

# MODEL 3700 AND 3700 SDS FRONT FOLDING PLANTERS (EdgeVac® Seed Metering) OPERATOR & PARTS MANUAL

**M0202**

**Rev. 12/07**

This manual is applicable to:    Model: 3700 And 3700 SDS Front Folding Planters  
Serial Number: 750816 And On

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

Model Number \_\_\_\_\_

Serial Number \_\_\_\_\_

Date Purchased \_\_\_\_\_

Monitor Serial Number \_\_\_\_\_

Measured Pulses Per Mile/Km (Radar Distance Sensor) \_\_\_\_\_

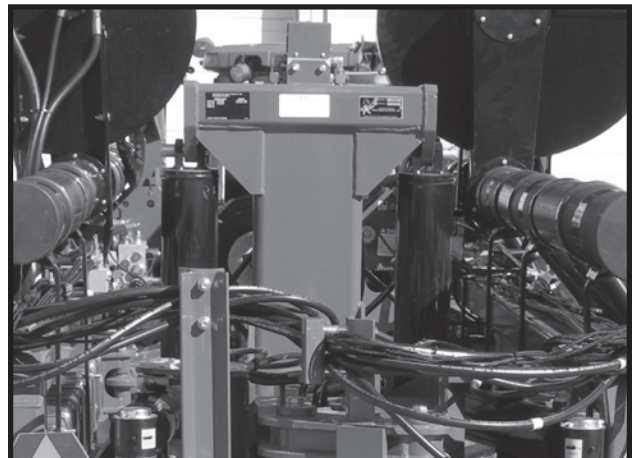
Measured Pulses Per Mile/Km (Magnetic Distance Sensor) \_\_\_\_\_

## SERIAL NUMBER

The serial number plate is located on the planter frame to be readily available. It is suggested that your 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 model number and serial number to your KINZE® Dealer when ordering parts or anytime correspondence is made with KINZE Manufacturing, Inc.

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# PREDELIVERY/DELIVERY CHECKLIST

## 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 CHECKLIST

After the planter has been completely assembled, use the following checklist 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 are properly spaced and optional attachments are correctly assembled.
- Be sure all grease fittings are in place and lubricated.
- Check planter and make sure all working parts are moving freely, bolts are tight and cotter pins are spread.
- Check all drive chains for proper tension and alignment.
- Check for oil leaks and proper hydraulic operation.
- Check to be sure hydraulic hoses are routed correctly to prevent damage.
- Inflate tires to specified PSI air pressure. Tighten wheel lug bolts and lug nuts to specified torques.
- Check to be sure all safety decals are correctly located and legible. Replace if damaged.
- Check to be sure the reflective decals 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 lockup devices are on the planter and correctly located.
- Auxiliary safety chain is properly installed and hardware is torqued to specification.
- Vacuum fan PTO-driven pump is attached correctly to the tractor. Oil reservoir is filled to capacity and system is inspected for leaks.

***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 \_\_\_\_\_ Delivery Date \_\_\_\_\_  
Street Address \_\_\_\_\_ Model No. \_\_\_\_\_ Serial No. \_\_\_\_\_  
City, State/Province \_\_\_\_\_ Dealer Name \_\_\_\_\_  
ZIP/Postal Code \_\_\_\_\_ Dealer No. \_\_\_\_\_

## DELIVERY CHECKLIST

At the time the planter is delivered, the following checklist is to be used as 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.

- Check for proper operation of vacuum fan and PTO-driven pump with tractor to be used with planter.
- 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 reflective decals 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.***

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(Signature Of Delivery Person/Dealer Name/Date)

## AFTER DELIVERY CHECKLIST

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.
- Check with the customer as to the performance of the EdgeVac® Seed Metering System.
- 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 warning signs (decals), reflective decals and SMV sign are correctly located and that decals are legible. Replace if damaged or missing.
- Check to be sure safety/warning lights are working properly.

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(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

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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 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/or the words **NOTE, IMPORTANT, CAUTION, WARNING** or **DANGER** are used to call your attention to important information. The definition of each of these terms follows:

**NOTE:** Indicates a special point of information or addresses a machine adjustment.

**IMPORTANT:** Indicates an operation or maintenance condition which, if not corrected, could result in damage to machine, property, crops or the environment.



**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate personal injury.



**WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious personal injury.



**DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious personal injury.



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

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

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.

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

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Model 3700 and 3700 SDS Front Folding Planters are available in multiple sizes and row spacings with a bulk seed delivery system (SDS) or conventional seed hoppers. Optional liquid fertilizer and row unit attachments are available for Model 3700 and 3700 SDS Front Folding Planters.

## GENERAL INFORMATION

The information used in this manual was current at the time of printing. However, due to KINZE's continual attempts 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.

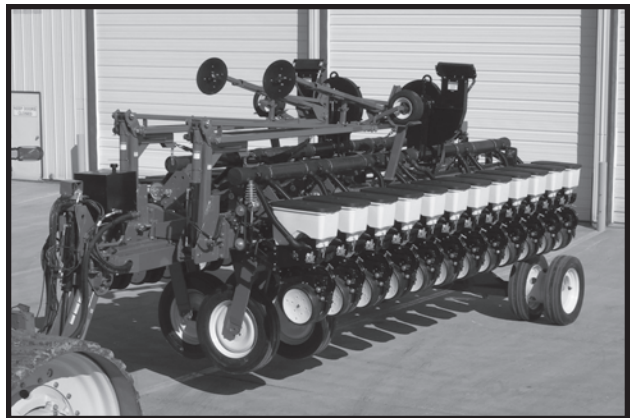
Right hand (R.H.) and left hand (L.H.), as used throughout this manual, are determined by facing in the direction the machine will travel when in use, unless otherwise stated.

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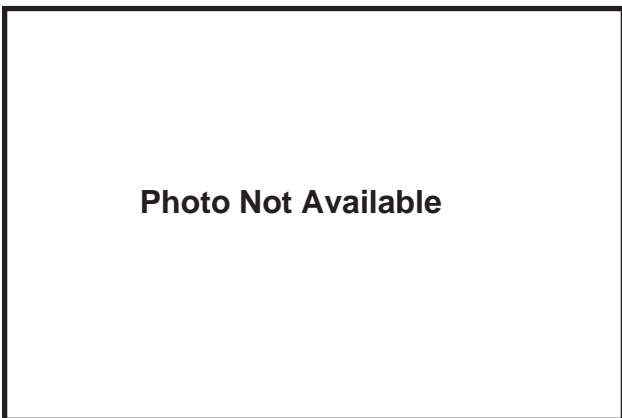
**24 Row 22" Conventional Machine Shown In Field Operation Position**

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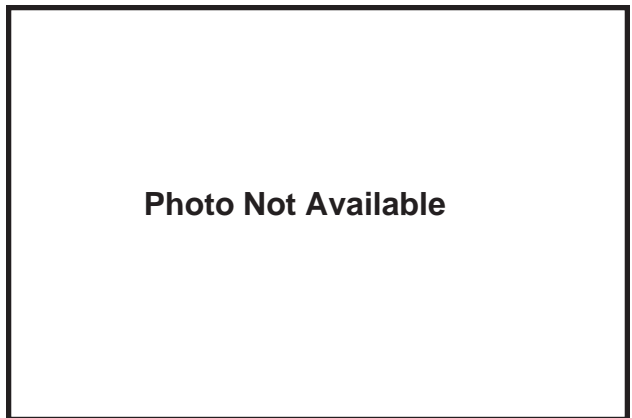
**24 Row 22" Conventional Machine Shown In Transport Position**

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**24 Row 30" SDS Machine Shown In Field Operation Position**

D03200602



**24 Row 30" SDS Machine Shown In Transport Position**

# INTRODUCTION

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# SPECIFICATIONS

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**BASE MACHINE TYPE** - Pull Type, Hydraulic Front Folding Frame For Transport

**SEED METER TYPE** - EdgeVac® Seed Metering System

**EDGEVAC® SEED METERING SYSTEM INCLUDES -**

EdgeVac® Seed Meters With Dust/Sun Shields(Less Seed Discs), Meter Drive Clutches, No. 41 Chains, Two 20" Diameter Vacuum Fans With Mounting Components, Hydraulic Motors, Oil Filters And Coolers, 2-Section, 1000 RPM 1 3/4"-20 Spline PTO 2-Section Gear Pump, 20 Gallon Capacity Oil Reservoir, Hoses And Fittings, 4" Diameter Vacuum Feed Hoses, Manifolds With Mounting Brackets And Hardware, 2" Diameter Meter Vacuum Hoses With Connectors

**PLANTING UNIT TYPES** - Pull Row Units  
- SDS Bulk Seed Delivery System Or Conventional Seed Hoppers

**ROW SPACING**

- 16 Row - 30" Rows
- 16 Row - 38" Rows
- 24 Row - 20" Rows
- 24 Row - 22" Rows
- 24 Row - 30" Rows
- 36 Row - 20" Rows

**DRIVE SYSTEM**

Four 255-70R 22.5" Ground Drive Tires – 16 Row 30", 16 Row 38", 24 Row 20", 24 Row 22" And 24 Row 30"  
Six 255-70R 22.5" Ground Drive Tires – 36 Row 20"  
Four 4.80" x 8" Contact Drive Tires  
No. 40 Chain With Spring-Loaded Idlers  
Two Quick-Adjust End-Mounted Seed Transmissions With Machined Sprockets  
7/8" Hex Drive And Drill Shafts  
Point Row Clutches

**TRANSPORT TIRES**

Four 36" x 16" x 17.5" Rib Duplex, 14 Ply Tubeless Tires – 16 Row 30", 24 Row 30" And 36 Row 20"  
Four 255-70R 22.5" Load Range H Radial Tubeless – 16 Row 38", 24 Row 20" And 24 Row 22"

**ROW MARKERS**

16 Row 30" And 24 Row 20" (Prior To Serial No. 750921) - Equipped With Two-Fold Markers With 16" Concave Disc Blades And Depth Bands  
16 Row 38", 24 Row 20" (Serial No. 750921 And On) 24 Row 22", 24 Row 30" And 36 Row 20" - Equipped With Three-Fold Markers With 16" Concave Disc Blades And Depth Bands

**HYDRAULICS**

Dual SCV For Independent Operation Of Lift And Marker/Fold Functions  
Lift - 4 Master Cylinders/2 Slave Cylinders (36 Row 20" 2 Assist Cylinders)  
Marker/Fold Functions - Hydraulic Lever And Electric Switch Operation (12 Volts DC Required)  
Hydraulic Fold System Consists Of 1 Hitch Parallel Link Cylinder, 1 Tongue Cylinder And 2 Helper Cylinders

**MACHINE OPTIONS**

- Electronic Seed Monitors
  - KPM I
  - KPM II Stack-Mode With Magnetic Distance Sensor Or Radar Distance Sensor
  - KPM III With Magnetic Distance Sensor Or Radar Distance Sensor
  - Planter Monitor Module (PMM)
- Piston Pump Package
- Rear Trailer Hitch – 16 Row 38" And 24 Row 30"
- Two-Speed Point Row Clutch Package – Allows Half-Width Planting And Reduced Rate Planting (Available Through KINZE® Repair Parts)
- Triple Transport Tire Package - 16 Row 38", 24 Row 20" And 24 Row 22"

# SPECIFICATIONS

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## ROW UNIT OPTIONS/ATTACHMENTS

- Seed Meter Discs
- Down Pressure Options
  - Quick Adjustable Down Force Springs
  - Pneumatic Down Pressure Package
- Closing Options
  - Rubber “V” Closing Wheels
  - Cast Iron “V” Closing Wheels
  - Covering Discs/Single Press Wheel
  - Drag Closing Attachment
- Granular Chemical Application
- Hopper Panel Extension Package
- Spring Tooth Incorporator
- Row Unit Extension Bracket
- Row Unit Mounted No Till Coulter
- Coulter Mounted Residue Wheels
- Row Unit Mounted Disc Furrowers
- Row Unit Mounted Residue Wheel
- Frame Mounted Coulter
- Residue Wheel Attachment For Frame Mounted Coulter

# SPECIFICATIONS

## MODEL 3700 CONVENTIONAL DIMENSIONS/WEIGHTS

PLANTER SIZE	16 Row 38"	24 Row 20"	24 Row 22"	24 Row 30"	36 Row 20"
Operating Width (Markers Folded)	53' 0"	43' 0"	47' 0"	63' 0"	63' 0"
Operating Length	28' 0"	28' 0"	28' 0"	30' 8"	30' 8"
Overall Transport Width	*13' 0"	*13' 0"	*13' 0"	*13' 0"	*13' 0"
Transport Tires (Center-To-Center)	88" - 128"	80" - 120"	88" - 128"	65" - 115"	80" - 120"
Transport Height	11' 6"	11' 6"	11' 6"	11' 6"	11' 6"
Transport Length	30' 8"	30' 8"	30' 8"	36' 8"	36' 8"
Empty Machine Hitch Weight (Transport)	5400 Lbs.	5400 Lbs.	6520 Lbs.	7150 Lbs.	**8200 Lbs.
Base Machine Weight***	15,927 Lbs.	16,726 Lbs.	17,817 Lbs.	21,743 Lbs.	25,690 Lbs.

\* 14' 0" when equipped with granular chemical application option.

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

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

## MODEL 3700 SDS DIMENSIONS/WEIGHTS

PLANTER SIZE	16 Row 38"	24 Row 20"	24 Row 22"	24 Row 30"	36 Row 20"
Operating Width (Markers Folded)	<b>INFORMATION NOT AVAILABLE</b>	43' 0"	47' 0"	63' 0"	63' 0"
Operating Length		28' 0"	28' 0"	30' 8"	30' 8"
Overall Transport Width		*13' 0"	*13' 0"	*13' 0"	*13' 0"
Transport Tires (Center-To-Center)		80" - 120"	88" - 128"	65" - 115"	80" - 120"
Transport Height		11' 6"	11' 6"	11' 6"	11' 6"
Transport Length		30' 8"	30' 8"	36' 8"	36' 8"
Empty Machine Hitch Weight (Transport)		5400 Lbs.	6520 Lbs.	7150 Lbs.	**8200 Lbs.
Base Machine Weight***			19,738 Lbs.	20,506 Lbs.	24,581 Lbs.

\* 14' 0" when equipped with granular chemical application option.

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

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

# SPECIFICATIONS










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# SAFETY PRECAUTIONS

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

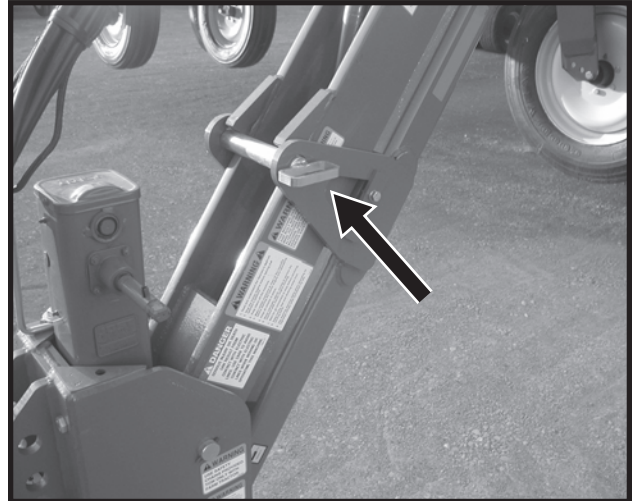
Since a large portion of farm accidents occur as a result of fatigue or carelessness, safety practices should be of utmost concern. Read and understand the instructions provided in this manual and on the warning signs. Review these instructions frequently. Listed below are other safety suggestions that 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 row marker assemblies are in operation.**
-  **Before operating the planter for the first time and periodically thereafter, check to be sure the lug nuts on the transport wheels are torqued properly. This is especially important if the planter is to be transported for a long distance.**
-  **Always make sure safety/warning lights, reflective decals and SMV sign are in place and visible prior to transporting the machine on public roads. In this regard, check federal, state/provincial and local regulations.**
-  **Limit towing speed to 15 MPH.**
-  **Transport stability is critical. The gross weight of the tractor must be greater than the gross weight of the planter. Gross weight varies with planter attachments. Tow 16 and 24 row planters with farm tractor of a minimum 200 HP. Tow 36 Row 20" planter with farm tractor of a minimum 250 HP.**
-  **Store the planter in an area away from human activity. DO NOT permit children to play on or around the stored unit.**



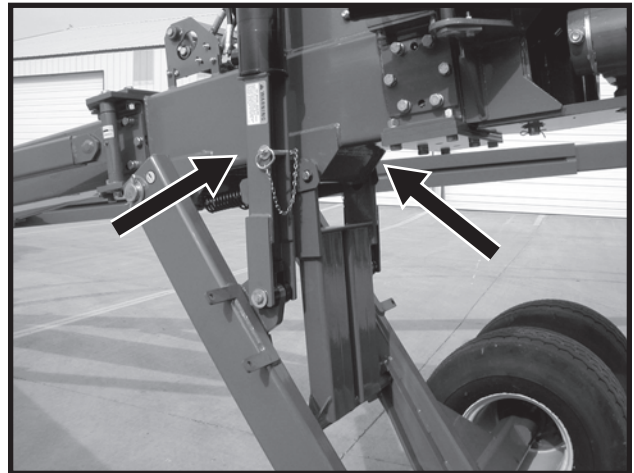
**Always install hitch parallel linkage lock pin or cylinder lockup and center lift cylinder lockups before transporting the planter.**

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**Hitch Parallel Linkage Lockup Pin**

D101801109



**Center Lift Cylinder Lockups**



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



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




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

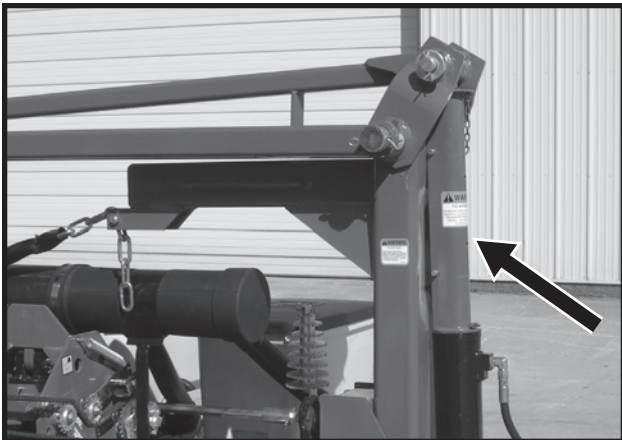











**Always keep hands, feet and clothing away from moving parts. Do not wear loose fitting clothing which may catch in moving parts.**

# SAFETY PRECAUTIONS

-  Always wear protective clothing, substantial shoes and suitable hearing and eye sight protectors applicable for the situation.
-  Use a tractor equipped with a roll-over-protective-system and fasten your seat belt prior to starting the engine.
-  Always drive at a safe speed relative to local conditions and ensure your speed is low enough for an emergency stop to be safe and secure. Keep speed to minimum.
-  Reduce speed prior to turns to avoid the risk of overturning.
-  Allow for unit length when making turns.
-  Avoid sudden uphill turns on steep slopes.
-  Always keep the tractor in gear to provide engine braking when going downhill. Do not coast.
-  Make sure the parked machine is on a hard, level surface. Wheel chocks may be needed to prevent unit from rolling.
-  Watch for obstructions such as wires, tree limbs, etc., when folding row markers.
-  To avoid serious injury or death, care must be taken when operating row markers around overhead power lines.
-  This planter has uplift at the drawbar when it is in field raised and full raised positions prior to fold. **DO NOT** unhook from tractor in these positions. Doing so will cause the machine to tip backwards.
-  Install safety lockup devices on row markers, as provided, prior to transporting the planter or working around the machine.

D03200618



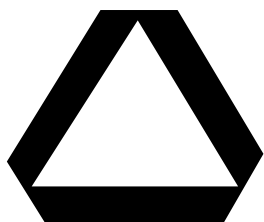
-  Rim and tire servicing can be dangerous. Explosive separation of a tire and rim parts can cause serious injury or death.
-  The seed and fertilizer metering system of this planter are designed to be driven by ground tires. A PTO pump and hydraulic motors power the vacuum fans. The use of aftermarket 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.
-  This machine has been designed and built with your safety in mind. Do not make any alterations or changes to this machine. Any alteration to the design or construction may create safety hazards.
-  Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
-  Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
-  Agricultural chemicals used with this unit can be dangerous. Improper selection or use can seriously injure persons, animals, plants, soil and other property. **BE SAFE:** Select the right chemical for the job. Handle it with care. Follow the instructions on the container label and of the equipment manufacturer.
-  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.
-  Never operate vacuum fans with cover removed.
-  Always wear ear protection when working around operating vacuum fans.

# 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 the safety of those around you. **OBSERVE THESE WARNINGS!**

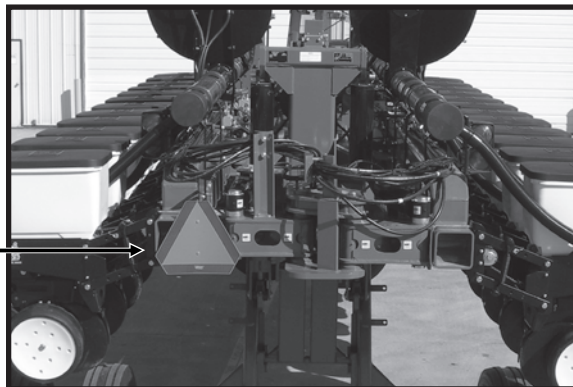
- **Keep these signs clean so they can be readily observed. Wash with soap and water or cleaning solution as required.**
- **Replace “WARNING” signs should they become damaged, painted over or if they are missing.**
- **Check reflective decals and SMV sign periodically. Replace if they show loss of any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

**NOTE: Style and locations of SMV sign, reflective decals and safety/warning lights conform to ANSI/ASAE S279.13 DEC2005 and ANSI/ASAE S276.6 JAN2005.**



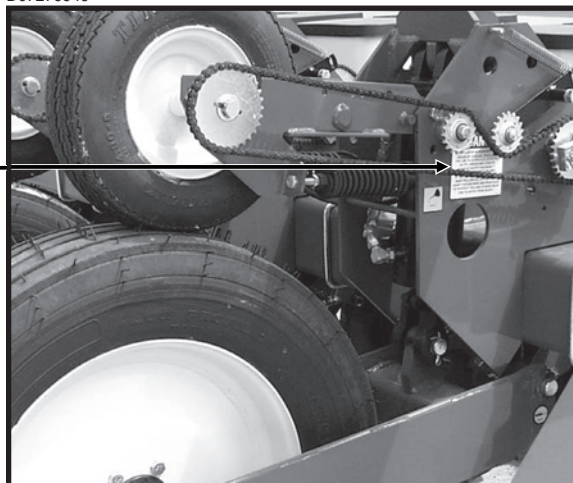
Part No. GD2199 (Qty. 1)

D03200606



Part No. G7100-89 (Qty. 4)

D07279949



# SAFETY WARNING SIGNS

**! 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, unplug 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)

**! 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**

*TO AVOID INJURY ...*

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

7100-47

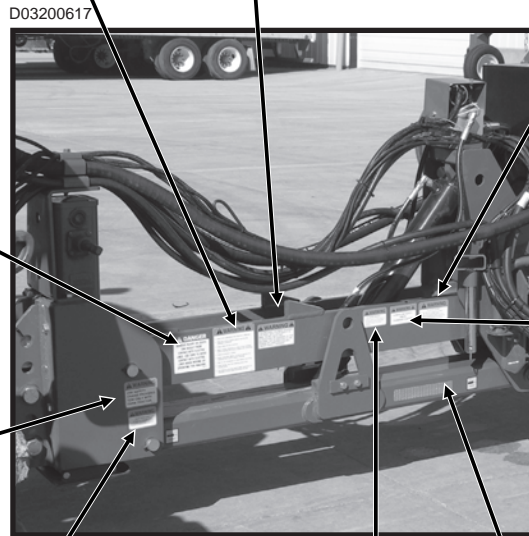
Part No. G7100-47 (Qty. 1)

**! 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)

**! WARNING**

USE SAFETY CHAINS PROVIDED. TOW ONLY WITH FARM TRACTOR.

7100-302

Part No. G7100-302 (Qty. 1)

**! WARNING**

HEAVY HITCH LOAD. ATTACH TO TRACTOR WITH SUFFICIENT DRAWBAR CAPACITY. REFER TO OPERATOR'S MANUAL

7100-197

Part No. G7100-197 (Qty. 1)

**! WARNING**

**TO AVOID INJURY --**

ALWAYS LOWER PLANTER UNITS TO THE GROUND BEFORE UNHITCHING PLANTER. TONGUE CAN RAISE SUDDENLY.

7100-43

Part No. G7100-43 (Qty. 1)



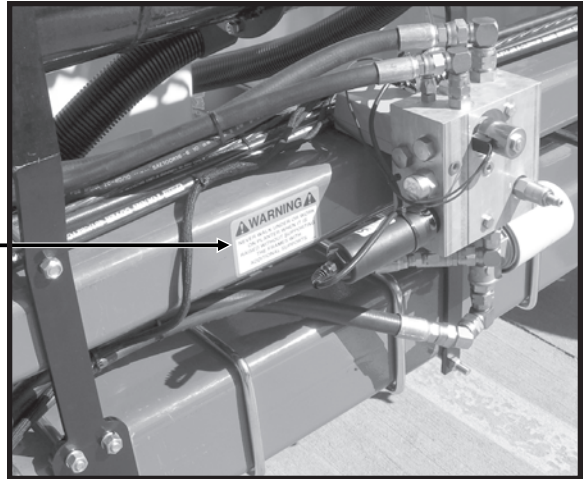
Part No. G7100-259 Amber Reflective Decal (Qty. 2 - One Located On Each Side Of Hitch)

# SAFETY WARNING SIGNS



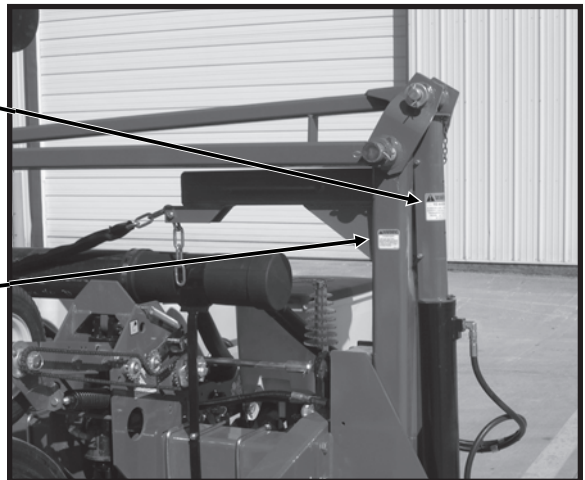
Part No. G7100-68 (Qty. 1)

D03200624

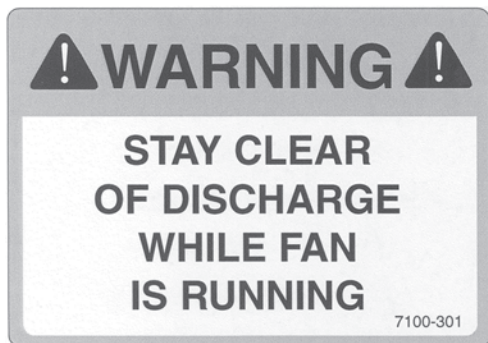


Part No. G7100-83 (Qty. 2 - One Per Marker)

D03200618

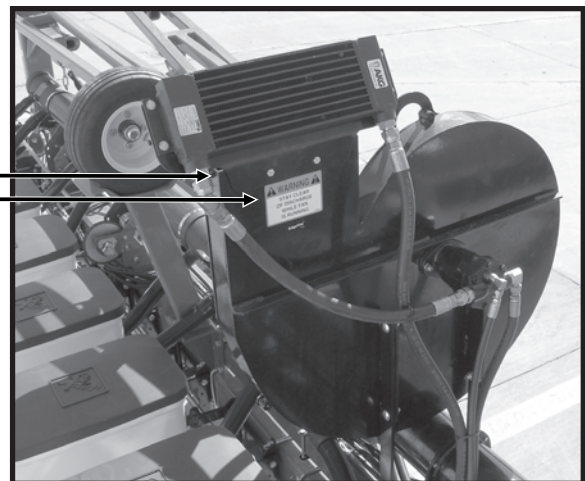


Part No. G7100-42 (Qty. 4 - Two Per Marker)



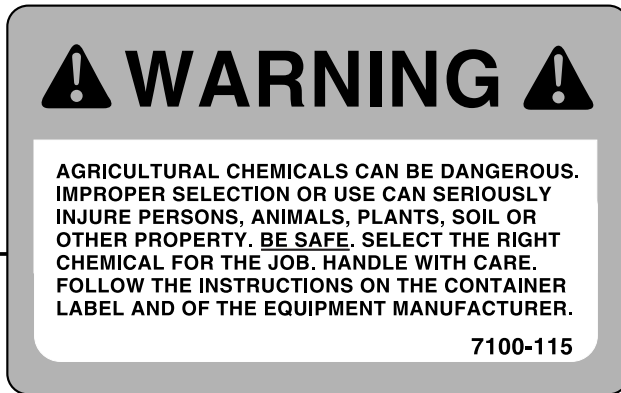
Part No. G7100-301 (Qty. 4 - One On Each Side Of Each Fan)

D03200631



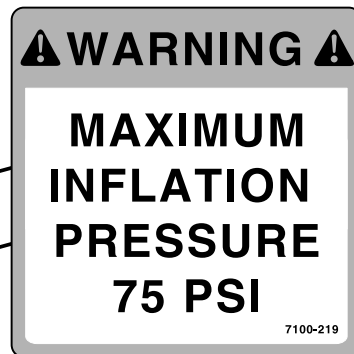
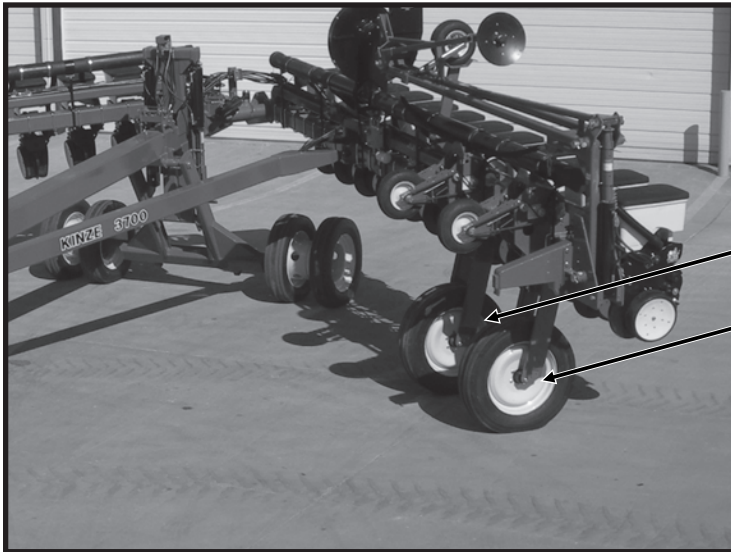
# SAFETY WARNING SIGNS

D06039901



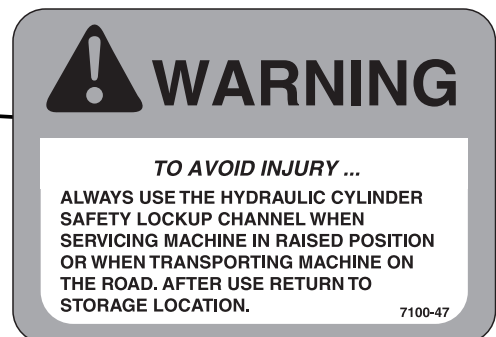
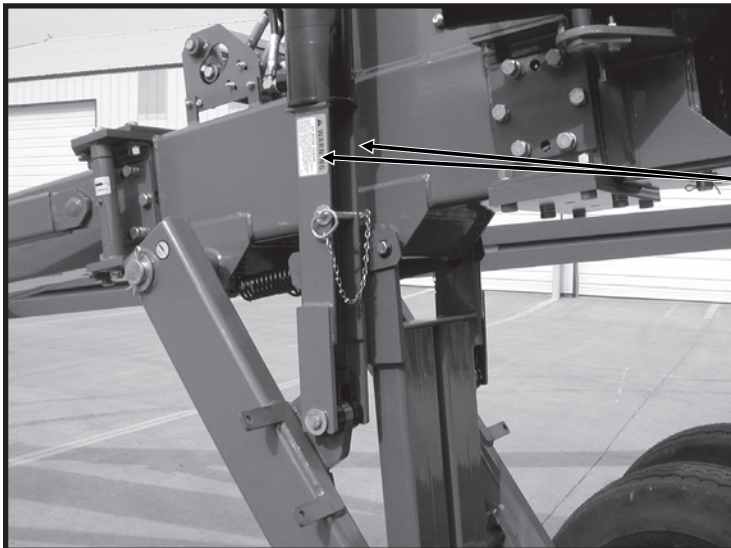
Part No. G7100-115 (Qty. 1 Per Lid - Located On Underside Of Each Optional Granular Chemical Hopper Lids)

D03200611



Part No. G7100-219 (Qty. 1 Per Tire - Ground Drive Tires, All Sizes; Transport Tires, 16 Row 38", 24 Row 20" And 24 Row 22")

D101801109

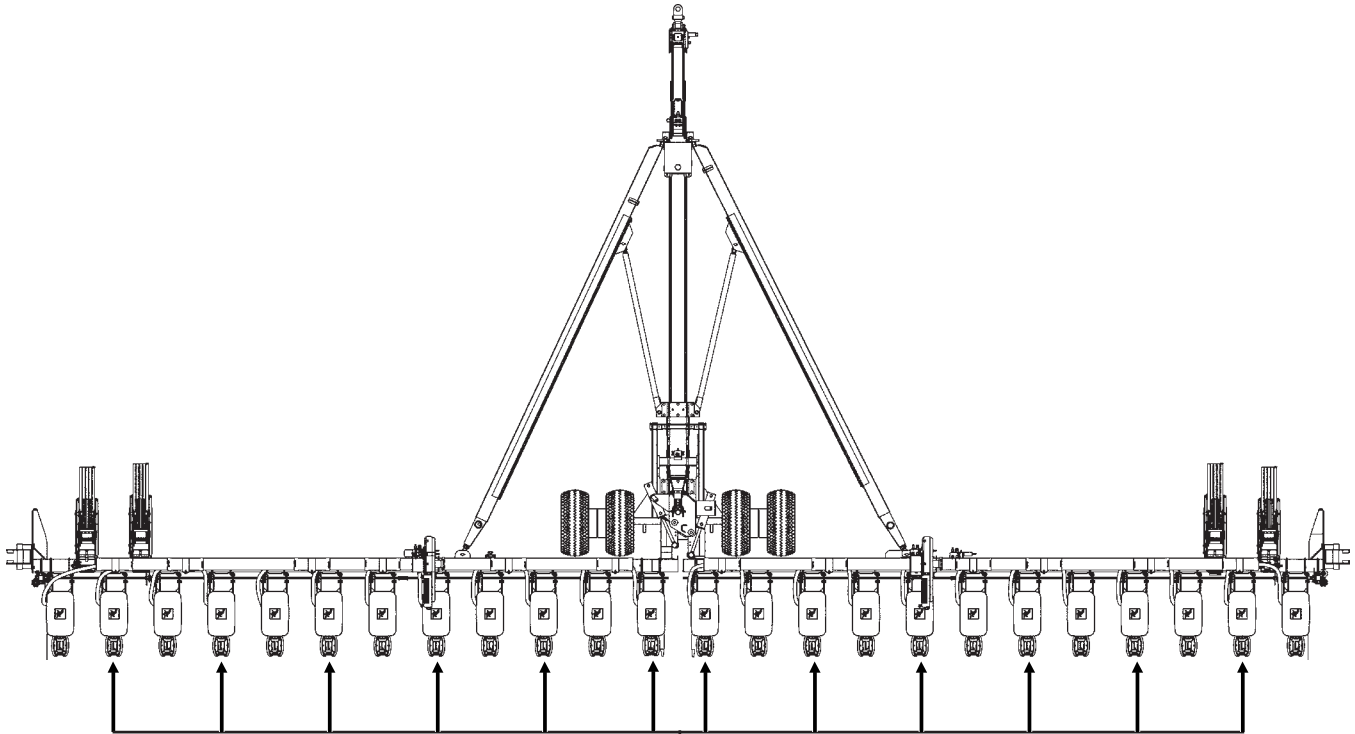


Part No. G7100-47 (Qty. 4 - Two Per Center Lift Cylinder Lockup)

# SAFETY WARNING SIGNS

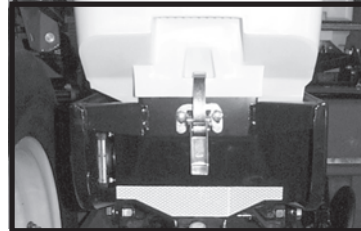
(FF109)

## Conventional Planter Shown



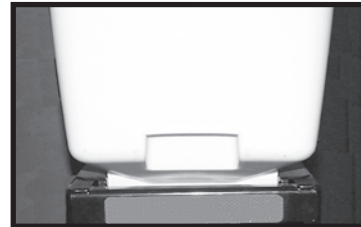
Part No. G7100-262 Amber Reflective Decal (Located On The Hopper Support On Every Other Row Unit Beginning On The 2nd Row Unit In On The L.H. End Of The Planter) **(Standard)**

D060800114



Part No. G7100-259 Amber Reflective Decal (Located On The Granular Chemical Hopper Panel Extension On Every Other Row Unit Beginning On The 2nd Row Unit In On The L.H. End Of The Planter) **(With Optional Granular Chemical)**

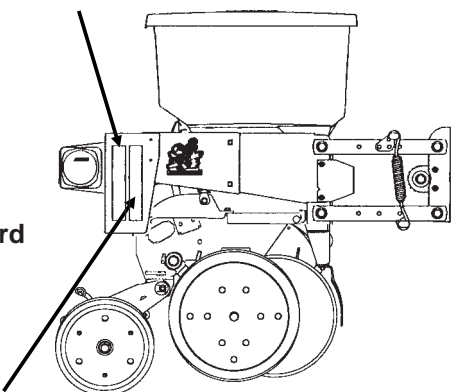
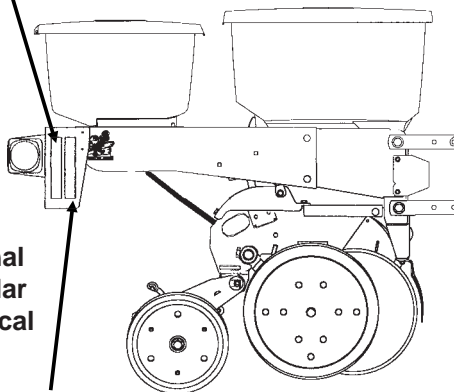
D062300102

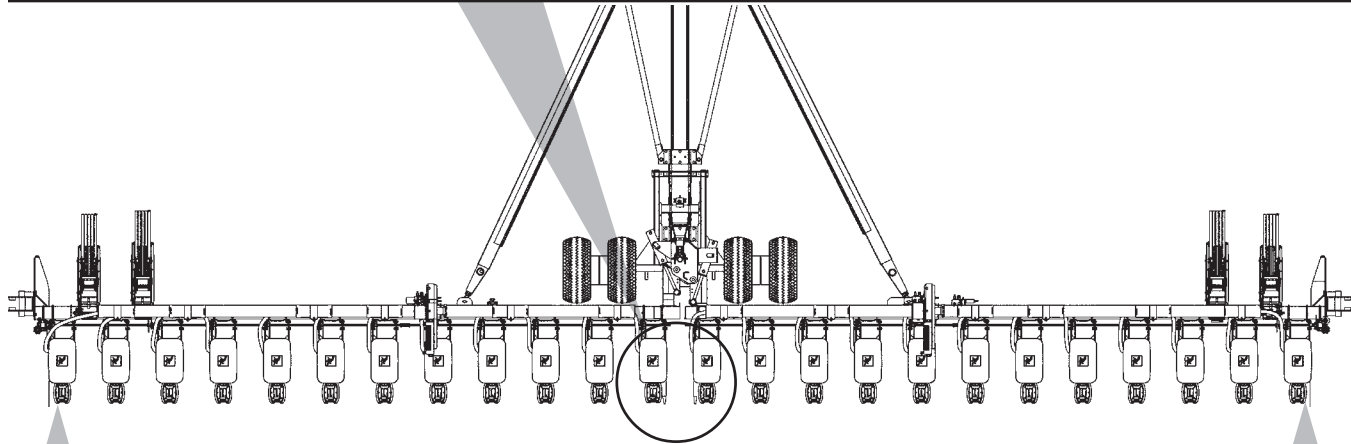


NOTE: 8 decals are used on 16 Row 38", 12 on 24 Row 20"/22"/30" and 18 on 36 Row 20" sizes.

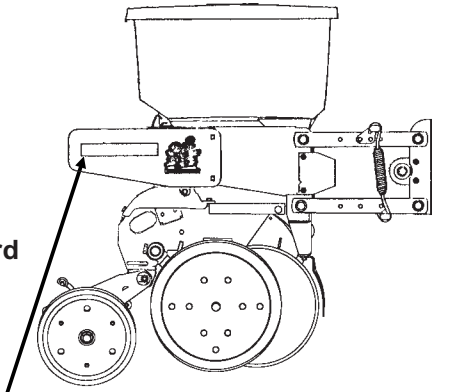
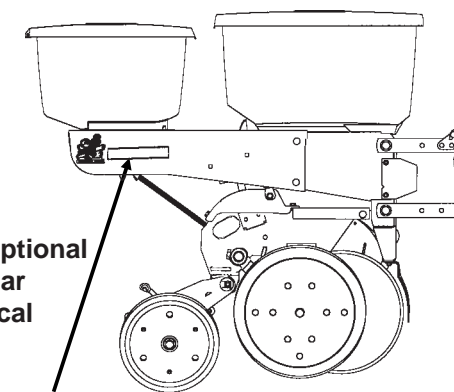
# SAFETY WARNING SIGNS

(FF89d/RU120m/FF109/FF88b/RU120l)

<p>Part No. G7100-258 Red Reflective Decal (Qty. 2 - Located On The Two Center Row Units - Rear-Facing In Transport Position)</p>	<p>Part No. G7100-258 Red Reflective Decal (Qty. 2 - Located On The Two Center Row Units - Rear-Facing In Transport Position)</p>
<p><b>Standard</b></p> 	<p><b>With Optional Granular Chemical</b></p> 
<p>Part No. G7100-260 Orange Reflective Decal (Qty. 2 - Located On The Two Center Row Units - Rear-Facing In Transport Position)</p>	<p>Part No. G7100-260 Orange Reflective Decal (Qty. 2 - Located On The Two Center Row Units - Rear-Facing In Transport Position)</p>



**Conventional Planter Shown**

<p><b>Standard</b></p> 	<p><b>With Optional Granular Chemical</b></p> 
<p>Part No. G7100-259 Amber Reflective Decal (Qty. 2 - Located On The Outside Row Unit On Each End Of The Planter - Forward-Facing In Transport Position)</p>	<p>Part No. G7100-259 Amber Reflective Decal (Qty. 2 - Located On The Outside Row Unit On Each End Of The Planter - Forward-Facing In Transport Position)</p>

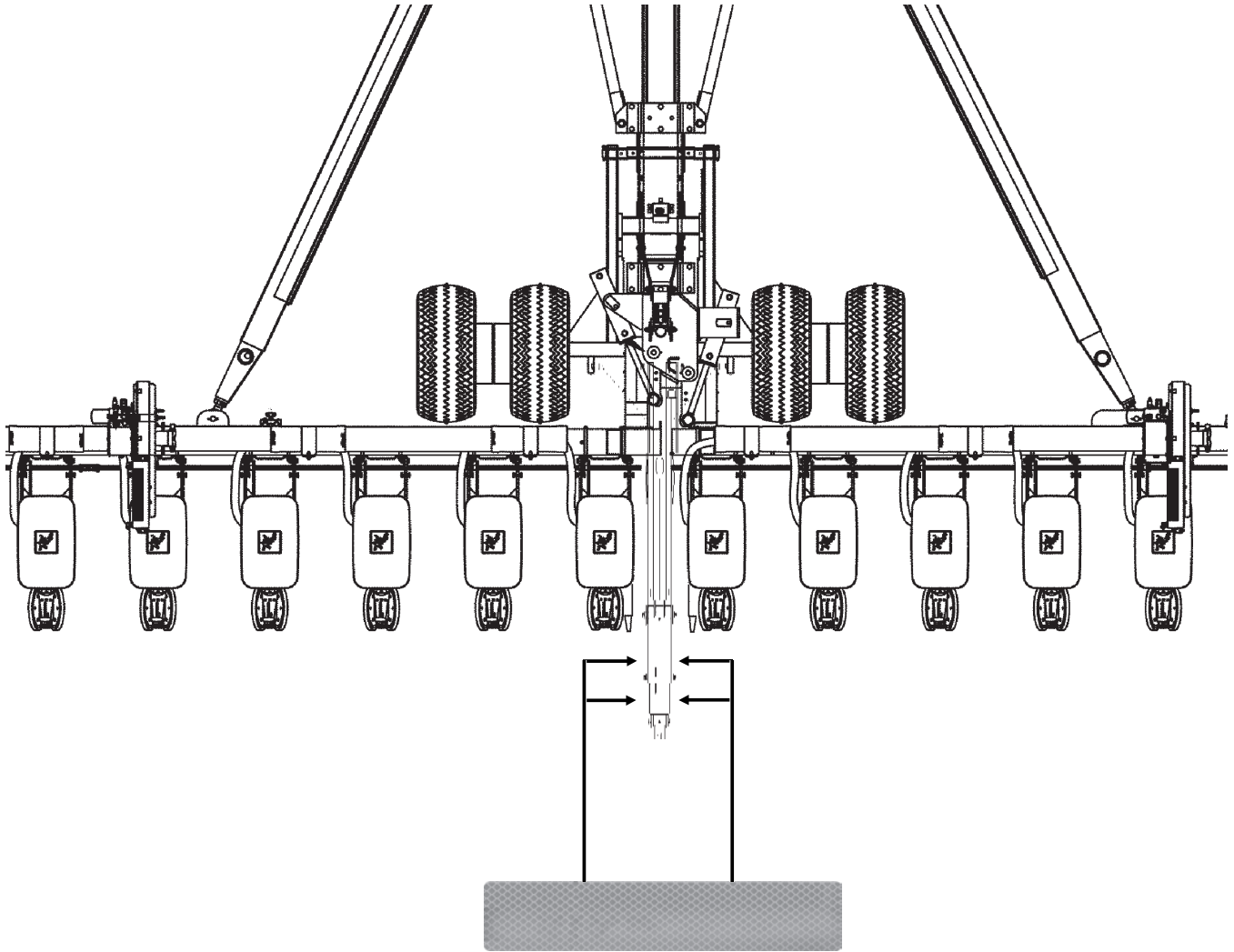


# SAFETY WARNING SIGNS

(FF109/A7259)

## Optional Rear Trailer Hitch (16 Row 38" And 24 Row 30" Only)

### Conventional Planter Shown



Part No. G7100-259 Amber Reflective Decal (Qty. 4)

# SAFETY WARNING SIGNS

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# 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.


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

The KINZE EdgeVac® Seed Metering System includes seed meters, seed discs and an air system consisting of hydraulic driven vacuum fans which draw air through manifolds, hoses and the seed meters on each row unit.

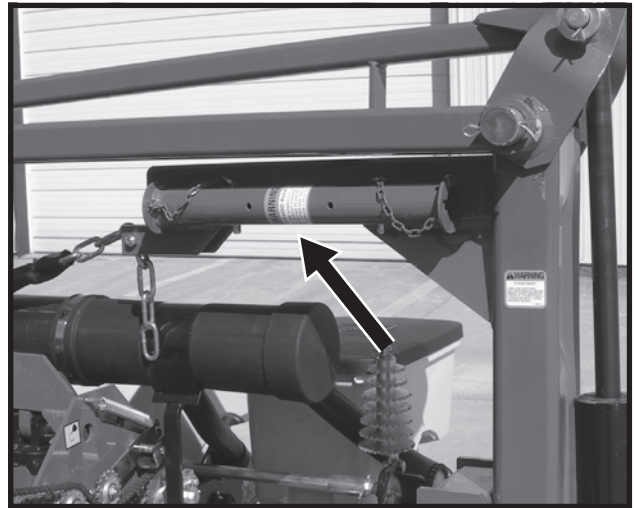
 **WARNING:** Never operate vacuum fans with the cover removed.

## ROW MARKER SAFETY LOCKUP

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

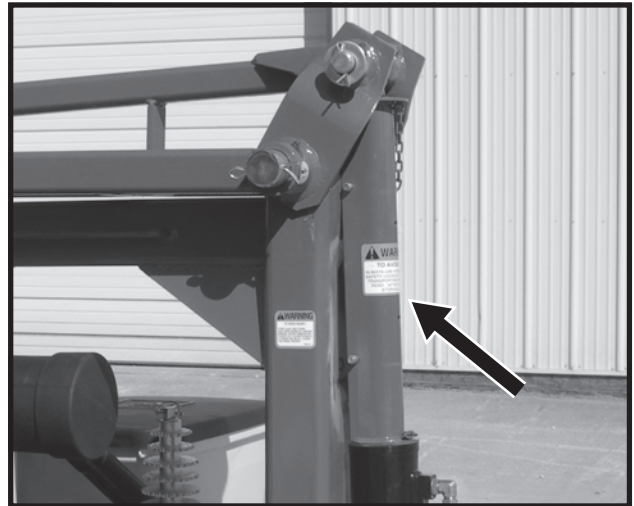
 **WARNING:** To avoid serious injury or death, keep others away when raising or lowering row markers.

D03200620



Lockup Stored For Row Marker Operation

D03200618



Row Marker Locked Up For Transport Or Working Around The Machine

# MACHINE OPERATION

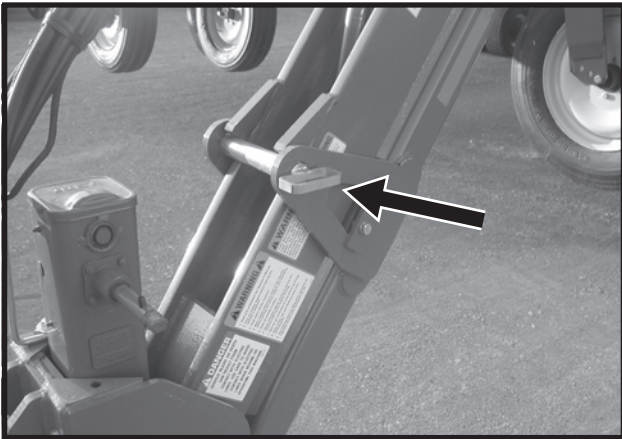
## HITCH PARALLEL LINKAGE LOCKUP

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

**IMPORTANT:** Safety lockup devices must always be used when the planter is being transported or stored in the transport position.

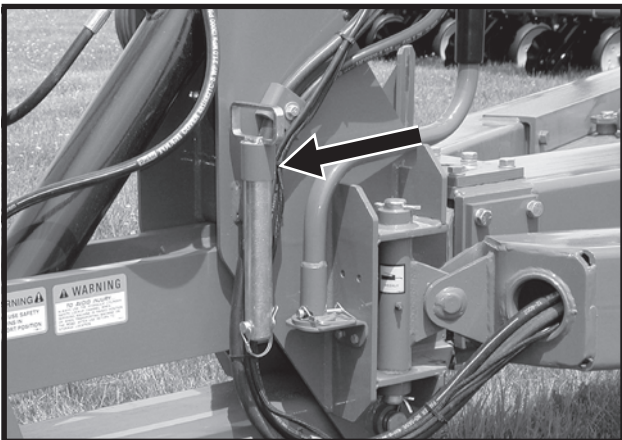
 **DANGER:** Never work under the planter while in raised position without installing all safety lockup devices.

D03030502




Hitch Parallel Linkage Lockup Pin In Transport Position

D06250314



Hitch Parallel Linkage Lockup Pin In Storage Location

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

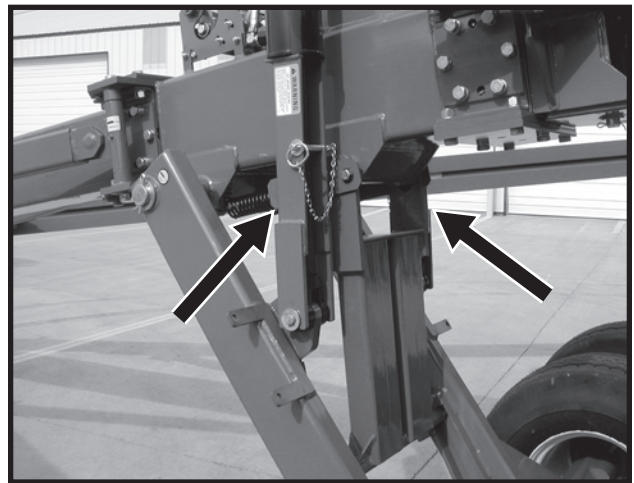
## CENTER LIFT CYLINDER LOCKUPS

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

Lockup devices for the two center lift (slave) cylinders are provided to prevent accidental release of the automatic safety lock. Center lift cylinder lockups should be positioned as shown below when the machine is in the transport position or is being serviced in the raised position.

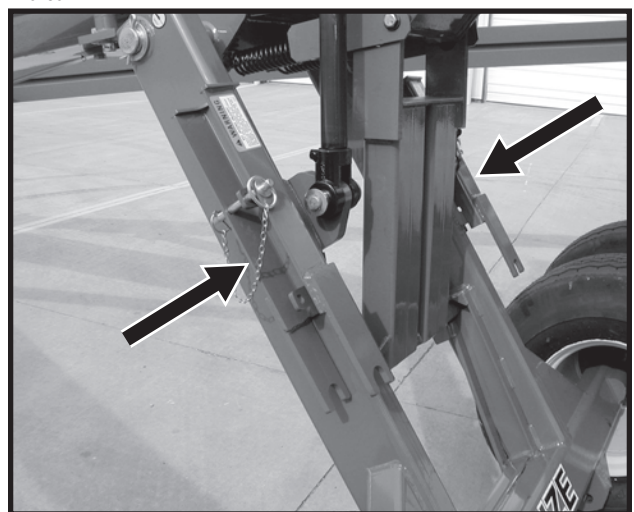
 **DANGER:** Never work under the planter while in raised position without installing all safety lockup devices.

D101801109



Center Lift Cylinder Lockups In Transport Position

D101801114



Center Lift Cylinder Lockups In Field Operation Position

# MACHINE OPERATION

## INITIAL PREPARATION OF THE PLANTER

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

## TRACTOR REQUIREMENTS

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

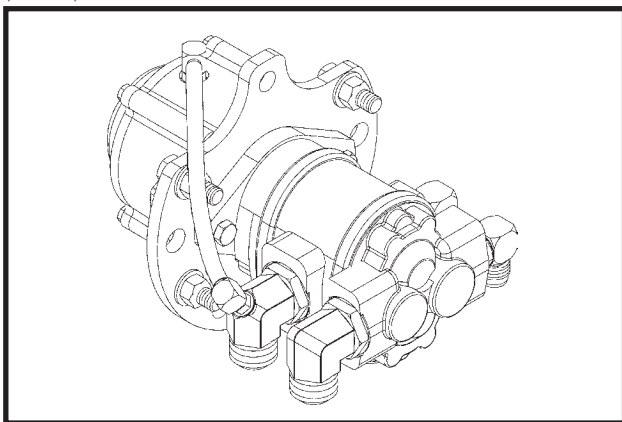
**NOTE: Additional customer-supplied drawbar support required with 36 Row 20" due to heavy transport hitch weights.**

Two dual remote hydraulic outlets (SCV) are required on all sizes of conventional planters equipped with row markers. Three dual remote hydraulic outlets (SCV) are required on all sizes of SDS planters equipped with row markers. One set of outlets is used to operate the lift function, one set is used to operate the markers, tongue and fold/unfold functions and the third set is used to operate the SDS functions (If Applicable).

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

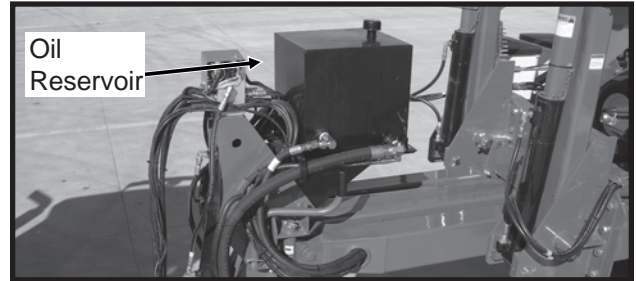
A 1 3/4"-20 spline 1000 RPM PTO is required to operate the PTO-driven hydraulic pump. The pump is a two section pump capable of supplying 15 GPM to two hydraulic motors/vacuum fans. Other components of the dual fan system include two oil coolers, two replaceable cartridge-type filters, two motorized flow controls, pressure compensating valves, solenoid valves and relief valves. The entire EdgeVac® Seed Metering System operates from a 20 gallon capacity oil reservoir.

(FWD131)



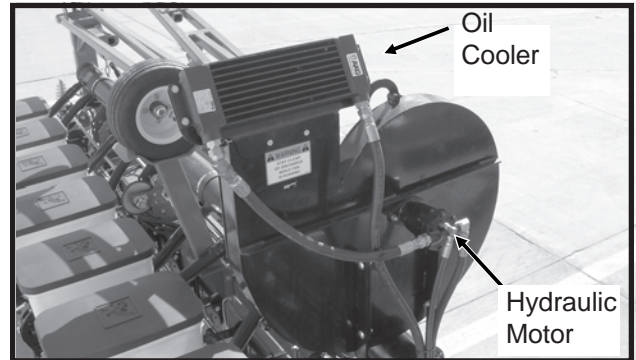
PTO Drive

D03200604



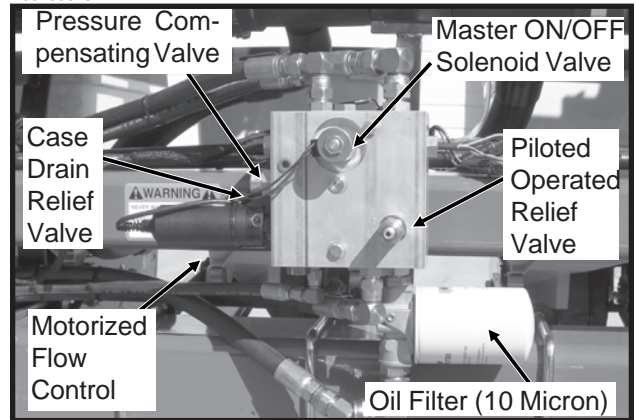
Oil Reservoir

D03200631



Vacuum Fan Assembly With Oil Cooler

D03200625



A 12 volt battery connection is required to power the vacuum fan control console. Connect the "red" wire to the positive (+) battery terminal and the "black" wire to the negative (-) battery terminal.

**NOTE: The tractor's 3 point hitch must have a minimum lift capacity of 10,000 lbs. to raise the hitch weight of the machine, attachments, seed and dry chemicals.**

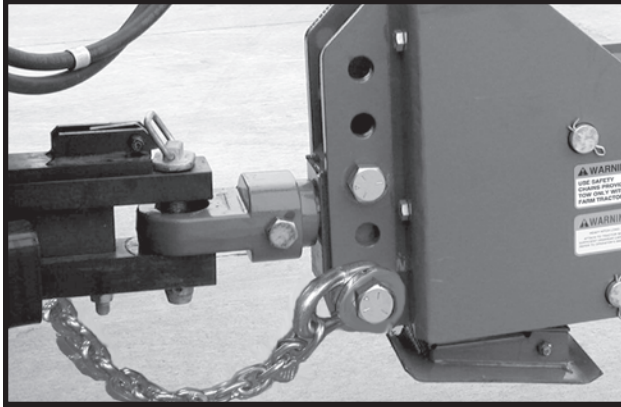
Tractor front end stability is necessary for safe, efficient operation. Therefore, it may be necessary to add front ballast to your tractor for satisfactory field operation, as well as adequate transport stability. Refer to your tractor operator's manual for front ballast recommendations.

**NOTE: Tractor drawbar may need to be removed to provide clearance for the planter.**

# MACHINE OPERATION

## TRACTOR PREPARATION AND HOOKUP

D101801130b



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

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

2. Install planter control console, vacuum fan control console and SDS control console (If Applicable) on tractor in convenient locations within reach of the operator and close to the hydraulic controls. Mount control consoles securely and route power cord to the power source.

D032006300LF



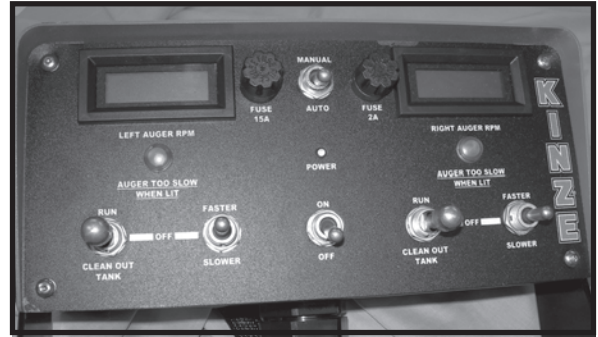
Planter Control Console

D03200676a



Vacuum Fans Control Console

D10060627



SDS Control Console

Control consoles operates on 12 volt DC only.

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

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

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

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

4. The auxiliary attaching system (transport safety chain) provided with your planter should be used to ensure the connection is retained between the planter and tractor in the event of a hitch pin/drawbar failure. The safety chain is to be attached to the planter using an unused clevis mounting hole on the planter hitch. The attaching hardware should be torqued to 840 ft. lbs.

# MACHINE OPERATION

5. Install PTO pump onto tractor PTO shaft. Make sure shaft rotation matches what is indicated on the pump housing

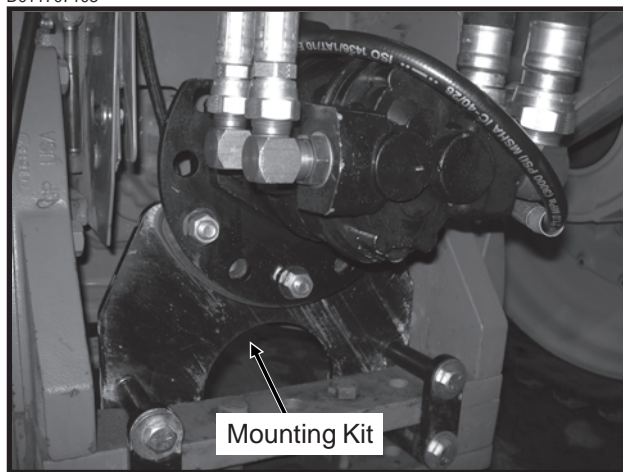
**IMPORTANT:** The PTO shaft coupling should be cleaned and greased each time the pump is installed.

**IMPORTANT:** To extend life of shaft splines, apply a coating of high-speed industrial coupling grease, such as Chevron® Coupling Grease, that meets AGMA CG-1 and CG-2 Standards.

*(The Chevron® trademark is owned by Chevron Products Company. AGMA is the acronym for the American Gear Manufacturers Association)*

**NOTE:** A tractor model-specific mount kit is required to install the PTO pump. Contact KINZE® Service Department through your KINZE® Dealer for additional information.

D011707103



Fill reservoir with hydraulic fluid. A SAE 10W-20 multi-grade wide temperature range transmission hydraulic fluid is recommended.

Start system. Allow to run with tractor at idle and the fans turned off for 1-2 minutes.

Allow to run with tractor at idle and the fans at full speed for 1-2 minutes.

Check fluid level in reservoir and fill as required.

To allow the fluid to expand when heated fluid level in each tank should be within 1"-2" from the top of the tank, after the pump has run and hydraulic hoses have been primed.

Bring tractor to PTO speed and adjust flow control to the desired vacuum level using the switches on the vacuum fans control console.

6. 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 - Field Raise Function (Return)  
Red BB - Field Raise Function (Pressure)

Blue AA - Fold/UnFold And Row Marker Functions (Return)  
Blue BB - Fold/UnFold And Row Marker Functions (Pressure)

Yellow AA - (Return) Bulk Seed Delivery System, (SDS) Functions  
Yellow BB - (Pressure) Bulk Seed Delivery System (SDS) Functions

Green RR -  $\frac{3}{4}$ " Hose From Vacuum Fan Motor (Return)  
Green PP -  $\frac{5}{8}$ " Hose To Vacuum Fan Motor (Pressure)  
Green CD -  $\frac{3}{8}$ " Case Drain Hose (Case Drain)



**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.

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

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

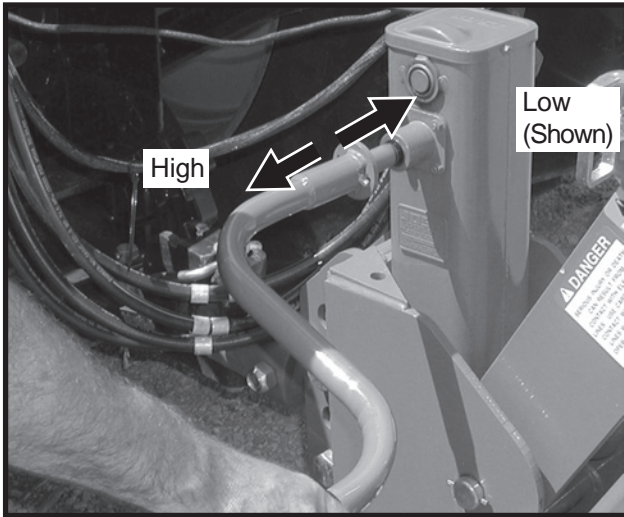
Connect harness on tractor to vacuum fan console on tractor. Connect power lead to power source. A power lead adapter may be required.

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

# MACHINE OPERATION

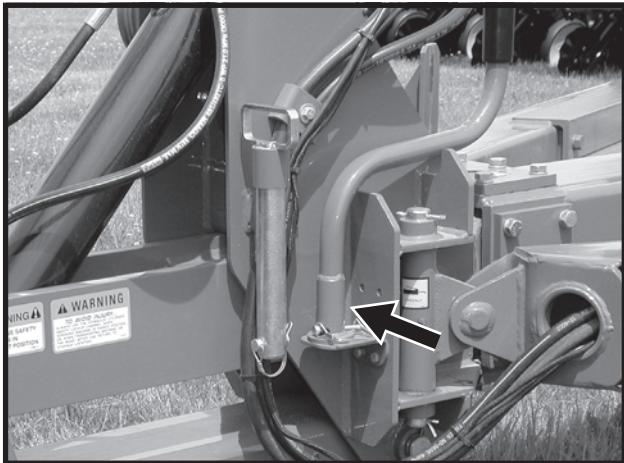
## 2-SPEED JACK ASSEMBLY

D06300304



Use jack handle to position drive shaft "in" for low speed operation or "out" for high speed operation.

D06250314

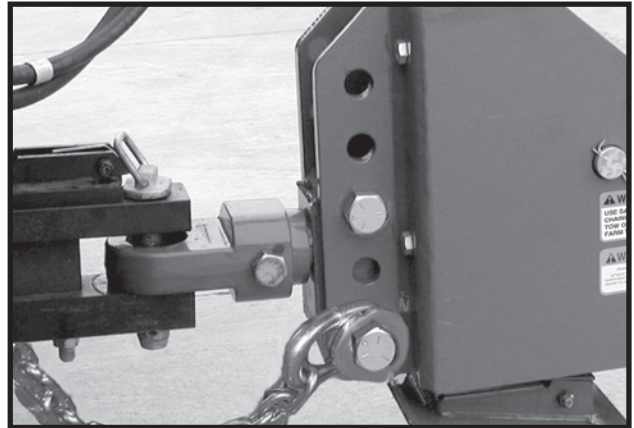


**Jack Handle Storage Location**

## LEVELING THE PLANTER

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

D101801130b



Five 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 the clevis mounting bolt, make sure the lock nut is torqued to 840 ft. lbs.

With the planter lowered to operating height, 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".

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

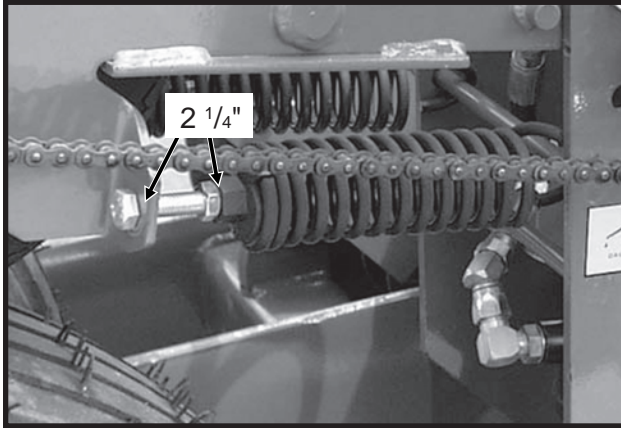
If after rephasing the planter the center is higher or lower than the wings, consult your KINZE® Dealer for valve adjustment and/or maintenance.



# MACHINE OPERATION

## CONTACT WHEEL SPRING ADJUSTMENT

D07279948

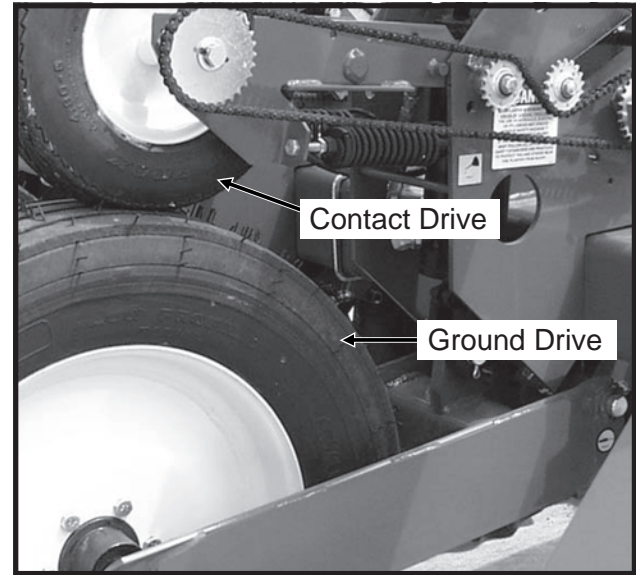


There are two down pressure springs on each contact drive wheel. The spring tension is factory preset and should require no further adjustment.

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

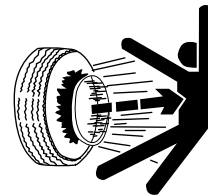
## TIRE PRESSURE

D07279949



Tire pressure should be checked regularly and maintained as follows:

Transport/Ground Drive 255-70R 22.5" .....	75 PSI
Transport 36" x 16" x 17.5" .....	40 PSI
Contact Drive 4.80" x 8" .....	50 PSI
Marker 16" x 6.5" x 8" .....	14 PSI
Contact Drive 4.10" x 6" .....	
(Liquid Fertilizer Piston Pump) .....	50 PSI



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

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

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

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.

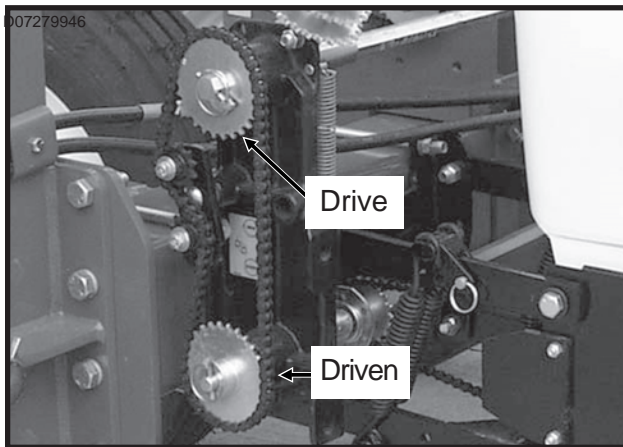
# MACHINE OPERATION

## SEED RATE TRANSMISSION ADJUSTMENT

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

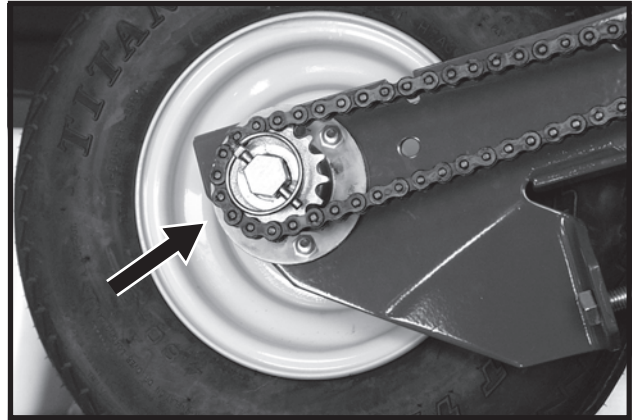
Chain tension is controlled by a spring-loaded dual-sprocket idler. The idler assembly is adjusted with a easy-release idler arm. This arm has a release position to remove spring tension on the chain for replacing sprockets. The amount of spring tension on the chain is controlled by the idler arm. See "Wrap Spring Wrench Operation".

A decal positioned on the transmission illustrates proper chain routing. The planting rate charts found in "Seed Meter Operation/Maintenance" will aid you in selecting the correct sprocket combinations.



## CONTACT WHEEL DRIVE SPROCKETS

D070699113a



**NOTE:** 22 tooth, 28 tooth or 44 tooth sprockets at each contact drive wheel can be interchanged from the sprocket storage rod bolted near the wheel module on each side of the planter. 22 tooth sprockets require use of 148 pitch No. 40 chains. 28 tooth sprockets require use of 150 pitch chains. 44 tooth sprockets require use of 158 pitch chains.

Chain tension is controlled by a spring-loaded sprocket idler. The amount of spring tension on the chain is controlled by the idler arm.

The planting rate charts found in Seed Meter Operation/Maintenance section will aid you in selecting the correct sprocket.

**NOTE:** 22, 28 and 44 tooth drive sprockets are NOT applicable to all rate charts. Check chart titles to ensure proper rate charts are selected.

**NOTE:** When using the 54 cell sunflower disc, use 15 tooth drive sprocket at contact wheels and replace 28 tooth drive sprocket at wheel module reverser plates with 19 tooth sprocket. 15 tooth sprockets require use of 144 pitch No. 40 chains. Applicable sprockets, chains and instructions supplied in G1K469 Sunflower Rate Reduction Kit.

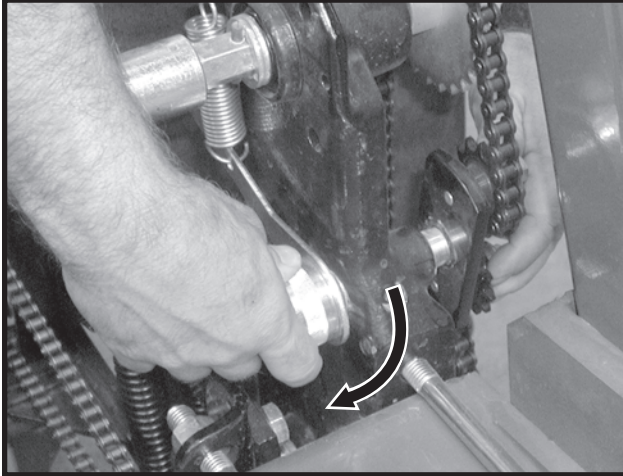
**NOTE:** After each sprocket combination adjustment, make a field test to be sure you are planting at the desired rate.

# MACHINE OPERATION

## WRAP SPRING WRENCH OPERATION

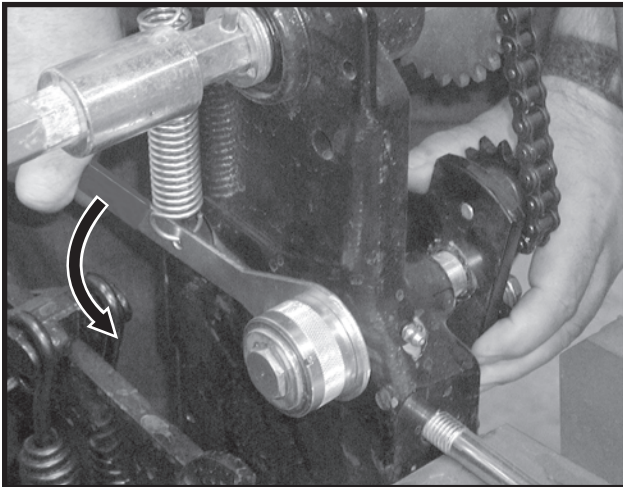
The chain idlers are equipped with wrap spring wrenches. Chain tension is released and/or added as shown below.

D11120301



To release chain tension, rotate the knurled collar on the wrap spring wrench while rotating the chain idler away from the chain.

D11120303a



To add chain tension, rotate the chain idler into the chain while rotating the handle to tension idler spring.

The wrap spring wrenches are made in L.H. and R.H. configurations, which can be identified by the silver or gold release collars, respectively.

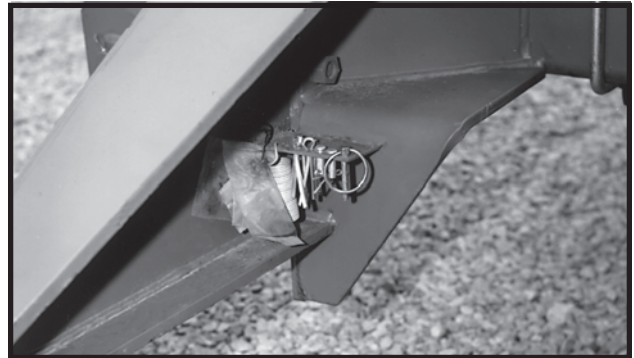
## SHEAR PROTECTION

The planter driveline and seed and granular chemical drivelines are protected from damage by shear pins.

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

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

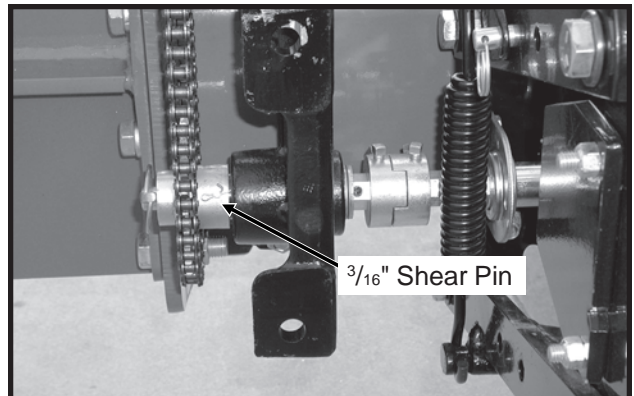
72495-48



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

**NOTE: Drill shaft/transmission coupler alignment is critical.**

D101801136

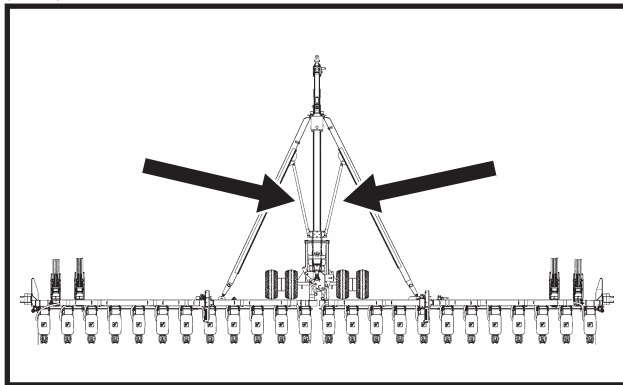


Transmission Shaft

# MACHINE OPERATION

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

(FF109)



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

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

## HYDRAULIC/ELECTRIC OPERATION

Two dual remote hydraulic outlets (SCV) are required on all sizes of conventional planters equipped with row markers. Three dual remote hydraulic outlets (SCV) are required on all sizes of SDS planters equipped with row markers. One set of outlets is used to operate the lift function, one set is used to operate the markers, tongue and fold/unfold functions and the third set is used to operate the SDS functions (If Applicable).



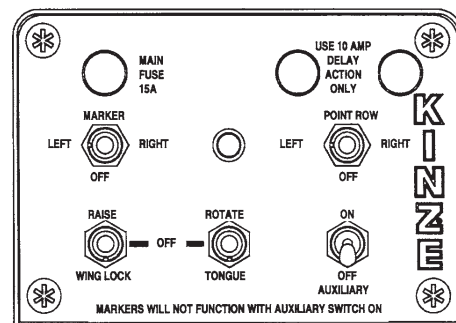
**DANGER:** To avoid serious injury or death, care must be taken when operating row markers around overhead power lines.

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

**NOTE:** The backlit console is equipped with a push-button switch on the back of the console which should be used to turn off the light during extended periods of non-use.

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

A6865(PLTR153)



Planter Control Console

D10060627



SDS Control Console



**WARNING:** Never work under the planter while in raised position without installing safety lockup devices.

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

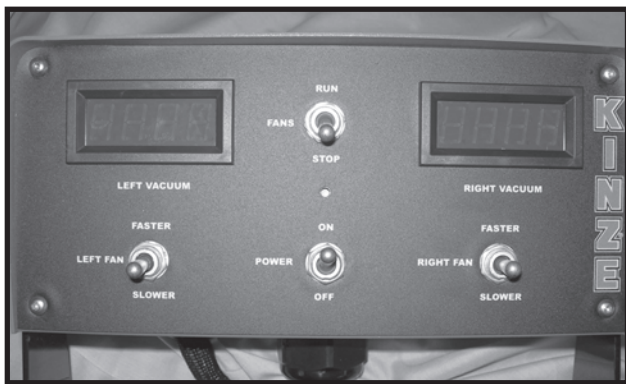
# MACHINE OPERATION

## DIGITAL VACUUM GAUGE OPERATION

The digital vacuum gauge control console is equipped with a power toggle switch, run/stop (fans) toggle switch and two fan speed control toggle switches for the vacuum fans. The power switch provides power to the control console. The run/stop toggle switch will turn both fans on when the power switch is ON. The fan speed control switches allow fan speed adjustment on each fan (left or right).

**NOTE: The toggle switch should be left in OFF position when the planter is not in use. If left in either fan position, the tractor battery will be drained.**

D10060618

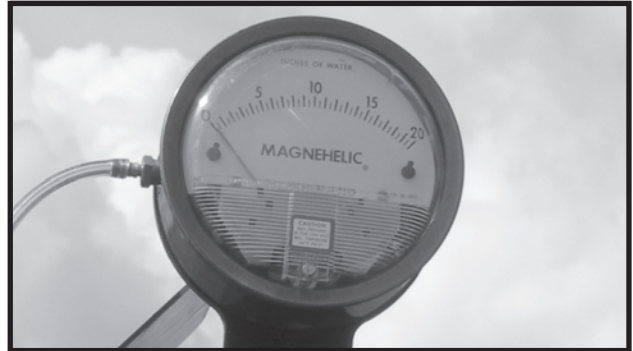


The digital vacuum gauge is calibrated at the factory, however, vacuum will vary throughout the manifold system and it may be necessary to adjust the digital readout so it agrees with the actual vacuum at the meter. With the seed discs loaded with seed, compare the digital vacuum gauge readouts to the reading taken from the analog gauges or a hand held gauge at several meters along the length of the planter. The elbow connections located on the covers of the seed meters allow testing of meter vacuum levels without removing the vacuum hoses. If there is more difference than 1" or 2" (H<sub>2</sub>O), the digital gauge can be adjusted by inserting a small flat bladed screwdriver into the opening on the back of the digital gauge housing and turning the potentiometer until the digital gauge displays the vacuum that is present at the meter. Compare readings at 10" and 20" of vacuum.

## ANALOG VACUUM GAUGES

The analog vacuum gauge on each side of the planter connects directly to the manifold. Digital vacuum gauges should then be calibrated to match that reading. See "Digital Vacuum Gauge Operation".

D06260653



The only adjustment to the gauge is to "zero" the needle with no vacuum present. If there is a significant difference between this gauge and a reading taken at the meters, a different manifold location should be found to connect hose to the gauge.

## VACUUM FAN MOTOR VALVE BLOCK ASSEMBLY

A pressure relief valve in the hydraulic circuit on each side of the planter prevents build up of oil pressure over 35 PSI in the case drain line when the vacuum fan motor is in operation. This valve will vent oil to the outside of the valve block through a drain hole in the aluminum valve block. This can occur whenever the case drain is connected improperly or pressure in the motor circuit builds.

See "Hydraulic Diagram - Vacuum Fan Motor System" in Maintenance section.

The valve block also contains a check valve that serves two purposes. This valve (a) prevents the vacuum fan from operating in the wrong direction if pressure is applied to the return side of the motor and (b) allows the fan to coast to a stop when the tractor hydraulic control is returned to the neutral position.

**NOTE: If reverse pressure is applied the fan will turn at a reduced speed.**

# MACHINE OPERATION

## TRANSPORT TO FIELD SEQUENCE



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

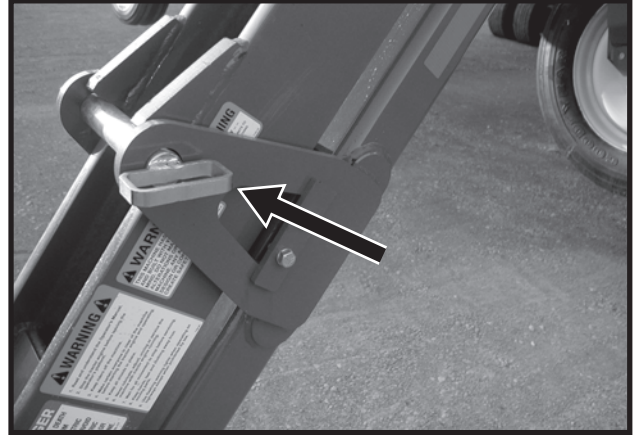
### SUMMARIZED TRANSPORT TO FIELD SEQUENCE

- Remove hitch parallel linkage lock pin or lockup.
- Lower hitch parallel linkage to release wing hooks.
- Unfold planter wings.
- Raise planter to remove weight from center (slave) lift cylinder lockups and remove lockups.
- Lower planter.
- Remove row marker lockups.

NOTE: Read the following information for more detailed instructions.

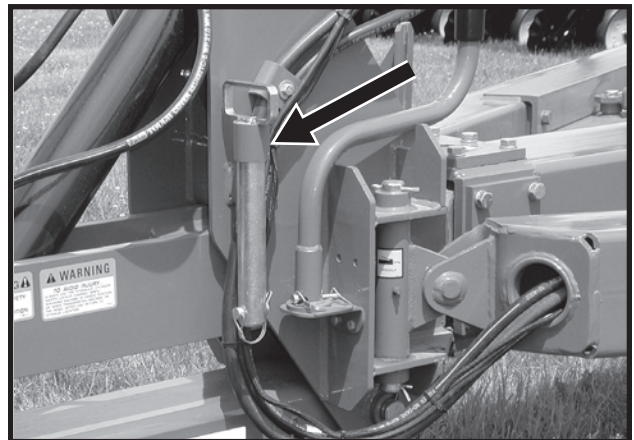
1. Position the planter in a relatively flat open area. Try to avoid an area with furrows, etc.
2. Fully extend hitch parallel linkage cylinder located on hitch. Remove the hitch parallel linkage lock pin from the hitch parallel linkage or cylinder lockup from cylinder rod. Store in storage location provided as shown on the following page.

D03030501



**Hitch Parallel Linkage Lockup Pin In Transport Position**

D06250314

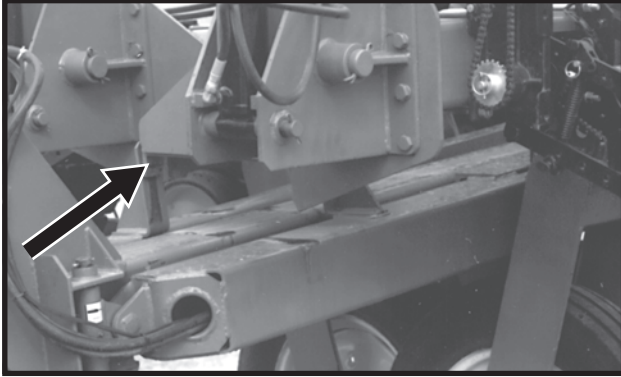


**Hitch Parallel Linkage Lockup Pin In Storage Location**

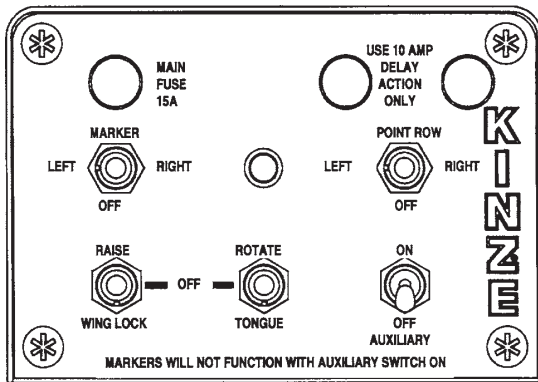
# MACHINE OPERATION

- Lower the hitch parallel linkage until the wing wheels are on the ground and the hitch has released from the hooks (see photo below) on the ends of the wings. This requires holding the switch on the control console labeled "ROTATE/TONGUE" in the "TONGUE" position while operating the proper tractor hydraulic control to retract the hitch parallel linkage cylinder fully.

73430-5



A6865(PLTR153)



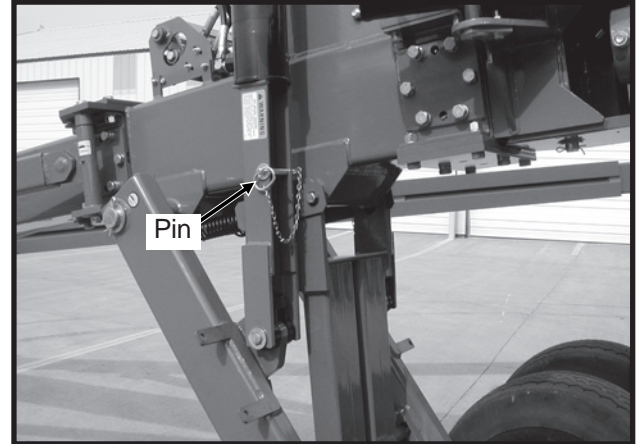
- Hold the control console switch labeled "ROTATE/TONGUE" in "ROTATE" and operate the hydraulic control. The tongue will begin to retract and the wings will begin to unfold, rolling on the wing wheels. It is necessary to place the tractor transmission in neutral or a low reverse gear, to allow the tractor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

D03200611



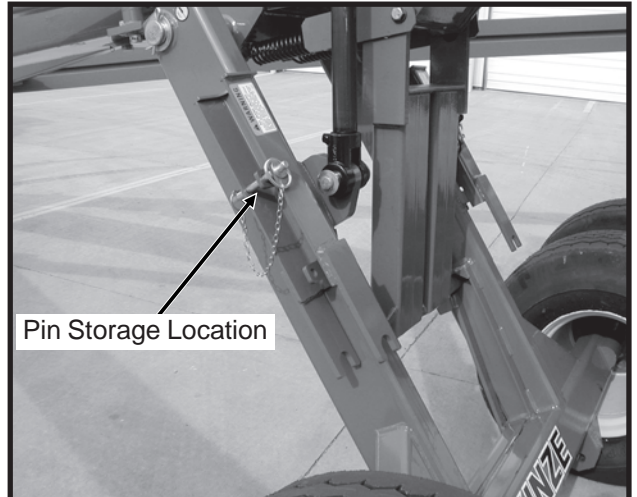
- Raise the planter to remove weight from the center lift cylinder lockup brackets. Remove the pin which locks each bracket in place and store the lockup brackets and pins as shown below.

D101801109



Center Lift Cylinder Lockups In Transport Position

D101801114



Center Lift Cylinder Lockups In Field Operation Position

**NOTE:** The automatic safety lock will release when the planter is raised to remove weight from the center lift cylinder lockups. Raising the planter too high will reset the mechanism. If this happens, lower the machine until the hydraulic system stalls against the automatic safety, raise the machine again slightly to release the automatic safety lock and then lower the planter.

# MACHINE OPERATION

6. With the planter fully unfolded, lower the machine all the way down. The center will drop until the toolbar is level and then the entire machine will lower evenly. When all lift cylinders are fully retracted, hold the tractor's hydraulic lever 5 to 10 seconds to rephase the system.

D03200612



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

7. Remove and store marker lockups.

D03200620



## FIELD OPERATION

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

After the planter is lowered to the planting position, position the hydraulic lever in float during normal field operation.

Operate markers with the control console switch for that marker in the ON (LEFT or RIGHT) position and the tractor's hydraulic valve. After markers are lowered to the ground, move the hydraulic control to operate two-fold or three-fold markers in float position. Marker speed is controlled with flow control valves located in the valve block on the right wing. One valve controls the raise speed of both markers while the other valve controls the lower speed of both markers. See "Marker Speed Adjustment".



# MACHINE OPERATION

## FIELD TO TRANSPORT SEQUENCE

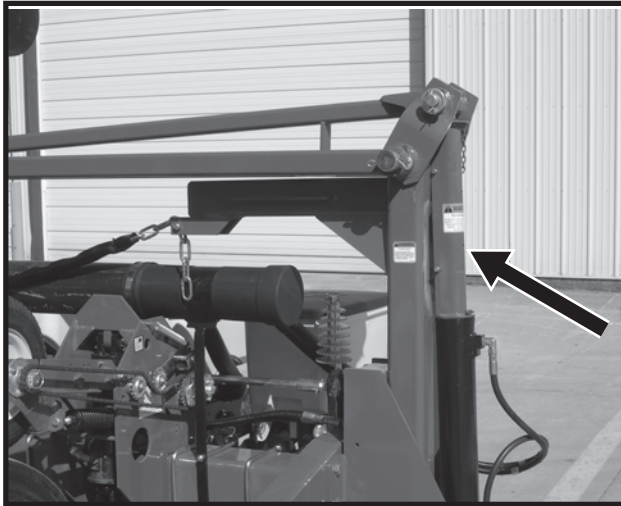
### SUMMARIZED FIELD TO TRANSPORT SEQUENCE

- Install marker lockups.
- Raise planter to fully extend master/slave cylinders.
- Install center (slave) lift cylinder lockups.
- Lower planter onto center lift cylinder lockups.
- Fold planter wings.
- Raise hitch parallel linkage to engage wing hooks.
- Install hitch parallel linkage lock pin or lockup bracket.
- Lower hitch parallel linkage cylinder.

NOTE: Read the following information for more detailed instructions.

1. Install cylinder lockups on marker cylinders to prevent the markers from unfolding when the planter is in the transport position.

D03200618



2. Raise the planter while holding the “RAISE/WING LOCK” switch on the control console in the “RAISE” position. The planter frame should raise level until the lift (master) cylinders at the ends of the wings are fully extended. The center lift (slave) cylinders will continue to extend (at a somewhat slower rate) until they are fully extended.

D03200612

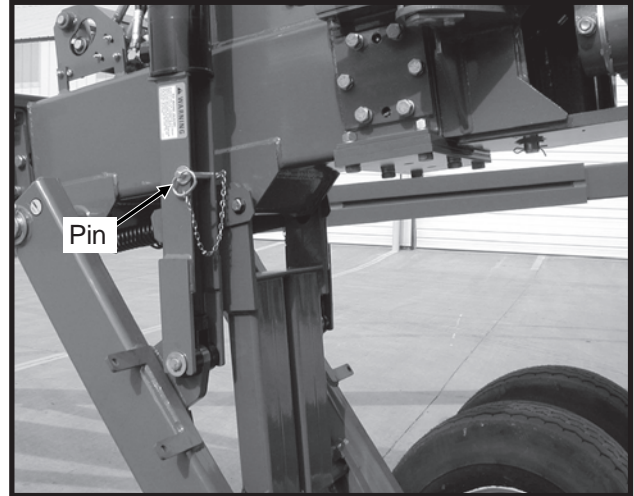


3. Install center (slave) lift cylinder lockups. Position brackets as shown below. Install pin assembly to lock each in place.



**IMPORTANT: DO NOT fold planter into transport position without lift cylinder lockups installed.**

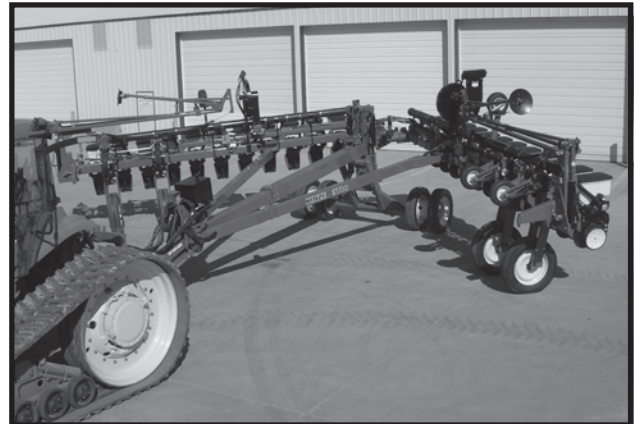
D101801109



### Center Lift Cylinder Lockups In Transport Position

4. Lower planter onto center lift cylinder safety lockups.
5. Hold the “ROTATE/TONGUE” switch in the “ROTATE” position and operate the tractor valve to fold the planter. The hooks on the wing ends should pass over the planter hitch and contact the stops on the draft links. (It may be necessary to extend the hitch parallel linkage cylinder slightly to ensure that the hooks on the wings contact the stops and don't come in over the top of the stops.) It is necessary to **slowly** idle the tractor forward as you fold the planter, allowing the center axle tires to remain stationary and the wing tires to roll in a continuous arc with minimal side loading on the tires or their mounting structure.

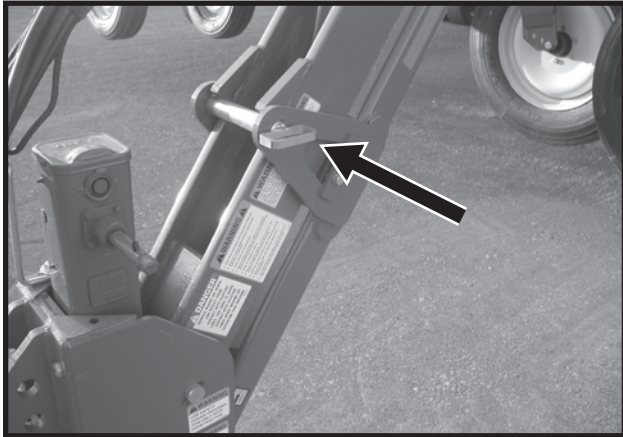
D03200611



# MACHINE OPERATION

- When the wings are fully folded, hold the “ROTATE/TONGUE” switch in the “TONGUE” position to extend the hitch parallel linkage cylinder fully to lift the wing tires off the ground.
- Place the hitch parallel linkage lock pin through the holes in the hitch as shown below.

D03030502



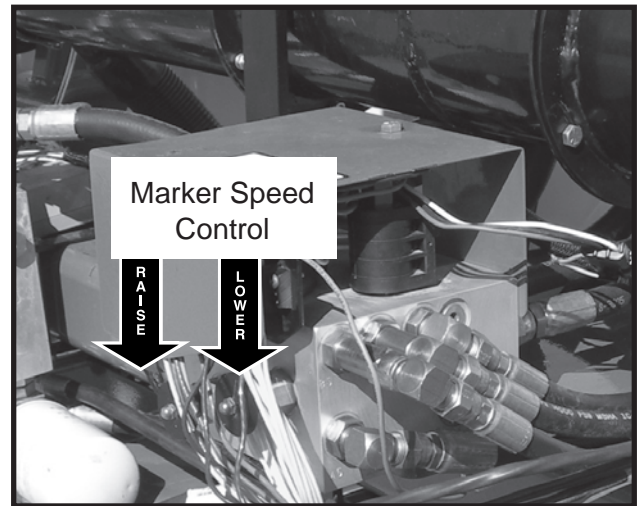
**Hitch Parallel Linkage Lockup Pin In Transport Position**

- Lower parallel link cylinder onto lock pin.

## ROW MARKER SPEED ADJUSTMENT

The marker hydraulic system includes two flow control valves. One flow control valve sets the lowering speed of both markers and one sets the raising speed of both markers. To adjust marker speed, loosen the jam nuts and turn the control(s) clockwise or IN to slow the travel speed and counterclockwise or OUT to increase the travel speed. The flow control (s) determines the amount of oil flow restriction through the valve (s), therefore varying travel speed of the markers. Tighten jam nut after adjustments are complete.

D03200629



**IMPORTANT:** The flow controls should be properly adjusted before the marker assemblies are first put into use. Excessive travel speed can damage the marker assembly.



**DANGER:** To avoid serious injury or death, care must be taken when operating row markers around overhead power lines.

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

**NOTE:** On a tractor where the oil flow can not be controlled, the rate of flow of oil from the tractor may be greater than the rate at which the marker cylinder can accept it. The tractor hydraulic control 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.

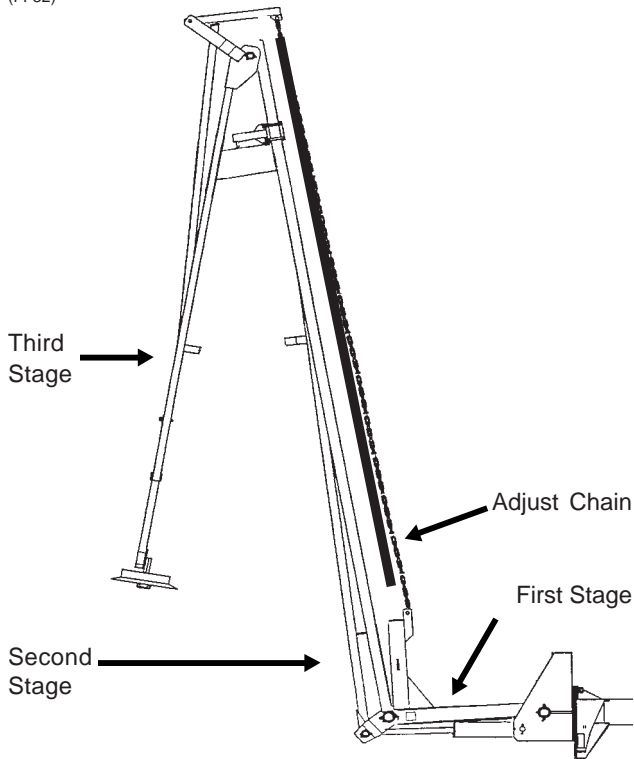
On tractors equipped with flow control valves, row marker speed adjustment should be made with the tractor flow controls in maximum position. After marker speed is set, the tractor flow controls can be adjusted to allow the hydraulic control to stay in detent during the marker raise or lower cycle.

# MACHINE OPERATION

## ROW MARKER CHAIN ADJUSTMENT (16 Row 38", 24 Row 20", 24 Row 22", 24 Row 30" And 36 Row 20" Sizes Only)

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

(FF32)



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

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



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

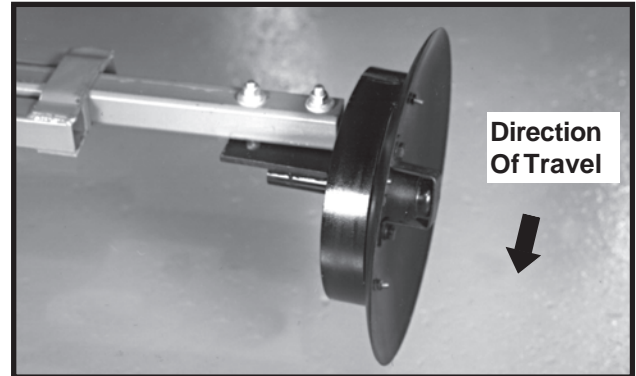
## ROW MARKER LENGTH ADJUSTMENT

To determine the correct length at which to set the row 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 disc blade to the center line of the planter is equal to the total planting width previously obtained. Both the planter and row 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 row marker assemblies equally and securely tighten clamping bolts. An example of marker length adjustment follows:

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

24 Rows x 30" Spacing = 720" Marker Dimension
---

60569-53



**Row Marker Disc Blade Shown With Depth Band**

The marker disc blade should be installed so the concave side of the blade faces outward to throw dirt away from the grease seals. The spindle assembly 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 assembly as required. Tighten bolts to the specified torque.

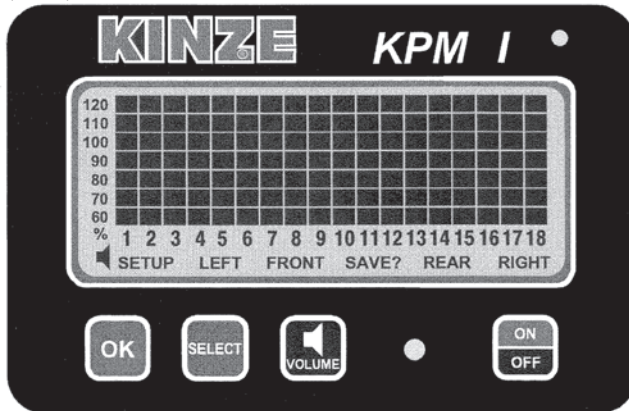
**IMPORTANT: A marker disc blade assembly that is set at a sharper angle than necessary will add unnecessary stress to the complete row marker assembly and shorten the life of bearings and blades. Set the blade angle only as needed to leave a clear mark.**

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

Notched marker blades, for use in more severe no till conditions, are available from KINZE® Repair Parts through your KINZE® Dealer.

## KPM I ELECTRONIC SEED MONITOR

(MTR28)



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

Seed flow for up to 36 rows, in two 18 row sections (left/right or rear/front), may be monitored with one monitor. For less complicated applications (18 rows or less), all rows may be programmed in one section and the other section left disabled.

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.

The single backlit Liquid Crystal Display (LCD) shows the active section, the number of monitored rows per section, the relative seed rate for each row (using a bar graph display) and scrolls various alarm and warning messages when an alarm condition exists. A continuous audible alarm will sound upon system malfunction or underflow conditions for any monitored row. Alarms must be acknowledged by the user. Various warnings may sound the alarm or flash one or more icons.

The monitor will power down if no activity is detected within one hour. No activity means there has been no new seed flow and no operator push key input. (If Applicable)

**\* NOTE: The primary harness, on all 3000 Series Planters, is hard-wired into the safety/warning light harness or control console harness included as standard equipment with the planter.**

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### MONITOR KEY FUNCTIONS

Each key press is acknowledged by the monitor with a short beep.

#### OK

- Ends and saves the new setup during installation.
- Acknowledges and silences alarms in the operation mode.

#### SELECT

- Selects the application mode (rear/front or left/right) at the beginning of installation setup.
- Selects the active section(s) (rear, rear/front, left, right or left/right) in the operation mode.
- Has no affect on a system configured to monitor only one section.

#### VOLUME

- Pressing the key will turn the audible alarm on.
- Holding the key for periods of 2 seconds increases the volume until it reaches the maximum, at which time it rolls over to the minimum level.

#### ON/OFF

- Powers the unit on and off.

### LCD FUNCTIONS

The monitor collects data on the planting rates from all active rows and calculates an average. This average will determine the 100% mark. Seed rate for each row is then compared to the average value and the result is displayed on the bar graph.

The information regarding each section is displayed alternately every 5 seconds. While operating a system with two sections programmed, one or both sections may be selected any time. When only one section is selected, the monitor calculates the average based on the remaining active rows from that section.

**STEP 1** Press SELECT key once to show one section. The flashing icon shows the section that is not selected. The selected section is continuously displayed on the LCD.

**EXAMPLE:** The system is setup to display rear/front sections. Press SELECT key. The FRONT icon will be flashing and the REAR section will be displayed on the bar graph. After 1 minute the FRONT icon will stop flashing. The monitor will stay in this REAR only display through power down and power up. Each time the monitor is turned on while in REAR only mode, the FRONT icon will flash for 1 minute. Also if seed flow is sensed in the FRONT section while planting, the FRONT icon will resume flashing.

**STEP 2** Press SELECT key again to activate both sections.

**EXAMPLE:** Press SELECT key a second time. The information regarding each section will display alternately every 5 seconds.

For simple applications, where only one section is programmed, the display will automatically lock on that section. Pressing SELECT key will have no affect.

**NOTE:** When alternating between two sections, the display will lock on the section containing the first recognized alarm until the alarm is acknowledged by pressing the OK key or the alarm condition is removed.

## CHANGING THE AUDIBLE ALARM VOLUME

**STEP 1** Press and hold down the VOLUME key.

**STEP 2** The SETUP and VOLUME icons will turn on and the alarm will sound continuously. The intensity of the sound will change every 2 seconds. After the maximum volume is reached, the next change will set the volume to minimum and will continue to get louder every 2 seconds. When the desired volume is reached, release the key.

## WARNINGS AND ALARMS

- 1. System Alarms** - A system alarm is activated when the monitor detects a faulty sensor or one of several other communication faults.

The corresponding row number starts flashing and the alarm sounds. All segments on the corresponding bar graph are turned off. Pushing the OK key to acknowledge the warning will turn the audible alarm off. The row number will continue to flash until the alarm condition is removed. If the monitor detects a faulty sensor and there is no planting activity present, the monitor will scroll "CHECK CONNECTION".

Another type of system alarm occurs when the monitor detects a data communication bus error. The three possible data communication bus errors are:

LCD Display	Error Condition
SYS HI	The data communication lead (green) has been shorted to the power lead (white).
SYS LO	The data communication lead (green) has been shorted to the ground lead (black).
SYS EC	An internal error has been detected.

- 2. Under Flow Alarms** - If the seed rate for one or more rows is less than 55% of the calculated average, the corresponding 60% segment will stay on, the corresponding row number starts flashing and the alarm sounds. Pushing the OK key to acknowledge the alarm will turn the alarm off. The 60% segment of the bar graph remains on and the row number continues to flash until the alarm condition is corrected.

**NOTE:** All alarms present within a short time before planting stops, are frozen on the screen and the text LOW or FAIL will display on the LCD. If the under flow is between 0% and 10%, this warrants a "FAIL" condition. If the under flow is between 10% and 55%, a "LOW" condition is generated. If multiple rows have an under flow condition, "FAIL" will display if any one or more rows is between 0% and 10%. This allows the user to identify and fix the problem rows.

**NOTE: This warning will not trigger unless a minimum time of continuous planting has passed.**

**NOTE: If all the rows show a seed rate of zero, the condition will not generate an alarm. It will be assumed the planter has stopped. The row numbers and the bottom 60% segment will remain on for all selected rows.**

3. **Multiple Alarms** - If more than one alarm condition occurs at the same time, pushing the OK key will acknowledge all alarms that are currently displayed. For example, if one row on the front and one row on the rear are alarming, pushing the OK key will only acknowledge one of them. However, if there are two alarms on the front, both alarms would be acknowledged with one push of the OK key.
4. **Section Not Selected Warning** - If the monitor was programmed for two sections and only one is currently selected for display (by pressing the SELECT key), the icon of the disabled section will flash for a period of 1 minute, then turn off at each power up. If seed flow is sensed in the disabled section, the icon for that section (front, left or right) will begin to flash.
5. **Seed Planting Stopped Warning** - When the monitor detects no seed flow on all rows, the monitor will emit 3 short beeps to alert the user. This warning will occur each time the planter is stopped, each time the planter is raised at the end of a row or if the mechanical drive fails while planting.

**NOTE: This warning will not trigger unless a minimum time of continuous planting has passed.**

6. **Seed Counting Sensor In Calibration Warning** - All seed counting sensors run a self-calibration sequence on power up. While in calibration the bottom segment of each corresponding bar graph will flash if the monitor detects movement or planting activity. If the monitor does not detect this, the message "WAIT CALIBRATION" will be scrolled.

7. **Seed Counting Sensor Too Dirty Warning** - After the seed counting sensors end their internal self-calibration, the monitor may detect one or more sensors are either too dirty or blocked. If the monitor detects planting or movement, the corresponding bar graph remains flashing. The monitor will display "CLEAN SENSORS" on the LCD if no movement or planting is detected, prompting the user to clean the tubes. If the tubes are dirty, they will still show seed flow with less accuracy. If the tubes are blocked the user will get an alarm as soon as planting starts. The corresponding bar graph will remain flashing until the problem is corrected and the monitor is powered down and then powered back up.
8. **Low Battery Warning** - The monitor is constantly monitoring its input voltage to quickly detect low power conditions. If the monitor detects that the input voltage has dropped below 11.0V, it will display "LOW POWER" on the LCD, provided that the monitor does not detect planting.

**NOTE: After the alarms have been acknowledged and if the alarm condition is still present, the LCD will continue to display the alarm condition.**

## REPLACING A FAULTY SENSOR

To replace a faulty sensor; (a) disconnect the faulty sensor and check the monitor to be sure the correct sensor was disconnected, (b) turn the monitor off, (c) after a few seconds, turn the monitor back on and (d) plug in the replacement sensor. The monitor will chirp twice to acknowledge the new sensor was learned and saved.

To replace more than one faulty sensor, proceed as stated above beginning with the lowest numbered row in the rear or left section and continue to replace sensors in increasing order. Then move on to the front or right section and continue in ascending row number order.

**NOTE: If the monitor is not turned off and then on, the replacement sensor(s) will be ignored until the next power on, at which point they will be randomly learned by the monitor.**

## FIELD OPERATION

(MTR28e/MTR28c/MTR28d/MTR28b)

Press the ON/OFF key to turn the monitor on and off.



Information regarding each section is displayed alternately every 5 seconds.

### REAR/FRONT CONFIGURATION

- Press the SELECT key once to show REAR section only.
- Press the SELECT key a second time to return to each section being displayed alternately every 5 seconds.
- Press the SELECT key a third time to show REAR section only again.



### LEFT/RIGHT CONFIGURATION

- Press the SELECT key once to show LEFT section only.
- Press the SELECT key a second time to show RIGHT section only.
- Press the SELECT key a third time to return to each section being displayed alternately every 5 seconds.



**NOTE: SELECT key has no function when only a single section is being used.**

Press the VOLUME key to increase or decrease volume. See “Changing The Audible Alarm Volume”.



Press the OK key to silence alarms. See “Warnings And Alarms”.



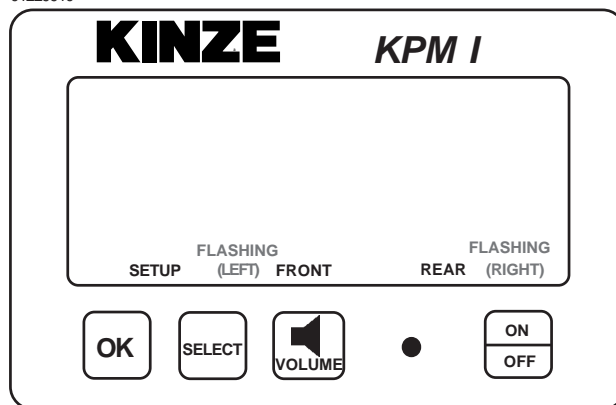
## PROGRAMMING/CONNECTING SEED TUBES

**STEP 1** All the seed tubes w/sensors must be disconnected from the harness and the monitor must be off.

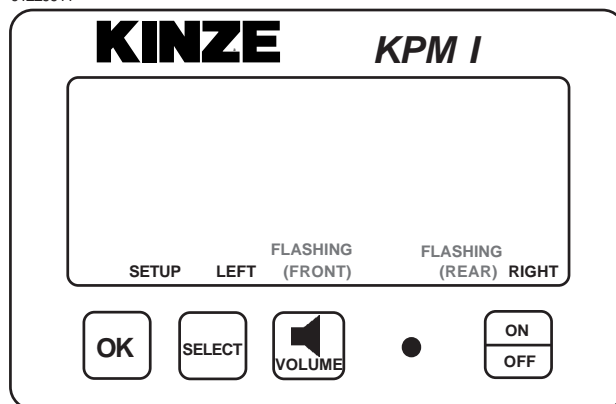
**STEP 2** Press the ON key. The monitor automatically enters the setup procedure. If the monitor was accidentally powered on with no sensors attached, the user can turn the monitor off at this point and the previous configuration is not lost.

**STEP 3** Press the SELECT key. Each time you press the SELECT key the mode will toggle between rear/front and left/right. The selected display will be solid and the configuration not currently selected will be flashing. By default the monitor starts in rear/front mode.

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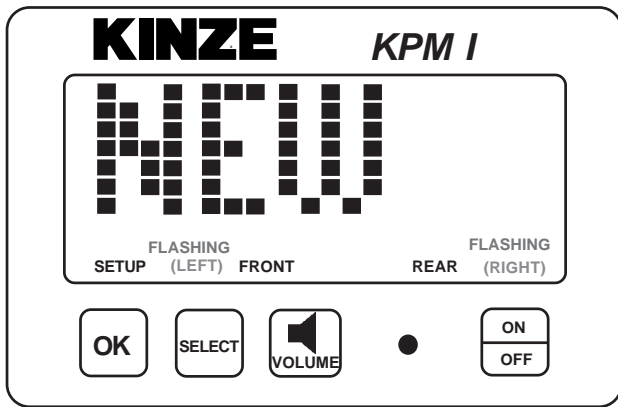
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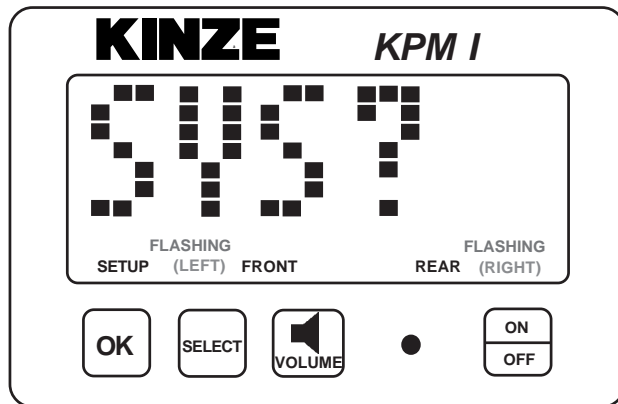
**NOTE: Model 3700 (24/36) planters will use the left/right configuration. Model 3700 (16 row) planter will use the rear configuration only. When all rows can be viewed on a single display (rear), pressing the select key has no function.**

**STEP 4** Press and hold the OK key to confirm the selection and continue holding until the row numbers appear on the display. During confirmation, the display will alternate between “NEW” and “SYS” to alert the user that the previous configuration will be lost. With the rear/front mode selected, the monitor automatically starts with the rear section. The REAR icon shows solid and the FRONT icon starts to flash. With the left/right mode selected, the monitor automatically starts with the left section. The LEFT icon shows solid and the RIGHT icon starts to flash.

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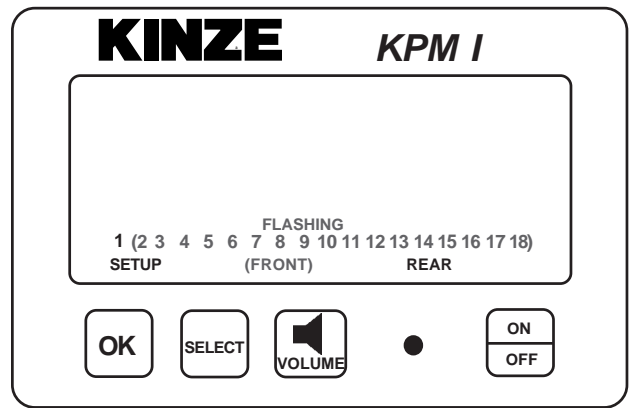


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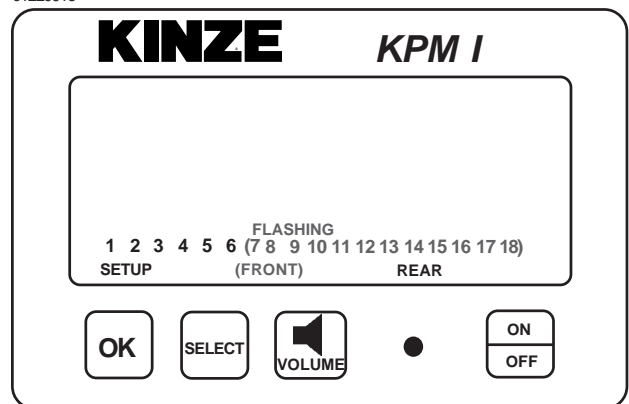
**STEP 5** Plug each seed tube w/sensor into the harness in a predetermined order. Row 1 first, row 2 second and so on up to 18 rows. When a sensor is plugged in, the corresponding row number on the LCD display will stay solid, the monitor will chirp twice and the LED (Light Emitting Diode) on the seed tube sensor will turn on for approximately 30 seconds to show connection is made. NOTE: Unless there is a faulty sensor, the installer should just have to connect the sensors in the proper order without checking the monitor is acknowledging each sensor.

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**STEP 6** When all the seed tubes w/sensors for the current section are installed, check to be sure the monitor displays solid numbers for the number of sensors connected.

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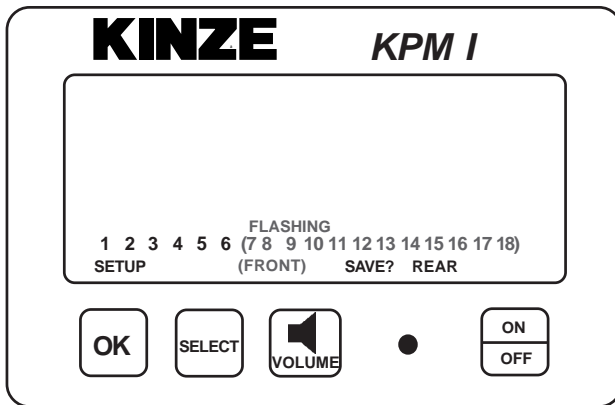




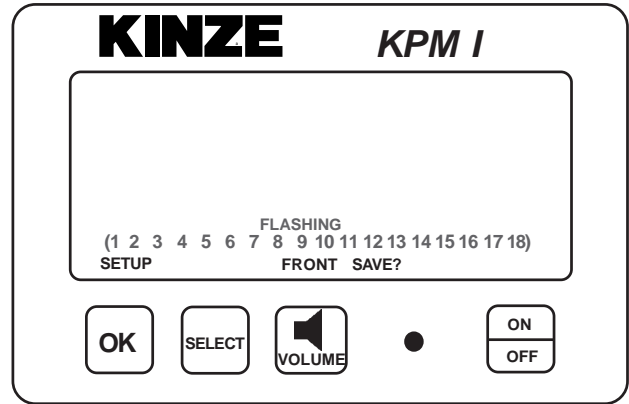
**STEP 7** If this condition is satisfied, press and hold the OK key to save the setup for the current section. The SAVE? icon will show followed by continuous short beeps indicating the monitor is preparing to save. The installer has 5 seconds to decide if he wants to save the current configuration. During this time the short beeps will sound. To complete the save, hold the OK key pressed until the word “DONE” shows on the screen followed by a long beep and the SAVE? icon turns off. When the OK key is released the monitor will continue with the second section installation.

**STEP 8** Follow STEPS 5 through 7 to install the second section. If no seed tubes are installed on the second section, press and hold the OK key until the word “DONE” shows on the screen followed by a long beep and the SAVE? icon turns off.

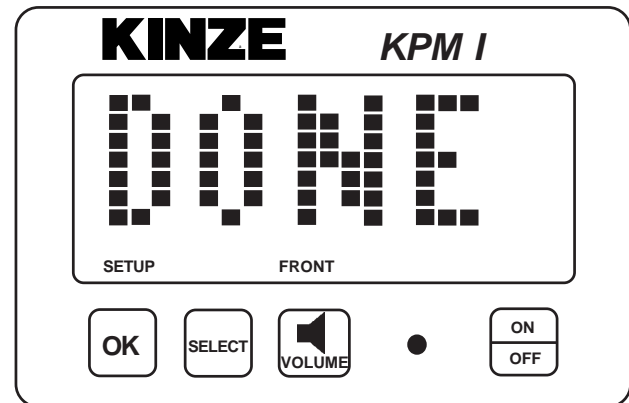
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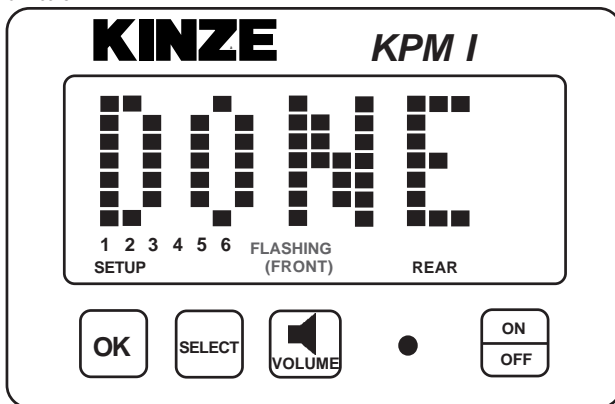
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01229918

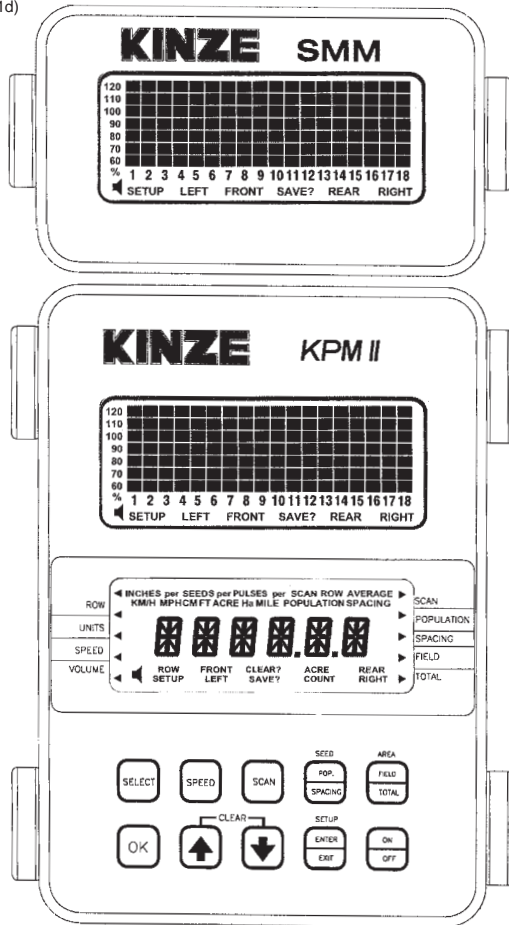


**NOTE:** Individual seed tubes may be unplugged for special situations. An alarm will sound which can be silenced by touching the OK key. The monitor will recognize each seed tube when reconnected.

**See “KPM I/KPM II Stack-Mode Electronic Seed Monitors Troubleshooting” in the Maintenance Section.**

## KPM II STACK-MODE ELECTRONIC SEED MONITOR

(MTR41d)



**NOTE: SMM console may not be applicable to all models.**

The KPM II Stack-Mode electronic seed monitor system consists of (a) a KPM II Stack-Mode console, which is mounted on the tractor; (b) seed tubes with sensors, one of which is installed in each planter row unit; (c) a magnetic distance sensor, which is installed on the planter, or a radar distance sensor, which is installed on the tractor; (d) shaft rotation sensors, which are installed on the planter drill shafts; and (e) a planter harness (junction Y-harness and/or extension harness where applicable), to which the individual seed tube sensors connect. The primary harness, which connects the monitor console to the planter harness, is hard-wired into the safety/warning light harness or control console harness included as standard equipment with the planter.

The software design of the KPM II Stack-Mode console allows the use of an add-on SMM console for simultaneous viewing of the seed flow bar graphs for standard (up to 36 rows) and/or Interplant® System rows (up to 36 rows). A total of 72 rows may be displayed in multiple sections (rear/front, left/right or four sections). The SMM console must be used to allow utilization of the four section feature.

The SMM console is included with the KPM II Stack-Mode Electronic Seed Monitor Package for 24 and 36 row Model 3700 planters.

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.

The KPM II Stack-Mode console has two backlit Liquid Crystal Displays (LCD). The upper display shows the active section, the number of monitored rows per section, the relative seed rate for each row (using a bar graph display) and scrolls various alarm and warning messages when an alarm condition exists. A continuous audible alarm will sound upon system malfunction or underflow conditions for any monitored row. Alarms must be acknowledged by the user. Various warnings may sound the alarm or flash one or more icons. The lower display is used to display alphanumeric data such as row spacing, units (Metric or English), speed, volume, seed population, seed spacing, field area, total area and distance sensor pulses per mile/kilometer.

(If Applicable) The SMM console has one backlit Liquid Crystal Display (LCD) which functions the same as the upper display on the KPM II Stack-Mode console except it does not scroll alarm and warning messages. The SMM console must be programmed into the system before printed text will display on the LCD.

The monitor system will power down if no activity is detected within one hour. No activity means there has been no new seed flow and no operator push key input.

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## MONITOR KEY FUNCTIONS

Push keys allow the user to select or change the operating mode, the active displays or the current configuration. Depending on the operating mode or the current display selected, some keys are valid while some are not. Each key press, if valid, is acknowledged by a short beep and an action is taken. If the key press has no action associated, the key press is considered invalid, and the user will not get any feedback.

### SELECT

- Selects the application mode (rear/front, left/right or four sections up to a maximum of 72 rows) at the beginning of installation in the setup mode.
- Selects the active section(s) (rear, rear/front, left, right or left/right) in the operation mode.
- Has no affect on a system configured to monitor only one section.
- While programming the monitor, the key will select the digit to change.

### SPEED

- Immediately displays the current ground speed.

### SCAN

- If the current average population or average spacing is displayed, this key sequentially displays the seed population/spacing on each row.
- If the display shows functions other than average seed population or spacing, pressing SCAN will sequentially display speed, average seed population and average seed spacing.
- Pressing a second time freezes the display on the current row.
- Pressing a third time restarts the sequential display.

### SEED POPULATION/SEED SPACING

- Immediately displays the average seed POPULATION and the average seed SPACING of all active rows.
- Each press alternates between seed spacing and seed population.

### AREA FIELD/AREA TOTAL

- Immediately displays the field or total area planted since the field/total area was last cleared.
- Each press alternates between field area and total area.

### OK

- Ends and saves the new setup during installation.
- Acknowledges and silences alarms in the operation mode.

### UP ARROW AND DOWN ARROW

- Scrolls sequentially through the display options on the lower LCD display.
- Freezes on the current row in the scan mode.
- Scrolls sequentially through the rows when the population scan is frozen.
- Used to enter programmable values in the programming mode.
- The UP and DOWN Arrow keys can be pressed at the same time to start the CLEAR function.

### SETUP ENTER/SETUP EXIT

- Enters and exits the programming mode.

### ON/OFF

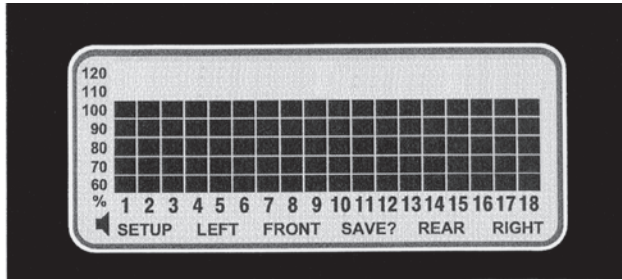
- Powers the unit on and off.

# MACHINE OPERATION

# KPM II STACK-MODE

## UPPER LCD FUNCTIONS

(MTR29h)



The monitor collects data on the planting rates from all active rows and calculates an average. This average will determine the 100% mark. Seed rate for each row is then compared to the average value and the result is displayed on the bar graph.

With only the KPM II Stack-Mode console programmed into the system, the information regarding each section is displayed alternately every 5 seconds. While operating a system with two sections programmed, one or both sections may be selected any time. When only one section is selected, the monitor calculates the average based on the remaining active rows from that section.

With the SMM console programmed into the system, two sections are viewed at the same time. If the system configuration is for four sections, the display will alternate every 5 seconds between a pair of sections. The select key will lock the display on rear sections. The SMM console shows RIGHT in the left/right configuration, FRONT in the rear/front configuration and FRONT RIGHT/ REAR RIGHT in four sections configuration. The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and FRONT LEFT/REAR LEFT in four sections configuration.

**STEP 1** Press SELECT key once to show one section. The flashing icon shows the section that is not selected. The selected section icon is continuously displayed on the LCD.

**EXAMPLE:** The system is setup to display rear section on KPM II Stack-Mode console and front section on SMM console. Press SELECT key. The FRONT icon will be flashing and the REAR section will be displayed on the bar graph. The SMM console is only backlit. After 1 minute the front row icon will stop flashing. The monitor will stay in this REAR only display through power down and power up. Each time the monitor is turned on while in REAR only mode, the FRONT icon will flash for 1 minute.

If seed flow is sensed in the FRONT section while planting, the FRONT icon will resume flashing.

When the front section is disabled, the row spacing will automatically double to maintain the proper implement width in the monitor. A 23 or 24 row 15" configuration changes to a 12 row 30" configuration with a touch of the SELECT key.

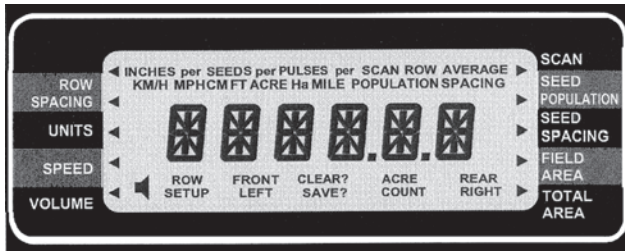
**STEP 2** Press SELECT key again to activate both sections.

For simple applications, where only one section is programmed, the display will automatically lock on that section. Pressing the SELECT key will have no affect.

**NOTE:** When alternating between two sections, the display will lock on the section containing the first recognized alarm until the alarm is acknowledged by pressing the OK key or the alarm condition is removed.

## LOWER LCD FUNCTIONS

(MTR29g)



- The UP and DOWN arrow keys will sequentially change what is being displayed on the lower LCD. Pressing the UP or DOWN arrow keys will move the arrow head icon (on the left and right hand side of the display) to another item. For example, if the arrow icon is pointing to SPEED, ground speed will be displayed on the LCD. Pressing the UP arrow key will move the icon to UNITS. The display will change to display all the icons used to represent the current (English or Metric) measurement system.
- The shortcut keys SPEED, SEED POPULATION/SPACING and AREA FIELD/TOTAL allow direct access to their respective displays. For example, no matter what is currently being displayed on the lower LCD, pressing the SPEED key will change the display to the current speed. Pressing the SEED POPULATION/SPACING or AREA FIELD/TOTAL keys will alternate between the two functions assigned to those keys.
- Pressing the SCAN key while displaying seed spacing or population will cause a sequential display of each individual row. Pressing the SCAN key a second time will freeze the display on the currently displayed row. The UP or DOWN arrow keys can be used to change the currently displayed row. Pressing the SCAN key will restart the automatic advancing of the scan function.
- Pressing the SCAN key while displaying speed will cause a sequential display of speed, average planter population and average seed spacing. Pressing the SCAN key a second time will freeze the display on the currently displayed reading.

### ROW SPACING

Press the arrow keys to ROW SPACING to display the current spacing between rows in inches or centimeters. The ROW SPACING icons turn on, displaying a 3 digit, one decimal place format. In the area count mode, this function displays the implement width in feet or meters, using a 3 digit, no decimal places format.

### UNITS

Press the arrow keys to UNITS to display all the icons from the currently selected English or Metric measurement system. For the English system, the icons are: INCH, MPH, FT, ACRE and MILE. For the Metric system, the icons are: M, KM/H and Ha.

### SPEED

Press the SPEED key to display the current speed in MPH or KM/H, using a 3 digit, one decimal place format.

### VOLUME

Press the arrow keys to VOLUME to display the presently selected audible alarm volume. The SPEAKER icon turns on.

### SCAN

Press the SCAN key to display the seed spacing or seed population (see Steps 1-3 following) of each individual row. (1) Pressing the SCAN key while displaying any other function will cause the monitor to sequentially display speed, average seed population and average seed spacing. (2) Pressing the SCAN key a second time will freeze the display. (3) Pressing the SCAN key a third time restarts the sequential display. The UP and DOWN arrow keys can be used to change the current display.

# MACHINE OPERATION

# KPM II STACK-MODE

## SEED POPULATION/SEED SPACING

Each SEED POP/SPACING key press alternates between seed population and seed spacing.

Seed population displays the average number of seeds or the row average number of seeds per acre or seeds per hectare for all the active rows. The average is displayed using a 6 digits, no decimal places format. The AVERAGE POPULATION icon will turn on. When in the scan mode, the scan arrow and SCAN ROW POPULATION will appear. The ROW number icon and the current row will be displayed on the left and the population will be displayed on the right in 1000's using 3 digits, one decimal place (e.g. 32.9 means 32,900). When in scan freeze mode, the scan arrow and ROW POPULATION will turn on (scan arrow may be flashing). The UP and DOWN keys may be used to lock on the desired row.

Seed spacing displays the average distance or the row average distance between seeds for all active rows in inches per seed or centimeters per seed using a 3 digit, one decimal place format. When the average is displayed the AVERAGE SPACING icons are turned on. When in the scan mode, the scan arrow and SCAN ROW SPACING icons will appear. The ROW number icon and the current row will be displayed on the left and the spacing will be displayed on the right. The display will sequence to the next row every 5 seconds. When in scan freeze mode, the scan arrow and SPACING will turn on (scan arrow may be flashing). The UP and DOWN keys may be used to lock on the desired row.

## FIELD AREA/TOTAL AREA

Each AREA FIELD/TOTAL key press alternates between field area and total area.

Field area displays the total number of acres or hectares using a 6 digit, one decimal place format.

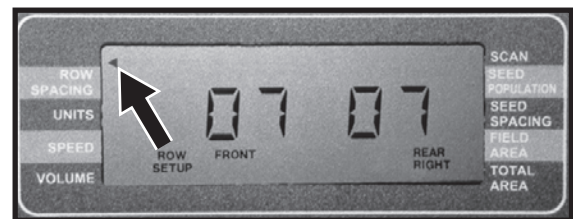
**NOTE: When FIELD AREA is selected, the UP or DOWN key must be held in slightly longer than normal so the monitor will not mistake this action with a CLEAR, which consists of the UP and DOWN arrow keys pressed simultaneously. A beep will sound when the function activates.**

Total area displays the total number of acres or hectares using a 6 digit, one decimal place format. The total area counter updates every time the field area counter increments. Clearing the total area counter will also clear the field area counter.

When the monitor is programmed as a rear only or rear/front configuration and shaft rotation sensors are installed, pressing the UP arrow to move beyond row spacing lights an arrow on an unlabeled area above ROW SPACING. This is the automatically set division line between the L.H. shaft sensor and the R.H. shaft sensor. The display shows the first row on the rear section and the front section assigned to the R.H. shaft rotation sensor.

**EXAMPLE: On a 12 Row 30" planter with Interplant® Package, the display would appear as follows:**

092597-21



THIS DISPLAY IS NOT ACCESSIBLE ON LEFT/RIGHT CONFIGURATIONS OR SYSTEMS WITHOUT SHAFT ROTATION SENSORS.

## PROGRAMMING - Changing The Audible Alarm Volume

**STEP 1** To enter the programming mode, press and hold the SETUP key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the SETUP icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.

**NOTE: The monitor must be in a programmable function (row spacing, units, speed, volume or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.**

**STEP 2** Press the UP or DOWN arrow keys to move the flashing arrow to VOLUME. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

**STEP 3** Press the OK key and the flashing arrow becomes solid and the audible alarm will sound.

**NOTE: The lower LCD will display the current volume and the SPEAKER icon is turned on. Settings are from 0 to 9.**

- Use the UP or DOWN arrow keys to change the setting. With every UP arrow key push, the alarm will increment by one step between the minimum and the maximum. If the maximum level (9) is reached the volume rolls over to the minimum level (0).
- Pressing the DOWN arrow key lowers the volume until the minimum level (0) is reached, at which point the volume rolls over to the maximum level (9).

**STEP 4** To exit without saving, press and release the OK key. The monitor will restore the lower LCD to show the setting of the item, and the arrow icon will flash, allowing the user to select another item to program.

To exit and save, press and hold the OK key. The monitor will emit several short beeps and SAVE? icon is turned on. After a short time a long beep is heard, and the lower LCD will display the word "DONE". Release the OK key. If the OK key is released BEFORE the word "DONE" is displayed, the changes WILL NOT BE SAVED. The word "DONE" MUST be displayed in order for the save to have occurred.

**NOTE: The programming mode may be exited at any time, by pressing the SETUP key. Pressing this key will return the monitor to its normal operation. All items changed and saved will come into effect immediately. Any items changed, but not saved will revert to the original programmed value.**

# MACHINE OPERATION

# KPM II STACK-MODE

## PROGRAMMING - Units (Metric Or English)

**STEP 1** To enter the programming mode, press and hold the SETUP key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the SETUP icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.

**NOTE: The monitor must be in a programmable function (row spacing, units, speed, volume or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.**

**STEP 2** Press the UP or DOWN arrow keys to move the flashing arrow to UNITS. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

**STEP 3** Press the OK key and the flashing arrow becomes solid and the audible alarm will sound.

**NOTE: The lower LCD will alternately display all Metric icons or all English icons, indicating the Metric or English mode respectively.**

- Use the UP or DOWN arrow keys to change the setting.

**STEP 4** To exit without saving, press and release the OK key. The monitor will restore the lower LCD to show the setting of the item, and the arrow icon will flash, allowing the user to select another item to program.

To exit and save, press and hold the OK key. The monitor will emit several short beeps and SAVE? icon is turned on. After a short time a long beep is heard, and the lower LCD will display the word "DONE". Release the OK key. If the OK key is released BEFORE the word "DONE" is displayed, the changes WILL NOT BE SAVED. The word "DONE" MUST be displayed in order for the save to have occurred.

**NOTE: The programming mode may be exited at any time, by pressing the SETUP key. Pressing this key will return the monitor to its normal operation. All items changed and saved will come into effect immediately. Any items changed, but not saved will revert to the original programmed value.**

## PROGRAMMING - Row Spacing

**STEP 1** Prior to entering the programming mode, the application mode (rear/front, left/right or four sections) must be active. If the monitor is programmed in a rear/front configuration, both sections will be active (alternating every 5 seconds if the SMM console is not used). You can then set the row spacing to the Interplant® System row spacing.

EXAMPLE: On a 12 Row 30" with Interplant® Package set the row spacing to 15.0 with front active.

When the monitor is in normal field operation mode, disabling the front section will automatically change the row spacing to 30".

**STEP 2** To enter the programming mode, press and hold the SETUP key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the SETUP icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.

**NOTE: The monitor must be in a programmable function (row spacing, units, speed, volume or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.**

**STEP 3** Press the UP or DOWN arrow keys to move the flashing arrow to ROW SPACING. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

**STEP 4** Press the OK key and the flashing arrow becomes solid and the audible alarm will sound.

**NOTE: The lower LCD will display the current row spacing (in inches or centimeters) and ROW SPACING icon is turned on.**

- The least significant digit of the displayed value will be blinking.
- This value can be changed by pressing either the UP or DOWN arrow keys.
- Once this digit is correct, press the MODE SELECT key and the blinking digit will move to the next significant digit, where the process can be repeated.



**NOTE:** The monitor limits the entry of row spacing to a minimum of 10.0 inches (25.4 cm) and to a maximum of 99.9 inches (253.7 cm). If the monitor is configured to a rear/front configuration, the limits change to a minimum of 5.0 inches (12.7 cm) and a maximum of 49.9 inches (126.8 cm).

**STEP 5** To exit without saving, press and release the OK key. The monitor will restore the lower LCD to show the setting of the item and the arrow icon will flash, allowing the user to select another item to program.

To exit and save, press and hold the OK key. The monitor will emit several short beeps and SAVE? icon is turned on. After a short time a long beep is heard, and the lower LCD will display the word "DONE". Release the OK key. If the OK key is released BEFORE the word "DONE" is displayed, the changes WILL NOT BE SAVED. The word "DONE" MUST be displayed in order for the save to have occurred.

To exit setup mode, press the SETUP key.

**NOTE:** The programming mode may be exited at any time, by pressing the SETUP key. Pressing this key will return the monitor to its normal operation. All items changed and saved will come into effect immediately. Any items changed, but not saved will revert to the original programmed value.

## PROGRAMMING - Speed

**STEP 1** To enter the programming mode, press and hold the SETUP key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the SETUP icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.

**NOTE: The monitor must be in a programmable function (row spacing, units, speed, volume or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.**

**STEP 2** Press the UP or DOWN arrow keys to move the flashing arrow to SPEED. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

**STEP 3** Press the OK key and the flashing arrow becomes solid and the audible alarm will sound. The R.H. digit on the display will be blinking.

The speed constant is used to record how many pulses are generated per mile (or kilometer) from the ground speed sensor. The lower LCD will display the current pulses per mile (or kilometer) using a 6 digit, no decimal place format. The PULSES per MILE (or PULSES per KM) icons are turned on.

**NOTE: It is highly recommended that a field calibration be done to establish the PPM/PPKM (Pulses Per Mile/Kilometer) number on a new machine installation. Several factors can affect this value such as wheel slip on the magnetic distance sensor, mounting angle and height on the radar distance sensor, etc. IT IS NOT UNCOMMON FOR THE SPEED ON THE MONITOR TO VARY SLIGHTLY FROM THE TRACTOR SPEEDOMETER. Adjusting the PPM/PPKM in the monitor to make the speed agree can cause serious errors in acre/hectare and population counts. Do field checks to verify populations and seed spacings.**

**NOTE: On new system installations, the monitor will default to 500 PPM (310 PPKM). This will have to be changed to obtain accurate readings from the monitor.**

- In field conditions, measure 330 feet ( $\frac{1}{16}$  mile) or 100 meters, depending on the unit of measurement selected.

- Pull the tractor up to the starting line.

- Press the UP and DOWN arrow keys at the same time and hold them down until the CLEAR? icon is displayed and the monitor beeps several times. When the data is actually cleared, the monitor will emit a long beep and the number of pulses is cleared.

**NOTE: If the PPM/PPKM number starts to count pulses with the tractor not moving, check the radar for vibration or other kinds of interference.**

- Drive the tractor for 330 feet ( $\frac{1}{16}$  mile) or 100 meters and stop.

- The monitor will count the number of pulses and display them.

**STEP 4** To exit without saving, press and release the OK key. The monitor will restore the lower LCD to show the previous setting of the item, and the arrow icon will flash, allowing the user to select another item to program.

To exit and save, press and hold the OK key. The monitor will emit several short beeps and SAVE? icon is turned on. After a short time a long beep is heard, and the lower LCD will display the word "DONE". Release the OK key. If the OK key is released BEFORE the word "DONE" is displayed, the changes WILL NOT BE SAVED. The word "DONE" MUST be displayed in order for the save to have occurred.

**NOTE: The programming mode may be exited at any time, by pressing the SETUP key. Pressing this key will return the monitor to its normal operation. All items changed and saved will come into effect immediately. Any items changed, but not saved will revert to the original programmed value.**

NOTE: If a discrepancy occurs and digits must be changed, follow STEPS 1 and 2 to enter the programming mode and proceed as follows:

- Press the OK key and the flashing arrow becomes solid. The least significant digit of the displayed value will be blinking.
- This value can be changed by pressing either the UP or DOWN arrow keys.
- Once this digit is correct, press the SELECT key and the blinking digit will move to the next significant digit, where the process can be repeated.

The monitor limits the entry of pulses per mile or kilometer to a minimum of 500 PPM (310 PPKM), and to a maximum of 500,000 PPM (310,686 PPKM).

KEY Action	Flashing Digit	Display Value
Press The UP Arrow Key	Right Most Digit	2031, 2032, 2033
Press The SELECT Key	Second Digit From Right	2033
Press The DOWN Arrow Key	Second Digit From Right	2023, 2013, 2003, 2093, 2083
Press The SELECT Key Twice	Left Most Digit	2083
Press The DOWN Arrow Key	Left Most Digit	1083, 0500 (Min. Value), 9500, 8500

## PROGRAMMING - Clearing Total Area

**NOTE: Clearing the total area counter will also clear the field area counter.**

**STEP 1** To enter the programming mode, press and hold the SETUP key. The monitor will emit several short beeps followed by a long beep. On the lower LCD, the SETUP icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.

**NOTE: The monitor must be in a programmable function (row spacing, units, speed, volume or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.**

**STEP 2** Press the UP or DOWN arrow keys to move the flashing arrow to TOTAL AREA. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

**STEP 3** Press the OK key and the flashing arrow becomes solid and the audible alarm will sound.

- The lower LCD will display the total area and the ACRE (or Ha) icon turns on.
- With the flashing arrow on TOTAL AREA, press the OK key.

- To reset the counter, press the UP and DOWN arrow keys at the same time and hold them down for a short period of time to clear the data. The CLEAR? icon will be displayed and the monitor will beep several times. When the data is actually cleared, the monitor will emit a long beep, and the total area is reset to zeros. After the long beep, the previous recorded total area is not retrievable. Once cleared, the user **may not** choose to exit programming mode without saving as described in STEP 4.

**STEP 4** To exit and save, press and hold the OK key. The monitor will emit several short beeps and SAVE? icon is turned on. After a short time a long beep is heard, and the lower LCD will display the word "DONE". Release the OK key. If the OK key is released BEFORE the word "DONE" is displayed, the changes WILL NOT BE SAVED. The word "DONE" MUST be displayed in order for the save to have occurred.

**NOTE: The programming mode may be exited at any time, by pressing the SETUP key. Pressing this key will return the monitor to its normal operation. All items changed and saved will come into effect immediately. Any items changed, but not saved will revert to the original programmed value.**

## AREA COUNTER/SPEEDOMETER MODE

If the monitor is installed with only a radar distance sensor (no seed tubes attached), the monitor becomes a speedometer. If (a) the monitor is connected to a radar distance sensor, (b) the signal cable from the back of the console is connected to a sensing switch (Part No. G1K249 Acre Counter Switch Kit) instead of the seed tubes and (c) the implement width in feet (or meters) is programmed into the monitor, the monitor will function as an area counter.

The seed spacing and seed population functions are not available in this mode. If the monitor is powered down, the seed tubes connected and the monitor powered up, the monitor will again show seed population and seed spacing in inches or centimeters. Row spacing reverts back to its programmed setting.

## WARNINGS AND ALARMS

- 1. System Alarms** - A system alarm is activated when the monitor detects a faulty sensor or one of several other communication faults.

The corresponding row number starts flashing and the audible alarm sounds. All segments on the corresponding bar graph are turned off. Pushing the OK key to acknowledge the warning will turn the alarm off. The row number will continue to flash until the alarm condition is removed. If the monitor detects a faulty sensor and there is no planting activity present, the monitor will scroll "CHECK CONNECTION".

If the distance sensor is detected as faulty, the monitor will display either "PICKUP" or "RADAR", depending on the type of sensor installed, and the audible alarm will sound. The user can push the OK key to acknowledge the alarm. When the distance sensor is faulty, the monitor will change to a bar graph only mode where the rows are still displayed relative to each other. No area related information (speed, field area, total area, seed spacing or seed population) will be accumulated or displayed.

If a rotation shaft sensor is faulty, "LSHAFT", "RSHAFT" or "SHAFTS" will display.

Another type of system alarm occurs when the monitor detects a data communication bus error.

The four possible data communication bus errors are:

LCD Display	Error Condition
SYS HI	The data communication lead (green) has been shorted to the power lead (white).
SYS LO	The data communication lead (green) has been shorted to the ground lead (black).
SYS EC	An internal error has been detected.
COP	Cycled power ON/OFF to quickly.

- 2. Under Flow Alarms** - If the seed rate for one or more rows is less than 55% of the calculated average, the corresponding 60% segment will stay on, the corresponding row number starts flashing and the alarm sounds. Pushing the OK key to acknowledge the warning will turn the alarm off. The 60% segment of the bar graph remains on and the row number continues to flash until the alarm condition is corrected.

**NOTE: All alarms present within a short time before planting stops are frozen on the screen and the text LOW or FAIL will display on the LCD. If the under flow is between 0% and 10%, this warrants a "FAIL" condition. If the under flow is between 10% and 55%, a "LOW" condition is generated. If multiple rows have an under flow condition, "FAIL" will display if any one or more rows is between 0% and 10%. This allows the user to identify and fix the problem rows.**

**NOTE: This warning will not trigger unless a minimum time of continuous planting has passed.**

**NOTE: If all the rows show a seed rate of zero, the condition will not generate an alarm. It will be assumed the planter has stopped. The row numbers and the bottom 60% segment will remain on for all selected rows.**

- 3. Multiple Alarms** - If more than one alarm condition occurs at the same time, pushing the OK key will acknowledge all alarms that are currently displayed. For example, if one row on the front and one row on the rear are alarming, pushing the OK key will only acknowledge one of them. However, if there are two alarms on the front, both alarms would be acknowledged with one push of the OK key.

4. **Section Not Selected Warning** - If the monitor was programmed for two sections and only one is currently selected for display (by pressing the SELECT key), the icon of the disabled section will flash for a period of 1 minute, then turn off at each power up. If seed flow is sensed in the disabled section, the icon for that section (front, left or right) will begin to flash.
5. **Seed Planting Stopped Warning** - When the monitor detects no seed flow on all rows, the monitor will emit 3 short beeps to alert the user. This warning will occur each time the planter is stopped, each time the planter is raised at the end of a row or if the mechanical drive fails while planting.

**NOTE: This warning will not trigger unless a minimum time of continuous planting has passed.**

6. **Seed Counting Sensor In Calibration Warning** - All seed counting sensors run a self-calibration sequence on power up. While in calibration the bottom segment of each corresponding bar graph will flash if the monitor detects movement or planting activity. If the monitor does not detect this, the message "WAIT CALIBRATION" will be scrolled.
7. **Seed Counting Sensor Too Dirty Warning** - After the seed counting sensors end their internal self-calibration, the monitor may detect one or more sensors are either too dirty or blocked. If the monitor detects planting or movement, the corresponding bar graph remains flashing. The monitor will display "CLEAN SENSORS" on the top LCD if no movement or planting is detected, prompting the user to clean the tubes. If the tubes are dirty, they will still show seed flow with less accuracy. If the tubes are blocked the user will get an alarm as soon as planting starts. The corresponding bar graph will remain flashing until the problem is corrected and the monitor is powered down and then powered back up.
8. **Low Battery Warning** - The monitor is constantly monitoring its input voltage to quickly detect low power conditions. If the monitor detects that the input voltage has dropped below 11.0V, it will display "LO SYS" on the lower LCD on the KPM II Stack-Mode console, provided that the monitor does not detect speed or planting.

**NOTE: After the alarms have been acknowledged and if the alarm condition is still present, the LCD will continue to display the alarm condition.**

## REPLACING A FAULTY SENSOR

**NOTE: Stack-Mode Seed Sensors are identified by a blue 3-pin connector. Replace Stack-Mode Seed Sensors with like components only.**

To replace a faulty sensor; (a) disconnect the faulty sensor and check the monitor to be sure the correct sensor was disconnected, (b) turn the monitor off, (c) after a few seconds, turn the monitor back on and (d) plug in the replacement sensor. The monitor will chirp twice to acknowledge the new sensor was learned and saved.

To replace more than one faulty sensor, proceed as stated above for rear/front or left/right configurations beginning with the lowest numbered row in the rear or left section and continue to replace sensors in ascending order. Then move on to the front or right section and continue in ascending order. For four section configurations, begin with rear/left and continue to rear/right, then front/left and ending with front/right.

If the monitor detects a faulty distance sensor, the lower LCD will immediately move to the speed display, show the word "PICKUP" or "RADAR" depending on the distance sensor installed, and the alarm will sound.

**NOTE: If the monitor is not turned off and then on, the replacement sensor(s) will be ignored until the next power on, at which point the sensors will be randomly learned by the monitor.**

# MACHINE OPERATION

# KPM II STACK-MODE

## FIELD OPERATION

Press the ON/OFF key to turn the monitor on.



(MTR28e)

Information regarding each section is displayed alternately every 5 seconds.

### REAR/FRONT CONFIGURATION (Without SMM Console Installed)

- Press the SELECT key once to show REAR section only. (Monitor sets correct row spacing.)
- Press the SELECT key a second time to return to each section being displayed alternately every 5 seconds on KPM II Stack-Mode console. (Monitor sets correct row spacing.)
- Press the SELECT key a third time to show REAR section only again.



(MTR28c)

### REAR/FRONT CONFIGURATION (With SMM Console Installed)

- Press the SELECT key once to show REAR section only on KPM II Stack-Mode console. (Monitor sets correct row spacing.)
- Press the SELECT key a second time to show FRONT section on SMM console and REAR section on KPM II Stack-Mode console. (Monitor sets correct row spacing.)
- Press the SELECT key a third time to show REAR section only again.



(MTR28c)

### FOUR SECTION CONFIGURATION (With SMM Console Installed)

- Press the SELECT key once to show REAR and LEFT sections on KPM II Stack-Mode console and REAR and RIGHT sections on SMM console. (Monitor sets correct row spacing.)
- Press the SELECT key a second time to return to all four sections, alternating right front and right rear on SMM console and alternating left front and left rear on KPM II Stack-Mode console. (Monitor sets correct row spacing.)
- Press the SELECT key a third time to show REAR and LEFT sections on KPM II Stack-Mode console and REAR and RIGHT sections on SMM console again.

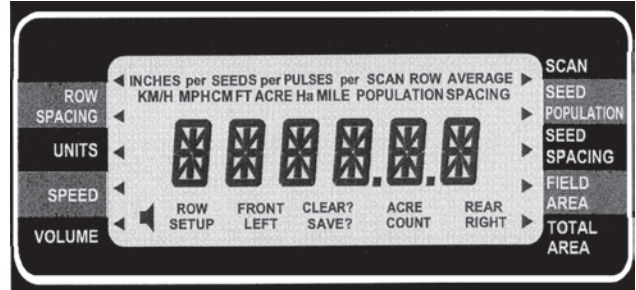


(MTR28c)

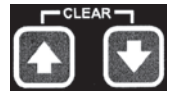
**NOTE: SELECT key has no function when only a single section is being used.**

At power up, the lower LCD will show speed (MPH or KM/H).

(MTR29g/MTR29b/MTR29a/MTR29c/MTR29f/MTR29c/MTR29f)



Press the UP or DOWN arrow keys to move the flashing arrow on the lower LCD to change what is displayed on the lower LCD.



Press the shortcut keys SPEED, SEED POPULATION/SEED SPACING or AREA FIELD/TOTAL for direct access to these displays.



(MTR29c/MTR29d/MTR29b/MTR29c)

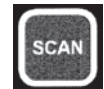
Press the SEED POPULATION/SEED SPACING or AREA FIELD/TOTAL keys to alternate between the two functions assigned to that key.



Press the SEED POPULATION/SEED SPACING key to choose average seed spacing/population per acre.



Press the SCAN key to display individual rows starting at row 1.



Press the SCAN key again to lock on current row.

Press the SCAN key again to resume scrolling.

Use the UP or DOWN arrow keys to move to a particular row.



Press the SEED POPULATION/SEED SPACING key to go back to planter average.



## CLEARING FIELD AREA

(MTR29n/MTR28b)

To reset the counter, press the UP or DOWN arrow keys to move the arrow in the lower display to FIELD AREA.



Press the UP and DOWN arrow keys at the same time and hold them down for a short period of time to clear the data. The CLEAR? icon will be displayed and the monitor will beep several times. When the data is actually cleared, the monitor will emit a long beep, and the field area is reset to zero. After the long beep, the previous field area recorded is not retrievable.



**NOTE: Clearing the field area counter will not clear the total area counter. See “Programming-Clearing Total Area” for clearing total area.**

Press the OK key to silence alarms. See “Warnings And Alarms”.



