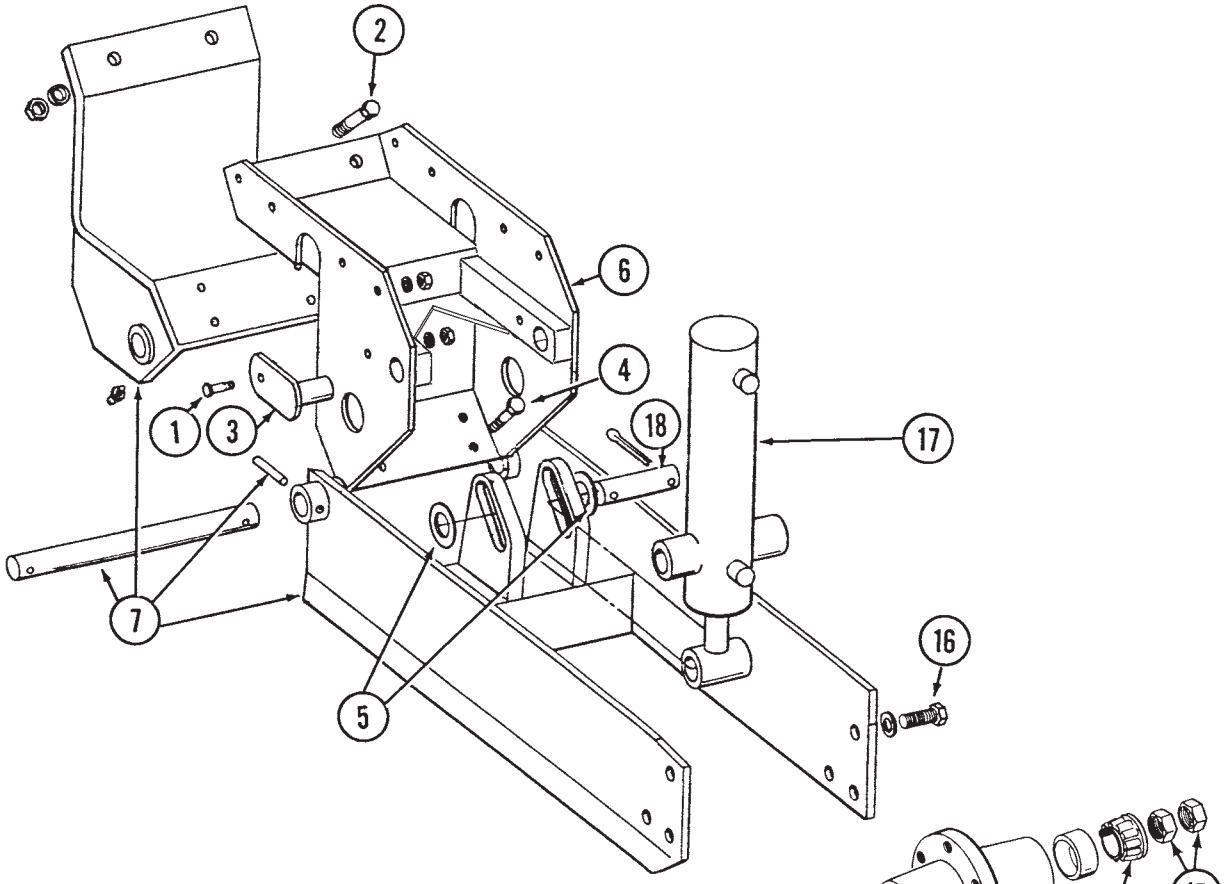
PLA013/PLA034/PLA015/HTA014(PT54/PT55/PT2e)

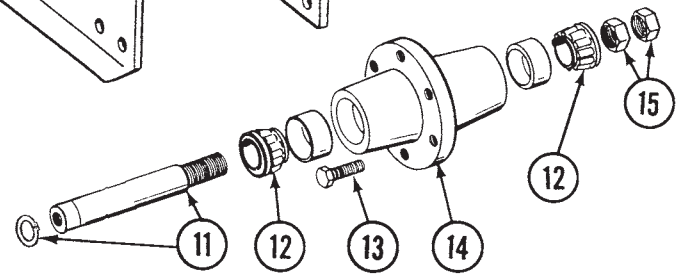


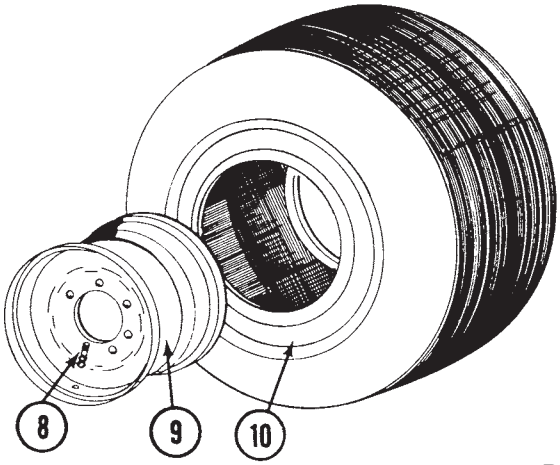
STYLE A



STYLE B







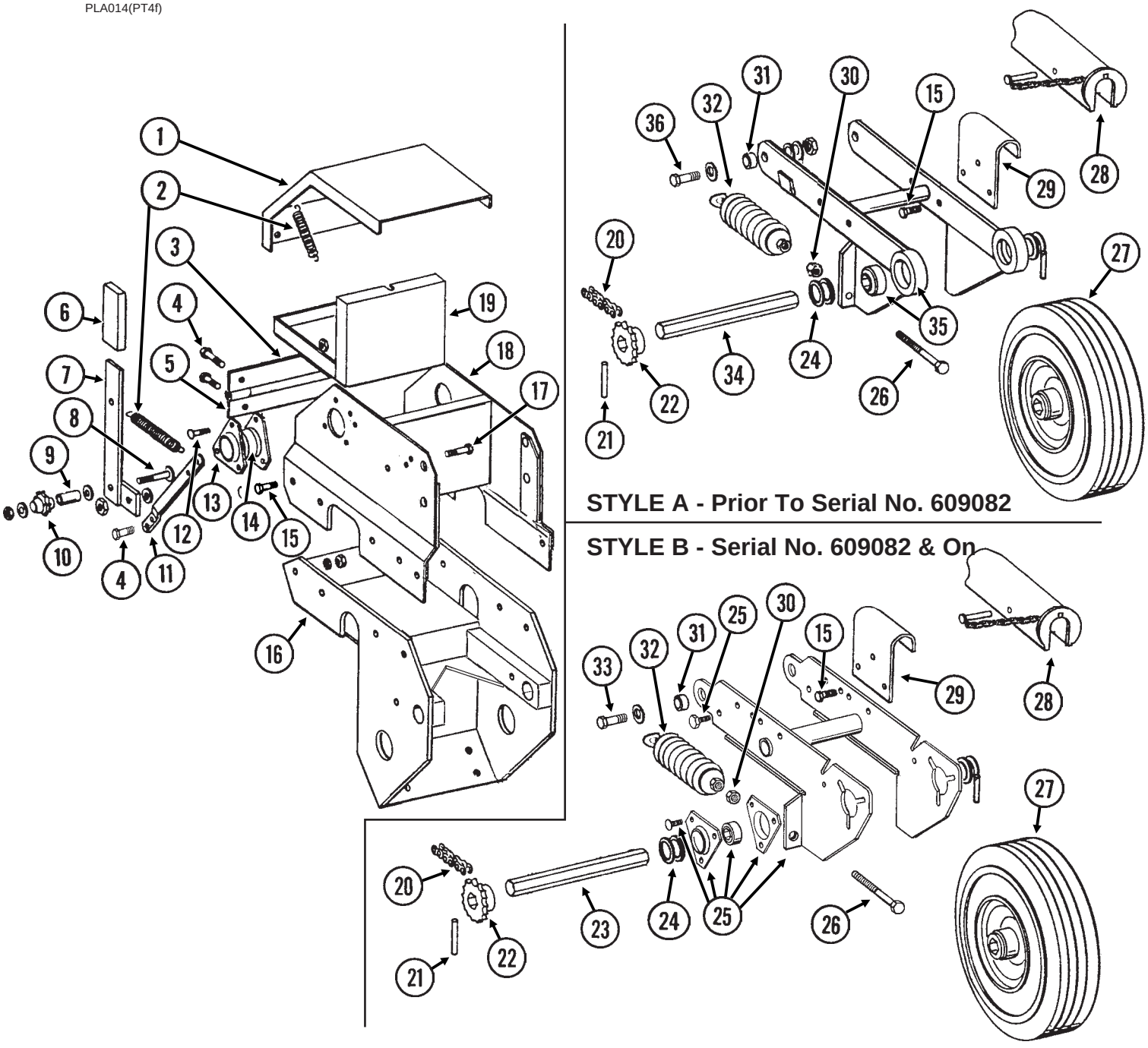
TRANSPORT AND GROUND DRIVE WHEEL ASSEMBLY

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10581	2	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10111	2	Lock Nut, 1/2"-13
2.	G10009	2	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
3.	GA5121	2	Pin
4.	G10008	4	Hex Head Cap Screw, 5/8"-11 x 2"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
5.	G10139	2	Washer, 1 1/4" USS
6.	GA5122	1	Wheel Tower Clamp
7.	GA5124	1	Arm W/Shaft, Clamp, Grease Fittings And Spring Pins
	GD5804	-	Shaft, 1 1/4" x 12"
	GA5123	-	Clamp
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fittings, 1/4"-28
	G10610	-	Spring Pin, 3/8" x 2"
8.	GA7434	1	Valve Stem
9.	GA2142	1	Rim, 5.50" x 20"
10.	D9645	1	Tire, 7.50" x 20", 6 Ply Tubeless **(Non-Stock Item Sub GD10795)** (Specify Brand*)
	GD10795	-	Tire, 7.50" x 20", 6 Ply Tubeless Without Center Rib (Specify Brand*)
11.	GA2558	1	Spindle W/Round External Retaining Ring, 9 1/2"
	GD11490	-	Round External Retaining Ring
12.	GA0895	2	Cone
13.	GR0270	6	Lug Bolt, 9/16"-18
14.	GA2148	1	Hub W/Cups
	GR0434	-	Cup
15.	G10087	2	Jam Nut, 1 1/2"-10
16.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
17.		-	See “Master/Slave/Lift Assist Cylinders”, Pages P45 And P46
18.	GD5841	1	Pin, 1 1/4" x 5 5/8"
	G10460	2	Cotter Pin, 1/4" x 2"
19.	G10025	2	Hex Head Cap Screw, 3/4"-10 x 1 1/2"
	G10231	2	Lock Washer, 3/4"
	G10105	2	Hex Nut, 3/4"-10
20.	GD5845	1	Scraper Mount, L.H.
21.	GD5846	1	Scraper Mount, R.H.
22.	GD5847	1	Scraper Bar
23.	G10636	4	Carriage Bolt, 1/2"-13 x 1 1/2"
	G10228	4	Lock Washer, 1/2"
	G10216	4	Washer, 1/2" USS
	G10102	4	Hex Nut, 1/2"-13
24.	GA7376	1	Scraper Mount
25.	GD10010	1	Scraper
A.	GA2147	-	Hub And Spindle Assembly (Items 11-16)
B.	GA7409	-	Scraper Assembly (Items 19 And 23-25)

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

CONTACT DRIVE WHEEL AND ARM ASSEMBLY

PLA014(PT4f)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA5182	1	Cover
2.	GD5857	2	Spring
3.	GD5790	1	Hinge, Male
4.	G10023	4	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	4	Lock Washer, 1/4"
	G10103	4	Hex Nut, 1/4"-20
5.	GD5789	1	Hinge, Female
6.	GD5827	1	Cover
7.	GA5157	1	Idler Arm, L.H.
	GA5158	-	Idler Arm, R.H.

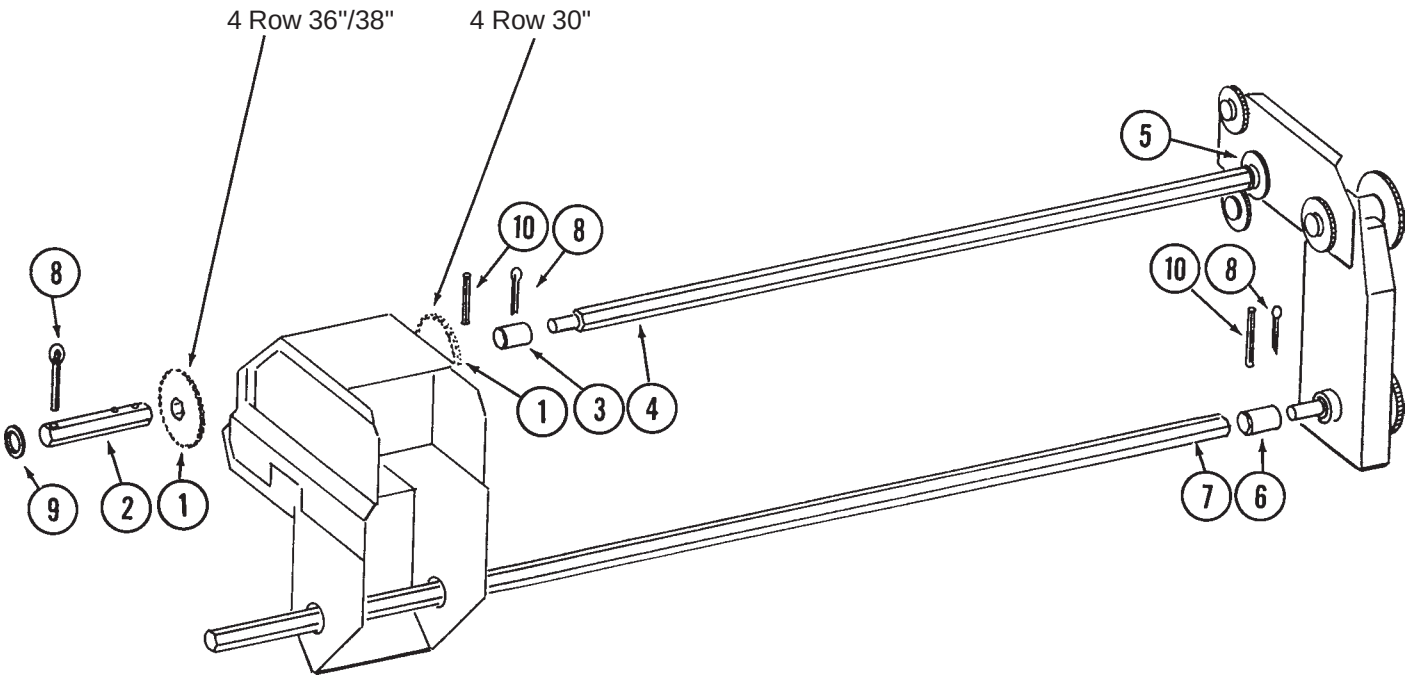
CONTACT DRIVE WHEEL AND ARM ASSEMBLY

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
8.	G10306	1	Carriage Bolt, 3/8"-16 x 2"
	G10203	-	Washer, 3/8" SAE (As Required)
	G10210	-	Washer, 3/8" USS (As Required)
	G10108	1	Lock Nut, 3/8"-16
9.	GD1026	1	Sleeve, 1 3/16"
10.	GD7426	1	Idler Sprocket, 12 Tooth
11.	GD5860	1	Bar
12.	G10303	-	Carriage Bolt, 5/16"-18 x 1"
	G10232	-	Lock Washer, 5/16"
	G10219	-	Washer, 5/16" USS (As Required)
	G10106	-	Hex Nut, 5/16"-18
13.	G3400-01	-	Flangette
14.	G2100-03	-	Bearing, 7/8" Hex Bore, Spherical
15.	G10001	6	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	6	Lock Washer, 3/8"
	G10101	6	Hex Nut, 3/8"-16
16.		-	See “Transport And Ground Drive Wheel Assembly”, Pages P32 And P33
17.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	1	Lock Washer, 3/8"
	G10370	1-2	Machine Bushing
	GD5756	1	Special Nut
18.	GA5118	1	Mount
19.	GA7235	1	Tool Box Insert
20.	G3310-132	1	Chain, No. 40, 132 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
21.	G10602	2	Spring Pin, 1/4" x 1 1/2"
22.	GA5105	1	Sprocket, 15 Tooth
23.	GD6825-10.375	1	Shaft, 7/8" x 10 3/8"
24.	G10233	6	Machine Bushing, 1"
25.	GA7370	1	Arm W/Flangettes, Bearings And Hardware **(Sub G1K253)**
	G10303	6	Carriage Bolt, 5/16"-18 x 1"
	G10232	6	Lock Washer, 5/16"
	G10219	6	Washer, 5/16" USS (As Required)
	G10106	6	Hex Nut, 5/16"-18
	G3400-01	4	Flangette
	G2100-03	2	Bearing, 7/8" Hex Bore, Spherical
	G10055	2	Hex Head Cap Screw, 5/8"-11 x 1 1/4" (Stop Bolt)
	G10107	2	Lock Nut, 5/8"-11
26.	G10890	2	Hex Head Adjusting Bolt, 1/2"-13 x 4", Grade 2
27.	GA5090	1	Tire And Rim Assembly (Specify Brand*)
	GD5753	-	Tire, 4.10" x 6" (Specify Brand*)
	GD5752	-	Tube
28.	GA8174	1	Lockup W/Pin
29.	GD7944	1	Mount
30.	G10501	2	Jam Nut, 1/2"-13
31.	GB0218	2	Bushing, 19/32"
32.	GA2068	2	Spring
33.	G10751	2	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	G10235	6	Machine Bushing
	GD7805	2	Special Washer
	G10412	2	Lock Nut, 5/8"-18
34.	GD5797	1	Shaft, 7/8" x 10"
35.	GA5120	1	Wheel Arm W/Bearings **(Sub G1K253)**
	GA5116	-	Bearing, 7/8" Hex Bore Cylindrical
36.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10235	4	Machine Bushing
	G10205	2	Washer, 5/8" SAE
	G10107	2	Lock Nut, 5/8"-11
A.	G1K253	-	Contact Wheel Arm Replacement Kit, (Items 21, 23 And 25)

*** Specific brand requests will be supplied only as available from current KINZE® stock. If a specific brand 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.**

DRIVELINE, 4 ROW 30"/36"/38"

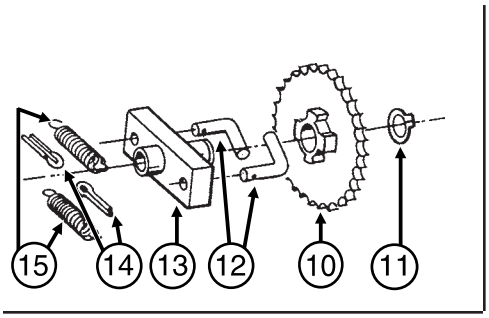
PTD033(PT5)

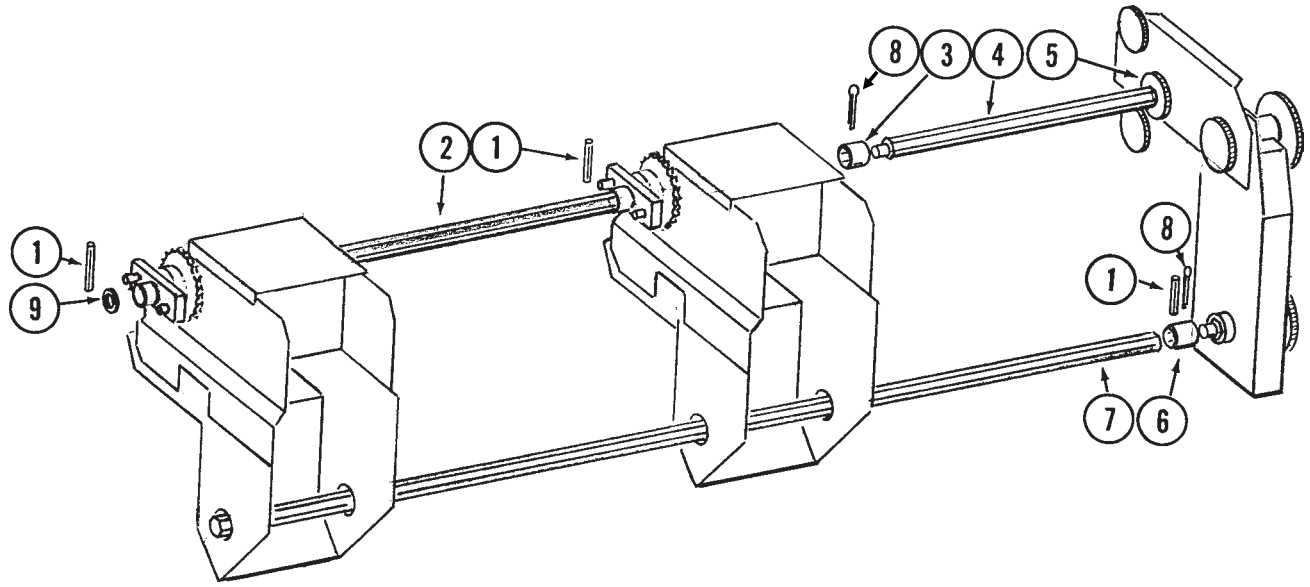


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5114	1	Sprocket, 30 Tooth
2.	GD7819	1	Drive Shaft, 15" (3 Holes), 4 Row 30"
	GD5958	-	Drive Shaft, 16" (4 Holes), 4 Row 36"/38"
3.	GD5961	1	Coupler, 2 1/4"
4.	GD5885-02	1	Drive Shaft, 19", 4 Row 30"
	GD5885-03	-	Drive Shaft, 24", 4 Row 36"/38"
5.		-	See “Transmission Assembly”, Pages P38 And P39
6.	GD5886	1	Coupler
7.	GD5887-105	1	Drill Shaft, 4 Row 30"
	GD5887-128	-	Drill Shaft, 4 Row 36"/38"
8.	G10460	3	Cotter Pin, 1/4" x 2"
9.	G10233	-	Machine Bushing (As Required)
10.	G10602	2	Spring Pin, 1/4" x 1 1/2"

DRIVELINE, 6 ROW 30"/36"/38" AND 8 ROW 30"

PTD016/PTD034(PT6/PT7)

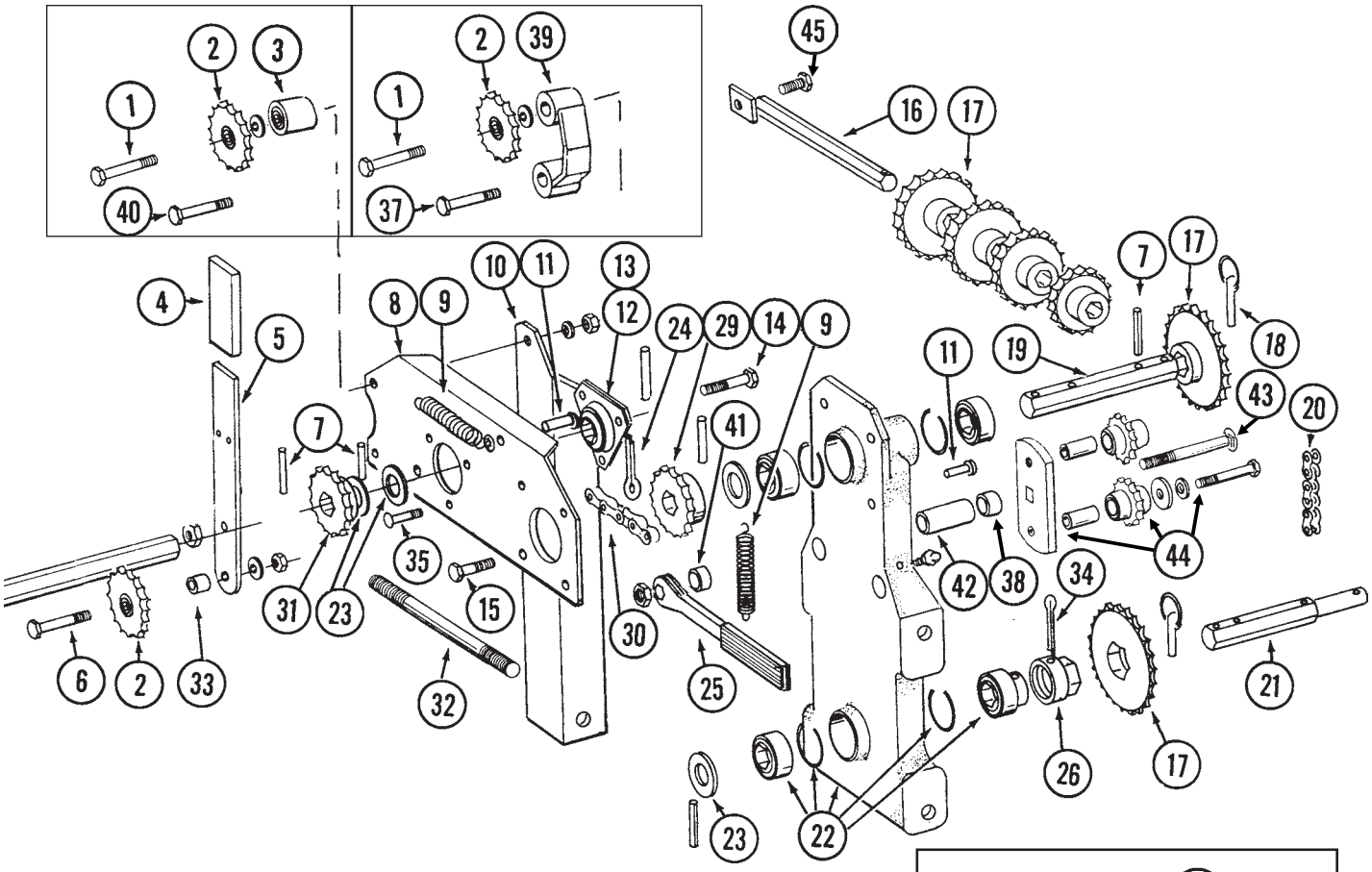


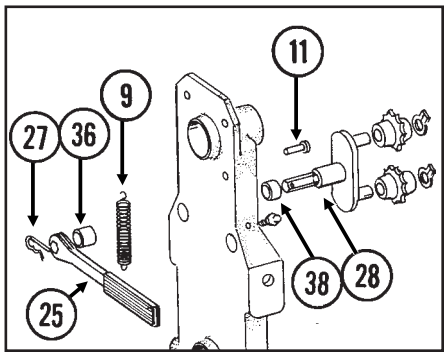


ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10602	3	Spring Pin, 1/4" x 2"
2.	GD5884-01	1	Drive Shaft, 36" (3 Holes), 6 Row 30" And 8 Row 30"
	GD5960	-	Drive Shaft, 50" (6 Holes), 6 Row 36"/38"
3.	GD5961	1	Coupler, 2 1/4"
4.	GD5885-01	1	Drive Shaft, 30", 6 Row 30"/36"/38" And 8 Row 30"
5.		-	See “Transmission Assembly”, Pages P38 And P39
6.	GD5886	1	Coupler
7.	GD5887-165	1	Drill Shaft, 6 Row 30"
	GD5887-204	-	Drill Shaft, 6 Row 36"/38"
	GD5887-225	-	Drill Shaft, 8 Row 30"
8.	G10460	2	Cotter Pin, 1/4" x 2"
9.	G10233	-	Machine Bushing (As Required)
10.	GA5165	1	Hub/Sprocket Assembly, 30 Tooth
11.	G10430	1	Ring
12.	GD1255	2	“L” Pin
13.	GA0378	1	Block And Hub Assembly
14.	G10464	2	Cotter Pin, 3/16" x 1"
15.	GD1256	2	Spring
A.	GA5164	-	Ratchet/Sprocket Assembly, Includes: (2)GD1256, (2)G10464, (1)GA0378, (2)GD1255, (1)GA5165, (1)G10430

TRANSMISSION ASSEMBLY

PTD040/PTD066/PTD041(PT8a/PT8b)





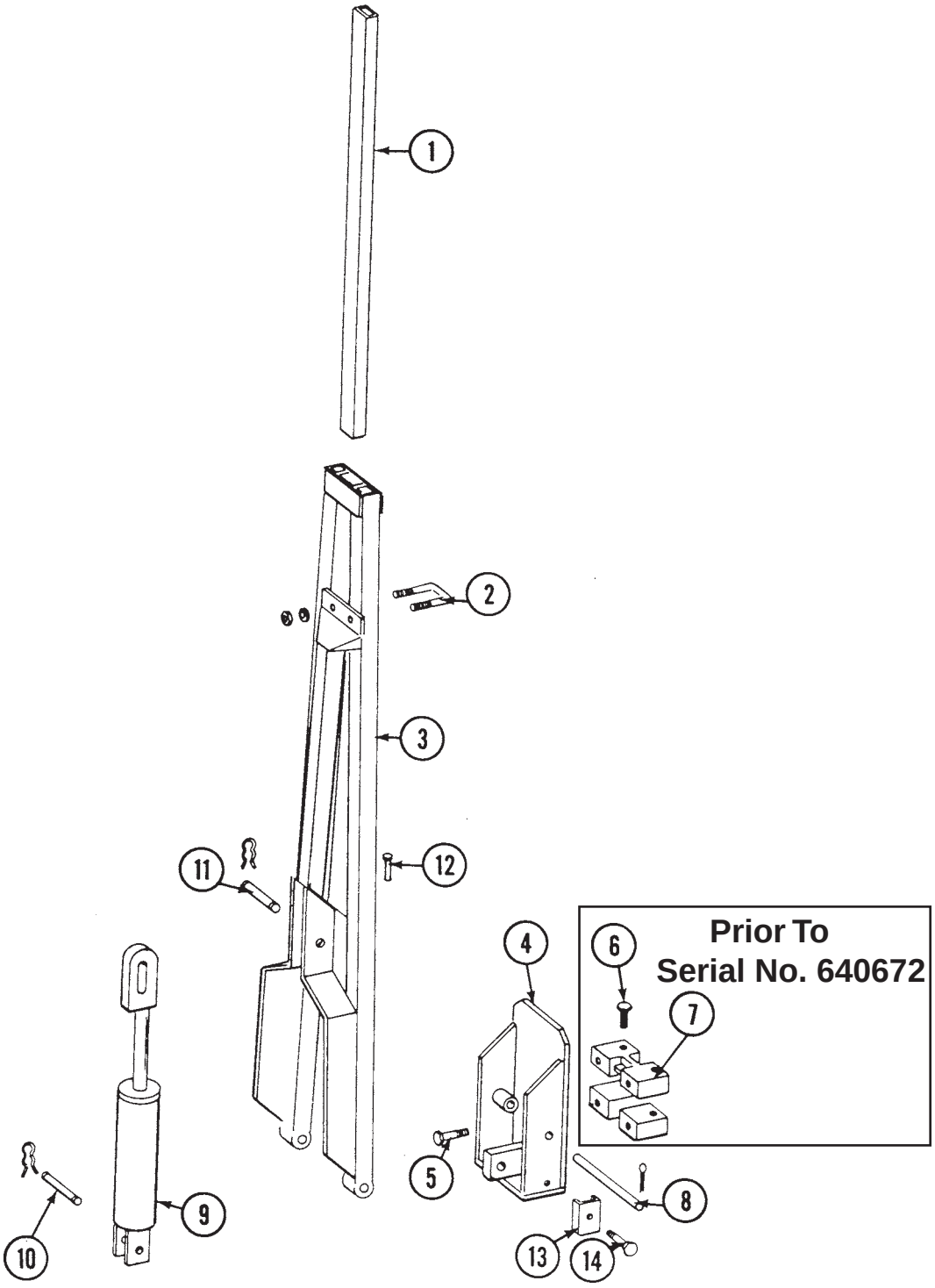
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10033	1	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10128	-	Machine Bushing (As Required)
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
2.	GA7154	1	Idler Sprocket W/Bearing, 18 Tooth
3.	GB0259	1	Spacer, 1"
4.	GD5827	1	Cover
5.	GD5829	1	Arm
6.	G10053	1	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10128	-	Machine Bushing (As Required)
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
7.	G10602	5	Spring Pin, 1/4" x 1 1/2"
8.	GD5824	1	Plate, R.H.
9.	GD5857	2	Spring
10.	GD5830	1	Angle Support, R.H.
11.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Retaining Ring, 5/16"
12.	G2100-03	1	Bearing, 7/8" Hex Bore, Spherical
13.	G3400-01	2	Flangette
14.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	1	Lock Washer, 3/8"
	G10203	-	Washer, 3/8" SAE (As Required)
	G10210	-	Washer, 3/8" USS (As Required)
	GD5756	1	Special Nut, 3/8"-16
15.	G10037	3	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10228	3	Lock Washer, 1/2"
	G10102	3	Hex Nut, 1/2"-13
16.	GA5146	1	Sprocket Storage Rod

