MODEL 2600
TWIN-LINE® PLANTER

OPERATOR & PARTS MANUAL

M0159 Rev. 3/99

This manual is applicable to: Model: 2600 Twin-Line® Planters
Serial Number: 610000 and on

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

Model Number 2600

Serial Number _____

Date Purchased _____

SERIAL NUMBER

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

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

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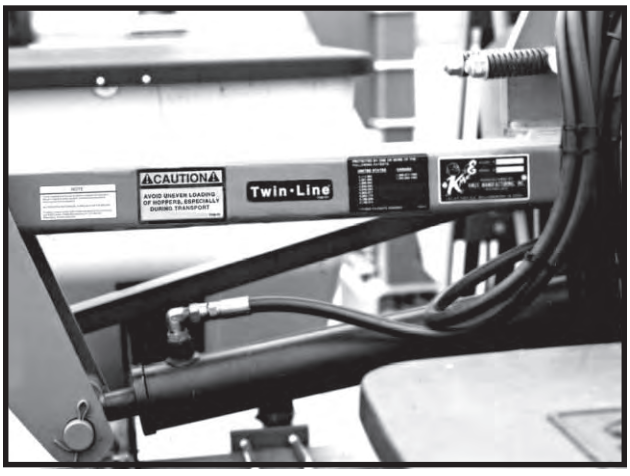

PREDELIVERY/DELIVERY CHECK LIST

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.
- ❑ The Row Unit Drive And Chain Packages have been removed from their shipping locations in the hopper on each end of the planter and installed to the left side of each hopper support. See “Row Unit Assembly And Installation Instruction”.
- ❑ The row marker blade assemblies have been removed from their shipping location over the planter hitch and installed on the row marker assembly at each end of the planter. See “Marker Adjustment” in the Machine Operation Section of this manual.
- ❑ 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

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TO THE OWNER

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

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

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

Throughout this manual the symbol  and the words NOTE, CAUTION, WARNING and DANGER are used to call your attention to important safety information. The definition of each of these terms used follows:

NOTE: Indicates a special point of information.

CAUTION: Indicates that a failure to observe can cause damage to the machine or equipment.

WARNING: Indicates that a failure to observe can cause damage to the machine or equipment and/or personal injury.

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

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

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

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

WARRANTY

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

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

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

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

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

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

INTRODUCTION

The Model 2600 Twin-Line® Planter is available in various configurations and row spacings. Optional interplant row spacing is obtainable with the addition of push type row units.

The Model 2600 Twin-Line® Planter permits installation of liquid or dry fertilizer application equipment and various row unit attachments.

GENERAL INFORMATION

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

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

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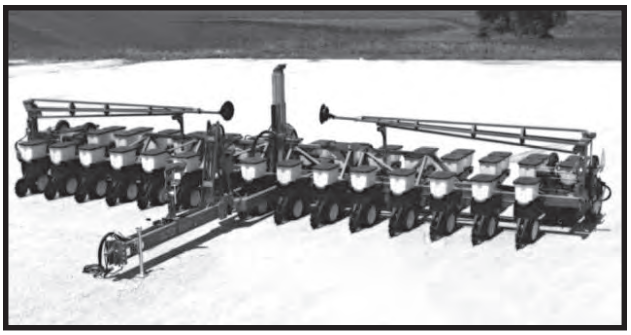

Shown With Interplant® Option

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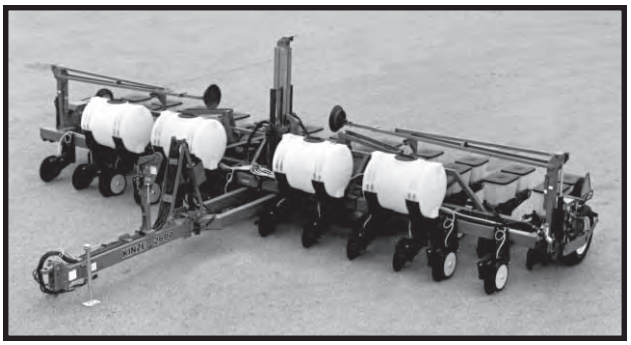

Shown With Liquid Fertilizer Option

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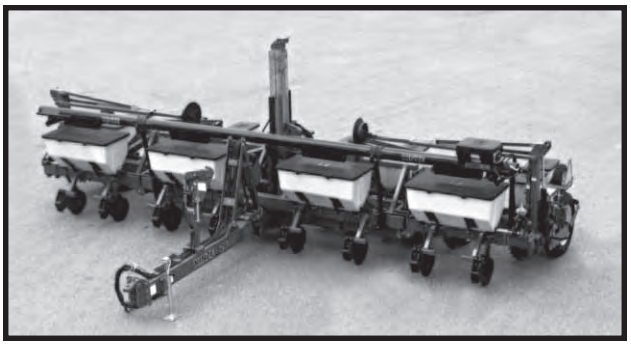

Shown With Dry Fertilizer And Quick Fill Options

SPECIFICATIONS

TYPE - Pull Type (Hydraulically rotates endwise to transport)

PLANTING UNIT TYPES - Push and Pull Row Units

ROW SPACING	**Pull**	**Interplant® Push**
	8 Row Wide - 36" or 38" Rows	15 - 18" or 19" Rows
	12 Row Narrow - 30" Rows	23 - 15" Rows
	12 Row Wide - 36" or 38" Rows	23 - 18" or 19" Rows
	16 Row Narrow - 30" Rows	31 - 15" Rows

DRIVE SYSTEM

Spring-loaded contact drive system
7.50" x 20", 6 ply, rib implement wing tire - two on 8 and 12 row, four on 16 row
4.8" x 8", 6 ply, contact drive tire - two on 8 and 12 row, four on 16 row
No. 40 roller chain and spring-loaded idlers
Point row clutches standard on 12 and 16 row sizes and optional on 8 row size
7/8" hex drill and drive shafts and end mounted seed transmissions

TRANSPORT TIRES

Equipped with four 255 - 70R x 22.5" radial load range H tubeless rib implement tires
Adjustable height wheels for ridge planting

TYPE LIFT

Master/slave hydraulics
8 and 12 row - 2 center lift (master) cylinders, 1 cylinder per wing wheel module (2 slave)
16 row - 2 center lift (master) cylinders, 2 cylinders per wing wheel module (4 slave)

MARKERS - Independently controlled. Two-fold low profile with depth band on marker blade

MACHINE OPTIONS

- Electronic Seed Monitors - KM1000, KM3000 with magnetic distance sensor or KM3000 with radar distance sensor (KPM I/KPM II - See Assembly Instruction IS364)
- Point Row Wrap Spring Clutch Package - Allows half width planting. (Std. 12/16 row, Optional 8 row)
- Two-Speed Point Row Wrap Spring Clutch Package - Allows half width planting and reduced rate planting (Available through KINZE® Repair Parts)
- Interplant Options
- Liquid Fertilizer Options
- Dry Fertilizer Options
- Quick Fill Auger For Dry Fertilizer
- Half Rate (2 To 1) Drive Reduction Package
- Rear Trailer Hitch
- Piston Pump Mount And Drive Package
- Rock Guard Package For Transport Wheel Arm

ROW UNIT OPTIONS/ATTACHMENTS

- Finger Pickup Or Brush-Type Seed Meters
- Closing Wheels - Rubber “V”, Cast Iron “V” Or Covering Discs/Single Press Wheel
- Granular Chemical Application
- Spring Tooth Incorporator
- Row Unit Extension Brackets
- Gauge Wheel Covers
- 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

SPECIFICATIONS

Dimensions/Operating

PLANTER SIZE	8 Row 36"/38"	12 Row 30"	12 Row 36"/38"	16 Row 30"
WIDTH	27' 1"	31' 2"	37' 2"	41' 2"
LENGTH - “Y” Hitch	19' 4"	21' 4"	22' 4"	24' 4"
LENGTH - “T” Hitch	17' 4"	19' 4"	20' 4"	22' 4"

Dimensions/Transport

PLANTER SIZE	8 Row 36"/38"	12 Row 30"	12 Row 36"/38"	16 Row 30"
WIDTH Std., fertilizer or push units	13' 4"	11' 2"	13' 4"	11' 2"
WIDTH Push unit with no till coulters Push unit with no till coulters and coulter mounted residue wheels	13' 4" 13' 4"	11' 4" 11' 8"	13' 4" 13' 4"	11' 4" 11' 8"
LENGTH	30' 6"	36' 10"	45' 10"	46' 10"
HEIGHT	10' 8"	10' 8"	10' 8"	11' 0"

NOTE: L.H. transport wheel and axle stub assembly (On Applicable Machines) is removable for truck transport at 10' 3" width on wide row machines and 9' 6" on narrow row machines.

PLANTER SIZE	8 Row 36"/38"	12 Row 30"	12 Row 36"/38"	16 Row 30"
*WEIGHT	10,794 lbs.	11,850 lbs.	12,534 lbs.	14,589 lbs.

* Base Machine weights include planter frame, row markers, drive components, tires and wheels, hydraulic cylinders, KINZE® pull row units (closing wheel arms less closing wheels) and point row clutches (12 row and up).

SAFETY PRECAUTIONS

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

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

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

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

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

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

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.

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

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.

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

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.

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

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

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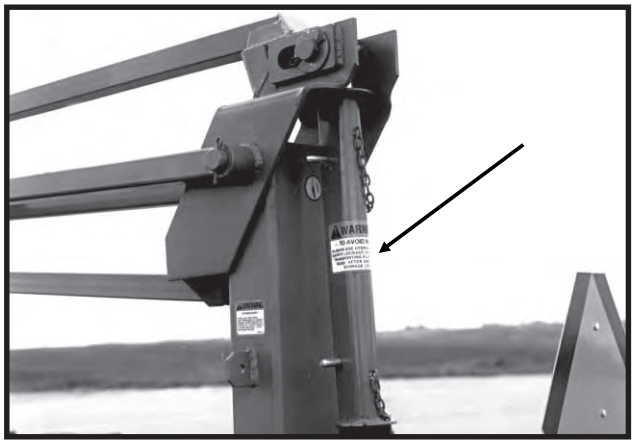


Watch for obstructions such as wires, tree limbs, etc., when folding markers.

On machines where the outer transport wheel on the left side of the planter is bolt-on to allow legal width truck shipment, always install outer transport wheel assembly prior to unloading. DO NOT REMOVE THIS ASSEMBLY AFTER PLANTER IS ASSEMBLED FOR USE. DO NOT fold planter or tow planter while the outer transport wheel is removed. Tipping may occur because of narrow wheel base.

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.

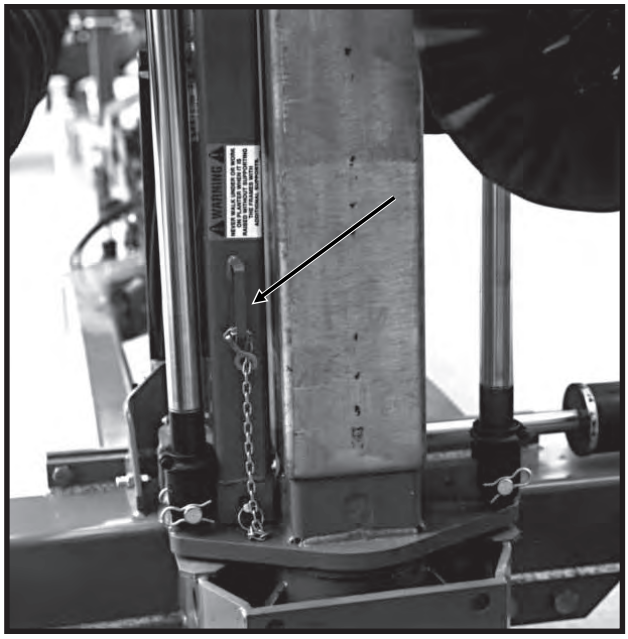
SAFETY PRECAUTIONS

Always install tongue safety pin, manual safety lockup and transport latch locking pin before transporting planter.

76609-35

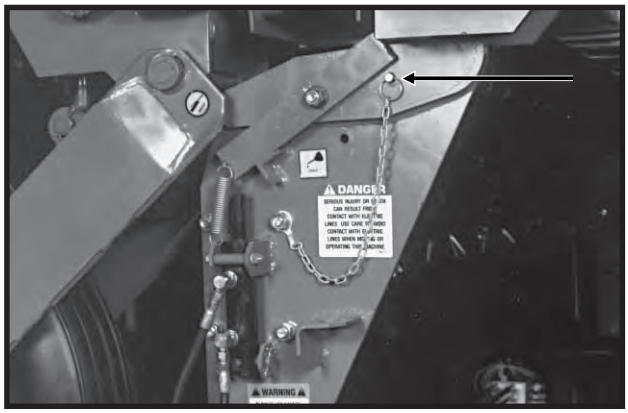
Tongue Safety Pin

81535-32



Manual Safety Lockup

81999-16



Transport Latch Locking Pin

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.

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.

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

Avoid transporting planter with hoppers loaded whenever possible. When it is necessary to transport the planter with the hoppers loaded, the added weight should be distributed evenly on the planter frame before rotating the planter.

Limit towing speed to 15 MPH. Tow only with farm tractor of a minimum 90 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.

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.

SAFETY PRECAUTIONS

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

Avoid sudden uphill turns on steep slopes.

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

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.

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.

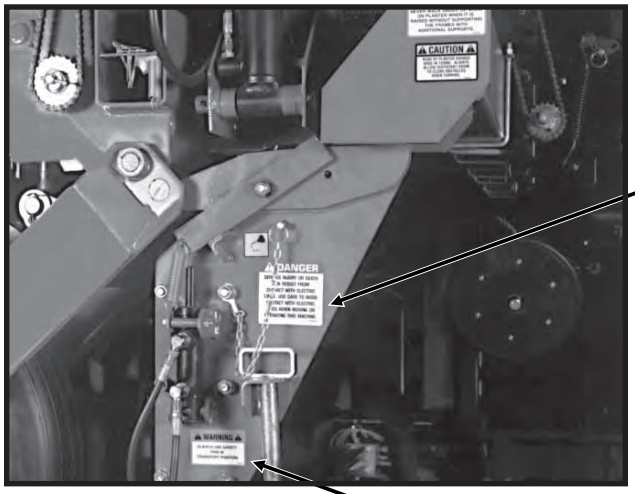
Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

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 decal 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.**

82079-2



DANGER

SERIOUS INJURY OR DEATH CAN RESULT FROM CONTACT WITH ELECTRICAL LINES. USE CARE TO AVOID CONTACT WITH ELECTRIC LINES WHEN MOVING OR OPERATING THIS MACHINE.

7100-117

Part No. G7100-117 (Qty. 1)

WARNING

ALWAYS USE SAFETY PINS IN TRANSPORT POSITION

7100-2

Part No. G7100-02 (Qty. 1)

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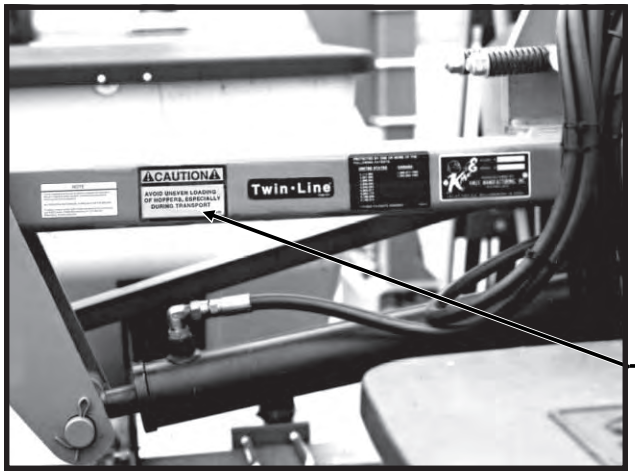

CAUTION

AVOID UNEVEN LOADING OF HOPPERS, ESPECIALLY DURING TRANSPORT

7100-75

Part No. G7100-75
(Qty. 4 - Front & Back/Left & Right)

SAFETY WARNING SIGNS

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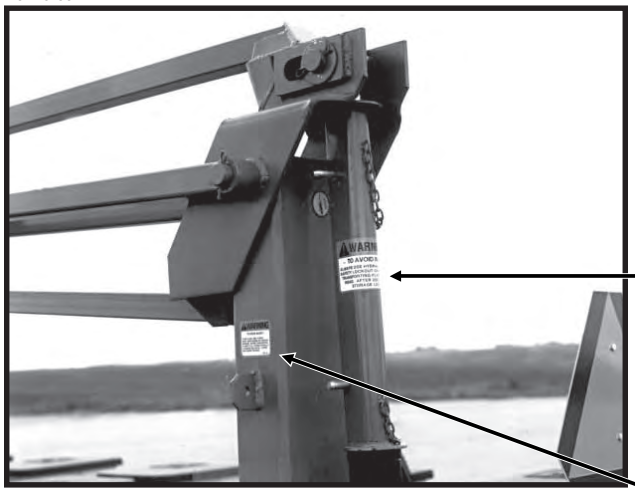

WARNING

TO AVOID INJURY

ALWAYS USE HYDRAULIC CYLINDER SAFETY LOCKOUT CHANNELS WHEN TRANSPORTING PLANTER ON THE ROAD. AFTER USE RETURN TO STORAGE LOCATION.

7100-83

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

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

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

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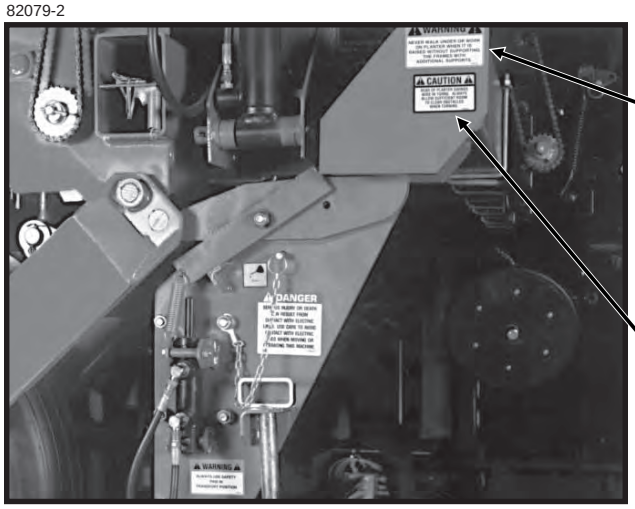


WARNING

NEVER WALK UNDER OR WORK ON PLANTER WHEN IT IS RAISED WITHOUT SUPPORTING THE FRAMES WITH ADDITIONAL SUPPORTS.

7100-68

Part No. G7100-68 (Qty. 1)

CAUTION

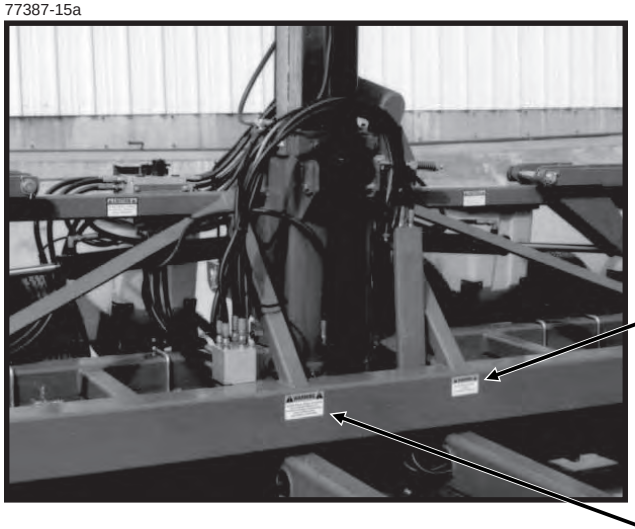
REAR OF PLANTER SWINGS WIDE IN TURNS. ALWAYS ALLOW SUFFICIENT ROOM TO CLEAR OBSTACLES WHEN TURNING.

7100-63

Part No. G7100-63 (Qty. 1)

SAFETY WARNING SIGNS

77387-15a



WARNING

NEVER WALK UNDER OR WORK ON PLANTER WHEN IT IS RAISED WITHOUT SUPPORTING THE FRAMES WITH ADDITIONAL SUPPORTS.

7100-68

Part No. G7100-68 (Qty. 2 - Front & Back)

WARNING

ALWAYS USE SAFETY STAND IN TRANSPORT POSITION

7100-200

Part No. G7100-200 (Qty. 2 - Front & Back)

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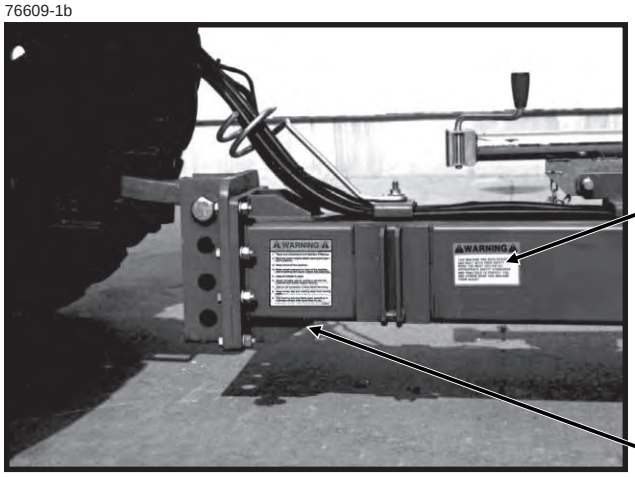


WARNING

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 (Qty. 1)

WARNING

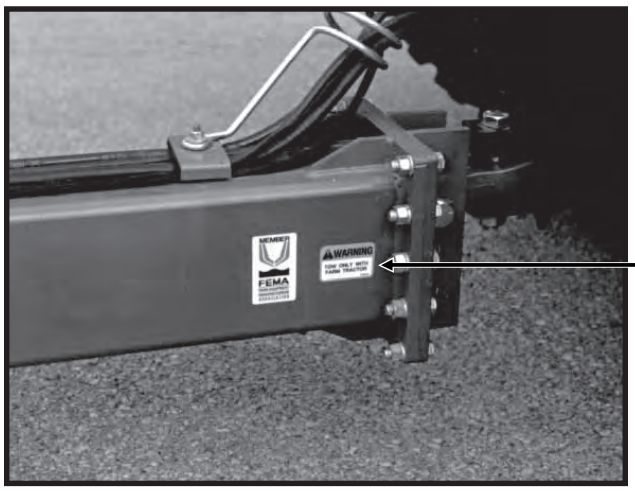
1. Read and understand the Operator's Manual.
2. Stop the tractor engine before leaving the operator's platform.
3. Keep riders off the machine.
4. Make certain everyone is clear of the machine before starting the tractor engine and operating.
5. Keep all shields in place.
6. Never lubricate, adjust, 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 (Qty. 1)

SAFETY WARNING SIGNS

76740-30



Part No. G7100-56 (Qty. 1)

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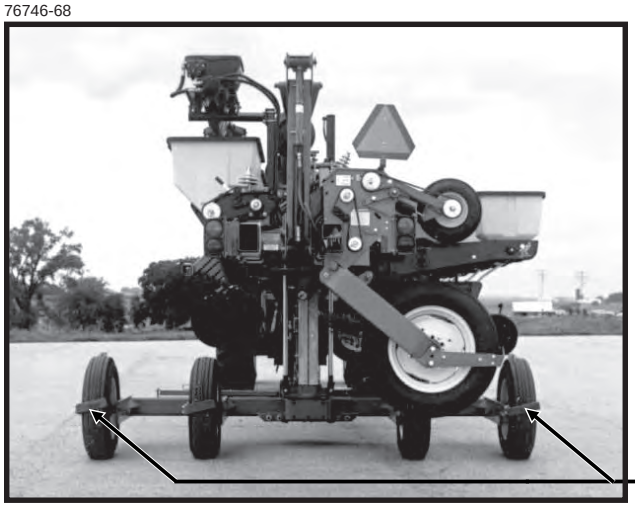
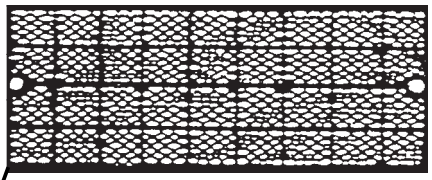
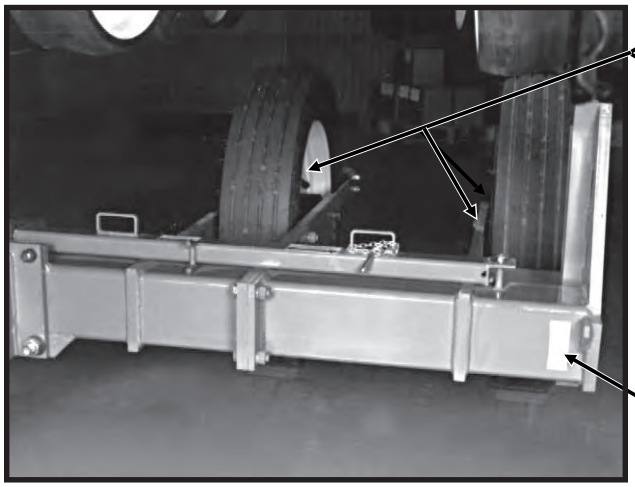




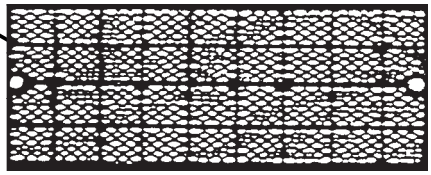
Part No. G7200-03 Red Reflector
(Qty. 2 - Located On Outside Two Scrapers)

Part No. G7100-203
8/12 Row Only (Prior To Serial No. 610534)

81439-9

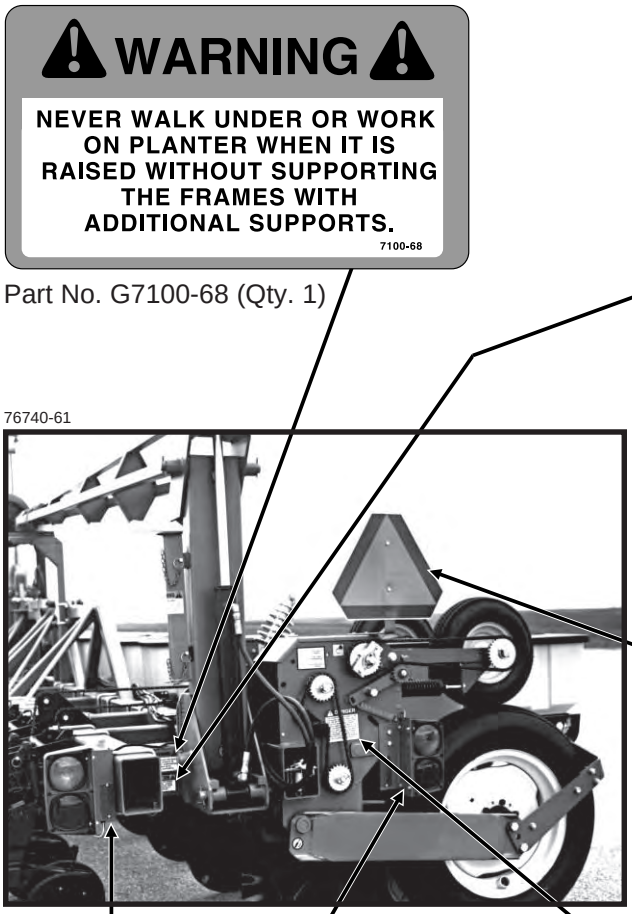


Part No. G7100-219
8/12/16 Row (Serial No. 610534 & On)



Part No. G7200-04 Amber Reflector
(Qty. 2 - Located At Each End Of Front Axle)

SAFETY WARNING SIGNS



Part No. G7100-68 (Qty. 1)

Part No. G7100-63 (Qty. 1)

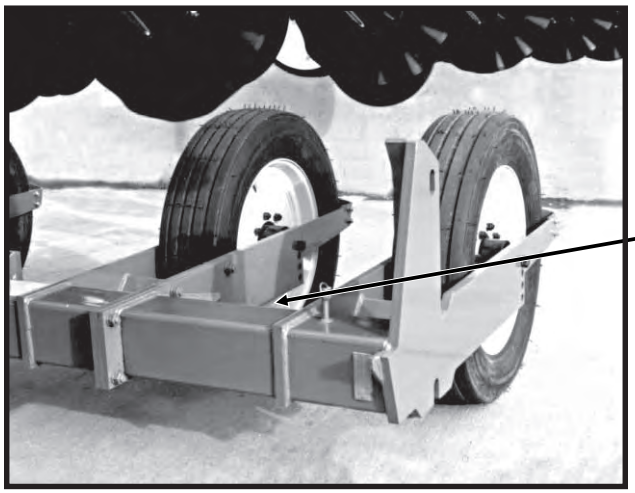
Part No. GD2199 (Qty. 1)

Part No. G7200-03 Red Reflector (Qty. 2)

Part No. G7100-89 (Qty. 2 - Located On Wheel Module On Both Ends Of Planter)

SAFETY WARNING SIGNS

81535-35



DANGER

DO NOT REMOVE THIS ASSEMBLY AFTER PLANTER IS ASSEMBLED FOR USE. REMOVAL OF THIS WHEEL AND AXLE ASSEMBLY CAN CAUSE THE MACHINE TO BECOME UNSTABLE AND TIP OVER CAUSING DAMAGE OR SERIOUS INJURY.

7100-215

Part No. G7100-215 (Qty. 1 - Located On Rear Side Of Stub Axle)

77178-17a

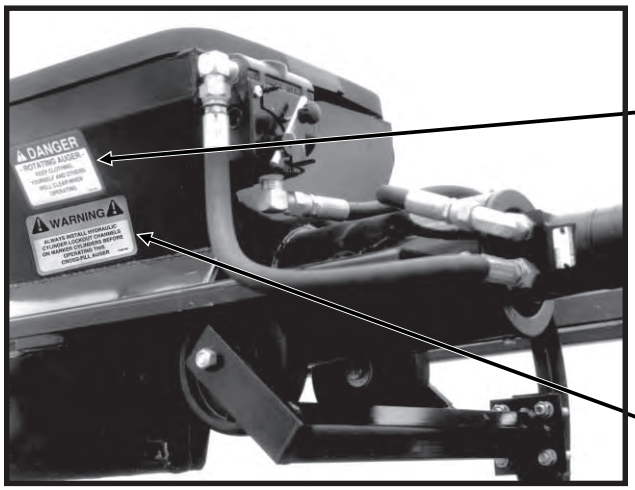
WARNING

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 (1 Per Row Unit - Located On Under Side Of Granular Chemical Hopper Lid)

76746-66a



DANGER

- ROTATING AUGER-

KEEP CLOTHING, YOURSELF AND OTHERS WELL CLEAR WHEN OPERATING

7100-103

Part No. G7100-103 (Qty. 1 - Quick Fill Hopper)

WARNING

ALWAYS INSTALL HYDRAULIC CYLINDER LOCKOUT CHANNELS ON MARKER CYLINDERS BEFORE OPERATING THIS CROSS-FILL AUGER

7100-163

Part No. G7100-163 (Qty. 1 - Quick Fill Hopper)

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.

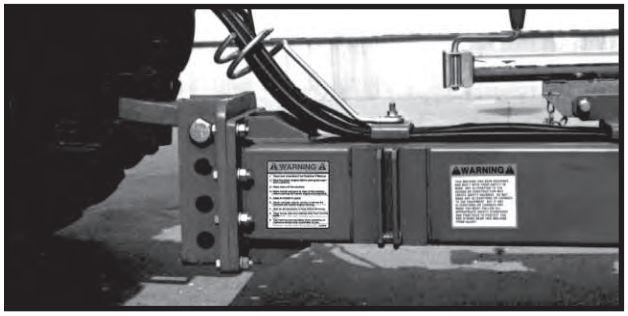
DANGER: The outer transport wheel on the left side of applicable machines is shipped not bolted on to allow narrower width truck shipment. DO NOT REMOVE THIS ASSEMBLY AFTER PLANTER IS ASSEMBLED FOR USE. DO NOT fold planter or tow planter while the outer transport wheel is removed. Tipping may occur because of narrow wheel base.

TRACTOR REQUIREMENTS

Consult your dealer for information on horsepower requirements and tractor compatibility. Requirements will vary with planter options, tillage and terrain. Two dual remote hydraulic outlets (SCV) are required on all sizes. A 12 volt DC electrical system is required on all sizes.

TRACTOR PREPARATION AND HOOKUP

76609-1a



1. Adjust tractor drawbar to 13-17 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. Install control console on tractor in a convenient location to the right of the operator and close to the hydraulic controls. Mount control console securely and route power cord to the power source.
   The control console operates on 12 volt DC only. The console battery lead has two wires, a BLACK wire and a RED wire (tagged with "+"). Each lead is terminated in a ring terminal. The BLACK wire should always be connected to the chassis ground battery terminal.
   If two 12 volt batteries are connected in series, ALWAYS make power connection on battery which is grounded to tractor chassis.
   If two 6 volt batteries are connected in series, make sure power connection provides 12 volt DC across the positive terminal on one battery and negative terminal of the second battery.

3. Back tractor to planter and connect with 1 1/4" - 1 1/2" diameter hitch pin. If the tractor is not equipped with a hitch pin locking device, make sure hitch pin is secured with a locking pin or cotter pin.

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

The hydraulic hoses are color coded as follows:

Red AA - Lift Functions (Return)
Red BB - Lift Functions (Pressure)
Blue AA - Marker And Fold/Unfold Functions (Return)
Blue BB - Marker And Fold/Unfold Functions (Pressure)

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

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

5. Connect cable on planter to control console cable on tractor. 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.

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

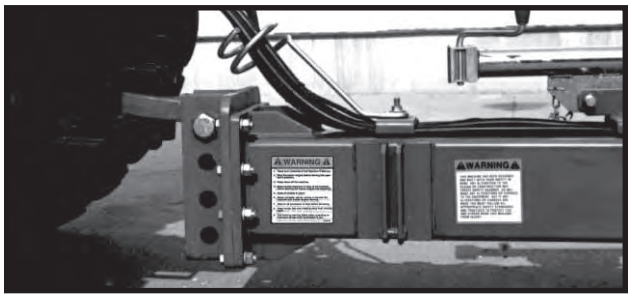
7. Lower planter to the planting position and check to be sure the hitch is level. If hitch slopes up or down, disconnect planter and adjust hitch clevis up or down as necessary.

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 hole on planter hitch.

LEVELING THE PLANTER

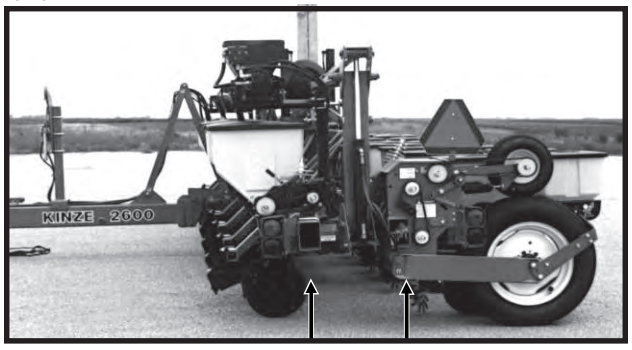
For proper operation of the planter and row units, it is important that the planter frame and row unit parallel arms be approximately level. The toolbar should operate at a 20"-22" height, measured to the bottom of the toolbar.

76609-1a



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

76746-17



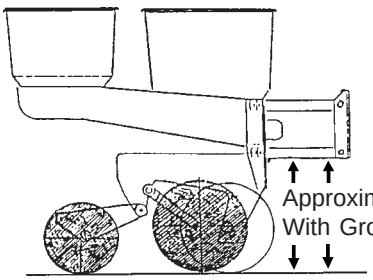
With the planter lowered to proper operating depth, check to be sure the frame is level fore and aft. Recheck once planter is in the field.

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

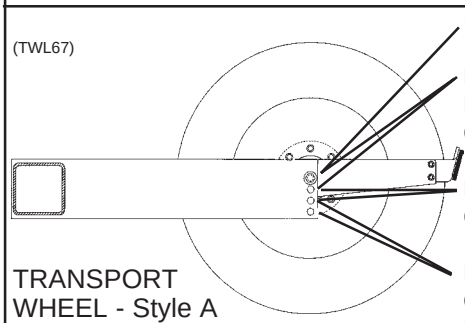
Field and actual planting conditions will dictate which of the transport wheel settings to use to ensure row unit parallel arms are approximately parallel with the ground. It may also be necessary to lower the ground drive wheels to ensure level lateral toolbar operation if the transport wheels are set in one of the two lower sets of holes.

NOTE: To allow adequate drive force after lowering the ground drive wheels, it may be necessary to lower the contact drive wheel arms to the lower set of holes in the wheel module and lower the down pressure springs to the lower mounting rod on the wheel module.

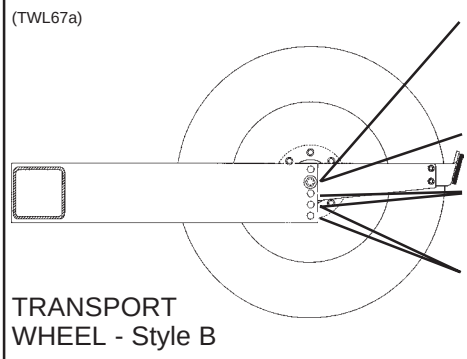
(PLTR88)



(TWL67)

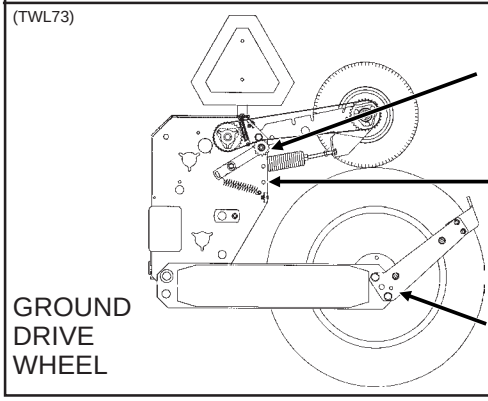


(TWL67a)



CAUTION: When using top hole setting, check clearance between tires and drill shaft U-joint prior to operation.

(TWL73)



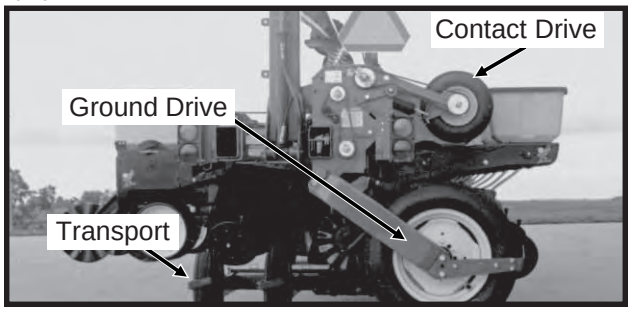
Once the planter has been fully loaded with seed, granular chemicals, fertilizer, etc.; a field check should be made to be sure the wings are level with the center frame. If the wings are not level with the center frame, the drive wheels and/or transport wheels can be raised or lowered in the wheel arms to increase or decrease planter bar height. Hitch height should be raised accordingly to ensure level operation.

NOTE: Since the lift cylinders are barrel rephasing, it is necessary for the cylinders to fully retract in order to rephase. Cylinder stops should not be used.

MACHINE OPERATION

TIRE PRESSURE

76746-44

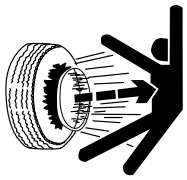


Tire pressure should be checked regularly and maintained as follows:

8 & 12 Row Machines
255-70R x 22.5", Transport (Center Section) . . . 75 PSI
7.50" x 20", Transport (Center Section) . . . . . .65 PSI
7.50" x 20", Ground Drive (Wings) . . . . . .40 PSI
4.8" x 8", Contact Drive . . . . . 50 PSI
4.10" x 6", Contact Drive
(Liquid Fertilizer Piston Pump) . . . . . .60 PSI

WARNING: Maximum inflation for 7.50" x 20" transport tires on 8/12 row machines (Prior To Serial No. 610534) is 65 PSI.

16 Row Machines
255-70R x 22.5", Transport (Center Section) . . . 75 PSI
7.50" x 20", Transport (Center Section) . . . . . 90 PSI
7.50" x 20", Ground Drive (Wings) . . . . . .40 PSI
4.8" x 8", Contact Drive . . . . . 50 PSI
4.10" x 6", Contact Drive
(Liquid Fertilizer Piston Pump) . . . . . .60 PSI



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

The multipiece rim used on the transport wheels on applicable 16 Row 2600 Planters requires that specific procedures and safety instructions be followed in mounting and demounting of the tires.

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.

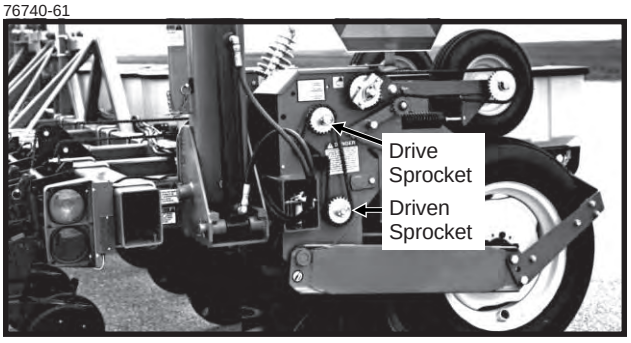
TRANSMISSION ADJUSTMENT

Planting population rate changes are made at each end of the planter. 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 wheel module on each side of the planter.

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

A decal positioned on the transmission module provides proper chain routing. The planting rate charts found at the back of this section will aid you in selecting the correct sprocket combinations.

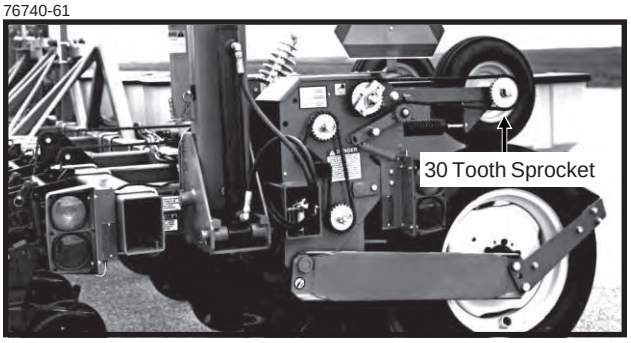
76740-61



16 Row Machine Shown

STANDARD RATE DRIVE

76740-61

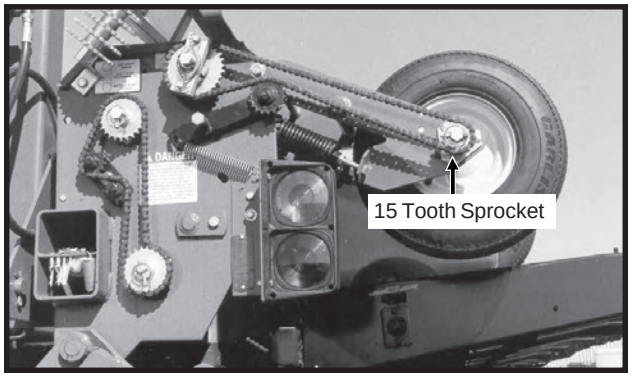


16 Row Machine Shown

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

HALF RATE (2 TO 1) DRIVE

08269724

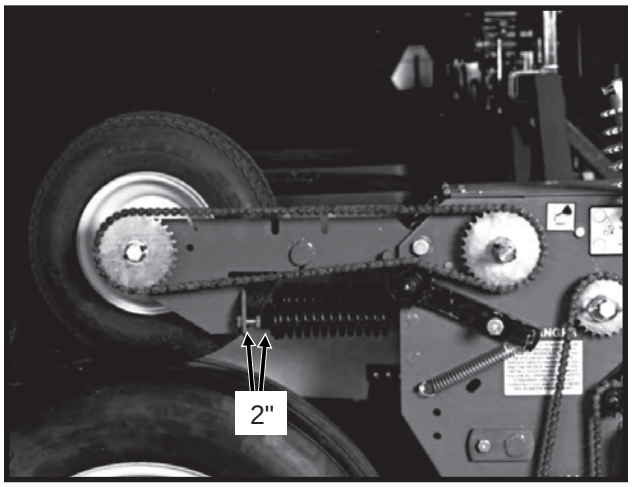


Half rate (2 to 1) drive is recommended when Interplant® push units are used. Replace the 30 tooth sprocket on each contact wheel with a 15 tooth sprocket. This will reduce the planter transmission speed and reduce planting rates by approximately 50%.

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

CONTACT DRIVE WHEEL SPRING ADJUSTMENT

81439-32



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" between the spring plug and the bolt head.

SHEAR PROTECTION

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

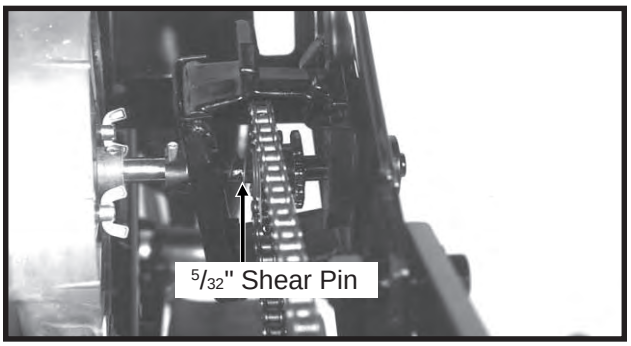
If excessive load should cause a pin to shear, it is important to determine where binding has occurred before replacing the pin. Replace shear pins with same size and type.

Additional shear pins can be found in the storage area located inside the rear planter frame.

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

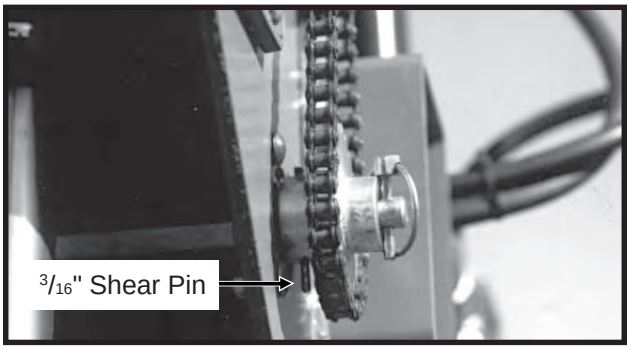
NOTE: Drill shaft/transmission coupler alignment is critical.

61658-27



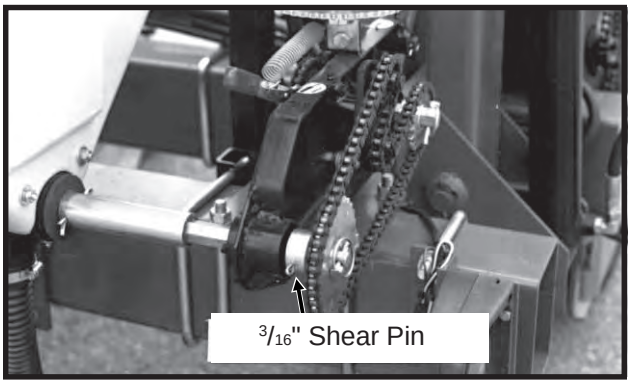
Row Unit Seed Meter Drive

50981-10



Transmission Shaft

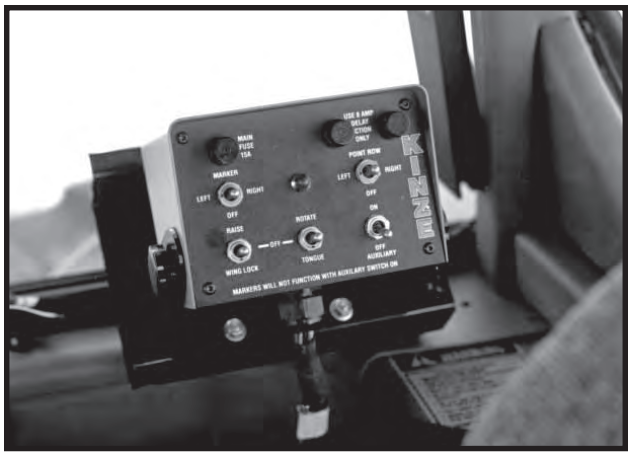
76746-62



Dry Fertilizer Attachment Transmission

HYDRAULIC/ELECTRIC OPERATION

76746-24



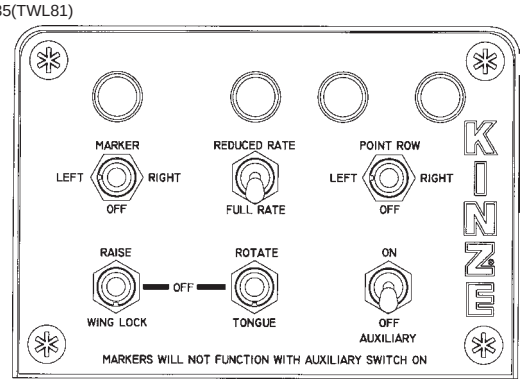
Switches on the control console located on the tractor are used to raise the planter to transport position, operate the rotate and tongue extension functions, lock and release the planter wings, and raise and lower the row markers.

All 2600 planters are equipped to operate from two dual remote hydraulic outlets. One set of hydraulic outlets, in conjunction with the switches on the control console, are used to operate the raise to transport function. The second set, in conjunction with the switches on the control console, are used to operate the markers and fold/unfold functions.

The marker and point row selector switches are an "on-off-on" type. (NOTE: Point row clutches are optional on 8 row sizes and standard on 12 and 16 row sizes. All 2600 planters are shipped with the point row switch installed in the control console.)

If the planter is equipped with the optional Two-Speed Point Row Wrap Spring Clutch Package, the point row switch and reduced rate switch operate independently of the rest of the control console. Power to the marker switch is fed through the auxiliary switch and the two transport function switches. Operating any of the switches in the lower row disables the marker function and turns off the panel light for the markers.

A7435(TWL81)



The raise/wing lock and rotate/tongue (fold function) switches are "on-off-on" momentary "on" type and must be held in position while operating the tractor hydraulic lever. Activating a fold function switch disables the marker circuit.

NOTE: For safety the marker selector switch should be placed in its "off" (center) position. An indicator light on the control box panel is "on" whenever the marker circuit or point row circuit is energized.

The auxiliary switch is an "on-off" type switch which is used in conjunction with the hydraulic marker control lever to operate the optional dry fertilizer quick fill attachment. All 2600 planters are shipped with the auxiliary switch installed in the control console. The auxiliary switch must be in the "off" position to enable other functions to operate.

NOTE: Activating the auxiliary switch disables all other control console switches except the point row clutch switch.

NOTE: Since the lift cylinders are (port type or groove-in-the-barrel type) rephasing, it is necessary for the cylinders to fully retract before they will rephase in the lowered position. Cylinder stops should not be used.

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

WARNING: Make sure all hydraulic hoses are properly connected before operating the planter. Never connect or disconnect hydraulic hoses without first stopping the tractor engine and moving the hydraulic operating levers in both directions to relieve any pressure in the system.

TRANSPORT TO FIELD SEQUENCE

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

SUMMARIZED TRANSPORT TO FIELD SEQUENCE

- Remove tongue safety pin.
- Remove transport latch locking pin.
- Remove manual safety lockup.
- Rotate planter to planting position.
- Raise planter slightly to release safety hook at top of center section.
- Lower planter to the ground.
- Release wing locks.
- Rephase planter lift cylinders.
- Raise planter to raised field positiion and retract tongue.
- Remove marker lockups.

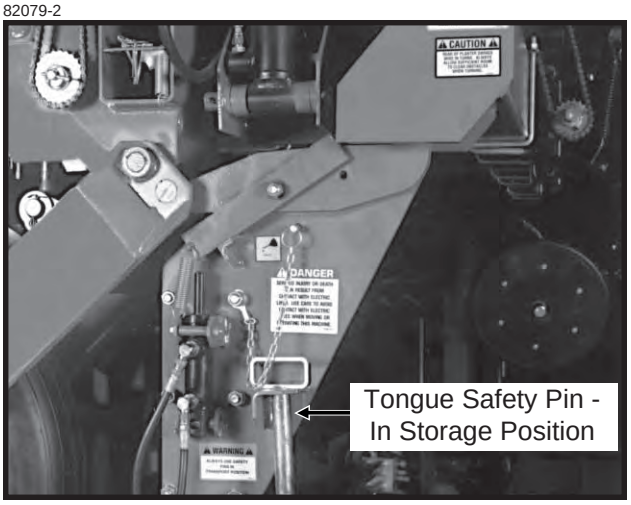
NOTE: Read the following information for more detailed instructions.

76746-20

1. With the tongue fully extended and the planter in the raised transport position, remove the tongue safety pin and store it in the storage position.

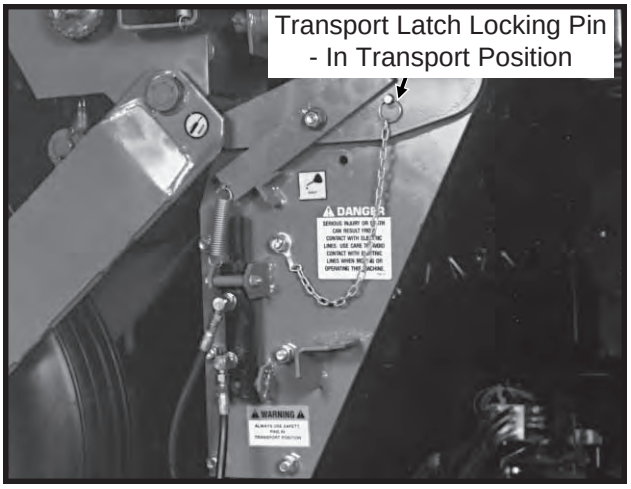
76609-35

82079-2

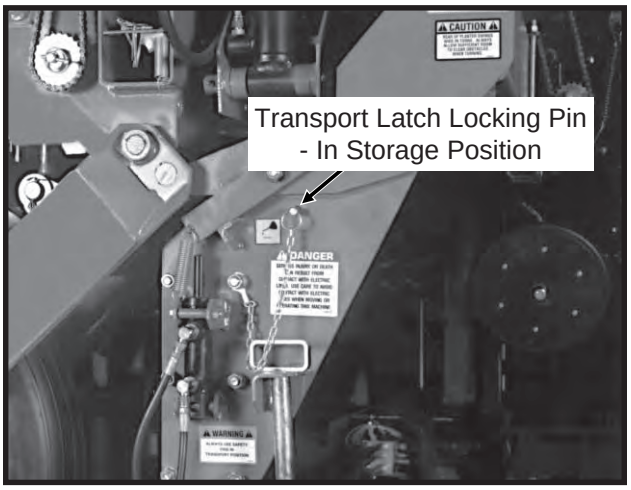


2. Remove the transport latch locking pin from the locked position and place it in the storage location.

81999-16

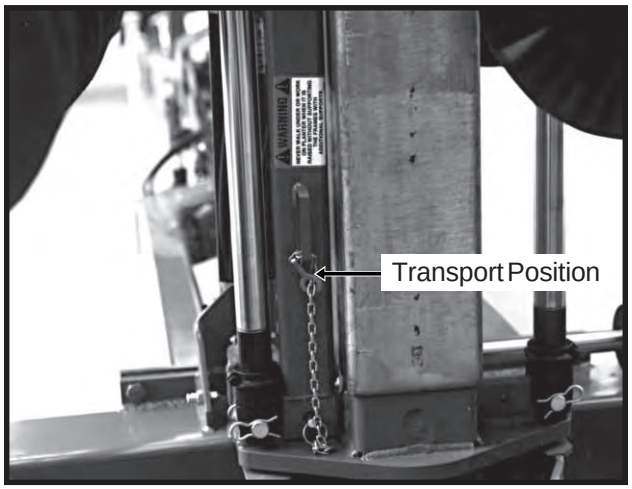


82079-2

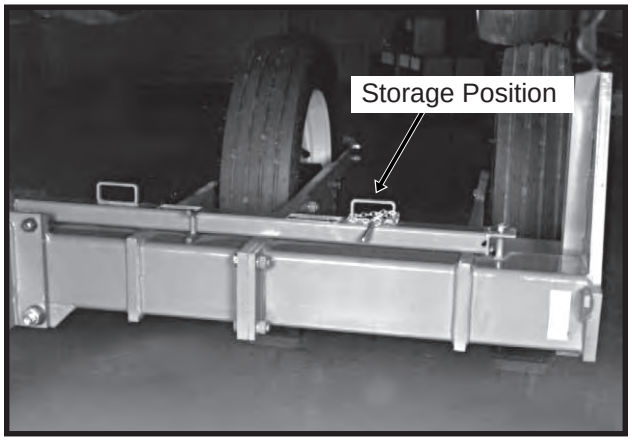


3. Remove the manual safety lockup from under the front center lift cylinder and place it in the storage location on the left side of the planter axle.

81535-32

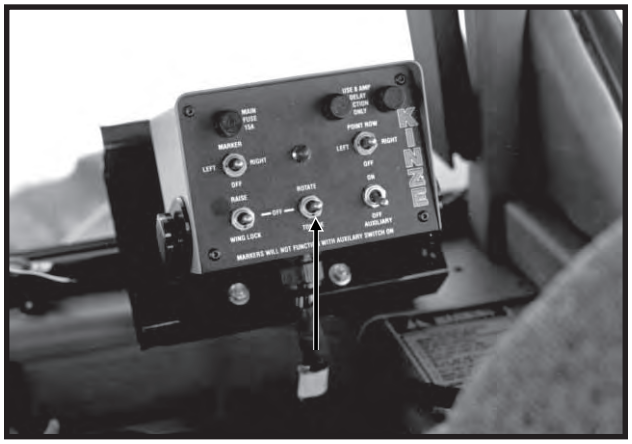


81439-9

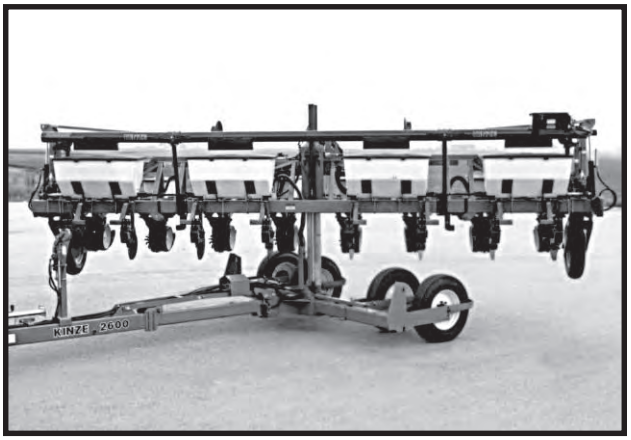


4. Hold the control console switch labeled “ROTATE/ TONGUE” in **“rotate”** and operate the hydraulic lever to unfold the planter. The transport latch will automatically release.

76746-24

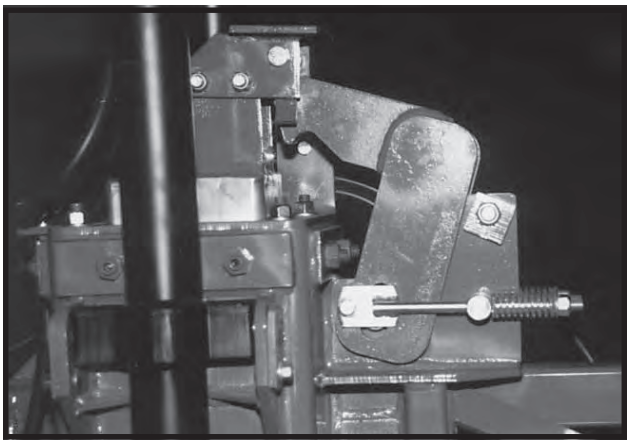


76746-48



5. Raise the planter 1" - 2". The safety hook will release and snap away from the catch pin on the top of the pivot post.

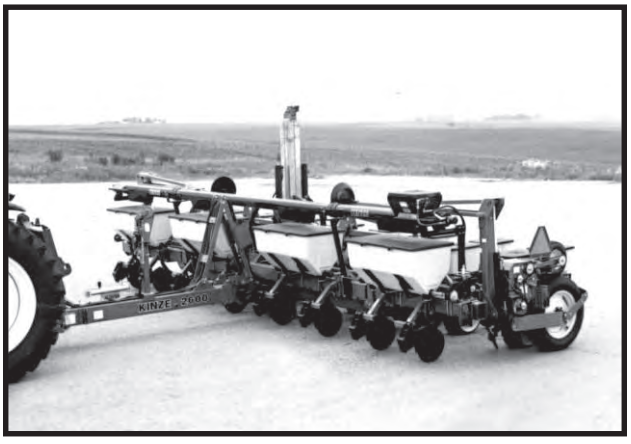
82316-16



NOTE: Raising the planter too high will reset the hook mechanism and the sequence must be repeated.

6. Slowly lower the planter to the ground.

76746-28



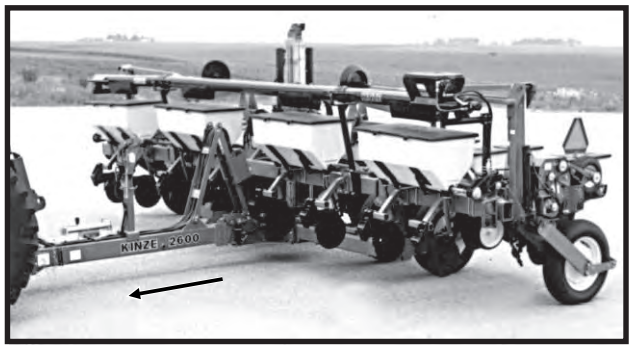
7. Hold the control console switch labeled “RAISE/ WING LOCK” in **“wing lock”** and operate the hydraulic lever to release the wing locks.

76740-16

8. Hold the hydraulic lever (to lower planter) to rephase the planter lift cylinders. The length of time it takes to rephase the system may vary due to tractor hydraulic flow and/or oil temperature. Normally 5 to 20 seconds is adequate to rephase the system.

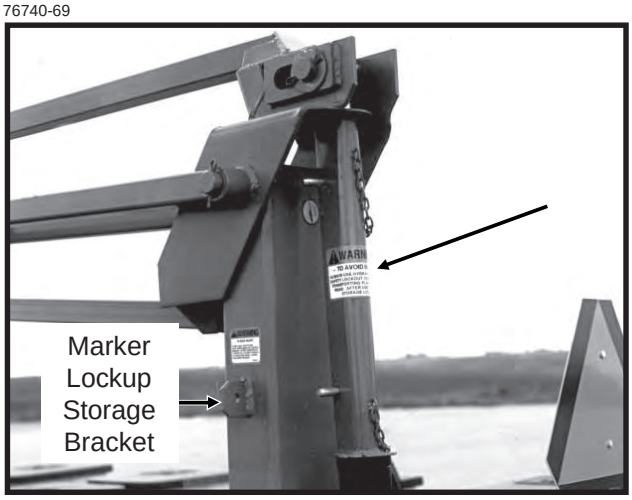
9. Raise the planter to the raised field position. Hold the control console switch labeled “ROTATE/ TONGUE” in **“tongue”** and operate the hydraulic lever to retract the tongue.

76746-31



10. Remove and store marker lockups.

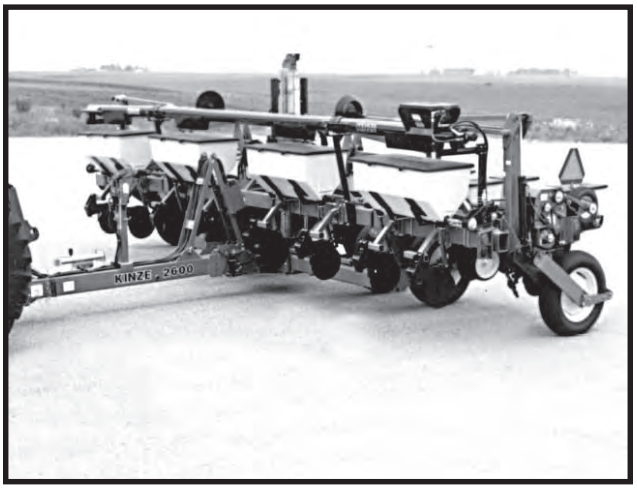
76740-69



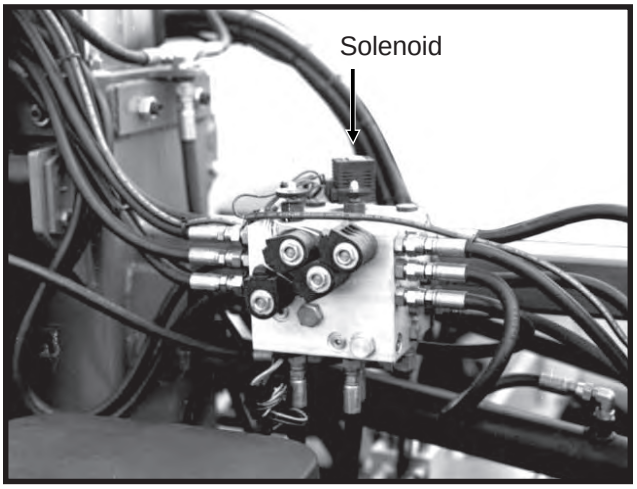
FIELD OPERATION

There are two raised positions on the planter. One is the “raised field position” which is when the planter wing cylinders are fully extended and the center lift cylinders are at mid-stroke. Because the solenoid, located on the top side of the valve blocks on the rear R.H. side of the center frame, is not energized; the wing cylinders cannot bypass oil preventing the planter from raising any higher. In the “raised field position” the row units are approximately 14 inches off the ground. This position is used in making turns or passing over waterways during field operation.

76746-31



76740-28



Shown With Cover Removed

See “Marker Operation” for field operation of row markers.

FIELD TO TRANSPORT SEQUENCE

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

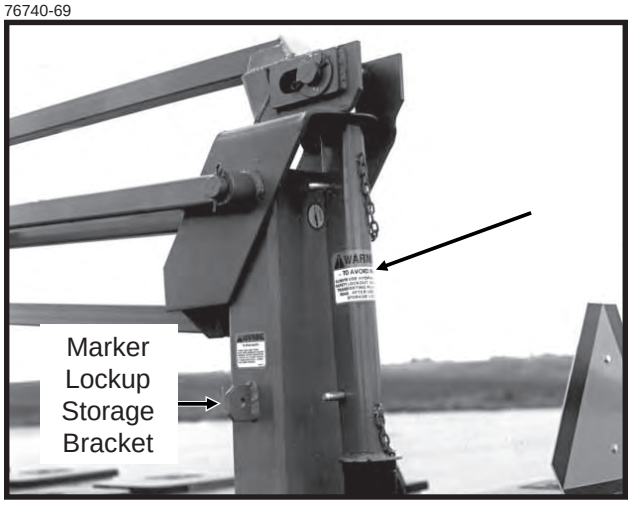
SUMMARIZED FIELD TO TRANSPORT SEQUENCE

- Install marker lockups.
- Raise planter to raised field position.
- Extend tongue.
- Lock wings over center
- Raise planter to engage safety hook at top of center section into locking position.
- Lower planter onto safety hook.
- Rotate planter to transport position.
- Install tongue safety pin.
- Install transport latch locking pin.
- Install manual safety lockup.

NOTE: Read the following information for more detailed instructions.

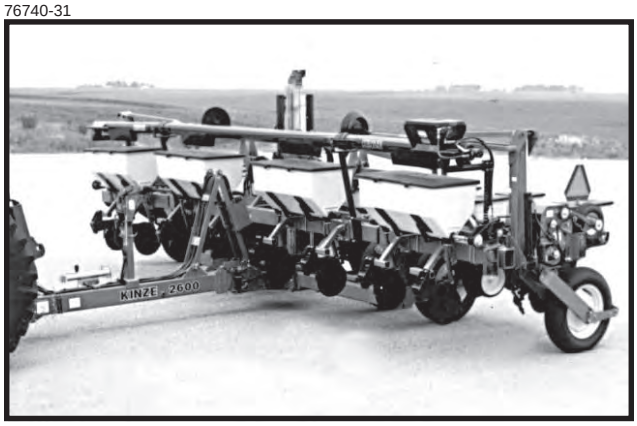
1. Install marker lockups.

76740-69



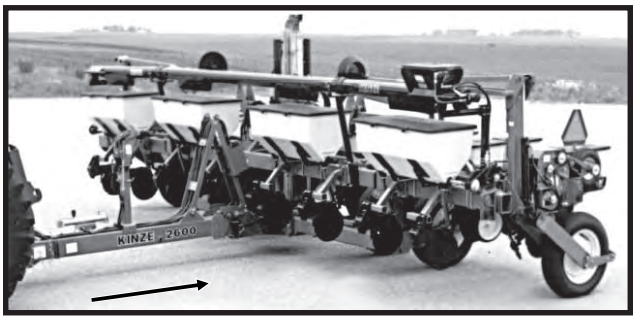
2. Using the hydraulic lever, raise the planter to the raised field position as shown below.

76740-31

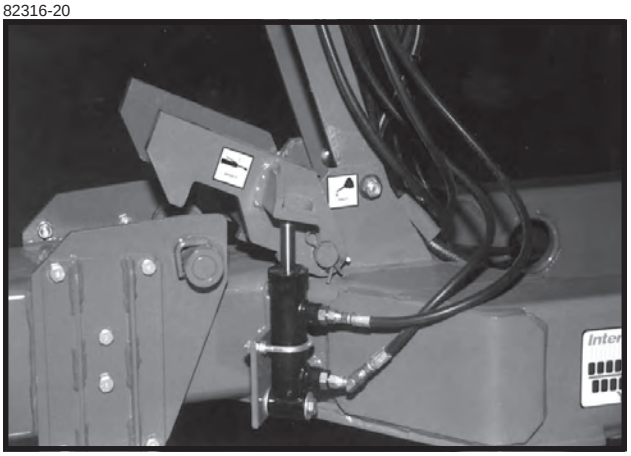


3. Hold the control console switch labeled "ROTATE/ TONGUE" in **"tongue"** and operate the hydraulic lever until the tongue is fully extended. Tongue lock latch will automatically release.

76740-31

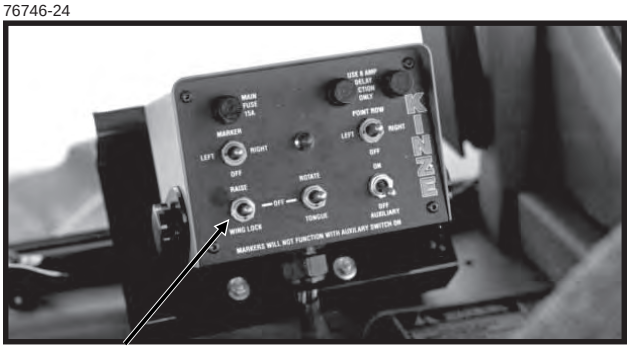


82316-20



4. Hold the control console switch labeled "RAISE/ WING LOCK" in **"wing lock"** and operate the hydraulic lever until the wing lock cylinders are fully extended and the wing locks are locked over center.

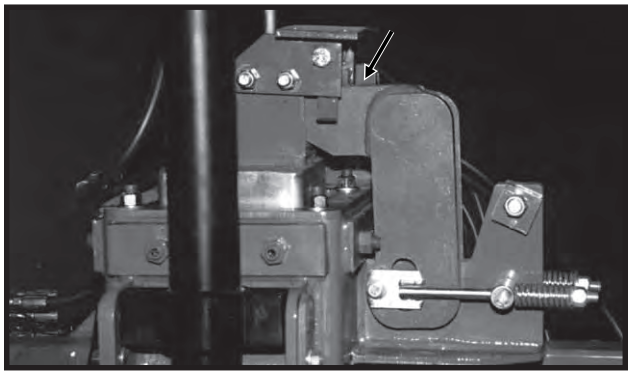
76746-24



76740-8

5. Hold the control console switch labeled “RAISE/ WING LOCK” in **“raise”** and operate the hydraulic lever until the two center lift cylinders are fully extended and the safety hook located at the top of the center section rotates into locking position.

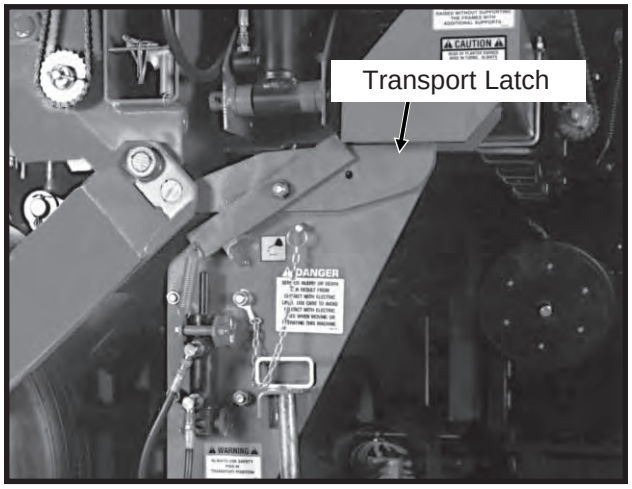
82316-15



6. Using the hydraulic lever, lower the planter onto the safety hook.

7. Hold the control console switch labeled “ROTATE/ TONGUE” in **“rotate”** and operate the hydraulic lever to rotate the planter until the transport latch is secured.

82079-2

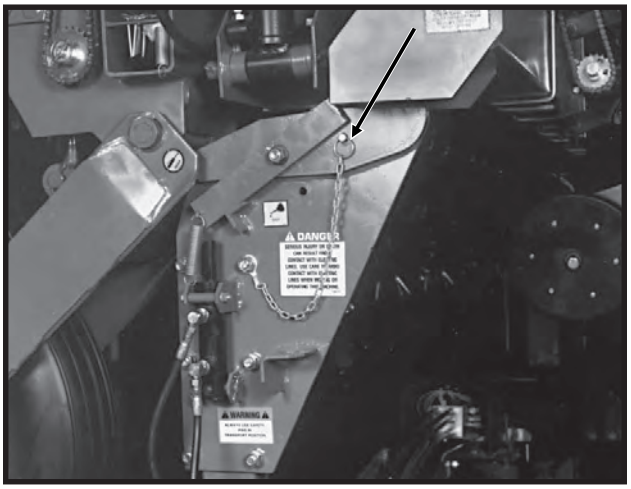


8. Install tongue safety pin.

76609-35

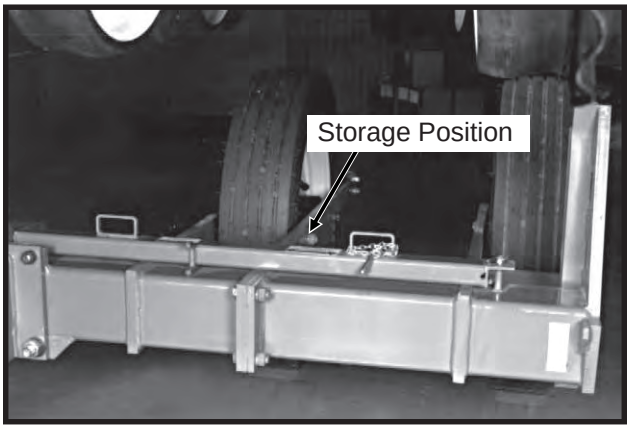
9. Install transport latch locking pin.

81999-16

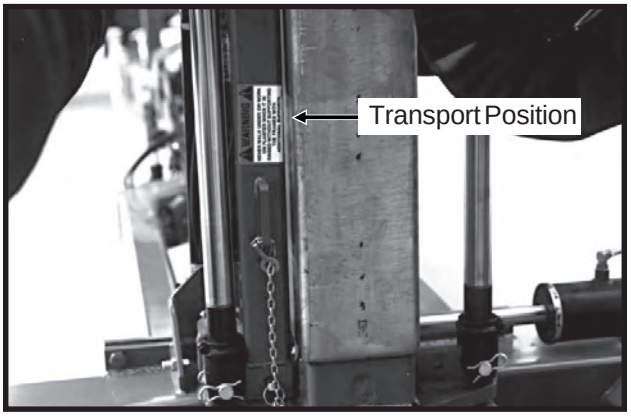


10. Remove manual safety bar from its storage location on the left side of the axle assembly and position it behind the front center lift cylinder.

81439-9



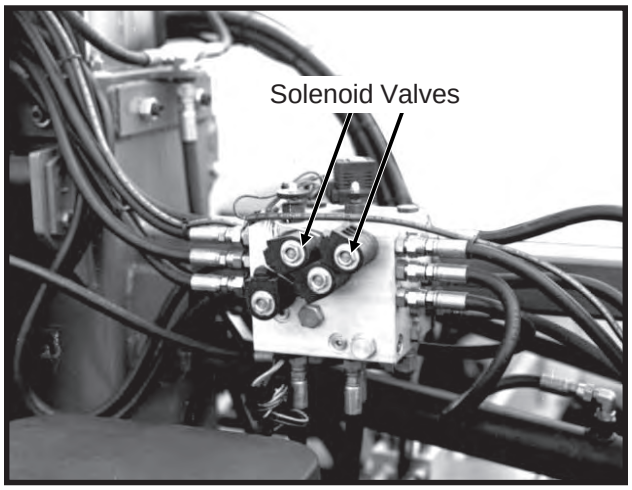
81535-32



NOTE: For safety purposes it is recommended that the manual safety lockup be installed prior to working under the planter when the planter is in the raised position or while transporting the planter.

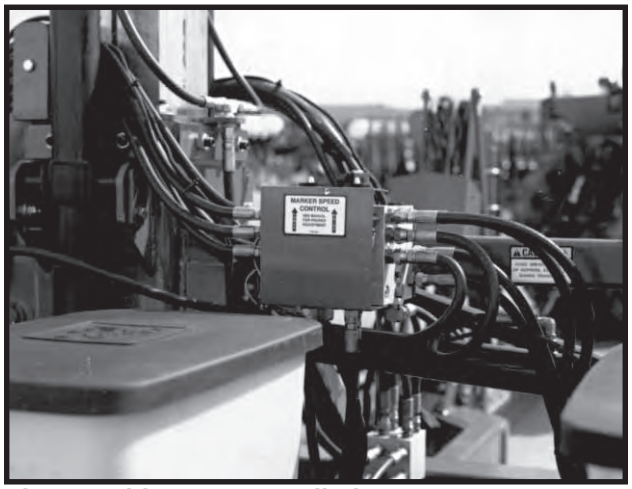
MARKER OPERATION

76740-28



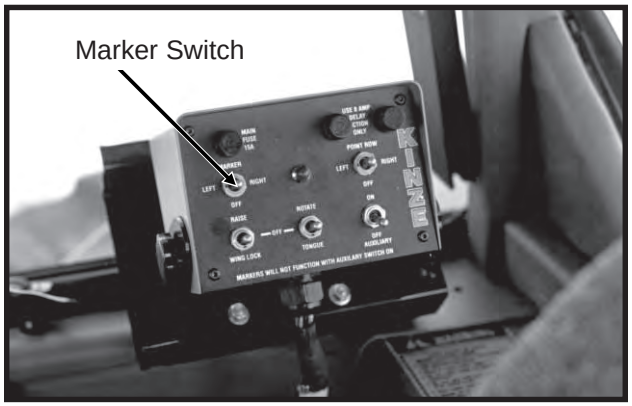
Shown With Cover Removed

77387-4



Shown With Cover Installed

76746-24



Three Position Selector Switch On Control Console

Two solenoid valves, located on the valve block on the rear R.H. side of the center frame, along with a three position selector switch on the control console permits the operator to raise or lower the desired marker.

See “Marker Speed Adjustment.”

1. On the control console, select which marker you want lowered.
2. Operate hydraulic control lever to lower marker.
3. If opposite marker is to be used next, change control switch to other side.
4. At end of field, using hydraulic control lever raise the down marker.
5. After making the turn; using the hydraulic lever, lower the pre-selected marker.
6. Continue to follow this procedure.

NOTE: Both markers can be lowered by operating the switch in each position and operating the hydraulic lever twice. The markers will raise simultaneously with the hydraulic lever in the raise position.

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

If the electrical system fails to operate properly:

Check fuse.
Check wiring connections.
Check control switch.
Check solenoid. SOLENOID HOUSING WILL BE MAGNETIZED WHEN ENERGIZED.

MARKER SAFETY LOCKUP

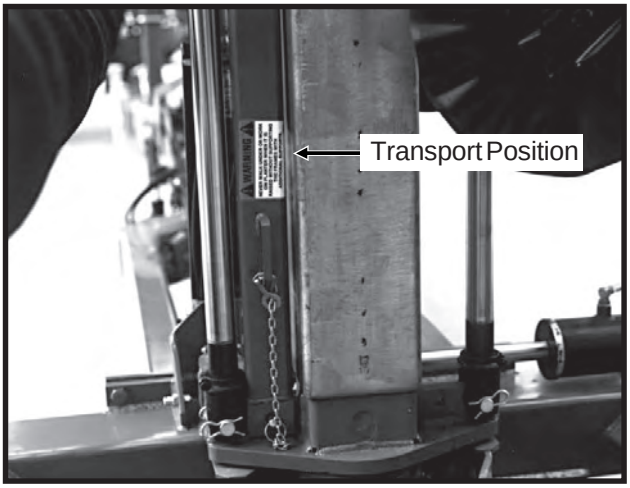
Install safety lockups over marker cylinder rods when transporting the planter or working around the planter. When lockups are not in use, store in the storage position provided on the first stage marker arm.

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

MANUAL SAFETY LOCKUP

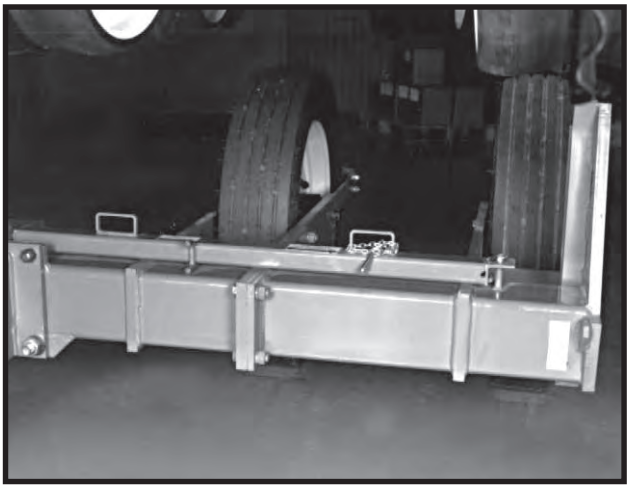
Never allow anyone to work around or under the planter without first securing the manual safety lockup in the locked position. When transporting the planter use the manual safety lockup for added safety.

81535-32



Manual Safety Lockup In Locked Posiiton

81439-9



Manual Safety Lockup In Stored Location

For field operation remove the manual safety lockup and store on the L.H. side of the transport axle.

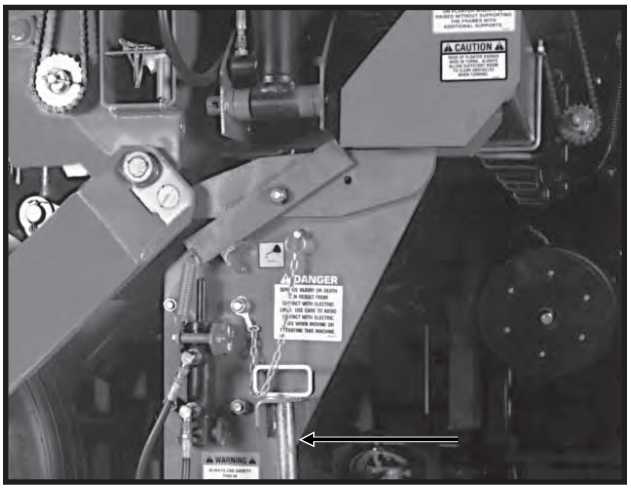
TONGUE SAFETY PIN

The tongue safety pin when installed will prevent the tongue cylinder from retracting should hydraulic failure occur or a sudden stop be made when transporting the planter. Never transport the planter without installing the tongue safety pin.

76609-35

Tongue Safety Pin Installed For Transport

82079-2



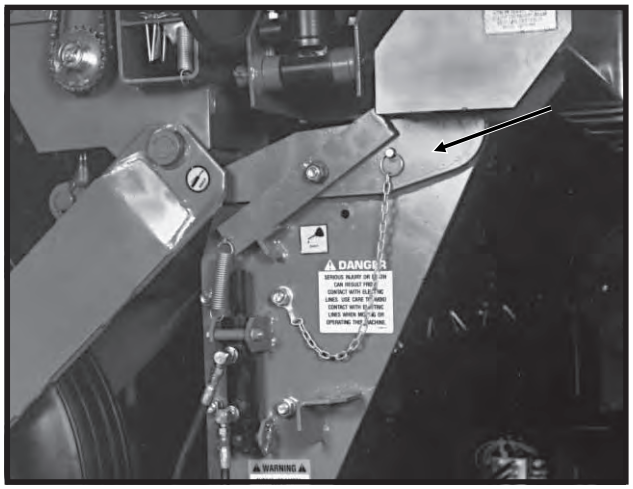
Tongue Safety Pin Stored For Field Operation

For field operation remove the tongue safety pin and store in the bracket provided on the transport latch post at the center of the planter.

TRANSPORT LATCH LOCKING PIN

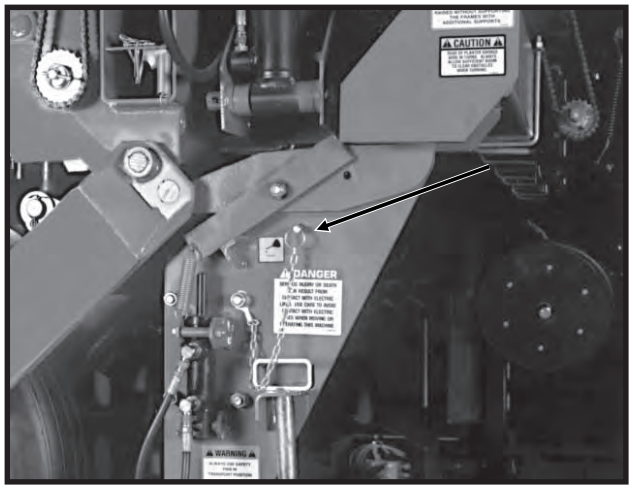
The transport latch locking pin when installed will prevent the latch bar from disengaging and allowing the planter frame to swing away. Never transport the planter without installing the transport latch locking pin.

81999-16



Transport Latch Locking Pin Installed For Transport

82079-2



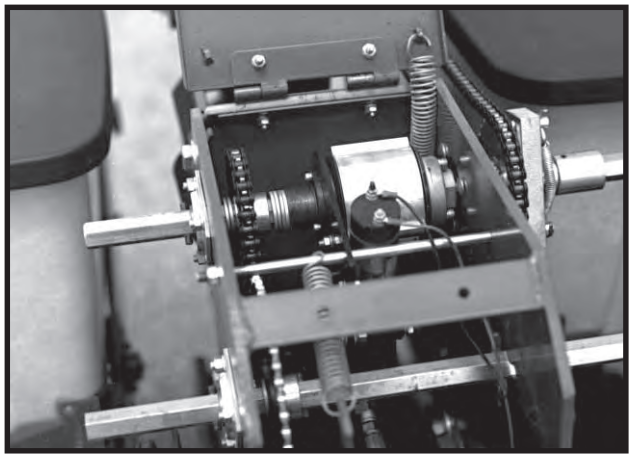
Transport Latch Locking Pin Stored For Field Operation

For field operation remove the transport latch locking pin and store in the location provided on the latch post.

POINT ROW WRAP SPRING CLUTCH

(Standard on 12 and 16 Row/Optional on 8 Row)

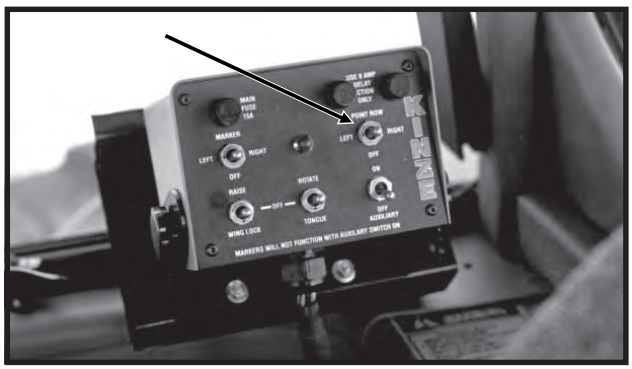
76740-2



16 Row Machine Shown

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

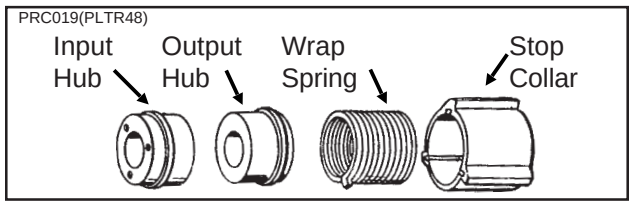
76746-24



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

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

PRC019(PLTR48)



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

the spring from rotating prevents the transmission of torque from the input hub to the output hub, stopping the planter drive.

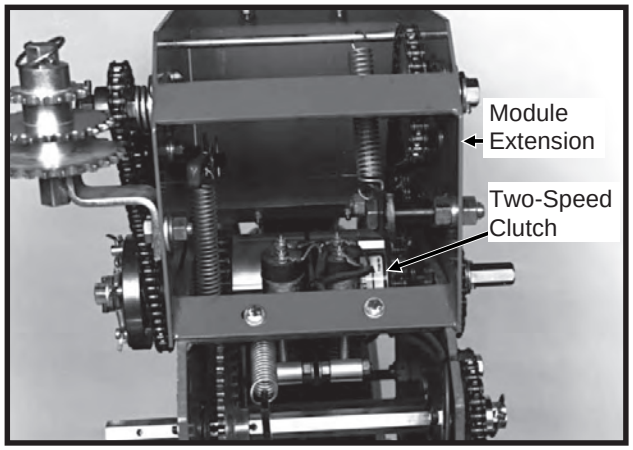
The input end of the spring is bent outward and is referred to as the control tang. The control tang fits into a slot in the stop collar that is located between the input and output hubs and over the wrap spring. If the stop collar is allowed to rotate with the input hub, the clutch is engaged. If the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

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

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

TWO-SPEED POINT ROW WRAP SPRING CLUTCH

81826-8

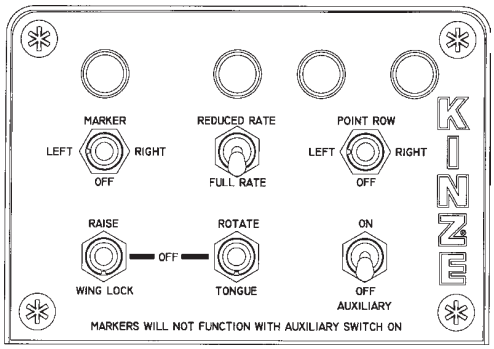


The Two-Speed Point Row Clutch Package is designed to allow on-the-go population rate adjustment as well as the capability to shut off either half of the planter for finishing up fields or for long point row situations.

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

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

A7435(TWL81)



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

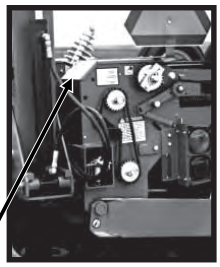
(7100-214)76740-61

TRANSMISSION RATE REDUCTION

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

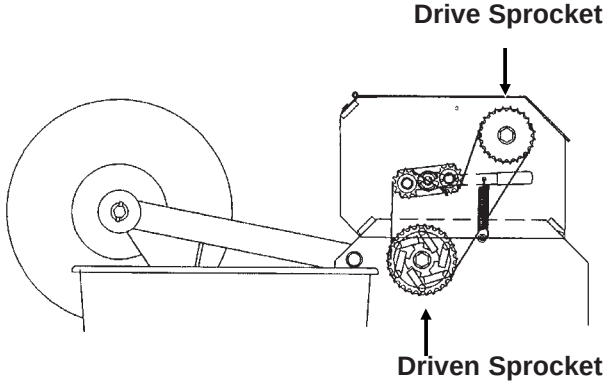
* Use sprockets off seed drive transmission

7100-214



Full rate transmission shown. Two-speed clutch wheel module extension not installed.

(TWL80)



NOTE: Since the two-speed point row clutch is located ahead of the liquid fertilizer squeeze pump and/or dry fertilizer drive, activating the two-speed point row clutch reduced rate switch will cause the same per cent of reduction in dry fertilizer or liquid fertilizer (squeeze pump) application rates.

ELECTRONIC SEED MONITOR SYSTEM

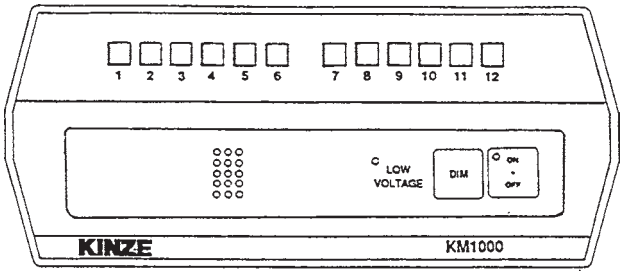
The electronic seed monitor system consists of a console, which is mounted on the tractor; seed tubes with sensors, one of which is installed in each planter row unit; and a planter harness (harness, Y-connector and/or extension cable where applicable), which connects the individual seed tube sensors 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" harness.) and turning the monitor OFF then back ON. The monitor will then ignore these unused rows and monitor the other rows normally.

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

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

10/96

KM1000 Bezel Decal Selection Chart

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

Row lamp indicates planter row in use.

Row lamp not used.

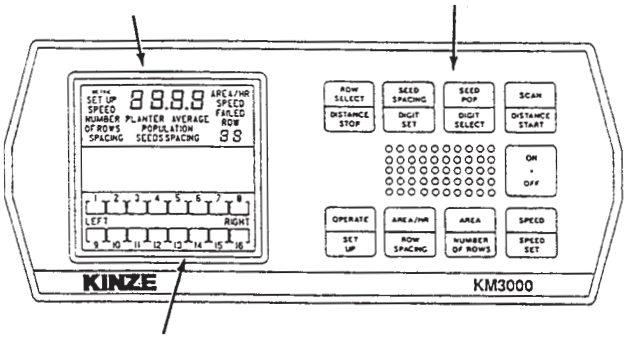
* With Y-connector.

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

KM3000 MONITOR

D-0841-0001(PLTR2)

Upper Display **Pressure Sensitive Switches**



Lower Display

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

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

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

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

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

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

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

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

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

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

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

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

SPEED displays current vehicle ground speed in MPH or KmPH.

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

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

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

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

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

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

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

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

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

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

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

ENTERING CONSTANTS (KM3000 Only)

Upon initial power-up or whenever memory is lost the following three constants must be entered before the system will enter the "operate" mode. The following examples are for a 12 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: 12 row 30" planter with 21 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 = 330"

Step 2. 21 rows (number of total rows) minus 1 = 20

Step 3. 330" ÷ 20 = 16.5" average row spacing

Step 4. Program 16.5 (round to closest tenth)

2. ***NUMBER OF ROWS*** *- The number of active rows on your planter. (Example for 12 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 a 12 is shown in this location: 12.

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

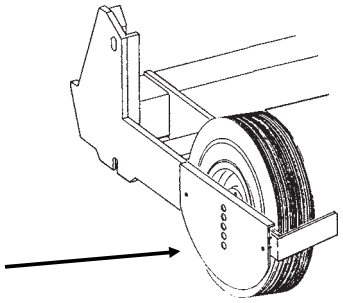
The half of the Y-connector marked row 1 is used for the main rows on the planter and the other half for Interplant® rows. When Interplant® rows are not being used, switch the console to the OFF position and disconnect the Interplant® rows at the Y-connector. Switch the console back ON. It will be necessary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

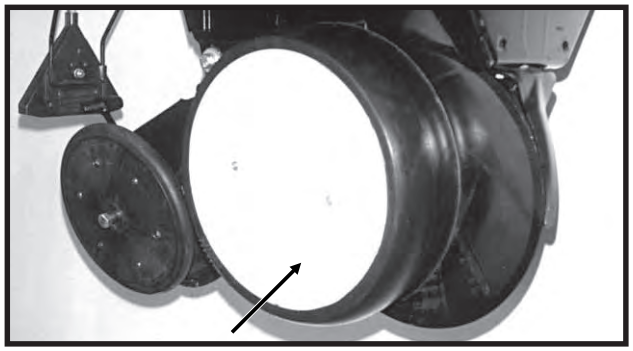
ROCK GUARDS

(PLTR49a)



Transport wheel rock guards are designed for use on both sides of each of the four center transport wheels when the planter is used in rocky conditions. Rock guards will help prevent rocks from being picked up by the wheel causing damage to the row unit.

73090-2



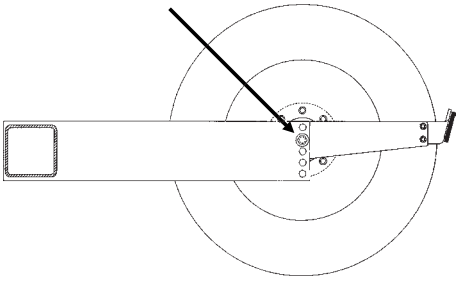
Row unit gauge wheel covers may be used in conjunction with transport wheel rock guards on row unit guage wheels next to transport wheels.

RIDGE PLANTING

When ridge planting, the drive wheels and transport wheels can be lowered 2" or 4" to the lower mounting holes in the wheel arms to increase the planter bar height. The contact drive tire must also be lowered to the lower set of holes in the wheel module and the down pressure springs hooked on the lower rod. Hitch height should be raised accordingly to ensure level operation.

(TWL67a)

Wheel Shown Mounted In Standard Location - Lower 2" Or 4" To Lower Mounting Holes When Ridge Planting

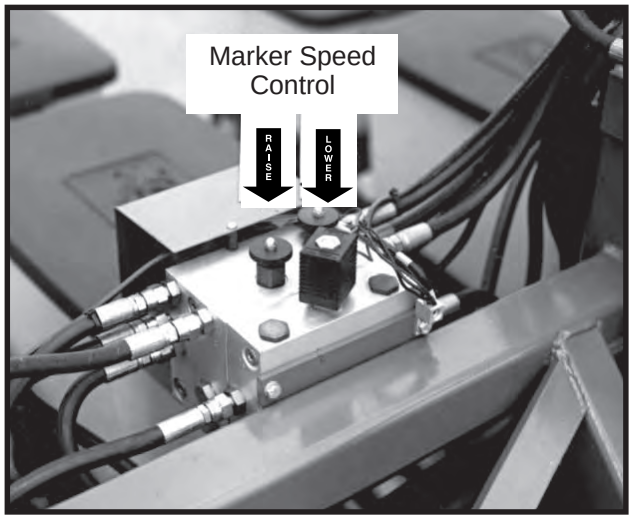


NOTE: The toolbar should operate at a 20"-22" height measured from the bottom of the toolbar to the planting surface.

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.

76740-43



DANGER: The flow controls should be properly adjusted before the marker assembly is first put to 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 the oil. The tractor hydraulic control lever will have to be held until the cylinder reaches the end of its stroke. This occurs most often on tractors with an open center hydraulic system.

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

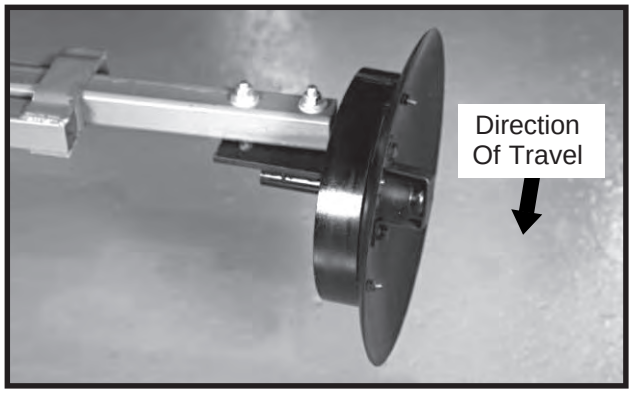
MARKER ADJUSTMENT

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.

12 Rows x 30" Spacing = 360" Marker Dimension

60569-53



Marker blade shown with depth band.