# MACHINE OPERATION

# KPM II STACK-MODE

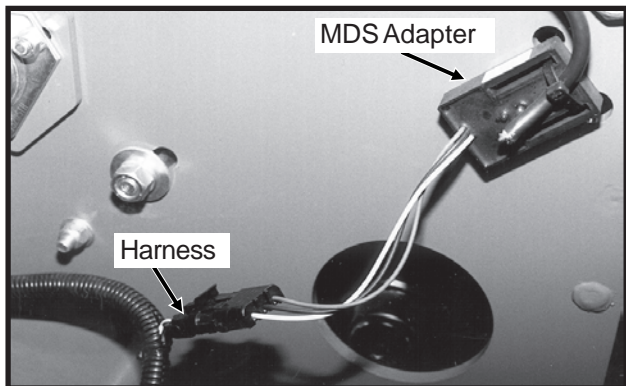
**PROGRAMMING/CONNECTING SMM CONSOLE, SHAFT ROTATION SENSORS, SEED TUBES AND/OR RADAR/MAGNETIC DISTANCE SENSORS**

**STEP 1** All sensors (including the seed tubes w/ sensors, radar, magnetic distance, SMM console and shaft rotation sensors) must be unplugged from the harness and/or console and the monitor must be off.

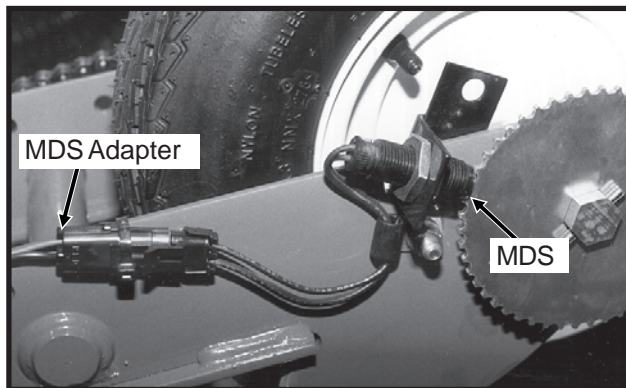
**NOTE:** If the monitor detects a radar sensor but no seed tubes at power up, it will automatically go into AREA COUNT mode. See "Area Counter/Speedometer Mode".

**NOTE:** Disconnect magnetic distance sensor between MDS adapter and planter harness. DO NOT disconnect between MDS and MDS adapter.

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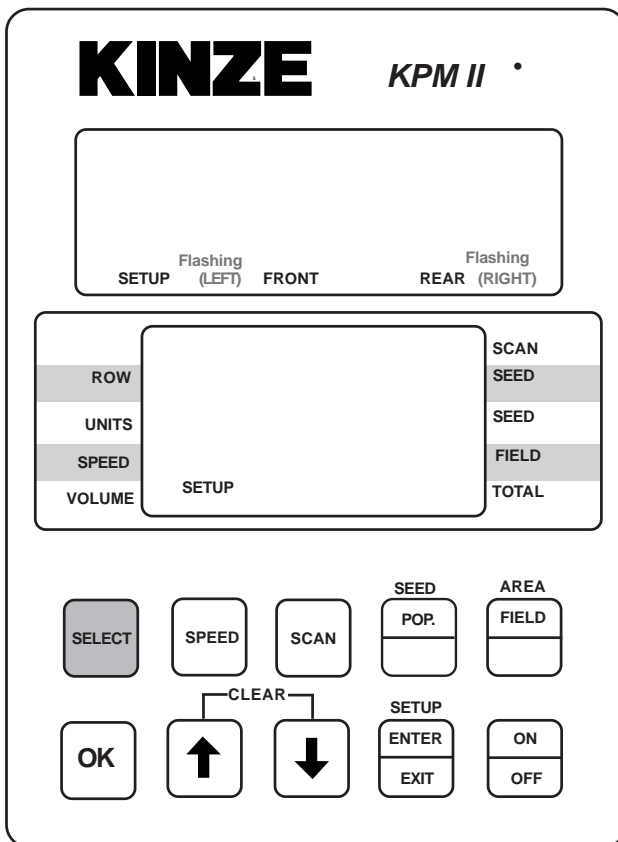
01189910



**STEP 2** Press the ON key. The monitor automatically enters the setup procedure. Monitor will scroll "NO SENSOR" on top LCD of KPM II Stack-Mode console.

**STEP 3** The monitor automatically defaults to rear/front. Press the SELECT key once for left/right and twice for four sections (front right/front left/rear right/rear left). The selected display will be solid and the configuration not currently selected will be flashing.

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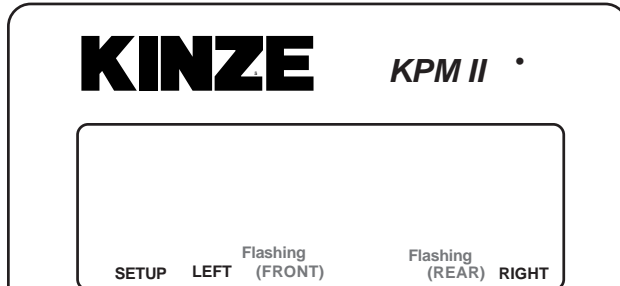
**NOTE:** SMM console may not be applicable to all models.



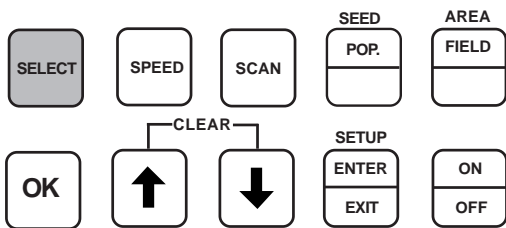
# MACHINE OPERATION

# KPM II STACK-MODE

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ROW	SETUP	SCAN
UNITS		SEED
SPEED		SEED
VOLUME		FIELD
		TOTAL



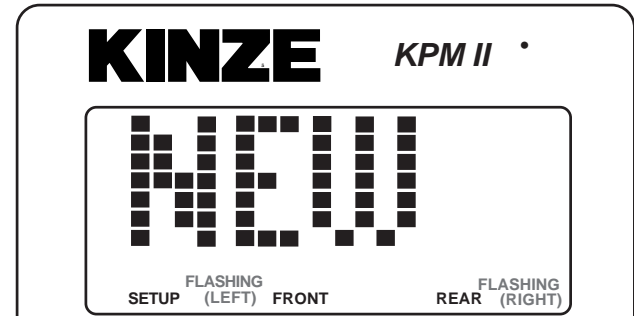
**NOTE: SMM console may not be applicable to all models.**

**NOTE: Model 3700 (24/36 row) planters select left/right configuration.**

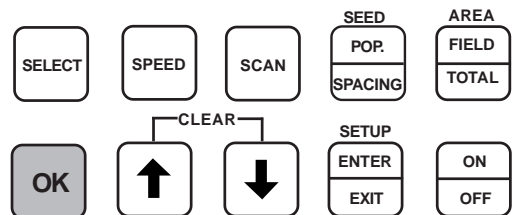
**STEP 4** Press and hold the OK key to confirm selection. The upper display will alternate between “NEW” and “SYS?”.

The alarm will sound four short beeps followed by one long beep. At this point your selection has been saved and row numbers will appear flashing on the upper display of the KPM II.

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ROW SPACING	SETUP	SCAN
UNITS		SEED POPULATION
SPEED		SEED SPACING
VOLUME		FIELD AREA
		TOTAL AREA



**NOTE: SMM console may not be applicable to all models.**

# MACHINE OPERATION

# KPM II STACK-MODE

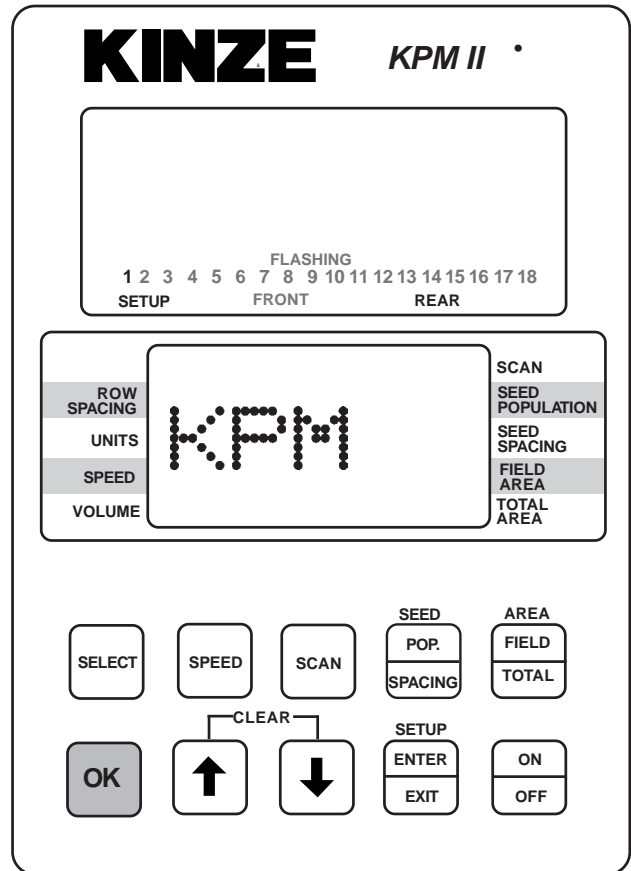
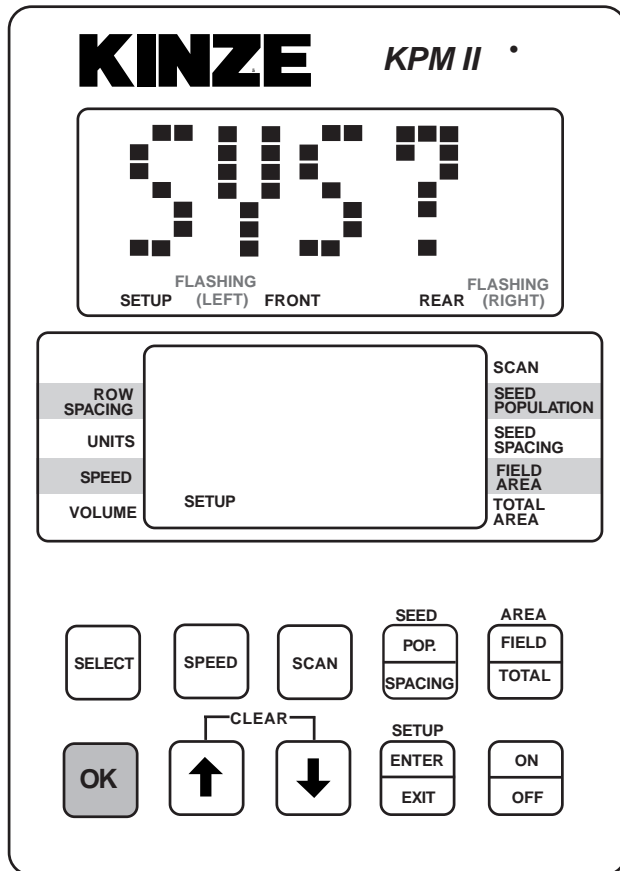
**NOTE: Illustrated using rear/front configuration.**  
 The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and FRONT LEFT/REAR LEFT in the four sections configuration.

**STEP 5** (If Applicable) Connect SMM console into junction Y-harness which was installed between the KPM II Stack-Mode console and the primary harness. The SMM console will show a lighted screen and KPM will show on the lower LCD.

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**NOTE: SMM console may not be applicable to all models.**

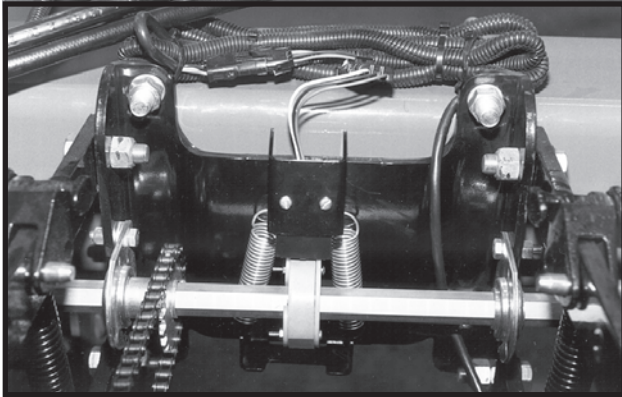
**NOTE: SMM console may not be applicable to all models.**

# MACHINE OPERATION

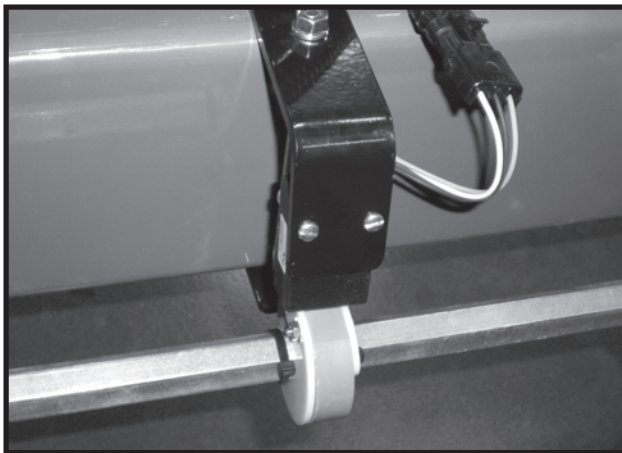
# KPM II STACK-MODE

**STEP 6** If the monitor system includes shaft rotation sensors, these should be installed at this time. Plug in the L.H. shaft first, then the R.H. shaft. L.H. and R.H. is determined by facing in the direction the machine will travel when in use.

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D12140713



“LSHAFT” or “SHAFT 1” will display on the lower LCD when the first shaft rotation sensor is installed. “RSHAFT” or “SHAFT 2” will display when the second shaft rotation sensor is installed.

**NOTE:** Illustrated using rear/front configuration. The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and FRONT LEFT/REAR LEFT in the four sections configuration.

12060211

**KINZE**    *SMM*

**KINZE**    *KPM II*    •

FLASHING

1 (2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18)

SETUP                      (FRONT)                      REAR

ROW SPACING	SHAFT 1	SCAN SEED POPULATION
UNITS		SEED SPACING
SPEED		FIELD AREA
VOLUME	SETUP                      REAR	TOTAL AREA

SELECT	SPEED	SCAN	SEED POP. SPACING	AREA FIELD TOTAL
OK	↑	↓	SETUP ENTER EXIT	ON OFF

CLEAR

**NOTE:** SMM console may not be applicable to all models.

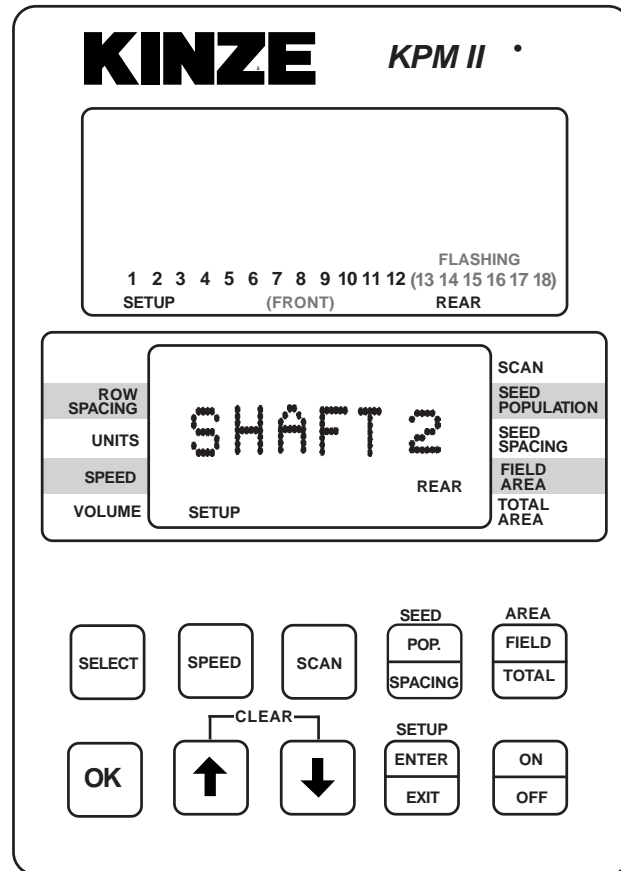
# MACHINE OPERATION

# KPM II STACK-MODE

## STEP 6 (Continued)

**NOTE: Illustrated using rear/front configuration.** The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and REAR LEFT/FRONT LEFT in the four sections configuration.

12060211

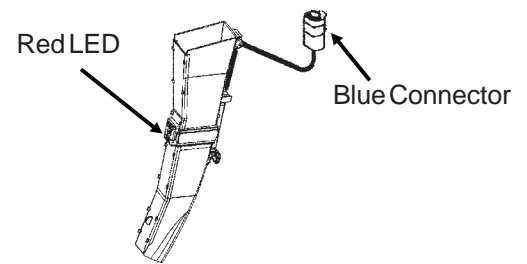


**NOTE: SMM console may not be applicable to all models.**

## STEP 7 Determine which row you want as number one and plug the seed tube w/sensor into the harness.

Continue plugging in sensors along with shaft rotation sensors if so equipped. Row 1 first, row 2 second and so on up to 18 rows. When a sensor is plugged in, the corresponding row number on the upper LCD display will stay solid, the monitor will chirp twice and a red LED (Light Emitting Diode) on the seed tube sensor will turn on for approximately 30 seconds to show connection is made.

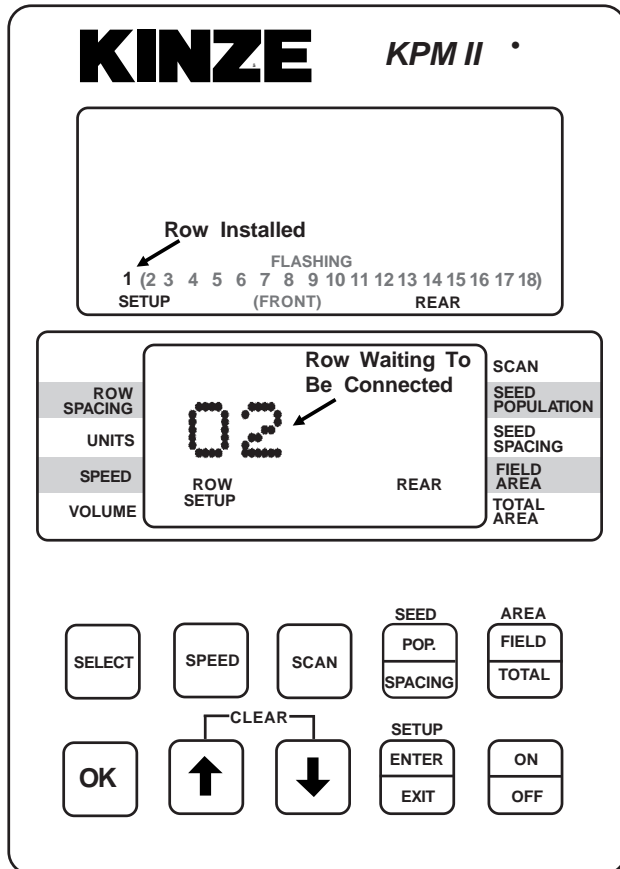
(A11948)



## STEP 7 (Continued)

**NOTE:** Illustrated using rear/front configuration. The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and REAR LEFT/FRONT LEFT in the four sections configuration.

12060211



**NOTE:** SMM console may not be applicable to all models.

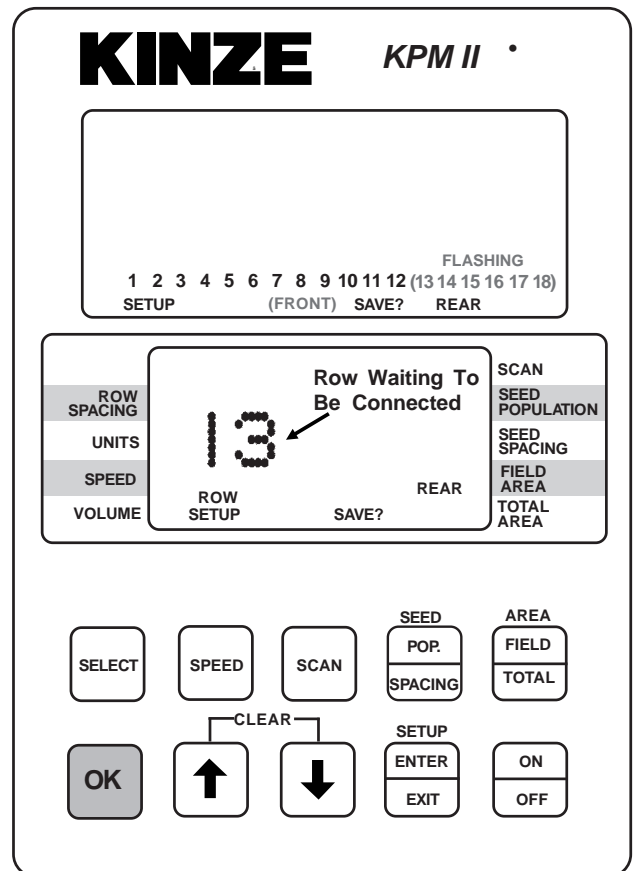
# MACHINE OPERATION

# KPM II STACK-MODE

**STEP 8** When all the seed tubes for the current section (rear/front, left/right or four section) are installed, check to be sure the upper LCD on the KPM II Stack-Mode console displays solid numbers for the number of seed tubes connected. Press and hold the OK key to save the setup for the current section. The SAVE? icon will display followed by continuous short beeps indicating the monitor is preparing to save. The installer has 5 seconds to decide to save the current configuration. During this time, four short beeps will sound followed by a long beep and the SAVE? icon will turn off and the word "DONE" shows on the screen. The monitor will continue to the second section installation (If Applicable).

**NOTE: Illustrated using rear/front configuration.** The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and FRONT LEFT/REAR LEFT in the four sections configuration.

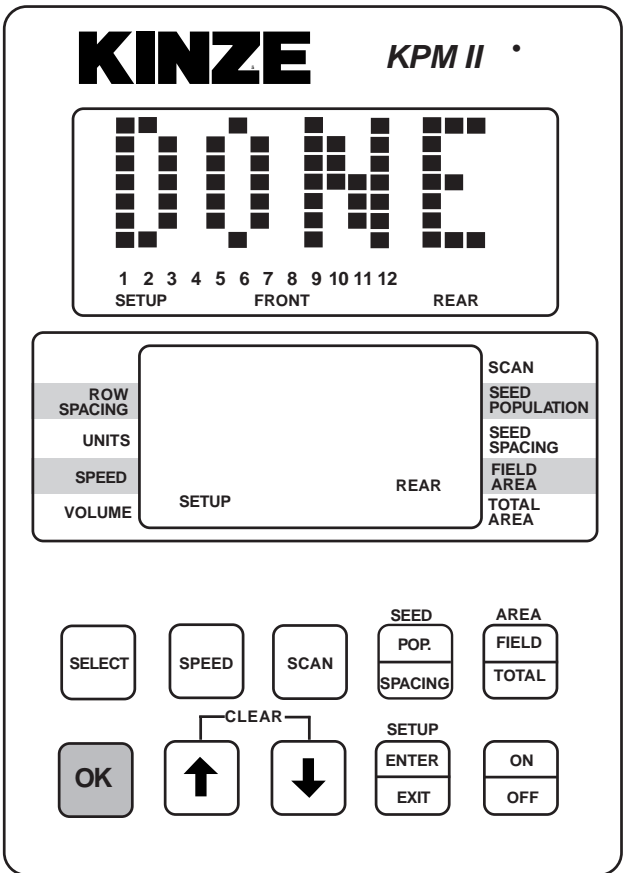
12060211



**NOTE: SMM console may not be applicable to all models.**

## STEP 8 (Continued)

12060211



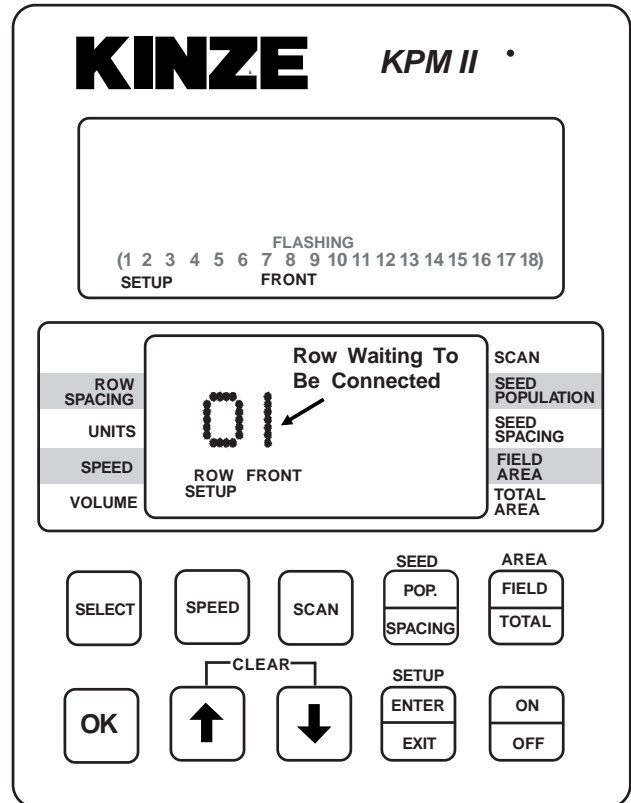
**NOTE: SMM console may not be applicable to all models.**

**STEP 9** Follow STEPS 6, 7 and 8 to install the second, third and fourth sections (If Applicable). If no seed tubes are installed on additional sections, press and hold the OK key. The word "DONE" will appear on upper display. The alarm will sound four short beeps followed by one long beep and the SAVE? icon turns off. The monitor has exited the setup mode. When you release the OK key the upper display will scroll "WAITING CALIBRATION". The lower display will show "GNDSPD" and the alarm will sound continually until the distance sensor is connected. See STEP 10.

**NOTE:** The SMM console LCD remains blank (except the backlighted screen) until the entire system is saved.

**NOTE:** Illustrated using rear/front configuration. The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and FRONT LEFT/REAR LEFT in the four sections configuration. The SMM console shows RIGHT in the left/right configuration, FRONT in the front/rear configuration and FRONT RIGHT/REAR RIGHT in four sections configuration.

12060212



**NOTE:** SMM console may not be applicable to all models.



# MACHINE OPERATION

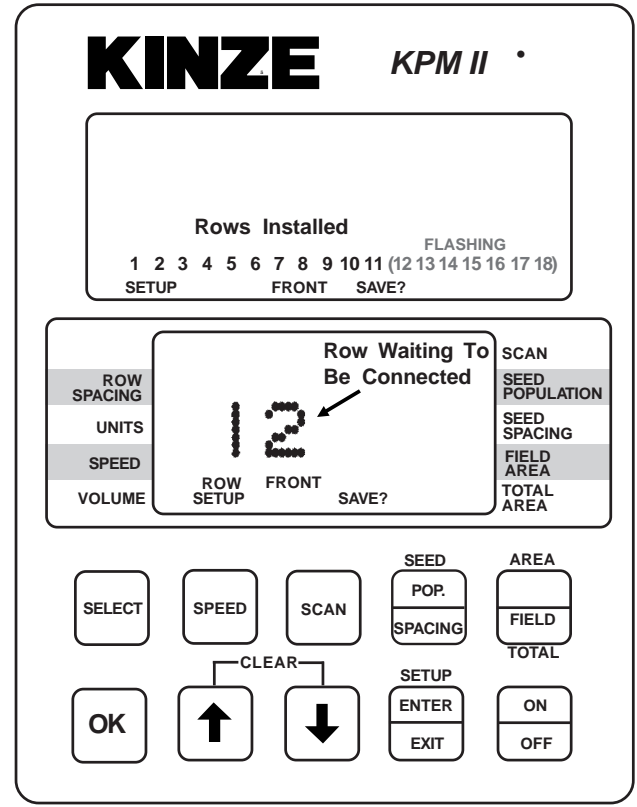
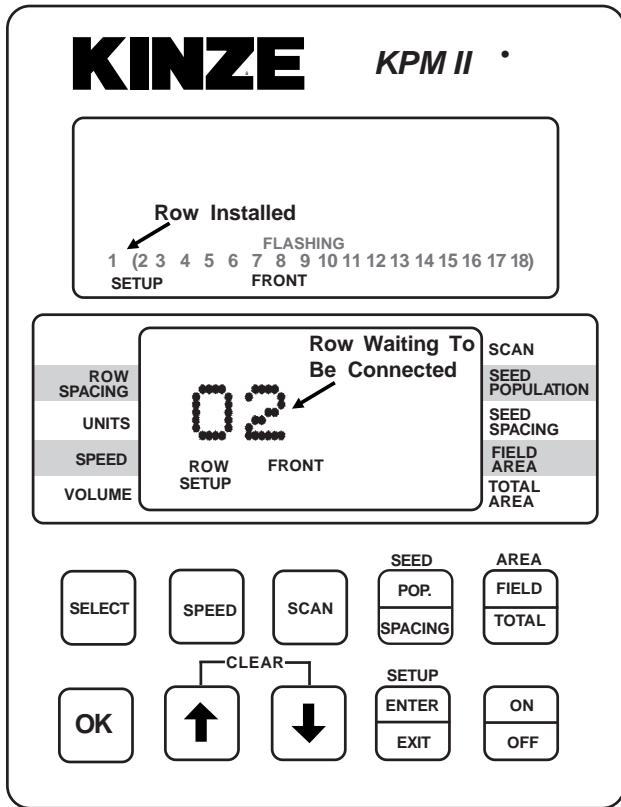
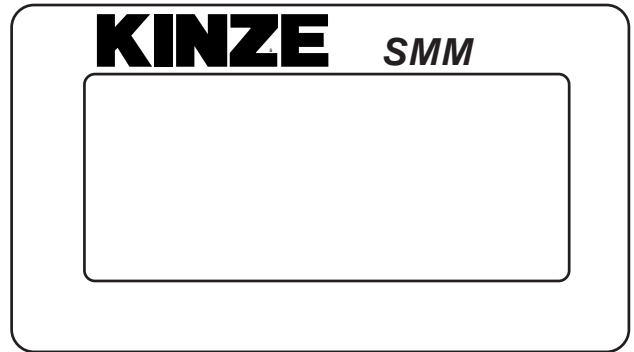
# KPM II STACK-MODE

## STEP 9 (Continued)

12060213



12060214



**NOTE: SMM console may not be applicable to all models.**

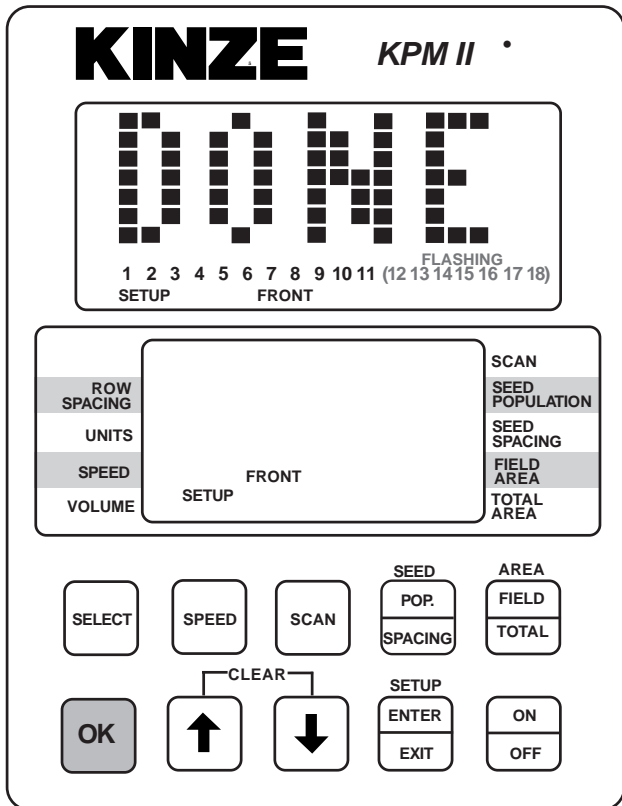
**NOTE: SMM console may not be applicable to all models.**

# MACHINE OPERATION

# KPM II STACK-MODE

## STEP 9 (Continued)

12060215



**NOTE: SMM console may not be applicable to all models.**

**STEP 10** With the lower display showing “GNDSPD”, connect the distance sensor. The monitor will display “PICKUP” if a magnetic distance sensor is connected or “RADAR” if a radar distance sensor is installed. Only one distance sensor can be connected at a time.

**NOTE: To connect the radar distance sensor, install the 10" monitor/radar adapter between the console and radar distance sensor to adapt the monitor system to various tractor radar systems. DO NOT CONNECT 10" MONITOR/RADAR ADAPTER PRIOR TO THIS STEP.**

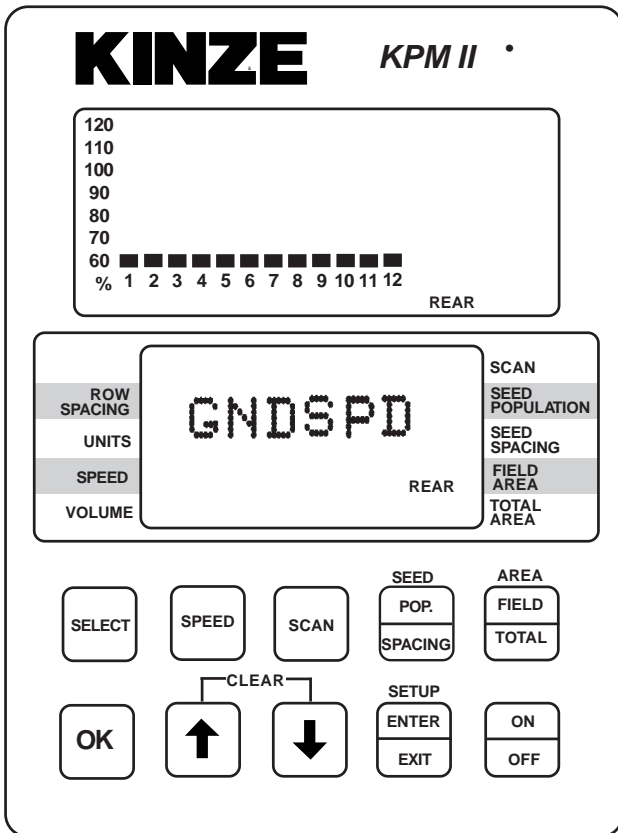
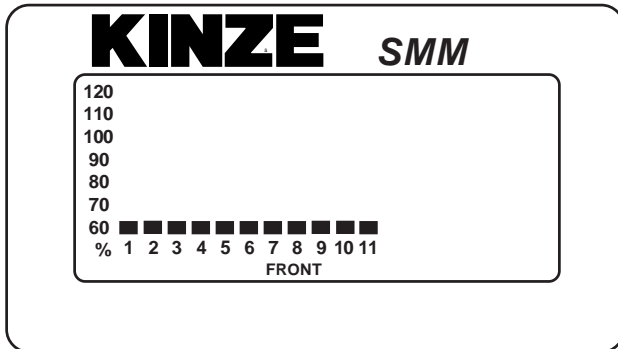
# MACHINE OPERATION

# KPM II STACK-MODE

## STEP 10 (Continued)

**NOTE: Illustrated using rear/front configuration.** The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and FRONT LEFT/REAR LEFT in the four sections configuration. The SMM console shows RIGHT in the left/right configuration, FRONT in the rear/front configuration and FRONT RIGHT/REAR RIGHT in four sections configuration.

12060216

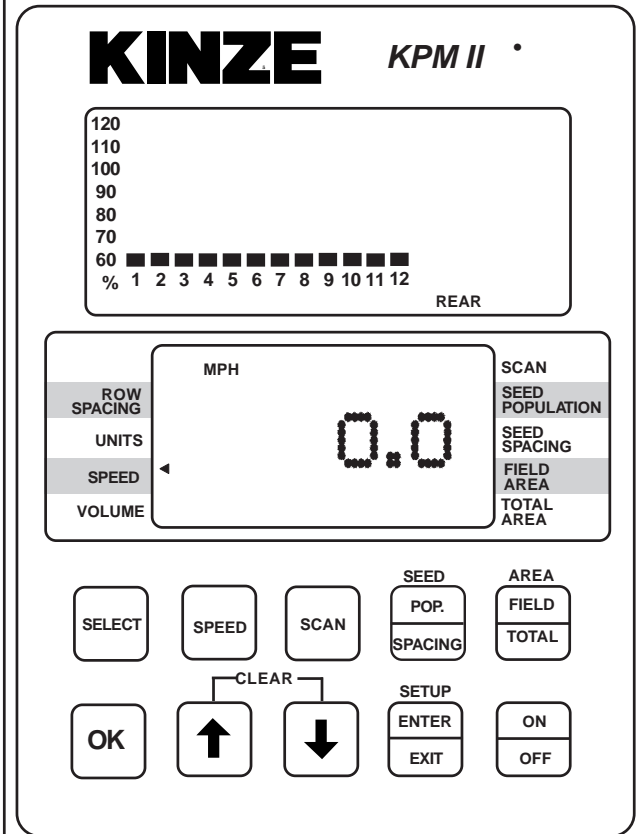
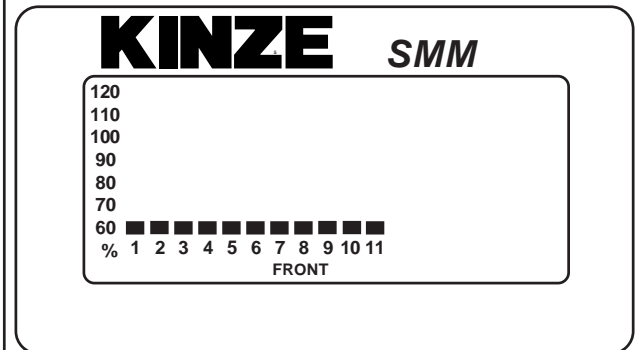


**NOTE: SMM console may not be applicable to all models.**

**NOTE: To reprogram the system to monitor more or less rows (up to the maximum of 18 per section, 72 total in four section configuration), all sensors must be unplugged, followed by the complete setup procedure.**

**NOTE: Individual seed tubes may be unplugged for special situations. An alarm will sound which can be silenced by touching the OK key. The monitor will recognize the seed tube(s) when reconnected.**

12060217



**NOTE: SMM console may not be applicable to all models.**

# MACHINE OPERATION

# KPM II STACK-MODE

ROW-BY-ROW ALARM LEVEL SETTING  
 (Requires Version V2.05 Or Higher Software -  
 KPM II Stack-Mode Monitors Only)

This feature allows the audio alarm to be disabled on selected rows in applications such as planting seed corn.

**NOTE:** The system should be programmed to monitor all planter rows prior to performing these steps.

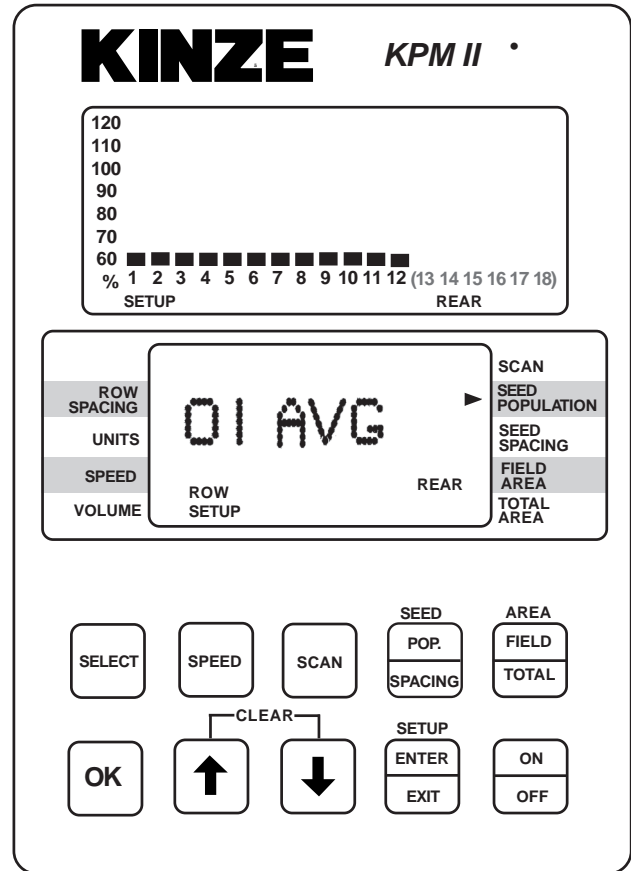
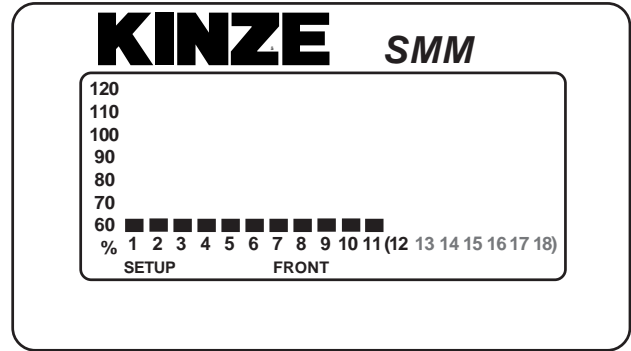
**NOTE:** Illustrated using rear/front configuration. The KPM II Stack-Mode console shows LEFT in the left/right configuration, REAR in the rear/front configuration and FRONT LEFT/REAR LEFT in the four sections configuration. The SMM console shows RIGHT in the left/right configuration, FRONT in the rear/front configuration and FRONT RIGHT/REAR RIGHT in four sections configuration.

**STEP 1** Enter the programming mode by pressing and holding the SETUP key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the SETUP icon will turn on and the arrow head icon will flash, indicating the user can select an item to program.

**NOTE:** The monitor must be in a programmable function (row spacing, unit, speed, volume or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.

**STEP 2** Press the UP or DOWN arrow keys to move the flashing arrow to SEED POPULATION. As the arrow icon moves, the lower LCD will display the current setting of each item selected.

12060218



**NOTE:** SMM console may not be applicable to all models.

**STEP 3** Press the OK key. Row number starts flashing.

**STEP 4** Arrow UP or DOWN to desired row.

**STEP 5** Press SELECT key. "AVG" starts flashing.

**STEP 6** Arrow UP or DOWN to choose one of the following options.

HIGH - For Early Alarm (70%)  
AVG - For Standard Alarm Setting (55%)  
LOW - For Failed Alarm Only (25%)  
OFF - To Disable Row Alarm

**STEP 7** Press and hold the OK key to save alarm setting. There will be four short beeps, one long beep and the word "DONE" will appear when the save is completed.

**STEP 8** Repeat STEPS 3 through 7 for each row on which you wish to adjust the alarm setting.

**STEP 9** When finished, press the SETUP key to exit setup mode.

**NOTE:** The programming mode may be exited at any time by pressing the SETUP key. Pressing this key will return the monitor to its normal operation. All items changed and saved will come into effect immediately. Any items changed, but not saved will revert to the original programmed value.

**NOTE:** Repeat STEPS 3 through 7 to change seed monitor back to the original settings when special row-by-row alarm level settings are no longer required.

**NOTE:**  
**See "Programming - Row Spacing" for programming applicable row spacing.**

**See "KPM I/KPM II Stack-Mode Electronic Seed Monitors Troubleshooting" in the Maintenance Section.**

## KPM III ELECTRONIC SEED MONITOR

D10190501



The KPM III electronic seed monitor system consists of (a) a KPM III console, which is mounted on the tractor; (b) seed tubes with sensors, one of which is installed in each planter row unit; (c) a magnetic distance sensor, which is installed on the planter, or a radar distance sensor, which is installed on the tractor; (d) shaft rotation sensors (if applicable), which are installed on the planter drill shafts; and (e) planter harnesses (junction Y-harness and/or extension harness where applicable), to which the individual seed tube sensors connect. The primary harness, which connects the monitor console to the planter harness, is hard-wired into the safety/warning light harness or control console harness included as standard equipment with the planter.

The software design of the KPM III console allows simultaneous viewing of seed flow bargraphs for standard and/or Interplant® System rows (up to 36 rows).

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.

The KPM III console uses a single backlit Liquid Crystal Display (LCD) to show, the number of monitored rows, the relative seed rate for each row (using bargraph displays) and displays various alarm and warning messages when an alarm condition exists. A continuous audible alarm will sound upon system malfunction or underflow conditions for any monitored row. Alarms must be acknowledged by the user. Various warnings may sound the alarm or flash one or more messages. The LCD also shows alphanumeric data such as row spacing, units (Metric or English), speed (MPH or KM/H, volume, seed population, seed spacing, field area and total area.

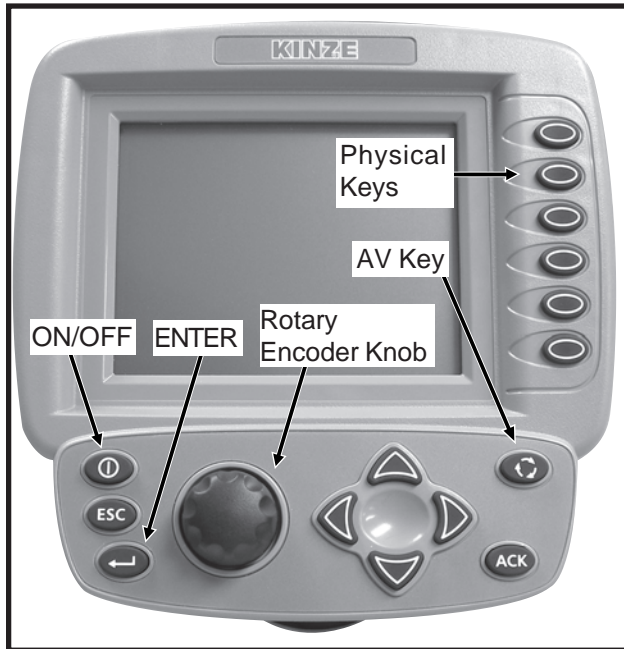
The monitor system will power down if no activity is detected within one hour. No activity means there has been no new seed flow and no operator push key input.

<b>Monitor Key Functions .....</b>	<b>6-53</b>
<b>Configuring Planter Monitor .....</b>	<b>6-54</b>
<b>Programming/Connecting Seed Tubes, Shaft Rotation Sensors And/Or Radar/Magnetic Distance Sensors .....</b>	<b>6-56</b>
<b>Changing Volume, Contrast And Backlighting .....</b>	<b>6-58</b>
<b>Programming Interplant® Condition, Row Spacing And Units (Metric Or English) .....</b>	<b>6-59</b>
<b>Programming Row Unit Alarms Levels .....</b>	<b>6-60</b>
<b>Speed Sensor Calibration/Programming .....</b>	<b>6-61</b>
<b>Reprogramming Speed Sensor .....</b>	<b>6-62</b>
<b>Adding Interplant® Rows (If Rear Rows Have Previously Been Programmed) .....</b>	<b>6-66</b>
<b>Adding Even-Row Package (If Front Rows Have Previously Been Programmed) .....</b>	<b>6-68</b>
<b>Enabling/Disabling Interplant® Rows .....</b>	<b>6-70</b>
<b>Warnings And Alarms .....</b>	<b>6-73</b>
<b>Field Operation .....</b>	<b>6-75</b>
<b>Area Management .....</b>	<b>6-76</b>
<b>Area Counters .....</b>	<b>6-78</b>
<b>Clearing Field Area .....</b>	<b>6-79</b>
<b>Acre Count Mode .....</b>	<b>6-79</b>
<b>Replacing Faulty Sensor(s) .....</b>	<b>6-81</b>

## MONITOR KEY FUNCTIONS

Push keys allow the user to select or change the operating mode, the active displays or the current configuration. Depending on the operating mode or the current display selected, some keys may not be active. Each key press, if valid, is acknowledged by a short beep and an action is taken. If the key press has no action associated, the key press is considered invalid, and the user will not receive feedback.

D10190501



### PHYSICAL KEYS

- Located on R.H. side of console and referred to as F1, F2, F3, F4, F5 and F6
- Keys are referenced in descending order with F1 at the top and F6 at the bottom.



### ON/OFF KEY

- Powers the unit on and off.



### ESC KEY

- Used as the CANCEL (escape) key.



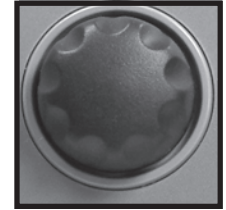
### ENTER KEY

- Confirms or accepts the highlighted selection.



### ROTARY ENCODER KNOB

- Turn knob clockwise to increase or counterclockwise to decrease value of item.
- Turn knob clockwise to scroll up or counterclockwise to scroll down.
- Press knob to enter selection.



### AV (AUDIO/VIDEO) KEY

- Set alarm volume.
- Adjust the contrast.
- Adjust backlighting of the LCD display.



### ACK (ACKNOWLEDGE) KEY

- Used to silence (acknowledge) the warning alarm when various error conditions occur.

**NOTE: Alarms can be viewed by pressing the STATUS key.**



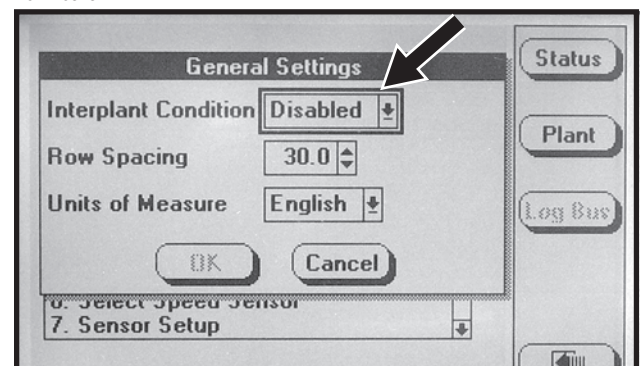
### ARROW KEYS

- UP arrow key is used to increase the value of an item by one or to scroll up.
- DOWN arrow key is used to decrease the value of an item by one or to scroll down.
- LEFT arrow key multiplies the numeric value of the item by 10.
- RIGHT arrow key divides the numeric value of the item by 10.



**NOTE: Within the LCD, the black box around the smaller box as shown below indicates which field is selected/highlighted. Turning the rotary encoder knob or pressing the UP or DOWN arrow keys moves the black box. When the black box is positioned on a programmable item, such as Shaft Sensors, Speed Sensor, Front Row Units or Rear Row Units, pressing the knob or ENTER key will highlight the programmable item. A programmable item may only be changed when it is highlighted.**

D02140616

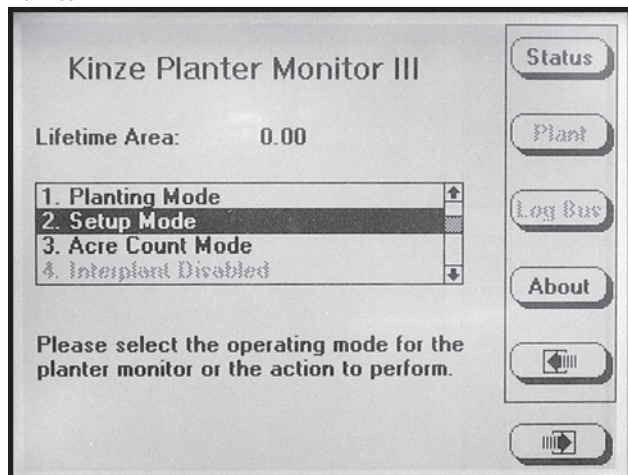


## CONFIGURING PLANTER MONITOR

When the KPM III is powered on for the first time it will go directly into the “Planter Configuration” screen (STEP 4).

**STEP 1** Press the F6 key until “Mode Selection” screen appears.

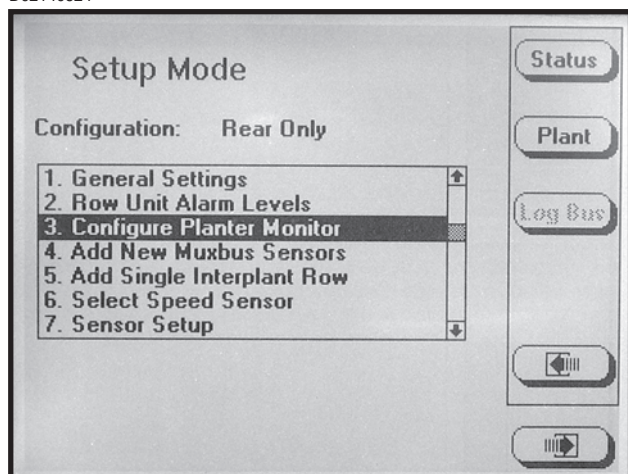
D02140614



**STEP 2** Select “Setup Mode” by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display highlighted item.

**STEP 3** Select “Configure Planter Monitor” by turning the knob or using the UP and DOWN arrow keys. Press the knob or the ENTER key to display the highlighted item.

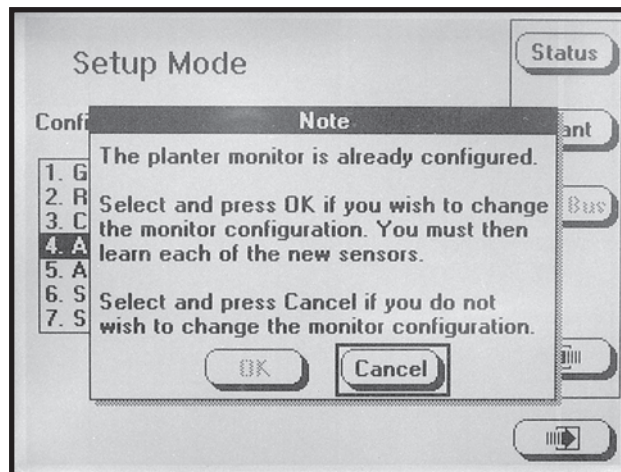
D02140624



**NOTE:** The planter monitor cannot be reconfigured while planting.

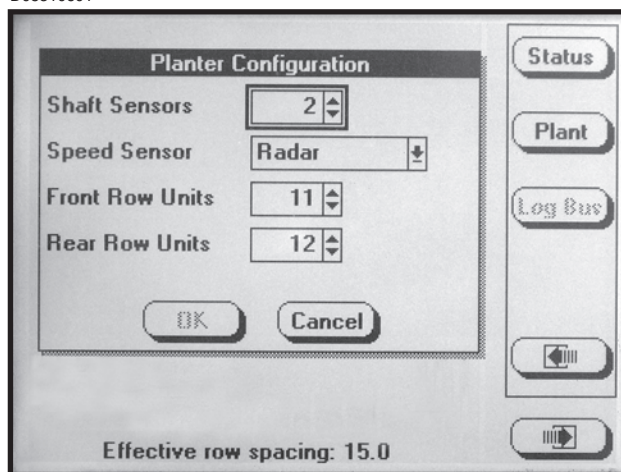
**NOTE:** If the monitor has already been configured the message shown below will appear.

D02140634



**STEP 4** Press the knob or ENTER key, to highlight the “Shaft Sensors” field. Enter the number of “Shaft Sensors” by turning the knob or using the UP or DOWN arrow keys. When the correct value is displayed press the knob or ENTER key. The black box will advance to “Speed Sensor” field.

D05310601

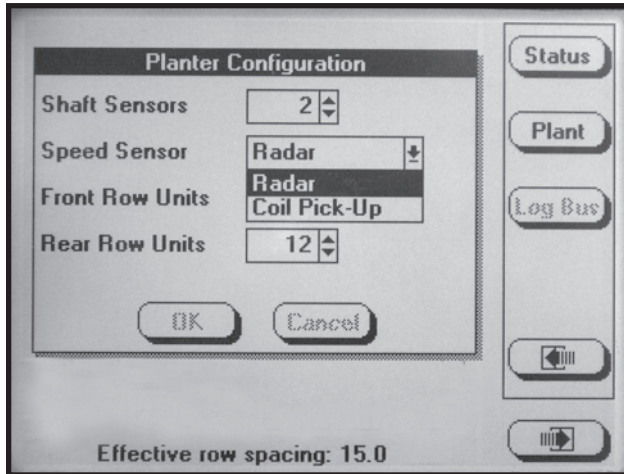


**NOTE:** The numeric value may be changed only if the item is highlighted. Turning the rotary encoder knob increases or decreases the value of the item. The UP arrow key may be used to increase the value of the item by one and the DOWN arrow key may be used to decrease the value of the field by one.



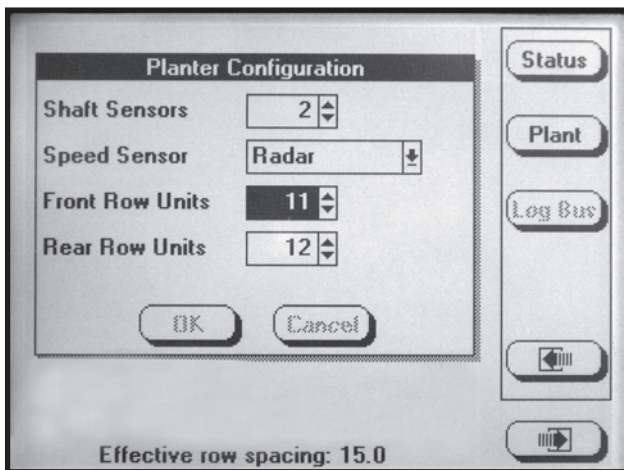
**STEP 5** Press the knob or ENTER key and a drop down menu will appear; select either “Radar” or “Coil Pick-Up” (MDS) by turning the knob or using the UP or DOWN arrow keys. When the desired selection is highlighted press the knob or ENTER key. The black box will advance to “Front Row Units” field.

D05310604



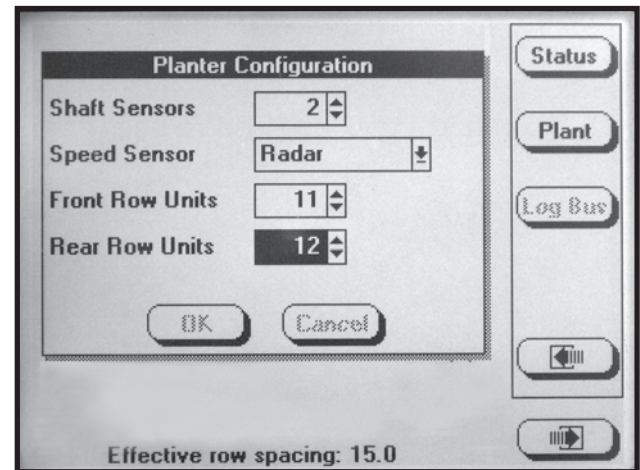
**STEP 6** If there are front rows on the planter, press the knob or ENTER key to highlight the “Front Row Units” field. Turn the knob or use the UP or DOWN arrow keys to obtain correct number of push row units. Press the knob or ENTER key when desired quantity is displayed. The black box will advance to “Rear Row Units” field. If no front rows need to be entered simply turn the knob or press the DOWN arrow key to advance to “Rear Row Units”.

D05310605



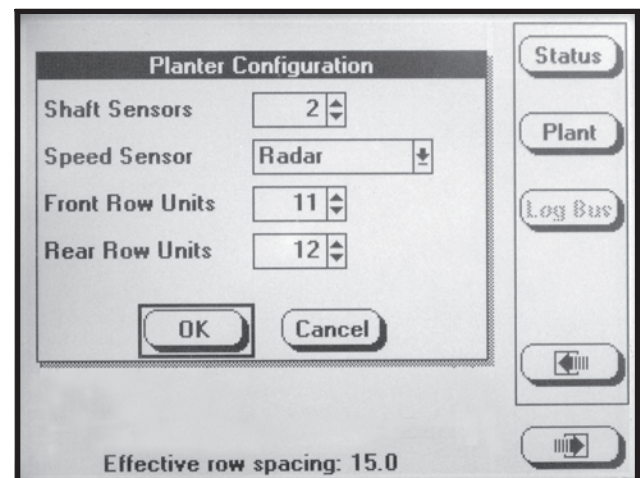
**STEP 7** Press the knob or ENTER key to highlight the “Rear Row Units” field. Turn the knob or use the UP or DOWN arrow keys to obtain correct number of pull row units. Press the knob or ENTER key when desired quantity is displayed. The black box will advance to the OK key.

D05310606



**STEP 8** Press the knob or the ENTER key to save the information.

D05310607



**NOTE:** To prevent the configuration from being saved press ESC or select the CANCEL button, then press the rotary encoder knob or ENTER key.

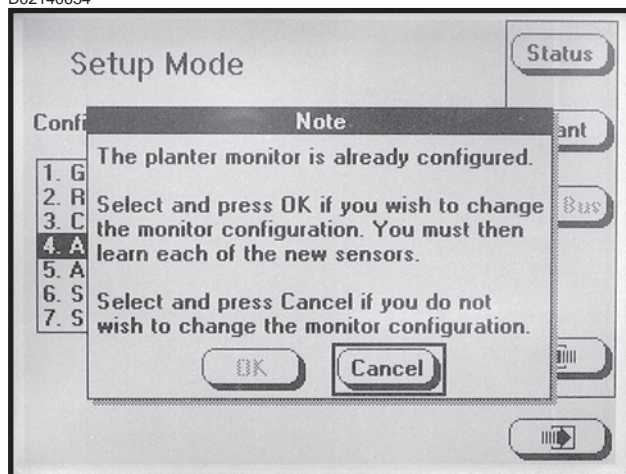
**STEP 9** The monitor screen shown below will appear.

If the new planter configuration is to be saved turn the knob or press the UP or DOWN arrow keys to select the OK button then press the knob or ENTER key to save the planter configuration. If the monitor configuration is not to be changed select the CANCEL key, press the knob or ENTER key to CANCEL or press the ESC key.

If OK is selected the monitor will advance to "Sensor Setup" (STEP 4 in PROGRAMMING/CONNECTING SEED TUBES, SHAFT ROTATION SENSORS AND/OR RADAR/MAGNETIC DISTANCE SENSORS section).

**NOTE: STEP 9 does not apply if configuring the monitor for the first time.**

D02140634



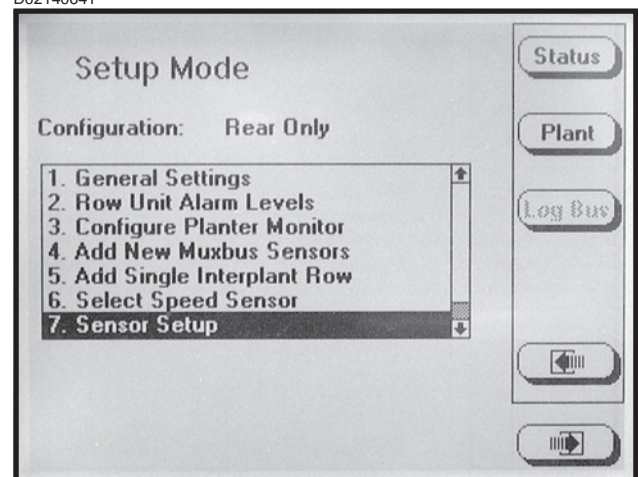
## PROGRAMMING/CONNECTING SEED TUBES, SHAFT ROTATION SENSORS AND/OR RADAR/MAGNETIC DISTANCE SENSORS

**STEP 1** To enter "Mode Selection", press F6 key until the "Mode Selection" screen appears.

**STEP 2** Select "Setup Mode" by turning the rotary encoder knob or press the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

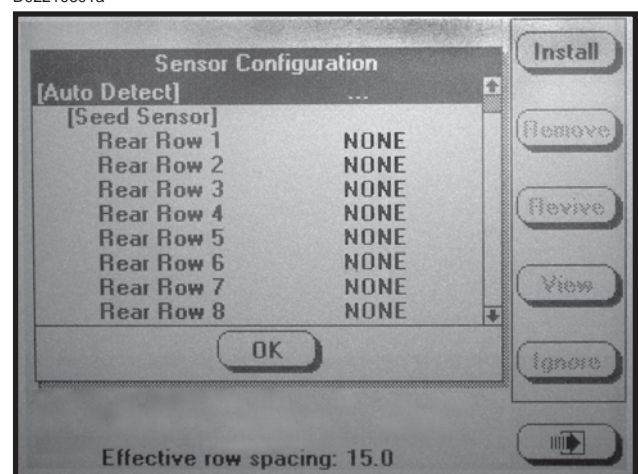
**STEP 3** Select "Sensor Setup" by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

D02140641



**STEP 4** Attach the planter harness to the KPM III. Do NOT connect any of the sensors to the planter harness. With [Auto Detect] selected press the INSTALL key.

D02210601a

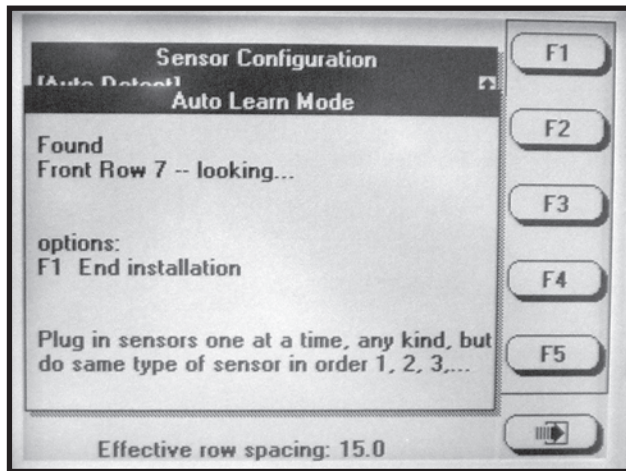


**STEP 5** Plug in the first seed sensor (row 1), working from left to right (rear row units and front next if applicable). When a sensor is connected to the planter harness wait for the monitor to acknowledge with two beeps.

Continue connecting seed sensors along with shaft rotation sensors or speed sensors. Progress will reflect on the LCD screen. The example below indicates that the last seed sensor found was Front Row 7 and the monitor is looking for the next sensor.

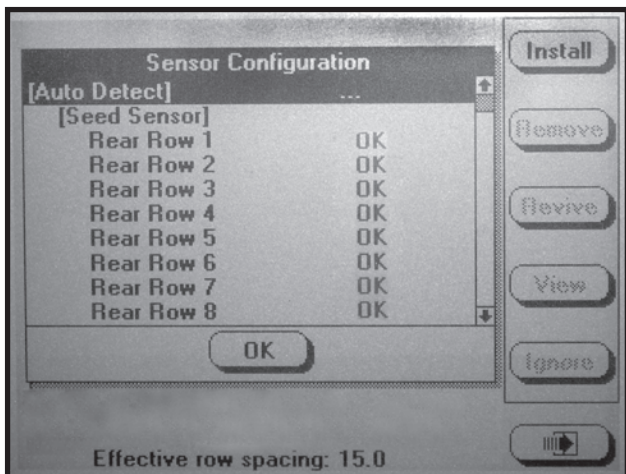
When all sensors are installed press the F1 key to end the installation.

D02170617



**NOTE:** After each sensor has been installed “OK” will appear after the sensor name.

D02210601b

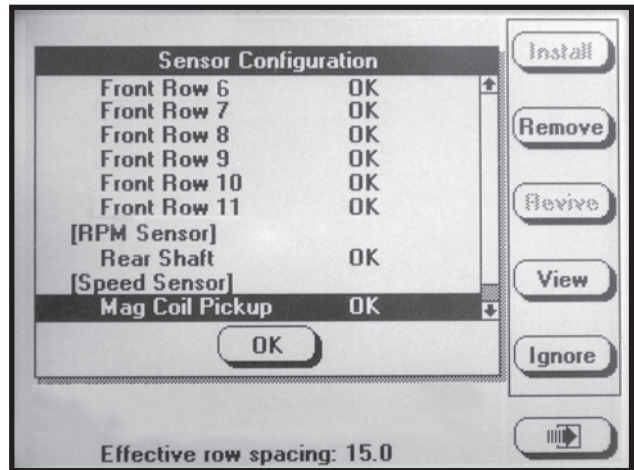


**STEP 6** If “OK” appears behind ALL sensors, press the knob or the ENTER key to save the configuration. The “Setup Mode” menu will then appear.

**NOTE:** If “NONE” appears after a sensor, the sensor was not recognized. All sensors must be disconnected from the planter harness and reconnected as described in STEP 5.

**NOTE:** If “OK slow” appears after a sensor, the sensor is able to communicate but at a slower speed. For the system to run at top speed of 9600 baud the slow sensor must be replaced.

D05310609



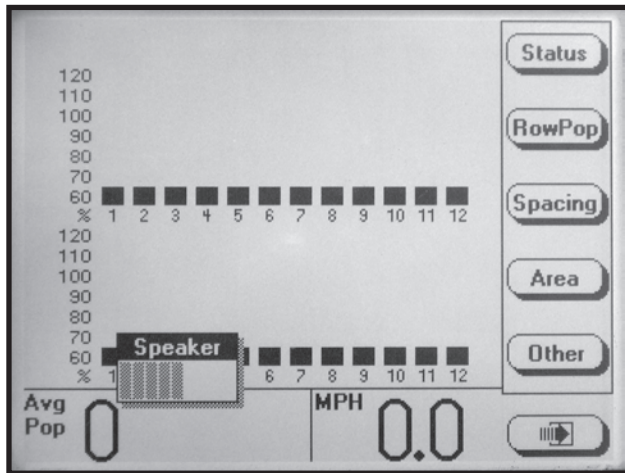
**STEP 7** To return to “Planting Mode” select the PLANT key or press the F6 key until “Planting Mode” screen appears.

## CHANGING VOLUME, CONTRAST AND BACKLIGHTING

The alarm and LCD screen contrast and backlighting may be adjusted at anytime regardless of what is displayed on the screen.

**STEP 1** Press the AV key. The speaker adjustment dialog box will appear in the lower L.H. corner of the display.

D05310610

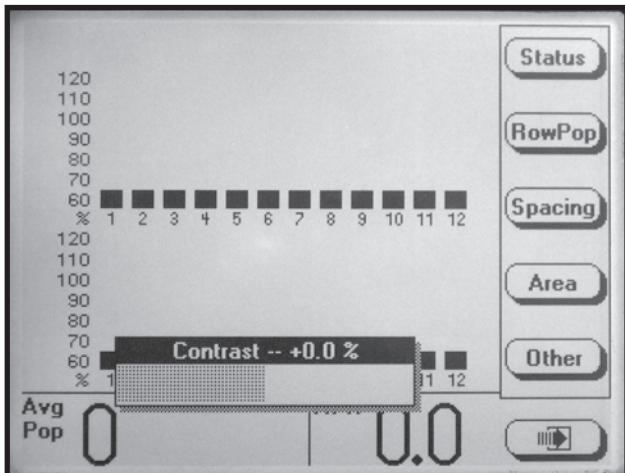


**STEP 2** Use the LEFT and RIGHT arrows or turn the rotary encoder knob to adjust the volume. The volume of the sound emitted from the speaker changes as the adjustment is being made.

**STEP 3** To adjust contrast or backlight, go to STEP 4. If finished press ENTER to save and exit.

**STEP 4** Press the AV button a second time. The contrast adjustment dialog box will appear in the lower portion of the display.

D05310611

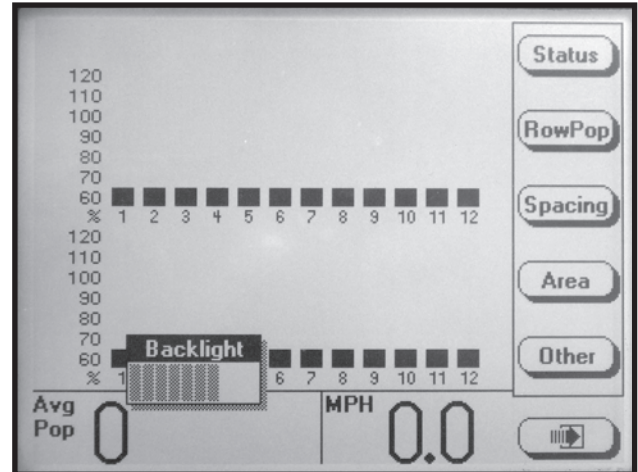


**STEP 5** Use the LEFT and RIGHT arrows or turn the knob to adjust contrast. The effect of the adjustment will be visible on the display.

**STEP 6** To adjust backlighting go to STEP 7. If finished press ENTER to save and exit.

**STEP 7** Press the AV button a third time. The backlight adjustment dialog box will appear in the lower L.H. corner of the display.

D05310612



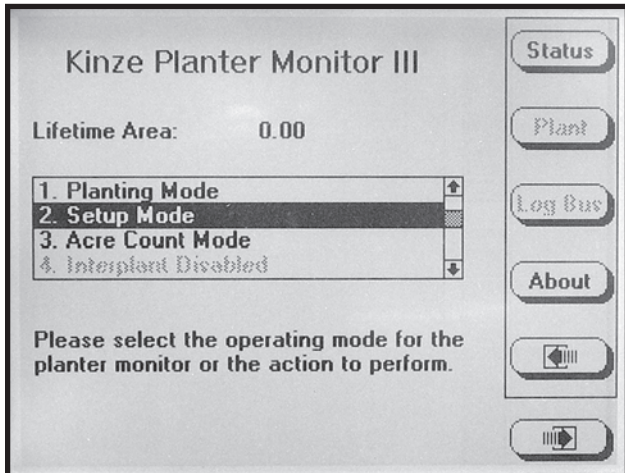
**STEP 8** Use the LEFT and RIGHT arrows or turn the knob to adjust backlighting. The effect of the adjustment will be visible on the display.

**STEP 9** Press the knob, ENTER or press the AV button a fourth time to save the volume, contrast and backlight settings. The backlight adjustment dialog box will disappear.

**PROGRAMMING INTERPLANT® CONDITION,  
ROW SPACING AND UNITS (Metric Or English)**

**STEP 1** To enter “Mode Selection” screen press the F6 key until “Mode Selection” screen appears.

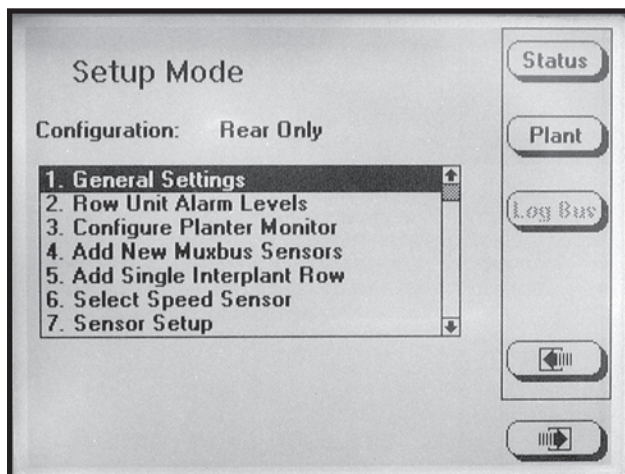
D02140614



**STEP 2** Select “Setup Mode” by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

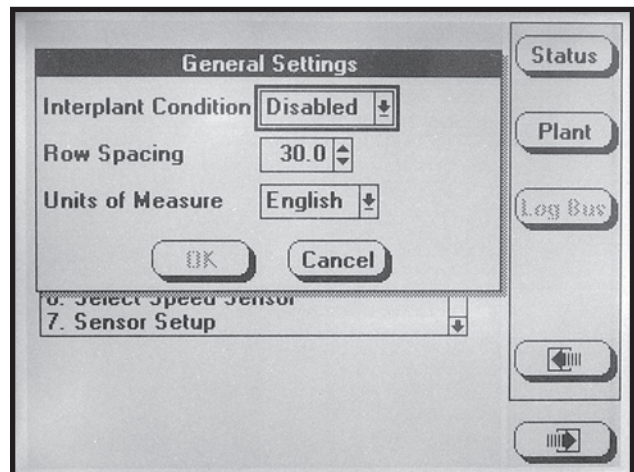
**STEP 3** Select “General Settings” by turning the knob or using the UP or DOWN arrow keys. Press the knob or the ENTER key to display the highlighted item.

D02140615



**STEP 4** Press the knob or ENTER key and a drop down menu will appear. Select either “Enabled” (push row units are being used for planting) or “Disabled” (push row units are not being used for planting and no seed rate alarms will be generated for the front rows; no bargraphs are to be displayed for the front rows and the front rows do not contribute to the average population and spacing or acre counts). Use the knob or UP or DOWN arrow keys to make selection. Press the knob or ENTER key to select highlighted item. The black box will advance to “Row Spacing” field.

D02140616



**NOTE: When English is selected inches are displayed, if Metric is selected centimeters are displayed.**

**STEP 5** Press the knob or ENTER key to enter the correct value for “Row Spacing”. Turn the knob to increase or decrease the number. The UP arrow key is used to increase the value of the item by one and the DOWN arrow key is used to decrease the value of the field by one. The LEFT arrow key multiplies the value of the item by 10 and the RIGHT arrow key divides the value of the item by 10. When the correct number has been entered press the knob or ENTER key. The black box will advance to “Units of Measure” field.

**NOTE:** The narrowest row spacing the planter is equipped to plant should be entered for “Row Spacing”. Example: 12 Row 30" with Interplant, row spacing would be set to 15".

**STEP 6** Select “Units Of Measure” field by pressing the knob or ENTER key and a drop down menu will appear. Select either “English” or “Metric” by turning the knob or using the UP or DOWN arrow keys. Press the knob or the ENTER key. The black box will advance to OK.

**STEP 7** Press the knob or ENTER key, when correct values are entered.

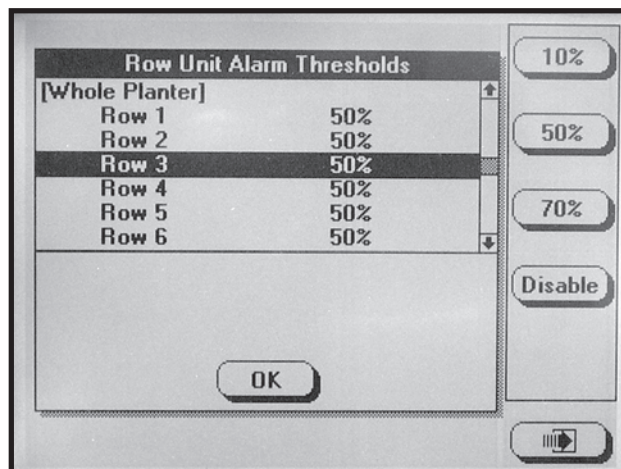
**STEP 8** To return to “Planting Mode” press the PLANT key.

## PROGRAMMING ROW UNIT ALARM LEVELS

The Row Unit Alarm Levels allow the thresholds for the seed rate alarms to be set. The default is 50% or Average. If the average population drops below 50% for a given row a seed rate alarm will be generated for that row unit. The alarm threshold can be set to 70%, 50%, 10% or disabled for any row.

**NOTE:** When the alarm threshold is disabled for any row no seed rate alarm will be generated.

D02140623



The alarm thresholds can be set for the whole planter, any planter section or individual rows.

**NOTE:** A section is determined by a set of rows driven by one or more shafts, designated to a single shaft sensor.

**STEP 1** To enter “Mode Selection”, press F6 key until the “Mode Selection” screen appears.

**STEP 2** Select “Setup Mode” by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

**STEP 3** Select “Row Unit Alarm Levels” by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

**STEP 4** To set alarm thresholds for whole planter, select “Whole Planter”. Press the key next to the desired threshold. When the desired threshold has been specified for all row units, press the knob or ENTER key.

To set alarm thresholds for all the rows in one section, select rear section or front section. Press the key next to the desired threshold. When the desired threshold has been specified for all row units, press the knob or ENTER key.

To set alarm thresholds for individual rows, select the desired row. Press the key next to the desired threshold. When the desired threshold has been specified for all row units, press the knob or ENTER key.

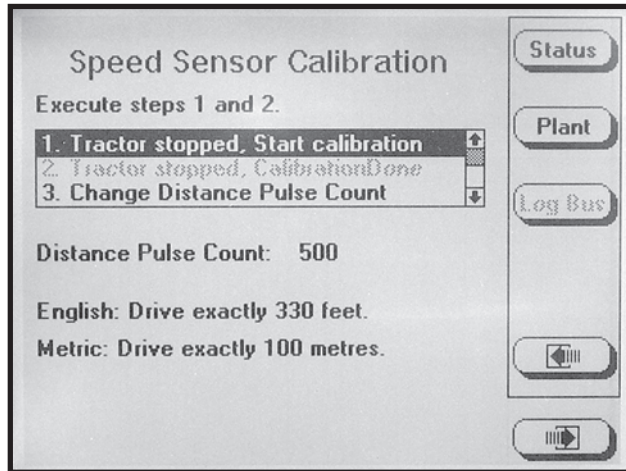
**STEP 5** To return to “Planting Mode” press the PLANT key.

## SPEED SENSOR CALIBRATION/PROGRAMMING

**STEP 1** To enter the “Speed Sensor Calibration” mode, press F6 until the “Mode Selection” screen appears. Select “Setup Mode” and press the rotary encoder knob or ENTER key. Press F6 to advance to the “Speed Sensor Calibration” screen.

The Distance Pulse Count is used to record how many pulses are generated per mile/kilometer from the ground speed sensor. The monitor will display the current pulses per mile/kilometer using a 6 digit, no decimal place format.

D02140643



**NOTE:** A field calibration must be performed to establish the Distance Pulse Count number. Several factors can affect this value, such as wheel slip on the magnetic distance sensor. **IT IS NOT UNCOMMON FOR THE SPEED ON THE MONITOR TO VARY SLIGHTLY FROM THE TRACTOR SPEEDOMETER. Adjusting the Distance Pulse Count in the monitor to make the speed agree with the tractor can cause serious errors in acre/hectare and population/spacing readings. Do field checks to verify populations and seed spacing.**

- In field conditions, measure 330 feet or 100 meters, depending on the unit of measurement selected. Place a marker at the start point and end point.
- Pull the tractor up to the starting point.
- Select “Tractor stopped. Start calibration”.
- Press the rotary encoder knob or ENTER key to change the Distance Pulse Count on the display to 0.

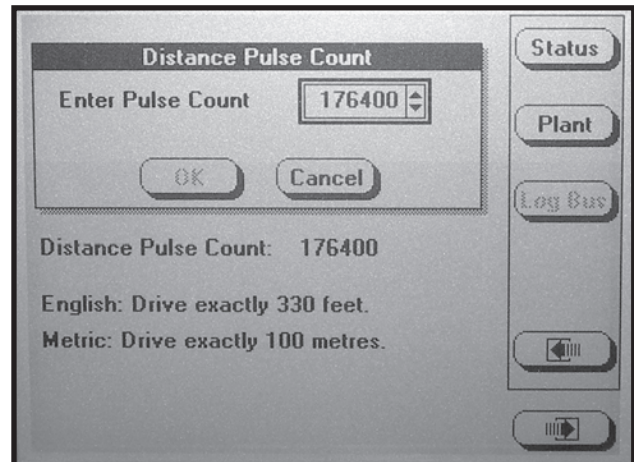
**NOTE:** If the Distance Pulse Count number starts to count pulses with the tractor not moving, check radar distance sensor for vibration or other interference.

- Drive the tractor for 330 feet or 100 meters.
- The monitor will count the number of pulses and display them.
- Stop the tractor at the end point.
- Select “Tractor stopped. Calibration Done”.
- Press the knob or ENTER key.

**NOTE:** Repeat the above steps multiple times. Record and average the values. Use this average for the Distance Pulse Count number constant.

**STEP 2** Select “Change Distance Pulse Count” by turning the knob or using the DOWN arrow key. Press the knob or ENTER key.

D02200605



**NOTE:** The Distance Pulse Count will vary from the above example.

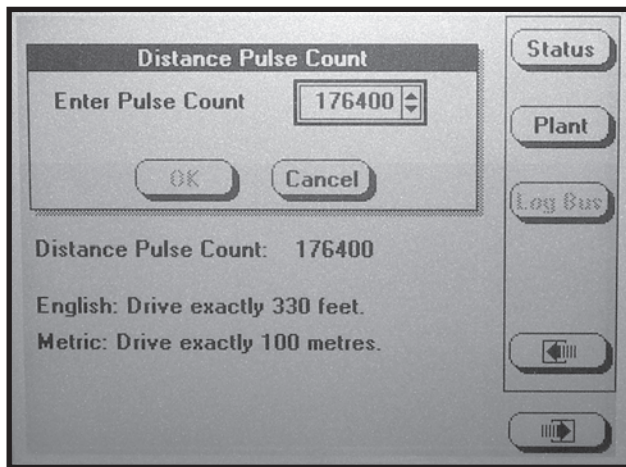
**STEP 3** To return to “Planting Mode” press the PLANT key.

WHEN THE CORRECT DISTANCE PULSE COUNT IS KNOWN, CALIBRATION IS NOT NEEDED AND THE FOLLOWING STEPS MAY BE USED.

**STEP 1** To enter the “Speed Sensor Calibration” screen, press F6 key until the “Mode Selection” screen appears. (If Applicable) Select “Setup Mode” and press the rotary encoder knob or ENTER key. Press F6 key to advance to the “Speed Sensor Calibration” screen.

**STEP 2** Select “Change Distance Pulse” field by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key.

D02200605



**NOTE:** The Distance Pulse Count will vary from the above example.

**STEP 3** With the “Enter Pulse Count” field selected press the knob or ENTER key.

**STEP 4** Change the Pulse Count to the desired value using the UP or DOWN arrow keys or turn the knob until the desired value is obtained. Press the knob or ENTER key.

**NOTE:** The LEFT arrow key multiplies the value of the item by 10 and the RIGHT arrow key divides the value of the item by 10.

**STEP 5** Select OK by pressing the knob or ENTER key to save the new count. Select CANCEL to retain the old value of the Distance Pulse Count.

**STEP 6** Press PLANT key to return to main planting screen.

## REPROGRAMMING SPEED SENSOR

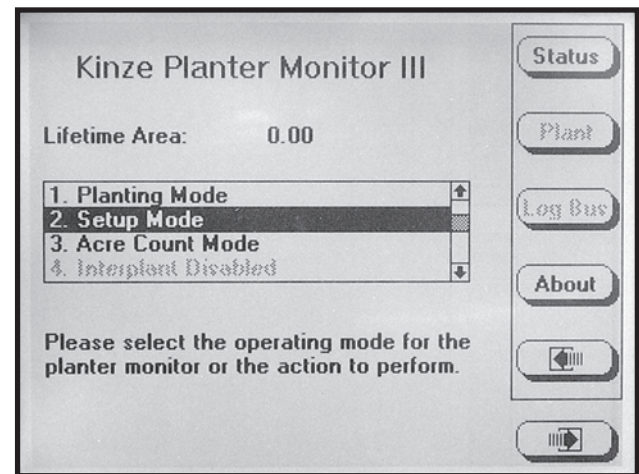
This setting must be specified when the monitor is first configured. It will be necessary to reprogram to use an alternate speed sensor.

**NOTE:** Speed sensors may not be changed while planting.

## RADAR TO MAGNETIC DISTANCE SENSOR

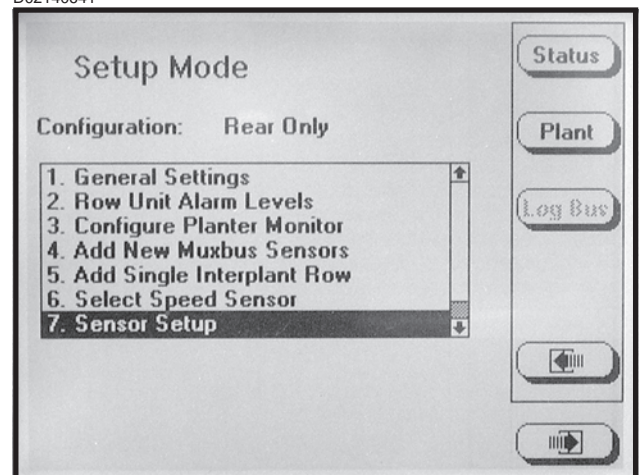
**STEP 1** Press the F6 key until the “Mode Selection” screen appears. Select “Setup Mode” by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

D02140614



**STEP 2** Turn the knob or use the UP or DOWN arrow keys to choose “Sensor Setup”. Press the knob or ENTER key to display the highlighted item.

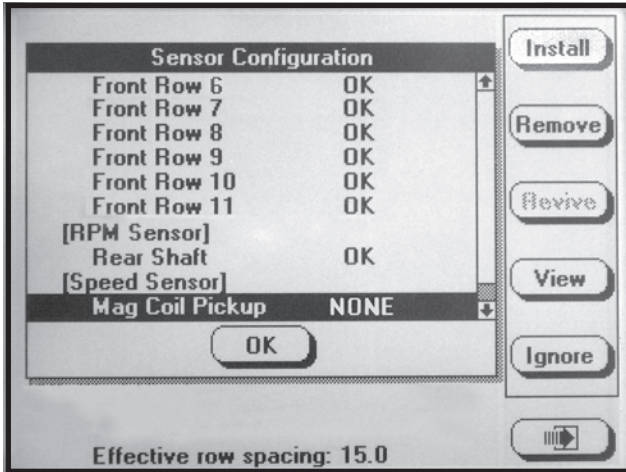
D02140641



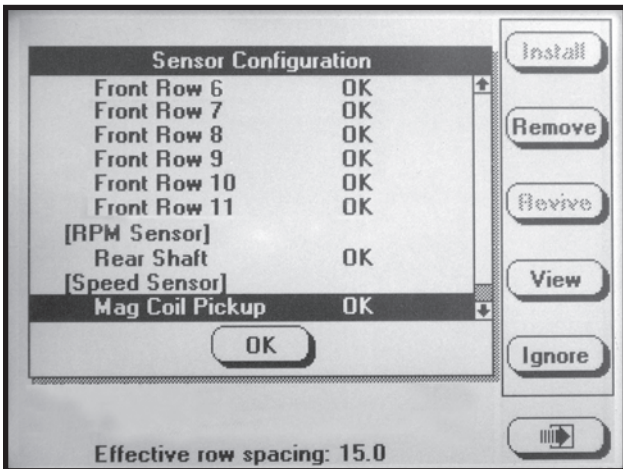


**STEP 3** Turn the knob or use the UP or DOWN arrow keys to highlight “Mag Coil Pickup”. Plug in Magnetic Distance Sensor and press the INSTALL key. Press the knob or ENTER key to save information.

D05310609a

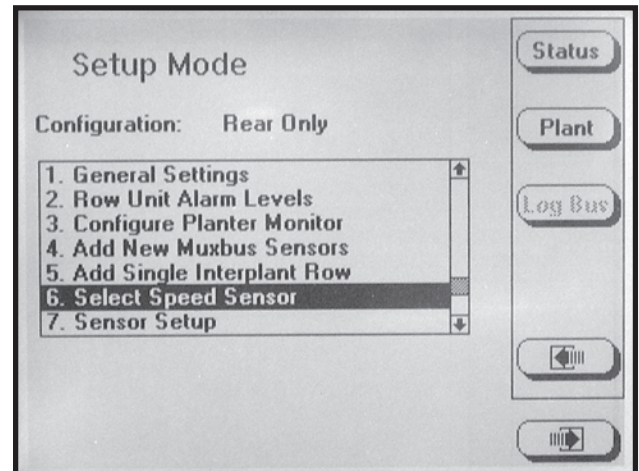


D05310609

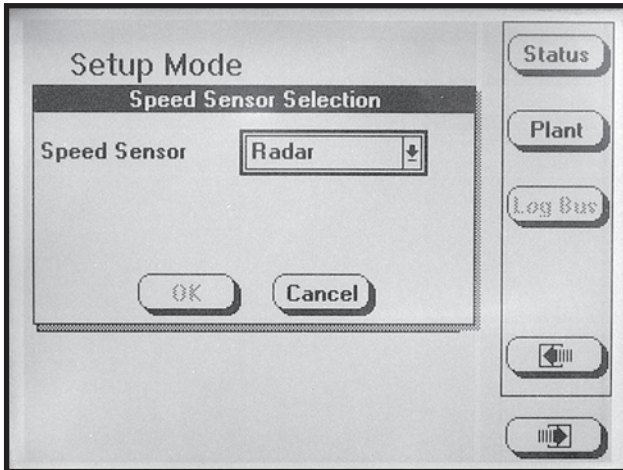


**STEP 4** Turn the knob or use the UP or DOWN arrow keys to select “Select Speed Sensor” and press the knob or ENTER key. Press the knob or ENTER key to select the “Speed Sensor” field and a drop down menu will appear. Turn the knob or use the UP or DOWN arrow keys to select “Coil Pick-Up” and press the knob or ENTER key to make selection. The black box will advance to OK press the knob or ENTER key to save the information.

D02140639

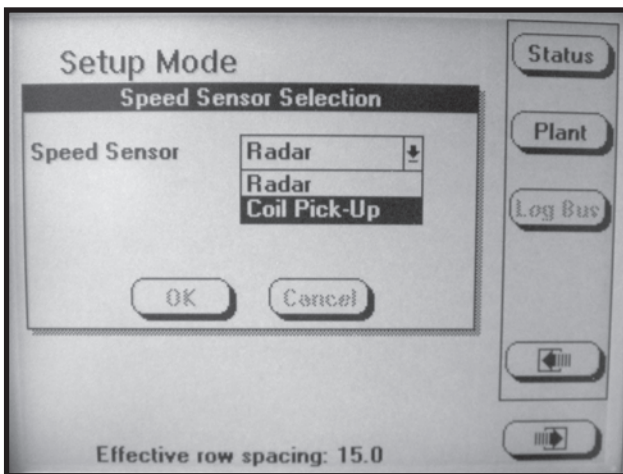


D02140639



**NOTE:** To prevent the configuration from being changed select CANCEL, then press the rotary encoder knob, ENTER key or ESC key.

D06210601



**STEP 5** Unplug the radar from the tractor.

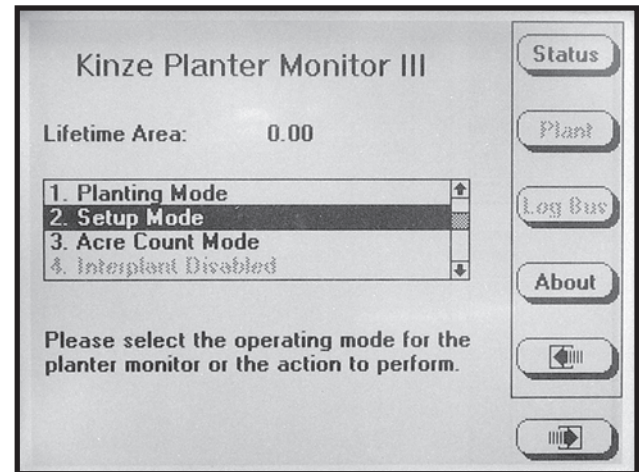
**STEP 6** Press the PLANT key to return to main planting screen.

**NOTE:** When switching between speed sensors, verify the distance pulse count is correct for the chosen sensor. There will be significant distance pulse count variation between radar and coil pick-up sensors.

## MAGNETIC DISTANCE SENSOR TO RADAR

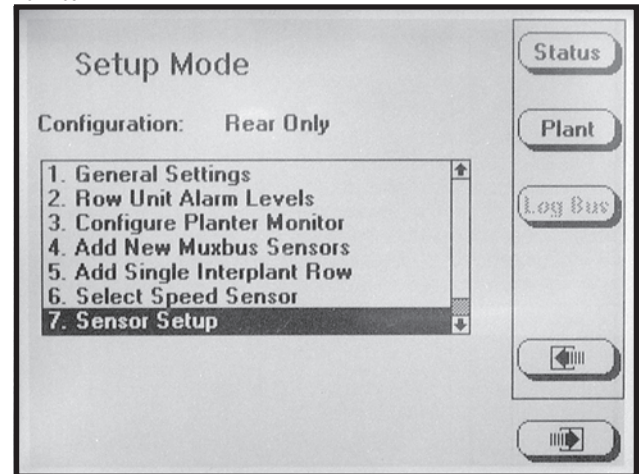
**STEP 1** Press the F6 key until the “Mode Selection” screen appears. Select “Setup Mode” by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

D02140614

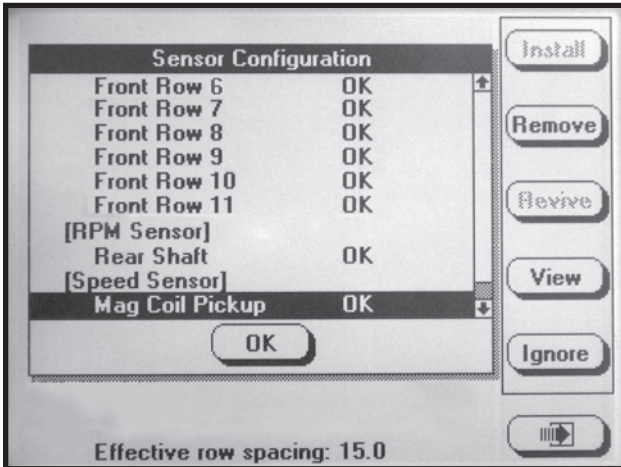


**STEP 2** Turn the knob or use the UP or DOWN arrow keys to choose “Sensor Setup”. Turn the knob or use the UP or DOWN arrow keys to highlight “Mag Coil Pickup”. Press the REMOVE key, a note will appear for confirmation select as appropriate. Unplug Magnetic Distance Sensor and press the knob or ENTER key to save the information.

D02140641

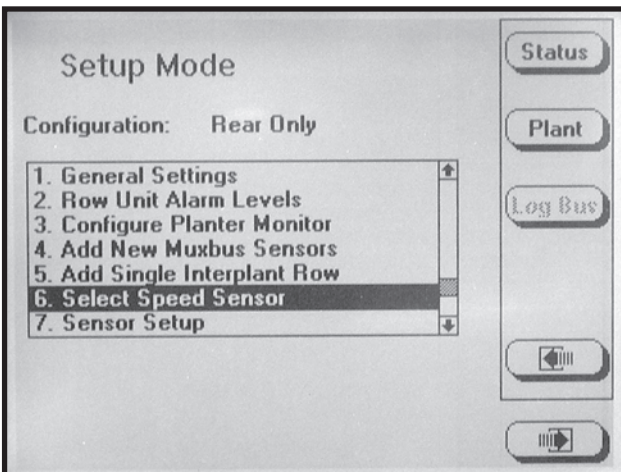


D05310609

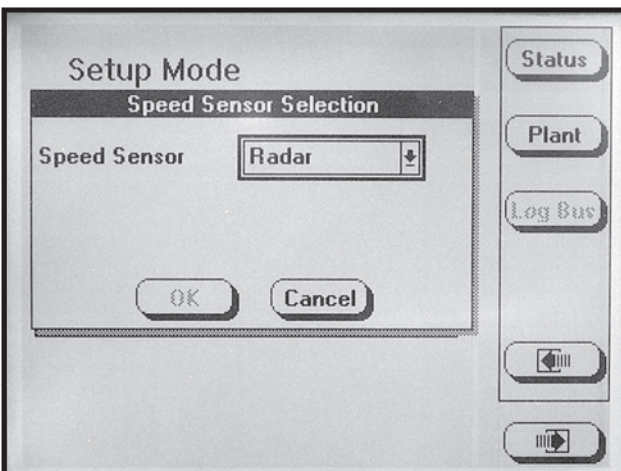


**STEP 3** Turn the knob or use the UP or DOWN arrow keys to select “Select Speed Sensor” and press the knob or ENTER key. Press the knob or ENTER key to select the “Speed Sensor” field and a drop down menu will appear. Turn the knob or use the UP or DOWN arrow keys to select “Radar” and press the knob or ENTER key to make selection.

D02140639

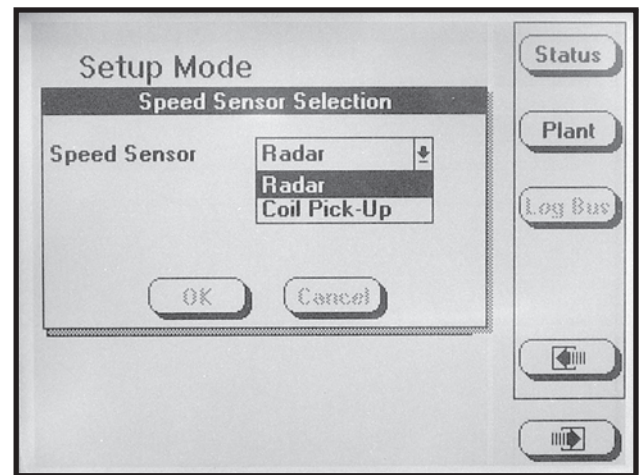


D02140639



**NOTE:** To prevent the configuration from being changed select CANCEL, then press the knob, ENTER key or ESC key.

D02140640



**STEP 4** Plug in the Radar and the black box will advance to OK. Press the knob or ENTER key to save the information.

**STEP 5** Press the PLANT key to return to main planting screen.

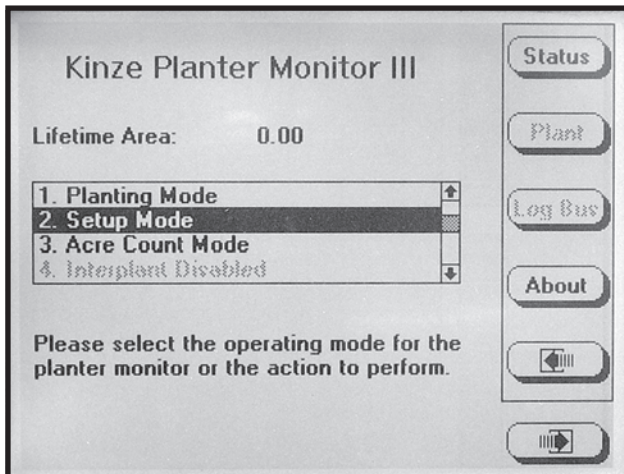
**NOTE:** When switching between speed sensors, verify the distance pulse count is correct for the chosen sensor. There will be significant distance pulse count variation between radar and magnetic distance sensors.

ADDING INTERPLANT® ROWS (If Rear Rows Have Previously Been Programmed)

**STEP 1** Press the F6 key until “Mode Selection” screen appears.

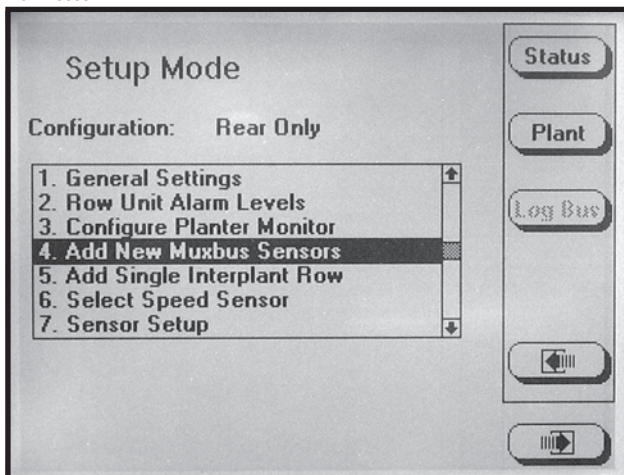
**STEP 2** Select “Setup Mode” by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

D02140614



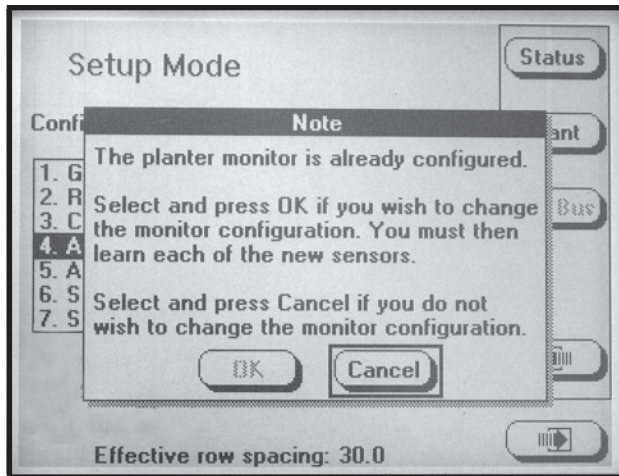
**STEP 3** Select “Add New Muxbus Sensors” by turning the knob or using the UP and DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

D02140633



**STEP 4** The note shown below will appear. Select OK by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to make the selection.

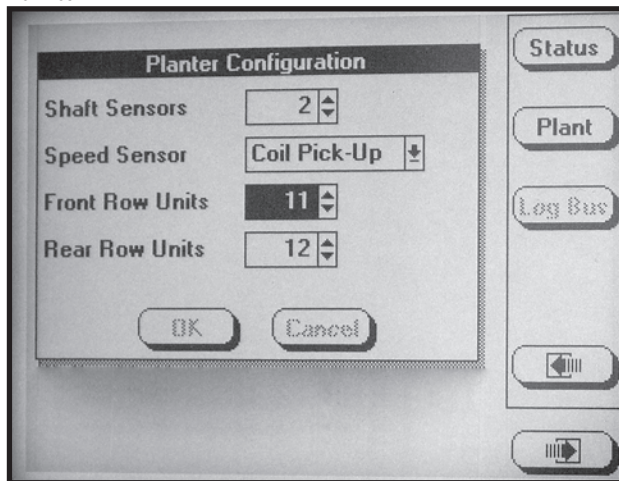
D03010601



**STEP 5** Turn the knob or use the UP or DOWN arrow keys to select the “Front Row Units” field and press the knob or ENTER key to highlight the field. Turn the knob or use the UP or DOWN arrow keys to obtain the desired number of rows. When the correct value has been entered press the knob or ENTER key. The black box will advance to the OK key. Press the knob or ENTER key to save the information.

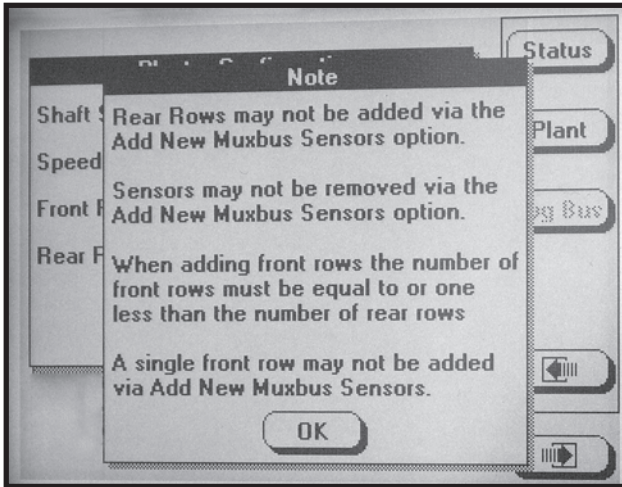
**NOTE:** To prevent the configuration from being changed select CANCEL, then press the knob, ENTER key or ESC key.

D02220674



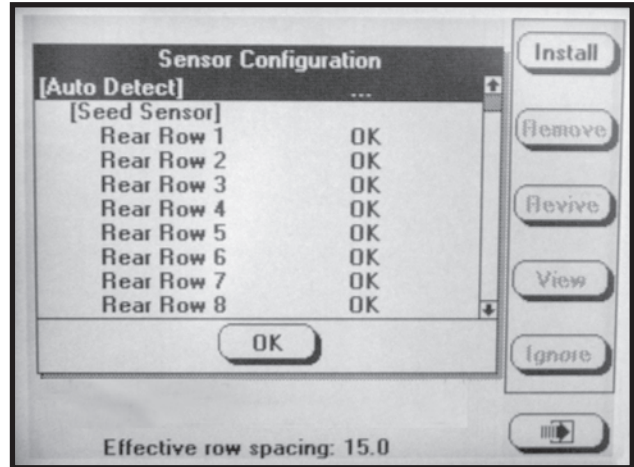
**NOTE:** Attempting to add rear rows while adding new muxbus sensors will cause the following note to appear.

D02220675



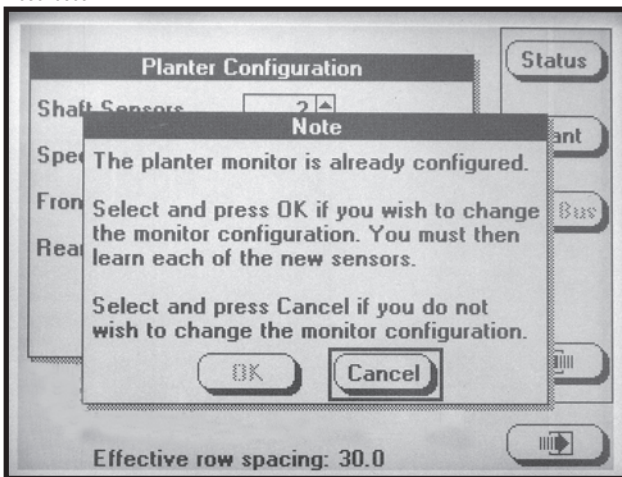
**STEP 7** The sensor configuration screen will appear. With [Auto Detect] highlighted select INSTALL. Begin to install sensors from left to right.

D02230604a



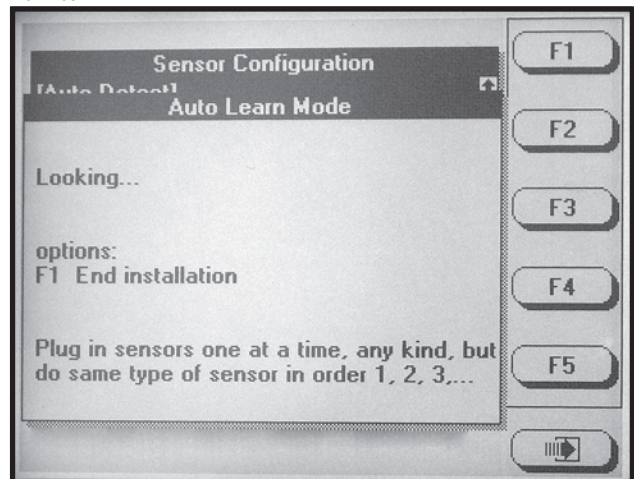
**STEP 6** The note shown below will appear. Select OK by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to make the selection.

D03010603



**NOTE:** To prevent the configuration from being changed select CANCEL, then press the knob, ENTER key or ESC key.

D02220672

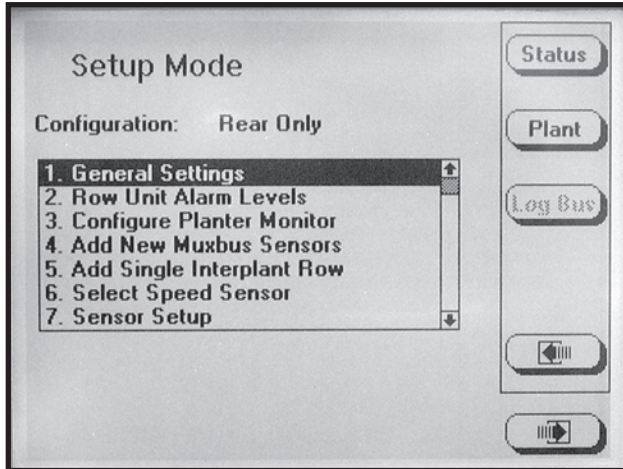


**STEP 8** When all sensors are learned select F1 to end installation. Scroll down to verify the front rows are learned. Select OK by pressing the knob or ENTER key.

**NOTE:** "OK" will appear next to each sensor if no errors are detected.

**STEP 9** Select “General Settings”, by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to make the selection.

D02140615



**STEP 10** Select the “Row Spacing” field by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to highlight field. Adjust the row spacing to Interplant spacing by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to enter the value. Then turn the knob or use the UP or DOWN arrow keys to advance to OK. Press the knob or enter key to save row spacing.

**NOTE:** To prevent the configuration from being changed select **CANCEL**, then press the knob, ENTER key or ESC key.

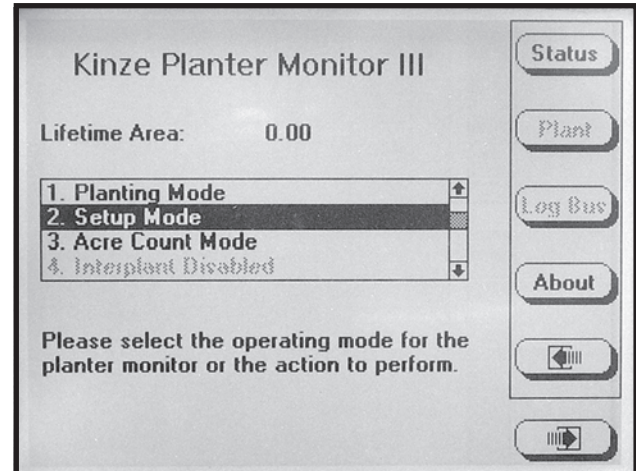
**STEP 11** To return to “Planting Mode” press the PLANT key.

ADDING EVEN-ROW PACKAGE (If Front Rows Have Previously Been Programmed)

**STEP 1** Press the F6 key until “Mode Selection” screen appears.

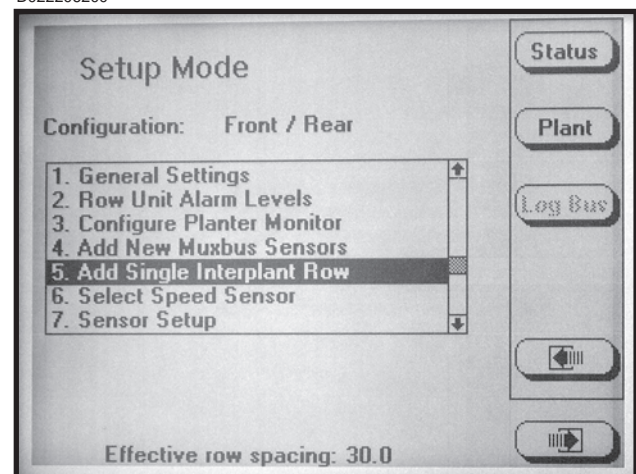
**STEP 2** Select “Setup Mode” by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

D02140614



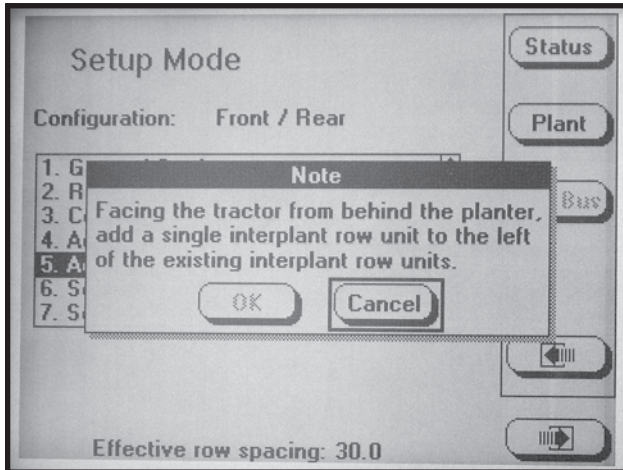
**STEP 3** Select “Add Single Interplant Row” by turning the knob or using the UP and DOWN arrow keys. Press the knob or the ENTER key to display the highlighted item.

D022206200



**STEP 4** To confirm the following note turn the knob or use the UP or DOWN arrow keys to select OK and then press the knob or ENTER key to confirm. If the single Interplant row is not to be added select the CANCEL key and press the knob or ENTER key to cancel or press the ESC key.

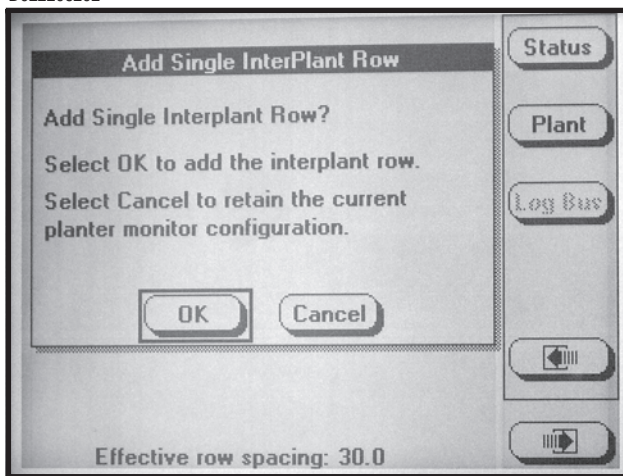
D022206201



**STEP 5** To “Add Single Interplant Row” the following screen will appear.

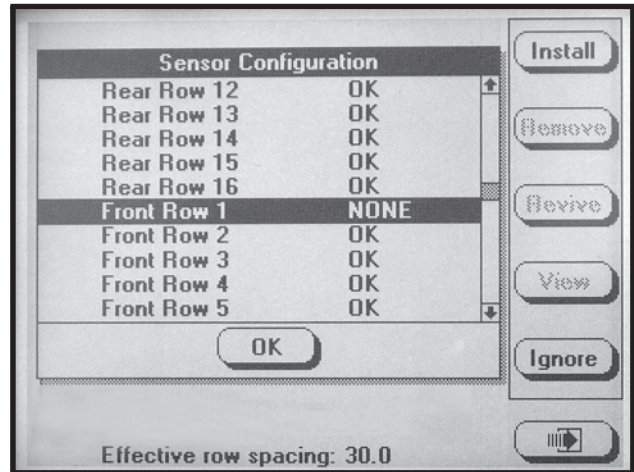
If the single Interplant row is to be added turn the knob or use the UP or DOWN arrow keys to select OK and then press the knob or ENTER key to add the Interplant row. If the single Interplant row is not to be added select the CANCEL key and press the knob or ENTER key to cancel or press the ESC key.

D022206202



**STEP 6** The “Sensor Configuration” screen will appear. Plug in the new sensor then scroll down to highlight “Front Row 1” by turning the knob or using the UP or DOWN arrow keys. Select INSTALL to learn the new sensor. Press the knob or ENTER key to return to setup mode.

D02220670

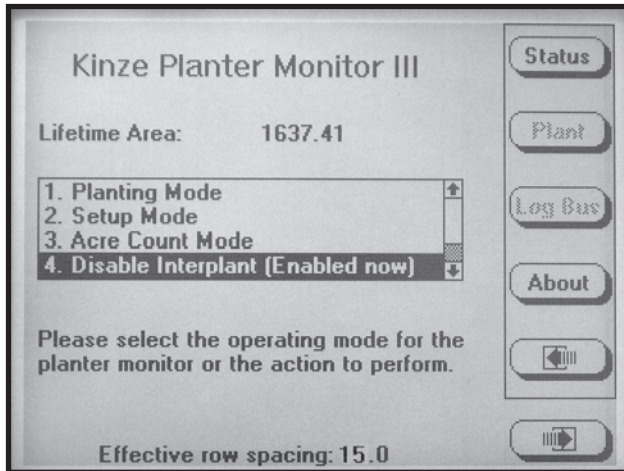


**STEP 7** To return to “Planting Mode” press the PLANT key.

## ENABLING/DISABLING INTERPLANT® ROWS

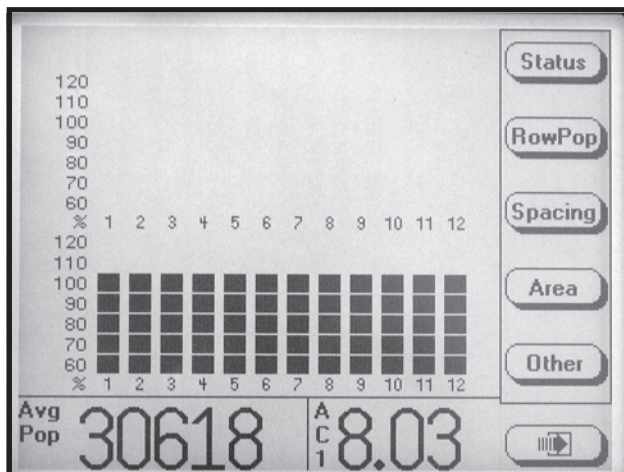
To Enable or Disable Interplant (a) press the F6 key until the “Mode Selection” screen appears, (b) turn the rotary encoder knob or use the UP or DOWN arrow keys to highlight “Disable/Enable Interplant”, (c) press the knob or ENTER key to “Disable” or “Enable” Interplant. To verify selection, the row spacing is displayed on the bottom of the screen.

D03010605a



Either select the “Planting Mode” by turning the knob or using the UP arrow key and pressing the knob or ENTER key or press F6 to return to the “Planting Mode”.

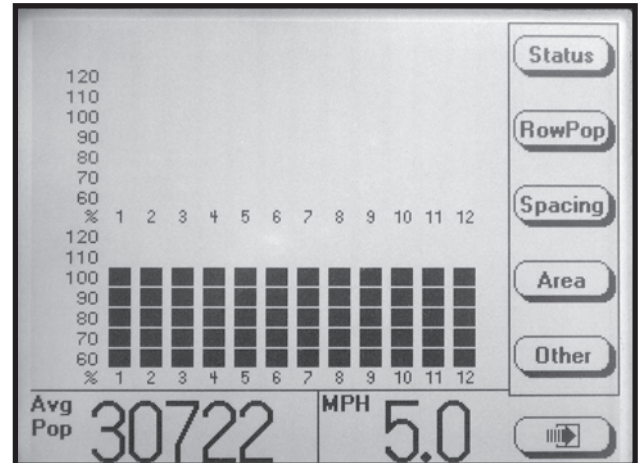
D02240602



## ROW POPULATION

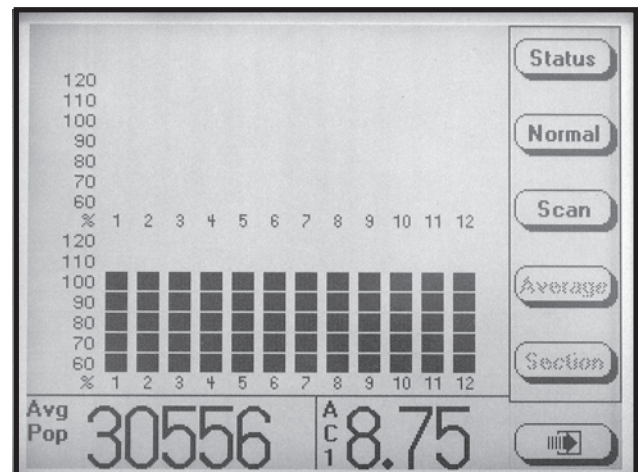
- Press the ROW POP key to display row population. Average planter population will be shown in the lower L.H. corner of the display.

D05310614



- Press the SCAN key and the monitor will scan through each row in ascending order displaying the average seed population for each row. After all rows have been scanned the average population is displayed and scan function will continue with the first rear row.

D02240604

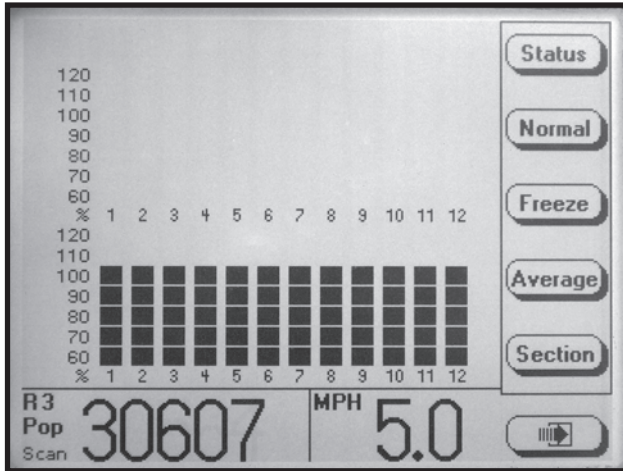




- Press the FREEZE key to stop scanning, the left display item will be frozen on a particular row. "Frzn" appears in the lower L.H. corner to indicate the display is frozen. To resume scan press the SCAN key.

**EXAMPLE:** When average row population is shown, R3 indicates rear row 3, F2 indicates front row 2, etc.

D05310615



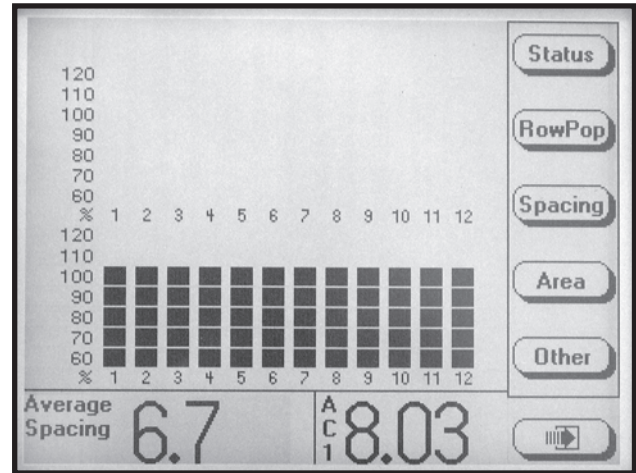
- When either Scan or Frzn is displayed in the L.H. corner the SECTION and arrow keys function as follows: (a) SECTION or RIGHT arrow key advances to the first row of the next section; (b) SECTION or LEFT arrow key selects the first row of the previous section, wrapping around to the first row of the last section when moving past the first section; (c) UP arrow key moves forward to the next row of the planter, wrapping around to the first row when moving past the last row; (d) DOWN arrow key moves backward to the previous row of the planter, wrapping around to the last row of the planter when moving past the first row.
- Press the AVERAGE key to display the average population in the bottom L.H. corner.
- Press the NORMAL key to display the normal screen for planting mode.

**NOTE:** If the rows are being scanned and the AVERAGE key is selected the scan function will stop.

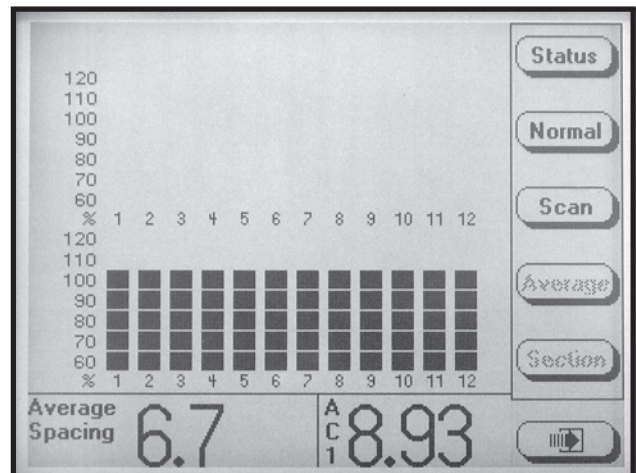
## ROW SPACING

- Press the SPACING key to display seed spacing keys. Seed spacing will appear in the bottom L.H. corner of the display.

D02240602



D02240605



- Press the SCAN key and the monitor will scan through each row in ascending order displaying the average seed spacing for each row. Scan appears in the L.H. corner to indicate the display is scanning. After all rows have been scanned the average population is displayed and scanning will continue with the first rear row.
- Press the FREEZE key to stop scanning and the left display item will be frozen on a particular row. "Frzn" appears to indicate the display is frozen. To resume scan press the SCAN key.

- When either "Scan" or "Frzn" is displayed in the left display item the SECTION and arrow keys function as follows: (a) SECTION and RIGHT arrow key advances to the first row of the next section; (b) LEFT arrow key selects the first row of the previous section, wrapping around to the first row of the last section when moving past the first section; (c) UP arrow key moves forward to the next row of the planter, wrapping around to the first row when moving past the last row; (d) DOWN arrow key moves backward to the previous row of the planter, wrapping around to the last row of the planter when moving past the first row.

- Press the AVERAGE key to display the average seed spacing in the bottom L.H. corner.
- Press the NORMAL key to display the main planting mode.

**NOTE: If the rows are being scanned and the AVERAGE key is selected the scan function will stop.**

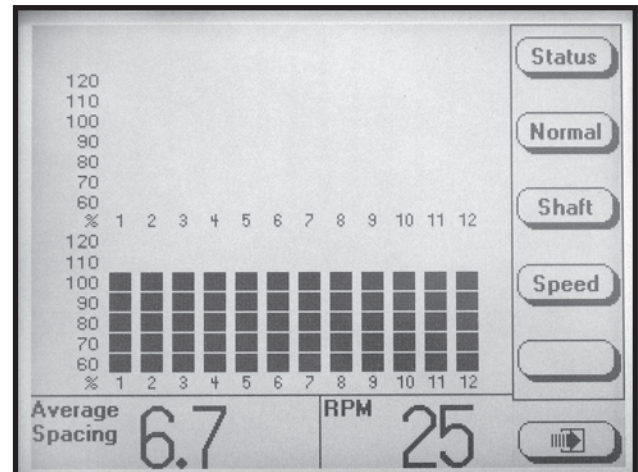
### SPEED/SHAFT ROTATION

- Press the OTHER key to display items available to display in the bottom R.H. corner.

- Press the SHAFT key to view the average meter shaft RPM. The value will appear in the bottom R.H. corner of the display.

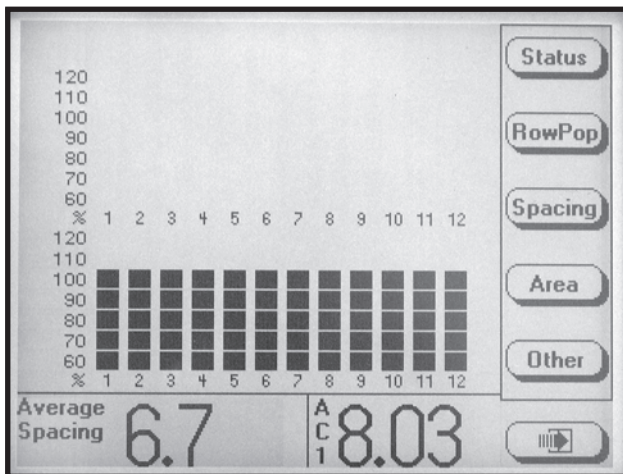
**NOTE: Applicable to planters with shaft rotation sensors installed.**

D02240607

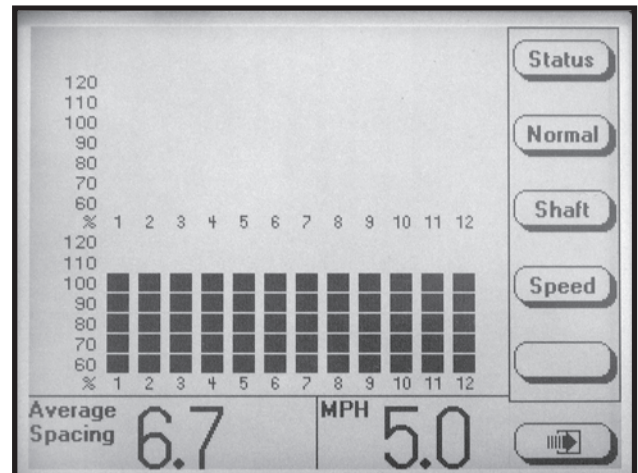


- Press the SPEED key to view the ground speed. The value will appear in the bottom R.H. corner of the display.

D02240602



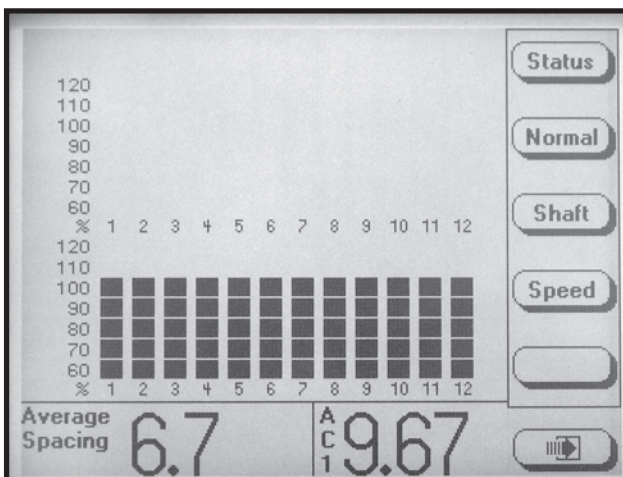
D02240608



**NOTE: The appropriate units of measure will be displayed (English or Metric).**

- Press NORMAL to bring back the standard key labels.

D02240606



## WARNINGS AND ALARMS

1. **Seed Rate Alarm** - A seed rate alarm is activated whenever the row average seed population drops below the threshold set for that row.

The corresponding row on the bargraph starts flashing and the monitor emits a series of beeps that persists until the alarm is clear or the ACK button is pressed. "Seed Rate Alarm" appears in the upper left corner of the screen. The bargraph for the row drops down based on the threshold set for the alarm.

**EXAMPLE: If the threshold is 70% the lower two bargraph segments are shown. If the threshold is 50% or 10% the lowest bargraph segment is shown.**

The status message associated with an alarm contains more information about the alarm. To view the "Status Message" for a seed rate alarm, press the STATUS key.

If the sensor is detecting no seed flow it will display which row is not functioning. The alarm may be indicating a mechanical problem that is reducing the seed flow or an electrical problem causing the seed counts to be incorrect.

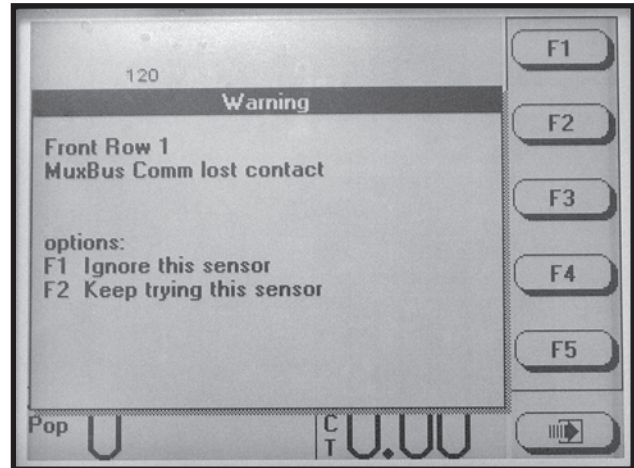
**NOTE: The only way to remove an alarm is to find and correct the problem. Alarms are not reported for rows that seed rate alarm thresholds have been disabled.**

**NOTE: The percentage shown in the alarm message is the percentage at the time the alarm occurred.**

2. **Section Not Planting** - When the monitor detects an entire section not planting, the monitor will emit three beeps to alert the user. The bargraph for the affected section flashes and is reduced to the lowest segment. An alarm message is added to the list of "Status Messages". Press the STATUS key to view the alarm message.

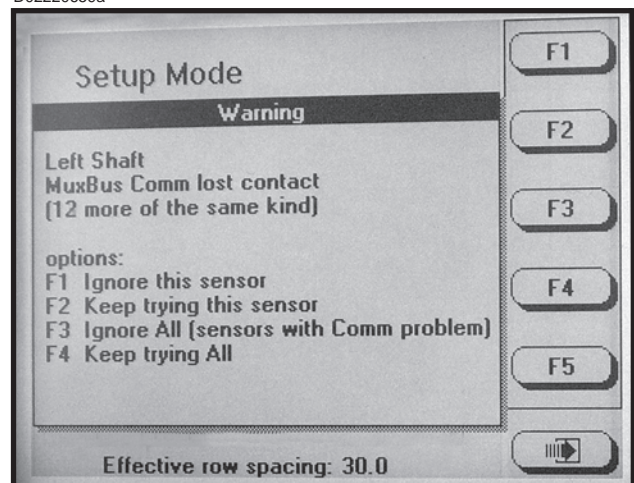
3. **Seed Counting Sensors Not Communicating With Monitor** - When the monitor detects a communication error between the sensor and the monitor, the monitor will emit two beeps to alert the user. Try to reestablish communication with sensor(s) by pressing F2. If the monitor is unable to establish communication there may be (a) a faulty sensor, (b) a poor electrical connection or (c) a cut or pinched wire harness.

D02220687



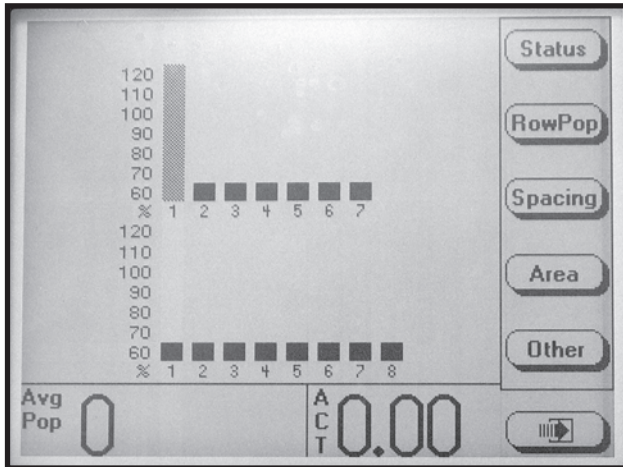
If multiple sensors have lost contact, the message will indicate which sensors have lost contact.

D02220659a



**NOTE: When it is known that a sensor or a group of sensors are faulty, F1 or F3 should be pressed. The monitor will no longer try to communicate with the sensor(s). In the planting mode the corresponding bargraphs will be grayed out in the main screen.**

D02220691



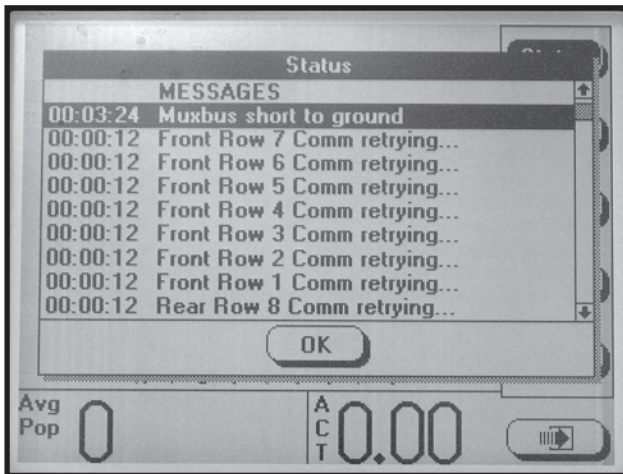
**NOTE:** If the sensors are not faulty, F2 or F4 should be pressed and the message shown below will appear when the STATUS key is pressed.

- Seed Counting Sensors Too Dirty Warning** - When powering on the KPM III, each of the seed sensors will do a self check. If a seed tube is too dirty, the message “Clean Or Replace Sensor As Necessary” will be displayed and the bargraph for that row will flash. The LED on the seed tube sensor will not flash. The sensor will not function until the problem is corrected.

**NOTE:** After the alarms have been acknowledged and if the alarm condition is still present, the LCD screen will continue to display the alarm condition.

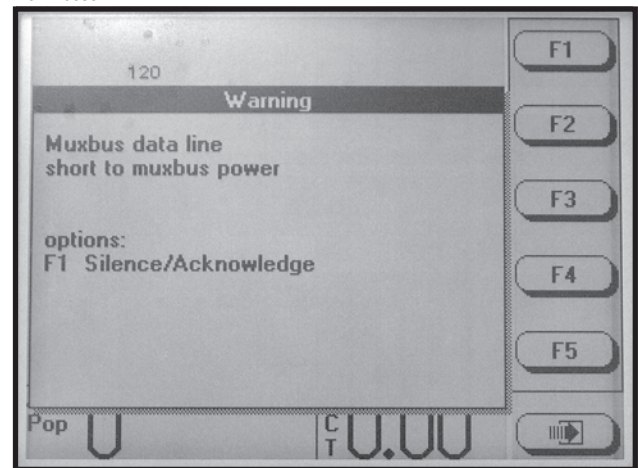
- Wire Shorts** - When a wire is shorted any one of the messages shown below will appear, stating which wires are shorted. The short must be located and fixed to continue planting. Cycle the power on the monitor to clear the alarm.

D02220685

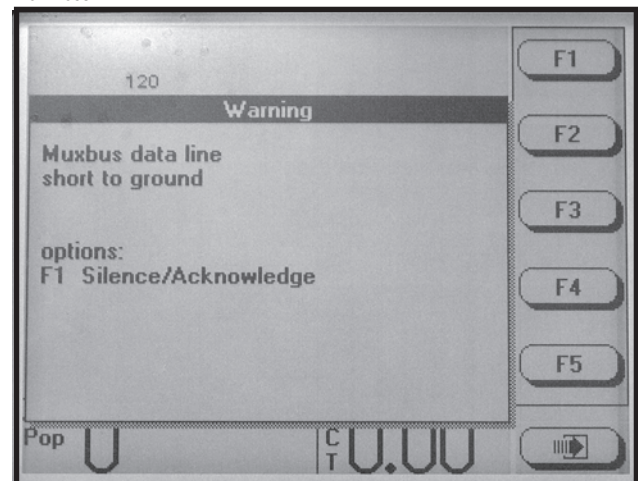


**NOTE:** If a sensor has been ignored, the sensor configuration screen will display as shown below.

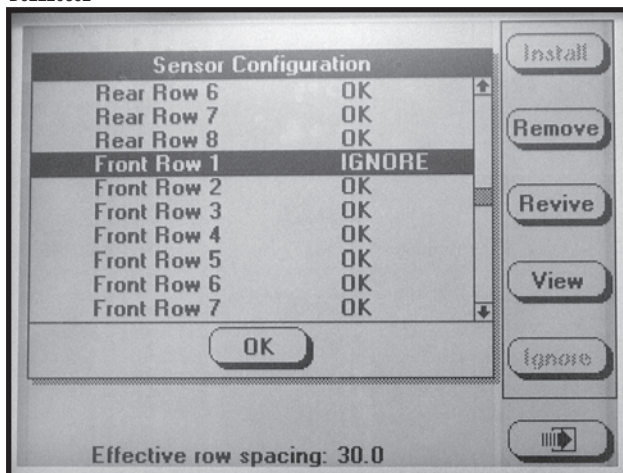
D02220683



D02220684



D02220692

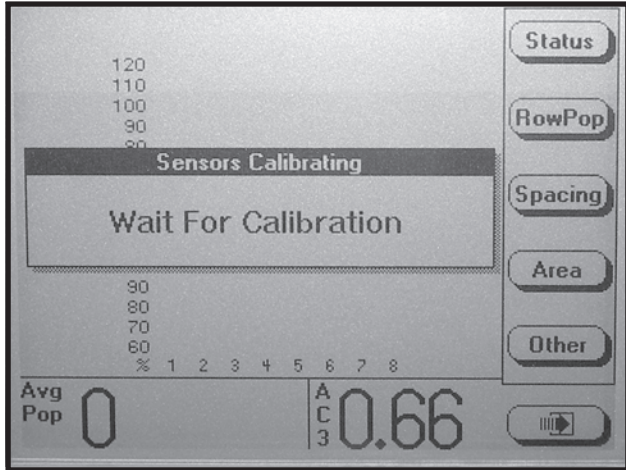


## FIELD OPERATION

Press the ON/OFF key to turn the monitor ON.

If the monitor has been configured, it will enter the normal planting mode and attempt to communicate with the seed sensors.

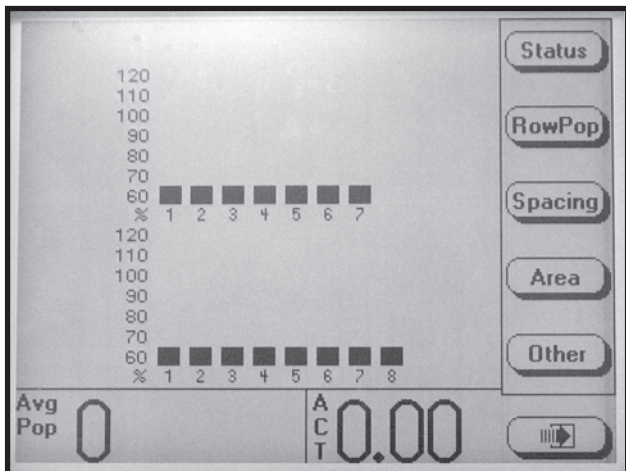
D02200606



**NOTE:** Do not attempt planting before the "Wait For Calibration" message disappears. If planter is moving while sensors are calibrating alarms will be generated.

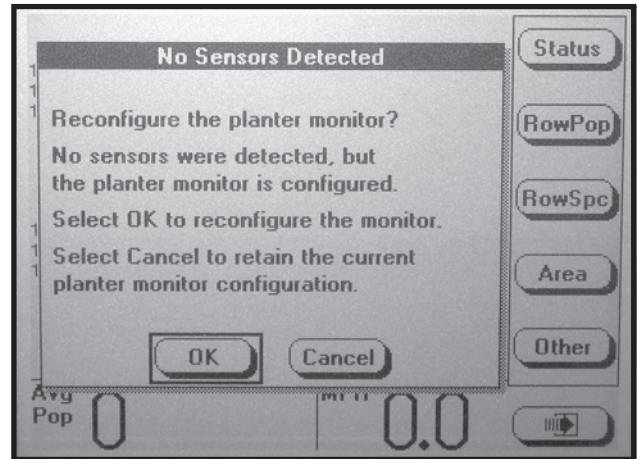
**NOTE:** If the monitor can communicate with the sensors the normal planting mode screen will be displayed.

D0220689a



If the monitor does not detect any sensors the message shown below will appear.

D02200627



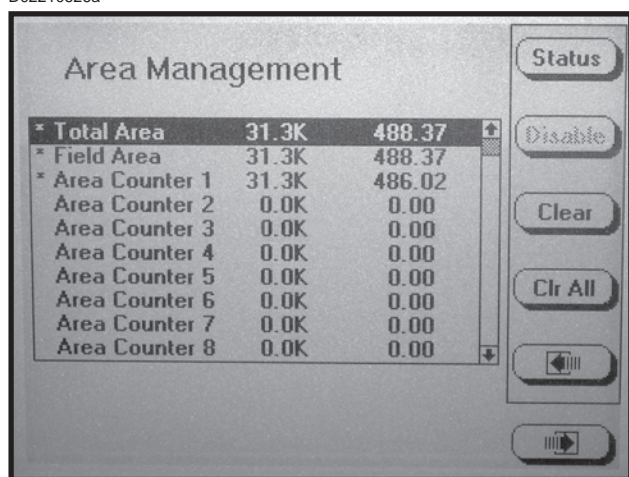
**NOTE:** Selecting OK will reconfigure the monitor requiring all sensors to be re-learned. Selecting CANCEL will maintain the current configuration and the monitor will continue trying to communicate with the sensors.

## AREA MANAGEMENT

There are 10 area counters: Total Area, Field Area and area counters 1 through 8. The Total Area is always active but may be cleared. If it is cleared, the Field Area is also cleared. Field Area and Area Counters 1 through 8 may be cleared independent of each other. They may also be started or stopped at anytime. In addition, there is a Lifetime Area Counter (located on the Mode Selection Screen) which can not be disabled or cleared by the user.

To enter the "Area Management" screen, press the F6 key until the "Area Management" screen appears.

D02210626a



**NOTE:** Total area counter can never be disabled, but can be reset to zero (cleared).

- The asterisk next to the name of the area counter indicates the area counter is enabled and accumulating area.

**EXAMPLE:** In the photo shown above, 31.3K indicates the average seed population for the accumulated area is 31,300 seeds per unit area (acre/hectare). This number has been rounded off. The actual seed population ranges anywhere from 30,500 to 31,499 per unit area. The last column of numbers is the area accumulated (acres/hectares).

- Turn the knob or use the UP or DOWN arrow keys to highlight the desired "Area Counter".
- Press the ENABLE or DISABLE key.

**NOTE:** Up to four area counters can be enabled at one time (two area counters in addition to Total Area and Field Area). If four area counters are already enabled, disable one active area counter in order to enable a new area counter. To disable or enable area counters see next column.

**NOTE:** When a key is dimmed it does not perform any operation on the highlighted area counter.

### ENABLE AREA COUNTER

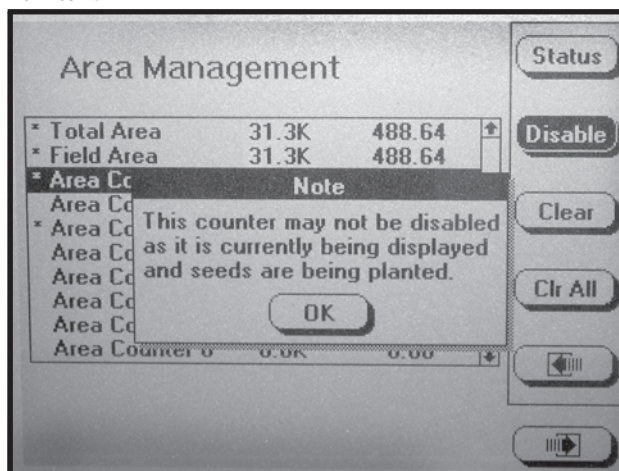
Each of the "Disabled Area Counters" may be enabled up to a total of four "Area Counters". To Enable a Disabled "Area Counter": (a) highlight the desired "Area Counter" by turning the rotary encoder knob or using the UP or DOWN arrow keys; (b) press the ENABLE key or press the knob or ENTER key and an asterisk will appear next to the "Area Counter". The Enabled "Area Counter" starts accumulating area.

### DISABLE AREA COUNTER

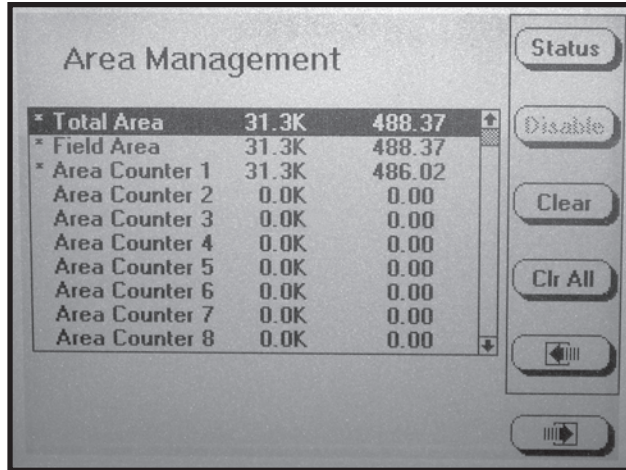
Each of the Enabled Area Counters may be disabled, with the exception of the Total Area Counter. To disable an enabled area counter: (a) highlight that "Area Counter"; (b) press the DISABLE key or press the rotary encoder knob or ENTER key and the asterisk next to the "Area Counter" will disappear. The "Disabled Area Counter" will no longer accumulate area.

**NOTE:** Attempts to disable an Area Counter that is currently being displayed while planting will cause the following alarm.

D02210627a

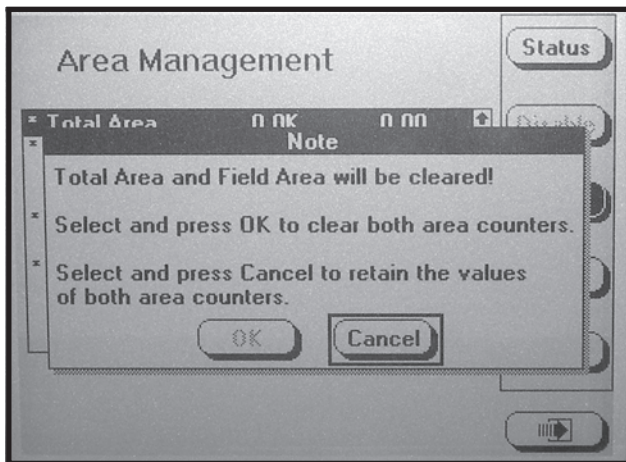


D02210626a



**NOTE:** If the total area is highlighted and the CLEAR key is pressed the following request for confirmation will appear.

D02200612



## CLEAR AREA COUNTER

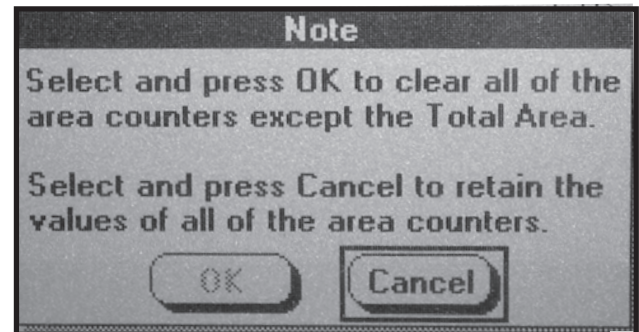
Total Area, Field Area and Area Counters 1 through 8 can be cleared, whether they are Enabled or Disabled. Clearing the "Total Area" counter forces the "Field Area" counter to also be cleared. Clearing any other "Area Counter" including the "Field Area" counter clears only that counter.

**NOTE:** Lifetime Area Counter can never be cleared or disabled.

To clear an Area Counter: (a) highlight the desired area counter, by turning the rotary encoder knob or using the UP or DOWN arrow keys, (b) press the CLEAR key, (c) the request for confirmation shown below will appear, (d) turn the knob or use the UP or DOWN arrow keys to select OK or CANCEL, (e) press the knob or ENTER key to make selection.

To Clear All Area Counters except the "Total Area Counter": (a) select the CLR ALL key; (b) a request for confirmation will appear; (c) turn the knob or use the UP or DOWN arrow keys to select either OK or CANCEL; (d) press the knob or ENTER key to confirm selection.

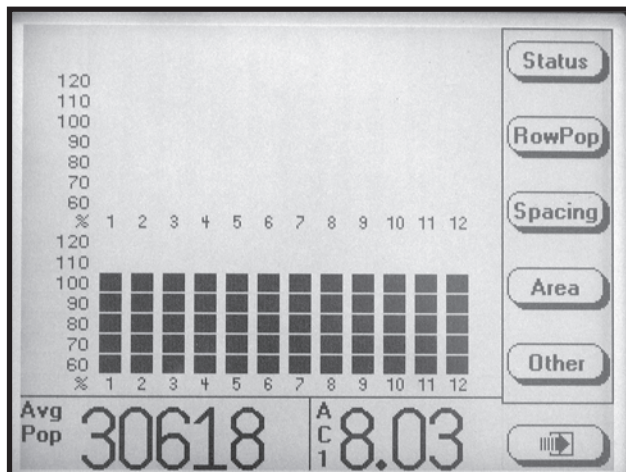
D02210628



## AREA COUNTERS

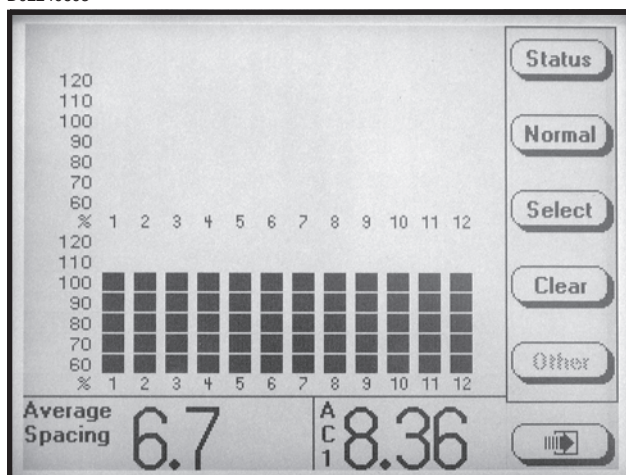
**STEP 1** On the main planting screen press the AREA key.

D02240602



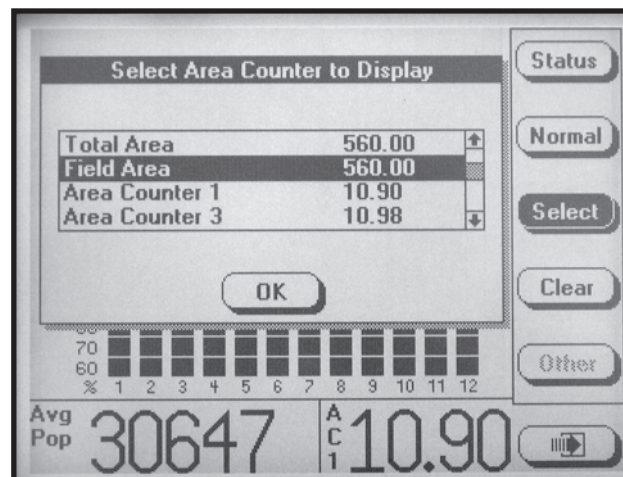
**STEP 2** Press the SELECT key to display the list of the Enabled Area Counters.

D02240603



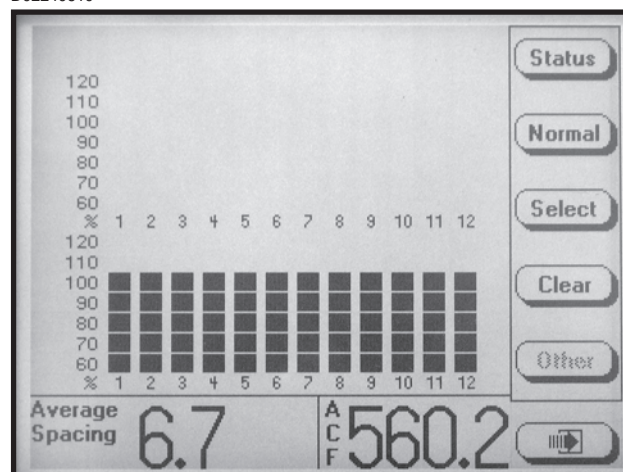
**STEP 3** To select the desired active "Area Counter" turn the knob or use the UP or DOWN arrows to highlight the desired "Area Counter".

D02240609



**STEP 4** Press the knob or ENTER key to select OK. The planting screen will then be displayed. Press NORMAL to display main planting screen.

D02240610



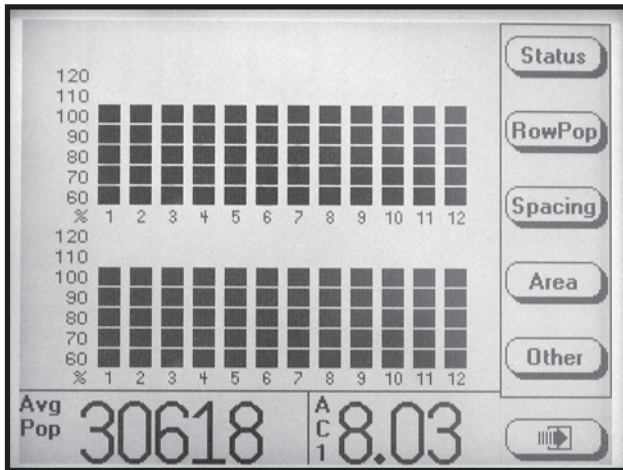
**NOTE:** The abbreviation for the selected area counter numerical value will appear in the bottom R.H. corner of the screen. In the above photo "ACF" represents "Area Counter Field".



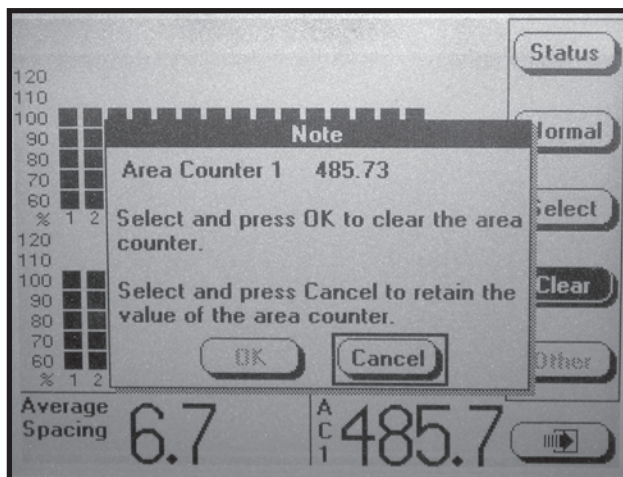
## CLEARING FIELD AREA

To reset the counter, display the main planting screen by pressing the F6 key until it appears. Press the AREA key then select the CLEAR key, a dialog box will appear requesting confirmation to clear. Select OK or CANCEL key by turning the rotary encoder knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to verify the selection.

D02210625



D02210625



**NOTE:** Only the displayed Area Counter can be disabled.

## ACRE COUNT MODE

When a tractor is equipped with a radar distance sensor, accumulating area without a planter attached is possible. Two routes are provided to enter acre count mode: (a) Installation of an Acre Count Switch Kit or (b) entry into Acre Count Mode.