TRANSMISSION ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
17.	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
18.	GD2558	3	Lynch Pin, 1/4"
19.	GD5835	1	Shaft, 7/8" x 7"
20.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
21.	GD7822	1	Shaft, 7/8" x 7"
22.	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
23.	G10233	-	Machine Bushing
24.	G10460	1	Cotter Pin, 1/4" x 2"
25.	GA4235	1	Ratchet Wrench W/Protective Closure
	G10445	-	Protective Closure
26.	GD7127	1	Shear Coupler
27.	G10670	1	Hair Pin Clip, No. 3
28.	GA5628	1	Idler W/Sprockets And Rings
	GD7426	-	Sprocket
	G10435	-	Ring
29.	GA5106	1	Sprocket, 17 Tooth, Standard Drive
	GA5202	-	Sprocket, 34 Tooth, Half Rate (2 To 1) Drive Reduction
30.	G3310-92	1	Chain, No. 40, 92 Pitch Including Connector
	G3310-08	-	Chain, No. 40, 8 Pitch Including Connector Link, Used With 2 To 1 Drive Reduction
	GR0912	-	Connector Link, No. 40
			NOTE: Refer to "Interplant® Push Row Unit Transmission And Drive" for additional information if applicable.
31.	GA5105	1	Sprocket, 15 Tooth
32.	GD6793	2	Stud, 5/8"-11 x 9 1/2" (Threaded Both Ends)
	G10230	4	Lock Washer, 5/8"
	G10107	4	Hex Nut, 5/8"-11
33.	GD4887-01	1	Sleeve, 5/8"
34.	G10462	1	Cotter Pin, 3/16" x 2"
35.	G10303	3	Carriage Bolt, 5/16"-18 x 1"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18
36.	GD6819	1	Idler Sleeve, 7/16"
37.	G10053	1	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
38.	GD2734-01	1	Sleeve, 1/2"
39.	GA7156	1	Idler Mount, R.H. **(Sub GB0259 And G10017)**
40.	G10039	1	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
41.	GD10161	1	Spacer, 3/8"
42.	GD3180-16	1	Sleeve, 2 13/16"
43.	G10867	1	Carriage Bolt, 1/2"-13 x 5"
	G10111	1	Lock Nut, 1/2"-13
44.	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"
45.	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

MARKER ASSEMBLY, CONVENTIONAL
4 ROW 30"/36"/38" AND 6 ROW 30"

MKR010(MKR1)

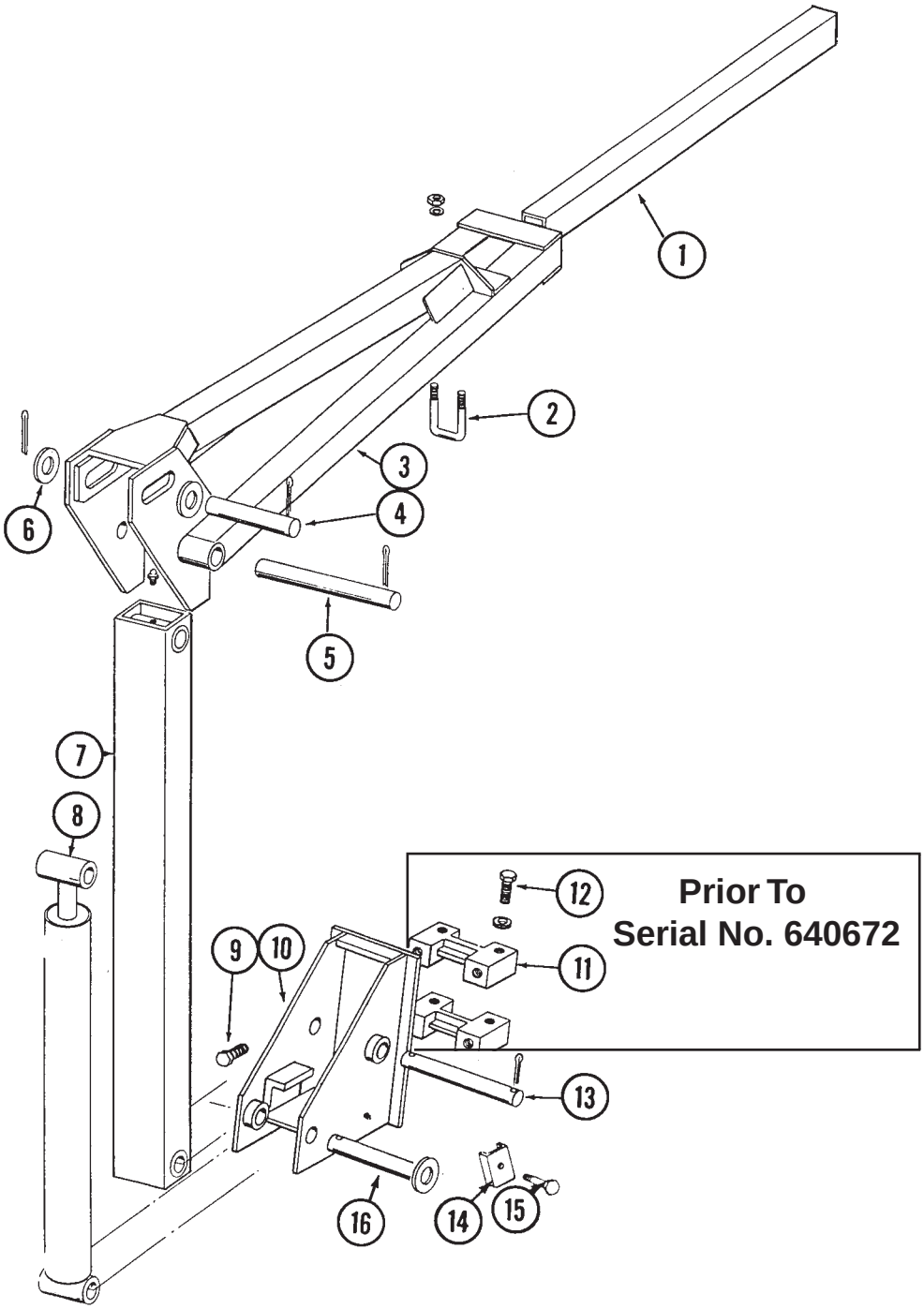


MARKER ASSEMBLY, CONVENTIONAL
4 ROW 30"/36"/38" AND 6 ROW 30"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD0453-02	1	Extension Tube, 40", 4 Row 30"
	GD0453-07	-	Extension Tube, 45", 4 Row 36"/38" And 6 Row 30"
2.	GD2721	1	U-Bolt, 2" x 2" x 1/2"-13
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
3.	GA5175	1	Arm, 31 1/2", 4 Row 30"
	GA5184	-	Arm W/Grease Fittings, 44 1/2", 4 Row 36"/38"
	GA5183	-	Arm W/Grease Fittings, 58 1/2", 6 Row 30"
	G10640	-	Grease Fitting, 1/4"-28
4.	GA5177	1	Mount W/Grease Fittings, 4 Row 30"
	GA5178	-	Mount, 4 Row 36"/38" And 6 Row 30"
	G10640	-	Grease Fitting, 1/4"-28
5.	G10008	4	Hex Head Cap Screw, 5/8"-11 x 2"
	G10230	4	Lock Washer, 5/8"
6.	G10026	4	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	4	Lock Washer, 3/4"
7.	GB0177	2	Tap Block
8.	GD0438	1	Pin, 13 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
9.		-	See “Conventional Marker Cylinder”, Page P47
10.	GR0367	1	Pin, 2 7/8"
	GR0193	2	Clip
11.	GR0375	1	Pin, 3 1/2"
	GR0193	2	Clip
12.	GD0462	1	Safety Lockup Pin
	G10670	1	Hair Pin Clip, No. 3
	G10187	1	Spring Pin, 5/32" x 2"
13.	GD5892	1	Hose Clamp, 5/8" x 1 1/2" x 1 1/2"
14.	G10133	1	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	1	Lock Nut, 5/16"-18

MARKER ASSEMBLY, TWO-FOLD LOW PROFILE 6 ROW 36"/38" AND 8 ROW 30"

MKR006/MKR009(MKR2)

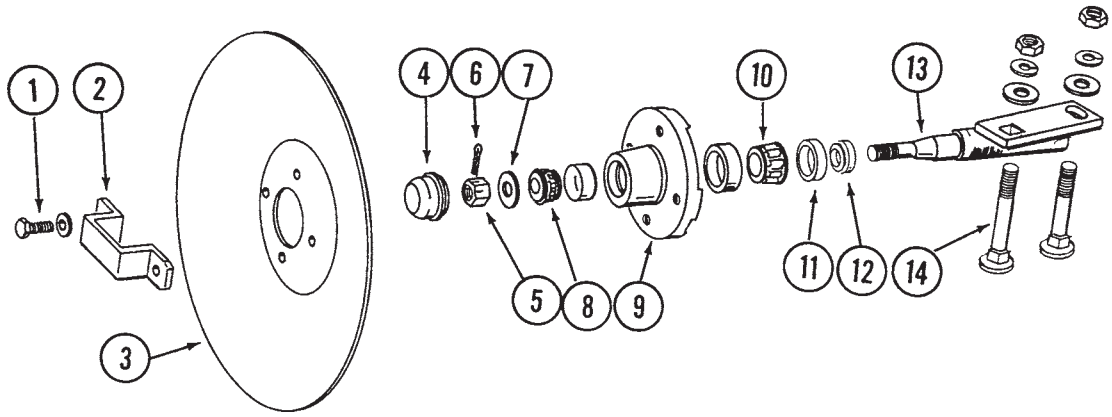


MARKER ASSEMBLY, TWO-FOLD LOW PROFILE 6 ROW 36"/38" AND 8 ROW 30"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD0453-03	1	Extension Tube, 50", 6 Row 36"/38" And 8 Row 30"
2.	GD2721	1	U-Bolt, 2" x 2" x 1/2"-13
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
3.	GA5190	1	Second Stage Arm, 35", 6 Row 36"/38"
	GA5188	-	Second Stage Arm, 46", 8 Row 30"
4.	GD2161	1	Pin, 1 1/4" x 8 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
5.	GD3214	1	Pin, 1 1/4" x 12 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
6.	G10226	2	Washer, 1 1/4" SAE
7.	GA5173	1	First Stage Arm W/Grease Fittings
	G10641	-	Grease Fitting, 1/8" NPT
8.		-	See “Low Profile Marker Cylinder”, Page P47
9.	G10879	4	Flanged 12 Point Bolt, 5/8"-11 x 2", Special Hardened
10.	GA5130	1	Mount
11.	GB0177	2	Tap Block
12.	G10026	4	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	4	Lock Washer, 3/4"
13.	GD0652	1	Pin, 1 1/4" x 9 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
14.	GD5875	1	Hose Clamp, 9/16" x 2 1/2" x 2"
15.	G10133	1	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	1	Lock Nut, 5/16"-18
16.	GA6532	1	Pin, 1 1/4" x 7 5/8"
	G10460	1	Cotter Pin, 1/4" x 2"

MARKER SPINDLE/HUB/BLADE

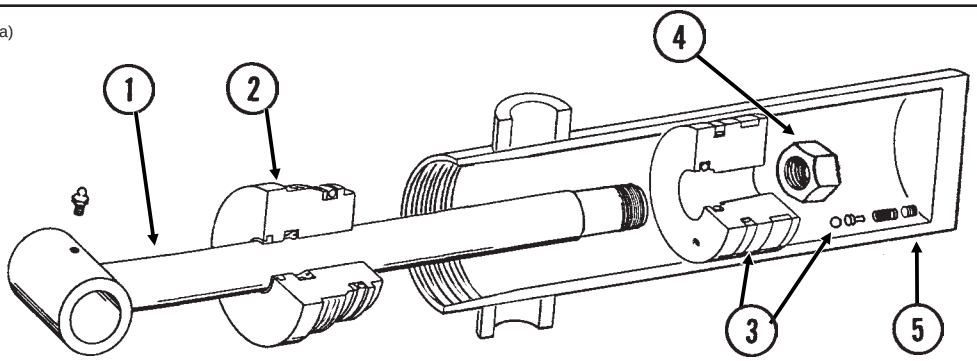
MKR020(MKR3)



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	Dust 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 Cup
	GR0150	-	Inner Cup
10.	GA0245	1	Inner Bearing
11.	GA0243	1	Grease Seal
12.	GA0899	1	Rubber Seal
13.	GA1676	1	Spindle, R.H.
	GA1677	-	Spindle, L.H. (Shown)
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
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)

CYLINDER, MASTER LIFT

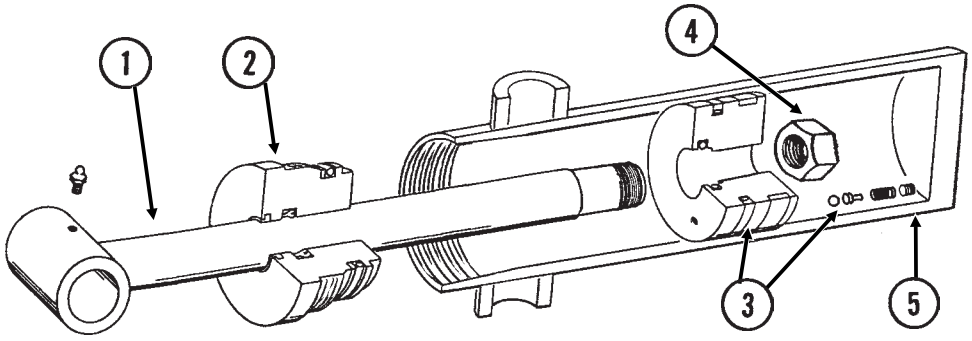
CYL038(CYL1a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6137	1	Rod Assembly W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
2.	GD5947	1	Gland
3.	GA6135	1	Piston W/Rephasing Valve
	GR1169	1	Rephasing Valve Replacement Kit (Set Screw, Guide, Spring And Ball)
4.	GR0983	1	Lock Nut, 1"-14
5.	A4295	1	Barrel **(Non-Stock Item)**
A.	GA6120	-	Cylinder Complete, 3 1/2" x 8" *(Part Number Stamped On Barrel)*
B.	GR0982	-	Seal Kit, Includes: (1)Wear Ring, (2)O-Rings, (1)BU Ring, (1)U-Cup, (1)Wiper, (1)Uniring

CYLINDER, SLAVE LIFT

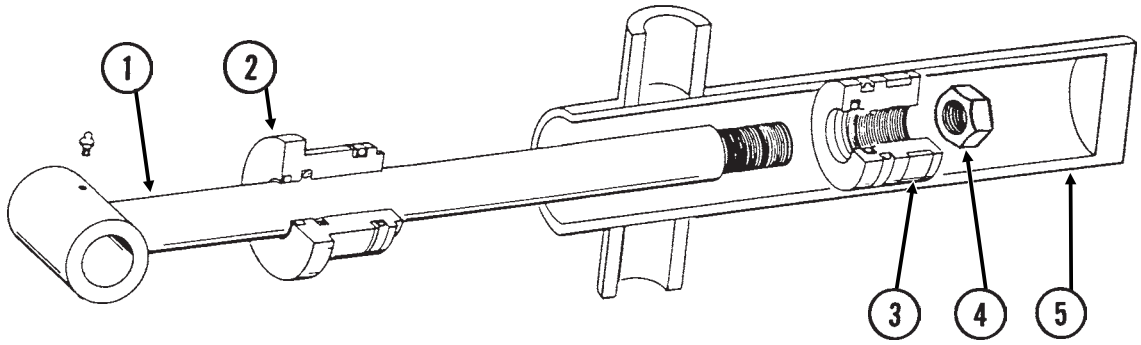
CYL038(CYL1a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6137	1	Rod Assembly W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
2.	GD5946	1	Gland
3.	GA6134	1	Piston W/Rephasing Valve
	GR1169	1	Rephasing Valve Replacement Kit (Set Screw, Guide, Spring And Ball)
4.	GR0983	1	Lock Nut, 1"-14
5.	A4297	1	Barrel **(Non-Stock Item)**
A.	GA6119	-	Cylinder Complete, 3 1/4" x 8" *(Part Number Stamped On Barrel)*
B.	GR0984	-	Seal Kit, Includes: (2)O-Ring, (1)BU Ring, (1)Wear Ring, (1)Rod Wiper, (1)Uniring, (1)U-Cup

CYLINDER, LIFT ASSIST
6 ROW 30"/36"/38" AND 8 ROW 30"

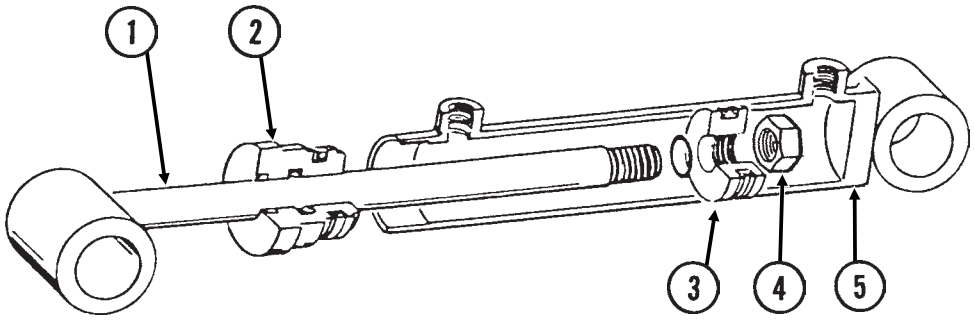
CYL026(CYL4b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA4322	1	Rod Assembly W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
2.	GD5954	1	Gland
3.	GD5956	1	Piston
4.	GR0923	1	Special Jam Nut, 1"-14
5.	A5455	1	Barrel **(Non-Stock Item)**
A.	GA5093	-	Cylinder Complete, 2 1/2" x 8"
B.	GR0930	-	Seal Kit, Includes: (1)Wear Ring, (1)T-Seal, (2)O-Rings, (1)BU Ring, (1)U-Cup, (1)Wiper

CYLINDER, ROCK SHAFT LIFT

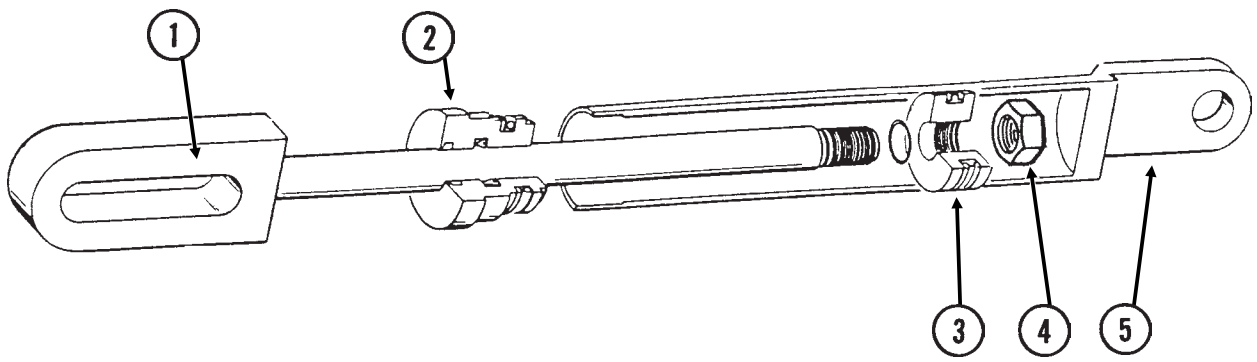
CYL032(CYL5a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5563	1	Rod Assembly
2.	GD6574	1	Gland
3.	GD7629	1	Piston
4.	GR1030	1	Lock Nut, 1 1/4"-12
5.	A5562	1	Barrel **(Non-Stock Item)**
A.	GA5541	-	Cylinder Complete, 3" x 8" (3/4" O-Ring Ports)
B.	GR1031	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring, (1)Rod Wiper, (1)Wear Ring, (1)Uniring, (1)U-Cup

CYLINDER, CONVENTIONAL MARKER
4 ROW 30"/36"/38" AND 6 ROW 30"

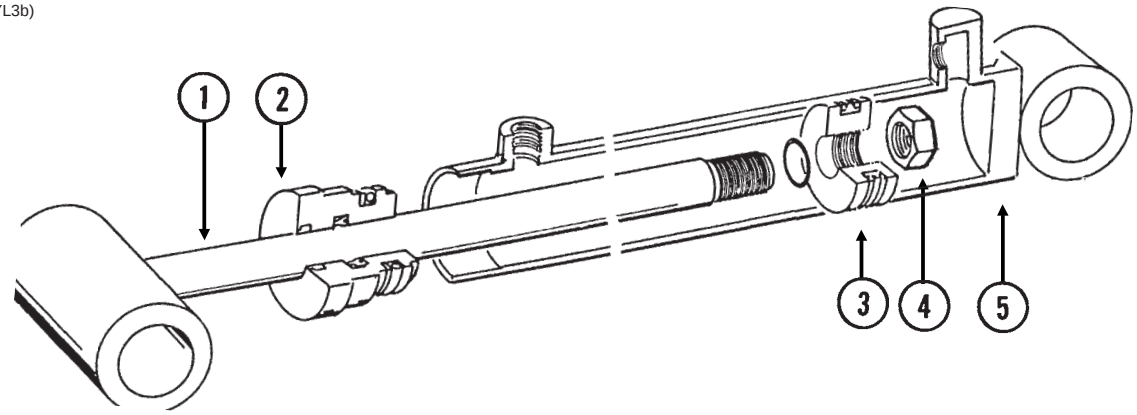
CYL030(CYL2b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5453	1	Rod Assembly
2.	GD5949	1	Gland
3.	GD4632	1	Piston
4.	GR0959	1	Lock Nut, 3/4"-16
5.	A5454	1	Barrel **(Non-Stock Item)**
A.	GA5095	-	Cylinder Complete, 2" x 8"
B.	GR0927	-	Seal Kit, Includes: (1)T Seal, (2)O-Rings, (1)BU Ring, (1)U-Cup (1)Wiper

CYLINDER, TWO-FOLD LOW PROFILE MARKER
6 ROW 36"/38" AND 8 ROW 30"

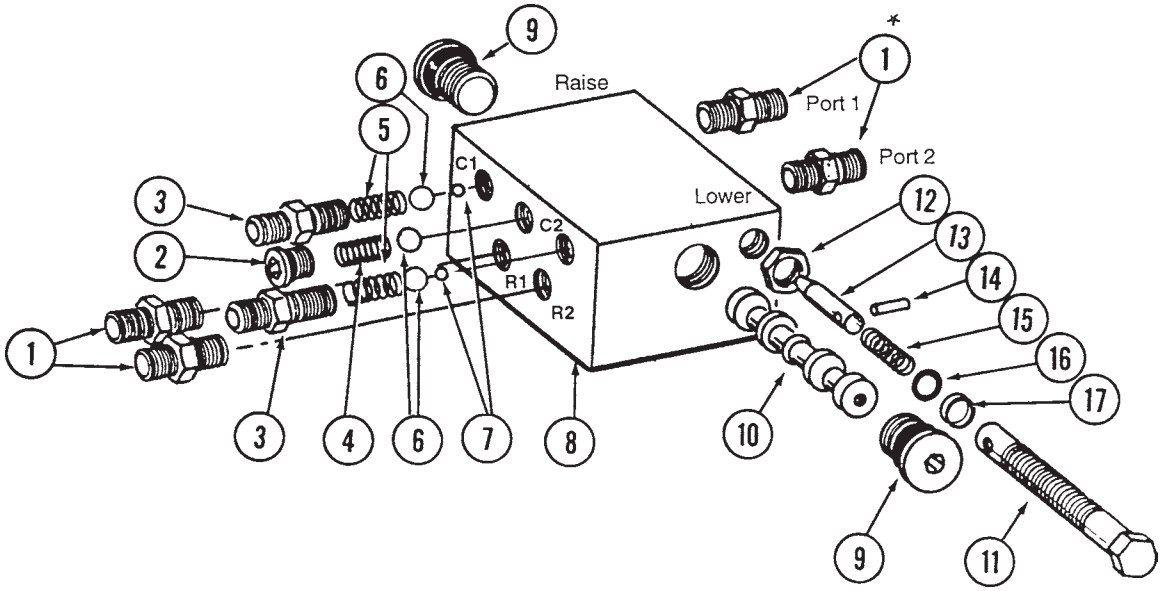
CYL039(CYL3b)

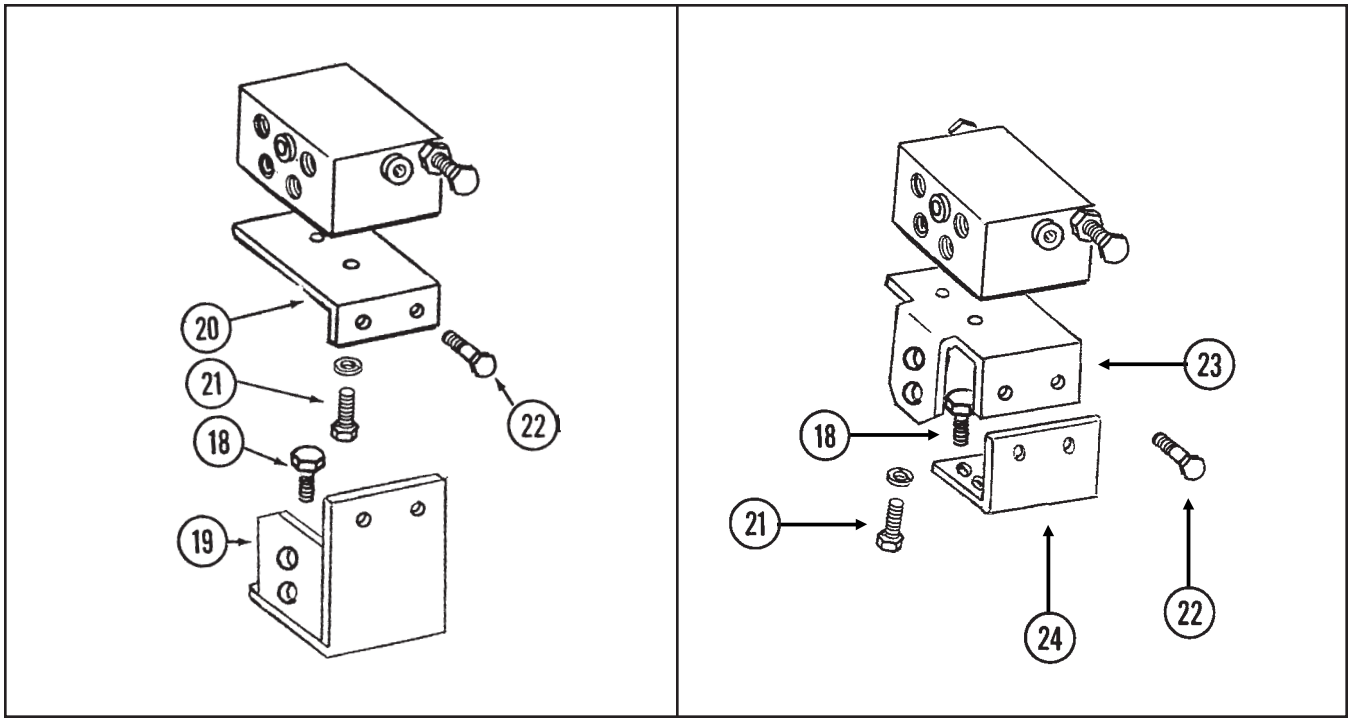


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5459	1	Rod Assembly
2.	GD5949	1	Gland
3.	GD4632	1	Piston
4.	GR0959	1	Lock Nut, 3/4"-16
5.	A5460	1	Barrel **(Non-Stock Item)**
A.	GA5097	-	Cylinder Complete, 2" x 20 1/16"
B.	GR0927	-	Seal Kit, Includes: (1)T Seal, (2)O-Rings, (1)BU Ring, (1)U-Cup, (1)Wiper

MARKER SEQUENCING/FLOW CONTROL VALVE

VVB025/PHS035(PT9a/PT10/PT11)





MARKER SEQUENCING/FLOW CONTROL VALVE

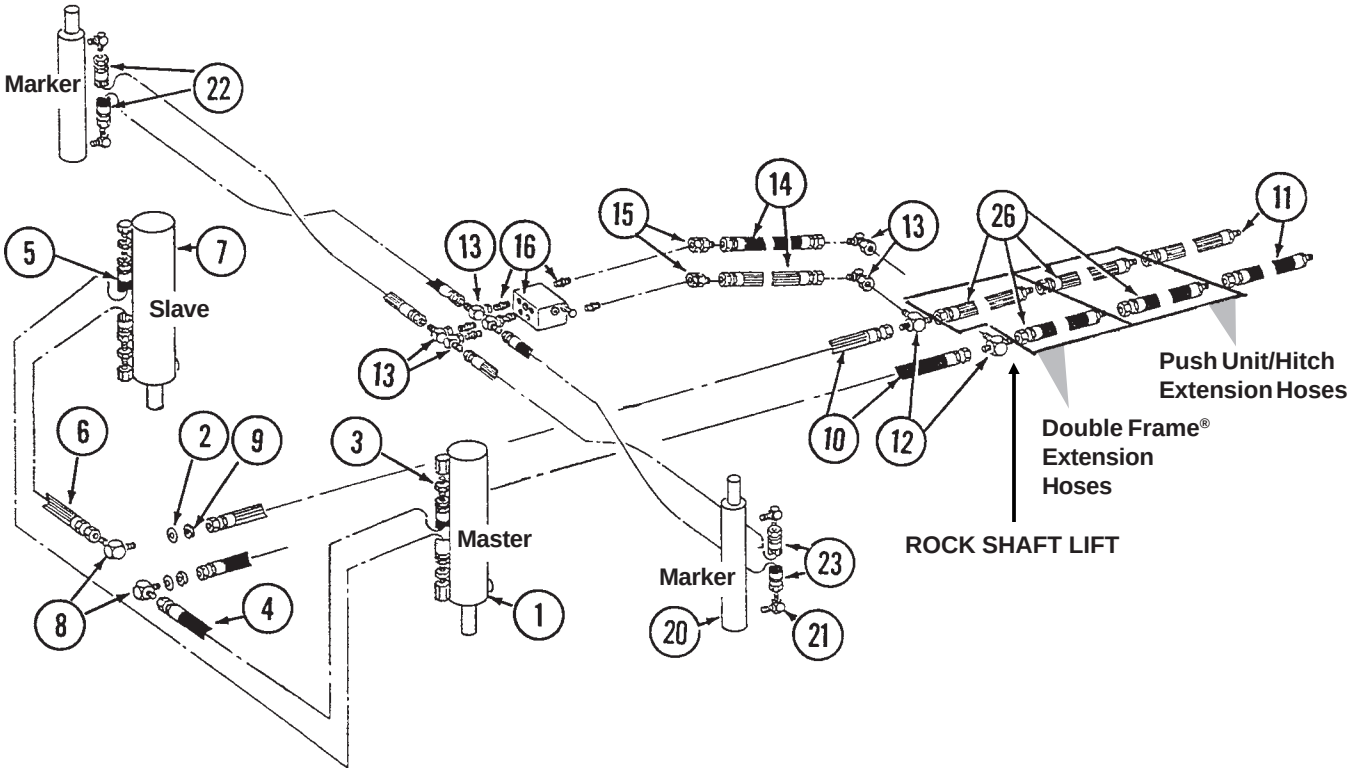
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6400-06	4	Connector W/O-Ring, 9/16"-18 Male 37° JIC To 9/16"-18 O-Ring *
	GR1045	-	O-Ring
2.	GR1034	1	Hex Socket O-Ring Plug W/O-Ring
	GR1035	-	O-Ring
3.	GR1032	2	Port Adapter W/O-Ring
	GR1045	-	O-Ring
4.	GR1033	1	Detent Spring
5.	GR1036	2	Spring
6.	GR1044	3	7/16" Check Ball
7.	GR1043	2	1/4" Steel Ball
8.		-	Valve Body **(Non-Stock Item)**
9.	GR1047	2	Hex Socket Plug W/O-Ring
	GR1037	-	O-Ring
10.		-	Spool **(Non-Stock Item)**
11.	GR1042	2	Adjustment Screw
12.	GR1048	2	Hex Jam Nut, 1/2"-20
13.	GR1038	2	Needle
14.	GR1039	2	Spring Pin
15.	GR1046	2	Compression Spring
16.	GR1040	2	O-Ring
17.	GR1041	2	Teflon BU Ring
18.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10203	2	Washer, 3/8" SAE
	G10229	2	Lock Washer, 3/8"
19.	GA5141	1	Valve Mounting Angle
20.	GD7630	1	Mounting Angle
21.	G10001		Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	2	Lock Washer, 3/8"
22.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10203	2	Washer, 3/8" SAE
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
23.	GD10224	1	Valve Mounting Angle
24.	GD10223	1	Mounting Angle
A.	GA5552	-	Valve Assembly Complete (Items 1-17)
B.	GA5572	-	Flow Control Portion Only (Items 11-17)