The marker blade is installed so the concave side of the blade is outward to throw dirt away from the grease seals. The spindle bracket is slotted so the hub and blade can be angled to throw more or less dirt. To adjust the hub and spindle, loosen the 1/2" hardware and move the bracket as required. Tighten bolts to the specified torque.

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

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

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

TRANSPORTING THE PLANTER

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

CAUTION: Avoid transporting planter with hoppers loaded whenever possible. When it is necessary to transport the planter with the hoppers loaded, the added weight should be distributed evenly on the planter frame before rotating the planter.

Install all safety lockups and safety lock pins.

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” and “Leveling The Planter Wings”.
- ❑ 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 in “Hydraulic Operation”.
- ❑ 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

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.)

DOUBLE DISC FERTILIZER OPENER

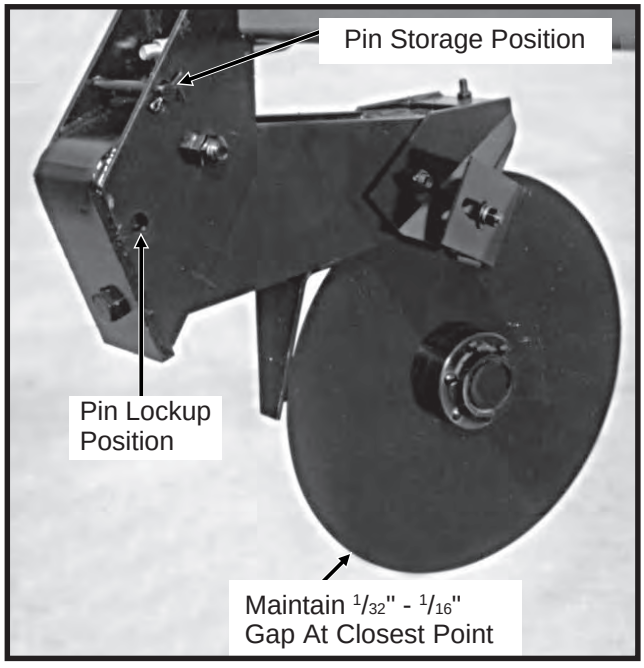
The double disc fertilizer openers should be positioned during assembly **to place the fertilizer no closer than 2" to either side of the row.** If planter frame is level and at proper 20" planting height, fertilizer depth will be approximately 4". Soil conditions can affect depth slightly.

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

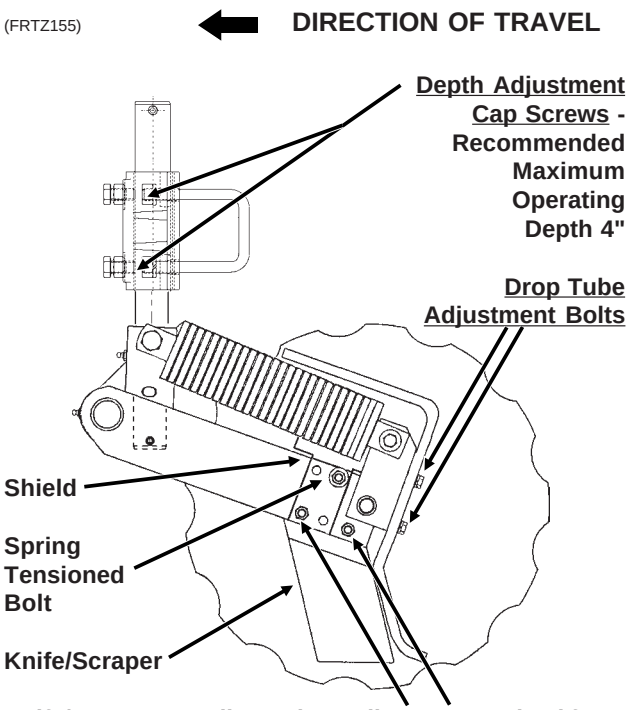
The notched single disc fertilizer opener is designed for use in minimum and no till soil conditions. Placement of fertilizer with the 16 3/4" notched single disc fertilizer opener is recommended at 2 1/2" - 3" from the row. **Never locate the opener to place fertillizer closer than 2".**

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

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

WARNING: Spring under pressure. DO NOT disassemble.

(FRTZ155)



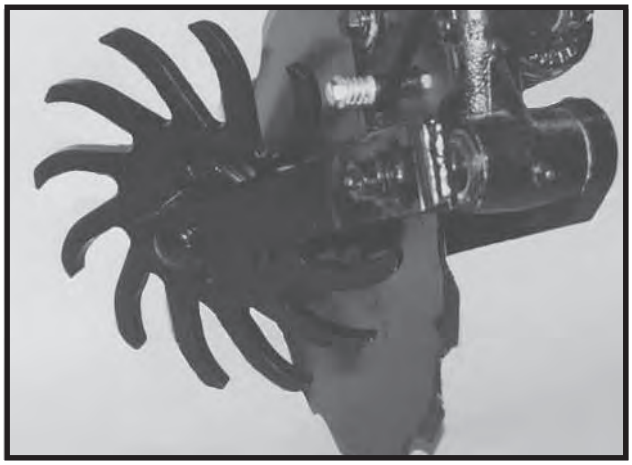
Knife/Scraper Leading Edge Adjustment Bolts (If not equipped with a shield and spring tensioned bolt, the third knife/scraper attachment bolt is also an adjustment bolt.)

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

12229798

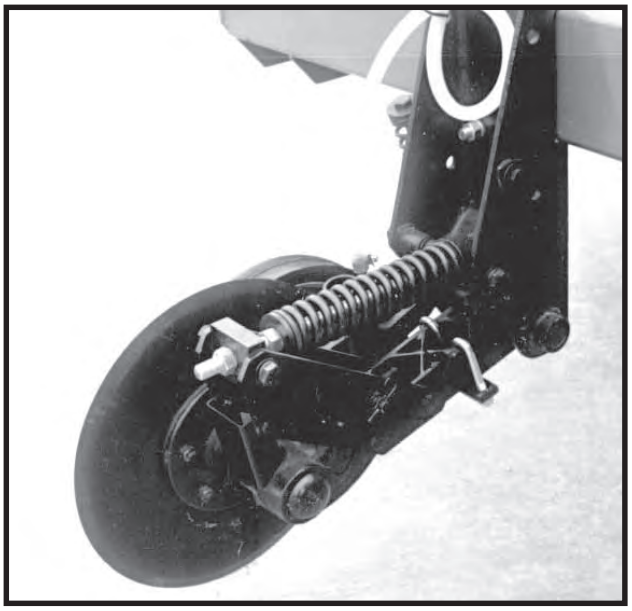


The notched single disc fertilizer opener mounted residue wheel is designed for applications where row unit mounted residue wheel attachments cannot be installed. The residue wheel is attached to the notched single disc fertilizer opener using 5/8" x 3 1/2" and 1/2" x 1 3/4" hardware.

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".**

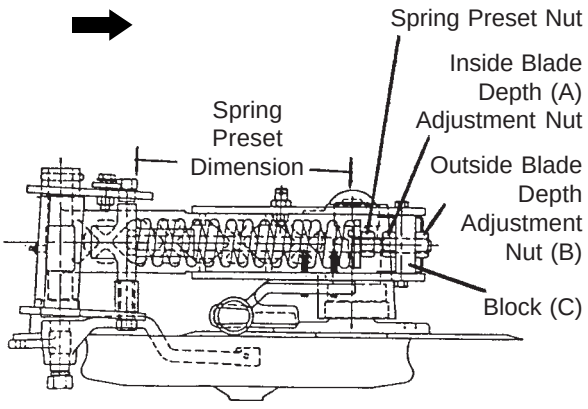
If planter frame is level and at approximately 20" operating height, maximum blade depth for placement of fertilizer is approximately 5". Soil conditions can affect depth slightly.

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)

DIRECTION OF TRAVEL



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.

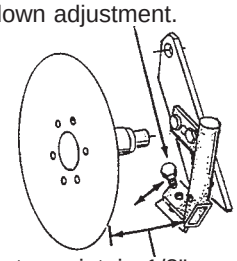
DANGER: Always install all lockup brackets before working under the machine.

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.

FOC016(PLTR4)

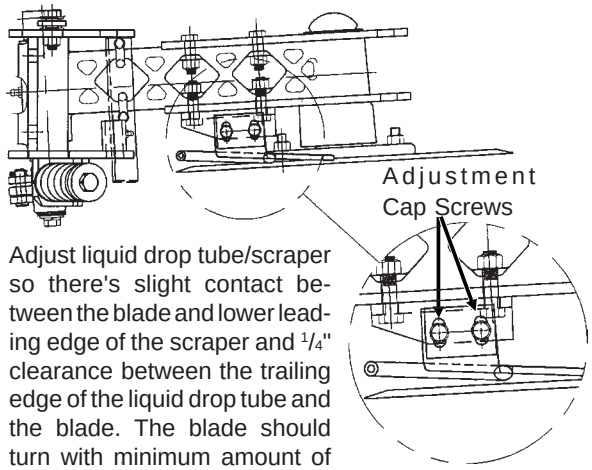
Loosen scraper adjustment bolt. Slotted hole in scraper allows up or down adjustment.



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.

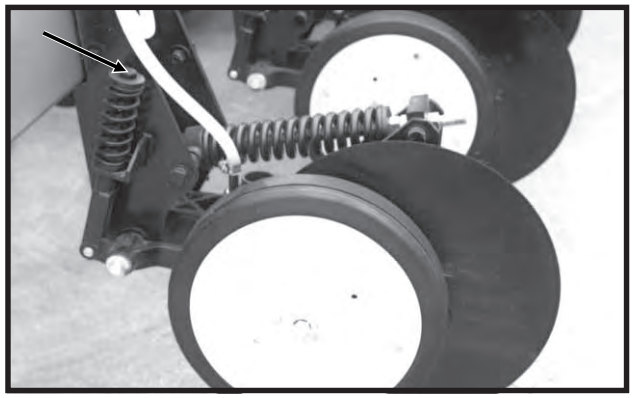
(INS16a)



Adjust liquid drop tube/scraper so there's 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:

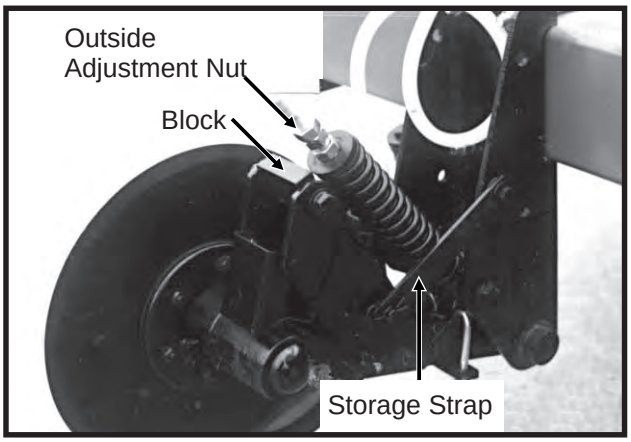
Step 1. With the planter in the planting position, remove outside blade depth adjustment nut. ("B" in illustration on previous page.)

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.

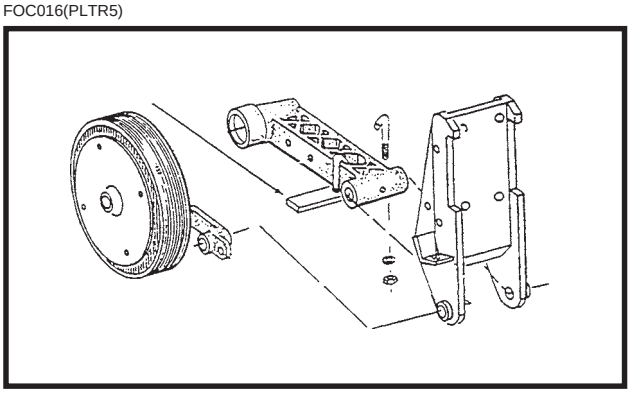
Step 4. Re-install depth adjustment nut and tighten.

77899-12



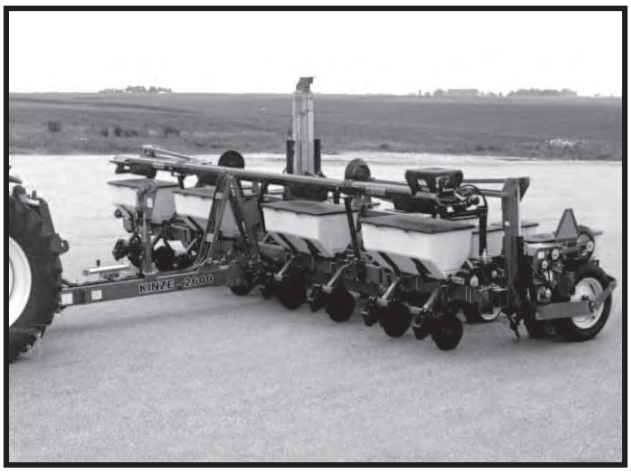
NOTE: The HD single disc fertilizer opener is equipped with a lockup bar that automatically raises and locks the soil press wheel when the blade assembly is raised.

FOC016(PLTR5)



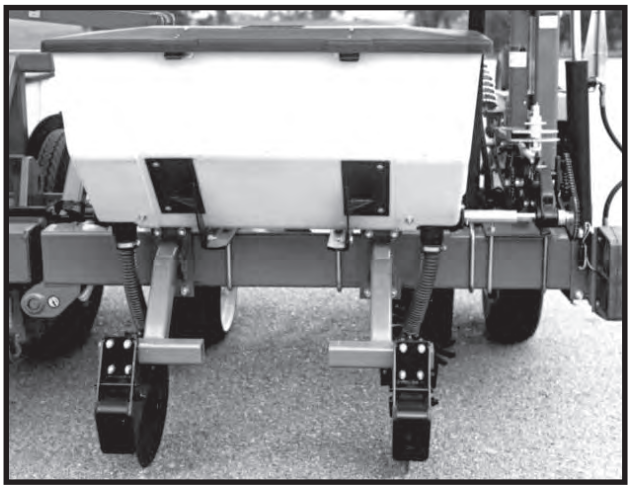
DRY FERTILIZER ATTACHMENT

76746-27



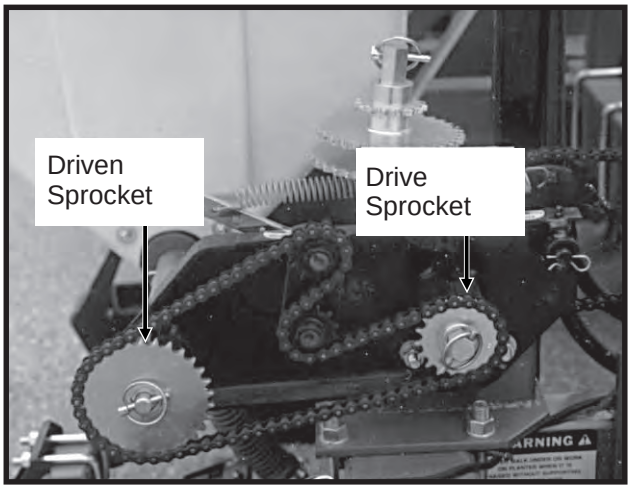
Shown with Quick Fill Attachment installed

76746-9



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.

76746-63



(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 each side of the planter directly ahead of the row unit transmission on all sizes. 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.

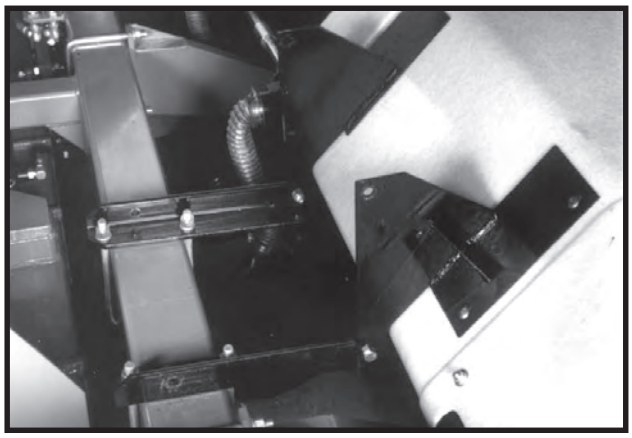
IMPORTANT: Certain analysis of fertilizer, if placed too close to the seed, may cause germination or seedling damage especially if used in amounts in excess of fertilizer manufacturer's recommendations. Check with your fertilizer dealer or manufacturer for the correct amount and placement.

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. Remove the two rear 1/2" x 1 1/4" cap screws from between hopper mounts and mounting angles. Rotate hopper lids to the back side of the hopper and carefully tip hopper forward. After dumping contents, flush all loose fertilizer from the hopper and hoses.

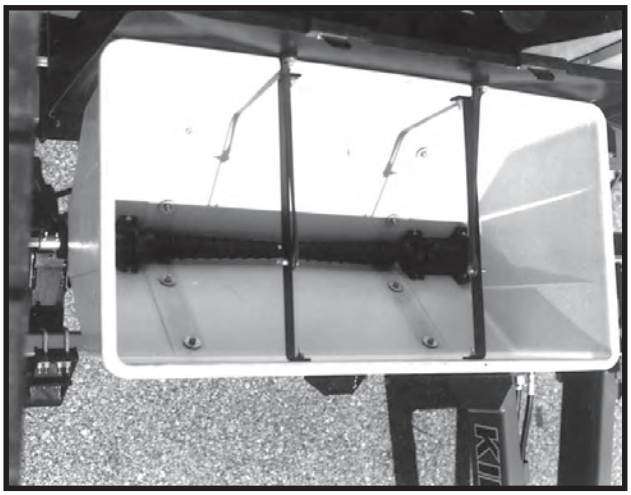
69797-85



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

To disassemble 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 shaft in the direction of planter travel to see that the spirals on the auger move toward the ends of the hopper. If not, remove auger assembly, turn 180° and reinstall.

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.

DRY FERTILIZER QUICK FILL ATTACHMENT

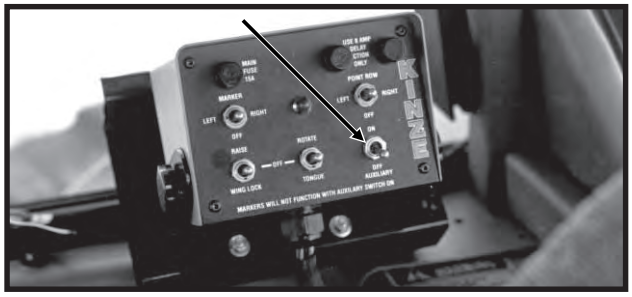
The quick fill attachment allows one point filling of all dry fertilizer hoppers. Located near the fill hopper is the hydraulic motor which drives the attachment and the flow control valve which controls the speed of the auger and also works as a safety valve for shutting off the auger. A pair of specially installed solenoid valves, controlled by the auxiliary switch on the control console, operates the auger.

76746-30

WARNING: Always install hydraulic cylinder lockout channels on marker cylinders before operating quick fill attachment.

NOTE: The quick fill attachment can be equipped for use with a closed center hydraulic system or open center hydraulic system. See Illustrations 1 and 2.

76746-24



1. Be sure marker switch on control console is in OFF position.
2. Move auxiliary switch on control console to ON position.
3. Operate hydraulic (marker) control lever to engage quick fill auger.

At the end of each season or if the quick fill attachment is not being used for a period of time, pull the augers from the quick fill tubes and thoroughly clean the augers and tubes and treat with a rust preventative.

DANGER: Keep clothing, yourself and others well clear when augers are in operation.

Illustration 1 (PLTR50)
Closed Center System

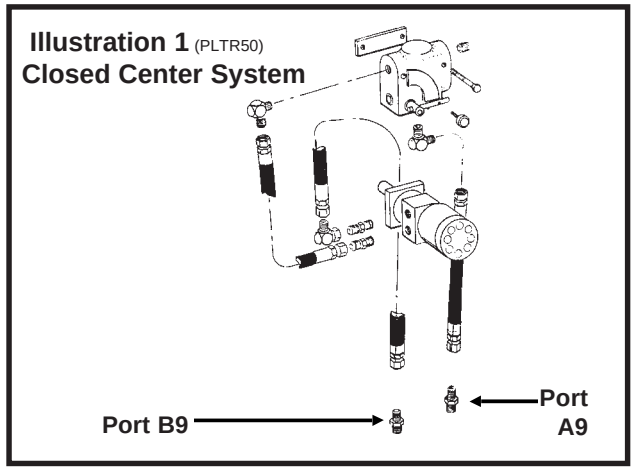
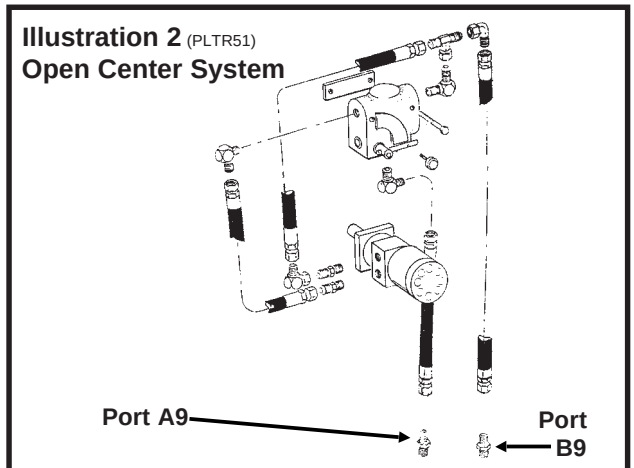
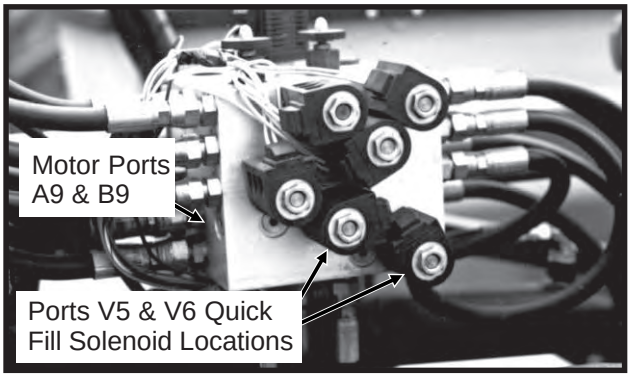


Illustration 2 (PLTR51)
Open Center System

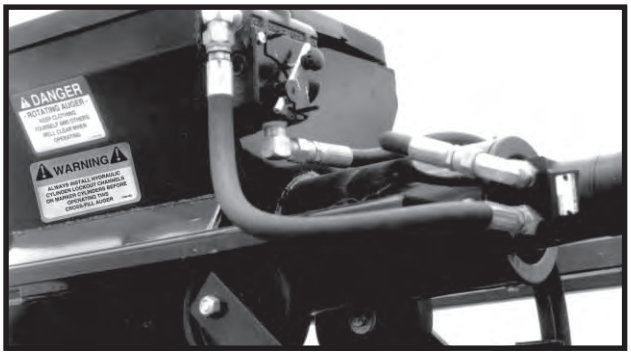


77612-8



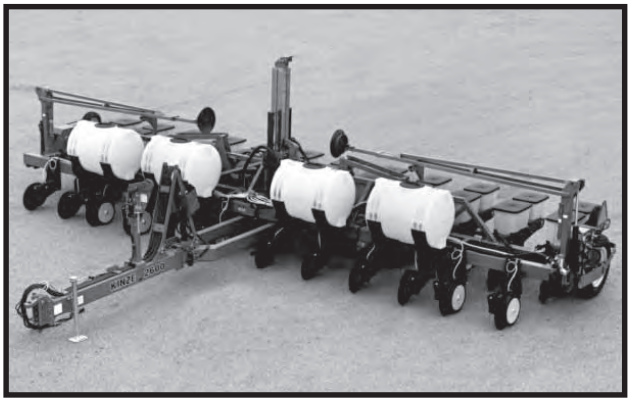
Shown with protective cover removed.

76746-66a



LIQUID FERTILIZER ATTACHMENT

76746-38



Shown With HD Single Disc Fertilizer Openers Installed

OPTIONAL SQUEEZE PUMP

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 driven and drive shafts. When changing sprocket combinations, make sure sprockets are in alignment, sprocket retaining collars are tight and chain tension is sufficiently restored.

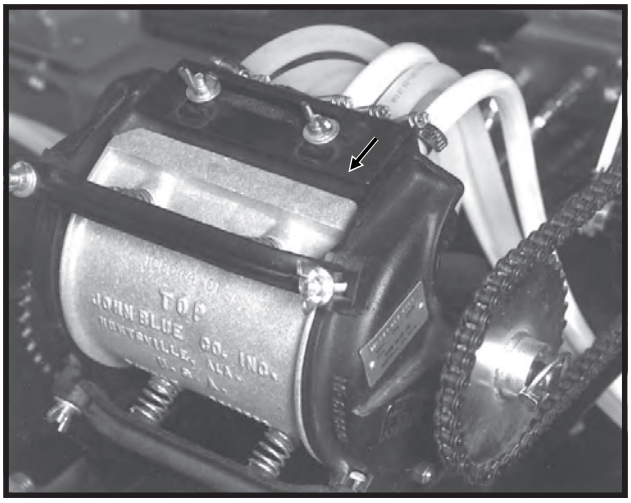
The delivery rate chart found at the end of this section provides an approximate application rate only. Actual delivery will vary with temperature and the particular fertilizer being used.

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 manufacturers' 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.

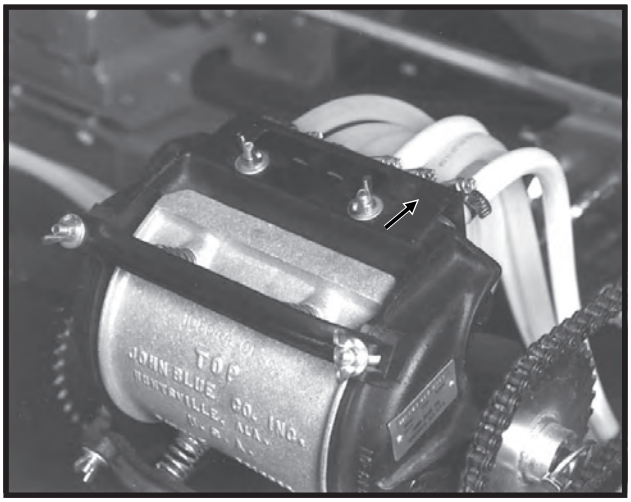
Shut-off valves provided at various locations should be closed to shut off flow when the planter sits overnight or for extended periods of time. It is also important to close the tank valves whenever service on the pump or hoses is being performed. To prolong the life of the hoses in the squeeze pump, 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



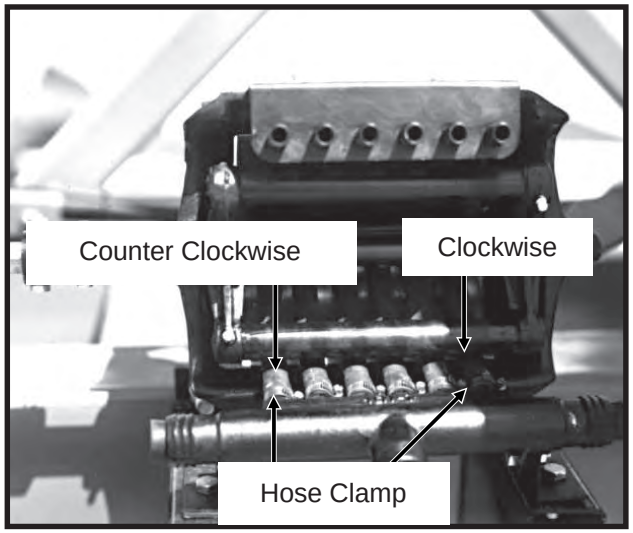
Discharge Manifold Forward

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.

48931-2



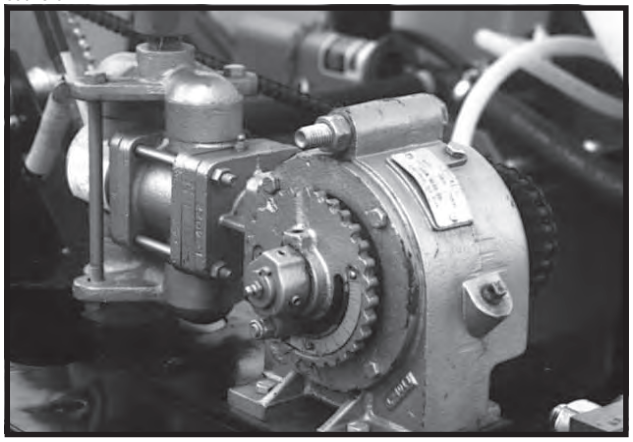
For the right hand hose (facing the pump from front as shown above) twist the hose 1/4 turn in the clockwise direction.

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

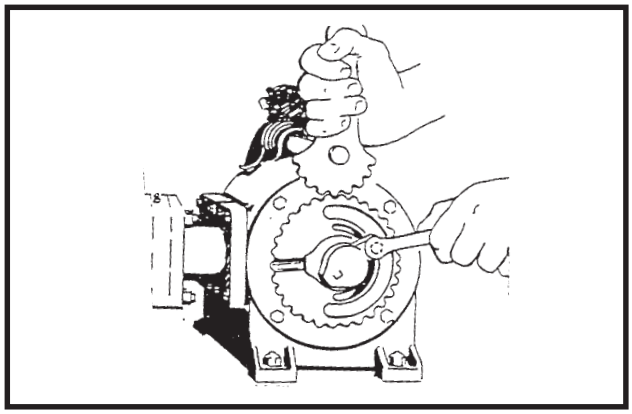


If the machine is equipped with the piston pump option, the rate of liquid fertilizer application is determined by the piston pump settings.

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.

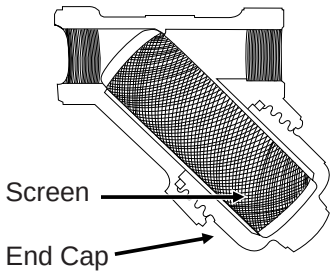
NOTE: Periodically check flow to all rows. If one or more lines are plugged, set rate will be delivered to remaining rows.

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.

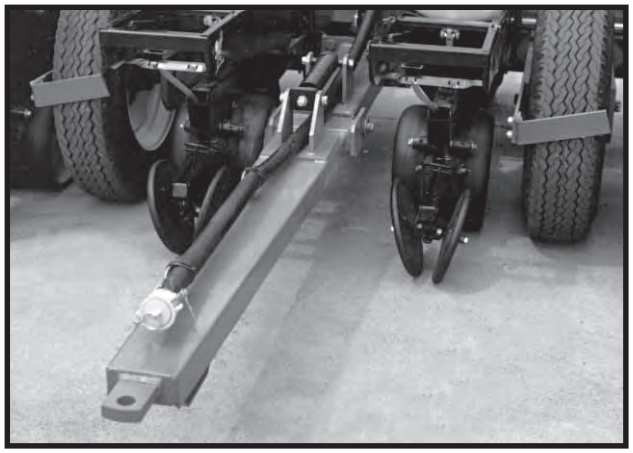
(INS220)



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

REAR TRAILER HITCH

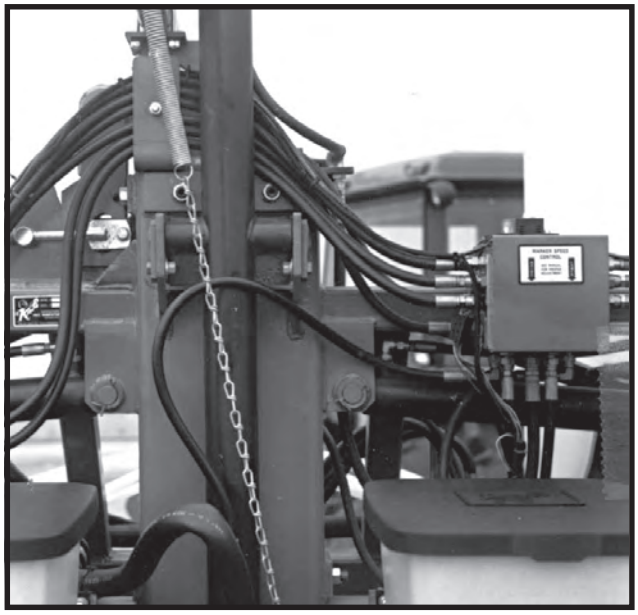
76782-70



The Rear Trailer Hitch is used to tow a 3 or 4 wheel wagon behind the planter. A spring, chain and mounting bracket are used to support the 1 1/4" feed hose from the hitch to the piston pump. This extra length or loop is required to allow the planter to be moved into transport position without stretching the hose.

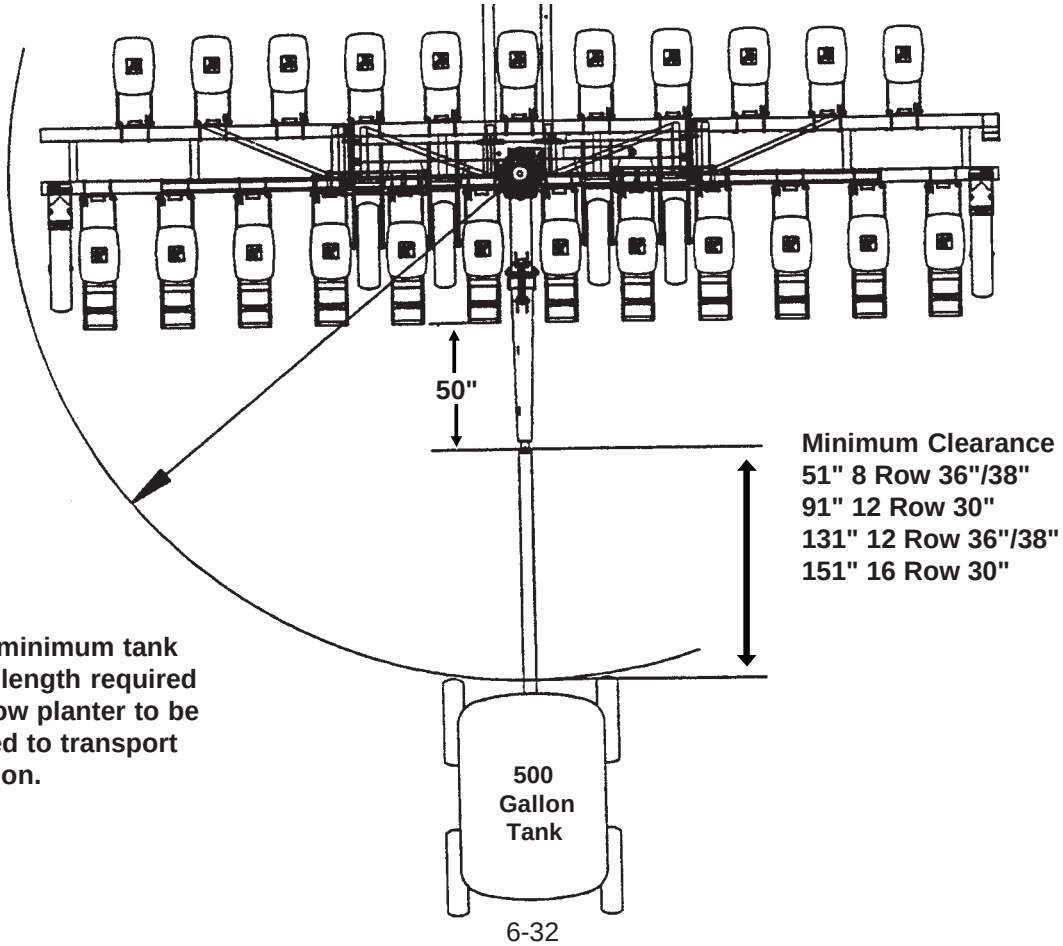
NOTE: The rear trailer hitch is designed for use with piston pump only. Maximum allowable hitch weight is 200 lbs. Gross towing weight should not exceed 6000 lbs. or the equivalent of a loaded 500 gallon tank and running gear.

76782-80



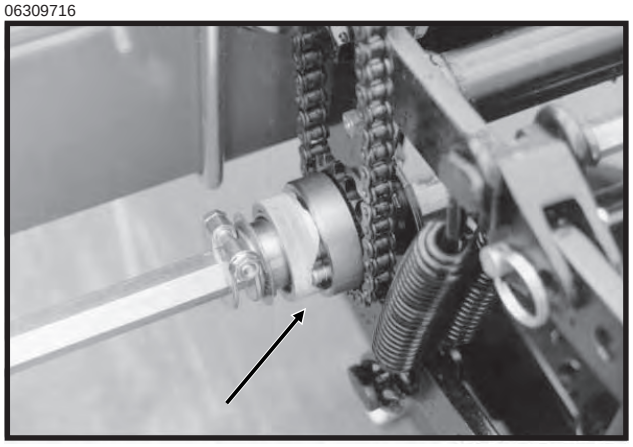
NOTE: Periodically check feed hose for kinks to prevent restricted delivery rate.

(PLTR133)



PUSH ROW UNIT CLUTCH SPROCKET

06309716



The push row unit clutch sprocket is designed to allow the push row unit drill shaft to be disengaged when only the pull row units are being used.

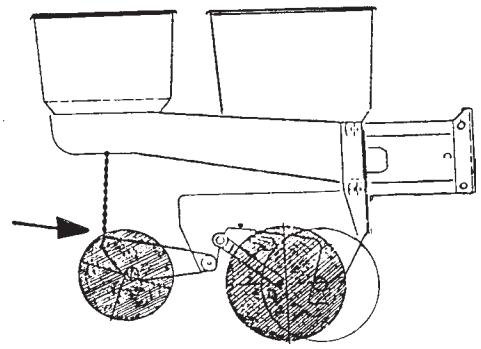
To engage or disengage the push row unit drill shaft using the clutch sprocket, rotate the knurled collar on the clutch sprocket 1/4 turn. Then using a 7/8" wrench on the drill shaft, rock the drill shaft slightly to take pressure off of the spring loaded pins in the clutch to allow the clutch to engage or disengage.

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

CHECKING SEED POPULATION

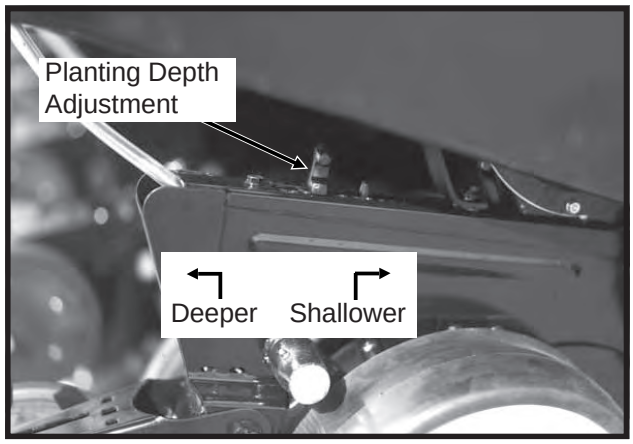
1. Tie up one or more sets of closing wheels by running a light chain or rubber tarp strap between the hopper support panel and closing wheels. It may be necessary to decrease closing wheel arm spring tension.

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 re-check.

72359-108



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

LENGTH OF ROW IN FEET AND INCHES						
Fraction Of Acre	Row Width					
	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 1,320 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 2600 Twin-Line® 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 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.

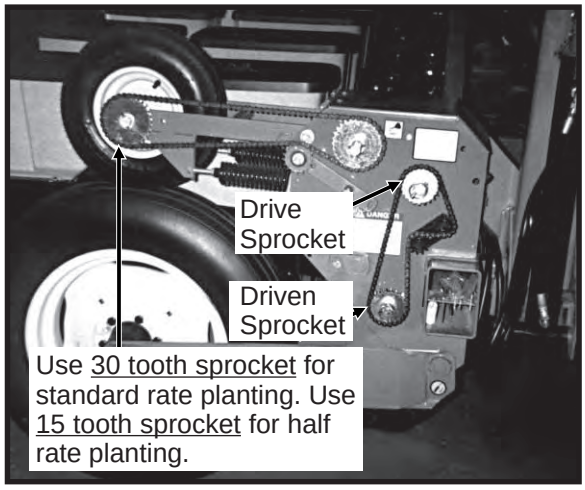
NOTE: Due to a multitude of variables, seed spacing can be adversely affected at speeds above 5.5 MPH.

Seed population per acre with **15" rows will be double the rate for 30" rows**, as well as 18" rows versus 36" rows and 19" rows versus 38" rows, at the listed sprocket combination. See pages 6-38 and 6-39.

In some cases when planting 15" row soybeans or milo/grain sorghum, a **Half Rate (2 To 1) Drive Reduction Package** may be required to obtain the desired population and seed spacing.

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

77066-24



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

30" Rows	36" Rows	38" Rows	Transmission Sprockets Drive	Transmission Sprockets Driven	Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
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	2 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 30"/36"/38" 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	102,483	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	157,878	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

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	161,856	134,880	127,782	2.6	129,484	107,904	102,226	3.2	2 to 8
17	27	167,852	139,876	132,514	2.5	134,282	111,900	106,012	3.1	2 to 8
17	26	174,308	145,256	137,610	2.4	139,446	116,204	110,088	3.0	2 to 8
19	28	180,898	150,748	142,814	2.3	144,718	120,598	114,252	2.9	2 to 8
19	27	187,598	156,332	148,104	2.2	150,078	125,066	118,484	2.8	2 to 8
17	24	188,832	157,360	149,078	2.2	151,066	125,888	119,262	2.8	2 to 8
17	23	197,042	164,202	155,560	2.1	157,634	131,362	124,448	2.7	2 to 8
19	25	202,606	168,838	159,952	2.1	162,084	135,070	127,962	2.6	2 to 8
19	24	211,048	175,874	166,618	2.0	168,838	140,700	133,294	2.5	2 to 8
23	28	218,982	182,486	172,880	1.9	175,186	145,988	138,304	2.4	2 to 8
19	23	220,224	183,520	173,862	1.9	176,180	146,816	139,090	2.4	2 to 8
24	28	228,504	190,420	180,398	1.8	182,804	152,336	144,318	2.3	2 to 8
24	27	236,966	197,472	187,078	1.8	189,572	157,978	149,662	2.2	2 to 8
17	19	238,526	198,772	188,310	1.8	190,820	159,018	150,648	2.2	2 to 8
24	26	246,080	205,068	194,274	1.7	196,864	164,054	155,420	2.1	2 to 8
26	28	247,546	206,288	195,430	1.7	198,036	165,030	156,344	2.1	2 to 8
24	25	255,924	213,270	202,046	1.6	204,740	170,616	161,636	2.0	2 to 8
26	27	256,714	213,928	202,668	1.6	205,372	171,142	162,134	2.0	2 to 8
23	23	266,588	222,156	210,464	1.6	213,270	177,724	168,372	2.0	2 to 8
27	26	276,840	230,700	218,558	1.5	221,472	184,560	174,846	1.9	2 to 8
24	23	278,178	231,814	219,614	1.5	222,542	185,452	175,692	1.9	2 to 8
25	23	289,768	241,474	228,764	1.4	231,814	193,180	183,012	1.8	2 to 8
19	17	297,950	248,292	235,224	1.4	238,360	198,634	188,180	1.8	2 to 8
27	24	299,910	249,926	236,772	1.4	239,928	199,940	189,418	1.7	2 to 8
28	24	311,018	259,182	245,540	1.3	248,814	207,346	196,432	1.7	2 to 8
23	19	322,710	268,926	254,772	1.3	258,168	215,140	203,818	1.6	2 to 8
28	23	324,540	270,450	256,216	1.3	259,632	216,360	204,966	1.6	2 to 8
24	19	336,742	280,618	265,848	1.2	269,392	224,494	212,678	1.6	2 to 8
25	19	350,772	292,310	276,926	1.2	280,618	233,848	221,540	1.5	2 to 8
23	17	360,676	300,564	284,744	1.2	288,540	240,452	227,796	1.5	2 to 8
26	19	364,804	304,002	288,002	1.1	291,844	243,202	230,402	1.4	2 to 7
27	19	378,834	315,756	297,080	1.1	303,068	252,556	237,664	1.4	2 to 7
28	19	392,866	327,388	310,156	1.1	314,292	261,910	248,124	1.3	2 to 7
26	17	407,722	339,768	321,886	1.0	326,178	271,814	257,508	1.3	2 to 7
27	17	423,404	352,836	334,266	0.9	338,724	282,268	267,412	1.2	2 to 7
28	17	439,084	365,904	346,646	0.9	351,268	292,724	277,316	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.

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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	3.5	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 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	29	24	23	86	71	68
15	33	33	27	26	98	82	78
15	30	36	30	28	109	90	86
19	33	41	34	33	124	104	98
19	30	45	38	36	138	114	108
15	19	52	43	41	158	132	125
30	35	56	47	44	172	143	136
30	33	60	50	47	182	152	144
33	35	63	53	50	189	158	149
35	33	70	58	56	212	177	168
33	30	73	60	57	220	184	174
19	15	84	70	66	272	227	215
30	19	104	87	82	316	263	250
33	19	115	96	91	347	290	275
35	19	122	102	97	368	307	291
30	15	132	110	104	400	334	316
33	15	145	121	115	440	367	348
35	15	154	129	122	467	389	369

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.

NOTE: Since the optional two-speed point row clutch is located ahead of the dry fertilizer drive, activating the two-speed point row clutch reduced rate switch will cause the same per cent of reduction in dry fertilizer application rates.

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

Remove one spout from one of the fertilizer hoppers and attach a container under the opening. Engage the fertilizer attachment and drive forward for 174 feet. Weigh the amount of fertilizer caught in the container and multiply that amount by 100. The result will be the pounds of fertilizer delivered per acre when planting in 30 inch 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
15	*62	6.1	5.1	4.8	46	*62	18.7	15.6	14.8
19	*62	7.7	6.4	6.1	15	19	19.9	16.6	15.7
15	46	8.2	6.9	6.5	32	34	23.7	19.8	18.7
19	46	10.4	8.7	8.2	34	32	26.8	22.3	21.1
15	34	11.1	9.3	8.8	19	15	31.9	26.6	25.2
15	32	11.8	9.8	9.3	46	34	34.1	28.4	26.9
32	*62	13.0	10.8	10.3	46	32	36.2	30.2	28.6
19	34	14.1	11.7	11.1	32	19	42.4	35.4	33.5
19	32	15.0	12.5	11.8	34	19	45.1	37.6	35.6
32	46	17.5	14.6	13.8	*62	34	45.9	38.3	36.3
34	46	18.6	15.5	14.7					

***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.

NOTE: Since the optional two-speed point row clutch is located ahead of the liquid fertilizer squeeze pump, activating the two-speed point row clutch reduced rate switch will cause the same per cent of reduction in liquid fertilizer (squeeze pump) application rates.

To check the exact number of gallons your fertilizer attachment will actually deliver on a 30 inch 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 feet. 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 inch 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:

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 40 Tooth Drive Sprocket And 23 Tooth Driven Sprocket

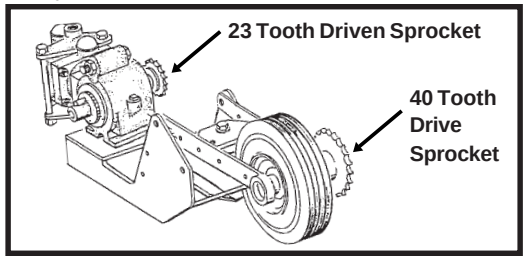
Pump Setting	1	2	3	4	5	6	7	8	9	10
8 Row 36"	7.2	14.5	21.6	28.8	36.0	43.2	50.4	57.6	64.8	72.0
8 Row 38"	6.8	13.7	20.5	27.3	34.1	40.9	47.8	54.6	61.4	68.2
12 Row 30"	5.8	11.6	17.3	23.0	28.8	34.6	40.3	46.1	51.8	57.6
12 Row 36"	4.8	9.6	14.4	19.2	24.0	28.8	33.6	38.4	43.2	48.0
12 Row 38"	4.5	9.1	13.6	18.2	22.7	27.3	31.8	36.4	40.9	45.5
16 Row 30"	4.3	8.7	13.0	17.3	21.6	25.9	30.2	34.6	38.9	43.2

Chart 2

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

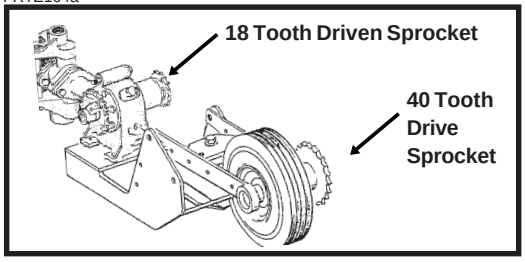
Pump Setting	1	2	3	4	5	6	7	8	9	10
8 Row 36"	5.7	11.5	17.1	22.9	28.6	34.3	40.0	45.7	51.4	57.1
8 Row 38"	5.4	10.9	16.3	21.7	27.1	32.5	37.9	43.3	48.7	54.1
12 Row 30"	4.6	9.2	13.7	18.3	22.9	27.5	32.0	36.6	41.1	45.7
12 Row 36"	3.8	7.6	11.4	15.2	19.0	22.9	26.7	30.5	34.3	38.1
12 Row 38"	3.6	7.2	10.8	14.4	18.0	21.7	25.2	28.9	32.5	36.1
16 Row 30"	3.4	6.9	10.3	13.7	17.1	20.6	24.0	27.5	30.9	34.3

FRTZ164



GA6154 (L-4405) - Use Chart 1

FRTZ164a



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 feet. 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:

36" multiply by 0.83 **38" multiply by 0.79**

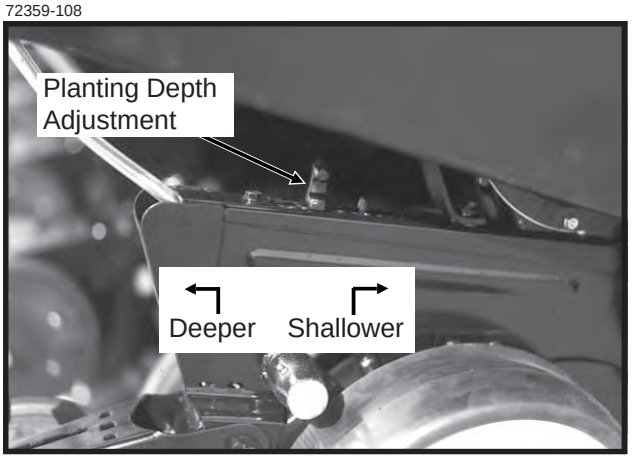
ROW UNIT OPERATION

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



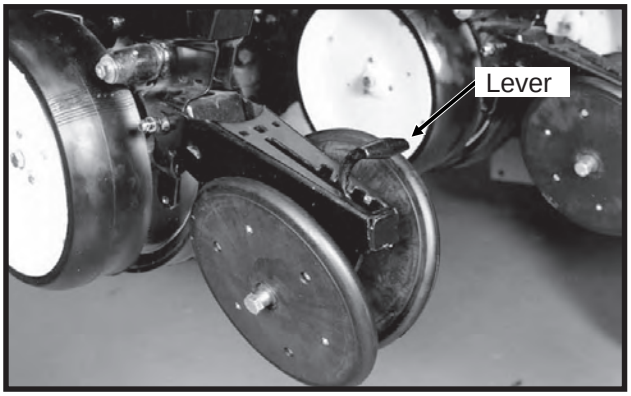
"V" CLOSING WHEEL ADJUSTMENT (Rubber And Cast Iron)

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.

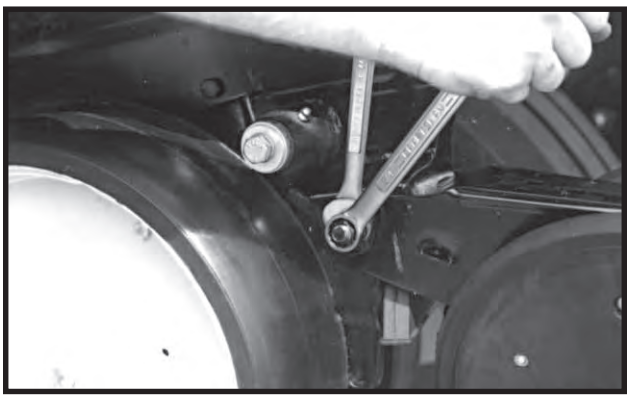
77121-10



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

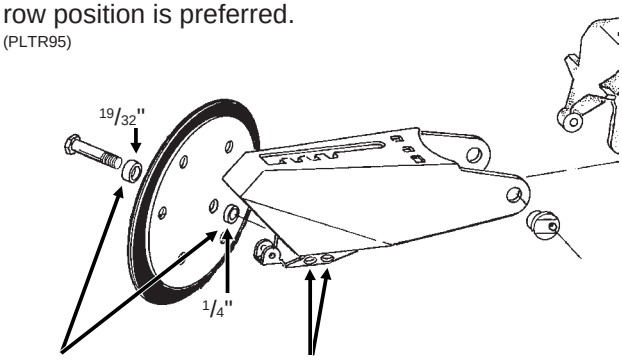
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the "V" closing wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the closing wheel arm to the wheel arm stop. Using another 3/4" wrench turn the eccentric bushings until the **closing wheels are aligned with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

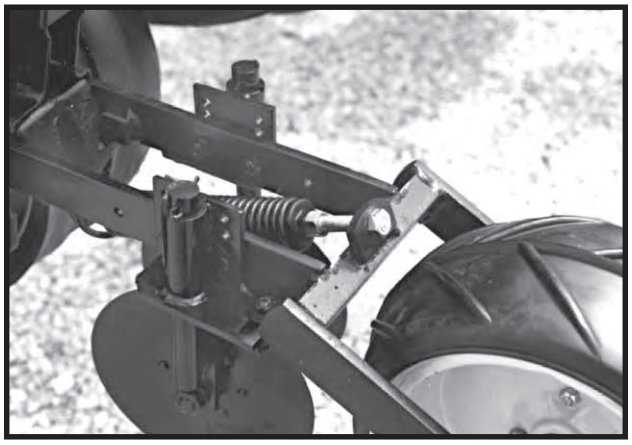
(PLTR95)



COVERING DISCS/SINGLE PRESS WHEEL ADJUSTMENT

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

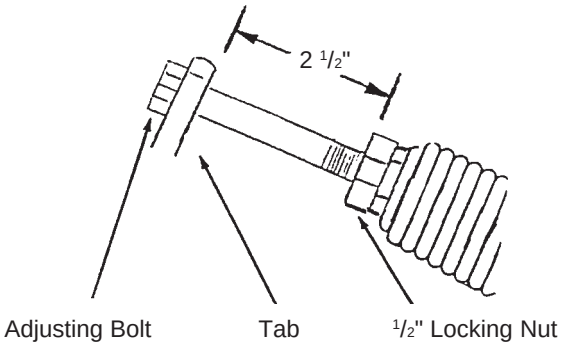
72359-31



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

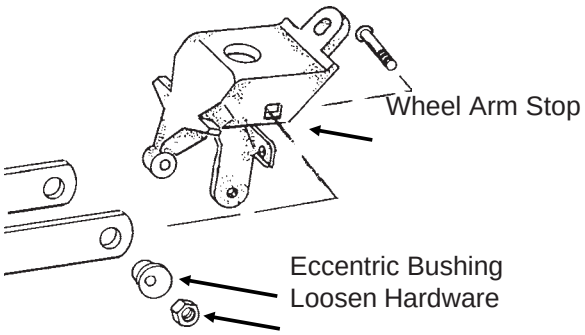
Initial press wheel down force setting should be with 2 1/2" between mounting arm tab and locking nut. To adjust down force spring, loosen 1/2" locking nut and turn adjusting bolt in to increase down force and out to decrease down force. Tighten locking nut against spring plug. Adjust all row units to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

RH993(PLTR12)



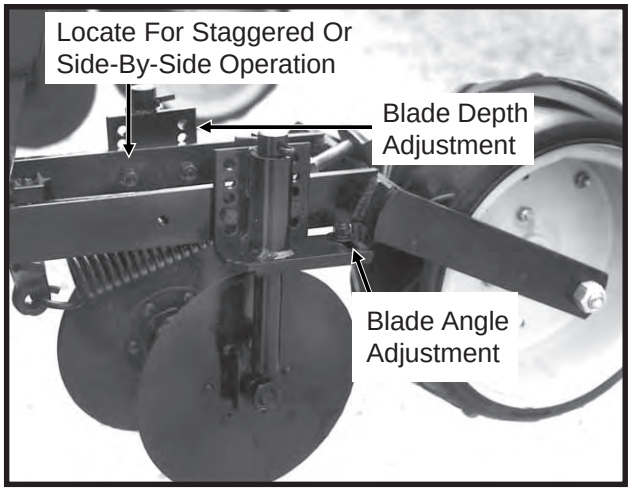
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the covering discs/single press wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another 3/4" wrench, turn the eccentric bushings until the press wheel is aligned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

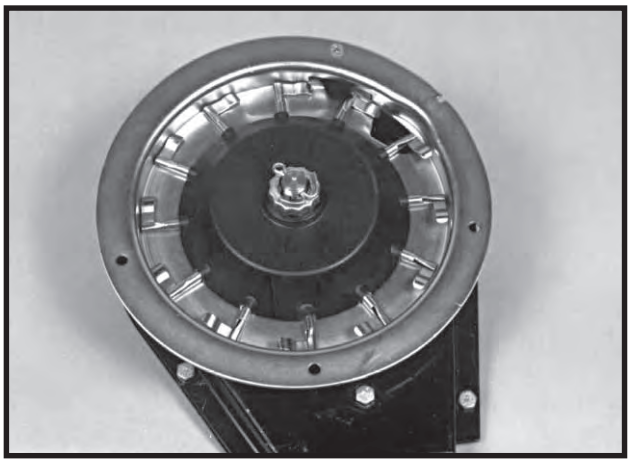
Slotted holes in the disc mount and bracket allow for 0° - 15° blade angle adjustment.

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.

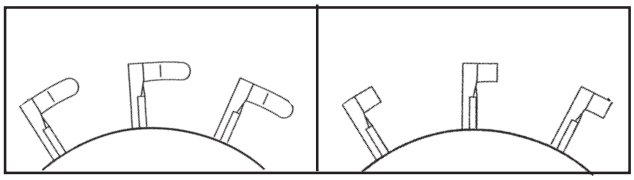
60620-16



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.

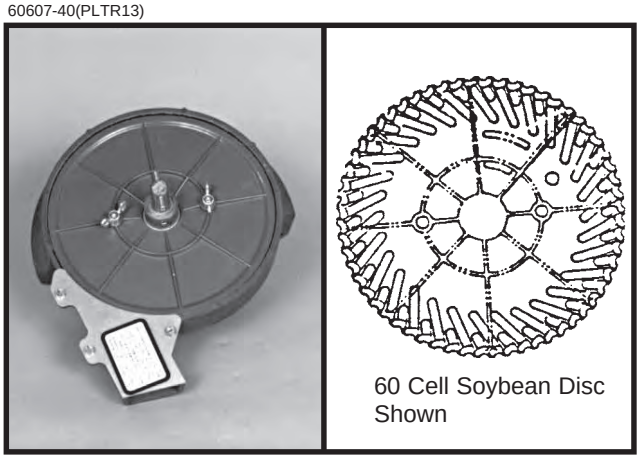
IMPORTANT: To ensure efficient operation of the finger pickup seed meter and extend the life of its components, mix one teaspoon of powdered graphite with the seed twice daily. Even distribution of the graphite with the seed is critical with newer seed coatings to provide lubrication for the seed pickup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

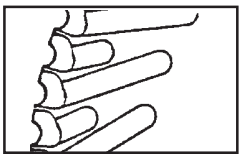
60607-40(PLTR13)



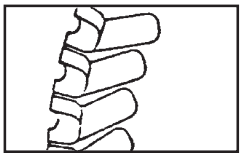
60 Cell Soybean Disc Shown

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

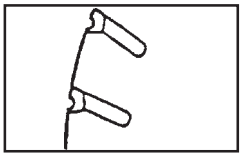
Soybean: *60 cells to meter seed sizes from 2200 to 4000 seeds per pound (Black color-coded).* (PLTR14)



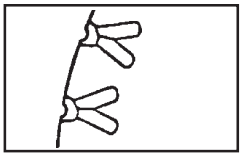
Specialty soybean: *48 cells to meter seed sizes from 1400 to 2200 seeds per pound (Dark blue color-coded).* (PLTR15)



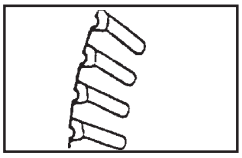
Small milo/grain sorghum: *30 cells to meter seed sizes from 14,000 to 20,000 seeds per pound (Red color-coded).* (PLTR16)



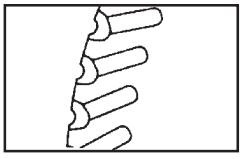
Large milo/grain sorghum: *30 cells to meter seed sizes from 10,000 to 16,000 seeds per pound (Light blue color-coded).* (PLTR17)



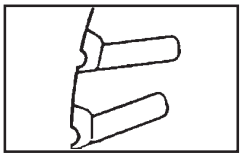
High rate small milo/grain sorghum: *60 cells to meter seed sizes from 12,000 to 18,000 seeds per pound (Red color-coded).* (PLTR18)



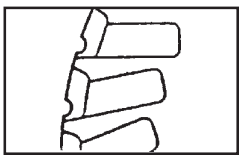
High rate large milo/grain sorghum: *60 cells to meter seed sizes from 10,000 to 14,000 seeds per pound (Yellow color-coded).* (PLTR19)



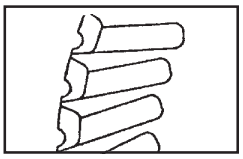
Cotton, acid-delinted: *30 cells to meter seed sizes from 4200 to 5200 seeds per pound (White color-coded).* (PLTR20)



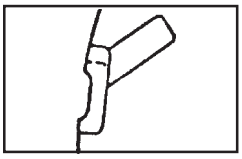
Large cotton, acid-delinted: *36 cells to meter seed sizes from 3800 to 4400 seeds per pound (Tan color-coded).* (PLTR21)



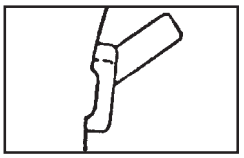
High rate cotton, acid-delinted: *48 cells to meter seed sizes from 4200 to 5200 seeds per pound (Light green color-coded).* (PLTR22)



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 "Meter Drive Release".

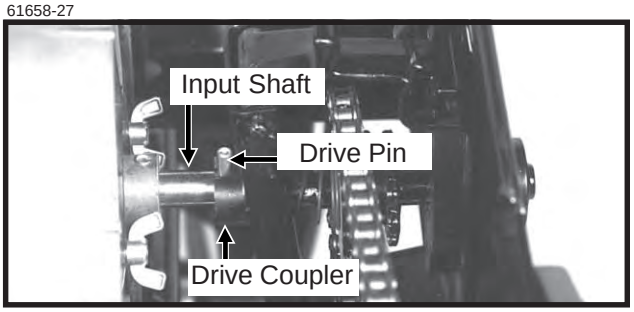
ROW UNIT OPERATION

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



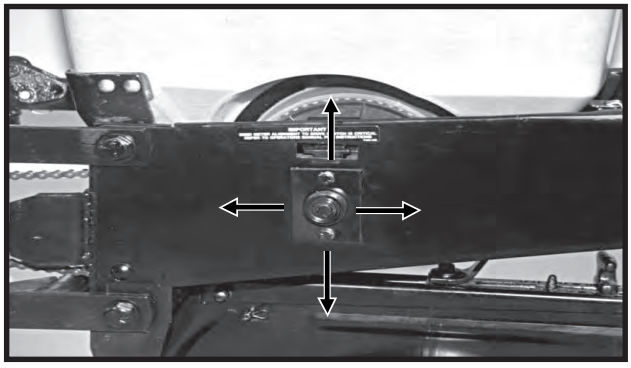
To check alignment:

- 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:

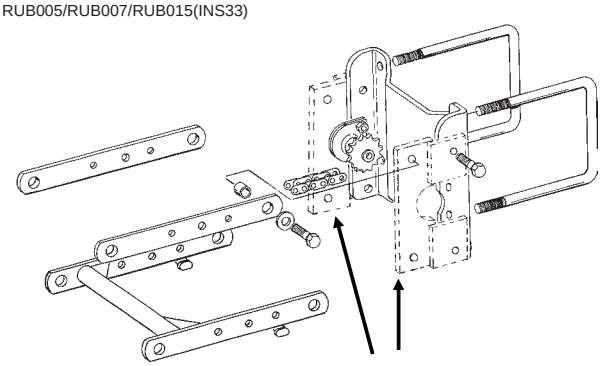
- Slightly loosen both $^{5}/_{16}$" cap screws.
- Move clutch assembly to correct any misalignment.
- Tighten both $^{5}/_{16}$" cap screws.

72794-24



ROW UNIT EXTENSION BRACKETS

RUB005/RUB007/RUB015(INS33)

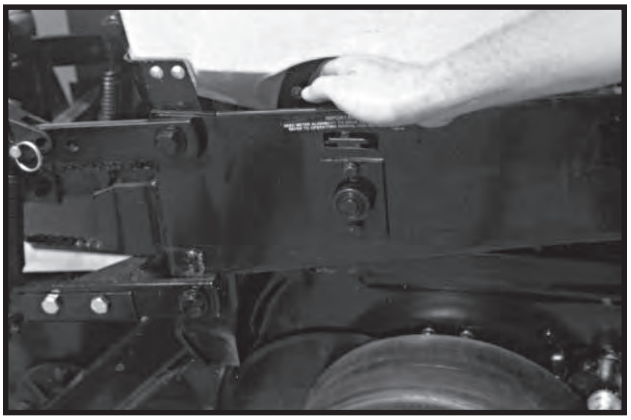


Row unit extension brackets are required on the four center row units if the Model 2600 planter is equipped with coulter mounted residue wheels. The brackets extend the row units rearward 4" to provide required clearance between the residue wheels and transport axle in planting position and between hydraulic hose routing post in transport position.

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



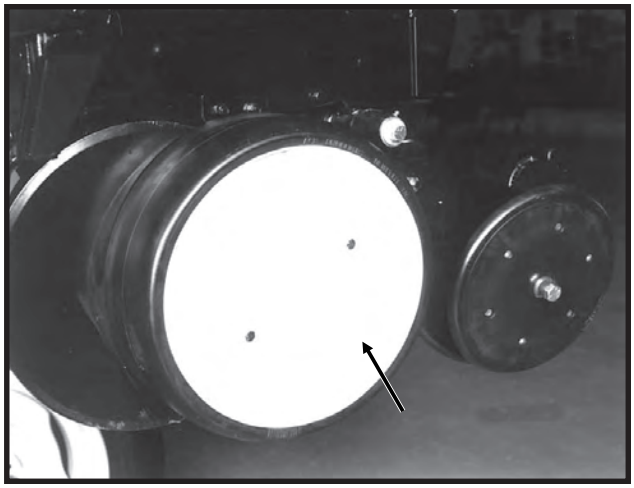
To disengage the drive, lift the release handle and pull outward until the handle locks in the slot in the side of the hopper side panel. To engage the row unit, lift and unlatch the handle. Spring tension will return the mechanism to the drive position.

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 OPERATION

ROW UNIT GAUGE WHEEL COVER

78896-6



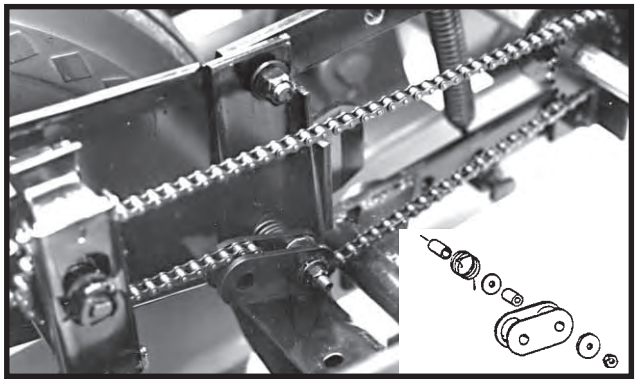
The row unit gauge wheel cover when installed on the gauge wheels next to the transport and/or drive wheels of the planter will aid in protecting the row units from rock damage.

ROW UNIT CHAIN ROUTING

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

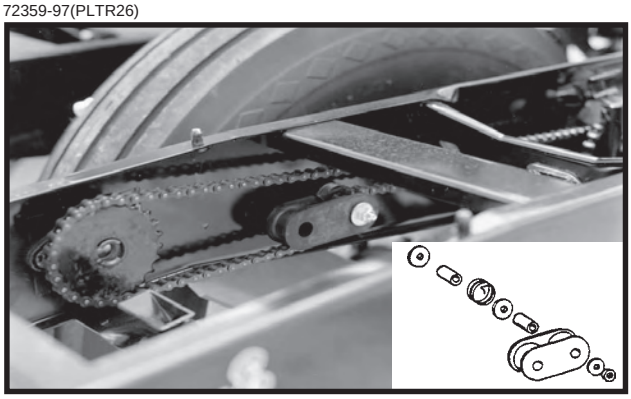
Inspect and replace weak, worn or broken springs and/or idlers and idler bushings.

72359-124(PLTR25)



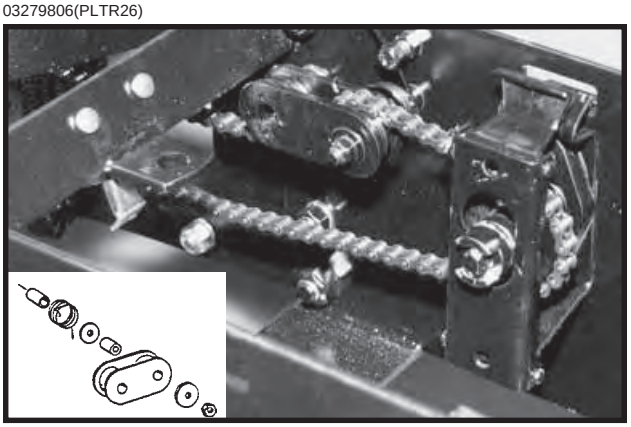
Pull Row Unit Meter Drive

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)

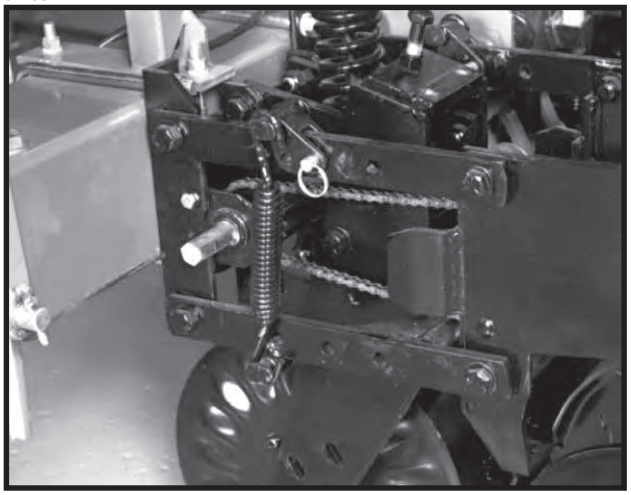
Direction Of Chain Travel →

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.

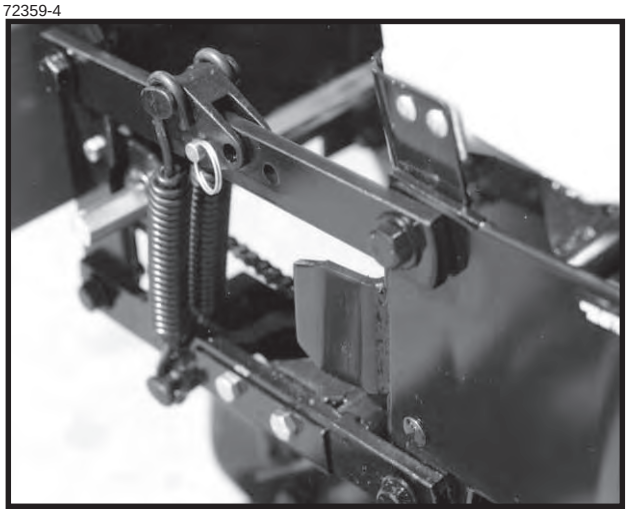
Two springs per row, one on the L.H. parallel arms and one on the R.H. parallel arms, are used unless equipped with row unit mounted no till coulters. Four springs per row are used with row unit mounted no till coulters.

61703-4



Two Springs Per Row (Dual)

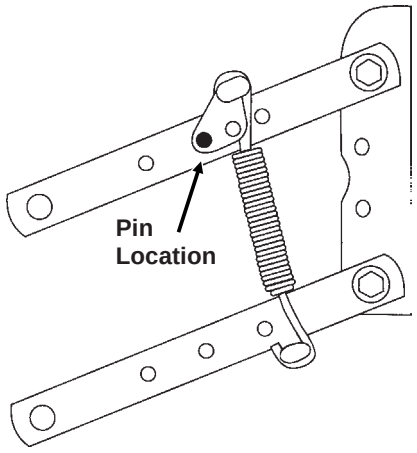
72359-4



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

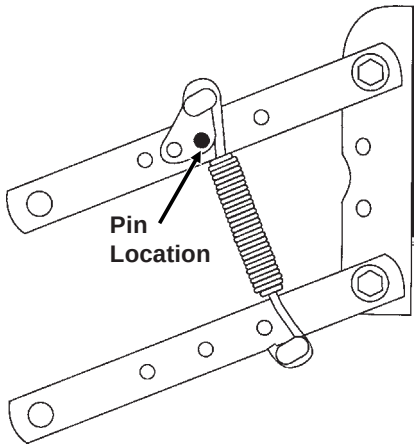
There are four positions for spring tension adjustment. Position 1 allows for minimum down pressure and position 4 for maximum down pressure.

L0096(PLTR27d)



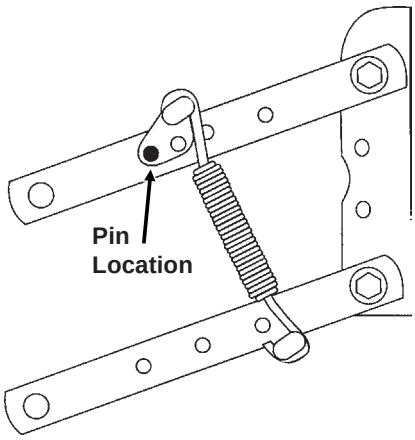
Position 1 (Minimum)

(PLTR28d)



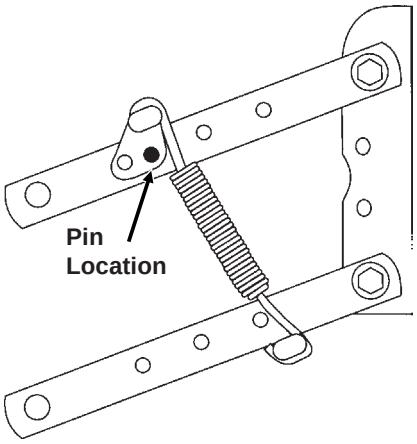
Position 2

(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.

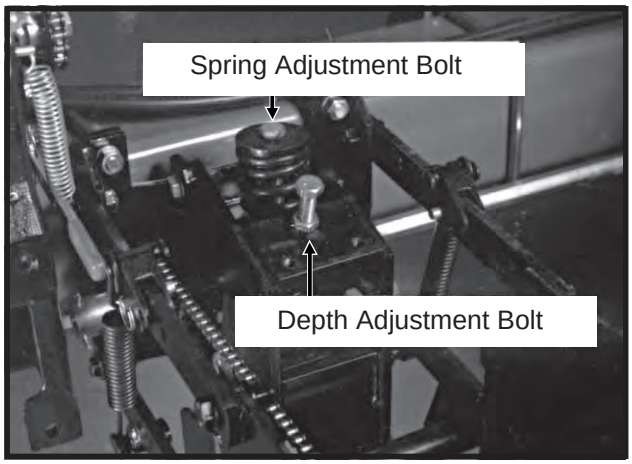
FRAME MOUNTED COULTER

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.

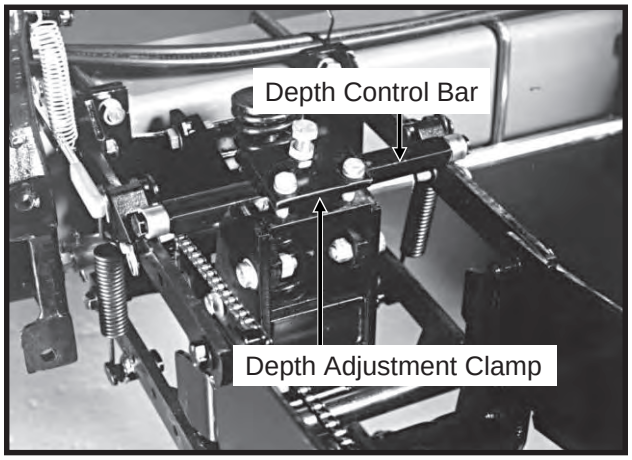
56314-14



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

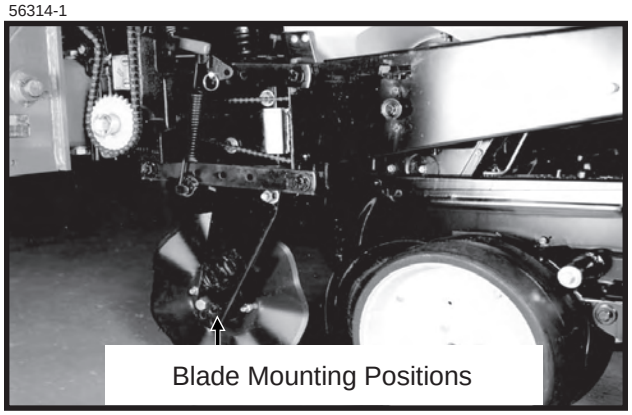


In certain applications it is desirable to use the depth control bar. In uneven terrain, use of the depth control bar allows greater depth control. The up and down movement of the row unit allows the coulter to move up and down at a rate of approximately 1/2 that of the row unit, maintaining a more uniform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

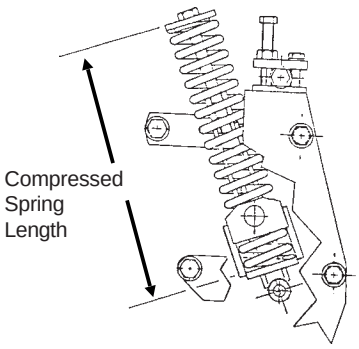
56314-1



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

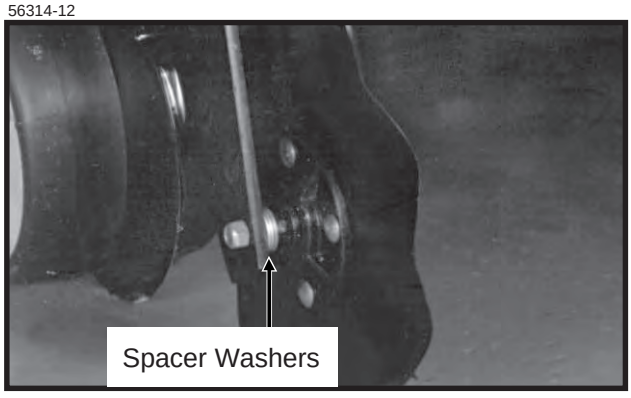
A5649rev.(PLTR44)



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.

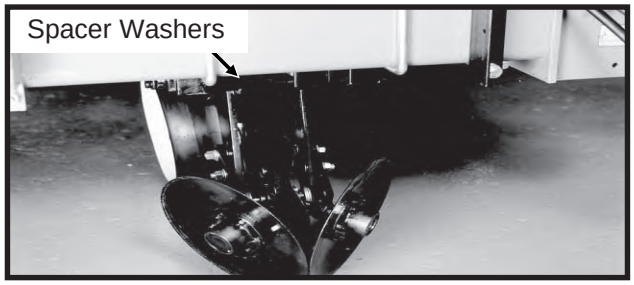
ROW UNIT OPERATION

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.

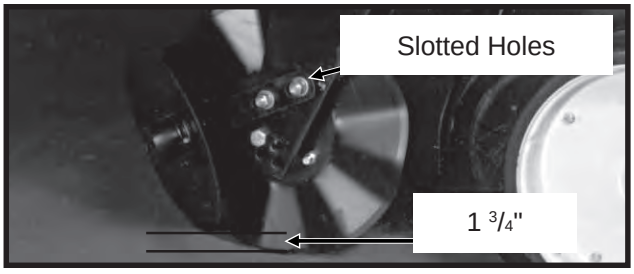
56314-19



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.

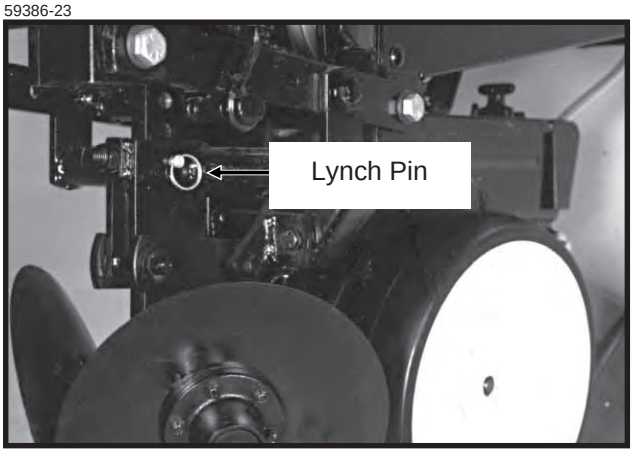
NOTE: The depth control bar should always be used when the frame mounted coulter is equipped with disc furrowers.

ROW UNIT MOUNTED DISC FURROWER

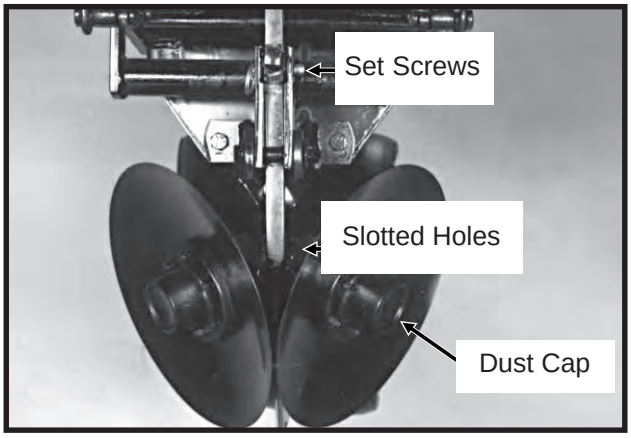
The row unit mounted disc furrower for use on pull row units only (Not compatible with Interplant® push row units.) may be equipped with either 12" solid blades or 12" notched blades.

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



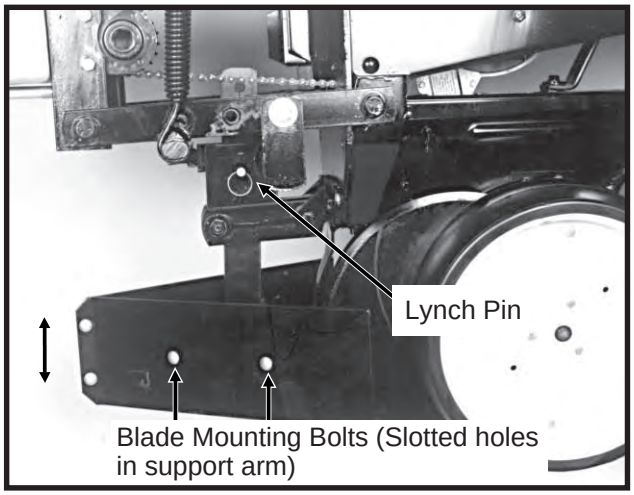
Vertical adjustment in 1/3" increments is possible by removing the lynch pin which secures the vertical support arm and moving the support arm up or down as required. Re-install lynch pin. Finer adjustment can be attained by removing the lynch pin and using the 5/8" x 2 1/4" set screw to clamp the support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

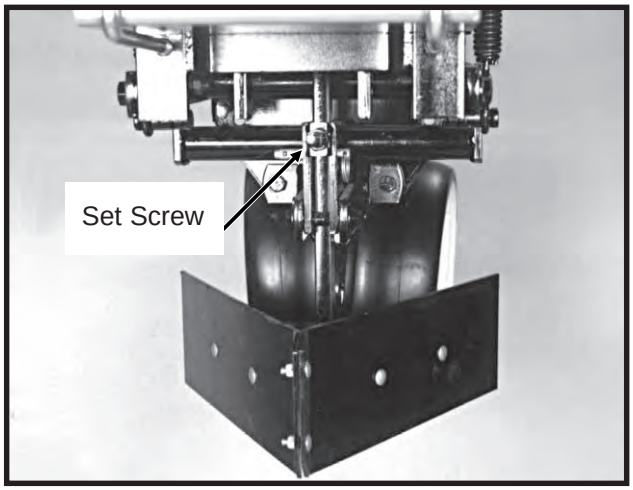
ROW UNIT OPERATION

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.

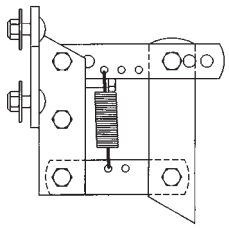
NOTE: The row unit mounted bed leveler is not compatible with row spacings less than 36".

ROW UNIT MOUNTED RESIDUE WHEEL

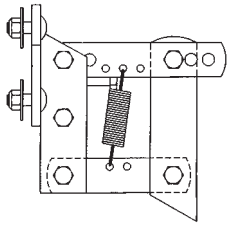
The row unit mounted residue wheel may be used on pull row units and push row units.

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.

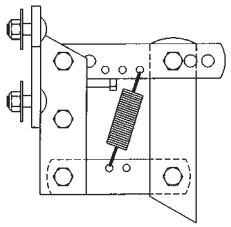
Position 1 *(Minimum)*(PLTR31a)



Position 2(PLTR32a)

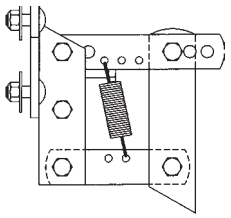


Position 3 *(Maximum)*(PLTR33a)



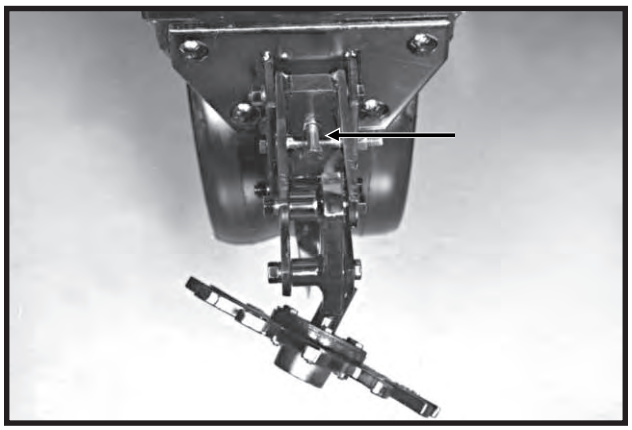
For additional uplift or float, position springs as shown below.

(PLTR34a)



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

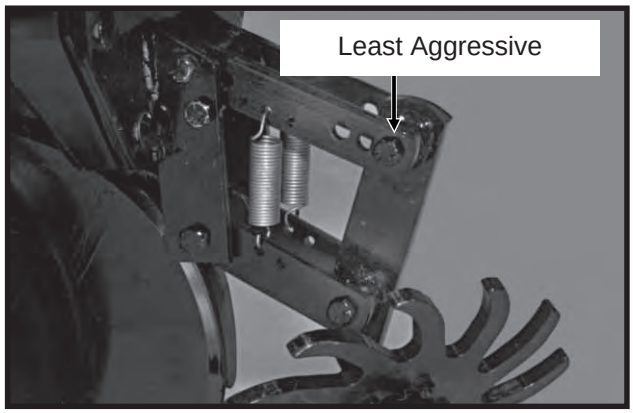
76782-31



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.

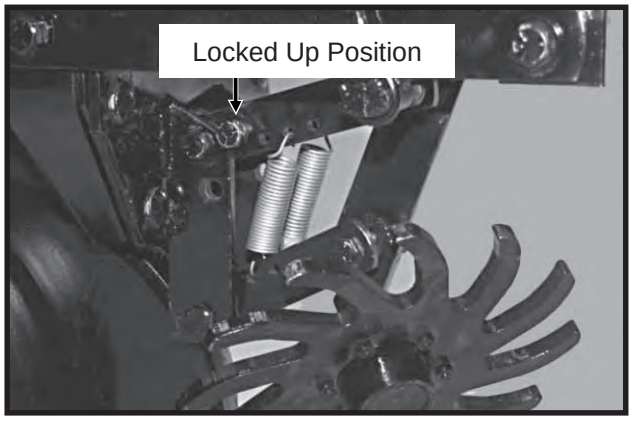
Three holes in the upper link allow for wheel angle adjustment. With the wheel mount in the most vertical position, using the rear hole in the upper link, the residue wheel is most aggressive. Moving the wheel mount to one of the forward holes reduces the aggressiveness of the wheel for use in mulch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

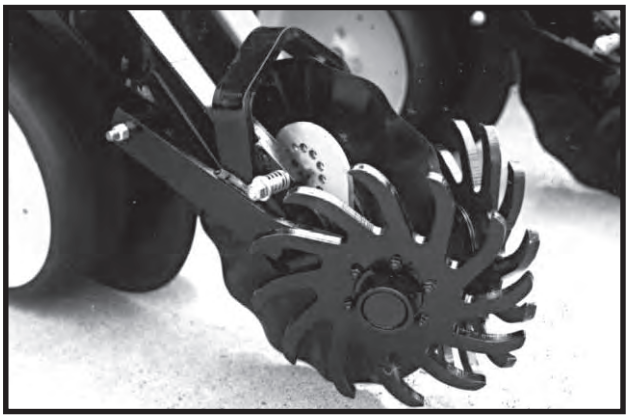
Operating depth can be checked by setting the planter down on a level concrete floor and checking the relationship between the coulter blade and row unit opener blade. Make sure the planter is level and coulter is square with the planter frame and aligned with the row unit disc opener.

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

ROW UNIT OPERATION

COULTER MOUNTED RESIDUE WHEELS

80376-15

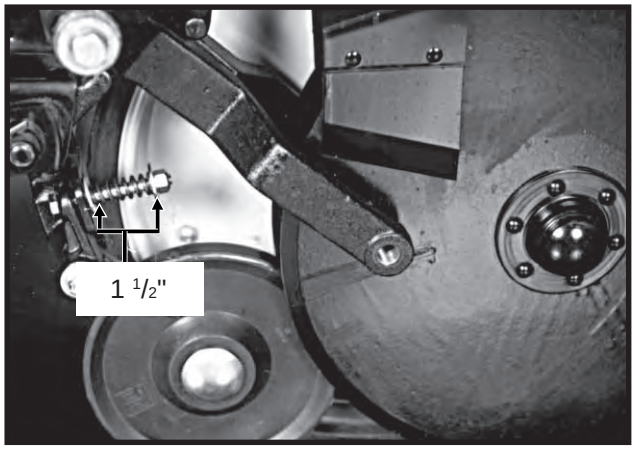


Coulter mounted residue wheels are designed for use on pull row unit and push row units.

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

76782-5



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.

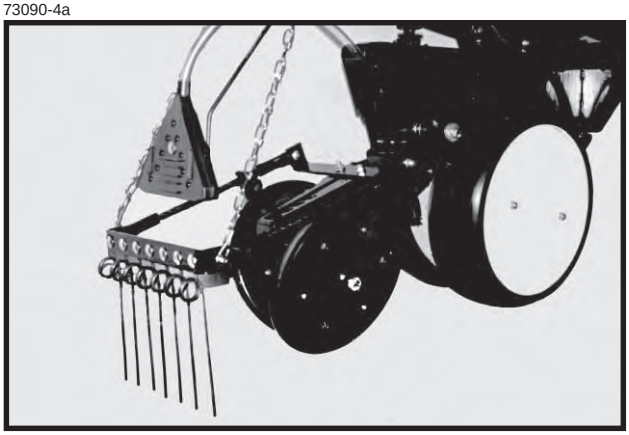
Initial spring tension is set leaving 1 1/2" between the washers.

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.

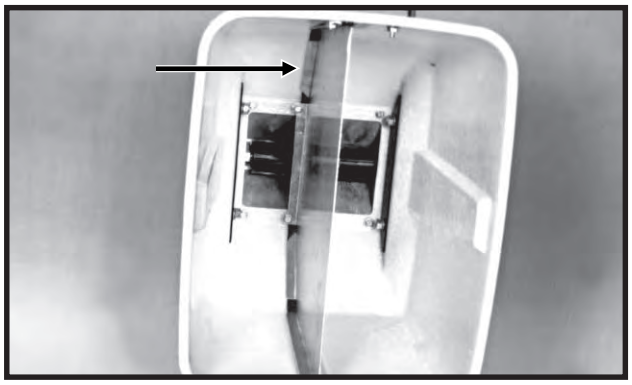
NOTE: The spring tooth incorporator is not compatible with the covering discs/single press wheel option.

73090-4a



GRANULAR CHEMICAL HOPPER

61766-2



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

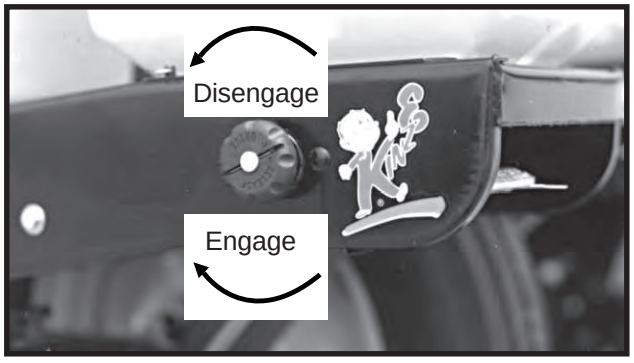
Be sure no foreign objects get into the hopper when it is being filled. Replace the hopper lids after filling the hoppers to prevent the accumulation of dirt and moisture.

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

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

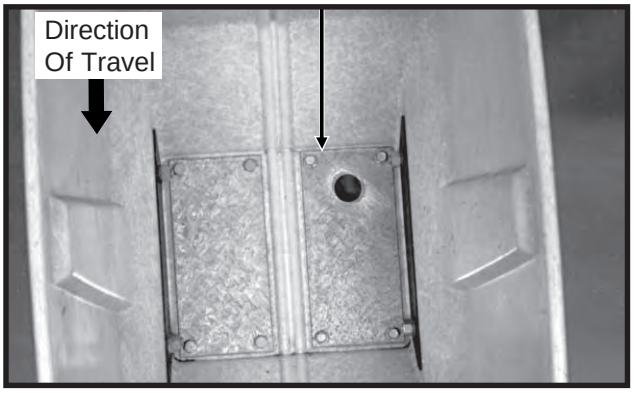
The granular chemical clutch drive coupler and meter shaft can be disengaged and engaged by turning the throwout knob located at the rear of the hopper support panel. To engage the drive, turn the knob 1/4 turn clockwise. To disengage the drive, turn the knob 1/4 turn counterclockwise. Slotted holes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

72359-183



GRANULAR CHEMICAL RESTRICTOR PLATE

65249-17



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

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

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

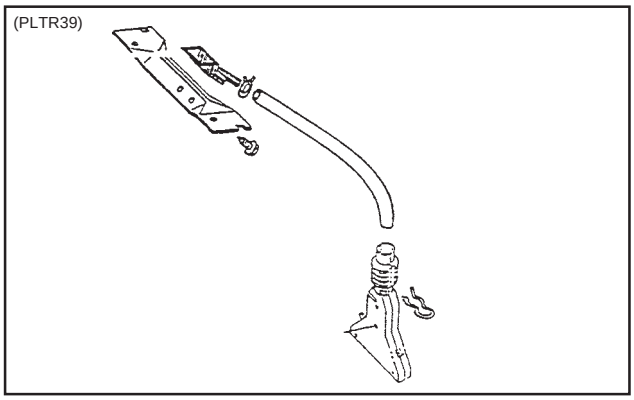
GRANULAR CHEMICAL BANDING OPTIONS

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

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

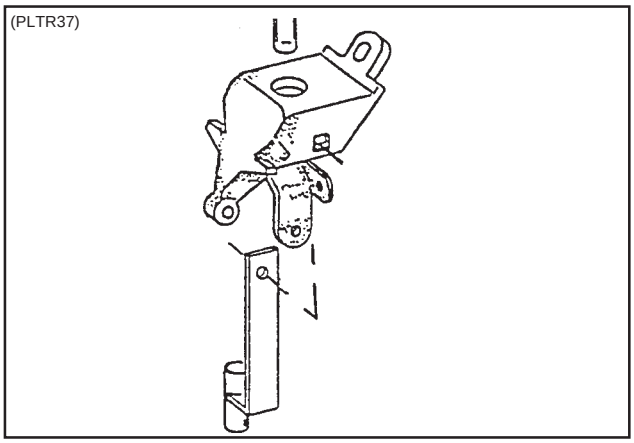
NOTE: The granular chemical rear bander is not compatible with the covering discs/single press wheel option.

(PLTR39)



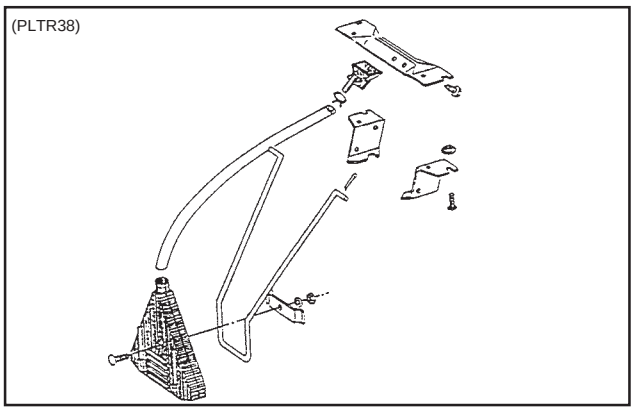
4 1/2" Slope-Compensating Bander

(PLTR37)



Straight Drop In-Furrow Placement

(PLTR38)

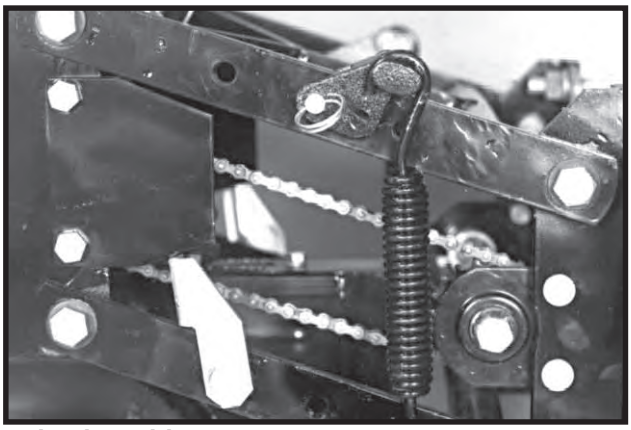


14" Rear Banding

PUSH ROW UNIT LOCKUPS

Push row unit lockups are designed to allow the push units to be locked in the raised position.

60569-6

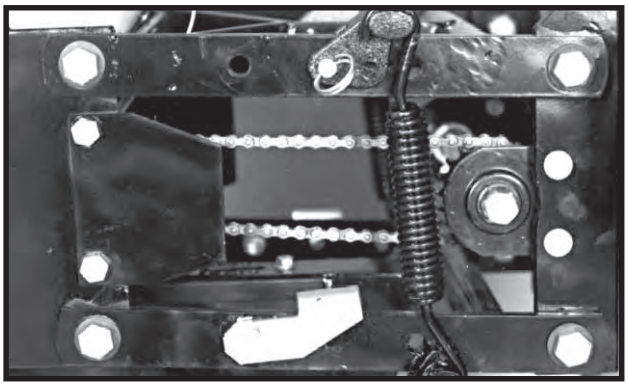


Raised Position

To lock in raised position:

1. With the planter in the raised position, place a wooden (approximately 8") block under the disc opener assembly of each push unit. (Or use other means of raising each push unit.)
2. Lower the planter until the push unit is in the extreme raised position.
3. Rotate both right hand and left hand lockups into place under the push unit stops as shown in the “Raised Position” photo.
4. Raise planter.
5. Remove wooden blocks.