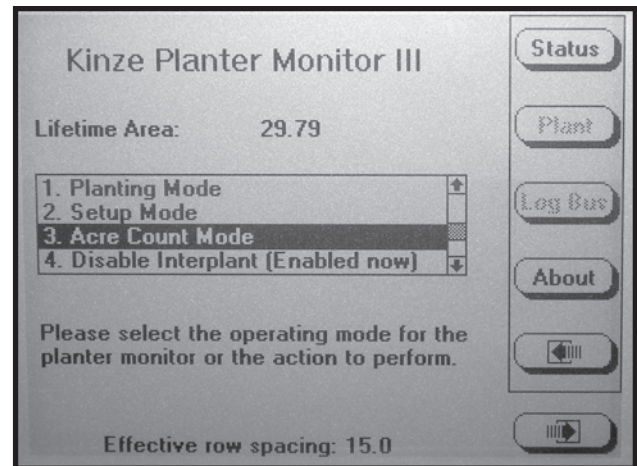
### Acre Count Switch Kit

**STEP 1** With the monitor OFF, attach an Acre Count Switch Kit to the Muxbus connector and then turn monitor ON and advance to STEP 2.

### Acre Count Mode

**STEP 1** Press the F6 key until the “Mode Selection” screen appears. Turn the rotary encoder knob or use the UP or DOWN arrow keys to select “Acre Count Mode”. Press the knob or ENTER key.

D02200618



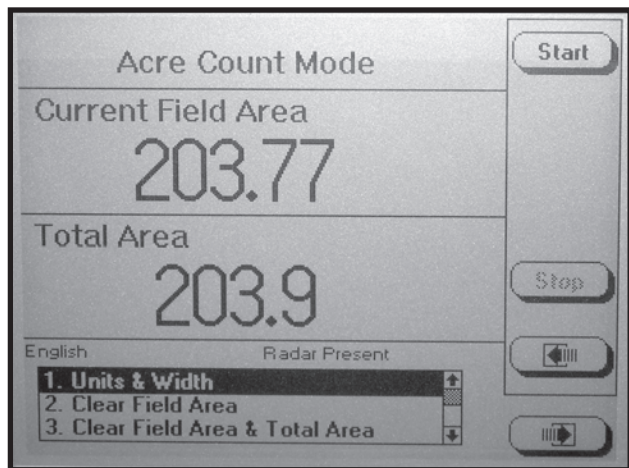
**NOTE:** If no radar unit is detected a warning will appear.

**NOTE:** If using acre count mode, area (acres or hectares) is accumulated in “Lifetime Area Counter”.

**NOTE: DO NOT BEGIN ACCUMULATING AREA IF THE RADAR UNIT HAS NOT BEEN CALIBRATED. Always check the distance pulse count value immediately after entering acre count mode and before pressing start.**

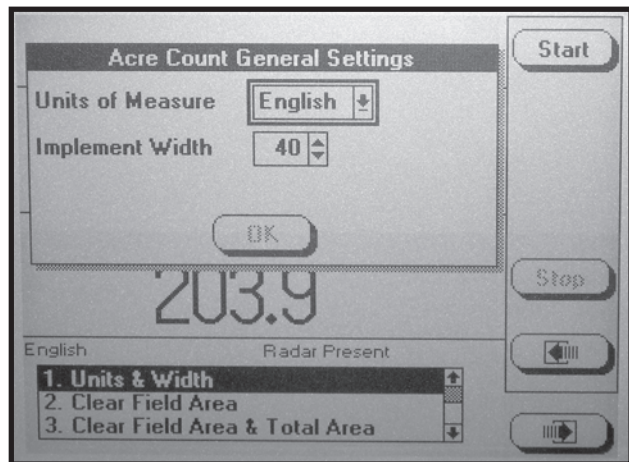
**STEP 2** In the menu, “Units & Width” will be highlighted. Press the knob or ENTER key.

D02200619



**STEP 3** A drop down menu will appear. Select the correct units of measure “English” or “Metric” by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to make the selection. The black box will advance to “Implement Width” field showing implement width in feet.

D02200621



**STEP 4** Press the knob or ENTER key to highlight the field. Turn the knob or use the UP or DOWN arrow keys to select desired number in feet. When desired number is obtained press the knob or ENTER key. The black box will advance to OK key.

**NOTE: The implement width entered in acre count mode has no effect on planting mode settings.**

**STEP 5** Press the knob or ENTER key when done.

**NOTE: Tractor should be at a complete stop before starting.**

**STEP 6** To begin accumulating area press the START key.

**STEP 7** To stop accumulating area or to move to a different location, press the STOP key.

There are two counters in the Acre Count Mode (Field Area Counter and Total Area Counter). The “Field Area” counter can be cleared independent of the “Total Area” counter. Clearing the “Total Area” counter causes the “Field Area” counter to also be cleared.

- To Clear Field Area. Highlight “Clear Field Area” and press the knob or ENTER key. A note will appear verifying the decision to reset the field area to zero. Select OK and press the knob or ENTER key to clear the field to zero. Select Cancel and press the knob or the ENTER key to retain the current field value.

- To Clear Both Field Area And Total Area. Highlight the “Clear Field Area & Total Area” and press the knob or ENTER key. A note will appear to verify the decision to reset the field area and the total area to zero. Select OK and press the knob or ENTER key to clear the field to zero. Select CANCEL and press the knob or ENTER key to retain the current field value.

With planter reconnected to monitor return to normal plant screen by pressing the F6 key until the “Mode Selection” screen appears. Select “Planting Mode” by turning the knob or using the UP or DOWN arrow keys, press the knob or ENTER key.

## REPLACING FAULTY SENSOR(S)

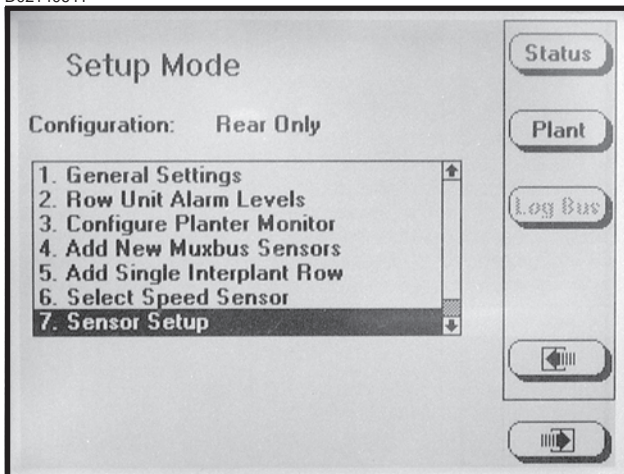
To replace a single faulty sensor: (a) turn OFF the monitor, (b) replace the sensor, (c) turn monitor ON. It will then recognize that a single sensor has been replaced.

**NOTE:** Monitor will beep twice when the new sensor(s) is learned.

To replace more than one faulty sensor:

- STEP 1** Press F6 key until the “Mode Selection” screen appears.
- STEP 2** Select “Setup Mode” by turning the knob or press the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.
- STEP 3** Select “Sensor Setup” by turning the knob or using the UP or DOWN arrow keys. Press the knob or ENTER key to display the highlighted item.

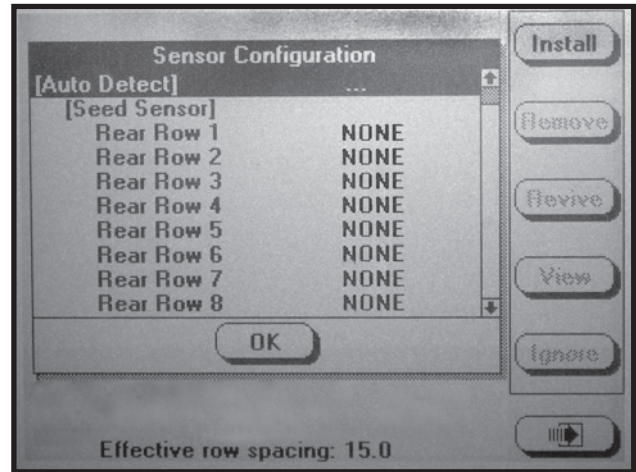
D02140641



- STEP 4** Highlight faulty sensor. Press REMOVE key and unplug sensor. Plug in new sensor and press INSTALL key.

Repeat above procedure for each faulty sensor being replaced.

D02210601a



**NOTE:** Highlighting a sensor and pressing VIEW gives additional information when troubleshooting a problem. If a faulty sensor has been ignored it may be highlighted in the list of sensors, press REVIVE. The monitor will try to communicate with the sensor. If successful, “OK” will appear next to the sensor.

- STEP 5** Press the knob or ENTER key to return to “Setup Mode” screen.
- STEP 6** To return to “Planting Mode” press the PLANT key.

**See “KPM III Electronic Seed Monitor Troubleshooting” in the Maintenance Section.**

## PLANTER MONTIOR MODULE (PMM)

The PMM Magnetic Distance Sensor Package includes a planter-mounted module enclosure with cover and mounting hardware, seed tubes w/sensors, planter harness, planter monitor cable, shaft rotation sensors and magnetic distance sensor components. A customer-supplied Ag Leader Insight display and associated cab harnesses are also required.

**NOTE: See information supplied with Ag Leader Insight display for installation and programming.**

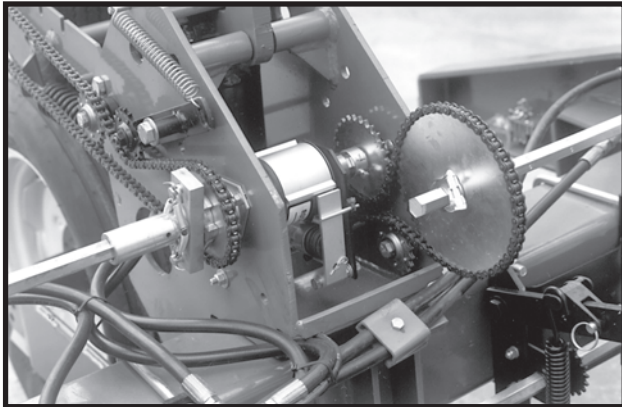
D11200710a



# MACHINE OPERATION

## POINT ROW CLUTCHES

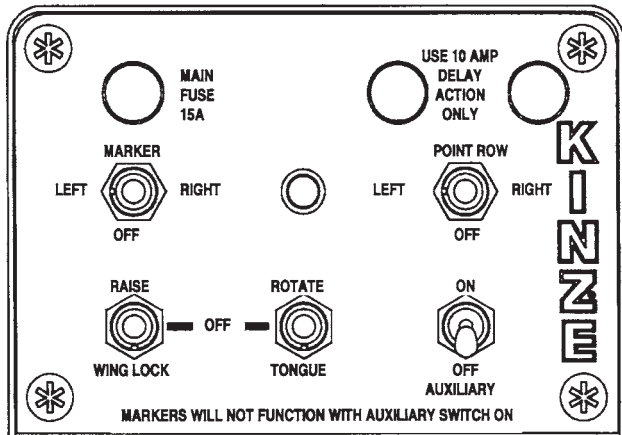
82378-18a



R.H. Side Of Planter Shown

With the use of electric-activated clutches, which disengage the drive, either half of the planter may be shut off for finishing up fields or for long point row situations.

A6865(PLTR153)

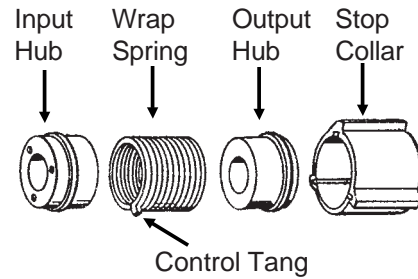


The selector switch for the clutches is located on the planter control console.

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

**NOTE: The liquid fertilizer piston pumps have their own drive wheels, therefore liquid fertilizer application will not be affected by use of the point row clutch.**

PRC019(PLTR48a)



The 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 control tang connected to it is forced back and the spring opens. This allows the input hub to continue rotating without transmitting torque to the output hub; therefore, stopping the planter drive.

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

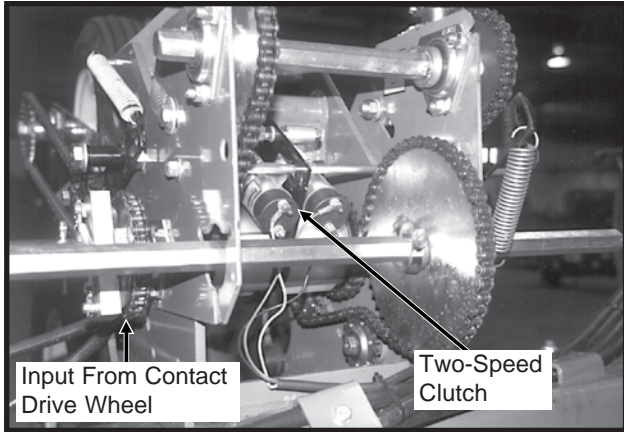
When the operational switch is in the "DISENGAGE" (right or left) position the solenoid coil IS ENERGIZED and the plunger in the solenoid coil pulls the actuator arm against the stop on the stop collar, disengaging the wrap spring and stopping the planter drive.

# MACHINE OPERATION

## TWO-SPEED POINT ROW CLUTCHES

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

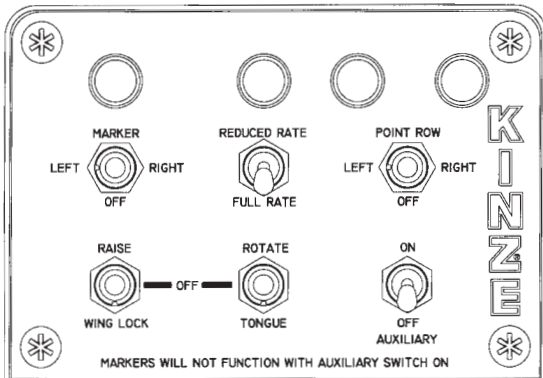
82488-12a



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

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

A7435(TWL81)



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

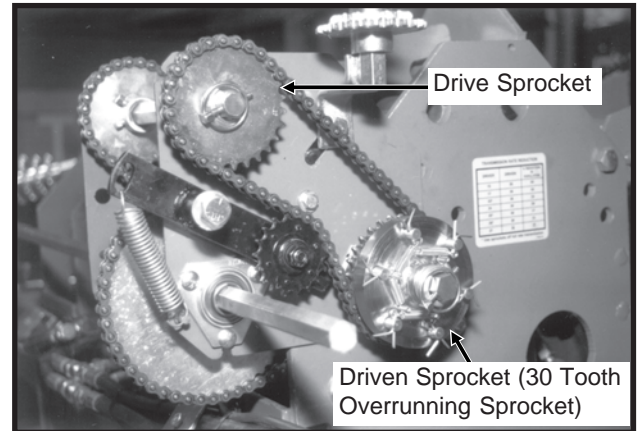
7100-214

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

\* Use sprockets off seed drive transmission

7100-214

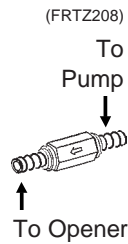
82488-1



# MACHINE OPERATION

## PISTON PUMP PACKAGE

**NOTE:** An optional low rate check valve is available for installation in-line between the liquid fertilizer piston pump and the liquid fertilizer openers to ensure equal distribution of product at low rates. The check valve also eliminates the need for an anti-siphon loop if the valve is installed as close as possible to the fertilizer opener drop tube.

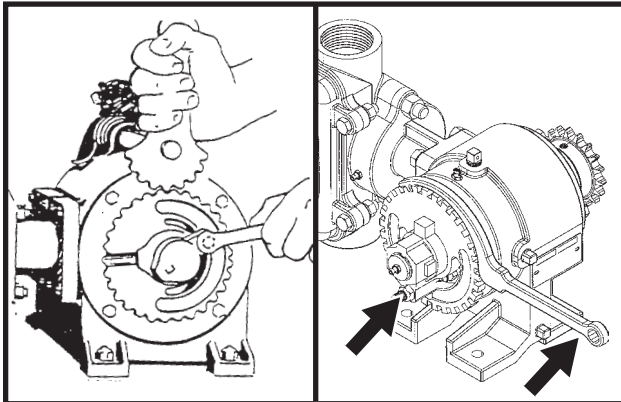


If the machine is equipped with the piston pump option, the rate of liquid fertilizer application is determined by the piston pump settings.

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  $\frac{3}{8}$ " 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  $\frac{3}{8}$ " lock nut being careful not to over tighten.

(PLTR9/A12330b)

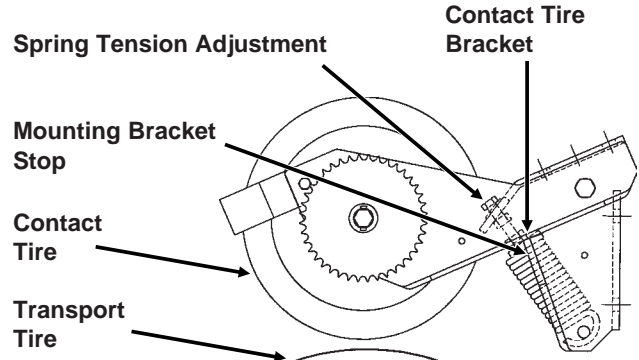


The operator and instruction manual shipped with the pump and flow divider should be kept and stored with this manual for future reference.

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

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

(FF74)

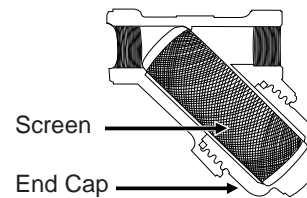


## CLEANING

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

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

(INS220)



See "Piston Pump Storage" (If Applicable) in the Maintenance Section of the manual.

# MACHINE OPERATION

## LIQUID FERTILIZER PISTON PUMP APPLICATION RATES GALLONS PER ACRE

Applies To Model LM-2455-R And Model NGP-6055 Piston Pumps With 18 Tooth Sprocket (Planter Equipped With One Piston Pump)

Pump Setting	1	2	3	4	5	6	7	8	9	10
16 Row 38"	2.7	5.5	8.2	10.9	13.7	16.4	19.1	21.9	24.6	27.4
24 Row 20"	3.5	6.9	10.4	13.8	17.3	20.7	24.0	27.6	31.1	34.4
24 Row 22"	3.1	6.3	9.4	12.5	15.6	18.8	21.8	25.0	28.2	31.1
24 Row 30"	2.2	4.6	6.8	9.1	11.4	13.7	16.0	18.3	20.6	22.8
36 Row 20"	2.3	4.6	6.9	9.2	11.5	13.8	16.0	18.4	20.7	22.9

The chart above is for planters equipped with contact drive. See "Tire Pressure" for recommended tire pressures. This chart is based on average wheel slippage and liquid viscosities.

Measure and weigh one gallon of actual fertilizer solution to determine exact application rate. This chart was calculated based on a solution weighing ten pounds per gallon.

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

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

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

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

20" multiply by 1.50

22" multiply by 1.36

38" multiply by 0.79



# MACHINE OPERATION

## LIQUID FERTILIZER PISTON PUMP APPLICATION RATES GALLONS PER ACRE

Applies To Model LM-2455-R And Model NGP-6055 Piston Pumps With 18 Tooth Sprocket (Planter Equipped With Two Piston Pumps)

Pump Setting	1	2	3	4	5	6	7	8	9	10
16 Row 38"	5.4	11.0	16.4	21.8	27.3	32.8	38.2	43.7	49.1	54.7
24 Row 20"	7.0	13.8	20.8	27.6	34.6	41.4	48.0	55.2	62.2	68.8
24 Row 22"	6.2	12.6	18.8	25.0	31.2	37.6	43.6	50.0	56.4	62.2
24 Row 30"	4.4	9.2	13.6	18.2	22.8	27.4	32.0	36.6	41.2	45.6
36 Row 20"	4.6	9.2	13.8	18.4	23.0	27.6	32.0	36.8	41.4	45.8

The chart above is for planters equipped with contact drive. See "Tire Pressure" for recommended tire pressures. This chart is based on average wheel slippage and liquid viscosities.

Measure and weigh one gallon of actual fertilizer solution to determine exact application rate. This chart was calculated based on a solution weighing ten pounds per gallon.

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

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

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

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

20" multiply by 1.50

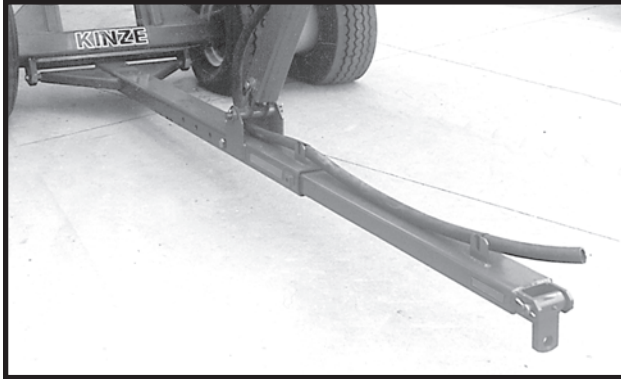
22" multiply by 1.36

38" multiply by 0.79

# MACHINE OPERATION

## REAR TRAILER HITCH (16 Row 30/38" And 24 Row 30" Sizes Only)

CLR3-96c



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

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

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

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

## TRANSPORTING THE PLANTER



**WARNING: Always make sure safety/warning lights, reflective decals and SMV sign are in place and visible prior to transporting the machine on public roads. In this regard, check and comply with all federal, state/provincial and local regulations.**

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



**WARNING: Always Install all safety lockup devices before transporting the planter.**

## 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 (Km/h)
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 (Km/h)	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.)

# MACHINE OPERATION

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## PLANTING SPEED

Planters are designed to operate within a speed range of 2 to 8 MPH. Generally, higher ground speeds will cause more variation in seed spacing. Speeds above 5.5 MPH are typically not recommended. See “Planting And Application Rate Charts” in Seed Meter Operation/Maintenance section for specific recommendations.

## 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 “Planting And Application Rate Charts” in Seed Meter Operation/Maintenance section and “Checking Seed Population and “Checking Granular Chemical Application Rate” at end of this section.

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

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

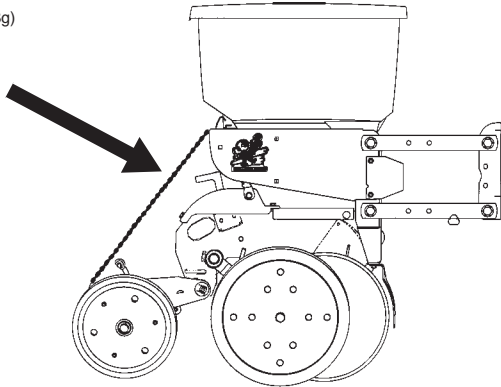
- Hoses And Fittings
- Bolts And Nuts
- Cotter Pins And Spring Pins
- Drive Chain Alignment

# MACHINE OPERATION

## CHECKING SEED POPULATION

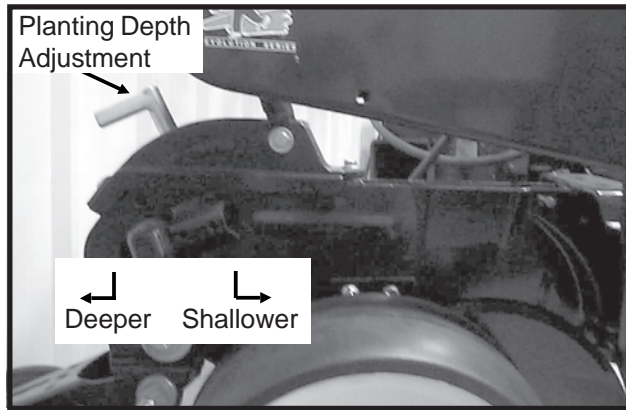
1. Tie up one or more sets of closing wheels by running a chain or rubber tarp strap between the hopper support panel and closing wheels. It may be necessary to decrease closing wheel arm spring tension.

(RU113g)



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

D020705102



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

LENGTH OF ROW IN FEET AND INCHES				
Fraction Of Acre	Row Width			
	20"	22"	30"	38"
$\frac{1}{1000}$	26' 2"	23' 9"	17' 5"	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  $\frac{1}{1000}$  of an acre by 1000. This will give you total population.

EXAMPLE: With 30" row spacing 17' 5" equals  $\frac{1}{1000}$  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 population 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 driveline 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 seed cell has lost its seed. If two seeds are found within a short distance of each other, the seed cell has metered two seeds instead of one.

See "Seed Metering System Troubelshooting" in the Seed Meter Operation/Maintenance section of this manual.

# MACHINE OPERATION

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## Determining Pounds Per Acre

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/Grain Sorghum = 56 Pounds
- 1 Bushel Cotton = 32 Pounds

If seeds per pound information is not available the following are averages:

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

If seed population check shows planting rate is significantly different than seed rate chart shows or if a particular meter is not planting accurately, see "Seed Metering System Troubelshooting" in the Seed Meter Operation/Maintenance sectiion of this manual.

# MACHINE OPERATION

## CHECKING GRANULAR CHEMICAL APPLICATION RATE

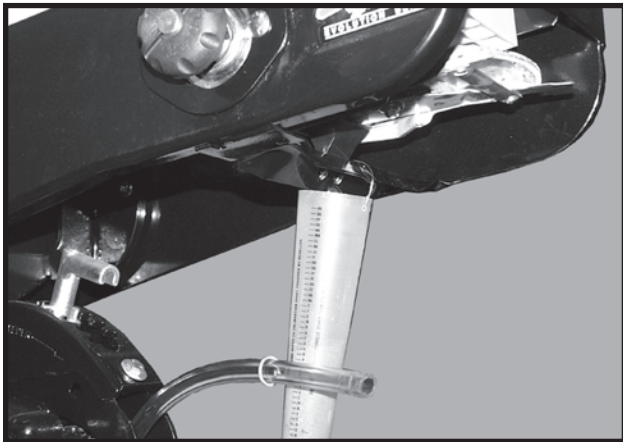
Many things can affect the rate of delivery of granular chemicals such as temperature, humidity, speed, ground conditions, flowability of different material or any obstruction in the meter.



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

A field check is important to determine correct application rates.

D05149901



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

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

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

POUNDS PER ACRE FACTOR FOR GIVEN ROW WIDTH	
Row Width	Factor
20"	1.25
22"	1.13
30"	0.83
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.

# SEED METER OPERATION/MAINTENANCE

## GENERAL PLANTING RATE INFORMATION

These planting rate charts are applicable to KINZE® Model 3700 EdgeVac® Front Folding Planters. See "Tire Pressure" for recommended tire pressures.

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

The following seed discs are available for use with the KINZE® EdgeVac® Seed Metering System:

**Corn/Popcorn:** 39 cell. Light blue color-coded. For all seed corn grades from 35 to 70 pounds per 80,000 kernel count unit or popcorn seed size range from 2210 to 4200 seeds per pound. Also used for No. 1 sunflower seeds. *When planting popcorn this seed disc requires use of seed baffle. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Low-Rate Corn/Popcorn:** 24 cell. Light green color-coded. For all seed corn grades from 35 to 70 pounds per 80,000 kernel count unit or popcorn seed size range from 2210 to 4200 seeds per pound. Also used for No. 1 sunflower seeds. *When planting popcorn this seed disc requires use of seed baffle. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Soybean:** 60 cell. Black color-coded. Seed size range from 2200 to 4000 seeds per pound. *This seed disc requires use of seed baffle. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Soybean, High-Rate:** 120 cell. Dark blue color-coded. Seed size range from 2200 to 4000 seeds per pound. *This seed disc requires use of seed baffle. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Milo/Grain Sorghum:** 60 cell. Yellow color-coded. Seed size range from 10,000 to 20,000 seeds per pound. *This seed disc requires use of seed baffle and cleanout brush. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell):** 20 cell. Brown color-coded. Cotton seed size range from 3800 to 4400 seeds per pound. *This seed disc requires use of cleanout brush w/ball-type ejector. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Small Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell):** 20 cell. Grey color-coded. Cotton seed size range from 4200 to 5200 seeds per pound. *This seed disc requires use of cleanout brush w/ball-type ejector. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Cotton, Acid-Delinted/Small Dry Edible Bean:** 54 cell. Dark green color-coded. Cotton seed size range from 3800 to 4400 seeds per pound or dry edible bean seed size range from 1200 to 2500 seeds per pound. *This seed disc requires use of cleanout brush w/ball-type ejector. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Small Cotton/Sunflower:** 54 cell. White color-coded. Cotton seed size range from 4200 to 5200 seeds per pound or sunflower seed sizes No. 2, 3 and 4. *This seed disc requires use of cleanout brush w/ball-type ejector. See "Seed Meter" on pages 7-2 and 7-3 for additional information.*

**Large Dry Edible Bean:** 54 cell. Tan color-coded. Seed size range from 800 to 1200 seeds per pound.

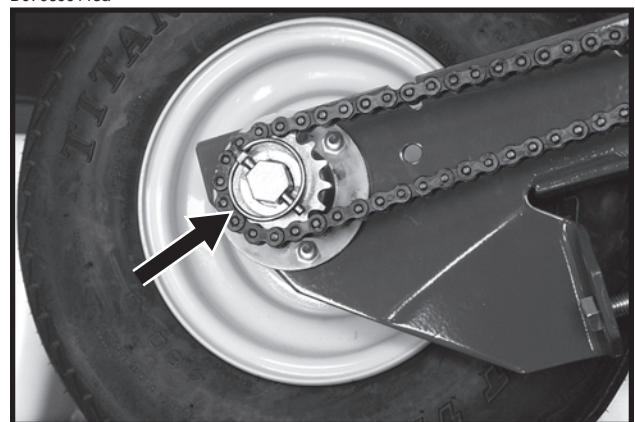
**NOTE: Due to a multitude of variables, seed spacing can be adversely affected at speeds above 5.5 MPH.**

**NOTE: See "Seed Meter Singulator Brush And Vacuum Level Adjustments" on page 7-26.**

**NOTE: 22, 28 and 44 tooth drive sprockets are NOT applicable to all rate charts. Check chart titles to ensure proper rate chart is selected. 22 tooth sprockets require use of 148 pitch No. 40 chains, 28 tooth sprockets require use of 150 pitch No. 40 chains and 44 tooth sprockets require use of 158 pitch No. 40 chains.**

**NOTE: When using the 54 cell sunflower disc, use 15 tooth drive sprocket at contact wheels and replace 28 tooth drive sprocket at wheel module reverser plates with 19 tooth sprocket. 15 tooth sprockets require use of 144 pitch No. 40 chains. Applicable sprockets, chains and instructions supplied in G1K469 Sunflower Rate Reduction Kit.**

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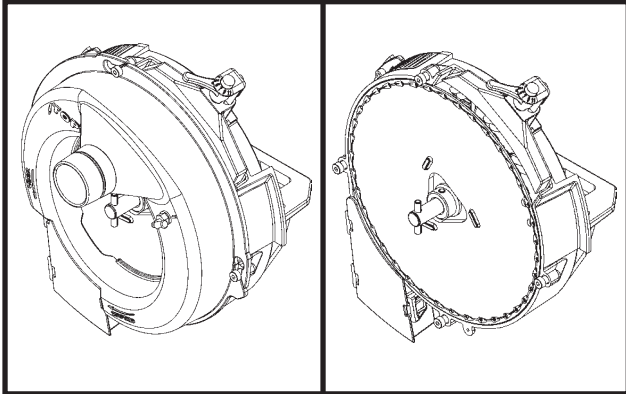


**NOTE: Contact wheel drive sprocket referenced at top of each rate chart.**

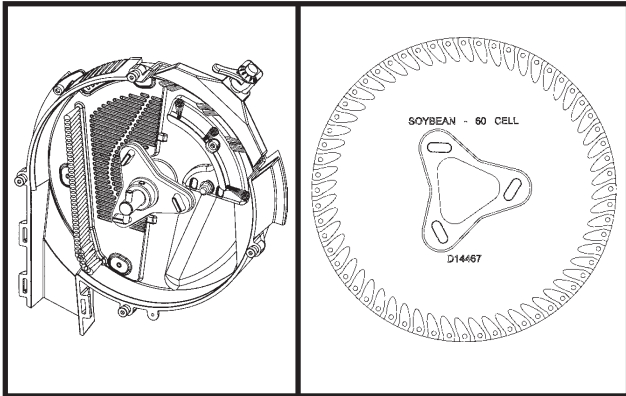
# SEED METER OPERATION/MAINTENANCE

## SEED METER

(METR71/METR71a)

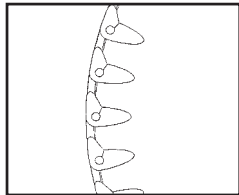


(METR70/D14467a)

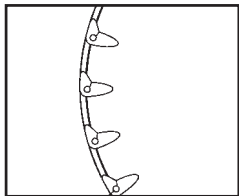


The seed discs below and at right are available for use with the KINZE® EdgeVac® Seed Metering System:

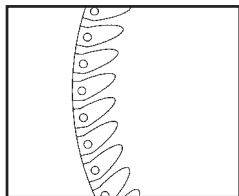
**Corn/Popcorn:** 39 cell. For all seed corn grades from 35 to 70 pounds per 80,000 kernel count unit. Popcorn seed size range from 2210 to 4200 seeds per pound. Also used for No. 1 sunflower seeds. (*Light blue color-coded.*) (D14465)



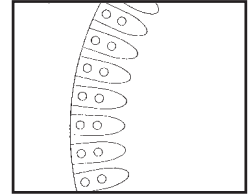
**Low-Rate Corn/Popcorn:** 24 cell. For all seed corn grades from 35 to 70 pounds per 80,000 kernel count unit. Popcorn seed size range from 2210 to 4200 seeds per pound. Also used for No. 1 sunflower seeds. (*Light green color-coded.*) (D16734a)



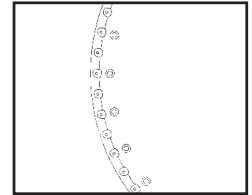
**Soybean:** 60 cell. Seed size range from 2200 to 4000 seeds per pound. (*Black color-coded.*) (D14467a)



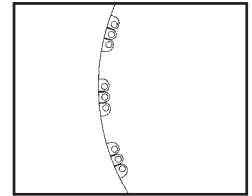
**Soybean, High-Rate:** 120 cell. Seed size range from 2200 to 4000 seeds per pound. (*Dark blue color-coded.*) (D14468a)



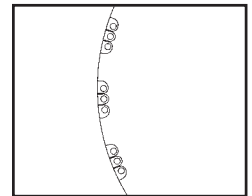
**Milo/Grain Sorghum:** 60 cell. Seed size range from 10,000 to 20,000 seeds per pound. (*Yellow color-coded.*) (D17050)



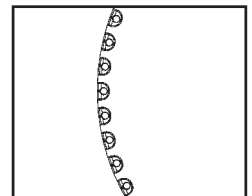
**Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell):** 20 cell. Cotton seed size range from 3800 to 4400 seeds per pound. (*Brown color-coded.*) (D17187)



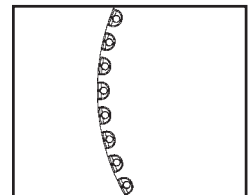
**Small Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell):** 20 cell. Cotton seed size range from 4200 to 5200 seeds per pound. (*Grey color-coded.*) (D17187)



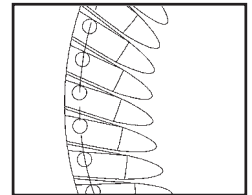
**Cotton, Acid-Delinted/Small Dry Edible Bean:** 54 cell. Cotton seed size range from 3800 to 4400 seeds per pound. Dry edible bean seed size range from 1200 to 2500 seeds per pound. (*Dark green color-coded.*) (D17186)



**Small Cotton/Sunflower:** 54 cell. Cotton seed size range from 4200 to 5200 seeds per pound. Sunflower seed sizes No. 2, 3 and 4. (*White color-coded.*) (D17186)



**Large Dry Edible Bean:** 54 cell. Seed size range from 800 to 1200 seeds per pound. (*Tan color-coded.*) (D14477)



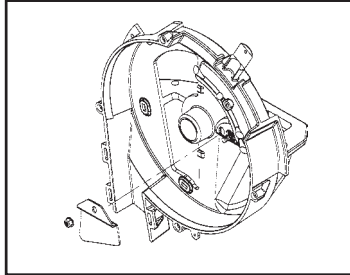
Install the selected seed disc. Position the vacuum cover on the meter by aligning the keyhole slots over the bolt heads. Push the cover on the meter and turn counter clockwise to lock in place. **See following page for additional components required with specific seed discs.**



# SEED METER OPERATION/MAINTENANCE

**NOTE:** Use of damaged seed or seed containing foreign material will cause plugging of seed disc orifices and require more frequent seed meter cleanout to prevent underplanting.

(MTER74)

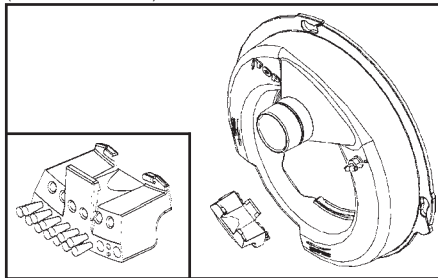


## **SEED BAFFLE**

- Milo/Grain Sorghum
- Soybeans
- Popcorn

The **seed baffle** is designed to prevent excessive seed in the meter from restricting air flow through the seed. **Used with 60 Cell Milo/Grain Sorghum Disc, 60 Cell Soybean Disc, 120 Cell High-Rate Soybean Disc and 39 Cell and 24 Cell Popcorn Discs.**

(A12133c/A12133aa)



## **CLEANOUT BRUSH**

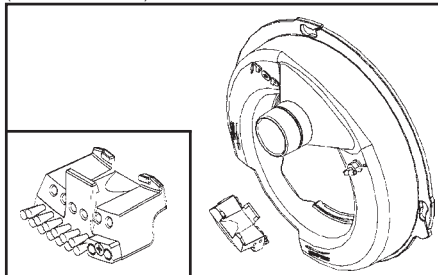
- Milo/Grain Sorghum

The **cleanout brush** is designed to remove foreign material and seed remnants to help prevent plugging of seed disc orifices.

**Used with 60 Cell Milo/Grain Sorghum Disc.**

## **CLEANOUT BRUSH W/BALL-TYPE EJECTOR**

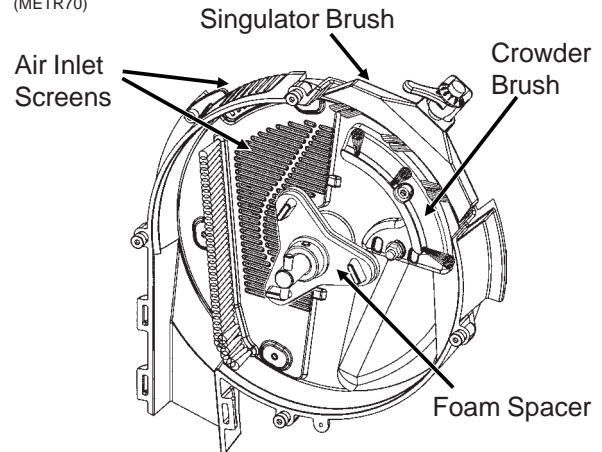
(A12154a/A12133a)



- Cotton
- Small Edible Beans
- No. 2, No. 3 And No. 4 Sunflowers

The **cleanout brush w/ball-type ejector** is designed to eject seed remnants from the seed disc orifices. **Used with 20 Cell Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell) Discs; 54 Cell Acid-Delinted Cotton/Small Dry Edible Bean; and Small Cotton/Sunflower Discs.**

(METR70)

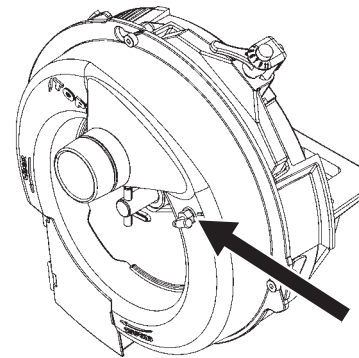


The crowder brush aids in the singulation of small flat seeds by (a) crowding seeds to the outer perimeter of the seed disc and (b) orienting seeds to allow the singulator brush to be more effective.

The air inlet screens allow air to enter the system and aids in keeping field residue or other foreign material out of the meter.

The foam spacer gently preloads the seed disc against the vacuum cover when no vacuum is present.

(METR71)



The  $\frac{3}{16}$ " hose barb elbow on the seed meter vacuum cover allows measurement of vacuum level at each meter. A customer-supplied vacuum gauge is required.

See "Seed Meter Singulator Brush And Vacuum Level Adjustments", "Seed Meter Maintenance" and "Preparation For Storage" for additional EdgeVac® Seed Metering System information.

# SEED METER OPERATION/MAINTENANCE

## CONVENTIONAL SEED HOPPERS

One tablespoon of **powdered graphite** should be mixed with the seed each time the hoppers are filled. Regular graphite use will prolong the life of the brush-type seed meter components, improve seed spacing, and may reduce buildup of seed treatments. Apply graphite around the outer perimeter of the hopper as shown below.

D05300104b



**NOTE: DO NOT** apply graphite only in the center of the hopper. It will filter too quickly through the seed and not distribute as evenly as desired.

**NOTE: Additional graphite or talc may be required to retard buildup of seed treatments on meter components. More frequent cleaning of monitor seed tubes may be necessary due to use of additional graphite or talc.**

**Talc seed lubricant** may be used in lieu of or in addition to graphite to reduce seed treatment buildup on seed discs and meter components. Coat seed disc and brushes with talc before installing meter. Fill hopper  $\frac{1}{2}$  full of seed, add  $\frac{1}{4}$  cup of talc and **mix thoroughly**. Finish filling hopper, add another  $\frac{1}{4}$  cup of talc and **mix thoroughly**. (For sunflowers, increase talc amounts from  $\frac{1}{4}$  cup to  $\frac{1}{2}$  cup in both areas.) 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 discs and/or brushes.

**NOTE: Some liquid seed treatments or inoculants may create buildup on the seed discs 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 may cause bridging of the seed in the meter, reducing population or stopping the meter from planting.

## SDS SEED DELIVERY SYSTEM

**IMPORTANT: Use powdered graphite or talc with each 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.**

82354-1e



Powdered graphite should be added with the seed each time the bulk seed hoppers are filled. Use 2 cups per hopper fill. Graphite should be added in layers as the bulk seed hoppers are filled. The use of powdered graphite will prolong the life of the seed meter components, reduce buildup of seed treatment on components in the meter and improve seed spacing.

**Talc seed lubricant** may be used in lieu of or in addition to graphite to reduce seed treatment buildup on bulk fill auger system components, seed discs and other meter components and will improve meter performance. Coat seed discs and brushes with talc before installing meters. Fill each bulk hopper  $\frac{1}{2}$  full of seed, add  $4\frac{1}{2}$  cups of talc and mix thoroughly. Finish filling bulk seed hoppers, add another  $4\frac{1}{2}$  cups of talc. (For sunflowers, increase talc amounts from  $4\frac{1}{2}$  cups to 9 cups in both areas.) 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 additional talc to prevent seed treatment buildup on seed discs and/or meter components.

# SEED METER OPERATION/MAINTENANCE

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## SDS SEED DELIVERY SYSTEM (Continued)

**NOTE: Some liquid seed treatments or inoculants may create buildup on seed discs or meter components. 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.

**NOTE: See "Seed Lubrication" in SDS Seed Delivery System Operation section for additional information.**

## SEED METER CLEANOUT (Conventional Seed Hoppers)

To maintain genetic purity, thorough seed meter cleanout is important.

To clean the seed meter, disengage the seed drive and remove the seed hopper and meter. Lay the hopper on its right side.

Disassemble seed meter by rotating vacuum cover clockwise to align keyhole slots with bolt heads. Lift off cover. Remove seed disc. Empty the meter and hopper by allowing the seed to run out of the meter. Inspect brushes in meter to ensure all seed is removed. Replace seed disc and install vacuum cover.

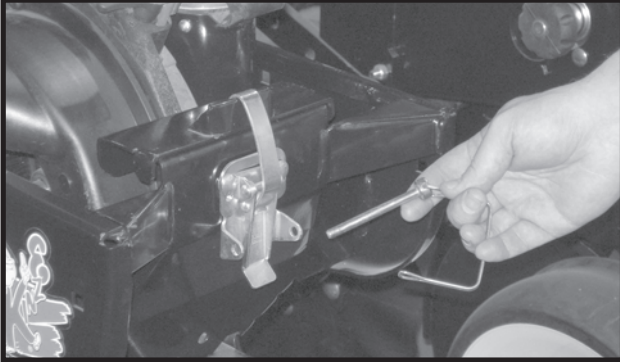
**NOTE: Use of damaged seed or seed containing foreign material will cause plugging of seed cell orifices and require more frequent seed meter cleanout to prevent underplanting.**

# SEED METER OPERATION/MAINTENANCE

## SEED METER CLEANOUT (SDS Seed Delivery System)

To maintain genetic purity, thorough seed meter cleanout is important.

D011006301

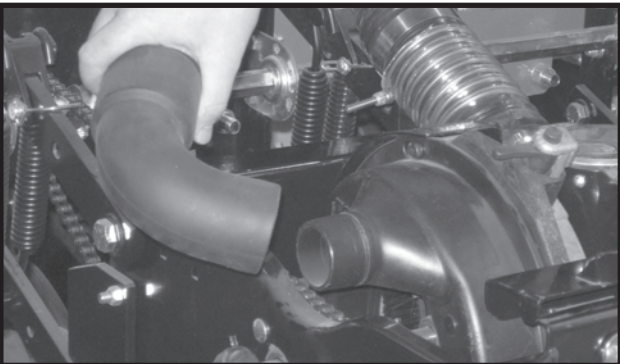


D011006303

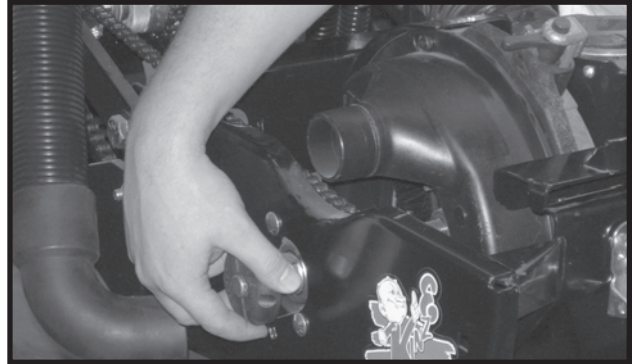


To clean the seed meter, remove locking pin and release latch that secures seed meter and mount.

D011006304

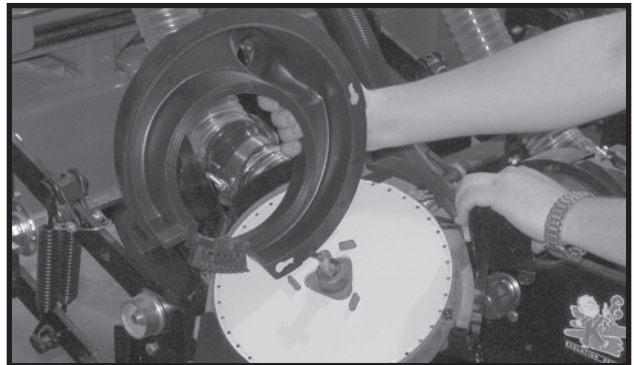


D011006305



Disconnect drop hose from seed meter and seed meter drive and remove assembly from row unit.

D011006308



Disassemble vacuum cover and remove seed disc from seed meter. Allow all seed to exit meter and inspect for complete clean-out.

Reassemble.

Follow procedure on all rows.

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR CORN/POPCORN 39 CELL DISC  
22 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
34,813	31,648	23,209	18,323	15	28	4 to 6	9.0
36,102	32,820	24,068	19,001	15	27	4 to 6	8.7
37,491	34,083	24,994	19,732	15	26	4 to 6	8.4
38,991	35,446	25,994	20,521	15	25	4 to 6	8.0
39,455	35,868	26,303	20,766	17	28	4 to 6	7.9
40,615	36,923	27,077	21,376	15	24	4 to 6	7.7
40,916	37,196	27,277	21,535	17	27	4 to 6	7.7
42,381	38,528	28,254	22,306	15	23	4 to 6	7.4
42,490	38,627	28,326	22,363	17	26	4 to 6	7.4
44,096	40,088	29,398	23,209	19	28	4 to 6	7.1
44,189	40,172	29,460	23,258	17	25	4 to 6	7.1
45,730	41,572	30,486	24,068	19	27	4 to 6	6.9
46,031	41,846	30,687	24,227	17	24	4 to 6	6.8
47,489	43,171	31,659	24,994	19	26	4 to 6	6.6
48,032	43,665	32,021	25,280	17	23	4 to 6	6.5
49,388	44,898	32,925	25,994	19	25	4 to 6	6.4
51,303	46,639	34,202	27,002	15	19	4 to 6	6.1
51,446	46,769	34,297	27,077	19	24	4 to 6	6.1
53,380	48,527	35,587	28,095	23	28	4 to 6	5.9
53,683	48,802	35,788	28,254	19	23	4 to 6	5.8
55,357	50,325	36,905	29,135	23	27	4 to 6	5.7
55,701	50,637	37,134	29,316	24	28	4 to 6	5.6
57,339	52,126	38,226	30,178	15	17	4 to 6	5.5
57,764	52,513	38,509	30,402	24	27	4 to 6	5.4
58,144	52,858	38,763	30,602	17	19	4 to 6	5.4
59,786	54,350	39,857	31,466	23	25	4 to 6	5.2
60,343	54,857	40,228	31,759	26	28	4 to 6	5.2
62,277	56,615	41,518	32,777	23	24	4 to 6	5.0
62,385	56,714	41,590	32,834	24	25	4 to 6	5.0
62,663	56,967	41,776	32,981	27	28	4 to 6	5.0
64,984	59,077	43,323	34,202	23	23	4 to 6	4.8
67,391	61,265	44,927	35,469	28	27	4 to 6	4.7
67,484	61,349	44,989	35,518	27	26	4 to 6	4.6
67,810	61,645	45,206	35,689	24	23	4 to 6	4.6
69,983	63,621	46,655	36,833	28	26	4 to 6	4.5
70,183	63,803	46,789	36,938	27	25	4 to 6	4.5
70,635	64,214	47,090	37,176	25	23	4 to 6	4.4
72,629	66,027	48,420	38,226	19	17	4 to 6	4.3
73,107	66,461	48,738	38,478	27	24	4 to 6	4.3
73,460	66,782	48,974	38,663	26	23	4 to 6	4.3
75,815	68,923	50,543	39,903	28	24	4 to 6	4.1
76,286	69,351	50,857	40,150	27	23	4 to 6	4.1
78,665	71,514	52,443	41,403	23	19	4 to 6	4.0
79,111	71,919	52,741	41,638	28	23	4 to 6	4.0
82,085	74,623	54,724	43,203	24	19	4 to 6	3.8
85,506	77,732	57,004	45,003	25	19	4 to 6	3.7
87,920	79,927	58,613	46,274	23	17	4 to 6	3.6
88,926	80,842	59,284	46,803	26	19	4 to 6	3.5
91,743	83,402	61,162	48,286	24	17	4 to 6	3.4
92,346	83,951	61,564	48,603	27	19	4 to 6	3.4
95,565	86,877	63,710	50,297	25	17	4 to 6	3.3
95,766	87,060	63,844	50,403	28	19	4 to 6	3.3
99,388	90,352	66,258	52,309	26	17	4 to 6	3.2
99,643	90,584	66,428	52,443	23	15	4 to 6	3.1
103,210	93,828	68,807	54,321	27	17	4 to 6	3.0

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR CORN/POPCORN 39 CELL DISC  
28 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
44,307	40,280	29,538	23,320	15	28	4 to 6	7.1
45,948	41,771	30,632	24,183	15	27	4 to 6	6.8
47,716	43,378	31,810	25,114	15	26	4 to 6	6.6
49,624	45,113	33,083	26,118	15	25	4 to 6	6.3
50,215	45,650	33,477	26,429	17	28	4 to 6	6.2
51,692	46,993	34,461	27,206	15	24	4 to 6	6.1
52,075	47,341	34,717	27,408	17	27	4 to 6	6.0
53,940	49,036	35,960	28,389	15	23	4 to 6	5.8
54,078	49,162	36,052	28,462	17	26	4 to 6	5.8
56,123	51,021	37,415	29,538	19	28	4 to 6	5.6
56,241	51,128	37,494	29,600	17	25	4 to 6	5.6
58,201	52,910	38,801	30,632	19	27	4 to 6	5.4
58,584	53,258	39,056	30,834	17	24	4 to 6	5.4
60,440	54,945	40,293	31,810	19	26	4 to 6	5.2
61,131	55,574	40,754	32,174	17	23	4 to 6	5.1
62,858	57,143	41,905	33,083	19	25	4 to 6	5.0
65,295	59,359	43,530	34,366	15	19	4 to 6	4.8
65,477	59,524	43,651	34,461	19	24	4 to 6	4.8
67,938	61,762	45,292	35,757	23	28	4 to 6	4.6
68,323	62,112	45,549	35,960	19	23	4 to 6	4.6
70,454	64,049	46,970	37,081	23	27	4 to 6	4.5
70,892	64,447	47,261	37,312	24	28	4 to 6	4.4
72,977	66,343	48,651	38,409	15	17	4 to 6	4.3
73,518	66,834	49,012	38,693	24	27	4 to 6	4.3
74,001	67,274	49,334	38,948	17	19	4 to 6	4.2
76,091	69,173	50,727	40,048	23	25	4 to 6	4.1
76,800	69,818	51,200	40,421	26	28	4 to 6	4.1
79,261	72,056	52,841	41,716	23	24	4 to 6	4.0
79,399	72,181	52,933	41,789	24	25	4 to 6	4.0
79,753	72,503	53,169	41,975	27	28	4 to 6	3.9
82,707	75,188	55,138	43,530	23	23	4 to 6	3.8
85,770	77,973	57,180	45,142	28	27	4 to 6	3.7
85,888	78,080	57,259	45,204	27	26	4 to 6	3.7
86,303	78,457	57,535	45,423	24	23	4 to 6	3.6
89,069	80,972	59,380	46,879	28	26	4 to 6	3.5
89,324	81,203	59,549	47,013	27	25	4 to 6	3.5
89,899	81,727	59,933	47,315	25	23	4 to 6	3.5
92,438	84,034	61,625	48,651	19	17	4 to 6	3.4
93,046	84,587	62,030	48,971	27	24	4 to 6	3.4
93,495	84,996	62,330	49,208	26	23	4 to 6	3.4
96,492	87,720	64,328	50,785	28	24	4 to 6	3.3
97,091	88,265	64,727	51,101	27	23	4 to 6	3.2
100,119	91,018	66,746	52,694	23	19	4 to 6	3.1
100,687	91,534	67,125	52,993	28	23	4 to 6	3.1
104,472	94,975	69,648	54,985	24	19	4 to 6	3.0
108,825	98,932	72,550	57,276	25	19	4 to 6	2.9
111,898	101,726	74,599	58,894	23	17	4 to 6	2.8
113,178	102,889	75,452	59,568	26	19	4 to 6	2.8
116,763	106,148	77,842	61,454	24	17	4 to 6	2.7
117,531	106,847	78,354	61,859	27	19	4 to 6	2.7
121,628	110,571	81,086	64,015	25	17	4 to 6	2.6
121,884	110,804	81,256	64,150	28	19	4 to 6	2.6
126,493	114,994	84,329	66,576	26	17	4 to 6	2.5
126,818	115,289	84,545	66,746	23	15	4 to 6	2.5
131,359	119,417	87,572	69,136	27	17	4 to 6	2.4

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR LOW-RATE CORN/POPCORN 24 CELL DISC  
22 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
21,423	19,476	14,282	11,275	15	28	4 to 6	14.6
22,217	20,197	14,811	11,693	15	27	4 to 6	14.1
23,071	20,974	15,381	12,143	15	26	4 to 6	13.6
23,994	21,813	15,996	12,629	15	25	4 to 6	13.1
24,280	22,073	16,187	12,779	17	28	4 to 6	12.9
24,994	22,722	16,663	13,155	15	24	4 to 6	12.5
25,179	22,890	16,786	13,252	17	27	4 to 6	12.5
26,081	23,710	17,387	13,727	15	23	4 to 6	12.0
26,148	23,770	17,432	13,762	17	26	4 to 6	12.0
27,136	24,669	18,091	14,282	19	28	4 to 6	11.6
27,193	24,721	18,129	14,312	17	25	4 to 6	11.5
28,141	25,583	18,761	14,811	19	27	4 to 6	11.1
28,326	25,751	18,884	14,909	17	24	4 to 6	11.1
29,224	26,567	19,482	15,381	19	26	4 to 6	10.7
29,558	26,871	19,705	15,557	17	23	4 to 6	10.6
30,393	27,630	20,262	15,996	19	25	4 to 6	10.3
31,571	28,701	21,048	16,616	15	19	4 to 6	9.9
31,659	28,781	21,106	16,663	19	24	4 to 6	9.9
32,849	29,863	21,899	17,289	23	28	4 to 6	9.5
33,035	30,032	22,024	17,387	19	23	4 to 6	9.5
34,066	30,969	22,711	17,929	23	27	4 to 6	9.2
34,277	31,161	22,852	18,041	24	28	4 to 6	9.1
35,286	32,078	23,524	18,571	15	17	4 to 6	8.9
35,547	32,315	23,698	18,709	24	27	4 to 6	8.8
35,781	32,528	23,854	18,832	17	19	4 to 6	8.8
36,791	33,446	24,527	19,364	23	25	4 to 6	8.5
37,134	33,758	24,756	19,544	26	28	4 to 6	8.4
38,324	34,840	25,549	20,171	23	24	4 to 6	8.2
38,391	34,901	25,594	20,206	24	25	4 to 6	8.2
38,562	35,056	25,708	20,296	27	28	4 to 6	8.1
39,990	36,355	26,660	21,048	23	23	4 to 6	7.8
41,471	37,701	27,648	21,827	28	27	4 to 6	7.6
41,528	37,753	27,686	21,857	27	26	4 to 6	7.6
41,729	37,935	27,819	21,963	24	23	4 to 6	7.5
43,067	39,151	28,711	22,667	28	26	4 to 6	7.3
43,190	39,263	28,793	22,731	27	25	4 to 6	7.3
43,468	39,516	28,978	22,878	25	23	4 to 6	7.2
44,695	40,632	29,797	23,524	19	17	4 to 6	7.0
44,989	40,899	29,993	23,678	27	24	4 to 6	7.0
45,206	41,097	30,138	23,793	26	23	4 to 6	6.9
46,655	42,414	31,104	24,555	28	24	4 to 6	6.7
46,945	42,677	31,297	24,708	27	23	4 to 6	6.7
48,409	44,008	32,273	25,479	23	19	4 to 6	6.5
48,684	44,258	32,456	25,623	28	23	4 to 6	6.4
50,514	45,922	33,676	26,586	24	19	4 to 6	6.2
52,619	47,835	35,079	27,694	25	19	4 to 6	6.0
54,105	49,186	36,070	28,476	23	17	4 to 6	5.8
54,724	49,749	36,482	28,802	26	19	4 to 6	5.7
56,457	51,324	37,638	29,714	24	17	4 to 6	5.6
56,828	51,662	37,886	29,910	27	19	4 to 6	5.5
58,809	53,463	39,206	30,952	25	17	4 to 6	5.3
58,933	53,576	39,289	31,017	28	19	4 to 6	5.3
61,162	55,602	40,774	32,190	26	17	4 to 6	5.1
61,318	55,744	40,879	32,273	23	15	4 to 6	5.1
63,514	57,740	42,343	33,428	27	17	4 to 6	4.9

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR LOW-RATE CORN/POPCORN 24 CELL DISC  
28 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE HILLS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
27,134	24,667	18,089	14,281	15	28	4 to 6	11.6
28,139	25,581	18,759	14,810	15	27	4 to 6	11.1
29,221	26,565	19,481	15,380	15	26	4 to 6	10.7
30,390	27,627	20,260	15,995	15	25	4 to 6	10.3
30,752	27,956	20,501	16,185	17	28	4 to 6	10.2
31,656	28,778	21,104	16,661	15	24	4 to 6	9.9
31,891	28,992	21,261	16,785	17	27	4 to 6	9.8
33,033	30,030	22,022	17,386	15	23	4 to 6	9.5
33,117	30,107	22,078	17,430	17	26	4 to 6	9.5
34,370	31,245	22,913	18,089	19	28	4 to 6	9.1
34,442	31,311	22,961	18,127	17	25	4 to 6	9.1
35,643	32,402	23,762	18,759	19	27	4 to 6	8.8
35,877	32,616	23,918	18,883	17	24	4 to 6	8.7
37,013	33,649	24,676	19,481	19	26	4 to 6	8.5
37,437	34,034	24,958	19,704	17	23	4 to 6	8.4
38,494	34,995	25,663	20,260	19	25	4 to 6	8.1
39,987	36,352	26,658	21,046	15	19	4 to 6	7.8
40,098	36,453	26,732	21,104	19	24	4 to 6	7.8
41,605	37,823	27,737	21,898	23	28	4 to 6	7.5
41,841	38,038	27,894	22,022	19	23	4 to 6	7.5
43,146	39,224	28,764	22,709	23	27	4 to 6	7.3
43,414	39,468	28,943	22,850	24	28	4 to 6	7.2
44,691	40,628	29,794	23,522	15	17	4 to 6	7.0
45,022	40,929	30,015	23,696	24	27	4 to 6	7.0
45,318	41,199	30,212	23,852	17	19	4 to 6	6.9
46,598	42,362	31,065	24,525	23	25	4 to 6	6.7
47,032	42,757	31,355	24,754	26	28	4 to 6	6.7
48,540	44,127	32,360	25,547	23	24	4 to 6	6.5
48,624	44,204	32,416	25,592	24	25	4 to 6	6.5
48,841	44,401	32,561	25,706	27	28	4 to 6	6.4
50,650	46,045	33,767	26,658	23	23	4 to 6	6.2
52,526	47,751	35,017	27,645	28	27	4 to 6	6.0
52,598	47,816	35,065	27,683	27	26	4 to 6	6.0
52,852	48,047	35,235	27,817	24	23	4 to 6	5.9
54,546	49,587	36,364	28,709	28	26	4 to 6	5.7
54,702	49,729	36,468	28,791	27	25	4 to 6	5.7
55,054	50,049	36,703	28,976	25	23	4 to 6	5.7
56,609	51,463	37,739	29,794	19	17	4 to 6	5.5
56,981	51,801	37,988	29,990	27	24	4 to 6	5.5
57,257	52,051	38,171	30,135	26	23	4 to 6	5.5
59,092	53,720	39,394	31,101	28	24	4 to 6	5.3
59,459	54,053	39,639	31,294	27	23	4 to 6	5.3
61,313	55,739	40,875	32,270	23	19	4 to 6	5.1
61,661	56,055	41,107	32,453	28	23	4 to 6	5.1
63,979	58,163	42,653	33,673	24	19	4 to 6	4.9
66,645	60,586	44,430	35,076	25	19	4 to 6	4.7
68,527	62,297	45,684	36,067	23	17	4 to 6	4.6
69,311	63,010	46,207	36,479	26	19	4 to 6	4.5
71,506	65,005	47,671	37,635	24	17	4 to 6	4.4
71,976	65,433	47,984	37,882	27	19	4 to 6	4.4
74,485	67,714	49,657	39,203	25	17	4 to 6	4.2
74,642	67,856	49,761	39,285	28	19	4 to 6	4.2
77,465	70,422	51,643	40,771	26	17	4 to 6	4.0
77,663	70,603	51,776	40,875	23	15	4 to 6	4.0
80,444	73,131	53,629	42,339	27	17	4 to 6	3.9

**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.**



# SEED METER OPERATION/MAINTENANCE

## PLANTING RATES FOR SOYBEAN AND MILO/GRAIN SORGHUM 60 CELL DISCS

**22 TOOTH CONTACT WHEEL DRIVE SPROCKET** (See Page 7-1)

APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
53,558	48,690	35,706	28,189	15	28	4 to 6	5.9
55,542	50,493	37,028	29,233	15	27	4 to 6	5.6
57,678	52,435	38,452	30,357	15	26	4 to 6	5.4
59,985	54,532	39,990	31,571	15	25	4 to 6	5.2
60,700	55,181	40,466	31,947	17	28	4 to 6	5.2
62,485	56,804	41,657	32,887	15	24	4 to 6	5.0
62,948	57,225	41,965	33,130	17	27	4 to 6	5.0
65,202	59,274	43,468	34,317	15	23	4 to 6	4.8
65,369	59,426	43,579	34,405	17	26	4 to 6	4.8
67,841	61,673	45,227	35,706	19	28	4 to 6	4.6
67,984	61,803	45,322	35,781	17	25	4 to 6	4.6
70,353	63,958	46,902	37,028	19	27	4 to 6	4.5
70,816	64,378	47,211	37,272	17	24	4 to 6	4.4
73,059	66,417	48,706	38,452	19	26	4 to 6	4.3
73,895	67,177	49,263	38,892	17	23	4 to 6	4.2
75,982	69,074	50,654	39,990	19	25	4 to 6	4.1
78,928	71,753	52,619	41,541	15	19	4 to 6	4.0
79,148	71,952	52,765	41,657	19	24	4 to 6	4.0
82,123	74,657	54,749	43,223	23	28	4 to 6	3.8
82,589	75,081	55,059	43,468	19	23	4 to 6	3.8
85,165	77,422	56,776	44,823	23	27	4 to 6	3.7
85,694	77,903	57,129	45,102	24	28	4 to 6	3.7
88,214	80,194	58,809	46,428	15	17	4 to 6	3.6
88,867	80,789	59,245	46,772	24	27	4 to 6	3.5
89,452	81,320	59,635	47,080	17	19	4 to 6	3.5
91,978	83,616	61,318	48,409	23	25	4 to 6	3.4
92,835	84,395	61,890	48,860	26	28	4 to 6	3.4
95,810	87,100	63,873	50,426	23	24	4 to 6	3.3
95,977	87,252	63,985	50,514	24	25	4 to 6	3.3
96,405	87,641	64,270	50,740	27	28	4 to 6	3.3
99,976	90,887	66,651	52,619	23	23	4 to 6	3.1
103,679	94,253	69,119	54,568	28	27	4 to 6	3.0
103,821	94,383	69,214	54,643	27	26	4 to 6	3.0
104,323	94,839	69,548	54,907	24	23	4 to 6	3.0
107,666	97,878	71,778	56,666	28	26	4 to 6	2.9
107,974	98,158	71,983	56,828	27	25	4 to 6	2.9
108,669	98,790	72,446	57,194	25	23	4 to 6	2.9
111,738	101,580	74,492	58,809	19	17	4 to 6	2.8
112,473	102,248	74,982	59,196	27	24	4 to 6	2.8
113,016	102,742	75,344	59,482	26	23	4 to 6	2.8
116,638	106,035	77,759	61,389	28	24	4 to 6	2.7
117,363	106,694	78,242	61,770	27	23	4 to 6	2.7
121,023	110,021	80,682	63,696	23	19	4 to 6	2.6
121,710	110,645	81,140	64,058	28	23	4 to 6	2.6
126,285	114,805	84,190	66,466	24	19	4 to 6	2.5
131,547	119,588	87,698	69,235	25	19	4 to 6	2.4
135,261	122,965	90,174	71,190	23	17	4 to 6	2.3
136,809	124,372	91,206	72,005	26	19	4 to 6	2.3
141,142	128,311	94,095	74,285	24	17	4 to 6	2.2
142,071	129,155	94,714	74,774	27	19	4 to 6	2.2
147,023	133,657	98,015	77,381	25	17	4 to 6	2.1
147,333	133,939	98,222	77,544	28	19	4 to 6	2.1
152,904	139,004	101,936	80,476	26	17	4 to 6	2.1
153,296	139,360	102,197	80,682	23	15	4 to 6	2.0
158,785	144,350	105,857	83,571	27	17	4 to 6	2.0

**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.

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR SOYBEAN AND MILO/GRAIN SORGHUM 60 CELL DISCS  
28 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
68,165	61,968	45,444	35,876	15	28	4 to 6	4.6
70,690	64,264	47,127	37,205	15	27	4 to 6	4.4
73,409	66,735	48,939	38,636	15	26	4 to 6	4.3
76,345	69,405	50,897	40,182	15	25	4 to 6	4.1
77,254	70,231	51,503	40,660	17	28	4 to 6	4.1
79,526	72,297	53,017	41,856	15	24	4 to 6	3.9
80,115	72,832	53,410	42,166	17	27	4 to 6	3.9
82,984	75,440	55,323	43,676	15	23	4 to 6	3.8
83,197	75,633	55,464	43,788	17	26	4 to 6	3.8
86,343	78,493	57,562	45,444	19	28	4 to 6	3.6
86,525	78,659	57,683	45,539	17	25	4 to 6	3.6
89,541	81,401	59,694	47,127	19	27	4 to 6	3.5
90,130	81,936	60,086	47,437	17	24	4 to 6	3.5
92,984	84,531	61,990	48,939	19	26	4 to 6	3.4
94,048	85,499	62,699	49,499	17	23	4 to 6	3.3
96,704	87,913	64,469	50,897	19	25	4 to 6	3.2
100,454	91,322	66,969	52,871	15	19	4 to 6	3.1
100,733	91,576	67,155	53,017	19	24	4 to 6	3.1
104,520	95,018	69,680	55,011	23	28	4 to 6	3.0
105,113	95,557	70,075	55,323	19	23	4 to 6	3.0
108,391	98,538	72,261	57,048	23	27	4 to 6	2.9
109,065	99,150	72,710	57,402	24	28	4 to 6	2.9
112,272	102,066	74,848	59,091	15	17	4 to 6	2.8
113,104	102,822	75,403	59,528	24	27	4 to 6	2.8
113,848	103,498	75,899	59,920	17	19	4 to 6	2.8
117,063	106,421	78,042	61,612	23	25	4 to 6	2.7
118,153	107,412	78,769	62,186	26	28	4 to 6	2.7
121,940	110,855	81,293	64,179	23	24	4 to 6	2.6
122,152	111,048	81,435	64,291	24	25	4 to 6	2.6
122,698	111,543	81,798	64,578	27	28	4 to 6	2.6
127,242	115,674	84,828	66,969	23	23	4 to 6	2.5
131,955	119,959	87,970	69,450	28	27	4 to 6	2.4
132,136	120,124	88,091	69,545	27	26	4 to 6	2.4
132,774	120,704	88,516	69,881	24	23	4 to 6	2.4
137,030	124,573	91,353	72,121	28	26	4 to 6	2.3
137,421	124,928	91,614	72,327	27	25	4 to 6	2.3
138,306	125,733	92,204	72,793	25	23	4 to 6	2.3
142,212	129,283	94,808	74,848	19	17	4 to 6	2.2
143,147	130,134	95,431	75,341	27	24	4 to 6	2.2
143,839	130,762	95,892	75,705	26	23	4 to 6	2.2
148,449	134,954	98,966	78,131	28	24	4 to 6	2.1
149,371	135,792	99,581	78,616	27	23	4 to 6	2.1
154,030	140,027	102,686	81,068	23	19	4 to 6	2.0
154,903	140,821	103,269	81,528	28	23	4 to 6	2.0
160,727	146,115	107,151	84,593	24	19	4 to 6	2.0
167,424	152,203	111,616	88,118	25	19	4 to 6	1.9
172,151	156,501	114,767	90,606	23	17	4 to 6	1.8
174,121	158,291	116,080	91,642	26	19	4 to 6	1.8
179,636	163,305	119,757	94,545	24	17	4 to 6	1.7
180,817	164,380	120,545	95,167	27	19	4 to 6	1.7
187,120	170,110	124,747	98,484	25	17	4 to 6	1.7
187,514	170,468	125,010	98,692	28	19	4 to 6	1.7
194,605	176,914	129,737	102,424	26	17	4 to 6	1.6
195,104	177,368	130,070	102,686	23	15	4 to 6	1.6
202,090	183,718	134,727	106,363	27	17	4 to 6	1.6

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR SOYBEAN 60 CELL DISC  
44 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
107,110	97,372	71,406	56,374	15	28	4 to 6	2.9
111,077	100,979	74,051	58,461	15	27	4 to 6	2.8
115,349	104,863	76,899	60,710	15	26	4 to 6	2.7
119,963	109,057	79,975	63,138	15	25	4 to 6	2.6
121,391	110,355	80,927	63,890	17	28	4 to 6	2.6
124,961	113,601	83,308	65,769	15	24	4 to 6	2.5
125,887	114,443	83,925	66,256	17	27	4 to 6	2.5
130,394	118,540	86,930	68,629	15	23	4 to 6	2.4
130,729	118,844	87,153	68,805	17	26	4 to 6	2.4
135,672	123,338	90,448	71,406	19	28	4 to 6	2.3
135,958	123,598	90,639	71,557	17	25	4 to 6	2.3
140,697	127,907	93,798	74,051	19	27	4 to 6	2.2
141,623	128,748	94,415	74,538	17	24	4 to 6	2.2
146,109	132,826	97,406	76,899	19	26	4 to 6	2.1
147,780	134,346	98,520	77,779	17	23	4 to 6	2.1
151,953	138,139	101,302	79,975	19	25	4 to 6	2.1
157,846	143,496	105,231	83,077	15	19	4 to 6	2.0
158,284	143,895	105,523	83,308	19	24	4 to 6	2.0
164,235	149,304	109,490	86,439	23	28	4 to 6	1.9
165,166	150,151	110,111	86,930	19	23	4 to 6	1.9
170,318	154,834	113,545	89,641	23	27	4 to 6	1.8
171,376	155,796	114,250	90,198	24	28	4 to 6	1.8
176,416	160,378	117,611	92,851	15	17	4 to 6	1.8
177,723	161,566	118,482	93,538	24	27	4 to 6	1.8
178,892	162,629	119,261	94,154	17	19	4 to 6	1.8
183,943	167,221	122,629	96,812	23	25	4 to 6	1.7
185,657	168,779	123,771	97,714	26	28	4 to 6	1.7
191,607	174,189	127,738	100,846	23	24	4 to 6	1.6
191,941	174,491	127,960	101,021	24	25	4 to 6	1.6
192,797	175,270	128,532	101,472	27	28	4 to 6	1.6
199,938	181,762	133,292	105,231	23	23	4 to 6	1.6
207,343	188,494	138,229	109,128	28	27	4 to 6	1.5
207,628	188,753	138,419	109,278	27	26	4 to 6	1.5
208,631	189,665	139,087	109,806	24	23	4 to 6	1.5
215,318	195,744	143,545	113,325	28	26	4 to 6	1.5
215,933	196,303	143,955	113,649	27	25	4 to 6	1.5
217,324	197,567	144,883	114,381	25	23	4 to 6	1.4
223,460	203,146	148,973	117,611	19	17	4 to 6	1.4
224,930	204,482	149,954	118,384	27	24	4 to 6	1.4
226,017	205,470	150,678	118,956	26	23	4 to 6	1.4
233,261	212,056	155,507	122,769	28	24	4 to 6	1.3
234,710	213,373	156,473	123,532	27	23	4 to 6	1.3
242,030	220,028	161,354	127,384	23	19	4 to 6	1.3
243,403	221,275	162,269	128,107	28	23	4 to 6	1.3
	229,594	168,369	132,923	24	19	4 to 6	1.2
	239,160	175,384	138,461	25	19	4 to 6	1.2
	245,913	180,336	142,371	23	17	4 to 6	1.2
	248,727	182,400	144,000	26	19	4 to 6	1.1
<b>NOTE: Planting rates over 250,000 seeds/acre are not recommended with subject seed disc and/or drive ratio.</b>		188,177	148,561	24	17	4 to 6	1.1
		189,415	149,538	27	19	4 to 6	1.1
		196,018	154,751	25	17	4 to 6	1.1
		196,430	155,077	28	19	4 to 6	1.1
		203,858	160,941	26	17	4 to 6	1.0
		204,381	161,354	23	15	4 to 6	1.0
		211,699	167,131	27	17	4 to 6	1.0

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR HIGH-RATE SOYBEAN 120 CELL DISC  
22 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
107,117	97,379	71,411	56,377	15	28	4 to 6	2.9
111,084	100,986	74,056	58,465	15	27	4 to 6	2.8
115,357	104,870	76,904	60,714	15	26	4 to 6	2.7
119,971	109,065	79,981	63,143	15	25	4 to 6	2.6
121,399	110,363	80,933	63,894	17	28	4 to 6	2.6
124,970	113,609	83,313	65,774	15	24	4 to 6	2.5
125,895	114,450	83,930	66,261	17	27	4 to 6	2.5
130,403	118,548	86,935	68,633	15	23	4 to 6	2.4
130,738	118,852	87,158	68,809	17	26	4 to 6	2.4
135,681	123,347	90,454	71,411	19	28	4 to 6	2.3
135,967	123,606	90,645	71,562	17	25	4 to 6	2.3
140,707	127,915	93,804	74,056	19	27	4 to 6	2.2
141,632	128,757	94,422	74,543	17	24	4 to 6	2.2
146,118	132,835	97,412	76,904	19	26	4 to 6	2.1
147,790	134,355	98,527	77,784	17	23	4 to 6	2.1
151,963	138,148	101,309	79,981	19	25	4 to 6	2.1
157,857	143,506	105,238	83,082	15	19	4 to 6	2.0
158,295	143,905	105,530	83,313	19	24	4 to 6	2.0
164,246	149,315	109,497	86,445	23	28	4 to 6	1.9
165,177	150,161	110,118	86,935	19	23	4 to 6	1.9
170,329	154,845	113,553	89,647	23	27	4 to 6	1.8
171,387	155,806	114,258	90,204	24	28	4 to 6	1.8
176,428	160,389	117,619	92,857	15	17	4 to 6	1.8
177,735	161,577	118,490	93,545	24	27	4 to 6	1.8
178,904	162,640	119,269	94,160	17	19	4 to 6	1.8
183,955	167,232	122,637	96,819	23	25	4 to 6	1.7
185,669	168,790	123,780	97,721	26	28	4 to 6	1.7
191,620	174,200	127,747	100,853	23	24	4 to 6	1.6
191,954	174,503	127,969	101,028	24	25	4 to 6	1.6
192,810	175,282	128,540	101,479	27	28	4 to 6	1.6
199,952	181,774	133,301	105,238	23	23	4 to 6	1.6
207,357	188,507	138,238	109,135	28	27	4 to 6	1.5
207,642	188,766	138,428	109,285	27	26	4 to 6	1.5
208,645	189,677	139,097	109,813	24	23	4 to 6	1.5
215,333	195,757	143,555	113,333	28	26	4 to 6	1.5
215,948	196,316	143,965	113,657	27	25	4 to 6	1.5
217,339	197,581	144,892	114,389	25	23	4 to 6	1.4
223,475	203,159	148,984	117,619	19	17	4 to 6	1.4
224,946	204,496	149,964	118,392	27	24	4 to 6	1.4
226,032	205,484	150,688	118,964	26	23	4 to 6	1.4
233,277	212,070	155,518	122,777	28	24	4 to 6	1.3
234,726	213,387	156,484	123,540	27	23	4 to 6	1.3
242,047	220,042	161,364	127,393	23	19	4 to 6	1.3
243,419	221,290	162,280	128,115	28	23	4 to 6	1.3
	229,610	168,380	132,932	24	19	4 to 6	1.2
	239,177	175,396	138,471	25	19	4 to 6	1.2
	245,930	180,349	142,380	23	17	4 to 6	1.2
	248,744	182,412	144,009	26	19	4 to 6	1.1
		188,190	148,571	24	17	4 to 6	1.1
		189,428	149,548	27	19	4 to 6	1.1
		196,031	154,761	25	17	4 to 6	1.1
		196,444	155,087	28	19	4 to 6	1.1
		203,872	160,952	26	17	4 to 6	1.0
		204,395	161,364	23	15	4 to 6	1.0
		211,713	167,142	27	17	4 to 6	1.0

**NOTE: Planting rates over 250,000 seeds/acre are not recommended with subject seed disc and/or drive ratio.**

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR HIGH-RATE SOYBEAN 120 CELL DISC  
28 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
136,331	123,937	90,887	71,753	15	28	4 to 6	2.3
141,380	128,527	94,253	74,410	15	27	4 to 6	2.2
146,818	133,471	97,878	77,272	15	26	4 to 6	2.1
152,690	138,809	101,794	80,363	15	25	4 to 6	2.1
154,508	140,462	103,005	81,320	17	28	4 to 6	2.0
159,052	144,593	106,035	83,712	15	24	4 to 6	2.0
160,231	145,664	106,820	84,332	17	27	4 to 6	2.0
165,968	150,880	110,645	87,351	15	23	4 to 6	1.9
166,393	151,267	110,929	87,575	17	26	4 to 6	1.9
172,685	156,987	115,124	90,887	19	28	4 to 6	1.8
173,049	157,317	115,366	91,078	17	25	4 to 6	1.8
179,081	162,801	119,387	94,253	19	27	4 to 6	1.8
180,259	163,872	120,173	94,873	17	24	4 to 6	1.7
185,969	169,063	123,979	97,878	19	26	4 to 6	1.7
188,097	170,997	125,398	98,998	17	23	4 to 6	1.7
193,408	175,825	128,938	101,794	19	25	4 to 6	1.6
200,908	182,644	133,939	105,741	15	19	4 to 6	1.6
201,466	183,151	134,311	106,035	19	24	4 to 6	1.6
209,040	190,037	139,360	110,021	23	28	4 to 6	1.5
210,226	191,114	140,151	110,645	19	23	4 to 6	1.5
216,783	197,075	144,522	114,096	23	27	4 to 6	1.4
218,129	198,299	145,419	114,805	24	28	4 to 6	1.4
224,545	204,131	149,696	118,181	15	17	4 to 6	1.4
226,208	205,644	150,805	119,057	24	27	4 to 6	1.4
227,696	206,996	151,797	119,840	17	19	4 to 6	1.4
234,125	212,841	156,083	123,224	23	25	4 to 6	1.3
236,306	214,824	157,538	124,372	26	28	4 to 6	1.3
243,880	221,709	162,587	128,358	23	24	4 to 6	1.3
244,305	222,095	162,870	128,581	24	25	4 to 6	1.3
245,395	223,087	163,597	129,155	27	28	4 to 6	1.3
	231,349	169,656	133,939	23	23	4 to 6	1.2
	239,917	175,939	138,900	28	27	4 to 6	1.2
	240,247	176,181	139,090	27	26	4 to 6	1.2
	241,408	177,032	139,762	24	23	4 to 6	1.2
	249,145	182,706	144,242	28	26	4 to 6	1.1
	249,857	183,228	144,654	27	25	4 to 6	1.1
		184,409	145,586	25	23	4 to 6	1.1
		189,615	149,696	19	17	4 to 6	1.1
		190,863	150,681	27	24	4 to 6	1.1
		191,785	151,409	26	23	4 to 6	1.1
		197,932	156,262	28	24	4 to 6	1.1
		199,161	157,233	27	23	4 to 6	1.0
		205,373	162,137	23	19	4 to 6	1.0
		206,538	163,056	28	23	4 to 6	1.0
		214,302	169,186	24	19	4 to 6	1.0
		223,231	176,235	25	19	4 to 6	0.9
		229,534	181,211	23	17	4 to 6	0.9
		232,161	183,285	26	19	4 to 6	0.9
		239,514	189,090	24	17	4 to 6	0.9
		241,090	190,334	27	19	4 to 6	0.9
		249,494	196,969	25	17	4 to 6	0.8
			197,384	28	19	4 to 6	0.8
			204,848	26	17	4 to 6	0.8
			205,373	23	15	4 to 6	0.8
			212,726	27	17	4 to 6	0.8

**NOTE: Planting rates over 250,000 seeds/acre are not recommended with subject seed disc and/or drive ratio.**

**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.**

# SEED METER OPERATION/MAINTENANCE

## PLANTING RATES FOR HILL-DROP COTTON (3 SEEDS PER CELL), 20 CELL DISC

### 22 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)

#### APPROXIMATE HILLS/ACRE FOR VARIOUS ROW WIDTHS

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
17,853	16,230	11,902	9,396	15	28	4 to 6	17.6
18,514	16,831	12,343	9,744	15	27	4 to 6	16.9
19,226	17,478	12,817	10,119	15	26	4 to 6	16.3
19,995	18,177	13,330	10,524	15	25	4 to 6	15.7
20,233	18,394	13,489	10,649	17	28	4 to 6	15.5
20,828	18,935	13,886	10,962	15	24	4 to 6	15.1
20,983	19,075	13,988	11,043	17	27	4 to 6	14.9
21,734	19,758	14,489	11,439	15	23	4 to 6	14.4
21,790	19,809	14,526	11,468	17	26	4 to 6	14.4
22,614	20,558	15,076	11,902	19	28	4 to 6	13.9
22,661	20,601	15,107	11,927	17	25	4 to 6	13.8
23,451	21,319	15,634	12,343	19	27	4 to 6	13.4
23,605	21,459	15,737	12,424	17	24	4 to 6	13.3
24,353	22,139	16,235	12,817	19	26	4 to 6	12.9
24,632	22,392	16,421	12,964	17	23	4 to 6	12.7
25,327	23,025	16,885	13,330	19	25	4 to 6	12.4
26,309	23,918	17,540	13,847	15	19	4 to 6	11.9
26,383	23,984	17,588	13,886	19	24	4 to 6	11.9
27,374	24,886	18,250	14,408	23	28	4 to 6	11.5
27,530	25,027	18,353	14,489	19	23	4 to 6	11.4
28,388	25,807	18,925	14,941	23	27	4 to 6	11.0
28,565	25,968	19,043	15,034	24	28	4 to 6	11.0
29,405	26,731	19,603	15,476	15	17	4 to 6	10.7
29,480	26,800	19,653	15,516	23	26	4 to 6	10.6
29,622	26,930	19,748	15,591	24	27	4 to 6	10.6
29,755	27,050	19,836	15,660	25	28	4 to 6	10.5
29,817	27,107	19,878	15,693	17	19	4 to 6	10.5
30,659	27,872	20,439	16,136	23	25	4 to 6	10.2
30,762	27,965	20,508	16,190	24	26	4 to 6	10.2
30,857	28,052	20,571	16,240	25	27	4 to 6	10.2
30,945	28,132	20,630	16,287	26	28	4 to 6	10.1
31,937	29,033	21,291	16,809	23	24	4 to 6	9.8
31,992	29,084	21,328	16,838	24	25	4 to 6	9.8
32,044	29,130	21,362	16,865	25	26	4 to 6	9.8
32,091	29,174	21,394	16,890	26	27	4 to 6	9.8
32,135	29,214	21,423	16,913	27	28	4 to 6	9.8
33,325	30,296	22,217	17,540	23	23	4 to 6	9.4
34,560	31,418	23,040	18,189	28	27	4 to 6	9.1
34,607	31,461	23,071	18,214	27	26	4 to 6	9.1
34,714	31,558	23,143	18,270	25	24	4 to 6	9.0
34,774	31,613	23,183	18,302	24	23	4 to 6	9.0
35,889	32,626	23,926	18,889	28	26	4 to 6	8.7
35,991	32,719	23,994	18,943	27	25	4 to 6	8.7
36,223	32,930	24,149	19,065	25	23	4 to 6	8.7
37,246	33,860	24,831	19,603	19	17	4 to 6	8.4
37,324	33,931	24,883	19,644	28	25	4 to 6	8.4
37,491	34,083	24,994	19,732	27	24	4 to 6	8.4
37,672	34,247	25,115	19,827	26	23	4 to 6	8.3
38,879	35,345	25,920	20,463	28	24	4 to 6	8.1
39,121	35,565	26,081	20,590	27	23	4 to 6	8.0
40,341	36,674	26,894	21,232	23	19	4 to 6	7.8
40,570	36,882	27,047	21,353	28	23	4 to 6	7.7
42,095	38,268	28,063	22,155	24	19	4 to 6	7.5
43,849	39,863	29,233	23,078	25	19	4 to 6	7.2
45,087	40,988	30,058	23,730	23	17	5 to 6	7.0

**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.**

# SEED METER OPERATION/MAINTENANCE

## PLANTING RATES FOR HILL-DROP COTTON (3 SEEDS PER CELL), 20 CELL DISC

### 28 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)

#### APPROXIMATE HILLS/ACRE FOR VARIOUS ROW WIDTHS

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
22,722	20,656	15,148	11,959	15	28	4 to 6	13.8
23,563	21,421	15,709	12,402	15	27	4 to 6	13.3
24,470	22,245	16,313	12,879	15	26	4 to 6	12.8
25,448	23,135	16,966	13,394	15	25	4 to 6	12.3
25,751	23,410	17,168	13,553	17	28	4 to 6	12.2
26,509	24,099	17,672	13,952	15	24	4 to 6	11.8
26,705	24,277	17,803	14,055	17	27	4 to 6	11.7
27,661	25,147	18,441	14,559	15	23	4 to 6	11.3
27,732	25,211	18,488	14,596	17	26	4 to 6	11.3
28,781	26,164	19,187	15,148	19	28	4 to 6	10.9
28,842	26,220	19,228	15,180	17	25	4 to 6	10.9
29,847	27,134	19,898	15,709	19	27	4 to 6	10.5
30,043	27,312	20,029	15,812	17	24	4 to 6	10.4
30,995	28,177	20,663	16,313	19	26	4 to 6	10.1
31,349	28,500	20,900	16,500	17	23	4 to 6	10.0
32,235	29,304	21,490	16,966	19	25	4 to 6	9.7
33,485	30,441	22,323	17,624	15	19	4 to 6	9.4
33,578	30,525	22,385	17,672	19	24	4 to 6	9.3
34,840	31,673	23,227	18,337	23	28	4 to 6	9.0
35,038	31,852	23,358	18,441	19	23	4 to 6	9.0
36,130	32,846	24,087	19,016	23	27	4 to 6	8.7
36,355	33,050	24,237	19,134	24	28	4 to 6	8.6
37,424	34,022	24,949	19,697	15	17	4 to 6	8.4
37,520	34,109	25,013	19,747	23	26	4 to 6	8.4
37,701	34,274	25,134	19,843	24	27	4 to 6	8.3
37,870	34,427	25,246	19,931	25	28	4 to 6	8.3
37,949	34,499	25,300	19,973	17	19	4 to 6	8.3
39,021	35,474	26,014	20,537	23	25	4 to 6	8.0
39,151	35,592	26,101	20,606	24	26	4 to 6	8.0
39,272	35,702	26,181	20,670	25	27	4 to 6	8.0
39,384	35,804	26,256	20,729	26	28	4 to 6	8.0
40,647	36,952	27,098	21,393	23	24	4 to 6	7.7
40,717	37,016	27,145	21,430	24	25	4 to 6	7.7
40,783	37,075	27,188	21,465	25	26	4 to 6	7.7
40,843	37,130	27,229	21,496	26	27	4 to 6	7.7
40,899	37,181	27,266	21,526	27	28	4 to 6	7.7
42,414	38,558	28,276	22,323	23	23	4 to 6	7.4
43,985	39,986	29,323	23,150	28	27	4 to 6	7.1
44,045	40,041	29,364	23,182	27	26	4 to 6	7.1
44,181	40,165	29,454	23,253	25	24	4 to 6	7.1
44,258	40,235	29,505	23,294	24	23	4 to 6	7.1
45,677	41,524	30,451	24,040	28	26	4 to 6	6.9
45,807	41,643	30,538	24,109	27	25	4 to 6	6.8
46,102	41,911	30,735	24,264	25	23	4 to 6	6.8
47,404	43,094	31,603	24,949	19	17	4 to 6	6.6
47,504	43,185	31,669	25,002	28	25	4 to 6	6.6
47,716	43,378	31,810	25,114	27	24	4 to 6	6.6
47,946	43,587	31,964	25,235	26	23	4 to 6	6.5
49,483	44,985	32,989	26,044	28	24	4 to 6	6.3
49,790	45,264	33,194	26,205	27	23	4 to 6	6.3
51,343	46,676	34,229	27,023	23	19	4 to 6	6.1
51,634	46,940	34,423	27,176	28	23	4 to 6	6.1
53,576	48,705	35,717	28,198	24	19	4 to 6	5.9
55,808	50,734	37,205	29,373	25	19	4 to 6	5.6
57,384	52,167	38,256	30,202	23	17	5 to 6	5.5

**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.

# SEED METER OPERATION/MAINTENANCE

## PLANTING RATES FOR COTTON/SMALL DRY EDIBLE BEAN/SUNFLOWER, 54 CELL DISC

### 22 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)

#### APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
48,203	43,821	32,135	25,370	15	28	4 to 6	6.5
49,988	45,444	33,325	26,309	15	27	4 to 6	6.3
51,911	47,191	34,607	27,321	15	26	4 to 6	6.0
53,987	49,079	35,991	28,414	15	25	4 to 6	5.8
54,630	49,663	36,420	28,752	17	28	4 to 6	5.7
56,236	51,124	37,491	29,598	15	24	4 to 6	5.6
56,653	51,503	37,769	29,817	17	27	4 to 6	5.5
58,681	53,347	39,121	30,885	15	23	4 to 6	5.3
58,832	53,484	39,221	30,964	17	26	4 to 6	5.3
61,057	55,506	40,704	32,135	19	28	4 to 6	5.1
61,185	55,623	40,790	32,203	17	25	4 to 6	5.1
63,318	57,562	42,212	33,325	19	27	4 to 6	5.0
63,735	57,941	42,490	33,545	17	24	4 to 6	4.9
65,753	59,776	43,836	34,607	19	26	4 to 6	4.8
66,506	60,460	44,337	35,003	17	23	4 to 6	4.7
68,383	62,167	45,589	35,991	19	25	4 to 6	4.6
71,035	64,578	47,357	37,387	15	19	4 to 6	4.4
71,233	64,757	47,489	37,491	19	24	4 to 6	4.4
73,911	67,192	49,274	38,900	23	28	4 to 6	4.2
74,330	67,573	49,553	39,121	19	23	4 to 6	4.2
76,648	69,680	51,099	40,341	23	27	4 to 6	4.1
77,124	70,113	51,416	40,592	24	28	4 to 6	4.1
79,393	72,175	52,928	41,786	15	17	4 to 6	4.0
79,981	72,710	53,320	42,095	24	27	4 to 6	3.9
80,507	73,188	53,671	42,372	17	19	4 to 6	3.9
82,780	75,255	55,187	43,568	23	25	4 to 6	3.8
83,551	75,956	55,701	43,974	26	28	4 to 6	3.8
86,229	78,390	57,486	45,384	23	24	4 to 6	3.6
86,379	78,526	57,586	45,463	24	25	4 to 6	3.6
86,765	78,877	57,843	45,666	27	28	4 to 6	3.6
89,978	81,798	59,985	47,357	23	23	4 to 6	3.5
93,311	84,828	62,207	49,111	28	27	4 to 6	3.4
93,439	84,944	62,293	49,178	27	26	4 to 6	3.4
93,890	85,355	62,594	49,416	24	23	4 to 6	3.3
96,900	88,091	64,600	51,000	28	26	4 to 6	3.2
97,176	88,342	64,784	51,146	27	25	4 to 6	3.2
97,802	88,911	65,202	51,475	25	23	4 to 6	3.2
100,564	91,422	67,043	52,928	19	17	4 to 6	3.1
101,226	92,023	67,484	53,277	27	24	4 to 6	3.1
101,715	92,468	67,810	53,534	26	23	4 to 6	3.1
104,975	95,431	69,983	55,250	28	24	4 to 6	3.0
105,627	96,024	70,418	55,593	27	23	4 to 6	3.0
108,921	99,019	72,614	57,327	23	19	4 to 6	2.9
109,539	99,581	73,026	57,652	28	23	4 to 6	2.9
113,657	103,324	75,771	59,819	24	19	4 to 6	2.8
118,392	107,629	78,928	62,312	25	19	4 to 6	2.6
121,735	110,668	81,157	64,071	23	17	4 to 6	2.6
123,128	111,935	82,085	64,804	26	19	4 to 6	2.5
127,028	115,480	84,685	66,857	24	17	4 to 6	2.5
127,864	116,240	85,243	67,297	27	19	4 to 6	2.5
132,321	120,292	88,214	69,643	25	17	4 to 6	2.4
132,599	120,545	88,400	69,789	28	19	4 to 6	2.4
137,614	125,103	91,743	72,428	26	17	4 to 6	2.3
137,967	125,424	91,978	72,614	23	15	4 to 6	2.3
142,907	129,915	95,271	75,214	27	17	4 to 6	2.2

**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.**



# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR COTTON/SMALL DRY EDIBLE BEAN/SUNFLOWER, 54 CELL DISC  
28 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
61,349	55,772	40,899	32,289	15	28	4 to 6	5.1
63,621	57,837	42,414	33,485	15	27	4 to 6	4.9
66,068	60,062	44,045	34,773	15	26	4 to 6	4.7
68,711	62,464	45,807	36,163	15	25	4 to 6	4.6
69,529	63,208	46,352	36,594	17	28	4 to 6	4.5
71,574	65,067	47,716	37,670	15	24	4 to 6	4.4
72,104	65,549	48,069	37,949	17	27	4 to 6	4.3
74,685	67,896	49,790	39,308	15	23	4 to 6	4.2
74,877	68,070	49,918	39,409	17	26	4 to 6	4.2
77,708	70,644	51,806	40,899	19	28	4 to 6	4.0
77,872	70,793	51,915	40,985	17	25	4 to 6	4.0
80,587	73,261	53,724	42,414	19	27	4 to 6	3.9
81,117	73,742	54,078	42,693	17	24	4 to 6	3.9
83,686	76,078	55,791	44,045	19	26	4 to 6	3.7
84,644	76,949	56,429	44,549	17	23	4 to 6	3.7
87,033	79,121	58,022	45,807	19	25	4 to 6	3.6
90,409	82,190	60,272	47,584	15	19	4 to 6	3.5
90,660	82,418	60,440	47,716	19	24	4 to 6	3.5
94,068	85,516	62,712	49,510	23	28	4 to 6	3.3
94,602	86,001	63,068	49,790	19	23	4 to 6	3.3
97,552	88,684	65,035	51,343	23	27	4 to 6	3.2
98,158	89,235	65,439	51,662	24	28	4 to 6	3.2
101,045	91,859	67,363	53,182	15	17	4 to 6	3.1
101,794	92,540	67,862	53,576	24	27	4 to 6	3.1
102,463	93,148	68,309	53,928	17	19	4 to 6	3.1
105,356	95,778	70,238	55,451	23	25	4 to 6	3.0
106,338	96,671	70,892	55,967	26	28	4 to 6	2.9
109,746	99,769	73,164	57,761	23	24	4 to 6	2.9
109,937	99,943	73,291	57,862	24	25	4 to 6	2.9
110,428	100,389	73,619	58,120	27	28	4 to 6	2.8
114,518	104,107	76,345	60,272	23	23	4 to 6	2.7
118,759	107,963	79,173	62,505	28	27	4 to 6	2.6
118,922	108,111	79,282	62,591	27	26	4 to 6	2.6
119,497	108,633	79,665	62,893	24	23	4 to 6	2.6
123,327	112,115	82,218	64,909	28	26	4 to 6	2.5
123,679	112,436	82,453	65,094	27	25	4 to 6	2.5
124,476	113,160	82,984	65,514	25	23	4 to 6	2.5
127,990	116,355	85,327	67,363	19	17	4 to 6	2.5
128,832	117,120	85,888	67,807	27	24	4 to 6	2.4
129,455	117,686	86,303	68,134	26	23	4 to 6	2.4
133,604	121,458	89,069	70,318	28	24	4 to 6	2.3
134,434	122,213	89,623	70,755	27	23	4 to 6	2.3
138,627	126,024	92,418	72,961	23	19	4 to 6	2.3
139,413	126,739	92,942	73,375	28	23	4 to 6	2.2
144,654	131,504	96,436	76,134	24	19	4 to 6	2.2
150,681	136,983	100,454	79,306	25	19	4 to 6	2.1
154,936	140,851	103,291	81,545	23	17	4 to 6	2.0
156,708	142,462	104,472	82,478	26	19	4 to 6	2.0
161,672	146,975	107,781	85,091	24	17	4 to 6	1.9
162,736	147,942	108,490	85,650	27	19	4 to 6	1.9
168,408	153,099	112,272	88,636	25	17	4 to 6	1.9
168,763	153,421	112,509	88,823	28	19	4 to 6	1.9
175,145	159,223	116,763	92,181	26	17	4 to 6	1.8
175,594	159,631	117,063	92,418	23	15	4 to 6	1.8
181,881	165,346	121,254	95,727	27	17	4 to 6	1.7

**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.**

# SEED METER OPERATION/MAINTENANCE

## PLANTING RATES FOR SUNFLOWER, 54 CELL DISC

15 TOOTH CONTACT WHEEL DRIVE SPROCKET/19 TOOTH REVERSER DRIVE SPROCKET (See Page 7-1)

### APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
22,281	20,256	14,854	11,727	15	28	4 to 6	14.1
23,106	21,006	15,404	12,161	15	27	4 to 6	13.6
23,995	21,814	15,997	12,629	15	26	4 to 6	13.1
24,955	22,686	16,637	13,134	15	25	4 to 6	12.6
25,252	22,956	16,835	13,290	17	28	4 to 6	12.4
25,995	23,632	17,330	13,681	15	24	4 to 6	12.1
26,187	23,807	17,458	13,783	17	27	4 to 6	12.0
27,125	24,659	18,083	14,276	15	23	4 to 6	11.6
27,194	24,722	18,130	14,313	17	26	4 to 6	11.5
28,223	25,657	18,815	14,854	19	28	4 to 6	11.1
28,282	25,711	18,855	14,885	17	25	4 to 6	11.1
29,268	26,607	19,512	15,404	19	27	4 to 6	10.7
29,461	26,782	19,640	15,506	17	24	4 to 6	10.6
30,394	27,631	20,262	15,997	19	26	4 to 6	10.3
30,742	27,947	20,494	16,180	17	23	4 to 6	10.2
31,609	28,736	21,073	16,637	19	25	4 to 6	9.9
32,835	29,850	21,890	17,282	15	19	4 to 6	9.6
32,927	29,933	21,951	17,330	19	24	4 to 6	9.5
34,164	31,059	22,776	17,981	23	28	4 to 6	9.2
34,358	31,235	22,905	18,083	19	23	4 to 6	9.1
35,430	32,209	23,620	18,647	23	27	4 to 6	8.9
35,650	32,409	23,767	18,763	24	28	4 to 6	8.8
36,698	33,362	24,466	19,315	15	17	4 to 6	8.5
36,970	33,609	24,647	19,458	24	27	4 to 6	8.5
37,213	33,830	24,809	19,586	17	19	4 to 6	8.4
39,858	36,235	26,572	20,978	23	24	4 to 6	7.9
38,621	35,110	25,747	20,327	26	28	4 to 6	8.1
39,858	36,235	26,572	20,978	23	24	4 to 6	7.9
39,928	36,298	26,619	21,015	24	25	4 to 6	7.9
40,106	36,460	26,737	21,108	27	28	4 to 6	7.8
41,591	37,810	27,728	21,890	23	23	4 to 6	7.5
43,132	39,211	28,755	22,701	28	27	4 to 6	7.3
43,191	39,265	28,794	22,732	27	26	4 to 6	7.3
43,400	39,454	28,933	22,842	24	23	4 to 6	7.2
44,791	40,719	29,861	23,574	28	26	4 to 6	7.0
44,919	40,835	29,946	23,641	27	25	4 to 6	7.0
45,208	41,098	30,139	23,794	25	23	4 to 6	6.9
46,485	42,259	30,990	24,466	19	17	4 to 6	6.7
46,790	42,537	31,194	24,627	27	24	4 to 6	6.7
47,016	42,742	31,344	24,745	26	23	4 to 6	6.7
48,523	44,112	32,349	25,539	28	24	4 to 6	6.5
48,825	44,386	32,550	25,697	27	23	4 to 6	6.4
50,348	45,770	33,565	26,499	23	19	4 to 6	6.2
50,633	46,030	33,755	26,649	28	23	4 to 6	6.2
52,537	47,761	35,024	27,651	24	19	4 to 6	6.0
54,726	49,751	36,484	28,803	25	19	4 to 6	5.7
56,271	51,155	37,514	29,616	23	17	4 to 6	5.6
56,915	51,741	37,943	29,955	26	19	4 to 6	5.5
58,717	53,379	39,145	30,904	24	17	4 to 6	5.3
59,104	53,731	39,402	31,107	27	19	4 to 6	5.3
61,164	55,604	40,776	32,192	25	17	4 to 6	5.1
61,293	55,721	40,862	32,259	28	19	4 to 6	5.1
63,610	57,828	42,407	33,479	26	17	4 to 6	4.9
63,774	57,976	42,516	33,565	23	15	4 to 6	4.9
66,057	60,052	44,038	34,767	27	17	4 to 6	4.7

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR LARGE DRY EDIBLE BEAN 54 CELL DISC  
22 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
48,203	43,821	32,135	25,370	15	28	4 to 6	6.5
49,988	45,444	33,325	26,309	15	27	4 to 6	6.3
51,911	47,191	34,607	27,321	15	26	4 to 6	6.0
53,987	49,079	35,991	28,414	15	25	4 to 6	5.8
54,630	49,663	36,420	28,752	17	28	4 to 6	5.7
56,236	51,124	37,491	29,598	15	24	4 to 6	5.6
56,653	51,503	37,769	29,817	17	27	4 to 6	5.5
58,681	53,347	39,121	30,885	15	23	4 to 6	5.3
58,832	53,484	39,221	30,964	17	26	4 to 6	5.3
61,057	55,506	40,704	32,135	19	28	4 to 6	5.1
61,185	55,623	40,790	32,203	17	25	4 to 6	5.1
63,318	57,562	42,212	33,325	19	27	4 to 6	5.0
63,735	57,941	42,490	33,545	17	24	4 to 6	4.9
65,753	59,776	43,836	34,607	19	26	4 to 6	4.8
66,506	60,460	44,337	35,003	17	23	4 to 6	4.7
68,383	62,167	45,589	35,991	19	25	4 to 6	4.6
71,035	64,578	47,357	37,387	15	19	4 to 6	4.4
71,233	64,757	47,489	37,491	19	24	4 to 6	4.4
73,911	67,192	49,274	38,900	23	28	4 to 6	4.2
74,330	67,573	49,553	39,121	19	23	4 to 6	4.2
76,648	69,680	51,099	40,341	23	27	4 to 6	4.1
77,124	70,113	51,416	40,592	24	28	4 to 6	4.1
79,393	72,175	52,928	41,786	15	17	4 to 6	4.0
79,981	72,710	53,320	42,095	24	27	4 to 6	3.9
80,507	73,188	53,671	42,372	17	19	4 to 6	3.9
82,780	75,255	55,187	43,568	23	25	4 to 6	3.8
83,551	75,956	55,701	43,974	26	28	4 to 6	3.8
86,229	78,390	57,486	45,384	23	24	4 to 6	3.6
86,379	78,526	57,586	45,463	24	25	4 to 6	3.6
86,765	78,877	57,843	45,666	27	28	4 to 6	3.6
89,978	81,798	59,985	47,357	23	23	4 to 6	3.5
93,311	84,828	62,207	49,111	28	27	4 to 6	3.4
93,439	84,944	62,293	49,178	27	26	4 to 6	3.4
93,890	85,355	62,594	49,416	24	23	4 to 6	3.3
96,900	88,091	64,600	51,000	28	26	4 to 6	3.2
97,176	88,342	64,784	51,146	27	25	4 to 6	3.2
97,802	88,911	65,202	51,475	25	23	4 to 6	3.2
100,564	91,422	67,043	52,928	19	17	4 to 6	3.1
101,226	92,023	67,484	53,277	27	24	4 to 6	3.1
101,715	92,468	67,810	53,534	26	23	4 to 6	3.1
104,975	95,431	69,983	55,250	28	24	4 to 6	3.0
105,627	96,024	70,418	55,593	27	23	4 to 6	3.0
108,921	99,019	72,614	57,327	23	19	4 to 6	2.9
109,539	99,581	73,026	57,652	28	23	4 to 6	2.9
113,657	103,324	75,771	59,819	24	19	4 to 6	2.8
118,392	107,629	78,928	62,312	25	19	4 to 6	2.6
121,735	110,668	81,157	64,071	23	17	4 to 6	2.6
123,128	111,935	82,085	64,804	26	19	4 to 6	2.5
127,028	115,480	84,685	66,857	24	17	4 to 6	2.5
127,864	116,240	85,243	67,297	27	19	4 to 6	2.5
132,321	120,292	88,214	69,643	25	17	4 to 6	2.4
132,599	120,545	88,400	69,789	28	19	4 to 6	2.4
137,614	125,103	91,743	72,428	26	17	4 to 6	2.3
137,967	125,424	91,978	72,614	23	15	4 to 6	2.3
142,907	129,915	95,271	75,214	27	17	4 to 6	2.2

**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.**

# SEED METER OPERATION/MAINTENANCE

**PLANTING RATES FOR LARGE DRY EDIBLE BEAN 54 CELL DISC  
28 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

20" Rows	22" Rows	30" Rows	38" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
				Drive	Driven		
61,349	55,772	40,899	32,289	15	28	4 to 6	5.1
63,621	57,837	42,414	33,485	15	27	4 to 6	4.9
66,068	60,062	44,045	34,773	15	26	4 to 6	4.7
68,711	62,464	45,807	36,163	15	25	4 to 6	4.6
69,529	63,208	46,352	36,594	17	28	4 to 6	4.5
71,574	65,067	47,716	37,670	15	24	4 to 6	4.4
72,104	65,549	48,069	37,949	17	27	4 to 6	4.3
74,685	67,896	49,790	39,308	15	23	4 to 6	4.2
74,877	68,070	49,918	39,409	17	26	4 to 6	4.2
77,708	70,644	51,806	40,899	19	28	4 to 6	4.0
77,872	70,793	51,915	40,985	17	25	4 to 6	4.0
80,587	73,261	53,724	42,414	19	27	4 to 6	3.9
81,117	73,742	54,078	42,693	17	24	4 to 6	3.9
83,686	76,078	55,791	44,045	19	26	4 to 6	3.7
84,644	76,949	56,429	44,549	17	23	4 to 6	3.7
87,033	79,121	58,022	45,807	19	25	4 to 6	3.6
90,409	82,190	60,272	47,584	15	19	4 to 6	3.5
90,660	82,418	60,440	47,716	19	24	4 to 6	3.5
94,068	85,516	62,712	49,510	23	28	4 to 6	3.3
94,602	86,001	63,068	49,790	19	23	4 to 6	3.3
97,552	88,684	65,035	51,343	23	27	4 to 6	3.2
98,158	89,235	65,439	51,662	24	28	4 to 6	3.2
101,045	91,859	67,363	53,182	15	17	4 to 6	3.1
101,794	92,540	67,862	53,576	24	27	4 to 6	3.1
102,463	93,148	68,309	53,928	17	19	4 to 6	3.1
105,356	95,778	70,238	55,451	23	25	4 to 6	3.0
106,338	96,671	70,892	55,967	26	28	4 to 6	2.9
109,746	99,769	73,164	57,761	23	24	4 to 6	2.9
109,937	99,943	73,291	57,862	24	25	4 to 6	2.9
110,428	100,389	73,619	58,120	27	28	4 to 6	2.8
114,518	104,107	76,345	60,272	23	23	4 to 6	2.7
118,759	107,963	79,173	62,505	28	27	4 to 6	2.6
118,922	108,111	79,282	62,591	27	26	4 to 6	2.6
119,497	108,633	79,665	62,893	24	23	4 to 6	2.6
123,327	112,115	82,218	64,909	28	26	4 to 6	2.5
123,679	112,436	82,453	65,094	27	25	4 to 6	2.5
124,476	113,160	82,984	65,514	25	23	4 to 6	2.5
127,990	116,355	85,327	67,363	19	17	4 to 6	2.5
128,832	117,120	85,888	67,807	27	24	4 to 6	2.4
129,455	117,686	86,303	68,134	26	23	4 to 6	2.4
133,604	121,458	89,069	70,318	28	24	4 to 6	2.3
134,434	122,213	89,623	70,755	27	23	4 to 6	2.3
138,627	126,024	92,418	72,961	23	19	4 to 6	2.3
139,413	126,739	92,942	73,375	28	23	4 to 6	2.2
144,654	131,504	96,436	76,134	24	19	4 to 6	2.2
150,681	136,983	100,454	79,306	25	19	4 to 6	2.1
154,936	140,851	103,291	81,545	23	17	4 to 6	2.0
156,708	142,462	104,472	82,478	26	19	4 to 6	2.0
161,672	146,975	107,781	85,091	24	17	4 to 6	1.9
162,736	147,942	108,490	85,650	27	19	4 to 6	1.9
168,408	153,099	112,272	88,636	25	17	4 to 6	1.9
168,763	153,421	112,509	88,823	28	19	4 to 6	1.9
175,145	159,223	116,763	92,181	26	17	4 to 6	1.8
175,594	159,631	117,063	92,418	23	15	4 to 6	1.8
181,881	165,346	121,254	95,727	27	17	4 to 6	1.7

**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.**

# SEED METER OPERATION/MAINTENANCE

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

Meter Setting	20" Rows	22" Rows	30" Rows	38" Rows
<b>CLAY GRANULES</b>				
10	7.4	6.7	4.9	3.9
11	8.1	7.3	5.4	4.3
12	9.2	8.3	6.1	4.8
13	10.4	9.4	6.9	5.4
14	11.6	10.5	7.7	6.0
15	12.8	11.6	8.5	6.7
16	14.4	13.1	9.6	7.6
17	16.1	14.6	10.7	8.4
18	17.1	15.5	11.4	9.0
19	19.7	17.8	13.1	10.3
20	21.3	19.3	14.2	11.2
21	23.3	21.1	15.5	12.3
22	24.6	22.3	16.4	12.9
23	25.8	23.4	17.2	13.6
24	28.2	25.6	18.8	14.9
25	31.4	28.4	20.9	16.5
26	34.5	31.3	23.0	18.1
27	36.2	32.8	24.1	19.0
28	38.1	34.5	25.4	20.1
29	41.7	37.8	27.8	22.0
30	44.4	40.3	29.6	23.4
<b>SAND GRANULES</b>				
5	4.4	3.9	2.9	2.3
6	7.4	6.7	4.9	3.8
7	8.0	7.2	5.3	4.2
8	9.5	8.6	6.3	5.0
9	11.7	10.6	7.8	6.1
10	13.4	12.1	8.9	7.0
11	15.3	13.9	10.2	8.0
12	16.8	15.2	11.2	8.8
13	18.9	17.1	12.6	10.0
14	21.2	19.2	14.1	11.1
15	23.3	21.1	15.5	12.3
16	26.3	23.8	17.5	13.8
17	29.1	26.4	19.4	15.3
18	32.7	29.7	21.8	17.2
19	36.5	33.1	24.3	19.1
20	38.6	35.0	25.7	20.3
21	41.4	37.5	27.6	21.8
22	44.4	40.3	29.6	23.4
23	48.0	43.5	32.0	25.3
24	51.6	46.8	34.4	27.2
25	55.4	50.2	36.9	29.1

**NOTE:** 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. See "Checking Granular Chemical Application Rate" page for additional information.



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

# SEED METER OPERATION/MAINTENANCE

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## DRY HERBICIDE APPLICATION RATES

APPROXIMATE POUNDS/ACRE AT 5 MPH FOR VARIOUS ROW WIDTHS

### CLAY GRANULES

Meter Setting	20" Rows	22" Rows	30" Rows	38" Rows
10	7.1	6.4	4.7	3.7
11	7.8	7.1	5.2	4.1
12	8.7	7.9	5.8	4.6
13	9.8	8.8	6.5	5.1
14	11.0	9.9	7.3	5.7
15	12.3	11.2	8.2	6.5
16	13.5	12.2	9.0	7.1
17	14.9	13.5	9.9	7.8
18	16.1	14.6	10.7	8.4
19	17.4	15.8	11.6	9.2
20	18.9	17.1	12.6	10.0
21	20.4	18.5	13.6	10.7
22	21.9	19.9	14.6	11.5
23	23.6	21.4	15.7	12.4
24	25.5	23.1	17.0	13.4
25	27.2	24.6	18.1	14.3
26	29.1	26.4	19.4	15.3
27	31.4	28.4	20.9	16.5
28	33.9	30.7	22.6	17.8
29	36.5	33.1	24.3	19.1
30	40.1	36.3	26.7	21.2

**NOTE:** 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. See "Checking Granular Chemical Application Rate" page for additional information.



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

## SEED METER OPERATION/MAINTENANCE

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**See “Liquid Fertilizer Rate Charts”  
in Machine Operation section.**

# SEED METER OPERATION/MAINTENANCE

## SEED METER SINGULATOR BRUSH AND VACUUM LEVEL ADJUSTMENTS

### SEED DISC SELECTION

CROP	CELLS	SEED SIZE RANGE	COLOR-CODE
Corn	39	35 To 70 Lbs./80,000 Kernel Count	Light Blue
Low-Rate Corn	24	35 To 70 Lbs./80,000 Kernel Count	Light Green
Popcorn	39	2210 To 4200 Seeds/Lb.	Light Blue
Low-Rate Popcorn	24	2210 To 4200 Seeds/Lb.	Light Green
Soybean	60	2200 To 4000 Seeds/Lb.	Black
High-Rate Soybean	120	2200 To 4000 Seeds/Lb.	Dark Blue
Milo/Grain Sorghum	60	10,000 To 20,000 Seeds/Lb.	Yellow
Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell)	20	3800 To 5200 Seeds/Lb.	Brown
Cotton, Acid-Delinted	54	3800 To 5200 Seeds/Lb.	Dark Green
Dry Edible Bean (Small)	54	1200 To 2500 Seeds/Lb.	Dark Green
Dry Edible Bean (Large)	54	800 To 1200 Seeds/Lb.	Tan

### EDGEVAC® INITIAL SETTINGS

CROP	SIZE	SEED DISC	SINGULATOR BRUSH SETTING	VACUUM SETTING (H <sub>2</sub> O)	SEE NOTES
Corn	35-45 Lbs./80k	Corn/Popcorn	7	20	4, 5
	45-60 Lbs./80k	Corn/Popcorn	6	20	4, 5
	60-70 Lbs./80k	Corn/Popcorn	5	20	4, 5
Popcorn	2210-4200 Seeds/Lb.	Corn/Popcorn	9	18	1, 4, 5
Soybeans	2200-4000 Seeds/Lb.	Soybean	5	10	1
Milo/Grain Sorghum	10,000-20,000 Seeds/Lb.	Milo/Grain Sorghum	7	18	1, 2
Hill-Drop Cotton	3800-5200 Seeds/Lb.	Hill-Drop Cotton	8	23	3
Cotton	3800-5200 Seeds/Lb.	Cotton	8	20	3
Edible Beans	800-1200 Seeds/Lb.	Large Edible Bean	5	18	5
	1200-2500 Seeds/Lb.	Small Edible Bean	6	18	3, 5

#### NOTES:

- Requires use of seed meter baffle. Refer to page 7-3 for additional information.
- Requires use of cleanout brush. Refer to page 7-3 for additional information.
- Requires use of cleanout brush w/ball-type ejector. Refer to page 7-3 for additional information.
- For flat seeds, higher vacuum level may be required.
- Larger seeds may require a lower numbered singulator brush setting from the initial setting. Smaller seeds may require a higher numbered setting.

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

**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.

**NOTE:** Singulator brush settings are marked from 1 thru 11. The lower the singulator brush setting, the less aggressive. The higher singulator brush settings are the most aggressive. Refer to illustrations on page 7-27.

**NOTE:** Optimum meter performance will be attained with consistent seed size and shape. A mixture of seed sizes and shapes will affect meter performance.

**NOTE:** Use 1 tablespoon powdered graphite with each hopper fill of seed. Seed treatment, foreign material, dirt or seed chaff may cause gradual reduction of seed disc fill (population). See “Seed Meter”.

**NOTE:** Excessive seed treatment, humidity and light-weight seed can affect meter performance. Use 1/2 cup of talc with each hopper fill of seed and mix thoroughly so that all seeds are coated, adjust rates as needed. Use of talc will aid the seed flow into the meter, singulation and seed drop from the disc.

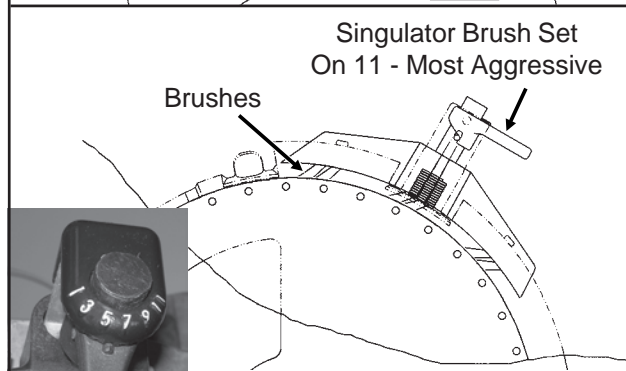
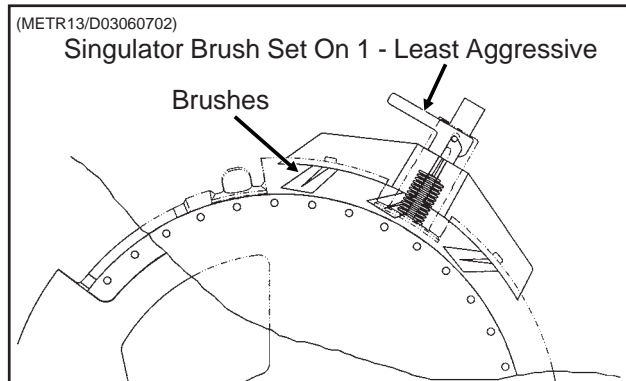
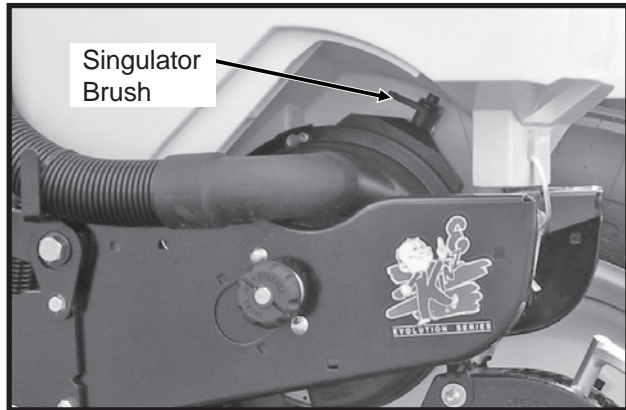


# SEED METER OPERATION/MAINTENANCE

**STEP 1** Select seed disc (and seed meter baffle, cleanout brush and/or cleanout brush w/ball-type ejector if applicable) to match crop and population.

**STEP 2** Adjust the singulator brush setting. Note that seed size, seed shape, seed treatments, travel speed and planting rate will all affect meter performance.

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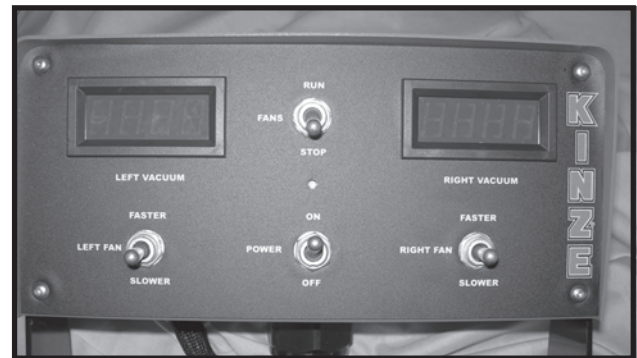


**STEP 3** Adjust vacuum level to the initial setting according to the tables on preceding page. Note that seed size, seed shape, seed treatments, travel speed and planting rate will all affect meter performance.

With vacuum fans running, lower planter to planting position and drive forward a short distance to load seed into the seed disc cells.

**NOTE:** Vacuum reading will be much lower when seed disc cells are empty. Prior to setting vacuum level, load all seed cells.

D10060618



See “Digital Vacuum Gauge Operation” in Machine Operation section

**NOTE:** Operate vacuum fans 3-5 minutes to bring oil up to normal operating temperature prior to making the final vacuum level adjustment.

**STEP 4** Perform optional seed disc fill check.

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With vacuum hose connected and vacuum fan operating, remove vacuum cover and seed disc as an assembly. Inspect seed discs for proper seed fill.

See “Seed Metering System Troubleshooting” at the end of this section.

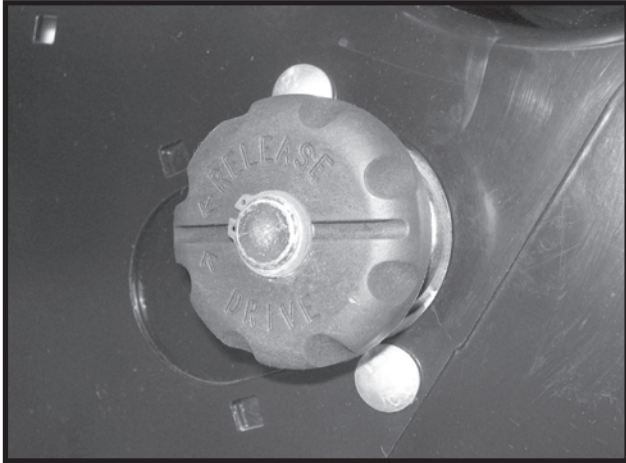
# SEED METER OPERATION/MAINTENANCE

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## SEED METER DRIVE RELEASE

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

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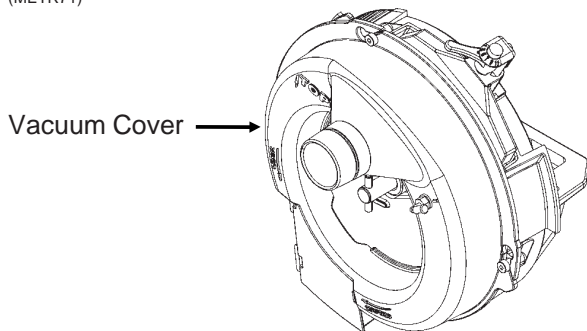


To disengage the drive, turn the knob  $\frac{1}{4}$  turn counter-clockwise. To engage the drive, turn the knob  $\frac{1}{4}$  turn clockwise.

# SEED METER OPERATION/MAINTENANCE

## SEED METER MAINTENANCE

(METR71)



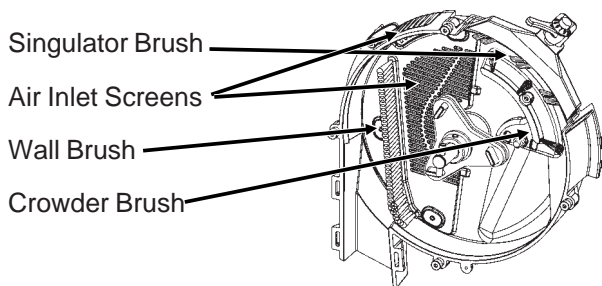
Clean, high quality seed should be used for maximum meter accuracy. Damaged or cracked seed, hulls or foreign material may become lodged in the seed disc orifices and greatly reduce meter accuracy.

It is suggested that the seed disc be inspected and cleaned daily, checking for any buildup of foreign material or any blocked orifices. Clean the seed disc by washing it with soap and water as needed. Dry thoroughly.

Inspect singulator brush for wear and replace if necessary following every 200 acres per row of operation.

The seed disc and/or vacuum cover should be replaced if abnormally high vacuum is required for consistent operation or if consistent operation can not be achieved. If adjustment of the singulator brush does not affect performance of the meter or if the brushes appear frayed, the singulator brush may need to be replaced. If the seed disc orifices are plugged frequently with seed remnants, the cleanout brush or cleanout brush with ball-type ejector (if applicable) may need to be replaced. High quality seed should be used to attain best performance.

(METR70)



Prior to each planting season, inspect seed discs, singulator brush, crowder brush, wall brush and air inlet screens and clean or replace as needed.

See "Preparation For Storage" for additional EdgeVac® Seed Metering System maintenance.

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

**NOTE:** Remove seed discs from meters for annual storage and store the seed discs vertically on a dowel or pipe.

## VACUUM MANIFOLD MAINTENANCE

In the course of normal operation, dust will accumulate in manifolds and hoses. Manifolds should be cleaned annually. More frequent cleaning may be necessitated by abnormally dusty planting conditions.

Remove vacuum hose from each seed meter. Operate the vacuum fan at full hydraulic flow from the tractor for two minutes to clear manifolds, hoses and fittings of dust and debris.

# SEED METER OPERATION/MAINTENANCE

## SEED METERING SYSTEM TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Low seed count.	Meter RPM too high.	Reduce planting rate or planting speed.
	Singulator brush setting too aggressive.	Adjust singulator brush.
	Vacuum level too low.	Increase fan speed.
	Seed sensor not picking up all seeds dropped.	Clean seed tube. Move meter to different row.
	Seeds sticking to seed disc.	Use graphite or talc to aid release.
	Seed treatment buildup in seed disc recesses.	Reduce amount of treatment used and or mix thoroughly. Add talc.
	Seed size too large for disc used.	Use appropriate disc for seed size.
	Wrong transmission setting.	Change transmission to desired rate.
	Wrong seed disc.	Use appropriate disc for seed type and size.
	Drive wheel slippage.	Compensate by adjusting transmission sprockets.
	Low tire pressure.	Adjust tire pressure to correct level.
	Failed/worn drive components.	Inspect and replace parts as required.
	Plugged orifices in seed disc.	Inspect and clean disc. Check cleanout brush. (If Applicable)
	Loss of vacuum at meter.	Check for foreign material between vacuum cover and disc. Inspect parts for wear/damage. Clean or replace as required.
	Seed bridging in hopper.	Add graphite to improve seed flow.
	Faulty vacuum gauge reading.	Repair/replace gauge.
	Dirt in vacuum manifold.	Check vacuum manifold for dirt and clean.
	Seed baffle (If Applicable) not allowing seed flow due to bridging of seed.	Thoroughly mix talc to coat all seeds. Remove seed baffle. See "Seed Meter" in Seed Meter Operation/Maintenance section.
	60 cell soybean disc not filling properly due to excessive RPM.	Replace with 120 cell soybean disc.
	Seed disc worn.	Replace.
Vacuum cover worn.	Replace.	
Not planting seed.	Seed hoppers empty.	Fill seed hopper.
	Seed tube plugged/damaged.	Clean or replace tube.
	Meter drive damaged.	Repair/replace drive components.
	Low/no vacuum.	Inspect vacuum system and repair as necessary.
	Singulator brush setting too aggressive.	Adjust singulator brush.
	Faulty vacuum gauge.	Repair/replace vacuum gauge.
	Seed bridging in hopper.	Add graphite to improve seed flow.
	Loss of vacuum at meter.	Check for foreign material between vacuum cover and disc. Inspect parts for wear/damage. Clean and/or replace as required.
	Wrong seed disc.	Use appropriate disc for seed type and size.
	Meter drive clutch not engaged.	Engage drive clutch.
	Fan not running.	Start fan.
Dirt in vacuum manifold.	Check vacuum manifold for dirt and clean.	

(Continued On Following Page)

# SEED METER OPERATION/MAINTENANCE

## SEED METERING SYSTEM TROUBLESHOOTING (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Not planting seed. (Continued)	Seed baffle (If Applicable) not allowing seed flow due to bridging of seed.	Thoroughly mix talc to coat all seeds. Remove seed baffle. See "Seed Meter" in Seed Meter Operation/Maintenance section.
	60 cell soybean disc not filling properly due to excessive RPM.	Replace with 120 cell soybean disc.
High seed count.	Wrong transmission setting.	Change transmission to desired rate.
	High vacuum.	Adjust vacuum level to appropriate level.
	Wrong seed disc.	Replace seed disc.
	Singulator brush setting not aggressive enough.	Adjust singulator brush.
	Worn singulator brush.	Inspect brush and replace as required.
	Seed leaking past wall brush.	Inspect wall brush condition and installation. Replace as necessary.
	Faulty vacuum gauge.	Check gauge line for dirt/obstruction. Repair/replace vacuum gauge.
Poor seed spacing.	Obstruction in seed tube.	Clean seed tube.
	Dirty/damaged seed disc.	Inspect seed disc for damage, foreign material in orifices or seed treatment buildup in recesses. Clean or replace as required.
	Wrong vacuum setting.	Adjust vacuum to appropriate level.
	Excess foreign material in seed.	Inspect and clean meter and seed discs. Use clean, undamaged seed.
	Incorrect singulator brush setting.	Adjust singulator brush to appropriate setting.
	Inconsistent driveline.	Inspect drive components for rust, misalignment, worn or damaged parts. Replace/repair as required.
	Toolbar not level or wrong height.	Adjust hitch to level toolbar and row units.
	Planting too fast for conditions.	Reduce speed.
	Rough field conditions.	Reduce speed.
Irregular seed population.	Driving too fast.	Reduce speed.
	Drive wheels slipping.	Reduce speed. Decrease row unit down pressure spring settings.
Unable to achieve desired vacuum level.	Tractor hydraulic flow set too low.	Increase flow to fan motor.
	Incorrect hydraulic connections.	Check all hydraulic connections and hose routings.
	Damaged fan components.	Inspect motor and impeller for wear/damage and repair/replace as necessary.
	Vacuum hose pinched/kinked/ blocked.	Inspect air lines for any damage or obstruction. Clean air lines and manifold by removing end cap from manifold and running fan at high speed.
	Vacuum hose loose/disconnected.	Inspect and reattach all air hoses.
	Tractor not producing required hydraulic flow/pressure.	Have tractor serviced by qualified technician.
	Dirt in vacuum gauge line.	Check gauge line for dirt/obstruction and clean.

# SEED METER OPERATION/MAINTENANCE

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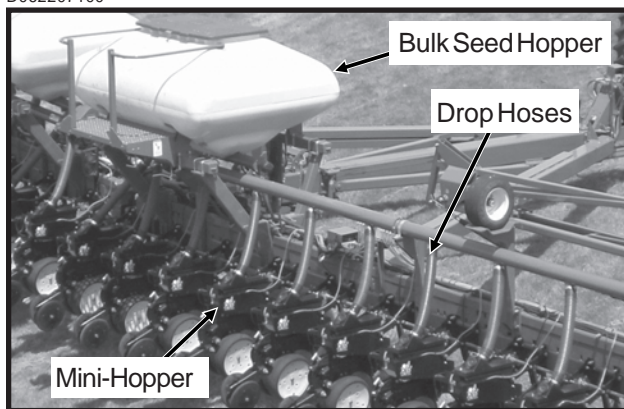
# SDS SEED DELIVERY SYSTEM OPERATION

## INTRODUCTION

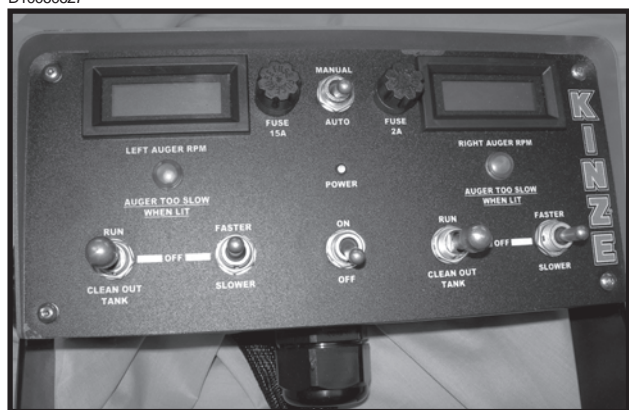
The seed delivery system consists of two bulk seed hoppers with removable lids that each service half of the planter. Approximate capacity of each hopper is 55 bushels for a total of 110 bushels. Seed hoppers are accessible via rear-mounted ladders and access decks. Individual mini-hoppers are filled from the central-mounted seed hoppers with 3 1/2" diameter augers in steel tubes which flex to match wing flex and fold requirements. The auger system is hydraulic driven with two variable speed motors controlled from a cab mounted console. The control console includes two electronic tachometers and switches for master shut-off and variable speed control by section. The system is driven on-demand to ensure constant supply to all rows. Limit switches disable the system when the planter is in folded position.

The mini-hoppers are used in lieu of conventional seed hoppers. The row units and seed meters are the same as used on other KINZE® planters.

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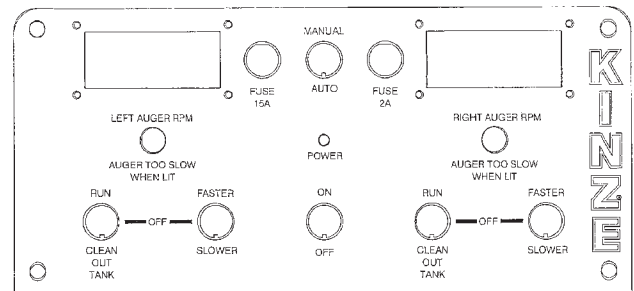
**NOTE:** After all row outlets are filled to capacity, seed will continue to be evenly distributed to all rows until the bulk seed hopper is empty. When the bulk seed hopper is empty or the auger system is shut off, all drop hoses will “plant out” equally and all rows should run out of seed at approximately the same time.

## OPERATION

To operate the Seed Delivery System (SDS) the tractor must be equipped with a closed center hydraulic system.

Position the main power switch on the control console to **ON**. The left and right side of the planter use independent systems that operate the same, except for auger flighting direction. Toggle switches are used to control the auger systems on each half of the planter. To operate, place switches in **RUN** position. Place hydraulic lever in **ON** position. The auger systems will continue to run until they have charged the system. The operator can increase or decrease the speed by utilizing the **FASTER/SLOWER** switches positioned to the right of each **RUN** switch. Auger RPM is displayed for each side using an LCD tachometer. Recommended starting speed is 100 RPM. The operator must adjust for the type and weight of seed and population being planted.

(FWD83)



The outermost drop on each side of the planter is equipped with a proximity sensor that will stop the system when the drop tube is full. When the seed level drops away from the sensor, the system will automatically start after a short time delay (approximately 2 minutes). The augers will then restart and run until the system is fully recharged. If the system does not recharge fast enough, a light on the display will illuminate. Increase the auger RPM to ensure adequate seed availability.

In the event of a sensor failure, the system will not operate. Hold the **MANUAL/AUTO** switch in the **MANUAL** position to override the sensor and run the system. This override is intended **ONLY** for emergency operation until the system can be repaired. An additional shut-off switch (limit switch) on each outboard end is designed to keep the system from stuffing if the proximity sensor fails and the **MANUAL** run switch is engaged too long.

(Continued On Following Page)

# SDS SEED DELIVERY SYSTEM OPERATION

(Continued)



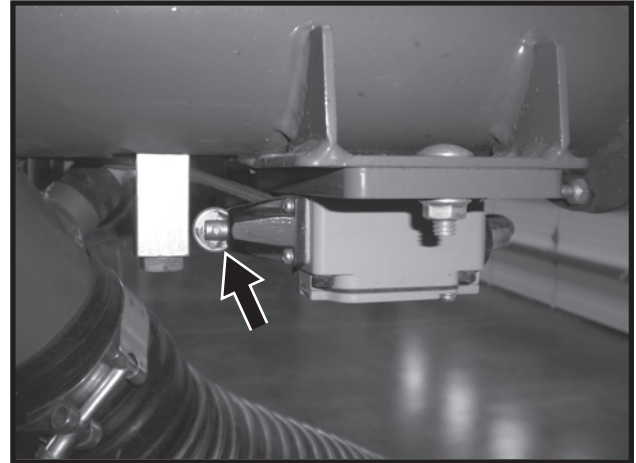
**WARNING:** ALWAYS use master power switch to turn the system OFF when leaving the tractor operator platform, as the system can start and run at any time if seed demand occurs. Always turn the system OFF before transport. A limit switch on each half of the system at the center of the planter disables the system when the planter is folded.

To empty the bulk seed hoppers, a nipple is provided near the hydraulic motor on each hopper. Connect a 3" hose to each nipple and move the **RUN/CLEANOUT TANK** switch to **CLEANOUT**. To operate toggle lever, pull the toggle lever out and reposition it to the **CLEANOUT** position. The auger below the hopper will run in reverse to empty the hopper. The rest of the system will not run in reverse.

## ADJUSTMENT OF LIMIT (SAFETY) SWITCHES AND PROXIMITY SENSORS

LIMIT SWITCHES - LOCATED ON OUTER ENDS OF PLANTER

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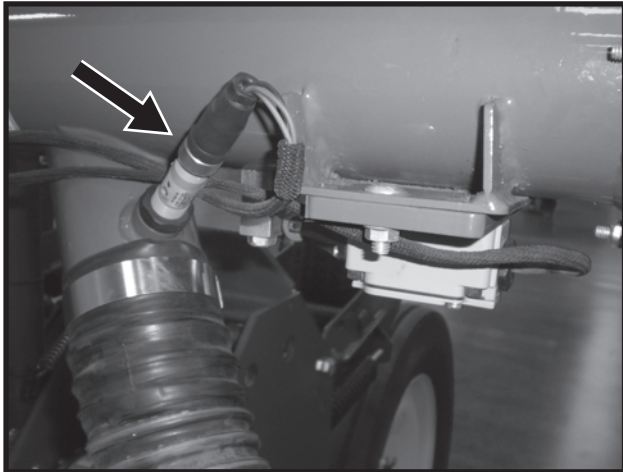
The limit (secondary overload) switches on the outer ends of the auger tubes are connected as normally CLOSED switches. When relaxed (no pressure applied to the roller), they allow current to flow through the switches. A  $\frac{1}{8}$ " air gap should be maintained between the switch roller and the actuator arm when all components are in a relaxed state to allow current to pass through the switches. This function can be tested by turning the system ON. While the system is running, carefully pull back the actuator arm until it makes contact with the switch roller. Continue to pull the actuator arm back another  $\frac{1}{4}$ ". The system should shut off and then restart when the actuator arm is released. To adjust for  $\frac{1}{8}$ " air gap, reposition the switch by loosening the bolts holding the retainer plate, making the adjustment and then retightening.



# SDS SEED DELIVERY SYSTEM OPERATION

## PROXIMITY SENSORS

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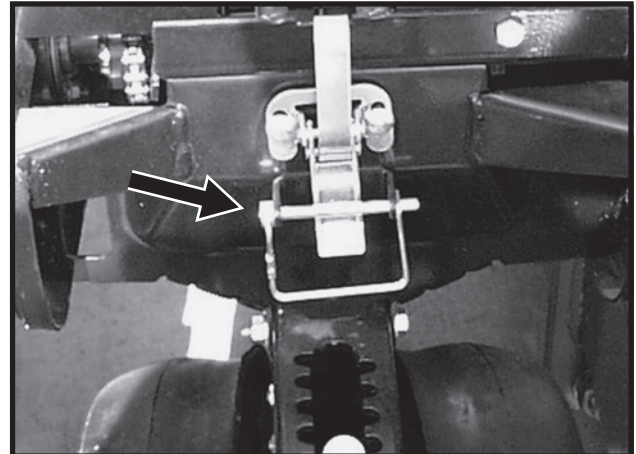
The proximity sensor screws into the outer drop tube at each end of the planter. The tip of the sensor should be approximately  $\frac{1}{2}$ " up from the bottom of the deflector pad in the drop tube. When replacing a sensor draw a line on the sensor  $1\frac{1}{2}$ " from the sensing tip. Screw the sensor into the drop tube until the line is just below the surface. Rotate the sensor so the indicator light is visible. Tighten the plastic jam nut to prevent the sensor from rotating and vibrating. Be careful not to over tighten the jam nut.

To test the sensor, turn the key ON in the tractor but DO NOT start the tractor. Turn the power switch ON. The control console power light should be illuminated. The sensor light should only be illuminated if it senses seed. Remove the drop hose and pass your finger under the sensor. When your finger passes within 12 mm (approximately  $\frac{7}{16}$ " ) of the tip of the sensor the indicator light on the sensor should come on. When you remove your finger the light should go out. If the light stays illuminated, try cleaning the sensor with a dry cloth. DO NOT adjust the sensitivity on the sensor without contacting factory service personnel.

## MINI-HOPPER LATCH

Due to the pull exerted by the drop hose on the mini-hopper as the row unit moves up and down, a pin is provided to secure the mini-hopper latch.

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# SDS SEED DELIVERY SYSTEM OPERATION

## SEED LUBRICATION

The use of powdered graphite is recommended. In addition to the benefits graphite provides the seed meters, graphite will also aid seed flow through the bulk seed auger system. If seed treatments or inoculants that add moisture to the seed are used, talc is recommended along with the graphite. Be sure to test unfamiliar combinations before completely filling the system. Apply any seed treatments, graphite and/or talc alternately in layers with the seed while filling the bulk seed hoppers. The auger system will assist in mixing the seed, seed treatments, graphite and/or talc. For this reason, pre-mixing may not be as critical as with planters equipped with individual seed hoppers.

82354-1e



See Seed Meter Operation/Maintenance.

## SDS TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
System does not operate.	No power to main switch.	Check to be sure the main power switch and RUN switch are both ON. Check all fuses.
	Limit switches incorrectly positioned.	Check to make sure limit switches are adjusted correctly.
	Faulty proximity sensor.	Check if proximity sensors are working correctly. Replace if necessary.
	Built-in 2 minute delay.	Wait 2-3 minutes after cycling proximity sensors to determine if system is in TIME DELAY mode.
	No hydraulic flow.	Check to determine tractor hydraulic valve is detented ON (in the correct position) and set for proper flow.
	Auger speed set too low.	Increase auger speed. If set too slow system may stall.

# ROW UNIT OPERATION

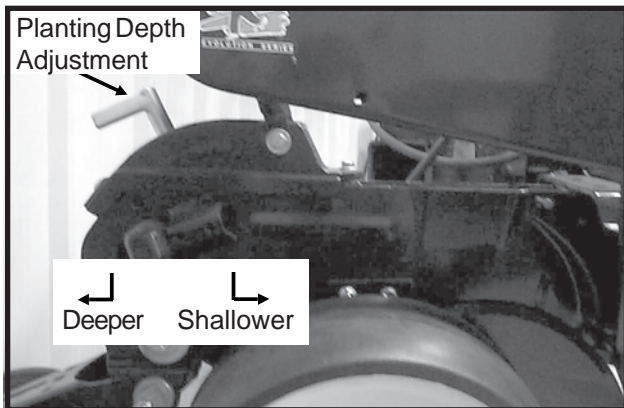
## PLANTING DEPTH

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 push down on 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. Available depth adjustment range is approximately 1/2" to 3 1/2".



**WARNING:** Never work under the planter while in raised position without using safety lockup devices.

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

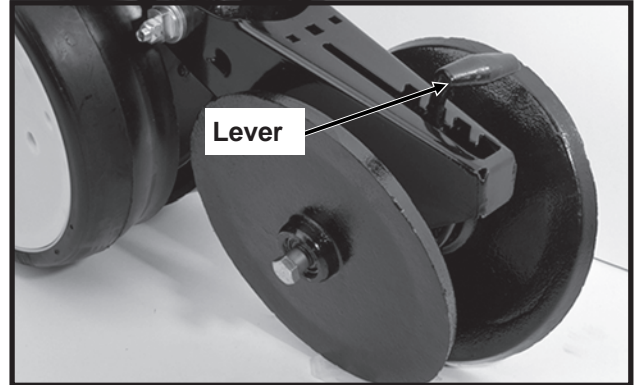


**WARNING:** Raise planter and install safety lockup devices before making closing wheel adjustments.

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.

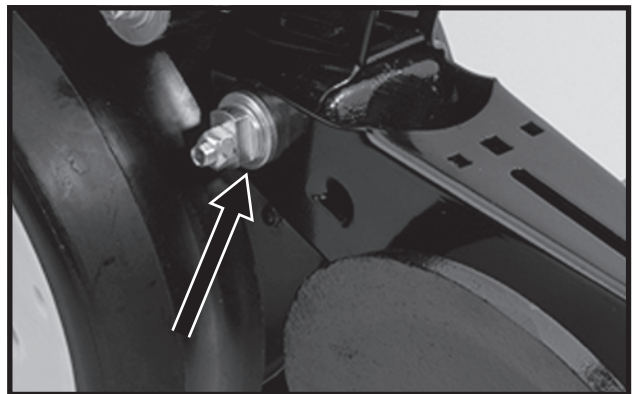
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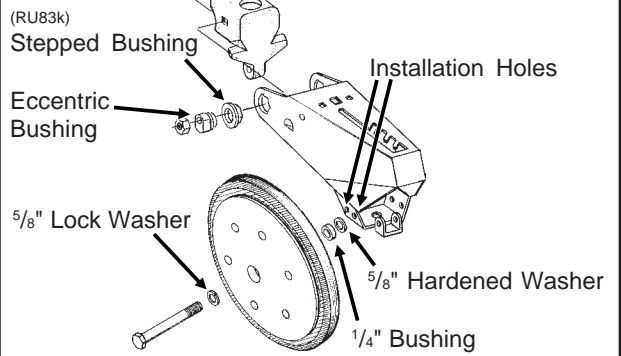
Light soil usually requires less down force at average depth (approximately 2") while heavy soil requires increased down force.

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.

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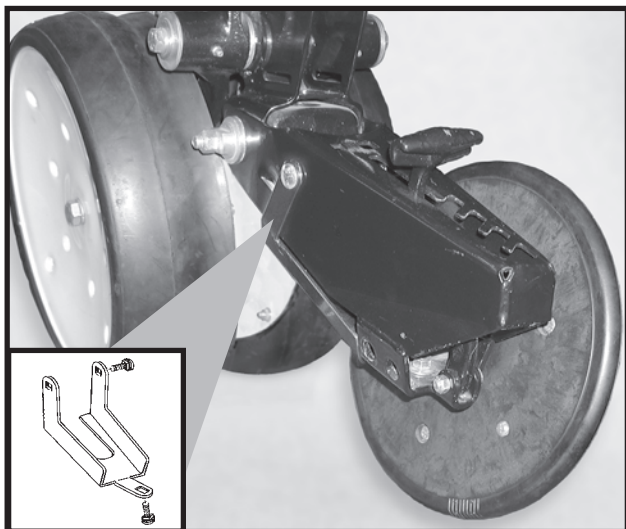
The closing wheels can be installed in two locations either "offset" (to improve residue flow) or "directly" opposite. If set "directly" opposite, the forward installation holes should be used.



# ROW UNIT OPERATION

## CLOSING WHEEL SHIELD (Rubber And Cast Iron “V” Closing Wheels)

D11090208a



**Shown With Closing Wheel Removed For Visual Clarity**

The optional closing wheel shield is designed to be installed onto the underside of the closing wheel arm to help prevent root balls and stalks from plugging the closing wheels.

## COVERING DISCS/SINGLE PRESS WHEEL ADJUSTMENT



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

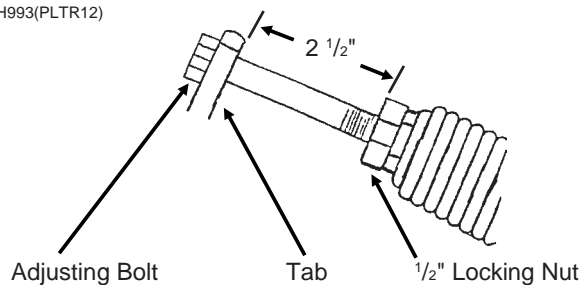
72359-31



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 or out to decrease down force. Tighten locking nut against spring plug. Adjust all row units to a similar setting.

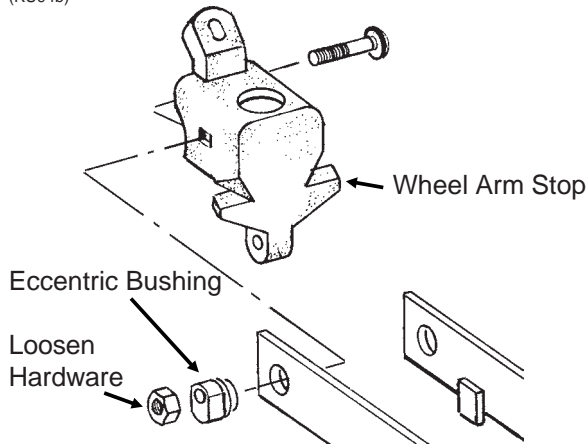
RH993(PLTR12)



# ROW UNIT OPERATION

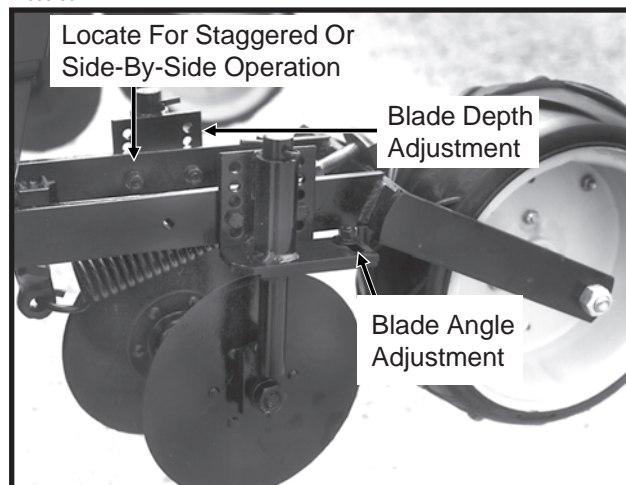
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the covering discs/single press wheel assembly. Using a  $\frac{3}{4}$ " wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another  $\frac{3}{4}$ " wrench, turn the eccentric bushings until the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

(RU94b)



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



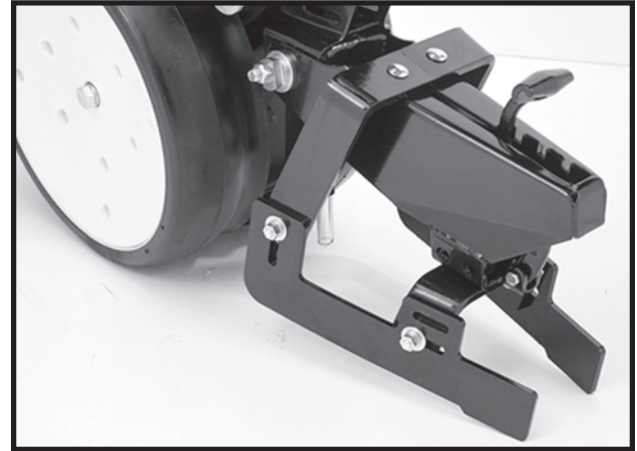
Five sets of holes in each disc bracket allow for  $\frac{1}{2}$ " incremental blade depth adjustment.

Slotted holes in the disc mount and bracket allow for  $0^\circ - 15^\circ$  blade angle adjustment.

Adjust covering discs on all row units to similar settings.

## DRAG CLOSING ATTACHMENT

LF212299-18



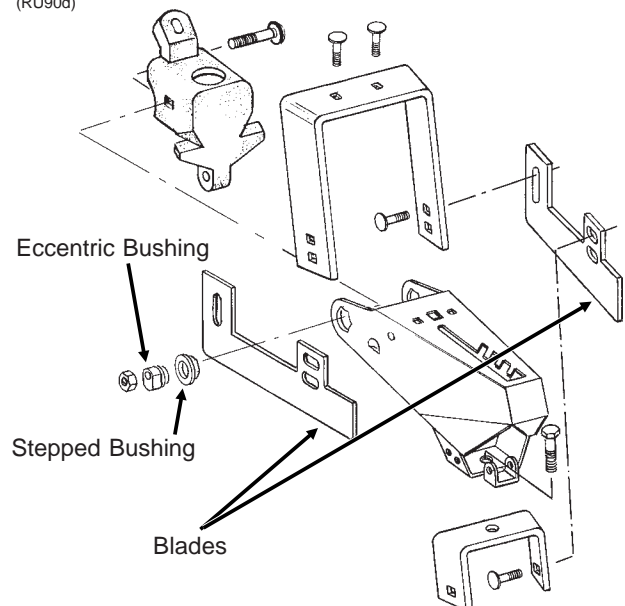
The drag closing attachment is designed to pull loose soil over the seed trench.

Front and rear adjustment is made using the slotted holes in the blades. Adjust all rows the same.

**NOTE: Use of a seed firming wheel or other seed firming device is recommended with the drag closing attachment.**

**WARNING: Raise planter and install safety lockup devices before making drag closing attachment adjustments.**

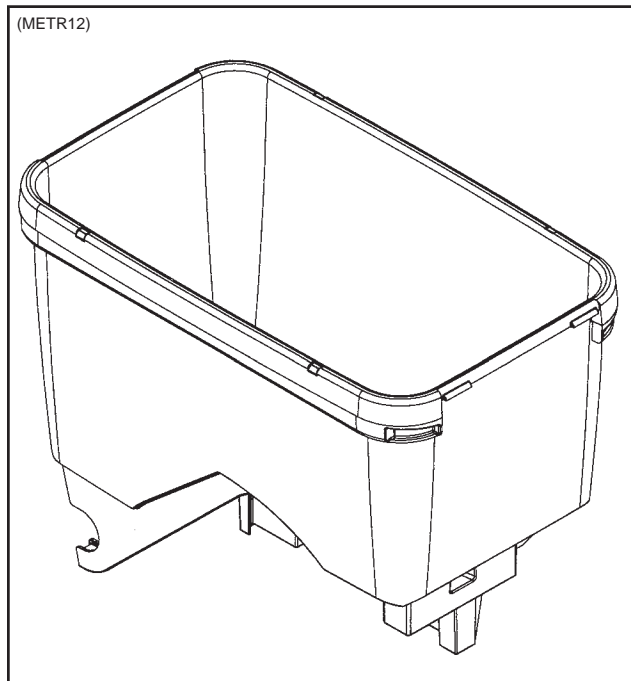
(RU90d)



Eccentric bushings allow for lateral adjustment of the drag closing attachment. Using a  $\frac{3}{4}$ " wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another  $\frac{3}{4}$ " wrench, turn the eccentric bushings until the drag closing attachment is aligned with the seed trench.

# ROW UNIT OPERATION

## SEED HOPPER (Conventional Seed Hoppers)

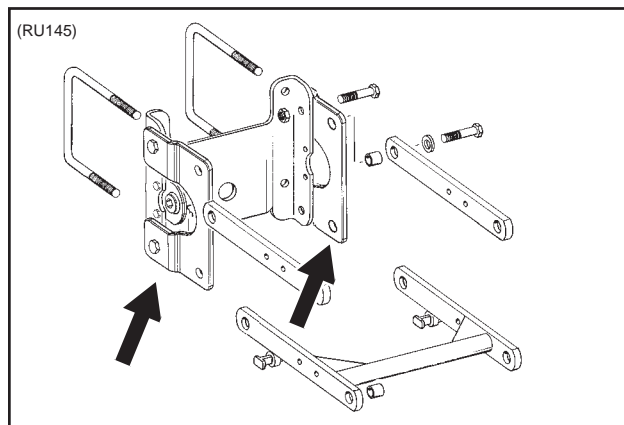


The capacity of each seed hopper is 1.75 bushels.

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 "Seed Meter" in Seed Meter Operation/Maintenance section.

Periodically empty the hoppers completely to remove any foreign material and to ensure proper seed meter operation. To empty hopper, disengage meter drive and hopper latch and lift hopper off the hopper support. See "Seed Meter Drive Release" in Seed Meter Operation/Maintenance section.

## ROW UNIT EXTENSION BRACKETS



Model 3700 planters with 20" or 22" row spacing require the use of row unit extension brackets at the wing lift wheel arms when the planter is equipped with coulters mounted residue wheels. The brackets extend the row units rearward 4" to provide required clearance.