***Not used on sizes with 3/8" hoses.**

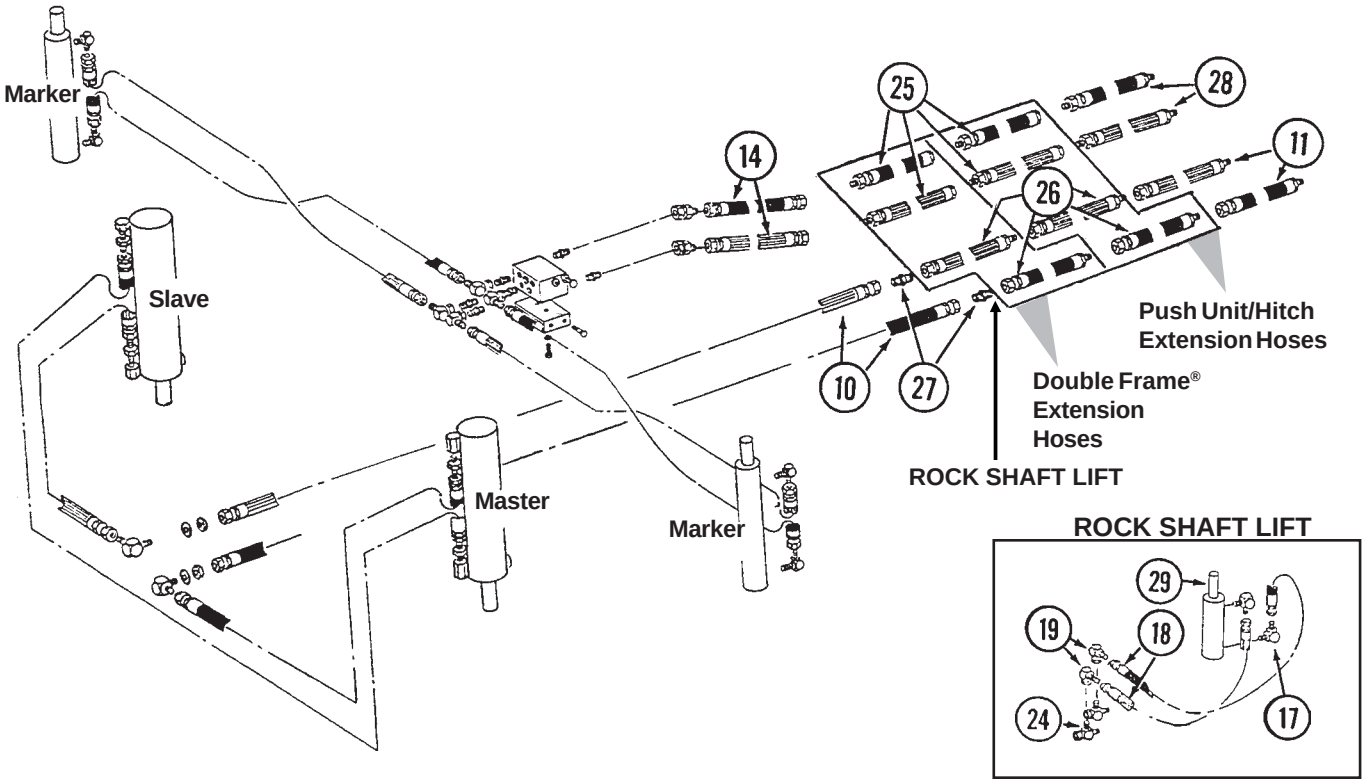
HYDRAULIC SYSTEM, 4 ROW 30"/36"/38" CONVENTIONAL MARKER

PHS001/PHS002/PHS003(PT12a/PT13a/PT14)

Single Valve



Dual Valve



ROCK SHAFT LIFT

HYDRAULIC SYSTEM, 4 ROW 30"/36"/38" CONVENTIONAL MARKER

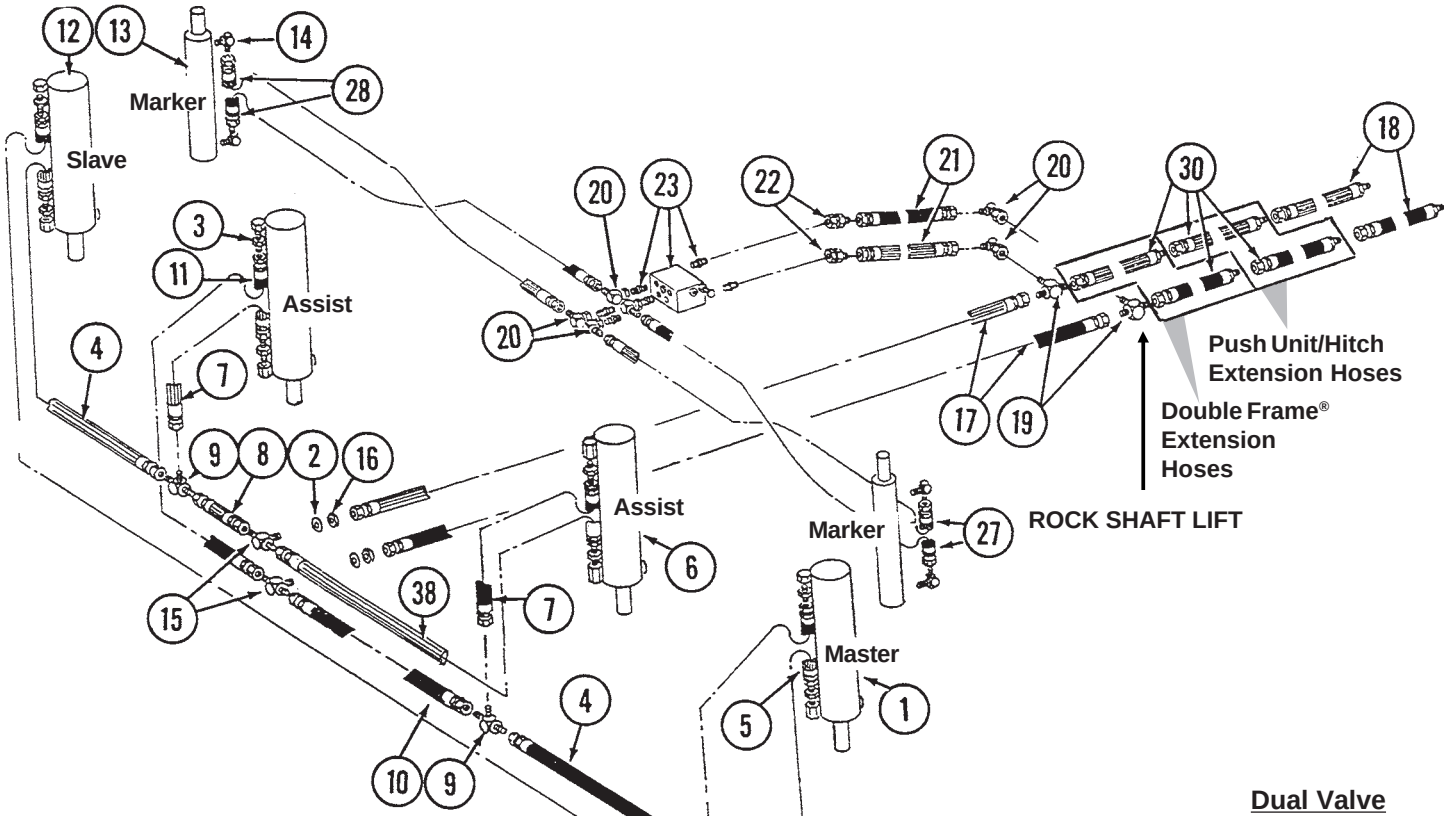
ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Master Lift Cylinder”, Page P45
2.	G10215	2	Machine Bushing
3.	G6400-08	4	Connector, 3/4"-16 Male O-Ring To 37° JIC
4.	*A1018	1	Hose Assembly, 3/8" x 40", 4 Row 30"
	*A1020	-	Hose Assembly, 3/8" x 48", 4 Row 36"/38"
5.	*A3113	1	Hose Assembly, 3/8" x 84", 4 Row 30"
	*A3136	-	Hose Assembly, 3/8" x 100", 4 Row 36"/38"
6.	*A1020	1	Hose Assembly, 3/8" x 48", 4 Row 30"
	*A1021	-	Hose Assembly, 3/8" x 56", 4 Row 36"/38"
7.		-	See “Slave Lift Cylinder”, Page P45
8.	G2701-08	2	Elbow, 3/4"-16 Male 37° JIC
9.	G306-08	2	Lock Nut, 3/4"-16
10.	*A1076	2	Hose Assembly, 3/8" x 30"
11.	*A3135	2	Hose Assembly, 3/8" x 100"
12.	G2603-08-08-06	2	Tee, 3/4"-16 Male 37° JIC To 9/16"-18 37° JIC
13.	G6500-06	4	Elbow, 9/16"-18 Male 37° JIC To Female 37° JIC
14.	*A1138	2	Hose Assembly, 1/4" x 29"
15.	G6502-06	2	Elbow, 45°, 9/16"-18 Male 37° JIC To Female
16.		-	See “Marker Sequencing/Flow Control Valve”, Page P48 (For Valve Mounts See “Marker Sequencing/Flow Control Valve”)
17.	G6801-08	2	Elbow, 3/4"-16 Male 37° JIC To 3/4" O-Ring
18.	*A1079	2	Hose Assembly, 3/8" x 24"
19.	G6500-08	2	Swivel Elbow
20.		-	See “Conventional Marker Cylinder”, Page P47
21.	G6801-06-08	4	Elbow, 9/16"-18 Male 37° JIC To 3/4"-16 O-Ring
22.	*A1102	2	Hose Assembly, 1/4" x 95", 4 Row 30"
	*A1171	-	Hose Assembly, 1/4" x 108", 4 Row 36"/38"
23.	*A1170	2	Hose Assembly, 1/4" x 90", 4 Row 30"
	*A1150	-	Hose Assembly, 1/4" x 103", 4 Row 36"/38"
24.	G6602-08	2	Tee, 3/4"-16 37° JIC
25.	*A1182	-	Hose Assembly, 1/4" x 30", With Double Frame® Package
	*A1178	-	Hose Assembly, 1/4" x 46", With Push Unit Extension
	*A1177	-	Hose Assembly, 1/4" x 24", With Hitch Extensions
26.	*A3142	-	Hose Assembly, 3/8" x 30", With Double Frame® Package
	*A3149	-	Hose Assembly, 3/8" x 46", With Push Unit Extension
	*A3147	-	Hose Assembly, 3/8" x 24", With Hitch Extensions
27.	G2403-08	2	Union, 3/4"-16 Male 37° JIC
28.	*A1173	2	Hose Assembly, 1/4" x 100"
29.		-	See “Rock Shaft Lift Cylinder”, Page P46

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

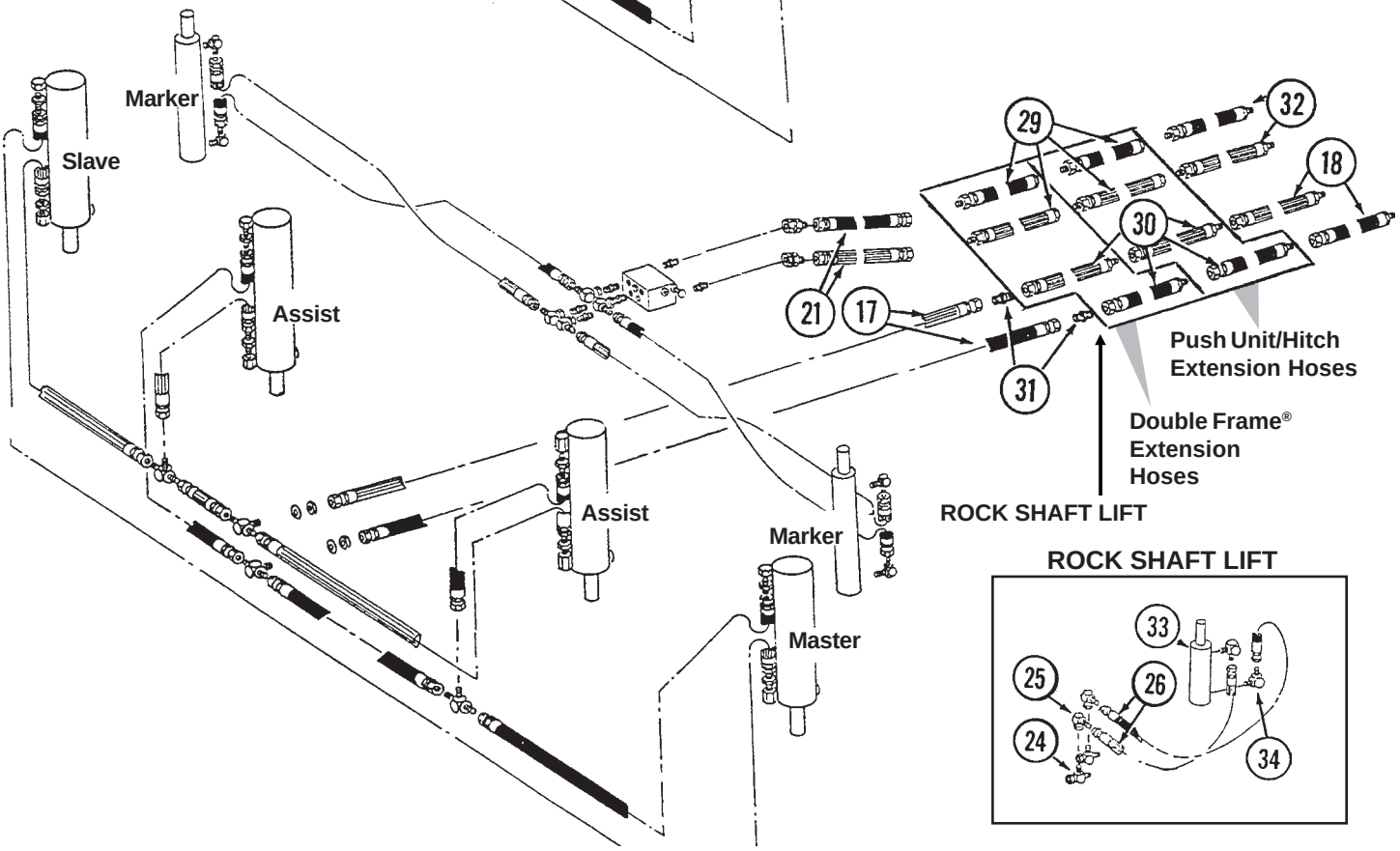
HYDRAULIC SYSTEM, 6 ROW 30" CONVENTIONAL MARKER

PHS001/PHS002/PHS003(PT15a/PT16a/PT17)

Single Valve



Dual Valve



ROCK SHAFT LIFT

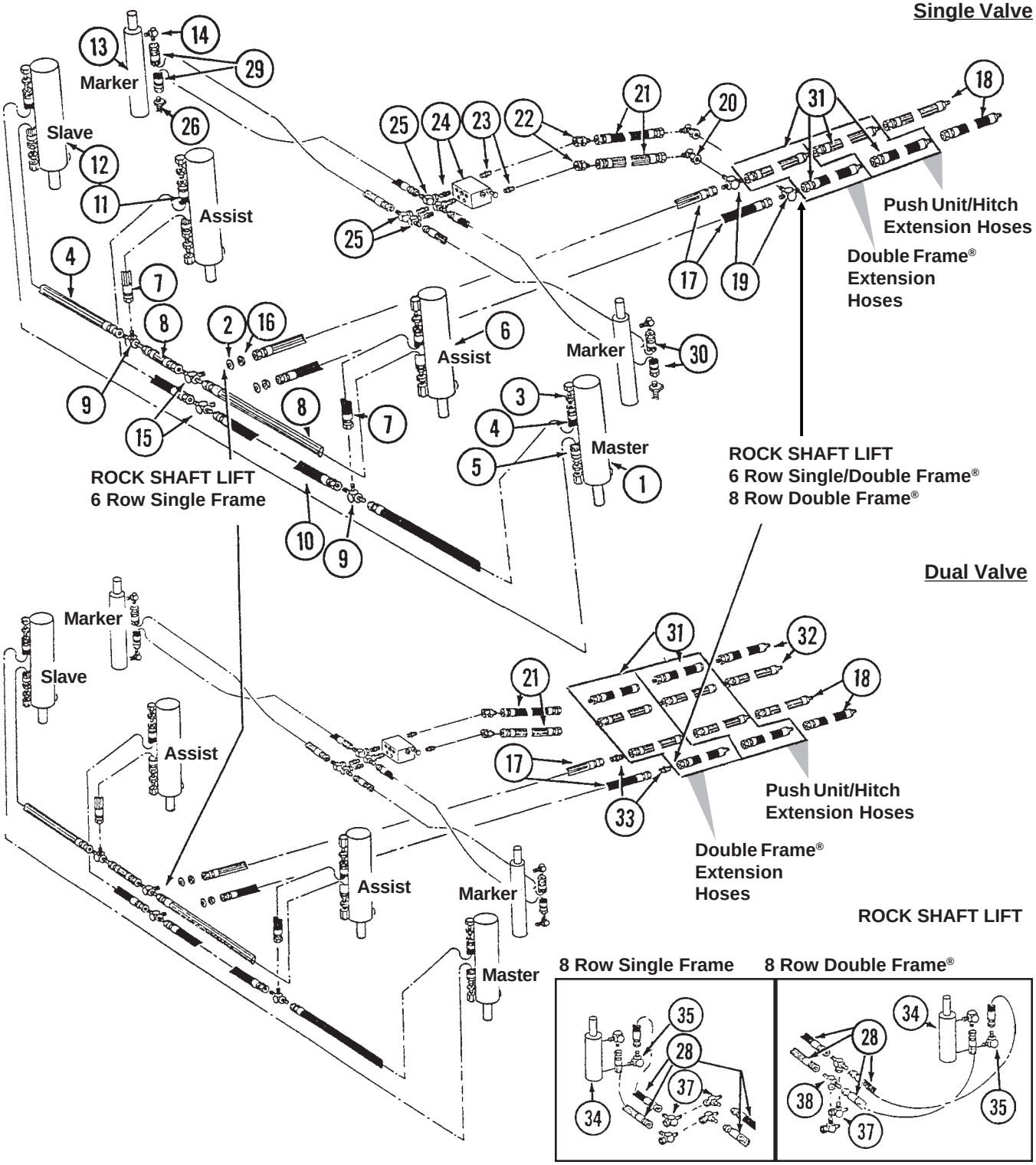
HYDRAULIC SYSTEM, 6 ROW 30" CONVENTIONAL MARKER

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Master Lift Cylinder”, Page P45
2.	G10215	2	Machine Bushing
3.	G6400-08	8	Connector, 3/4"-16 Male O-Ring To 37° JIC
4.	*A1018	2	Hose Assembly, 3/8" x 40"
5.	*A3115	1	Hose Assembly, 3/8" x 146"
6.		-	See “Lift Assist Cylinder”, Page P46
7.	*A1000	2	Hose Assembly, 3/8" x 15"
8.	*A3119	1	Hose Assembly, 3/8" x 36"
9.	G2603-08	2	Tee, 3/4"-16 Male 37° JIC
10.	*A1086	1	Hose Assembly, 3/8" x 28"
11.	*A1019	1	Hose Assembly, 3/8" x 44"
12.		-	See “Slave Lift Cylinder”, Page P45
13.		-	See “Conventional Marker Cylinder”, Page P47
14.	G6801-06-08	4	Elbow, 9/16"-18 Male 37° JIC To 3/4"-16 O-Ring
15.	G2703-08	2	Bulkhead Tee, 3/4"-16 Male 37° JIC
16.	G306-08	2	Lock Nut, 3/4"-16
17.	*A1076	2	Hose Assembly, 3/8" x 30"
18.	*A3135	2	Hose Assembly, 3/8" x 100"
19.	G2603-08-08-06	2	Tee, 3/4"-16 Male 37° JIC To 9/16"-18 37° JIC
20.	G6500-06	2	Elbow, 9/16"-18 Male 37° JIC To Female 37° JIC
21.	*A1138	2	Hose Assembly, 1/4" x 29"
22.	G6502-06	2	Elbow, 45°, 9/16"-18 Male 37° JIC To Female
23.		-	See “Marker Sequencing/Flow Control Valve”, Page P48 (For Valve Mounts See “Marker Sequencing/Flow Control Valve”)
24.	G6602-08	2	Tee, 3/4"-16 37° JIC
25.	G6500-08	2	Swivel Elbow
26.	*A3175	1	Hose Assembly, 3/8" x 38"
27.	*A1168	2	Hose Assembly, 1/4" x 120"
28.	*A1105	2	Hose Assembly, 1/4" x 125"
29.	*A1182	-	Hose Assembly, 1/4" x 30", With Double Frame® Package
	*A1178	-	Hose Assembly, 1/4" x 46", With Push Unit Extension
	*A1177	-	Hose Assembly, 1/4" x 24", With Hitch Extensions
30.	*A3142	-	Hose Assembly, 3/8" x 30", With Double Frame® Package
	*A3149	-	Hose Assembly, 3/8" x 46", With Push Unit Extension
	*A3147	-	Hose Assembly, 3/8" x 24", With Hitch Extensions
31.	G2403-08	2	Union, 3/4"-16 Male 37° JIC
32.	*A1173	2	Hose Assembly, 1/4" x 100"
33.		-	See “Rock Shaft Lift Cylinder”, Page P46
34.	G6801-08	2	Elbow, 3/4"-16 Male 37° JIC To 3/4" O-Ring
35.	*A1079	2	Hose Assembly, 3/8" x 24"

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

HYDRAULIC SYSTEM, 6 ROW 36"/38" AND 8 ROW 30", TWO-FOLD LOW PROFILE MARKER

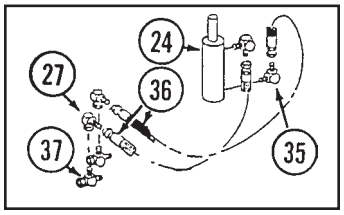
PHS001/PHS002/PHS003(PT18a/PT19/PT20/PT21/PT22)



8 Row Single Frame

8 Row Double Frame®

6 Row Single/Double Frame®



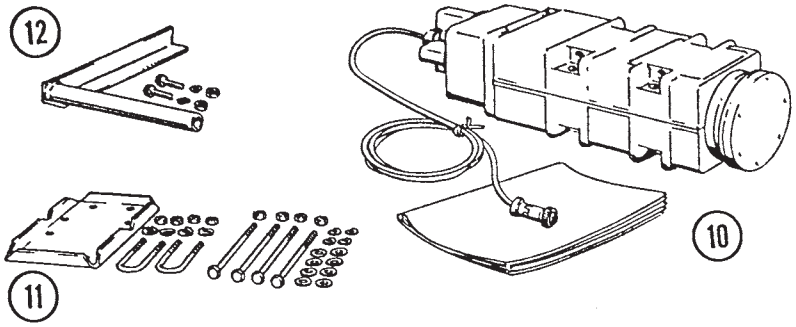
HYDRAULIC SYSTEM, 6 ROW 36"/38" AND 8 ROW 30", TWO-FOLD LOW PROFILE MARKER

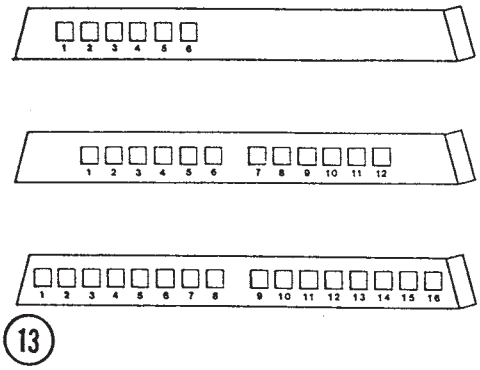
ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Master Lift Cylinder”, Page P45
2.	G10215	2	Machine Bushing
3.	G6400-08	8	Connector, 3/4"-16 Male O-Ring To 37° JIC
4.	*A1020	2	Hose Assembly, 3/8" x 48", 6 Row 36"/38"
	*A1018	-	Hose Assembly, 3/8" x 40", 8 Row 30"
5.	*A3132	1	Hose Assembly, 3/8" x 178", 6 Row 36"/38"
	*A1054	-	Hose Assembly, 3/8" x 204", 8 Row 30"
6.		-	See “Lift Assist Cylinder”, Page P46
7.	*A1000	2	Hose Assembly, 3/8" x 15"
8	*A1019	2	Hose Assembly, 3/8" x 44", 6 Row 36"/38"
	*A1055	-	Hose Assembly, 3/8" x 66", 8 Row 30"
9.	G2603-08	2	Tee, 3/4"-16 Male 37° JIC
10.	*A1044	1	Hose Assembly, 3/8" x 34", 6 Row 36"/38"
	*A1021	-	Hose Assembly, 3/8" x 56", 8 Row 30"
11.	*A3128	1	Hose Assembly, 3/8" x 52", 6 Row 36"/38"
	*A1039	-	Hose Assembly, 3/8" x 76", 8 Row 30"
12.		-	See “Slave Lift Cylinder”, Page P45
13.		-	See “Low Profile Marker Cylinder”, Page P47
14.	G6801-08	2	Elbow, 3/4"-16 Male 37° To 3/4"-16 O-Ring
15.	G2703-08	2	Bulkhead Tee, 3/4"-16 Male 37° JIC
16.	G306-08	2	Lock Nut, 3/4"-16
17.	*A1076	2	Hose Assembly, 3/8" x 30"
18.	*A3135	2	Hose Assembly, 3/8" x 100"
19.	G2603-08	2	Tee, 3/4"-16 Male 37° JIC
20.	G6500-08	2	Elbow, 3/4"-16 Male 37° JIC To Female 37° JIC
21.	*A1079	2	Hose Assembly, 3/8" x 24"
22.	G6502-08	2	Elbow, 45°, 3/4"-16 Male 37° JIC To Female 37° JIC
23.	G6400-08-06	2	Adapter, 3/4"-16 Male 37° JIC To 9/16"-18 O-Ring
24.		-	See “Marker Sequencing/Flow Control Valve”, Page P48
25.	G6500-08-06	2	Elbow, 3/4"-16 Male 37° JIC To 9/16"-18 Female 37° JIC
26.	G6400-08	2	Connector, 3/4"-16 Male O-Ring To 37° JIC
27.	G6500-08	2	Swivel Elbow
28.	*A3156	4	Hose Assembly, 3/8" x 68", 8 Row 30"
29.	*A1013	2	Hose Assembly, 3/8" x 150", 6 Row 36"/38"
	*A1090	-	Hose Assembly, 3/8" x 162", 8 Row 30"
30.	*A3137	2	Hose Assembly, 3/8" x 140", 6 Row 36"/38"
	*A3114	-	Hose Assembly, 3/8" x 156", 8 Row 30"
31.	*A3142	-	Hose Assembly, 3/8" x 30", With Double Frame® Package
	*A3149	-	Hose Assembly, 3/8" x 46", With Push Unit Extension
	*A3147	-	Hose Assembly, 3/8" x 24", With Hitch Extensions
32.	*A3143	2	Hose Assembly, 3/8" x 100"
33.	G2403-08	2	Union, 3/4"-16 Male 37° JIC
34.		-	See “Rock Shaft Lift Cylinder”, Page P46
35.	G6801-08	2	Elbow, 3/4"-16 JIC To 3/4" O-Ring
36.	*A1079	2	Hose Assembly, 3/8" x 24", 6 Row 36"/38"
37.	G6602-08	2	Tee, 3/4"-16 37° JIC
38.	G6600-08	2	Tee, Outlet 3/4"-16 37° JIC

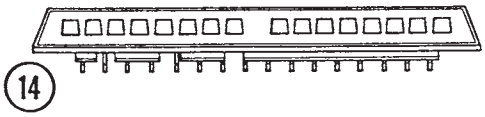
*** Hydraulic hose is not stocked by KINZE® Repair Parts, but can be made available on a special order basis. Call for quote.**

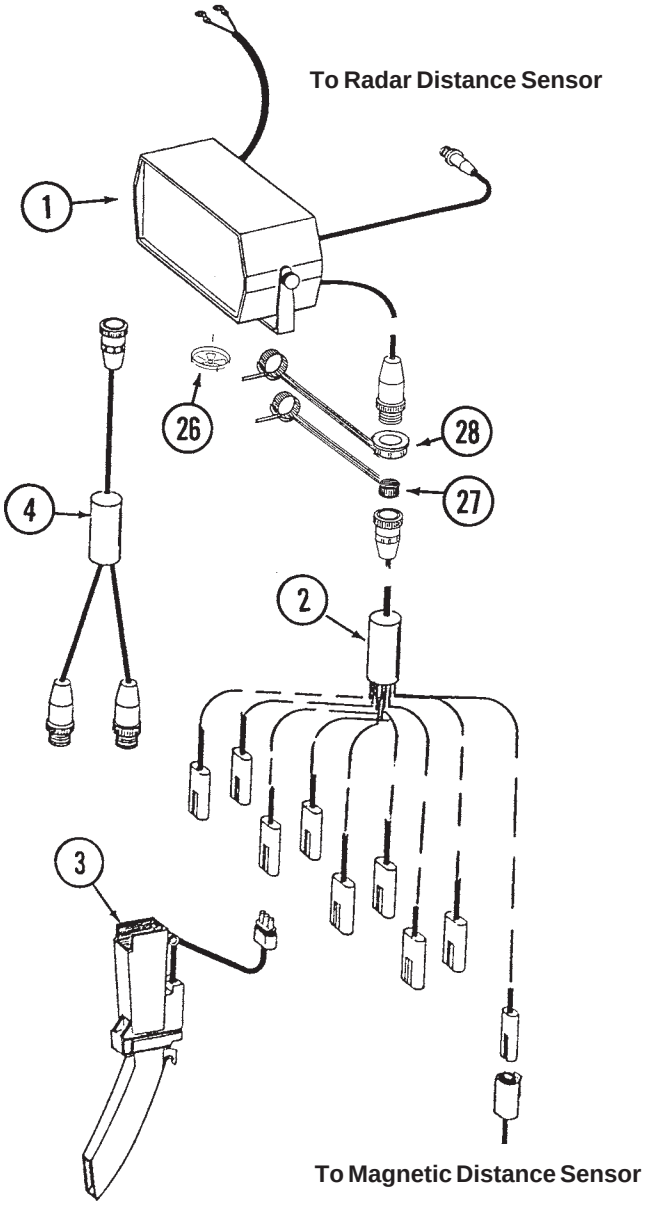
ELECTRONIC SEED MONITOR

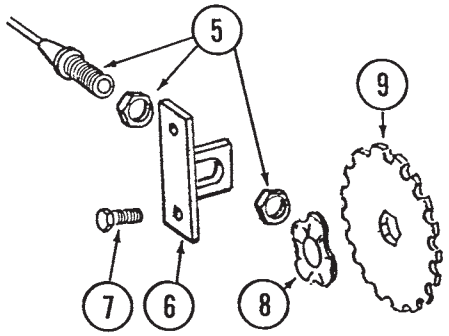
ECP017/D-0640-0001/D-0640-0003/D-0640-0004/D-1172-0001/D-1172-0002/ECP019/ECP020/ECP021/ECP022(MTR3a)