60569-9



Planting Position

To release lockups:

Reverse of above procedure. At Step 3, rotate lockups out from under the push unit stops as shown in “Planting Position” photo.

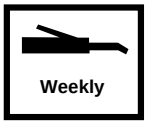
DANGER: Always install all safety lockups or lower planter to the ground before working under or around the machine.

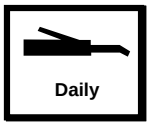
LUBRICATION

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



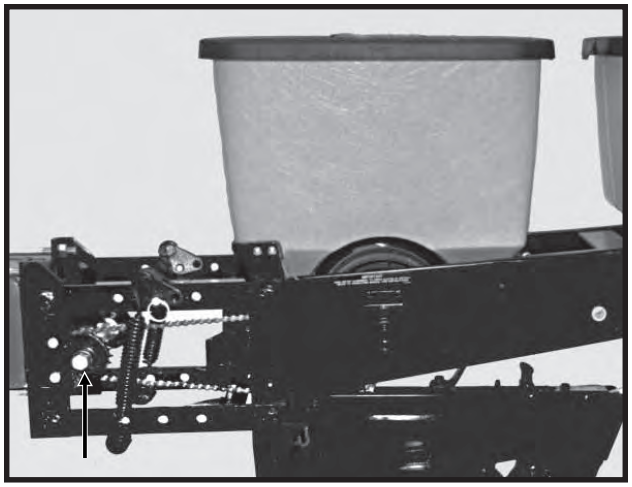


Lubricate at frequency indicated with an SAE multipurpose type grease.

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

SEALED BEARINGS

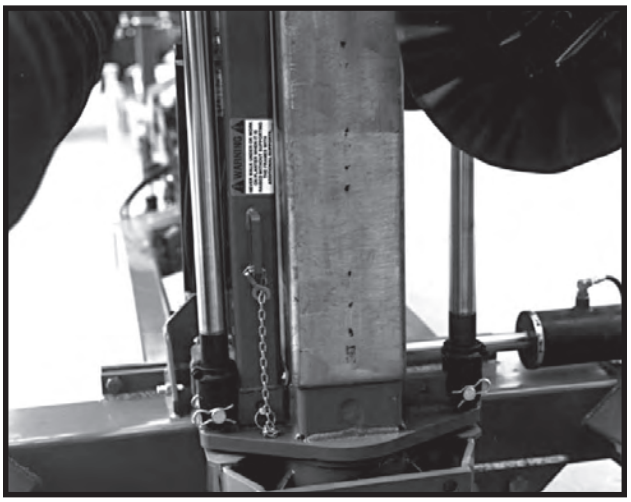
72794-21a



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.

CENTER POST

81535-32



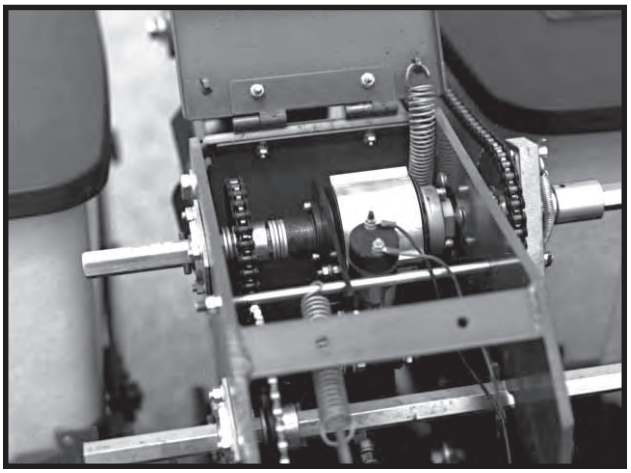
The center post is clad with stainless steel. To prolong service life keep stainless steel surface clean and free of any lubrication.

CENTER POST AND POLY WEAR PADS REQUIRE NO LUBRICATION. ANY OIL OR GREASE WILL ATTRACT DIRT AND ACCELERATE WEAR ON THE CENTER POST AND ON THE POLY WEAR PADS.

See "Wear Pad Replacement/Adjustment" for additional information.

POINT ROW WRAP SPRING CLUTCHES

76740-2



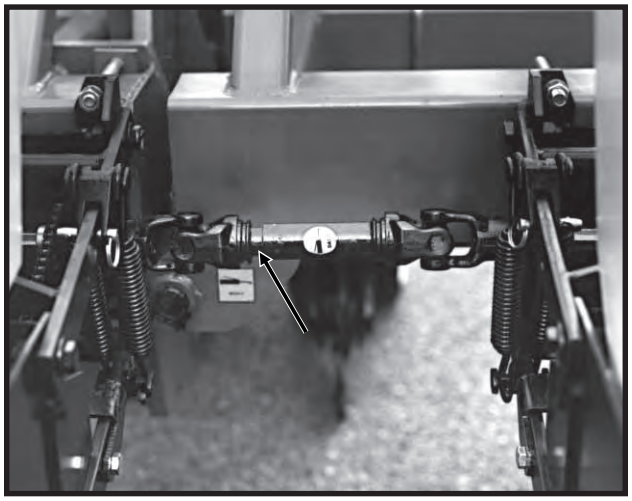
The point row wrap spring clutches are permanently lubricated and sealed and require no periodic maintenance. DO NOT LUBRICATE. KEEP CLUTCHES CLEAN.

LUBRICATION

U-JOINT SLIDES

Lubricate all U-joint slides daily with a high quality SAE 10 weight oil or a quality spray lubricant.

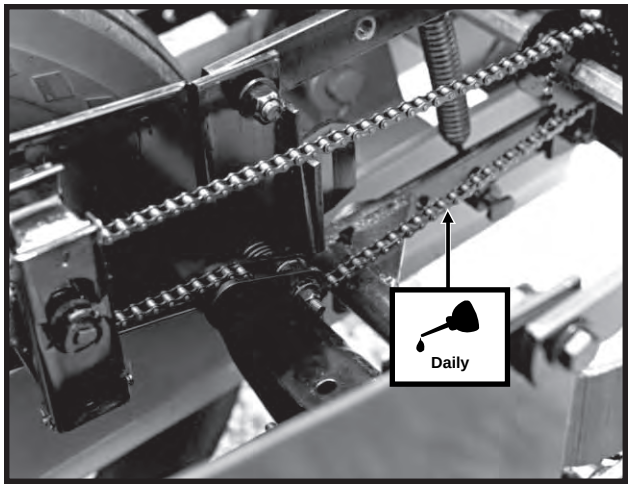
76740-54



DRIVE CHAINS

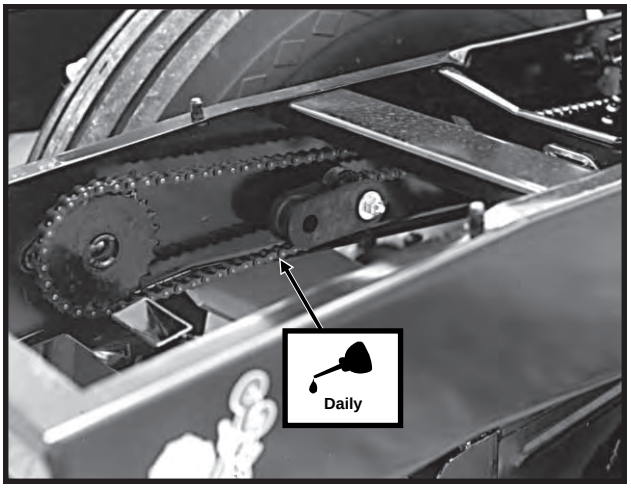
All transmission and drive chains should be lubricated daily with a high quality SAE 10 weight oil or a quality spray lubricant. Extreme operating conditions such as dirt, temperature or speed may require more frequent lubrication. If a chain becomes stiff, it should be removed, soaked and washed in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

72359-123



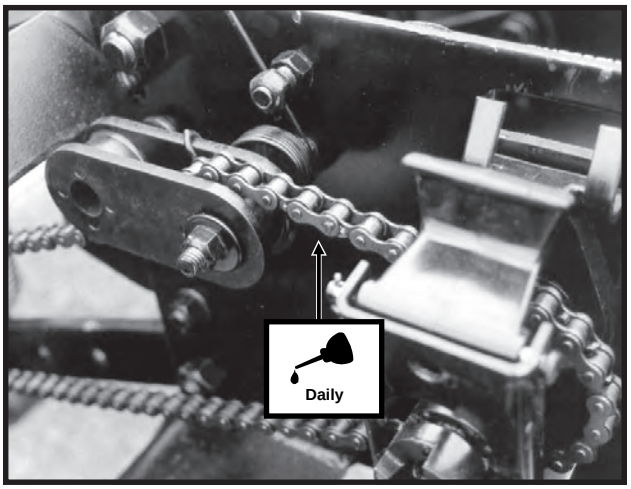
Pull Row Unit Seed Meter Drive Chain(s)

72359-126



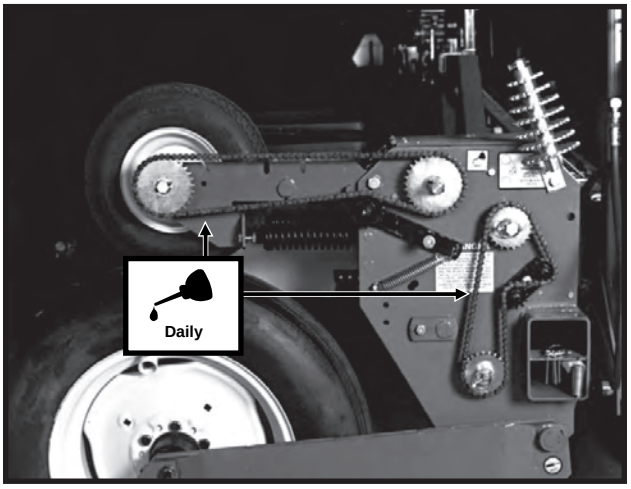
Row Unit Granular Chemical Meter Drive Chain(s)

08229714



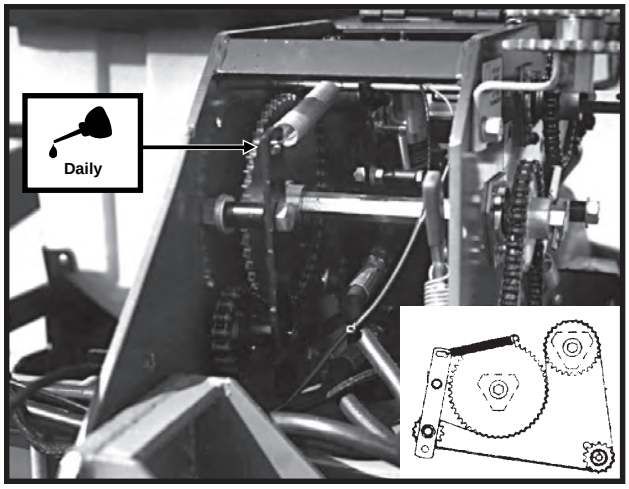
Push Unit Seed Meter Drive Chain(s)

81439-32



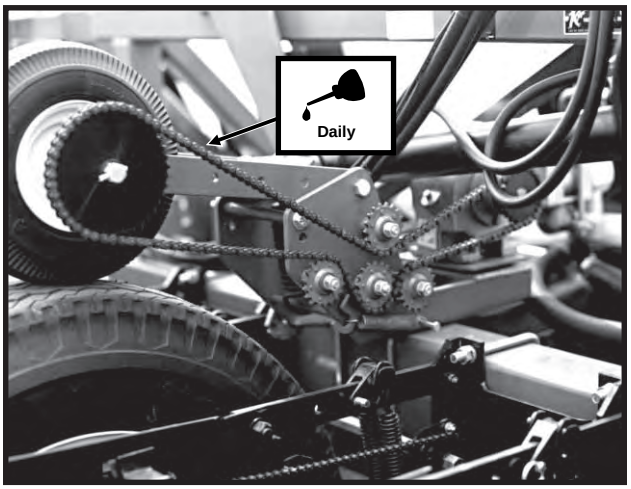
Contact Wheel Drive Chain
Planter Transmission Drive Chain

77387-8(PLTR52)



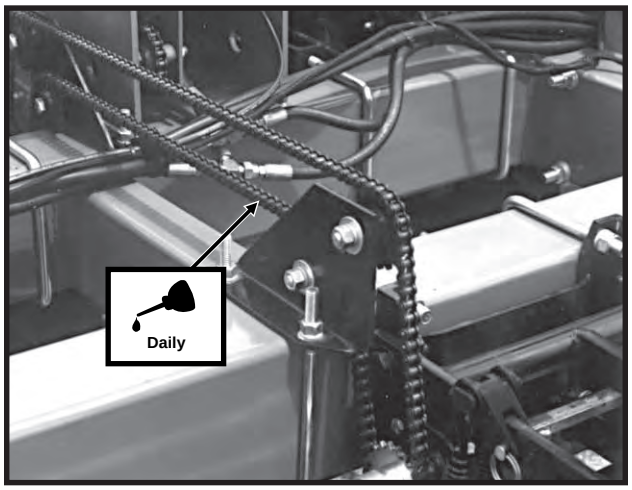
Inner Wheel Module Drive Chain

76782-38



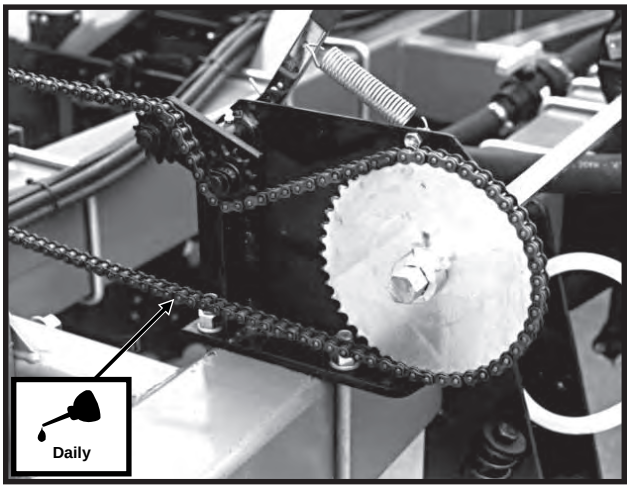
Liquid Fertilizer Drive Chain (Piston Pump)

76740-52



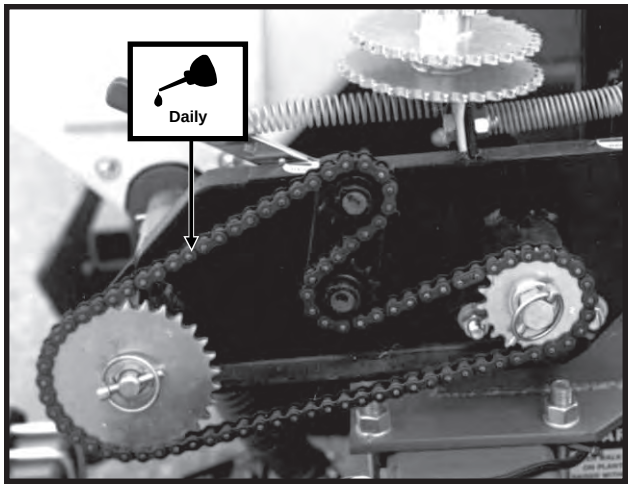
Push Unit Drive Chains

77570-46



Liquid Fertilizer Drive Chains (Squeeze Pump)

76746-64



Dry Fertilizer Drive Chains

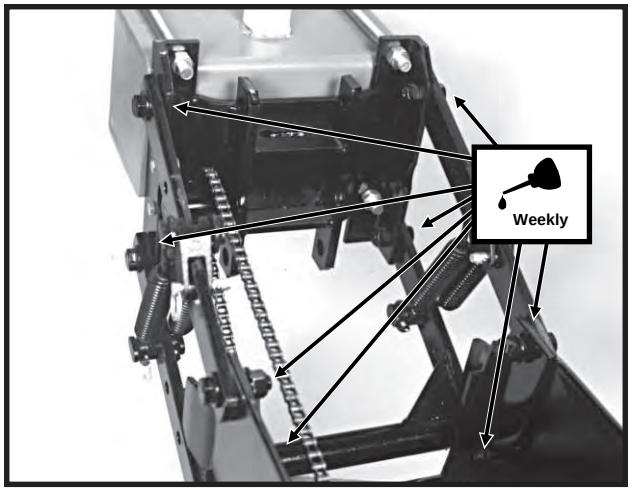
LUBRICATION

BUSHINGS

Lubricate bushings at the frequency indicated.

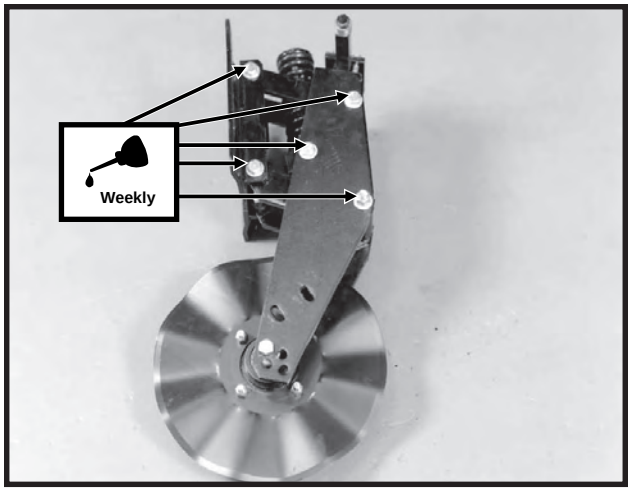
Using a torque wrench, check each bolt for proper torque. If bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushing if necessary **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque bolts to 130 ft. lbs.**

59386-43



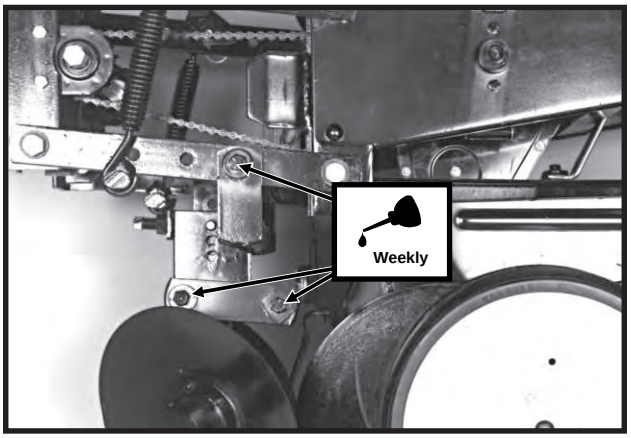
Pull Row Unit and/or Push Row Unit Parallel Linkage (8 per row)

56314-8



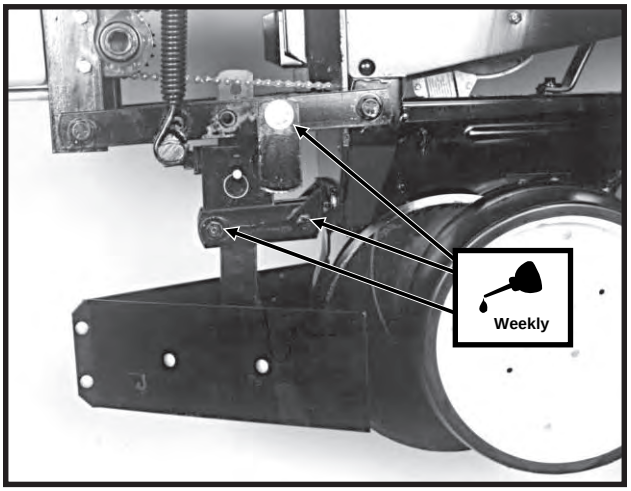
Frame Mounted Coulter Parallel Linkage (10 per row)
Shown not installed on row unit for visual clarity.

59386-18



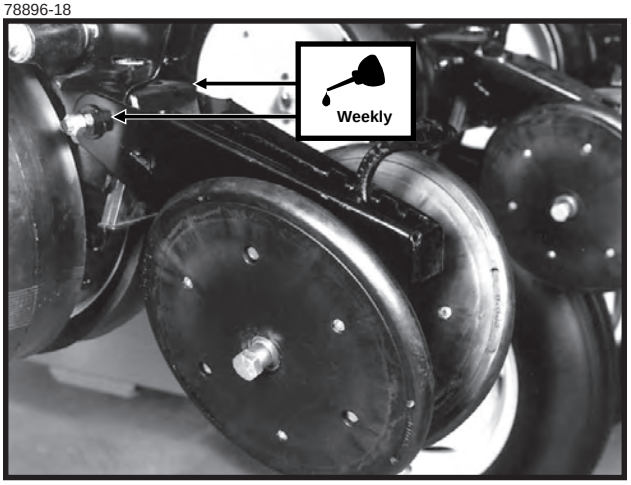
Row Unit Mounted Disc Furrower Parallel Linkage (6 per row)

59386-26



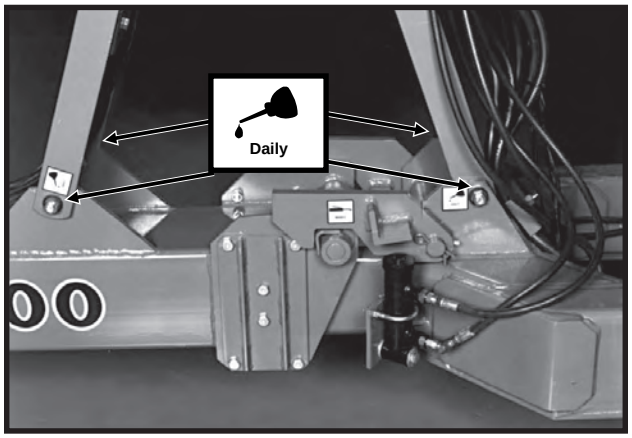
Row Unit Mounted Bed Leveler Parallel Linkage (6 per row)

78896-18



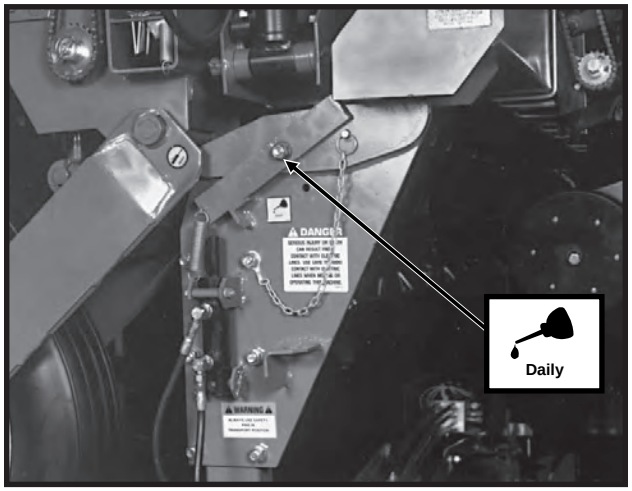
Row Unit Closing Wheel and/or Covering Discs/ Single Press Wheel Eccentric Bushings (2 per row)

76609-10



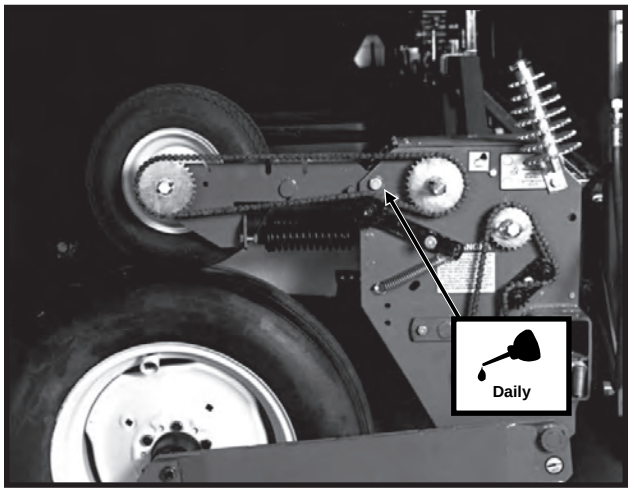
Hose Takeup (6 locations)

81999-16



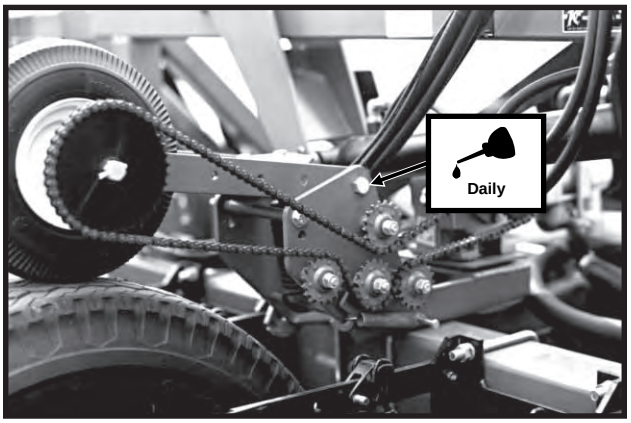
Transport Latch (1 location)

81439-32



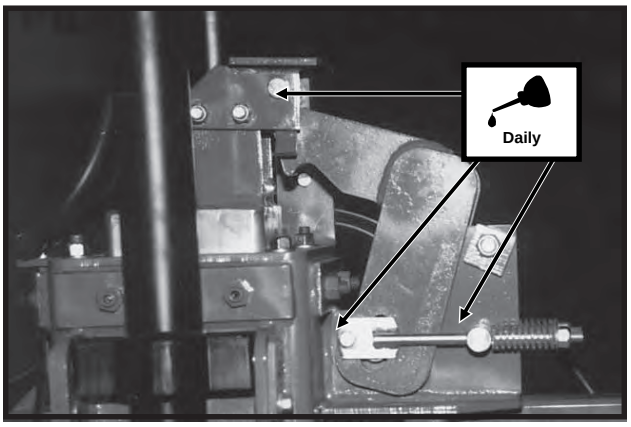
Contact Drive Wheel Arm (2 per wheel assembly)

76782-38



Optional Piston Pump Drive Wheel Arm Assembly (2 per wheel assembly)

82316-16



Safety Hook Located At Top Of Center Section

NOTE: CENTER POST AND POLY WEAR PADS REQUIRE NO LUBRICATION. ANY OIL OR GREASE WILL ATTRACT DIRT AND ACCELERATE WEAR ON THE CENTER POST AND ON THE POLY WEAR PADS.

LUBRICATION

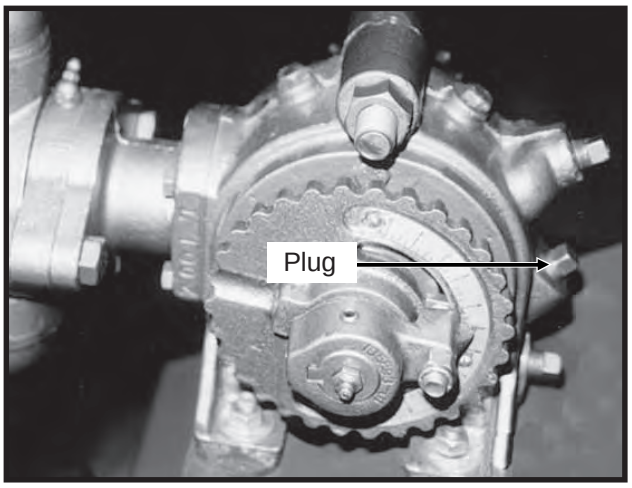
WHEEL BEARINGS

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

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

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

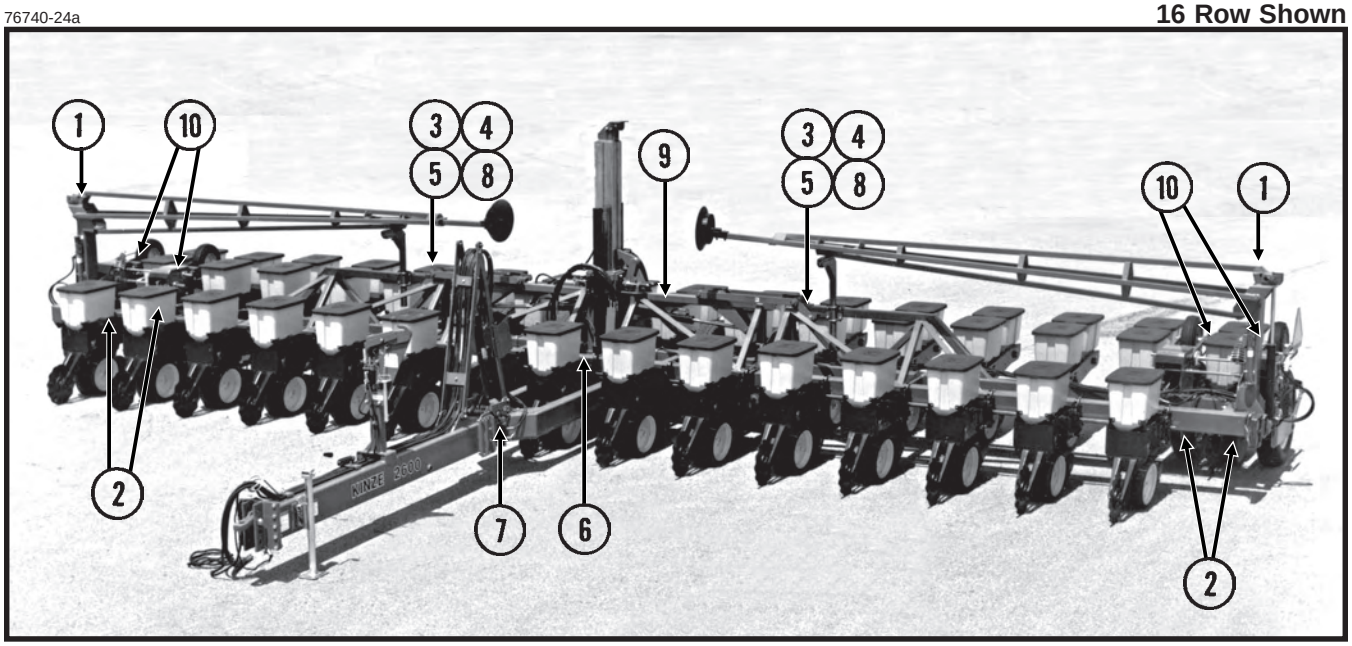
Those parts equipped with grease fittings should be lubricated at the frequency indicated with an SAE multipurpose type grease. Be sure to clean the fitting thoroughly before using grease gun. The frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions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

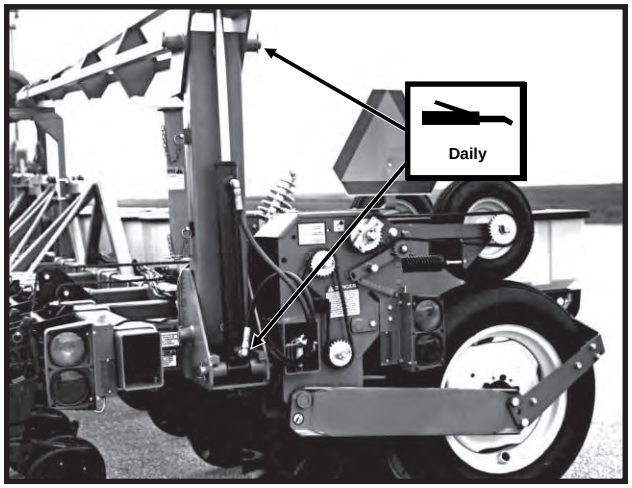
76740-24a

16 Row Shown



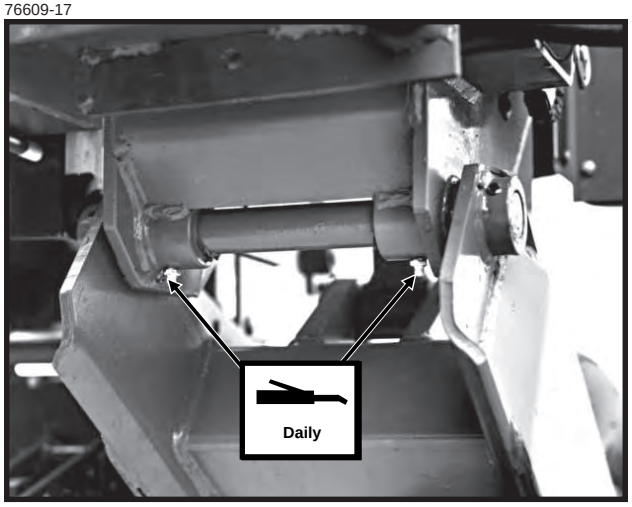
LUBRICATION

76740-61



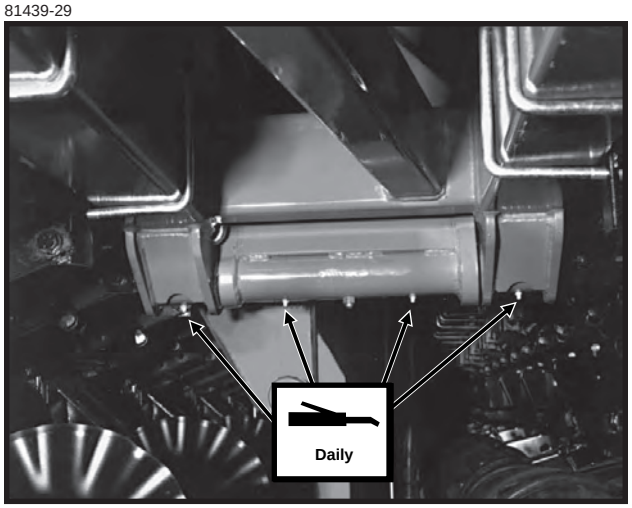
1. Marker Assemblies - 4 Zerks Per Assembly On 8 Row Wide And 12 Row 30. 2 Zerks Per Assembly On 12 Row Wide And 16 Row 30.

76609-17



2. Wing Wheel Pivot - 2 Zerks Per Wheel Module

81439-29

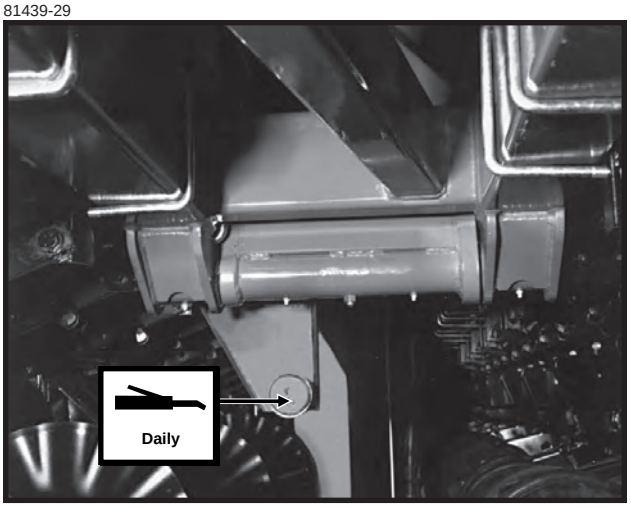


3. Wing Hinges - 4 Zerks Per Wing

76740-16

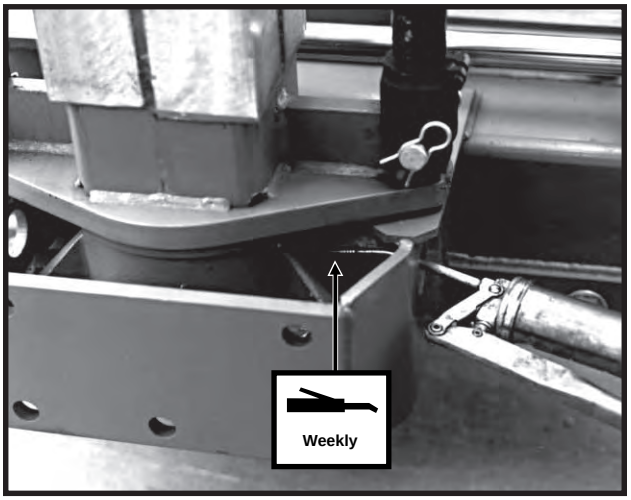
4. Wing Locks - 3 Zerks Per Wing

81439-29



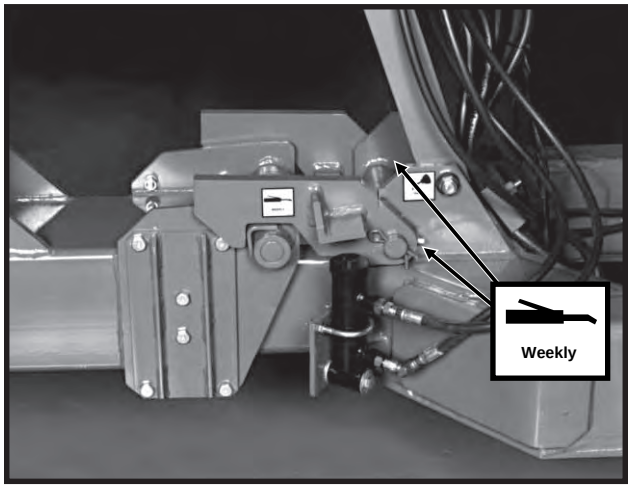
5. Cam Follower - 1 Zerk Per Follower

76609-36



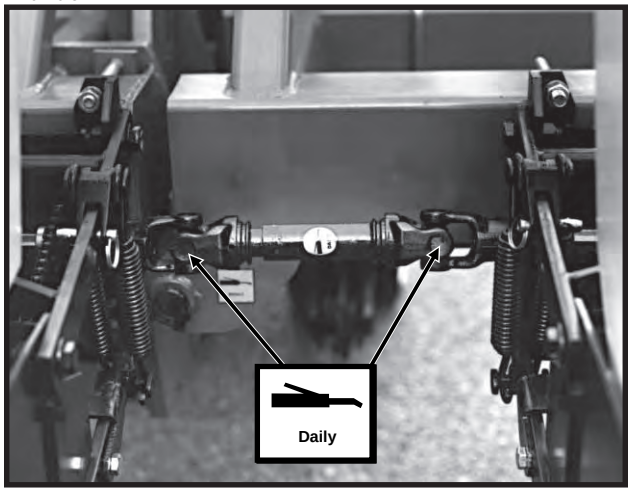
6. Center Pivot - 1 Zerk

81439-7



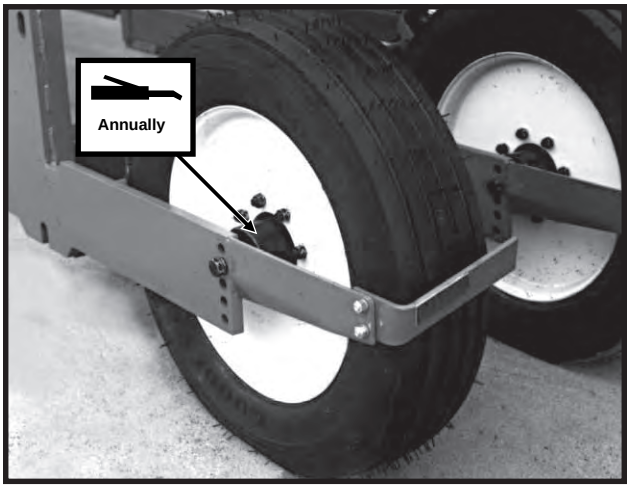
7. Tongue Hook - 2 Zerks

76740-54



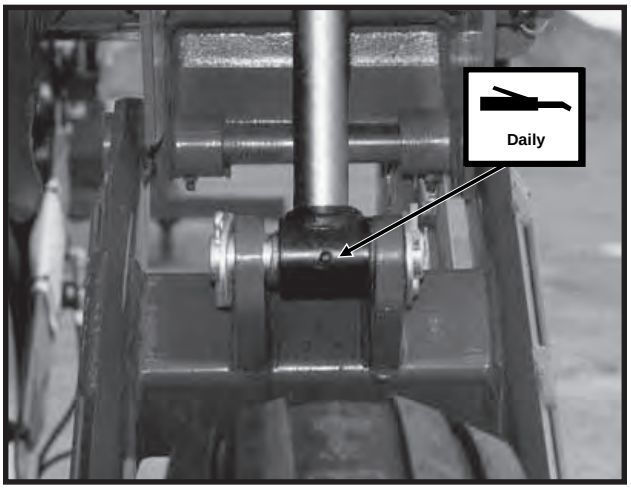
8. U-Joints - 2 Zerks Per Hinge Area

80367-20a



9. Transport Wheel Bearings - 1 Zerk Per Hub

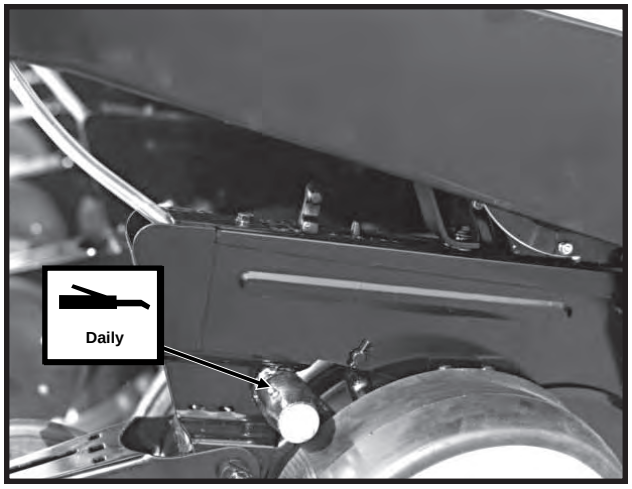
05199819a



10. Wing Lift Cylinders - 1 Zerk Per Cylinder

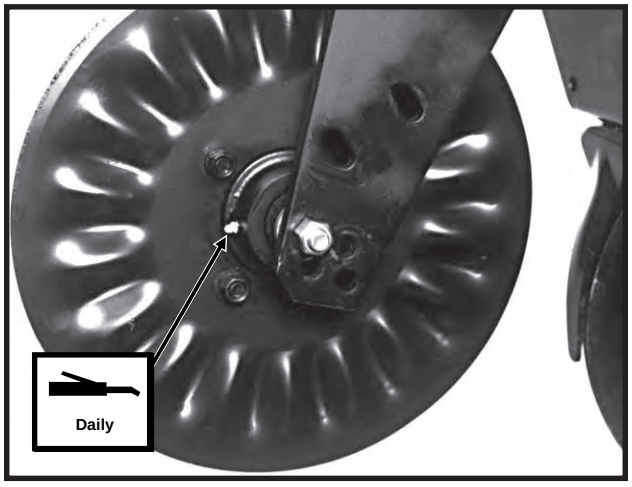
Row Unit

72359-106



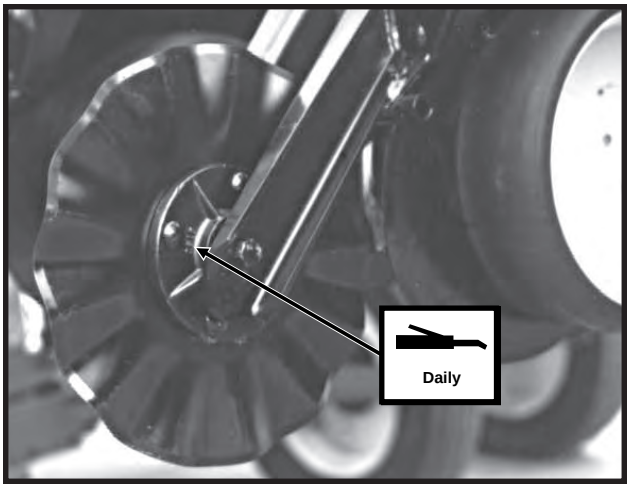
Gauge Wheel Arms - 1 Zerk Per Arm

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.)**

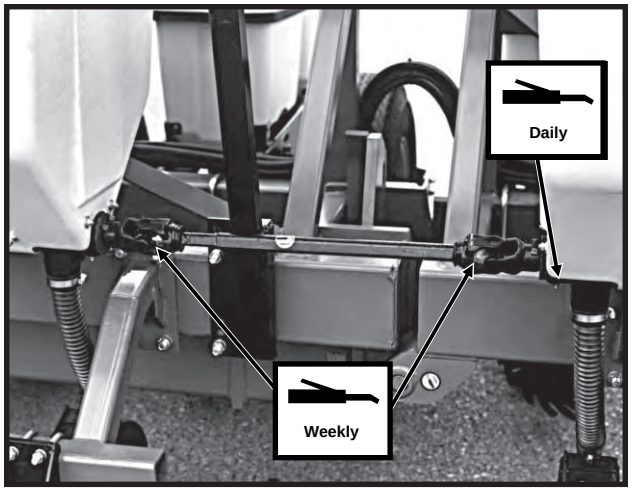
80367-10



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.)**

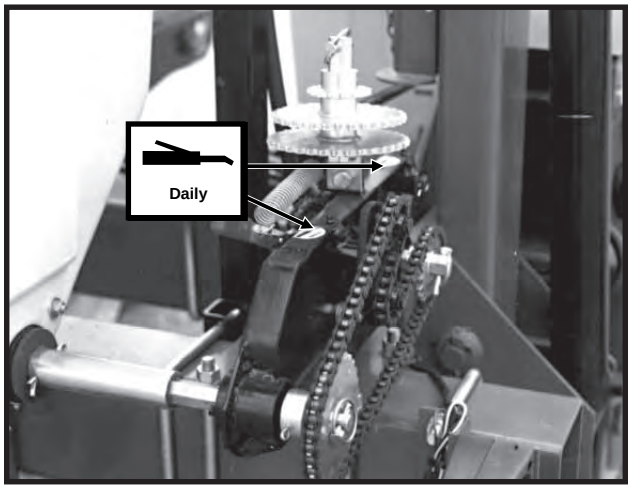
Dry Fertilizer Attachment

76746-10



Fertilizer Hopper - 2 Zerks Per Hopper
U-Joint - 1 Zerk Per Hinge Area

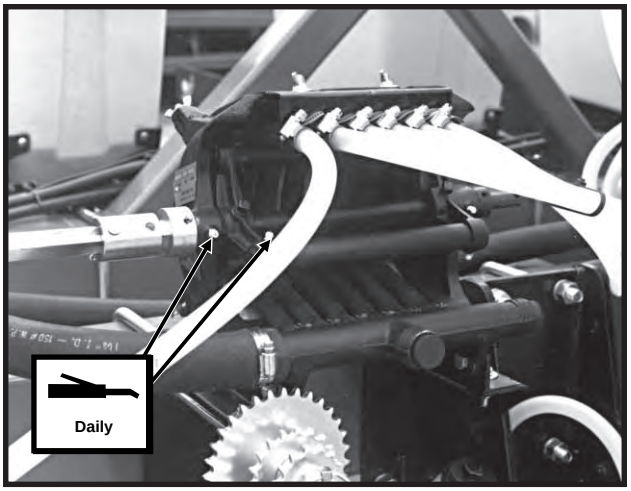
76746-62



Fertilizer Transmission - 2 Zerks Per Transmission

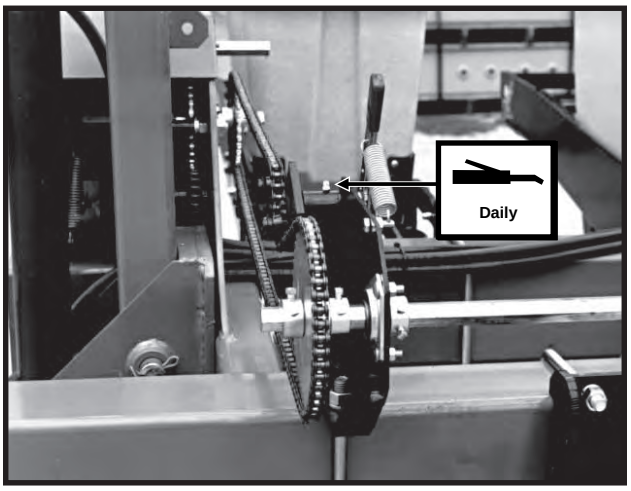
Liquid Fertilizer Attachment

77570-52



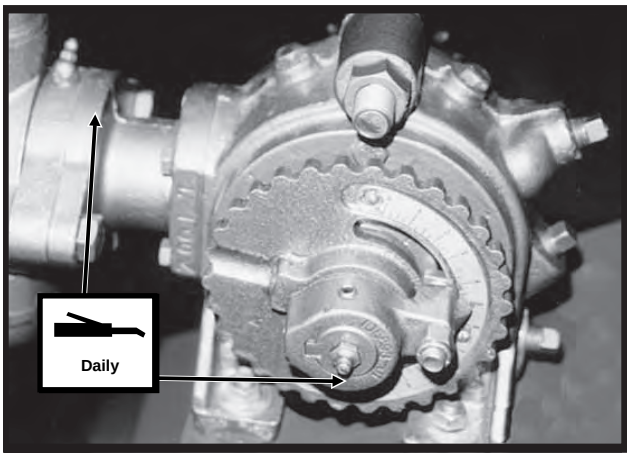
Squeeze Pump - 8 Zerks Per Pump

77570-49



Squeeze Pump Drive Chain Idler - 1 Zerk Per Plate

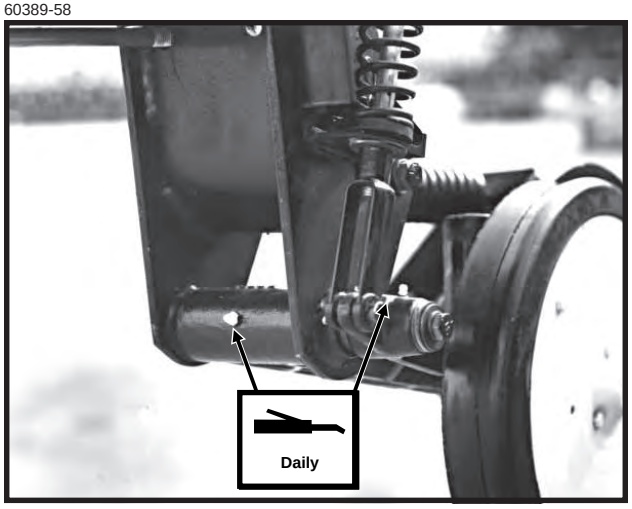
12229799



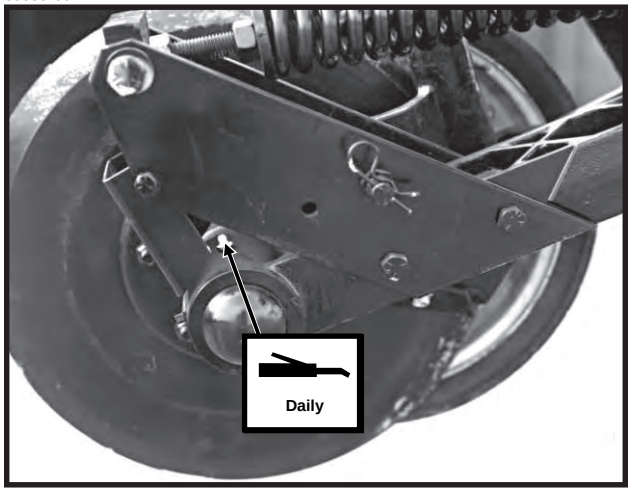
Piston Pump - 2 Zerks (Fill zerk on outboard stuffing box until lubricant seeps out of drain hole in bottom.)

HD Single Disc Fertilizer Opener

60389-58



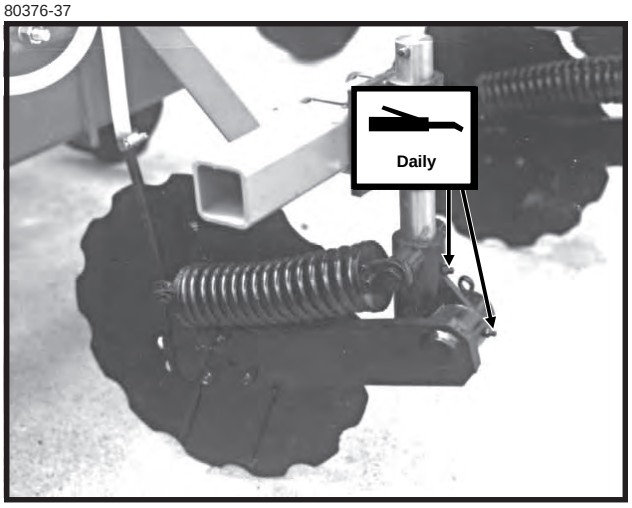
60389-60



3 Zerks Per HD Single Disc Fertilizer Opener

Notched Single Disc Fertilizer Opener

80376-37



2 Zerks Per Notched Single Disc Fertilizer Opener

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.

Center Section Transport Tire Lug Nuts - 125 Ft. Lbs.
Wing Ground Drive Tire Lug Nuts - 90 Ft. Lbs.
5/8" No Till Coulter Spindle Bolts - 120 Ft. Lbs.

TORQUE VALUES CHART - PLATED HARDWARE

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

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

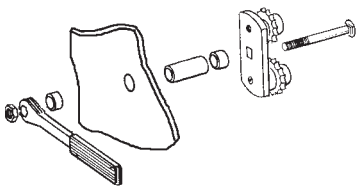
GRADE 2 **No Marks**	**GRADE 5** **3 Marks**	**GRADE 8** **6 Marks**

CHAIN TENSION ADJUSTMENT

The drive chains are spring loaded and therefore 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.

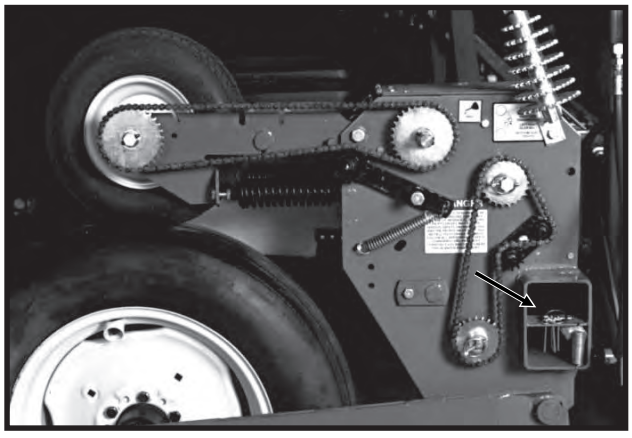
Additional chain links can be found in the storage box located inside the planter frame.

(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.

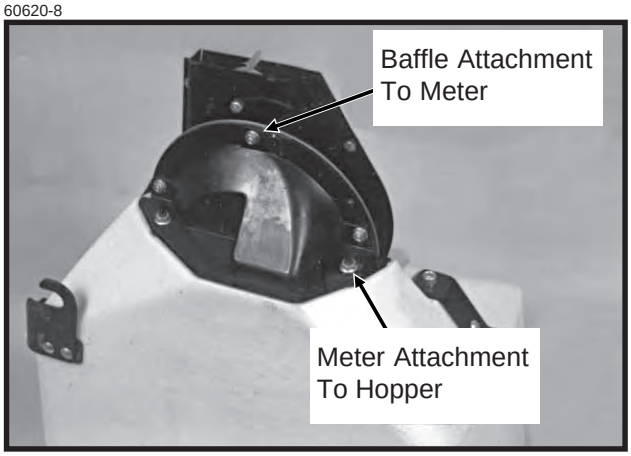
81439-32



FINGER PICKUP SEED METER INSPECTION/ADJUSTMENT

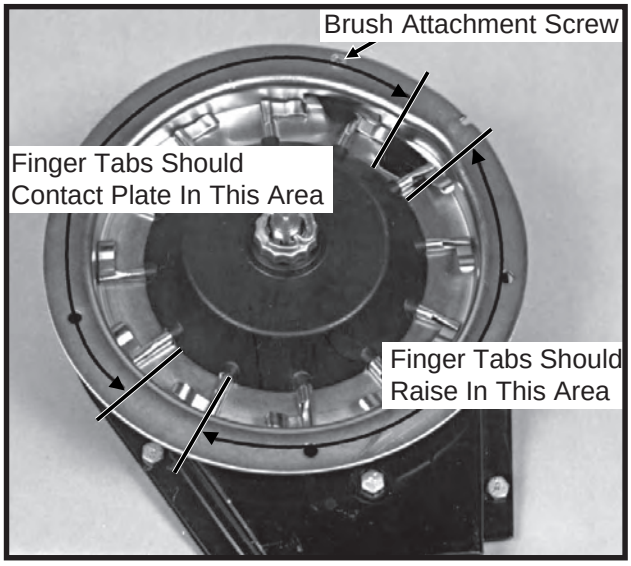
To inspect or service the finger pickup seed meter, remove the meter from the seed hopper by removing the two nuts which secure the mechanism to the hopper. Remove the baffle from the meter assembly by removing three cap screws. This will permit access to the finger pickup.

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

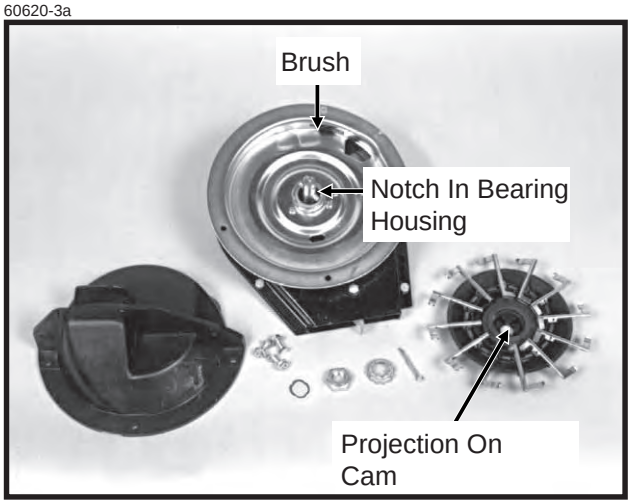


A build-up of debris or chaff may prevent proper finger operation and will require disassembly and cleaning of the corn meter as follows:

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

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

60620-3a



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

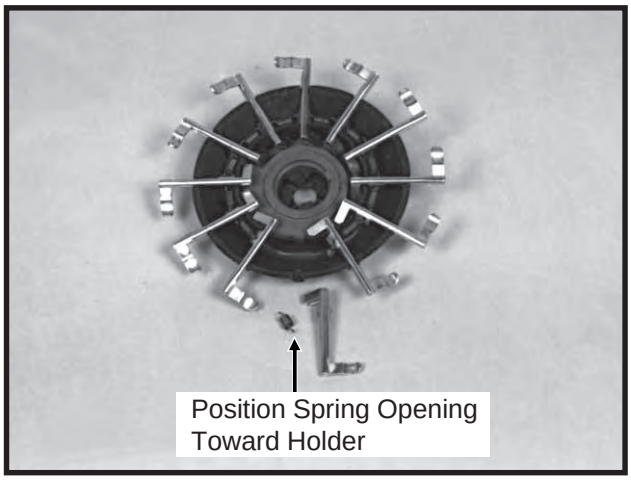
   EXAMPLE: Approximately 800 acres of corn on an 8 row machine or 1200 acres on a 12 row machine.

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

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

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

60620-22



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

50725-4

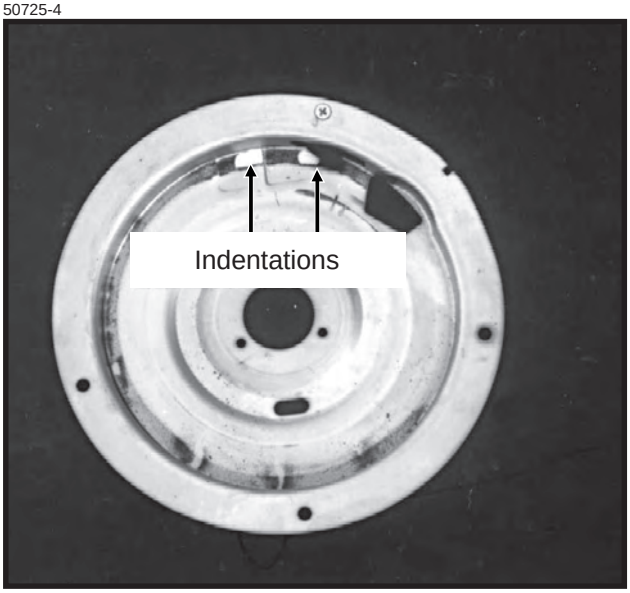


Photo shows worn plate

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

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

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

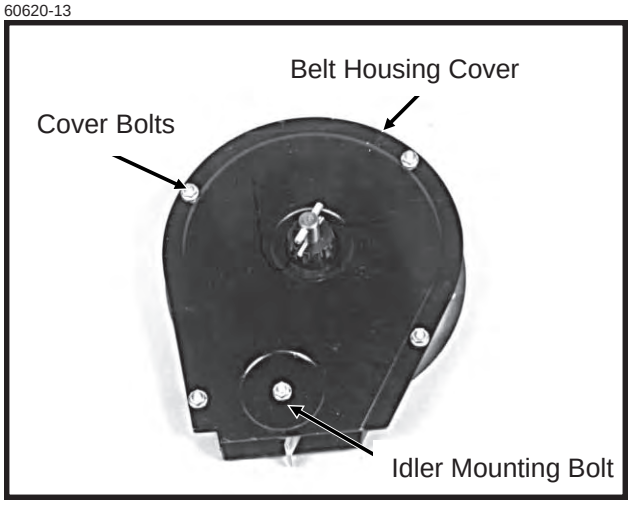
9. Turn finger holder by hand to make sure it is positioned firmly against the carrier, but is not over tightened and can be rotated with moderate force.

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

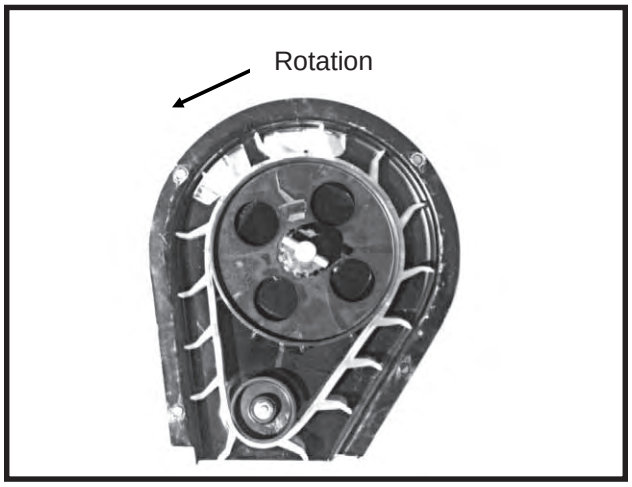
NOTE: Check tightness of adjusting nut on each unit after first day of use and periodically thereafter.

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

60620-13



60887-97



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

CAUTION: Do not over tighten hardware.

FINGER PICKUP SEED METER CLEANING

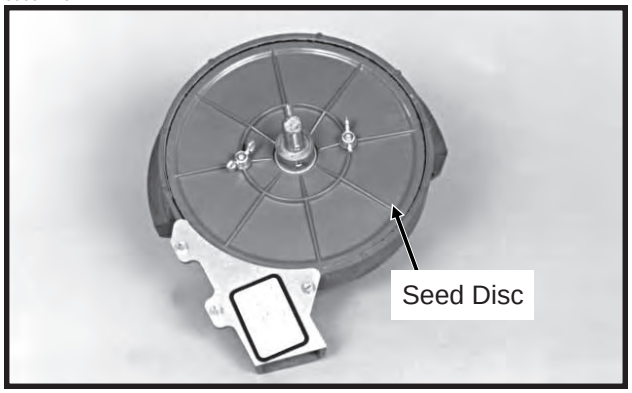
1. Disassemble meter.
2. Blow out any foreign material present in the meter mechanism.
3. Wash in mild soap and water. DO NOT USE GASOLINE, KEROSENE OR ANY OTHER PETROLEUM BASED PRODUCT.
4. Dry thoroughly.
5. Coat lightly with a rust inhibiter.
6. Reassemble and store in a dry place.

FINGER PICKUP SEED METER TROUBLESHOOTING

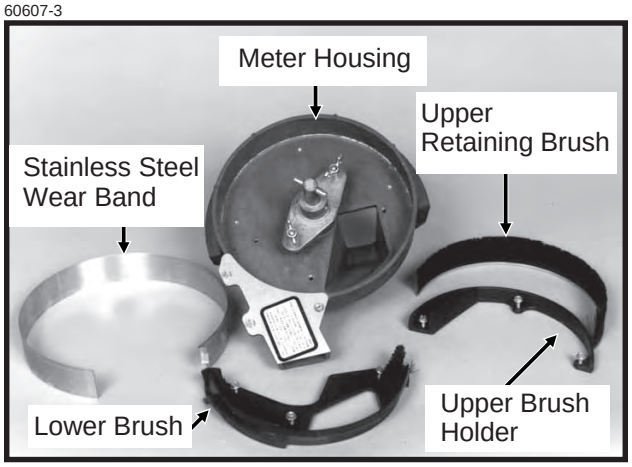
PROBLEM	POSSIBLE CAUSE	SOLUTION
One row not planting seed.	Drive release not engaged.	Engage drive release mechanism.
	Foreign material in hopper.	Clean hopper and finger carrier mechanism.
	Seed hopper empty.	Fill seed hopper.
	Pin sheared in drive release sprocket.	Replace pin. Inspect meter for obstructions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

BRUSH-TYPE SEED METER MAINTENANCE

60607-10

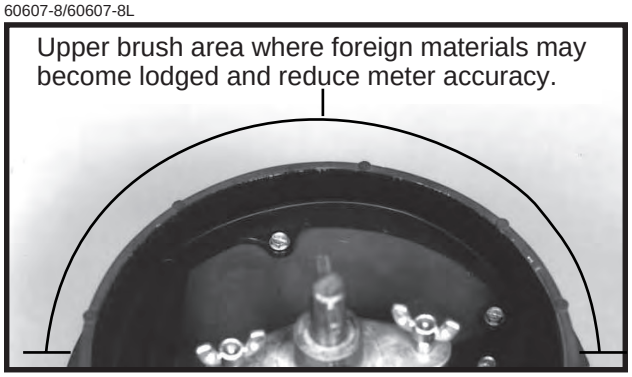


60607-3



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

60607-8/60607-8L



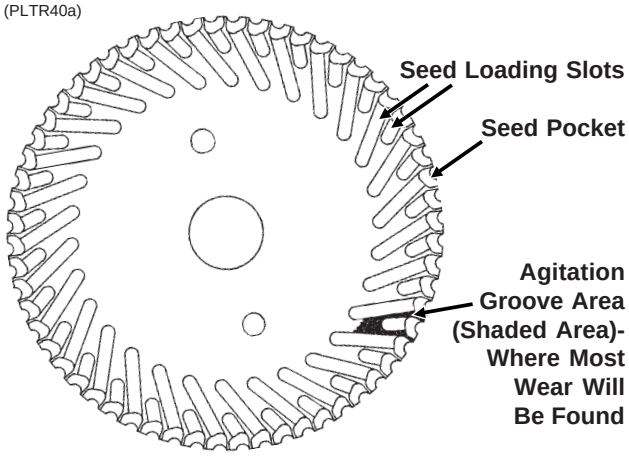
NOTE: Replace hopper lids after hoppers are filled to prevent accumulation of dust or dirt in the seed meter which will cause premature wear.

Cleaning brush-type seed meter for storage:

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

Seed Disc Wear

(PLTR40a)

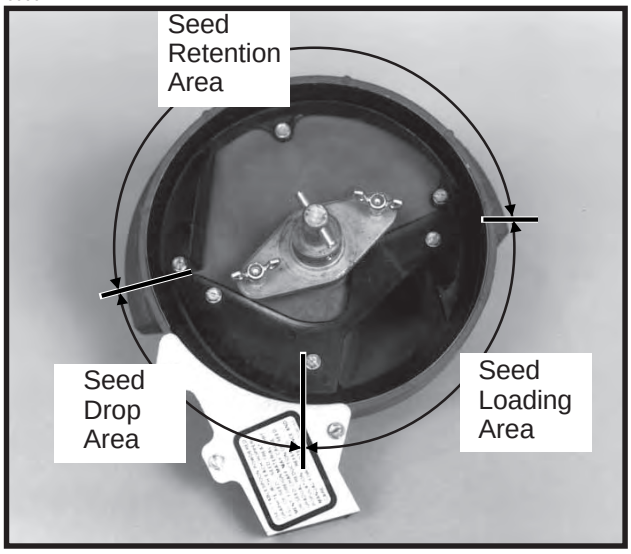


Most wear on the seed disc will be found in the agitation groove area (area between the seed loading slots). Wear will affect planting accuracy at high RPM. To measure for wear, lay a straight edge across the surface of the disc and measure the gap between the disc (at the agitation groove area) and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

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

Upper Retaining Brush

60607-21



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

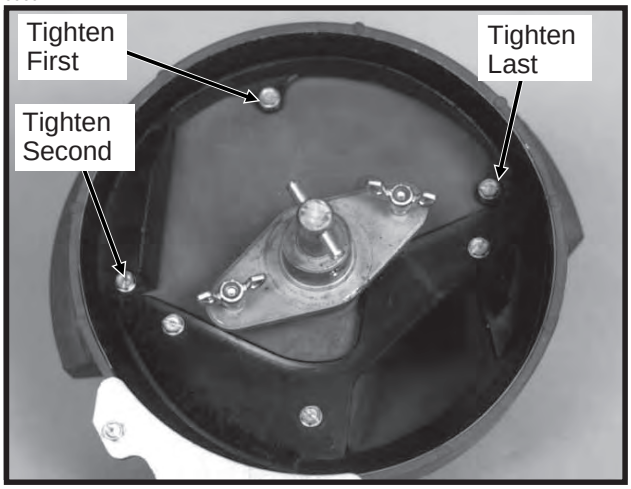
The retaining brush must apply enough pressure against the seed in the seed disc pocket as the disc rotates through the seed retention area to prevent the seed from dropping out of the disc pocket. A damaged spot, excessive wear on the brush or foreign material lodged in the brush may greatly reduce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

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

Installation Of Upper Retaining Brush

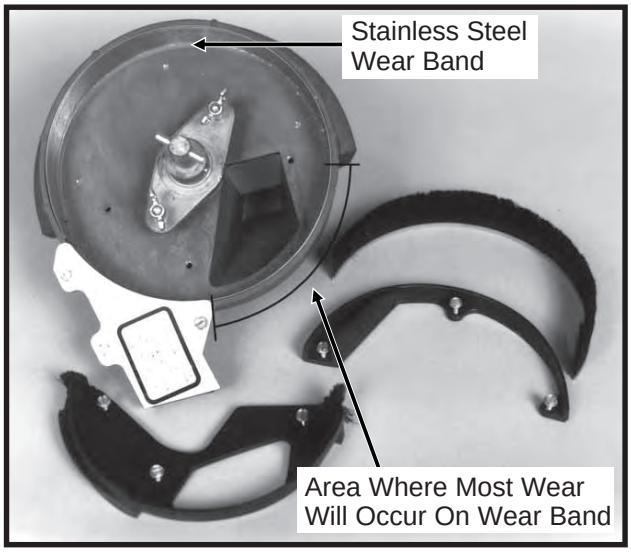
Position retaining brush into inner perimeter of seed retention area. Make sure the base of the brush is tight against the bottom of the meter housing. Install brush holder and three hex head screws. Tighten center screw first, left screw second and right screw last.

60607-21



Stainless Steel Wear Band

60607-38a

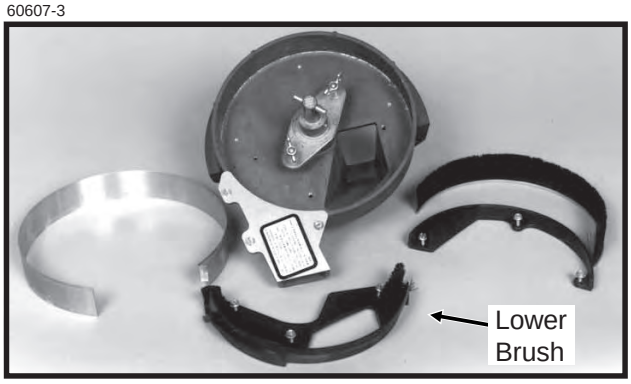


The purpose of the stainless steel wear band is to protect the meter housing from wear. The band is .030" thick and should be replaced when approximately .020" of wear is found in the primary area of wear. If the wear band is allowed to wear through or if the meter is used without the wear band in place,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

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

Lower Brush

60607-3



The lower brush has several functions. One function is to move seed down the seed loading slots to the seed pockets. The second function is to isolate seed 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.
Low count at low RPM and higher count at higher RPM.	Foreign material lodged in upper retaining brush.	Remove seed disc and remove foreign material from between brush holder and bristles. Clean with compressed air.
	Worn upper retaining brush.	Replace. See “Maintenance”.
Low count at higher RPM and normal count at low RPM.	Seed disc worn in the agitation groove area.	Replace disc. See “Maintenance”.
High count.	Seed size too small for seed disc.	Switch to larger seed or appropriate seed disc.
	Incorrect seed rate transmission setting.	Reset transmission. Refer to proper rate chart in “Machine Operation” section of manual.
	Upper brush too wide (fanned out) for small seed size.	Replace upper brush.
Upper retaining brush laid back.	Seed treatment buildup on brush.	Remove brush. Wash with soap and water. Dry thoroughly before reinstalling. See “Maintenance”.
	Buildup of foreign material at base of brush.	Remove brush holder and brush. Clean with compressed air. Reinstall.

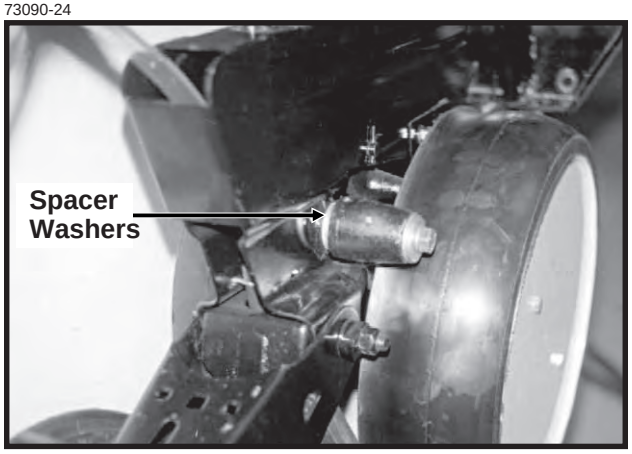
CLOSING WHEEL TROUBLESHOOTING

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

GAUGE WHEEL ADJUSTMENT

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

73090-24



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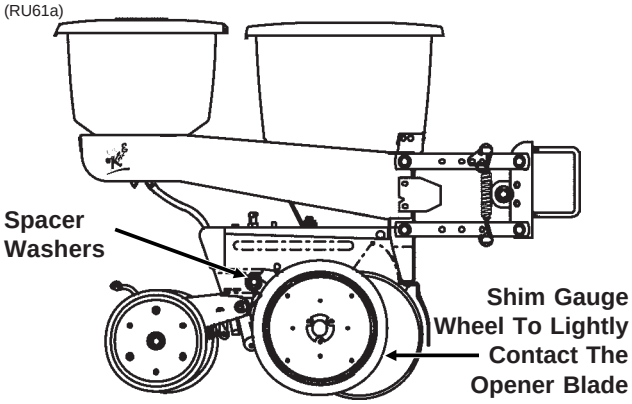


To adjust clearance between gauge wheels and opener blades, add or remove spacer washers between the shank and gauge wheel arm. Store remaining spacer washers between gauge wheel arm and flat washer on outer side of gauge wheel arm.

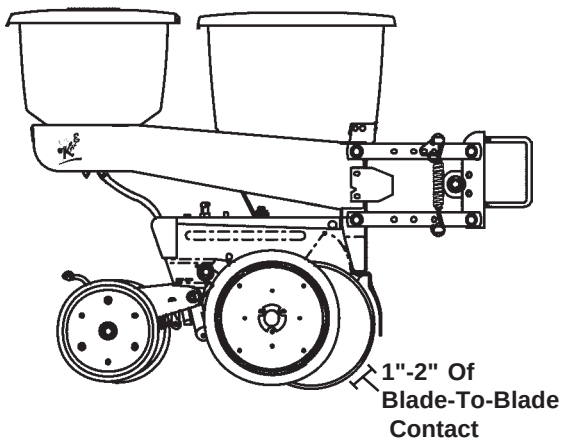
NOTE: It may be desirable to space gauge wheel further from blade when operating in sticky soils.

15" SEED OPENER DISC/BEARING ASSEMBLY

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

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

(RU61a)



To replace disc/bearing assembly:

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

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

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

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

To replace bearing:

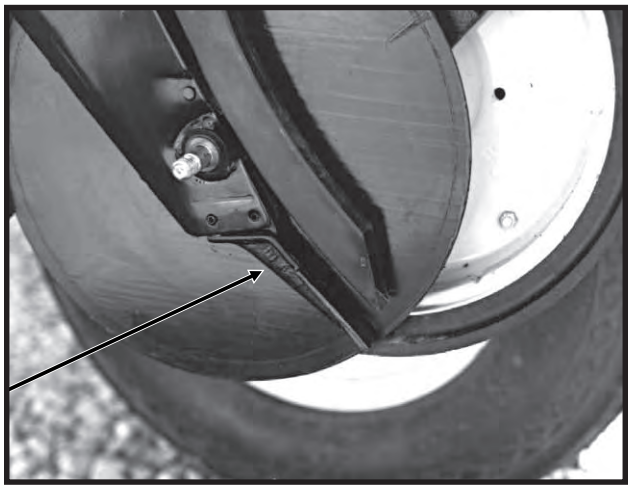
1. Remove gauge wheel, scraper, bearing cap, jam nut, washer and disc/bearing assembly.
2. Remove 1/4" rivets from bearing housing to expose bearing.
3. After installing new bearing, install three evenly spaced 1/4" bolts into three of the six holes in the bearing housing to hold the bearing and bearing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

SEED TUBE GUARD/INNER SCRAPER

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

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

50881-9



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.

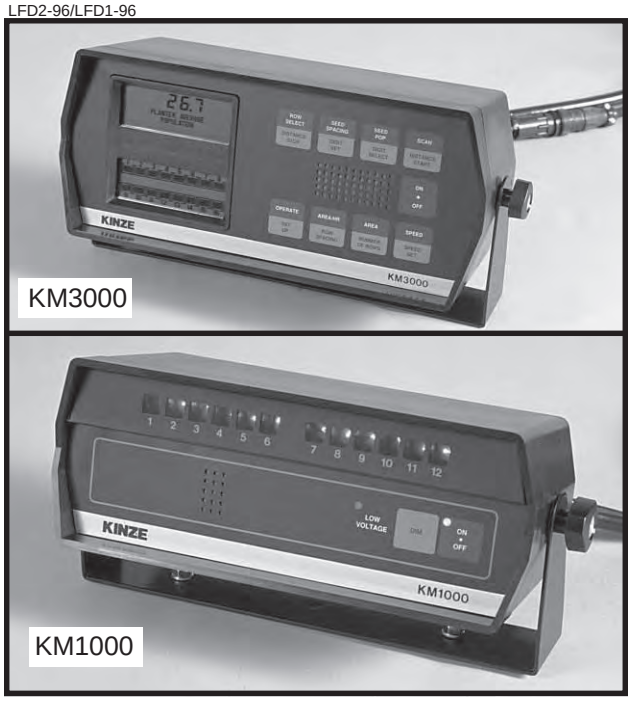
When the 16" diameter coulter blade is worn to a 14 $^{1}/_{2}$" diameter (maximum allowable wear), it should be replaced.

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

KM1000 TROUBLESHOOTING CHART (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
5. (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)

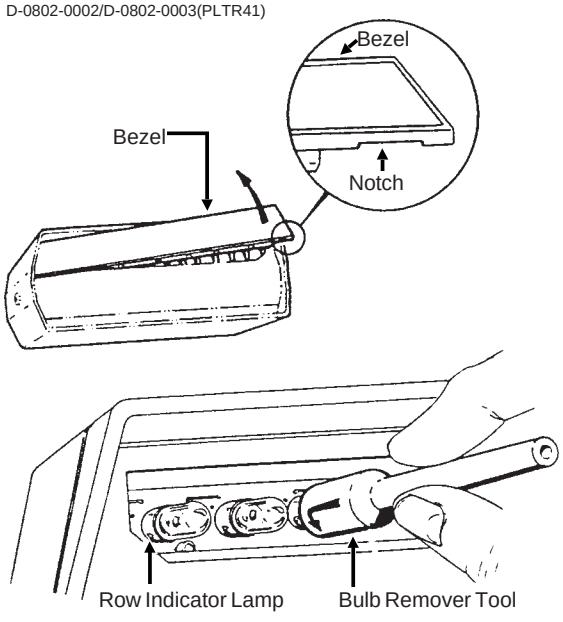
PROBLEM	POSSIBLE CAUSE	SOLUTION
4. Monitor completely "dead".	Blown console fuse.	Check fuse, located on rear panel of console. If fuse is blown, replace with a 5-amp, type AGC. If fuse blows again, check power connection to battery. If connections are reversed fuse will blow. If battery connections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

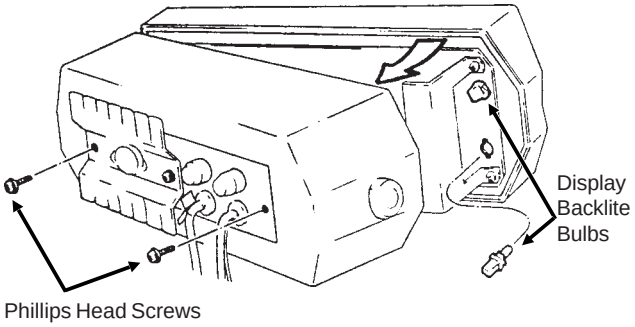
D-0802-0002/D-0802-0003(PLTR41)



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)



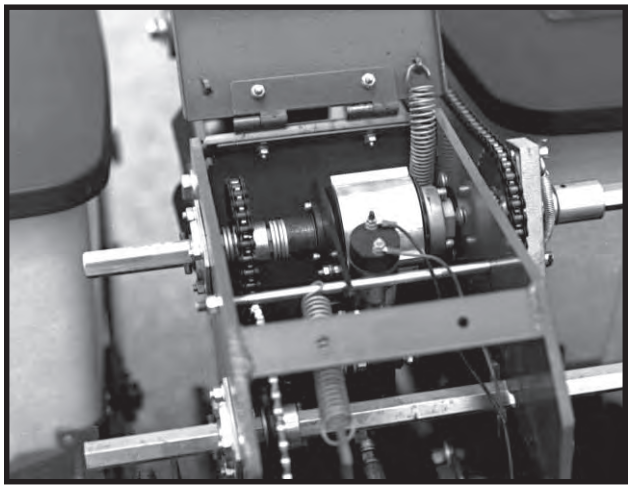
Remove the two outside Phillips head screws. NOTE: DO NOT REMOVE THE CENTER PHILLIPS HEAD SCREW. Carefully separate the console case from the front panel. Remove the defective bulb by turning the lamp assembly 1/4 turn counterclockwise and pulling straight out. Replace bulb with a GE No. 73 bulb (Part 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.**

POINT ROW WRAP SPRING CLUTCH INSPECTION

Standard On 12 And 16 Row/Optional On 8 Row

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

76740-2



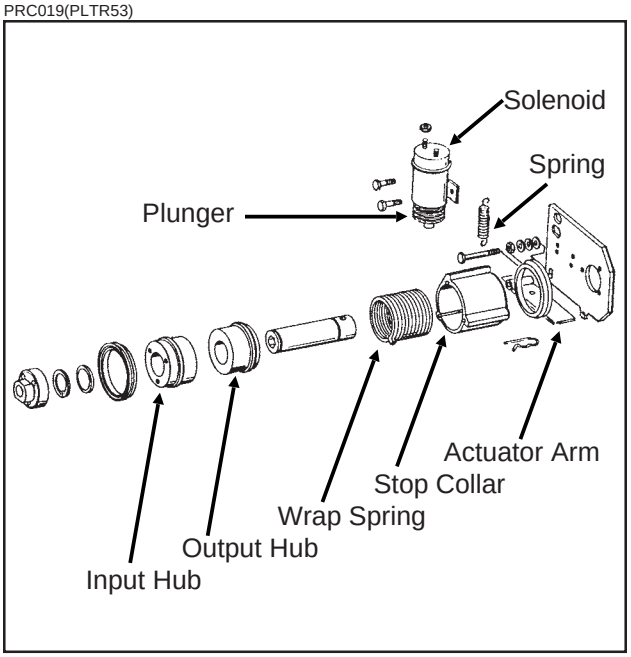
The right hand clutch operates clockwise and the left hand clutch operates counterclockwise. Therefore, some of the parts of the clutch such as the wrap spring differ from one side of the planter to the other. Be sure to use the correct repair part if a clutch must be repaired.

NOTE: The point row clutch input shaft on the R.H. side of the machine will have an "L" stamped on it and the shaft on the L.H. side of the machine will have an "R" stamped on it.

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

NOTE: Always replace fuse with proper size and type when replacing fuse. Use MDL 10 amp slow blow fuse on front of control console.

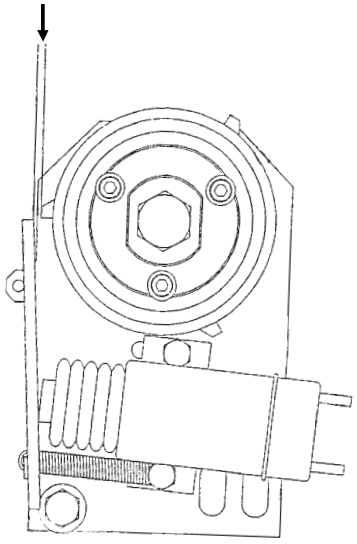
PRC019(PLTR53)



(PLTR54)

ACTUATOR ARM ADJUSTMENT

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



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

POINT ROW WRAP SPRING CLUTCH TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Neither clutch will disengage.	Main fuse blown in control console.	Replace defective fuse.
	Poor terminal connection in wiring harness.	Repair or replace.
	Wiring damage in wiring harness.	Repair or replace.
	Low voltage at coil. (12 volts required)	Check battery connections.
One side of planter will not re-engage.	Shear pin in seed drive transmission sheared.	Replace with one of equal size and grade.
One clutch will not engage.	Fuses blown.	Replace defective fuses.
	Actuator arm and plunger stuck in disengaged position.	Remove, free up and reinstall.
	Actuator arm out of adjustment.	Adjust actuator arm mounting pin in slot so that actuator arm clears stop on stop collar by approximately $^1/_8$" when clutch is rotated.
	Wrap spring broken or stretched.	Disassemble clutch and replace spring.
	Foreign substance such as oil or grease on the input or output hubs.	Disassemble clutch. Clean hubs and spring and reassemble.
	Something touching the stop collar.	Check to ensure collar is free to turn with clutch.
	Clutch assembled incorrectly.	Check clutch and diagram for correct assembly.
Clutch slipping.	Wrap spring stretched.	"Lock" clutch output shaft from turning. Place torque wrench on input shaft and rotate in direction of drive. After input shaft has rotated a short distance the wrap spring should tighten onto the input hub. If slippage occurs at less than 100 ft. lbs. replace spring. If spring still slips after installing new spring, replace input hub.
Planter will not re-engage while planter is moving forward.	Spring in actuator arm not strong enough to push arm away from stop collar when operational switch is turned to the ON position.	Remove spring from inside solenoid and stretch spring slightly or replace. Reinstall spring. If that fails, file the stop on the stop collar slightly so that the stop is not as aggressive.
Frequent solenoid burnout.	Fuses too large.	Replace fuses on front panel with 8 amp slow blow fuses.
Frequent fuse burnout.	Low voltage (12 volts required).	Check power source voltage for partically discharged battery, etc.
	Damage to wiring harness.	Locate damage and repair or replace harnesss.
Clutch or clutches will not disengage.	Input and output shafts out of alignment.	Align input and output shafts to prevent drag.
	Input or output shaft is pushed in too far creating a coupler.	Reposition input and output shafts.

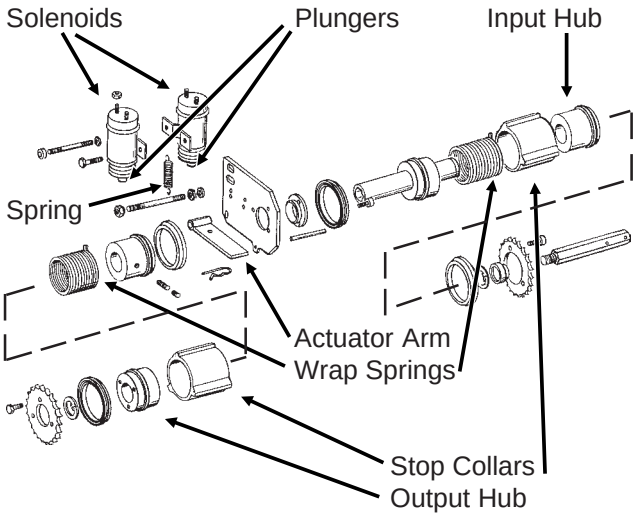
TWO-SPEED POINT ROW WRAP SPRING CLUTCH

Optional On 8, 12 And 16 Row

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

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

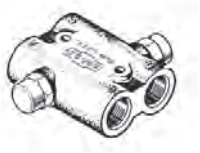
(TWL75)



RELIEF VALVE

(Located On Hitch - Serial No. 611994 & On)

(TWL148)



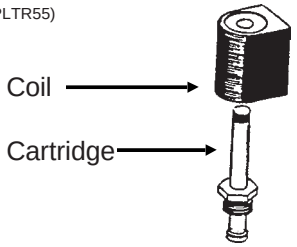
The relief valve pressure is preset and is not adjustable.

SOLENOID VALVE INSPECTION

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

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

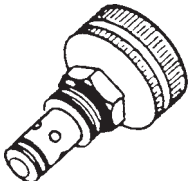
VVB019(PLTR55)



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

FLOW CONTROL VALVE INSPECTION

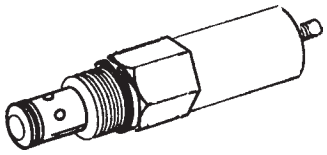
VVB020(TWL28)



The 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, it should be removed for inspection. Check for foreign material and contamination on both the valve and the seating area of the valve body. Replace any components found to be defective.

PRESSURE RELIEF VALVE INSPECTION

VVB020(TWL29)



If the pressure relief valve fails to release the tongue lock or function properly, remove the valve from the valve block and check for foreign material or check to see if the o-ring is leaking internally. Replace if found to be defective.

LIFT CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Right wing raises faster than left wing. The right wing may even raise completely before the center frame and left wing start to raise. If the planter is loaded, the center frame and left wing may not be able to raise at all.	Master cylinder, located on front side of center post, leaking internally. NOTE: Make sure the lift system is completely rephased.	Repair or replace master cylinder.
Left wing raises faster than right wing. The left wing may even raise completely before the center frame and right wing start to raise. If the planter is loaded, the center frame and right wing may not be able to raise at all.	Master cylinder, located on rear side of center post, leaking internally. NOTE: Make sure the lift system is completely rephased.	Repair or replace master cylinder.
Center frame will raise, but wings do not.	Planter hydraulic circuit out of phase. Usually occurs when the planter is lowered from transport position.	Hold hydraulic lever in lowering position to give the hydraulic circuit more time to rephase.
Center frame will continue to raise after the wing cylinders have reached full stroke when going to raised field position.	Solenoid valve in port V16 leaking.	Replace solenoid valve cartridge.
Planter will raise to raise field position, but will not raise to transport position.	Solenoid valve coil in port V16 is not energized.	Be sure control console switch is in “raise” position to energize solenoid coil in port V16. Check control console fuse by moving auxiliary switch to ON position. If red light comes on the fuse is OK. Return auxiliary to OFF position. Check for poor wire connection or damaged wire and repair. Solenoid valve coil is defective. All solenoid valves used on the planter are the same. Switch the solenoid coil with one you know is working. If this cures the problem, replace defective coil.

LIFT CIRCUIT TROUBLESHOOTING (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
(Cont'd.) Planter will raise to raise field position, but will not raise to transport position.	Solenoid valve cartridge in port V16 is stuck closed.	All solenoid valves used on the planter are the same. Switch the solenoid cartridge with one you know is working. If this cures the problem, replace defective cartridge.
Left wing lowering slower than center frame and right wing. If hydraulic lever is held in lowering position, the left wing cylinder will attempt to extend.	Check valve in port V17 leaking internally.	Remove check valve in port V17 and inspect for foreign material in valve and remove if possible. Replace check valve. If above fails, switch check valve in port V17 with check valve in port V15. If problem moves or switches to right wing, replace defective check valve.
Right wing lowering slower than center frame and left wing. If hydraulic lever is held in lowering position, the right wing cylinder will attempt to extend.	Check valve inport V15 leaking internally.	Remove check valve in port V15 and inspect for foreign material in valve and remove if possible. Replace check valve. If above fails, switch check valve in port V15 with check valve in port V17. If problem moves or switches to right wing, replace defective check valve.
Planter will not raise.	Tractor may have hydraulic problem.	Repair tractor hydrauics.
	Planter may be overloaded with hopper extensions and/or extra fertilizer tanks, coulters or non-KINZE® approved attachments.	Remove weight.
	Center pivot wear pads may be adjusted too tight and are now binding on the post.	Adjust pads.
	Check relief valve pressure should be 2500 (±50).	Replace bad cartridge.
Planter will not rephase.	Piston seal expanded into barrel rephasing grooves. (Only Cylinders With Rephasing Groove In Barrel.)	Consult your KINZE® Dealer.
	All cylinders not completely retracted. Caused by mechanical interference on or between planter frame and wheel lift module.	Remove interference.
	One or more cylinders are completely retracted but not bypassing oil and not allowing remaining cylinders to retract.	Move tractor hydraulic lever to the raise position briefly and down again. Slow down the lowering of the planter from the raised transport position to the planting position. This will slow the flow of oil that passes by the rephasing groove in the wing cylinders.

TONGUE CYLINDER CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Tongue cylinder will not extend, but will retract.	No power to solenoid valve coil in port V10 and/or V14. Both must be energized.	Check wiring between control console and solenoid coils looking for damaged wires and poor connections.
	Solenoid valve coil defective.	Switch coil from port V13 with V10. If tongue still will not extend, switch coil from V14 with V13. It will not be necessary to remove any of the wire connections to the solenoid. All three of these solenoids are normally energized when the tongue switch is energized. Replace defective coil.
	Solenoid valve cartridges in port V10 and/or V14 stuck closed.	Switch cartridge from port V10 with cartridge in port V13. If tongue cylinder retracts, replace defective cartridge from port V10. If problem continues, switch cartridge from port V14 with cartridge in port V13. Replace defective cartridge.
Tongue cylinder will not extend but tongue lock cylinder extends.	Pressure relief valve in port V11 stuck closed or pressure setting too high. (Valve is factory set to open at 1000 PSI.)	Replace or adjust pressure relief valve. To adjust, loosen lock nut and turn counter clockwise to decrease pressure.
Tongue hook does not release before the tongue starts to extend.	Solenoid valve cartridge in port V11 stuck open or pressure setting too low. (Valve is factory set to open at 1000 PSI.)	Replace or adjust pressure relief valve. To adjust, loosen lock nut and turn clockwise to increase pressure.
Tongue cylinder will not retract, but will extend.	Solenoid valve coil in port V13 defective.	Switch coil from port V13 with coil from port V14. If coil from port V13 is bad, the tongue will extend but not retract. Replace defective coil.
	Solenoid valve cartridge in port V13 stuck closed.	Switch cartridge from port V13 with cartridge from port V14. If cartridge is bad, the tongue will extend but not retract. Replace defective cartridge.
Tongue extends with the switch off.	Solenoid valve cartridge in port V10 and V14 stuck open.	Replace solenoid valve cartridge.
Tongue retracts with the switch off.	Solenoid valve cartridge in port V13 stuck open.	Replace solenoid valve cartridge.

ROTATION CYLINDER CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Cylinder does not extend, but will retract.	Solenoid valve coil in port V12 defective.	Switch coil from port V12 with coil in port V9. If cylinder extends but will not retract, replace defective coil from port V12.
	Solenoid valve cartridge in port V12 is stuck closed.	Switch cartridge from port V12 with cartridge in port V9. If cylinder extends but will not retract, replace defective cartridge from port V12.
Cylinder does not retract, but will extend.	Solenoid valve coil in port V9 defective.	Switch coil from port V9 with coil in port V12. If cylinder extends but will not retract, replace defective coil from port V9.
	Solenoid valve cartridge in port V9 is stuck closed.	Switch cartridge from port V9 with cartridge in port V12. If cylinder extends but will not retract, replace defective cartridge from port V9.

WING LOCK CYLINDER CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Cylinders will not extend or retract.	No power to the solenoid valve coils.	Auxiliary switch may be in the ON position. Must be in OFF position. Check fuse at control console. Replace fuse with 15 amp type AGC if blown. Check for poor wire connection or damaged wire. Repair as required.
Cylinders will not extend.	Solenoid valve coil in port V3 not energized.	Check for power to coil. Check coil ground wire. If OK, switch coil from port V3 with coil from port V4. If cylinders extend but will not retract, replace defective coil.
	Solenoid valve cartridge in port V3 stuck closed.	Switch cartridge in port V3 with cartridge in port V4. If cylinders extend but will not retract, replace defective cartridge.
Cylinders will not retract.	Solenoid valve coil in port V4 not energized.	Check for power to coil. Check coil ground wire. If OK, switch coil from port V4 with coil from port V3. If cylinders retract but will not extend, replace defective coil.
	Solenoid valve cartridge in port V4 stuck closed.	Switch cartridge in port V4 with cartridge in port V3. If cylinders retract but will not extend, replace defective cartridge.
Cylinders retract with the switch off.	Solenoid valve cartridge in port V4 stuck open.	Replace solenoid valve cartridge.
Cylinders extend with the switch off.	Solenoid valve cartridge in port V3 stuck open.	Replace solenoid valve cartridge.

MARKER CIRCUIT TROUBLESHOOTING

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

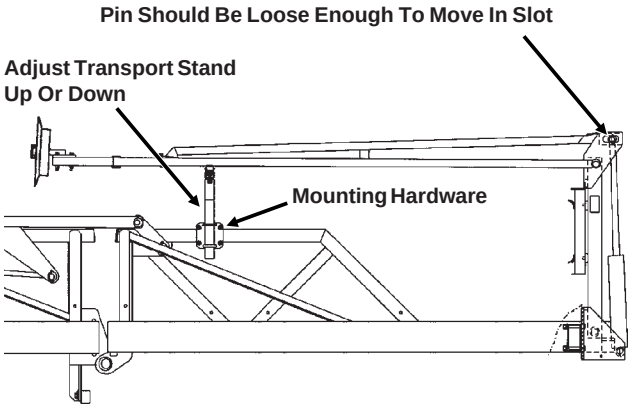
MARKER TRANSPORT STAND ADJUSTMENT

It is critical that the marker transport stands are adjusted correctly to allow the marker cushion cylinders to function properly.