# ROW UNIT OPERATION

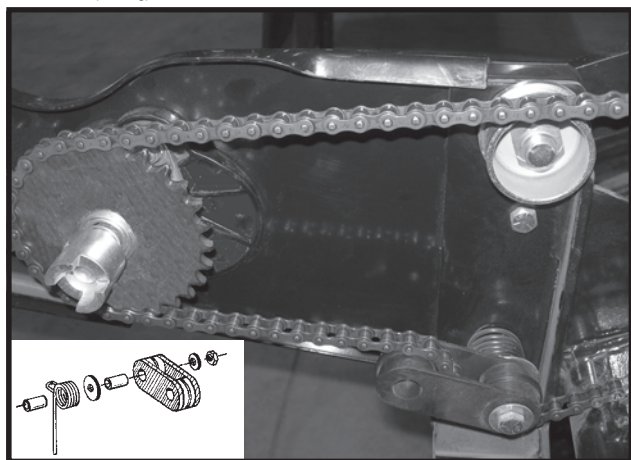
## ROW UNIT CHAIN ROUTING

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

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

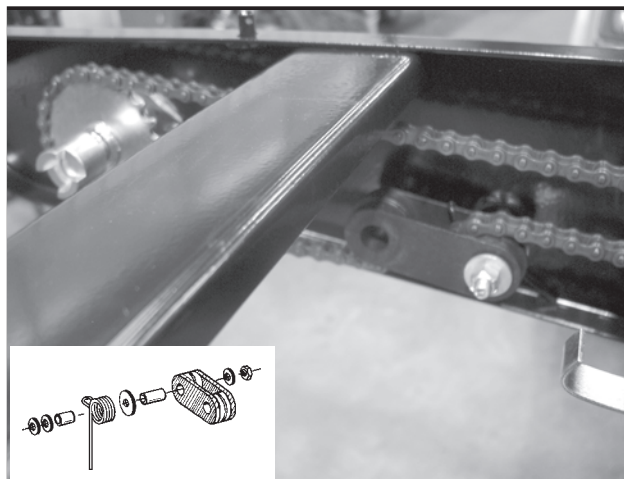
**NOTE: When idler shows signs of wear, it can be reversed for prolonged use.**

D09280611a(RU80g)



**Pull Row Unit Meter Drive**

D051705102



**Row Unit Granular Chemical Drive**

**NOTE: Make sure connector link is installed with closed end oriented properly as shown below.**

(PLTR24)



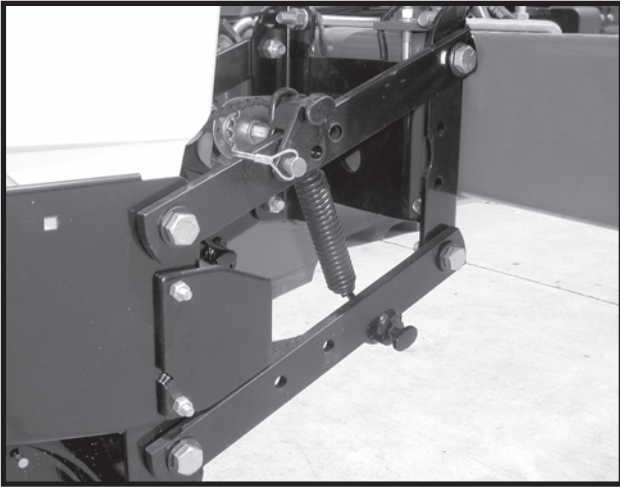
# ROW UNIT OPERATION

## 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.

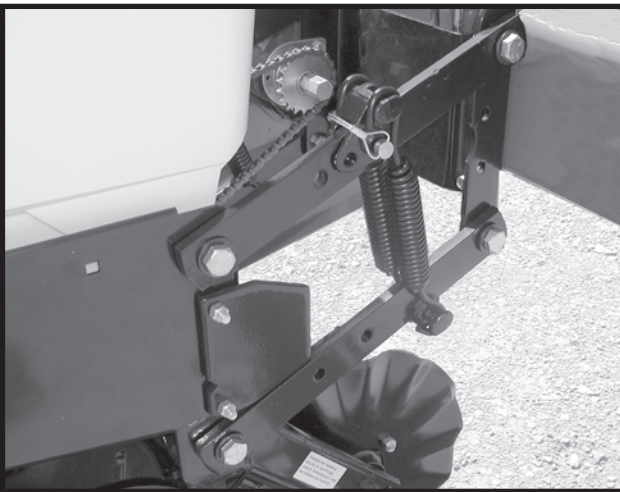
Two springs per row, one on the L.H. parallel arms and one on the R.H. parallel arms, are used unless equipped with row unit mounted no till coulters. Four springs per row are used with row unit mounted no till coulters.

D06300305



Two Springs Per Row (Dual)

D07010301

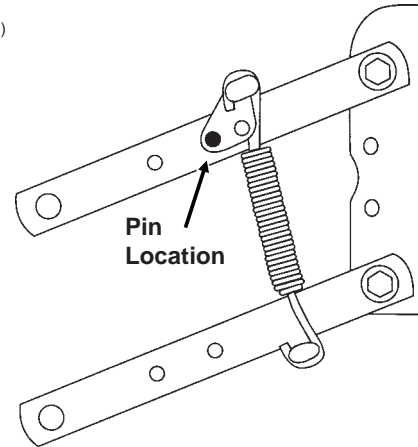


Four Springs Per Row (Quad)

**NOTE:** Four springs per row are to be used with row unit mounted no till coulters only.

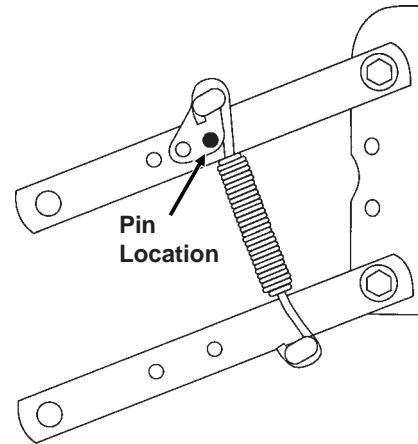
There are four positions for spring tension adjustment. Position 1 allows for minimum down pressure and position 4 for maximum down pressure.

L0096(PLTR27e)



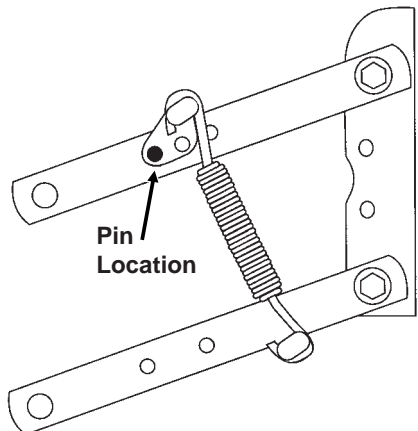
Position 1 (Minimum)

(PLTR28e)



Position 2

(PLTR29e)



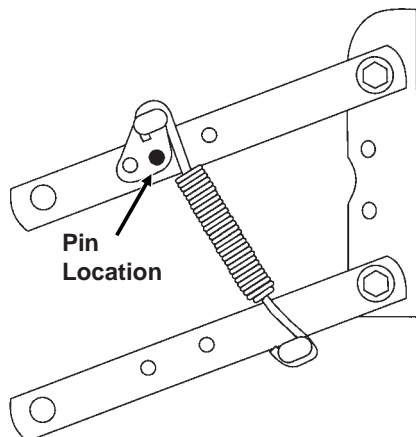
Position 3



# ROW UNIT OPERATION

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(PLTR30e)



## 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.



**WARNING:** Always install safety lockup devices or lower machine to the ground before working under or around the machine.

**IMPORTANT:** Springs must always be installed with open side of spring hooks toward the seed hoppers to prevent binding on spring mount adjustment pins.

# ROW UNIT OPERATION

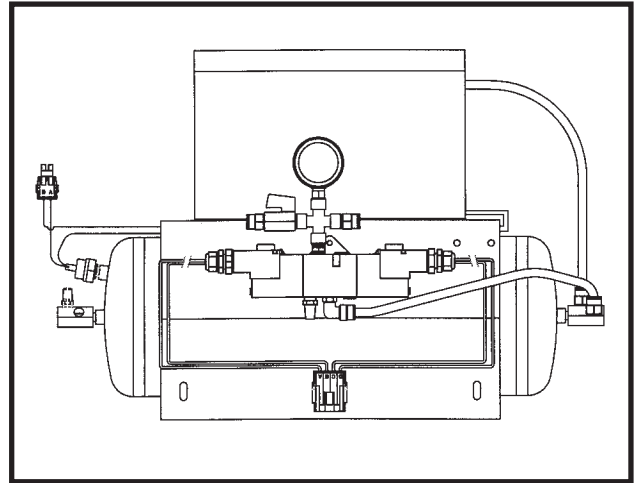
## PNEUMATIC DOWN PRESSURE PACKAGE

With pneumatic down pressure option, the operator can vary row unit down pressure on-the-go as field conditions change. A cab-mounted digital readout displays down force (lbs.) applied. A planter-mounted 12 VDC air compressor, with 3 gallon capacity air tank, supplies air for the down pressure system.

Packages also include upper and lower air spring mounting castings for pull row units, 150 psi rated air springs,  $\frac{3}{8}$ " O.D. nylon hoses, dual solenoid air valve and stainless steel, 160 psi, 2" liquid-filled gauge and planter wiring harness.

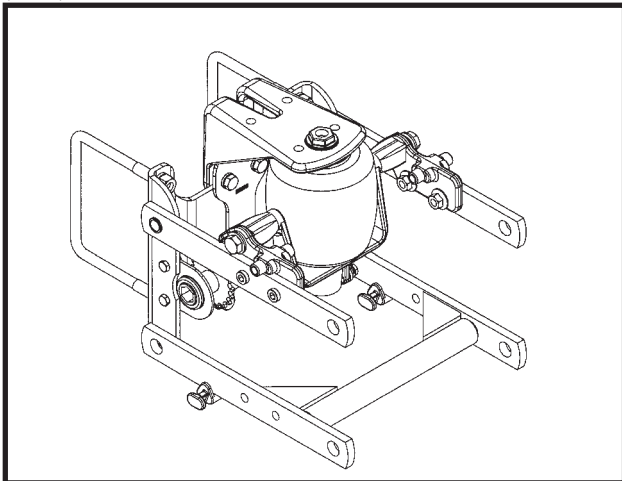
Pneumatic down pressure row unit extension brackets are required in some applications.

(PNE01)



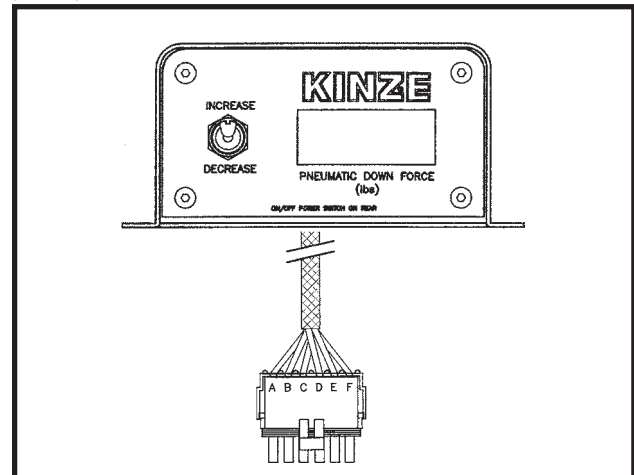
**Air Compressor With Dual Solenoid Assembly**

(PNE07)



**Pull Row Unit Air Spring**

(A12644a)

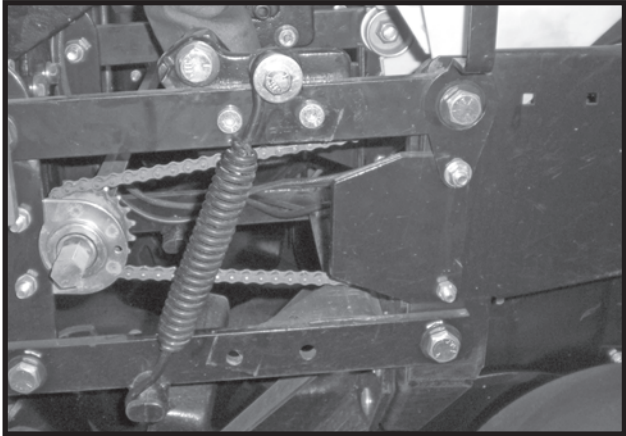


**Control Console Assembly**

# ROW UNIT OPERATION

**NOTE:** If additional down pressure is needed with the Pneumatic Down Pressure Package, assist springs are available through your KINZE® dealer. One spring is installed on the outer side of the parallel arms on each side of the row unit as shown below.

D11280153a

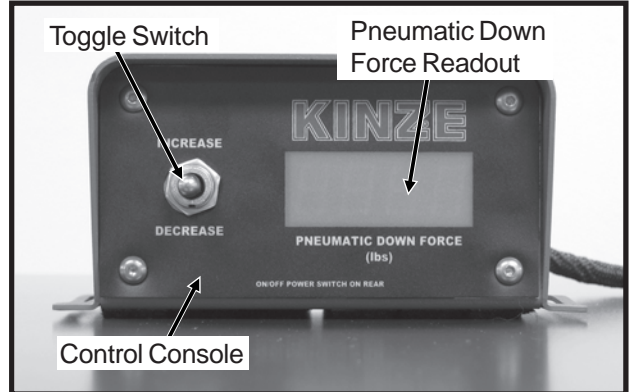


**Pull Row Unit Assist Springs**

## FIELD OPERATION

**NOTE:** For the most accurate adjustment, adjust down pressure with planter lowered and row units in the ground. Pressure can be adjusted from tractor using the control console, or at planter using the manual control valves.

D112907101



*To adjust down pressure from cab:*

To INCREASE pressure, push toggle switch up.

To DECREASE pressure, push toggle switch down.

The readout value on the control console is pounds of down pressure force.

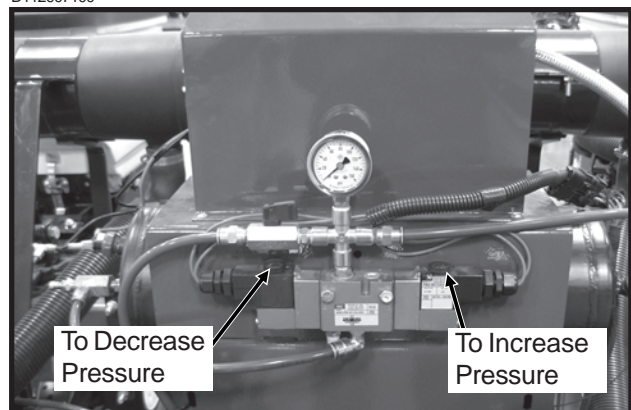
*To adjust down pressure from planter:*

To INCREASE pressure, press and hold button on solenoid as shown below.

To DECREASE pressure, press and hold button on solenoid as shown below.

The readout value on the air pressure gauge is NOT the down pressure force value. To calculate the force value, multiply the air pressure (psi) by four (4).

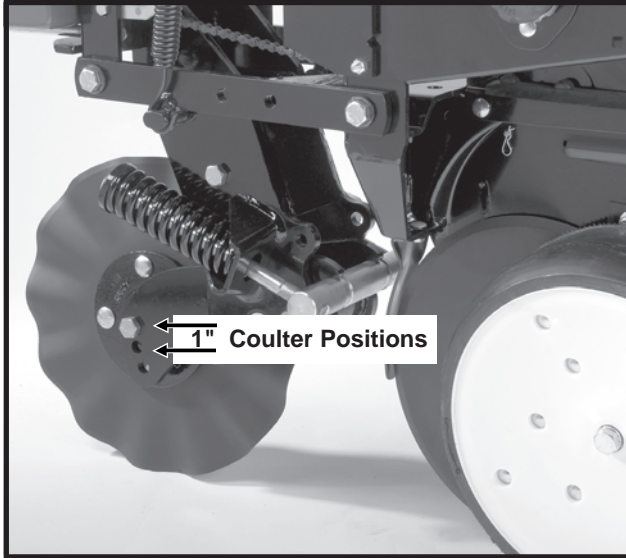
D112907100



# ROW UNIT OPERATION

## FRAME MOUNTED COULTER

LF083002101

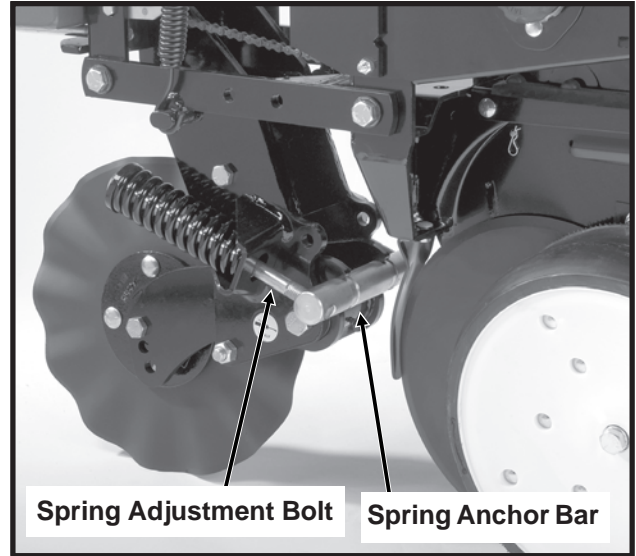


Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units only. (Not compatible with push row units.)

The frame mounted coulters is designed to apply necessary spring down pressure on the coulters for maximum penetration while exerting less shock load on the row unit.

The initial location of the coulters blade is in the top hole. The blade can be relocated to one of the lower two holes (1" increments) as wear occurs or if deeper operation of the blade is desired.

LF083002101



### DOWN PRESSURE ADJUSTMENT

Down force adjustment is made by tightening or loosening the two spring adjustment bolts. With the planter in raised position, turn the bolts clockwise to increase down pressure or counterclockwise to decrease down force. Set both springs the same.

Down force on the blade is shown below in lbs.

End Of Spring Adjustment Bolt Flush With Spring Anchor Bar (Shown Above)	End Of Spring Adjustment Bolt Extended 1/2" Through Spring Anchor Bar	All Threads Used (Maximum)
275 lbs.	400 lbs.	500 lbs.

**NOTE:** Avoid setting down pressure higher than is required for consistent soil penetration. Excessive pressure will increase the chances of damage to coulters components when the coulters strikes an obstacle.

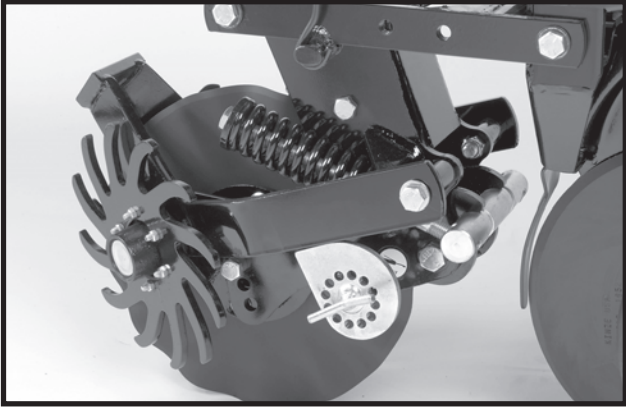
# ROW UNIT OPERATION

## RESIDUE WHEELS

(For Use With Frame Mounted Coulter)

The residue wheels for use with the frame mounted coulter may be used on pull row units only.

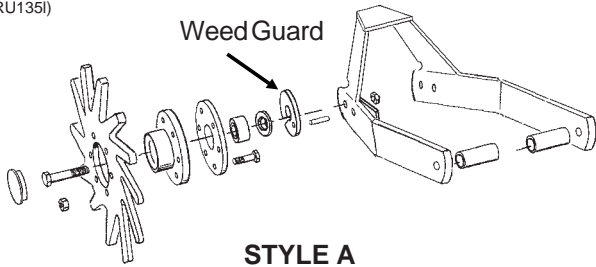
LF083002102



### STYLE A Shown

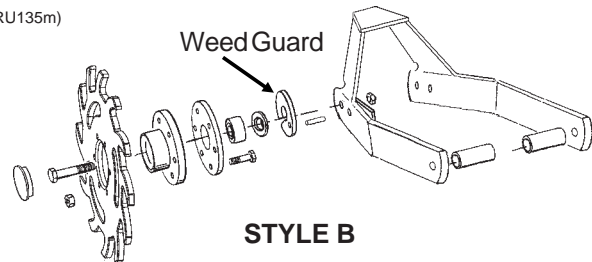
The residue wheels are attached to the frame mounted coulter with two cap screws and sleeves allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in  $\frac{1}{4}$ " increments. A high point on the cam allows the wheels to be locked up so they do not contact the ground. A weed guard, located on the inboard side of each wheel, aids in the prevention of weed wrap which can cause premature bearing failure.

(RU135l)



STYLE A

(RU135m)



STYLE B

**NOTE:** Opening in weed guard must point down.

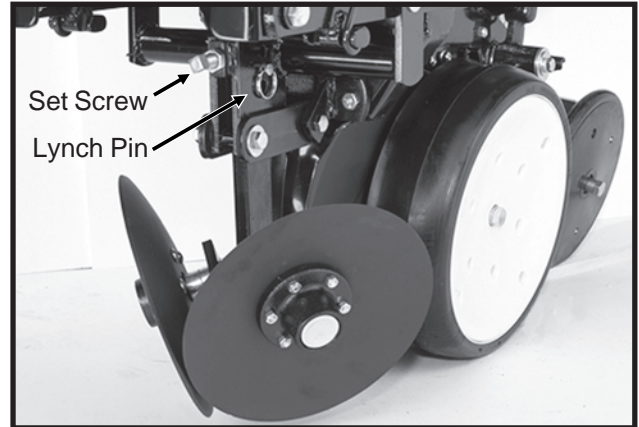
**IMPORTANT:** The forward mounting positions of the tined wheels can not be used on the four rows behind the axle on the 3500/3600 machine, due to inadequate clearance.

## ROW UNIT MOUNTED DISC FURROWER

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

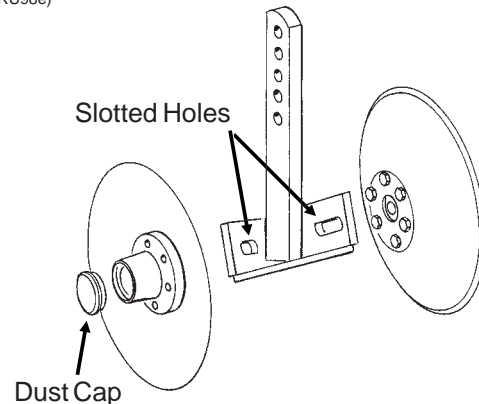
Disc furrowers are used to clear crop residue, dirt clods and dry soil from in front of the row units for a clean and smooth seed bed. Notched blades are used for heavier residue conditions. The notched blades cut crop residue and move it aside to prevent plugging or pushing.

LF212299-22



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

(RU98e)



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

# ROW UNIT OPERATION

## ROW UNIT MOUNTED RESIDUE WHEEL

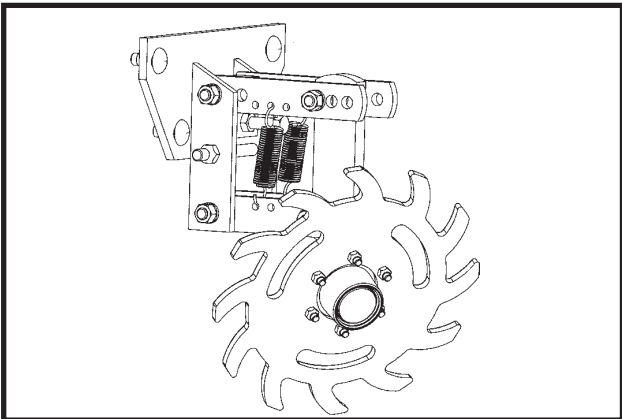
The row unit mounted residue wheel may be used on pull row units and push row units.

D101701113



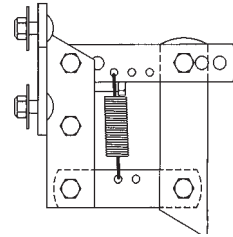
**STYLE A**

(A12685)

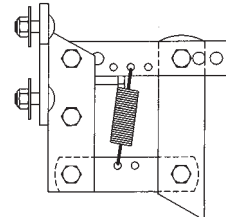


**STYLE B**

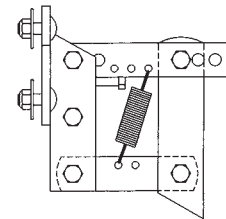
Two adjustable springs on the parallel links on each residue wheel allow for down force adjustment. Position 1 as shown below provides minimum down pressure and position 3 maximum down pressure.



**Position 1 (Minimum)** (PLTR31a)



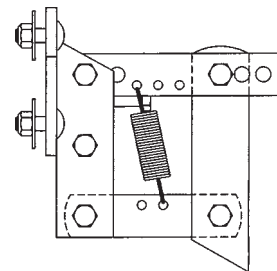
**Position 2** (PLTR32a)



**Position 3 (Maximum)** (PLTR33a)

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

(PLTR34a)

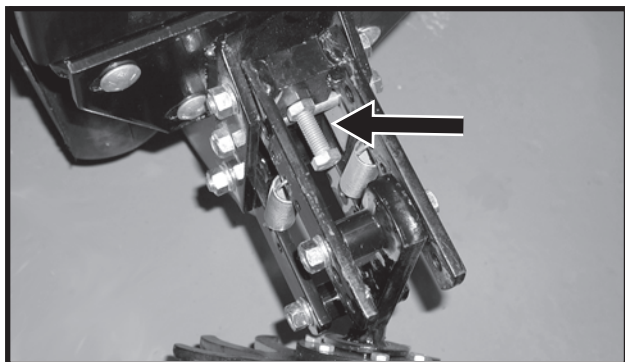


To adjust down force springs, raise the row unit out of the ground and reposition springs as shown for the desired down pressure.

# ROW UNIT OPERATION

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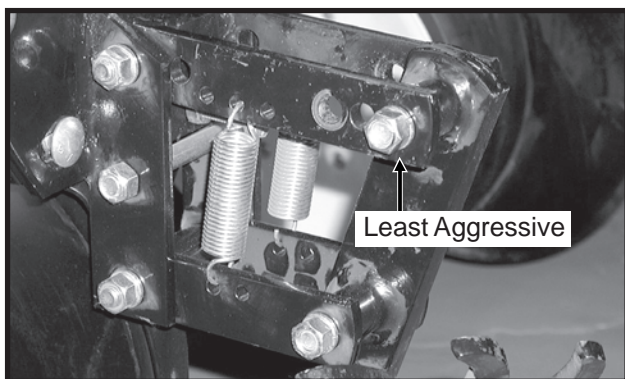
D101701112



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 <sup>3</sup>/<sub>4</sub>" above the depth of the row unit double disc opener.

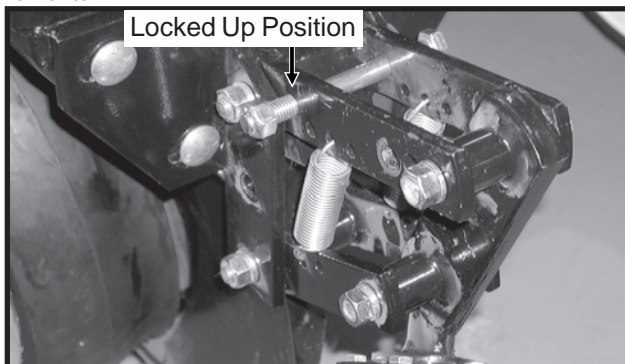
Three holes in the upper link allow for wheel angle adjustment. With the wheel mount in the most vertical position, using the rear hole in the upper link, the residue wheel is most aggressive. Moving the wheel mount to one of the forward holes reduces the aggressiveness of the wheel for use in mulch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

D101701202



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.

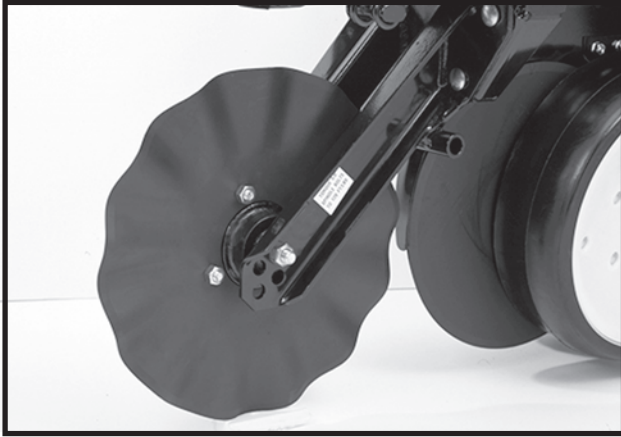
D011701203



# ROW UNIT OPERATION

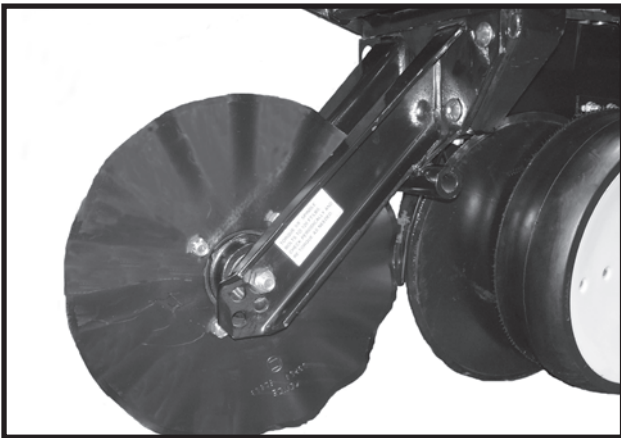
## ROW UNIT MOUNTED NO TILL COULTER

LF212299-19a



**STYLE A (Two Sleeves For Installing Coulters Mounted Residue Wheels)**

D05170706a



**STYLE B (One Sleeve For Installing Coulters Mounted Residue Wheels)**

Row unit mounted no till coulters with 1" bubbled, 1" fluted (8 flutes) or  $\frac{3}{4}$ " fluted (13 flutes) blades may be used on pull row units and push row units. ( $\frac{3}{4}$ " 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 coulters blade should be aligned in relation to the row unit double disc openers. The coulters assembly can be adjusted by loosening the four attaching bolts, moving coulters arm to align and tightening the four attaching bolts.

The coulters blade can be adjusted to one of four  $\frac{1}{2}$ " incremental settings in the forked arm. Initial location of the coulters is in the top hole. As the coulters blade wears, the blade should be adjusted downward to one of the three lower settings to maintain the coulters 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 coulters 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 coulters blade and row unit opener blade. Make sure the planter is level and coulters is square with the planter frame and aligned with the row unit disc opener.

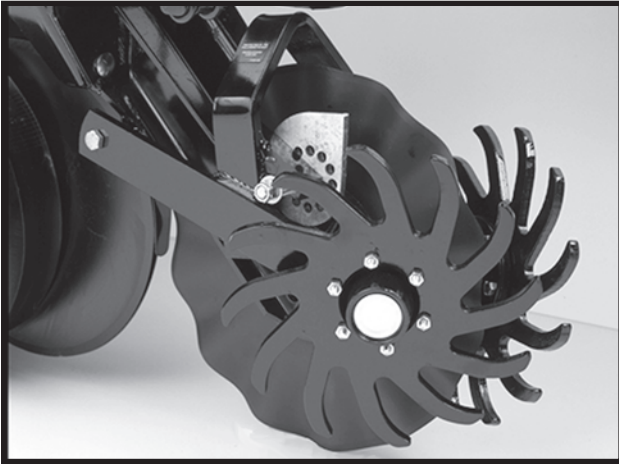
**NOTE: Torque  $\frac{5}{8}$ " spindle hardware to 120 ft. lbs.**



# ROW UNIT OPERATION

## COULTER MOUNTED RESIDUE WHEELS

LF212299-23



**STYLE A - Used With Style A Row Unit Mounted No Till Coultter**

D05170708a

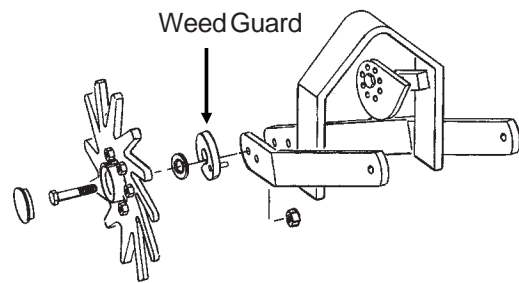


**STYLE B - Used With Style B Row Unit Mounted No Till Coultter**

Coultter mounted residue wheels are designed for use on pull row units and push row units. Row unit extension brackets are required on the four center pull row units if the planter is equipped with coultter mounted residue wheels.

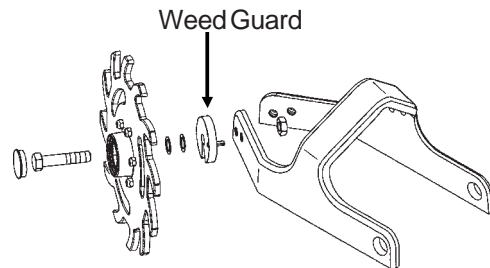
The coultter mounted residue wheels are attached to the row unit mounted no till coultter with one cap screw and sleeve allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. A lock nut on the inside of the mount locks the spindle cap screw. 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. A weed guard, located on the inboard side of each wheel, aids in the prevention of weed wrap which can cause premature bearing failure.

(RU104tt)



**STYLE A**

(RU153a)



**STYLE B**

**NOTE: Opening in weed guard must point down.**

# ROW UNIT OPERATION

## GRANULAR CHEMICAL HOPPER AND DRIVE

LF212299-6



The granular chemical hopper has a 1.4 cubic feet capacity.

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.

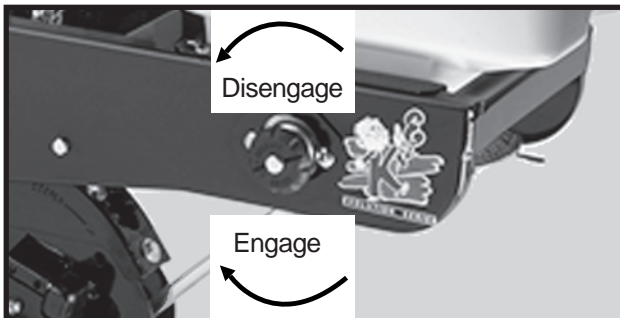
The metering gate located on the bottom of the hopper regulates the application rate. See "Dry Insecticide And Dry Herbicide Application Rate Charts" in this manual. Calibrate using the chemical manufacturers' instructions.



**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 it with care. Follow the instructions on the container label and of the equipment manufacturer.**

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  $\frac{1}{4}$  turn clockwise. To disengage the drive, turn the knob  $\frac{1}{4}$  turn counterclockwise. Slotted holes in the hopper support panel and clutch housing allow for alignment adjustment between the clutch drive coupler and meter shaft.

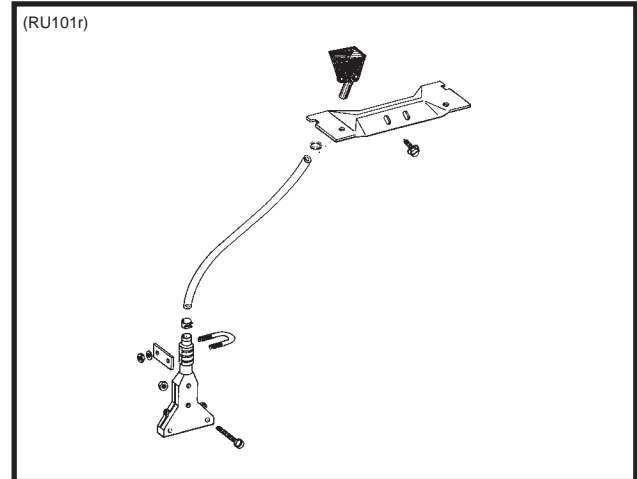
LF212299-4



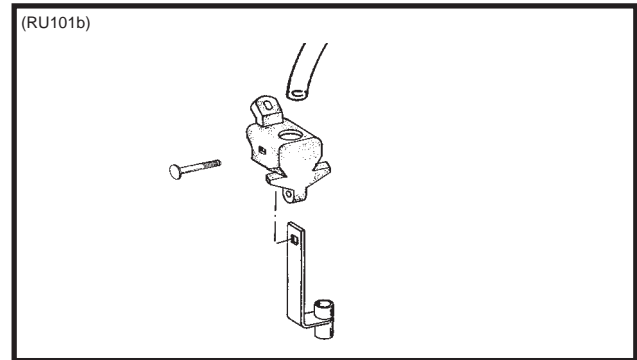
## GRANULAR CHEMICAL BANDING OPTIONS

Granular chemical banding options allow  $4 \frac{1}{2}$ " slope-compensating banding, straight drop in-furrow placement or 14" rear banding.

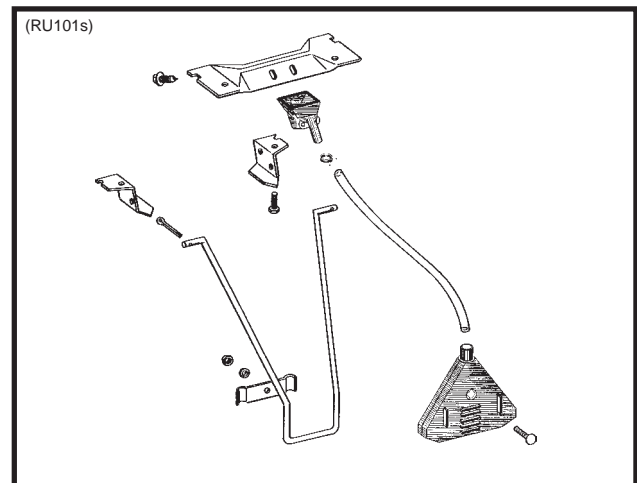
**NOTE: The granular chemical rear bander is not compatible with the covering discs/single press wheel option.**



**4 1/2" Slope-Compensating Bander**



**Straight Drop In-Furrow Placement**



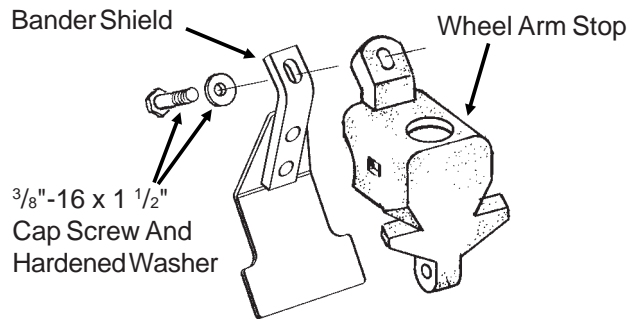
**14" Rear Banding**

# ROW UNIT OPERATION

## GRANULAR CHEMICAL BANDER SHIELD

The optional granular chemical bander shield is designed to be installed onto the underside of the wheel arm stop to shield crop residue from lodging in the granular chemical bander.

(RU83m)

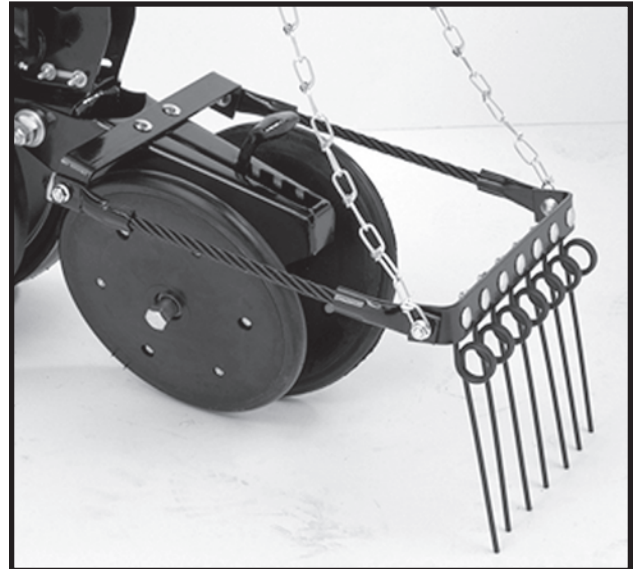


## SPRING TOOTH INCORPORATOR

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.**

LF212299-26



# ROW UNIT OPERATION

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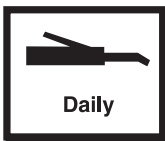
# LUBRICATION

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.



**WARNING:** Always install safety lockup devices or lower the machine to the ground before working under or around the machine.

## LUBRICATION SYMBOLS



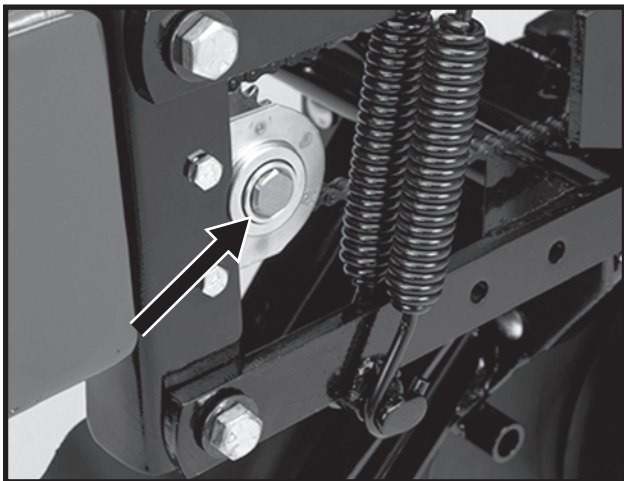
Lubricate at frequency indicated with an SAE multipurpose grease.



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

## SEALED BEARINGS

LF212199-3

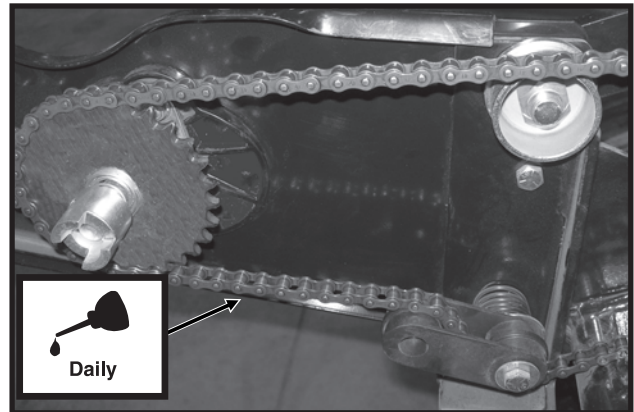


A number of sealed bearings are used on your KINZE® planter to provide trouble free operation. These are located in such areas as the drive shaft, row units and transmission bearings. Sealed bearings are lubricated for life. Due to the seals, relubrication is not practical.

## DRIVE CHAINS

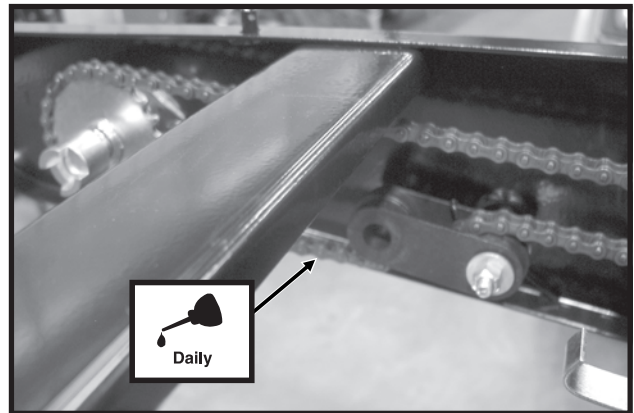
All transmission and drive chains should be lubricated daily with a high quality chain lubricant. Extreme operating conditions such as dirt, temperature or speed may require more frequent lubrication. If a chain becomes stiff, it should be removed, soaked and washed in solvent to loosen and remove dirt from the joints. Then soak the chain in oil so the lubricant can penetrate between the rollers and bushings.

D09280611a



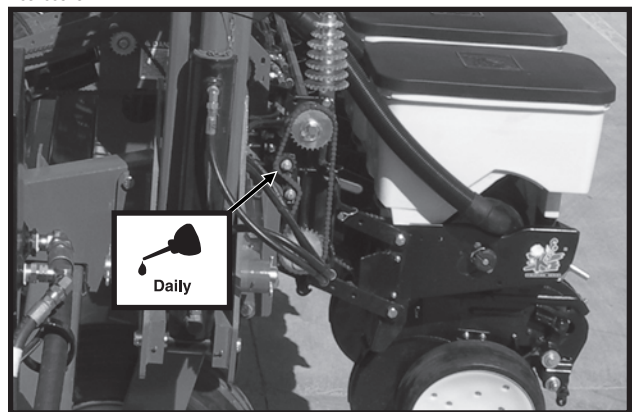
Pull Row Unit Drive Chains

D051705102



Row Unit Granular Chemical Drive Chains

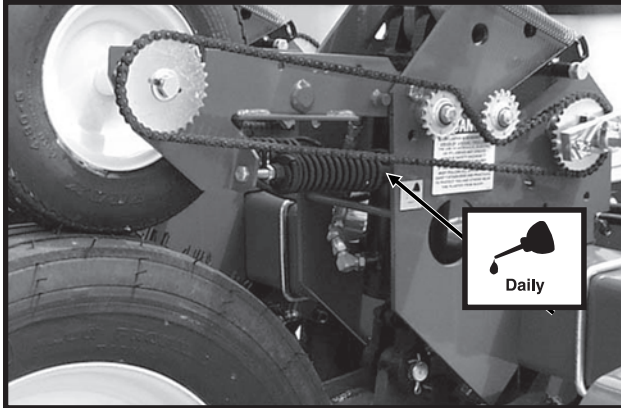
D03200646



Transmission Chains

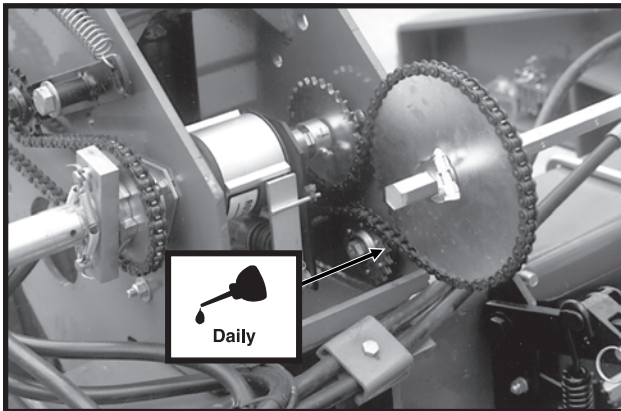
# LUBRICATION

D07279949



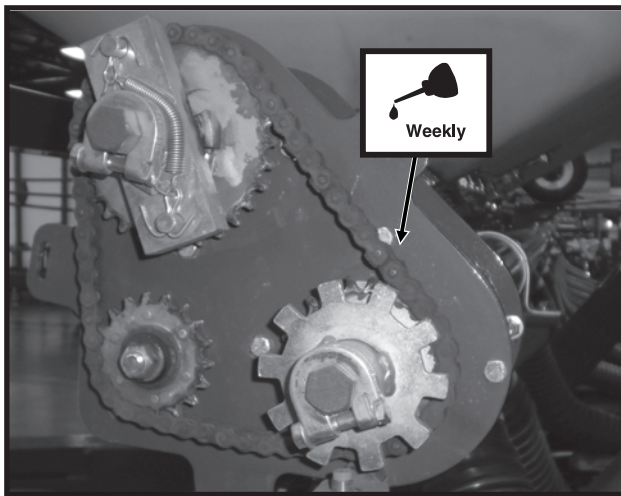
**Contact Wheel Drive Chains**

82378-18a



**Inner Module Drive Chains**

D12030701



**SDS Drive Chains**

## WRAP SPRING WRENCH ASSEMBLY

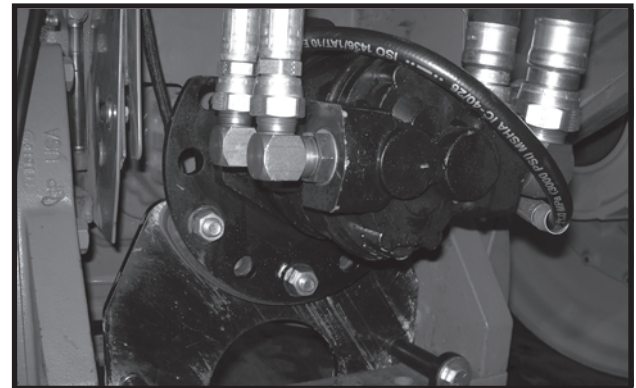
The chain idler is equipped with a wrap spring wrench. The wrench components may require occasional lubrication to operate correctly. Disassembly is required to lubricate. (a) Remove the 1/4"-20 x 1/2" cap screw that secures the idler with sprockets to the wrench tightener shaft. (b) Remove the wrap spring wrench from the planter. (c) Tip the wrap spring wrench on its side and lubricate using a high quality spray lubricant. Lubricant must be absorbed into the wrap spring area. (d) Reinstall wrench on planter.

D101303102



## PTO PUMP SHAFT COUPLING

D011707103



**IMPORTANT:** The PTO shaft coupling should be cleaned and greased each time the pump is installed.

**IMPORTANT:** To extend life of shaft splines, apply a coating of high-speed industrial coupling grease, such as Chevron® Coupling Grease, that meets AGMA CG-1 and CG-2 Standards.

*(The Chevron® trademark is owned by Chevron Products Company. AGMA is the acronym for the American Gear Manufacturers Association)*

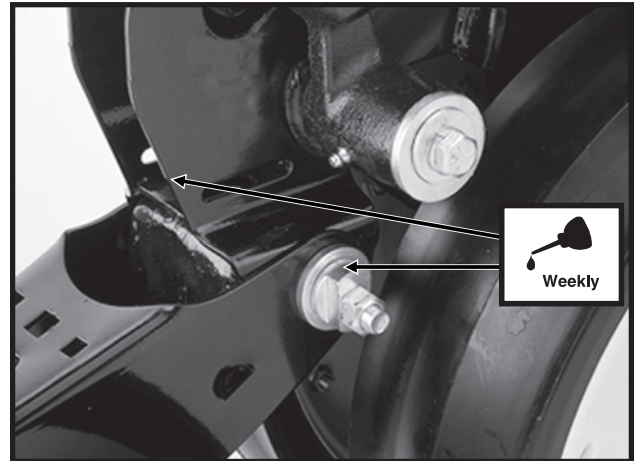
# LUBRICATION

## BUSHINGS

Lubricate bushings at the frequency indicated.

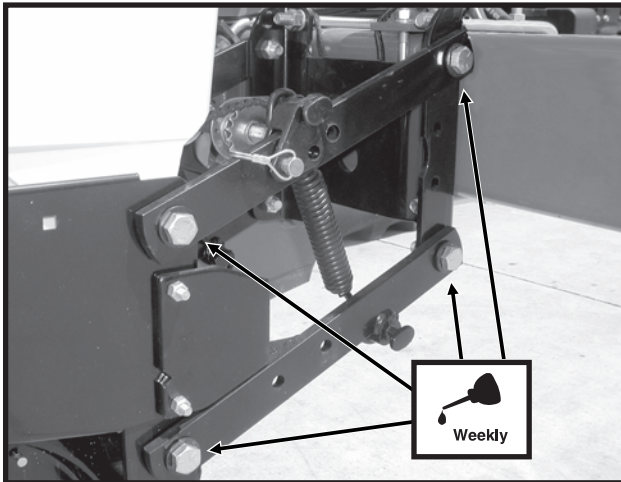
Using a torque wrench, check each bolt for proper torque. If bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushing if necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque hardware to 130 ft. lbs.**

LF212199-2



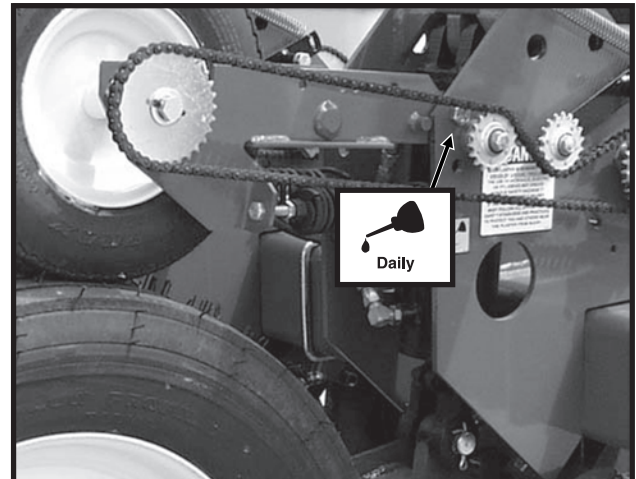
Row Unit "V" Closing Wheel, Covering Discs/  
Single Press Wheel And/Or Drag Closing Wheel  
Eccentric Bushings  
(2 Per Row)

D06300305



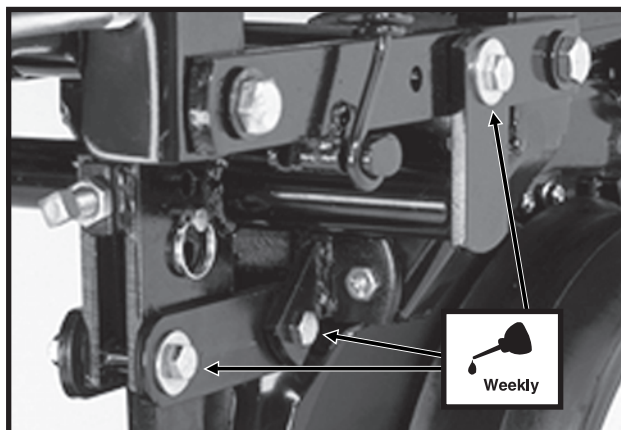
Pull Row Unit Parallel Linkages (8 Per Row)

D07279949



Contact Wheel Arm (2 Per Wheel Assembly)

LF212299-22



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

# LUBRICATION

## WHEEL BEARINGS

The transport wheel hubs are equipped with grease fittings. The wheel bearings should be checked and lubricated annually. Remove the dust cap and pump grease into the hub until grease comes out around the seals. Replace dust cap.

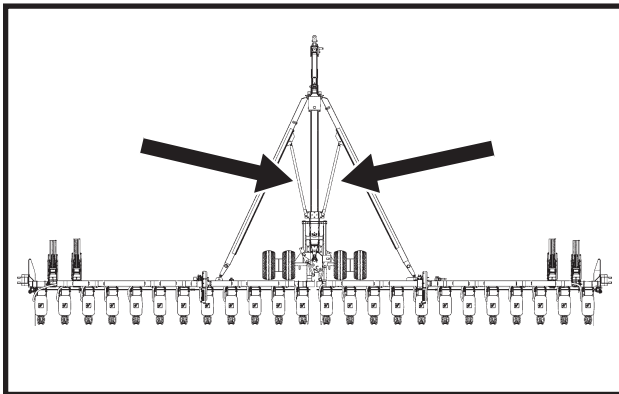
All wheel bearings should be repacked annually and checked for wear. This applies to all drive wheels, transport wheels and marker hubs.

To check for wear, raise the wheel off the ground. Check for endplay in the bearings by moving the tire side-to-side. 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 Maintenance section.

To repack wheel hubs, follow the procedure outlined for wheel bearing replacement with the exception that bearings and bearing cups are reused.

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

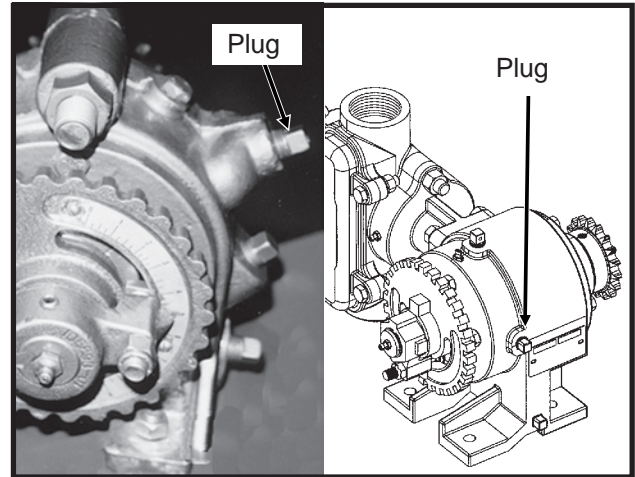
(FF109)



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

## LIQUID FERTILIZER PISTON PUMP CRANKCASE OIL LEVEL

12229799/A12330a



Check crankcase oil daily and maintain at plug level. Fill as needed with EP 90 weight gear oil. Total oil capacity is approximately  $\frac{3}{4}$  pint.

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



# LUBRICATION

## GREASE FITTINGS

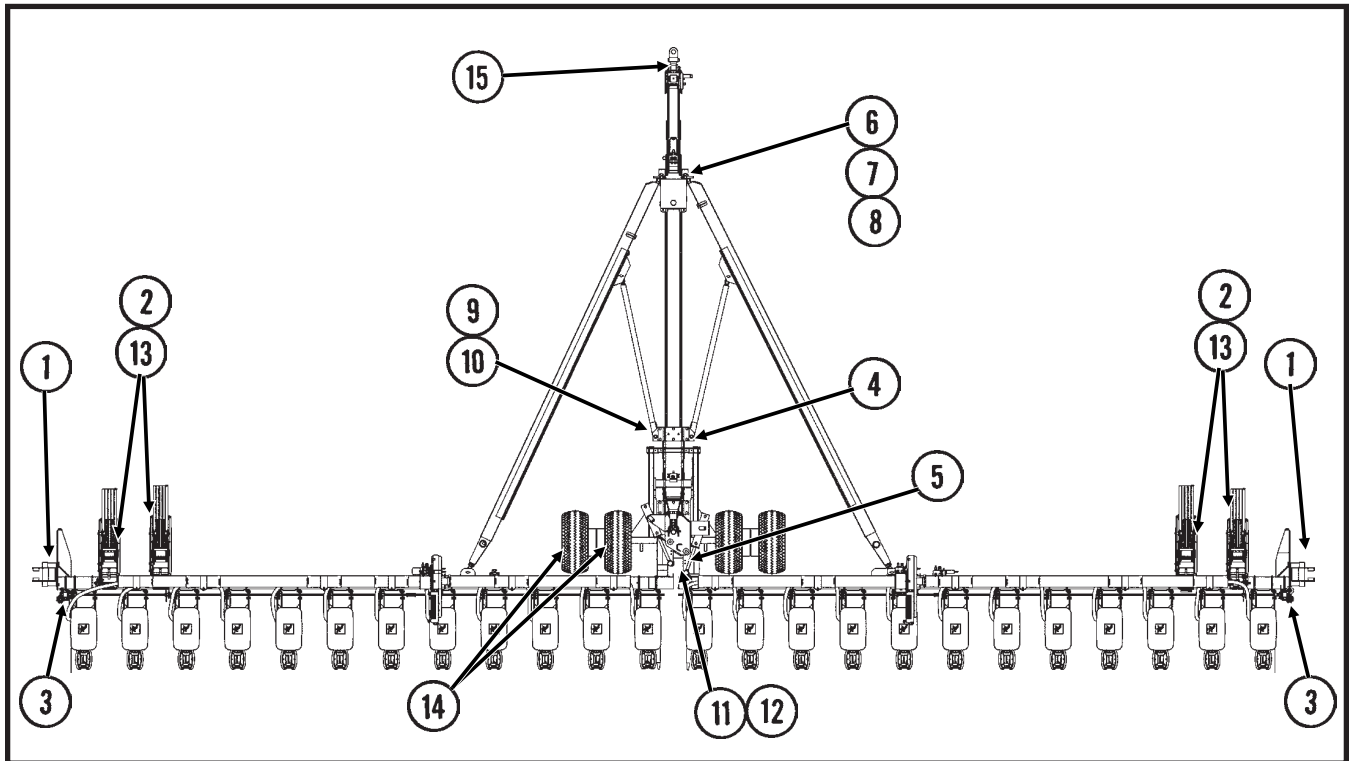
Those parts equipped with grease fittings should be lubricated at the frequency indicated with an SAE multipurpose grease. Be sure to clean the fitting thoroughly before using grease gun. The frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions may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



**WARNING:** Always install safety lockup devices or lower the planter to the ground before working under or around the machine.

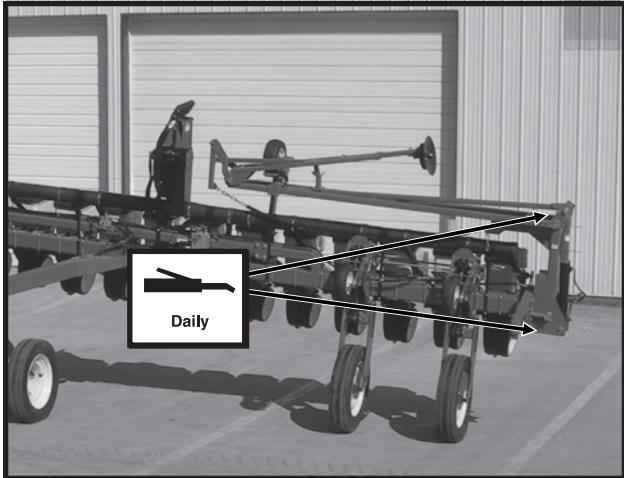
**NOTE:** Numbers on photo below correspond to photos on following pages showing lubrication frequencies.

(FF109)



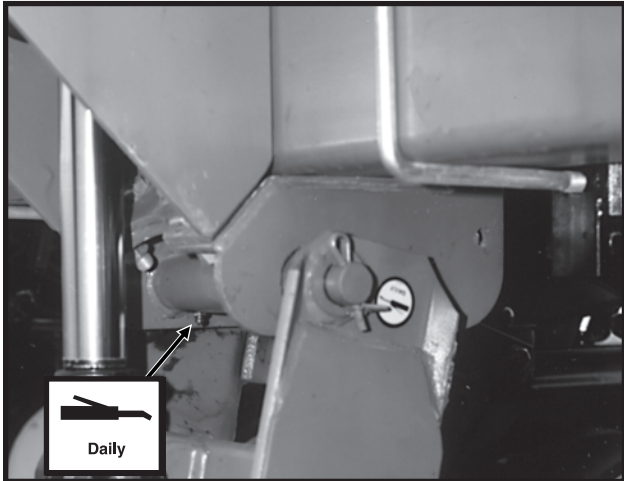
# LUBRICATION

D03200612



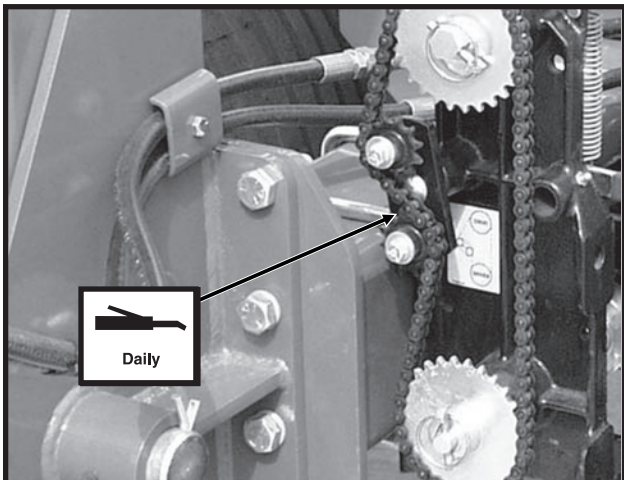
1. Row Marker Assemblies - 11 Zerks Per Side On Three-Fold Assembly; 2 Zerks Per Side On Two-Fold Assembly (**Three-Fold Assembly Shown**)

72495-34



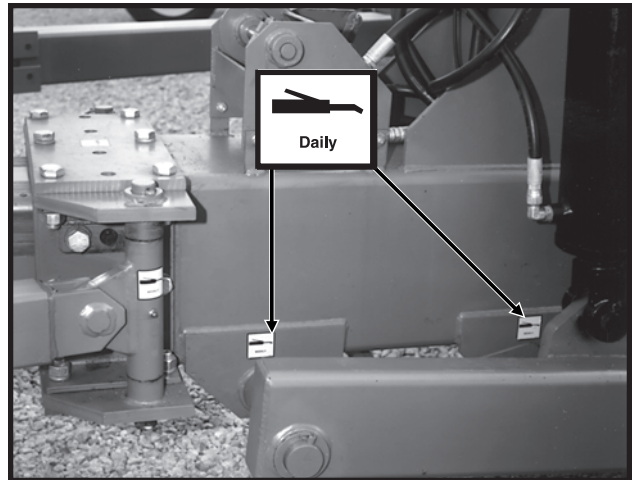
2. Ground Drive Wheel Pivot - 2 Zerks Per Wheel Module

D07279954



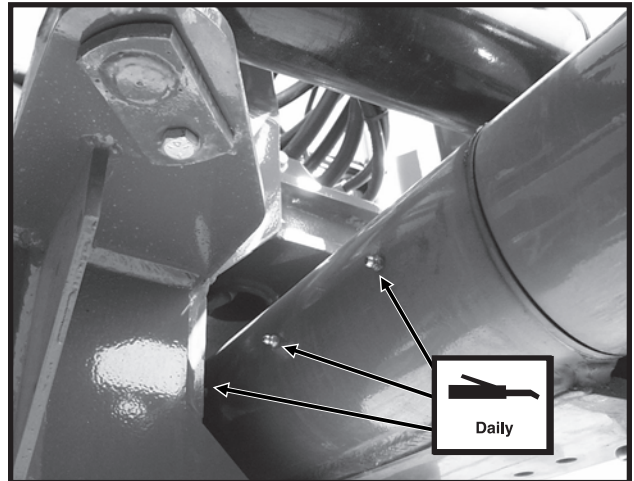
3. Seed Rate Transmission Assembly Idler Pivot - 1 Zerk Per Assembly

72495-21



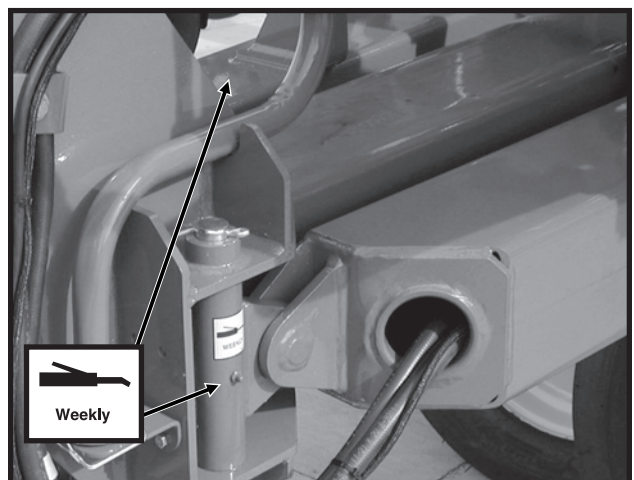
4. Axle And Automatic Safety Lock Pivots - 7 Zerks

D090199103



5. Wing Pivot Knuckle - 3 Zerks Per Knuckle On Horizontal Shaft

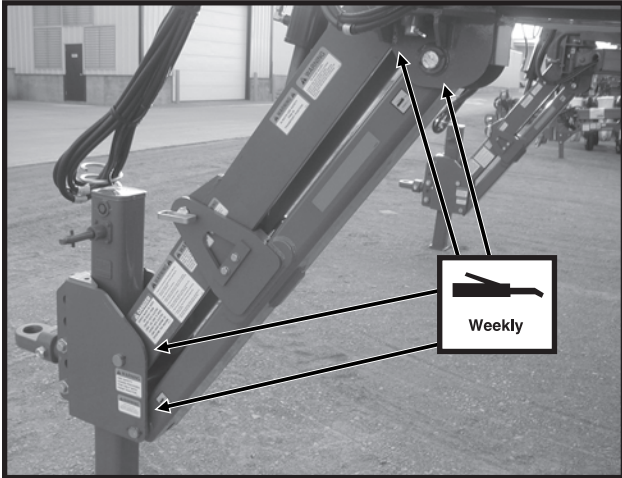
D101801108



6. Link Assemblies - 1 Zerk Per Assembly
7. Front Wear Pads - 4 Zerks

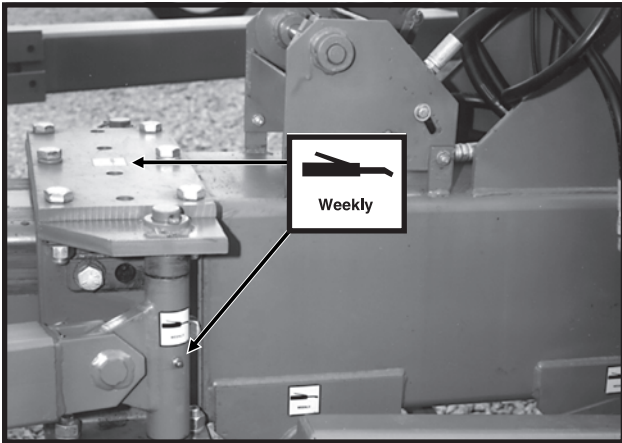
# LUBRICATION

D03030504



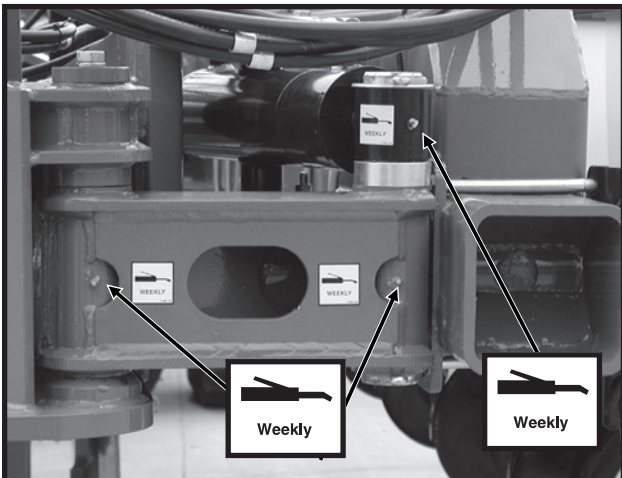
8. Upper And Lower Hitch Linkage - 2 Zerks Per Link

72495-21



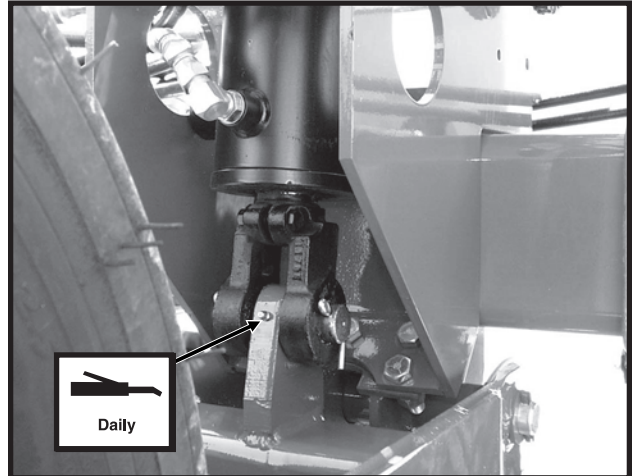
9. Rear Wear Pads (2 Sets) - 16 Zerks (24 Row 30" And 36 Row 20" Sizes Only)  
10. Axle Link Assemblies - 1 Zerk Per Assembly

D101801149



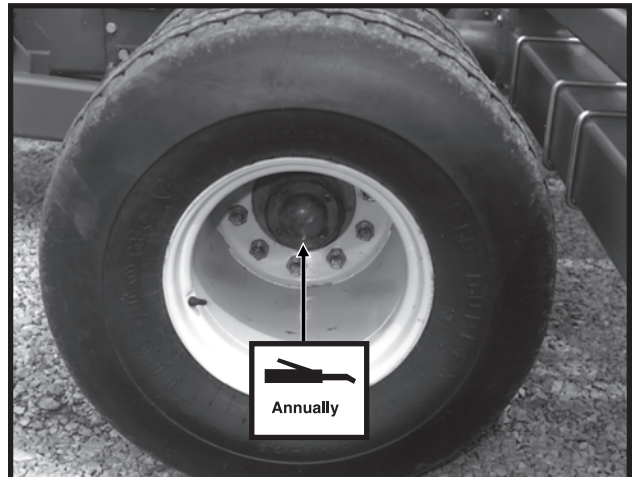
11. Helper Cylinders - 1 Zerk Per Cylinder  
12. Wing Pivot Knuckle - 1 Zerk Per Knuckle On Vertical Shaft

D080599103



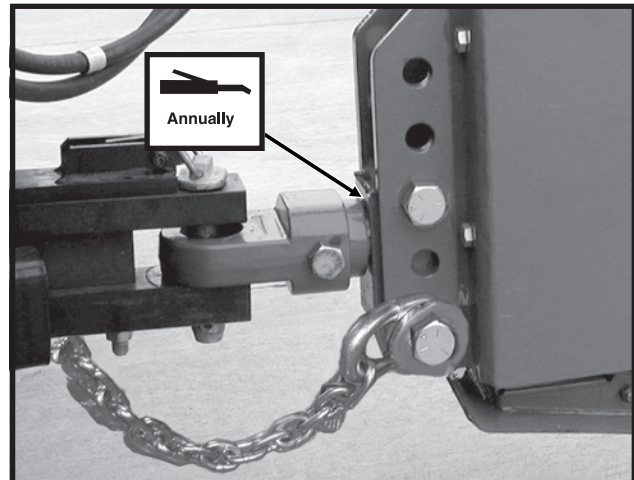
13. Wheel Module Lift Cylinder Mount - 1 Zerk Per Wheel Module

72495-5



14. Transport Wheel Bearing - 1 Zerk Per Wheel Hub

D101801130b

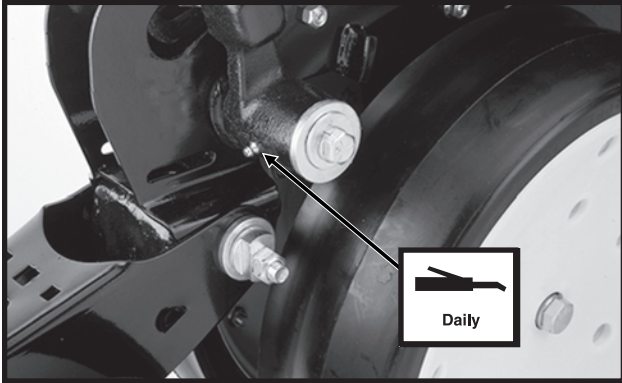


15. Swivel Block - 1 Zerk

# LUBRICATION

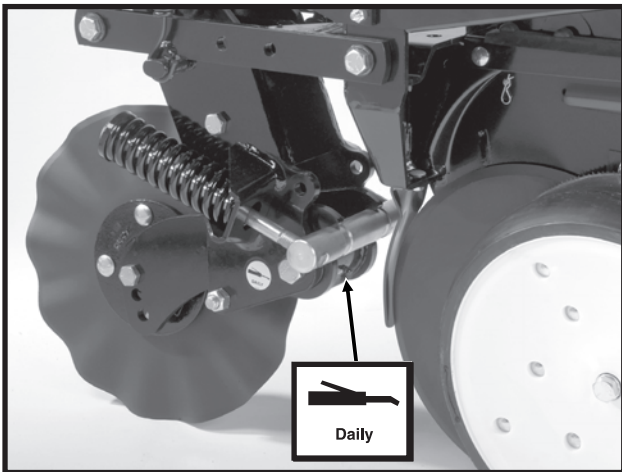
## Row Unit

LF212199-2



Gauge Wheel Arms - 1 Zerk Per Arm  
(Seals in gauge wheel arm are installed with lip facing out to allow grease to purge dirt away from seal. Pump grease into arm until fresh grease appears between washers and arm.)

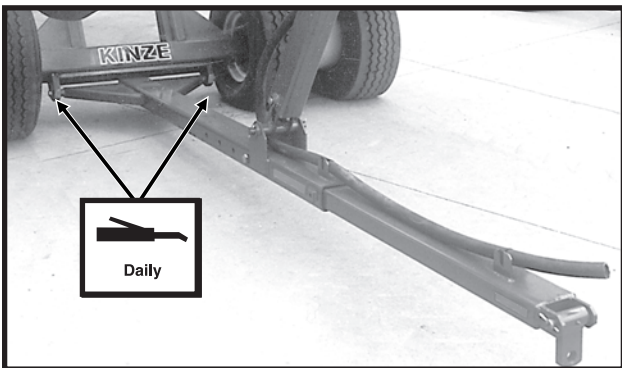
LF083002101



Frame Mounted Coulter - 1 Zerk Per Arm

## Rear Trailer Hitch Pivot

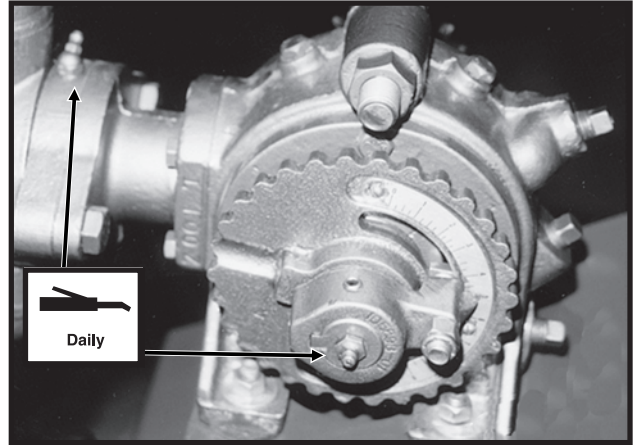
CLR3-96c



Rear Trailer Hitch Pivot - 2 Zerks

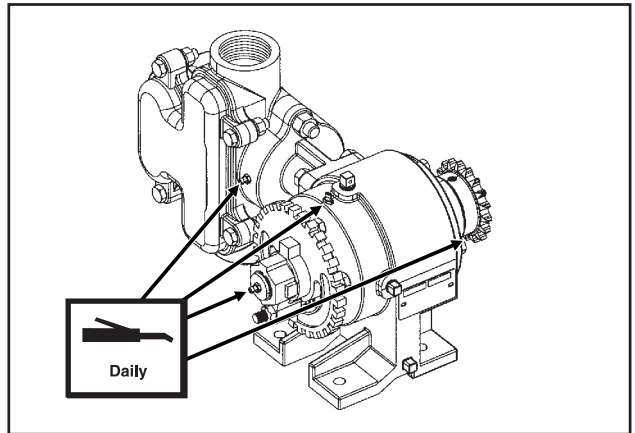
## Liquid Fertilizer Piston Pump

12229799



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

(A12330a)



Liquid Fertilizer Piston Pump - 4 Zerks (Fill zerk on outboard stuffing box until lubricant seeps out of drain hole in bottom.)

# MAINTENANCE

## MOUNTING BOLTS AND HARDWARE

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

All hardware used on the KINZE® planter is Grade 5 (high strength) unless otherwise noted. Grade 5 cap screws are marked with three radial lines on the head. If hardware must be replaced, be sure to replace it with hardware of equal size, strength and thread type. Refer to the torque values chart when tightening hardware.

**Row Unit Parallel Linkage Bushing Hardware - 130 Ft. Lbs. (See “Bushings” in the Lubrication section of this manual.)**

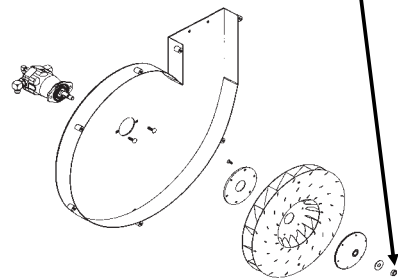
**5/8" No Till Coulter Spindle Hardware – 120 Ft. Lbs.  
Transport Tire Inner Budd Nuts - 220 Ft. Lbs./Outer Budd Nuts - 670 Ft. Lbs.**

**IMPORTANT:** Over tightening hardware can cause as much damage as under tightening. Tightening hardware 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.

**IMPORTANT:** Torque setting for 5/8"-18 hex jam nut that secures fan impellor assembly to motor shaft is 50 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

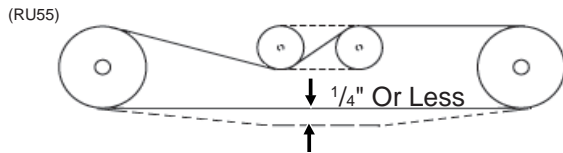


**GRADE 8**  
6 Marks

# MAINTENANCE

## CHAIN TENSION ADJUSTMENT

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



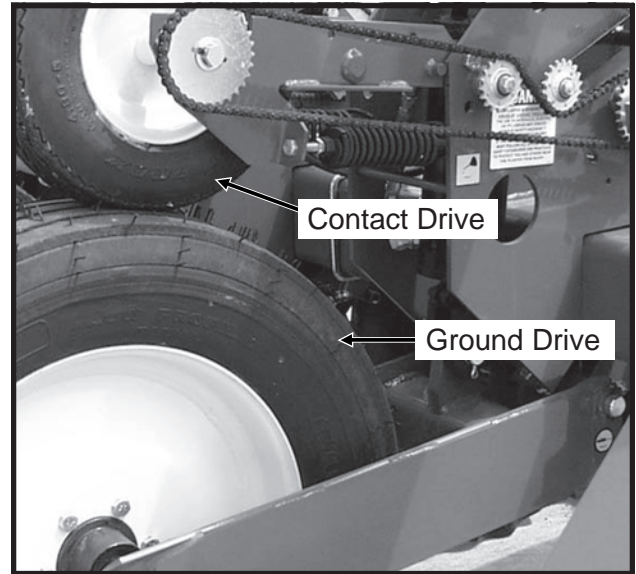
Additional chain links can be found in the storage area located at the end of the planter frame on the inboard side of the transport hook.

72495-48



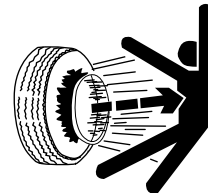
## TIRE PRESSURE

D07279949



Tire pressure should be checked regularly and maintained as follows:

Transport/Ground Drive 255-70R 22.5" .....	75 PSI
Transport 36" x 16" x 17.5" .....	40 PSI
Contact Drive 4.80" x 8" .....	50 PSI
Marker 16" x 6.5" x 8" .....	14 PSI
Contact Drive 4.10" x 6" .....	
(Liquid Fertilizer Piston Pump) .....	50 PSI



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

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

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

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.

# MAINTENANCE

## PTO PUMPS AND OIL COOLERS

Drain the reservoirs, clean strainers and change filters annually.

To drain the reservoirs, disconnect the suction line (hose between reservoir and pump) from each reservoir and drain. To fully drain tanks, raise the planter into field raised position. Refill system with a SAE 10W-20 multigrade wide temperature range transmission hydraulic fluid.

Replace filters with high quality 10 micron filters.

Start the system and allow to run with tractor at idle and the fans turned off for 1-2 minutes. Allow to run with tractor at idle and the fans at full speed for 1-2 minutes. Check reservoir fluid level and fill as required. Hydraulic fluid level should be within 1"-2" from the top of each reservoir after the pumps have run and hydraulic hoses have been primed to allow the fluid to expand when heated. Bring tractor to PTO speed and adjust flow control to the desired vacuum level using the switches on the vacuum fan control console.

## PTO PUMPS AND OIL COOLERS TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump is squealing.	Lack of oil to pump.	Check for plugged suction strainer. Check oil level.
Oil temperature is high.	Low oil level.	Check oil level and add as required.
Desired fan speed cannot be achieved.	Low oil level.	Check oil level and add as required.
	Plugged filter.	Check and change as required.
Vacuum level is not displayed.	Digital vacuum gauge console power is OFF.	Turn ON.
	Cable not plugged in.	Check connection.
	Digital vacuum gauge console has no power.	Check fuse.

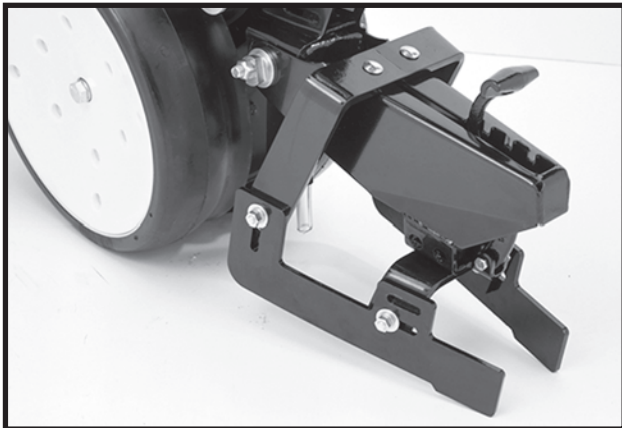
# MAINTENANCE

## 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".

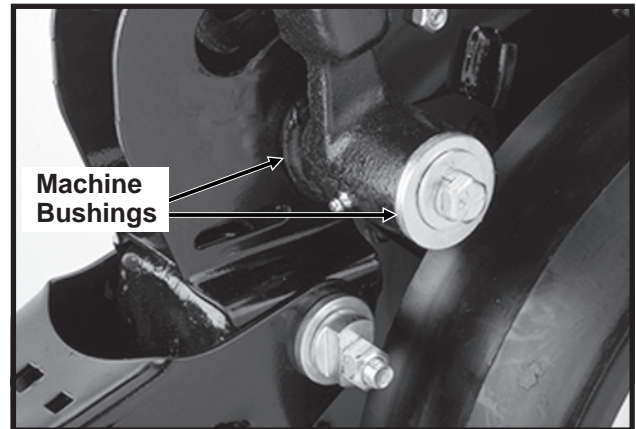
## DRAG CLOSING ATTACHMENT

LF212299-18



Prior to storage of the planter, inspect each drag closing attachment and replace any worn or broken parts. Check for loose hardware and tighten as needed.

LF212199-2



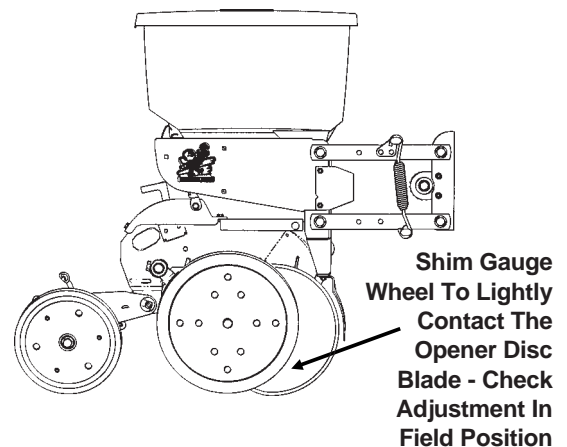
(RU113g)

## 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.

To adjust clearance between gauge wheels and opener blades, add or remove machine bushings between the shank and gauge wheel arm. Store remaining machine bushings 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.



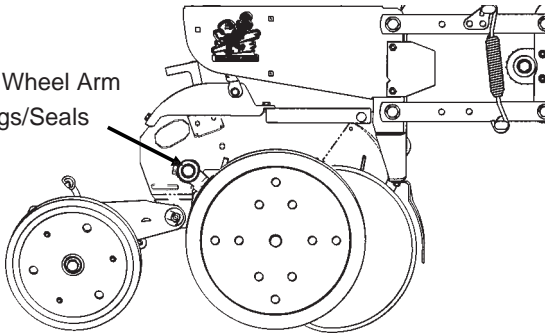


# MAINTENANCE

## GAUGE WHEEL ARM BUSHING AND/OR SEAL REPLACEMENT

(RU113g)

Gauge Wheel Arm Bushings/Seals

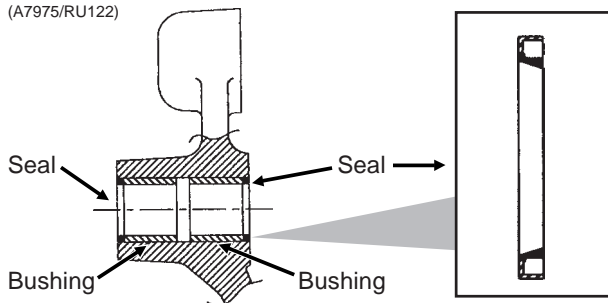


**NOTE: A Gauge Wheel Arm Bushing And Seal Driver Kit (G1K296), for use in bushing and seal replacement, is available through your KINZE® Dealer.**

**To replace gauge wheel arm assembly bushing(s) and/or seal(s):**

1. Remove gauge wheel from arm.
2. Remove the gauge wheel arm assembly from the shank assembly.
3. Remove seal and bushing and discard. Clean and dry inner bore.

(A7975/RU122)



4. Drive/press replacement bushing inside bore of arm to a depth of .125" below flush.
5. Coat wiping edge of seal with grease.
6. Drive/press seal into place with lip to the outside as shown above.

**NOTE: Use extra care to protect the sealing lip during installation. Apply uniform pressure to assemble the seal into the bore of the arm. Never apply a direct hammer blow to the seal surface.**

7. Inspect gauge wheel pivot spindle.
8. Reinstall gauge wheel arm assembly and gauge wheel.

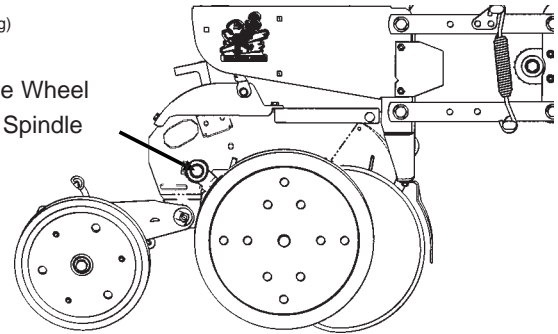
**NOTE: Special machine bushing between gauge wheel arm and gauge wheel.**

9. Shim for proper gauge wheel tire/disc blade clearance.
10. Lubricate with an SAE multipurpose grease.

## GAUGE WHEEL ARM PIVOT SPINDLE REPLACEMENT

(RU113g)

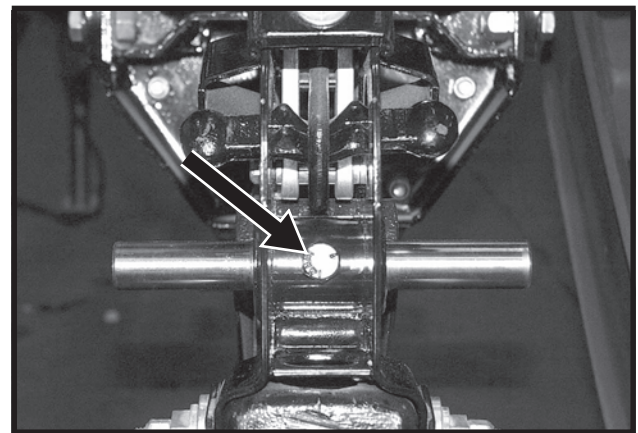
Gauge Wheel Pivot Spindle



**To replace gauge wheel pivot spindle:**

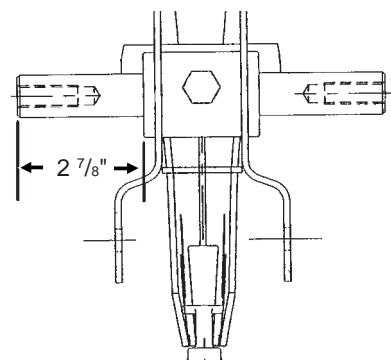
1. Remove the gauge wheel and arm assemblies from the shank assembly.
2. Remove 1/2" x 3/4" cap screw that locks the pivot spindle in place and remove the spindle.

D06189902



3. Install the replacement spindle and position as shown below. Exact centering is critical.

(A7966)



4. Install 1/2" x 3/4" cap screw and torque to lock pivot spindle in place.
5. Install gauge wheel and arm assemblies. Shim for proper gauge wheel tire/disc blade clearance.

# MAINTENANCE

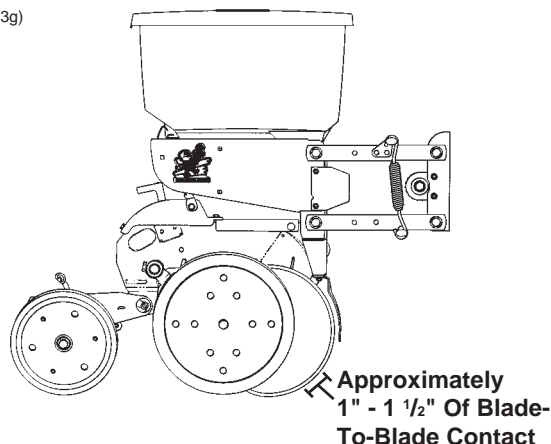
## 15" SEED OPENER DISC BLADE/ BEARING ASSEMBLY

Approximately 1" - 1 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 relocate machine bushings from inside to outside to maintain approximately 1" - 1 1/2" of contact.

**NOTE: If proper blade-to-blade contact cannot be maintained after relocating machine bushings or if blade diameter wears below 14 1/2", the blades should be replaced.**

**IMPORTANT: Excessive blade contact may result in premature disc opener bearing/hub failures and excessive wear on seed tube guard/inner scraper. When properly adjusted, if one blade is held in fixed position, the opposite blade should be able to be rotated with minimal force (Less than 5 pounds force at outer edge of blade).**

(RU113g)



### To replace disc blade/bearing assembly:

1. Remove gauge wheel.
2. Remove scraper.
3. Remove bearing dust cap.
4. Remove cap screw, washer and disc blade/bearing assembly. The machine bushings between the shank and disc blade are used to maintain the approximate 1" - 1 1/2" of blade-to-blade contact.

**IMPORTANT: Left hand side of opener uses a left hand threaded cap screw. DO NOT OVER TIGHTEN. Damage to shank threads will require replacement of row unit shank assembly.**

5. Install machine bushing(s), new disc blade/bearing assembly, washer and cap screw. Torque 5/8"-11 Grade 5 cap screw to value shown in "Torque Values Chart".

**NOTE: Replace disc blades only with blades of equal thickness.**

6. Replace bearing dust cap.
7. Install scraper.
8. Install gauge wheel.

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

### To replace bearing:

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

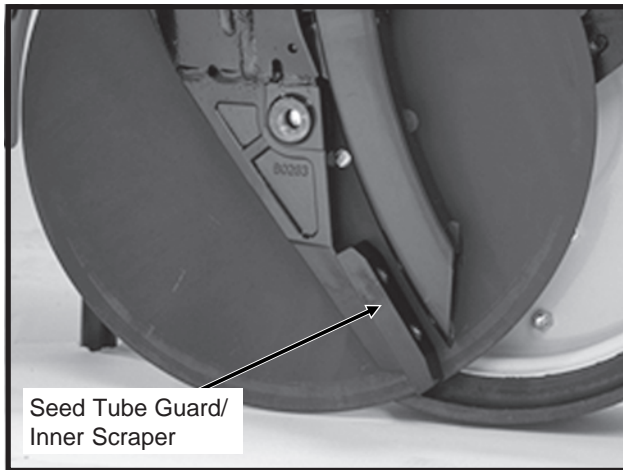
# MAINTENANCE

## SEED TUBE GUARD/INNER SCRAPER

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

Remove the seed tube and check for wear. Excessive wear on the seed tube indicates a worn seed tube guard. Replace the seed tube guard if it measures  $\frac{5}{8}$ " or less at the lower end. A new seed tube guard measures approximately  $\frac{7}{8}$ ".

LF212199-12



Shown With Gauge Wheel And Seed Opener Disc Blade Removed For Visual Clarity

**IMPORTANT: No till planting or planting in hard ground conditions, especially when the planter is not equipped with no till coulters, and/or excessive blade-to-blade contact will increase seed tube guard wear and necessitate more frequent inspection and/or replacement.**

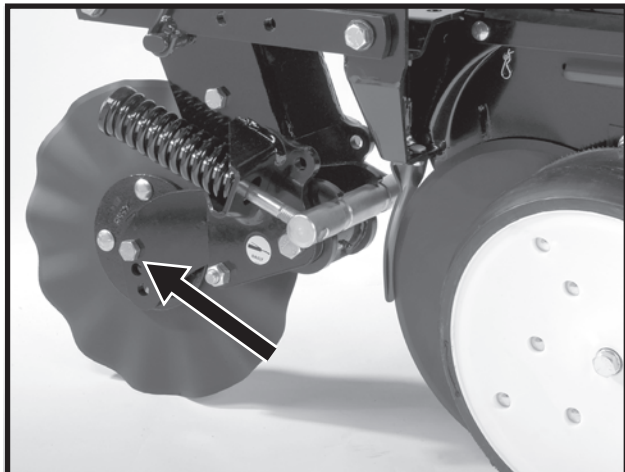
To replace the seed tube guard, remove the seed tube and the two hex socket head cap screws which attach the seed tube guard. Hold the replacement seed tube guard centered between the seed opener disc blades. Install, but DO NOT tighten, the hex socket head cap screws. Using a clamp or vise-grip, squeeze the opener blades together in front of the seed tube guard. Tighten the seed tube guard retaining screws. Remove the clamps. The distance between the seed tube guard and opener blades should be equal on both sides. Reinstall seed tube.

**IMPORTANT: Over tightening the hex socket head cap screws may damage the threads in the shank and require replacement of the shank. A seed tube guard that is worn excessively may allow the blades to wear into the row unit shank, also requiring replacement of the shank.**

# MAINTENANCE

## FRAME MOUNTED COULTER

LF083002101



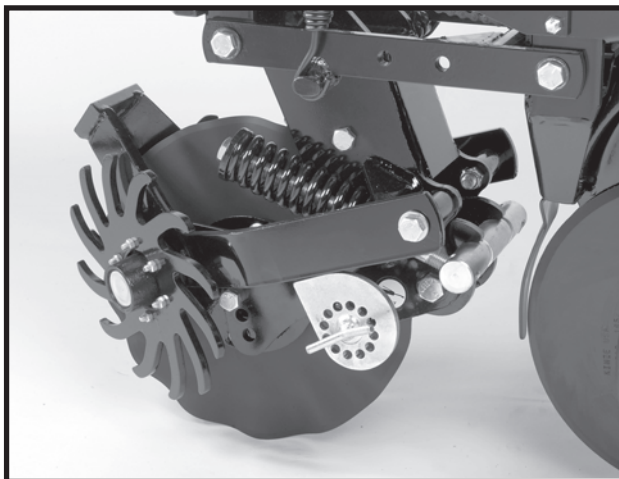
**NOTE: Torque  $\frac{5}{8}$ " spindle hardware to 120 ft. lbs.**

See "Frame Mounted Coulter" in Row Unit Operation Section of this manual for depth and spring adjustment.

When the 16" diameter coulter blade (1" fluted, 1" bubbled or  $\frac{3}{4}$ " fluted) is worn to 14  $\frac{1}{2}$ " (maximum allowable wear), it should be replaced.

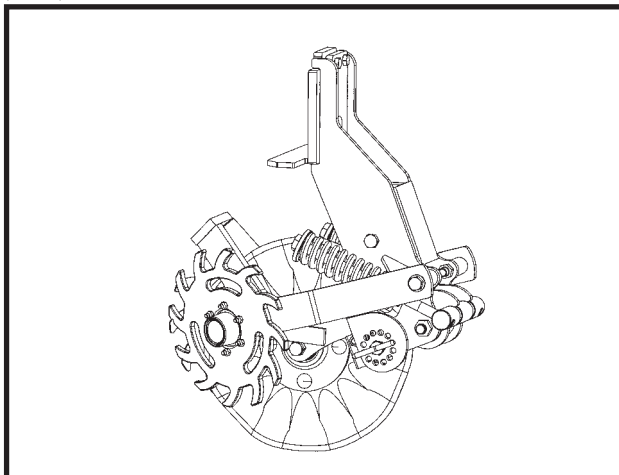
## RESIDUE WHEELS (For Use With Frame Mounted Coulter)

LF083002102



### STYLE A

(RU154)



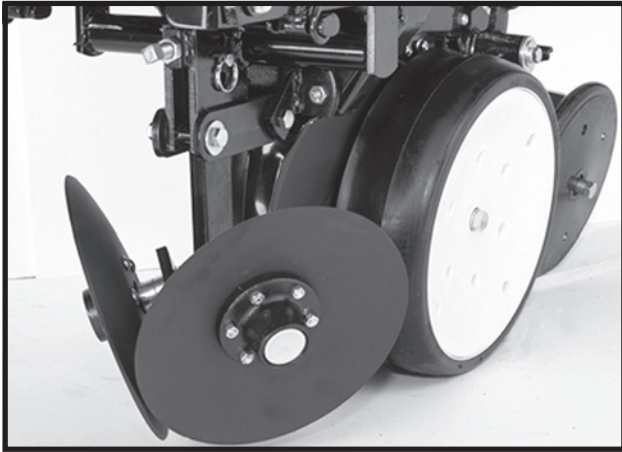
### STYLE B

The wheel hubs are equipped with sealed bearings. If a bearing sounds or feels rough when the wheel is rotated, replace the bearings.

# MAINTENANCE

## ROW UNIT MOUNTED DISC FURROWER

LF212299-22



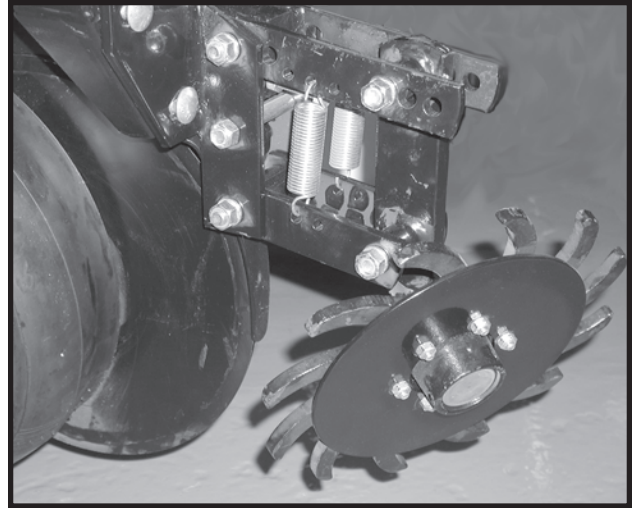
Lubricate the bushings in the support arm and mounting bracket at the frequency indicated in the Lubrication Section of this manual. Using a torque wrench, check each bolt for proper torque. If the bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushings as necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque cap screws to 57 ft. lbs.**

The blade hubs are equipped with sealed bearings. If bearings sound or feel rough when the blade is rotated, replace the bearings.

When the 12" diameter blades (solid or notched) are worn to 11", they should be replaced.

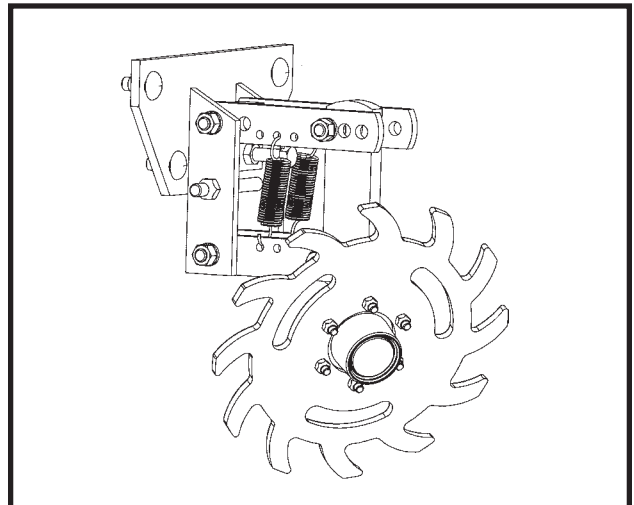
## ROW UNIT MOUNTED RESIDUE WHEEL

D101701113



**STYLE A**

(A12685)



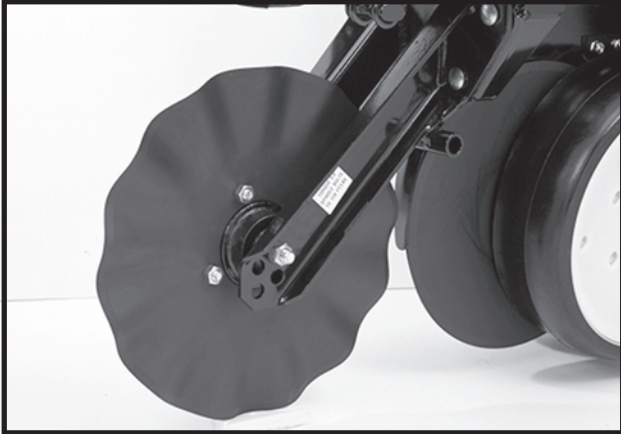
**STYLE B**

The wheel hub is equipped with sealed bearings. If a bearing sounds or feels rough when the wheel is rotated, replace the bearings.

# MAINTENANCE

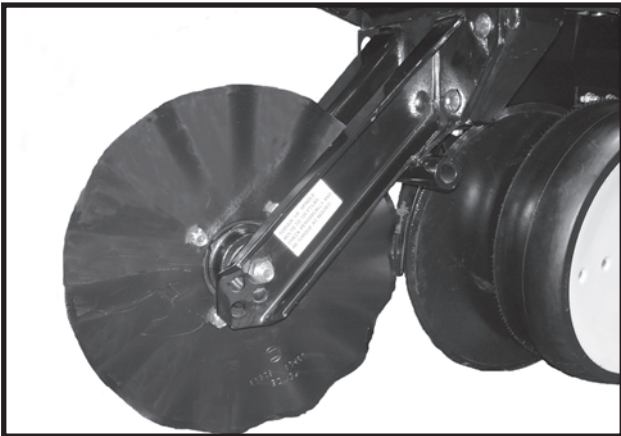
## ROW UNIT MOUNTED NO TILL COULTER

LF212299-19a



**STYLE A (Two Sleeves For Installing Coulters Mounted Residue Wheels)**

D05170706a



**STYLE B (One Sleeve For Installing Coulters Mounted Residue Wheels)**

Check periodically to be sure nuts and hardware are tightened to proper torque specification.

**NOTE: Torque  $\frac{5}{8}$ " spindle hardware to 120 ft. lbs.**

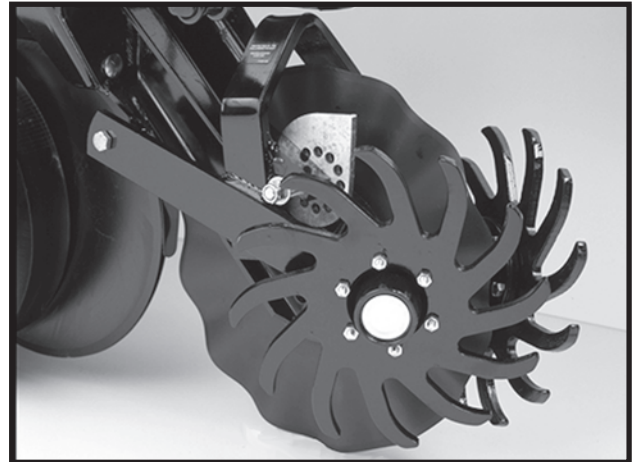
Be sure the coulters is positioned square with the row unit and aligned in front of row unit disc opener.

The coulters 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 Coulters" in Row Unit Operation section of this manual.

When the 16" diameter coulters blade is worn to 14  $\frac{1}{2}$ " (maximum allowable wear), it should be replaced.

## COULTERS MOUNTED RESIDUE WHEELS

LF212299-23



**STYLE A - Used With Style A Row Unit Mounted No Till Coulters**

D05170708a



**STYLE B - Used With Style B Row Unit Mounted No Till Coulters**

The wheel hubs are equipped with sealed bearings. If bearings sound or feel rough when the wheel is rotated, replace the bearings.

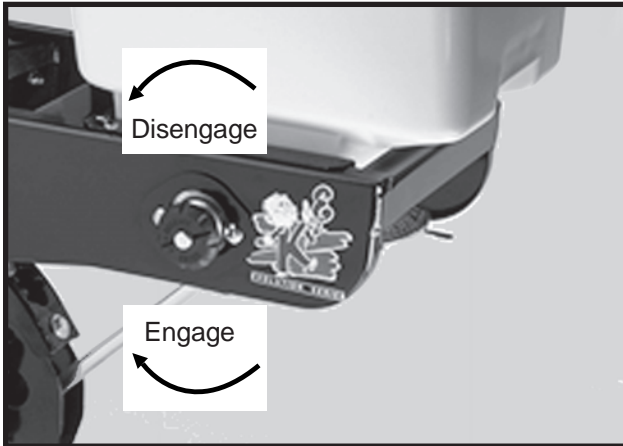
# MAINTENANCE

## GRANULAR CHEMICAL ATTACHMENT

Prior to storage of the planter, disengage the granular chemical drive by rotating the throwout knob  $\frac{1}{4}$  turn counterclockwise. Remove the drive chain and empty and clean all granular chemical hoppers. Clean the drive chains and coat them with a rust preventive spray or submerge chains in oil. Inspect and replace any worn or broken parts.

Install hoppers and chains. Check chain alignment.

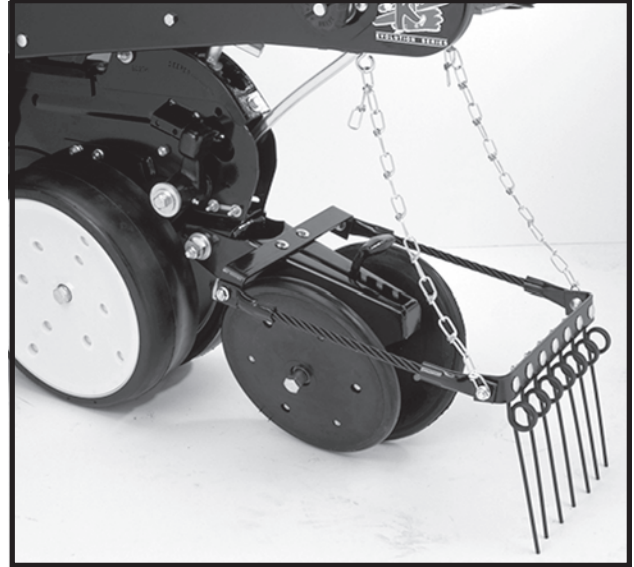
LF212299-4



## SPRING TOOTH INCORPORATOR

Prior to storage of the planter, inspect each spring tooth incorporator and replace any worn or broken parts. Check for loose hardware and tighten as needed.

LF212299-26



# MAINTENANCE

## KPM I/KPM II STACK-MODE ELECTRONIC SEED MONITORS TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Single sensor communication alarm comes on (alarm on with no bargraph and a flashing row number on a single row).	Faulty seed tube sensor.	Replace sensor.
	Break in the harness just before the seed tube sensor.	Inspect for break in harness and repair. If break can't be found, replace harness section.
	Dirty or corroded connector.	Clean connector.
Sensor communication alarms come on for all sensors (alarm on with no bargraphs and flashing row numbers on all rows).	Faulty monitor.	Repair/replace monitor.
	Break in the harness just after the monitor.	Inspect for break in harness and repair. If break can't be found, replace harness section.
	Dirty or corroded connector.	Clean connector.
Sensor communication alarms come on for some sensors (alarm on with no bargraphs and flashing row numbers on all rows).	Break in the harness.	Inspect for break in harness and repair. If break can't be found, replace harness section corresponding with the alarming sensors.
	Dirty or corroded connector.	Clean connector.
Faulty monitor values (such as speed, area, etc.) being displayed. (KPM II Stack-Mode Only)	Incorrect monitor settings.	Change settings to properly correspond to the system.
	Faulty radar/magnetic distance sensor.	Replace sensor.
	Improperly mounted radar sensor.	Properly mount sensor.
Underplanting or no planting alarm on a single sensor when planting (alarm on with a single bargraph segment on and a flashing row number on a single row).	Seed tube sensor is blocked.	Clean sensor.
	Faulty seed tube sensor.	Replace sensor.
	Meter not planting or underplanting.	Repair/replace meter.
	Chain broken or off sprocket.	Repair as necessary.
Seed tube sensor dirty or blocked warning comes on (after calibration, bargraph keeps flashing for a single row).	Seed tube sensor is dirty.	Clean sensor.
	Faulty seed tube sensor.	Replace sensor.
LED on the seed tube sensor will not come on.	Faulty seed tube sensor.	Replace sensor.
	Dirty or corroded connector.	Clean connector.
	Break in the harness just before the sensor.	Repair harness.
Erroneous MPH readings at idle. (Radar Distance Sensor Only)	Radar sensor not located in a stable location.	Relocate to a more stable location.



# MAINTENANCE

## KPM III ELECTRONIC SEED MONITOR TROUBLESHOOTING

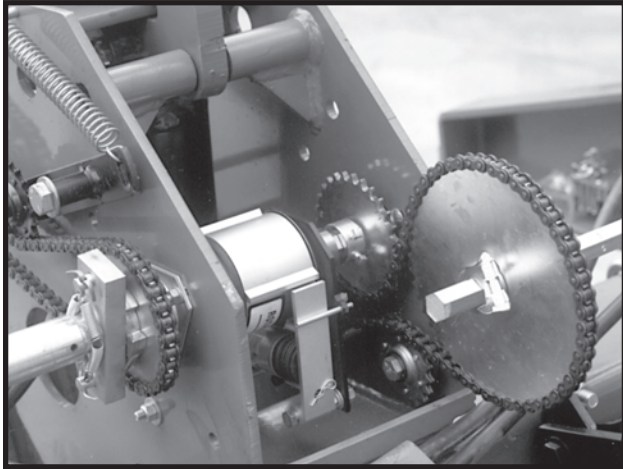
PROBLEM	POSSIBLE CAUSE	SOLUTION
Single sensor communication alarm comes on.	Faulty seed tube sensor.	Replace sensor.
	Break in the harness just before the seed tube sensor.	Inspect for break in harness and repair. If break can't be found, replace harness section.
	Dirty or corroded connector.	Clean connector.
Sensor communication alarms come on for all sensors.	Faulty monitor.	Replace monitor.
	Break in the harness just after the monitor.	Inspect for break in harness and repair. If break can't be found, replace harness section.
	Dirty or corroded connector.	Clean connector.
Sensor communication alarms come on for some sensors.	Break in the harness.	Inspect for break in harness and repair. If break can't be found, replace harness section corresponding with the alarming sensors.
	Dirty or corroded connector.	Clean connector.
Faulty monitor values (such as speed, area, etc.) being displayed.	Incorrect monitor settings.	Change settings to properly correspond to the system.
	Faulty radar/magnetic distance sensor.	Replace sensor.
	Improperly mounted radar sensor.	Properly mount sensor.
Underplanting or no planting alarm on a single sensor when planting (alarm on with a single bargraph segment on and a flashing row number on a single row).	Seed tube sensor is blocked.	Clean sensor.
	Faulty seed tube sensor.	Replace sensor.
	Meter not planting or underplanting.	Repair/replace meter.
	Chain broken or off sprocket.	Repair as necessary.
Seed tube sensor dirty or blocked warning comes on.	Seed tube sensor is dirty.	Clean sensor.
	Faulty seed tube sensor.	Replace sensor.
LED on the seed tube sensor will not come on.	Faulty seed tube sensor.	Replace sensor.
	Dirty or corroded connector.	Clean connector.
	Break in the harness just before the sensor.	Repair harness.
Erroneous MPH readings at idle. (Radar Distance Sensor Only)	Radar sensor not located in a stable location.	Relocate to a more stable location.

# MAINTENANCE

## POINT ROW CLUTCHES

The point row clutches are permanently lubricated and require no periodic maintenance.

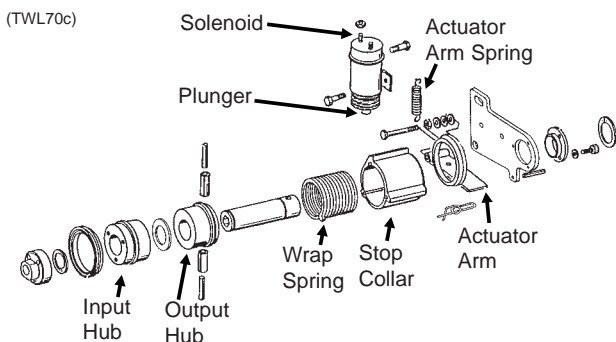
82378-18a



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

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

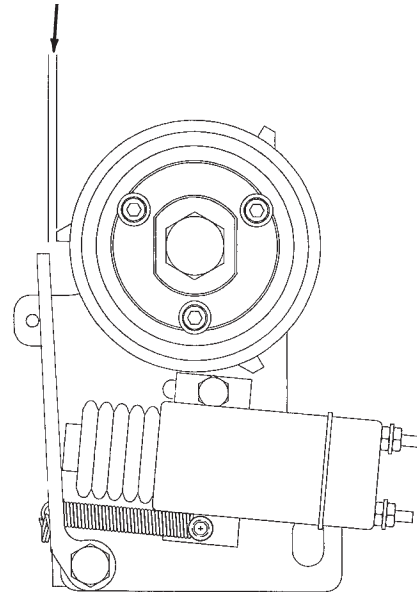
**NOTE: Always replace fuse with proper size and type when replacing fuses. Use AGC-15 amp main fuse and MDL-10 amp slow blow fuses.**



(A7110)

### 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.**



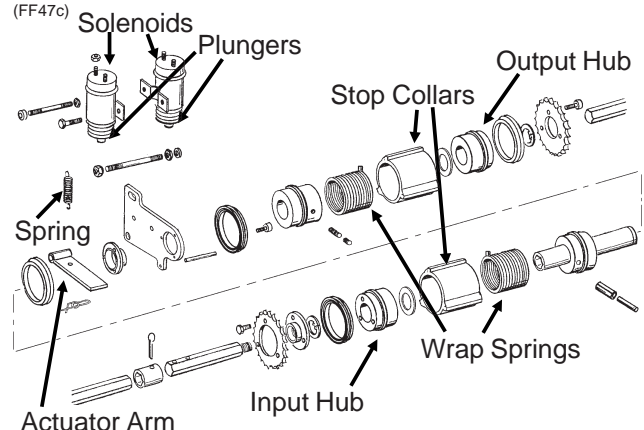
**NOTE: To adjust gap between actuator arm and stop, loosen nut on mounting pin and move pin in slot until there is at least 1/8" (± 1/32") gap between arm and stop on stop collar. Retighten nut.**

## TWO-SPEED POINT ROW CLUTCHES

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

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

(FF47c)



# MAINTENANCE

## POINT ROW CLUTCH TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
None of the clutches 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 section of planter will not re-engage.	Shear pin at seed drive transmission(s) sheared.	Replace pin 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.
	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 section 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 10 amp slow blow fuses.
Frequent fuse burnout.	Low voltage (12 volts required).	Check power source voltage for partially discharged battery, etc.
	Damage to wiring harness.	Locate damage and repair or replace harness.
Clutch or clutches will not disengage.	Input and output shafts out of alignment.	Align input and output shafts to prevent drag.
	Input or output shaft is pushed in too far creating a coupler.	Reposition input and output shafts.

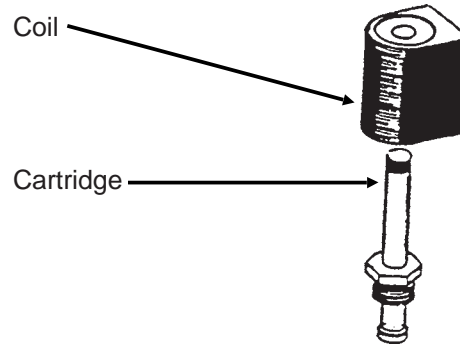
# MAINTENANCE

## SOLENOID VALVE

VVB019(PLTR55)

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.



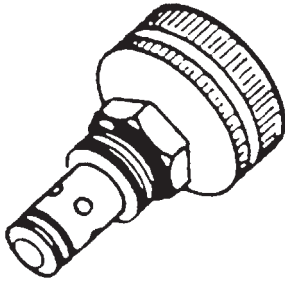
## SOLENOID VALVE TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
None of the solenoids will operate.	Low voltage.	Must be connected to 12 volt DC only. Negative ground.
	Blown fuse.	Replace fuse in control console on tractor with AGC-15 amp only.
	Battery connection.	Clean and tighten.
	Wiring harness damaged.	Repair or replace.
One solenoid valve will not operate.	Bad switch.	Replace on control 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.

# MAINTENANCE

## FLOW CONTROL VALVE

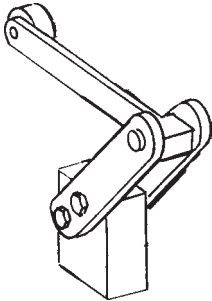
VVB020(TWL28)



The row marker flow control valves, located in the valve block on the right wing of the planter, should be adjusted for raise and lower speed as part of the assembly procedure or upon initial operation. If a valve fails to function properly or requires frequent adjustment, it should be removed for inspection. Check for foreign material and contamination on both the valve and the seating area of the valve body. Replace any components found to be defective.

## DETENT LEVER VALVE

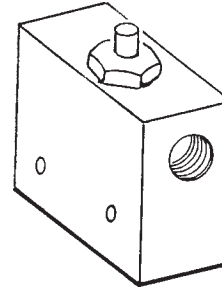
PHA031(PLTR68)



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

## STROKE LIMITER VALVE

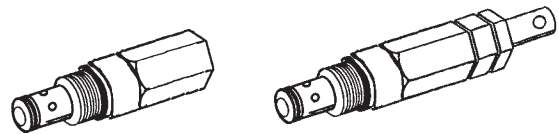
VVB037rev(PLTR69)



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

## PRESSURE RELIEF VALVE

(FF46/FF46a)



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

## CHECK VALVE

VVB020(PLTR70)



The check valves, located in the valve block on the left wing of the planter, trap oil flow in the planter's lift system to keep the toolbar level during field operation. Another check valve is located in the junction block on the left wing of the planter on 24 Row 30" and 36 Row 20" sizes. Consult your KINZE® Dealer for service.

# MAINTENANCE

## ROW MARKER OPERATION 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 left 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 "Row Marker Transport Stand Adjustment".
	Marker flow control valve out of adjustment.	See Operation section for adjustment.

# MAINTENANCE

## LIFT CIRCUIT TROUBLESHOOTING

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

## ROW MARKER TRANSPORT STAND ADJUSTMENT

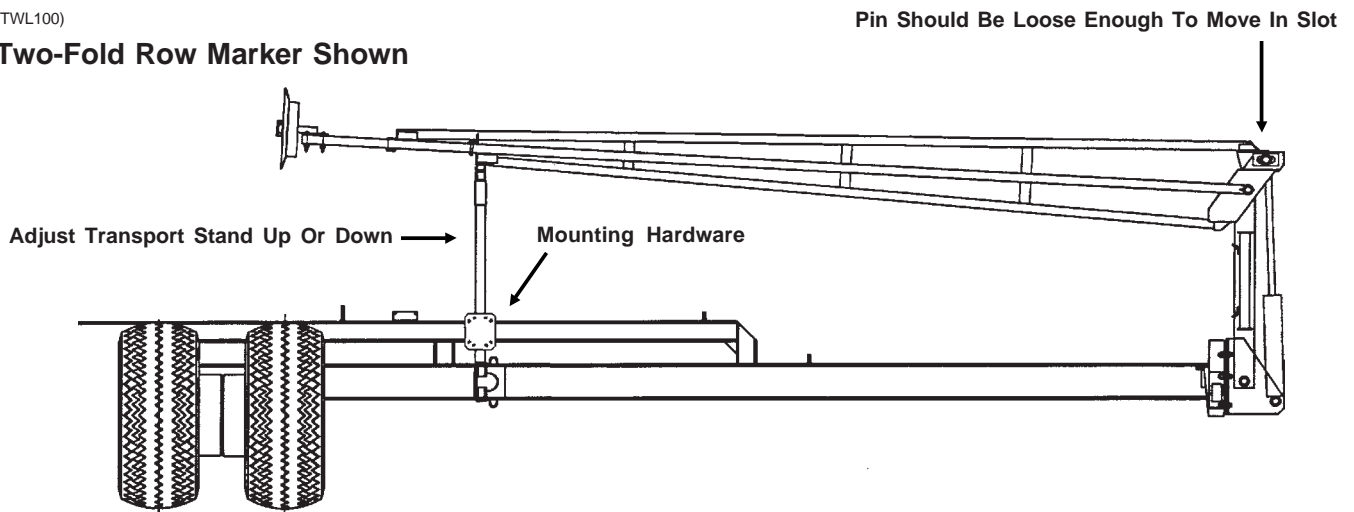
It is critical that the marker transport stands are adjusted correctly to allow the marker cushion cylinders used on two-fold and three-fold low profile row markers to function as designed.

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 (applies only to two-fold row markers).

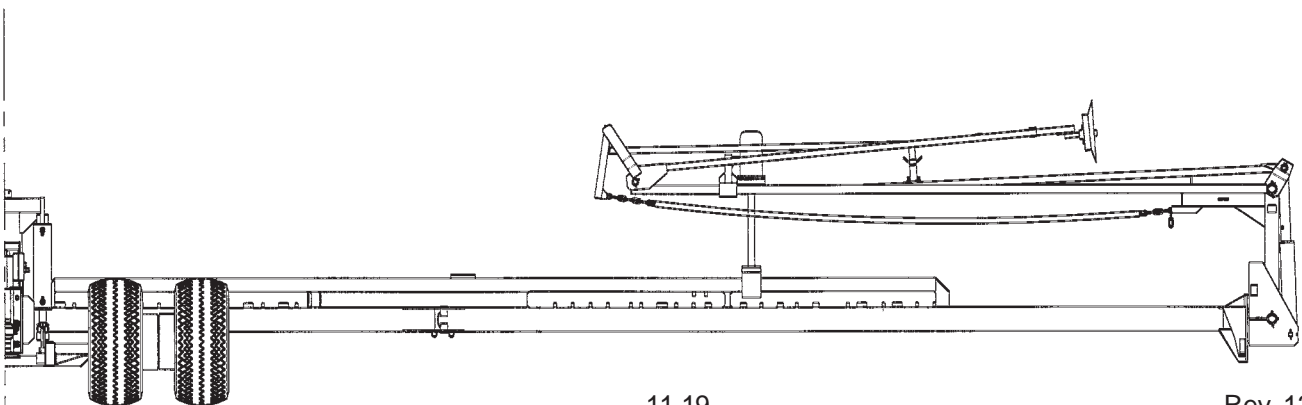
(TWL100)

### Two-Fold Row Marker Shown



(FF139)

### Three-Fold Row Marker Shown

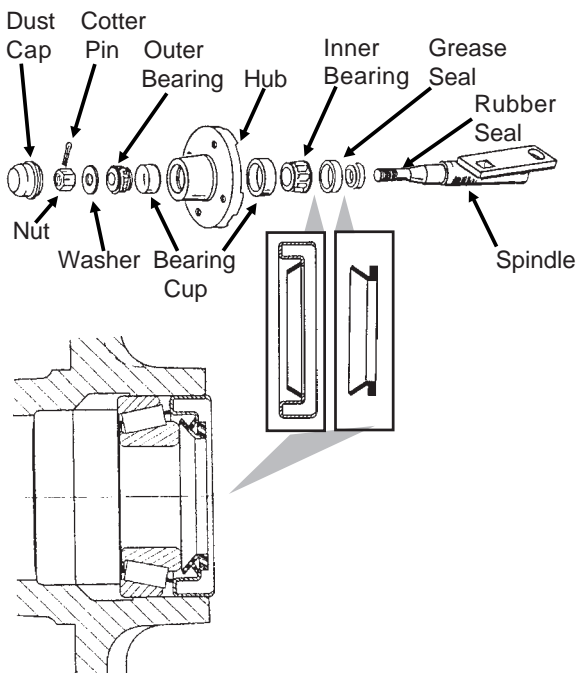


# MAINTENANCE

## ROW MARKER BEARING LUBRICATION OR REPLACEMENT

1. Remove marker blade.
2. Remove dust cap from hub.
3. Remove cotter pin, nut and washer.
4. Slide hub from spindle.
5. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
6. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
7. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also, fill the space between the bearing cups in the hub with grease.
8. Place inner bearing in place and press in new rubber seal and grease seal.
9. Clean spindle and install hub.
10. Install outer bearing, washer and slotted hex nut. Tighten slotted hex nut while rotating hub until there is some drag. This assures that all bearing surfaces are in contact. Back off slotted nut to nearest locking slot and install cotter pin.
11. Fill dust caps approximately  $\frac{3}{4}$  full of wheel bearing grease and install on hub.
12. Install blade and dust cap retainer on hub and tighten evenly and securely.

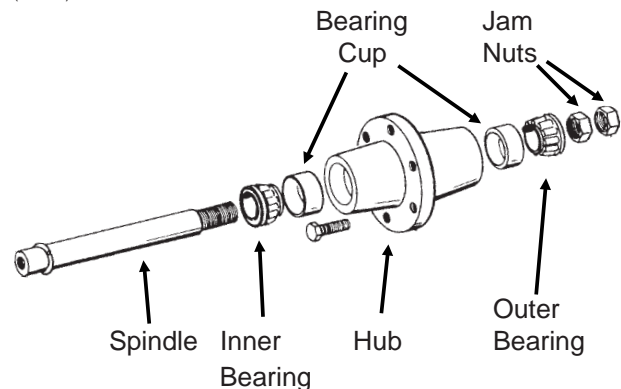
(PLTR45/PLTR99/PLTR98)



## GROUND DRIVE WHEEL BEARING LUBRICATION OR REPLACEMENT

1. Raise tire clear of ground and remove wheel.
2. Remove double jam nuts and slide hub from spindle.
3. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
4. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
5. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.
6. Place inner bearing and seal in place.
7. Clean spindle and install hub.
8. Install outer bearing, seal and jam nut. Tighten jam nut while rotating hub until there is some drag. This assures that all bearing surfaces are in contact. Back off jam nut  $\frac{1}{4}$  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.

(EF35e)



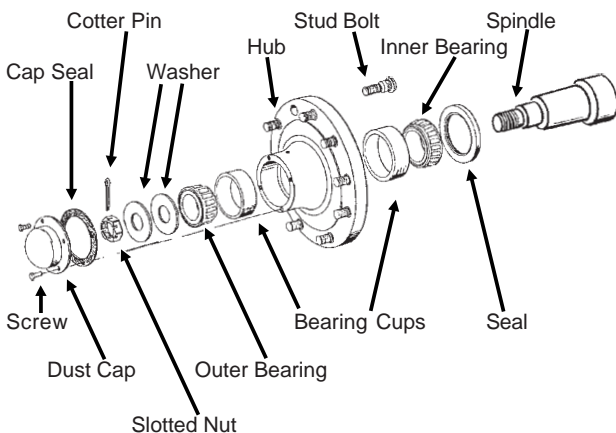


# MAINTENANCE

## TRANSPORT WHEEL BEARING REPLACEMENT

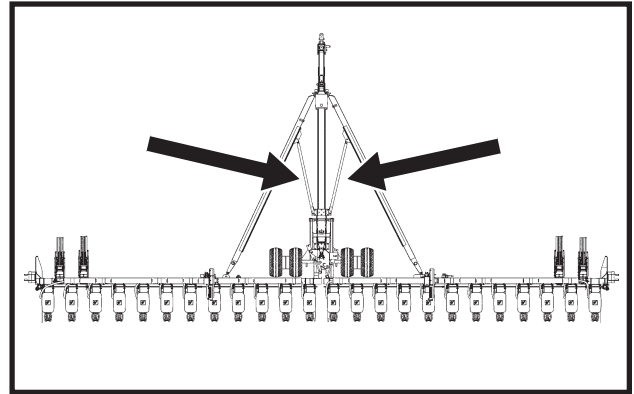
1. Raise tire clear of ground and remove wheel.
2. Remove dust cap attachment hardware and remove cap from wheel hub.
3. Remove cotter pin, axle nut and 2" washer.
4. Slide hub from axle spindle, using a hub puller if necessary.
5. Remove bearings and cups from hub and discard. Thoroughly clean and dry wheel hub.
6. Press in new bearing cups with thickest edges facing in.
7. Pack bearing with heavy-duty wheel bearing grease, thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.
8. Place inner bearing in hub and press in new grease seal with lip pointing towards bearing.
9. Clean axle spindle and install hub.
10. Install outer bearing, 2" washer and slotted hex nut. Tighten slotted hex nut while rotating the hub until there is some drag. This assures that all bearing surfaces are in contact. Back off slotted nut to nearest locking slot and install cotter pin. Check for endplay in bearings.
11. Fill dust cap half full of wheel bearing grease and install on hub with attachment bolts.
12. Install wheel and remove jack. Torque inner budd nuts to 220 ft. lbs. and outer budd nuts to 670 ft. lbs.

HTA002(PLTR71)



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

(FF109)



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

# MAINTENANCE

## PISTON PUMP STORAGE

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

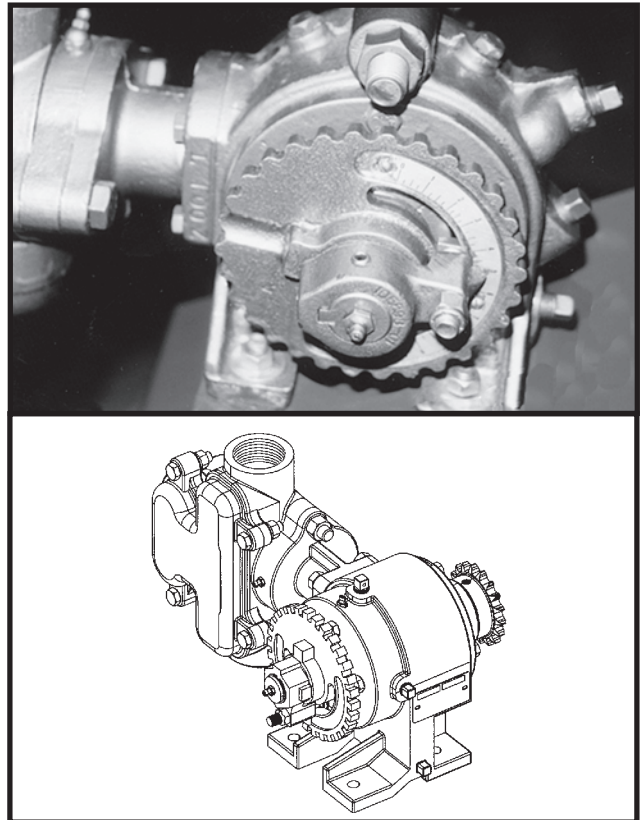
### Overnight Storage

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

### Winter Storage

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

12229799/A12330a



## 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.

# MAINTENANCE

## 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.

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

Make sure all seed and granular chemical hoppers are empty and clean.

Remove seed discs from seed meters, clean and store meters in a rodent-free, dry area with discs removed. Store seed discs vertically on a dowel or pipe.

Remove vacuum hose from each seed meter. Operate vacuum fans at fully hydraulic flow from the tractor for two minutes to clear manifolds, hoses and fittings of dust and debris.

Clean breather on analog vacuum gages.

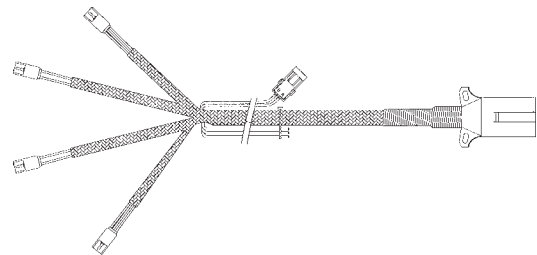
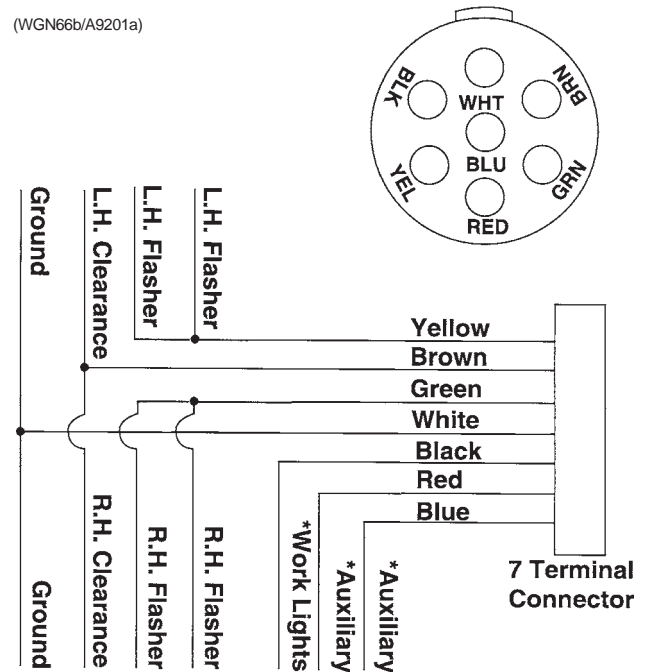
Grease or paint disc openers/blades and row marker disc blades to prevent rust.

Flush liquid fertilizer hoses and metering pumps with clean water. See "Piston Pump Storage" if applicable.

Disengage row unit clutch and unlatch mini-hopper on each row unit to release stress on drop hoses and hoppers during storage. (SDS Only)

## ELECTRICAL WIRING DIAGRAM FOR LIGHT PACKAGE

(WGN66b/A9201a)



**\*Optional customer-supplied auxiliary lights and wires may be wired into existing plug terminals.**

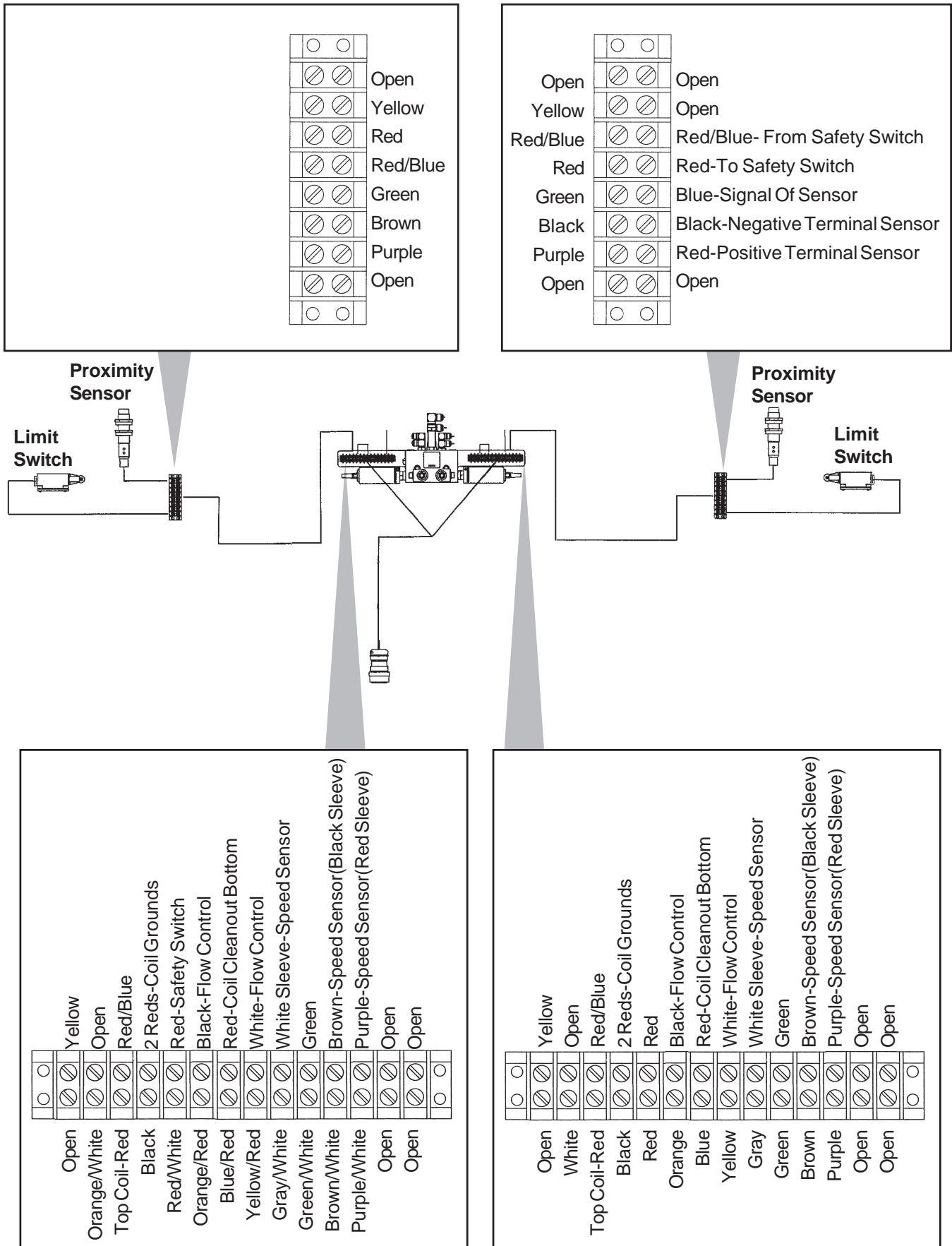
The light packages supplied on Model 3700 and 3700 SDS Front Folding Planters meet ASAE Standards. For the correct wiring harness to be wired into the lights on your tractor, check with the tractor manufacturer.

69922-35



# MAINTENANCE

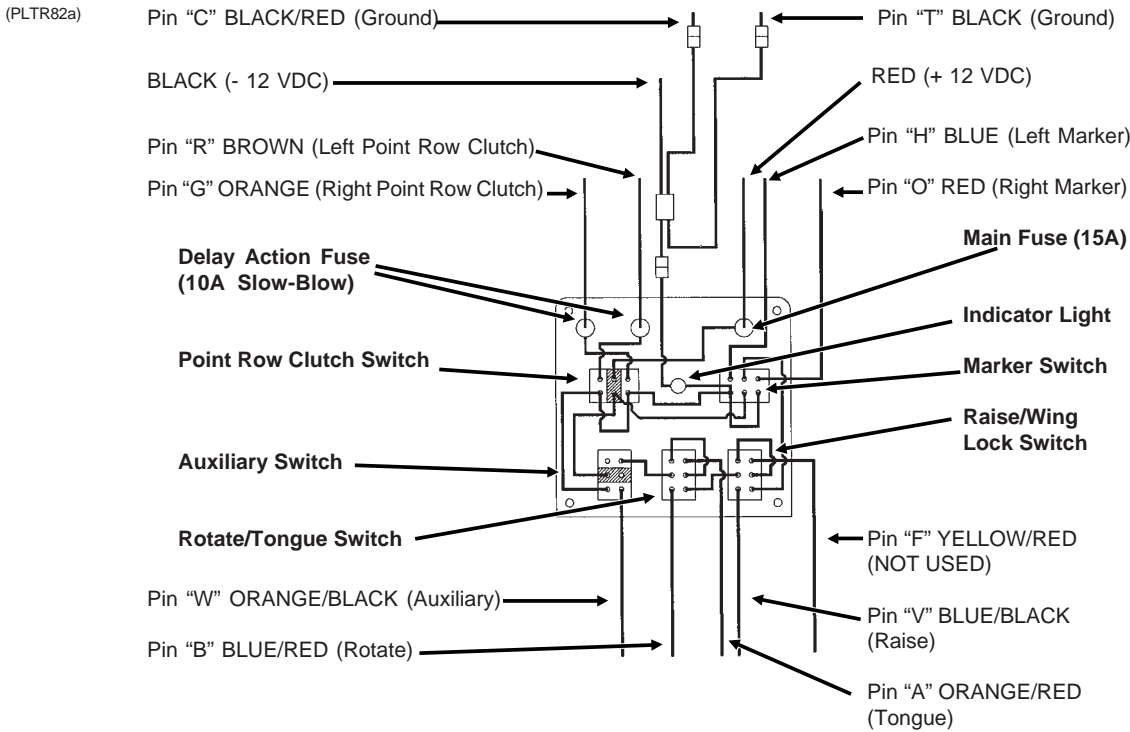
## ELECTRICAL WIRING SCHEMATIC (SDS) (A9098/FF128a/A9097)



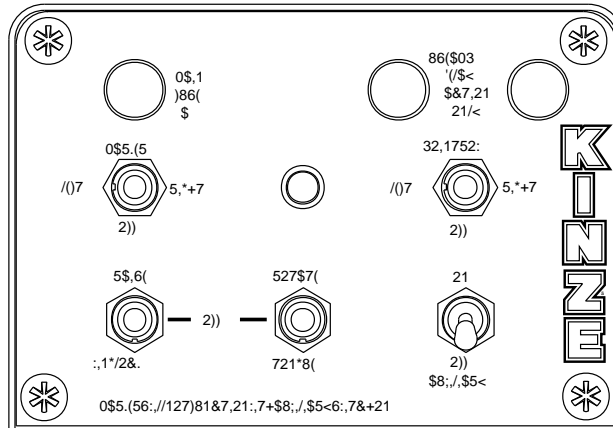
# MAINTENANCE

## ELECTRICAL CONTROL CONSOLE SCHEMATIC

**IMPORTANT:** 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.



(INS238)



**NOTE:**

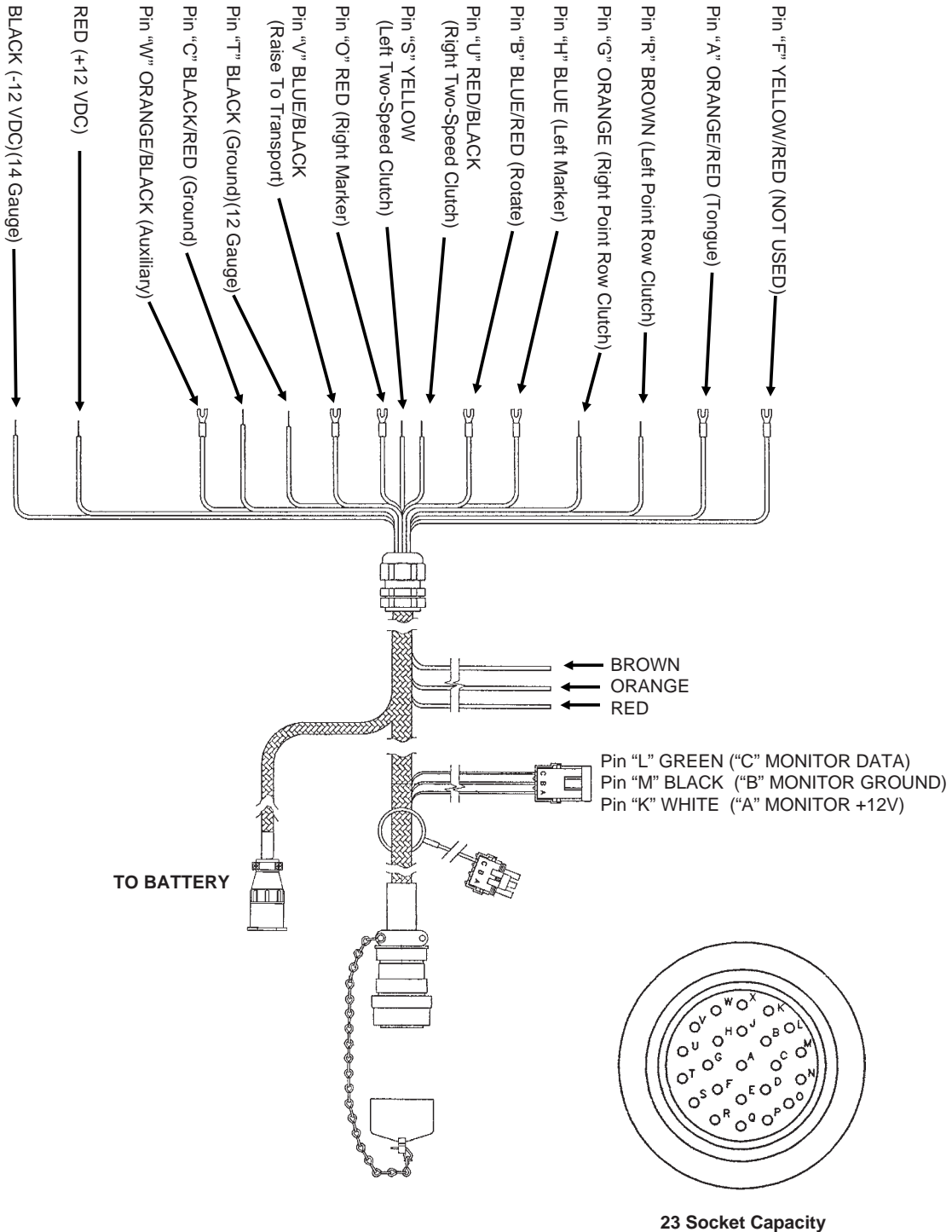
1. Operating row marker or point row switch in either direction lights panel light.
2. Point row clutch switch operates independently of the rest of the control box.
3. Power to the row marker switch is fed through the auxiliary switch and the two transport function switches. Operating any of the switches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

See page 11-30 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.

# MAINTENANCE

## ELECTRICAL WIRING HARNESS SCHEMATIC (On Tractor)

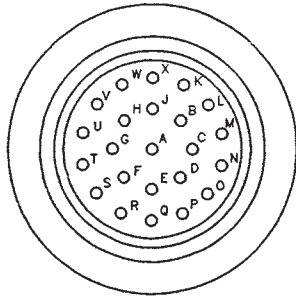
(ELC10c/ELC13)



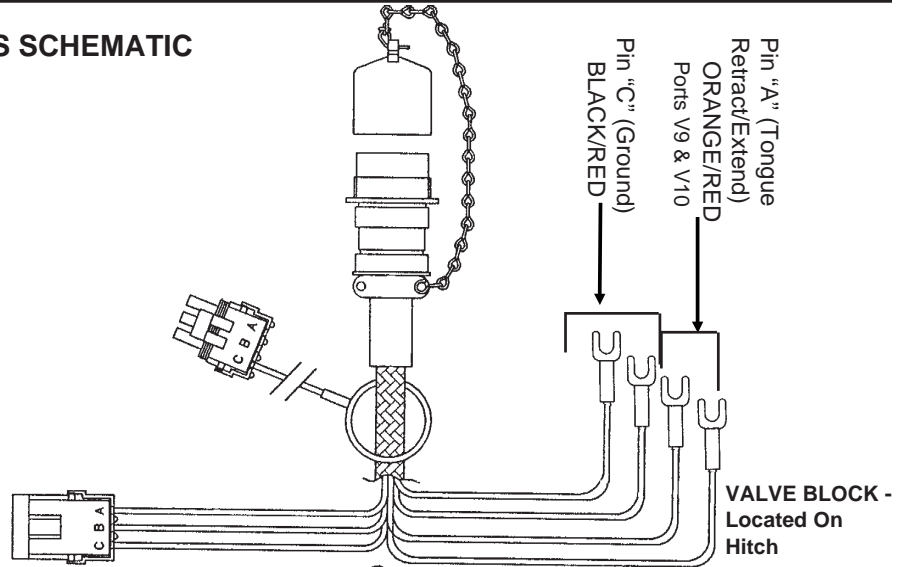
# MAINTENANCE

## ELECTRICAL WIRING HARNESS SCHEMATIC (On Planter)

(ELC13/ELC11a/TWL71d)

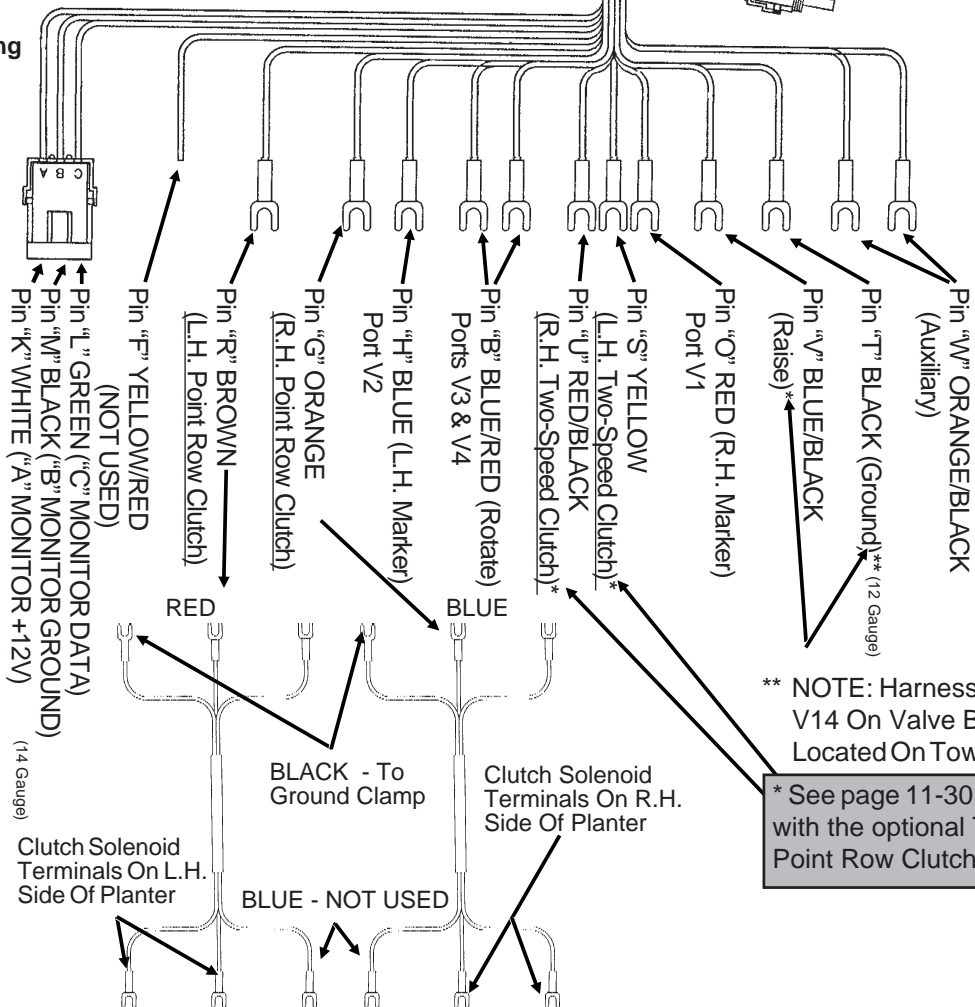


23 Pin Capacity



VALVE BLOCK -  
Located On  
Hitch

VALVE BLOCK -  
Located On R.H. Wing



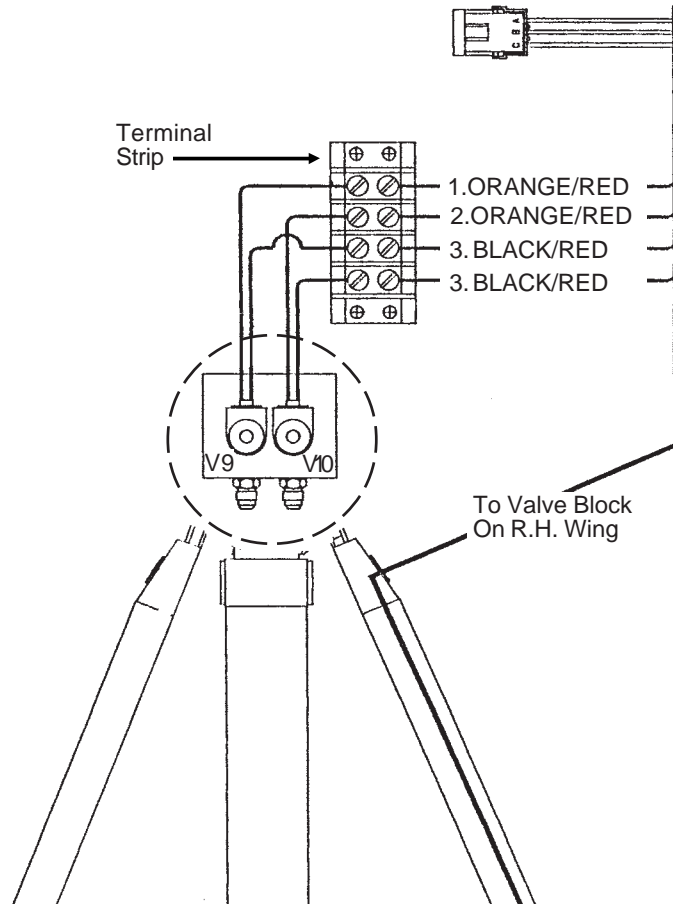
\*\* NOTE: Harness To Port V14 On Valve Block Located On Tower

\* See page 11-30 if equipped with the optional Two-Speed Point Row Clutch Package.