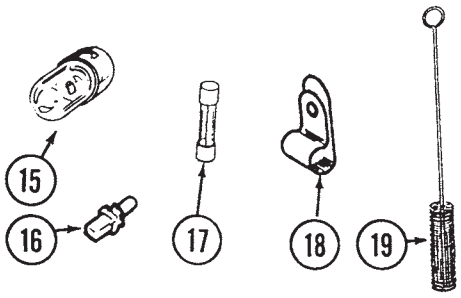


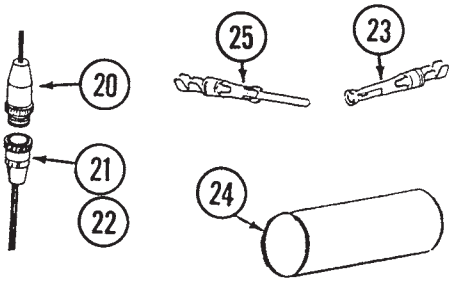










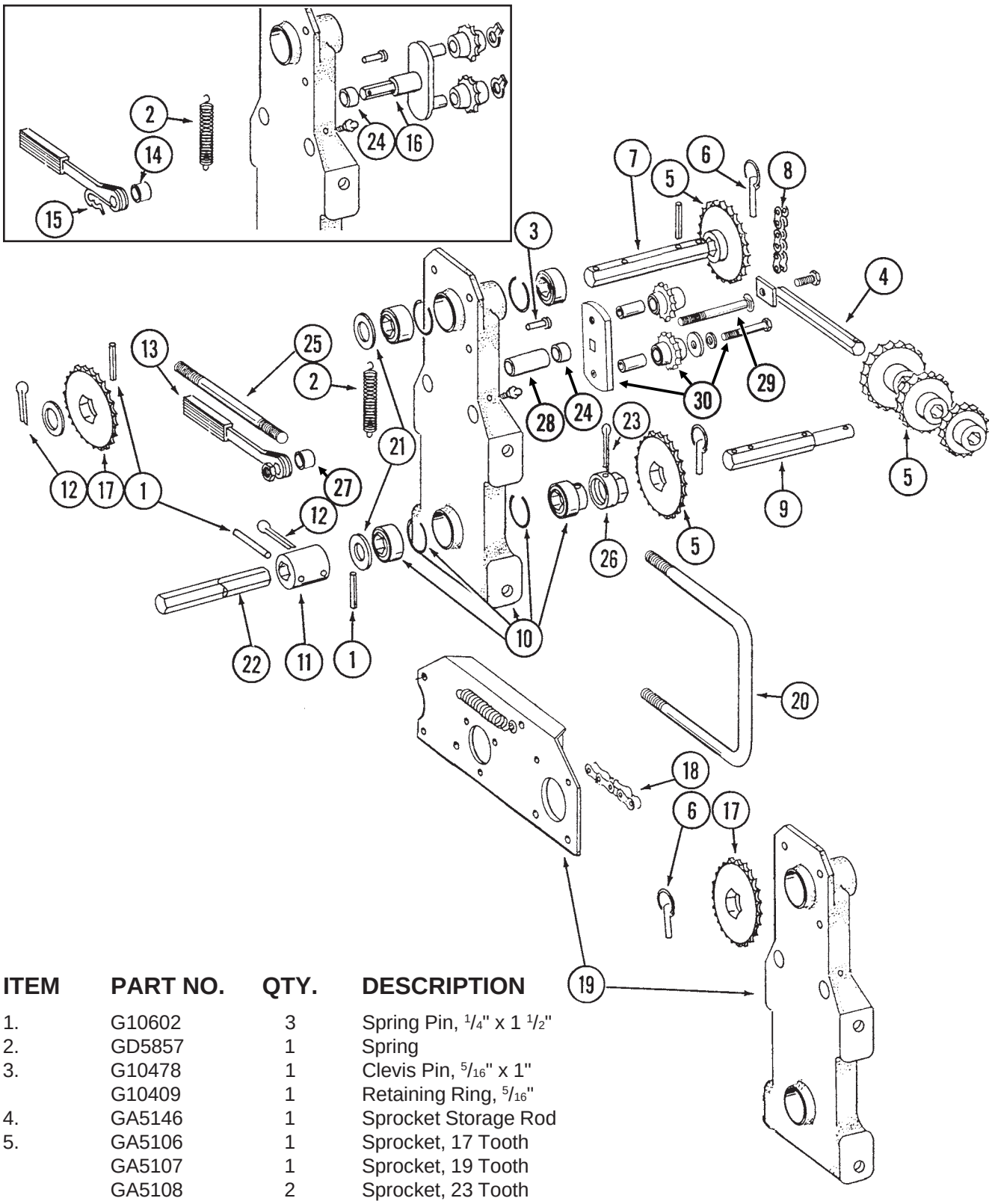


ELECTRONIC SEED MONITOR

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5873	1	Console W/Mounting Bracket, KM1000
	GA5874	-	Console W/Mounting Bracket, KM3000
	GR1077	-	Mounting Bracket, KM1000
	GR1078	-	Mounting Bracket, KM3000
	GR1079	-	Console Mounting Bracket Hardware Package (Includes 2 Wellnuts, 2 Knobs And 1/4" Hardware)
2.	GA5875	1	Planter Harness, 4 Row
	GA5876	-	Planter Harness, 6 Row
	GA5877	-	Planter Harness, 8 Row
3.	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"
4.	GA6045	-	Y-Connector, 8 Row (Interplant®) (Used On 4 Row)
	GA5883	-	Y-Connector, 12 Row (Interplant®) (Used On 6 Row)
	GA5884	1	Y-Connector, 16 Row (Interplant®) (Used On 8 Row)
5.	GA5600	1	Magnetic Distance Sensor (Use W/KM3000 Console Only)
6.	GD8770	1	Bracket
7.	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
8.	GD8771	1	Spring Wave Washer
9.	GD8751	-	Magnetic Distance Sensor Pulse Wheel (Use W/KM3000 Console Only)
10.	GA4223	-	Radar Distance Sensor (Use W/KM3000 Console Only)
11.	GA4229	-	Radar Sensor Mounting Bracket Package
12.	GA4230	-	Radar Sensor Pipe Mounting Package
13.	GR1082	1	KM1000 Bezel Decal, 12 Row (Used On 4 Row)
	GR1081	-	KM1000 Bezel Decal, 6 Row (Used On 6 Row)
	GR1083	-	KM1000 Bezel Decal, 16 Row (Used On 8 Row)
14.	GR1080	1	KM1000 Bezel
15.	GR0595	1	Bulb, KM1000 Row Lamp
16.	GR1084	1	Bulb, KM3000 Backlite
17.	GR0866	1	Fuse, 5 Amp, Type AGC
	GR1085	1	Fuse, 2 Amp, Type AGC
18.	GD6291	-	Insulated Clamp
19.	GR0594	-	Brush
20.	GR0583	-	Console Connector Kit W/37 Pins And Shrink Tube
21.	GR0582	-	Harness Connector Kit W/37 Female Socket Contacts, Coupling Ring And Shrink Tube
22.	GR0807	-	Coupling Ring
23.	GR1171	-	Female Socket Contact
24.	GR1069	-	Shrink Tube, 2 1/2"
25.	GR1067	-	Pin
26.	GR1348	-	Sound Baffle W/Pin
27.	GD4564	-	Dust Cover
28.	GD4563	-	Dust Cap
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 5-9 And 18)

INTERPLANT® PUSH UNIT TRANSMISSION AND DRIVE

PTD040/PTD041/PTD066(PT23a)



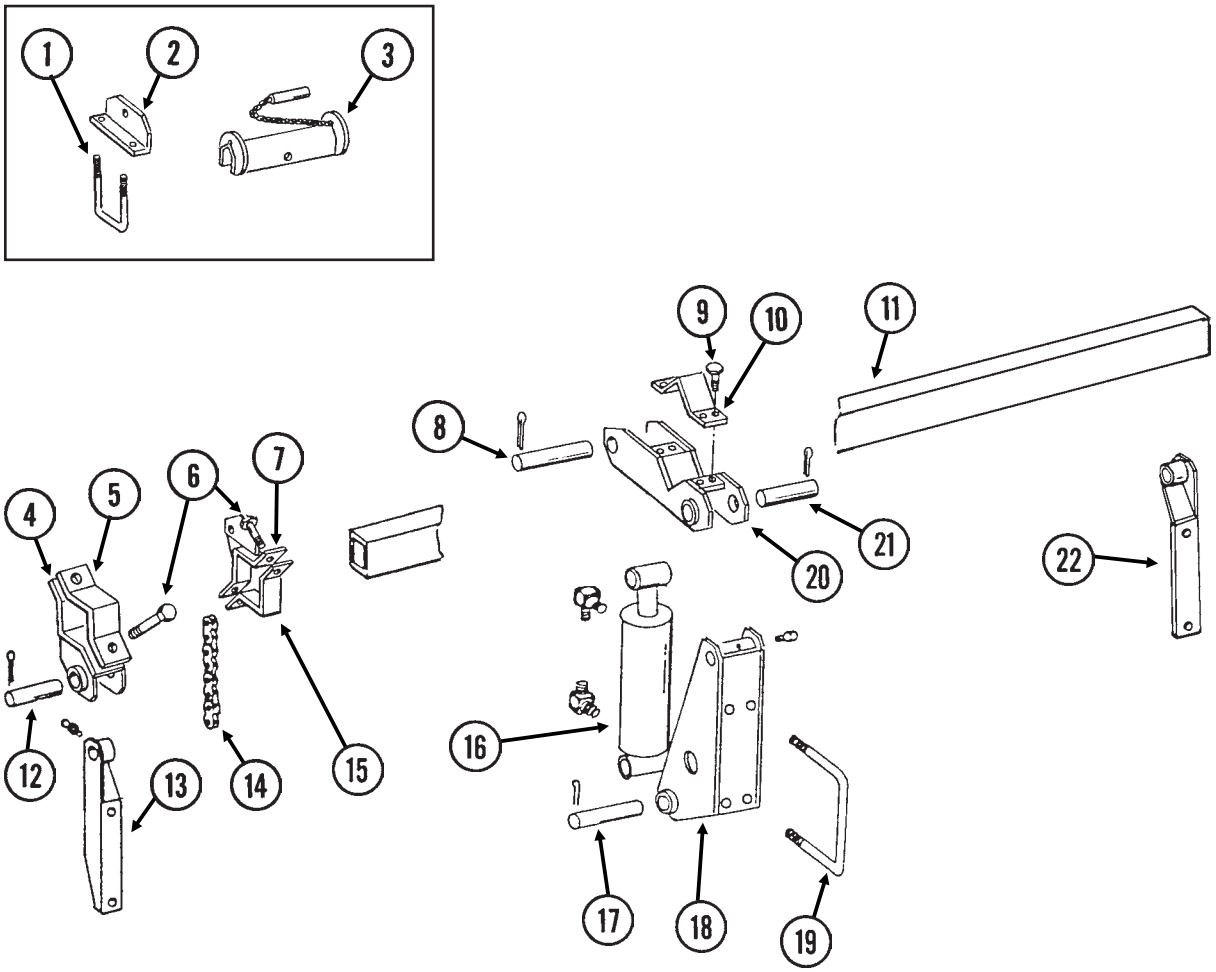
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10602	3	Spring Pin, 1/4" x 1 1/2"
2.	GD5857	1	Spring
3.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Retaining Ring, 5/16"
4.	GA5146	1	Sprocket Storage Rod
5.	GA5106	1	Sprocket, 17 Tooth
	GA5107	1	Sprocket, 19 Tooth
	GA5108	2	Sprocket, 23 Tooth
	GA5109	1	Sprocket, 24 Tooth
	GA5110	1	Sprocket, 25 Tooth
	GA5111	1	Sprocket, 26 Tooth
	GA5112	1	Sprocket, 27 Tooth
	GA5113	1	Sprocket, 28 Tooth

INTERPLANT® PUSH UNIT TRANSMISSION AND DRIVE

ITEM	PART NO.	QTY.	DESCRIPTION
6.	GD2558	3	Lynch Pin, 1/4"
7.	GD5835	1	Shaft, 7/8" x 7"
8.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
9.	GD7822	1	Shaft, 7/8" x 7"
10.	GA5629	1	Transmission Plate W/Bearings, Grease Fittings And Retaining Rings
	GA5116	-	Bearing, 7/8" Hex Bore, Cylindrical
	GA5624	-	Special Bearing, 7/8" Hex Bore x 1.6"
	GD6551	-	Ring
	G10641	-	Grease Fitting, 1/8" NPT
11.	GD5886	1	Coupler, 1 3/4"
12.	G10460	2	Cotter Pin, 1/4" x 2"
13.	GA4235	1	Ratchet Wrench W/Protective Closure
	G10445	-	Protective Closure
14.	GD6819	1	Idler Sleeve, 7/16"
15.	G10670	1	Hair Pin Clip, No. 3
16.	GA5628	1	Idler W/Sprockets And Rings
	GD7426	-	Sprocket
	G10435	-	Ring
17.	GA5202	1	Sprocket, 34 Tooth
18.	G3310-26	1	Chain, No. 40, 26 Pitch Including Connector Link (To Be Added To 3310-89 On Single Frame Planters)
	G3310-228	-	Chain, No. 40, 228 Pitch Including Connector And Offset Links (Used On Double Frame® Planters)
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
19.		-	See “Transmission Assembly”, Pages P38 And P39
20.	GD1113	-	U-Bolt, 5" x 7" x 5/8"-11 (Used On Double Frame® Planters)
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
21.	G10233	-	Machine Bushing
22.	GD5887-95	1	Drill Shaft, 4 Row 30"
	GD5887-109	-	Drill Shaft, 4 Row 36"/38"
	GD5887-155	-	Drill Shaft, 6 Row 30"
	GD5887-185	-	Drill Shaft, 6 Row 36"/38"
	GD5887-215	-	Drill Shaft, 8 Row 30"
23.	G10462	1	Cotter Pin, 3/16" x 2"
24.	GD2734-01	1	Sleeve, 1/2"
25.	GD6793	-	Stud, 5/8"-11 x 9 1/2" (Used On Single Frame Planters)
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
26.	GD7127	1	Shear Coupler
27.	GD10161	1	Spacer, 3/8"
28.	GD3180-16	1	Sleeve, 2 13/16"
29.	G10867	1	Carriage Bolt, 1/2"-13 x 5"
	G10111	1	Lock Nut, 1/2"-13
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"

INTERPLANT® ROCK SHAFT ASSEMBLY

PRS002/PRS004/PRS006/PRS008/PRS009(PT24e)

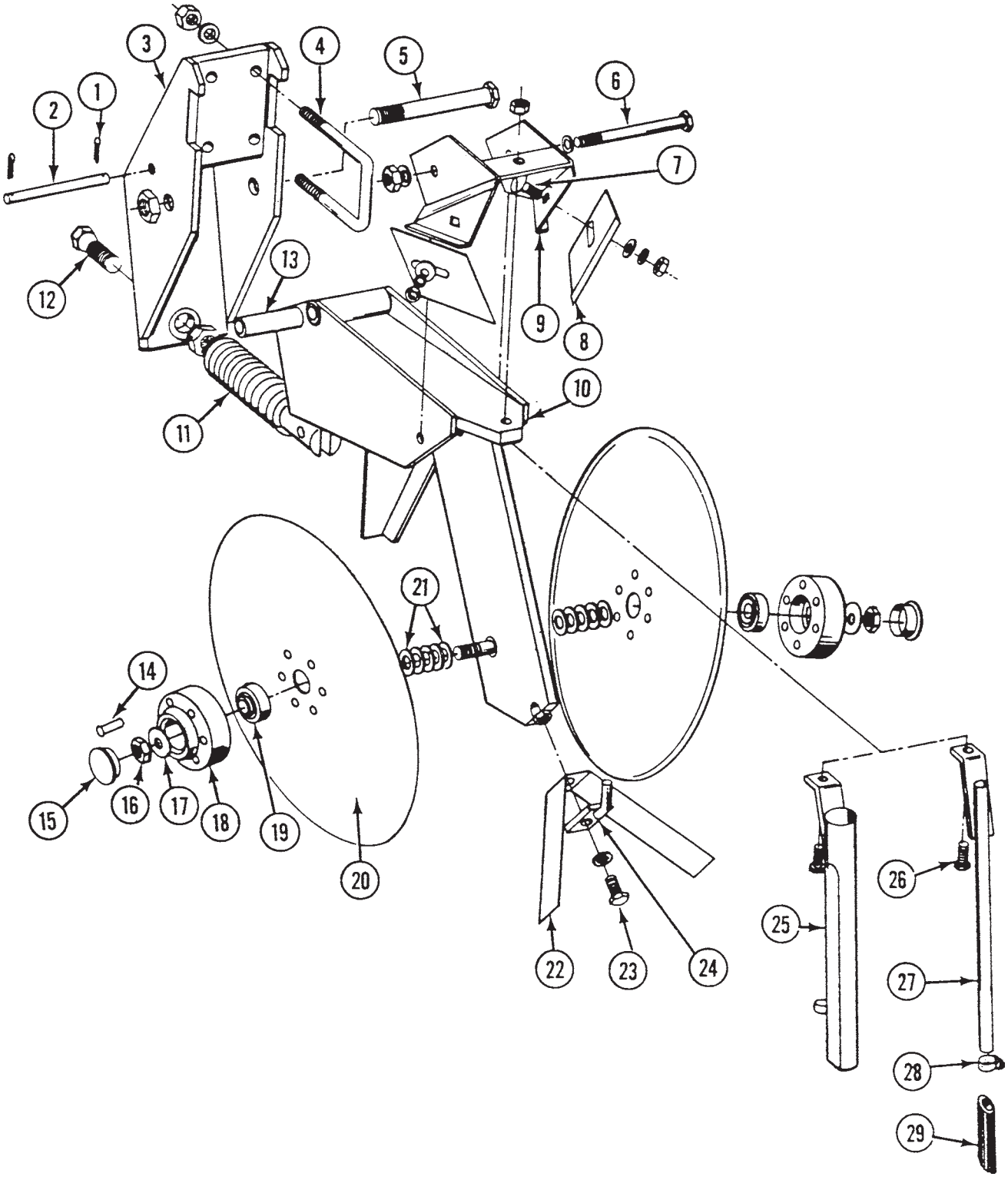


INTERPLANT® ROCK SHAFT ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD4743	-	U-Bolt, 3" x 3" x 1/2"-13
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
2.	GD10655	-	Cylinder Lockup Storage Bracket
3.	GA8176	-	Lockup
4.	GA6519	-	Support Mount Clamp
5.	GD9231	-	Clamp
6.	G10581	-	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
7.	GA6518	-	Unit Lift Clamp
8.	GD3550	-	Pin, 1 1/4" x 5 5/8"
	G10460	-	Cotter Pin, 1/4" x 2"
9.	G10009	-	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
10.	GD9234	-	Pivot Clamp
11.	GD3518-09	1	Tube, 3" x 3" x 90", 4 Row 30"
	GD3518-10	-	Tube, 3" x 3" x 114", 4 Row 36"/38"
	GD3518-11	-	Tube, 3" x 3" x 150", 6 Row 30"
	GD3518-12	-	Tube, 3" x 3" x 190", 6 Row 36"/38"
	GD3518-13	-	Tube, 3" x 3" x 210", 8 Row 30"
12.	GD6136	-	Pin, 1 1/4" x 5"
	G10460	-	Cotter Pin, 1/4" x 2"
13.	GA5313	-	End Support Mount W/Grease Fitting, L.H.
	G10641	-	Grease Fitting, 1/8" NPT
14.	GA5865	-	Chain, No. 60 Roller, 9 Pitch Including Connector Links
	GR1022	-	Connector Link, No. 2060 Roller
	G10641	-	Grease Fitting, 1/8" NPT
15.	GD9233	-	Clamp
16.		-	See “Rock Shaft Lift Cylinder”, Page P46
17.	GD6870	-	Pin, 1 1/4" x 6"
	G10460	-	Cotter Pin, 1/4" x 2"
18.	GA4570	-	Cylinder Mount W/Grease Fitting
19.	GD1113	-	U-Bolt, 5" x 7" x 5/8"-11
	GD1114	-	U-Bolt, 7" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
20.	GA6517	-	Cylinder Pivot Mount
21.	GD6869	-	Shaft, 1 1/4" x 6 1/2"
	G10460	-	Cotter Pin, 1/4" x 2"
22.	GA5312	1	End Mount W/Grease Fitting, R.H.
	G10641	-	Grease Fitting, 1/8" NPT

DOUBLE DISC FERTILIZER OPENER

FOC007(PT25)

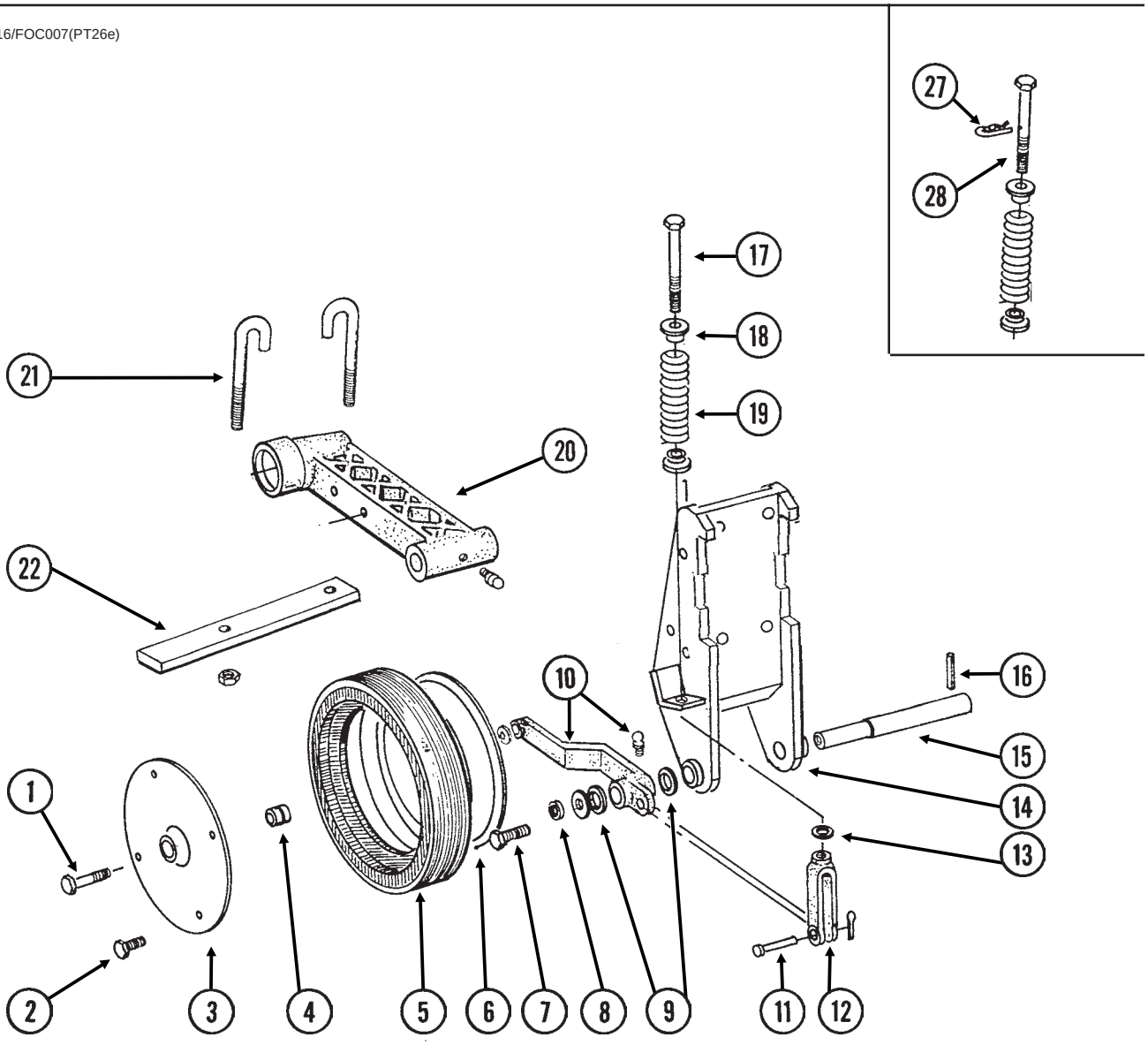


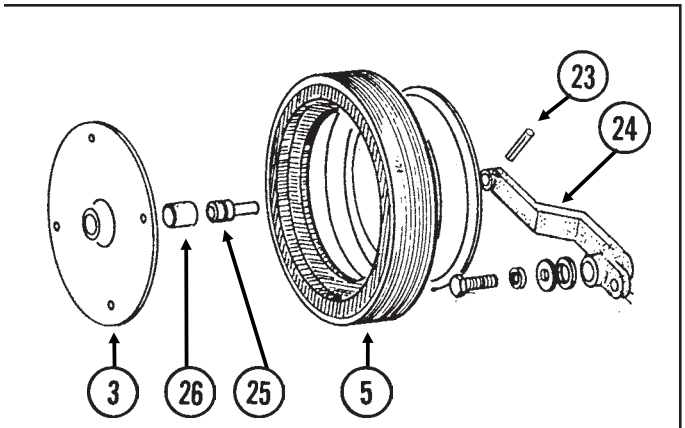
DOUBLE DISC FERTILIZER OPENER

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10451	2	Cotter Pin, 1/8" x 1"
2.	GD1657	1	Lockup Pin
3.	GA0785	1	Bracket
4.	GD1138	2	U-Bolt, 2 1/2" x 2 1/2" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
5.	G10046	1	Hex Head Cap Screw, 5/8"-11 x 5"
	G10107	1	Lock Nut, 5/8"-11
6.	G10045	1	Hex Head Cap Screw, 1/2"-13 x 4 1/2"
	G10111	1	Lock Nut, 1/2"-13
7.	G10305	2	Carriage Bolt, 3/8"-16 x 1"
	G10210	2	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
8.	GD1673	2	Scraper
9.	GA0810	1	Scraper Mount
10.	GA0308	1	Shank
11.	GA0328	1	Spring
12.	GD0962	1	Hex Head Adjusting Bolt, 5/8"-18
	G10499	1	Jam Nut, 5/8"-18
13.	GD0487	1	Bushing
14.	G10542	12	Rivet, 1/4" x 1 5/16"
15.	GD1132	2	Dust Cap
16.	G10503	1	Jam Nut, R.H., 5/8"-11
	G10504	1	Jam Nut, L.H., 5/8"-11
17.	G10204	2	Machine Bushing, 21/32"
18.	GB0134	2	Hub
19.	GA2014	2	Bearing
20.	GD1030	2	Blade
21.	G10213	-	Machine Bushing, .030"
22.	GD2589	1	Inner Scraper
23.	G10019	1	Hex Head Cap Screw, 5/16"-18 x 1"
	G10232	1	Lock Washer, 5/16"
24.	GA0312	1	Mount
25.	GA1369	-	Drop Tube, Dry Fertilizer
26.	G10133	1	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	1	Lock Nut, 5/16"-18
27.	GA0318	-	Drop Tube, Liquid Fertilizer
28.	G10681	-	Clamp, No. 6
29.	GD1797	-	Extension
A.	GA0320	-	Disc And Bearing Assembly (Items 18-20)

HD SINGLE DISC FERTILIZER OPENER (Soil Press Wheel)

FOC016/FOC007(PT26e)



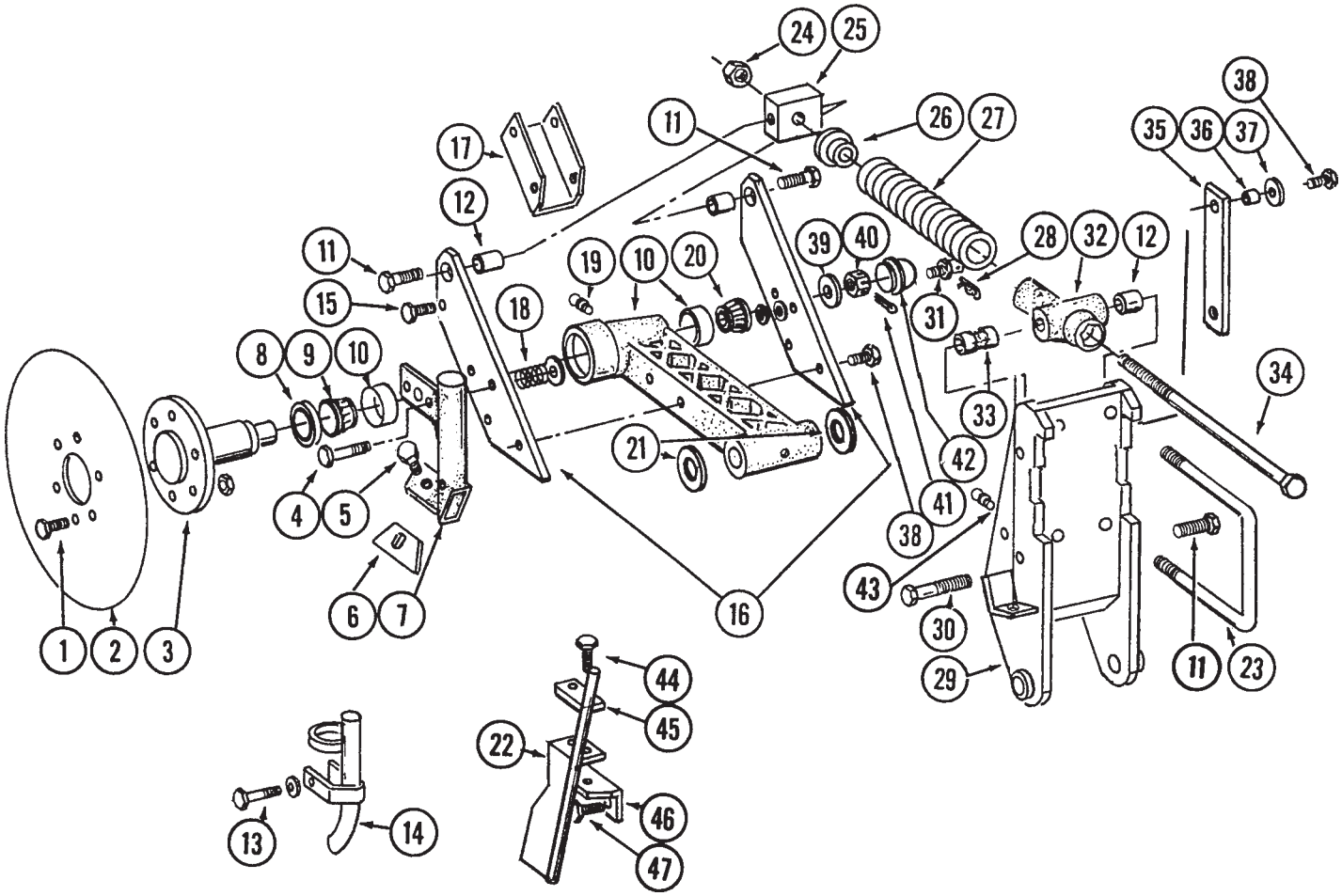


HD SINGLE DISC FERTILIZER OPENER (Soil Press Wheel)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10010	1	Hex Head Cap Screw, 5/8"-11 x 3"
2.	G10018	4	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	4	Lock Nut, 5/16"-18
3.	GD4888	1	Half Wheel
4.	GA6171	1	Bearing
5.	GD4850	1	Offset Tire
6.	GD1048	1	Half Wheel
7.	G10438	1	Hex Head Cap Screw, 1/2"-13 x 3/4"
	G10228	1	Lock Washer, 1/2"
	G10216	1	Washer, 1/2" USS
8.	G10230	1	Lock Washer, 5/8"
9.	G10526	10	Bushing, .048"
10.	GA8306	-	Wheel Arm W/Grease Fitting, R.H.
	GA8305	1	Wheel Arm W/Grease Fitting, L.H. (Shown)
	G10640	1	Grease Fitting, 1/4"-28
11.	G10560	1	Clevis Pin, 1/2" x 1 3/4"
	G10456	1	Cotter Pin, 1/8" x 3/4"
12.	GD8218	1	Yoke
13.	G10205	1	Washer, 5/8" SAE
14.		-	See “HD Single Disc Fertilizer Opener (Disc And Drop Tube)”, Pages P66 And P67
15.	GD7911	1	Pivot Pin
16.	G10610	1	Spring Pin, 3/8" x 2"
17.	GD9709	1	Special Bolt
18.	GB0212	2	Washer
19.	GD8308	1	Spring
20.		-	See “HD Single Disc Fertilizer Opener (Disc And Drop Tube)”, Pages P66 And P67
21.	GD9705	2	J-Bolt
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
22.	GD9706	1	Lockup Bar
23.	G10603	1	Spring Pin, 1/4" x 1 1/4"
24.	GD8030	-	Wheel Arm, R.H.
	GD8031	1	Wheel Arm, L.H. (Shown)
25.	GA2022	1	Bearing
26.	GB0118	1	Sleeve
27.	G10592	1	Hair Pin Clip, No. 11
28.	GD8214	1	Special Bolt (If Equipped With G1K215 Lockup Kit)
A.	G1K215	-	Lockup Kit (Items 21 And 22)
B.	GA6766	-	Wheel Assembly (Items 2-6)