To adjust the transport stands:

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

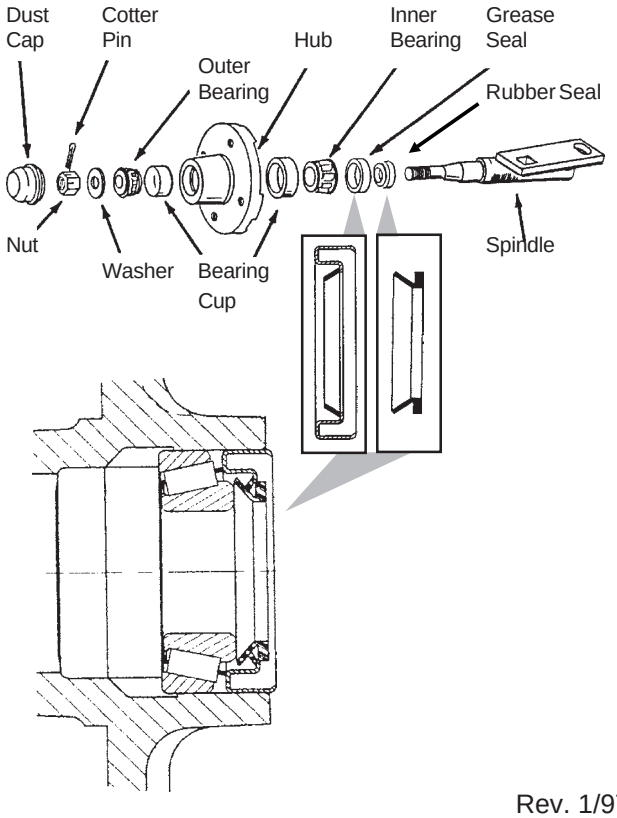
A7102-1(TWL104)



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)

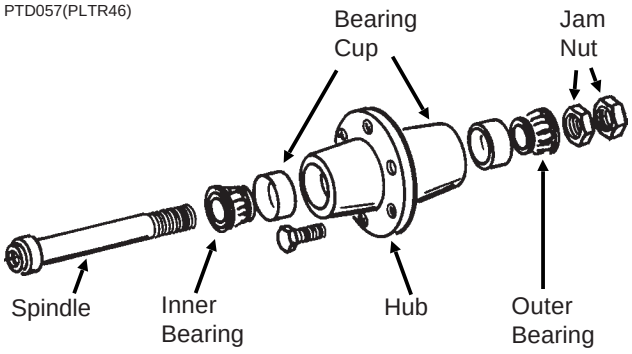


WHEEL BEARING LUBRICATION OR REPLACEMENT

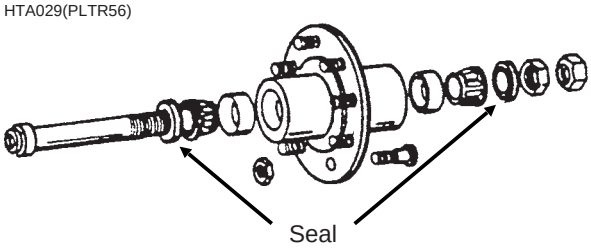
NOTE: Each transport wheel hub is equipped with a grease fitting for lubrication. The below procedure is used only for bearing replacement.

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

PTD057(PLTR46)



HTA029(PLTR56)



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.

Disassemble, clean and grease all U-joint slides.

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

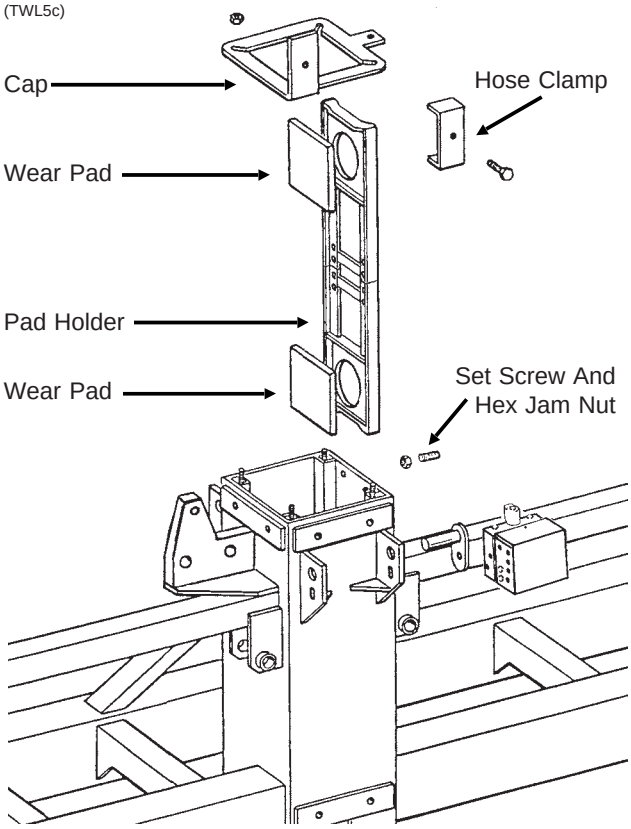
Flush liquid fertilizer tanks, hoses and metering pump with clean water. See “Piston Pump Storage” if applicable.

Empty dry fertilizer hoppers, clean hoppers, disassemble and clean metering augers, reassemble coating all metal parts with rust preventative.

Pull augers from dry fertilizer quick fill tubes and thoroughly clean augers and tubes and treat with a rust preventative.

Wear Pad Replacement/Adjustment

(TWL5c)



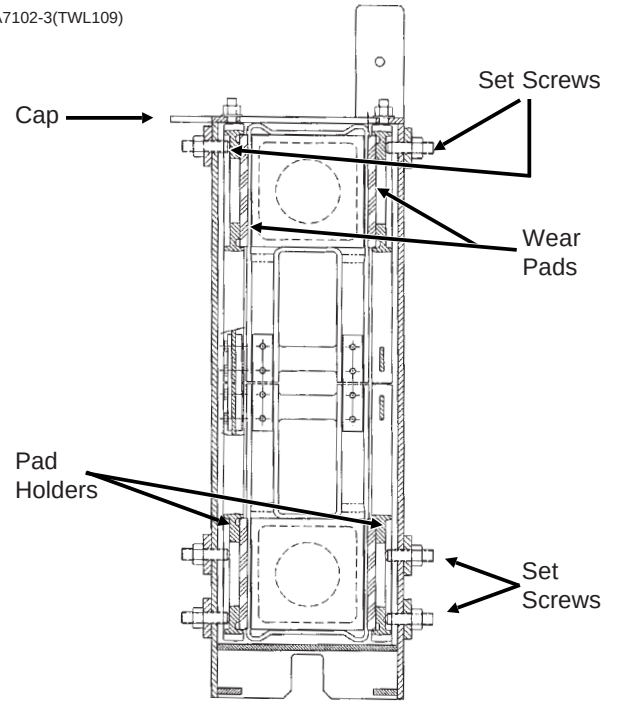
The center section of the planter consists of a steel tubular frame equipped with four wear pad assemblies which travel up and down against a stainless steel clad center post. Each wear pad assembly consists of a pad holder and two wear pads. The wear pads are held in place by the pad holder and adjusted and locked in adjustment by 3/4" set screws and hex jam nuts.

Check pad adjustment and wear annually. Replace any broken or missing adjustment set screws.

DANGER: Always install all safety lockups and safety lock pins before working under the unit.

To check adjustment and wear, park the planter on a level surface. Raise the planter to the raised field position. Visually check the four upper adjustable wear pads. Each wear pad should lightly contact the stainless steel clad center post. The maximum allowable gap between the plastic wear pad and the stainless steel post, when checked using a thickness gauge, should be no more than .060". Raise the planter to the raised transport position, install all safety lockups and visually check the four lower adjustable wear pads. Maximum allowable gap on the lower pads is the same as the upper pads.

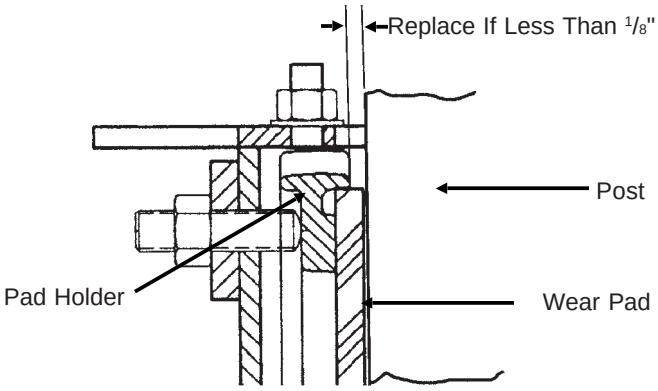
A7102-3(TWL109)



If adjustment is necessary proceed as follows: (a) Lower the planter to field operation position. It may be necessary to the loosen the cap mounting nuts to allow wear pad adjustment. (b) Loosen the necessary hex jam nuts. (c) Tighten set screws until the wear pad lightly contacts the stainless steel clad center post. DO NOT OVER TIGHTEN. (d) Tighten hex jam nuts. (e) Recheck clearance. If clearance is not to specifications, repeat adjustment steps. (f) Torque hex jam nuts to 130 ft. lbs. Tighten cap mounting bolts if applicable.

NOTE: If exposed wear pad is worn to less than 1/8" as shown below, replace the wear pad.

(TWL149)



If replacement is necessary proceed as follows: (a) Lower the planter to field operation position. (b) Remove the four 5/8" nuts and remove the cap from the top of the center post. It will be necessary to remove the hose clamp first. (c) Remove the sixteen 3/4" hex jam nuts and set screws which lock the wear pads in place, and slide the four wear pad holders with wear pads out of the top of the center post. (d) Place a minimal amount of heavy grease in pad holder prior to installing pad to hold pad in place during installation. (e) Reinstall the wear pad assembly. (f) Apply an anti-seize lubricant to set screws threads. Hand tighten set screw until the wear pad lightly contacts the stainless steel clad center post.

CAUTION: DO NOT OVER TIGHTEN WEAR PADS. OVER TIGHTENING WILL CAUSE PREMATURE WEAR.

(g) Install and torque hex jam nuts to 130 ft. lbs. (h) Position the center post cap over the studs and torque the nuts evenly alternating between studs. Tighten the nuts until the cap is distorted as shown in the photo below.

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PISTON PUMP STORAGE

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

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

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

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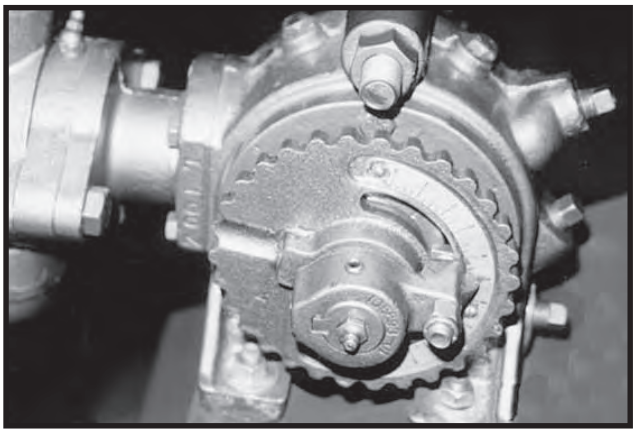
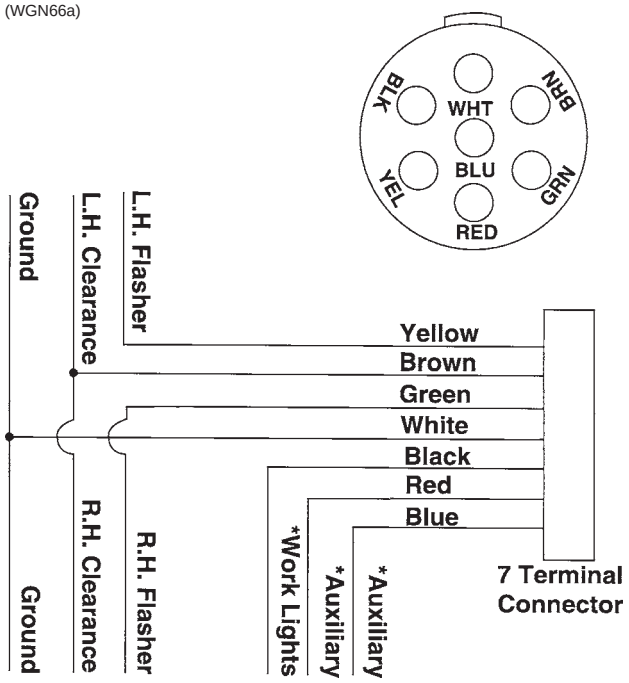


PISTON PUMP TROUBLESHOOTING

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.

ELECTRICAL WIRING DIAGRAM FOR LIGHT PACKAGE

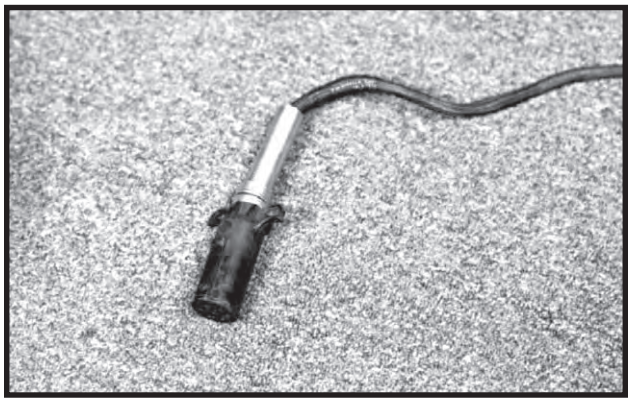
(WGN66a)



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

Light package supplied on the Model 2600 Twin-Line® Planter meets ASAE Standards. For the correct wiring harness to be wired into the lights on your tractor, check with the tractor manufacturer.

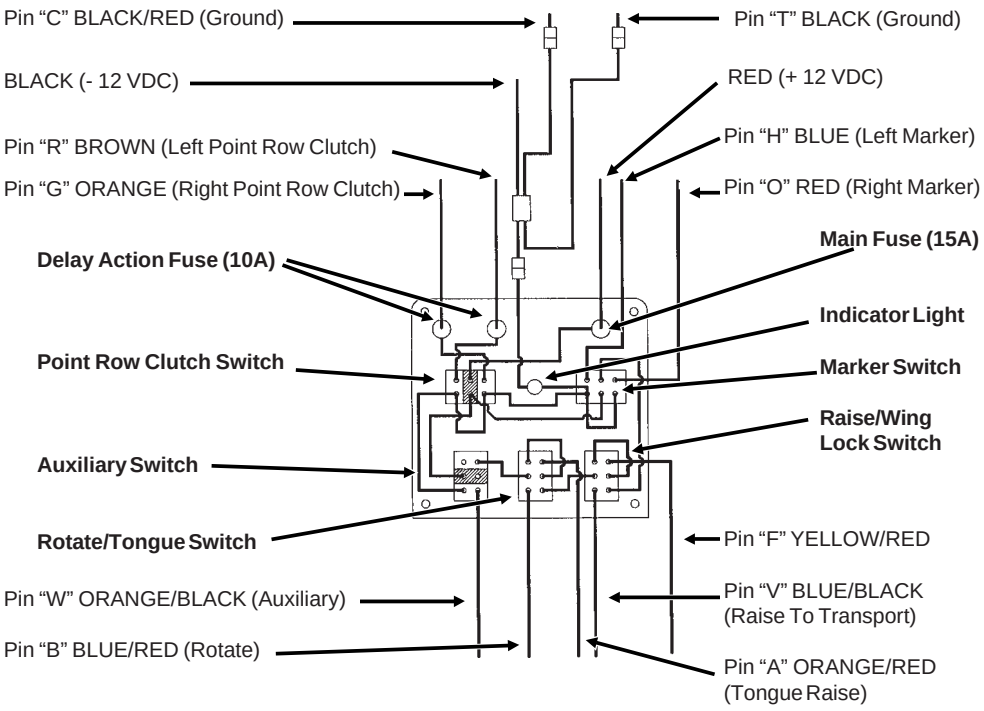
69922-35



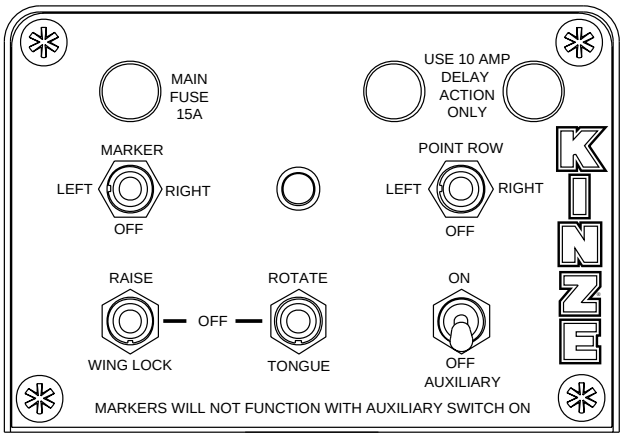
ELECTRICAL CONTROL CONSOLE SCHEMATIC

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

(PLTR82a)



(INS238)



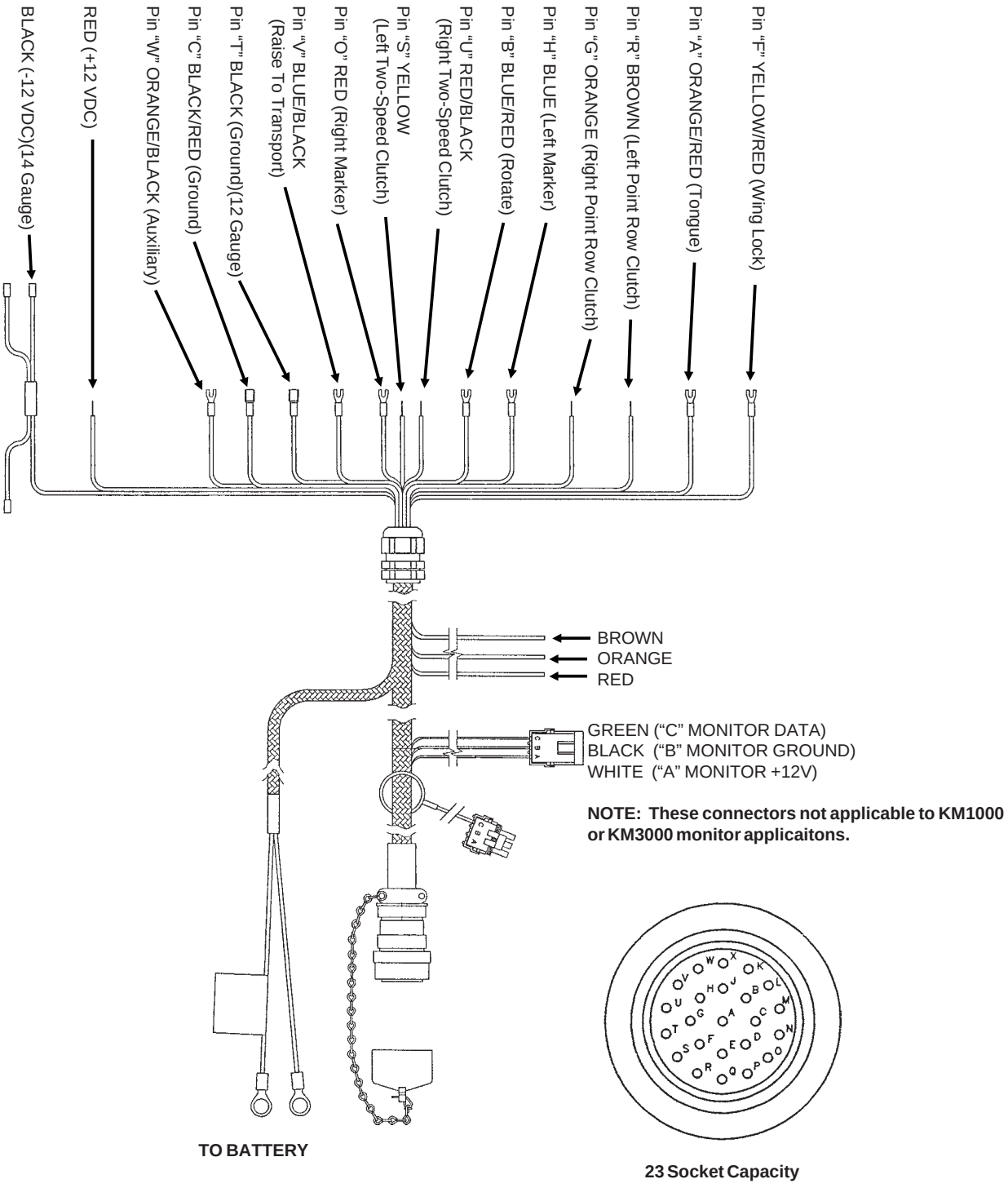
NOTE:

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

See page 9-35 for electrical control console schematic and wiring harness to two-speed point row clutch solenoids for planter equipped with the optional Two-Speed Point Row Clutch Package.

ELECTRICAL WIRING HARNESS SCHEMATIC (On Tractor)

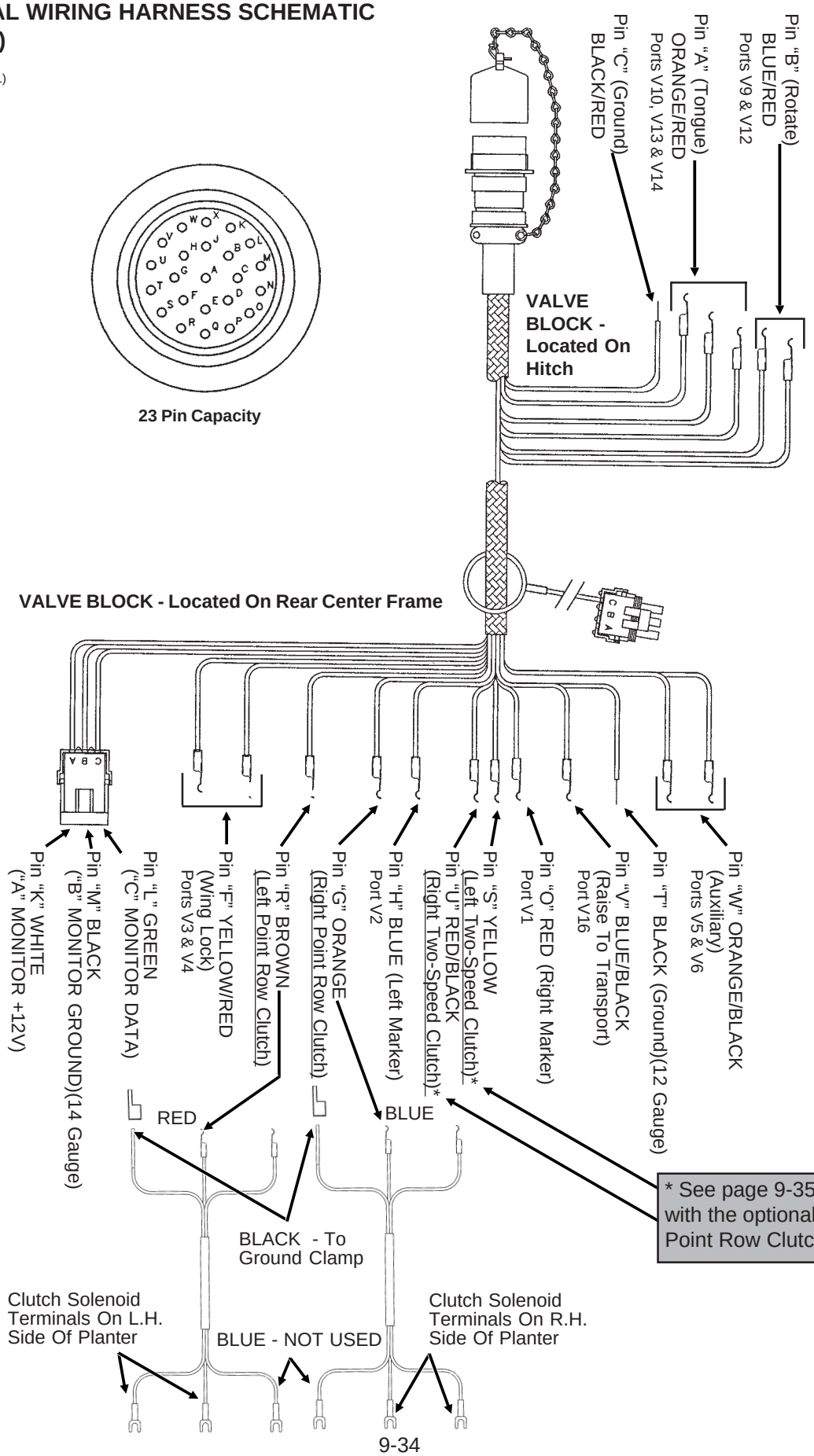
(ELC10/ELC13)



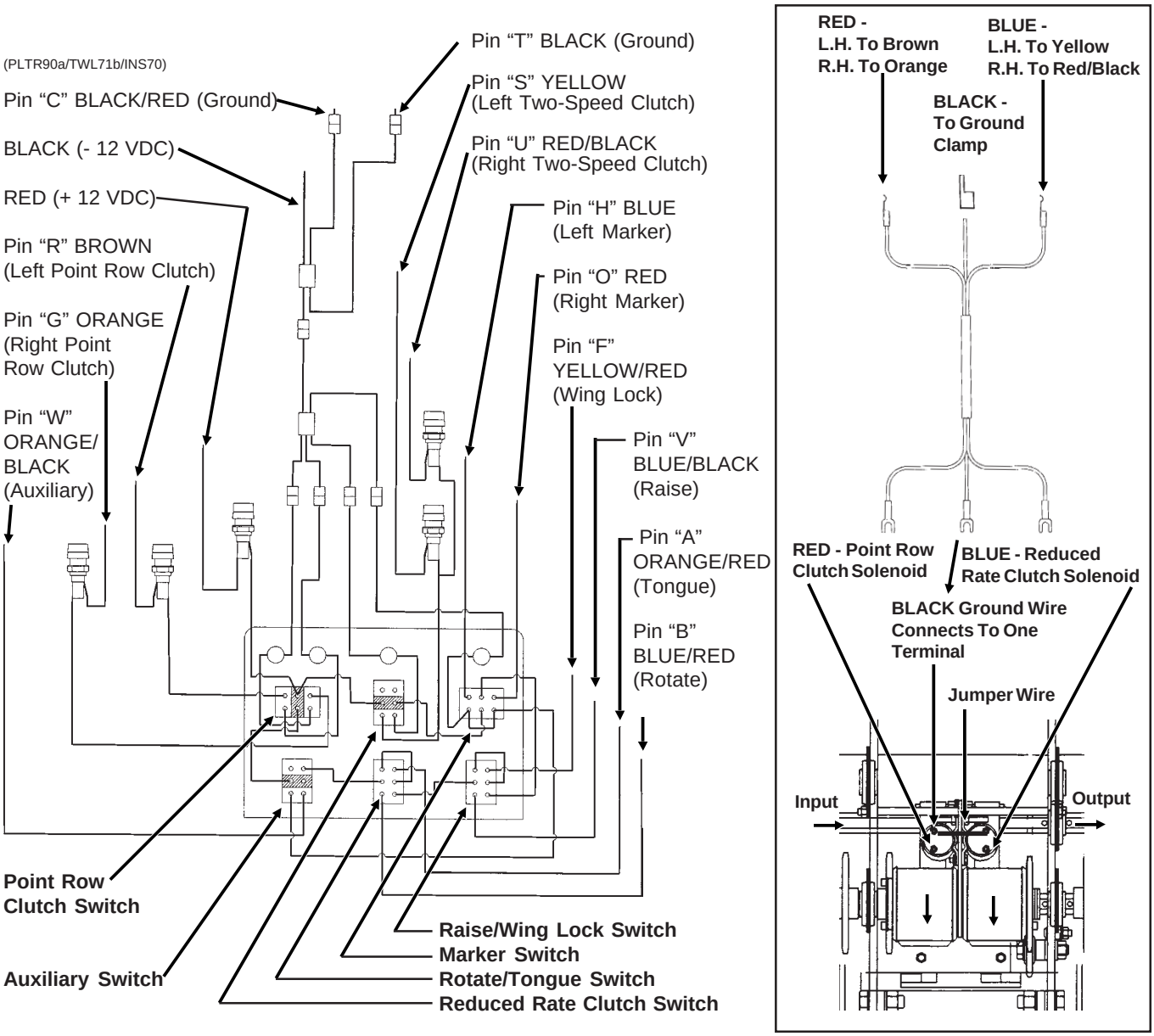
ELECTRICAL WIRING HARNESS SCHEMATIC (On Planter)

(ELC13/ELC12/TWL71)

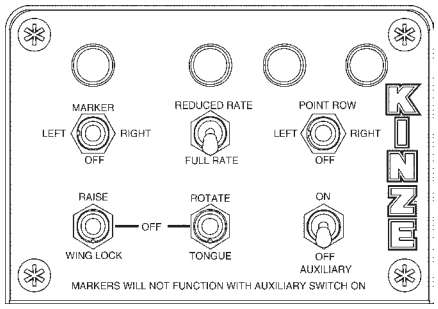
23 Pin Capacity



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



(INS260)



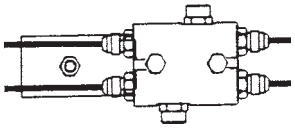
NOTE:

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

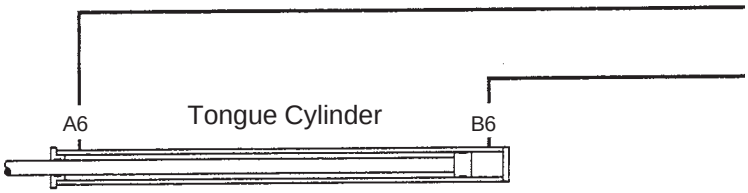
NOTE: Before doing any electrical work, disconnect the control console from the tractor battery. Keep wiring harnesses away from high temperature areas or sharp edges. DO NOT route the wiring harnesses along battery cables. Use tie straps to keep wire harness away from moving parts on tractor and planter.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

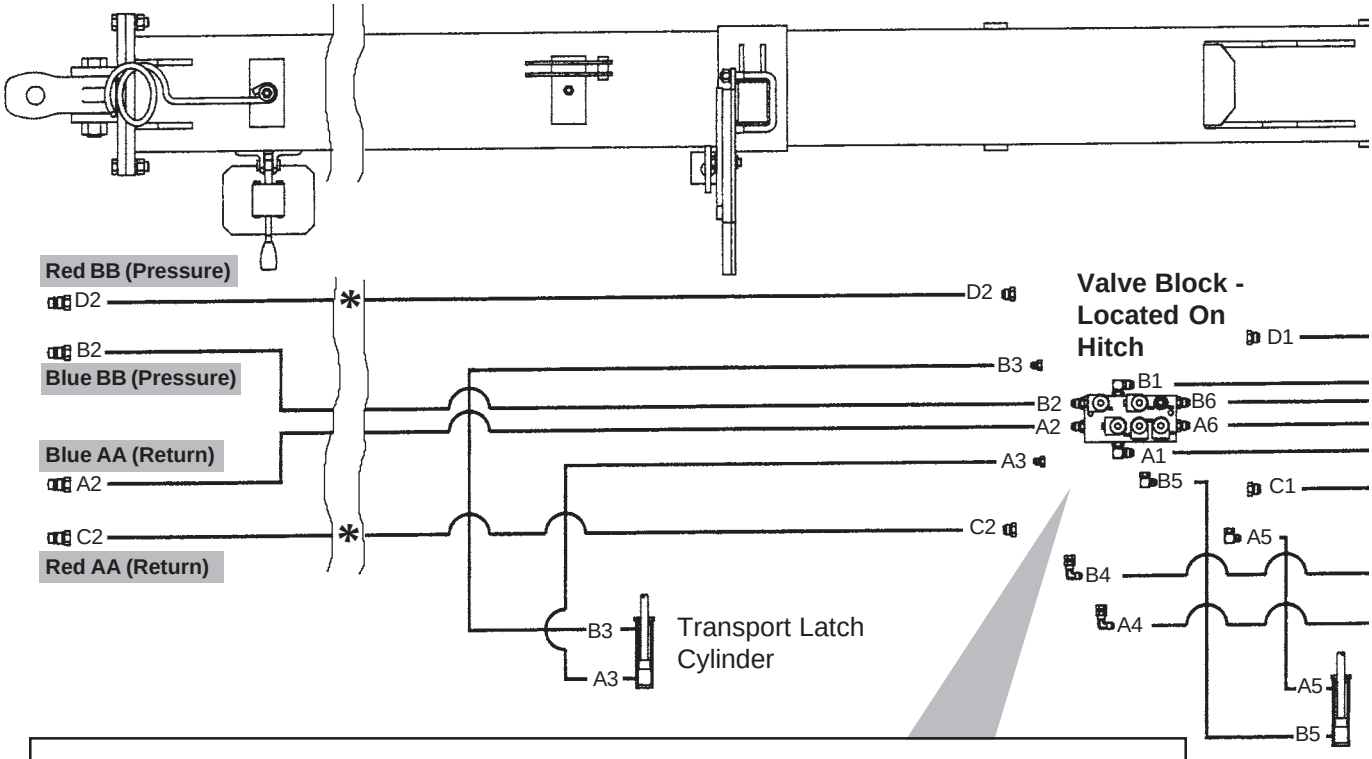
HYDRAULIC SYSTEM SCHEMATIC

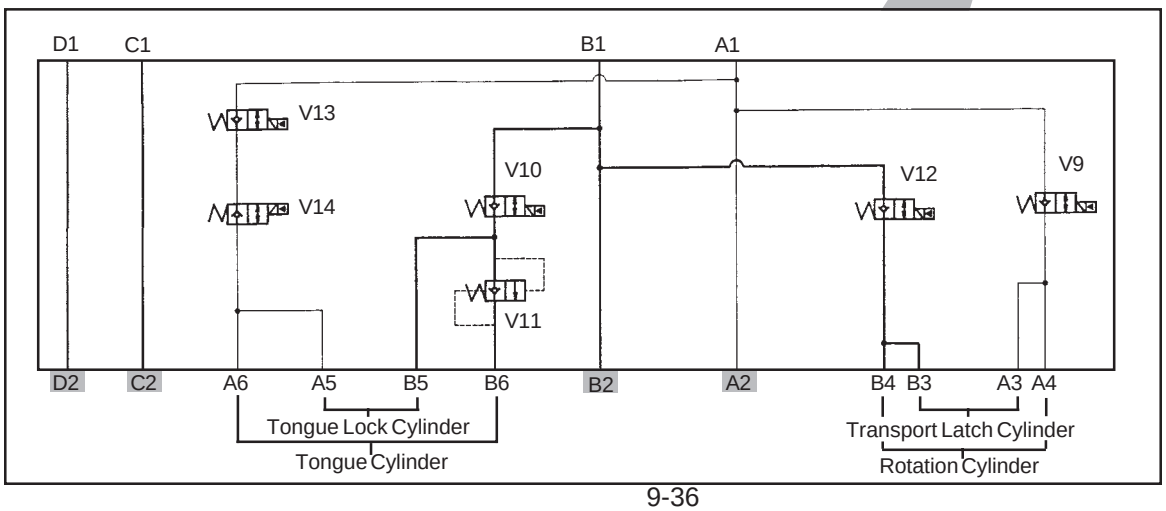
(TWL143/TWL107/TWL111)



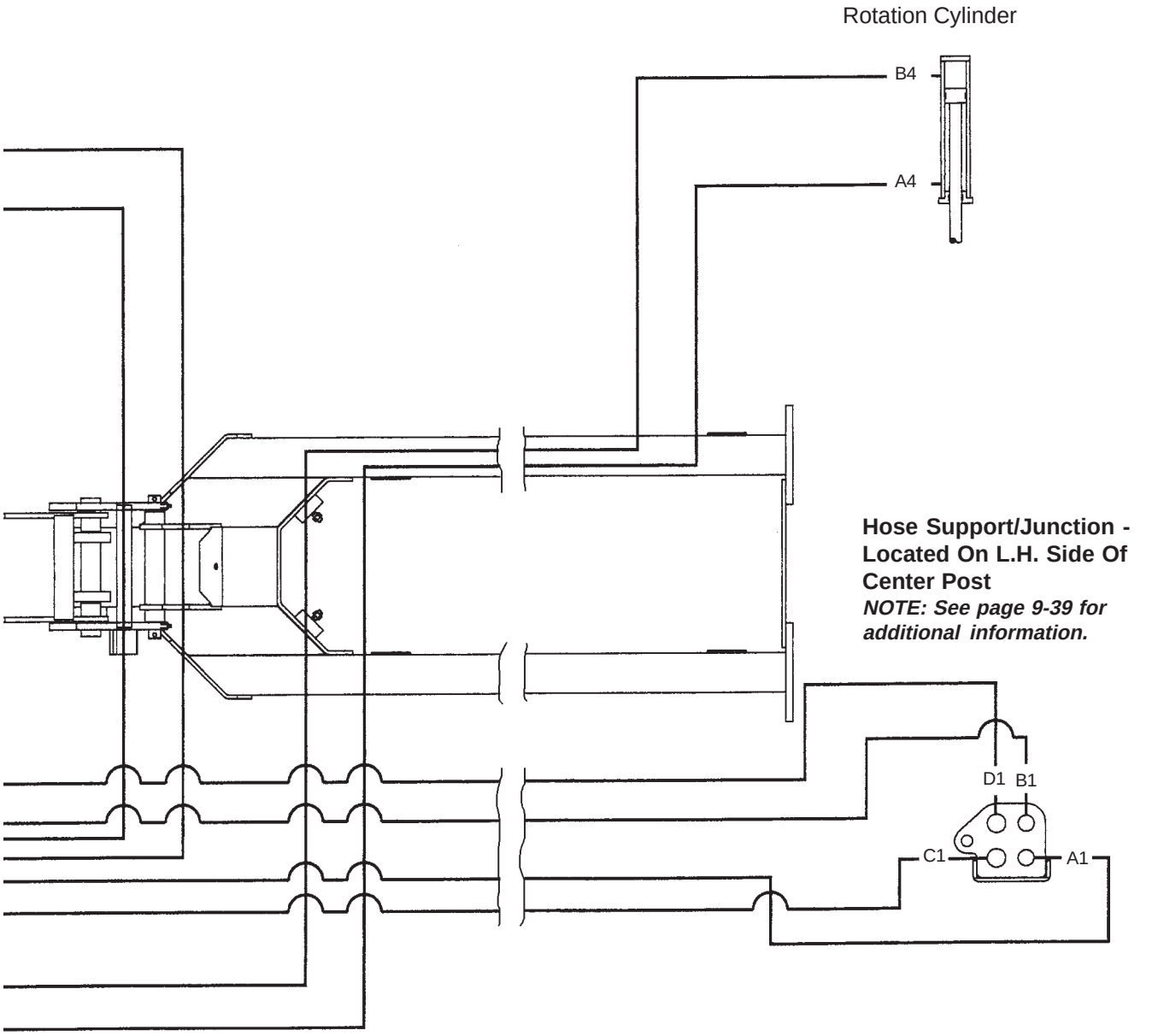
✻Relief Valve - Serial No. 611994 & On

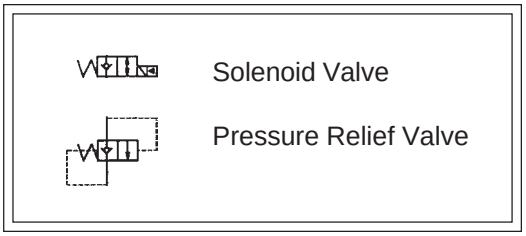






(TWL108/TWL115)

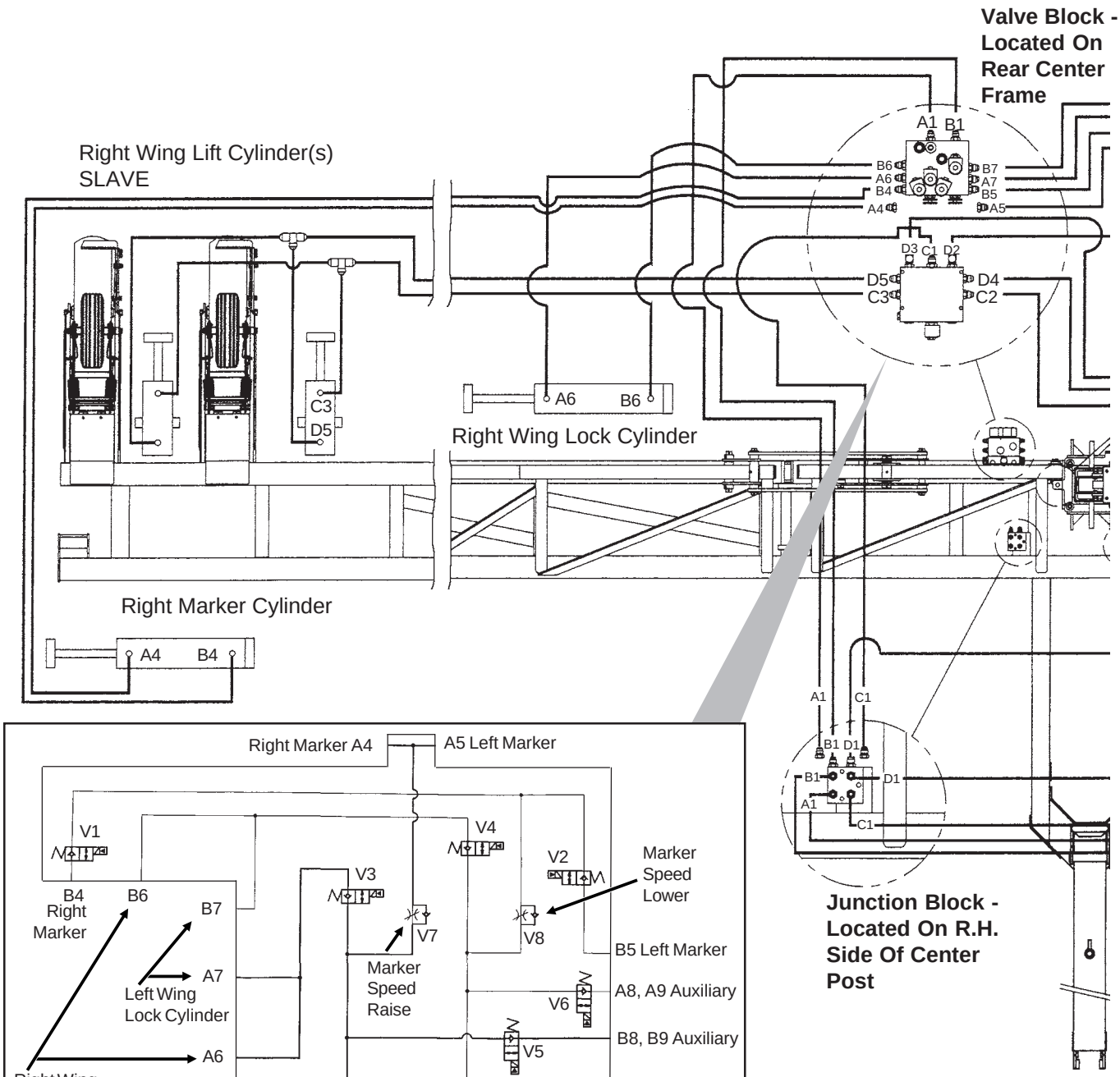


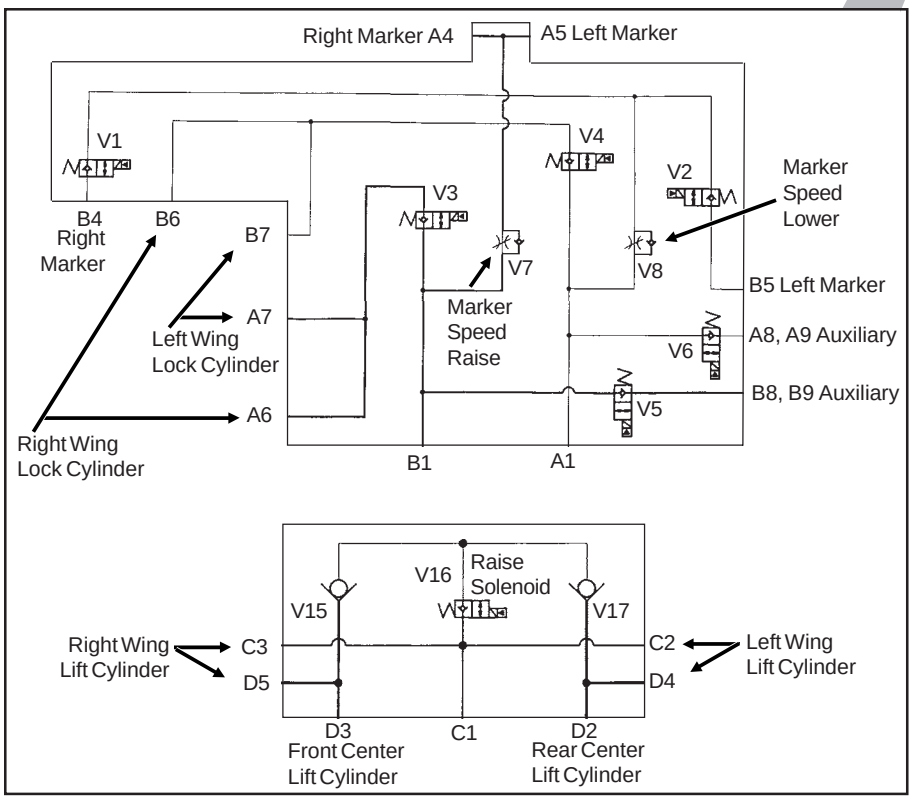


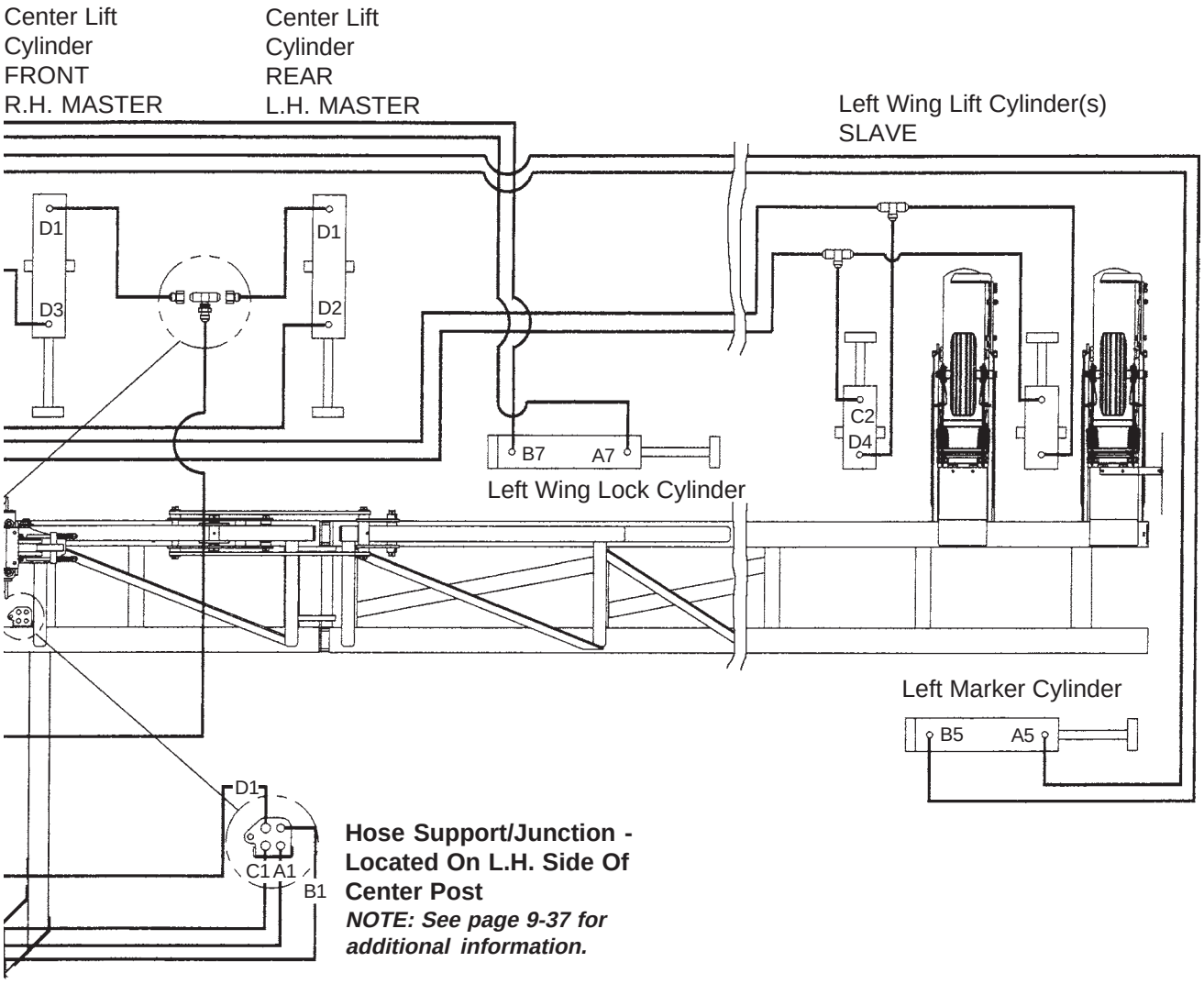
HYDRAULIC SYSTEM SCHEMATIC (Continued)

(TWL105/TWL113/TWL114)

16 Row Shown (Two Wing Lift Cylinders Per Wing)
8 And 12 Row (One Wing Lift Cylinder Per Wing)





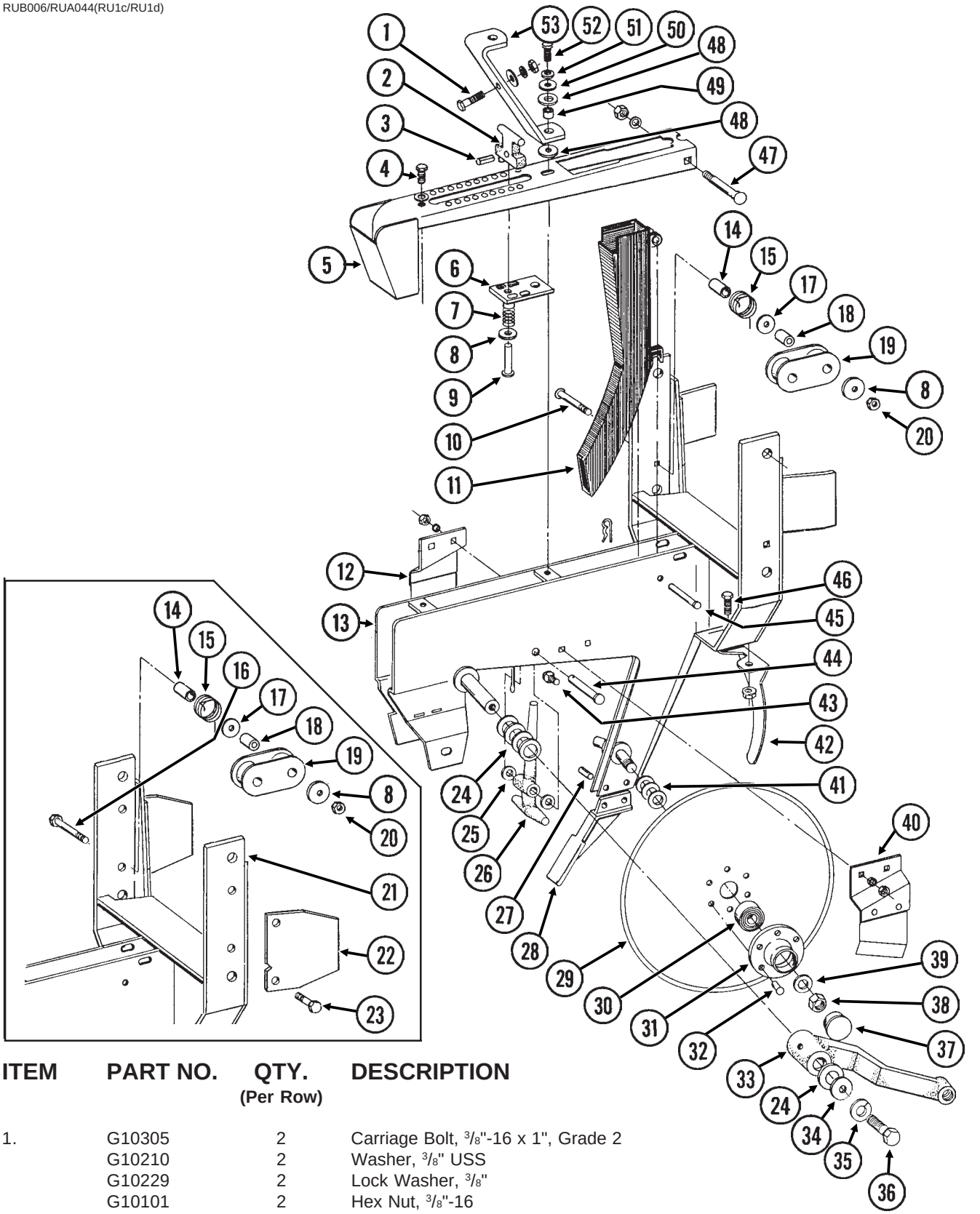


	Check Valve
	Solenoid Valve
	Row Marker Flow Control Valve

PARTS LIST INDEX

SHANK ASSEMBLY

RUB006/RUA044(RU1c/RU1d)



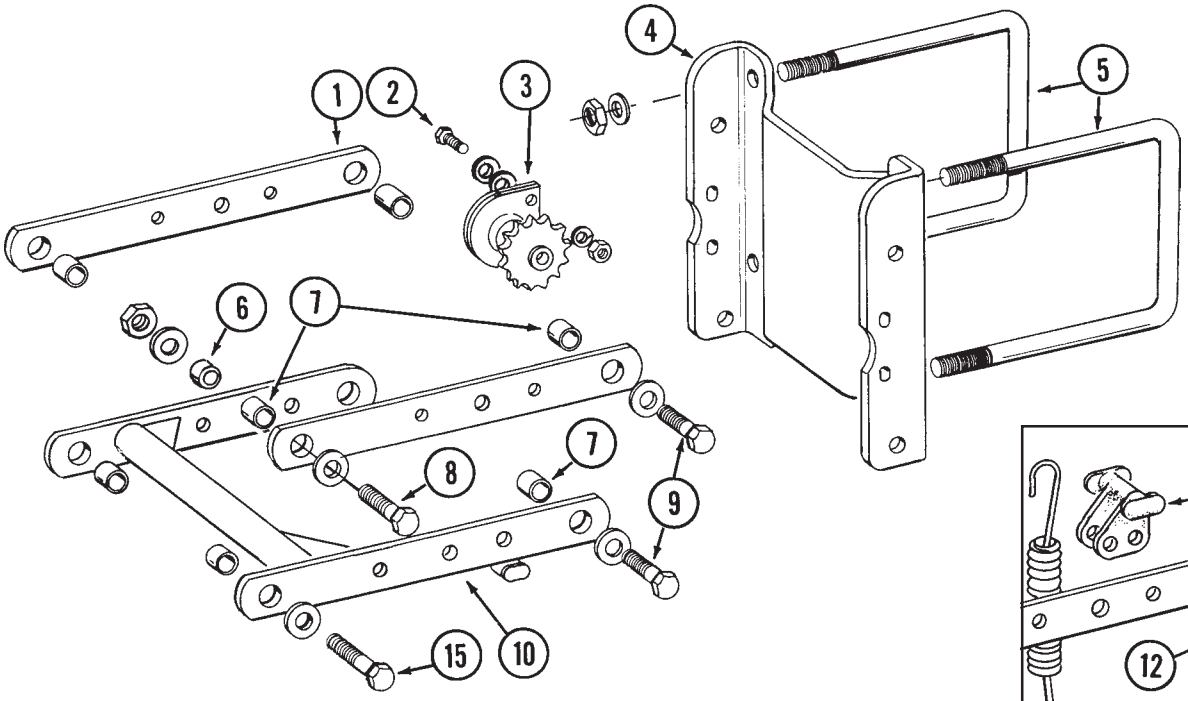
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10305	2	Carriage Bolt, 3/8"-16 x 1", Grade 2
	G10210	2	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
2.	GB0102	1	Depth Adjusting Handle
3.	G10605	1	Spring Pin, 5/32" x 3/4"
4.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	1	Lock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

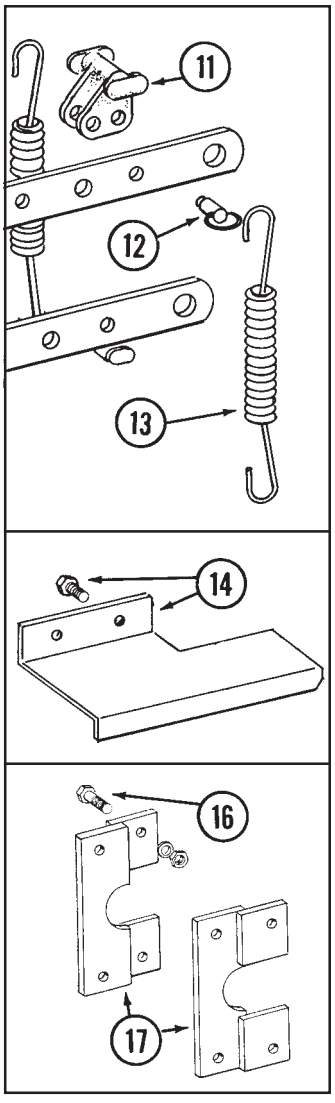
SHANK ASSEMBLY

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

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

RUB007/RUB015/RUB016/RUB013/RUB019/RUB020(RU2a/RU3/RU4/RU30)

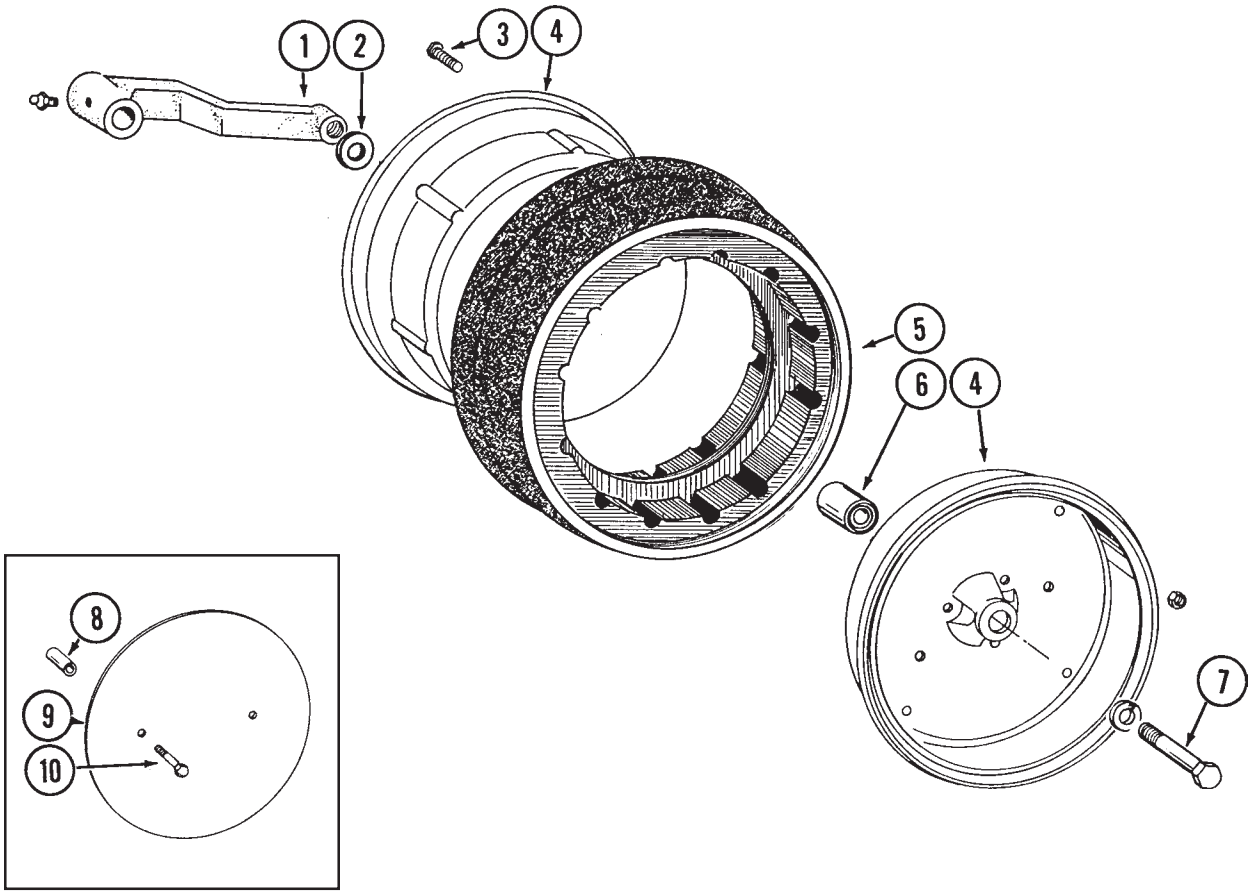




ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD7619	2	Upper Parallel Arm
2.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	-	Washer, 3/8" USS (As Required)
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
3.	GA1720	1	Bearing/Sprocket, 7/8" Bore
4.	GD10036	1	Mounting Support Plate
5.	GD1113	2	U-Bolt, 5" 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

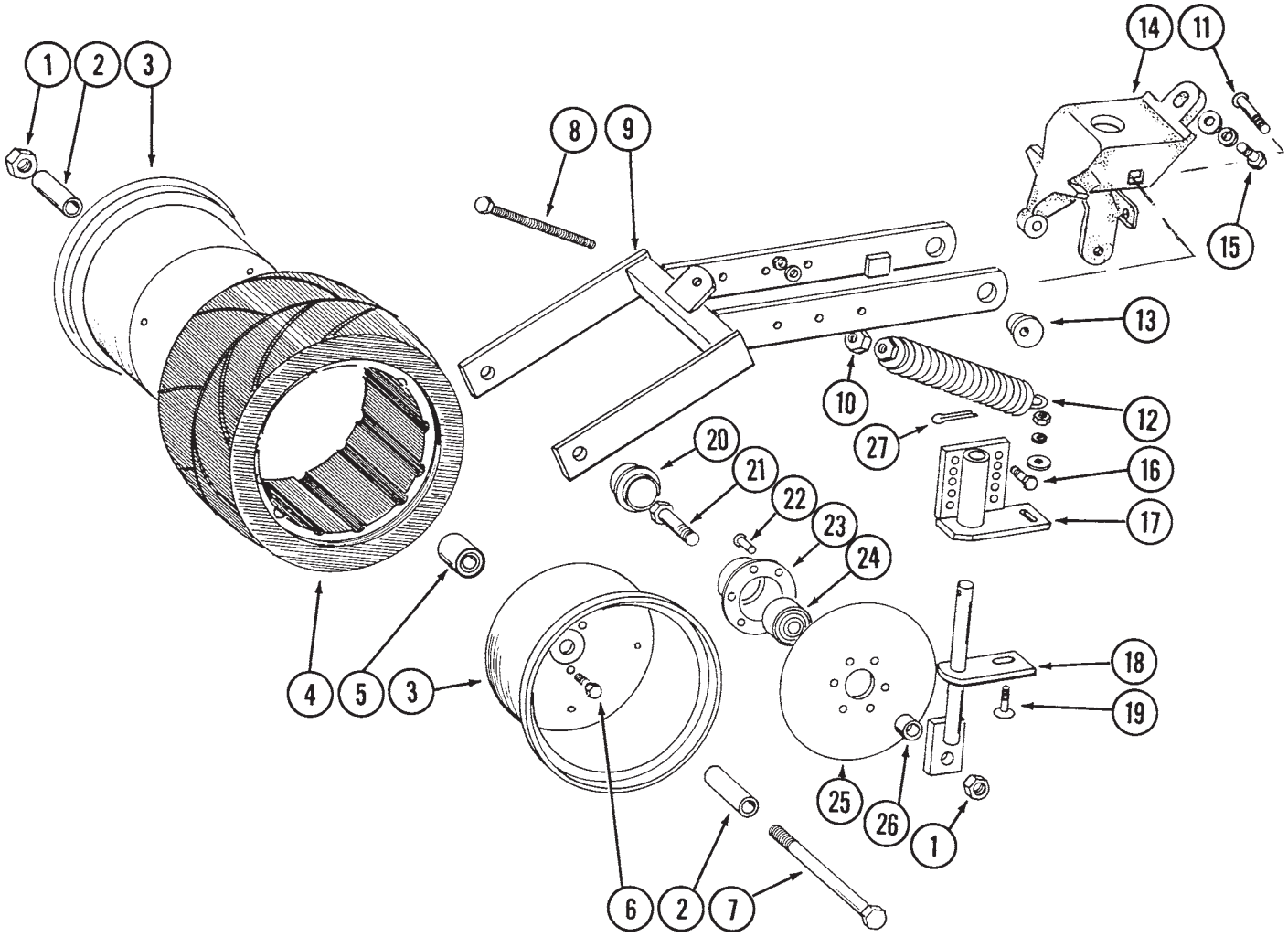
RUB001/RUB018/RUA039/RUB018/RUA044(RU5a/RU6)



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)

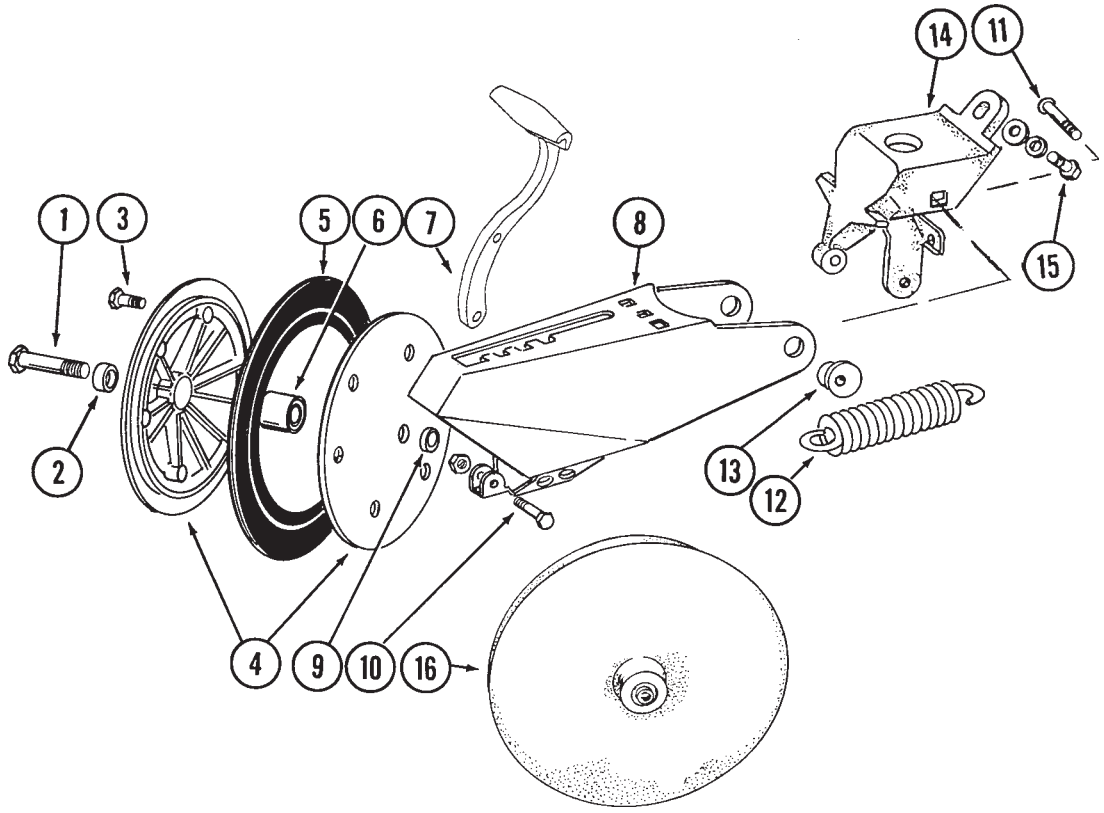


COVERING DISCS/SINGLE PRESS WHEEL

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

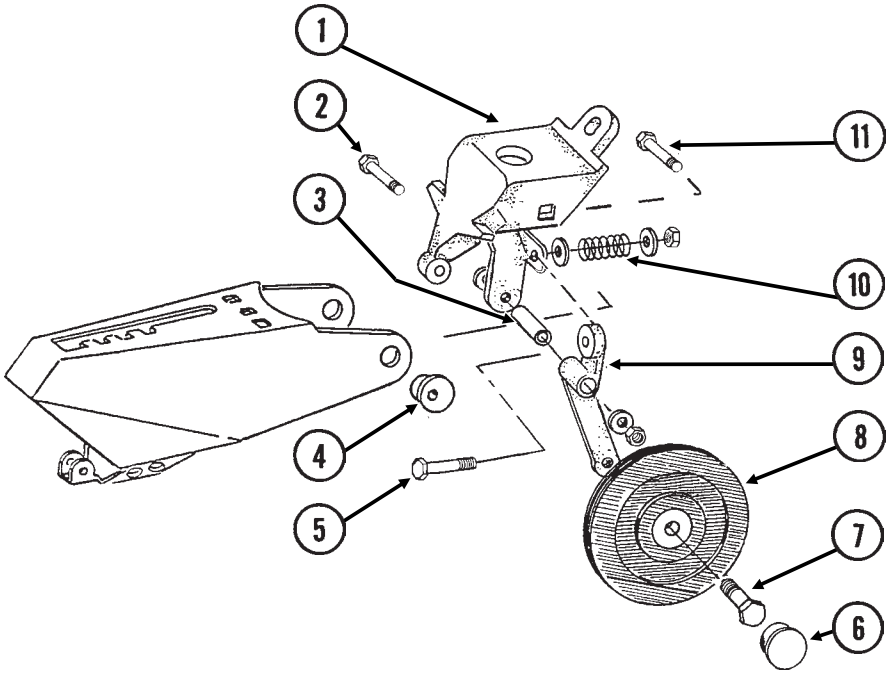
RUB004/RUA044/RUA046(RU9)



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

SEED FIRMING WHEEL

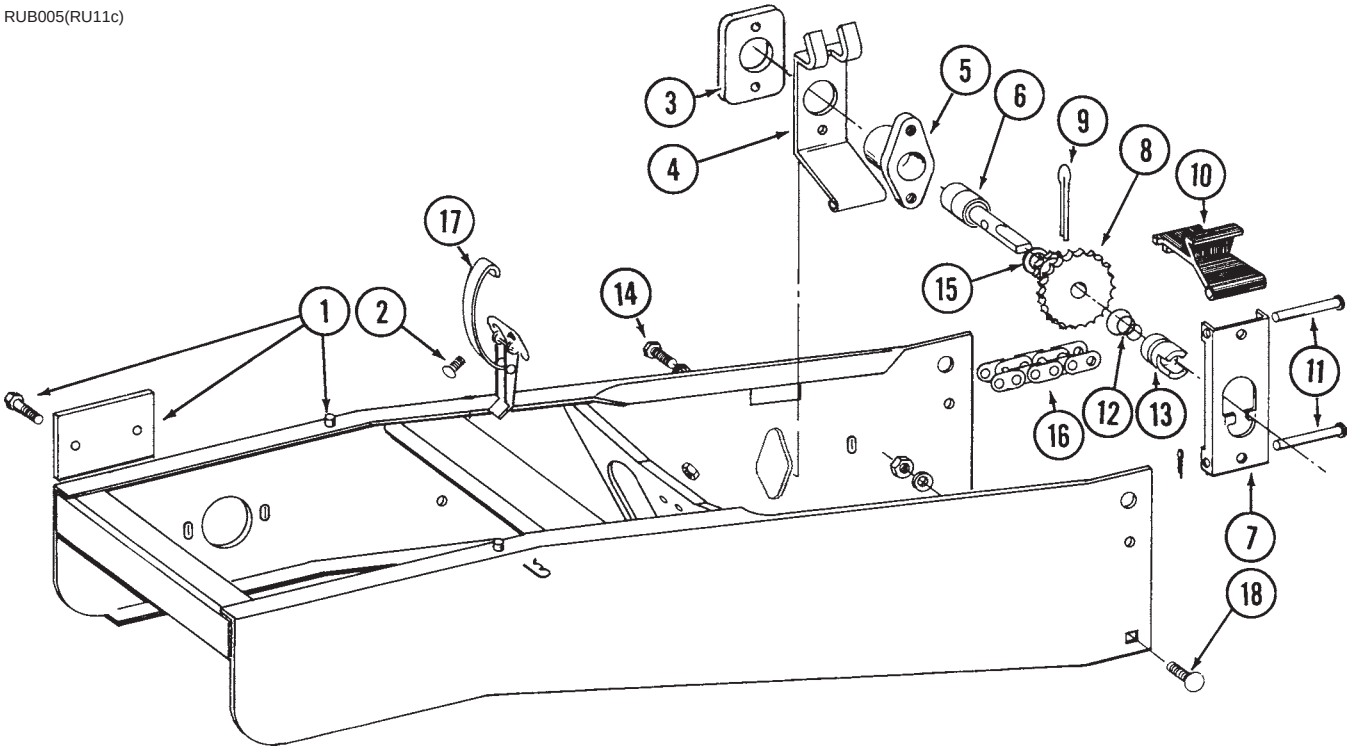
RUB006/RUA044(RU10b)



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

HOPPER SUPPORT AND METER DRIVE

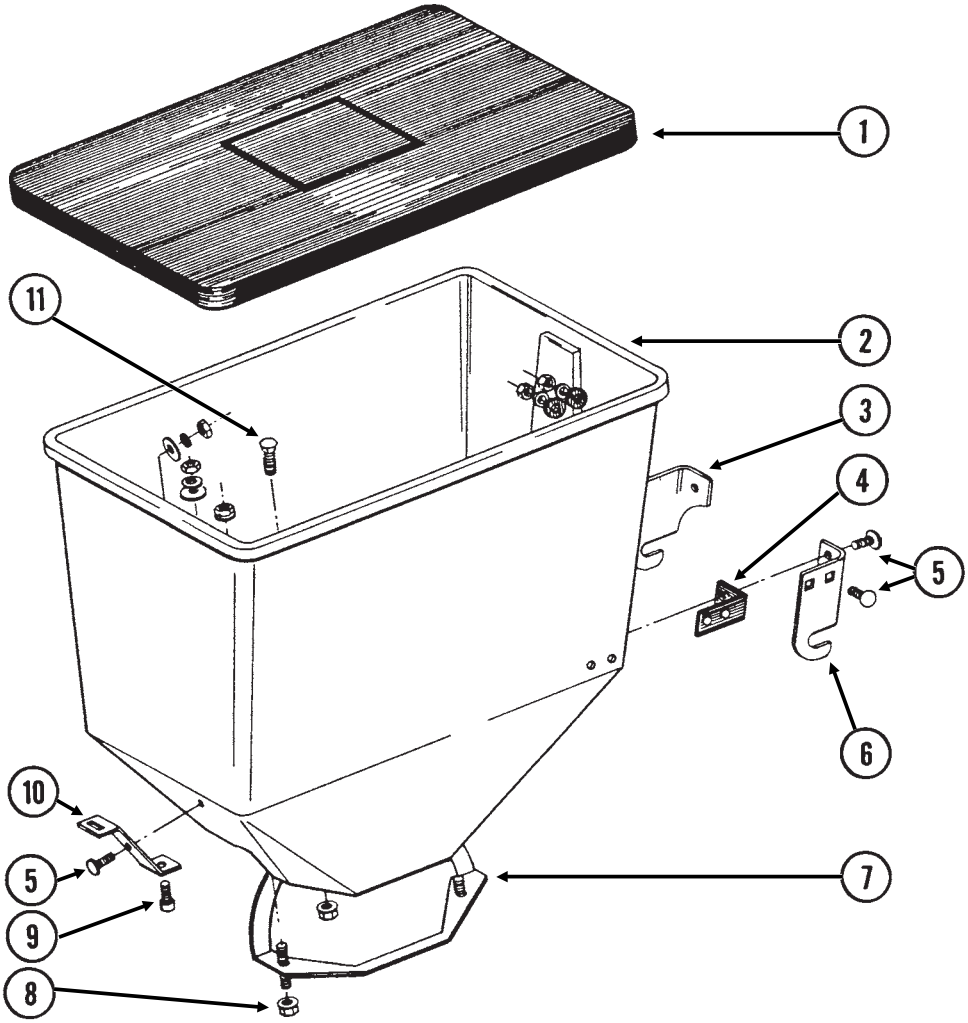
RUB005(RU11c)



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

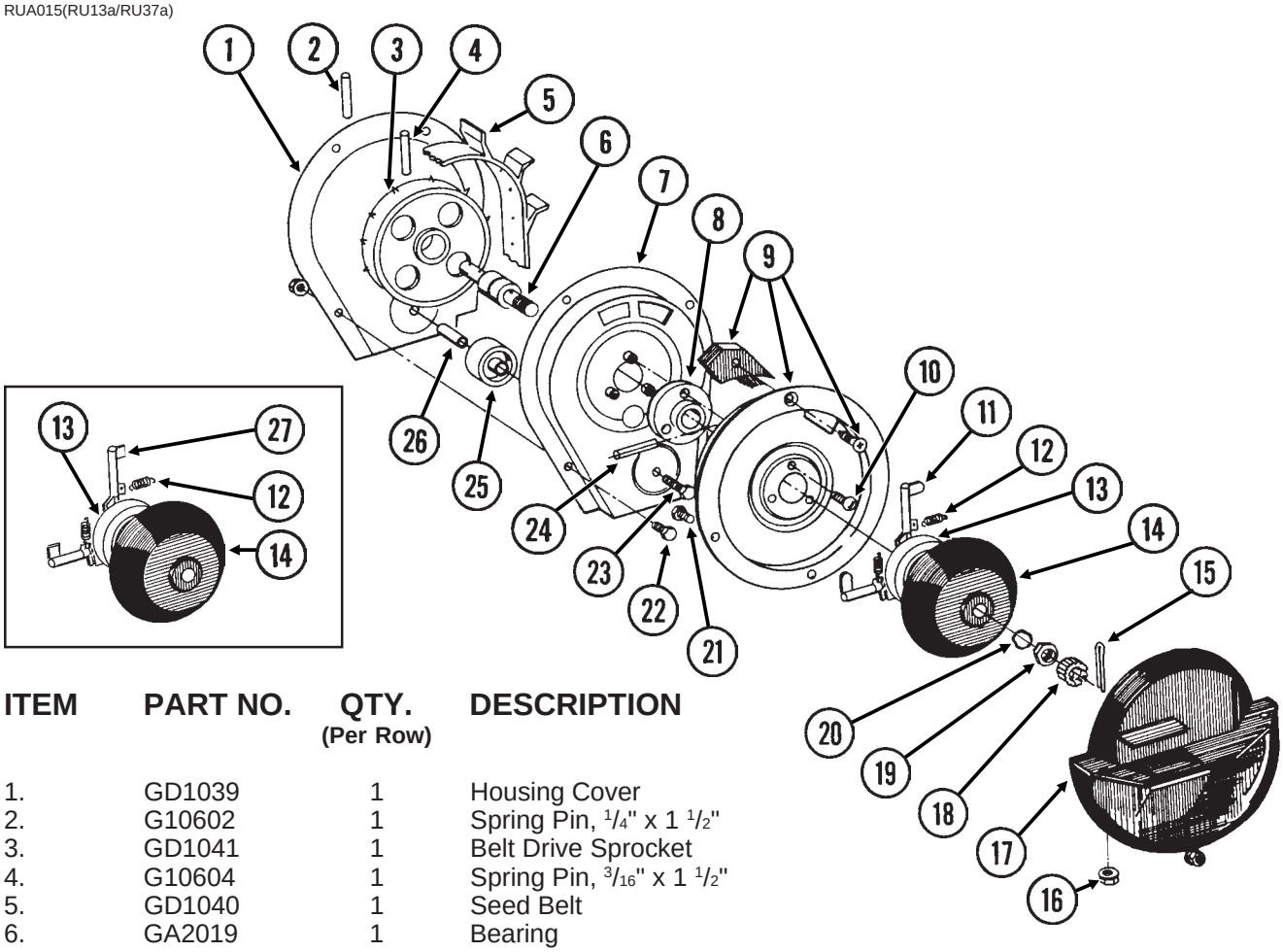
RUA015(RU12b)



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 PICKUP SEED METER

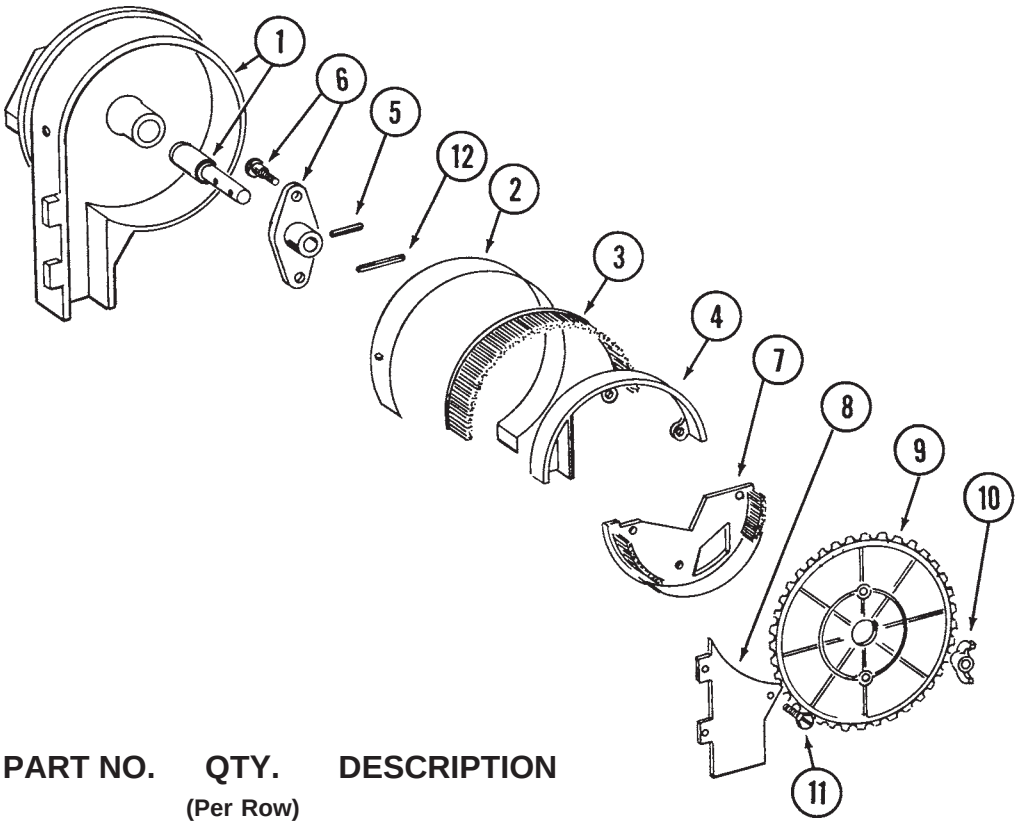
RUA015(RU13a/RU37a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1039	1	Housing Cover
2.	G10602	1	Spring Pin, 1/4" x 1 1/2"
3.	GD1041	1	Belt Drive Sprocket
4.	G10604	1	Spring Pin, 3/16" x 1 1/2"
5.	GD1040	1	Seed Belt
6.	GA2019	1	Bearing
7.	GA2018	1	Conveyor Housing
8.	GB0110	1	Bearing Housing
9.	GR0664	1	Carrier With Brush And Screw
	GA2020	-	Brush
	G10690	-	Rolling Thread Screw, No. 10 x 3/4"
10.	G10401	3	Screw, No. 10-32 x 5/8"
11.	GD10733	12	Finger, Corn
12.	GD6501	12	Spring
13.	GB0111	1	Cam
14.	GD1045	1	Finger Holder
15.	G10470	1	Cotter Pin, 5/32" x 1"
16.	G10620	2	Flange Nut, 5/16"-18
17.	GD1046	1	Seed Baffle
18.	GD1083	1	Cover Nut, 5/8"-18
19.	G10500	1	Jam Nut, 5/8"-18 UNF
20.	GD11315	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)
B.	GR1327	-	Finger Assembly, Oil Sunflower (Items 12-14 And 27)

BRUSH-TYPE SEED METER

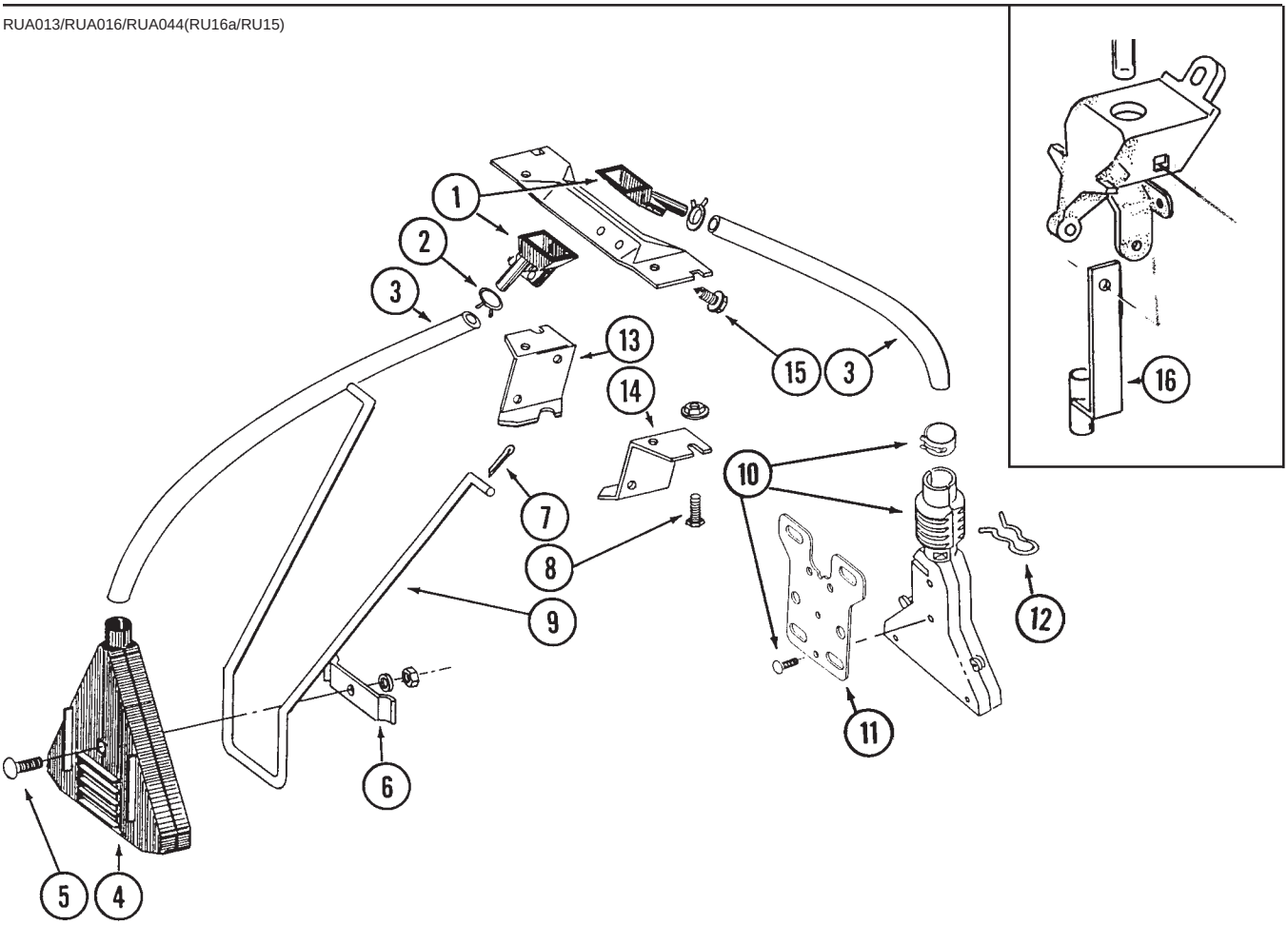
RUA037(RU14)



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

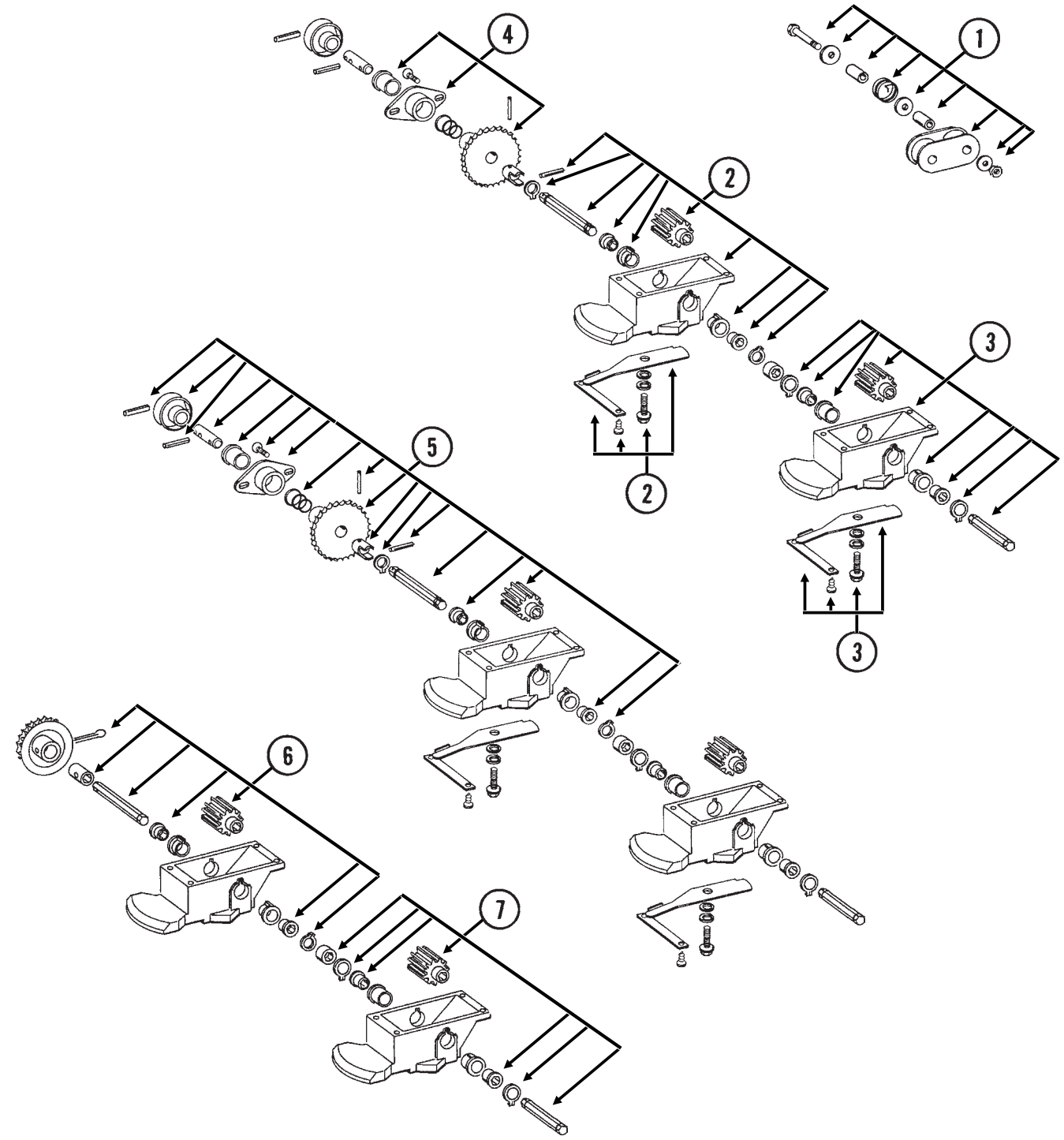
RUA013/RUA016/RUA044(RU16a/RU15)



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

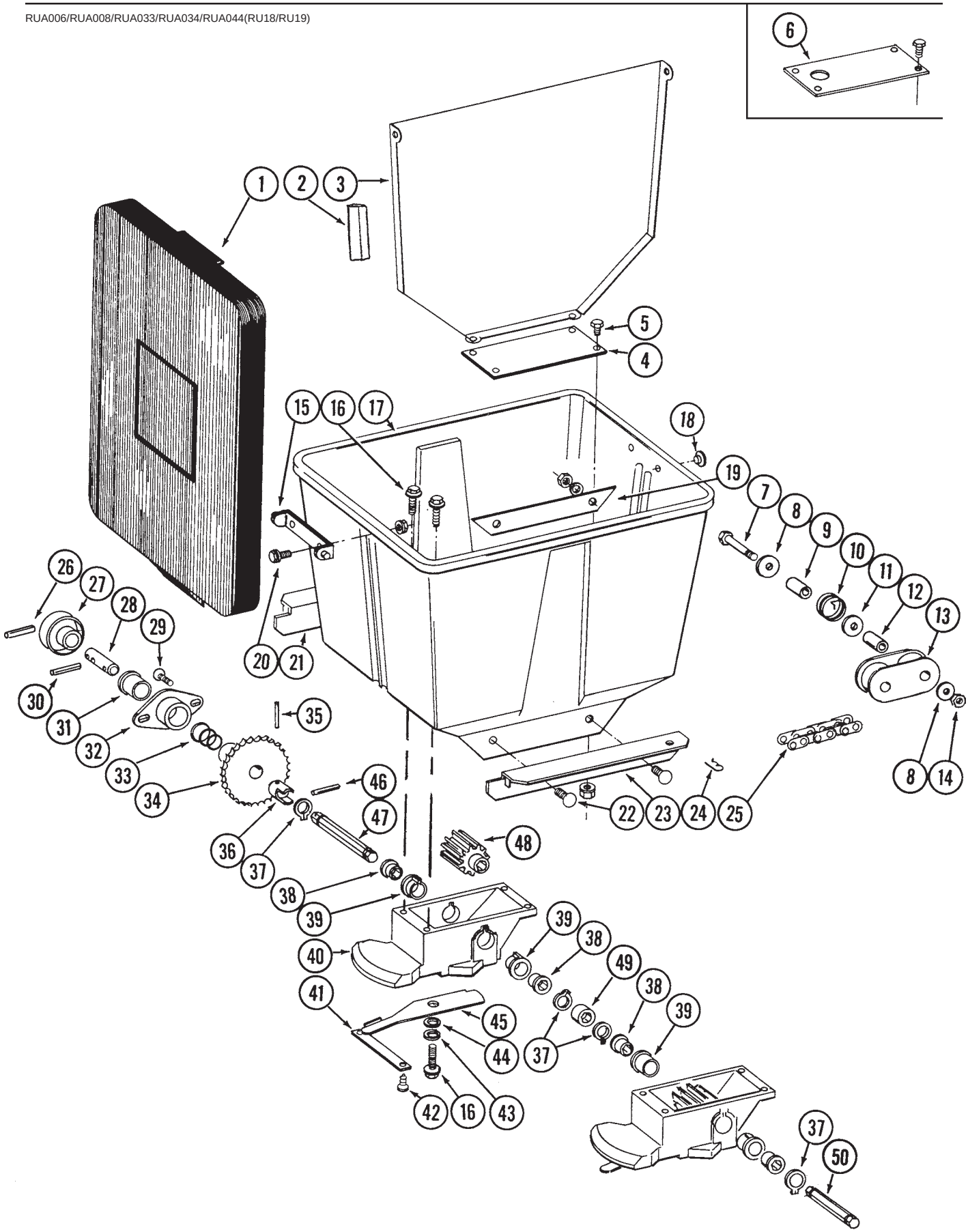
(RU65/RU66/RU67)



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)

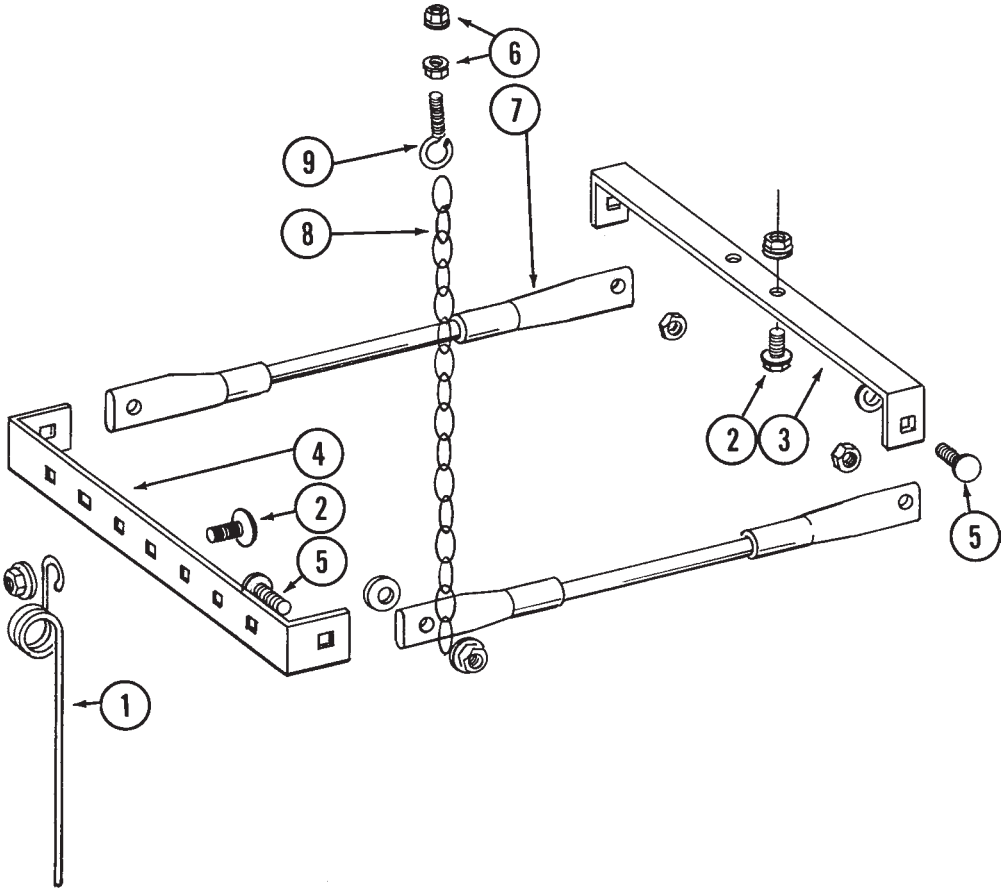


GRANULAR CHEMICAL HOPPER WITH METER(S) & THROWOUT

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

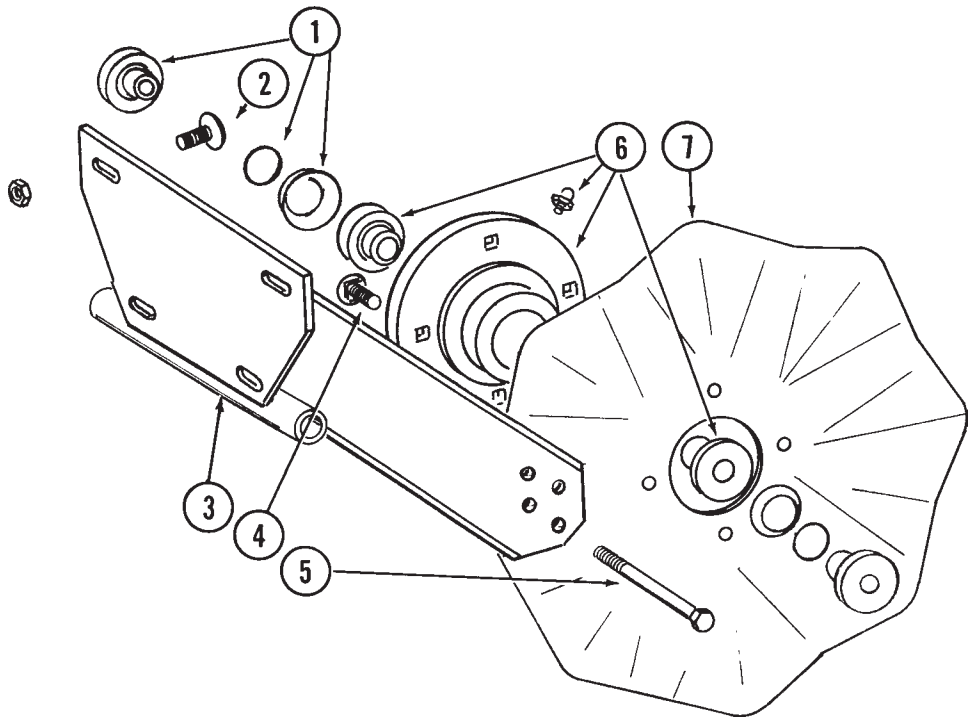
RUA011(RU20)