# MAINTENANCE

(A7516a)

## VALVE BLOCK - Located On Hitch

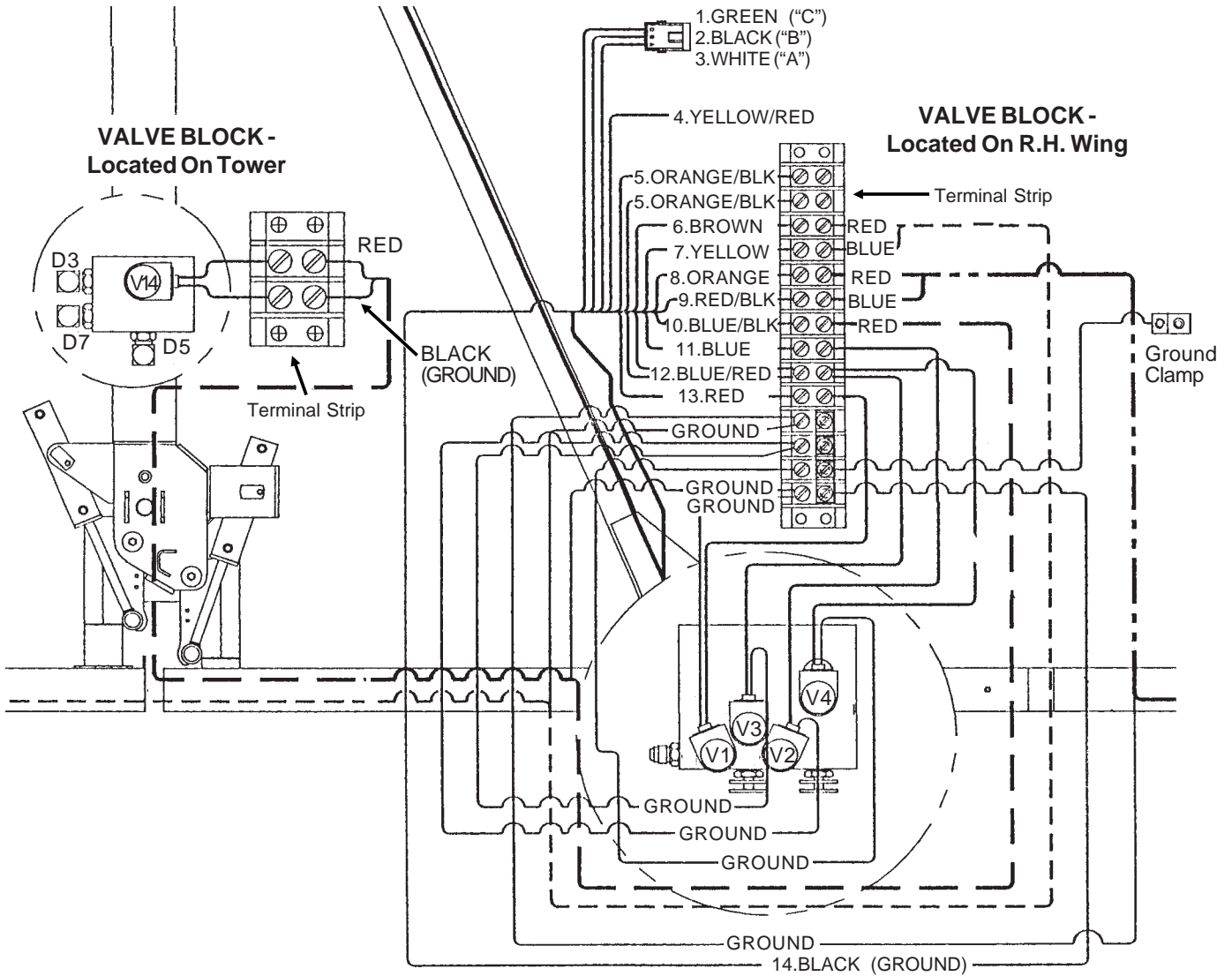


1. ORANGE/RED - Pin "A" (Tongue Retract/Extend) - Port V9
2. ORANGE/RED - Pin "A" (Tongue Retract/Extend) - Port V10
3. BLACK/RED - Pin "C" (Ground)



# MAINTENANCE

(A7516b)

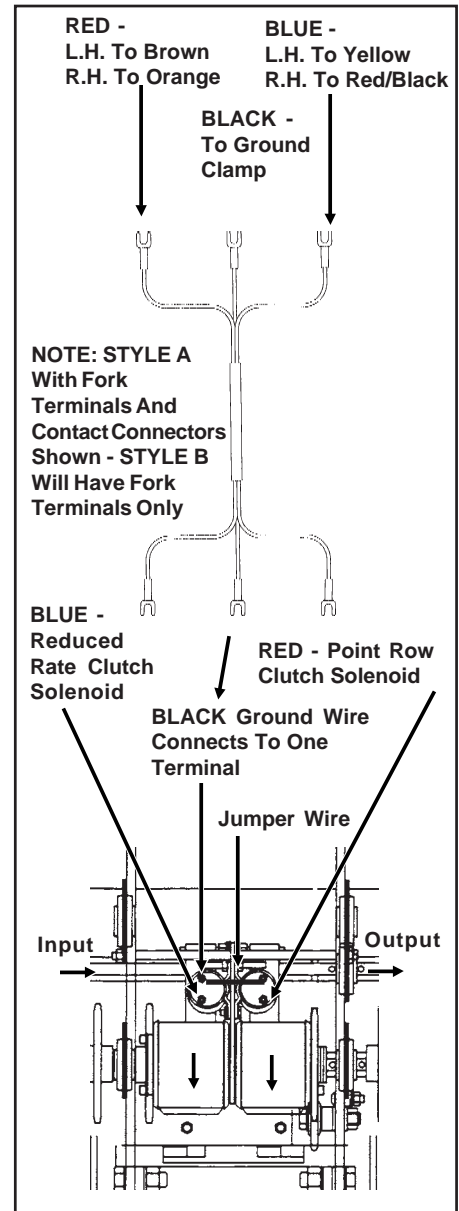
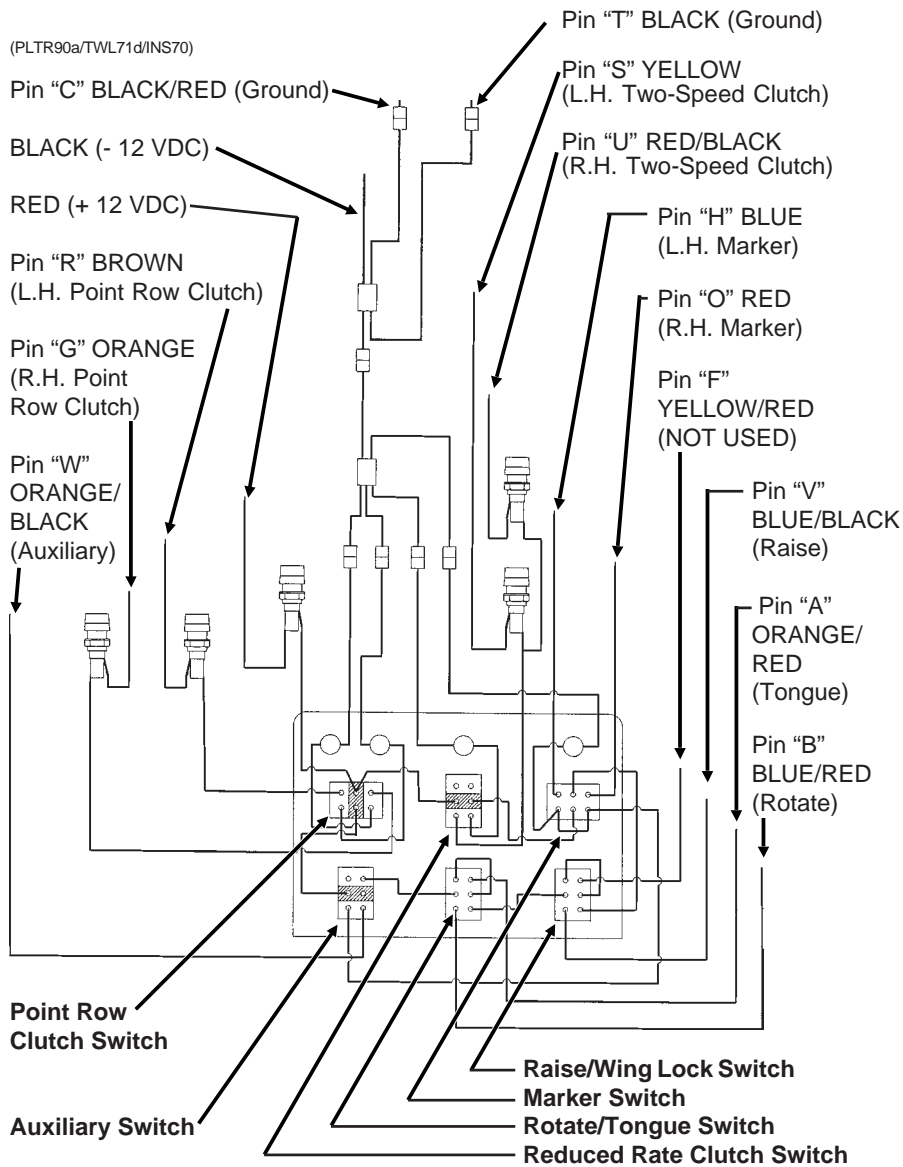


1. GREEN - Pin "L" ("C" MONITOR DATA)
2. BLACK - Pin "M" ("B" MONITOR GROUND)
3. WHITE - Pin "K" ("A" MONITOR +12V)
4. YELLOW/RED - Pin "F" (NOT USED)
5. ORANGE/BLACK - Pin "W" (Auxiliary)
6. BROWN - Pin "R" (L.H. Point Row Clutch)
7. YELLOW - Pin "S" (L.H. Two-Speed Clutch)\*
8. ORANGE - Pin "G" (R.H. Point Row Clutch)
9. RED/BLACK - Pin "U" (R.H. Two-Speed Clutch)\*
10. BLUE/BLACK - Pin "V" (Raise)
11. BLUE - Pin "H" (L.H. Marker) - Port V2
12. BLUE/RED - Pin "B" (Rotate) - Ports V3 And V4
13. RED - Pin "O" (R.H. Marker) - Port V1
14. BLACK - Pin "T" (Ground)

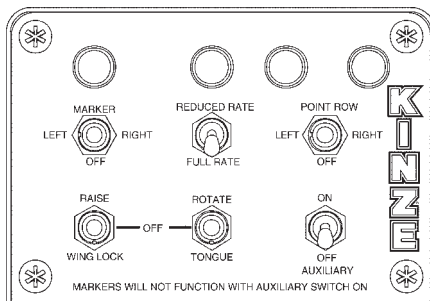
\* See page 11-30 if equipped with the optional Two-Speed Point Row Clutch Package.

# MAINTENANCE

## ELECTRICAL CONTROL CONSOLE SCHEMATIC (With Optional Two-Speed Point Row Clutches)



(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.

**IMPORTANT:** 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.

# MAINTENANCE

## ELECTRICAL WIRING HARNESS SCHEMATIC (Vacuum Fan Gauges)

(FF111)

**To Vacuum Fan Valve Block On R.H. Side Of Planter**

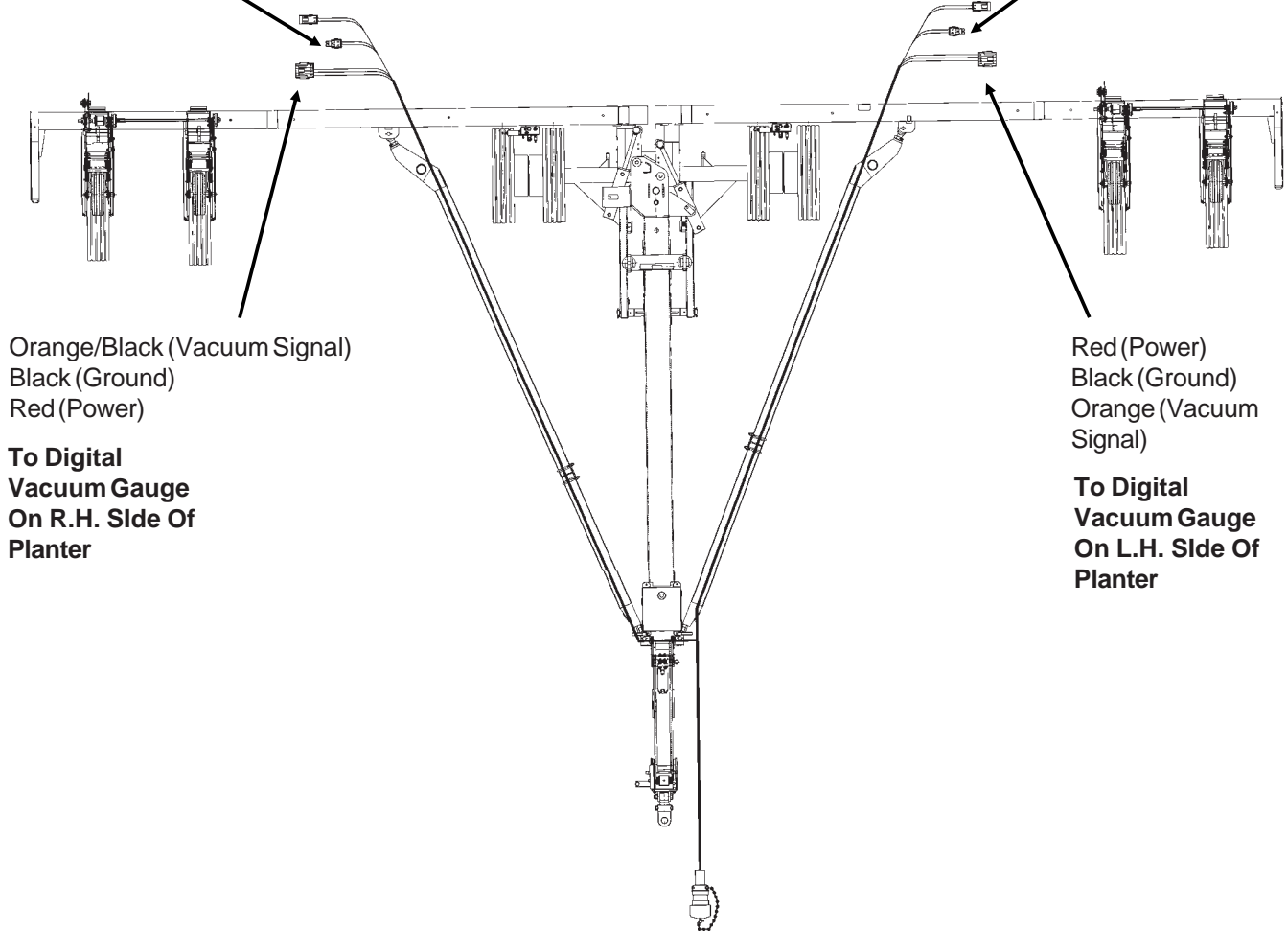
White (Motor Up)  
Blue (Motor Down)

Yellow (Coil Power)  
Black (Ground)

**To Vacuum Fan Valve Block On L.H. Side Of Planter**

Brown (Motor Up)  
Green (Motor Down)

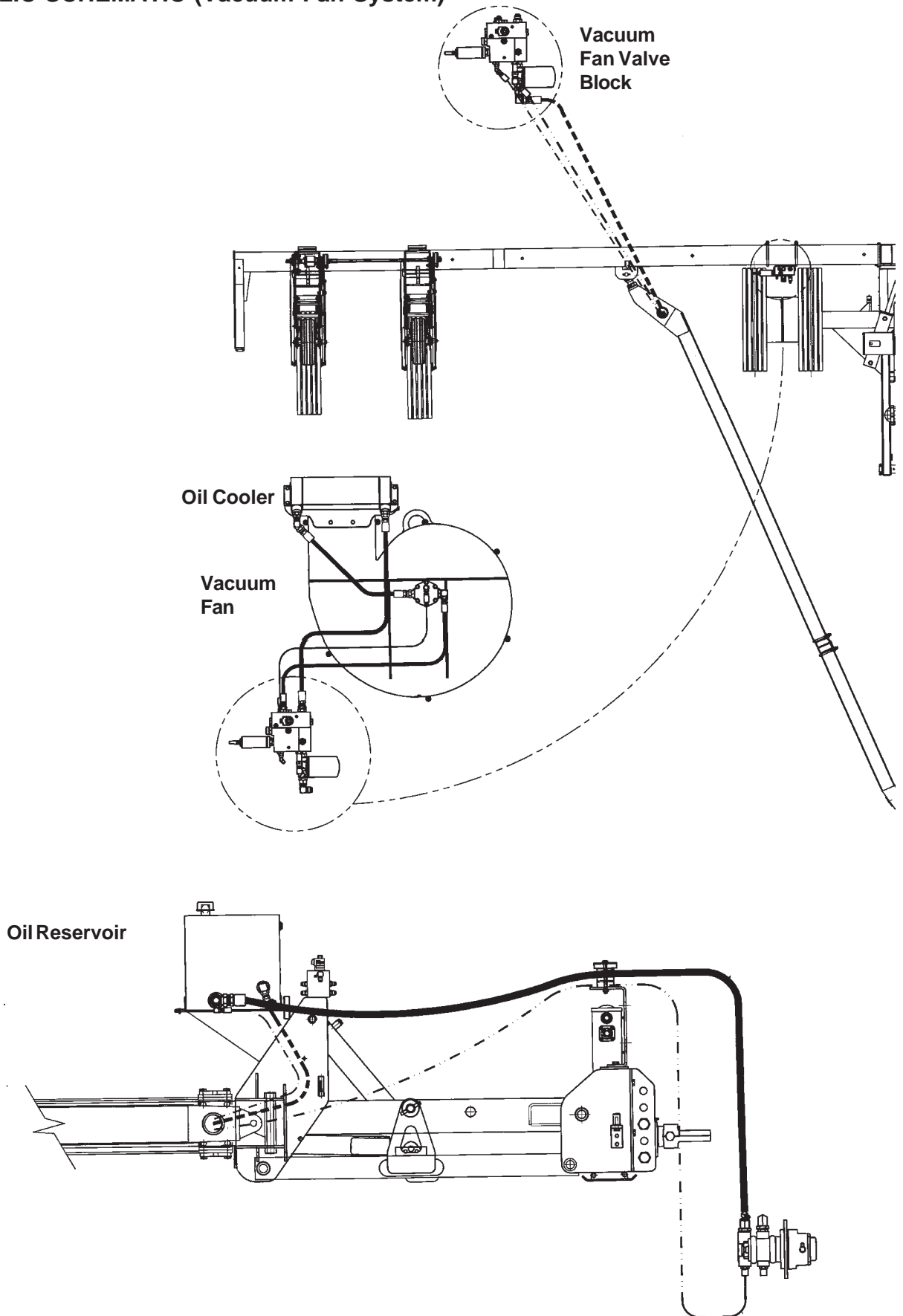
Black (Ground)  
Yellow (Coil Power)



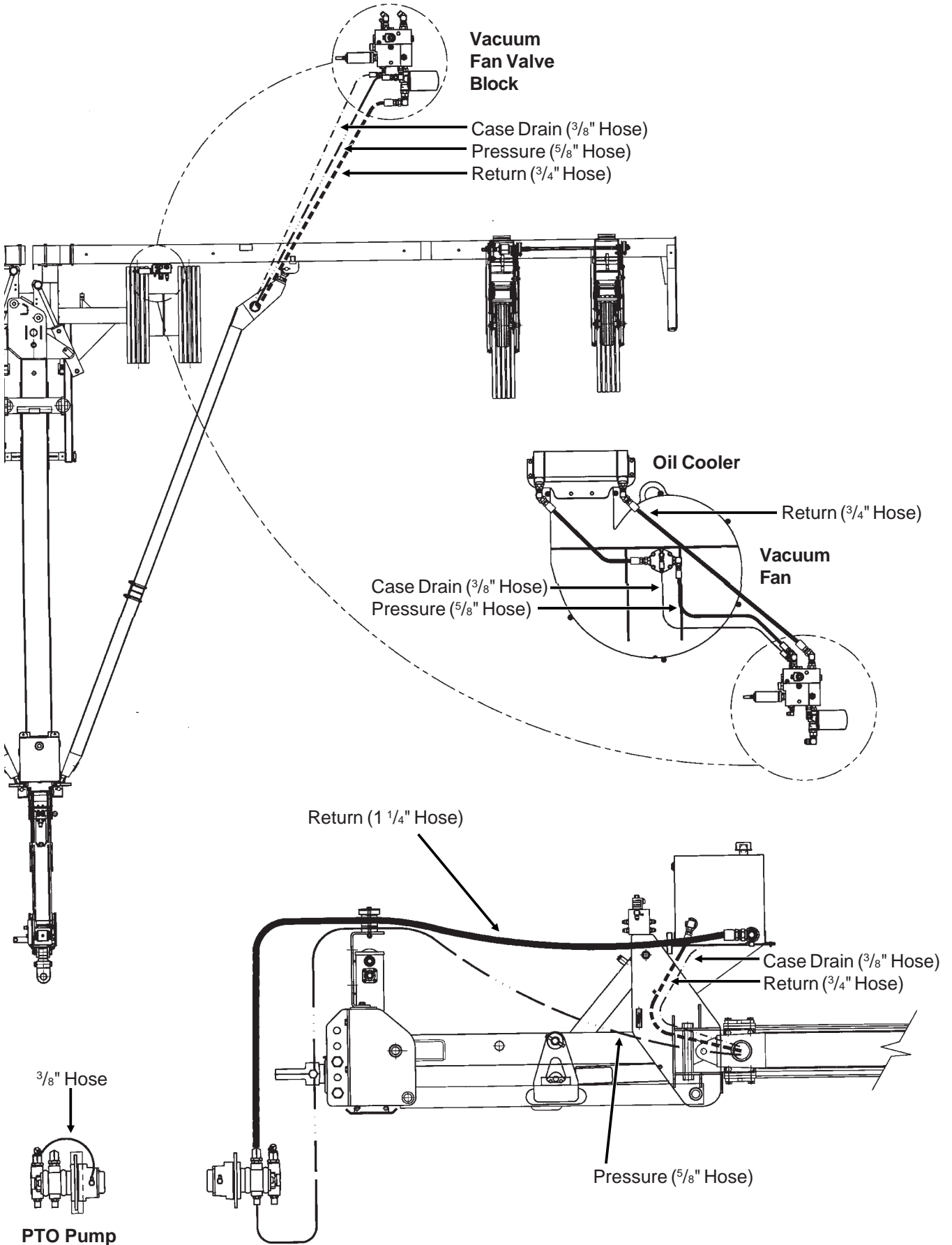
# MAINTENANCE

## HYDRAULIC SCHEMATIC (Vacuum Fan System)

(FF110)



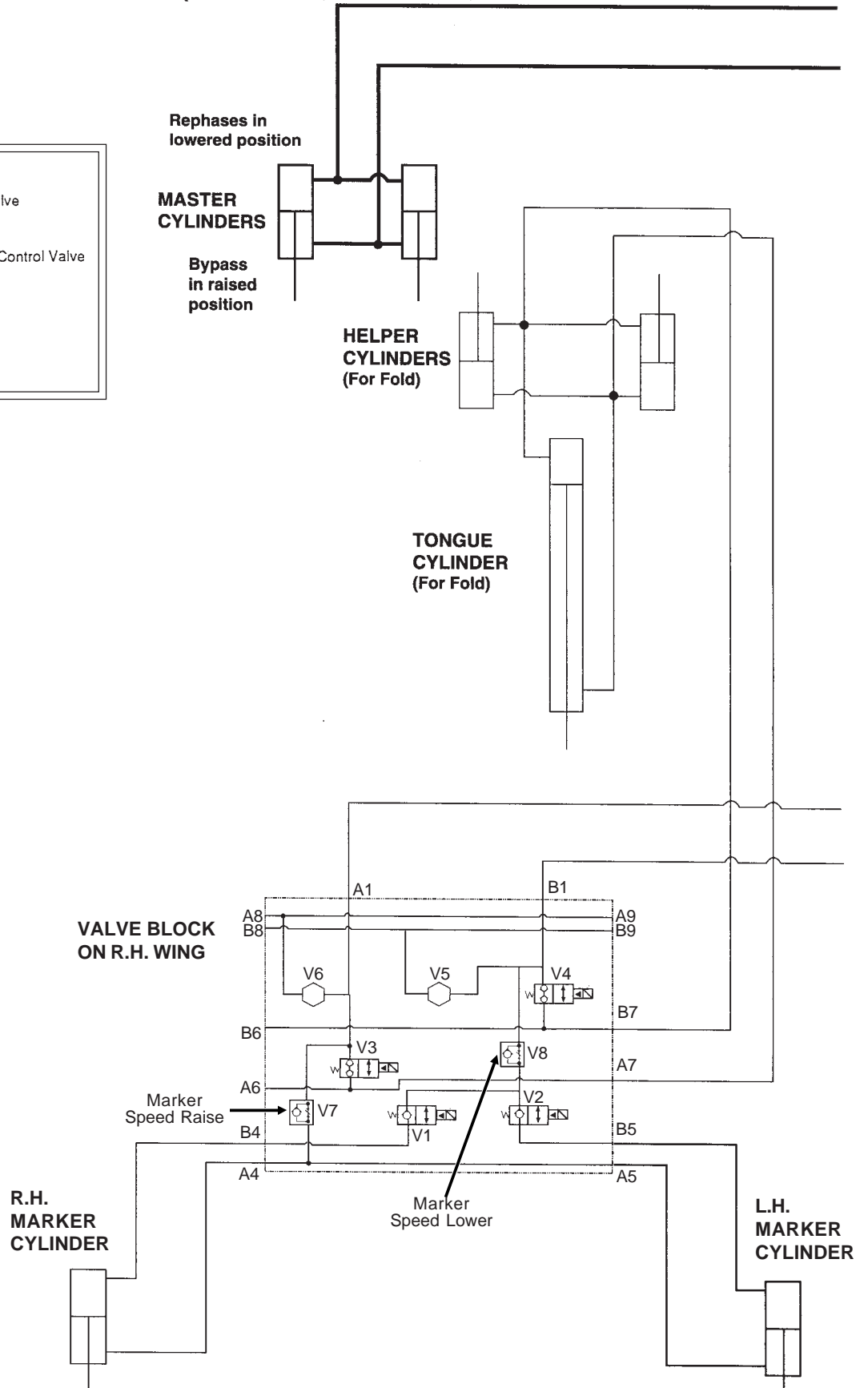
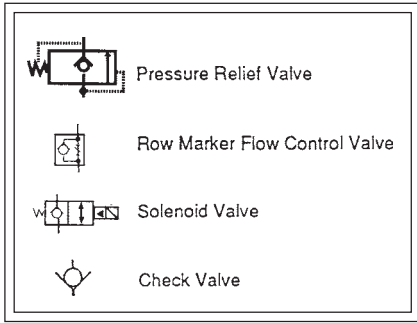
# MAINTENANCE



# MAINTENANCE

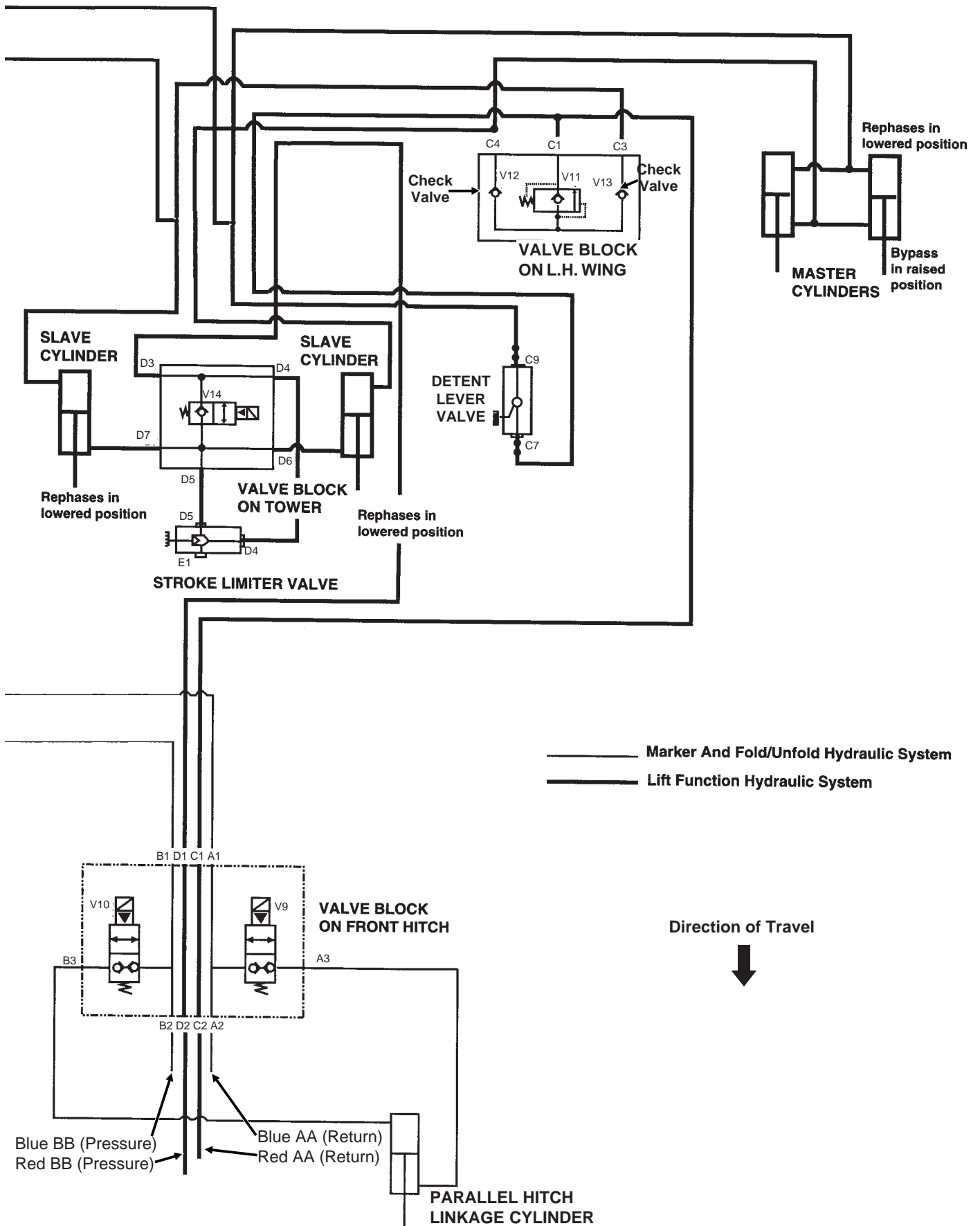
## HYDRAULIC SYSTEM SCHEMATIC (16 Row 30", 16 Row 38", 24 Row 20" And 24 Row 22" Sizes)

(PLTR93a)



# MAINTENANCE

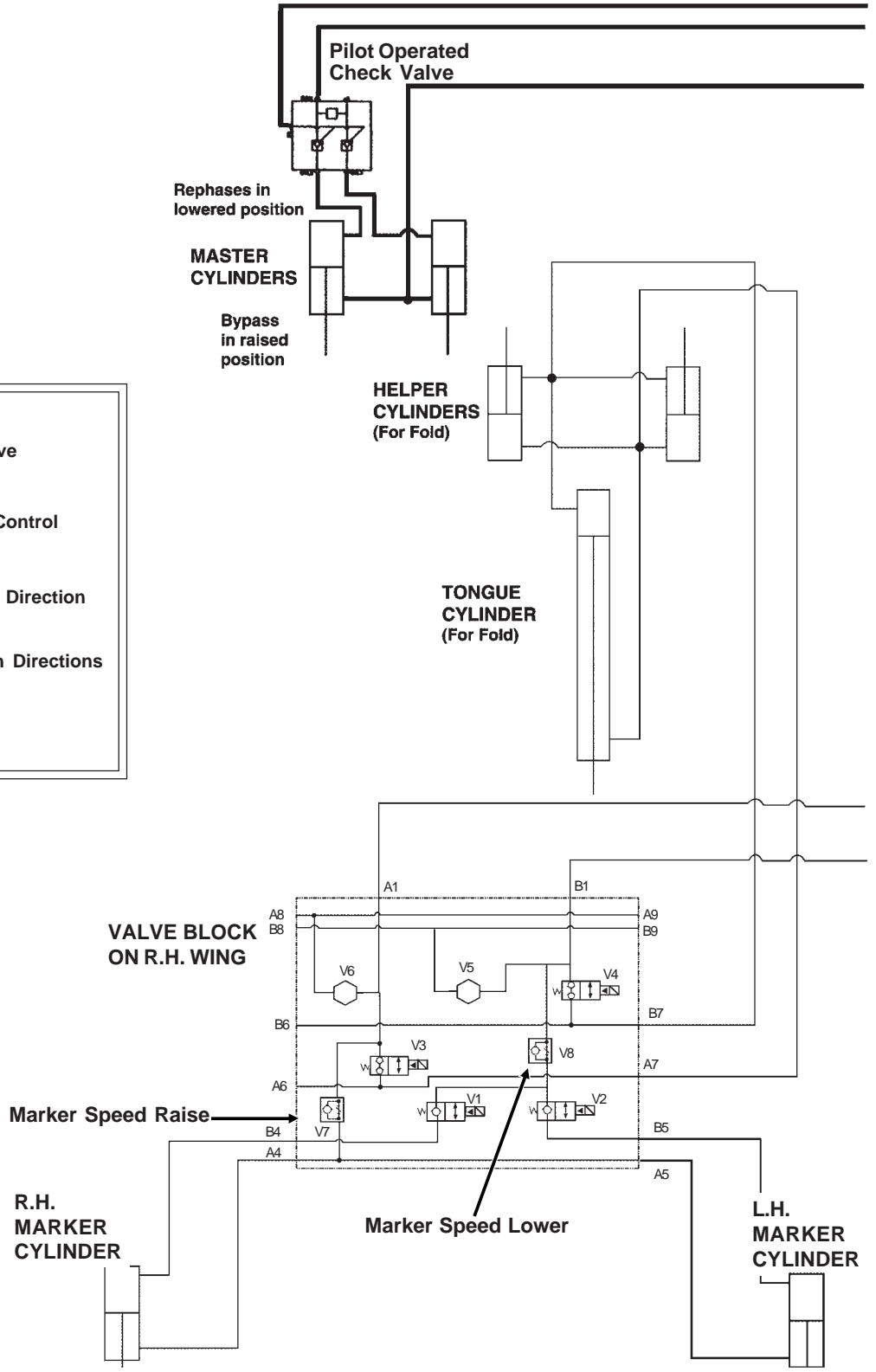
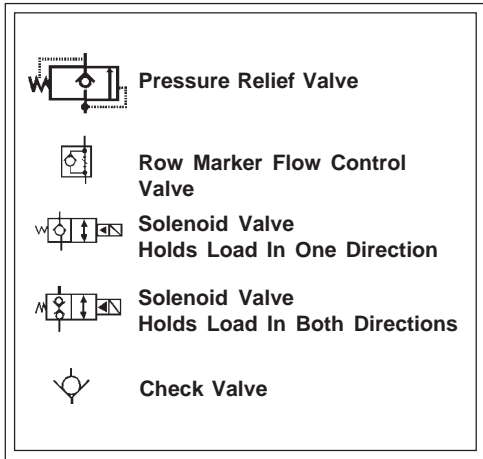
(PLTR94)



# MAINTENANCE

## HYDRAULIC SYSTEM SCHEMATIC (24 Row 30" Size)

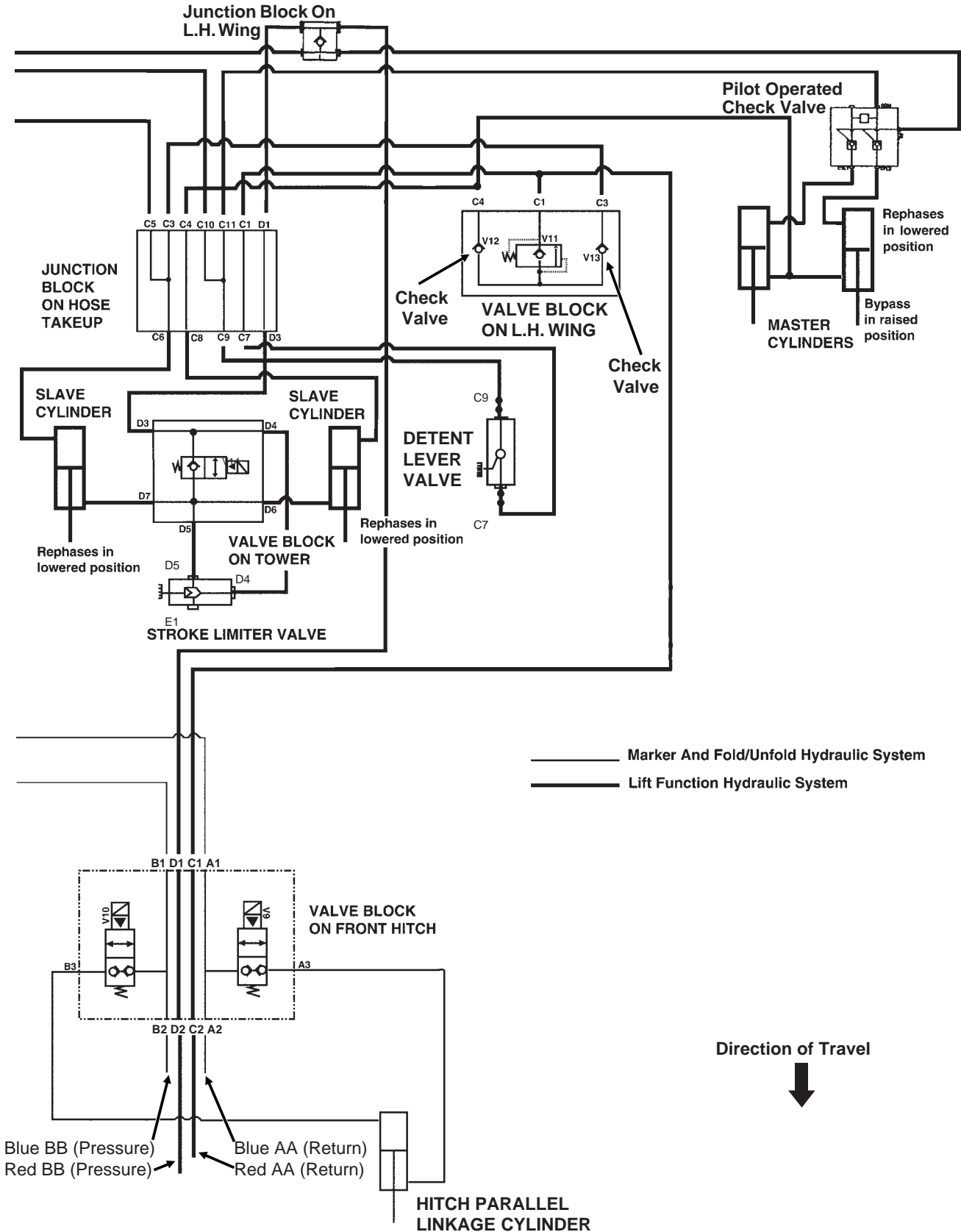
(PLTR74d)





# MAINTENANCE

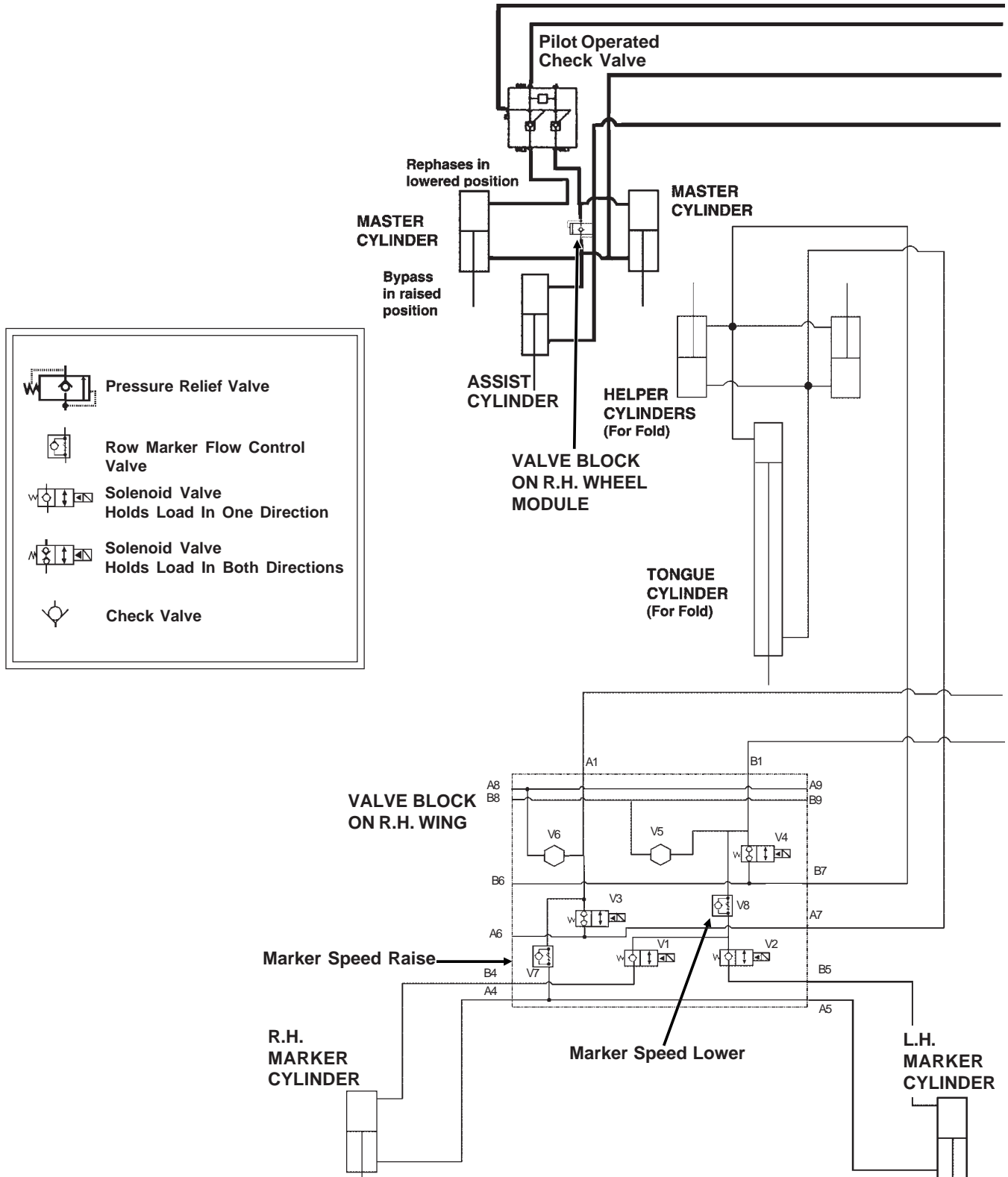
(PLTR75f)



# MAINTENANCE

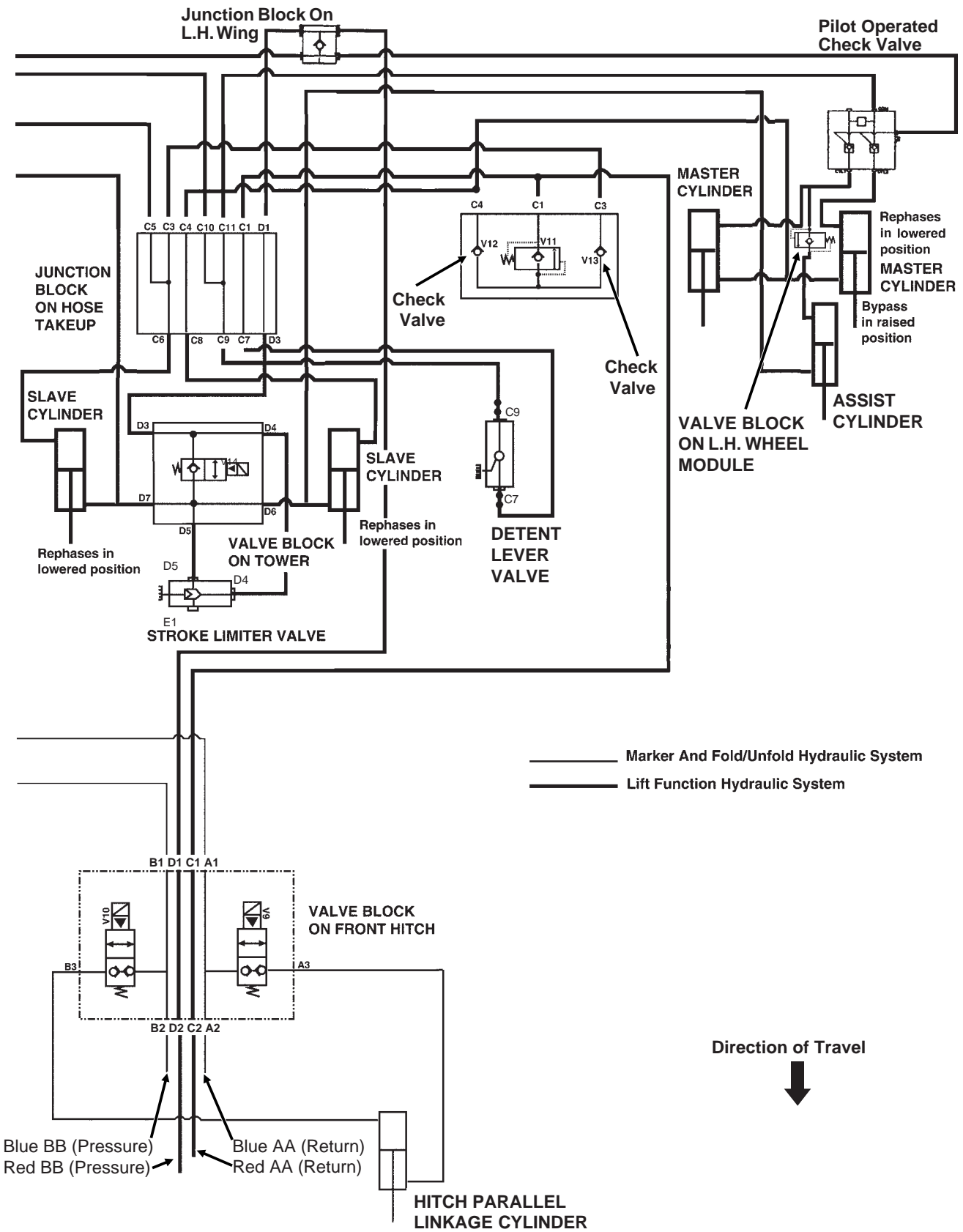
## HYDRAULIC SYSTEM SCHEMATIC (36 Row 20" Size)

(PLTR74f)



# MAINTENANCE

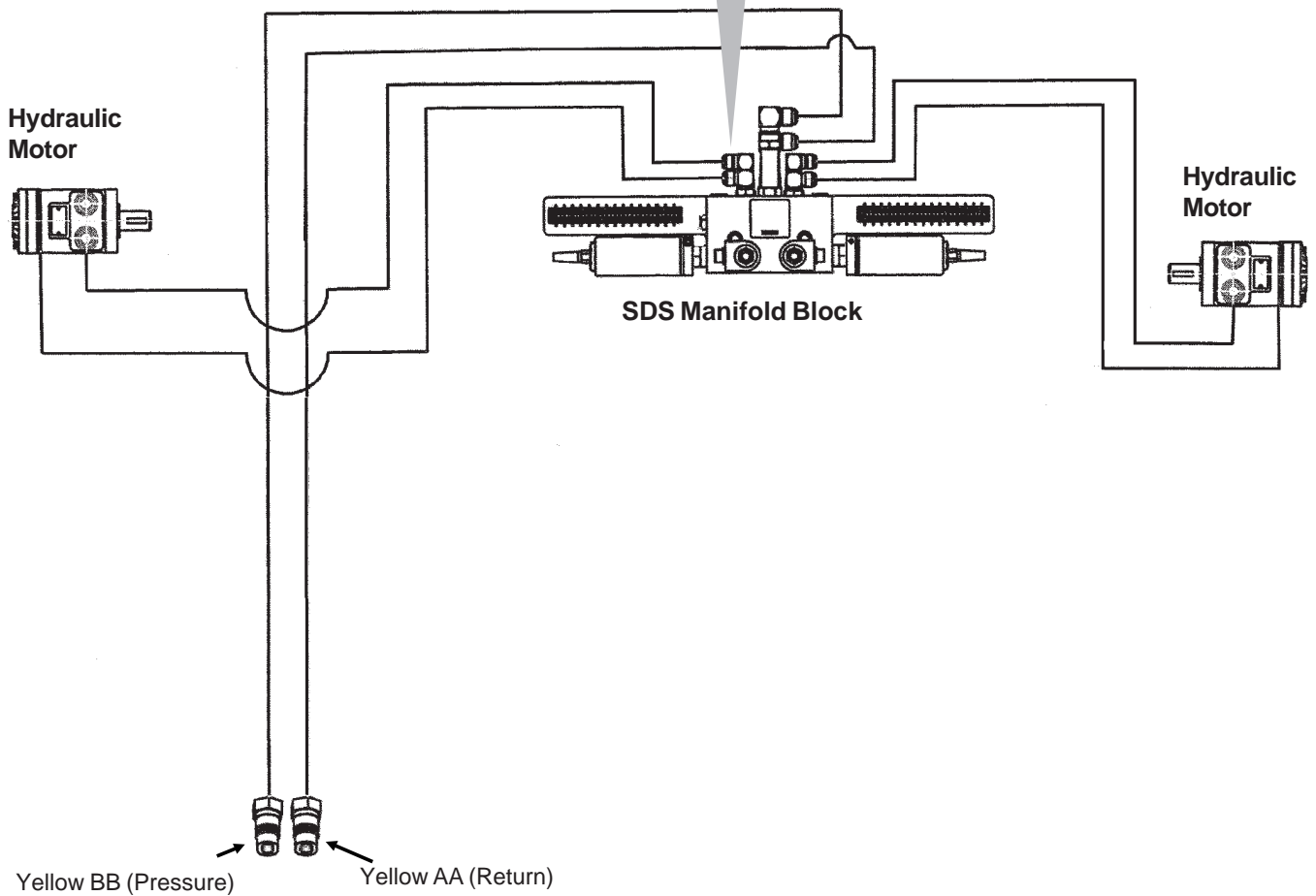
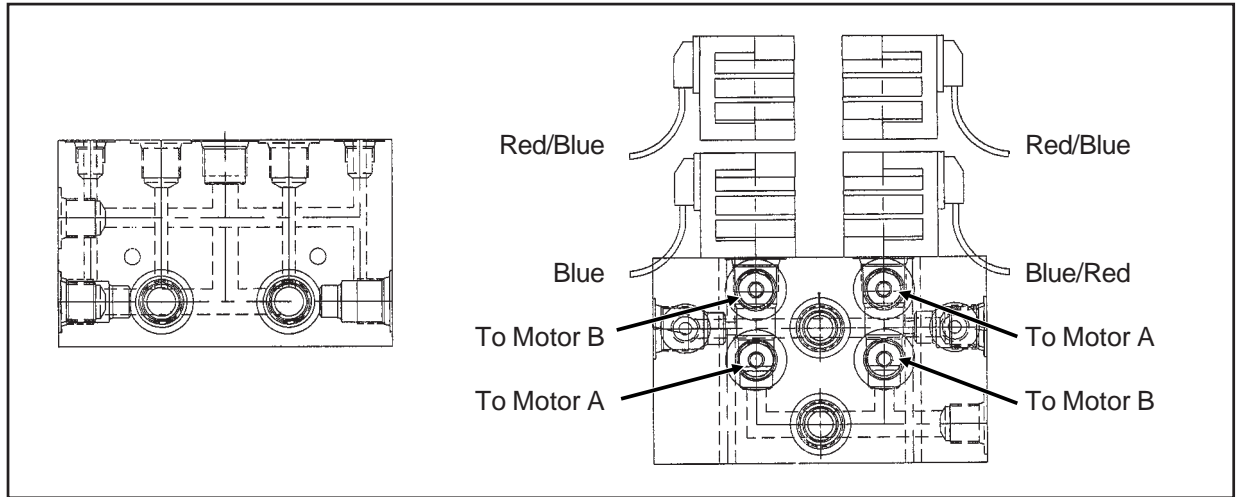
(PLTR75h)



# MAINTENANCE

## HYDRAULIC SYSTEM SCHEMATIC (SDS)

(FWD103/FF128b)

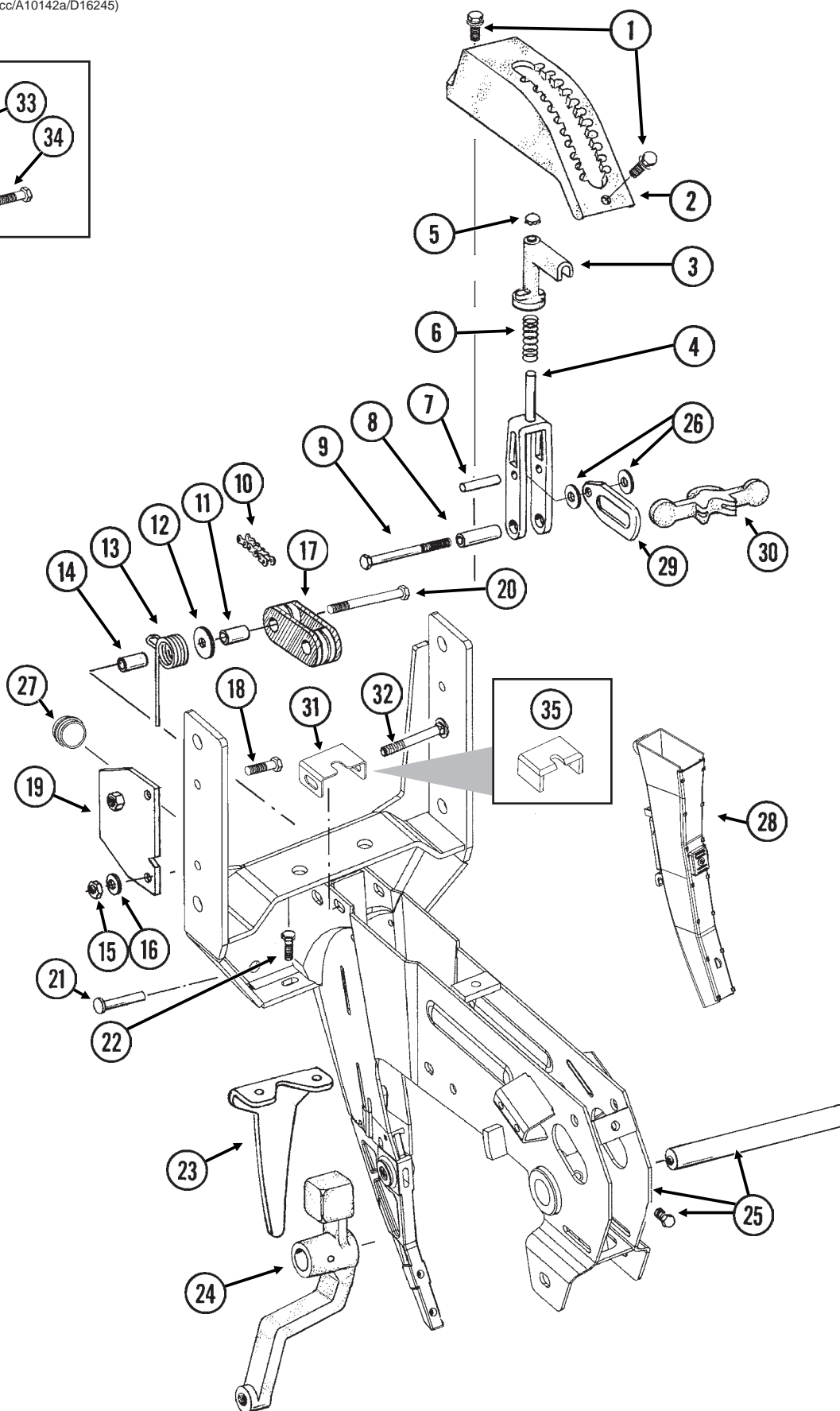
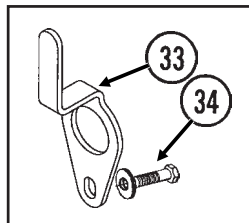


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# SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

(D17014/METR29cc/A10142a/D16245)

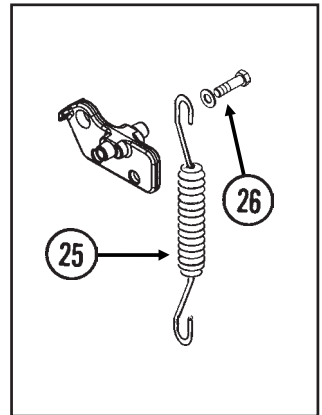
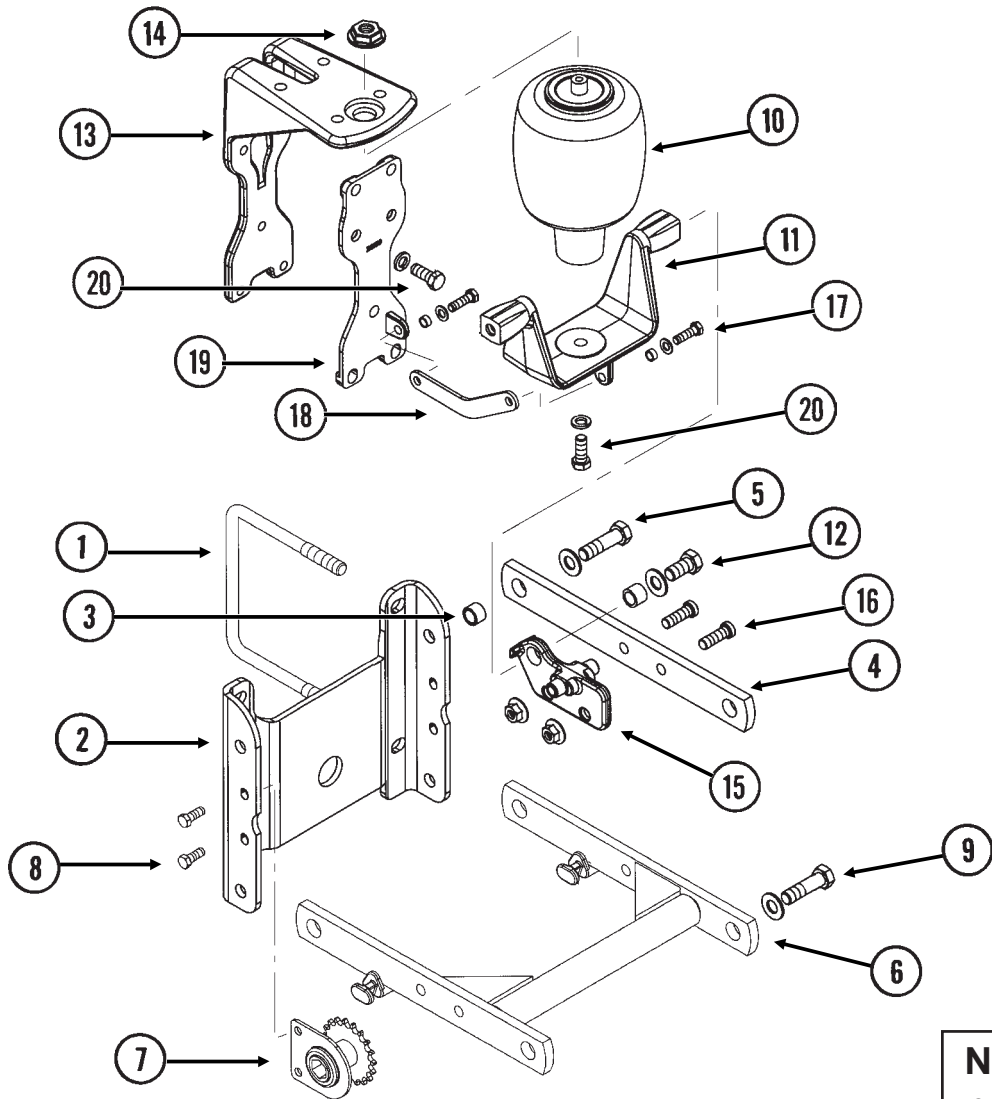


# SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G11015	2	Hex Washer Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{1}{4}$ "
2.	GB0274	1	Cover, Depth Adjustment
3.	GB0266	1	Handle, Depth Adjustment
4.	GB0267	1	Lever, Depth Adjustment
5.	GD3612	1	Cap Plug
6.	GD10993	1	Spring
7.	GD13361	1	Pin, $\frac{3}{8}$ " x 1 $\frac{2}{3}$ "
8.	GD11259	1	Sleeve, $\frac{3}{8}$ " I.D. x $\frac{5}{8}$ " O.D. x 1 $\frac{25}{32}$ " Long
9.	G11008	1	Hex Head Cap Screw, $\frac{3}{8}$ "-24 x 2 $\frac{1}{2}$ ", Grade 8
	G11007	1	Lock Nut, $\frac{3}{8}$ "-24, Grade C
10.	G3303-108	1	Chain, No. 41, 108 Pitch Including Connector Link
	G3303-16	1	Chain, No. 41, 16 Pitch Including Connector Link (Used W/Row Unit Extension Brackets)
	GR0196	1	Connector Link, No. 41
11.	GD1026	1	Sleeve, 1 $\frac{3}{16}$ " Long
12.	G10201	1	Special Washer, $\frac{3}{8}$ " x 1 $\frac{1}{2}$ " O.D.
13.	GD1065	1	Idler Spring
14.	GD7318	1	Sleeve, 1" Long
15.	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
16.	G10210	1	Washer, $\frac{3}{8}$ " USS
17.	GD11962	1	Idler
18.	G10003	3	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{1}{2}$ "
	G10108	3	Lock Nut, $\frac{3}{8}$ "-16
19.	GD10867	2	Stop
20.	G10326	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 3 $\frac{3}{4}$ "
21.	G10551	1	Clevis Pin, $\frac{1}{4}$ " x 2 $\frac{1}{2}$ "
	G10669	1	Hair Pin Clip, No. 22
22.	G10312	2	Carriage Bolt, $\frac{5}{16}$ "-18 x $\frac{3}{4}$ "
	G10620	2	Serrated Flange Nut, $\frac{5}{16}$ "-18
23.	GD1033	1	Shield
24.		-	See "Gauge Wheels", Pages P12 And P13
25.	GA10157	1	Shank W/Gauge Wheel Pivot Spindle And Set Screw
	GD11001	-	Spindle
	G10438	-	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x $\frac{3}{4}$ "
26.	G10207	2	Washer, $\frac{7}{8}$ " O.D. x $\frac{13}{32}$ " I.D. x .134" (If Applicable)
27.	GD11845	1	Dust Cap
28.			See "KPM I Electronic Seed Monitor", "KPM II Stack-Mode Electronic Seed Monitor", KPM III Electronic Seed Monitor" And "Planter Monitor Module (PMM)", Pages P146-P153
29.	GB0285	1	Collar, Depth Adjustment
30.	GB0265	1	Pivot Link, Depth Adjustment
31.	GD15970	1	Sun Shade
32.	G10304	1	Carriage Bolt, $\frac{3}{8}$ "-16 x 3"
	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
33.	GD17014	1	Hose Guide
34.	G10047	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{3}{4}$ "
	G10203	2-3	Washer, $\frac{3}{8}$ " SAE
	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
35.	GD16245	-	Sun Shade (Rubber)

# PARALLEL ARMS, MOUNTING SUPPORT PLATE AND PNEUMATIC DOWN PRESSURE PACKAGE

(RU157a/RU159/RU157aa)



**NOTE: Item 18 link not used when extension brackets are used.**

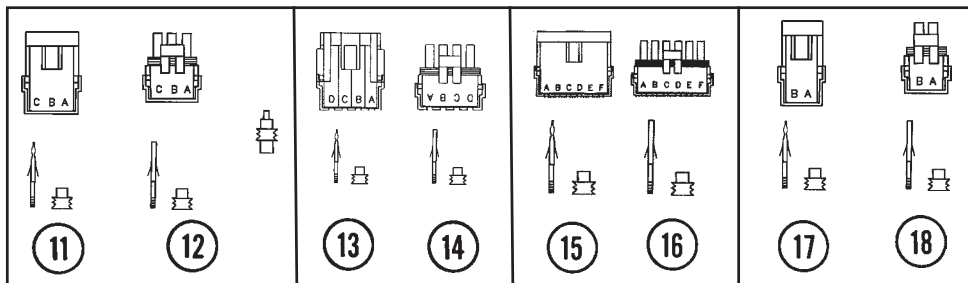
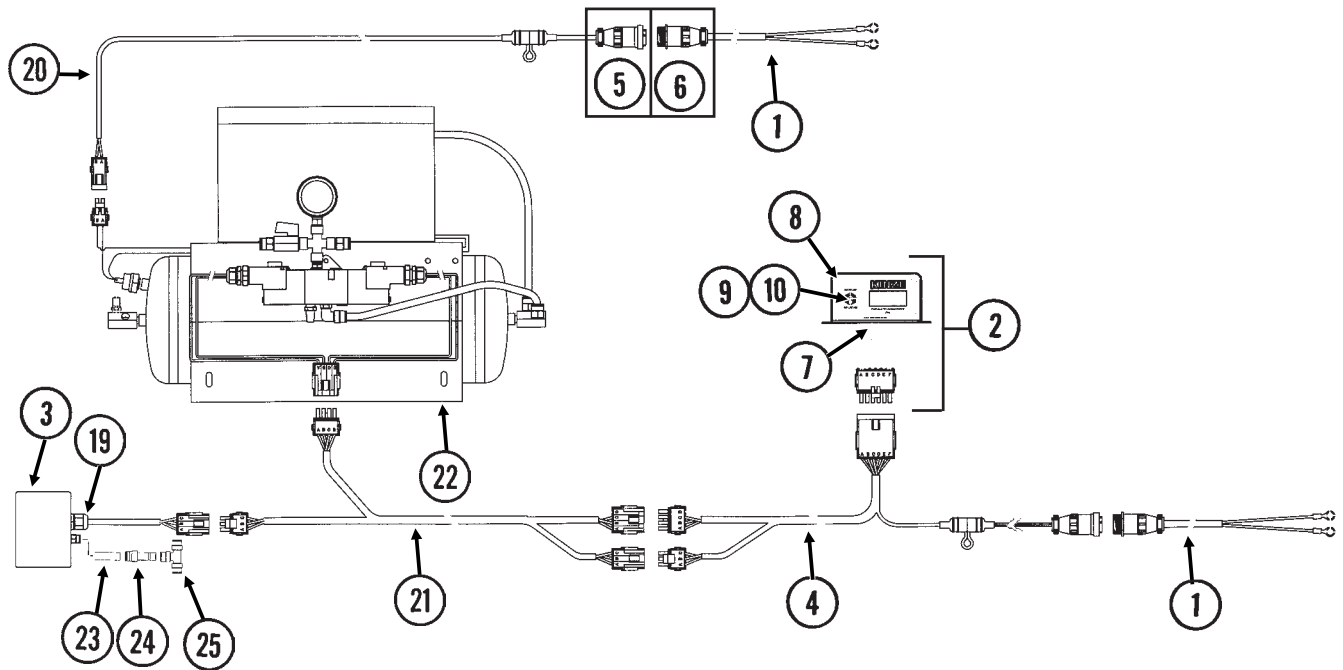


# PARALLEL ARMS, MOUNTING SUPPORT PLATE AND PNEUMATIC DOWN PRESSURE PACKAGE

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
2.	GD10036	1	Mounting Support Plate
3.	GB0218	4	Bushing, 2 1/32" I.D. x 7/8" O.D. x 19/32" Long
4.	GD11422	2	Upper Parallel Arm
5.	G10732	4	Hex Head Cap Screw, 5/8"-18 x 2"
	GD7805	4	Special Washer, 5/8", Hardened
	G10412	4	Lock Nut, 5/8"-18
6.	GA5651	1	Lower Parallel Arm
7.	GA1720	1	Bearing/Sprocket, 7/8" Hex Bore
8.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
9.		-	See "Hopper Support And Meter Drive", Page P18
10.	GA11982	1	Air Spring Assembly
11.	GB0394	1	Saddle
12.	G11018	2	Hex Head Cap Screw, 5/8"-18 x 1 1/4"
	GD7805	2	Special Washer, 5/8", Hardened
	GD3180-30	2	Sleeve, 7/8" O.D. x 5/8" I.D. x 2 1/32"
13.	GB0396	1	Head Mount
14.	GB0397	1	Shoulder Nut, 3/4"-16
15.	GB0395	2	Bracket
16.	G11220	4	Hex Socket Cap Screw, 1/2"-13 x 1 1/2"
	G10071	4	Serrated Flange Nut, 1/2"-13
17.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10203	2	Washer, 3/8" SAE
	GD11963-04	2	Spacer, 1/4"
	G10108	2	Lock Nut, 3/8"-16
18.	GD17794	1	Link
19.	GB0393	1	Plate
20.	G10037	7	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10206	2	Washer, 1/2" SAE (Lower Two Holes Only)
	G10228	7	Lock Washer, 1/2"
21.	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
22.	GB0366	2	Extension Bracket
23.	GB0398	1	Extension
24.	G10039	4	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10206	4	Washer, 1/2" SAE
	G10111	4	Lock Nut, 1/2"-13
25.	GD8249	2	Spring
26.	G10438	2	Hex Head Cap Screw, 1/2"-13 x 3/4"
	G10216	2	Washer, 1/2" USS
A.	G6326X	-	U-Bolt Package For 7" x 7" Toolbar, Includes: (2) GD1114, (4) G10230, (4) G10104
B.	G1K465	-	Pull Row Unit Assist Springs Package, Includes: (2) G10438, (2) G10216 And (2) GD8249

# PNEUMATIC DOWN PRESSURE CONTROL CONSOLE, SENDING UNIT AND HARNESSES

(PNE01a/MTR27a/ELC27b/MTR45/MTR27t)

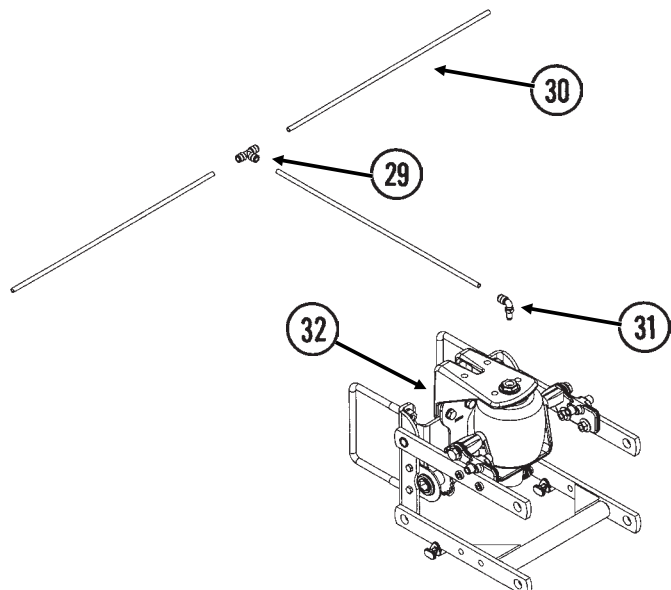
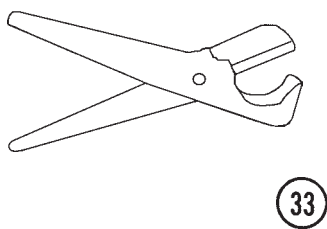
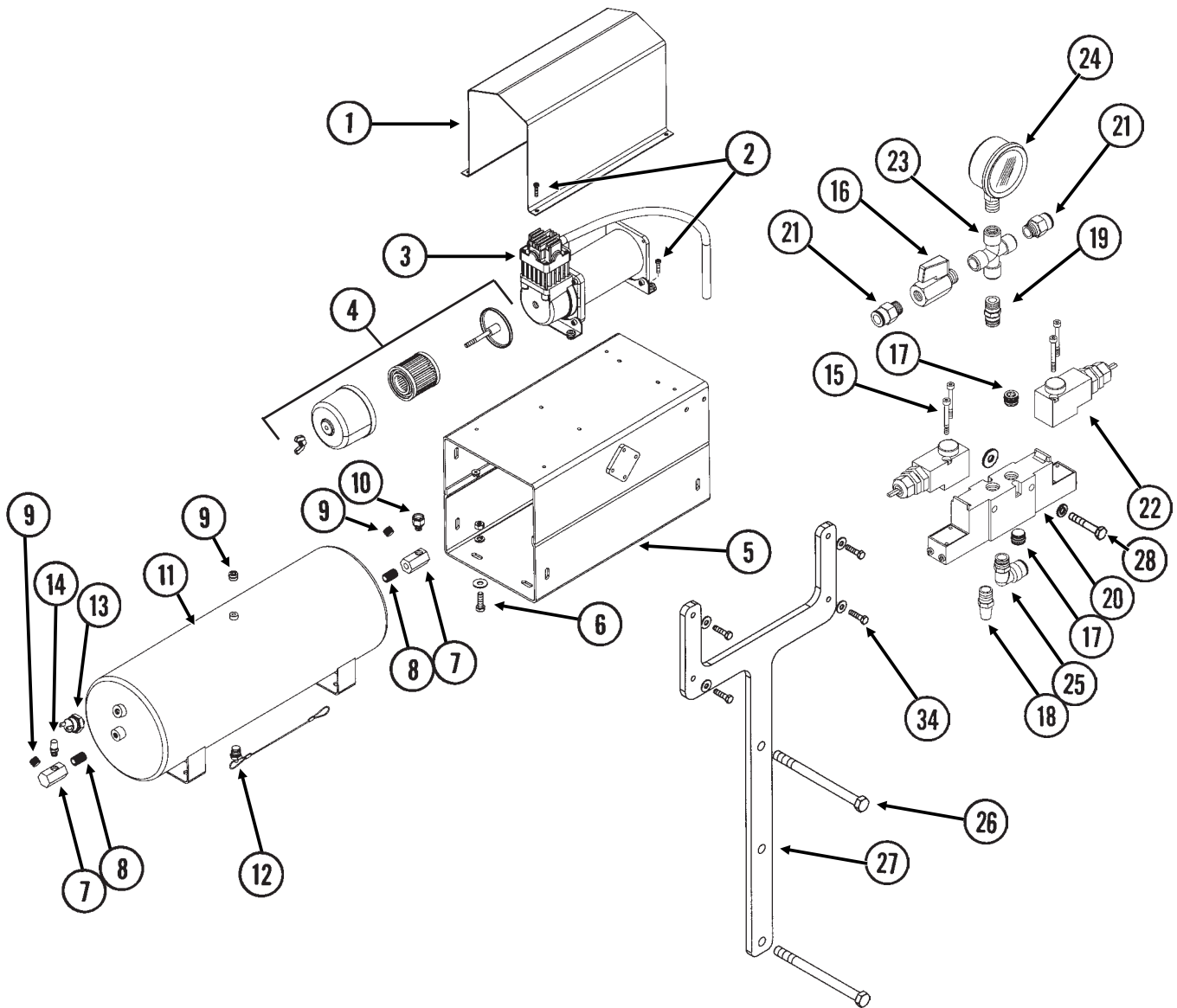


# PNEUMATIC DOWN PRESSURE CONTROL CONSOLE, SENDING UNIT AND HARNESSSES

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7856	2	Power Lead Adapter
2.	GA12644	1	Control Console Assembly
3.	GA12646	1	Sending Unit
4.	GA12645	1	Wiring Harness W/Fuse Holder And Fuse, 206"
	GD14258	-	Fuse Holder
	GD14660	-	Fuse, 2 Amp Delay Action
5.	G1K268	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (1) Lock Ring, (3) Female Terminal Pins
6.	G1K267	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (3) Male Terminal Pins
7.	GA9963	1	Strain Relief
8.	GR1292	4	Pan Head Screw, No. 8-32 x 1/2"
9.	GR1363	1	Hex Face Nut, 15/32"-32
10.	GA6978	1	Switch, 3 Position Toggle, ON-OFF-ON
11.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
12.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
13.	GA8328	-	4-Pin Female Connector Kit, Includes: (1) 4-Pin Female Housing, (4) Pin Contacts, (4) Seals
14.	GA8329	-	4-Pin Male Connector Kit, Includes: (1) 4-Pin Male Housing, (4) Socket Contacts, (4) Seals
15.	G1K396	-	6-Pin Female Connector Kit (Black), Includes: (3) 6-Pin Female Housings, (18) Pin Contacts, (18) Seals
16.	G1K395	-	6-Pin Male Connector Kit (Black), Includes: (3) 6-Pin Male Housings, (18) Socket Contacts, (18) Seals
17.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
18.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
19.	GA9964	2	Strain Relief
20.	GA12682	1	Wiring Harness W/Fuse Holder And Fuse, 40'
	GD14258	-	Fuse Holder
	GD18275	-	Fuse, 20 Amp
21.	GA12669	1	Wiring Harness, 40'
22.		-	See "Pneumatic Down Pressure Air Compressor, Dual Solenoid Assembly, Tubing And Fittings", Pages P8 And P9
23.	GD17151-06	1	Nylon Tubing, 1/4" O. D. x 1 1/2'
24.	GD18796	1	Reducer, 3/8" To 1/4"
25.	GD18010	1	Tee, 3/8" Tube Union

# PNEUMATIC DOWN PRESSURE AIR COMPRESSOR, DUAL SOLENOID ASSEMBLY, TUBING AND FITTINGS

(PNE06/PNE02/PNE29b/A13169/PNE09/PNE08)



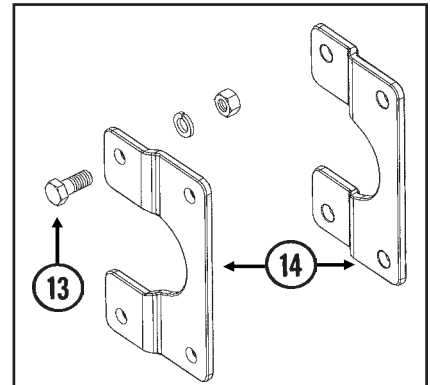
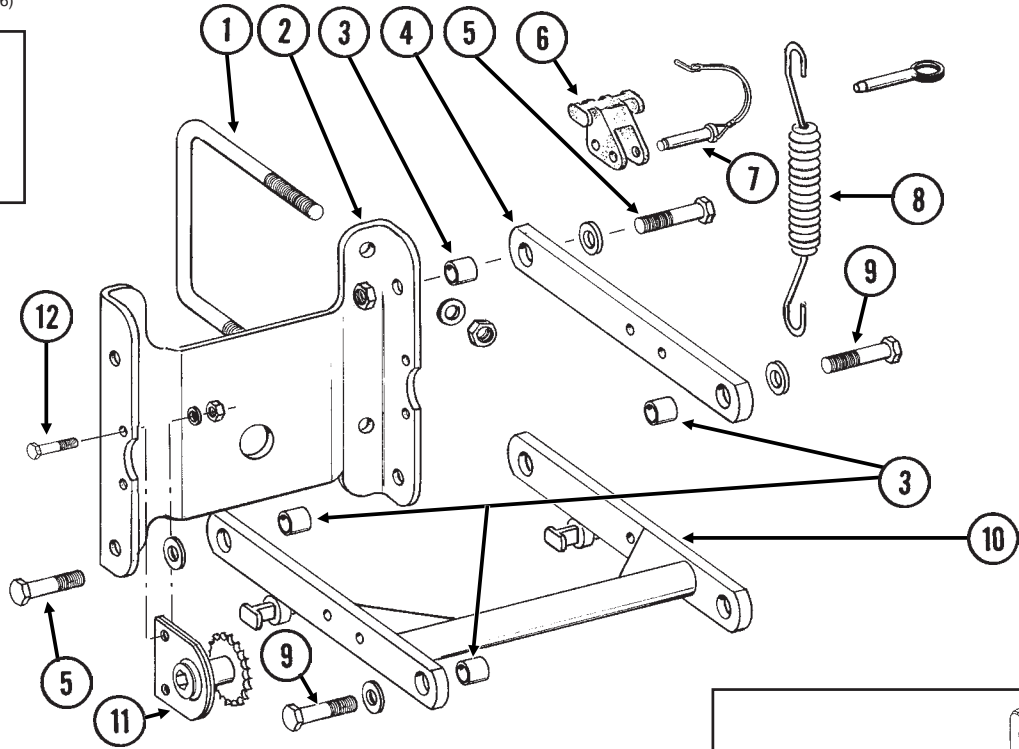
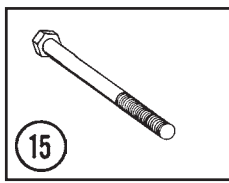
# PNEUMATIC DOWN PRESSURE AIR COMPRESSOR, DUAL SOLENOID ASSEMBLY, TUBING AND FITTINGS

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD18112	1	Cover
2.	G11066	8	Phillips Pan Head Machine Screw, No. 10-24 x 3/4", Stainless Steel
	G10992	8	Serrated Flange Nut, No. 10-24
3.	GA12102	1	Air Compressor
4.	GA12404	1	Filter Assembly
	GR1809	-	Filter
5.	GA12358	1	Mount
6.	G10019	8	Hex Head Cap Screw, 5/16"-18 x 1"
	G10219	8	Washer, 5/16" USS
	G10232	8	Lock Washer, 5/16"
	G10106	8	Hex Nut, 5/16"-18
7.	GD17298	2	Manifold, 1/4" NPT
8.	GD18081	2	Close Nipple, 1/4" NPT
9.	GD17156	3	Plug, 1/4" NPT
10.	GD17144	1	Reducer, 1/8" Male To 1/4" Female
11.	GA11988	1	Tank, 3 Gallon
12.	GA11991	1	Drain, 1/4" NPT
13.	GR1778	1	Pressure Switch
14.	GA11989	1	Valve Stem, 1/8" NPT
15.	G11247	4	Slotted Pan Head Machine Screw, M4-0.7 x 8
16.	GA11992	1	Shutoff Valve, 1/4" NPT
17.	GD17156	2	Plug, 1/4" NPT
18.	GA11997	1	Breather, 1/4" NPT
19.	GD17154	1	Connector, 1/4" Male NPT
20.	GA11993	1	Block
21.	GD17141	3	Connector, 1/4" Male NPT
22.	GA11994	2	Solenoid
23.	GD18078	1	Female Cross, 1/4" NPT
24.	GA12104	1	Pressure Gauge, 1/4" NPT
25.	GD17143	1	Swivel Elbow, 1/4" NPT x 3/8"
26.	G10152	3	Hex Head Cap Screw, 5/8"-11 x 9"
27.	GD18173	2	Bracket
28.	G10021	2	Hex Head Cap Screw, 1/4"-20 x 1 1/2"
	G10227	2	Lock Washer, 1/4"
	G10209	2	Washer, 1/4" USS
29.	GD18010	-	Tee, 3/8" Tube Union
30.	GD17150-04	-	Nylon Tubing, 3/8" O.D. x 86', 16 Row
	GD17150-05	-	Nylon Tubing, 3/8" O.D. x 112', 24 Row
	GD17150-07	-	Nylon Tubing, 3/8" O.D. x 168', 36 Row
31.	GD18011	-	Elbow, 3/8" x 1/8" NPT Extended
32.		-	See "Parallel Arms, Mounting Support Plate And Pneumatic Down Pressure Package", Pages P4 And P5
33.	GA13169	1	Tube Cutter W/Blade
	GR1843	-	Blade
34.	G10171	4	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10219	4	Washer, 5/16" USS
	G10232	4	Lock Washer, 5/16"
	G10106	4	Hex Nut, 5/16"-18
A.	GA12626	-	Air Compressor Assembly (Items 1-14)
B.	GA11995	-	Dual Solenoid Assembly (Items 15-25)

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

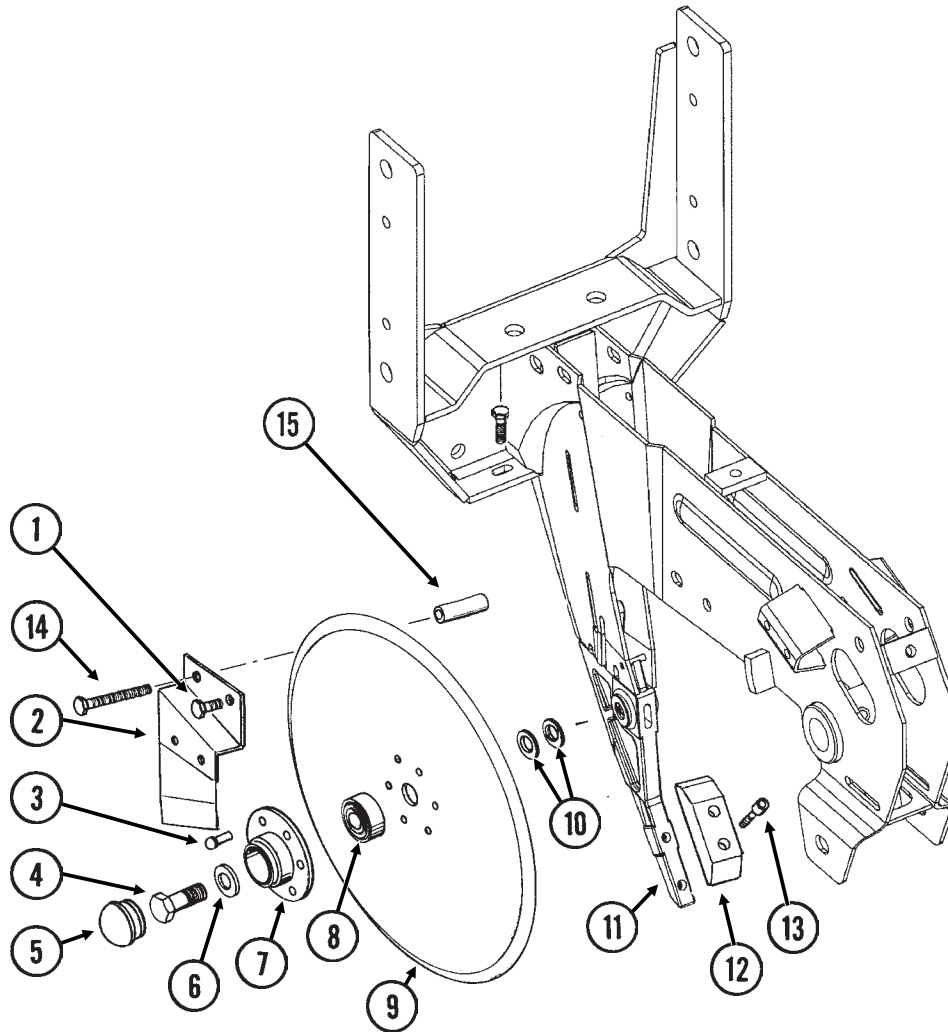
RUB021/RUB022(RU78i/B0366)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1114 G10230 G10104	2 4 4	U-Bolt, 7" x 7" x 5/8"-11 Lock Washer, 5/8" Hex Nut, 5/8"-11
2.	GD10036	1	Mounting Support Plate
3.	GB0218	4	Bushing, 2 1/32" I.D. x 7/8" O.D. x 19/32" Long
4.	GD11422	2	Upper Parallel Arm
5.	G10732 GD7805 G10412	4 4 4	Hex Head Cap Screw, 5/8"-18 x 2" Special Washer, 5/8", Hardened Lock Nut, 5/8"-18
6.	GB0186	2	Spring Anchor
7.	GD14217	2	Tab Lock Pin, 7/16" x 1 1/2"
8.	GD8249	2-4	Spring
9.		-	See "Hopper Support And Meter Drive", Page P18
10.	GA5651	1	Lower Parallel Arm
11.	GA1720	1	Bearing/Sprocket, 7/8" Hex Bore
12.	G10001 G10229 G10101	2 2 2	Hex Head Cap Screw, 3/8"-16 x 1" Lock Washer, 3/8" Hex Nut, 3/8"-16
13.	G10007 G10230 G10104	4 4 4	Hex Head Cap Screw, 5/8"-11 x 1 1/2" Lock Washer, 5/8" Hex Nut, 5/8"-11
14.	GB0366	2	Extension Bracket
15.	G10152 GD10953 G10230 G10104	- - - -	Hex Head Cap Screw, 5/8"-11 x 9" Square Washer, 5/8" Lock Washer, 5/8" Hex Nut, 5/8"-11
A.	G6326X	-	U-Bolt Package For 7" x 7" Toolbar, Includes: (2) GD1114, (4) G10230, (4) G10104

# 15" SEED OPENER DISC BLADE/BEARING ASSEMBLY AND SCRAPERS

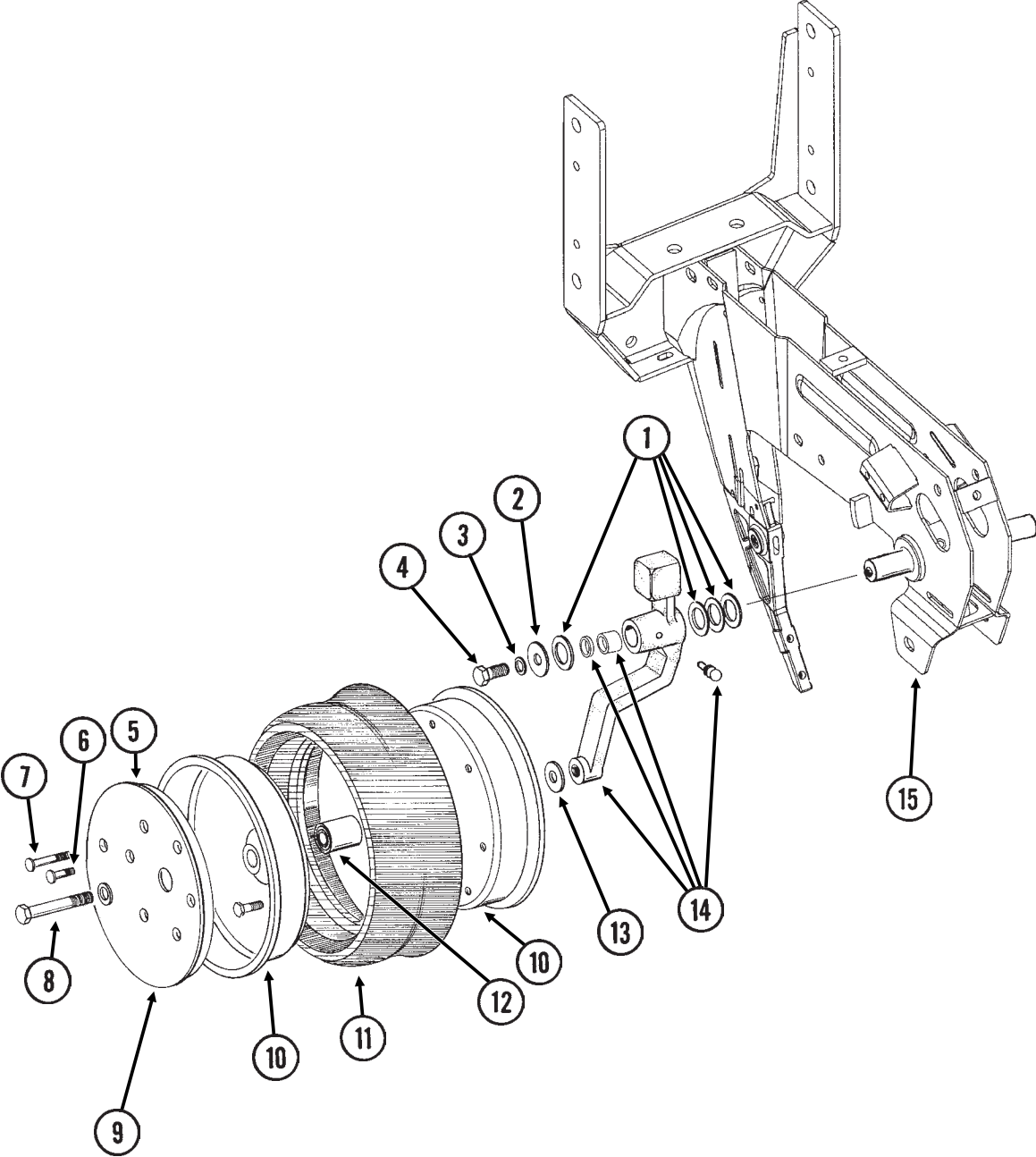
(RU139)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10328	2	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x $\frac{5}{8}$ "
	G10622	2	Serrated Flange Nut, $\frac{3}{8}$ "-16
2.	GA2012R	1	Disc Scraper, R.H.
	GA2012L	-	Disc Scraper, L.H. (Shown)
3.	G10427	12	Rivet, $\frac{1}{4}$ " x $\frac{1}{2}$ "
4.	GD11017	1	Special Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 1 $\frac{1}{2}$ ", L.H. Threads
	G10007	1	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 1 $\frac{1}{2}$ "
5.	GD11845	2	Dust Cap
6.	G10204	2	Special Machine Bushing, $\frac{5}{8}$ " x 1" O.D.
7.	GD10473	2	Bearing Housing
8.	GA2014	2	Bearing
9.	GD11306	2	Disc Blade, 3.5 mm x 15"
10.	G10213	-	Machine Bushing, $\frac{5}{8}$ " (.030" Thick)(As Required)
11.		-	See "Shank Assembly", Pages P2 And P3
12.	GB0301	1	Seed Tube Guard/Inner Scraper
13.	G10912	2	Hex Socket Head Cap Screw, $\frac{5}{16}$ "-18 x 1", Grade 8
14.	G10325	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 2 $\frac{3}{4}$ "
	G10622	1	Serrated Flange Nut, $\frac{3}{8}$ "-16
15.	GD11259	1	Sleeve, $\frac{3}{8}$ " I.D. x $\frac{5}{8}$ " O.D. x 1 $\frac{25}{32}$ " Long
A.	GA8324	-	Disc Blade/Bearing Assembly, Less Dust Cap (Items 3 And 7-9)

# GAUGE WHEELS

(RU140)



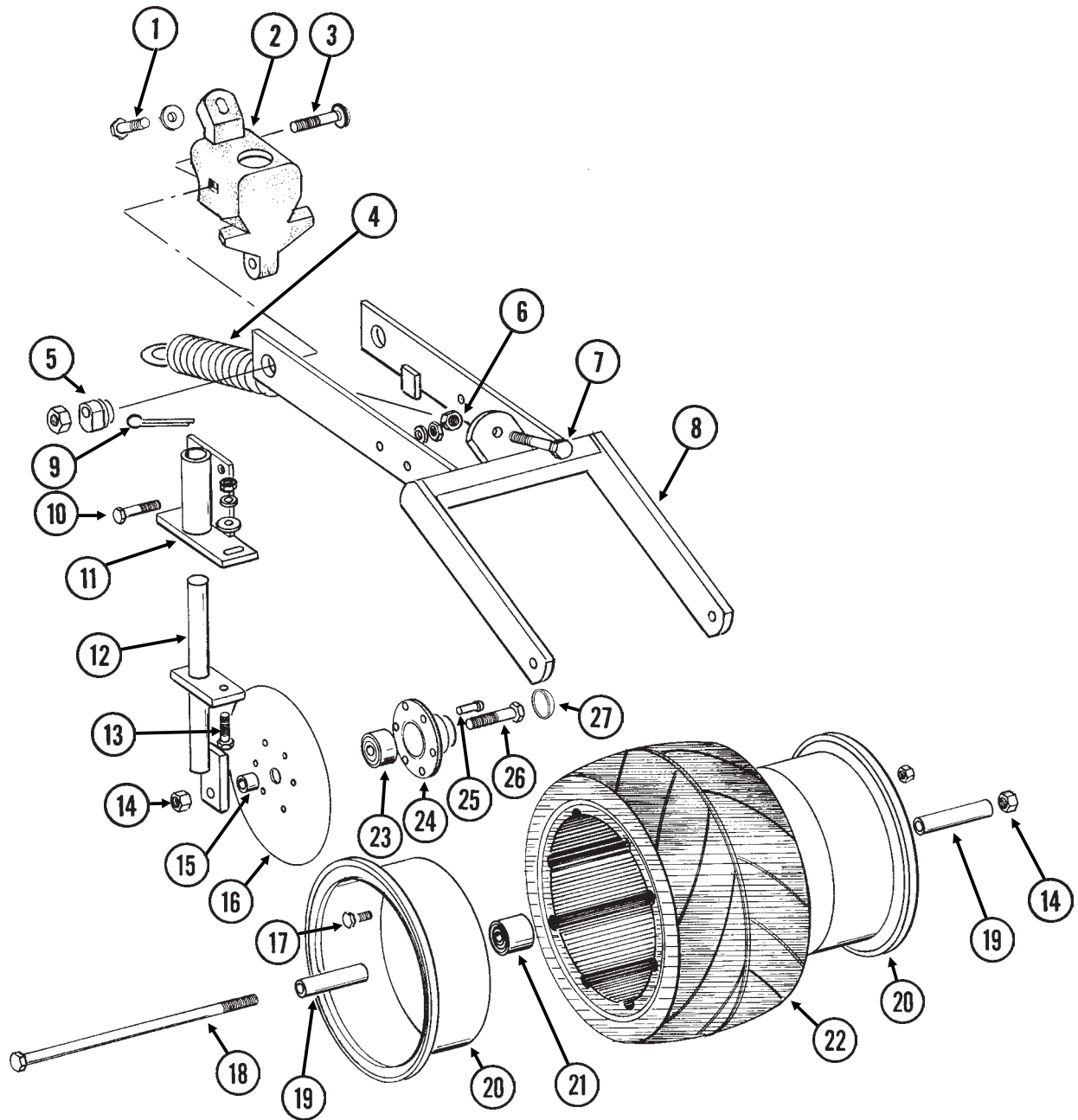


# GAUGE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10940	-	Machine Bushing, 1" (.048" Thick)
2.	G10216	2	Washer, 1/2" USS
3.	G10228	2	Lock Washer, 1/2"
4.	G10014	1	Hex Head Cap Screw, 1/2"-13 x 1"
5.	GD11453	2	Cover
6.	G10338	12	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10620	12	Serrated Flange Nut, 5/16"-18
7.	G10924	8	Carriage Bolt, 5/16"-18 x 1 3/4"
	G10620	8	Serrated Flange Nut, 5/16"-18
8.	G10010	2	Hex Head Cap Screw, 5/8"-11 x 3"
	G10230	2	Lock Washer, 5/8"
9.	G10018	14	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	14	Lock Nut, 5/16"-18, Grade 8
10.	GD11423	4	Half Wheel
11.	GD1086	2	Tire
12.	GA6171	2	Bearing
13.	G10204	2	Special Machine Bushing, 5/8" x 1" O.D.
14.	GA7975	1	Wheel Arm W/Grease Fitting, Bushings And Seals, L.H. (Shown)
	GA7976	1	Wheel Arm W/Grease Fitting, Bushings And Seals, R.H.
	G10640	1	Grease Fitting, 1/4"-28 (Per Arm)
	GB0276	2	Bushing, 1" I.D. x 1 1/4" O.D. x 1" Long (Per Arm)
	GD10991	2	Seal (Per Arm)
15.		-	See "Shank Assembly", Pages P2 And P3
A.	GA7949	-	Gauge Wheel Complete (Items 5-7 And 9-12)
B.	G1K296	-	Gauge Wheel Arm Bushing And Seal Driver Kit, Includes: (1) Seal Driver, (1) Bushing Driver, (1) Instruction

# COVERING DISCS/SINGLE PRESS WHEEL

RUA054/RUB026(RU94d)

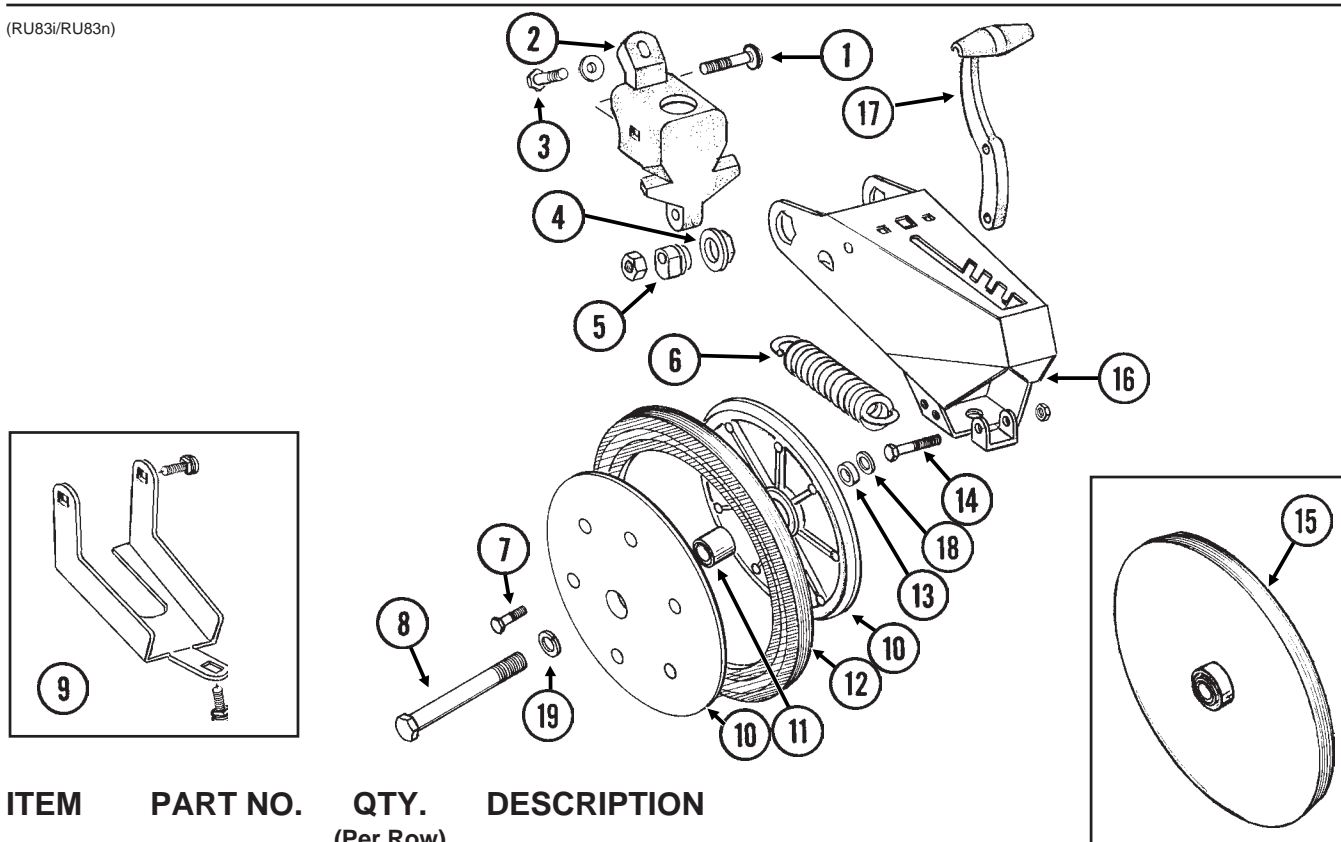


# COVERING DISCS/SINGLE PRESS WHEEL

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10001	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 1"
	G10210	1	Washer, $\frac{3}{8}$ " USS
2.	GB0268	1	Wheel Arm Stop
3.	G10801	2	Carriage Bolt, $\frac{1}{2}$ "-13 x 2 $\frac{1}{4}$ "
	G10315	-	Carriage Bolt, $\frac{1}{2}$ "-13 x 2 $\frac{1}{2}$ " (Used W/Straight Drop In-Furrow Granular Chemical Bracket)
	G10102	2	Hex Nut, $\frac{1}{2}$ "-13
4.	GA2054	1	Spring
5.	GB0239	2	Eccentric Bushing
6.	G10102	1	Hex Nut, $\frac{1}{2}$ "-13
7.	G10015	1	Adjusting Bolt, $\frac{1}{2}$ "-13 x 5"
8.	GA6619	1	Mounting Arm
9.	G10463	2	Cotter Pin, $\frac{1}{4}$ " x 1 $\frac{1}{2}$ "
10.	G10171	4	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x 1 $\frac{1}{4}$ "
	G10232	4	Lock Washer, $\frac{5}{16}$ "
	G10106	4	Hex Nut, $\frac{5}{16}$ "-18
11.	GA6620	2	Bracket
12.	GA6618	2	Mount
13.	G10303	2	Carriage Bolt, $\frac{5}{16}$ "-18 x 1"
	G10219	2	Washer, $\frac{5}{16}$ " USS
	G10232	2	Lock Washer, $\frac{5}{16}$ "
	G10106	2	Hex Nut, $\frac{5}{16}$ "-18
14.	G10107	3	Lock Nut, $\frac{5}{8}$ "-11
15.	GD1109	2	Bushing, $\frac{41}{64}$ " I.D. x $\frac{7}{8}$ " O.D. x $\frac{1}{4}$ " Long
16.	GD9290	2	Disc Blade, 8"
17.	G10018	7	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{5}{8}$ "
	G10109	7	Lock Nut, $\frac{5}{16}$ "-18, Grade 8
18.	G10152	1	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 9"
19.	GD3180-12	2	Sleeve, $\frac{5}{8}$ " I.D. x $\frac{7}{8}$ " O.D. x 2 $\frac{7}{8}$ " Long
20.	GD9562	2	Half Wheel
21.	GA6171	1	Bearing
22.	GD9305	1	Tire
23.	GA2014	2	Bearing
24.	GD10473	2	Bearing Housing
25.	G10427	12	Rivet, $\frac{1}{4}$ " x $\frac{1}{2}$ "
26.	G10006	2	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 2 $\frac{1}{4}$ "
27.	GD11845	2	Dust Cap
A.	GA6733	-	Single Press Wheel Complete W/Bearing (Items 17 And 20-22)
B.	GA6801	-	Covering Disc Blade Complete W/Bearing (Items 16 And 23-25)

# "V" CLOSING WHEELS

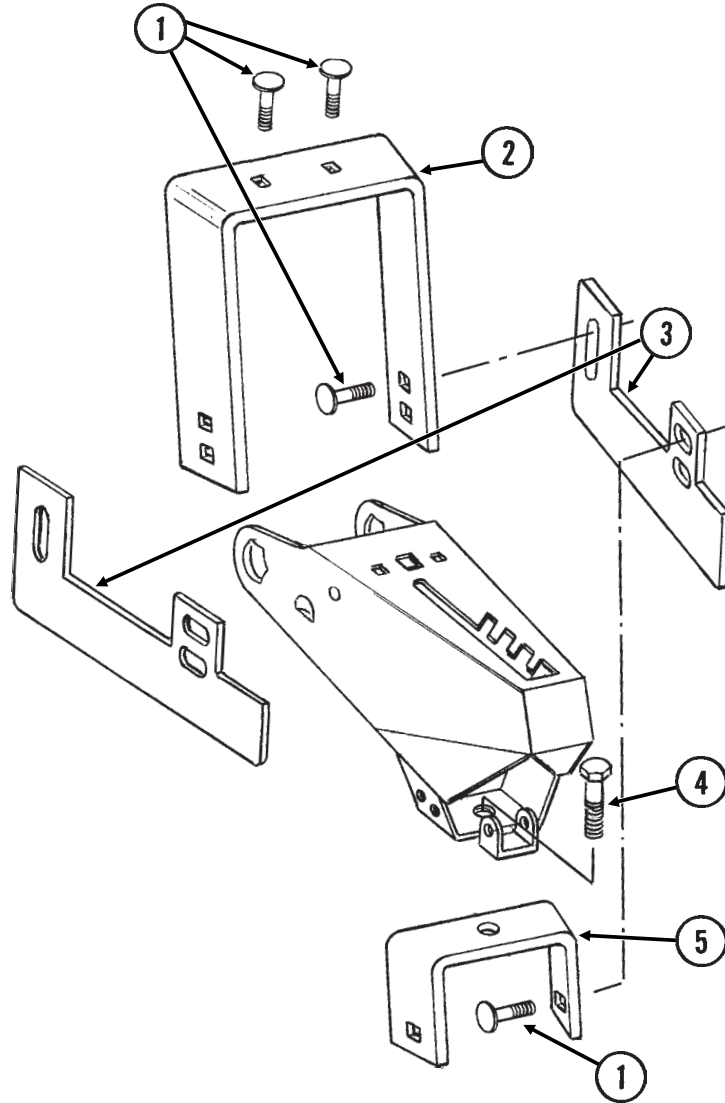
(RU83i/RU83n)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10801	2	Carriage Bolt, 1/2"-13 x 2 1/4"
	G10315	-	Carriage Bolt, 1/2"-13 x 2 1/2" (Used W/Straight Drop In-Furrow Granular Chemical Bracket)
	G10111	2	Lock Nut, 1/2"-13
2.	GB0268	1	Wheel Arm Stop
3.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10210	1	Washer, 3/8" USS
4.	GB0282	2	Stepped Bushing
5.	GB0239	2	Eccentric Bushing
6.	GD8460	1	Spring
7.	G10064	6	Hex Head Cap Screw, 1/4"-20 x 1"
8.	G10013	2	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10107	2	Lock Nut, 5/8"-11
9.	G1K345	-	Closing Wheel Shield Kit W/Hardware And Instruction
	G10308	2	Carriage Bolt, 3/8"-16 x 3/4"
	G10599	1	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10210	1	Washer, 3/8" USS
	G10229	3	Lock Washer, 3/8"
	G10101	3	Hex Nut, 3/8"-16
10.	GD9120	4	Nylon Half Wheel
11.	GA6171	2	Bearing
12.	GD1085	2	Rubber Tire, 1" x 12"
13.	GD1109	2	Bushing, 41/64" I.D. x 7/8" O.D. x 1/4" Long
14.	G10133	1	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	1	Lock Nut, 5/16"-18, Grade 8
15.	GA6597	-	Cast Iron Closing Wheel W/Bearing
	GA6171	-	Bearing
16.	GA8322	1	Arm
17.	GB0254	1	Lever
18.	GD7805	2	Special Washer, 5/8", Hardened
19.	G10230	2	Lock Washer, 5/8"
A.	GA6434	-	Rubber Closing Wheel Complete W/Bearing (Items 7 And 10-12)

# DRAG CLOSING ATTACHMENT

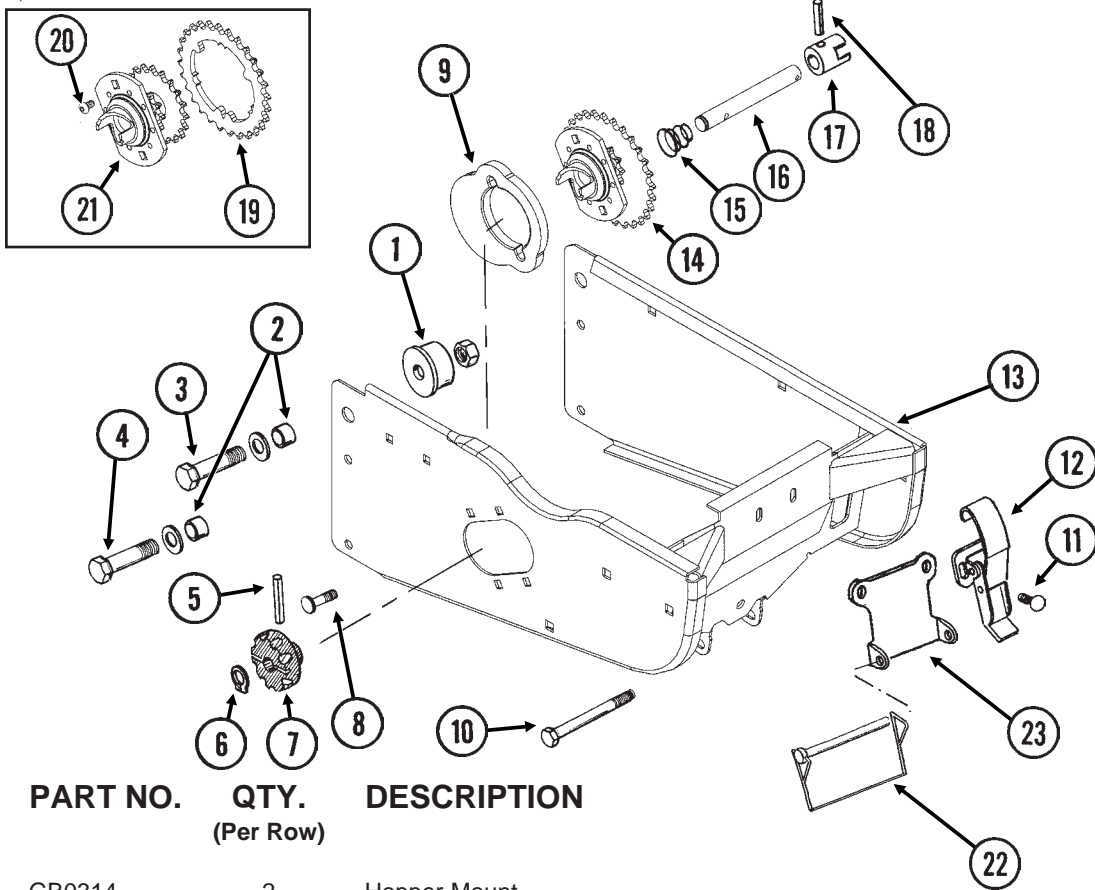
RUB050(RU90c)



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Row)	
1.	G10599	6	Carriage Bolt, $\frac{3}{8}$ "-16 x 1 $\frac{1}{4}$ "
	G10210	6	Washer, $\frac{3}{8}$ " USS
	G10229	6	Lock Washer, $\frac{3}{8}$ "
	G10101	6	Hex Nut, $\frac{3}{8}$ "-16
2.	GD11508	1	Front Bracket
3.	GD11313	2	Blade
4.	G10007	1	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 1 $\frac{1}{2}$ "
	G10230	1	Lock Washer, $\frac{5}{8}$ "
	G10104	1	Hex Nut, $\frac{5}{8}$ "-11
5.	GD11509	1	Rear Bracket
A.	G7566X	-	Drag Closing Attachment Complete (Items 1-5)

# HOPPER SUPPORT AND METER DRIVE

(METR72/MTR22ff)

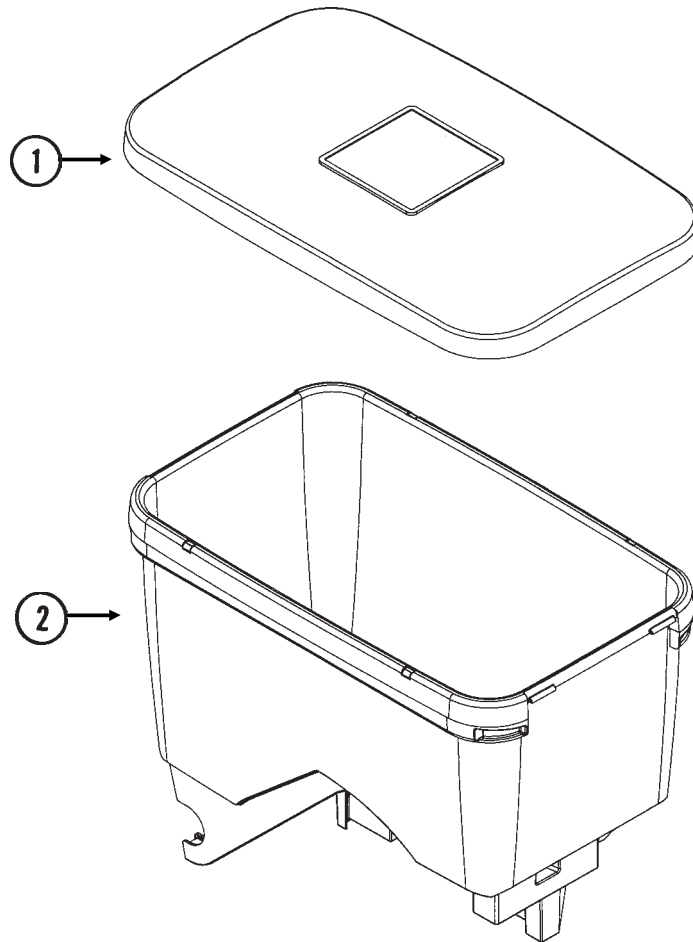


ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GB0314	2	Hopper Mount
2.	GB0218	4	Bushing, $2\frac{1}{32}$ " I.D. x $\frac{7}{8}$ " O.D. x $\frac{19}{32}$ " Long
3.	G10752	2	Hex Head Cap Screw, $\frac{5}{8}$ "-18 x $2\frac{1}{4}$ "
	GD7805	2	Special Washer, $\frac{5}{8}$ ", Hardened
	G10412	2	Lock Nut, $\frac{5}{8}$ "-18
4.	G10751	2	Hex Head Cap Screw, $\frac{5}{8}$ "-18 x $1\frac{3}{4}$ "
	GD7805	2	Special Washer, $\frac{5}{8}$ ", Hardened
	G10412	2	Lock Nut, $\frac{5}{8}$ "-18
5.	G10602	1	Spring Pin, $\frac{1}{4}$ " x $1\frac{1}{2}$ "
6.	G10567	1	External Retaining Ring, $\frac{5}{8}$ "
7.	GD11239	1	Knob
8.	G10338	2	Carriage Bolt, $\frac{5}{16}$ "-18 x $1\frac{1}{4}$ "
	G10620	2	Serrated Flange Nut, $\frac{5}{16}$ "-18
9.	GB0331	1	Clutch Adapter Plate
10.	G10061	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x $3\frac{1}{2}$ "
	G10210	2	Washer, $\frac{3}{8}$ " USS
	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
11.	G10309	2	Carriage Bolt, $\frac{1}{4}$ "-20 x $\frac{5}{8}$ ", Grade 2
	G10621	2	Serrated Flange Nut, $\frac{1}{4}$ "-20
12.	GA2007	1	Hopper Hold Down Latch
13.	GA10155	1	Hopper Support
14.	GA12143	1	Double Sprocket And Bearing, Drive Clutch, 11/28 Tooth
15.	GD11413	1	Spring
16.	GD15747	1	Shaft
17.	GB0278	1	Coupler
18.	G10546	1	Spring Pin, $\frac{3}{16}$ " x $1\frac{1}{4}$ "
19.	GD17192	1	Bolt-On Sprocket, 28 Tooth
20.	G11222	3	Hex Socket Button Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{1}{2}$ ", Stainless Steel
	G10620	3	Serrated Flange Nut, $\frac{5}{16}$ "-18
21.	GA10137	1	Double Sprocket And Bearing, Drive Clutch, 11/19 Tooth
22.	GD10705	1	Locking Clip Pin, $\frac{1}{4}$ " x $2\frac{1}{2}$ " (SDS Only)
23.	GD13110	1	Retainer (SDS Only)
A.	GA12144	-	Meter Drive Assembly, 11/28 Tooth (Items 5-7 And 14-18)

# SEED HOPPER AND LID (Conventional)

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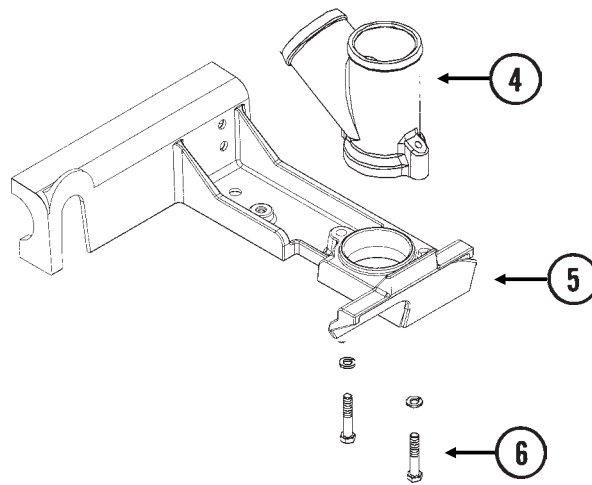
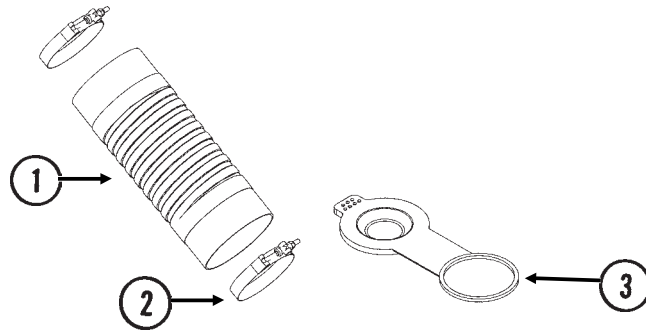
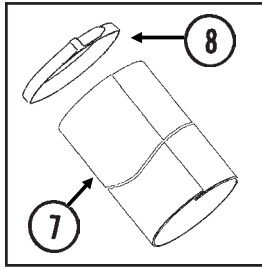
(METR12)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD11279	1	Lid
2.	GA10634	1	Seed Hopper

# SEED METER MOUNT AND DROP HOSES (SDS)

(D16399/METR63bb)





# SEED METER MOUNT AND DROP HOSES (SDS)

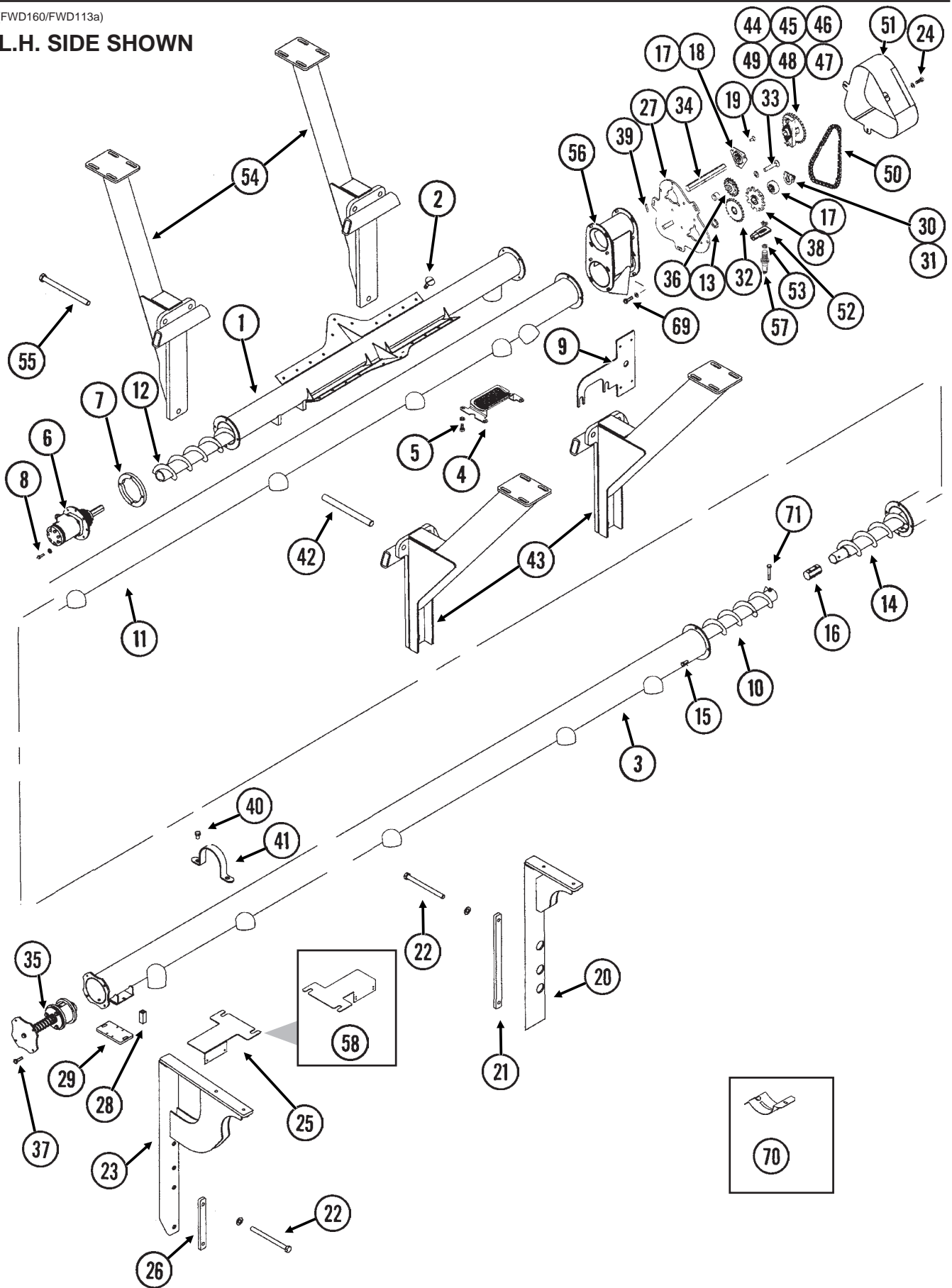
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ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD12797-02	-	Drop Hose, 3 1/4" x 30"
	GD12797-04	-	Drop Hose, 3 1/4" x 32"
2.	G10999	2	T-Bolt Hose Clamp, 3 1/4"
3.	GD13412	-	View Cap
4.	GB0371	-	Inlet, Short
5.	GA11392	1	Meter Mount
6.	G10047	2	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10229	2	Lock Washer, 3/8"
7.	GD16399-01	-	Sleeve, 3" x 10"
8.	GD2117	-	Tie Strap, 14 1/2"

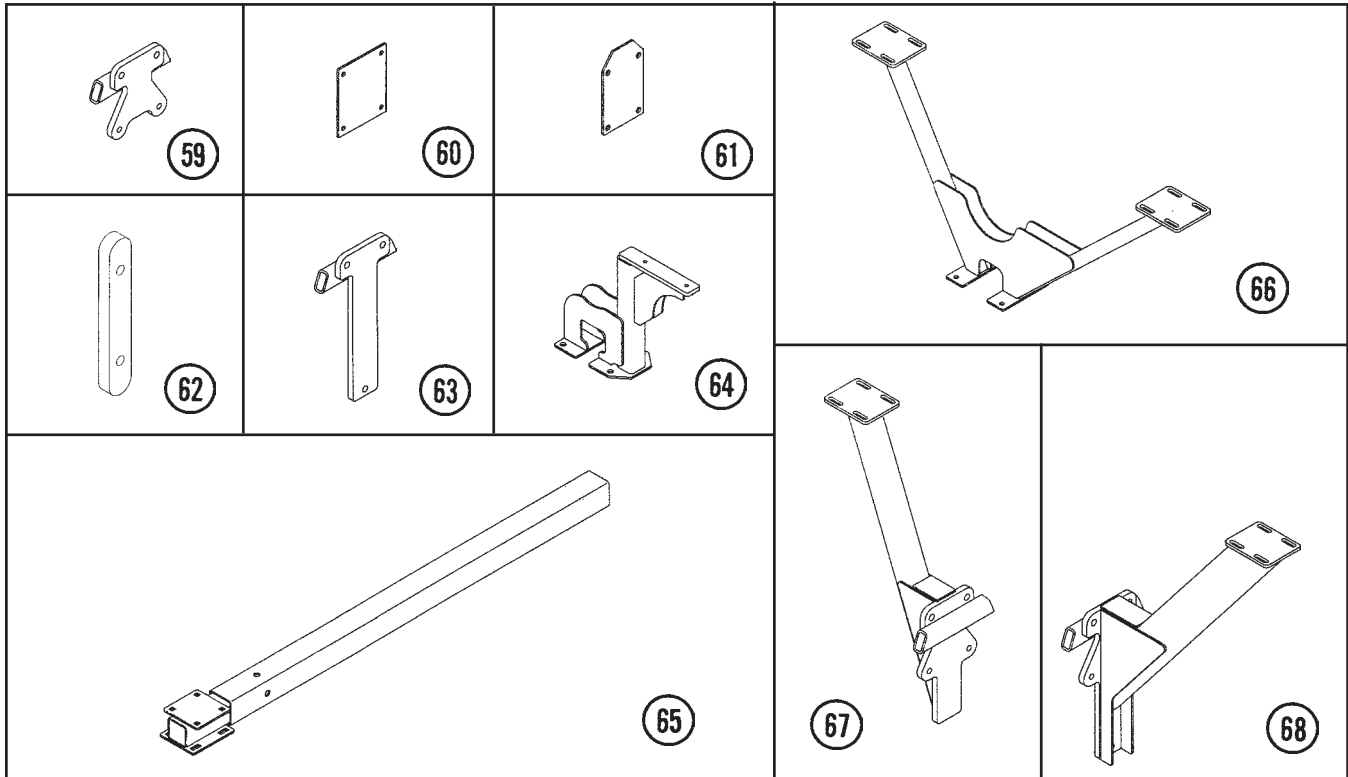
# AUGER ASSEMBLIES (SDS)

(FWD160/FWD113a)

L.H. SIDE SHOWN



# AUGER ASSEMBLIES (SDS)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA12417	1	Upper Tube
2.	G11192	22	Bolt, $\frac{5}{16}$ "-18 x 1"
	G10221	22	Washer, $\frac{5}{16}$ " SAE
	G11182	22	Lock Nut, $\frac{5}{16}$ "-18
3.	GA13137	1	Outer Tube, L.H., 54 $\frac{2}{3}$ ", 24 Row 20"
	GA13136	-	Outer Tube, R.H., 61 $\frac{1}{2}$ ", 24 Row 20"
	GA13103	-	Outer Tube, L.H., 107 $\frac{1}{4}$ ", 24 Row 22"
	GA13104	-	Outer Tube, R.H., 114", 24 Row 22"
	GA12421	-	Outer Tube, L.H., 169 $\frac{3}{4}$ ", 24 Row 30"
	GA12420	-	Outer Tube, R.H., 176 $\frac{5}{8}$ ", 24 Row 30"
	GA13135	-	Outer Tube, L.H., 174 $\frac{1}{2}$ ", 36 Row 20"
	GA13134	-	Outer Tube, R.H., 181 $\frac{1}{2}$ ", 36 Row 20"
4.	GA11623	1	Screen
5.	G10018	8	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{5}{8}$ "
	G10232	8	Lock Washer, $\frac{5}{16}$ "
6.		-	See "SDS Hydraulic System", Pages P138 And P139
7.	GD16766	1	Ring
8.	G10064	4	Hex Head Cap Screw, $\frac{1}{4}$ "-20 x 1"
	G10209	4	Washer, $\frac{1}{4}$ " USS
	G10110	4	Lock Nut, $\frac{1}{4}$ "-20
9.	GD18636	1	Light Bracket
10.	GA13129	1	Auger Assembly, L.H., 43 $\frac{1}{2}$ ", 24 Row 20"
	GA13130	-	Auger Assembly, R.H., 50 $\frac{1}{2}$ ", 24 Row 20"
	GA13077	-	Auger Assembly, L.H., 96", 24 Row 22"
	GA13076	-	Auger Assembly, R.H., 102 $\frac{7}{8}$ ", 24 Row 22"
	GA12415	-	Auger Assembly, L.H., 158 $\frac{1}{2}$ ", 24 Row 30"
	GA12416	-	Auger Assembly, R.H., 165 $\frac{3}{8}$ ", 24 Row 30"
	GA13127	1	Auger Assembly, L.H., 163 $\frac{1}{2}$ ", 36 Row 20"
	GA13128	-	Auger Assembly, R.H., 170 $\frac{1}{2}$ ", 36 Row 20"

# AUGER ASSEMBLIES (SDS)

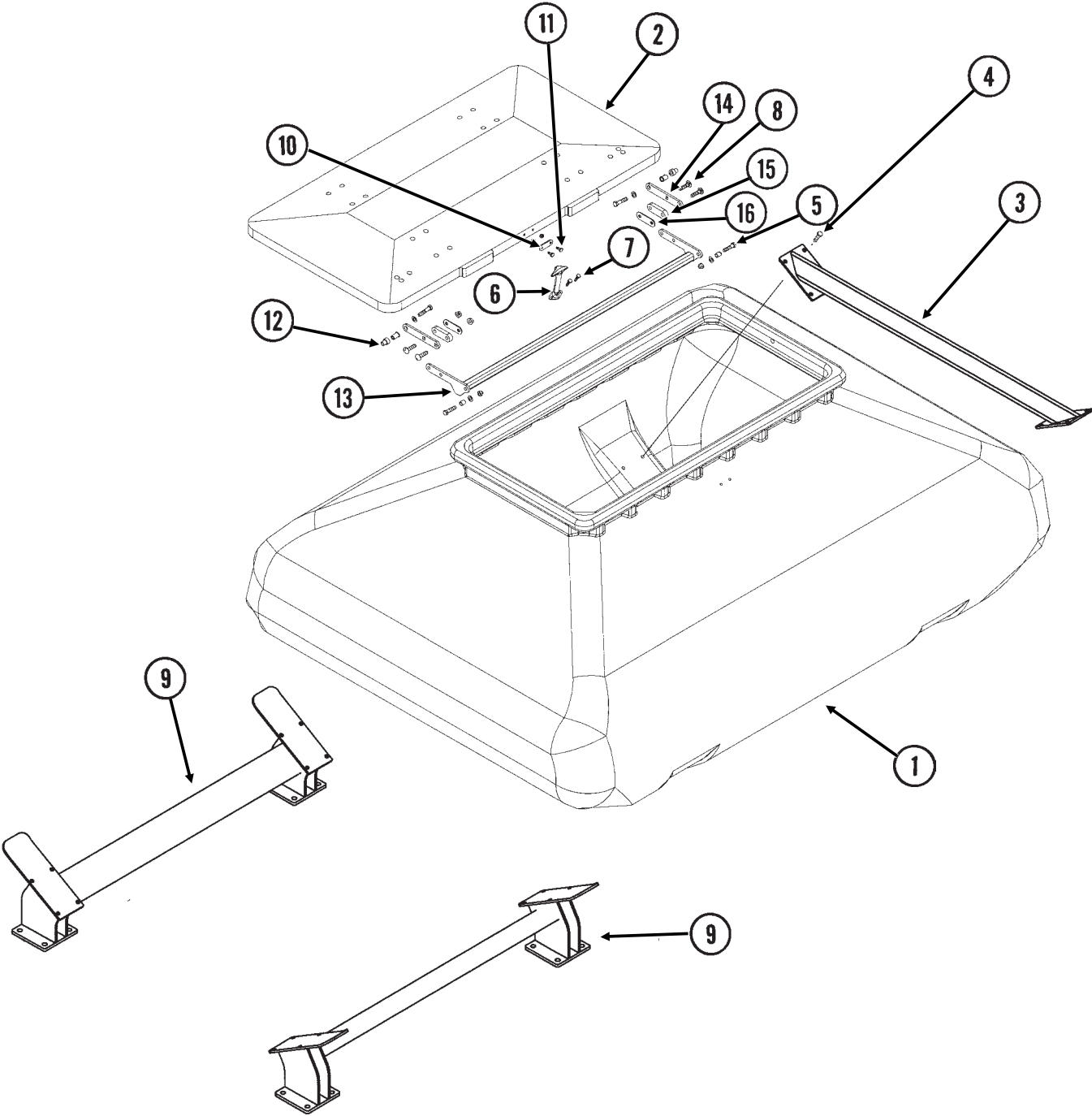
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
11.	GA13133		Inner Tube, L.H., 144 1/2", 24 Row 20" And 36 Row 20"
	GA13132	-	Inner Tube, R.H., 144 1/2", 24 Row 20" And 36 Row 20"
	GA13101	-	Inner Tube, L.H., 115 1/4", 24 Row 22"
	GA13102	-	Inner Tube, R.H., 115 1/4", 24 Row 22"
	GA12419	-	Inner Tube, L.H., 144 1/2", 24 Row 30"
	GA12418	-	Inner Tube, R.H., 144 1/2", 24 Row 30"
12.	GA13123	1	Auger Assembly, L.H., 73 1/4", 24 Row 20" And 36 Row 20"
	GA13124	-	Auger Assembly, R.H., 73 1/4", 24 Row 20" And 36 Row 20"
	GA13073	-	Auger Assembly, L.H., 72 1/4", 24 Row 22"
	GA13072	-	Auger Assembly, R.H., 72 1/4", 24 Row 22"
	GA12411	-	Auger Assembly, L.H., 68 1/4", 24 Row 30"
	GA12412	-	Auger Assembly, R.H., 68 1/4", 24 Row 30"
13.	G10233	3	Machine Bushing, 1", 10 Gauge
14.	GA13125	1	Auger Assembly, L.H., 155", 24 Row 20" And 36 Row 20"
	GA13126	-	Auger Assembly, R.H., 155", 24 Row 20" And 36 Row 20"
	GA13075	-	Auger Assembly, L.H., 124 1/2", 24 Row 22"
	GA13074	-	Auger Assembly, R.H., 124 1/2", 24 Row 22"
	GA12413	-	Auger Assembly, L.H., 150 1/8", 24 Row 30"
	GA12414	-	Auger Assembly, R.H., 150 1/8", 24 Row 30"
15.	G10019	-	Hex Head Cap Screw, 5/16"-18 x 1"
16.	GD17938	1	Connector
17.	G2100-03	-	Bearing, 7/8" Hex Bore, Spherical
18.	G3400-01	-	Flangette
19.	G10312	-	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	-	Serrated Flange Nut, 5/16"-18
20.	GA12439	-	Support
21.	GD18627	-	Long Tap Block
22.	G10341	-	Hex Head Cap Screw, 5/8"-11 x 8"
	G10205	-	Washer, 5/8" SAE
23.	GA12440	-	Support
24.	G10001	-	Hex Head Cap Screw, 3/8"-16 x 1"
	G10210	-	Washer, 3/8" USS
	G10229	-	Lock Washer, 3/8"
25.	GD17891	-	Terminal Strip Mount
26.	GD18628	-	Short Tap Block
27.	GD17914	1	Plate
28.	GD16701	-	Arm
29.	GD16680	-	Limit Switch Mount
30.	GD11045	5	Lock Clamp
31.	G10130	5	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	5	Flange Nut, 5/16"-18, No Serration
32.	GA5108	2	Sprocket, 23 Tooth
33.	G10315	-	Carriage Bolt, 1/2"-13 x 2 1/2"
	GD4887-13	-	Sleeve
	G10206	-	Washer, 1/2" SAE
	G10111	-	Lock Nut, 1/2"-13
34.	GD17934	1	Hex Shaft
35.	GA11778	1	Auger Stop
36.	GA7154	1	Sprocket, 18 Tooth
37.	G10064	4	Hex Head Cap Screw, 1/2"-20 x 1"
	G10110	4	Lock Nut, 1/2"-20, Grade B

# AUGER ASSEMBLIES (SDS)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
38.	GA12450	1	Sensor Wheel
39.	G10602	1	Spring Pin, 1/4" x 1 1/2"
40.	G10438	-	Hex Head Cap Screw, 1/2"-13 x 3/4"
41.	GD16631	-	Strap
42.	GD6425-08	-	Bushing, 1" O.D. x 3/4" I.D. x 7" Long
43.	GA12436	-	Support
44.	G10464	2	Cotter Pin, 3/16" x 1"
45.	GD1256	2	Spring
46.	GA0378	1	Block And Hub Assembly
47.	GD1255	2	L-Pin
48.	GA5165	1	Sprocket, 30 Tooth
49.	G10430	1	External Retaining Ring, 1 1/4"
50.	G3310-58	1	Chain, No. 40, 58 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
51.	GA12465	1	Guard, L.H. (Shown)
	GA12466	-	Guard, R.H.
52.	GA12449	1	Sensor Mount
53.	GD14257	2	Nut, M12 x 1"
54.	GA12437	-	Support
55.	G10477	-	Hex Head Cap Screw, 3/4"-10 x 10"
56.	GA13139	1	Transition, L.H., 11", 24 Row 20" And 36 Row 20" (Shown)
	GA13138	-	Transition, R.H., 11", 24 Row 20" And 36 Row 20"
	GA13097	-	Transition, L.H., 10", 24 Row 22"
	GA13098	-	Transition, R.H., 10", 24 Row 22"
	GA12447	-	Transition, L.H., 6", 24 Row 30"
	GA12446	-	Transition, R.H., 6", 24 Row 30"
57.		-	See "Electrical Components (SDS Control Console)", Pages P140 And P141
58.	GD18046	-	Terminal Strip Mount
59.	GA13100	-	Backing Support
60.	GD18647	-	Plate, 7 1/2" x 9"
61.	GD18580	-	Plate, 11" x 6 1/2"
62.	GD18579	-	Tap Block, 9 3/16" Long
63.	GA13099	-	Backing Support
64.	GA13131	-	Support
65.	GA13121	-	Tube, 69"
	GA13122	-	Tube, 70 1/3"
66.	GA13205	-	Support
67.	GA13081	-	Support, Front
68.	GA13269	-	Support, Rear
69.	G10019	-	Hex Head Cap Screw, 5/18"-18 x 1"
	G10219	-	Washer, 5/16" USS
	G10109	-	Lock Nut, 5/16"-18, Grade 8
70.	GA11164	-	Mount
71.	G10403	4	Hex Head Cap Screw, 1/4"-20 x 2 1/4"
	G10110	4	Lock Nut, 1/4"-20, Grade B
A.	GA5164	-	Ratchet/Sprocket Assembly, L.H. Hopper (Items 44-49)
	GA9843	-	Ratchet/Sprocket Assembly, R.H. Hopper (Items 44-49)

# BULK SEED HOPPER ASSEMBLY (SDS)

(FF129a)

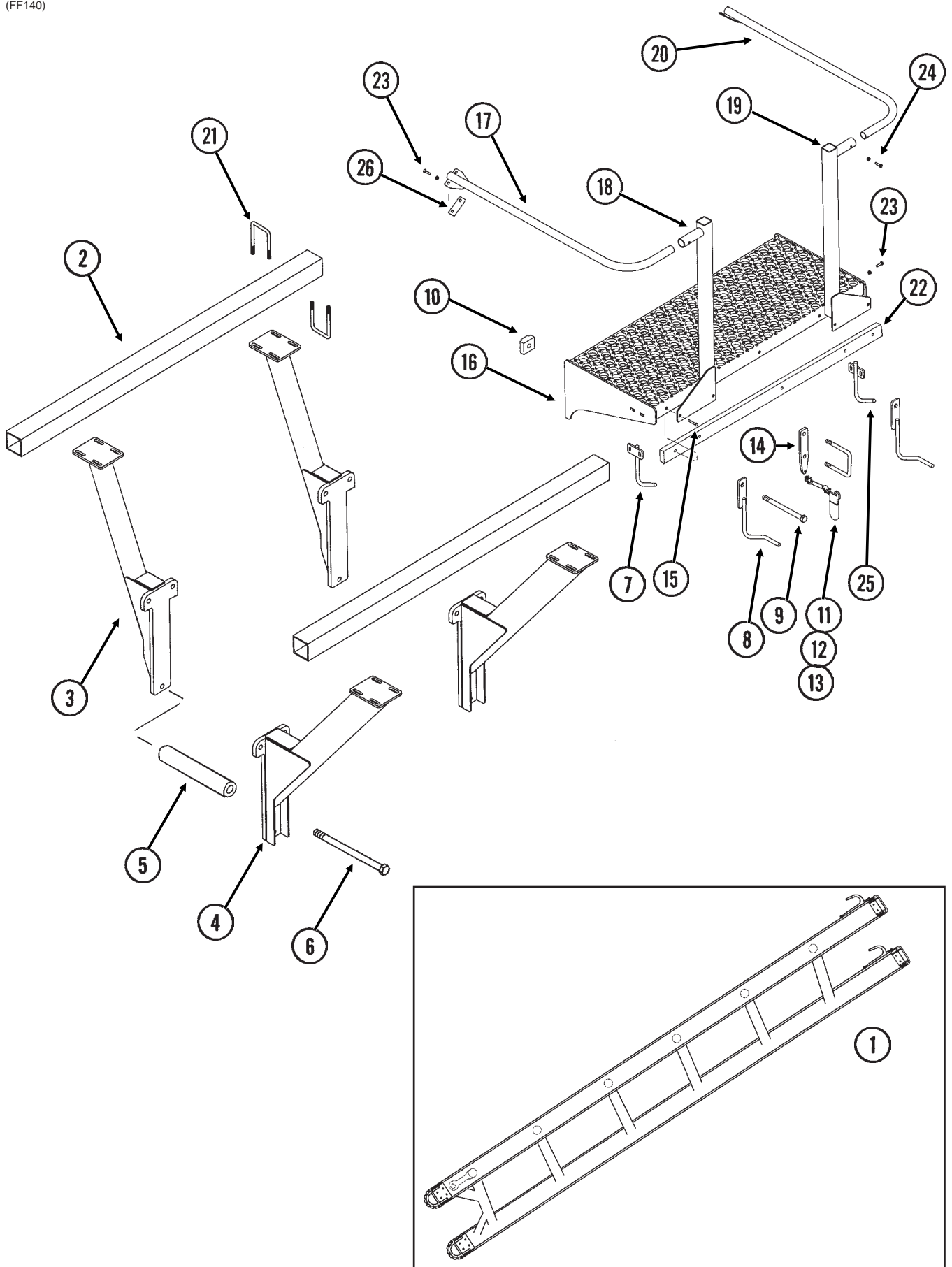


# BULK SEED HOPPER ASSEMBLY (SDS)

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GD17308	1	Hopper
2.	GA11579	1	Lid
3.	GA11381	2	Hopper Stiffener
4.	G10003	16	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{1}{2}$ "
	G10203	16	Washer, $\frac{3}{8}$ " SAE
	G10108	16	Lock Nut, $\frac{3}{8}$ "-16
5.	G10003	2	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{1}{2}$ "
	GD11963-03	2	Tube, $\frac{1}{2}$ " O.D. x $\frac{25}{64}$ " I.D. x $\frac{9}{16}$ "
	G10203	2	Washer, $\frac{3}{8}$ " SAE
	G10108	2	Lock Nut, $\frac{3}{8}$ "-16
6.	GA11635	1	Latch Cover
7.	G10064	2	Hex Head Cap Screw, $\frac{1}{4}$ "-20 x 1"
	G10211	2	Washer, $\frac{1}{4}$ " SAE
	G10110	2	Lock Nut, $\frac{1}{4}$ "-20, Grade B
8.	G10301	4	Carriage Bolt, $\frac{3}{8}$ "-16 x 1 $\frac{1}{2}$ "
	G10622	4	Serrated Flange Nut, $\frac{3}{8}$ "-16
9.	GA11615	2	Mount
10.	GD16979	1	Latch
11.	G10020	2	Hex Head Cap Screw, $\frac{1}{4}$ "-20 x $\frac{5}{8}$ "
	G10110	2	Lock Nut, $\frac{1}{4}$ "-20, Grade B
12.	G10047	2	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{3}{4}$ "
	G10203	2	Washer, $\frac{3}{8}$ " SAE
	GD16694	2	Bushing
	G11226	2	Tee Nut, $\frac{3}{8}$ "-16
13.	GA11587	1	Hinge
14.	GD16692	2	Bar
15.	GD16693	2	Spacer
16.	GD16691	2	Shim

# BULK SEED HOPPER CATWALK AND TANK MOUNTS (SDS)

(FF140)



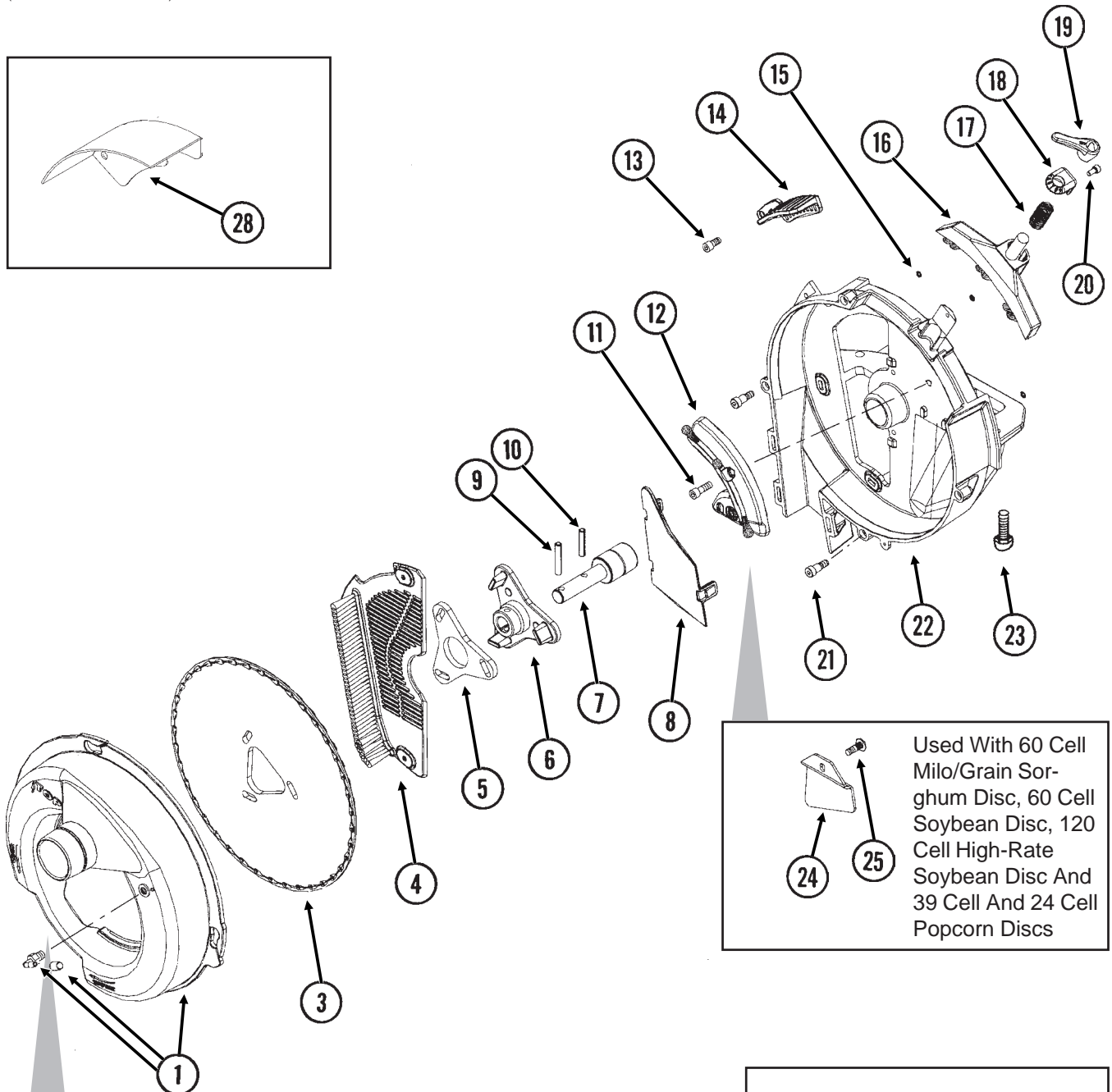
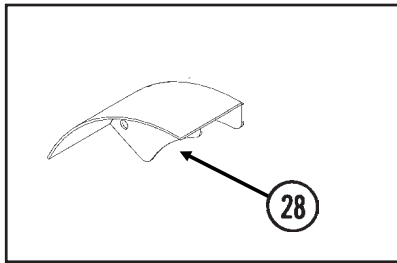


# BULK SEED HOPPER CATWALK AND TANK MOUNTS (SDS)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA12613	-	Ladder
2.	GD16514-03	-	Tube, 72"
	GD16514-05	-	Tube, 77"
	GD16514-06	-	Tube, 64"
	GD16514-07	-	Tube, 80"
3.	GA12437	-	Tank Support, Front
4.	GA12436	-	Tank Support, Rear
5.	GD6425-08	-	Bushing, 6 <sup>15</sup> / <sub>16</sub> "
6.	G10477	-	Hex Head Cap Screw, <sup>3</sup> / <sub>4</sub> "-10 x 10"
	G10112	-	Lock Nut, <sup>3</sup> / <sub>4</sub> "-10
7.	GA12619	-	Front Ladder Hook, L.H.
8.	GA12621	-	Rear Ladder Hook
9.	G10341	-	Hex Head Cap Screw, <sup>5</sup> / <sub>8</sub> "-18 x 8"
	G10205	-	Washer, <sup>5</sup> / <sub>8</sub> " SAE
	G10107	-	Lock Nut, <sup>5</sup> / <sub>8</sub> "-11
10.	GD18059	-	Platform Mount Block
11.	GD5827	-	Cover
12.	GD18072	-	Tarp Strap, 6"
13.	GD18069	-	Latch Plate
14.	GD18068	-	Ladder Strap
15.	G10004	-	Hex Head Cap Screw, <sup>3</sup> / <sub>8</sub> "-16 x 1 <sup>1</sup> / <sub>4</sub> "
	G10622	-	Serrated Flange Nut, <sup>3</sup> / <sub>8</sub> "-18
16.	GA12607	-	Platform
17.	GA12605	-	Handrail, L.H.
18.	GA12603	-	Post, L.H.
19.	GA12604	-	Post, R.H.
20.	GA12606	-	Handrail, R.H.
21.	GD16356	-	U-Bolt, 3 <sup>1</sup> / <sub>2</sub> " x 3 <sup>1</sup> / <sub>2</sub> " x <sup>1</sup> / <sub>2</sub> "-13
	G10228	-	Lock Washer, <sup>1</sup> / <sub>2</sub> "
	G10102	-	Hex Nut, <sup>1</sup> / <sub>2</sub> "-13
22.	GD18055	-	Stiffener
23.	G10303	-	Carriage Bolt, <sup>5</sup> / <sub>16</sub> "-18 x 1"
	G10620	-	Serrated Flange Nut, <sup>5</sup> / <sub>16</sub> "-18
24.	G10040	-	Hex Head Cap Screw, <sup>1</sup> / <sub>4</sub> "-20 x 1 <sup>3</sup> / <sub>4</sub> "
	G10110	-	Lock Nut, <sup>1</sup> / <sub>4</sub> "-20
25.	GA12620	-	Front Ladder Hook, R.H.
26.	GD18390	4	Backing Plate

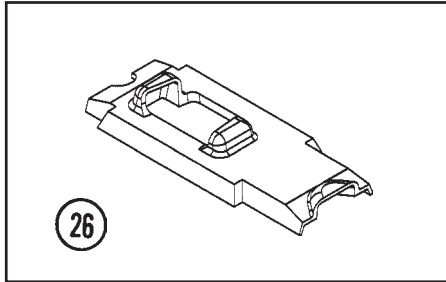
# SEED METER

(METR69/METR65/A12133)



Used With 60 Cell Milo/Grain Sorghum Disc, 60 Cell Soybean Disc, 120 Cell High-Rate Soybean Disc And 39 Cell And 24 Cell Popcorn Discs

- 2** Used With 60 Cell Milo/Grain Sorghum Disc
- 27** Used With 20 Cell Hill-Drop Acid-Delinted Cotton Discs; 54 Cell Acid-Delinted Cotton/ Small Dry Edible Bean Disc; And Small Cotton/Sunflower Disc

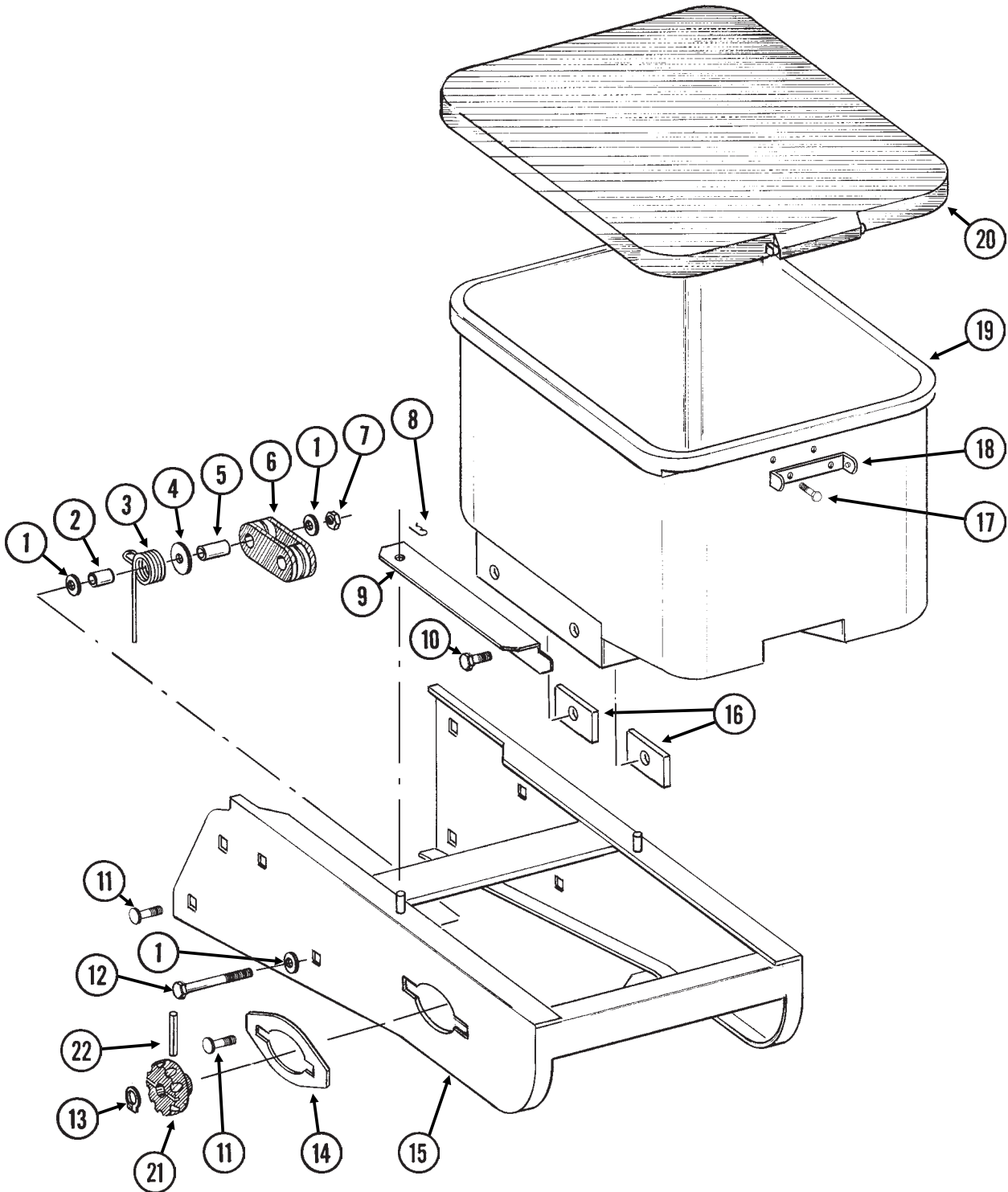


# SEED METER

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11911	1	Vacuum Cover W/Elbow And Cap
	GD17099	-	<sup>3</sup> / <sub>16</sub> " Hose Barb Elbow
	GD17152	-	Cap
2.	GA12133	1	Cleanout Brush <b>(Used With 60 Cell Milo/Grain Sorghum Disc)</b>
3.	GD17049	-	Seed Disc, Corn/Popcorn, 39 Cell, Light Blue Color-Coded
	GD17048	-	Seed Disc, Low-Rate Corn/Popcorn, 24 Cell, Light Green Color-Coded
	GD14467	-	Seed Disc, Soybean, 60 Cell, Black Color-Coded
	GD14468	-	Seed Disc, High-Rate Soybean, 120 Cell, Dark Blue Color-Coded
	GD17050	-	Seed Disc, Milo/Grain Sorghum, 60 Cell, Yellow Color-Coded
	GD17187	-	Seed Disc, Hill-Drop Cotton, Acid-Delinted, 20 Cell (3 Seeds Per Cell), Brown Color-Coded
	GD18095	-	Seed Disc, Small Hill-Drop Cotton, Acid-Delinted, 20 Cell (3 Seeds Per Cell), Grey Color-Coded
	GD17186	-	Seed Disc, Cotton, Acid-Delinted/Small Dry Edible Bean, 54 Cell, Dark Green Color-Coded
	GD18098	-	Seed Disc, Small Cotton/Sunflower, 54 Cell, White Color-Coded
	GD14477	-	Seed Disc, Large Dry Edible Bean, 54 Cell, Tan Color-Coded
4.	GD17028	1	Wall Brush/Vent
5.	GD17021	1	Foam Spacer
6.	GB0328	1	Mount
7.	GA5698	1	Bearing
8.	GD14541	1	Discharge Cover
9.	G10602	1	Spring Pin, <sup>1</sup> / <sub>4</sub> " x 1 <sup>1</sup> / <sub>2</sub> "
10.	G10603	1	Spring Pin, <sup>1</sup> / <sub>4</sub> " x 1 <sup>1</sup> / <sub>4</sub> "
11.	G11213	1	Hex Socket Head Cap Screw, <sup>1</sup> / <sub>4</sub> "-20 x <sup>3</sup> / <sub>4</sub> "
12.	GA11935	1	Crowder Brush
13.	G10260	1	Hex Socket Head Cap Screw, <sup>1</sup> / <sub>4</sub> "-20 x <sup>1</sup> / <sub>2</sub> " (Conventional Planters)
	G10252	1	Hex Socket Head Cap Screw, <sup>1</sup> / <sub>4</sub> "-20 x <sup>7</sup> / <sub>8</sub> " (SDS Planters)
	G10209	1	Washer, <sup>1</sup> / <sub>4</sub> " USS (SDS Planters)
	G10110	1	Lock Nut, <sup>1</sup> / <sub>4</sub> "-20, Grade B (SDS Planters)
14.	GD17047	1	Air Inlet Screen
15.	GD17162	3	Push Nut, <sup>1</sup> / <sub>8</sub> " I.D.
16.	GA10755	1	Singulator Brush
17.	GD14592	1	Spring
18.	GB0358	1	Cap
19.	GD15663	1	Brush Adjustment Lever
20.	G11173	1	Hex Socket Head Cap Screw, No. 10-24 x <sup>3</sup> / <sub>8</sub> ", Stainless Steel
21.	G11172	4	Hex Socket Head Shoulder Screw, <sup>1</sup> / <sub>4</sub> "-20 x <sup>3</sup> / <sub>8</sub> ", Stainless Steel
22.	GB0319	1	Housing
23.	G11009	2	Locking Thumbscrew, <sup>5</sup> / <sub>16</sub> "-18 x <sup>3</sup> / <sub>4</sub> " (Conventional Planters)
	G10171	2	Hex Head Cap Screw, <sup>5</sup> / <sub>16</sub> "-18 x 1 <sup>1</sup> / <sub>4</sub> " (SDS Planters)
	G10232	2	Lock Washer, <sup>5</sup> / <sub>16</sub> " (SDS Planters)
24.	GD17104	1	Seed Baffle <b>(Used With 60 Cell Milo/Grain Sorghum Disc, 60 Cell Soybean Disc, 120 Cell High-Rate Soybean Disc And 39 Cell And 24 Cell Popcorn Discs)</b>
25.	G11210	1	Rib Neck Bolt, <sup>1</sup> / <sub>4</sub> "-20 x <sup>3</sup> / <sub>4</sub> "
	G10323	1	Hex Flange Nut, <sup>1</sup> / <sub>4</sub> "-20, No Serration
26.	GD15700	1	Shank Cover, EdgeVac <sup>®</sup> Meter
27.	GA12154	-	Cleanout Brush W/Ball-Type Ejector <b>(Used With 20 Cell Hill-Drop Acid-Delinted Cotton Discs And 54 Cell Acid-Delinted Cotton/Small Dry Edible Bean And Small Cotton/Sunflower Discs)</b>
28.	GD15923	1	Meter Cover (SDS Only)
A.	G1K469	-	Sunflower Rate Reduction Kit, Includes: (4) GA5205 Sprocket, 15 Tooth; (2) GA5107 Sprocket, 19 Tooth; (4) G3310-144 Chain, No. 40 And (1) Instruction

# GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

(METR14d)