HD SINGLE DISC FERTILIZER OPENER (Disc And Drop Tube)

FOC016/FOC007/FOC019(PT27a)



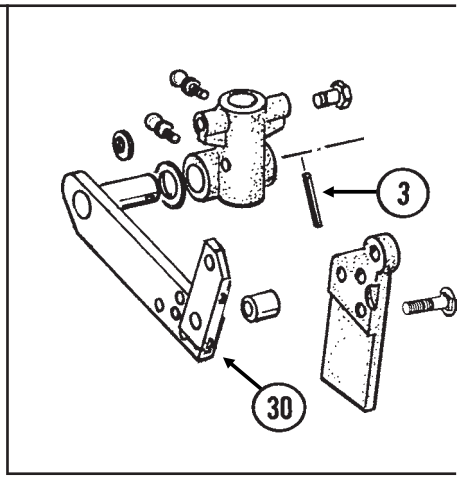
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10594	6	Bolt, 1/2"-13 x 1 1/2"
	G10111	6	Lock Nut, 1/2"-13
2.	GD7900	1	Blade, 18"
3.	GB0205	1	Spindle
4.	G10049	2	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10210	2	Lock Washer, 3/8"
	G10108	2	Lock Nut, 3/8"-16
5.	G10599	1	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10210	1	Washer, 3/8"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
6.	GD7912	1	Scraper
7.	GB0210	-	Drop Tube, R.H.
	GB0209	1	Drop Tube, L.H. (Shown)
8.	GA4286	1	Seal
9.	GA4287	1	Inner Bearing
10.	GA5887	1	Arm W/Cups And Washers
	GD6553	-	Inner Cup
	GR0188	-	Outer Cup
	G10205	3	Washer, 5/8" SAE
11.	G10007	3	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
12.	GB0218	3	Bushing, 19/32"

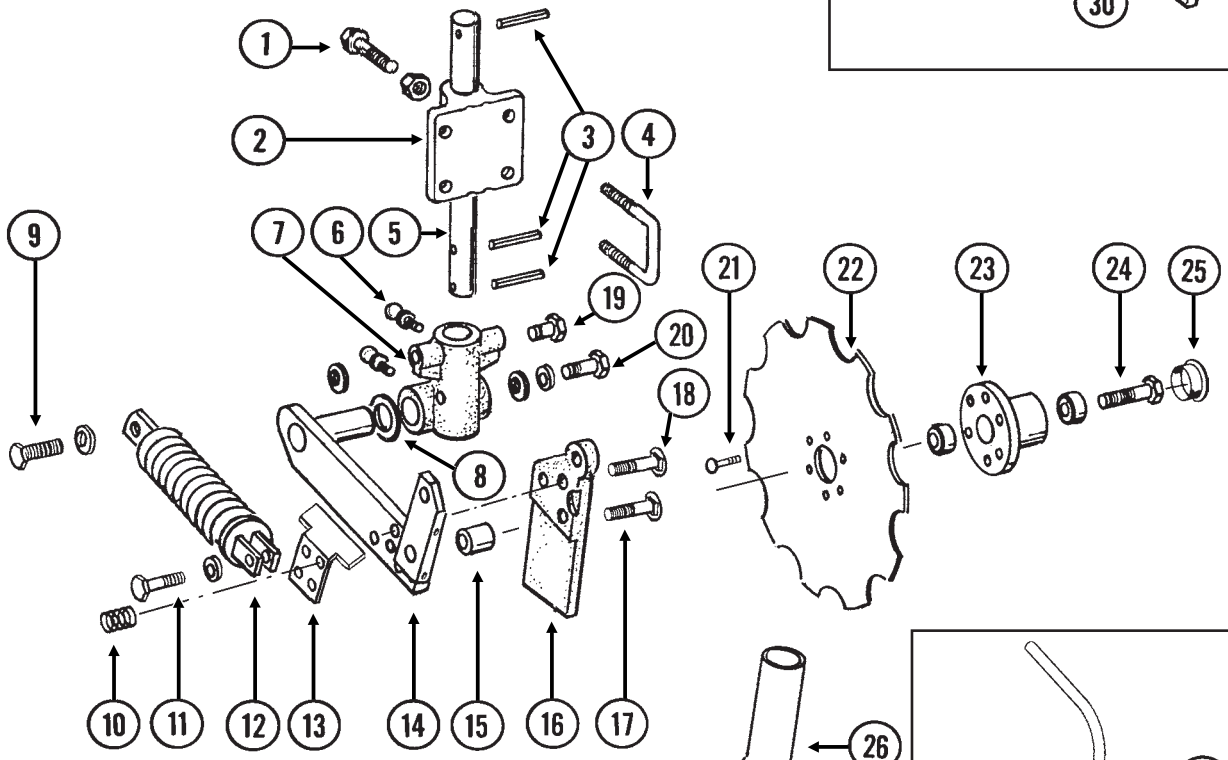
HD SINGLE DISC FERTILIZER OPENER (Disc And Drop Tube)

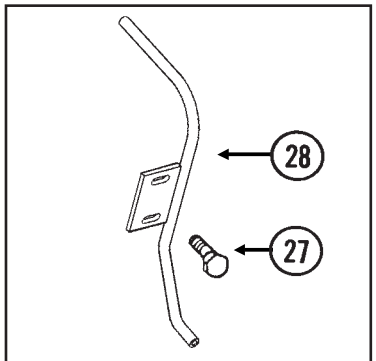
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
13.	G10403	1	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10209	2	Washer, 1/4" USS
	G10110	1	Lock Nut, 1/4"-20
14.	GA6408	1	Liquid Drop Tube
15.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10108	2	Lock Nut, 3/8"-16
16.	GD8224	2	Bar
17.	GD8238	1	Channel
18.	GD7962	2	Spring
19.	G10641	2	Grease Fitting, 1/8" NPT
20.	GA0237	1	Outer Bearing
21.	G10322	-	Bushing (As Required)
22.	GA7269	1	Liquid Drop Tube, L.H.
	GA7268	-	Liquid Drop Tube, R.H.
23.	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
24.	G10231	1	Lock Washer, 3/4"
	G10105	1	Hex Nut, 3/4"-10
25.	GD7908	1	Block
26.	GB0213	1	Spring Guide
27.	GD10273	1	Compression Spring
28.	G10592	1	Hair Pin Clip, No. 11
29.	GA7240	-	Opener Mount, R.H.
	GA7239	1	Opener Mount, L.H. (Shown)
30.	G10862	1	Hex Head Cap Screw, 5/8"-11 x 3 1/4"
	G10205	2	Washer, 5/8" SAE
	G10230	1	Lock Washer, 5/8"
31.	GD8276	1	Pin
	G10237	1	Lock Washer, 7/16"
	G10100	1	Hex Nut, 7/16"-14
32.	GB0206	1	Guide Rod
33.	GD10242	1	Bushing, 2 1/4"
34.	GD7907	1	Special Bolt
35.	GD8239	1	Storage Strap
36.	GD7904-02	1	Tube
37.	G10216	3	Washer, 1/2" USS
38.	G10039	5	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10111	5	Lock Nut, 1/2"-13
39.	G10220	1	Machine Bushing
40.	G10507	1	Slotted Nut, 1"-14
41.	G10459	1	Cotter Pin, 3/16" x 1 1/2"
42.	GD1104	1	Dust Cap
43.	G10640	1	Grease Fitting, 1/4"-28
44.	G10004	2	Hex Head Cap Screw, 3/8"-16
	G10229	2	Washer, 3/8" SAE
45.	GD10487	1	Clamp
46.	GD10304	-	Angle, R.H.
	GD10303	1	Angle, L.H. (Shown)
47.	G10016	2	Hex Head Cap Screw, 1/2"-13 x 2"
	G10111	2	Lock Nut, 1/2"-13
A.	G7393X	-	Liquid Fertilizer Drop Tube Package, L.H. And R.H. (Items 22 And 44-47)

NOTCHED SINGLE DISC FERTILIZER OPENER

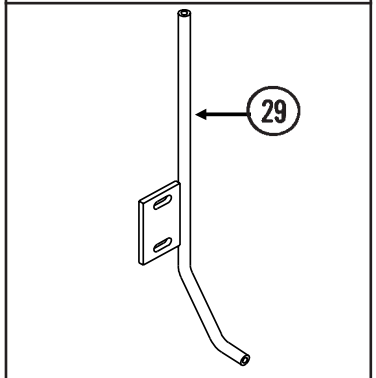
FOC018(PT65/PT67/PT57en)







Serial No. 609748 & On



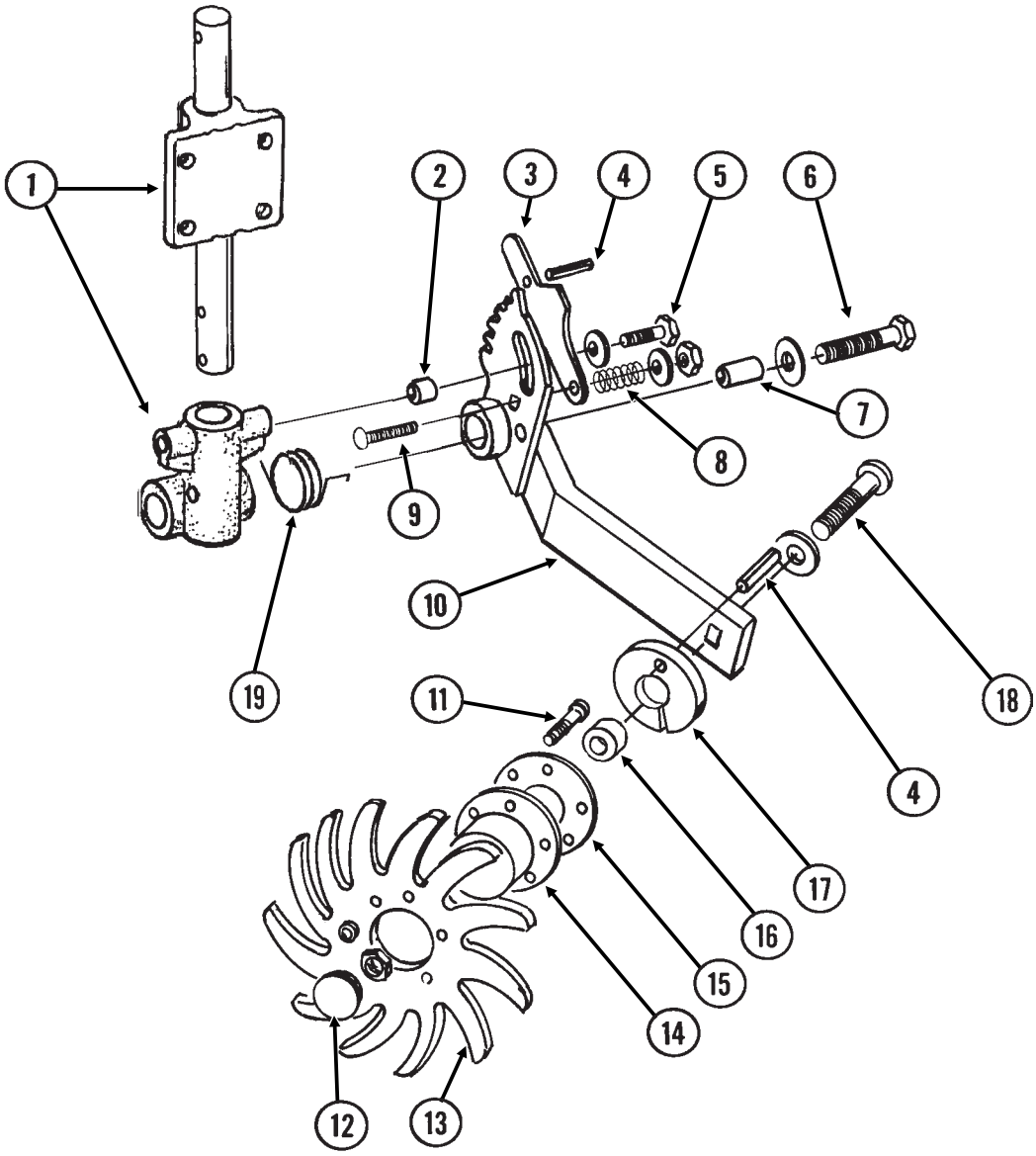
Prior To Serial No. 609748

NOTCHED SINGLE DISC FERTILIZER OPENER

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10014	2	Hex Head Cap Screw, 1/2"-13 x 1"
	G10102	2	Hex Nut, 1/2"-13
2.	GB0270	1	Mount
3.	G10476	3-4	Spring Pin, 3/8" x 2 1/4"
4.	GD1138	2	U-Bolt, 2 1/2" x 2 1/2" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
5.	GD9908	1	Shaft, 1 1/2" x 14"
6.	G10641	2	Grease Fitting, 1/8" NPT
7.	GB0250	1	Pivot
8.	G10450	2	Machine Bushing
9.	GD7818	1	Special Bolt
	GD7805	2	Special Washer
10.	GD11106	1	Spring
11.	G10047	1	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10210	1	Washer, 3/8"
	GD1026	1	Spacer, 1 3/16"
	G10108	1	Lock Nut, 3/8"-16
12.	GA6966	1	Compression Spring Assembly
13.	GD11097	1	Shield
14.	GA8007	1	Pivot Arm, L.H. (Shown)
	GA8008	-	Pivot Arm, R.H.
15.	GD7817-05	1	Spacer, 1 1/4"
16.	GB0249	1	Knife/Scraper, L.H. (Shown)
	GB0248	-	Knife/Scraper, R.H.
17.	G10306	2-3	Carriage Bolt, 3/8"-16 x 2"
	G10108	2-3	Lock Nut, 3/8"-16
18.	G10898	1	Carriage Bolt, 3/8"-16 x 2 3/4"
	G10210	1	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
19.	G10438	1	Hex Head Cap Screw, 1/2"-13 x 3/4"
20.	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
21.	G10886	6	Truss Head Bolt, 5/16"-18 x 1"
	G10106	6	Hex Nut, 5/16"-18
22.	GD9934	1	Blade, 16 3/4"
23.	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
24.	G10013	1	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
25.	GD1132	1	Dust Cap
26.	GA6972	1	Dry Drop Tube, R.H.
	GA6973	-	Dry Drop Tube, L.H. (Shown)
27.	G10043	2	Hex Head Cap Screw, 5/16"-18 x 3/4"
	G10232	2	Lock Washer, 5/16"
	G10219	2	Washer, 5/16" USS
28.	GA6984	1	Liquid Drop Tube, R.H. (Serial No. 611176 & On)
	GA6985	-	Liquid Drop Tube, L.H. (Shown) (Serial No. 611176 & On)
29.	GA7830	1	Liquid Drop Tube, R.H. (Prior To Serial No. 611176)
	GA7829	-	Liquid Drop Tube, L.H. (Shown) (Prior To Serial No. 611176)
30.	GA6967	1	Pivot Arm, L.H. (Shown)
	GA6968	-	Pivot Arm, R.H.

RESIDUE WHEEL, NOTCHED SINGLE DISC FERTILIZER OPENER MOUNTED

DFC024(FRTZ165i)

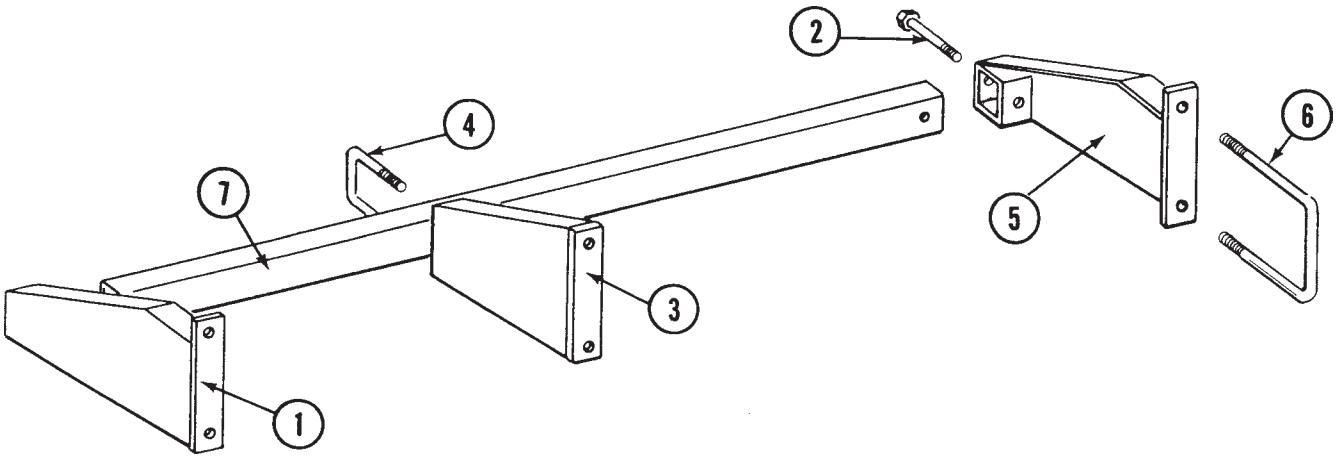


RESIDUE WHEEL, NOTCHED SINGLE DISC FERTILIZER OPENER MOUNTED

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.		-	See “Notched Single Disc Fertilizer Opener”, Pages P68 And P69
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
19.	GD11265	1	Spring, L.H. (Shown)
	GD11266	-	Spring, R.H.
A.	GA7445	-	L.H. Wheel Assembly (Items 11 And 13-15)(Shown)
	GA7446	-	R.H. Wheel Assembly (Items 11 And 13-15)

FERTILIZER OPENER MOUNTING BAR
(Double Disc And Notched Single Disc Fertilizer Openers)

FOC008(PT28)

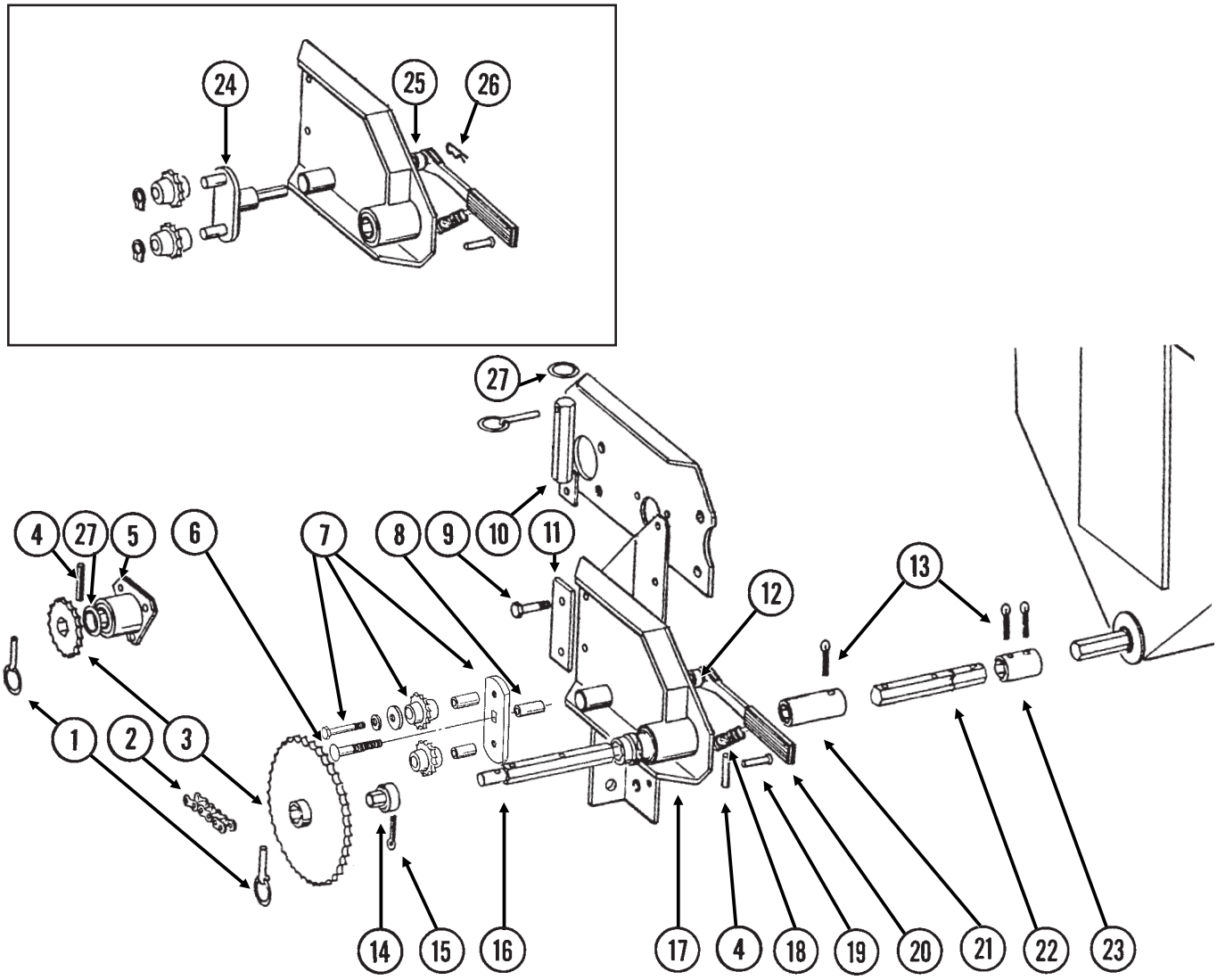


FERTILIZER OPENER MOUNTING BAR
(Double Disc And Notched Single Disc Fertilizer Openers)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5231	1	Support, L.H., Single Frame Planters Only
2.	G10035	2	Hex Head Cap Screw, 1/2"-13 x 4"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
3.	GA5237	1	Support, L.H. (Shown), 8 Row Only
	GA5236	1	Support, R.H., 8 Row Only
4.	GD1138	2	U-Bolt, 2 1/2" x 2 1/2" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
5.	GA5230	1	Support, R.H., Single Frame Planters Only
6.	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
7.	GD1685-14	1	Bar, 105", 4 Row 30"
	GD1685-15	-	Bar, 129", 4 Row 36"/38"
	GD1685-13	-	Bar, 165", 6 Row 30"
	GD1685-12	-	Bar, 205", 6 Row 36"/38"
	GD1685-16	-	Bar, 225", 8 Row 30"
A.	G6795X	-	Support Bundle (Items 1, 2, 4, 5 And 6)

DRY FERTILIZER TRANSMISSION ASSEMBLY

DFC008rev(PT29c/PT29b)

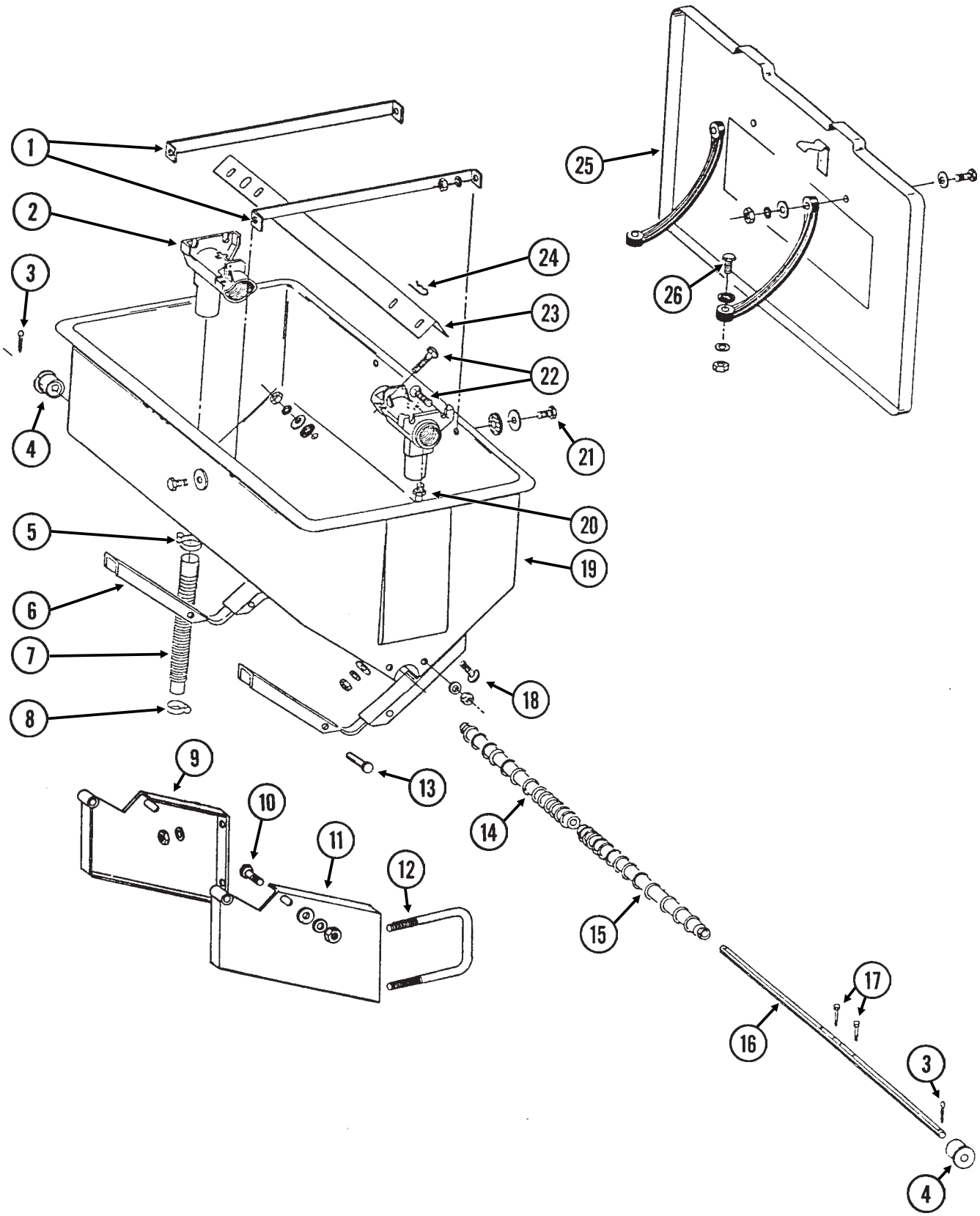


DRY FERTILIZER TRANSMISSION ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2558	3	Lynch Pin, 1/4"
2.	G3310-98	1	Chain, No. 40, 98 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
3.	GA5105	1	Sprocket, 15 Tooth
	GA5107	1	Sprocket, 19 Tooth
	GA5114	1	Sprocket, 30 Tooth
	GA5115	1	Sprocket, 33 Tooth
	GA6337	1	Sprocket, 35 Tooth
4.	G10602	2	Spring Pin, 1/4" x 1 1/2"
5.	GA5223	1	Spacer W/Bearing
	GA5116	-	Bearing
6.	G10419	1	Carriage Bolt, 1/2"-13 x 4 1/2"
	G10111	1	Lock Nut, 1/2"-13
7.	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"
8.	GD3180-17	1	Sleeve, 2 5/16"
9.	G10053	2	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10033	1	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10016	2	Hex Head Cap Screw, 1/2"-13 x 2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
10.	GA5229	1	Sprocket Storage Rod
11.	GD8246	1	Overlay
12.	GD10161	1	Spacer, 3/8"
13.	G10460	-	Cotter Pin, 1/4" x 2"
14.	GD7127	1	Shear Coupler
15.	G10462	1	Cotter Pin, 3/16" x 2"
16.	GD7870	1	Shaft, 7"
17.	GA5678	1	Plate W/Bearings And Grease Fitting
	GA5116	-	Bearing
	GA5624	-	Extended Bearing
	G10640	-	Grease Fitting, 1/4"-28
18.	GD5857	1	Spring
19.	G10408	1	Clevis Pin, 5/16" x 3/4"
	G10409	1	Ring, 5/16"
20.	GA4235	1	Ratchet Arm W/Protective Closure
	G10445	-	Protective Closure
21.	GD7867	-	Coupler, 3", 4 Row 36"/38" And 6 Row 36"/38"
22.	GD7871	-	Hex Shaft, 6", 4 Row 36"/38" And 6 Row 36"/38"
23.	GD5886	-	Coupler, 1 3/4"
24.	GA5136	1	Idler W/Sprockets And Rings
	GD7426	-	Sprocket
	G10435	-	Ring
25.	GD6819	1	Sleeve
26.	G10670	1	Hair Pin Clip, No. 3
27.	G10233	2	Machine Bushing, 1", 10 Gauge

DRY FERTILIZER HOPPER AND MOUNTS

DFC009/DFC014/DFC018(PT30a)



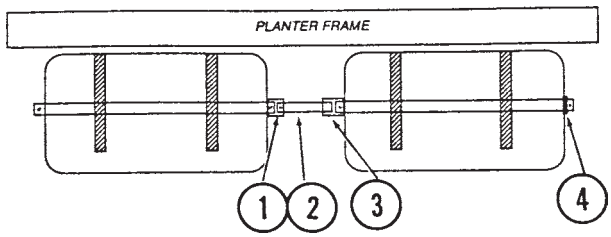
DRY FERTILIZER HOPPER AND MOUNTS

ITEM	PART NO.	QTY. (Per Hopper)	DESCRIPTION
1.	GD1209	2	Strap
2.	GD1200	2	Outlet Housing
3.	G10460	2	Cotter Pin, 1/4" x 2"
4.	GB0200	2	Bearing
5.	G10676	2	Clamp, No. 36
6.	GA5652	2	Saddle
7.	GD3790	2	Rubber Tube
8.	G10672	2	Clamp, No. 28
9.	GA0864	1	Hopper Mount, R.H.
10.	G10037	2	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10206	2	Washer, 1/2" SAE
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
11.	GA0863	1	Hopper Mount, L.H.
12.	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10177	-	Hex Head Cap Screw, 5/8"-11 x 9 1/2"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
13.	G10561	2	Clevis Pin, 1/2" x 3"
	G10451	2	Cotter Pin, 1/8" x 1"
14.	GB0198	1	Auger, R.H.
15.	GB0199	1	Auger, L.H.
16.	GD7848	1	Shaft
17.	G10587	2	Hex Head Cap Screw, 1/4"-20 x 2", Stainless Steel
	G10588	2	Hex Nut, 1/4"-20, Stainless Steel
18.	G10303	8	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10201	8	Special Washer
	GD1213	8	Rubber Washer
	G10232	8	Lock Washer, 5/16"
	G10106	8	Hex Nut, 5/16"-18
19.	GD1379	1	Hopper
20.	G10641	2	Grease Fitting, 1/8" NPT
21.	G10171	4	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10201	4	Special Washer
	GD1213	4	Rubber Washer
	G10232	4	Lock Washer, 5/16"
	G10106	4	Hex Nut, 5/16"-18
22.	G10303	8	Carriage Bolt, 5/16"-18 x 1", Grade 2
	G10219	8	Washer, 5/16" USS
	G10232	8	Lock Washer, 5/16"
	G10106	8	Hex Nut, 5/16"-18
23.	GD1207	1	Baffle
24.	G10670	2	Hair Pin Clip, No. 3
25.	GA0898	1	Lid With Retainers, Clips, Rivets, Rubber Straps And Hardware
	GD1380	-	Front Clip
	GD2412	-	Rear Retainer
	G10655	-	Rivet, 3/16" x 13/32"
	GD1210	-	Rubber Strap
	G10171	-	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10219	-	Washer, 5/16" USS
	G10232	-	Lock Washer, 5/16"
	G10106	-	Hex Nut, 5/16"-18
26.	G10133	2	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10219	2	Washer, 5/16" USS
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18
A.	GA5666	-	Hopper Sub-Assembly, (Items 2,6,18,19, 22 And 24)
B.	GA5667	-	Hopper Hardware Box, (Items 1, 21, 23 And 26)