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

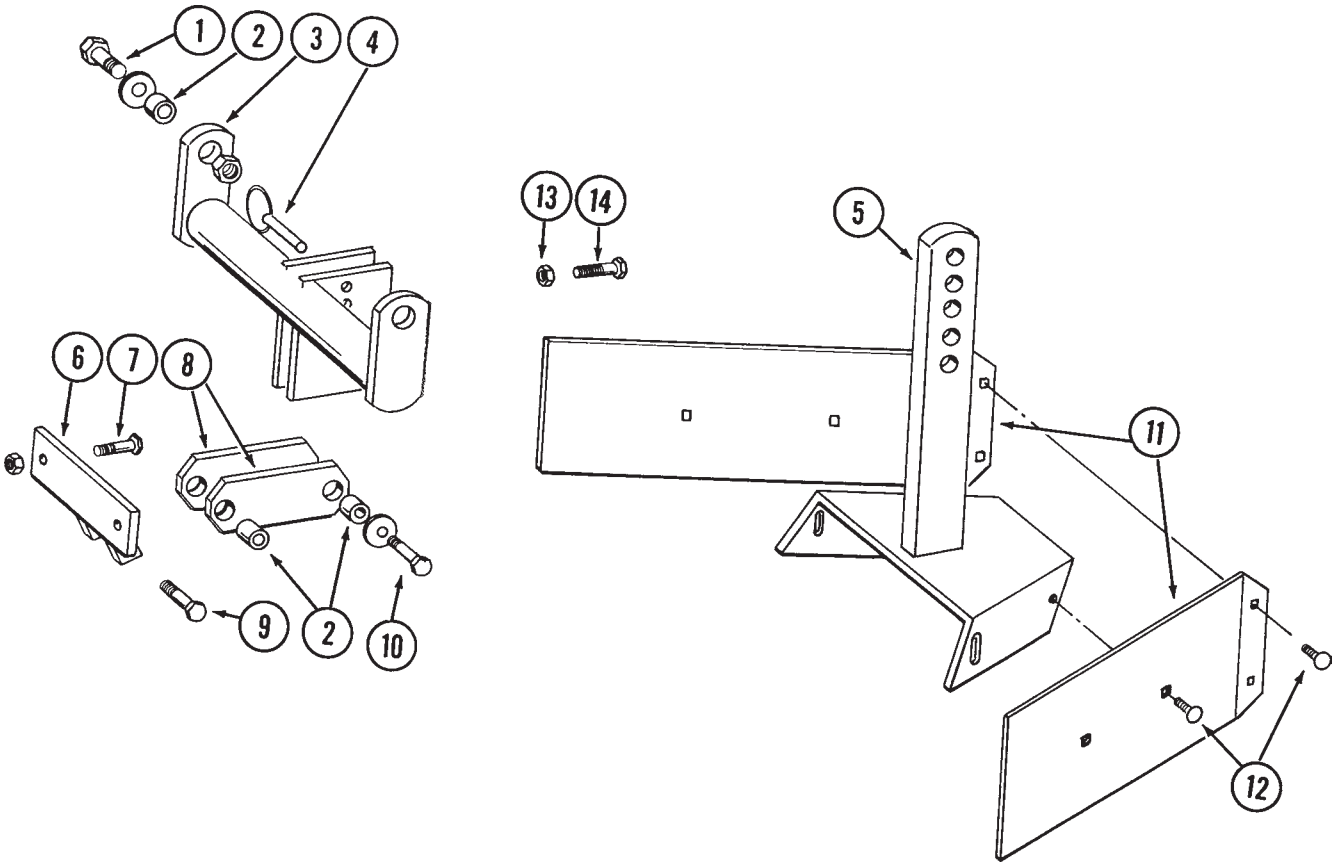
RUA036(RU21a)



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

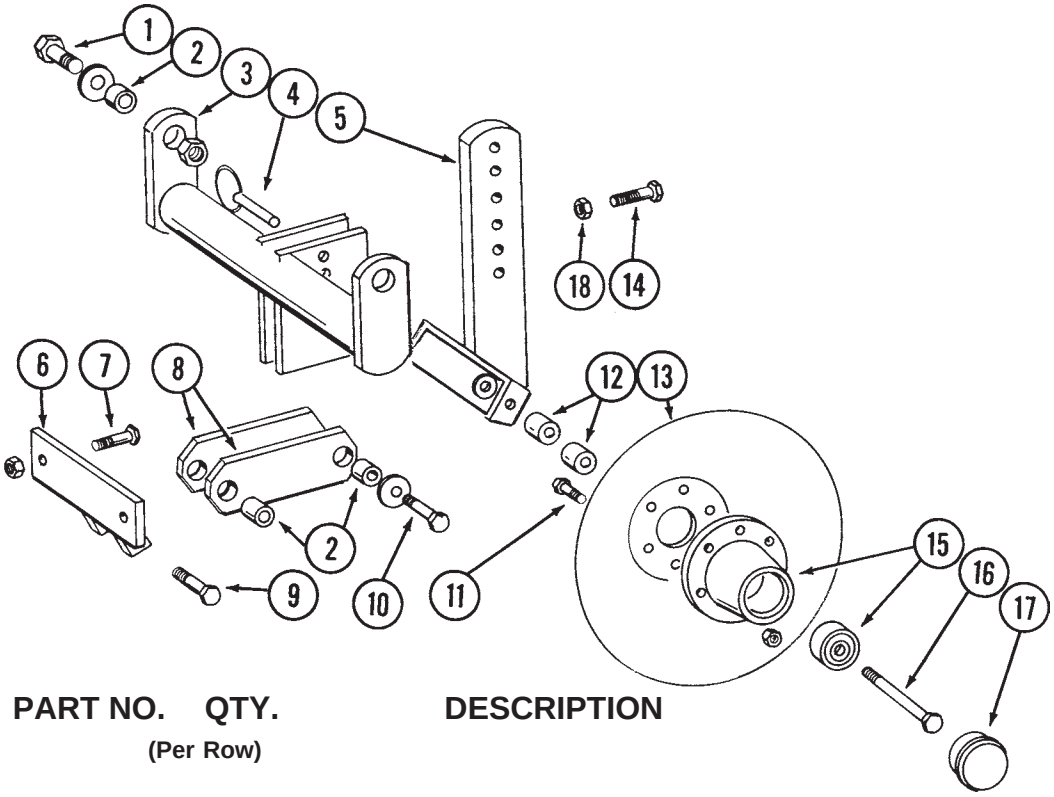
RUA038/RUA040(RU22a)



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

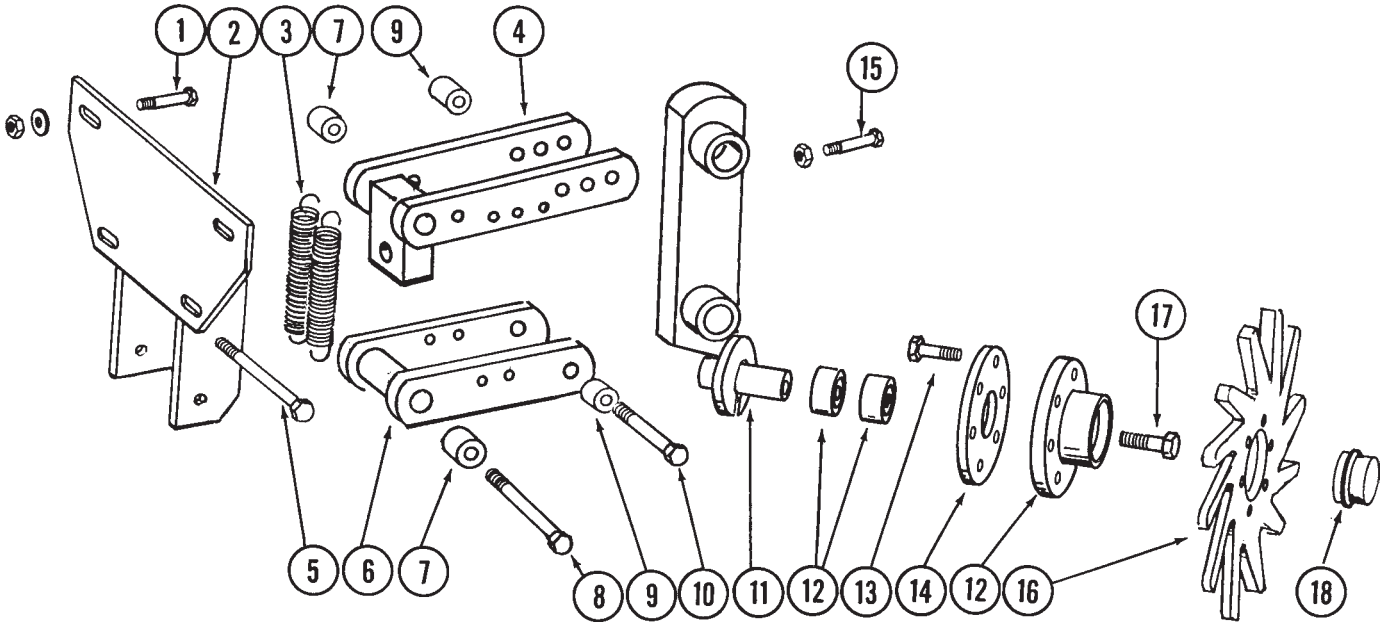
RUA038/RUA040(RU23a)



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

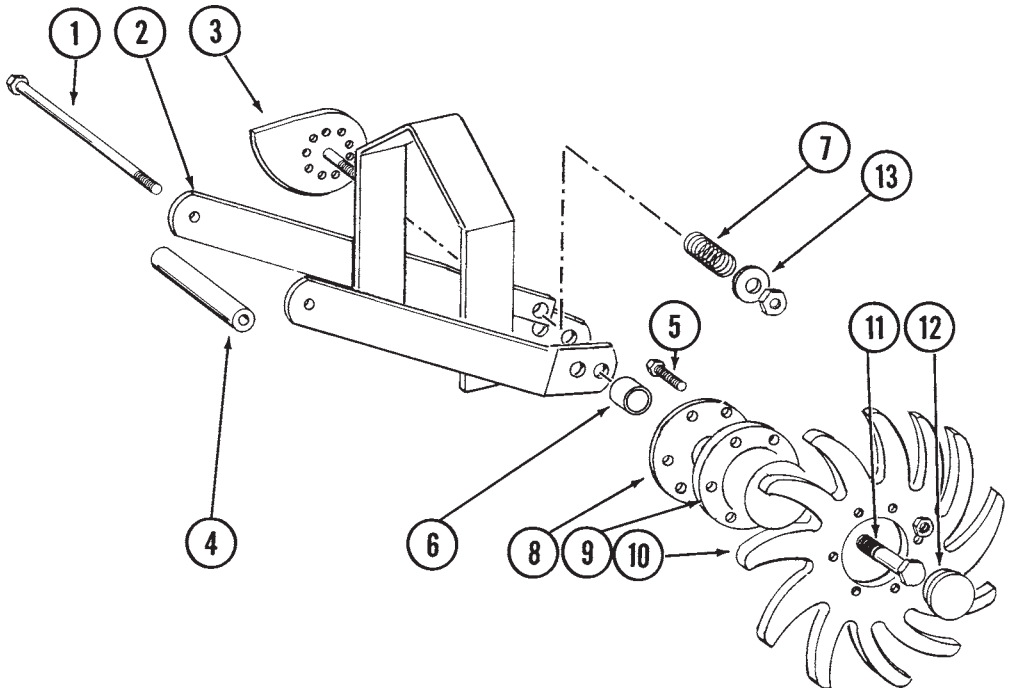
RUA041/RUA045(RU24a)



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, 3"
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

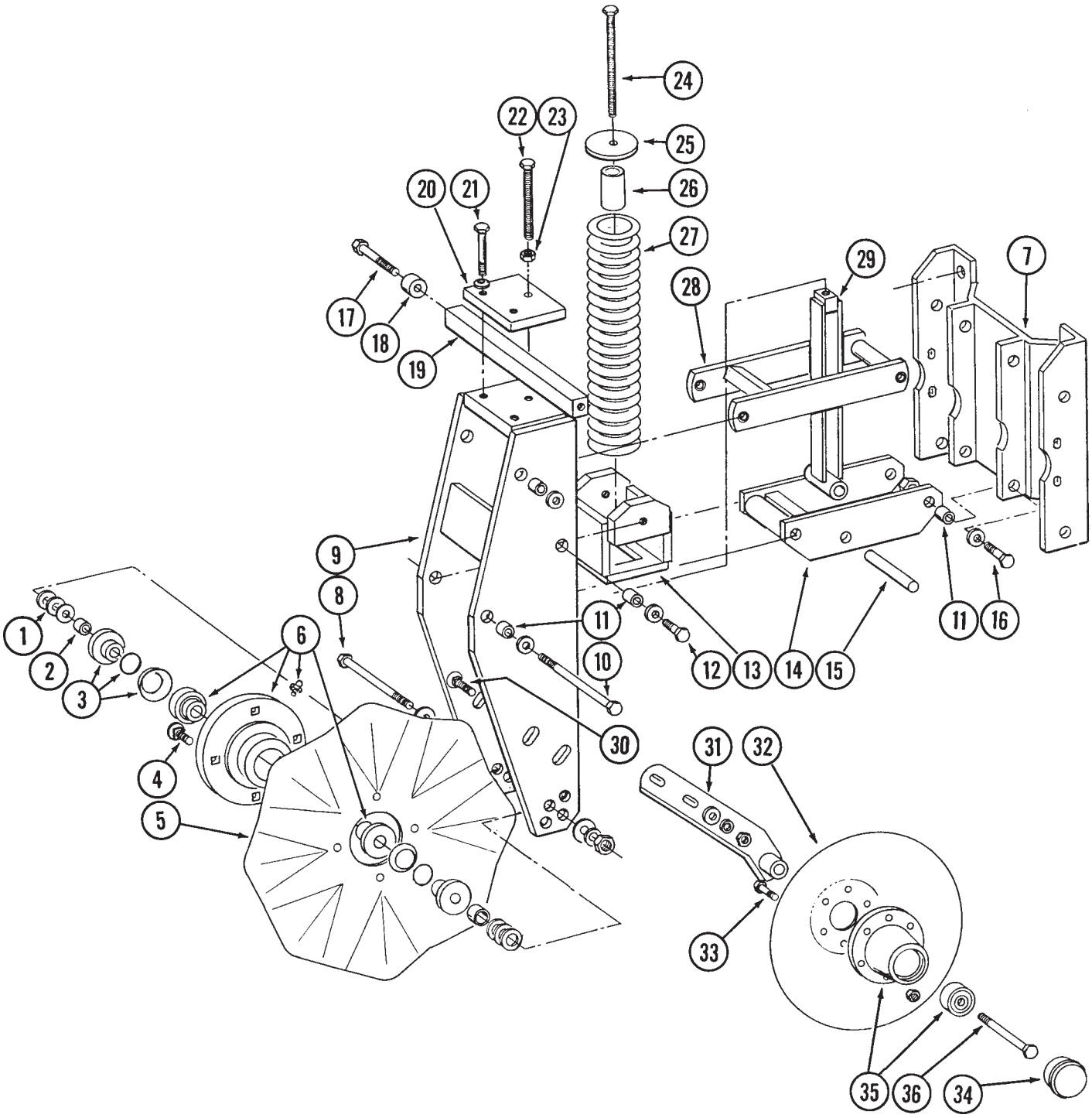
RUA047(RU31a)



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)



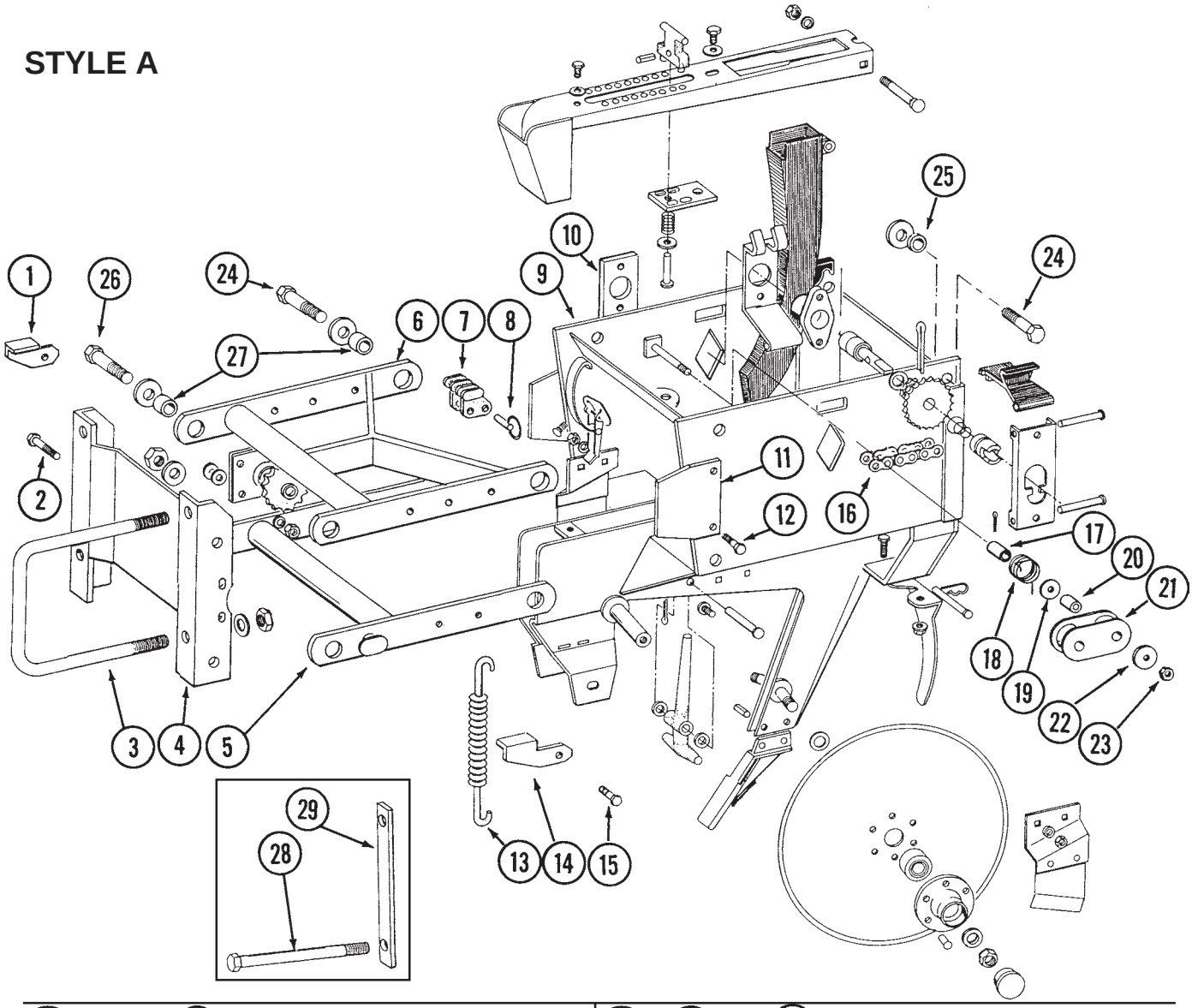
FRAME MOUNTED COULTER W/DISC FURROWER

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

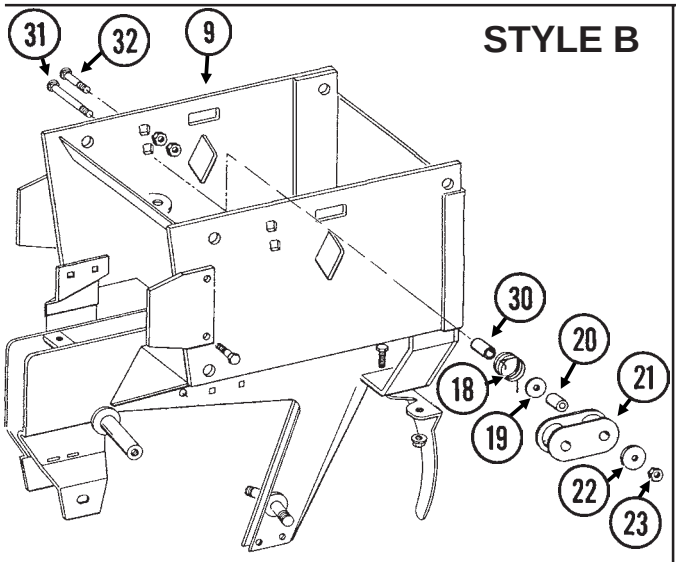
INTERPLANT® PUSH ROW UNIT

RPU001/RPU009/RUA044/RPU010(RU26c)

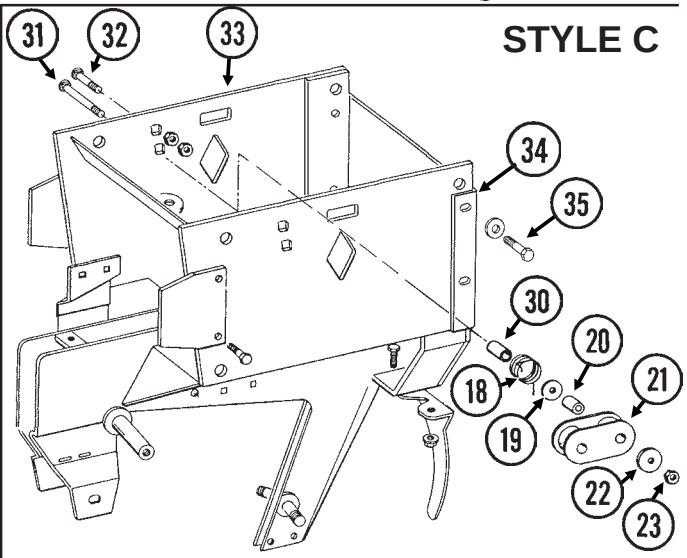
STYLE A



STYLE B



STYLE C

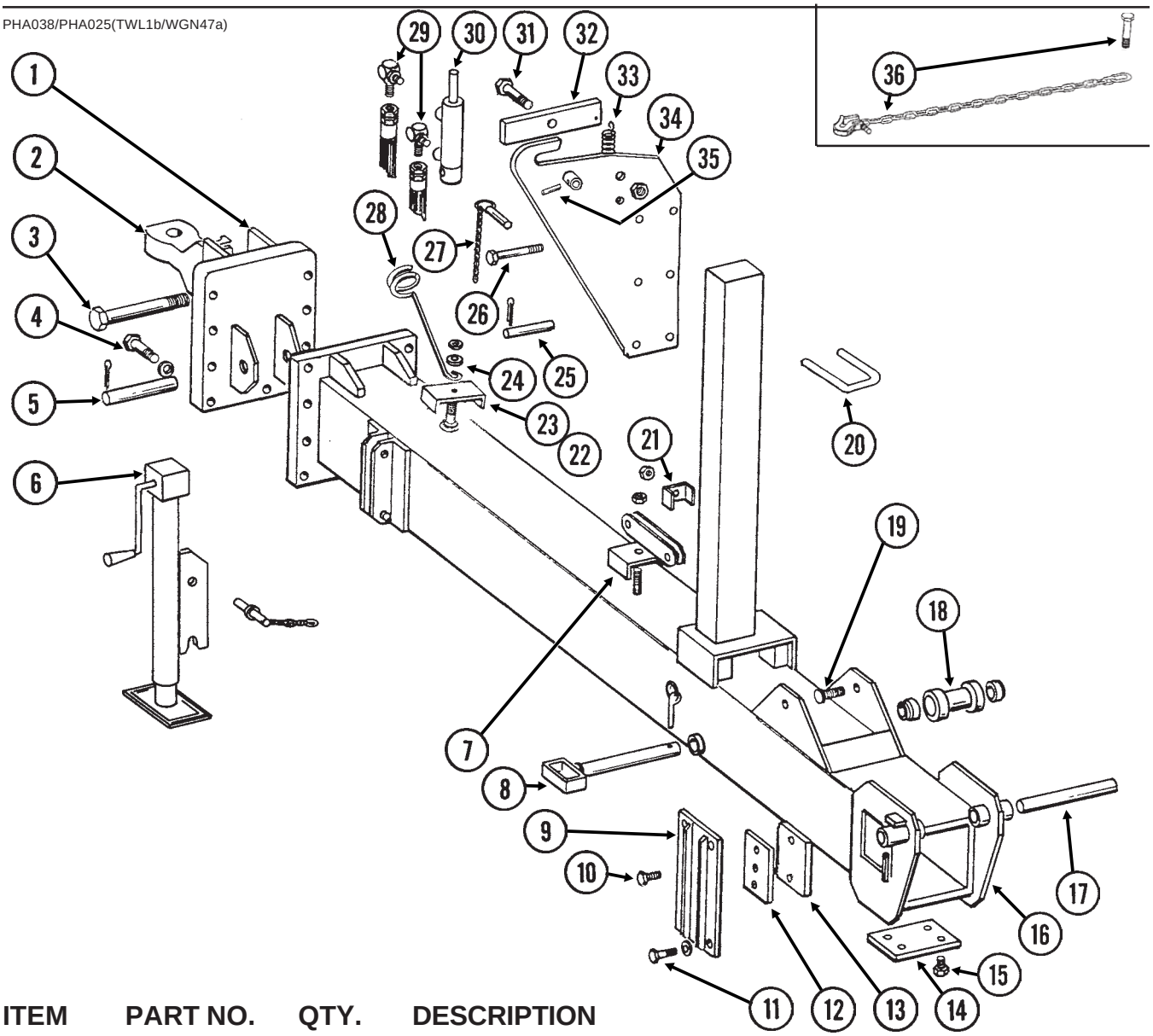


INTERPLANT® PUSH ROW UNIT

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD7627	1	Lockup, L.H.
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.	GD1113	2	U-Bolt, 5" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
4.	GA5786	1	Mounting Plate
5.	GA5787	1	Lower Arm
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.	GD10710	2	Stop Bar
12.	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
13.	GD8249	-	Spring
14.	GD7626	1	Lockup, R.H.
15.	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
16.	G3303-96	1	Roller Chain, No. 41, 96 Links Including Connector Link
	GR0196	1	Connector Link, No. 41
17.	GD7318	1	Bushing, 1"
18.	GD11218	1	Spring
19.	G10201	1	Special Washer
20.	GD1026	1	Spacer, 1 3/16"
21.	GD9240	1	Idler
22.	G10210	1	Washer, 3/8" USS
23.	G10108	1	Lock Nut, 3/8"-16
24.	G10751	6	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	GD7805	6	Special Washer
	G10412	6	Lock Nut, 5/8"-18
25.	GD1109	2	Pivot Bushing, 1/4"
26.	G10732	4	Hex Head Cap Screw, 5/8"-18 x 2"
	GD7805	4	Special Washer
	G10412	4	Lock Nut, 5/8"-18
27.	GB0218	8	Bushing, 19/32"
28.	G10012	0	Hex Head Cap Screw, 5/8"-11 x 6 1/2"
	G10830	-	Hex Head Cap Screw, 5/8"-11 x 7 1/2"
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
29.	GD1908	-	Bracket, 3/8" Thick
	GD10509	-	Bracket, 5/8" Thick
30.	GD8893-01	1	Bushing, 1 3/8"
31.	G10307	1	Carriage Bolt, 3/8"-16 x 3 1/2"
32.	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
33.	GA8167	-	Push Unit Shank
34.	GD11233	-	Cover
35.	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 11,12, 22, 23 And 30-35)

OUTER HITCH/SAFETY CHAIN

PHA038/PHA025(TWL1b/WGN47a)



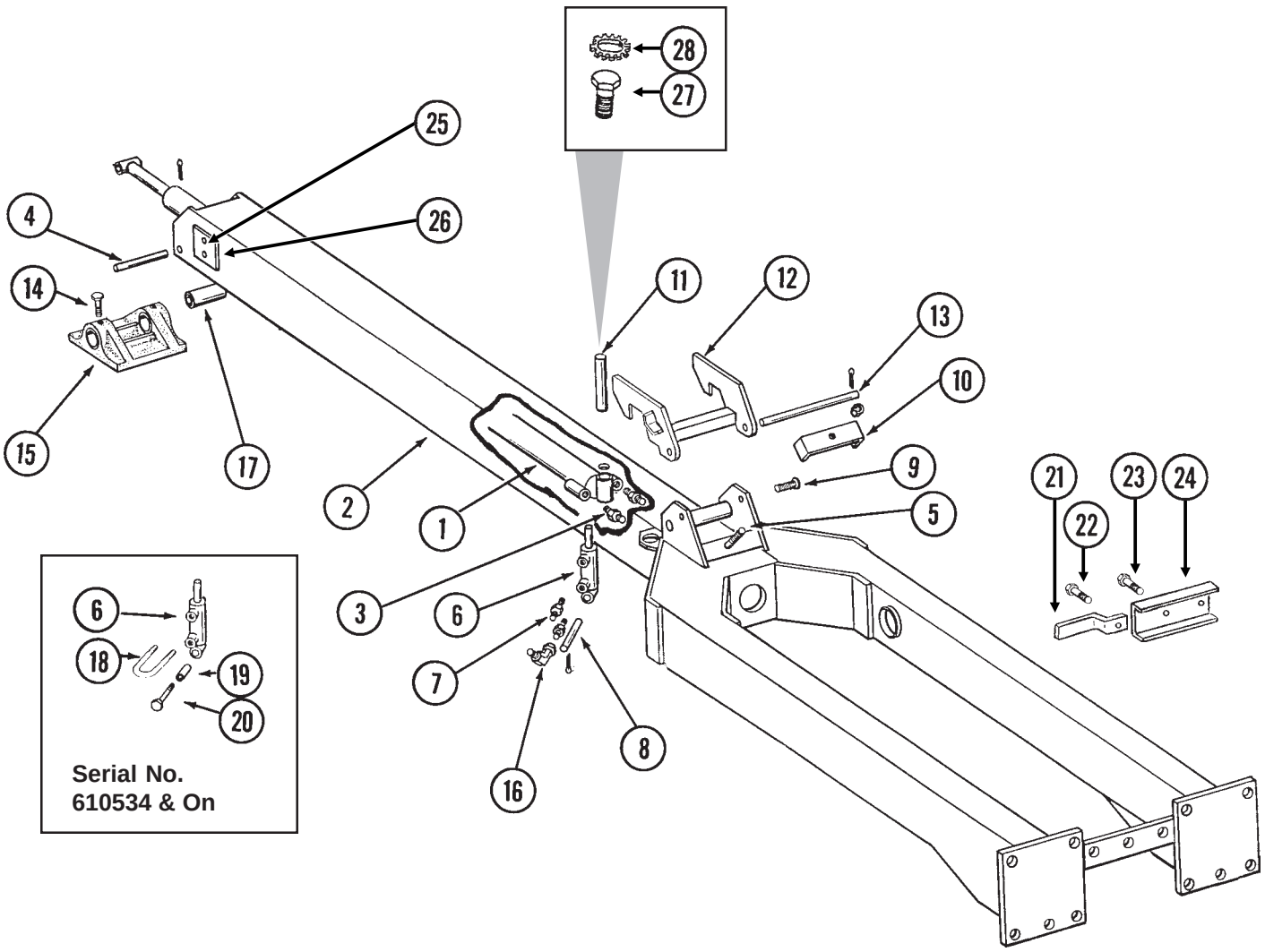
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7009	1	Mount, 8 Row 36"/38" And 12 Row 30", 12 Row 36"/38" (“Y” Hitch Only)
	GA7078	-	Mount, 12 Row 36"/38" (“T” Hitch Only) And 16 Row 30"
2.	GB0237	1	Clevis, Single
3.	G10169	1	Hex Head Cap Screw, 1 1/4"-7 x 6"
	G10157	1	Lock Nut, 1 1/4"-7
4.	G10005	6	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10009	9	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
	G10230	9	Lock Washer, 5/8"
	G10104	9	Hex Nut, 5/8"-11
5.	GD5173	1	Pin, 1 1/4" x 5 1/8"
	G10462	2	Cotter Pin, 3/16" x 2"
6.	GA4994	1	Jack Assembly Complete
	GA4995	-	Detent Pin Assembly
	GR0517	-	Pin
	GR0516	-	Crank Assembly
	GR0515	-	Bevel Gear
7.	GA5842	1	Bracket, Jack Mount
8.	GA4402	1	Safety Pin, 12 3/4", 8 Row 36"/38" And 12 Row 30", 12 Row 36"/38" (“Y” HitchOnly)
	GA4845	-	Safety Pin, 14 3/4", 12 Row 36"/38" (“T” Hitch Only) And 16 Row 30"
	GD2558	-	Lynch Pin, 1/4"
	GD2557	-	Lynch Pin, 7/16"

OUTER HITCH/SAFETY CHAIN

ITEM	PART NO.	QTY.	DESCRIPTION
9.	GA7029	2	Wear Mount, 8 Row 36"/38" And 12 Row 30", 12 Row 36"/38" (“Y” Hitch Only)
	GA7084	-	Wear Mount, L.H., 12 Row 36"/38" (“T” Hitch Only) And 16 Row 30"
	GA7085	-	Wear Mount, R.H., 12 Row 36"/38" (“T” Hitch Only) And 16 Row 30"
	GA7083	-	Wear Pad Retainer, 12 Row 36"/38" (“T” Hitch Only) And 16 Row 30"
10.	G10014	4	Hex Head Cap Screw, 1/2"-13 x 1"
	G10228	4	Lock Washer, 1/2"
11.	G10017	8	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	8	Lock Washer, 1/2"
	G10102	8	Hex Nut, 1/2"-13
12.	GD5154	-	Shim, 4" x 4" (As Required), All Sizes
	GD3501	-	Shim, 4" x 6" (As Required), 12 Row 36"/38" (“T” Hitch Only) And 16 Row 30"
13.	GD9959	-	Wear Pad, Nylatron, 4" x 4" (As Required), All Sizes
	GD9960	-	Wear Pad, Nylatron, 4" x 6" (As Required), 12 Row 36"/38" (“T” Hitch Only) And 16 Row 30"
14.	GD7519	3	Shim, 16 Gauge (16 Row Only)
	GD7518	1	Shim, 3/8" (16 Row Only)
15.	G10014	4	Hex Head Cap Screw, 1/2"-13 x 1"
	G10228	4	Lock Washer 1/2"
	G10216	4	Washer, 1/2" USS
16.	A7055	-	Outer Hitch, “Y”, 73", 8 Row 36"/38" **(Non-Stock Item)** Prior To Serial No. 611176
	A7835	-	Outer Hitch, “Y”, 73", 8 Row 36"/38" **(Non-Stock Item)** Serial No. 611176 & On
	A7066	-	Outer Hitch, “T”, 97", 8 Row 36"/38" **(Non-Stock Item)** Prior To Serial No. 611176
	A7836	-	Outer Hitch, “T”, 97", 8 Row 36"/38" **(Non-Stock Item)** Serial No. 611176 & On
	A7010	-	Outer Hitch, “Y”, 97", 12 Row 30" **(Non-Stock Item)**
	A7061	-	Outer Hitch, “T”, 121", 12 Row 30"(Shown) **(Non-Stock Item)**
	A7044	-	Outer Hitch, “Y”, 121", 12 Row 36"/38" **(Non-Stock Item)**
	A7072	-	Outer Hitch, “T”, 151 1/2", 12 Row 36"/38" **(Non-Stock Item)**
	A7088	-	Outer Hitch, “Y”, 127 1/2", 16 Row 30" **(Non-Stock Item)**
	A7073	-	Outer Hitch, “T”, 151 1/2", 16 Row 30" **(Non-Stock Item)**
17.	GD5804	1	Shaft, 12", 8 Row “Y” And “T” Hitch, 12 Row “Y” Hitch
	GD7251	1	Shaft, 14", 12 Row “T” Hitch And 16 Row “Y” And “T” Hitch
	G10610	2	Spring Pin, 3/8" x 2"
18.	GA4418	1	Roller W/Bronze Bushings, 8 Row “Y” And “T” Hitch, 12 Row “Y” Hitch
	GA4842	-	Roller W/Bronze Bushings, 12 Row “T” Hitch And 16 Row “Y” And “T” Hitch
	GD6556	1	Bronze Bushing
19.			See “Hose Takeup”, Page P34
20.	GD9953	3	U-Bolt, 3" x 4" x 5/8"-11
	G10230	3	Lock Washer, 5/8"
	G10104	3	Hex Nut, 5/8"-11
21.	GD5892	2	Clamp, 1 1/2" x 1 1/2"
22.	GD8189	-	Rubber Pad
23.	GD8188	-	Clamp, 3" x 5 3/8"
24.	G10111	1	Lock Nut, 1/2"-12
25.	GD7137	1	Pin, 3/4" x 3 3/8"
	G10457	2	Cotter Pin, 5/32" x 1 1/2"
26.	G10062	1	Hex Head Cap Screw, 3/8"-16 x 2"
	GD2971-09	1	Sleeve, 2"
	G10108	1	Lock Nut, 3/8"-16
27.	GA7022	1	Transport Latch Locking Pin
28.	GD8260	1	Hose Holder
29.	G6801-06-08	2	Elbow, 3/4"-16 O-Ring To 9/16"-18 JIC
30.			See “Transport Latch Cylinder”, Page P84
31.	G10006	1	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
	GB0218	1	Bushing, 19/32"
	GD5154	1	Shim
	G10107	1	Lock Nut, 5/8"-11
32.	GA7016	1	Catch Bar
33.	GD5857	1	Spring
34.	GA7433	1	Transport Latch
35.	G10765	-	Spring Pin, 1/4" x 1"
36.	G1K232	1	Safety Chain Kit, 1/2" (Optional)
	G10169	1	Hex Head Cap Screw, 1 1/4"-7 x 6"
	G10157	1	Lock Nut, 1 1/4"-7

INNER HITCH, “Y”

PHA035/PHA037(TWL2b/TWL86/TWL87/TWL136)

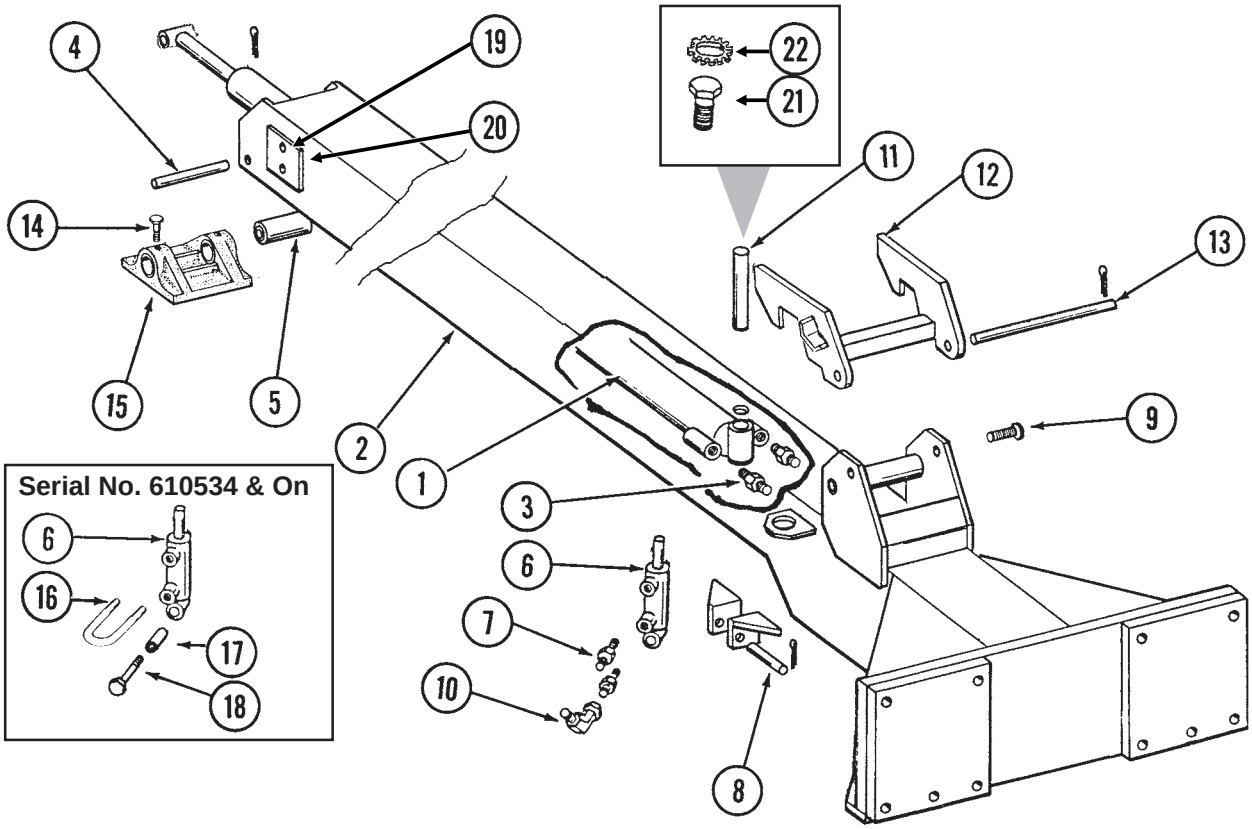


INNER HITCH, “Y”

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Tongue Cylinder”, Pages P86 And P87
2.	A7427	-	Inner Hitch, 145 3/8", 8 Row 36"/38" **(Non-Stock Item)**
	A7429	-	Inner Hitch, 169 3/8", 12 Row 30" (Shown) **(Non-Stock Item)**
	A7428	-	Inner Hitch, 191 5/8", 12 Row 36"/38" **(Non-Stock Item)**
	A7426		Inner Hitch, 205 3/8", 16 Row 30" **(Non-Stock Item)**
3.	G6400-08	2	Connector, 3/4"-16 JIC To 3/4" O-Ring
4.	GD5173	1	Pin, 1 1/4" x 5 1/8"
	G10462	1	Cotter Pin, 3/16" x 2"
5.	G10581	1	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10111	1	Hex Nut, 1/2"-13
6.		-	See “Tongue Lock Cylinder”, Page P84
7.	G6400-06-08	2	Connector, 3/4"-16 O-Ring To 9/16"-18 JIC
8.	GD7137	1	Pin, 3/4" x 3 3/8"
	G10457	2	Cotter Pin, 5/32" x 1 1/2"
9.			See “Hose Takeup”, Pages P34 And P35
10.	GD8188	-	Clamp, 3" x 5 3/8"
	GD8189	-	Rubber Pad
11.	GD3537-17	1	Shaft, 1 1/4" x 6 3/8", 8 Row 36"/38" And 12 Row 30"/36"/38"
	GD3537-18	-	Shaft, 1 1/4" x 7 3/8", 16 Row 30"
12.	GA7423	1	Tongue Hook W/Grease Fittings, 8/12 Row
	GA7424	-	Tongue Hook W/Grease Fittings,16 Row
13.	GD5804	1	Shaft, 1 1/4" x 12", 8/12 Row
	GD7883	-	Shaft, 1 1/4" x 14 1/2", 16 Row
	G10468	2	Cotter Pin, 3/8" x 2"
14.	G10131	1	Set Screw, 5/16"-18 x 3/4"
15.	GB0246	1	Shoe
16.	G6502-06	1	Swivel Elbow, 9/16"-18 JIC Male To Female, 45°
17.	GD3537-11	1	Shaft, 1 1/4" x 7", 8/12 Row
	GD3537-12	-	Shaft, 1 1/4" x 8", 16 Row
18.	GD10530	1	U-Bolt, 2 1/8" x 1 7/8" x 3/8"-16
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
19.	GD10538-01	1	Sleeve
20.	G10585	1	Hex Head Cap Screw, 1/2"-13 x 3 1/4"
	G10216	1	Washer, 1/2" USS
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
21.	GD10650	1	Hose Clamp
22.	G10004	1	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
23.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10210	1	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
24.	GD10664	1	Shield
25.	G10014	4	Hex Head Cap Screw, 1/2"-13 x 1"
26.	GD9959	2	Nylatron Wear Pad
	GD5154	6	Shim
27.	G10522	-	Tapping Screw, 1/4"-20 x 3/4" (If Applicable)
28.	G10894	-	External Washer (If Applicable)

INNER HITCH, “T”

PHA035/PHA036(TWL3b/TWL136)

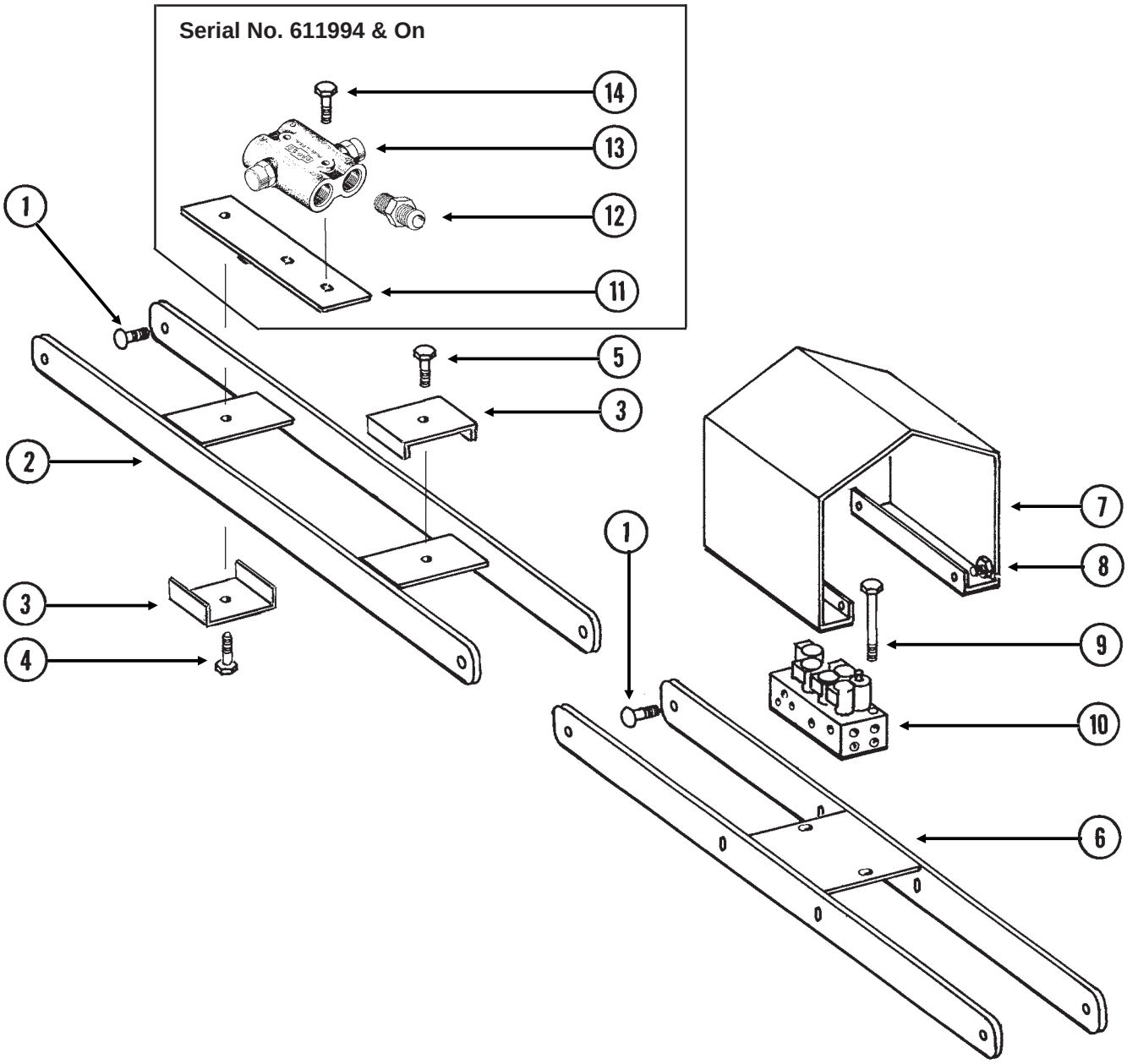


INNER HITCH, “T”

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Tongue Cylinder”, Pages P86 And P87
2.	A7431	-	Inner Hitch, 121 5/8", 8 Row 36"/38" **(Non-Stock Item)**
	A7432	-	Inner Hitch, 145 3/8", 12 Row 30" (Shown) **(Non-Stock Item)**
	A7430	-	Inner Hitch, 183 1/8", 12 Row 36"/38" And 16 Row 30" **(Non-Stock Item)**
3.	G6400-08	2	Connector, 3/4"-16 JIC To 3/4" O-Ring
4.	GD5173	1	Pin, 1 1/4" x 5 1/8"
	G10462	1	Cotter Pin, 3/16" x 2"
5.	GD3537-11	1	Shaft, 1 1/4" x 7", 8 Row 36"/38" And 12 Row 30"
	GD3537-12	-	Shaft, 1 1/4" x 8", 12 Row 36"/38" And 16 Row 30"
6.		-	See “Tongue Lock Cylinder”, Page P84
7.	G6400-06-08	2	Connector, 3/4"-16 O-Ring To 9/16"-18 JIC
8.	GD7137	1	Pin, 3/4" x 3 3/8"
	G10457	2	Cotter Pin, 5/32" x 1 1/2"
9.			See “Hose Takeup”, Pages P34 And P35
10.	G6502-06	1	Swivel Elbow, 9/16"-18 JIC Male To Female
11.	GD3537-17	1	Shaft, 1 1/4" x 6 3/8", 8 Row 36"/38" And 12 Row 30"
	GD3537-18	-	Shaft, 1 1/4" x 7 3/8", 12 Row 36"/38" And 16 Row 30"
12.	GA7423	1	Tongue Hook W/Grease Fittings, 8 Row 36"/38" And 12 Row 30"
	GA7424	-	Tongue Hook W/Grease Fittings,12 Row 36"/38" And 16 Row 30"
13.	GD5804	1	Shaft, 1 1/4" x 12", 8 Row 36"/38" And 12 Row 30"
	GD7883	-	Shaft, 1 1/4" x 14 1/2", 12 Row 36"/38" And 16 Row 30"
	G10468	2	Cotter Pin, 3/8" x 2"
14.	G10131	1	Set Screw, 5/16"-18 x 3/4"
15.	GB0246	1	Shoe
16.	GD10530	1	U-Bolt, 2 1/8" x 1 7/8" x 3/8"-16
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
17.	GD10538-01	1	Sleeve
18.	G10585	1	Hex Head Cap Screw, 1/2"-13 x 3 1/4"
	G10216	1	Washer, 1/2" USS
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
19.	G10014	4	Hex Head Cap Screw, 1/2"-13 x 1"
20.	GD9959	2	Nylatron Wear Pad
	GD5154	6	Shim
21.	G10522	-	Tapping Screw, 1/4"-20 x 3/4" (If Applicable)
22.	G10894	-	External Washer (If Applicable)

HOSE TAKEUP

PHA039(TWL137)



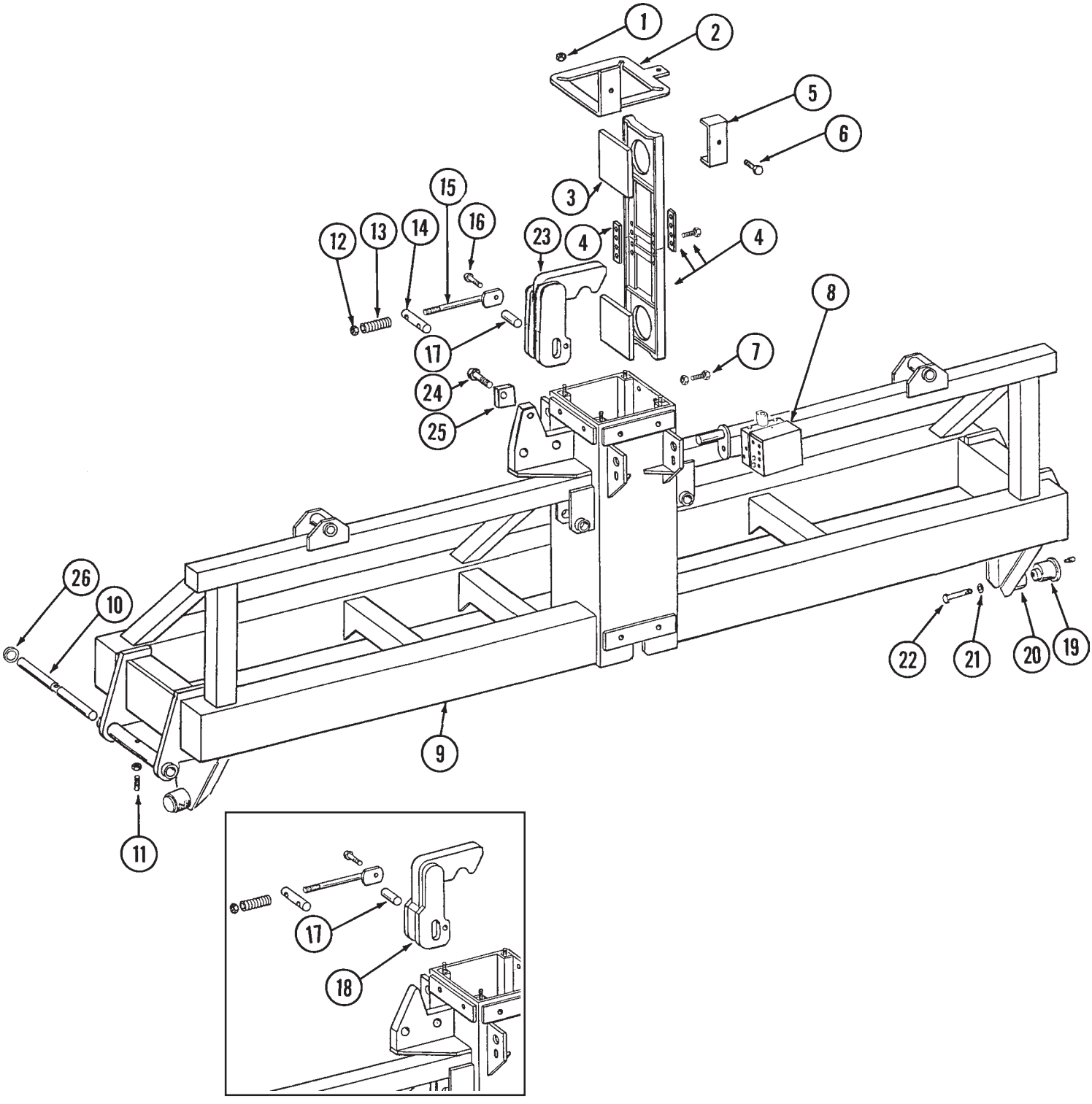
HOSE TAKEUP

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10689	6	Carriage Bolt, 5/8"-11 x 2"
	GB0218	6	Bushing, 19/32"
	GD7805	6	Washer, Hardened
	G10107	6	Lock Nut, 5/8"-11
2.	GA7058	1	Takeup, 28 1/4", 8 Row 36"/38" "Y" Hitch
	GA7013	-	Takeup, 44 1/4", 8 Row 36"/38" "T" Hitch And 12 Row 30" (Shown) "Y" Hitch
	GA7049	-	Takeup, 56 1/4", 12 Row 30" "T" Hitch, 12 Row 36"/38" And 16 Row 30" "Y" Hitch
	GA7074	-	Takeup, 67 5/8", 12 Row 36"/38" And 16 Row 30" "T" Hitch
3.	GD8188	2	Clamp, 3" x 5 3/8"
	GD8189	2	Rubber Pad
4.	G10581	1	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10053	-	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10111	1	Lock Nut, 1/2"-13
5.	G10581	1	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10111	1	Lock Nut, 1/2"-13
6.	GA7057	1	Takeup, 28 1/4", 8 Row 36"/38" "Y" Hitch
	GA7021	-	Takeup, 44 1/4", 8 Row 36"/38" "T" Hitch And 12 Row 30" "Y" Hitch (Shown)
	GA7050	-	Takeup, 56 1/4", 12 Row 30" "T" Hitch And 12 Row 36"/38" And 16 Row 30" "Y" Hitch
	GA7075	-	Takeup, 67 5/8", 12 Row 36"/38" And 16 Row 30" "T" Hitch
7.	GD9952	1	Cover, 8 Row 36"/38" "T" Hitch, 12 Row 30"/36"/38" "Y"/"T" Hitch And 16 Row 30" "Y"/"T" Hitch (Shown)
	GD10295	-	Cover, 8 Row 36"/38" "Y" Hitch
8.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	4	Lock Washer, 3/8"
	G10203	8	Washer, 3/8" SAE
	G10101	4	Hex Nut, 3/8"-16
9.	G10172	2	Hex Head Cap Screw, 3/8"-16 x 5"
	G10210	2	Washer, 3/8"
	G10108	2	Lock Nut, 3/8"-16
10.			See "Valve Block - Located On Hitch", Page P69
11.	GA8131	1	Mount
12.	G6400-10	4	Connector, 7/8"-14 JIC To 7/8"-14 O-Ring
13.		-	See "Relief Valve - Located On Hitch", Page P71
14.	G10902	2	Carriage Bolt, 5/16"-18 x 2 1/2"
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18

CENTER FRAME

PFA070/VVB034(TWL138)

12 ROW SHOWN

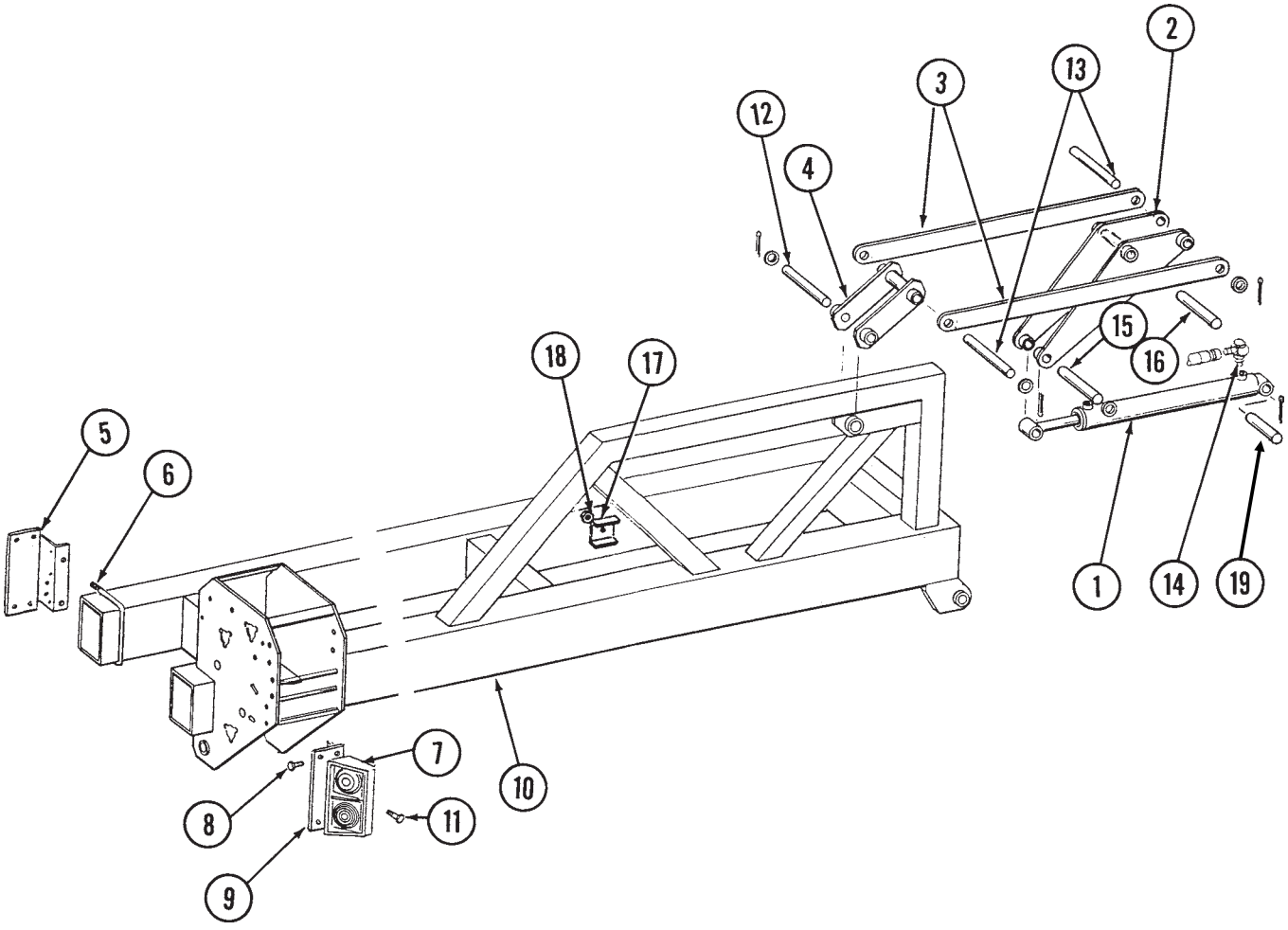


CENTER FRAME

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD7805	4	Special Washer
	G10104	4	Hex Nut, 5/8"-11
2.	GD9968	1	Cap, Serial No. 611176 & On
	GA7840	-	Cap, Prior To Serial No. 611176
3.	GD10053	8	Wear Pad, 7" Square
4.	GA7579	4	Pad Holder
	GD10706	-	Bar, 1 1/4" x 6" (1/4" Thick)
	GD10707	-	Bar, 1 1/4" x 6" (3/8" Thick)
	G10001	-	Hex Head Cap Screw, 3/8"-16 x 1"
5.	GD8188	1	Clamp, 5 3/8" x 3"
	GD8189	1	Rubber Pad
6.	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
7.	G10543	16	Hex Head Adjusting Bolt, 3/4"-10 x 3"
	G10105	16	Hex Jam Nut, 3/4"-10
8.		-	See “Valve Block - Located On Rear Center Frame”, Page P68
9.	A7394	1	Frame, 166", 8 Row 36"/38" And 12 Row 36"/38" **(Non-Stock Item)**
	A7393	-	Frame, 136", 12 Row 30" And 16 Row 30" **(Non-Stock Item)**
10.	GD10531	1	Hinge Pin, 2 1/8" x 25 3/4" (Shown), 8/12 Row And (SN 610534 & On) 16 Row
	GD10508	-	Hinge Pin, 2 1/8" x 27 1/4", (Prior To SN 610534) 16 Row
11.	G10102	1	Hex Jam Nut, 1/2"-13
	G10828	1	Hex Socket Set Screw, 1/2"-13 x 1 1/4"
12.	G10205	2	Washer, 5/8" SAE
	G10107	2	Lock Nut, 5/8"-11
13.	GD10006	2	Spring
14.	GD9870	1	Pin 1 1/4" x 6"
15.	GA6943	2	Spring Rod
16.	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"
	GD7904-02	2	Bushing, 1/2"
17.	GD9898	1	Pin, 1 1/4" x 2 15/16"
18.	GA6942	1	Safety Hook
19.	GA6497	2	Cam Follower W/Grease Fitting
	G10640	-	Grease Fitting, 1/4"-28
20.	GD10532	2	Sleeve
21.	GD9052	2	Hardened Washer
22.	G10025	2	Hex Head Cap Screw, 3/4"-10 x 1 1/2"
23.	GA7390	-	Safety Hook
24.	G10085	-	Hex Head Cap Screw, 3/4"-10 x 3 3/4"
	G10218	-	Washer, 3/4" USS
	G10112	-	Lock Nut, 3/4"-10
25.	GD10492	2	Adjustment Block
26.	G10404	-	Machine Bushing, 3 1/8" x 2 1/8" x 3/16" (As Required)
	G10234	-	Machine Bushing, 10 Gauge (As Required)
	G10336	-	Machine Bushing, 14 Gauge (As Required)

WING FRAME

PFA069(TWL139)

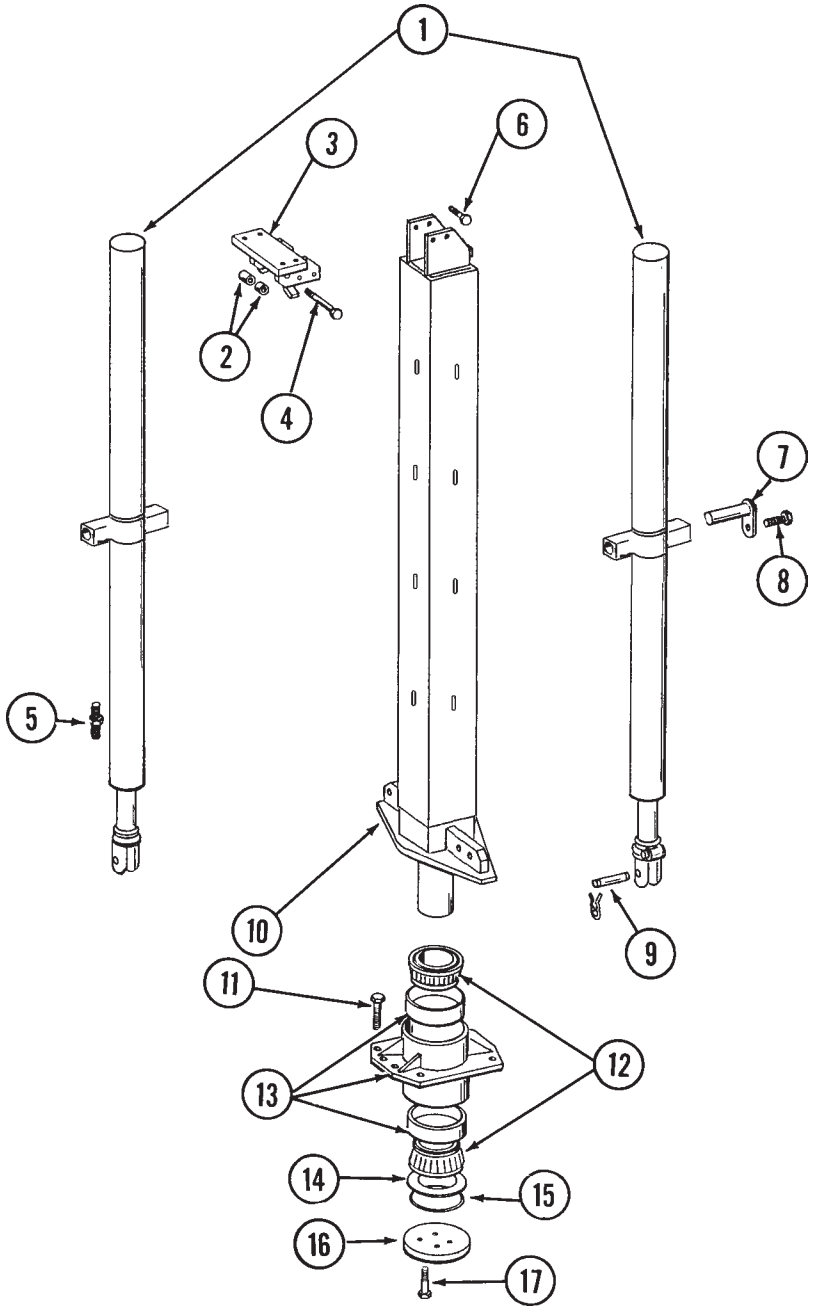


WING FRAME

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Wing Lock Cylinder”, Page P88
2.	GA7019	1	Toggle Link
3.	GD10049	2	Strap, 56", 8 Row 36"/38" And 12 Row 36"/38"
	GD9956	2	Strap, 41", 12 Row 30" And 16 Row 30"
4.	GA7018	1	Link
5.	GA6792	1	Light Bracket
6.	GD1113	1	U-Bolt, 5" x 7" x 5/8"-11
	G10230	2	Lock Washer, 5/8"
	G10107	2	Lock Nut, 5/8"-11
7.			See “Electrical Components”, Pages P60 And P61
8.	G10019	2	Hex Head Cap Screw, 3/8"-18 x 1"
	G10210	1	Washer, 3/8" USS
	G10232	2	Lock Washer, 3/8"
	G10106	2	Hex Nut, 3/8"-18
9.	GD9681	1	Light Bracket
10.	A7026	-	Wing, R.H., 72 1/2", 8 Row 36"/38" **(Non-Stock Item)** Prior To Serial No. 611176
	A7834	-	Wing, R.H., 75 1/2", 8 Row 36"/38" **(Non-Stock Item)** Serial No. 611176 & On
	A7025	-	Wing, L.H., 72 1/2", 8 Row 36"/38" **(Non-Stock Item)** Prior To Serial No. 611176
	A7833	-	Wing, L.H., 75 1/2", 8 Row 36"/38" **(Non-Stock Item)** Serial No. 611176 & On
	A6904	-	Wing, R.H., 119 1/4", 12 Row 30" **(Non-Stock Item)**
	A6905	-	Wing, L.H., 119 1/4", 12 Row 30" **(Non-Stock Item)**
	A7028	-	Wing, R.H., 152", 12 Row 36"/38" **(Non-Stock Item)**
	A7027	-	Wing, L.H., 152", 12 Row 36"/38" **(Non-Stock Item)**
	A6892	-	Wing, R.H., 179 1/4", 16 Row 30" (Two Wheel Towers Per Wing) **(Non-Stock Item)**
	A6893	-	Wing, L.H., 179 1/4", 16 Row 30" (Two Wheel Towers Per Wing) **(Non-Stock Item)**
11.	G10064	8	Hex Head Cap Screw, 1/4"-20 x 1"
	G10110	8	Lock Nut, 1/4"-20
12.	GD9963	1	Pin, 1 1/4" x 9"
	G10460	2	Cotter Pin, 1/4" x 2"
13.	GD9964	2	Pin, 1 1/4" x 10 1/2"
	G10159	4	Bushing
	G10460	4	Cotter Pin, 1/4" x 2"
14.	G6801-08	2	Elbow, 3/4" O-Ring To 3/4" JIC
15.	GD4108	1	Pin, 1 1/4" x 7"
	G10159	2	Bushing
	G10460	2	Cotter Pin, 1/4" x 2"
16.	GD9955	1	Pin 1 1/4" x 7"
	G10606	2	Spring Pin, 1/4" x 2"
17.	GD5875	-	Clamp, 2 1/2" x 2"
18.	G10108	-	Lock Nut, 3/8"-16
19.	GD6136	2	Pin, 1 1/4" x 5"
	G10460	4	Cotter Pin, 1/4" x 2"

CENTER PIVOT

PFA067/PFA068(TWL7b)

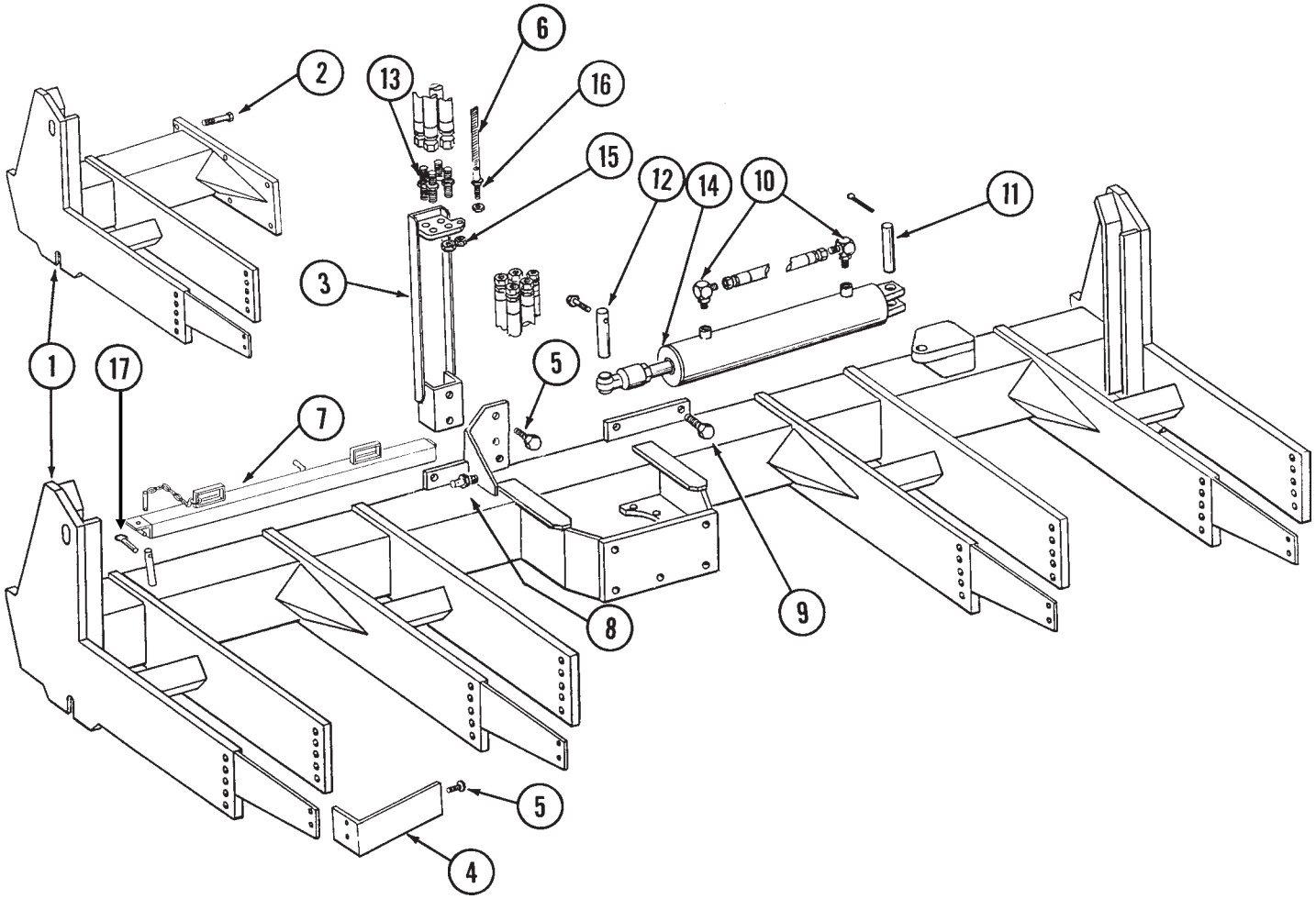


CENTER PIVOT

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Center Lift Cylinder”, Pages P78 And P79
2.	GD10447	1	Sleeve, 3 5/8"
	GD10446	1	Sleeve, 3 13/16"
3.	GA6964	1	Hook Strap
4.	G10011	1	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10107	1	Lock Nut, 5/8"-11
5.	G6400-08	4	Connector, 3/4"-16 O-Ring To JIC
6.	G10689	4	Carriage Bolt, 5/8"-11 x 2"
	G10107	4	Lock Nut, 5/8"-11
7.	GA5121	4	Hammer Strap
8.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10216	4	Washer, 1/2" USS
	G10228	4	Lock Washer, 1/2"
	G10107	4	Hex Nut, 1/2"-13
9.	GR0375	2	Pin, 1" x 3 1/2"
	GR0193	4	Hair Pin Clip
10.	GA7540	1	Center Post
11.	G10441	8	Hex Head Cap Screw, 7/8"-9 x 3", Grade 8
	GD10063	8	Hardened Washer
	G10442	8	Hex Nut, 7/8"-9
12.	GA7096	2	Cone
13.	GA7067	1	Bearing Housing W/Cups And Grease Fitting
	GD10011	2	Cup
	G10779	1	Grease Fitting, 1/4"-28
14.	GD10012	-	Shim, .005" Thick (As Required)
	GD10013	-	Shim, .020" Thick (As Required)
	GD10014	-	Shim, .007" Thick (As Required)
15.	GD9130	1	O-Ring
16.	GD9636	1	Bearing Cap
17.	G10027	4	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
	GD2169	1	Hardened Washer

AXLE ASSEMBLY

HTA043/HTA044/PFA071/PHA033/PHA034/PFA073(TWL140)

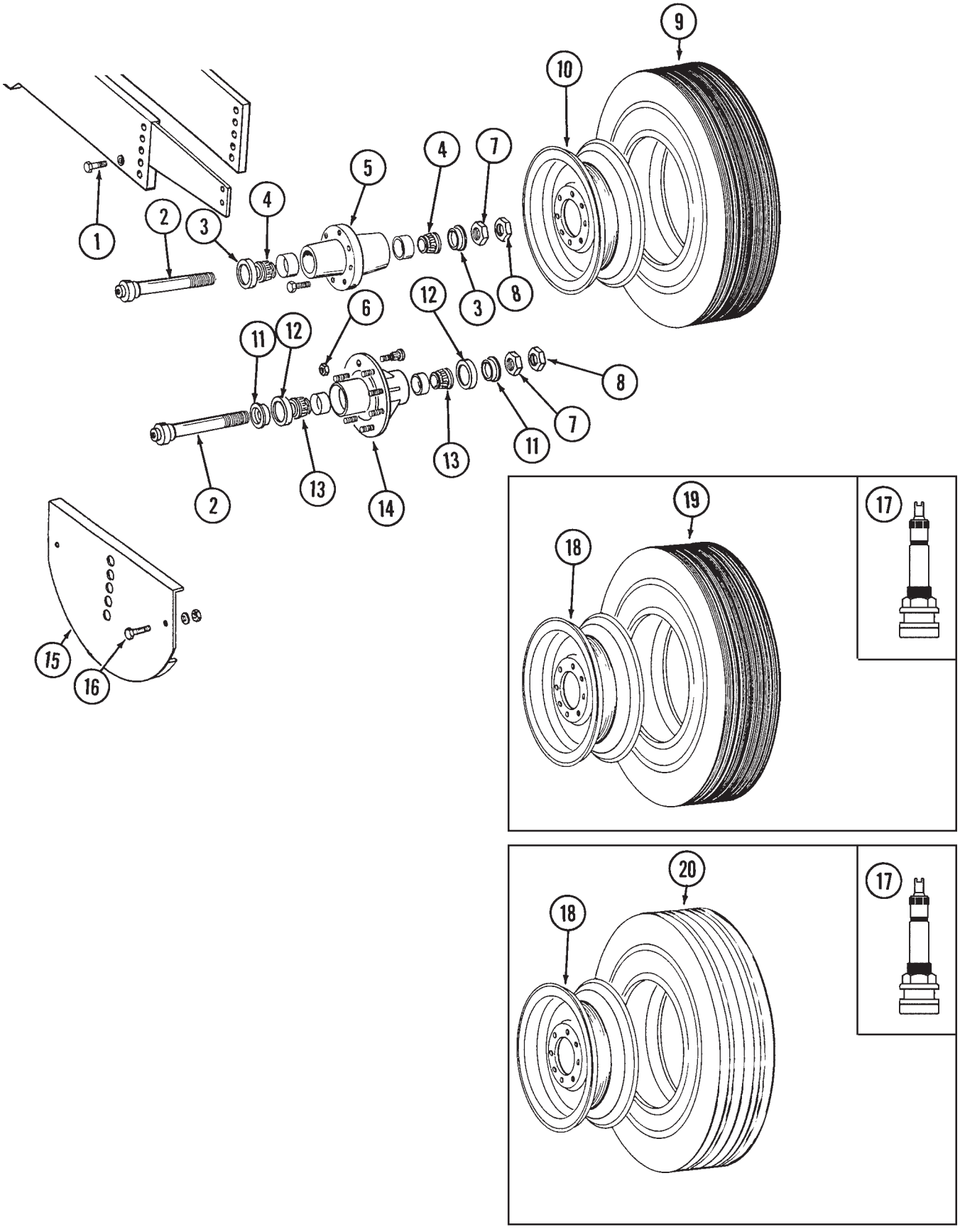


AXLE ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
1.	A6762	1	Axle, 12 Row 30" And 16 Row 30" **(Non-Stock Item)**
	A7378	-	Axle W/Stub, 12 Row 30" And 16 Row 30", Prior To Serial No. 611994 **(Non-Stock Item)**
	A7020	-	Axle W/Stub, 8 Row 36"/38" And 12 Row 36"/38", Prior To Serial No. 611994 **(Non-Stock Item)**
	A8062	-	Axle W/Stub, 12 Row 30" And 16 Row 30", Serial No. 611994 & On **(Non-Stock Item)**
	A8063	-	Axle W/Stub, 8 Row 36"/38" And 12 Row 36"/38", Serial No. 611994 & On **(Non-Stock Item)**
2.	G10802	6	Hex Head Cap Screw, 3/4"-10 x 2 3/4"
	G10231	6	Lock Washer, 3/4"
	G10105	6	Hex Nut, 3/4"-10
3.	GA7048	1	Hose Support/Junction
4.	GD10010	-	Scraper
5.	G10636	-	Carriage Bolt, 1/2"-13 x 1 1/2"
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
6.	GA7120	1	Cable, 8 Row 36"/38" And 12 Row 36"/38"
	GA6608	-	Cable, 12 Row 30" And 16 Row 30"
7.	GA7098	1	Manual Safety Lockup
8.	GD8276	1	Pin
	G10237	1	Lock Washer, 7/16"
	G10100	1	Hex Nut, 7/16"-14
9.	G10808	6	Hex Head Cap Screw, 1"-8 x 10", Grade 8, “Y” Hitch
	G10437	4	Hex Head Cap Screw, 3/4"-8 x 2 1/2", Grade 8, “Y” Hitch
	G10811	6	Hex Head Cap Screw, 1"-8 x 11", Grade 8, “T” Hitch
	G10810	4	Hex Head Cap Screw, 3/4"-10 x 3 1/2", Grade 8, “T” Hitch
	GD10231	6	Hardened Washer, 1"
	G10647	6	Hex Nut, 1"-8
	GD2169	4	Hardened Washer, 3/4"
	G10436	4	Hex Nut, 3/4"-10
10.	G6801-06-08	2	Elbow, 3/4"-16 O-Ring To 9/16"-18 JIC
11.	GD10064	1	Pin, 1 1/4" x 5 1/4", 8/12/16 Row
	G10460	2	Cotter Pin, 1/4" x 2"
12.	GD10092	1	Pin, 1 1/4" x 5 1/4"
	G10226	4	Washer, 1 1/4" x 5 1/4" SAE
	G10049	1	Hex Head Cap Screw, 3/8"-16
	G10108	1	Lock Nut, 3/8"-16
13.	G2700-08	2	Union, 3/4"-16 JIC
	G2700-10	2	Union, 7/8"-14 JIC
14.		-	See “Rotation Cylinder”, Page P85
15.	G306-08	2	Lock Nut, 3/4"-16
	G306-10	2	Lock Nut, 7/8"-14
16.	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13

TRANSPORT WHEELS/ROCK GUARDS

HTA032/HTA040/HTA043/HTA004(TWL141/A7434)



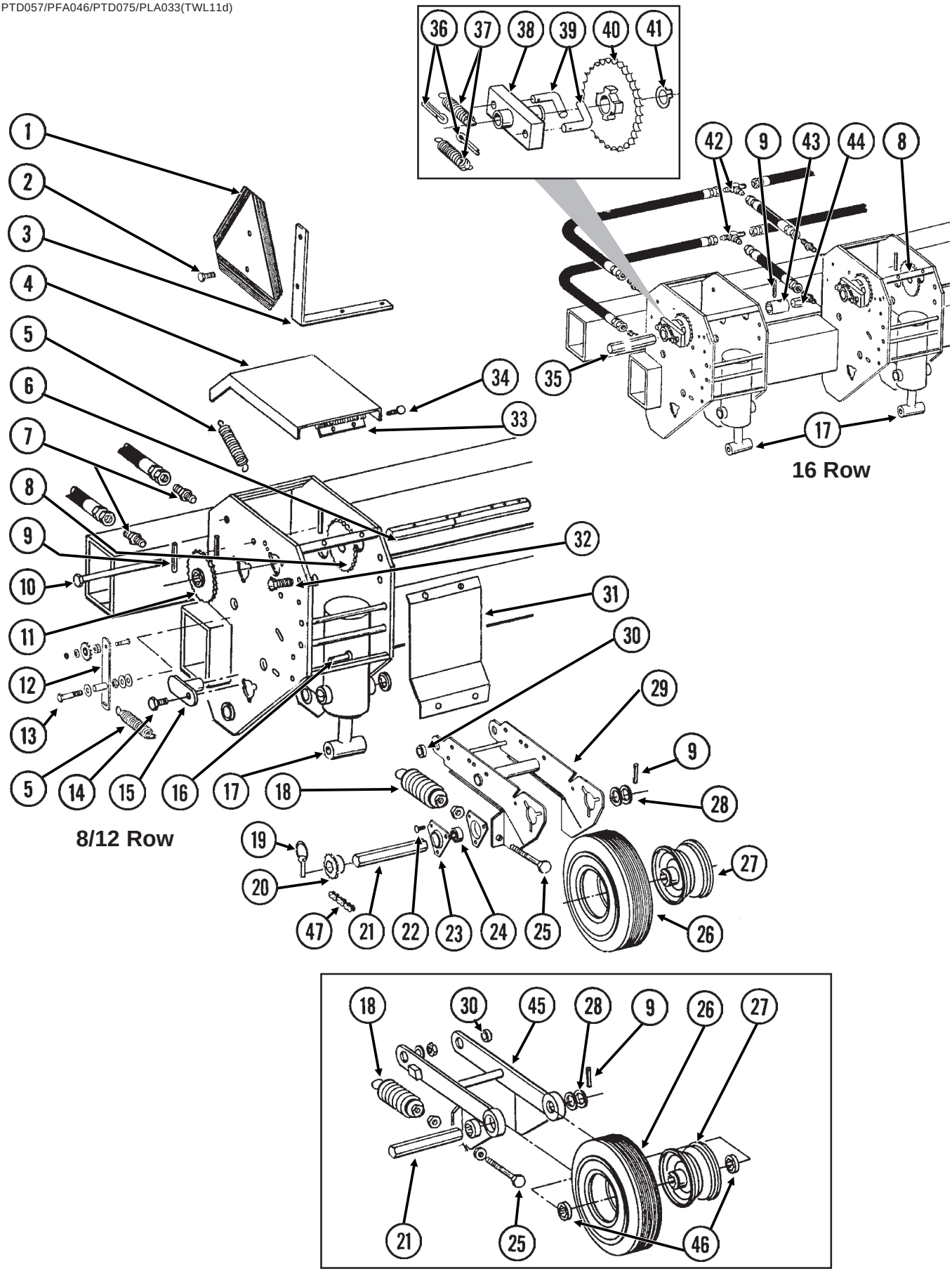
TRANSPORT WHEELS/ROCK GUARDS

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10448	2	Hex Head Cap Screw, 7/8"-9 x 2 1/2", Grade 8
	G10330	2	Lock Washer, 7/8"
2.	GA4727	1	Spindle W/External Retaining Ring, 1 3/4"
	G10913	-	External Retaining Ring, 2 1/2"
3.	GA4722	2	Seal
4.	GA4723	2	Cone
5.	GA4729	1	Hub W/Cups, Bolts And Grease Fitting, 8 Bolt, 1 3/4" Bore 8/12 Row
	G10641	-	Grease Fitting, 1/8" NPT
	GD7079	-	Cup
	GR0528	-	Bolt
6.	GR0531	8	Nut, 5/8"-18 UNF
7.	GD7089	1	Special Nut, 1 3/4"-12 UNF
8.	GD7864	1	Special Hex Nut, 1 3/4"-12 UNF
9.	GD7262	1	Tube Type Tire, 7.50" x 20", 10 Ply, 8/12/16 Row (Specify Brand*) (Prior To Serial No. 610534)
	GA7222	1	Tube, 8/12 Row (Prior To Serial No. 610534)
	GD7256	-	Tube, 16 Row (Prior To Serial No. 610534)
	GD7263	-	Flap, 16 Row (Prior To Serial No. 610534)
10.	GA4291	1	Rim, W7B x 20H, 8/12 Row (Prior To Serial No. 610534)
	GA4869	-	Rim, 16 Row (Prior To Serial No. 610534)
11.	GD7163	2	Spacer
12.	GA4799	2	Seal
13.	GA4800	2	Cone
14.	GA4801	1	Hubs W/Cups, Bolts And Grease Fitting, 8 Bolt, 1 3/4" Bore, 16 Row
	GD7167	-	Cup
	GR0528	-	Bolt, Grade 5
	G10641	-	Grease Fitting, 1/8" NPT
15.	GA5716	-	Rock Guard (Optional)
16.	G10037	-	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
17.	GA7434	-	Valve Stem, 8/12/16 Row, Use With GD10485 Tubeless Tire (Serial No. 610534 & On)
18.	GA7389	-	Rim, 5.5" x 22.5", 8/12/16 Row (Serial No. 610534 & On)
19.	GD10485	-	Tubeless Tire, 255-70R x 22.5", 8/12/16 Row (Specify Brand*) (Serial No. 610534 - 611993)
20.	GD10785	-	Tubeless Tire, 255-70R x 22.5" Without Center Rib, 8/12/16 Row (Specify Brand*) (Serial No. 611994 & On)
A.	GA7869	-	Tire And Rim Assembly (Specify Brand*)(Items 17, 18 And 20)

*** 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.**

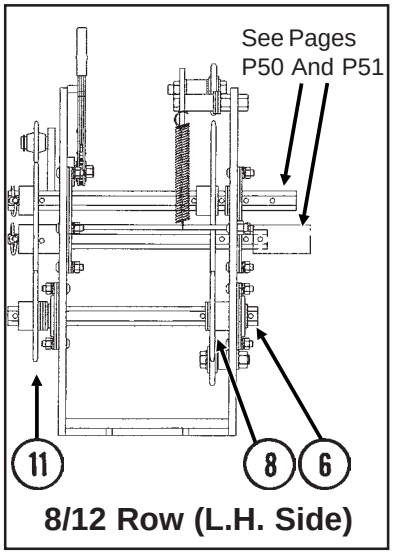
CONTACT DRIVE WHEEL AND DRIVE SHAFT(S)

PTD057/PFA046/PTD075/PLA033(TWL11d)

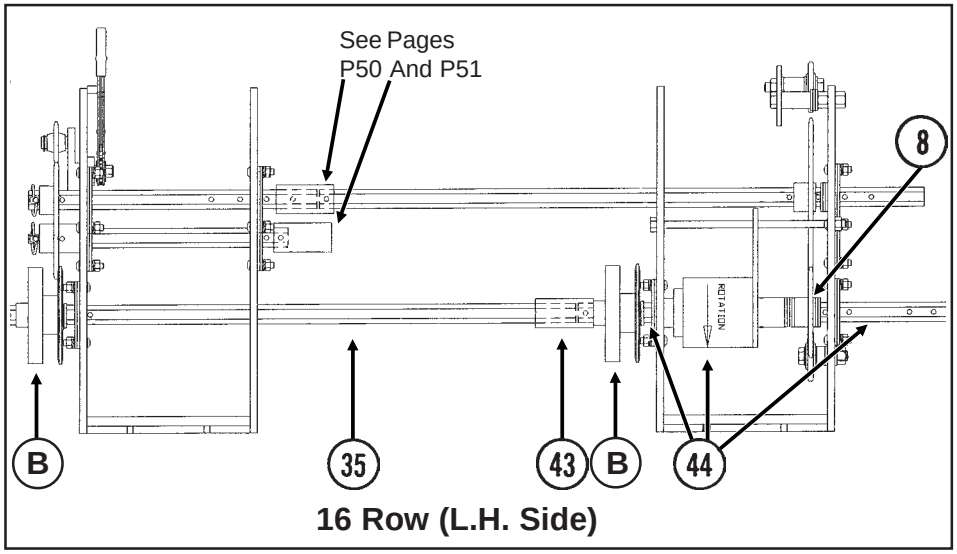


CONTACT DRIVE WHEEL AND DRIVE SHAFT(S)

(TWL157/TWL156)



8/12 Row (L.H. Side)



16 Row (L.H. Side)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD2199	1	SMV Sign
2.	G10022	2	Hex Head Cap Screw, 1/4"-20 x 1/2"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
3.	GD9969	1	Bracket
4.	GD10298	1	Cover
5.	GD5857	2	Spring
6.	GD10543	1	Shaft, 7/8" x 13"
			See “Point Row Wrap Spring Clutch”, Pages P54-P57, For 8 And 12 Row Machines Equipped With Point Row Clutches
7.	G6400-08	2	Connector, 3/4"-16 JIC To O-Ring
8.		-	See “Inner Module Drive”, Page P53
9.	G10602	4	Spring Pin, 1/4" x 1 1/2"
10.	G10595	-	Hex Head Cap Screw, 3/8"-16 x 10" (Used To Secure Point Row Clutch)
	G10108	-	Lock Nut, 3/8"
	G10107	2	Lock Nut, 5/8"-11
11.	GA5114	1	Sprocket, 30 Tooth
12.	GA6534	1	Idler W/Sprocket And Hardware
	GA7154	-	Sprocket, 18 Tooth
	G10017	-	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10128	-	Machine Bushing
	G10501	-	Lock Nut, 1/2"-13
13.	G10743	1	Hex Head Cap Screw, 5/8"-11 x 3 3/4"
	G10235	-	Machine Bushing (As Required)
	G10205	-	Washer, 5/8"-11 SAE (As Required)
	G10104	1	Hex Nut, 5/8"-11
	G10107	1	Lock Nut, 5/8"-11
14.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10216	2	Washer, 1/2" USS
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
15.	GA5121	2	Pin

Continued

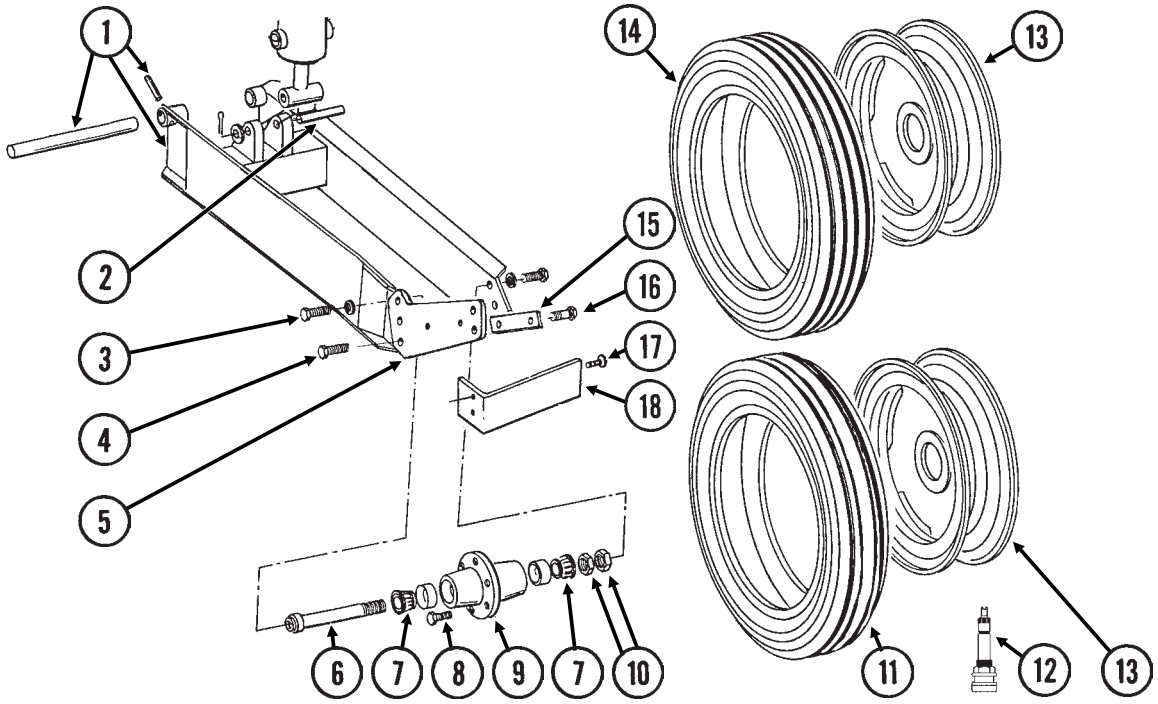
CONTACT DRIVE WHEEL AND DRIVE SHAFT(S)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
(Continued)			
16.	G10478	2	Clevis Pin, 5/16" x 1"
	G10409	2	Ring
17.		-	See “Wing Lift Cylinder”, Pages P80-P83
18.	GA2068	2	Spring
19.	GD2558	1	Lynch Pin, 1/4"
20.	GA5114	1	Sprocket, 30 Tooth
	GA5105	-	Sprocket, 15 Tooth, Half Rate (2 To 1) Drive
21.	GD6775	1	Shaft, 7/8" x 11 3/4"
22.	G10303	6	Carriage Bolt, 5/16"-18 x 1"
	G10219	6	Washer, 5/16" USS
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
23.	G3400-01	4	Flangette
24.	G2100-03	2	Bearing, 7/8" Hex Bore, Spherical
25.	G10890	2	Hex Head Adjusting Screw, 1/2"-13 x 4"
	G10501	2	Hex Jam Nut, 1/2"-13
26.	GD4700	1	Tire, 4.8" x 8", 6 Ply, Rib Implement (Specify Brand*)
	GD4701	-	Valve Stem
27.	GA3553	1	Rim
28.	G10233	-	Machine Bushing
29.	GA7372	1	Wheel Arm (Serial No. 610534 & On)
30.	GB0218	2	Bushing, 19/32"
31.	GD6895	1	Shield
32.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10235	4	Machine Bushing
	GD7805	2	Hardened Washer
	G10205	2	Washer, 5/8" SAE
	G10107	2	Hex Nut, 5/8"-11
33.	GD5789	1	Hinge, Female
	GD5790	1	Hinge, Male
34.	G10064	6	Hex Head Cap Screw, 1/4"-20 x 1"
	G10209	4	Washer, 1/2"
	G10227	6	Lock Washer, 1/4"
	G10103	6	Hex Nut, 1/4"-20
35.	GD10099	-	Shaft, 7/8" x 29 5/8"
36.	G10464	2	Cotter Pin, 3/16" x 1"
37.	GD1256	2	Spring
38.	GA0378	1	Block
39.	GD1255	2	“L” Pin
40.	GA5165	1	Sprocket, 30 Tooth
41.	G10430	1	Ring
42.	G2603-08	2	Tee, 3/4"-16 JIC
43.	GD5212	1	Coupler, 16 Row Only
44.		-	See “Point Row Wrap Spring Clutch”, Pages 54-57
45.	GA4388	1	Wheel Arm, W/Bearings (Prior To Serial No. 610534)
	GA5116	2	Bearing, 7/8" Hex Bore
46.	GD1199-03	-	Spacer, 5/8" (Prior To Serial No. 610534)
47.	G3310-110	1	Chain, No. 40, 110 Pitch Including Connector Link, Half Rate (2 To 1) Drive
	G3310-118	-	Chain, No. 40, 118 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
A.	GA3552	-	Tire And Rim Assembly (Specify Brand*)(Items 26 And 27)
B.	GA5164	-	Ratchet/Sprocket Assembly Complete (Items 36-41)

*** 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.**

GROUND DRIVE WHEEL

PTD057(TWL142a)