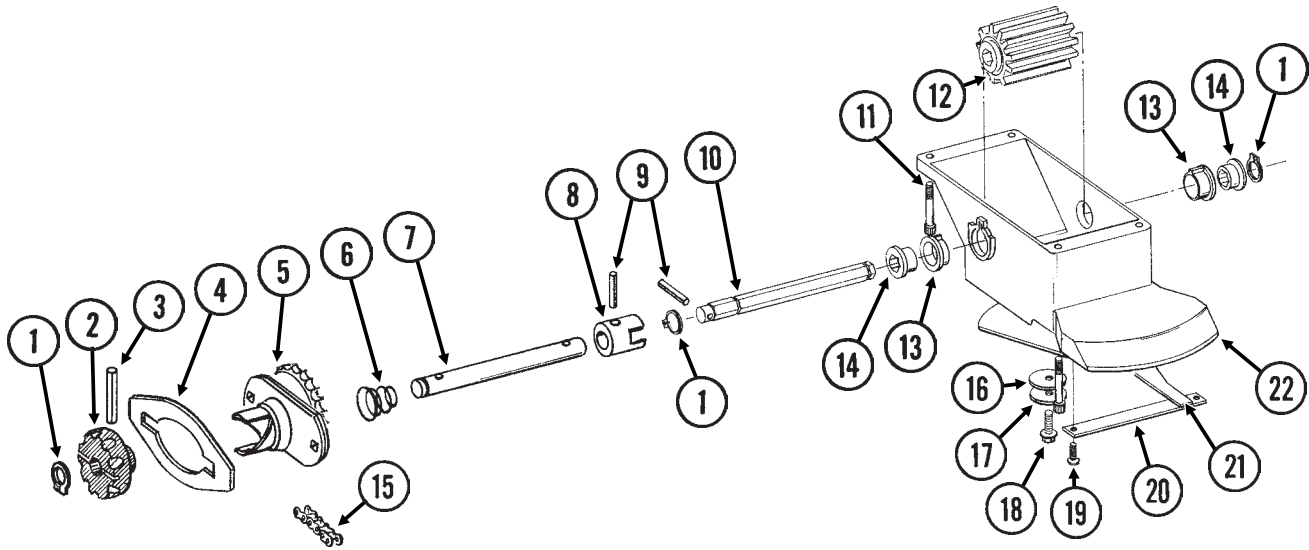
# GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

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ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10210	3	Washer, $\frac{3}{8}$ " USS
2.	GD2971-10	1	Sleeve, $\frac{9}{16}$ " Long
3.	GD11219	1	Spring
4.	G10201	1	Special Washer, $\frac{3}{8}$ " x 1 $\frac{1}{2}$ " O.D.
5.	GD1026	1	Sleeve, 1 $\frac{3}{16}$ " Long
6.	GD11962	1	Idler
7.	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
8.	G10670	2	Hair Pin Clip, No. 3
9.	GD1059L	1	Support, L.H. (Shown)
	GD1059R	1	Support, R.H.
10.	G10002	4	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x $\frac{3}{4}$ "
	G10229	4	Lock Washer, $\frac{3}{8}$ "
11.	G10312	8	Carriage Bolt, $\frac{5}{16}$ "-18 x $\frac{3}{4}$ "
	G10620	8	Serrated Flange Nut, $\frac{5}{16}$ "-18
12.	G10325	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 2 $\frac{3}{4}$ "
13.	G10567	3	External Retaining Ring, $\frac{5}{8}$ "
14.	GD11305	1	Plate
15.	A10759	1	Hopper Panel Extension <b>(Non-Stock Item)</b> <b>(Sub Wholegoods Order Code 700-01099)</b>
16.	GD11424	4	Block
17.	G10023	2	Hex Head Cap Screw, $\frac{1}{4}$ "-20 x $\frac{3}{4}$ "
	G10621	2	Serrated Flange Nut, $\frac{1}{4}$ "-20
18.	GD1060	1	Hinge
19.	GA8371	1	Hopper
20.	GA4444	1	Lid
21.	GD11239	1	Knob
22.	G10602	1	Spring Pin, $\frac{1}{4}$ " x 1 $\frac{1}{2}$ "

# GRANULAR CHEMICAL METER AND METER DRIVE

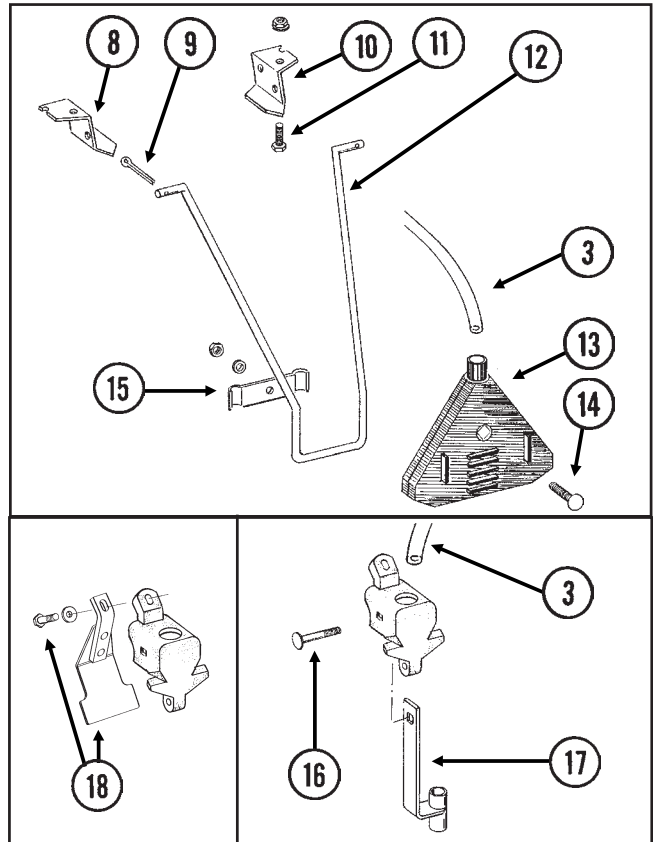
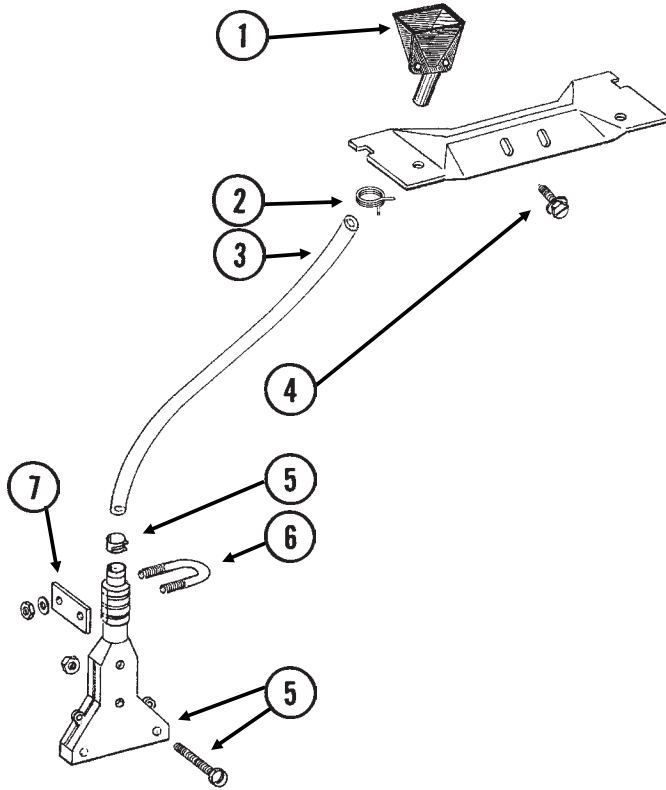
RUA051/RUB028(RU91a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10567	3	External Retaining Ring, 5/8"
2.	GD11239	1	Knob
3.	G10602	1	Spring Pin, 1/4" x 1 1/2"
4.		-	See "Granular Chemical Hopper And Hopper Panel Extension", Pages P32 And P33
5.	GA8364	1	Sprocket And Bearing, Drive Clutch, 24 Tooth
6.	GD11413	1	Spring
7.	GD11240	1	Shaft
8.	GB0278	1	Coupler
9.	G10546	2	Spring Pin, 3/16" x 1 1/4"
10.	GD11297	1	Shaft
11.	G10921	4	Hex Socket Head Cap Screw, No. 10-24 x 7/8"
	G10257	4	Lock Washer, No. 10
12.	GD7148	1	Feed Roller, Hex Bore
13.	GB0115	2	Bearing
14.	GD7258	2	Hex Bushing
15.	G3303-108	1	Chain, No. 41, 108 Pitch Including Connector Link
	GR0196	1	Connector Link, No. 41
16.	G10660	1	Wave Washer, 1/2"
17.	G10209	1	Washer, 1/4" USS
18.	G10570	1	Slotted Hex Self-Tapping Screw, 1/4"-20 x 3/4"
19.	G11073	2	Slotted Hex Self-Tapping Screw, No. 10 x 3/8"
20.	GD1061	1	Support Strap
21.	GD1063	1	Metering Gate
22.	GB0116	1	Granular Housing
A.	GA8326	-	Granular Chemical Meter Complete (Items 1, 9, 10, 12-14 And 16-22)

# GRANULAR CHEMICAL BANDING OPTIONS

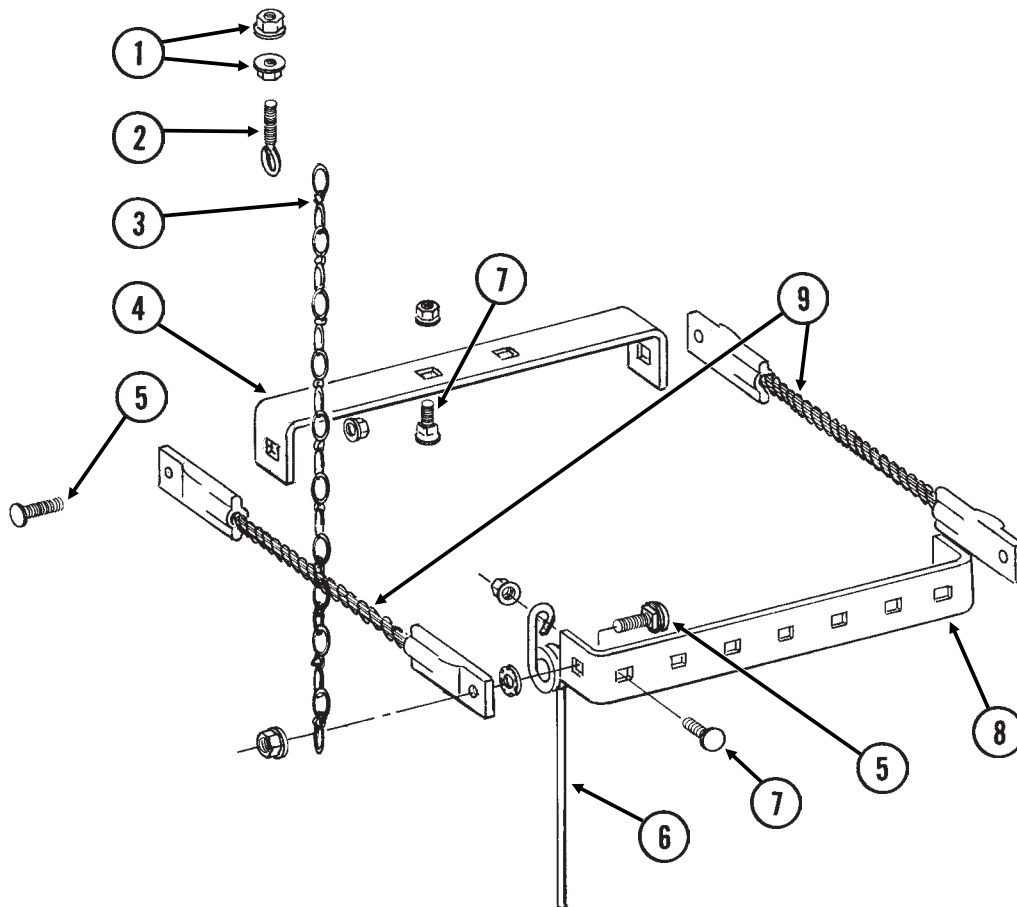
RUA061/RUA073(RU101mm/RU83m)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2423	1	Funnel
2.	G11209	1	Wire Hose Clamp, 3/4"
3.	GD2947	1	Hose, 7/16" x 28"
4.	G10523	2	Slotted Pan Head Self-Tapping Screw, No. 10 x 1/2"
5.	GA6907	1	Slope-Compensating Bander W/Hardware (4 1/2" Band Width)
	G10864	1	Uni-Clamp
	G10757	2	Pan Head Screw, No. 10-32 x 1 1/4"
	G10758	2	Hex Nut, No. 10-32
6.	GD10963	1	U-Bolt, 1 1/2" x 1 5/16" x 1/4"-20
	G10209	2	Washer, 1/4" USS
	G10110	2	Lock Nut, 1/4"-20, Grade B
7.	GD10984	1	Spacer
8.	GD1115L	-	Hanger Bracket, L.H.
9.	G10452	-	Cotter Pin, 1/8" x 1/2"
10.	GD1115R	-	Hanger Bracket, R.H.
11.	G10310	-	Carriage Bolt, 1/4"-20 x 3/4", Grade 2
	G10227	-	Lock Washer, 1/4"
	G10103	-	Hex Nut, 1/4"-20
12.	GD1116	-	Hanger
13.	GA2075	-	Diffuser, 14" Band
14.	G10306	-	Carriage Bolt, 3/8"-16 x 2"
	G10229	-	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
15.	GD1118	-	Clamp
16.	G10315	1	Carriage Bolt, 1/2"-13 x 2 1/2" (Replaces Existing 1/2" x 2 1/4" Hardware)
17.	GA6741	1	Bracket (Straight Drop In-Furrow)
18.	G1K385	-	Bander Shield Kit W/Hardware And Instruction
	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	GD14659	1	Special Washer, 3/8", Hardened

# SPRING TOOTH INCORPORATOR

RUA055(RU95)

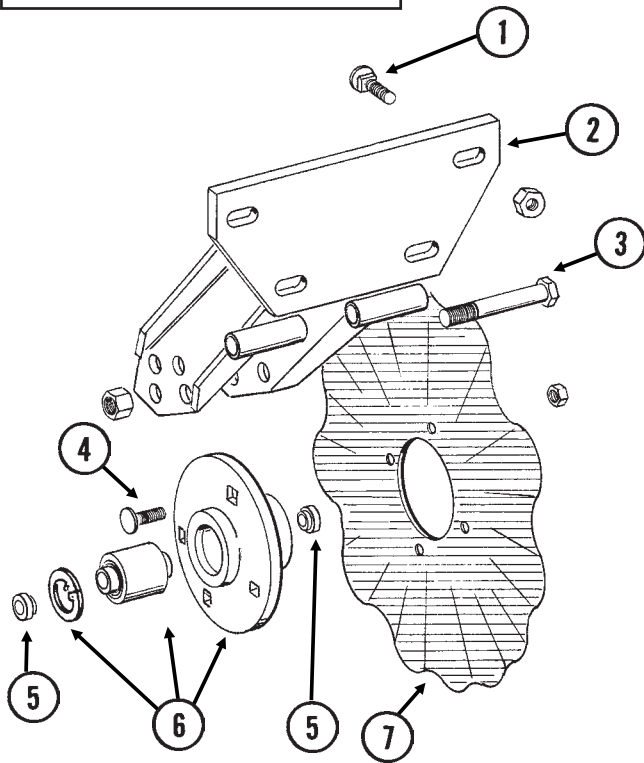
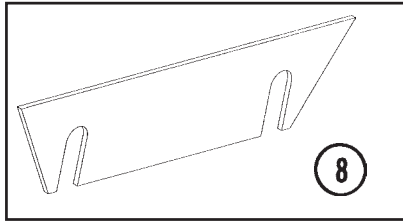


ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10621	4	Serrated Flange Nut, 1/4"-20
2.	GD2460	2	Eyebolt, 1/4"-20
3.	G3305-01	4	Twin Loop Chain, 9 Links
4.	GD1143	1	Front Bracket
5.	G10305	4	Carriage Bolt, 3/8"-16 x 1"
	G10529	4	External Tooth Lock Washer, 3/8"
	G10622	4	Serrated Flange Nut, 3/8"-16
6.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

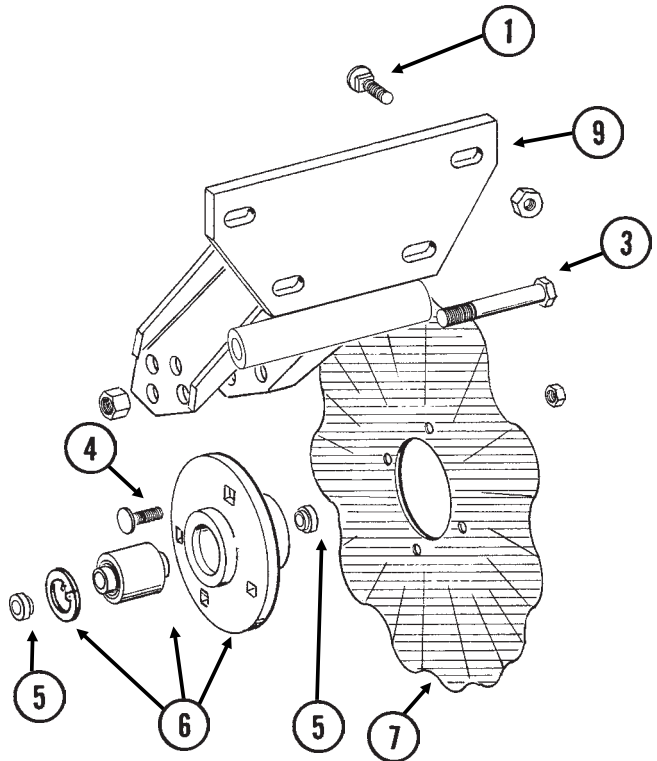


# ROW UNIT MOUNTED NO TILL COULTER

(D14398/RU102c/RU152)



**STYLE A**

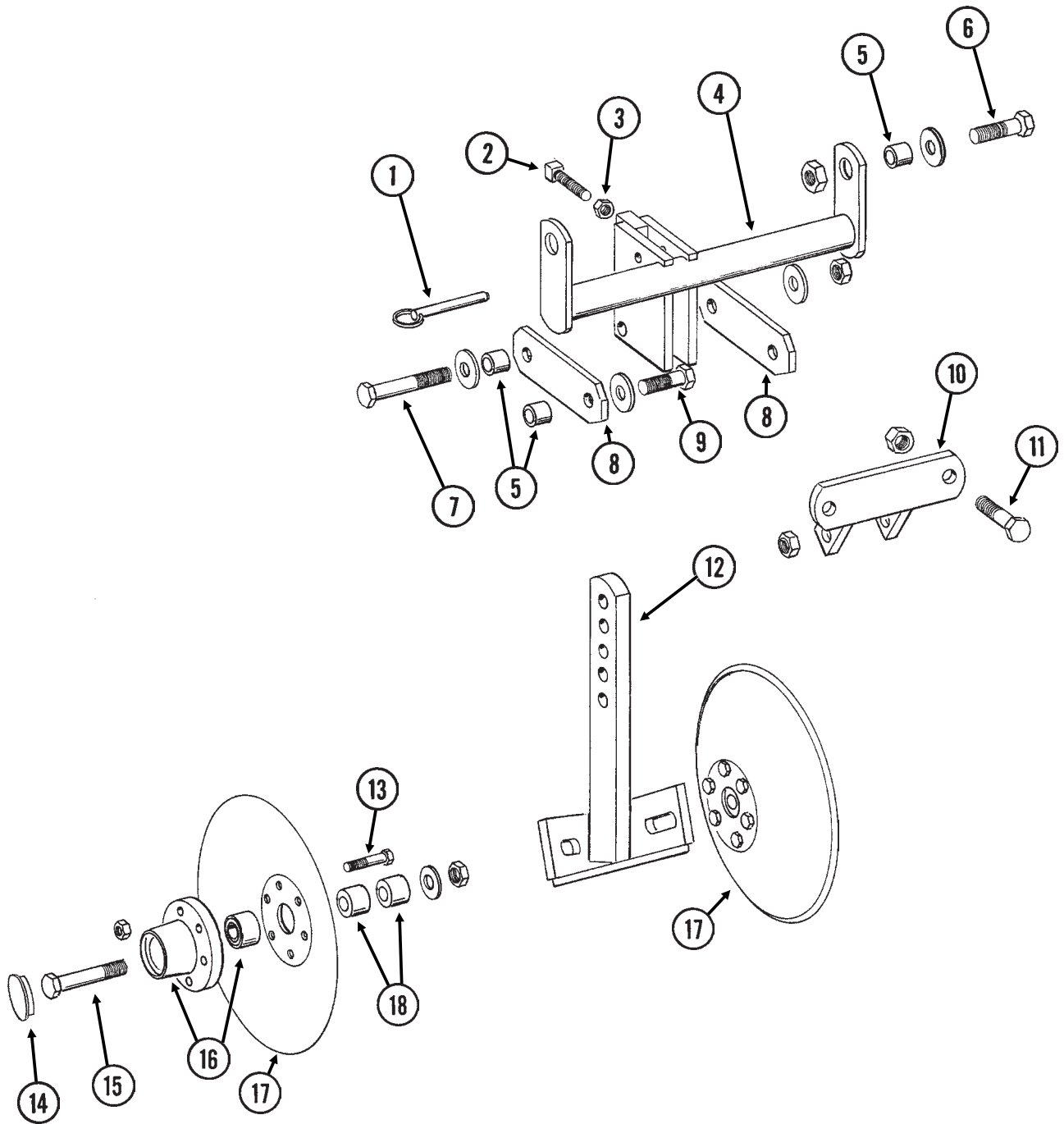


**STYLE B**

ITEM	PART NO.	QTY.	DESCRIPTION
(Per Row)			
1.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
2.	GA5625	1	Arm (Style A)
3.	G10036	1	Hex Head Cap Screw, 5/8"-11 x 4"
	G10107	1	Lock Nut, 5/8"-11
4.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
5.	GD11677	2	Adapter
6.	GA8641	1	Hub W/Bearing And Retaining Ring
	GA8603	-	Bearing, Double Row
	GD11652	-	Retaining Ring, 2 7/16"
7.	GD7803	-	Disc Blade, Fluted, 1", 8 Flutes (Shown)
	GD7804	-	Disc Blade, Bubbled, 1"
	GD9254	-	Disc Blade, Fluted, 3/4", 13 Flutes
8.	GD14398	-	Spacer
9.	GA11520	1	Arm (Style B)

# ROW UNIT MOUNTED DISC FURROWER

RUA059/RUA058(RU99/RU98g)



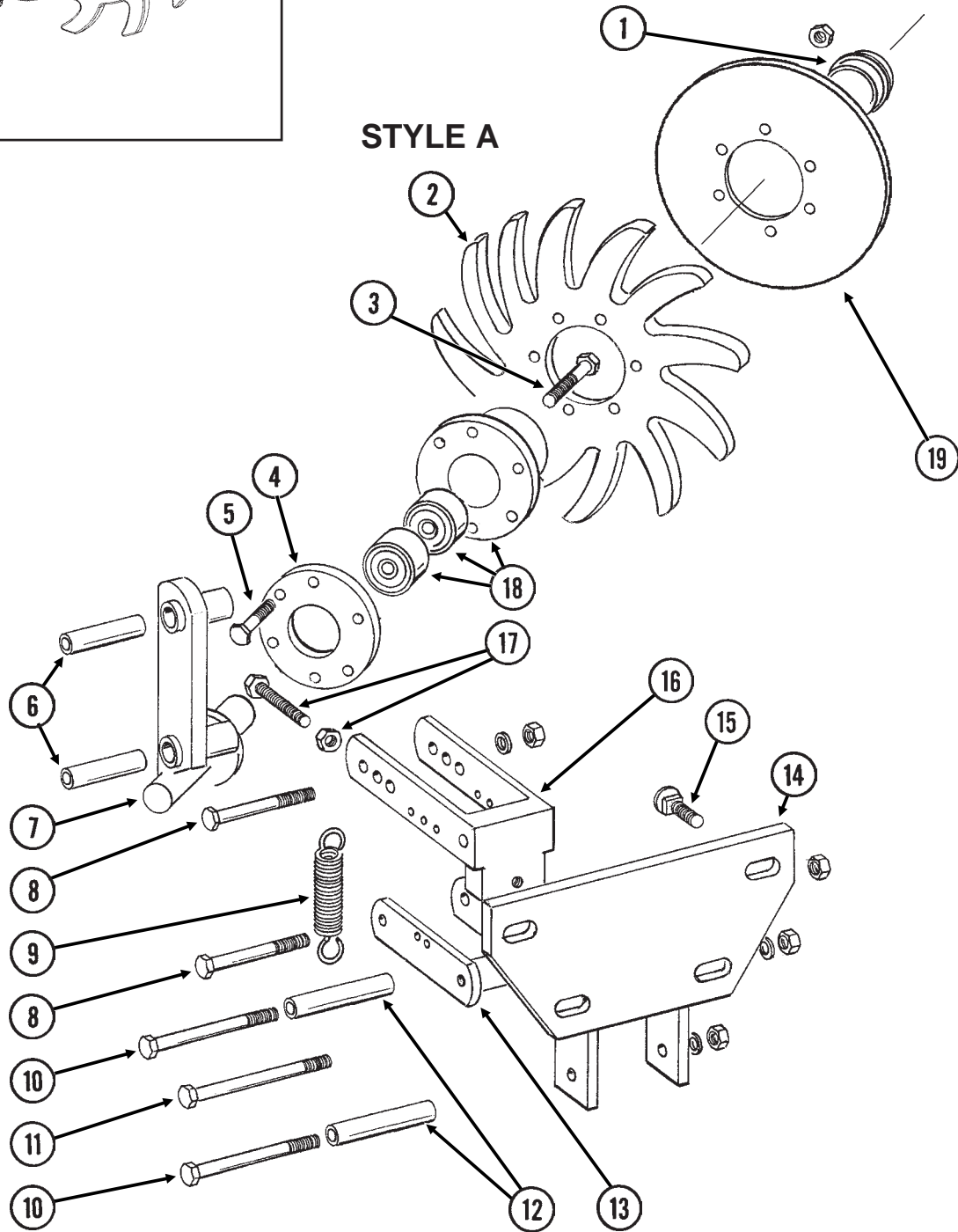
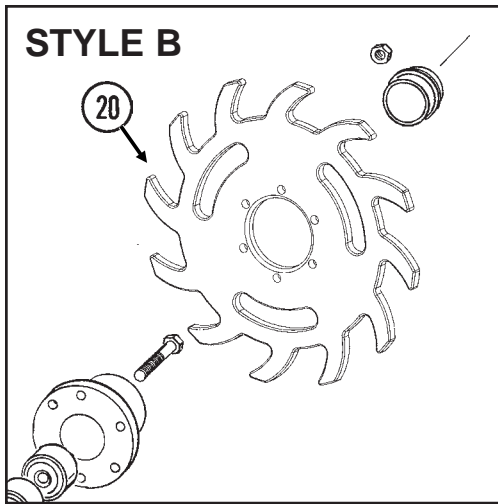
# ROW UNIT MOUNTED DISC FURROWER

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ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10536	1	Detent Pin, 1/2" x 2 1/2" Grip
2.	G10597	1	Square Head Set Screw, 5/8"-11 x 2 1/4"
3.	G10503	1	Hex Jam Nut, 5/8"-11, Grade 2
4.	GA5719	1	Mounting Bracket
5.	GD7889	6	Bushing, 1" O.D. x 9/16" I.D. x 7/16" Long
6.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	GD14674	2	Special Washer, 1/2", Hardened
	G10111	2	Lock Nut, 1/2"-13
7.	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
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.	GA5715	1	Anchor
11.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	2	Lock Nut, 1/2"-13
12.	GA5718	1	Support Arm
13.	G10572	6	Truss Head Slotted Machine Screw, 5/16"-18 x 7/8"
	G10106	6	Hex Nut, 5/16"-18
14.	GD1132	2	Dust Cap
15.	G10318	2	Hex Head Cap Screw, 5/8"-11 x 4 1/2"
	GD7805	2	Special Washer, 5/8", Hardened
	G10107	2	Lock Nut, 5/8"-11
16.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
17.	GD7823	-	Disc Blade, Solid, 12" (Shown)
	GD8307	-	Disc Blade, Notched, 12"
18.	GD7817-01	2	Spacer, 1 1/16" I.D. x 3/4" Long
	GD7817-04	2	Spacer, 1 1/16" I.D. x 1/2" Long

# ROW UNIT MOUNTED RESIDUE WHEEL

(RU103dd/RU103d)



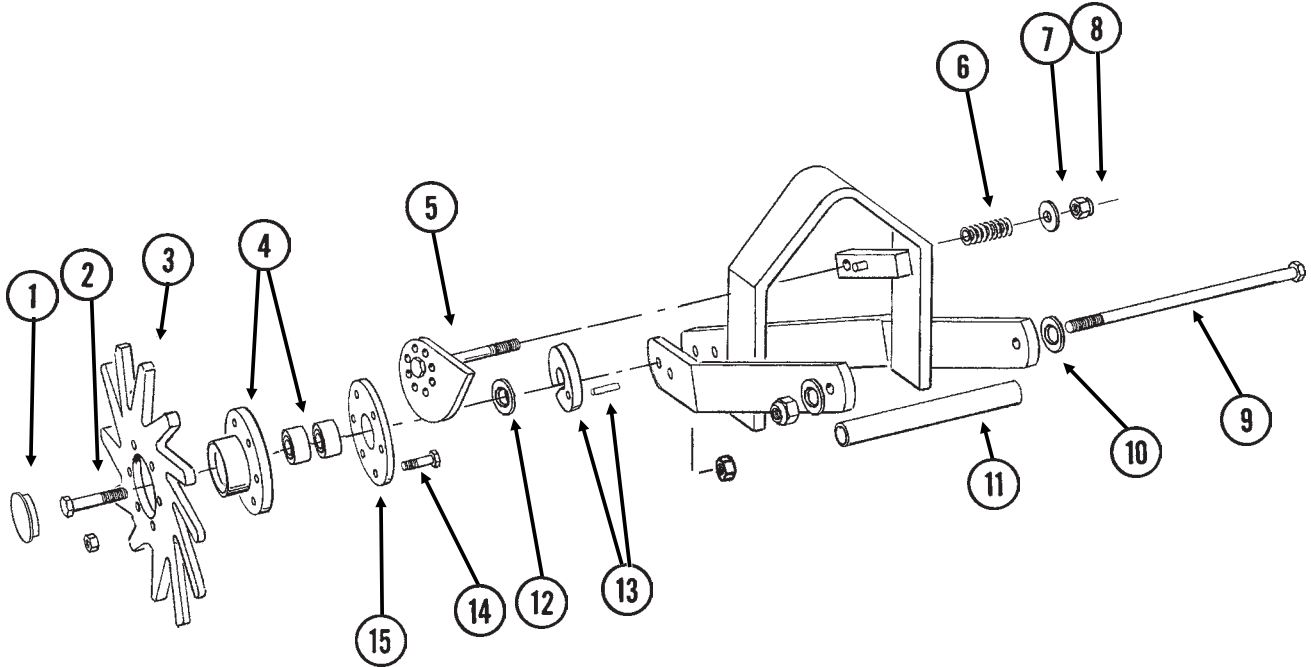
# ROW UNIT MOUNTED RESIDUE WHEEL

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1132	1	Dust Cap
2.	GD10552	1	Wheel, 12 Tine, $\frac{3}{8}$ " x 12"
3.	G10006	1	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 2 $\frac{1}{4}$ "
4.	GD9724	1	Backing Plate
5.	G10133	6	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x 1 $\frac{1}{2}$ "
	G10109	6	Lock Nut, $\frac{5}{16}$ "-18, Grade 8
6.	GD9720	2	Spacer, $\frac{1}{2}$ " x 2 $\frac{3}{16}$ " Long
7.	GA6838	1	Wheel Mount
8.	G10033	2	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 3 $\frac{1}{2}$ "
	G10228	2	Lock Washer, $\frac{1}{2}$ "
	G10102	2	Hex Nut, $\frac{1}{2}$ "-13
9.	GD5857	2	Spring
10.	G10045	2	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 4 $\frac{1}{2}$ "
	G10228	2	Lock Washer, $\frac{1}{2}$ "
	G10102	2	Hex Nut, $\frac{1}{2}$ "-13
11.	G10348	1	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 5" (Lockup Bolt)
	G10111	1	Lock Nut, $\frac{1}{2}$ "-13
12.	GD9715	2	Spacer, $\frac{1}{2}$ " x 3" Long
13.	GA6834	1	Lower Link
14.	GA6832	1	Mount
15.	G10574	4	Carriage Bolt, $\frac{1}{2}$ "-13 x 1 $\frac{1}{4}$ "
	G10111	4	Lock Nut, $\frac{1}{2}$ "-13
16.	GA6833	1	Upper Link
17.	G10371	1	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 3", Full Thread
	G10501	1	Hex Jam Nut, $\frac{1}{2}$ "-13, Grade 2
18.	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
19.	GD12534	-	Cover
20.	GB0387	1	Wheel, 12 Tine, $\frac{3}{8}$ " x 12"
A.	GA7446	-	Wheel Assembly, 12 Tine, R.H. (Items 2, 4, 5 And 18)
B.	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 4, 5, 18 And 20)

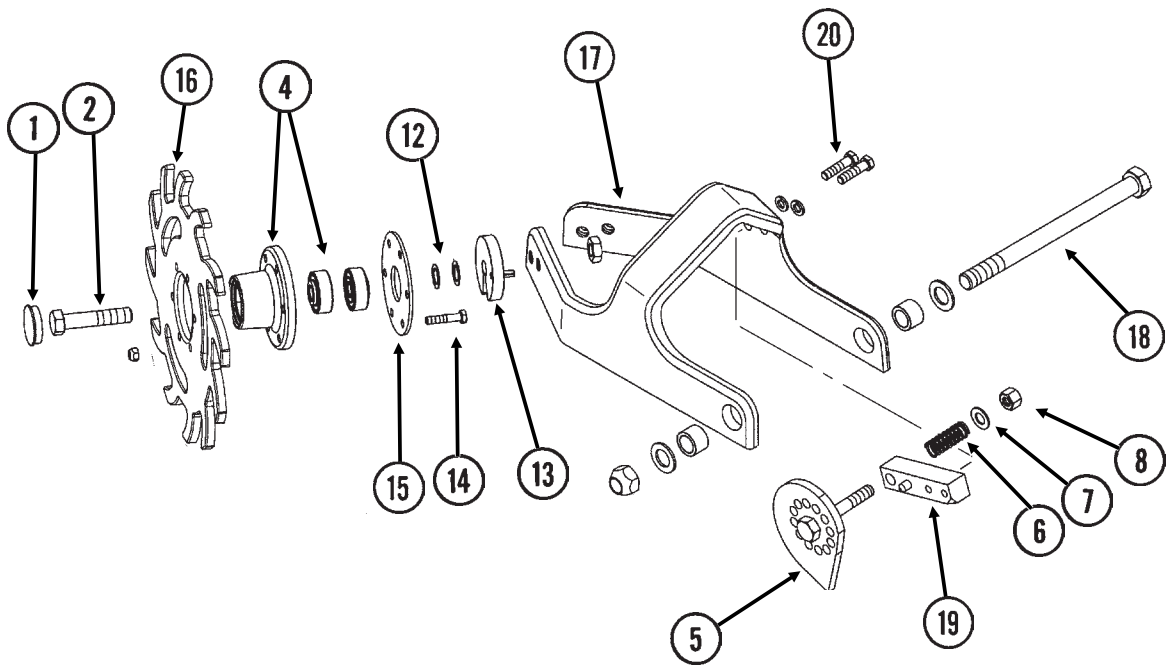
# COULTER MOUNTED RESIDUE WHEELS

(RU104uuu/RU153)

## STYLE A - Used With Style A Row Unit Mounted No Till Coulter



## STYLE B - Used With Style B Row Unit Mounted No Till Coulter

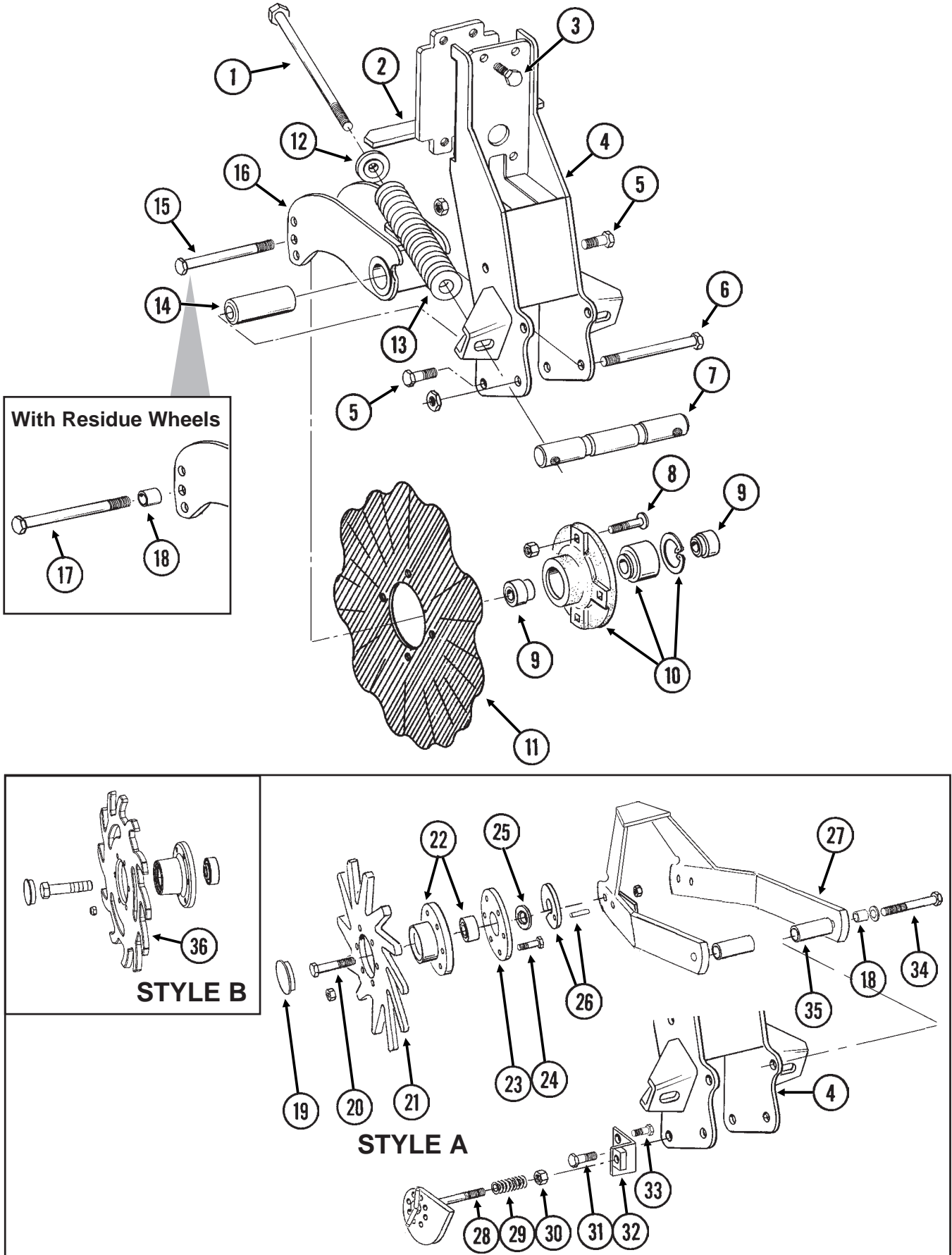


# COULTER MOUNTED RESIDUE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1132	2	Dust Cap
2.	G10010	2	Hex Head Cap Screw, 5/8"-11 x 3"
	G10503	2	Hex Jam Nut, 5/8"-11, Grade 2
3.	GD10552	2	Wheel, 12 Tine, 3/8" x 12"
4.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
5.	GA7412	1	Cam
6.	GD10519	1	Spring
7.	G10206	1	Washer, 1/2" SAE
8.	G10974	1	Lock Nut W/Nylon Insert, 1/2"-13
9.	G11098	1	Hex Head Cap Screw, 1/2"-13 x 9 1/2", Grade 8
	GD14674	2	Special Washer, 1/2", Hardened
	G10974	1	Lock Nut W/Nylon Insert, 1/2"-13
10.	GA7271	1	Mount
11.	GD10526	1	Sleeve, 7 1/2"
12.	G10213	2-4	Machine Bushing, 5/8" (.030" Thick)
13.	GA8760	2	Weed Guard W/Spring Pin
	G10765	-	Spring Pin, 1/4" x 1"
14.	G10133	12	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	12	Lock Nut, 5/16"-18, Grade 8
15.	GD9724	2	Backing Plate
16.	GB0387	2	Wheel, 12 Tine, 3/8" x 12"
17.	GB0401	1	Mount
18.	G11236	1	Hex Head Cap Screw, 3/4"-10 x 10 1/2"
	GB0383	2	Bushing, 1 1/8" O.D. x 25/32" I.D. x 3/4" Long
	G10194	2	Washer, 3/4" SAE
	G11228	1	Lock Nut, 3/4"-10
19.	GA12256	1	Locking Pin
20.	G10003	2	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	2	Lock Washer, 3/8"
A.	GA7446	-	Wheel Assembly, 12 Tine, R.H. (Items 3, 4, 14 And 15) (Shown)
	GA7445	-	Wheel Assembly, 12 Tine, L.H. (Items 3, 4, 14 And 15)
B.	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 4, 14, 15 And 16) (Shown)
	GA12235	-	Wheel Assembly, 12 Tine, L.H. (Items 4, 14, 15 And 16)
C.	G1K467	-	Residue Wheel Mount Kit (Items 17-20)

# FRAME MOUNTED COULTER W/RESIDUE WHEELS

(RU135c/RU135g/RU153b/RU135hh)



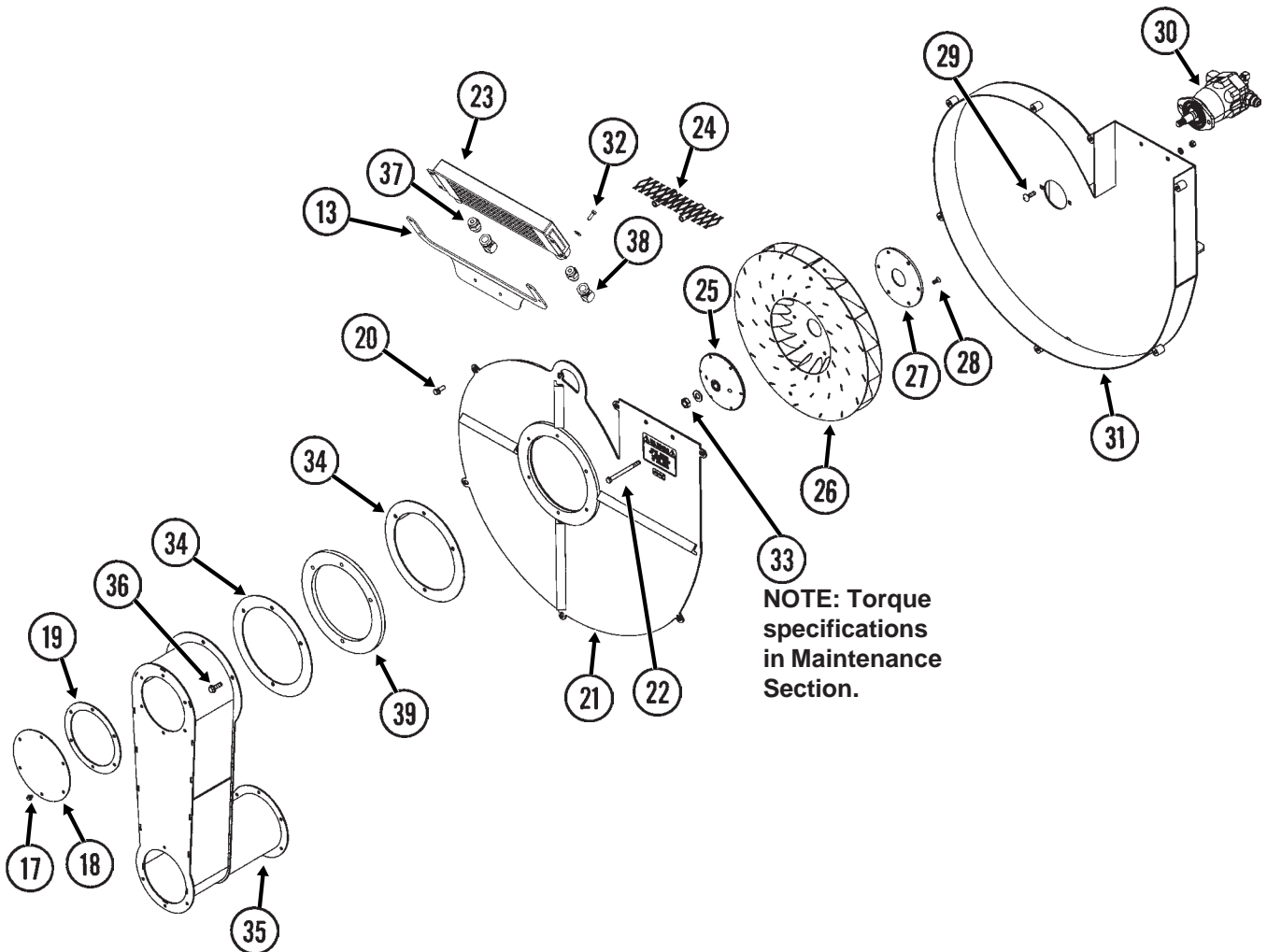
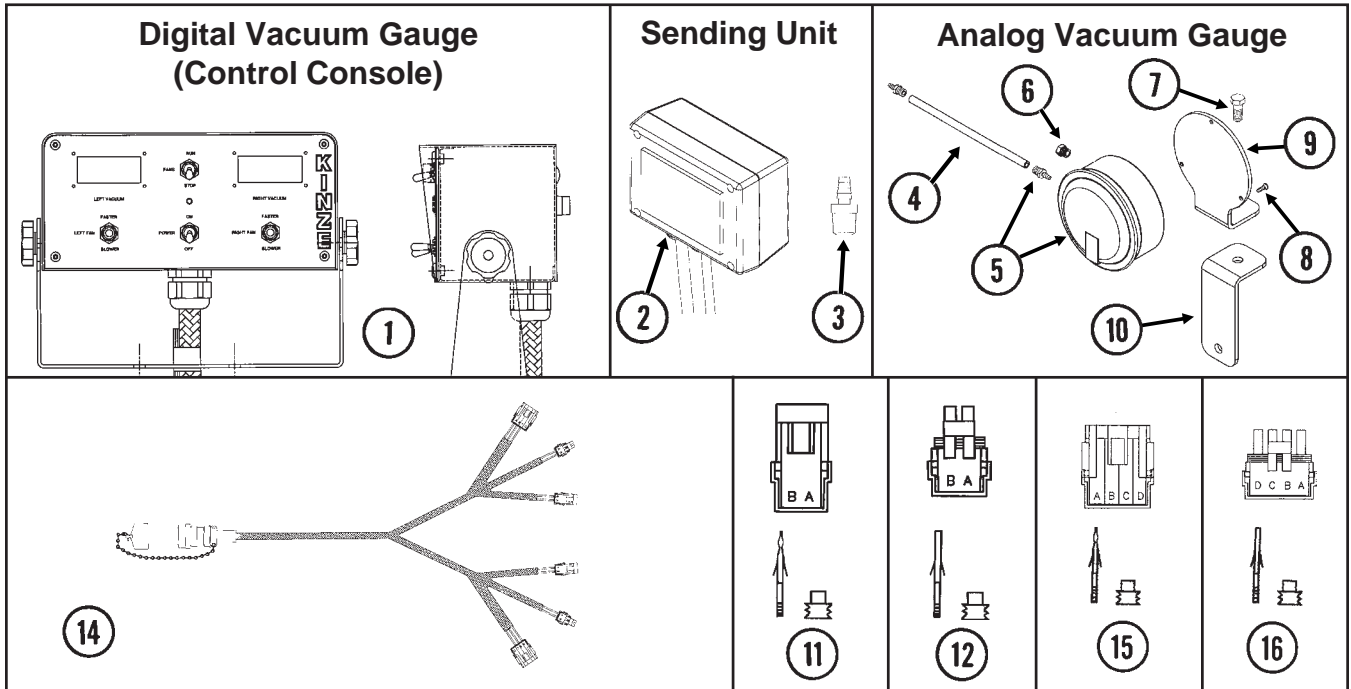


# FRAME MOUNTED COULTER W/RESIDUE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G11010	2	Hex Head Cap Screw, 3/4"-10 x 12"
2.	GA9844	1	Plate W/Angle
3.	G10039	4	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
4.	GA9131	1	Coulter Frame
5.	G10007	4	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10107	4	Lock Nut, 5/8"-11
6.	G10400	1	Hex Head Cap Screw, 3/4"-10 x 6 1/2"
	G10112	1	Lock Nut, 3/4"-10
7.	GD12826	1	Spring Anchor Bar
8.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
9.	GD12827	2	Adapter
10.	GA8641	1	Hub W/Bearing And Retaining Ring
	GA8603	1	Bearing, Double Row
	GD11652	1	Retaining Ring, 2 7/16"
11.	GD7803	1	Disc Blade, Fluted, 1", 8 Flutes (Shown)
	GD7804	-	Disc Blade, Bubbled, 1"
	GD9254	-	Disc Blade, Fluted, 3/4", 13 Flutes
12.	GB0213	2	Spring Seat
13.	GD12817	2	Compression Spring
14.	GD12829	1	Sleeve
15.	G10046	1	Hex Head Cap Screw, 5/8"-11 x 5"
	G10107	1	Lock Nut, 5/8"-11
16.	GA9845	1	Coulter Arm W/Grease Fitting
	G10643	-	Grease Fitting, 45°, 1/4"-28
17.	G10011	1	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10107	1	Lock Nut, 5/8"-11
18.	GB0218	3	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
19.	GD1132	2	Dust Cap
20.	G10010	2	Hex Head Cap Screw, 5/8"-11 x 3"
	G10503	2	Hex Jam Nut, 5/8"-11, Grade 2
21.	GD10552	2	Wheel, 12 Tine, 3/8" x 12"
22.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
23.	GD9724	2	Backing Plate
24.	G10133	12	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	12	Lock Nut, 5/16"-18, Grade 8
25.	G10213	2	Machine Bushing, 5/8" (.030" Thick)
26.	GA9862	2	Weed Guard W/Spring Pin
	G10765	-	Spring Pin, 1/4" x 1"
27.	GA9865	1	Mount
28.	GA9861	1	Cam
29.	GD10519	1	Spring
30.	G10974	1	Lock Nut W/Nylon Insert, 1/2"-13
31.	G10005	1	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10107	4	Lock Nut, 5/8"-11
32.	GA9864	1	Support
33.	G10014	1	Hex Head Cap Screw, 1/2"-13 x 1"
	G10102	1	Hex Nut, 1/2"-13
34.	G10011	2	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10205	2	Washer, 5/8" SAE
	G10730	2	Lock Nut W/Nylon Insert, 5/8"-11
35.	GD14170	2	Sleeve, 3"
36.	GB0386	2	Wheel, 12 Tine, 3/8" x 12"
A.	GA7446	-	Wheel Assembly, 12 Tine, R.H. (Items 21-24) (Shown)
	GA7445	-	Wheel Assembly, 12 Tine, L.H. (Items 21-24)
B.	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 22, 23, 24 And 36) (Shown)
	GA12235	-	Wheel Assembly, 12 Tine, L.H. (Items 22, 23, 24 And 36)

# VACUUM GAUGES, CONTROL CONSOLE AND VACUUM FAN ASSEMBLY WITH OIL COOLER

(A11692/A11156/GR1736/A10765/A11158/A11699/A7856/A11155/A8329/A11757)

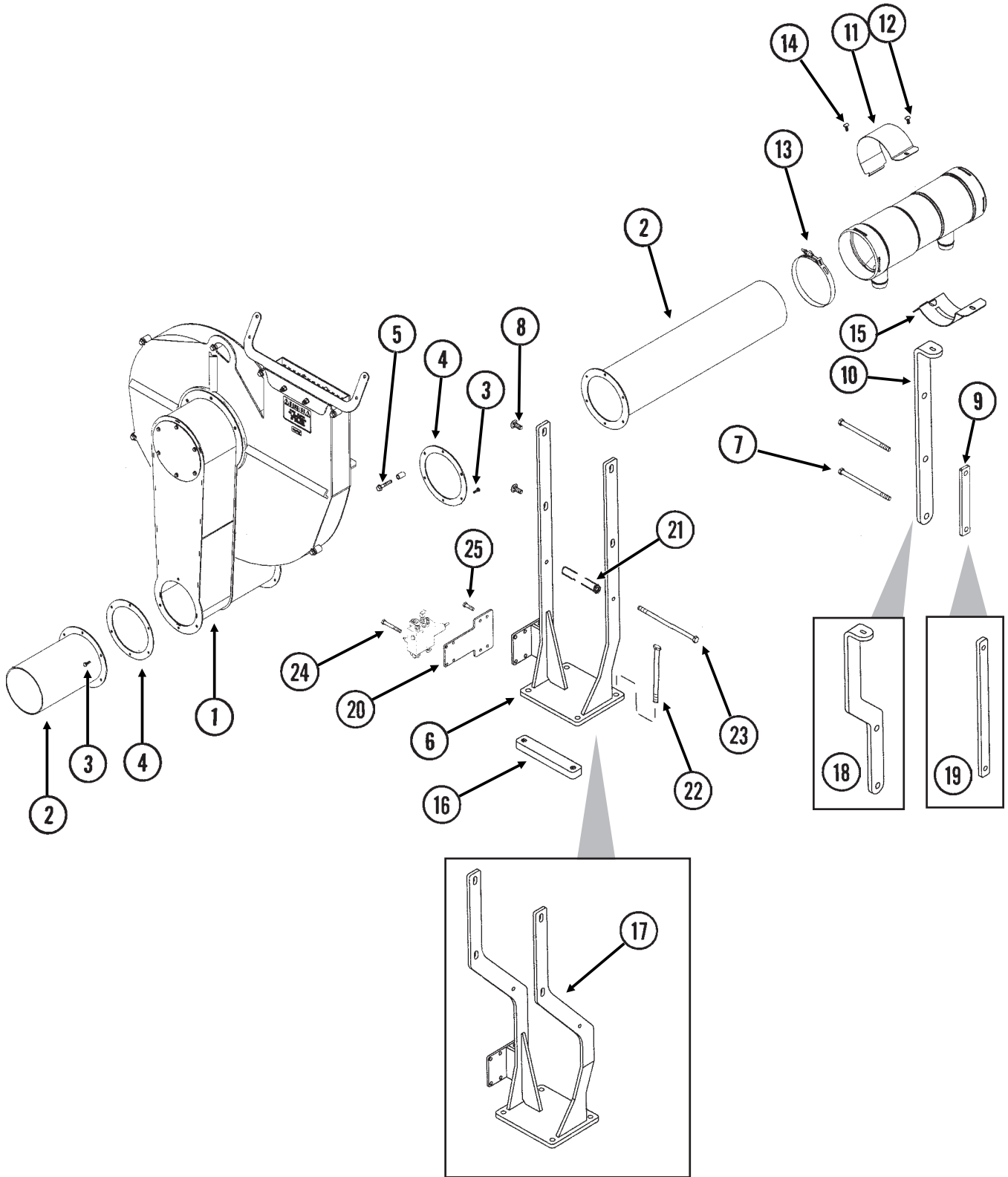


# VACUUM GAUGES, CONTROL CONSOLE AND VACUUM FAN ASSEMBLY WITH OIL COOLER

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G8081X	1	Backlite Control Console Assembly W/Mounting Brackets, Harness W/Dust Cap And Power Cable
	GD14640	-	Mounting Bracket
	GA6975	-	Knob
	GD2829	-	Fuse, 15 Amp, Type AGC
2.	GA11156	1	Sending Unit W/1/4" Tubing And Harness
	GD16324-01	-	Tubing, 1/4" x 45"
	GA9964	-	Strain Relief
3.	GR1736	1	Hose Barb, 1/8" Male NPT To Barb
4.	GD15849-02	1	Clear Tube, 5/16" O.D. x 3/16" I.D. x 120"
5.	GA10765	1	Analog Vacuum Gauge W/Hose Barb
	GR1777	-	Hose Barb, 1/8" Male NPT To 3/16" Barb
6.	GA10799	1	Breather, 1/8" Male NPT
7.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10210	1	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
8.	G11138	3	Hex Socket Head Cap Screw, No. 6-32 x 1/2", Grade 8
9.	GD15804	1	Mount
10.	GD15803	1	Support
11.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
12.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
13.	GD16608	1	Bracket
14.	GA11689	1	Harness, 432", 16 Row 38", 24 Row 20" And 24 Row 22"
	GA11691	-	Harness, 519", 24 Row 30" And 36 Row 20"
15.	GA8328	-	4-Pin Female Connector Kit, Includes: (1) 4-Pin Female Housing, (4) Seals, (4) Pin Contacts
16.	GA8329	-	4-Pin Male Connector Kit, Includes: (1) 4-Pin Male Housing, (4) Seals, (4) Sockets
17.	G11166	6	Whiz Lock Bolt, 1/4"-20 x 3/4"
18.	GD16840	1	Cover
19.	GD16991	1	Cover Gasket, 1/8" x 8 3/8" (6 1/2" I.D.)
20.	G11124	7	Whiz Lock Bolt, 3/8"-18 x 1"
21.	GA10752	1	Cover
22.	G10063	2	Hex Head Cap Screw, 3/8"-16 x 4"
	G10203	2	Washer, 3/8" SAE
	G10108	2	Lock Nut, 3/8"-16
23.	GA10917	1	Oil Cooler
24.	GA11987	2	Screen
25.	GD15790	1	Hub
26.	GA10635	1	Impeller
27.	GD15789	1	Backing Plate
28.	G11133	6	Hex Socket Head Cap Screw, 5/16"-18 x 3/4", Grade 8
29.	G10599	2	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
30.		-	See "Vacuum Fan Hydraulic Motor Assembly", Page P65
31.	GA10148	1	Shroud
32.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
	G10219	4	Washer, 5/16" USS
	G10109	4	Lock Nut, 5/16"-18, Grade B
33.	G10205	1	Washer, 5/8" SAE
	G10499	1	Hex Jam Nut, 5/8"-18, Grade 2
34.	GD16992	2	Gasket, 1/8" x 11 7/8"
35.	GA11651	1	Outlet, 31 11/16"
	GA12457	-	Outlet, 35 11/16"
36.	G11204	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
37.	G6400-12	2	Connector W/O-Ring, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
38.	G6502-12	1-2	Swivel Elbow, 45°, 1 1/16"-12 Male JIC To Female
39.	GD16839	1	Spacer, 1/2" x 12"
A.	GA11757	-	Vacuum Fan Assembly (Items 13, 20-22, 24-31 And 33)

# VACUUM FAN/MANIFOLD MOUNTING SUPPORTS AND HARDWARE

(FF108bb)



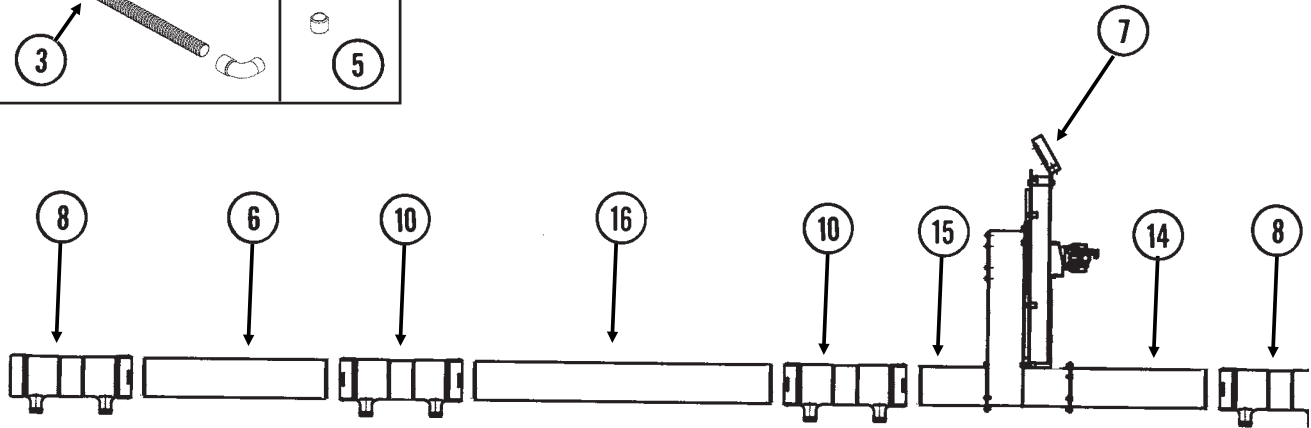
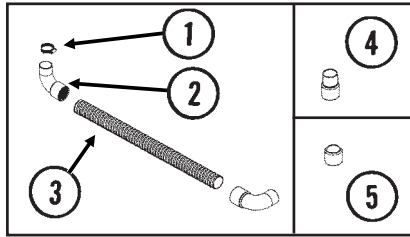
# VACUUM FAN/MANIFOLD MOUNTING SUPPORTS AND HARDWARE

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ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly W/Oil Cooler", Pages P46 And P47
2.		-	See "Manifolds And Distribution Hoses", Pages P50-P59
3.	G10023	-	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10110	-	Lock Nut, 1/4"-20, Grade B
4.	GD16842	2	Manifold Gasket, 1/8" x 8 3/8" (6 5/8" I.D.)
5.	G11199	1	Whiz Lock Bolt, 3/8"-16 x 2"
	GD8893-07	1	Sleeve, 1" Long
6.	GA13181	1	Support
7.	G10341	-	Hex Head Cap Screw, 5/8"-11 x 8"
	G10152	-	Hex Head Cap Screw, 5/8"-11 x 9"
8.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10071	4	Serrated Flange Nut, 1/2"-13
9.	GD18628	-	Tap Plate, Short
10.	GD18626	-	Support
11.	GD15854	1	Clamp
12.	G10338	-	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10620	-	Serrated Flange Nut, 5/16"-18
13.	G11145	-	T-Bolt Clamp, 7"
14.	G10133	-	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10232	-	Lock Washer, 5/16"
	G10106	-	Hex Nut, 5/16"-18
15.	GA11164	-	Mount
16.	GD18624	-	Tap Block
17.	GA13203	-	Offset Support
18.	GD18625	-	Offset Support
19.	GD18627	-	Tap Block, Long
20.	GD18622	-	Block Support Plate
21.	GD8893-10	-	Sleeve, 9 13/16" Long
22.	G10980	-	Hex Head Cap Screw, 1/2"-13 x 5 1/2"
	GD18623	-	Cap Screw, 1/2"-13 x 17"
23.	G11257	-	Hex Head Cap Screw, 3/8"-16 x 11 1/2"
	G10108	-	Lock Nut, 3/8"-16
24.	G10063	-	Hex Head Cap Screw, 3/8"-16 x 4"
	G10753	-	Hex Head Cap Screw, 3/8"-16 x 4 1/2"
	G10229	-	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
25.	G10001	-	Hex Head Cap Screw, 3/8"-16 x 1"
	G10108	-	Lock Nut, 3/8"-16

# MANIFOLDS AND DISTRIBUTION HOSES, 16 ROW 38"

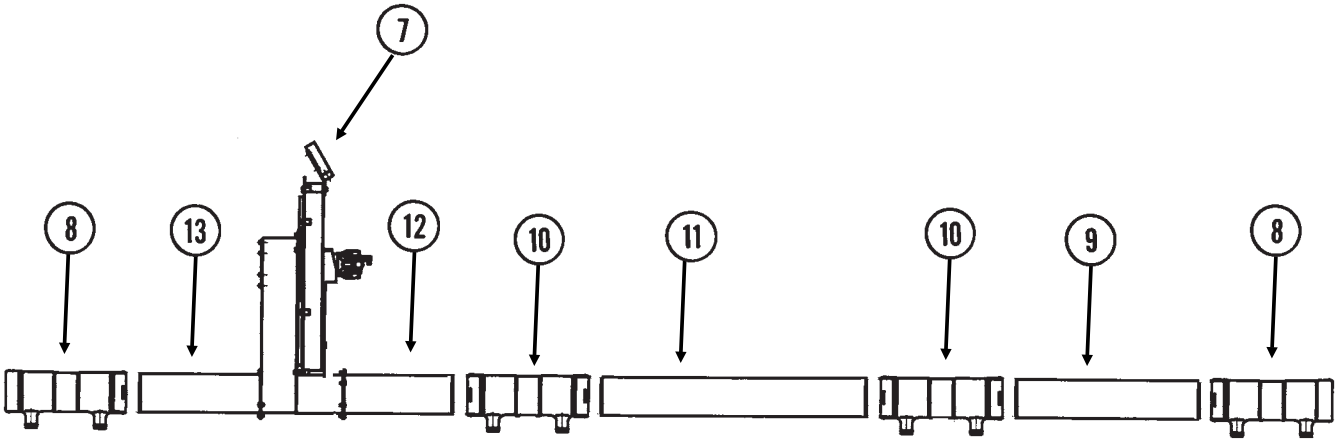
(FF112/FF114a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10676	16	Hose Clamp, No. 36, Stainless Steel
2.	GD14626	24	Elbow, 90°, 2"
3.	GD15792-04	6	Hose, 2" x 36"
	GD15792-13	1	Hose, 2" x 50"
	GD15792-16	1	Hose, 2" x 55"
	GD15792-20	7	Hose, 2" x 32"
	GD15792-24	1	Hose, 2" x 40"
4.	GD14627	8	Coupler, 2"
5.	G11147	-	Cap, 2"
6.	GD15856-06	1	Pipe, 6" x 40 1/2"
7.		-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P46 And P47
8.	GD15850	4	Manifold, 21" (Open One End)
9.	GD15856-06	1	Pipe, 6" x 40 1/2"
10.	GD15799	4	Manifold, 21" (Open Both Ends)
11.	GD15856-10	1	Pipe, 5" x 55"
12.	GA12146	1	Manifold Flange, 23 1/2"
13.	GA12147	1	Manifold Flange, 25 1/2"
14.	GA12148	1	Manifold Flange, 28"
15.	GA12145	1	Manifold Flange, 16"
16.	GD15856-11	1	Pipe, 6" x 60"

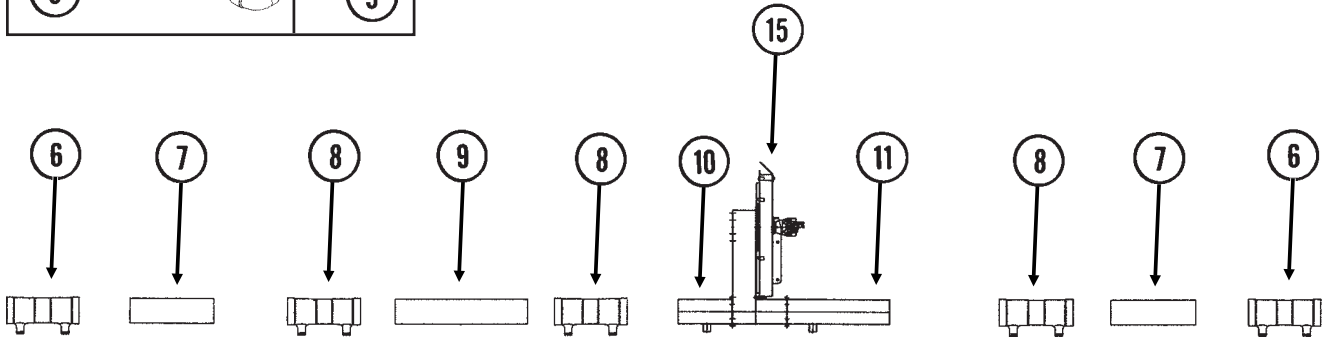
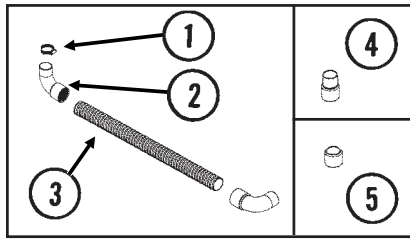
# MANIFOLDS AND DISTRIBUTION HOSES, 16 ROW 38"

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# MANIFOLDS AND DISTRIBUTION HOSES, 24 ROW 20"

(FF112/FF131)

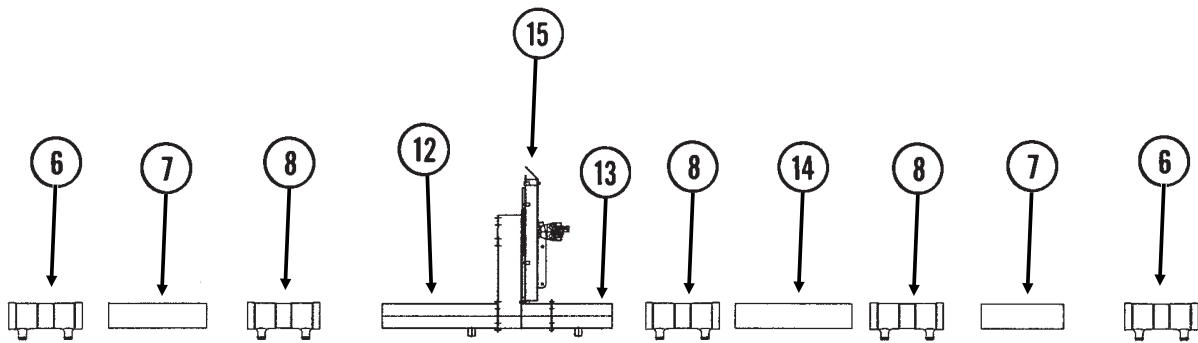


ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10676	24	Hose Clamp, No. 36, Stainless Steel
2.	GD14626	27	Elbow, 90°, 2"
3.	GD15792-04	13	Hose, 2" x 36"
	GD15792-09	8	Hose, 2" x 30"
	GD15792-12	2	Hose, 2" x 44"
	GD15792-24	1	Hose, 2" x 40"
4.	GD14627	21	Coupler, 2"
5.	G11147	-	Cap, 2"
6.	GD15850	4	Manifold, 21" (Open One End)
7.	GD15856-20	4	Pipe, 6" x 22 1/2"
8.	GD15799	6	Manifold, 21" (Open Both Ends)
9.	GD15856-28	1	Pipe, 6" x 35 1/2"
10.	GA13208	1	Manifold Flange, 14 1/2"
11.	GA13210	1	Manifold Flange, 27 1/2"
12.	GA13184	1	Manifold Flange, 30 3/4"
13.	GA13209	1	Manifold Flange, 16"
14.	GD15856-27	1	Pipe, 6" x 30 3/4"
15.		-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P46 And P47



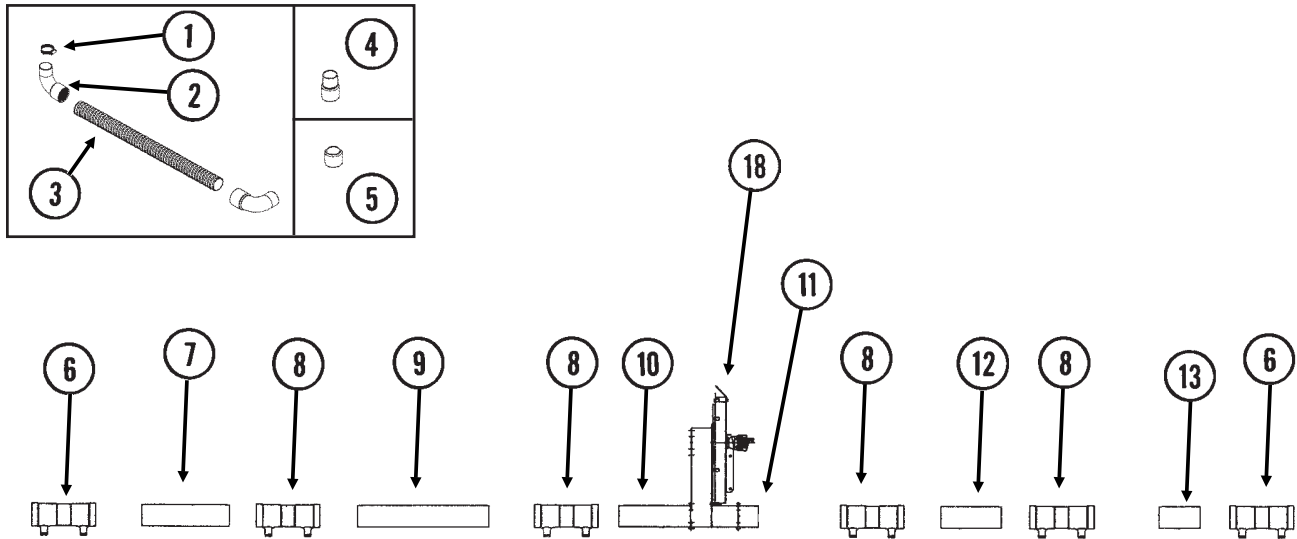
# MANIFOLDS AND DISTRIBUTION HOSES, 24 ROW 20"

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# MANIFOLDS AND DISTRIBUTION HOSES, 24 ROW 22"

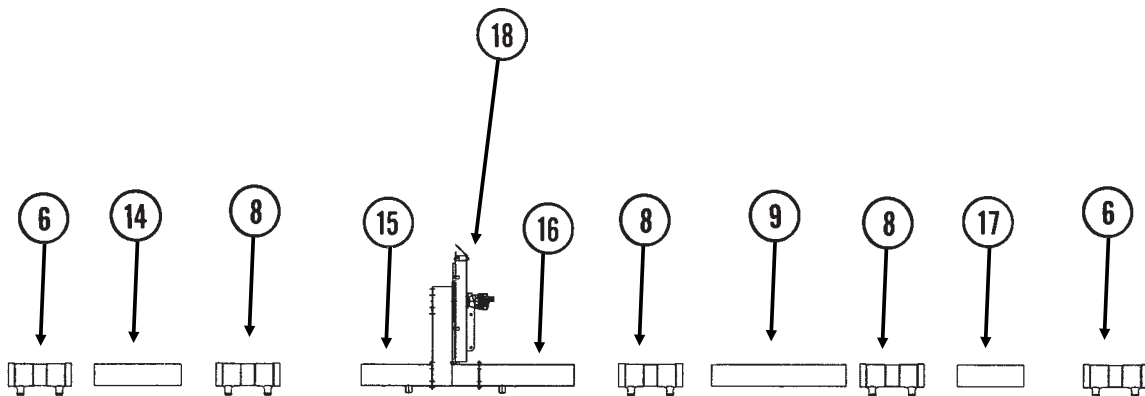
(FF112/FF132)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10676	24	Hose Clamp, No. 36, Stainless Steel
2.	GD14626	27	Elbow, 90°, 2"
3.	GD15792-04	8	Hose, 2" x 36"
	GD15792-12	8	Hose, 2" x 44"
	GD15792-22	2	Hose, 2" x 58"
	GD15792-24	6	Hose, 2" x 40"
4.	GD14627	21	Coupler, 2"
5.	G11147	-	Cap, 2"
6.	GD15850	4	Manifold, 21" (Open One End)
7.	GD15856-26	1	Pipe, 6" x 27"
8.	GD15799	7	Manifold, 21" (Open Both Ends)
9.	GD15856-06	2	Pipe, 6" x 40 1/2"
10.	GA13182	1	Manifold Flange, 22"
11.	GA11653	1	Manifold Flange, 6"
12.	GD15856-41	1	Pipe, 6" x 18 1/2"
13.	GD15856-39	1	Pipe, 6" x 12 1/2"
14.	GD15856-38	1	Pipe, 6" x 26 1/2"
15.	GA13217	1	Manifold Flange, 21 1/2"
16.	GA13218	1	Manifold Flange, 29"
17.	GD15856-34	1	Pipe, 6" x 20 1/2"
18.		-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P46 And P47

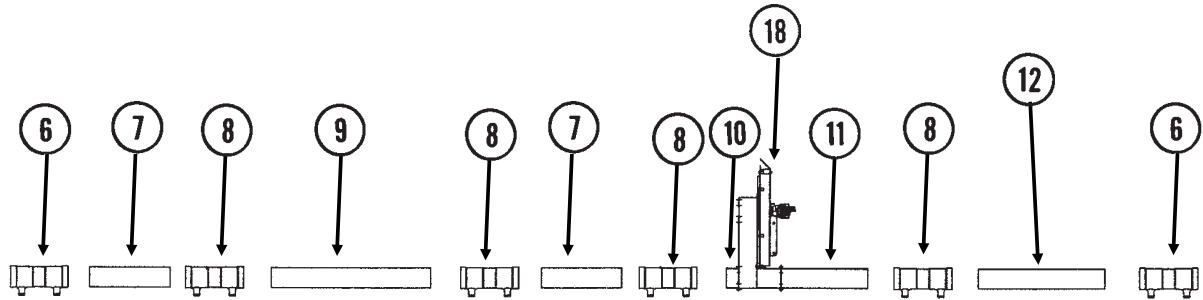
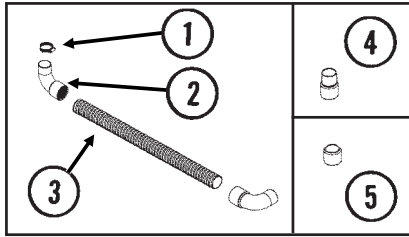
# MANIFOLDS AND DISTRIBUTION HOSES, 24 ROW 22"

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# MANIFOLDS AND DISTRIBUTION HOSES, 24 ROW 30"

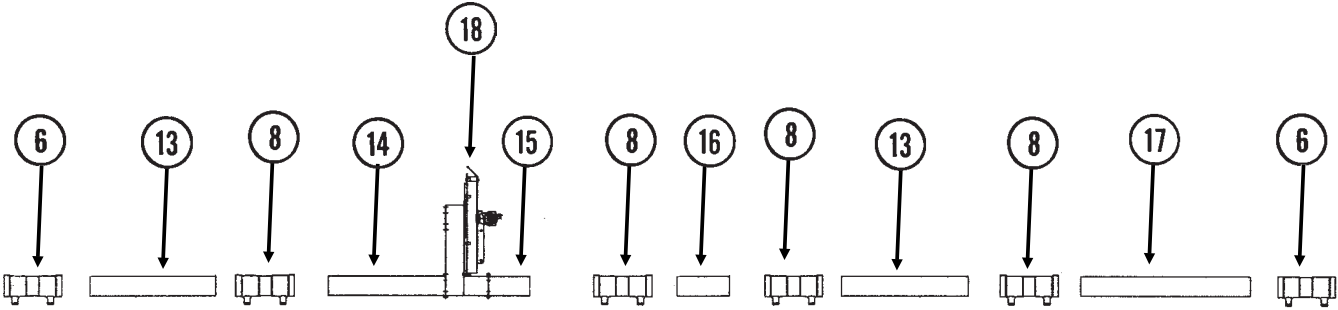
(FF112/FF133)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10676	24	Hose Clamp, No. 36, Stainless Steel
2.	GD14626	32	Elbow, 90°, 2"
3.	GD15792-04	14	Hose, 2" x 36"
	GD15792-13	2	Hose, 2" x 50"
	GD15792-12	2	Hose, 2" x 44"
	GD15792-22	2	Hose, 2" x 58"
	GD15792-24	4	Hose, 2" x 40"
4.	GD14627	16	Coupler, 2"
5.	G11147	-	Cap, 2"
6.	GD15850	4	Manifold, 21" (Open One End)
7.	GD15856-26	2	Pipe, 6" x 27"
8.	GD15799	8	Manifold, 21" (Open Both Ends)
9.	GD15856-18	1	Pipe, 6" x 53 1/2"
10.	GA13195	1	Manifold Flange, 4"
11.	GA13194	1	Manifold Flange, 29"
12.	GD15856-07	1	Pipe, 6" x 42"
13.	GD15856-32	1	Pipe, 6" x 42 1/2"
14.	GA13193	1	Manifold Flange, 39 1/4"
15.	GA13192	1	Manifold Flange, 14"
16.	GD15856-05	1	Pipe, 6" x 17 1/2"
17.	GD15856-37	1	Pipe, 6" x 57 1/2"
18.	-	-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P46 And P47

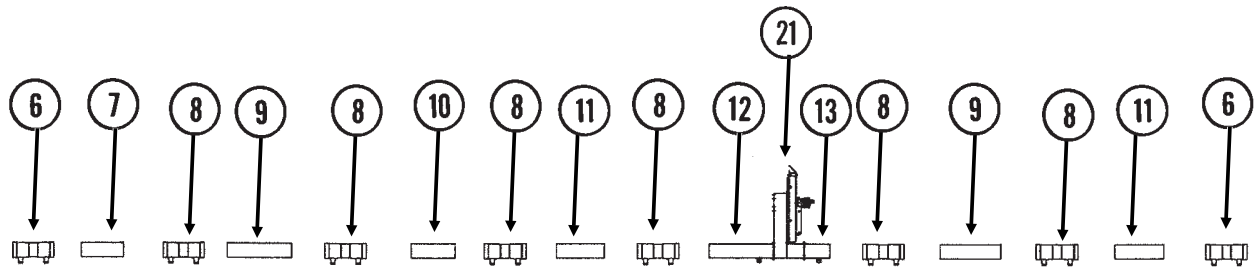
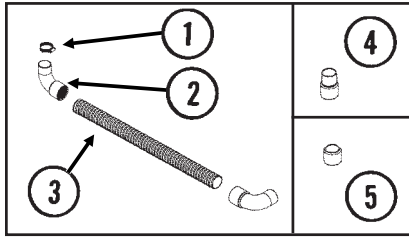
# MANIFOLDS AND DISTRIBUTION HOSES, 24 ROW 30"

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# MANIFOLDS AND DISTRIBUTION HOSES, 36 ROW 20"

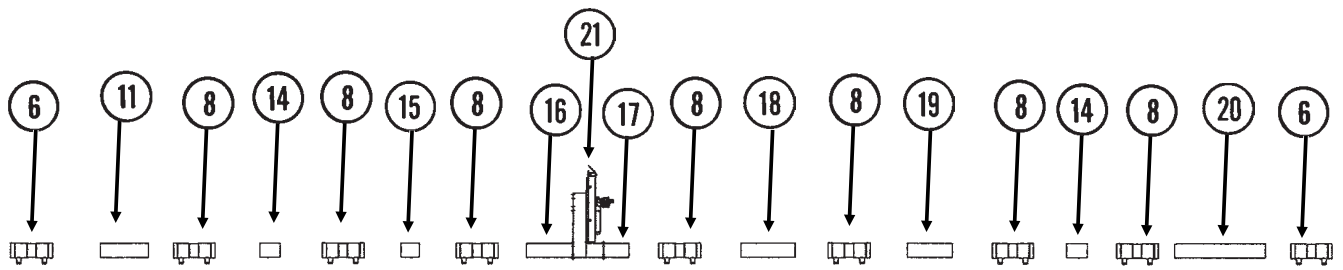
(FF112/FF134)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10676	24	Hose Clamp, No. 36, Stainless Steel
2.	GD14626	41	Elbow, 90°, 2"
3.	GD15792-04	12	Hose, 2" x 36"
	GD15792-12	4	Hose, 2" x 44"
	GD15792-09	13	Hose, 2" x 30"
	GD15792-22	1	Hose, 2" x 58"
	GD15792-24	6	Hose, 2" x 40"
4.	GD14627	31	Coupler, 2"
5.	G11147	-	Cap, 2"
6.	GD15850	4	Manifold, 21" (Open One End)
7.	GD15856-02	2	Pipe, 6" x 20"
8.	GD15799	13	Manifold, 21" (Open Both Ends)
9.	GD15856-33	1	Pipe, 6" x 28 1/2"
10.	GD15856-34	1	Pipe, 6" x 20 1/2"
11.	GD15856-20	3	Pipe, 6" x 22 1/2"
12.	GA13184	1	Manifold Flange, 30 3/4"
13.	GA13183	1	Manifold Flange, 12 1/4"
14.	GD15856-29	1	Pipe, 6" x 9 1/2"
15.	GD15856-36	1	Pipe, 6" x 8 1/2"
16.	GA13182	1	Manifold Flange, 22"
17.	GA12142	1	Manifold Flange, 12"
18.	GD15856-30	1	Pipe, 6" x 25 1/4"
19.	GD15856-31	1	Pipe, 6" x 21"
20.	GD15856-32	1	Pipe, 6" x 42 1/2"
21.	-	-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P46 And P47

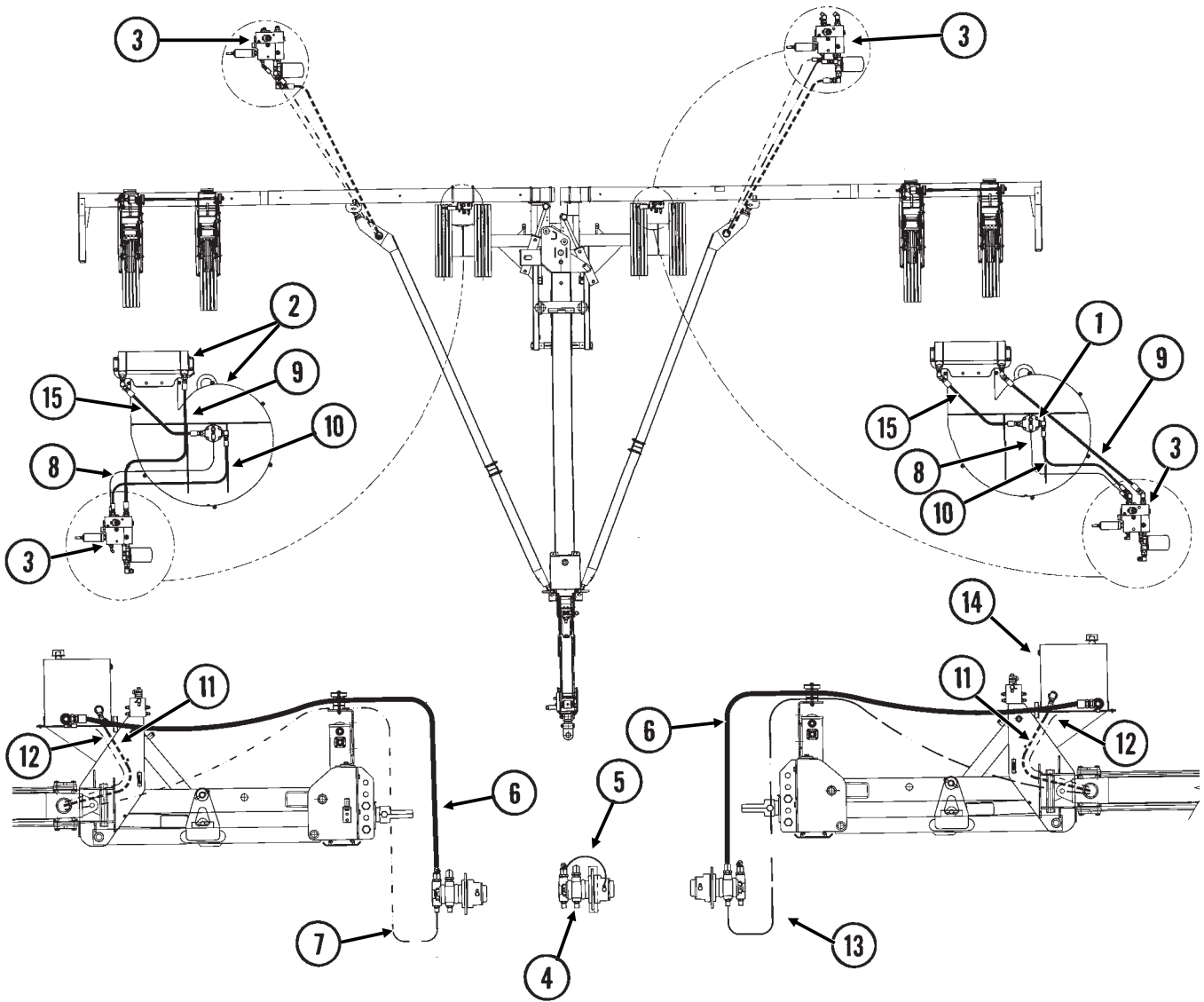
# MANIFOLDS AND DISTRIBUTION HOSES, 36 ROW 20"

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# VACUUM FAN HYDRAULIC COMPONENTS

(FF110)





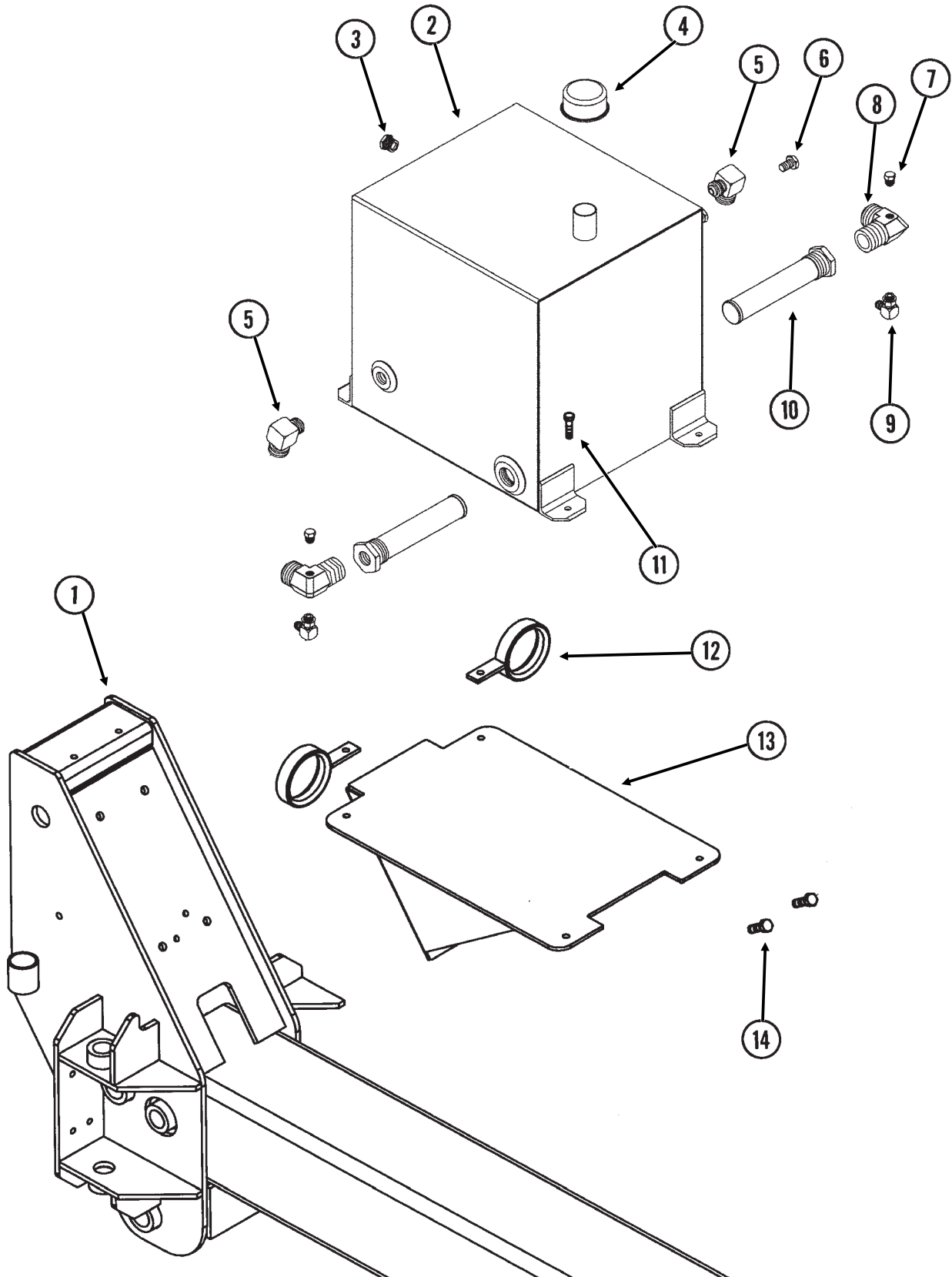
# VACUUM FAN HYDRAULIC COMPONENTS

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Vacuum Fan Hydraulic Motor Assembly", Page P65
2.		-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P46 And P47
3.		-	See "Vacuum Fan Motor Valve Block Assembly", Pages P66-P69
4.		-	See "PTO Pump Assembly", Pages P70 And P71
5.	*A3292	1	Hose Assembly, 3/8" x 22"
6.	*A11800	2	Hose Assembly, 1 1/4" x 123"
7.	*A11421	1	Hose Assembly, 5/8" x 408", 24 Row 20" And 24 Row 22"
	*A11433	-	Hose Assembly, 5/8" x 424", 24 Row 30" And 36 Row 20"
8.	*A12051	2	Hose Assembly, 3/8" x 36"
9.	*A3392	2	Hose Assembly, 3/4" x 50"
10.	*A11431	2	Hose Assembly, 5/8" x 34"
11.	*A3398	2	Hose Assembly, 3/4" x 274", 24 Row 20" And 24 Row 22"
	*A12904	-	Hose Assembly, 3/4" x 330", 24 Row 30" And 36 Row 20"
12.	*A12031	2	Hose Assembly, 3/8" x 284", 24 Row 20" And 24 Row 22"
	*A12052	-	Hose Assembly, 3/8" x 340", 24 Row 30" And 36 Row 20"
13.	*A11422	1	Hose Assembly, 5/8" x 358", 24 Row 20" And 24 Row 22"
	*A11432	-	Hose Assembly, 5/8" x 412", 24 Row 30" And 36 Row 20"
14.		-	See "Vacuum Fan Reservoir Assembly", Pages P62 And P63
15.	*A3381	2	Hose Assembly, 3/4" x 26"

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

# VACUUM FAN RESERVOIR ASSEMBLY

(FF105a)



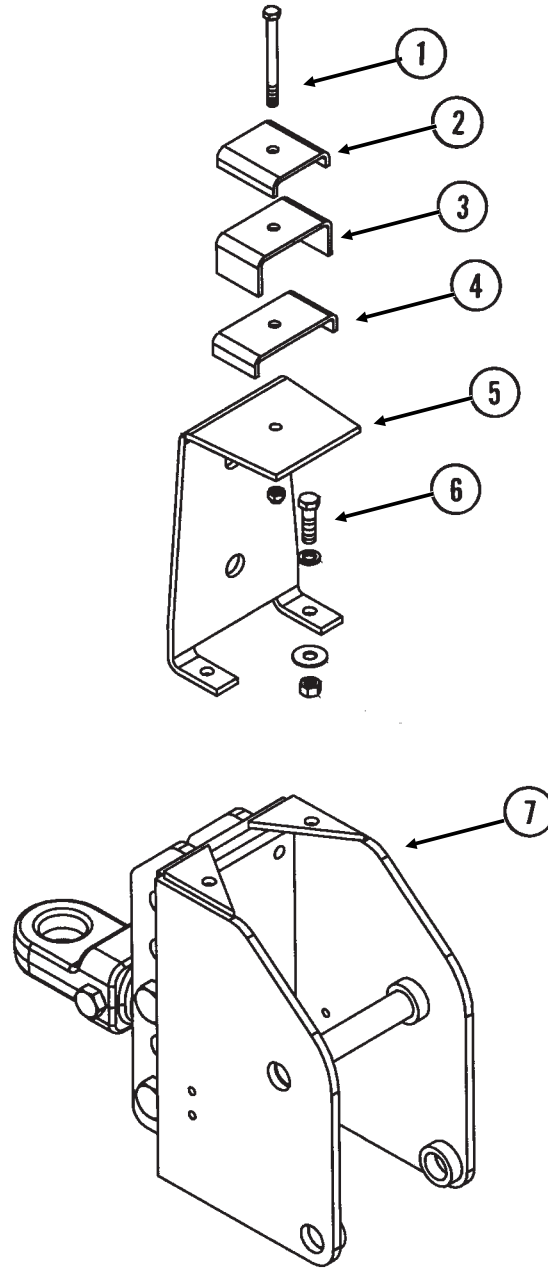
# VACUUM FAN RESERVOIR ASSEMBLY

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ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Front Hitch Assembly (Rear Section)", Pages P74 And P75
2.	GA11696	1	Reservoir
3.	GD17091	1	Liquid Level Sight
4.	GD16932	1	Cap
5.	G2501-12-16	2	Elbow, 90°, 1 1/16"-12 Male JIC To 1" NPT
6.	G5406-08	1	Plug, 3/4" NPT Hex Head
7.	G2408-06	2	Plug, 9/16"-18 JIC
8.	GD17027	2	Elbow, 90°, 1 5/8"-18 Male JIC To 1" NPT W/ 9/16" Port
9.	G6801-06	2	Elbow W/O-Ring, 90°, 9/16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
10.	GD16993	2	Strainer
11.	G10003	6	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10108	6	Lock Nut, 3/8"-16
12.	GA11697	2	Hose Guide
13.	GA11695	1	Mount
14.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	4	Lock Nut, 1/2"-13

# RESERVOIR HOSE SUPPORTS/CLAMPS ON HITCH

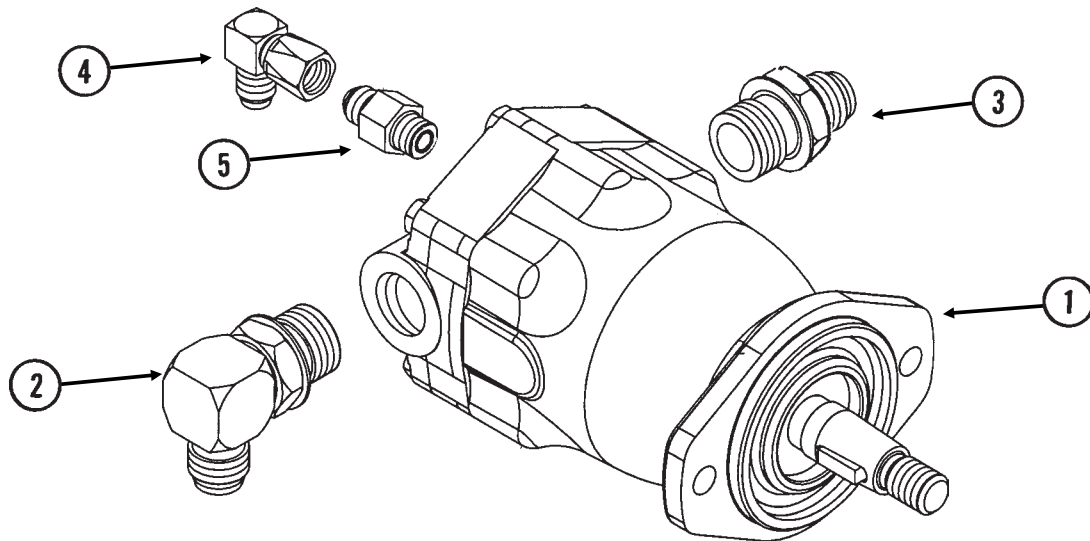
(FF105c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10980	1	Hex Head Cap Screw, 1/2"-13 x 5 1/2"
	G10111	1	Lock Nut, 1/2"-13
2.	GD0740	1	Hose Clamp, 3/4" x 4" x 3 1/2"
3.	GD17024	1	Hose Clamp, 2" x 3" x 4 3/4"
4.	GD8188	1	Hose Clamp, 7/8" x 3" x 5 3/8"
5.	GD16922	1	Support
6.	G10006	2	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
	G10230	2	Lock Washer, 5/8"
	G10217	2	Washer, 5/8" USS
	G10104	2	Hex Nut, 5/8"-11
7.	-	-	See "Front Hitch Assembly", Pages P72 And P73

# VACUUM FAN HYDRAULIC MOTOR ASSEMBLY

(METR21b)

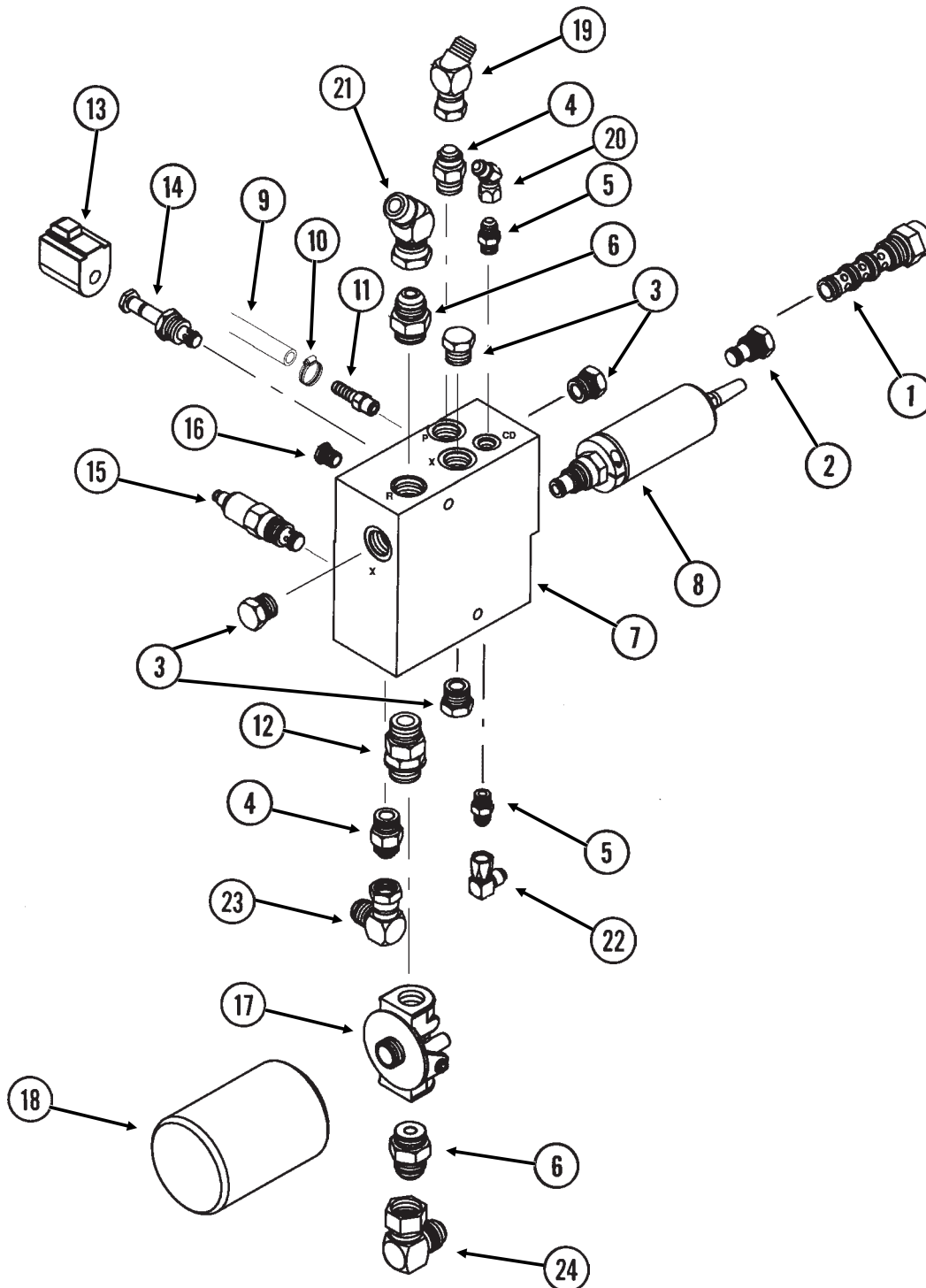


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA10149	1	Hydraulic Motor
	GR1734	-	Seal Kit
2.	G6801-10-12	1	Elbow W/O-Ring, 90°, 7/8"-14 Male JIC To 1 1/16"-12 O-Ring
	GR1467	-	O-Ring
3.	G6400-12	2	Connector W/O-Ring, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
4.	G6500-06	1	Swivel Elbow, 90°, 9/16"-18 Male JIC To Female
5.	G6400-06	1	Connector W/O-Ring, 9/16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring

# VACUUM FAN MOTOR VALVE BLOCK ASSEMBLY, 24 ROW 20", 24 ROW 22", 24 ROW 30" AND 36 ROW 20"

(FF107-A11907)

**NOTE:** Used on L.H. side of planter.



# VACUUM FAN MOTOR VALVE BLOCK ASSEMBLY, 24 ROW 20", 24 ROW 22", 24 ROW 30" AND 36 ROW 20"

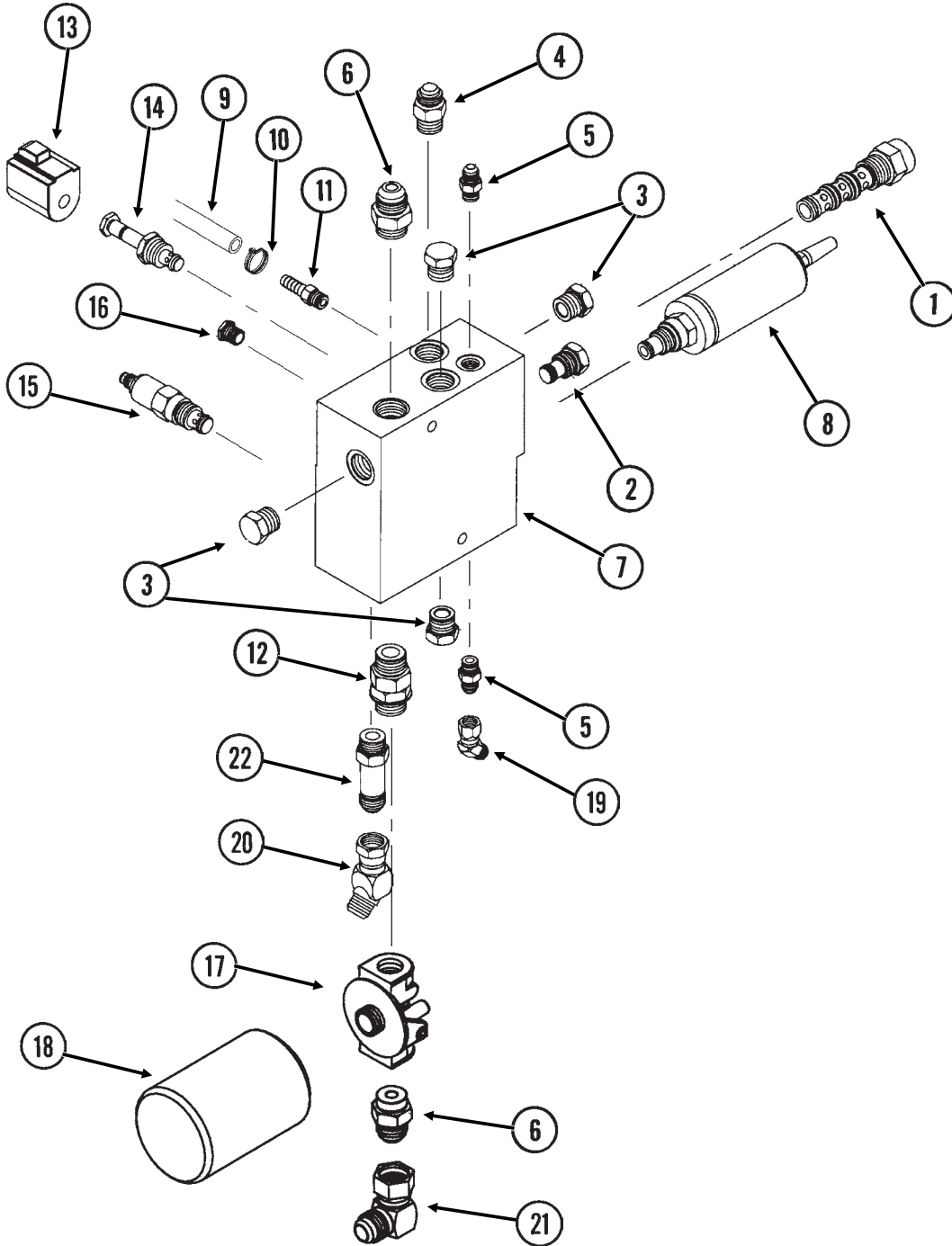
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11682	1	Pressure Compensating Element
2.	GA11934	1	Relief Valve Cartridge
3.	G6408-10	4	Plug W/O-Ring, 7/8"-14 O-Ring
	GR1466	-	O-Ring
4.	G6400-10	2	Connector W/O-Ring, 7/8"-14 Male JIC To O-Ring
	GR1466	-	O-Ring
5.	G6400-06	2	Connector W/O-Ring, 9/16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
6.	G6400-12	2	Connector W/O-Ring, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
7.	GD16873	1	Valve Block
8.	GA11799	1	Flow Control Cartridge W/Terminals
9.	GD6279-05	1	Clear Plastic Hose, 9/16" O.D. x 60"
10.	G10681	1	Hose Clamp, No. 6
11.	GD11700	1	Adapter, 1/4" NPT To 3/8" Barb
12.	G6403-NWO-12	1	Adjustable Union, 1 1/16"-12 O-Ring
	GR1467	-	O-Ring
13.	GA11900	1	Coil W/Terminals
14.	GA11680	1	Cartridge
15.	GA11679	1	Relief Valve
16.	G6408-H06-O	1	Hex Socket Head Plug W/O-Ring, 9/16"-18 O-Ring
	GR1045	-	O-Ring
17.	GD16038	1	Filter Head
18.	GD16037	1	Oil Filter, 10 Micron
19.	G6500-10	1	Swivel Elbow, 45°, 7/8"-14 Male JIC To Female
20.	G6500-06	1	Swivel Elbow, 45°, 9/16"-18 Male JIC To Female
21.	G6500-12	1	Swivel Elbow, 45°, 1 1/16"-12 Male JIC To Female
22.	G6500-06	1	Swivel Elbow, 90°, 9/16"-18 Male JIC To Female
23.	G6500-10	1	Swivel Elbow, 90°, 7/8"-14 Male JIC To Female
24.	G6500-12	1	Swivel Elbow, 90°, 1 1/16"-12 Male JIC To Female

# VACUUM FAN MOTOR VALVE BLOCK ASSEMBLY, ALL SIZES

(FF106-A11908)

**NOTE:** Used on both sides of 16 Row 38" planters. Used on R.H. side of 24 Row 20"/22"/30" and 36 Row 20" planters.





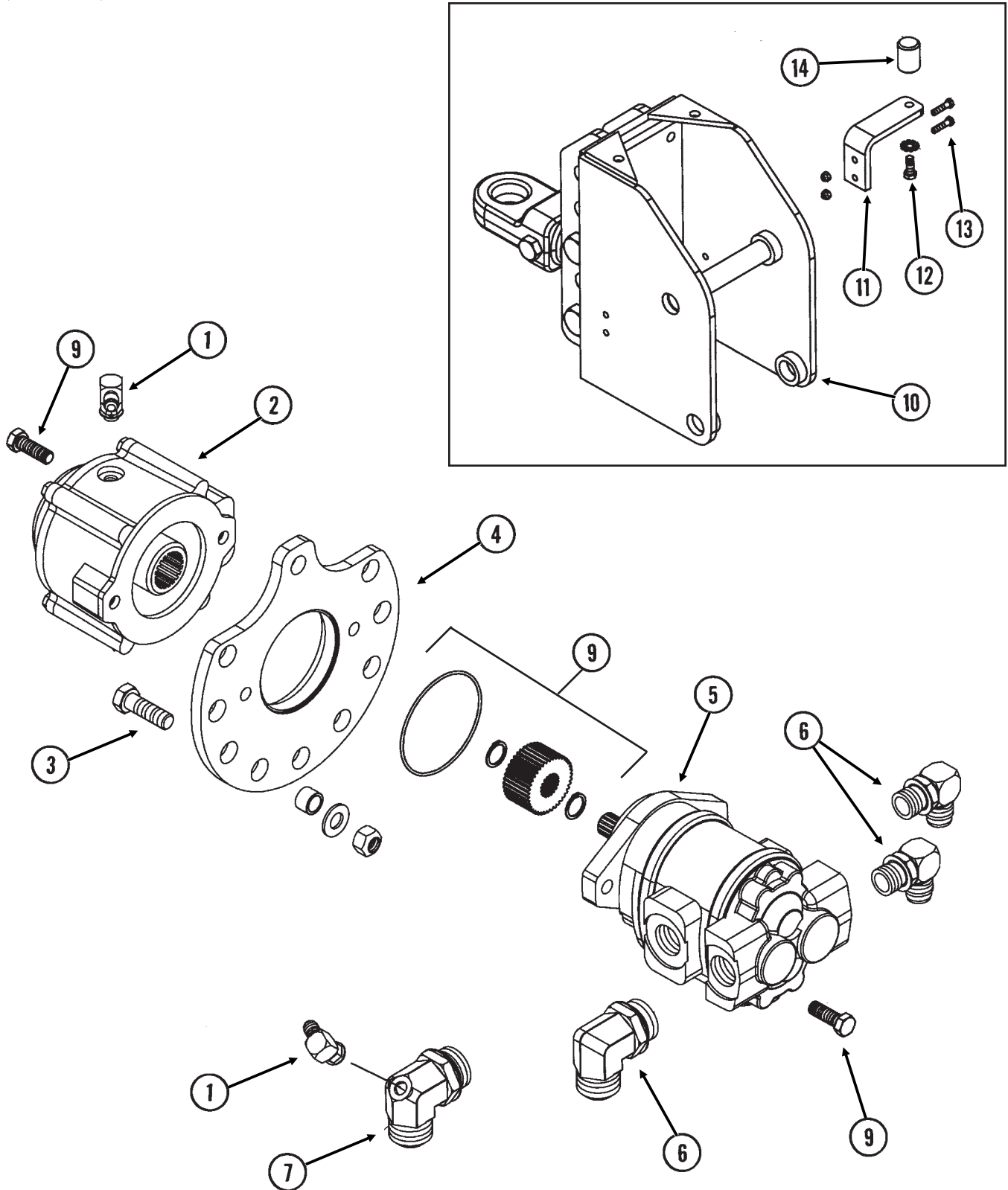
# VACUUM FAN MOTOR VALVE BLOCK ASSEMBLY, ALL SIZES

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11682	1	Pressure Compensating Element
2.	GA11934	1	Relief Valve Cartridge
3.	G6408-10	4	Plug W/O-Ring, 7/8"-14 O-Ring
	GR1466	-	O-Ring
4.	G6400-10	1	Connector W/O-Ring, 7/8"-14 Male JIC To O-Ring
	GR1466	-	O-Ring
5.	G6400-06	2	Connector W/O-Ring, 9/16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
6.	G6400-12	2	Connector W/O-Ring, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
7.	GD16873	1	Valve Block
8.	GA11799	1	Flow Control Cartridge W/Terminals
9.	GD6279-05	1	Clear Plastic Hose, 9/16" O.D. x 60"
10.	G10681	1	Hose Clamp, No. 6
11.	GD11700	1	Adapter, 1/4" NPT To 3/8" Barb
12.	G6403-NWO-12	1	Adjustable Union, 1 1/16"-12 O-Ring
	GR1467	-	O-Ring
13.	GA11900	1	Coil W/Terminals
14.	GA11680	1	Cartridge
15.	GA11679	1	Relief Valve
16.	G6408-H06-O	1	Hex Socket Head Plug W/O-Ring, 9/16"-18 O-Ring
	GR1045	-	O-Ring
17.	GD16038	1	Filter Head
18.	GD16037	1	Oil Filter, 10 Micron
19.	G6502-06	1	Swivel Elbow, 45°, 9/16"-18 Male JIC To Female
20.	G6502-10	1	Swivel Elbow, 45°, 7/8"-14 Male JIC To Female
21.	G6500-12	1	Swivel Elbow, 90°, 1 1/16"-12 Male JIC To Female
22.	G6400-L-10	1	Long Connector, W/O-Ring, 7/8"-14 Male JIC To O-Ring
	GR1466	-	O-Ring

# PTO PUMP ASSEMBLY

(FWD123/FF105c)



# PTO PUMP ASSEMBLY

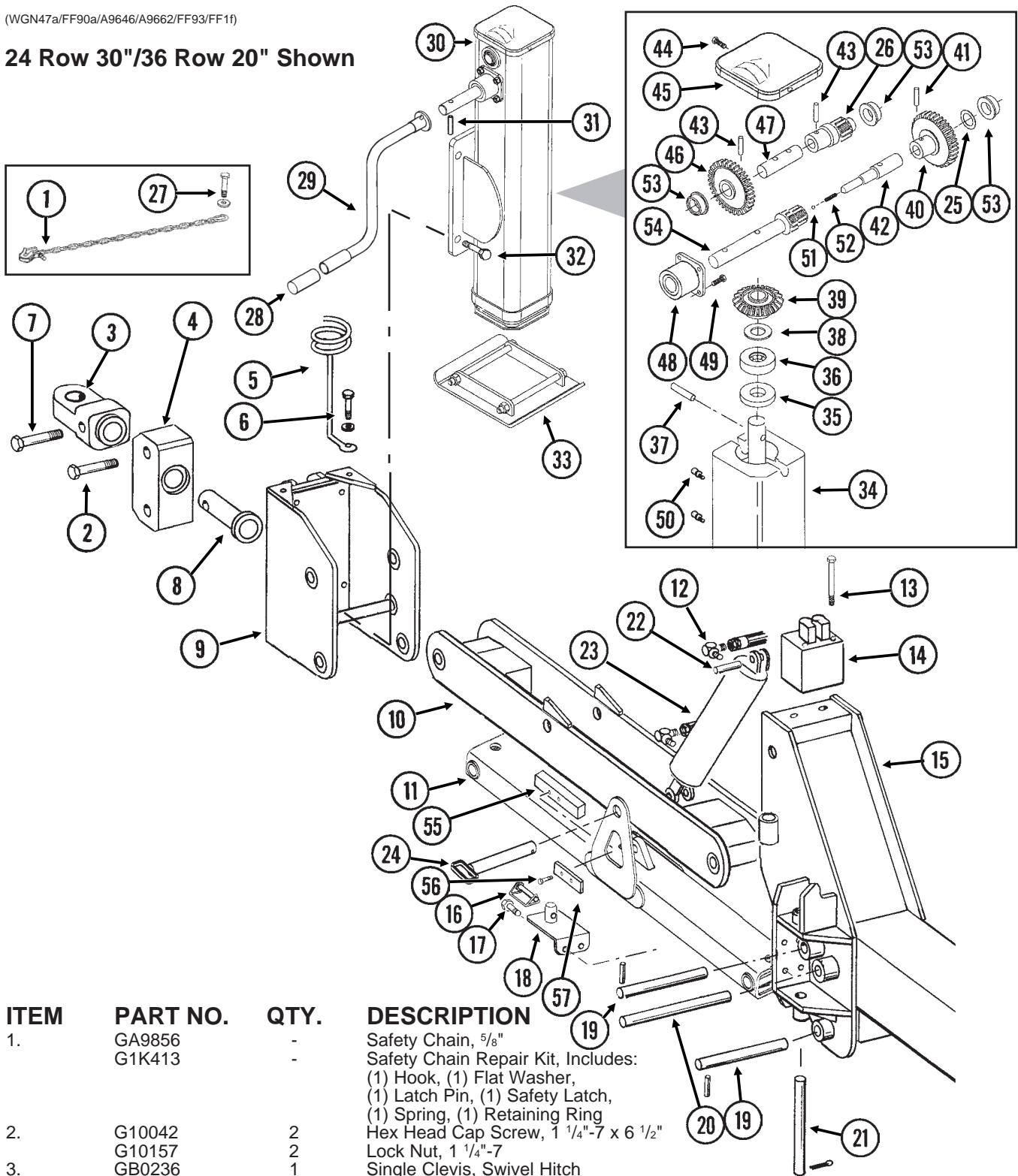
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6801-06	2	Elbow W/O-Ring, 90°, 9/16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
2.	GA11677	1	Planetary Gearbox
3.	G10008	5	Hex Head Cap Screw, 5/8"-11 x 2"
	GB0218	5	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
	GD7805	5	Special Washer, 5/8", Hardened
	G10107	5	Lock Nut, 5/8"-11
4.	GD17215	1	Plate
5.	GA11676	1	PTO Pump
6.	G6801-12	2	Elbow W/O-Ring, 90°, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
7.	GD16994	1	Special Elbow W/O-Ring, 90°, 1 5/8"-12 Male JIC To O-Ring
	GR1787	-	O-Ring
8.	G6801-20	1	Elbow W/O-Ring, 90°, 1 5/8"-12 Male JIC To O-Ring
	GR1787	-	O-Ring
9.	GA11678	1	Gearbox Mounting Kit, Includes: (4) Bolts, (1) O-Ring, (2) Retainers, (1) Gear, (2) Hex Head Cap Screws
10.		-	See "Front Hitch Assembly, Pages P72 And P73
11.	GD17087	1	Bracket (PTO Pump Storage)
12.	G10037	1	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10527	1	Lock Washer, 1/2" Internal/External
13.	G10003	2	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10108	2	Lock Nut, 3/8"-16
14.	GD16923	1	Sleeve

# FRONT HITCH ASSEMBLY/SAFETY CHAIN

(WGN47a/FF90a/A9646/A9662/FF93/FF1f)

24 Row 30"/36 Row 20" Shown



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA9856 G1K413	- -	Safety Chain, 5/8" Safety Chain Repair Kit, Includes: (1) Hook, (1) Flat Washer, (1) Latch Pin, (1) Safety Latch, (1) Spring, (1) Retaining Ring
2.	G10042 G10157	2 2	Hex Head Cap Screw, 1 1/4"-7 x 6 1/2" Lock Nut, 1 1/4"-7
3.	GB0236	1	Single Clevis, Swivel Hitch
4.	GA9526 G10643	1 -	Swivel Block W/Grease Fitting Grease Fitting, 45°, 1/4"-28
5.	GD9349	1	Hose Holder
6.	G10006 G10230 G10217 G10104	1 1 1 1	Hex Head Cap Screw, 5/8"-11 x 2 1/4" Lock Washer, 5/8" Washer, 5/8" USS (If Applicable) Hex Nut, 5/8"-11
7.	G10151 G10396	2 2	Hex Head Cap Screw, 1"-8 x 6" Lock Nut, 1"-8
8.	GD13377	1	Spindle
9.	GA9459	1	Hitch Cap

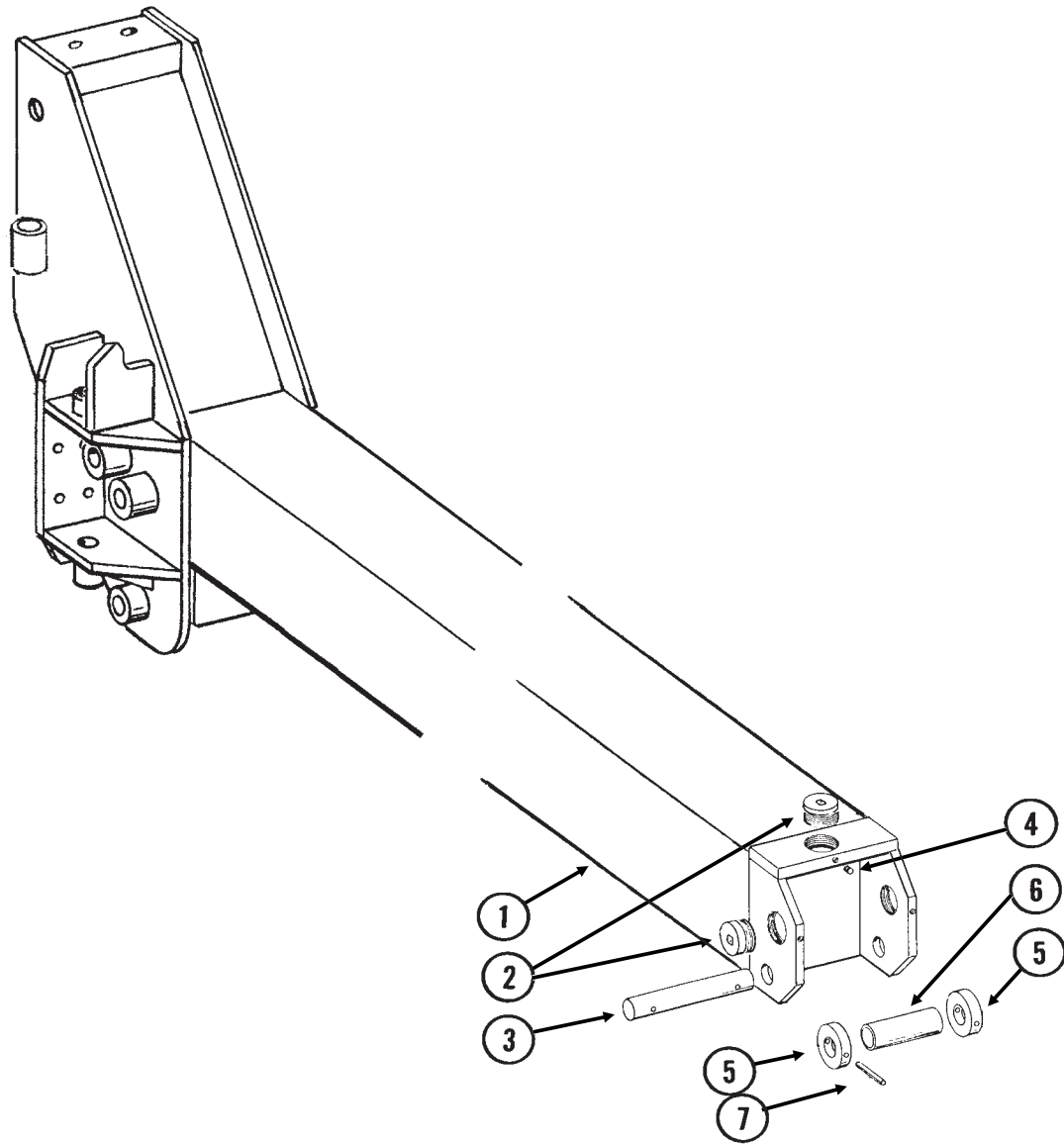
# FRONT HITCH ASSEMBLY/SAFETY CHAIN

ITEM	PART NO.	QTY.	DESCRIPTION
10.	GA9894	1	Upper Hitch Link W/Grease Fittings
	G10640	-	Grease Fitting, 1/4"-28
11.	GA10043	1	Lower Hitch Link W/Grease Fittings
	G10640	-	Grease Fitting, 1/4"-28
12.	G6801-08	2	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
13.	G10754	2	Hex Head Cap Screw, 5/16"-18 x 8"
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18
14.		-	See "Valve Block On Front Hitch", Page P120
15.		-	See "Front Hitch Assembly (Rear Section)", Page P74
16.	GD10705	1	Locking Clip Pin, 1/4" x 2 1/2"
17.	G10019	2	Hex Head Cap Screw, 5/16"-18 x 1"
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18
18.	GA9654	1	Handle Mount
19.	GD9464-01	4	Pin, 1 1/2" x 11 1/4"
	G10475	8	Spring Pin, 1/4" x 2 1/4"
20.	GD0671	1	Pin, 1 1/4" x 10 3/4"
	G10460	2	Cotter Pin, 1/4" x 2"
21.	GD4014	2	Pin, 1 1/4" x 12"
	G10460	4	Cotter Pin, 1/4" x 2"
22.	GR0717	2	Pin W/Clip
	GR0193	-	Hair Pin Clip
23.		-	See "Hitch Parallel Linkage Cylinder", Page P119
24.	GA6813	1	Parallel Linkage Lock Pin
	GD14217	1	Tab Lock Pin, 7/16" x 1 1/2"
25.	G11032	1	Shim
26.	GD13605	1	Output Spur Gear
27.	G10494	1	Hex Head Cap Screw, 1 1/4"-7 x 3 1/2"
	GD10646	1	Special Washer
	G10226	1	Washer, 1 1/4" SAE
	G10157	1	Lock Nut, 1 1/4"-7
28.	G11012	1	Cover
29.	GA9655	1	Handle
30.	GA9646	1	2-Speed Jack Assembly, Less Handle And Foot Assembly
31.	G11076	1	Spring Pin, M10 x 50 (Metric)
32.	G10006	4	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
33.	GA9662	1	Jack Foot Assembly W/Hardware
	G11034	-	Hex Head Cap Screw, 1/2"-13 x 7"
	G10111	-	Lock Nut, 1/2"-13
34.	GA9663	1	Lower Leg Assembly
35.	GD13598	1	Collar
36.	GA9665	1	Thrust Bearing
37.	G10840	1	Dowel Pin, 3/8" x 1 3/4"
38.	GD13600	1	Thrust Washer
39.	GD13601	1	Bevel Gear
40.	GD13602	1	Output Cluster Gear
41.	G11030	1	Spring Pin, 3/8" x 1 3/4"
42.	GD13603	1	Output Shaft
43.	G11031	2	Spring Pin, 5/16" x 1 1/2"
44.	G10960	2	Flanged Whiz-Lock Screw, 1/4"-20 x 5/8", No Serration
45.	GD13607	1	Cover
46.	GD13606	1	Input Spur Gear
47.	GD13608	1	Output Shaft
48.	GA9666	1	Shaft Housing
49.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
	G10109	4	Lock Nut, 5/16"-18, Grade 8
50.	G10641	2	Grease Fitting, 1/8" NPT
51.	GD13609	2	Detent Ball
52.	GD13610	1	Detent Spring
53.	GD13604	3	Bushing
54.	GD13611	1	Input Shaft
55.	GD15787	2	Stop Block, 1 1/2" x 8"
56.	GD15785	2	Mount, 1 1/2" x 5 1/2"
57.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	4	Lock Washer, 1/2"
A.	GA9504	-	2-Speed Jack/Mount Sub-Assembly (Items 2-9, 30, 31 And 33)

# FRONT HITCH ASSEMBLY (REAR SECTION)

PHA029/PFA057(FF2c)

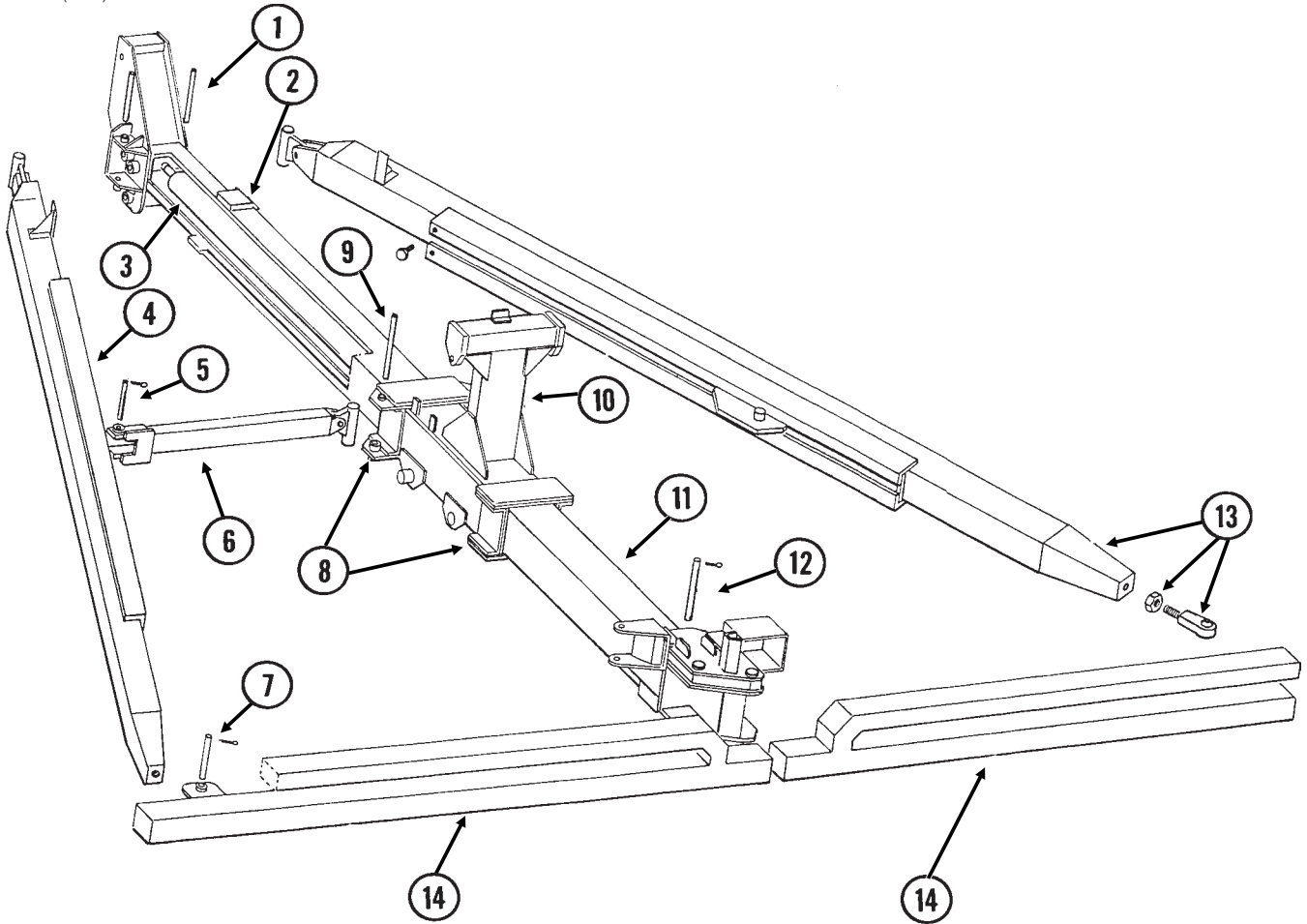
24 Row 30"/36 Row 20" Shown



ITEM	PART NO.	QTY.	DESCRIPTION
1.	A8974	1	Front Hitch, 199 <sup>5</sup> / <sub>8</sub> ", 24 Row 30" And 36 Row 20" <b>(Non-Stock Item)</b>
	A8973	1	Front Hitch, 166 <sup>5</sup> / <sub>8</sub> ", 16 Row 38", 24 Row 20" And 24 Row 22" <b>(Non-Stock Item)</b>
2.	GD9357	3	Bronze Adjusting Plug
3.	GD9362	1	Mounting Pin
4.	G10760	3	Hex Socket Set Screw, <sup>3</sup> / <sub>8</sub> "-16 x 1/2"
5.	GD9366	2	Roller
6.	GD9367	1	Sleeve
7.	G10293	2	Spring Pin, <sup>3</sup> / <sub>8</sub> " x 3"

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

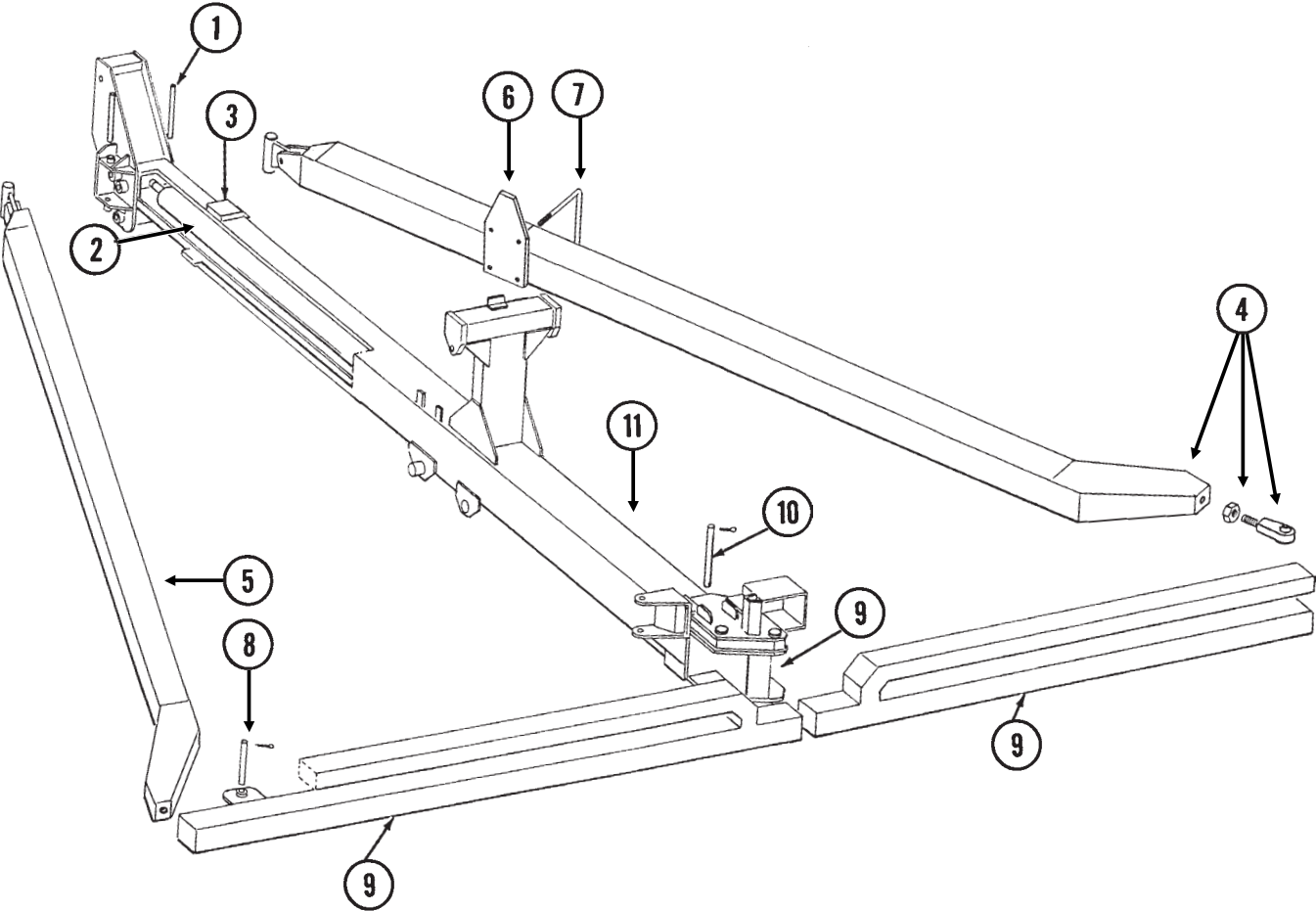
PFA060(FF3c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Front Hitch Assembly/Safety Chain", Pages P72 And P73
2.		-	See "Front Wear Pads", Page P78
3.		-	See "Tongue Cylinder", Page P118
4.	GA7453	1	L.H. Draft Link W/Split Locking Nut, Socket Head Screw And Joint
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Hex Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
5.	GD9542-03	2	Pin, 1 1/4" x 6 1/8"
	G10460	4	Cotter Pin, 1/4" x 2"
6.	GA6654	2	Axle Link
7.	GD3421	2	Pin, 1 1/4" x 8 3/4"
	G10460	4	Cotter Pin, 1/4" x 2"
8.		-	See "Rear Wear Pads", Page P79
9.	GD9542-04	2	Pin, 1 1/4" x 15"
	G10460	4	Cotter Pin, 1/4" x 2"
10.		-	See "Tower Assembly", Pages P80 And P81
11.	A12535	1	Rear Hitch <b>(Non-Stock Item)</b>
12.	GD5506	1	Pin, 1 1/4" x 16"
	G10460	2	Cotter Pin, 1/4" x 2"
13.	GA7454	1	R.H. Draft Link W/Split Locking Nut, Socket Head Screw And Joint
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Hex Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
14.		-	See "Hinge And Wing Assemblies", Pages P86 And P87

# HITCH AND LINKAGE ASSEMBLY, 16 ROW 30", 16 ROW 38", 24 ROW 20" AND 24 ROW 22"

PFA060/PFA061(FF62)





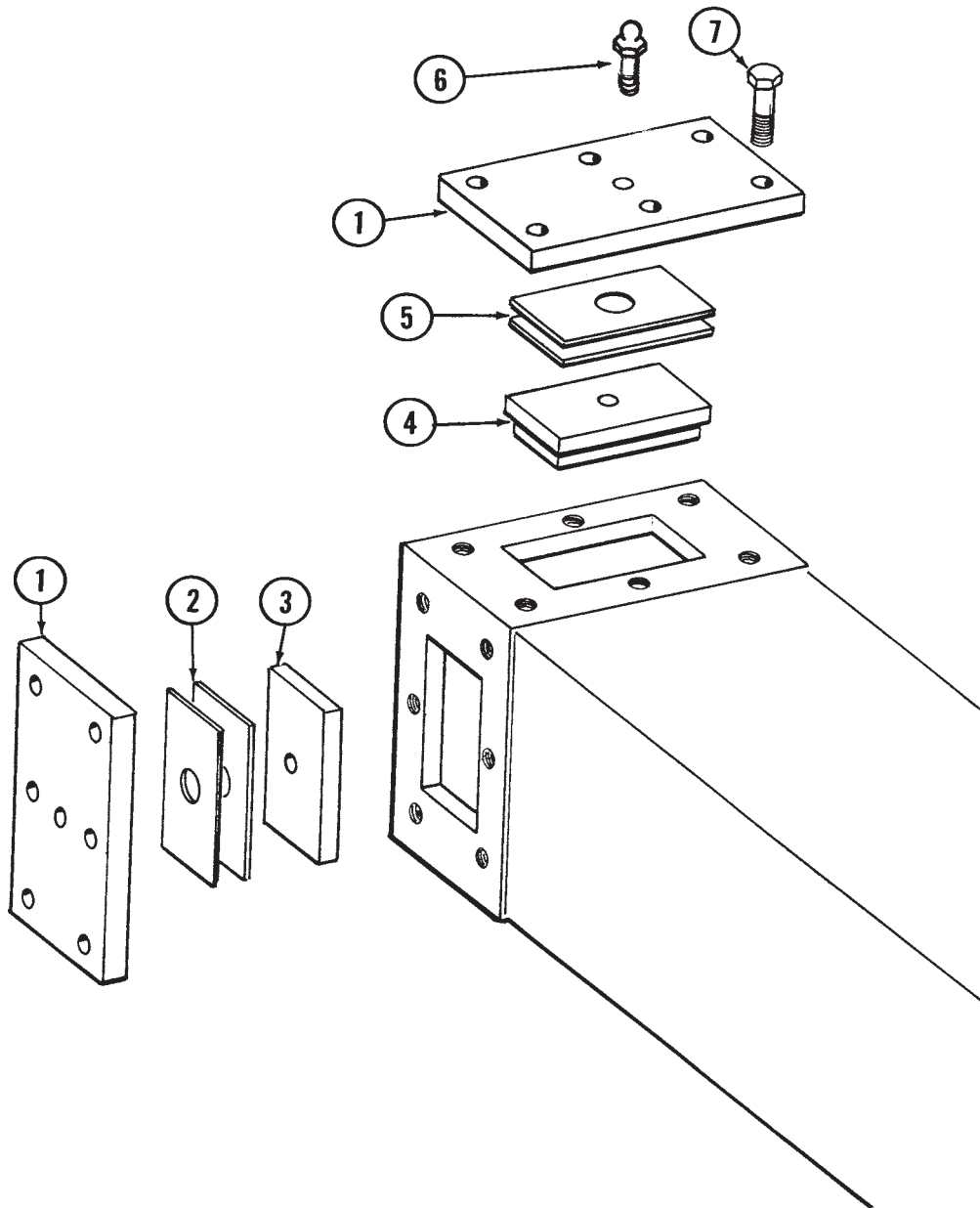
# HITCH AND LINKAGE ASSEMBLY, 16 ROW 30", 16 ROW 38", 24 ROW 20" AND 24 ROW 22"

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ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Front Hitch Assembly/Safety Chain", Pages P72 And P73
2.		-	See "Tongue Cylinder", Page P117
3.		-	See "Front Wear Pads", Page P78
4.	GA7476	1	R.H. Draft Link W/Split Locking Nut, Socket Head Screw And Joint, 24 Row 20" And 24 Row 22"
	GA11260	1	R.H. Draft Link W/Split Locking Nut, Socket Head Screw And Joint, 16 Row 38"
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Hex Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
5.	GA7475	1	L.H. Draft Link W/Split Locking Nut, Socket Head Screw And Joint, 16 Row 30", 24 Row 20" And 24 Row 22"
	GA11261	1	L.H. Draft Link W/Split Locking Nut, Socket Head Screw And Joint, 16 Row 38"
	GD10230	-	Split Locking Nut, 2"-12, Grade 2
	G10831	-	Hex Socket Head Screw, 1/4"-20 x 5/8"
	GA6660	-	Joint
6.	GA7490	2	Stop
7.	GD1113	4	U-Bolt, 5" x 7" x 5/8"-11
	G10230	8	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
8.	GD3421	2	Pin, 1 1/4" x 8 3/4"
	G10460	4	Cotter Pin, 1/4" x 2"
9.		-	See "Hinge And Wing Assemblies", Pages P86 And P87
10.	GD5506	1	Pin, 1 1/4" x 16"
	G10460	2	Cotter Pin, 1/4" x 2"
11.	A7473	1	Rear Hitch <b>(Non-Stock Item)</b>

# FRONT WEAR PADS, ALL SIZES

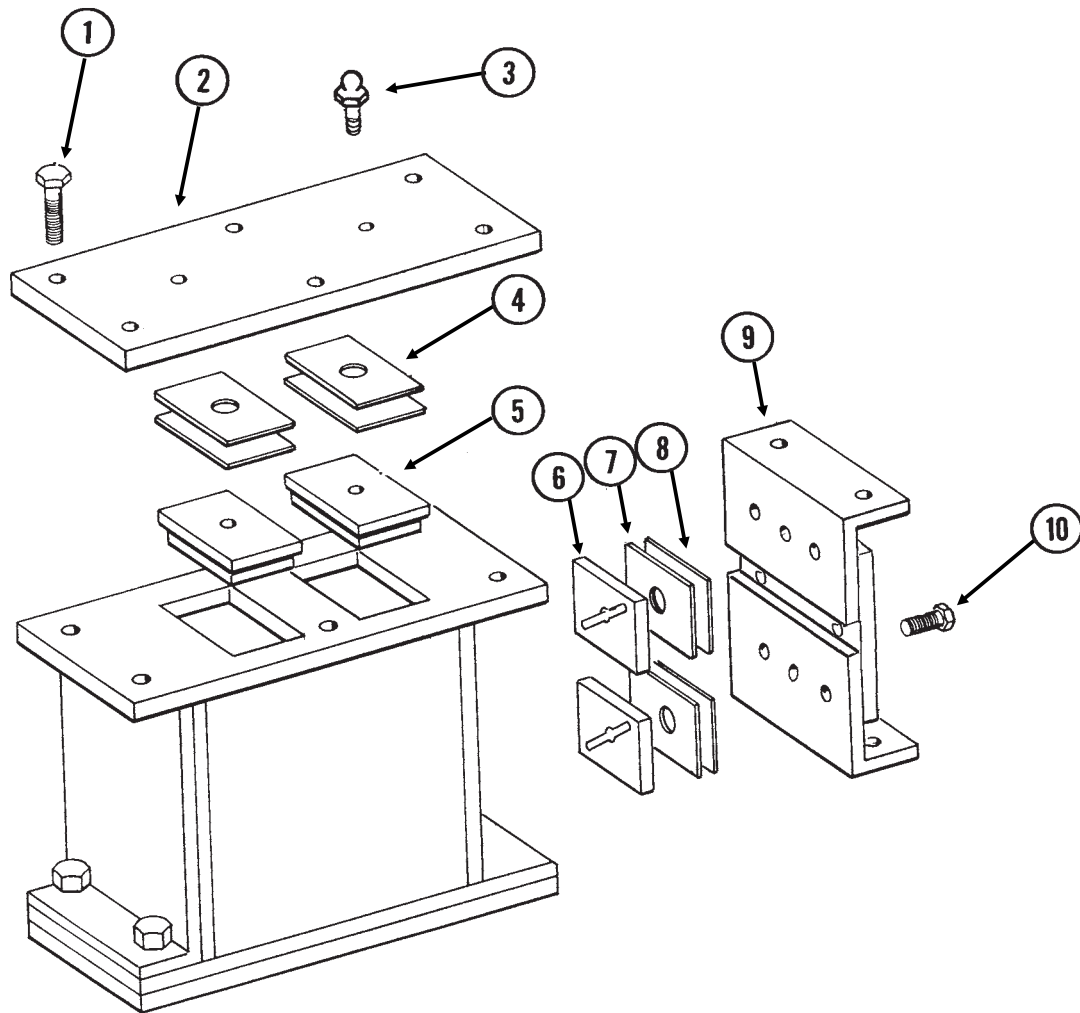
PFA059(FF4a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9467	4	Cap
2.	GD9465	2	Shim, $\frac{3}{8}$ "
	GD10981	-	Shim, $\frac{1}{4}$ " (As Required)
3.	GD9468	2	Bearing Pad
4.	GA6655	2	Retainer Pad
5.	GD9498	6	Shim, 12 Gauge
6.	G10763	4	Grease Fitting, Extended, $\frac{1}{8}$ "-27
7.	G10007	24	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 1 $\frac{1}{2}$ "
	G10230	24	Lock Washer, $\frac{5}{8}$ "

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

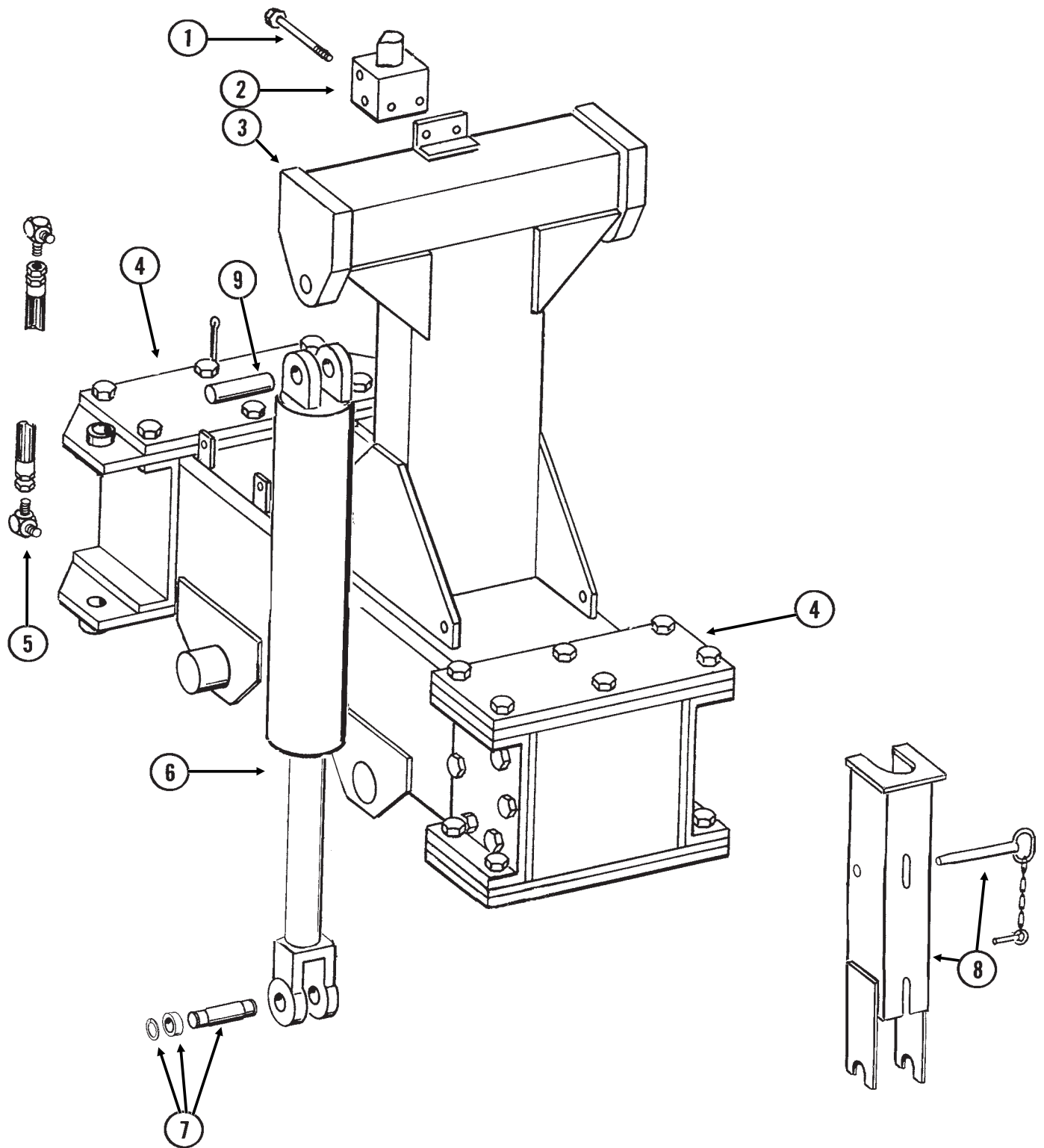
(FF5b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10802	16	Hex Head Cap Screw, $\frac{3}{4}$ "-10 x 2 $\frac{3}{4}$ "
	G10028	-	Hex Head Cap Screw, $\frac{3}{4}$ "-10 x 3"
	G10231	16	Lock Washer, $\frac{3}{4}$ "
	G10218	16	Washer, $\frac{3}{4}$ " USS
	G10105	16	Hex Nut, $\frac{3}{4}$ "-10
	2.	GD9469	4
GD18328		-	Retainer, 8" x 18 $\frac{3}{4}$ "
3.	G10763	16	Grease Fitting, Extended, $\frac{1}{8}$ "-27
4.	GD9498	16	Shim, 12 Gauge
5.	GA6655	8	Retainer Pad
6.	GD9468	8	Bearing Pad
7.	GD9465	8	Shim, $\frac{3}{8}$ "
	GD10981	-	Shim, $\frac{1}{4}$ " (As Required)
	GD9498	8	Shim, 12 Gauge
9.	GA12595	4	Retainer
10.	G10025	32	Hex Head Cap Screw, $\frac{3}{4}$ "-10 x 1 $\frac{1}{2}$ "
	G10231	32	Lock Washer, $\frac{3}{4}$ "
	G10215	32	Machine Bushing, $\frac{3}{4}$ ", 14 Gauge

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

PFA061(FF6c)



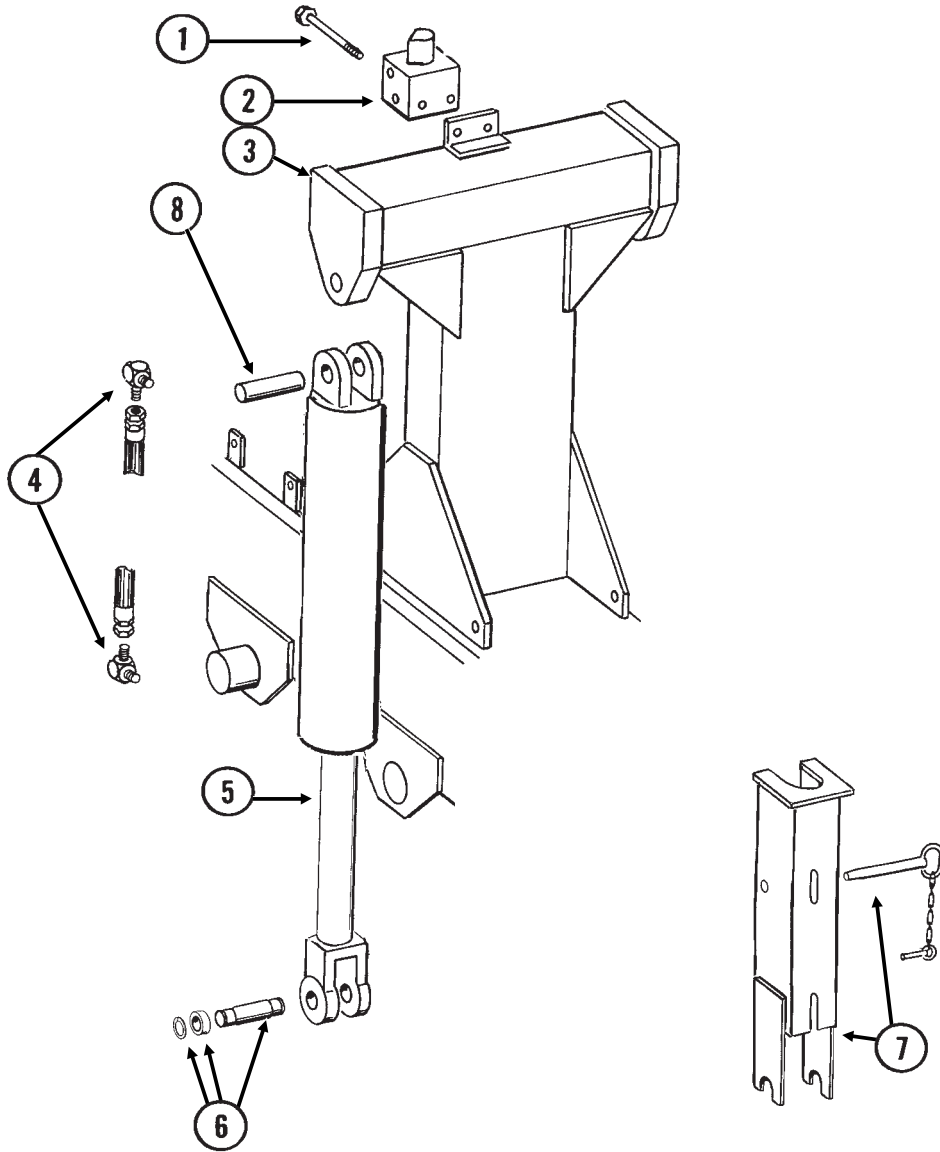
# TOWER ASSEMBLY, 24 ROW 30" AND 36 ROW 20"

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10326	2	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 3 $\frac{3}{4}$ "
	G10229	2	Lock Washer, $\frac{3}{8}$ "
	G10101	2	Hex Nut, $\frac{3}{8}$ "-16
2.		-	See "Valve Block On Tower Assembly", Page P121
3.	A6639	1	Axle Mount ( <b>Non-Stock Item</b> )
4.		-	See "Rear Wear Pads", Page P79
5.	G6801-08	4	Elbow W/O-Ring, 90°, $\frac{3}{4}$ "-16 Male JIC To O-Ring
	GR1037	-	O-Ring
6.		-	See "Slave Cylinder", Page P113
7.	GD12545	2	Pin, 1 $\frac{1}{4}$ " x 5 $\frac{1}{2}$ "
	GD12535	4	Special Bushing, 2" O.D. x 1" I.D. x $\frac{3}{4}$ " Long
	G10982	4	HD External Retaining Ring, 1"
8.	GA8971	1	Cylinder Lockup Bracket W/Pin Assembly
	GA8312	-	Pin W/Lynch Pin, 5 $\frac{1}{2}$ "
9.	GD12585	2	Pin, 1 $\frac{1}{4}$ " x 4 $\frac{1}{2}$ "
	G10460	4	Cotter Pin, $\frac{1}{4}$ " x 2"

# TOWER ASSEMBLY, 16 ROW 30", 16 ROW 38", 24 ROW 20" AND 24 ROW 22"

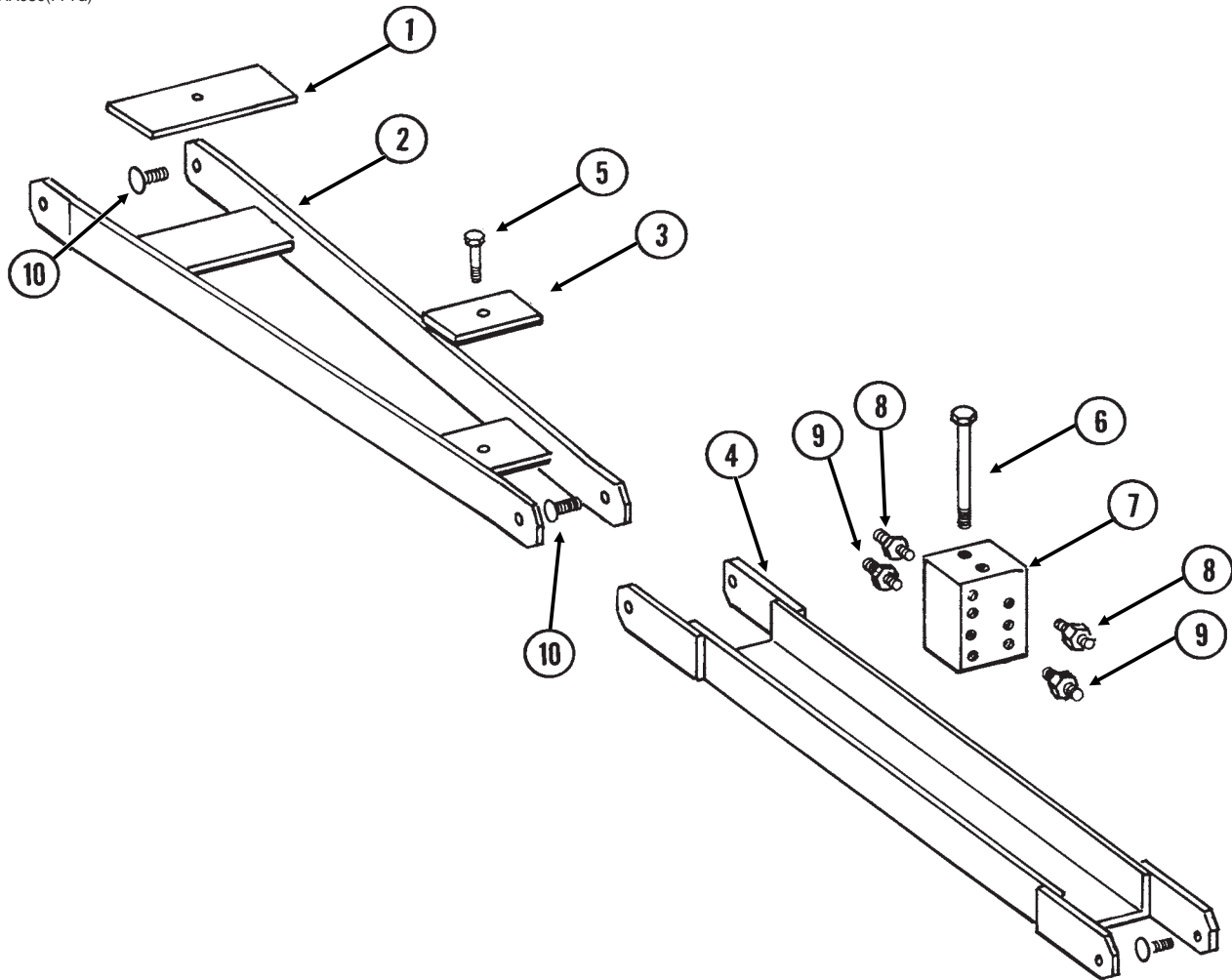
(FF63b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10326	2	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 3 $\frac{3}{4}$ "
	G10229	2	Lock Washer, $\frac{3}{8}$ "
	G10101	2	Hex Nut, $\frac{3}{8}$ "-16
2.		-	See "Valve Block On Tower Assembly", Page P121
3.		-	See "Hitch And Linkage Assembly", Pages P76 And P77
4.	G6801-08	4	Elbow W/O-Ring, 90°, $\frac{3}{4}$ "-16 Male JIC To O-Ring
	GR1037	-	O-Ring
5.		-	See "Slave Cylinder", Page P113
6.	GD12545	2	Pin, 1 $\frac{1}{4}$ " x 5 $\frac{1}{2}$ "
	GD12535	4	Special Bushing, 2" O.D. x 1" I.D. x $\frac{3}{4}$ " Long
	G10982	4	HD External Retaining Ring, 1"
7.	GA8971	1	Cylinder Lockup Bracket W/Pin Assembly
	GA8312	-	Pin W/Lynch Pin, 5 $\frac{1}{2}$ "
8.	GD12585	2	Pin, 1 $\frac{1}{4}$ " x 4 $\frac{1}{2}$ "
	G10460	4	Cotter Pin, $\frac{1}{4}$ " x 2"

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

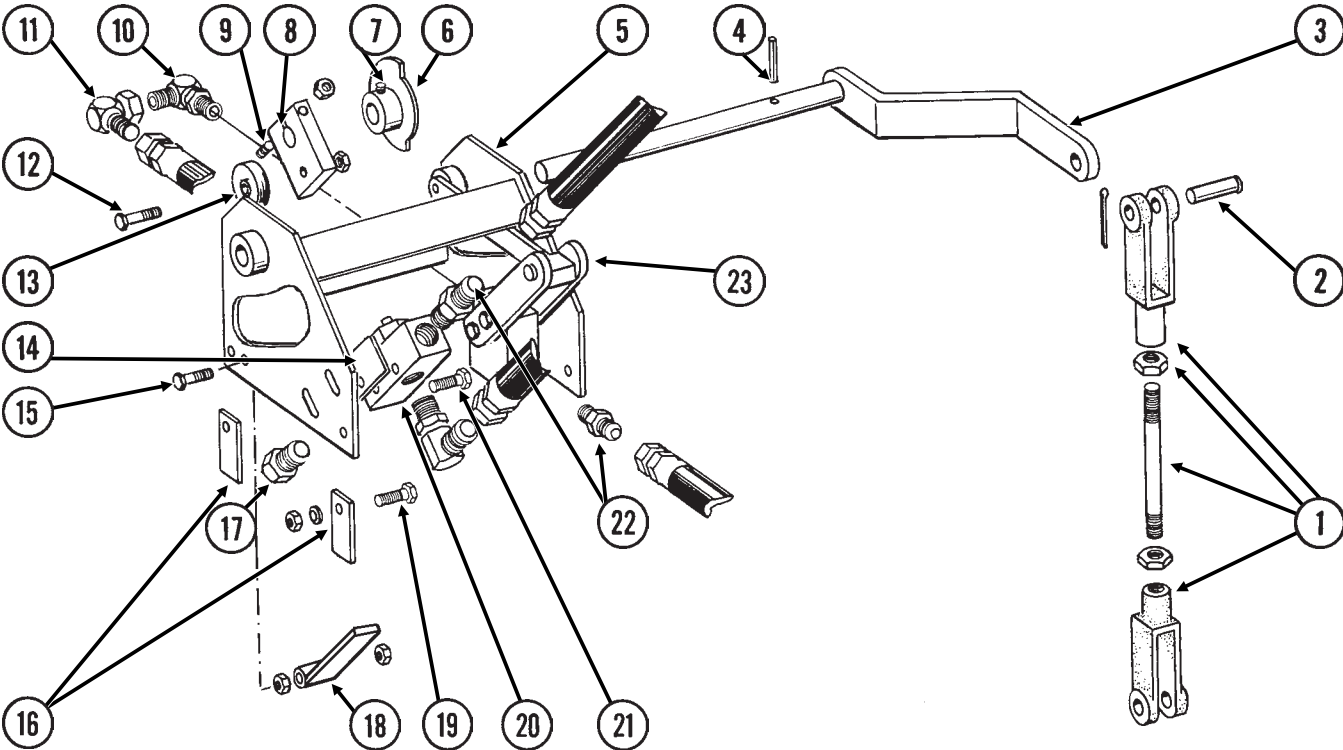
PHA030(FF7a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD11895	1	Spacer, 4" x 8 1/4"
2.	GA6656	1	Front Hose Take-Up
3.	GD11894	1	Spacer, 4" x 5 1/2"
4.	GA6657	1	Rear Hose Take-Up
5.	G10038	2	Hex Head Cap Screw, 1/2"-13 x 3"
	G10111	2	Lock Nut, 1/2"-13
6.	G10756	2	Hex Head Cap Screw, 3/8"-16 x 6"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
7.	GD9537	1	Block
8.	G6400-10-08	5	Connector W/O-Ring, 7/8"-14 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
9.	G6400-08	7	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
10.	G10415	6	Carriage Bolt, 5/8"-11 x 2 1/4"
	GB0218	6	Bushing, 2 1/32" I.D. x 7/8" O.D. x 19/32" Long
	GD7805	6	Special Washer, 5/8", Hardened
	G10107	6	Lock Nut, 5/8"-11

# STROKE LIMITER/DETENT VALVE ASSEMBLY AND LINKAGE

PHA031(FF8e)





# STROKE LIMITER/DETENT VALVE ASSEMBLY AND LINKAGE

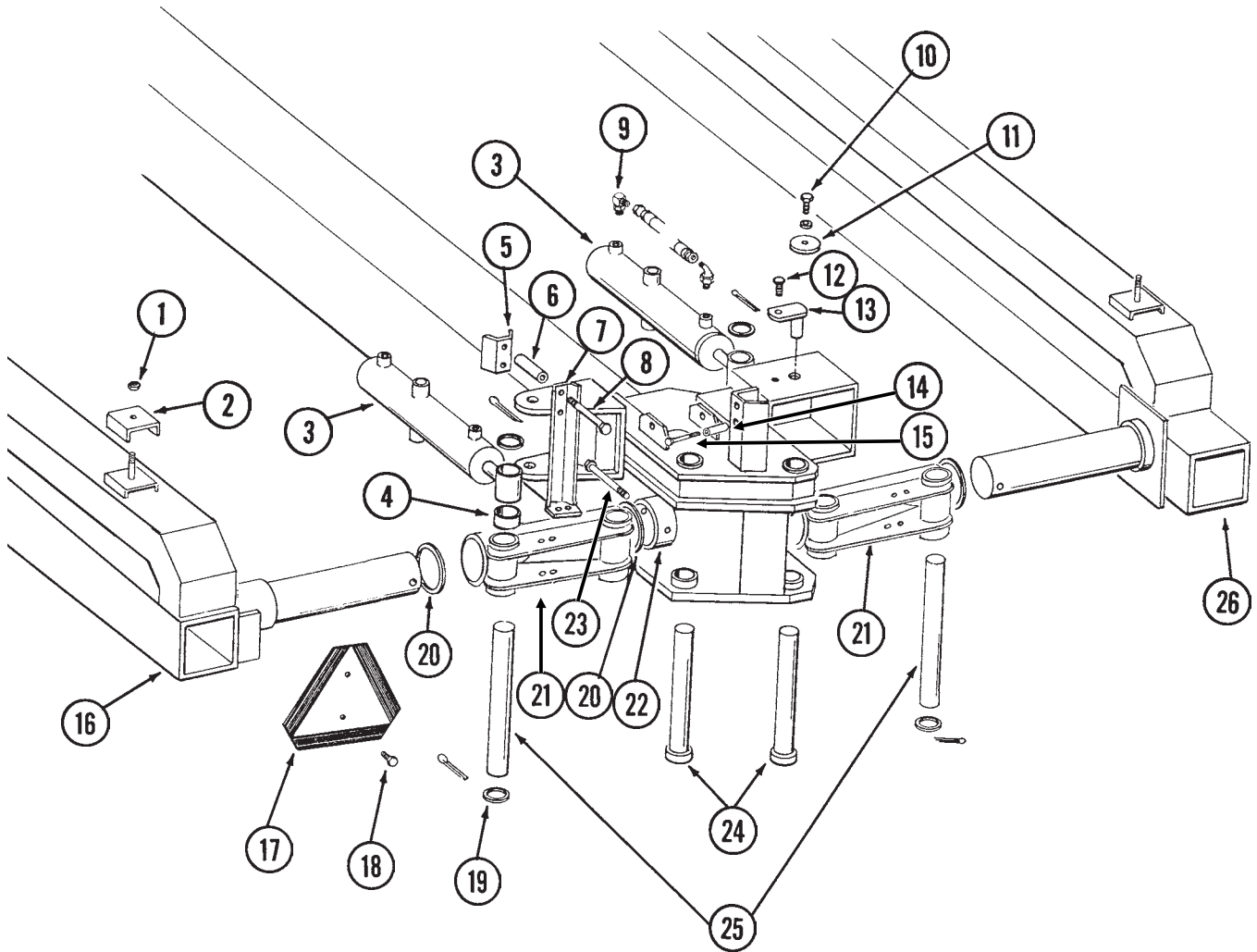
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA6646	1	Rod Assembly
	GD8218	-	Yoke
	GD9499	-	Stud
	G10104	-	Hex Nut, 5/8"-11
2.	G10284	2	Clevis Pin, 1/2" x 1 1/2"
	G10451	2	Cotter Pin, 1/8" x 1"
3.	GA6685	1	Cam Activator
4.	G10606	1	Spring Pin, 1/4" x 2"
5.	GA6687	1	Housing
6.	GA6686	1	Cam
7.	G10120	2	Hex Socket Set Screw, 3/8"-16 x 1/2"
8.	GD9511	1	Detent Arm
9.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10108	1	Lock Nut, 3/8"-16
10.	G6801-10-08	1	Elbow W/O-Ring, 90°, 7/8"-14 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
11.	G6500-10	1	Swivel Elbow, 90°, 7/8"-14 Male JIC To Female
12.	G10009	1	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
	G10107	1	Lock Nut, 5/8"-11
13.	GA2014	1	Bearing
14.	GD10714	-	Spacer
15.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10101	2	Hex Nut, 3/8"-16
16.		-	See "Hitch And Linkage Assembly", Pages P75-P77
17.	G6408-08	1	Plug W/O-Ring, 3/4"-16 O-Ring
	GR1037	-	O-Ring
18.	GA7153	1	Stroke Limiter Arm (If Applicable)
19.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
20.		-	See "Stroke Limiter Valve", Page P128
21.	G10069	2	Hex Head Cap Screw, 5/16"-18 x 2 1/4"
	G10620	2	Serrated Flange Nut, 5/16"-18
22.	G6400-10-08	1	Connector W/O-Ring, 7/8"-14 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
23.		-	See "Detent Lever Valve", Page P127

# HINGE AND WING ASSEMBLIES

PFA062/PFA052(FF9c)

24 Row 30"/36 Row 20" Shown

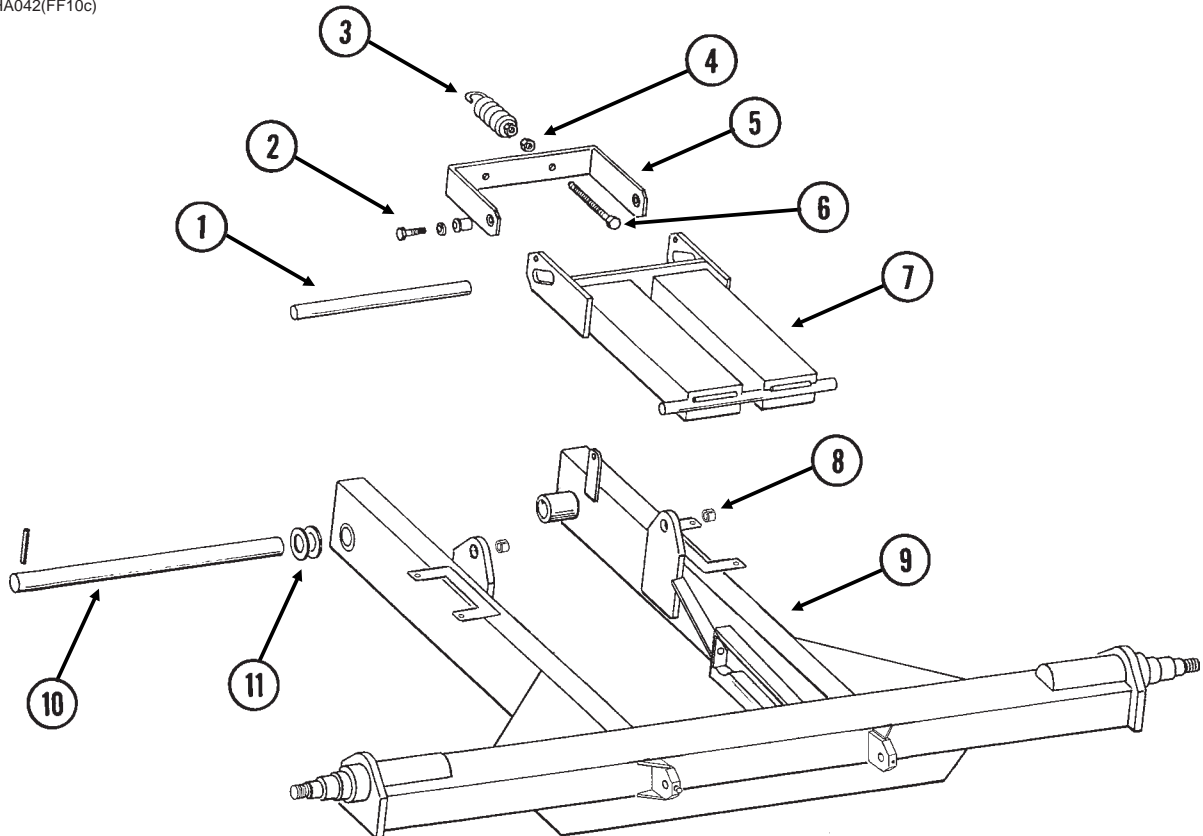


# HINGE AND WING ASSEMBLIES

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10111	-	Lock Nut, 1/2"-13
2.	GD0740	-	Hose Clamp, 3/4" x 4" x 3 1/2"
	GD0776	-	Hose Clamp, 3/4" x 2" x 2 1/2"
3.		-	See "Helper Cylinder", Page P116
4.	GD9727	2	Spacer
5.	GD9361	2	Hose Guide
6.	GD3180-13	4	Sleeve, 5/8" I.D. x 7/8" O.D. x 4" Long
7.	GA6640	1	Bracket
8.	G10011	2	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
9.	G6801-06-08	4	Elbow W/O-Ring, 90°, 9/16"-18 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
10.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
11.	GD9516	2	Pivot Washer
12.	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
13.	GA6761	4	Pin
14.	GD3180-06	2	Sleeve, 5/8" I.D. x 7/8" O.D. x 1 3/4" Long
15.	G10013	2	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10036	-	Hex Head Cap Screw, 5/8"-11 x 4"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
16.	GA9031	1	L.H. Wing, 360", 24 Row 30" And 36 Row 20"
	GA8847	1	L.H. Wing, 270 3/8", 24 Row 22"
	GA11251	1	L.H. Wing, 300 3/8", 16 Row 38"
	GA7459	1	L.H. Wing, 246 3/8", 24 Row 20"
17.	GD2199	1	SMV Sign
18.	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
19.	G10360	4	Machine Bushing, 2 1/2", 10 Gauge
20.	GD9462	6	Washer
21.	GA8137	-	Knuckle Less Grease Fittings
	G10640	3	Grease Fitting, 1/4"-28
22.	GD9463	2	Washer
23.	G10057	2	Hex Head Cap Screw, 3/4"-10 x 7"
	G10231	2	Lock Washer, 3/4"
	G10105	2	Hex Nut, 3/4"-10
24.	GA8994	-	Vertical Pin
	G10360	-	Machine Bushing, 2 1/2", 10 Gauge (As Required)
	G10359	-	Machine Bushing, 2 1/2", 18 Gauge (As Required)
	GD12692	-	Pin, 3/8" x 3 1/2"
25.	GD9726	2	Pin, 2 1/2" x 13 1/8"
	G10461	4	Cotter Pin, 3/8" x 3"
26.	GA9032	1	R.H. Wing, 357", 24 Row 30" And 36 Row 20"
	GA8848	1	R.H. Wing, 267 3/8", 24 Row 22"
	GA11252	1	R.H. Wing, 297 3/8", 16 Row 38"
	GA7462	1	R.H. Wing, 243 3/8", 24 Row 20"

# AXLE AND TRANSPORT LOCKUP

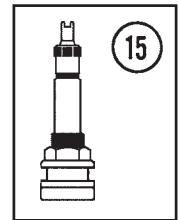
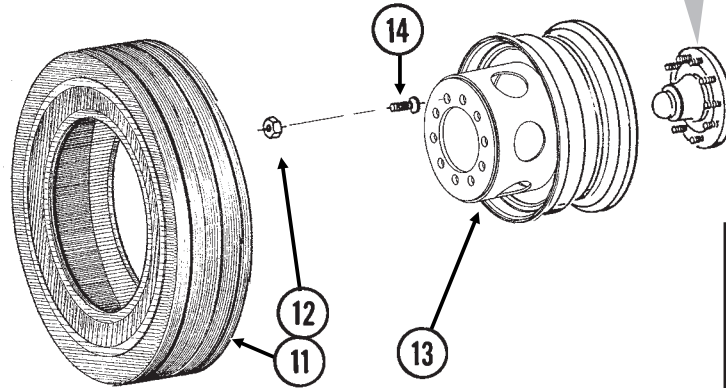
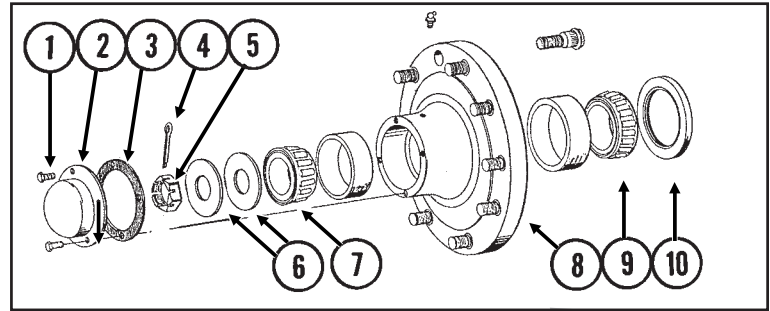
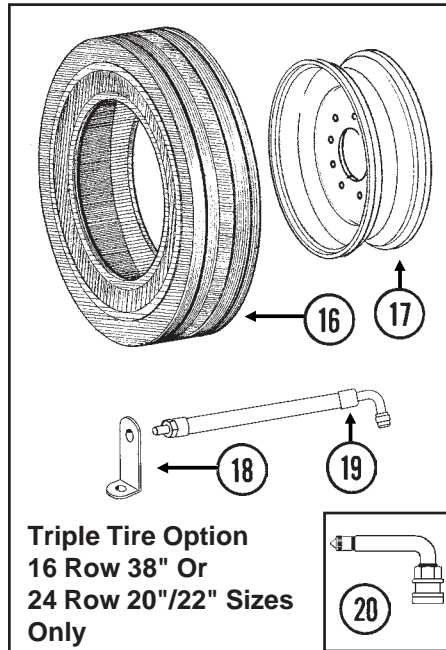
HTA042/PHA042(FF10c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD11783	1	Transport Rod, 1 1/2" x 14 3/4"
2.	G10055	2	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	GD3180-24	2	Sleeve, 5/8" I.D. x 7/8" O.D. x 3/8" Long
	GD7805	2	Special Washer, 5/8", Hardened
3.	GA2068	2	Spring W/Plug
4.	G10102	2	Hex Nut, 1/2"-13
5.	GA6725	1	Mechanical Trip Actuator
6.	G10015	2	Adjusting Bolt, 1/2"-13 x 5"
7.	GA6658	1	Automatic Safety Lock
8.	GD11751	2	Steel Bushing, 1" Wide
9.	A9024	1	Axle W/Grease Fittings, 86 3/4", 24 Row 30"
			<b>(Non-Stock Item)</b>
	A9025	-	Axle W/Grease Fittings, 96 3/4", 24 Row 20" And 36 Row 20"
			<b>(Non-Stock Item)</b>
	A8852	-	Axle W/Grease Fittings, 104 3/4", 16 Row 38" And 24 Row 22"
			<b>(Non-Stock Item)</b>
	G10640	4	Grease Fitting, 1/4"-28
10.	GD9566-01	1	Pin, 2 1/8" x 31 3/8"
	G10461	2	Cotter Pin, 3/8" x 3"
11.	G10234	4	Machine Bushing, 2 1/8", 10 Gauge

# TRANSPORT WHEEL AND HUB ASSEMBLY

HTA002/HTA004/HTA041(FF11d/A7434)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10376	4	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{3}{4}$ "
2.	GD1529	1	Dust Cap
3.	GD1536	1	Seal
4.	G10460	1	Cotter Pin, $\frac{1}{4}$ " x 2"
5.	G10070	1	Slotted Hex Nut, 1 $\frac{1}{4}$ "-12
6.	G10139	2	Washer, 1 $\frac{1}{4}$ " USS
7.	GA0705	1	Outer Bearing
8.	GA5965	1	Hub W/Cups, Grease Fitting And Stud Bolts (10 Bolt)
	GR0322	-	Outer Cup
	GD8532	-	Inner Cup
	G10373	-	Grease Fitting, 45°, $\frac{1}{8}$ "-27
	GR0257	-	Stud Bolt, $\frac{3}{4}$ "-16 x 2 $\frac{1}{2}$ "
9.	GA5987	1	Inner Bearing
10.	GA5988	1	Seal
11.	GD13352	-	Tire, 36" x 16" x 17.5", 14 Ply, Tubeless (Specify Brand*), 24 Row 30" And 36 Row 20" (Shown)
	GD13409	-	Tire, 255-70R 22.5" W/O Center Rib, Tubeless (Specify Brand*), 16 Row 38", 24 Row 20" And 24 Row 22"
12.	GD9509	10	Outer Budd Nut
13.	GA6738	-	Rim, 18 $\frac{1}{2}$ " Deep, 24 Row 30"
	GA7448	-	Rim, 16" Deep, 36 Row 20"
	GA7551	-	Rim, 13 $\frac{1}{2}$ " Deep, 16 Row 38", 24 Row 20" And 24 Row 22"
	GA10771	-	Rim, 19 $\frac{1}{2}$ " Deep, 16 Row 38"
14.	GD9508	10	Inner Budd Nut, 2 $\frac{1}{4}$ " Long
	GD12567	-	Inner Budd Nut, 2 $\frac{5}{8}$ " Long
15.	GA7434	1	Valve Stem
16.	GD13409	1	Tire, 255-70R 22.5" W/O Center Rib, Tubeless (Specify Brand*)
17.	GA8955	1	Center Rim Weld
18.	GD12704	1	Bracket
19.	GA9056	1	Air Hose
20.	GA9139	1	Air Hose Elbow, 90°

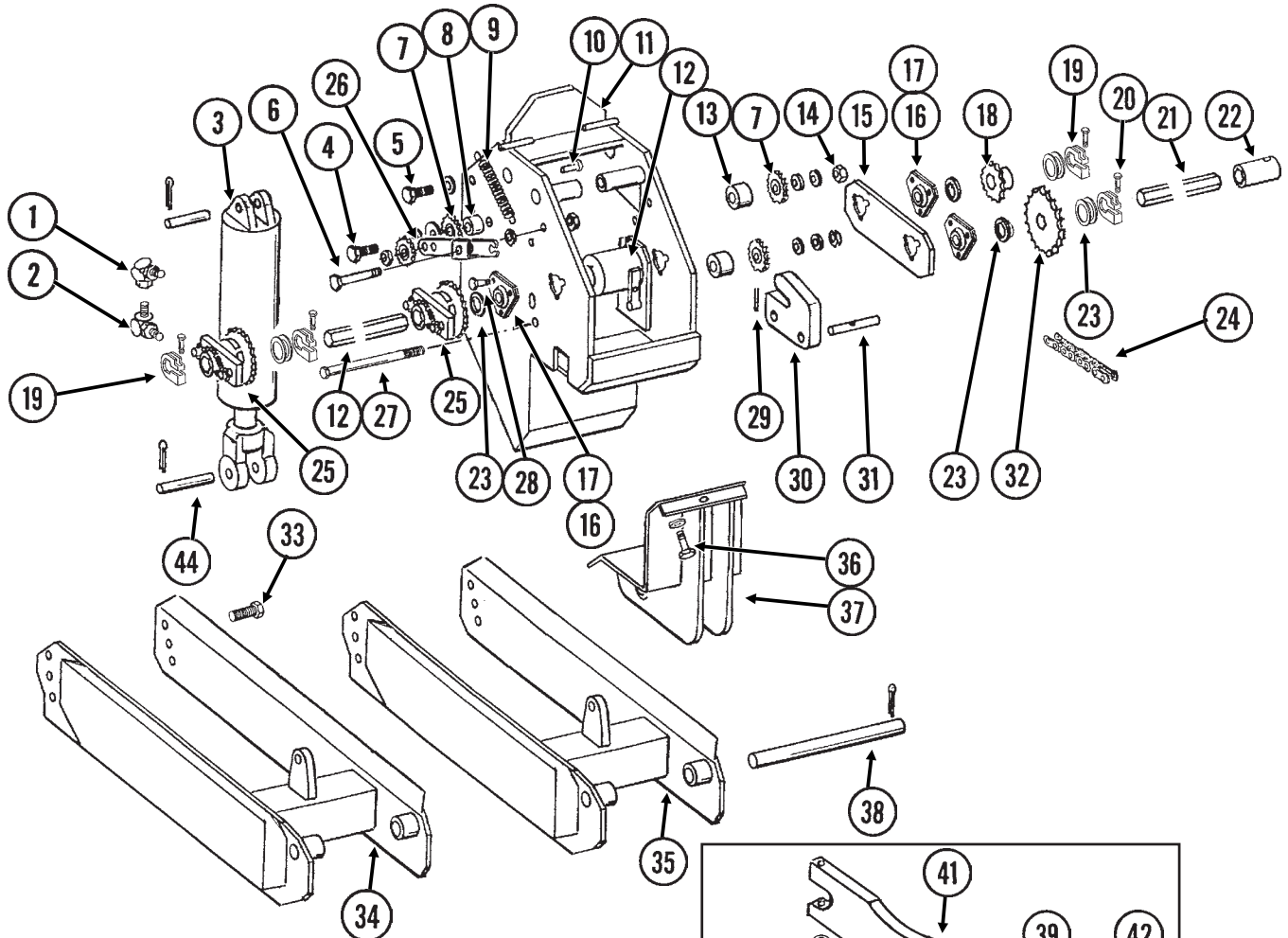
\* Specific brand requests will be supplied only as available from current KINZE® Repair Parts stock. If a specific brand requested is not in stock, the brand available will be supplied.

# WHEEL MODULE ASSEMBLY

PFA056(FF83d/FF113)

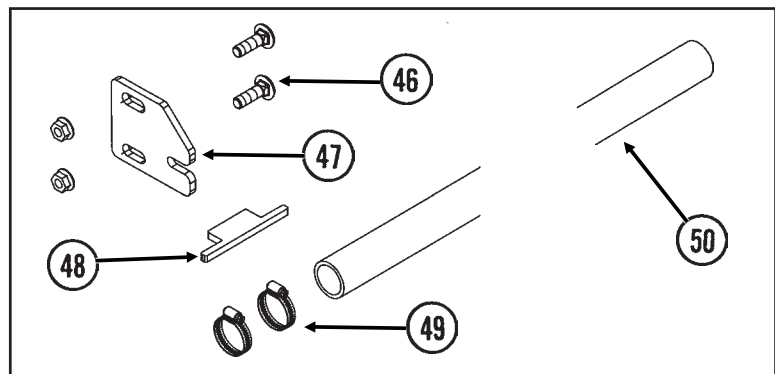
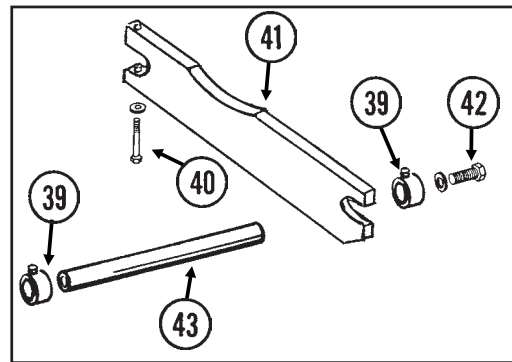
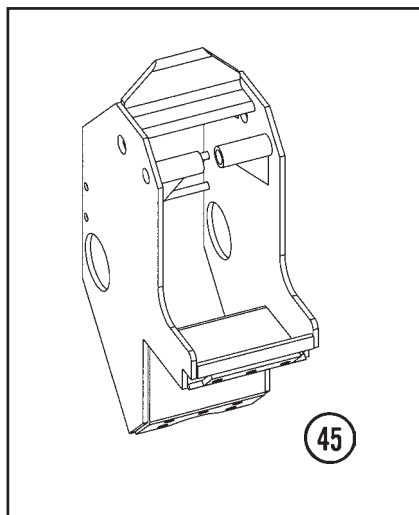
R.H. Side Shown

To Transmission →



Long Wheel Arm

Short Wheel Arm



# WHEEL MODULE ASSEMBLY

ITEM	PART NO.	QTY. (Per Machine)	DESCRIPTION
1.	G6502-08	8	Swivel Elbow, 45°, 3/4"-16 Male JIC To Female
2.	G6801-08	8	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
3.		-	See "Master Cylinder", Page P113
4.	G10397	4	Hex Head Cap Screw, 1/2"-13 x 2 3/4"
	G10216	4	Washer, 1/2" USS
	G10111	4	Lock Nut, 1/2"-13
5.		-	See "Contact Wheel Assembly", Pages P94 And P95
6.	G10036	4	Hex Head Cap Screw, 5/8"-11 x 4"
	G10918	8	Machine Bushing, 5/8", 14 Gauge (If Applicable)
	G10104	4	Hex Nut, 5/8"-11
	G10107	4	Lock Nut, 5/8"-11
7.	GA7154	8	Sprocket W/Bearing, 18 Tooth
8.	GB0258	4	Stepped Spacer, 7/8"
9.	GD5857	4	Spring
10.	G10860	4	Retaining Ring, 3/8"
	G10166	4	Clevis Pin, 3/8" x 1 1/2"
11.	A7323	-	Wheel Tower <b>(Non-Stock Item)</b>
12.		-	See "Point Row Clutch", Pages P96 And P97 Or "Two-Speed Point Row Clutch", Pages P98 And P99
13.	GD10637	8	Stepped Spacer, 1/2"
14.	G10053	8	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10235	16	Machine Bushing, 7/8", 14 Gauge
	G10228	8	Lock Washer, 1/2"
	G10102	8	Hex Nut, 1/2"-13
15.	GD9482	2	Plate
16.	G2100-03	-	Bearing, 7/8" Hex Bore, Spherical
17.	G3400-01	-	Flangette
18.	GA5113	-	Sprocket, 28 Tooth
	GA5107	-	Sprocket, 19 Tooth
19.	GD11045	-	Lock Clamp
20.	G10130	-	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	-	Flange Nut, 5/16"-18, No Serration
21.	GD0914-18	1	Hex Shaft, 7/8" x 18" (No Holes), 16 Row 38"
	GD0914-24	1	Hex Shaft, 7/8" x 24" (No Holes), 24 Row 22", 24 Row 30" And 36 Row 20"
	GD0914-25	1	Hex Shaft, 7/8" x 25" (No Holes), 24 Row 20"
	GD0914-63	1	Hex Shaft, 7/8" x 63" (No Holes), 24 Row 20" And 24 Row 30"
	GD0914-72	1	Hex Shaft, 7/8" x 72" (No Holes), 24 Row 22" And 36 Row 20"
	GD0914-81	1	Hex Shaft, 7/8" x 81" (No Holes), 16 Row 38"
22.		-	See "Seed Rate Transmission And Driveline", Pages P102-P104, Item 8
23.	G10233	-	Machine Bushing, 1", 10 Gauge (As Required)
24.	G3310-82	-	Chain, No. 40, 82 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
25.		2	See "Ratchet/Sprocket Assembly", Page P105
26.	GA9554	4	Idler W/Sprocket And Hardware, R.H.
	GA7154	-	Sprocket W/Bearing, 18 Tooth
	G10017	-	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10128	-	Machine Bushing, 1/2", 14 Gauge
	G10501	-	Hex Jam Nut, 1/2"-13, Grade 2
27.	G10595	2	Hex Head Cap Screw, 3/8"-16 x 10"
	G10875	2	Hex Head Cap Screw, 3/8"-16 x 11"
	G10203	4	Washer, 3/8" SAE
	G10108	2	Lock Nut, 3/8"-16

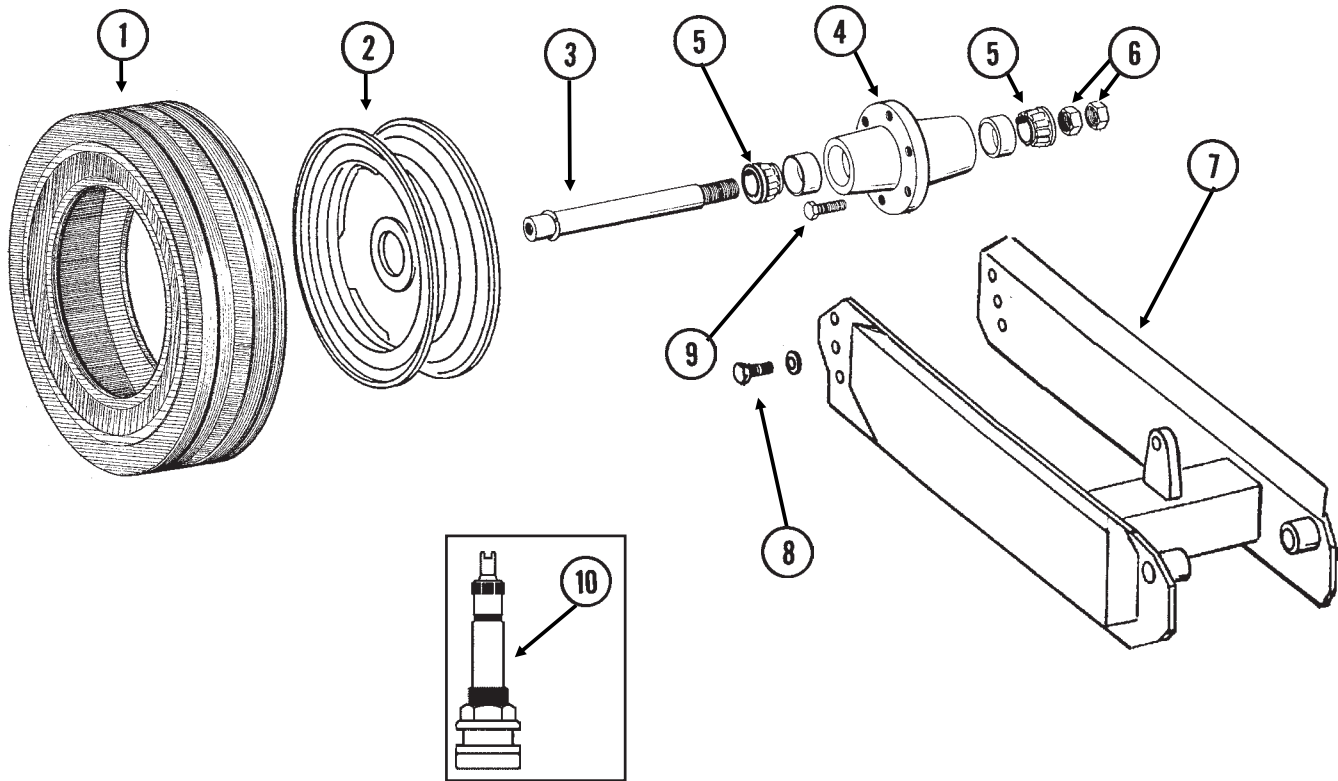
# WHEEL MODULE ASSEMBLY

ITEM	PART NO.	QTY. (Per Machine)	DESCRIPTION
28.	G10338	6	Carriage Bolt, $\frac{5}{16}$ "-18 x 1 $\frac{1}{4}$ "
	G10303	18	Carriage Bolt, $\frac{5}{16}$ "-18 x 1"
	G10232	24	Lock Washer, $\frac{5}{16}$ "
	G10106	24	Hex Nut, $\frac{5}{16}$ "-18
29.	G10606	4-6	Spring Pin, $\frac{1}{4}$ " x 2"
30.	GD9514	4-6	Cylinder Pivot Mount
31.	GD9515	4-6	Cylinder Anchor Pin, 1" x 6"
32.	GA5194	-	Sprocket, 50 Tooth
33.			See "Ground Drive Tire Assembly", Page P93
34.	GA8715	-	Long Wheel Arm W/Grease Fitting (Inner)
	G10640	-	Grease Fitting, $\frac{1}{4}$ "-28
35.	GA8714	-	Short Wheel Arm W/Grease Fitting (Outer) (Lift Assist For 36 Row 20" Only)
	G10640	-	Grease Fitting, $\frac{1}{4}$ "-28
36.	G10006	-	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 2 $\frac{1}{4}$ "
	GD7805	-	Special Washer, $\frac{5}{8}$ ", Hardened
	G10230	-	Lock Washer, $\frac{5}{8}$ "
	G10104	-	Hex Nut, $\frac{5}{8}$ "-11
37.	GA7324	4	Bracket W/Grease Fittings
	G10640	-	Grease Fitting, $\frac{1}{4}$ "-28
38.	GD11695	4-6	Pin, 1 $\frac{1}{4}$ " x 13 $\frac{1}{4}$ "
	G10610	8-12	Spring Pin, $\frac{3}{8}$ " x 2"
39.	GD10686	-	Special Lock Collar, Less Set Screws
	G10145	-	Square Head Set Screw, $\frac{5}{16}$ "-18 x $\frac{1}{2}$ "
40.	G10035	-	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 4"
	G10228	-	Lock Washer, $\frac{1}{2}$ "
41.	GD10316	-	Plate, Special Row Spacing Only
42.	G10017	-	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 1 $\frac{1}{2}$ "
	G10228	-	Lock Washer, $\frac{1}{2}$ "
43.	GD10317	-	Shaft, Special Row Spacing Only
44.	GD12585	8-10	Pin, 1 $\frac{1}{4}$ " x 4 $\frac{1}{2}$ "
	G10460	16-20	Cotter Pin, $\frac{1}{4}$ " x 2"
45.	A11070	-	Wheel Tower (Center Wheel Module On 36 Row 20" Only) <b>(Non-Stock Item)</b>
46.	G10599	2	Carriage Bolt, $\frac{3}{8}$ "-16 x 1 $\frac{1}{4}$ "
	G10622	2	Serrated Flange Nut, $\frac{3}{8}$ "-16
47.	GD17023	1	Plate
48.	GD14115	1	Catch
49.	G10278	2	Hose Clamp, No. 16
50.	GD13652-05	1	Pipe, 1" x 70", 16 Row 38"
	GD13652-04	1	Pipe, 1" x 55", 24 Row 20"
	GD13652-03	1	Pipe, 1" x 60", 24 Row 22" And 36 Row 20"
	GD13652-02	1	Pipe, 1" x 50", 24 Row 30"
A.	G1K269	-	Lock Clamp Kit (Items 19 And 20)



# GROUND DRIVE TIRE ASSEMBLY

PFA056/PTD057(FF13e/A7434)

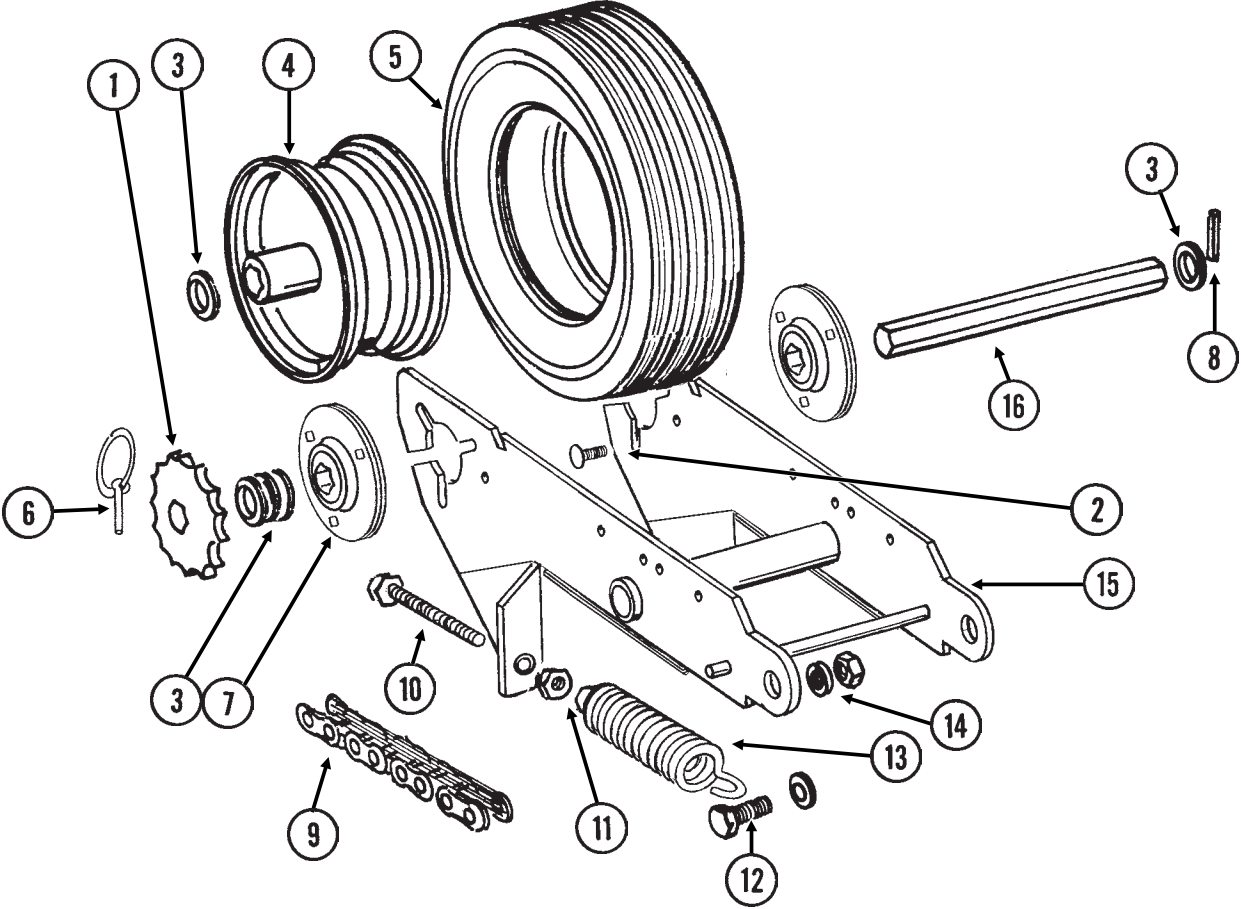


ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD13409	-	Tire, 255-70R 22.5" W/O Center Rib, Tubeless (Specify Brand*)
2.	GA9619	-	Rim, 5.5" x 22.5"
3.	GA4376	1	Spindle W/Round External Retaining Ring, 10"
	GD11490	-	Round External Retaining Ring
4.	GA2148	1	Hub W/Cups, 6 Bolt
	GR0434	-	Cup
5.	GA0895	2	Bearing
6.	G11081	2	Hex Jam Nut, 1 1/2"-12, Grade 2
7.		-	See "Wheel Module Assembly", Pages P90-P92
8.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
9.	GR0270	6	Lug Bolt, 9/16"-18
10.	GA7434	-	Valve Stem
A.	GA9620	-	Tire And Rim Assembly W/O Center Rib (Items 1, 2 And 10) (Specify Brand*)
B.	GA4377	-	Hub And Spindle Assembly (Items 3-6)

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

# CONTACT WHEEL ASSEMBLY

(FF43e)



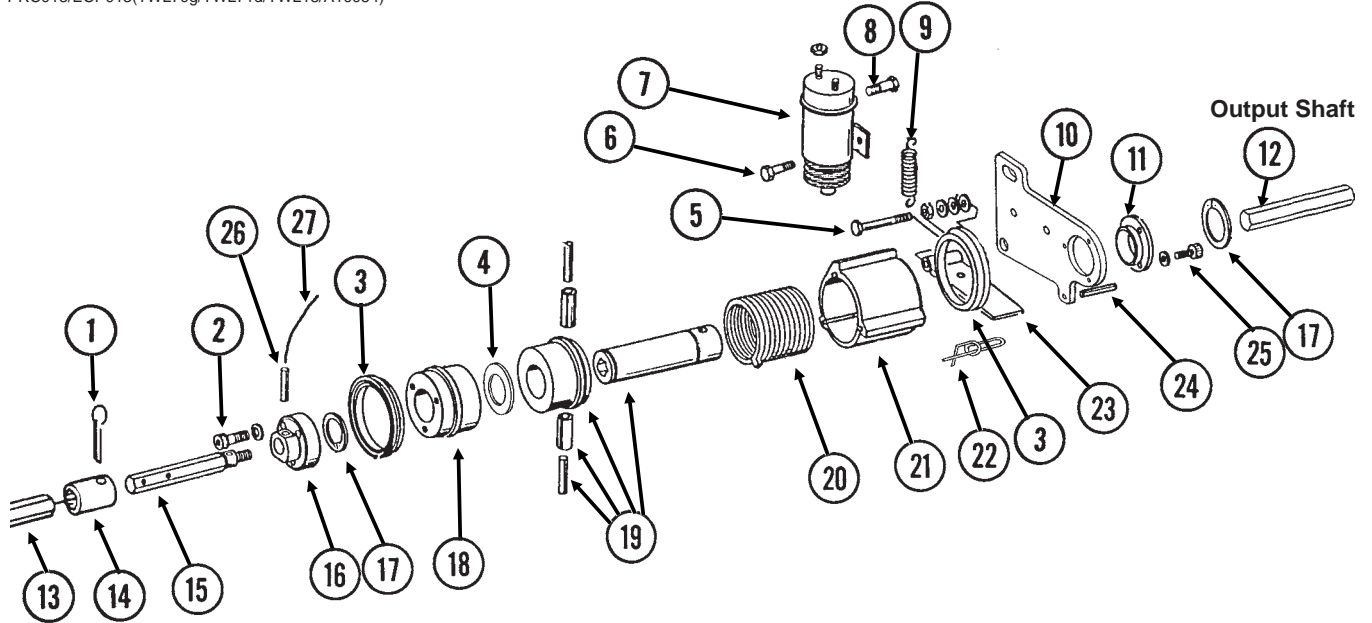
# CONTACT WHEEL ASSEMBLY

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA12192	1	Sprocket, 22 Tooth
	GA5113	-	Sprocket, 28 Tooth
	GA12191	-	Sprocket, 44 Tooth
	GA5105	-	Sprocket, 15 Tooth
2.	G10303	6	Carriage Bolt, $\frac{5}{16}$ "-18 x 1"
	G10232	6	Lock Washer, $\frac{5}{16}$ "
	G10106	6	Hex Nut, $\frac{5}{16}$ "-18
3.	G10233	-	Machine Bushing, 1", 10 Gauge (As Required)
4.	GA3553	1	Rim, 3.75" x 8"
5.	GD4700	1	Tire, 4.80" x 8", 4 Ply, Rib Implement (Specify Brand*)
	GD4701	-	Valve Stem
6.	GD2558	1	Lynch Pin, $\frac{1}{4}$ "
7.	GA9846	2	Flanged Bearing, $\frac{7}{8}$ " Hex Bore
8.	G10602	2	Spring Pin, $\frac{1}{4}$ " x 1 $\frac{1}{2}$ "
9.	G3310-148	1	Chain, No. 40, 148 Pitch Including Connector Link (Used With 22 Tooth Sprocket)
	G3310-150	1	Chain, No. 40, 150 Pitch Including Connector Link (Used With 28 Tooth Sprocket)
	G3310-158	1	Chain, No. 40, 158 Pitch Including Connector Link (Used With 44 Tooth Sprocket)
	G3310-144	1	Chain, No. 40, 144 Pitch Including Connector Link (Used With 15 Tooth Sprocket)
	GR0912	-	Connector Link, No. 40
10.	G10890	2	Hex Head Adjusting Bolt, $\frac{1}{2}$ "-13 x 4", Grade 2
11.	G10501	2	Hex Jam Nut, $\frac{1}{2}$ "-13, Grade 2
12.	G10008	2	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 2"
	G10235	4	Machine Bushing, $\frac{7}{8}$ ", 14 Gauge
	GD7805	2	Special Washer, $\frac{5}{8}$ ", Hardened
	G10107	2	Lock Nut, $\frac{5}{8}$ "-11
	13.	GA2068	2
14.	GB0218	2	Bushing, $2\frac{1}{32}$ " I.D. x $\frac{7}{8}$ " O.D. x $\frac{19}{32}$ " Long
15.	GA7372	1	Wheel Arm
16.	GD6775	1	Hex Shaft, $\frac{7}{8}$ " x 11 $\frac{3}{4}$ " (2 Holes)
A.	GA3552	-	Tire And Rim Assembly (Items 4 And 5) (Specify Brand*)

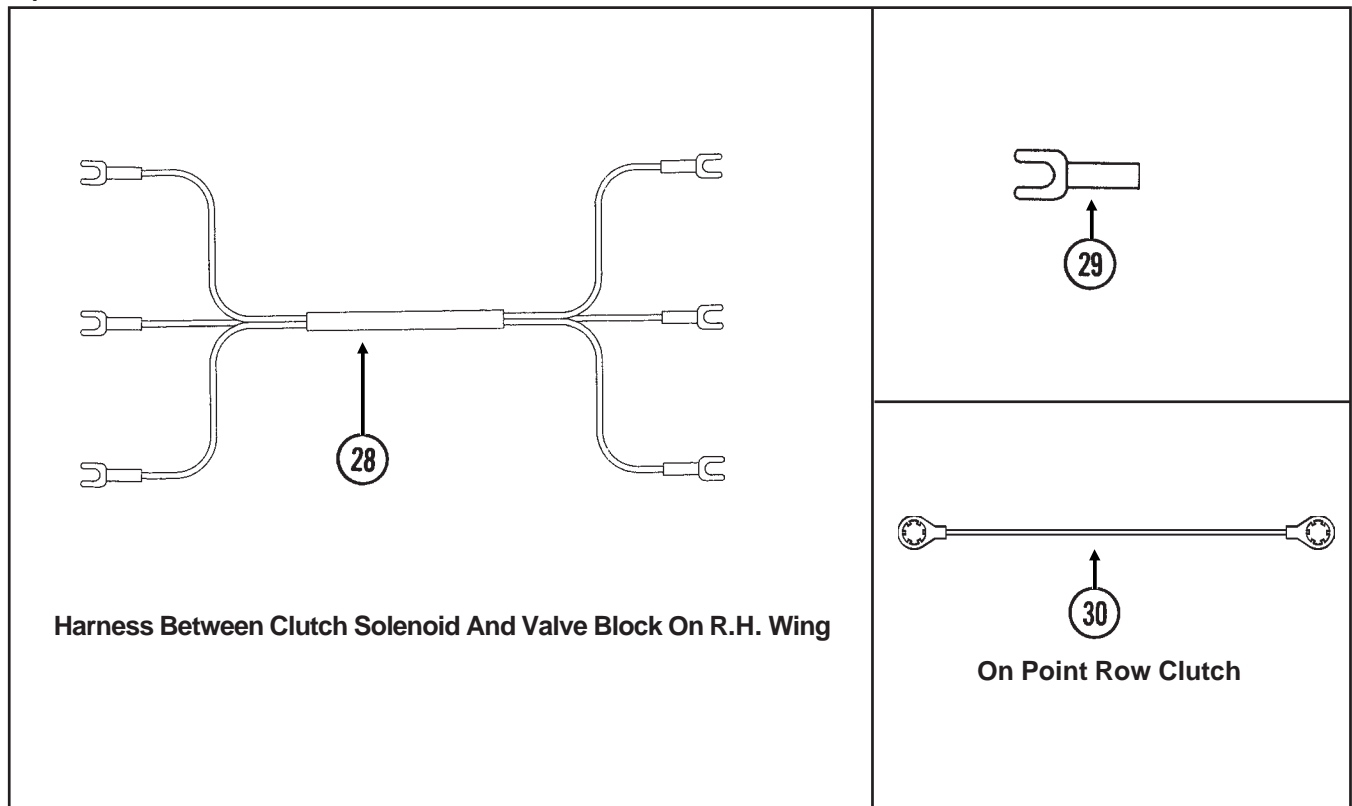
\* Specific brand requests will be supplied only as available from current KINZE® Repair Parts stock. If a specific brand requested is not in stock, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand may affect rates. Field checks are recommended after any change in contact tires.

# POINT ROW CLUTCH

PRC018/ECP013(TWL70g/TWL71d/TWL18/A10054)



Input Shaft



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	

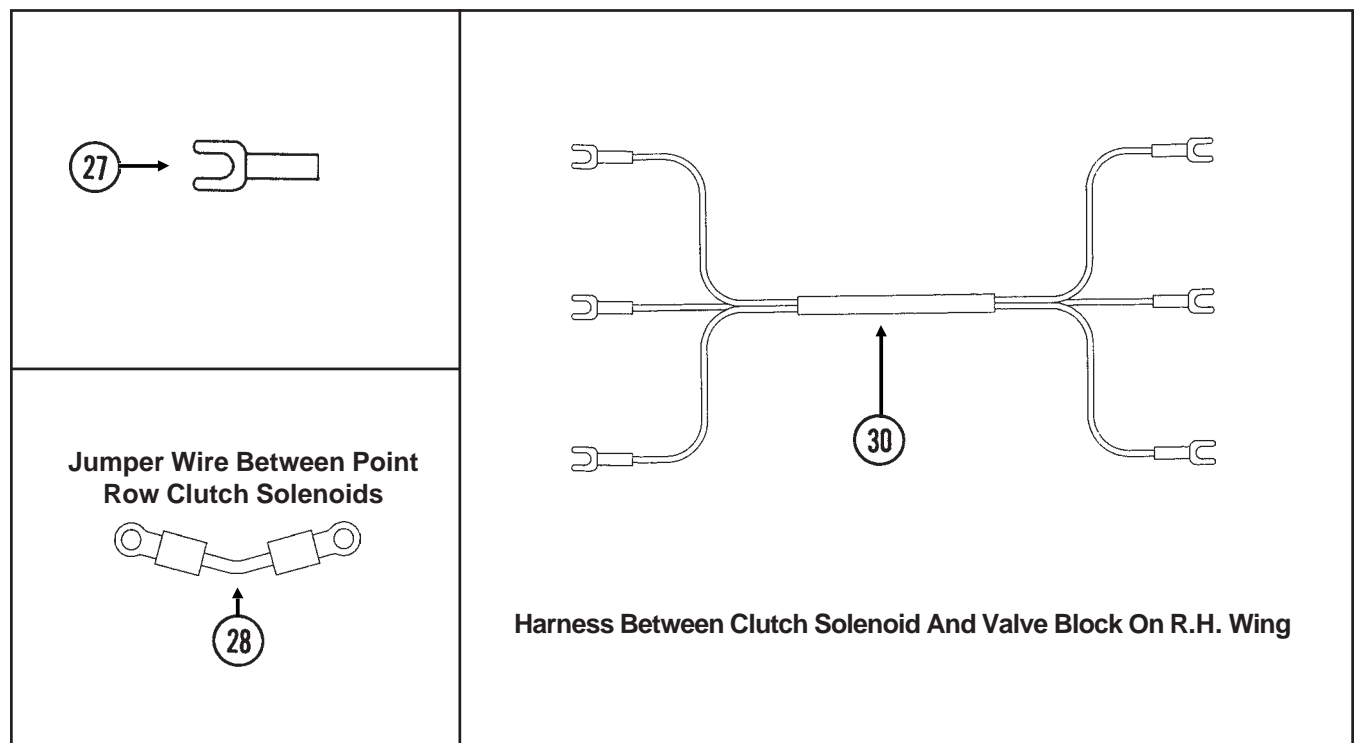
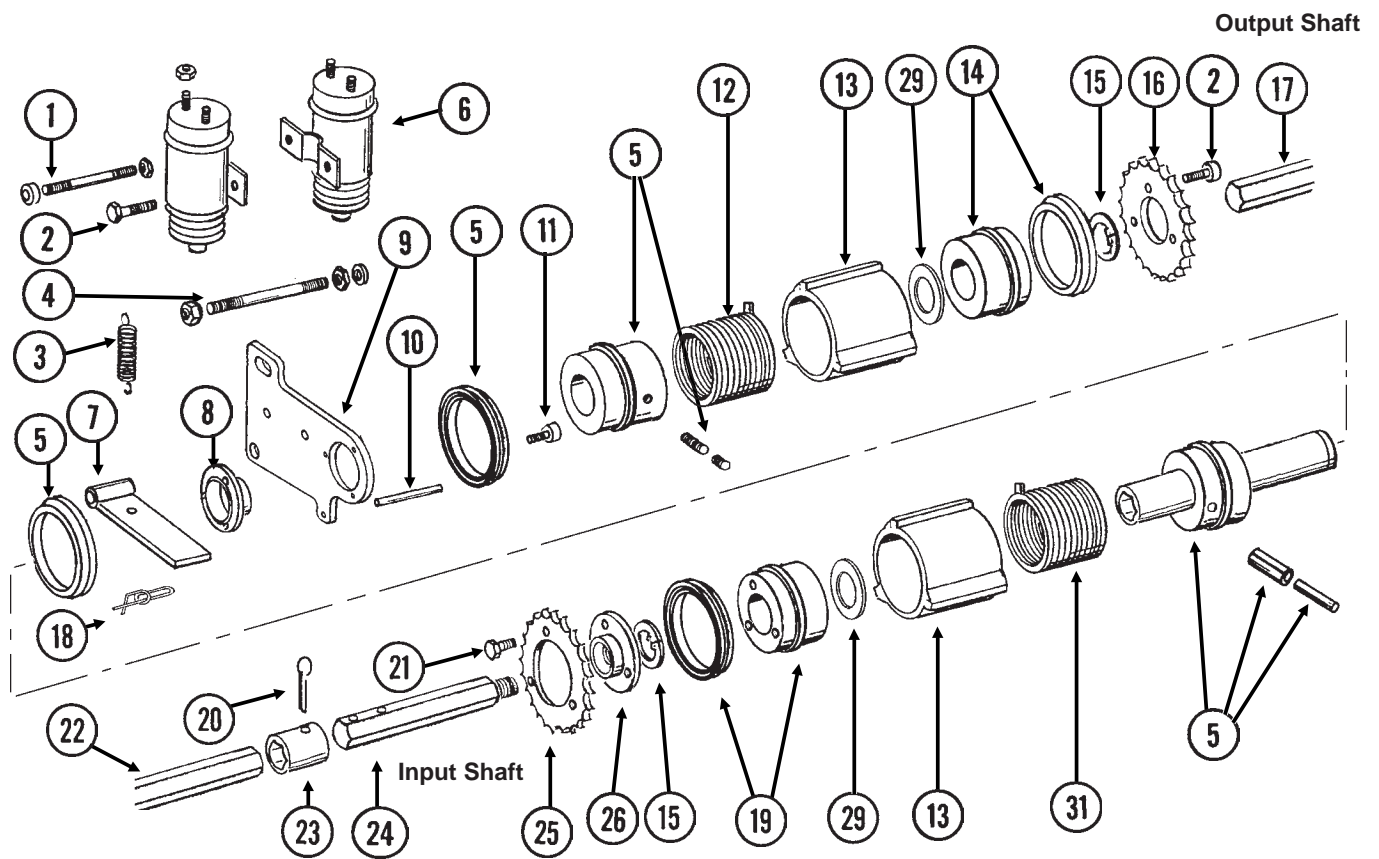
- |    |         |   |   |
|----|---------|---|---|
| 1. | G10460  | 1 | Cotter Pin, 1/4" x 2"                   |
| 2. | G10374  | 3 | Hex Socket Head Cap Screw, 1/4"-20 x 1" |
|    | G10227  | 3 | Lock Washer, 1/4"                       |
| 3. | GD14512 | 2 | V-Ring Seal                             |
| 4. | GD14513 | 1 | Felt Washer                             |

# POINT ROW CLUTCH

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
5.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10101	1	Hex Nut, 3/8"-16
	G10203	1	Washer, 3/8" SAE
	G10229	2	Lock Washer, 3/8"
	G10497	1	Hex Jam Nut, 3/8"-16, Grade 2
6.	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
7.	GA8393	1	Solenoid Complete
	GR1306	1	Snap Ring
	GR1303	1	Spring
	GR1304	1	Boot
	GR1305	1	Plunger
8.	G10900	1	Hex Socket Head Cap Screw, 1/4"-20 x 1 3/4", Grade 8
	G10227	1	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
9.	GD10123	1	Spring
10.	GD10103	1	Mounting Plate
11.	GD9667	1	Bushing
12.	GD0914-10	1	Hex Shaft, 7/8" x 10" (No Holes)
13.	GD0914-32	1	Hex Shaft, 7/8" x 32" (No Holes), 24 Row 30"
	GD0914-40	-	Hex Shaft, 7/8" x 40" (No Holes), 24 Row 20"
	GD0914-38	-	Hex Shaft, 7/8" x 38" (No Holes), 16 Row 38"
	GD0914-44	-	Hex Shaft, 7/8" x 44" (No Holes), 24 Row 22"
	GD0914-42	-	Hex Shaft, 7/8" x 42" (No Holes), 36 Row 20"
14.	GD7867	1	Coupler, 3"
15.	GD10068	1	Input Shaft, R.H. Threads
16.	GD10070	1	Coupler W/R.H. Threads
17.	G10496	2	External Inverted Snap Ring, 1 1/2"
18.	GD10104	1	Input Hub
19.	GA7137	1	Hub/Sleeve Assembly W/Spring Pins
	G10765	-	Spring Pin, 1/4" x 1"
	G10804	-	Spring Pin, 5/32" x 7/8"
20.	GD9671	-	Spring, L.H.
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	Hex Socket Head Screw, No. 10-32 x 1/2"
	G10257	3	Lock Washer, No. 10
26.	G10546	1	Spring Pin, 3/16" x 1 1/4"
27.	GD13524-01	1	Lock Wire, 10", Stainless Steel
28.	GA9479	1	Wiring Harness, 228", R.H. Side Of Machine, 16 Row 38", 24 Row 20", 24 Row 22" And 24 Row 30"
	GA9483	-	Wiring Harness, 252", R.H. Side Of Machine, 36 Row 20"
	GA9512	-	Wiring Harness, 516", L.H. Side Of Machine, All Sizes
29.	G10996	-	Fork Terminal
30.	GA10054	-	Ground Cable, Green
A.	GA7111	-	Point Row Clutch Assembly, L.H. (Items 2-11, 15-27 And 30)

# TWO-SPEED POINT ROW CLUTCH

PRC023(FF47c/A7274/A10054)

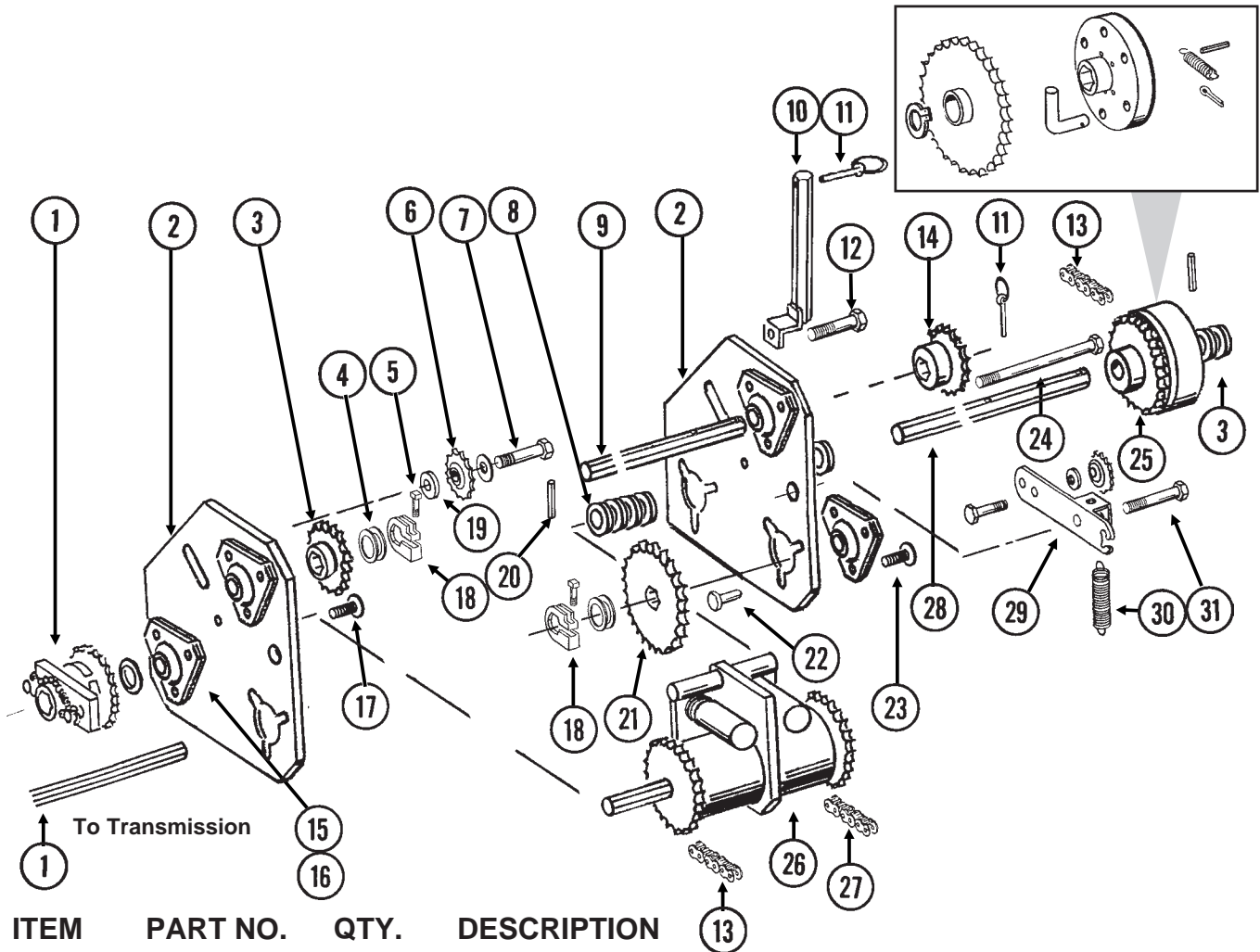


# TWO-SPEED POINT ROW CLUTCH

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD10635	1	Threaded Rod, 1/4"-20 x 3 1/2"
	G10103	2	Hex Nut, 1/4"-20
	G10227	2	Lock Washer, 1/4"
	GD10282	2	Allen Nut, 1/4"-20
2.	G10023	4	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10227	4	Lock Washer, 1/4"
	G10103	1	Hex Nut, 1/4"-20
3.	GD10123	2	Spring
4.	GD10636	1	Threaded Rod, 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/Seals, Sleeve, Pins And Screws
	GD10120	-	Seal
	GD10584	-	Sleeve
	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.	GA8393	2	Solenoid Complete
	GR1306	-	Snap Ring
	GR1303	-	Spring
	GR1304	-	Boot
	GR1305	-	Plunger
7.	GD10510	2	Actuator Arm
8.	GD10586	1	Bushing
9.	GD10103	1	Mounting Plate
10.	G10859	1	Spring Pin, 3/16" x 2 1/4"
11.	G10876	3	Hex Socket Head Screw, No. 10-32 x 1/4"
12.	GD9671	2	Spring, L.H.
13.	GD10585	2	Stop Collar
14.	GA9572	1	Hub W/Seal
	GD10120	-	Seal
15.	G10496	2	External Inverted Snap Ring, 1 1/2"
16.	GD10579	1	Output Sprocket, 28 Tooth
17.	GD0914-10	1	Hex Shaft, 7/8" x 10" (No Holes)
18.	GD11120	2	Rue Ring Cotter, 5/16"
19.	GA9571	1	Hub W/Seal
	GD10120	-	Seal
20.	G10460	1	Cotter Pin, 1/4" x 2"
21.	G10374	3	Hex Socket Head Cap Screw, 1/4"-20 x 1"
	GD10588	3	Key
22.	GD0914-32	1	Hex Shaft, 7/8" x 32" (No Holes), 24 Row 30"
	GD0914-40	-	Hex Shaft, 7/8" x 40" (No Holes), 24 Row 20"
	GD0914-38	-	Hex Shaft, 7/8" x 38" (No Holes), 16 Row 38"
	GD0914-44	-	Hex Shaft, 7/8" x 44" (No Holes), 24 Row 22"
	GD0914-42	-	Hex Shaft, 7/8" x 42" (No Holes), 36 Row 20"
23.	GD7867	1	Coupler, 3"
24.	GD10068	1	Input Shaft, R.H. Threads
25.	GD10578	1	Input Sprocket, 28 Tooth
26.	GD10638	1	Coupler W/R.H. Threads
27.	G10996	-	Fork Terminal
28.	GA7274	1	Jumper Wire W/Ring Terminals, 2 3/16"
29.	GD14513	2	Felt Washer
30.	GA9479	1	Wiring Harness, 228", R.H. Side Of Machine, 16 Row 38", 24 Row 20", 24 Row 22" And 24 Row 30"
	GA9483	-	Wiring Harness, 252", R.H. Side Of Machine, 36 Row 20"
	GA9512	-	Wiring Harness, 516", L.H. Side Of Machine, All Sizes
31.	GD9672	-	Spring, R.H.

# TWO-SPEED POINT ROW CLUTCH WHEEL MODULE EXTENSIONS

(FF48c)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.		-	See "Wheel Module Assembly", Pages P90-P92
2.	GD10327	2	Extension Plate
3.	GA5113	1	Sprocket, 28 Tooth
4.	G10233	1	Machine Bushing, 1", 10 Gauge
5.	G10130	1	Square Head Machine Bolt, $\frac{5}{16}$ "-18 x 1 $\frac{3}{4}$ "
	G10923	1	Flange Nut, $\frac{5}{16}$ "-18, No Serration
6.	GA7154	1	Sprocket W/Bearing, 18 Tooth
7.	G10053	1	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 2 $\frac{1}{2}$ "
	G10168	1	Machine Bushing, $\frac{1}{2}$ ", 7 Gauge
	G10206	3	Washer, $\frac{1}{2}$ " SAE
	G10228	1	Lock Washer, $\frac{1}{2}$ "
	G10102	1	Hex Nut, $\frac{1}{2}$ "-13
8.	G10233	-	Machine Bushing, 1", 10 Gauge (As Required)
9.	GD10547	1	Jack Shaft, $\frac{7}{8}$ " x 13"
10.	GA7313	1	Sprocket Storage Rod
11.	GD2558	2	Lynch Pin, $\frac{1}{4}$ "
12.	G10037	1	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 1 $\frac{1}{4}$ "
	G10216	1	Washer, $\frac{1}{2}$ " USS
	G10228	1	Lock Washer, $\frac{1}{2}$ "
	G10102	1	Hex Nut, $\frac{1}{2}$ "-13
13.	G3310-68	2	Chain, No. 40, 68 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40



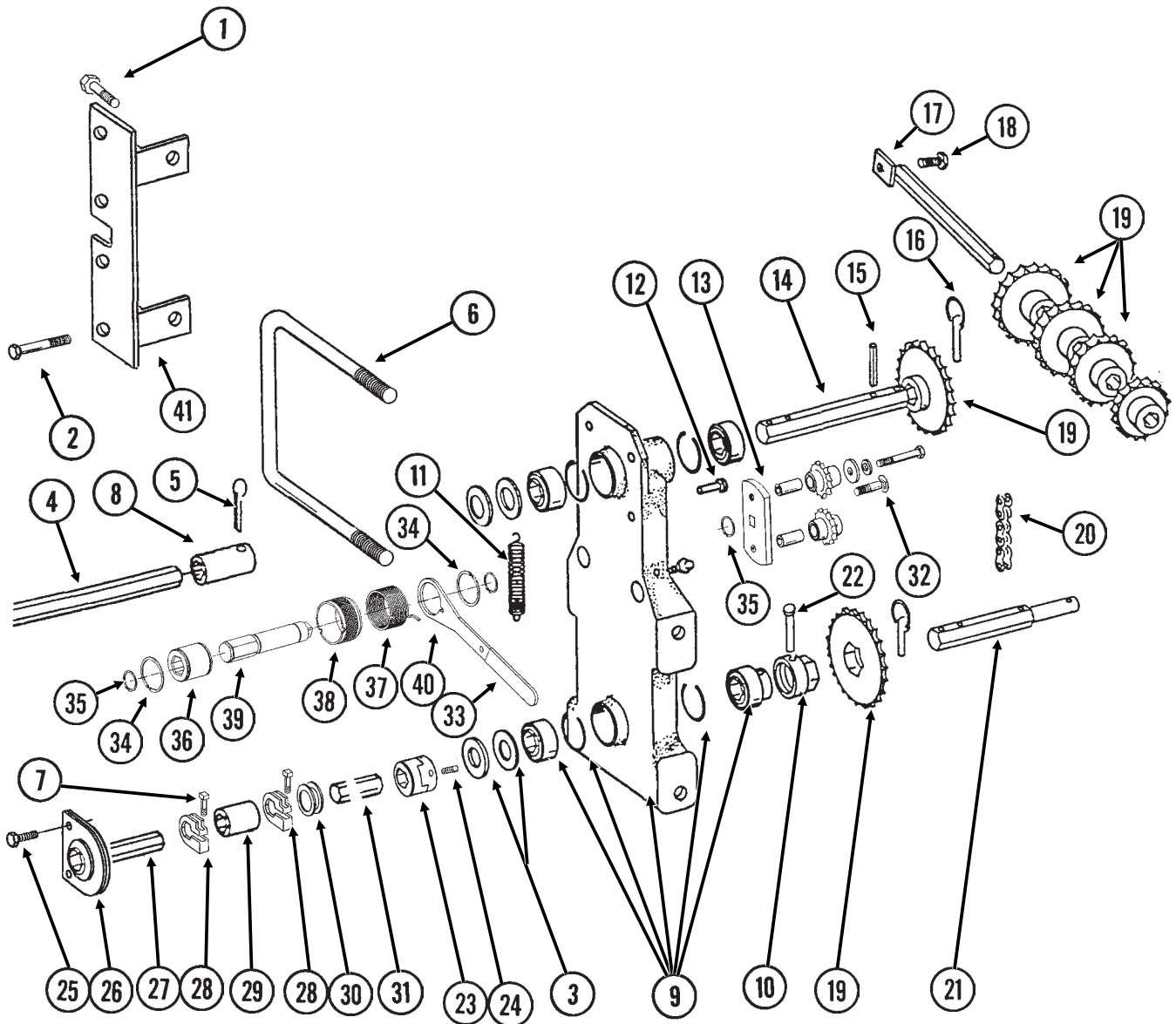
# TWO-SPEED POINT ROW CLUTCH WHEEL MODULE EXTENSIONS

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
14.	GA5105	1	Sprocket, 15 Tooth
	GA5106	1	Sprocket, 17 Tooth
	GA5109	-	Sprocket, 24 Tooth
	GA5112	1	Sprocket, 27 Tooth
	GA5108	-	Sprocket, 23 Tooth (From Transmission)
	GA5110	-	Sprocket, 25 Tooth (From Transmission)
	GA5111	-	Sprocket, 26 Tooth (From Transmission)
15.	G3400-01	-	Flangette
16.	G2100-03	-	Bearing, 7/8" Hex Bore, Spherical
17.	G10338	3	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18
18.	GD11045	1	Lock Clamp
19.	GD10637	1	Stepped Spacer, 1/2"
20.	G10602	2	Spring Pin, 1/4" x 1 1/2"
21.	GA5194	1	Sprocket, 50 Tooth
22.	G10408	1	Clevis Pin, 5/16" x 3/4"
	G10409	1	Retaining Ring, 5/16"
23.	G10302	9	Carriage Bolt, 5/16"-18 x 7/8"
	G10232	9	Lock Washer, 5/16"
	G10221	-	Washer, 5/16" SAE
	G10106	9	Hex Nut, 5/16"-18
24.	G10595	1	Hex Head Cap Screw, 3/8"-16 x 10"
	G10108	1	Lock Nut, 3/8"-16
25.	GA7321	-	Overrunning Sprocket Assembly, L.H.
	G10430	1	External Retaining Ring, 1 1/4"
	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
26.		-	See "Two-Speed Point Row Clutch", Pages P98 And P99
27.	G3310-82	1	Chain, No. 40, 82 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
28.	GD10548	1	Output Shaft, 7/8" x 12"
29.	GA9919	1	Idler W/Sprocket And Hardware, R.H.
	GA7154	-	Sprocket W/Bearing, 18 Tooth
	G10017	-	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10128	-	Machine Bushing, 1/2", 14 Gauge
	G10501	-	Hex Jam Nut, 1/2"-13, Grade 2
30.	GD5857	2	Spring
31.	G10036	1	Hex Head Cap Screw, 5/8"-11 x 4"
	G10205	1	Washer, 5/8" SAE
	G10107	1	Lock Nut, 5/8"-11
	G10104	1	Hex Nut, 5/8"-11
A.	G1K269	-	Lock Clamp Kit (Items 5 And 18)

# SEED RATE TRANSMISSION AND DRIVELINE

(FF42g)

R.H. Side Shown



# SEED RATE TRANSMISSION AND DRIVELINE

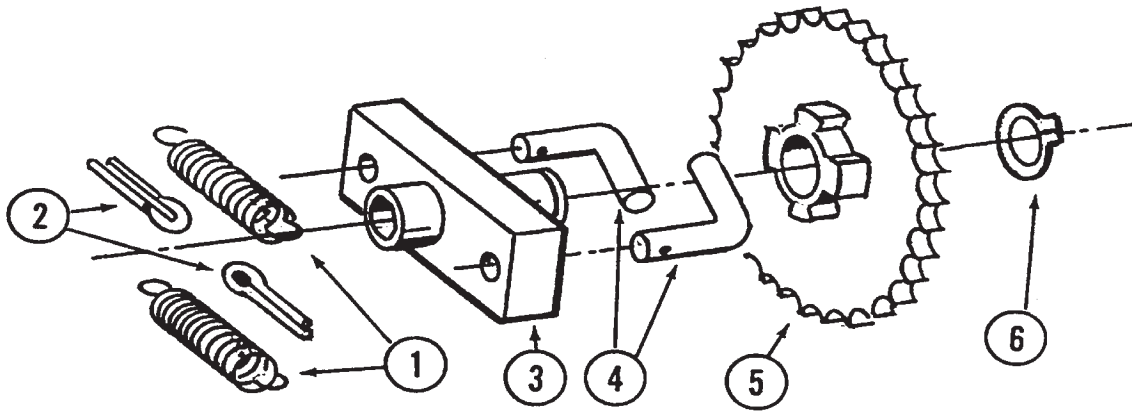
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10008	2	Hex Head Cap Screw, 5/8"-11 x 2"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
2.	G10028	4	Hex Head Cap Screw, 3/4"-10 x 3"
	G10231	4	Lock Washer, 3/4"
	G10194	4	Washer, 3/4" SAE
	G10105	2	Hex Nut, 3/4"-10
3.	G10233	4	Machine Bushing, 1", 10 Gauge
4.		-	See "Wheel Module Assembly", Pages P90-P92
5.	G10460	1	Cotter Pin, 1/4" x 2"
6.	GD1114	1	U-Bolt, 7" x 7" x 5/8"-11
	G10107	2	Lock Nut, 5/8"-11
7.	G10130	2	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	2	Flange Nut, 5/16"-18, No Serration
8.	GD7867	1	Coupler, 3"
9.	GA5629	1	Transmission Plate W/Bearings, Grease Fittings And Retaining Rings
	GA5116	3	Bearing, 7/8" Hex Bore, Cylindrical
	GA5624	1	Special Bearing, 7/8" Hex Bore x 1.6"
	GD6551	4	Ring
	G10640	-	Grease Fitting, 1/4"-28
	GD7127	1	Shear Coupler
10.	GD5857	1	Spring
11.	G10478	1	Clevis Pin, 5/16" x 1"
	G10409	1	Retaining Ring, 5/16"
13.	GA7336	1	Idler W/Bolt-On Sprockets
	GD7426	-	Sprocket, 12 Tooth
	GD1026	-	Sleeve, 1 3/16" Long
	G10210	-	Washer, 3/8" USS
	G10229	-	Lock Washer, 3/8"
	G10047	-	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	GD5835	1	Shaft, 7/8" x 7"
	G10602	3	Spring Pin, 1/4" x 1 1/2"
15.	GD2558	3	Lynch Pin, 1/4"
17.	GA5146	1	Sprocket Storage Rod
18.	G10017	1	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
19.	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
20.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
21.	GD7822	1	Shaft, 7/8" x 7"
22.	G10821	1	Clevis Pin, 3/16" x 2"
	G10455	1	Cotter Pin, 1/16" x 1/2"
23.	GB0287	2	Coupler
24.	G10131	4	Square Head Set Screw, 5/16"-18 x 3/4"

# SEED RATE TRANSMISSION AND DRIVELINE

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
25.	G10004	2	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{1}{4}$ "
	G10229	2	Lock Washer, $\frac{3}{8}$ "
	G10101	2	Hex Nut, $\frac{3}{8}$ "-16
26.	GA2180	1	Hanger Bearing, $\frac{7}{8}$ " Hex Bore, 36 Row 20" Only
27.	GD0914-152	1	Hex Shaft, $\frac{7}{8}$ " x 152" (No Holes), L.H. Side, 24 Row 30" And 36 Row 20"
	GD0914-224	-	Hex Shaft, $\frac{7}{8}$ " x 224" (No Holes), L.H. Side, 24 Row 20"
	GD0914-140	-	Hex Shaft, $\frac{7}{8}$ " x 140" (No Holes), L.H. Side, 16 Row 38"
	GD0914-123	-	Hex Shaft, $\frac{7}{8}$ " x 123" (No Holes), L.H. Side, 24 Row 22"
	GD0914-152	1	Hex Shaft, $\frac{7}{8}$ " x 152" (No Holes), R.H. Side, 24 Row 30" And 36 Row 20"
	GD0914-234	-	Hex Shaft, $\frac{7}{8}$ " x 234" (No Holes), R.H. Side, 24 Row 20"
	GD0914-145	-	Hex Shaft, $\frac{7}{8}$ " x 145" (No Holes), R.H. Side, 16 Row 38"
	GD0914-128	-	Hex Shaft, $\frac{7}{8}$ " x 128" (No Holes), R.H. Side, 24 Row 22"
28.	GD11045	2	Lock Clamp
29.	GD1719	1	Coupler, 4", 16 Row 38", 24 Row 22", 24 Row 30" And 36 Row 20" Only
30.	G10233	1	Machine Bushing, 1", 10 Gauge
31.	GD0914-208	-	Hex Shaft, $\frac{7}{8}$ " x 208" (No Holes), R.H. Side, 36 Row 20"
	GD0914-198	-	Hex Shaft, $\frac{7}{8}$ " x 198" (No Holes), L.H. Side, 36 Row 20"
	GD0914-198	1	Hex Shaft, $\frac{7}{8}$ " x 198" (No Holes), R.H. And L.H. Sides, 24 Row 30"
	GD0914-128	-	Hex Shaft, $\frac{7}{8}$ " x 128" (No Holes), R.H. Side, 24 Row 22"
	GD0914-123	-	Hex Shaft, $\frac{7}{8}$ " x 123" (No Holes), L.H. Side, 24 Row 22"
	GD0914-145	-	Hex Shaft, $\frac{7}{8}$ " x 145" (No Holes), R.H. Side, 16 Row 38"
	GD0914-140	-	Hex Shaft, $\frac{7}{8}$ " x 140" (No Holes), L.H. Side, 16 Row 38"
32.	G11100	1	Hex Socket Button Head Cap Screw, $\frac{1}{4}$ "-20 x $\frac{1}{2}$ ", Grade 8
	G10227	1	Lock Washer, $\frac{1}{4}$ "
	G10209	1	Washer, $\frac{1}{4}$ " USS
33.	G11078	1	Vinyl Cap
34.	G10496	2	External Inverted Snap Ring, 1 $\frac{1}{2}$ "
35.	G11075	3	External Inverted Snap Ring, $\frac{7}{8}$ "
36.	GD14432	1	Sleeve, 1 $\frac{1}{4}$ "
37.	GD14413	-	Torsion Spring, L.H. (Shown)
	GD14414	1	Torsion Spring, R.H.
38.	GD14430	1	Release Collar, Gold, R.H. (Shown)
	GD14429	-	Release Collar, Silver, L.H.
39.	GD14427	1	Tightener Shaft, 4 $\frac{7}{8}$ "
40.	GD14431	1	Handle
41.	GA9524	-	Mount, 36 Row 20" Only (Shown)
	GA11358	-	Mount, R.H., 16 Row 38" Only
	GA11359	-	Mount, L.H., 16 Row 38" Only
A.	G1K269	-	Lock Clamp Kit (Items 7 And 28)
B.	G1K378	1	Wrap Spring Wrench Replacement Kit, Gold Collar, R.H. (Items 32-40) (Shown)
	G1K379	-	Wrap Spring Wrench Replacement Kit, Silver Collar, L.H. (Items 32-40)

# RATCHET/SPROCKET ASSEMBLY

PTD016(TWL12)



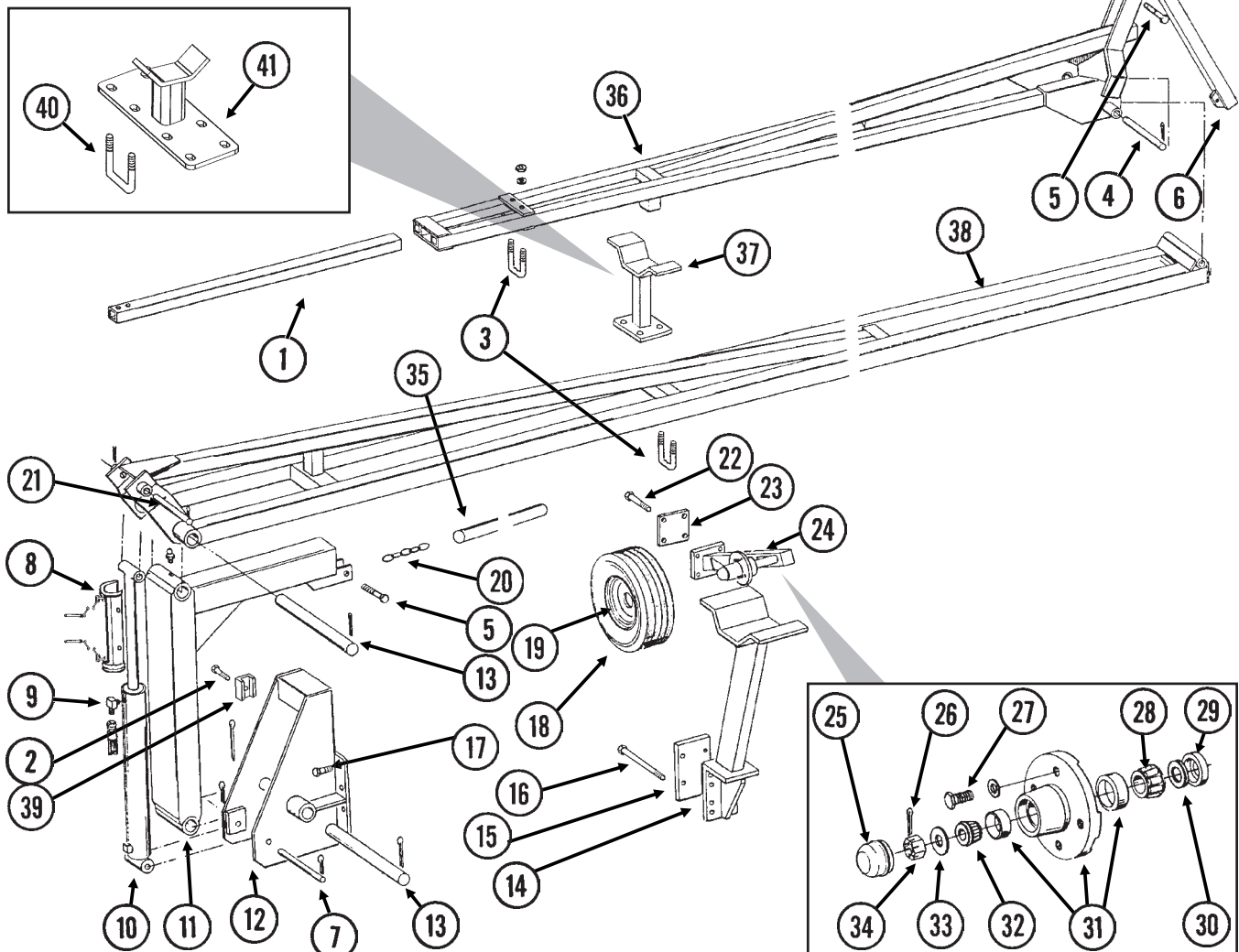
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD1256	2	Spring
2.	G10453	2	Cotter Pin, $\frac{3}{16}$ " x 1"
3.	GA0378	1	Block And Hub Assembly
4.	GD1255	2	L-Pin
5.	GA5165	1	Sprocket, 30 Tooth
6.	G10430	1	External Retaining Ring, 1 $\frac{1}{4}$ "
A.	GA5164	-	Ratchet/Sprocket Assembly (Items 1-6)

# ROW MARKER ASSEMBLY, 16 ROW 38", 24 ROW 22", 24 ROW 30" AND 36 ROW 20"

(FF18/FF101)

Prior To Serial No. 750921

L.H. Side Shown



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GD0453-07	1	Extension Tube, 45", 24 Row 30" And 36 Row 20"
	GD0453-11	1	Extension Tube, 35", 24 Row 22"
2.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10210	1	Washer, 3/8" USS
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
3.	GD2721	1-3	U-Bolt, 2" x 2" x 1/2"-13
	G10228	2-6	Lock Washer, 1/2"
	G10102	2-6	Hex Nut, 1/2"-13
4.	GD0704	1	Pin, 1 1/4" x 14"
	G10460	2	Cotter Pin, 1/4" x 2"
5.	G10033	3	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10038	-	Hex Head Cap Screw, 1/2"-13 x 3"
	G10581	-	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10111	3	Lock Nut, 1/2"-13
6.	GA6860	1	Bracket
7.	GD10186	1	Pin, 1 1/4" x 9 1/2"
	G10979	-	Special Washer, 1 1/4" (If Applicable)
	G10460	2	Cotter Pin, 1/4" x 2"
8.	GA8172	1	Safety Lockup W/Detent Pins, 20"
	G10536	-	Detent Pin, 1/2" x 2 1/2" Grip

# ROW MARKER ASSEMBLY, 16 ROW 38", 24 ROW 22", 24 ROW 30" AND 36 ROW 20"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
9.	G6801-08	-	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	G6400-08	-	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
10.		-	See "Row Marker Cylinder", Page P115
11.	GA6870	1	Arm, First Stage
12.	GA4031	1	Mount W/Grease Fittings
	G10640	-	Grease Fitting, 1/4"-28
13.	GD0677	2	Pin, 2 1/8" x 15 3/4"
	G10461	4	Cotter Pin, 3/8" x 3"
14.	GA6720	1	Tire Support
15.	GD9622	1	Plate, 5 1/2" x 7 1/4"
16.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10217	4	Washer, 5/8" USS
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
17.	G10027	8	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
	G10028	-	Hex Head Cap Screw, 3/4"-10 x 3"
	G10026	-	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	8	Lock Washer, 3/4"
	G10105	6	Hex Nut, 3/4"-10
18.	GD0841	1	Tube Type Tire, 16" x 6.5" x 8" (Specify Brand*)
	GD1364	1	Tube (Not Shown)
19.	GA0246	1	Rim, T8 x 5.38" x 4"
20.	G3302-05	1	Coil Chain, No. 9/0, 79 Links
21.	GD9964	1	Pin, 1 1/4" x 10 1/2"
	G10979	-	Special Washer, 1 1/4" (If Applicable)
	G10460	2	Cotter Pin, 1/4" x 2"
22.	G10063	8	Hex Head Cap Screw, 3/8"-16 x 4"
	G10210	-	Washer, 3/8" USS (As Required)
	G10229	8	Lock Washer, 3/8"
	G10101	8	Hex Nut, 3/8"-16
23.	GD0692	2	Mounting Plate, 5" x 4"
24.	GA0160R	1	Support, R.H.
	GA0160L	-	Support, L.H. (Shown)
25.	GD0840	1	Dust Cap
26.	G10544	1	Cotter Pin, 5/32" x 1"
27.	G10722	4	Hex Head Cap Screw, 1/2"-20 x 1"
	G10228	4	Lock Washer, 1/2"
28.	GA0245	1	Bearing
29.	GA0243	1	Grease Seal
30.	GA0899	1	Rubber Seal
31.	GA0167	1	Hub W/Cups
	GR0151	-	Outer Cup
	GR0150	-	Inner Cup
32.	GA0257	1	Bearing
33.	G10724	1	Washer, 5/8" SAE
34.	G10725	1	Slotted Hex Nut, 5/8"-18
35.	GD10674-01	1	Nylon Cover, 141"
36.	GA9103	1	Arm W/Grease Fittings, Third Stage, 117", 24 Row 30" And 36 Row 20"
	GA9555	-	Arm W/Grease Fittings, Third Stage, 65", 16 Row 38" And 24 Row 22"
	G10640	-	Grease Fitting, 1/4"-28
37.	GA9101	1	Stop Weld, 24 Row 22", 24 Row 30" And 36 Row 20"
38.	GA9102	1	Arm W/Grease Fittings, Second Stage, 185", 16 Row 38", 24 Row 30" And 36 Row 20"
	GA9612	-	Arm W/Grease Fittings, Second Stage, 136", 24 Row 22"
	G10640	-	Grease Fitting, 1/4"-28
39.	GD0776	1	Hose Clamp, 3/4" x 2" x 2 1/2"
40.	GD1138	8	U-Bolt, 2 1/2" x 2 1/2" x 1/2"-13, 16 Row 38"
	G10228	16	Lock Washer, 1/2"
	G10102	16	Hex Nut, 1/2"-13
41.	GA11354	1	Stop Weld, 16 Row 38"
A.	GA0542	-	Tire And Rim Assembly (Items 18 And 19)

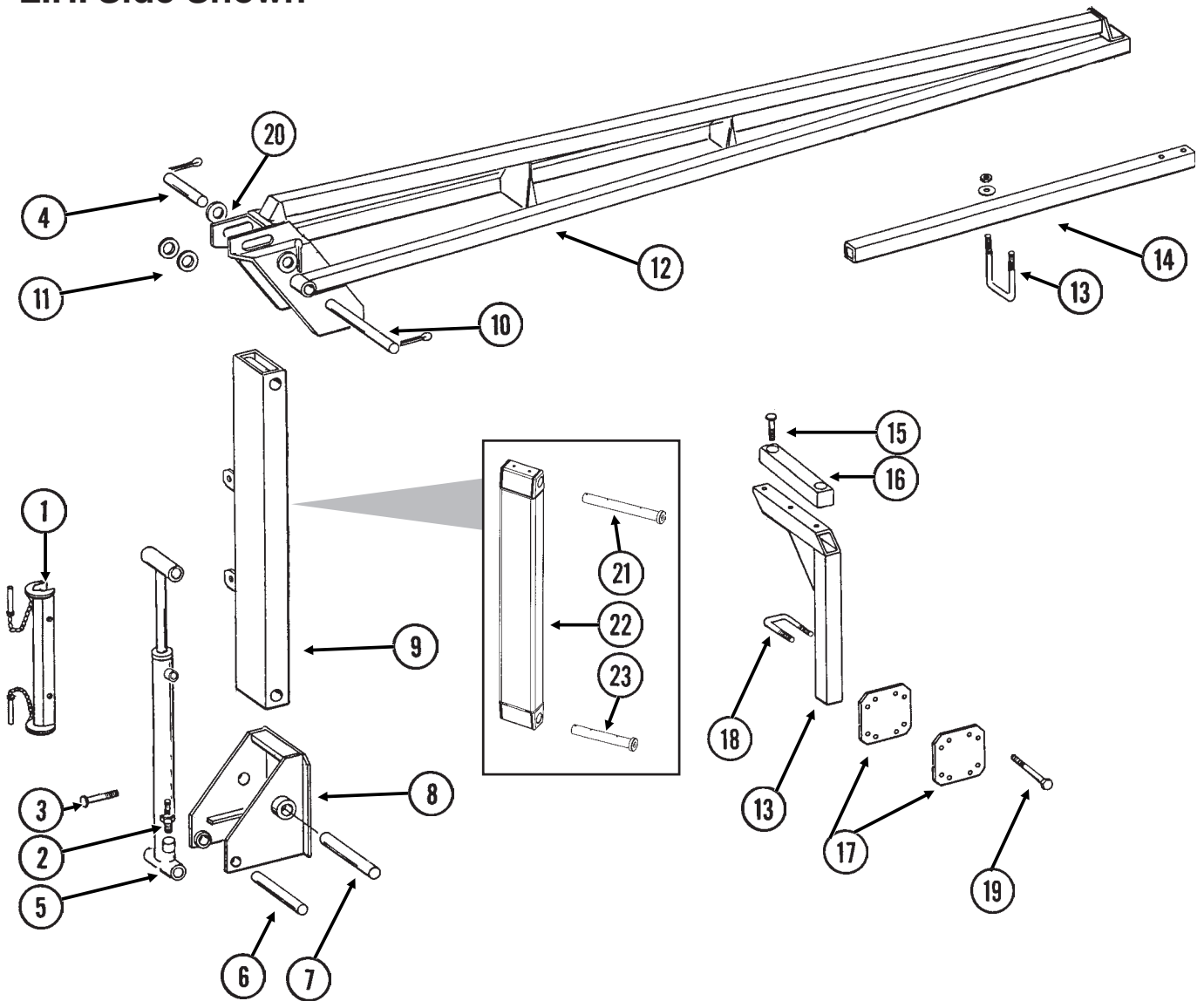
\* Specific brand requests will be supplied only as available from current KINZE® Repair Parts stock. If a specific brand requested is not in stock, the brand available will be supplied.

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

(MKR16c/A11591)

Prior To Serial No. 750921

L.H. Side Shown





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

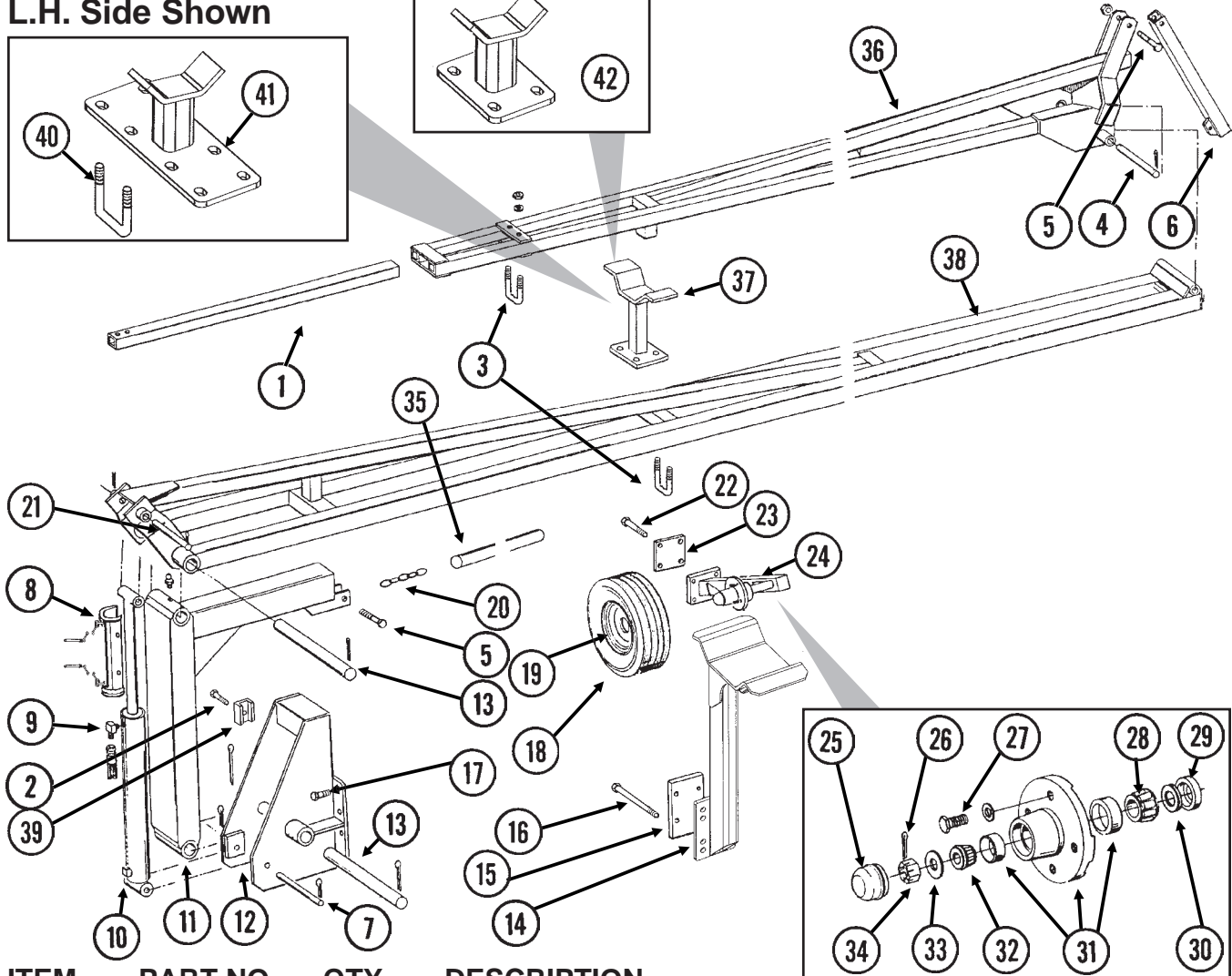
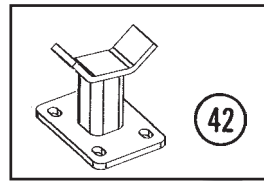
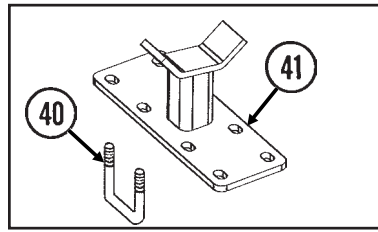
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA8170	1	Safety Lockup W/Detent Pins, 19 <sup>3</sup> / <sub>8</sub> "
	G10536	-	Detent Pin, 1/2" x 2 1/2" Grip
2.	G6801-08	-	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
	G6400-08-04	-	Connector W/O-Ring, 3/4"-16 Male JIC To 7/16"-20 O-Ring
	GR1465	-	O-Ring
3.	G10879	6	Flanged 12 Point Bolt, 5/8"-11 x 2", Special Hardened
	G10230	6	Lock Washer, 5/8"
	G10104	5	Hex Nut, 5/8"-11
4.	GD1701	1	Pin, 1 1/4" x 6 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
5.		-	See "Row Marker Cylinder", Page P115
6.	GD0652	1	Pin, 1 1/4" x 9 1/2"
	G10979	-	Special Washer, 1 1/4" (If Applicable)
	G10460	2	Cotter Pin, 1/4" x 2"
7.	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
8.	GA4877	1	Mount
9.	GA4878	1	Arm W/Grease Fittings, First Stage, R.H.
	GA4983	-	Arm W/Grease Fittings, First Stage, L.H.
	G10641	-	Grease Fitting, 1/8" NPT
10.	GD0737	1	Pin, 1 1/4" x 13 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
11.	G10979	-	Special Washer, 1 1/4" (If Applicable)
	G10159	-	Machine Bushing, 1 1/4", 10 Gauge
	G10322	-	Machine Bushing, 1 1/4", 18 Gauge
12.	GA7118	-	Arm, Second Stage, 172 1/4"
13.	GD2721	3	U-Bolt, 2" x 2" x 1/2"-13
	G10228	6	Lock Washer, 1/2"
	G10102	6	Hex Nut, 1/2"-13
14.	GD0453-03	-	Extension Tube, 50"
15.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10206	2	Washer, 1/2" SAE
	G10111	2	Lock Nut, 1/2"-13
16.	GA9088	1	Molded Stop, 12 1/4" Long
17.	GD10645	2	Bar
18.	GA7562	1	Stand, 38"
19.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
20.	G10226	2	Washer, 1 1/4" SAE
	G10322	2	Machine Bushing, 1 1/4", 18 Gauge
21.	GA11768	-	Pin W/Grease Fitting, 1 1/4" x 13"
	G10640	-	Grease Fitting, 1/4"-28
	G10463	-	Cotter Pin, 1/4" x 1 1/2"
22.	GA11569	-	Arm, First Stage, L.H. (Shown)
	GA11568	-	Arm, First Stage, R.H.
23.	GA11769	-	Pin W/Grease Fitting, 1 1/4" x 11 1/2"
	G10640	-	Grease Fitting, 1/4"-28
	G10463	-	Cotter Pin, 1/4" x 1 1/2"

# ROW MARKER ASSEMBLY, 16 ROW 38", 24 ROW 20", 24 ROW 22", 24 ROW 30" AND 36 ROW 20"

(FF101/A12803/FF18g)

L.H. Side Shown

Serial No. 750921 And On



ITEM PART NO. QTY. DESCRIPTION

(Per Assy.)

1.	GD0453-07	1	Extension Tube, 45", 24 Row 20", 24 Row 30" And 36 Row 20"
	GD0453-11	1	Extension Tube, 35", 16 Row 38", 24 Row 22"
2.	G10048	1	Hex Head Cap Screw, 3/8"-16 x 2"
	G10210	1	Washer, 3/8" USS
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
3.	GD2721	1-3	U-Bolt, 2" x 2" x 1/2"-13
	G10228	2-6	Lock Washer, 1/2"
	G10102	2-6	Hex Nut, 1/2"-13
4.	GD0704	1	Pin, 1 1/4" x 14"
	G10460	2	Cotter Pin, 1/4" x 2"
5.	G10033	3	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10038	-	Hex Head Cap Screw, 1/2"-13 x 3"
	G10581	-	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10111	3	Lock Nut, 1/2"-13
6.	GA6860	1	Bracket
7.	GD10186	1	Pin, 1 1/4" x 9 1/2"
	G10979	-	Special Washer, 1 1/4" (If Applicable)
	G10460	2	Cotter Pin, 1/4" x 2"
8.	GA8172	1	Safety Lockup W/Detent Pins, 20"
	G10536	-	Detent Pin, 1/2" x 2 1/2" Grip
9.	G6801-08	-	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	G6400-08	-	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
	G6400-08-04	-	Connector W/O-Ring, 3/4"-16 Male JIC To 7/16"-20 O-Ring
	GR1464	-	O-Ring

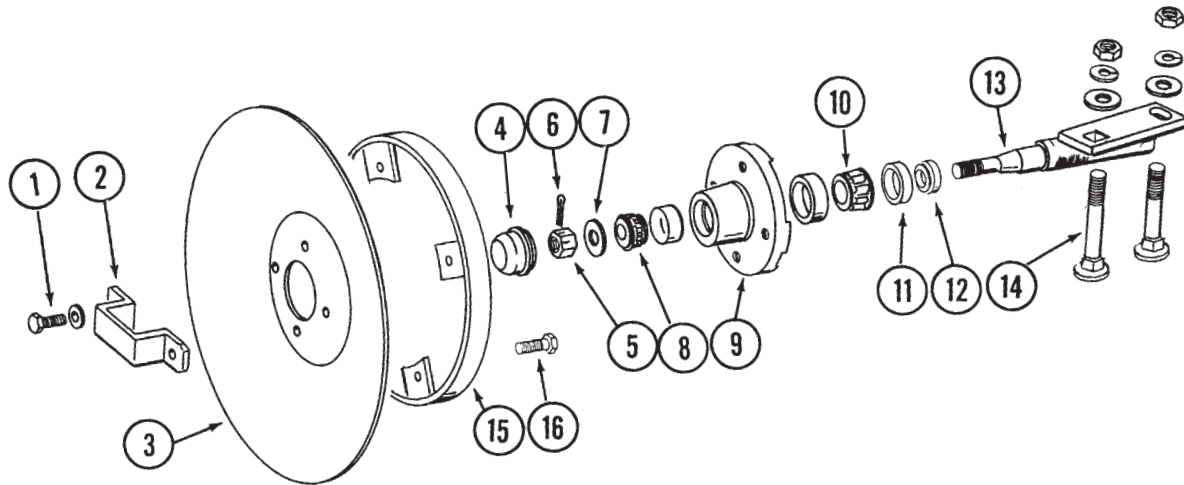
# ROW MARKER ASSEMBLY, 16 ROW 38", 24 ROW 20", 24 ROW 22", 24 ROW 30" AND 36 ROW 20"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
10.		-	See "Row Marker Cylinder", Page P115
11.	GA6870	1	Arm, First Stage
12.	GA4031	1	Mount W/Grease Fittings
	G10640	-	Grease Fitting, 1/4"-28
13.	GD0677	2	Pin, 2 1/8" x 15 3/4"
	G10461	4	Cotter Pin, 3/8" x 3"
14.	GA12434	1	Tire Support
15.	GD9622	1	Plate, 5 1/2" x 7 1/4"
16.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10217	4	Washer, 5/8" USS
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
17.	G10027	8	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
	G10028	-	Hex Head Cap Screw, 3/4"-10 x 3"
	G10026	-	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	8	Lock Washer, 3/4"
	G10105	6	Hex Nut, 3/4"-10
18.	GD0841	1	Tube Type Tire, 16" x 6.5" x 8" (Specify Brand*)
	GD1364	1	Tube (Not Shown)
19.	GA0246	1	Rim, T8 x 5.38" x 4"
20.	G3302-05	1	Coil Chain, No. 9/0, 79 Links, 16 Row 38", 24 Row 30" And 36 Row 20"
	G3302-10	-	Coil Chain, No. 9/0, 50 Links, 24 Row 20"
	G3302-01	-	Coil Chain, No. 9/0, 60 Links, 24 Row 22"
21.	GD9964	1	Pin, 1 1/4" x 10 1/2"
	G10979	-	Special Washer, 1 1/4" (If Applicable)
	G10460	2	Cotter Pin, 1/4" x 2"
22.	G10063	8	Hex Head Cap Screw, 3/8"-16 x 4"
	G10210	-	Washer, 3/8" USS (As Required)
	G10229	8	Lock Washer, 3/8"
	G10101	8	Hex Nut, 3/8"-16
23.	GD0692	2	Mounting Plate, 5" x 4"
24.	GA0160R	1	Support, R.H.
	GA0160L	-	Support, L.H. (Shown)
25.	GD0840	1	Dust Cap
26.	G10544	1	Cotter Pin, 5/32" x 1"
27.	G10722	4	Hex Head Cap Screw, 1/2"-20 x 1"
	G10228	4	Lock Washer, 1/2"
28.	GA0245	1	Bearing
29.	GA0243	1	Grease Seal
30.	GA0899	1	Rubber Seal
31.	GA0167	1	Hub W/Cups
	GR0151	-	Outer Cup
	GR0150	-	Inner Cup
32.	GA0257	1	Bearing
33.	G10724	1	Washer, 5/8" SAE
34.	G10725	1	Slotted Hex Nut, 5/8"-18
35.	GD10674-01	1	Nylon Cover, 141", 16 Row 38", 24 Row 30" And 36 Row 20"
	GD10674-04	-	Nylon Cover, 100", 24 Row 20" And 24 Row 22"
36.	GA9555	1	Arm W/Grease Fittings, Third Stage, 65", 16 Row 38" (Shown)
	GA12690	-	Arm W/Grease Fittings, Third Stage, 57", 24 Row 20"
	GA12695	-	Arm W/Grease Fittings, Third Stage, 65", 24 Row 22"
	GA9103	-	Arm W/Grease Fittings, Third Stage, 117", 24 Row 30" And 36 Row 20"
	G10640	-	Grease Fitting, 1/4"-28
37.	GA9101	1	Stop Weld, 24 Row 22", 24 Row 30" And 36 Row 20"
38.	GA9102	1	Arm W/Grease Fittings, Second Stage, 185", 16 Row 38", 24 Row 30" And 36 Row 20"
	GA12692	-	Arm W/Grease Fittings, Second Stage, 120", 24 Row 20"
	GA9612	-	Arm W/Grease Fittings, Second Stage, 136", 24 Row 22"
	G10640	-	Grease Fitting, 1/4"-28
39.	GD0776	1	Hose Clamp, 3/4" x 2" x 2 1/2"
40.	GD1138	8	U-Bolt, 2 1/2" x 2 1/2" x 1/2"-13, 16 Row 38"
	G10228	16	Lock Washer, 1/2"
	G10102	16	Hex Nut, 1/2"-13
41.	GA11354	1	Stop Weld, 16 Row 38"
42.	GA12803	1	Stop Weld, 24 Row 20"
A.	GA0542	-	Tire And Rim Assembly (Items 18 And 19)

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

# ROW MARKER SPINDLE/HUB/BLADE

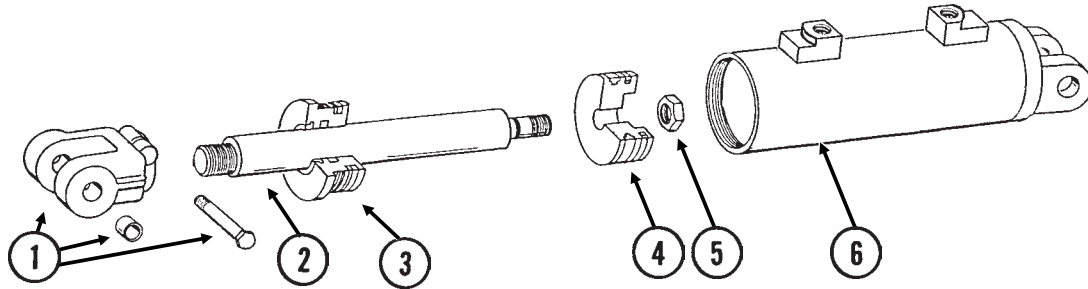
MKR020(MKR4)



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	Disc Blade, Solid, 16" (Shown)
	GD10283	-	Disc Blade, Notched, 16" (Optional)
4.	GD0840	1	Dust Cap
5.	G10725	1	Slotted Hex Nut, 5/8"-18
6.	G10544	1	Cotter Pin, 5/32" x 1"
7.	G10724	1	Washer, 5/8" SAE
8.	GA0257	1	Bearing
9.	GA0167	1	Hub W/Cups, 4 Bolt
	GR0151	-	Outer Cup
	GR0150	-	Inner Cup
10.	GA0245	1	Bearing
11.	GA0243	1	Grease Seal
12.	GA0899	1	Rubber Seal
13.	GA1677	1	Spindle, L.H. (Shown)
	GA1676	-	Spindle, R.H.
14.	G10844	2	Carriage Bolt, 1/2"-13 x 3 1/2"
	G10168	2	Machine Bushing, 1/2", 7 Gauge
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
15.	GA5853	1	Depth Band
16.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
	G10109	4	Lock Nut, 5/16"-18, Grade 8
A.	GA1679	-	Hub And Spindle Assembly, L.H. (Items 1, 2, 5-11 And 13-15)
	GA1678	-	Hub And Spindle Assembly, R.H. (Items 1, 2, 5-11 And 13-15)

# MASTER CYLINDER, ALL SIZES

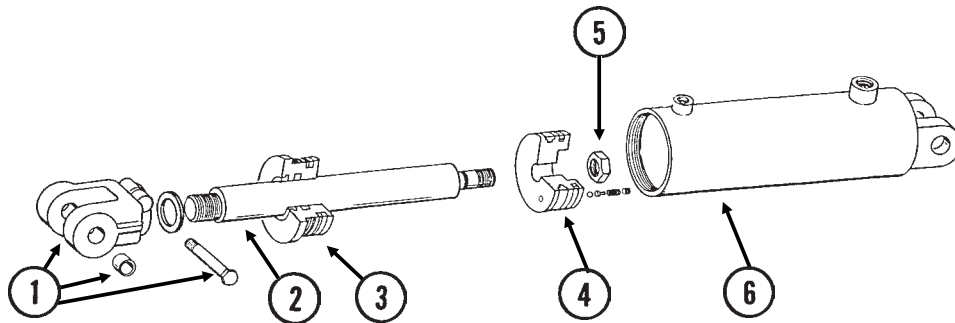
(CYL33d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8130	1	Clevis W/Bushings, Hex Head Cap Screw And Hex Nut
	GD11751	2	Steel Bushing, 1" Wide
	G10939	1	Hex Head Cap Screw, 3/8"-16 x 2 1/4"
	G10101	1	Hex Nut, 3/8"-16
2.	GD12521	1	Rod
3.	GD12522	1	Gland
4.	GD12525	1	Piston
5.	G10958	1	Lock Nut, 1"-14
6.	A8927	1	Barrel <b>(Non-Stock Item)</b>
A.	GA8928	-	Cylinder Complete, 4 1/2" x 10" <i>(Part Number Stamped On Barrel)</i>
B.	GR1530	-	Seal Kit, Includes: (1) Wiper, (1) U-Cup, (2) O-Rings, (1) BU Ring, (2) Cast Iron Rings, (1) Seal, (1) Energizer

# SLAVE CYLINDER, ALL SIZES

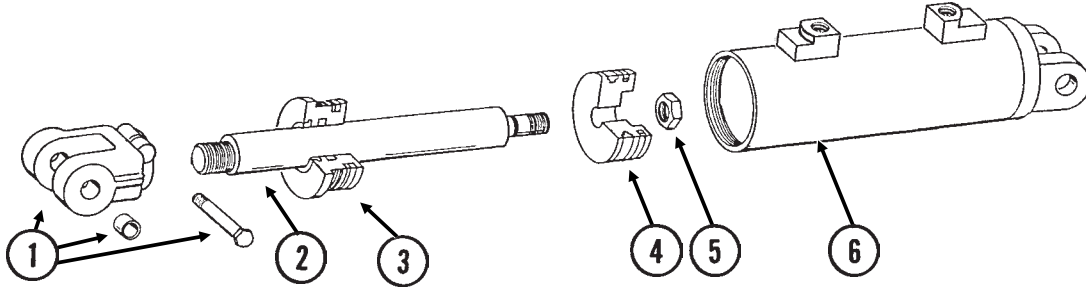
CYL055(CYL15d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8130	1	Clevis W/Bushings, Hex Head Cap Screw And Hex Nut
	GD11751	2	Steel Bushing, 1" Wide
	G10939	1	Hex Head Cap Screw, 3/8"-16 x 2 1/4"
	G10101	1	Hex Nut, 3/8"-16
2.	GD12564	1	Rod
3.	GD12572	1	Gland
4.	GA8962	1	Piston W/Rephasing Valve
	GR1169	-	Rephasing Valve Replacement Kit (Set Screw, Guide, 2 Springs And Ball)
5.	G10958	1	Lock Nut, 1"-14
6.	A8960	1	Barrel <b>(Non-Stock Item)</b>
A.	GA8961	-	Cylinder Complete, 4 3/4" x 20" <i>(Part Number Stamped On Barrel)</i>
B.	GR1546	-	Seal Kit, Includes: (1) Wiper, (1) U-Cup, (2) O-Rings, (1) BU Ring, (2) Cast Iron Rings, (1) Seal, (1) Energizer

# ASSIST CYLINDER, 36 ROW 20"

(CYL33d)



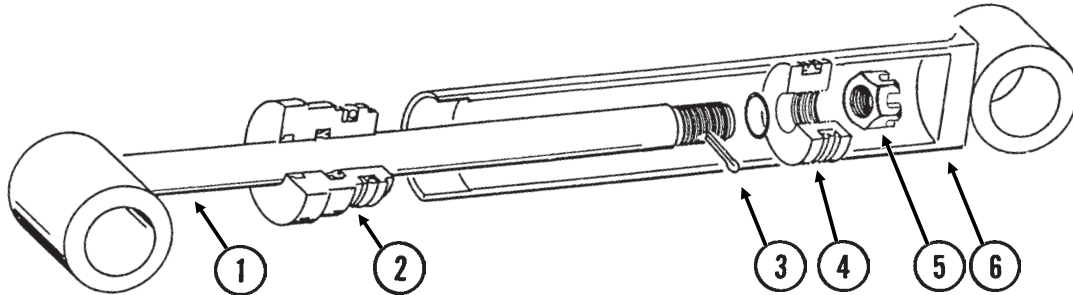
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8130	1	Clevis W/Bushings, Hex Head Cap Screw And Hex Nut
	GD11751	2	Steel Bushing, 1" Wide
	G10939	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 2 $\frac{1}{4}$ "
	G10101	1	Hex Nut, $\frac{3}{8}$ "-16
2.	GD16202	1	Rod
3.	GD11984	1	Gland
4.	GD16200	1	Piston
5.	G10958	1	Lock Nut, 1"-14
6.	A11072	1	Barrel <b>(Non-Stock Item)</b>
A.	GA11073	-	Cylinder Complete, 3" x 10" <i>(Part Number Stamped On Barrel)</i>
B.	GR1740	-	Seal Kit, Includes: (1) Wiper, (1) U-Cup, (2) O-Rings, (1) BU Ring, (2) Cast Iron Rings, (1) Seal, (1) Energizer

# ROW MARKER (Cushion) CYLINDER, 16 ROW 30" AND 24 ROW 20" (Prior To Serial No. 750921)

(CYL03b)

$\frac{3}{4}$ "-16 O-Ring Port

$\frac{7}{16}$ "-20 O-Ring Port

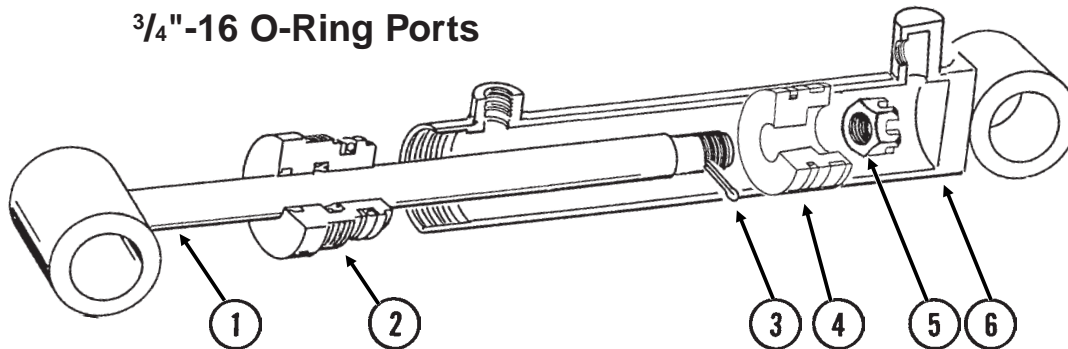


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8871	1	Rod Assembly
2.	GD10207	1	Gland
3.	G10827	1	Cotter Pin, $\frac{1}{8}$ " x $1\frac{3}{4}$ "
4.	GD11983	1	Piston
5.	G10962	1	Slotted Hex Nut, $\frac{7}{8}$ "-14
6.	A7524	1	Barrel <b>(Non-Stock Item)</b>
A.	GA8895	-	Cylinder Complete, $2\frac{1}{2}$ " x $20\frac{1}{16}$ " (Part Number Stamped On Barrel)
B.	GR1521	-	Seal Kit, Includes: (1) T-Seal, (2) O-Rings, (1) BU Ring, (1) Cast Iron Ring, (1) Wiper, (1) U-Cup

# ROW MARKER (Cushion) CYLINDER, 16 ROW 38", 24 ROW 20" (Serial No. 750921 And On) 24 ROW 22", 24 ROW 30" AND 36 ROW 20"

(CYL032d)

$\frac{3}{4}$ "-16 O-Ring Ports

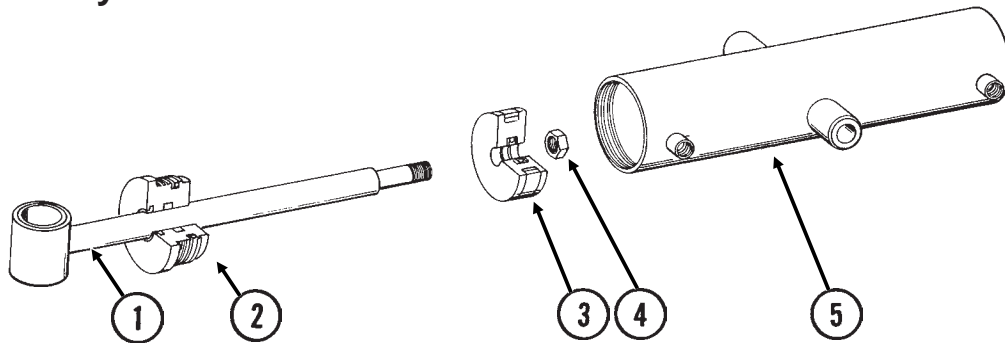


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8948	1	Rod Assembly
2.	GD12548	1	Gland
3.	G10984	1	Cotter Pin, $\frac{3}{16}$ " x $2\frac{1}{2}$ "
4.	GD12550	1	Piston
5.	G10983	1	Slotted Hex Nut, $1\frac{1}{8}$ "-12
6.	A8950	1	Barrel <b>(Non-Stock Item)</b>
A.	GA8951	-	Cylinder Complete, $3\frac{1}{2}$ " x 20" (Part Number Stamped On Barrel)
B.	GR1532	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Wiper, (1) T-Seal, (1) BU Ring, (1) Cast Iron Ring

# HELPER CYLINDER, ALL SIZES

(CYL17a)

## R.H. Side Only

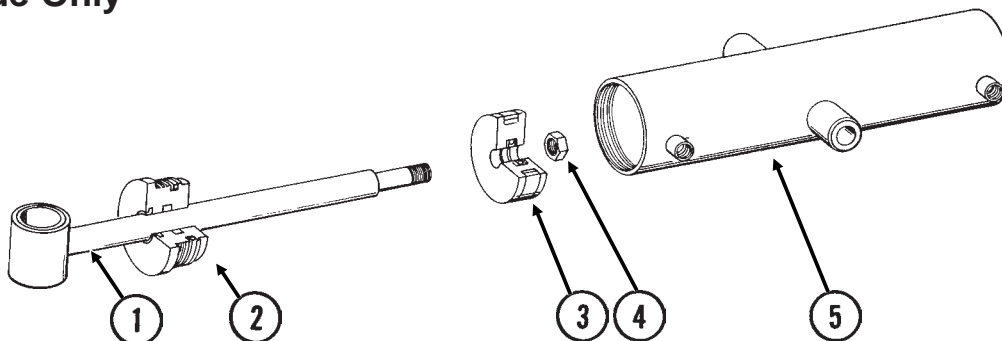


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8910 G10640	1 -	Rod Assembly W/Grease Fitting Grease Fitting, 1/4"-28
2.	GD11988	1	Gland
3.	GD11997	1	Piston
4.	G10958	1	Lock Nut, 1"-14
5.	A8300	1	Barrel ( <b>Non-Stock Item</b> )
A.	GA8906	-	Cylinder Complete, 4" x 13 5/8" ( <i>Part Number Stamped On Barrel</i> )
B.	GR1525	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper, (1) T-Seal

# HELPER CYLINDER, ALL SIZES

CYL055(CYL17a)

## L.H. Side Only

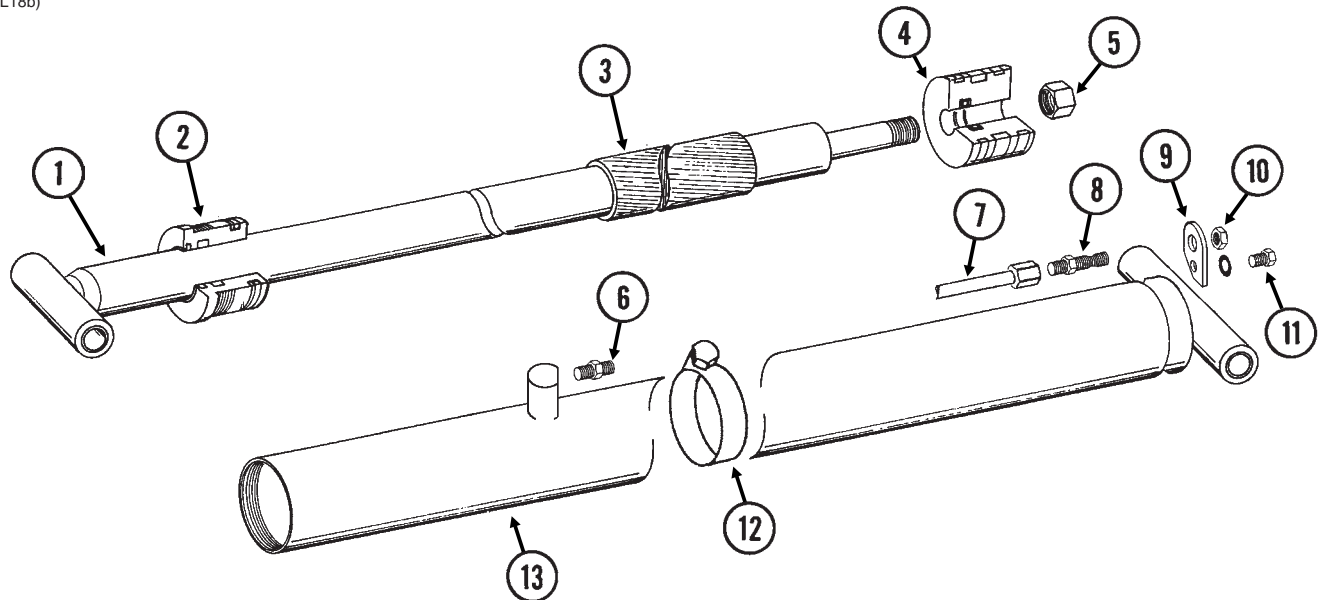


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8907 G10640	1 -	Rod Assembly W/Grease Fitting Grease Fitting, 1/4"-28
2.	GD11988	1	Gland
3.	GD11997	1	Piston
4.	G10958	1	Lock Nut, 1"-14
5.	A6852	1	Barrel ( <b>Non-Stock Item</b> )
A.	GA8905	-	Cylinder Complete, 4" x 15 5/32" ( <i>Part Number Stamped On Barrel</i> )
B.	GR1525	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper, (1) T-Seal



# TONGUE CYLINDER, 16 ROW 38", 24 ROW 20" AND 24 ROW 22"

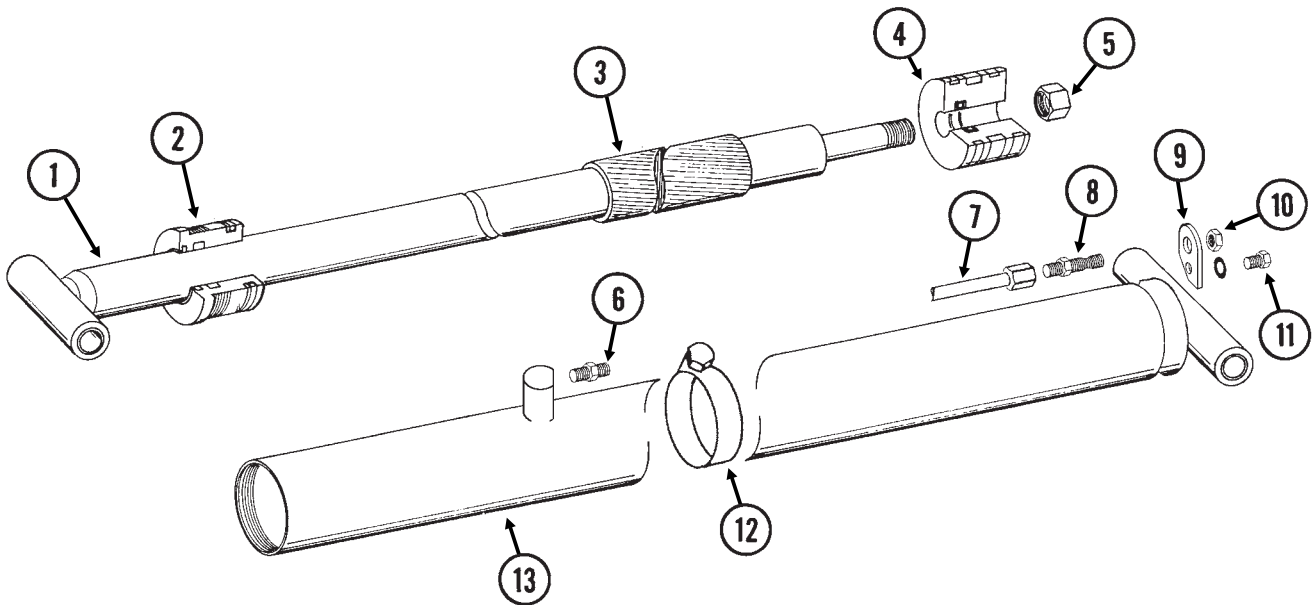
(CYL18b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA9576	1	Rod Assembly
2.	GD13448	1	Gland
3.	GD13453	1	Spacer
4.	GD13449	1	Piston
5.	G10972	1	Lock Nut, 1 1/4"-12
6.	G6400-08-04	1	Connector W/O-Ring, 3/4"-16 Male JIC To 7/16"-20 O-Ring
	GR1465	-	O-Ring
7.	GA10145	1	Steel Hydraulic Line, 145 15/16"
8.	G2700-08	1	Bulkhead Tube Union, 3/4"-16 Male JIC
9.	GD13643	1	Bracket
10.	G306-08	1	Lock Nut, 3/4"-16
11.	G10328	1	Hex Head Cap Screw, 3/8"-16 x 5/8"
	G10229	1	Lock Washer, 3/8"
12.	G11089	1	Hose Clamp
13.	GA9578	1	Barrel
A.	GA9579	-	Cylinder Complete, 4" x 132 1/2" ( <i>Part Number Stamped On Barrel</i> )
B.	GR1599	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (3) Wear Rings, (1) Piston Seal, (1) U-Cup, (1) Wiper, (1) Expander

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

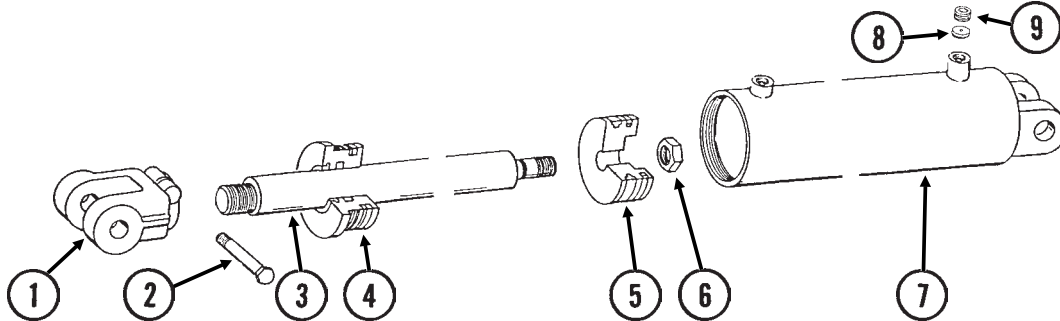
(CYL18b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA9580	1	Rod Assembly
2.	GD13448	1	Gland
3.	GD13456	1	Spacer
4.	GD13449	1	Piston
5.	G10972	1	Lock Nut, 1 1/4"-12
6.	G2700-08	1	Bulkhead Tube Union, 3/4"-16 Male JIC
7.	GA10146	1	Steel Hydraulic Line, 178 1/4"
8.	G6400-08-04	1	Connector W/O-Ring, 3/4"-16 Male JIC To 7/16"-20 O-Ring
9.	GR1465	-	O-Ring
10.	GD13643	1	Bracket
11.	G306-08	1	Lock Nut, 3/4"-16
12.	G10328	1	Hex Head Cap Screw, 3/8"-16 x 5/8"
13.	G10229	1	Lock Washer, 3/8"
12.	G11089	1	Hose Clamp
13.	GA9582	1	Barrel
A.	GA9583	-	Cylinder Complete, 4" x 162" (Part Number Stamped On Barrel)
B.	GR1599	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (3) Wear Rings, (1) Piston Seal, (1) U-Cup, (1) Wiper, (1) Expander

# HITCH PARALLEL LINKAGE CYLINDER, ALL SIZES

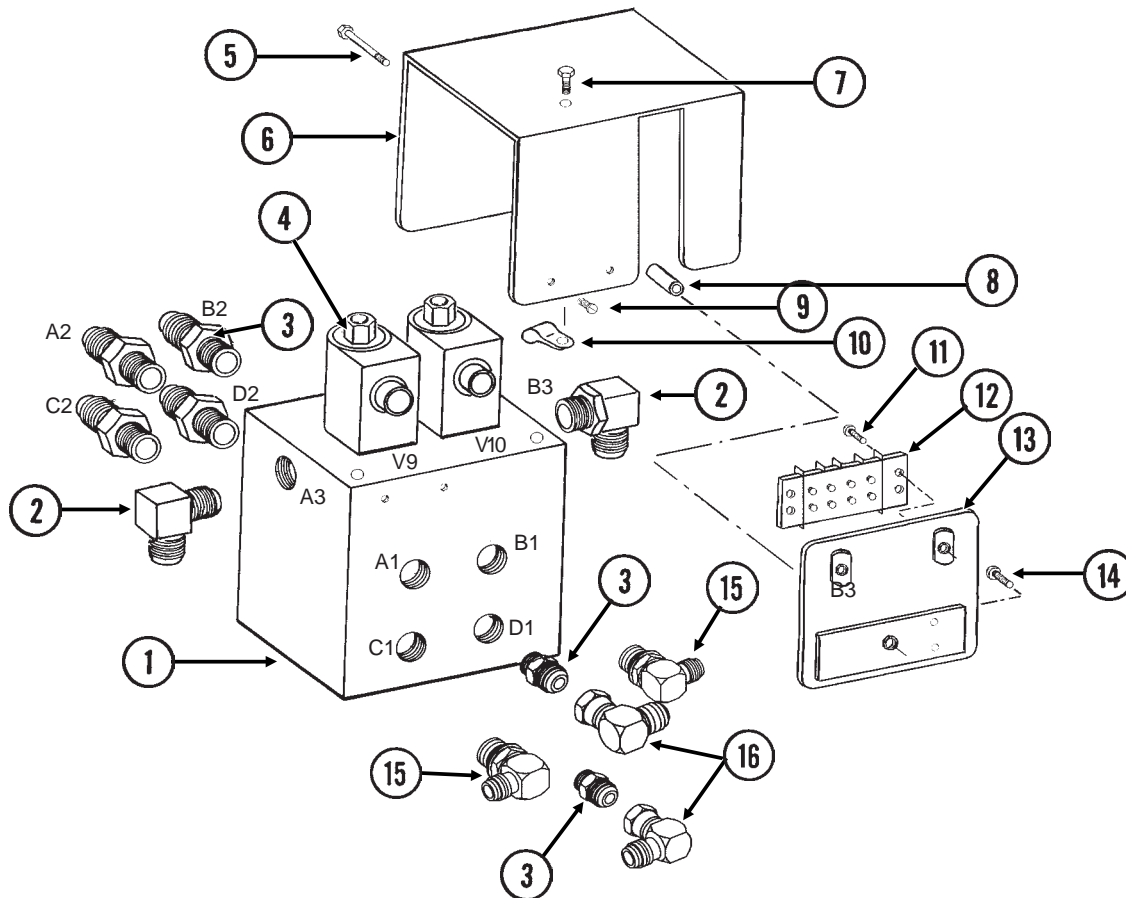
(CYL15c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD11951	1	Clevis
2.	G10939	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 2 $\frac{1}{4}$ "
	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
3.	GD12580	1	Rod
4.	GD14244	1	Gland
5.	GD14223	1	Piston
6.	G10969	1	Lock Nut, $\frac{7}{8}$ "-14
7.	A8969	1	Barrel ( <b>Non-Stock Item</b> )
8.	GD12589	1	Orifice Plate
9.	G10987	1	Hollow Lock Screw, $\frac{3}{4}$ "-16 x $\frac{3}{8}$ "
A.	GA9941	-	Cylinder Complete, 3 $\frac{1}{2}$ " x 20" ( <i>Part Number Stamped On Barrel</i> )
B.	GR1638	-	Seal Kit, Includes: (1) T-Seal, (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper, (1) Wear Ring

# VALVE BLOCK ON FRONT HITCH

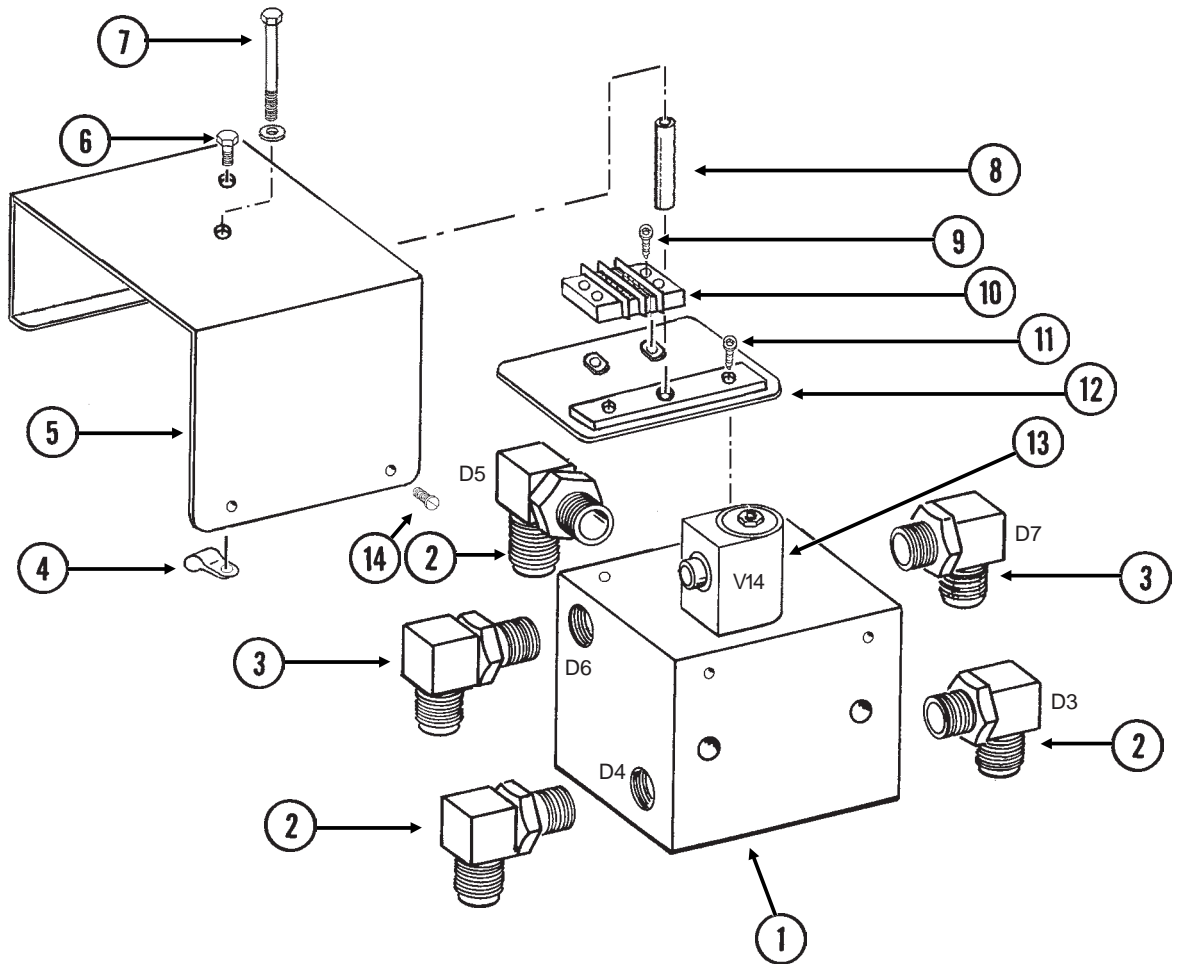
(FF19c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9531	1	Block
2.	G6801-08	2	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
3.	G6400-10-08	6	Connector W/O-Ring, 7/8"-14 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
4.		-	See "Solenoid Valve (G1K276)", Page P129
5.	G10133	1	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10232	1	Lock Washer, 5/16"
6.	GD13365	1	Cover
7.	G10054	1	Hex Head Cap Screw, 5/16"-18 x 1/2"
	G10232	1	Lock Washer, 5/16"
	G10106	1	Hex Nut, 5/16"-18
8.	GD8066-02	1	Sleeve, 1" Long
9.	G10977	2	Phillips Pan Head Machine Screw, No. 10-24 x 1/2", Stainless Steel
10.	GD13348	1	Insulated Clamp, 11/16"
11.	G11067	2	Phillips Pan Head Machine Screw, No. 8-32 x 3/4", Stainless Steel
12.	GA9510	1	Terminal Strip W/Screws, No. 6, 4 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
13.	GA9518	1	Terminal Strip Mount
14.	G11066	2	Phillips Pan Head Machine Screw, No. 10-24 x 3/4", Stainless Steel
15.	G6801-10-08	2	Elbow W/O-Ring, 90°, 7/8"-14 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
16.	G6500-10	2	Swivel Elbow, 90°, 7/8"-14 Male JIC To Female

# VALVE BLOCK ON TOWER ASSEMBLY

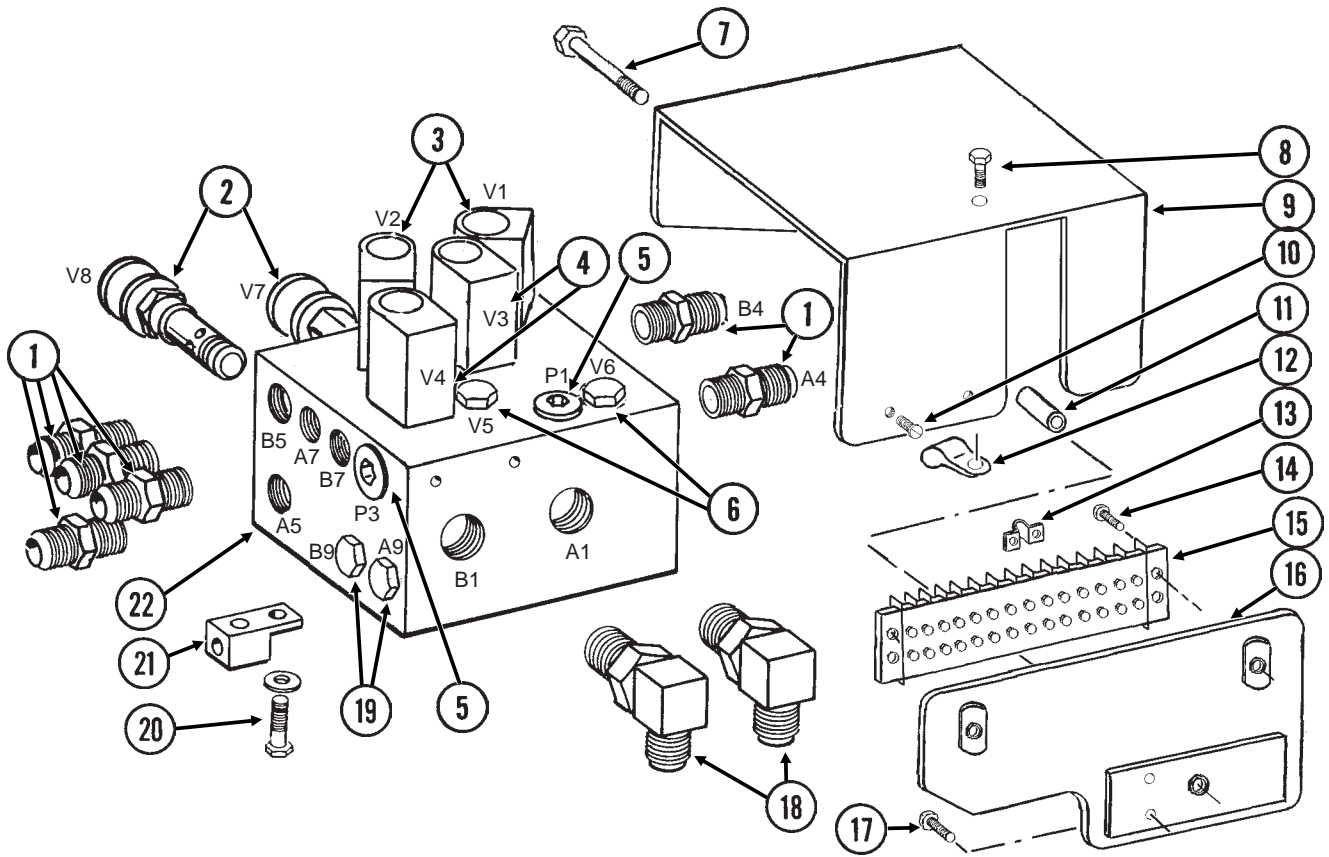
(FF20a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9536	1	Block
2.	G6801-10-08	3	Elbow W/O-Ring, 90°, 7/8"-14 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
3.	G6801-08	2	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
4.	GD13348	1	Insulated Clamp, 1 1/16"
5.	GD13366	1	Cover
6.	G10054	1	Hex Head Cap Screw, 5/16"-18 x 1/2"
	G10232	1	Lock Washer, 5/16"
	G10106	1	Hex Nut, 5/16"-18
7.	G10583	1	Hex Head Cap Screw, 5/16"-18 x 2 3/4"
	G10232	1	Lock Washer, 5/16"
8.	GD8066-03	1	Sleeve, 2 5/16" Long
9.	G11067	2	Phillips Pan Head Machine Screw, No. 8-32 x 3/4", Stainless Steel
10.	GA9511	1	Terminal Strip W/Screws, No. 6, 2 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
11.	G11066	2	Phillips Pan Head Machine Screw, No. 10-24 x 3/4", Stainless Steel
12.	GA9519	1	Terminal Strip Mount
13.		-	See "Solenoid Valve (G1K275)", Page P129
14.	G10977	2	Phillips Pan Head Machine Screw, No. 10-24 x 1/2", Stainless Steel

# VALVE BLOCK ON R.H. WING

(FF21a)



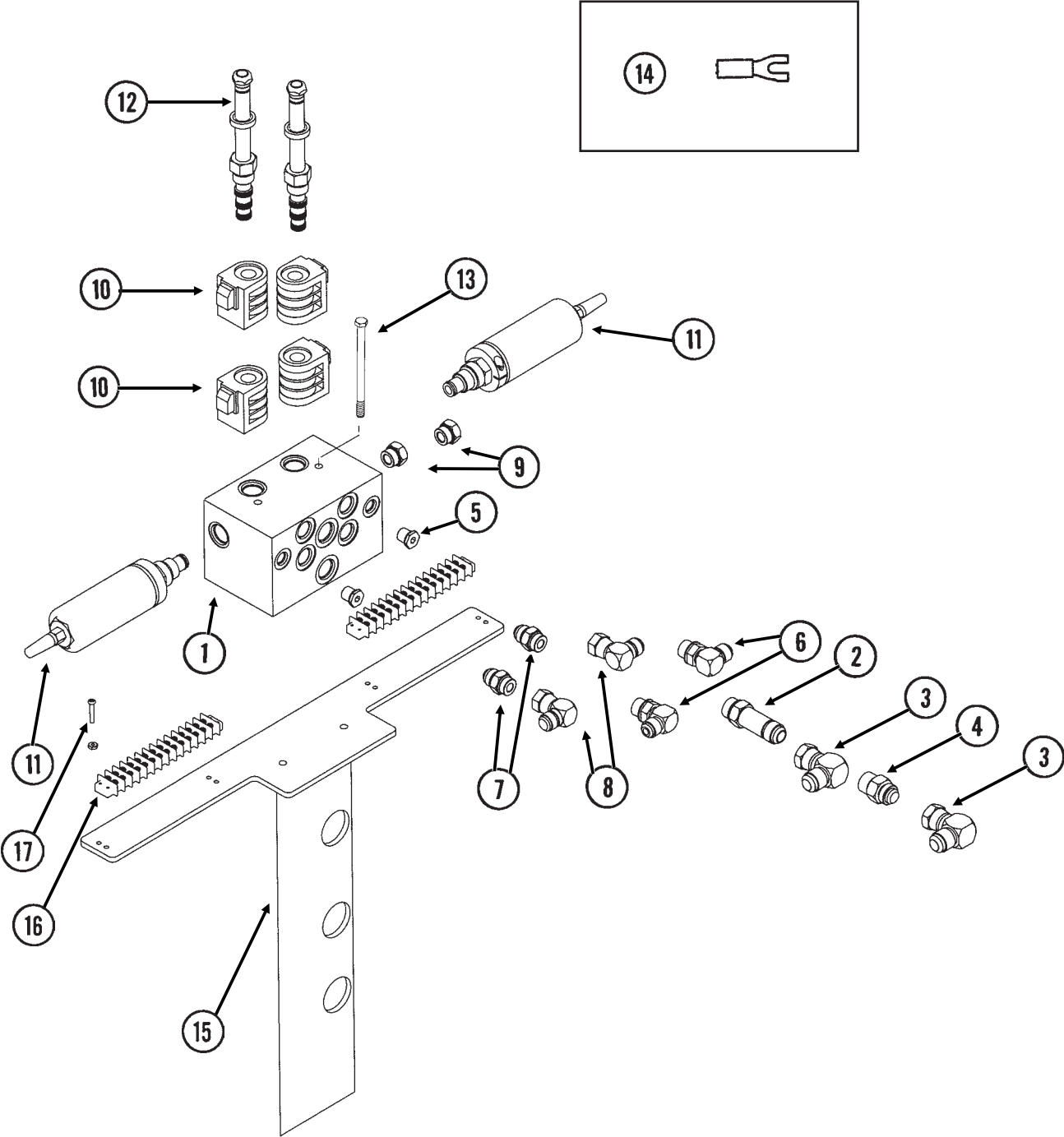
# VALVE BLOCK ON R.H. WING

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6400-08 GR1037	6 -	Connector W/O-Ring, $\frac{3}{4}$ "-16 Male JIC To O-Ring O-Ring
2.		-	See "Flow Control Valve", Page P130
3.		-	See "Solenoid Valve (G1K275)", Page P129
4.		-	See "Solenoid Valve (G1K276)", Page P129
5.	G6408-H06-O GR1045	5 -	Hex Socket Head Plug W/O-Ring, $\frac{9}{16}$ "-18 O-Ring O-Ring
6.	G6408-10 GR1466	2 -	Plug W/O-Ring, $\frac{7}{8}$ "-14 O-Ring O-Ring
7.	G10133 G10232	1 2	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x 1 $\frac{1}{2}$ " Lock Washer, $\frac{5}{16}$ "
8.	G10054 G10232 G10106	1 1 1	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{1}{2}$ " Lock Washer, $\frac{5}{16}$ " Hex Nut, $\frac{5}{16}$ "-18
9.	GD13146	1	Cover
10.	G10977	2	Phillips Pan Head Machine Screw, No. 10-24 x $\frac{1}{2}$ ", Stainless Steel
11.	GD8066-02	1	Sleeve, 1" Long
12.	GD13348	1	Insulated Clamp, $\frac{11}{16}$ "
13.	GD13310	1	Jumper, $\frac{7}{16}$ "
14.	G11067	2	Phillips Pan Head Machine Screw, No. 8-32 x $\frac{3}{4}$ ", Stainless Steel
15.	GA9097 GR1635	1 -	Terminal Strip W/Screws, No. 6, 14 Terminal Screw, No. 6-32 x $\frac{1}{4}$ "
16.	GA9095	1	Terminal Strip, Mount
17.	G11066	2	Phillips Pan Head Machine Screw, No. 10-24 x $\frac{3}{4}$ ", Stainless Steel
18.	G6801-10 GR1466	2 -	Elbow W/O-Ring, 90°, $\frac{7}{8}$ "-14 Male JIC To O-Ring O-Ring
19.	G6408-08 GR1037	6 -	Plug W/O-Ring, $\frac{3}{4}$ "-16 O-Ring O-Ring
20.	G10019 G10043 G10232	1 1 2	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x 1" Hex Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{3}{4}$ " Lock Washer, $\frac{5}{16}$ "
21.	GA3584	1	Ground Clamp
22.	GD9533	1	Block

# SDS MANIFOLD BLOCK

(FF130/A9481)





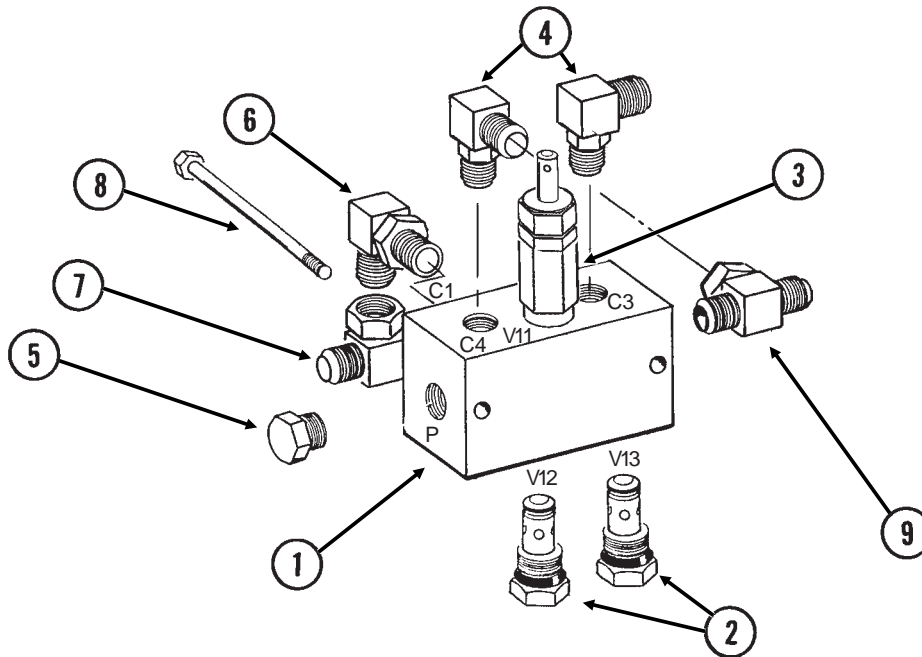
# SDS MANIFOLD BLOCK

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD16500	1	Block
2.	G6400-L-10	1	Long Connector W/O-Ring, 7/8"-14 Male JIC To O-Ring
	GR1466	-	O-Ring
3.	G6500-10	2	Swivel Elbow, 90°, 7/8"-14 Male JIC To Female
4.	GA11360	1	Check Valve
5.	G6408-H06-0	2	Hex Socket Head Plug W/O-Ring, 9/16"-18 O-Ring
	GR1045	-	O-Ring
6.	G6801-08	2	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
7.	G6400-08	2	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
8.	G6500-08	2	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
9.	G6408-08	2	Plug W/O-Ring, 3/4"-16 O-Ring
	GR1037	-	O-Ring
10.	GR1748	4	Coil
11.	GA10987	2	Flow Control Cartridge
12.	GA11365	2	Spool Valve
13.	G11935	2	Hex Head Cap Screw, 1/4"-20 x 5"
	G10209	4	Washer, 1/4" USS
	G10110	2	Lock Nut, 1/4"-20
14.	G10996	-	Fork Terminal
15.	GA12471	1	Mount
16.		-	Terminal Strip, See "Electrical Components (SDS Control Console)", Pages P140 And P141
17.	G11201	8	Phillips Pan Head Machine Screw, No. 8-32 x 1", Stainless Steel
	G11202	8	Lock Nut W/Nylon Insert, No. 8-32, Stainless Steel
A.	GR1756	-	Seal Kit For Coil, Includes: (6) BU Rings, (4) O-Rings

# VALVE BLOCK ON L.H. WING

VVB030(FF22c)



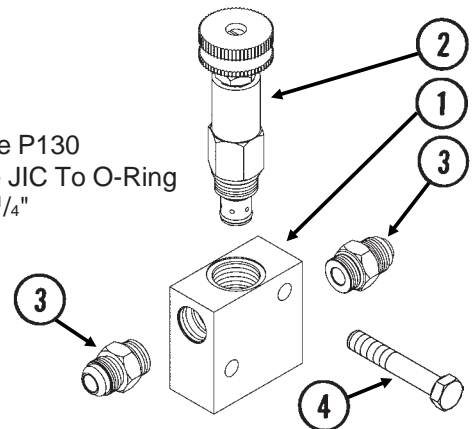
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9535	1	Block
2.		-	See "Check Valve", Page P131
3.		-	See "Pressure Relief Valve", Page P130
4.	G6801-08	2	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
5.	G6408-06	1	Plug W/O-Ring, 9/16"-18 O-Ring
	GR1045	-	O-Ring
6.	G6801-10-08	1	Elbow W/O-Ring, 90°, 7/8"-14 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
7.	G6600-10	1	Swivel Tee, 7/8"-14 JIC
8.	G10746	2	Hex Head Cap Screw, 1/4"-20 x 2 3/4"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
9.	G6600-08	1	Swivel Tee, 3/4"-16 JIC

# VALVE BLOCK ON L.H AND R.H. WHEEL MODULE

36 Row 20" Only

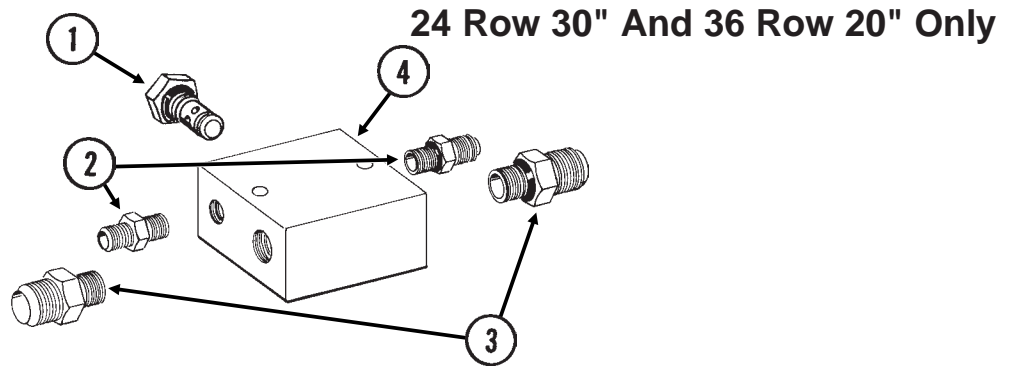
(FF103)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA12113	1	Block
2.		-	See "Pressure Relief Valve", Page P130
3.	G6400-08	1	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
4.	G10939	2	Hex Head Cap Screw, 3/8"-16 x 2 1/4"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16



# JUNCTION BLOCK - LOCATED ON L.H. WING

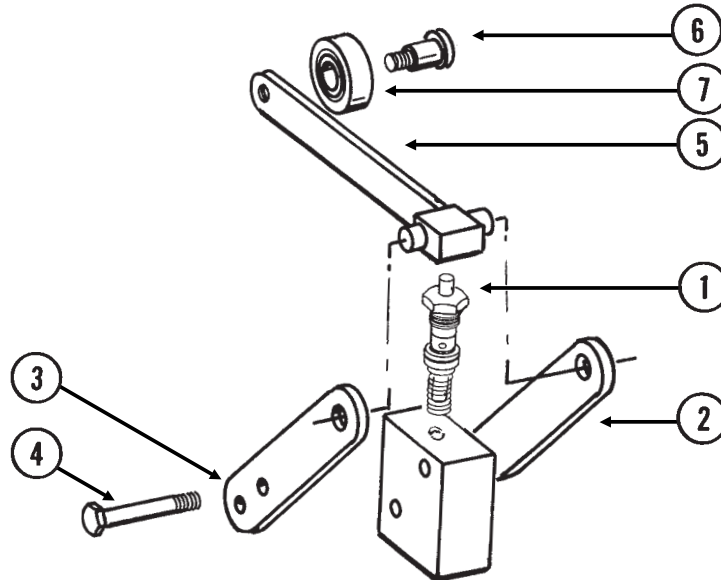
VVB038(HYD31a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Check Valve", Page P131
2.	G6400-04	2	Connector W/O-Ring, $\frac{7}{16}$ "-20 Male JIC To O-Ring
	GR1465	-	O-Ring
3.	G6400-10	2	Connector W/O-Ring, $\frac{7}{8}$ "-14 Male JIC To O-Ring
	GR1466	-	O-Ring
4.	GD13447	1	Block

# DETENT LEVER VALVE

VVB033(FF24)

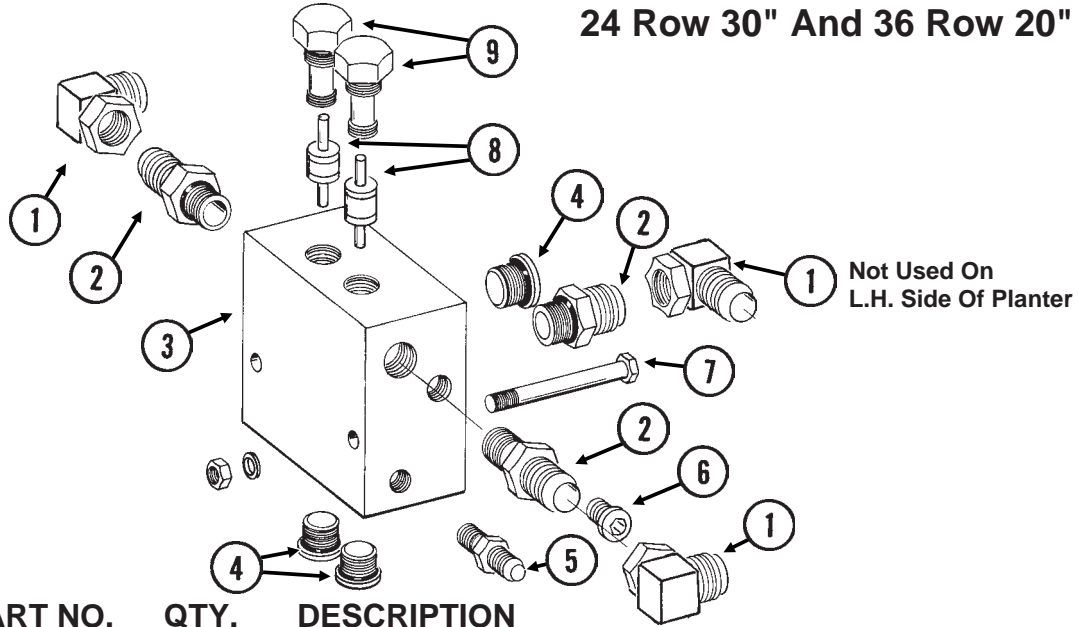


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1254	1	Valve
2.	GR1259	1	Bar
3.	GR1255	1	Bar
4.	G10060	2	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x 2 $\frac{1}{2}$ "
	G10232	2	Lock Washer, $\frac{5}{16}$ "
	G10106	2	Hex Nut, $\frac{5}{16}$ "-18
5.	GR1256	1	Arm
6.	GR1258	1	Socket Shoulder Screw, $\frac{1}{2}$ "
7.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

# PILOT OPERATED CHECK VALVE

VVB039(HYD30)

24 Row 30" And 36 Row 20" Only

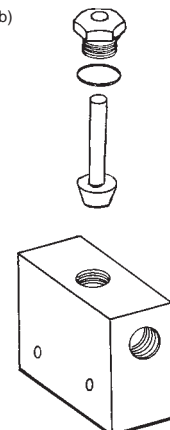


ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6500-08	2-3	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
	G6502-08	-	Swivel Elbow, 45°, 3/4"-16 Male JIC To Female
2.	G6400-08	3	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
3.	GR1455	1	Block <b>(Non-Stock Item)</b>
4.	GR1047	3	Hex Socket Plug W/O-Ring
	GR1037	-	O-Ring
5.	G6400-04	1	Connector W/O-Ring, 7/16"-20 Male JIC To O-Ring
	GR1465	-	O-Ring
6.	GR1034	1	Hex Socket Plug W/O-Ring
	GR1035	-	O-Ring
7.	G10062	1	Hex Head Cap Screw, 3/8"-16 x 3"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
8.	GR1457	2	Pilot Piston <b>(Non-Stock Item)</b>
9.	GR1456	2	Cartridge <b>(Non-Stock Item)</b>
A.	GA8409	-	Pilot Operated Check Valve (Items 3, 4, 6, 8 And 9)
B.	GR1458	-	Seal Kit, Includes: (2) Cartridge Seal Kits, (5) O-Rings, (2) BU Rings

# STROKE LIMITER VALVE

ITEM	PART NO.	QTY.	DESCRIPTION
A.	GA12105	-	Stroke Limiter Valve Complete ( <i>Part Number Stamped On Valve Block</i> )
B.	G1K255	-	Repair Kit, Includes: (1) Adapter, (1) Poppet, (1) Seal Kit W/O-Rings And BU Ring

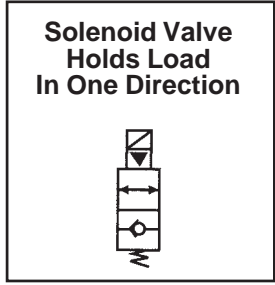
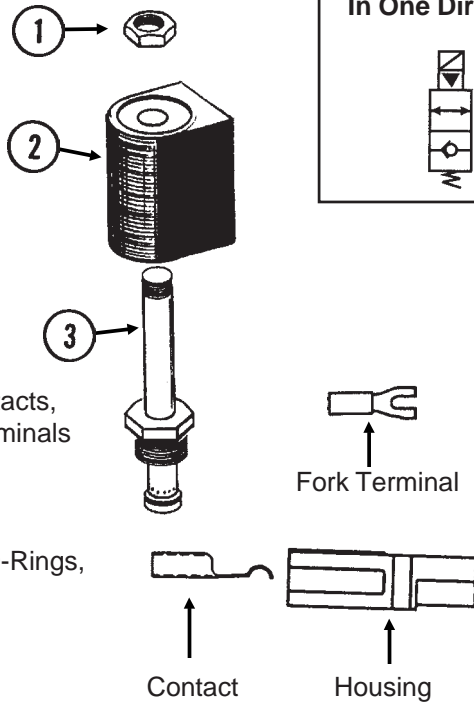
(FF23b)



# SOLENOID VALVE (G1K275)

VVB019(TWL27c/TWL18/PLTR75c/A9481)

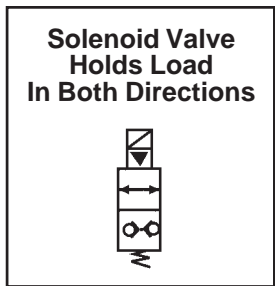
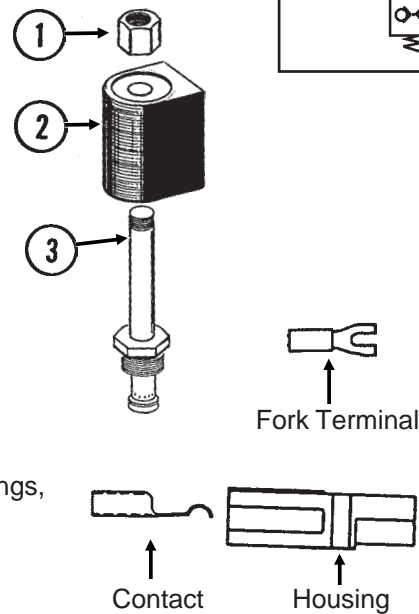
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0761	1	Special Hex Nut, 1/2"-20
2.	G1K274	1	Coil Kit W/Contacts, Housings And Fork Terminals
	GD9529	2	Housing, Black
	GD9530	2	Contact
	G10996	2	Fork Terminal
3.	GR0763	1	Cartridge
A.	G1K275	-	Solenoid Valve Kit W/Solenoid Valve, Contacts, Housings And Fork Terminals
	GD9529	2	Housing, Black
	GD9530	2	Contact
	G10996	2	Fork Terminal
B.	GR0764	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring



# SOLENOID VALVE (G1K276)

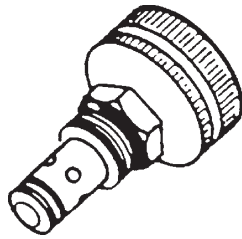
VVB019(FF25/TWL18/PLTR75c)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1322	1	Special Hex Nut, 1/2"-20
2.	G1K274	1	Coil Kit W/Contacts, Housings And Fork Terminals
	GD9529	2	Housing, Black
	GD9530	2	Contact
	G10996	2	Fork Terminal
3.	GR1321	1	Cartridge
A.	G1K276	-	Solenoid Valve Kit W/Housings, Contacts, And Forked Terminals
	GD9529	2	Housing, Black
	GD9530	2	Contact
	G10996	2	Fork Terminal
B.	GR0764	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring



# FLOW CONTROL VALVE

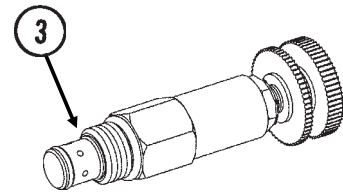
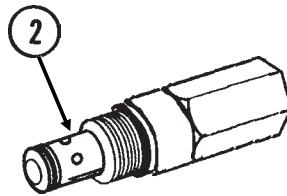
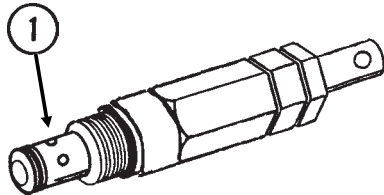
VVB020(TWL28)



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

# PRESSURE RELIEF VALVE

VVB020(FF46/FF46a/FF104)

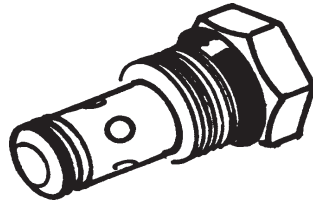


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8844	-	Pressure Relief Valve, 1750 PSI
	GR1515	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring
2.	GA10140	-	Pressure Relief Valve, 550 PSI
	GR0764	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring
3.	GA3407	-	Pressure Relief Valve, 1000 PSI
	GR0764	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring

# CHECK VALVE

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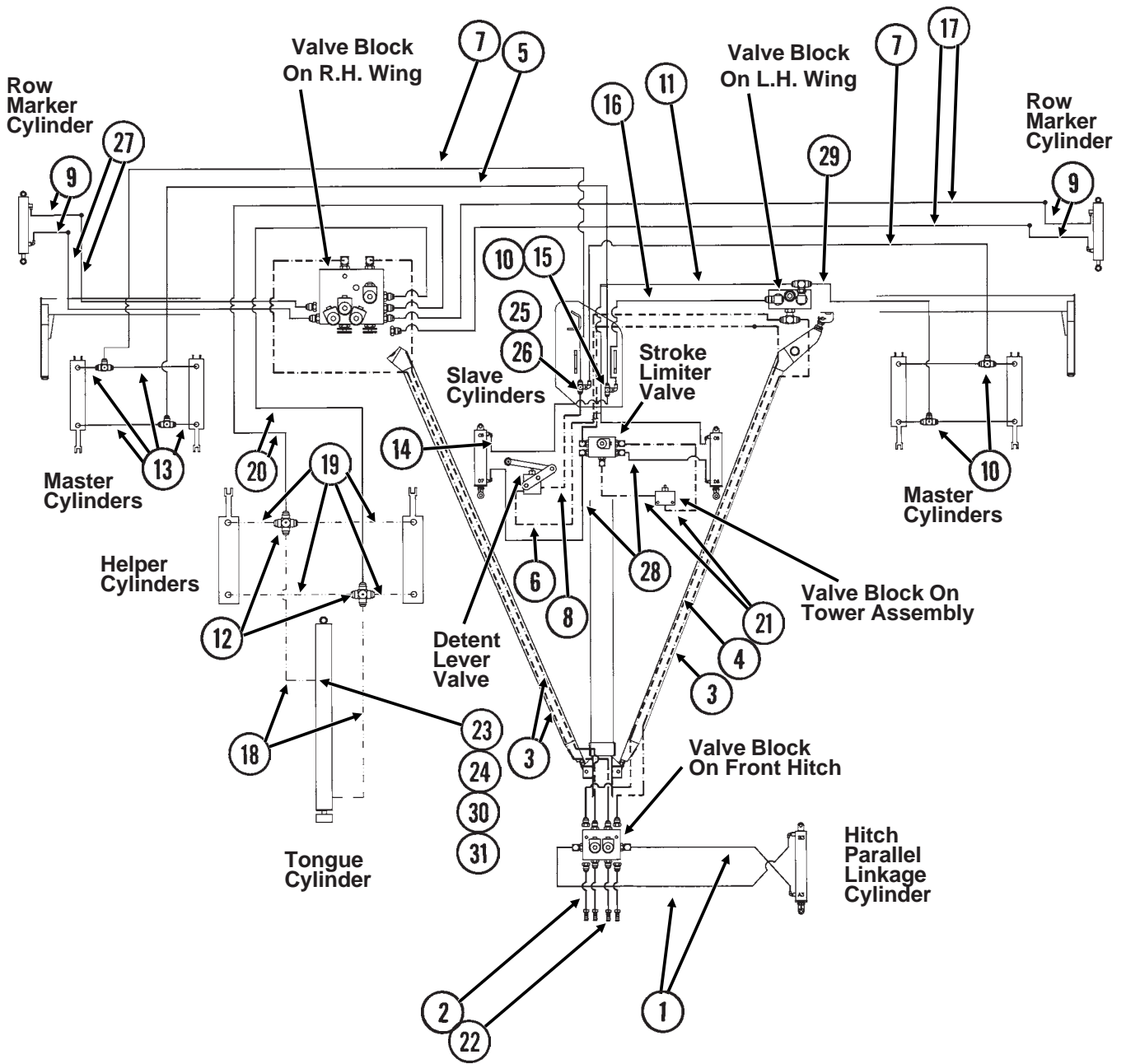
VVB020(TWL30)



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

# HYDRAULIC SYSTEM, 16 ROW 30", 16 ROW 38", 24 ROW 20" AND 24 ROW 22"

(FF97a)





# HYDRAULIC SYSTEM, 16 ROW 30", 16 ROW 38", 24 ROW 20" AND 24 ROW 22"

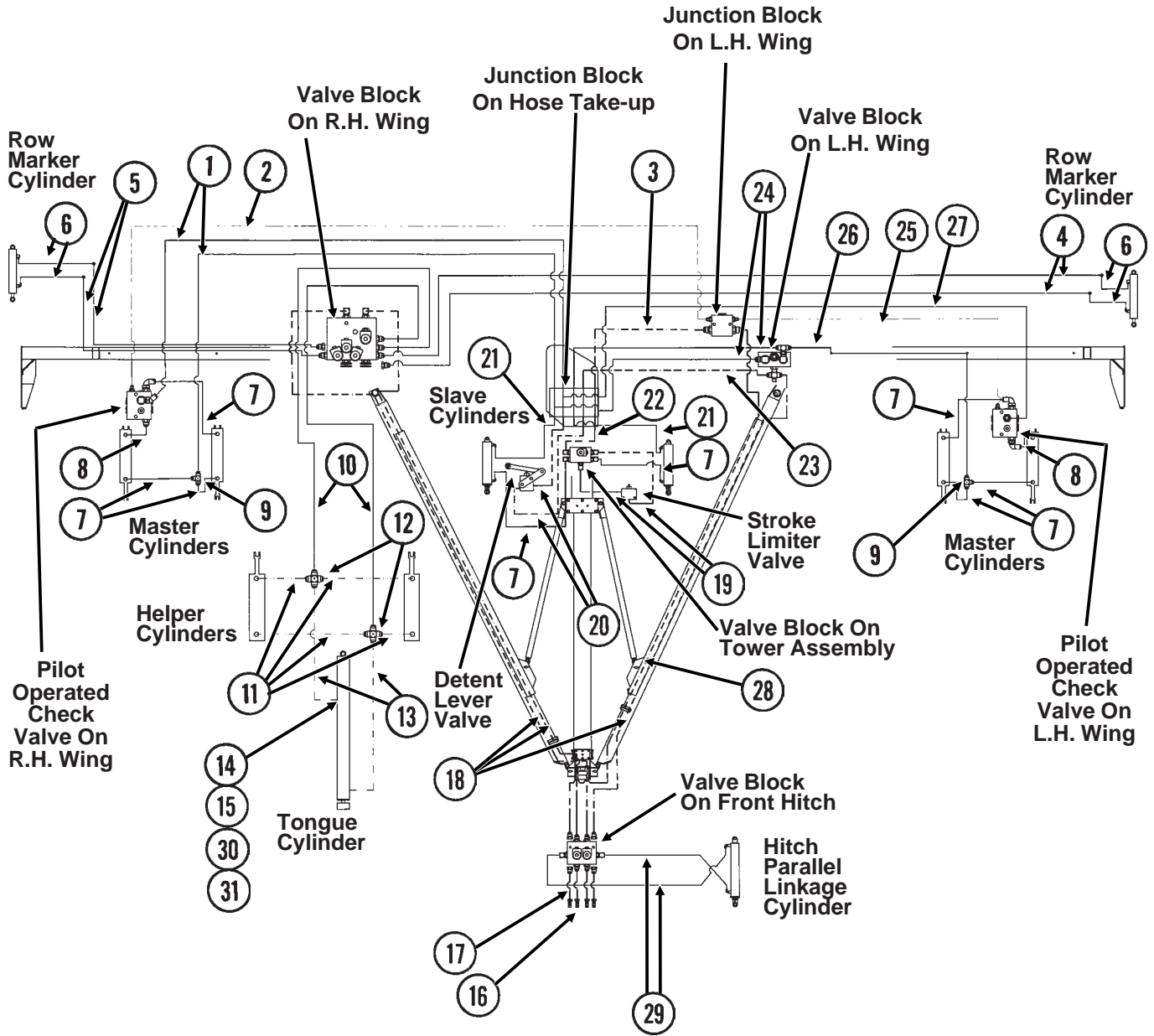
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	*A1044	2	Hose Assembly, 3/8" x 34"
2.	*A1412	4	Hose Assembly, 1/2" x 130"
3.	*A1499	3	Hose Assembly, 1/2" x 280"
4.	*A1498	1	Hose Assembly, 1/2" x 452"
5.	*A1089	1	Hose Assembly, 3/8" x 240", 24 Row 20"
	*A3185	-	Hose Assembly, 3/8" x 284", 16 Row 38"
	*A3141	-	Hose Assembly, 3/8" x 260", 24 Row 22"
6.	*A1487	1	Hose Assembly, 1/2" x 150"
7.	*A3196	2	Hose Assembly, 3/8" x 240", 24 Row 20"
	*A3276	-	Hose Assembly, 3/8" x 284", 16 Row 38"
	*A3212	-	Hose Assembly, 3/8" x 260", 24 Row 22"
8.	*A1404	1	Hose Assembly, 1/2" x 41"
9.	*A1072	4	Hose Assembly, 3/8" x 48"
10.	G2603-08	5	Tee, 3/4"-16 Male JIC
11.	*A1049	1	Hose Assembly, 3/8" x 160"
12.	G2650-06	2	Cross, 9/16"-18 Male JIC
13.	*A3119	8	Hose Assembly, 3/8" x 36", 24 Row 20"
	*A3175	-	Hose Assembly, 3/8" x 38", 16 Row 38" And 24 Row 22"
14.	*A1020	1	Hose Assembly, 3/8" x 48"
15.	G6500-08	1	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
16.	*A1010	1	Hose Assembly, 3/8" x 120"
17.	*A3197	2	Hose Assembly, 3/8" x 388", 24 Row 20"
	*A3104	-	Hose Assembly, 3/8" x 442", 16 Row 38"
	*A3213	-	Hose Assembly, 3/8" x 412", 24 Row 22"
18.	*A1146	2	Hose Assembly, 1/4" x 12"
19.	*A1189	4	Hose Assembly, 1/4" x 36"
20.	*A3195	2	Hose Assembly, 3/8" x 136"
21.	*A1424	2	Hose Assembly, 1/2" x 30"
22.	GD4086	4	ISO Coupler
23.	G6400-06-08	1	Connector W/O-Ring, 9/16"-18 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
24.	G6502-06	2	Swivel Elbow, 45°, 9/16"-18 Male JIC To Female
25.	G2603-10	1	Tee, 7/8"-14 Male JIC
26.	G6500-10	1	Swivel Elbow, 90°, 7/8"-14 Male JIC To Female
27.	*A3199	2	Hose Assembly, 3/8" x 132", 24 Row 20"
	*A1028	-	Hose Assembly, 3/8" x 186", 16 Row 38"
	*A3114	-	Hose Assembly, 3/8" x 156", 24 Row 22"
28.	*A3119	2	Hose Assembly, 3/8" x 36"
29.	*A1010	1	Hose Assembly, 3/8" x 120", 24 Row 20"
	*A1078	-	Hose Assembly, 3/8" x 174", 16 Row 38"
	*A1013	-	Hose Assembly, 3/8" x 150", 24 Row 22"
30.	*G6500-06	1	Swivel Elbow, 90°, 9/16"-18 Male JIC To Female
31.	G2406-08-06	1	Reducer, 3/4"-16 Female JIC To 9/16"-18 Male JIC

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

# HYDRAULIC SYSTEM, 24 ROW 30"

(FF98a)



# HYDRAULIC SYSTEM, 24 ROW 30"

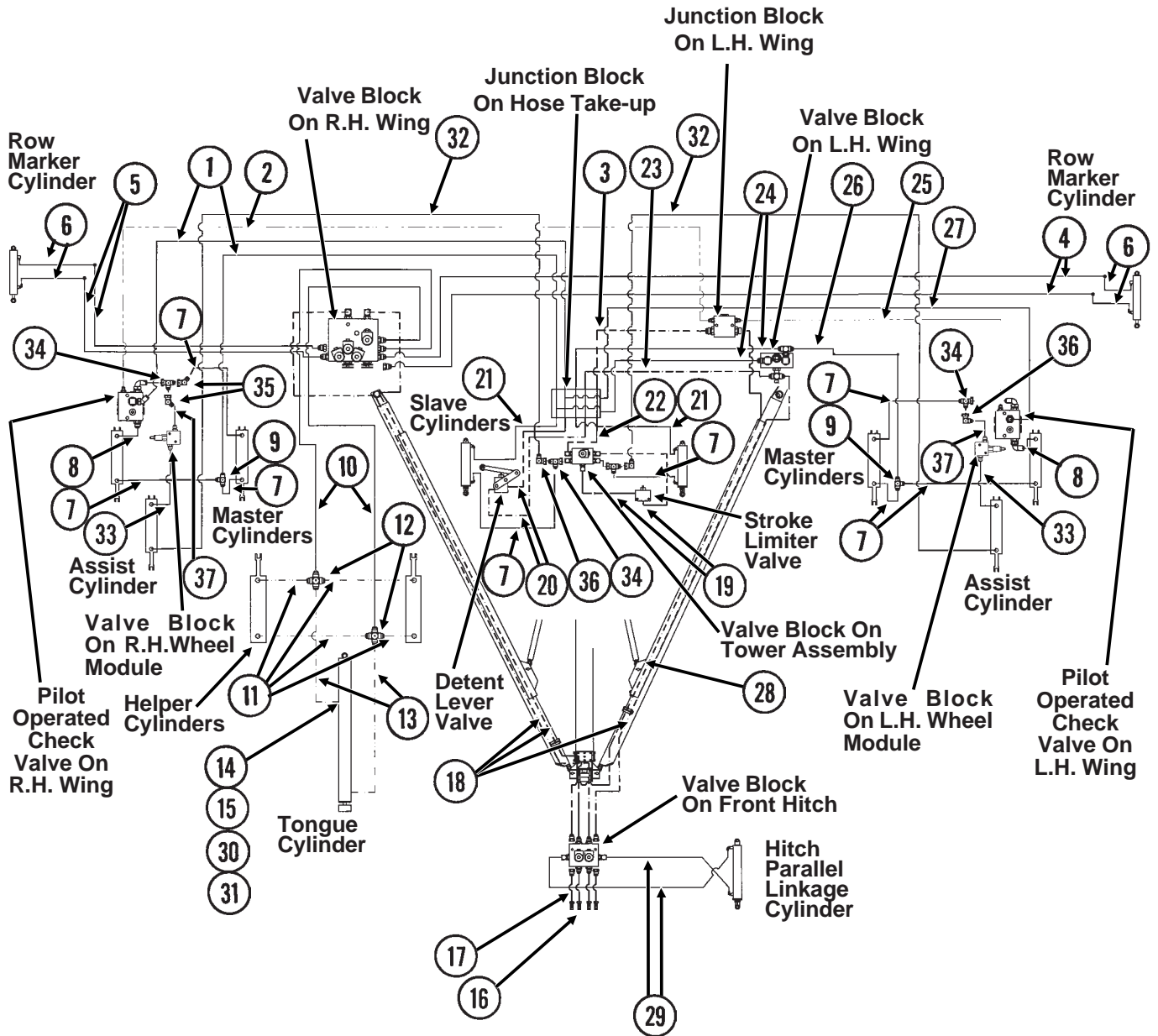
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	*A1051	2	Hose Assembly, $\frac{3}{8}$ " x 360"
2.	*A8501	1	Hose Assembly, $\frac{3}{16}$ " x 426"
3.	*A1475	1	Hose Assembly, $\frac{1}{2}$ " x 108"
4.	*A3178	2	Hose Assembly, $\frac{3}{8}$ " x 536"
5.	*A3109	2	Hose Assembly, $\frac{3}{8}$ " x 222"
6.	*A1072	4	Hose Assembly, $\frac{3}{8}$ " x 48"
7.	*A3119	8	Hose Assembly, $\frac{3}{8}$ " x 36"
8.	*A3119	2	Hose Assembly, $\frac{3}{8}$ " x 36"
9.	G2603-08	2	Tee, $\frac{3}{4}$ "-16 Male JIC
10.	*A3179	2	Hose Assembly, $\frac{3}{8}$ " x 152"
11.	*A1189	4	Hose Assembly, $\frac{1}{4}$ " x 36"
12.	G2650-06	2	Cross, $\frac{9}{16}$ "-18 Male JIC
13.	*A1146	2	Hose Assembly, $\frac{1}{4}$ " x 12"
14.	G6400-06-08	1	Connector W/O-Ring, $\frac{9}{16}$ "-18 Male JIC To $\frac{3}{4}$ "-16 O-Ring
	GR1037	-	O-Ring
15.	G6502-06	2	Swivel Elbow, 45°, $\frac{9}{16}$ "-18 Male JIC To Female
16.	GD4086	4	ISO Coupler
17.	*A1412	4	Hose Assembly, $\frac{1}{2}$ " x 130"
18.	*A1485	3	Hose Assembly, $\frac{1}{2}$ " x 330"
19.	*A1424	2	Hose Assembly, $\frac{1}{2}$ " x 30"
20.	*A1465	2	Hose Assembly, $\frac{1}{2}$ " x 84"
21.	*A3140	2	Hose Assembly, $\frac{3}{8}$ " x 94"
22.	*A1421	1	Hose Assembly, $\frac{1}{2}$ " x 107"
23.	*A1487	1	Hose Assembly, $\frac{1}{2}$ " x 150"
24.	*A1026	2	Hose Assembly, $\frac{3}{8}$ " x 152"
25.	*A1038	1	Hose Assembly, $\frac{3}{8}$ " x 370"
26.	*A3161	1	Hose Assembly, $\frac{3}{8}$ " x 210"
27.	*A8500	1	Hose Assembly, $\frac{3}{16}$ " x 260"
28.	*A8208	1	Hose Assembly, $\frac{1}{2}$ " x 374"
29.	*A1044	2	Hose Assembly, $\frac{3}{8}$ " x 34"
30.	*G6500-06	1	Swivel Elbow, 90°, $\frac{9}{16}$ "-18 Male JIC To Female
31.	G2406-08-06	1	Reducer, $\frac{3}{4}$ "-16 Female JIC To $\frac{9}{16}$ "-18 Male JIC

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

# HYDRAULIC SYSTEM, 36 ROW 20"

(FF98b)



# HYDRAULIC SYSTEM, 36 ROW 20"

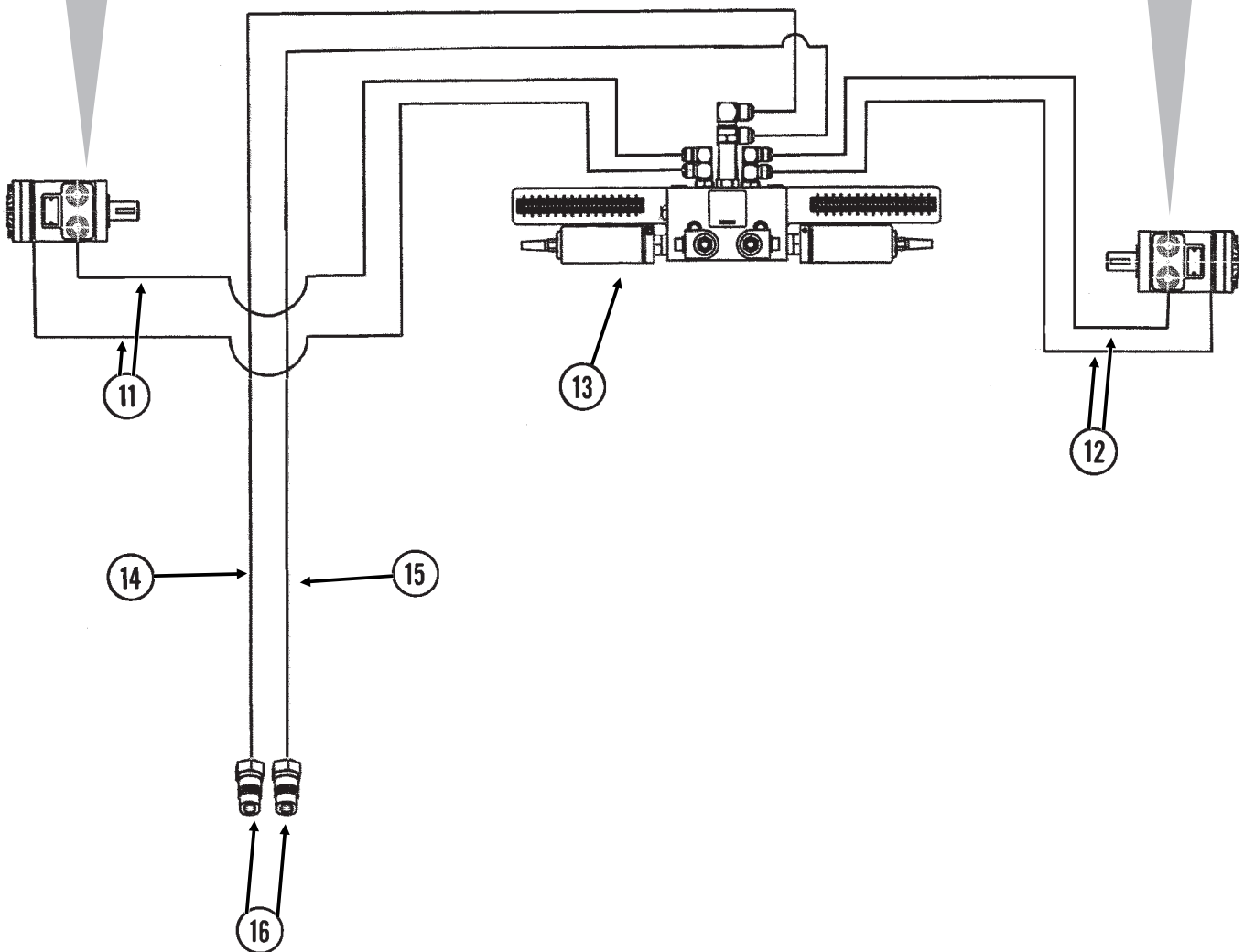
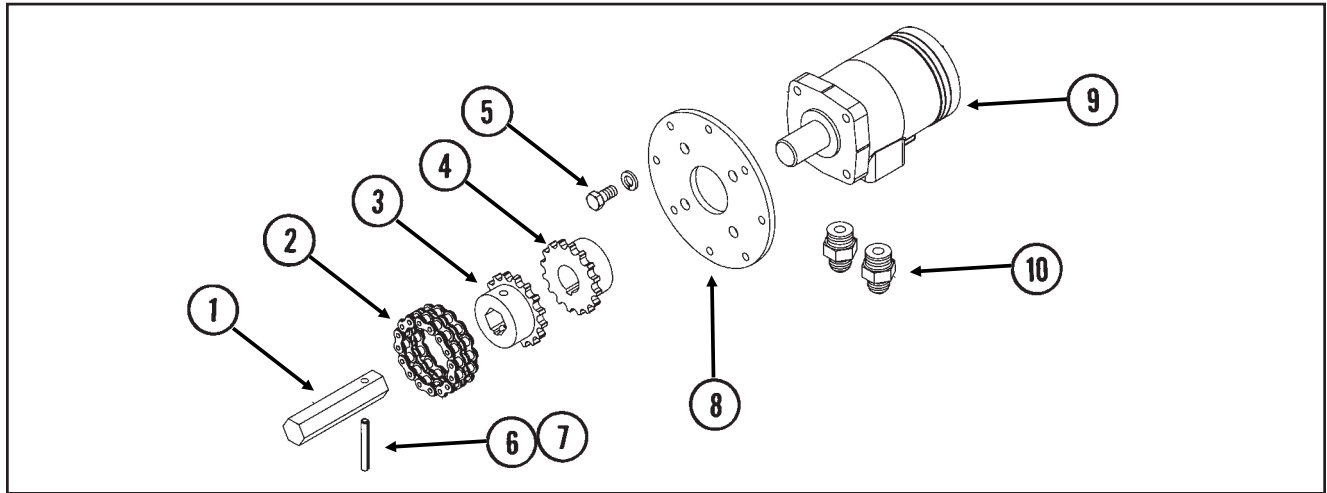
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	*A1038	2	Hose Assembly, 3/8" x 370"
2.	*A8503	1	Hose Assembly, 3/16" x 436"
3.	*A1475	1	Hose Assembly, 1/2" x 108"
4.	*A3178	2	Hose Assembly, 3/8" x 536"
5.	*A3109	2	Hose Assembly, 3/8" x 222"
6.	*A1072	4	Hose Assembly, 3/8" x 48"
7.	*A3119	8	Hose Assembly, 3/8" x 36"
8.	*A1019	2	Hose Assembly, 3/8" x 44"
9.	G2603-08	2	Tee, 3/4"-16 Male JIC
10.	*A3179	2	Hose Assembly, 3/8" x 152"
11.	*A1189	4	Hose Assembly, 1/4" x 36"
12.	G2650-06	2	Cross, 9/16"-18 Male JIC
13.	*A1146	2	Hose Assembly, 1/4" x 12"
14.	G6400-06-08	1	Connector W/O-Ring, 9/16"-18 Male JIC To 3/4"-16 O-Ring
	GR1037	-	O-Ring
15.	G6502-06	2	Swivel Elbow, 45°, 9/16"-18 Male JIC To Female
16.	GD4086	4	ISO Coupler
17.	*A1412	4	Hose Assembly, 1/2" x 130"
18.	*A1485	3	Hose Assembly, 1/2" x 330"
19.	*A1424	2	Hose Assembly, 1/2" x 30"
20.	*A1465	2	Hose Assembly, 1/2" x 84"
21.	*A3140	2	Hose Assembly, 3/8" x 94"
22.	*A1421	1	Hose Assembly, 1/2" x 107"
23.	*A1487	1	Hose Assembly, 1/2" x 150"
24.	*A1026	2	Hose Assembly, 3/8" x 152"
25.	*A3197	1	Hose Assembly, 3/8" x 388"
26.	*A1057	1	Hose Assembly, 3/8" x 216"
27.	*A8502	1	Hose Assembly, 3/16" x 270"
28.	*A8208	1	Hose Assembly, 1/2" x 374"
29.	*A1044	2	Hose Assembly, 3/8" x 34"
30.	*G6500-06	1	Swivel Elbow, 90°, 9/16"-18 Male JIC To Female
31.	G2406-08-06	1	Reducer, 3/4"-16 Female JIC To 9/16"-18 Male JIC
32.	*A3275	2	Hose Assembly, 3/8" x 490"
33.	*A1098	2	Hose Assembly, 3/8" x 26"
34.	G6602-08	4	Swivel Tee, 3/4"-16 JIC
35.	G6502-08	2	Swivel Elbow, 45°, 3/4"-16 Male JIC To Female
36.	G6500-08	3	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
37.	*A3122	2	Hose Assembly, 3/8" x 10 1/2"

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

# SDS HYDRAULIC SYSTEM

(FWD105/FF128b)



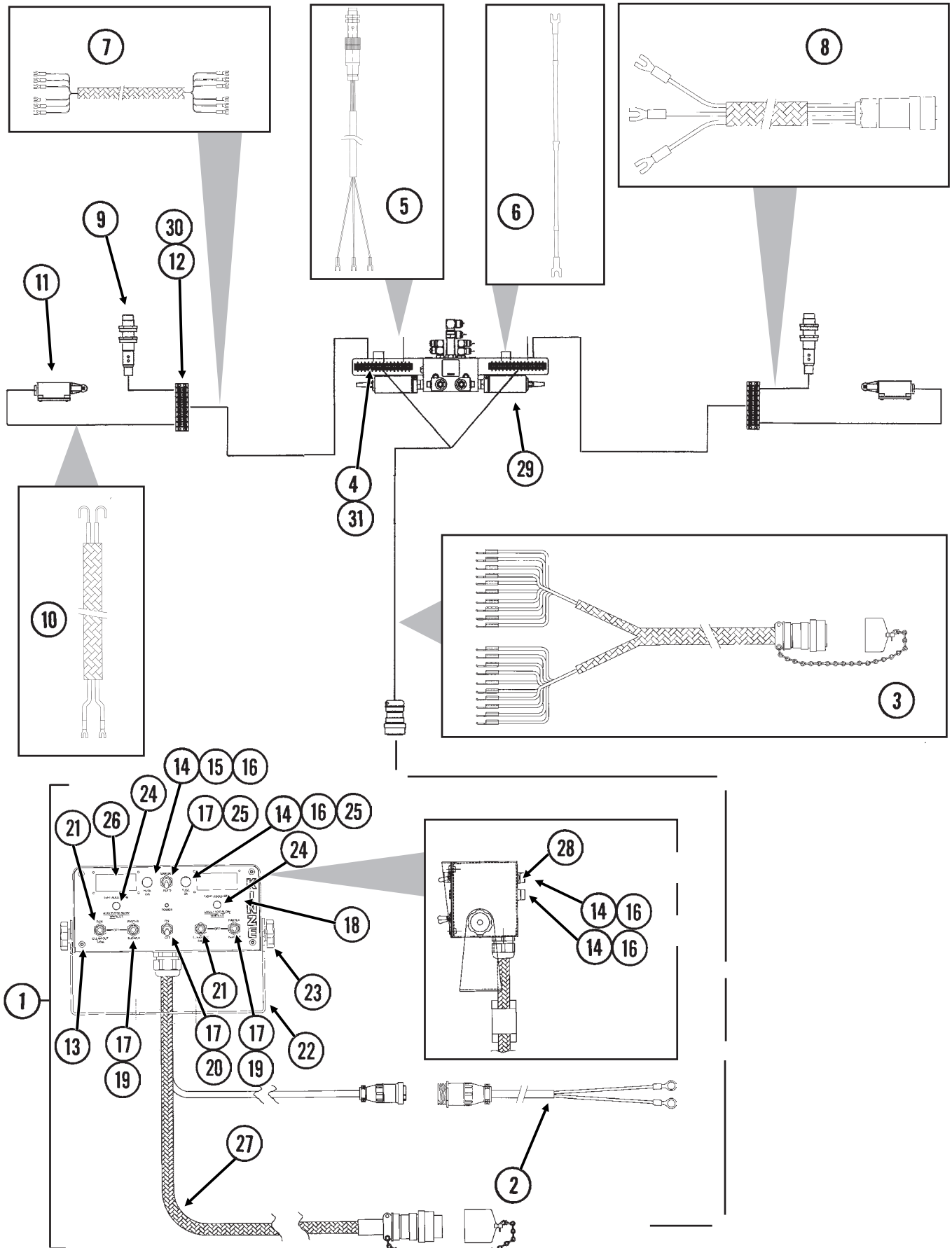
# SDS HYDRAULIC SYSTEM

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD16538	1	Shaft
2.	G3317-16	1	Chain, Double No. 40, 16 Pitches Including Connector Link
	GR1790	-	Connector Link, Double No. 40
3.	GD16489	1	Coupler, 7/8" Hex
4.	GD16490	1	Coupler, 1" I.D.
5.	G10002	4	Hex Head Cap Screw, 3/8"-16 x 3/4"
	G10229	4	Lock Washer, 3/8"
6.	G10606	1	Spring Pin, 1/4" x 2"
7.	GD13524-01	1	Lock Wire, 10", Stainless Steel
8.	GD16537	1	Plate
9.	GA11774	2	Hydraulic Motor
10.	G6400-08-10	2	Connector W/O-Ring, 3/4"-16 Male JIC To 7/8"-14 O-Ring
	GR1466	-	O-Ring
11.	*A1021	2	Hose Assembly, 3/8" x 56", 24 Row 20" And 36 Row 20"
	*A1011	-	Hose Assembly, 3/8" x 125", 24 Row 22"
	*A1019	-	Hose Assembly, 3/8" x 44", 24 Row 30"
12.	*A12041	2	Hose Assembly, 3/8" x 244", 24 Row 20" And 36 Row 20"
	*A3116	-	Hose Assembly, 3/8" x 314", 24 Row 22"
	*A1031	-	Hose Assembly, 3/8" x 234", 24 Row 30"
13.		-	See "SDS Manifold Block", Pages P124 And P125
14.	*A11430	1	Hose Assembly, 5/8" x 452", 24 Row 20"
	*A11429	-	Hose Assembly, 5/8" x 468", 24 Row 22"
	*A11423	-	Hose Assembly, 5/8" x 525", 24 Row 30" And 36 Row 20"
15.	*A12707	1	Hose Assembly, 1/2" x 452", 24 Row 20"
	*A12706	-	Hose Assembly, 1/2" x 468", 24 Row 22"
	*A8297	-	Hose Assembly, 1/2" x 525", 24 Row 30" And 36 Row 20"
16.	GD4086	2	ISO Coupler

# ELECTRICAL COMPONENTS (SDS Control Console)

(A12468/A9954/A11502/A11906/FF128a/A11376/A11378/A11348a/A11736)





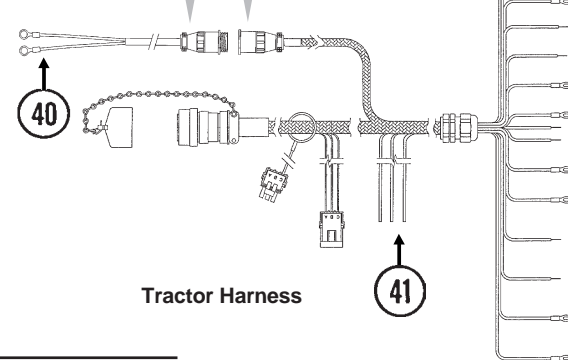
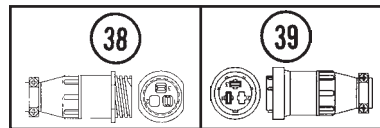
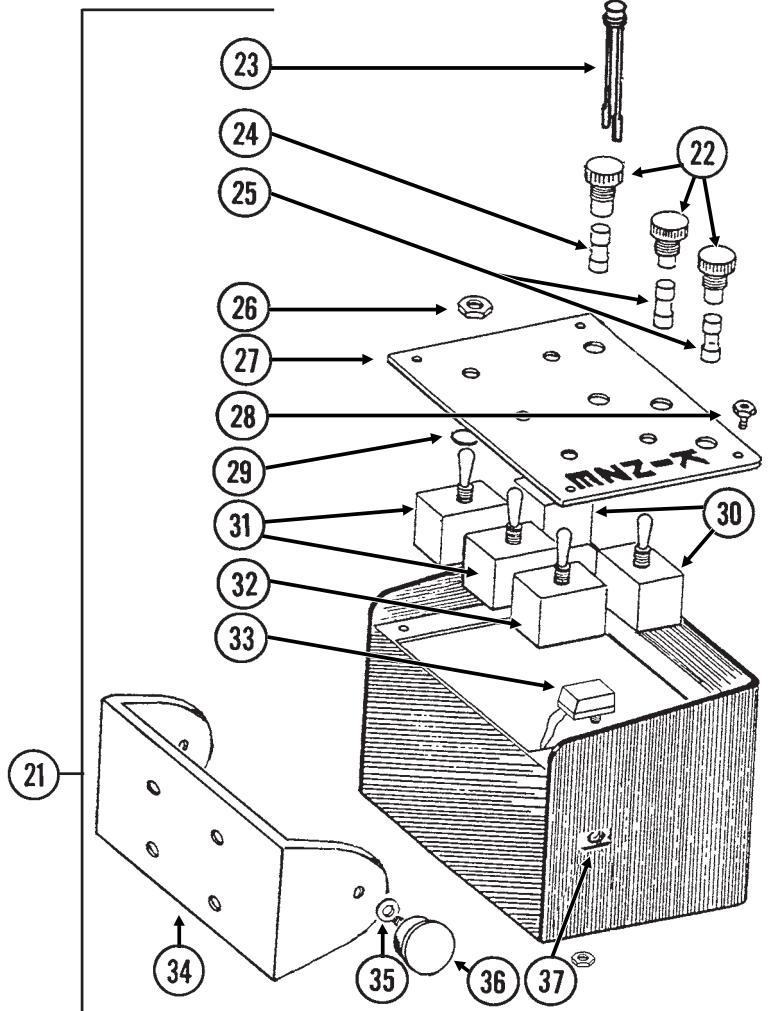
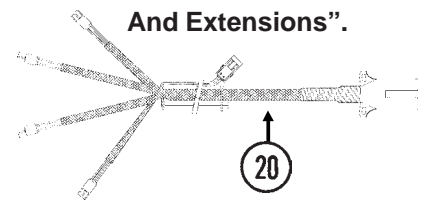
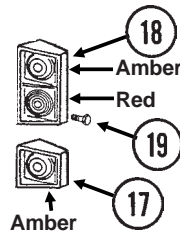
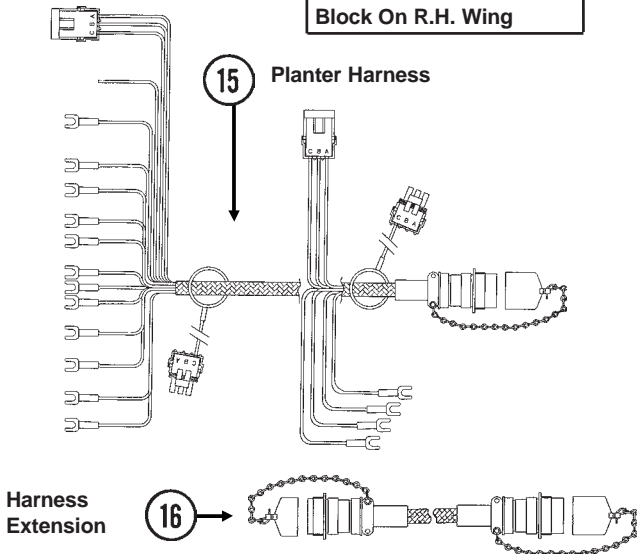
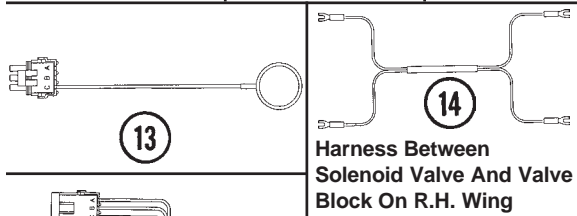
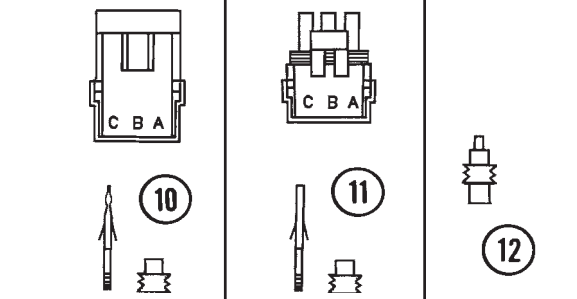
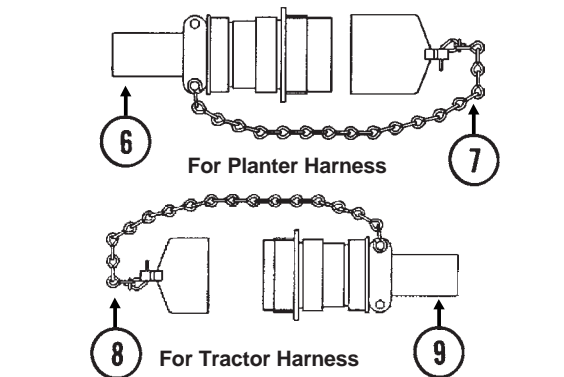
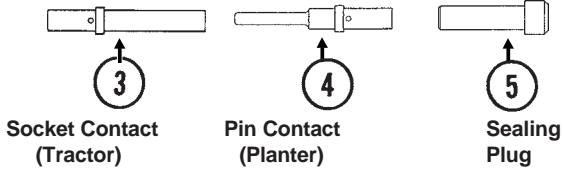
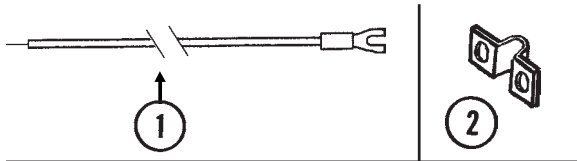
# ELECTRICAL COMPONENTS (SDS Control Console)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11348	1	SDS Control Console Assembly
2.	GA7856	1	Power Lead Adapter
3.	GA13105	1	Wiring Harness, 495", 24 Row 22" And 24 Row 20"
	GA12467	-	Wiring Harness, 552", 24 Row 30" And 36 Row 20"
4.	GA9097	2	Terminal Strip W/Screws, No. 6, 14 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
5.	GA12451	2	Speed Sensor Assembly, 24 Row 20"/30" And 36 Row 20"
	GA13270	-	Speed Sensor Assembly, 24 Row 22"
6.	GA11502	2	Voltage Stabilizer, 8 1/2"
7.	GA13106	1	Wiring Harness, 232", R.H., 24 Row 20"
	GA13107	-	Wiring Harness, 396", L.H., 24 Row 20"
	GA13272	1	Wiring Harness, 150", R.H., 24 Row 22"
	GA13271	-	Wiring Harness, 480", L.H., 24 Row 22"
	GA12468	-	Wiring Harness, 336", R.H., 24 Row 30" And 36 Row 20"
	GA12469	-	Wiring Harness, 516", L.H., 24 Row 30" And 36 Row 20"
8.	GA11906	2	4-Pin Connector, 48"
9.	GA11387	2	Proximity Sensor
10.	GA11378	2	Wiring Harness, 48"
11.	GA11066	2	Limit Switch
12.	GA9098	2	Terminal Strip W/Screws, No. 6, 8 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
13.	GR1292	4	Pan Head Screw, No. 8-32 x 1/2"
14.	GA2612	3	Fuse Holder W/Spade, 1 33/50"
15.	GD2829	1	Fuse, 15 Amp, Type AGC
16.	GD3860	3	O-Ring
17.	GR1363	4	Hex Face Nut, 15/32"-32
	GR1364	4	Internal Tooth Lock Washer, 15/32"
18.	GA12171	1	Cover Plate
19.	GA6978	2	Switch, 3 Position Toggle, Momentary On-Off-Momentary On
20.	GA6977	1	Switch, 2 Position Toggle, On-Off
21.	GA12173	2	Switch, 3 Position Locking Toggle
22.	GD14640	1	Mounting Bracket
23.	GA6975	2	Knob
	G10211	4	Washer, 1/4" SAE
	GR1290	2	Cage Nut, 1/4"-20
24.	GA10195	2	Indicator Light, Amber
25.	GA12174	1	Switch, 2 Position Toggle, Momentary-On
26.	GA9965	2	Tachometer
27.	GA12180	1	Wiring Harness W/Dust Cap And Power Cable
28.	G11112	1	Plug, 3/8"
29.		-	See "SDS Manifold Block", Pages P124 And P125
30.	GD18102	2	Cover, 1 3/8" x 4"
	GD18100	4	Clip
31.	GD18103	2	Cover, 1 3/8" x 5 3/4"
	GD18100	4	Clip

# ELECTRICAL COMPONENTS

(A9481/TWL26e/FF27b/FF27c//A9102a/ELC14/ELC3a/ELC5c/MTR27a/ELC8/ELC11a/FF29a/ELC4/TWL20f/ELC10c/ELC34/ELC35)

See page P145 for "Light/ Reflective Decal Brackets And Extensions".



# ELECTRICAL COMPONENTS

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA9481	-	Jumper Wire W/Fork Terminal, 13"
	G10996	-	Fork Terminal
2.	GD13310	-	Jumper, 7/16"
3.	GD8740	-	Socket Contact, No. 14
4.	GD8741	-	Pin Contact, No. 14
5.	GD8739	-	Sealing Plug, No. 12
6.	GA6109	1	Connector W/Cable Clamp, 23 Pin Capacity
7.	GA7862	-	Dust Cap W/Chain
8.	GA7863	-	Dust Cap W/Chain
9.	GA6108	1	Connector W/Cable Clamp, 23 Socket Capacity
10.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
11.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
12.	GD11089	-	Sealing Plug
13.	GA8047	-	Dust Plug (Black)
14.	GA9513	1	Wiring Harness, 312", From Valve Block On R.H. Wing To Tower Assembly
15.	GA9496	1	Wiring Harness W/Dust Cap, 468"
16.	GA7399	-	Harness Extension W/Dust Caps, 180"
17.	GA6701	1	Single Amber Light Assembly
	GR1204	-	Amber Lens
	GR1206	-	Rubber Grommet (2)
	GR1207	-	Lamp Unit
	GR1208	-	Bulb
18.	GA6699	1	Double Light Assembly
	GA6700	1	Double Light Assembly (Shown)
	GR1203	-	Red Lens
	GR1204	-	Amber Lens
	GR1205	-	Cover
	GR1206	-	Rubber Grommet (4)
	GR1207	-	Lamp Unit
	GR1208	-	Bulb
19.	G10064	8	Hex Head Cap Screw, 1/4"-20 x 1"
	G10857	8	Hex Head Cap Screw, 1/4"-20 x 1 1/4"
	G10110	16	Lock Nut, 1/4"-20, Grade B
20.	GA9502	1	Wiring Harness W/7 Terminal Female Connector, 659" (4 Light Connections)
	GA5385	-	7 Terminal Female Connector
21.	G7633X	-	Backlit Control Console Assembly W/Mounting Brackets, Short Harness W/Dust Cap And Power Cable (Shown)
	G7639X	-	Backlit Control Console Assembly W/Mounting Brackets, Short Harness W/Dust Cap And Power Cable, Planters Equipped With Two-Speed Point Row Clutches
22.	GA2612	3-5	Fuse Holder W/Spade, 1 33/50"
23.	GA7077	1-4	Indicator Light
24.	GD2829	1-2	Fuse, 15 Amp, Type AGC
25.	GD10243	2-6	Fuse, MDL 10 Amp Delay Action
26.	GR1363	5	Hex Face Nut, 15/32"-32
	GR1364	5	Internal Tooth Lock Washer, 15/32"

(Continued On Following Page)

# ELECTRICAL COMPONENTS

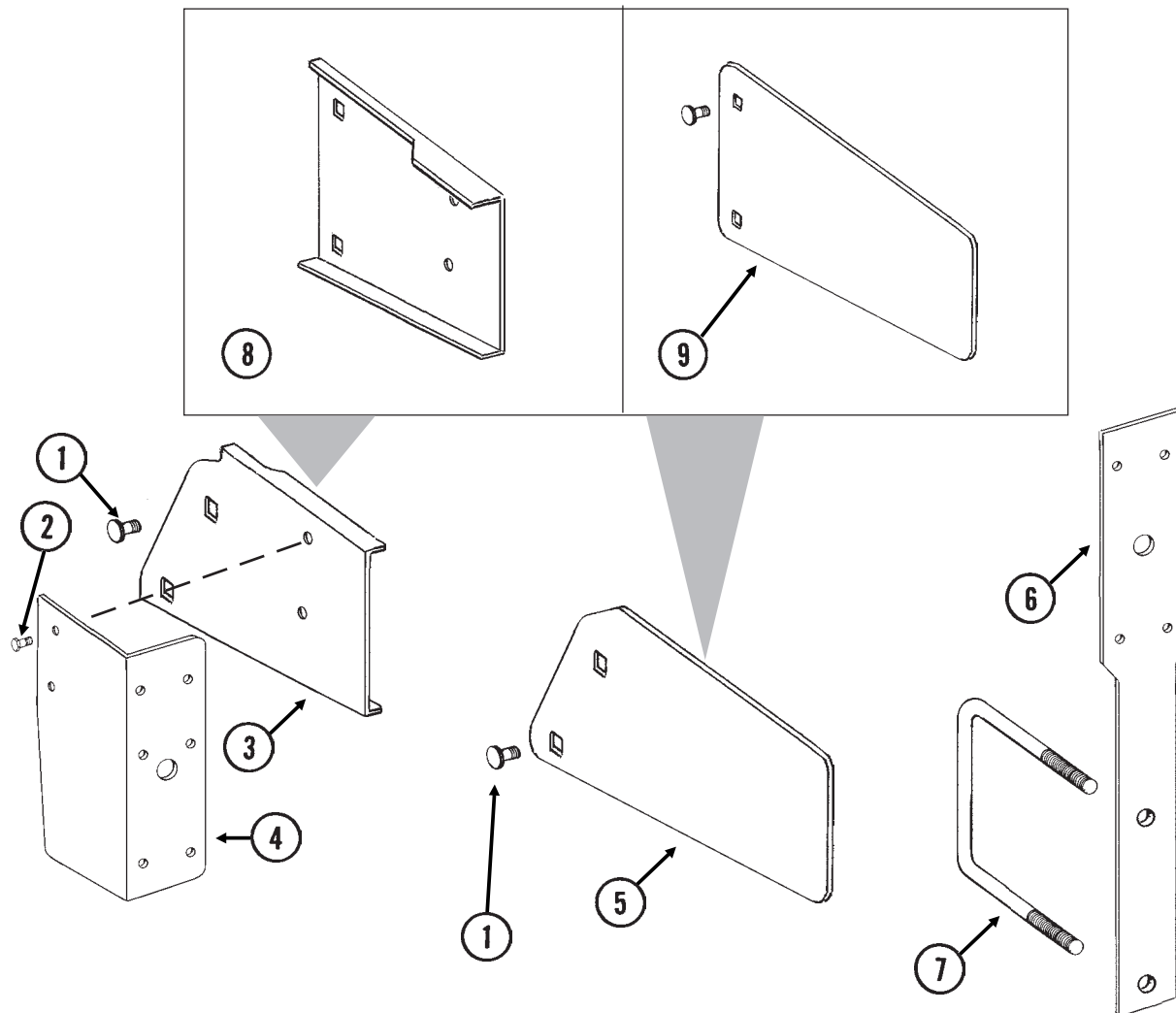
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ITEM	PART NO.	QTY.	DESCRIPTION
27.	GA8734	1	Cover Plate (Shown)
	GA8735	-	Cover Plate, Planters Equipped With Two-Speed Point Row Clutches
28.	GR1292	4	Pan Head Screw, No. 8-32 x 1/2"
29.	GD3860	-	O-Ring (If Applicable)
30.	GA2528	2	Switch, 3 Position Toggle, On-Off-On
31.	GA6978	2	Switch, 3 Position Toggle, Momentary On-Off-Momentary On
32.	GA6977	1-2	Switch, 2 Position Toggle, On-Off
33.	GA8731	1	Switch, Push Button W/Transformer
34.	GD9896	1	Mounting Bracket
35.	G10211	4	Washer, 1/4" SAE
36.	GA6975	2	Knob
37.	GR1290	2	Cage Nut, 1/4"-20
38.	G1K267	-	Power Lead Adapter Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (3) Male Terminal Pins
39.	G1K268	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (1) Lock Ring, (3) Female Terminal Pins
40.	GA7856	1	Power Lead Adapter
41.	GA8729	1	Wiring Harness W/Dust Cap And Power Cable

NOTE: See "Point Row Clutch" or "Two-Speed Point Row Clutch" for R.H. and L.H. Wiring Harnesses for the point row clutches. See "KPM I Electronic Seed Monitor" or "KPM II Stack-Mode/KPM III Electronic Seed Monitors" for those components.

# LIGHT/REFLECTIVE DECAL BRACKETS AND EXTENSIONS

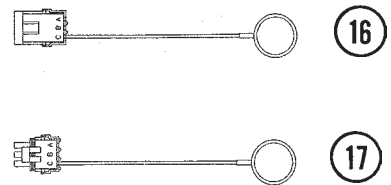
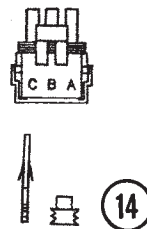
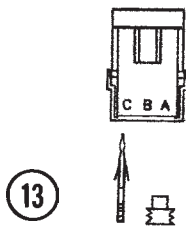
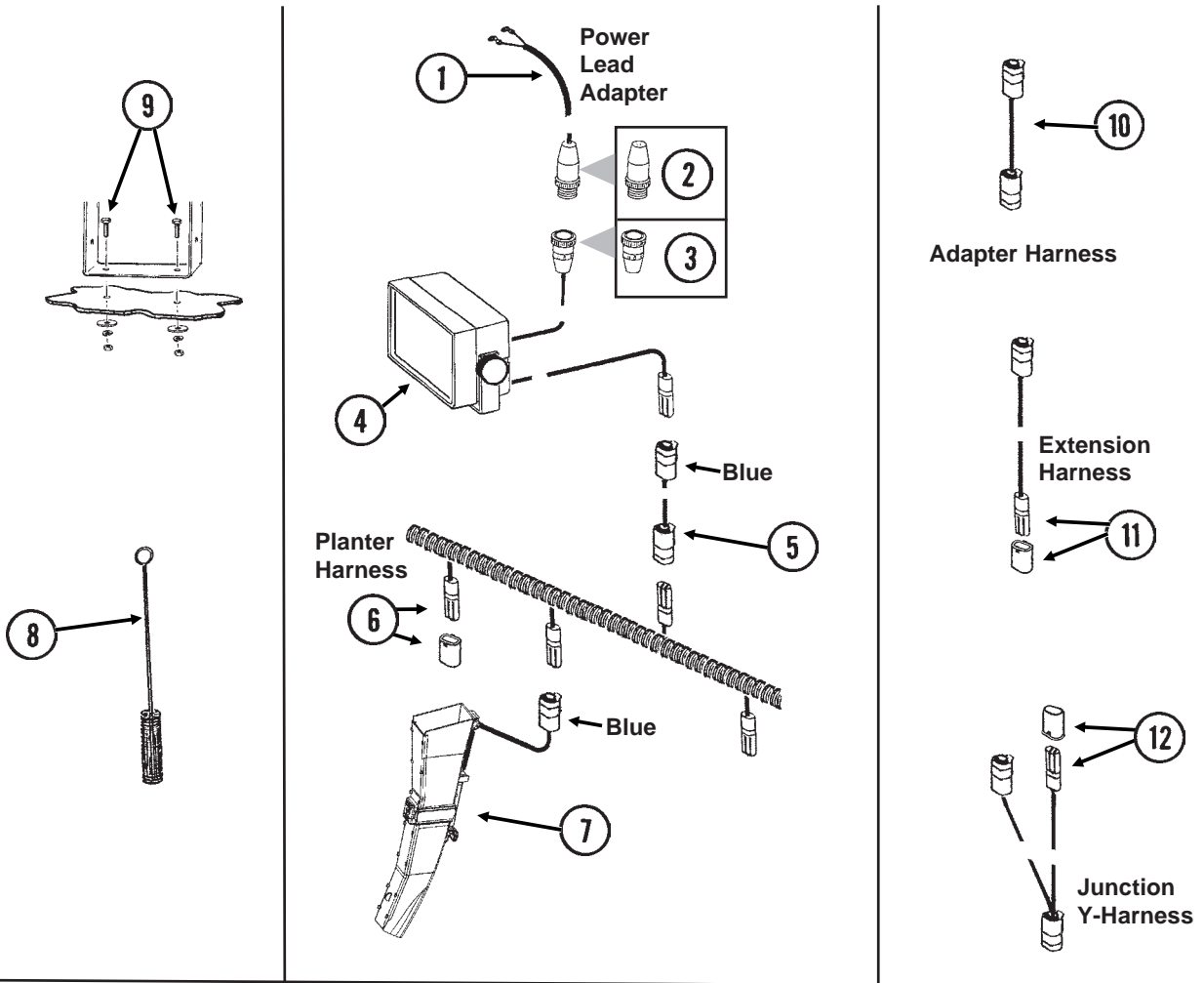
(RU130b/RU129/RU133/RU132/RU130a/RU131/RU129a/RU132a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10312	-	Carriage Bolt, $\frac{5}{16}$ "-18 x $\frac{3}{4}$ "
	G10620	-	Serrated Flange Nut, $\frac{5}{16}$ "-18
2.	G10064	-	Hex Head Cap Screw, $\frac{1}{4}$ "-20 x 1"
	G10227	-	Lock Washer, $\frac{1}{4}$ "
	G10103	-	Hex Nut, $\frac{1}{4}$ "-20
3.	GD15968	1	Light Mount Extension
4.	GD12725	1	Bracket (L.H. Wing)
	GD12724	1	Bracket (R.H. Wing) (Shown)
5.	GD15967	1	Reflective Decal Bracket
6.	GD13358	2	Light Bracket
7.	GD1114	2	U-Bolt, 7" x 7" x $\frac{5}{8}$ "-11
	G10230	4	Lock Washer, $\frac{5}{8}$ "
	G10104	4	Hex Nut, $\frac{5}{8}$ "-11
8.	GD12723	1	Light Mount Extension
9.	GD12710	1	Reflective Decal Bracket

# KPM I ELECTRONIC SEED MONITOR

(MTR46b)



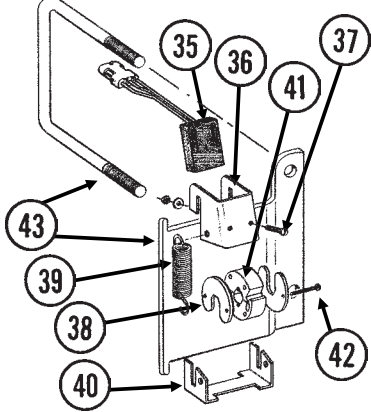
# KPM I ELECTRONIC SEED MONITOR

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7856	1	Power Lead Adapter
2.	G1K267	-	Power Lead Adapter Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (3) Male Terminal Pins
3.	G1K268	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (1) Lock Ring, (3) Female Terminal Pins
4.	GA10570	1	KPM I Backlit Console W/Mounting Bracket, Fuse Holder And Fuse, Power Lead Adapter (Item 1), Brush (Item 10) And Dust Plug (Item 16)
	GR1390	-	Mounting Bracket, KPM I
	GR1392	-	Console Mounting Bracket Hardware Package (Includes 2 Knobs And 1/4" Hardware)
	GA10601	-	Fuse Holder
	GD7639	-	Fuse
5.		-	Included In Tractor/Planter Wiring Harnesses, See Items 15 And 41, Pages P142-P144
6.	GA7850	-	Planter Harness W/Dust Caps, 8 Row (12 Connectors)
	GA7851	-	Planter Harness W/Dust Caps, 12 Row (16 Connectors)
	GA8050	-	Planter Harness W/Dust Caps, 18 Row (22 Connectors)
	GD11993	-	Dust Cap
7.	GA11948	-	Seed Tube W/Computerized Sensor, EdgeVac®
	GR1737	-	Sensor Only, EdgeVac®
	GA11947	-	Seed Tube (With Holes For Sensor Installation), EdgeVac®
8.	GR0594	-	Brush
9.	G10022	2	Hex Head Cap Screw, 1/4"-20 x 1/2"
	G10211	2	Washer, 1/4" SAE
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
10.	GA7857	-	Adapter Harness, 1'
11.	GA7854	-	Extension Harness W/Dust Cap, 15'
	GA7855	-	Extension Harness W/Dust Cap, 30'
	GD11993	-	Dust Cap
12.	GA7853	-	Junction Y-Harness W/Dust Cap
	GD11993	-	Dust Cap
13.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
	G1K362	-	3-Pin Female Connector Kit (Blue), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
14.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
	G1K363	-	3-Pin Male Connector Kit (Blue), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
15.	GD11089	-	Sealing Plug
16.	GA8046	-	Dust Plug (Black)
	GA9978	-	Dust Plug (Blue)
17.	GA8047	-	Dust Plug (Black)
	GA9979	-	Dust Plug (Blue)

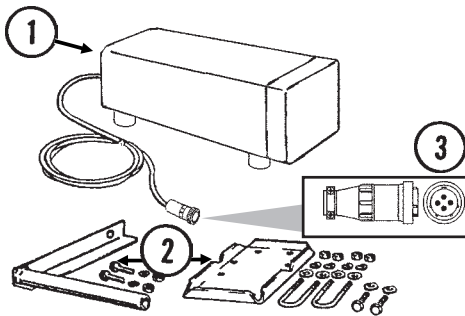
# KPM II STACK-MODE ELECTRONIC SEED MONITOR

(MTR43v)

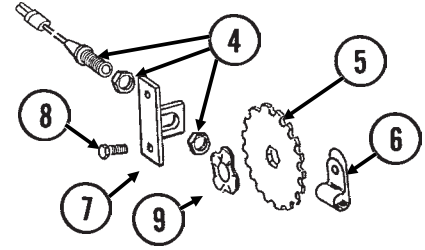
## Shaft Rotation Sensor



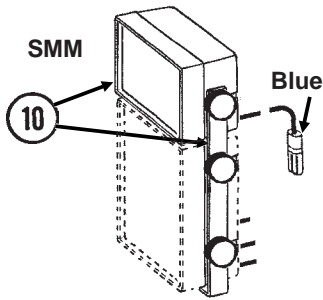
## Radar Distance Sensor



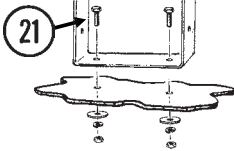
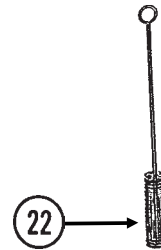
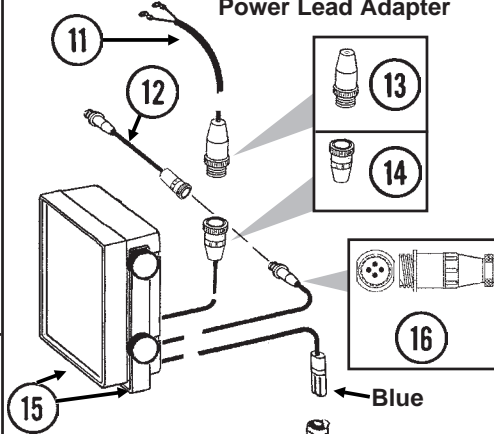
## Magnetic Distance Sensor (MDS)



SMM

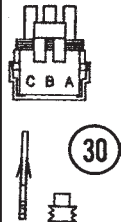
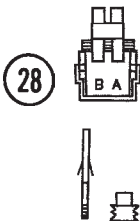
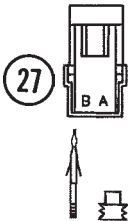
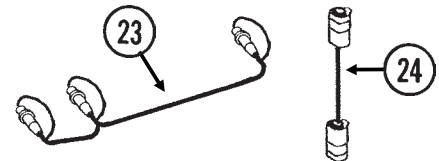


## Power Lead Adapter

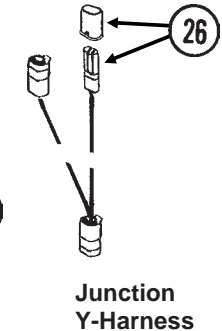
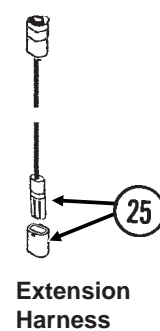
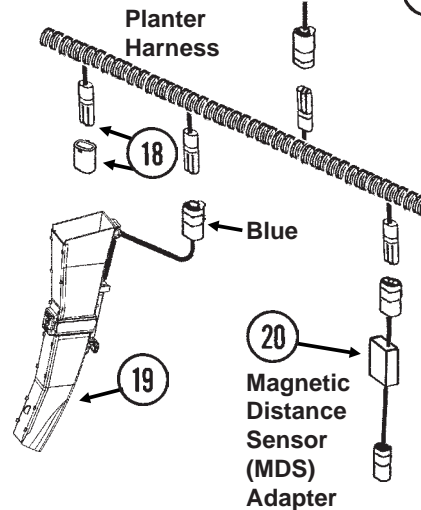


## Radar Y-Cable

## Adapter Harness



31



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7858	-	Radar Distance Sensor W/20' Cable
2.	GA8026	-	Radar Sensor Pipe/Mounting Bracket Package
3.	G1K323	-	4-Pin Connector Kit W/Female Housing, Includes: (4) Pins, (1) Cable Clamp
4.	GA5600	1	Magnetic Distance Sensor
5.	GD8751	-	Magnetic Distance Sensor Pulse Wheel
6.	GD6291	-	Insulated Clamp, 3/8"
7.	GD8770	1	Bracket
8.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16



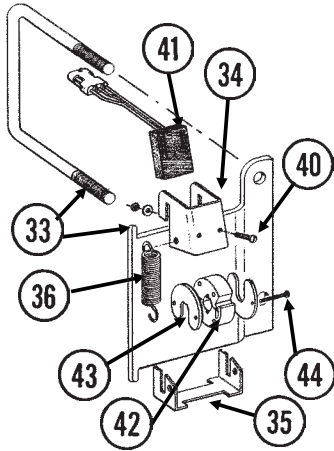
# KPM II STACK-MODE ELECTRONIC SEED MONITOR

ITEM	PART NO.	QTY.	DESCRIPTION
9.	GD8771	1	Spring Wave Washer
10.	GA9857	1	SMM Backlit Console W/Mounting Bracket And Dust Plug (Item 36)
	GR1631	-	Mounting Bracket, KPM II Stack-Mode And SMM Consoles
	GR1632	-	Console Mounting Bracket Hardware Package (Includes 2 Knobs And 1/4" Hardware)
11.	GA7856	1	Power Lead Adapter
12.	GA9144	-	Monitor/Radar Adapter Cable, 10"
13.	G1K267	-	Power Lead Adapter Connector Kit, Includes: (1) Cable Clamp, (1) 3-Pin Connector, (3) Male Terminal Pins
14.	G1K268	-	Console Cable Connector Kit, Includes: (1) Cable Clamp, (1) 3-Pin Connector, (1) Lock Ring, (3) Female Terminal Pins
15.	GA10575	-	KPM II Backlit Console W/Mounting Bracket, Fuse Holder And Fuse, Power Lead Adapter (Item 11), Brush (Item 23), Dust Plug (Item 34) And Monitor/Radar Adapter, 10" (Item 12)
	GR1391	-	Mounting Bracket, KPM II
	GR1393	-	Console Mounting Bracket Hardware Package (Includes 4 Knobs And 1/4" Hardware)
	GA10601	-	Fuse Holder
	GD7639	-	Fuse
16.	G1K322	-	4-Pin Connector Kit W/Male Housing, (4) Female Socket Contacts And (1) Cable Clamp
17.		-	Included In Tractor/Planter Wiring Harness, See Pages P142-P144
18.	GA7850	-	Planter Harness W/Dust Caps, 8 Row (12 Connectors)
	GA7851	-	Planter Harness W/Dust Caps, 12 Row (16 Connectors)
	GA8050	-	Planter Harness W/Dust Caps, 18 Row (22 Connectors)
	GD11993	-	Dust Cap
19.	GA11948	-	Seed Tube W/Computerized Sensor, EdgeVac®
	GR1737	-	Sensor Only, EdgeVac®
	GA11947	-	Seed Tube (With Holes For Sensor Installation), EdgeVac®
20.	GA7859	1	Magnetic Distance Sensor Adapter (Analog To Digital)
21.	G10022	2	Hex Head Cap Screw, 1/4"-20 x 1/2"
	G10211	2	Washer, 1/4" SAE
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
22.	GR0594	-	Brush
23.	GR0586	1	Radar Y-Cable (Used To Connect Radar Distance Sensor For Multiple Functions)
24.	GA7857	-	Adapter Harness, 1'
25.	GA7854	-	Extension Harness W/Dust Cap, 15'
	GA7855	-	Extension Harness W/Dust Cap, 30'
	GD11993	-	Dust Cap
26.	GA7853	-	Junction Y-Harness W/Dust Cap
	GD11993	-	Dust Cap
27.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
28.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
29.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
	G1K362	-	3-Pin Female Connector Kit (Blue), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
30.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
	G1K363	-	3-Pin Male Connector Kit (Blue), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
31.	GD11089	-	Sealing Plug
32.	G1K249	-	Acre Counter Switch Kit
33.	GA8046	-	Dust Plug (Black)
	GA9978	-	Dust Plug (Blue)
34.	GA8047	-	Dust Plug (Black)
	GA9979	-	Dust Plug (Blue)
35.	GR1415	1	Rotation Sensor
36.	GD11169	1	Mount
37.	G10757	2	Pan Head Screw, No. 10-32 x 1 1/4"
	G10243	2	Washer, No. 10 SAE
	G10758	2	Hex Nut, No. 10-32
38.	GD11474	2	Cover
39.	GD5857	2	Spring
40.	GD11170	1	Spring Mount
41.	GR1414	1	Actuator
42.	G10927	2	Pan Head Machine Screw, No. 8-32 x 1 1/4", Stainless Steel
	G10931	2	Lock Washer, No. 8, Internal/External, Stainless Steel
	G10928	2	Hex Nut, No. 8-32, Stainless Steel
43.	G1K364	-	Rotation Sensor Mount Kit, Includes: (2) Mounts, (2) GD11721 5" x 7" U-Bolts, (4) G10228 Lock Washers, (4) G10102 Hex Nuts, (1) Instruction
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 4-9)

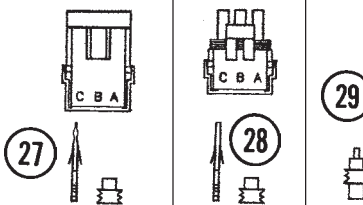
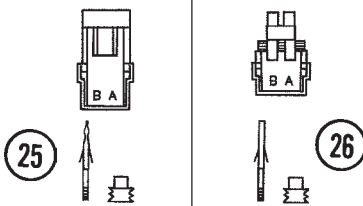
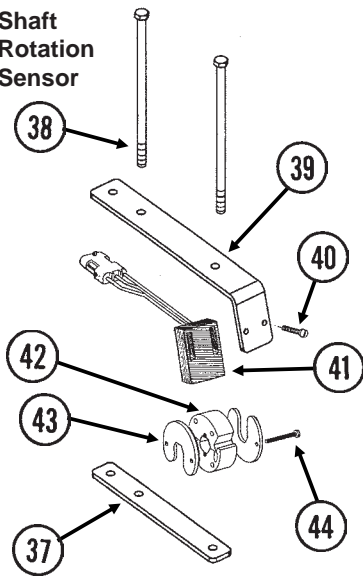
# KPM III ELECTRONIC SEED MONITOR

(MTR43w)

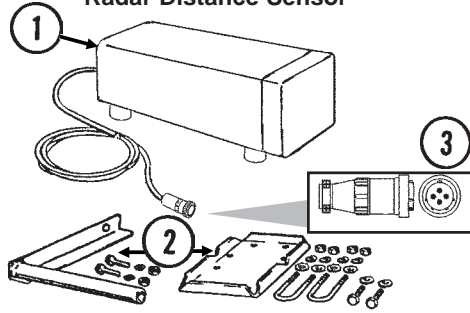
## Shaft Rotation Sensor



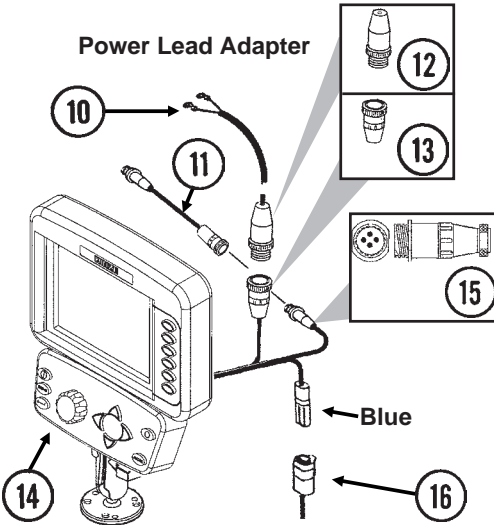
## Shaft Rotation Sensor



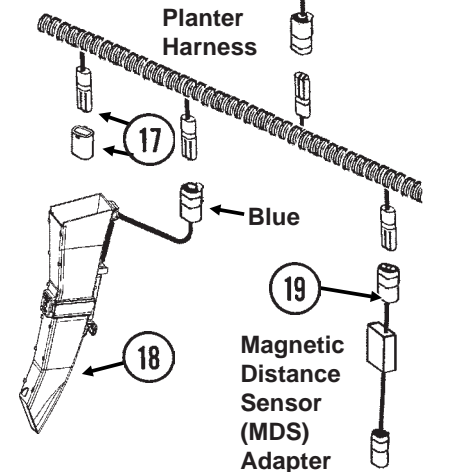
## Radar Distance Sensor



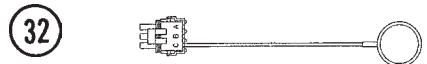
## Power Lead Adapter



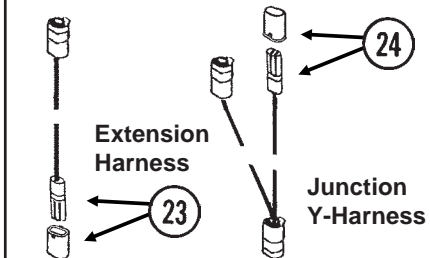
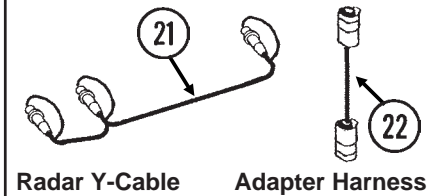
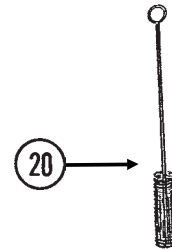
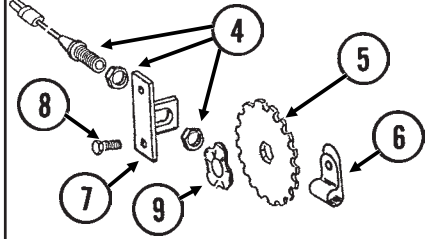
## Planter Harness



## Magnetic Distance Sensor (MDS) Adapter



## Magnetic Distance Sensor (MDS)



TEM	PART NO.	QTY.	DESCRIPTION
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1.	GA7858	-	Radar Distance Sensor W/20' Cable
2.	GA8026	-	Radar Sensor Pipe/Mounting Bracket Package
3.	G1K323	-	4-Pin Connector Kit W/Female Housing, Includes: (4) Pins, (1) Cable Clamp
4.	GA5600	1	Magnetic Distance Sensor
5.	GD8751	-	Magnetic Distance Sensor Pulse Wheel
6.	GD6291	-	Insulated Clamp, 3/8"
7.	GD8770	1	Bracket
8.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16

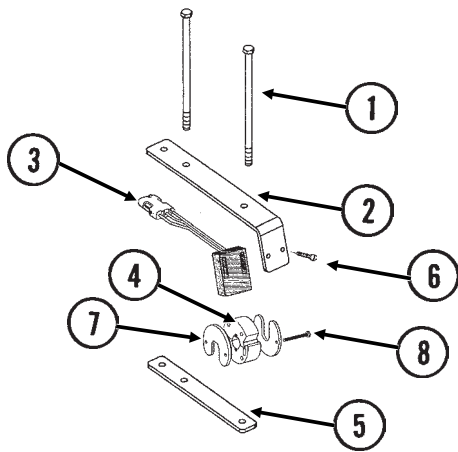
# KPM III ELECTRONIC SEED MONITOR

ITEM	PART NO.	QTY.	DESCRIPTION
9.	GD8771	1	Spring Wave Washer
10.	GA7856	1	Power Lead Adapter
11.	GA9144	-	Monitor/Radar Adapter Cable, 10"
12.	G1K267	-	Power Lead Adapter Connector Kit, Includes: (1) Cable Clamp, (1) 3-Pin Connector, (3) Male Terminal Pins
13.	G1K268	-	Console Cable Connector Kit, Includes: (1) Cable Clamp, (1) 3-Pin Connector, (1) Lock Ring, (3) Female Terminal Pins
14.	GA11039	1	KPM III Backlit Console W/Brush (Item 23), Dust Plug (Item 34), Mounting Bracket Assembly, Console Mounting Bracket Hardware And Power Harness
	GA12403	-	Mounting Bracket Assembly, Includes: (2) Mounting Brackets, (2) Connector Halves, (1) Compression Spring, (1) Tension Knob, (1) 1/4"-20 x 1 3/4" Hex Head Cap Screw, (1) 1/4" Plastic Washer, (1) 1/4" Steel Washer
	GR1762	-	Console Mounting Bracket Hardware Package, Includes: (3) No. 10-32 x 5/8" Hex Socket Pan Head Screws, (3) No. 10 Lock Washers
	GR1764	-	Power Harness
15.	G1K322	-	4-Pin Connector Kit W/Male Housing, (4) Female Socket Contacts And (1) Cable Clamp
16.		-	Included In Tractor/Planter Wiring Harness, See Pages P142-P144
17.	GA7850	-	Planter Harness W/Dust Caps, 8 Row (12 Connectors)
	GA7851	-	Planter Harness W/Dust Caps, 12 Row (16 Connectors)
	GA8050	-	Planter Harness W/Dust Caps, 18 Row (22 Connectors)
	GD11993	-	Dust Cap
18.	GA12650	-	Seed Tube W/Computerized Sensor, EdgeVac®
	GR1737	-	Sensor Only, EdgeVac®
	GA12636	-	Seed Tube (With Holes For Sensor Installation), EdgeVac®
19.	GA7859	1	Magnetic Distance Sensor Adapter (Analog To Digital)
20.	GR0594	-	Brush
21.	GR0586	1	Radar Y-Cable (Used To Connect Radar Distance Sensor For Multiple Functions)
22.	GA7857	-	Adapter Harness, 1'
23.	GA7854	-	Extension Harness W/Dust Cap, 15'
	GA7855	-	Extension Harness W/Dust Cap, 30'
	GD11993	-	Dust Cap
24.	GA7853	-	Junction Y-Harness W/Dust Cap
	GD11993	-	Dust Cap
25.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
26.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
27.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
	G1K362	-	3-Pin Female Connector Kit (Blue), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
28.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
	G1K363	-	3-Pin Male Connector Kit (Blue), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
29.	GD11089	-	Sealing Plug
30.	G1K249	-	Acre Counter Switch Kit
31.	GA8046	-	Dust Plug (Black)
	GA9978	-	Dust Plug (Blue)
32.	GA8047	-	Dust Plug (Black)
	GA9979	-	Dust Plug (Blue)
33.	G1K364	-	Rotation Sensor Mount Kit, Includes: (2) Mounts, (2) GD11721 5" x 7" U-Bolts, (4) G10228 Lock Washers, (4) G10102 Hex Nuts, (1) Instruction
34.	GD11169	1	Mount
35.	GD11170	1	Spring Mount
36.	GD5857	2	Spring
37.	GD18168	2	Mount
38.	G10686	4	Hex Head Cap Screw, 3/8"-16 x 8"
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
39.	GD18118	2	Shaft Sensor Mount
40.	G10757	4	Pan Head Screw, No. 10-32 x 1 1/4"
	G10243	4	Washer, No. 10 SAE
	G10758	4	Hex Nut, No. 10-32
41.	GR1415	1	Rotation Sensor
42.	GR1414	1	Actuator
43.	GD11474	4	Cover
44.	G10927	4	Pan Head Machine Screw, No. 8-32 x 1 1/4", Stainless Steel
	G10931	4	Lock Washer, No. 8, Internal/External, Stainless Steel
	G10928	4	Hex Nut, No. 8-32, Stainless Steel
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 4-9)

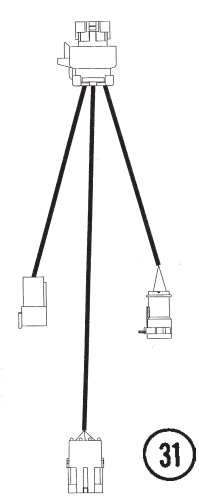
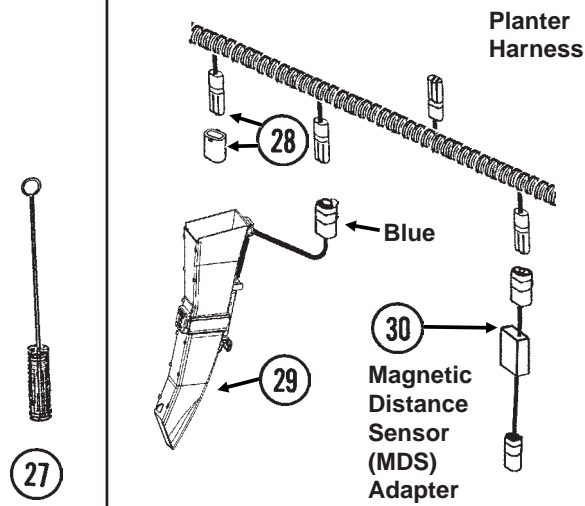
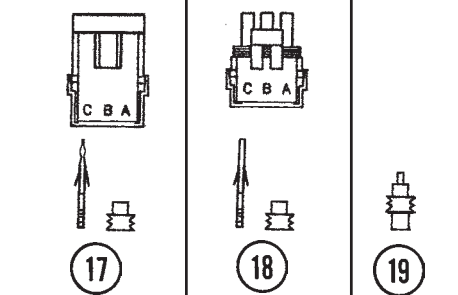
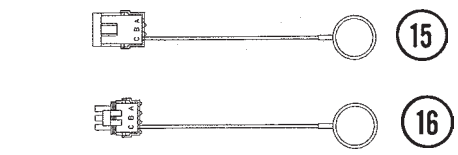
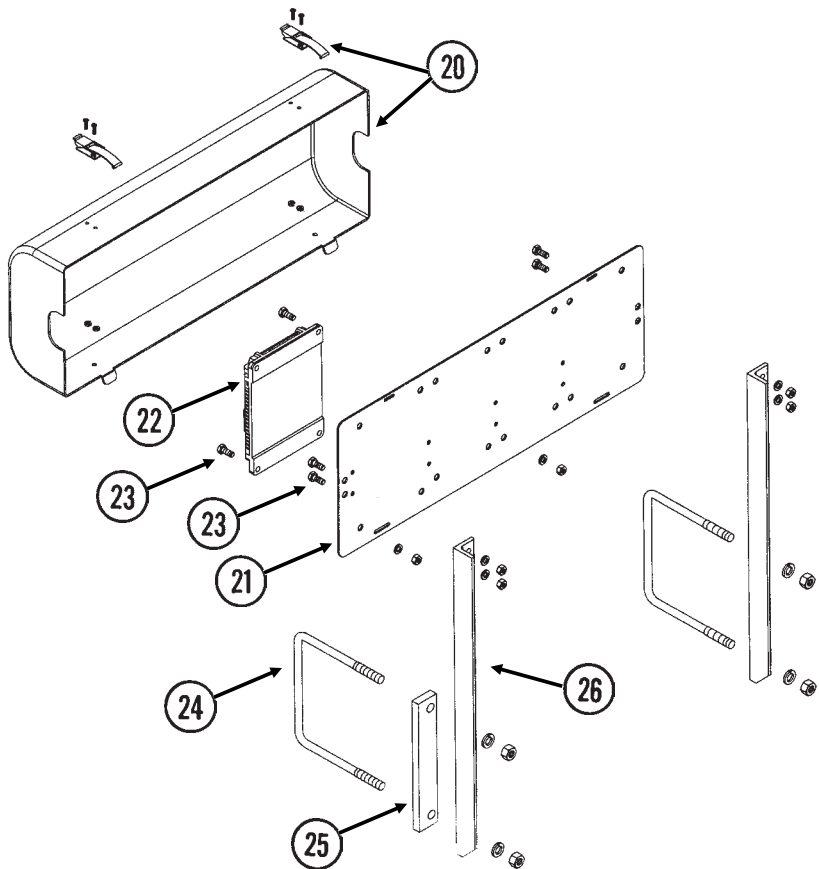
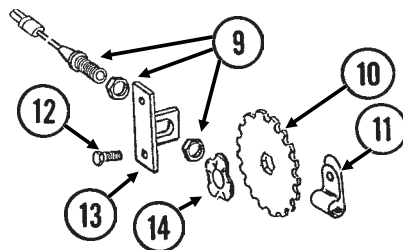
# PLANTER MONITOR MODULE (PMM)

(MTR60/MTR63/PMM01/MTR65/MTR61/MTR64/MTR62/PMM02)

## Shaft Rotation Sensor



## Magnetic Distance Sensor (MDS)



**NOTE: See Ag Leader manual for Ag Leader Insight display and associated cab harness components.**

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10686	4	Hex Head Cap Screw, 3/8"-16 x 8"
	G1-229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
2.	GD18118	2	Shaft Sensor Mount
3.	GR1415	1	Rotation Sensor
4.	GR1414	1	Actuator
5.	GD18168	2	Mount

# PLANTER MONITOR MODULE (PMM)

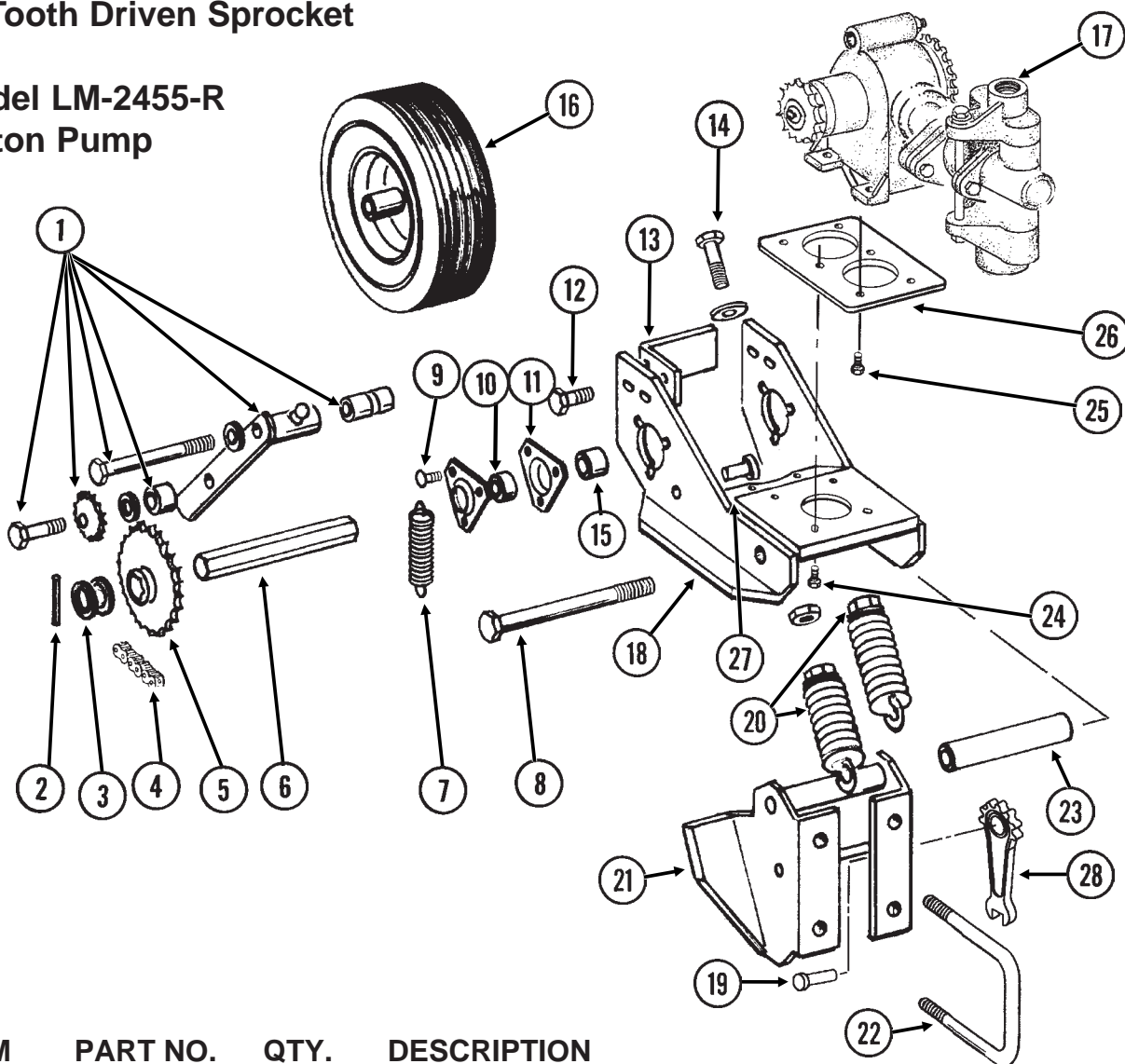
ITEM	PART NO.	QTY.	DESCRIPTION
6.	G10757	2	Pan Head Screw, No. 10-32 x 1 ¼"
	G10243	2	Washer, No. 10 SAE
	G10758	2	Hex Nut, No. 10-32
7.	GD11474	4	Cover
8.	G10927	4	Pan Head Machine Screw, No. 8-32 x 1 ¼", Stainless Steel
	G10931	4	Lock Washer, No. 8, Internal/External, Stainless Steel
	G10928	4	Hex Nut, No. 8-32, Stainless Steel
9.	GA5600	1	Magnetic Distance Sensor
10.	GD8751	-	Magnetic Distance Sensor Pulse Wheel
11.	GD6291	-	Insulated Clamp, ¾"
12.	G10001	2	Hex Head Cap Screw, ¾"-16 x 1"
	G10229	2	Lock Washer, ¾"
	G10101	2	Hex Nut, ¾"-16
13.	GD8770	1	Bracket
14.	GD8771	1	Spring Wave Washer
15.	GA8046	-	Dust Plug (Black)
	GA9978	-	Dust Plug (Blue)
16.	GA8047	-	Dust Plug (Black)
	GA9979	-	Dust Plug (Blue)
17.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
	G1K362	-	3-Pin Female Connector Kit (Blue), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
18.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
	G1K363	-	3-Pin Male Connector Kit (Blue), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
19.	GD11089	-	Sealing Plug
20.	GA12563	1	Module Cover Assembly W/Lock Clamps
	GA12641	-	Lock Clamp
	G11065	-	Phillips Pan Head Machine Screw, No. 8-32 x 5/8", Stainless Steel
	G11202	-	Lock Nut W/Nylon Insert, No. 8-32, Stainless Steel
21.	GD18013	1	Bracket
22.	GA12538	1	Planter Monitor Module
23.	G10043	4	Hex Head Cap Screw, 5/16"-18 x 3/4"
	G10232	4	Lock Washer, 5/16"
	G10106	4	Hex Nut, 5/16"-18
24.	GD7145	2	U-Bolt, 7" x 7" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
25.	GD16316	2	Spacer
26.	GD16315	2	Support
27.	GR0594	-	Brush
28.	GA7850	2	Planter Harness W/Dust Caps, 16 Row (12 Connectors)
	GA7851	-	Planter Harness W/Dust Caps, 24 Row (16 Connectors)
	GA8050	-	Planter Harness W/Dust Caps, 36 Row (18 Connectors)
	GD11993	-	Dust Cap
29.	GA12650	-	Seed Tube W/Computerized Sensor, EdgeVac®
	GR1737	-	Sensor Only, EdgeVac®
	GA12636	-	Seed Tube (With Holes For Sensor Installation), EdgeVac®
30.	GA7859	1	Magnetic Distance Sensor Adapter (Analog To Digital)
31.	GA12557	1	Planter Monitor Cable
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 9-14)

# LIQUID FERTILIZER PISTON PUMP DRIVE, 16, 24 AND 36 ROW

(FF571)

## 40 Tooth Drive Sprocket And 18 Tooth Driven Sprocket

### Model LM-2455-R Piston Pump



ITEM	PART NO.	QTY.	DESCRIPTION
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(Per Assy.)

1.	GA7244	1	Idler W/Sprocket, Bushing, Spacer And Hardware
	GA7154	-	Sprocket W/Bearing, 18 Tooth
	GD7889	-	Bushing, 1" O.D. x $\frac{9}{16}$ " I.D x $\frac{7}{16}$ " Long
	G10581	-	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 2 $\frac{1}{4}$ "
	G10216	-	Washer, $\frac{1}{2}$ " USS
	G10228	-	Lock Washer, $\frac{1}{2}$ "
	G10102	-	Hex Nut, $\frac{1}{2}$ "-13
	G10830	-	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 7 $\frac{1}{2}$ "
	G10205	-	Washer, $\frac{5}{8}$ " SAE
	G10230	-	Lock Washer, $\frac{5}{8}$ "
	G10104	-	Hex Nut, $\frac{5}{8}$ "-11
	GD10254	-	Spacer, 2 $\frac{3}{4}$ "
	G10640	-	Grease Fitting, $\frac{1}{4}$ "-28
2.	G10602	2	Spring Pin, $\frac{1}{4}$ " x 1 $\frac{1}{2}$ "
3.	G10233	5	Machine Bushing, 1", 10 Gauge

# LIQUID FERTILIZER PISTON PUMP DRIVE, 16, 24 AND 36 ROW

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
4.	G3310-91	1	Chain, No. 40, 91 Pitch Including Connector Link And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40
5.	GA7180	1	Sprocket, 40 Tooth
6.	GD6825-11.25	1	Hex Shaft, 7/8" x 11 1/4" (2 Holes)
7.	GD5857	1	Spring
8.	G10093	1	Hex Head Cap Screw, 5/8"-11 x 8 1/2"
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
9.	G10302	6	Carriage Bolt, 5/16"-18 x 7/8"
	G10221	6	Washer, 5/16" SAE
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
10.	G2100-03	2	Bearing, 7/8" Hex Bore, Spherical
11.	G3400-01	4	Flangette
12.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	4	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
13.	GD11556	1	Scraper
14.	G10053	2	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10216	2	Washer, 1/2" USS
	G10102	2	Hex Nut, 1/2"-13
15.	GD10200	2	Sleeve, 3/4" Long
16.	GA5090	-	Tire And Rim Assembly (Specify Brand*)
	GD5753	1	Tire, 4.10" x 6" (Specify Brand*)
	GD5752	1	Inner Tube
17.		-	See "Liquid Fertilizer Piston Pump", Pages P160-P163
18.	GA7246	1	Base Mount
19.	G10478	2	Clevis Pin, 5/16" x 1"
	G10409	2	Retaining Ring, 5/16"
	G10670	1	Hair Pin Clip, No. 3
20.	GA2068	2	Spring W/Plug
21.	GA7245	1	Pump Mount W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
22.	GD11289	2	U-Bolt, 7" x 4" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
23.	GD10244-01	1	Sleeve, 7 1/16"
24.	G10062	4	Hex Head Cap Screw, 3/8"-16 x 3"
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
25.	G10003	4	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10210	4	Washer, 3/8" USS
	GR1122	4	Mounting Pad
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
26.	GD11554	1	Pump Mount
27.	G10478	2	Clevis Pin, 5/16" x 1"
	G10409	2	Retaining Ring, 5/16"
28.			See "Liquid Fertilizer Piston Pump (Crankcase Assembly)", Pages 160 And P161

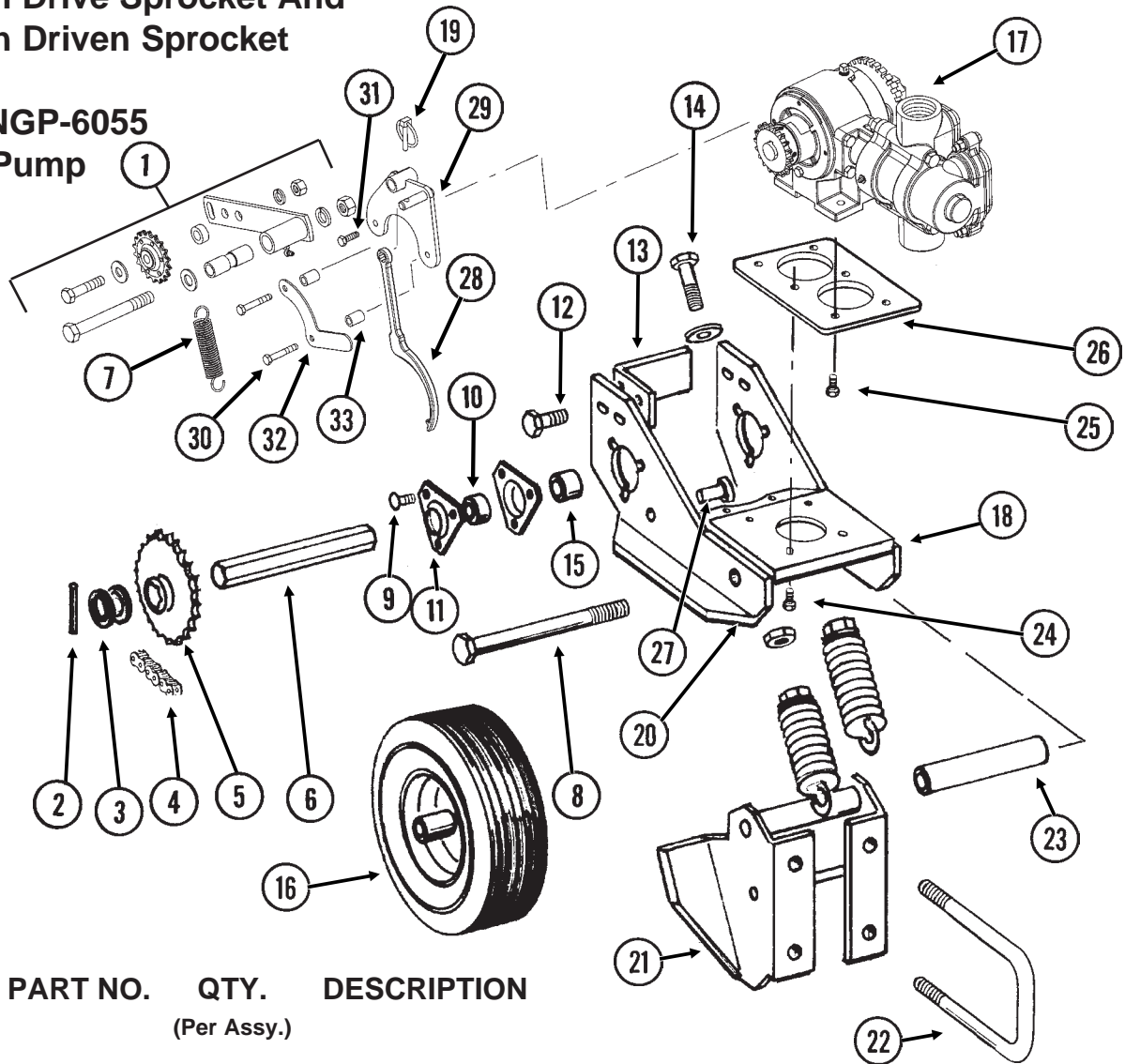
\* Specific brand requests will be supplied only as available from current KINZE® Repair Parts stock. If a specific brand requested is not in stock, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand may affect rates. Field checks are recommended after any change in contact tires.

# LIQUID FERTILIZER PISTON PUMP DRIVE, 16, 24 AND 36 ROW

(FF124a)

## 40 Tooth Drive Sprocket And 18 Tooth Driven Sprocket

### Model NGP-6055 Piston Pump



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GA12597	1	Idler W/Sprocket, Bushing, Spacer And Hardware
	GA7154	-	Sprocket W/Bearing, 18 Tooth
	GD7889	-	Bushing, 1" O.D. x $\frac{9}{16}$ " I.D x $\frac{7}{16}$ " Long
	G10581	-	Hex Head Cap Screw, $\frac{1}{2}$ "-13 x 2 $\frac{1}{4}$ "
	G10216	-	Washer, $\frac{1}{2}$ " USS
	G10228	-	Lock Washer, $\frac{1}{2}$ "
	G10102	-	Hex Nut, $\frac{1}{2}$ "-13
	G10011	-	Hex Head Cap Screw, $\frac{5}{8}$ "-11 x 5 $\frac{1}{2}$ "
	G10205	-	Washer, $\frac{5}{8}$ " SAE
	G10230	-	Lock Washer, $\frac{5}{8}$ "
	G10104	-	Hex Nut, $\frac{5}{8}$ "-11
	GD10254	-	Spacer, 2 $\frac{3}{4}$ "
	G10779	-	Grease Fitting, 90°, $\frac{1}{4}$ "-28
2.	G10602	2	Spring Pin, $\frac{1}{4}$ " x 1 $\frac{1}{2}$ "
3.	G10233	5	Machine Bushing, 1", 10 Gauge
4.	G3310-91	1	Chain, No. 40, 91 Pitch Including Connector Link And Offset Link
	GR0912	-	Connector Link, No. 40
	GR0911	-	Offset Link, No. 40



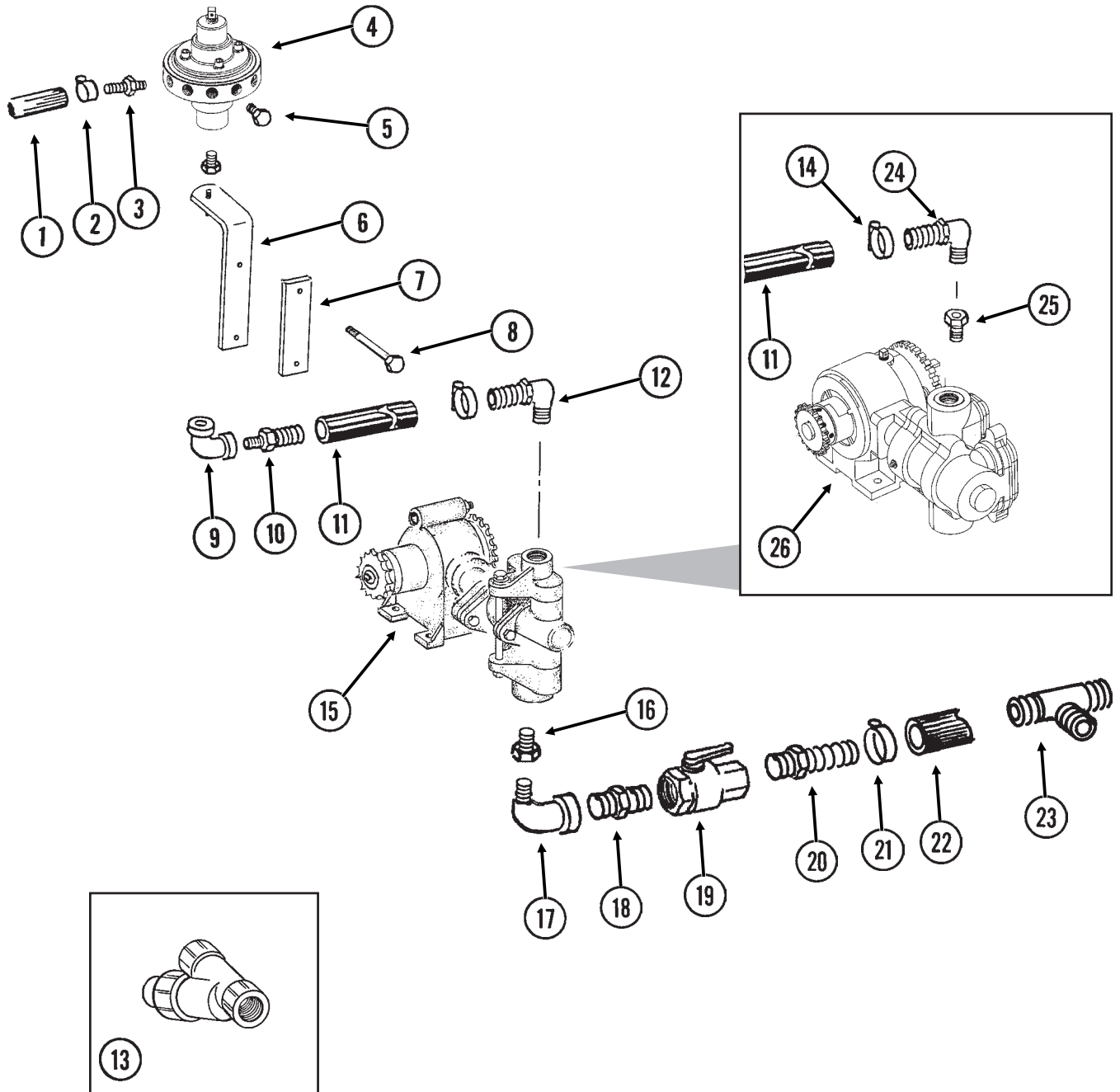
# LIQUID FERTILIZER PISTON PUMP DRIVE, 16, 24 AND 36 ROW

ITEM	PART NO.	QTY.	DESCRIPTION
(Per Assy.)			
5.	GA7180	1	Sprocket, 40 Tooth
6.	GD6825-11.25	1	Hex Shaft, 7/8" x 11 1/4" (2 Holes)
7.	GD5857	1	Spring
8.	G10093	1	Hex Head Cap Screw, 5/8"-11 x 8 1/2"
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
9.	G10302	6	Carriage Bolt, 5/16"-18 x 7/8"
	G10221	6	Washer, 5/16" SAE
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
10.	G2100-03	2	Bearing, 7/8" Hex Bore, Spherical
11.	G3400-01	4	Flangette
12.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10210	4	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
13.	GD11556	1	Scraper
14.	G10053	2	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	G10216	2	Washer, 1/2" USS
	G10102	2	Hex Nut, 1/2"-13
15.	GD10200	2	Sleeve, 3/4" Long
16.	GA5090	-	Tire And Rim Assembly (Specify Brand*)
	GD5753	1	Tire, 4.10" x 6" (Specify Brand*)
	GD5752	1	Inner Tube
17.		-	See "Liquid Fertilizer Piston Pump", Pages P164 And P165
18.	GA7246	1	Base Mount
19.	GD2558	1	Lynch Pin, 1/4"
20.	GA2068	2	Spring W/Plug
21.	GA7245	1	Pump Mount W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
22.	GD11289	2	U-Bolt, 7" x 4" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
23.	GD10244-01	1	Sleeve, 7 1/16"
24.	G10062	4	Hex Head Cap Screw, 3/8"-16 x 3"
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
25.	G10003	4	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10210	4	Washer, 3/8" USS
	GR1122	4	Mounting Pad
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
26.	GD11554	1	Pump Mount
27.	G10478	2	Clevis Pin, 5/16" x 1"
	G10409	2	Retaining Ring, 5/16"
28.			See "Liquid Fertilizer Piston Pump", Pages P164 And P165
29.	GA12616	1	Idler Mounting Bracket
30.	G10041	2	Hex Head Cap Screw, 5/16"-18 x 2"
31.	G10019	1	Hex Head Cap Screw, 5/16"-18 x 1"
32.	GD18065	1	Guide
33.	GD2971-17	2	Sleeve, 7/8" Long

\* Specific brand requests will be supplied only as available from current KINZE® Repair Parts stock. If a specific brand requested is not in stock, the brand available will be supplied. Different brand tires may have different diameters. Change in tire brand may affect rates. Field checks are recommended after any change in contact tires.

# LIQUID FERTILIZER HOSES AND FITTINGS, 16, 24 AND 36 ROW

(FF84c/FF84cc)



# LIQUID FERTILIZER HOSES AND FITTINGS, 16, 24 AND 36 ROW

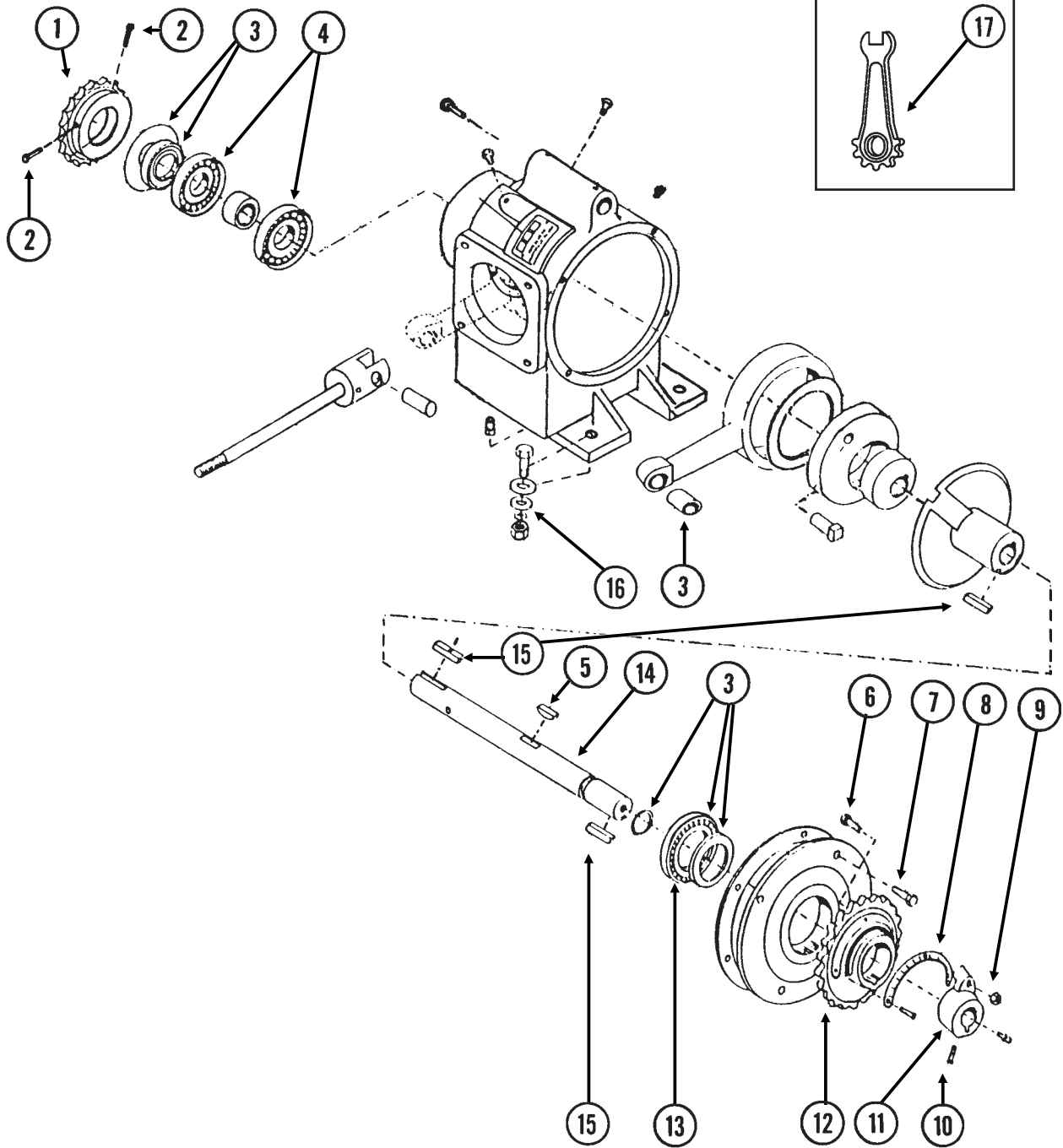
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	G4301-07	1	Hose, 3/8" x 200', 16 Row
	G4301-08	-	Hose, 3/8" x 250', 24 And 36 Row
	G4301-04	-	Hose, 3/8" x 100', 36 Row
2.	G10681	-	Hose Clamp, No. 6
3.	GD11700	18-24	Adapter, 1/4" NPT To 3/8" Barb
4.		-	See "Liquid Fertilizer Piston Pump Flow Divider", Pages P166 And P167
5.	G10292	-	Pipe Plug, 1/4" NPT
6.	GA6527	2	Mount, 3/4" NPT
7.	GD10248	2	Bar
8.	G10152	2	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
9.	G10733	2	Elbow, 90°, 3/4" Female NPT
10.	G10734	2	Adapter, 3/4" NPT To Barb
11.	G4205-08	2	Hose, 3/4" x 150"
12.	G10896	-	Elbow, 90°, 1" NPT To 3/4" Barb
13.	GA3893	1	Strainer Complete
	GR0880	-	Screen, No. 40 Mesh
	GR0881	-	Gasket
	GR0882	-	Y-Body
	GR0883	-	End Cap
14.	G10278	-	Hose Clamp, No. 16
15.		-	See "Liquid Fertilizer Piston Pump", Pages P160-P163
16.	G10615	2	Reducing Bushing, 1 1/2" Male NPT To 1 1/4" Female
17.	G10887	2	Elbow, 90°, 1 1/4" Male NPT To Female
18.	G10619	2	Close Nipple, 1 1/4" NPT
19.	GA4976	2	Shutoff Valve, 1 1/4" NPT
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle
20.	G10626	4	Adapter, 1 1/4" NPT To Barb
21.	G10674	2	Hose Clamp, No. 24
22.	G4200-01	1	Hose, 1 1/4" x 22'
23.	G10633	1	Tee, 1 1/4" Barb
24.	G10917	2	Elbow, 90°, 3/4" NPT To Barb
25.	G11237	2	Reducing Bushing, 1 1/2" Male NPT To 3/4" Female
26.		-	See "Liquid Fertilizer Piston Pump", Pages P164 And P165

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

JB-L4400-991/CCU077(FRTZ172b)

Model LM-2455-R



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

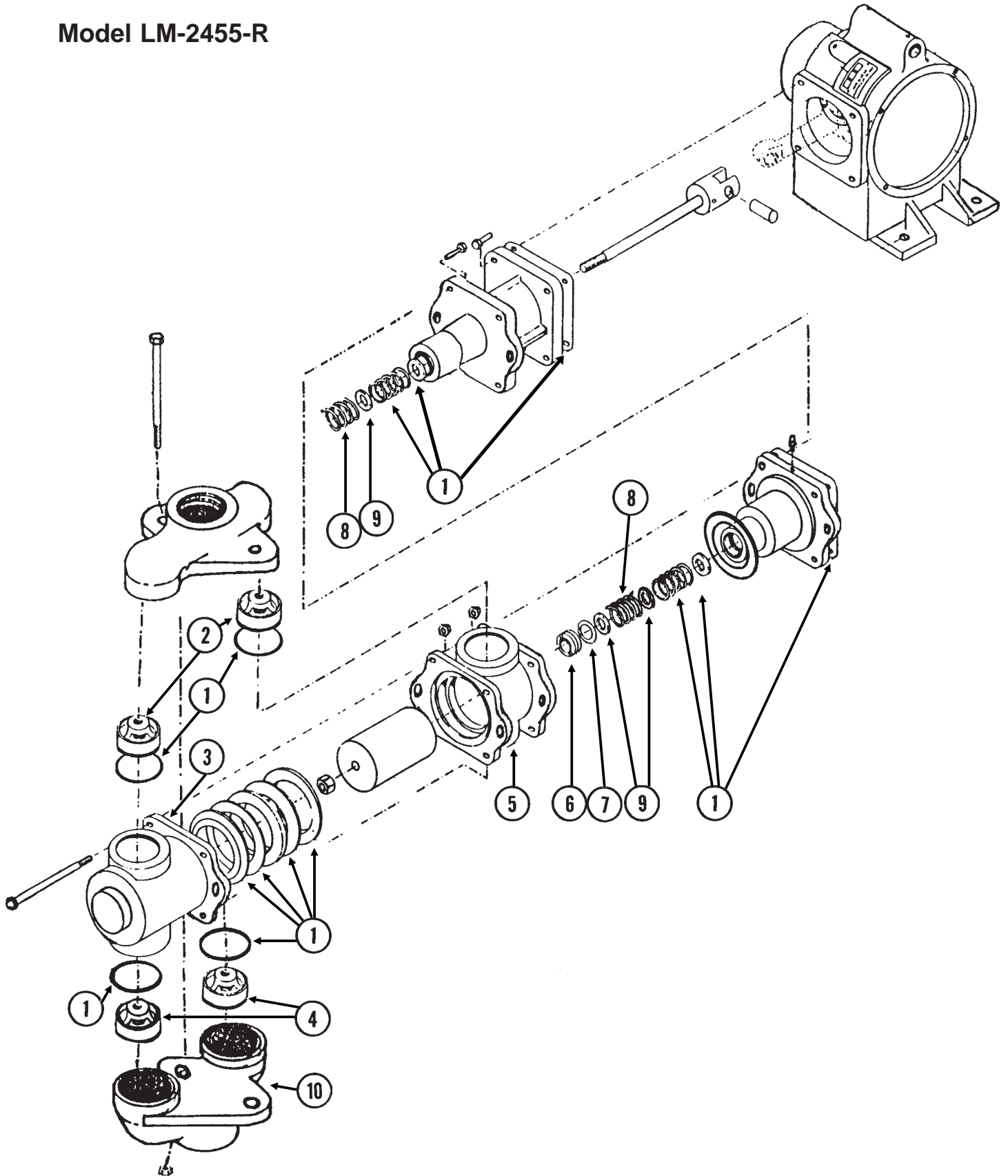
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1389	1	Sprocket, 18 Tooth
2.	G10688	2	Square Head Set Screw, $\frac{3}{8}$ "-16 x $\frac{5}{8}$ "
3.	GR1425	1	Repair Kit, Includes Item 1 On Pages P162 And P163
4.	GR1427	2	Bearing
5.	GR1420	1	Woodruff Key, $\frac{3}{8}$ "-16 x 1 $\frac{3}{4}$ "
6.	GR1167	1	Square Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{3}{4}$ "
7.	G10043	4	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{3}{4}$ "
8.	GR1168	1	Scale
9.	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
10.	G10693	3	Hex Socket Head Set Screw, $\frac{5}{16}$ "-18 x $\frac{3}{8}$ "
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 P154 And P155
17.	GR1424	1	Adjustment Wrench
A.	GA8069	-	Piston Pump Complete W/18 Tooth Sprocket (Model LM-2455-R), Includes Crankcase Assembly On This Page And Cylinder Assembly On Pages P162 And P163

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

JB-L2190-991(FRTZ171)

Model LM-2455-R



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

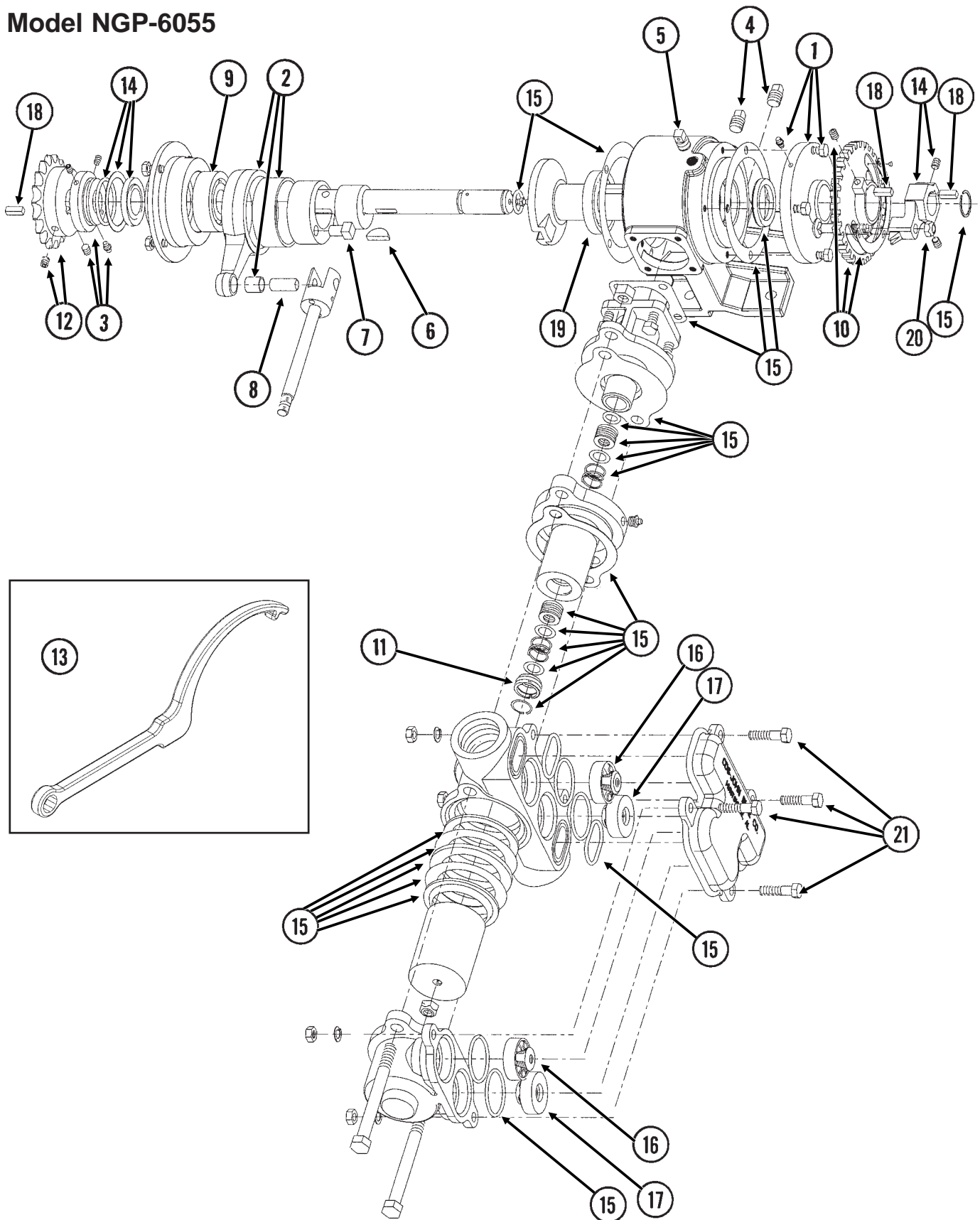
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1425	1	Repair Kit, Includes Item 3 On Pages P160 And P161
2.	GR1144	2	Discharge Valve
3.	GR1423	1	Outboard Cylinder
4.	GR1142	2	Suction Valve
5.	GR1422	1	Inboard Cylinder
6.	GR1134	1	Stuffing Box Insert
7.	GR1133	1	Retaining Ring
8.	GR1130	2	Packing Spring
9.	GR1129	3	Washer
10.	GR1451	1	Suction Manifold

# LIQUID FERTILIZER PISTON PUMP Uses 18 Tooth Sprocket

(A12335a/GR1808)

## Model NGP-6055





# LIQUID FERTILIZER PISTON PUMP

## Uses 18 Tooth Sprocket

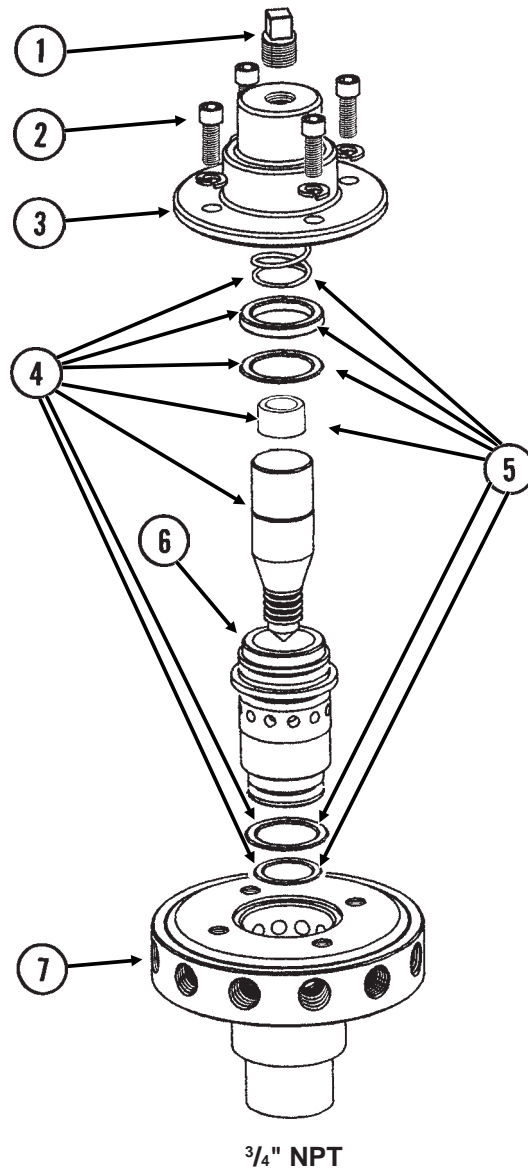
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ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1804	1	Flange Cover Assembly
	G10991	4	Hex Head Cap Screw, $\frac{5}{16}$ "-18 x $\frac{7}{8}$ "
2.	GR1802	1	Connecting Rod Assembly
3.	GR1801	1	Spacer Assembly
	G10693	3	Hex Socket Head Set Screw, $\frac{5}{16}$ "-18 x $\frac{3}{8}$ "
4.	GR1123	2	Plug
5.	GR1543	1	Vent Plug
6.	GR1112	1	Woodruff Key
7.	GR1120	1	Eccentric Pin
8.	GR1124	1	Pin
9.	GR1104	1	Bearing
10.	GR1805	1	Setting Hub Assembly
11.	GR1134	1	Stuffing Box Insert
12.	GR1389	1	Sprocket, 18 Tooth
13.	GR1808	1	Adjustment Wrench
14.	GR1806	1	Setting Pointer Assembly
15.	GR1795	1	Repair Kit, Includes: (6) Gaskets, (9) O-Rings, (4) Washers, (1) Retaining Ring, (2) Oil Seals, (1) Snap Ring, (1) Thrust Washer, (1) Rod Bushing, (2) Flange Plunger Packings, (2) Packing Springs, (2) Rod Vee Packing Sets
16.	GR1799	2	Discharge Valve Assembly
17.	GR1797	2	Suction Valve Assembly
18.	GR1118	3	Setting Arm Key
19.	GR1116	1	Bearing
20.	G10306	1	Carriage Bolt, $\frac{3}{8}$ "-16 x 2"
	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
21.	G10003	4	Hex Head Head Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{1}{2}$ "
	G10210	4	Washer, $\frac{3}{8}$ " USS
	G10229	4	Lock Washer, $\frac{3}{8}$ "
	G10101	4	Hex Nut, $\frac{3}{8}$ "-16
A.	GA12330	-	Piston Pump Complete W/18 Tooth Sprocket (Model NGP-6055)

# LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER, 16 AND 24 ROW

(FRTZ202c)

## Model FD-1200 Flow Divider, 12 Outlet

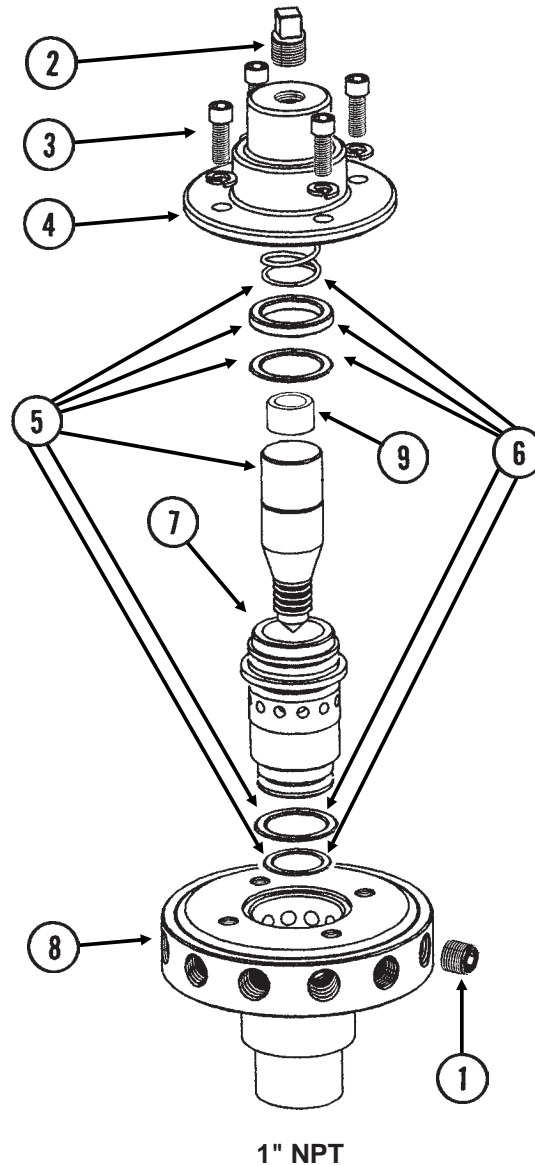


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1543	1	Plug
2.	GR1542	4	Hex Socket Head Screw, 1/4"-20 x 3/4"
	GR1541	4	Lock Washer, 1/4", Stainless Steel
3.	GR1540	1	Cap
4.	GR1544	1	Needle Assembly W/Seal Kit (Item 22)
5.	GR1545	1	Seal Kit, Includes: (3) O-Rings, (1) Seal, (1) Spring, (1) Stainless Steel Sleeve
6.	GR1535	1	Sleeve
7.	GR1533	1	Body (12 Outlets)
A.	GA8931	1	Liquid Fertilizer Piston Pump Flow Divider Complete, 12 Outlet (Model FD-1200)

# LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER, 36 ROW

JB-L2190-991(PT40b/FRTZ202d)

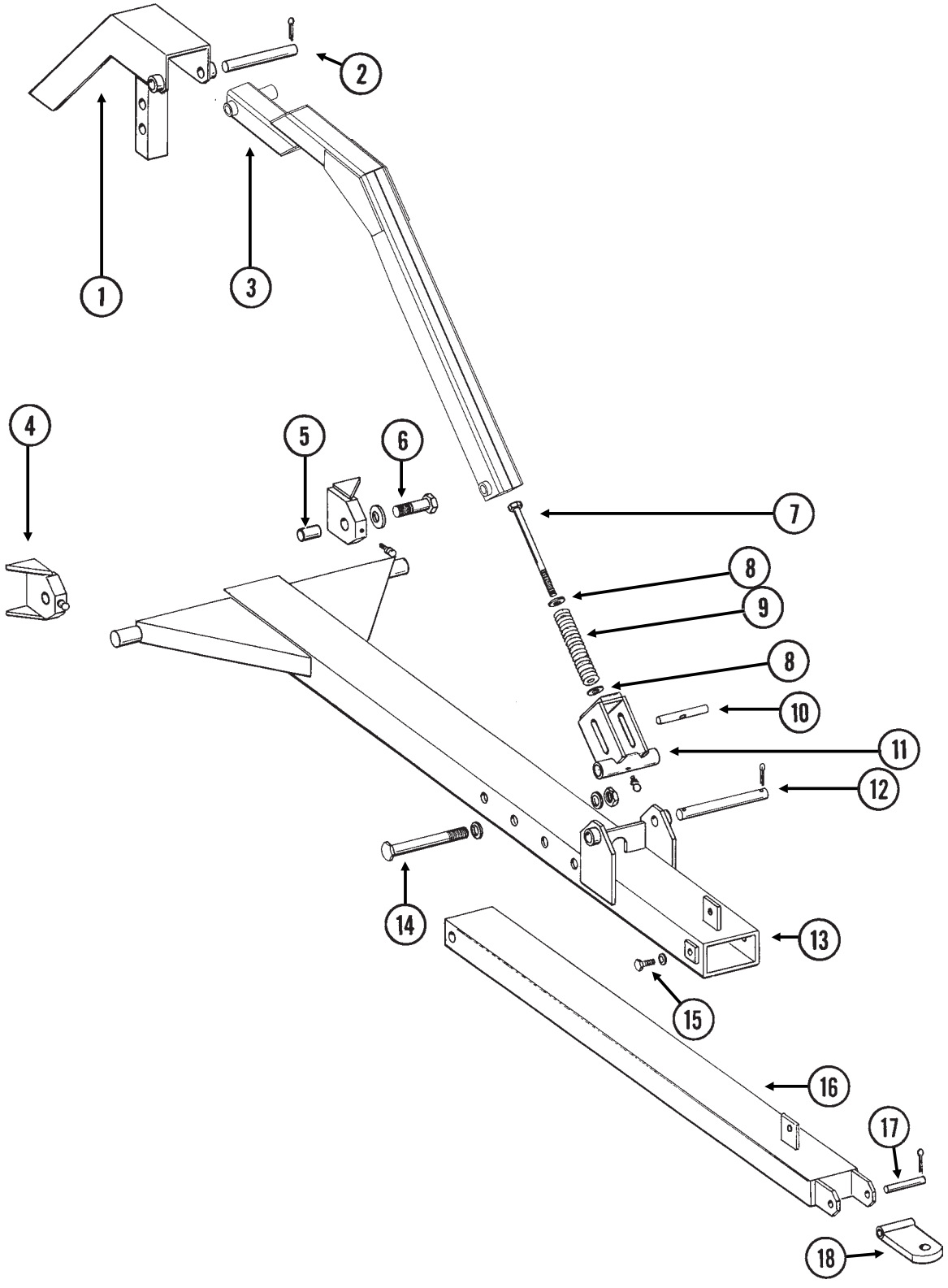
## Model FD-2000 Flow Divider, 20 Outlet



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10350	4	Hex Socket Head Plug, 1/4" NPT
2.	GR1543	1	Plug
3.	GR1542	4	Hex Socket Head Screw, 1/4"-20 x 3/4", Stainless Steel
	GR1541	4	Lock Washer, 1/4", Stainless Steel
4.	GR1566	1	Cap
5.	GR1567	1	Needle Assembly W/Seal Kit (Item 7)
6.	GR1568	1	Seal Kit, Includes: (3) O-Rings, (1) Seal, (1) Spring
7.	GR1561	1	Sleeve
8.	GR1559	1	Body (20 Outlets)
9.	GR1574	1	Sleeve, 1" O.D. x 1/2" Long, Stainless Steel
A.	GA9407	1	Liquid Fertilizer Piston Pump Flow Divider Complete, 20 Outlet (Model FD-2000)

# REAR TRAILER HITCH, 16 ROW 30", 16 ROW 38" AND 24 ROW 30"

(FF96)



# REAR TRAILER HITCH, 16 ROW 30", 16 ROW 38" AND 24 ROW 30"

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ITEM	PART NO.	QTY.	DESCRIPTION
1.	A7252	1	Link Mount <b>(Non-Stock Item)</b>
2.	GD3547	1	Pin, 1 1/4" x 12 3/4"
	G10460	2	Cotter Pin, 1/4" x 2"
3.	GA9408	1	Top Link W/Grease Fitting, 16 Row 38" And 24 Row 30"
	G10640	-	Grease Fitting, 1/4"-28
4.		-	See "Axle And Transport Lockup", Page P88
5.	GD10297	2	Bushing, 1 3/4"
6.	G10837	2	Hex Head Cap Screw, 7/8"-9 x 3"
	G10330	2	Lock Washer, 7/8"
7.	GD7907	1	Special Bolt
8.	GB0213	2	Spring Seat
9.	GD10273	1	Compression Spring
10.	GD10296	1	Pin, 1 1/4" x 5 1/2"
11.	GA7258	1	Side Link W/Grease Fitting
	G10641	-	Grease Fitting, 1/8" NPT
12.	GD1702	1	Pin, 1 1/4" x 10 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
13.	GA7254	1	Front Hitch
14.	G10838	1	Hex Head Cap Screw, 1"-8 x 8 1/2"
	G10200	2	Washer, 1" USS
	G10396	1	Lock Nut, 1"-8
15.	G10055	2	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	G10230	2	Lock Washer, 5/8"
16.	GA7256	1	Rear Hitch
17.	GD8839	1	Pin, 1 1/4" x 6 1/4"
	G10460	2	Cotter Pin, 1/4" x 2"
18.	GA6177	1	Clevis W/Grease Fitting
	G10640	-	Grease Fitting, 1/4"-28

# DECALS, PAINT AND MISCELLANEOUS

**WARNING**

ALWAYS USE SAFETY PINS IN TRANSPORT POSITION

7100-2

1

**WARNING**

TO AVOID INJURY -- ALWAYS LOWER PLANTER UNITS TO THE GROUND BEFORE UNHITCHING PLANTER. TONGUE CAN RAISE SUDDENLY.

7100-43

3

**WARNING**

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

7100-46

4

**WARNING**

TO AVOID INJURY -- 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**

USE SAFETY CHAINS PROVIDED. TOW ONLY WITH FARM TRACTOR.

7100-302

6

**WARNING**

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

7100-68

7

**KINZE**

5

**WARNING**

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

7100-43

8

**DANGER**

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

7100-89

9

**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

10



11



12

**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

13



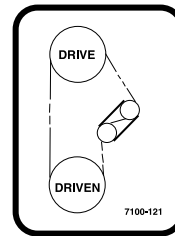
14

**DANGER**

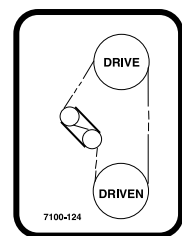
SERIOUS INJURY OR DEATH CAN RESULT FROM CONTACT WITH ELECTRICAL LINES. USE CARE TO AVOID CONTACT WITH ELECTRIC LINES WHEN MOVING OR OPERATING THIS MACHINE.

7100-117

15



16



17

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

7100-153

18

**MARKER SPEED CONTROL**

SEE MANUAL FOR PROPER ADJUSTMENT

7100-160

19

ROTATE KNURLED COLLAR ON WRAP SPRING TIGHTENER TO RELEASE SPRING TENSION

7100-295

20

**ROTATION**

→

7100-192

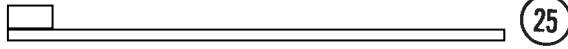
21



22

# DECALS, PAINT AND MISCELLANEOUS

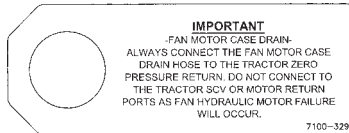
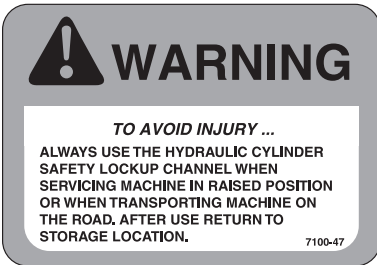
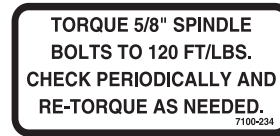
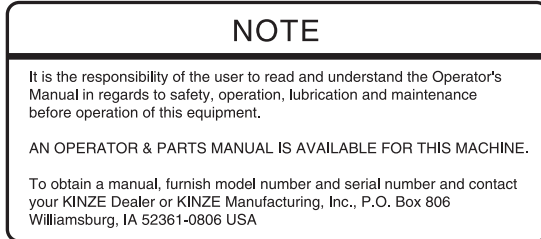
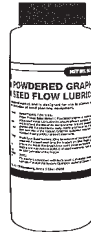
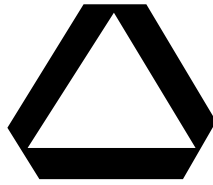
# KINZE 3700 <sup>23</sup>



**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



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G7100-02	1	Decal, Warning
2.	G7100-42	4	Decal, Warning
3.	G7100-43	1	Decal, Warning
4.	G7100-46	1	Decal, Warning
5.	G7100-54	1	Decal, KINZE®, 4 3/16" x 17 3/16"
6.	G7100-302	1	Decal, Warning
7.	G7100-68	2	Decal, Warning

(Continued On Following Page)

# DECALS, PAINT AND MISCELLANEOUS

ITEM	PART NO.	QTY.	DESCRIPTION
8.	G7100-83	2	Decal, Warning (1 Per Marker Lockup)
9.	G7100-89	4	Decal, Danger
10.	G7100-90	1	Decal, Warning
11.	G7100-110	-	Decal, Grease Weekly
12.	G7100-111	-	Decal, Oil Daily
13.	G7100-115	-	Decal, Warning (1 Per Granular Chemical Hopper)
14.	G7100-116	-	Decal, Grease Daily
15.	G7100-117	1	Decal, Danger
16.	G7100-121	1	Decal, Transmission, R.H.
17.	G7100-124	1	Decal, Transmission, L.H.
18.	G7100-153	-	Decal, Information (1 Per Seed Meter)
19.	G7100-160	-	Decal, Flow Control
20.	G7100-295	-	Decal, Spring Tension Release
21.	G7100-192	-	Decal, Point Row Clutch Rotation
22.	G7100-247	-	Decal, Logo, 4 <sup>3</sup> / <sub>8</sub> " x 4 <sup>1</sup> / <sub>2</sub> " (2 Per Row Unit)
	G7100-252	-	Decal, Logo, 3 <sup>1</sup> / <sub>2</sub> " x 3 <sup>5</sup> / <sub>8</sub> " (Hopper Panel Extension)
23.	G7100-246	2	Decal, 3700
24.	G7100-197	1	Decal, Warning
25.	GD1512	-	Tie Strap, 7 <sup>1</sup> / <sub>2</sub> "
	GD2117	-	Tie Strap, 14 <sup>1</sup> / <sub>2</sub> "
26.	G7100-214	1	Decal, Two-Speed Point Row Clutch Rate Reduction
27.	GD2199	1	SMV Sign
28.	GR0146MPP	-	Powdered Graphite, Twenty-Four 1 Pound Containers
29.	GR1570MPP	-	Talc Lubricant, Four 8 Pound Containers
30.	GR0155MPP	-	Blue Paint, Twelve Aerosol Cans
31.	G7100-219	-	Decal, Warning
32.	G7100-217	-	Decal, Note
33.	G7100-234	-	Decal, Bolt Torque
34.	GD10057-01	-	Hose Identification Sleeve, Red AA
	GD10057-02	-	Hose Identification Sleeve, Red BB
	GD10057-03	-	Hose Identification Sleeve, Blue AA
	GD10057-04	-	Hose Identification Sleeve, Blue BB
	GD10057-07	-	Hose Identification Sleeve, Yellow AA
	GD10057-08	-	Hose Identification Sleeve, Yellow BB
	GD10057-11	-	Hose Identification Sleeve, Green PP
	GD10057-12	-	Hose Identification Sleeve, Green RR
	GD10057-13	-	Hose Identification Sleeve, Green CD
35.	G7100-47	4	Decal, Warning
36.	G7100-258	-	Reflective Decal, Red, 1 <sup>1</sup> / <sub>2</sub> " x 9", Rectangular (If Applicable)
	G7100-259	-	Reflective Decal, Amber, 1 <sup>1</sup> / <sub>2</sub> " x 9", Rectangular (If Applicable)
	G7100-260	-	Reflective Decal, Orange, 1 <sup>1</sup> / <sub>2</sub> " x 9", Rectangular (If Applicable)
37.	G7100-261	-	Reflective Decal, Red, 1 <sup>3</sup> / <sub>4</sub> " x 9", Die-Cut (If Applicable)
	G7100-262	-	Reflective Decal, Amber, 1 <sup>3</sup> / <sub>4</sub> " x 9", Die-Cut (If Applicable)
	G7100-263	-	Reflective Decal, Orange, 1 <sup>3</sup> / <sub>4</sub> " x 9", Die-Cut (If Applicable)
38.	GM0202	-	Operator & Parts Manual, Model 3700 And 3700 SDS (EdgeVac® Seed Metering)
39.	G7100-311	-	Decal, EdgeVac®
40.	G7100-329	-	Tag, Fan Motor Case Drain
41.	G7100-301	-	Decal, Warning



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