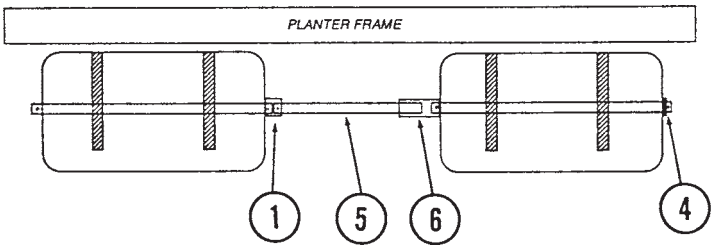
DRY FERTILIZER COUPLERS/SHAFTS

RH101190(PT31/PT32/PT33/PT34/PT35)

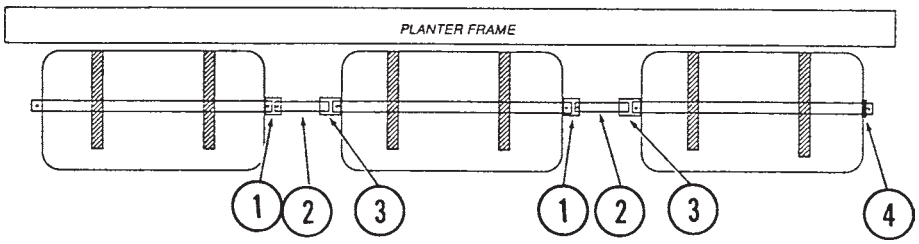
4 Row 30"



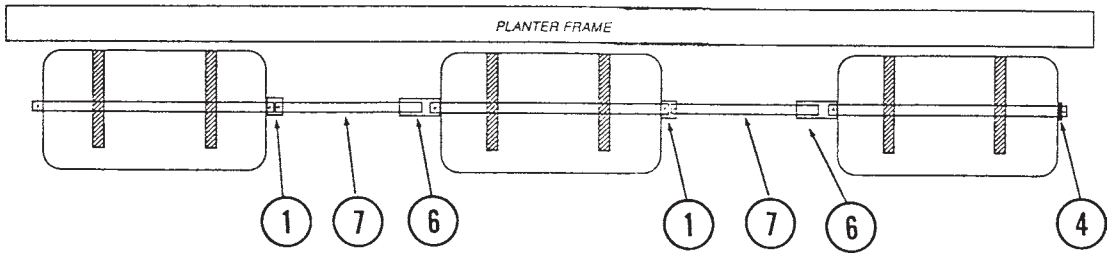
4 Row 36"/38"



6 Row 30"

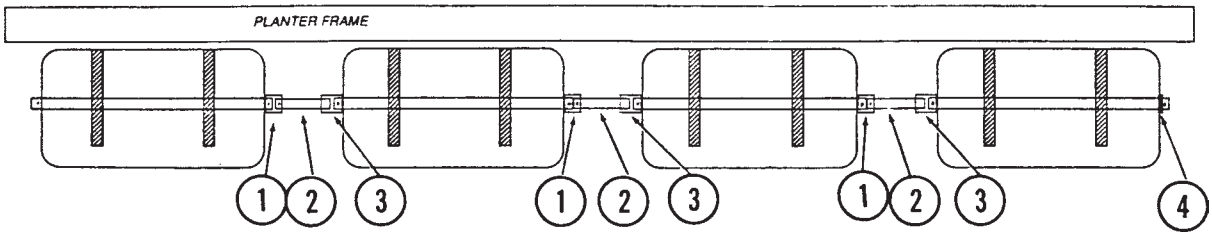


6 Row 36"/38"



DRY FERTILIZER COUPLERS/SHAFTS

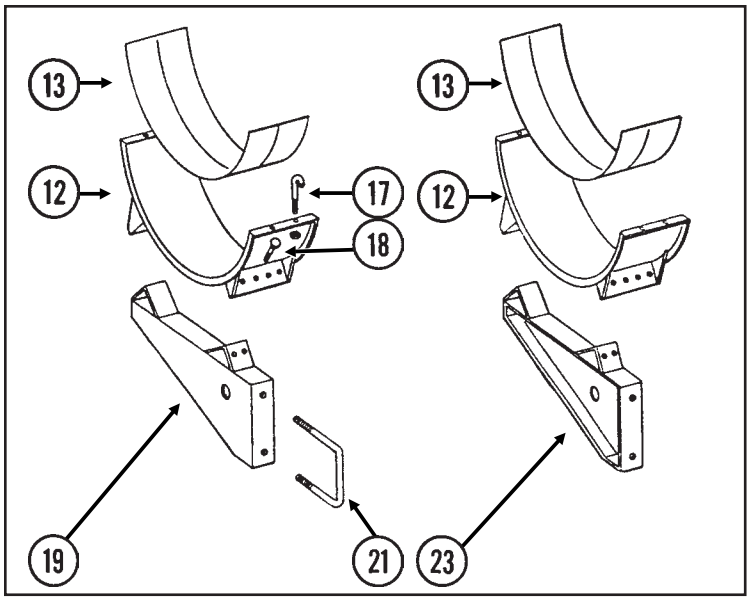
8 Row 30"

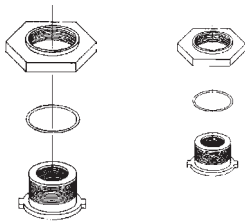


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD5886	-	Coupler, 1 3/4"
2.	GD2548-15.5	-	Shaft, 15 1/2"
3.	GD7867	-	Coupler, 3"
4.	G10233	2	Machine Bushing
5.	GD2548-25.5	-	Shaft, 25 1/2"
6.	GD7868	-	Coupler, 7"
7.	GD2548-27.5	-	Shaft, 27 1/2"

LIQUID FERTILIZER TANKS, SADDLES, MOUNTS, HOSES AND FITTINGS

LFC012rev(PT36c/PT51)

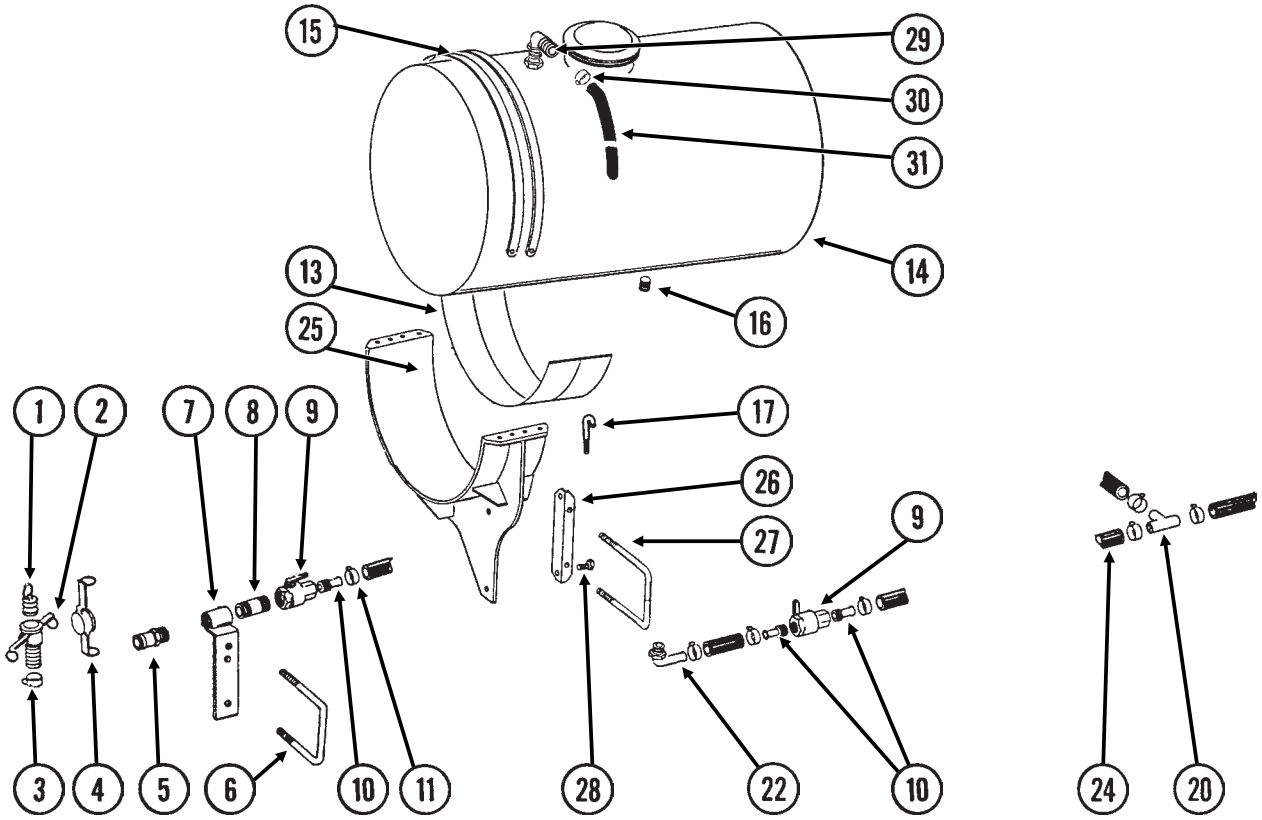




1 1/4" At Bottom Of Tank

3/4" At Bottom And Top Of Tank

Polypropylene Fitting Assemblies See Item 14

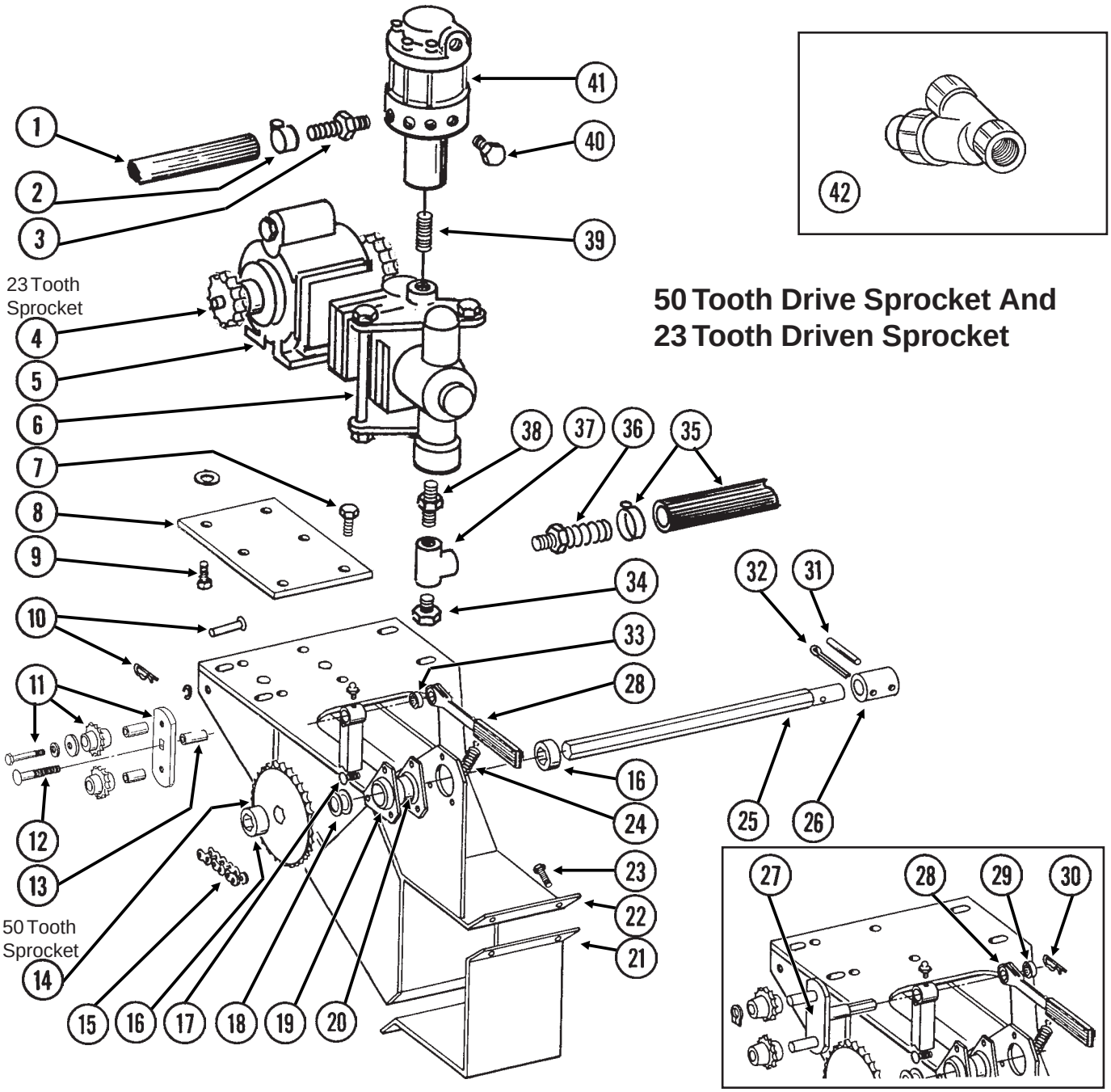


LIQUID FERTILIZER TANKS, SADDLES, MOUNTS, HOSES AND FITTINGS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD1517	1	Dust Plug
2.	GD1516	1	Adapter
3.	G10672	1	Clamp, No. 28
4.	GD1515	1	Dust Cap, 1 1/4"
5.	GD1514	1	Adapter
6.	GD7145	1	U-Bolt, 7" x 7" x 1/2"-13
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
7.	GA5917	1	Quick Fill Mount
8.	G10619	1	Pipe Nipple, 1 1/4" x 3"
9.	GA4976	-	Ball Valve, Full Port
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle
10.	G10626	-	Adapter, 1 1/4" NPT To 1 1/4" Barb Fitting
11.	G10674	-	Clamp, No. 24
12.	GA5264	-	Saddle
13.	GD1862	-	Pad, 8" x 14' (For Two 30" Tanks)
14.	GA5258	2	Tank W/Lid And Fittings, 30" x 110 Gallon, 4 Row
	GD1812	2	Tank W/Lid And Fittings, 30" x 150 Gallon, 6 And 8 Row
	GR1005	-	Fillwell, 10", Threaded (Top Of Tank)
	GR1006	-	Lid, 10", Threaded (Top Of Tank)
	GR0513	-	3/4" Polypropylene Fitting Assembly (Nut, Bushing And O-Ring)
	GR0508	-	1 1/4" Polypropylene Fitting Assembly (Nut, Bushing And O-Ring)
15.	GD1520	-	Band, 30"
16.	G10096	-	Plug, 3/4" Nylon
17.	GD1337	-	J-Bolt, 5/16"
	G10109	-	Lock Nut, 5/16"-18
18.	G10003	-	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10210	-	Washer, 3/8" USS
	G10229	-	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
19.	GA5799	-	Saddle Mount **(Sub GA7375 And GD10110)**
20.	G10633	-	Tee, 1 1/4"
21.	GD1114	-	U-Bolt, 7" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
22.	G10629	-	Elbow, 1 1/4"
23.	GA5800	-	Saddle Mount **(Sub GA7375 And GD10110)**
24.	G4200-01	1	Hose, 1 1/4" x 22', 4 Row
	G4200-02	-	Hose, 1 1/4" x 27', 6 Row
	G4200-03	-	Hose, 1 1/4" x 32', 8 Row
25.	GA7375	-	Tank Mount (2 Per Tank)
26.	GD10110	-	Mounting Angle (2 Per Tank)
27.	GD1748	-	U-Bolt, 7" x 7" x 3/4"-10
	G10231	-	Lock Washer, 3/4"
	G10105	-	Hex Nut, 3/4"-10
28.	G10007	-	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
29.	G10917	2	Elbow, 90°, 3/4" NPT To Barb
30.	G10278	2	Hose Clamp, No. 16
31.	G4205-03	1	Hose, 3/4" x 97" (3/4" x 48 1/2" Per Tank)

LIQUID FERTILIZER PISTON PUMP DRIVE

LFC009/LFC024/LFC026/LFC027(FF65/PT37d/PT29b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G4300-03	1	Hose, 7/16" x 30', 4 Row
	G4300-10	-	Hose, 7/16" x 60', 6 Row
	G4300-05	-	Hose, 7/16" x 100', 8 Row
2.	G10673	-	Clamp, No. 8
3.	GD8816	-	Hose Barb
4.	GA6509	1	Sprocket W/Set Screw, 23 Tooth
5.		-	See “Liquid Fertilizer Piston Pump (Crankcase Assembly)”, Pages P86 And P87
6.		-	See “Liquid Fertilizer Piston Pump (Cylinder Assembly)”, Pages P88 And P89
7.	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
8.	GD9226	1	Plate

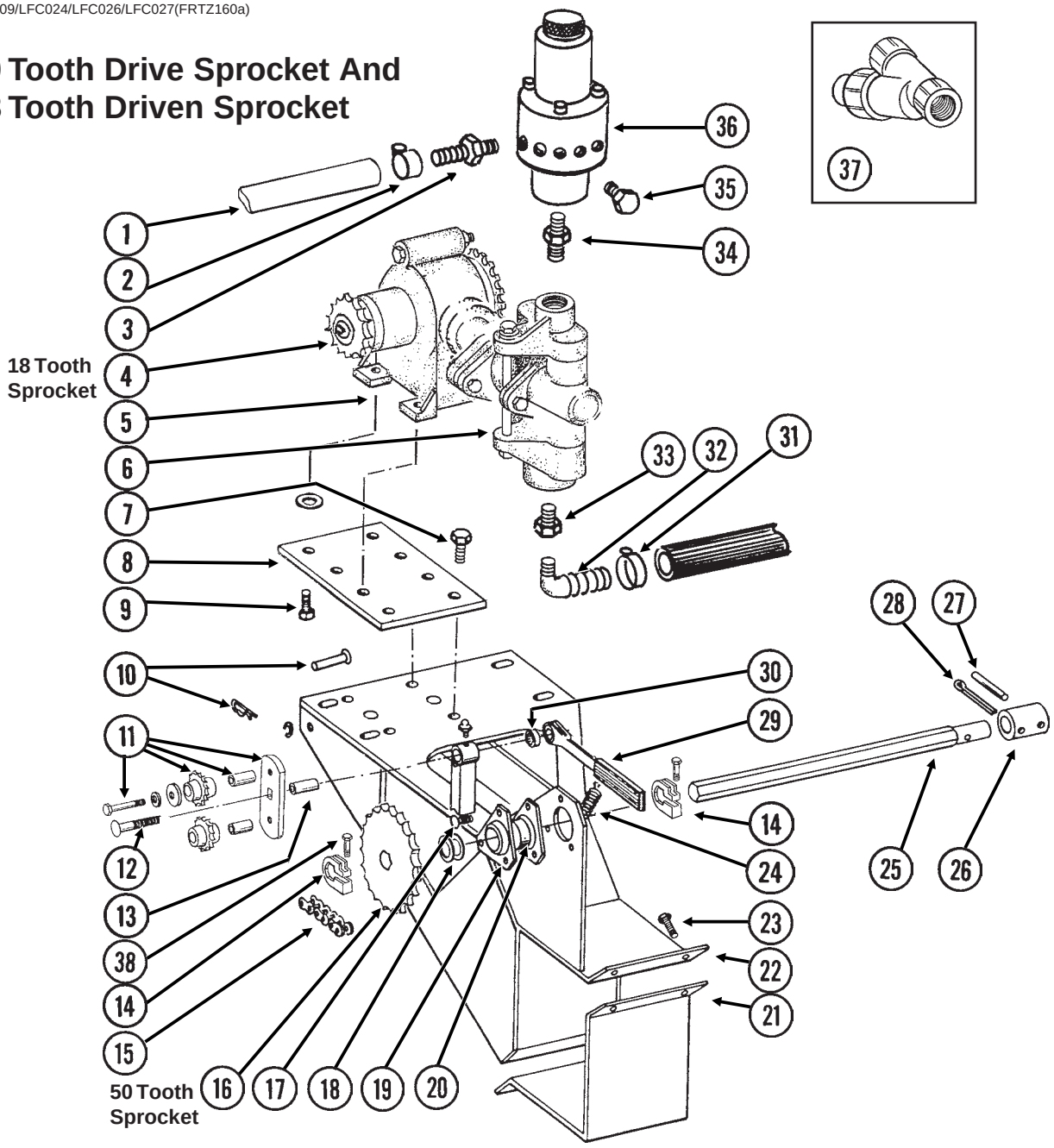
LIQUID FERTILIZER PISTON PUMP DRIVE

ITEM	PART NO.	QTY.	DESCRIPTION
9.	G10047	4	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10210	4	Washer, 3/8" USS
	GR1122	4	Mounting Pad
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
10.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Retaining Ring
	G10669	1	Hair Pin Clip, No. 22
11.	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"
12.	G10865	1	Carriage Bolt, 1/2"-13 x 4"
	G10111	1	Lock Nut, 1/2"-13
13.	GD3180-04	1	Sleeve, 2 1/8"
14.	GA5194	1	Sprocket, 50 Tooth
15.	G3310-144	1	Chain, No. 40, 144 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
16.	GD0917	2	Lock Collar, 7/8" Hex, Less Set Screws **(Sub G1K269)**
	G10145	-	Set Screw, 5/16"-18 x 1/2"
17.	G10303	3	Carriage Bolt, 5/16"-18 x 1"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18
18.	G10233	2	Machine Bushing
19.	G3400-01	2	Flangette
20.	G2100-03	1	Bearing, 7/8" Hex Bore, Spherical
21.	GD6182	1	Clamp
22.	GA6501	1	Drive Plate W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fitting, 1/4"-28
23.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
24.	GD5857	1	Spring
25.	GD5990	1	Shaft, 74"
26.	GD3839	1	Coupler, 2"
27.	GA5136	1	Idler W/Sprockets And Rings
	GD7426	-	Sprocket
	G10435	-	Ring
28.	GA4235	1	Ratchet Arm W/Protective Closure
	G10445	-	Protective Closure
29.	GD6819	1	Sleeve
30.	G10670	1	Hair Pin Clip, No. 3
31.	G10602	1	Spring Pin, 1/4" x 1 1/2"
32.	G10460	1	Cotter Pin, 1/4" x 2"
33.	GD10161	1	Spacer, 3/8"
34.	G10739	1	Pipe Plug, 1 1/4"
35.		-	See “Liquid Fertilizer Tanks, Saddles, Mounts, Hoses And Fittings”, Pages P80 And P81
36.	G10626	1	Adapter, 1 1/4" NPT To Barb Fitting
37.	G10719	1	Tee, 1 1/4"
38.	G10728	1	Reducing Pipe Nipple, 1 1/2" To 1 1/4"
39.	G10389	1	Pipe Nipple, 3/4"
40.	G10292	-	Plug, 1/4" NPT
41.		-	See “Liquid Fertilizer Piston Pump Flow Divider”, Pages P94 And P95
42.	GA3893	1	Strainer Complete
	GR0880	-	Screen, No. 40 Mesh
	GR0881	-	Gasket
	GR0882	-	“Y” Body
	GR0883	-	End Cap

LIQUID FERTILIZER PISTON PUMP DRIVE

LFC009/LFC024/LFC026/LFC027(FRTZ160a)

50 Tooth Drive Sprocket And 18 Tooth Driven Sprocket



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G4300-03	1	Hose, 7/16" x 30', 4 Row
	G4300-10	-	Hose, 7/16" x 60', 6 Row
	G4300-05	-	Hose, 7/16" x 100', 8 Row
2.	G10673	-	Clamp, No. 8
3.	GD8816	-	Hose Barb
4.		1	Sprocket W/Set Screw, 18 Tooth, See Pages P90 And P91
5.		-	See “Liquid Fertilizer Piston Pump W/18 Tooth Sprocket (Crankcase Assembly)”, Pages P90 And P91
6.		-	See “Liquid Fertilizer Piston Pump W/18 Tooth Sprocket (Cylinder Assembly)”, Pages P92 And P93
7.	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

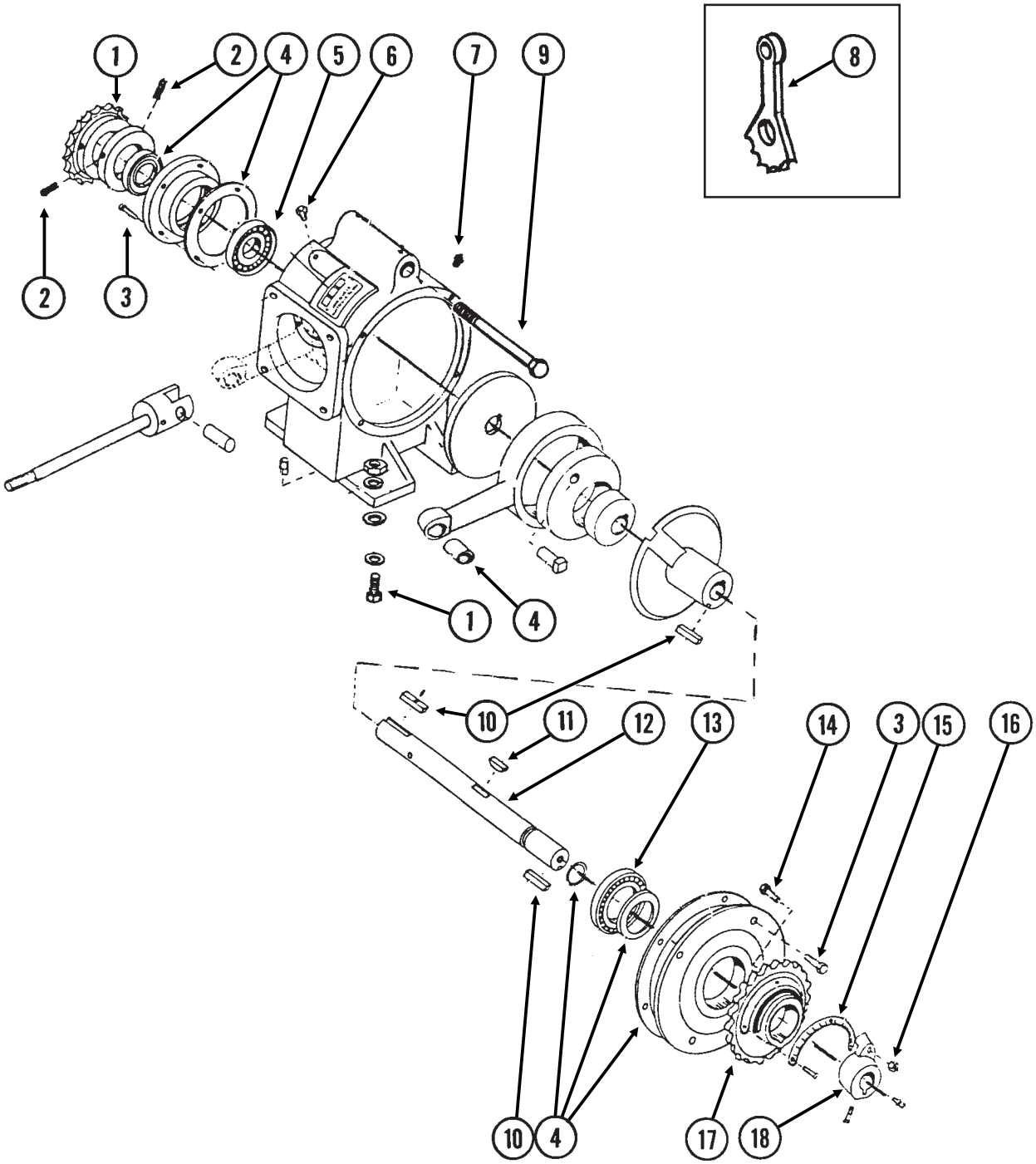
LIQUID FERTILIZER PISTON PUMP DRIVE

ITEM	PART NO.	QTY.	DESCRIPTION
8.	GD11180	1	Plate
9.	G10047	4	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10210	4	Washer, 3/8" USS
	GR1122	4	Mounting Pad
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
10.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Retaining Ring
	G10669	1	Hair Pin Clip, No. 22
11.	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"
12.	G10865	1	Carriage Bolt, 1/2"-13 x 4"
	G10111	1	Lock Nut, 1/2"-13
13.	GD3180-04	1	Sleeve, 2 1/8"
14.	GD11045	2	Lock Clamp
15.	G3310-126	1	Chain, No. 40, 126 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
16.	GA5194	1	Sprocket, 50 Tooth
17.	G10303	3	Carriage Bolt, 5/16"-18 x 1"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18
18.	G10233	2	Machine Bushing
19.	G3400-01	2	Flangette
20.	G2100-03	1	Bearing, 7/8" Hex Bore, Spherical
21.	GD6182	1	Clamp
22.	GA6501	1	Drive Plate W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fitting, 1/4"-28
23.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
24.	GD5857	1	Spring
25.	GD5990	1	Shaft, 74"
26.	GD3839	1	Coupler, 2"
27.	G10602	1	Spring Pin, 1/4" x 1 1/2"
28.	G10460	1	Cotter Pin, 1/4" x 2"
29.	GA4235	1	Ratchet Arm W/Protective Closure
	G10445	-	Protective Closure
30.	GD10161	1	Spacer, 3/8"
31.		-	See “Liquid Fertilizer Tanks, Saddles, Mounts, Hoses And Fittings”, Pages P80 And P81
32.	G10629	1	Elbow, 90°, 1 1/4" NPT To Barb Fitting
33.	G10615	1	Reducing Bushing, 1 1/2" Male To 1 1/4" Female
34.	G10618	1	Closed Nipple, 1"
35.	G10292	-	Plug, 1/4" NPT
36.		-	See “Liquid Fertilizer Piston Pump Flow Divider”, Pages P96 And P97
37.	GA3893	1	Strainer Complete
	GR0880	-	Screen, No. 40 Mesh
	GR0881	-	Gasket
	GR0882	-	“Y” Body
	GR0883	-	End Cap
38.	G10031	-	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	-	Flange Nut, 5/16"-18
A.	G1K269	-	Lock Clamp Kit (Items 14 And 38)

LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 23 Tooth Sprocket

JB-L4400-991/CCU077(FRTZ174)