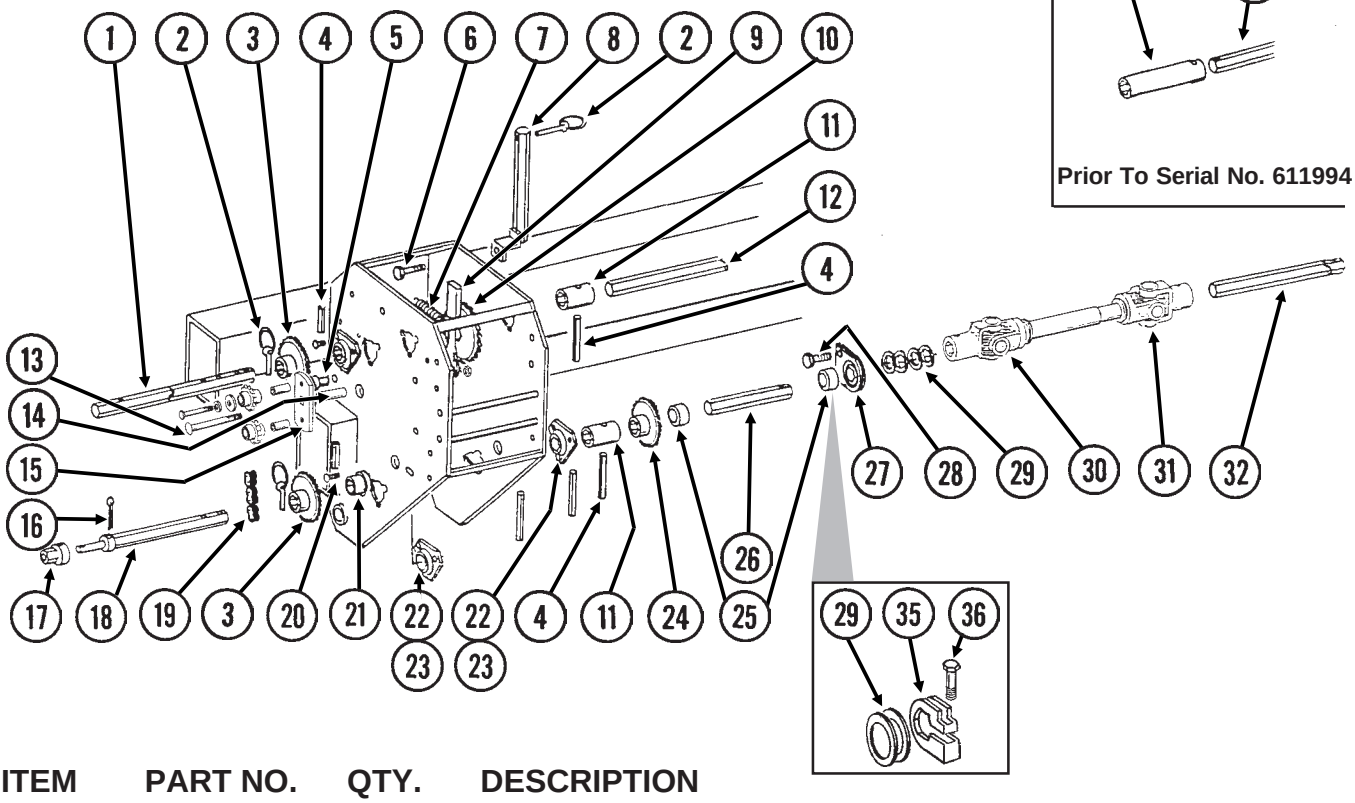
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA7031	1	Wheel Module W/Pin
	GD6712	-	Pin, 1 1/4" x 12 1/2"
	G10610	-	Spring Pin, 3/8" x 2
2.	GD5841	1	Pin, 1 1/4" x 5 5/8"
	G10226	2	Washer, 1 1/4" SAE
	G10460	2	Cotter Pin, 1/4" x 2"
3.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
4.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
	G10105	2	Hex Nut, 3/4"-10
5.	GD10128	1	Scraper Arm
6.	GA4376	1	Spindle W/Round External Retaining Ring, 10'
	GD11490	-	Round External Retaining Ring
7.	GA0895	2	Cone
8.	GR0270	6	Lug Bolt, 9/16"-18
9.	GA2148	1	Hub W/Cups, 6 Bolt
	GR0434	-	Cup
10.	G10087	2	Hex Jam Nut, 1 1/2"-12
11.	GD10795	1	Tire, 7.50" x 20" Without Center Rib, 6 Ply Tubeless (Specify Brand*)
12.	GA7434	-	Valve Stem
13.	GA2908	1	Rim, 5.5" x 20"
14.	D9645	1	Tire, 7.50" x 20", 6 Ply Tubeless (Specify Brand*)**(Non-Stock Item Sub GD10795)**
15.	GD10144	1	Bar Clamp
16.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
17.	G10636	2	Carriage Bolt, 1/2"-13 x 1 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
18.	GD10010	1	Scraper
A.	GA7997	-	Tire And Rim Assembly (Specify Brand*)(Items 11-13)

*** 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.**

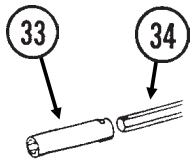
TRANSMISSION AND ROW UNIT DRILL SHAFTS

PTD056/PTD065/PTD076/PTD079(TWL14a/PLTR128)

8/12 Row Shown



8 Row Only



Prior To Serial No. 611994

ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	GD6780	1	Shaft, 7/8" x 15"
2.	GD2558	3	Lynch Pin, 1/4"
3.	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
4.	G10602	7	Spring Pin, 1/4" x 1 1/2"
5.	G10870	1	Clevis Pin, 3/8" x 1"
	G10860	1	Ring
6.	G10016	1	Hex Head Cap Screw, 1/2"-13 x 2"
	GD10356	1	Bushing, 3/4" Long (If Applicable)
	G10228	1	Lock Washer, 1/2"
	G10527	2	Lock Washer, 1/2", Int./Ext.
	G10102	1	Hex Nut, 1/2"-13
7.	GD5857	1	Spring
8.	GA4630	1	Sprocket Storage Rod
9.	GA4235	1	Ratchet Wrench W/Protective Closure
	G10445	-	Protective Closure, Red
10.		-	See “Inner Module Drive”, Page P53
11.	GD5212	1	Coupler, 1 3/4", 16 Row Only
12.	GD10100	1	Shaft, 7/8" x 31 3/8", 16 Row Only
13.	G10314	1	Carriage Bolt, 1/2"-13 x 3"
	G10111	1	Lock Nut, 1/2"-13
14.	GD3180-05	1	Sleeve, 1 3/16"

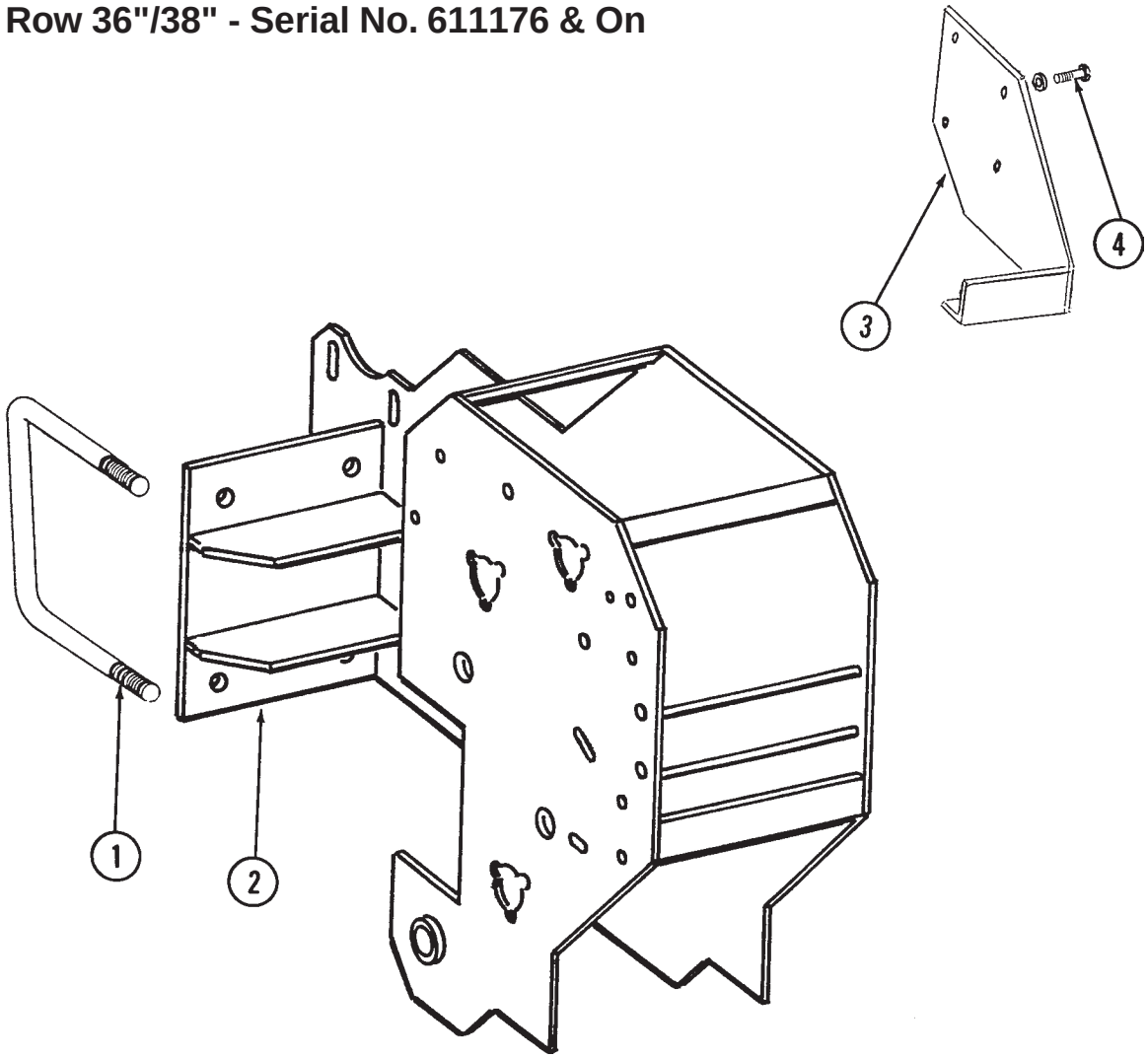
TRANSMISSION AND ROW UNIT DRILL SHAFTS

ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
15.	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"
16.	G10462	-	Cotter Pin, 3/16" x 2"
17.	GD7127	1	Shear Coupler
18.	GD7612	1	Shaft, 7/8" x 13 1/2"
19.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
20.	G10303	-	Carriage Bolt, 5/16"-18 x 1"
	G10232	-	Lock Washer, 5/16"
	G10106	-	Hex Nut, 5/16"-18
21.	GA5548	1	Special Bearing
22.	G3400-01	-	Flangette
23.	G2100-03	-	Bearing, 7/8" Hex
24.	GA5107	1	Sprocket, 19 Tooth, Interplant® Drive
25.	GD0917	-	Lock Collar, 7/8" Hex, Less Set Screws **(Sub G1K269)**
	G10145	-	Set Screws, 5/16"-18 x 1/2"
26.	GD0914-58.5	2	Drill Shaft, Wing, 8 Row 36"/38"
	GD0914-106.5	-	Drill Shaft, Wing, 12 Row 30"
	GD0914-134.5	-	Drill Shaft, Wing, 12 Row 36"/38"
	GD0914-166.75	-	Drill Shaft, Wing, 16 Row 30"
27.	GA2180	-	Bearing Hanger, 7/8" Hex
28.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	2	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
29.	G10233	-	Machine Bushing
30.	GA7053	1	U-Joint, Less Set Screws, 18", 8 Row 36"/38" And 12 Row 36"/38"
	GA7052	-	U-Joint, Less Set Screws, 10", 12 Row 30" And 16 Row 30"
	G10688	-	Set Screws, 3/8"-16 x 5/8"
	GR1300	-	Grease Fitting
	GR1297	-	Inboard Yoke And Profile, 10" U-Joint
	GR1298	-	Inboard Yoke And Profile, 18" U-Joint
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
31.	GA7051	-	U-Joint, Less Set Screws, 12"
	G10688	-	Set Screw, 3/8"-16 x 5/8"
	GR1300	-	Grease Fitting
	GR1296	-	Inner Profile
	GR1295	-	Inboard Yoke
	GR1301	-	Spring Pin, 8mm x 50mm
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
32.	GD0914-53	1	Drill Shaft, R.H. Main Frame, 8 Row 36"/38" And 12 Row 36"/38"
	GD0914-44	1	Drill Shaft, L.H. Main Frame, 8 Row 36"/38" And 12 Row 36"/38"
	GD0914-45	1	Drill Shaft, R.H. Main Frame, 12 Row 30" And 16 Row 30"
	GD0914-35	-	Drill Shaft, L.H. Main Frame, 12 Row 30" And 16 Row 30"
33.	GD10152	1	Coupler Less Set Screws, 8", 8 Row Only
	G10145	2	Set Screw, 5/16"-18 x 1/2"
34.	GD0914-04	1	Shaft, 8 Row Only
35.	GD11045	-	Lock Clamp
36.	G10031	-	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	-	Hex Nut, 5/16"-18
A.	G1K269	-	Lock Clamp Kit (Items 35 And 36)

BOLT-ON WHEEL MODULE/TRANSPORT LATCH CATCH

PFA072(TWL15)

12 Row 36"/38" - Serial No. 610000 & On
8 Row 36"/38" - Serial No. 611176 & On

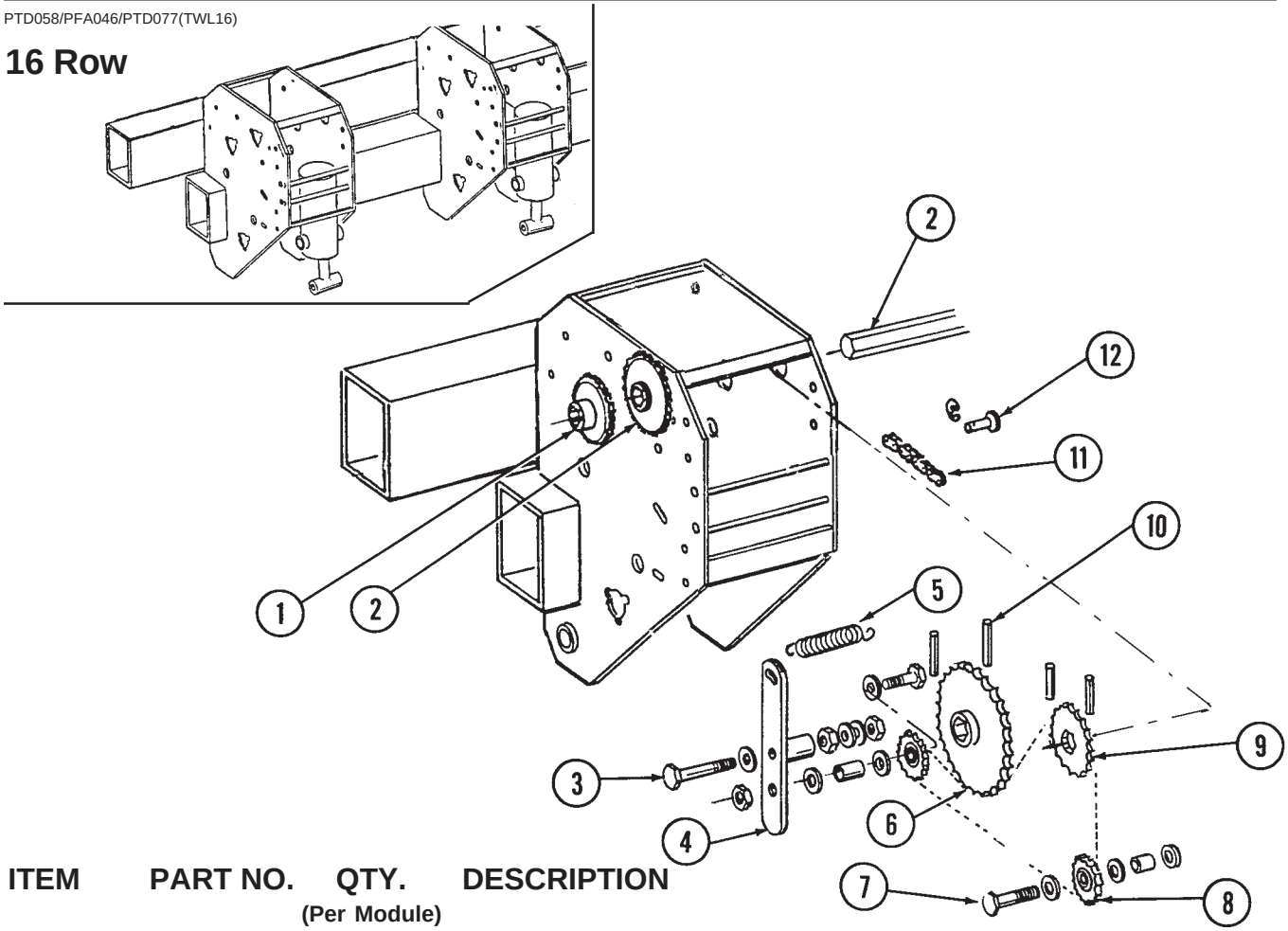


ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	GD1747	2	U-Bolt, 5" x 7" x 3/4"-10
	G10231	10	Lock Washer, 3/4"
	G10105	10	Hex Nut, 3/4"-10
2.	GA7113	1	Wheel Tower W/Grease Fitting, L.H., Prior To Serial No. 611994 (Shown)
	GA7112	-	Wheel Tower W/Grease Fitting, R.H., Prior To Serial No. 611994
	GA8071	1	Wheel Tower W/Grease Fitting, L.H., Serial No. 611994 & On
	GA8070	-	Wheel Tower W/Grease Fitting, R.H., Serial No. 611994 & On
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fitting, 1/4"-28
3.	GA7108	1	Transport Latch Catch
4.	G10007	4	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	4	Lock Washer, 5/8"

INNER MODULE DRIVE

PTD058/PFA046/PTD077(TWL16)

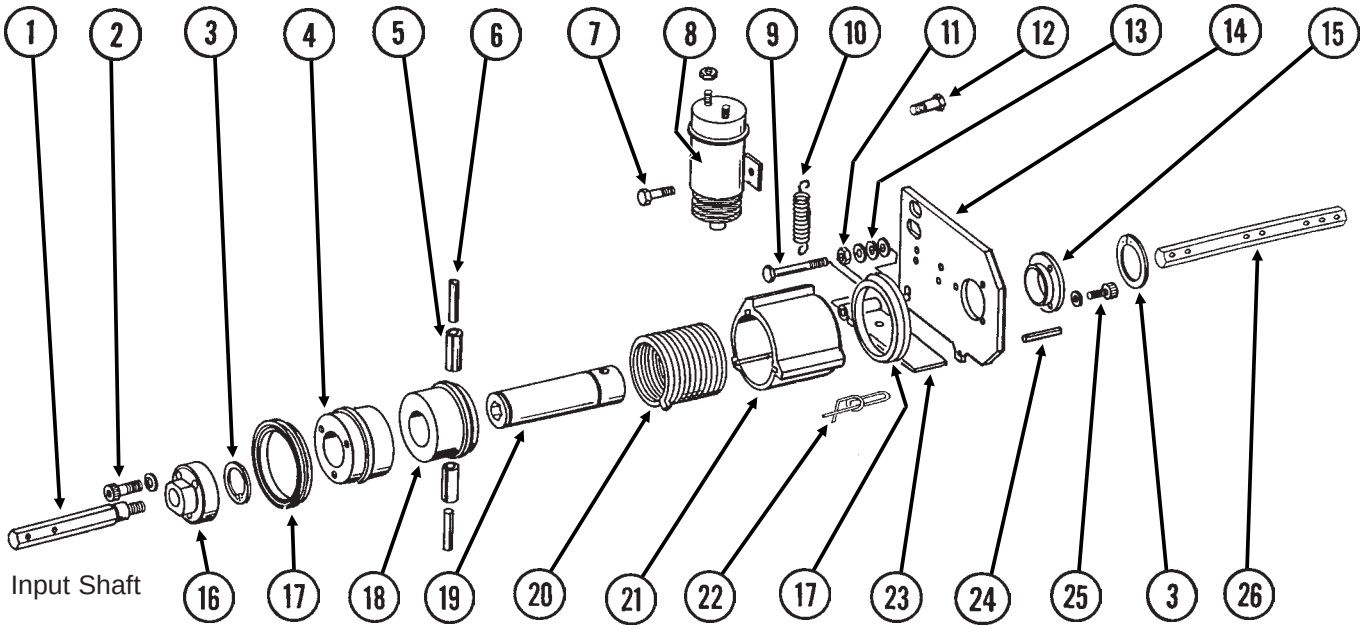
16 Row

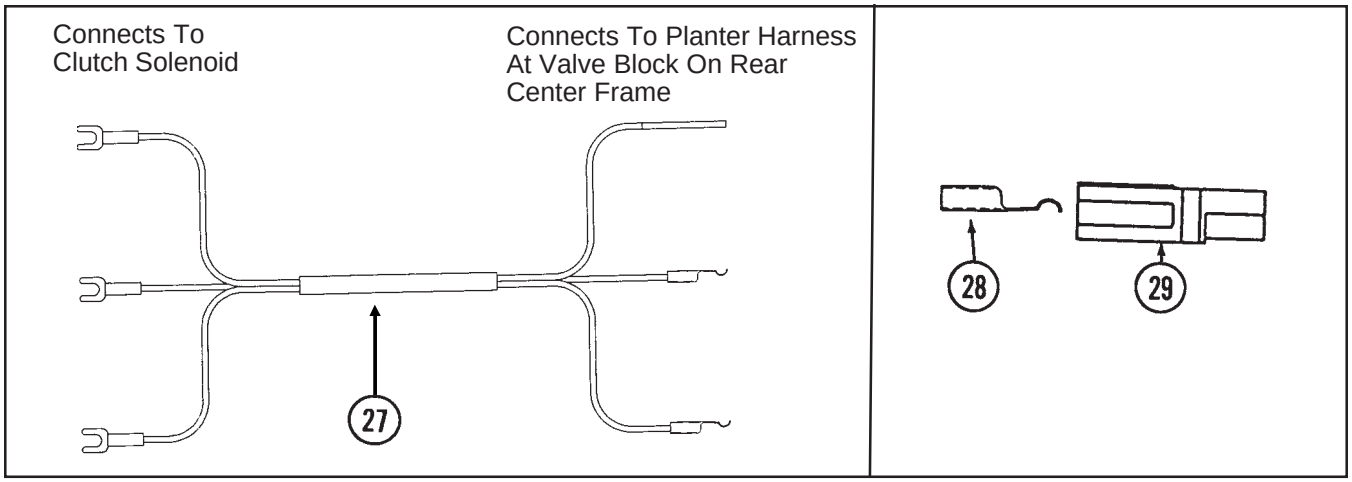


ITEM	PART NO.	QTY. (Per Module)	DESCRIPTION
1.		-	See “Transmission and Row Unit Driveline”, Pages P50 And P51
2.		-	See “Contact Drive Wheel”, Pages P46 And P47
3.	G10743	1	Hex Head Cap Screw, 5/8"-11 x 3 3/4"
	G10918	3	Machine Bushing
	G10104	1	Hex Nut, 5/8"-11
	G10107	1	Lock Nut, 5/8"-11
4.	GA7063	1	Idler W/Sprocket And Hardware
	GA7154	-	Sprocket, 18 Tooth
	G10397	-	Hex Head Cap Screw, 1/2"-13 x 2 3/4"
	GD10007	-	Spacer, 1 1/8"
	G10206	-	Washer, 1/2" SAE
	G10111	-	Lock Nut, 1/2"-13
5.	GD5857	1	Spring
6.	GA5194	1	Sprocket, 50 Tooth
7.	G10581	1	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	GD7889	1	Bushing
	G10168	2	Machine Bushing
	G10205	2	Washer, 1/2" SAE
	G10111	1	Hex Nut, 1/2"-13
8.	GA7154	1	Idler Sprocket W/Bearing, 18 Tooth
9.	GA5113	1	Sprocket, 28 Tooth
10.	G10602	-	Spring Pin, 1/4" x 1 1/2"
11.	G3310-100	1	Chain, No. 40, 100 Pitch Including Connector Link And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
12.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Ring

POINT ROW WRAP SPRING CLUTCH

PRC019(TWL144a/TWL71/TWL18)



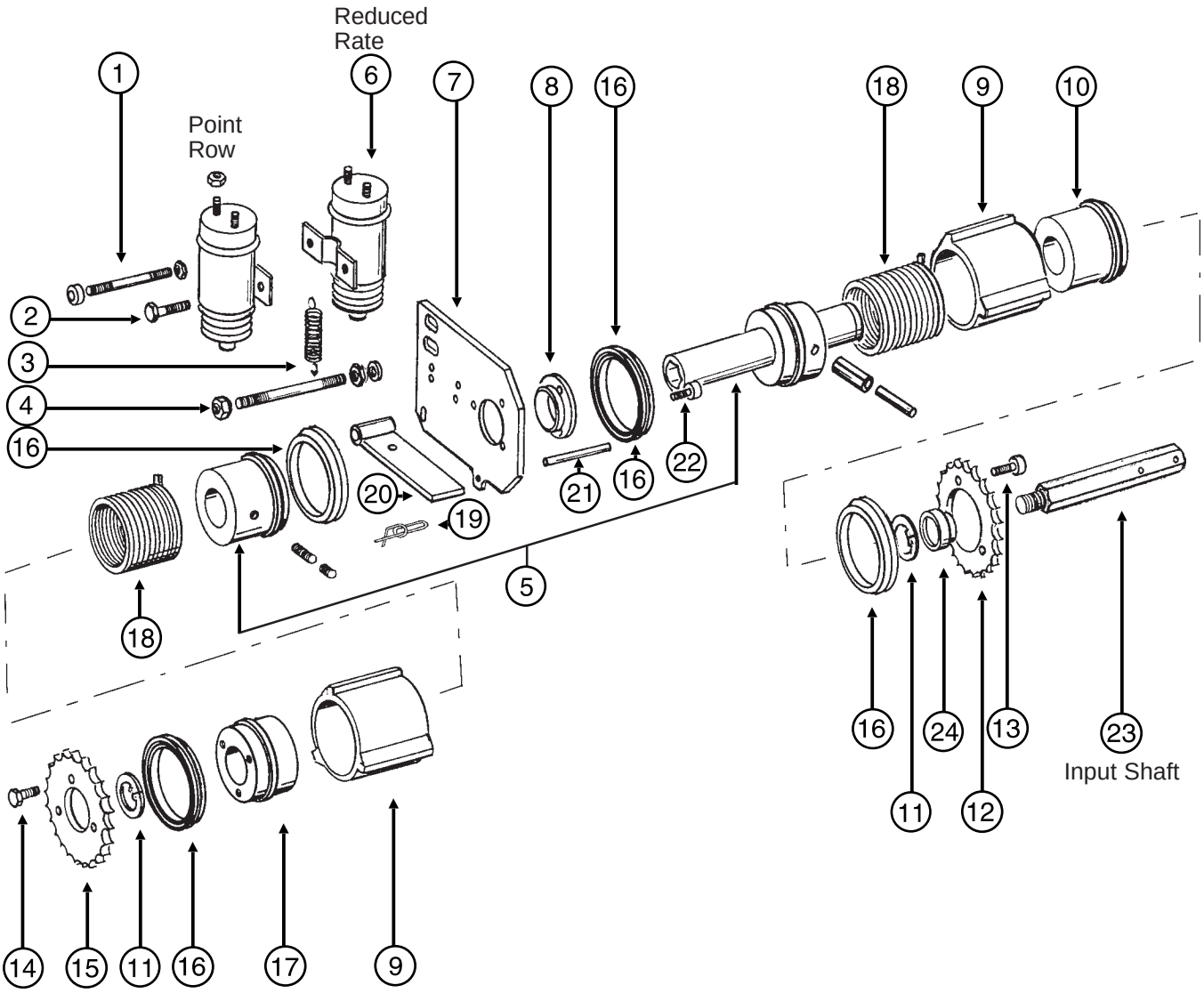


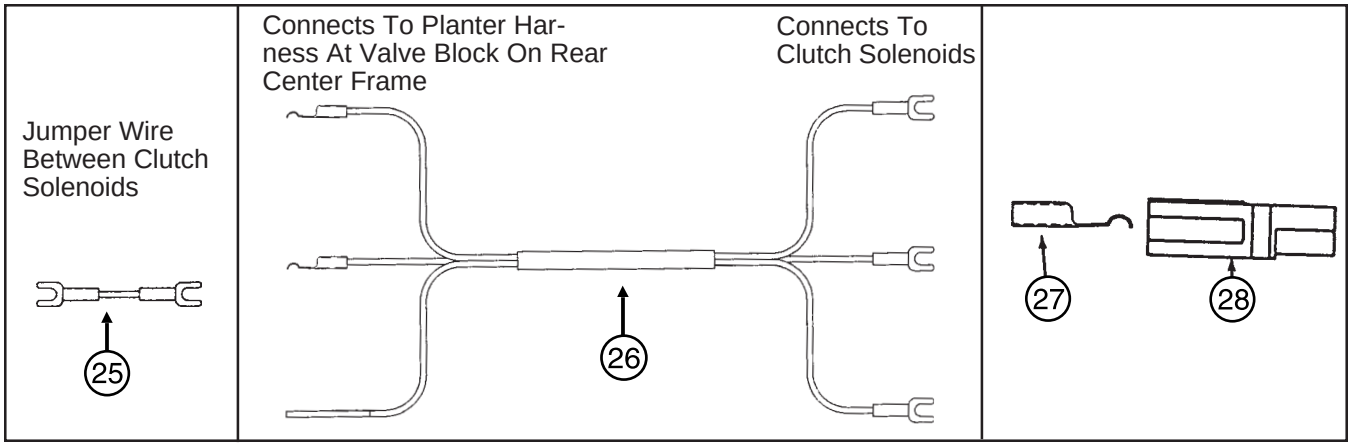
POINT ROW WRAP SPRING CLUTCH

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD10069	1	Input Shaft, L.H. Thread (R.H. Side of Machine)
	GD10068	-	Input Shaft, R.H. Thread (L.H. Side of Machine)
2.	G10374	3	Socket Head Screw, 1/4"-20 x 1"
	G10227	3	Lock Washer, 1/4"
3.	G10496	2	Snap Ring
4.	GD10104	1	Input Hub
5.	G10765	2	Spring Pin, 1/4" x 1"
6.	G10804	2	Spring Pin, 5/32" x 7/8"
7.	G10023	1	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	1	Lock Washer, 1/4"
	G10103	1	Hex Nut, 1/4"-20
8.	GA7143	1	Solenoid Complete
	GR1306	1	Snap Ring
	GR1303	1	Spring
	GR1304	1	Boot
	GR1305	1	Plunger
	GR1307	1	Body
	G1K221	-	Plastic Ratchet Fastener (As Required)
9.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10229	2	Lock Washer, 3/8"
	G10497	1	Hex Nut, 3/8"-16
10.	GD10123	1	Spring
11.	G10101	1	Hex Nut, 3/8"-16
12.	G10900	1	Socket Head Cap Screw, 1/4"-20 x 1 3/4"
	G10227	1	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
13.	G10203	1	Washer, 3/8" SAE
14.	GD10103	1	Mounting Plate
15.	GD9667	1	Bushing
16.	GD10071	1	Coupler W/L.H. Threads (R.H. Side of Machine)
	GD10070	1	Coupler W/R.H. Threads (L.H. Side of Machine)
17.	GD10120	2	Seal
18.	GD10105	1	Output Hub
19.	GD10106	1	Sleeve
20.	GD9672	1	Spring, R.H. (R.H. Side of Machine)
	GD9671	-	Spring, L.H. (L.H. Side of Machine)
21.	GD10102	1	Stop Collar
22.	GD11120	1	Rue Ring Cotter, 5/16"
23.	GD10510	1	Actuator Arm
24.	G10859	1	Spring Pin, 3/16" x 2 1/4"
25.	G10253	3	Socket Head Screw, No. 10-32 x 1/2"
	G10257	3	Lock Washer, No. 10
26.	GD10543	-	Shaft, 7/8" x 13"
27.	GA7401	1	Wiring Harness, 16', R.H. Side 8 Row 36"/38"
	GA7405	1	Wiring Harness, 19', L.H. Side 8 Row 36"/38" And R.H. Side 12 Row 30"
	GA7400	-	Wiring Harness, 22', L.H. Side 12 Row 30" And R.H. Side 12 Row 36"/38"
	GA7402	-	Wiring Harness, 26', L.H. Side 12 Row 36"/38"
	GA7403	-	Wiring Harness, 21', R.H. Side 16 Row 30"
	GA7404	-	Wiring Harness, 25', L.H. Side 16 Row 30"
28.	GD9530	-	Contact
29.	GD9529	-	Housing
A.	GA7110	-	Point Row Wrap Spring Clutch Assembly, R.H. (R.H. Side Of Machine) (Items 1-25)
	GA7111	-	Point Row Wrap Spring Clutch Assembly, L.H. (L.H. Side Of Machine) (Items 1-25)

TWO-SPEED POINT ROW WRAP SPRING CLUTCH

PRC023(TWL145/TWL76/TWL71/TWL18)



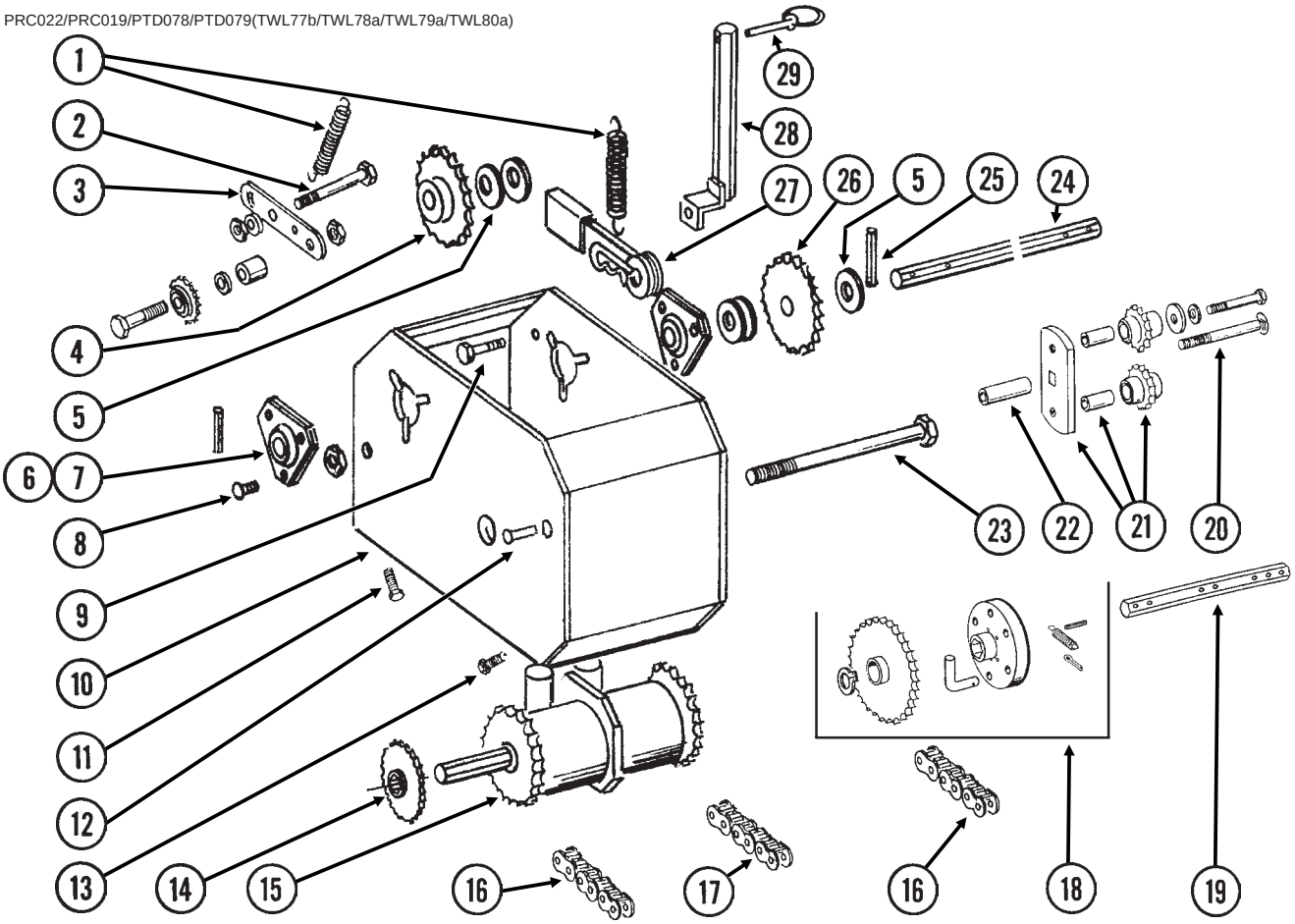


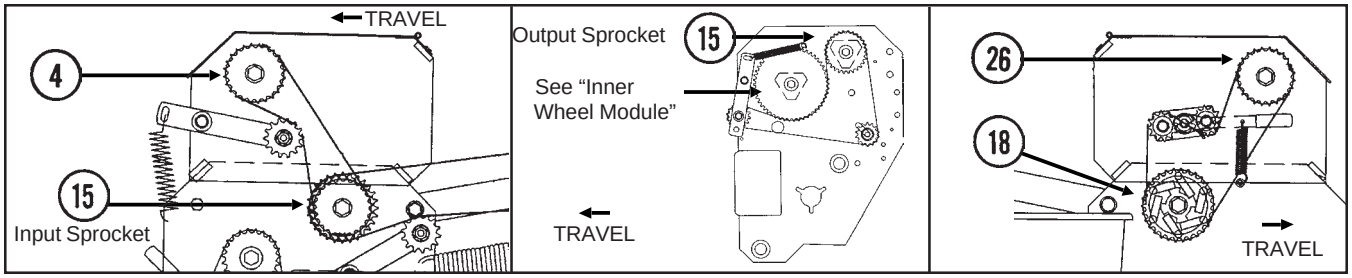
TWO-SPEED POINT ROW WRAP SPRING CLUTCH

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD10635	1	Threaded Bar, 1/4"-20 x 3 1/2"
	G10103	2	Hex Nut, 1/4"-20
	G10227	2	Lock Washer, 1/4"
	GD10282	2	Allen Nut, 1/4"-20
2.	G10023	1	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	1	Lock Washer, 1/4"
	G10103	1	Hex Nut, 1/4"-20
3.	GD10123	2	Spring
4.	GD10636	1	Threaded Bar, 3/8"-16 x 4 1/4"
	G10108	2	Lock Nut, 3/8"-16
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
5.	GA7463	1	Hub/Sleeve Assembly W/Pins And Screws
	G10873	-	Hex Socket Set Screw, 5/16"-18 x 3/4"
	G10872	-	Hex Socket Set Screw, 5/16"-18 x 1/4"
	G10804	-	Spring Pin, 5/32" x 7/8"
	G10765	-	Spring Pin, 1/4" x 1"
6.	GA7143	2	Solenoid Complete
	GR1306	-	Snap Ring
	GR1303	-	Spring
	GR1304	-	Boot
	GR1305	-	Plunger
	GR1307	-	Body
7.	GD10103	1	Mounting Plate
8.	GD10586	1	Bushing
9.	GD10585	2	Stop Collar
10.	GD10580	1	Drive Hub
11.	G10496	2	Snap Ring
12.	GD10578	1	Input Sprocket, 28 Tooth
13.	G10374	3	Hex Socket Head Screw, 1/4"-20 x 1"
	GD10588	3	Key
14.	G10023	3	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	3	Lock Washer, 1/4"
15.	GD10579	1	Output Sprocket, 28 Tooth
16.	GD10120	4	Seal
17.	GD10583	1	Driven Hub
18.	GD9672	2	Spring, R.H. (R.H. Side of Machine)
	GD9671	-	Spring, L.H. (L.H. Side of Machine)
19.	GD11120	2	Rue Ring Cotter
20.	GD10510	2	Actuator Arm
21.	G10859	1	Spring Pin, 3/16" x 2 1/4"
22.	G10876	3	Hex Socket Head Screw, No. 10-32 x 1/4"
23.	GD10069	1	Input Shaft, L.H. Thread (R.H. Side of Machine)
	GD10068	-	Input Shaft, R.H. Thread (L.H. Side of Machine)
24.	GD10638	1	Coupler W/R.H. Threads
	GD10587	-	Coupler W/L.H. Threads
25.	GA7274	1	Jumper Wire, Between Solenoids
26.	GA7401	1	Wiring Harness, 16', R.H. Side 8 Row 36"/38"
	GA7405	1	Wiring Harness, 19', L.H. Side 8 Row 36"/38" And R.H. Side 12 Row 30"
	GA7400	-	Wiring Harness, 22', L.H. Side 12 Row 30" And R.H. Side 12 Row 36"/38"
	GA7402	-	Wiring Harness, 26', L.H. Side 12 Row 36"/38"
	GA7403	-	Wiring Harness, 21', R.H. Side 16 Row 30"
	GA7404	-	Wiring Harness, 25', L.H. Side 16 Row 30"
27.	GD9530	-	Contact
28.	GD9529	-	Housing

TWO-SPEED POINT ROW WRAP SPRING CLUTCH WHEEL MODULE EXTENSION

PRC022/PRC019/PTD078/PTD079(TWL77b/TWL78a/TWL79a/TWL80a)





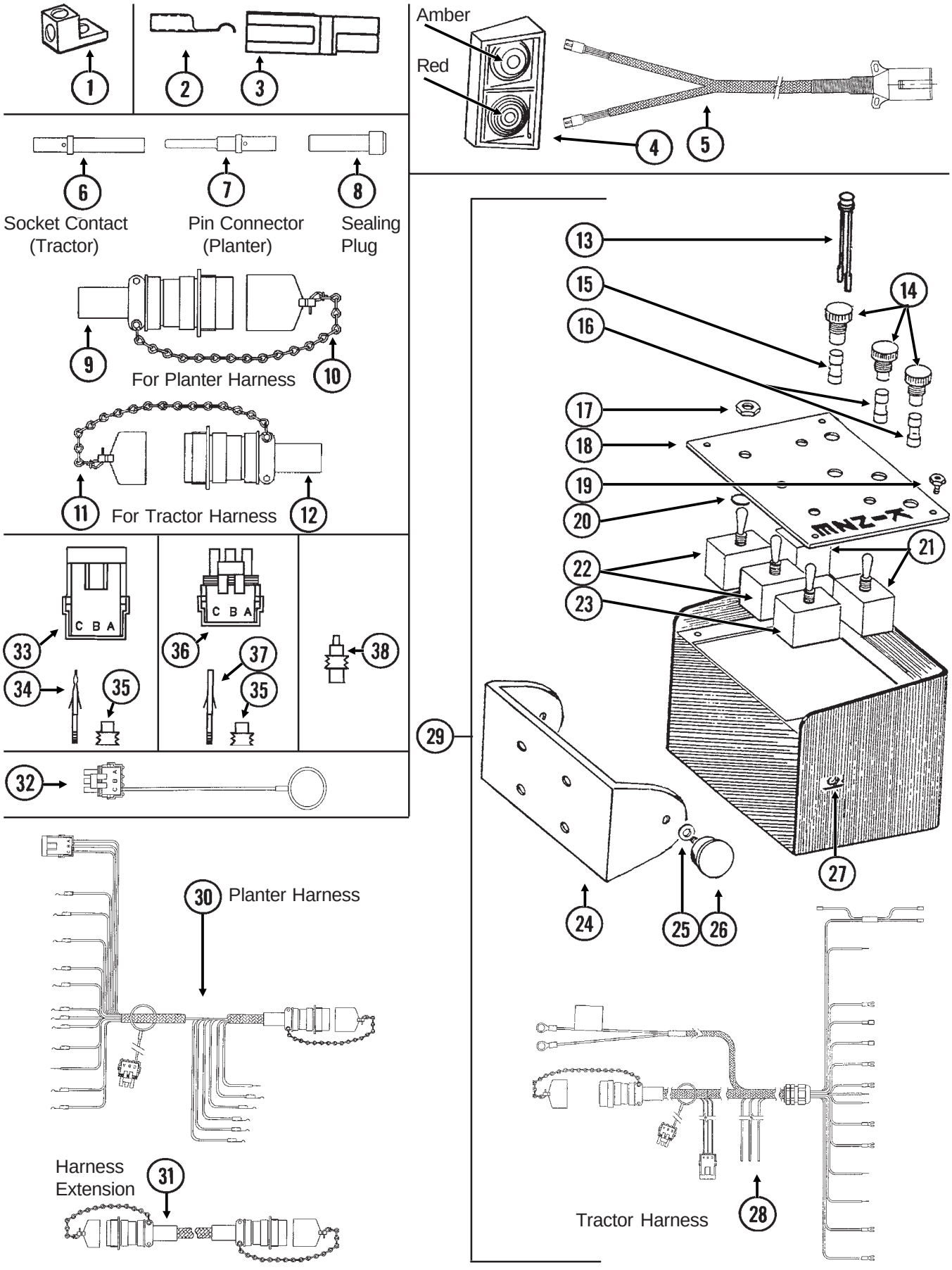
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD5857	2	Spring
2.	G10013	1	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10204	2	Machine Bushing
	G10107	1	Lock Nut, 5/8"-11
	G10104	1	Hex Nut, 5/8"-11
3.	GA7307	1	Idler W/Sprocket And Hardware
	GA7154	-	Sprocket, 18 Tooth
	G10053	-	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	GD10356	-	Spacer, 3/4"
	G10206	-	Washer, 1/2" SAE
	G10111	-	Lock Nut, 1/2"-13
4.	GA5113	1	Sprocket, 28 Tooth
5.	G10233	-	Machine Bushing
6.	G3400-01	-	Flangette
7.	G2100-03	-	Bearing, 7/8" Hex

TWO-SPEED POINT ROW WRAP SPRING CLUTCH WHEEL MODULE EXTENSION

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
8.	G10312	6	Carriage Bolt, 5/16"-18 x 3/4"
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
9.	G10037	1	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10216	1	Washer, 1/2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
10.	GA7306	1	Extension Bracket
11.	G10857	2	Hex Head Cap Screw, 1/4"-20 x 1 1/4"
	G10209	2	Washer, 1/4"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
12.	G10408	1	Clevis Pin, 5/16" x 3/4"
	G10409	1	Ring
13.	G10064	2	Hex Head Cap Screw, 1/4"-20 x 1"
	G10209	2	Washer, 1/4"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
14.		-	See “Contact Drive Wheel”, Pages P46 And P47
15.		-	See “Two-Speed Point Row Wrap Spring Clutch”, Pages P56 And P57
16.	G3310-74	2	Chain, No. 40, 74 Pitch Including Connector Link And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
17.	G3310-100	1	Chain, No. 40, 100 Pitch Including Connector Link And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
18.	GA7320	1	Overrunning Sprocket Assembly, R.H.
	GA7321	-	Overrunning Sprocket Assembly, L.H.
	G10430	1	Ring
	GD1255	6	“L” Pin
	G10546	6	Spring Pin, 3/16" x 1 1/4"
	G10470	6	Cotter Pin, 5/32" x 1"
	GD10366	6	Spring
	GA7317	1	Block
	GA7319	1	Sprocket W/Bushing, 30 Tooth
19.	GD10543	1	Output Shaft, 7/8" x 13"
20.	G10863	1	Carriage Bolt, 1/2"-13 x 2 3/4"
	G10111	1	Lock Nut, 1/2"-13
21.	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"
22.	GD3180-18	1	Sleeve, 1 1/8"
23.	G10595	1	Hex Head Cap Screw, 3/8"-16 x 10"
	G10108	1	Lock Nut, 3/8"-16
24.	GD10355	1	Shaft, 7/8" x 13 3/4"
25.	G10602	3	Spring Pin, 1/4" x 1 1/2"
26.	GA5109	1	Sprocket, 24 Tooth
	GA5105	1	Sprocket, 15 Tooth
	GA5106	1	Sprocket, 17 Tooth
	GA5112	1	Sprocket, 27 Tooth
	GA5108	-	Sprocket, 23 Tooth (From Transmission)
	GA5110	-	Sprocket, 25 Tooth (From Transmission)
	GA5111	-	Sprocket, 26 Tooth (From Transmission)
27.	GA4235	1	Ratchet Wrench W/Protective Closure
28.	GA7313	1	Sprocket Storage Rod
29.	GD2558	2	Lynch Pin, 1/4"
	G10445	-	Protective Closure, Red

ELECTRICAL COMPONENTS

ECP010/ECP011/ECP018/ECP023(TWL19a/TWL18/TWL23/PT50/ELC14/ELC3a/ELC5c/MTR27a/ELC8/ELC12/ELC4/TWL20a/ELC10)



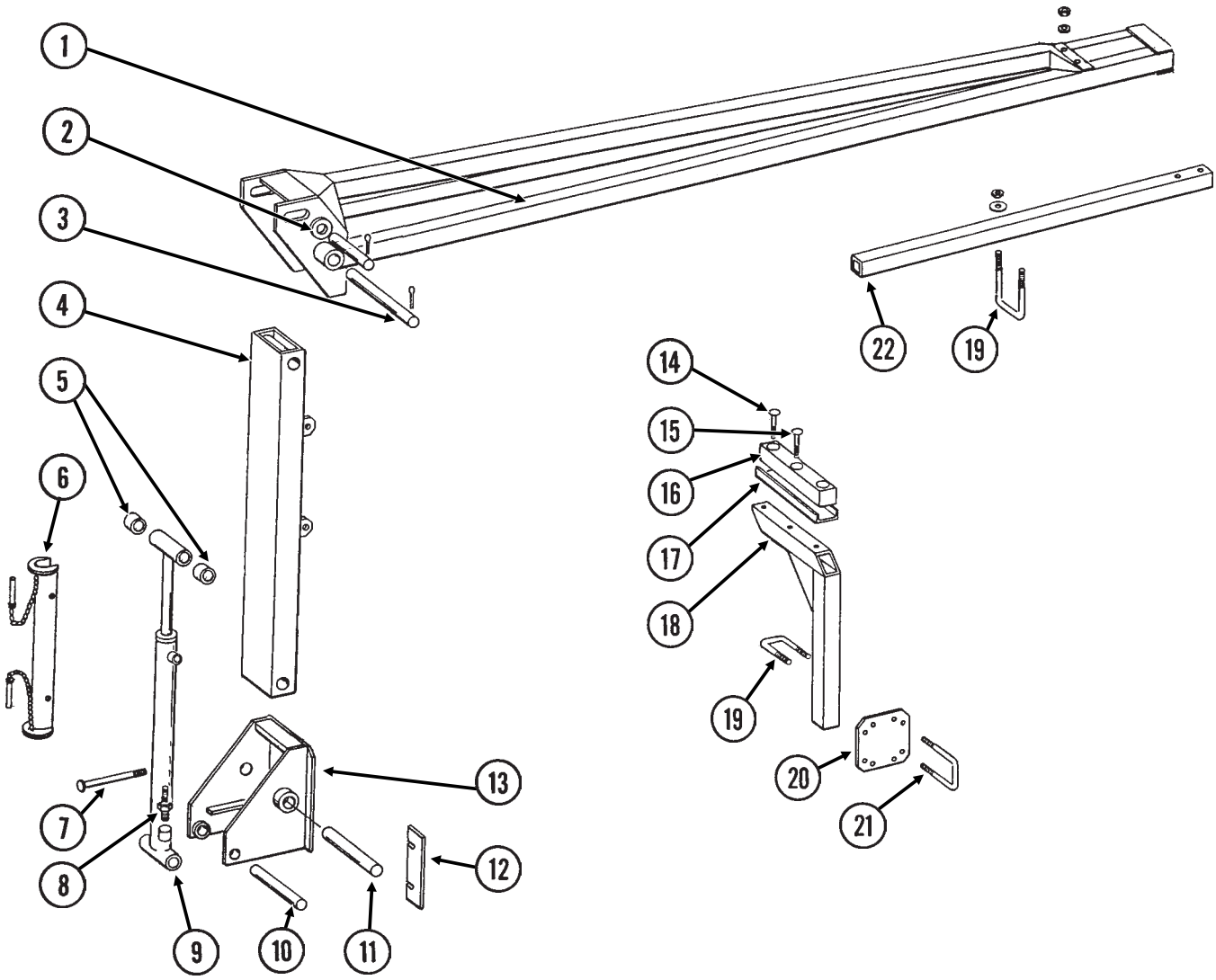
ELECTRICAL COMPONENTS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA3584	-	Ground Clamp
2.	GD9530	-	Contact
3.	GD9529	-	Housing
4.	GA6699	1	Double Light Assembly (Shown)
	GA6700	1	Double Light Assembly
	GR1203	-	Red Lens
	GR1204	-	Amber Lens
	GR1205	-	Cover
	GR1206	-	Rubber Grommet (4)
	GR1207	-	Lamp Unit
	GR1208	-	Bulb
5.	GA6794	1	Light Wiring Harness W/7 Terminal Female Connector, 53', 8 Row 36"/38"
	GA6795	-	Light Wiring Harness W/7 Terminal Female Connector, 59', 12 Row 30"
	GA6797	-	Light Wiring Harness W/7 Terminal Female Connector, 66', 12 Row 36"/38"
	GA6796	-	Light Wiring Harness W/7 Terminal Female Connector, 67', 16 Row 30"
	GA5385	-	7 Terminal Female Connector
6.	GD8740	-	Socket Contact, No. 14
7.	GD8741	-	Pin Connector , No. 14
8.	GD8739	-	Sealing Plug, No. 12
9.	GA6109	1	Connector With Cable Clamp, 23 Pin Capacity
10.	GA7862	-	Dust Cap W/Chain
11.	GA7863	-	Dust Cap W/Chain
12.	GA6108	1	Connector With Cable Clamp, 23 Socket Capacity
13.	GA7077	1-4	Indicator Light
14.	GA2612	3-5	Fuse Holder W/Spade
15.	GD2829	1-2	Fuse, 15 Amp, Type AGC
16.	GD10243	2-6	Fuse, MOL 10 Amp Delay Action
17.	GR1363	5	Hex Face Nut, $^{15}/_{32}$"-32
	GR1364	5	Internal Tooth Lock Washer, $^{15}/_{32}$"
18.	GD9897	1	Cover Plate (Shown)
	GD10318	-	Cover Plate, Planters Equipped With Two-Speed Point Row Clutch
19.	GR1292	4	Pan Head Screw, No. 8-32 x $^{1}/_{2}$"
20.	GD3860	-	O-Ring (If Applicable)
21.	GA2528	2	Switch, 3 Position Toggle, On/Off/On
22.	GA6978	2	Switch, 3 Position Momentary, On/Off/ Momentary On
23.	GA6977	1-2	Switch, 2 Position Toggle, On/Off
24.	GD9896	1	Mounting Bracket
25.	G10211	4	Washer, $^{1}/_{4}$" SAE
26.	GA6975	2	Knob
27.	GR1290	2	Cage Nut, $^{1}/_{4}$"-20
28.	GA7368	1	Harness W/Dust Cap And Power Cable
29.	G7408X	-	Control Console Assembly With Mounting Brackets, Short Harness W/Dust Cap And Power Cable (Shown)
	G7409X	-	Control Console Assembly With Mounting Brackets, Short Harness W/Dust Cap And Power Cable, Planters Equipped With Two-Speed Point Row Clutch
30.	GA7366	1	Hydraulic Wiring Harness W/Dust Cap, 40', 8 Row 36"/38" And 12 Row 30"
	GA7367	-	Hydraulic Wiring Harness W/Dust Cap, 50', 12 Row 36"/38" And 16 Row 30"
31.	GA7399	-	Harness Extension W/Dust Caps, 15'
32.	GA8047	-	Dust Plug
33.	GD11079	-	Housing
34.	GD11080	-	Pin Contact, No. 18
35.	GD11081	-	Seal
36.	GD11090	-	Housing
37.	GD11091	-	Socket Contact, No. 18
38.	GD11089	-	Sealing Plug
A.	G1K248	-	Harness Ends Repair Kit (3 Housings, 9 Seals, 9 Pin Contacts) (Items 33-35)
B.	G1K252	-	Harness Ends Repair Kit (3 Housings, 9 Seals, 9 Socket Contacts) (Items 35-37)

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

MARKER ASSEMBLY 8 ROW 36"/38" AND 12 ROW 30"

MKR019/MKR027(MKR14b)

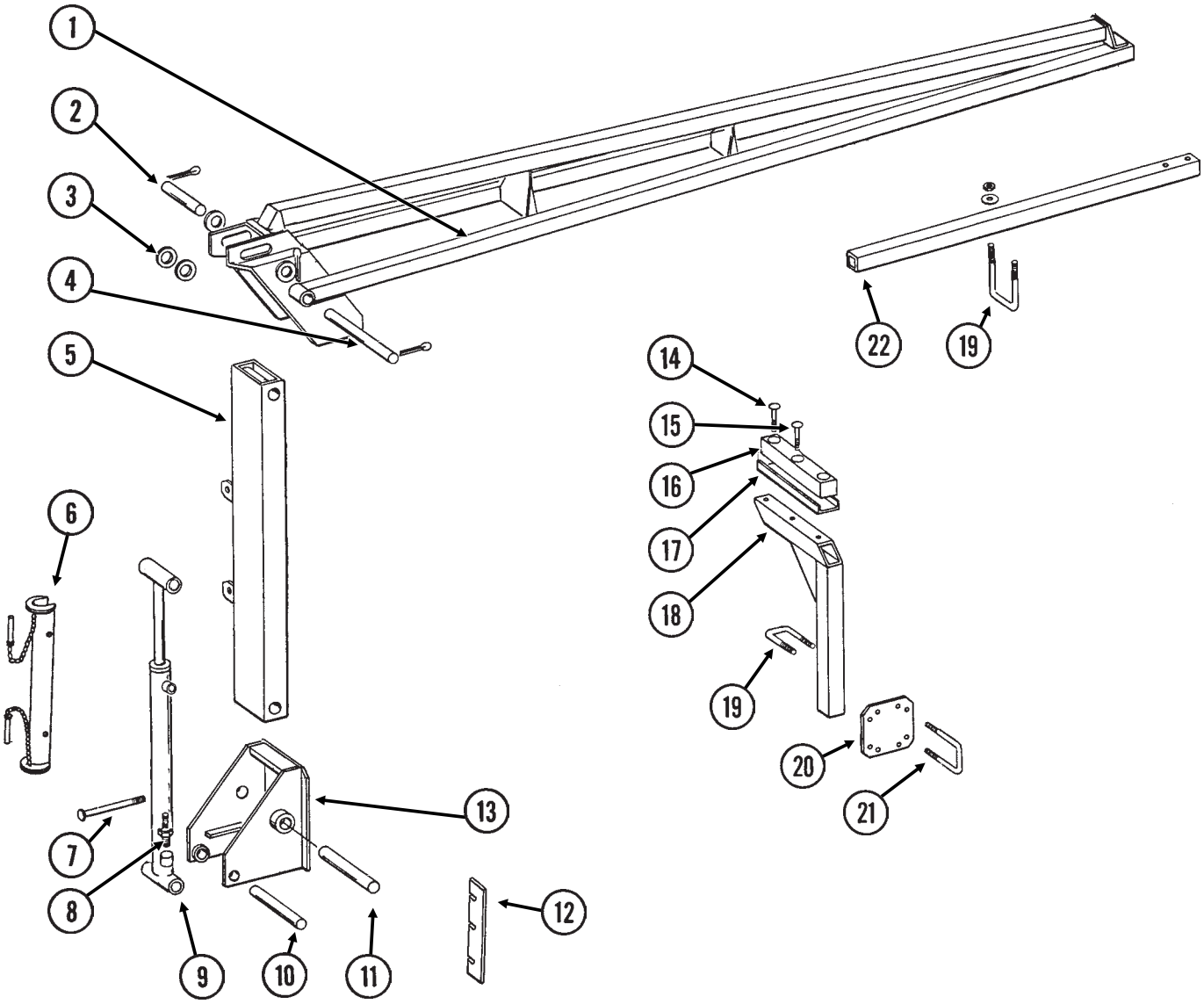


MARKER ASSEMBLY 8 ROW 36"/38" AND 12 ROW 30"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA4353	1	Arm W/Grease Fittings, 110", 12 Row 30"
	G10641	-	Grease Fitting, 1/8" NPT
	GA5192	-	Arm, 8 Row 36"/38"
2.	G10226	-	Washer, 1 1/4" SAE (As Required)
	G10159	-	Machine Bushing, 10 Gauge (As Required)
	G10322	-	Machine Bushing, 18 Gauge (As Required)
3.	GD3214	1	Pin, 1 1/4" x 12 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
4.	GA4611	1	First Stage W/Grease Fittings
	G10641	-	Grease Fitting, 1/8" NPT
5.	GD0752-41	4	Sleeve, 1"
6.	GA8170	1	Safety Lockup W/Detent Pins
	G10536	-	Detent Pin, 1/2" x 2 1/2"
7.	G10318	4	Hex Head Cap Screw, 5/8"-11 x 4 1/2" (Where Applicable)
	G10008	-	Hex Head Cap Screw, 5/8"-11 x 2" (Where Applicable)
	G10205	8	Washer, 5/8" SAE
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
8.	G6801-08	-	Elbow, 3/4"-16 JIC To 3/4"-16 O-Ring
	G6400-08	-	Adapter, 3/4"-16 JIC To 3/4"-16 O-Ring
	G6400-08-04	-	Adapter, 3/4"-16 JIC To 7/16"-20 O-Ring
9.		-	See “Marker Cylinder”, Page P89
10.	GD2161	2	Pin, 1 1/4" x 8 1/2"
	G10460	4	Cotter Pin, 1/4" x 2"
11.	GD0652	1	Pin, 1 1/4" x 9 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
12.	GD10792	-	Shim (As Required)
13.	GA5130	1	Mount
14.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10206	2	Washer, 1/2" SAE
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
15.	G10033	1	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10206	1	Washer, 1/2" SAE
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
16.	GD4512	1	Rubber Stop
17.	GD6772	1	Retainer
18.	GA7042	1	Stand, 20" (12 Row 30" Only)
19.	GD2721	-	U-Bolt, 2" x 2" x 1/2"-13
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
20.	GD9981	1	Bar
21.	GD4743	2	U-Bolt, 3" x 3" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
22.	GD0453-07	1	Extension Tube, 45", 12 Row 30"
	GD0453-08	-	Extension Tube, 65", 8 Row 36"/38"

MARKER ASSEMBLY 12 ROW 36"/38" AND 16 ROW 30"

MKR019/MKR023MKR027(MKR15b)

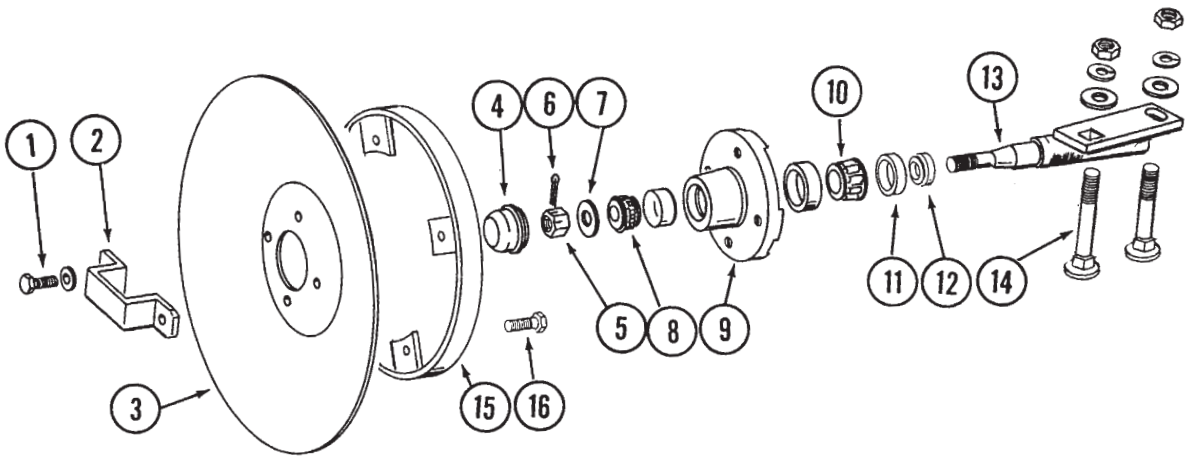


MARKER ASSEMBLY 12 ROW 36"/38" AND 16 ROW 30"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA7116	1	Arm, 138 1/4", 12 Row 36"/38"
	GA7118	-	Arm, 172 1/4", 16 Row 30"
2.	GD1701	1	Pin, 1 1/4" x 6 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
3.	G10226	-	Washer, 1 1/4" SAE
	G10159	-	Machine Bushing, 10 Gauge
	G10322	-	Machine Bushing, 18 Gauge
4.	GD0737	1	Pin, 1 1/4" x 13 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
5.	GA4878	1	First Stage W/Grease Fittings, R.H.
	GA4983	-	First Stage W/Grease Fittings, L.H.
	G10641	-	Grease Fitting, 1/8" NPT
6.	GA8170	1	Safety Lockup W/Detent Pins
	G10536	-	Detent Pin, 1/2" x 2 1/2"
7.	G10068	-	Hex Head Cap Screw, 5/8"-11 x 6"
	G10008	-	Hex Head Cap Screw, 5/8"-11 x 2"
	G10205	6	Washer, 5/8" SAE
	G10230	6	Lock Washer, 5/8"
	G10104	6	Hex Nut, 5/8"-11
8.	G6801-08	-	Elbow, 3/4"-16 JIC To 3/4"-16 O-Ring
	G6400-08	-	Adapter, 3/4"-16 JIC To 3/4"-16 O-Ring
	G6400-08-04	-	Adapter, 3/4"-16 JIC To 7/16"-20 O-Ring
9.		-	See “Marker Cylinder”, Page P89
10.	GD0652	1	Pin, 1 1/4" x 9 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
11.	GD7209	1	Pin, 1 1/4" x 11 1/2"
	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10108	1	Lock Nut, 3/8"-16
12.	GD10793	-	Shim (As Required)
13.	GA4877	1	Mount
14.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10206	2	Washer, 1/2" SAE
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
15.	G10033	1	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10206	1	Washer, 1/2" SAE
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
16.	GD4512	1	Rubber Stop
17.	GD6772	1	Retainer
18.	GA7043	1	Stand, 30"
19.	GD2721	3	U-Bolt, 2" x 2" x 1/2"-13
	G10228	6	Lock Washer, 1/2"
	G10102	6	Hex Nut, 1/2"-13
20.	GD9981	1	Bar
21.	GD4743	2	U-Bolt, 3" x 3" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
22.	GD0453-09	1	Extension Tube, 75", 12 Row 36"/38"
	GD0453-03	-	Extension Tube, 50", 16 Row 30"

MARKER SPINDLE/HUB/BLADE

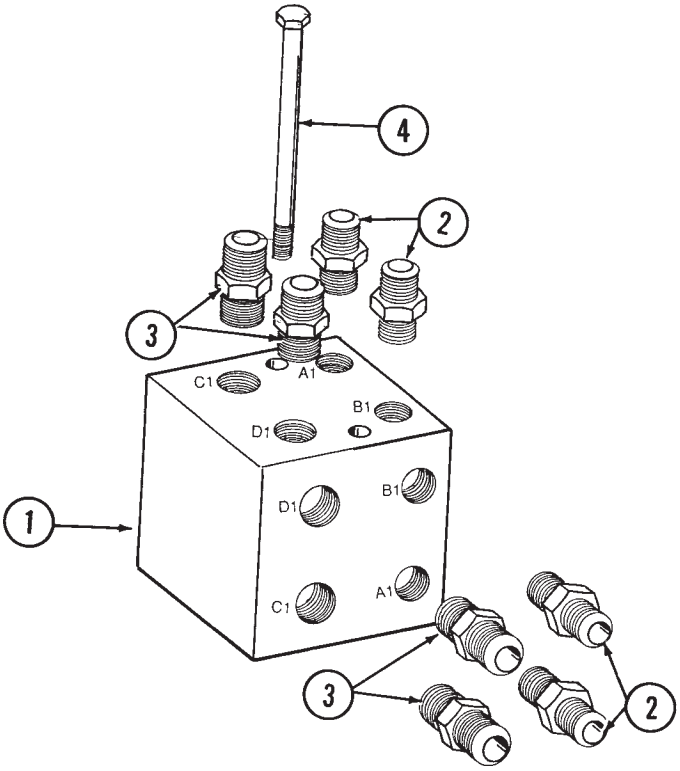
MKR020(MKR4)



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
15.	GA5853	1	Depth Band
16.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
	G10109	4	Lock Nut, 5/16"-18
A.	GA1679	-	Hub And Spindle Assembly, L.H. (Items 1, 2 And 4-13)
	GA1678	-	Hub And Spindle Assembly, R.H. (Items 1, 2 And 4-13)

JUNCTION BLOCK - LOCATED ON R.H. SIDE OF CENTER PIVOT

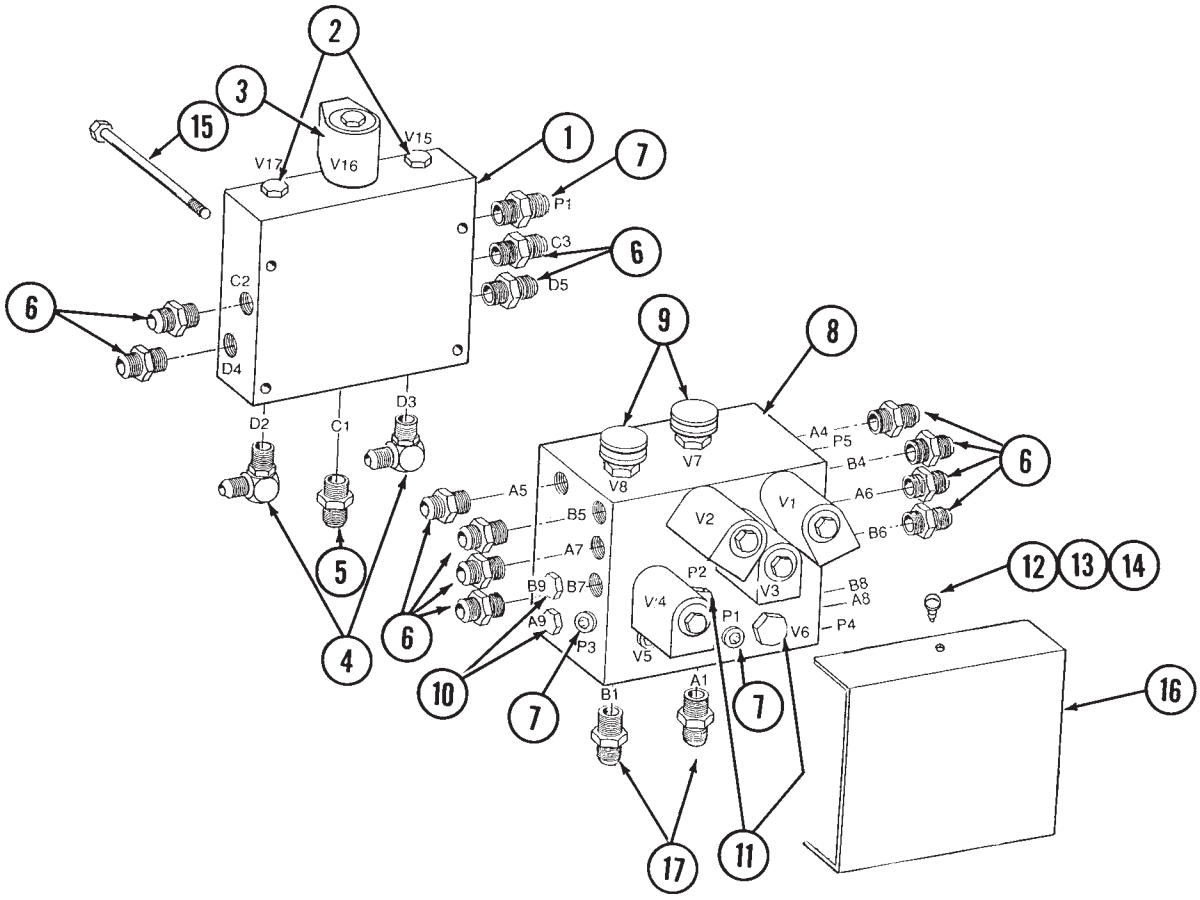
VVB036(TWL24)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9971	1	Block
2.	G6400-08	4	Connector, 3/4"-16 JIC To 3/4"-16 O-Ring
3.	G6400-10-08	4	Connector, 7/8"-14 JIC To 3/4"-16 O-Ring
4.	G10172	2	Hex Head Cap Screw, 3/8"-16 x 5"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16

VALVE BLOCKS - LOCATED ON REAR CENTER FRAME

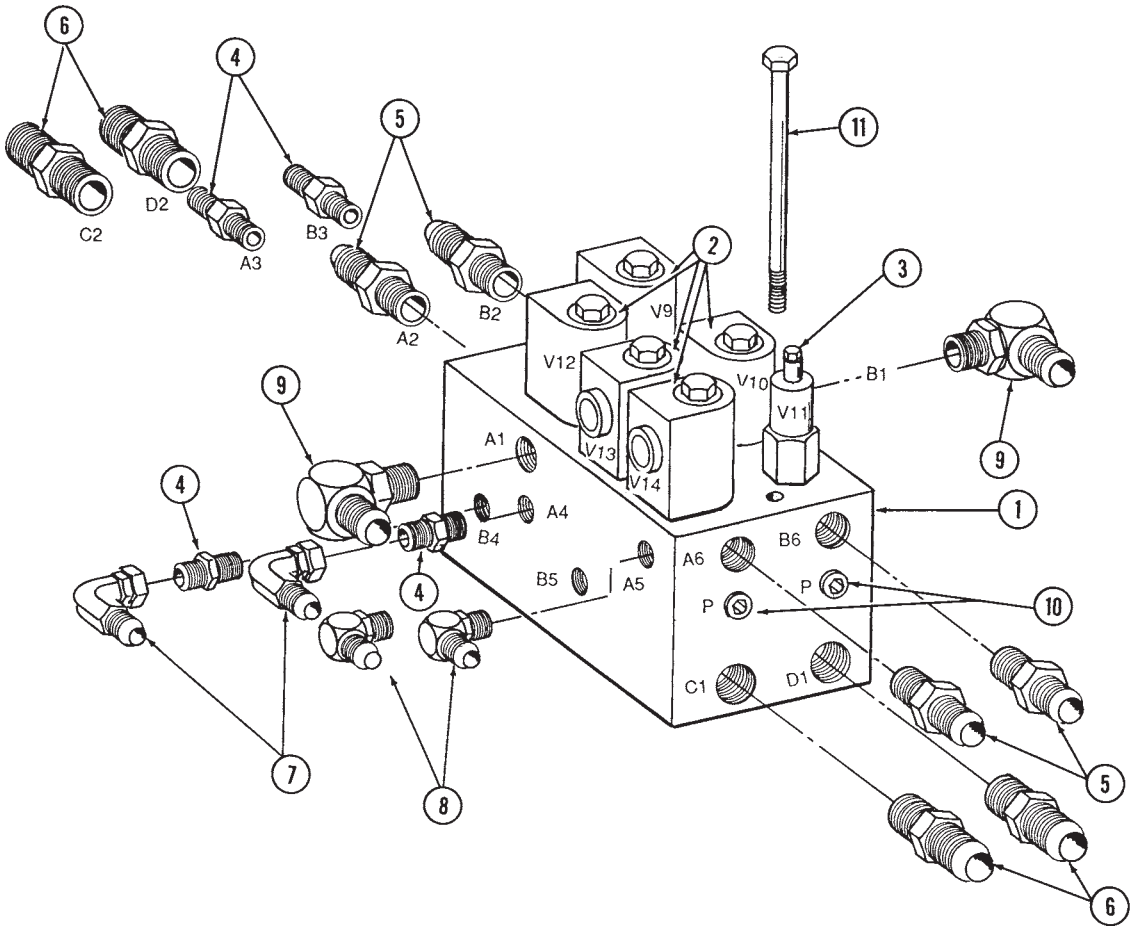
VVB034(TWL25)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9977	1	Block
2.		2	See “Check Valve”, Page P71
3.		5	See “Solenoid Valve”, Page P70
4.	G6801-08-10	2	Elbow, 90°, 7/8"-14 O-Ring To 3/4"-16 JIC
5.	G6400-10	1	Connector, 7/8"-14 JIC To 7/8"-14 O-Ring
6.	G6400-08	12	Connector, 3/4"-16 JIC To 3/4"-16 O-Ring
7.	G6408-H06-O	6	Hex Socket Head Plug, 9/16"-18 O-Ring
8.	GD9533	1	Block
9.		2	See “Flow Control Valve”, Page P70
10.	G6408-08	4	Plug, 3/4"-16 O-Ring
11.	G6408-10	2	Plug, 7/8"-14 O-Ring
12.	G10248	2	Screw
13.	G10767	1	Screw
14.	GD7363-04	1	Spacer
15.	G10583	4	Hex Head Cap Screw, 5/16"-18 x 2 3/4"
	G10232	4	Lock Washer, 5/16"
16.	GD9583	1	Cover
17.	G6400-08-10	2	Connector, 7/8"-14 O-Ring To 3/4"-16 JIC

VALVE BLOCK - LOCATED ON HITCH

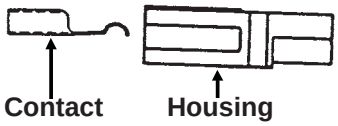
VVB035(TWL26b)

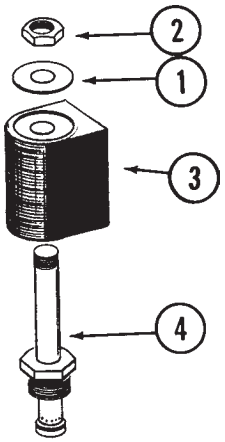


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9905	1	Block
2.		-	See “Solenoid Valve”, Page P70
3.		-	See “Pressure Relief Valve”, Page P71
4.	G6400-06	4	Connector, $^{9}/_{16}$"-18 JIC To $^{9}/_{16}$"-18 O-Ring
5.	G6400-08	4	Connector, $^{3}/_{4}$"-16 JIC To $^{3}/_{4}$"-16 O-Ring
6.	G6400-10	4	Connector, $^{7}/_{8}$"-14 JIC To $^{7}/_{8}$"-14 O-Ring
7.	G6500-06	2	Elbow, 90°, $^{9}/_{16}$"-18 JIC To $^{9}/_{16}$"-18 Swivel
8.	G6801-06	2	Elbow, 90°, $^{9}/_{16}$"-18 O-Ring To $^{9}/_{16}$"-18 JIC
9.	G6801-08	2	Elbow, 90°, $^{3}/_{4}$"-16 O-Ring To $^{3}/_{4}$"-16 JIC
10.	G6408-H06-O	2	Plug, $^{9}/_{16}$"-18 O-Ring
11.		-	See “Hose Takeup”, Pages P34 And P35

SOLENOID VALVE

VVB019(TWL18/TWL27)

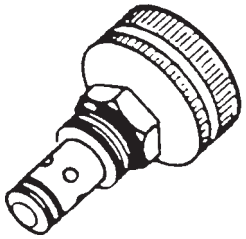




ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0760	1	Plate
2.	GR0761	1	Hex Nut
3.	G1K274	1	Coil Kit W/Contacts And Housings
	GD9529	2	Housing
	GD9530	2	Contact
4.	GR0763	1	Cartridge
A.	G1K275	-	Solenoid Valve Kit W/Contacts And Housings
	GD9529	2	Housing
	GD9530	2	Contact
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

FLOW CONTROL VALVE

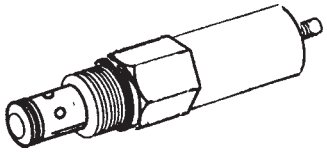
VVB020(TWL28)



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

PRESSURE RELIEF VALVE

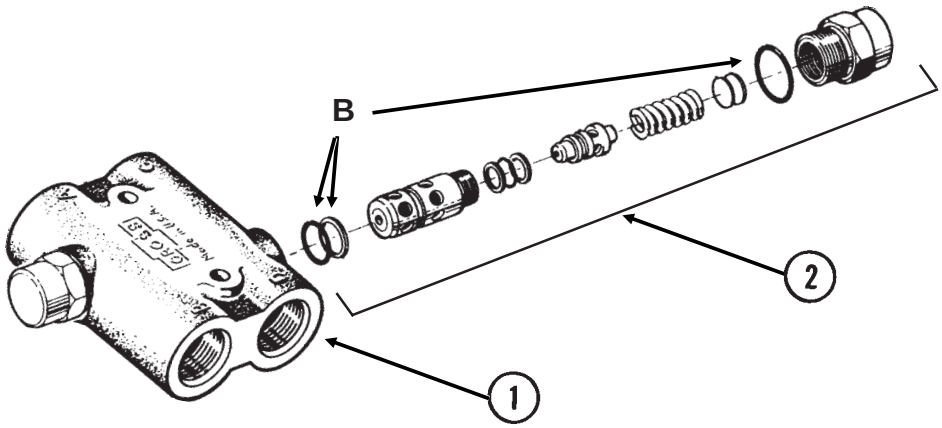
VVB020(TWL29)



ITEM	PART NO.	QTY.	DESCRIPTION
A.	GA3407	-	Pressure Relief Valve, 1000 PSI
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

RELIEF VALVE Located On Hitch - Serial No. 611994 & On

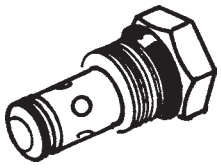
(TWL147)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1402	1	Body
2.	GR1403	2	Cartridge
A.	GA8129	-	Relief Valve Complete
B.	GR1404	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

CHECK VALVE

VVB020(TWL30)

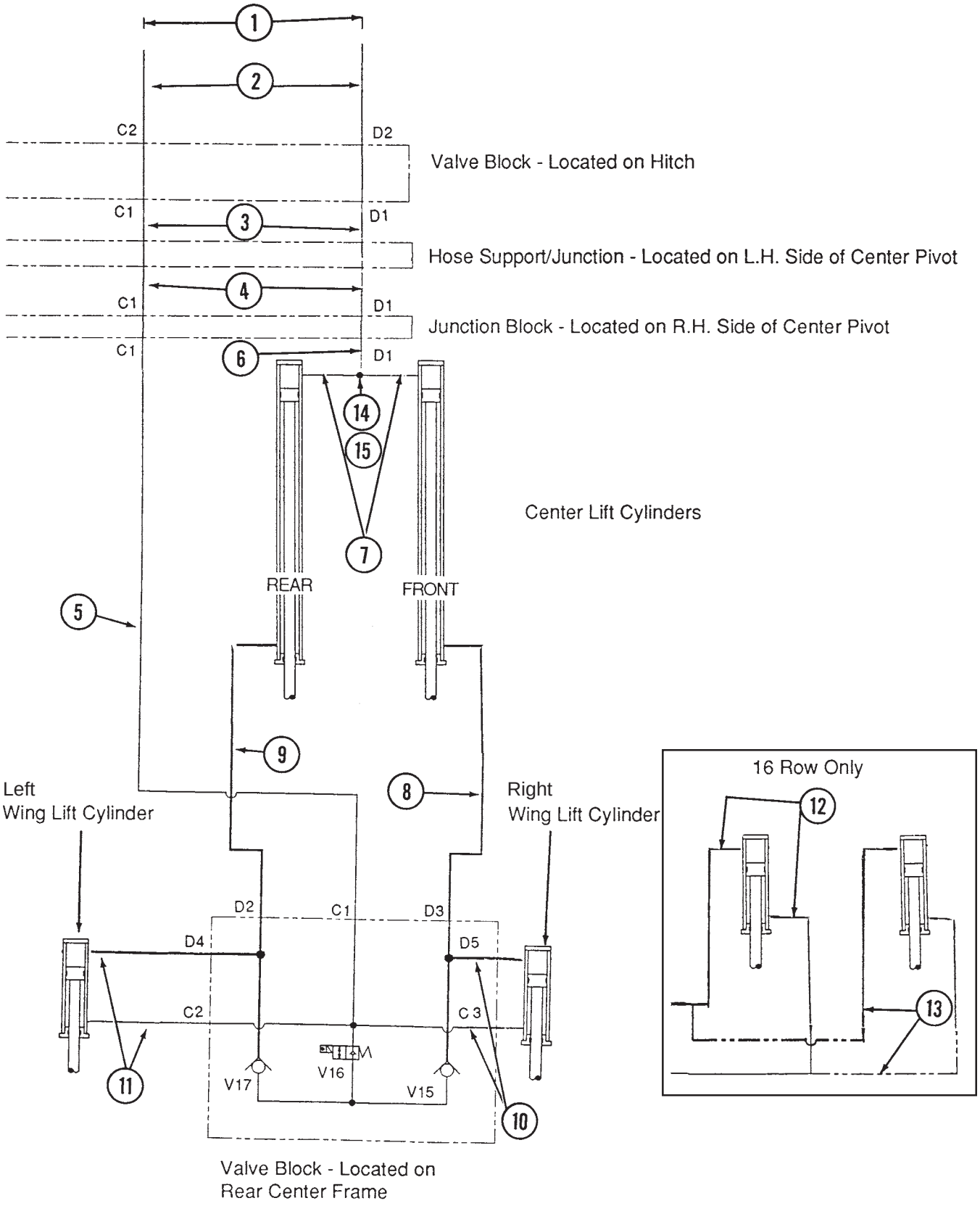


ITEM	PART NO.	QTY.	DESCRIPTION
A.	GA4293	-	Check Valve
B.	GR0764	-	Seal Kit, Includes: (2)O-Rings, (1)BU Ring

HYDRAULIC LIFT SYSTEM

Z229(TWL31)

Prior To Serial No. 611994



HYDRAULIC LIFT SYSTEM

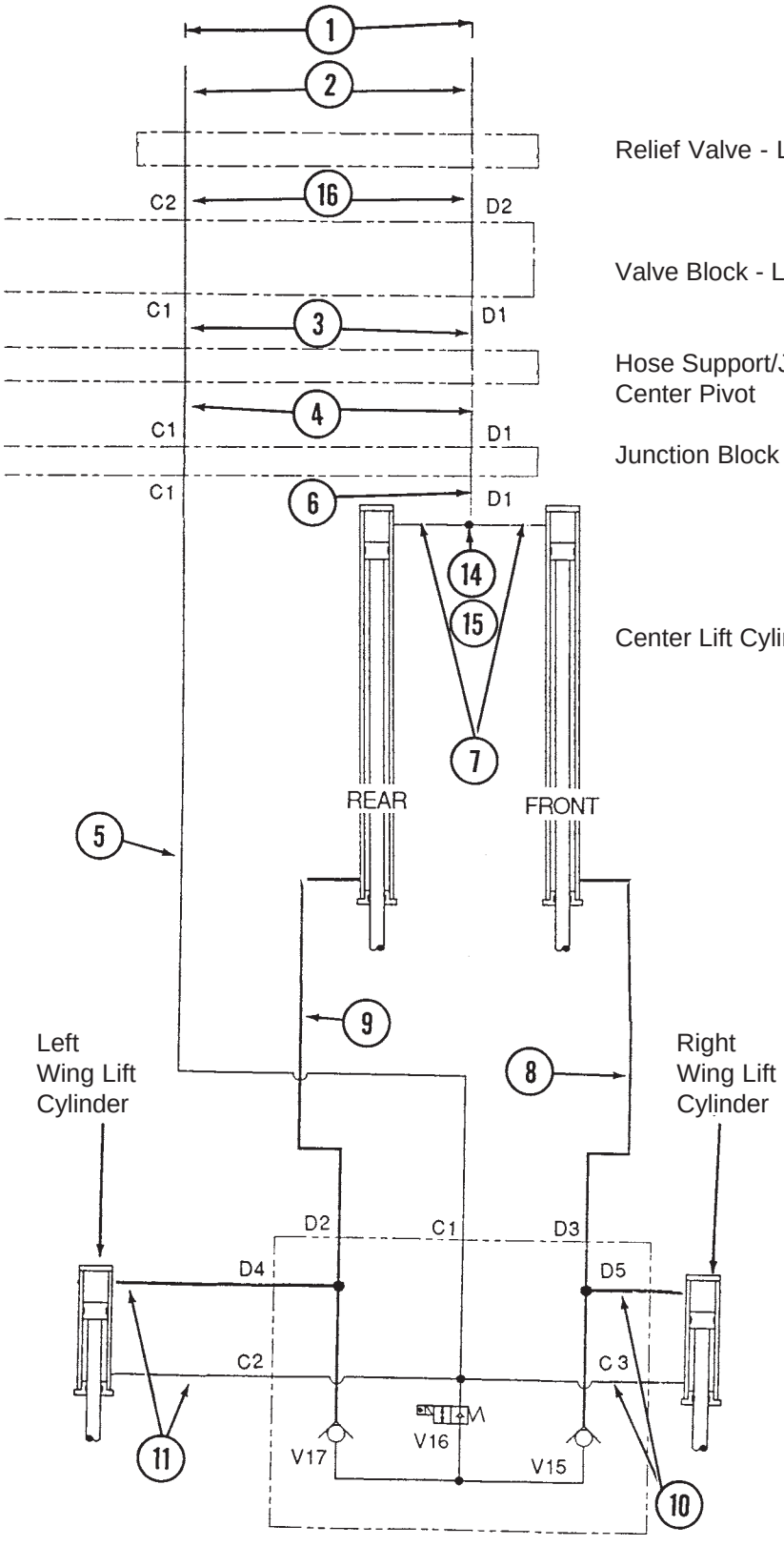
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD4086	2	Tip, Pioneer
2.	*A1466	2	Hose Assembly, 1/2" x 156", 8 Row 36"/38" “Y” Hitch
	*A1492	2	Hose Assembly, 1/2" x 203", 8 Row 36"/38" “T” Hitch
	*A1489	2	Hose Assembly, 1/2" x 191", 12 Row 30" “Y” Hitch
	*A1444	2	Hose Assembly, 1/2" x 250", 12 Row 30" “T” Hitch
	*A1491	2	Hose Assembly, 1/2" x 246", 12 Row 36"/38", “Y” Hitch
	*A1447	2	Hose Assembly, 1/2" x 300", 12 Row 36"/38", “T” Hitch
	*A1491	2	Hose Assembly, 1/2" x 246", 16 Row 30" “Y” Hitch
	*A1447	2	Hose Assembly, 1/2" x 300", 16 Row 30", “T” Hitch
3.	*A1494	2	Hose Assembly, 1/2" x 112", 8 Row 36"/38" “Y” Hitch
	*A1463	2	Hose Assembly, 1/2" x 68", 8 Row 36"/38" “T” Hitch
	*A1464	2	Hose Assembly, 1/2" x 72", 12 Row 30" “T” Hitch
	*A1467	2	Hose Assembly, 1/2" x 120", 12 Row 30"/36"/38" “Y” Hitch
	*A1462	2	Hose Assembly, 1/2" x 78", 12 Row 36"/38" And 16 Row 30" “T” Hitch
	*A1478	2	Hose Assembly, 1/2" x 128", 16 Row 30" “Y” Hitch
4.	*A1425	2	Hose Assembly, 1/2" x 60", 8 Row 36"/38" And 12 Row 36"/38"
	*A1403	2	Hose Assembly, 1/2" x 56", 12 Row 30" And 16 Row 30"
5.	*A1424	1	Hose Assembly, 1/2" x 30"
6.	*A1404	1	Hose Assembly, 1/2" x 41"
7.	*A1076	2	Hose Assembly, 3/8" x 30"
8.	*A3128	1	Hose Assembly, 3/8" x 52"
9.	*A3131	1	Hose Assembly, 3/8" x 42"
10.	*A3101	2	Hose Assembly, 3/8" x 168", 8 Row 36"/38"
	*A1028	2	Hose Assembly, 3/8" x 186", 12 Row 30"
	*A1031	2	Hose Assembly, 3/8" x 234", 12 Row 36"/38"
	*A1057	2	Hose Assembly, 3/8" x 216", 16 Row 30"
11.	*A1093	2	Hose Assembly, 3/8" x 230", 8 Row 36"/38"
	*A1033	2	Hose Assembly, 3/8" x 250", 12 Row 30"
	*A3185	2	Hose Assembly, 3/8" x 284", 12 Row 36"/38"
	*A1034	2	Hose Assembly, 3/8" x 272", 16 Row 30"
12.	*A3122	4	Hose Assembly, 3/8" x 10 1/2", 16 Row 30" Only
13.	*A1018	4	Hose Assembly, 3/8" x 40", 16 Row 30" Only
14.	G2703-10	1	Tee, 7/8"-14 JIC Bulkhead
15.	G2406-10-08	2	Reducer, 7/8"-14 JIC To 3/4"-16 JIC

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

HYDRAULIC LIFT SYSTEM

Z229(TWL146)

Serial No. 611994 & On



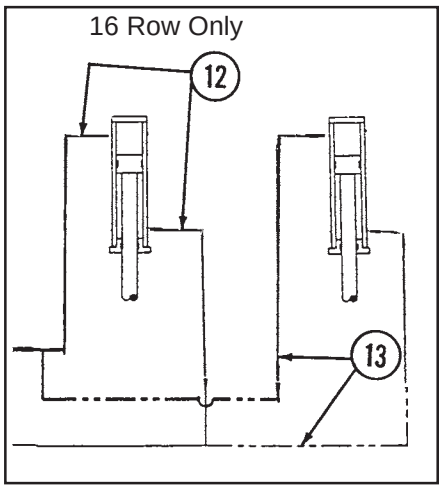
Relief Valve - Located On Hitch

Valve Block - Located On Hitch

Hose Support/Junction - Located On L.H. Side Of Center Pivot

Junction Block - Located On R.H. Side Of Center Pivot

Center Lift Cylinders



Valve Block - Located On Rear Center Frame

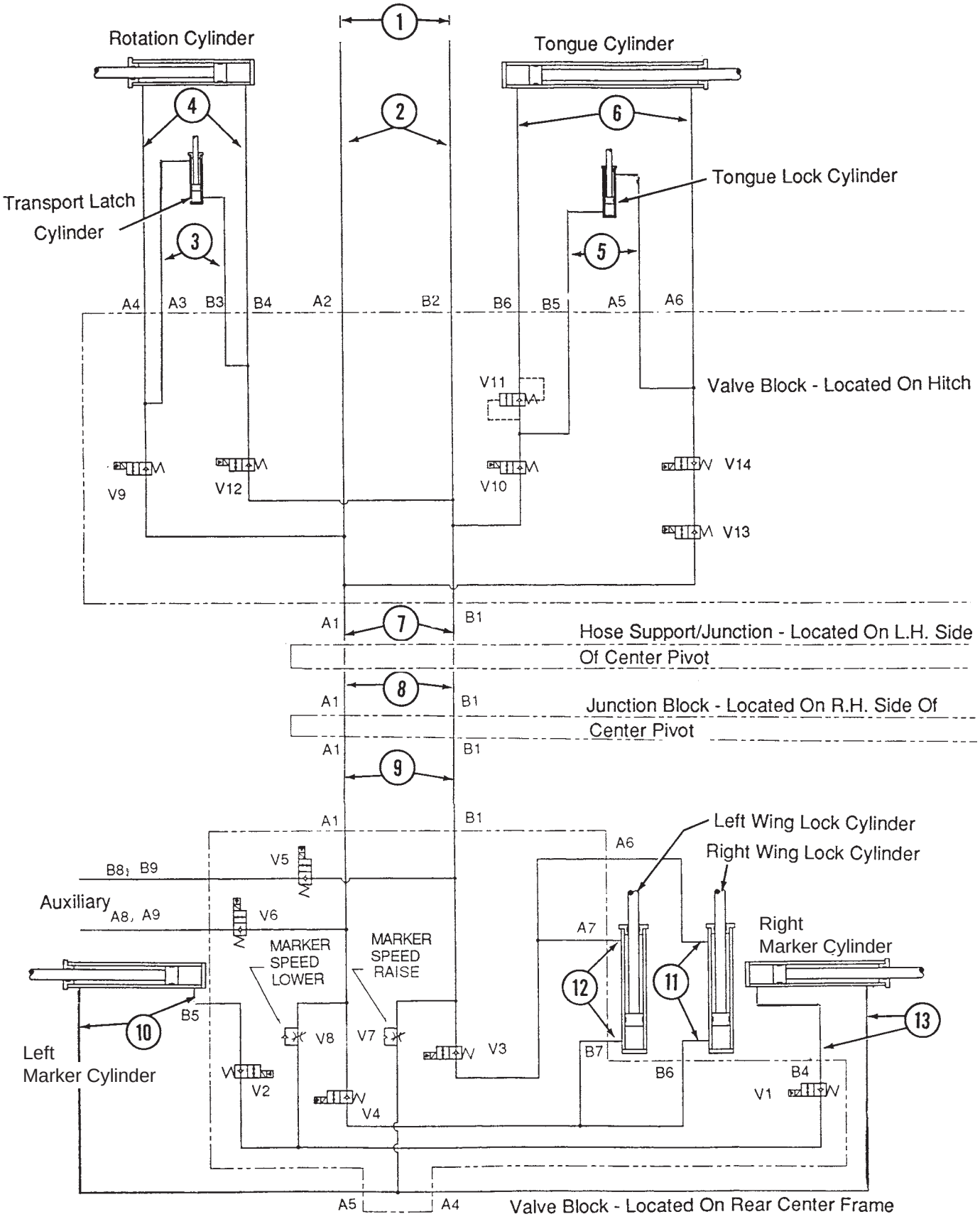
HYDRAULIC LIFT SYSTEM

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD4086	2	Tip, Pioneer
2.	*A1417	2	Hose Assembly, 1/2" x 138", 8 Row 36"/38" "Y" Hitch
	*A8204	2	Hose Assembly, 1/2" x 159", 8 Row 36"/38" "T" Hitch
	*A8206	2	Hose Assembly, 1/2" x 147", 12 Row 30" "Y" Hitch
	*A8205	2	Hose Assembly, 1/2" x 182", 12 Row 30" "T" Hitch
	*A8200	2	Hose Assembly, 1/2" x 178", 12 Row 36"/38" And 16 Row 30" "Y" Hitch
	*A8207	2	Hose Assembly, 1/2" x 209", 12 Row 36"/38" And 16 Row 30" "T" Hitch
3.	*A1494	2	Hose Assembly, 1/2" x 112", 8 Row 36"/38" "Y" Hitch
	*A1463	2	Hose Assembly, 1/2" x 68", 8 Row 36"/38" "T" Hitch
	*A1464	2	Hose Assembly, 1/2" x 72", 12 Row 30" "T" Hitch
	*A1467	2	Hose Assembly, 1/2" x 120", 12 Row 30"/36"/38" "Y" Hitch
	*A1462	2	Hose Assembly, 1/2" x 78", 12 Row 36"/38" And 16 Row 30" "T" Hitch
	*A1478	2	Hose Assembly, 1/2" x 128", 16 Row 30" "Y" Hitch
4.	*A1425	2	Hose Assembly, 1/2" x 60", 8 Row 36"/38" And 12 Row 36"/38"
	*A1403	2	Hose Assembly, 1/2" x 56", 12 Row 30" And 16 Row 30"
5.	*A1424	1	Hose Assembly, 1/2" x 30"
6.	*A1404	1	Hose Assembly, 1/2" x 41"
7.	*A1076	2	Hose Assembly, 3/8" x 30"
8.	*A3128	1	Hose Assembly, 3/8" x 52"
9.	*A3131	1	Hose Assembly, 3/8" x 42"
10.	*A3101	2	Hose Assembly, 3/8" x 168", 8 Row 36"/38"
	*A1028	2	Hose Assembly, 3/8" x 186", 12 Row 30"
	*A1031	2	Hose Assembly, 3/8" x 234", 12 Row 36"/38"
	*A1057	2	Hose Assembly, 3/8" x 216", 16 Row 30"
11.	*A1093	2	Hose Assembly, 3/8" x 230", 8 Row 36"/38"
	*A1033	2	Hose Assembly, 3/8" x 250", 12 Row 30"
	*A3185	2	Hose Assembly, 3/8" x 284", 12 Row 36"/38"
	*A1034	2	Hose Assembly, 3/8" x 272", 16 Row 30"
12.	*A3122	4	Hose Assembly, 3/8" x 10 1/2", 16 Row 30" Only
13.	*A1018	4	Hose Assembly, 3/8" x 40", 16 Row 30" Only
14.	G2703-10	1	Tee, 7/8"-14 JIC Bulkhead
15.	G2406-10-08	2	Reducer, 7/8"-14 JIC To 3/4"-16 JIC
16.	*A8202	2	Hose Assembly, 1/2" x 17", 8 Row 36"/38" "Y" Hitch
	*A8203	2	Hose Assembly, 1/2" x 43", 8 Row 36"/38" "T" And 12 Row 30" "Y" Hitch
	*A1463	2	Hose Assembly, 1/2" x 68", 12 Row 30" "T" Hitch, 12 Row 36"/38" "Y" Hitch And 16 Row 30" "Y" Hitch
	*A8201	2	Hose Assembly, 1/2" x 90", 12 Row 36"/38" "T" Hitch And 16 Row 30" "T" Hitch

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

HYDRAULIC MARKER/FOLD SYSTEM

Z229(TWL32)



HYDRAULIC MARKER/FOLD SYSTEM

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD4086	2	Tip, Pioneer
2.	*A1075	2	Hose Assembly, 3/8" x 156", 8 Row 36"/38" "Y" Hitch
	*A3182	2	Hose Assembly, 3/8" x 203", 8 Row 36"/38" "T" Hitch
	*A3133	2	Hose Assembly, 3/8" x 191", 12 Row 30" "Y" Hitch
	*A1032	2	Hose Assembly, 3/8" x 250", 12 Row 30" "T" Hitch
	*A3183	2	Hose Assembly, 3/8" x 246", 12 Row 36"/38" And 16 Row 30", "Y" Hitch
	*A3184	2	Hose Assembly, 3/8" x 300", 12 Row 36"/38" And 16 Row 30", "T" Hitch
3.	*A1170	2	Hose Assembly, 1/4" x 90", 8 Row 36"/38" "Y" Hitch
	*A1106	2	Hose Assembly, 1/4" x 130", 8 Row 36"/38" "T" Hitch
	*A1103	2	Hose Assembly, 1/4" x 110", 12 Row 30" "Y" Hitch
	*A1183	2	Hose Assembly, 1/4" x 157", 12 Row 30" "T" Hitch And 12 Row 36"/38" "Y" Hitch
	*A1156	2	Hose Assembly, 1/4" x 204", 12 Row 36"/38" "T" Hitch
	*A1129	2	Hose Assembly, 1/4" x 168", 16 Row 30" "Y" Hitch
	*A1119	2	Hose Assembly, 1/4" x 216", 16 Row 30" "T" Hitch
4.	*A1105	2	Hose Assembly, 1/4" x 125", 8 Row 36"/38" "Y" Hitch
	*A1114	2	Hose Assembly, 1/4" x 85", 8 Row 36"/38" And 12 Row 30" "T" Hitch
	*A1106	2	Hose Assembly, 1/4" x 130", 12 Row 30"/36"/38" "Y" Hitch
	*A1102	2	Hose Assembly, 1/4" x 95", 12 Row 36"/38" "T" Hitch And 16 Row 30" "T" Hitch
	*A1116	2	Hose Assembly, 1/4" x 136", 16 Row 30" "Y" Hitch
5.	*A1181	2	Hose Assembly, 1/4" x 32", 8 Row 36"/38" "Y" Hitch
	*A1139	2	Hose Assembly, 1/4" x 40", 8 Row 36"/38" "T" Hitch, 12 Row 30" "Y"/"T" Hitch, 12 Row 36"/38" "Y"/"T" Hitch And 16 Row 30" "Y"/"T" Hitch
6.	*A1022	2	Hose Assembly, 3/8" x 60", 8 Row 36"/38" "Y" Hitch
	*A1087	2	Hose Assembly, 3/8" x 74", 8 Row 36"/38" "T" Hitch
	*A3156	2	Hose Assembly, 3/8" x 68", 12 Row 30"/36"/38" "Y" Hitch
	*A3159	2	Hose Assembly, 3/8" x 97", 12 Row 36"/38" And 16 Row 30" "T" Hitch
	*A3129	2	Hose Assembly, 3/8" x 79", 12 Row 30" "T" Hitch
	*A3118	2	Hose Assembly, 3/8" x 80", 16 Row 30","Y" Hitch
7.	*A1024	2	Hose Assembly, 3/8" x 116", 8 Row 36"/38" "Y" Hitch
	*A1039	2	Hose Assembly, 3/8" x 76", 8 Row 36"/38" "T" Hitch
	*A3129	2	Hose Assembly, 3/8" x 79", 12 Row 30" "T" Hitch
	*A1011	2	Hose Assembly, 3/8" x 125", 12 Row 30"/36"/38" "Y" Hitch
	*A3113	2	Hose Assembly, 3/8" x 84", 12 Row 36"/38" And 16 Row 30" "T" Hitch
	*A1041	2	Hose Assembly, 3/8" x 130", 16 Row 30" "Y" Hitch
8.	*A1022	2	Hose Assembly, 3/8" x 60", 8 Row 36"/38" And 12 Row 36"/38"
	*A1021	2	Hose Assembly, 3/8" x 56", 12 Row 30" And 16 Row 30"
9.	*A1076	2	Hose Assembly, 3/8" x 30"
10.	*A3141	2	Hose Assembly, 3/8" x 260", 8 Row 36"/38"
	*A1034	2	Hose Assembly, 3/8" x 272", 12 Row 30"
	*A3106	2	Hose Assembly, 3/8" x 318", 12 Row 36"/38"
	*A3181	2	Hose Assembly, 3/8" x 332", 16 Row 30"
11.	*A1076	2	Hose Assembly, 3/8" x 30"
12.	*A1055	2	Hose Assembly, 3/8" x 66"
13.	*A1054	2	Hose Assembly, 3/8" x 204", 8 Row 36"/38"
	*A3163	2	Hose Assembly, 3/8" x 225", 12 Row 30"
	*A1036	2	Hose Assembly, 3/8" x 280", 12 Row 36"/38"
	*A1097	2	Hose Assembly, 3/8" x 288", 16 Row 30"

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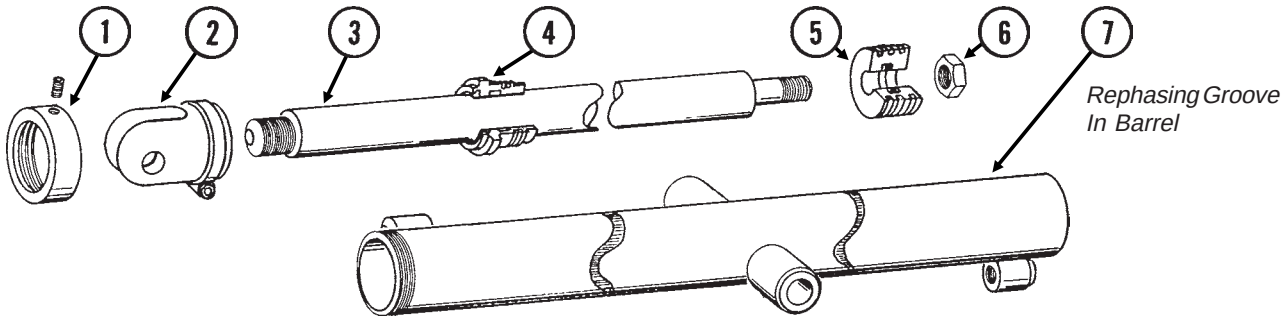
CENTER LIFT CYLINDER, ALL SIZES

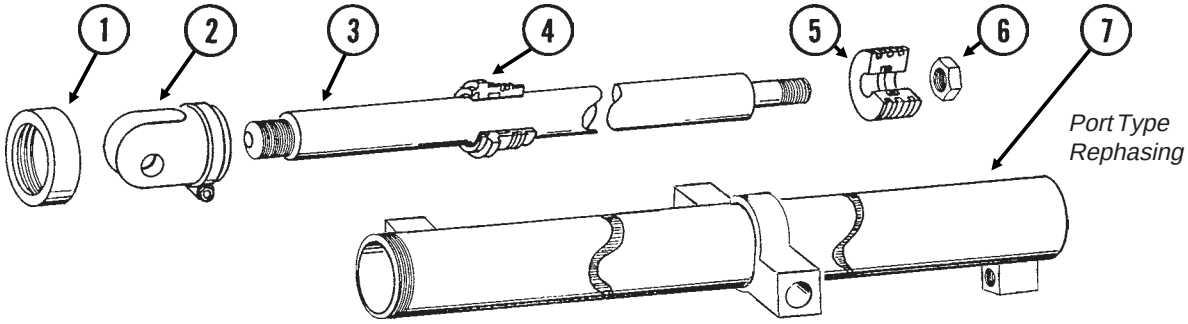
CYL057(CYL38a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7225	1	Cap W/Set Screw
	G10405	-	Socket Head Set Screw, 1/4"-20 x 1/4"
2.	GA7224	1	Clevis
3.	GD10210	1	Rod Assembly
4.	GD10211	1	Gland
5.	GD10209	1	Piston
6.	GR0983	1	Lock Nut, 1"-14
7.	GA7223	1	Barrel
A.	GA6956	-	Cylinder Complete, 3" x 48" *(Part Number Stamped On Barrel)*
B.	GR1312	-	Seal Kit, Includes: (2) Cast Iron Rings, (3) O-Rings, (3) BU Ring, (1) U-Cup, (1) Wiper, (1) Teflon Ring

CENTER LIFT CYLINDER, ALL SIZES

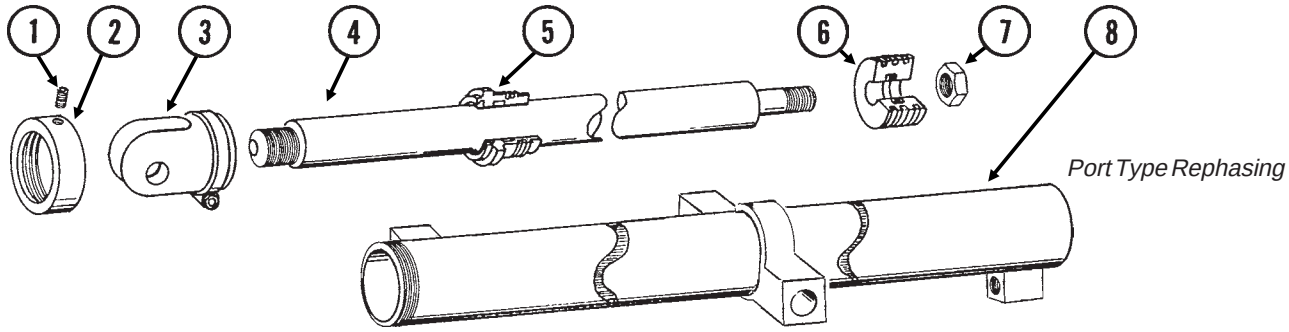
CYL057(CYL40a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD10937	1	Cap
2.	GA7224	1	Clevis
3.	GD10936	1	Rod Assembly
4.	GD10211	1	Gland
5.	GD10938	1	Piston
6.	GR0983	1	Lock Nut, 1"-14
7.	GA7940	1	Barrel
A.	GA7837	-	Cylinder Complete, 3" x 48" *(Part Number Stamped On Barrel)*
B.	GR1374	-	Seal Kit, Includes: (1) Ring, (1) Seal, (2) O-Rings, (1) BU Washer, (1) Wiper, (1) U-Cup

CENTER LIFT CYLINDER, ALL SIZES

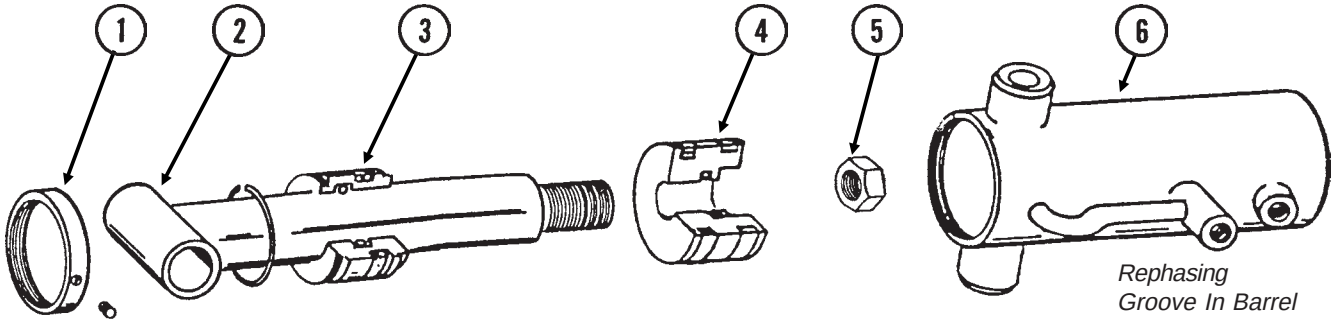
CYL031/CYL011(CYL39a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10907	1	Set Screw, 1/4"-20 x 1/4"
2.	GD11193	1	Cap
3.	GA7224	1	Clevis
4.	GD10936	1	Rod Assembly
5.	GD10211	1	Gland
6.	GD11253	1	Piston
7.	GR0983	1	Lock Nut, 1"-14
8.	GA8149	1	Barrel
A.	GA8107	-	Cylinder Complete, 3" x 48" *(Part Number Stamped On Barrel)*
B.	GR1428	-	Seal Kit, Includes: (1) Ring, (2) O-Rings, (2) BU Washer, (1) Wiper, (1) U-Cup, (1) Piston Seal, (2) Cast Rings

WING LIFT CYLINDER, 8 AND 12 ROW

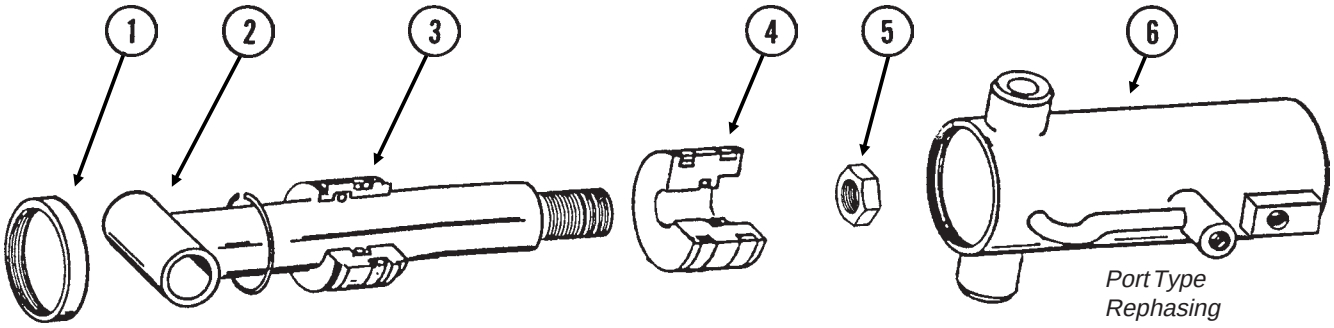
CYL031/CYL011(CYL8c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7230	1	Cap W/Set Screw
	G10405	-	Socket Head Set Screw, 1/4"-20 x 1/4"
2.	GA7229	1	Rod W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
3.	GD10215	1	Gland
4.	GD10214	1	Piston
5.	GR0983	1	Lock Nut, 1"-14
6.	GA7228	1	Barrel
A.	GA6958	-	Cylinder Complete, 4 1/4" x 6" *(Part Number Stamped On Barrel)*
B.	GR1314	-	Seal Kit, Includes: (3) O-Rings, (3) BU Rings, (1) Teflon Ring, (1) Rod Wiper, (1) U-Cup, (2) Cast Iron Rings

WING LIFT CYLINDER, 8 AND 12 ROW

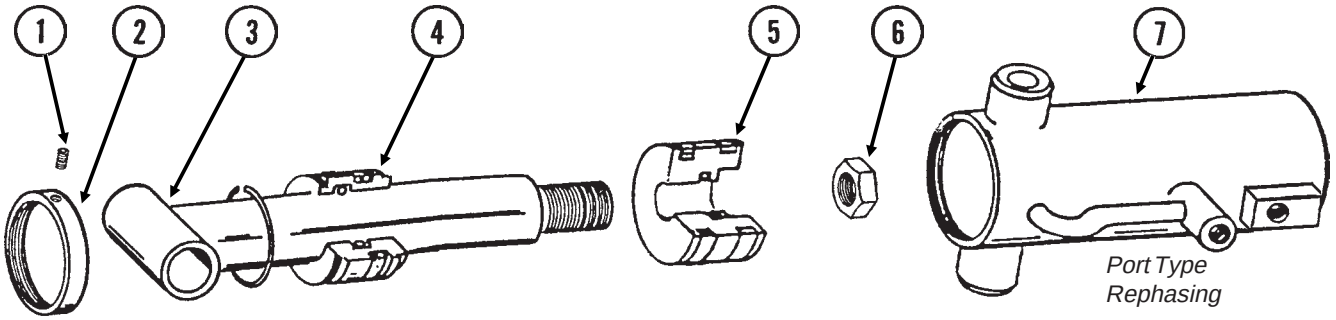
CYL031/CYL011(CYL8d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD10934	1	Cap
2.	GA7937	1	Rod W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
3.	GD10933	1	Gland
4.	GD10935	1	Piston
5.	GR0983	1	Lock Nut, 1"-14
6.	GA7936	1	Barrel
A.	GA7839	-	Cylinder Complete, 4 1/4" x 6" *(Part Number Stamped On Barrel)*
B.	GR1375	-	Seal Kit, Includes: (1) Ring, (1) Seal, (2) O-Rings, (1) BU Washer, (1) Wiper, (1) U-Cup

WING LIFT CYLINDER, 8 AND 12 ROW

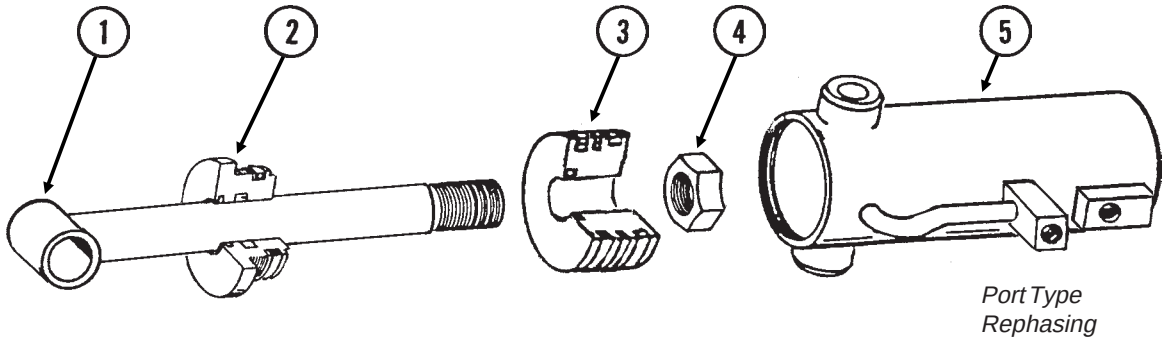
CYL031/CYL011(CYL41a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10907	1	Set Screw, 1/4"-20 x 1/4"
2.	GD11191	1	Cap
3.	GA7937	1	Rod W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
4.	GD10933	1	Gland
5.	GD11190	1	Piston
6.	GR0983	1	Lock Nut, 1"-14
7.	GA8148	1	Barrel
A.	GA8109	-	Cylinder Complete, 4 1/4" x 6" *(Part Number Stamped On Barrel)*
B.	GR1416	-	Seal Kit, Includes: (1) Ring, (2) O-Rings, (2) BU Washer, (1) Wiper, (1) U-Cup, (1) Piston Seal, (2) Cast Rings

WING LIFT CYLINDER, 8 AND 12 ROW

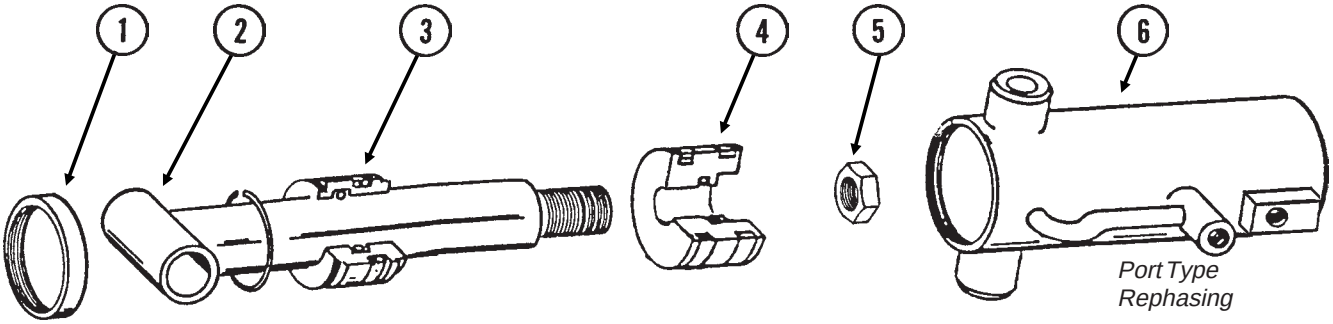
(CYL45a)



ITEM	PART NO.	QTY	DESCRIPTION
1.	GA8320	1	Rod W/Grease Fitting
	G10640	-	Grease Fitting, 1/4" - 28
2.	GD11295	1	Gland
3.	GD11294	1	Piston
4.	GR0983	1	Lock Nut, 1"-14
5.	GA8319	1	Barrel
A.	GA8310	-	Cylinder Complete, 4 1/4" x 6 (Part Number Stamped On Barrel)
B.	GR1442	-	Seal Kit, Includes: (2) Rings, (1) Seal, (3) O-Rings, (1) BU Washer, (1) Wiper, (1) U-Cup

WING LIFT CYLINDER, 16 ROW

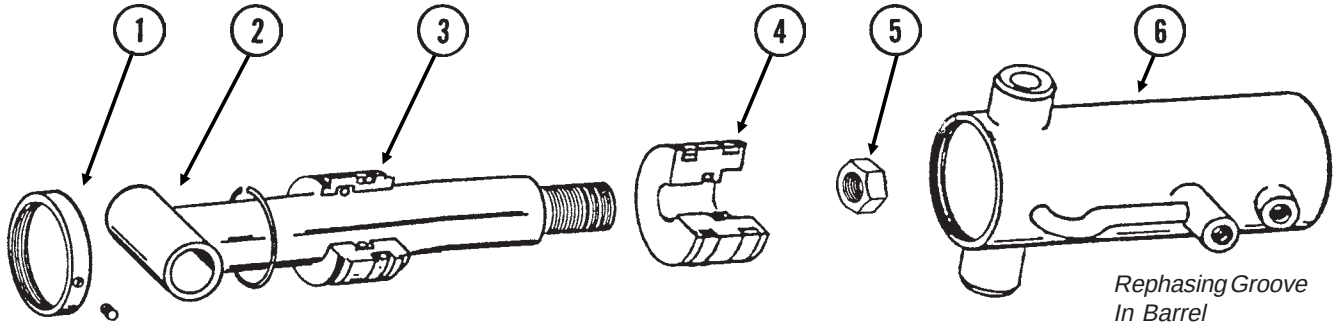
CYL031/CYL011(CYL8d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD10937	1	Cap
2.	GA7939	1	Rod W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
3.	GD10211	1	Gland
4.	GD10938	1	Piston
5.	GR0983	1	Lock Nut, 1"-14
6.	GA7938	1	Barrel
A.	GA7838	-	Cylinder Complete, 3" x 6" *(Part Number Stamped On Barrel)*
B.	GR1374	-	Seal Kit, Includes: (1) Ring, (1) Seal, (2) O-Rings, (1) BU Washer, (1) Wiper, (1) U-Cup

WING LIFT CYLINDER, 16 ROW

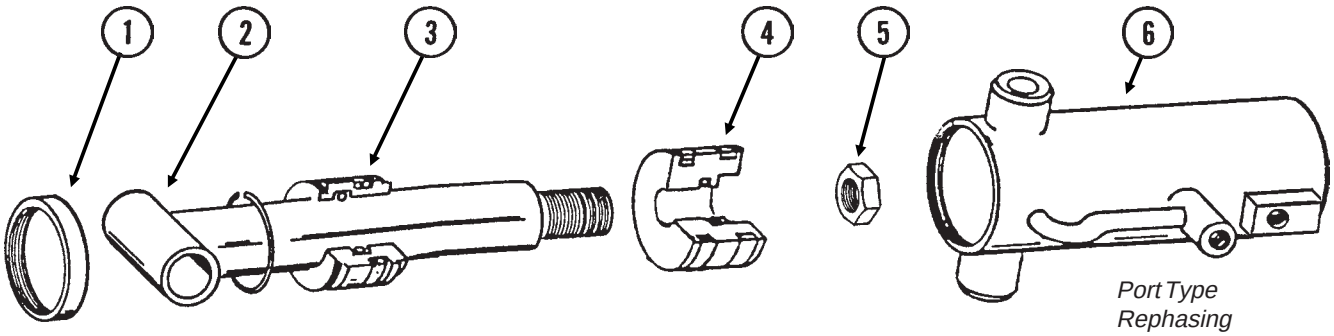
CYL031/CYL011(CYL8c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7225	1	Cap W/Set Screw
	G10405	-	Socket Head Set Screw, 1/4"-20 x 1/4"
2.	GA7227	1	Rod W/Grease Fitting
	G10449	-	Grease Fitting, 3/16" Drive-In
3.	GD10213	1	Gland
4.	GD10209	1	Piston
5.	GR0983	1	Lock Nut, 1"-14
6.	GA7226	1	Barrel
A.	GA6957	-	Cylinder Complete, 3" x 6" *(Part Number Stamped On Barrel)*
B.	GR1313	-	Seal Kit, Includes: (3) O-Rings, (3) BU Rings, (1) Teflon Ring, (1) Rod Wiper, (1) U-Cup, (2) Cast Iron Rings

WING LIFT CYLINDER, 16 ROW

CYL031/CYL011(CYL8d)

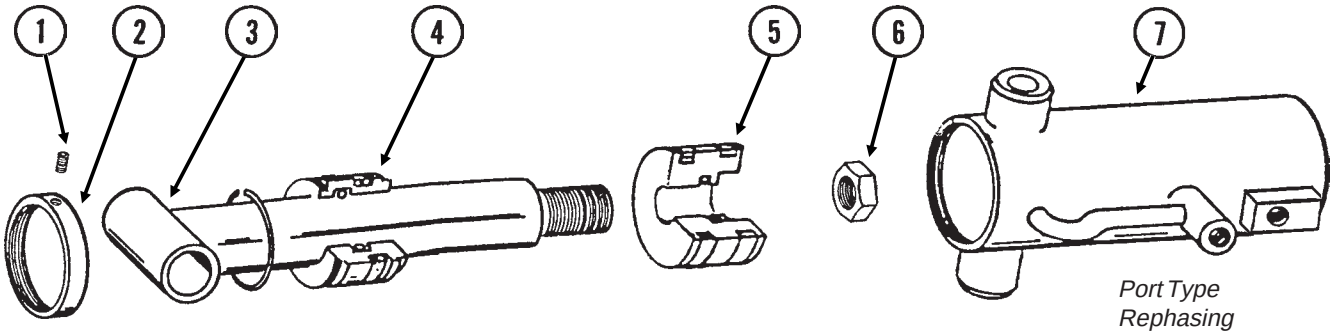


Port Type Rephasing

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD10937	1	Cap
2.	GA7939	1	Rod W/Grease Fitting
	G10449	-	Grease Fitting, $^{3}/_{16}$" Drive-In
3.	GD10211	1	Gland
4.	GD11253	1	Piston
5.	GR0983	1	Lock Nut, 1"-14
6.	GA7938	1	Barrel
A.	GA7838ST	-	Cylinder Complete, 3" x 6" *(Part Number Stamped On Barrel)*
B.	GR1443	-	Seal Kit, Includes: (3) Seal, (3) O-Rings, (2) BU Washer, (1) Wiper, (1) U-Cup

WING LIFT CYLINDER, 16 ROW

CYL031/CYL011(CYL41a)

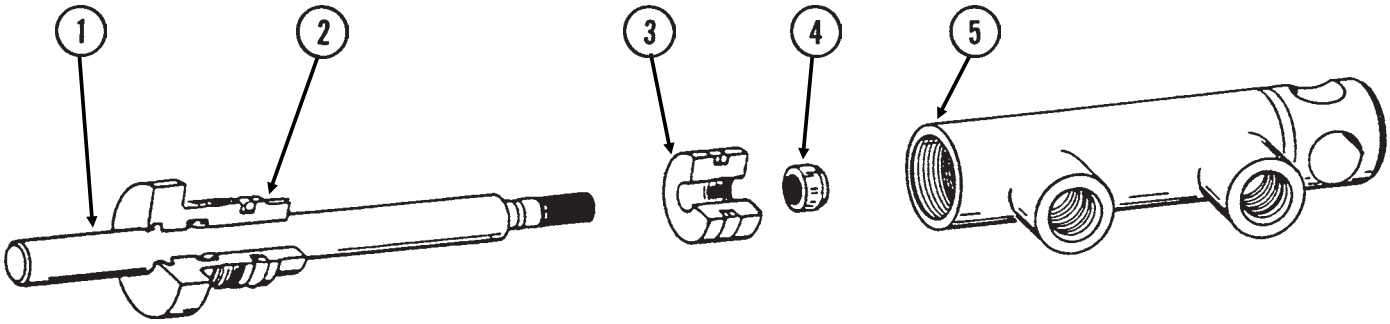


Port Type Rephasing

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10907	1	Set Screw, $^{1}/_{4}$"-20 x $^{1}/_{4}$"
2.	GD11193	1	Cap
3.	GA8157	1	Rod W/Grease Fitting
	G10449	-	Grease Fitting, $^{3}/_{16}$" Drive-In
4.	GD11194	1	Gland
5.	GD11253	1	Piston
6.	GR0983	1	Lock Nut, 1"-14
7.	GA8147	1	Barrel
A.	GA8108	-	Cylinder Complete, 3" x 6" *(Part Number Stamped On Barrel)*
B.	GR1417	-	Seal Kit, Includes: (1) Ring, (2) O-Rings, (2) BU Washer, (1) Wiper, (1) U-Cup, (1) Piston Seal, (2) Cast Rings

TRANSPORT LATCH CYLINDER, ALL SIZES

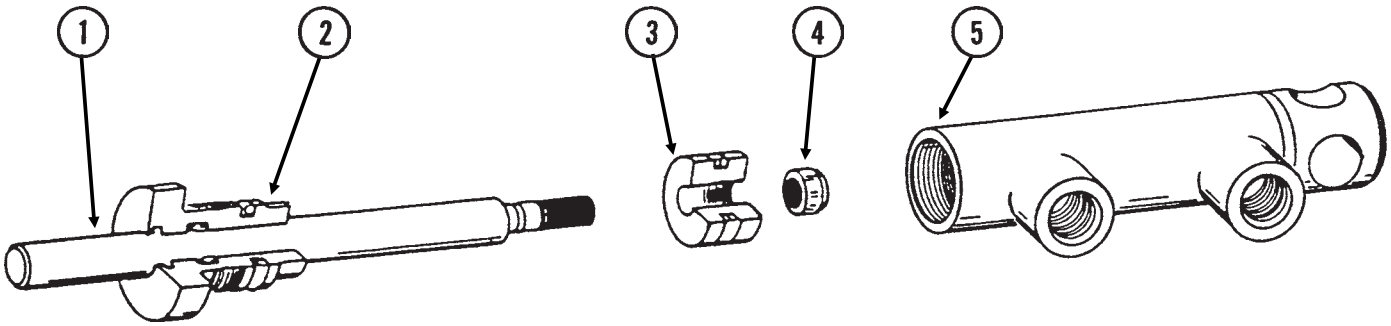
CYL035/CYL050(CYL9a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD7124	1	Rod
2.	GD7122	1	Gland
3.	GD7120	1	Piston
4.	GR0999	1	Lock Nut, 1/2"-20
5.	GA6020	1	Barrel
A.	GA4309	-	Cylinder Complete, 1 1/2" x 2 1/2"
B.	GR1001	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Rod Wiper, (1) Seal

TONGUE LOCK CYLINDER, ALL SIZES

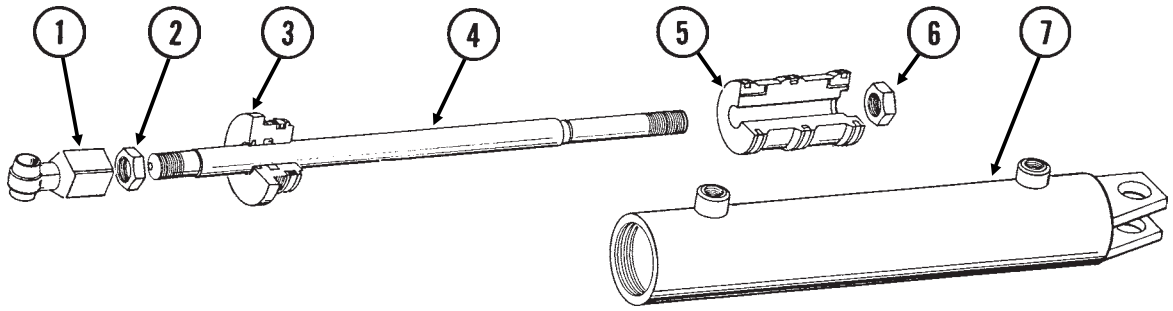
CYL035(CYL9a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD7123	1	Rod
2.	GD7122	1	Gland
3.	GD7120	1	Piston
4.	GR0999	1	Lock Nut, 1/2"-20
5.	GA6020	1	Barrel
A.	GA4310	-	Cylinder Complete, 1 1/2" x 2 1/2"
B.	GR1001	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Rod Wiper, (1) Seal

ROTATION CYLINDER, ALL SIZES

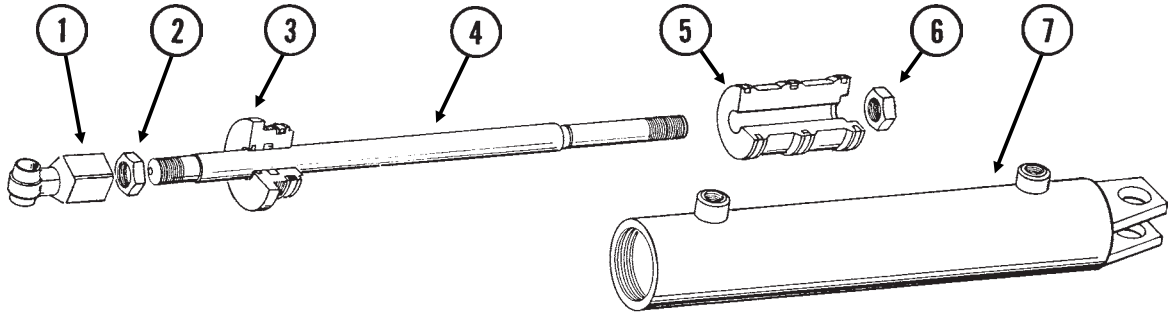
CYL058(CYL11b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7221	1	Clevis
2.	GR1310	1	Jam Nut, 1 1/4"-12
3.	GD6571	1	Gland
4.	GD10208	1	Rod Assembly
5.	GD7136	1	Piston
6.	GR0987	1	Lock Nut, 1 1/4" Thin
7.	GA7220	1	Barrel
A.	GA6715	-	Cylinder Complete, 4" x 16" *(Part Number Stamped On Barrel)*
B.	GR1311	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Rod Wiper, (1) Seal, (2) Wear Rings, (1) BU Ring

ROTATION CYLINDER, ALL SIZES

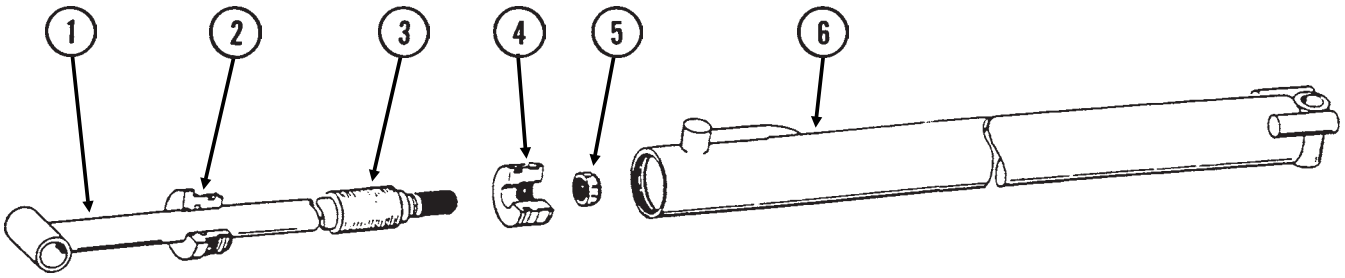
CYL058(CYL11a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7221	1	Clevis
2.	GR1310	1	Jam Nut, 1 1/4"-12
3.	GD6571	1	Gland
4.	GD10208	1	Rod Assembly
5.	GD10765	1	Piston
6.	GR0987	1	Lock Nut, 1 1/4" Thin
7.	GA7220	1	Barrel
A.	GA7801	-	Cylinder Complete, 4" x 16" *(Part Number Stamped On Barrel)*
B.	GR1366	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Rod Wiper, (1) Seal, (2) Wear Rings, (1) BU Ring

TONGUE CYLINDER
8 ROW 36"/38" WITH “Y” HITCH

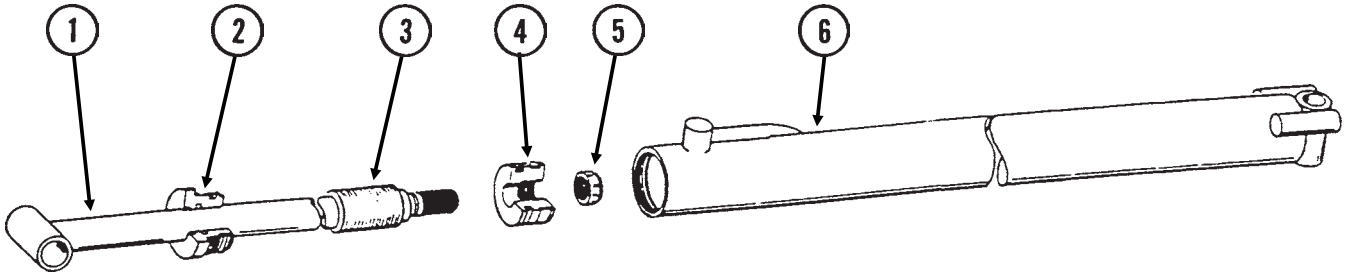
CYL034(CYL12a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA4791	1	Rod Assembly
2.	GD7146	1	Gland
3.	GD7147	1	Spacer
4.	GD4527	1	Piston
5.	GR0987	1	Lock Nut, 1 1/4"-12 Thin
6.	GA4792	1	Barrel
A.	GA4484	-	Cylinder Complete, 3" x 36"
B.	GR1004	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) Wear Ring, (1) Wiper, (1) U-Cup, (1) T Seal W/BU Rings

TONGUE CYLINDER
8 ROW 36"/38" WITH “T” HITCH
12 ROW 30" WITH “Y” HITCH

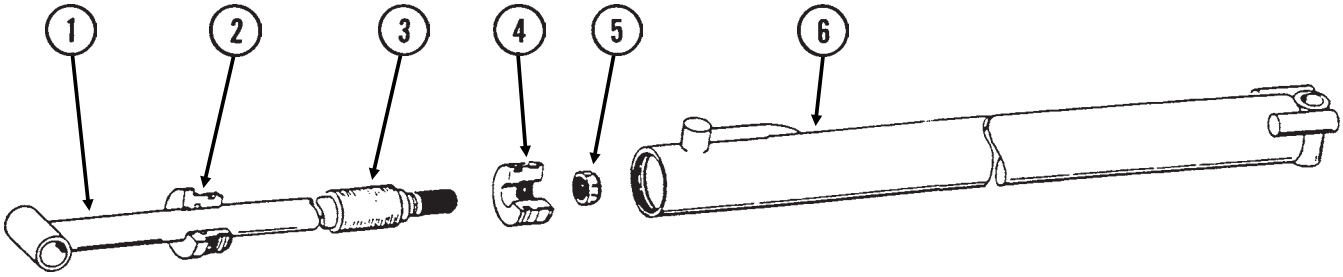
CYL034(CYL12a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA4780	1	Rod Assembly
2.	GD7146	1	Gland
3.	GD7147	1	Spacer
4.	GD4527	1	Piston
5.	GR0987	1	Lock Nut, 1 1/4"-12 Thin
6.	GA4779	1	Barrel
A.	GA4285	-	Cylinder Complete, 3" x 60"
B.	GR1004	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) Wear Ring, (1) Wiper, (1) U-Cup, (1) T Seal W/BU Ring

TONGUE CYLINDER
12 ROW 30" WITH “T” HITCH
12 ROW 36"/38", 16 ROW 30" WITH “Y” HITCH

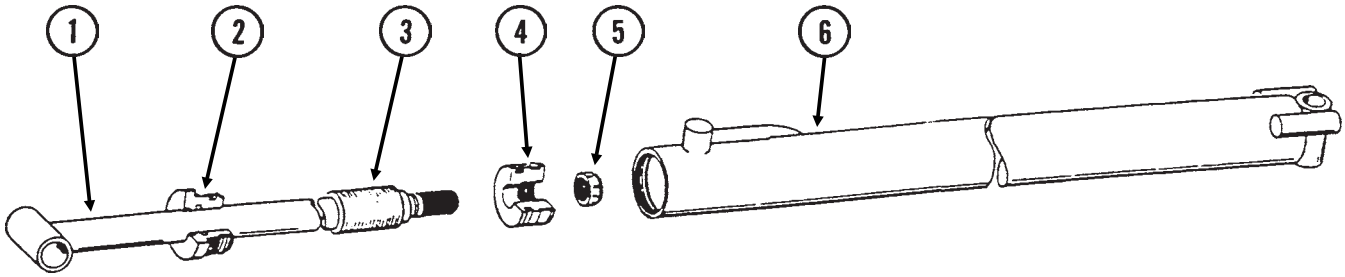
CYL036(CYL12a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA4782	1	Rod Assembly
2.	GD7146	1	Gland
3.	GD7147	1	Spacer
4.	GD4527	1	Piston
5.	GR0987	1	Lock Nut, 1 1/4"-12 Thin
6.	GA4781	1	Barrel
A.	GA4332	-	Cylinder Complete, 3" x 84"
B.	GR1004	-	Seal Kit, Includes: (1) Wear Ring, (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper, (1) T Seal W/BU Rings

TONGUE CYLINDER
12 ROW 36"/38", 16 ROW 30" WITH “T” HITCH

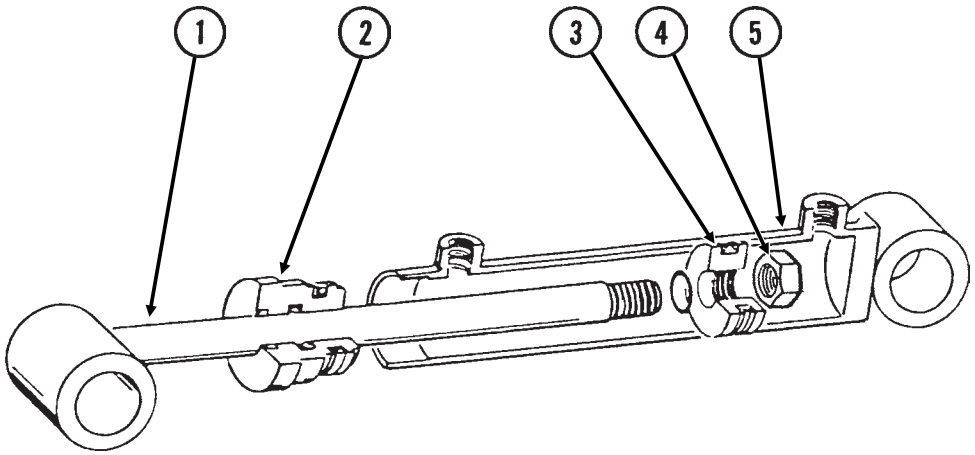
CYL036(CYL12a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5620	1	Rod Assembly
2.	GD7146	1	Gland
3.	GD7147	1	Spacer
4.	GD4527	1	Piston
5.	GR0987	1	Lock Nut, 1 1/4"-12 Thin
6.	GA5619	1	Barrel
A.	GA5584	-	Cylinder Complete, 3" x 108"
B.	GR1004	-	Seal Kit, Includes: (1) Wear Ring, (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper, (1) T Seal W/BU Rings

WING LOCK CYLINDER, ALL SIZES

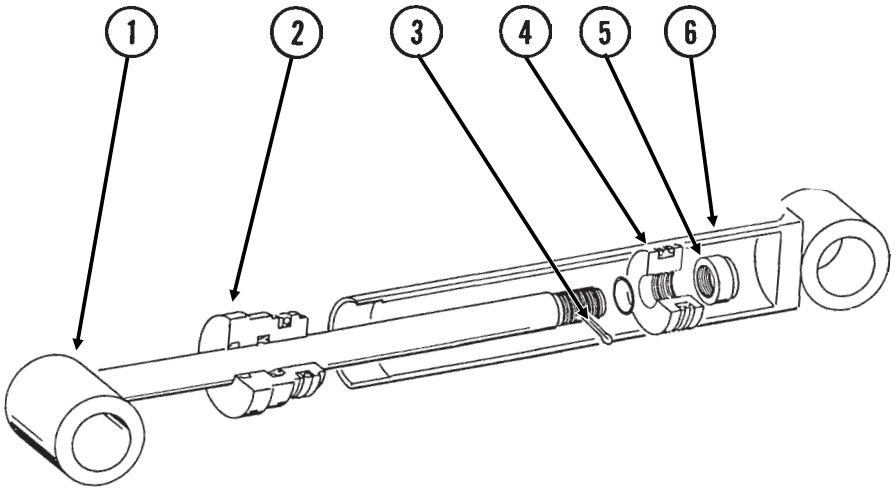
CYL032(CYL5a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA4193	1	Rod Assembly
2.	GD5954	1	Gland
3.	GD4525	1	Piston
4.	GR0964	1	Special Jam Nut
5.	GA4192	1	Barrel
A.	GA4115	-	Cylinder Complete, 2 1/2" x 20 1/16"
B.	GR0963	-	Seal Kit, Includes: (1) T Seal, (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper

MARKER (Cushion) CYLINDER, ALL SIZES

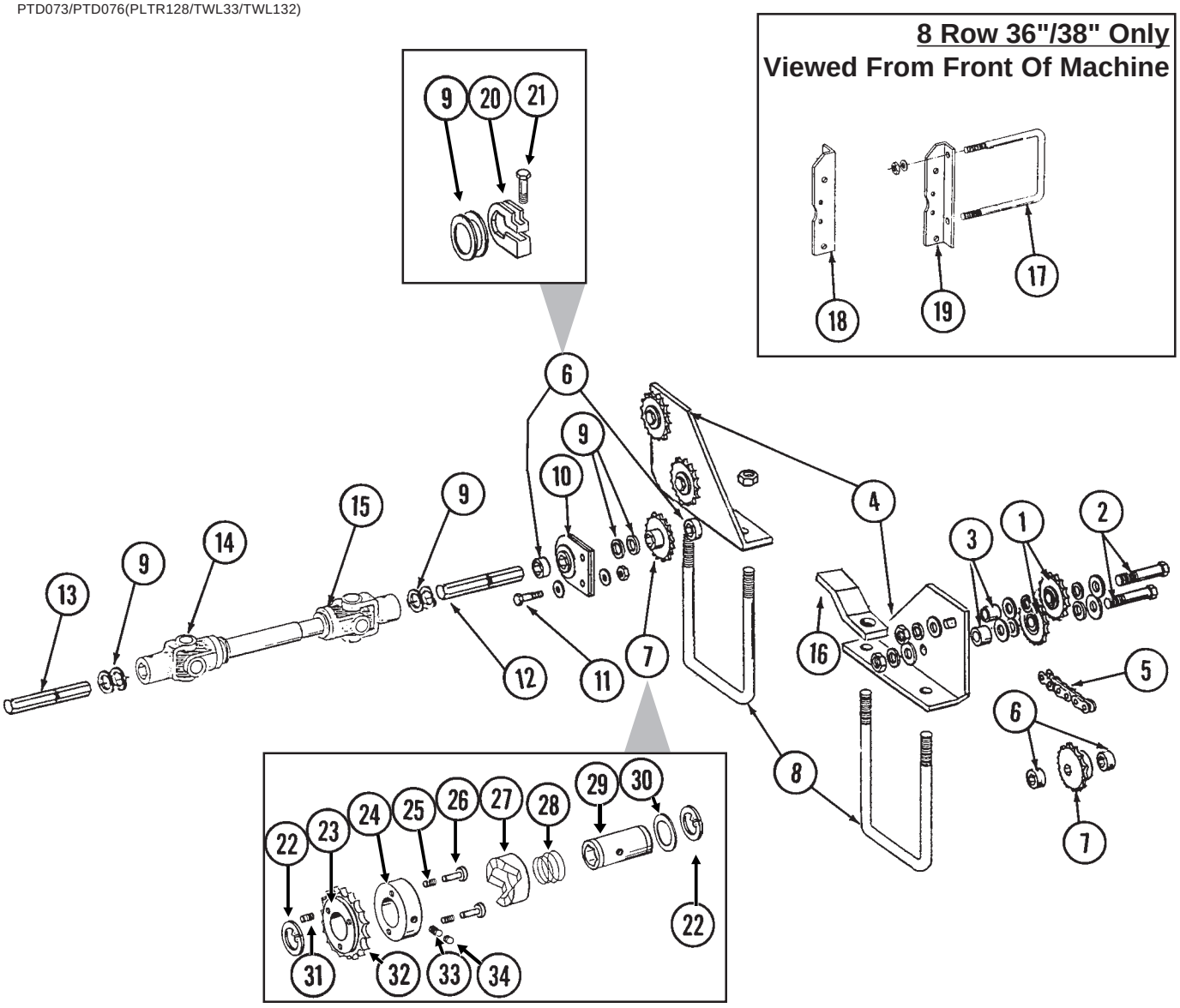
CYL032(CYL32)



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

INTERPLANT® PUSH UNIT DRIVE

PTD073/PTD076(PLTR128/TWL33/TWL132)



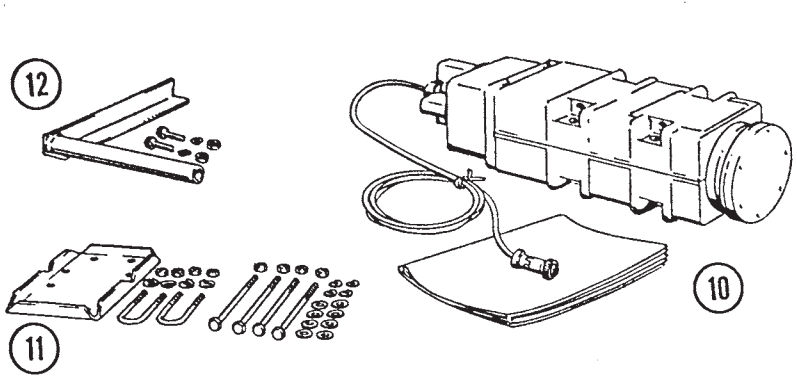
ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	GA7154	4	Idler Sprocket W/Bearing, 18 Tooth
2.	G10581	4	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10216	20	Washer, 1/2" USS
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
3.	GD9229	4	Spacer
4.	GD9106	2	Mount
5.	G3310-208	1	Chain, No. 40, 204 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
6.	GD0917	4	Lock Collar, Less Set Screws **(Sub G1K239)**
	G10145	4	Set Screw, 5/16"-18 x 1/2"
7.	GA5107	2	Sprocket, 19 Tooth
8.	GD8306	2	U-Bolt, 7" x 5" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
9.	G10233	-	Machine Bushing (As Required)

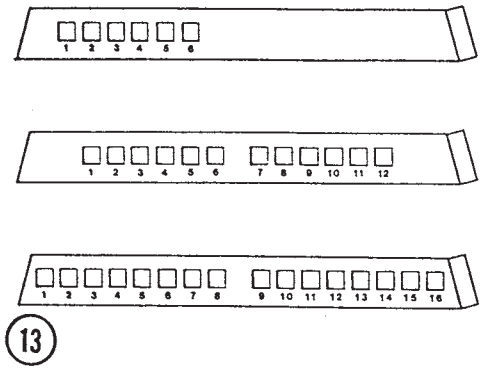
INTERPLANT® PUSH UNIT DRIVE

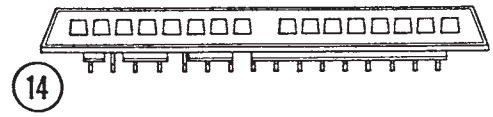
ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
10.	GA2180	-	Bearing Hanger, 7/8" Hex Bore
11.	G10004	-	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	-	Washer, 3/8" USS
	G10229	-	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
12.	GD0914-42	1	Wing Drill Shaft, Both Sides, 8 Row 36"/38"
	GD0914-81	-	Wing Drill Shaft, Both Sides, 12 Row 30"
	GD0914-96	-	Wing Drill Shaft, Both Sides, 12 Row 36"/38"
	GD0914-124	-	Wing Drill Shaft, R.H. Side, 16 Row 30"
	GD0914-138	-	Wing Drill Shaft, L.H. Side, 16 Row 30"
13.	GD0914-55	1	Center Drill Shaft, R.H. Side, 8 Row 36"/38"
	GD0914-84	1	Center Drill Shaft, L.H. Side, 8 Row 36"/38"
	GD0914-48	-	Center Drill Shaft, R.H. Side, 12 Row 30" And 16 Row 30"
	GD0914-66	-	Center Drill Shaft, L.H. Side, 12 Row 30" And 16 Row 30"
	GD0914-55	-	Center Drill Shaft, R.H. Side, 12 Row 36"/38"
	GD0914-84	-	Center Drill Shaft, L.H. Side, 12 Row 36"/38"
14.	GA7053	1	U-Joint, Less Set Screws, 18", 8 Row 36"/38" And 12 Row 36"/38"
	GA7052	-	U-Joint, Less Set Screws, 10", 12 Row 30" And 16 Row 30"
	G10688	-	Set Screws, 3/8"-16 x 5/8"
	GR1300	-	Grease Fitting
	GR1297	-	Inboard Yoke And Profile, 10" U-Joint
	GR1298	-	Inboard Yoke And Profile, 18" U-Joint
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
15.	GA7051	1	U-Joint, Less Set Screws, 12"
	G10688	-	Set Screws, 3/8"-16 x 5/8"
	GR1300	-	Grease Fitting
	GR1296	-	Inner Profile
	GR1295	-	Inboard Yoke
	GR1301	-	Spring Pin, 8mm x 50mm
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
16.	GD10204	1	Hose Retainer
17.	GD1113	-	U-Bolt, 5" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
18.	GD2298	-	Support Angle, R.H. (8 Row 36"/38" Only)
19.	GD1022L	-	Support Angle, L.H. (8 Row 36"/38" Only)
20.	GD11045	-	Lock Clamp
21.	G10031	-	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	-	Flange Nut, 5/16"-18
22.	G10496	2	External Inverted Snap Ring, 1 1/2"
23.	GR1406	1	Bushing
24.	GR1405	1	Lock Collar
25.	GR1413	1	Spring
26.	GR1410	1	Pin
27.	GR1409	1	Knurled Collar
28.	GR1408	1	Compression Spring
29.	GR1407	1	Drive Shaft
30.	GR1411	1	Shim
31.	G10905	3	Hex Socket Head Cap Screw, No. 10-24 x 3/8"
32.	GR1412	1	Sprocket, 19 Tooth
33.	G10120	1	Hex Socket Set Screw, 3/8"-16 x 1/2"
34.	G10906	1	Hex Socket Set Screw, 3/8"-16 x 1/4"
A.	GA8092	-	Clutch Sprocket Assembly, 19 Tooth (Items 22-34)
B.	G1K269	-	Lock Clamp Kit (Items 20 And 21)

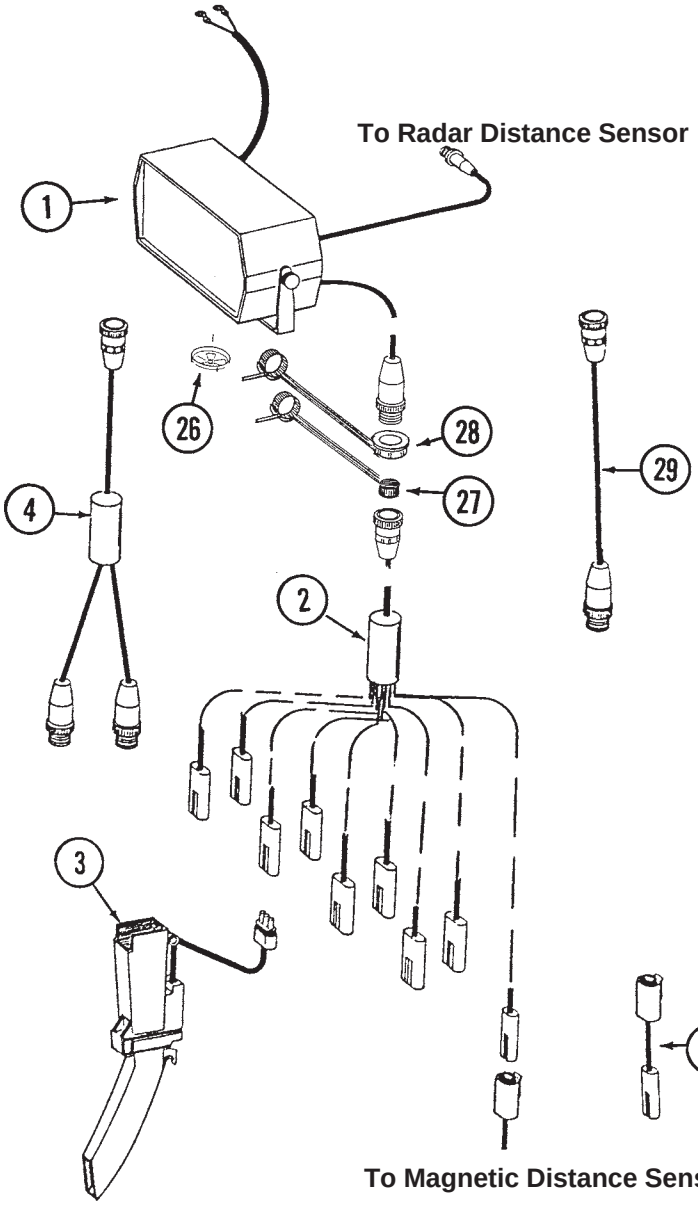
ELECTRONIC SEED MONITOR

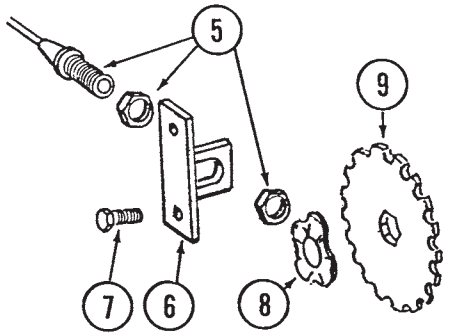
ECP017/D-0640-0001/D-0640-0003/D-0640-0004/D-1172-0001/D-1172-0002/ECP019/ECP020/ECP021/ECP022(MTR3a)

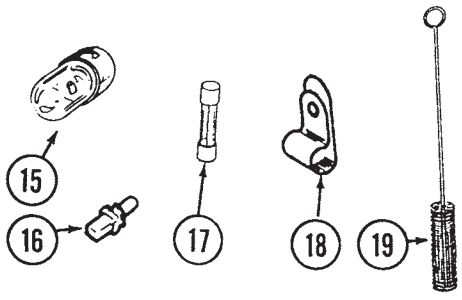


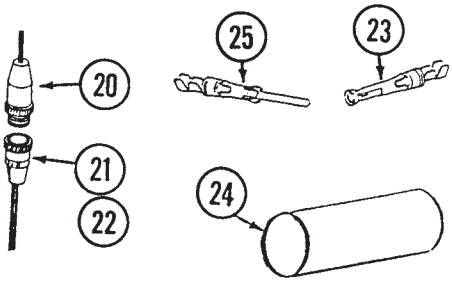










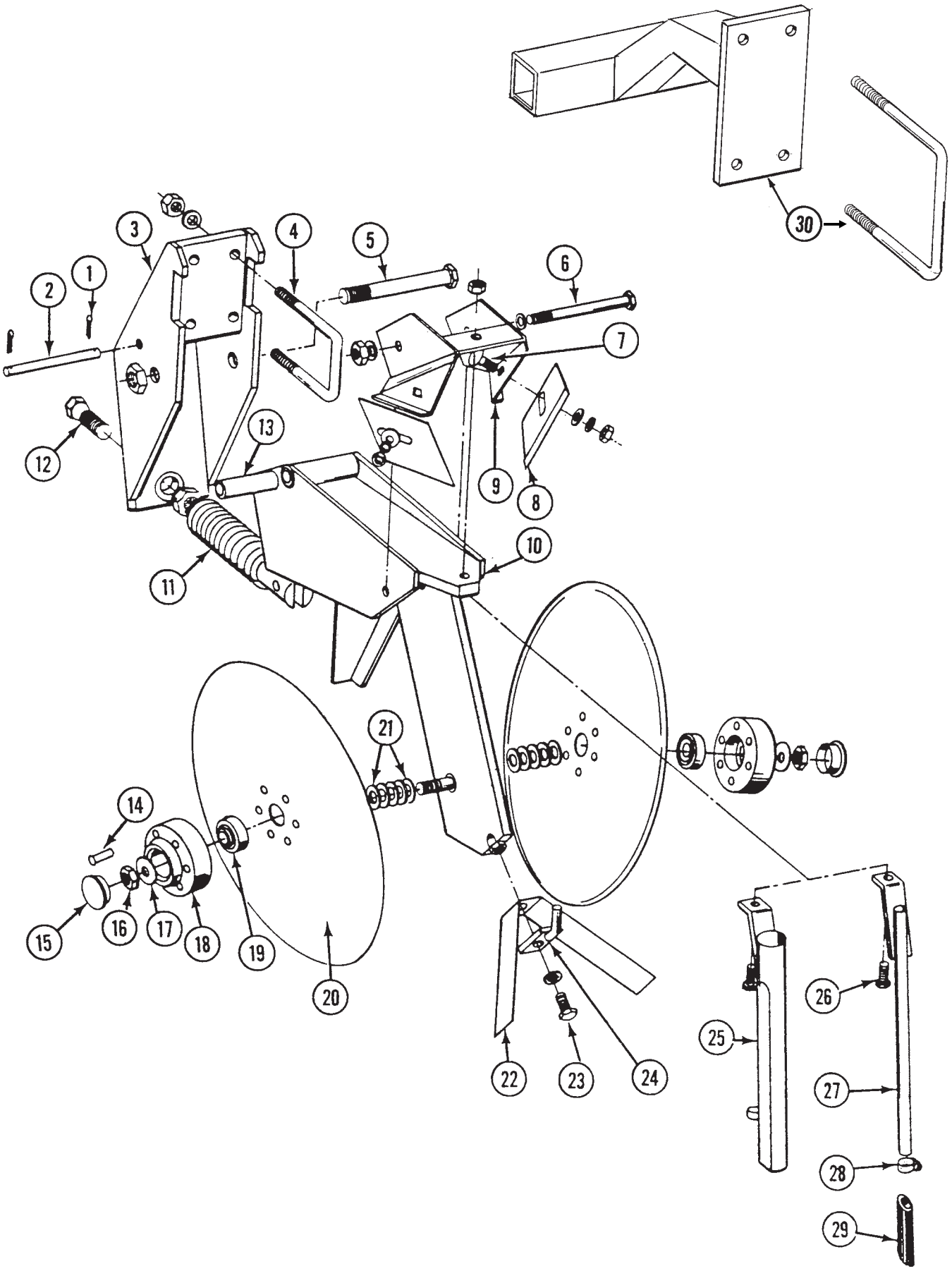


ELECTRONIC SEED MONITOR

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.	GA5877	1	Planter Harness, 8 Row
	GA5878	-	Planter Harness, 12 Row
	GA5879	-	Planter Harness, 16 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.	GA5884	1	Y-Connector, 16 Row (Used On 8 Row)
	GA5885	-	Y-Connector, 24 Row (Used on 12 Row)
	GA5886	-	Y-Connector, 32 Row (Used On 16 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 12 Row)
	GR1083	-	KM1000 Bezel Decal, 16 Row (Used On 8 And 16 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
29.	GA5881	-	Extension Cable, 15', 1-32 Rows
	GA5882	-	Extension Cable, 30', 1-32 Rows
30.	GA7342	-	Adapter Cable, 4', Between Planter Harness And Magnetic Distance Sensor (Wide Row Only)
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 5-9 And 18)

DOUBLE DISC FERTILIZER OPENER AND MOUNT

FOC007/FOC017(PT25/TWL34)

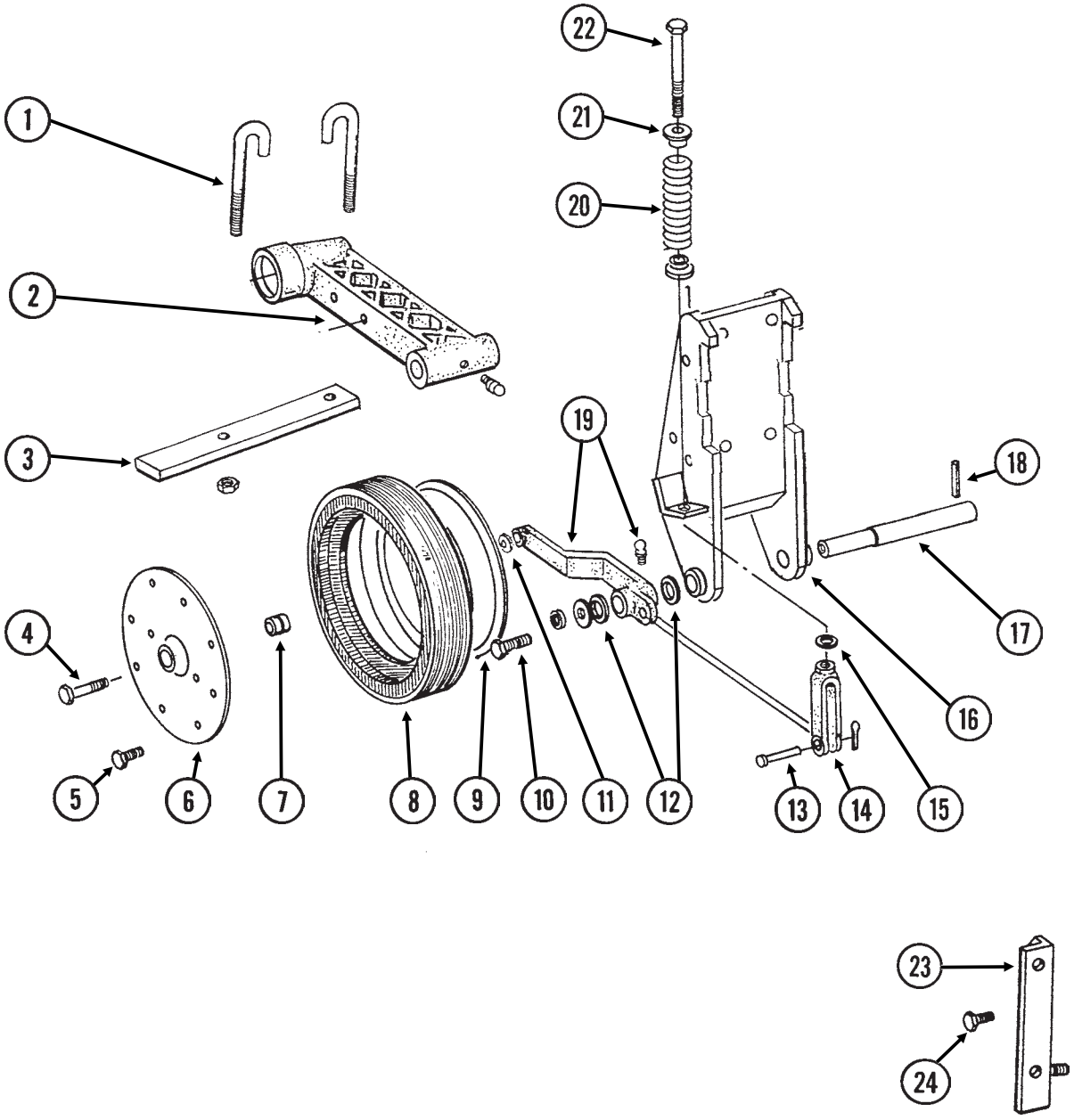


DOUBLE DISC FERTILIZER OPENER AND MOUNT

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" Gauge
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
30.	GA7135	1	Mount W/U-Bolts
	GD1113	2	U-Bolt, 5" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
A.	GA0320	-	Disc And Bearing Assembly (Items 18-20)

HD SINGLE DISC FERTILIZER OPENER (Soil Press Wheel)

FOC016/FOC007(TWL35b)

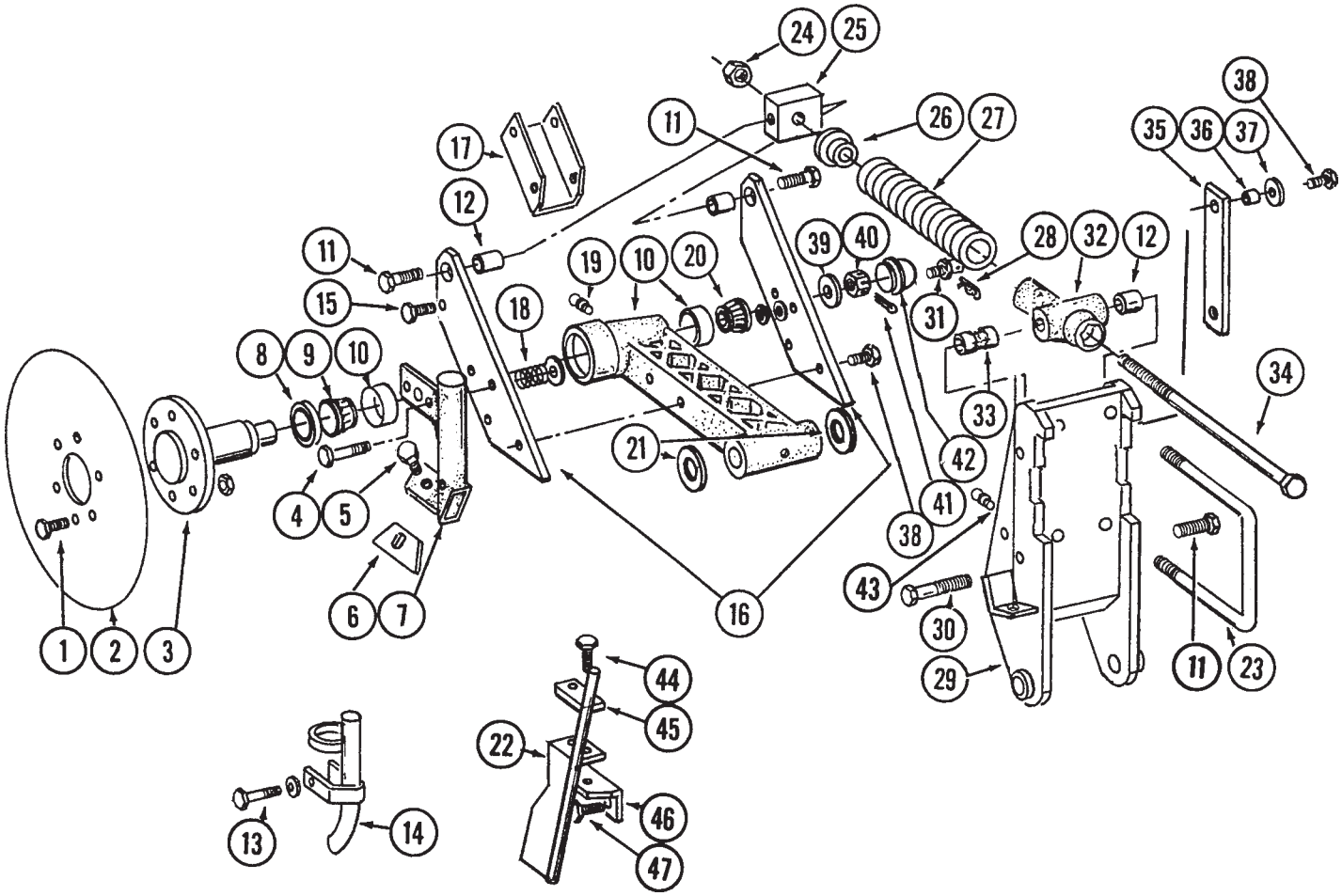


HD SINGLE DISC FERTILIZER OPENER (Soil Press Wheel)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD9705	2	J-Bolt
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
2.		-	See “HD Single Disc Fertilizer Opener (Disc And Drop Tube)”, Pages P98 And P99
3.	GD9706	1	Lockup Bar
4.	G10010	1	Hex Head Cap Screw, 5/8"-11 x 3"
5.	G10018	4	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	4	Lock Nut, 5/16"-18
6.	GD4888	1	Half Wheel
7.	GA6171	1	Bearing
8.	GD4850	1	Offset Tire
9.	GD1048	1	Half Wheel
10.	G10438	1	Hex Head Cap Screw, 1/2"-13 x 3/4"
	G10228	1	Lock Washer, 1/2"
	G10216	1	Washer, 1/2" USS
11.	G10230	1	Lock Washer, 5/8"
12.	G10526	10	Bushing, .048" Gauge
13.	G10560	1	Clevis Pin, 1/2" x 1 3/4"
	G10456	1	Cotter Pin, 1/8" x 3/4"
14.	GD8218	1	Yoke
15.	G10205	1	Washer, 5/8" SAE
16.		-	See “HD Single Disc Fertilizer Opener (Disc And Drop Tube)”, Pages P98 And P99
17.	GD7911	1	Pivot Pin
18.	G10610	1	Spring Pin, 3/8" x 2"
19.	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
20.	GD8308	1	Spring
21.	GB0212	2	Washer
22.	GD9709	1	Special Bolt
23.	G10005	-	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
24.	GA6345	-	Mounting Angle, L.H. (As Required) (Shown)
	GA6344	-	Mounting Angle, R.H. (As Required)
A.	G1K215	-	Lockup Kit (Items 1 And 3)
B.	GA6766	-	Wheel Assembly (Items 5-9)

HD SINGLE DISC FERTILIZER OPENER (Disc And Drop Tube)

FOC016/FOC007/FOC019(PT27a)



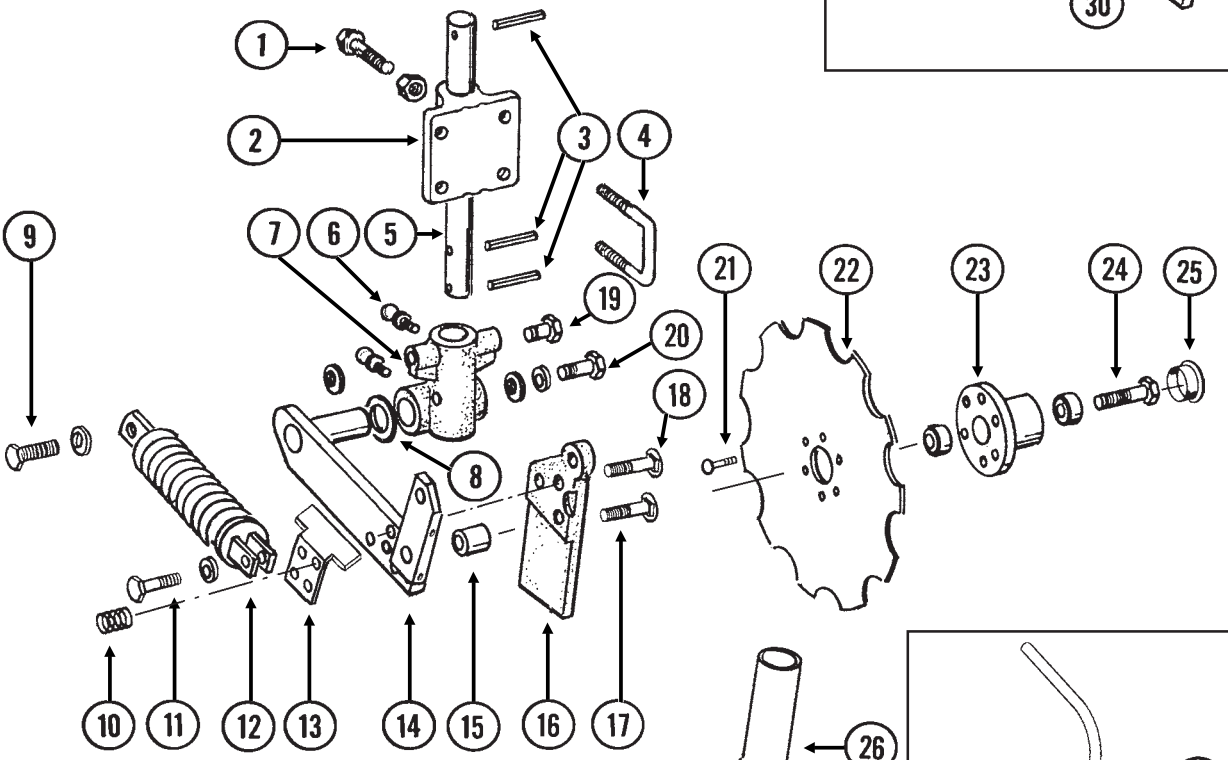
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10594	6	Bolt, 1/2"-13 x 1 1/2"
	G10111	6	Lock Nut, 1/2"-13
2.	GD7900	1	Blade, 18"
3.	GB0205	1	Spindle
4.	G10049	2	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10210	2	Lock Washer, 3/8"
	G10108	2	Lock Nut, 3/8"-16
5.	G10599	1	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10210	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
	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"

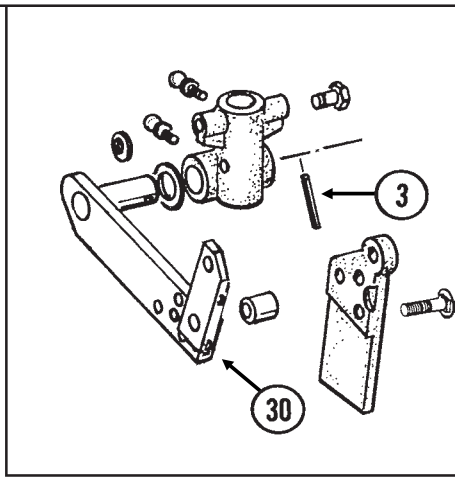
HD SINGLE DISC FERTILIZER OPENER (Disc And Drop Tube)

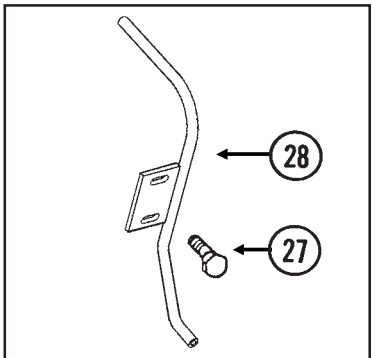
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
13.	G10403	1	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10209	2	Washer, 1/4" USS
	G10110	1	Lock Nut, 1/4"-20
14.	GA6408	1	Liquid Drop Tube
15.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10108	2	Lock Nut, 3/8"-16
16.	GD8224	2	Bar
17.	GD8238	1	Channel
18.	GD7962	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.	GD1113	2	U-Bolt, 5" 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 AND MOUNT

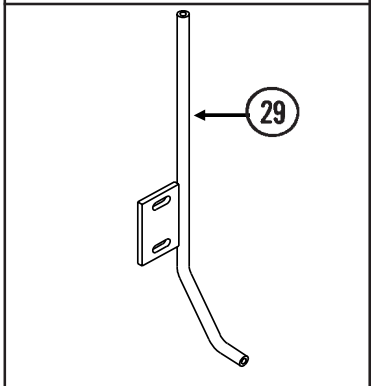
FOC018(PT65/PT67/TWL34a/PT57en)



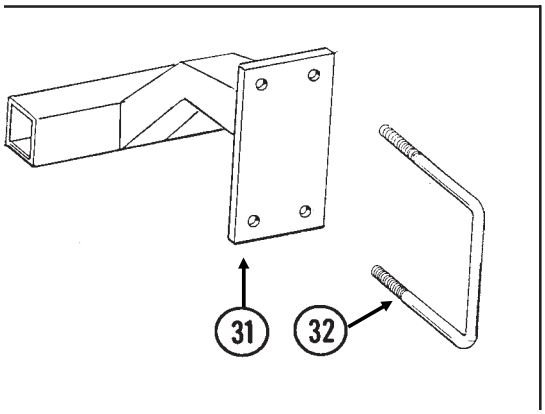




Serial No. 611176 & On



Prior To Serial No. 611176

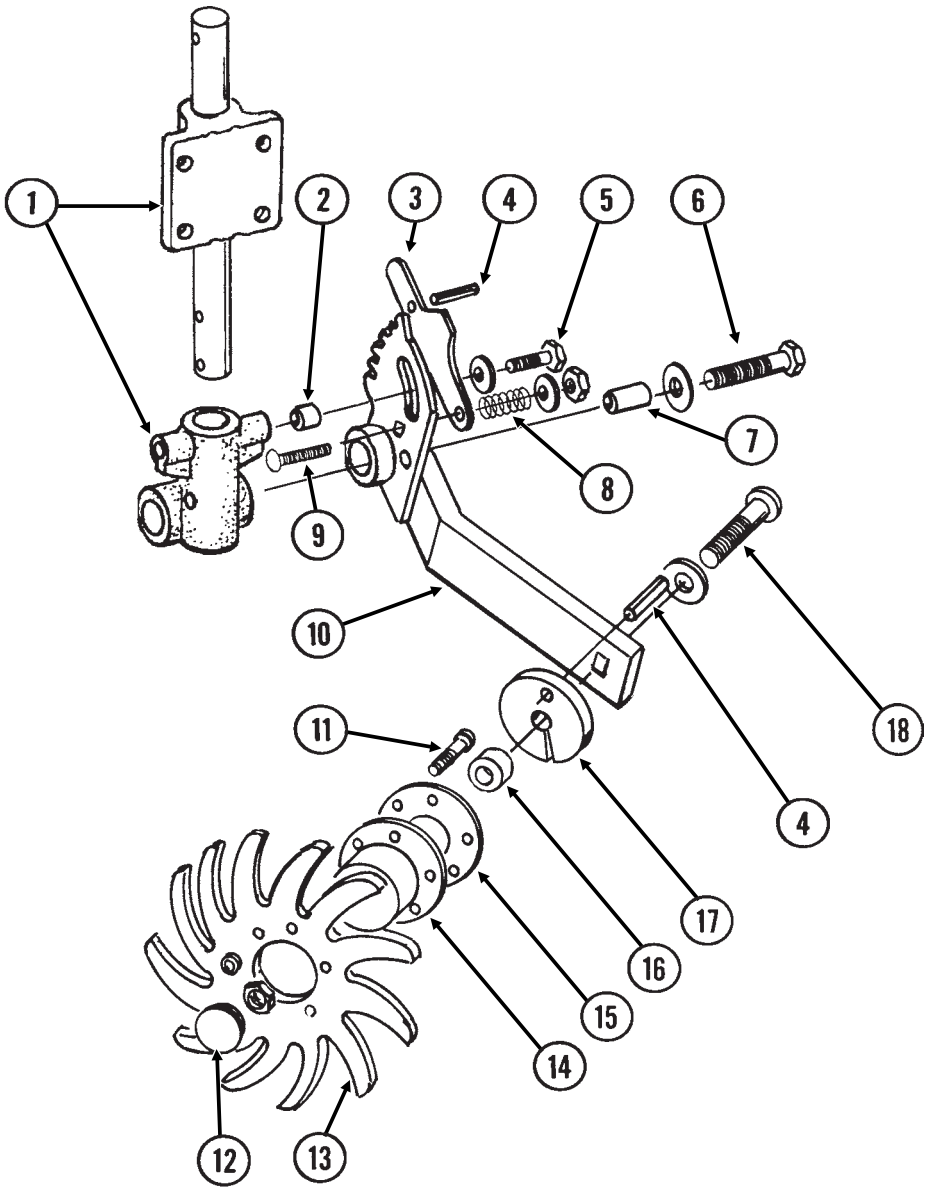


NOTCHED SINGLE DISC FERTILIZER OPENER AND MOUNT

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.
31.	GA7134	1	Mount
32.	GD1113	2	U-Bolt, 5" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11

RESIDUE WHEEL, NOTCHED SINGLE DISC FERTILIZER OPENER MOUNTED

DFC024(FRTZ165f)

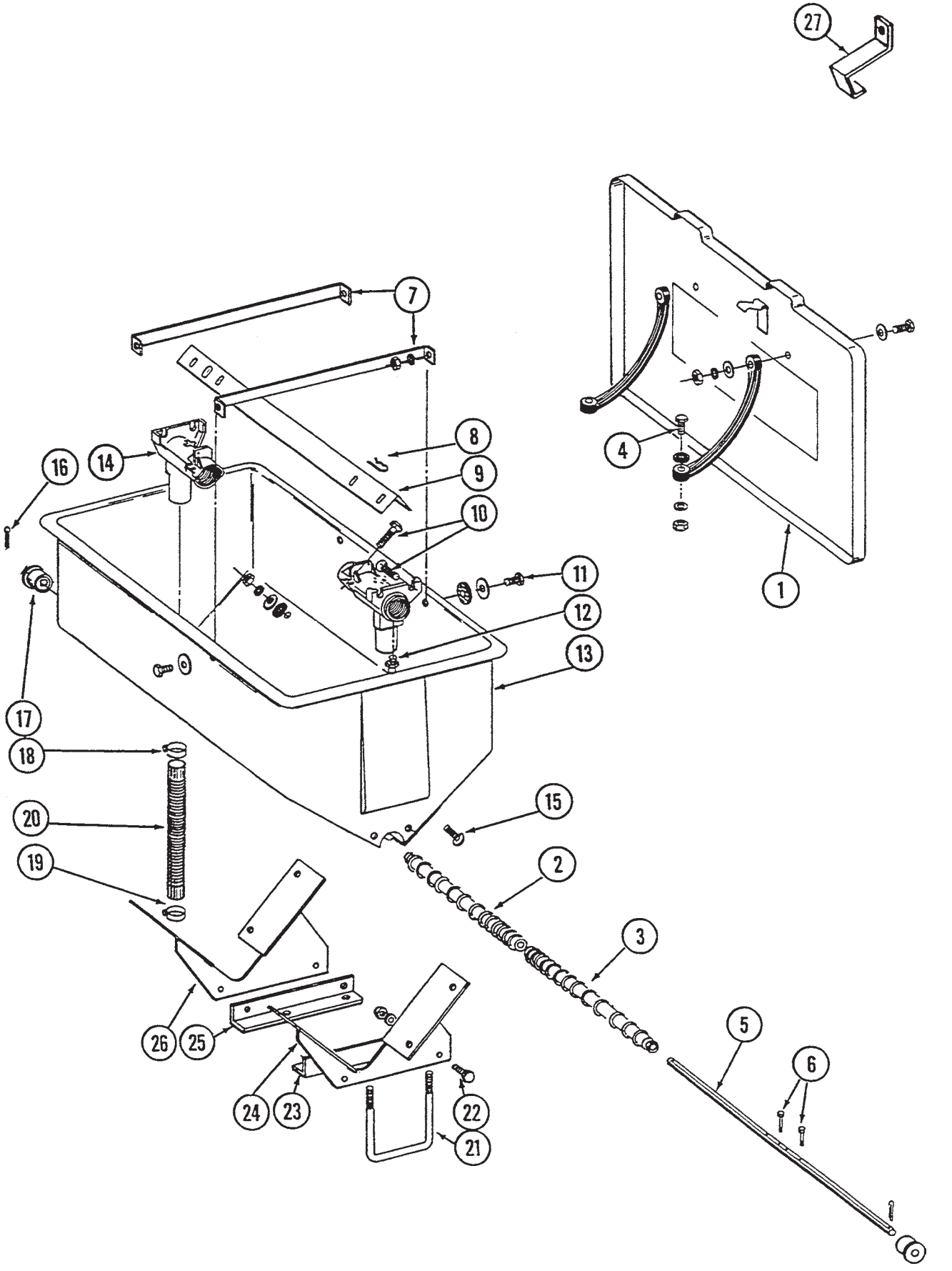


RESIDUE WHEEL, NOTCHED SINGLE DISC FERTILIZER OPENER MOUNTED

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.		-	See “Notched Single Disc Fertilizer Opener And Mount”, Pages P100 And P101
2.	GD11053	1	Bushing, 7/8" Long
3.	GD11178	1	Adjustment Lever
4.	G10603	2	Spring Pin, 1/4" x 1 1/4"
5.	G10919	1	Self-Locking Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10216	1	Washer, 1/2" USS
6.	G10920	1	Self-Locking Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	GD7805	1	Special Washer
7.	GD11358	1	Hardened Bushing, 2 1/8" Long
8.	GD7962	1	Spring
9.	G10306	1	Carriage Bolt, 3/8"-16 x 2"
	G10203	1	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
10.	GA7999	1	Mount, L.H. (Shown)
	GA7998	-	Mount, R.H.
11.	G10133	6	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	6	Lock Nut, 5/16"-18
12.	GD1132	2	Dust Cap
13.	GD10552	2	Wheel, 3/8" x 12"
14.	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
15.	GD9724	1	Backing Plate
16.	GD7817-04	1	Spacer, 1 1/4" O.D. x 1/2" Long
17.	GD11188	1	Spacer
18.	G10908	1	Carriage Bolt, 5/8"-11 x 3"
	G10503	1	Hex Jam Nut, 5/8"-11
A.	GA7445	-	L.H. Wheel Assembly (Items 11 And 13-15)(Shown)
	GA7446	-	R.H. Wheel Assembly (Items 11 And 13-15)

DRY FERTILIZER HOPPER AND MOUNTS

DFC009/DFC018(TWL36)

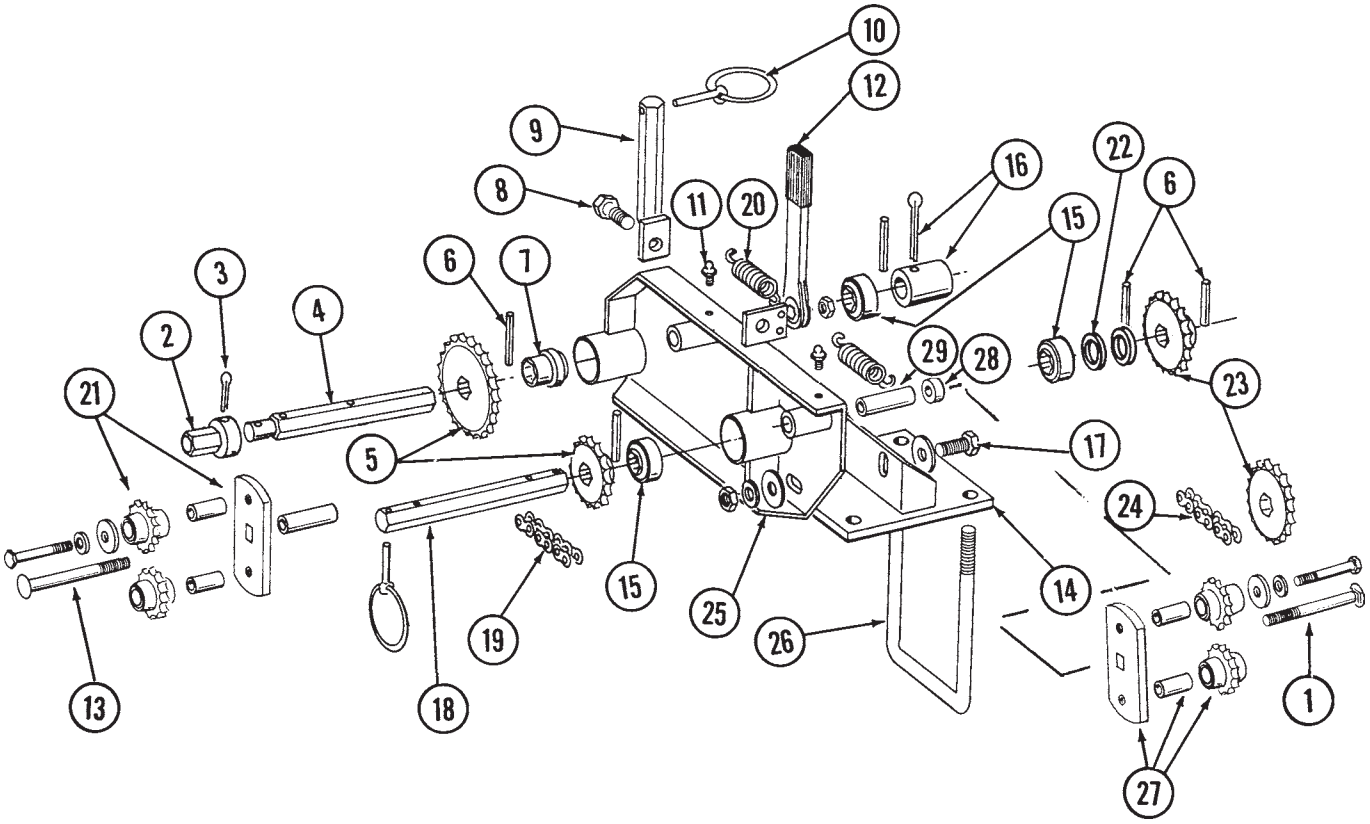


DRY FERTILIZER HOPPER AND MOUNTS

ITEM	PART NO.	QTY. (Per Hopper)	DESCRIPTION
1.	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
2.	GB0198	1	Auger, R.H.
3.	GB0199	1	Auger, L.H.
4.	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
5.	GD7848	1	Shaft
6.	G10587	2	Hex Head Cap Screw, 1/4"-20 x 2", Stainless Steel
	G10588	2	Hex Nut, 1/4"-20, Stainless Steel
7.	GD1209	2	Strap
8.	G10670	2	Hair Pin Clip, No. 3
9.	GD1207	1	Baffle
10.	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
11.	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
12.	G10641	2	Grease Fitting, 1/8" NPT
13.	GD1379	1	Hopper
14.	GD1200	2	Outlet Housing
15.	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
16.	G10460	2	Cotter Pin, 1/4" x 2"
17.	GB0200	2	Bearing
18.	G10676	2	Clamp, No. 36
19.	G10672	2	Clamp, No. 28
20.	GD3790	2	Rubber Tube
21.	GD1134	2	U-Bolt, 7" x 5" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
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.	GD9131	1	Angle, L.H.
24.	GA6437	1	Mount, L.H.
25.	GD9132	1	Angle, R.H.
26.	GA6436	1	Mount, R.H.
27.	GD8722	-	Holder (As Required)
A.	GA6503	-	Hopper Sub-Assembly (Items 8, 10 And 12-15)
B.	GA5667	-	Hopper Hardware Box (Items 2-7, 11, 16 And 17)

DRY FERTILIZER DRIVE

DFC016/PTD079(TWL37b)



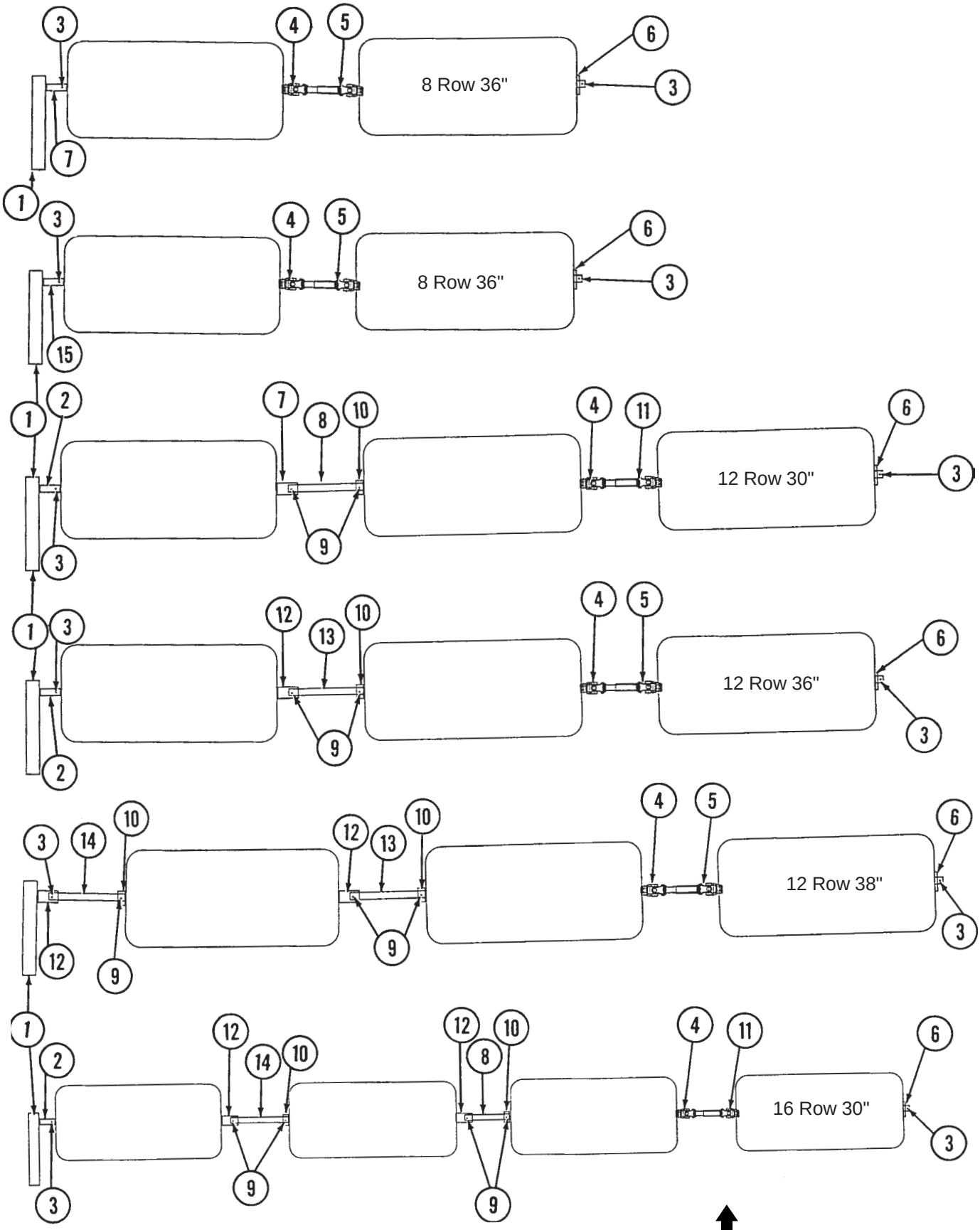
ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	G10419	1	Carriage Bolt, 1/2"-13 x 4 1/2"
	G10206	1	Washer, 1/2" SAE
	G10111	1	Lock Nut, 1/2"-13
2.	GD7127	1	Shear Coupler
3.	G10462	1	Cotter Pin, 3/16" x 2"
4.	GD7866	1	Shaft, 7/8" x 7 1/2"
5.	GA5105	1	Sprocket, 15 Tooth
	GA5107	1	Sprocket, 19 Tooth
	GA5114	1	Sprocket, 30 Tooth
	GA5115	1	Sprocket, 33 Tooth
	GA6337	1	Sprocket, 35 Tooth

DRY FERTILIZER DRIVE

ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
6.	G10602	6	Spring Pin, 1/4" x 1 1/2"
7.	GA5624	1	Extended Bearing
8.	G10037	1	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10111	1	Lock Nut, 1/2"-13
9.	GA5229	1	Rod
10.	GD2558	3	Lynch Pin, 1/4"
11	G10640	2	Grease Fitting, 1/4"-28
12.	GA4235	1	Ratchet Wrench Kit With Protective Closure
	G10445	-	Protective Closure
13.	G10419	1	Carriage Bolt, 1/2"-13 x 4 1/2"
	GD3180-16	1	Sleeve, 2 13/16"
	G10111	2	Lock Nut, 1/2"-13
14.	GA7129	1	Mount, L.H.
	GA7130	1	Mount, R.H.
15.	GA5116	3	Bearing, 7/8" Hex
16.		-	See “Dry Fertilizer Couplers/Shafts”, Pages P108 And P109
17.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10206	4	Washer, 1/2" SAE
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
18.	GD10119	1	Shaft, 7/8" x 7 7/16"
19.	G3310-88	1	Chain, No. 40, 88 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
20.	GD5857	2	Spring
21.	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"
22.	G10233	2	Machine Bushing
23.	GA5109	2	Sprocket, 24 Tooth
24.	G3310-130	1	Chain, No. 40, 130 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
25.	GA5671	1	Transmission Plate, L.H.
	GA5672	-	Transmission Plate, R.H.
26.	GD1134	2	U-Bolt, 7" x 5" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
27.	GA7396	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"
	G10049	-	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10108	-	Lock Nut, 3/8"-16
28.	GD2734-08	1	Spacer, 5/8"
29.	GD3180-10	1	Sleeve, 3 1/4"

DRY FERTILIZER COUPLERS/SHAFTS

RH100594(TWL38a)



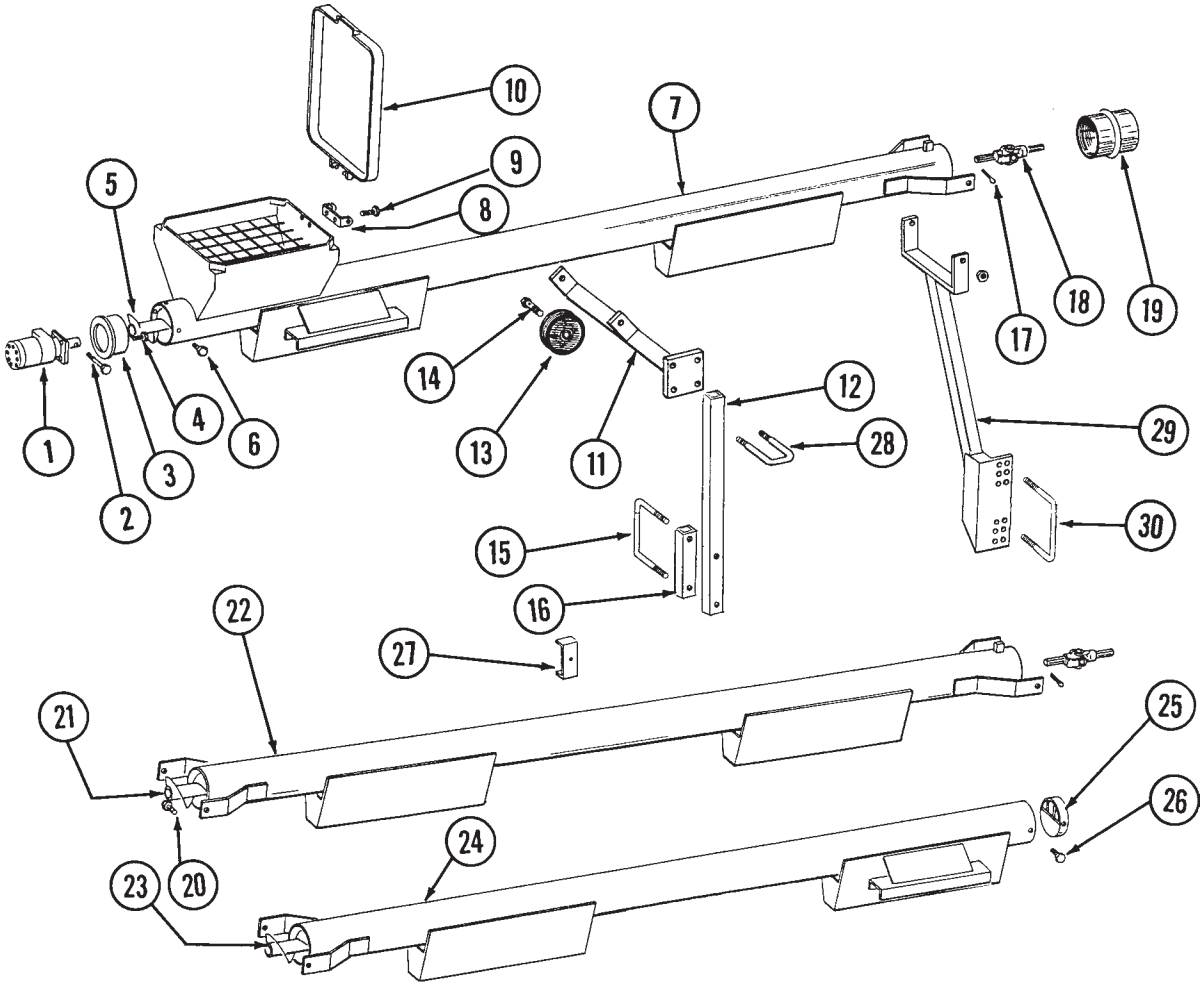
L.H. Side Of Machine Shown

DRY FERTILIZER COUPLERS/SHAFTS

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Dry Fertilizer Drive”, Pages P106 And P107
2.	GD10109	-	Coupler, 6"
3.	G10460	-	Cotter Pin, 1/4" x 2"
4.	GA7051	-	U-Joint, Male, 6 1/2" (Less Set Screws)
	GR1300	-	Grease Fitting
	G10688	-	Set Screw, 3/8"-16 x 5/8"
5.	GA7146	-	U-Joint, Female, 16 1/2" (Less Set Screws)
	GR1300	-	Grease Fitting
	G10688	-	Set Screw, 3/8"-16 x 5/8"
6.	G10233	-	Machine Bushing
7.	GD7867	-	Coupler, 3"
8.	GD2548-8.25	-	Shaft, 8 1/4"
9.	G10602	-	Spring Pin, 1/4" x 1 1/2"
10.	GD5886	-	Coupler, 1 3/4"
11.	GA7052	-	U-Joint, Female, 4 1/2" (Less Set Screws)
	GR1300	-	Grease Fitting
	G10688	-	Set Screw, 3/8"-16 x 5/8"
12.	GD10126	-	Coupler, 4"
13.	GD2548-24.5	-	Shaft, 24 1/2"
14.	GD2548-13.5	-	Shaft, 13 1/2"
15.	GD10773	-	Coupler, 10 3/4"

DRY FERTILIZER QUICK FILL

DFQ002/DFQ003/DFQ004/DFQ005(TWL39)



ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Dry Fertilizer Quick Fill Hydraulic System”, Pages P112 And P113
2.	G10041	1	Hex Head Cap Screw, 5/16"-18 x 2"
	G10109	1	Lock Nut, 5/16"-18
3.	GB0174	1	Motor Mount
4.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	4	Lock Washer, 3/8"
5.	GA7182	1	Auger, L.H. Side, 69 1/2", 8 Row 36"/38"
	GA7184	-	Auger, L.H. Side, 108 1/4", 12 Row 30"
	GA7183	-	Auger, L.H. Side, 137 1/2", 12 Row 36"/38"
	GA7185	-	Auger, L.H. Side, 168 1/4", 16 Row 30"

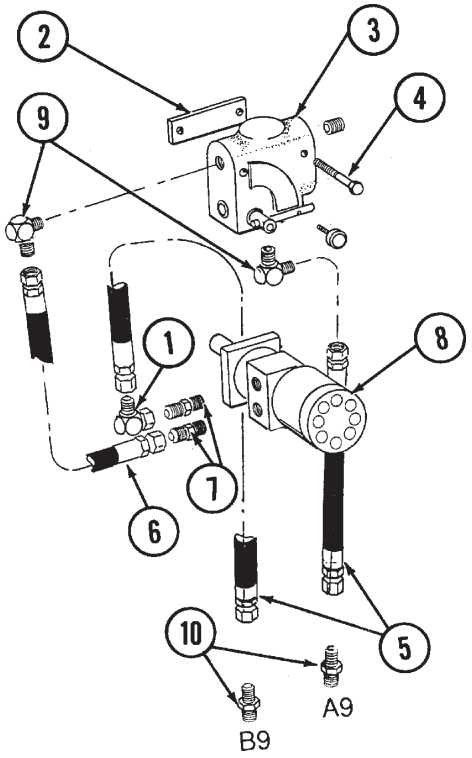
DRY FERTILIZER QUICK FILL

ITEM	PART NO.	QTY.	DESCRIPTION
6.	G10023	2	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	2	Lock Washer, 1/4"
7.	GA7160	1	Auger Tube, L.H. Side, 72", 8 Row 36"/38"
	GA7173	-	Auger Tube, L.H. Side, 110 3/4", 12 Row 30"
	GA7172	-	Auger Tube, L.H. Side, 140", 12 Row 36"/38"
	GA7174	-	Auger Tube, L.H. Side, 170 3/4", 16 Row 30"
8.	GD1060	1	Hinge
9.	G10064	2	Hex Head Cap Screw, 1/4"-20 x 1"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
10.	GA4444	1	Lid
11.	GA7159	2	Wing Mount
12.	GD10142	2	Mounting Tube
13.	GA4005	4	Wheel With Bearing
14.	G10032	4	Hex Head Cap Screw, 1/2"-13 x 3 3/4"
	G10216	8	Washer, 1/2" USS
	G10102	4	Hex Nut, 1/2"-13 (As Required)
	G10111	4	Lock Nut, 1/2"-13
15.	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
16.	GD9047	2	Spacer
17.	G10460	4	Cotter Pin, 1/4" x 2"
18.	GA5442	2	U-Joint
19.	GD6115	2	Boot
20.	G10009	4	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
	G10217	8	Washer, 5/8" USS
	G10107	4	Lock Nut, 5/8"-11
21.	GA7191	1	Auger, Center, 139 3/4", 8 Row 36"/38" And 12 Row 36"/38"
	GA7190	-	Auger, Center, 123 3/4", 12 Row 30" And 16 Row 30"
22.	GA7163	1	Auger Tube, Center, 144 1/2", 8 Row 36"/38" And 12 Row 36"/38"
	GA7178	-	Auger Tube, Center, 128 1/2", 12 Row 30" And 16 Row 30"
23.	GA7186	1	Auger, R.H. Side, 52", 8 Row 36"/38"
	GA7188	-	Auger, R.H. Side, 90", 12 Row 30"
	GA7187	-	Auger, R.H. Side, 121", 12 Row 36"/38"
	GA7189	-	Auger, R.H. Side, 150", 16 Row 30"
24.	GA7162	1	Auger Tube, R.H. Side, 72", 8 Row 36"/38"
	GA7176	-	Auger Tube, R.H. Side, 110 3/4", 12 Row 30"
	GA7175	-	Auger Tube, R.H. Side, 140", 12 Row 36"/38"
	GA7177	-	Auger Tube, R.H. Side, 170 3/4", 16 Row 30"
25.	GA5373	1	End Shield
26.	G10023	8	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	8	Lock Washer, 1/4"
	G10103	8	Hex Nut, 1/4"-20
27.	GD10164	1	Clamp, 2 1/2" x 2 1/2" (Located Above Center Section Pivot)
28.	GD2721	4	U-Bolt, 2" x 2" x 1/2"-13
	G10228	8	Lock Washer, 1/2"
	G10102	8	Hex Nut, 1/2"-13
29.	GA7157	1	Hinge Mount, L.H. (Shown)
	GA7158	1	Hinge Mount, R.H.
30.	GD1113	2	U-Bolt, 5" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11

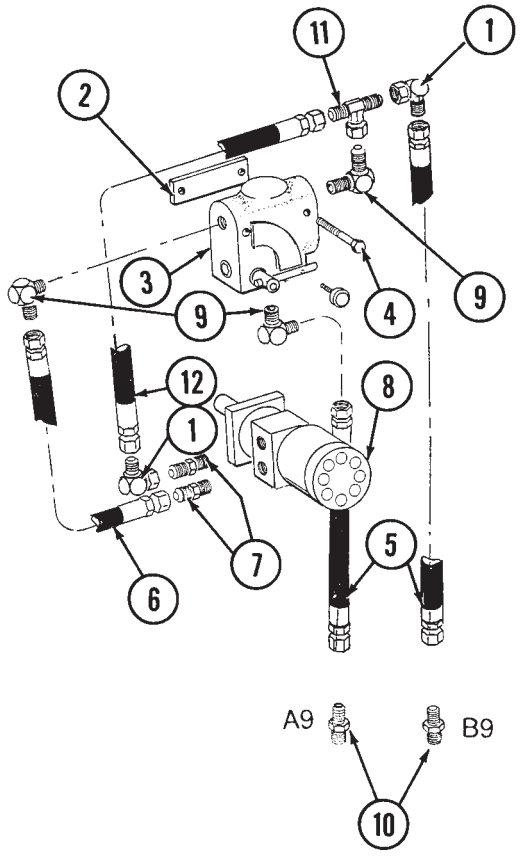
DRY FERTILIZER QUICK FILL HYDRAULIC SYSTEM

PHS030/PHS031(TWL40/TWL41)

Closed Center System



Open Center System



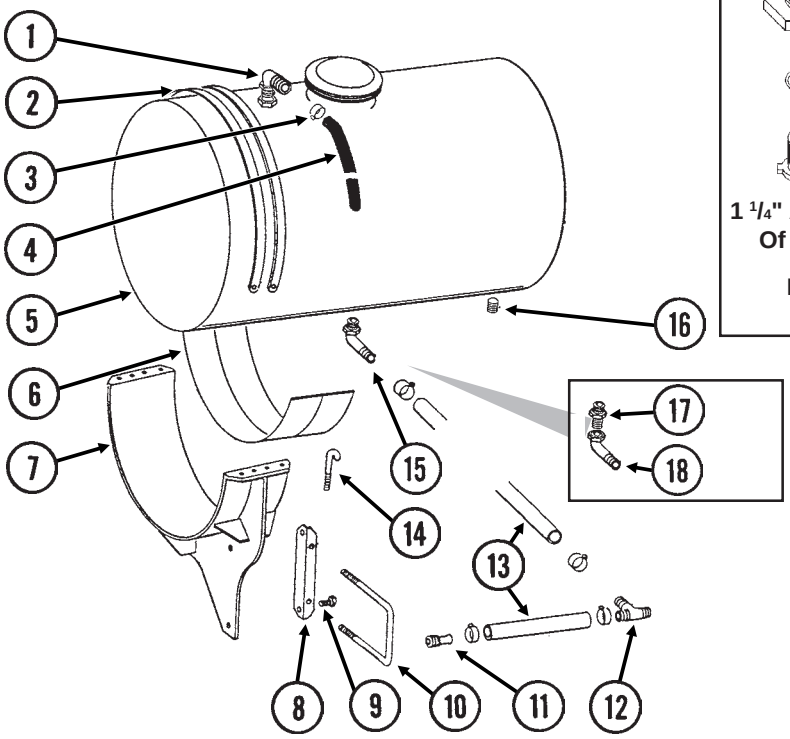
DRY FERTILIZER QUICK FILL HYDRAULIC SYSTEM

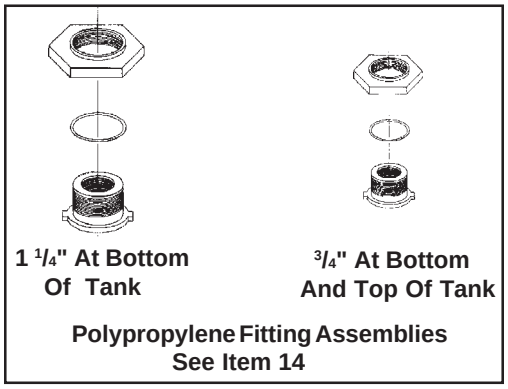
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6500-10	1-2	Elbow, 7/8"-14, Male JIC To Female
2.	GD6244	1	Spacer
3.	GA5374	1	Flow Control Valve
	GR0979	-	O-Ring
	GR0980	-	Handle
	GR0981	-	Side Lever Spool
4.	G10403	2	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	2	Lock Nut, 1/4"-20
5.	*A1471	2	Hose Assembly, 1/2" x 264", 8 Row 36"/38"
	*A8211	-	Hose Assembly, 1/2" x 300", 12 Row 30"
	*A1496	-	Hose Assembly, 1/2" x 332", 12 Row 36"/38"
	*A8210	-	Hose Assembly, 1/2" x 360", 16 Row 30"
6.	*A1450	1	Hose Assembly, 1/2" x 22"
7.	G6400-10	2	Connector, 7/8"-14 JIC To 7/8"-14 O-Ring
8.	GA5163	1	Motor
	GR1302	-	Seal Kit
9.	G2501-10-08	2-3	Elbow, 7/8"-14 JIC To 1/2" NPT
10.	G6400-10-08	2	Connector, 7/8"-14 JIC To 3/4"-16 O-Ring
11.	G6600-10	-	Swivel Outlet Tee, 7/8"-14 JIC
12.	*A1424	-	Hose Assembly, 1/2" x 30"

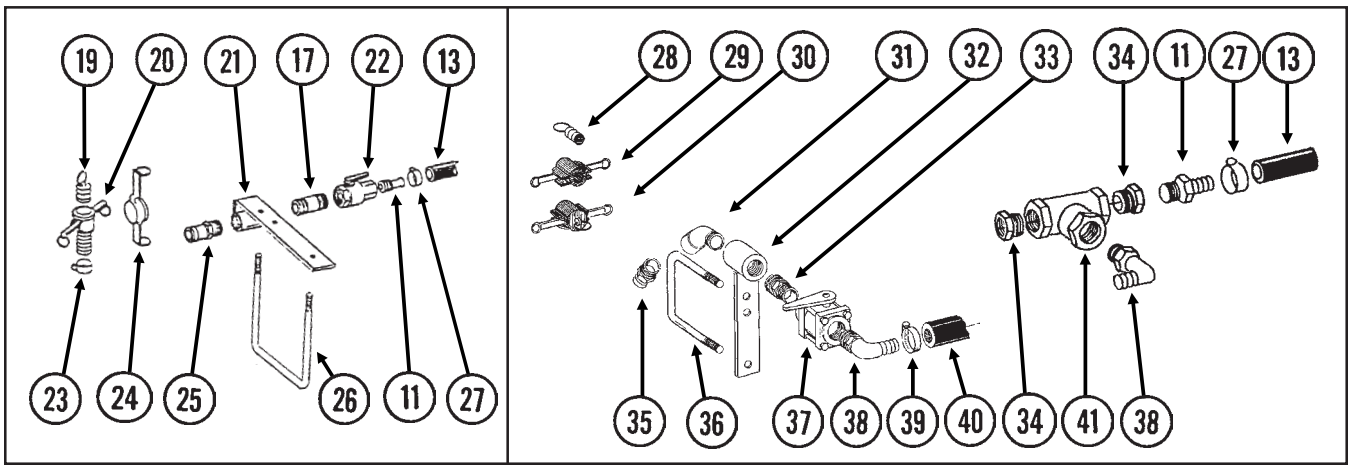
*** Hydraulic hose is not stocked by KINZE® Repair Parts, but can be made available on a special order basis. Call for quote.**

LIQUID FERTILIZER TANKS, SADDLES, SADDLE MOUNTS AND HOSES

LFC021/LFC023/LFC030/LFC012(TWL117a/PT51/TWL118a/TWL94a/TWL116)







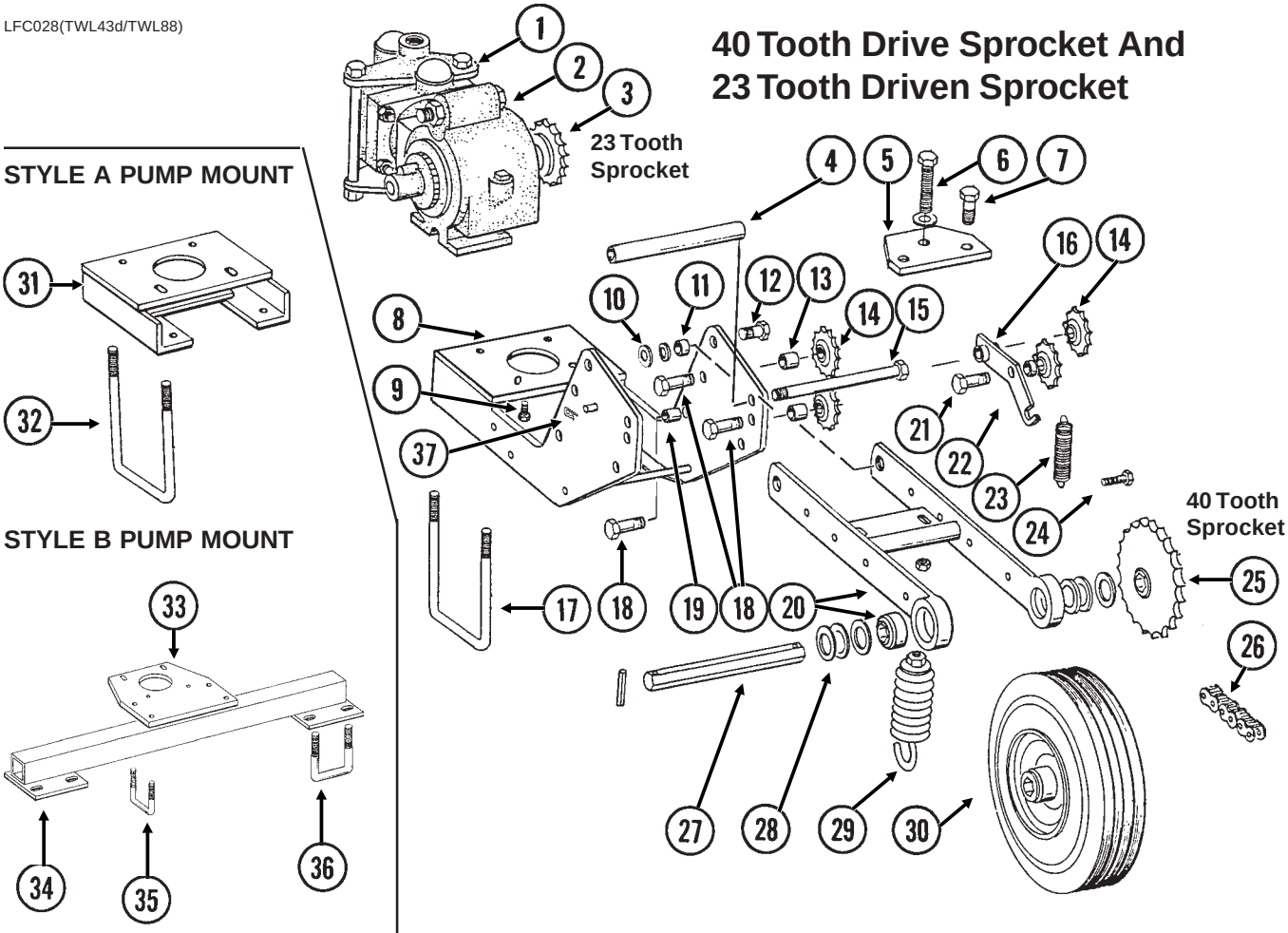
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10917	2	Elbow, 90°, 3/4" NPT To Barb
2.	GD1520	-	Band, 30" (4 Per Tank)
3.	G10278	2	Hose Clamp, No. 16
4.	G4205-03	-	Hose, 3/4" x 97"
	G4205-10	-	Hose 3/4" x 200" (3/4" x 48" Per Tank)
5.	GD1812	-	Tank With Lid And Fittings, 30" x 150 Gallon, 8 Row Sizes (Qty. 2), 12/16 Row Sizes (Qty. 4)
	GA5258	-	Tank With Lid And Fittings, 30" x 110 Gallon, 12/16 Row Sizes (Qty. 4)
	GR1005	-	Fill Well, Threaded (Top Of Tank)
	GR1006	-	Lid, 10", Threaded (Top Of Tank)
	GR0513	-	Polypropylene Fitting Assembly (Nut, Bushing And O-Ring), 3/4"
	GR0508		Polypropylene Fitting Assembly (Nut, Bushing And O-Ring), 1 1/4"
6.	GD1862	-	Pad, 8" x 14'
7.	GA7133	-	Tank Mount (2 Per Tank)
8.	GD10110	-	Mounting Angle (2 Per Tank)

LIQUID FERTILIZER TANKS, SADDLES, SADDLE MOUNTS AND HOSES

ITEM	PART NO.	QTY.	DESCRIPTION
9.	G10007	-	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
10.	GD1747	-	U-Bolt, 5" x 7" x 3/4"-10
	G10231	-	Lock Washer, 3/4"
	G10105	-	Hex Nut, 3/4"-10
11.	G10626	-	Adapter, 1 1/4" NPT To 1 1/4" Barb
12.	G10633	-	Tee, 1 1/4"
13.	G4200-06	1	Hose, 1 1/4" x 40', 8 Row 36"/38" And 12 Row 30"
	G4200-05	-	Hose, 1 1/4" x 50', 12 Row 36"/38" And 16 Row 30"
14.	GD1337	-	J-Bolt, 5/16"-18 (8 Per Tank)
	G10109	-	Lock Nut, 5/16"-18 (8 Per Tank)
15.	G10629	-	Elbow, 1 1/4"
16.	G10096	-	Nylon Plug, 3/4"
17.	G10619	-	Pipe Nipple, 1 1/4"
18.	G10887	-	Elbow, 1 1/4" NPT
19.	GD1517	1	Dust Plug, 1 1/4"
20.	GD1516	1	Adapter, 1 1/4"
21.	GA5917	1	Quick Fill Mount, 1 1/4"
22.	GA4976	-	Shutoff Valve, 1 1/4"
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle
23.	G10672	1	Clamp, No. 28
24.	GD1515	1	Dust Cap, 1 1/4"
25.	GD1514	1	Adapter, 1 1/4"
26.	GD8306	1	U-Bolt, 7" x 5" x 1/2"-13
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
27.	G10674	-	Clamp, No. 24
28.	GD10777	-	Dust Plug, 2"
29.	GD3622	-	Adapter, 2"
30.	GD3951	-	Dust Cap, 2"
31.	G10889	-	Elbow, 2", 45°
32.	GA7845	-	Quick Fill Mount, 2"
33.	G10623	-	Pipe Nipple, 2"
34.	G10616	-	Reducing Bushing, 2" To 1 1/4"
35.	GD3623	-	Adapter, 2"
36.	GD1113	-	U-Bolt, 5" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
37.	GA2660	-	Shutoff Valve, 2"
38.	G10630	-	Elbow, 2" NPT To Barb, 90°
39.	G10676	-	Clamp, No. 36
40.	G4201-02	-	Hose, 2" x 12', 8 Row
	G4201-03	-	Hose, 2" x 18', 12/16 Row
41.	G10888	-	Tee, 2"

LIQUID FERTILIZER PISTON PUMP DRIVE

LFC028(TWL43d/TWL88)



ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Liquid Fertilizer Piston Pump (Cylinder Assembly)”, Pages P124 And P125
2.		-	See “Liquid Fertilizer Piston Pump (Crankcase Assembly)”, Pages P122 And P123
3.	GA6509	1	Sprocket W/Set Screw, 23 Tooth
4.	GD10165	1	Sleeve, 6 3/4"
5.	GD10156	1	Spring Mount
6.	G10371	1	Hex Head Cap Screw, 1/2"-13 x 3"
	G10206	1	Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
7.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10206	2	Washer, 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
8.	GA7171	1	Pump Mount, Includes Items 4, 15 And 37
9.	G10003	4	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	GR1122	4	Mounting Pad
	G10210	4	Washer, 3/8" USS
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
10.	GD7805	2	Hardened Washer
11.	GB0218	2	Bushing, 19/32"

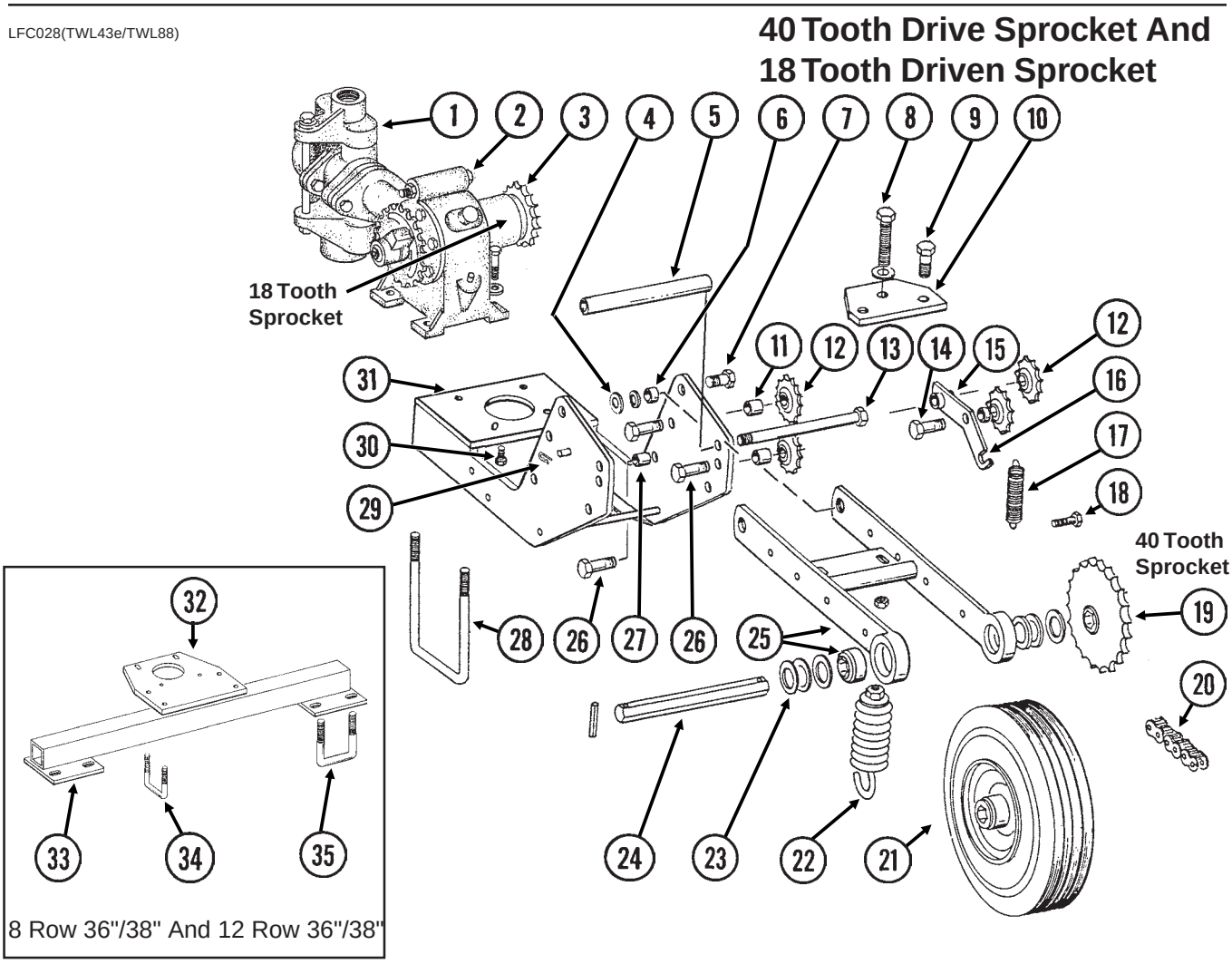
LIQUID FERTILIZER PISTON PUMP DRIVE

ITEM	PART NO.	QTY.	DESCRIPTION
12.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10235	2	Machine Bushing
	G10107	2	Lock Nut, 5/8"-11
13.	GD10007	2	Spacer, 1 1/8"
14.	GA7154	4	Idler Sprocket, 18 Tooth
15.	G10819	1	Hex Head Cap Screw, 1/2"-13 x 8 1/2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
16.	GA7179	1	Idler Arm
17.	GD1134	2	U-Bolt, 7" x 5" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
18.	G10038	3	Hex Head Cap Screw, 1/2"-13 x 3"
	G10228	3	Lock Washer, 1/2"
	G10102	3	Hex Nut, 1/2"-13
19	GD7904-04	-	Sleeve, 1 1/8"
20.	GA6415	1	Wheel Arm W/Bearings
	GA5116	-	Bearing
21.	G10016	1	Hex Head Cap Screw, 1/2"-13 x 2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
22.	GD10161	1	Spacer, 3/8"
23.	GD5857	1	Spring
24.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1/2"
	G10229	1	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
25.	GA7180	1	Sprocket, 40 Tooth
26.	G3310-160	1	Chain, No. 40, 160 Pitch Including Connector Link, 12 Row 30" And 16 Row 30"
	G3310-218	-	Chain, No. 40, 218 Pitch, Including Connector Link, 8 Row 36"/38" And 12 Row 36"/38", Style A
	G3310-210	-	Chain, No. 40, 210 Pitch, Including Connector Link, 8 Row 36"/38" And 12 Row 36"/38", Style B
	GR0912	-	Connector Link, No. 40
27.	GD5797	1	Shaft, 10"
	G10602	2	Spring Pin, 1/4" x 1 1/2"
28.	G10233	5	Machine Bushing
29.	GA2068	1	Spring
30.	GA5090	1	Tire And Rim Assembly (Specify Brand*)
	GD5753	-	Tire, 4.10" x 6" (Specify Brand*)
	GD5752	-	Tube
31.	GA7192	1	Pump Mount, 8 Row 36"/38" And 12 Row 36"/38", Style A
32.	GD8306	2	U-Bolt, 7" x 5" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
33.	GD10642	1	Plate, 8 Row 36"/38" And 12 Row 36"/38", Style B
34.	GA7507	1	Pump Mount, 8 Row 36"/38" And 12 Row 36"/38", Style B
35.	GD2721	2	U-Bolt, 2" x 2" x 1/2"-13, Style B
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
36.	GD4743	2	U-Bolt, 3" x 3" x 1/2"-13, Style B
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
37.	G10670	1	Hair Pin Clip, No. 3

*** Specific brand requests will be supplied only as available from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand could result in rate changes.**

LIQUID FERTILIZER PISTON PUMP DRIVE

LFC028(TWL43e/TWL88)



8 Row 36"/38" And 12 Row 36"/38"

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Liquid Fertilizer Piston Pump (Cylinder Assembly)”, Pages P128 And P129
2.		-	See “Liquid Fertilizer Piston Pump (Crankcase Assembly)”, Pages P126 And P127
3.		-	Sprocket, 18 Tooth, See “Liquid Fertilizer Piston Pump (Crankcase Assembly)”, Page P126
4.	GD7805	2	Hardened Washer
5.	GD10165	1	Sleeve, 6 3/4"
6.	GB0218	2	Bushing, 19/32"
7.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10235	2	Machine Bushing
	G10107	2	Lock Nut, 5/8"-11
8.	G10371	1	Hex Head Cap Screw, 1/2"-13 x 3"
	G10206	1	Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
9.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10206	2	Washer, 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
10.	GD10156	1	Spring Mount
11.	GD10007	2	Spacer, 1 1/8"
12.	GA7154	4	Idler Sprocket, 18 Tooth

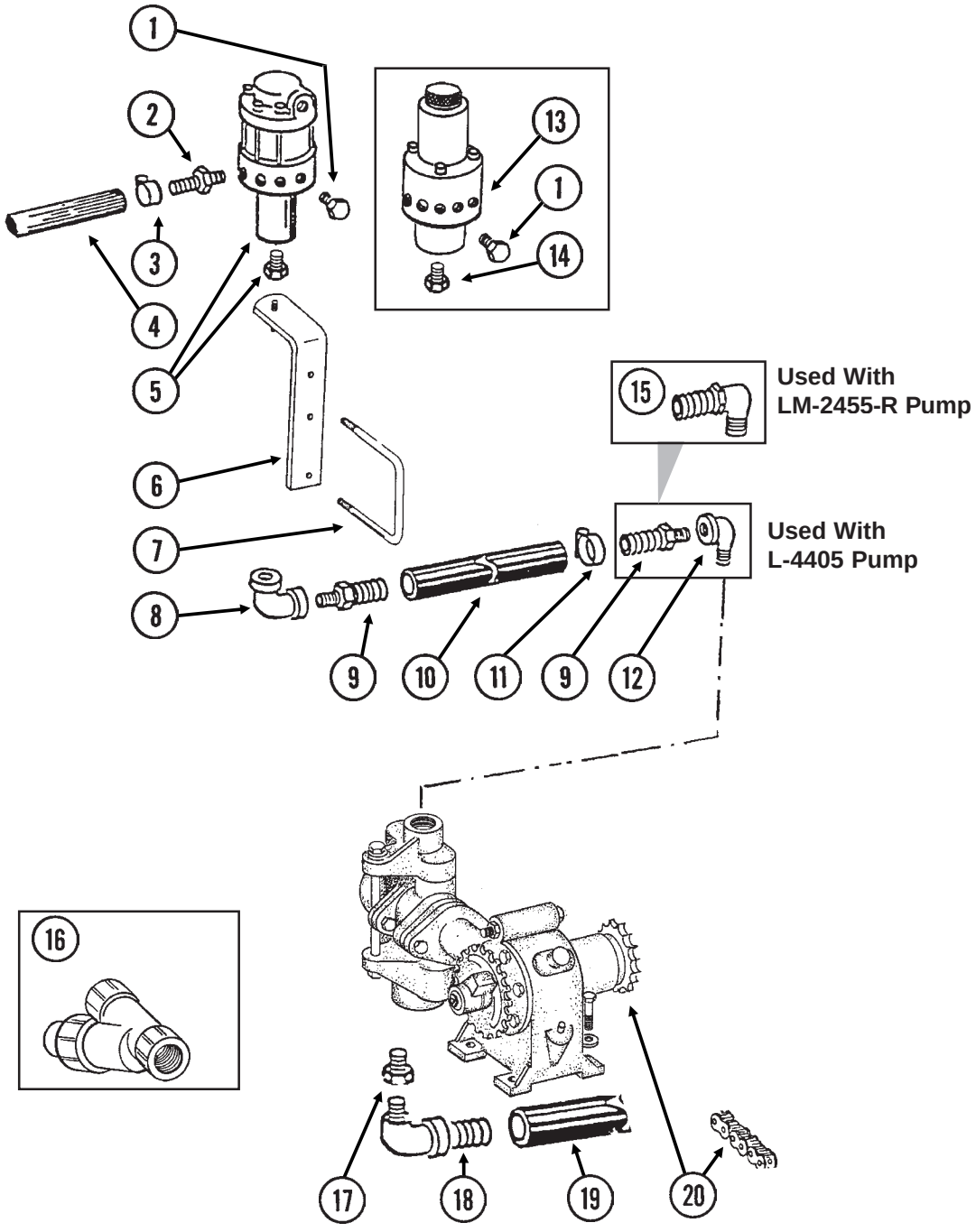
LIQUID FERTILIZER PISTON PUMP DRIVE

ITEM	PART NO.	QTY.	DESCRIPTION
13.	G10819	1	Hex Head Cap Screw, 1/2"-13 x 8 1/2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
14.	G10016	1	Hex Head Cap Screw, 1/2"-13 x 2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
15.	GD10161	1	Spacer, 3/8"
16.	GA7179	1	Idler Arm
17.	GD5857	1	Spring
18.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1/2"
	G10229	1	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
19.	GA7180	1	Sprocket, 40 Tooth
20.	G3310-160	1	Chain, No. 40, 160 Pitch Including Connector Link, 12 Row 30" And 16 Row 30"
	G3310-218	-	Chain, No. 40, 218 Pitch, Including Connector Link, 8 Row 36"/38" And 12 Row 36"/38", Style A
	G3310-210	-	Chain, No. 40, 210 Pitch, Including Connector Link, 8 Row 36"/38" And 12 Row 36"/38", Style B
	GR0912	-	Connector Link, No. 40
21.	GA5090	1	Tire And Rim Assembly (Specify Brand*)
	GD5753	-	Tire, 4.10" x 6" (Specify Brand*)
	GD5752	-	Tube
22.	GA2068	1	Spring
23.	G10233	5	Machine Bushing
24.	GD5797	1	Shaft, 10"
	G10602	2	Spring Pin, 1/4" x 1 1/2"
25.	GA6415	1	Wheel Arm W/Bearings
	GA5116	-	Bearing
26.	G10038	3	Hex Head Cap Screw, 1/2"-13 x 3"
	G10228	3	Lock Washer, 1/2"
	G10102	3	Hex Nut, 1/2"-13
27.	GD7904-04	-	Sleeve, 1 1/8"
28.	GD1134	2	U-Bolt, 7" x 5" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
29.	G10670	1	Hair Pin Clip, No. 3
30.	G10003	4	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	GR1122	4	Mounting Pad
	G10210	4	Washer, 3/8" USS
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
31.	GA7171	1	Pump Mount, Includes Items 5, 13 And 29
32.	GD10642	1	Plate, 8 Row 36"/38" And 12 Row 36"/38", Style B
33.	GA7507	1	Pump Mount, 8 Row 36"/38" And 12 Row 36"/38", Style B
34.	GD2721	2	U-Bolt, 2" x 2" x 1/2"-13, Style B
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
35.	GD4743	2	U-Bolt, 3" x 3" x 1/2"-13, Style B
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13

*** Specific brand requests will be supplied only as available from current KINZE® stock. If a specific brand as requested is not on hand, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand could result in rate changes.**

LIQUID FERTILIZER FLOW DIVIDER MOUNT AND HOSES

LFC028/LFC026(FRTZ162c)



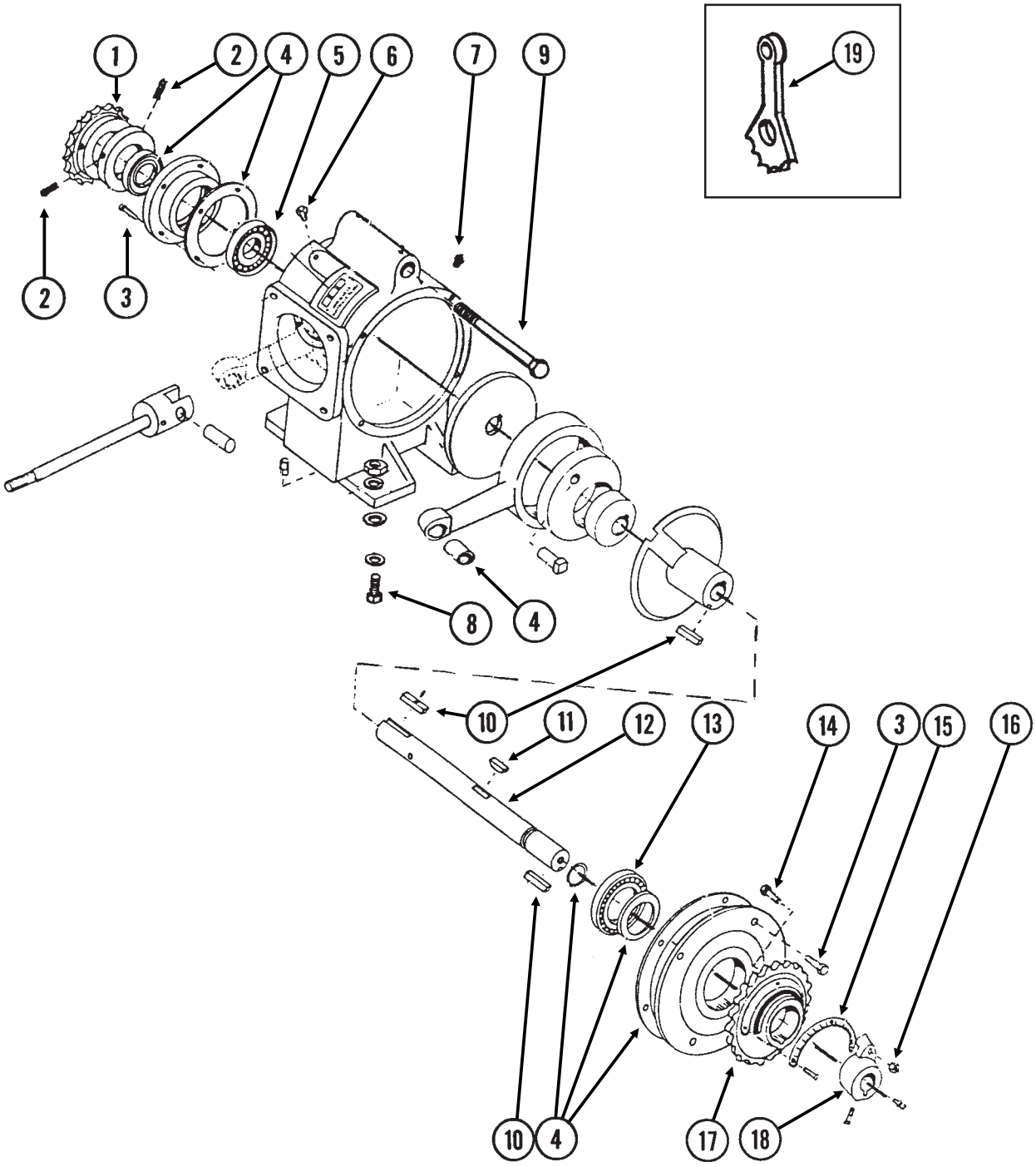
LIQUID FERTILIZER FLOW DIVIDER MOUNT AND HOSES

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10292	-	Plug, 1/4" NPT
2.	GD8816	-	Hose Barb
3.	G10673	-	Clamp, No. 8
4.	G4300-06	1	Hose, 7/16" x 160', 8 Row 36"/38" And 12 Row 30"
	G4300-05	2	Hose, 7/16" x 100', 12 Row 36"/38" And 16 Row 30"
5.		-	See “Liquid Fertilizer Flow Divider”, Pages P130, P131, P134 And P135
6.	GA6527	1	Support
7.	GD1113	3	U-Bolt, 5" x 7" x 5/8"-11
	G10230	6	Lock Washer, 5/8"
	G10104	6	Hex Nut, 5/8"-11
8.	G10733	1	Elbow, 3/4"
9.	G10734	-	Hose Barb, 3/4"
10.	G4205-02	-	Hose, 3/4" x 62"
11.	G10278	-	Clamp, No. 16
12.	G10735	1	Elbow, 90°, 3/4"
13.		-	See “Liquid Fertilizer Flow Divider”, Pages P132 And P133
14.	G10613	1	Reducing Bushing, 1" x 3/4"
15.	G10896	1	Adapter, 1" NPT To 3/4" Barb
16.	GA3893	1	Strainer Complete
	GR0880	-	Screen, No. 40 Mesh
	GR0881	-	Gasket
	GR0882	-	“Y” Body
	GR0883	-	End Cap
17.	G10615	1	Reducing Bushing, 1 1/2" x 1 1/4"
18.	G10629	3	Elbow
19.	G4200-08	1	Hose, 1 1/4" x 3'
20.		-	See “Liquid Fertilizer Piston Pump Drive - 40 Tooth Dirve Sprocket And 23 Tooth Driven Sprocket”, Pages P116 And P117 and/or “Liquid Fertilizer Piston Pump Drive - 40 Tooth Dirve Sprocket And 18 Tooth Driven Sprocket”, Pages P118 And P119

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

JB-L4400-991/CCU077(FRTZ174)

John Blue® Model L-4405



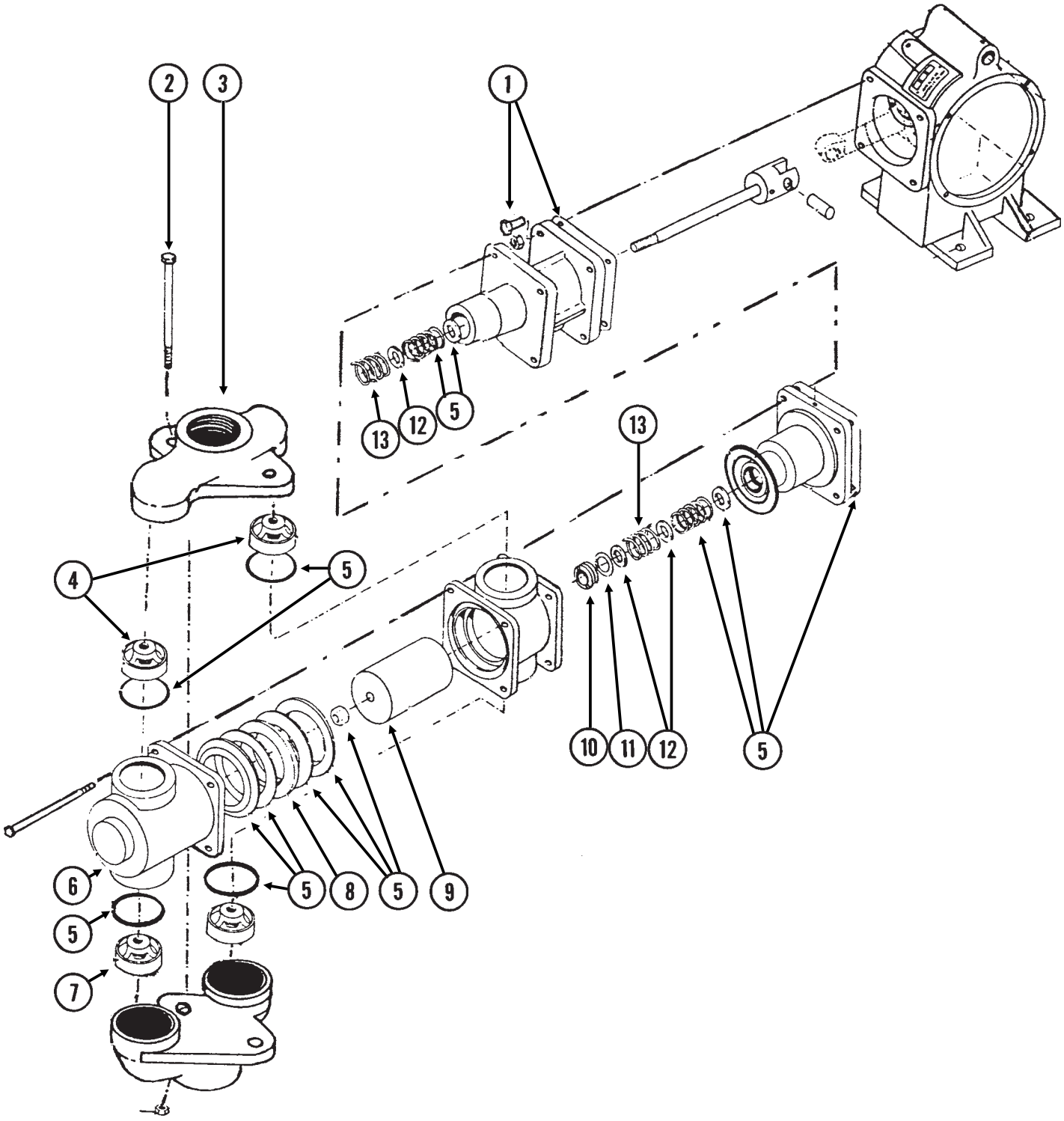
LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 23 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Liquid Fertilizer Piston Pump Drive”, Pages P116 And P117
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 P122 And P123
5.	GR1104	1	Bearing
6.	G10054	2	Hex Bolt, 5/16"-18 x 1/2"
7.	GR1107	1	Vent Plug
8.		-	See “Liquid Fertilizer Piston Pump Drive”, Pages P116 And P117
9.	G10318	1	Hex Head Cap Screw, 5/8"-11 x 4 1/2"
	G10104	1	Hex Nut, 5/8"-11
10.	GR1118	3	Setting Arm Key
11.	GR1112	1	Woodruff Key
12.	GR1148	1	Crankshaft
13.	GR1116	1	Bearing
14.	GR1167	1	Square Head Bolt, 3/8"-16 x 1 3/4"
15.	GR1168	1	Scale
16.	G10108	1	Lock Nut, 3/8"-16
17.	GR1114	1	Flange
18.	GR1165	1	Arm
19.	GR1100	1	Adjustment Wrench
A.	GA6154	-	Piston Pump Complete Less 23 Tooth Sprocket (L-4405), Includes Crankcase Assembly On This Page And Cylinder Assembly On Pages P124 And P125

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

JB-L2190-991(FRTZ173)

John Blue® Model L-4405



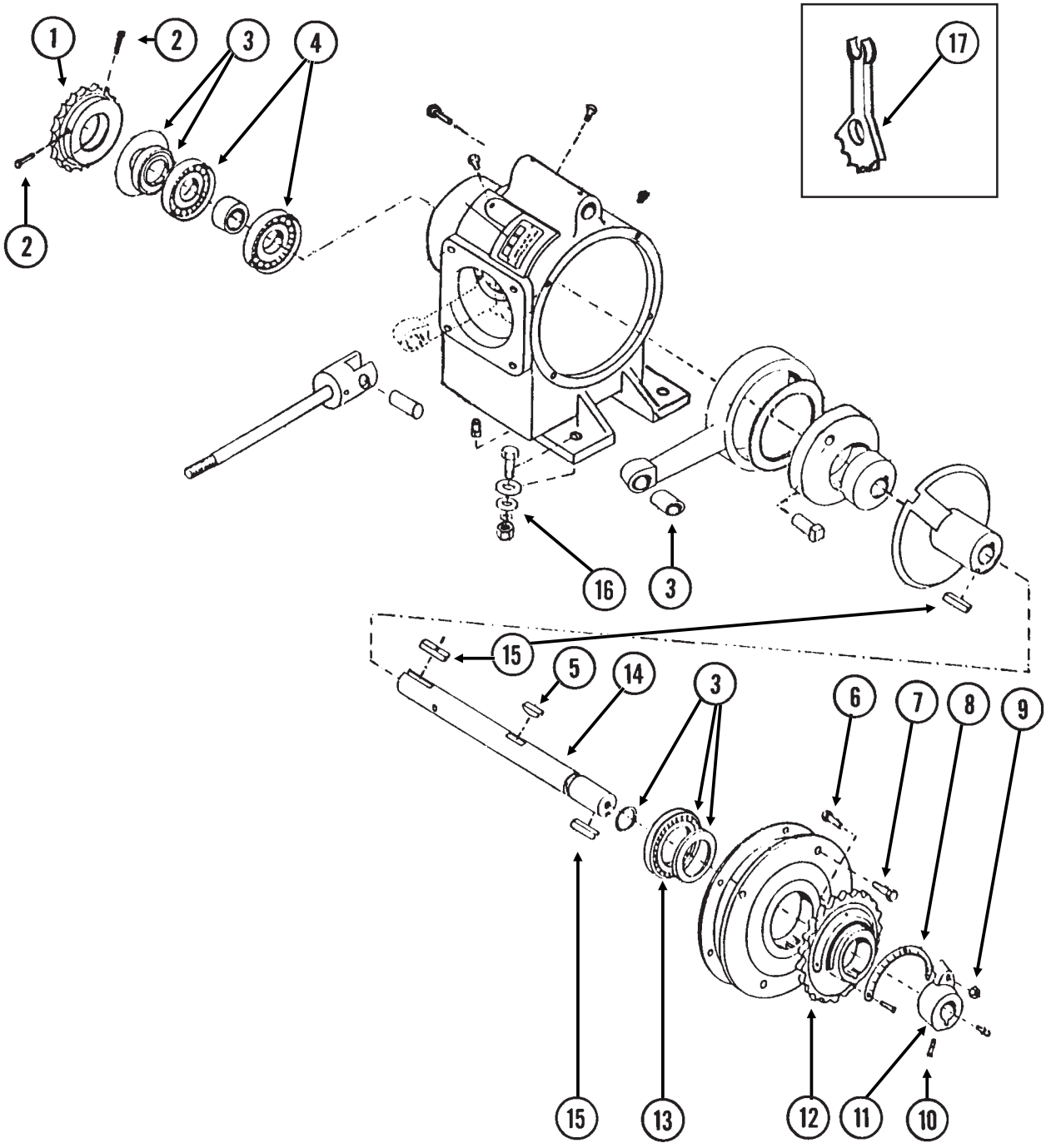
LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 23 Tooth Sprocket

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 6 On Pages P122 And P123
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



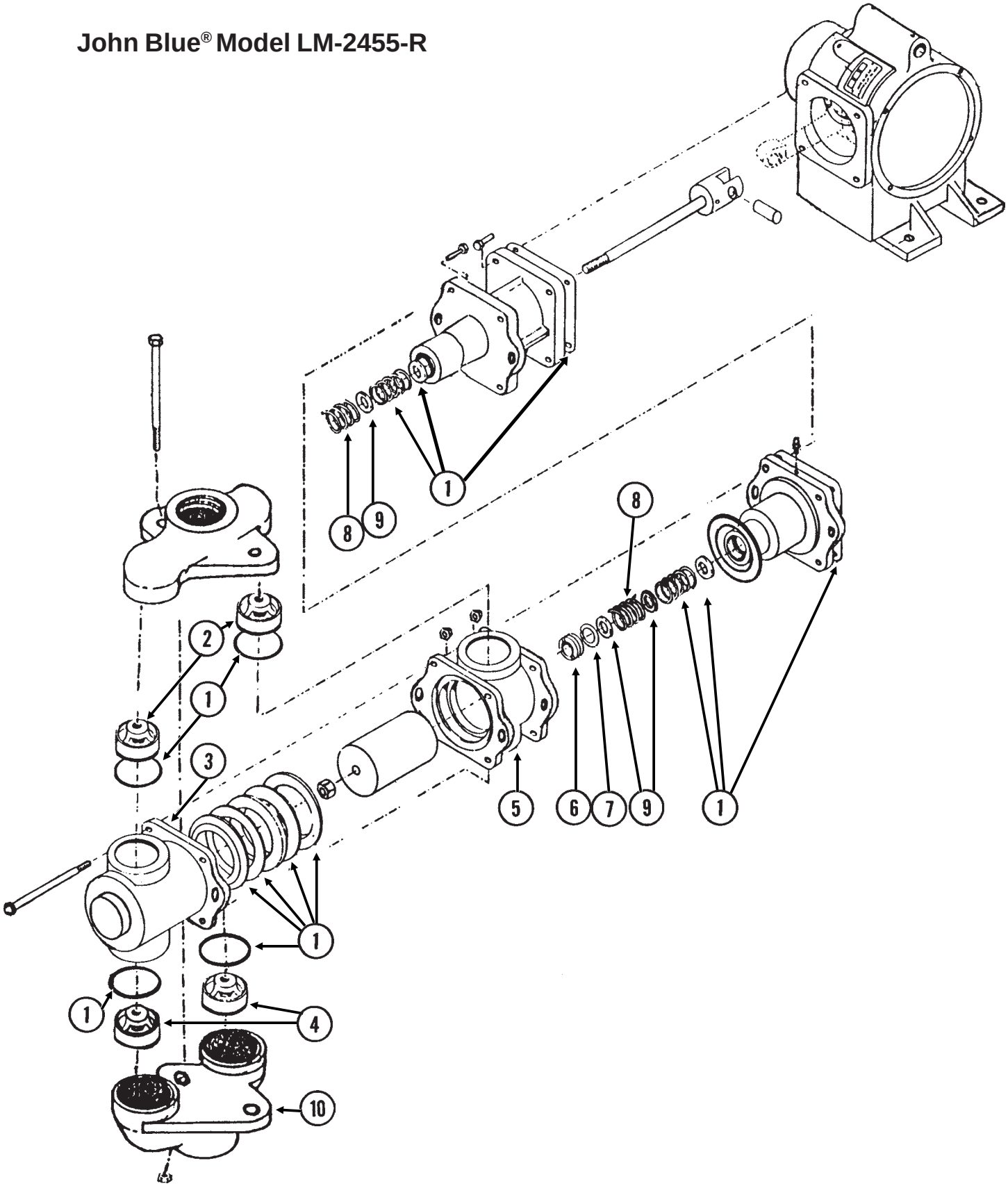
LIQUID FERTILIZER PISTON PUMP (Crankcase Assembly) Uses 18 Tooth Sprocket

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 P128 And P129
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 P118 And P119
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 P128 And P129

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

JB-L2190-991(FRTZ171)

John Blue® Model LM-2455-R



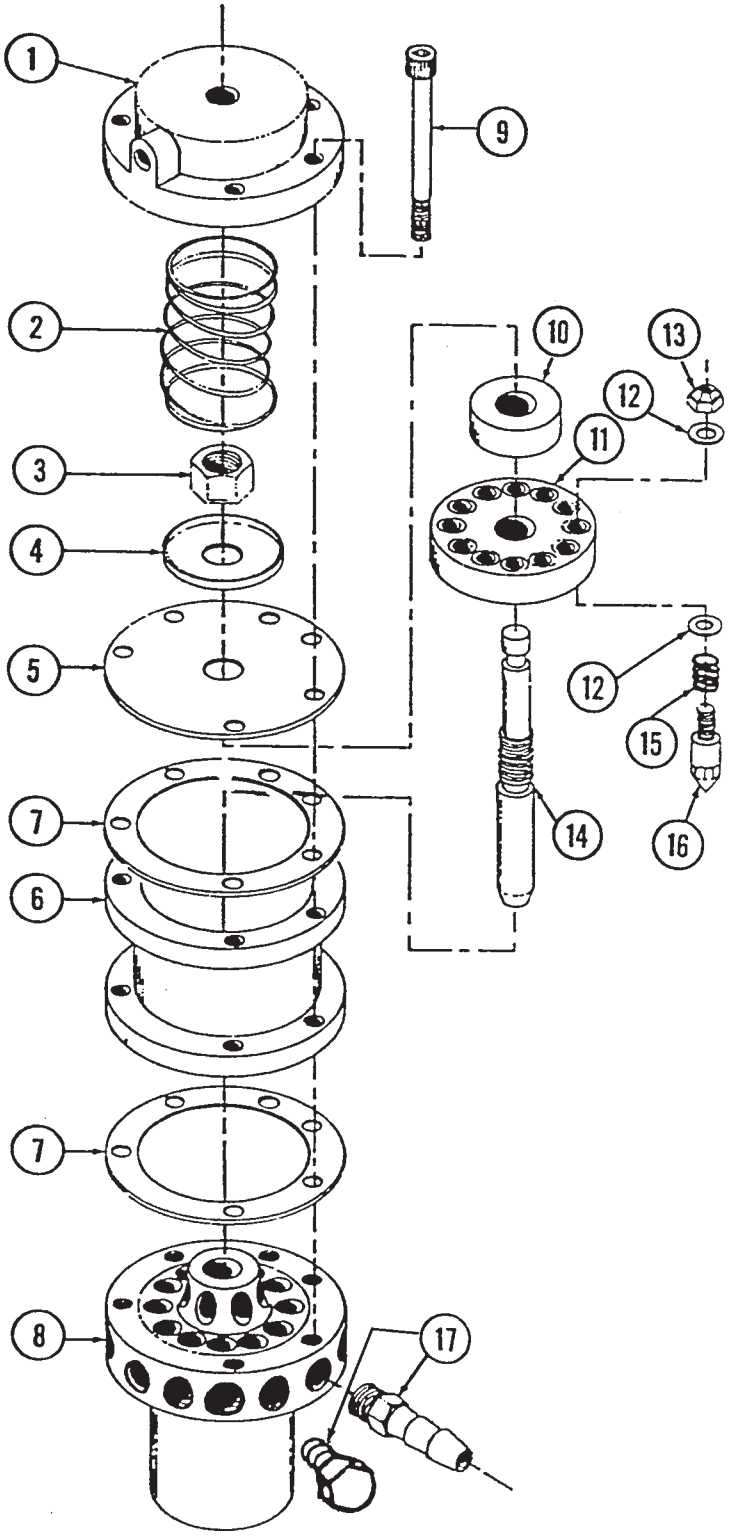
LIQUID FERTILIZER PISTON PUMP (Cylinder Assembly) Uses 18 Tooth Sprocket

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1425	1	Repair Kit, Also Includes Item 3 On Pages P126 And P127
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, 8/12 ROW SIZE

JB-L2190-991(PT40)

John Blue® Flow Divider



LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER, 8/12 ROW SIZE

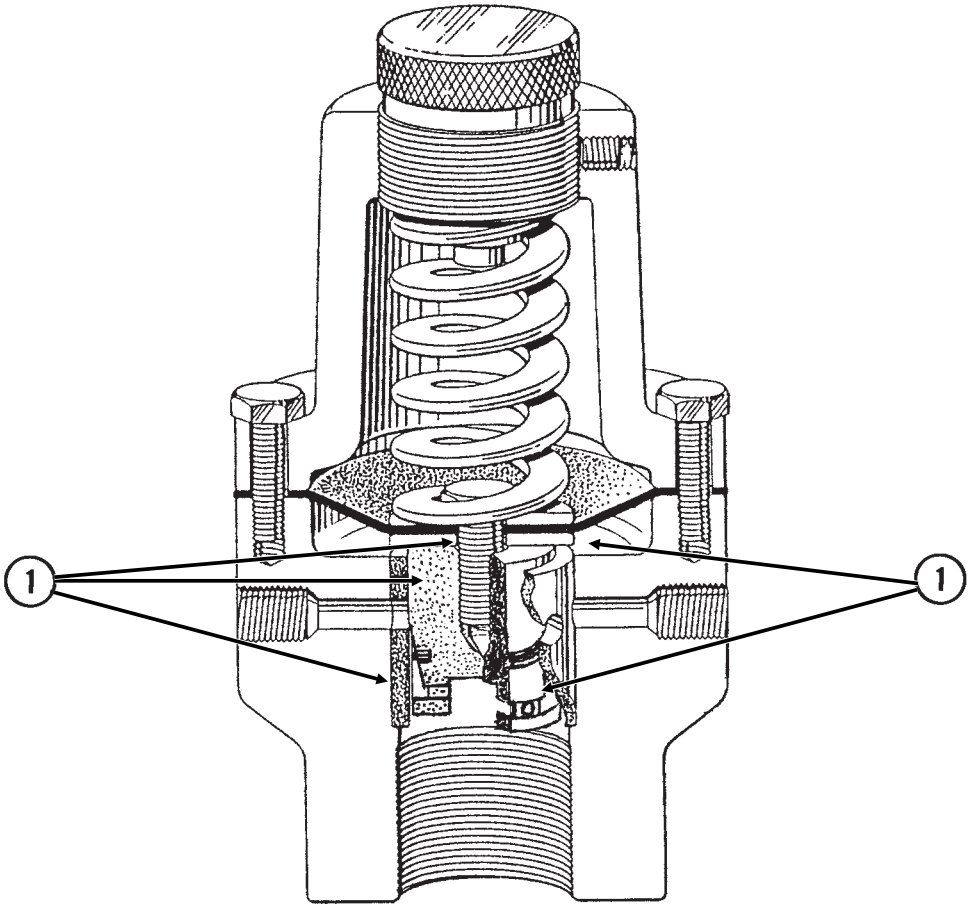
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1150	1	Cap
2.	GR1151	1	Spring
3.	G10358	1	Hex Nut, $^{9}/_{16}$"-18
4.	GR1152	1	Plate
5.	GR1153	1	Diaphragm
6.	GR1154	1	Housing
7.	GR1155	2	Gasket
8.	*	1	Manifold
9.	GR1157	6	Socket Screw, $^{1}/_{4}$"
10.	GR1158	1	Lock
11.	*	1	Disk
12.	*	24	Stainless Steel Washer
13.	*	12	Valve Nut
14.	GR1162	1	Plunger
15.	*	12	Spring
16.	*	12	Valve
17.		-	See “Liquid Fertilizer Flow Divider Mount And Hoses”, Pages P120 And P121
A.	GA6158	1	Liquid Fertilizer Piston Pump Flow Divider Complete

*** Factory calibration required. Replacement not recommended. Always be sure timing marks on disk and manifold line up.**

LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER, 8/12 ROW SIZE

(FRTZ159)

CDS® Flow Divider



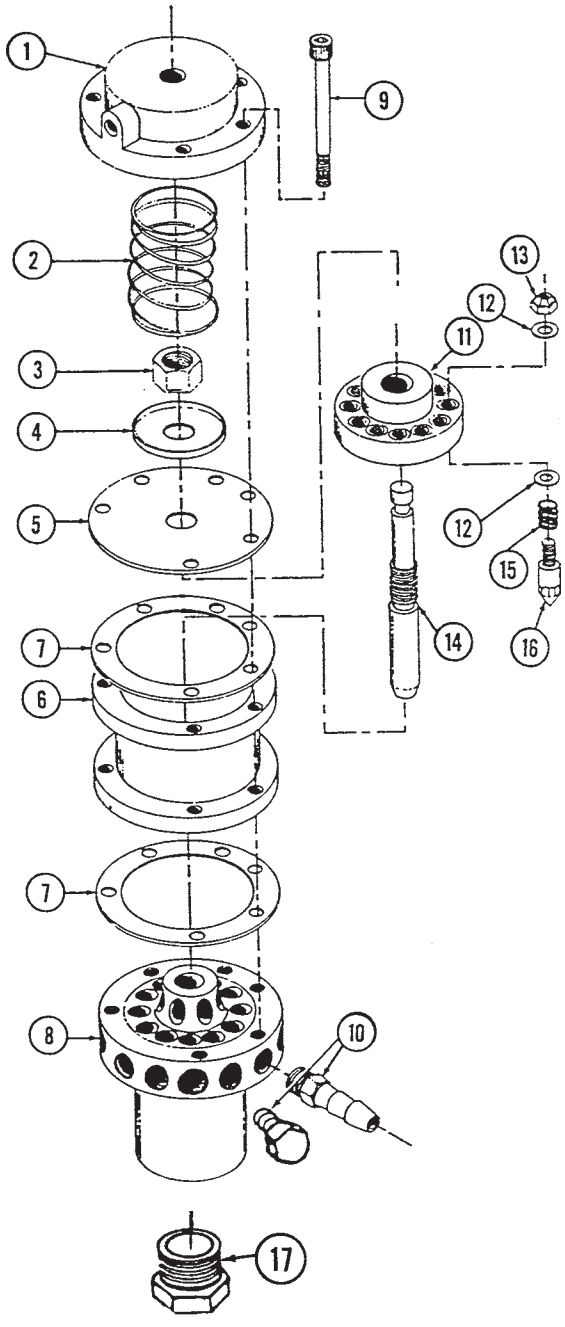
LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER, 8/12 ROW SIZE

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 PISTON PUMP FLOW DIVIDER, 16 ROW SIZE

JB-L2190-991(TWL45/PT39)

John Blue® Flow Divider



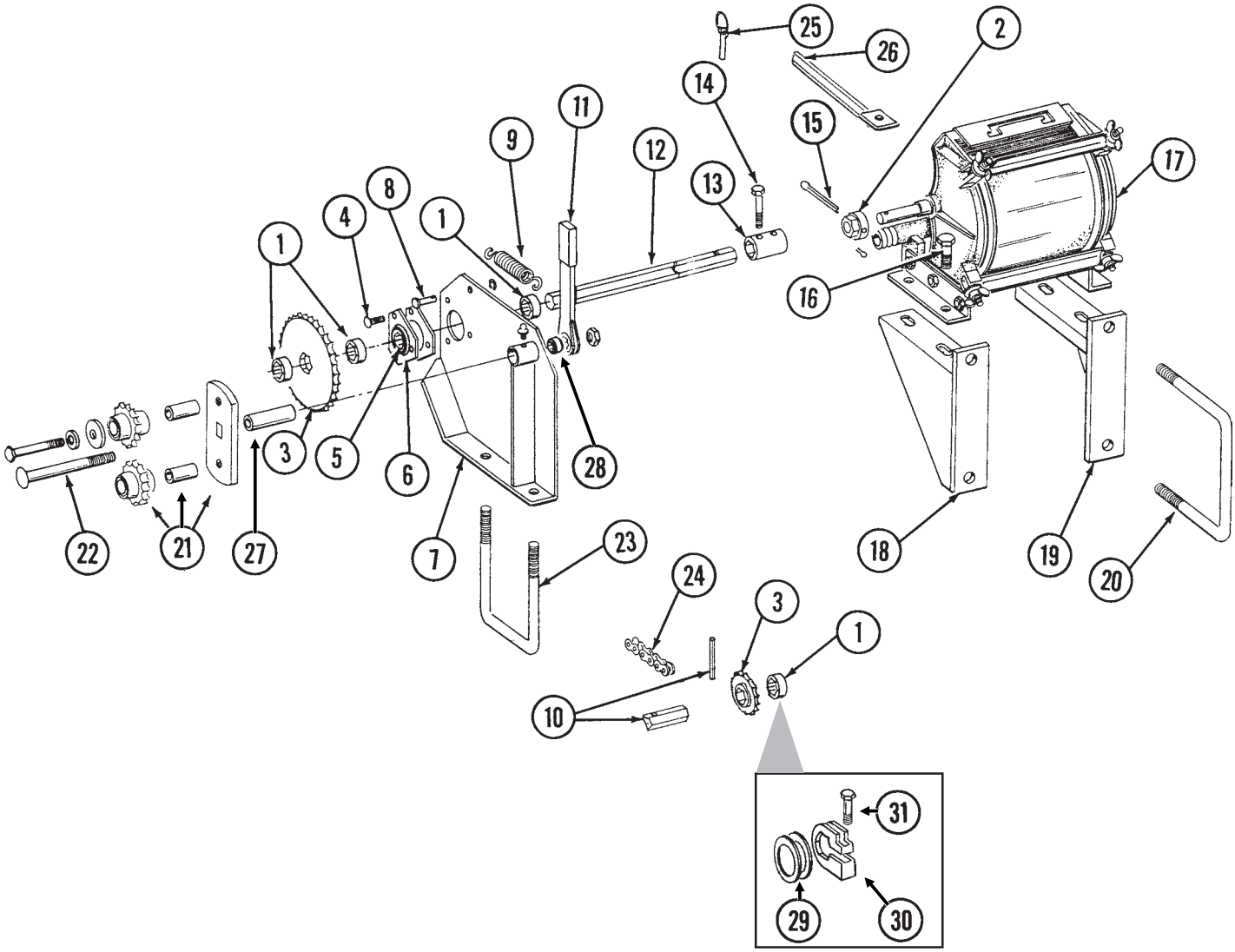
LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER, 16 ROW SIZE

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1188	1	Cap
2.	GR1189	1	Spring
3.	G10358	1	Hex Nut, 9/16"-18
4.	GR1190	1	Plate
5.	GR1191	1	Diaphragm
6.	GR1192	1	Housing
7.	GR1193	2	Gasket
8.	*	1	Manifold
9.	GR1195	6	Socket Screw, 1/4"
10.		-	See “Liquid Fertilizer Flow Divider Mount And Hoses”, Pages P120 And P121
11.	*	1	Disk
12.	*	24	Stainless Steel Washer
13.	*	12	Valve Nut
14.	GR1199	1	Plunger
15.	*	12	Spring
16.	*	12	Valve
17.	G10737	1	Reducing Bushing, 1 1/4" To 3/4"
A.	GA6570	1	Liquid Fertilizer Piston Pump Flow Divider Complete, 16 Row (Items 1-16)

*** Factory calibration required. Replacement not recommended. Always be sure timing marks on disk and manifold line up.**

LIQUID FERTILIZER SQUEEZE PUMP DRIVE

LFC022/LFC029(TWL46a/PLTR128)



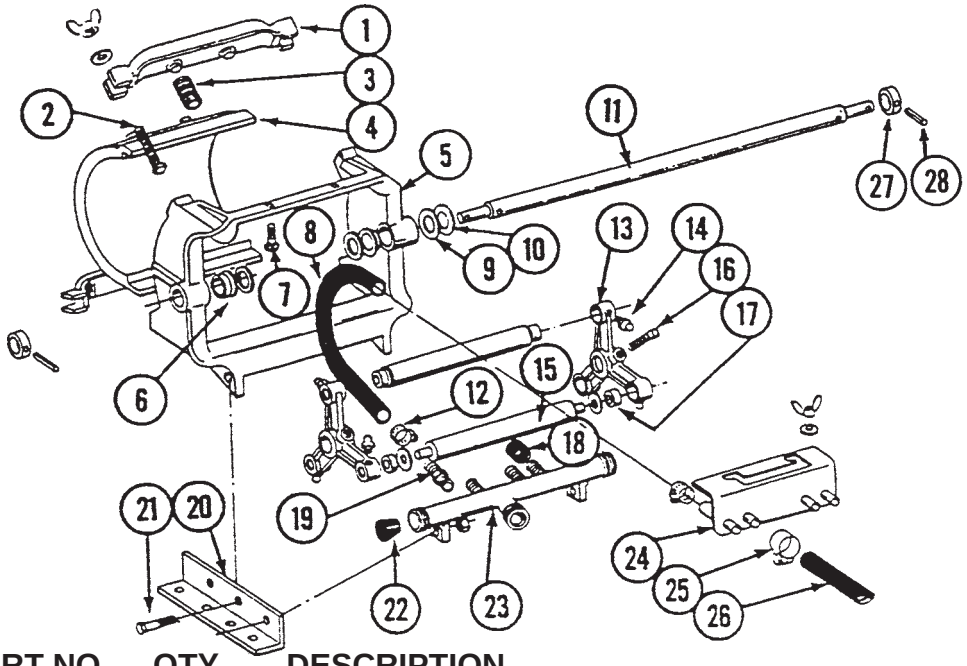
ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	GD0917	4	Lock Collar (Less Set Screws) **(Sub G1K269)**
	G10145	8	Set Screw, 5/16"-18 x 1/2"
2.	GD7127	1	Shear Coupler
3.	GA5105	1	Sprocket, 15 Tooth
	GA5107	1	Sprocket, 19 Tooth
	GA6513	1	Sprocket, 32 Tooth
	GA5202	1	Sprocket, 34 Tooth
	GA6514	1	Sprocket, 46 Tooth
	GA6515	-	Sprocket, 62 Tooth (Optional)
4.	G10303	3	Carriage Bolt, 5/16"-18 x 1"
	G10219	3	Washer, 5/16" USS
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18

LIQUID FERTILIZER SQUEEZE PUMP DRIVE

ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
5.	G2100-03	1	Bearing, 7/8" Hex
6.	G3400-01	2	Flangette
7.	GA4617	1	Drive Plate With Grease Fitting
	GA4618	-	Drive Plate With Grease Fitting (Shown)
	G10641	-	Grease Fitting, 1/8" NPT
	G10640	-	Grease Fitting, 1/4"-28
8.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Retaining Ring, 5/16"
9.	GD5857	1	Spring
10.		-	See “Transmission And Row Unit Driveline”, Pages P50 And P51
11.	GA4235	1	Ratchet Wrench With Protective Closure
	G10445	-	Protective Closure
12.	GD2548-48	1	Shaft, 7/8" x 48", 8 Row
	GD2548-54	-	Shaft, 7/8" x 54", 12/16 Row
13.	GD6924	1	Coupler
14.	G10339	1	Hex Head Cap Screw, 5/16"-18 x 2"
	G10232	1	Lock Washer, 5/16"
	G10106	1	Hex Nut, 5/16"-18
15.	G10462	1	Cotter Pin, 3/16" x 2"
16.	G10004	4	Hex Head Cap Screw, 3/8"-14 x 1 1/4"
	G10210	4	Washer, 3/8" USS
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/4"-14
17.		-	See “Liquid Fertilizer Squeeze Pump”, Pages P138-P141
18.	GA4619	1	Pump Mount, L.H.
19.	GA4620	1	Pump Mount, R.H.
20.	GD1113	2	U-Bolt, 5" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
21.	GA7336	1	Idler With 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"
22.	G10865	1	Carriage Bolt, 1/2"-13 x 4"
	G10111	1	Lock Nut, 1/2"-13
23.	GD1134	1	U-Bolt, 7" x 5" x 5/8"-11
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
24.	G3310-170	1	Chain, No. 40, 170 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
25.	GD2558	1	Lynch Pin, 1/4"
26.	GA5229	1	Storage Rod
27.	GD3180-04	1	Sleeve, 2 1/8"
28.	GD10161	1	Spacer, 3/8"
29.	G10233	-	Machine Bushing (As Required)
30.	GD11045	4	Lock Clamp
31.	G10031	4	Hex Head Cap Screw, 5/16"-18 x 1 3/4"
	G10620	4	Flange Nut, 5/16"-18
A.	G1K269	-	Lock Clamp Kit, (Items 30 And 31)

LIQUID FERTILIZER SQUEEZE PUMP, 8 ROW SIZES

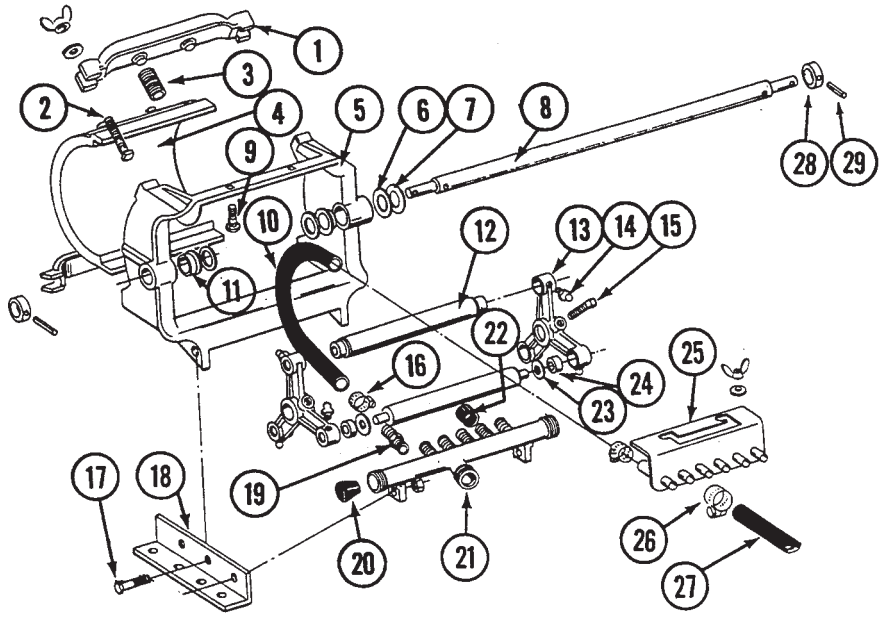
LFC011(PT46)



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.	GD9107	1	Shaft
12.	G10681	12	Clamp, No. 6
13.	GR0223	2	Roller Arm
14.	G10640	8	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	-	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.	G4300-16	-	Hose, 7/16" x 120'
27.	GD9109	2	Sleeve
28.	G10718	2	Spring Pin, 5/16" x 1 1/8"
A.	GA6510	2	Squeeze Pump Complete, 4 Rows (Items 1-24)

LIQUID FERTILIZER SQUEEZE PUMP, 12 ROW SIZES

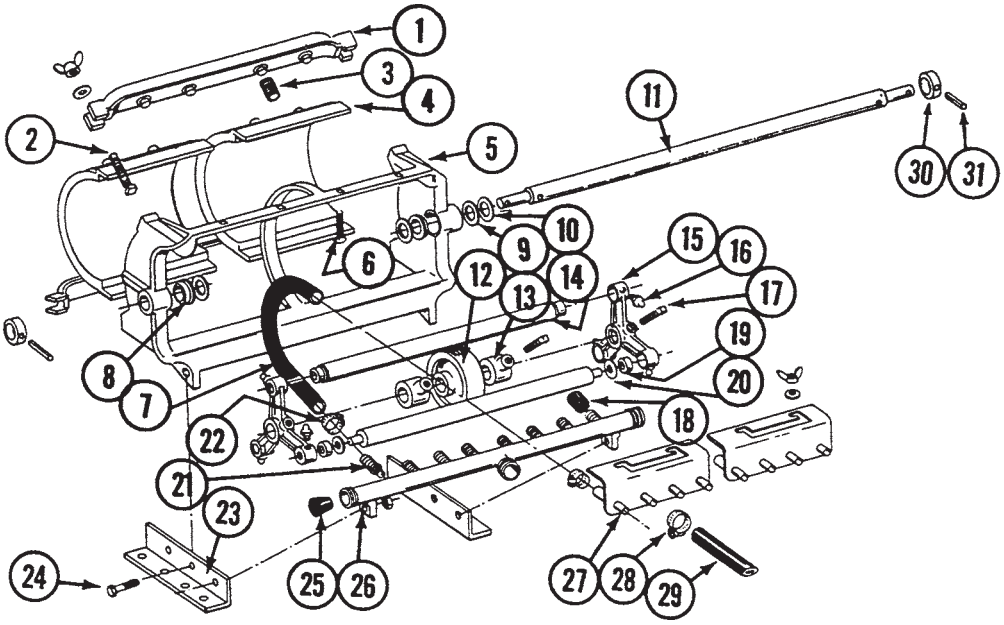
LFC011/LFC010(PT46)



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	8	Spring
4.	GR0212	2	Plate
5.	GR0208	1	Frame
6.	GR0225	2	Shim, 1/32"
7.	GR0226	2	Shim, 1/32"
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	16	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	8	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	2	Discharge Manifold
26.	G10673	-	Clamp, No. 8
27.	G4300-06	-	Hose, 7/16" x 160'
	G4300-05	-	Hose, 7/16" x 100'
28.	GD9109	2	Sleeve
29.	G10718	2	Spring Pin, 5/16" x 1 1/8"
A.	GA6511	2	Squeeze Pump Complete, 6 Rows (Items 1-25 And 28-29)

LIQUID FERTILIZER SQUEEZE PUMP, 16 ROW SIZE

LFC010(PT48)

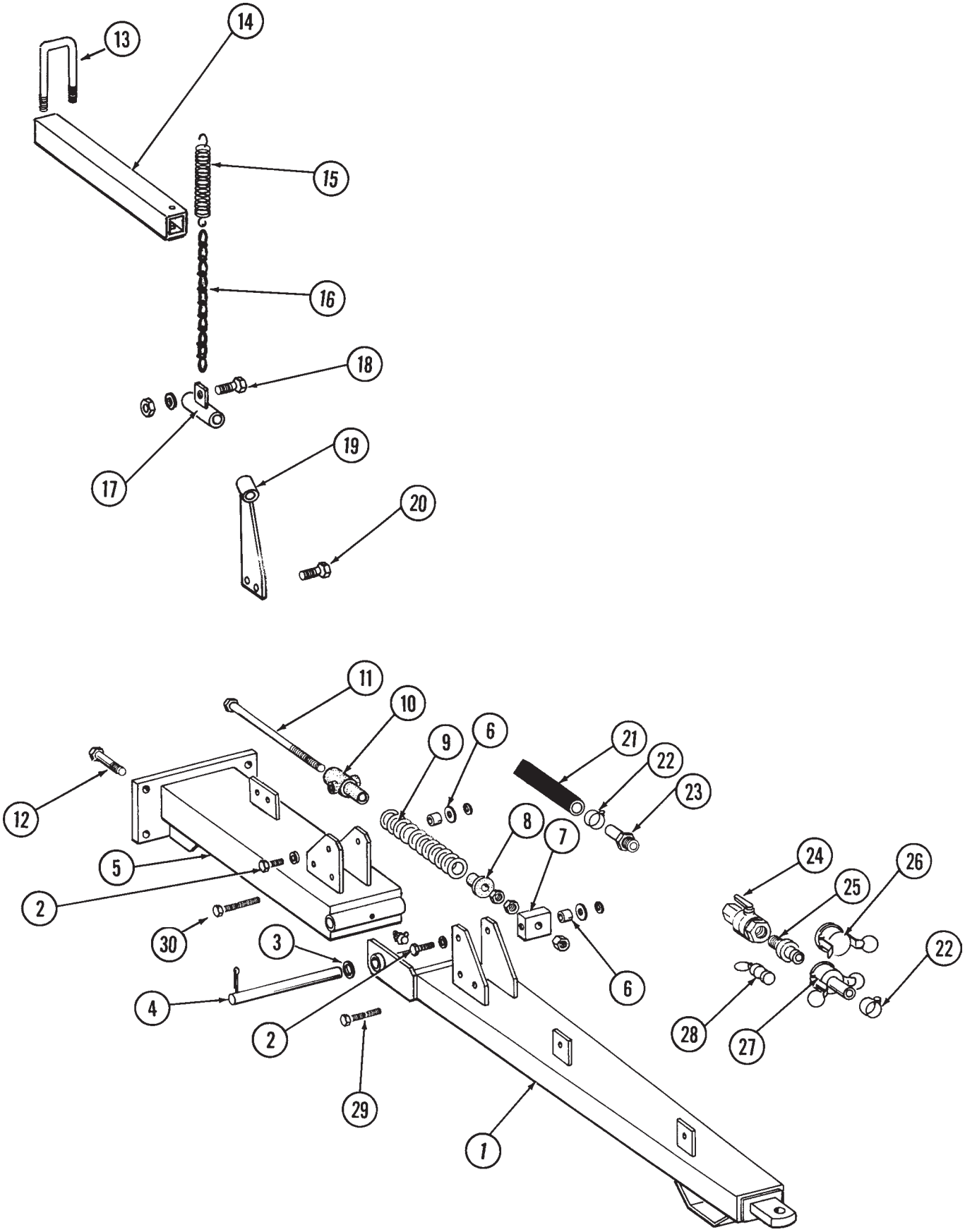


LIQUID FERTILIZER SQUEEZE PUMP, 16 ROW SIZE

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	1	Discharge Manifold
28.	G10673	8	Clamp, No. 8
29.	G4300-05	-	Hose, 7/16" x 100'
30.	GD9109	2	Sleeve
31.	G10718	2	Spring Pin, 5/16" x 1 1/8"
A.	GA6512	2	Squeeze Pump Complete, 8 Rows (Items 1-27 And 30-31)

REAR TRAILER HITCH

PHA032/LFC003(TWL47a)



REAR TRAILER HITCH

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6961	1	Hitch
2.	G10007	4	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	GD7805	4	Special Washer
	G10230	4	Lock Washer, 5/8"
3.	G10226	2	Washer, 1 1/4" SAE
4.	GD3547	1	Shaft
	G10460	2	Cotter Pin, 1/4" x 2"
5.	GA6960	1	Hitch
6.	GB0218	4	Bushing, 19/32"
7.	GD7908	1	Tap Block
8.	GB0213	1	Spring Seat
9.	GD2115	1	Spring
10.	GB0206	1	Rod Guide
11.	GD7907	1	Special Bolt
	G10105	3	Hex Nut, 3/4"-10
12.	G10826	5	Hex Head Cap Screw, 1"-8 x 2 1/2"
	G10396	5	Lock Nut, 1"-8
13.	GD2721	2	U-Bolt, 2" x 2" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
14.	GD10196	-	Hanger Tube
15.	GD0829	-	Spring
16.	G3305-03	-	Twin Loop Chain
17.	GA7209	-	Hose Support
18.	G10064	1	Hex Head Cap Screw, 1/4"-20 x 1"
	G10209	2	Washer, 1/4" USS
	G10110	1	Lock Nut, 1/4"-20
19.	GA7208	-	Hose Support
20.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10108	2	Lock Nut, 3/8"-16
21.	G4200-01	1	Hose, 1 1/4" x 22'
22.	G10672	6	Clamp, No. 28
23.	G10626	1	Adapter, 1 1/4" NPT To 1 1/4" Barb
24.	GA4976	1	Ball Valve, Full Port
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle
25.	GD1514	1	Adapter
26.	GD1515	1	Dust Cap, 1 1/4"
27.	GD1516	1	Adapter
28.	GD1517	1	Dust Plug
29.	G10172	1	Hex Head Cap Screw, 3/8"-16 x 5"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
30.	G10756	1	Hex Head Cap Screw, 3/8"-16 x 6"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16

SMV, DECALS, REFLECTORS AND TIE STRAPS

⚠ WARNING ⚠

ALWAYS USE SAFETY PINS IN TRANSPORT POSITION

7100-2

1

⚠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

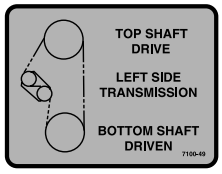
2

⚠ 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

3



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⚠WARNING

TOW ONLY WITH FARM TRACTOR

7100-56

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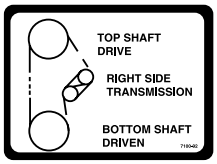

7

KINZE

5

⚠CAUTION⚠

REAR OF PLANTER SWINGS WIDE IN TURNS. ALWAYS ALLOW SUFFICIENT ROOM TO CLEAR OBSTACLES WHEN TURNING.

7100-63

8

IMPORTANT

Always rephase the hydraulic system after transporting.

1. Lower the planter to the ground.
2. Hold the hydraulic lever for 15 seconds to rephase the hydraulic system.
3. Resume normal operation.

7100-64

9

⚠ WARNING ⚠

NEVER WALK UNDER OR WORK ON PLANTER WHEN IT IS RAISED WITHOUT SUPPORTING THE FRAMES WITH ADDITIONAL SUPPORTS.

7100-68

10

INSTRUCTION

TRANSPORT TO PLANTING
1. RELEASE TRANSPORT LOCK.
2. ROTATE PLANTER.
3. RELEASE LIFT LOCK.
4. LOWER PLANTER AND REPHASE SYSTEM.
5. RELEASE WING LOCKS.
6. RAISE TO RAISED FIELD POSITION.
7. RETRACT TONGUE.

7100-73

11

INSTRUCTION

PLANTING TO TRANSPORT
1. SECURE WING LOCKS.
2. RAISE TO RAISED FIELD POSITION.
3. FULLY EXTEND TONGUE.
4. RAISE TO LOCKED TRANSPORT POSITION.
5. ROTATE PLANTER.

7100-74

12

⚠CAUTION⚠

AVOID UNEVEN LOADING OF HOPPERS, ESPECIALLY DURING TRANSPORT

7100-75

13

⚠ WARNING ⚠

TO AVOID INJURY
ALWAYS USE HYDRAULIC CYLINDER SAFETY LOCKOUT CHANNELS WHEN TRANSPORTING PLANTER ON THE ROAD. AFTER USE RETURN TO STORAGE LOCATION.

7100-83

14

⚠ 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

15

⚠ WARNING ⚠

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

7100-90

16

⚠ DANGER

- ROTATING AUGER-
KEEP CLOTHING, YOURSELF AND OTHERS WELL CLEAR WHEN OPERATING

7100-103

17

18

19

⚠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

20

21

⚠ DANGER

SERIOUS INJURY OR DEATH CAN RESULT FROM CONTACT WITH ELECTRICAL LINES. USE CARE TO AVOID CONTACT WITH ELECTRIC LINES WHEN MOVING OR OPERATING THIS MACHINE.

7100-117

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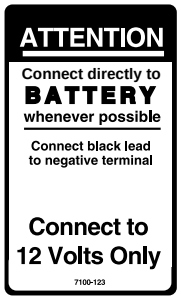
SMV, DECALS, REFLECTORS AND TIE STRAPS



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KINZE 2600
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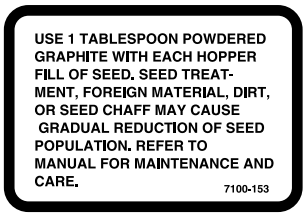

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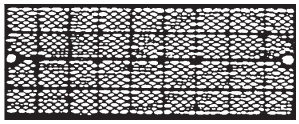
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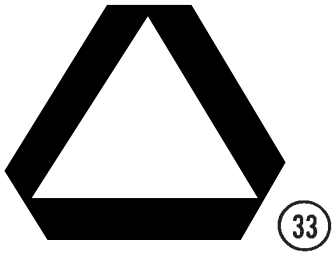
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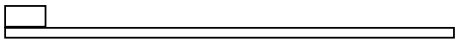
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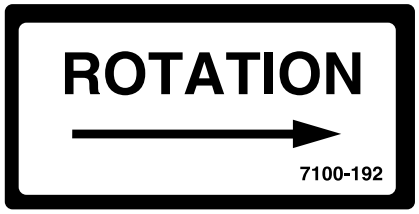

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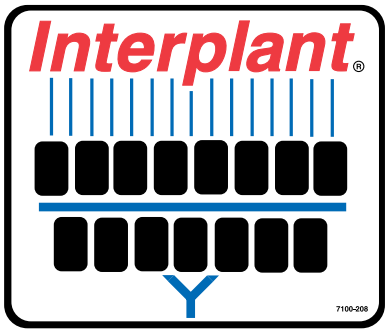

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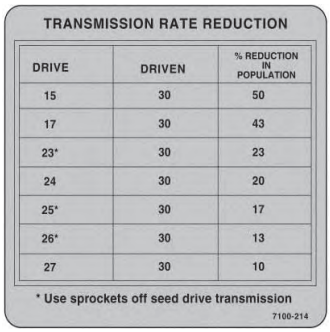

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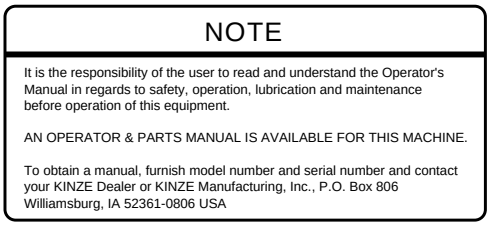

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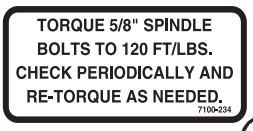

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SMV, DECALS, REFLECTORS AND TIE STRAPS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G7100-02	3	Decal, Warning
2.	G7100-42	4	Decal, Warning
3.	G7100-46	1	Decal, Warning
4.	G7100-49	1	Decal, Left Side Transmission
5.	G7100-54	2	Decal, KINZE®, 4 3/16" x 17 3/16"
	G7100-104	2	Decal, KINZE®, 3" x 12" (Dry Fertilizer Quick Fill Attachment)
6.	G7100-56	1	Decal, Warning
7.	G7100-92	1	Decal, Right Side Transmission
8.	G7100-63	2	Decal, Caution
9.	G7100-64	1	Decal, Important
10.	G7100-68	3	Decal, Warning
11.	G7100-73	1	Decal, Transport To Planting
12.	G7100-74	1	Decal, Planting To Transport
13.	G7100-75	4	Decal, Caution
14.	G7100-83	2	Decal, Warning
15.	G7100-89	2	Decal, Danger
16.	G7100-90	1	Decal, Warning
17.	G7100-103	1	Decal, Danger (Dry Fertilizer Quick Fill Attachment)
18.	G7100-110	-	Decal, Grease Weekly
19.	G7100-111	-	Decal, Oil Daily
20.	G7100-115	-	Decal, Warning (1 Per Granular Chemical Hopper)
21.	G7100-116	-	Decal, Grease Daily
22.	G7100-117	1	Decal, Danger
23.	G7100-123	1	Decal, Attention
24.	G7100-200	-	Decal, Warning
25.	G7100-195	-	Decal, Logo (2 Per Row Unit)
26.	G7100-199	2	Decal, 2600
27.	G7100-215	1	Decal, Danger (Machines With Bolt-On Stub Axle)
28.	G7100-153	-	Decal, Information (1 Per Brush-Type Seed Meter)
29.	G7100-201	1	Decal, Information
30.	G7100-163	1	Decal, Warning (Dry Fertilizer Attachment)
31.	G7100-203	-	Decal, Warning (8/12 Row Only) (1 Per Transport Wheel Rim)
32.	G7200-03	-	Reflector, Red
	G7200-04	-	Reflector, Amber
33.	GD2199	1	SMV Sign
34.	GD1512	-	Tie Strap, 7"
	GD2117	-	Tie Strap, 14 1/2"
	GD1162	-	Tie Strap, 28"
	GD2984	-	Tie Strap, 33"
35.	GD10057-01	-	Hose Identification Sleeve, Red AA
	GD10057-02	-	Hose Identification Sleeve, Red BB
	GD10057-03	-	Hose Identification Sleeve, Blue AA
	GD10057-04	-	Hose Identification Sleeve, Blue BB
36.	G7100-182	-	Decal, Meter Alignment (1 Per Row Unit)
37.	G7100-192	-	Decal, Point Row Clutch Rotation
38.	G7100-177	1	Decal, Twin-Line®
39.	G7100-208	-	Decal, Interplant®
40.	G7100-214	-	Decal, Two-Speed Point Row Clutch Rate Reduction
41.	G7100-217	-	Decal, Note
42.	G7100-219	-	Decal, Warning
43.	G7100-234	-	Decal, Bolt Torque
44.	GR0155	-	Blue Paint, Aerosol
45.	GR0146	-	Powdered Graphite, 1 Pound
46.	GR1367	-	Talc Seed Lubricant, 8 Pounds

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