John Blue® Model L-4405



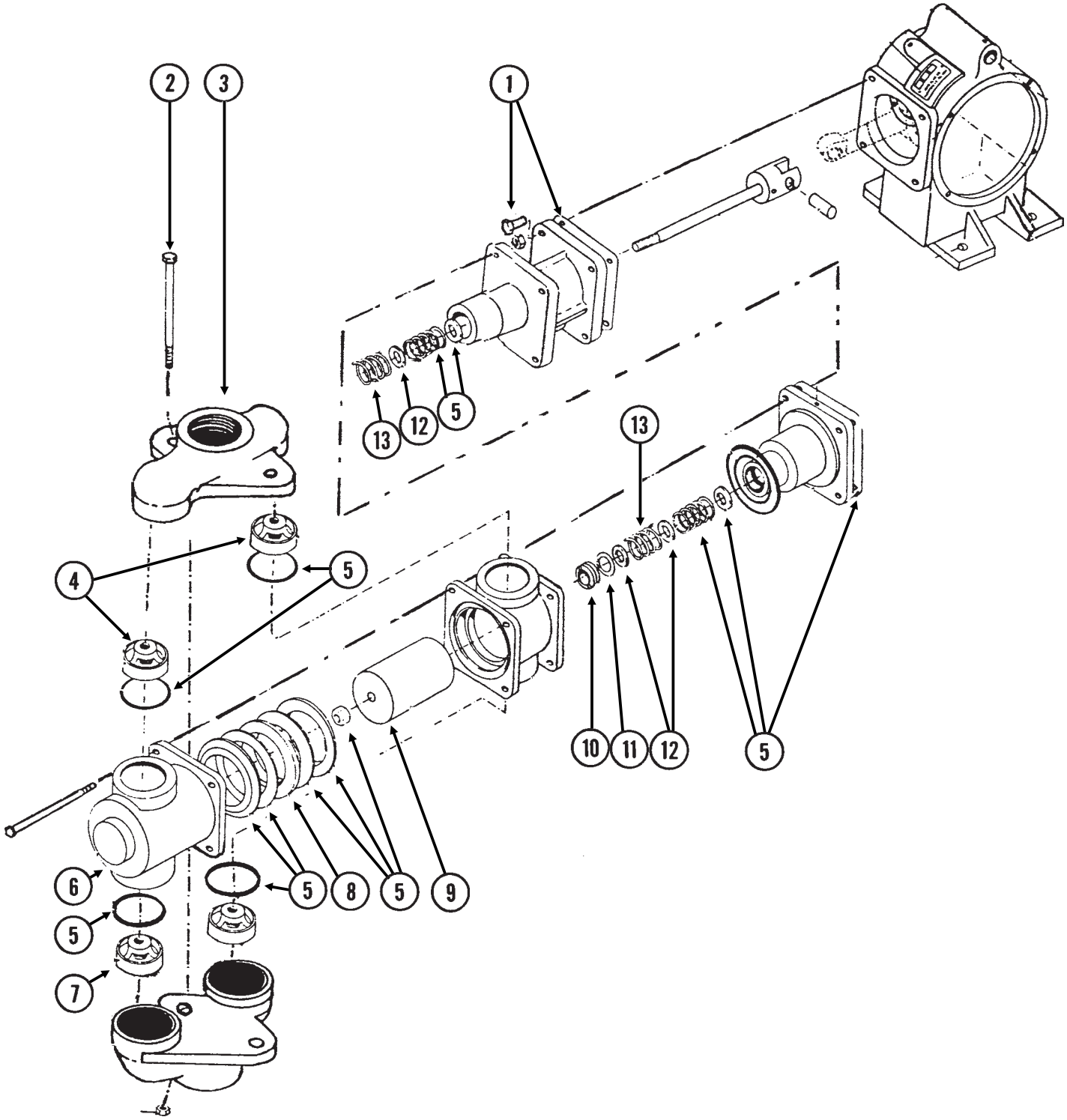
LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 23 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Liquid Fertilizer Piston Pump Drive”, Pages P82 And P83
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 P88 And P89
5.	GR1104	1	Bearing
6.	G10054	2	Hex Bolt, 5/16"-18 x 1/2"
7.	GR1107	1	Vent Plug
8.	GR1100	1	Adjustment Wrench
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
A.	GA6154	-	Piston Pump Complete Less 23 Tooth Sprocket (L-4405), Includes Crankcase Assembly On This Page And Cylinder Assembly On Pages P88 And P89

LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 23 Tooth Sprocket

JB-L2190-991(FRTZ173)

John Blue® Model L-4405



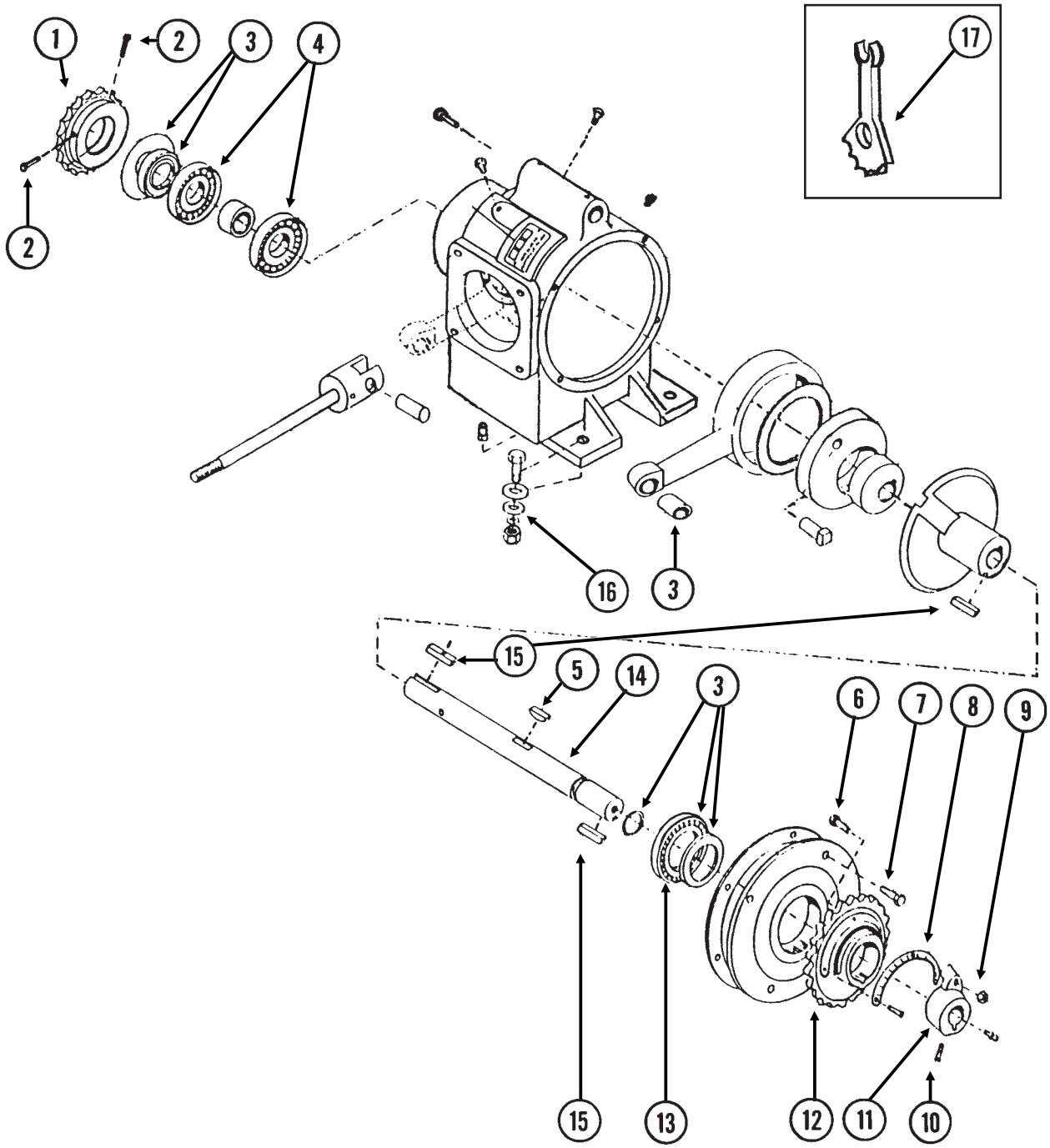
LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 23 Tooth Sprocket

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 P86 And P87
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



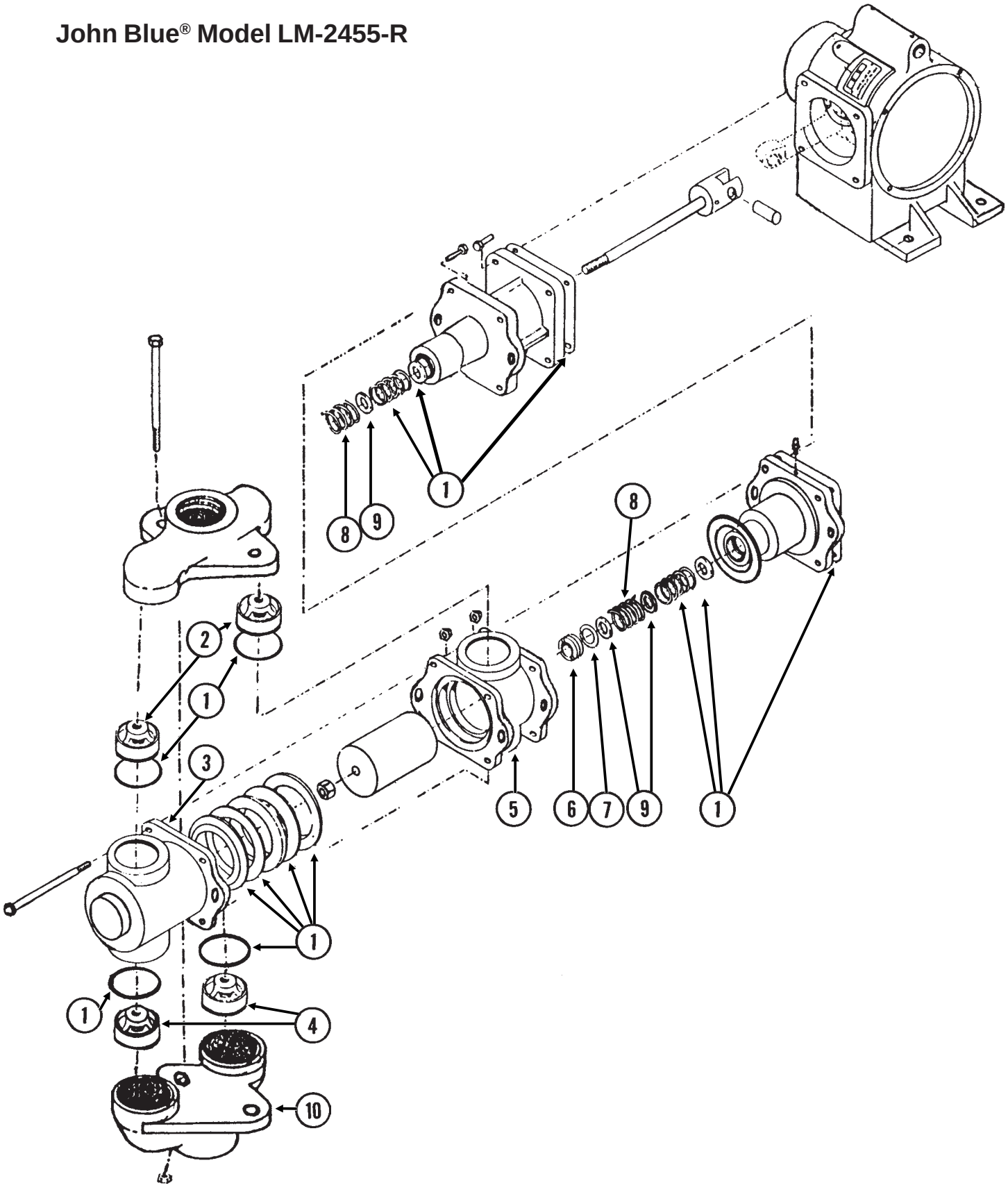
LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 18 Tooth Sprocket

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 P92 And P93
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 P84 And P85
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 P92 And P93

LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 18 Tooth Sprocket

JB-L2190-991(FRTZ171)

John Blue® Model LM-2455-R



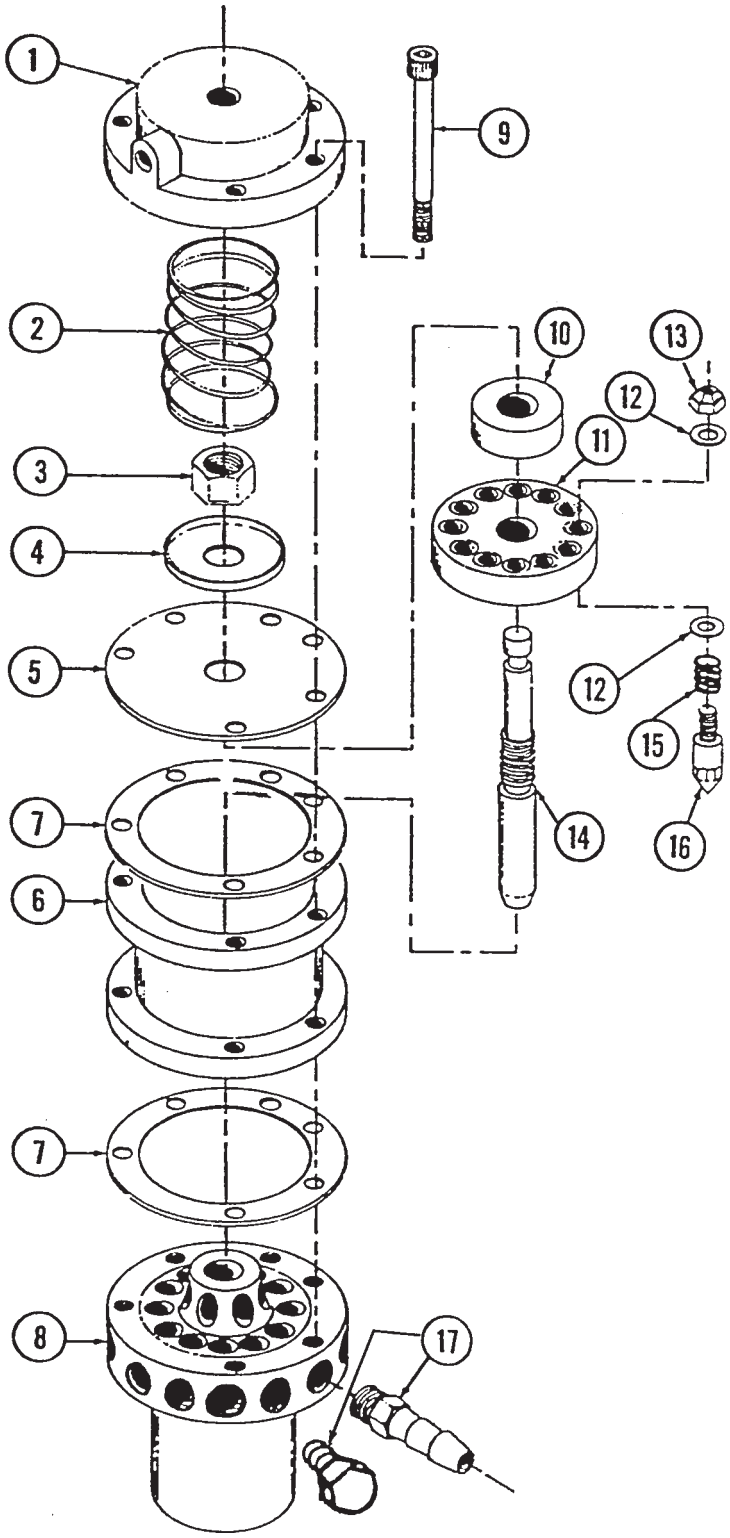
LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 18 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1425	1	Repair Kit, Also Includes Item 3 On Pages P90 And P91
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

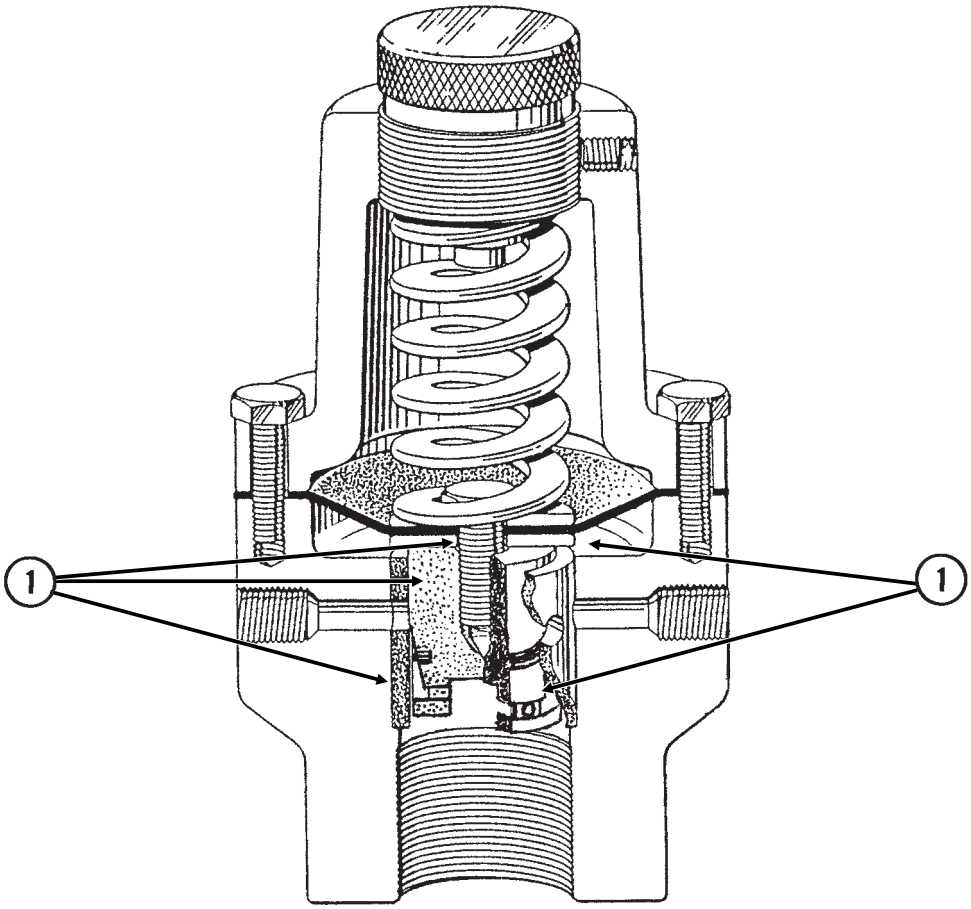
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1150	1	Cap
2.	GR1151	1	Spring
3.	G10358	1	Hex Nut, $^{9}/_{16}$"-18
4.	GR1152	1	Plate
5.	GR1153	1	Diaphram
6.	GR1154	1	Housing
7.	GR1155	2	Gasket
8.	*	1	Manifold
9.	GR1157	6	Socket Screw, $^{1}/_{4}$"
10.	GR1158	1	Lock
11.	*	1	Disk
12.	*	24	Stainless Steel Washer
13.	*	12	Valve Nut
14.	GR1162	1	Plunger
15.	*	12	Spring
16.	*	12	Valve
17.		-	See “Liquid Fertilizer Piston Pump Drive”, Pages P82 And P83
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



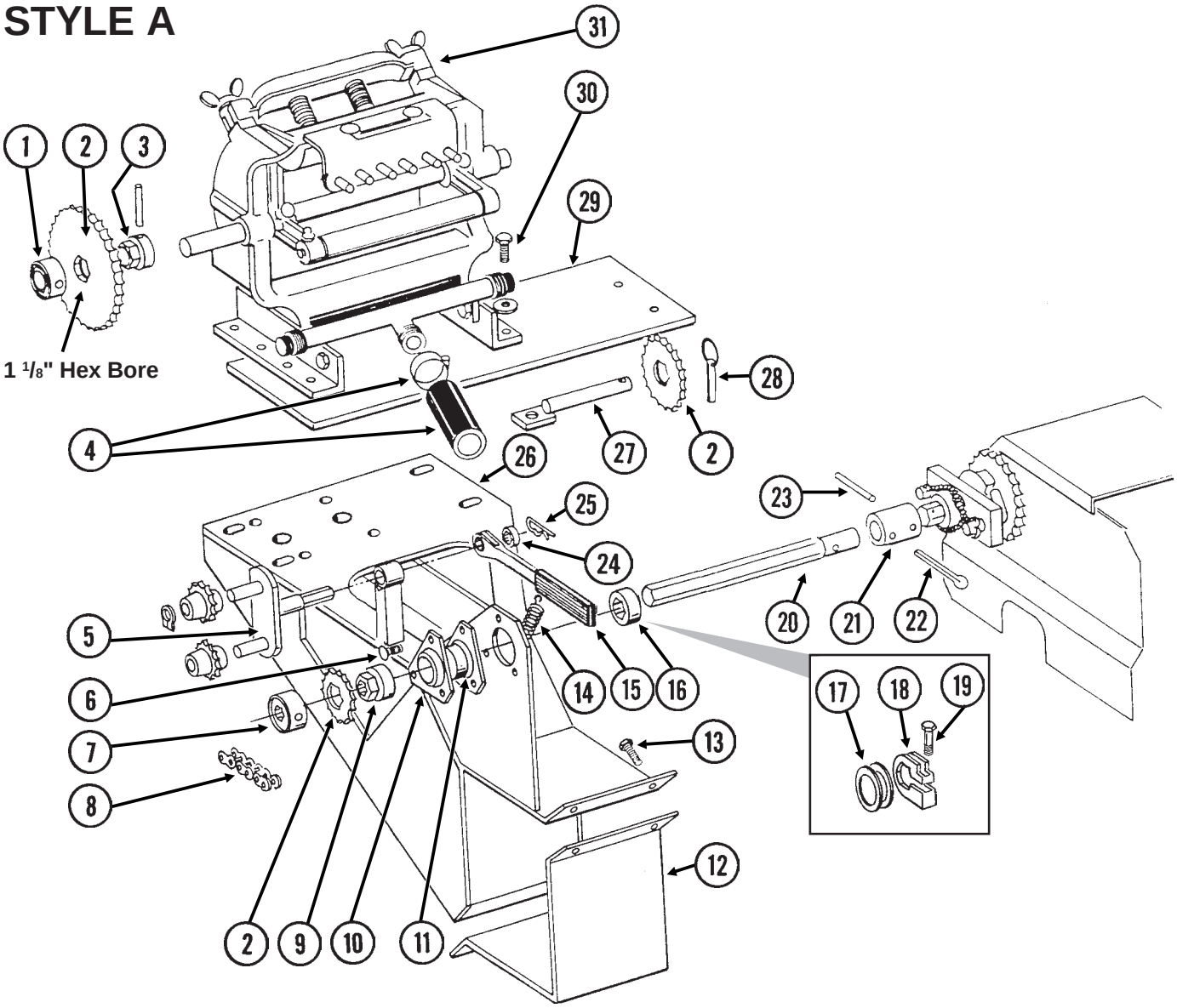
LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER

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

LIQUID FERTILIZER SQUEEZE PUMP MOUNTING BRACKET AND DRIVELINE

LFC009/LFC027(PT41a/PLTR128)

STYLE A



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD1215	1	Lock Collar W/Set Screws
	G10120	2	Set Screw, 3/8"-16 x 1/2"
2.	G2500-70	1	Sprocket, 16 Tooth
	G2500-71	1	Sprocket, 18 Tooth
	G2500-72	1	Sprocket, 20 Tooth
	G2500-73	1	Sprocket, 30 Tooth
	G2500-74	1	Sprocket, 44 Tooth
	G2500-75	1	Sprocket, 46 Tooth
	G2500-76	1	Sprocket, 52 Tooth
	G2500-78	1	Sprocket, 62 Tooth
	G2500-77	-	Sprocket, 60 Tooth (Optional)

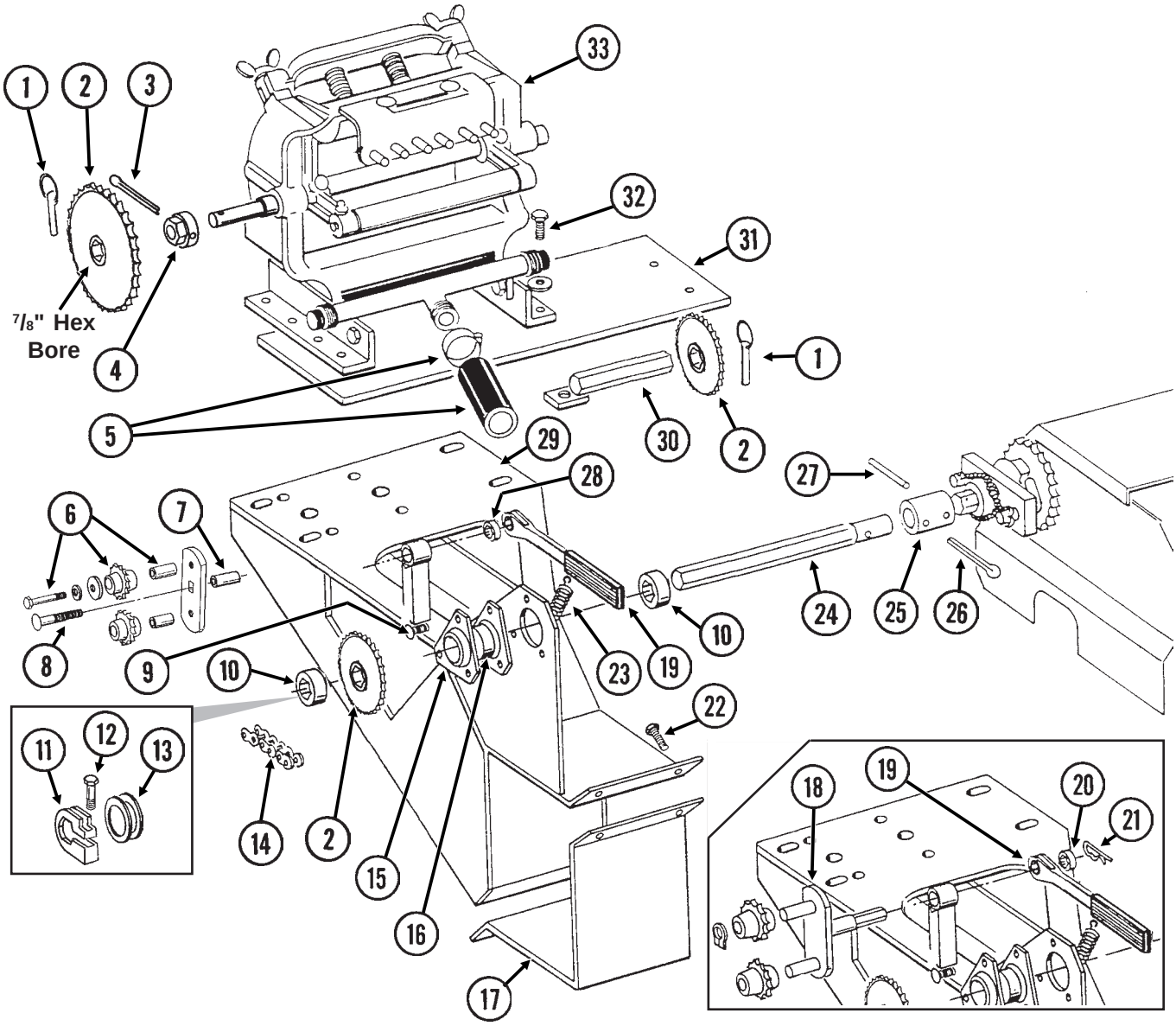
LIQUID FERTILIZER SQUEEZE PUMP MOUNTING BRACKET AND DRIVELINE

ITEM	PART NO.	QTY.	DESCRIPTION
3.	GD1216	1	Adapter (Less Spring Pin) W/Set Screws
	G10600	1	Spring Pin, 5/16" x 2 1/4"
	G10120	2	Set Screw, 3/8"-16 x 1/2"
4.		-	See “Liquid Fertilizer Tanks, Saddles, Mounts, Hoses And Fittings”, Pages P80 And P81
5.	GA5136	1	Idler W/Sprockets And Rings
	GD7426	-	Sprocket
	G10435	-	Ring
6.	G10303	3	Carriage Bolt, 5/16"-18 x 1"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18
7.	GA2355	1	Lock Collar W/Set Screws
	G10120	2	Set Screw, 3/8"-16 x 1/2"
8.	G3310-155	1	Chain, No. 40, 155 Pitch Including Connector And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
9.	GA2354	1	Adapter W/Set Screws
	G10120	2	Set Screw, 3/8"-16 x 1/2"
10.	G3400-01	2	Flangette
11.	G2100-03	1	Bearing, 7/8" Hex Bore, Spherical
12.	GD6182	1	Saddle Clamp
13.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
14.	GD5857	1	Spring
15.	GA4235	1	Ratchet Arm W/Protective Closure
	G10445	-	Protective Closure
16.	GD0917	1	Lock Collar, 7/8" Hex, Less Set Screws **(Sub G1K269)**
	G10145	2	Set Screw, 5/16"-18 x 1/2"
17.	G10233	-	Machine Bushing
18.	GD11045	-	Lock Clamp
19.	G10031	-	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	-	Flange Nut, 5/16"-18
20.	GD5988	-	Shaft, 36", 4 Row 30"/36"/38" And 6 Row 30"/36"/38"
	GD5990	-	Shaft, 74", 8 Row 30"
21.	GD3839	1	Coupler
22.	G10460	1	Cotter Pin, 1/4" x 2"
23.	G10602	1	Spring Pin, 1/4" x 1 1/2"
24.	GD6819	1	Sleeve
25.	G10670	1	Hair Pin Clip, No. 3
26.	GA6501	1	Drive Plate W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fitting, 1/4"-28
27.	GA5251	1	Sprocket Storage Rod
28.	GD2558	1	Lynch Pin, 1/4"
29.	GD6165	-	Plate, 8 Row Only
30.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	4	Washer, 3/8" USS
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
31.		-	See “Liquid Fertilizer Squeeze Pump”, Pages P102, P104 And P106
A	G1K269	-	Lock Clamp Kit (Items 18 And 19)

LIQUID FERTILIZER SQUEEZE PUMP MOUNTING BRACKET AND DRIVELINE

LFC009/LFC027(PT45b/PT29b/PLTR128a)

STYLE B



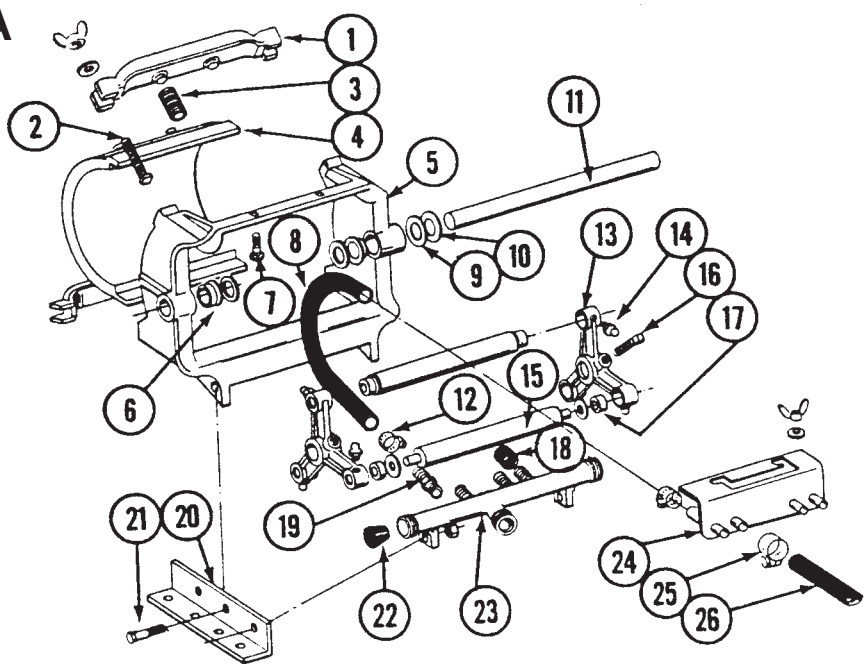
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2558	2	Lynch Pin, 1/4"
2.	GA5105	1	Sprocket, 15 Tooth
	GA5107	1	Sprocket, 19 Tooth
	GA6513	1	Sprocket, 32 Tooth
	GA5202	1	Sprocket, 34 Tooth
	GA6514	1	Sprocket, 46 Tooth
	GA6515	-	Sprocket, 62 Tooth (Optional)
3.	G10462	1	Cotter Pin, 3/16" x 2"
4.	GD7127	1	Shear Coupler
5.		-	See “Liquid Fertilizer Tanks, Saddles, Mounts, Hoses And Fittings”, Pages P80 And P81

LIQUID FERTILIZER SQUEEZE PUMP MOUNTING BRACKET AND DRIVELINE

ITEM	PART NO.	QTY.	DESCRIPTION
6.	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"
7.	GD3180-04	1	Sleeve, 2 1/8"
8.	G10865	1	Carriage Bolt, 1/2"-13 x 4"
	G10111	1	Lock Nut, 1/2"-13
9.	G10303	3	Carriage Bolt, 5/16"-18 x 1"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18
10.	GD0917	2	Lock Collar, 7/8" Hex, Less Set Screws **(Sub G1K269)**
	G10145	4	Set Screw, 5/16"-18 x 1/2"
11.	GD11045	-	Lock Clamp
12.	G10031	-	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	-	Flange Nut, 5/16"-18
13.	G10233	-	Machine Bushing
14.	G3310-140	1	Chain, No. 40, 140 Pitch Including Connector
	GR0912	-	Connector Link, No. 40
15.	G3400-01	2	Flangette
16.	G2100-03	1	Bearing, 7/8" Hex Bore, Spherical
17.	GD6182	1	Saddle Clamp
18.	GA5136	1	Idler W/Sprockets And Rings
	GD7426	-	Sprocket
	G10435	-	Ring
19.	GA4235	1	Ratchet Arm W/Protective Closure
	G10445	-	Protective Closure
20.	GD6819	1	Sleeve
21.	G10670	1	Hair Pin Clip, No. 3
22.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
23.	GD5857	1	Spring
24.	GD5988	-	Shaft, 36", 4 Row 30"/36"/38" And 6 Row 30"/36"/38"
	GD5990	-	Shaft, 74", 8 Row 30"
25.	GD3839	1	Coupler
26.	G10460	1	Cotter Pin, 1/4" x 2"
27.	G10602	1	Spring Pin, 1/4" x 1 1/2"
28.	GD10161	1	Spacer, 3/8"
29.	GA6501	1	Drive Plate W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fitting, 1/4"-28
30.	GA5229	1	Sprocket Storage Rod
31.	GD6165	-	Plate, 8 Row Only
32.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	4	Washer, 3/8" USS
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
33.		-	See “Liquid Fertilizer Squeeze Pump”, Pages P103, P105 And P107
A.	G1K269	-	Lock Clamp Kit (Items 11 And 12)

LFC011(PT42)

STYLE A

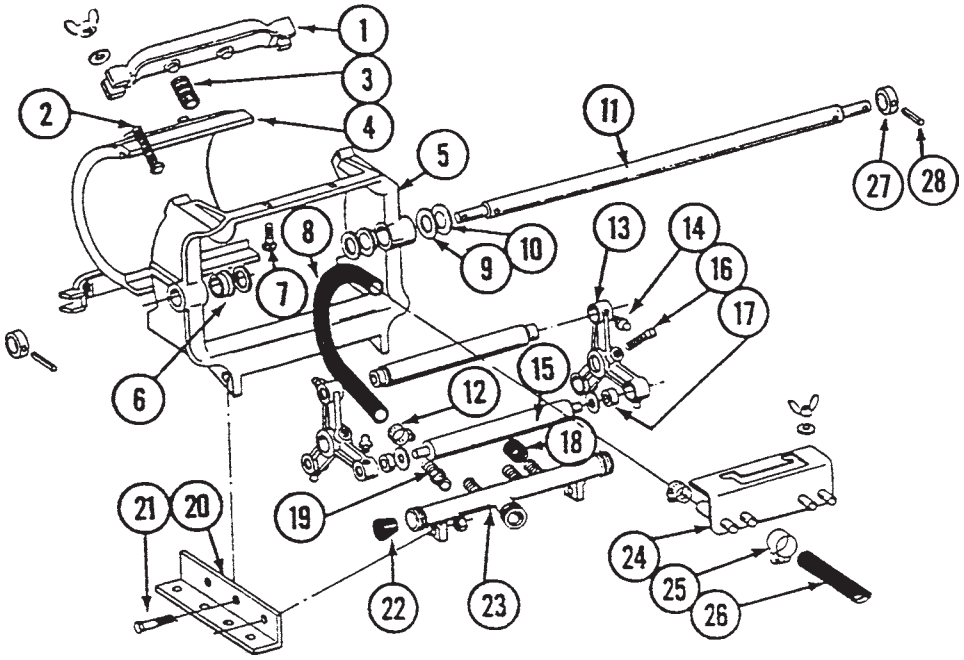


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0216	2	Spring Anchor Bar
2.	G10130	4	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
3.	GR0214	4	Spring
4.	GR0212	1	Plate
5.	GR0208	1	Frame
6.	GR0207	2	Nylon Bushing
7.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10219	2	Washer, 5/16" USS
	G10144	2	Wing Nut, 5/16"-18
8.	GR0215	4	Metering Hose, 1/2" x 13"
9.	GR0225	2	Shim, 1/32"
10.	GR0226	2	Shim, 3/64"
11.	GR0210	1	Shaft
12.	G10681	8	Clamp, No. 6
13.	GR0223	3	Roller Arm
14.	G10640	2	Grease Fitting, 1/4"-28
15.	GR0209	3	Roller
16.	G10131	2	Set Screw, 5/16"-18 x 3/4"
17.	GR0227	6	Nylon Bushing
18.	GR0211	2	Rubber Cap
19.	GR0232	4	Adapter
20.	GR0213	2	Angle
21.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10101	4	Hex Nut, 3/8"-16
22.	GR0217	2	Manifold Plug
23.	GR0228	1	Intake Manifold
24.	GR0224	1	Discharge Manifold
25.	G10673	-	Clamp, No. 8
26.	G4300-03	1	Hose, 7/16" x 30'
A.	GA0321	-	Squeeze Pump Complete, 4 Rows (Items 1-24)

LIQUID FERTILIZER SQUEEZE PUMP 4 ROW

LFC011(PT46)

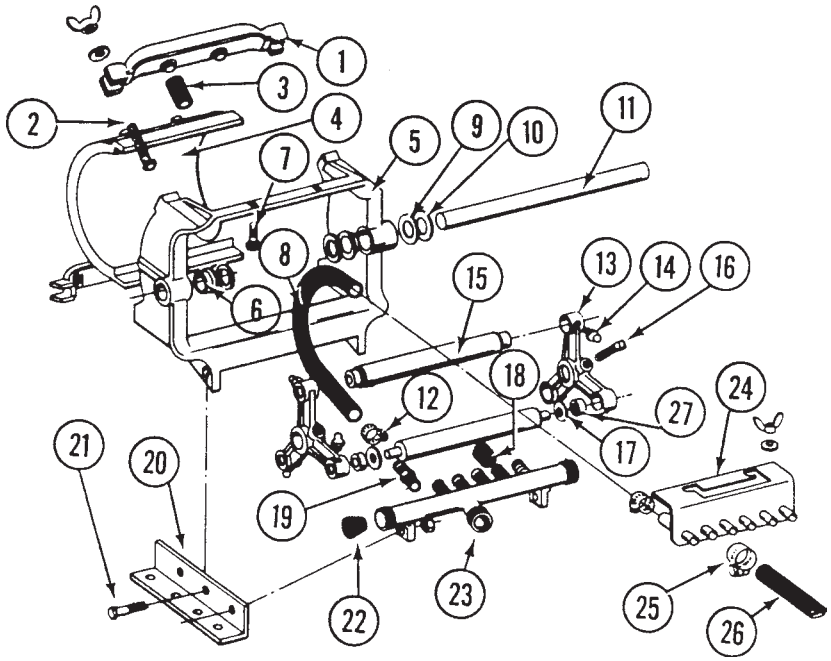
STYLE B



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0216	2	Spring Anchor Bar
2.	G10130	4	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
3.	GR0214	4	Spring
4.	GR0212	1	Plate
5.	GR0208	1	Frame
6.	GR0207	2	Nylon Bushing
7.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10219	2	Washer, 5/16" USS
	G10144	2	Wing Nut, 5/16"-18
8.	GR0215	4	Metering Hose, 1/2" x 13"
9.	GR0225	2	Shim, 1/32"
10.	GR0226	2	Shim, 3/64"
11.	GD9107	1	Shaft
12.	G10681	8	Clamp, No. 6
13.	GR0223	2	Roller Arm
14.	G10640	2	Grease Fitting, 1/4"-28
15.	GR0209	3	Roller
16.	G10131	2	Set Screw, 5/16"-18 x 3/4"
17.	GR0227	6	Nylon Bushing
18.	GR0211	2	Rubber Cap
19.	GR0232	4	Adapter
20.	GR0213	2	Angle
21.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10101	4	Hex Nut, 3/8"-16
22.	GR0217	2	Manifold Plug
23.	GR0228	1	Intake Manifold
24.	GR0224	1	Discharge Manifold
25.	G10673	-	Clamp, No. 8
26.	G4300-03	1	Hose, 7/16" x 30'
27.	GD9109	2	Sleeve
28.	G10718	2	Spring Pin, 5/16" x 1 1/8"
A.	GA6510	-	Squeeze Pump Complete, 4 Rows (Items 1-24)

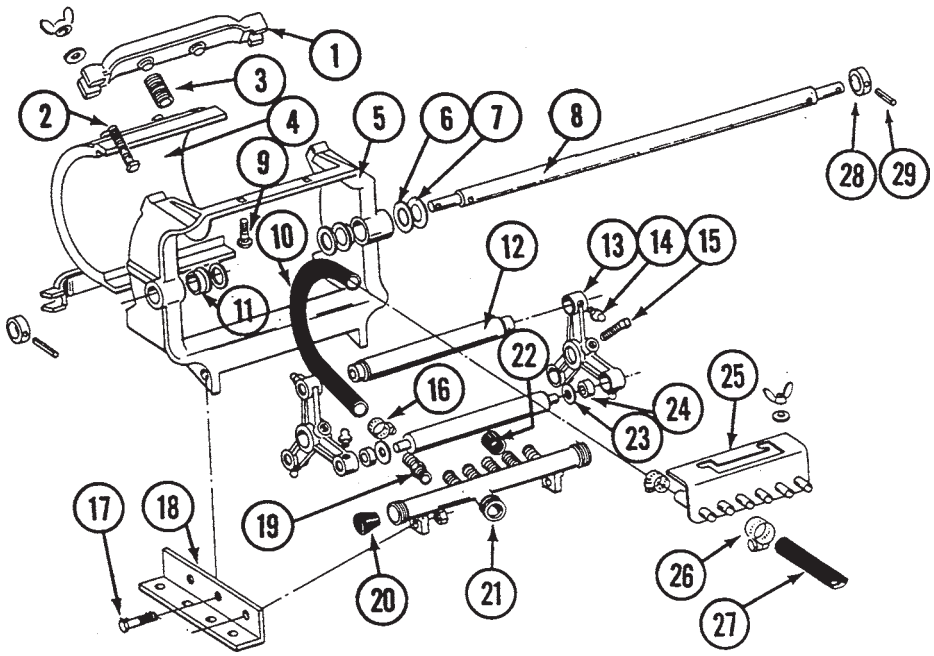
LFC011(PT43)

STYLE A



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0216	2	Spring Anchor Bar
2.	G10130	4	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
3.	GR0214	4	Spring
4.	GR0212	1	Plate
5.	GR0208	1	Frame
6.	GR0207	2	Nylon Bushing
7.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10219	2	Washer, 5/16" USS
	G10144	2	Wing Nut, 5/16"-18
8.	GR0215	6	Metering Hose, 1/2" x 13"
9.	GR0225	2	Shim, 1/32"
10.	GR0226	2	Shim, 3/64"
11.	GR0210	1	Shaft
12.	G10681	12	Clamp, No. 6
13.	GR0231	2	Roller Arm
14.	G10640	8	Grease Fitting, 1/4"-28
15.	GR0233	3	Roller
16.	G10131	2	Set Screw, 5/16"-18 x 3/4"
17.	GR0229	6	Nylon Bushing
18.	GR0211	-	Rubber Cap
19.	GR0232	6	Adapter
20.	GR0213	2	Angle
21.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10101	4	Hex Nut, 3/8"-16
22.	GR0217	2	Manifold Plug
23.	GR0228	1	Intake Manifold
24.	GR0224	1	Discharge Manifold
25.	G10673	-	Clamp, No. 8
26.	G4300-10	1	Hose, 7/16" x 60'
27.	GR0230	6	Roller Bearing
A.	GA0322	-	Squeeze Pump Complete, 6 Rows (Items 1-24 And 27)

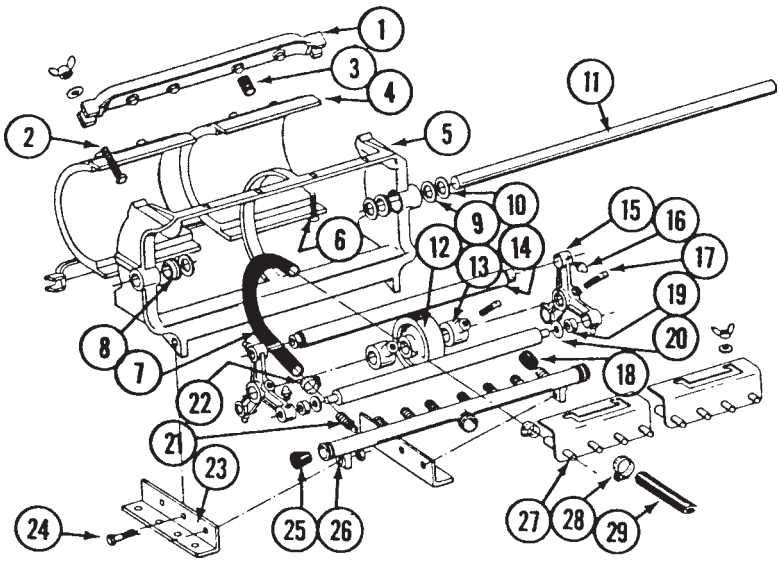
STYLE B



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0216	2	Spring Anchor Bar
2.	G10130	4	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
3.	GR0214	4	Spring
4.	GR0212	1	Plate
5.	GR0208	1	Frame
6.	GR0225	2	Shim, 1/32"
7.	GR0226	2	Shim, 3/64"
8.	GD9107	1	Shaft
9.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10219	2	Washer, 5/16" USS
	G10144	2	Wing Nut, 5/16"-18
10.	GR0215	6	Metering Hose, 1/2" x 13"
11.	GR0207	2	Nylon Bushing
12.	GR0233	3	Roller
13.	GR0231	2	Roller Arm
14.	G10640	8	Grease Fitting, 1/4"-28
15.	G10131	2	Set Screw, 5/16"-18 x 3/4"
16.	G10681	12	Clamp, No. 6
17.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10101	4	Hex Nut, 3/8"-16
18.	GR0213	2	Angle
19.	GR0232	6	Adapter
20.	GR0217	2	Manifold Plug
21.	GR0228	1	Intake Manifold
22.	GR0211	-	Rubber Cap
23.	GR0229	6	Nylon Bushing
24.	GR0230	6	Roller Bearing
25.	GR0224	1	Discharge Manifold
26.	G10673	-	Clamp, No. 8
27.	G4300-10	1	Hose, 7/16" x 60'
28.	GD9109	2	Sleeve
29.	G10718	2	Spring Pin, 5/16" x 1 1/8"
A.	GA6511	-	Squeeze Pump Complete, 6 Rows (Items 1-24 And 27)

LFC010(PT44)

STYLE A

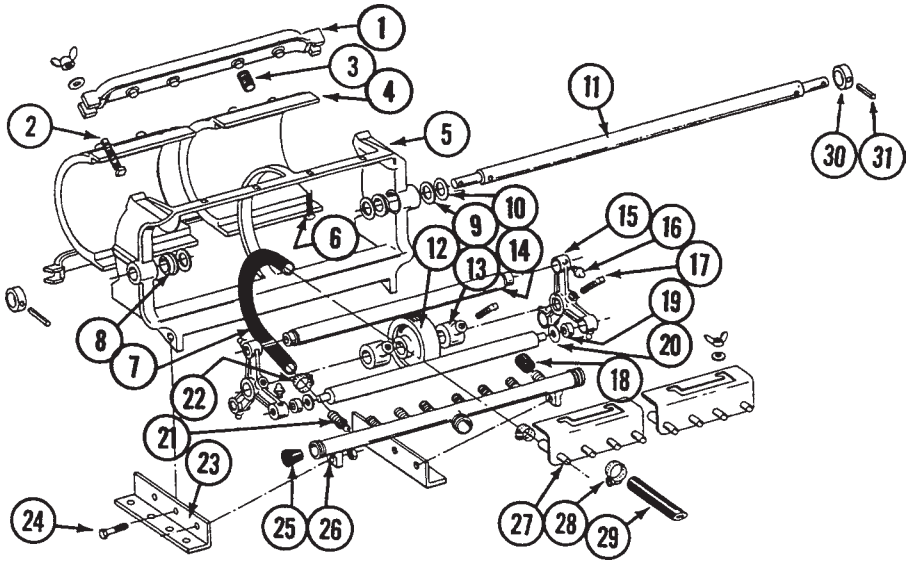


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0221	2	Spring Anchor Bar
2.	G10130	4	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
3.	GR0214	8	Spring
4.	GR0212	2	Plate
5.	GR0222	1	Frame
6.	G10303	4	Round Head Machine Bolt, 5/16"-18 x 1"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
7.	GR0215	8	Metering Hose, 1/2" x 13"
8.	GR0207	2	Nylon Bushing
9.	GR0225	4	Shim, 1/32"
10.	GR0226	4	Shim, 3/64"
11.	GR0220	1	Shaft
12.	GR0281	1	Back Up Roller
13.	GR0282	2	Set Collar
14.	GR0283	3	Roller
15.	GR0231	2	Roller Arm
16.	G10640	8	Grease Fitting, 1/4"-28
17.	G10131	2	Set Screw, 5/16"-18 x 3/4"
18.	GR0211	-	Rubber Cap
19.	GR0230	6	Bearing
20.	GR0229	6	Nylon Washer
21.	GR0232	8	Adapter
22.	G10681	16	Clamp, No. 6
23.	GR0279	1	Angle, Left
	GR0280	1	Angle, Right
24.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10101	4	Hex Nut, 3/8"-16
25.	GR0217	2	Manifold Plug
26.	GR0284	1	Intake Manifold
27	GR0236	2	Discharge Manifold
28.	G10673	-	Clamp, No. 8
29.	G4300-05	1	Hose, 7/16" x 100'
A.	GA0323	-	Squeeze Pump Complete, 8 Rows (Items 1-27)

LIQUID FERTILIZER SQUEEZE PUMP 8 ROW

LFC010(PT48)

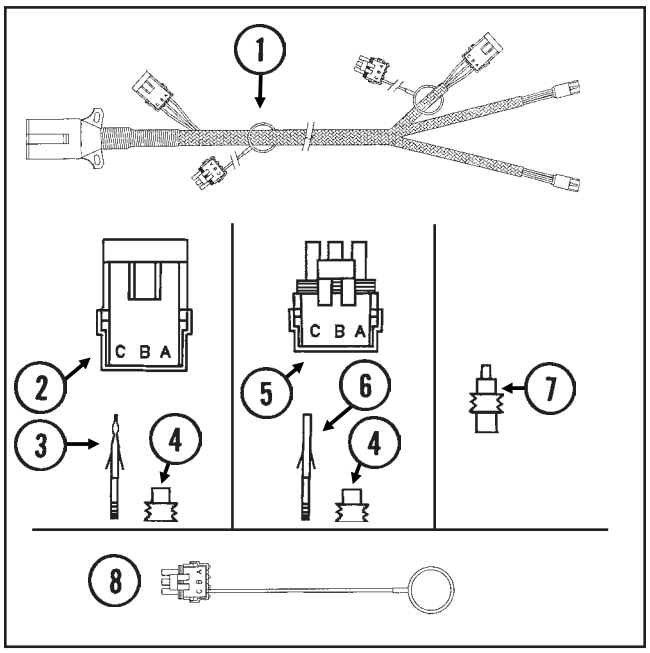
STYLE B

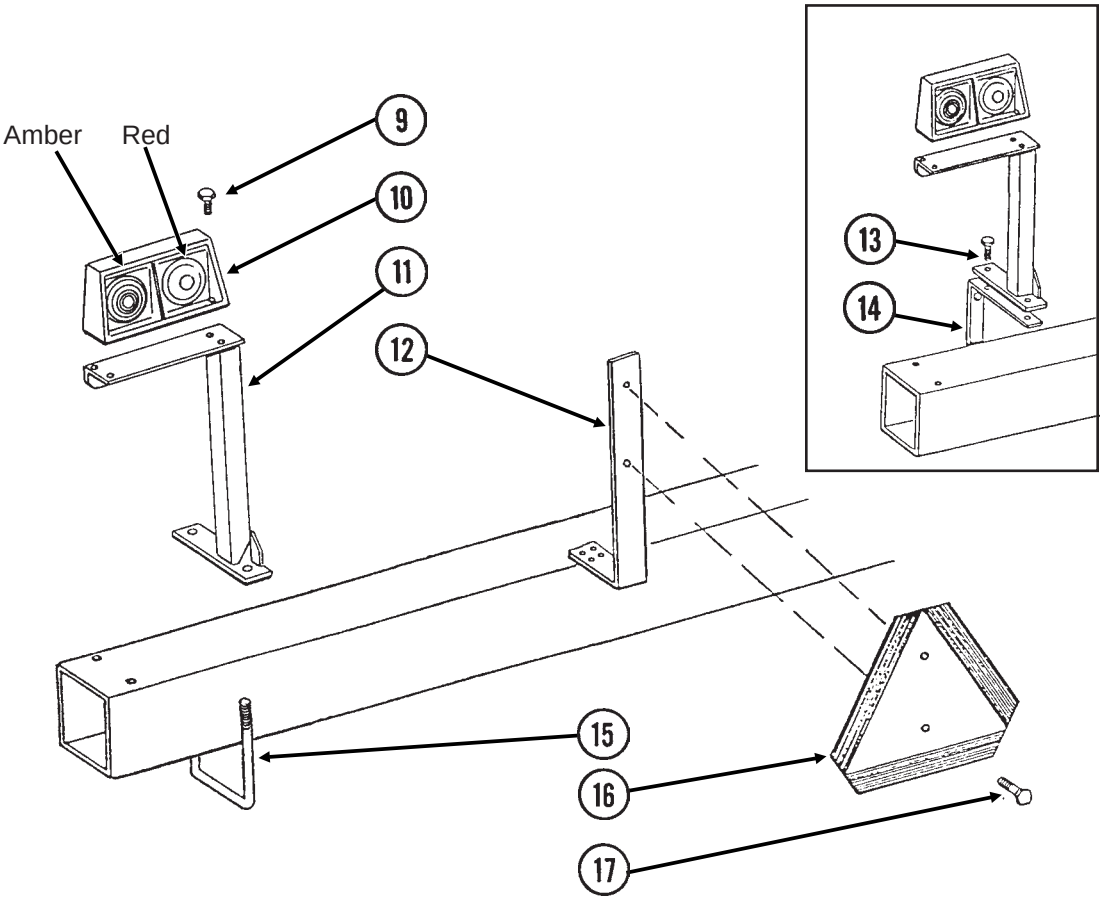


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0221	2	Spring Anchor Bar
2.	G10130	4	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
3.	GR0214	8	Spring
4.	GR0212	2	Plate
5.	GR0222	1	Frame
6.	G10303	4	Round Head Machine Bolt, 5/16"-18 x 1"
	G10219	4	Washer, 5/16" USS
	G10144	4	Wing Nut, 5/16"-18
7.	GR0215	8	Metering Hose, 1/2" x 13"
8.	GR0207	2	Nylon Bushing
9.	GR0225	4	Shim, 1/32"
10.	GR0226	4	Shim, 3/64"
11.	GD9108	1	Shaft
12.	GR0281	1	Back Up Roller
13.	GR0282	2	Set Collar
14.	GR0283	3	Roller
15.	GR0231	2	Roller Arm
16.	G10640	8	Grease Fitting, 1/4"-28
17.	G10131	2	Set Screw, 5/16"-18 x 3/4"
18.	GR0211	-	Rubber Cap
19.	GR0230	6	Bearing
20.	GR0229	6	Nylon Washer
21.	GR0232	8	Adapter
22.	G10681	16	Clamp, No. 6
23.	GR0279	1	Angle, Left
	GR0280	1	Angle, Right
24.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10101	4	Hex Nut, 3/8"-16
25.	GR0217	2	Manifold Plug
26.	GR0284	1	Intake Manifold
27	GR0236	2	Discharge Manifold
28.	G10673	-	Clamp, No. 8
29.	G4300-05	1	Hose, 7/16" x 100'
30.	GD9109	2	Sleeve
31.	G10718	2	Spring Pin, 5/16" x 1 1/8"
A.	GA6512	-	Squeeze Pump Complete, 8 Rows (Items 1-27)

ELECTRICAL COMPONENTS AND SMV SIGN

PFA052/PFA055(PT49d/ELC9)

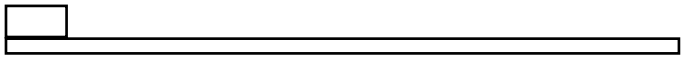




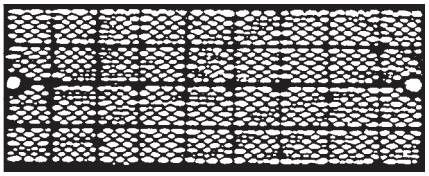
ELECTRICAL COMPONENTS AND SMV SIGN

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6814	-	Light Wiring Harness W/7 Terminal Female Connector, 329", 4 Row 30"/36"/38" And 6 Row 30"
	GA6815	-	Light Wiring Harness W/7 Terminal Female Connector, 395", 6 Row 36"/38" And 8 Row 30"
	GA5385	-	7 Terminal Female Connector
2.	GD11079	-	Housing
3.	GD11080	-	Pin Contact, No. 18
4.	GD11081	-	Seal
5.	GD11090	-	Housing
6.	GD11091	-	Socket Contact, No. 18
7.	GD11089	-	Sealing Plug
8.	GA8047	-	Dust Plug
9.	G10064	8	Hex Head Cap Screw, 1/4"-20 x 1"
	G10209	8	Washer, 1/4" USS
	G10110	8	Lock Nut, 1/4"-20
10.	GA6699	1	Double Light Assembly
	GA6700	1	Double Light Assembly (Shown)
	GR1203	-	Red Lens
	GR1204	-	Amber Lens
	GR1205	-	Cover
	GR1206	-	Rubber Grommet (4)
	GR1207	-	Lamp Unit
	GR1208	-	Bulb
11.	GA6823	1	Bracket, L.H. (Shown)
	GA6824	1	Bracket, R.H.
12.	GD7152	1	Bracket
13.	G10039	-	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
14.	GD8304	-	Bracket (Used To Mount Light Bracket When HD Single Disc Fertilizer Openers Are Used)
15.	GD7145	2	U-Bolt, 7" x 7" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
16.	GD2199	1	SMV Sign
17.	G10023	2	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10110	2	Lock Nut, 1/4"-20
A.	G1K248	-	Harness Ends Repair Kit, Includes:(3)GD11079, (9)GD11081 And (9)GD11080 (Items 2-4)
B.	G1K252	-	Harness Ends Repair Kit, Includes:(3)GD11090, (9)GD11081 And (9)GD11091 (Items 4-6)

DECALS, REFLECTORS AND TIE STRAPS



1



2

WARNING

TO AVOID INJURY --
STAND CLEAR--KEEP OTHERS AWAY WHEN RAISING OR LOWERING MARKERS. BEFORE TRANSPORTING PLANTER FULLY EXTEND HYDRAULIC CYLINDERS AND INSTALL LOCKING PINS WHERE PROVIDED.

7100-42

3

WARNING

1. Read and understand the Operator's Manual.
2. Stop the tractor engine before leaving the operator's platform.
3. Keep riders off the machine.
4. Make certain everyone is clear of the machine before starting the tractor engine and operating.
5. Keep all shields in place.
6. Never lubricate, adjust, unclog or service the machine with tractor engine running.
7. Wait for all movement to stop before servicing.
8. Keep hands, feet and clothing away from moving parts.
9. Use flashing warning lights when operating on highways except when prohibited by law.

7100-46

4

WARNING

TO AVOID INJURY ...
ALWAYS USE THE HYDRAULIC CYLINDER SAFETY LOCKUP CHANNEL WHEN SERVICING MACHINE IN RAISED POSITION OR WHEN TRANSPORTING MACHINE ON THE ROAD. AFTER USE RETURN TO STORAGE LOCATION.

7100-47

5

KINZE

6

WARNING

TOW ONLY WITH FARM TRACTOR

7100-56

7

Double Frame®

8

2000

9

DANGER

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

7100-89

10

WARNING

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.

7100-90

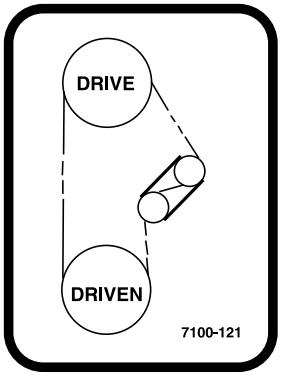
11

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.

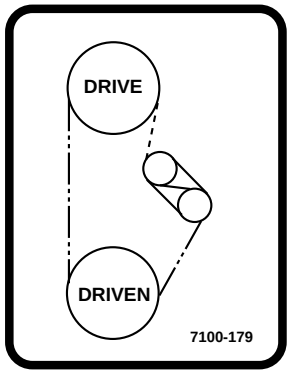
7100-115

12



7100-121

13



7100-179

14

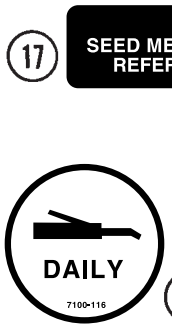
USE 1 TABLESPOON POWDERED GRAPHITE WITH EACH HOPPER FILL OF SEED. SEED TREATMENT, FOREIGN MATERIAL, DIRT, OR SEED CHAFF MAY CAUSE GRADUAL REDUCTION OF SEED POPULATION. REFER TO MANUAL FOR MAINTENANCE AND CARE.

7100-153

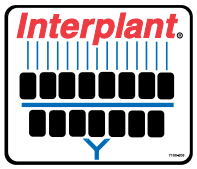
15

DECALS, REFLECTORS AND TIE STRAPS

16



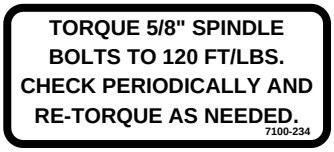
17



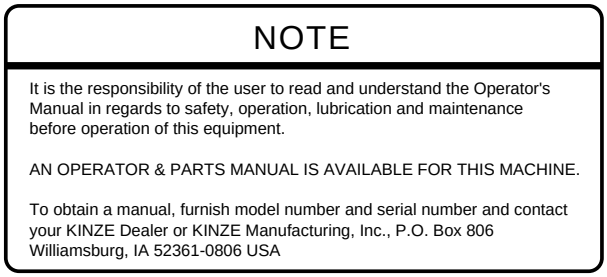
20

18

19



21



22

23

24

25

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD1162	-	Tie Strap, 28"
	GD1512	-	Tie Strap, 6"
	GD2117	-	Tie Strap, 14 1/2"
	GD2984	-	Tie Strap, 33"
2.	G7200-03	2	Reflector, Red
	G7200-04	2	Reflector, Amber
3.	G7100-42	4	Decal, Warning
4.	G7100-46	1	Decal, Warning
5.	G7100-47	2-4	Decal, Warning
6.	G7100-104	1	Decal, KINZE®, 3" x 12"
7.	G7100-56	1	Decal, Warning
8.	G7100-60	1	Decal, Double Frame®
9.	G7100-156	1	Decal, 2000
10.	G7100-89	2-4	Decal, Danger
11.	G7100-90	1	Decal, Warning
12.	G7100-115	-	Decal, Warning (1 Per Granular Chemical Hopper)
13.	G7100-121	1	Decal, Transmission
14.	G7100-179	1	Decal, Transmission (Interplant®)
15.	G7100-153	-	Decal, Information (1 Per Brush-Type Seed Meter)
16.	G7100-195	-	Decal, Logo (2 Per Row Unit)
17.	G7100-182	-	Decal, Meter Alignment (1 Per Row Unit)
18.	G7100-116	-	Decal, Grease Daily
19.	G7100-111	-	Decal, Oil Daily
20.	G7100-208	2	Decal, Interplant®
21.	G7100-234	-	Decal, Bolt Torque
22.	G7100-217	1	Decal, Note
23.	GR0155	-	Blue Paint, Aerosol
24.	GR0146	-	Powdered Graphite, 1 Pound
25.	GR1367	-	Talc Seed Lubricant, 8 Pounds

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX