

**MODEL 3800 AND 3800 SDS  
FORWARD FOLDING PLANTER**  
(EdgeVac® Seed Metering)

**OPERATOR & PARTS  
MANUAL**

**M0230**

**3/09**

This manual is applicable to: Model: 3800 And 3800 SDS Forward Folding Planters  
Serial Number: 755331 And On

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

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

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

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

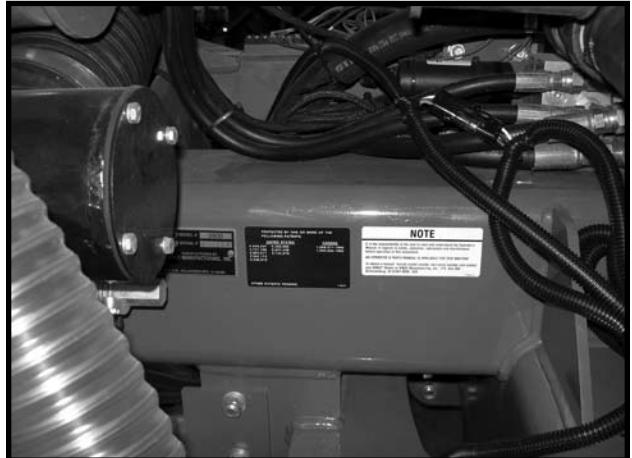
Monitor Serial Number _____
Measured Pulses Per Mile/Km (Radar Distance Sensor) _____
Measured Pulses Per Mile/Km (Magnetic Distance Sensor) _____

**SERIAL NUMBER**

The serial number plate is located on the center portion of 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.

D01050701



**3800 Planter With Conventional Seed Hoppers  
Shown**

*KINZE®, the KINZE® logo, Interplant® and EdgeVac® are registered trademarks of KINZE Manufacturing, Inc.*

**This page left blank intentionally.**

# PREDELIVERY/DELIVERY CHECKLIST

## TO THE DEALER

Preelivery 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.
- The closing wheels have been installed. See "Row Unit Assembly And Installation Instructions".
- Row markers are set at the correct length (If Applicable). See "Row Marker Length Adjustment" in the Machine Operation section of the Operator & Parts Manual.
- Be sure all grease fittings are in place and lubricated.
- Check planter and make sure all working parts are moving freely, bolts are tight and cotter pins are spread.
- Check all drive chains for proper tension and alignment.
- Check for oil leaks and proper hydraulic operation.
- Check to be sure hydraulic hoses are routed correctly to prevent damage.
- Inflate tires to specified PSI air pressure. Tighten wheel lug bolts and lug nuts to specified torques.
- Check to be sure all safety decals and SMV sign are correctly located and legible. Replace if damaged.
- Check to be sure safety/warning lights are installed correctly and working properly.
- Check to be sure the reflective decals are correctly located and visible when the planter is in transport position.
- Paint all parts scratched in shipment or assembly.
- Be sure all safety lockup devices are on the planter and correctly located.
- Vacuum fan PTO drive pump is attached correctly to the tractor. Reservoir is filled to capacity and system is inspected for leaks.
- PTO shaft meets specifications for tractor being used with planer.

***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. 3800 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, PTO driven pump and PTO assembly 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.***

---

(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), SMV sign and reflective decals are correctly located and that decals are legible. Replace if damaged or missing.
- Check to be sure safety/warning lights are working properly.

---

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

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

*Tear Along Perforation*

# TABLE OF CONTENTS

---

<b>TO THE OWNER</b> .....	1-1
<b>WARRANTY</b> .....	1-2
<b>INTRODUCTION</b> .....	2-1
<b>SPECIFICATIONS</b> .....	3-1
<b>SAFETY PRECAUTIONS</b> .....	4-1
<b>SAFETY WARNING SIGNS</b> .....	5-1
<b>MACHINE OPERATION</b>	
Analog Vacuum Gauges .....	6-14
Checking Granular Chemical Application Rate .....	6-75
Checking Seed Population .....	6-74
Contact Wheel Idler Adjustment .....	6-9
Contact Wheel Spring Adjustment .....	6-9
Contact Wheel Drive Sprockets .....	6-10
Depth Gauge Wheel Attachment For Notched Single Disc Fertilizer Opener .....	6-69
Digital Vacuum Gauge Operation .....	6-14
Electronic Seed Monitor System	
KPM III .....	6-25
Planter Monitor Module (PMM) .....	6-66
<b>Field Adjustments</b>	
Seed Rate Transmission Adjustment .....	6-10
Field Operation .....	6-18
Field Test .....	6-73
Field To Transport Sequence .....	6-18
Hydraulic/Electric Operation .....	6-13
Initial Preparation Of The Planter .....	6-1
Leveling The Planter .....	6-8
Liquid Fertilizer Attachment .....	6-70
Liquid Fertilizer Rate Charts .....	6-71
Metric Conversion Table .....	6-73
Notched Single Disc Fertilizer Opener .....	6-67
Planting Speed .....	6-73
Point Row Clutches .....	6-24
Rear Trailer Hitch .....	6-72
Row Marker Length Adjustment .....	6-23
Row Marker Operation .....	6-22
Row Marker Speed Adjustment .....	6-23
Shear Protection .....	6-12
Tire Pressure .....	6-9
Tractor Preparation And Hookup .....	6-3
Tractor Requirements .....	6-2
Transport To Field Sequence .....	6-15
Transporting The Planter .....	6-73
U-Joint Shaft Assemblies .....	6-11
Vacuum Fan Motor Valve Block .....	6-14
Wing Latch Hook Safety Pin(s) .....	6-1
Wrap Spring Wrench Operation .....	6-11

# TABLE OF CONTENTS

---

## SEED METER OPERATION/MAINTENANCE

### Field Adjustments

General Planting Rate Information .....	7-1
Planting And Application Rate Charts .....	7-7
Seed Meter Singulator Brush And Vacuum Level Adjustment .....	7-26
Seed Meter .....	7-2
Seed Meter Cleanout .....	7-5
Seed Meter Drive Release .....	7-28
Seed Meter Maintenance.....	7-29
Seed Metering System Troubleshooting .....	7-30
Vacuum Manifold Maintenance.....	7-29

## SDS SEED DELIVERY SYSTEM OPERATION

Adjustment Of Limit (Safety) Switches And Proximity Switches .....	8-2
Introduction .....	8-1
Mini-Hopper Latch .....	8-3
Operation .....	8-1
SDS Troubleshooting .....	8-4
Seed Lubrication.....	8-4

## ROW UNIT OPERATION

Closing Wheel Shield.....	9-2
Coulter Mounted Residue Wheels .....	9-14
Covering Discs/Single Press Wheel Adjustment .....	9-2
Drag Closing Attachment.....	9-3
Frame Mounted Coulter .....	9-10
Granular Chemical Bander Shield .....	9-16
Granular Chemical Banding Options .....	9-15
Granular Chemical Hopper And Drive .....	9-15
Planting Depth .....	9-1
Pneumatic Down Pressure Package .....	9-8
Quick Adjustable Down Force Springs .....	9-6
Residue Wheels (For Use With Frame Mounted Coulter).....	9-11
Row Unit Chain Routing .....	9-5
Row Unit Extension Brackets.....	9-4
Row Unit Mounted Disc Furrower .....	9-12
Row Unit Mounted No Till Coulter.....	9-14
Row Unit Mounted Residue Wheel.....	9-12
Seed Hopper (Conventional Seed Hoppers) .....	9-4
Spring Tooth Incorporator .....	9-16
“V” Closing Wheel Adjustment (Rubber And Cast Iron).....	9-1

# TABLE OF CONTENTS

---

## LUBRICATION

Bushings .....	10-3
Drive Chains .....	10-1
Grease Fittings .....	10-6
Hitch Slide Assembly .....	10-4
Liquid Fertilizer Piston Pump Crankcase Oil Level .....	10-5
Lubrication Symbols .....	10-1
PTO Shaft Assembly.....	10-4
Sealed Bearings .....	10-1
Wheel Bearings .....	10-4
Wrap Spring Wrench Assembly .....	10-4

## MAINTENANCE

15" Seed Opener Disc Blade/Bearing Assembly .....	11-6
Chain Tension Adjustment .....	11-2
Coulter Mounted Residue Wheels .....	11-8
Counter Balance Valve (Located At Center Of Rear H-Frame) .....	11-13
Drag Closing Attachment.....	11-4
Electrical Control Console Schematic (Planter Functions) .....	11-22
Electrical Light Harness Schematics .....	11-20
Electrical Wiring Diagram For 7-Terminal Light Connector .....	11-19
Electrical Wiring Harness Schematic (On Tractor).....	11-23
Electrical Wiring Harness Schematics (On Planter) .....	11-24
Electrical Wiring Harness Schematic (Vacuum Fan Gauges).....	11-29
Electrical Wiring Schematic (SDS) .....	11-28
Flow Control Valve .....	11-13
Flow Regulator Valve .....	11-13
Frame Mounted Coulter.....	11-7
Gauge Wheel Adjustment.....	11-4
Gauge Wheel Arm Bushing And/Or Seal Replacement .....	11-5
Gauge Wheel Arm Pivot Spindle Replacement .....	11-5
Granular Chemical Attachment.....	11-9
Hydraulic System Schematics .....	11-32
Hydraulic Schematics (SDS) .....	11-34
Hydraulic Schematic (Vacuum Fan System)) .....	11-30
Lift/Ground Drive Wheel Bearing Lubrication Or Replacement .....	11-16
Mounting Bolts And Hardware .....	11-1
Piston Pump Storage.....	11-18
Point Row Clutches.....	11-11
Preparation For Storage .....	11-19
Pressure Relief Valve (Located At Each Row Marker).....	11-13
Pressure Relief Valve (Located On Center Of Rear H-Frame) .....	11-13
PTO Pumps And Oil Coolers .....	11-3
Residue Wheels (For Use With Frame Mounted Coulter).....	11-7
Row Marker Bearing Lubrication Or Replacement .....	11-16
Row Unit Mounted Disc Furrower.....	11-8
Row Unit Mounted No Till Coulter.....	11-8
Row Unit Mounted Residue Wheel.....	11-8
Seed Tube Guard/Inner Scraper .....	11-7
Solenoid Valve .....	11-13
Spring Tooth Incorporator .....	11-9

(Continued On Following Page)

# TABLE OF CONTENTS

---

## **MAINTENANCE (Continued)**

Tire Pressure .....	11-2
Torque Values Chart .....	11-1
Transport Wheel Bearing Replacement .....	11-17

### **Troubleshooting**

Closing Wheel Troubleshooting .....	11-4
KPM III Electronic Seed Monitor Troubleshooting .....	11-10
Lift/Fold Circuit Troubleshooting.....	11-14
Piston Pump Troubleshooting .....	11-18
Point Row Clutch Troubleshooting .....	11-12
PTO Pumps And Oil Coolers Troubleshooting.....	11-3
Row Marker Circuit Troubleshooting .....	11-15
Solenoid Valve Troubleshooting .....	11-14

<b>PARTS LIST INDEX</b> .....	P1
-------------------------------	----

<b>PARTS SECTION NUMERICAL INDEX</b> .....	P157
--	------




# TO THE OWNER

---

KINZE Manufacturing, Inc. would like to thank you for your patronage. We appreciate your confidence in KINZE® farm machinery. Your KINZE® planter has been carefully designed 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 the 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 or similar models and vary slightly in appearance.

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

# WARRANTY

---

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

---

Model 3800 Forward Folding Planters are available in multiple size configurations with bulk seed delivery system (SDS) or conventional seed hoppers. The design permits installation of liquid fertilizer application equipment and various row unit attachments.

## GENERAL INFORMATION

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

D03220615



**Model 3800 SDS EdgeVac® 36 Row 30" Planter With Liquid Fertilizer Package**

# INTRODUCTION

---

# SPECIFICATIONS

---

**BASE MACHINE TYPE** - Semi-Mounted/Pull Type - Forward Folding Toolbar - Hydraulic Operation

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

**EDGEVAC® SEED METERING SYSTEM INCLUDES -**

EdgeVac® Seed Meters (Less Seed Discs), Meter Drive Clutches, No. 41 Chains, Two 20" Diameter Vacuum Fans With Mounting Components, Hydraulic Motors, Oil Filters And Coolers, 1000 RPM 1 ¾"-20 Spline PTO 2-Section Gear Pump (Planter Mounted), 8 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, Analog Vacuum Gauges And EdgeVac® Control Console

**PLANTING UNIT TYPES** - Pull Row Units

- SDS Bulk Seed Delivery System Or Conventional Seed Hoppers

**ROW SPACING** - 36 Row Narrow - 30" Rows (Six Rows On Center Section, Seven Rows On Inner Wings, Eight Rows On Outer Wings)

**DRIVE SYSTEM** - Spring-Loaded Contact Drive System

- Six 4.80" x 8" Contact Drive Tires

- No. 40 Roller Chain And Spring-Loaded Idlers

- Two Transmissions (One Per Half)

- Point Row Clutches Standard (Four Clutches)

- 7/8" Hex Drill/Drive Shafts With Spring-Loaded Hardened Couplers And U-Joint Shafts At Wing Hinges

**FIELD OPERATION TIRES** - Center Section - Four 41 x 11R 22.5 Radial Load Range H

- Wings - 7.50 x 20", 8 Ply Custom Rib Implement Adjustable Height Wheels  
Three Per Wing (Twelve On 36 Row 30")

**TRANSPORT TIRES** - 445-50R 22.5R Radial Load Range H (Four On SDS 36 Row 30")

**ROW MARKERS (OPTIONAL)** - Depth Band On Marker Blade

- 36 Row 30" - Four-Fold

**HYDRAULICS** - Three SCV For Independent Operation Of Field Lift, Fold Functions And Optional Row Marker Functions With 12 VDC Control Console

- Master/Slave Lift

- Four 4" x 8" Master Cylinders, Four 3 ¾" x 8" Slave Cylinders, Four 3 ½" x 8" Slave Cylinders  
And Four 2 ½" x 8" Lift Assist Cylinders On 36 Row 30"

- Transport Lift/Slide - One Slide Cylinder Under Tongue, Two Transport Axle Cylinders

- Wing Fold - Four Cylinders On 36 Row 30"

- Latch Cylinders - One Slide Latch Cylinder And One Tongue Latch Cylinder

**HITCH** - Category 3N, 3 Or 4N

# SPECIFICATIONS

---

## MACHINE OPTIONS

- Electronic Seed Monitor
  - KPM III With Magnetic Distance Sensor Or Radar Distance Sensor
  - Planter Monitor Module (PMM)
- Liquid Fertilizer Package
- Piston Pump Mount And Drive Package
- Notched Single Disc Fertilizer Openers
- Low Rate Check Valve Packages
- Rear Trailer Hitch

## ROW UNIT OPTIONS/ATTACHMENTS

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

# SPECIFICATIONS

## MODEL 3800 CONVENTIONAL DIMENSIONS/WEIGHTS

<b>PLANTER SIZE</b>	<b>36 Row 30"</b>
PLANTING WIDTH	92' 6"
PLANTING LENGTH	29' 9"
TRANSPORT WIDTH (See NOTE Below)	14' 7"
TRANSPORT LENGTH	56' 0"
TRANSPORT HEIGHT (With Markers)	3' 6"
WEIGHT* (Base Machine)	36,156 Lbs.

## MODEL 3800 SDS DIMENSIONS/WEIGHTS

<b>PLANTER SIZE</b>	<b>36 Row 30"</b>
PLANTING WIDTH	92' 6"
PLANTING LENGTH	29' 9"
TANK HEIGHT (Planting Position)	9' 4"
TRANSPORT WIDTH (See NOTE Below)	14' 7"
TRANSPORT LENGTH	56' 0"
TRANSPORT HEIGHT (With Markers)	13' 6"
WEIGHT* (Base Machine)	39,331 Lbs.

\* Estimated base machine weights include planter frame, drive components, tires and wheels, hydraulic cylinders and hoses, 12VDC control console, KINZE® pull row units (closing wheel arms less closing wheels), seed hoppers and lids on conventional planters or bulk seed hoppers and seed delivery system on SDS planters, dual quick-adjustable down force springs and point row clutches.

NOTE: Truck shipping width is 13' 9". Transport widths with optional granular chemical attachments are 15' 9".

# SPECIFICATIONS


---




# 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 or when folding the planter.**


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


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

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

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


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

 **Before operating the planter for the first time and periodically thereafter, check to be sure the lug bolts (and cap screws if applicable) on the transport wheels are torqued properly. This is especially important if the planter is to be transported for a long distance.**


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


 **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.**

 **The seed and fertilizer metering systems of this planter are designed to be driven by ground tires. A PTO pump and hydraulic motors power the vacuum fans. Hydraulic motors power the bulk seed distribution system. 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.**

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

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

# SAFETY PRECAUTIONS

---



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 24 Row 30" planters with 200 HP farm tractor (minimum HP). Tow 32 Row 30" or 36 Row 30" planters with 250 HP farm tractor (minimum HP).



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.



Allow for unit length when making turns.



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



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



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



Avoid sudden uphill turns on steep slopes.



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



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



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



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



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



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



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.

D032404100



Part No. G7100-68 (Qty. 2 - Located On Forward Toolbars On Both Sides Of Planter)

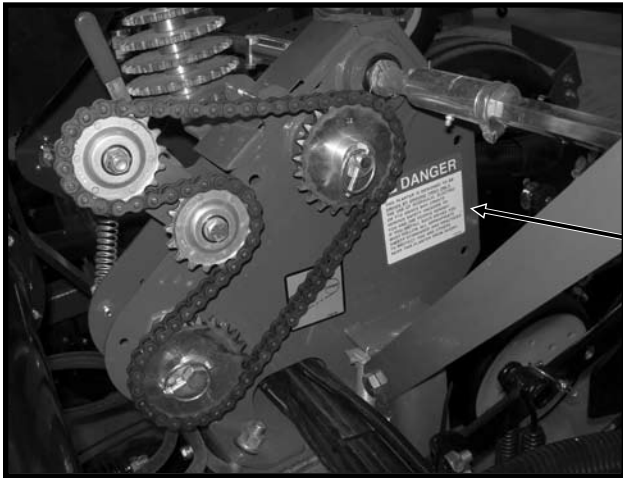
D032404114



Part No. G7100-68 (Qty. 2 - Located On Stub Wings On Both Sides Of Planter)

# SAFETY WARNING SIGNS

D01050736



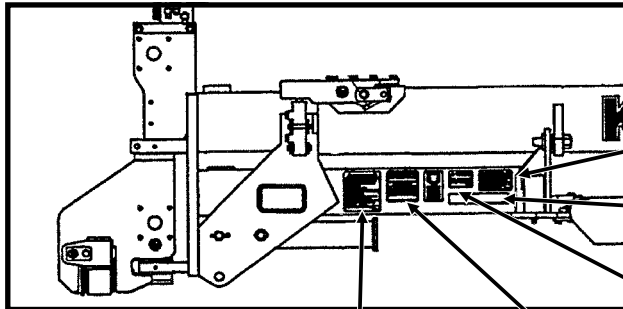
** DANGER**

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

7100-89

Part No. G7100-89 (Qty. 2 - One Located On Seed Rate Transmissions On Each Side Of Planter)

(FWD162)



** 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)



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

** WARNING **

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

7100-46

Part No. G7100-46 (Qty. 1 - Located On Planter Hitch)

** 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 - Located On Planter Hitch)

** WARNING**

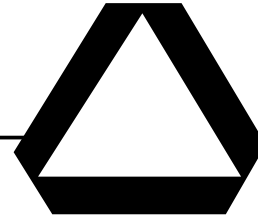
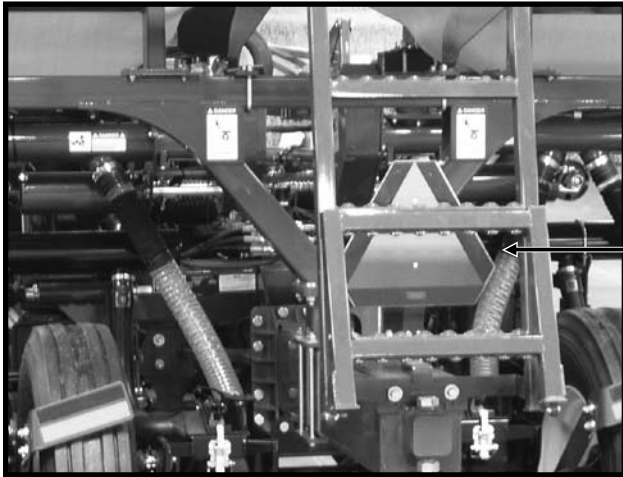
TOW ONLY WITH FARM TRACTOR

7100-56

Part No. G7100-56 (Qty. 1 - Located On Planter Hitch)

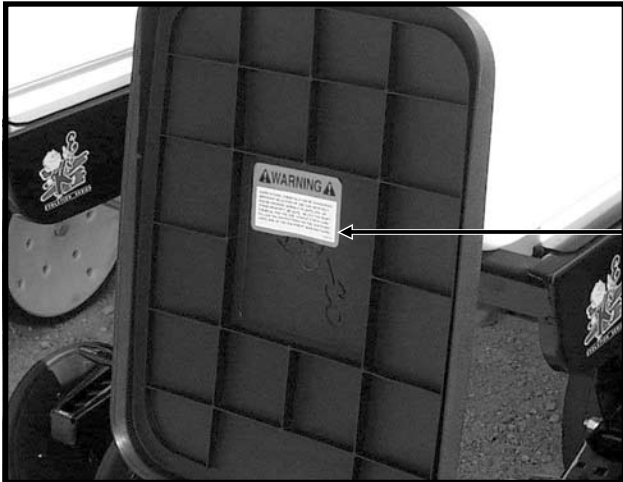
# SAFETY WARNING SIGNS

D02270807



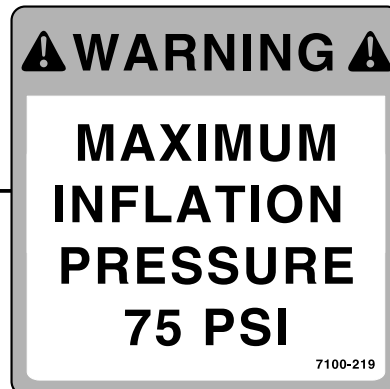
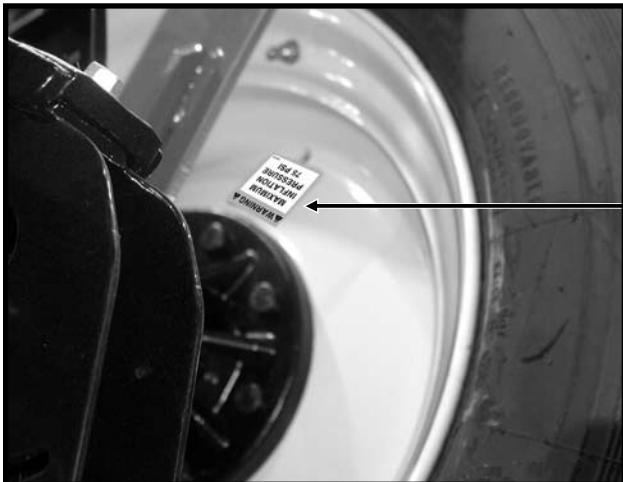
Part No. GD2199 (Qty. 1 - Located On Rear Center Section Of Planter)

D06039901



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

D040204101

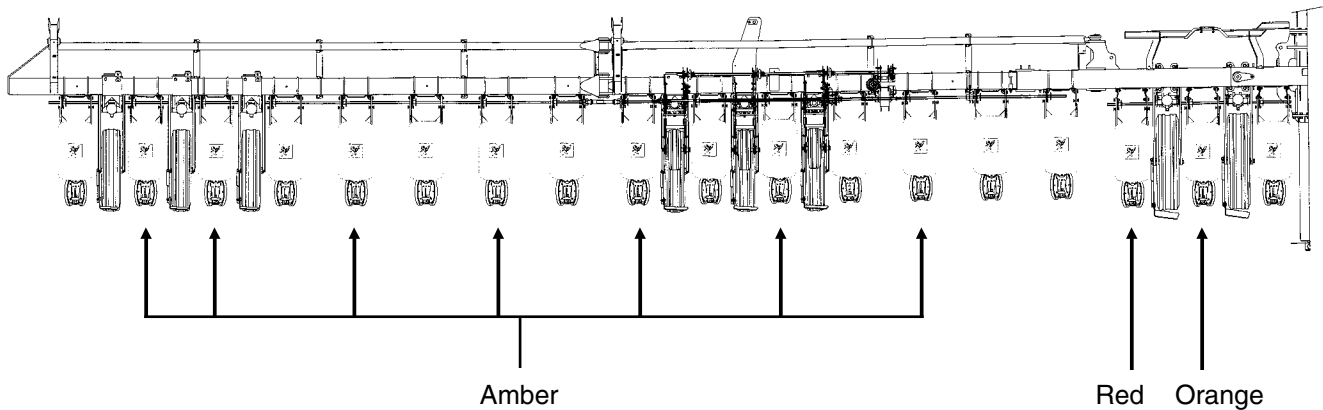


Part No. G7100-219 (Qty. 4 - One Per 41 x 11R22.5" Center Section Lift/Gauge Tire)

# SAFETY WARNING SIGNS

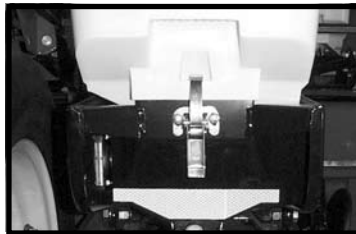
(FWD142a)

## Conventional 36 Row 30" 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 - Side-Facing In Transport Position)  
**(Standard)** (If Applicable)

D060800114



Part No. G7100-261 Red Reflective Decal  
Part No. G7100-260 Orange Reflective Decal (Located As Shown Above)  
**(Standard)** (If Applicable)



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 - Side-Facing In Transport Position) **(With Optional Granular Chemical)**  
(If Applicable)

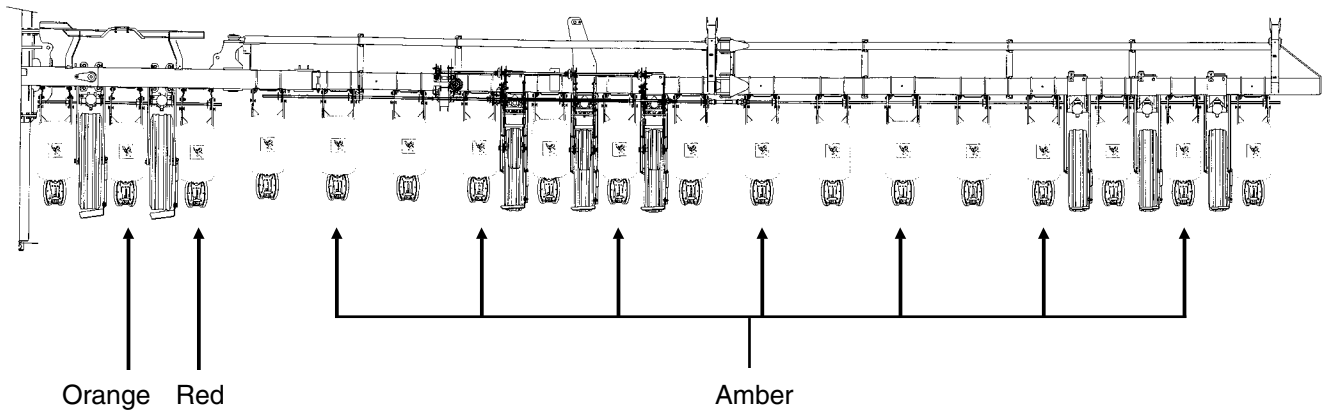
D062300102



Part No. G7100-258 Red Reflective Decal  
Part No. G7100-260 Orange Reflective Decal (Located As Shown Above)  
**(With Optional Granular Chemical)**  
(If Applicable)

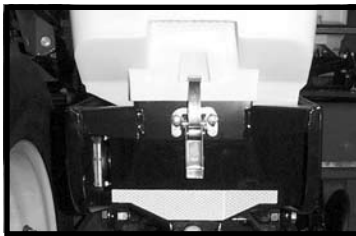
**NOTE: Fourteen decals used on 36 Row 30".**

# SAFETY WARNING SIGNS



Part No. G7100-261 Red Reflective Decal  
 Part No. G7100-260 Orange Reflective Decal  
 (Located As Shown Above)  
**(Standard)** (If Applicable)

D060800114



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 R.H. End Of The Planter - Side-Facing In Transport Position)  
**(Standard)** (If Applicable)



Part No. G7100-258 Red Reflective Decal  
 Part No. G7100-260 Orange Reflective Decal  
 (Located As Shown Above)  
**(With Optional Granular Chemical)**  
 (If Applicable)

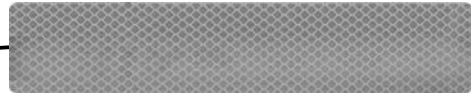
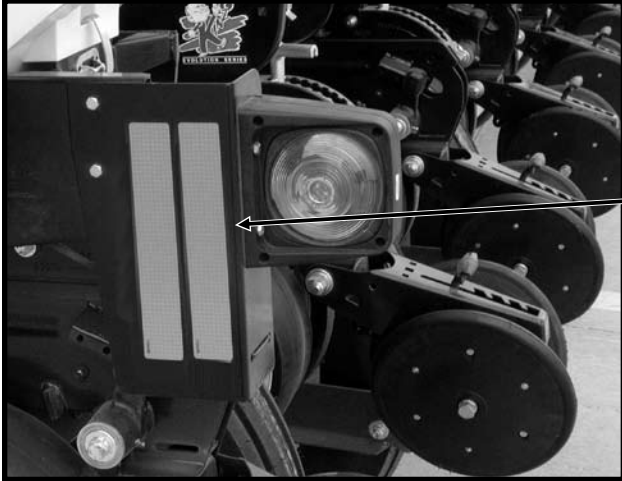
D062300102



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 R.H. End Of The Planter - Side-Facing In Transport Position) **(With Optional Granular Chemical)**  
 (If Applicable)

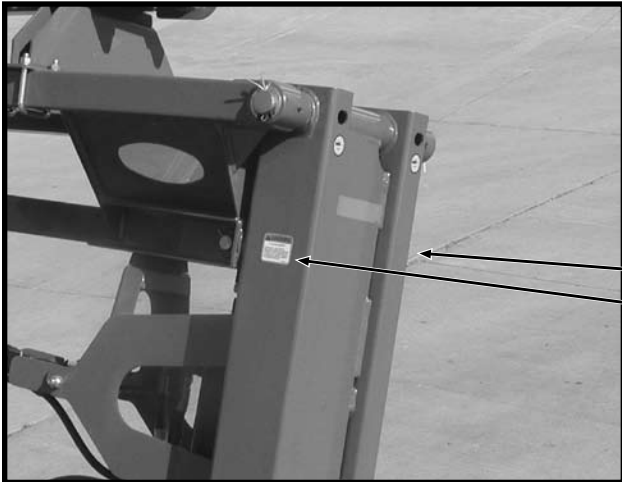
# SAFETY WARNING SIGNS

D040604130a



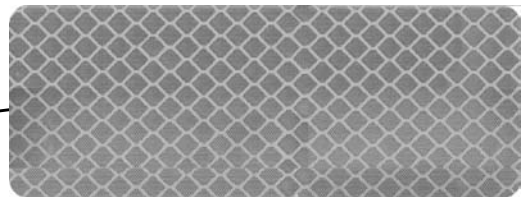
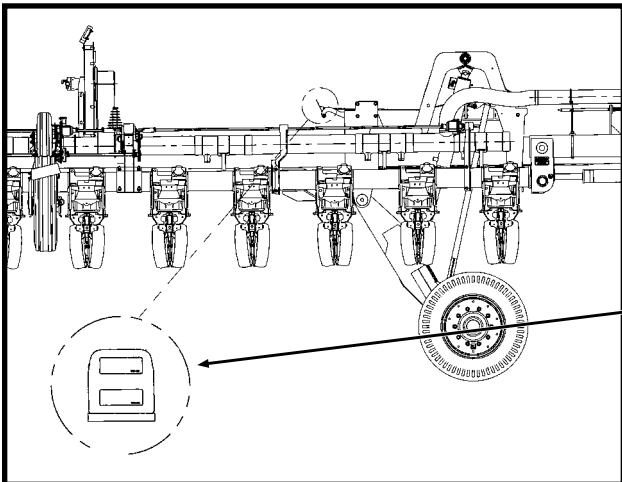
Part No. G7100-259 Amber Reflective Decal  
(Qty. 2 - Located On Each End Row Unit - Forward-Facing In Transport Position)

D081905111



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

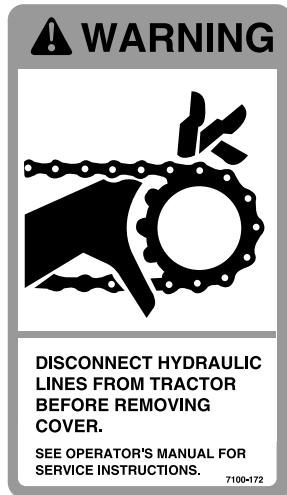
FWD118



Part No. G7100-322 (Qty. 2 - Located On Slide Assembly Flap)

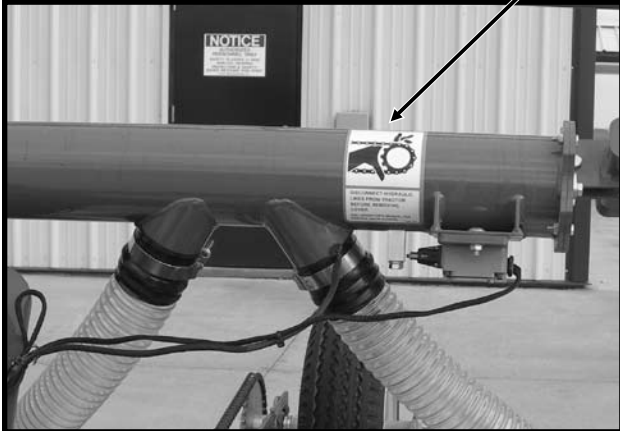


# SAFETY WARNING SIGNS

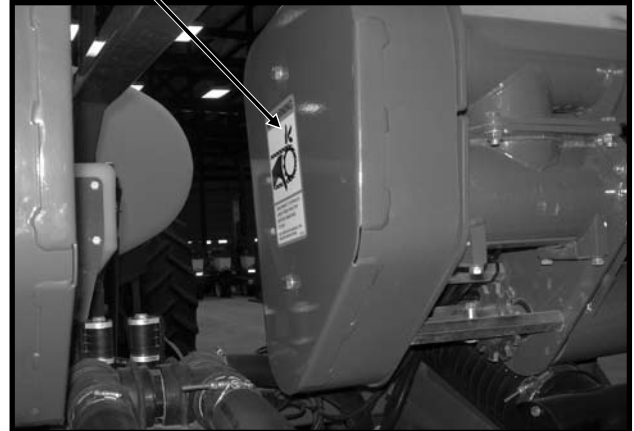


Part No. G7100-172 (Qty. 4)  
(SDS Planters Only)

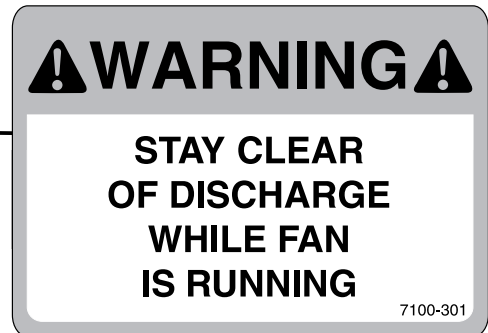
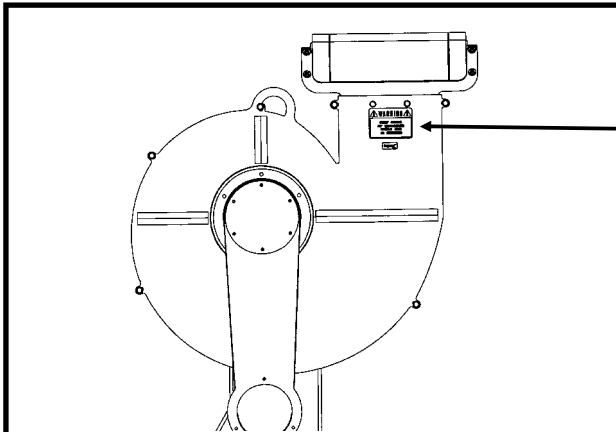
D03060601



D01050731

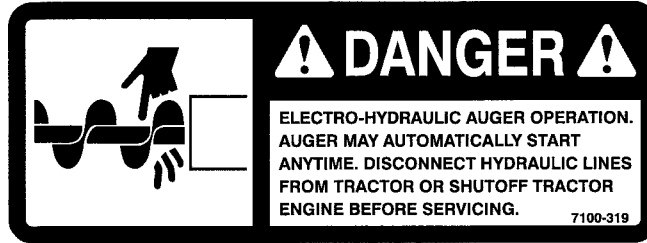


(FWD121)



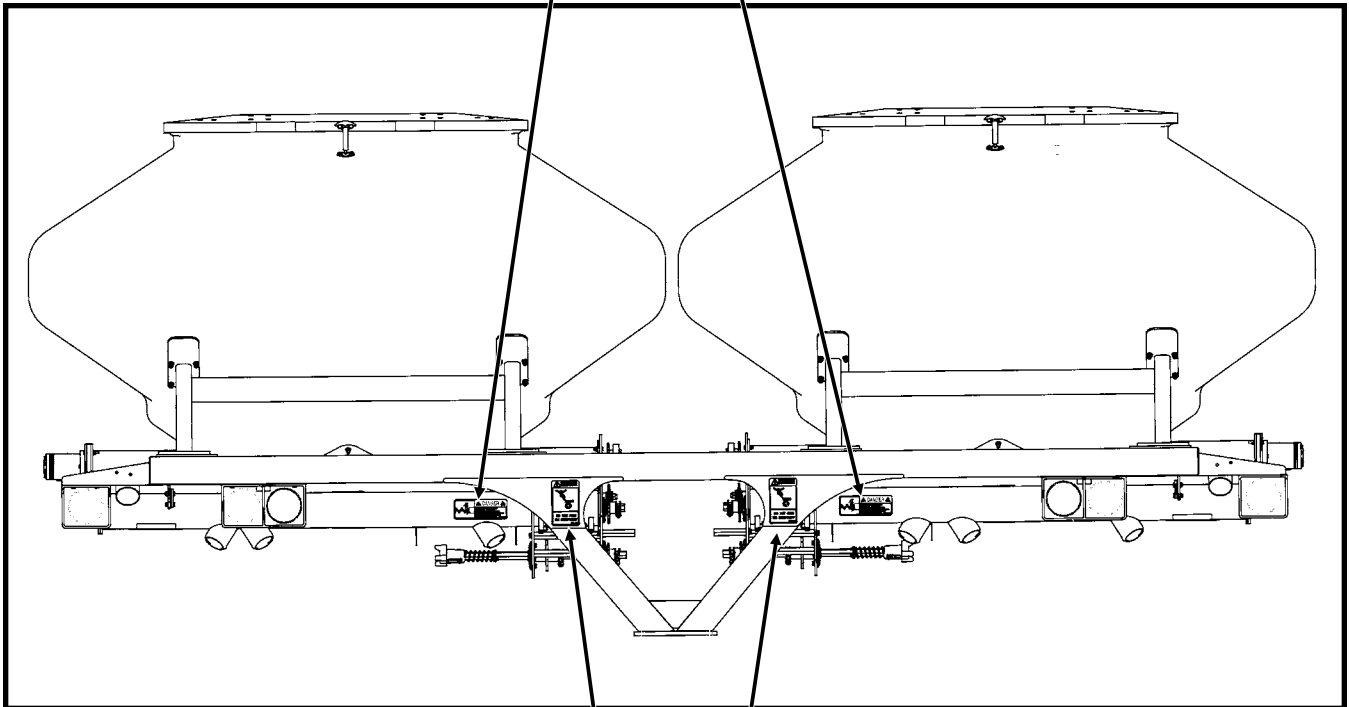
Part No. G7100-301 (Qty. 4 - One On Each Side Of Each Vacuum Fan)

# SAFETY WARNING SIGNS



Part No. G7100-319 (Qty. 2) (SDS Planters Only)

(FWD104)



Part No. G7100-266 (Qty. 2) (SDS Planters Only)

# 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.**

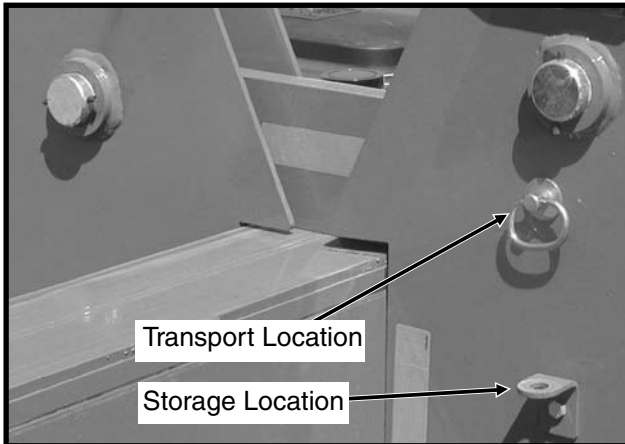
The KINZE EdgeVac® Seed Metering System includes seed meters, seed discs and an air system consisting of hydraulic driven vacuum fans which draw air through the manifolds and hoses and the seed meters on each row unit.

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

## WING LATCH HOOK SAFETY PIN(S)

The wing latch hook safety pin(s) when installed will prevent the latch bar from disengaging and allowing the planter frame to swing away. Never transport the planter without installing the wing latch hook safety pin(s). One wing latch hook safety pin is used on the 24 Row 30" size; two pins are used on 32 Row 30" and 36 Row 30" sizes.

D081905131



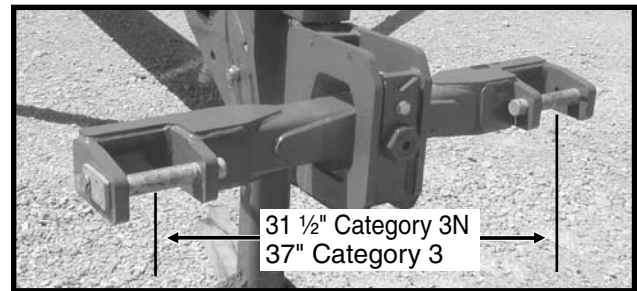
For field operation remove the wing latch hook safety pin(s) and store in the storage location(s) provided.

## INITIAL PREPARATION OF THE PLANTER

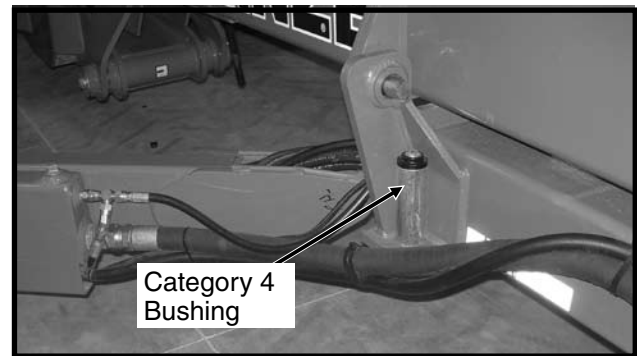
Lubricate the planter and row units per the lubrication information in this manual. Make sure all tires have been properly inflated. See "Tire Pressure". Check all drive chains for proper tension, alignment and lubrication.

The planter may be hitched to the tractor using a Category 3N, Category 3 or Category 4 hitch.

D081605102



D01050714



Install two 2" bushings, stored on the front inner hitch, onto the two hitch pins for Category 4 use.

# MACHINE OPERATION

## TRACTOR REQUIREMENTS

Consult your dealer for information on horsepower requirements and tractor compatibility. Requirements will vary with planter options, tillage and terrain. Three dual remote hydraulic outlets (SCV) are required on all sizes of conventional planters equipped with row markers. Four dual remote hydraulic outlets (SCV) are required on all sizes of SDS planters equipped with row markers. A 12 volt DC electrical system is required on all sizes.

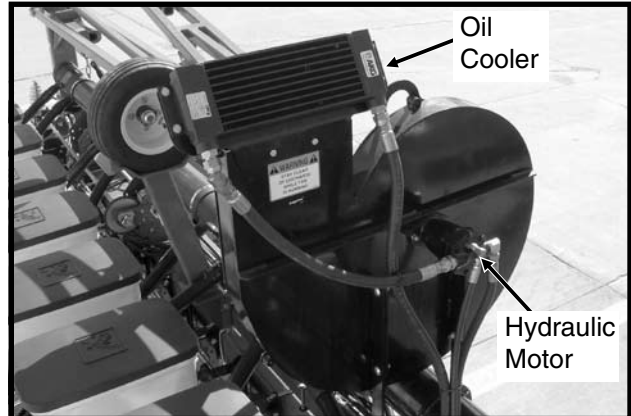


**Transport stability is critical. The gross weight of the tractor must be greater than the gross weight of the planter. Gross weight varies with planter attachments. Tow 36 Row 30" planters with 250 HP farm tractor (minimum HP).**

**NOTE: A 3-point quick hitch adapter is required.**

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 an 8 gallon capacity oil reservoir.

D03200631



Vacuum Fan Assembly With Oil Cooler

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

Correct adjustment and operation of the tractor's 3 point hitch is very important for peak performance of the planter.

A 3-point quick hitch adapter is required.

The tractor's 3 point hitch must be operated in POSITION mode, not DRAFT mode. Operation in DRAFT mode can cause the hitch to move up and down causing unlevel operation of the planter.

The tractor's 3 point hitch response sensitivity settings should be adjusted for the correct reaction speed for raising/controlling the hitch of the planter for the fold and unfold functions.

**IMPORTANT: Movement of the tractor's 3 point hitch (during field operation) is undesirable and may cause poor planter performance and/or damage to the planter. Consult your tractor dealer if necessary.**

1. Install planter control console, digital vacuum gauges 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 cords to the power source.

D10060624



Planter Control Console

D10060618



Digital Vacuum Gauges Control Console

D10060627



SDS Control Console (If Applicable)

- The control consoles operate 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.
2. Set tractor rear wheel spacing at 60" or double the planter row spacing. Dual tires should center on 120". Check tractor operator's manual for correct front and rear tire pressures. (If Applicable)
3. Adjust lower lift links on tractor so planter will lift level from side to side and raise high enough for planter transport clearance. Set the sway blocks on the tractor in position to prevent side sway.
4. Back tractor up to planter and connect planter.

# MACHINE OPERATION

- Install applicable PTO shaft assembly between tractor PTO output shaft and hydraulic pump gearbox on planter.

**CAUTION: A tractor model-specific PTO shaft assembly is required. The procedure described in the following steps MUST be followed every time a different tractor is attached to determine if the correct length PTO shaft assembly is being used. FAILURE TO FOLLOW THESE GUIDELINES WILL RESULT IN SEVERE DAMAGE TO THE IMPLEMENT AND/OR THE TRACTOR.**

**IMPORTANT: The tractor must be equipped with a 1 3/4"-20 spine PTO.**

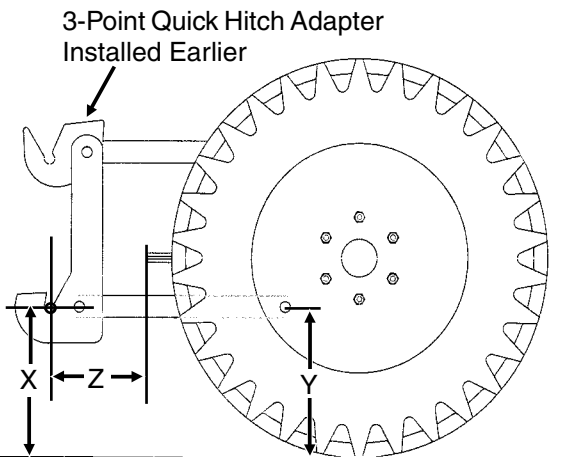
**NOTE: A 3-point quick hitch adapter is required on all Model 3800 EdgeVac® Planters.**

**IMPORTANT: To avoid possible clearance issues, quick hitches with removable top hooks MUST be removed.**

**IMPORTANT: The tractor drawbar must be removed prior to attaching planter to tractor. Failure to remove drawbar will cause damage to planter and/or tractor.**

A. To determine the correct length of PTO shaft to be used, dimension Z in the illustration below must be determined.

(FWD152)



D01290829



B. With tractor and planter on a level surface, raise or lower the hitch until X and Y are equal.

C. With a rod positioned across the lower lift links, measure the precise distance between the center of the lower lift point and the end of the tractor's PTO shaft to obtain dimension Z. As shown in photo, use a square on the PTO shaft to take an accurate measurement. Dimension Z must fall in one of the ranges for the PTO assemblies listed below.

## PTO Assembly Options (Select Using Dimension Z):

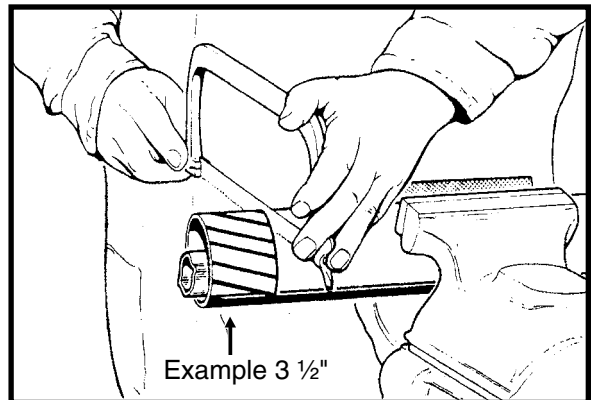
- 658-00688 - 24 1/2" to 27"
- 658-00689 - 31 1/2" to 34 1/2" (If measurement is between 27" and 31 1/2", shorten as needed.)
- 658-00690 - Over 34 1/2" (Trim to fit the application as needed.)

## PTO LENGTH ADJUSTMENT

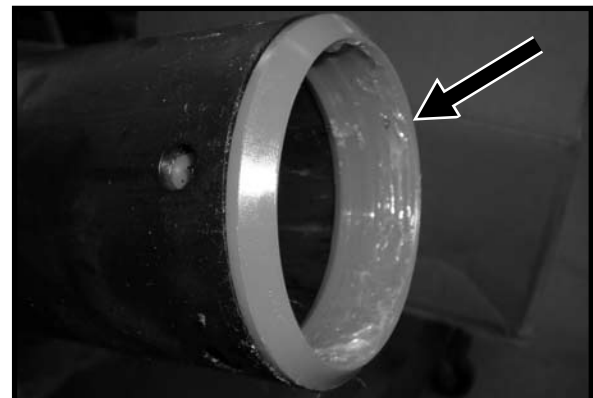
**IMPORTANT: Trim all guard tubes and inner/outer sliding profiles equally.**

**NOTE: For example: if dimension Z is 28", 658-00689 PTO should be used and 3 1/2" (31 1/2" - 28" = 3 1/2") must be trimmed off the tractor and planter ends of the PTO guards and tubes following the steps as follows:**

(FWD151a)



D01130801

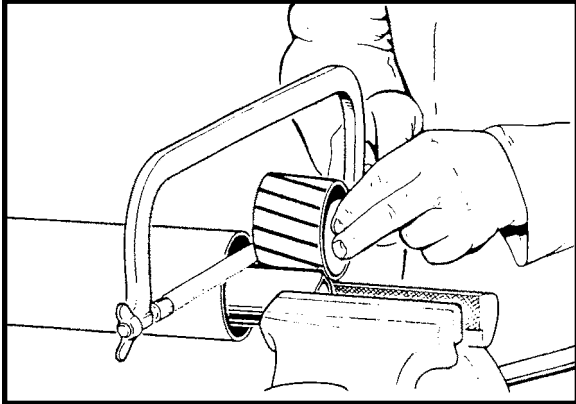


# MACHINE OPERATION

**STEP 1** - Shorten inner and outer plastic guard tubes by determined length.

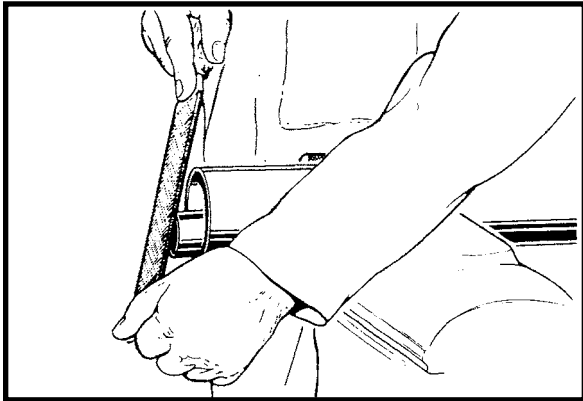
The inner plastic guard tube has an insert that must be removed prior to trimming and inserted back into the tube after the tube is trimmed. See photo on preceding page. Using trimmed portion of inner tube as a template, locate and drill  $\frac{5}{16}$ " holes in the guard tube to allow reinstallation of the insert.

(FWD151b)



**STEP 2** - Using plastic tube as a template for length, shorten inner and outer metal liding profiles by the same length as the guard tubes. This will leave the inner profile to extend beyond the guard tube as before.

(FWD151c)

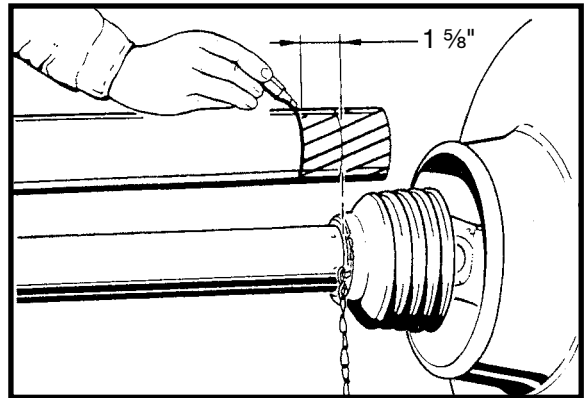


**STEP 3** - Round off all sharp edges and remove burrs. Grease sliding profiles. No other changes may be made to the PTO assembly.

If dimension X is over 34  $\frac{1}{2}$ ", use 658-00690 PTO assembly. With the 3-point arms completely raised, connect PTO to tractor and to planter with the sections disconnected. Hold the PTO halves side-by-side as shown below.

## 658-00690 PTO ASSEMBLY ONLY

(FWD151)



If dimension is not available, hold the half-shafts next to each other in the shortest working position (with the 3-point arms completely raised) and mark the location 1  $\frac{5}{8}$ " from where it would collide with the U-joint area of the PTO.

D01300803



Shown Properly Cut To Length With Plastic Guard Tubes In Place

# MACHINE OPERATION

---

**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)*

Fill reservoir with hydraulic fluid. A SAE 10W-20 multigrade 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 fan control console.

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

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

The hydraulic hoses are color coded as follows:

Red AA - Field Raise Function (Return)  
Red BB - Field Raise Function (Pressure)

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

Black AA - Row Marker Functions (Return)  
Black BB - Row Marker Functions (Pressure)

White AA - 5/8" Hose - Bulk Seed Delivery System (SDS) Functions (Return)

White BB - 1/2" Hose - Bulk Seed Delivery System (SDS) Functions (Pressure)



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

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



# MACHINE OPERATION

7. Connect cable on planter to planter control console cable on tractor. Connect cable on planter to vacuum fan control console and cable on planter to SDS control console (If Applicable). 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 warning lights on tractor.

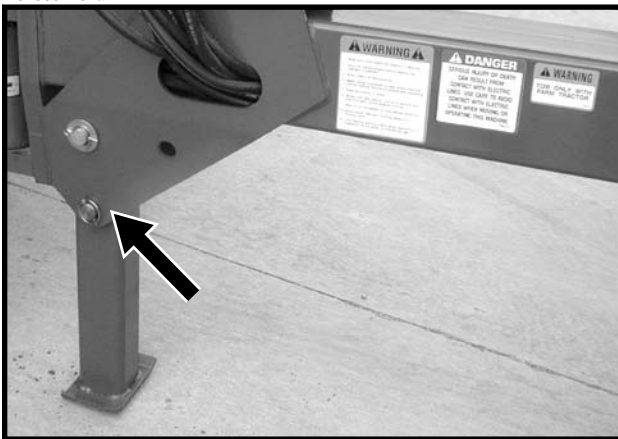
Connect harness on planter to digital vacuum gauge console on tractor. Connect power lead to power source. A power lead adapter may be required.

8. Raise planter slowly and watch for any interference. Remove pin from jack stand and swing jack stand to the horizontal position. Install pin in storage position.

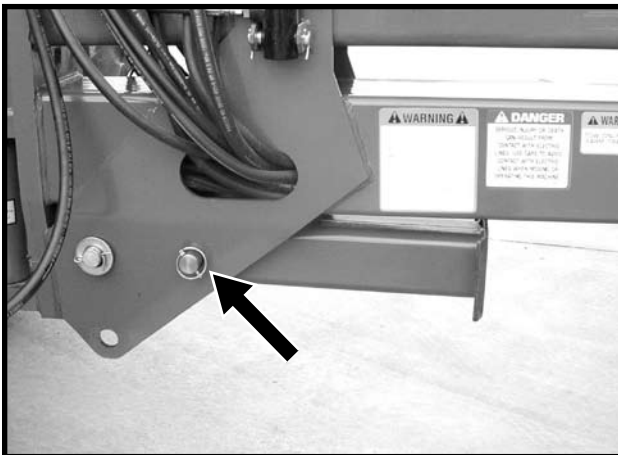
9. For proper operation of the planter and row units, it is important that the planter toolbars and row unit parallel arms be level side-to-side and front-to-rear. The toolbar should operate at 20"-22" height from planting surface. Tire pressure must be maintained at pressures specified and toolbar heights must be adjusted equally. Check to be sure planter toolbars are level and at correct operating heights. See "Leveling The Planter".

**NOTE: The transport axle cylinders are equipped with counter balance valves which hydraulically lock the cylinders when not in use.**

D040604101a



D040604100



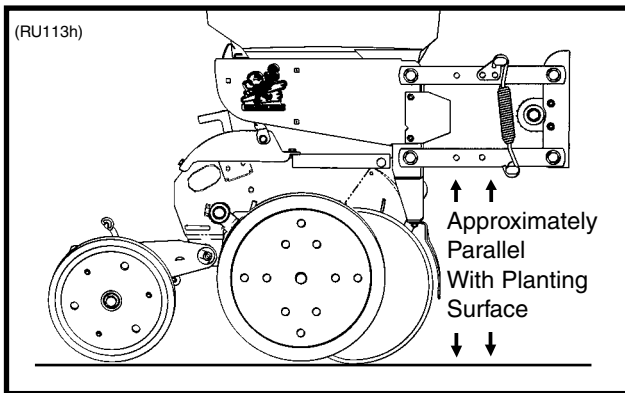
# MACHINE OPERATION

## LEVELING THE PLANTER

With the planter lowered to proper operating height, check to be sure the toolbars and row unit parallel arms are level fore and aft. Recheck when planter is in the field.

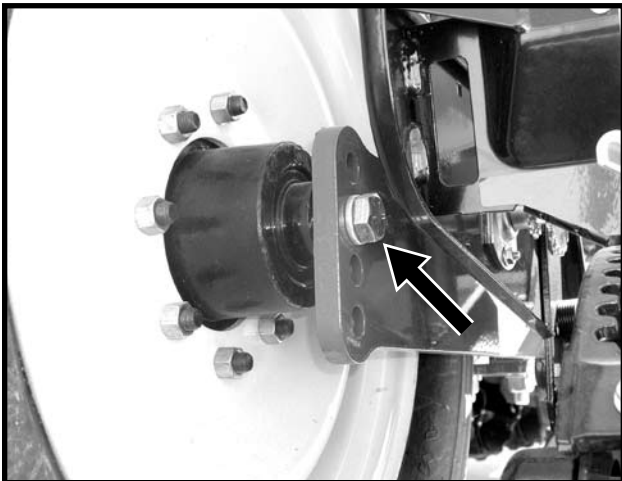
It is important for the planter to operate level laterally. Tire pressure must be maintained at pressures specified. See "Tire Pressure".

Field and actual planting conditions will dictate which of the wheel settings to use to ensure row unit parallel arms are approximately parallel with the planting surface.



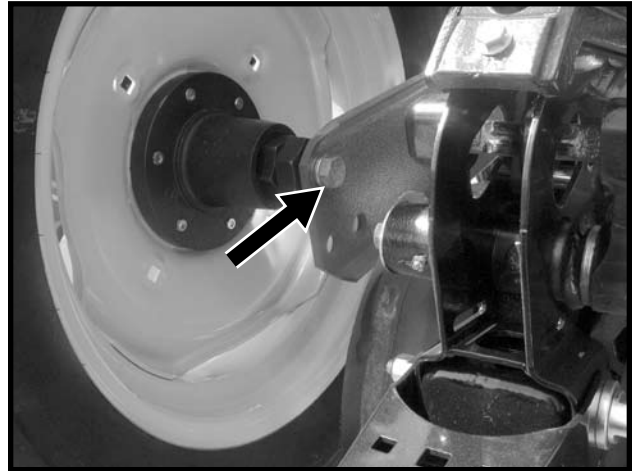
When the planter has been fully loaded with seed, granular chemicals, etc.; a field check should be made to be sure the wings are level with the center frame. If the wings are not level with the center frame, the lift/gauge wheels can be raised or lowered in the wheel arms to increase or decrease planter toolbar height. Hitch height should be positioned to ensure level operation.

D040604201



**Center Section Lift/Gauge Wheel (Rock Shaft Axle) - Initial Setting Shown**

D033104202

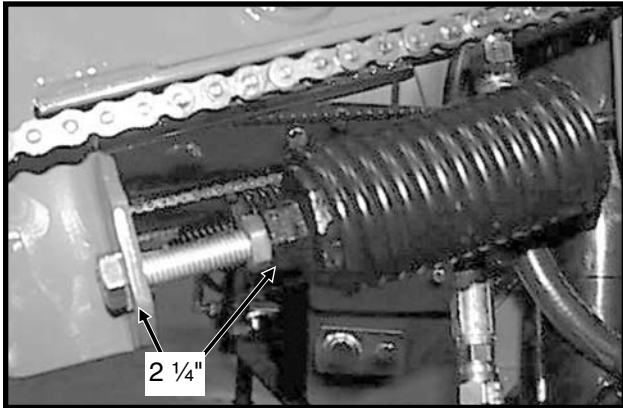


**Wing Lift/Gauge Wheel - Initial Setting Shown**

# MACHINE OPERATION

## CONTACT WHEEL SPRING ADJUSTMENT

D102704100

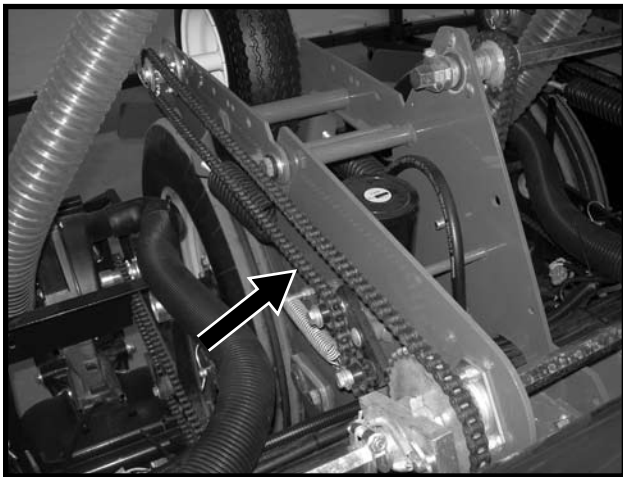


There are two down pressure springs on each contact drive wheel. The spring tension is factory preset and should require no further adjustment.

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

## CONTACT WHEEL IDLER ADJUSTMENT

D01050743

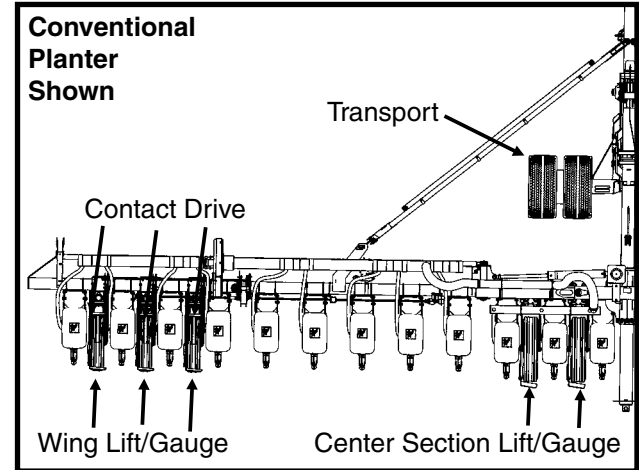


The 3/8" nut on the bolt that attaches the contact wheel idler must be tightened so the idler is free to rotate under spring load but tight enough so the carriage bolt is stable.

**NOTE:** See "Contact Wheel Drive Sprockets" for additional information when using 54 cell sunflower discs.

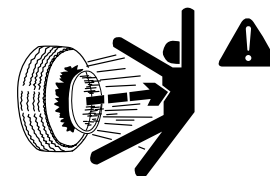
## TIRE PRESSURE

(FWD124a)



Tire pressure should be checked regularly and maintained as follows:

- (4) 41 x 11R22.5" Radial Load Range H  
(Center Section Lift/Gauge)..... 75 PSI
- (6-12) 7.50" x 20" 8 Ply Custom Rib Implement  
(Wing Lift/Gauge) ..... 40 PSI
- (2-4) 445-50R22.5R Radial Load Range H  
(Transport) ..... 120 PSI
- (6) 4.80" x 8" (Contact Drive)..... 50 PSI
- (2) 20.5 x 8.0-10 (Marker)..... 35 PSI
- (2) 7.60" x 15" Rib Implement  
(Liquid Fertilizer Piston Pump) ..... 40 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 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

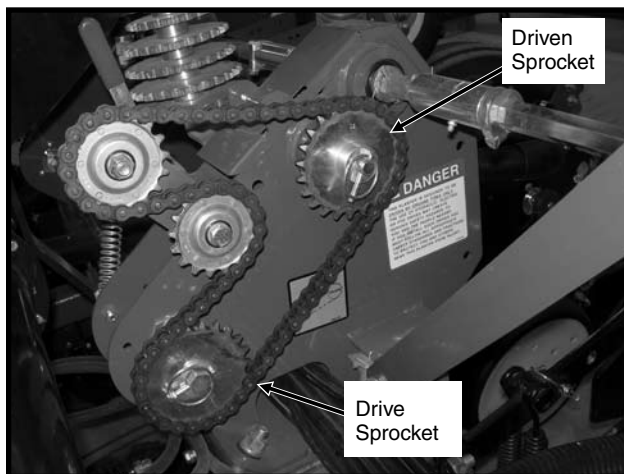
Planting population rate changes are made at the two transmission assemblies. The seed rate transmissions are designed to allow simple, rapid changes of sprockets to obtain the desired planting population. By removing the lynch pins on the hexagon shafts, sprockets can be interchanged with those from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

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

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

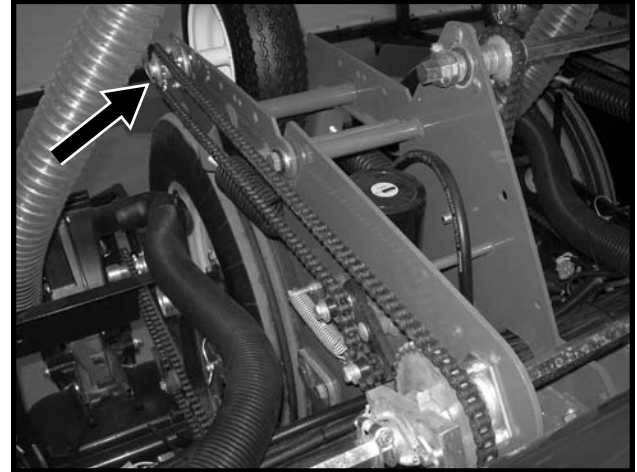
Seed rate transmissions should be set equally.

D01050736



## CONTACT WHEEL DRIVE SPROCKETS

D01050743



**NOTE: 15 tooth, 19 tooth or 38 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. 38 tooth sprockets require use of 168 pitch chains. 15 and 19 tooth sprockets required use of 160 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 sprockets.

**NOTE: 15, 19 and 38 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, make changes at contact wheel assembly using sprockets, chains, hex shafts, etc. supplied in G1K472 Sunflower Rate Reduction Kit. Each kit contains components for two contact wheel assemblies. Order kits according to number of contact wheel assemblies on the planter.**

D012508111



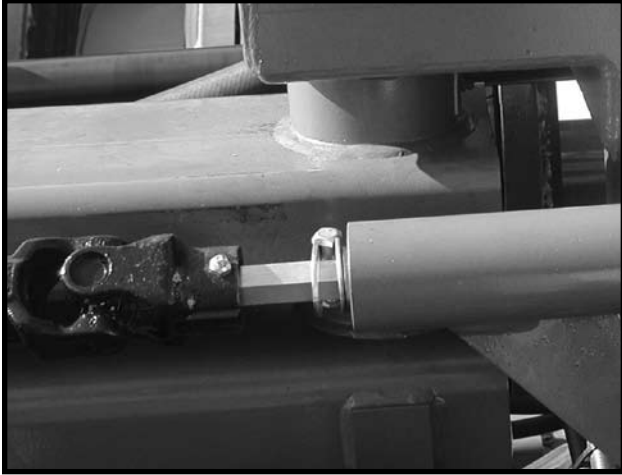
**NOTE: After each sprocket combination adjustment, make a field test to be sure you are planting at the desired rate.**

# MACHINE OPERATION

## U-JOINT SHAFT ASSEMBLIES

A U-joint shaft assembly is used between the center section of the planter and the wing assembly on each half of the planter to allow up and down wing movement.

D081905101



On 36 Row 30" planters a U-joint shaft assembly is used to span the space between the inner and outer wing assemblies and allow up and down wing movement of the wings on each half of the planter.

D020206109



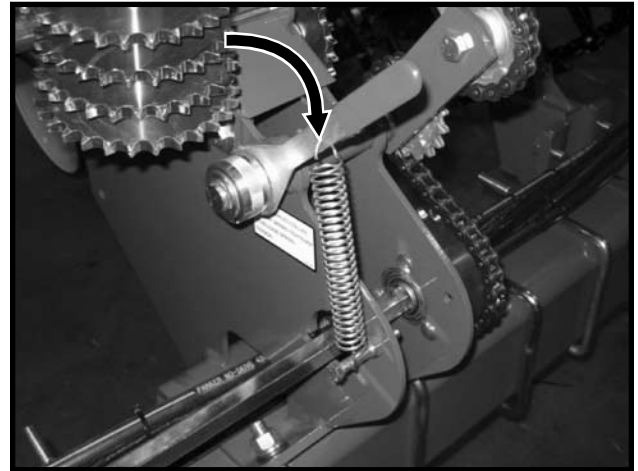
See "Grease Fittings" in the Lubrication Section of this manual.

## WRAP SPRING WRENCH OPERATION

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

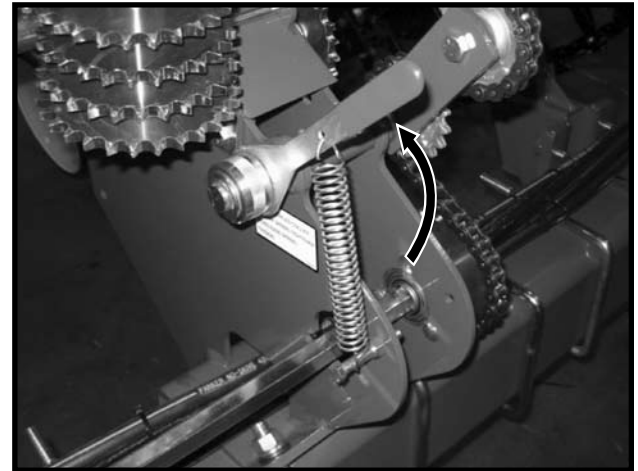
To release chain tension, rotate the knurled collar on the wrap spring wrench while rotating the chain idler away from the chain.

D021406101



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

D021406102



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.

# MACHINE OPERATION

---

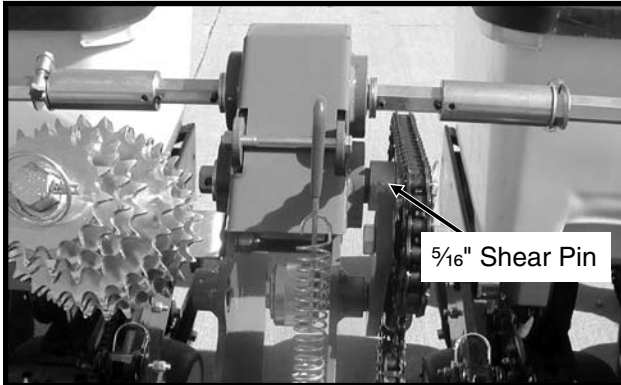
## SHEAR PROTECTION

The planter driveline and seed, granular chemical and fertilizer 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.

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

D081905108



**Seed Rate Transmission Shaft**

Additional shear pins can be found in the storage area located at each end of the planter toolbar.

D022106202



# MACHINE OPERATION

## HYDRAULIC/ELECTRIC OPERATION

D10060624



Planter Control Console

D10060627



SDS Control Console

The tractor's hydraulic system and switches on the planter control console located on the tractor are used to raise the planter to transport position, operate the fold functions and raise and lower the row markers. The SDS control console (If Applicable) monitors seed flow and controls auger speed.

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

Model 3800 planters with conventional seed hoppers are equipped to operate from three dual remote hydraulic outlets (SCV), including one SCV for optional row markers. Model 3800 SDS planters are equipped to operate from four dual remote hydraulic outlets (SCV), including one SCV for optional row markers and one for the bulk seed delivery system (SDS).

Four point row clutches are standard equipment to allow four equal sections across the planter to be engaged/disengaged.

The marker and point row selector switches are an ON-OFF-ON type.

The transport axle and wing fold switches are MOMENTARY ON-OFF-MOMENTARY ON type and must be held in position while operating the tractor hydraulic control. Activating a fold function switch disables the marker circuit.

**! WARNING:** To ensure the safety of the operator and others nearby, the marker selector switch should be placed in its OFF (center) position when not in use. An indicator light on the control box panel is ON whenever the marker circuit or point row clutch circuit are energized.

The auxiliary switch is an ON-OFF type switch which is used in conjunction with the hydraulic row marker/folding functions control to operate optional attachments. All 3800 planters are shipped with the auxiliary switch installed in the control console. The auxiliary switch must be in the OFF position to enable other functions.

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

**NOTE:** The lift cylinders are (port type) rephasing cylinders. It is necessary for the cylinders to fully retract before they will rephase in the lowered position. Cylinder stops cannot be used.

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

**! WARNING:** Never walk under or work on planter when it is raised without supporting the frames with additional supports.

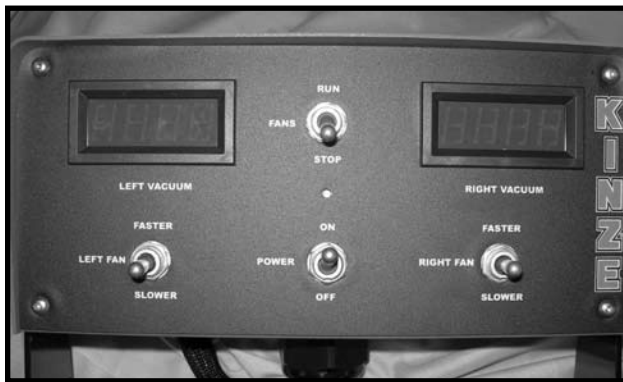
# MACHINE OPERATION

## 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 power switch should be left in OFF position when the planter is not in use. If left in ON 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

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

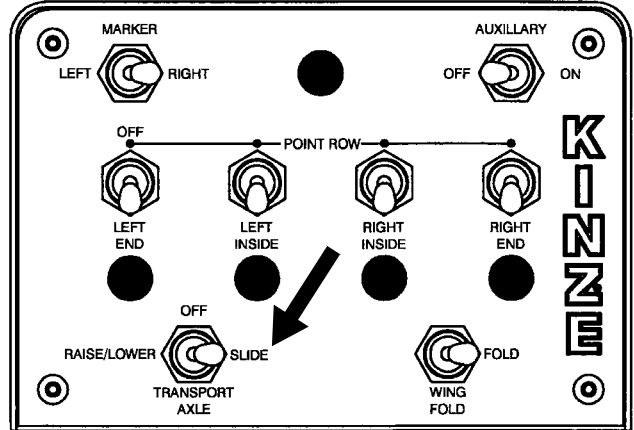
### SUMMARIZED TRANSPORT TO FIELD SEQUENCE

- Remove wing latch hook safety pin(s) from transport (locked) positions and place in storage locations provided.
- Raise field tires/wheels and hold to rephase.
- Fully raise planter using transport axle.
- Slide transport axle to rear position.
- Lower field tires/wheels.
- Lower rear of planter using transport axle until field tires touch the ground.
- Partially lower tractor 3 point hitch to release wing latch hooks.
- Unfold planter to planting position.
- Fully raise transport axle tires/wheels.
- Lower 3 point to level hitch position.

**NOTE: Read the following information for more detailed instructions.**

2. Hold the control console switch labeled **TRANSPORT AXLE** in **SLIDE** and operate the fold/unfold functions hydraulic control to move the transport axle to the rear position.

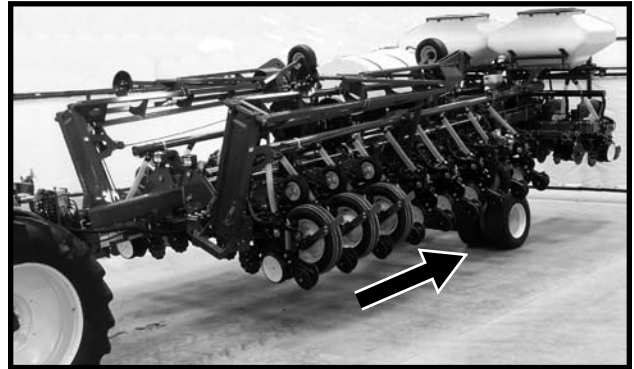
(FWD30bb)



D012507128

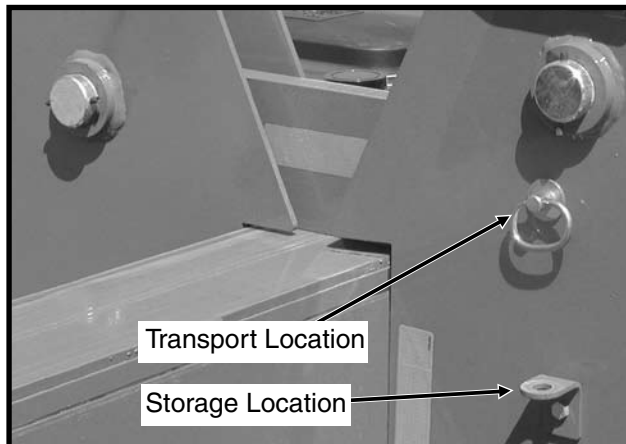


D012507128



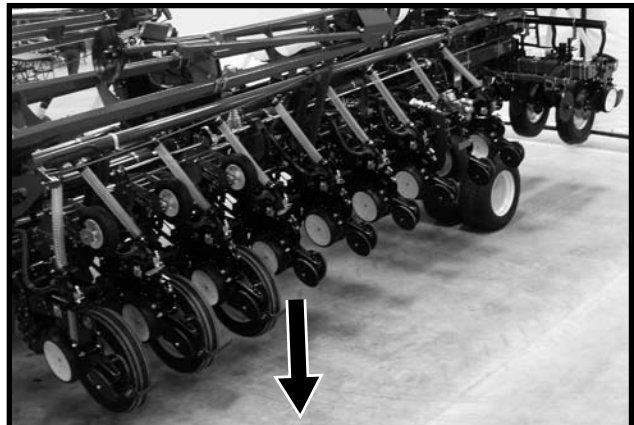
1. Remove wing latch hook safety pin(s) from transport positions and place in storage locations provided.

D081905131



3. Operate the field raise function hydraulic control to lower the field tires/wheels.

D012507125

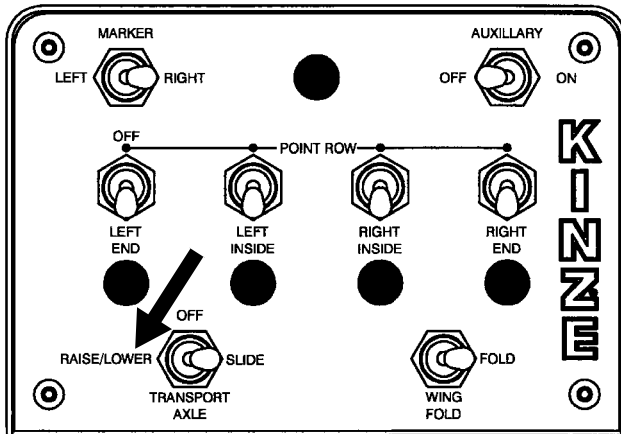


# MACHINE OPERATION

4. Hold the control console switch labeled **TRANSPORT AXLE** in **RAISE/LOWER** and operate the fold/unfold functions hydraulic control to raise the transport axle, lowering the rear of the planter, until the field tires touch the ground.

**IMPORTANT: DO NOT retract the transport cylinders completely or damage will occur to the driveline and transport tires. The weight of the planter should be on the field tires, but the transport axle tires should remain on the ground during folding.**

(FWD30bb)



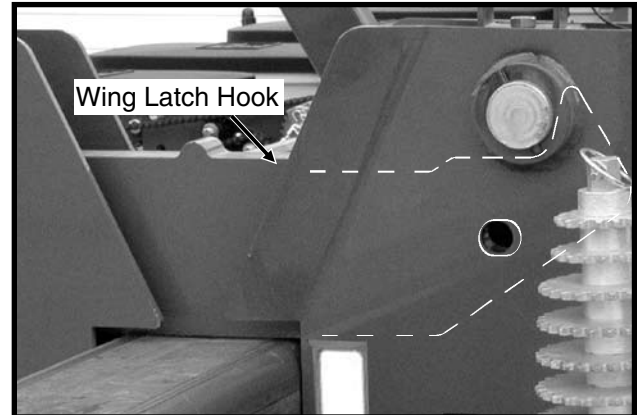
D012507123



5. Partially lower the tractor 3 point hitch to release the wing latch hooks.

**IMPORTANT: Only lower 3 point hitch until wing latch hooks release. DO NOT lower hitch further or damage will occur at the rear of the wing folding links.**

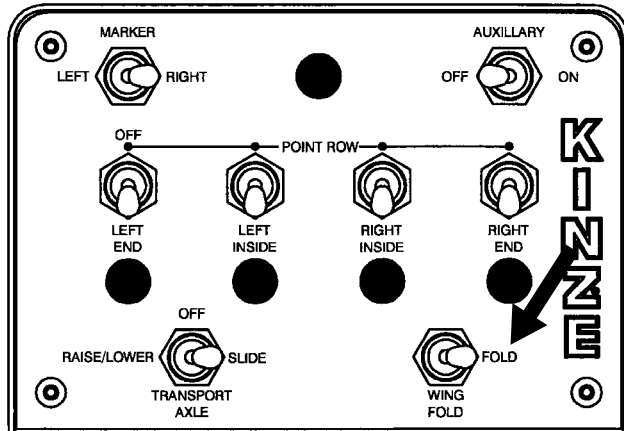
D040604144/A10104a



# MACHINE OPERATION

6. Hold the control console switch labeled WING FOLD in **FOLD** and operate the fold/unfold functions hydraulic control to unfold the planter. The tongue will begin to retract and the wings, carried on the wing wheels, will begin to unfold. Place the tractor transmission in neutral or a low reverse gear. Allow the tractor to roll in reverse as the planter unfolds. The center axle tires should remain stationary and the wing tires should roll in a continuous arc with minimal side loading on the tires or their mounting structures.

(FWD30bb)

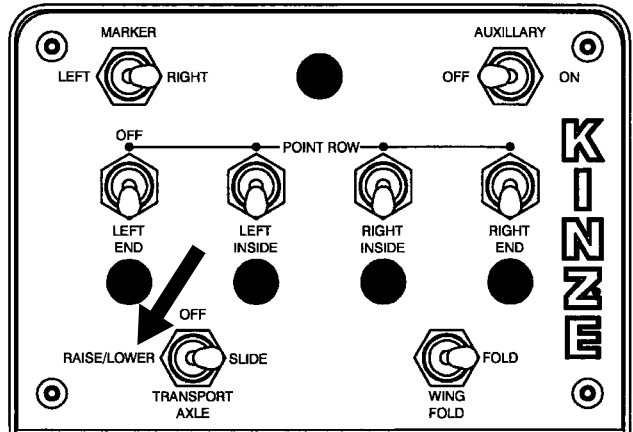


D012507119

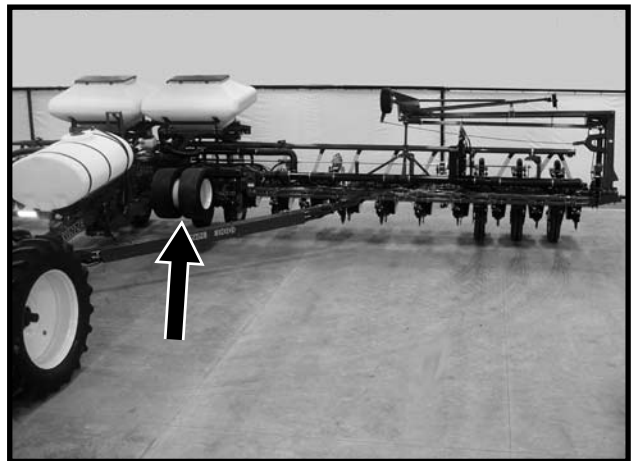


7. Hold the control console switch labeled TRANSPORT AXLE in **RAISE/LOWER** and operate the fold/unfold functions hydraulic control to raise the transport axle wheels to the fully raised planting position.

(FWD30bb)

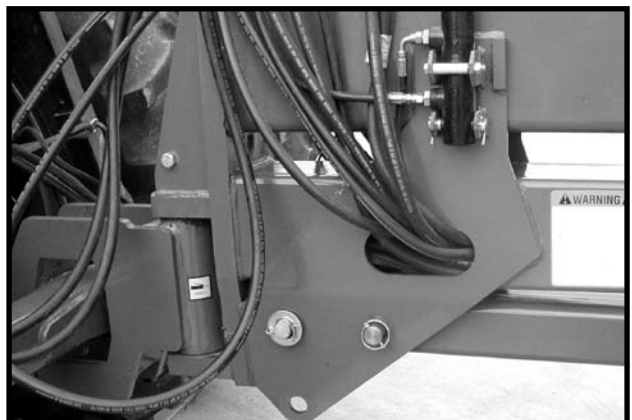


D012507111



8. Lower the 3 point to level hitch position.

D040604100



# MACHINE OPERATION



**WARNING:** Never walk under or work on planter when it is raised without supporting the frames with additional supports.

## FIELD OPERATION

Normal planting operation in the field requires the use of the tractor's hydraulic control to raise and lower the planter frame when making field turn arounds.

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

**IMPORTANT:** Operate row markers in float position to prevent damage to row markers.

D012507111



## FIELD TO TRANSPORT SEQUENCE

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

### SUMMARIZED FIELD TO TRANSPORT SEQUENCE

- Raise planter to field turn height.
- Lower transport axle to the ground.
- Fold planter to transport position.
- Raise front of planter using tractor 3 point hitch.
- Raise rear of planter using transport axle.
- Slide transport axle forward into transport position.
- Raise field tires/wheels.
- Remove wing latch hook safety pin(s) from storage location(s) and install in locked position(s).

**NOTE:** Read the following information for more detailed instructions.

1. Operate the field raise function hydraulic control to raise the planter to raised field height.

D012507111

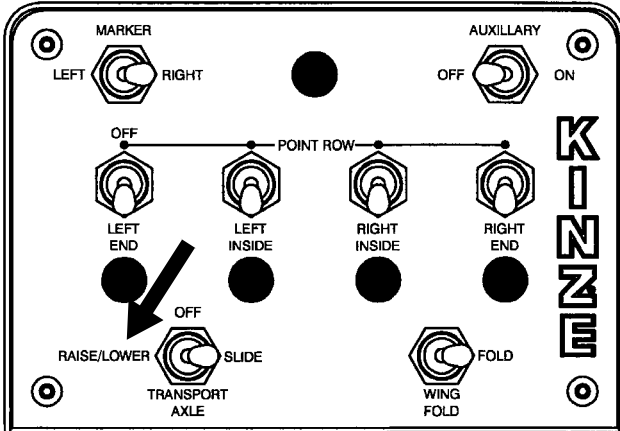


# MACHINE OPERATION

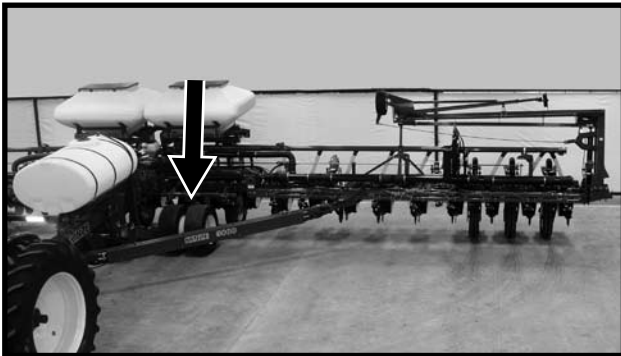
2. Hold the control console switch labeled **TRANSPORT AXLE** in **RAISE/LOWER** and operate the fold/unfold functions hydraulic control to lower the transport axle wheels until they touch the ground.

**IMPORTANT:** Lower transport axle tires until weight begins to transfer onto transport axle tires. **DO NOT** carry the full weight of the planter on the transport axle tires during folding.

(FWD30bb)



D012507113

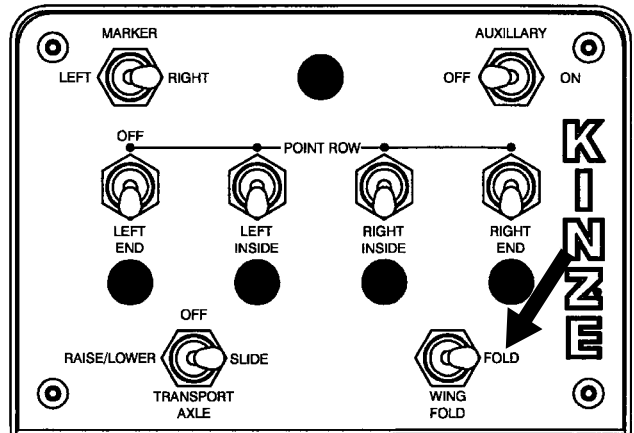


3. Hold the control console switch labeled **WING FOLD** in **FOLD** and operate the fold/unfold functions hydraulic control to fold the planter to transport position. It is necessary to **slowly** idle the tractor forward as you fold the planter, allowing the center axle tires to remain stationary and the wing tires to roll in a continuous arc with minimal side loading on the tires or their mounting structures.

**IMPORTANT:** Use the tractor 3 point control to adjust the hitch height as necessary to make sure the wing latch hooks pass over the hitch and engage the latch pins.

**NOTE:** In soft soil conditions the wings may not fold completely into position against the tongue. If this occurs, retract the wing wheels slightly to allow the wings to fold into latching position.

(FWD30bb)



D012507119

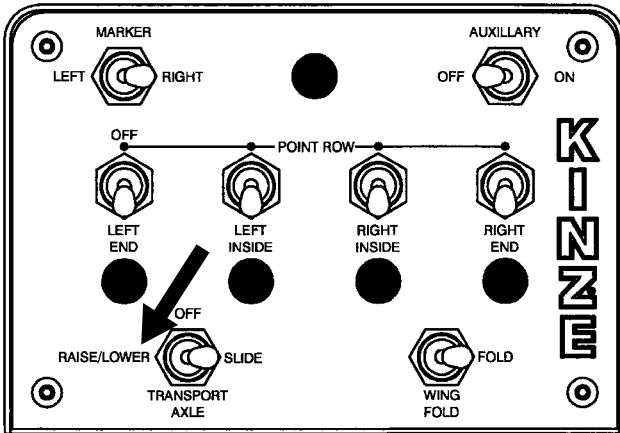


# MACHINE OPERATION

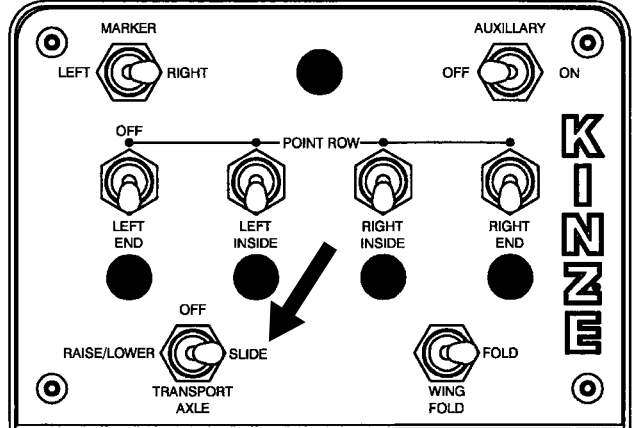
4. Raise the front of the planter using the tractor 3 point hitch.
5. Hold the control console switch labeled TRANSPORT AXLE in **RAISE/LOWER** and operate the fold/unfold functions hydraulic control to fully lower the transport axle tires, raising the rear of the planter.

6. Hold the control console switch labeled TRANSPORT AXLE in **SLIDE** and operate the fold/unfold functions hydraulic control to slide the transport axle fully forward into transport position.

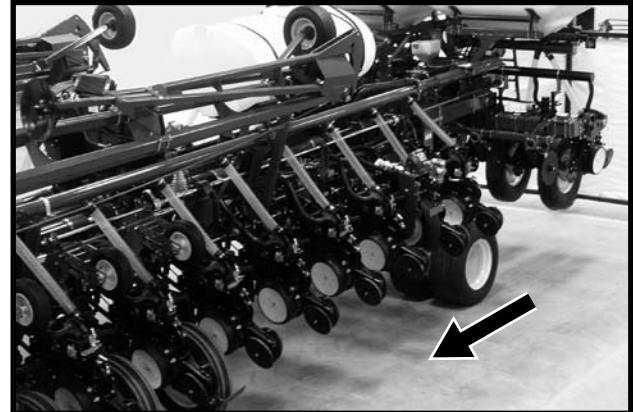
(FWD30bb)



(FWD30bb)



D012507125

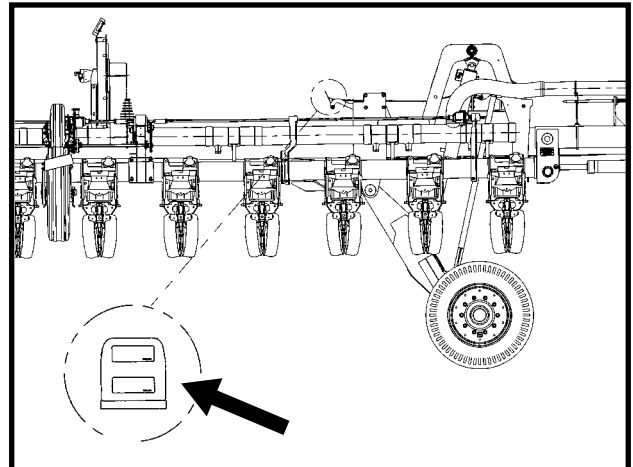


D012507123



**NOTE:** The transport axle cylinder circuit is equipped with counter balance valves which hydraulically lock the cylinders. The cylinders will not extend or retract until hydraulic pressure/flow is applied.

(FWD118)



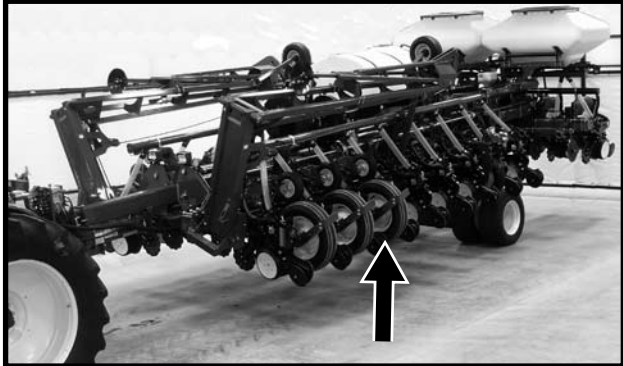
**IMPORTANT:** Indicator flap will be in raised position when the transport axle is fully forward into the transport position.

# MACHINE OPERATION

---

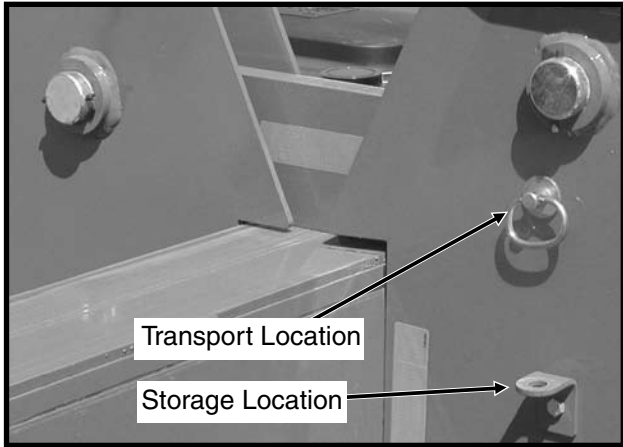
7. Operate the field raise function hydraulic control to raise the field tires/wheels.

D012507128



8. Remove wing latch hook safety pin(s) from their storage location(s) and install in locked position(s).

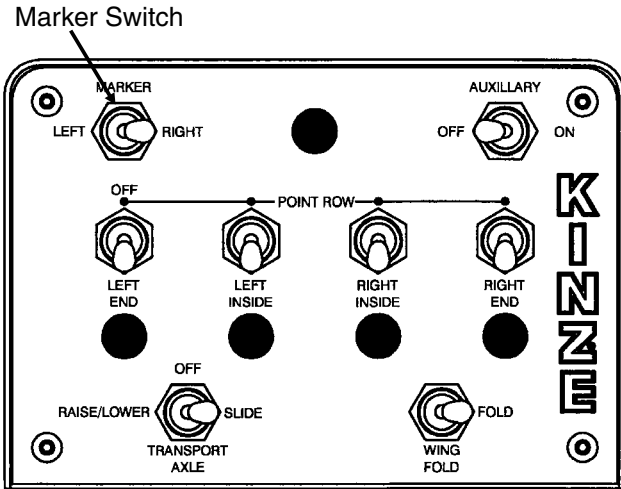
D081905131



# MACHINE OPERATION

## ROW MARKER OPERATION

(FWD30bb)



Three Position Selector Switch On Control Console

Two solenoid valves, located on the valve block at the front of the planter, along with a three position selector switch on the control console permit the operator to lower or raise the desired row marker.

See "Row Marker Speed Adjustment".

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

**NOTE:** Both row markers can be lowered by operating the switch in each position and operating the hydraulic control twice. The markers will raise simultaneously when the hydraulic control is moved to the raise position.

**NOTE:** Control console switch should be left in OFF position when planter is not in use. If left in ON position, it will discharge the tractor battery.

If the electrical system fails to operate properly:

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

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

**IMPORTANT:** Row markers MUST be operated with hydraulic circuit in float position to prevent damage to marker assemblies.

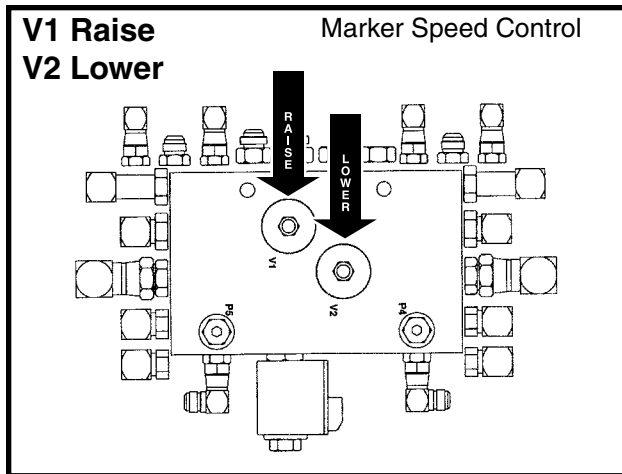


# MACHINE OPERATION

## ROW MARKER SPEED ADJUSTMENT

The row 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 nut 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) determine the amount of oil flow restriction through the valve(s), therefore varying travel speed of the markers. Tighten jam nut after adjustments are complete.

(FWD161)



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

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

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

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.



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

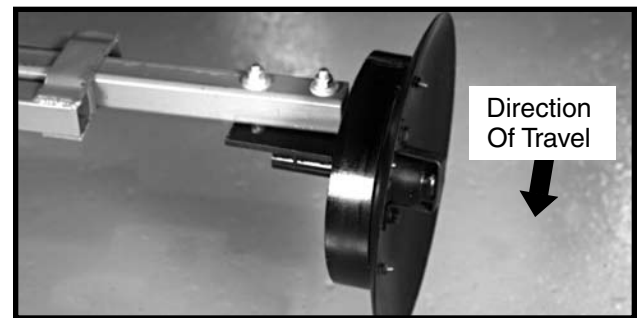
## ROW MARKER LENGTH ADJUSTMENT

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 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.

# MACHINE OPERATION

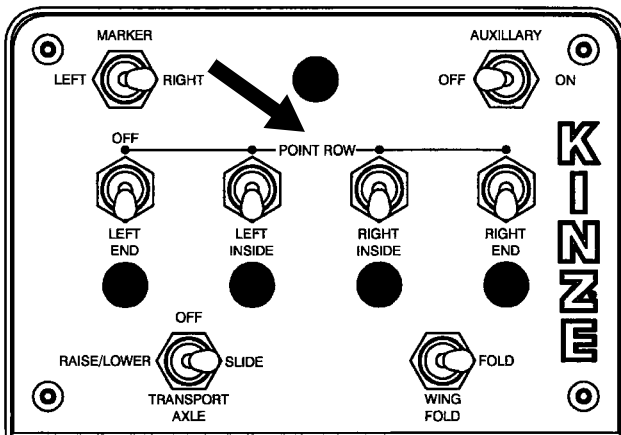
## POINT ROW CLUTCHES

D081905107



All Model 3800 planters are equipped with four point row clutches. With the use of electric-activated clutches, which disengage the drive, various sections of the planter may be shut off for finishing up fields or long point row situations.

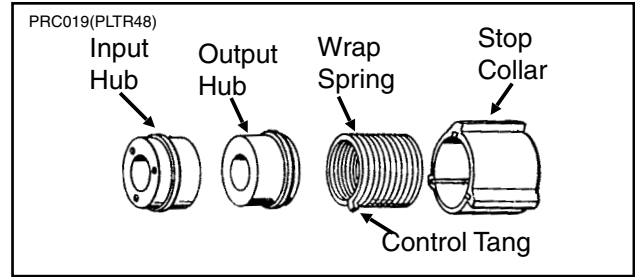
(FWD30bb)



The selector switches for the clutches are located on the planter control console.

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

**NOTE:** Since the liquid fertilizer piston pumps use dedicated drive wheels, liquid fertilizer application will not be controlled by use of the point row clutches.



The point row 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 tractor 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 retracts, allowing the actuator arm to contact the stop on the stop collar, disengaging the wrap spring and stopping the planter drive.

## INTRODUCTION

MTR66



The KPM III electronic seed monitor system consists of

- A KPM III console, which is mounted on the tractor
- Seed tubes with sensors, one of which is installed in each planter row unit
- A magnetic distance sensor, which is installed on the planter, or a radar distance sensor, which is installed on the tractor
- Shaft rotation sensors (if applicable), which are installed on the planter drill shafts
- Vacuum, pneumatic down pressure, SDS and hydraulic level/temperature (If applicable), which are installed on the planter.
- 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. It requires 12 volts DC.

The console receives information from each of the sensors and displays this information.

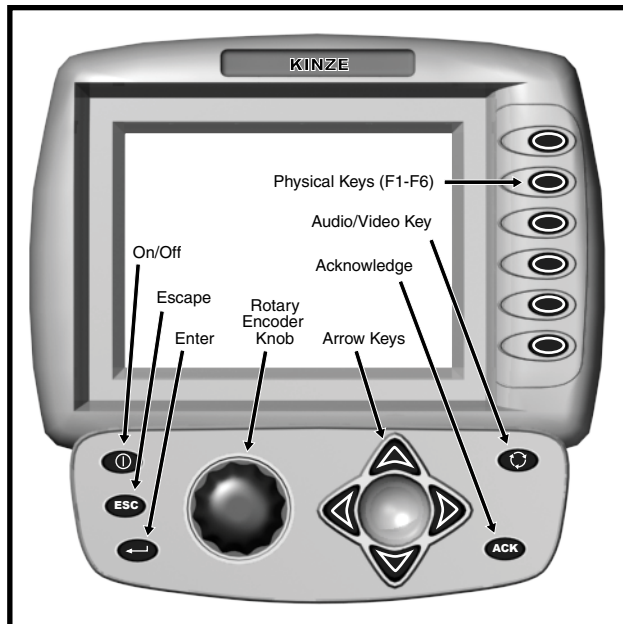
The KPM III console uses a single backlit Liquid Crystal Display (LCD) to show; the number of monitored rows, the relative seed rate for each row (using bargraph displays) and displays various alarm and warning messages when an alarm condition exists. A continuous audible alarm will sound upon system 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>6-26</b>
<b>Changing Volume, Contrast And Backlighting</b> .....	<b>6-27</b>
<b>Configuring Planter Monitor</b> .....	<b>6-28</b>
<b>Programming Interplant® Condition, Row Spacing And Units (Metric Or English)</b> .....	<b>6-31</b>
<b>Seed Meter Settings</b> .....	<b>6-32</b>
<b>Programming Row Unit Alarms Levels</b> .....	<b>6-34</b>
<b>Data Logging</b> .....	<b>6-35</b>
<b>Adding Interplant® Rows (If Rear Rows Have Previously Been Programmed)</b> .....	<b>6-37</b>
<b>Adding Even-Row Package (If Front Rows Have Previously Been Programmed)</b> .....	<b>6-39</b>
<b>Reprogramming Speed Sensor</b> .....	<b>6-40</b>
<b>Programming/Connecting Seed Tubes, Shaft Rotation Sensors And/Or Radar/Magnetic Distance Sensors</b> .....	<b>6-42</b>
<b>Speed Sensor Calibration/Programming</b> .....	<b>6-44</b>
<b>Acre Count Mode</b> .....	<b>6-47</b>
<b>Enabling/Disabling Interplant® Rows</b> .....	<b>6-49</b>
<b>Test Mode</b> .....	<b>6-50</b>
<b>Warnings And Alarms</b> .....	<b>6-55</b>
<b>Field Operation</b> .....	<b>6-59</b>
<b>Area Management</b> .....	<b>6-60</b>
<b>Area Counters</b> .....	<b>6-63</b>
<b>Clearing Field Area</b> .....	<b>6-64</b>
<b>Replacing Faulty Sensor(s)</b> .....	<b>6-65</b>

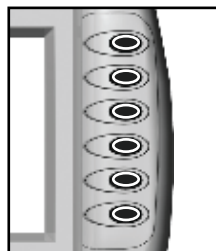
## MONITOR KEY FUNCTIONS

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.



### 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.



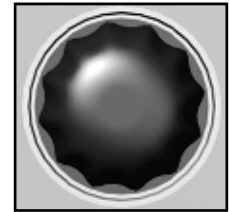
### ENTER KEY

- 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. Can be used at any time.



### 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.**

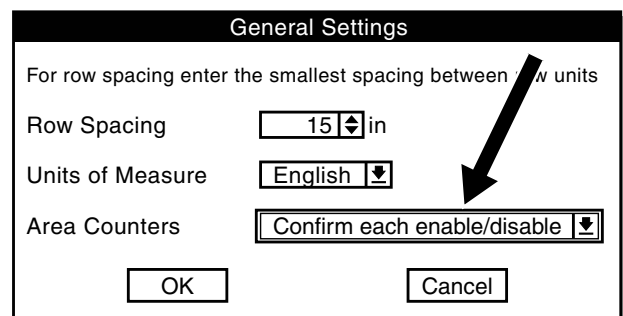


### ARROW KEYS

- UP arrow key is used to move up.
- DOWN arrow key is used to move down.
- LEFT arrow key is used to move to the left.
- RIGHT arrow key is used to move to the right.



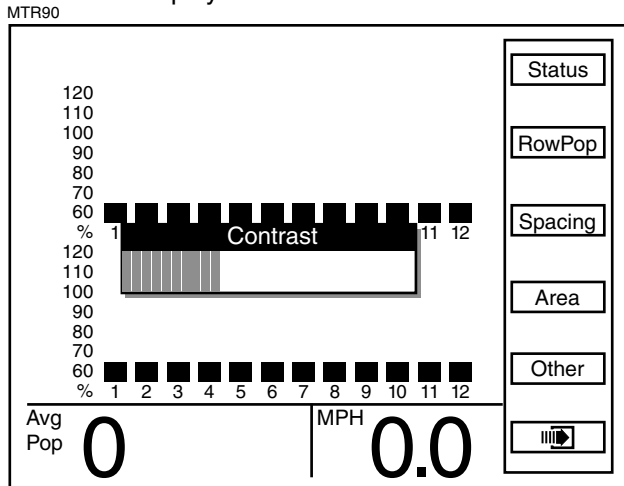
**NOTE: Within the LCD, the black box around the smaller box as shown below indicates which field is selected/highlighted. Turning the rotary encoder knob or pressing the UP or DOWN arrow keys moves the black box. When the black box is positioned on a programmable item, such as Shaft Sensors, Speed Sensor, 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.**



## CHANGING VOLUME, CONTRAST AND BACKLIGHTING WITH THE AV KEY

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

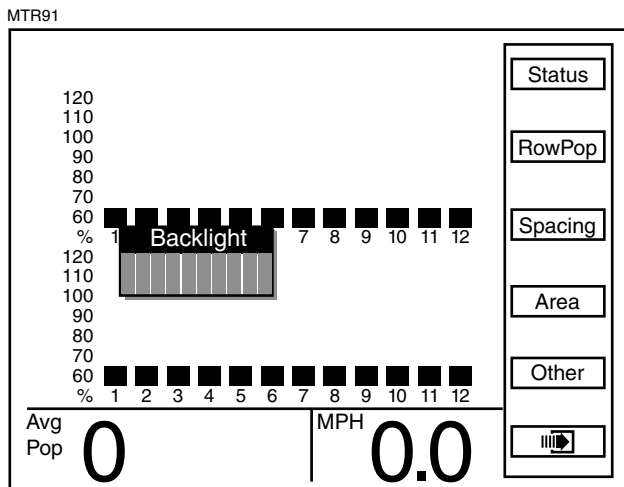
**STEP 1** Press the AV key. The Contrast adjustment dialog box will appear in the center of the display.



**STEP 2** Use the arrow keys or turn the rotary encoder knob to adjust contrast. The adjustment will be visible on the screen.

**STEP 3** To adjust speaker or backlight, go to STEP 4. If finished press the Enter key to save and exit.

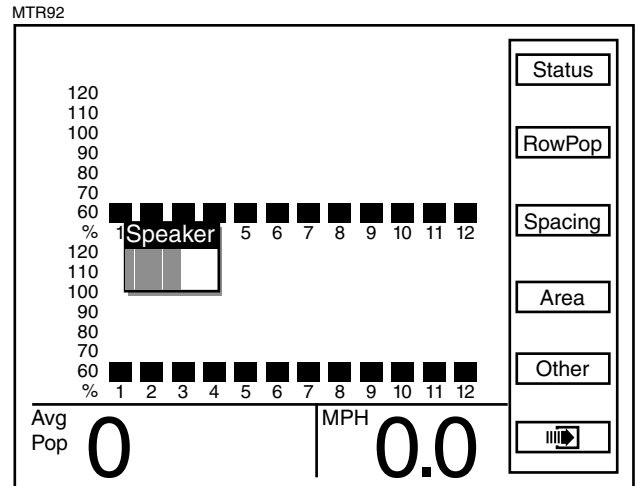
**STEP 4** Press the AV button a second time. The Backlight adjustment dialog box will appear in the center of the display.



**STEP 5** Use the arrow keys or turn the knob to adjust backlighting. The effect of the adjustment will be visible on the display.

**STEP 6** To adjust speaker go to STEP 7. If finished press the Enter key to save and exit.

**STEP 7** Press the AV button a third time. The Speaker adjustment dialog box will appear in the center of the display.



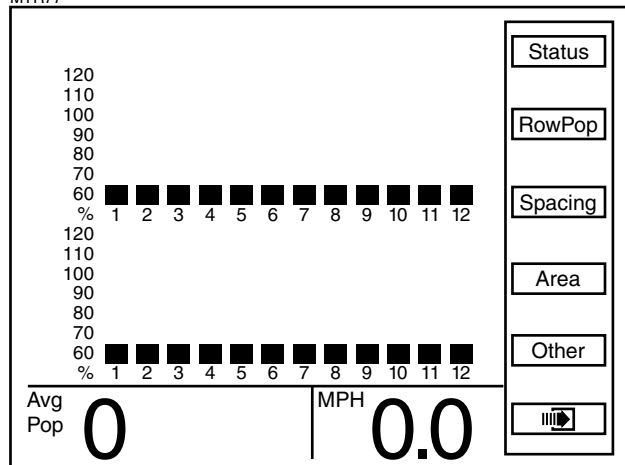
**STEP 8** Use the arrow keys or turn the knob to adjust speaker volume. The volume of sound emitted from the speaker will change as adjustment is made.

**STEP 9** Press the knob, Enter key or press the AV button a fourth time to save the volume, contrast and backlight settings.

## 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).

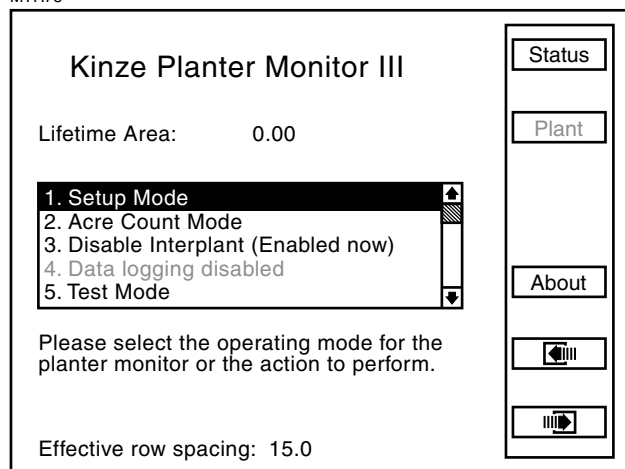
MTR77



**NOTE:** The Planter Configuration screen displays the planter rows as programmed into the KPM III software. The above screen shows 12 front (Interplant®) rows and 12 rear rows. If the KPM III were programmed for 8 front (Interplant®) rows and 8 rear rows the screen would display 8 front and 8 rear rows.

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

MTR78



**NOTE:** There are 5 choices on the Mode Selection screen;

1. Setup mode
2. Acre count mode
3. Disable Interplant® (Enabled now) mode
4. Data logging mode
5. Test mode

**STEP 2** Select "1. Setup Mode" by turning the rotary encoder knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

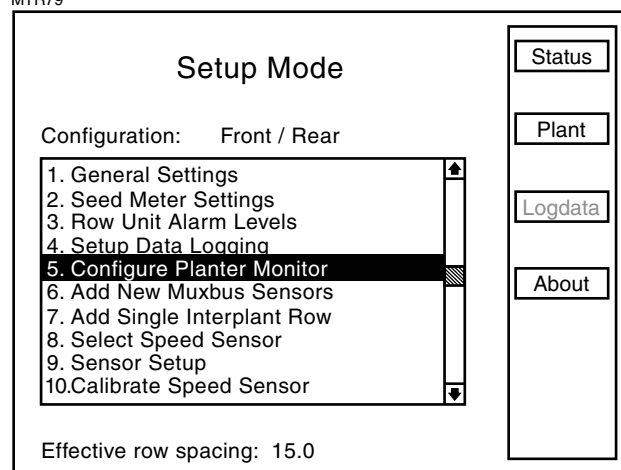
**NOTE:** There are 10 choices on the Setup Mode screen;

1. General Settings
2. Seed Meter Settings
3. Row Unit Alarm Levels
4. Setup Data Logging
5. Configure Planter Monitor
6. Add New Muxbus Sensors
7. Add Single Interplant® Row
8. Select Speed Sensor
9. Sensor Setup
10. Calibrate Speed Sensor

**STEP 3** Select "5. Configure Planter Monitor" by turning the knob or using the arrow keys. Press the knob or the Enter key to display the highlighted item.

**NOTE:** Press the F2 key next to Plant any time the Plant option is available to return to the Planter Configuration screen.

MTR79



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

**STEP 4** If there are front rows (Interplant) on the planter, press the knob or Enter key to highlight the “Front Rows” field. A drop down number pad will appear. Turn the knob or use the arrow keys to highlight the correct value then press the knob to select the number, for numbers containing more than one digit select one digit at a time. When the desired quantity is displayed above the number pad press the Enter key to return to the “Kinze Planter Configuration” screen. If the planter has no front rows turn the knob or press the arrow keys to advance to “Rear Rows”.

MTR80

The screenshot shows the 'Kinze Planter Configuration' screen. The 'Front Rows' field is highlighted with a value of 0. A numeric keypad is visible below it. The 'Sensors Installed' section includes Speed (Radar), Vacuum (0), and SDS (0). There are checkboxes for 'Hydraulic Level/Temp' and 'Downpressure Level', and a note 'SDS = Seed Delivery System'. 'OK' and 'Cancel' buttons are at the bottom.

**STEP 5** Press the knob or Enter key to select the “Rear Rows” field. A drop down number pad will appear. Turn the knob or use the arrow keys to highlight the correct value then press the knob to select the number, for numbers containing more than one digit select one digit at a time. When the desired quantity is displayed above the number pad, press the Enter key to return to the “Kinze Planter Configuration” screen.

MTR81

The screenshot shows the 'Kinze Planter Configuration' screen. The 'Rear Rows' field is highlighted with a value of 0. A numeric keypad is visible below it. The 'Front Rows' field now shows 11. The 'Sensors Installed' section and other elements are the same as in the previous screenshot.

**STEP 6** Rotate the knob or use the arrow keys to advance to “Shafts” field. Press the knob or Enter key to select the “Shaft” field. A drop down menu will appear. Turn the knob or use the arrow keys to highlight the correct value then press the knob to select the number, for numbers containing more than one digit select one digit at a time. When the correct value is displayed, press the knob or Enter key to return to the “Kinze Planter Configuration” screen.

MTR82

The screenshot shows the 'Kinze Planter Configuration' screen. The 'Shafts' field is highlighted with a value of 2. A drop-down menu is open showing options 0, 1, 2, and 4. The 'Sensors Installed' section includes Speed (Radar), Vacuum (0), and SDS (0). There are checkboxes for 'Hydraulic Level/Temp' and 'Downpressure Level', and a note 'SDS = Seed Delivery System'. 'OK' and 'Cancel' buttons are at the bottom.

**STEP 7** Turn the knob or use the arrow keys to advance to the “Speed” field. 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 arrow keys. When the desired selection is highlighted press the knob or Enter key.

MTR83

The screenshot shows the 'Kinze Planter Configuration' screen. The 'Speed' field is highlighted with a value of Radar. A drop-down menu is open showing options Radar and Coil Pick-Up. The 'Sensors Installed' section includes Vacuum (0) and SDS (0). There are checkboxes for 'Hydraulic Level/Temp' and 'Downpressure Level', and a note 'SDS = Seed Delivery System'. 'OK' and 'Cancel' buttons are at the bottom.

**STEP 8** If applicable, turn the knob or use the arrow keys to advance to “Vacuum”. Press the knob or Enter key and a drop down menu will appear. Select the correct number of vacuum sensors by turning the knob or using the arrow keys. Confirm the selection by pressing the knob or Enter key.

**STEP 9** If applicable, turn the knob or use the arrow keys to advance to “SDS” (Seed Delivery System), Press the knob or Enter key. A drop down menu will appear. Select the correct number of SDS Sensors by turning the knob or using the arrow keys. Press the knob or Enter key to confirm selection.

**STEP 10** If applicable, turn the knob or use the arrow keys to advance to “Hydraulic Level/Temp”. Press the knob or Enter key to select or deselect. When selected, a check mark will appear in the box.

**STEP 11** If applicable, turn the knob or use the arrow keys to advance to “Downpressure Level”. Press the knob or Enter key to select or deselect. When selected, a check mark will appear in the box.

**STEP 12** Advance to “OK” by using the knob or arrow keys. Press the knob or the Enter key to save the information.

MTR84

Kinze Planter Configuration	
Planter Type	Sensors Installed
Front Rows <input type="text" value="11"/>	Speed <input type="text" value="Radar"/>
Rear Rows <input type="text" value="12"/>	Vacuum <input type="text" value="0"/>
Shafts <input type="text" value="2"/>	SDS <input type="text" value="0"/>
There should be one sensor for each Row and each Shaft.	<input type="checkbox"/> Hydraulic Level/Temp <input type="checkbox"/> Downpressure Level SDS = Seed Delivery System
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

**NOTE:** To prevent the configuration from being saved select “Cancel” and press the rotary encoder knob or Enter key. The display will return to the “Setup Mode” screen without saving any changes.

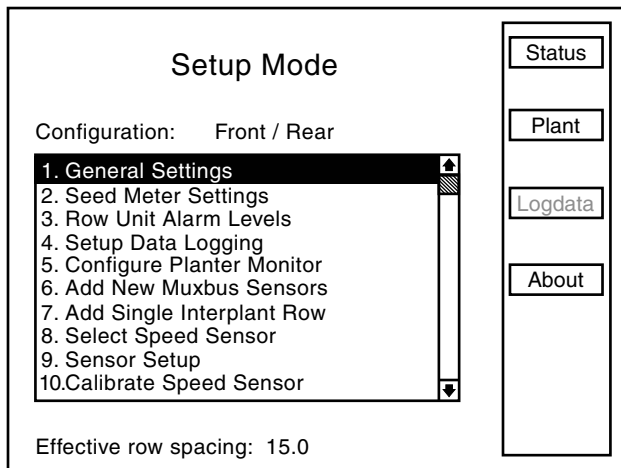
**NOTE:** When OK is selected the monitor automatically advances to the Sensor Setup screen. Sensor Setup can also be selected from the Setup Mode screen. See pages 45-46 (PROGRAMMING/CONNECTING SEED TUBES, SHAFT ROTATION SENSORS AND/OR RADAR/MAGNETIC DISTANCE SENSORS)



**GENERAL SETTINGS**  
**(Programming Interplant® condition, row spacing and units) (Metric or English)**

**STEP 1** Turn the knob or use the arrow keys to highlight “1. General Settings”. Press the knob or the Enter key to display the highlighted item.

MTR94



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

**STEP 2** Press the knob or Enter key to enter the correct value for “Row Spacing”. A drop down number pad will appear. Turn the knob or use the arrow keys to highlight the first digit of the desired number and press the knob. The number will appear in the “Row Spacing” line. Turn the knob or use the arrow keys to highlight the next digit of the number and press the knob. The number will appear in the “Row Spacing” line. When the correct number is displayed in the “Row Spacing” line, press the Enter key to return to the “General Settings” screen.

**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 3** Turn the knob or use the arrow keys to highlight the “Units of Measure” field. Select the “Units of Measure” field by pressing the knob or Enter key, a drop down menu will appear. Highlight either “English” or “Metric” by turning the knob or using the arrow keys. When the correct entry is highlighted, press the knob or Enter key to accept the unit of measure entry and return to the “General Settings” screen.

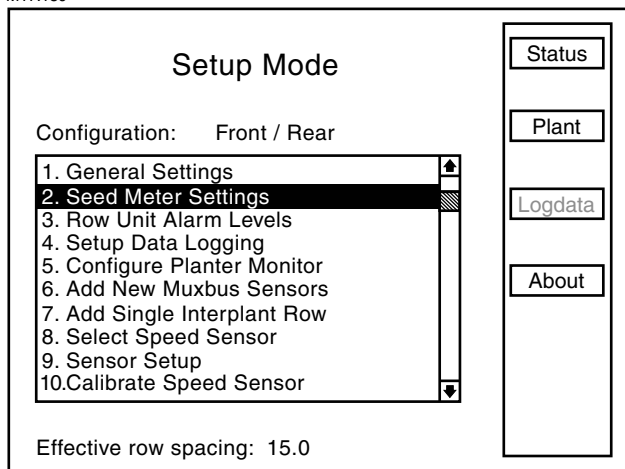
**STEP 4** Turn the knob or use the arrow keys to highlight the “Area Counters” field. Select the “Area Counters” field by pressing the knob or Enter key, a drop down menu will appear. Turn the knob or use the arrow keys to highlight either “Confirm each enable/disable”, “Don’t confirm again today”, or “Don’t confirm enable/disable”. When the desired selection is highlighted, press the knob or Enter key to accept the selection and return to the “General Settings” screen.

**STEP 5** Once the correct values have been inputted into the “General Settings” screen the “OK” button can be selected to save the changes, or the “Cancel” button can be selected to discard the changes that have been made. Turn the knob or use the arrow keys to highlight either “OK” or “Cancel” and press the knob or Enter key to return to the “Setup Mode” screen.

## SEED METER SETTINGS

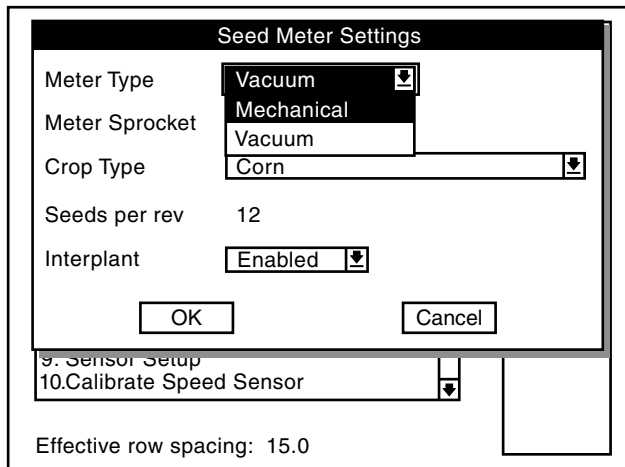
**STEP 1** Scroll to “2. Seed Meter Settings” by turning the rotary encoder knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR159

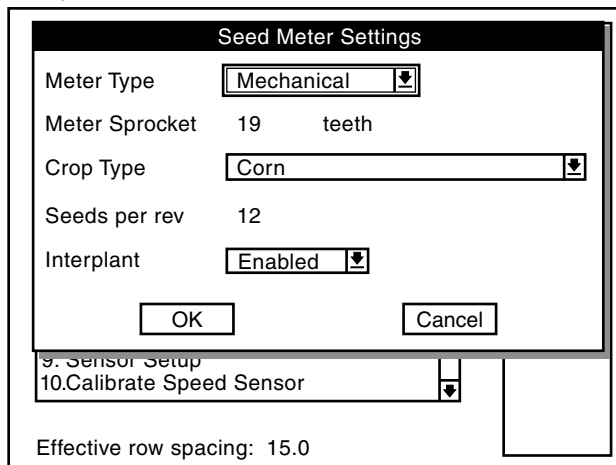


**STEP 2** Select meter type by highlighting “Meter Type” and pressing the knob or Enter key, then highlight “Mechanical” or “Vacuum” and press the knob or enter key.

MTR212

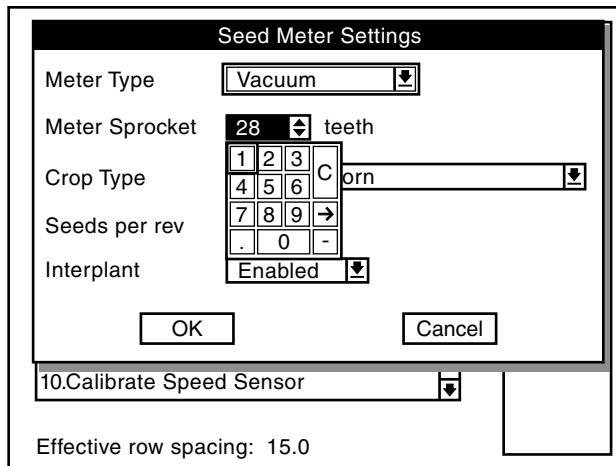


MTR210



**NOTE:** When Mechanical “Meter Type” is selected “Meter Sprocket” automatically sets.

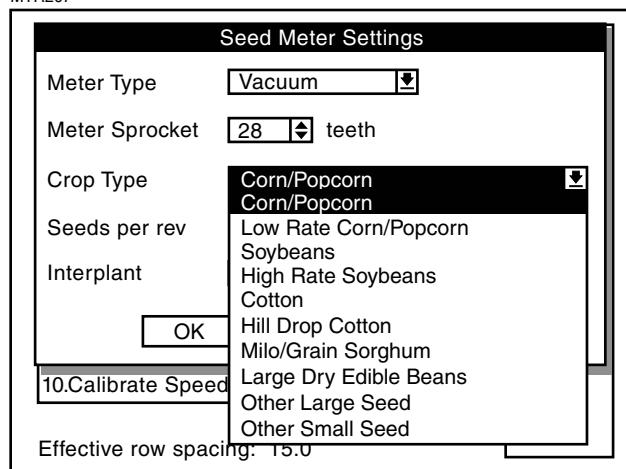
MTR206



**NOTE:** When Vacuum “Meter Type” is selected “Meter Sprocket” automatically defaults to 28 teeth. To change “Meter Sprocket” select “Meter Sprocket” by turning the knob or using the arrow keys. Press the knob or enter key, a drop down number pad will appear. Turn the knob or use the arrow keys to highlight the first digit of the desired number and press the knob. When the correct number is obtained press the knob or enter key.

**STEP 3** Turn the knob or use the arrow keys to highlight “Crop Type”. Press the knob or Enter key to display the crop drop down menu.

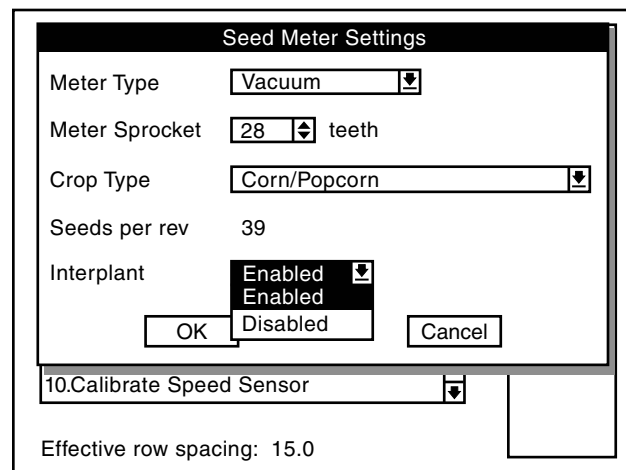
MTR207



**STEP 4** Turn the knob or use the arrows keys to highlight a crop for planting then press the knob or Enter key. Once crop type is entered, the “Seeds per rev” is set automatically.

**STEP 5** (If Applicable) Turn the knob or use the arrow keys to highlight “Interplant”. Press the knob or Enter key to display the Interplant® drop down menu.

MTR208



**STEP 6** Turn the knob or use the arrow keys to highlight either “enable” or “disable” and press the knob or Enter key.

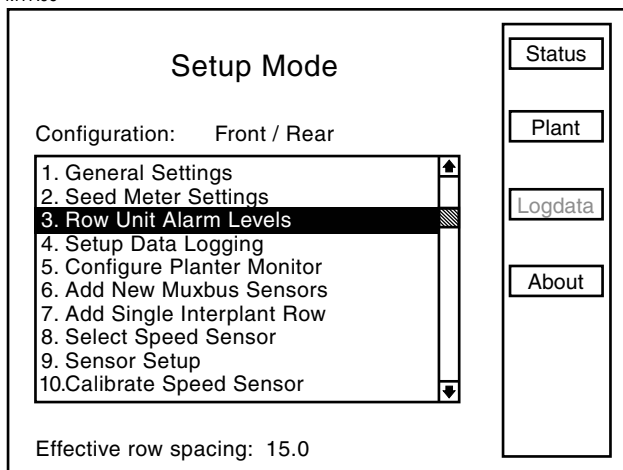
**STEP 7** When all changes have been made, highlight “OK” and press the knob or Enter key to return to the “Setup Mode” screen.

## 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%, 0% or disabled, or any custom percentage desired for any row.

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

MTR96

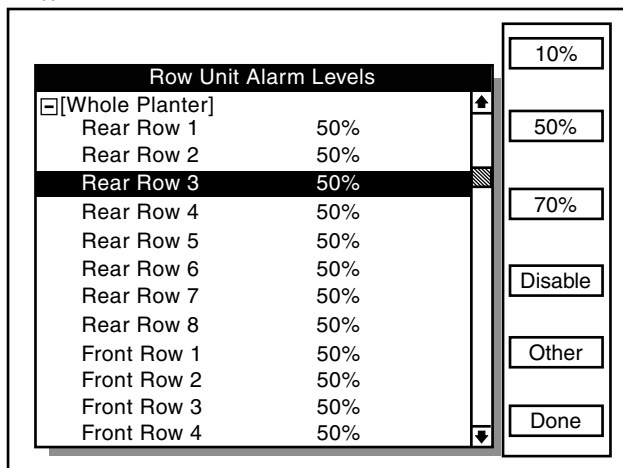


The alarm thresholds can be set for the whole planter, any planter section or individual rows.

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

**STEP 1** Select “3. Row Unit Alarm Levels” by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR98



**STEP 2** To set the alarm thresholds for the whole planter, turn the knob or use the arrow keys to highlight the “[Whole Planter]” line. Press the key next to the desired threshold. When the desired threshold has been specified for all row units, press the F6 key next to “Done”.

**NOTE: Only configured rows will appear on the screen.**

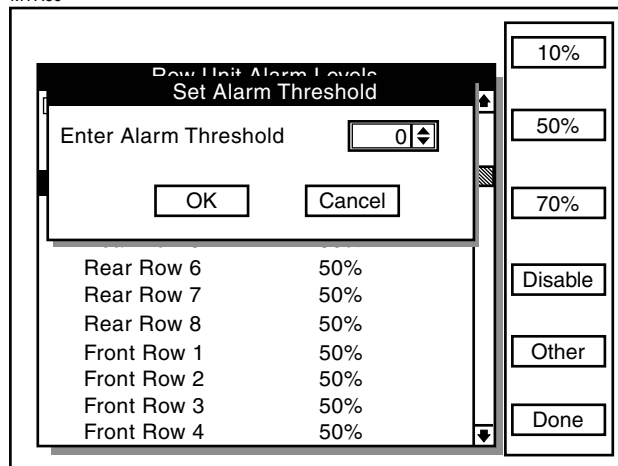
To set the alarm thresholds for all the rows in one section, highlight the desired section. Press the key next to the desired threshold. When the desired threshold has been specified for all row units, press the F6 key next to “Done”.

To set the alarm thresholds for individual rows, highlight the desired row. Press the key next to the desired threshold. When the desired threshold has been specified for all row units, press the F6 key next to “Done”.

To disable the row unit alarm, highlight the desired section or individual row. Press the F4 key next to “Disable”. When the alarm is desired again highlight the disabled section or row. Press the key next to the desired threshold.

To enter a threshold not listed, highlight the desired section or individual row. Press the F5 key next to “Other”. Press the knob or Enter key and a drop down key pad will appear. Turn the knob or use the arrow keys to highlight the first digit of the desired number and press the knob. The number will appear in the “Enter Alarm Threshold” line. Highlight the next digit of the number and press the knob. The number will appear in the line. When the correct number is displayed, press the Enter key to return to the “Set Alarm Threshold” screen. Turn the knob or use the arrow keys to advance to “OK”. Press the knob or Enter key to accept the threshold levels.

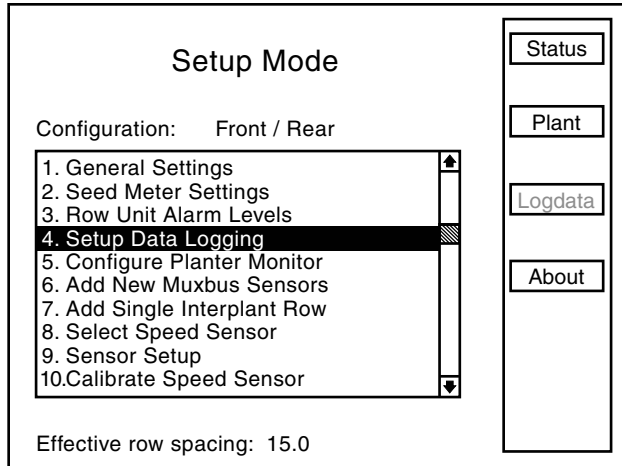
MTR99



## DATA LOGGING MODE

**STEP 1** Scroll to “4. Setup Data Logging” by turning the rotary encoder knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

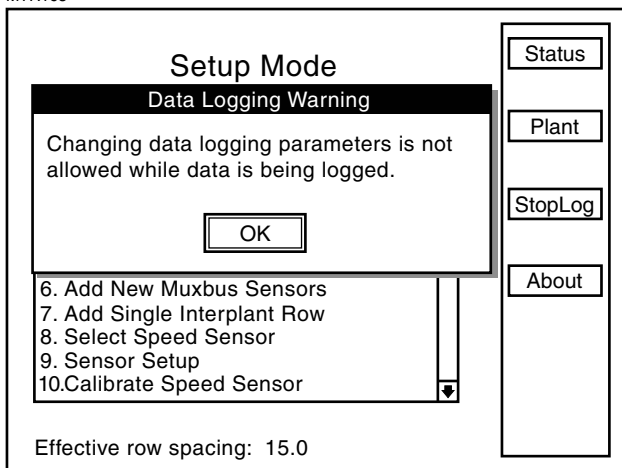
MTR164



**NOTE:** Data logging changes cannot be made while data is being logged. If the monitor is logging data the following warning will appear. To stop data logging and continue.

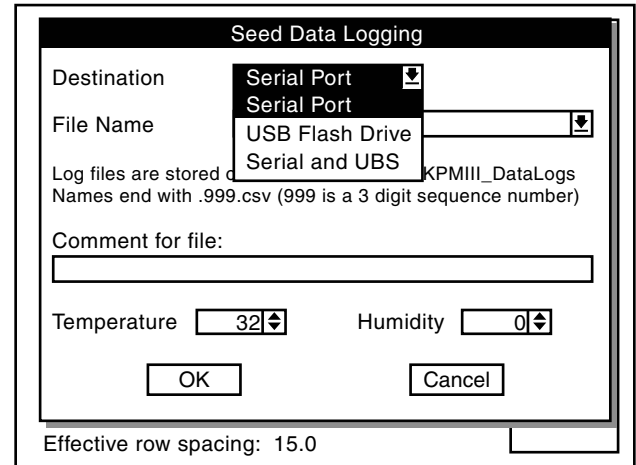
- Press the knob or Enter key to close the warning.
- Then in the “Setup Mode” press the F3 key next to “StopLog”.

MTR165



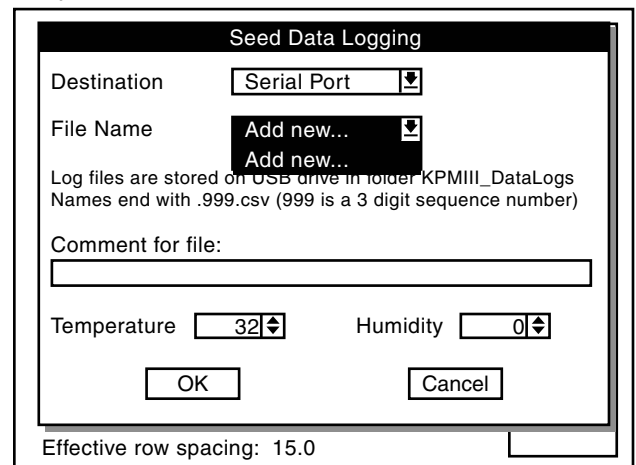
**STEP 2** Turn the knob or use the arrow keys to highlight the “Destination” box then press the knob or Enter key. Highlight the desired option either “Serial Port”, “USB Flash Drive”, or “Serial and USB” and press the knob or Enter key.

MTR166



**STEP 3** Use the knob or arrow keys to highlight the “File Name” box. Press the knob or Enter key and a drop down list of the files will be displayed. Select “Add new...” to enter a file name and press the knob or enter key to display a keyboard.

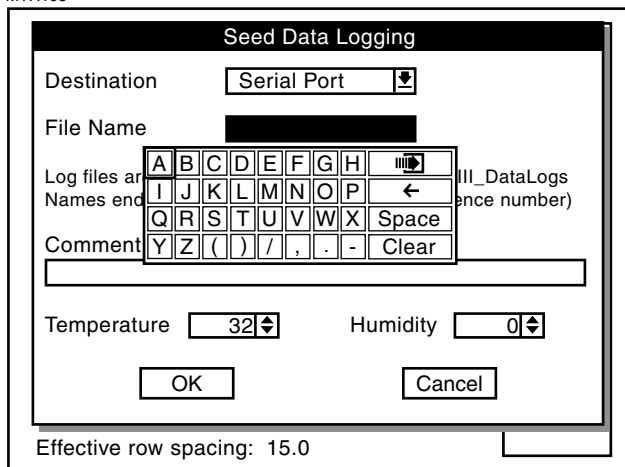
MTR167



**STEP 4** Select “Add new...” to enter a file name and press the knob or enter key to display a keyboard.

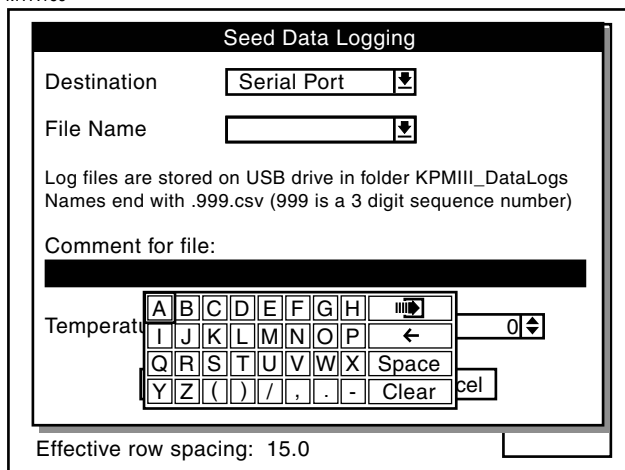
**STEP 5** Add a new file name by using the drop down keyboard. Spell out the file name by highlighting each letter and pressing the knob or Enter key.

MTR168



**STEP 6** Use the knob or arrow keys to scroll to the “Comment for file” box. Press the knob or Enter key to display the drop down keyboard. Use the keyboard to enter a Comment for the file then press the Enter key.

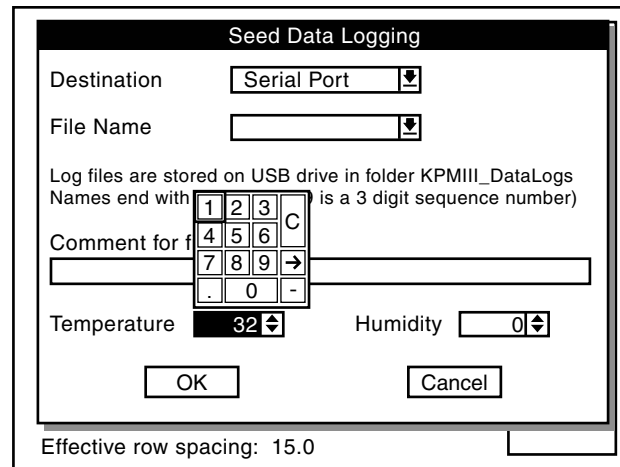
MTR169



**STEP 7** Use the knob or arrow keys to scroll to the Temperature box. Press the knob or Enter key to display the drop down keyboard. Use the keyboard to enter the temperature then press the Enter key.

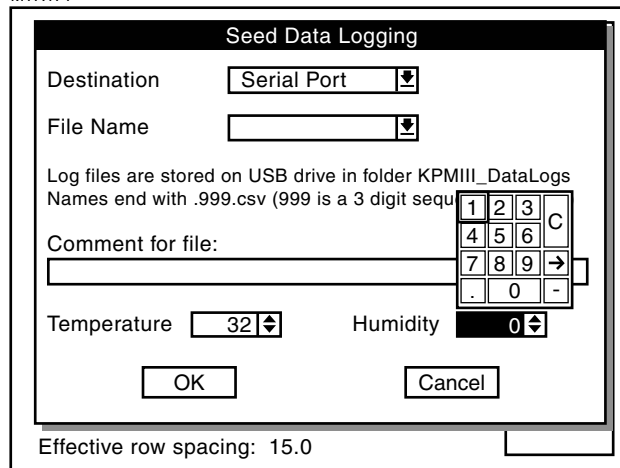
**STEP 8** Use the knob or arrow keys to scroll to the Humidity box. Press the knob or Enter key to display the drop down keyboard. Use the keyboard to enter the humidity then press the Enter key.

MTR170



**STEP 9** Use the knob or arrow keys to scroll to the “OK” button and press the knob or Enter key. The display will return to the Setup Mode screen.

MTR171



**STEP 10** Press the F2 key next to Plant to return to Planter configuration screen.

**STEP 11** Press the F3 key next to “Logdata” to begin logging.

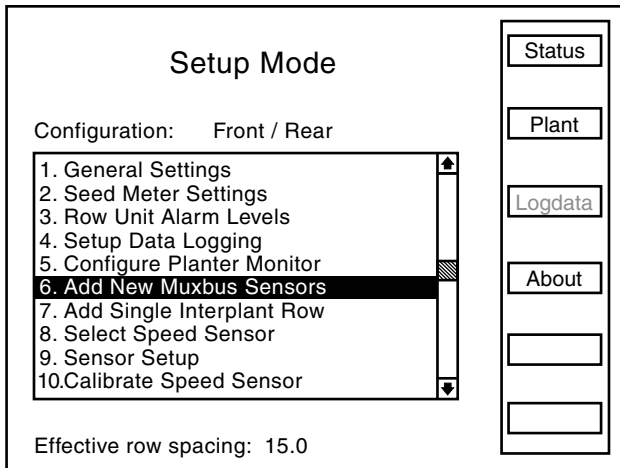
**STEP 12** Press the F3 key next to “Stoplog” to end logging.

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

**NOTE:** The planter monitor configuration must contain an odd number of front rows before the single Interplant® row unit can be added.

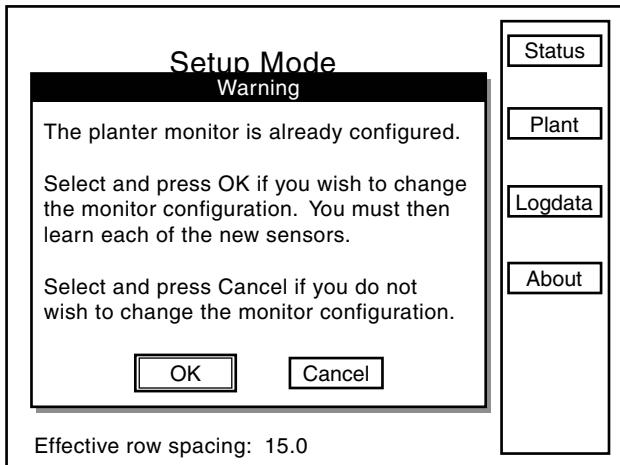
**STEP 1** Highlight “6. Add New Muxbus Sensors” by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR119



**STEP 2** The note shown below will appear. Highlight “OK” by turning the knob or using the arrow keys. Press the knob or Enter key to make the selection.

MTR120



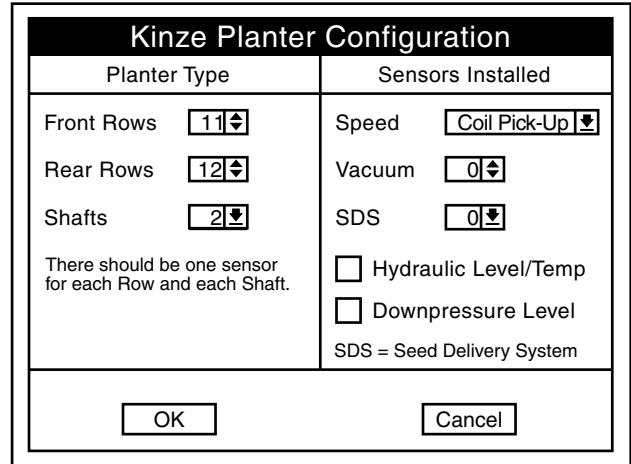
**NOTE:** To prevent the configuration from being changed, select Cancel, then press the knob, Enter key or ESC key.

**STEP 3** Turn the knob or use the arrow keys to highlight the “Front Rows” field and press the knob or Enter key and a drop down number pad will appear.

**STEP 4** Turn the knob or use the arrow keys to highlight the first digit of the desired number and press the knob to select the number, for numbers containing more than one digit select one digit at a time. The number will appear in the “Front Rows” line. When the correct number is displayed on the “Front Rows” line, press the Enter key to return to the “Kinze Planter Configuration” screen.

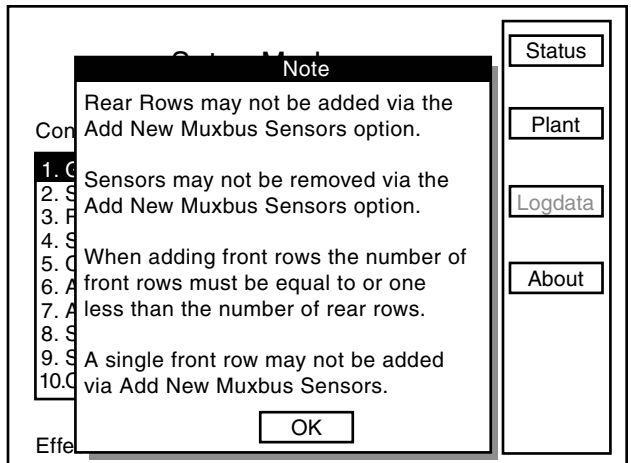
**NOTE:** To prevent the configuration from being changed select Cancel, then press the knob, Enter key or ESC key.

MTR121



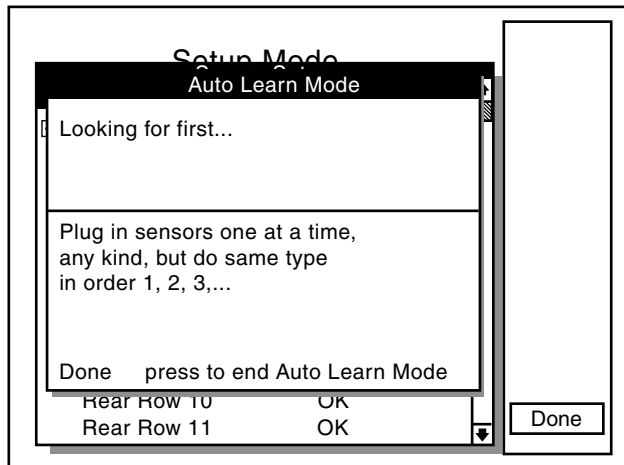
**NOTE:** Attempting to add rear rows while adding new Muxbus sensors will cause the following note to appear.

MTR122



**STEP 5** The sensor configuration screen will appear. With “[Auto Detect]” highlighted press the F1 key next to “Install”. Install sensors from left to right in the same way rear unit sensors were installed.

MTR123



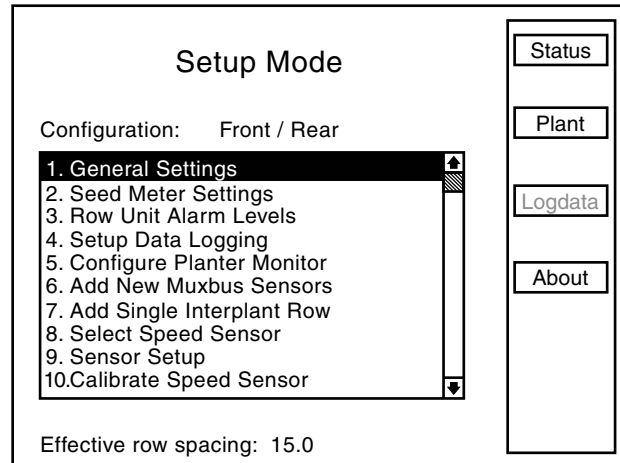
**STEP 6** When all sensors are learned select F1 to end installation. The “Auto Learn Mode” box will appear. Press the F6 key next to “Done”.

**STEP 7** Scroll down to verify the front rows are learned. Select “OK” by pressing the knob or the Enter key. Press the F6 key next to “Done”. The display will return to the “Setup Mode Screen”.

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

**STEP 8** Turn the knob or use the arrow keys to highlight “1. General Settings”. Press the knob or use the Enter key to make the selection.

MTR124



**STEP 9** Turn the knob or use the arrow keys to highlight the “Row Spacing” field. Press the knob or Enter key to make the selection. A drop down number pad will appear. Adjust the row spacing to Interplant spacing by turning the knob or use the arrow keys to highlight the correct value then press the knob to select the number, for numbers containing more than one digit select one digit at a time.

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

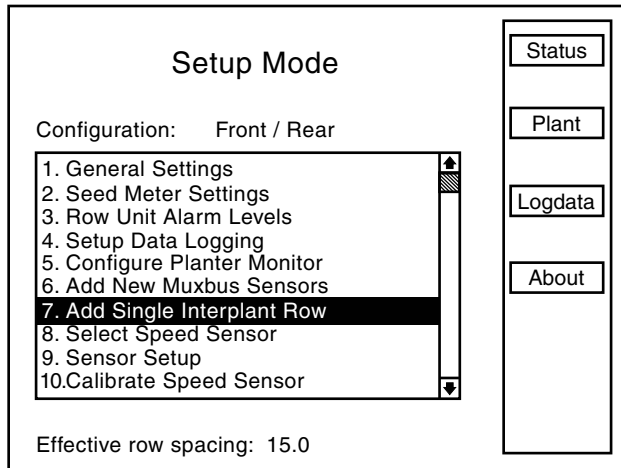
**STEP 10** Turn the knob or use the arrow keys to advance to the “OK” button. Press the knob or Enter key to save the row spacing and return to the “Setup Mode” screen.



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

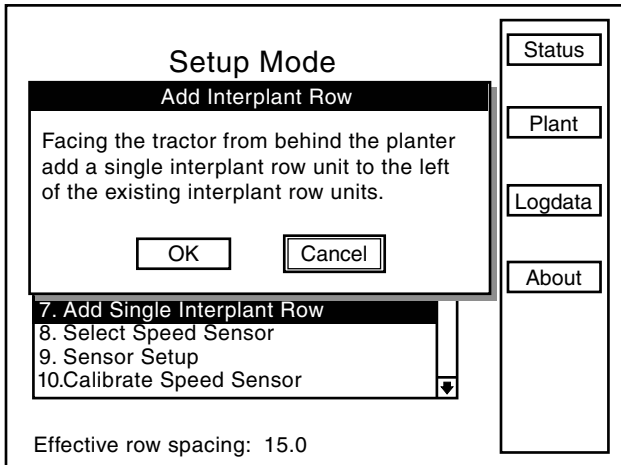
**STEP 1** Turn the knob or use the arrow keys to highlight “7. Add Single Interplant® Row”. Press the knob or the Enter key to display the highlighted item.

MTR126



**STEP 2** To confirm the note below turn the knob or use the arrow keys to highlight the “OK” button, 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.

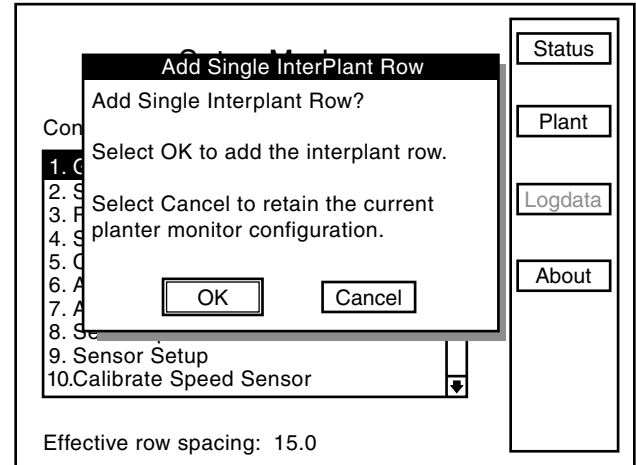
MTR127



**STEP 3** To “Add Single Interplant® Row” the following screen will appear.

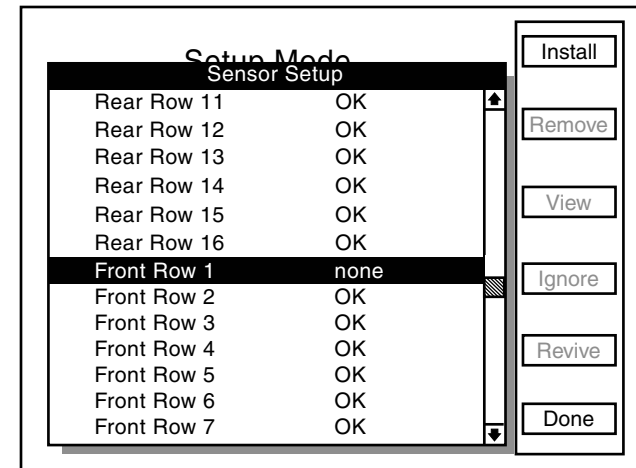
If the single Interplant® row is to be added turn the knob or use the arrow keys to highlight the “OK” button and then press the knob or Enter key to add the Interplant® row. If the single Interplant® row is not to be added select the Cancel key and press the knob or Enter key to cancel or press the ESC key.

MTR128



**STEP 4** The “Sensor Setup” screen will appear. Plug in the new sensor then scroll down to highlight “Front Row 1” by turning the knob or using the arrow keys. Press the F1 key next to Install to learn the new sensor.

MTR129



## REPROGRAMMING SPEED SENSOR

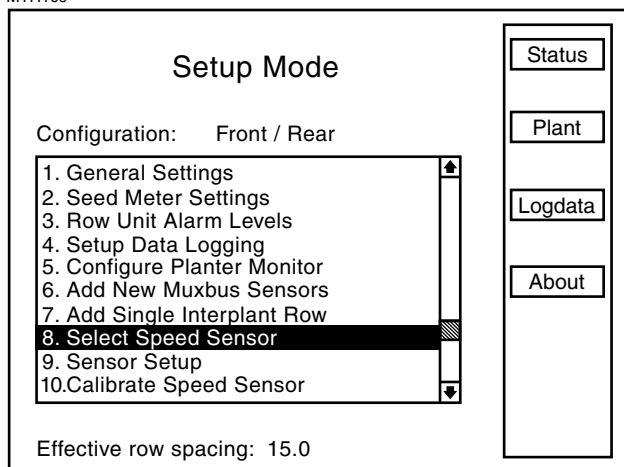
This setting must be specified when the monitor is first configured. It will be necessary to reprogram to use an alternate speed sensor.

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

### RADAR TO MAGNETIC DISTANCE SENSOR

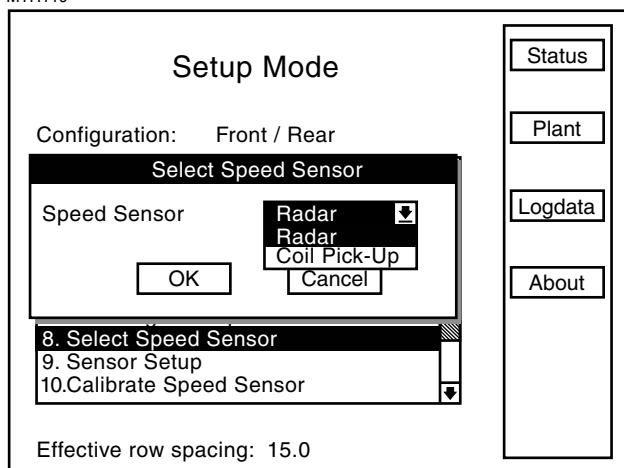
**STEP 1** Turn the knob or use the arrow keys to highlight “8. Select Speed Sensor”. Press the knob or Enter key to display the highlighted item.

MTR109



**STEP 2** Press the knob or Enter key, a drop down menu will appear. Turn the knob or use the arrow keys to highlight “Coil Pick-Up” and press the knob or Enter key.

MTR110



**STEP 3** Turn the knob or use the arrow keys to highlight the “OK” button and press the knob or Enter key to return to the “Setup Mode” screen.

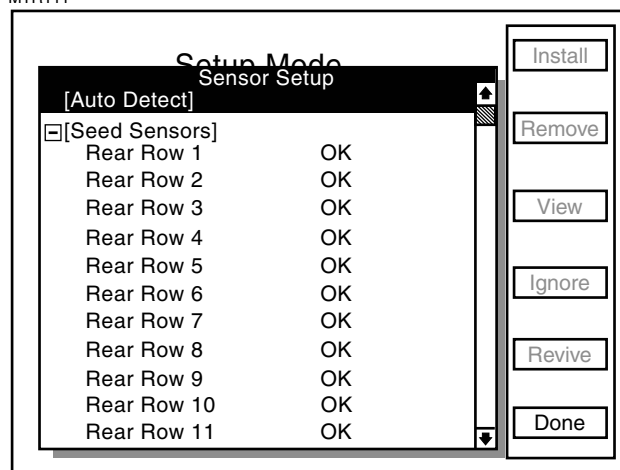
**STEP 4** Turn the knob or use the arrow keys to highlight “9. Sensor Setup” and press the knob or Enter key.

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

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

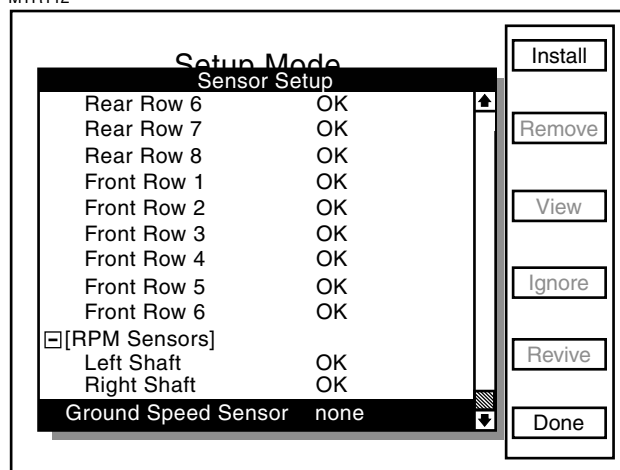
**STEP 6** Plug in Magnetic Distance Sensor (MDS) and press the F1 key next to Install. Press the knob or Enter key to save information. The Sensor Setup screen will appear.

MTR111



**STEP 7** Turn the knob or use the arrow keys to scroll down to “Ground Speed Sensor”.

MTR112



**STEP 8** Press the F1 key next to Install. The monitor will beep twice to confirm selection.

**STEP 9** Press the F6 key next to Done. The display will return to the Setup Mode screen.

**STEP 10** Press the F2 key by “Plant” to return to the Planter Configuration screen.

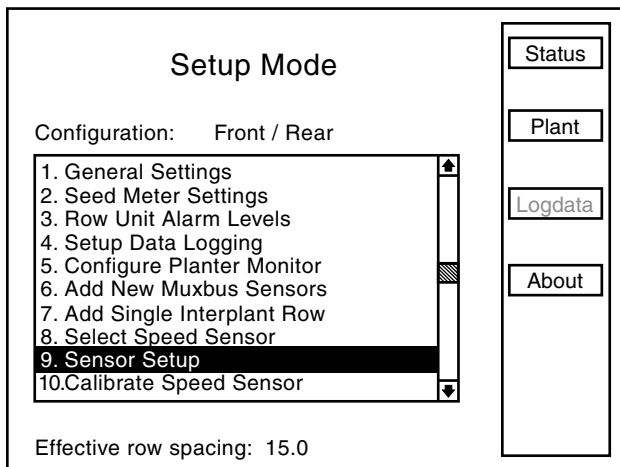
**NOTE: When switching between speed sensors, verify the distance pulse count is correct for the chosen sensor. There will be significant distance pulse count variation between radar and coil pick-up sensors.**

## MAGNETIC DISTANCE SENSOR (MDS) TO RADAR

**STEP 1** Turn the knob or use the arrow keys to choose “9. Sensor Setup”. Turn the knob or use the arrow keys to highlight “Ground Speed Sensor”. Press the F2 key next to Remove to remove the Ground speed Sensor.

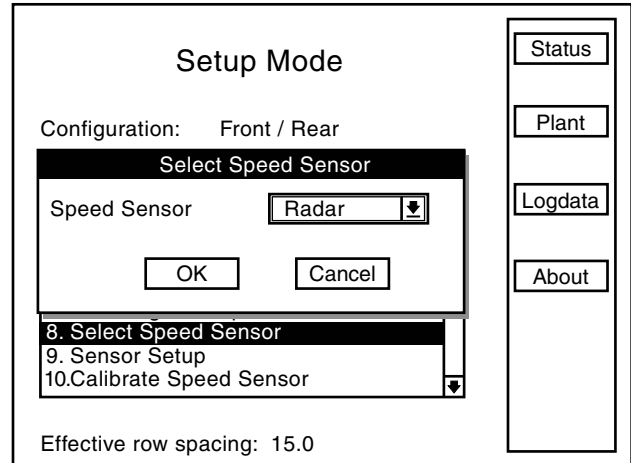
**STEP 2** Press the F6 key next to Done. The display will return to the Setup Mode screen.

MTR114



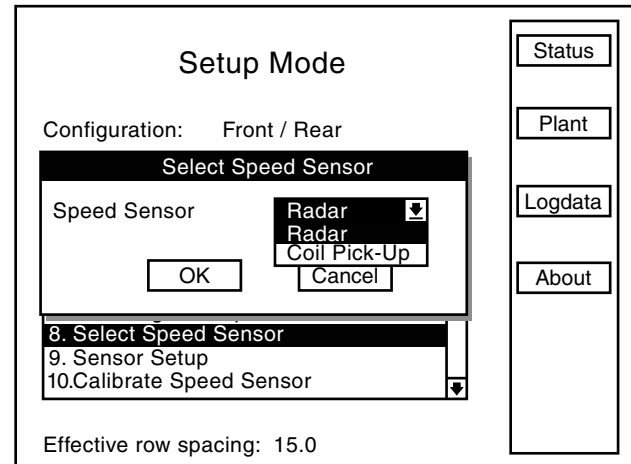
**STEP 3** Turn the knob or use the arrow keys to highlight “8. Select Speed Sensor” and press the knob or Enter key.

MTR116



**STEP 4** Press the knob or Enter key to select the “Speed Sensor” field and a drop down menu will appear.

MTR117



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

**STEP 5** Turn the knob or use the arrow keys to highlight “Radar” and press the knob or Enter key.

**STEP 6** Turn the knob or use the arrow keys to highlight the “OK” button and press the knob or Enter key.

**STEP 7** Plug in Radar, turn the knob or use arrow keys to advance to “OK”. Press the knob or Enter key to save the information. The display will return to the Setup Mode screen.

**STEP 8** Press the F2 key next to Plant to return to Planter Configuration 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.**

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

**NOTE:** The **Sensor Setup** screen automatically appears after the **Planter Monitor** is configured in the **Configure Planter Monitor** selection in the **Setup Mode** screen.

**IMPORTANT:** All sensors **MUST** be unplugged before programming begins.

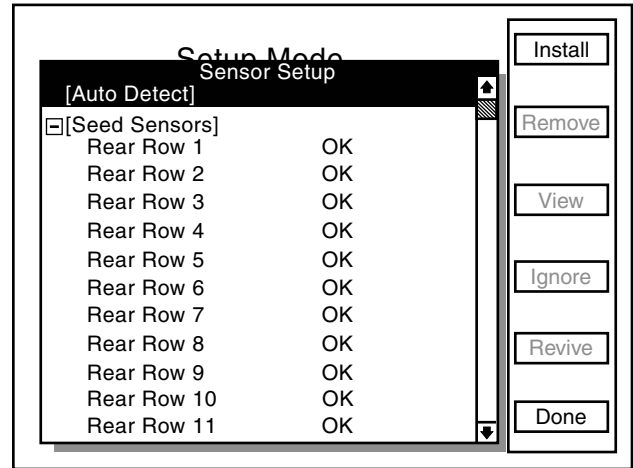
**STEP 1** To access Mode Selection, press F6 key until the Mode Selection screen appears.

**STEP 2** Select "1. Setup Mode" by turning the rotary encoder knob or press the arrow keys. Press the knob or Enter key to display the highlighted item.

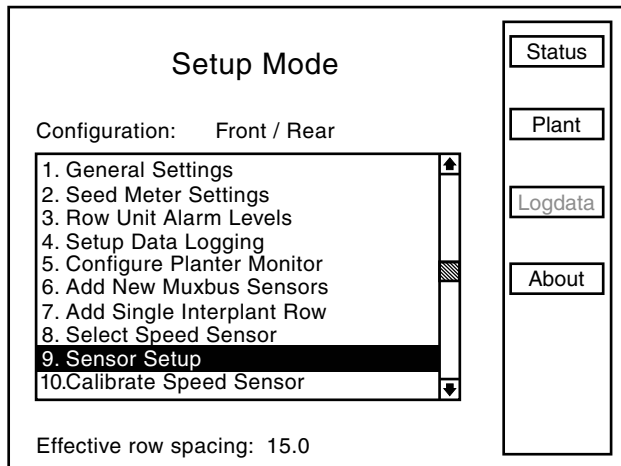
**STEP 3** Select "9. Sensor Setup" by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

**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 F1 key next to Install.

MTR86



MTR85



**STEP 5** Plug in the first pull row unit seed sensor (row 1), working from left to right across the planter. Once all pull row unit sensors have been connected, if applicable, interplant unit sensors should be connected following the same pattern. When a sensor is connected to the planter harness wait for the monitor to acknowledge the sensor with two beeps.

**NOTE:** If the monitor fails to acknowledge a sensor disconnect the sensor temporarily then reconnect the sensor and wait for the monitor to acknowledge the sensor with two beeps. If the monitor still fails to acknowledge the sensor try connecting a different sensor in this location.

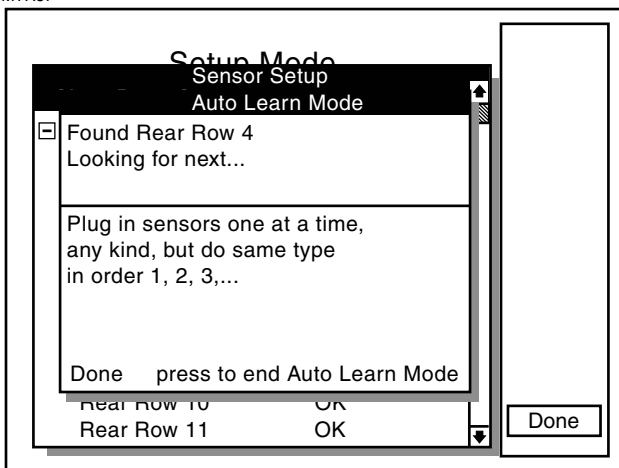
Connect shaft rotation sensors or speed sensors in the same way seed sensors were connected, making sure to work from left to right across the planter.

(If applicable) plug in SDS, vacuum or PDP (pneumatic down pressure) sensors in the same way seed sensors were connected.

Progress is displayed on the LCD screen as sensors are connected. The example below indicates that the last seed sensor found was Rear Row 4 and the monitor is looking for the next sensor.

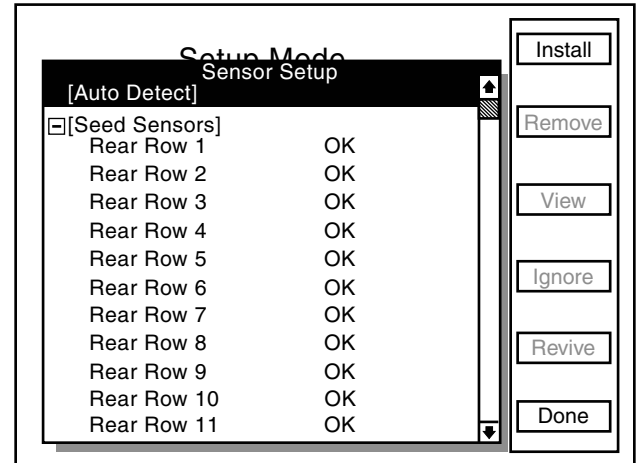
When all sensors are installed press the F6 key to end the installation and return to the "Setup Mode" screen.

MTR87



**NOTE:** After each sensor has been installed "OK" will appear after the sensor name on the LCD screen.

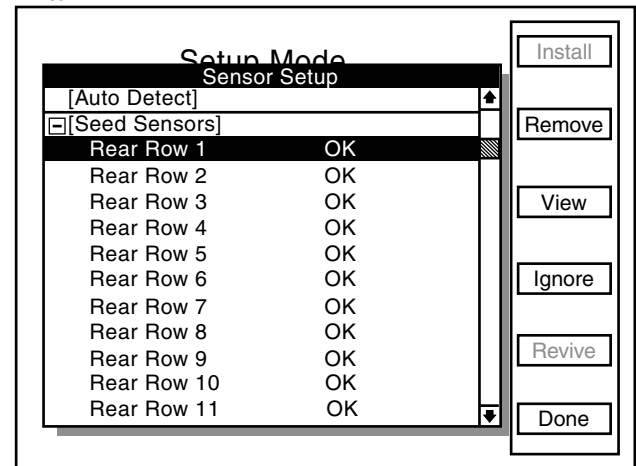
MTR86



**STEP 6** When "OK" appears behind ALL sensors, press the F6 key next to Done. The "Setup Mode" menu will then appear.

**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.

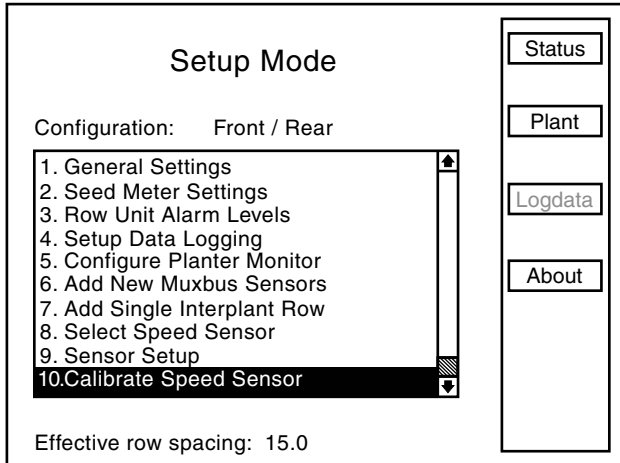
MTR89



## SPEED SENSOR CALIBRATION/PROGRAMMING

- STEP 1** Turn the knob or use the arrow keys to highlight "10. Calibrate Speed Sensor" and press the knob or Enter key.

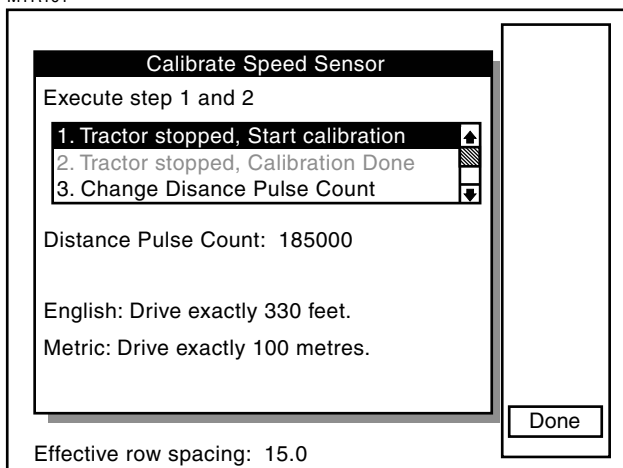
MTR100



The Distance Pulse Count is used to record how many pulses are generated per mile/kilometer from the ground speed sensor.

**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 monit or 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.**

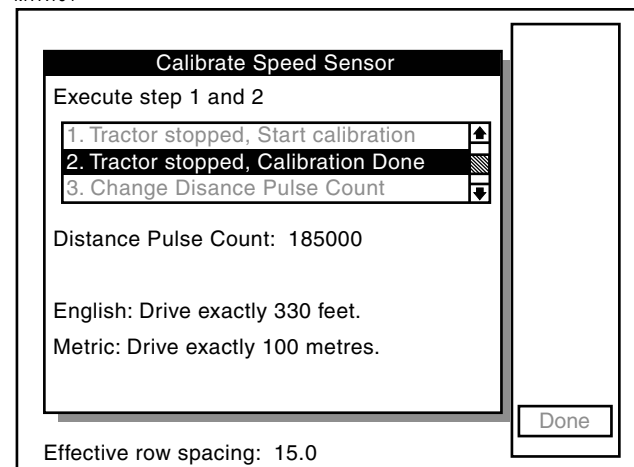
MTR101



- 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.

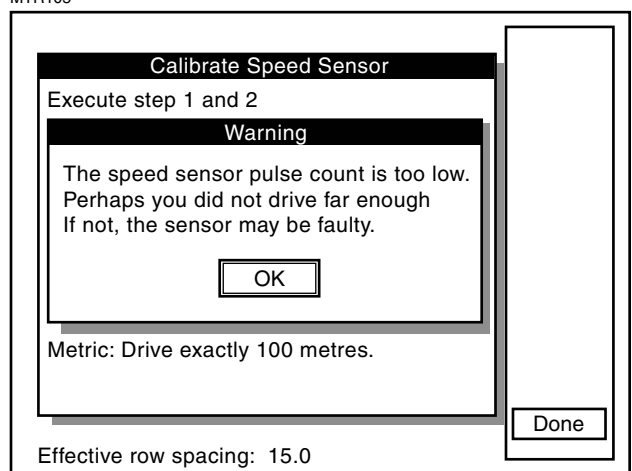
- Pull the tractor up to the starting point.
- Turn the knob or use the arrow keys to highlight "1. Tractor stopped, Start calibration" and press the knob or Enter key.
- Drive the tractor for 330 feet or 100 meters.
- The Monitor will count the number of pulses and display them.
- Stop the tractor at the end point.
- Turn the knob or use the arrow keys to highlight "2. Tractor stopped, Calibration Done" and press the knob or Enter key.

MTR104



**NOTE: If the warning box below appears, click OK and repeat the procedure.**

MTR105



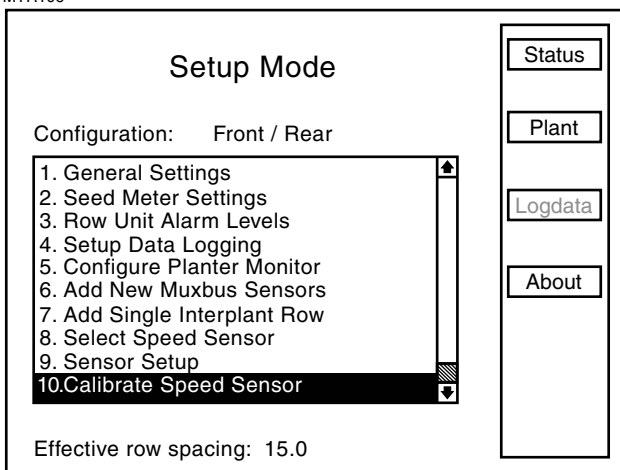
**NOTE:** Repeat the above steps multiple times. Record and average the values. Use this average for the Distance Pulse Count number constant.

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

When the correct distance pulse count is known, calibration is not needed and the following steps may be used.

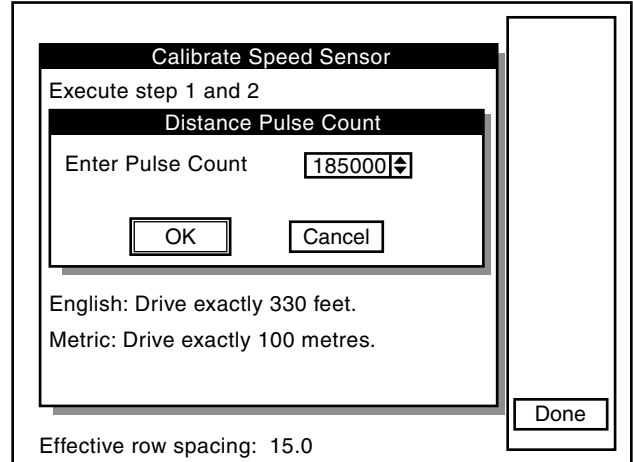
**STEP 1** Turn the knob or use the arrow keys to highlight "10. Calibrate Speed Sensor" and press the knob or Enter key

MTR106



**STEP 2** Turn the knob or use the arrow keys to highlight "3. Change Distance Pulse Count" and press the knob or Enter key. Highlight the "Enter Pulse Count" line and press the knob or Enter key and a drop down key pad will appear.

MTR107



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

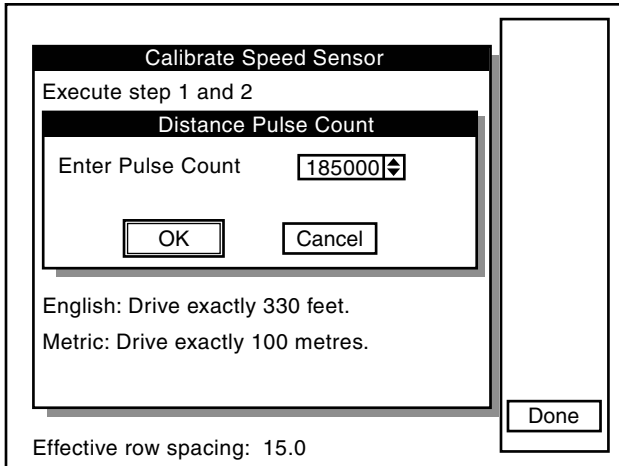
**STEP 3** Turn the knob or use the arrow keys to highlight the first digit of the average pulse count and press the knob. The number will appear in the "Enter Pulse Count" line. Highlight the next digit of the number and press the knob. Repeat this procedure until the entire number is entered then press the Enter key.

**STEP 4** Turn the knob or use the arrow keys to highlight "OK" then press the knob or Enter key to return to the "Calibrate Speed Sensor" screen.

**STEP 5** Press F6 key next to "Done" to return to "Setup Mode" screen.

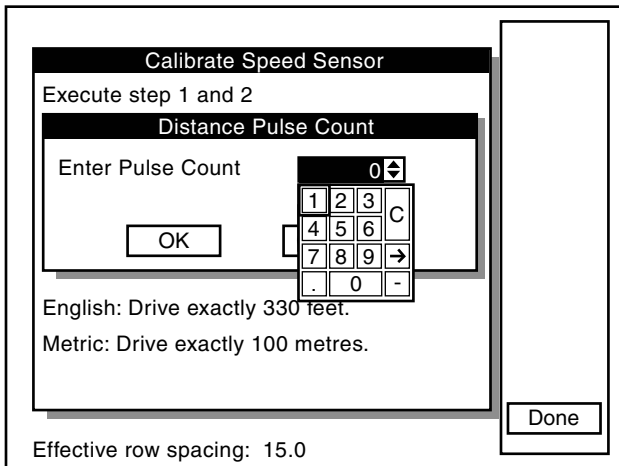
The monitor will display the current pulses per mile/kilometer using a 6 digit, no decimal place format labeled “Distance Pulse Count”. Turn the knob or use the arrow keys to highlight “Change Pulse Count” then press the knob or Enter key. The “Distance Pulse Count” box will appear.

MTR102



- When the “Enter Pulse Count” value is highlighted press the knob or Enter key and a drop down keypad will appear. Turn the knob or use the arrow keys to highlight “0”, zero, and press the knob or Enter key. Turn the knob or use the arrow keys to highlight “OK” and press the knob or Enter key to return to the “Calibrate Speed Sensor” screen.

MTR103



**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.**



## ACRE COUNT MODE

**NOTE:** When a tractor is equipped with a radar distance sensor, accumulating area without a planter attached is possible.

**STEP 1** Install an “Acre Count Switch Kit”.

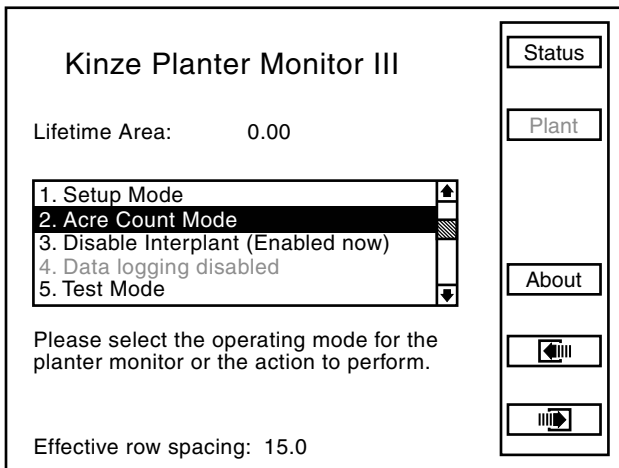
**STEP 2** Enter into “Acre Count Mode”.

### 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”.

**STEP 2** Press the F6 key until the Mode Selection screen appears. Turn the rotary encoder knob or use the arrow keys to highlight “2. Acre Count Mode”. Press the knob or Enter key.

MTR196



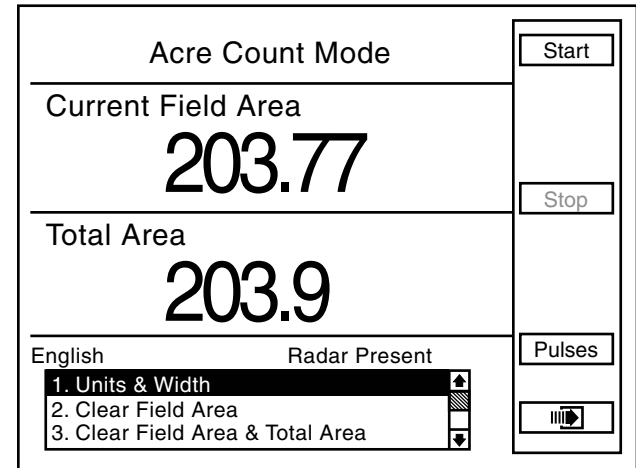
**NOTE:** If the radar unit is not detected a warning will appear.

**NOTE:** When using the acre count mode option, 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 3** Turn the knob or use the arrow keys to highlight “Units & Width” and press the knob or Enter key.

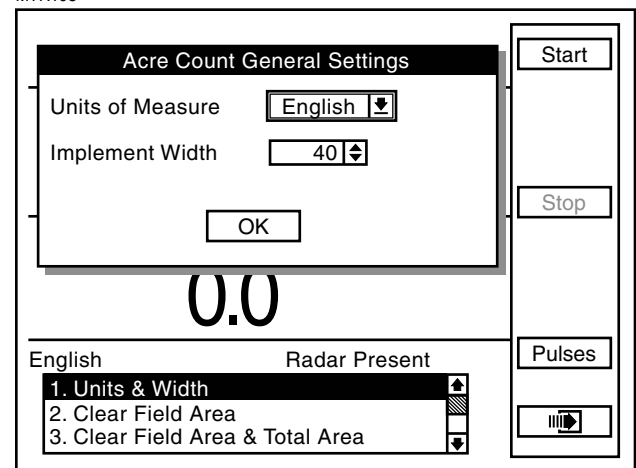
MTR197



**STEP 4** A box named “Acre Count General Settings” will appear. Highlight the correct units of measure “English” or “Metric” by turning the knob or using the arrow keys. Press the knob or Enter key to make the selection.

**STEP 5** Turn the knob or use the arrow keys to highlight the “Implement Width” box and press the knob or Enter key and a drop down number pad will appear.

MTR198



**STEP 6** Turn the knob or use the arrow keys to highlight the correct value then press the knob to select the number, for numbers containing more than one digit select one digit at a time. When the desired quantity is displayed above the number pad, press the Enter key.

**STEP 7** Turn the knob or use the arrow keys to highlight the “OK” button. Then press the knob or Enter key to save the changes that have been made.

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

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

**STEP 8** To begin accumulating area press the F1 key next to Start.

**STEP 9** To stop accumulating area or to move to a different location, press the F3 key next to Stop.

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, however clearing the “Total Area” counter also clears the “Field Area” counter.

- 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. Highlight “OK” and press the knob or Enter key to clear the field. Highlight “Cancel” and press the knob or the Enter key to retain the current field value.

MTR199

Acre Count Mode		Start
Current Field Area		
0.00		Stop
Total Area		
0.0		Pulses
English	Radar Present	
<ol style="list-style-type: none"> <li>1. Units &amp; Width</li> <li>2. Clear Field Area</li> <li>3. Clear Field Area &amp; Total Area</li> </ol>		

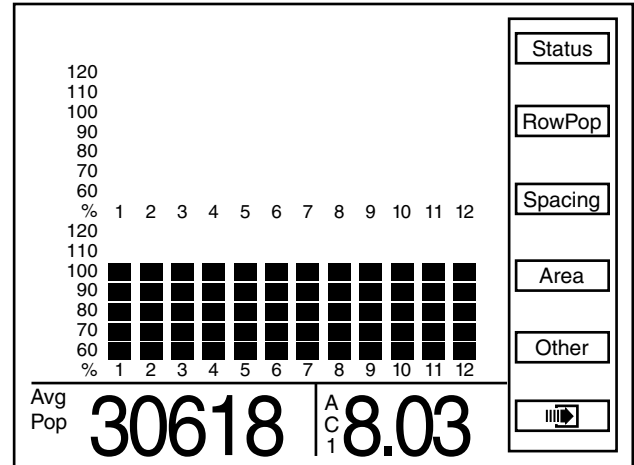
- To Clear Both Field Area And Total Area. Highlight “Clear Field Area & Total Area” and press the knob or Enter key. A note will appear to verify the decision to reset the field area and the total area to zero. Highlight “OK” and press the knob or Enter key to clear the field. Highlight “Cancel” and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

## ENABLING/DISABLING INTERPLANT® ROWS

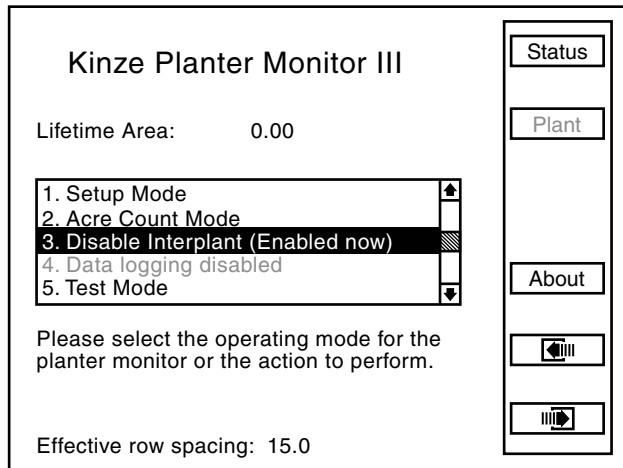
To Enable or Disable Interplant®

- STEP 1** Return to the “Planter Configuration” screen by pressing the F2 key next to “Plant”.
- STEP 2** Press the F6 key until the “Kinze Planter Monitor III” screen appears.
- STEP 3** Turn the rotary encoder knob or use the arrow keys to highlight “3. Disable Interplant (Enabled now) or Enable Interplant (Disabled now).
- STEP 4** 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.

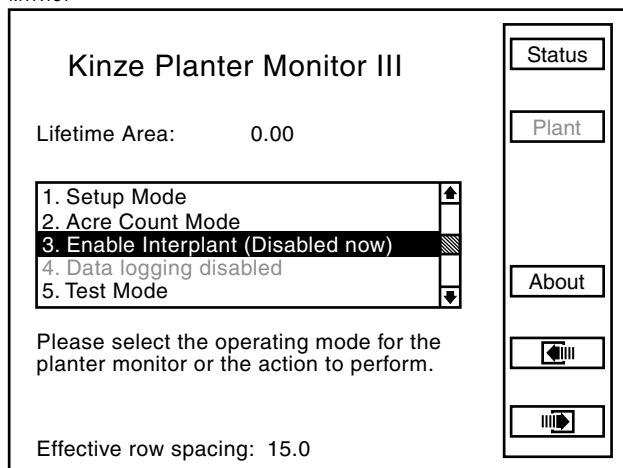
MTR132



MTR130



MTR131



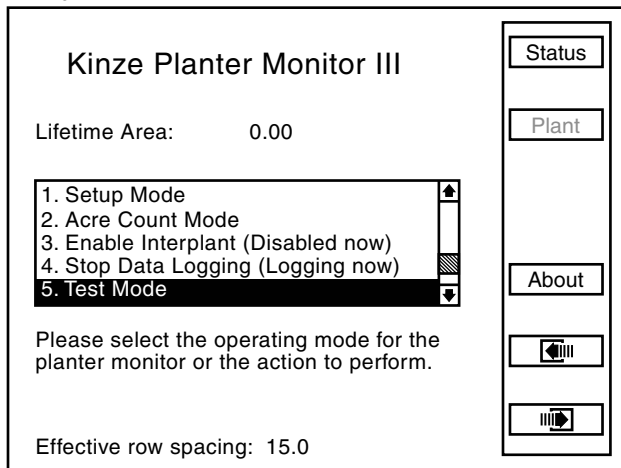
Press F6 to return to the Plant screen.

## TEST MODE

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

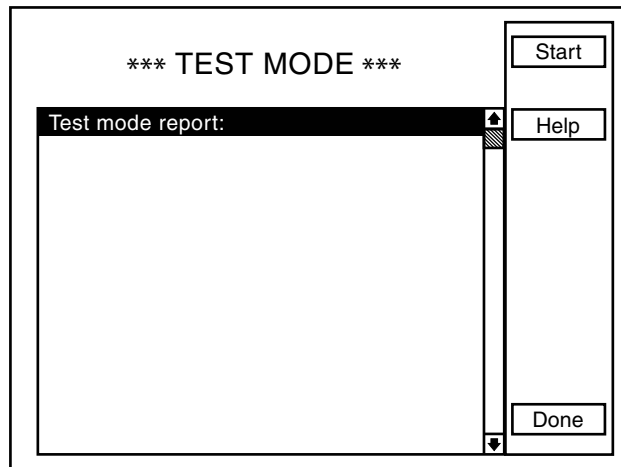
**STEP 2** Select "5. Test Mode" by turning the rotary encoder knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR173



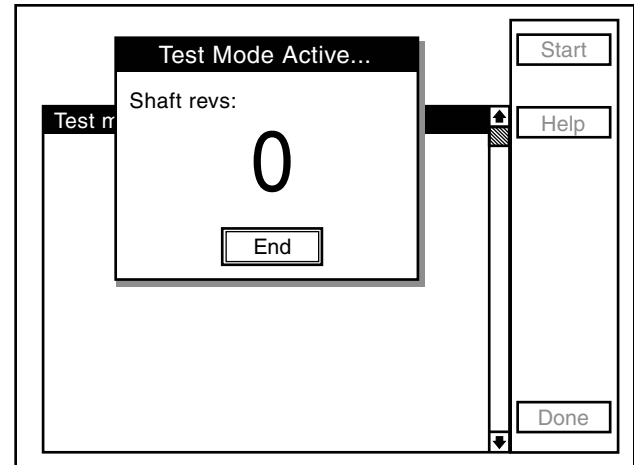
**STEP 3** Press the F1 key next to Start.

MTR174



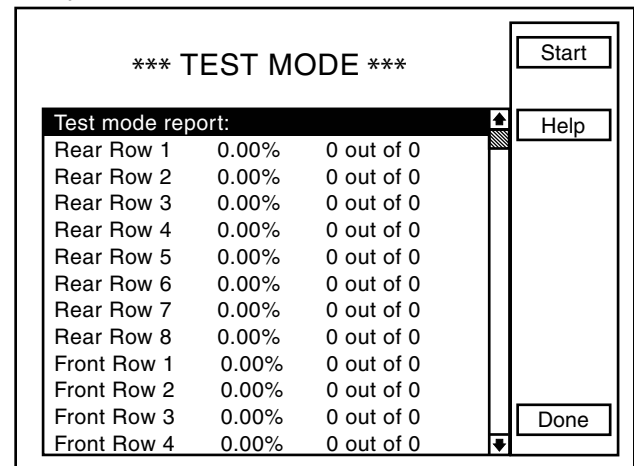
**STEP 4** The "Test Mode Active" box will appear showing the number of shaft revolutions. The "End" box will be highlighted. Press the knob or Enter key. The "Test Mode Active" box will appear displaying the drill shaft revolutions.

MTR173



**STEP 5** The TEST MODE screen displays test run data (seed count) for each row.

MTR176

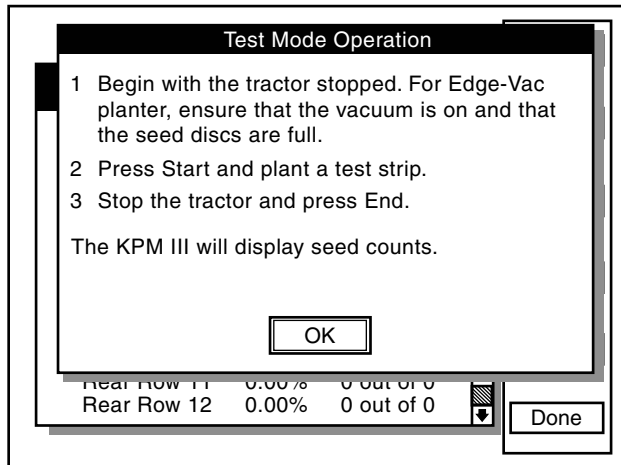


**STEP 6** Begin the test with the tractor stopped. For EdgeVac planters, ensure the vacuum is on and that the seed discs are full.

**STEP 7** Press the F1 key next to Start and plant a test strip.

**STEP 8** Stop the tractor and press "End". The KPM III will display seed counts by row and percentage.

MTR177



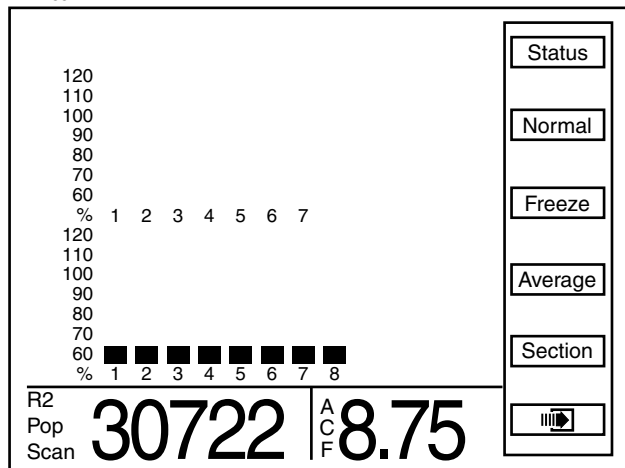
**NOTE:** The above instructions will display on the screen when the F2 key next to “Help” is pressed.

**STEP 9** Press the F6 key next to Done. The display returns to the Mode Selection screen.

## ROW POPULATION

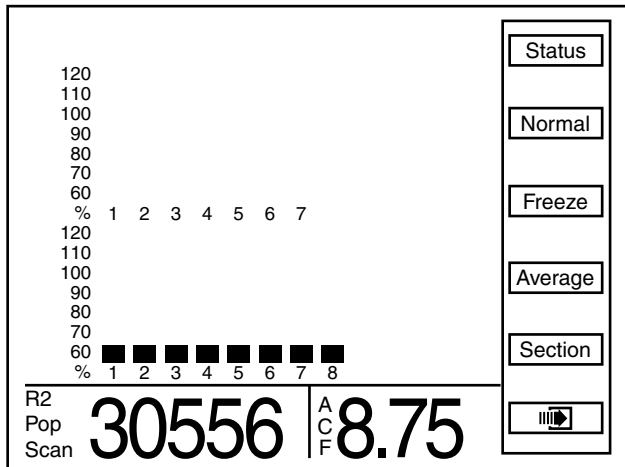
Press the F2 key next to “RowPop” to display row population. Average planter population will be shown in the lower L.H. corner of the display.

MTR133



- Press the F3 key next to Scan 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.

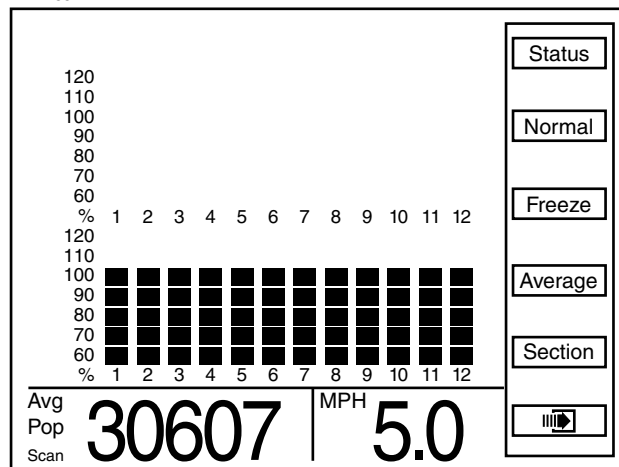
MTR134



- Press the F3 key next to Freeze 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 F3 key next to Scan.

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

MTR135



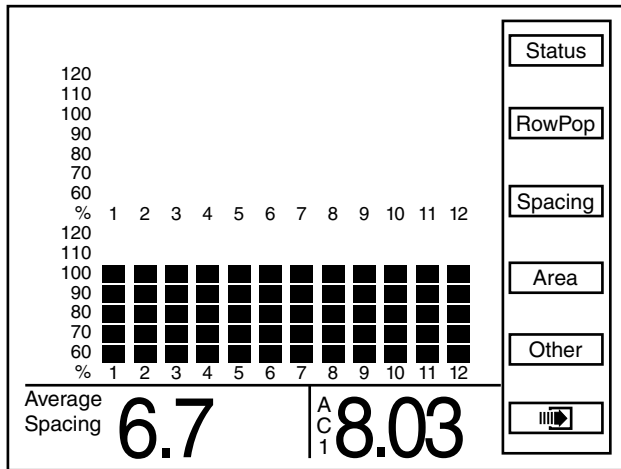
- When either “Scan” or “Frzn” is displayed in the L.H. corner, the Section and arrow keys function as follows:
  - Section, Right arrow key, or Left arrow key advances to the first rear row.
  - The Up arrow key moves forward to the next row of the planter, wrapping around to the first row when moving past the last row.
  - 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 F4 key next to Average to display the average population in the bottom L.H. corner.
- Press the F2 key next to Normal to display the normal screen for the Planter Configuration screen.

**NOTE:** If the rows are being scanned and the F4 key next to Average is pressed the scan function will stop.

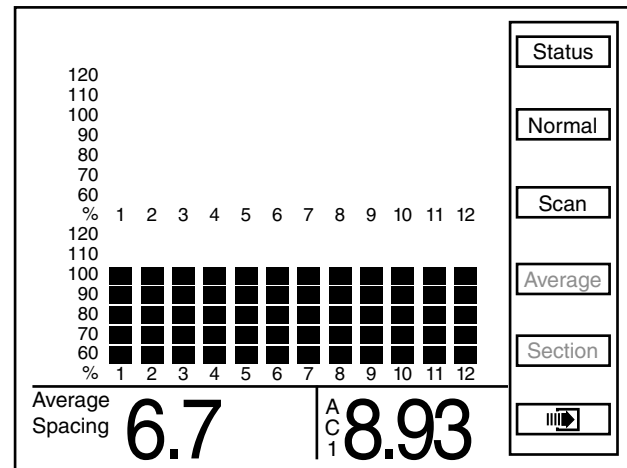
## ROW SPACING

- Press the F3 key next to Spacing to display seed spacing keys. "Average Spacing" will appear in the bottom L.H. corner of the display.

MTR136



MTR137



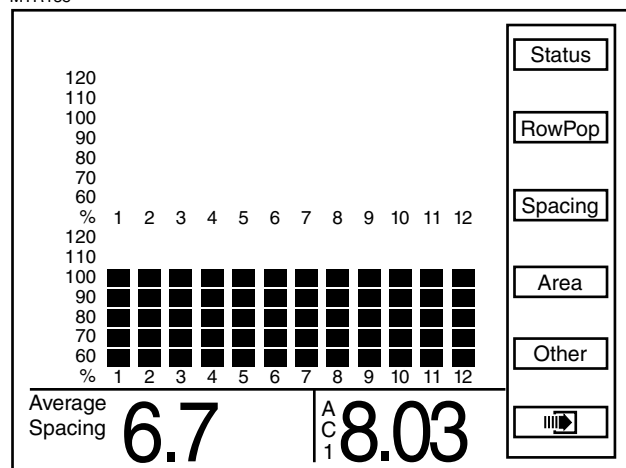
- Press the F3 key next to Scan and the monitor will scan through each row in ascending order displaying the average seed spacing for each row. Scan appears in the L.H. corner to indicate the display is scanning. After all rows have been scanned the average population is displayed and scanning will continue with the first rear row.

- Press the F3 key next to Freeze 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 F3 key next to Scan.
- When either "Scan" or "Frzn" is displayed in the left display item, the Section and arrow keys function as follows:
  - Section, Right arrow key, or Left arrow key advance to the first rear row.
  - The Up arrow key moves forward to the next row of the planter, wrapping around to the first row when moving past the last row.
  - Down arrow key moves backward to the previous row of the planter, wrapping around to the last row when moving past the first row.
- Press the F4 key next to Average to display the average seed spacing in the bottom L.H. corner.
- Press the F2 key next to Normal to display the Planter Configuration screen.

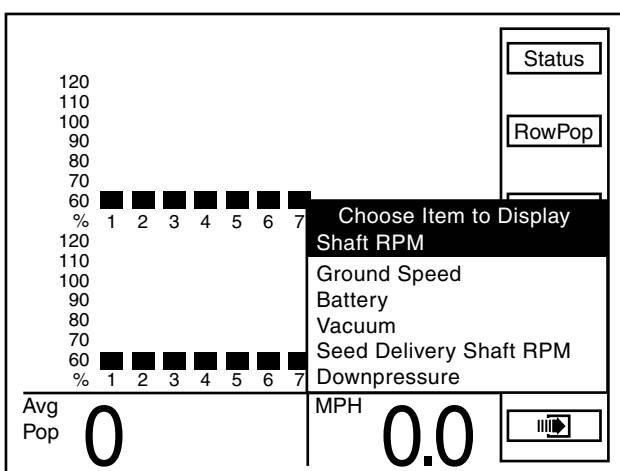
**NOTE: If the rows are being scanned and the F4 key next to Average is selected the scan function will stop.**

## SPEED/SHAFT ROTATION

MTR138



MTR209



- Press the F5 key next to “Other” to display items available to display in the bottom R.H. corner. Turn the knob or use the arrows keys to advance to “Battery” to view battery condition. The value will appear in the bottom R.H. corner of the display as “Bat V”.
- Press the F5 key next to “Other” to display items available to display in the bottom R.H. corner. Turn the knob or use the arrows keys to advance to “Vacuum” to view vacuum. The inches of vacuum will appear in the bottom R.H. corner of the display as “VAC”.
- Press the F5 key next to “Other” to display items available to display in the bottom R.H. corner. Turn the knob or use the arrows keys to advance to “Seed Delivery Shaft RPM” to view shaft RPM. The shaft RPM will appear in the bottom R.H. corner of the display as “RPM SDS”.
- Press the F5 key next to “Other” to display items available to display in the bottom R.H. corner. Turn the knob or use the arrows keys to advance to “Downpressure” to view lbs. of down pressure. The lbs. of down pressure will appear in the bottom R.H. corner of the display as “LBS”.

- Press the F5 key next to Other to display items available to display in the bottom R.H. corner. Turn the knob or use the arrow keys to highlight “Shaft RPM”. The value will appear in the bottom R.H. corner of the display as “RPM”.

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

- Press the F5 key next to “Other” to display items available to display in the bottom R.H. corner. Turn the knob or use the arrow keys to select “Ground Speed”. The value will appear in the bottom R.H. corner of the display as “MPH” or “Km Per Hr”.

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



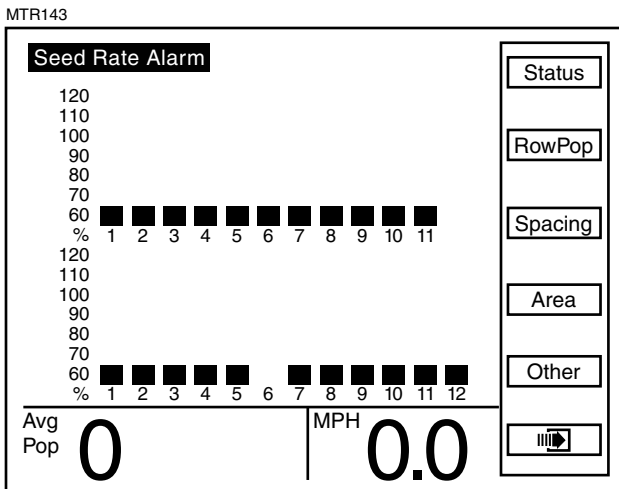
## WARNINGS AND ALARMS

**STEP 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 persist until the alarm is cleared 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.

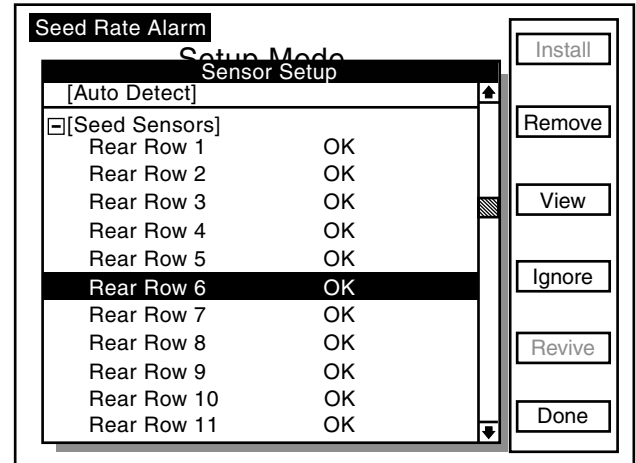
**EXAMPLE:** If the threshold is 70% the lower two bargraph segments are shown. If the threshold is 50% or 10% the lowest bargraph segment is shown.

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 F1 key next to Status.



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

MTR144

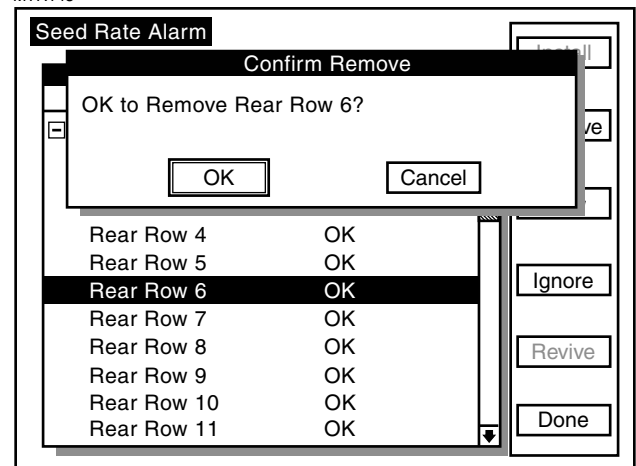


**NOTE:** The only way to remove an alarm is to find the problem and correct it. Alarms are not reported for rows with the seed rate alarm thresholds disabled.

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

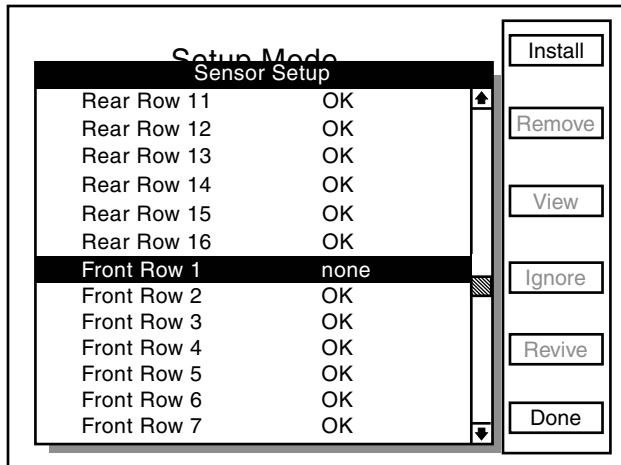
The row can be removed by pressing the F2 key next to Remove. A box will appear asking for confirmation to remove the row. The "OK" box will be highlighted in the box.

MTR145



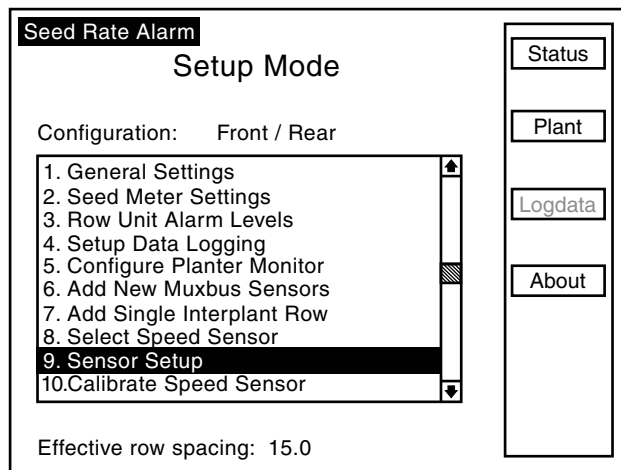
Press the knob or Enter key to confirm removal. The Sensor Setup screen will display "none" next to the row that was removed. Press the F6 key next to "Done". The setup mode screen will appear.

MTR146

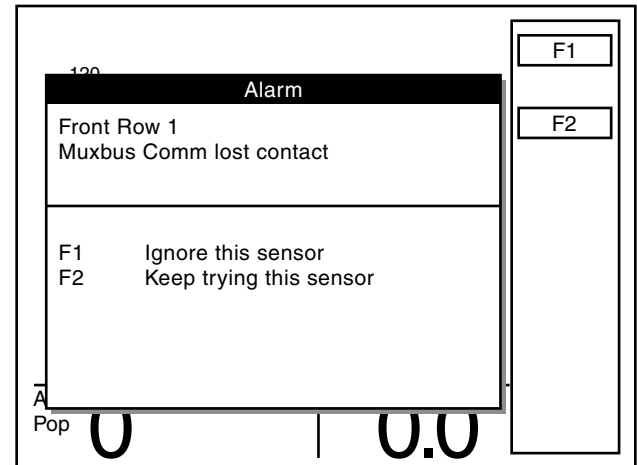


Press the F2 key next to Plant to return to the Planter Configuration screen.

MTR147

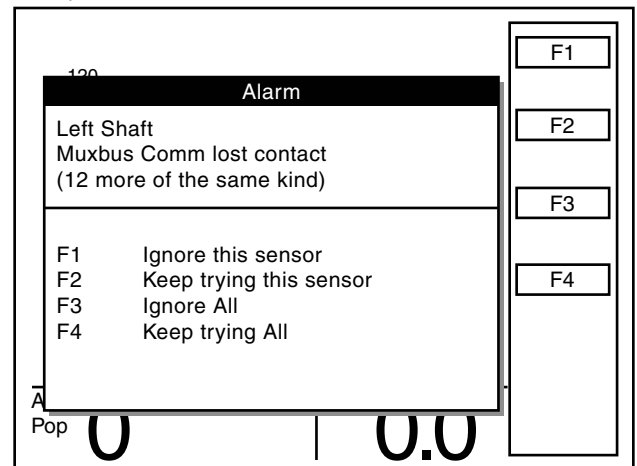


MTR148



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

MTR149



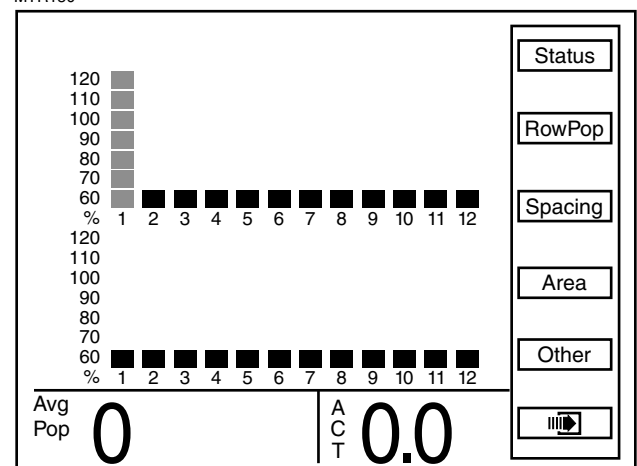
**STEP 2** Section Not Planting - When the monitor detects an entire section not planting, three beeps will sound to alert the user. The bargraph for the affected section flashes and is reduced to the lowest segment. An alarm message is added to the list of "Status Messages". Press the F1 key next to Status to view the alarm message.

**STEP 3** Seed Counting Sensors Not Communicating With Monitor - When the monitor detects a communication error between the sensor and the monitor, the monitor will beep twice 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 faulty sensor, poor electrical connection, or a cut or pinched wire harness.

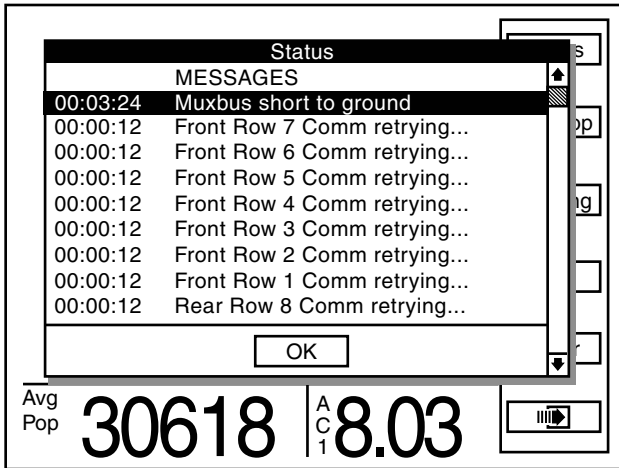
**NOTE:** When a known sensor or group of sensors are faulty, F1 or F3 should be pressed. The monitor will stop communication with the sensor(s) and the corresponding bargraphs will be grayed out on the main "Planter Configuration" screen as shown below.

MTR150



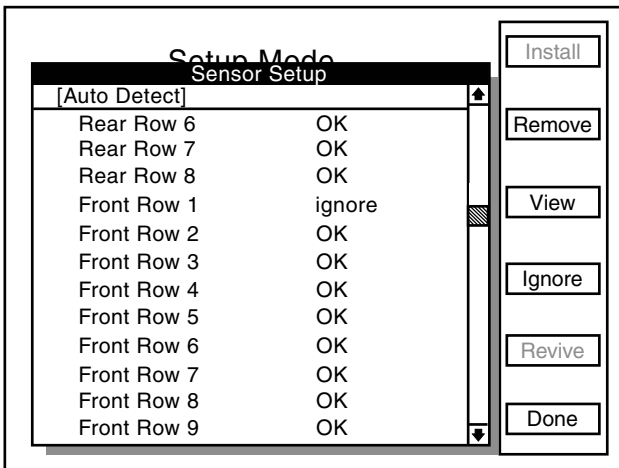
**NOTE: If sensors are not faulty, F2 or F4 should be pressed. After pressing F2 or F4 a message similar to the one below will appear when the "Status" button F1 is pressed.**

MTR151



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

MTR152

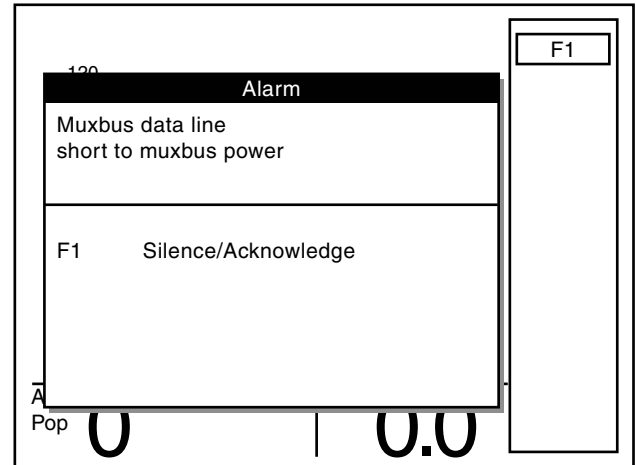


**STEP 4** Seed Counting Sensors Too Dirty Warning - When powering on the KPM III, each of the seed sensors will do a self check. If a seed tube is too dirty, the message "Clean Or Replace Sensor As Necessary" will be displayed and the bargraph for that row will flash.. The sensor will not function until the problem is corrected.

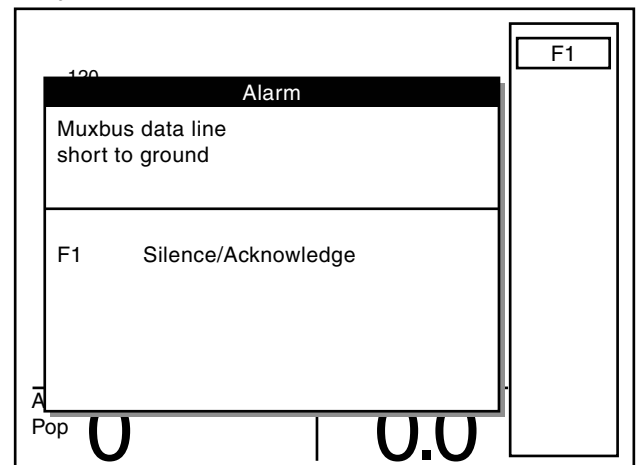
**NOTE: After the alarms have been acknowledged and the alarm condition still present, the LCD screen will continue to display the alarm condition.**

**STEP 5** Wire Shorts - When a wire is shorted, one of the messages below will appear, indicating which wires are shorted. The short must be located and repaired to continue planting. Turn off the monitor and restart it to clear the alarm.

MTR153

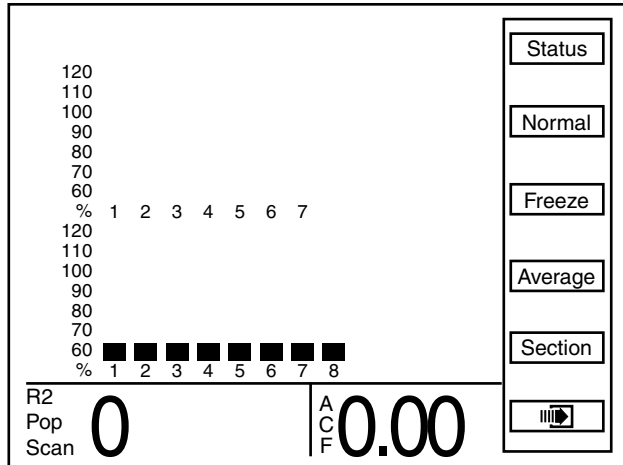


MTR154



**STEP 6** Add Interplant® Row Error – The planter monitor configuration must contain an odd number of front rows before the single Interplant® row unit can be added.

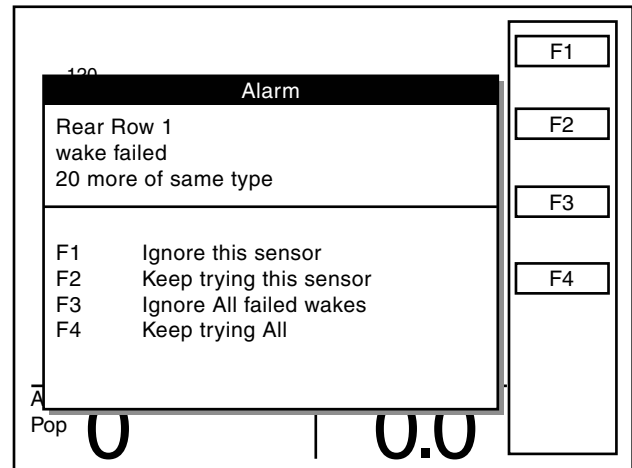
MTR155



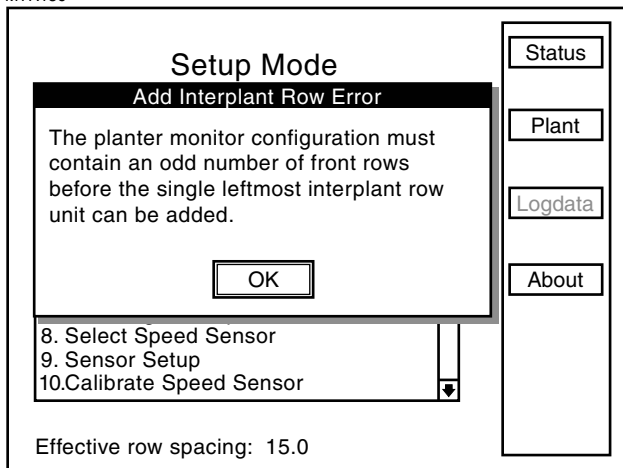
**NOTE:** The planter monitor configuration above has an even number of front (Interplant®) rows (8).

**STEP 8** Alarm: Rear Row 1 wake failed – Select an option from the warning box and press the key next to the selection.

MTR158

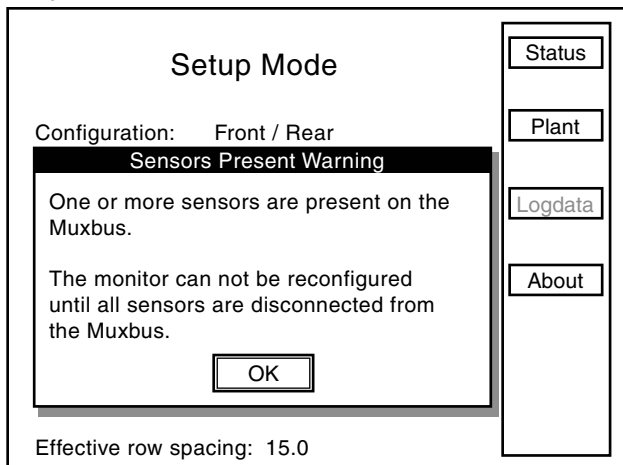


MTR156



**STEP 7** Sensor Present Warning – One or more sensors are present on the Muxbus.

MTR157

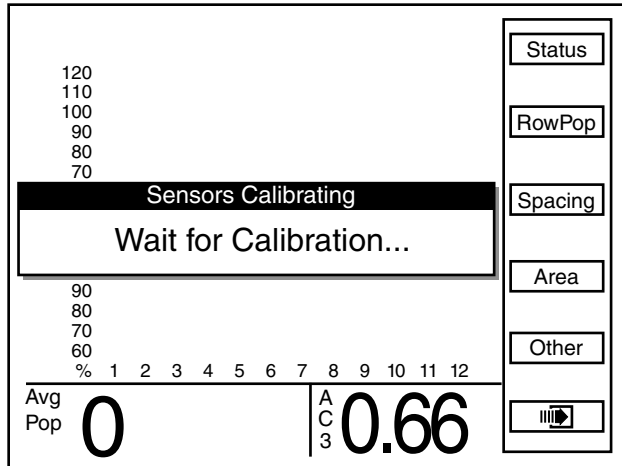


## FIELD OPERATION

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

If the monitor has been configured, it will show the Planter Configuration screen and attempt to communicate with the seed sensors.

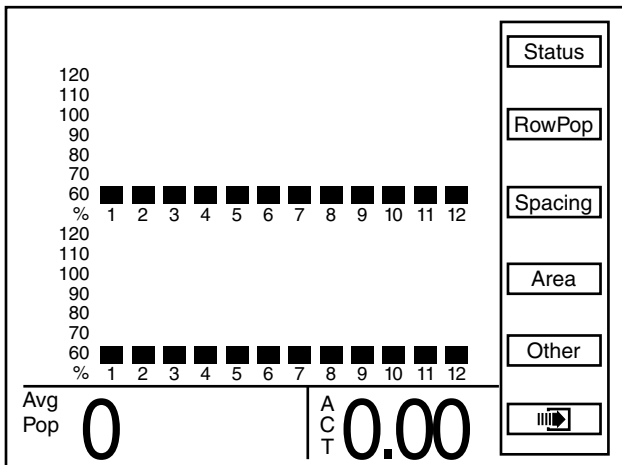
MTR179



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

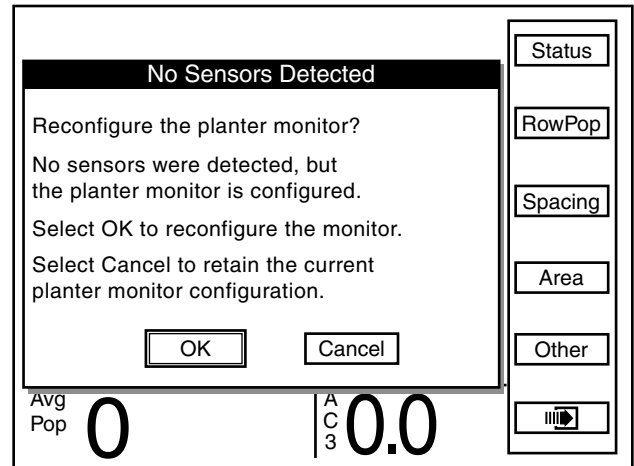
**NOTE:** If the monitor can communicate with the sensors the Planter Configuration screen will be displayed.

MTR180



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

MTR181



**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.

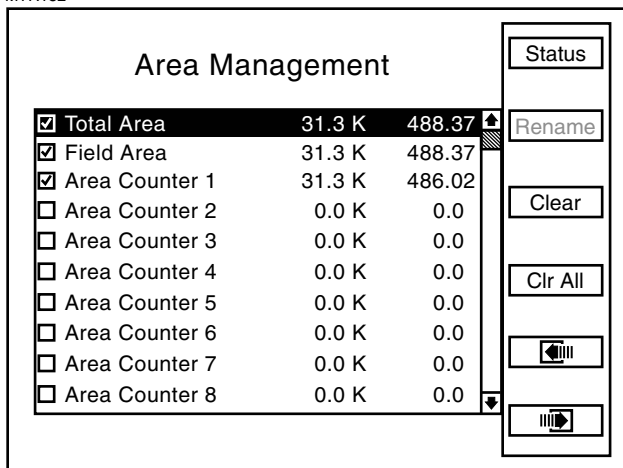
## AREA MANAGEMENT

There are 42 area counters: Total Area, Field Area and Area Counters 1 through 40. 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 40 may be cleared, started or stopped separate from each other.

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 display the “Area Management” screen, press the F6 key until the “Area Management” screen appears.

MTR182



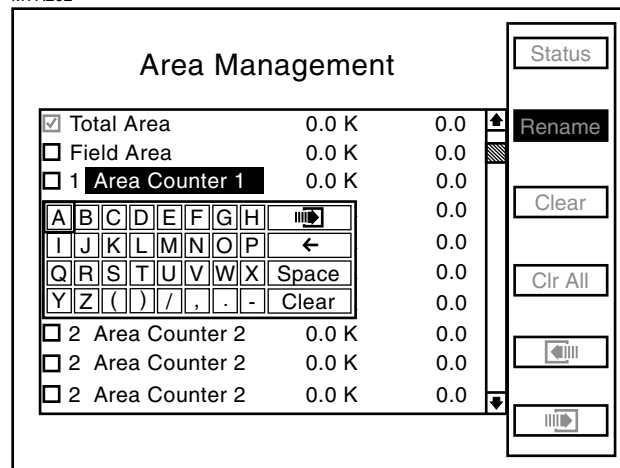
**NOTE: Total Area counter can never be disabled, but can be reset to zero (cleared).**

- The check mark (✓) in the box next to the name of the area counter indicates the area counter is enabled and accumulating area.

**EXAMPLE:** In the above illustration, 31.3K indicates average seed population per unit area (either acre or 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 (acre or hectare).

- Turn the knob or use the arrow keys to highlight the desired area counter.
- Press the F2 key next to Rename to name the area. A drop down keyboard will appear. Use the keyboard to enter area name, then press the knob or enter key to save information.

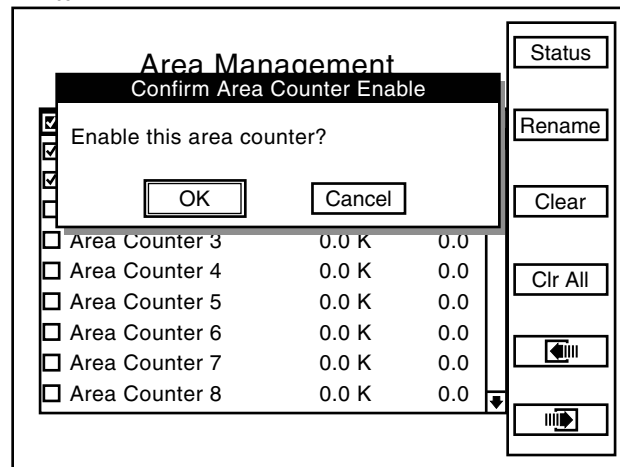
MTR202



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

### ENABLE AREA COUNTER

MTR183



To Enable a disabled area counter:

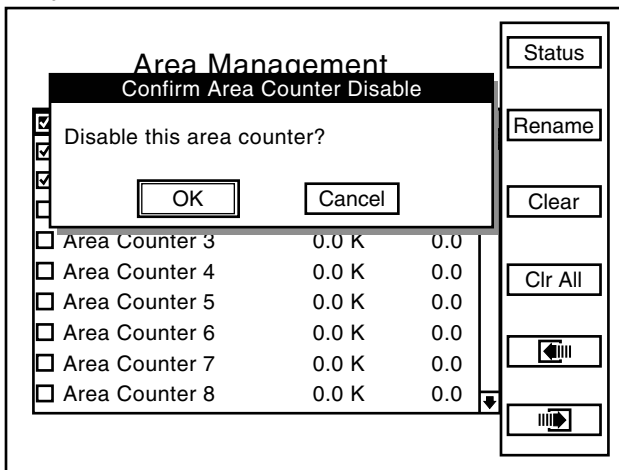
- Highlight the desired “Area Counter” by turning the rotary encoder knob or using the arrow keys.
- Press the knob or Enter key. A “Confirm Area Counter Enable” box will appear.
- Use the knob or arrow keys to highlight the “OK” button and press the knob or Enter key. The enabled “Area Counter” will then start accumulating area.

## DISABLE AREA COUNTER

All area counters may be disabled, except the Total Area Counter. To disable an enabled area counter:

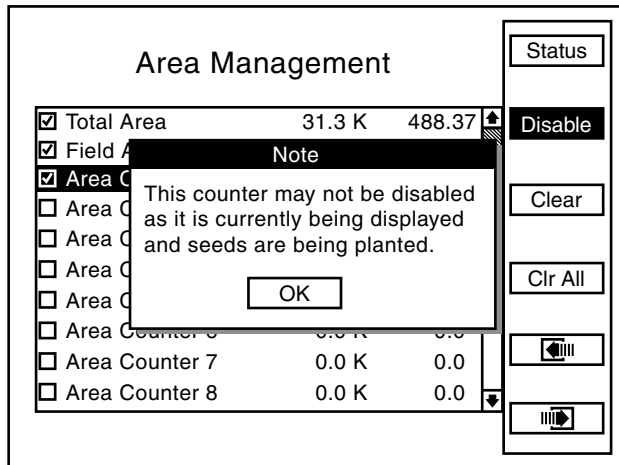
- Highlight the desired “Area Counter” by turning the rotary encoder knob or using the arrow keys.
- Press the knob or Enter key. A “Confirm Area Counter Disable” box will appear.
- Use the knob or arrow keys to highlight the “OK” button and press the knob or Enter key. The disabled “Area Counter” will no longer accumulate area.

MTR184

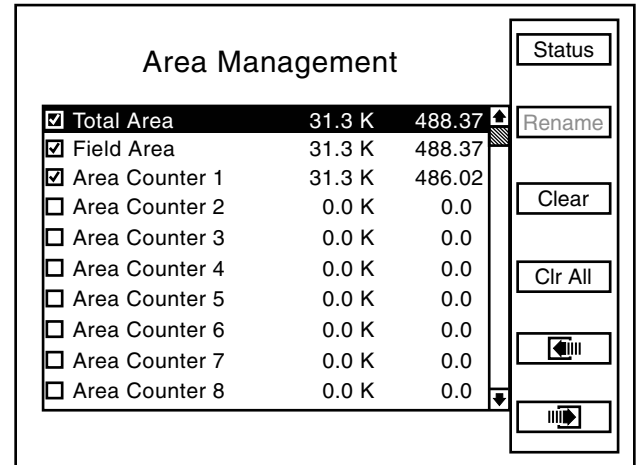


**NOTE: Attempts to disable an Area Counter that is planting will cause the following alarm.**

MTR185

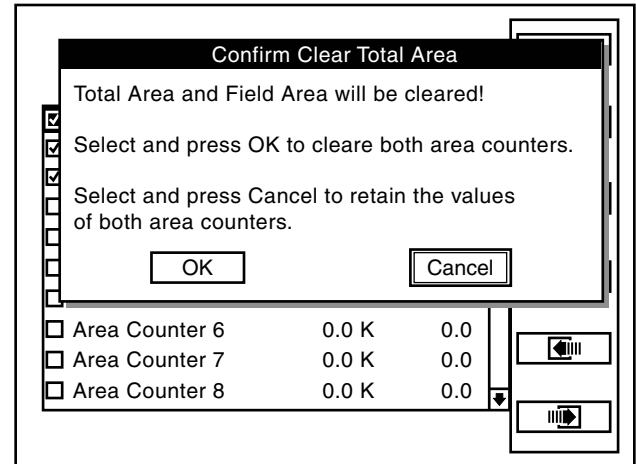


MTR186



**NOTE: If “Total area” is highlighted and the F3 key next to Clear is pressed the following request for confirmation will appear.**

MTR187



## CLEAR AREA COUNTER

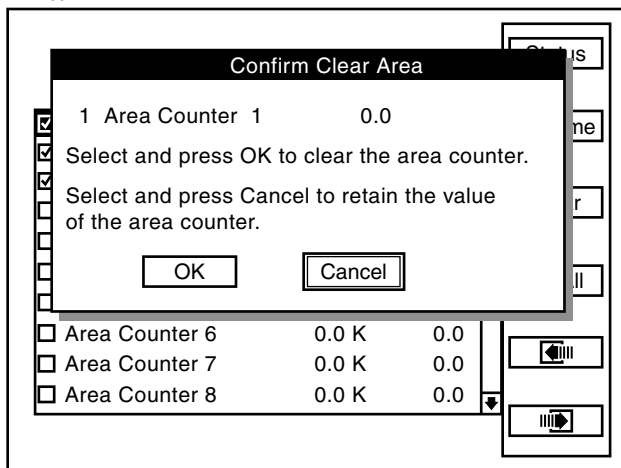
Total Area, Field Area and Area Counters 1 through 40 can be cleared, whether enabled or disabled. Clearing the “Total Area” counter forces the “Field Area” counter to be cleared. However, clearing an “Area Counter” including the “Field Area” clears only that individual counter.

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

### Clearing an Area Counter

- STEP 1** Turn the knob or use the arrow keys to highlight the desired area counter.
- STEP 2** Press the F3 key next to “Clear”. The request for confirmation shown below will appear.
- STEP 3** Turn the knob or use the arrow keys to highlight “OK” or “Cancel” and press the knob or Enter key to confirm the selection.

MTR188

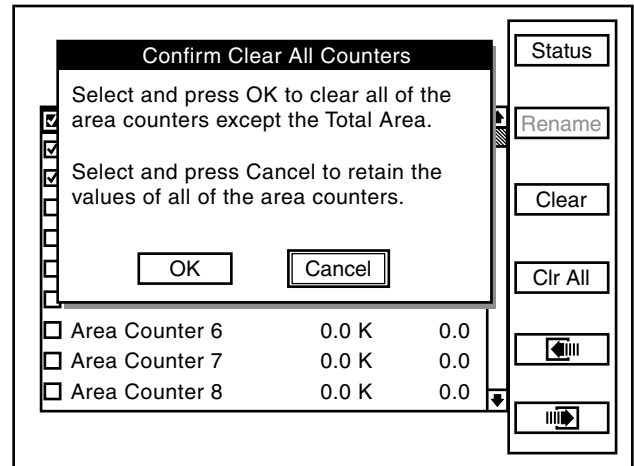


### Clearing All the Area Counters

**NOTE: This will clear all the area counters except the “Total Area Counter”**

- STEP 1** Press the F4 key next to “CLR All”. A request for confirmation will appear.
- STEP 2** Turn the knob or use the arrow keys to select either “OK” or “Cancel” and press the knob or Enter key to make confirm the selection.

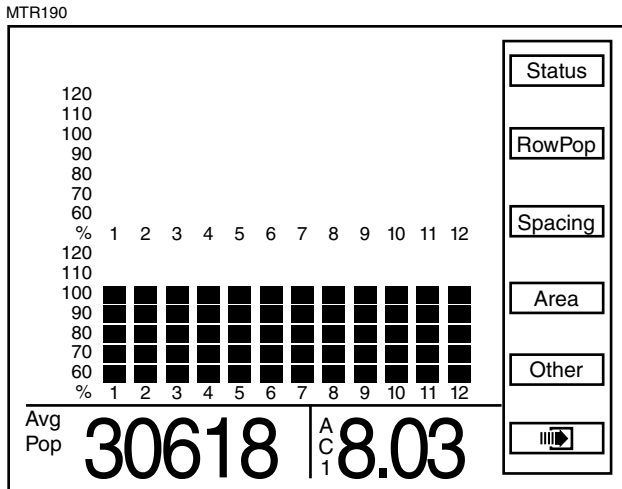
MTR189



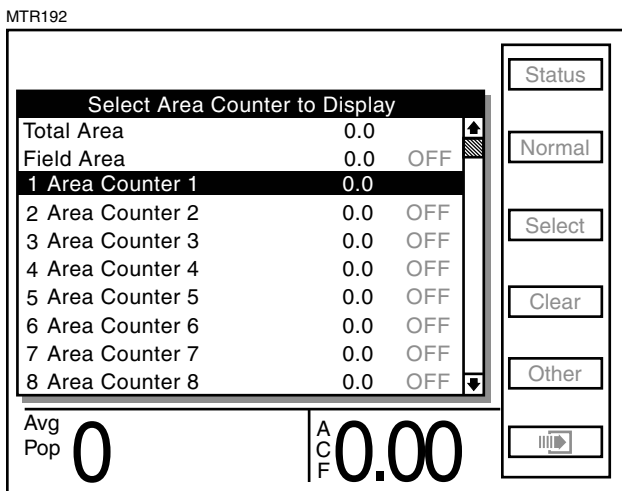


## AREA COUNTERS

**STEP 1** On the Planter Configuration screen press the F4 key next to “Area”.

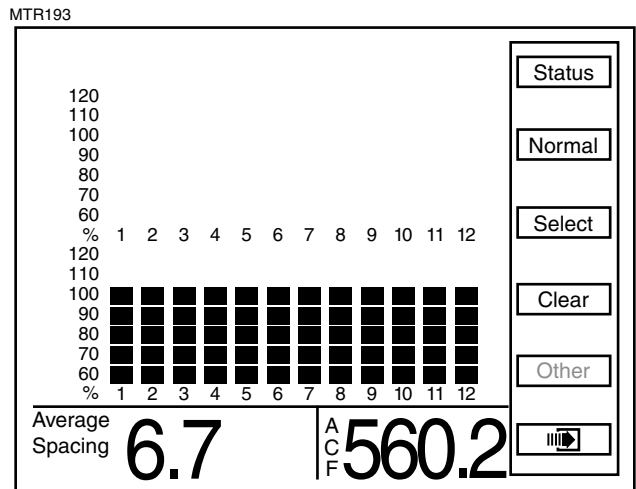


**STEP 2** Press the F3 key next to “Select” to display the list of area counters.



**STEP 3** Use the arrow keys to highlight the desired area counter to be displayed.

**STEP 4** Press the knob or Enter key and the “Planter Configuration” screen will be displayed.



**NOTE:** The abbreviation for the selected area counter will appear in the bottom R.H. corner of the screen. In the above illustration “ACF” stands for Area Counter Field.

## CLEARING FIELD AREA

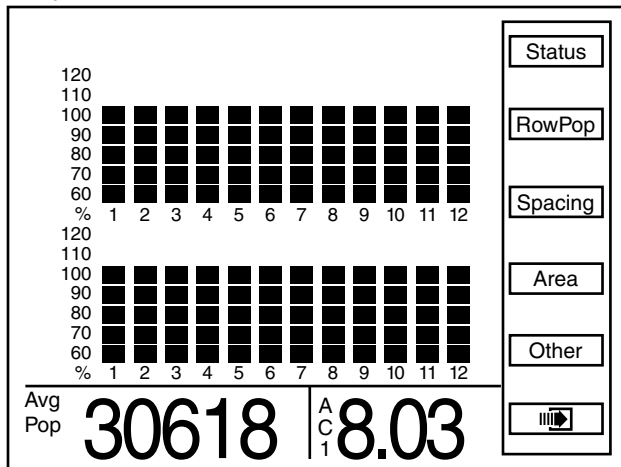
**STEP 1** To reset the counter, display the Plant screen.

**NOTE:** If “Area” is not displayed next to F4, press F2 next to “Normal”.

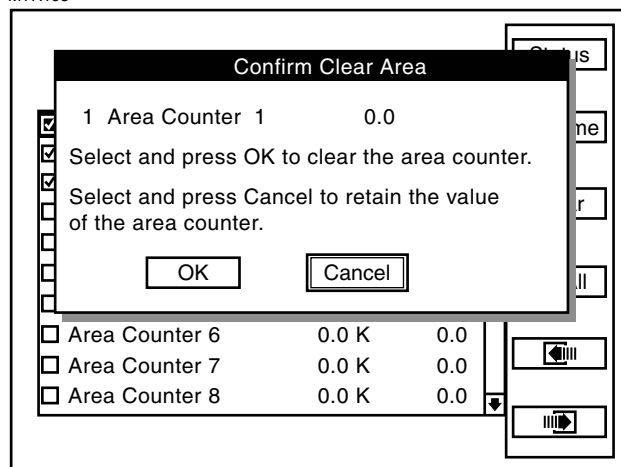
**STEP 2** Press the F4 key next to Area then press the F4 key next to Clear, a dialog box will appear requesting confirmation to clear.

**STEP 3** Highlight “OK” or “Cancel” by turning the knob or using the arrow keys. Press the knob or Enter key to verify the selection.

MTR194



MTR195



**NOTE:** Only the displayed area counter can be cleared.

## REPLACING FAULTY SENSOR(S)

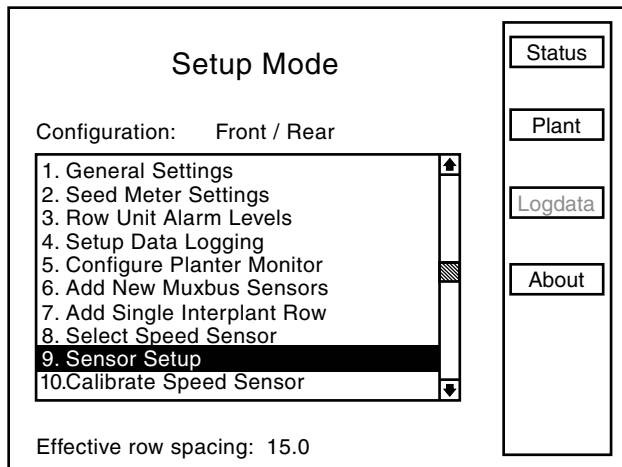
**NOTE: The monitor will beep twice when the new sensor(s) is learned.**

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

**STEP 2** Highlight "1. Setup Mode" by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

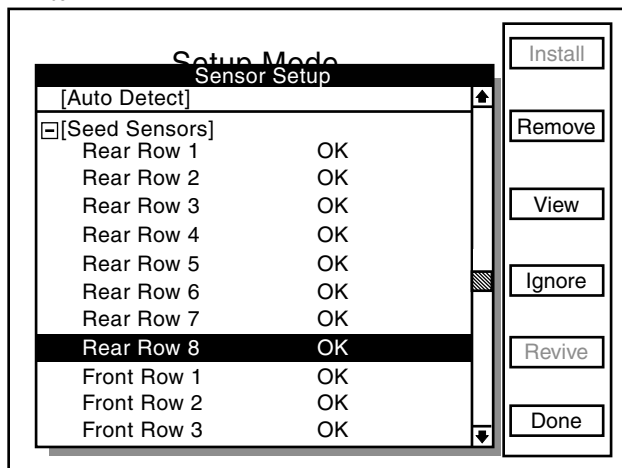
**STEP 3** Highlight "9. Sensor Setup" by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR200



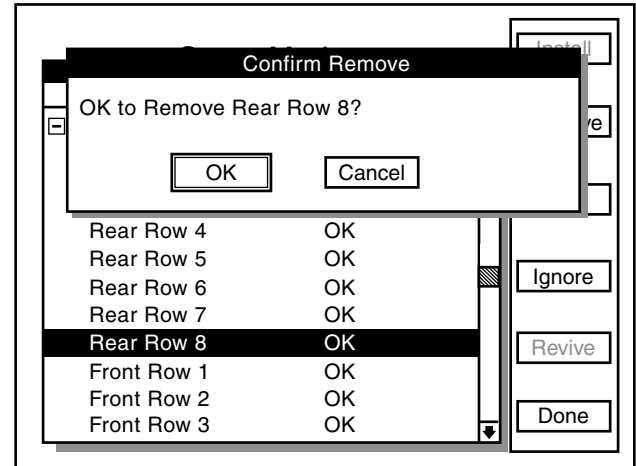
**STEP 4** Turn the knob or use the arrow keys to highlight the faulty sensor and press the F2 key next to Remove.

MTR203

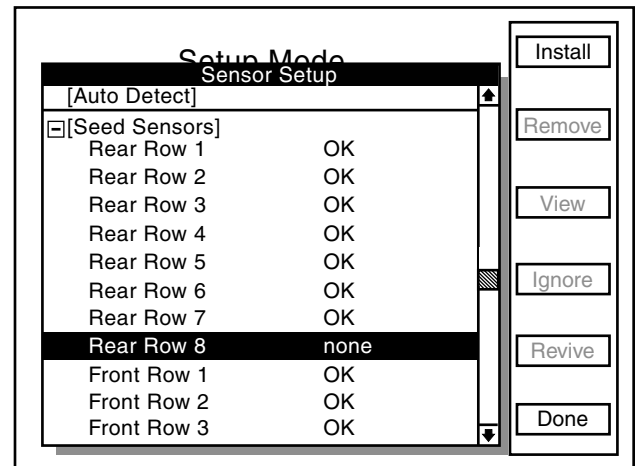


**STEP 5** The following message will appear. Select OK to confirm by pressing the knob or ENTER key. Select Cancel to exit.

MTR204



MTR205



**STEP 6** Unplug the sensor and plug in a new sensor. Press F1 key next to Install.

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

Repeat STEPS 1 through 6 for each faulty sensor being replaced.

**NOTE: Highlighting a sensor and pressing the F4 key next to View displays additional information for troubleshooting a problem. If a faulty sensor has been ignored it may be highlighted in the list of sensors, press the F3 key next to Revive. The monitor will try to communicate with the sensor. If successful, "OK" will appear next to the sensor.**

## PLANTER MONITOR 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

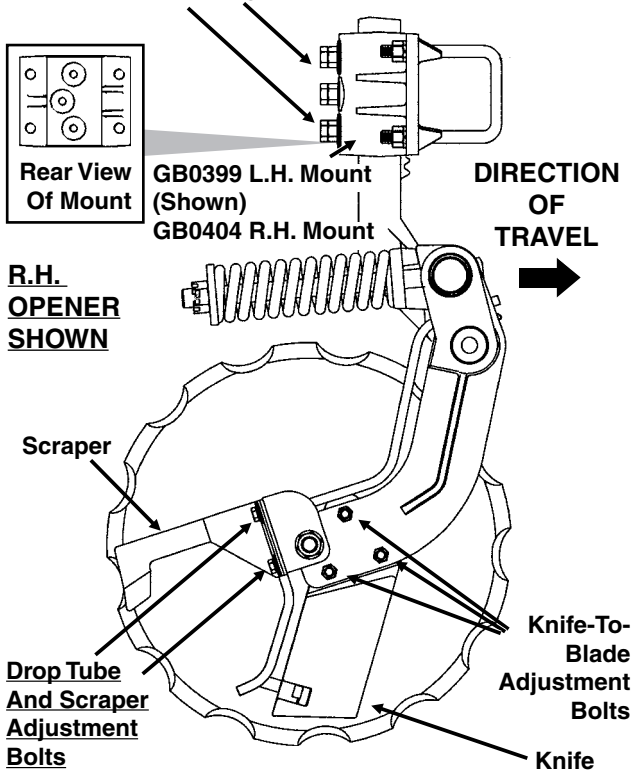
## NOTCHED SINGLE DISC FERTILIZER OPENER

The notched single disc fertilizer opener is designed for use in minimum and no till planting conditions. Placement of fertilizer with the 16 3/4" diameter notched single disc fertilizer opener is recommended at 2 1/2" - 3" from the row. The opener is designed to hold the blade at a set-angle so the knife and drop tube operate in the shadow of the blade. **Never locate the opener to place fertilizer closer than 2".**

**⚠ WARNING: Spring under pressure. DO NOT disassemble.**

(B0297/A12422)

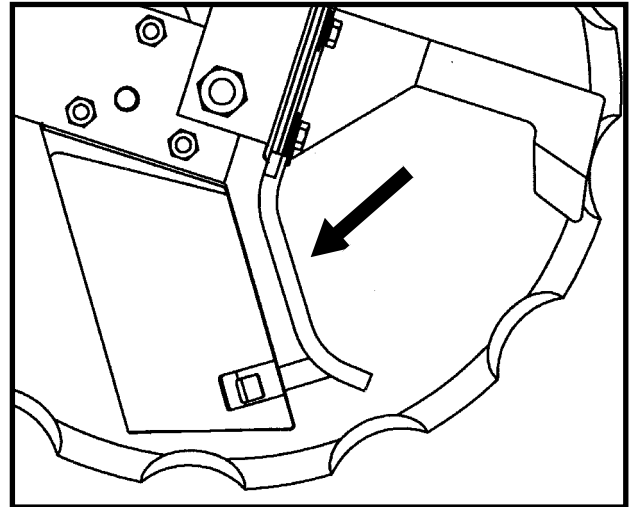
**Depth Adjustment Cap Screws - Recommended Maximum Operating Depth 4" (Middle Cap Screw Holds Blade Angle But Must Be Loosened To Adjust Depth And Tightened First To Set Blade Angle)**



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

Using the slotted mounting holes in the drop tube mount, **adjust fertilizer drop tube** behind the knife so it is protected from soil contact and wear. The liquid drop tube should be adjusted 1/4"-3/8" from the opener blade while keeping it behind the knife. Insert a flat bladed pry bar between the knife and drop tube just above the drop tube tab as shown below. Bend the tube inward toward the disc blade to obtain the desired 1/4"-3/8" adjustment.

D01040702



**NOTE: Adjusting the liquid drop tube will ensure it is out of the path of the soil flow across the knife. Drop tube and tab will wear quickly if not adjusted correctly.**

**Adjust scraper** to just touch the opener blade. As the mounting hardware is tightened, the scraper is drawn tighter to the blade. After adjustment, rotate opener blade to be sure blade will turn by hand with slight resistance, but will not coast or freewheel.

**Adjust blade depth** on each row using the cap screws and jam nuts located on the opener mount. The blade can be adjusted to allow a maximum 4" blade depth. Check fertilizer hose clearance (If Applicable) after adjusting opener depth. Torque cap screws and jam nuts to 57 ft. lbs.

# MACHINE OPERATION

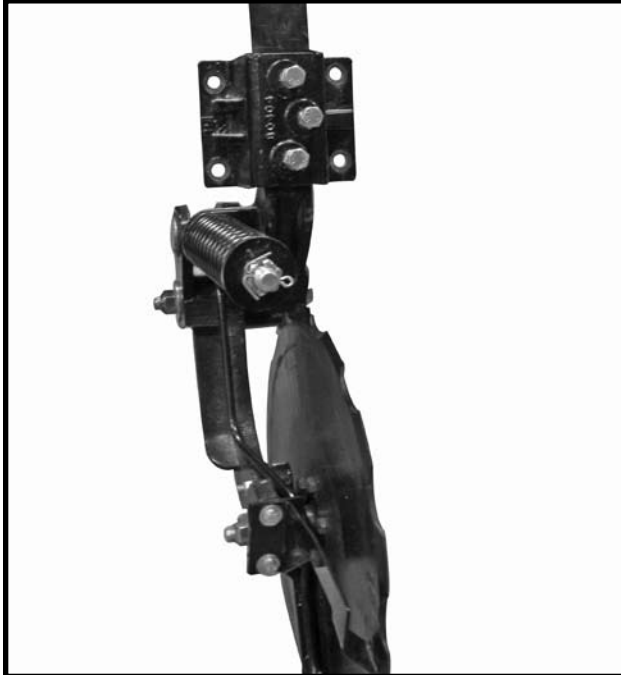
**NOTE:** The blade cuts through the soil at an angle relative to the direction of travel. For this reason and to ensure proper operation, the cast mount should be oriented so the front and bottom of the blade tilt towards the knife.

D11200805a



L.H. Opener (B0399)

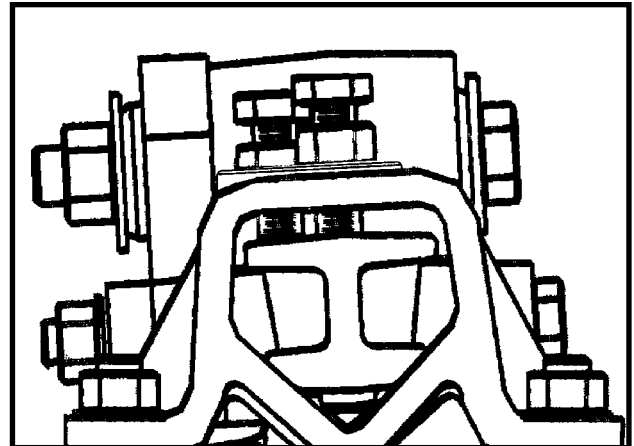
D11200808a



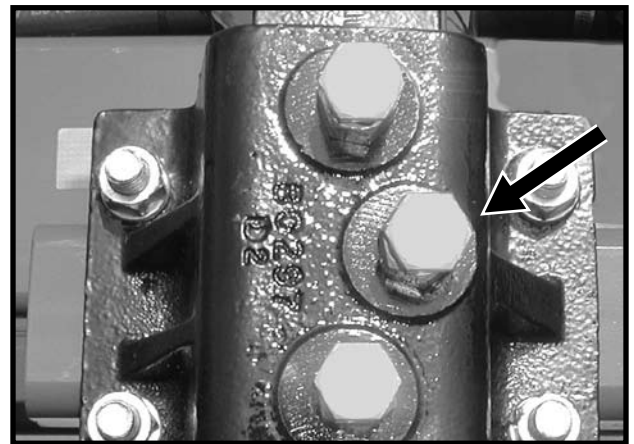
R.H. Opener (B0404)

**NOTE:** L.H. and R.H. openers are determined by what side the blade is on, by standing behind the planter in the direction of travel.

FRTZ296



D070103100



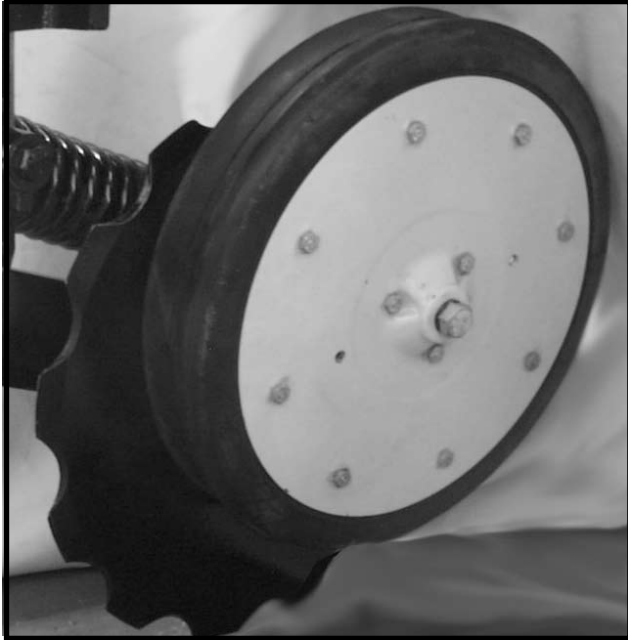
**NOTE:** Recommended maximum operating depth is 4". To adjust depth: (a) Loosen depth adjustment cap screws. (b) Adjust depth to desired setting. (c) Tighten upper and lower cap screws slightly to hold opener arm in place. (d) Tighten middle cap screw to set the opener arm angle. (e) Tighten upper and lower cap screws and all jam nuts.

# MACHINE OPERATION

---

## DEPTH/GAUGE WHEEL ATTACHMENT FOR NOTCHED SINGLE DISC FERTILIZER OPENER

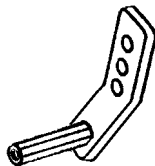
D061101202a



The depth/gauge wheel attachment for the notched single disc fertilizer opener is designed for use in situations where additional gauging is required to maintain desired fertilizer opener depth. The depth/gauge wheel is attached to the notched single disc fertilizer opener using a mounting block fastened to the pivot arm using  $\frac{5}{8}$ " hardware through the disc blade hub w/bearing.

Depth adjustment is made by using the adjustment holes in the depth/gauge wheel mounting block. Moving the depth/gauge wheel increases/decreases depth in approximate 1" increments in relation to the blade depth setting made at the vertical mounting post.

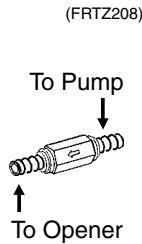
(FRTZ256a)



# MACHINE OPERATION

## LIQUID FERTILIZER ATTACHMENT

**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 valves also eliminate the need for anti-siphon loops if the valves are installed as close as possible to the fertilizer opener drop tubes.



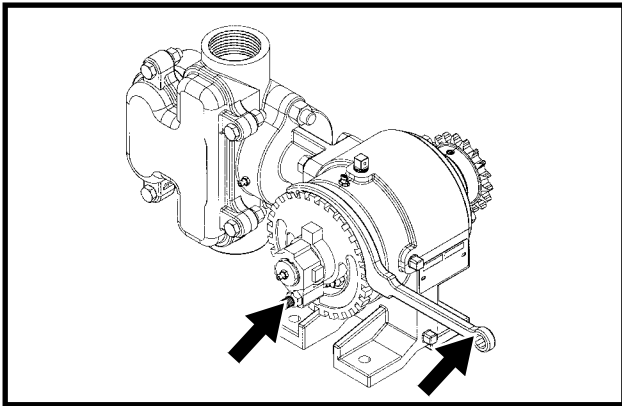
## PISTON PUMP

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.

(A12330b)



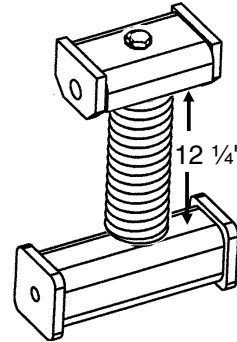
The operator and instruction manual shipped with the pump and flow divider should be kept and stored with this manual for future reference.

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

## PISTON PUMP GROUND DRIVE WHEEL SPRING ADJUSTMENT

Initial spring tension of the down pressure spring on the piston pump ground drive wheel is set leaving  $12\frac{1}{4}$ " between the bottom of the mounting plate and the plug on top of the spring. This dimension is taken with the planter in raised position (tire not contacting the ground). Further adjustment can be made to fit conditions.

(TWL219tt)



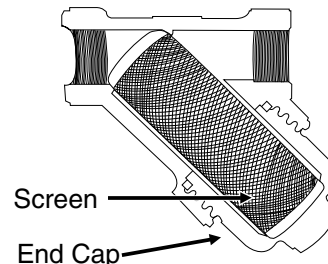
**NOTE:** The piston pump ground drive wheel assembly is designed to allow the assembly to be locked in raised position when not in use. Remove the two cap screws that attach the upper end of the spring to the spring mount. Reattach the spring using the upper holes in the spring mount. Reverse procedure to reset for field use.

## CLEANING

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

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

(INS220)



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



# MACHINE OPERATION

---

## LIQUID FERTILIZER PISTON PUMP APPLICATION RATES GALLONS PER ACRE

Applies To Model NGP-7055 Pump With 18 Tooth Sprocket  
(Planter Equipped With Two Piston Pumps)

Pump Setting	1	2	3	4	5	6	7	8	9	10
36 Row 30"	2.5	4.9	7.3	9.8	12.2	14.6	17.0	19.5	21.9	24.4

Above chart is for planters equipped with 7.60" x 15" drive wheel, based on 91" forward travel per wheel revolution, 48 tooth drive sprocket and 18 tooth driven sprocket on metering pump. 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 rate at desired rate.

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

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

# MACHINE OPERATION

## REAR TRAILER HITCH

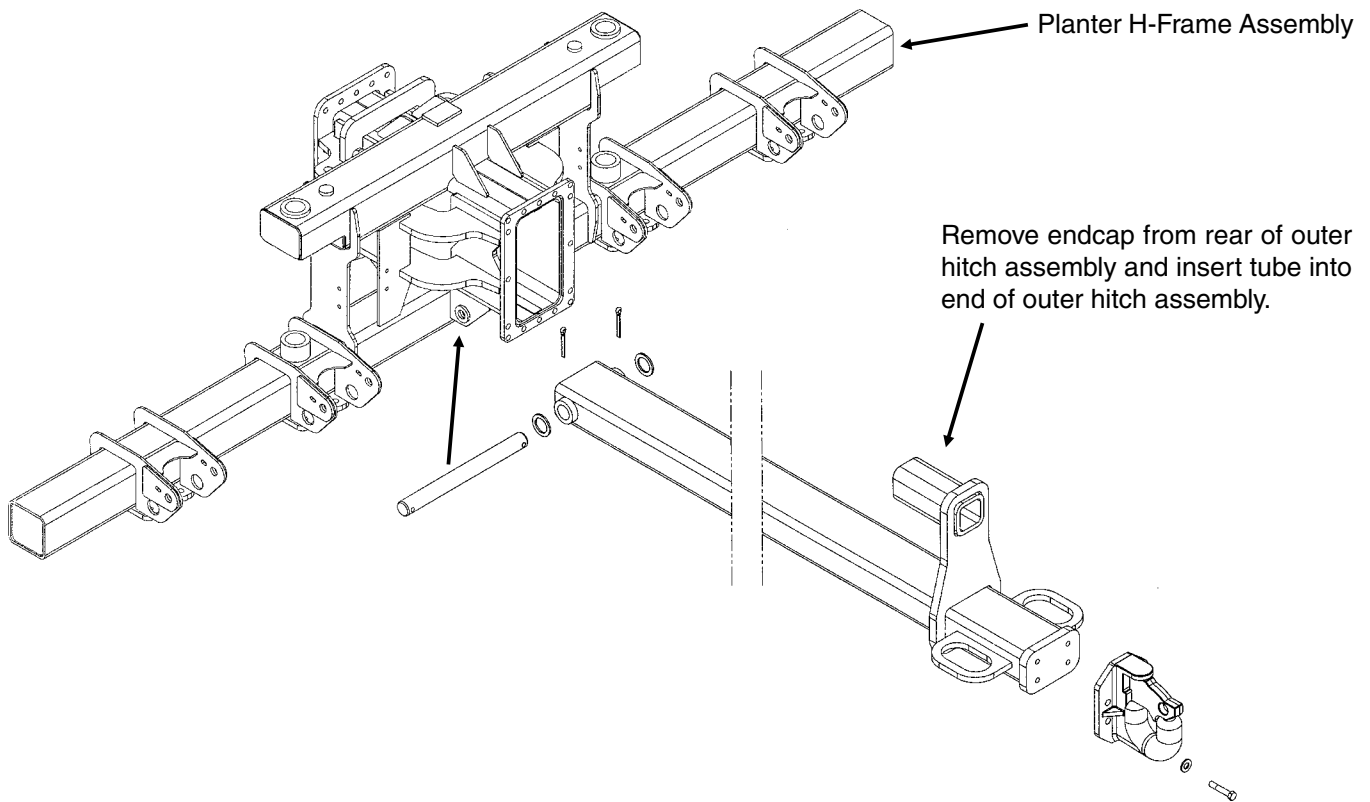
The Rear Trailer Hitch is used to tow a 3 or 4 wheel wagon behind the planter. Any hoses routed to the rear trailer hitch should follow hydraulic hose routings on the planter to allow the planter to be raised and folded to and from the transport position without stretching the hoses.

(A11210/FWD159)

**IMPORTANT:** Maximum allowable hitch weight is 200 lbs. Gross towing weight should not exceed 16,000 lbs. or the equivalent of a loaded 1000 gallon tank and running gear.

**IMPORTANT:** Connection points are provided on the rear trailer hitch for connection of customer-supplied transport safety chains.

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



**Note:** Tank hitch length must be long enough to accommodate when hitch raises as the planter is folded to transport position.

**Note:** The lower section of the ladder at the rear of the SDS tanks can not be folded down when using the rear trailer hitch. (Ladder applicable to 3800 SDS only.)

# MACHINE OPERATION

## 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 federal, state/provincial and local regulations.

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

## 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 the 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”, “Row Marker Speed Adjustment” and “Row Marker Operation”.
- Check for proper application rates and placement of granular chemicals on **all** rows. See “Checking Granular Chemical Application Rate”.
- Check for desired depth placement and seed population on **all** rows. See “Checking Seed Population”.
- Check for proper application rates of fertilizer on **all** rows. See “Fertilizer Application Rate Chart”.

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

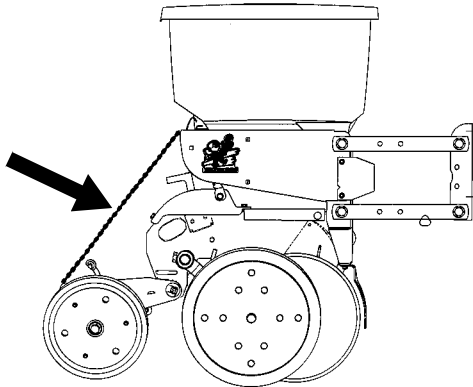
- Hoses And Fittings
- Bolts And Nuts
- Cotter Pins And Spring Pins
- Drive Chain Alignment

# MACHINE OPERATION

## CHECKING SEED POPULATION

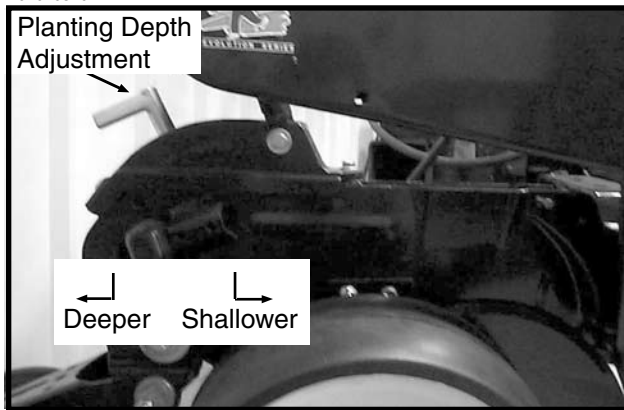
1. Tie up one or more sets of closing wheels by running a chain or rubber tarp strap between the hopper support panel and closing wheels. It may be necessary to decrease closing wheel arm spring tension.

(RU113b)



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	30" Row Width
$\frac{1}{1000}$	17' 5"

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

4. Count seeds in measured distance.
5. Multiply the number of seeds placed in  $\frac{1}{1000}$  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 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(s) for proper selection.

Second, check for seed meter performance. 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 Troubleshooting" in the Seed Meter Operation/Maintenance section of this manual.

# MACHINE OPERATION

## Determining Pounds Per Acre (Brush-Type Seed Meter)

To determine pounds per acre:

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

To determine bushels per acre:

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

The unit weight of:

- 1 Bushel Soybeans = 60 Pounds
- 1 Bushel Milo/Grain Sorghum = 56 Pounds
- 1 Bushel Cotton = 32 Pounds

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

- 2,600 seeds per pound for medium size soybeans
- 15,000 seeds per pound for medium size milo/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 Troubleshooting" in the Seed Meter Operation/Maintenance section of this manual.

## 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
30"	0.83

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

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

### Metering Gate

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

# MACHINE OPERATION

---

**This page left blank intentionally.**

# SEED METER OPERATION/MAINTENANCE

## GENERAL PLANTING RATE INFORMATION

These planting rate charts are applicable to KINZE® Model 3800 and 3800 SDS EdgeVac® Forward 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: 15, 19 and 38 tooth drive sprockets are NOT applicable to all rate charts. Check chart titles at top of each chart to ensure proper rate chart is selected. 38 tooth sprockets require use of 168 pitch No. 40 chains. 15 and 19 tooth sprockets require use of 160 pitch No. 40 chains.**

**NOTE: When using the 54 cell sunflower disc, make changes at contact wheel assembly using sprockets, chains, hex shafts, etc. supplied in G1K472 Sunflower Rate Reduction Kit. Each kit contains components for two contact wheel assemblies. Order kits according to number of contact wheel assemblies on the planter. See “Contact Wheel Drive Sprockets” in Machine Operation section.**

D070699113a

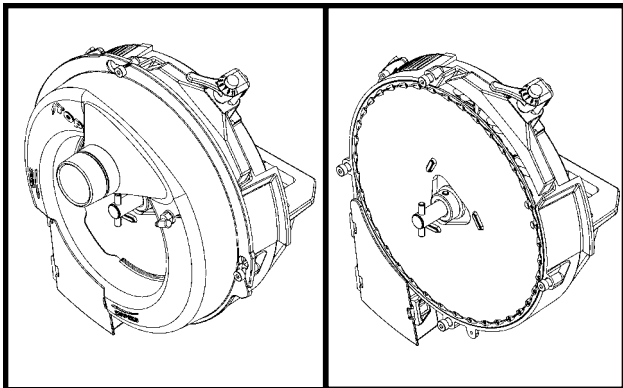


**NOTE: Contact wheel drive sprocket referenced at top of each rate chart.**

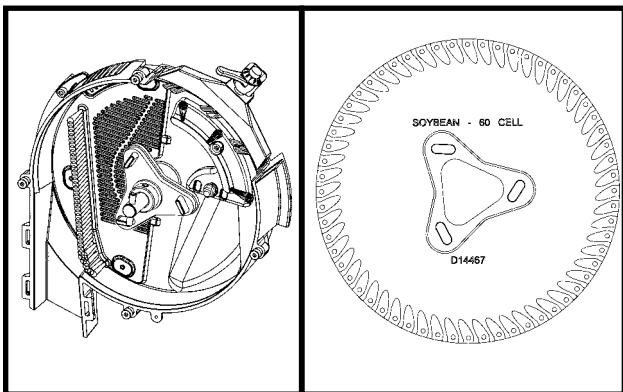
# SEED METER OPERATION/MAINTENANCE

## SEED METER

(METR71/METR71a)

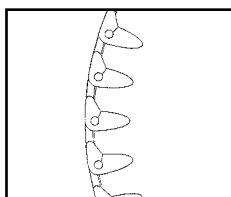


(METR70/D14467a)

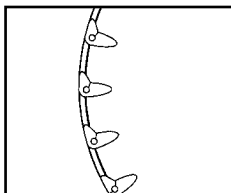


The seed discs below and at right are available for use with the KINZE® EdgeVac® Seed Metering System:

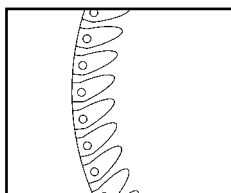
**Corn/Popcorn:** 39 cell. For all seed corn grades from 35 to 70 pounds per 80,000 kernel count unit. Popcorn seed size range from 2210 to 4200 seeds per pound. Also used for No. 1 sunflower seeds. (*Light blue color-coded.*) (D14465)



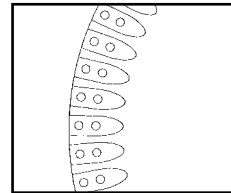
**Low-Rate Corn/Popcorn:** 24 cell. For all seed corn grades from 35 to 70 pounds per 80,000 kernel count unit. Popcorn seed size range from 2210 to 4200 seeds per pound. Also used for No. 1 sunflower seeds. (*Light green color-coded.*) (D16734a)



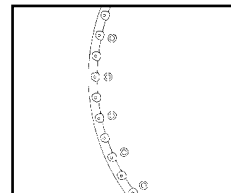
**Soybean:** 60 cell. Seed size range from 2200 to 4000 seeds per pound. (*Black color-coded.*) (D14467a)



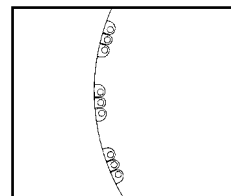
**Soybean, High-Rate:** 120 cell. Seed size range from 2200 to 4000 seeds per pound. (*Dark blue color-coded.*) (D14468a)



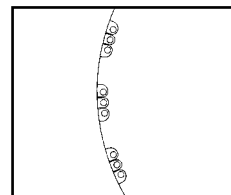
**Milo/Grain Sorghum:** 60 cell. Seed size range from 10,000 to 20,000 seeds per pound. (*Yellow color-coded.*) (D17050)



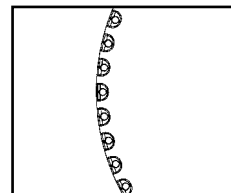
**Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell):** 20 cell. Cotton seed size range from 3800 to 4400 seeds per pound. (*Brown color-coded.*) (D17187)



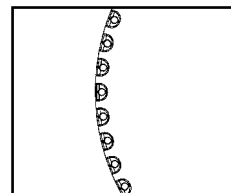
**Small Hill-Drop Cotton, Acid-Delinted (3 Seeds Per Cell):** 20 cell. Cotton seed size range from 4200 to 5200 seeds per pound. (*Grey color-coded.*) (D17187)



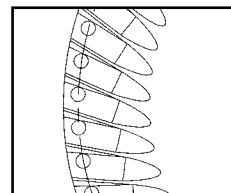
**Cotton, Acid-Delinted/Small Dry Edible Bean:** 54 cell. Cotton seed size range from 3800 to 4400 seeds per pound. Dry edible bean seed size range from 1200 to 2500 seeds per pound. (*Dark green color-coded.*) (D17186)



**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)



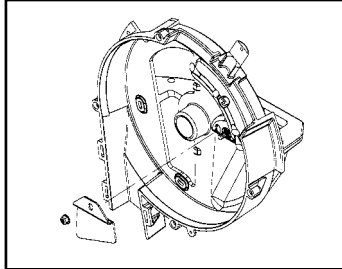
Install the selected seed disc. Position the vacuum cover on the meter by aligning the keyhole slots over the bolt heads. Push the cover on the meter and turn counter clockwise to lock in place. **See following page for additional components required with specific seed discs.**



# 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)

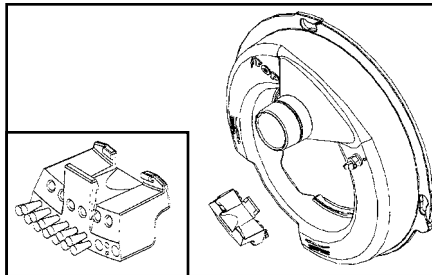


## **SEED BAFFLE**

- 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)



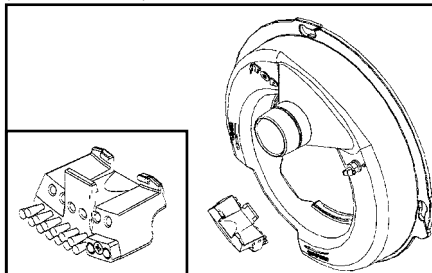
## **CLEANOUT BRUSH**

- 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.**

(A12154a/A12133a)



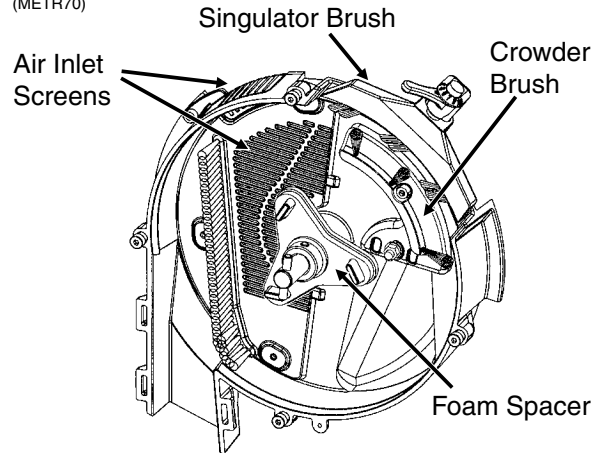
## **CLEANOUT BRUSH W/BALL-TYPE EJECTOR**

- 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.**

**NOTE:** Foreign material in seed disc orifices, such as seed chips, hulls, stems, etc., may affect seed delivery. Clean seed is required to ensure accurate seed metering from the vacuum seed meter. Seed discs should be removed daily to check for buildup of foreign material in the seed disc orifices.

(METR70)

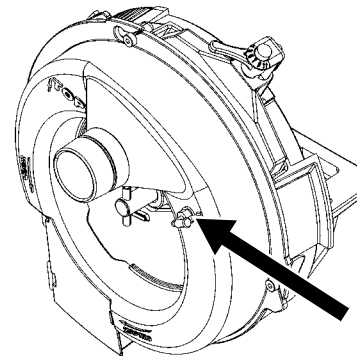


The crowder brush aids in the singulation of small flat seeds by (a) crowding seeds to the outer perimeter of the seed disc and (b) orienting seeds to allow the singulator brush to be more effective.

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. Frequency of monitor seed tube cleaning may be affected 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 amount from  $\frac{1}{4}$  cup to  $\frac{1}{2}$  cup.) 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 hopper is filled. Use 1 cup per hopper fill for 12 row machines and  $1 \frac{1}{2}$  cup per hopper fill for 16 row machines. 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  $4 \frac{1}{4}$  cups of talc and mix thoroughly. Finish filling bulk seed hopper, add another  $4 \frac{1}{4}$  cups of talc. (For sunflowers, double the amount of talc.) 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 auger bristles, seed discs and/or meter brushes.

# SEED METER OPERATION/MAINTENANCE

---

## 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 it's right side.

Disassemble seed meter by rotating vacuum cover clockwise to align key hole 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

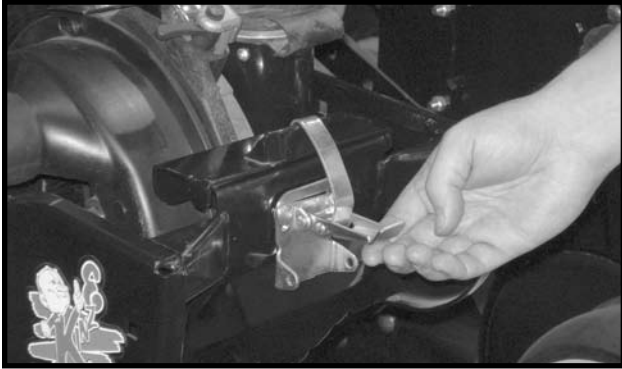
## SEED METER CLEANOUT (SDS Seed Delivery System)

To maintain genetic purity, thorough seed meter cleanout is important.

D011006301

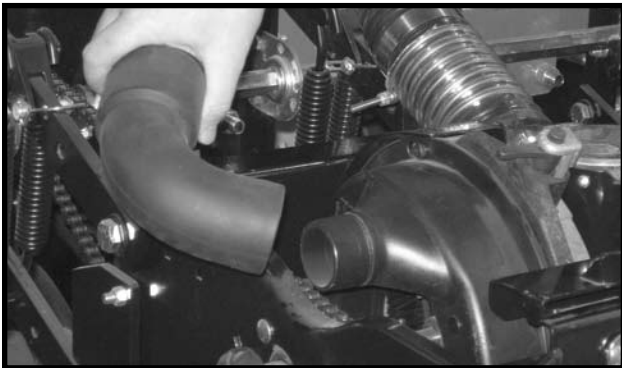


D011006303



To clean the seed meter, remove locking pin and release latch that secures seed meter and mount.

D011006304

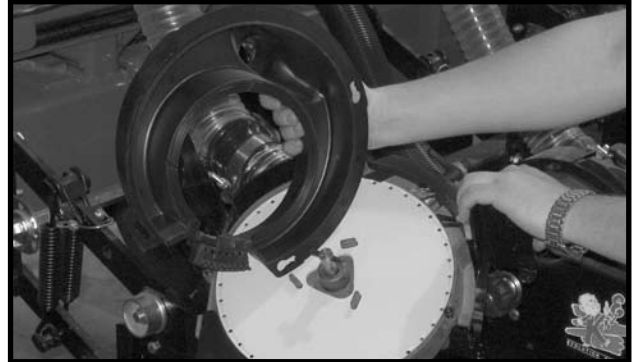


D011006305



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  
15 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
20,576	15	25	4 to 6	10.2
21,592	17	27	4 to 6	9.7
22,423	17	26	4 to 6	9.3
23,320	17	25	4 to 6	9.0
24,133	19	27	4 to 6	8.7
25,061	19	26	4 to 6	8.3
25,348	17	23	4 to 6	8.2
26,063	19	25	4 to 6	8.0
27,074	15	19	4 to 6	7.7
27,149	19	24	4 to 6	7.7
28,330	19	23	4 to 6	7.4
29,213	23	27	4 to 6	7.2
30,259	15	17	4 to 6	6.9
30,337	23	26	4 to 6	6.9
30,483	24	27	4 to 6	6.9
30,684	17	19	4 to 6	6.8
31,550	23	25	4 to 6	6.6
31,656	24	26	4 to 6	6.6
31,753	25	27	4 to 6	6.6
32,007	14	15	4 to 6	6.5
32,865	23	24	4 to 6	6.4
32,922	24	25	4 to 6	6.4
32,975	25	26	4 to 6	6.3
33,024	26	27	4 to 6	6.3
34,294	23	23	4 to 6	6.1
35,613	27	26	4 to 6	5.9
35,665	26	25	4 to 6	5.9
35,723	25	24	4 to 6	5.9
35,785	24	23	4 to 6	5.8
36,743	15	14	4 to 6	5.7
37,037	27	25	4 to 6	5.6
37,152	26	24	4 to 6	5.6
37,276	25	23	4 to 6	5.6
38,328	19	17	4 to 6	5.5
38,580	27	24	4 to 6	5.4
38,767	26	23	4 to 6	5.4
38,866	17	15	4 to 6	5.4
40,258	27	23	4 to 6	5.2
41,513	23	19	4 to 6	5.0
41,642	17	14	4 to 6	5.0
43,318	24	19	4 to 6	4.8
43,439	19	15	4 to 6	4.8
45,123	25	19	4 to 6	4.6
46,397	23	17	4 to 6	4.5
46,541	19	14	4 to 6	4.5
46,928	26	19	4 to 6	4.5
48,415	24	17	4 to 6	4.3
48,733	27	19	4 to 6	4.3
50,432	25	17	4 to 6	4.1
52,449	26	17	4 to 6	4.0
52,584	23	15	4 to 6	4.0
54,466	27	17	4 to 6	3.8
54,870	24	15	4 to 6	3.8
56,340	23	14	4 to 6	3.7
57,156	25	15	4 to 6	3.7

**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 CORN/POPCORN 39 CELL DISC  
19 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
26,063	15	25	4 to 6	8.0
27,350	17	27	4 to 6	7.6
28,402	17	26	4 to 6	7.4
29,538	17	25	4 to 6	7.1
30,568	19	27	4 to 6	6.8
31,744	19	26	4 to 6	6.6
32,107	17	23	4 to 6	6.5
33,013	19	25	4 to 6	6.3
34,294	15	19	4 to 6	6.1
34,389	19	24	4 to 6	6.1
35,884	19	23	4 to 6	5.8
37,003	23	27	4 to 6	5.7
38,328	15	17	4 to 6	5.5
38,427	23	26	4 to 6	5.4
38,612	24	27	4 to 6	5.4
38,866	17	19	4 to 6	5.4
39,964	23	25	4 to 6	5.2
40,097	24	26	4 to 6	5.2
40,221	25	27	4 to 6	5.2
40,543	14	15	4 to 6	5.2
41,629	23	24	4 to 6	5.0
41,701	24	25	4 to 6	5.0
41,768	25	26	4 to 6	5.0
41,830	26	27	4 to 6	5.0
43,439	23	23	4 to 6	4.8
45,109	27	26	4 to 6	4.6
45,176	26	25	4 to 6	4.6
45,249	25	24	4 to 6	4.6
45,327	24	23	4 to 6	4.6
46,541	15	14	4 to 6	4.5
46,914	27	25	4 to 6	4.5
47,059	26	24	4 to 6	4.4
47,216	25	23	4 to 6	4.4
48,549	19	17	4 to 6	4.3
48,869	27	24	4 to 6	4.3
49,105	26	23	4 to 6	4.3
49,231	17	15	4 to 6	4.2
50,993	27	23	4 to 6	4.1
52,584	23	19	4 to 6	4.0
52,747	17	14	4 to 6	4.0
54,870	24	19	4 to 6	3.8
55,022	19	15	4 to 6	3.8
57,156	25	19	4 to 6	3.7
58,770	23	17	4 to 6	3.6
58,953	19	14	4 to 6	3.5
59,442	26	19	4 to 6	3.5
61,325	24	17	4 to 6	3.4
61,729	27	19	4 to 6	3.4
63,880	25	17	4 to 6	3.3
66,436	26	17	4 to 6	3.1
66,606	23	15	4 to 6	3.1
68,991	27	17	4 to 6	3.0
69,502	24	15	4 to 6	3.0
71,364	23	14	4 to 6	2.9
72,398	25	15	4 to 6	2.9

**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 15 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1) APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Speed In Inches
	Drive	Driven		
12,662	15	25	4 to 6	16.5
13,288	17	27	4 to 6	15.7
13,799	17	26	4 to 6	15.2
14,351	17	25	4 to 6	14.6
14,851	19	27	4 to 6	14.1
15,422	19	26	4 to 6	13.6
15,598	17	23	4 to 6	13.4
16,039	19	25	4 to 6	13.0
16,661	15	19	4 to 6	12.5
16,707	19	24	4 to 6	12.5
17,434	19	23	4 to 6	12.0
17,977	23	27	4 to 6	11.6
18,621	15	17	4 to 6	11.2
18,669	23	26	4 to 6	11.2
18,759	24	27	4 to 6	11.1
18,882	17	19	4 to 6	11.1
19,416	23	25	4 to 6	10.8
19,480	24	26	4 to 6	10.7
19,541	25	27	4 to 6	10.7
19,697	14	15	4 to 6	10.6
20,224	23	24	4 to 6	10.3
20,260	24	25	4 to 6	10.3
20,292	25	26	4 to 6	10.3
20,322	26	27	4 to 6	10.3
21,104	23	23	4 to 6	9.9
21,916	27	26	4 to 6	9.5
21,948	26	25	4 to 6	9.5
21,983	25	24	4 to 6	9.5
22,021	24	23	4 to 6	9.5
22,611	15	14	4 to 6	9.2
22,792	27	25	4 to 6	9.2
22,862	26	24	4 to 6	9.1
22,939	25	23	4 to 6	9.1
23,587	19	17	4 to 6	8.9
23,742	27	24	4 to 6	8.8
23,856	26	23	4 to 6	8.8
23,918	17	15	4 to 6	8.7
24,774	27	23	4 to 6	8.4
25,547	23	19	4 to 6	8.2
25,626	17	14	4 to 6	8.2
26,657	24	19	4 to 6	7.8
26,731	19	15	4 to 6	7.8
27,768	25	19	4 to 6	7.5
28,552	23	17	4 to 6	7.3
28,641	19	14	4 to 6	7.3
28,879	26	19	4 to 6	7.2
29,794	24	17	4 to 6	7.0
29,990	27	19	4 to 6	7.0
31,035	25	17	4 to 6	6.7
32,276	26	17	4 to 6	6.5
32,359	23	15	4 to 6	6.5
33,518	27	17	4 to 6	6.2
33,766	24	15	4 to 6	6.2
34,671	23	14	4 to 6	6.0
35,173	25	15	4 to 6	5.9

**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  
19 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE HILLS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
16,039	15	25	4 to 6	13.0
16,831	17	27	4 to 6	12.4
17,478	17	26	4 to 6	12.0
18,177	17	25	4 to 6	11.5
18,811	19	27	4 to 6	11.1
19,535	19	26	4 to 6	10.7
19,758	17	23	4 to 6	10.6
20,316	19	25	4 to 6	10.3
21,104	15	19	4 to 6	9.9
21,162	19	24	4 to 6	9.9
22,083	19	23	4 to 6	9.5
22,771	23	27	4 to 6	9.2
23,587	15	17	4 to 6	8.9
23,647	23	26	4 to 6	8.8
23,761	24	27	4 to 6	8.8
23,918	17	19	4 to 6	8.7
24,593	23	25	4 to 6	8.5
24,675	24	26	4 to 6	8.5
24,751	25	27	4 to 6	8.4
24,949	14	15	4 to 6	8.4
25,618	23	24	4 to 6	8.2
25,662	24	25	4 to 6	8.1
25,703	25	26	4 to 6	8.1
25,741	26	27	4 to 6	8.1
26,731	23	23	4 to 6	7.8
27,760	27	26	4 to 6	7.5
27,801	26	25	4 to 6	7.5
27,845	25	24	4 to 6	7.5
27,894	24	23	4 to 6	7.5
28,641	15	14	4 to 6	7.3
28,870	27	25	4 to 6	7.2
28,959	26	24	4 to 6	7.2
29,056	25	23	4 to 6	7.2
29,876	19	17	4 to 6	7.0
30,073	27	24	4 to 6	7.0
30,218	26	23	4 to 6	6.9
30,296	17	15	4 to 6	6.9
31,380	27	23	4 to 6	6.7
32,359	23	19	4 to 6	6.5
32,460	17	14	4 to 6	6.4
33,766	24	19	4 to 6	6.2
33,860	19	15	4 to 6	6.2
35,173	25	19	4 to 6	5.9
36,166	23	17	4 to 6	5.8
36,278	19	14	4 to 6	5.8
36,580	26	19	4 to 6	5.7
37,739	24	17	4 to 6	5.5
37,987	27	19	4 to 6	5.5
39,311	25	17	4 to 6	5.3
40,883	26	17	4 to 6	5.1
40,988	23	15	4 to 6	5.1
42,456	27	17	4 to 6	4.9
42,770	24	15	4 to 6	4.9
43,916	23	14	4 to 6	4.8
44,552	25	15	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 SOYBEAN AND MILO/GRAIN SORGHUM 60 CELL DISCS  
15 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
31,656	15	25	4 to 6	6.6
33,219	17	27	4 to 6	6.3
34,497	17	26	4 to 6	6.1
35,876	17	25	4 to 6	5.8
37,127	19	27	4 to 6	5.6
38,555	19	26	4 to 6	5.4
38,996	17	23	4 to 6	5.4
40,097	19	25	4 to 6	5.2
41,652	15	19	4 to 6	5.0
41,768	19	24	4 to 6	5.0
43,584	19	23	4 to 6	4.8
44,943	23	27	4 to 6	4.7
46,553	15	17	4 to 6	4.5
46,672	23	26	4 to 6	4.5
46,897	24	27	4 to 6	4.5
47,206	17	19	4 to 6	4.4
48,539	23	25	4 to 6	4.3
48,701	24	26	4 to 6	4.3
48,851	25	27	4 to 6	4.3
49,242	14	15	4 to 6	4.2
50,561	23	24	4 to 6	4.1
50,649	24	25	4 to 6	4.1
50,730	25	26	4 to 6	4.1
50,805	26	27	4 to 6	4.1
52,760	23	23	4 to 6	4.0
54,789	27	26	4 to 6	3.8
54,870	26	25	4 to 6	3.8
54,958	25	24	4 to 6	3.8
55,053	24	23	4 to 6	3.8
56,528	15	14	4 to 6	3.7
56,980	27	25	4 to 6	3.7
57,156	26	24	4 to 6	3.7
57,347	25	23	4 to 6	3.6
58,967	19	17	4 to 6	3.5
59,354	27	24	4 to 6	3.5
59,641	26	23	4 to 6	3.5
59,794	17	15	4 to 6	3.5
61,935	27	23	4 to 6	3.4
63,867	23	19	4 to 6	3.3
64,065	17	14	4 to 6	3.3
66,644	24	19	4 to 6	3.1
66,829	19	15	4 to 6	3.1
69,420	25	19	4 to 6	3.0
71,381	23	17	4 to 6	2.9
71,602	19	14	4 to 6	2.9
72,197	26	19	4 to 6	2.9
74,484	24	17	4 to 6	2.8
74,974	27	19	4 to 6	2.8
77,588	25	17	4 to 6	2.7
80,691	26	17	4 to 6	2.6
80,898	23	15	4 to 6	2.6
83,795	27	17	4 to 6	2.5
84,415	24	15	4 to 6	2.5
86,676	23	14	4 to 6	2.4
87,933	25	15	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 SOYBEAN AND MILO/GRAIN SORGHUM 60 CELL DISCS 19 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1) APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
40,097	15	25	4 to 6	5.2
42,077	17	27	4 to 6	5.0
43,696	17	26	4 to 6	4.8
45,444	17	25	4 to 6	4.6
47,028	19	27	4 to 6	4.4
48,836	19	26	4 to 6	4.3
49,395	17	23	4 to 6	4.2
50,790	19	25	4 to 6	4.1
52,760	15	19	4 to 6	4.0
52,906	19	24	4 to 6	4.0
55,206	19	23	4 to 6	3.8
56,928	23	27	4 to 6	3.7
58,967	15	17	4 to 6	3.5
59,118	23	26	4 to 6	3.5
59,403	24	27	4 to 6	3.5
59,794	17	19	4 to 6	3.5
61,482	23	25	4 to 6	3.4
61,688	24	26	4 to 6	3.4
61,878	25	27	4 to 6	3.4
62,373	14	15	4 to 6	3.4
64,044	23	24	4 to 6	3.3
64,156	24	25	4 to 6	3.3
64,258	25	26	4 to 6	3.3
64,354	26	27	4 to 6	3.2
66,829	23	23	4 to 6	3.1
69,399	27	26	4 to 6	3.0
69,502	26	25	4 to 6	3.0
69,613	25	24	4 to 6	3.0
69,734	24	23	4 to 6	3.0
71,602	15	14	4 to 6	2.9
72,175	27	25	4 to 6	2.9
72,398	26	24	4 to 6	2.9
72,640	25	23	4 to 6	2.9
74,691	19	17	4 to 6	2.8
75,182	27	24	4 to 6	2.8
75,546	26	23	4 to 6	2.8
75,739	17	15	4 to 6	2.8
78,451	27	23	4 to 6	2.7
80,898	23	19	4 to 6	2.6
81,149	17	14	4 to 6	2.6
84,415	24	19	4 to 6	2.5
84,650	19	15	4 to 6	2.5
87,933	25	19	4 to 6	2.4
90,415	23	17	4 to 6	2.3
90,696	19	14	4 to 6	2.3
91,450	26	19	4 to 6	2.3
94,346	24	17	4 to 6	2.2
94,967	27	19	4 to 6	2.2
98,278	25	17	4 to 6	2.1
102,209	26	17	4 to 6	2.0
102,471	23	15	4 to 6	2.0
106,140	27	17	4 to 6	2.0
106,926	24	15	4 to 6	2.0
109,790	23	14	4 to 6	1.9
111,381	25	15	4 to 6	1.9

**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 60 CELL DISC  
38 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Speed Spacing In inches
	Drive	Driven		
80,194	15	25	4 to 6	2.6
84,155	17	27	4 to 6	2.5
87,391	17	26	4 to 6	2.4
90,887	17	25	4 to 6	2.3
94,055	19	27	4 to 6	2.2
97,673	19	26	4 to 6	2.1
98,790	17	23	4 to 6	2.1
101,580	19	25	4 to 6	2.1
105,519	15	19	4 to 6	2.0
105,812	19	24	4 to 6	2.0
110,413	19	23	4 to 6	1.9
113,856	23	27	4 to 6	1.8
117,933	15	17	4 to 6	1.8
118,235	23	26	4 to 6	1.8
118,807	24	27	4 to 6	1.8
119,588	17	19	4 to 6	1.7
122,965	23	25	4 to 6	1.7
123,376	24	26	4 to 6	1.7
123,757	25	27	4 to 6	1.7
124,747	14	15	4 to 6	1.7
128,088	23	24	4 to 6	1.6
128,311	24	25	4 to 6	1.6
128,517	25	26	4 to 6	1.6
128,707	26	27	4 to 6	1.6
133,657	23	23	4 to 6	1.6
138,798	27	26	4 to 6	1.5
139,004	26	25	4 to 6	1.5
139,227	25	24	4 to 6	1.5
139,469	24	23	4 to 6	1.5
143,204	15	14	4 to 6	1.5
144,350	27	25	4 to 6	1.4
144,796	26	24	4 to 6	1.4
145,280	25	23	4 to 6	1.4
149,382	19	17	4 to 6	1.4
150,365	27	24	4 to 6	1.4
151,091	26	23	4 to 6	1.4
151,478	17	15	4 to 6	1.4
156,902	27	23	4 to 6	1.3
161,796	23	19	4 to 6	1.3
162,298	17	14	4 to 6	1.3
168,831	24	19	4 to 6	1.2
169,299	19	15	4 to 6	1.2
175,865	25	19	4 to 6	1.2
180,831	23	17	4 to 6	1.2
181,392	19	14	4 to 6	1.2
182,900	26	19	4 to 6	1.1
188,693	24	17	4 to 6	1.1
189,934	27	19	4 to 6	1.1
196,555	25	17	4 to 6	1.1
204,417	26	17	4 to 6	1.0
204,941	23	15	4 to 6	1.0
212,280	27	17	4 to 6	1.0
213,852	24	15	4 to 6	1.0
219,580	23	14	4 to 6	1.0
222,762	25	15	4 to 6	0.9

**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 HIGH-RATE SOYBEAN 120 CELL DISC  
15 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
63,311	15	25	4 to 6	3.3
66,438	17	27	4 to 6	3.1
68,993	17	26	4 to 6	3.0
71,753	17	25	4 to 6	2.9
74,254	19	27	4 to 6	2.8
77,110	19	26	4 to 6	2.7
77,992	17	23	4 to 6	2.7
80,194	19	25	4 to 6	2.6
83,305	15	19	4 to 6	2.5
83,536	19	24	4 to 6	2.5
87,168	19	23	4 to 6	2.4
89,887	23	27	4 to 6	2.3
93,105	15	17	4 to 6	2.2
93,344	23	26	4 to 6	2.2
93,795	24	27	4 to 6	2.2
94,412	17	19	4 to 6	2.2
97,078	23	25	4 to 6	2.2
97,402	24	26	4 to 6	2.1
97,703	25	27	4 to 6	2.1
98,484	14	15	4 to 6	2.1
101,122	23	24	4 to 6	2.1
101,298	24	25	4 to 6	2.1
101,461	25	26	4 to 6	2.1
101,611	26	27	4 to 6	2.1
105,519	23	23	4 to 6	2.0
109,578	27	26	4 to 6	1.9
109,740	26	25	4 to 6	1.9
109,916	25	24	4 to 6	1.9
110,107	24	23	4 to 6	1.9
113,056	15	14	4 to 6	1.8
113,961	27	25	4 to 6	1.8
114,312	26	24	4 to 6	1.8
114,695	25	23	4 to 6	1.8
117,933	19	17	4 to 6	1.8
118,709	27	24	4 to 6	1.8
119,282	26	23	4 to 6	1.8
119,588	17	15	4 to 6	1.7
123,870	27	23	4 to 6	1.7
127,734	23	19	4 to 6	1.6
128,130	17	14	4 to 6	1.6
133,287	24	19	4 to 6	1.6
133,657	19	15	4 to 6	1.6
138,841	25	19	4 to 6	1.5
142,761	23	17	4 to 6	1.5
143,204	19	14	4 to 6	1.5
144,395	26	19	4 to 6	1.4
148,968	24	17	4 to 6	1.4
149,948	27	19	4 to 6	1.4
155,175	25	17	4 to 6	1.3
161,382	26	17	4 to 6	1.3
161,796	23	15	4 to 6	1.3
167,589	27	17	4 to 6	1.2
168,831	24	15	4 to 6	1.2
173,353	23	14	4 to 6	1.2
175,865	25	15	4 to 6	1.2

**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 HIGH-RATE SOYBEAN 120 CELL DISC  
19 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
80,194	15	25	4 to 6	2.6
84,155	17	27	4 to 6	2.5
87,391	17	26	4 to 6	2.4
90,887	17	25	4 to 6	2.3
94,055	19	27	4 to 6	2.2
97,673	19	26	4 to 6	2.1
98,790	17	23	4 to 6	2.1
101,580	19	25	4 to 6	2.1
105,519	15	19	4 to 6	2.0
105,812	19	24	4 to 6	2.0
110,413	19	23	4 to 6	1.9
113,856	23	27	4 to 6	1.8
117,933	15	17	4 to 6	1.8
118,235	23	26	4 to 6	1.8
118,807	24	27	4 to 6	1.8
119,588	17	19	4 to 6	1.7
122,965	23	25	4 to 6	1.7
123,376	24	26	4 to 6	1.7
123,757	25	27	4 to 6	1.7
124,747	14	15	4 to 6	1.7
128,088	23	24	4 to 6	1.6
128,311	24	25	4 to 6	1.6
128,517	25	26	4 to 6	1.6
128,707	26	27	4 to 6	1.6
133,657	23	23	4 to 6	1.6
138,798	27	26	4 to 6	1.5
139,004	26	25	4 to 6	1.5
139,227	25	24	4 to 6	1.5
139,469	24	23	4 to 6	1.5
143,204	15	14	4 to 6	1.5
144,350	27	25	4 to 6	1.4
144,796	26	24	4 to 6	1.4
145,280	25	23	4 to 6	1.4
149,382	19	17	4 to 6	1.4
150,365	27	24	4 to 6	1.4
151,091	26	23	4 to 6	1.4
151,478	17	15	4 to 6	1.4
156,902	27	23	4 to 6	1.3
161,796	23	19	4 to 6	1.3
162,298	17	14	4 to 6	1.3
168,831	24	19	4 to 6	1.2
169,299	19	15	4 to 6	1.2
175,865	25	19	4 to 6	1.2
180,831	23	17	4 to 6	1.2
181,392	19	14	4 to 6	1.2
182,900	26	19	4 to 6	1.1
188,693	24	17	4 to 6	1.1
189,934	27	19	4 to 6	1.1
196,555	25	17	4 to 6	1.1
204,417	26	17	4 to 6	1.0
204,941	23	15	4 to 6	1.0
212,280	27	17	4 to 6	1.0
213,852	24	15	4 to 6	1.0
219,580	23	14	4 to 6	1.0
222,762	25	15	4 to 6	0.9

**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 ACID-DELINTED HILL-DROP COTTON (3 SEEDS PER CELL), 20 CELL DISC  
15 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE HILLS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
10,552	15	25	4 to 6	19.8
11,073	17	27	4 to 6	18.9
11,499	17	26	4 to 6	18.2
11,959	17	25	4 to 6	17.5
12,376	19	27	4 to 6	16.9
12,852	19	26	4 to 6	16.3
12,999	17	23	4 to 6	16.1
13,366	19	25	4 to 6	15.6
13,884	15	19	4 to 6	15.1
13,923	19	24	4 to 6	15.0
14,528	19	23	4 to 6	14.4
14,981	23	27	4 to 6	14.0
15,518	15	17	4 to 6	13.5
15,557	23	26	4 to 6	13.4
15,632	24	27	4 to 6	13.4
15,735	17	19	4 to 6	13.3
16,180	23	25	4 to 6	12.9
16,234	24	26	4 to 6	12.9
16,284	25	27	4 to 6	12.8
16,414	14	15	4 to 6	12.7
16,854	23	24	4 to 6	12.4
16,883	24	25	4 to 6	12.4
16,910	25	26	4 to 6	12.4
16,935	26	27	4 to 6	12.3
17,587	23	23	4 to 6	11.9
18,263	27	26	4 to 6	11.4
18,290	26	25	4 to 6	11.4
18,319	25	24	4 to 6	11.4
18,351	24	23	4 to 6	11.4
18,843	15	14	4 to 6	11.1
18,993	27	25	4 to 6	11.0
19,052	26	24	4 to 6	11.0
19,116	25	23	4 to 6	10.9
19,656	19	17	4 to 6	10.6
19,785	27	24	4 to 6	10.6
19,880	26	23	4 to 6	10.5
19,931	17	15	4 to 6	10.5
20,645	27	23	4 to 6	10.1
21,289	23	19	4 to 6	9.8
21,355	17	14	4 to 6	9.8
22,215	24	19	4 to 6	9.4
22,276	19	15	4 to 6	9.4
23,140	25	19	4 to 6	9.0
23,794	23	17	4 to 6	8.8
23,867	19	14	4 to 6	8.8
24,066	26	19	4 to 6	8.7
24,828	24	17	4 to 6	8.4
24,991	27	19	4 to 6	8.4
25,863	25	17	4 to 6	8.1
26,897	26	17	4 to 6	7.8
26,966	23	15	4 to 6	7.8
27,932	27	17	4 to 6	7.5
28,138	24	15	4 to 6	7.4
28,892	23	14	4 to 6	7.2
29,311	25	15	4 to 6	7.1

**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 ACID-DELINTED HILL-DROP COTTON (3 SEEDS PER CELL), 20 CELL DISC  
19 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE HILLS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
13,366	15	25	4 to 6	15.6
14,026	17	27	4 to 6	14.9
14,565	17	26	4 to 6	14.4
15,148	17	25	4 to 6	13.8
15,676	19	27	4 to 6	13.3
16,279	19	26	4 to 6	12.8
16,465	17	23	4 to 6	12.7
16,930	19	25	4 to 6	12.4
17,587	15	19	4 to 6	11.9
17,635	19	24	4 to 6	11.9
18,402	19	23	4 to 6	11.4
18,976	23	27	4 to 6	11.0
19,656	15	17	4 to 6	10.6
19,706	23	26	4 to 6	10.6
19,801	24	27	4 to 6	10.6
19,931	17	19	4 to 6	10.5
20,494	23	25	4 to 6	10.2
20,563	24	26	4 to 6	10.2
20,626	25	27	4 to 6	10.1
20,791	14	15	4 to 6	10.1
21,348	23	24	4 to 6	9.8
21,385	24	25	4 to 6	9.8
21,419	25	26	4 to 6	9.8
21,451	26	27	4 to 6	9.7
22,276	23	23	4 to 6	9.4
23,133	27	26	4 to 6	9.0
23,167	26	25	4 to 6	9.0
23,204	25	24	4 to 6	9.0
23,245	24	23	4 to 6	9.0
23,867	15	14	4 to 6	8.8
24,058	27	25	4 to 6	8.7
24,133	26	24	4 to 6	8.7
24,213	25	23	4 to 6	8.6
24,897	19	17	4 to 6	8.4
25,061	27	24	4 to 6	8.3
25,182	26	23	4 to 6	8.3
25,246	17	15	4 to 6	8.3
26,150	27	23	4 to 6	8.0
26,966	23	19	4 to 6	7.8
27,050	17	14	4 to 6	7.7
28,138	24	19	4 to 6	7.4
28,217	19	15	4 to 6	7.4
29,311	25	19	4 to 6	7.1
30,138	23	17	4 to 6	6.9
30,232	19	14	4 to 6	6.9
30,483	26	19	4 to 6	6.9
31,449	24	17	4 to 6	6.6
31,656	27	19	4 to 6	6.6
32,759	25	17	4 to 6	6.4
34,070	26	17	4 to 6	6.1
34,157	23	15	4 to 6	6.1
35,380	27	17	4 to 6	5.9
35,642	24	15	4 to 6	5.9
36,597	23	14	4 to 6	5.7
37,127	25	15	4 to 6	5.6

**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 ACID-DELINTED COTTON/SMALL DRY EDIBLE BEAN, 54 CELL DISC  
15 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
28,490	15	25	4 to 6	7.3
29,897	17	27	4 to 6	7.0
31,047	17	26	4 to 6	6.7
32,289	17	25	4 to 6	6.5
33,414	19	27	4 to 6	6.3
34,700	19	26	4 to 6	6.0
35,097	17	23	4 to 6	6.0
36,088	19	25	4 to 6	5.8
37,487	15	19	4 to 6	5.6
37,591	19	24	4 to 6	5.6
39,226	19	23	4 to 6	5.3
40,449	23	27	4 to 6	5.2
41,897	15	17	4 to 6	5.0
42,005	23	26	4 to 6	5.0
42,208	24	27	4 to 6	5.0
42,485	17	19	4 to 6	4.9
43,685	23	25	4 to 6	4.8
43,831	24	26	4 to 6	4.8
43,966	25	27	4 to 6	4.8
44,318	14	15	4 to 6	4.7
45,505	23	24	4 to 6	4.6
45,584	24	25	4 to 6	4.6
45,657	25	26	4 to 6	4.6
45,725	26	27	4 to 6	4.6
47,484	23	23	4 to 6	4.4
49,310	27	26	4 to 6	4.2
49,383	26	25	4 to 6	4.2
49,462	25	24	4 to 6	4.2
49,548	24	23	4 to 6	4.2
50,875	15	14	4 to 6	4.1
51,282	27	25	4 to 6	4.1
51,441	26	24	4 to 6	4.1
51,613	25	23	4 to 6	4.1
53,070	19	17	4 to 6	3.9
53,419	27	24	4 to 6	3.9
53,677	26	23	4 to 6	3.9
53,815	17	15	4 to 6	3.9
55,742	27	23	4 to 6	3.8
57,480	23	19	4 to 6	3.6
57,659	17	14	4 to 6	3.6
59,979	24	19	4 to 6	3.5
60,146	19	15	4 to 6	3.5
62,478	25	19	4 to 6	3.3
64,242	23	17	4 to 6	3.3
64,442	19	14	4 to 6	3.2
64,978	26	19	4 to 6	3.2
67,036	24	17	4 to 6	3.1
67,477	27	19	4 to 6	3.1
69,829	25	17	4 to 6	3.0
72,622	26	17	4 to 6	2.9
72,808	23	15	4 to 6	2.9
75,415	27	17	4 to 6	2.8
75,974	24	15	4 to 6	2.8
78,009	23	14	4 to 6	2.7
79,139	25	15	4 to 6	2.6

**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 ACID-DELINTED COTTON/SMALL DRY EDIBLE BEAN, 54 CELL DISC  
19 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
36,088	15	25	4 to 6	5.8
37,870	17	27	4 to 6	5.5
39,326	17	26	4 to 6	5.3
40,899	17	25	4 to 6	5.1
42,325	19	27	4 to 6	4.9
43,953	19	26	4 to 6	4.8
44,456	17	23	4 to 6	4.7
45,711	19	25	4 to 6	4.6
47,484	15	19	4 to 6	4.4
47,615	19	24	4 to 6	4.4
49,686	19	23	4 to 6	4.2
51,235	23	27	4 to 6	4.1
53,070	15	17	4 to 6	3.9
53,206	23	26	4 to 6	3.9
53,463	24	27	4 to 6	3.9
53,815	17	19	4 to 6	3.9
55,334	23	25	4 to 6	3.8
55,519	24	26	4 to 6	3.8
55,691	25	27	4 to 6	3.8
56,136	14	15	4 to 6	3.7
57,640	23	24	4 to 6	3.6
57,740	24	25	4 to 6	3.6
57,833	25	26	4 to 6	3.6
57,918	26	27	4 to 6	3.6
60,146	23	23	4 to 6	3.5
62,459	27	26	4 to 6	3.3
62,552	26	25	4 to 6	3.3
62,652	25	24	4 to 6	3.3
62,761	24	23	4 to 6	3.3
64,442	15	14	4 to 6	3.2
64,958	27	25	4 to 6	3.2
65,158	26	24	4 to 6	3.2
65,376	25	23	4 to 6	3.2
67,222	19	17	4 to 6	3.1
67,664	27	24	4 to 6	3.1
67,991	26	23	4 to 6	3.1
68,165	17	15	4 to 6	3.1
70,606	27	23	4 to 6	3.0
72,808	23	19	4 to 6	2.9
73,034	17	14	4 to 6	2.9
75,974	24	19	4 to 6	2.8
76,185	19	15	4 to 6	2.7
79,139	25	19	4 to 6	2.6
81,374	23	17	4 to 6	2.6
81,627	19	14	4 to 6	2.6
82,305	26	19	4 to 6	2.5
84,912	24	17	4 to 6	2.5
85,470	27	19	4 to 6	2.4
88,450	25	17	4 to 6	2.4
91,988	26	17	4 to 6	2.3
92,224	23	15	4 to 6	2.3
95,526	27	17	4 to 6	2.2
96,233	24	15	4 to 6	2.2
98,811	23	14	4 to 6	2.1
100,243	25	15	4 to 6	2.1

**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 TO 30 TOOTH TO 15 TOOTH CONTACT WHEEL DRIVE SPROCKETS (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
9477	15	25	4 to 6	22.1
9945	17	27	4 to 6	21.0
10327	17	26	4 to 6	20.2
10741	17	25	4 to 6	19.5
11115	19	27	4 to 6	18.8
11542	19	26	4 to 6	18.1
11674	17	23	4 to 6	17.9
12004	19	25	4 to 6	17.4
12470	15	19	4 to 6	16.8
12504	19	24	4 to 6	16.7
13048	19	23	4 to 6	16.0
13455	23	27	4 to 6	15.5
13937	15	17	4 to 6	15.0
13972	23	26	4 to 6	15.0
14040	24	27	4 to 6	14.9
14132	17	19	4 to 6	14.8
14531	23	25	4 to 6	14.4
14580	24	26	4 to 6	14.3
14625	25	27	4 to 6	14.3
14742	14	15	4 to 6	14.2
15137	23	24	4 to 6	13.8
15163	24	25	4 to 6	13.8
15187	25	26	4 to 6	13.8
15210	26	27	4 to 6	13.7
15795	23	23	4 to 6	13.2
16402	27	26	4 to 6	12.7
16427	26	25	4 to 6	12.7
16453	25	24	4 to 6	12.7
16482	24	23	4 to 6	12.7
16923	15	14	4 to 6	12.4
17058	27	25	4 to 6	12.3
17111	26	24	4 to 6	12.2
17168	25	23	4 to 6	12.2
17653	19	17	4 to 6	11.8
17769	27	24	4 to 6	11.8
17855	26	23	4 to 6	11.7
17901	17	15	4 to 6	11.7
18542	27	23	4 to 6	11.3
19120	23	19	4 to 6	10.9
19180	17	14	4 to 6	10.9
19951	24	19	4 to 6	10.5
20007	19	15	4 to 6	10.5
20783	25	19	4 to 6	10.1
21370	23	17	4 to 6	9.8
21436	19	14	4 to 6	9.8
21614	26	19	4 to 6	9.7
22299	24	17	4 to 6	9.4
22445	27	19	4 to 6	9.3
23228	25	17	4 to 6	9.0
24157	26	17	4 to 6	8.7
24219	23	15	4 to 6	8.6
25086	27	17	4 to 6	8.3
25272	24	15	4 to 6	8.3
25949	23	14	4 to 6	8.1
26325	25	15	4 to 6	7.9

**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 LARGE DRY EDIBLE BEAN, 54 CELL DISC 15 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1) APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
28,490	15	25	4 to 6	7.3
29,897	17	27	4 to 6	7.0
31,047	17	26	4 to 6	6.7
32,289	17	25	4 to 6	6.5
33,414	19	27	4 to 6	6.3
34,700	19	26	4 to 6	6.0
35,097	17	23	4 to 6	6.0
36,088	19	25	4 to 6	5.8
37,487	15	19	4 to 6	5.6
37,591	19	24	4 to 6	5.6
39,226	19	23	4 to 6	5.3
40,449	23	27	4 to 6	5.2
41,897	15	17	4 to 6	5.0
42,005	23	26	4 to 6	5.0
42,208	24	27	4 to 6	5.0
42,485	17	19	4 to 6	4.9
43,685	23	25	4 to 6	4.8
43,831	24	26	4 to 6	4.8
43,966	25	27	4 to 6	4.8
44,318	14	15	4 to 6	4.7
45,505	23	24	4 to 6	4.6
45,584	24	25	4 to 6	4.6
45,657	25	26	4 to 6	4.6
45,725	26	27	4 to 6	4.6
47,484	23	23	4 to 6	4.4
49,310	27	26	4 to 6	4.2
49,383	26	25	4 to 6	4.2
49,462	25	24	4 to 6	4.2
49,548	24	23	4 to 6	4.2
50,875	15	14	4 to 6	4.1
51,282	27	25	4 to 6	4.1
51,441	26	24	4 to 6	4.1
51,613	25	23	4 to 6	4.1
53,070	19	17	4 to 6	3.9
53,419	27	24	4 to 6	3.9
53,677	26	23	4 to 6	3.9
53,815	17	15	4 to 6	3.9
55,742	27	23	4 to 6	3.8
57,480	23	19	4 to 6	3.6
57,659	17	14	4 to 6	3.6
59,979	24	19	4 to 6	3.5
60,146	19	15	4 to 6	3.5
62,478	25	19	4 to 6	3.3
64,242	23	17	4 to 6	3.3
64,442	19	14	4 to 6	3.2
64,978	26	19	4 to 6	3.2
67,036	24	17	4 to 6	3.1
67,477	27	19	4 to 6	3.1
69,829	25	17	4 to 6	3.0
72,622	26	17	4 to 6	2.9
72,808	23	15	4 to 6	2.9
75,415	27	17	4 to 6	2.8
75,974	24	15	4 to 6	2.8
78,009	23	14	4 to 6	2.7
79,139	25	15	4 to 6	2.6

**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 LARGE DRY EDIBLE BEAN, 54 CELL DISC  
19 TOOTH CONTACT WHEEL DRIVE SPROCKET (See Page 7-1)  
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS**

30" Rows	Transmission Sprockets		Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
	Drive	Driven		
36,088	15	25	4 to 6	5.8
37,870	17	27	4 to 6	5.5
39,326	17	26	4 to 6	5.3
40,899	17	25	4 to 6	5.1
42,325	19	27	4 to 6	4.9
43,953	19	26	4 to 6	4.8
44,456	17	23	4 to 6	4.7
45,711	19	25	4 to 6	4.6
47,484	15	19	4 to 6	4.4
47,615	19	24	4 to 6	4.4
49,686	19	23	4 to 6	4.2
51,235	23	27	4 to 6	4.1
53,070	15	17	4 to 6	3.9
53,206	23	26	4 to 6	3.9
53,463	24	27	4 to 6	3.9
53,815	17	19	4 to 6	3.9
55,334	23	25	4 to 6	3.8
55,519	24	26	4 to 6	3.8
55,691	25	27	4 to 6	3.8
56,136	14	15	4 to 6	3.7
57,640	23	24	4 to 6	3.6
57,740	24	25	4 to 6	3.6
57,833	25	26	4 to 6	3.6
57,918	26	27	4 to 6	3.6
60,146	23	23	4 to 6	3.5
62,459	27	26	4 to 6	3.3
62,552	26	25	4 to 6	3.3
62,652	25	24	4 to 6	3.3
62,761	24	23	4 to 6	3.3
64,442	15	14	4 to 6	3.2
64,958	27	25	4 to 6	3.2
65,158	26	24	4 to 6	3.2
65,376	25	23	4 to 6	3.2
67,222	19	17	4 to 6	3.1
67,664	27	24	4 to 6	3.1
67,991	26	23	4 to 6	3.1
68,165	17	15	4 to 6	3.1
70,606	27	23	4 to 6	3.0
72,808	23	19	4 to 6	2.9
73,034	17	14	4 to 6	2.9
75,974	24	19	4 to 6	2.8
76,185	19	15	4 to 6	2.7
79,139	25	19	4 to 6	2.6
81,374	23	17	4 to 6	2.6
81,627	19	14	4 to 6	2.6
82,305	26	19	4 to 6	2.5
84,912	24	17	4 to 6	2.5
85,470	27	19	4 to 6	2.4
88,450	25	17	4 to 6	2.4
91,988	26	17	4 to 6	2.3
92,224	23	15	4 to 6	2.3
95,526	27	17	4 to 6	2.2
96,233	24	15	4 to 6	2.2
98,811	23	14	4 to 6	2.1
100,243	25	15	4 to 6	2.1

**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 30" ROW WIDTH

Meter Setting	30" Rows
<b>CLAY GRANULES</b>	
10	4.9
11	5.4
12	6.1
13	6.9
14	7.7
15	8.5
16	9.6
17	10.7
18	11.4
19	13.1
20	14.2
21	15.5
22	16.4
23	17.2
24	18.8
25	20.9
26	23.0
27	24.1
28	25.4
29	27.8
30	29.6
<b>SAND GRANULES</b>	
5	2.9
6	4.9
7	5.3
8	6.3
9	7.8
10	8.9
11	10.2
12	11.2
13	12.6
14	14.1
15	15.5
16	17.5
17	19.4
18	21.8
19	24.3
20	25.7
21	27.6
22	29.6
23	32.0
24	34.4
25	36.9

**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

---

## DRY HERBICIDE APPLICATION RATES APPROXIMATE POUNDS/ACRE AT 5 MPH FOR 30" ROW WIDTH

CLAY GRANUALES	
Meter Setting	30" Rows
10	4.7
11	5.2
12	5.8
13	6.5
14	7.3
15	8.2
16	9.0
17	9.9
18	10.7
19	11.6
20	12.6
21	13.6
22	14.6
23	15.7
24	17.0
25	18.1
26	19.4
27	20.9
28	22.6
29	24.3
30	26.7

**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**

---

**See “Liquid Fertilizer Rate Chart”  
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 Unit	Light Blue
Low-Rate Corn	24	35 To 70 Lbs./80,000 Kernel Count Unit	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	SINGULATOR SEED DISC	VACUUM BRUSH SETTING	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:

1. Requires use of seed meter baffle. Refer to page 7-3 for additional information.
2. Requires use of cleanout brush. Refer to page 7-3 for additional information.
3. Requires use of cleanout brush w/ball-type ejector. Refer to page 7-3 for additional information.
4. For flat seeds, higher vacuum level may be required.
5. 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 ½ 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.

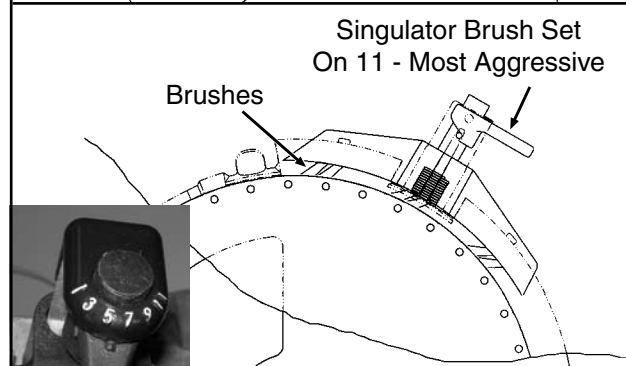
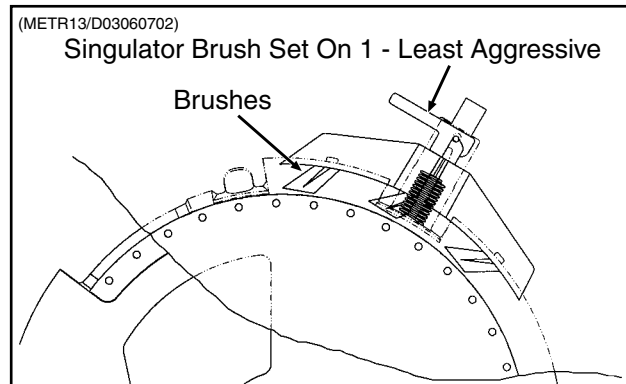
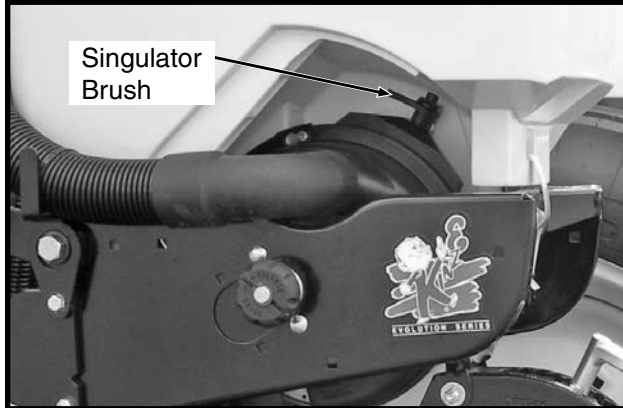


# SEED METER OPERATION/MAINTENANCE

**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 to initial setting. Note that seed size, seed shape, seed treatments, travel speed and planting rate will all affect meter performance.

D06260660



**STEP 3** With vacuum fan running, lower planter to planting position and drive forward a short distance to load seed into the seed disc cells.

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.

**NOTE:** Vacuum reading will be much lower when seed disc cells are empty. Prior to setting vacuum level, load all seed cells.

D10240583



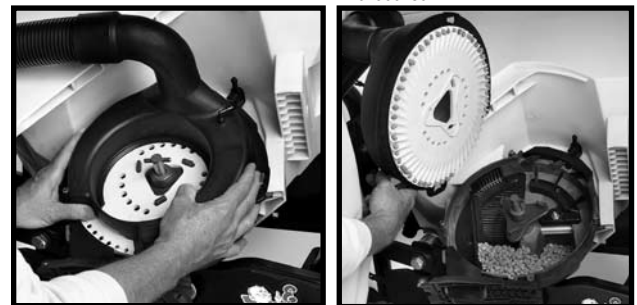
See “Digital Vacuum Gauge Operation” in Machine Operation section

**NOTE:** Operate vacuum fan 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.

D101906132

D101906130



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.

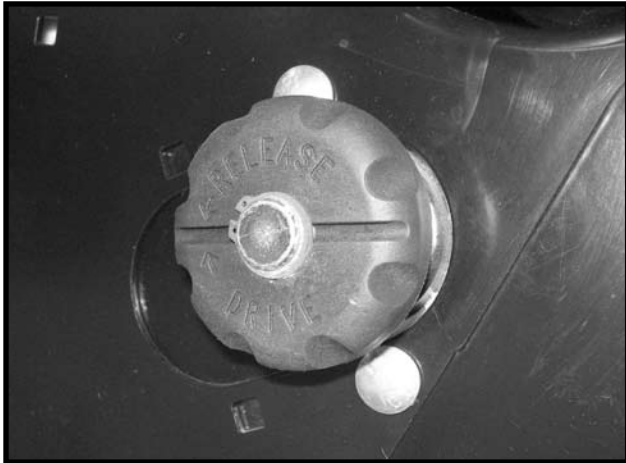
# SEED METER OPERATION/MAINTENANCE

---

## 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.

D011006101

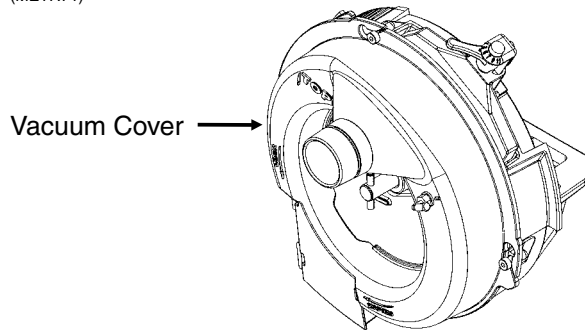


To disengage the drive, turn the knob  $\frac{1}{4}$  turn counterclockwise. To engage the drive, turn the knob  $\frac{1}{4}$  turn clockwise.

# SEED METER OPERATION/MAINTENANCE

## SEED METER MAINTENANCE

(METR71)



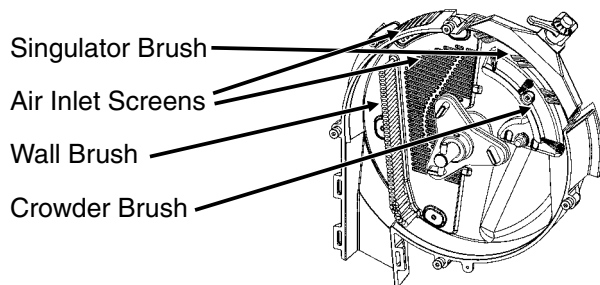
Clean, high quality seed should be used for maximum meter accuracy. Damaged or cracked seed, hulls or foreign material may become lodged in the seed disc orifices and greatly reduce meter accuracy.

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

---

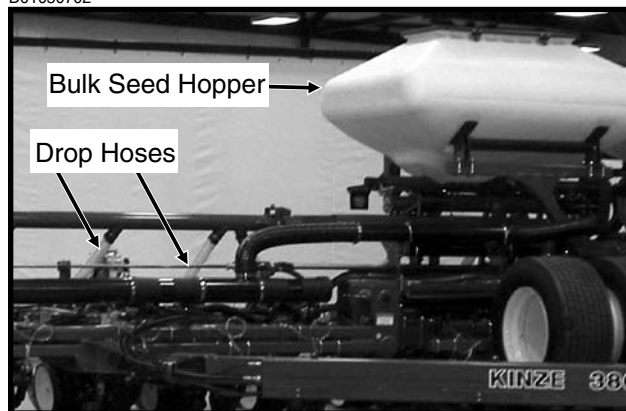
# SDS SEED DELIVERY SYSTEM OPERATION

## 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 a rear-mounted ladder and access deck. 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.

D01050702



D10060627



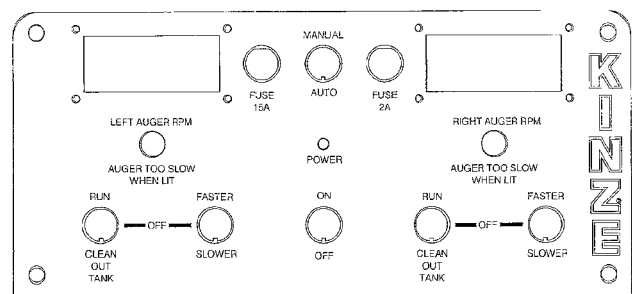
**NOTE:** After all row outlets are filled to capacity, seed will continue to be evenly distributed to all rows until the bulk seed hopper is empty. When the bulk seed hopper is empty or the auger system is shut off, all drop hoses will “plant out” equally and all rows should run out of seed at approximately 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. 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



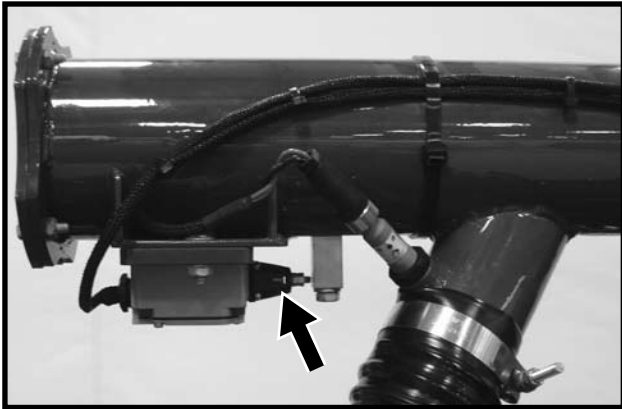
**WARNING: ALWAYS** use master power switch to turn the system OFF when leaving the tractor operator platform, as the system can start and run at any time if seed demand occurs. Always turn the system OFF before transport. A limit switch on each half of the system at the center of the planter disables 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

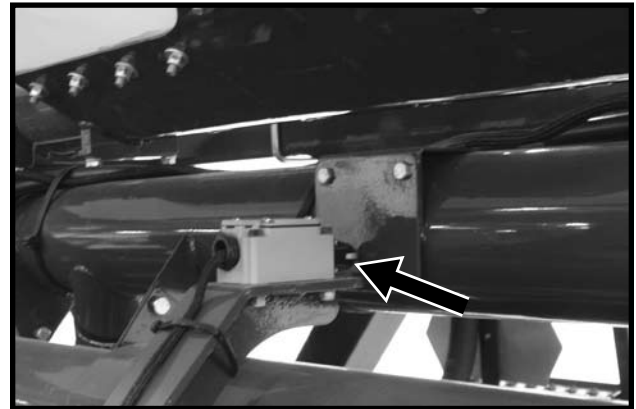
D12200683



The limit (secondary overload) switches on the outer ends of the tubes are connected as normally CLOSED switches. When relaxed (no pressure applied to the roller), they allow current to flow through the switches. A 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 1/4". The system should shut off and then restart when the actuator arm is released. To adjust for 1/8" air gap, reposition the switch by loosening the bolts holding the retainer plate.

LIMIT SWITCHES - LOCATED NEAR CENTER OF PLANTER

D12200684



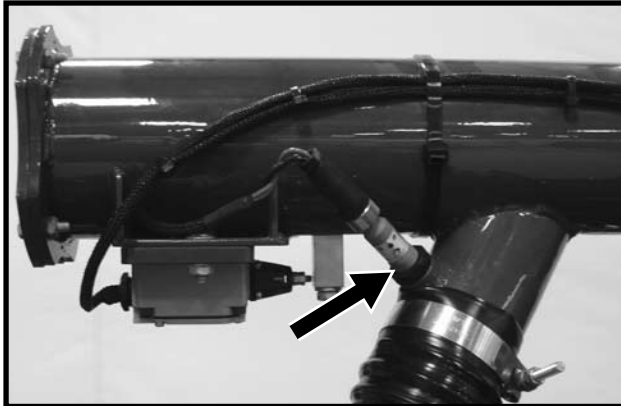
Two limit (transport safety) switches are located near the center of the machine on both sides. These switches are connected as normally OPEN switches. When relaxed (no pressure applied to the roller), they do not allow current to flow through the switch. These switches shut off the power when the planter is folded to avoid accidental operation of the system during transport. The system can be run in CLEANOUT mode while the planter is folded to allow easier access to the hopper unload nipples. These switches must be depressed when the planter is in field operation position to allow electrical current to pass through the switches to other components of the seed delivery system. To adjust the switch with planter in field operation position, loosen the nuts holding the switch to the mount. Move the switch toward the striking plate an additional 1/8" after a click is heard. Tighten mounting hardware and test system.



# SDS SEED DELIVERY SYSTEM OPERATION

## PROXIMITY SENSORS

D12200683



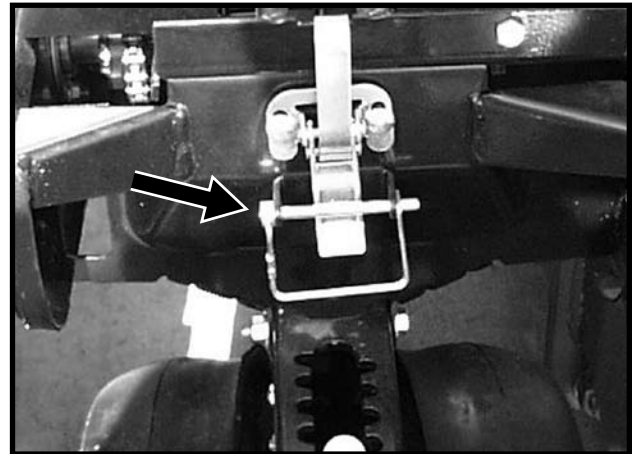
The proximity sensor screws into the outer drop tube at each end of the planter. The tip of the sensor should be approximately 1/2" up from the bottom of the deflector pad in the drop tube. When replacing a sensor draw a line on the sensor 1 1/2" up from the sensing tip. Screw the sensor into the drop 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 gets to within 12 mm (approximately 7/16") from 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.

D041801101



**IMPORTANT: Disengage row unit clutch and unlatch mini-hopper on each row unit to release stress on drop hoses and hoppers during storage.**

# 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 hopper. 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” section for additional information.

## 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 will stall.

# ROW UNIT OPERATION

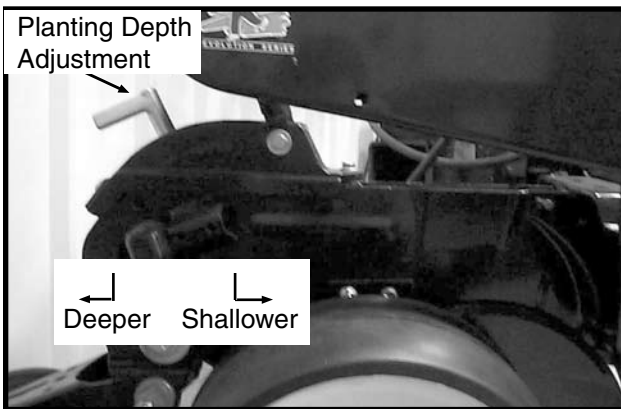
## PLANTING DEPTH

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.**

D020705102



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

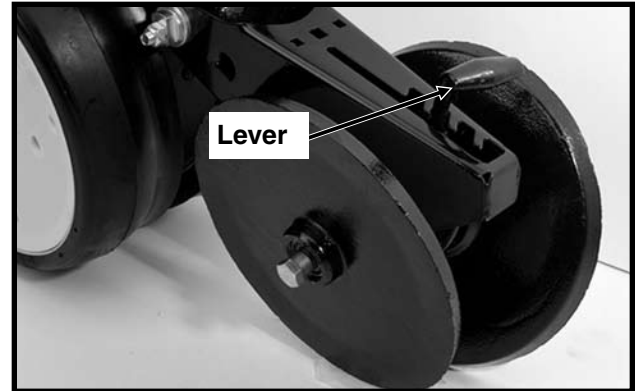


**WARNING: Raise planter and install safety lockup devices before making closing wheel adjustments.**

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.

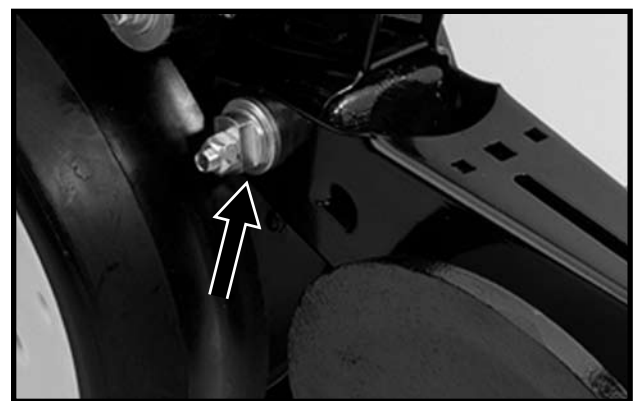
LF212299-15



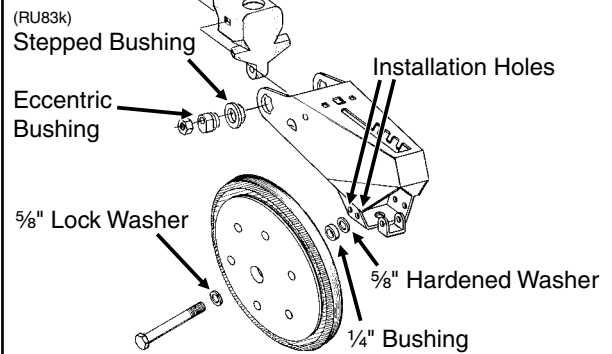
Light soil usually requires less down force at average depth (approximately 2") while heavy soil requires increased down force.

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.

LF2122299-15



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.

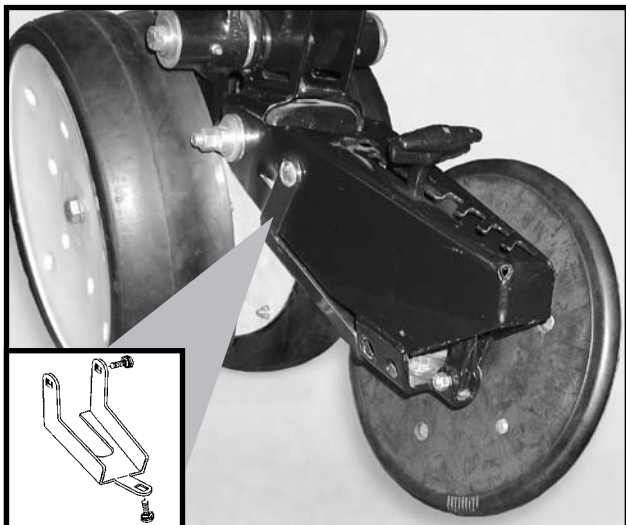


# ROW UNIT OPERATION

## 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.

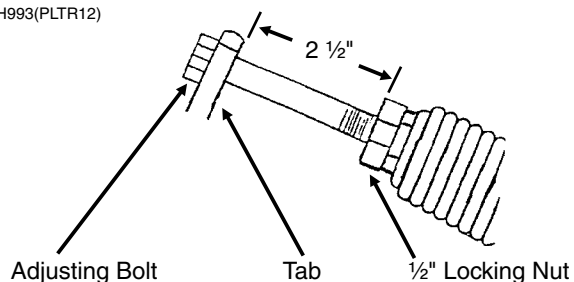
72359-31



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.

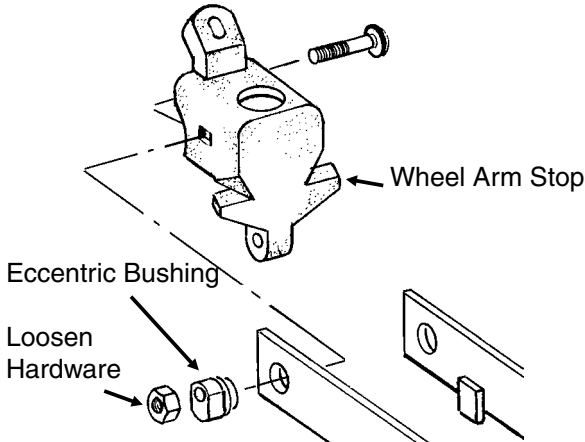
RH993(PLTR12)



# ROW UNIT OPERATION

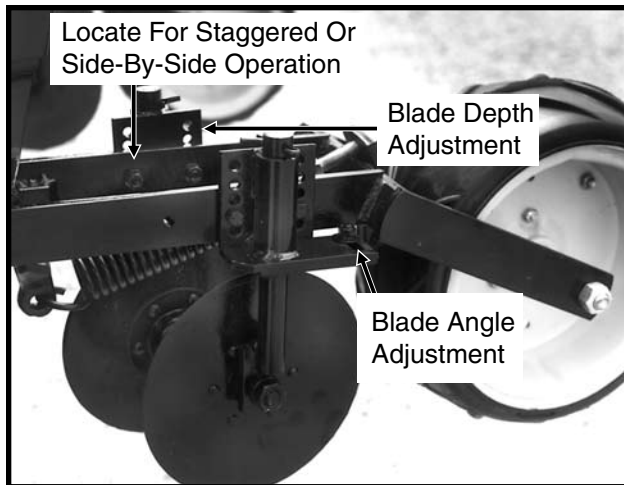
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the covering discs/single press wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another 3/4" wrench, turn the eccentric bushings until the press wheel is aligned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

(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 1/2" incremental blade depth adjustment.

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

Adjust covering discs on all row units to similar settings.

## DRAG CLOSING ATTACHMENT

LF212299-18



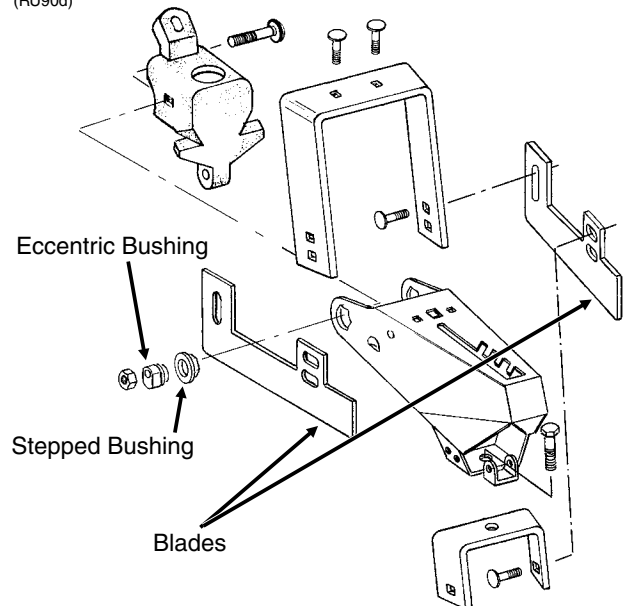
The drag closing attachment is designed to pull loose soil over the seed trench.

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 3/4" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another 3/4" wrench, turn the eccentric bushings until the drag closing attachment is aligned with the seed trench.

# ROW UNIT OPERATION

## SEED HOPPER (Conventional Seed Hoppers)

LF212199-7a



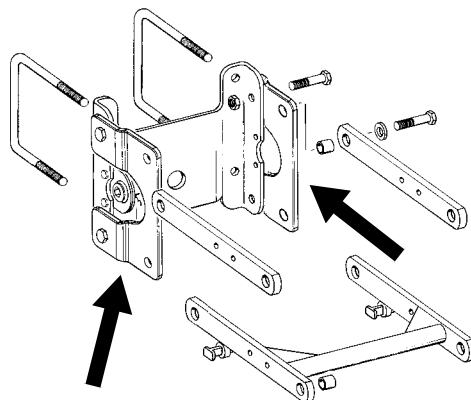
The seed hopper has a capacity of 1.9 bushels.

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 objects 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".

## ROW UNIT EXTENSION BRACKETS

(RU145)



Model 3800 and 3800 SDS planters are equipped with row unit extension brackets on the the six center section rows to provide clearance at the axle rock shaft.

Row unit extension brackets are required on all row units if 3800 planters are equipped with coulter mounted residue wheels and notched single disc fertilizer openers.

# ROW UNIT OPERATION

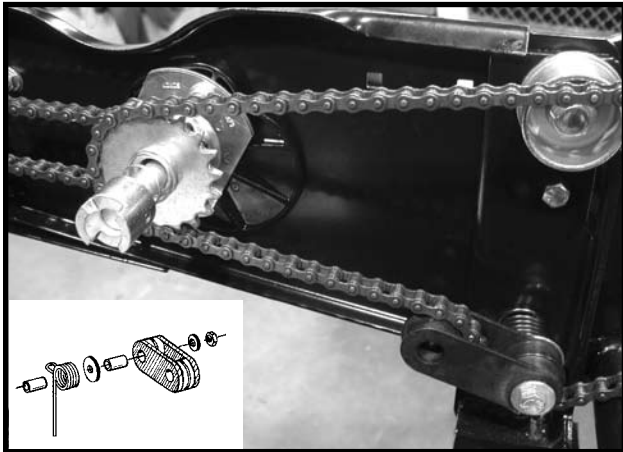
## ROW UNIT CHAIN ROUTING

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.

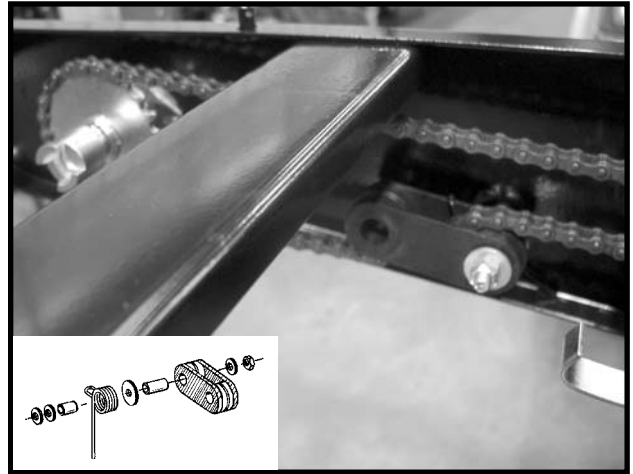
**NOTE: When idler shows signs of wear, it can be reversed for prolonged use.**

D051705103



**Pull Row Unit Meter Drive**

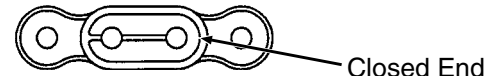
D051705102



**Row Unit Granular Chemical Drive**

**NOTE: Make sure connector link is installed with closed end oriented properly as shown below.**

(PLTR24)



**Direction Of Chain Travel** →

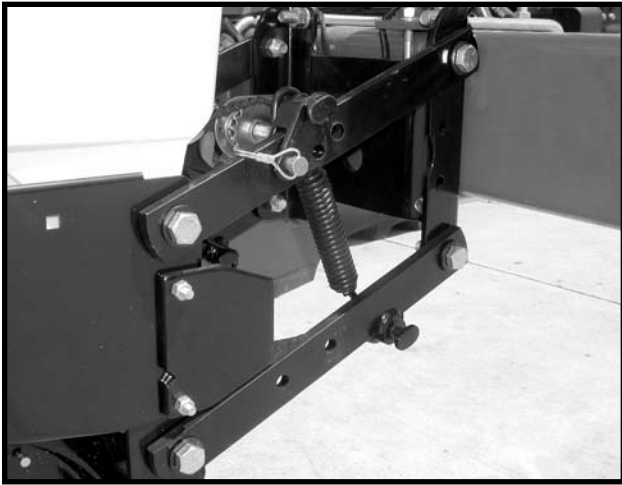
# ROW UNIT OPERATION

## 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

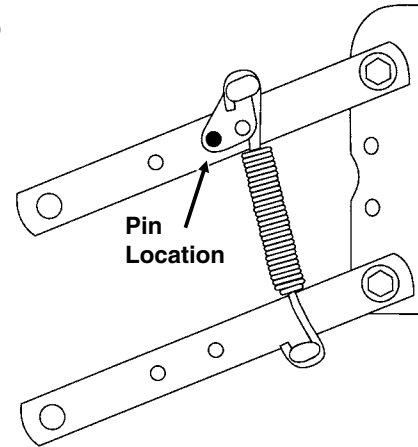


Four Springs Per Row (Quad)

**NOTE:** Four springs per row are to be used with row unit mounted no till coulters only.

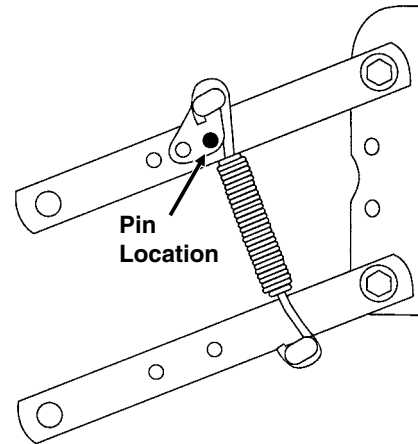
There are four positions for spring tension adjustment. Position 1 allows for minimum down pressure and position 4 for maximum down pressure.

L0096(PLTR27e)



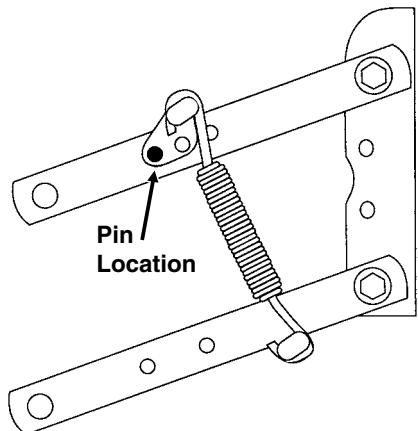
Position 1 (Minimum)

(PLTR28e)



Position 2

(PLTR29e)



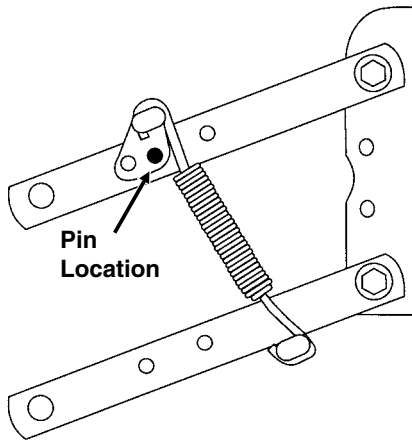
Position 3



# ROW UNIT OPERATION

---

(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

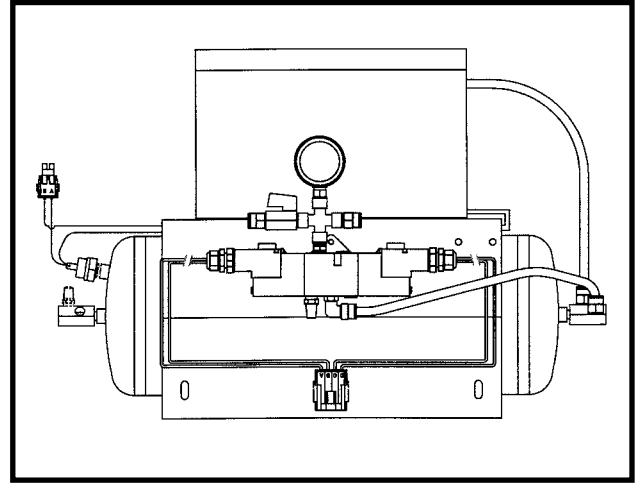
## PNEUMATIC DOWN PRESSURE PACKAGE

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.

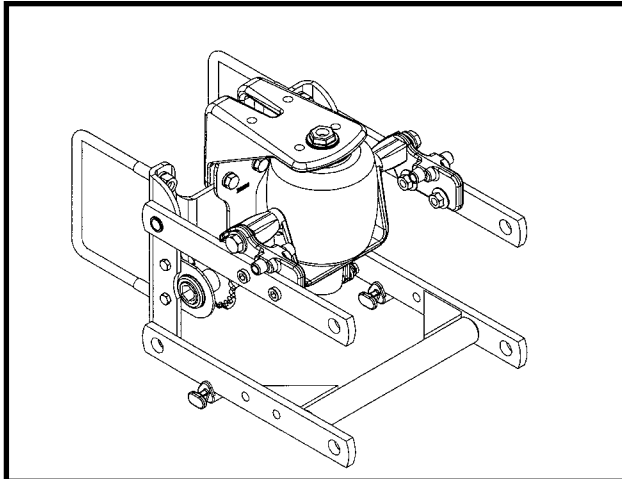
Pneumatic down pressure row unit extension brackets are required in some applications.

(PNE01)



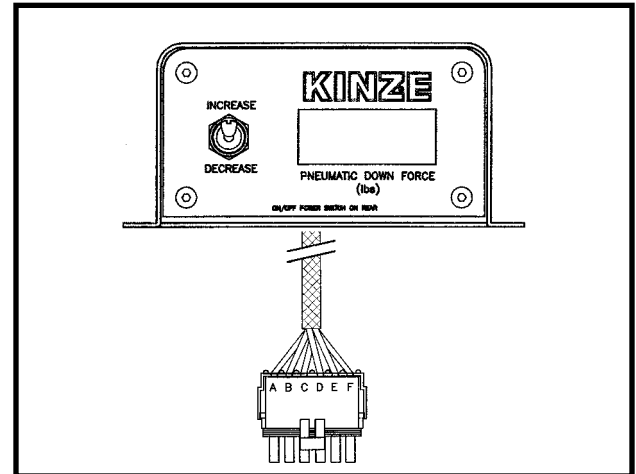
**Air Compressor With Dual Solenoid Assembly**

(PNE07)



**Pull Row Unit Air Spring**

(A12644a)

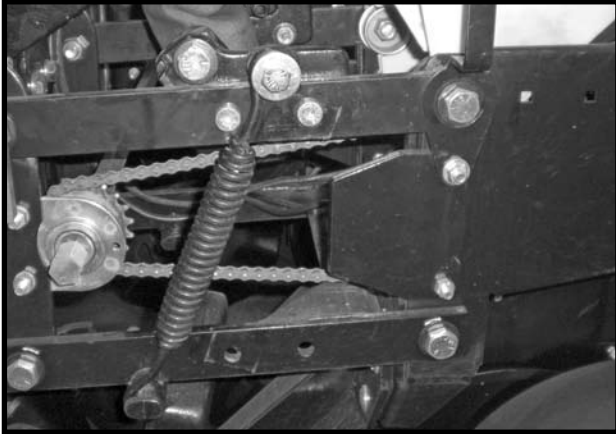


**Control Console Assembly**

# 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

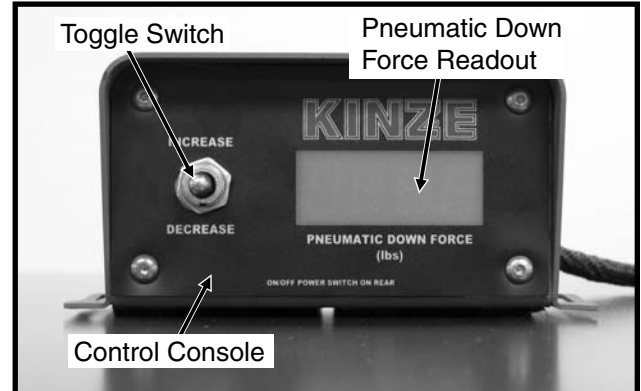


**Pull Row Unit Assist Springs**

## 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.

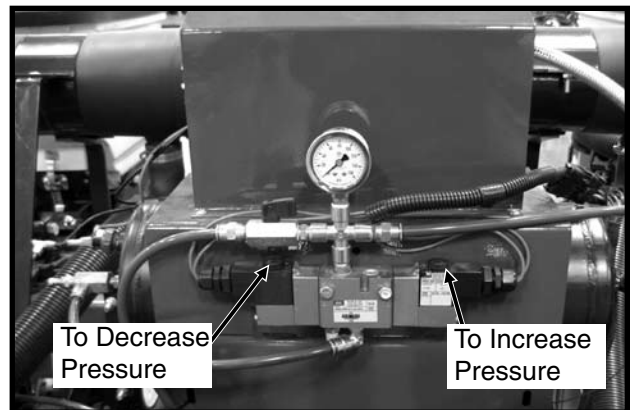
*To adjust down pressure from planter:*

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).

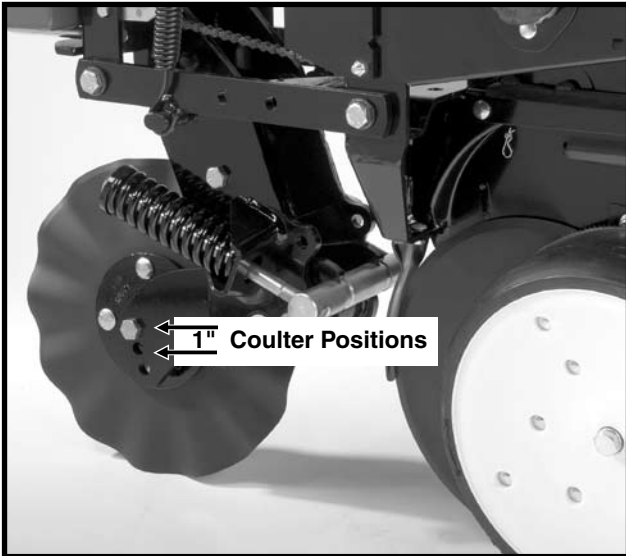
D112907100



# ROW UNIT OPERATION

## FRAME MOUNTED COULTER

LF083002101

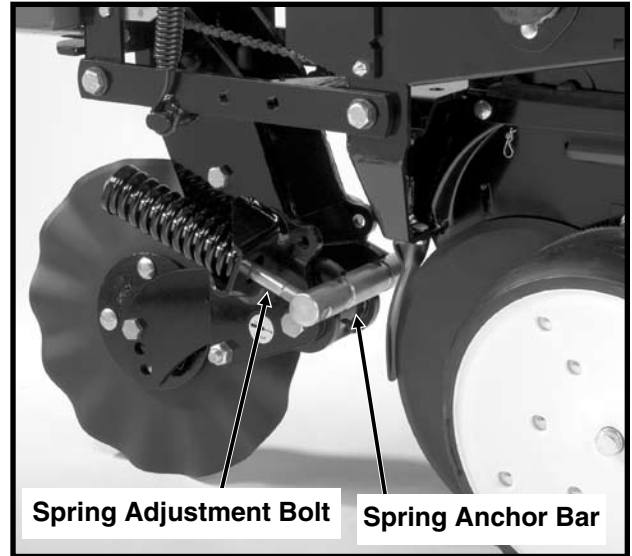


Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units only. (Not compatible with push row units.)

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

---

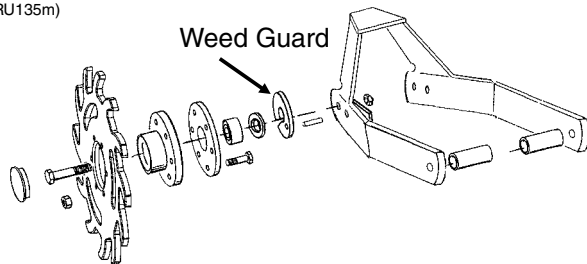
## RESIDUE WHEELS

(For Use With Frame Mounted Coulter)

The residue wheels for use with the frame mounted coulter may be used on pull row units only.

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 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.

(RU135m)



**NOTE: Opening in weed guard must point down.**

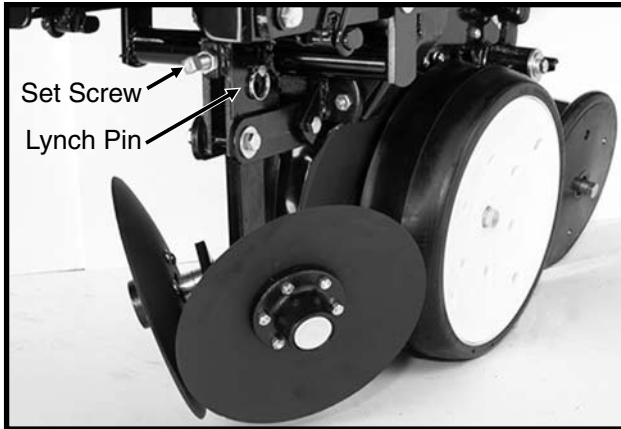
# ROW UNIT OPERATION

## 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.

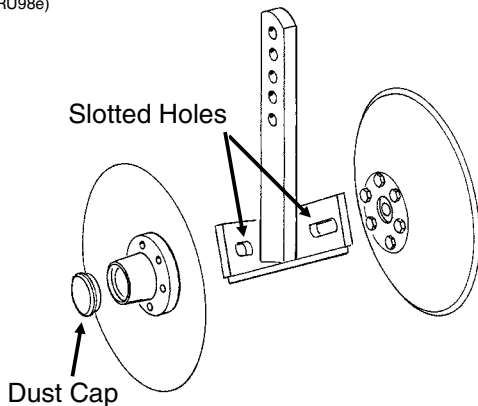
Disc furrowers are used to clear crop residue, dirt clods and dry soil from in front of the row units for a clean and smooth seed bed. Notched blades are used for heavier residue conditions. The notched blades cut crop residue and move it aside to prevent plugging or pushing.

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)

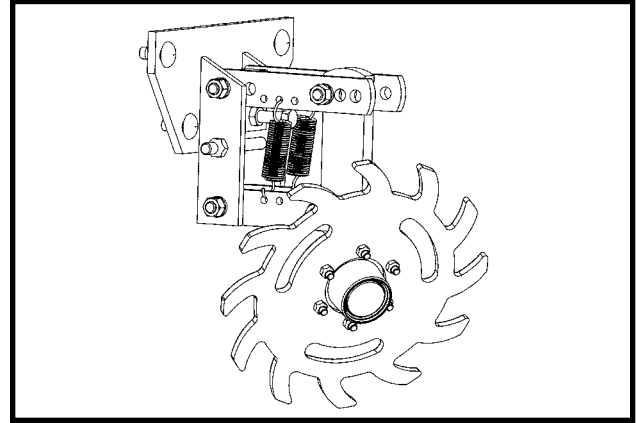


Slotted holes in the support arm where the blades are mounted allow fore and aft adjustment of the disc blades. Blades can be adjusted so the front edges meet or one blade can be moved to the rear and the other to the front of the slot so the cutting edge of one blade overlaps the edge of the other blade.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

## ROW UNIT MOUNTED RESIDUE WHEEL

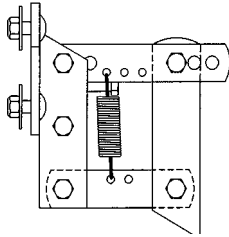
The row unit mounted residue wheel may be used on pull row units and push row units.

(A12685)

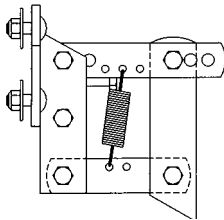


# ROW UNIT OPERATION

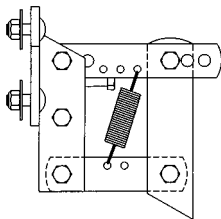
Two adjustable springs on the parallel links on each residue wheel allow for down force adjustment. Position 1 as shown below provides minimum down pressure and position 3 maximum down pressure.



**Position 1 (Minimum)** (PLTR31a)



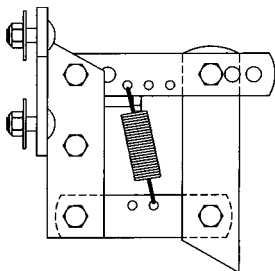
**Position 2** (PLTR32a)



**Position 3 (Maximum)** (PLTR33a)

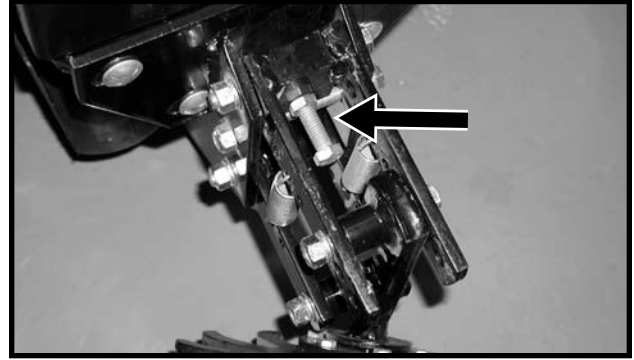
For additional uplift or float, position springs as shown below.

(PLTR34a)



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

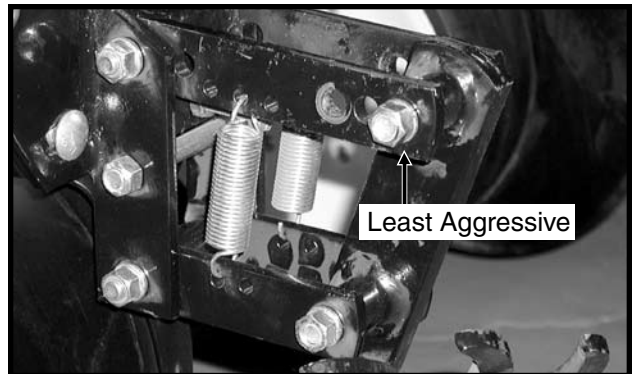
D10170112



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

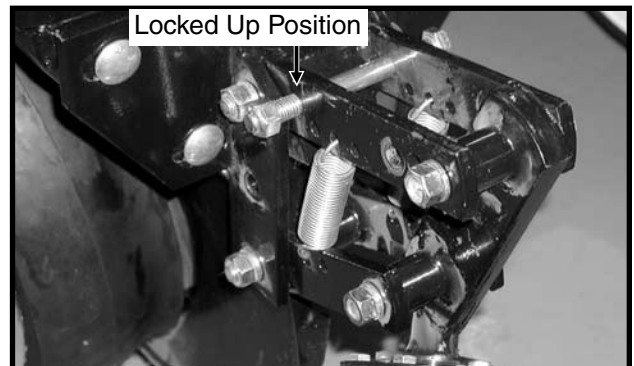
Three holes in the upper link allow for wheel angle adjustment. With the wheel mount in the most vertical position, using the rear hole in the upper link, the residue wheel is most aggressive. Moving the wheel mount to one of the forward holes reduces the aggressiveness of the wheel for use in mulch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

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

D05170706a



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

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

For proper operation, the coulters 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 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 5/8" spindle hardware to 120 ft. lbs.**

## COULTER MOUNTED RESIDUE WHEELS

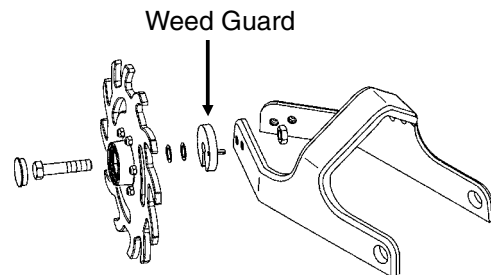
D05170708a



Coulters 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 coulters mounted residue wheels.

The coulters mounted residue wheels are attached to the row unit mounted no till coulters 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.

(RU153a)



**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.

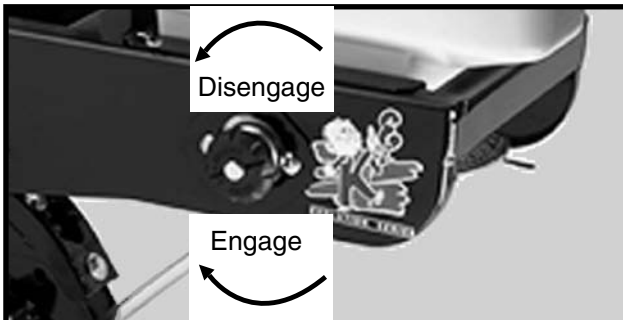
Be sure no foreign objects get into the hopper when it is being filled. Replace the hopper lids after filling the hoppers to prevent the accumulation of dirt and moisture.

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 ¼ turn clockwise. To disengage the drive, turn the knob ¼ turn counterclockwise. Slotted holes in the hopper support panel and clutch housing allow for alignment adjustment between the clutch drive coupler and meter shaft.

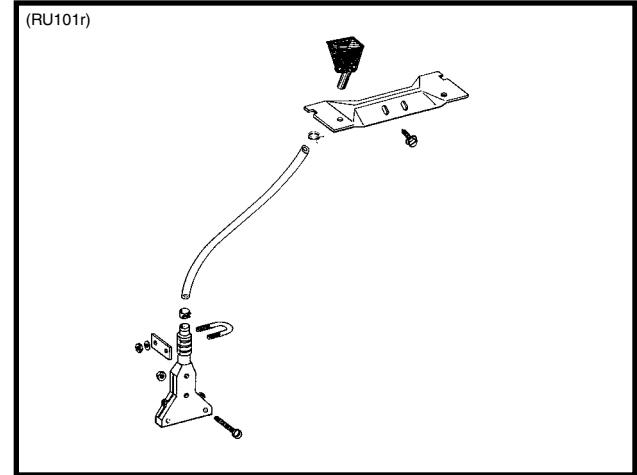
LF212299-4



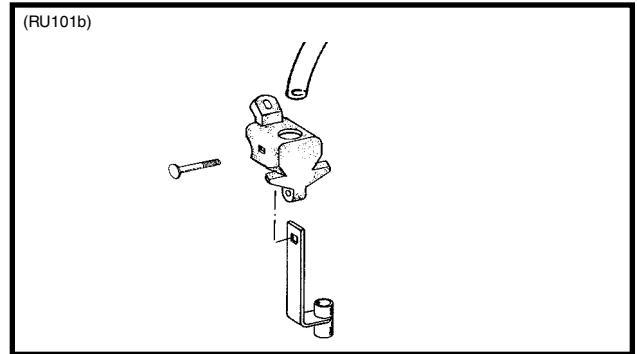
## GRANULAR CHEMICAL BANDING OPTIONS

Granular chemical banding options allow 4 ½" slope-compensating banding, straight drop in-furrow placement or 14" rear banding.

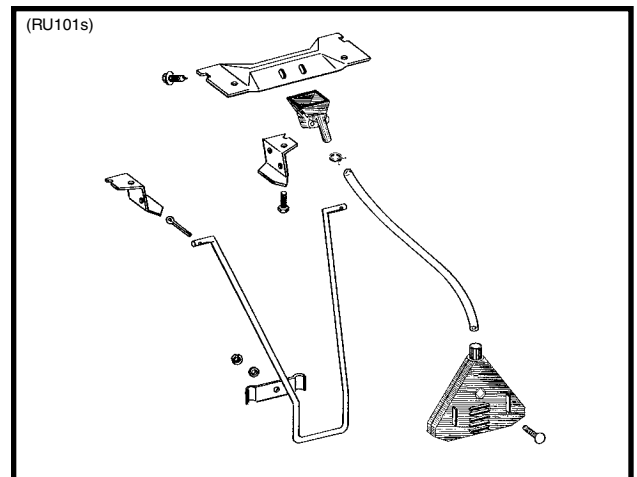
**NOTE: The granular chemical rear bander is not compatible with the covering discs/single press wheel option.**



4 ½" Slope-Compensating Bander



Straight Drop In-Furrow Placement



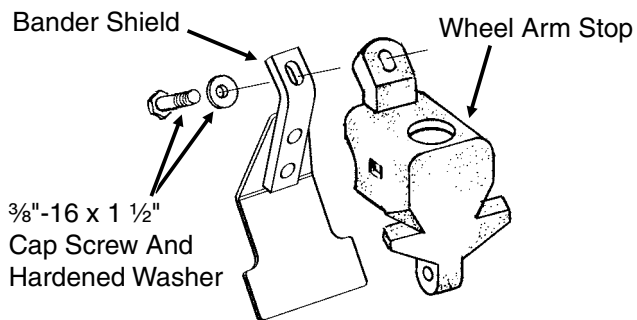
14" Rear Banding

# ROW UNIT OPERATION

## GRANULAR CHEMICAL BANDER SHIELD

The optional granular chemical banded 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)

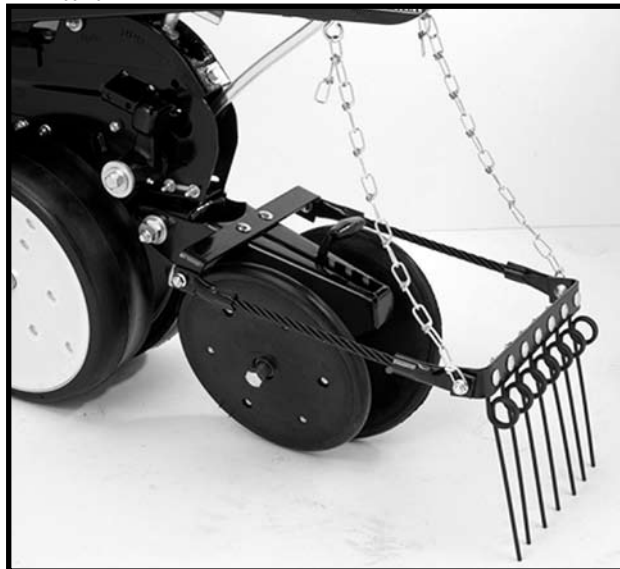


## SPRING TOOTH INCORPORATOR

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  $\frac{1}{8}$ " 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



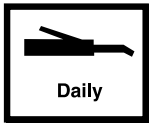
# LUBRICATION

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 planter to the ground before working under or around the machine.

## LUBRICATION SYMBOLS



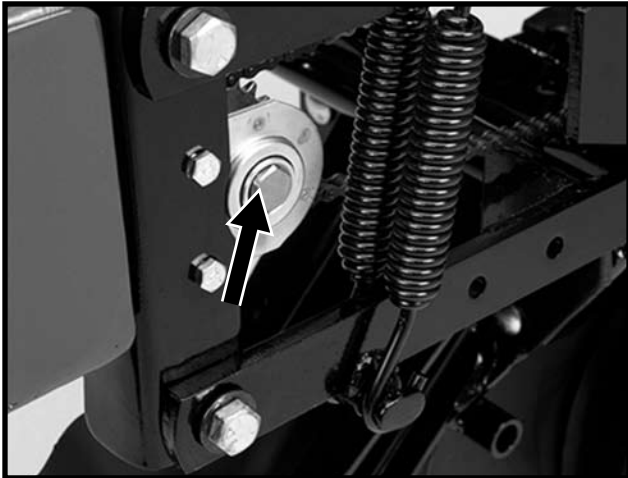
Lubricate at frequency indicated with an SAE multipurpose grease.



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

## SEALED BEARINGS

LF212199-3

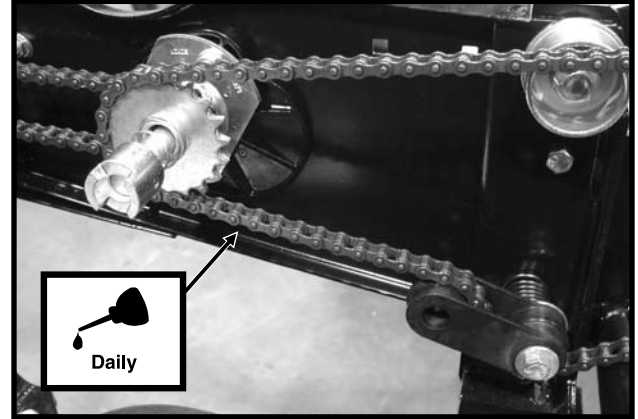


A number of sealed bearings are used on your KINZE® planter to provide trouble free operation. These are located in such areas as the drive shaft, row units and transmission bearings. Sealed bearings are lubricated for life. Due to the seals, relubrication is not practical.

## DRIVE CHAINS

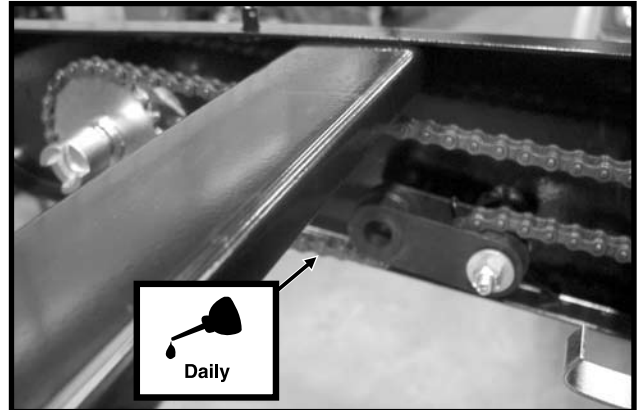
All transmission and drive chains should be lubricated daily with a high quality chain lubricant. Extreme operating conditions such as dirt, temperature or speed may require more frequent lubrication. If a chain becomes stiff, it should be removed, soaked and washed in solvent to loosen and remove dirt from the joints. Then soak the chain in oil so the lubricant can penetrate between the rollers and bushings.

D051705103



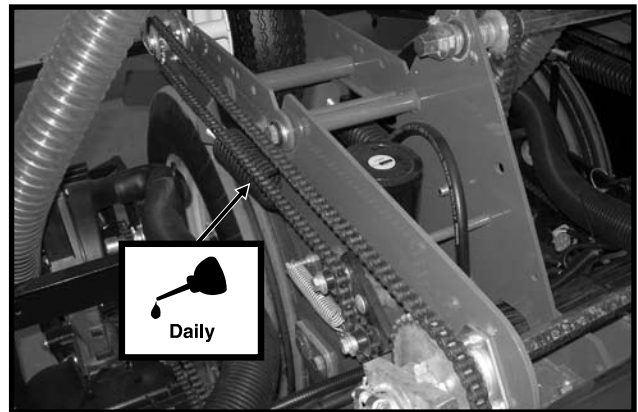
Pull Row Unit Drive Chains

D051705102



Row Unit Granular Chemical Drive Chains

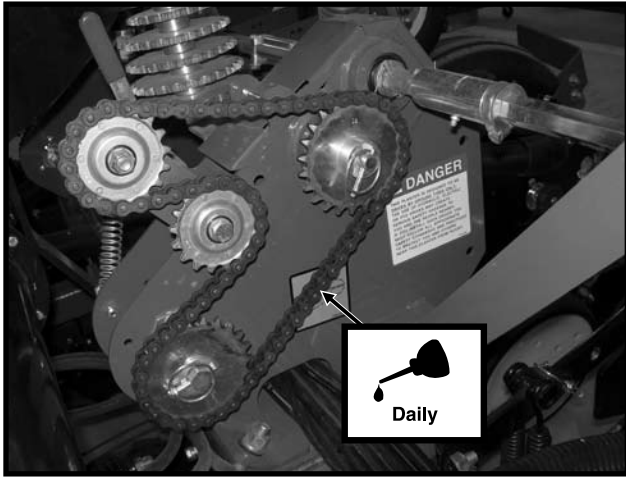
D01050743



Contact Wheel Chains

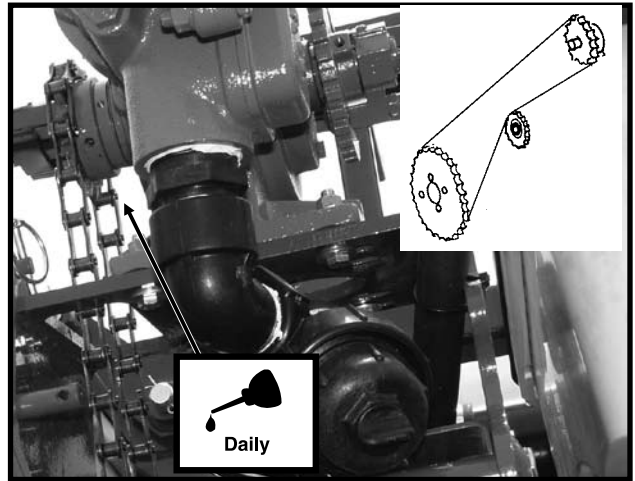
# LUBRICATION

D01050736



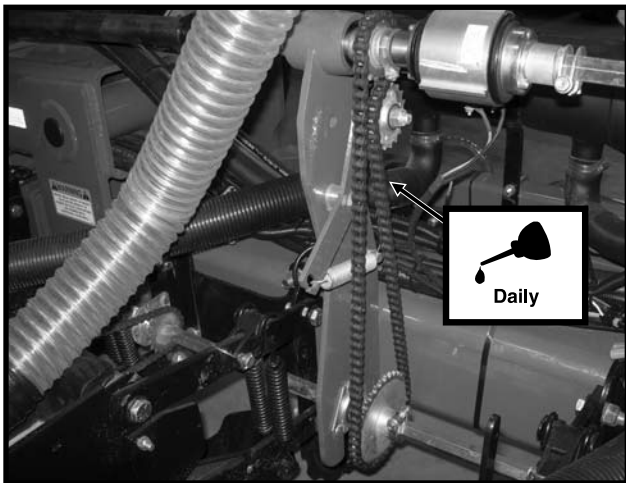
**Seed Rate Transmission Drive Chains**

D05230703(TWL219c)



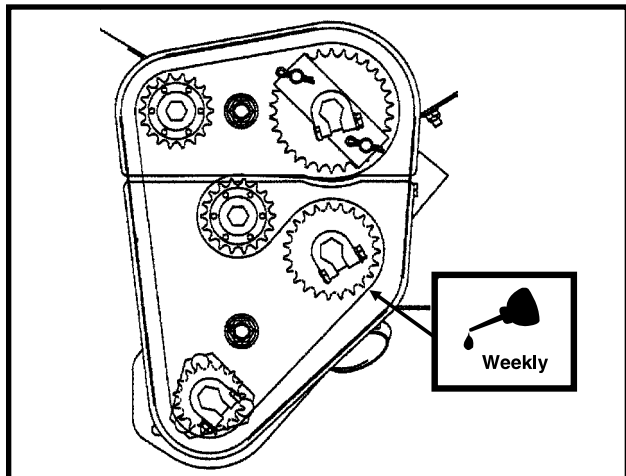
**Liquid Fertilizer Drive Chain (Piston Pump)**

D01050740



**Row Unit Drill Shaft Drive Chains**

(FWD149)



**SDS Drive Chains**

# LUBRICATION

## BUSHINGS

Lubricate bushings at the frequency indicated.

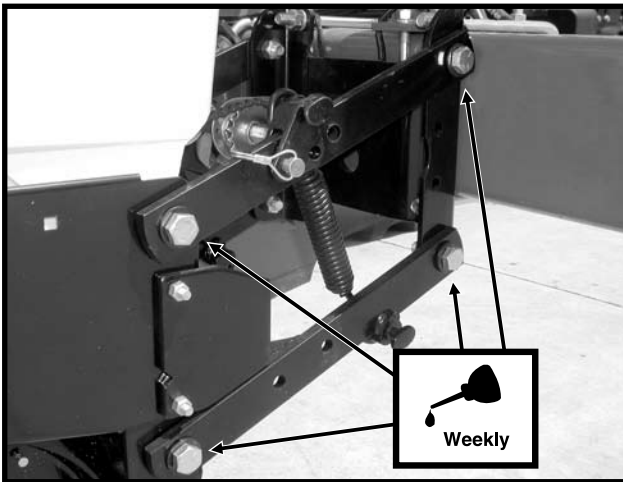
Using a torque wrench, check each bolt for proper torque. If bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushing if necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque hardware to 130 ft. lbs.**

LF212299-22



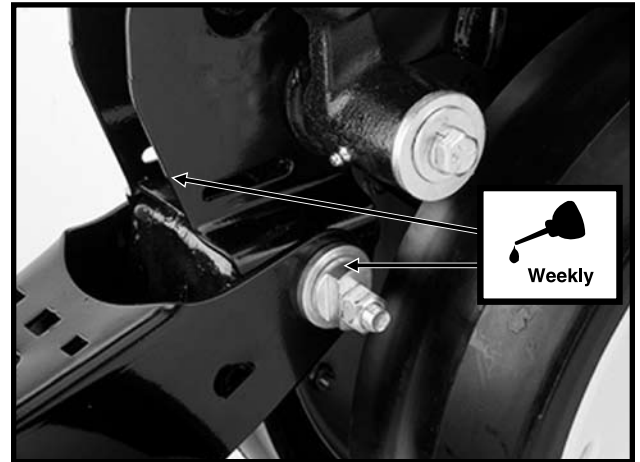
Row Unit Mounted Disc Furrower Parallel Linkages (6 Per Row)

D06300305



Pull Row Unit Parallel Linkages (8 Per Row)

LF212199-2



Row Unit "V" Closing Wheel, Covering Discs/ Single Press Wheel And/Or Drag Closing Wheel Eccentric Bushings (2 Per Row)

# LUBRICATION

## WRAP SPRING WRENCH ASSEMBLY

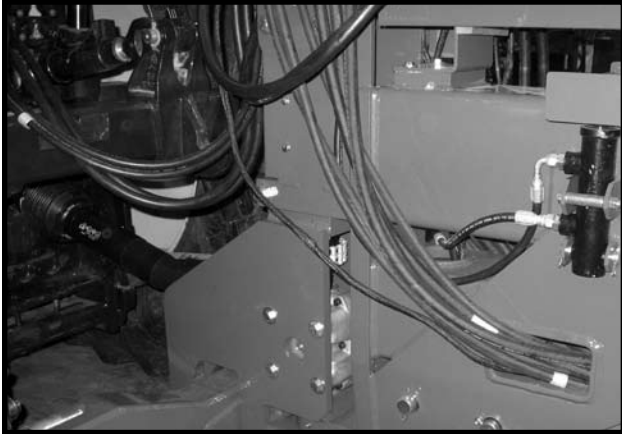
The chain idler is equipped with a wrap spring wrench. The wrench components may require occasional lubrication to operate correctly. Disassembly is required to lubricate. (a) Remove the cap screw that secures the idler with sprockets to the wrench tightener shaft. (b) Remove the wrap spring wrench from 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 SHAFT ASSEMBLY

D01290844



**IMPORTANT:**The PTO assembly should be cleaned and greased each time the PTO 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)*

## WHEEL BEARINGS

The transport wheel hubs are equipped with grease fittings. Pump grease into the hub until grease comes out around the seals. See “Grease Fittings” for lubrication frequency.

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, lift the wheel off the ground. Check for endplay in the bearings by moving the tire in and out. Rotate the tire to check for roughness in the bearings. If bearings sound rough, the hub should be removed and the bearings inspected and replaced if necessary. See Maintenance section.

To repack wheel hubs, follow the procedure outlined for wheel bearing replacement with the exception that bearings and bearing cups are reused.

## HITCH SLIDE ASSEMBLY (If Applicable)

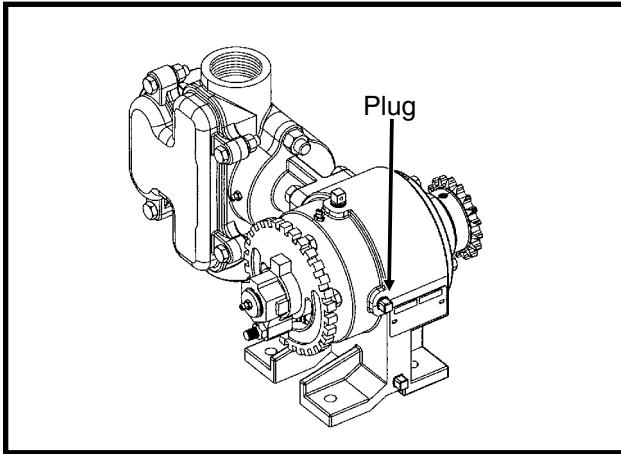
If the hitch does not extend or retract smoothly, extend the hitch and spray the inner slide area using a heavy duty aerosol grease lubricant.

# LUBRICATION

---

## LIQUID FERTILIZER PISTON PUMP CRANKCASE OIL LEVEL

(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

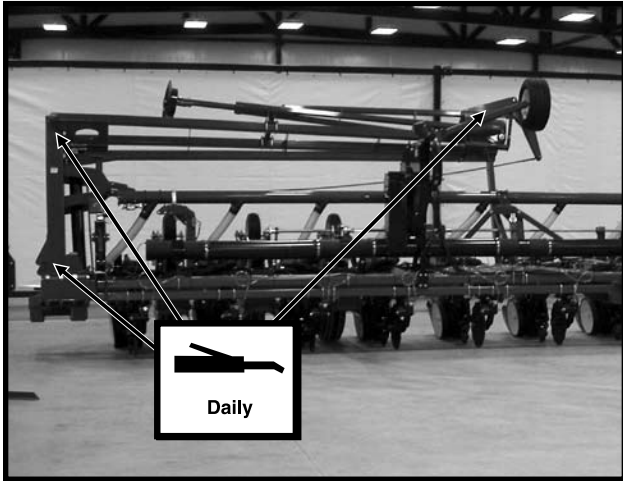
## GREASE FITTINGS

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.



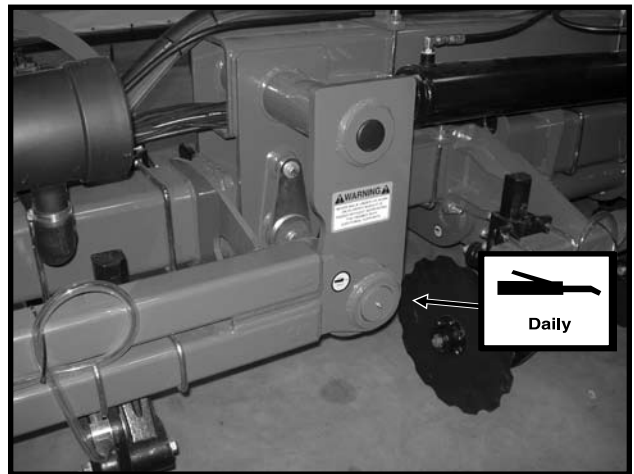
**WARNING: Always install safety lockup devices or lower the planter to the ground before working under or around the machine.**

D01050702



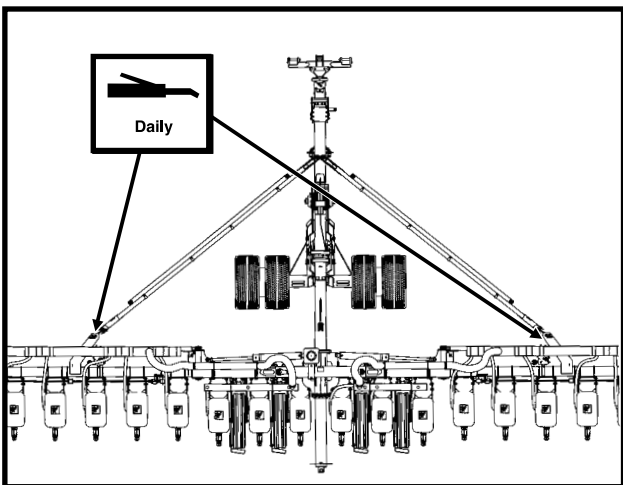
Row Marker Assemblies - 36 Row 30"

D01050708



Outer End Of Stub Wing - 3 Zerks Per Assembly

(FWD124a)



Wing Linkage Pivot - 1 Zerk Per Wing

D081905101

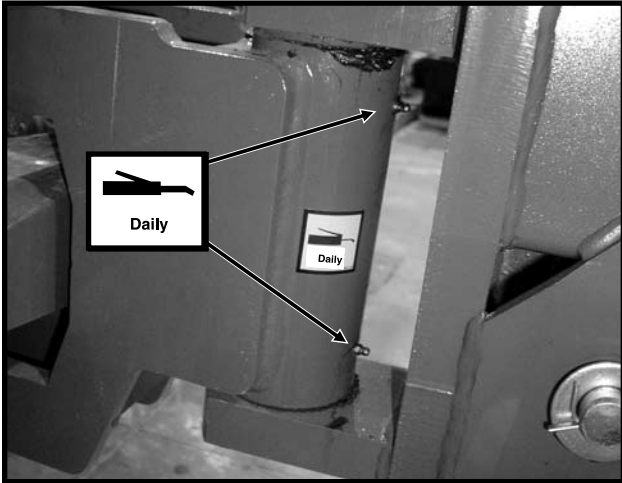


Inner End Of Stub Wing - 2 Zerks Per Assembly



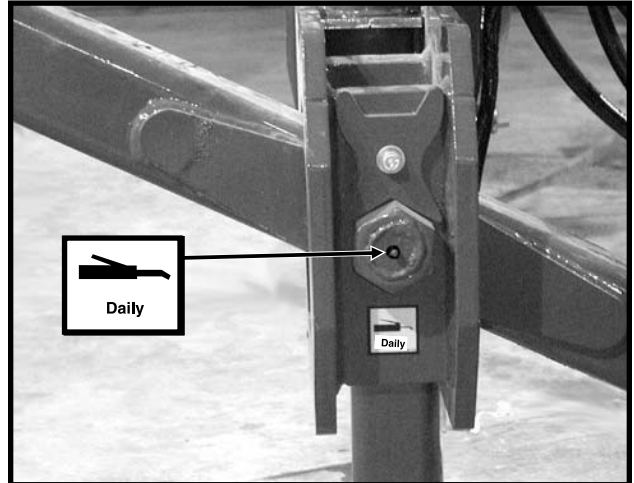
# LUBRICATION

D033104100



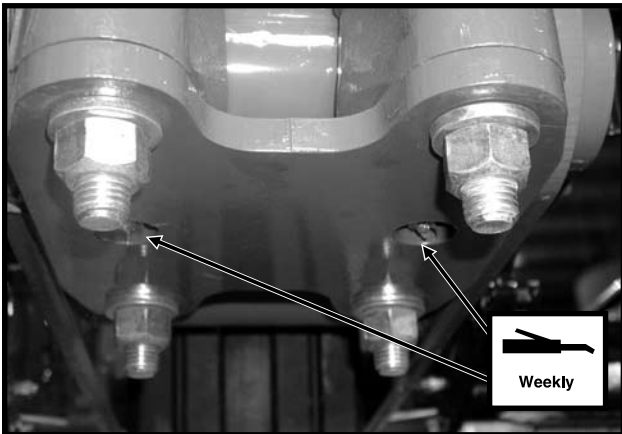
Hitch Pivot - 2 Zerks

D032404143



Hitch Pivot Pin - 1 Zerk

D040204102



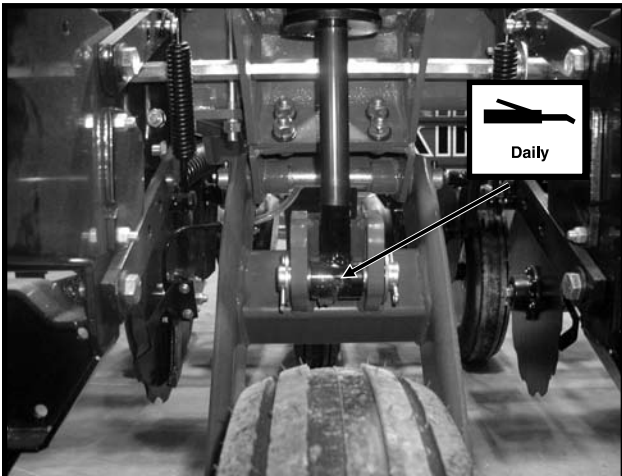
Center Section Lift Axle Pivot - 2 Zerks Per Wheel Assembly

72495-5



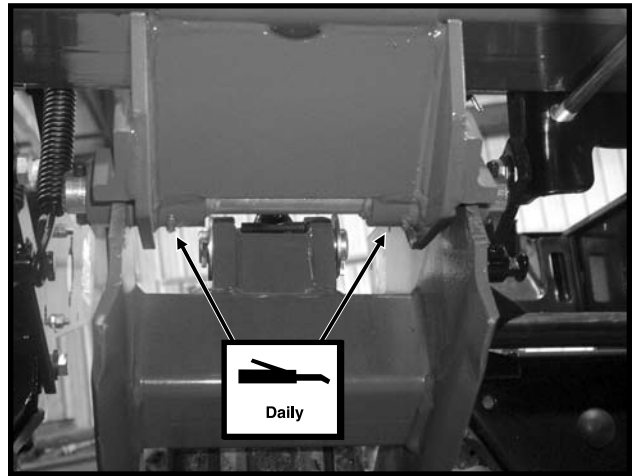
Transport Wheel Bearings - 1 Zerk Per Hub

D033104113



Wing Lift Cylinders - 1 Zerk Per Cylinder

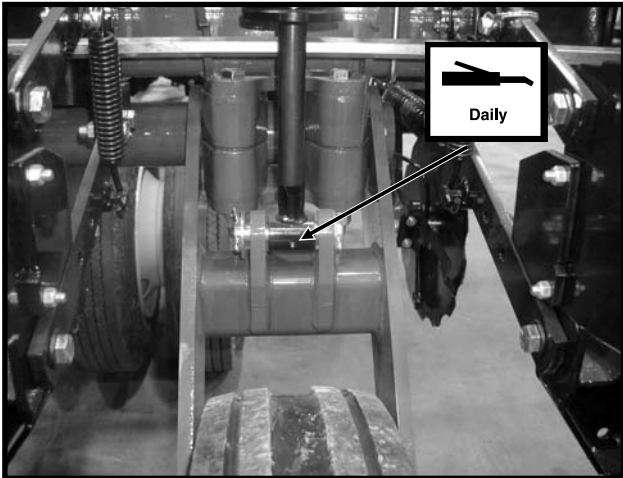
D040204105



Wing Wheel Pivot - 2 Zerks Per Wheel Module

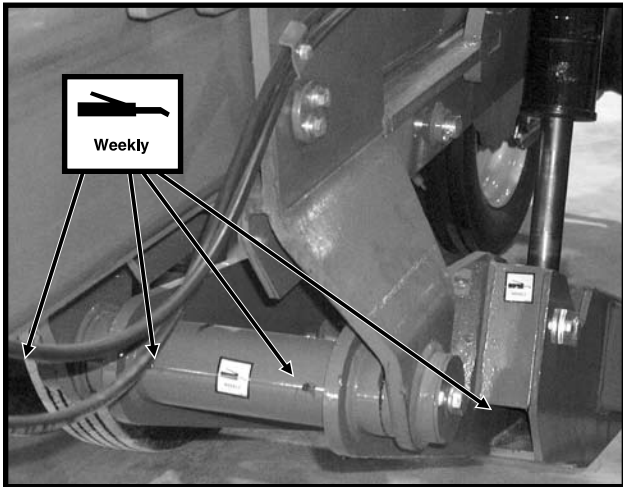
# LUBRICATION

D033104112



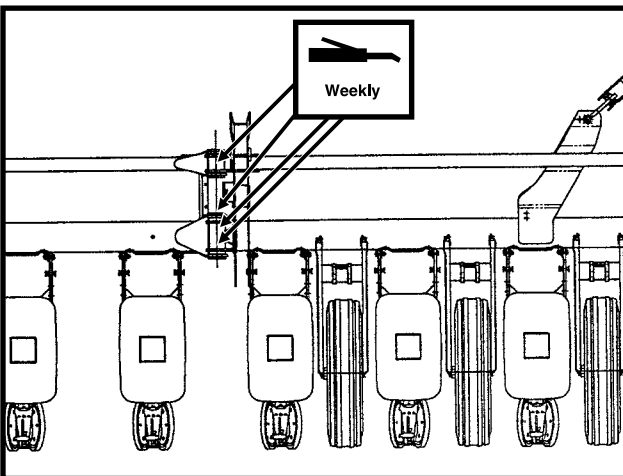
Center Section Lift Cylinders - 1 Zerk Per Cylinder

D032404124



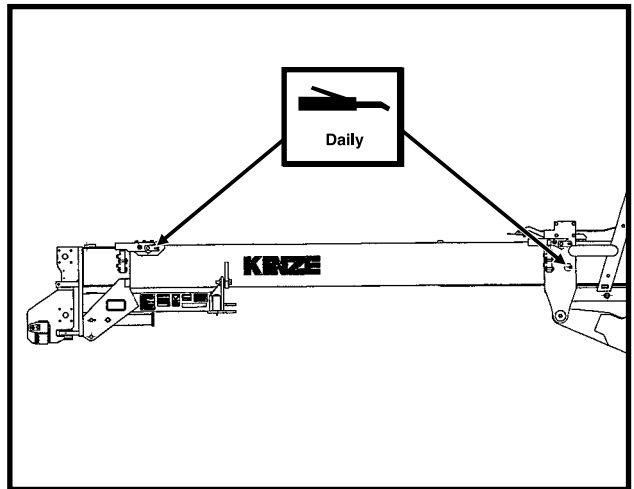
Transport Axle Pivot - 4 Zerks

(FWD52)



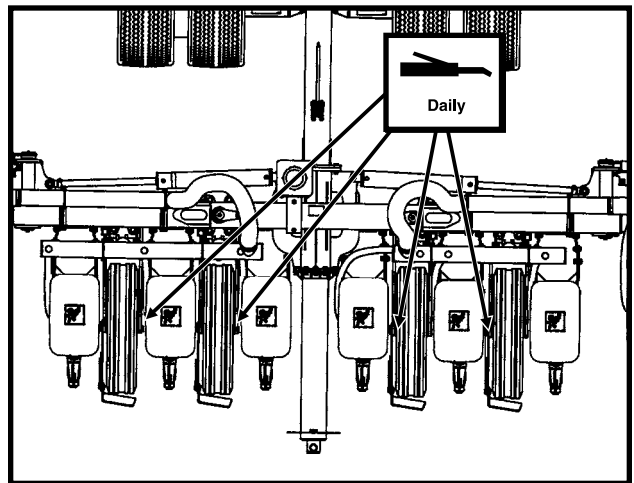
Outer Wing Hinge - 3 Zerks Per Assembly

(FWD163)



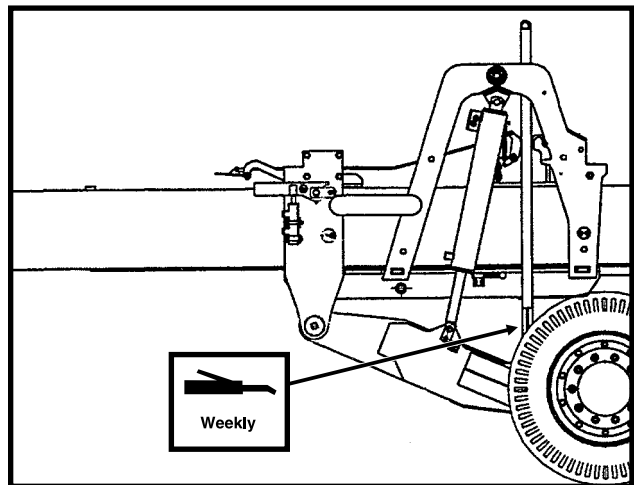
Slide Stops/Catches - 36 Row 30" - 2 Zerks

(FWD124a)



Rock Shaft Wheel Hub Assembly - 1 Zerk Per Hub

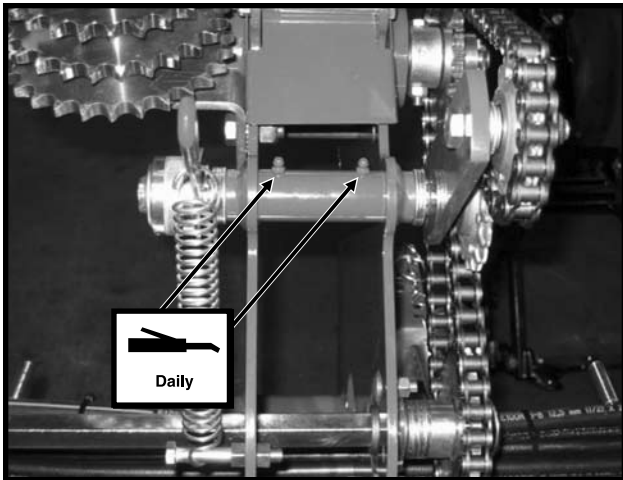
(FWD163)



Slide Assembly Lockup Stand - 2 Zerks

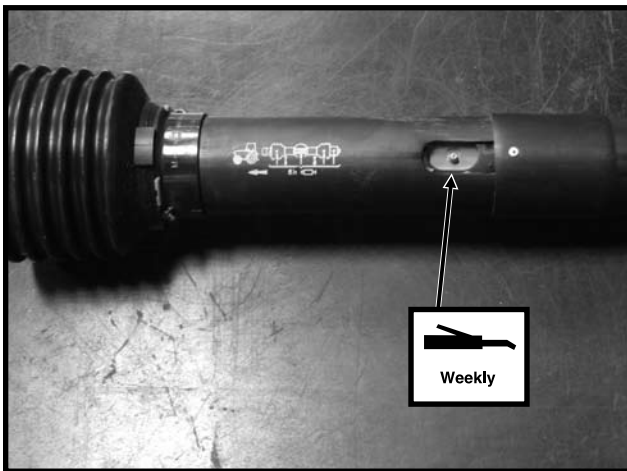
# LUBRICATION

D021406100



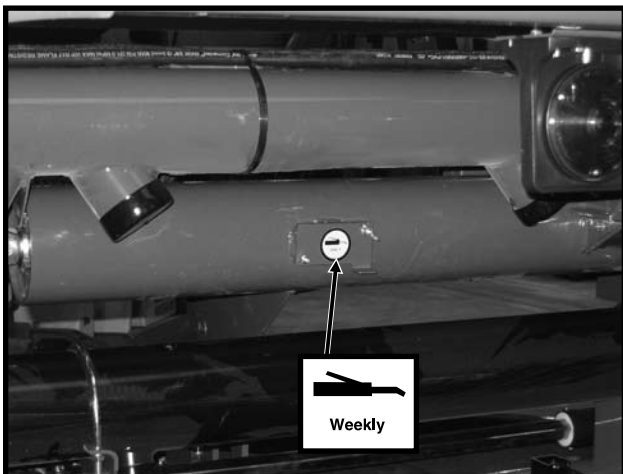
Seed Rate Transmission Assembly - 2 Zerks Per Transmission

D01290834



PTO Assembly- 1 Zerk

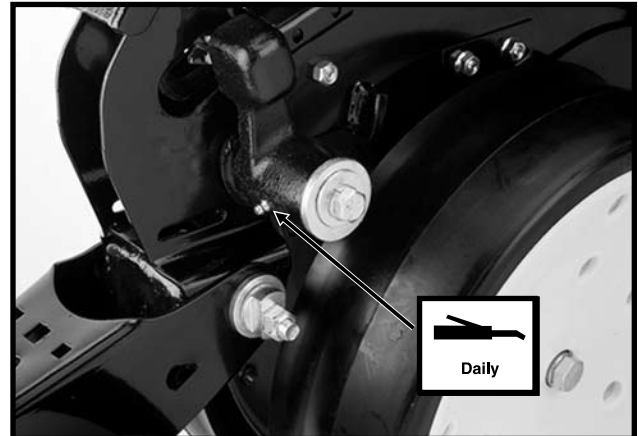
D02808101



SDS Auger Shaft - 1 Zerk On Each Side Of Planter

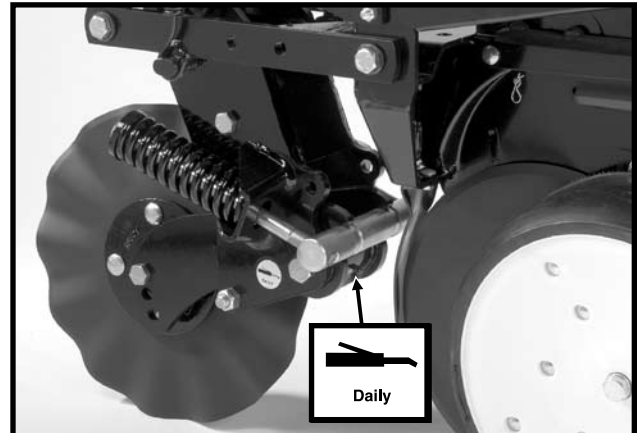
## Row Unit

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



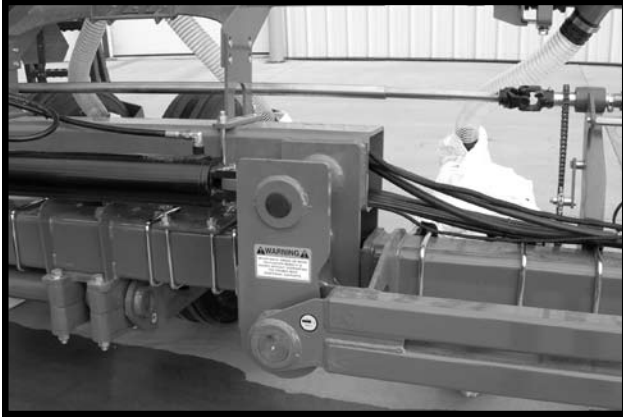
Frame Mounted Coulter - 1 Zerk Per Arm

# LUBRICATION

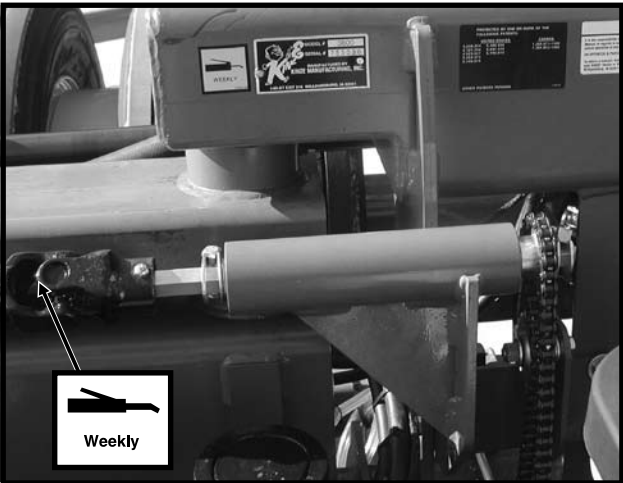
## U-Joint Slides

Lubricate all u-joint slides with a high quality lubricant.

D03060602

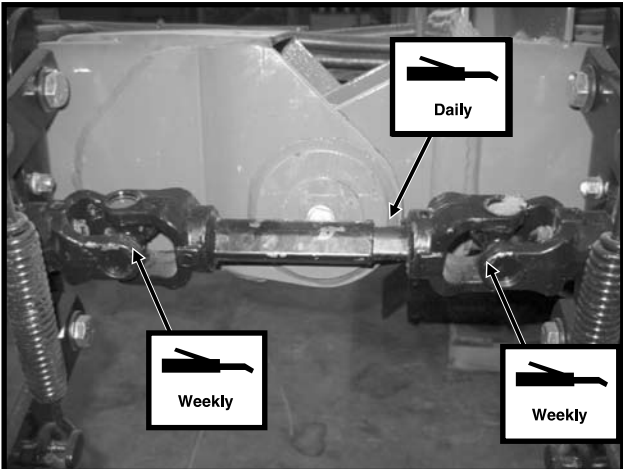


D081905101



U-Joint Shaft Between Center Section And Wing - 1 Zerk On Each End Of U-Joint Shafts (2 Per U-Joint Shaft)

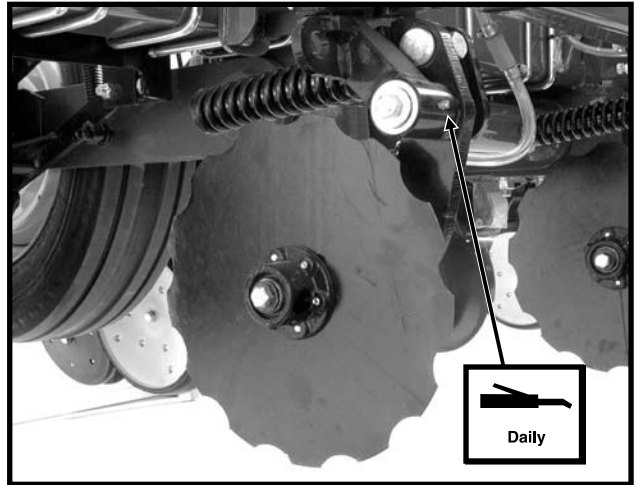
D020206109



U-Joint Shaft Between Inner And Outer Wings - 1 Zerk On Each End Of U-Joint Shaft (2 Per U-Joint Shaft)

## Fertilizer Openers

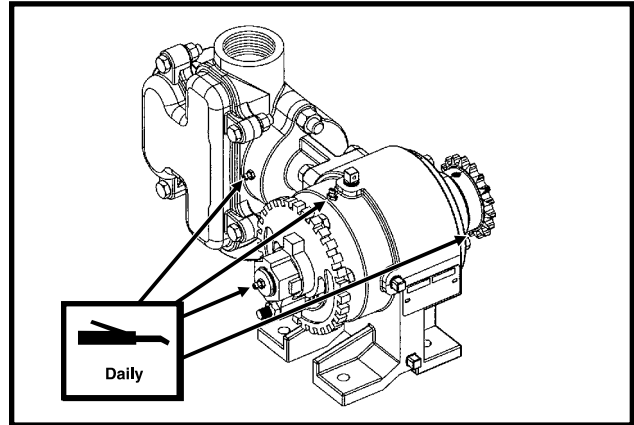
D040704104



Notched Single Disc Fertilizer Opener - 1 Zerk

## Liquid Fertilizer Piston Pump

(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 Flange Nuts - 350 Ft. Lbs.**

**Transport Tire (W/Duals) Cap Screws - 125 Ft. Lbs.**

**Center Section Lift/Gauge Tire Lug Nuts - 90 Ft. Lbs.**

**Wing Lift/Gauge Tire Lug Bolts - 125 Ft. Lbs.**

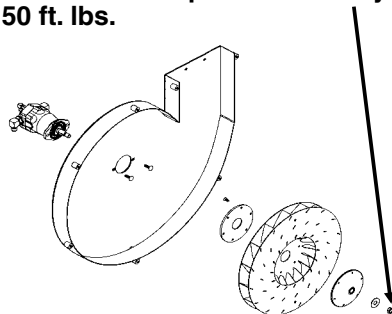
**3 Point Hitch Adapter Pin And Pivot Bolt - 550 Ft. Lbs.**

**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

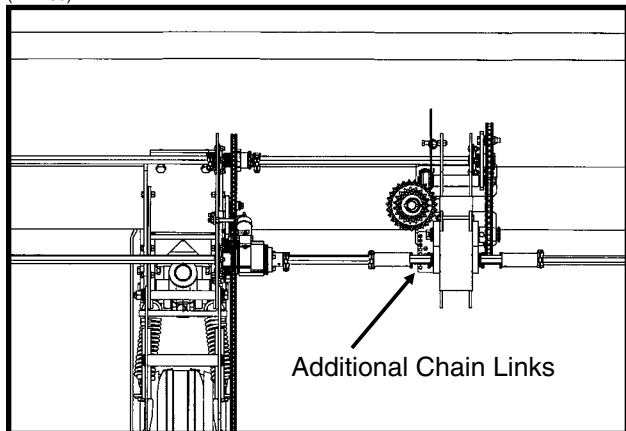
# MAINTENANCE

## CHAIN TENSION ADJUSTMENT

The drive chains have spring loaded idlers 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. See "Wrap Spring Wrench Assembly" in Lubrication Section for additional information.

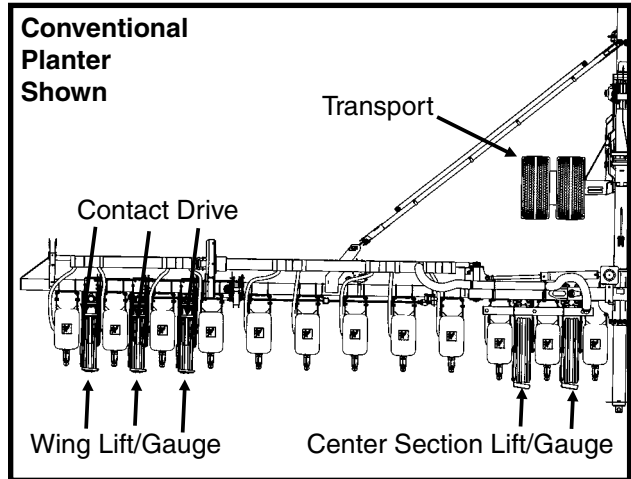
Additional chain links can be found in the storage areas located at each planter transmission assembly.

(FWD56)



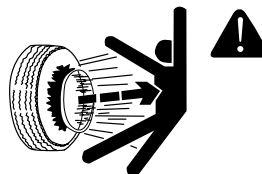
## TIRE PRESSURE

(FWD124a)



Tire pressure should be checked regularly and maintained as follows:

- (4) 41 x 11R22.5" Radial Load Range H  
(Center Section Lift/Gauge) ..... 75 PSI
- (6-12) 7.50" x 20" 8 Ply Custom Rib Implement  
(Wing Lift/Gauge) ..... 40 PSI
- (2-4) 445-50R22.5R Radial Load Range H  
(Transport) ..... 120 PSI
- (6) 4.80" x 8" (Contact Drive) ..... 50 PSI
- (2) 20.5 x 8.0-10 (Marker) ..... 35 PSI
- (2) 7.60" x 15" Rib Implement  
(Liquid Fertilizer Piston Pump) ..... 40 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 and change filters annually.

Refill system with a SAE 10W-20 multigrade wide temperature range transmission hydraulic fluid.

Reservoirs are supplied with a drain hose to allow easy draining.

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 2" from the top of the 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 oil level.
Oil temperature is high.	Low oil level.	Check oil level and add as required.
	Coolers plugged not allowing oil to flow across them.	Wash or blow off coolers.
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.

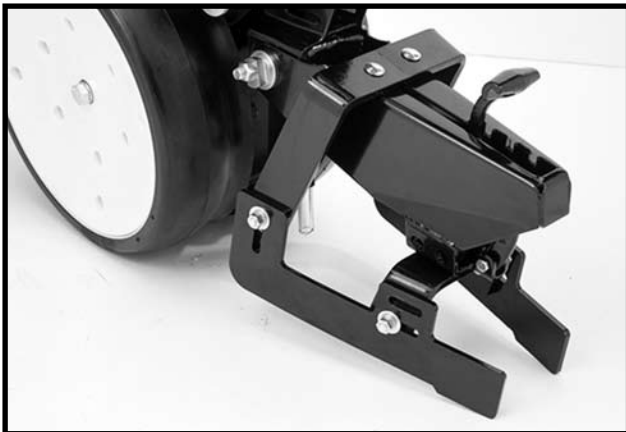
# MAINTENANCE

## 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”.

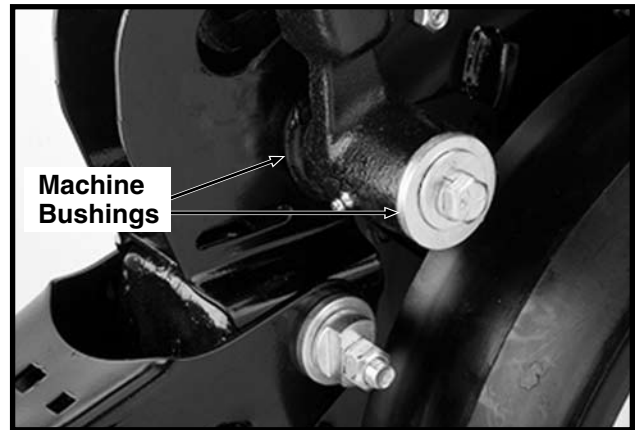
## DRAG CLOSING ATTACHMENT

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



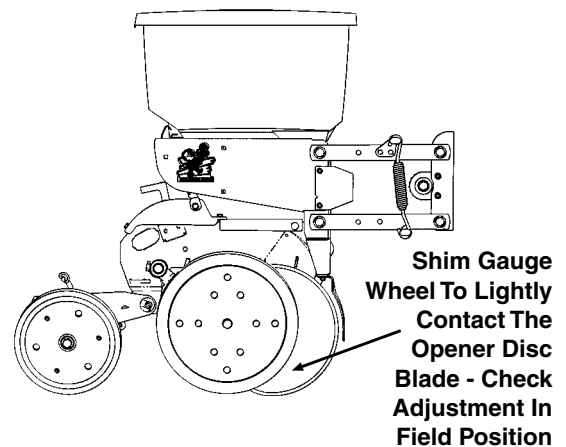
(RU113g)

## 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.



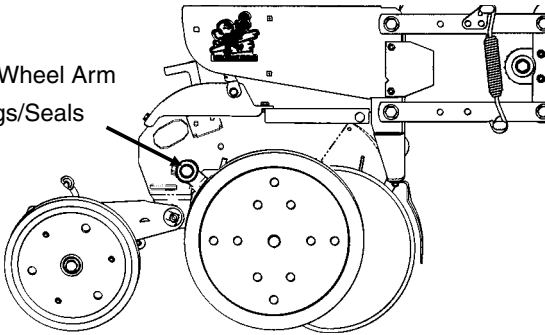


# MAINTENANCE

## GAUGE WHEEL ARM BUSHING AND/OR SEAL REPLACEMENT

(RU113g)

Gauge Wheel Arm Bushings/Seals

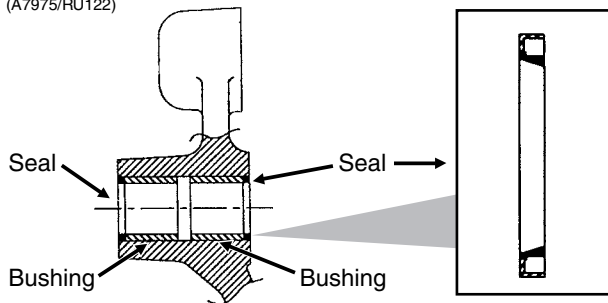


**NOTE: A Gauge Wheel Arm Bushing And Seal Driver Kit (G1K296), for use in bushing and seal replacement, is available through your KINZE® Dealer.**

**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.

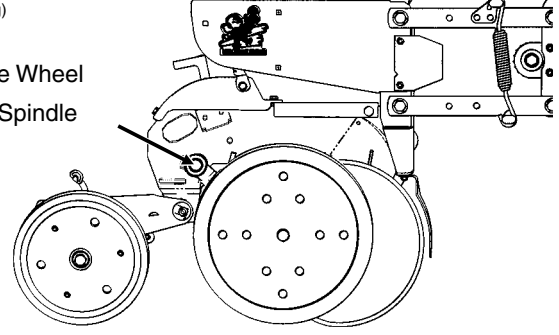
**NOTE: Special machine bushing between gauge wheel arm and gauge wheel.**

9. Shim for proper gauge wheel tire/disc blade clearance.
10. Lubricate with an SAE multipurpose grease.

## GAUGE WHEEL ARM PIVOT SPINDLE REPLACEMENT

(RU113g)

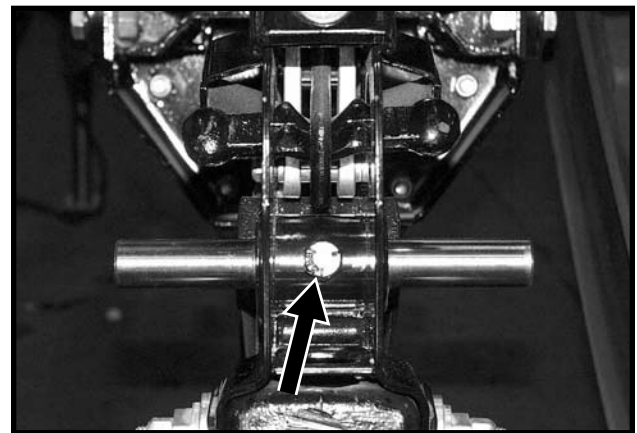
Gauge Wheel Pivot Spindle



**To replace gauge wheel pivot spindle:**

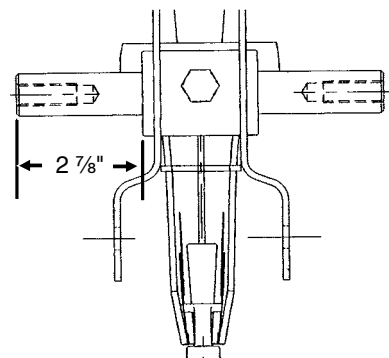
1. Remove the gauge wheel and arm assemblies from the shank assembly.
2. Remove 1/2" x 3/4" cap screw that locks the pivot spindle in place and remove the spindle.

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

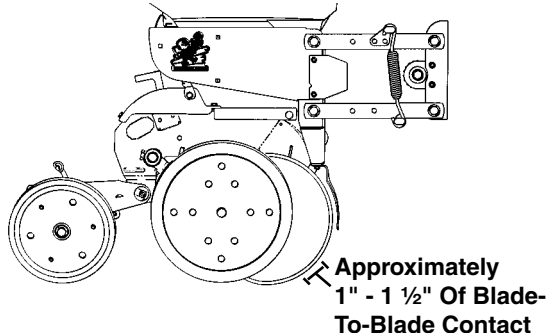
## 15" SEED OPENER DISC BLADE/ BEARING ASSEMBLY

Approximately 1" - 1 ½" 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 ½" of contact.

**NOTE: If proper blade-to-blade contact cannot be maintained after relocating machine bushings or if blade diameter wears below 14 ½", 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 ½" of blade-to-blade contact.

**IMPORTANT: Left hand side of opener uses a left hand threaded cap screw. DO NOT OVERTIGHTEN. 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 ⅝"-11 Grade 5 cap screw to value shown in "Torque Values Chart".

**NOTE: Replace disc blades only with disc 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 ¼" rivets from bearing housing to expose bearing.
3. After installing new bearing, install three evenly spaced ¼" 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 ¼" cap screws and install rivets in those three holes.
4. Reinstall disc blade/bearing assembly, washer and cap screw. Torque ⅝"-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.

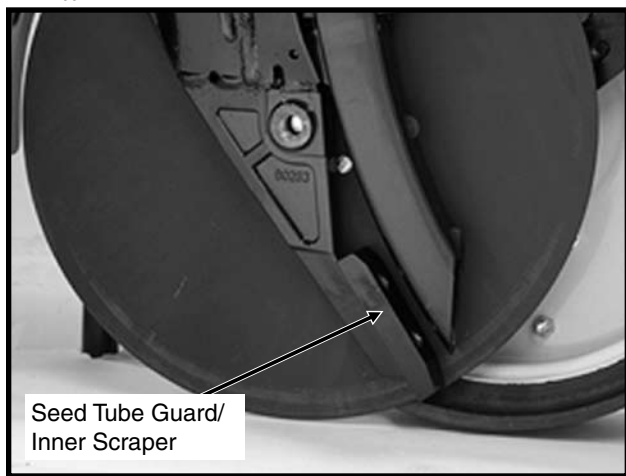
# MAINTENANCE

## 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

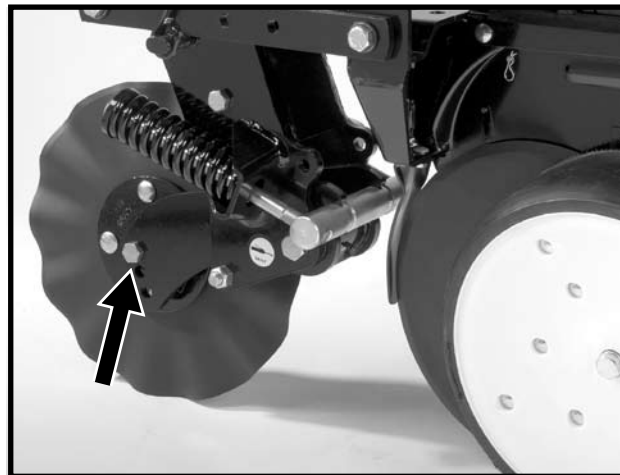
**IMPORTANT: No till planting or planting in hard ground conditions, especially when the planter is not equipped with no till coulters, and/or excessive blade-to-blade contact will increase seed tube guard wear and necessitate more frequent inspection and/or replacement.**

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.**

## FRAME MOUNTED COULTER

LF083002101



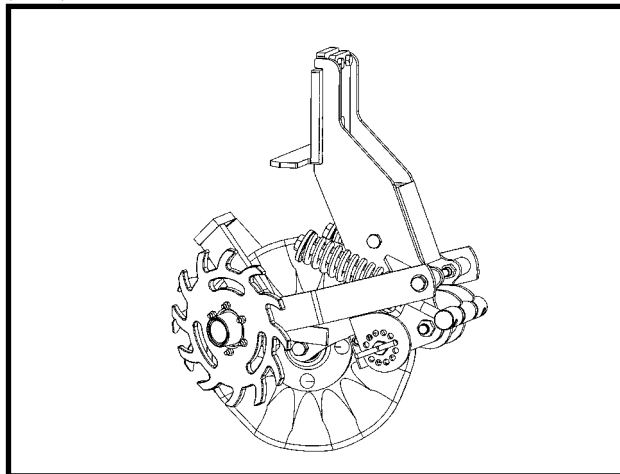
**NOTE: Torque  $\frac{5}{8}$ " spindle hardware to 120 ft. lbs.**

See "Frame Mounted Coulters" in Row Unit Operation section of this manual for depth and spring adjustment.

When the 16" diameter coulters 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 Coulters)

(RU154)

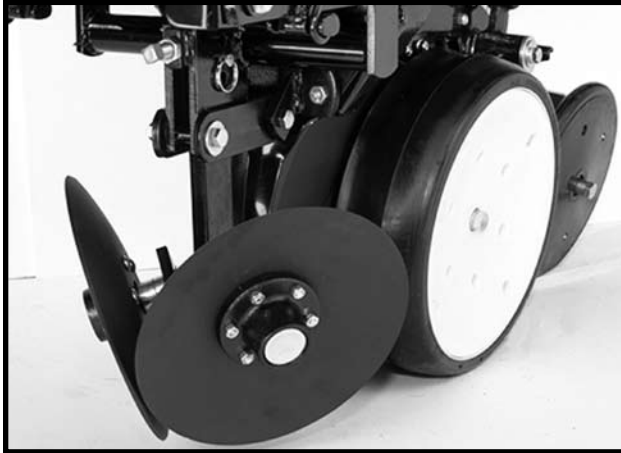


The wheel hub is equipped with sealed bearings. If a bearing sounds or feels rough when the wheel is rotated, replace the bearings.

# MAINTENANCE

## ROW UNIT MOUNTED DISC FURROWER

LF212299-22



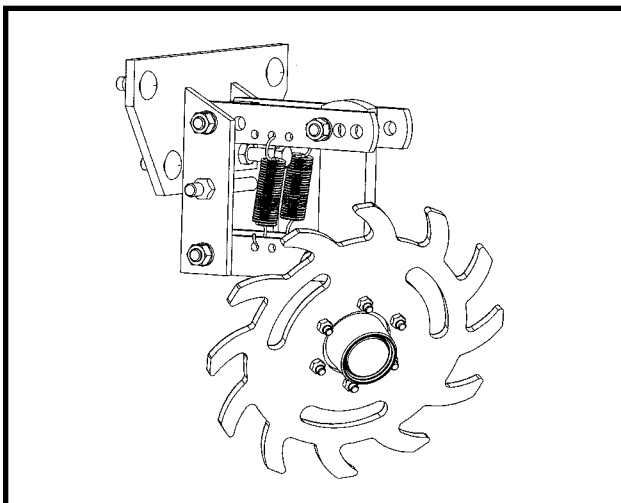
Lubricate the bushings in the support arm and mounting bracket at the frequency indicated in the Lubrication Section of this manual. Using a torque wrench, check each bolt for proper torque. If the bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushings as 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

(A12685)



The wheel hub is equipped with sealed bearings. If a bearing sounds or feels rough when the wheel is rotated, replace the bearings.

## ROW UNIT MOUNTED NO TILL COULTER

D05170706a



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

D05170708a



The wheel hubs are equipped with sealed bearings. If bearings sound or feel rough when the wheel is rotated, replace the bearings.

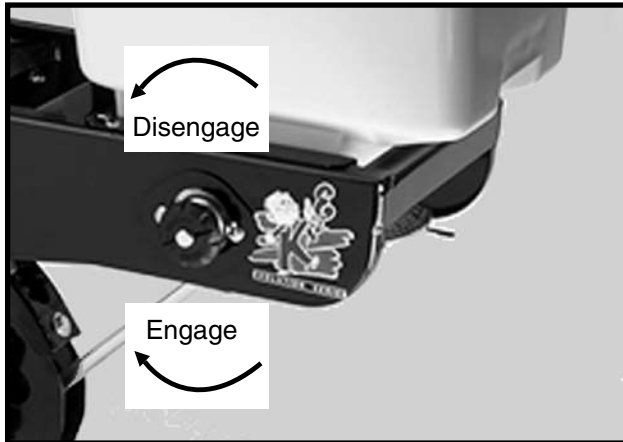
# MAINTENANCE

## 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.

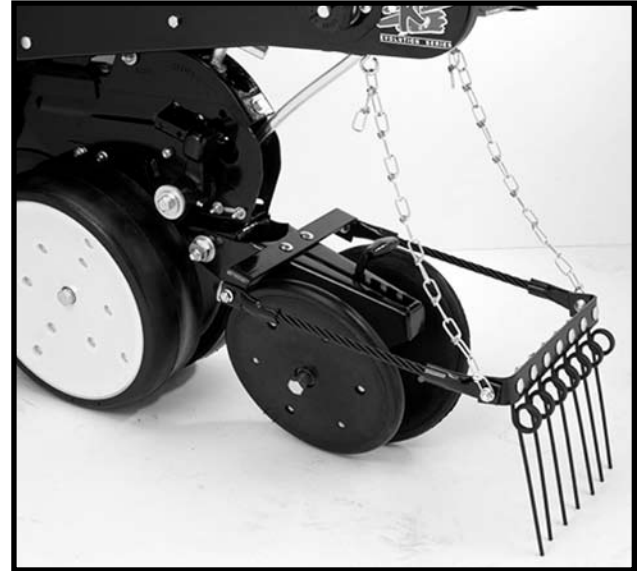
LF212299-4



## 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 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.	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.	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 sealed and require no periodic maintenance.

D081905107

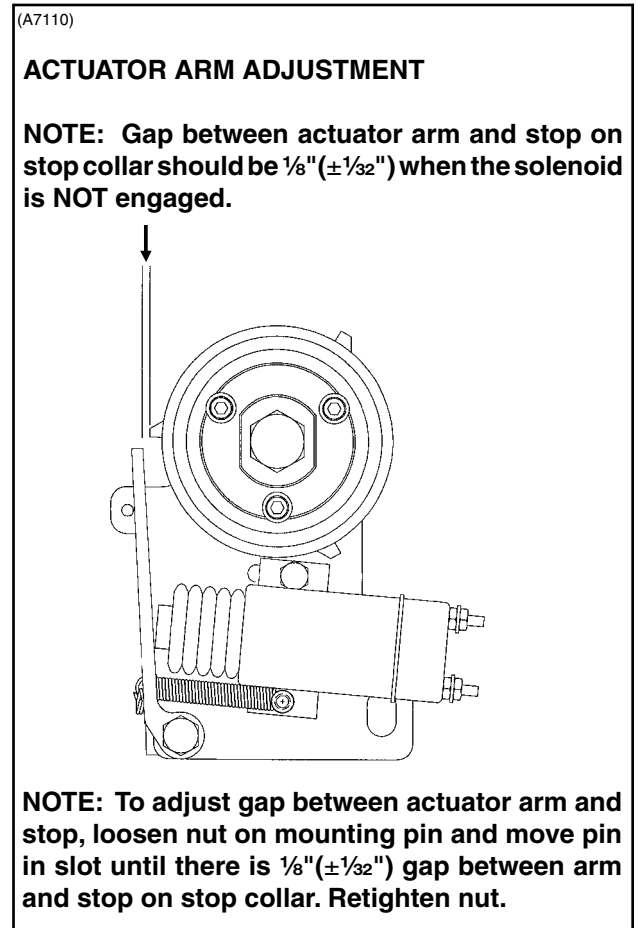
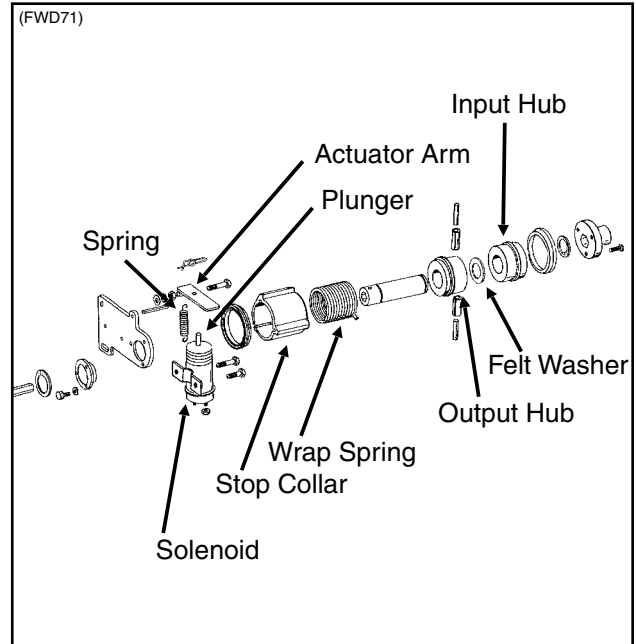


The clutches on the outer L.H. and inner R.H. sections operate clockwise and the clutches on the outer R.H. and inner L.H. sections operate counterclockwise. Therefore, some of the parts of the clutches such as the wrap springs differ from one location on the planter to another. Be sure to use the correct repair part if a clutch must be repaired.

Outer L.H. Section	Uses R.H. (CW) Point Row Clutch
Inner L.H. Section	Uses L.H. (CCW) Point Row Clutch
Inner R.H. Section	Uses R.H. (CW) Point Row Clutch
Outer R.H. Section	Uses L.H. (CCW) Point Row Clutch

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

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



# 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.



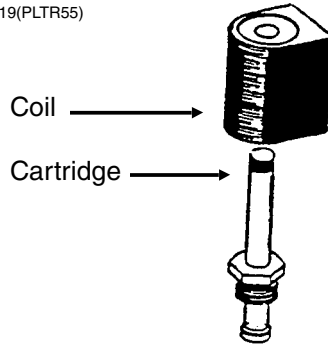
# MAINTENANCE

## SOLENOID VALVE

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

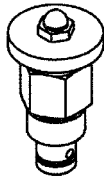
If the solenoid or solenoids fail to operate, first determine if the problem is electrical or hydraulic. If the valve is working properly, a click will be heard when the solenoid coil is energized. This will be the valve stem opening up. If no sound is heard, check the solenoid coil by touching the top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

VVB019(PLTR55)



## FLOW CONTROL VALVE

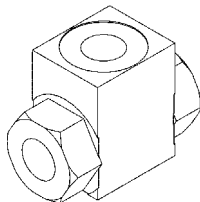
(FWD157)



The flow control valves should be adjusted for row marker raise and lower speed as part of the assembly procedure or upon initial operation. If the valve fails to function properly or requires frequent adjustment, it should be removed for inspection. Check for foreign material and contamination on both the valve and the seating area of the valve body. Replace any components found to be defective.

## FLOW REGULATOR VALVE (Located At Each Row Marker)

(A10645)



The flow regulator valve directs hydraulic pressure to the row marker lift assist cylinder.

## PRESSURE RELIEF VALVE (Located At Center Of Rear H-Frame)

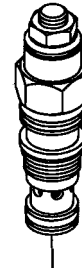
(FWD23)



The pressure relief valve limits the available hydraulic pressure to the transport axle cylinder when the cylinder is retracting. Consult your KINZE® Dealer for service.

## COUNTER BALANCE VALVE (Located At Center Of Rear H-Frame)

(FWD21)



The counter balance valve is used for hydraulic load holding. This is a safety feature to prevent the planter from being unintentionally lowered. The valve is factory set and should require no additional adjustments. Consult your KINZE® Dealer for service.

## PRESSURE RELIEF VALVE (Located At Each Row Marker)

(FWD26)



The pressure relief valve functions during the operation of the marker cylinder to equalize the hydraulic pressure applied to the row marker lift assist cylinder. The valve is factory set and should require no additional adjustments. Consult your KINZE® Dealer for service.

# MAINTENANCE

## 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.
	Poor 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.

## LIFT/FOLD CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	TROUBLESHOOTING*	SOLUTION
Planter raising uneven.	Master cylinder is leaking.	Raise planter <b>slowly</b> until master cylinder reaches mid stroke. If master cylinder is leaking the corresponding slave cylinder will have a greater rod length. If planter settles when hydraulic lever is released, check assist cylinders.	Perform leak test. Consult your KINZE® Dealer for leak testing. Install seal kit.
	Slave cylinder is leaking.	Fold planter to transport position. Retract field tires and observe which tire settles.	Perform leak test. Consult your KINZE® Dealer for leak testing. Install seal kit.
Planter raising even; however, planter settles when hydraulic lever is released.	Assist cylinder is leaking.	Fold planter to transport position. Retract assist cylinder and observe which tire settles.	Perform leak test. Consult your KINZE® Dealer for leak testing. Install seal kit.

\* Operate hydraulics slowly to accentuate the problem.

# MAINTENANCE

## ROW MARKER CIRCUIT TROUBLESHOOTING

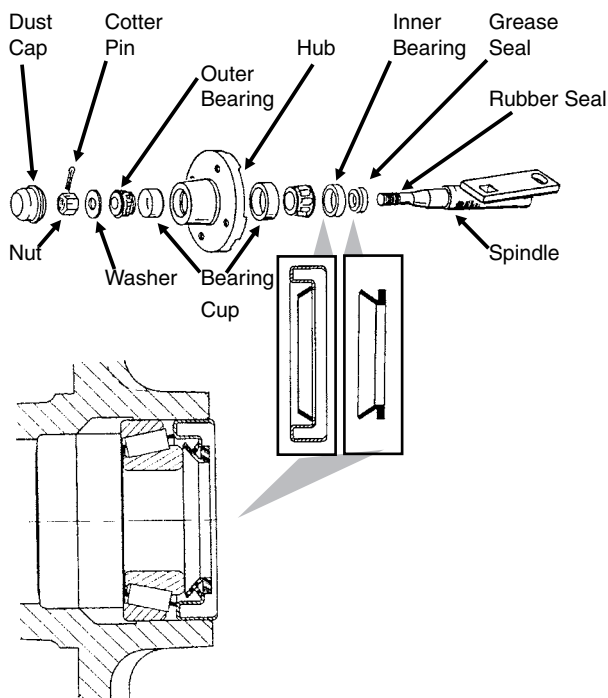
PROBLEM	POSSIBLE CAUSE	SOLUTION
Right marker lowering slower than left marker.	Solenoid valve cartridge in port V3 not opening completely.	Switch cartridge with one in port V4. If problem follows cartridge, replace cartridge.
	Hose pinched or collapsed.	Inspect hose routing. Replace or repair hoses as required.
Left marker lowering slower than right marker.	Solenoid valve cartridge in port V4 not opening completely.	Switch cartridge with one in port V3. 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 (V3) is defective. If the marker switch is in the right marker position, the left cartridge (V4) 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 V3 and V4 not energized.	Poor ground on wire, bad wire connection or damaged wire. Repair as required.
	Marker flow control valve closed too far.	See "Machine Operation" for adjustment.
Neither marker will raise.	Marker flow control valve closed too far.	See "Machine Operation" for adjustment.
Right marker will not lower.	Solenoid coil in port V3 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 V3 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 V4 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 V4 stuck closed.	Switch cartridge with one on the planter you know is operating properly. If right marker lowers, replace defective cartridge.
Markers traveling too fast and damaging row marker stands and/or damaging pivot at rod end of marker cylinders.	Marker flow control valve out of adjustment.	See "Machine Operation" for adjustment.

# MAINTENANCE

## ROW MARKER BEARING LUBRICATION OR REPLACEMENT

1. Remove row marker blade.
2. Remove dust cap from hub.
3. Remove cotter pin, nut and washer.
4. Slide hub from spindle.
5. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
6. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
7. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.
8. Install rubber seal into grease seal. Place inner bearing in place and press in new rubber seal/grease seal.
9. Clean spindle and install hub.
10. Install outer bearing, washer 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.

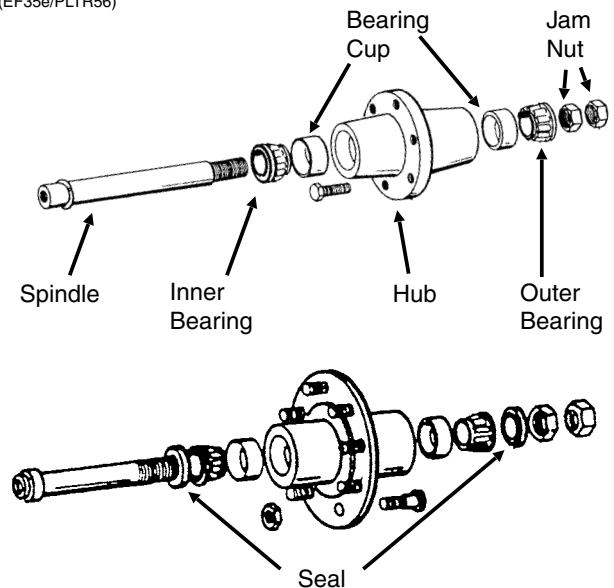
(PLTR45/PLTR99/PLTR98/PLTR102)



## LIFT/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, seals (Where Applicable) and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
4. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
5. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.
6. Place inner bearing and seal (If Applicable) in place.
7. Clean spindle and install hub.
8. Install outer bearing, seal (If Applicable) and stepped nut. Tighten jam nut while rotating hub until there is some drag. This assures that all bearing surfaces are in contact. Back off jam nut  $\frac{1}{4}$  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. Torque lug bolts or nuts to specified torque.

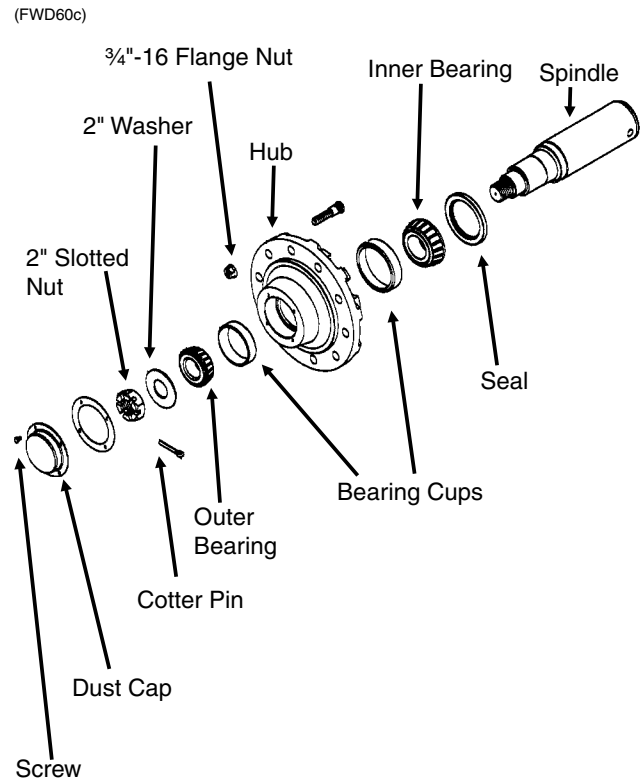
(EF35e/PLTR56)



# MAINTENANCE

## TRANSPORT WHEEL BEARING REPLACEMENT

1. Raise tires clear of ground and remove wheels.
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 wheels and remove jack. Torque wheel nuts (and cap screws if applicable) to specified torque.



# 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.**

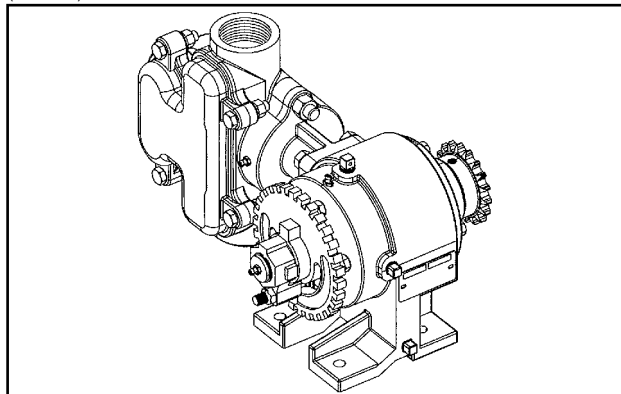
### Overnight Storage

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.

(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 full hydraulic flow from the tractor for two minutes to clear manifolds, hoses and fittings of dust and debris.

Clean breather on analog vacuum gauges.

Disassemble, clean and grease all U-joint slides.

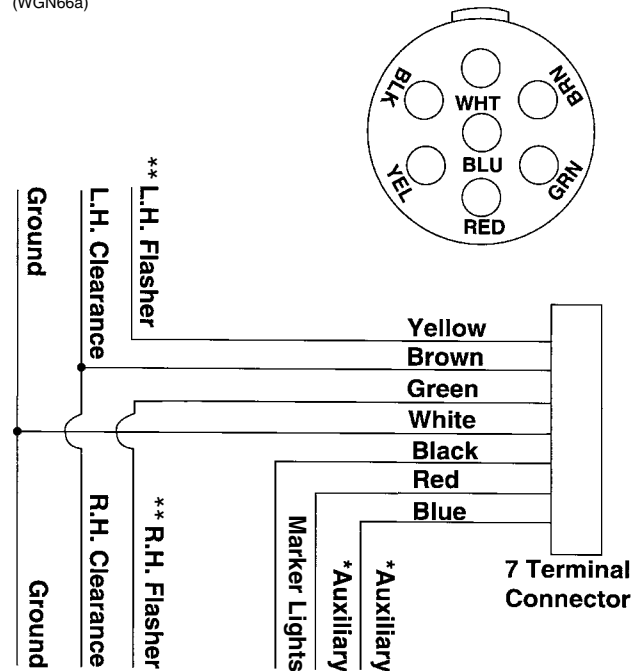
Grease or paint disc openers/blades and row marker disc blades to prevent rust.

Flush liquid fertilizer metering pump with clean water. See "Piston Pump Storage".

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 7-TERMINAL LIGHT CONNECTOR

(WGN66a)



- \* Optional customer-supplied auxiliary lights and wires may be wired into existing plug terminals.
- \*\* Rear and side flashers.

The light packages supplied on Model 3800 SDS and 3800 Conventional Forward Folding Planters meet ASAE Standards. For the correct wiring harness to be wired into the lights on your tractor, check with the tractor manufacturer.

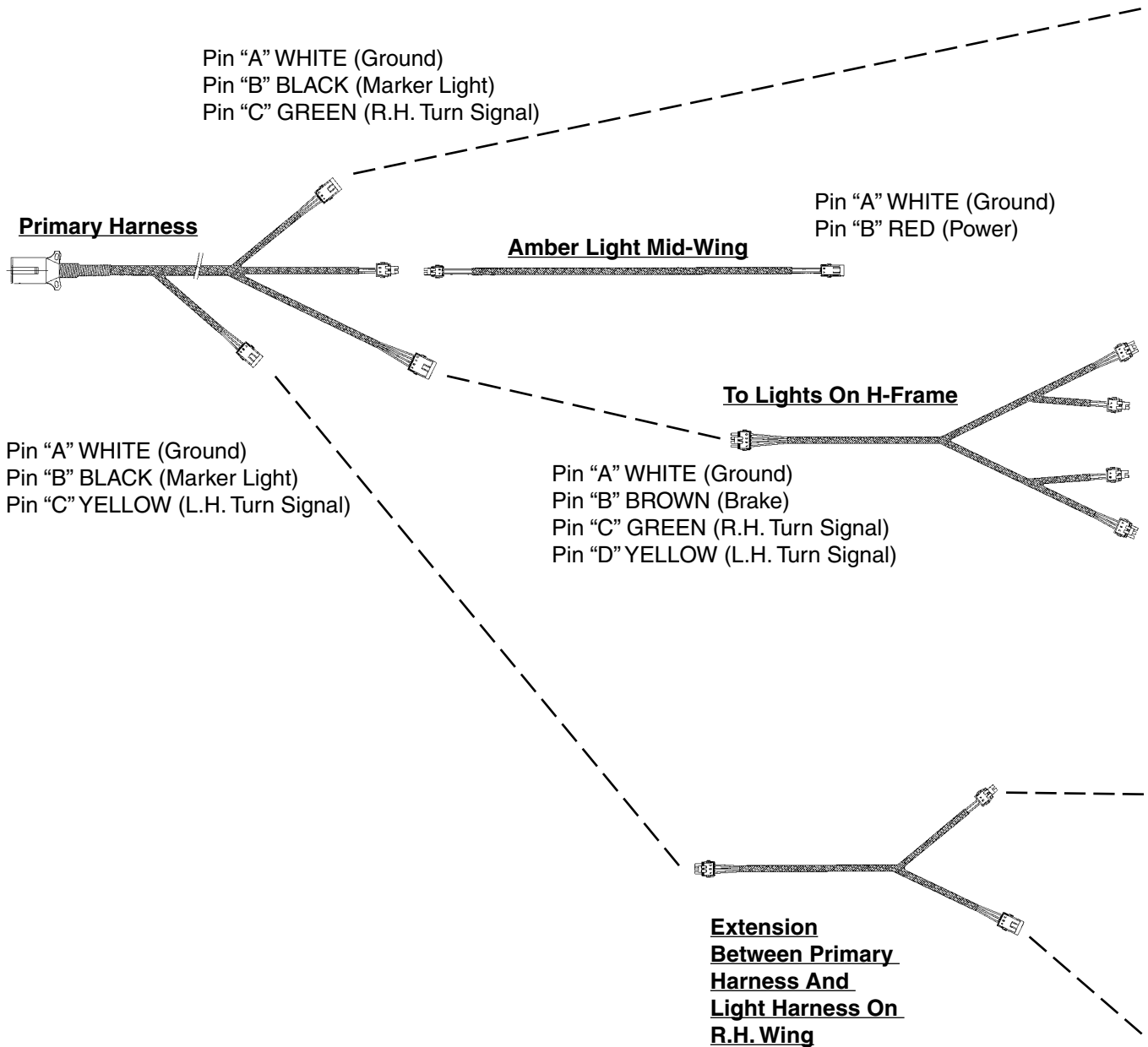
69922-35



# MAINTENANCE

## ELECTRICAL LIGHT HARNESS SCHEMATIC

(A10315/A10316/A10317/A10318/A10319)

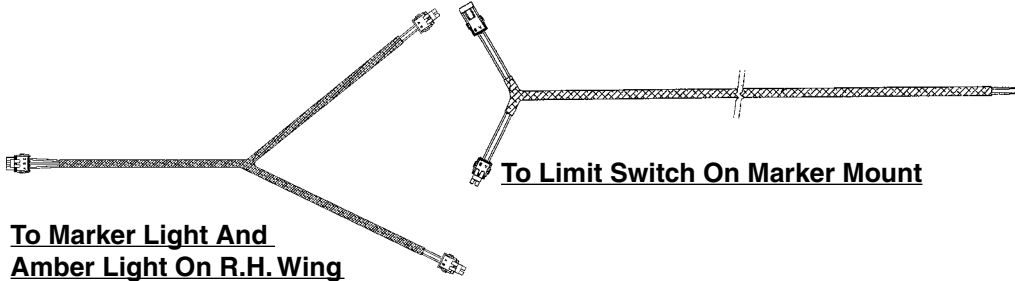




# MAINTENANCE

---

Pin "A" WHITE (Ground)  
 Pin "B" BLACK (Marker Light)



Pin "A" WHITE (Ground)  
 Pin "B" GREEN (R.H. Turn Signal)

Pin "A" WHITE (Ground)  
 Pin "B" BROWN (Brake)  
 Pin "C" GREEN (R.H. Turn Signal)

Pin "A" WHITE (Ground)  
 Pin "B" GREEN (R.H. Turn Signal)

Pin "A" WHITE (Ground)  
 Pin "B" YELLOW (L.H. Turn Signal)

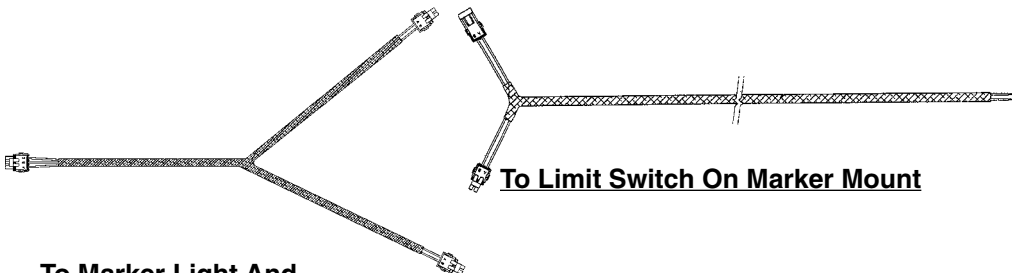
Pin "A" WHITE (Ground)  
 Pin "B" BROWN (Brake)  
 Pin "C" YELLOW (L.H. Turn Signal)

## **Amber Light Mid-Wing**

Pin "A" WHITE (Ground)  
 Pin "B" RED (Power)



Pin "A" WHITE (Ground)  
 Pin "B" BLACK (Marker Light)



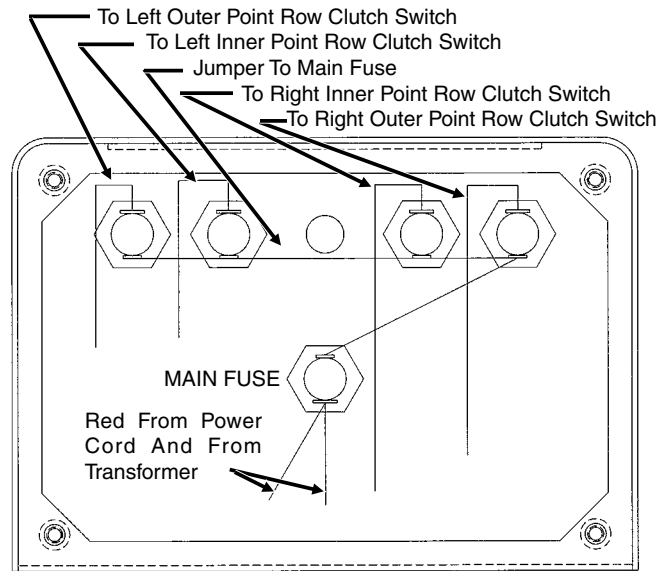
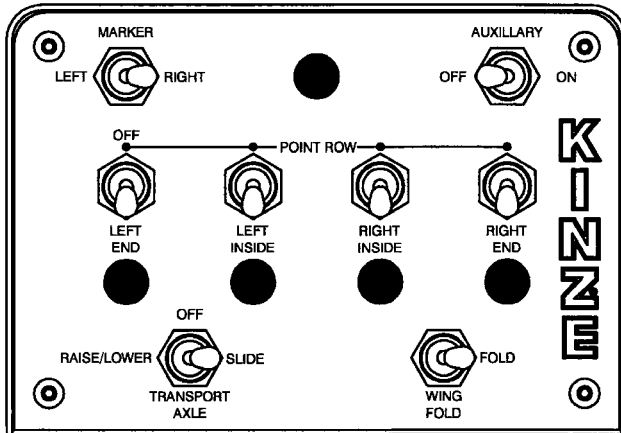
Pin "A" WHITE (Ground)  
 Pin "B" YELLOW (L.H. Turn Signal)

# MAINTENANCE

## ELECTRICAL CONTROL CONSOLE SCHEMATIC (Planter Functions)

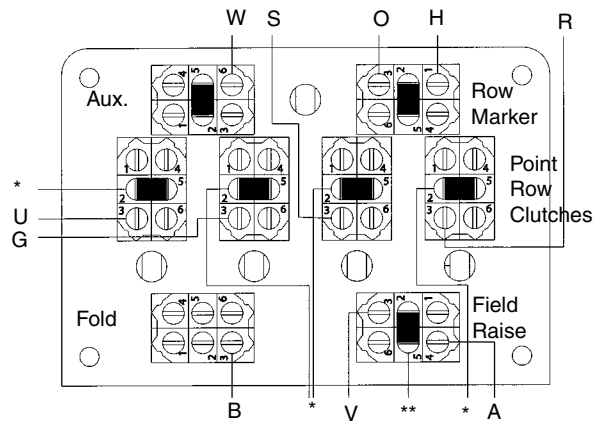
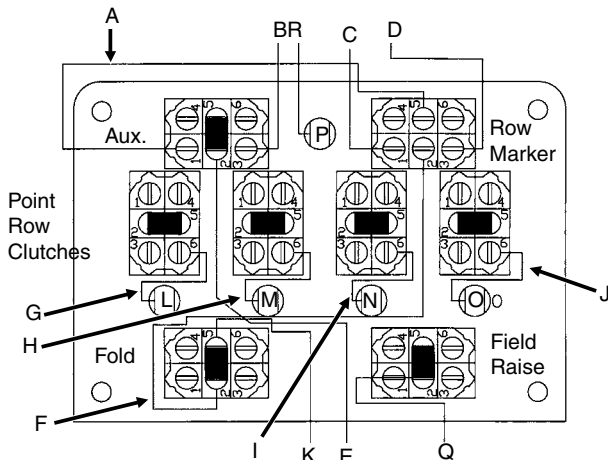
**IMPORTANT:** Before doing any electrical work, disconnect the control console from the tractor battery. Keep wiring harnesses away from high temperature areas or sharp edges. **DO NOT** route the wiring harnesses along battery cables. Use tie straps to keep wire harnesses away from moving parts on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

(FWD30bb/FWD36a/FWD30c/FWD36)



- A. 6" White Jumper
- B.-D., Q. 4" White Jumper (4)
- E. 4" Red Jumper
- F. 7" Orange Jumper
- G.-J. 3" White Jumper (4)
- K. 5" Black Jumper
- L.-P. 7" Purple Jumper (5)
- R. 4" White Jumper

- Pin "A" ORANGE/RED (Slide)
- Pin "R" BROWN (L.H. Outer Point Row Clutch)
- Pin "G" ORANGE (R.H. Inner Point Row Clutch)
- Pin "H" BLUE (L.H. Marker)
- Pin "B" BLUE/RED (Fold)
- Pin "U" RED/BLACK (R.H. Outer Point Row Clutch)
- Pin "S" YELLOW (L.H. Inner Point Row Clutch)
- Pin "O" RED (R.H. Marker)
- Pin "V" BLUE/BLACK (Raise To Transport)
- Pin "T" BLACK (Ground)(12 Gauge)
- Pin "C" BLACK/RED (Ground)
- Pin "W" ORANGE/BLACK (Auxiliary)
- \* To Point Row Clutch Fuses
- \*\* To Main Fuse



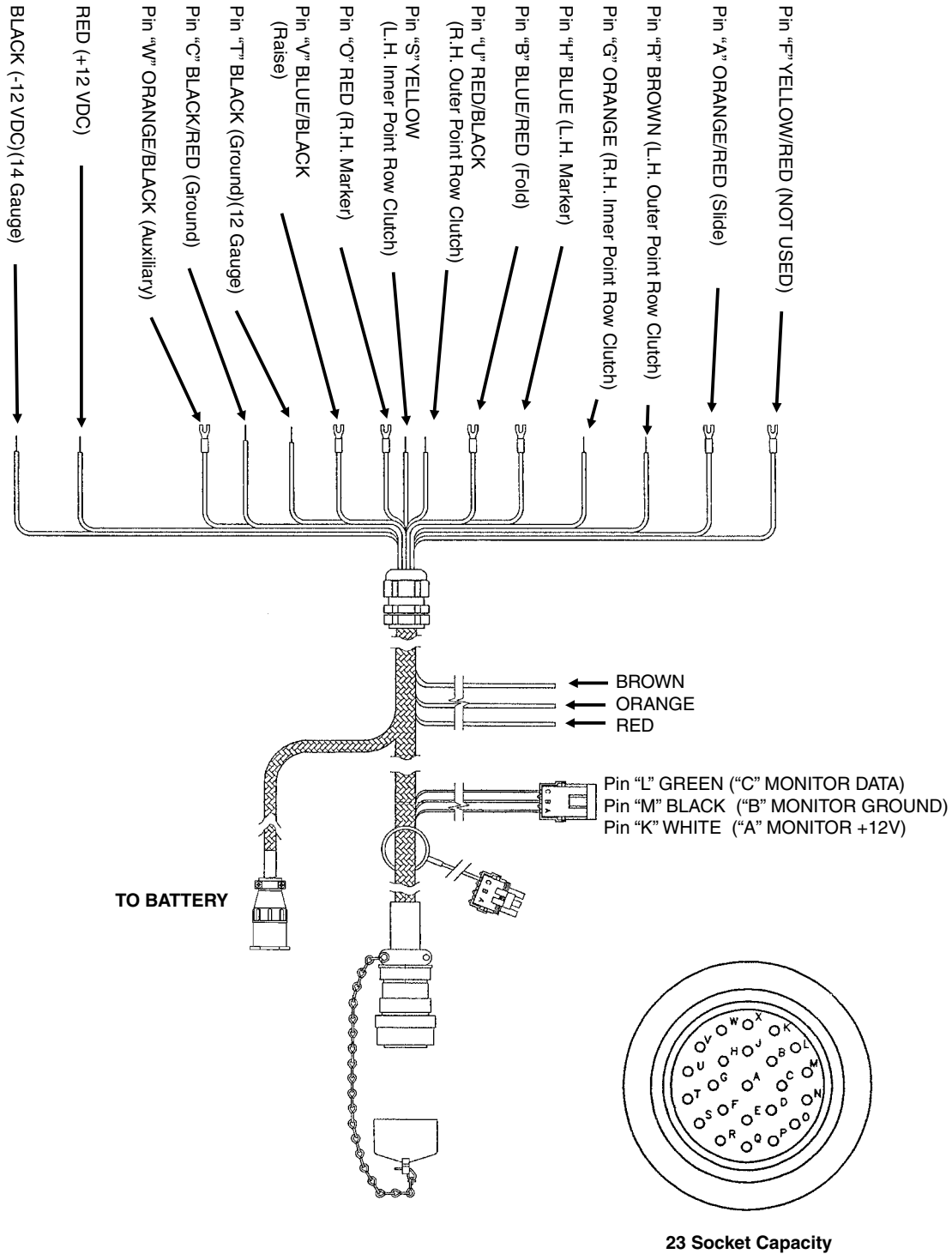
**NOTE:**

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

# MAINTENANCE

## ELECTRICAL WIRING HARNESS SCHEMATIC (On Tractor)

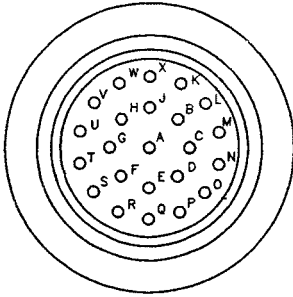
(ELC10c/ELC13)



# MAINTENANCE

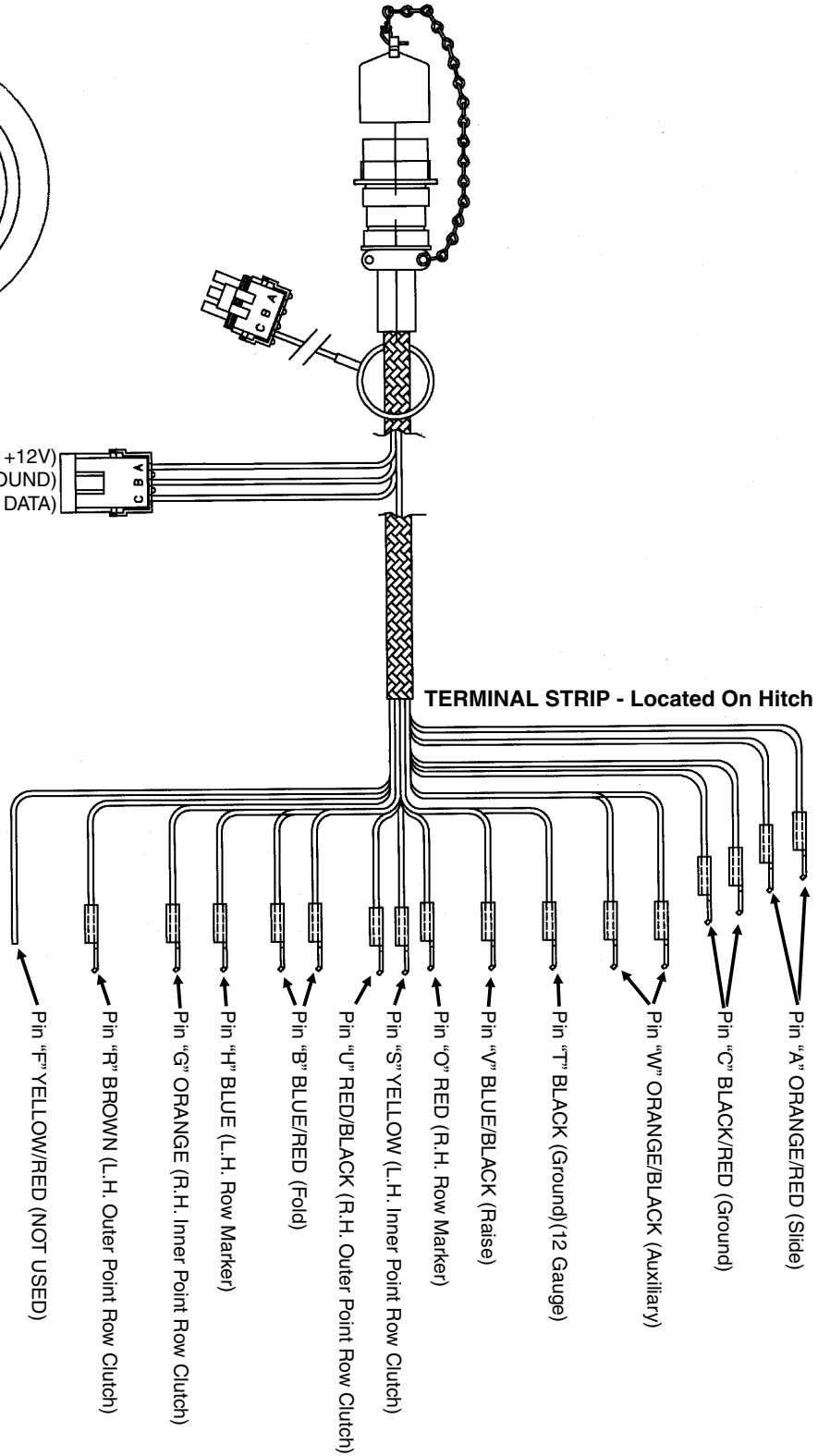
## ELECTRICAL WIRING HARNESSES SCHEMATIC (On Planter)

(ELC13/A10308)



23 Pin Capacity

- Pin "K" WHITE ("A" MONITOR +12V)
- Pin "M" BLACK ("B" MONITOR GROUND)
- Pin "L" GREEN ("C" MONITOR DATA)

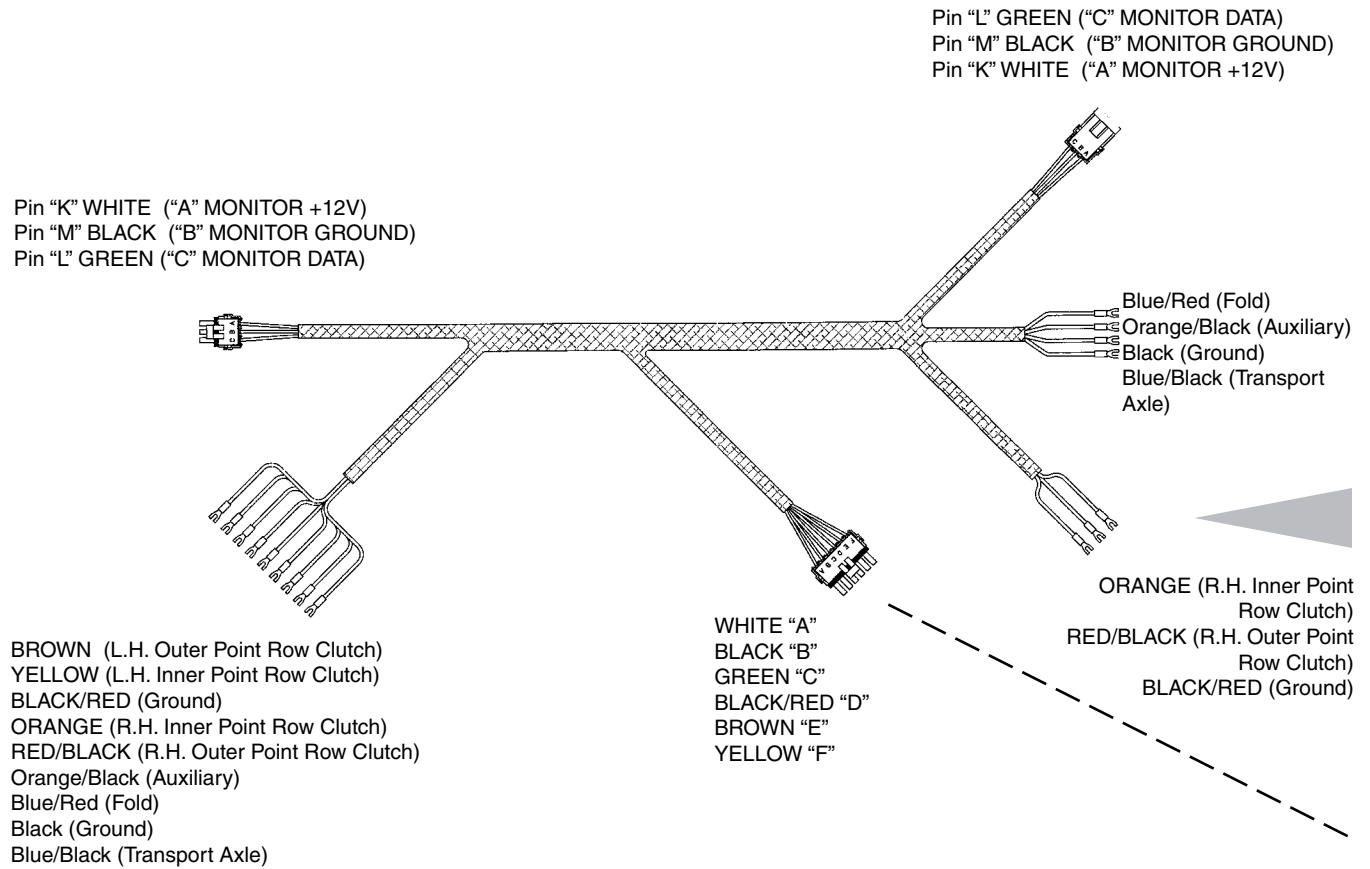


**Page intentionally left blank.**

# MAINTENANCE

## ELECTRICAL WIRING HARNESSES SCHEMATIC (Continued) (On Planter)

(A12652)

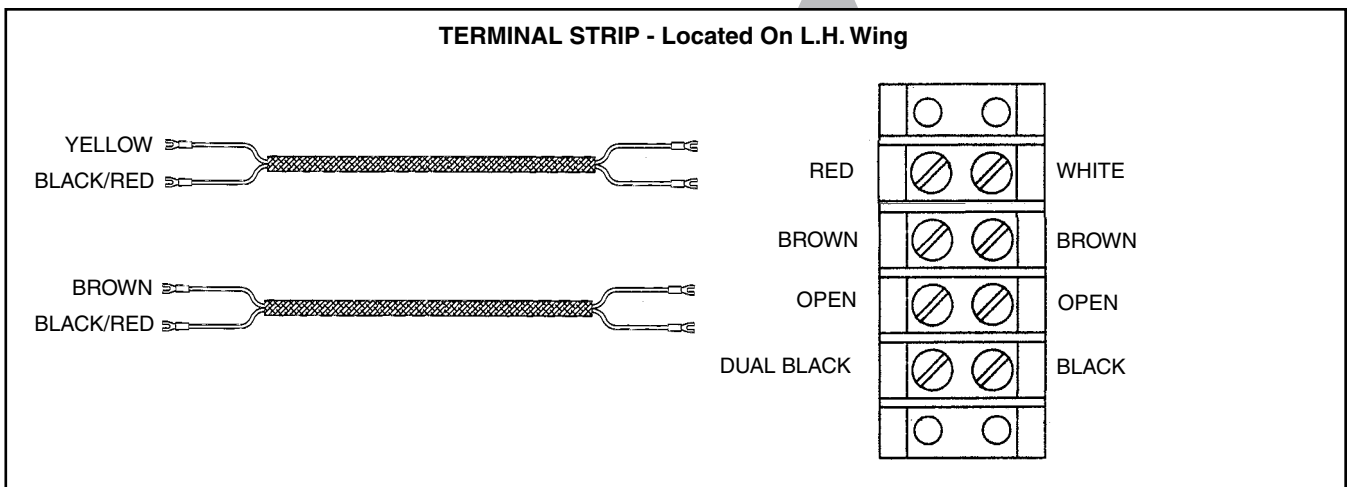
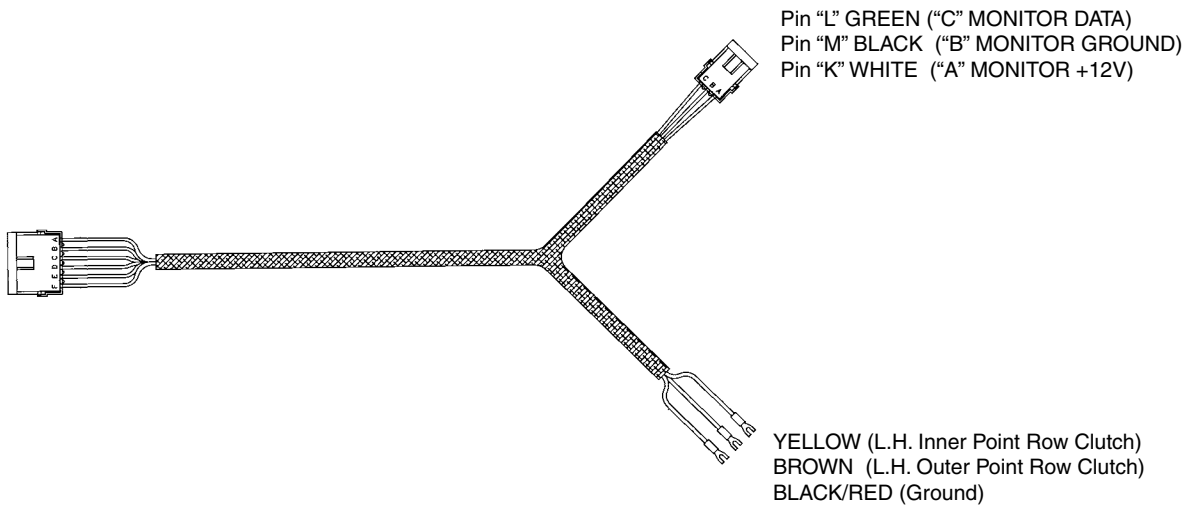
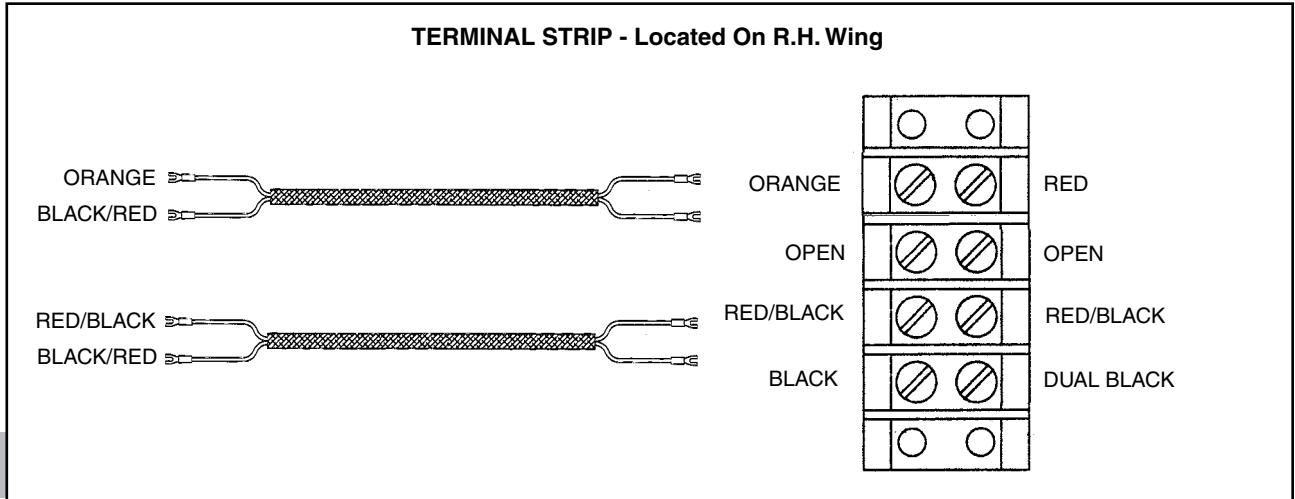


**TERMINAL STRIP - Located On Hitch**

# MAINTENANCE

## ELECTRICAL WIRING HARNESSES SCHEMATIC (Continued) (On Planter)

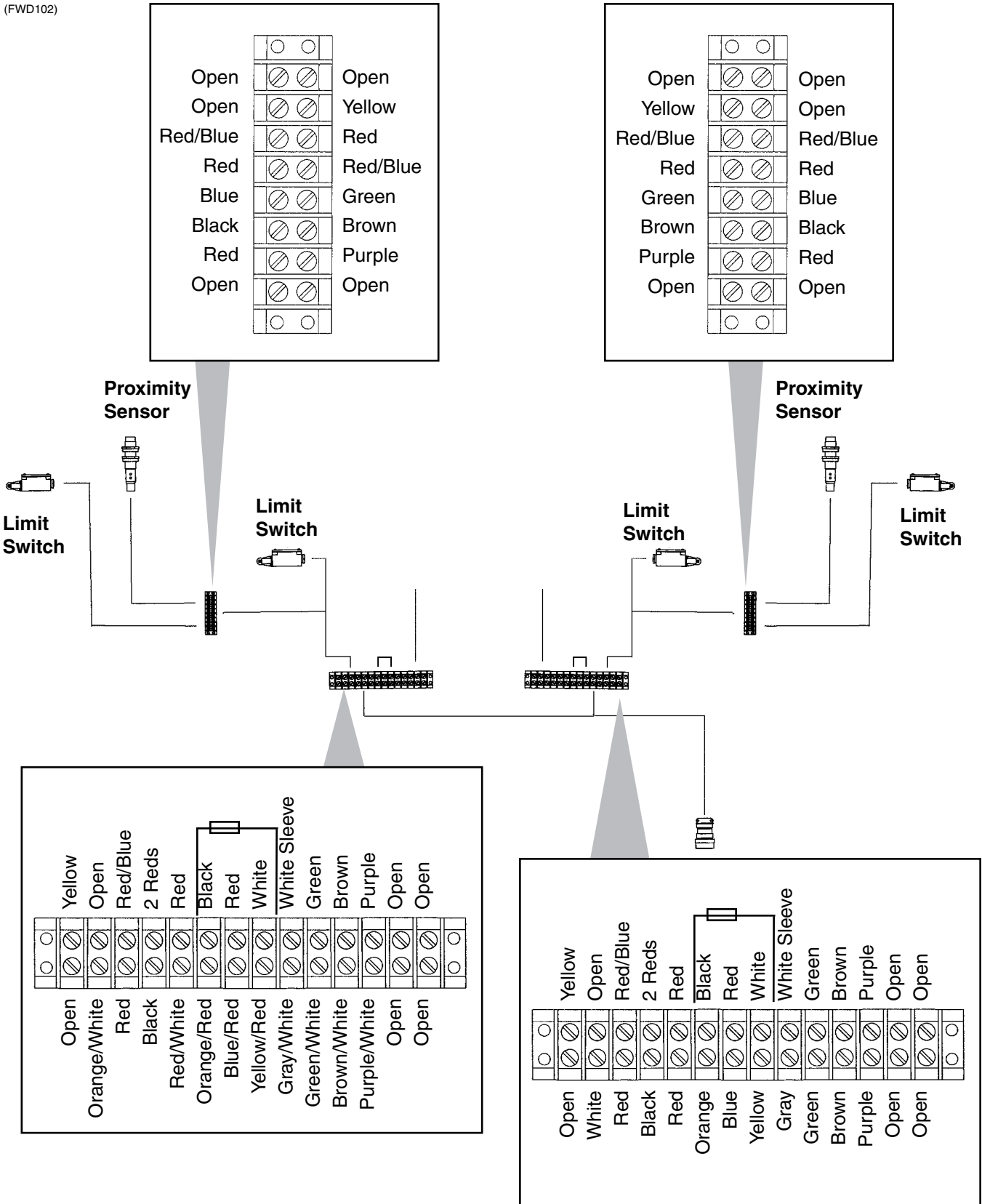
(A10311/A9510/A10310)



# MAINTENANCE

## ELECTRICAL WIRING SCHEMATIC (SDS)

(FWD102)

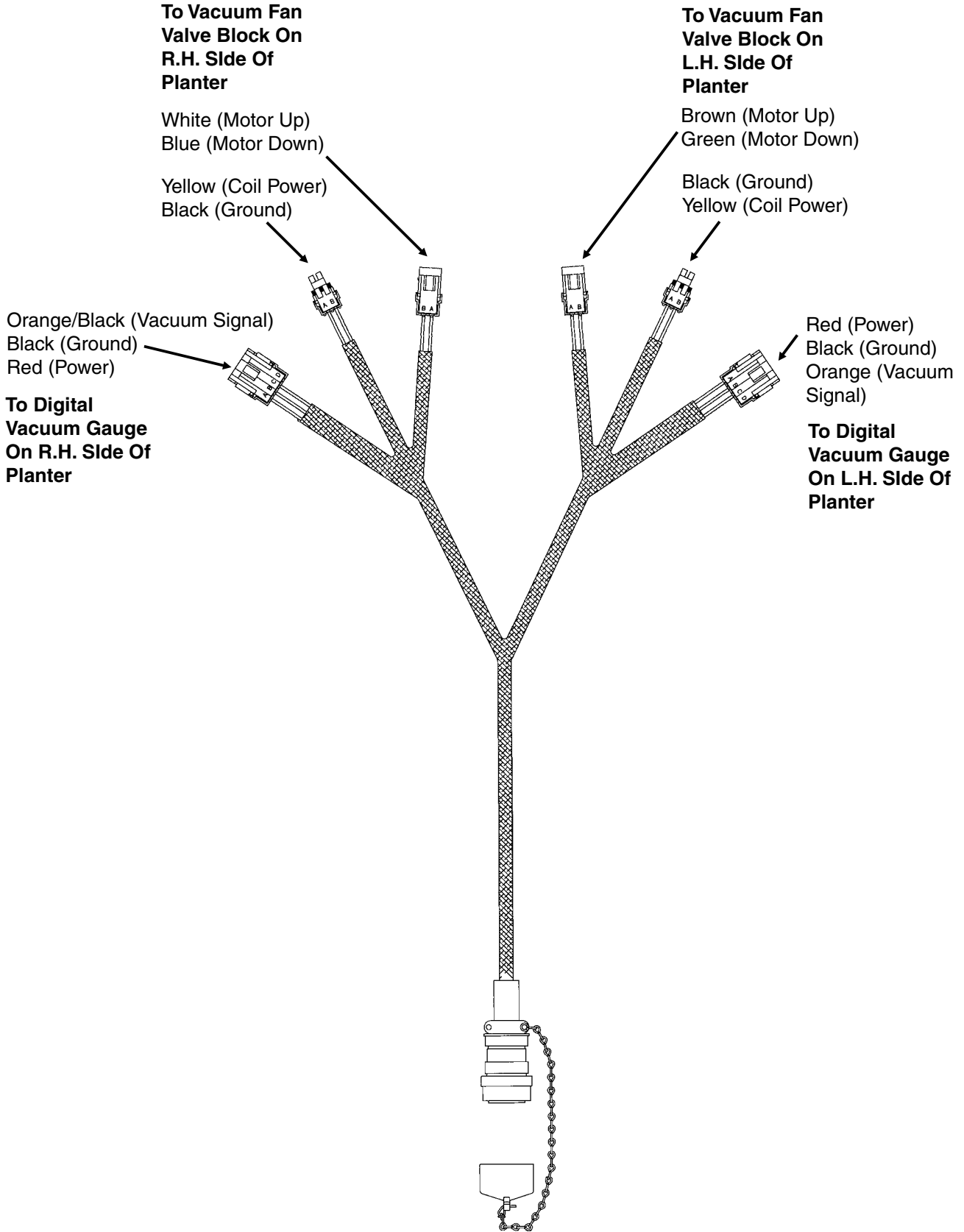




# MAINTENANCE

## ELECTRICAL WIRING HARNESS SCHEMATIC (Vacuum Fan Gauges)

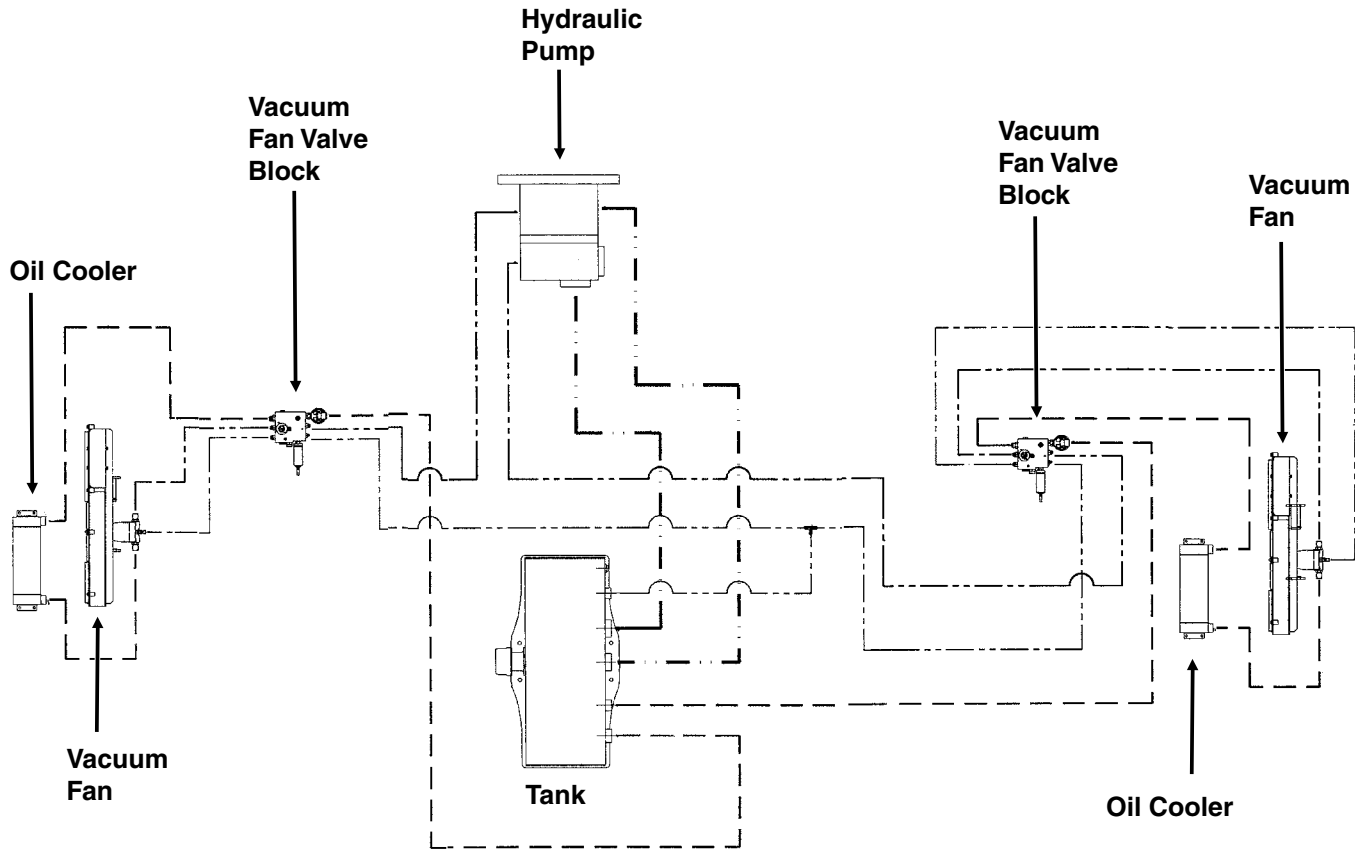
(A11689)



# MAINTENANCE

## HYDRAULIC SCHEMATIC (Vacuum Fan System)

(A13054-2a)

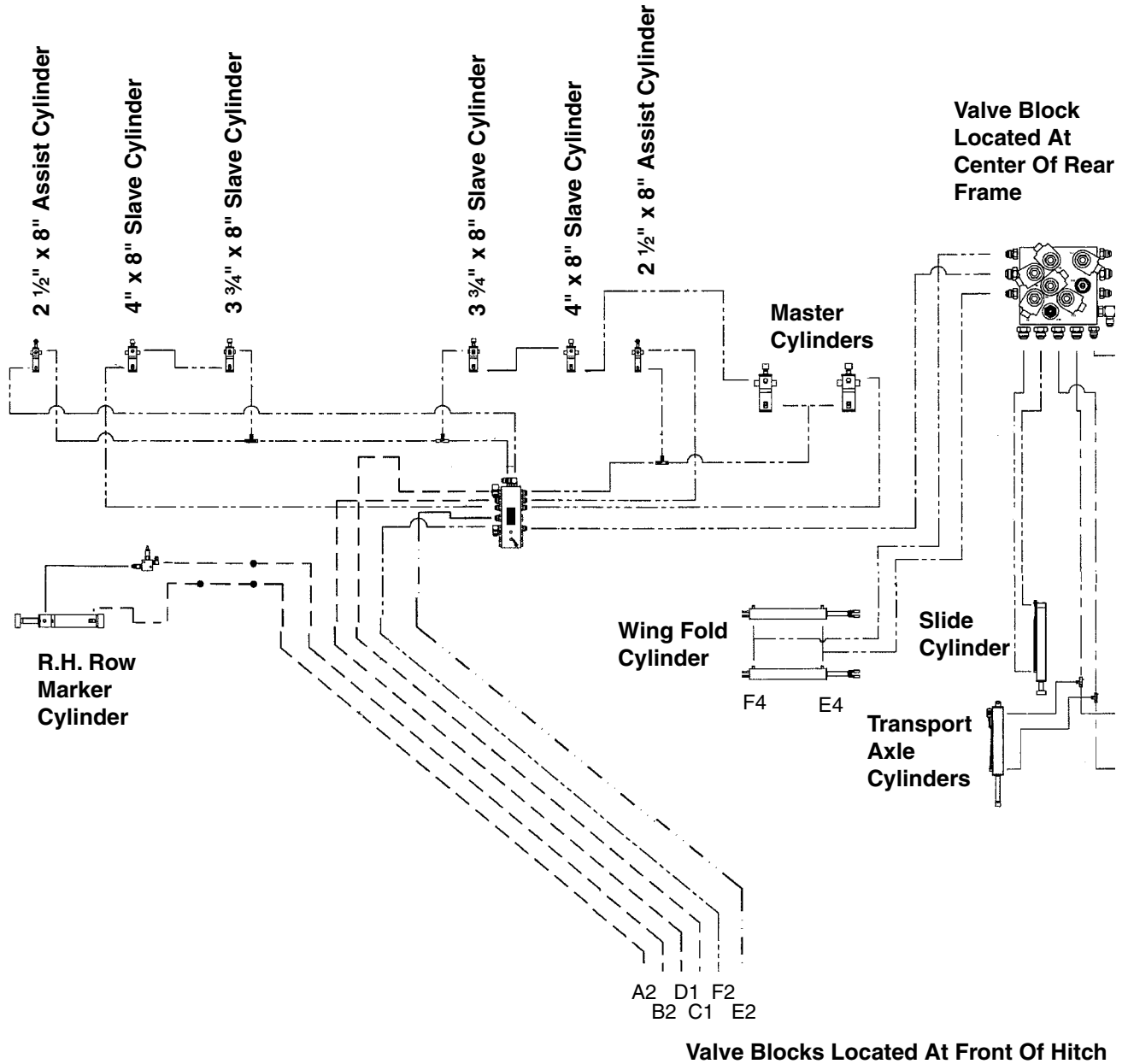


**Page intentionally left blank.**

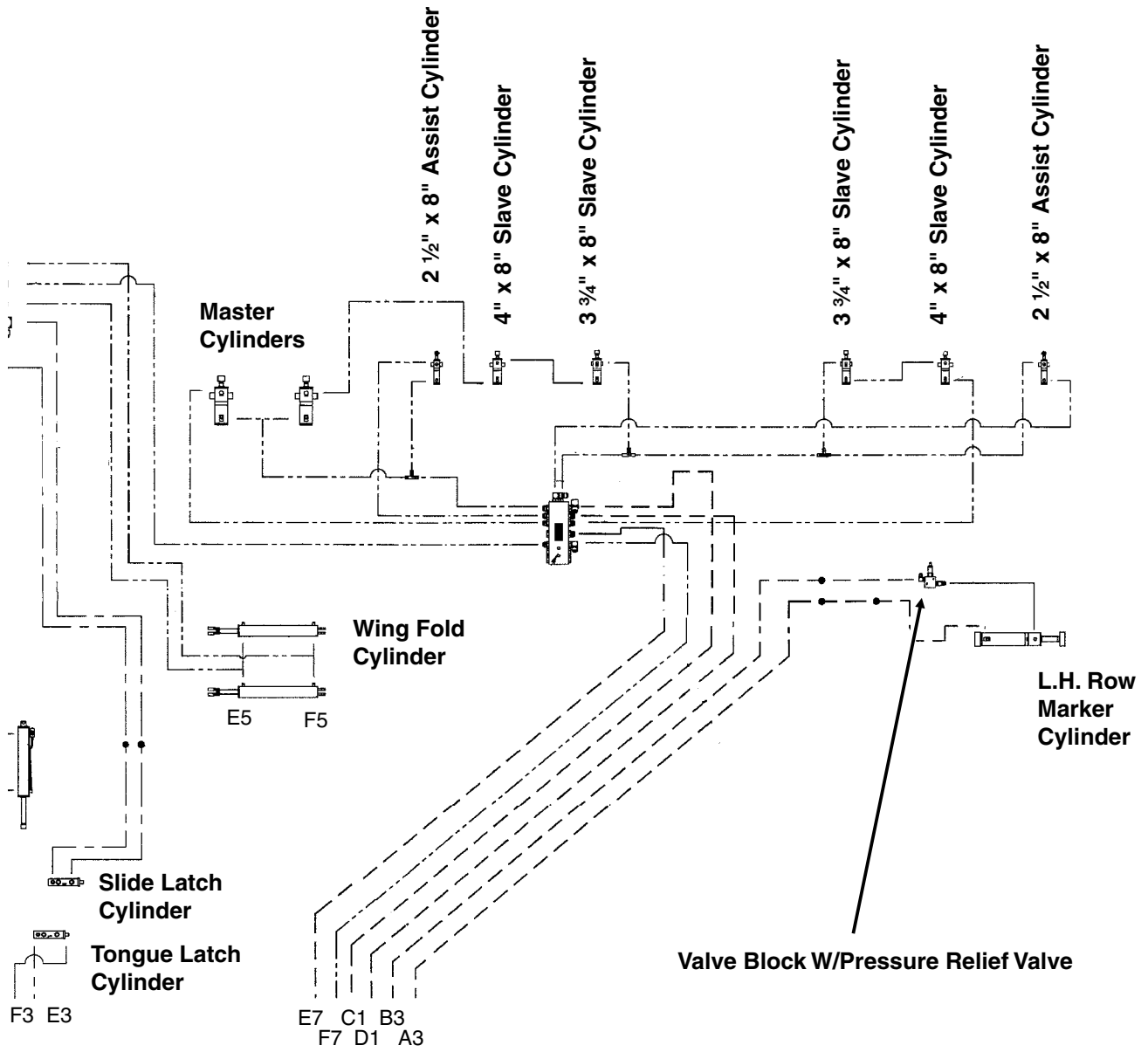
# MAINTENANCE

## HYDRAULIC SYSTEM SCHEMATIC

(FWD156)



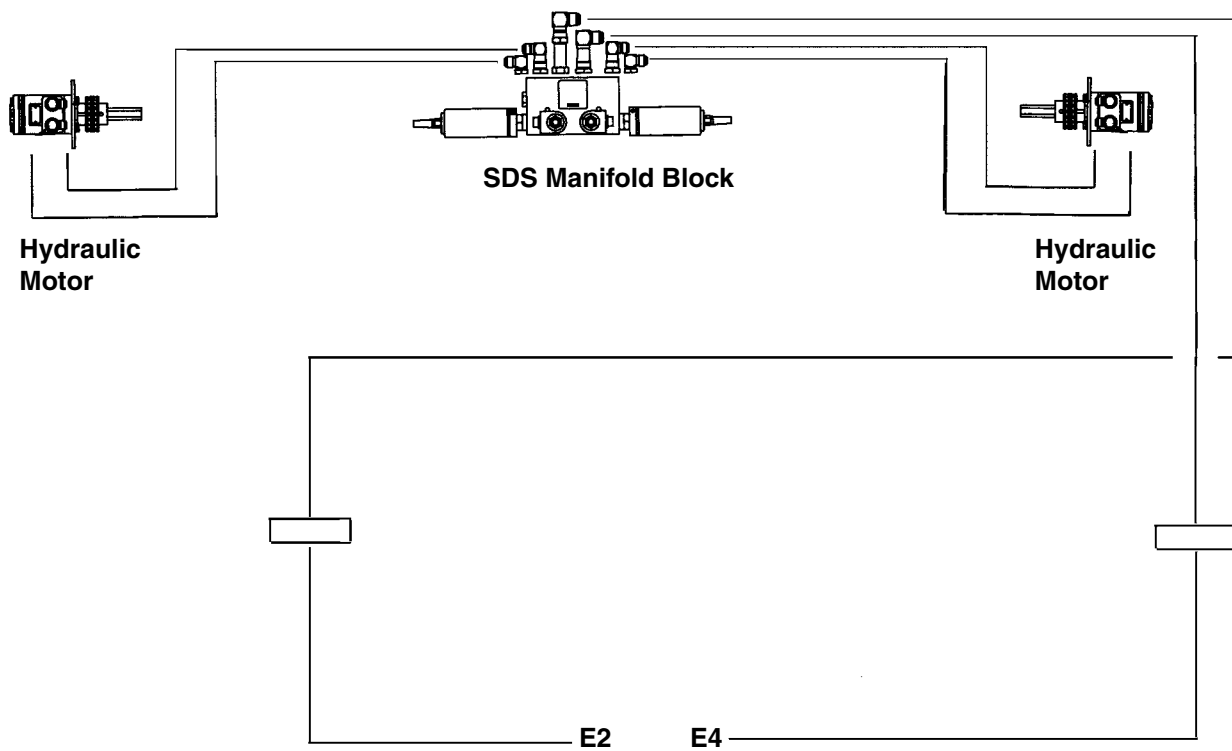
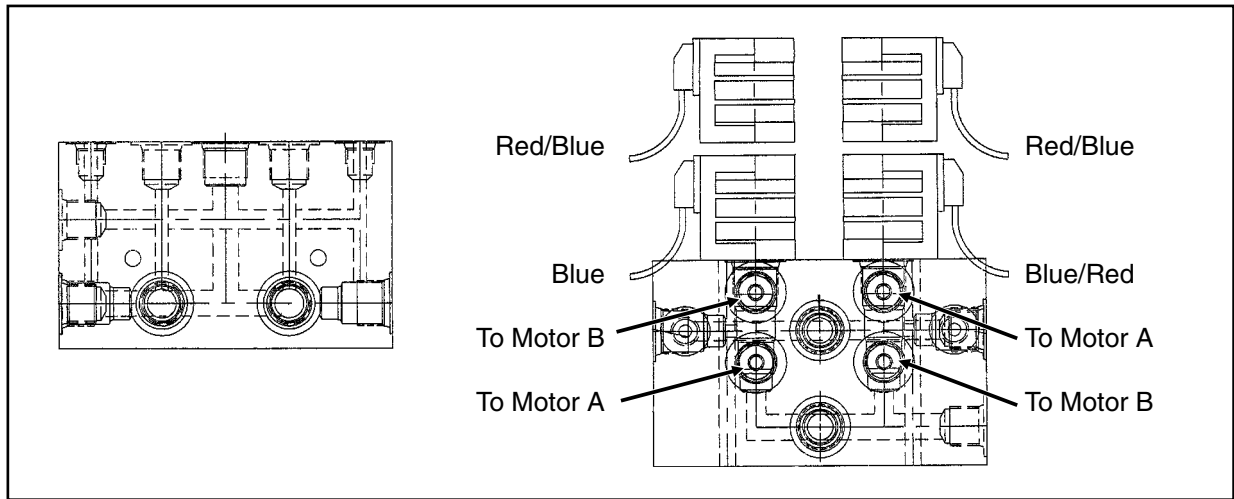
# MAINTENANCE



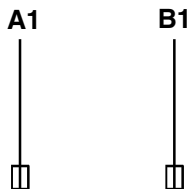
# MAINTENANCE

## HYDRAULIC SCHEMATIC (SDS)

(FWD103/FWD101a)



Valve Block Located At Front  
Of Hitch



# PARTS LIST INDEX

---

## ROW UNIT

15" Seed Opener Disc Blade/Bearing Assembly And Scrapers .....	P13
Coulter Mounted Residue Wheels .....	P45
Covering Discs/Single Press Wheel.....	P16
Drag Closing Attachment.....	P19
Frame Mounted Coulter W/Residue Wheels.....	P46
Gauge Wheels .....	P14
Granular Chemical Banding Options .....	P39
Granular Chemical Hopper And Hopper Panel Extension .....	P36
Granular Chemical Meter And Meter Drive.....	P38
Hopper Support And Meter Drive .....	P20
Parallel Arms, Mounting Support Plate And Pneumatic Down Pressure Package .....	P6
Parallel Arms, Mounting Support Plate And Quick Adjustable Down Force Springs .....	P12
Pneumatic Down Pressure Air Compressor, Dual Solenoid Assembly, Tubing And Fittings.....	P10
Pneumatic Down Pressure Control Console, Sending Unit And Harnesses .....	P8
Row Unit Mounted Disc Furrower .....	P42
Row Unit Mounted No Till Coulter .....	P41
Row Unit Mounted Residue Wheel .....	P44
Seed Hopper And Lid (Conventional Planters) .....	P22
Seed Meter .....	P24
Shank Assembly, Seed Tube And Depth Adjustment.....	P4
Spring Tooth Incorporator .....	P40
"V" Closing Wheels .....	P18

## EDGEVAC® SYSTEM

Manifolds And Distribution Hoses .....	P56
PTO Assembly .....	P48
PTO Assembly On Hitch .....	P60
PTO Gearbox Assembly .....	P62
PTO Pump Assembly.....	P51
Vacuum Fan Hydraulic Components.....	P50
Vacuum Fan Hydraulic Motor Assembly .....	P52
Vacuum Fan Motor Valve Block Assembly (Located On Both Sides Of Planter) .....	P53
Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler.....	P54

## BASE MACHINE

Center Toolbar/Rear H-Frame Assembly .....	P68
Contact Wheel, Arm And Tower Assemblies.....	P86

### Cylinders

Axle Slide Cylinder.....	P112
Master Cylinder.....	P109
Row Marker Cylinder .....	P112
Slave Cylinder.....	P110
Slave/Lift Assist Cylinder .....	P109
Tongue Latch and Slide Latch Cylinder .....	P111
Transport Axle Cylinder.....	P113
Wing Fold Cylinder.....	P111
Draft Link .....	P82

### Driven And Drill Shafts

On Center Section .....	P96
On Wings .....	P92

### Electrical Components

Electrical Components (Planter Control Console) .....	P124
Electrical Components (SDS Control Console) .....	P126
Electrical Components (Lights).....	P128

### Hitch Assemblies

Inner Slide Hitch.....	P64
Outer Slide Hitch.....	P66

(Continued On Next Page)

# PARTS LIST INDEX

---

Hydraulic Hoses And Fittings.....	P120
Inner Wing.....	P78
Lift/Gauge Wheel .....	P84
Light Assemblies.....	P130
Outer Wing.....	P80
Point Row Clutches.....	P98
Rock Shaft Axle Assembly And Wheels.....	P70
<b>Row Marker Assemblies</b>	
Row Marker Assembly (Mount and First Stage) .....	P102
Row Marker Assembly (Second Stage) .....	P104
Row Marker Assembly (Third and Fourth Stage).....	P106
Row Marker Stand .....	P108
Row Marker Spindle/Hub/Blade.....	P100
Seed Rate Transmission .....	P90
Slide Assembly .....	P72
Stub Wing .....	P76
Transport Axle Assembly And Wheels .....	P74
<b>Valve/Junction Blocks And Valves</b>	
Junction Block - Located on Each Wing.....	P117
SDS Manifold Block .....	P118
Valve Block - Located at Center of Rear H-Frame .....	P116
Valve Block - Located at Each Row Marker on Outer Wing.....	P119
Valve Blocks - Located On Hitch.....	P114
<b>SDS SEED DELIVERY SYSTEM</b>	
<b>Auger Assemblies</b>	
Center Auger Assemblies (SDS).....	P26
Wing Auger Assemblies (SDS) .....	P28
Bulk Seed Hopper Assembly (SDS) .....	P32
Bulk Seed Hopper Catwalk (SDS) .....	P34
SDS Hydraulic System.....	P122
Seed Meter Mount and Drop Hoses (SDS).....	P23
<b>ELECTRONIC SEED MONITOR</b>	
KPM III Electronic Seed Monitor.....	P132
Planter Monitor Module (PMM).....	P134
<b>FERTILIZER</b>	
Depth/Gauge Wheel Attachment For Notched Single Disc Fertilizer Opener.....	P138
<b>Fertilizer Opener Mounts</b>	
Notched Single Disc Fertilizer Opener.....	P136
Depth/Gauge Wheel Attachment for Notched Single Disc Fertilizer Opener .....	P138
Fertilizer Opener Mounts .....	P139
<b>Liquid Fertilizer</b>	
Liquid Fertilizer Tanks, Saddles, Saddle Mounts and Hoses (Conventional).....	P140
Liquid Fertilizer Tanks, Saddles, Saddle Mounts and Hoses (SDS) .....	P142
Liquid Fertilizer Piston Pump Mount and Ground Drive Wheel.....	P144
Liquid Fertilizer Flow Divider Mount and Hoses.....	P146
Liquid Fertilizer Piston Pump (Uses 18 Tooth Sprocket).....	P148
Liquid Piston Pump Flower Divider .....	P150
Rear Trailer Hitch .....	P151
Decals, Paint And Miscellaneous.....	P152
Numerical Index.....	P157



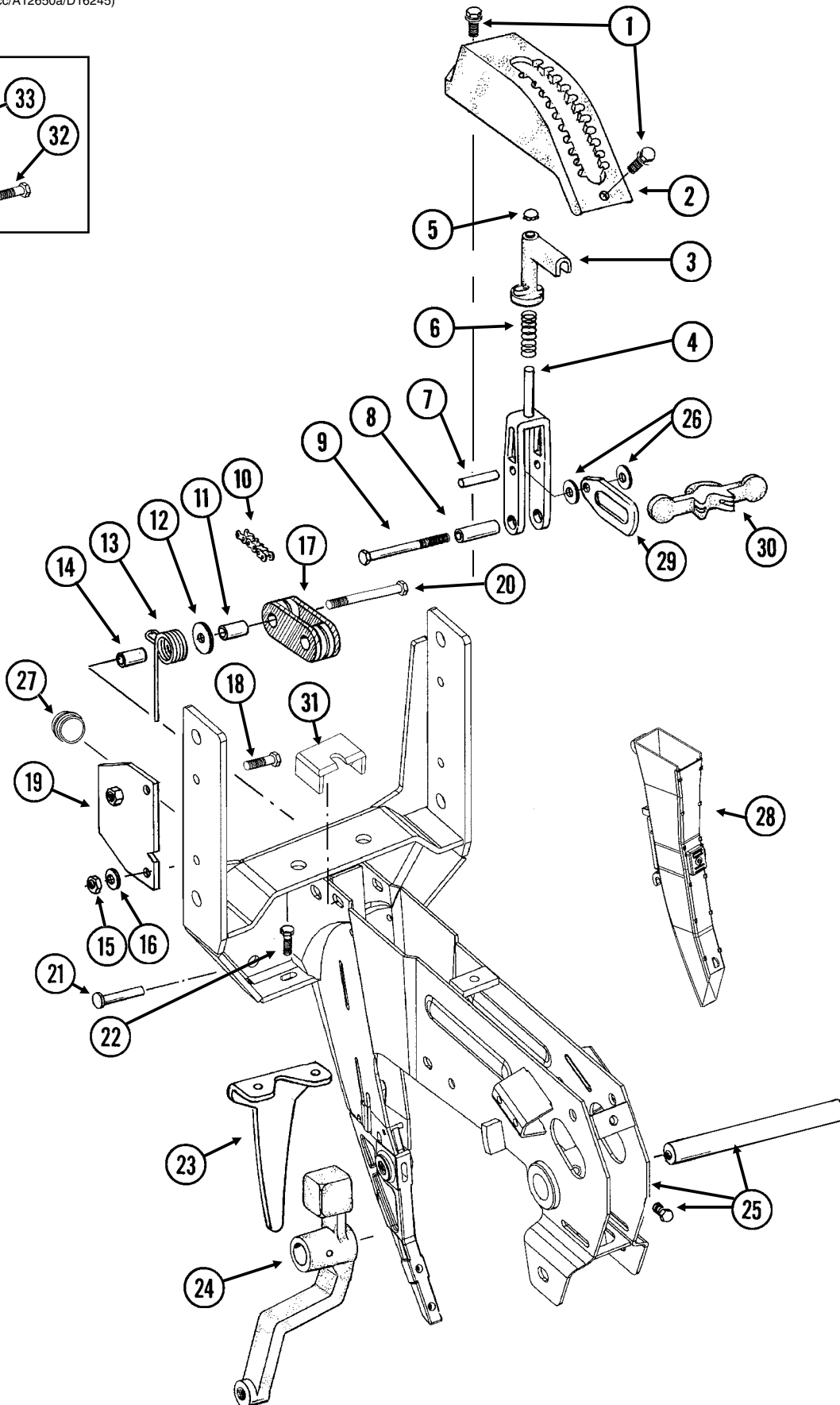
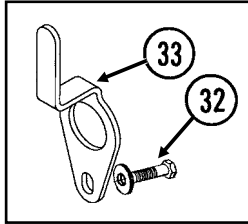
# PARTS LIST INDEX

---

**Page intentionally left blank.**

# SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

(D17014/METR29cc/A12650a/D16245)



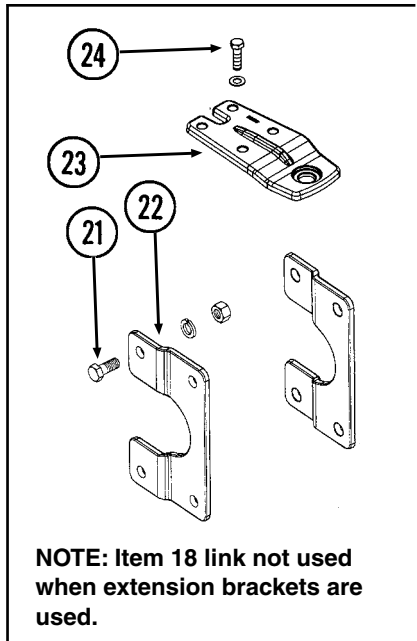
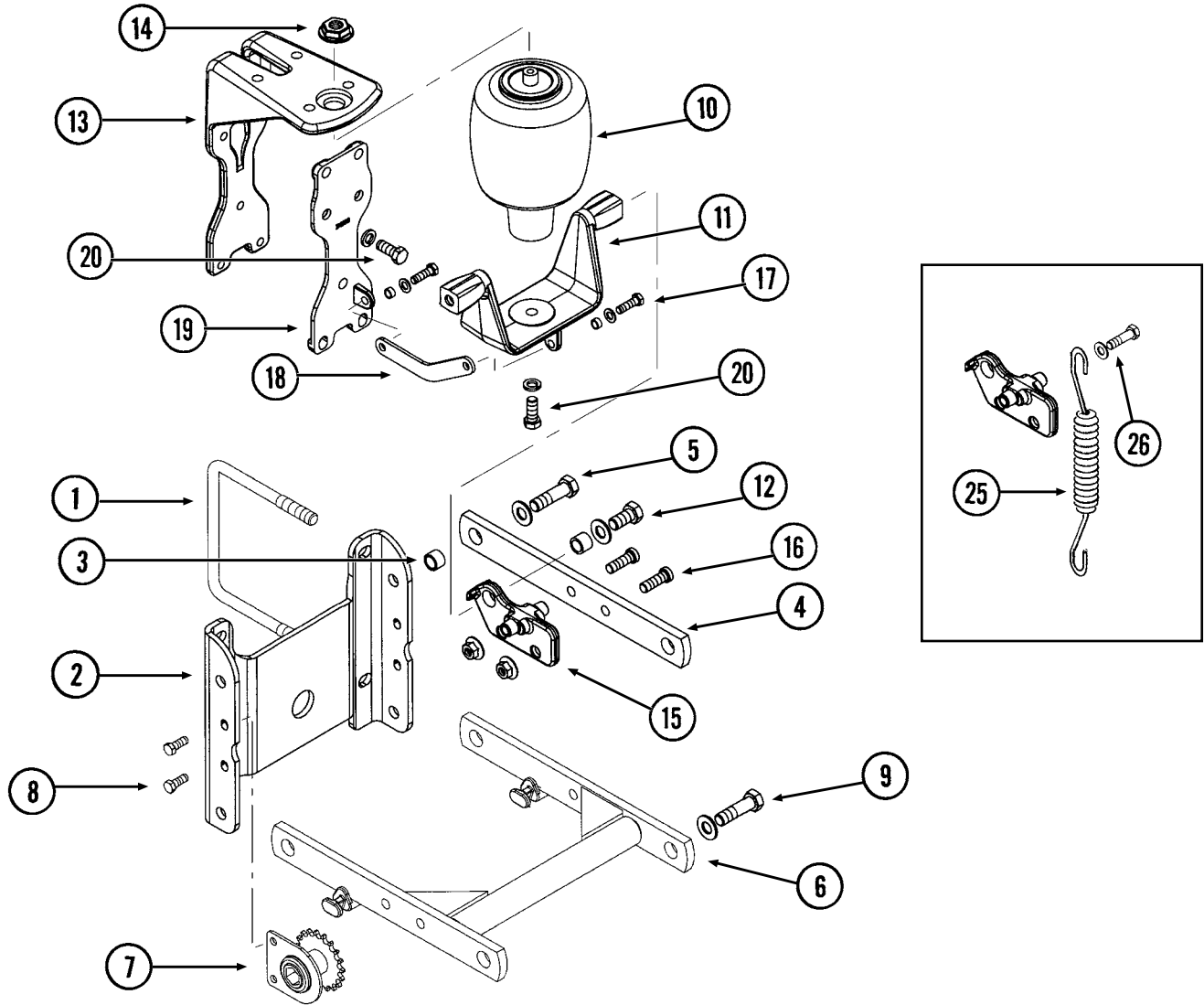
# SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

---

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G11015	2	Hex Washer Head Cap Screw, 3/8"-16 x 1 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, 3/8" x 1 2/3"
8.	GD11259	1	Sleeve, 3/8" I.D. x 5/8" O.D. x 1 25/32" Long
9.	G11008	1	Hex Head Cap Screw, 3/8"-24 x 2 1/2", Grade 8
	G11007	1	Lock Nut, 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 3/16" Long
12.	G10201	1	Special Washer, 3/8" x 1 1/2" O.D.
13.	GD1065	1	Idler Spring
14.	GD7318	1	Sleeve, 1" Long
15.	G10108	1	Lock Nut, 3/8"-16
16.	G10210	1	Washer, 3/8" USS
17.	GD11962	1	Idler
18.	G10003	3	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10108	3	Lock Nut, 3/8"-16
19.	GD10867	2	Stop
20.	G10326	1	Hex Head Cap Screw, 3/8"-16 x 3 3/4"
21.	G10551	1	Clevis Pin, 1/4" x 2 1/2"
	G10669	1	Hair Pin Clip, No. 22
22.	G10312	2	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	2	Serrated Flange Nut, 5/16"-18
23.	GD1033	1	Shield
24.		-	Wheel Arm, See "Gauge Wheels", Pages P14 And P15
25.	GA10157	1	Shank W/Gauge Wheel Pivot Spindle And Set Screw
	GD11001	-	Spindle
	G10438	-	Hex Head Cap Screw, 1/2"-13 x 3/4"
26.	G10207	2	Washer, 7/8" O.D. x 1 3/32" I.D. x .134" (If Applicable)
27.	GD11845	1	Dust Cap
28.			See "KPM III Electronic Seed Monitor" And "Planter Monitor Module (PMM)", Pages P132-P135
29.	GB0285	1	Collar, Depth Adjustment
30.	GB0265	1	Pivot Link, Depth Adjustment
31.	GD16245	-	Sun Shade (Rubber)
32.	G10047	1	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10203	2-3	Washer, 3/8" SAE
	G10108	1	Lock Nut, 3/8"-16
33.	GD17014	1	Hose Guide

# PARALLEL ARMS, MOUNTING SUPPORT PLATE AND PNEUMATIC DOWN PRESSURE PACKAGE

(RU157a/RU159/RU157aa)



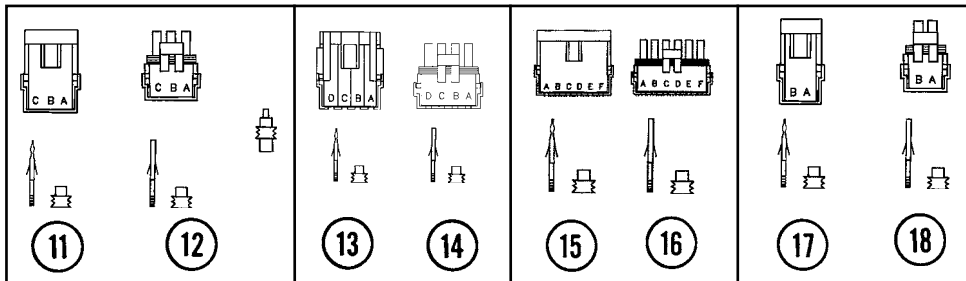
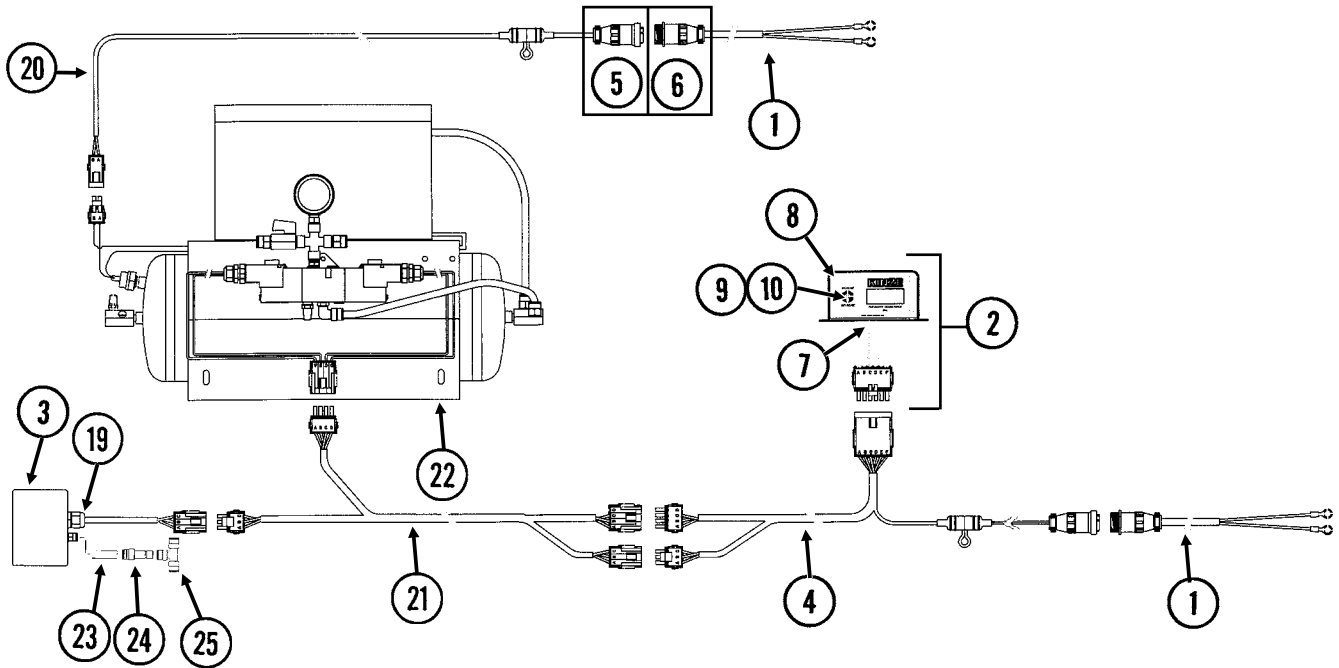
**NOTE:** Item 18 link not used when extension brackets are used.

# 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 1 9/32" 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 P20 and P21
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/MTR27i)

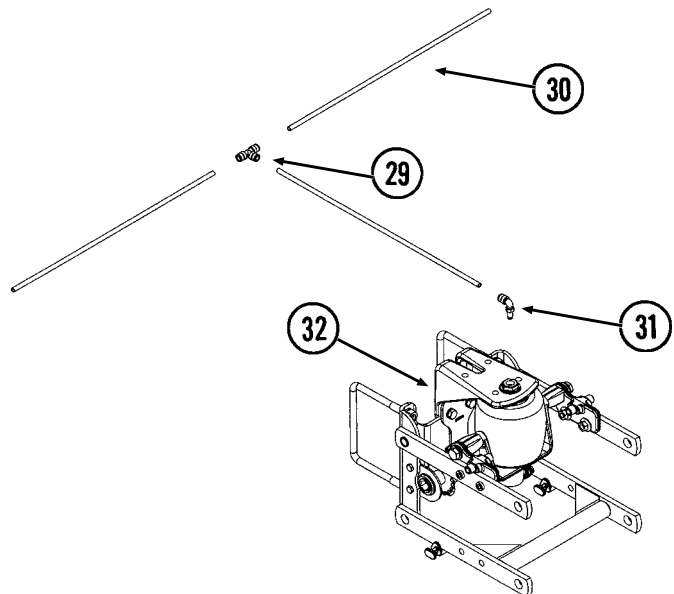
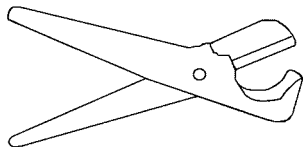
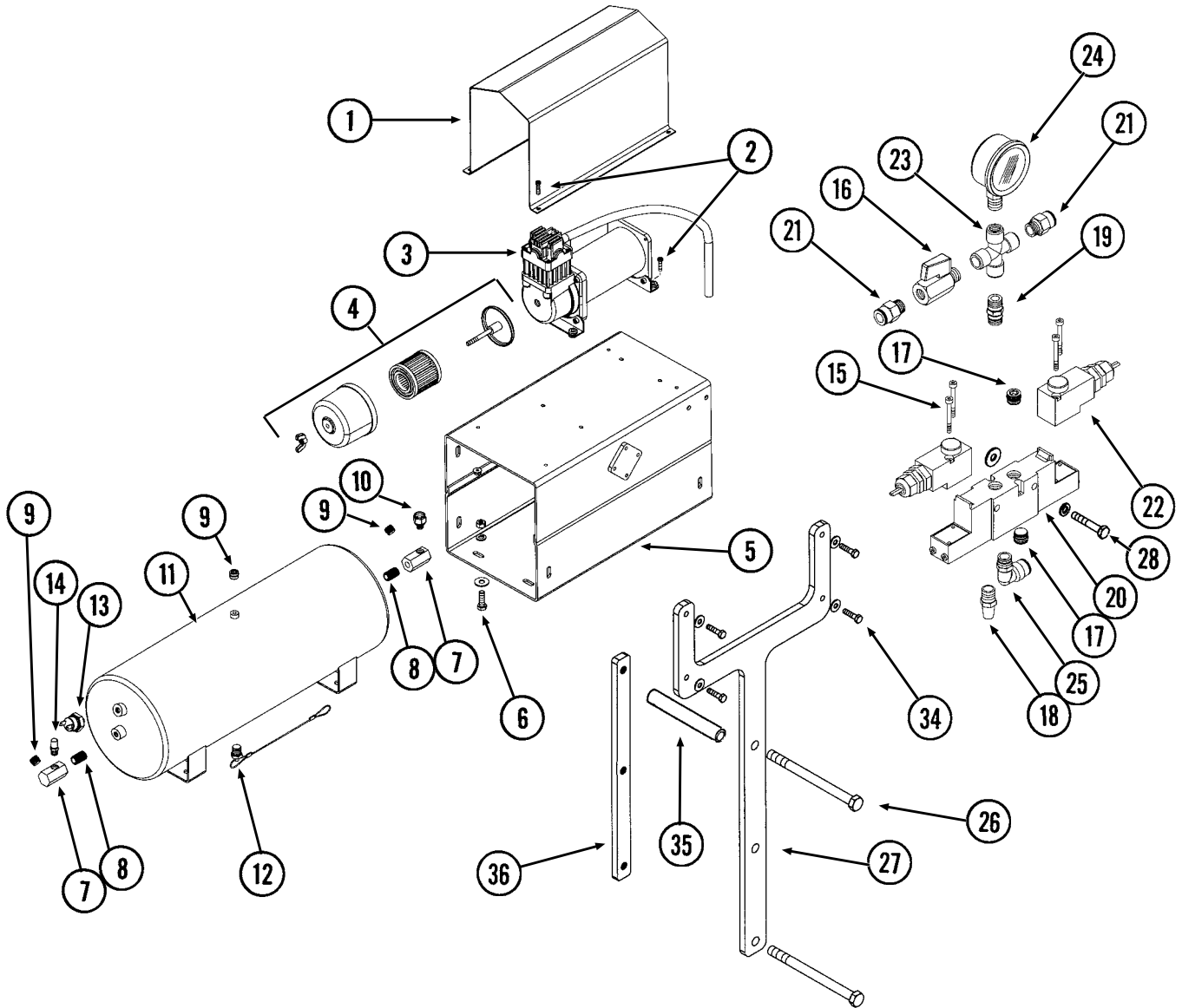


# PNEUMATIC DOWN PRESSURE CONTROL CONSOLE, SENDING UNIT AND HARNESSSES

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, Momentary On-Off-Momentary 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.	GA12683	1	Wiring Harness W/Fuse Holder And Fuse, 50'
	GD14258	-	Fuse Holder
	GD18275	-	Fuse, 20 Amp
21.	GA12671	1	Wiring Harness, 50'
22.		-	See "Pneumatic Down Pressure Air Compressor, Dual Solenoid Assembly, Tubing And Fittings", Pages P10 And P11
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)





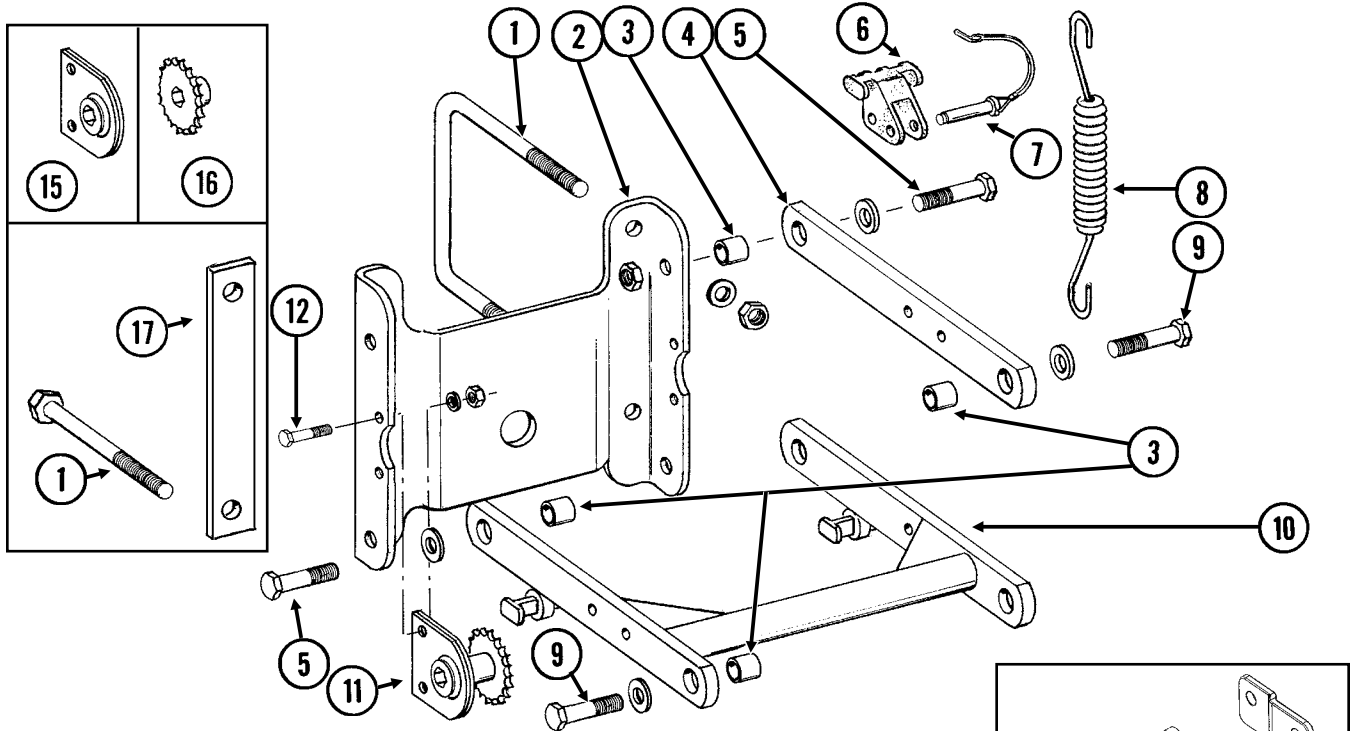
# PNEUMATIC DOWN PRESSURE AIR COMPRESSOR, DUAL SOLENOID ASSEMBLY, TUBING AND FITTINGS

---

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	Compressor 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.	G10341	3	Hex Head Cap Screw, 5/8"-11 x 8"
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.	GD17150-07	-	Nylon Tubing, 3/8" O.D. x 168'
31.	GD18011	-	Elbow, 3/8" x 1/8" NPT Extended
32.		-	See "Parallel Arms, Mounting Support Plate And Pneumatic Down Pressure Package", Pages P6 And P7
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
35.	GD3180-33	1	Sleeve, 7"
36.	GD18901	1	Tap Block, Long
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

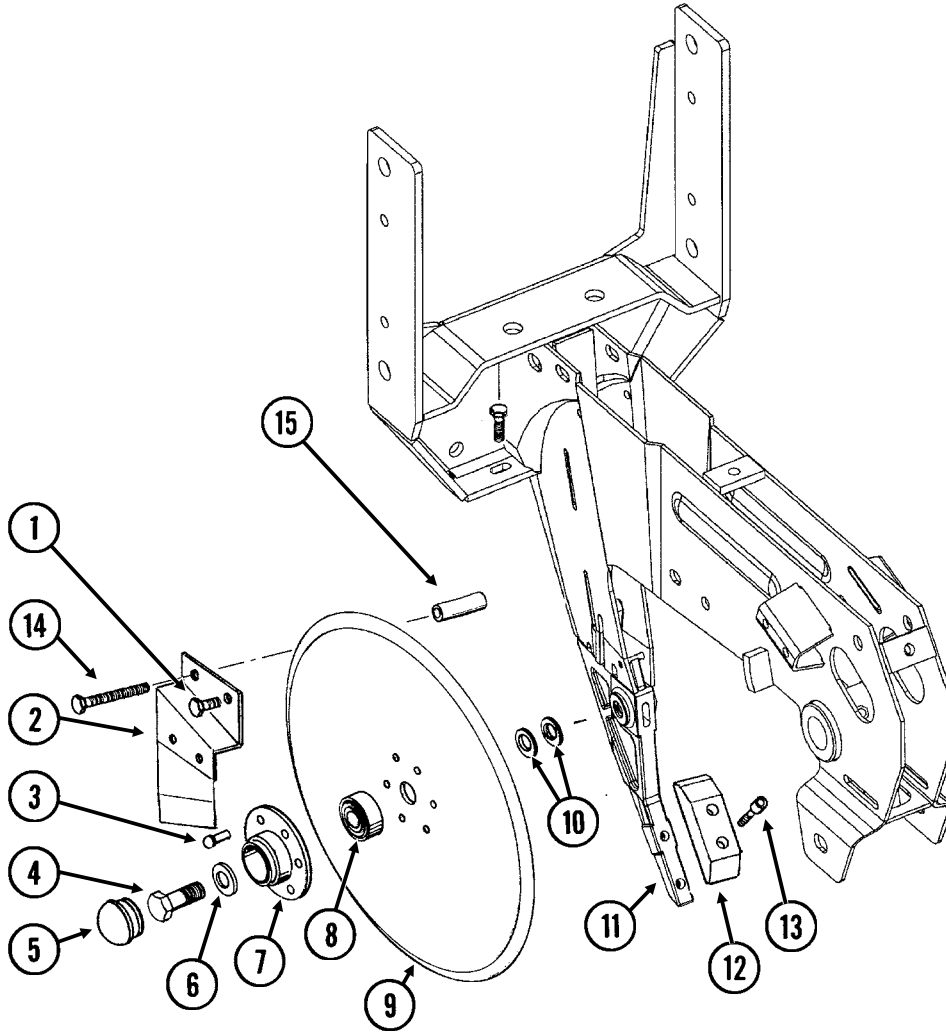
(RU147/RU148a/RU78f/B0366)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1114 G10152 G10217 G10230 G10104	2 - - 4 4	U-Bolt, 7" x 7" x 5/8"-11 Hex Head Cap Screw, 5/8"-11 x 9" Washer, 5/8" USS 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 1 9/32" 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 P20 and P21
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.	GA2180	-	Hanger Bearing, 7/8" Hex Bore
16.	GA11255	-	Sprocket, 19 Tooth
17.	GD1908	-	Mounting Bracket
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)

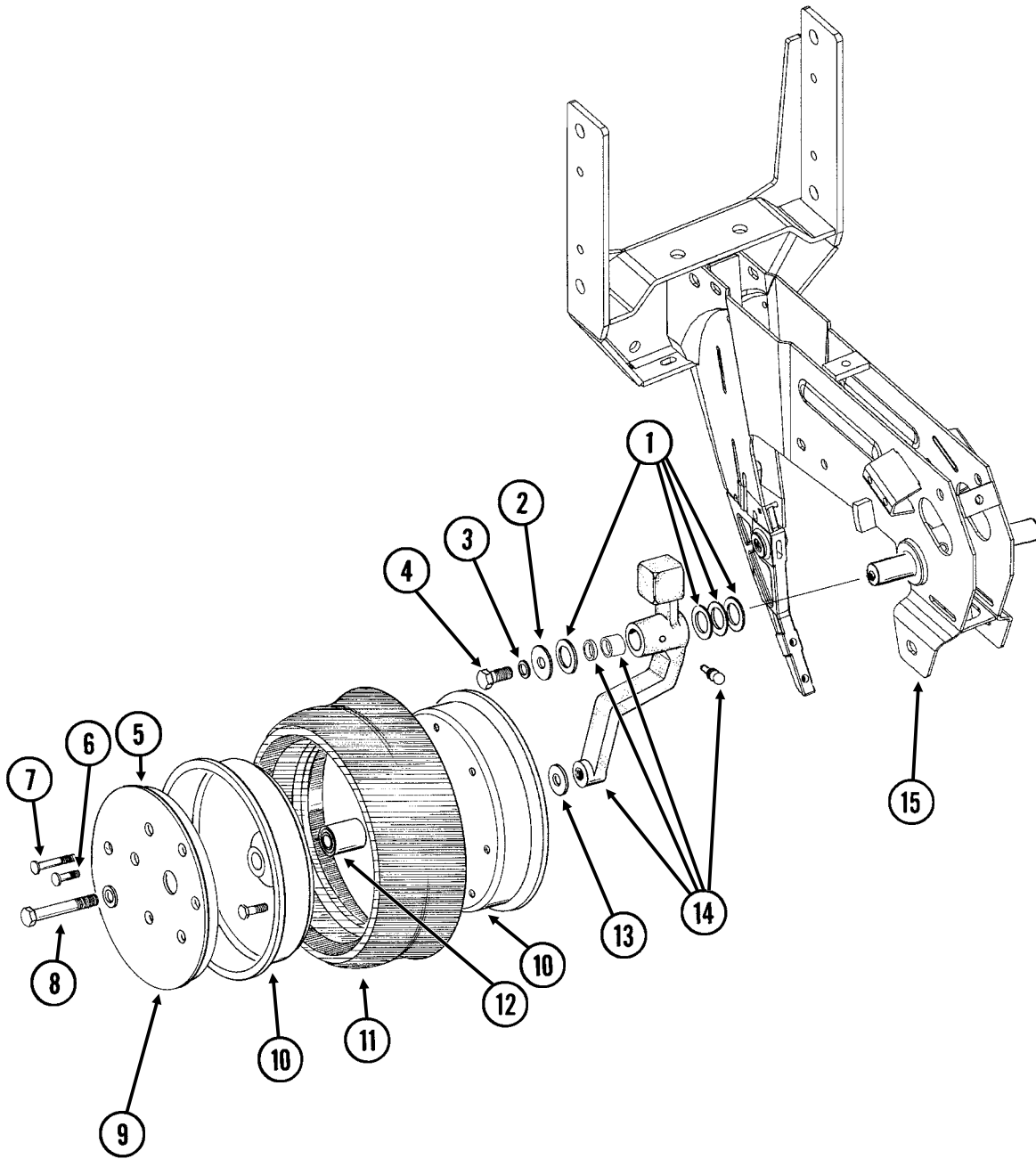


ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10328	2	Hex Head Cap Screw, 3/8"-16 x 5/8"
	G10622	2	Serrated Flange Nut, 3/8"-16
2.	GA2012R	1	Disc Scraper, R.H.
	GA2012L	-	Disc Scraper, L.H. (Shown)
3.	G10427	12	Rivet, 1/4" x 1/2"
4.	GD11017	1	Special Hex Head Cap Screw, 5/8"-11 x 1 1/2", L.H. Threads
	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
5.	GD11845	2	Dust Cap
6.	G10204	2	Special Machine Bushing, 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, 5/8" (.030" Thick)(As Required)
11.		-	See "Shank Assembly", Pages P4 And P5
12.	GB0301	1	Seed Tube Guard/Inner Scraper
13.	G10912	2	Hex Socket Head Cap Screw, 5/16"-18 x 1", Grade 8
14.	G10325	1	Hex Head Cap Screw, 3/8"-16 x 2 3/4"
	G10622	1	Serrated Flange Nut, 3/8"-16
15.	GD11259	1	Sleeve, 3/8" I.D. x 5/8" O.D. x 1 25/32" Long
A.	GA8324	-	Disc Blade/Bearing Assembly, Less Dust Cap (Items 3 And 7-9)

# GAUGE WHEELS

---

(RU140)

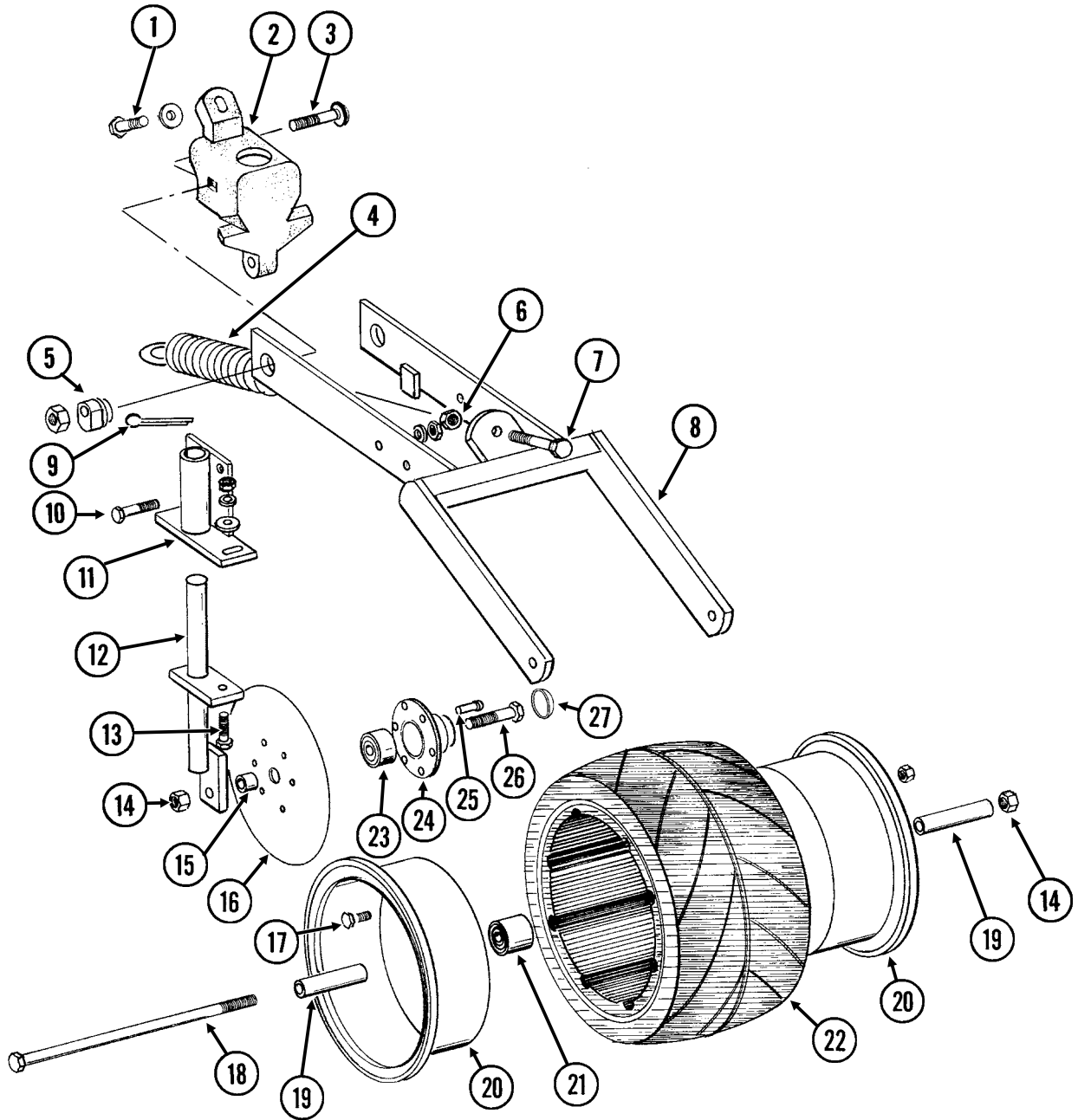


# GAUGE WHEELS

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 P4 And P5
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)

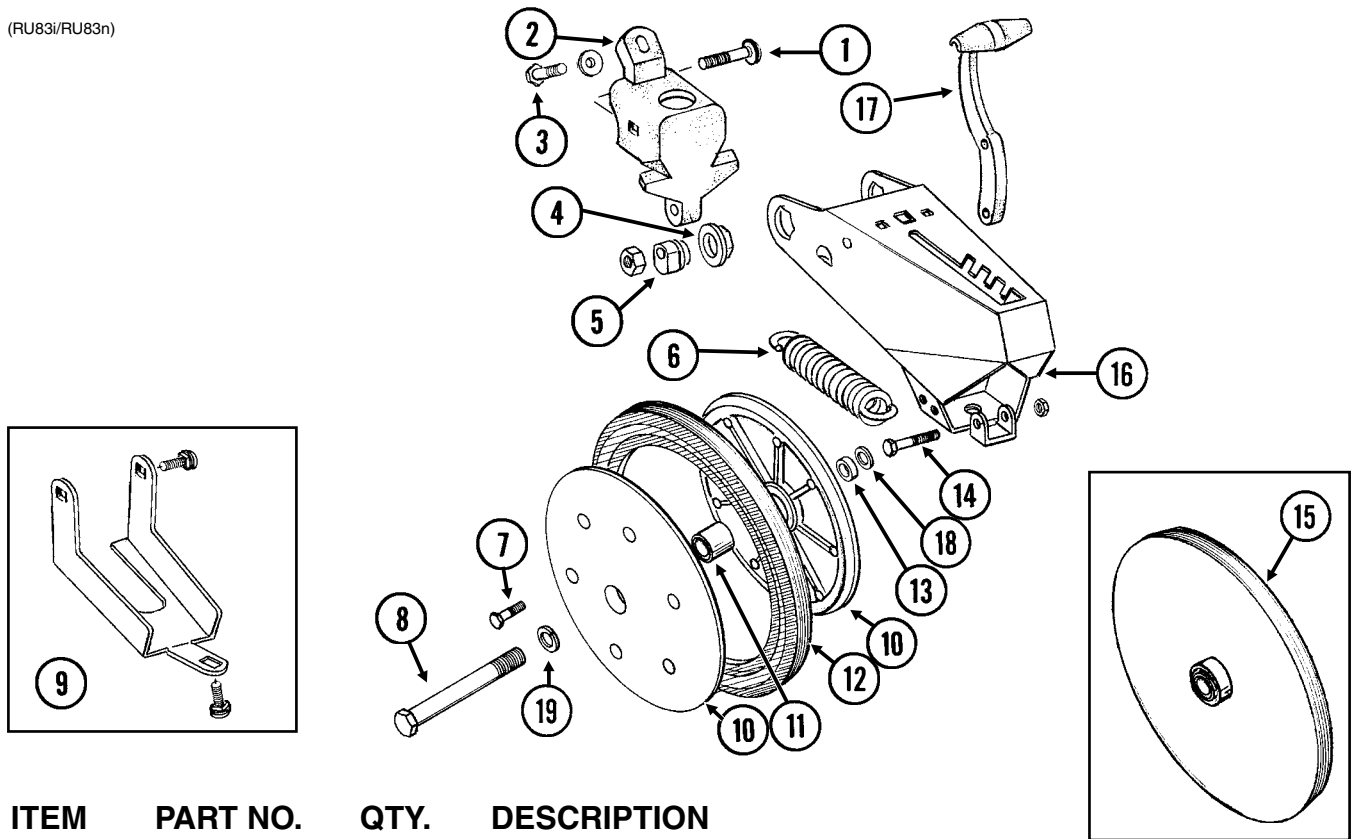


# COVERING DISCS/SINGLE PRESS WHEEL

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10210	1	Washer, 3/8" USS
2.	GB0268	1	Wheel Arm Stop
3.	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)
	G10102	2	Hex Nut, 1/2"-13
4.	GA2054	1	Spring
5.	GB0239	2	Eccentric Bushing
6.	G10102	1	Hex Nut, 1/2"-13
7.	G10015	1	Adjusting Bolt, 1/2"-13 x 5"
8.	GA6619	1	Mounting Arm
9.	G10463	2	Cotter Pin, 1/4" x 1 1/2"
10.	G10171	4	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10232	4	Lock Washer, 5/16"
	G10106	4	Hex Nut, 5/16"-18
11.	GA6620	2	Bracket
12.	GA6618	2	Mount
13.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10219	2	Washer, 5/16" USS
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18
14.	G10107	3	Lock Nut, 5/8"-11
15.	GD1109	2	Bushing, 4 1/63" I.D. x 7/8" O.D. x 1/4" Long
16.	GD9290	2	Disc Blade, 8"
17.	G10018	7	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	7	Lock Nut, 5/16"-18, Grade 8
18.	G10152	1	Hex Head Cap Screw, 5/8"-11 x 9"
19.	GD3180-12	2	Sleeve, 5/8" I.D. x 7/8" O.D. x 2 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, 1/4" x 1/2"
26.	G10006	2	Hex Head Cap Screw, 5/8"-11 x 2 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

(RU83/RU83n)

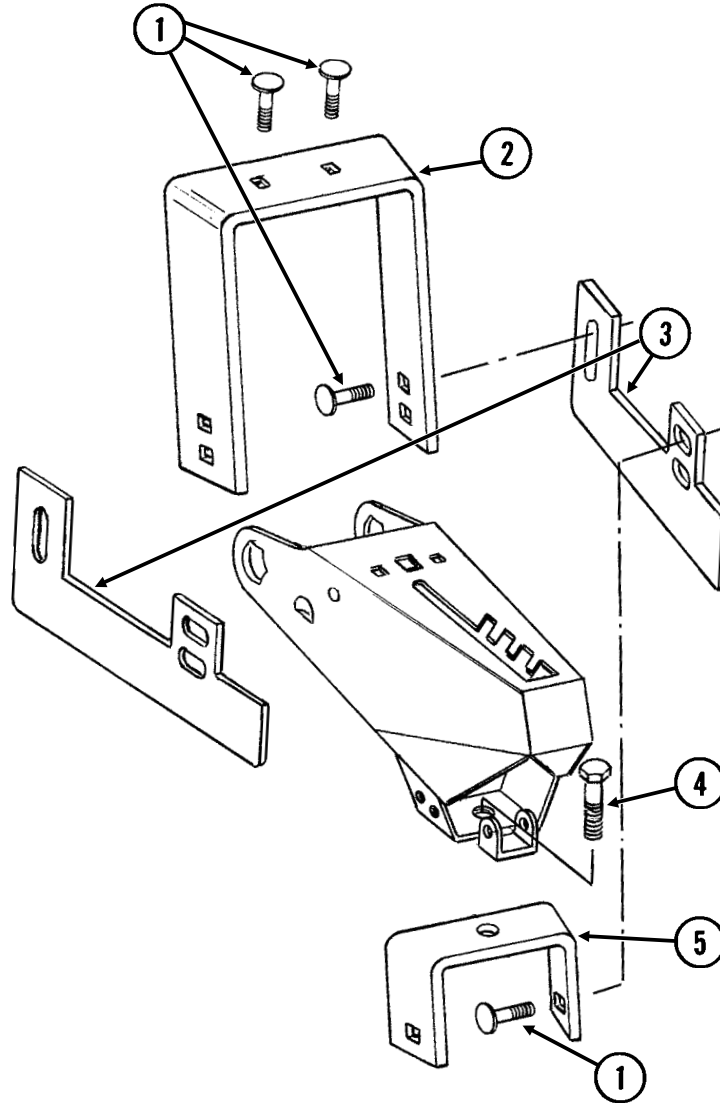


ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10801 G10315	2 -	Carriage Bolt, 1/2"-13 x 2 1/4" Carriage Bolt, 1/2"-13 x 2 1/2" (Used W/Straight Drop In-Furrow Granular Chemical Bracket)
	G10111	2	Lock Nut, 1/2"-13
2.	GB0268	1	Wheel Arm Stop
3.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10210	1	Washer, 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, 4 1/64" 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)



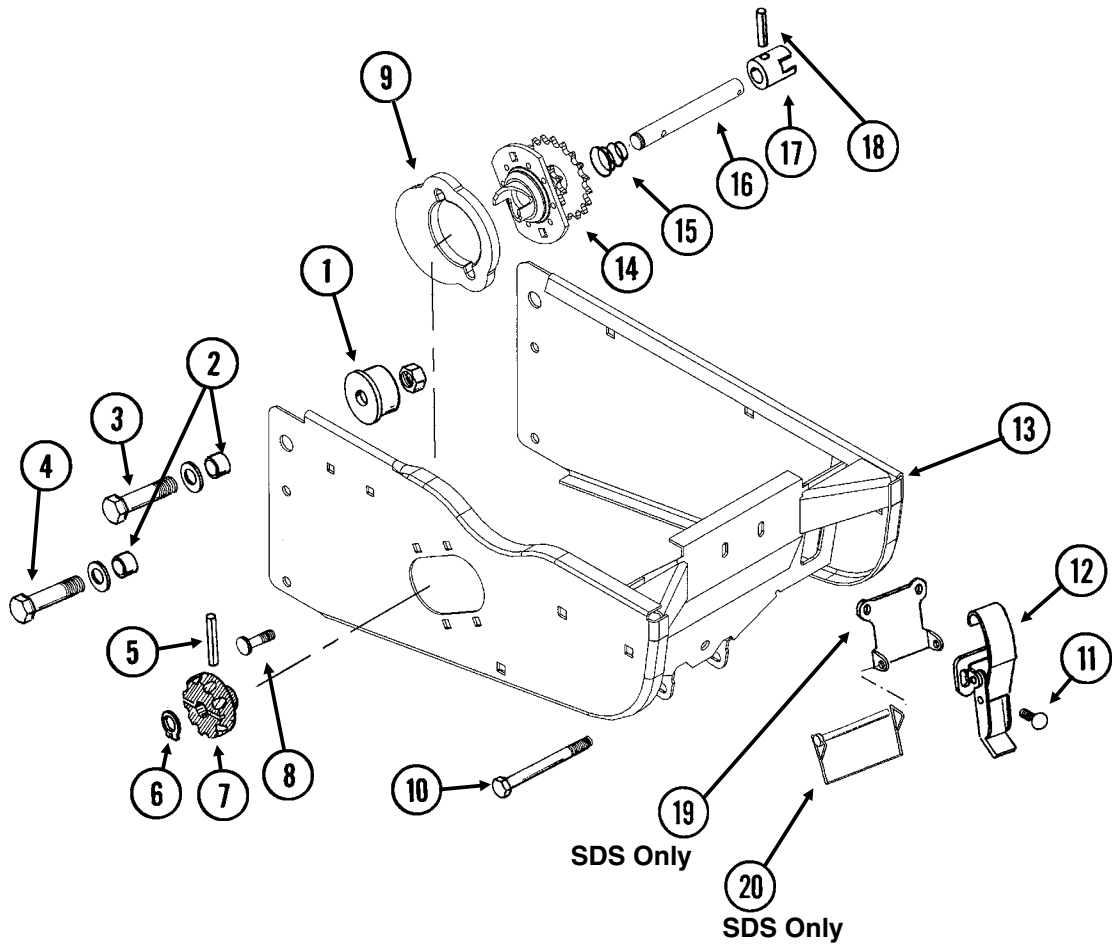
# DRAG CLOSING ATTACHMENT

RUB050(RU90c)



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Row)	
1.	G10599	6	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10210	6	Washer, 3/8" USS
	G10229	6	Lock Washer, 3/8"
	G10101	6	Hex Nut, 3/8"-16
2.	GD11508	1	Front Bracket
3.	GD11313	2	Blade
4.	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
5.	GD11509	1	Rear Bracket
A.	G7566X	-	Drag Closing Attachment Complete (Items 1-5)

# HOPPER SUPPORT AND METER DRIVE



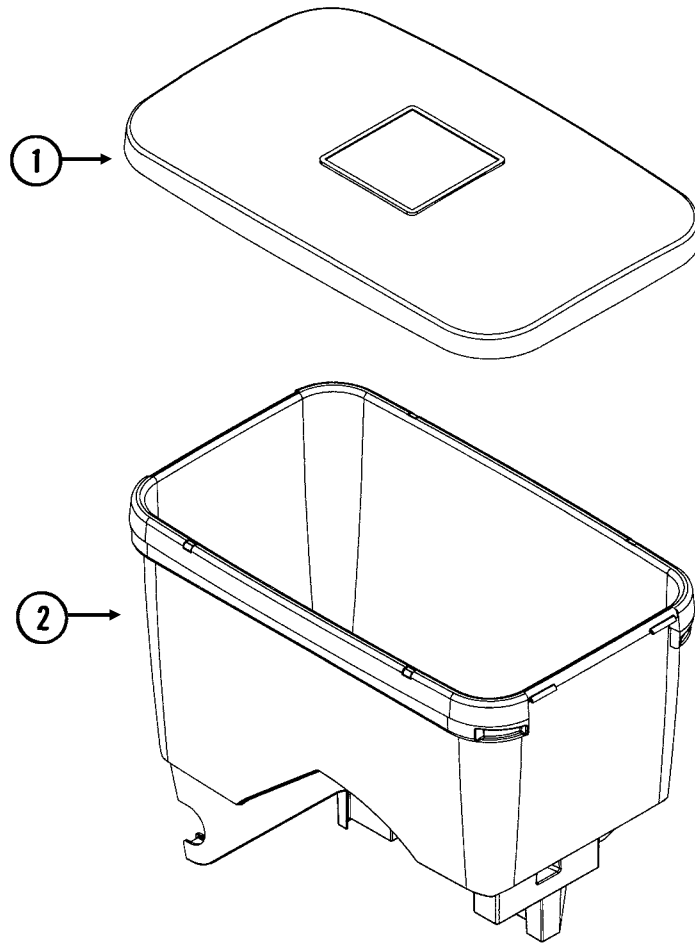
# HOPPER SUPPORT AND METER DRIVE

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GB0314	2	Hopper Mount
2.	GB0218	4	Bushing, 2 <sup>1</sup> / <sub>32</sub> " I.D. x 7 <sup>7</sup> / <sub>8</sub> " O.D. x 1 <sup>9</sup> / <sub>32</sub> " Long
3.	G10752	2	Hex Head Cap Screw, 5 <sup>8</sup> / <sub>16</sub> "-18 x 2 1 <sup>4</sup> / <sub>4</sub> "
	GD7805	2	Special Washer, 5 <sup>8</sup> / <sub>16</sub> ", Hardened
	G10412	2	Lock Nut, 5 <sup>8</sup> / <sub>16</sub> "-18
4.	G10751	2	Hex Head Cap Screw, 5 <sup>8</sup> / <sub>16</sub> "-18 x 1 3 <sup>4</sup> / <sub>4</sub> "
	GD7805	2	Special Washer, 5 <sup>8</sup> / <sub>16</sub> ", Hardened
	G10412	2	Lock Nut, 5 <sup>8</sup> / <sub>16</sub> "-18
5.	G10602	1	Spring Pin, 1 <sup>4</sup> / <sub>4</sub> " x 1 1 <sup>2</sup> / <sub>2</sub> "
6.	G10567	1	External Retaining Ring, 5 <sup>8</sup> / <sub>16</sub> "
7.	GD11239	1	Knob
8.	G10338	2	Carriage Bolt, 5 <sup>16</sup> / <sub>16</sub> "-18 x 1 1 <sup>4</sup> / <sub>4</sub> "
	G10620	2	Serrated Flange Nut, 5 <sup>16</sup> / <sub>16</sub> "-18
9.	GB0331	1	Clutch Adapter Plate
10.	G10061	1	Hex Head Cap Screw, 3 <sup>8</sup> / <sub>16</sub> "-16 x 3 1 <sup>2</sup> / <sub>2</sub> "
	G10210	2	Washer, 3 <sup>8</sup> / <sub>16</sub> " USS
	G10108	1	Lock Nut, 3 <sup>8</sup> / <sub>16</sub> "-16
11.	G10309	2	Carriage Bolt, 1 <sup>4</sup> / <sub>4</sub> "-20 x 5 <sup>8</sup> / <sub>16</sub> ", Grade 2
	G10621	2	Serrated Flange Nut, 1 <sup>4</sup> / <sub>4</sub> "-20
12.	GA2007	1	Hopper Hold Down Latch
13.	GA10155	1	Hopper Support
14.	GA10137	1	Double Sprocket And Bearing, Drive Clutch, 11/19 Tooth
15.	GD11413	1	Spring
16.	GD15747	1	Shaft
17.	GB0278	1	Coupler
18.	G10546	1	Spring Pin, 3 <sup>16</sup> / <sub>16</sub> " x 1 1 <sup>4</sup> / <sub>4</sub> "
19.	GD13110	1	Retainer (SDS Only)
20.	GD10705	1	Locking Clip Pin, 1 <sup>4</sup> / <sub>4</sub> " x 2 1 <sup>2</sup> / <sub>2</sub> " (SDS Only)
A.	GA10151	-	Meter Drive Assembly, 11/19 Tooth (Items 5-7 And 14-18)

# SEED HOPPER AND LID (Conventional)

---

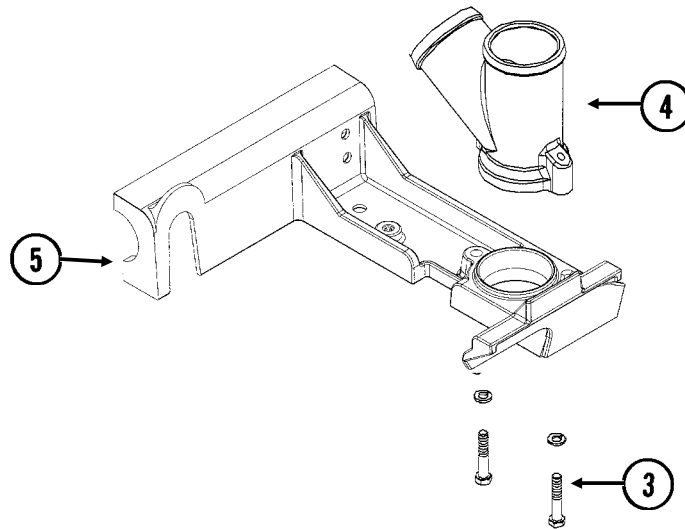
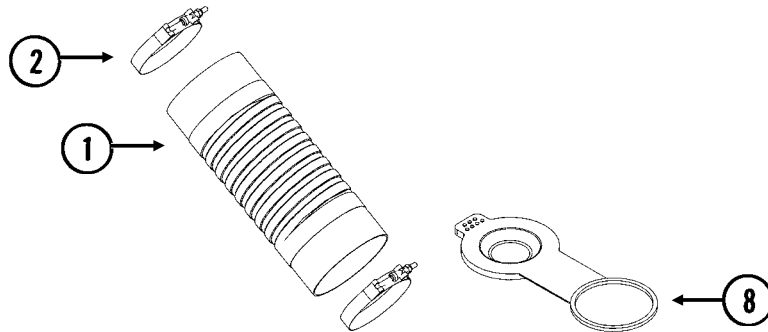
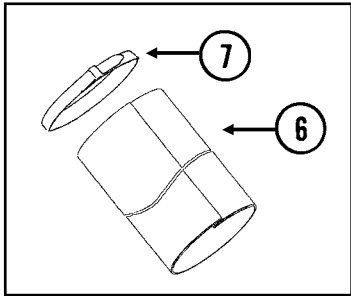
(METR12)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD11279	1	Lid
2.	GA10634	1	Seed Hopper

# SEED METER MOUNT AND DROP HOSES (SDS)

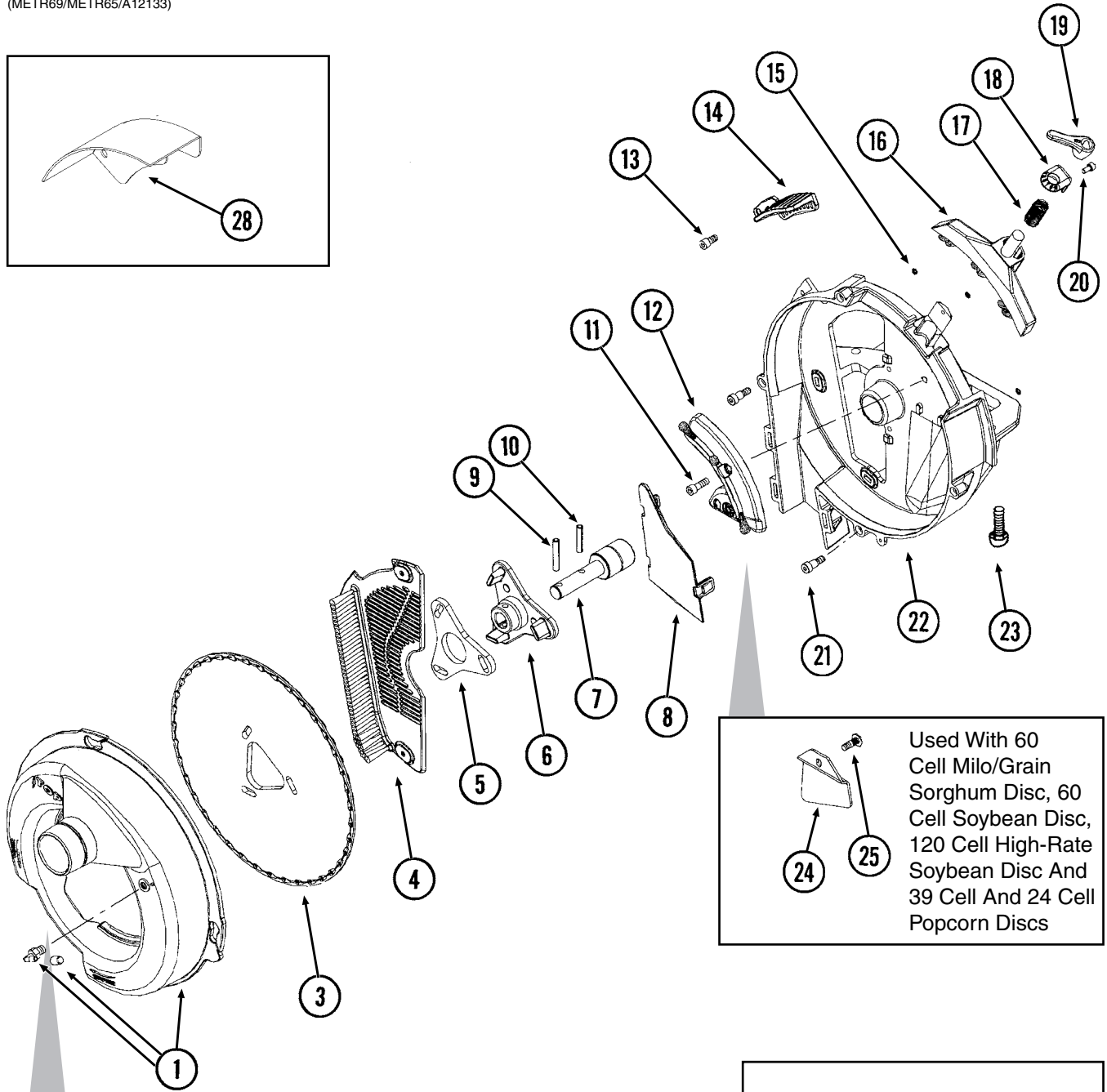
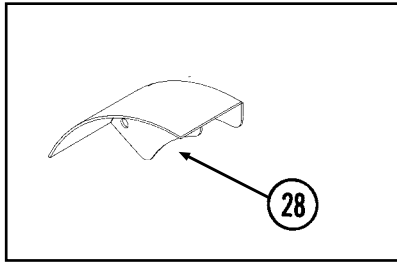
(D16399/METR63bb)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD12797-02	1	Drop Hose, 3 1/4" x 30"
	GD12797-04	-	Drop Hose, 3 1/4" x 32"
	GD12797-05	-	Drop Hose, 3 1/4" x 36"
	GD12797-09	-	Drop Hose, 3 1/4" x 39"
2.	G10999	2	T-Bolt Hose Clamp, 3 1/4"
3.	G10047	2	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10229	2	Lock Washer, 3/8"
4.	GB0371	1	Inlet, Short
5.	GA11392	1	Meter Mount
6.	GD16399-01	-	Sleeve, 3" x 10"
7.	GD2117	-	Tie Strap, 14 1/2"
8.	GD13412	1	View Cap

# SEED METER

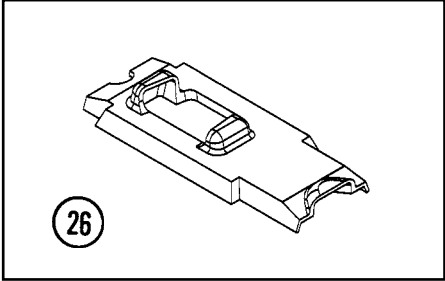
(METR69/METR65/A12133)



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

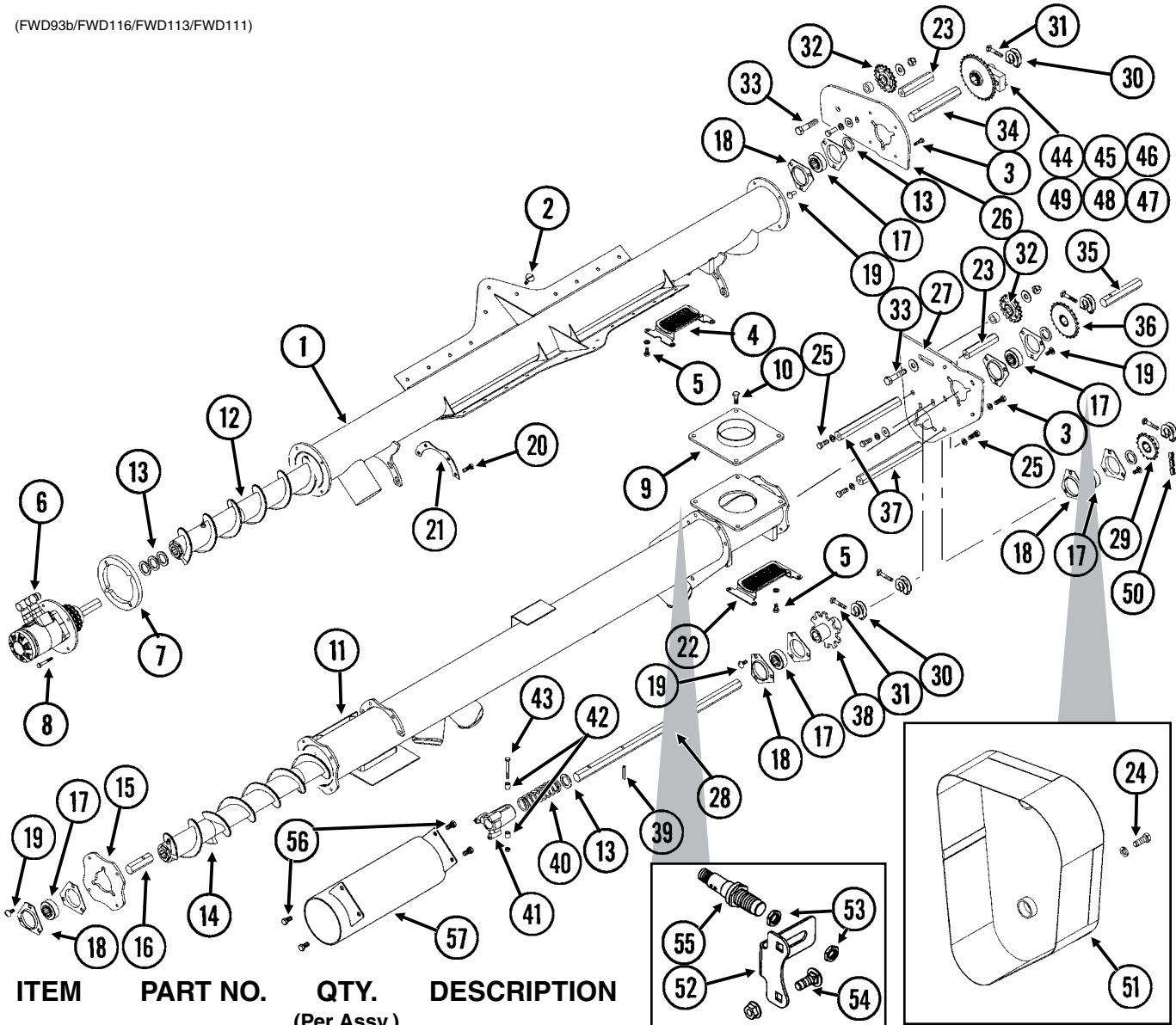


# SEED METER

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11911	1	Vacuum Cover W/Elbow And Cap
	GD17099	-	3/16" 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, 1/4" x 1 1/2"
10.	G10603	1	Spring Pin, 1/4" x 1 1/4"
11.	G11213	1	Hex Socket Head Cap Screw, 1/4"-20 x 3/4"
12.	GA11935	1	Crowder Brush
13.	G10260	1	Hex Socket Head Cap Screw, 1/4"-20 x 1/2" (Conventional Planters)
	G10252	1	Hex Socket Head Cap Screw, 1/4"-20 x 7/8" (SDS Planters)
	G10209	1	Washer, 1/4" USS (SDS Planters)
	G10110	1	Lock Nut, 1/4"-20, Grade B (SDS Planters)
14.	GD17047	1	Air Inlet Screen
15.	GD17162	3	Push Nut, 1/8" 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 3/8", Stainless Steel
21.	G11172	4	Hex Socket Head Shoulder Screw, 1/4"-20 x 3/8", Stainless Steel
22.	GB0319	1	Housing
23.	G11009	2	Locking Thumbscrew, 5/16"-18 x 3/4" (Conventional Planters)
	G10171	2	Hex Head Cap Screw, 5/16"-18 x 1 1/4" (SDS Planters)
	G10232	2	Lock Washer, 5/16" (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, 1/4"-20 x 3/4"
	G10323	1	Hex Flange Nut, 1/4"-20, No Serrations
26.	GD15700	1	Shank Cover, EdgeVac® 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.	G1K472	-	Sunflower Rate Reduction Kit, Includes: (2)122 Pitch Chains, (2)94 Pitch Chains, (2)Bars, (4)Spacers, (4)Lynch Pins, (2)Hex Shafts, (1)Hardware Bag, (4)Hanger Bearings, (2)30Tooth Sprockets, (4)15 Tooth Sprockets, (4)18 Tooth Sprockets And (1) Instruction (For Two Contact Wheel Assemblies)

# CENTER AUGER ASSEMBLIES (SDS)

(FWD93b/FWD116/FWD113/FWD111)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA11395	1	Upper Tube, L.H. (Shown)
	GA11396	-	Upper Tube, R.H.
2.	G11192	22	Bolt, 5/16"-18 x 1"
	G10221	22	Washer, 5/16" SAE
	G11182	22	Lock Nut W/Nylon Insert, 5/16"-18
3.	G10064	10	Hex Head Cap Screw, 1/4"-20 x 1"
	G10110	10	Lock Nut, 1/4"-20, Grade B
4.	GA11623	1	Screen
5.	G10018	8	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10232	8	Lock Washer, 5/16"
6.		-	See "SDS Hydraulic System", Pages P122 And P123
7.	GD16766	1	Ring
8.	G10021	4	Hex Head Cap Screw, 1/4"-20 x 1 1/2"
	G10110	4	Lock Nut, 1/4"-20, Grade B
9.	GA11391	1	Transfer Plate
10.	G10001	-	Hex Head Cap Screw, 3/8"-16 x 1"
	G10622	-	Serrated Flange Nut, 3/8"-16
11.	GA11389	1	Lower Tube, L.H. (Shown)
	GA11390	-	Lower Tube, R.H.
12.	GA11625	1	Auger Assembly, 61 5/8", L.H. (Shown)
	GA11624	1	Auger Assembly, 61 5/8", R.H.
	G10403	-	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	-	Lock Nut, 1/4"-20, Grade B
	GD16401	-	Auger Section, L.H.
	GD16400	-	Auger Section, R.H.
	GA11584	-	Hex Tube, 61 5/8"

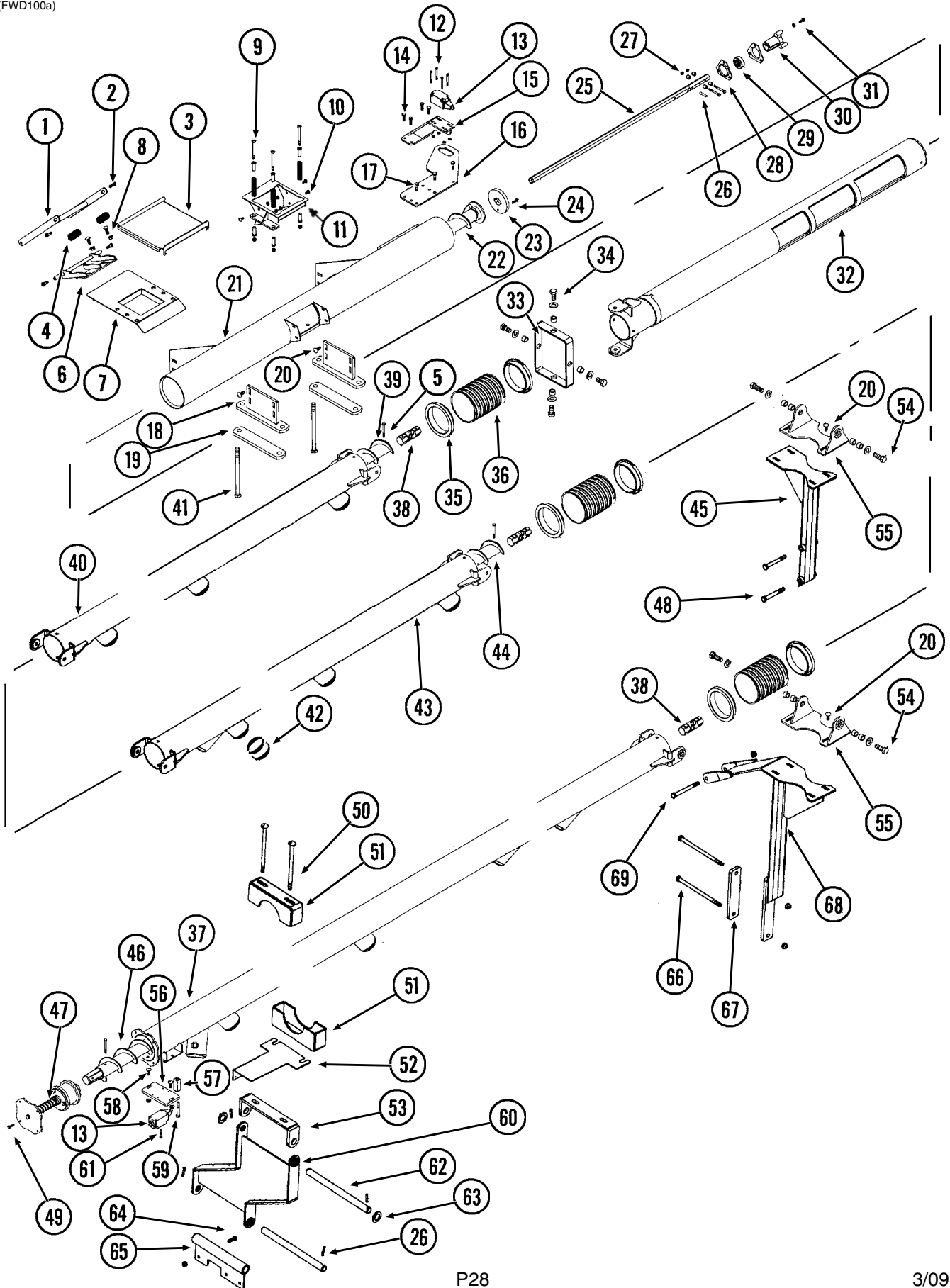


# CENTER AUGER ASSEMBLIES (SDS)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
13.	G10233	3	Machine Bushing, 1", 10 Gauge
14.	GA11627	1	Auger Assembly, 63 3/8", L.H. (Shown)
	GA11626	1	Auger Assembly, 63 3/8", R.H.
	G10403	-	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	-	Lock Nut, 1/4"-20, Grade B
	GD16401	-	Auger Section, L.H.
	GD16400	-	Auger Section, R.H.
	GA11585	-	Hex Tube, 63 3/8"
15.	GD16547	1	Bearing Plate
16.	GD16707	1	Shaft
17.	G2100-03	5	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.	G10019	8	Hex Head Cap Screw, 5/16"-18 x 1"
	G10620	8	Serrated Flange Nut, 5/16"-18
21.	GD16550	1	Shim
22.	GA11763	1	Screen
23.	GD16542	2	Guard
24.	G10001	-	Hex Head Cap Screw, 3/8"-16 x 1"
	G10210	-	Washer, 3/8" USS
	G10229	-	Lock Washer, 3/8"
25.	G10001	-	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	-	Lock Washer, 3/8"
26.	GD16539	1	Plate
27.	GD16540	1	Lower Plate
28.	GD11394-23	1	Hex Shaft, 7/8" x 23" (2 Holes)
29.	GA5106	1	Sprocket, 17 Tooth
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.	GA7154	2	Sprocket W/Bearing, 18 Tooth
33.	G10581	2	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	GD4887-10	2	Sleeve
	G10216	3	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
34.	GD16705	1	Hex Shaft
35.	GD16706	1	Shaft
36.	GA5108	1	Sprocket, 23 Tooth
37.	GD17002	2	Hex Shaft, 7/8" x 8 1/2"
38.	GA11375	1	Sensor Wheel
39.	G10602	1	Spring Pin, 1/4" x 1 1/2"
40.	GD2962	1	Spring
41.	GB0283	1	Coupler
42.	GD11395	2	Bushing, 1/2"
43.	G10880	1	Hex Head Cap Screw, 1/4"-20 x 2 1/4"
	G10110	1	Lock Nut, 1/4"-20, Grade B
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.	G3310-112	1	Chain, No. 40, 112 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
51.	GA11515	1	Guard, L.H.
	GA11513	-	Guard, R.H. (Shown)
52.	GD16535	1	Sensor Mount
53.	GD14257	2	Nut, M12 x 1"
54.	G10305	2	Carriage Bolt, 3/8"-16 x 1"
	G10622	2	Serrated Flange Nut, 3/8"-16
55.		-	Proximity Sensor, See "Electrical Components (SDS Control Console)", Pages P126 And P127
56.	G10002	4	Hex Head Cap Screw, 3/8"-16 x 3/4"
	G10108	4	Lock Nut, 3/8"-16
57.	GA11393	1	Coupler
A.	GA5164	-	Ratchet/Sprocket Assembly, L.H. Hopper (Items 44-49)
	GA9843	-	Ratchet/Sprocket Assembly, R.H. Hopper (Items 44-49)

# WING AUGER ASSEMBLIES (SDS)

(FWD100a)



# WING AUGER ASSEMBLIES (SDS)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11539	2	Link
2.	G10183	4	Hex Socket Head Set Screw, 5/16"-18 x 3/8"
3.	GA11538	2	Lid
4.	GD16983	4	Spring
5.	G10880	-	Hex Head Cap Screw, 1/4"-20 x 2 1/4"
	G10110	-	Lock Nut, 1/4"-20, Grade B
6.	GA11540	2	Link Mount
7.	GA11541	2	Plate
8.	G10305	-	Carriage Bolt, 3/8"-16 x 1"
	G10622	-	Serrated Flange Nut, 3/8"-16
9.	G11197	6	Slotted Flat Head Machine Screw, 5/16"-18 x 3 1/2"
	GD16634	12	Sleeve
	GD16982	6	Spring
	G11182	6	Lock Nut W/Nylon Insert, 5/16"-18
10.	G10309	8	Carriage Bolt, 1/4"-20 x 5/8", Grade 2
	G10621	8	Serrated Flange Nut, 1/4"-20
11.	GA11555	1	Transfer Chute, L.H.
	GA11556	-	Transfer Chute, R.H.
12.	G11205	8	Hex Socket Head Cap Screw, No. 10-32 x 2"
	G10243	8	Washer, No. 10 SAE
	G11206	8	Lock Nut, No. 10-32
13.		-	Limit Switch, See "Electrical Components (SDS Control Console)", Pages P126 And P127
14.	G10019	8	Hex Head Cap Screw, 5/16"-18 x 1"
	G10620	8	Serrated Flange Nut, 5/16"-18
15.	GA11548	2	Mount
16.	GD16672	2	Plate
17.	G10001	6	Hex Head Cap Screw, 3/8"-16 x 1"
	G10622	6	Serrated Flange Nut, 3/8"-16
18.	GA11532	4	Mount
19.	GD16620	4	Plate
20.	G10305	8	Carriage Bolt, 3/8"-16 x 1"
	G10622	8	Serrated Flange Nut, 3/8"-16
21.	GA11563	1	Outer Auger Tube, L.H.
	GA11562	-	Outer Auger Tube, R.H.
22.	GA12673	1	Auger Assembly, L.H. (Shown)
	GA12672	-	Auger Assembly, R.H.
	G10403	-	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	-	Lock Nut, 1/4"-20, Grade B
	GD16674	-	Spacer
	GD16401	-	Auger Section, L.H.
	GD16400	-	Auger Section, R.H.
	GA11581	-	Hex Tube, 64"
23.	GD16675	2	Pad
24.	G11180	2	Hex Head Cap Screw, 1/4"-20 x 1"
	G10110	2	Lock Nut, 1/4"-20, Grade B
25.	GA11580	2	Shaft
26.	G10602	2	Spring Pin, 1/4" x 1 1/2"
27.	G10880	4	Hex Head Cap Screw, 1/4"-20 x 2 1/4"
	GD11395	8	Bushing, 1/2"
	G10110	4	Lock Nut, 1/4"-20, Grade B
28.	G3400-01	4	Flangette
29.	G2100-03	2	Bearing, 7/8" Hex Bore, Spherical
30.	GB0283	2	Coupler

(Continued On Following Page)

# WING AUGER ASSEMBLIES (SDS)

ITEM	PART NO.	QTY.	DESCRIPTION
31.	G10043	6	Hex Head Cap Screw, 5/16"-18 x 3/4"
	G10232	6	Lock Washer, 5/16"
32.	GA11705	1	Inner Auger Tube, L.H. (Shown)
	GA11706	-	Inner Auger Tube, R.H.
33.	GD16556	2	Pivot Tube
34.	G10055	8	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	GD7805	8	Special Washer, 5/8", Hardened
	GB0218	8	Bushing, 2 1/32" I.D. x 7/8" O.D. x 1 9/32" Long
35.	GD16788	8	Hose Keeper
36.	GD16913	4	Hose, 5"
37.	GA11715	1	Auger Tube, L.H., 36 Row 30" (Shown)
	GA11714	-	Auger Tube, R.H., 36 Row 30"
38.	GA11575	4	U-Joint
39.	GA11723	1	Auger Assembly, L.H. (Shown)
	GA11724	-	Auger Assembly, R.H.
	G10403	-	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	-	Lock Nut, 1/4"-20, Grade B
	GD16401	-	Auger Section, L.H.
	GD16400	-	Auger Section, R.H.
	GD16385-07	-	Hex Tube, 67 1/4"
	40.	GA11709	1
41.	GA11708	-	Auger Tube, R.H.
	G10046	8	Hex Head Cap Screw, 5/8"-11 x 5"
42.	G10230	8	Lock Washer, 5/8"
	G10104	8	Hex Nut, 5/8"-11
	G11000	-	Cap, 3"
43.	GA11711	1	Auger Tube, L.H. (Shown)
	GA11710	-	Auger Tube, R.H.
44.	GA11721	1	Auger Assembly, L.H. (Shown)
	GA11722	-	Auger Assembly, R.H.
	G10403	-	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	-	Lock Nut, 1/4"-20, Grade B
	GD16401	-	Auger Section, L.H.
	GD16400	-	Auger Section, R.H.
	GD16385-08	-	Hex Tube, 112"
45.	GA11729	2	Support
46.	GA11717	1	Auger Assembly, L.H., 36 Row 30" (Shown)
	GA11718	-	Auger Assembly, R.H., 36 Row 30"
	G10403	-	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	-	Lock Nut, 1/4"-20, Grade B
	GD16401	-	Auger Section, L.H.
	GD16400	-	Auger Section, R.H.
	GA11728	-	Hex Tube, 222 3/8", 36 Row 30"
	GA11727	-	Hex Tube, 215 3/8", 36 Row 30"
47.	GA11778	2	Auger Stop
48.	G10035	4	Hex Head Cap Screw, 1/2"-13 x 4"
	G10111	4	Lock Nut, 1/2"-13
49.	G10064	8	Hex Head Cap Screw, 1/4"-20 x 1"
	G10110	8	Lock Nut, 1/4"-20, Grade B
50.	G11207	8	Carriage Bolt, 1/2"-13 x 8 1/2"
	G10216	8	Washer, 1/2" USS
	G10111	8	Lock Nut, 1/2"-13
51.	GA11733	4	Clamp

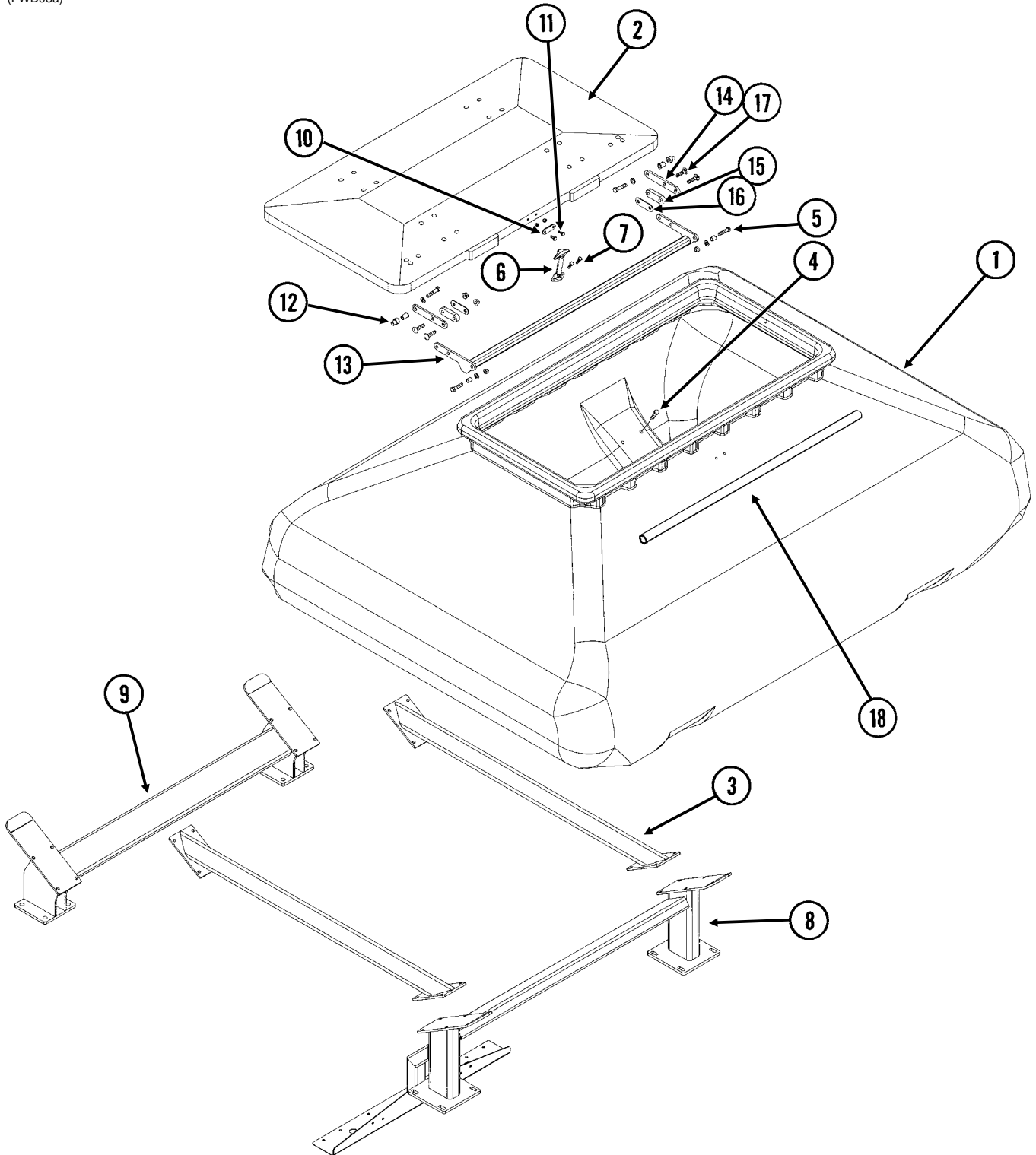
# WING AUGER ASSEMBLIES (SDS)

---

ITEM	PART NO.	QTY.	DESCRIPTION
52.	GD16972	1	Mount, L.H. Only
53.	GA11731	2	Support
54.	G10008	4	Hex Head Cap Screw, 5/8"-11 x 2"
	GD3180-29	4	Sleeve, 7/8" O.D. x 5/8" I.D. x 1 5/16"
55.	GA11684	2	Pivot Mount
56.	GD16680	2	Mount
57.	GD16701	2	Arm, 3/4" x 3/4" x 2"
58.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10620	2	Serrated Flange Nut, 5/16"-18
59.	G10049	2	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10229	2	Lock Washer, 3/8"
60.	GA11732	2	Support
61.	G11167	4	Hex Socket Head Cap Screw, No. 10-32 x 1 1/2", Grade 8
62.	GD16973	4	Pin, 1" x 13 1/2"
63.	G10082	8	Washer, 1" SAE
64.	G10004	-	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10622	-	Serrated Flange Nut, 3/8"-16
65.	GA11730	2	Support
66.	G10909	4	Hex Head Cap Screw, 1/2"-13 x 9"
	G10111	4	Lock Nut, 1/2"-13
67.	GD16957	2	Bracket
68.	GA11716	2	Hook Plate Mount
69.	G10348	2	Hex Head Cap Screw, 1/2"-13 x 5"
	G10111	2	Lock Nut, 1/2"-13

# BULK SEED HOPPER ASSEMBLY (SDS)

(FWD93a)

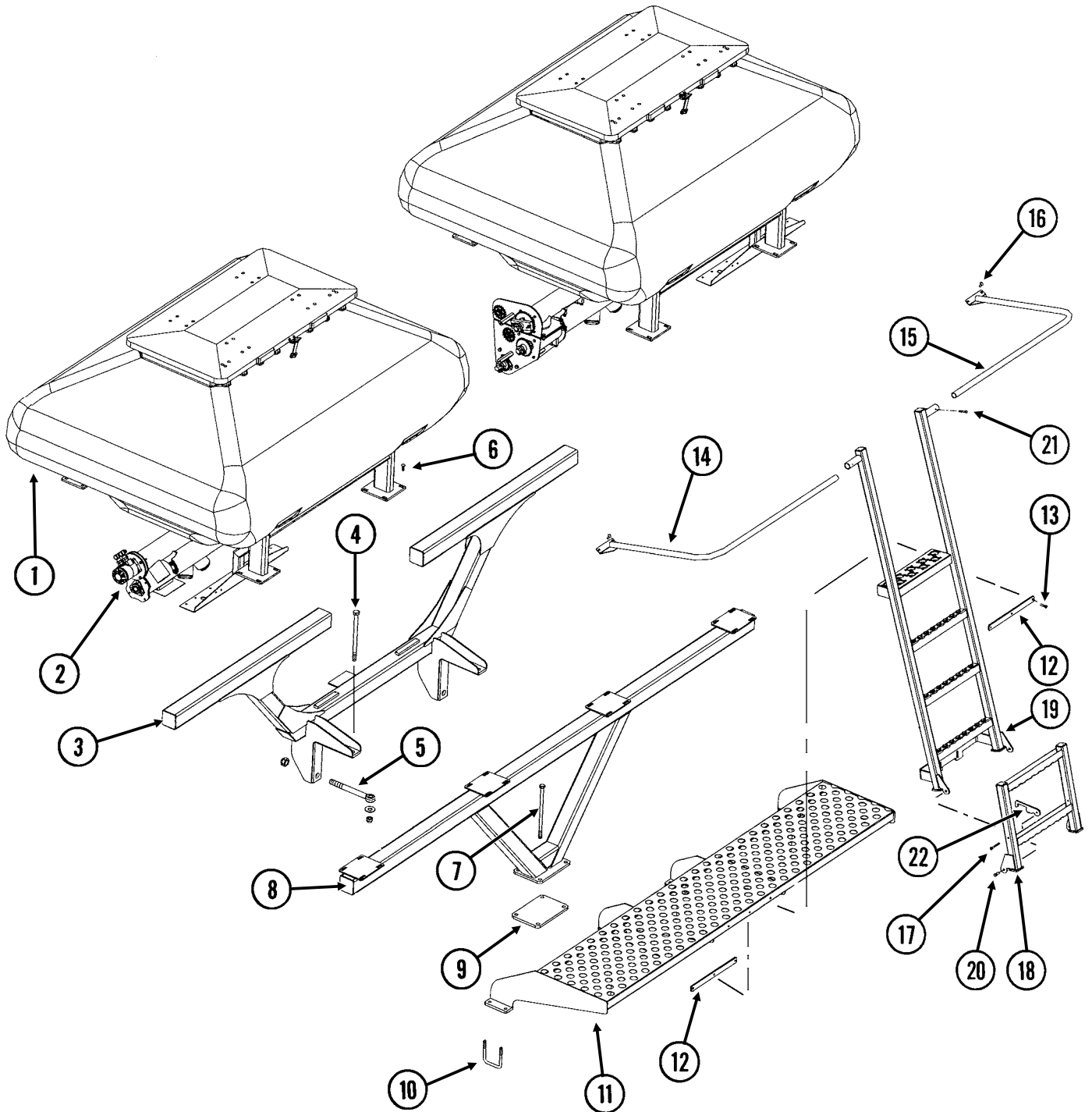


# BULK SEED HOPPER ASSEMBLY (SDS)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD17308	1	Hopper, R.H.
	GD17309	-	Hopper, L.H.
2.	GA11579	1	Lid
3.	GA11381	2	Hopper Stiffener
4.	G10003	16	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10203	16	Washer, 3/8" SAE
	G10108	16	Lock Nut, 3/8"-16
5.	G10003	2	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	GD11963-03	2	Tube, 1/2" O.D. x 25/64" I.D. x 9/16"
	G10203	2	Washer, 3/8" SAE
	G10108	2	Lock Nut, 3/8"-16
6.	GA11635	1	Latch Cover
7.	G10064	2	Hex Head Cap Screw, 1/4"-20 x 1"
	G10211	2	Washer, 1/4" SAE
	G10110	2	Lock Nut, 1/4"-20, Grade B
8.	GA11617	1	Rear Mount, L.H.
	GA11616	-	Rear Mount, R.H.
9.	GA11615	1	Front Mount
10.	GD16979	1	Latch
11.	G10020	2	Hex Head Cap Screw, 1/4"-20 x 5/8"
	G10110	2	Lock Nut, 1/4"-20, Grade B
12.	G10047	2	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10203	2	Washer, 3/8" SAE
	GD16694	2	Bushing
	G11226	2	Tee Nut, 3/8"-16
13.	GA11587	1	Hinge
14.	GD16692	2	Bar
15.	GD16693	2	Spacer
16.	GD16691	2	Shim
17.	G10301	4	Carriage Bolt, 3/8"-16 x 1 1/2"
	G10622	4	Serrated Flange Nut, 3/8"-16
18.	GD13575-05	-	Tube, 1" x 43" (If Applicable)

# BULK SEED HOPPER CATWALK (SDS)

(FWD97)



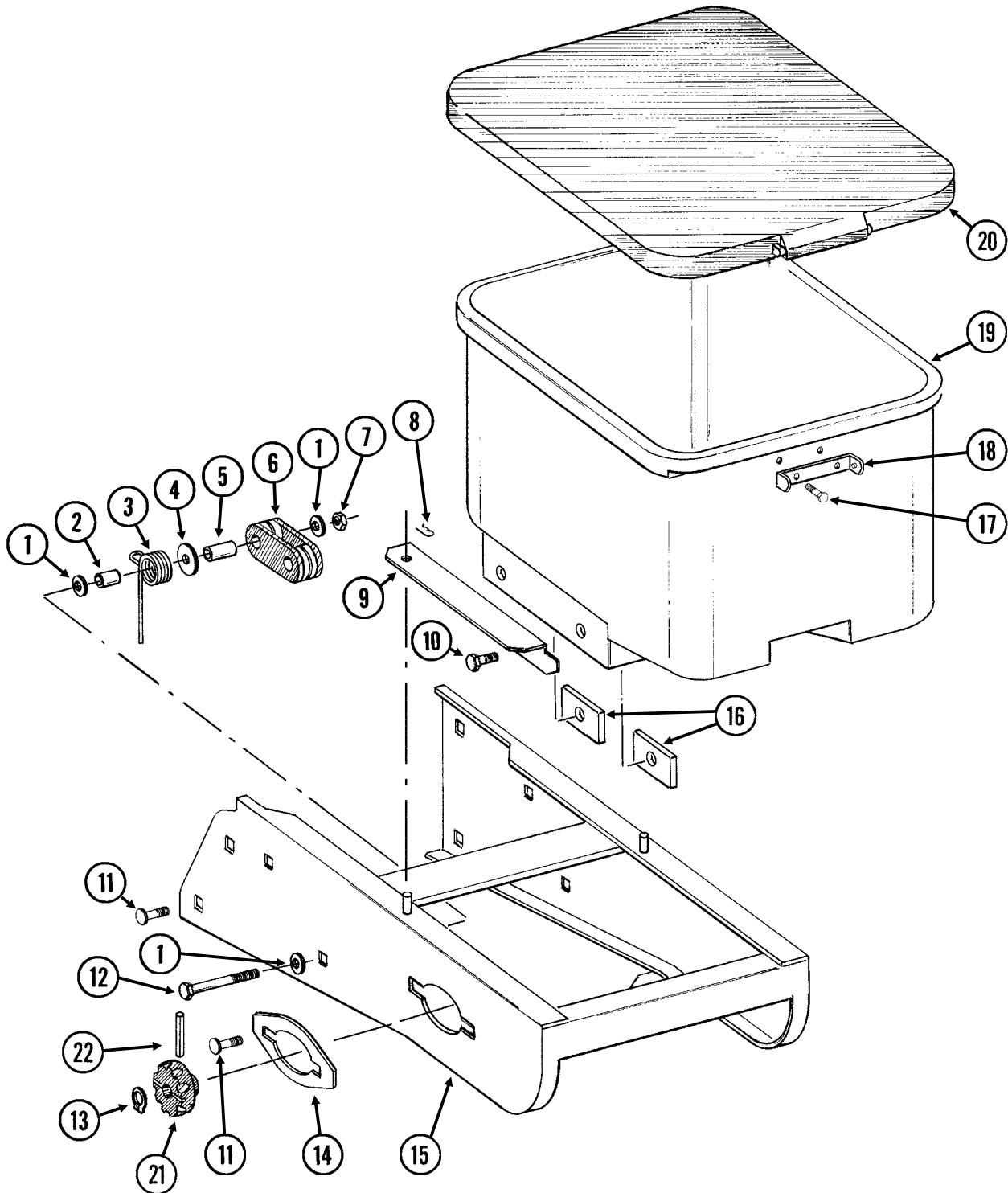


# BULK SEED HOPPER CATWALK (SDS)

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Bulk Seed Hopper Assembly (SDS)", Pages P32 And P33
2.		-	See "Center Auger Assemblies (SDS)", Pages P26 And P27
3.	GA11536	-	Hopper Mount, Front, 36 Row 30"
4.	G10541	1	Hex Head Cap Screw, 3/4"-10 x 11"
	G10218	1	Washer, 3/4" USS
	G10112	1	Lock Nut, 3/4"-10
5.	GD15283	1	Eyebolt, 1"-14 x 10"
	G11108	1	Lock Nut, 1"-14
6.	G10301	-	Carriage Bolt, 3/8"-16 x 1 1/2", 36 Row 30"
	G10622	4	Serrated Flange Nut, 3/8"-16
7.	GA11775	-	Special Bolt, 5/8"-11 x 18 1/2", 36 Row 30"
	G10205	4	Washer, 5/8" SAE
	G10107	4	Lock Nut, 5/8"-11
8.	GA11537	-	Hopper Mount, Rear, 36 Row 30"
9.	GD16530	1	Plate
10.	GD16356	4	U-Bolt, 3 1/2" x 3 1/2" x 1/2"-13
	G10228	8	Lock Washer, 1/2"
	G10102	8	Hex Nut, 1/2"-13
11.	GA11638	1	Catwalk
12.	GD16778	2	Bracket
13.	G10171	3	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10109	3	Lock Nut, 5/16"-18, Grade 8
14.	GA11639	1	Railing, L.H.
15.	GA11640	1	Railing, R.H.
16.	G10303	4	Carriage Bolt, 5/16"-18 x 1"
	G10219	4	Washer, 5/16" USS
	G10109	4	Lock Nut, 5/16"-18, Grade 8
17.	G10403	1	Hex Head Cap Screw, 1/4"-20 x 2 1/2"
	G10110	1	Lock Nut, 1/4"-20, Grade B
18.	GA11637	1	Lower Ladder
19.	GA11636	1	Ladder
20.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10108	2	Lock Nut, 3/8"-16
21.	G10040	2	Hex Head Cap Screw, 1/4"-20 x 1 3/4"
	G10110	2	Lock Nut, 1/4"-20, Grade B
22.	GD16779	1	Hook

# GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

(METR14d)



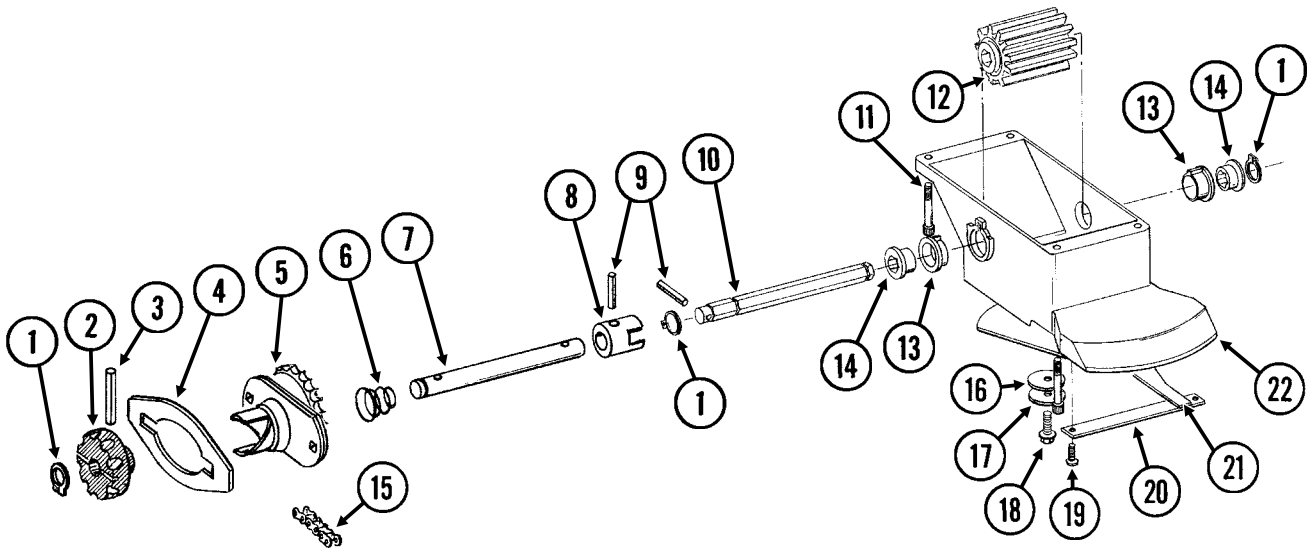
# GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

---

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10210	3	Washer, 3/8" USS
2.	GD2971-10	1	Sleeve, 9/16" Long
3.	GD11219	1	Spring
4.	G10201	1	Special Washer, 3/8" x 1 1/2" O.D.
5.	GD1026	1	Sleeve, 1 3/16" Long
6.	GD11962	1	Idler
7.	G10108	1	Lock Nut, 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, 3/8"-16 x 3/4"
	G10229	4	Lock Washer, 3/8"
11.	G10312	8	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	8	Serrated Flange Nut, 5/16"-18
12.	G10325	1	Hex Head Cap Screw, 3/8"-16 x 2 3/4"
13.	G10567	3	External Retaining Ring, 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, 1/4"-20 x 3/4"
	G10621	2	Serrated Flange Nut, 1/4"-20
18.	GD1060	1	Hinge
19.	GA8371	1	Hopper
20.	GA4444	1	Lid
21.	GD11239	1	Knob
22.	G10602	1	Spring Pin, 1/4" x 1 1/2"

# GRANULAR CHEMICAL METER AND METER DRIVE

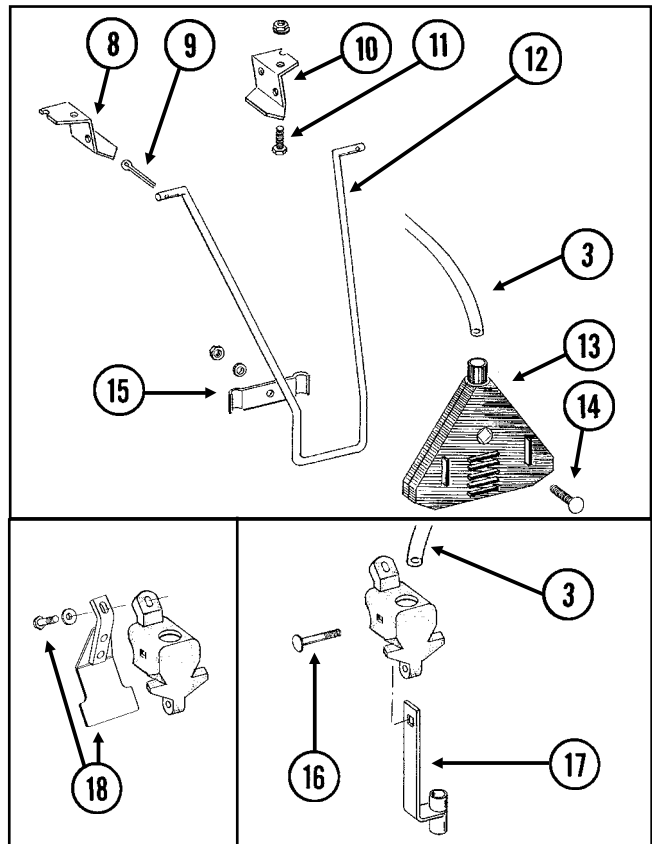
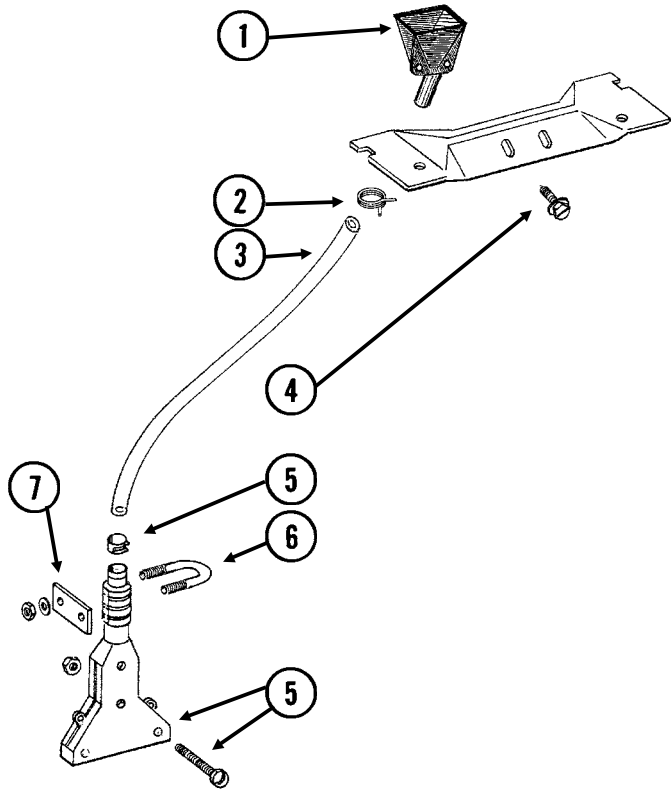
RUA051/RUB028(RU91a)



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 P36 And P37
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

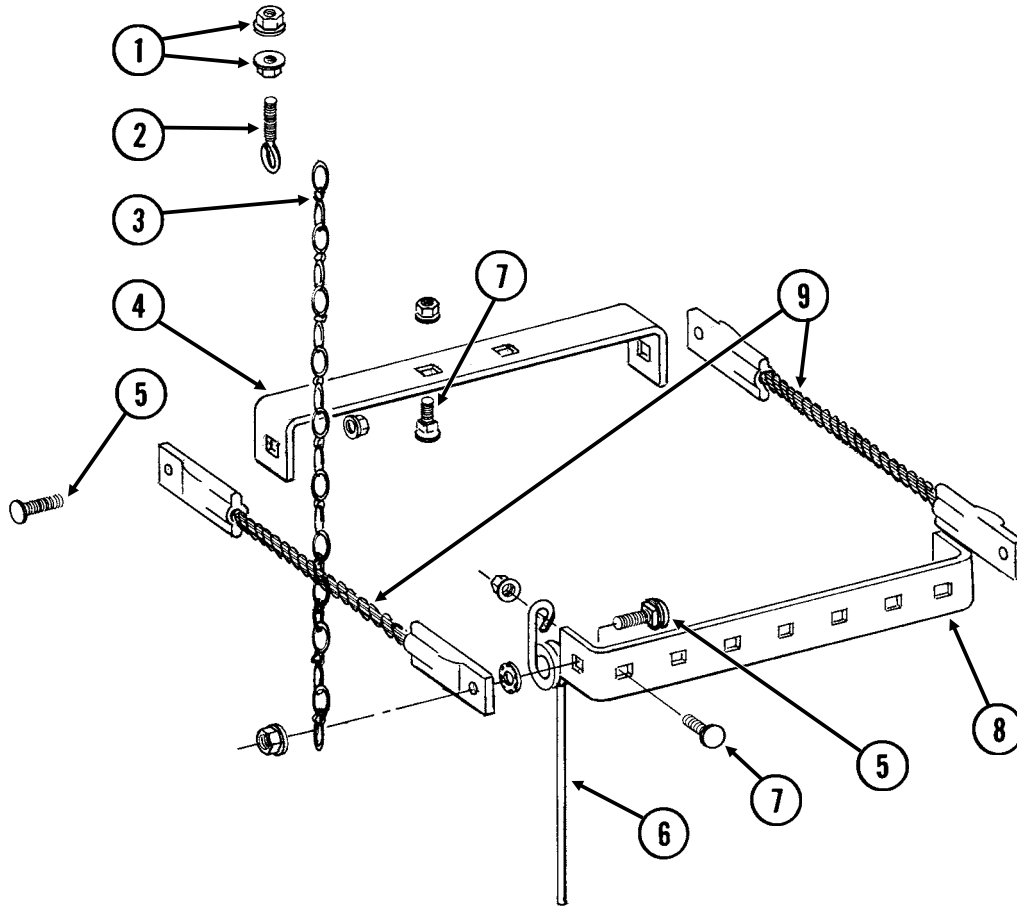
RUA061/RUA073(RU101mm/RU83m)



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

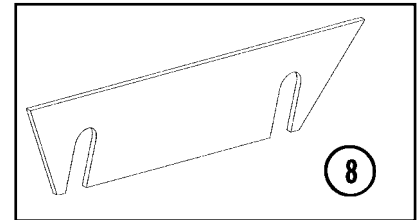
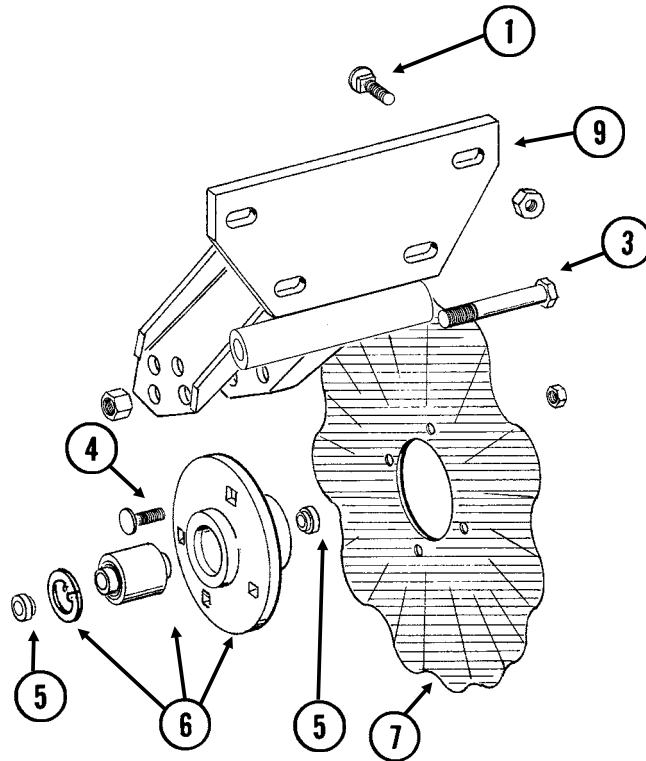
RUA055(RU95)



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

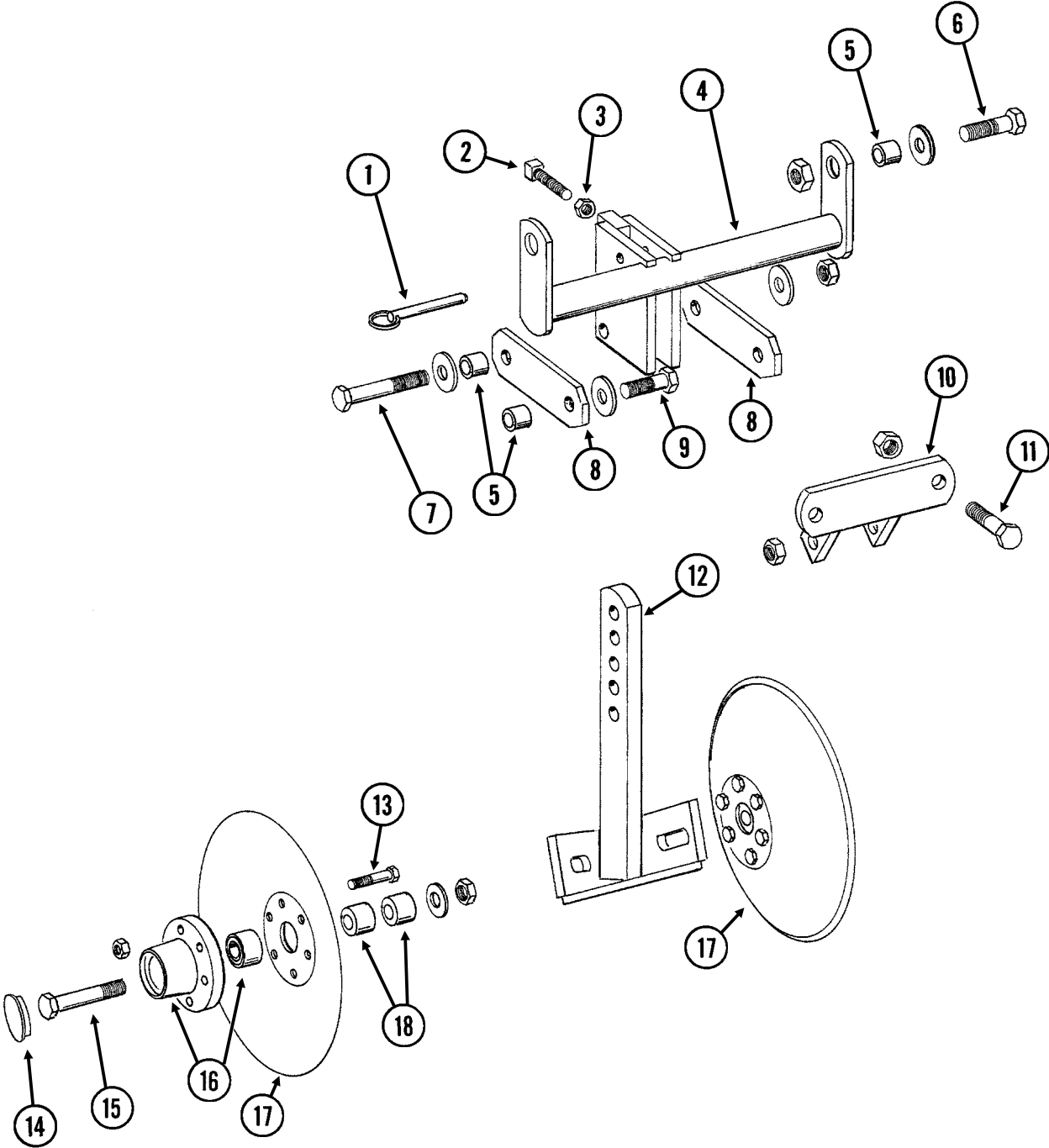
(D14398/RU102c/RU152)



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.	GA11520	1	Arm
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

# ROW UNIT MOUNTED DISC FURROWER

RUA059/RUA058(RU99/RU98g)



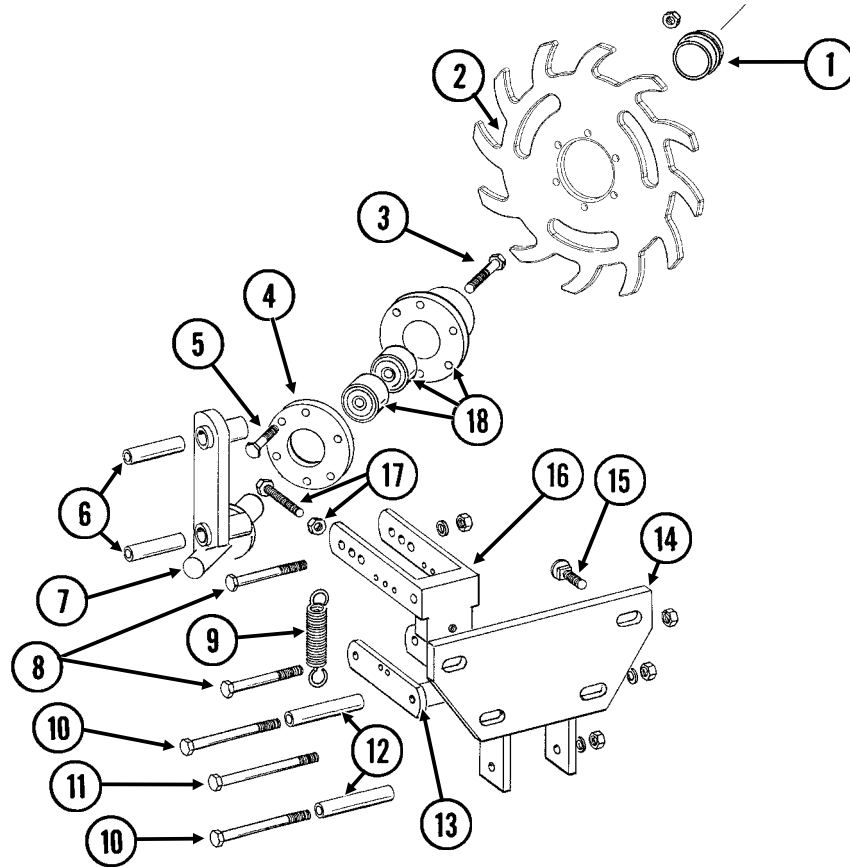


# ROW UNIT MOUNTED DISC FURROWER

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Row)	
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

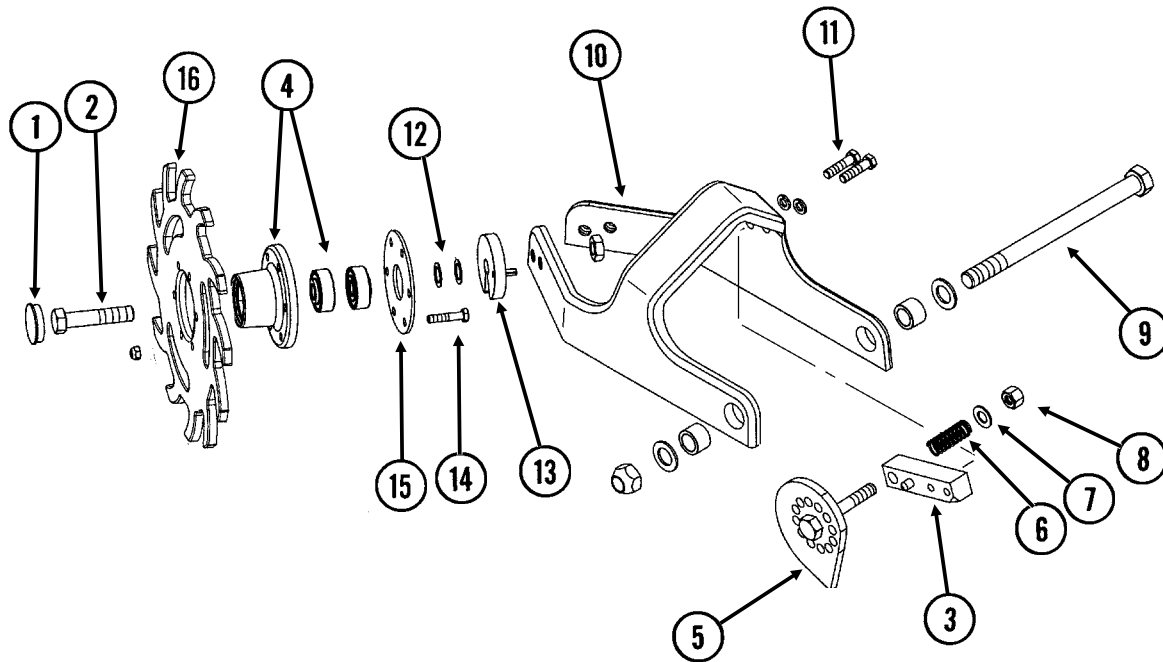
(RU103dd)



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Row)	
1	GD1132	1	Dust Cap
2	GB0387	1	Wheel, 12 Tine, 3/8" x 12"
3	G10006	1	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
4	GD9724	1	Backing Plate
5	G10133	6	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	6	Lock Nut, 5/16"-18, Grade 8
6	GD9720	2	Spacer, 1/2" x 2 3/16" Long
7	GA6838	1	Wheel Mount
8	G10033	2	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
9	GD5857	2	Spring
10	G10045	2	Hex Head Cap Screw, 1/2"-13 x 4 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
11	G10348	1	Hex Head Cap Screw, 1/2"-13 x 5" (Lockup Bolt)
	G10111	1	Lock Nut, 1/2"-13
12	GD9715	2	Spacer, 1/2" x 3" Long
13	GA6834	1	Lower Link
14	GA6832	1	Mount
15	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
16	GA6833	1	Upper Link
17	G10371	1	Hex Head Cap Screw, 1/2"-13 x 3", Full Thread
	G10501	1	Hex Jam Nut, 1/2"-13, Grade 2
18	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
A	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 2, 4, 5, And 18)

# COULTER MOUNTED RESIDUE WHEELS

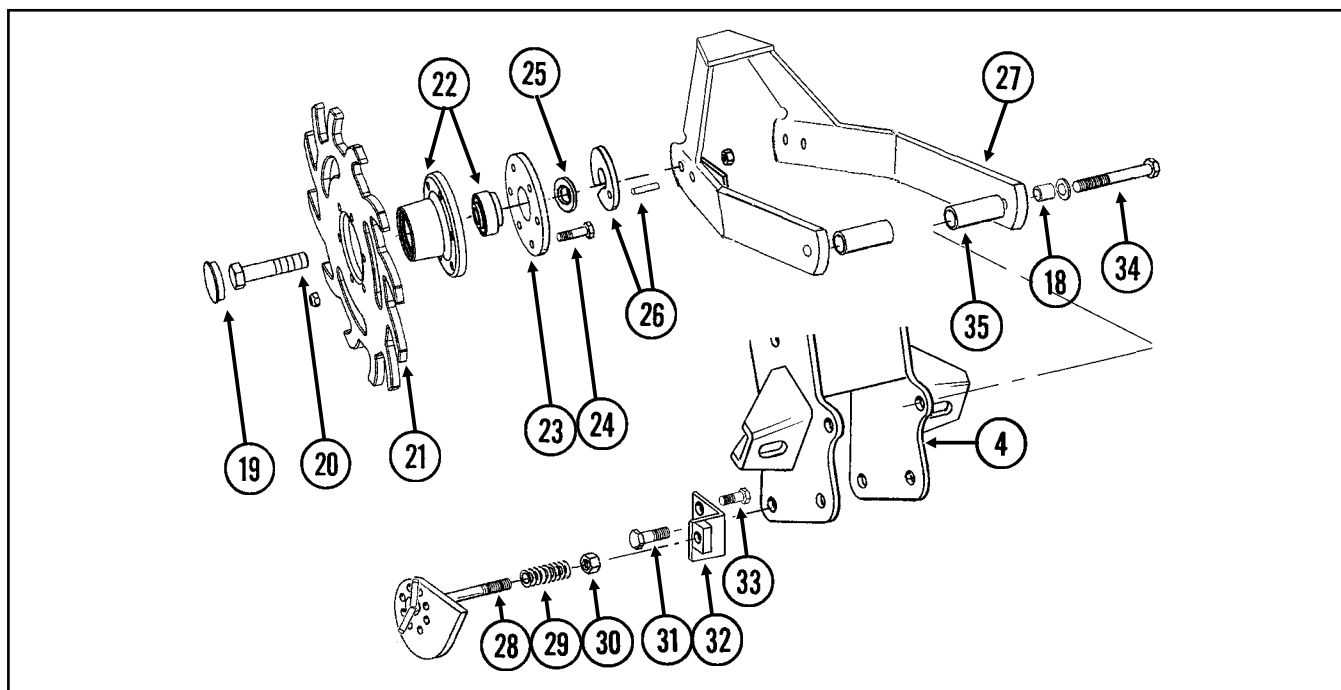
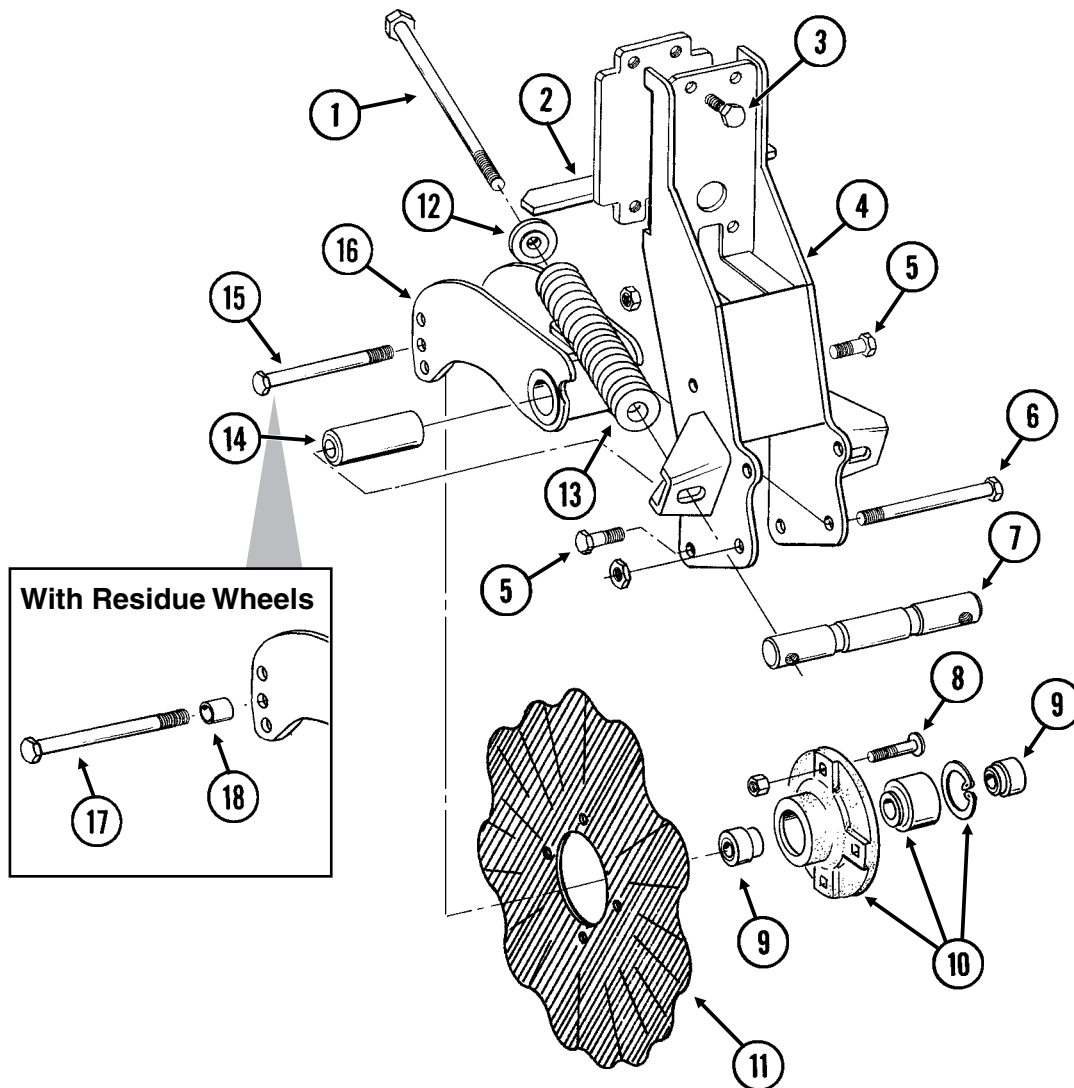
(RU153)



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Row)	
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	GA12256	1	Locking Pin
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	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
10	GB0401	1	Mount
11	G10003	2	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	2	Lock Washer, 3/8"
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"
A	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 3, 4, 14, And 15) (Shown)
	GA12235	-	Wheel Assembly, 12 Tine, L.H. (Items 3, 4, 14, And 15)
B	G1K467	-	Residue Wheel Mount Kit (Items 17-20)

# FRAME MOUNTED COULTER W/RESIDUE WHEELS

(RU135c/RU135g/RU153b/RU135hh)



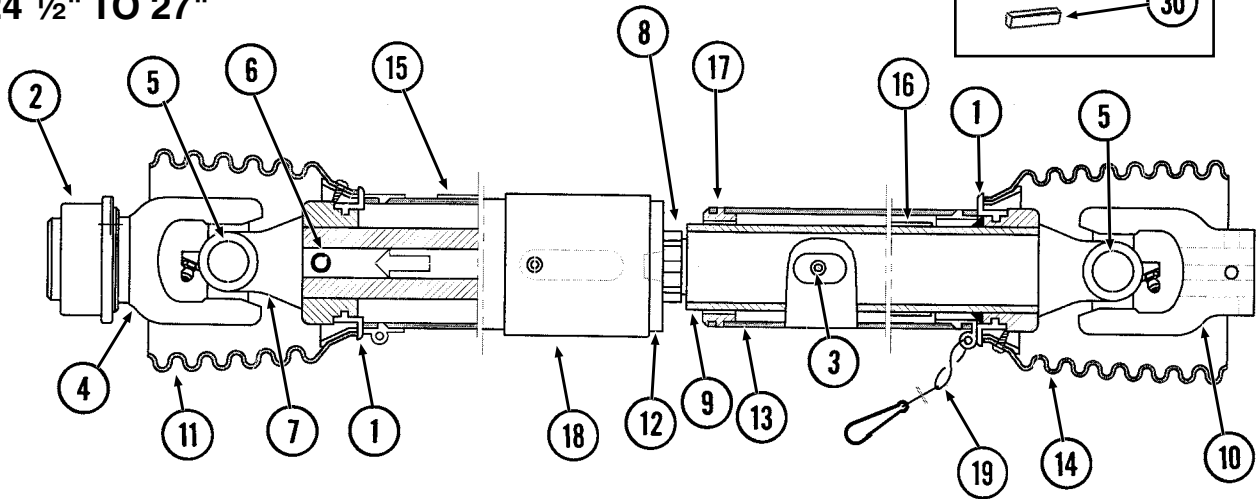
# FRAME MOUNTED COULTER W/RESIDUE WHEELS

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, 2 1/32" I.D. x 7/8" O.D. x 1 9/32" 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	GB0386	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"
A	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 21, 22, 23, And 24) (Shown)
	GA12235	-	Wheel Assembly, 12 Tine, L.H. (Items 21, 22, 23, And 24)

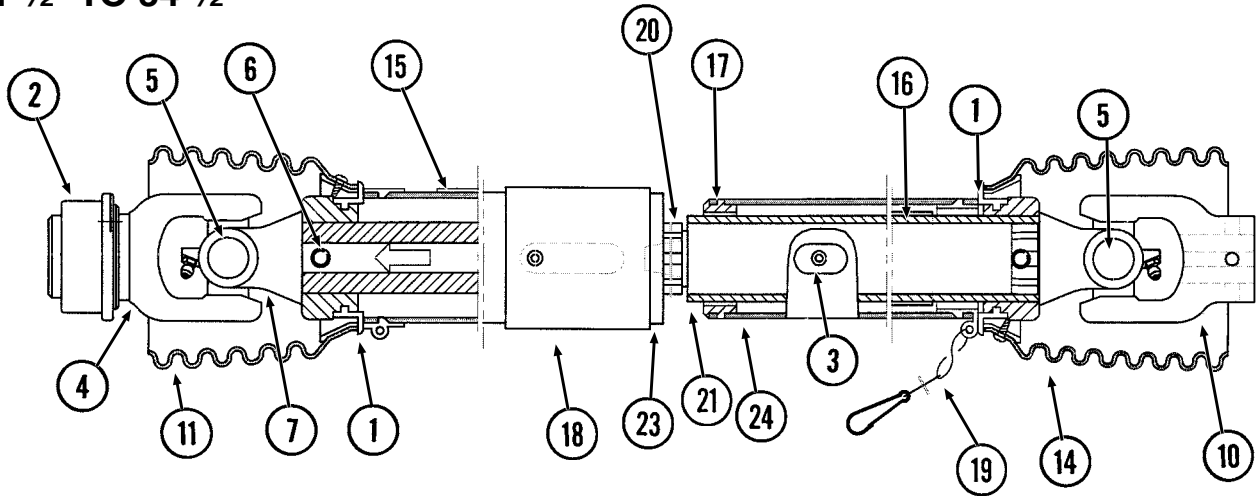
# PTO ASSEMBLY

(A13248/A13249/A13250/FWD165)

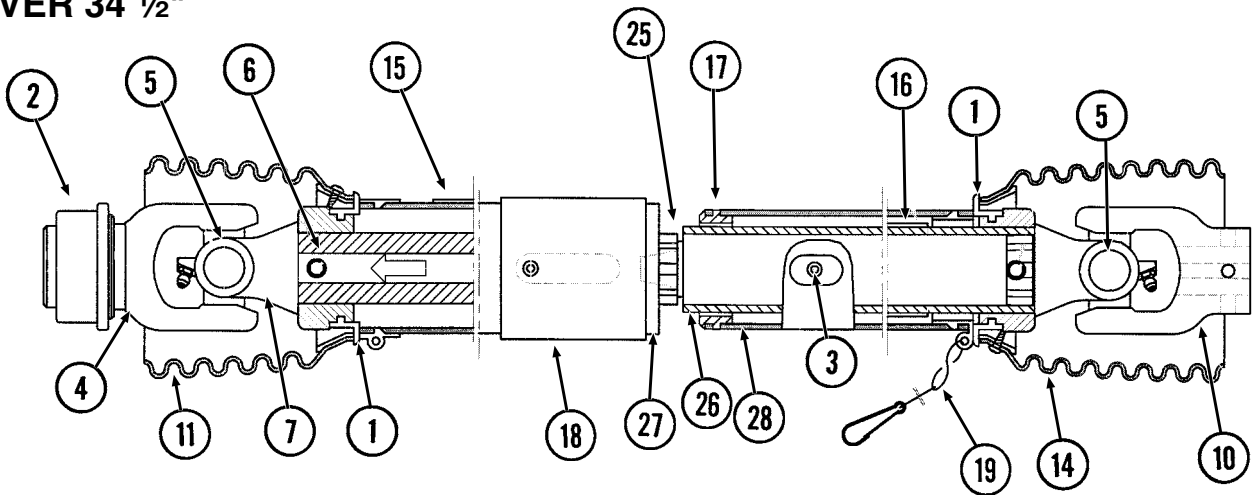
24 1/2" TO 27"



31 1/2" TO 34 1/2"



OVER 34 1/2"



# PTO ASSEMBLY

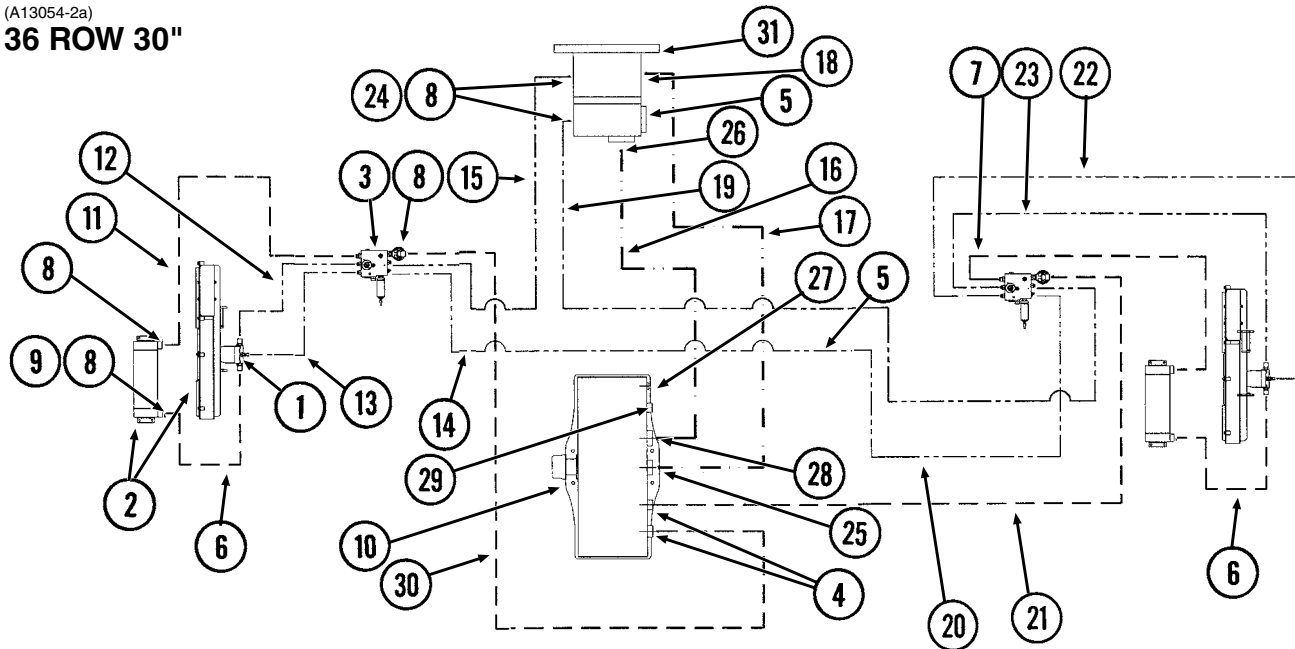
---

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1220	2	Bearing Ring
2.	GR1246	1	Quick Disconnect Kit
3.	GR1430	1	Grease Fitting, $\frac{3}{16}$ ", Drive-In
4.	GR1850	1	Yoke, 1 $\frac{3}{4}$ "-20 Spline
5.	GR1851	2	Cross & Bearing Kit
6.	GR1852	1	Spring Pin, 10mm x 80mm
7.	GR1853	1	Inboard Yoke
8.	GR1855	1	Inner Profile
9.	GR1858	1	Outer Profile
10.	GR1861	1	Yoke, 1 $\frac{3}{8}$ "
11.	GR1862	1	Shield Cone
12.	GR1864	1	Outer Shield Tube
13.	GR1867	1	Inner Shield Tube
14.	GR1869	1	Shield Cone
15.	GR1870	1	Outer Decal
16.	GR1871	1	Inner Decal
17.	GR1872	1	Support Bearing
18.	GR1874	1	Cover
19.	GR1875	1	Safety Chain
20.	GR1856	1	Inner Profile
21.	GR1859	1	Outer Profile
22.	GR1960	1	Inboard Yoke
23.	GR1865	1	Outer Shield Tube
24.	GR1868	1	Inner Shield Tube
25.	GR1854	1	Inner Profile
26.	GR1857	1	Outer Profile
27.	GR1863	1	Outer Shield Tube
28.	GR1866	1	Inner Shield Tube
29.	G10062	1	Hex Head Cap Screw, $\frac{3}{8}$ "-16 x 3"
	G10108	1	Lock Nut, $\frac{3}{8}$ "-16
30.	GD13226-02	1	Key, $\frac{5}{16}$ " Square x 1 $\frac{3}{4}$ "

# VACUUM FAN HYDRAULIC COMPONENTS

(A13054-2a)

36 ROW 30"



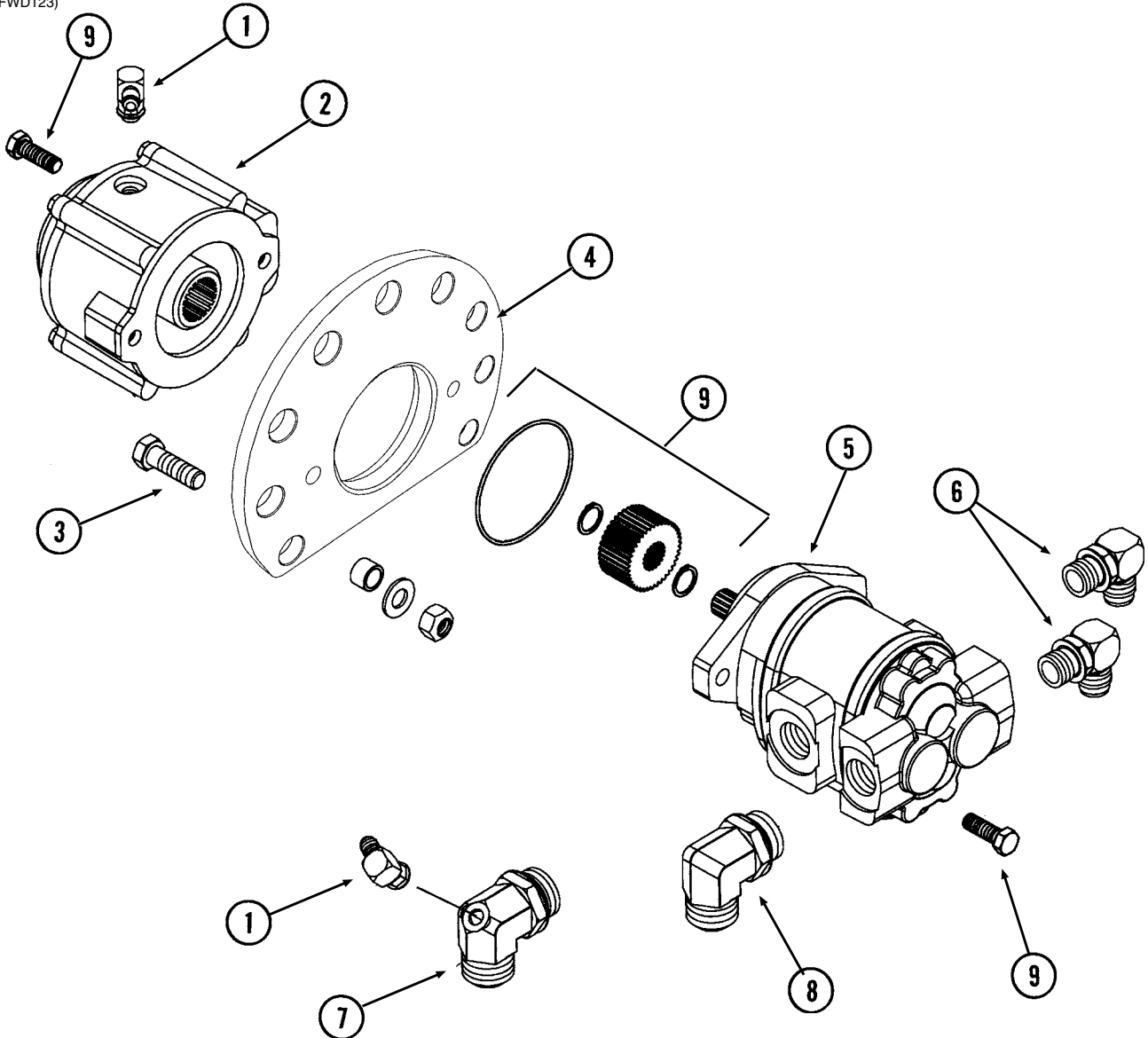
ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "Vacuum Fan Hydraulic Motor Assembly", Page P52
2.		-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P54 And P55
3.		-	See "Vacuum Fan Motor Valve Block Assembly (Located On Both Sides Of Planter)", Page P53
4.	G6801-12	2	Elbow W/O-Ring, 90°, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
5.	G6408-20	1	O-Ring Plug
6.	*A3381	2	Hose Assembly, 3/4" x 26"
7.	*A3384	1	Hose Assembly, 3/4" x 122"
8.	G6400-12	8	Connector W/O-Ring, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
9.	G6502-12	2	Swivel Elbow, 45°, 1 1/16"-12 Male JIC To Female
10.	GA12845	1	Tank, 8 Gallon
11.	*A3392	1	Hose Assembly, 3/4" x 50"
12.	*A11435	1	Hose Assembly, 5/8" x 28"
13.	*A12014	1	Hose Assembly, 3/8" x 34"
14.	*A12055	1	Hose Assembly, 3/8" x 275"
15.	*A11436	1	Hose Assembly, 5/8" x 326"
16.	*A11806	1	Hose Assembly, 1 1/4" x 60"
17.	*A11807	1	Hose Assembly, 1 1/4" x 78"
18.	G6410-16-20	1	Connector W/O-Ring, 1 5/16"-12 x 1 5/8"
	G6801-20	1	Elbow W/O-Ring, 90°, 1 5/8"-12 Male JIC To O-Ring
19.	*A11439	1	Hose Assembly, 5/8" x 360"
20.	*A12056	1	Hose Assembly, 3/8" x 323"
21.	*A12907	1	Hose Assembly, 3/4" x 323"
22.	*A3290	1	Hose Assembly, 3/8" x 98"
23.	*A11410	1	Hose Assembly, 5/8" x 98"
24.	G6500-12	2	Swivel Elbow, 90°, 1 1/16"-12 Male JIC To Female
25.	G6801-LL-20	2	X-Long Elbow W/O-Ring, 90°, 1 5/8"-12 Male JIC To O-Ring
	GR1787	-	O-Ring
26.	G6400-20-16	1	Connector W/O-Ring, 1 5/8"-12 JIC To 1 5/16"-12 O-Ring
	GR1786	-	O-Ring
27.	G304-C-10	1	Cap Nut, 7/8"-14
	G2404-10-08	1	Connector, 7/8" 14 Male JIC x 1/2" NPT
28.	G6801-L-20	1	Long Elbow W/O-Ring, 90°, 1 5/8"-12 Male JIC To O-Ring
	GR1787	-	O-Ring
29.	G6801-08-10	1	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To 7/8"-14 O-Ring
	GR1468	-	Seal Kit, Includes: (4) O-Rings, (5) BU Rings
30.	*A3398	1	Hose Assembly, 3/4" x 274"
31.	GA13490	1	Hydraulic Pump

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



# PTO PUMP ASSEMBLY

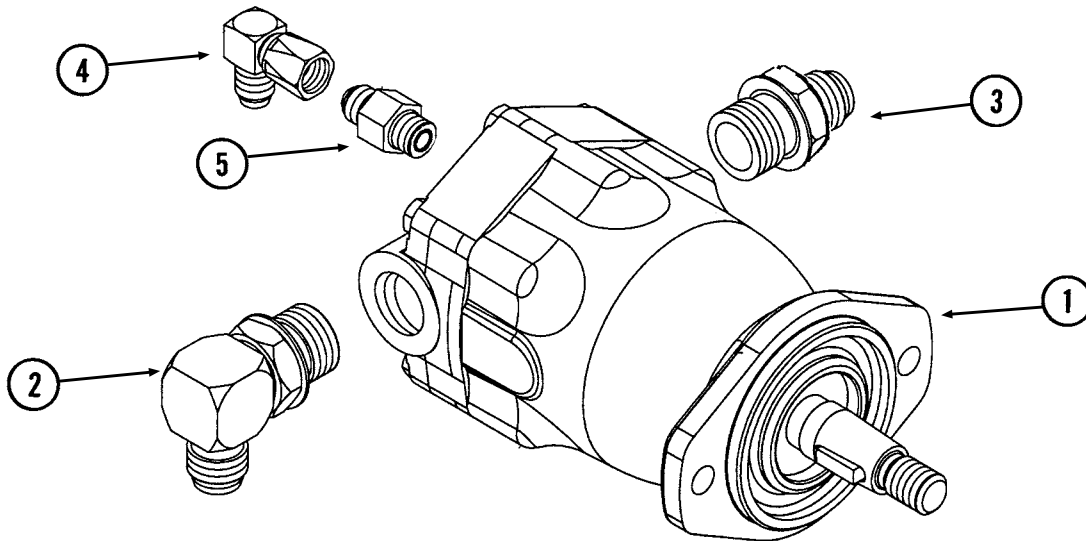
(FWD123)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6801-06 GR1045	2 -	Elbow W/O-Ring, 90°, 1/16"-18 Male JIC To O-Ring O-Ring
2.	GA11677	1	Planetary Gearbox
3.	G10008 GB0218 GD7805 G10107	5 5 5 5	Hex Head Cap Screw, 5/8"-11 x 2" Bushing, 2 1/32" I.D. x 7/8" O.D. x 1 9/32" Long Special Washer, 5/8", Hardened Lock Nut, 5/8"-11
4.	GD18283	1	Plate
5.	GA11676	1	PTO Pump
6.	G6801-12 GR1467	2 -	Elbow W/O-Ring, 90°, 1 1/16"-12 Male JIC To O-Ring O-Ring
7.	GD16994 GR1787	1 -	Special Elbow W/O-Ring, 90°, 1 5/8"-12 Male JIC To O-Ring O-Ring
8.	G6801-20 GR1787	1 -	Elbow W/O-Ring, 90°, 1 5/8"-12 Male JIC To O-Ring O-Ring
9.	GA11678	1	Gearbox Mounting Kit, Includes: (4) Bolts, (1) O-Ring, (2) Retainers, (1) Gear

# VACUUM FAN HYDRAULIC MOTOR ASSEMBLY

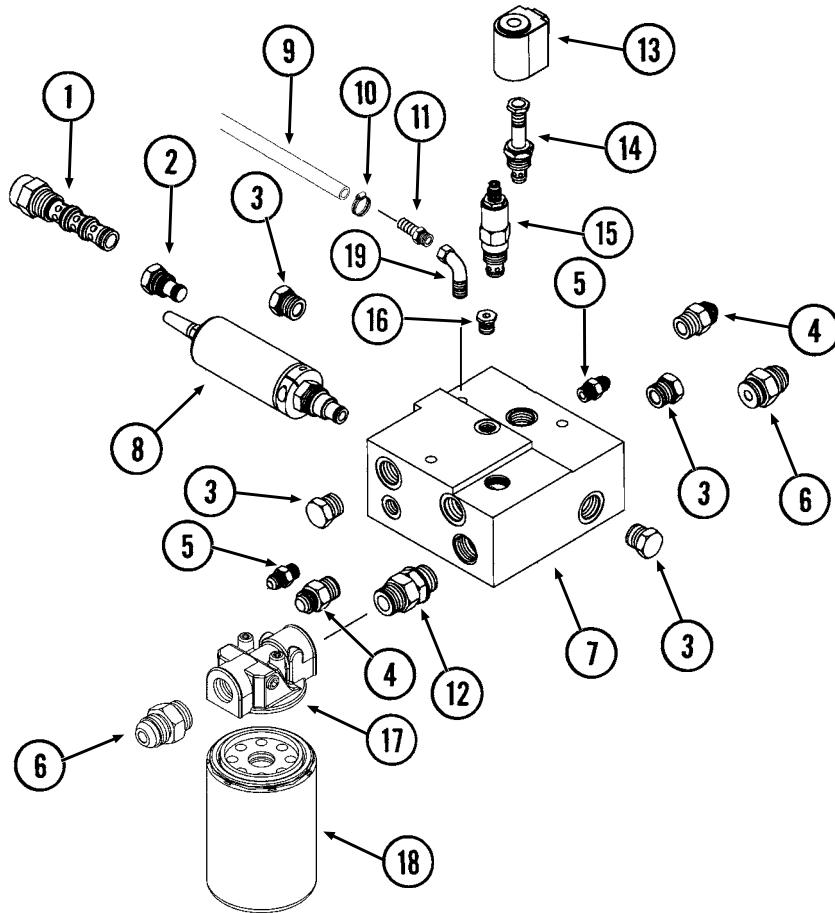
(METR21b)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA10149 GR1734	1 -	Hydraulic Motor Seal Kit
2.	G6801-10-12 GR1467	1 -	Elbow W/O-Ring, 90°, 7/8"-14 Male JIC To 1 1/16"-12 O-Ring O-Ring
3.	G6400-12 GR1467	2 -	Connector W/O-Ring, 1 1/16"-12 Male JIC To O-Ring O-Ring
4.	G6500-06	1	Swivel Elbow, 90°, 9/16"-18 Male JIC To Female
5.	G6400-06 GR1045	1 -	Connector W/O-Ring, 9/16"-18 Male JIC To O-Ring O-Ring

# VACUUM FAN MOTOR VALVE BLOCK ASSEMBLY (Located On Both Sides Of Planter)

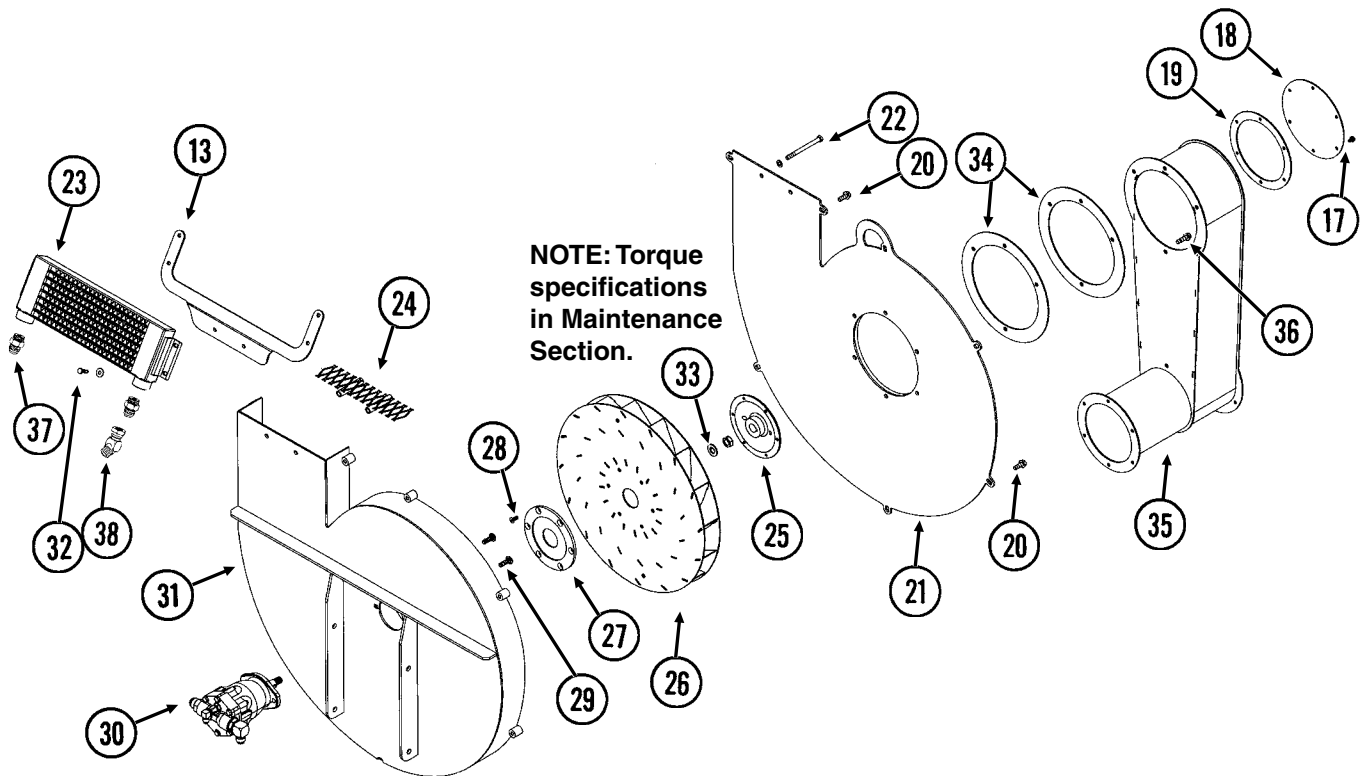
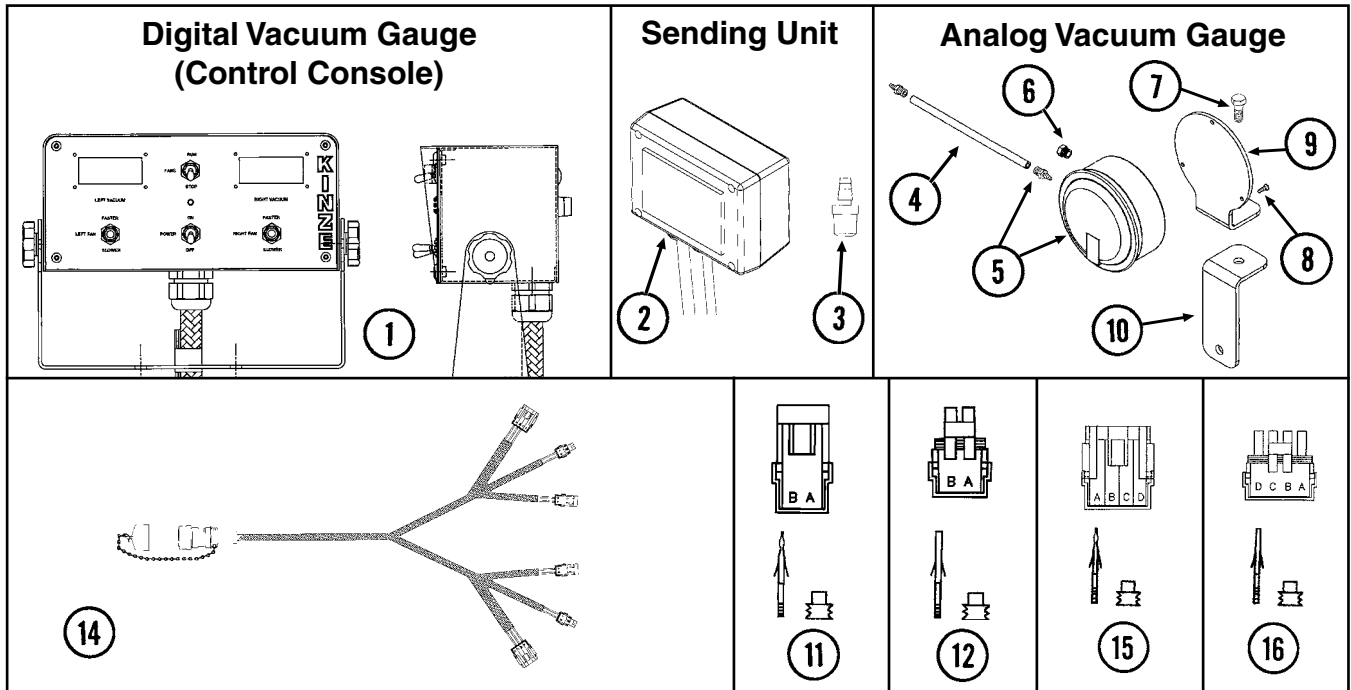
(FWD126a)



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 Tubing, 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.	G11260	1	Elbow, 1/4" NPT Male To Female

# VACUUM GAUGES, CONTROL CONSOLE AND VACUUM FAN ASSEMBLY WITH OIL COOLER

(A11692/A11156/GR1736/A10765/A11158/A11699/A7856/A11155/A8329/FWD127)

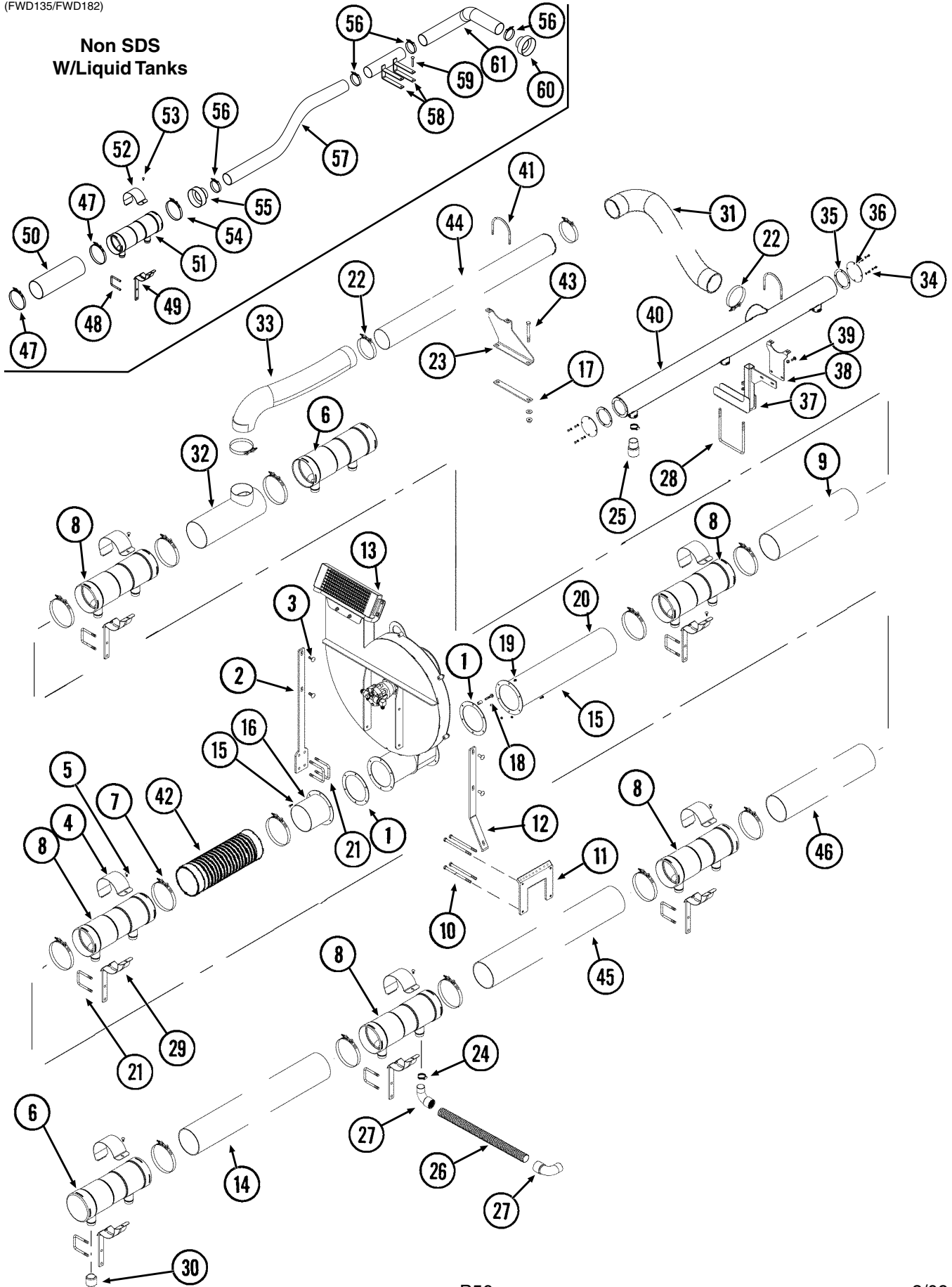


# VACUUM GAUGES, CONTROL CONSOLE AND VACUUM FAN ASSEMBLY WITH OIL COOLER

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G8081X	1	Backlit 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	-	Clear Plastic Tubing, 1/4" x 45"
	GA9964	-	Strain Relief
3.	GR1736	1	Hose Barb, 1/8" Male NPT To Barb
4.	GD15849-02	1	Clear Plastic Tubing, 3/16" 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.	G11215	3	Hex Socket Head Cap Screw, No. 6-32 x 3/8", 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.	GA11691	-	Harness, 519"
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 P58
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, 3/8" 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
36.	GD19246-01	4	Stud, 3/8"-16
	G10203	4	Washer, 3/8" SAE
	G10901	4	Lock Nut W/Nylon Insert, 3/8"-16
37.	G6400-12	2	Connector W/O-Ring, 1 1/16"-12 Male JIC To O-Ring
	GR1467	-	O-Ring
38.	G6502-12	1	Swivel Elbow, 45°, 1 1/16"-12 Male JIC To Female
A.	GA11757	-	Vacuum Fan Assembly (Items 13, 20-31 And 33)

# MANIFOLDS AND DISTRIBUTION HOSES

(FWD135/FWD182)



# MANIFOLDS AND DISTRIBUTION HOSES

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD16842	4	Manifold Gasket, 1/8" x 8 3/8" (6 5/8" I.D.)
2.	GD16844	-	Support
3.	G10574	-	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10071	-	Serrated Flange Nut, 1/2"-13
4.	GD15854	14	Clamp
5.	G10312	-	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	-	Serrated Flange Nut, 5/16"-18
6.	GD15850	4	Manifold, 21" (Open One End)
7.	G11145	-	T-Bolt Clamp, 7"
8.	GD15799	10	Manifold, 21" (Open Both Ends)
9.	GD15856-09	1	Pipe, 6" x 45 1/2", L.H.
	GD15856-12	-	Pipe, 6" x 67", R.H.
10.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	GD7805	1	Special Washer, 5/8", Hardened
11.	GD18761	1	Fan Support Mount
	G10005	-	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
12.	GD18760	1	Rear Fan Support, (To Be Used On Fan Above Row Unit)
	GD17015	1	Rear Fan Support, (To Be Used On Fan Above Wheel Module) (Uses Existing Wheel Module Hardware)
13.		-	See "Vacuum Gauges, Control Console And Vacuum Fan Assembly With Oil Cooler", Pages P54 And P55
14.	GD15856-08	1	Pipe, 6" x 43 1/2", L.H.
	GD15856-07	-	Pipe, 6" x 42", R.H.
15.	G10023	-	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10110	-	Lock Nut, 1/4"-20, Grade B
16.	GA11673	2	Manifold Flange, 5"
17.	GD17016	4	Plate, 1 1/4" x 10"
18.	G11199	2	Whiz Lock Bolt, 3/8"-16 x 2"
	GD8893-07	2	Sleeve, 1" Long
19.	G11166	-	Whiz Lock Bolt, 1/4"-20 x 3/4"
20.	GA11675	1	Manifold Flange, 37 41/64", L.H.
	GA11674	-	Manifold Flange, 11 9/64", R.H.
21.	GD4743	-	U-Bolt, 3" x 3" x 1/2"-13
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 3/4"-13
22.	G11188	4	T-Bolt Clamp, 5 1/4"
23.	GD16898	4	Support
24.	G10676	36	Hose Clamp, No. 36, Stainless Steel
25.	GD14627	8	Coupler
26.	GD15792-05	2	Hose, 2" x 38"
	GD15792-06	17	Hose, 2" x 42"
	GD15792-14	5	Hose, 2" x 46"
	GD15792-16	1	Hose, 2" x 55"
	GD15792-20	5	Hose, 2" x 32"
	GD15792-21	4	Hose, 2" x 52"
	GD15792-22	2	Hose, 2" x 58"
27.	GD14626	64	Elbow, 90°, 2"
28.	GD7145	-	U-Bolt, 7" x 7" x 1/2"-13
	G10228	-	Lock Washer, 1/2"
	G10102	-	Hex Nut, 1/2"-13
29.	GA11656	10	Support
30.	G11147	-	Cap, 2"
31.	GD15867-03	2	Hose, 5" x 36"
32.	GA11204	2	Manifold, 19"
33.	GD15867-04	2	Hose, 5" x 42"
34.	G10022	-	Hex Head Cap Screw, 1/4"-20 x 1/2"
	G10227	-	Lock Washer, 1/4"
35.	GD16864	4	Gasket, 1/8"
36.	GD16854	4	Cover
37.	GA11660	4	Support
38.	GD16855	4	Support
39.	G10305	-	Carriage Bolt, 3/8"-16 x 1"
	G10622	-	Serrated Flange Nut, 3/8"-16

(Continued On Next Page)

# MANIFOLDS AND DISTRIBUTION HOSES

---

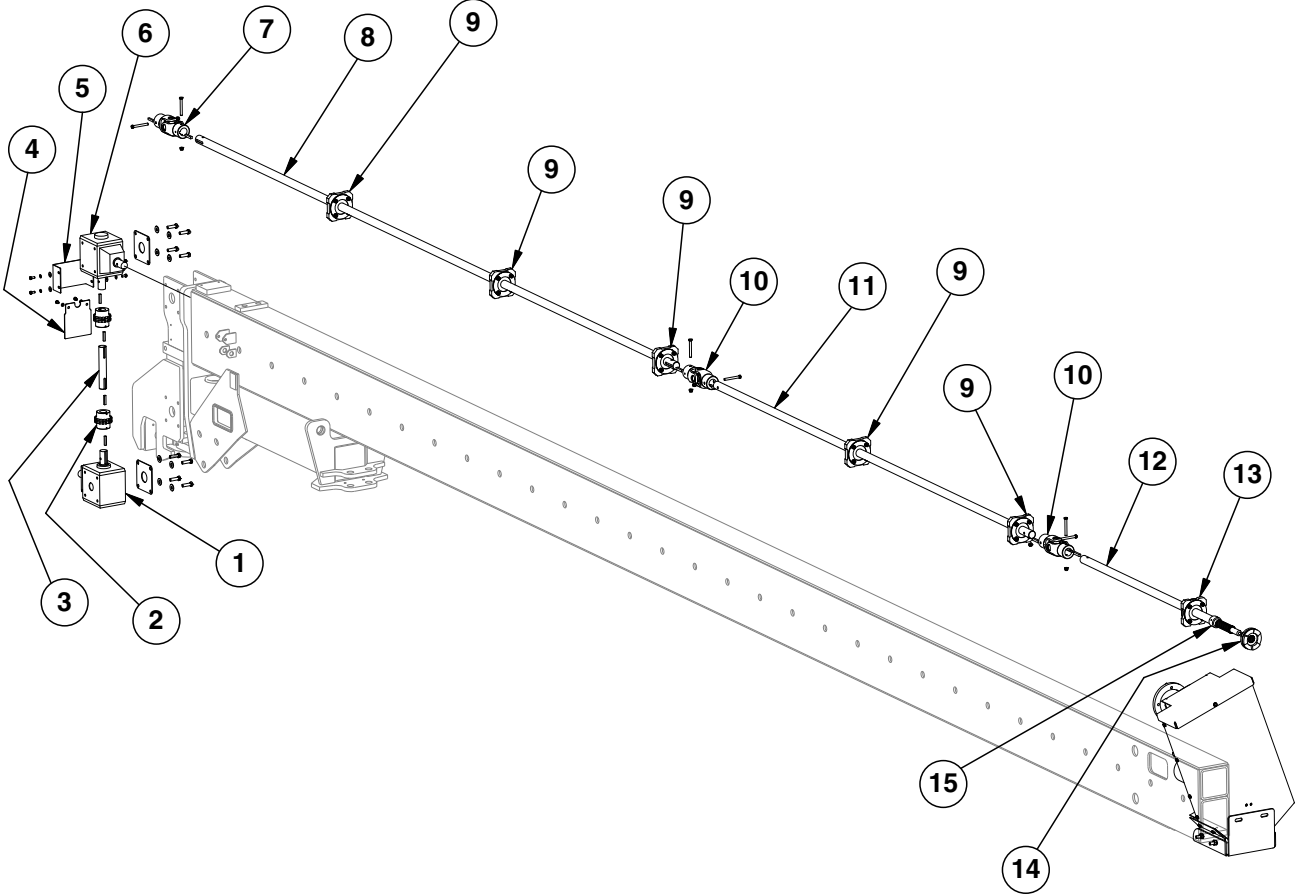
ITEM	PART NO.	QTY.	DESCRIPTION
40.	GA11671	1	Manifold, 68 <sup>55</sup> / <sub>64</sub> ", L.H.
	GA11672	1	Manifold, 53 <sup>23</sup> / <sub>64</sub> ", R.H.
41.	GD15833	-	U-Bolt, 5" Diameter x <sup>3</sup> / <sub>8</sub> "-16
	G10230	-	Lock Washer, <sup>5</sup> / <sub>8</sub> "
	G10104	-	Hex Nut, <sup>3</sup> / <sub>8</sub> "-11
42.	GD16317-01	2	Hose, 7" x 21"
43.	G10045	-	Hex Head Cap Screw, <sup>1</sup> / <sub>2</sub> "-13 x 4 <sup>1</sup> / <sub>2</sub> "
	G10216	-	Washer, <sup>1</sup> / <sub>2</sub> " USS
	G10071	-	Serrated Flange Nut, <sup>1</sup> / <sub>2</sub> "-13
44.	GD16119-12	2	Tube, 5" O.D. x 72"
45.	GD15856-08	1	Pipe, 6" x 43 <sup>1</sup> / <sub>2</sub> ", L.H.
	GD15856-09	-	Pipe, 6" x 44 <sup>1</sup> / <sub>2</sub> ", R.H.
46.	GD15856-10	1	Pipe, 6" x 55", L.H.
	GD15856-11	-	Pipe, 6" x 60", R.H.
47.	G11145	2	T-Bolt Clamp, 7"
48.	GD4743	-	U-Bolt, 3" x 3" x <sup>1</sup> / <sub>2</sub> "-13
	G10102	-	Hex Nut, <sup>1</sup> / <sub>2</sub> "-13
	G10228	-	Lock Washer, <sup>1</sup> / <sub>2</sub> "
49.	GA11656	1	Support
50.	GD15856-02	2	Pipe, 6" x 20"
51.	GD15799	12	Manifold, 21" (Open Both Ends)
52.	GD15854	14	Clamp
53.	G10312	14	Carriage Bolt, <sup>5</sup> / <sub>16</sub> "-18 x <sup>3</sup> / <sub>4</sub> "
	G10620	14	Serrated Flange Nut, <sup>5</sup> / <sub>16</sub> "-18
54.	G11188	2	T-Bolt Clamp, 5 <sup>1</sup> / <sub>4</sub> "
55.	GA11061	2	End, 4"
56.	G11137	8	T-Bolt Clamp, 4 <sup>1</sup> / <sub>4</sub> ", Stainless Steel
57.	GD15791-05	2	Hose, 2" x 54"
58.	GA13481	2	Manifold
59.	G10063	4	Hex Head Cap Screw, <sup>3</sup> / <sub>8</sub> "-16 x 4"
	G10108	4	Lock Nut, <sup>3</sup> / <sub>8</sub> "-16
60.	GA13480	2	Manifold Adapter
61.	GD15791-03	2	Hose, 4" x 46"



**This page intentionally left blank.**

# PTO ASSEMBLY ON HITCH

(IP1085-1)

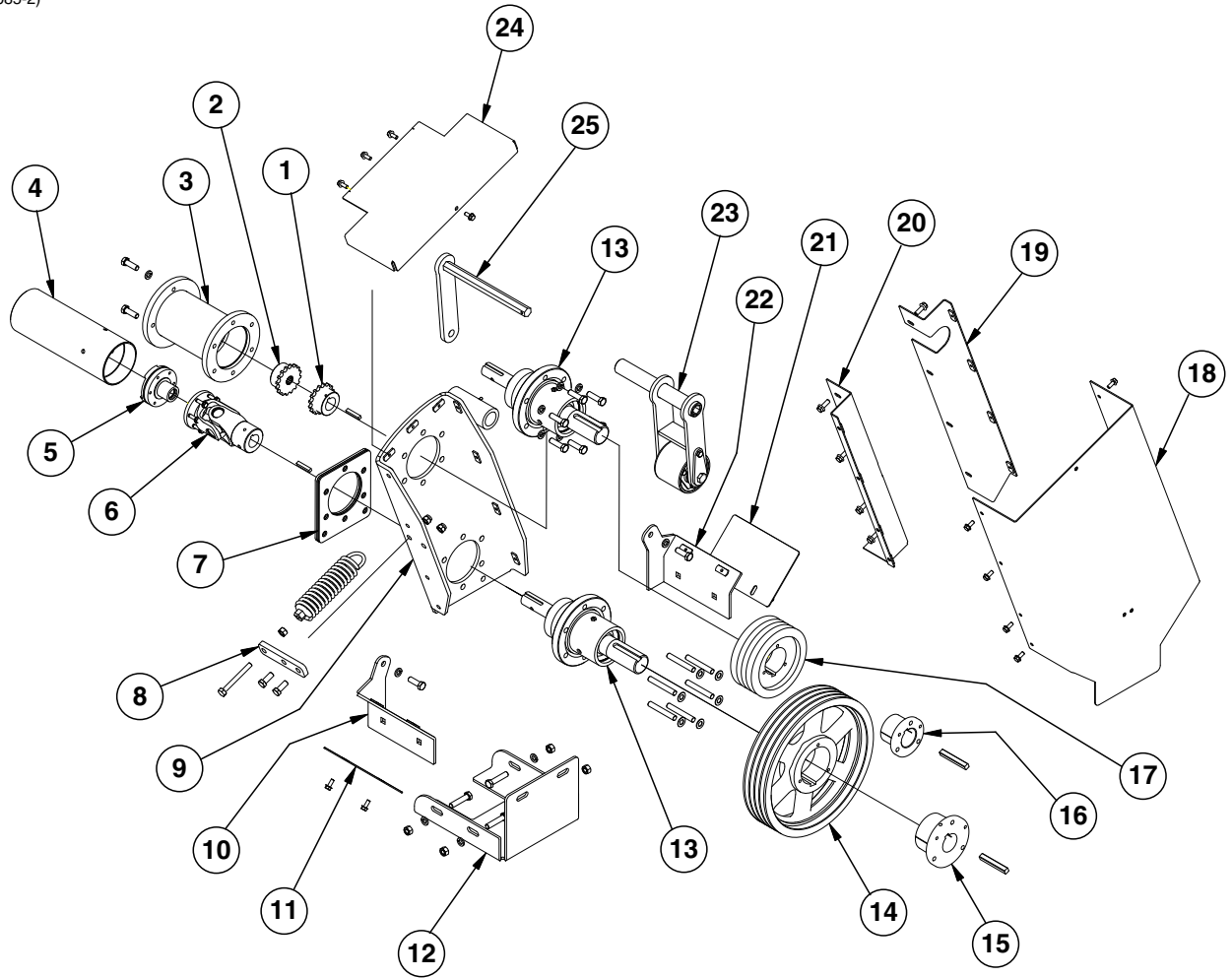


# PTO ASSEMBLY ON HITCH

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA13240	1	Shim
	GD18307	1	Shim
	G10216	4	Washer, 1/2" USS
	G10039	4	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
2.	GD18318	4	Coupling
	GA13258	2	Chain
	GD13226-02	4	Key, 5/16" Square x 1 3/4"
3.	GD18881	1	Front PTO Shaft
4.	GD18308	1	Lower Front PTO Cover
	G10054	2	Hex Head Cap Screw, 5/16"-18 x 1/2"
	G10232	2	Lock Washer, 5/16"
5.	GD18880	1	Upper Front PTO Cover
	G10232	4	Lock Washer, 5/16"
	G10219	4	Washer, 5/16" USS
	G10043	4	Hex Head Cap Screw, 5/16"-18 x 3/4"
6.	GA12818	1	PTO Gearbox
	GD18307	1	Shim
	G10216	4	Washer, 1/2" USS
	G10039	4	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
7.	GA13242	1	PTO Knuckle Assembly
	GD13226-02	1	Key, 5/16" Square x 1 3/4"
	G10688	2	Square Head Set Screw, 3/8"-16 x 5/8"
	G10809	2	Hex Head Cap Screw, 3/8"-16 x 3 1/4"
	G10108	2	Lock Nut, 3/8"-16
	GD14095-04	1	Square Bar, 3/8" x 2"
8.	GD18725	1	Main PTO Shaft
9.	GA13243	5	PTO Shaft Support Bearing Assembly
10.	GA13362	2	PTO Knuckle Assembly
	GD14095-04	4	Square Bar, 3/8" x 2"
	G10688	4	Square Head Set Screw, 3/8"-16 x 5/8"
	G10809	4	Hex Head Cap Screw, 3/8"-16 x 3 1/4"
	G10108	4	Lock Nut, 3/8"-16
11.	GD18726	1	PTO Shaft
12.	GD18845	1	Shaft, Splined
13.	GA13244	1	PTO Rear Shaft Support Assembly
14.	GD18731	1	Coupler
	G10848	1	Retaining Ring, 1 3/8", External
15.	GD18324	1	Lock Sleeve
	G11240	2	Hex Socket Set Screw, 1/4"-28 x 3/8"
	GD18325	1	Compression Spring

# PTO GEARBOX ASSEMBLY

(IP1085-2)

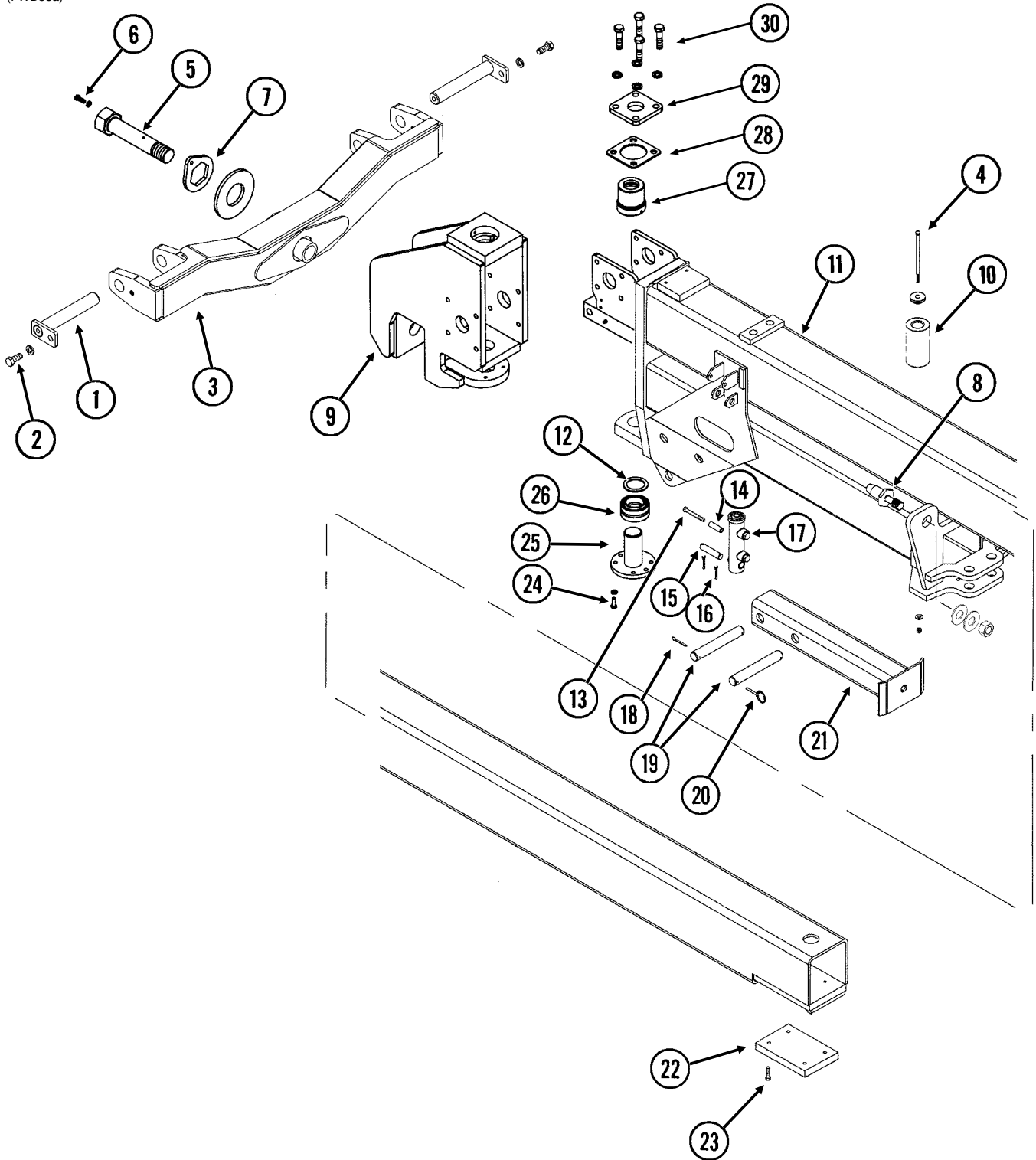


# PTO GEARBOX ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD18318	1	Coupling
	GD13226-02	1	Key, 5/16" Square x 1 3/4"
	GA13258	1	Chain
2.	GD19221	1	Coupling
3.	GA13241	1	PTO Pump Mount
	G10228	2	Lock Washer, 1/2"
	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
4.	GD18783	1	Hub Sleeve
5.	GA13547	1	Coupler Assembly
6.	GA12864	1	PTO Knuckle Assembly
	GD13226-02	1	Key, 5/16" Square x 1 3/4"
	G10232	6	Lock Washer, 5/16"
	G10019	6	Hex Head Cap Screw, 5/16"-18 x 1"
7.	GD18715-01	As Req'd	Shim, 10 Gauge
	GD18715-03	As Req'd	Shim, 1/4"
	GD18715-02	As Req'd	Shim, 7 Gauge
8.	GD18770	1	Cover Mount Bar
	GA2068	1	Spring W/Plug
	G10890	1	Hex Head Adjusting Bolt, 1/2"-13 x 4", Grade 2
	G10111	2	Lock Nut, 1/2"-13
	G10102	1	Hex Nut, 1/2"-13
	G10037	2	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	9.	GA13257	1
10.	GA13283	1	Side Extension, L.H.
	G10228	1	Lock Washer, 1/2"
	G10017	1	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
11.	GD18803	1	Fill Panel
	G10961	2	Flanged Whiz Lock Screw, 5/16"-18 x 3/4", No Serration
12.	GD18798	1	Bottom Cover
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
	G10581	4	Hex Head Cap Screw, 1/2"-13 x 2 1 1/4"
13.	GA13291	2	PTO Hub Assembly
	GD19379-01	6	Stub, 1/2"-13 x 3 1/2"
	G10974	6	Lock Nut W/Nylon Insert, 1/2"-13
	G10206	6	Washer, 1/2" SAE
	G10039	6	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10228	6	Lock Washer, 1/2"
14.	GD14666	1	Pulley, 15", 4 Groove
	GD13562	1	V-Belt, 4-Band
15.	GD14668	1	Bushing, R1 x 2, Split Taper
	GD13088	2	Key, 1/2" x 1/2" x 3 1/2"
16.	GD4123	1	Bushing, Q1 x 2, Split Taper
17.	GD14667	1	Pulley, 7 1/2", 4 Groove
18.	GA13278	1	Rear Main Cover
	G10961	8	Flanged Whiz Lock Screw, 5/16"-18 x 3/4", No Serration
19.	GA13280	1	Side Panel, R.H.
	G11046	4	Flange Screw, 3/8"-16 x 1"
20.	GA13279	1	Side Panel, L.H.
	G11046	4	Flange Screw, 3/8"-16 x 1"
21.	GD18802	1	Fill Panel
	G10961	2	Flanged Whiz Lock Screw, 5/16"-18 x 3/4", No Serration
22.	GA13282	1	Side Extension, R.H.
	G10228	1	Lock Washer, 1/2"
	G10017	1	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
23.	GA13288	1	Idler Arm
24.	GA13281	1	Top Cover
	G10961	4	Flanged Whiz Lock Screw, 5/16"-18 x 3/4", No Serration
25.	GA13286	1	Idler Arm

# INNER SLIDE HITCH

(FWD58a)

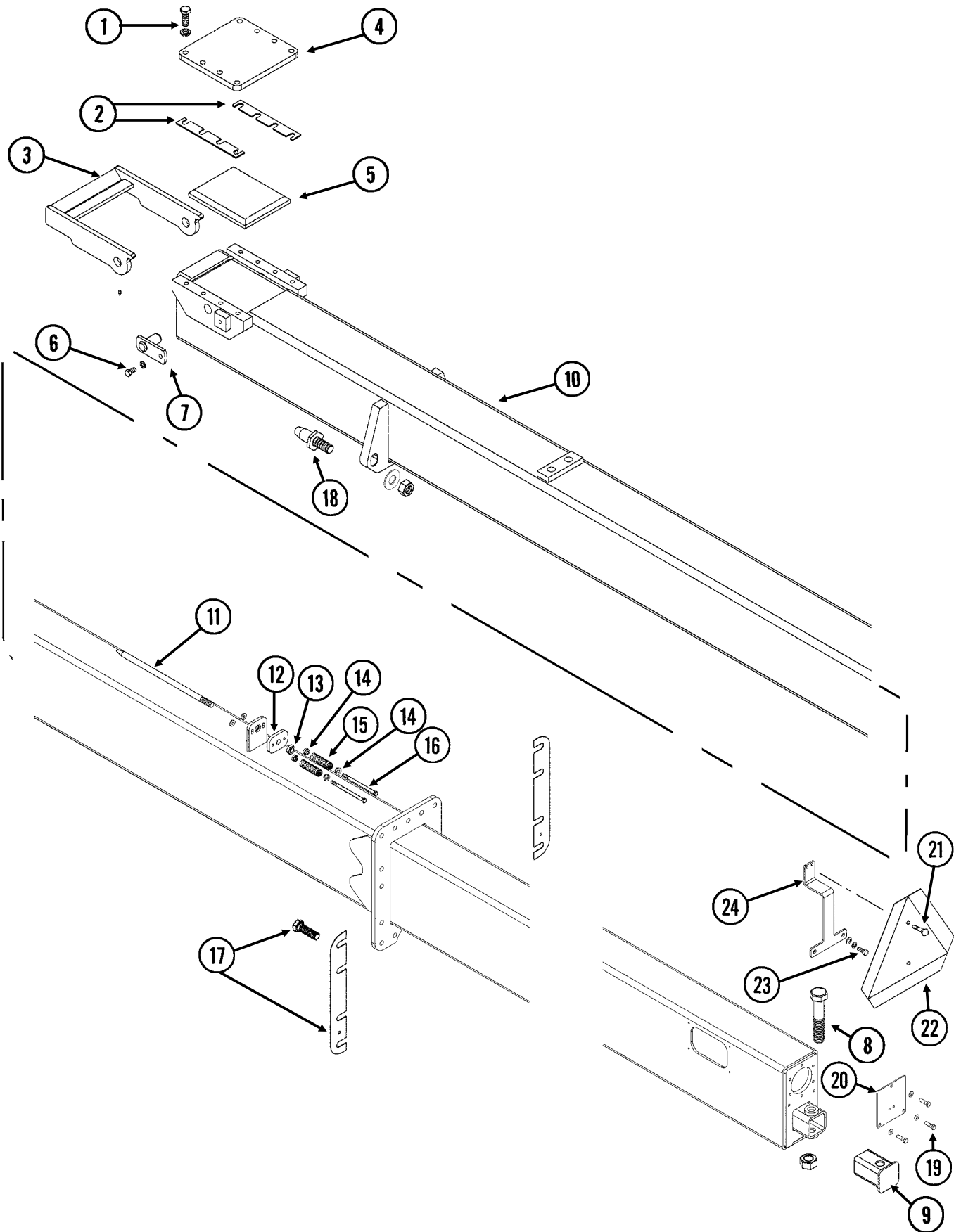


# INNER SLIDE HITCH

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11079	2	Pin, Category 3N And 3
2.	G10007	2	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	2	Lock Washer, 5/8"
3.	GA12657	1	Hitch Bar
4.	G10686	2	Hex Head Cap Screw, 3/8"-16 x 8"
	GB0212	2	Spring Washer
	G10210	2	Washer, 3/8" USS
	G10108	2	Lock Nut, 3/8"-16
5.	GA11082	1	Pivot Bolt W/Grease Fitting, 1 3/4" x 10 3/8" (Total Length)
	G10640	-	Grease Fitting, 1/4"-28
	GD18170	1	Spacer
6.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	1	Lock Washer, 3/8"
7.	GD18143	1	Pivot Lock Nut
8.		-	See "Outer Slide Hitch", Pages P66 And P67
9.	GA12679	1	Hitch Pivot
10.	GD16227	2	Bushing, 2" O.D. x 1 29/64" I.D. x 5 5/8", Category 4
11.	GA13006	-	Inner Hitch, 348 1/2", 32 Row 30"
	GA13007	-	Inner Hitch, 373 1/2", 36 Row 30"
12.	GD18175	1	Shim
13.	G10809	1	Hex Head Cap Screw, 3/8"-16 x 3 1/4"
	G10108	1	Lock Nut, 3/8"-16
14.	GD7137	1	Pin, 3/4" x 3 3/8"
15.	GD2971-09	1	Sleeve, 2" Long
16.	G10457	2	Cotter Pin, 5/32" x 1 1/2"
17.		1	See "Tongue Latch Cylinder", Page P111
18.	G10460	3	Cotter Pin, 1/4" x 2"
19.	GD3737	2	Pin, 1 1/4" x 8 1/2"
20.	GD2558	1	Lynch Pin, 1/4"
21.	GA10280	1	Hitch Stand
22.	G11099	4	Hex Socket Head Cap Screw, 3/8"-16 x 1 1/2", Grade 8
23.	GD14812	1	Wear Pad, 5 7/8" x 6 1/2" x 1"
24.	G10001	4	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	4	Lock Washer, 3/8"
25.	GA12681	1	Pivot Pin
26.	GA12689	1	Spherical Bearing
27.	GA12688	1	Special Spherical Bearing
28.	GD18151	1	Spacer
29.	GD18152	1	Cap
30.	G10009	4	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
	G10239	4	Hex Nut, 1 1/4" - 7

# OUTER SLIDE HITCH

(FWD9e)



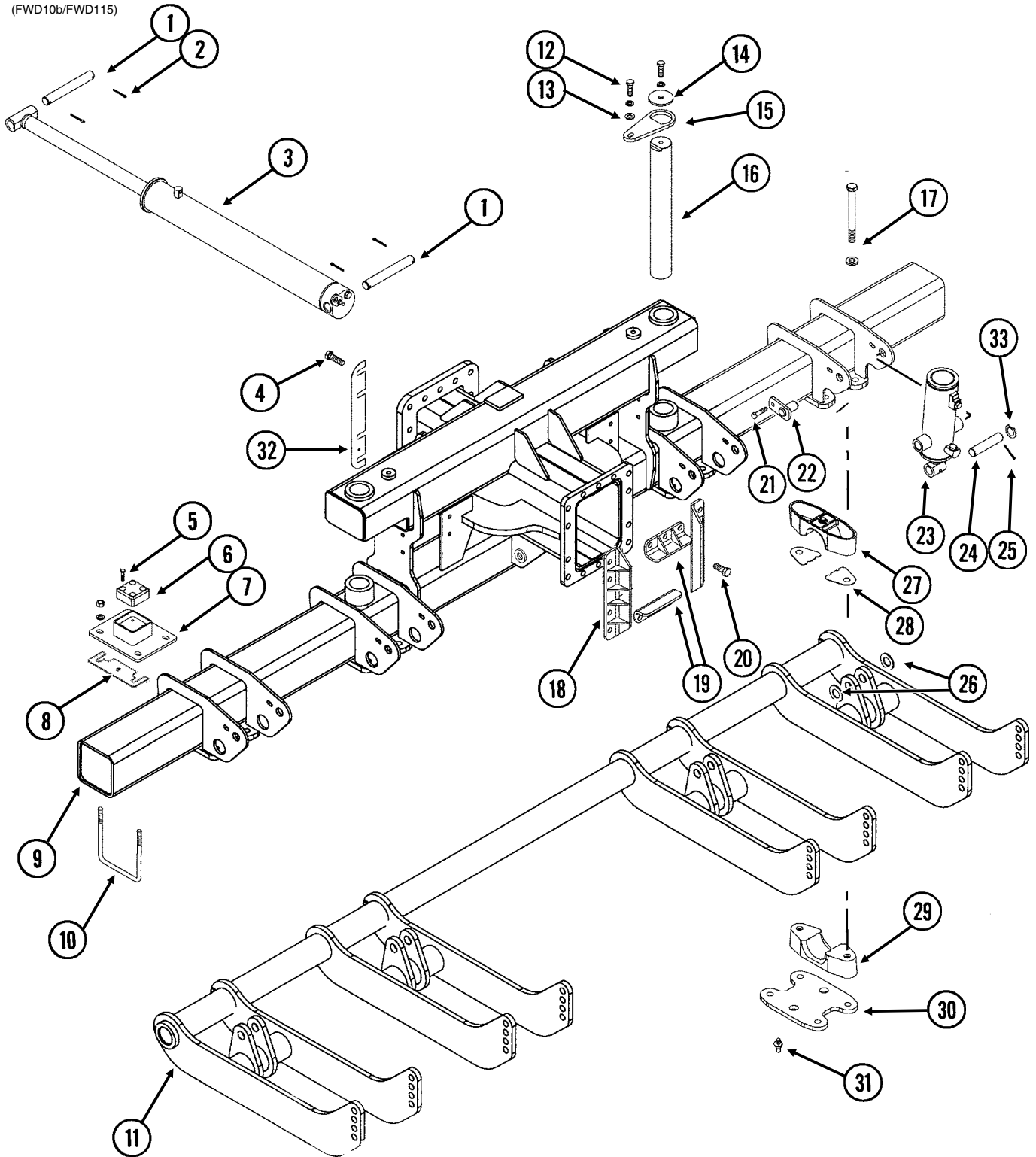


# OUTER SLIDE HITCH

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10008	8	Hex Head Cap Screw, 5/8"-10 x 2"
	G10230	8	Lock Washer, 5/8"
2.	GD14842	4	Shim, 1 1/2" x 10 1/2", 10 Gauge
3.	GA10281	1	Catch W/Grease Fittings
	G10640	-	Grease Fitting, 1/4"-28
4.	GD14841	1	Cover, 10 1/2" x 11" x 3/4"
5.	GD14843	1	Wear Pad
6.	G10014	2	Hex Head Cap Screw, 1/2"-13 x 1"
	G10228	2	Lock Washer, 1/2"
7.	GA10282	2	Pin, 2 1/4"
8.	G10042	1	Hex Head Cap Screw, 1 1/4"-7 x 6 1/2"
	G10157	1	Lock Nut, 1 1/4"-7
9.	GA10483	1	Hitch Endcap
10.	GA10269	1	Outer Hitch, 355 5/8", 36 Row 30"
11.	GD15669	1	Rod, 7/8" x 21"
12.	GD15668	1	Tap Block, 4" x 3" x 1/2"
13.	G10189	1	Hex Jam Nut, 7/8"-14
14.	GD15674	4	Spring Seat
15.	GD15675	2	Compression Spring
16.	G10756	2	Hex Head Cap Screw, 3/8"-16 x 6"
	G10203	2	Washer, 3/8" SAE
	G10108	2	Lock Nut, 3/8"-16
17.		-	See "Center Toolbar/Rear H-Frame Assembly", Pages P68 And P69
18.	GD18004	2	Hitch Lock Pin
	G11132	2	Washer, 1 1/8" SAE
	G11097	2	Hex Nut, 1 1/8"-12
19.	G10039	3	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10228	3	Lock Washer, 1/2"
20.	GD18601	1	Cap Plate
21.	G10020	2	Hex Head Cap Screw, 1/4"-20 x 5/8"
	G10227	2	Lock Washer, 1/4"
	G10103	2	Hex Nut, 1/4"-20
22.	GD2199	1	SMV Sign
23.	G10037	2	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10228	2	Lock Washer, 1/2"
	G10206	2	Washer, 1/2" SAE
24.	GD16787	-	SMV Extension Bracket, 15 3/4", SDS

# CENTER TOOLBAR/REAR H-FRAME ASSEMBLY

(FWD10b/FWD115)

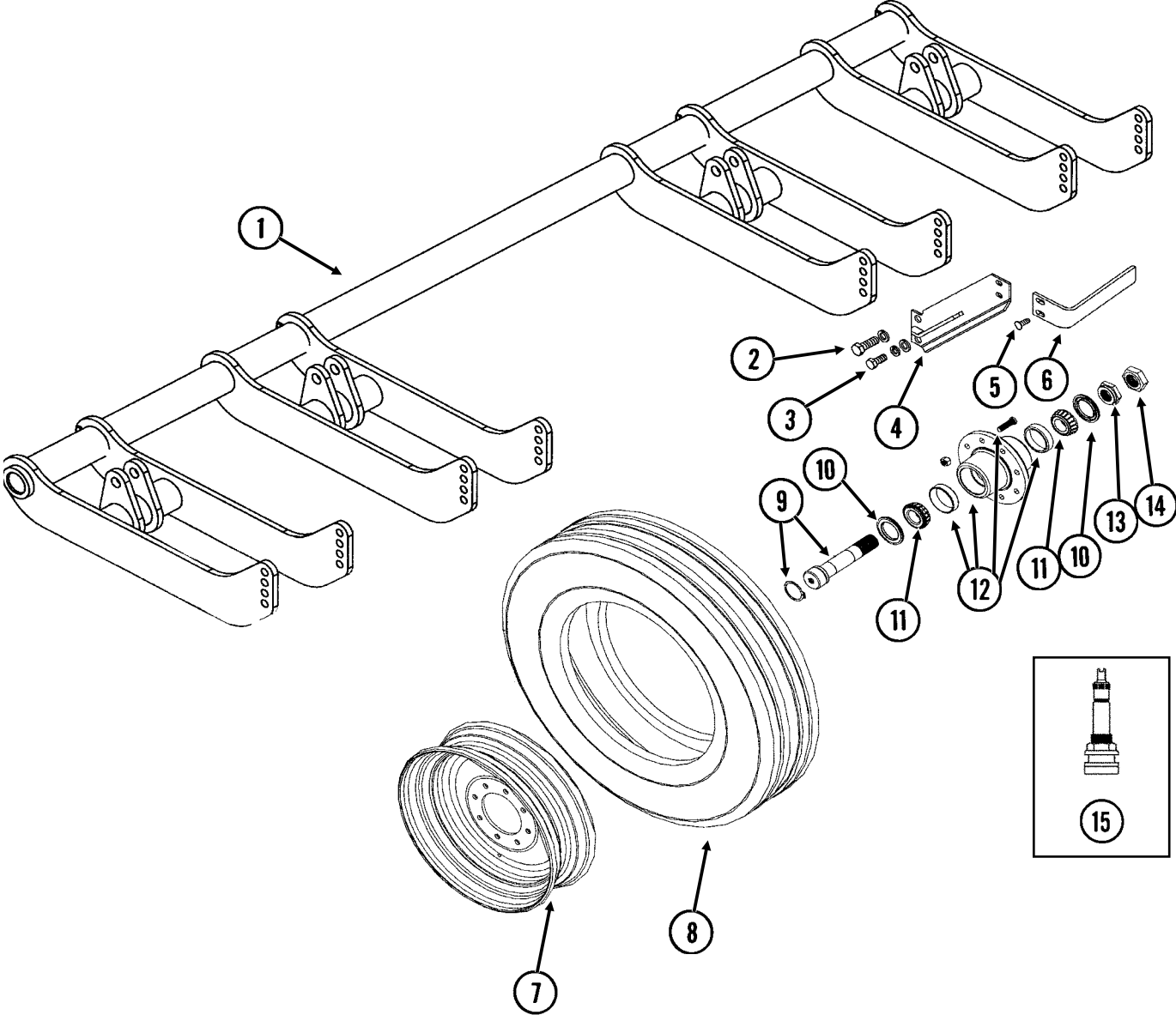


# CENTER TOOLBAR/REAR H-FRAME ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD15051	2	Pin, 1 1/4" x 9 1/4"
2.	G10460	4	Cotter Pin, 1/4" x 2"
3.		-	See "Axle Slide Cylinder", Page P112
4.	G10027	8	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
	G10026	-	Hex Head Cap Screw, 3/4"-10 x 2"
	G10025	-	Hex Head Cap Screw, 3/4"-10 x 1 1/2"
	G10231	8	Lock Washer, 3/4"
	G10105	8	Hex Nut, 3/4"-10
5.	G11099	8	Hex Socket Head Cap Screw, 3/8"-16 x 1 1/2", Grade 8
6.	GD15169	2	Wear Block
7.	GA10343	2	Mount, 8" x 10"
8.	GD15170	-	Shim, 3 1/4" x 10", 16 Gauge (As Required)
9.	GA11215	-	H-Frame Assembly
10.	GD17039	4	U-Bolt, 7" x 7" x 5/8"-11
	G10230	8	Lock Washer, 5/8"
	G10104	8	Hex Nut, 5/8"-11
11.			See "Rock Shaft Axle Assembly And Wheels", Pages P70 And P71
12.	G10008	4	Hex Head Cap Screw, 5/8"-11 x 2"
	G10230	4	Lock Washer, 5/8"
13.	G10217	2	Washer, 5/8" USS
14.	GD15046	2	Washer, 2 1/32" I.D. x 4" O.D. x 1/4"
15.	GD15045	2	Capture Plate
16.	GD15047	2	Pivot Pin, 3" x 28 1/2"
17.	G11095	16	Hex Head Cap Screw, 7/8"-9 x 9"
	GD10063	16	Hardened Washer, 7/8"
	G10418	16	Lock Nut, 7/8"-9
18.	GB0356	-	Keeper
19.	GB0355	2	Keeper
20.	G10026	16	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	16	Lock Washer, 3/4"
	G10105	16	Hex Nut, 3/4"-10
21.	G10016	8	Hex Head Cap Screw, 1/2"-13 x 2"
	G10216	8	Washer, 1/2" USS
	G10111	8	Lock Nut, 1/2"-13
22.	GA6761	8	Pin, 1 3/4"
	GA5121	-	Pin, 2 1/8"
23.		-	See "Master Cylinder", Page P109
24.	GD5841	4	Pin, 1 1/4" x 5 5/8"
25.	G10460	8	Cotter Pin, 1/4" x 2"
26.	G10226	8	Washer, 1 1/4" SAE
27.	GB0332	8	Bearing
28.	GD15172	16	Shim
29.	GD14941	8	Bearing
30.	GD14926	4	Clamp Plate
31.	G10640	8	Grease Fitting, 1/4"-28
32.	GD14842	-	Shim, 1 1/2" x 10 1/2", 10 Gauge, 36 Row 30"
	GD15450	-	Shim, 2 3/4" x 24", 16 Gauge, 36 Row 30"
	GD15796	-	Shim, 2 3/4" x 24", 22 Gauge, 36 Row 30"
33.	G10139	8	Washer, 1 1/4" USS

# ROCK SHAFT AXLE ASSEMBLY AND WHEELS

(FWD10c)



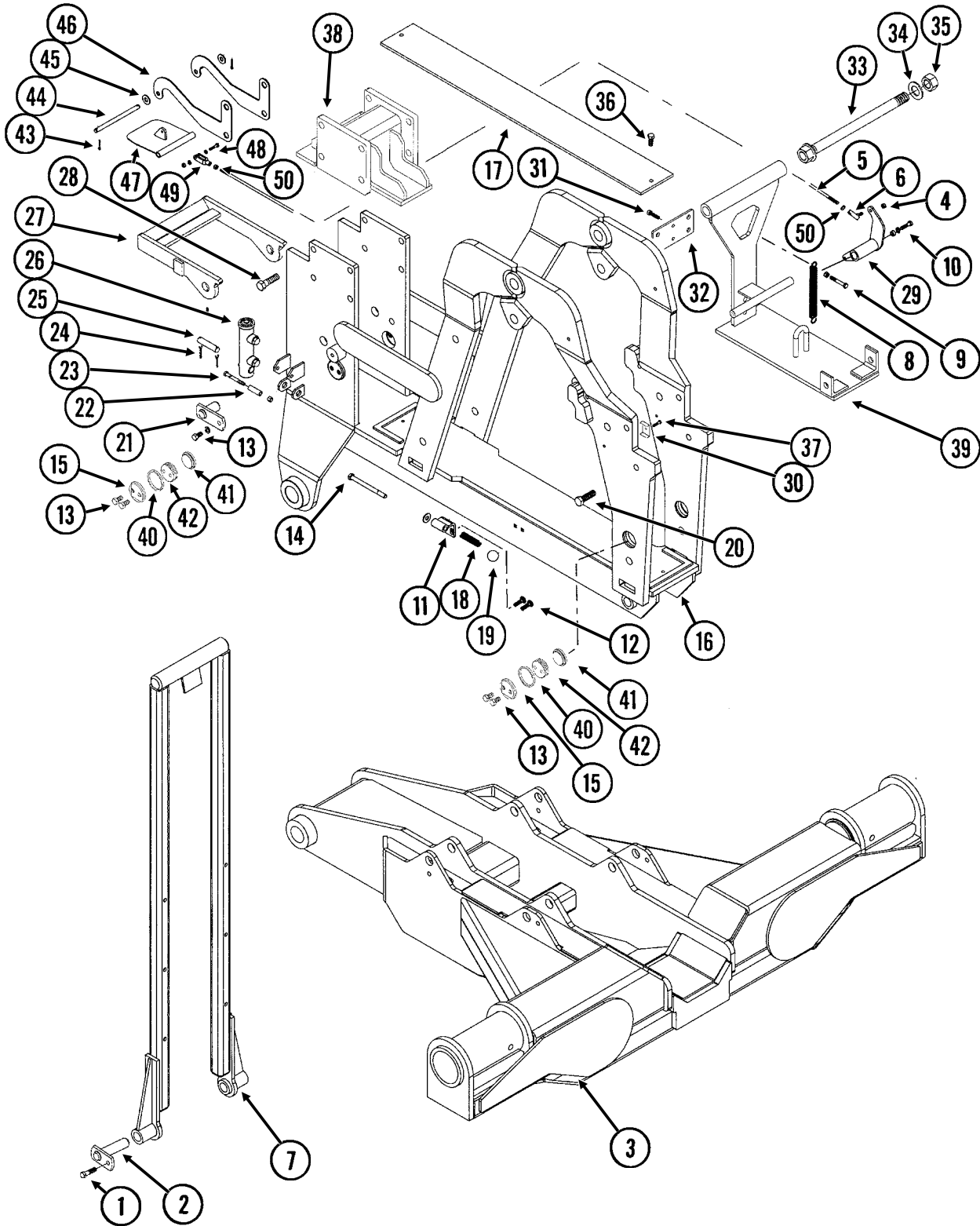
# ROCK SHAFT AXLE ASSEMBLY AND WHEELS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11174	1	Rock Shaft Axle, 133 1/2"
2.	G10448	8	Hex Head Cap Screw, 7/8"-9 x 2 1/2", Grade 8
	G10330	8	Lock Washer, 7/8"
3.	G11071	4	Hex Head Cap Screw, 3/4"-10 x 2 1/4"
	G10194	8	Washer, 3/4" SAE
	G10231	4	Lock Washer, 3/4"
	G10105	4	Hex Nut, 3/4"-10
4.	GA11227	4	Scraper Mount
5.	G10636	8	Carriage Bolt, 1/2"-13 x 1 1/2"
	G10216	8	Washer, 1/2" USS
	G10228	8	Lock Washer, 1/2"
	G10102	8	Hex Nut, 1/2"-13
6.	GD12543	4	Scraper
7.	GA9544	4	Rim, 5.5" x 22.5"
8.	GD15406	4	Tire, 41 x 11 R22.5" W/O Center Rib (Specify Brand*)
9.	GA10139	4	Spindle W/Retaining Ring, 1 3/4"
	G10913	-	External Retaining Ring, 2 1/2"
10.	GA4722	8	Seal
11.	GA4723	8	Bearing
12.	GA4729	4	Hub W/Cups, Bolts, Nuts And Grease Fitting, 8 Bolt, 1 3/4" Bore
	G10640	-	Grease Fitting, 1/4"-28
	GD7079	-	Cup
	GR0528	-	Stud, 5/8"-12 x 2 1/4", Grade 8
	GR0531	-	Lug Nut, 5/8"-18 UNF
13.	GD7089	4	Special Nut, 1 3/4"-12 UNF
14.	GD7864	4	Special Hex Nut, 1 3/4"-12 UNF
15.	GA7434	4	Valve Stem
A.	GA10553	-	Tire And Rim Assembly (Items 7, 8 And 15) (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.

# SLIDE ASSEMBLY

(FWD62aaa)

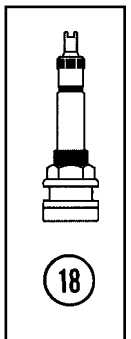
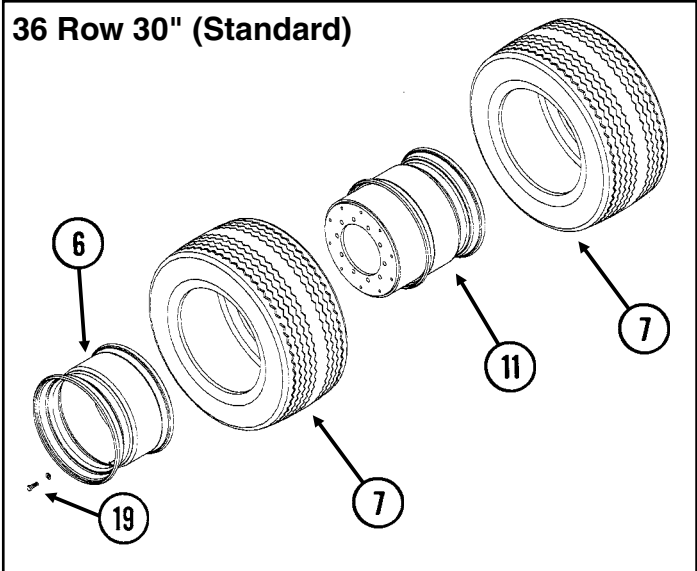
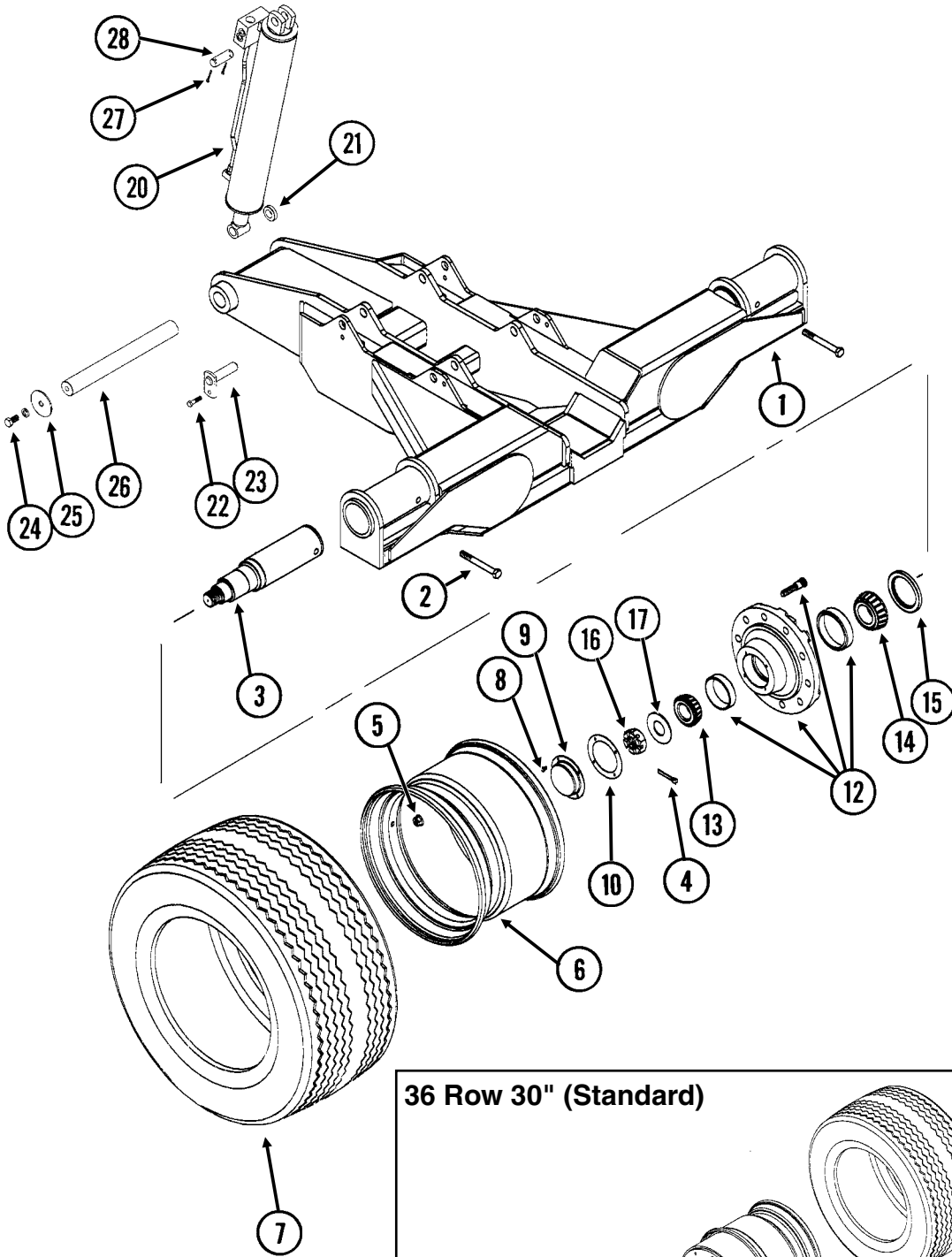


# SLIDE ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	4	Lock Nut, 1/2"-13
2.	GA10279	4	Pin, 5 1/4"
3.		-	See "Transport Axle Assembly And Wheels", Pages P74 And P75
4.	G11179	3	Hex Nut, 5/16"-24
5.	GD16393	1	Rod
6.	GA11264	1	Link
7.	GA10503	1	Lockup, 68 3/8"
8.	GD5857	1	Spring
9.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10101	1	Hex Nut, 3/8"-16
	GD2971-15	1	Sleeve, 5/16" Long
10.	G10004	1	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10203	1	Washer, 3/8" SAE
11.	GA10504	2	Support
12.	G10301	4	Carriage Bolt, 3/8"-16 x 1 1/2"
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
13.	G10014	10	Hex Head Cap Screw, 1/2"-13 x 1"
	G10228	10	Lock Washer, 1/2"
14.	G10871	2	Hex Head Cap Screw, 1/2"-13 x 6"
	G10216	2	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
15.	GB0230	4	Cap
16.	GA11206	1	Slide Assembly
17.	GD15492	1	Wear Pad, 6" x 48"
18.	GD15677	2	Compression Spring
19.	GD15679	2	Ball Knob
20.	G10027	2	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
	G10112	2	Lock Nut, 3/4"-10
21.	GA10282	2	Pin, 2 1/4"
22.	GD2971-09	1	Sleeve, 2" Long
23.	G10809	1	Hex Head Cap Screw, 3/8"-16 x 3 1/4"
	G10108	1	Lock Nut, 3/8"-16
24.	G10457	2	Cotter Pin, 5/32" x 1 1/2"
25.	GD7137	1	Pin, 3/4" x 3 3/8"
26.		-	See "Slide Latch Cylinder", Page P111
27.	GA10466	1	Catch W/Grease Fittings
	G10640	-	Grease Fitting, 1/4"-28
28.	G10802	8	Hex Head Cap Screw, 3/4"-10 x 2 3/4"
	G10112	8	Lock Nut, 3/4"-10
29.	GA11263	1	Arm
30.	GD5892	2	Hose Clamp, 5/8" x 1 1/2" x 1 1/2"
31.	G10003	8	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	8	Lock Washer, 3/8"
	G10101	8	Hex Nut, 3/8"-16
32.	GD15664	1	Plate, 3 3/16" x 7 1/4"
33.	GA10455	1	Cross Pin, 19"
34.	G10226	1	Washer, 1 1/4" SAE
35.	G10157	1	Lock Nut, 1 1/4"-7
36.	G11130	2	Hex Socket Head Cap Screw, 5/16"-18 x 1 1/2", Grade 8
	G10109	2	Lock Nut, 5/16"-18, Grade 8
37.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	2	Lock Washer, 3/8"
38.	GA10584	1	Slide Bracket
39.	GA11634	1	Rear Bracket
40.	GD15783	4	Spacer, 2 3/4" O.D. x 2 7/16" x 1/4"
41.	GD9093	4	Poly Wear Pad
42.	GB0234	4	Adjustment Plug
43.	G10470	2	Cotter Pin, 5/32" x 1"
44.	GD16394	1	Pin, 1/2" x 7 1/2"
45.	G10216	2	Washer, 1/2" USS
46.	GD16388	2	Mount
47.	GA11262	1	Flap
48.	G10857	1	Hex Head Cap Screw, 1/4"-20 x 1 1/4"
	G10211	2	Washer, 1/4" SAE
	G10103	1	Hex Nut, 1/4"-20
49.	GD16392	1	Clevis

# TRANSPORT AXLE ASSEMBLY AND WHEELS

(A12501/FWD60d/FWD61/A7434)





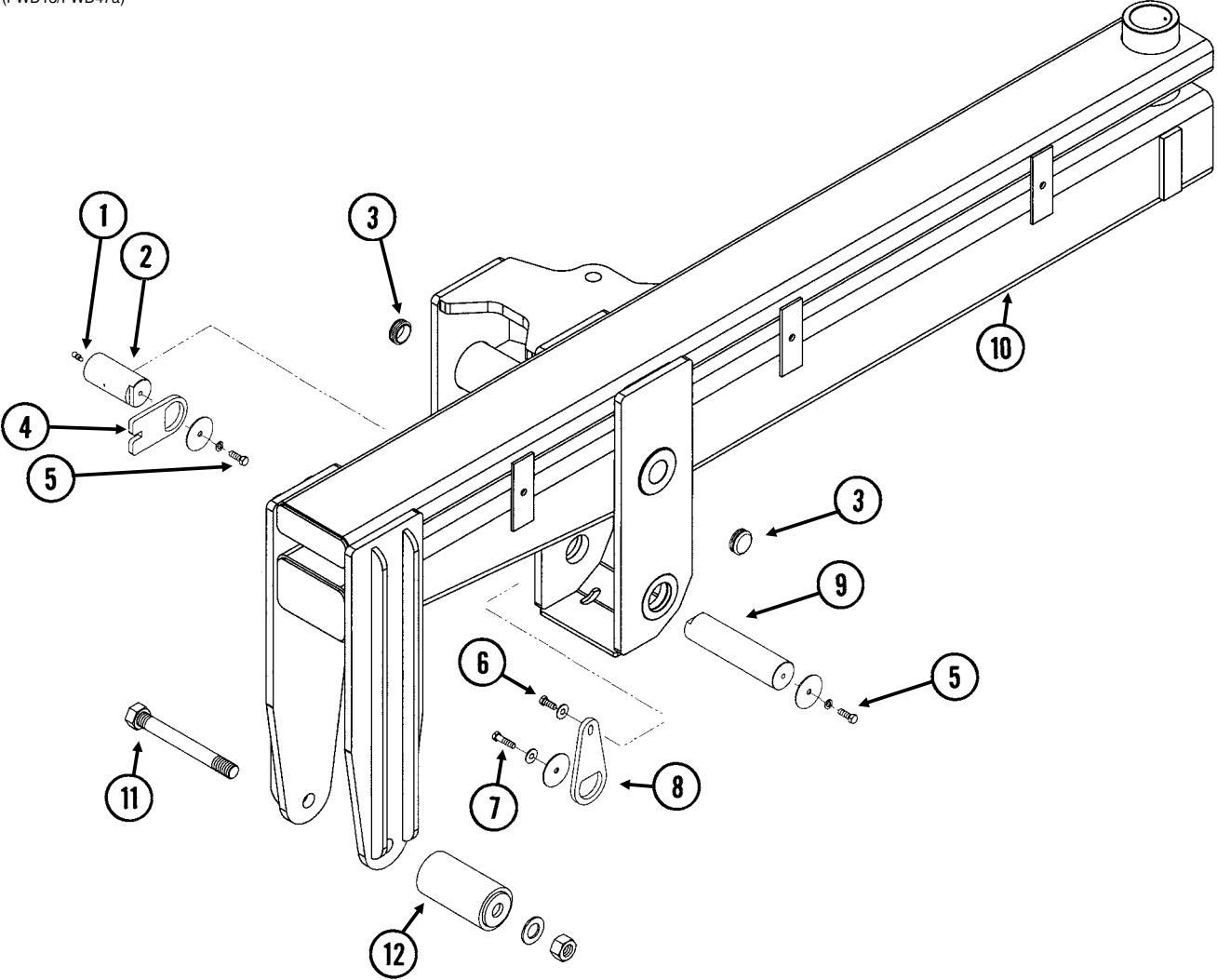
# TRANSPORT AXLE ASSEMBLY AND WHEELS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11112	1	Axle W/Grease Fittings, 36 Row 30"
	G10640	2	Grease Fitting, 1/4"-28
2.	G10400	2	Hex Head Cap Screw, 3/4"-10 x 6 1/2"
	G10112	2	Lock Nut, 3/4"-10
3.	GD13740	2	Spindle, 4 1/2"
4.	G10471	2	Cotter Pin, 3/8" x 2 1/2"
5.	G10625	20	Flange Nut, 3/4"-16
6.	GA11277	2	Rim, 22.5" x 14"
7.	GD16058	2-4	Tire, 445-50R22.5 Radial Load Range H (Specify Brand*)
8.	G10054	8	Hex Head Cap Screw, 5/16"-18 x 1/2"
9.	GD1360	2	Dust Cap
10.	GD1359	2	Seal
11.	GA11265	2	Rim, 22.5" x 14", Offset
12.	GA9306	2	Hub W/Cups, Grease Fitting And Stud Bolts (10 Bolt High Strength)
	GR0192	-	Outer Cup
	GR0191	-	Inner Cup
	G10373	-	Grease Fitting, 45°, 1/8"-27
	GR1681	-	Stud Bolt, 3/4"-16 x 3 7/8"
13.	GA0530	2	Outer Bearing
14.	GA0531	2	Inner Bearing
15.	GA0532	2	Seal
16.	G10726	2	Slotted Hex Nut, 2"-12
17.	G10198	2	Washer, 2" USS
18.	GA7434	-	Valve Stem
19.	G11174	10	Hex Head Cap Screw, 5/8"-11 x 2"
	GD7805	10	Special Washer, 5/8", Hardened
20.			See "Transport Axle Cylinder", Page P113
21.	GD0752-53	2	Sleeve, 3/8"
22.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	4	Lock Nut, 1/2"-13
23.	GA10279	4	Pin, 5 1/4"
24.	G10025	2	Hex Head Cap Screw, 3/4"-10 x 1 1/2"
	G10231	2	Lock Washer, 3/4"
25.	GD15041	2	Washer, 13/16" I.D. x 4" O.D., 7 Gauge
26.	GD15042	1	Pin, 2 1/4" x 20 1/16"
27.	G10460	4	Cotter Pin, 1/4" x 2"
28.	GD12790	2	Pin, 1 1/4" x 3 1/2"
A.	GA11278	-	Tire And Rim Assembly (Items 6, 7, And 18)
	GA11266	-	Tire And Rim Assembly (Items 7, 11 And 18)
B.	GA9315	-	Hub And Spindle Assembly (Items 3, 4, 5, 8, 9, 10 And 12-17)

\* 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.

# STUB WING

(FWD13/FWD47a)



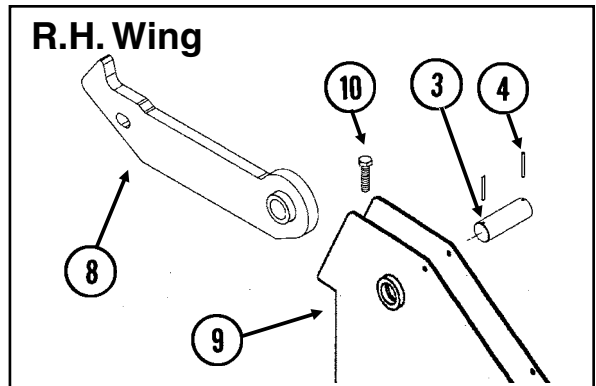
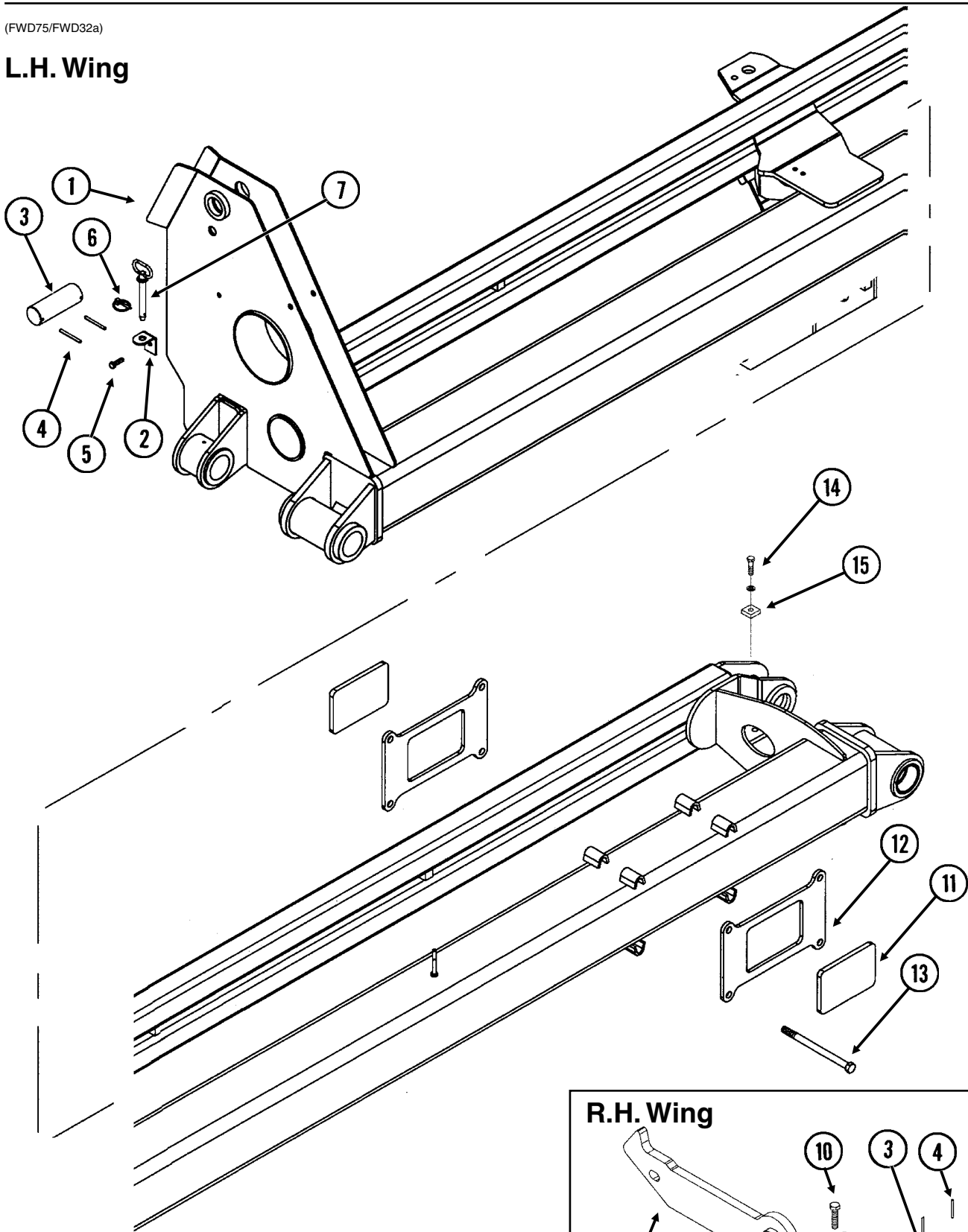
# STUB WING

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	G10640	1	Grease Fitting, 1/4"-28
2.	GD15067	1	Pin, 2 3/4" x 5 13/16"
3.	G11105	2	Cap
4.	GD15069	1	Capture Plate
5.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10228	2	Lock Washer, 1/2"
	GD15068	2	Washer, 3 3/4" O.D. x 1/2" I.D. x 1/4"
6.	G10037	1	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10216	1	Washer, 1/2" USS
7.	G10016	1	Hex Head Cap Screw, 1/2"-13 x 2"
	G10216	1	Washer, 1/2" USS
	GD15068	1	Washer, 3 3/4" O.D. x 1/2" I.D. x 1/4"
8.	GD15072	1	Capture Plate
9.	GD15070	1	Pin, 2 3/4" x 11 1/4"
10.	GA11249	1	Stub Wing W/Bushings And Grease Fittings, L.H.
	GA11250	-	Stub Wing W/Bushings And Grease Fittings, R.H.
	GD14565	-	Hardened Bushing, 3 1/2" O.D. x 3" I.D. x 4"
	GD14563	-	Hardened Bushing, 3 1/4" O.D. x 2 3/4" I.D. x 3"
	G10640	-	Grease Fitting, 1/4"-28
11.	GA10456	1	Roller Pin, 1 1/4"-7 x 12"
	G10226	1	Washer, 1 1/4" SAE
	G10239	1	Hex Nut, 1 1/4"-7
12.	GA10287	1	Roller

# INNER WING

(FWD75/FWD32a)

## L.H. Wing



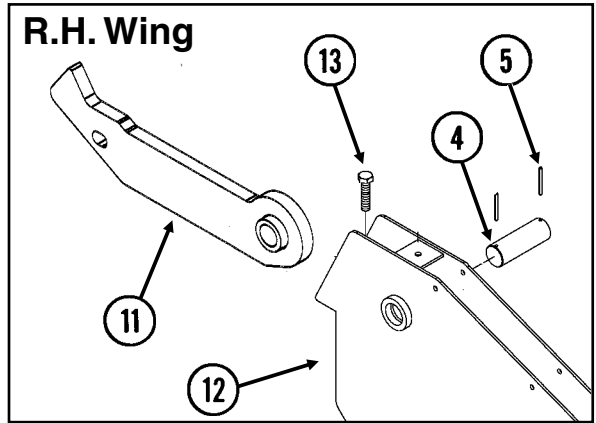
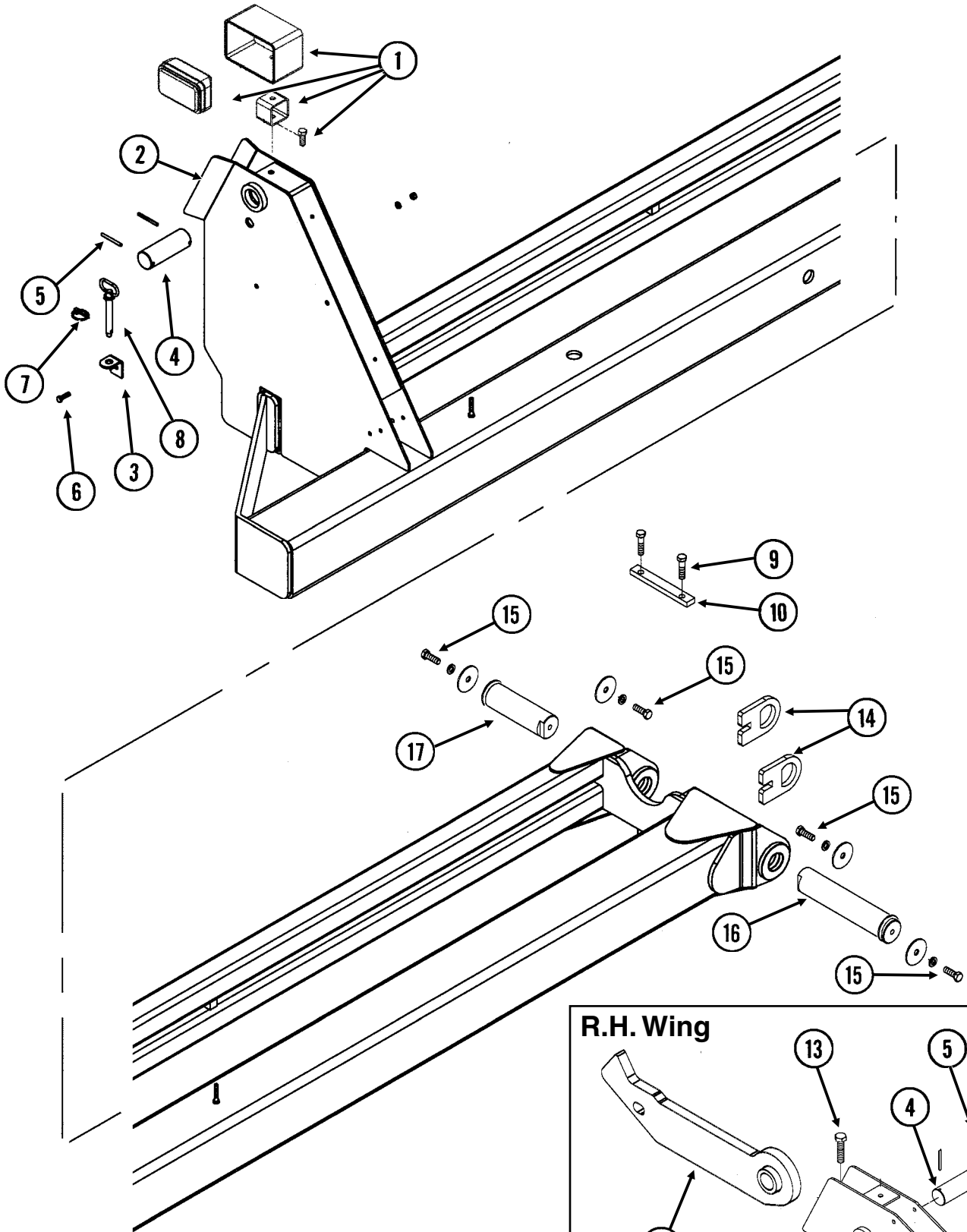
# INNER WING

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA11323	-	Inner Wing W/Grease Fittings, Bushings, Spacer And Sleeve, L.H., 209 5/8"
	G10640	-	Grease Fitting, 1/4"-28
	GD14564	-	Hardened Bushing, 2 3/4" O.D. x 2 1/4" I.D. x 4 1/2"
	GD15109	-	Spacer, 2 3/4" O.D. x 2 3/8" I.D. x 2 3/8"
	GD14562	-	Hardened Bushing, 2 3/4" O.D. x 2 1/4" I.D. x 3"
	GD15110	-	Sleeve, 3 1/4" O.D. x 2 7/8" I.D. x 1 7/8" Long
	GD14563	-	Hardened Bushing, 3 1/4" O.D. x 2 3/4" I.D. x 3"
2.	GD15285	1	Storage Bracket
3.	GD15074	1	Pin, 2" x 5 3/4"
4.	G10191	2	Spring Pin, 1/4" x 2 3/4"
5.	G10004	1	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
6.	GD5625	1	Lynch Pin, 3/16"
7.	GD15282	1	Pin, 5/8" x 4"
8.	GA10378	1	Inner Hook, 29 1/4" Long
9.	GA11324	-	Inner Wing W/Grease Fittings, Bushings, Spacer And Sleeve, R.H., 209 5/8"
	G10640	-	Grease Fitting, 1/4"-28
	GD14564	-	Hardened Bushing, 2 3/4" O.D. x 2 1/4" I.D. x 4 1/2"
	GD15109	-	Spacer, 2 3/4" O.D. x 2 3/8" I.D. x 2 3/8" (If Applicable)
	GD14562	-	Hardened Bushing, 2 3/4" O.D. x 2 1/4" I.D. x 3" (If Applicable)
	GD17450	-	Hardened Bushing, 2 3/4" O.D. x 2 1/4" I.D. x 4 3/16" (If Applicable)
	GD15110	-	Sleeve, 3 1/4" O.D. x 2 7/8" I.D. x 1 7/8" Long
GD14563	-	Hardened Bushing, 3 1/4" O.D. x 2 3/4" I.D. x 3"	
10.	G10543	1	Hex Head Cap Screw, 3/4"-10 x 3", Full Thread
	G10105	1	Hex Nut, 3/4"-10
11.	GD15720	2	Bronze Pad, 5" x 7 1/2"
12.	GD15719	2	Capture Plate
13.	G10152	4	Hex Head Cap Screw, 5/8"-11 x 9"
	G10217	4	Washer, 5/8" USS
	G10107	4	Lock Nut, 5/8"-11
14.	G10016	1	Hex Head Cap Screw, 1/2"-13 x 2"
	G10228	1	Lock Washer, 1/2"
	G10111	1	Lock Nut, 1/2"-13
15.	GD15066	1	Stop

# OUTER WING

(FWD48aa/FWD49)

## L.H. Wing

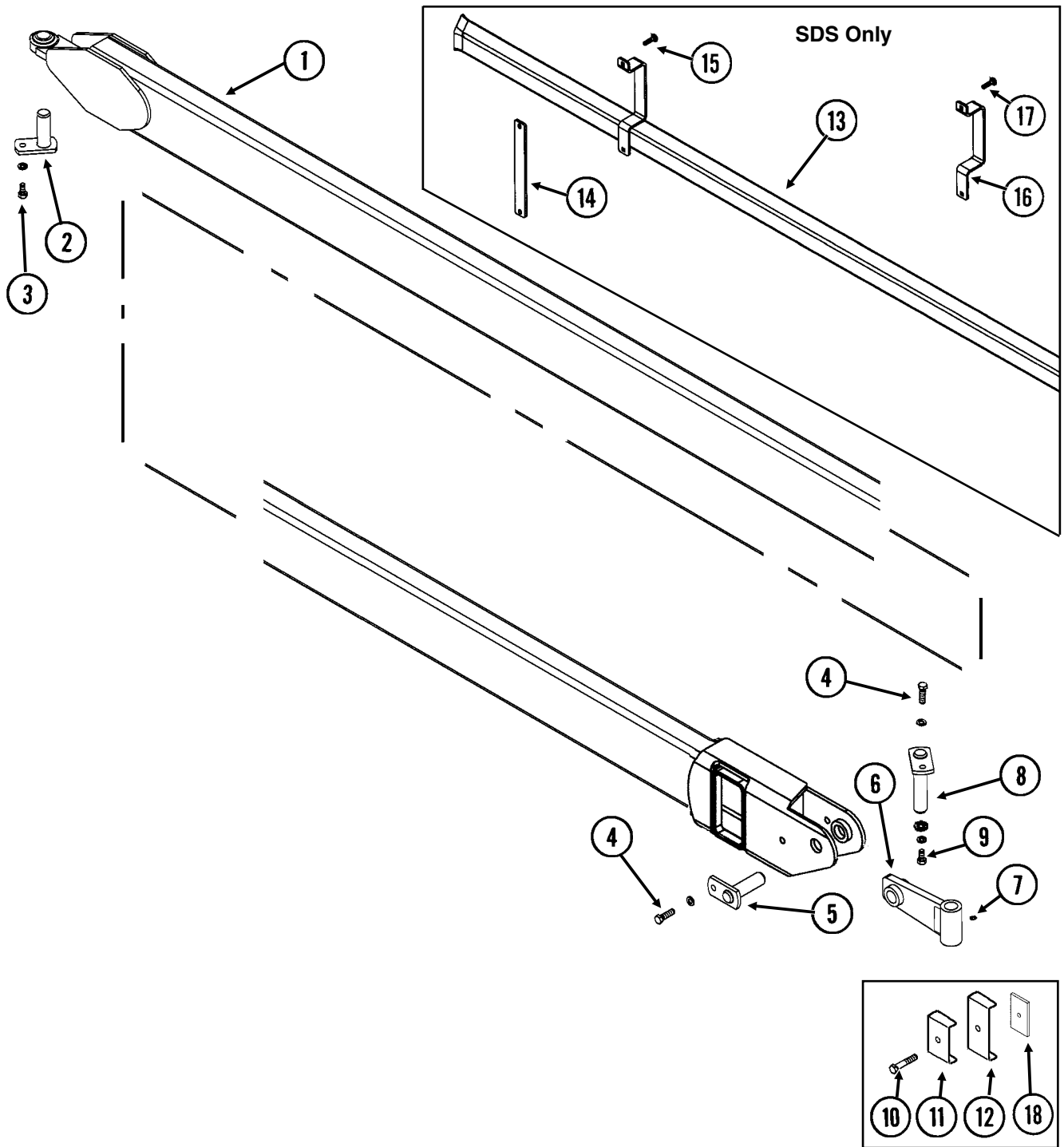


# OUTER WING

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.		-	See "Light Assemblies And Brackets", Pages P130 And P131
2.	GA10413	1	Outer Wing W/Grease Fittings, Bushings And Sleeve, L.H., 254 1/2"
	G10640	-	Grease Fitting, 1/4"-28
	GD14563	-	Hardened Bushing, 3 1/4" O.D. x 2 3/4" I.D. x 3"
	GD15110	-	Sleeve, 3 1/4" O.D. x 2 7/8" I.D. x 1 7/8" Long
3.	GD15285	1	Storage Bracket
4.	GD15074	1	Pin, 2" x 5 3/4"
5.	G10191	2	Spring Pin, 1/4" x 2 3/4"
6.	G10004	1	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	1	Lock Washer, 3/8"
	G10101	1	Hex Nut, 3/8"-16
7.	GD5625	1	Lynch Pin, 3/16"
8.	GD15282	1	Pin, 5/8" x 4"
9.	G10016	2	Hex Head Cap Screw, 1/2"-13 x 2"
	G10228	2	Lock Washer, 1/2"
	G10111	2	Lock Nut, 1/2"-13
10.	GD15065	1	Capture Plate
11.	GA10743	-	Outer Hook, 29 15/16" Long
12.	GA10414	1	Outer Wing W/Grease Fittings, Bushings And Sleeve, R.H., 254 1/2"
	G10640	-	Grease Fitting, 1/4"-28
	GD14563	-	Hardened Bushing, 3 1/4" O.D. x 2 3/4" I.D. x 3"
	GD15110	-	Sleeve, 3 1/4" O.D. x 2 7/8" I.D. x 1 7/8" Long
13.	G10543	1	Hex Head Cap Screw, 3/4"-10 x 3", Full Thread
	G10105	1	Hex Nut, 3/4"-10
14.	GD15064	2	Capture Plate
15.	G10026	4	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	4	Lock Washer, 3/4"
	GD17180	4	Washer, 3 1/2" O.D. x 13/16" I.D. x 3/8"
16.	GA12128	1	Pin, 2 1/4" x 11 1/8"
17.	GA12127	1	Pin, 2 1/4" x 7 1/8"

# DRAFT LINK

(FWD129/D16890/FWD16aaa/FWD128/FWD74a)



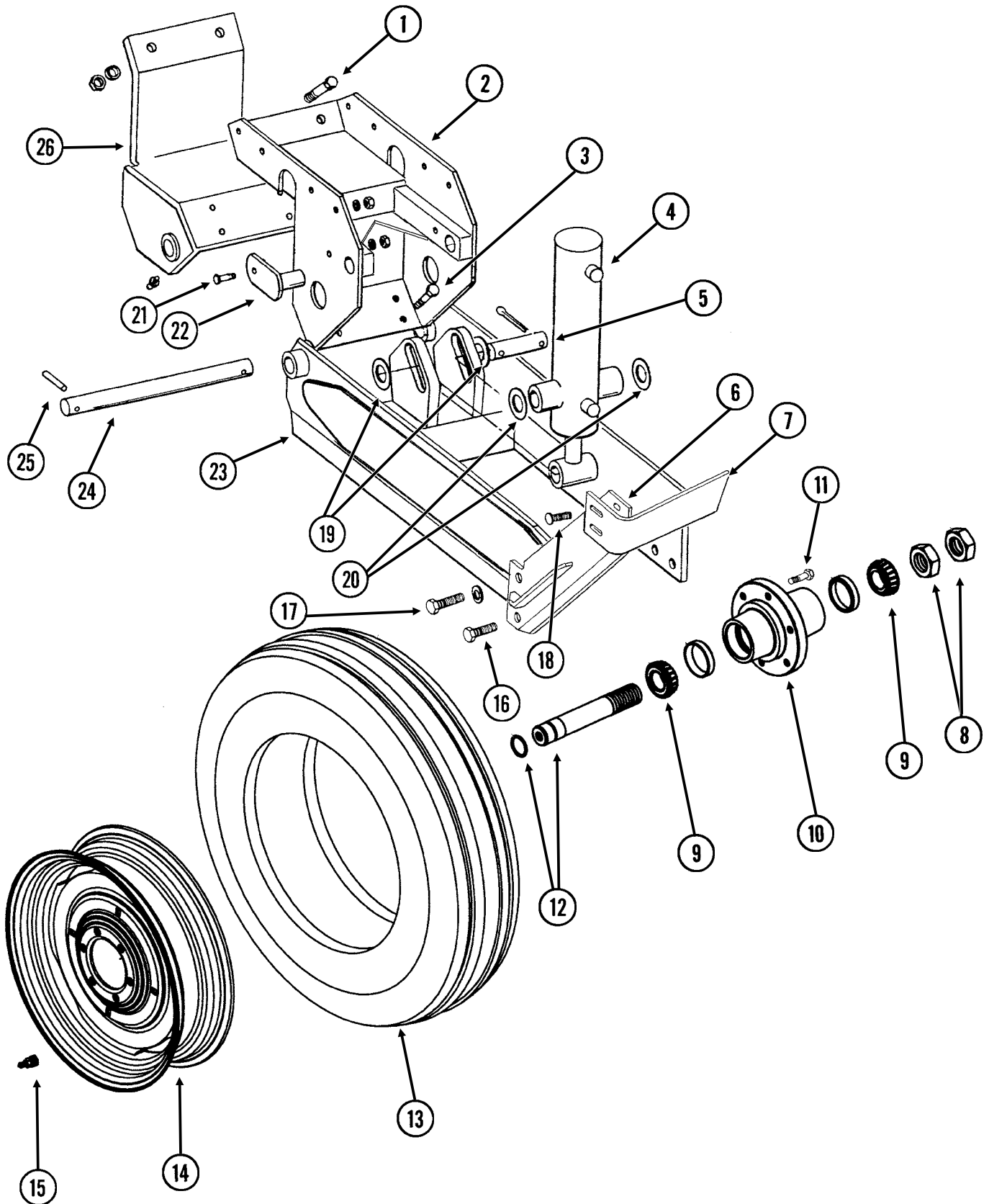


# DRAFT LINK

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GA11027	1	Draft Link, L.H., 314 1/8", 36 Row 30"
	GA11028	1	Draft Link, R.H., 314 1/8", 36 Row 30"
2.	GA10276	1	Pin, 3 5/8"
3.	G10014	1	Hex Head Cap Screw, 1/2"-13 x 1"
	G10228	1	Lock Washer, 1/2"
4.	G10039	1	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
5.	GA10277	1	Pin, 4"
6.	GA10275	1	Link Yoke
7.	G10640	1	Grease Fitting, 1/4"-28
8.	GA10278	1	Pin, 6"
9.	G10039	1	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10228	1	Lock Washer, 1/2"
	GD15235	1	Washer, 2 1/4" O.D. x 1/2" I.D. x 1/4"
10.	G10585	-	Hex Head Cap Screw, 1/2"-13 x 3 1/4"
	G10111	-	Lock Nut, 1/2"-13
11.	GD0740	-	Hose Clamp, 3/4" x 4" x 3 1/2"
12.	GD8188	-	Hose Clamp, 7/8" x 3" x 5 3/8"
13.	GA11669	1	Hose Tube, 111", 36 Row 30" SDS
	GA11670	1	Hose Tube, 287 3/4", 36 Row 30" SDS
14.	GD16887	2-4	Support
15.	G10301	8	Carriage Bolt, 3/8"-16 x 1 1/2"
	G10210	8	Washer, 3/8" USS
	G10108	8	Lock Nut, 3/8"-16
16.	GD16890	-	Clamp
17.	G10599	-	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10622	-	Serrated Flange Nut, 3/8"-16
18.	GD8189	-	Rubber Strip, 3/8"

# LIFT/GAUGE WHEEL

(FWD64a)



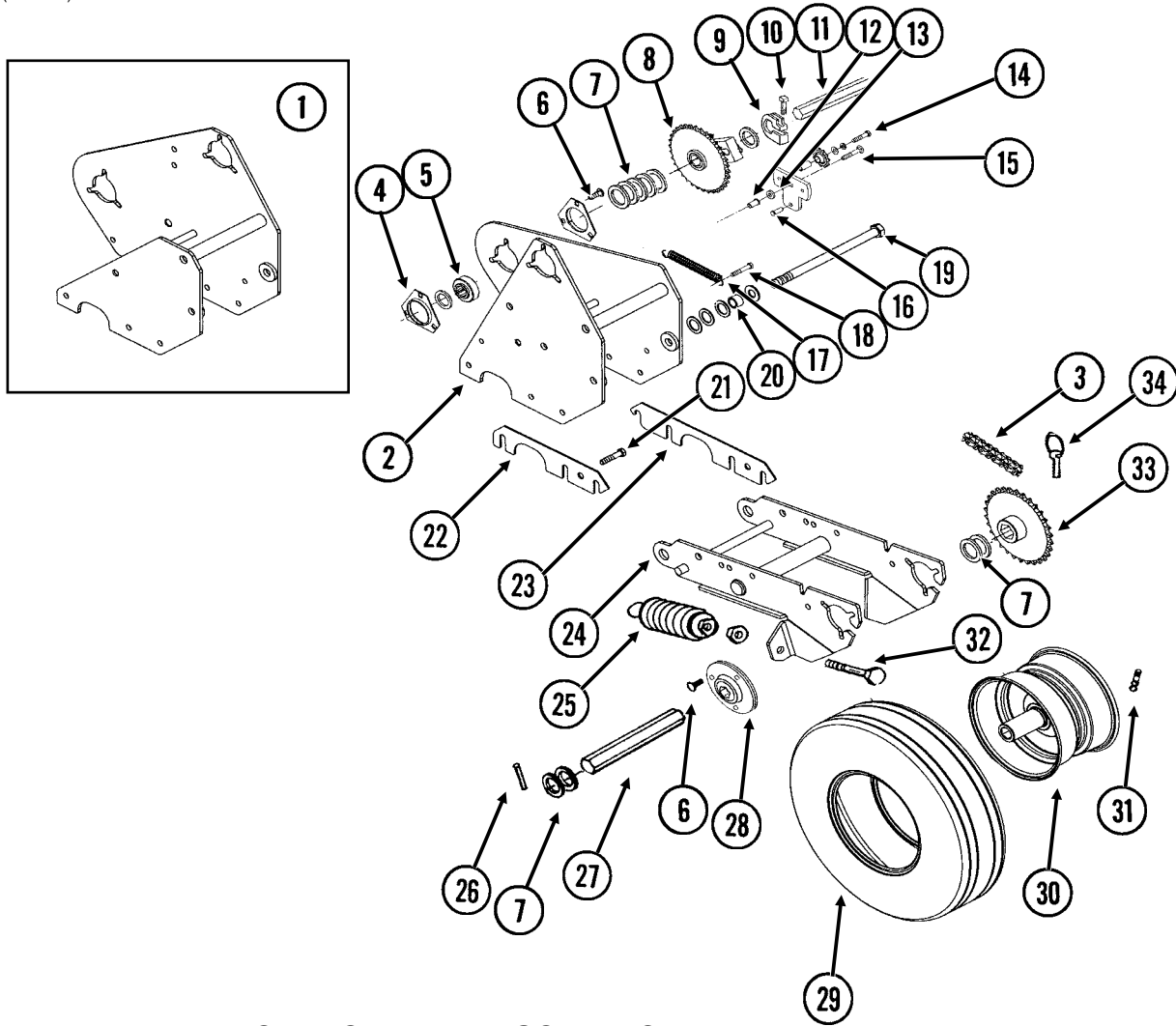
# LIFT/GAUGE WHEEL

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	G10009	2	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
2.	GA5122	1	Wheel Tower Clamp
3.	G10008	4	Hex Head Cap Screw, 5/8"-11 x 2"
	GD7805	6	Special Washer, 5/8", Hardened
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
4.		-	See "Master/Slave/Lift Assist Cylinders", Pages P109-P110
5.	GD5841	1	Pin, 1 1/4" x 5 5/8"
	G10460	2	Cotter Pin, 1/4" x 2"
6.	GA7376	1	Scraper Mount
7.	GD12543	1	Scraper
8.	G11081	2	Hex Jam Nut, 1 1/2"-12, Grade 2
9.	GA0895	2	Bearing
10.	GA2148	1	Hub W/Cups, 6 Bolt
	GR0434	-	Cup
11.	GR0270	6	Lug Bolt, 9/16"-18
12.	GA2558	1	Spindle W/Round External Retaining Ring, 9 1/2"
	GD11490	-	Round External Retaining Ring
13.	GD13401	-	Tire, 7.50" x 20", 8 Ply, Tubeless W/O Center Rib (Specify Brand*)
14.	GA2142	1	Rim, 5.50" x 20"
15.	GA7434	1	Valve Stem
16.	G10025	2	Hex Head Cap Screw, 3/4"-10 x 1 1/2"
	G10231	2	Lock Washer, 3/4"
	G10105	2	Hex Nut, 3/4"-10
17.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
18.	G10636	4	Carriage Bolt, 1/2"-13 x 1 1/2"
	G10071	4	Serrated Flange Nut, 1/2"-13
19.	G10139	2	Washer, 1 1/4" USS
20.	G10159	-	Machine Bushing, 1 1/4", 10 Gauge (As Required)
21.	G10581	2	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10111	2	Lock Nut, 1/2"-13
22.	GA5121	2	Pin, 2 1/8"
23.	GA11276	1	Arm
24.	GD11695	1	Pin, 1 1/4" x 13 1/4"
25.	G10610	2	Spring Pin, 3/8" x 2"
26.	GA9877	1	Clamp W/Grease Fittings
	G10640	2	Grease Fitting, 1/4"-28
A.	GA2147	-	Hub And Spindle Assembly (Items 8-10 And 12)
B.	GA7409	-	Scraper Assembly (Items 6, 7, 16 And 18)

\* 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 DRIVE WHEEL, ARM AND TOWER ASSEMBLIES

(FWD65c)



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GA11281	1	Tower, Inner And Center Module
2.	GA11280	1	Tower, Outer Module
3.	G3310-168	1	Chain, No. 40, 168 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
4.	G3400-01	-	Flangette
5.	G2100-03	-	Bearing, 7/8" Hex Bore, Spherical
6.	G10303	-	Carriage Bolt, 5/16"-18 x 1"
	G10232	-	Lock Washer, 5/16"
	G10106	-	Hex Nut, 5/16"-18
7.	G10233	-	Machine Bushing, 1", 10 Gauge
8.	GA10173	3	Ratchet/Sprocket Assembly, L.H.
	GD1256	2	Spring
	G10453	2	Cotter Pin, 3/16" x 1"
	GA0378	1	Block And Hub Assembly
	GD1255	2	L-Pin
	GA7572	1	Sprocket, 34 Tooth
	G10430	1	External Retaining Ring, 1 1/4"
9.	GD11045	-	Lock Clamp
10.	G10130	-	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	-	Flange Nut, 5/16"-18, No Serration

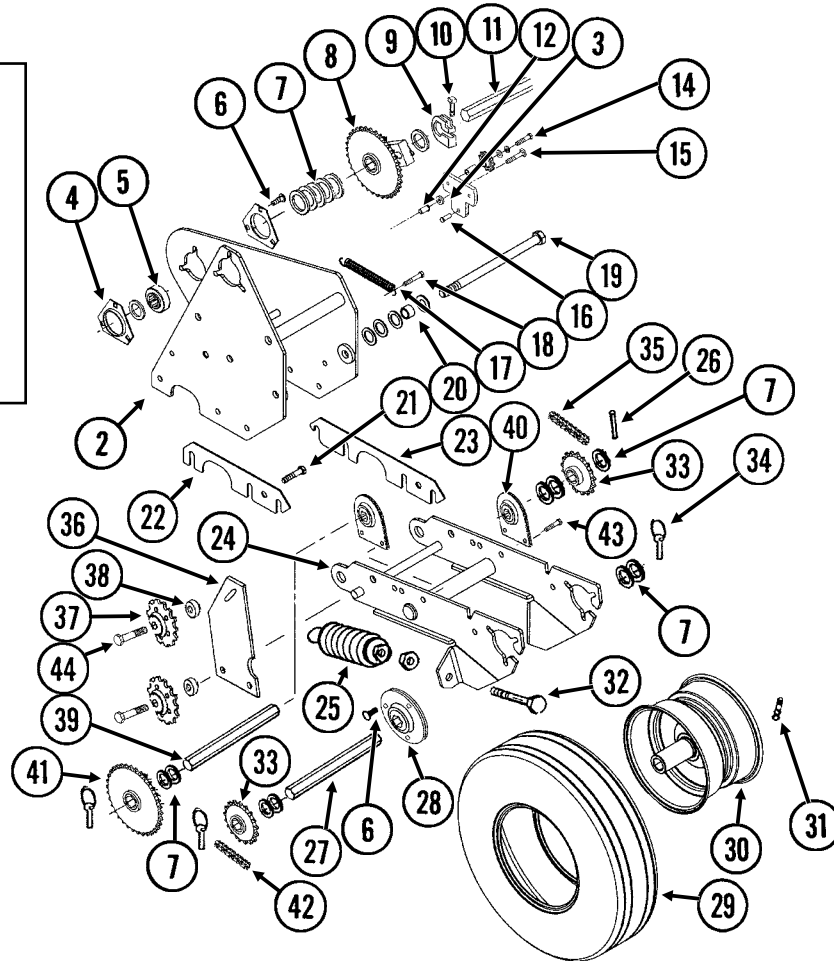
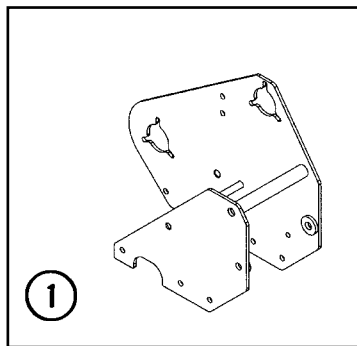
# CONTACT DRIVE WHEEL, ARM AND TOWER ASSEMBLIES

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
11.	GD2548-93	1	Hex Shaft, 7/8" x 93", L.H. Side (1 Hole)
	GD2548-104	-	Hex Shaft, 7/8" x 104", R.H. Side (1 Hole)
12.	GD15532	1	Bronze Bushing, 1"
13.	GD15538	1	Spacer, 3/8" I.D. x 7/8" O.D., 7 Gauge
14.	GA11287	1	Idler W/Sprockets, Sleeves And Hardware
	GD7426	2	Sprocket, 12 Tooth
	GD1026	2	Sleeve, 1 3/16" Long
	G10047	2	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10210	2	Washer, 3/8" USS
	G10229	2	Lock Washer, 3/8"
15.	G11119	1	Carriage Bolt, 3/8"-16 x 2 1/4"
	G10203	1	Washer, 3/8" SAE
	G10108	1	Lock Nut, 3/8"-16
16.	G11118	1	Clevis Pin, 3/8" x 3/4"
	G10860	1	Retaining Ring, 3/8"
17.	GD5857	1	Spring
18.	G10939	1	Hex Head Cap Screw, 3/8"-16 x 2 1/4"
	G10210	1	Washer, 3/8" USS
	G10101	1	Hex Nut, 3/8"-16
	G10108	1	Lock Nut, 3/8"-16
19.	G10953	1	Hex Head Cap Screw, 5/8"-11 x 10"
	G10235	6	Machine Bushing, 7/8", 14 Gauge
	GD7805	2	Special Washer, 5/8", Hardened
	G10107	1	Lock Nut, 5/8"-11
20.	GB0218	2	Bushing, 2 1/32" I.D. x 7/8" O.D. x 1 9/32" Long
21.	G10004	7	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	7	Lock Washer, 3/8"
	G10101	7	Hex Nut, 3/8"-16
22.	GD16438	1	Shim
23.	GD16437	1	Shim
24.	GA7372	1	Wheel Arm
25.	GA2068	2	Spring W/Plug
26.	G10602	2	Spring Pin, 1/4" x 1 1/2"
27.	GD6775	1	Hex Shaft, 7/8" x 11 3/4" (2 Holes)
28.	GA9846	-	Flanged Bearing, 7/8" Hex Bore
29.	GD4700	1	Tire, 4.80" x 8", 4 Ply, Rib Implement (Specify Brand*)
30.	GA3553	1	Rim, 3.75" x 8"
31.	GD4701	-	Valve Stem
32.	G10890	2	Hex Head Adjusting Bolt, 1/2"-13 x 4", Grade 2
	G10501	2	Hex Jam Nut, 1/2"-13, Grade 2
33.	GA11285	1	Sprocket, 38 Tooth
34.	GD2558	1	Lynch Pin, 1/4"
A.	G1K324	-	Contact Wheel Arm Replacement Kit, (Items 6, 7, 24, 26-28, 32 And 34)
B.	GA3552	-	Tire And Rim Assembly (Items 29-31)

\* 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.

# CONTACT WHEEL, ARM AND TOWER ASSEMBLIES (When Using G1K472 Sunflower Rate Reduction Kit)

(FWD65a)



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GA11281	1	Tower, Inner And Center Module On 36 Row 30"
2.	GA11280	1	Tower, Outer Module On 36 Row 30"
3.	GD15538	1	Spacer, 3/8" I.D. x 7/8" O.D., 7 Gauge
4.	G3400-01	-	Flangette
5.	G2100-03	-	Bearing, 7/8" Hex Bore, Spherical
6.	G10303	-	Carriage Bolt, 5/16"-18 x 1"
	G10232	-	Lock Washer, 5/16"
	G10106	-	Hex Nut, 5/16"-18
7.	G10233	-	Machine Bushing, 1", 10 Gauge
8.	GA10173	3	Ratchet/Sprocket Assembly, L.H.
	GD1256	2	Spring
	G10453	2	Cotter Pin, 3/16" x 1"
	GA0378	1	Block And Hub Assembly
	GD1255	2	L-Pin
	GA7572	1	Sprocket, 34 Tooth
	G10430	1	External Retaining Ring, 1 1/4"
9.	GD11045	-	Lock Clamp
10.	G10130	-	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	-	Flange Nut, 5/16"-18, No Serration
11.	GD2548-93	1	Hex Shaft, 7/8" x 93", L.H. Side (1 Hole)
	GD2548-104	-	Hex Shaft, 7/8" x 104", R.H. Side (1 Hole)
12.	GD15532	1	Bronze Bushing, 1"

# CONTACT WHEEL, ARM AND TOWER ASSEMBLIES (When Using G1K472 Sunflower Rate Reduction Kit)

---

ITEM	PART NO.	QTY.	DESCRIPTION
------	----------	------	-------------

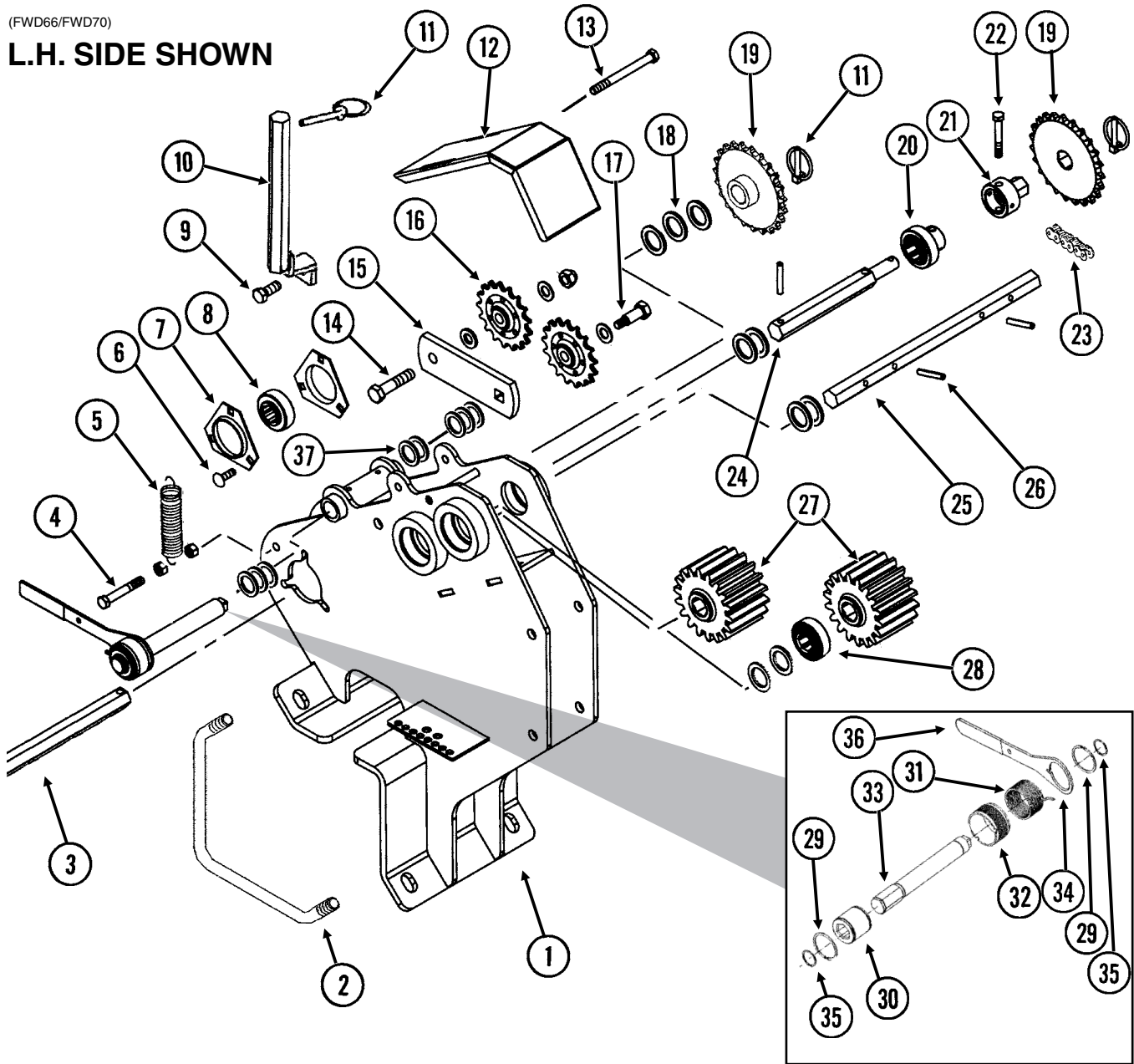
(Per Assy.)

\* 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.

# SEED RATE TRANSMISSION

(FWD66/FWD70)

L.H. SIDE SHOWN



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA11297	1	Transmission Plate W/Grease Fittings
	G10640	2	Grease Fitting, 1/4"-28
2.	GD8175	2	U-Bolt, 7" x 7" (Diamond) x 5/8"-11
	GD7805	4	Special Washer, 5/8", Hardened
	G10230	8	Lock Washer, 5/8"
	G10104	8	Hex Nut, 5/8"-11
3.		-	See "Contact Drive Wheel, Arm And Tower Assemblies", Pages P86 And P89
4.	G10049	1	Hex Head Cap Screw, 3/8"-16 x 2 1/2"
	G10101	2	Hex Nut, 3/8"-16
5.	GD5857	1	Spring
6.	G10303	3	Carriage Bolt, 5/16"-18 x 1"
	G10232	3	Lock Washer, 5/16"
	G10106	3	Hex Nut, 5/16"-18



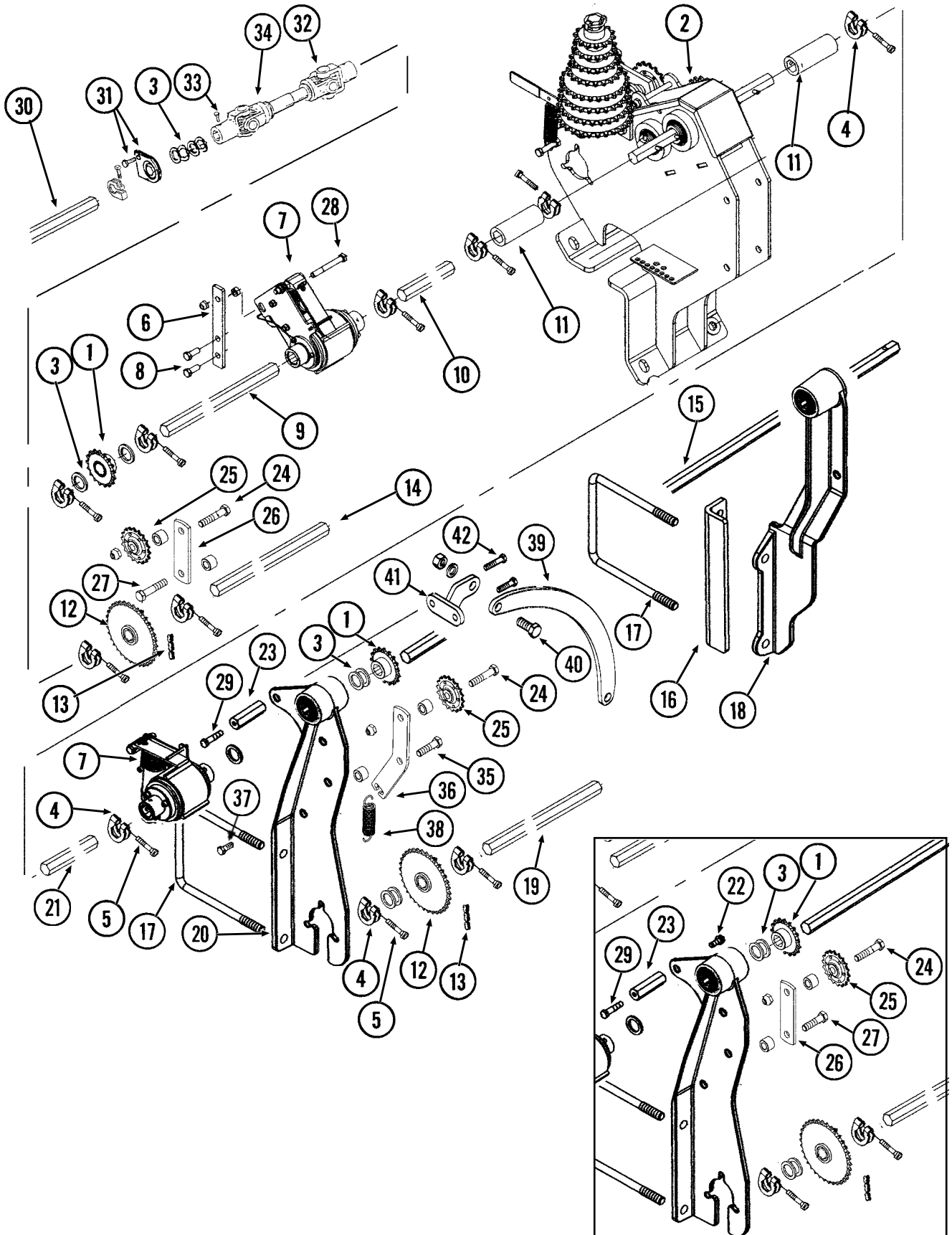
# SEED RATE TRANSMISSION

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
7.	G3400-01	2	Flangette
8.	G2100-03	1	Bearing, 7/8" Hex Bore, Spherical
9.	G10581	1	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10527	2	Lock Washer, 1/2", Internal/External
	GD10356	1	Bushing, 3/4" Long
	G10111	1	Lock Nut, 1/2"-13
10.	GA11245	1	Sprocket Storage Rod
11.	GD2558	3	Lynch Pin, 1/4"
12.	GD16449	1	Cover
13.	G10063	1	Hex Head Cap Screw, 3/8"-16 x 4"
	G10108	1	Lock Nut, 3/8"-16
14.	G10581	1	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10206	3	Washer, 1/2" SAE
	G10111	1	Lock Nut, 1/2"-13
15.	GD16446	1	Idler Plate
16.	GA11244	2	Idler Sprocket, 17 Tooth
17.	GD16440	1	Shoulder Bolt, 1/2" x 3/8"-16 x 1"
18.	G10233	-	Machine Bushing, 1", 10 Gauge (As Required)
19.	GA11235	1	Sprocket, 14 Tooth
	GA11236	1	Sprocket, 15 Tooth
	GA11237	1	Sprocket, 17 Tooth
	GA11238	1	Sprocket, 19 Tooth
	GA11239	2	Sprocket, 23 Tooth
	GA11240	1	Sprocket, 24 Tooth
	GA11241	1	Sprocket, 25 Tooth
	GA11242	1	Sprocket, 26 Tooth
	GA11243	1	Sprocket, 27 Tooth
20.	GA11394	1	Cylindrical Bearing
21.	GD7127	1	Shear Coupler
22.	G10069	1	Hex Head Cap Screw, 5/16"-18 x 2 1/4"
	G10109	1	Lock Nut, 5/16"-18, Grade 8
23.	G3316-80	1	Chain, No. 50, 80 Pitch Including Connector Link
	GR1743	-	Connector Link, No. 50
24.	GD16448	1	Shaft, 8 1/4"
25.	GD16447	1	Shaft, 14"
26.	G11103	1	Spring Pin, 1/4" x 1 3/4"
27.	GD16370	2	Gear, 18 Tooth
28.	GA5116	3	Bearing, 7/8" Hex Bore, Cylindrical
29.	G11075	2	External Inverted Snap Ring, 7/8"
30.	GD14432	1	Sleeve, 1 1/4"
31.	GD14414	1	Torsion Spring, R.H. (Used On L.H. Wrap Spring Wrench)
	GD14413	-	Torsion Spring, L.H. (Used On R.H. Wrap Spring Wrench) (Shown)
32.	GD19344	-	Release Collar, L.H.
	GD14343	1	Release Collar, R.H. (Shown)
33.	GD16439	1	Tightener Shaft, 7 5/16"
34.	GD14431	1	Handle
35.	G10496	2	External Inverted Snap Ring, 1 1/2"
36.	G11078	1	Vinyl Cap
37.	G10235	8	Machine Bushing, 7/8", 14 Gauge
A.	GA11311	-	Wrap Spring Wrench Assembly, Silver Collar, L.H. (Items 29-35)
	GA11312	1	Wrap Spring Wrench Assembly, Gold Collar, R.H. (Items 29-35) (Shown)

# DRIVEN AND DRILL SHAFTS ON WINGS

(FWD67aaFWD67a)

L.H. SIDE SHOWN



# DRIVEN AND DRILL SHAFTS ON WINGS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA5106	4	Sprocket, 17 Tooth
2.		-	See "Seed Rate Transmission", Pages P90 And P91
3.	G10233	-	Machine Bushing, 1", 10 Gauge
4.	GD11045	-	Lock Clamp
5.	G10130	-	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	-	Flange Nut, 5/16"-18, No Serration
6.	GD16417	2	Bracket
7.		-	See "Point Row Clutches", Pages P98 And P99
8.	G10001	4	Hex Head Cap Screw, 3/8"-16 x 1"
	G10108	4	Lock Nut, 3/8"-16
9.	GD0914-76	1	Hex Shaft, 7/8" x 76" (No Holes), L.H. Side
	GD0914-60	-	Hex Shaft, 7/8" x 60" (No Holes), R.H. Side
10.	GD0914-13.5	1	Hex Shaft, 7/8" x 13 1/2" (No Holes), L.H. Side
	GD0914-21	-	Hex Shaft, 7/8" x 21" (No Holes), R.H. Side
11.	GD10126	4	Coupler, 4"
12.	GA5202	4	Sprocket, 34 Tooth
13.	G3310-108	4	Chain, No. 40, 108 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
14.	GD0914-20	-	Hex Shaft, 7/8" x 20" (No Holes), L.H. Side, 36 Row 30"
	GD0914-36	-	Hex Shaft, 7/8" x 36" (No Holes), R.H. Side, 36 Row 30"
15.	GD16451	1	Shaft, 7/8" x 56" (1 Hole), L.H. Side
	GD16450	1	Shaft, 7/8" x 44" (1 Hole), R.H. Side
16.	GD16467	1	Bracket, L.H. Side
	GD16466	-	Bracket, R.H. Side
17.	GD1114	8	U-Bolt, 7" x 7" x 5/8"-11
	G10230	8	Lock Washer, 5/8"
	G10104	8	Hex Nut, 5/8"-11
18.	GA11257	1	Support W/Bearings And Rings, L.H. Side
	GA11256	-	Support W/Bearings And Rings, R.H. Side
	GA5116	-	Bearing, 7/8" Hex Bore, Cylindrical
	GD6551	-	Ring
19.	GD0914-156	-	Hex Shaft, 7/8" x 156" (No Holes), 36 Row 30"
20.	GA11258	2	Chain Mount W/Bearings And Rings
	GA5116	-	Bearing, 7/8" Hex Bore, Cylindrical
	GD6551	-	Ring
21.	GD0914-10.5	1	Hex Shaft, 7/8" x 10 1/2" (No Holes), L.H. Side
	GD0914-21	-	Hex Shaft, 7/8" x 21" (No Holes), R.H. Side
22.	G10001	1	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	1	Lock Washer, 3/8"
23.	GD15114	1	Hex Shaft Spacer
24.	G10053	2	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	GD10356	2	Bushing, 3/4" Long
	G10111	2	Lock Nut, 1/2"-13
25.	GA7154	2	Sprocket W/Bearing, 18 Tooth
26.	GD16362	2	Plate
27.	G10016	2	Hex Head Cap Screw, 1/2"-13 x 2"
	GD10356	4	Bushing, 3/4" Long
	G10527	4	Lock Washer, 1/2", Internal/External
	G10111	2	Lock Nut, 1/2"-13
28.	G10062	2	Hex Head Cap Screw, 3/8"-16 x 3"
	G10108	2	Lock Nut, 3/8"-16
	G10101	2	Hex Nut, 3/8"-16
29.	G10047	1	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10101	1	Hex Nut, 3/8"-16

(Continued On Following Page)  
3/09

# DRIVEN AND DRILL SHAFTS ON WINGS

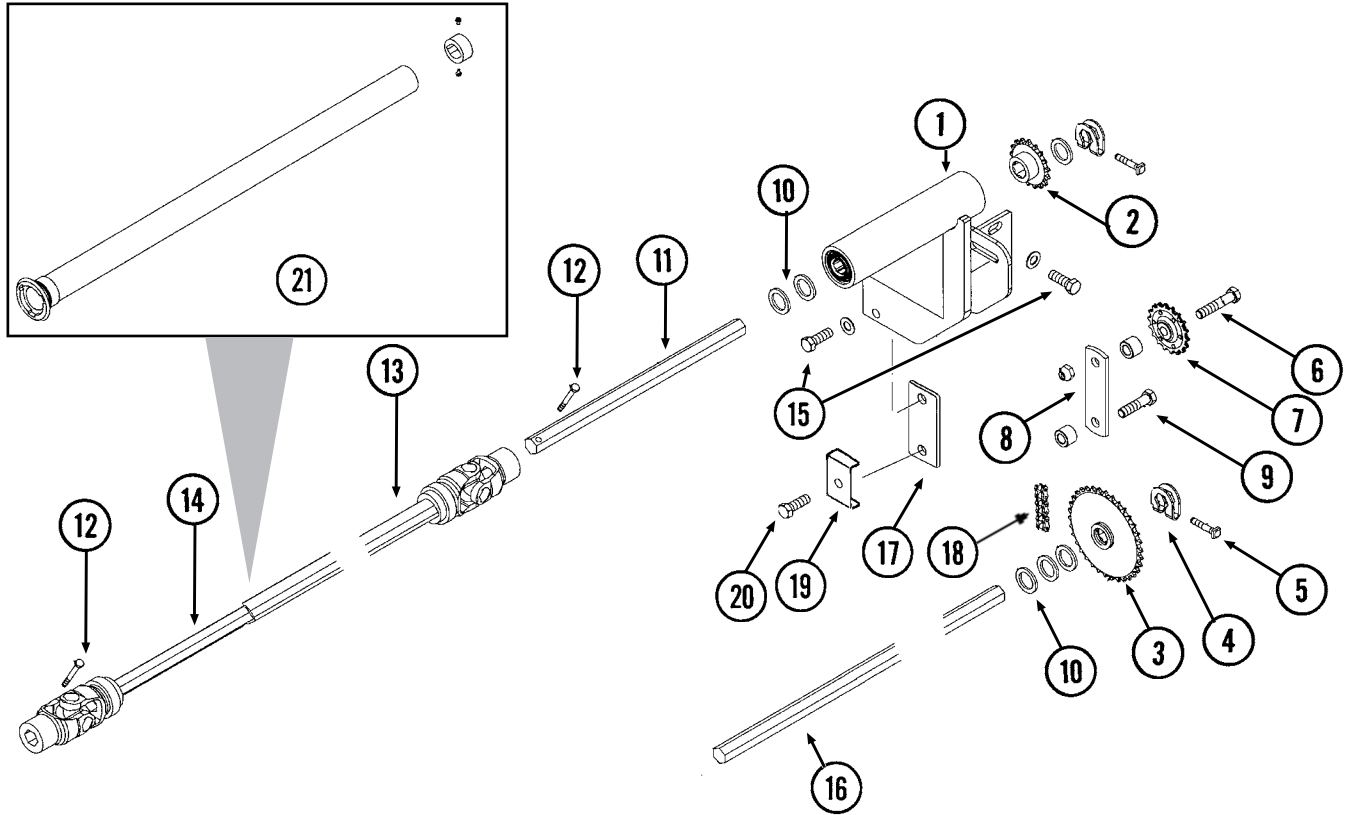
ITEM	PART NO.	QTY.	DESCRIPTION
30.	GD0914-228	-	Hex Shaft, 7/8" x 228" (No Holes), L.H. Side, 36 Row 30"
	GD0914-218	-	Hex Shaft, 7/8" x 218" (No Holes), R.H. Side, 36 Row 30"
31.		-	See "Parallel Arms, Mounting Support Plate And Quick Adjustable Down Force Springs", Page P12
32.	GA7051	2	U-Joint W/Grease Fitting, Male, 12 1/4" Long
	GR1557	-	Grease Fitting, 45°, Metric
	GR1296	-	Inner Profile
	GR1295	-	Inboard Yoke
	GR1301	-	Spring Pin, 8 mm x 50 mm
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
33.	G10688	4	Square Head Set Screw, 3/8"-16 x 5/8"
34.	GA7052	2	U-Joint W/Grease Fitting, Female, 10 1/4" Long
	GR1557	-	Grease Fitting, 45°, Metric
	GR1298	-	Inboard Yoke And Outer Profile (18 1/4" U-Joint)
	GR1297	-	Inboard Yoke And Outer Profile (10 1/4" U-Joint)
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
35.	G10016	2	Hex Head Cap Screw, 1/2"-13 x 2"
	GD10356	4	Bushing, 3/4" Long
	G10206	4	Washer, 1/2" SAE
	G10111	2	Lock Nut, 1/2"-13
36.	GD17051	2	Idler
37.	G10560	2	Clevis Pin, 1/2" x 1 3/4"
38.	GD5857	2	Spring
39.	GD17095	-	Brace Bar, 21", L.H.
	GD17094	1	Brace Bar, 19 3/4", R.H.
40.	G10007	2	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
41.	GA11964	2	Brace Mount
42.	G10003	2	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16

**This page intentionally left blank.**

# DRIVEN AND DRILL SHAFTS ON CENTER SECTION

(A12114/FWD73c)

L.H. SIDE SHOWN



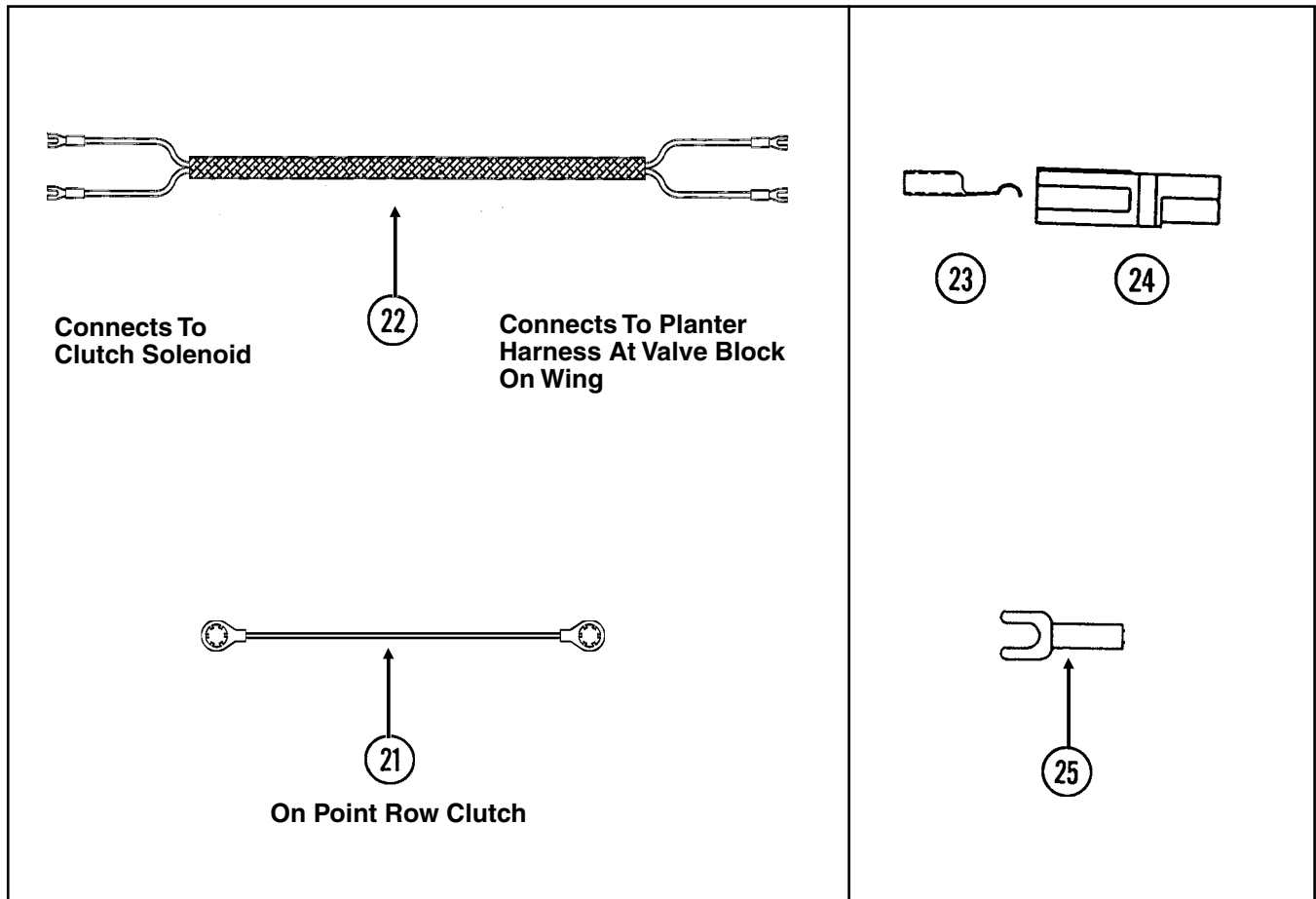
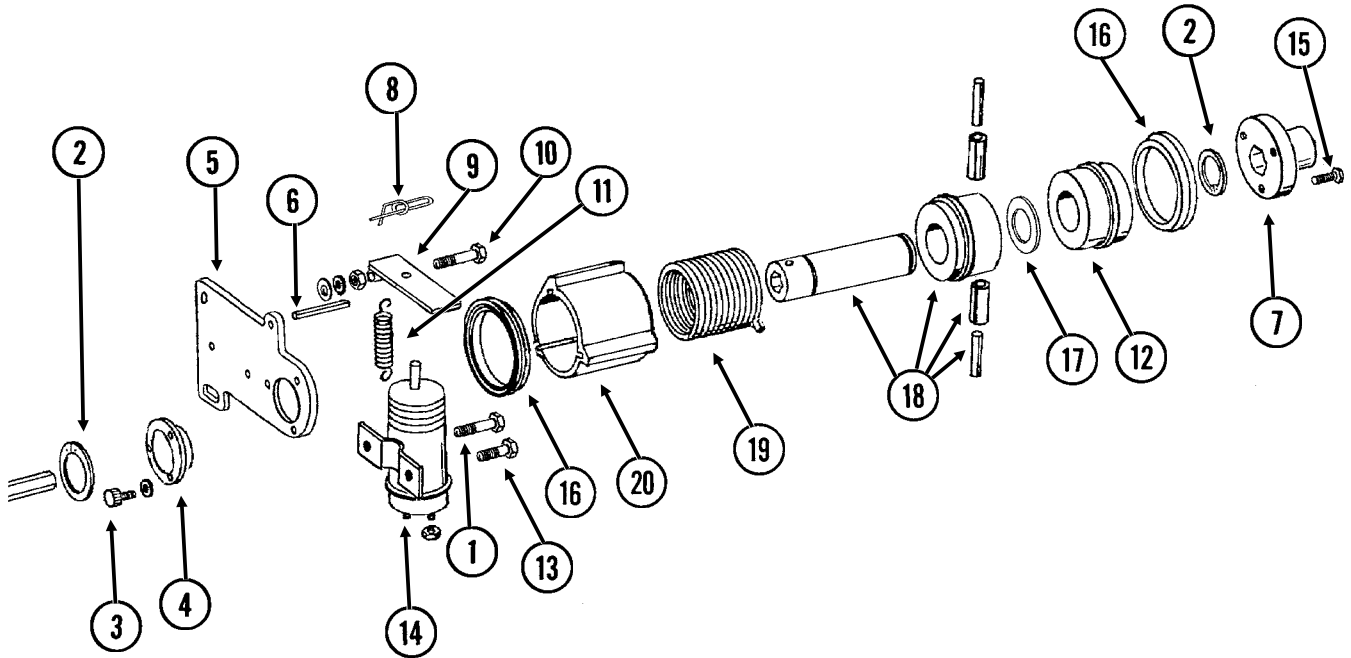
# DRIVEN AND DRILL SHAFTS ON CENTER SECTION

ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	GA11187	1	Mount W/Bearings And Rings, L.H. Side (Shown)
	GA11186	-	Mount W/Bearings And Rings, R.H. Side
	GA5116	-	Bearing, 7/8" Hex Bore, Cylindrical
	GD6551	-	Ring
2.	GA5106	2	Sprocket, 17 Tooth
3.	GA5202	4	Sprocket, 34 Tooth
4.	GD11045	-	Lock Clamp
5.	G10130	-	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	-	Flange Nut, 5/16"-18, No Serration
6.	G10053	2	Hex Head Cap Screw, 1/2"-13 x 2 1/2"
	GD10356	2	Bushing, 3/4" Long
	G10111	2	Lock Nut, 1/2"-13
7.	GA7154	2	Sprocket W/Bearing, 18 Tooth
8.	GD16362	2	Plate
9.	G10016	2	Hex Head Cap Screw, 1/2"-13 x 2"
	GD10356	4	Bushing, 3/4" Long
	G10527	4	Lock Washer, 1/2", Internal/External
	G10111	2	Lock Nut, 1/2"-13
10.	G10233	-	Machine Bushing, 1", 10 Gauge
11.	GD2548-16	2	Hex Shaft, 7/8" x 16" (1 Hole)
12.	G10880	4	Hex Head Cap Screw, 1/4"-20 x 2 1/4"
	G10110	4	Lock Nut, 1/4"-20, Grade B
13.	GA11169	2	U-Joint W/Grease Fitting, Female, 61 15/32"
	GR1294	-	Cross And Bearing Kit
	GR1352	-	Inboard Yoke
	GR1300	-	Grease Fitting, 67.5°, Metric
	GR1301	-	Spring Pin, 8 mm x 50 mm
	GR1365	-	Yoke, 7/8" Hex
	GR1741	-	Outer Profile
14.	GA8001	2	U-Joint W/Grease Fitting, Male, 40 13/32"
	GR1294	-	Cross And Bearing Kit
	GR1295	-	Inboard Yoke
	GR1300	-	Grease Fitting, 67.5°, Metric
	GR1301	-	Spring Pin, 8 mm x 50 mm
	GR1365	-	Yoke, 7/8" Hex
	GR1377	-	Inner Profile
15.	G10017	8	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10206	8	Washer, 1/2" SAE
	G10228	8	Lock Washer, 1/2"
	G10102	8	Hex Nut, 1/2"-13
16.	GD0914-78	1	Hex Shaft, 7/8" x 78" (No Holes), L.H. Side
	GD0914-68	-	Hex Shaft, 7/8" x 68" (No Holes), R.H. Side
17.	GD16355-01	-	Shim, 2" x 4" x 16 Gauge
	GD16355-02	-	Shim, 2" x 4" x 10 Gauge
	GD16355-03	-	Shim, 2" x 4" x 1/4"
18.	G3310-108	1	Chain, No. 40, 108 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
19.	GD0740	1	Hose Clamp, 3/4" x 4" x 3 1/2"
20.	G10585	1	Hex Head Cap Screw, 1/2"-13 x 3 1/4"
	G10206	1	Washer, 1/2" SAE
	G10228	1	Lock Washer, 1/2"
	G10102	1	Hex Nut, 1/2"-13
21.	GA12114	1	Cover W/Plug And Screws
	GD17100	-	Plug
	G11073	-	Slotted Hex Self-Tapping Screw, No. 10 x 3/8"

# POINT ROW CLUTCHES

(FWD71/TWL71d/TWL71/TWL18/A10054)

## L.H. POINT ROW CLUTCH SHOWN



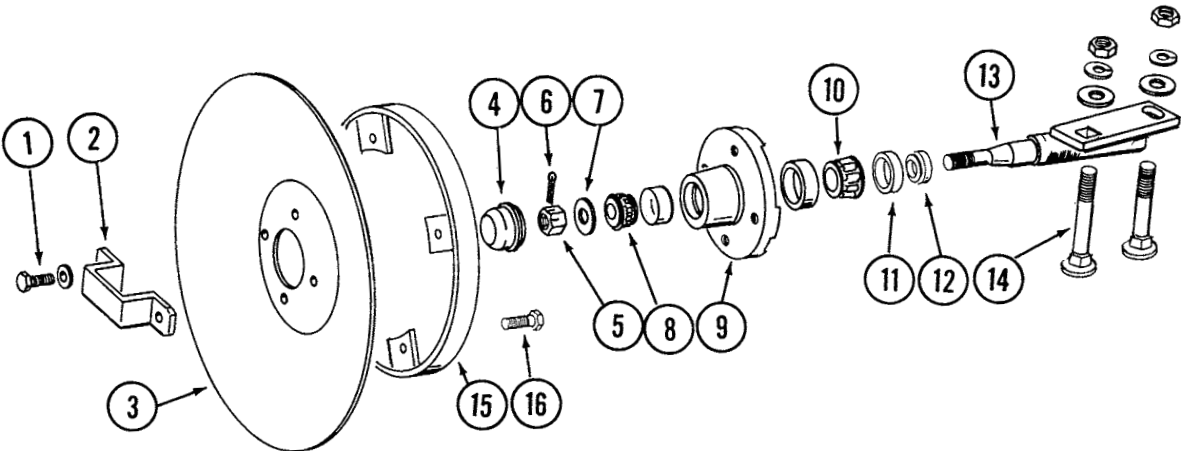


# POINT ROW CLUTCHES

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	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
2.	G10496	2	External Inverted Snap Ring, 1 1/2"
3.	G10253	3	Hex Socket Head Screw, No. 10-32 x 1/2"
	G10257	3	Lock Washer, No. 10
4.	GD9667	1	Bushing
5.	GD10103	1	Mounting Plate
6.	G10859	1	Spring Pin, 3/16" x 2 1/4"
7.	GA9068	1	Hex Coupler
8.	GD11120	1	Rue Ring Cotter, 5/16"
9.	GD10510	1	Actuator Arm
10.	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
	11.	GD10123	1
12.	GD10104	1	Input Hub
13.	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
14.	GA8393	1	Solenoid Complete
	GR1306	1	Snap Ring
	GR1303	1	Spring
	GR1304	1	Boot
	GR1305	1	Plunger
15.	G10374	3	Hex Socket Head Cap Screw, 1/4"-20 x 1"
	G10227	3	Lock Washer, 1/4"
16.	GD14512	2	V-Ring Seal
17.	GD14513	1	Felt Washer
18.	GA7137	1	Hub/Sleeve Assembly W/Spring Pins
	G10804	-	Spring Pin, 5/32" x 7/8"
	G10765	-	Spring Pin, 1/4" x 1"
19.	GD9672	1	Spring, R.H. (Used In GA11268)
	GD9671	-	Spring, L.H. (Used In GA11267)
20.	GD10102	1	Stop Collar
21.	GA10054	-	Ground Cable, Green
22.	GA11362	1	Wiring Harness, 96" (Yellow-Black/Red Ends), 36 Row 30" (L.H. Inner PRC)
	GA11363	1	Wiring Harness, 96" (Orange-Black/Red Ends), 36 Row 30" (R.H. Inner PRC)
	GA11619	1	Wiring Harness, 42" (Brown-Black/Red Ends), 36 Row 30" (L.H. Outer PRC)
	GA11620	1	Wiring Harness, 36" (Red/Black-Black/Red Ends), 36 Row 30" (R.H. Outer PRC)
23.	GD9530	-	Contact
24.	GD9529	-	Housing, Black
	GD12726	-	Housing, Red
25.	G10996	-	Fork Terminal
A.	GA11267	-	Point Row Clutch Assembly, L.H., (Used On Outer R.H. Wing And Inner) (Items 1-21)
	GA11268	-	Point Row Clutch Assembly, R.H., (Used On Outer L.H. Wing And Inner) (Items 1-21)

# ROW MARKER SPINDLE/HUB/BLADE

MKR020(MKR4)

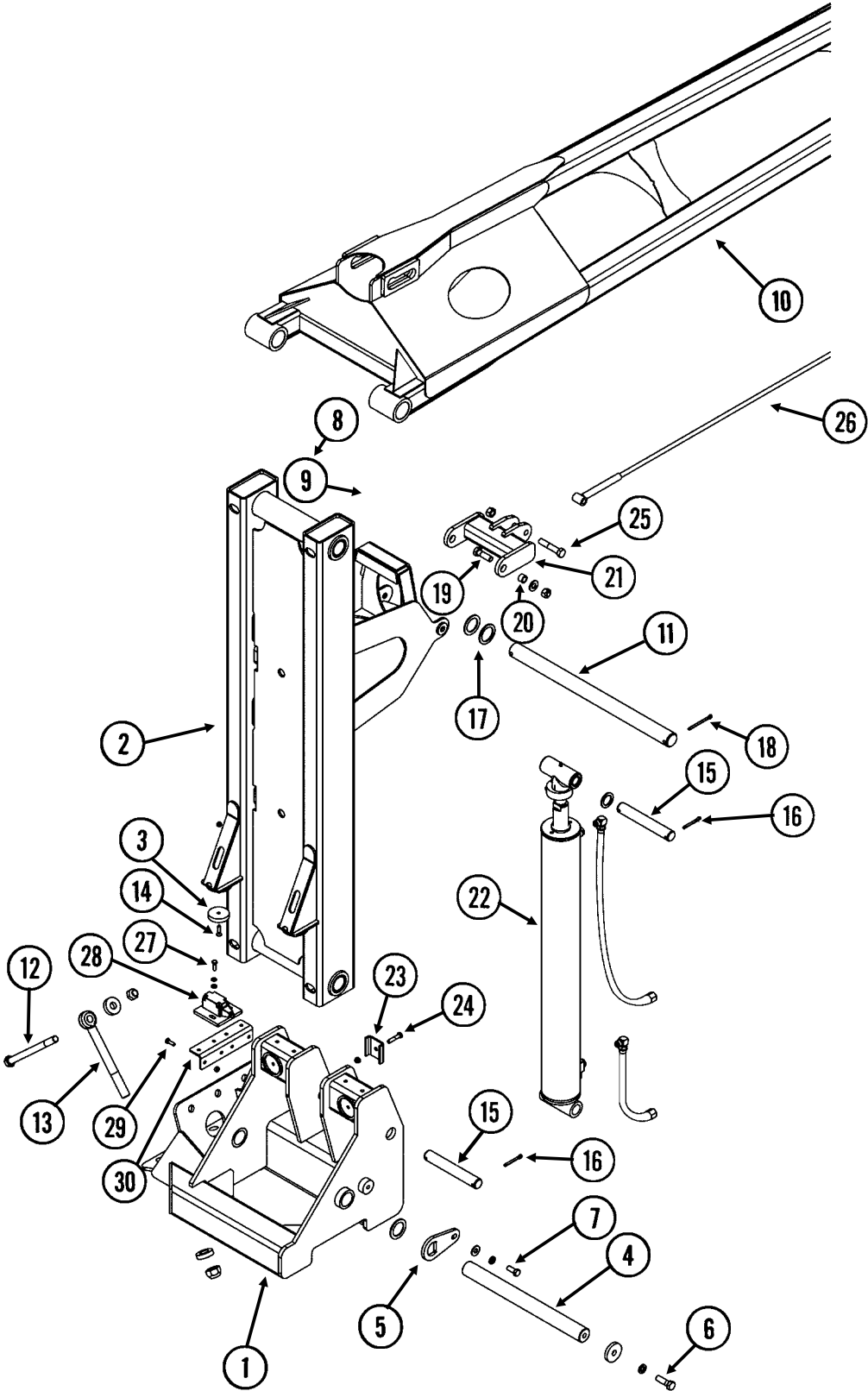


# ROW MARKER SPINDLE/HUB/BLADE

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
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.	GA1676	1	Spindle, R.H.
	GA1677	-	Spindle, L.H. (Shown)
14.	G10844	2	Carriage Bolt, 1/2"-13 x 3 1/2"
	G11162	-	Carriage Bolt, 1/2"-13 x 1 3/4"
	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 And 4-13)
	GA1678	-	Hub And Spindle Assembly, R.H. (Items 1, 2 And 4-13)

# ROW MARKER ASSEMBLY (Mount And First Stage)

(FWD167)

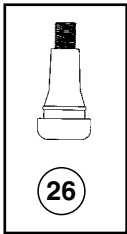
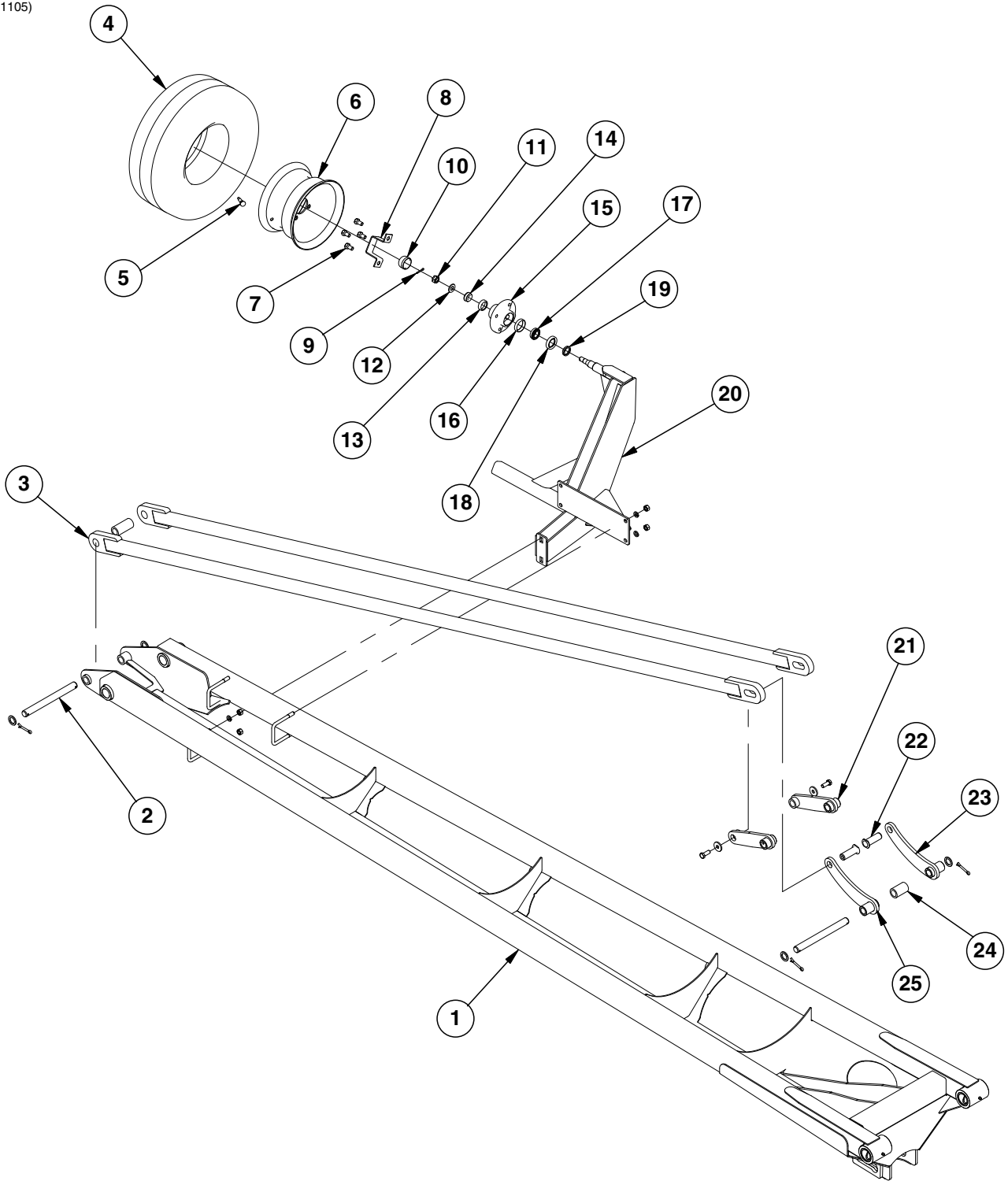


# ROW MARKER ASSEMBLY (Mount And First Stage)

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GA10395	1	Mount, L.H. (Shown)
	GA10394	-	Mount, R.H.
2.	GA10493	1	Arm W/Grease Fittings And Bushings, 66", First Stage
	GD15131	-	Bushing, 2 1/4" O.D. x 1 3/4" I.D. x 4"
	G10640	-	Grease Fitting, 1/4"-28
3.	GD15140	2	Bumper Pad
4.	GD15194	1	Pin, 1 3/4" x 19 1/4"
5.	GD15192	1	Capture Plate
6.	G10008	2	Hex Head Cap Screw, 5/8"-11 x 2"
	G10230	2	Lock Washer, 5/8"
	GD15193	2	Washer, 2 3/8" O.D. x 2 1/32" I.D. x 3/8"
	GD15742	2	Thrust Washer, 2 1/2" O.D. x 1 3/4" I.D. x 1/8"
7.	G10037	1	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10228	1	Lock Washer, 1/2"
	G10216	1	Washer, 1/2" USS
8.	GA9145	1	Molded Stop, 6 1/4" Long
9.	G10644	2	Hex Head Cap Screw, 7/16"-14 x 1 1/2"
	G10199	2	Washer, 7/16" SAE
	G10113	2	Lock Nut, 7/16"-14
10.		-	See "Row Marker Assembly (Second Stage), Pages P104 And P105
11.	GD15228	1	Pin, 1 3/4" x 26"
12.	G10477	4	Hex Head Cap Screw, 3/4"-10 x 10"
	G10112	4	Lock Nut, 3/4"-10
13.	GD15283	4	Eyebolt, 1"-14 x 10"
	G11108	4	Lock Nut, 1"-14
14.	G11110	2	Hex Socket Cap Screw, 5/16"-18 x 1 1/4", Grade 8
	G10109	2	Lock Nut, 5/16"-18, Grade 8
15.	GD15227	2	Pin, 1 1/4" x 8 3/8"
16.	G10460	4	Cotter Pin, 1/4" x 2"
17.	G10356	2	Machine Bushing, 1 3/4", 10 Gauge
	GD15742	2	Thrust Washer, 2 1/2" O.D. x 1 3/4" I.D. x 1/8"
18.	G10362	2	Cotter Pin, 1/4" x 3"
19.	G10008	2	Hex Head Cap Screw, 5/8"-11 x 2"
	GD7805	2	Special Washer, 5/8", Hardened
	G10107	2	Lock Nut, 5/8"-11
20.	GB0218	2	Bushing, 2 1/32" I.D. x 7/8" O.D. x 1 9/32" Long
21.	GA10401	1	Mount
22.		-	See "Row Marker Cylinder", Page P112
23.	GD5875	1	Hose Clamp, 9/16" x 2 1/2" x 2"
24.	G10047	1	Hex Head Cap Screw, 3/8"-16 x 1 3/4"
	G10108	1	Lock Nut, 3/8"-16
25.	G10862	1	Hex Head Cap Screw, 5/8"-11 x 3 1/4"
	GD3180-35	1	Sleeve, 7/8" O.D. x 5/8" I.D. x 1 1/2"
	G10107	1	Lock Nut, 5/8"-11
26.		-	See "Row Marker Assembly (Third And Fourth Stages), Pages P106 And P107
27.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
	G10232	4	Lock Washer, 5/16"
	G10221	4	Washer, 5/16" SAE
28.	GA13474	1	Limit Switch
29.	G10019	2	Hex Head Cap Screw, 5/16"-18 x 1"
	G10106	2	Lock Nut, 5/16"-18
30.	GD18957	1	Mount

# ROW MARKER ASSEMBLY (Second Stage)

(IP1105)



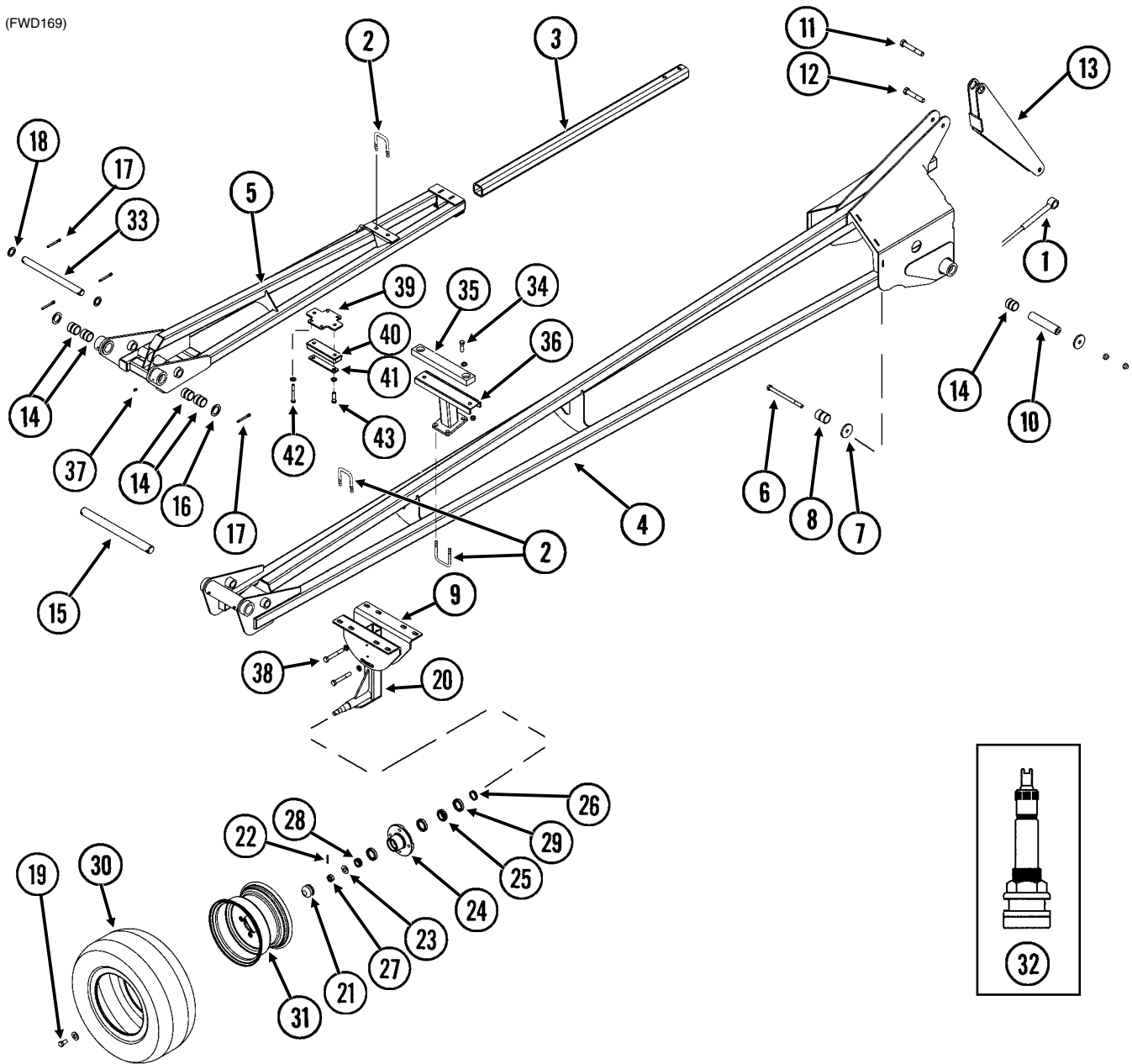
## ROW MARKER ASSEMBLY (Second Stage)

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GA13329	1	Arm W/Grease Fittings And Bushings, Second Stage, 164"
	GD15131	-	Bushing, 2 1/4" O.D. x 1 3/4" I.D. x 4"
	G10640	-	Grease Fitting, 1/4"-28
2.	GD15230	2	Pin, 1" x 10 3/4"
	G10460	4	Cotter Pin, 1/4" x 2"
	G10233	4	Machine Bushing, 1", 10 Gauge
3.	GA10386	2	Link, 143 3/4"
	GD5900-20	1	Sleeve, 3 3/16"
4.	GD15489	1	Tire, 20.5" x 8.0-10 (Specify Brand*)
5.	GA10458	1	Valve Stem
6.	GA10457	1	Rim, 6" x 10"
7.	GD3248	4	Lug Bolt, 1/2"-20 x 1 1/4"
8.	GD2597	1	Retainer
9.	G10544	1	Cotter Pin, 5/32" x 1"
10.	GD0840	1	Dust Cap
11.	G10725	1	Slotted Hex Nut, 5/8"-18
12.	G10724	1	Washer, 5/8" SAE
13.	GR0151	1	Outer Cup
14.	GA0257	1	Bearing
15.	GA0167	1	Hub W/Cups, 4 Bolt
	GB0165	1	Hub Casting, 4 Bolt
16.	GR0150	-	Inner Cup
17.	GA0245	1	Bearing
18.	GA0243	1	Grease Seal
19.	GA0899	1	Rubber Seal
20.	GA13333		Wheel Mount, L.H. (Shown)
	GA13334	1	Wheel Mount, R.H.
	G10228	6	Lock Washer, 1/2"
	G10102	6	Hex Nut, 1/2"-13
	GD4743	3	U-Bolt, 3" x 3" x 1/2"-13
21.	GA10383	2	Short Link
	GD15234	2	Washer, 1 1/2" O.D. x 1/2" I.D. x 7 Gauge
	G10037	2	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
22.	GD15233	2	Pin, 1 1/2" x 2 19/64"
23.	GA10385	1	Long Link
24.	GD5900-21	1	Sleeve, 2 3/8"
25.	GA10384	1	Long Link
26.	GA10458	-	Valve Stem
A.	GA10409	-	Tire And Rim Assembly (Items 26-28)
B.	GA0173	-	Hub Assembly, 4 Bolt W/Out Spindle (Items 14, 15, 17, 18, And 19)
C.	GA13478	-	Wheel Mount Assembly, R.H. (Items 7-12, 14, 15, And 17-20)
D.	GA13477	-	Wheel Mount Assembly, L.H. (Shown) (Items 7-12, 14, 15, And 17-20)

\* 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 (Third And Fourth Stages)

(FWD169)



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GA10507	1	Cable, 132 1/2"
2.	GD2721	7	U-Bolt, 2" x 2" x 1/2"-13
	G10228	14	Lock Washer, 1/2"
	G10102	14	Hex Nut, 1/2"-13
3.	GD0453-07	1	Extension Tube, 45"
4.	GA10375	1	Arm W/Grease Fittings, Third Stage, 148 1/2"
	G10640	-	Grease Fitting, 1/4"-28
5.	GA10426	-	Arm, Fourth Stage, 130", 36 Row 30"
6.	G11034	2	Hex Head Cap Screw, 1/2"-13 x 7"
	G10111	2	Lock Nut, 1/2"-13
7.	GD15235	4	Washer, 2 1/4" O.D. x 1/2" I.D. x 1/4"

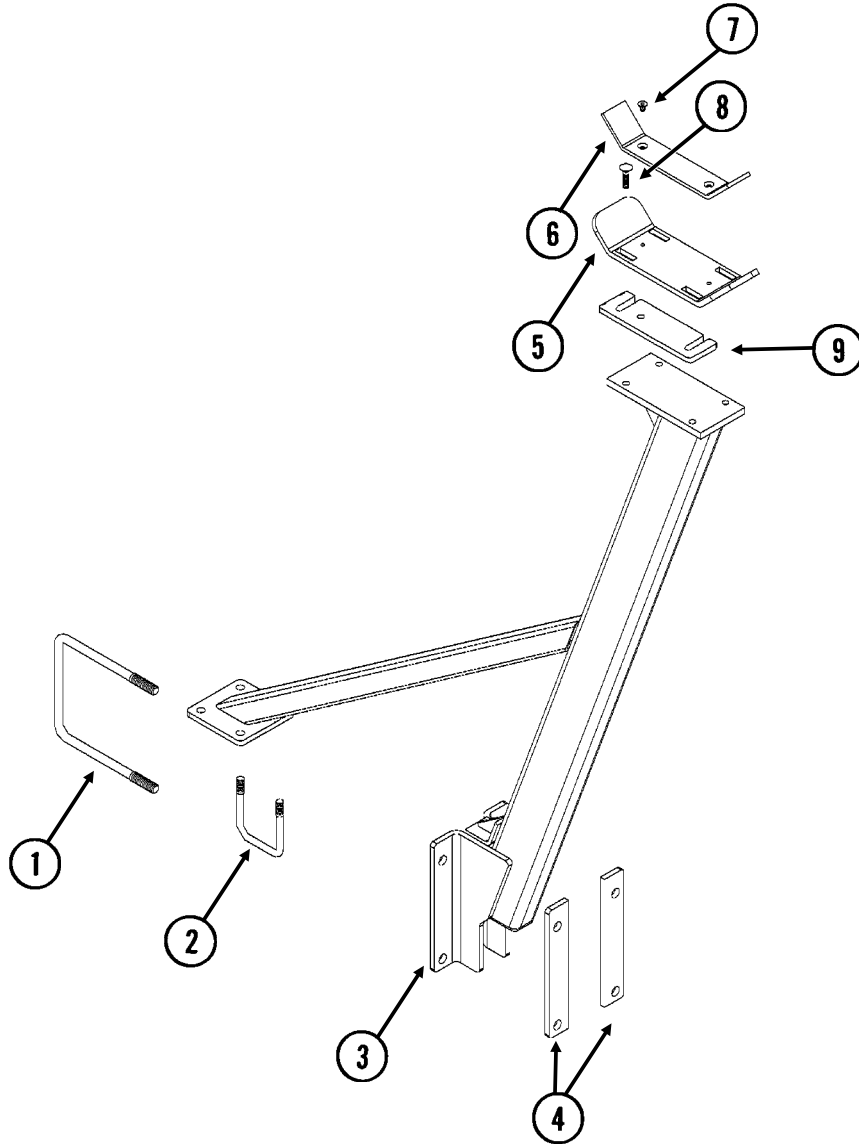


# ROW MARKER ASSEMBLY (Third And Fourth Stages)

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
8.	GD12613	4	Spring Bushing, 1 1/2" O.D. x 1 1/4" I.D. x 2"
9.	GD18934	1	Marker Wheel Mount Plate, R.H.
	GD18935		Marker Wheel Mount Plate, L.H.
10.	GD15229	2	Sleeve, 1 1/4" O.D. x 1/2" I.D. x 5 15/16"
11.	G10036	1	Hex Head Cap Screw, 5/8"-11 x 4"
	G10107	1	Lock Nut, 5/8"-11
	GD3180-36	1	Sleeve, 7/8" O.D. x 5/8" I.D. x 2"
12.	G10013	1	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10107	1	Lock Nut, 5/8"-11
	GD3180-35	1	Sleeve, 7/8" O.D. x 5/8" I.D. x 1 1/2"
13.	GA10382	1	Swing Link
14.	GD15290	6	Spring Bushing, 1 1/2" Long
15.	GD15231	1	Pin, 1 1/4" x 14 7/8"
16.	G10159	2	Machine Bushing, 1 1/4", 10 Gauge
17.	G10460	4	Cotter Pin, 1/4" x 2"
18.	G10233	2	Machine Bushing, 1", 10 Gauge
19.	G10722	4	Hex Head Cap Screw, 1/2"-20 x 1"
	G10228	4	Lock Washer, 1/2"
20.	GA13476	1	Gauge Wheel Mount
21.	GD0840	1	Dust Cap
22.	G10544	1	Cotter Pin, 5/32" x 1"
23.	G10724	1	Washer, 5/8" SAE
24.	GA0167	1	Hub W/Cups, 4 Bolt
	GR0151	-	Outer Cup
	GR0150	-	Inner Cup
25.	GA0245	1	Bearing
26.	GA0899	1	Rubber Seal
27.	G10725	1	Slotted Hex Nut, 5/8"-18
28.	GA0257	1	Bearing
29.	GA0243	1	Grease Seal
30.	GD15489	1	Tire, 20.5" x 8.0-10 (Specify Brand*)
31.	GA10457	1	Rim, 6" x 10"
32.	GA10458	-	Valve Stem
33.	GD15232	1	Pin, 1" x 12 3/4"
34.	G10644	4	Hex Head Cap Screw, 7/16"-14 x 1 1/2"
	G10199	4	Washer, 7/16" SAE
	G10113	4	Lock Nut, 7/16"-14
35.	GD15649	2	Wear Pad
36.	GA10496	1	Support
37.	G10640	1	Grease Fitting, 1/4"-28
38.	G10033	2	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	GD18939	2	Marker Wheel Washer
	G10111	2	Lock Nut, 1/2"-13
39.	GD18904	1	Plate Mount
40.	GD18905	1	Pad Mount
41.	GA9145	1	Molded Stop, 6 1/4" Long
42.	G10062	4	Hex Head Cap Screw, 3/8"-16 x 3"
	G10101	4	Hex Nut, 3/8"-16
	G10299	4	Washer, 3/8"
43.	G10644	2	Hex Head Cap Screw, 7/16"-14 x 1 1/2"
	G10113	2	Lock Nut, 7/16"-14
	G10199	2	Washer, 7/16" SAE
A.	GA10409	-	Tire And Rim Assembly (Items 30-32)

# ROW MARKER STAND

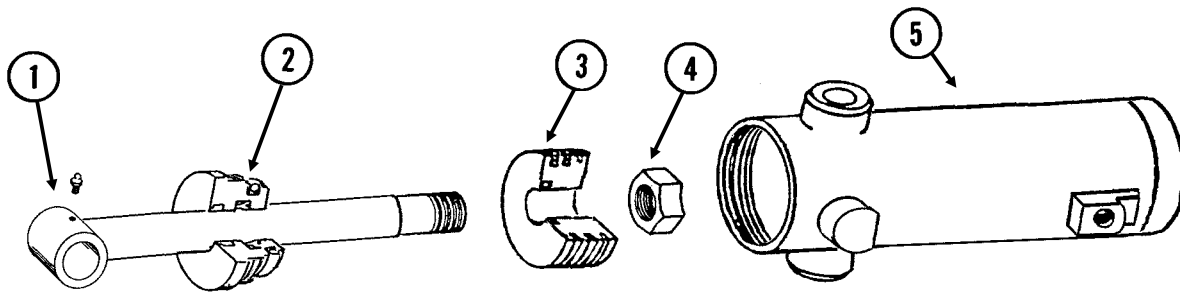
(FWD18a)



ITEM	PART NO.	QTY. (Per Assy.)	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.	GD4743	2	U-Bolt, 3" x 3" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
3.	GA10468	1	Stand
4.	GD15545	2	Bar, 1 3/4" x 10"
5.	GD15552	1	Plate
6.	GD15560	1	Pad
7.	G11133	2	Hex Socket Head Cap Screw, 15/16"-18 x 3/4", Grade 8
8.	G11134	4	Carriage Bolt, 3/8"-16 x 1 3/4"
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
9.	GD15784	-	Shim (As Required)

# MASTER CYLINDER

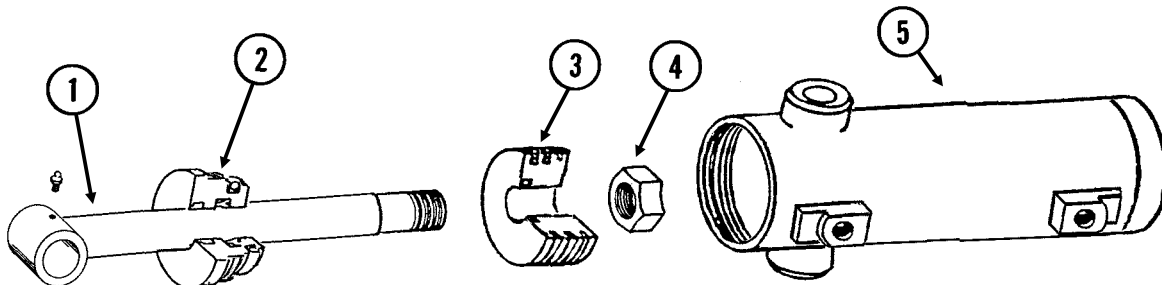
(CYL58)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11370	1	Rod Assembly W/Grease Fitting
	G10640	-	Grease Fitting, 1/4"-28
2.	GD12522	1	Gland
3.	GA11374	1	Piston W/Rephasing Valve
	GR1169	-	Rephasing Valve Replacement Kit (Includes: Set Screw, Guide, 2 Springs And Ball)
4.	G10958	1	Lock Nut, 1"-14
5.	A11368	1	Barrel <b>(Non-Stock Item)</b>
A.	GA11367	-	Cylinder Complete, 4 1/2" x 8" <i>(Part Number Stamped On Barrel)</i>
B.	GR1757	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Wiper, (1) BU Ring, (1) Wear Ring, (1) T-Seal

# SLAVE/LIFT ASSIST CYLINDERS

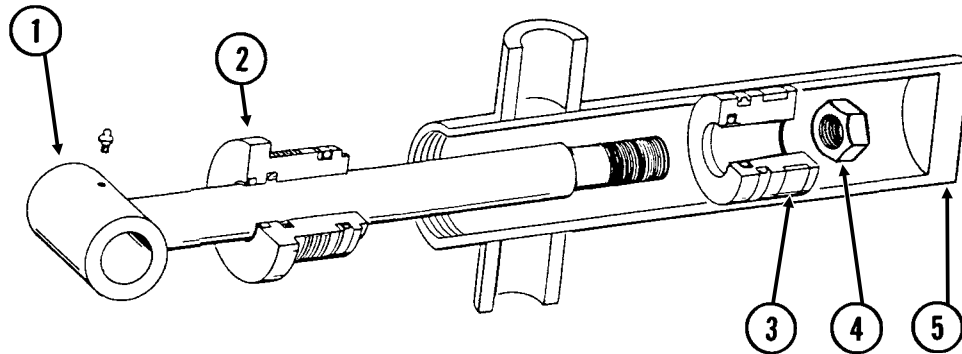
(CYL59)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA10363	1	Rod Assembly W/Grease Fitting
	G10640	-	Grease Fitting, 1/4"-28
2.	GD14902	1	Gland
3.	GD14901	1	Piston
4.	G10958	1	Lock Nut, 1"-14
5.	A10365	1	Barrel <b>(Non-Stock Item)</b>
A.	GA10366	-	Cylinder Complete, 3 3/4" x 8" <i>(Part Number Stamped On Barrel)</i>
B.	GR1689	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Wiper, (1) Seal, (2) Cast Iron Rings, (1) BU Ring, (1) Expander

# SLAVE/LIFT ASSIST CYLINDERS

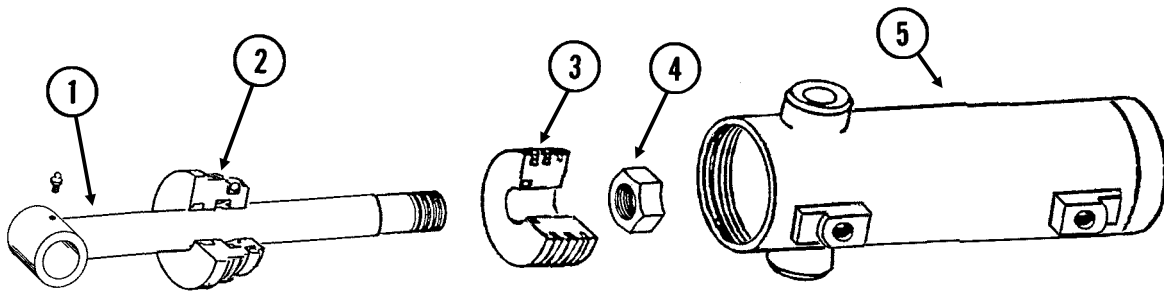
CYL026(CYL4d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8831	1	Rod Assembly W/Grease Fitting
	G10640	-	Grease Fitting, 1/4"-28
2.	GD11985	1	Gland
3.	GD11986	1	Piston
4.	G10969	1	Lock Nut, 7/8"-14
5.	A8827	1	Barrel <b>(Non-Stock Item)</b>
A.	GA8828	-	Cylinder Complete, 2 1/2" x 8" <i>(Part Number Stamped On Barrel)</i>
B.	GR1522	-	Seal Kit, Includes: (1) T-Seal, (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper

# SLAVE CYLINDER

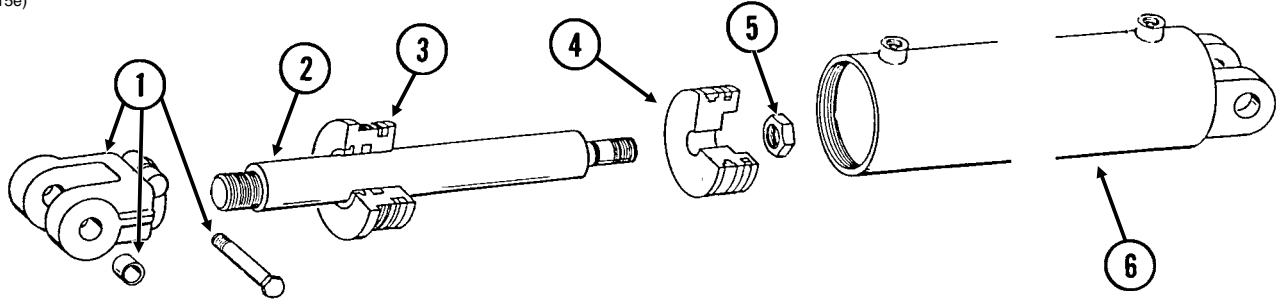
(CYL59)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA10359	1	Rod Assembly W/Grease Fitting
	G10640	-	Grease Fitting, 1/4"-28
2.	GD14898	1	Gland
3.	GD14897	1	Piston
4.	G10958	1	Lock Nut, 1"-14
5.	A11372	1	Barrel <b>(Non-Stock Item)</b>
A.	GA11371	-	Cylinder Complete, 4" x 8" <i>(Part Number Stamped On Barrel)</i>
B.	GR1688	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Wiper, (1) Seal, (2) Cast Iron Rings, (1) BU Ring, (1) Expander

# WING FOLD CYLINDER

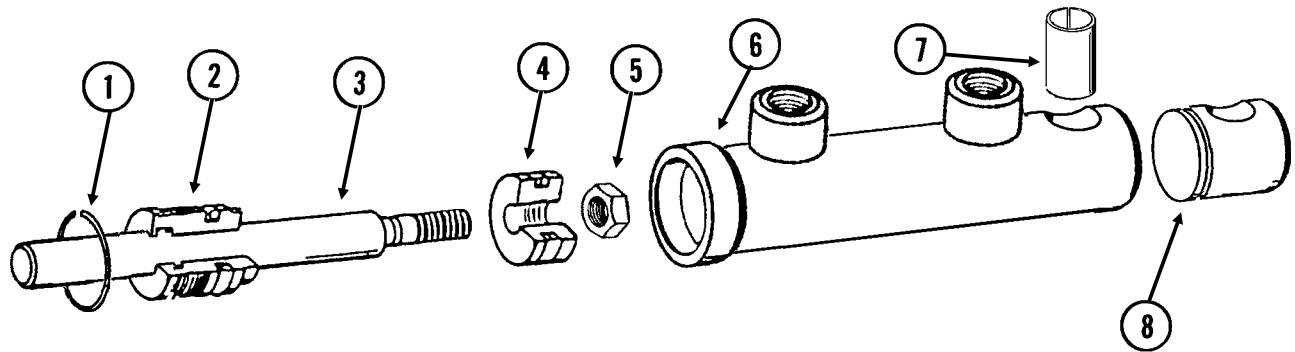
(CYL15e)



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.	GD14908	1	Rod
3.	GD12522	1	Gland
4.	GD14910	1	Piston
5.	G10972	1	Lock Nut, 1 1/4"-12
6.	A10372	1	Barrel <b>(Non-Stock Item)</b>
A.	GA10373	-	Cylinder Complete, 4 1/2" x 30" <i>(Part Number Stamped On Barrel)</i>
B.	GR1691	-	Seal Kit (For Cylinder And Counter Balance Valve), Includes: (1) Wiper, (1) U-Cup, (3) O-Rings, (1) BU Ring, (1) T-Seal, (1) Wear Ring

# TONGUE LATCH AND SLIDE LATCH CYLINDER

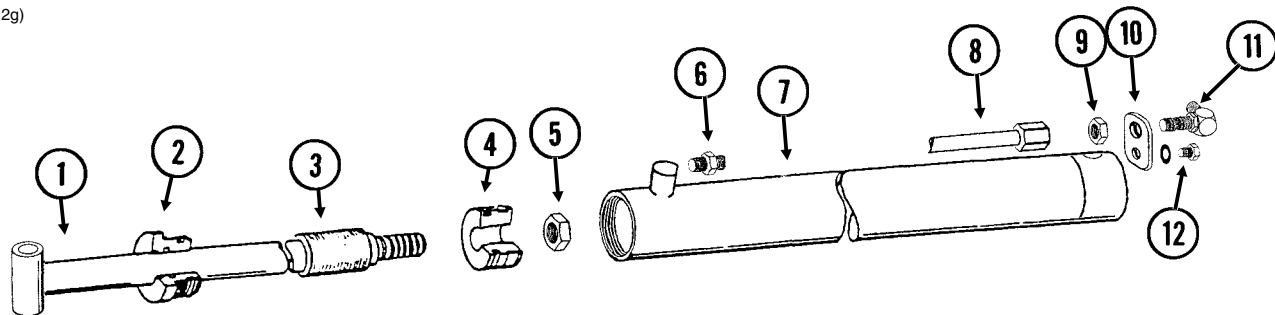
CYL035(CYL9d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10770	1	Internal Retaining Ring, 1 11/16"
2.	GD13170	1	Gland
3.	GD13171	1	Rod
4.	GD13172	1	Piston
5.	G11016	1	Lock Nut, 1/2"-20
6.	D13169	1	Barrel <b>(Non-Stock Item)</b>
7.	GD13400	1	Tension Bushing, 1" x 2" Long
8.	GD13173	1	End Cap
A.	GA9205	-	Cylinder Complete, 1 1/2" x 2 1/2" <i>(Part Number Stamped On Barrel)</i>
B.	GR1598	-	Seal Kit, Includes: (3) O-Rings, (2) BU Rings, (1) Wiper, (1) T-Seal, (1) Bronze Bushing, (1) U-Cup

# AXLE SLIDE CYLINDER

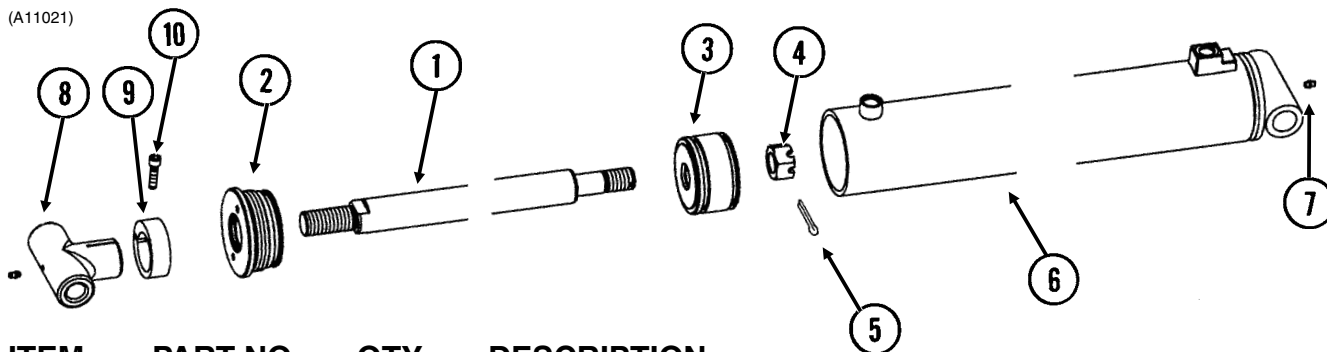
(CYL12g)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA10243	1	Rod Assembly
2.	GD12670	1	Gland
3.	GD14915	1	Sleeve, 6 1/2"
4.	GD12672	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.	GA10245	1	Barrel
8.	GA10242	1	Steel Hydraulic Line, 66 7/16"
9.	G306-08	1	Lock Nut, 3/4"-16
10.	GD12597	1	Bracket
11.	G2701-08	1	Bulkhead Elbow, 90°, 3/4"-16 Male JIC
12.	G10328	1	Hex Head Cap Screw, 3/8"-16 x 3/8"
	G10229	1	Lock Washer, 3/8"
A.	GA10246	-	Cylinder Complete, 4" x 60" (Part Number Stamped On Barrel)
B.	GR1552	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) Wear Ring, (1) Wiper, (1) U-Cup, (1) T-Seal

# ROW MARKER CYLINDER

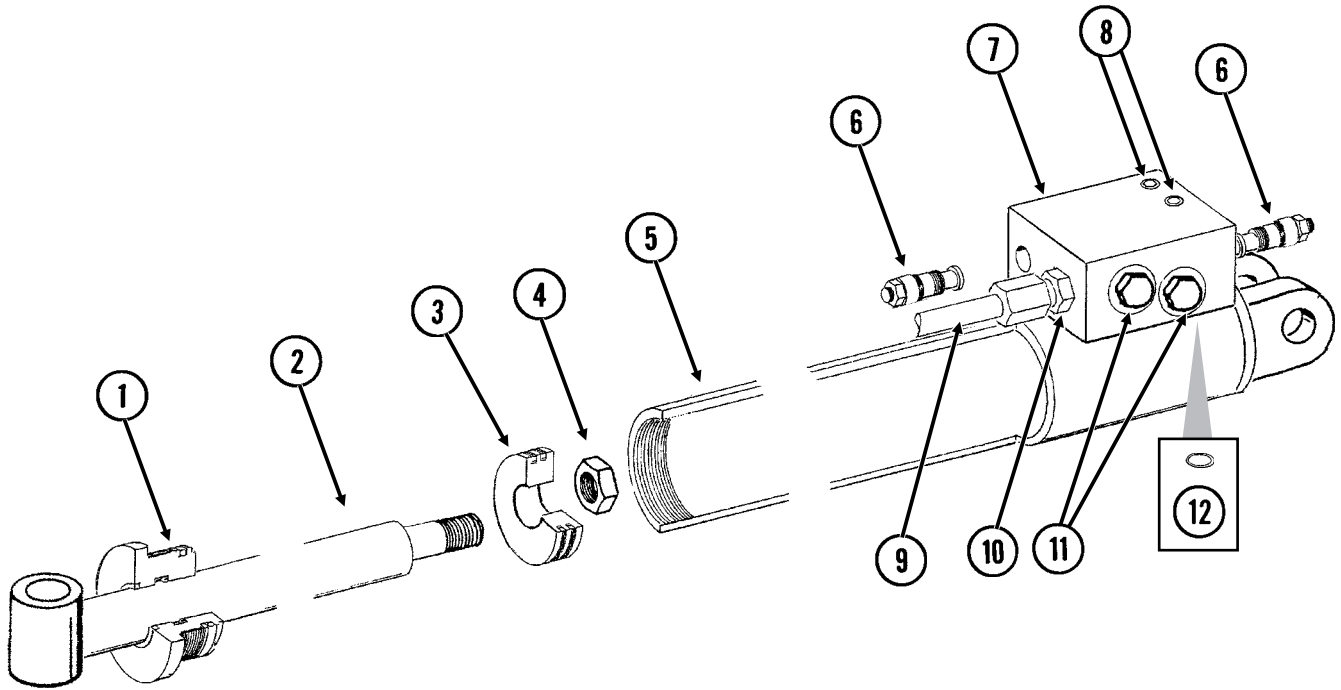
(A11021)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD16147	1	Rod
2.	GD12539	1	Gland
3.	GD14089	1	Piston
4.	G10983	1	Slotted Hex Nut, 1 1/8"-12
5.	G10984	1	Cotter Pin, 3/16" x 2 1/2"
6.	A11020	1	Barrel (Non-Stock Item)
7.	G10640	2	Grease Fitting, 1/4"-28
8.	GD16184	1	Clamp
9.	GD16060	1	Sleeve
10.	G11099	1	Hex Socket Head Cap Screw, 3/8"-16 x 1 1/2", Grade 8
A.	GA11021	-	Cylinder Complete, 4" x 32" (Part Number Stamped On Barrel)
B.	GR1630	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) Wiper, (1) T-Seal, (1) Cast Iron Ring, (1) U-Cup Seal

# TRANSPORT AXLE CYLINDER

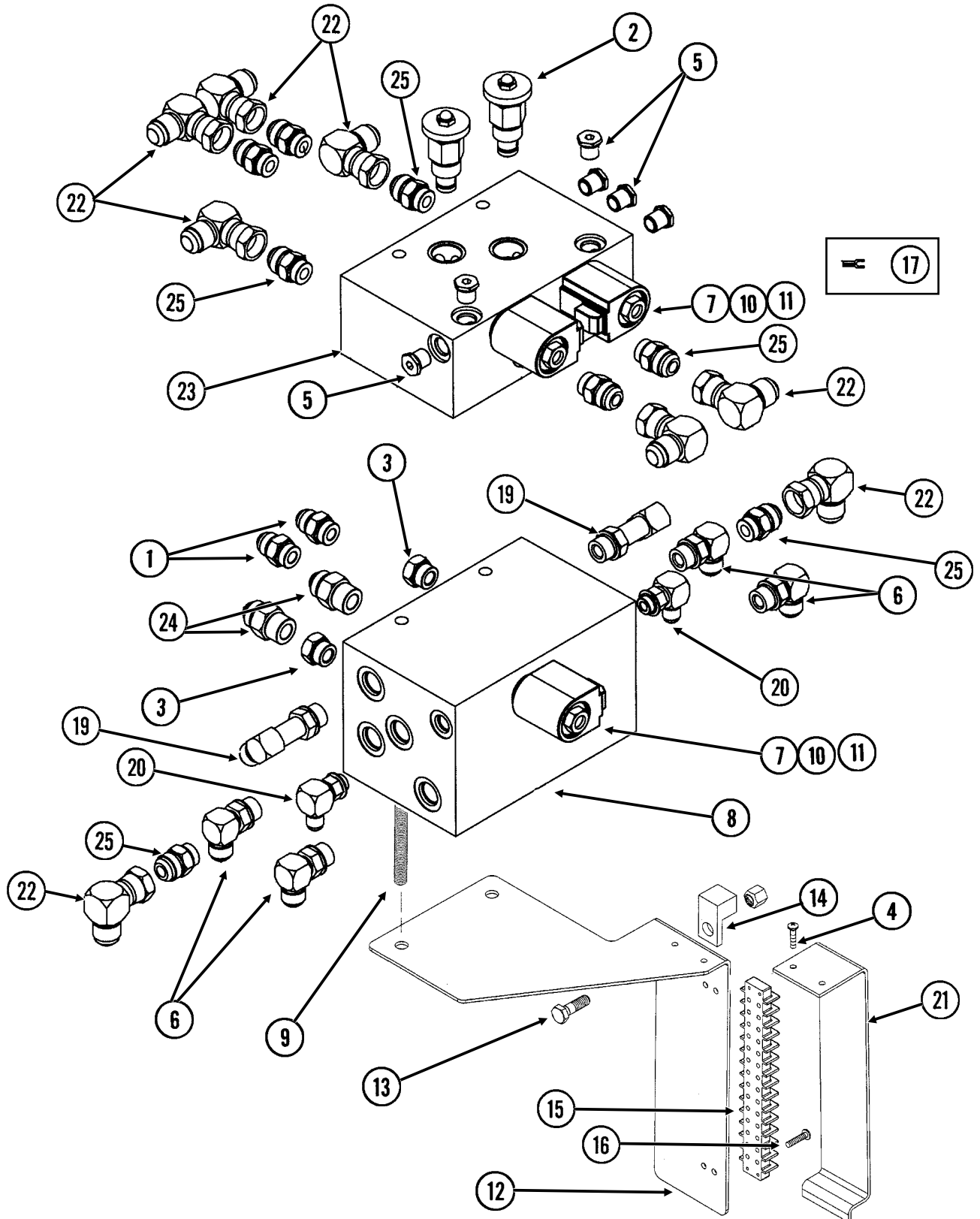
(CYL54d/D12239)



ITEM	PART NO.	QTY.	DESCRIPTION
(Per Cylinder)			
1.	GD12522	1	Gland
2.	GA10253	1	Rod Assembly
3.	GD15774	1	Piston
4.	G10972	1	Lock Nut, 1 1/4"-12
5.	A10255	1	Barrel <b>(Non-Stock Item)</b>
6.	GA10714	2	Counter Balance Valve
7.	GD15623	1	Block
8.	G10932	2	Hex Socket Head Cap Screw, 15/16"-18 x 2", Grade 8
9.	GA10623	1	Steel Hydraulic Line, 23 1/4"
10.	G6400-08	2	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
11.	G6408-08	-	Plug W/O-Ring, 3/4"-16 O-Ring
	GR1037	-	O-Ring
12.	GD12239	1	O-Ring, No. 016
A.	GA10256	-	Cylinder Complete, 4 1/2" x 28" <i>(Part Number Stamped On Barrel)</i>
B.	GR1691	-	Seal Kit (For Cylinder And Counter Balance Valve), Includes: (1) Wiper, (1) U-Cup, (3) O-Rings, (1) BU Ring, (1) T-Seal, (1) Wear Ring
C.	GR1517	-	Seal Kit For Counter Balance Valve, Includes: (3) O-Rings, (3) BU Rings

# VALVE BLOCKS - LOCATED ON HITCH

(FWD158)



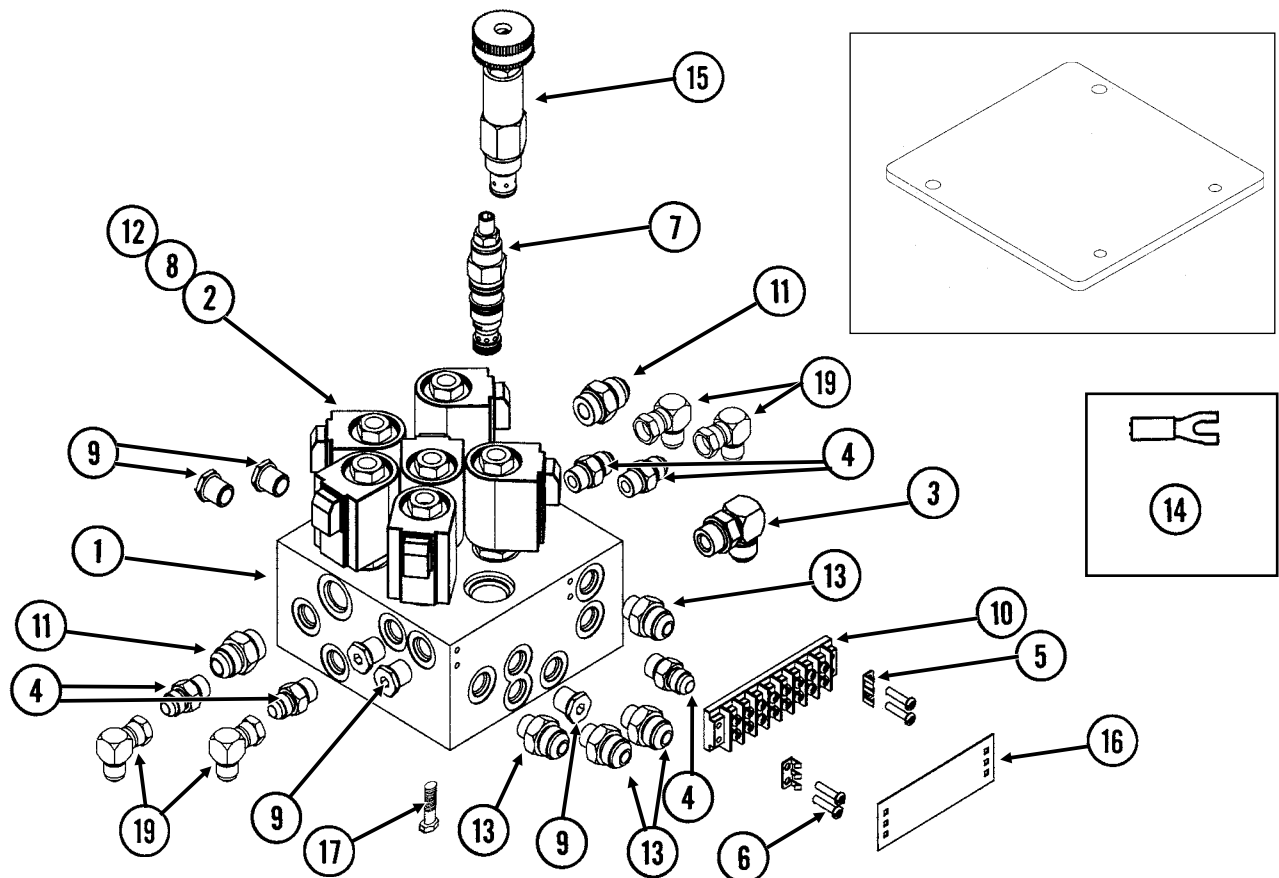


# VALVE BLOCKS - LOCATED ON HITCH

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6400-08	2	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
2.	GA3413	2	Flow Control Valve
	GR0764	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring
3.	G6408-08	2	Plug W/O-Ring, 3/4"-16 O-Ring
	GR1037	-	O-Ring
4.	G11067	2	Phillips Pan Head Machine Screw, No. 8-32 x 3/4", Stainless Steel
	G10928	2	Hex Nut, No. 8-32, Stainless Steel
5.	G6408-H06-0	6	Hex Socket Head Plug W/O-Ring, 9/16"-18 O-Ring
	GR1045	-	O-Ring
6.	G6801-08	4	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
7.	GR0761	3	Special Hex Nut, 1/2"-20
8.	GD18096	1	Block
9.	GD15187-01	2	Threaded Rod, 3/8"-16 x 13"
	G10203	2	Washer, 3/8" SAE
	G10108	2	Lock Nut, 3/8"-16
10.	GR0763	3	Cartridge
11.	GR1445	3	Coil
12.	GD15634	1	Mount
13.	G10002	1	Hex Head Cap Screw, 3/8"-16 x 3/4"
	G10622	1	Serrated Flange Nut, 3/8"-16
14.	GA3584	1	Ground Clamp
15.	GA9097	1	Terminal Strip W/Screws, No. 6, 14 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
16.	G11067	2	Phillips Pan Head Machine Screw, No. 8-32 x 3/4", Stainless Steel
17.	G10996	3	Fork Terminal
18.	G6500-08	4	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
19.	G6400-L-08	2	Long Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
20.	G6801-06	2	ElbowW/O-Ring, 90°, 9/16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
21.	GD16146	1	Cover
22.	G6500-10	4	Swivel Elbow, 90°, 7/8"-14 Male JIC To Female
23.	GD14923	1	Block
24.	G6400-10	2	Connector W/O-Ring, 7/8"-14 Male JIC To O-Ring
	GR1466	-	O-Ring
25.	G6400-10-08	6	Connector W/O-Ring, 7/8"-14 Male JIC To 3/4"-16 O-Ring

# VALVE BLOCK - LOCATED AT CENTER OF REAR H-FRAME

(A13233b/D18706)

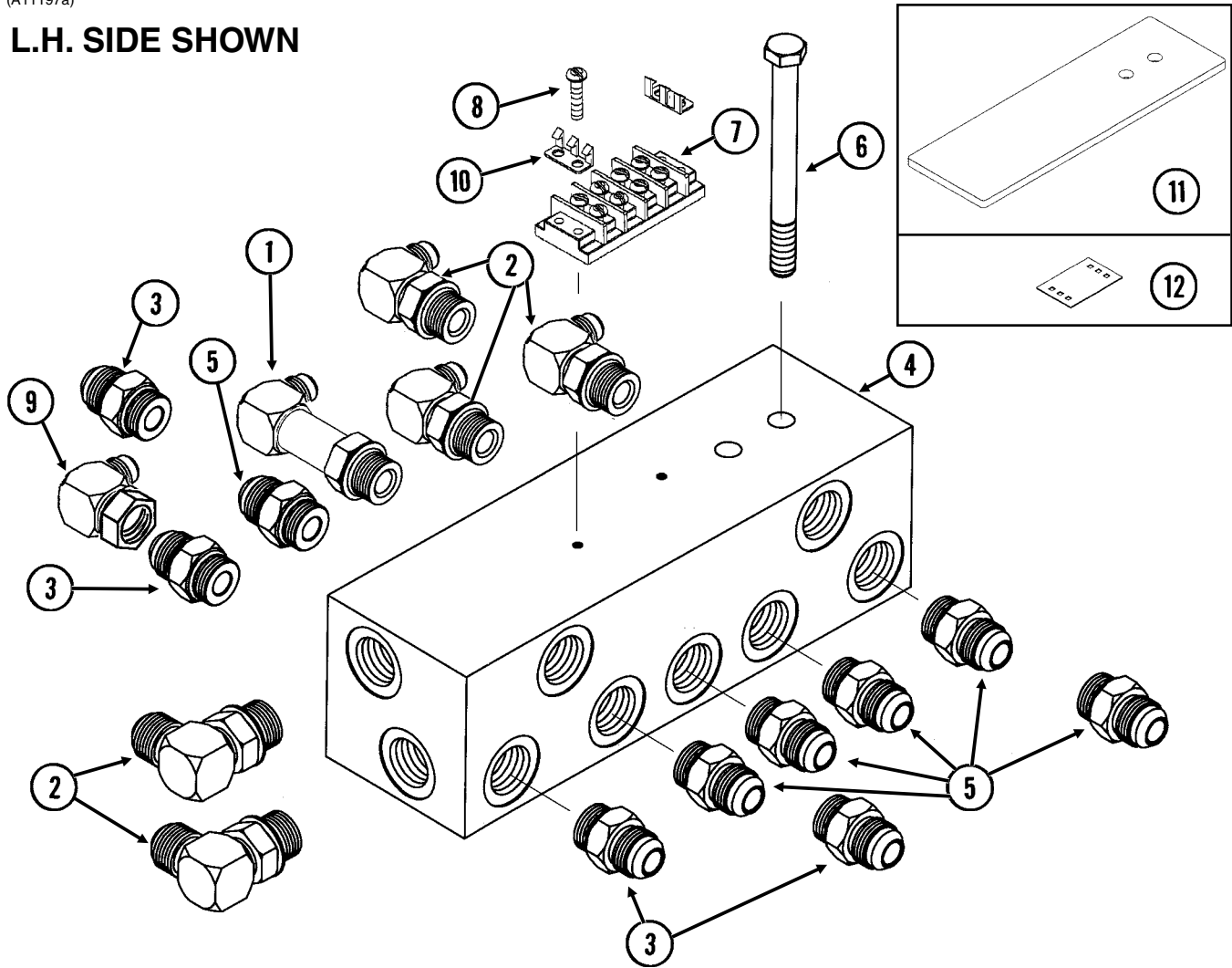


ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD18631	1	Block
2.	GR1445	6	Coil
3.	G6801-08-06	1	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To 1/16"-18 O-Ring
	GR1045	-	O-Ring
4.	G6400-06	5	Connector W/O-Ring, 1/16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
5.	GD18100	2	Clip
6.	G11067	4	Phillips Pan Head Machine Screw, No. 8-32 x 3/4", Stainless Steel
7.	GA10632	1	Counter Balance Valve
8.	GR0761	6	Special Hex Nut, 1/2"-20
9.	G6408-H06-0	5	Hex Socket Head Plug W/O-Ring, 1/16"-18 O-Ring
	GR1045	-	O-Ring
10.	GA9098	1	Terminal Strip W/Screws, No. 6, 8 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
11.	G6400-08	2	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
12.	GR0763	6	Cartridge
13.	G6400-08-06	4	Connector W/O-Ring, 3/4"-16 Male JIC To 1/16"-18 O-Ring
	GR1045	-	O-Ring
14.	G10996	12	Fork Terminal
15.	GA3407	1	Pressure Relief Valve, 1000 PSI
16.	GD18102	1	Cover, 1 3/8" x 4"
17.	G10171	2	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10232	2	Lock Washer, 5/16"
	G10221	2	Washer, 5/16" SAE
18.	GD18706	1	Plate, 5 1/4" x 6 1/4"
19.	G6502-06	4	Swivel Elbow, 45°, 1/16"-18 Male JIC To Female
A.	GR1517	-	Seal Kit For Counter Balance Valve, Includes: (3) O-Rings, (3) BU Rings

# JUNCTION BLOCK - LOCATED ON EACH WING

(A11197a)

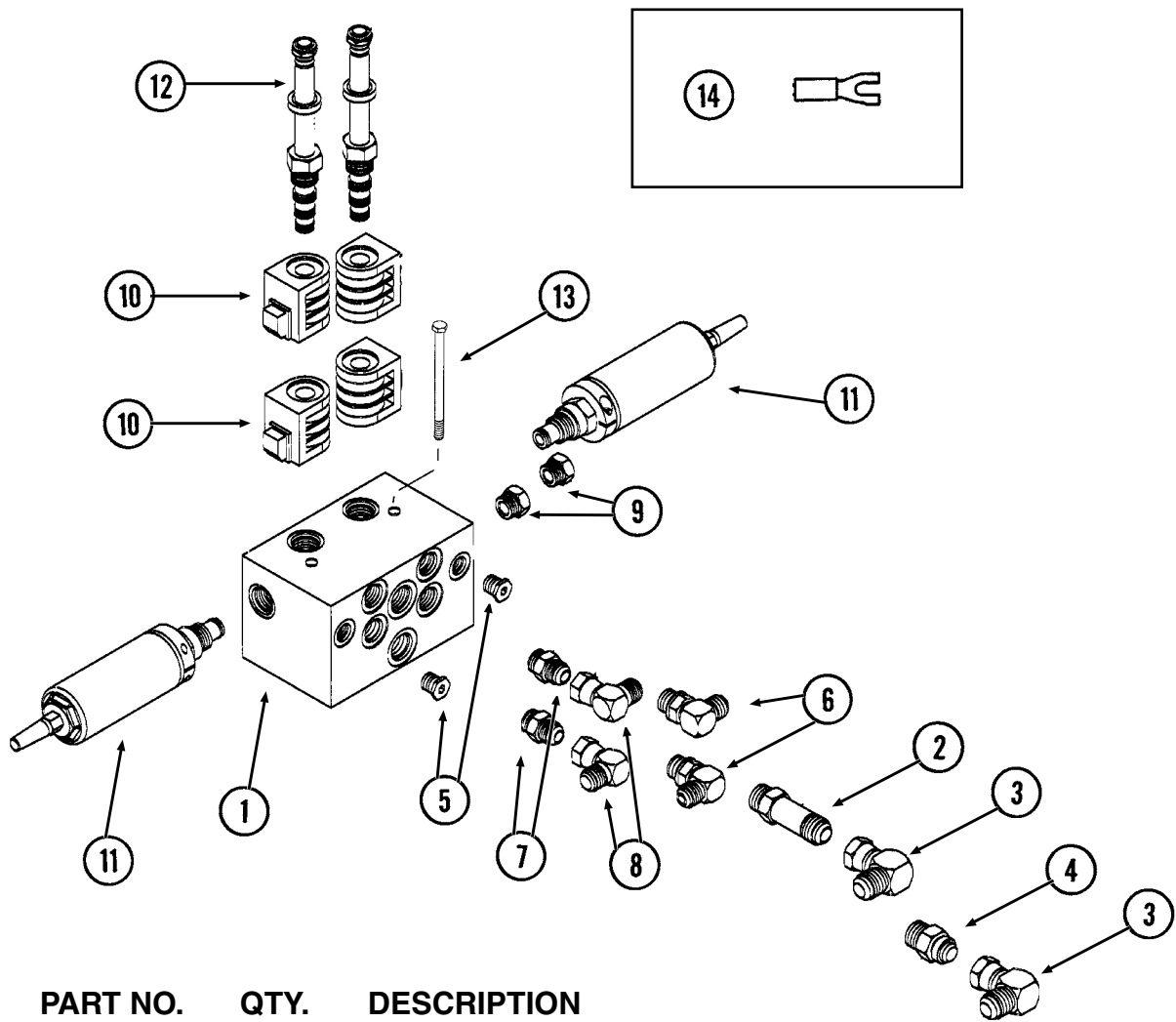
L.H. SIDE SHOWN



ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	G6801-LL-08 GR1037	1 -	X-Long Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring O-Ring
2.	G6801-08 GR1037	5 -	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring O-Ring
3.	G6400-10-08 GR1037	4 -	Connector W/O-Ring, 7/8"-14 Male JIC To 3/4"-16 O-Ring O-Ring
4.	GD14925	1	Block
5.	G6400-08 GR1037	6 -	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring O-Ring
6.	G10063 G10203 G10108	2 2 2	Hex Head Cap Screw, 3/8"-16 x 4" Washer, 3/8" SAE Lock Nut, 3/8"-16
7.	GA9510 GR1635	1 -	Terminal Strip W/Screws, No. 6, 4 Terminal Screw, No. 6-32 x 1/4"
8.	G11067	2	Phillips Pan Head Machine Screw, No. 8-32 x 3/4", Stainless Steel
9.	G6500-10	1	Swivel Elbow, 90°, 7/8"-14 Male JIC To Female
10.	GD18100	2	Clip
11.	GD18099	1	Spacer Plate
12.	GD18101	1	Cover

# SDS MANIFOLD BLOCK

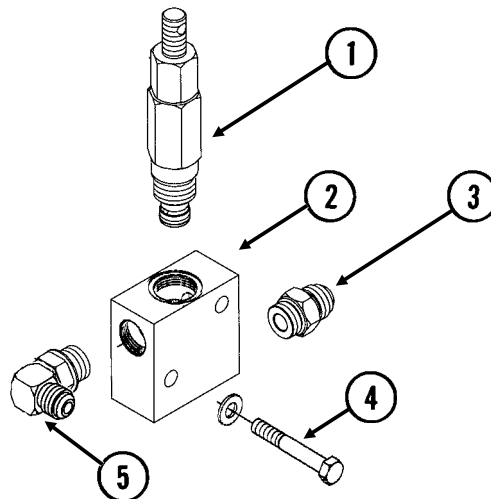
(FWD96/A9481)



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.	G11203	2	Hex Head Cap Screw, 1/4"-20 x 4 1/2"
	G10227	2	Lock Washer, 1/4"
14.	G10996	-	Fork Terminal
A.	GR1756	-	Seal Kit For Coil, Includes: (6) BU Rings, (4) O-Rings

# VALVE BLOCK - LOCATED AT EACH ROW MARKER ON OUTER WING

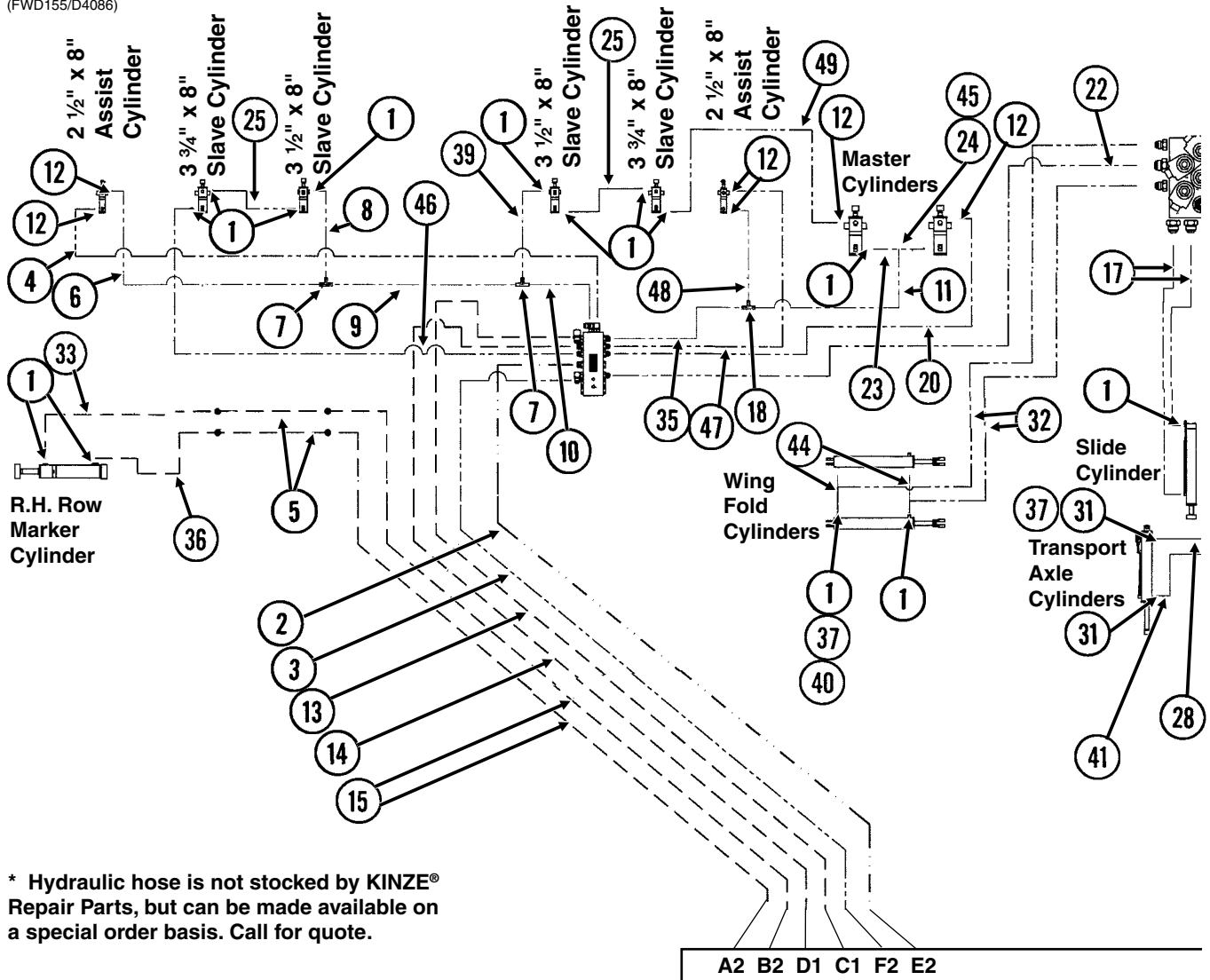
(FWD26a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA3407 GR1515	-	Pressure Relief Valve, 1000 PSI Seal Kit, Includes: (2) O-Rings, (1) BU Ring
2.	GD14528	1	Valve Block
3.	G6400-08 GR1037	1 -	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring O-Ring
4.	G10069 G10221 G10109	2 2 2	Hex Head Cap Screw, 5/16"-18 x 2 1/4" Washer, 5/16" SAE Lock Nut, 5/16"-18, Grade 8
5.	G6801-08 GR1037	1 -	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring O-Ring

# HYDRAULIC HOSES AND FITTINGS

(FWD155/D4086)

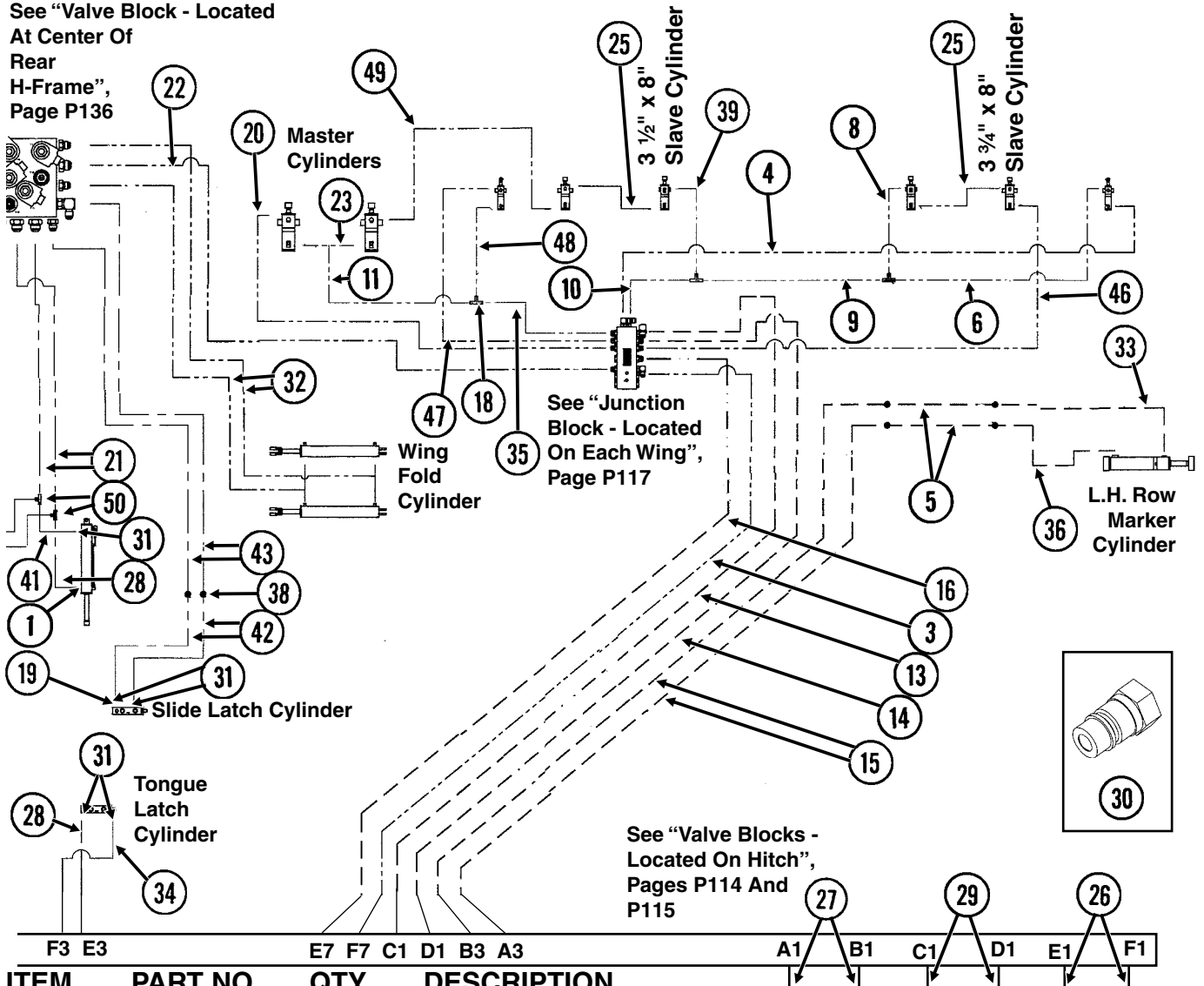


\* Hydraulic hose is not stocked by KINZE® Repair Parts, but can be made available on a special order basis. Call for quote.

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G6801-08 GR1037	29 -	Elbow W/O-Ring, 90°, 3/4"-16 Male JIC To O-Ring O-Ring
2.	*A11438	1	Hose Assembly, 3/8" x 410"
3.	*A12064	2	Hose Assembly, 3/8" x 410"
4.	*A12067	2	Hose Assembly, 3/8" x 237"
5.	*A8225	4	Hose Assembly, 1/2" x 209"
6.	*A1039	2	Hose Assembly, 3/8" x 76"
7.	G2603-08	4	Tee, 3/4"-16 Male JIC
8.	*A1082	2	Hose Assembly, 3/8" x 19"
9.	*A3199	2	Hose Assembly, 3/8" x 132"
10.	*A1018	2	Hose Assembly, 3/8" x 40"
11.	*A8226	2	Hose Assembly, 1/2" x 208"
12.	G6400-08 GR1037	12 -	Connector W/O-Ring, 3/4"-16 Male JIC To O-Ring O-Ring
13.	*A12724	2	Hose Assembly, 1/2" x 410"
14.	*A12725	2	Hose Assembly, 1/2" x 410"
15.	*A8260	4	Hose Assembly, 1/2" x 424"
16.	*A12723	1	Hose Assembly, 1/2" x 410"
17.	*A3225	2	Hose Assembly, 3/8" x 56"
18.	G2603-10	2	Tee, 7/8"-14 Male JIC
19.	6502-06	1	Swivel Elbow, 45°, 9/16"-18 Male JIC To Female
20.	*A1031	2	Hose Assembly, 3/8" x 234"
21.	*A3259	2	Hose Assembly, 3/8" x 122"
22.	*A1033	2	Hose Assembly, 3/8" x 250"
23.	*A3158	2	Hose Assembly, 3/8" x 46"
24.	G6803-08 GR1037	2 -	Tee, 3/4"-16 Male NPT To O-Ring O-Ring
25.	*A1055	4	Hose Assembly, 3/8" x 66"

# HYDRAULIC HOSES AND FITTINGS

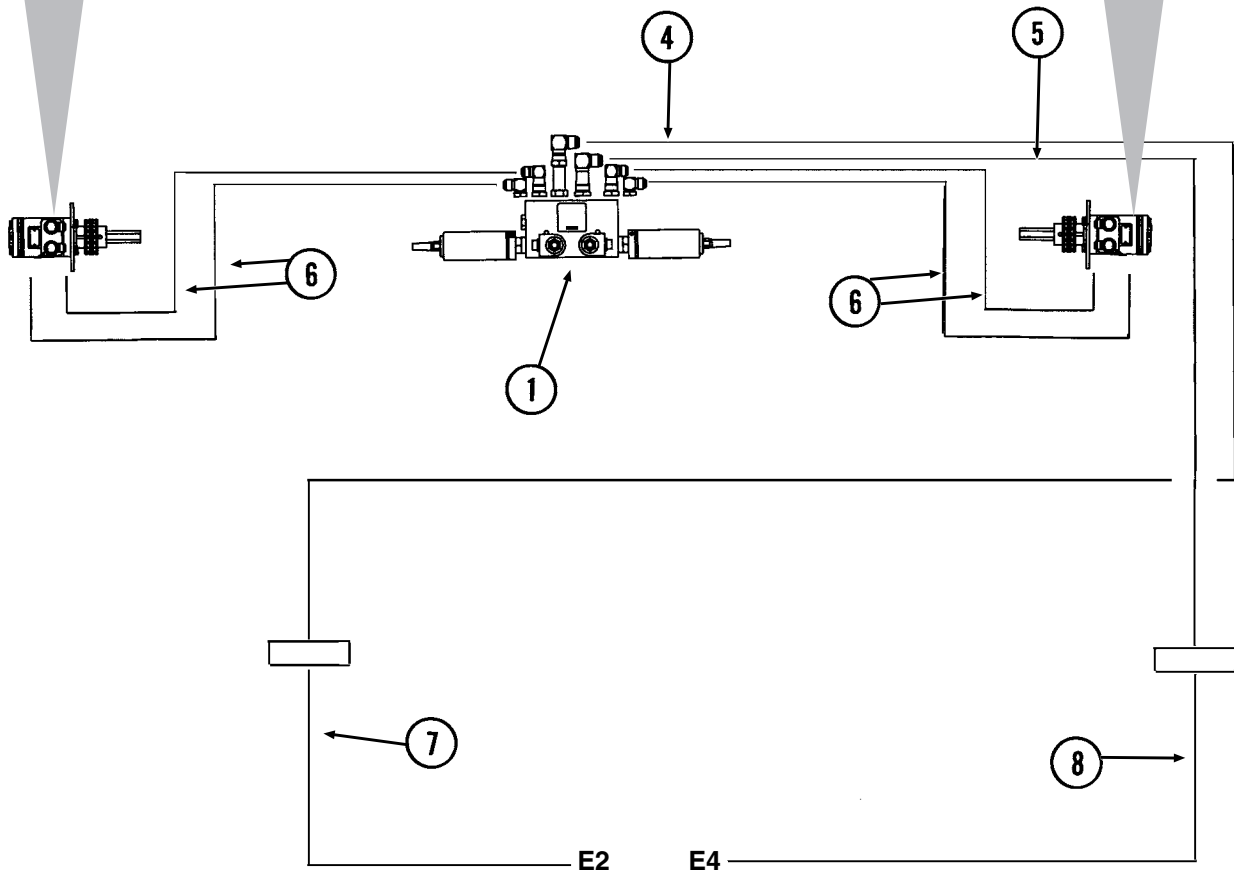
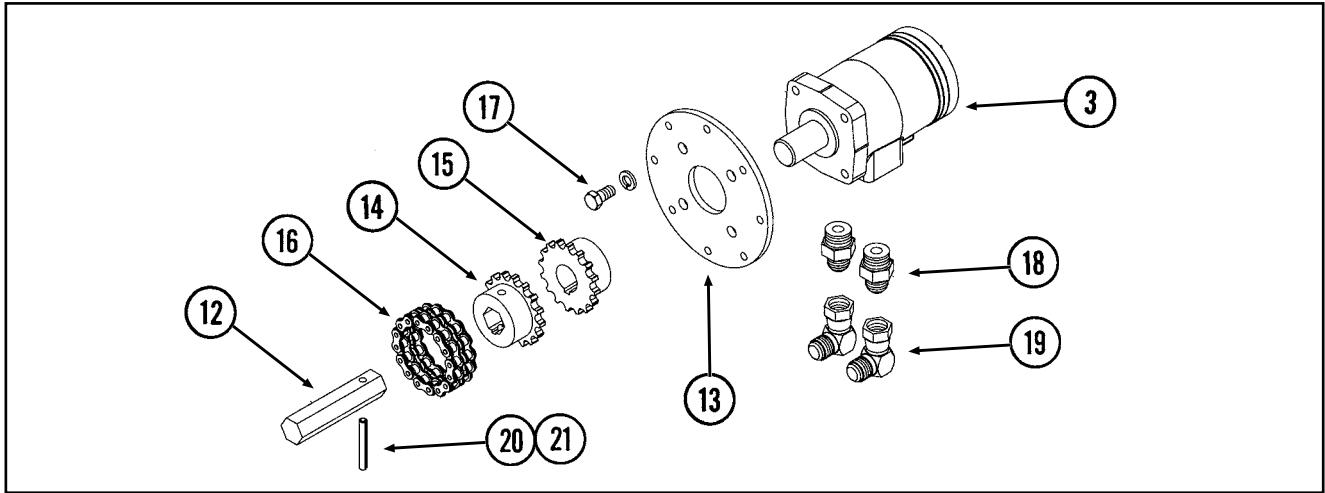
See "Valve Block - Located At Center Of Rear H-Frame", Page P136



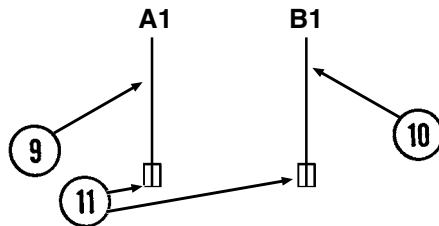
ITEM	PART NO.	QTY.	DESCRIPTION
26.	*A3236	2	Hose Assembly, 3/8" x 72"
27.	*A8230	2	Hose Assembly, 1/2" x 84"
28.	*A1192	3	Hose Assembly, 1/4" x 20"
29.	*A8231	2	Hose Assembly, 1/2" x 72"
30.	GD4086	6	ISO Coupler
31.	G6400-06-08 GR1037	7 -	Connector W/O-Ring, 9/16"-18 Male JIC To 3/4"-16 O-Ring O-Ring
32.	*A12053	4	Hose Assembly, 3/8" x 46"
33.	*A12729	2	Hose Assembly, 1/2" x 82"
34.	*A7613	1	Hose Assembly, 1/4" x 44"
35.	*A8229	2	Hose Assembly, 1/2" x 15"
36.	*A12730	2	Hose Assembly, 1/2" x 52"
37.	G6500-08	4	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
38.	G2700-06-06 G306-06	2 4	Bulkhead Tube Union, 9/16"-18 Male JIC Lock Nut, 9/16"-18
39.	*A1098	2	Hose Assembly, 3/8" x 26"
40.	G6602-08	4	Swivel Tee, 3/4"-16 JIC
41.	*A7614	2	Hose Assembly, 1/4" x 17"
42.	*A1132	2	Hose Assembly, 1/4" x 44"
43.	*A7615	2	Hose Assembly, 1/4" x 122"
44.	*A3153	4	Hose Assembly, 3/8" x 22"
45.	G6502-08	2	Swivel Elbow, 45°, 3/4"-16 Male JIC To Female
46.	*A1057	2	Hose Assembly, 3/8" x 216"
47.	*A1076	2	Hose Assembly, 3/8" x 30"
48.	*A3223	2	Hose Assembly, 3/8" x 24"
49.	*A3228	2	Hose Assembly, 3/8" x 306"
50.	G2704-06	2	Bulkhead Tee, 9/16"-18 JIC
51.	*A12041	1	Hose Assembly, 3/8" x 244"

# SDS HYDRAULIC SYSTEM

(FWD105/FWD101a)



2 Valve Block Located At Front Of Hitch



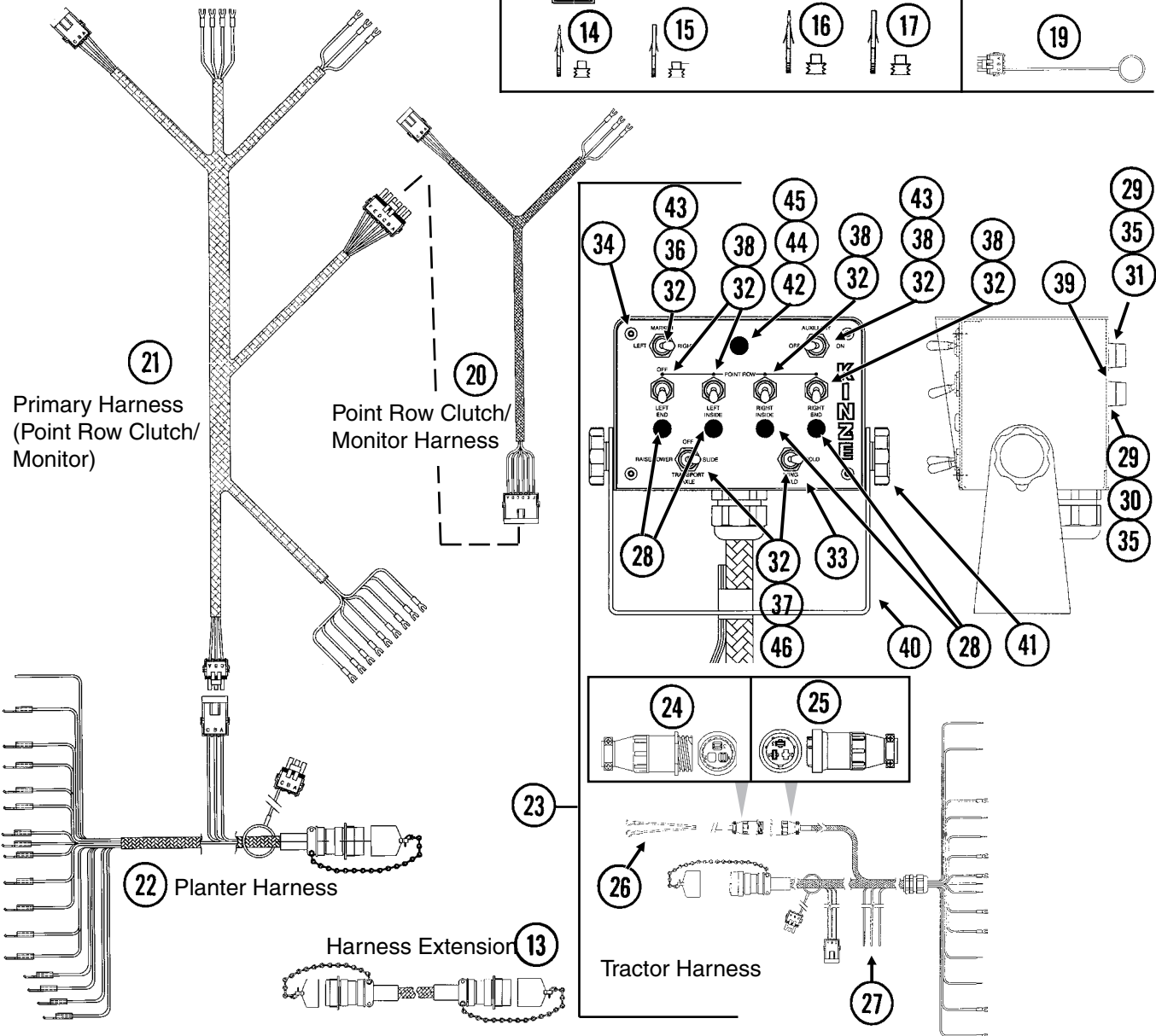
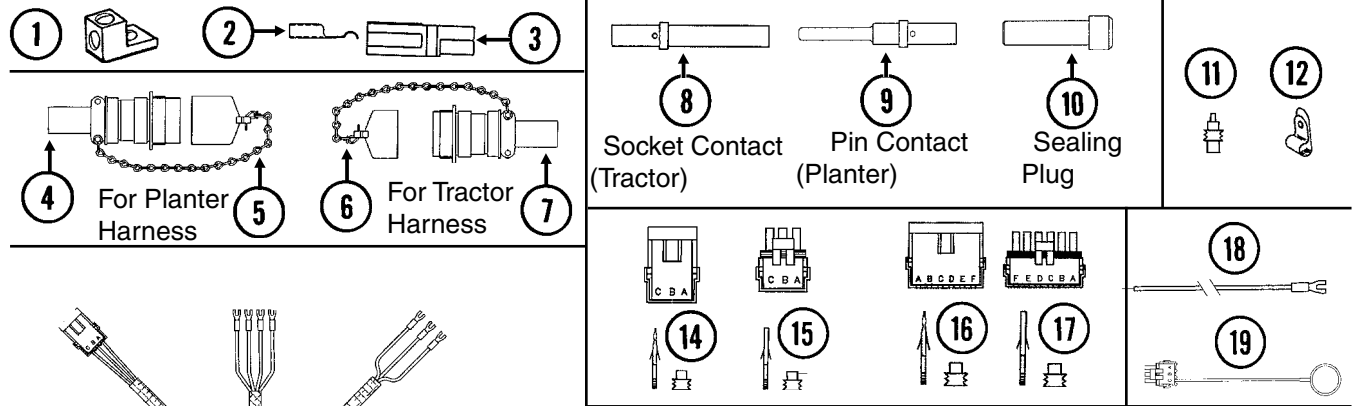


# SDS HYDRAULIC SYSTEM

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See "SDS Manifold Block", Page P118
2.		-	See "Valve Blocks - Located On Hitch (SDS)", Pages P114 And P115
3.	GA11774	2	Hydraulic Motor
4.	*A11425	1	Hose Assembly, 5/8" x 194"
5.	*A12703	1	Hose Assembly, 1/2" x 194"
6.	*A3159	4	Hose Assembly, 3/8" x 97"
7.	*A11434	-	Hose Assembly, 5/8" x 431", 36 Row 30"
8.	*A12710	-	Hose Assembly, 1/2" x 431", 36 Row 30"
9.	*A8231	1	Hose Assembly, 1/2" x 72"
10.	*A11400	1	Hose Assembly, 5/8" x 72"
11.	GD4086	2	ISO Coupler
12.	GD16538	1	Shaft
13.	GD16537	1	Plate
14.	GD16489	1	Coupler, 7/8" Hex
15.	GD16490	1	Coupler, 1" I.D.
16.	G3317-16	1	Chain, Double No. 40, 16 Pitches
	GR1790	-	Connector Link, Double No. 40
17.	G10002	4	Hex Head Cap Screw, 3/8"-16 x 3/4"
	G10229	4	Lock Washer, 3/8"
18.	G6400-08-10	2	Connector W/O-Ring, 3/4"-16 Male JIC To 7/8"-14 O-Ring
	GR1466	-	O-Ring
19.	G6500-08	2	Swivel Elbow, 90°, 3/4"-16 Male JIC To Female
20.	G10606	1	Spring Pin, 1/4" x 2"
21.	GD13524-01	1	Lock Wire, 10", Stainless Steel
A.	GR1911	-	Seal Kit (for Hydraulic Motor), Includes: (1) Exclusion Seal, (1) Back-Up Washer, (1) Pressure Seal, (1) O-Ring, (1) Seal, (1) Seal Washer

# ELECTRICAL COMPONENTS (Planter Control Console)

(TWL19a/TWL18/ELC3a/ELC5c/ELC14/MTR27a/ELC39/TWL26e/MTR27a/MTR45/A9481/ELC8/A10310/A12652/A10308/ELC34/ELC35/FWD30b)



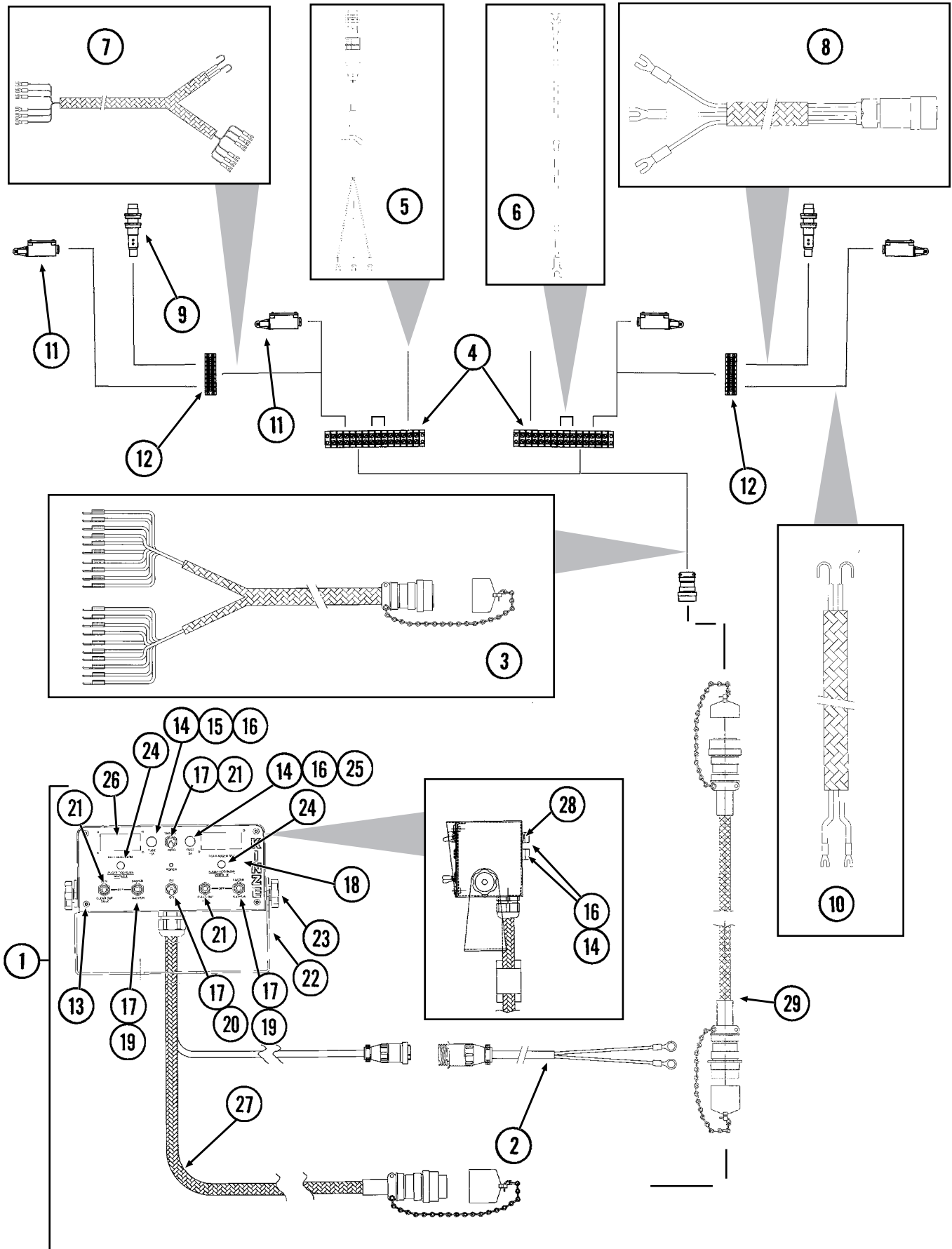
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA3584	-	Ground Clamp
2.	GD9530	-	Contact
3.	GD9529	-	Housing, Black
	GD12726	-	Housing, Red
4.	GA6109	1	Connector W/Cable Clamp, 23 Pin Capacity

# ELECTRICAL COMPONENTS (Planter Control Console)

ITEM	PART NO.	QTY.	DESCRIPTION
5.	GA7862	-	Dust Cap W/Chain
6.	GA7863	-	Dust Cap W/Chain
7.	GA6108	1	Connector W/Cable Clamp, 23 Socket Capacity
8.	GD8740	-	Socket Contact, No. 14
9.	GD8741	-	Pin Contact, No. 14
10.	GD8739	-	Sealing Plug, No. 12
11.	GD11089	-	Sealing Plug
12.	GD6291	-	Insulated Clamp, 3/8"
13.	GA7399	-	Harness Extension W/Dust Caps, 180"
14.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
15.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
16.	G1K396	-	6-Pin Female Connector Kit (Black), Includes: (3) 6-Pin Female Housings, (18) Pin Contacts, (18) Seals
17.	G1K395	-	6-Pin Male Connector Kit (Black), Includes: (3) 6-Pin Male Housings, (18) Socket Contacts, (18) Seals
18.	GA9481	-	Jumper Wire W/Fork Terminal, 13"
	G10996	-	Fork Terminal
19.	GA8047	-	Dust Plug (Black)
20.	GA10329	1	Wiring Harness, 359", 36 Row 30"
21.	GA13198	1	Wiring Harness, 497", 36 Row 30"
22.	GA10308	1	Wiring Harness W/Dust Cap, 96"
23.	G7848X	-	Backlit Control Console Assembly W/Mounting Brackets, Short Harness W/Dust Cap And Power Cable
24.	G1K267	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (3) Male Terminal Pins
25.	G1K268	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (1) Lock Ring, (3) Female Terminal Pins
26.	GA7856	1	Power Lead Adapter
27.	GA10307	1	Wiring Harness W/Dust Cap And Power Cable
28.	GA10194	4	Indicator Light, Red
29.	GA2612	5	Fuse Holder W/Spade, 1 33/50"
30.	GD2829	1	Fuse, 15 Amp, Type AGC
31.	GD10243	4	Fuse, MDL 10 Amp Delay Action
32.	GR1363	8	Hex Face Nut, 15/32"-32
	GR1364	8	Internal Tooth Lock Washer, 15/32"
33.	GA10686	1	Cover Plate
34.	GR1292	4	Hex Socket Button Head Cap Screw, No. 8-32 x 1/2"
35.	GD3860	5	O-Ring (If Applicable)
36.	GA2528	1	Switch, 3 Position Toggle, On-Off-On
37.	GA6978	2	Switch, 3 Position Toggle, Momentary On-Off-Momentary On
38.	GA6977	5	Switch, 2 Position Toggle, On-Off
39.	GA8731	1	Switch, Push Button W/Transformer
40.	GD9896	1	Mounting Bracket
41.	GA6975	2	Knob
	G10211	4	Washer, 1/4" SAE
	GR1290	2	Cage Nut, 1/4"-20
42.	GA10206	1	Indicator Light, Green
43.	GA10682	2	Jumper Wire, 3", Gray
44.	GA10683	1	Jumper Wire, 5", White
45.	GA10684	1	Jumper Wire, 3", Red
46.	GA10685	4	Jumper Wire, 5", White

# ELECTRICAL COMPONENTS (SDS Control Console)

(A11377/A9954/A11502/A11906/FWD102/A11376/A11378/A11348a/A11736)

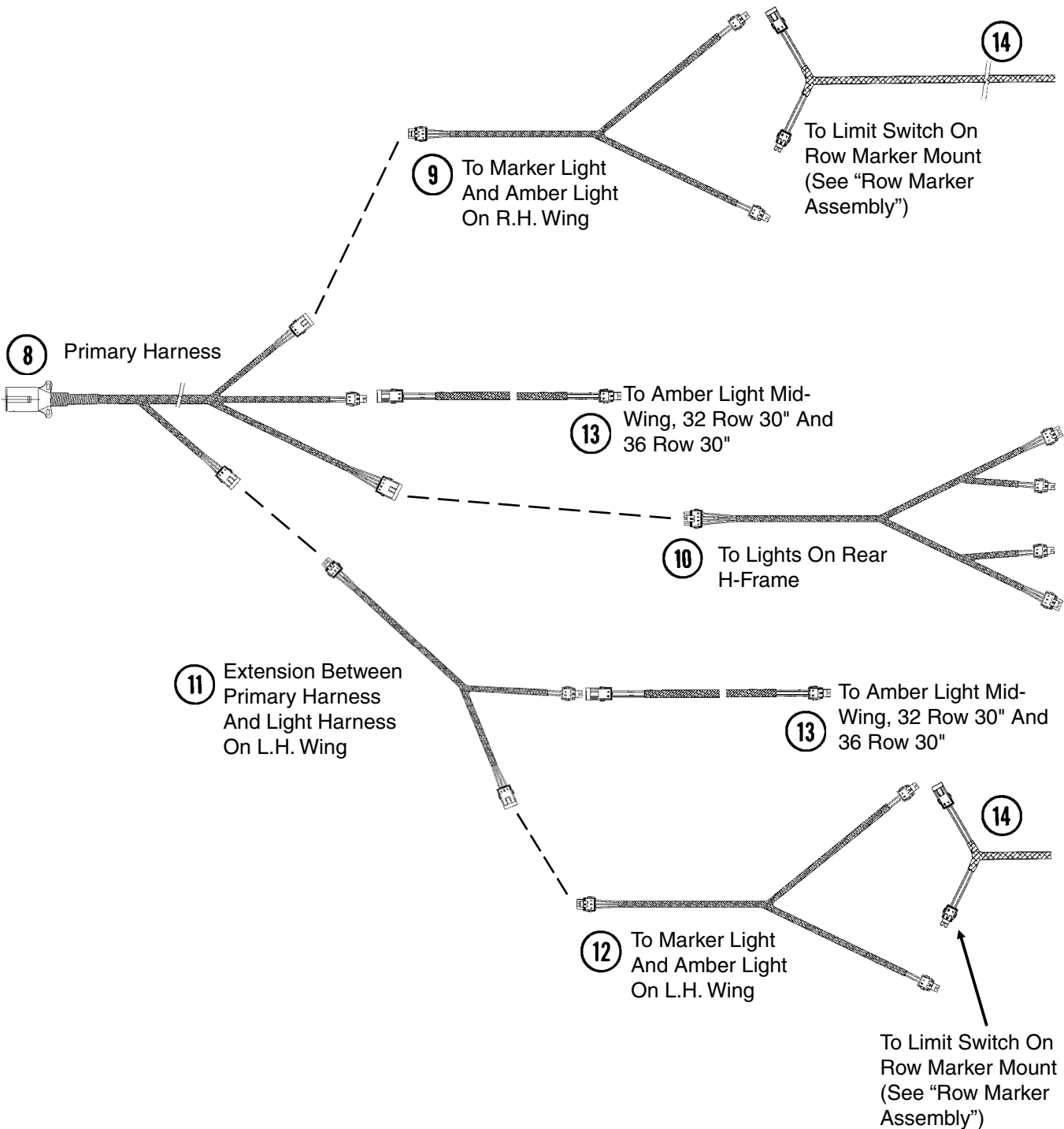
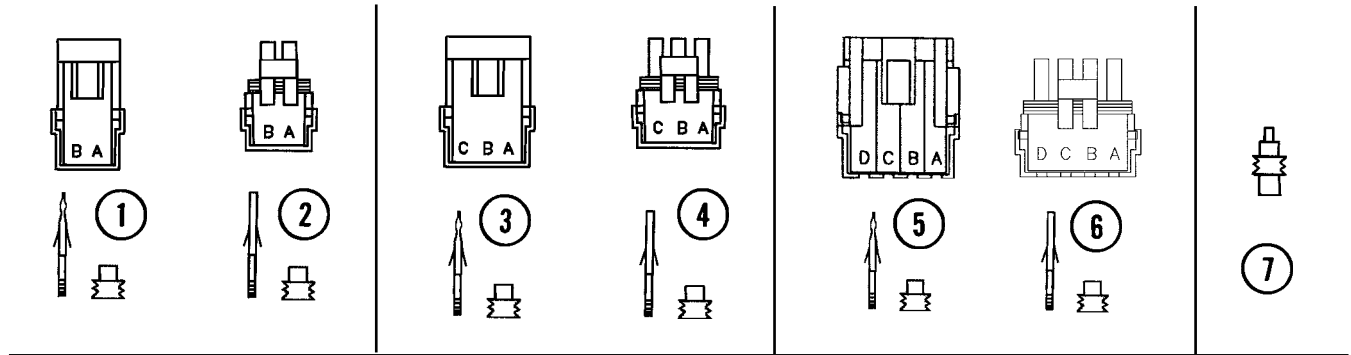


# ELECTRICAL COMPONENTS (SDS Control Console)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11348	1	SDS Control Console Assembly
2.	GA7856	1	Power Lead Adapter
3.	GA11506	-	Wiring Harness, 756", 36 Row 30"
4.	GA9097	2	Terminal Strip W/Screws, No. 6, 14 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
5.	GA9954	2	Speed Sensor Assembly
6.	GA11502	2	Voltage Stabilizer, 8 1/2"
7.	GA11507	-	Wiring Harness, 576", 36 Row 30"
8.	GA11906	2	4-Pin Connector, 48"
9.	GA11387	2	Proximity Sensor
10.	GA11378	2	Wiring Harness, 48"
11.	GA11066	4	Limit Switch
12.	GA9098	2	Terminal Strip W/Screws, No. 6, 8 Terminal
	GR1635	-	Screw, No. 6-32 x 1/4"
13.	GR1292	4	Hex Socket Button Head Cap 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, 2 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.	GA11736	-	Harness Extension W/Dust Caps, 180"

# ELECTRICAL COMPONENTS (Lights)

(MTR27/MTR27a/ELC27b/MTR27a/A10315/A10318/A10317/A10316/A10452/A11042)



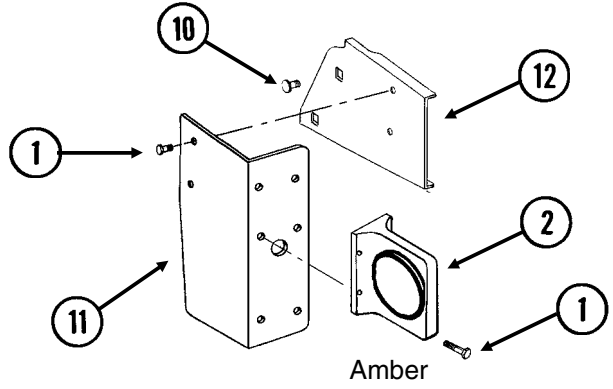
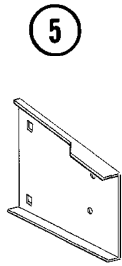
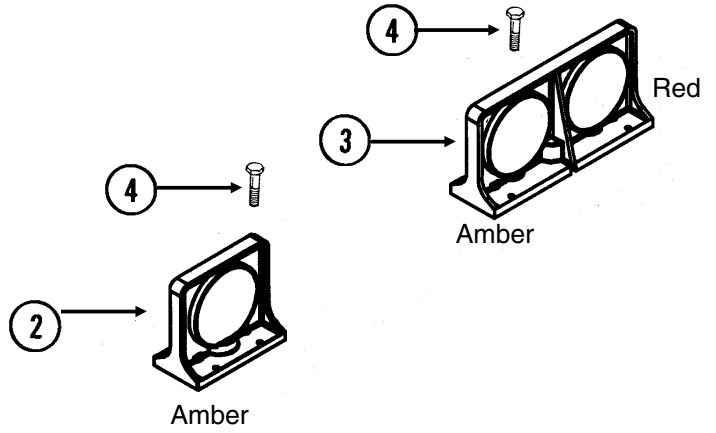
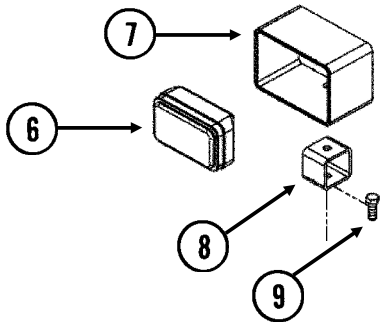
# ELECTRICAL COMPONENTS (Lights)

---

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
2.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
3.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
4.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
5.	GA8328	-	4-Pin Female Connector Kit, Includes: (1) 4-Pin Female Housing, (4) Pin Contacts, (4) Seals
6.	GA8329	-	4-Pin Male Connector Kit, Includes: (1) 4-Pin Male Housing, (4) Socket Contacts, (4) Seals
7.	GD11089	-	Sealing Plug
8.	GA10334	1	Wiring Harness, 543", 36 Row 30"
9.	GA10338	1	Wiring Harness, 276", 36 Row 30"
10.	GA10336	1	Wiring Harness, 258", 36 Row 30"
11.	GA10335	1	Wiring Harness, 359", 36 Row 30"
12.	GA10337	1	Wiring Harness, 276", 36 Row 30"
13.	GA10452	2	Wiring Harness, 63", 36 Row 30"
14.	GA11299	2	Wiring Harness, 63", All Sizes

# LIGHT ASSEMBLIES

(FWD24a/FWD14/RU130b/RU131f)



See "Bulk Seed Hopper Assembly (SDS)", Pages P32 and P33 for Light Brackets for SDS Planters.



# LIGHT ASSEMBLIES

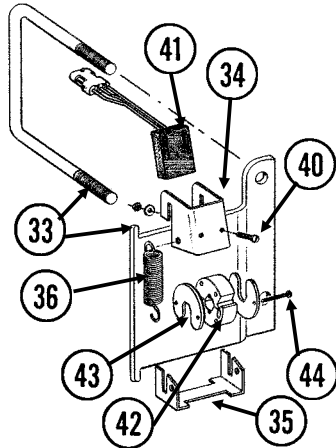
---

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10064	-	Hex Head Cap Screw, 1/4"-20 x 1"
	G10227	-	Lock Washer, 1/4"
	G10103	-	Hex Nut, 1/4"-20
2.	GA10576	4	Single Amber Light Assembly
	GR1731	-	Amber Lens
	GR1208	-	Bulb
3.	GA10571	1	Double Light Assembly
	GA10572	-	Double Light Assembly (Shown)
	GR1733	-	Red Lens
	GR1731	-	Amber Lens
	GR1732	-	Cover
4.	GR1208	-	Bulb
	G10064	8	Hex Head Cap Screw, 1/4"-20 x 1"
	G10110	8	Lock Nut, 1/4"-20, Grade B
5.	GD12723	1	Light Mount Extension
6.	GA10297	2	Work Light Assembly W/Halogen Lamp
	GR1707	-	Halogen Lamp, 3" x 5"
7.	GD15582	1	Light Protector
8.	GD14987	1	Light Bracket
9.	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
10.	G10312	-	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	-	Serrated Flange Nut, 5/16"-18
11.	GD12725	1	Bracket (Shown)
	GD12724	1	Bracket
12.	GD15968	1	Light Mount Extension

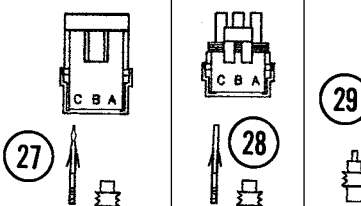
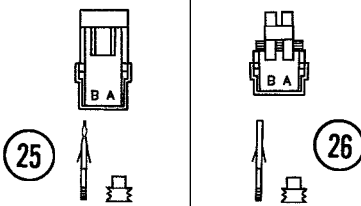
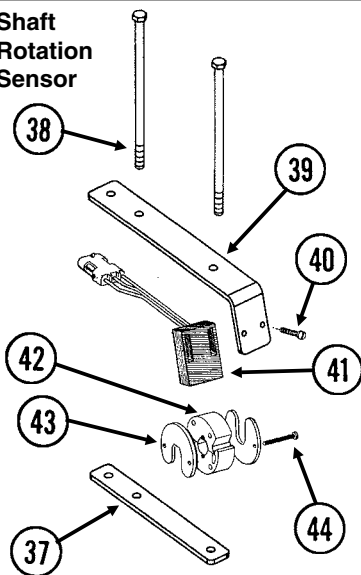
# KPM III ELECTRONIC SEED MONITOR

(MTR43w)

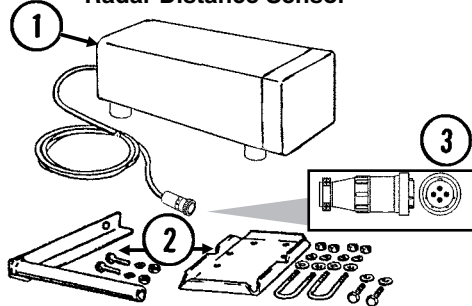
## Shaft Rotation Sensor



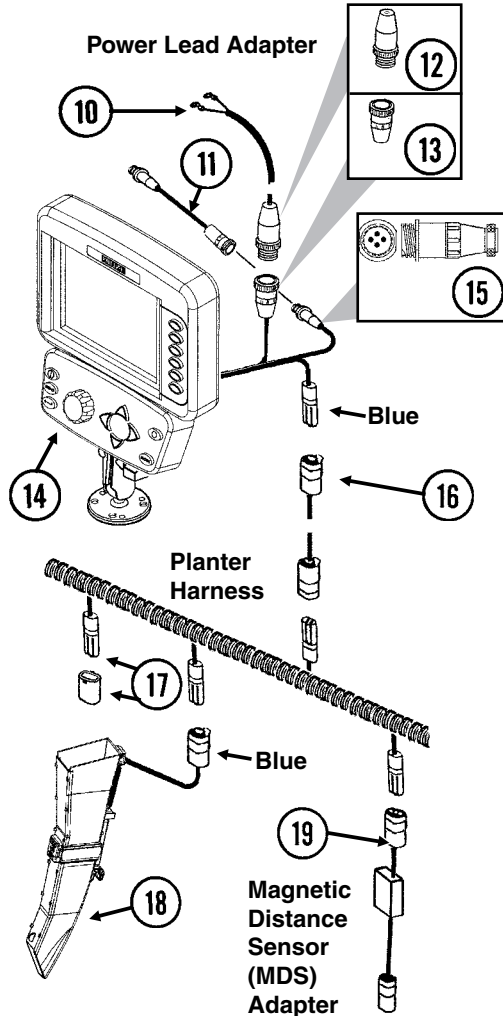
## Shaft Rotation Sensor



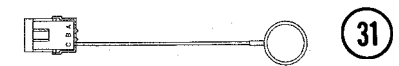
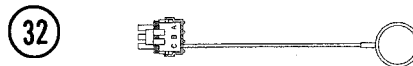
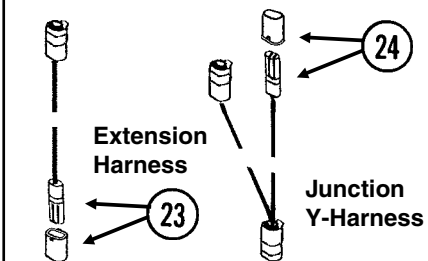
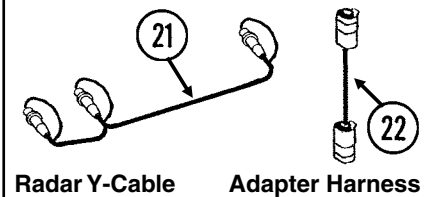
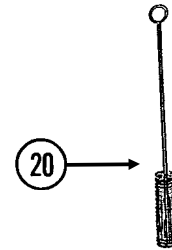
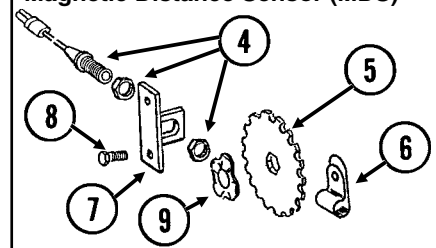
## Radar Distance Sensor



## Power Lead Adapter



## Magnetic Distance Sensor (MDS)



TEM	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

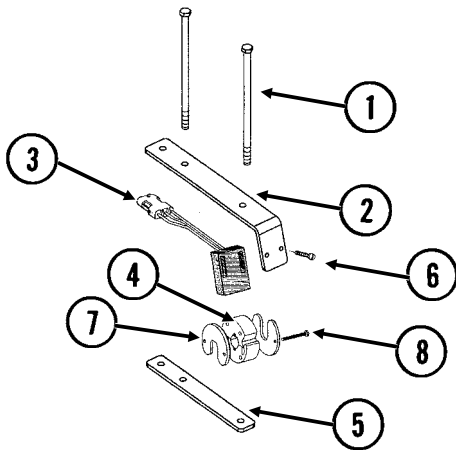
# KPM III ELECTRONIC SEED MONITOR

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	-	Console Cable 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 Harnesses, See Pages P154 And P155
17.	GA8022	-	Planter Harness W/Dust Caps, 6 Row (9 Connectors)
	GA7851	-	Planter Harness W/Dust Caps, 12 Row (16 Connectors)
	GA7852	-	Planter Harness W/Dust Caps, 16 Row (20 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.	GA7849	-	Extension Harness, 15'
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)

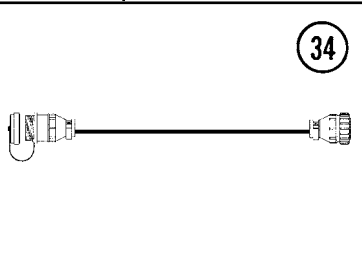
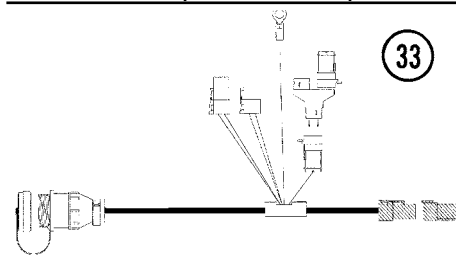
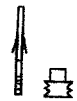
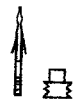
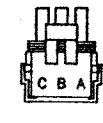
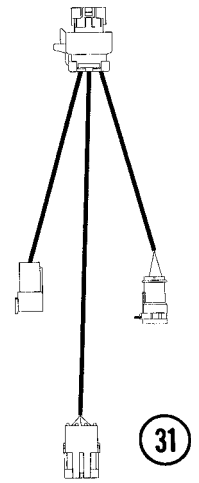
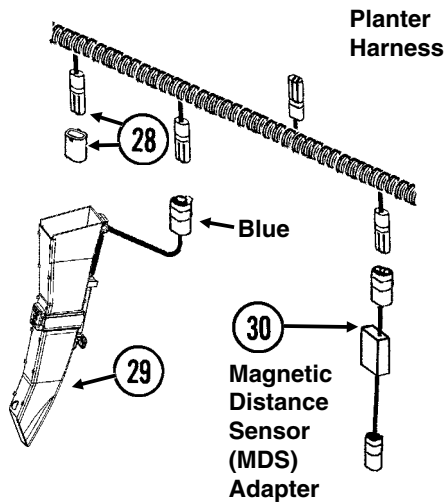
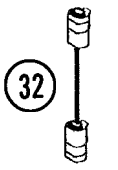
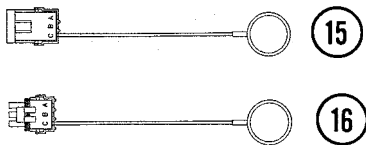
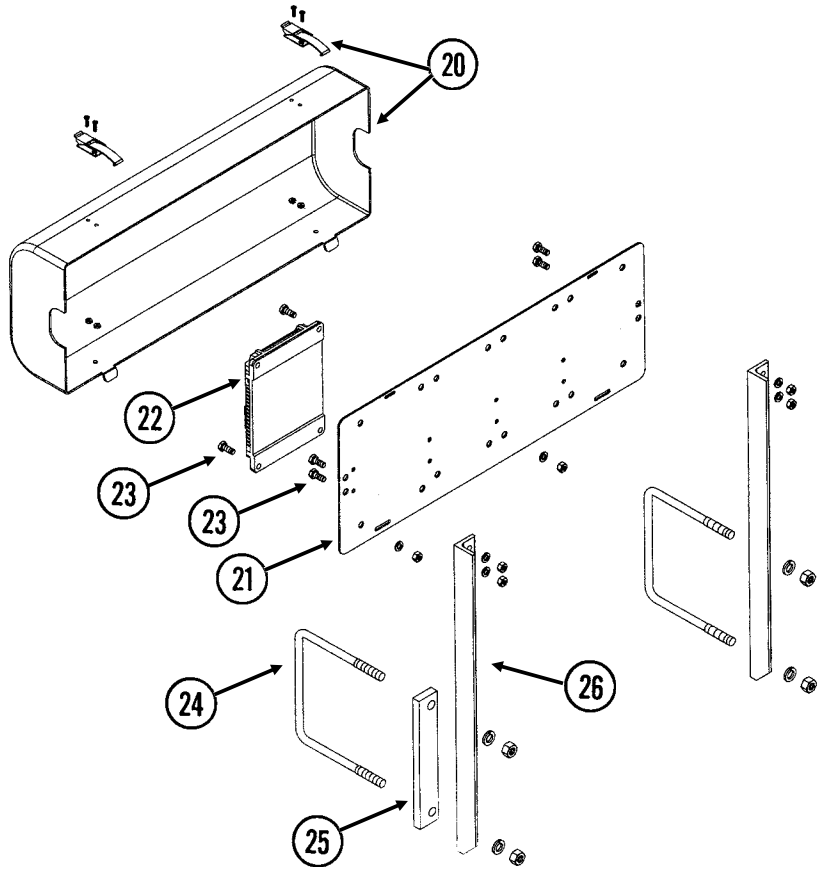
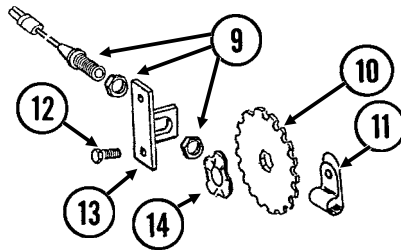
# PLANTER MONITOR MODULE (PMM)

(MTR60/MTR63/PMM01/MTR65/MTR61/MTR64/MTR62/PMM02)

## Shaft Rotation Sensor



## Magnetic Distance Sensor (MDS)



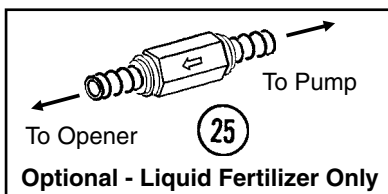
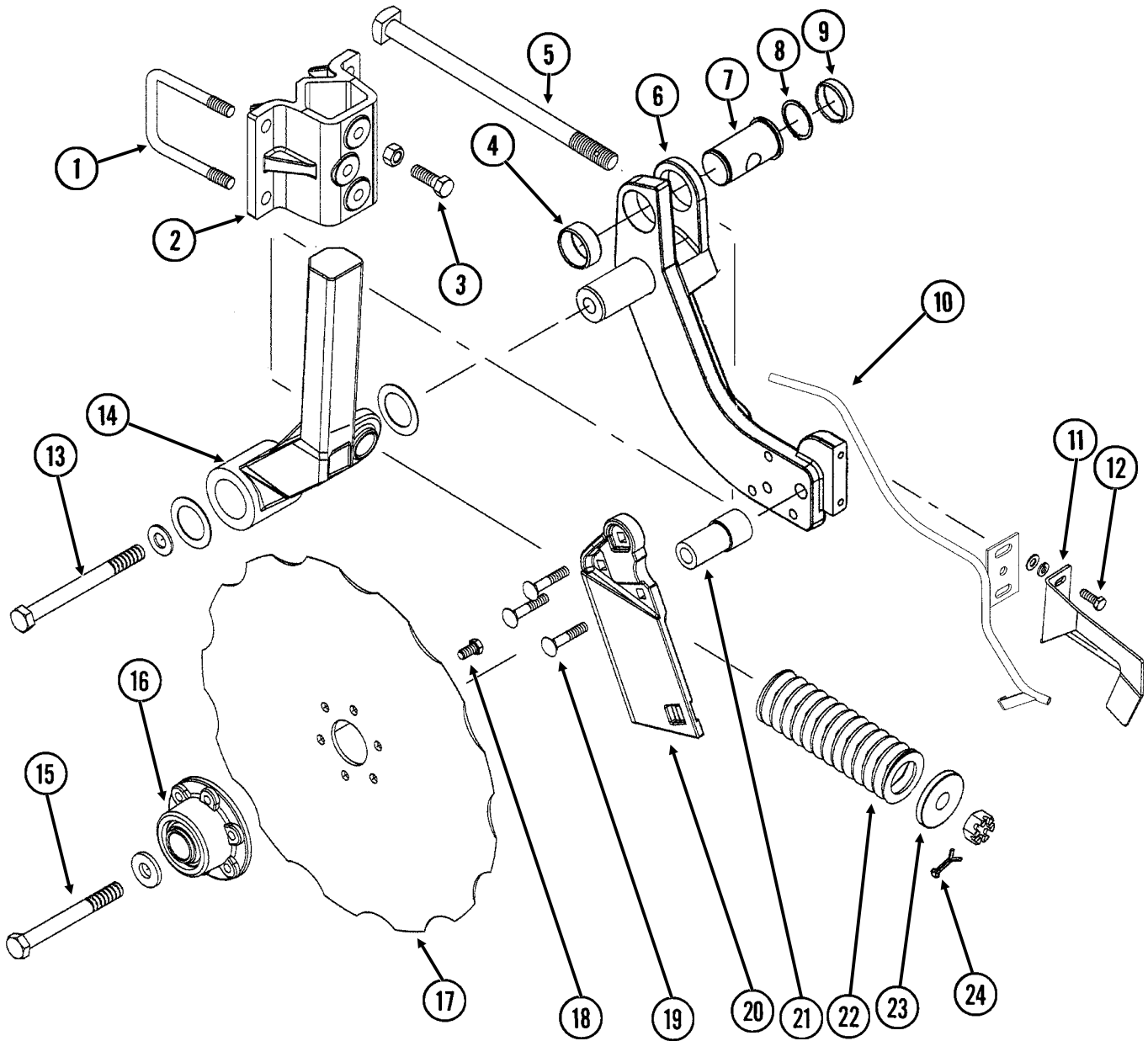
**NOTE: See Ag Leader manual for Ag Leader Insight display and associated cab harness components.**

# PLANTER MONITOR MODULE (PMM)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10686	4	Hex Head Cap Screw, 3/8"-16 x 8"
	G10229	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
6.	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
7.	GD11474	4	Cover
8.	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
9.	GA5600	1	Magnetic Distance Sensor
10.	GD8751	-	Magnetic Distance Sensor Pulse Wheel
11.	GD6291	-	Insulated Clamp, 3/8"
12.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-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, 1 1/2" x 9"
26.	GD16315	2	Support, 21 1/2"
27.	GR0594	-	Brush
28.	GA8022	-	Planter Harness W/Dust Caps, 6 Row (9 Connectors)
	GA7851	-	Planter Harness W/Dust Caps, 12 Row (16 Connectors)
	GA7852	-	Planter Harness W/Dust Caps, 16 Row (20 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 Module Cable
32.	GA7849	1	Extension Harness, 15'
33.	GA12655	-	Implement Cable (16 Row)
34.	GA13562	-	Cable Extension, 15'
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 9-14)

# NOTCHED SINGLE DISC FERTILIZER OPENER

(A10216aaa)

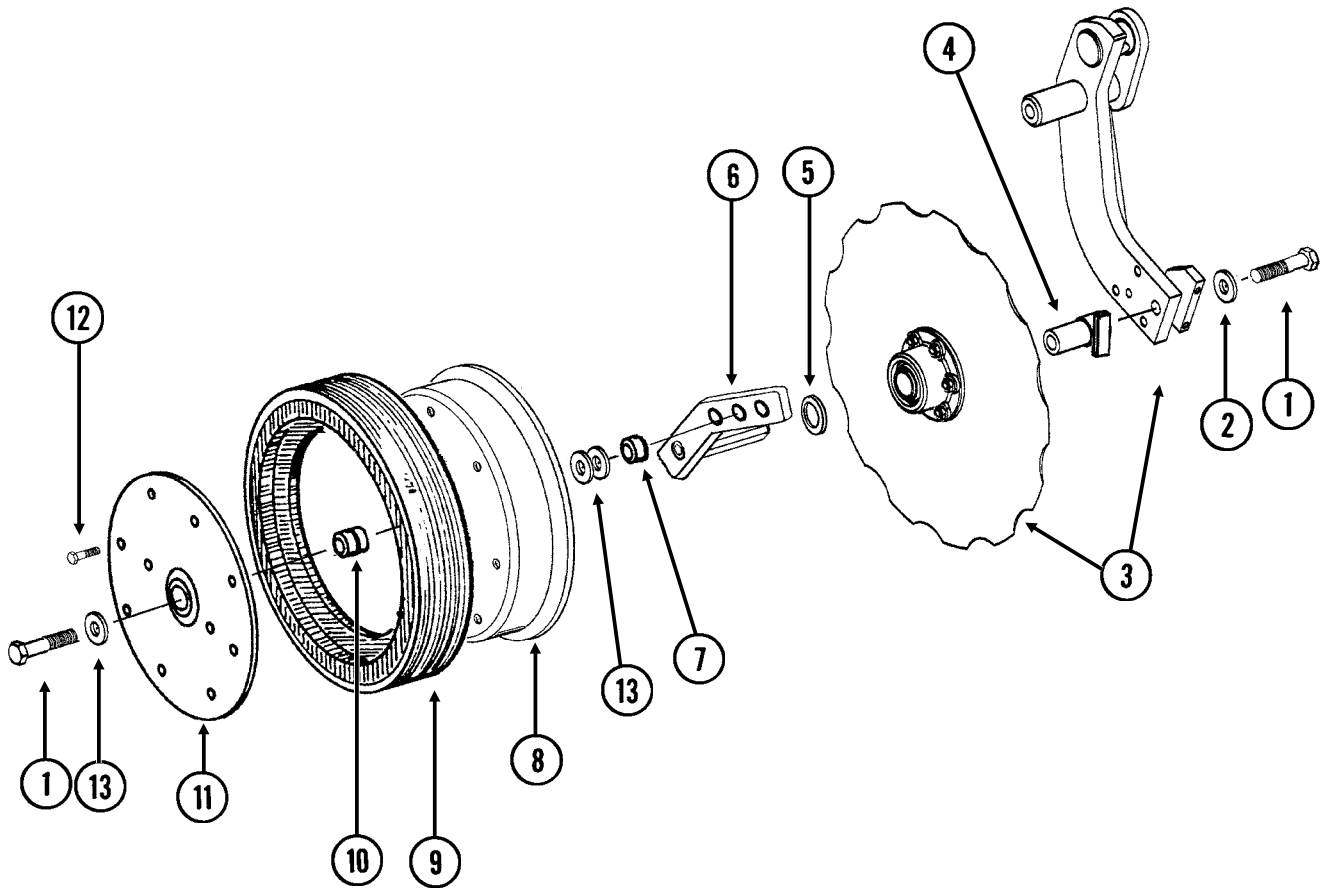


# NOTCHED SINGLE DISC FERTILIZER OPENER

ITEM	PART NO.	QTY.	DESCRIPTION
		(Per Assy.)	
1.	GD17006	2	U-Bolt, 3" x 3" x 1/2"-13
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
2.	GB0399	1	Mount (L.H.)
	GB0400	1	Mount (R.H.)
3.	G10017	3	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10102	3	Hex Nut, 1/2"-13
4.	GD14672	1	Spring Bushing, 3/4"
5.	GD15226	1	Special Bolt, 3/4"-10 x 12"
	G11116	1	Slotted Hex Nut, 3/4"-10
6.	GA10704	1	Pivot Arm W/Shaft, R.H. (Shown)
	GA10705	-	Pivot Arm W/Shaft, L.H.
	GD14651	-	Shaft
7.	GD14649	-	Pin
8.	G10283	1	External Retaining Ring, 1 1/2"
9.	GD14673	1	Spring Bushing, 1/2"
10.	GA12110	1	Drop Tube, R.H., Liquid Fertilizer (Shown)
	GA12111	-	Drop Tube, L.H., Liquid Fertilizer
11.	GD11558	-	Scraper, R.H. (Shown)
	GD11557	1	Scraper, L.H.
12.	G10991	2	Hex Head Cap Screw, 5/16"-18 x 7/8"
	G10232	2	Lock Washer, 5/16"
	G10219	2	Washer, 5/16" USS
13.	G10012	1	Hex Head Cap Screw, 5/8"-11 x 6 1/2"
	G10450	2	Machine Bushing, 1 1/2", 18 Gauge
	G10217	1	Washer, 5/8" USS
	G10107	1	Lock Nut, 5/8"-11
14.	GA10646	1	Arm Mount W/Grease Fitting, Bushing And Seal, R.H. (Shown)
	GA10647	-	Arm Mount W/Grease Fitting, Bushing And Seal, L.H.
	G10640	-	Grease Fitting, 1/4"-28
	GD15600	-	Bushing
	GD15568	-	Seal
15.	G10011	1	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	GD12677	1	Washer, 1 1/2" O.D., 7 Gauge, Hardened
	G10107	1	Lock Nut, 5/8"-11
16.	GA9437	1	Hub W/Bearing
	GA8603	-	Bearing, Double Row
17.	GD12676	1	Disc Blade, Notched, 16 3/4"
18.	G10002	6	Hex Head Cap Screw, 3/8"-16 x 3/4"
19.	G10306	3	Carriage Bolt, 3/8"-16 x 2"
	G10108	3	Lock Nut, 3/8"-16
20.	GB0322	-	Knife, R.H. (Shown)
	GB0323	1	Knife, L.H.
21.	GD12679	1	Stepped Spacer, 3" Long
22.	GD12817	1	Compression Spring
23.	GB0213	1	Spring Seat
24.	G10462	1	Cotter Pin, 3/16" x 2"
25.	GA8983	-	Check Valve, Low Rate

# DEPTH/GAUGE WHEEL ATTACHMENT FOR NOTCHED SINGLE DISC FERTILIZER OPENER

(FRTZ257)

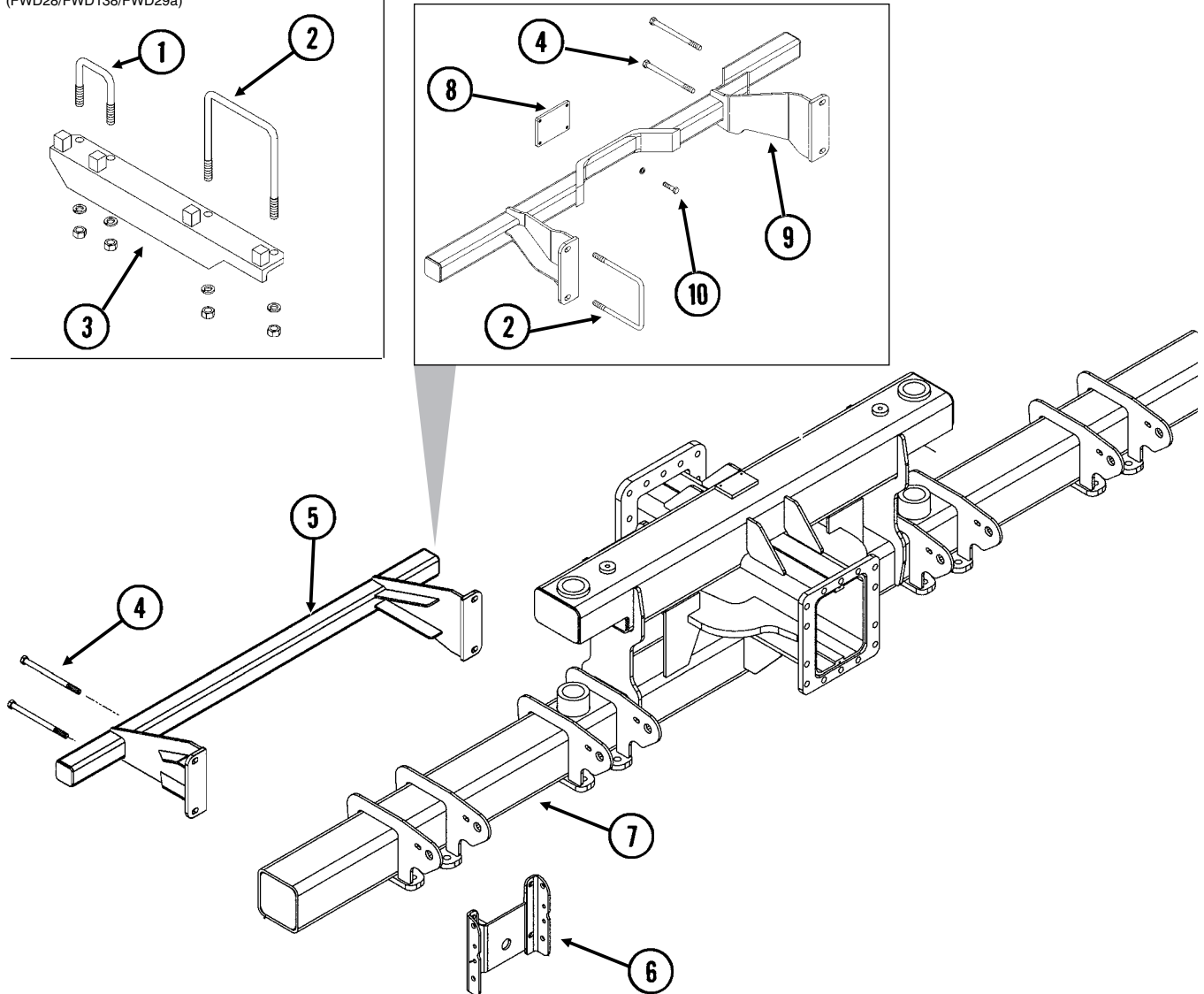


ITEM	PART NO.	QTY.	DESCRIPTION
(Per Assy.)			
1.	G10010	2	Hex Head Cap Screw, 5/8"-11 x 3"
2.	GD7805	1	Special Washer, 5/8", Hardened
3.		-	See "Notched Single Disc Fertilizer Opener", Pages P136 And P137
4.	GA9472	1	Blade Mount
5.	G10233	1	Machine Bushing, 1", 10 Gauge
6.	GA10037	1	Wheel Mount, L.H. (Shown)
	GA10036	1	Wheel Mount, R.H.
7.	GD13309	1	Spacer
8.	GD11423	1	Half Wheel
9.	GD11953	1	Offset Tire
10.	GA6171	1	Bearing
11.	GD11954	1	Half Wheel Cover, Nylon
12.	G10961	11	Flanged Whiz-Lock Screw, 5/16"-18 x 3/4", No Serration
	G10620	11	Serrated Flange Nut, 5/16"-18
13.	G10204	-	Special Machine Bushing, 5/8" x 1" O.D. (As Required)
A.	GA8877	-	Gauge Wheel Complete (Items 8-12)



# FERTILIZER OPENER MOUNTS

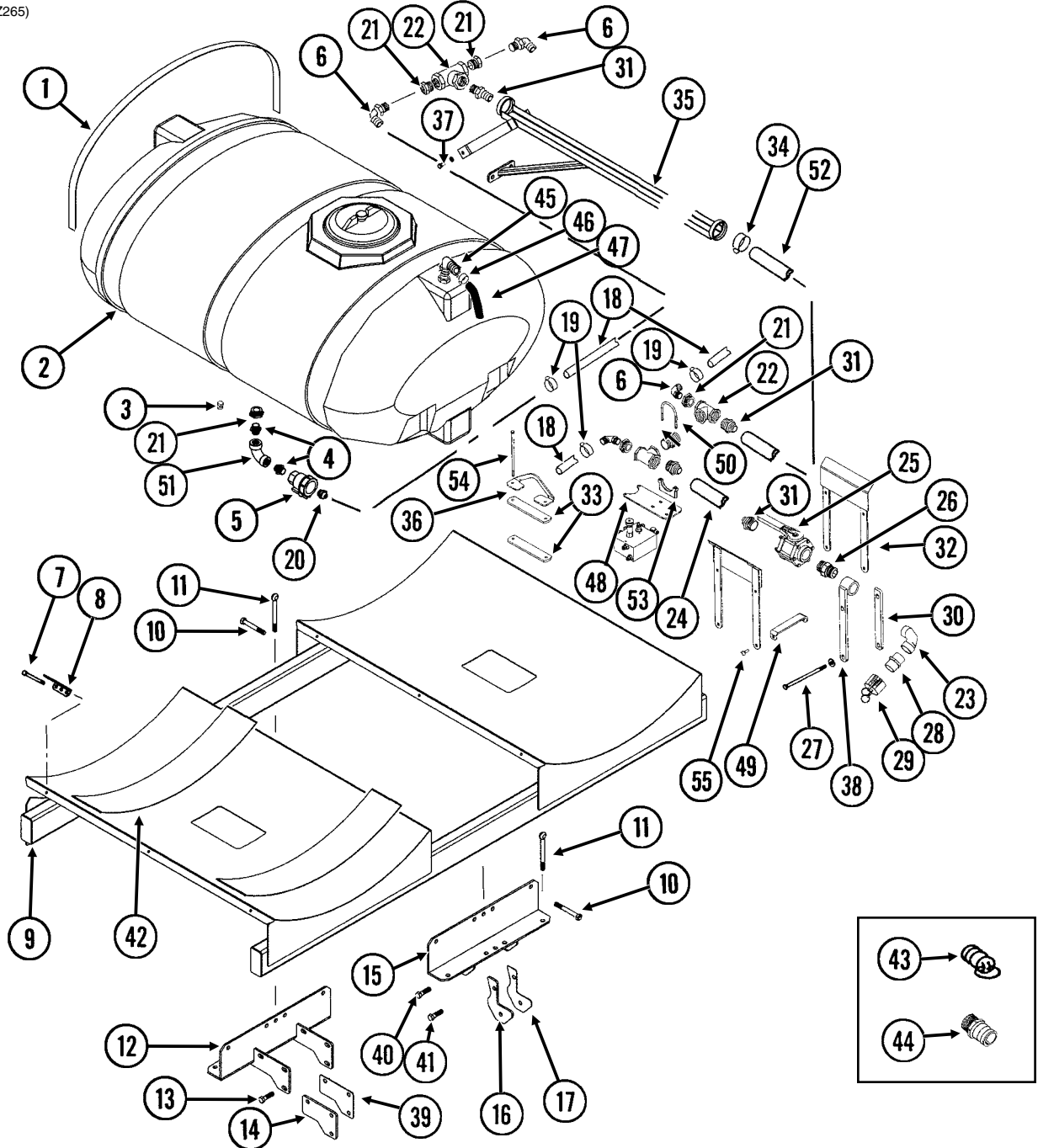
(FWD28/FWD138/FWD29a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD14671	-	U-Bolt, 3" x 3" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
2.	GD17039	-	U-Bolt, 7" x 7" x 5/8"-11
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
3.	GB0365	-	Brace, L.H. (Shown)
	GB0370	-	Brace, R.H.
4.	G10177	-	Hex Head Cap Screw, 5/8"-11 x 9 1/2"
	G10230	-	Lock Washer, 5/8"
	G10104	-	Hex Nut, 5/8"-11
5.	GA10923	2	Mount
6.		-	See "Parallel Arms, Mounting Support Plate And Quick Adjustable Down Force Springs", Page P12
7.		-	See "Center Toolbar/Rear H-Frame Assembly", Pages P68 And P69
8.	GD17973	2	Tap Block
9.	GA12487	1	Opener Mount, L.H. (Shown)
	GA12488	-	Opener Mount, R.H.
10.	G10016	8	Hex Head Cap Screw, 1/2"-13 x 2"
	G10228	8	Lock Washer, 1/2"

# LIQUID FERTILIZER TANKS, SADDLES, SADDLE MOUNTS AND HOSES (Conventional)

(FWD78a/FRTZ265)



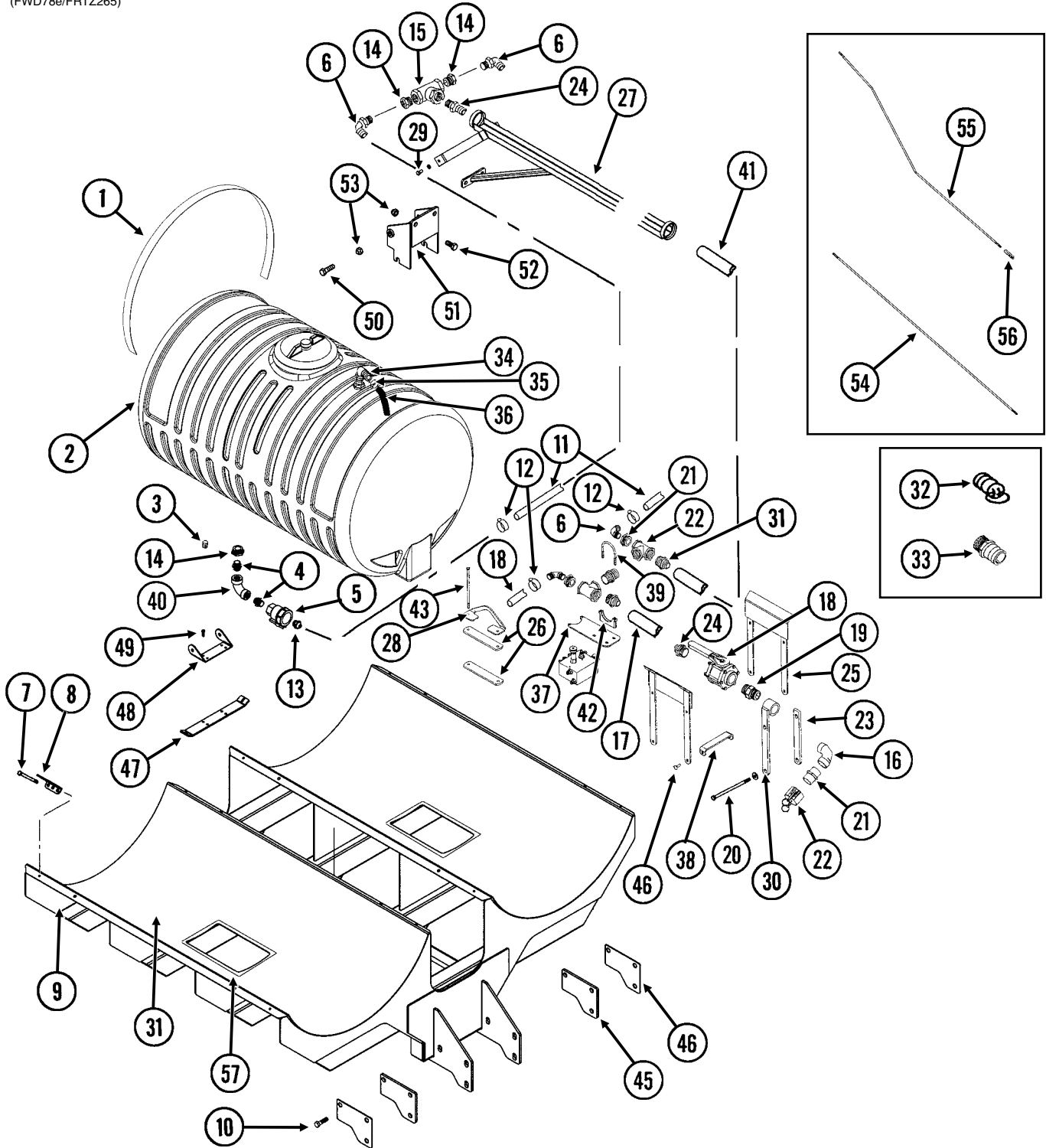
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD15605	3	Band (3 Per Tank)
2.	GA10201	2	Tank W/Lid And Fittings, 500 Gallon
	GR1702	-	Lid/Fillwell, 8" (Top Of Tank)
	GR1708	-	3/4" Bulkhead Fitting Assembly (Overflow Fitting, Nut, Bushing And O-Ring) (Top And Bottom Of Tank)
	GR1739	-	2" Bulkhead Fitting Assembly (Nut, Bushing And O-Ring) (Bottom Of Tank)
	GR1686	-	Lanyard, 12 1/2" (Top Of Tank)
3.	G10096	2	Pipe Plug, 3/4" NPT
4.	G10619	4	Close Nipple, 1 1/4" NPT
5.	GA4976	2	Shutoff Valve, 1 1/4" NPT
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle

# LIQUID FERTILIZER TANKS, SADDLES, SADDLE MOUNTS AND HOSES (Conventional)

ITEM	PART NO.	QTY.	DESCRIPTION
6.	G10629	4	Elbow, 90°, 1 1/4" NPT To Barb
7.	G10485	6	Hex Head Tap Bolt, 3/8"-16 x 5" (6 Per Tank)
	G10901	6	Lock Nut W/Nylon Insert, 3/8"-16 (6 Per Tank)
8.	GD11123	6	Anchor ( <b>Sub GA8114</b> )
9.	GA10356	1	Tank Mount
10.	G10058	7	Hex Head Cap Screw, 3/4"-10 x 5 1/2"
	G10112	7	Lock Nut, 3/4"-10
11.	GD14645	8	Eyebolt, 3/4"-10 x 8"
	G10112	8	Lock Nut, 3/4"-10
12.	GA10358	1	Tank Mount
13.	G10044	6	Hex Head Cap Screw, 3/4"-10 x 4"
	G10112	6	Lock Nut, 3/4"-10
14.	GD15472	3	Shim, 3/8"
15.	GA10357	1	Tank Mount
16.	GD15474	2	Shim, 3/8"
17.	GD15475	2	Shim, 12 Gauge
18.	G4200-05	2	Hose, 1 1/4" x 50'
19.	G10674	48	Hose Clamp, No. 24
20.	G10626	2	Adapter, 1 1/4" NPT To Barb
21.	G10616	6	Reducing Bushing, 2" Male NPT To 1 1/4" Female
22.	G10888	3	Tee, 2" Female NPT
23.	G10287	1	Elbow, 90°, 2" Male NPT To Female
24.	G4201-02	1	Hose, 2" x 12'
25.	GA2660	1	Shutoff Valve, 2" NPT
26.	G10623	3	Close Nipple, 2" NPT
27.	G10148	2	Hex Head Cap Screw, 1/2"-13 x 9 1/2"
	G10216	2	Washer, 1/2" USS
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
28.	GD3622	1	Adapter, 2" Female NPT To Cam Lock
29.	GD3951	1	Dust Cap, 2" Cam Lock
30.	GD15706	-	Bracket, 1 1/2" x 18 1/2", 36 Row 30"
31.	G10628	4	Adapter, 2" NPT To Barb
32.	GA11063	-	Hose Support, 36 Row 30"
33.	GD16478	4	Bracket
34.	G10676	4	Hose Clamp, No. 36, Stainless Steel
35.	GA10663	1	Hose Support
36.	GD16479	4	Mount
37.	G10014	2	Hex Head Cap Screw, 1/2"-13 x 1"
	G10228	2	Lock Washer, 1/2"
38.	GA10510	-	Straight Mount, Quick Fill, 20 1/32", 36 Row 30"
39.	GD15473	2-3	Shim, 12 Gauge
40.	G10028	2	Hex Head Cap Screw, 3/4"-10 x 3"
	G10112	2	Lock Nut, 3/4"-10
41.	G10056	2	Hex Head Cap Screw, 3/4"-10 x 3 1/2"
	G10112	2	Lock Nut, 3/4"-10
42.	GD1862	2	Pad, 8" x 14'
43.	GD10777	2	Dust Plug, 2" Male Cam Lock
44.	GD3623	1	Adapter, 2" Male NPT To Cam Lock
45.	G10917	2	Elbow, 90°, 3/4" NPT To Barb
46.	G10278	10	Hose Clamp, No. 16
47.	G4205-10	1	Hose, 3/4" x 200" (100" Per Tank)
48.	GD16210	1	Bracket
49.	GD16189	4	Tie Bracket
50.	G11165	2	T-Bolt Clamp, 2 1/2", Stainless Steel
51.	G10897	2	Elbow, 90°, 1 1/4" Female NPT
52.	G4206-01	1	Hose, 2" x 18'
53.	GA8768	2	Clamp, 3"
54.	G10753	-	Hex Head Cap Screw, 3/8"-16 x 4 1/2", 36 Row 30"
	G10108	8	Lock Nut, 3/8"-16
55.	G10599	8	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10203	8	Washer, 3/8" SAE
	G10108	8	Lock Nut, 3/8"-16

# LIQUID FERTILIZER TANKS, SADDLES, SADDLE MOUNTS AND HOSES (SDS)

(FWD78e/FRTZ265)



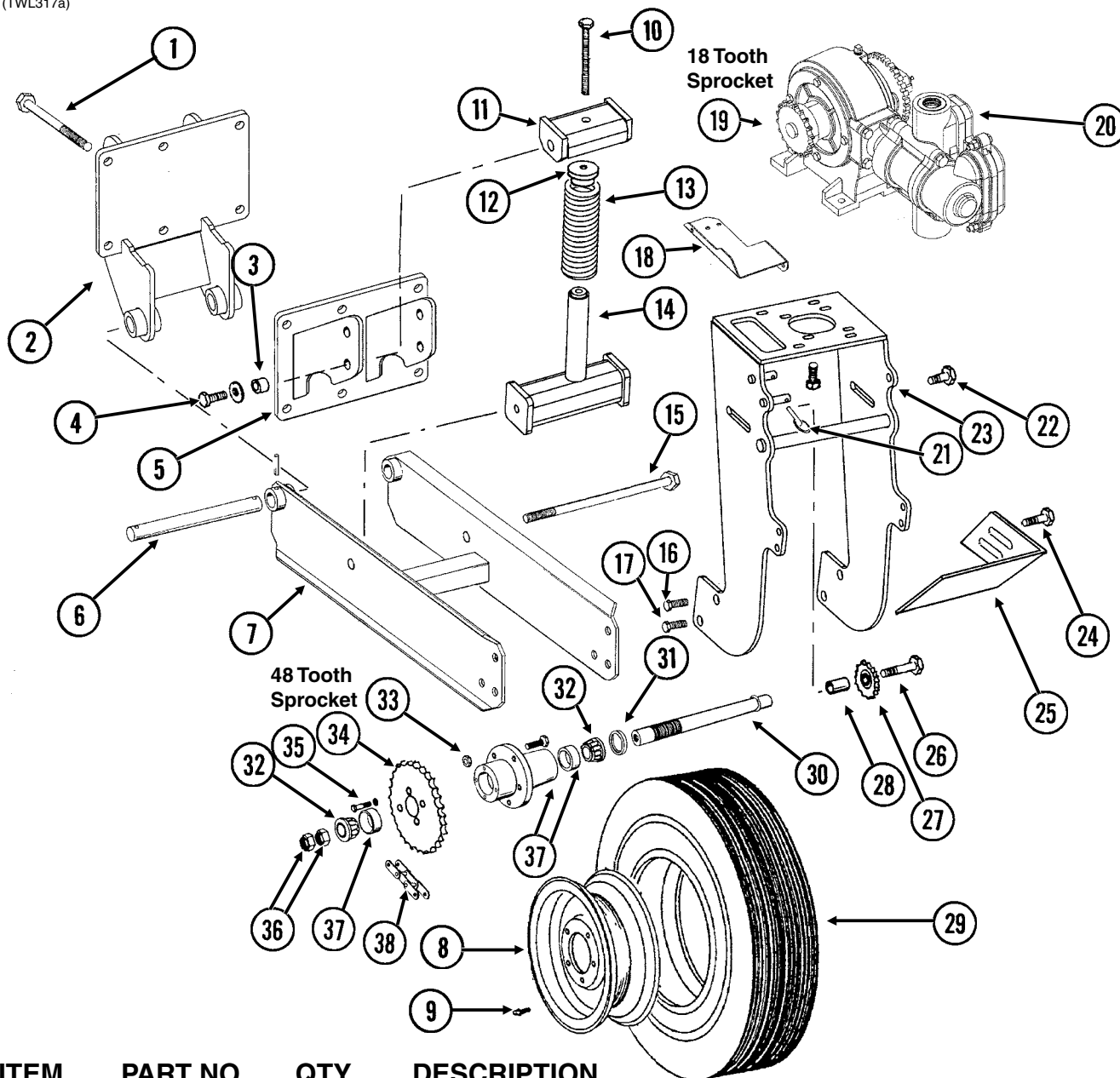
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD15605	3	Band (3 Per Tank)
2.	GA11743	2	Tank W/Lid And Fittings, 300 Gallon
	GR1006	-	Lid W/Removable Vent, 10" (Top Of Tank)
	GR1005	-	Fillwell, 10" (Top Of Tank)
	GR0508	-	1 1/4" Polypropylene Fitting Assembly (Nut, Bushing, And O-Ring) (Bottom Of Tank)
	GR1435	-	1 1/4" Anti-Vortex Fitting Assembly (Anti-Vortex Fitting, Nut, Bushing And O-Ring)
	GR0513	-	3/4" Polypropylene Fitting Assembly (Overflow Fitting, Nut, Bushing And O-Ring)
	GR1571	-	Strap W/Cap Rivet
3.	G10739	2	Plug, 1 3/4" NPT

# LIQUID FERTILIZER TANKS, SADDLES, SADDLE MOUNTS AND HOSES (SDS)

ITEM	PART NO.	QTY.	DESCRIPTION
4.	G10619	4	Close Nipple, 1 1/4" NPT
5.	GA4976	2	Shutoff Valve, 1 1/4" NPT
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle
6.	G10629	4	Elbow, 90°, 1 1/4" NPT To Barb
7.	G10485	6	Hex Head Tap Bolt, 3/8"-16 x 5" (6 Per Tank)
	G10901	6	Lock Nut W/Nylon Insert, 3/8"-16 (6 Per Tank)
8.	GD11123	6	Anchor ( <b>Sub GA8114</b> )
9.	GA11607	1	Tank Mount W/Wheels, Sleeve, Bushings And Hardware
	GD16714	-	Wheel
	GD5900-28	-	Sleeve, 1 1/2" O.D. x 1" I.D. x 2 1/8"
	GD16717	-	Bronze Bushing
	GD16718	-	Flanged Bronze Bushing
	GD16716	-	Special Bolt, 1"-8 x 12"
	G10640	-	Grease Fitting, 1/4"-28
10.	G10044	6	Hex Head Cap Screw, 3/4"-10 x 4"
	G10112	6	Lock Nut, 3/4"-10
11.	G4200-13	2	Hose, 1 1/4" x 50'
12.	G10674	48	Hose Clamp, No. 24
13.	G10626	2	Adapter, 1 1/4" NPT To Barb
14.	G10616	6	Reducing Bushing, 2" Male NPT To 1 1/4" Female
15.	G10888	3	Tee, 2" Female NPT
16.	G10287	1	Elbow, 90°, 2" Male NPT To Female
17.	G4201-02	1	Hose, 2" x 12'
18.	GA2660	1	Shutoff Valve, 2" NPT
19.	G10623	3	Close Nipple, 2" NPT
20.	G10148	2	Hex Head Cap Screw, 1/2"-13 x 9 1/2"
	G10216	2	Washer, 1/2" USS
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
21.	GD3622	2	Adapter, 2" Female NPT To Cam Lock
22.	GD3951	1	Dust Cap, 2" Cam Lock
23.	GD15706	-	Bracket, 1 1/2" x 18 1/2", 36 Row 30"
24.	G10628	4	Adapter, 2" NPT To Barb
25.	GA11063	-	Hose Support, 36 Row 30"
26.	GD16478	4	Bracket
27.	GA10663	1	Hose Support
28.	GD16479	4	Mount
29.	G10014	2	Hex Head Cap Screw, 1/2"-13 x 1"
	G10228	2	Lock Washer, 1/2"
30.	GA10510	-	Straight Mount, Quick Fill, 20 1/32", 36 Row 30"
31.	GD1862	2	Pad, 8" x 14"
32.	GD10777	2	Dust Plug, 2" Male Cam Lock
33.	GD3623	1	Adapter, 2" Male NPT To Cam Lock
34.	G10917	2	Elbow, 90°, 3/4" NPT To Barb
35.	G10278	10	Hose Clamp, No. 16
36.	G4205-10	1	Hose, 3/4" x 200" (100" Per Tank)
37.	GD16210	1	Bracket
38.	GD16189	4	Tie Bracket
39.	G11165	2	T-Bolt Clamp, 2 1/2", Stainless Steel
40.	G10897	2	Elbow, 90°, 1 1/4" Female NPT
41.	G4206-01	1	Hose, 2" x 18'
42.	GA8768	2	Clamp, 3"
43.	G10753	-	Hex Head Cap Screw, 3/8"-16 x 4 1/2", 36 Row 30"
	G10108	8	Lock Nut, 3/8"-16
44.	G10599	8	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10203	8	Washer, 3/8" SAE
	G10108	8	Lock Nut, 3/8"-16
45.	GD16733	2	Shim, 3/8"
46.	GD16731	4	Shim, 12 Gauge
47.	GD16943	1	Mounting Plate
	G10599	-	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10227	-	Lock Washer, 1/4"
	G10103	-	Hex Nut, 1/4"-20
48.	GD16942	1	Flapper
49.	G10064	6	Hex Head Cap Screw, 1/4"-20 x 1"
50.	G10027	2	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
51.	GA11608	-	Hose Support Mount
52.	G11042	2	Hex Head Cap Screw, 3/4"-10 x 1 3/4"
53.	G10112	12	Lock Nut, 3/4"-10
54.	GD16751	1	Extension Rod
55.	GD16944	1	Flapper Rod
56.	GD16572	1	Flapper Pivot Mount
57.	G4427-01	-	Edge Molding, 1/8" x 12"
	G4427-02	-	Edge Molding, 1/8" x 7"

# LIQUID FERTILIZER PISTON PUMP MOUNT AND GROUND DRIVE WHEEL

(TWL317a)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10152	6	Hex Head Cap Screw, 5/8"-11 x 9"
	G10230	6	Lock Washer, 5/8"
	G10104	6	Hex Nut, 5/8"-11
2.	GA10355	1	Wheel Arm Mount
3.	GB0218	2	Bushing, 2 1/32" I.D. x 7/8" O.D. x 1 19/32" Long
4.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	GD7805	2	Special Washer, 5/8", Hardened
	G10107	2	Lock Nut, 5/8"-11
5.	GA9712	1	Spring Mount
6.	GD2681	1	Pin, 1 1/4" x 13 1/2"
	G10460	2	Cotter Pin, 1/4" x 2"
7.	GA10621	1	Arm W/Grease Fittings
	G10641	2	Grease Fitting, 1/8" NPT
8.	GA0241	1	Wheel, 5" x 15"
	GD1166	1	Valve Stem

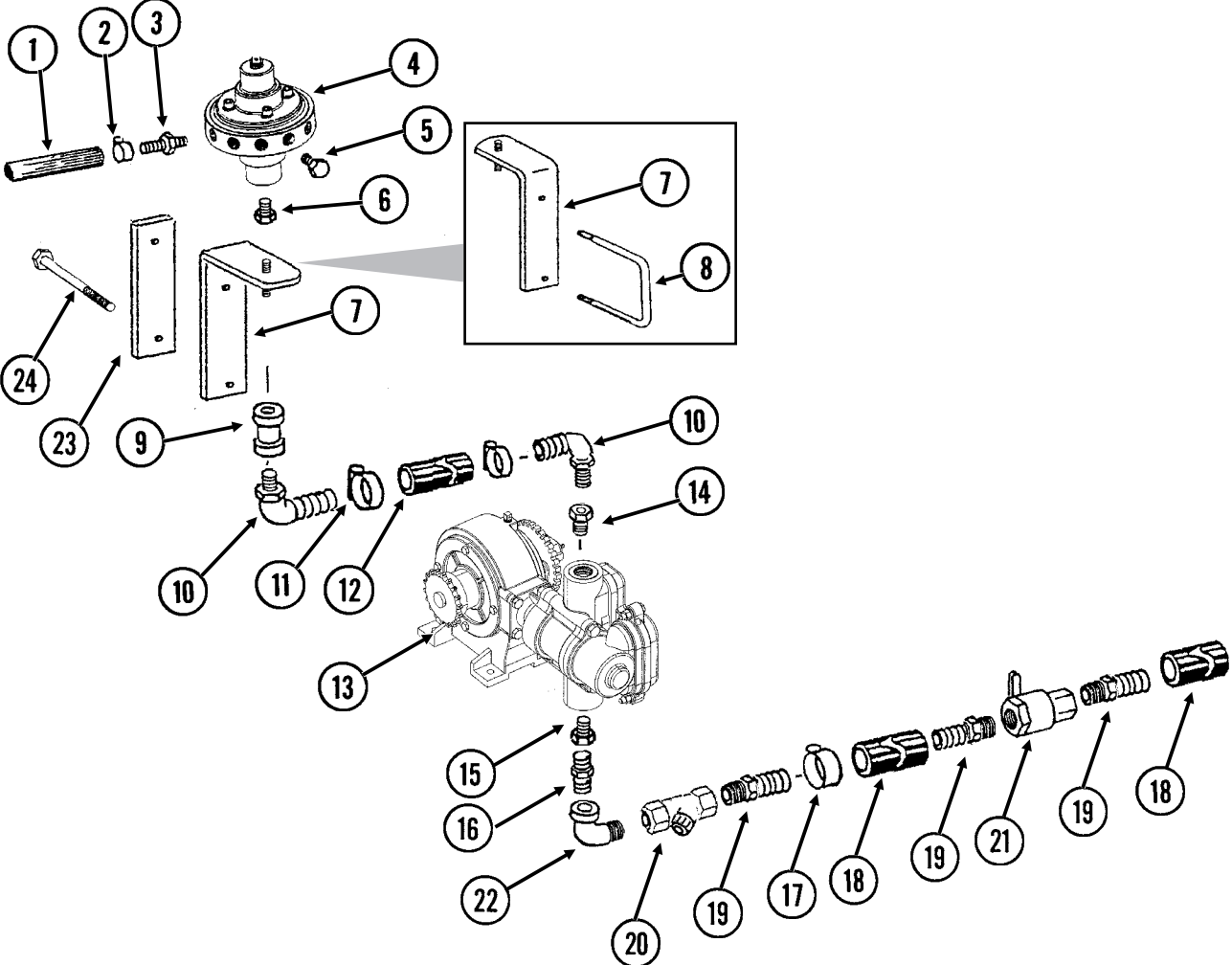
# LIQUID FERTILIZER PISTON PUMP MOUNT AND GROUND DRIVE WHEEL

ITEM	PART NO.	QTY.	DESCRIPTION
10.	G10012	1	Hex Head Cap Screw, 5/8"-11 x 6 1/2"
	GD7805	1	Special Washer, 5/8", Hardened
11.	GA10908	1	Spring Mount
12.	GB0196	1	Washer
13.	GD7831	1	Compression Spring
14.	GA10907	1	Spring Guide
15.	G11122	1	Hex Head Cap Screw, 5/8"-11 x 12"
	G10107	1	Lock Nut, 5/8"-11
16.	G10026	2	Hex Head Cap Screw, 3/4"-10 x 2"
	G10231	2	Lock Washer, 3/4"
17.	G11042	2	Hex Head Cap Screw, 3/4"-10 x 1 3/4"
	G10231	2	Lock Washer, 3/4"
	G10105	2	Hex Nut, 3/4"-10
18.	GD13744	1	Hose Holder
19.	GR1146	1	Sprocket, 18 Tooth
20.		-	See "Liquid Fertilizer Piston Pump", Pages P182 And P183
21.	GD2558	1	Lynch Pin, 1/4"
22.	G10007	2	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10217	2	Washer, 5/8" USS
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
23.	GA10894	1	Pump Mount
24.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10216	2	Washer, 1/2" USS
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
25.	GD13328	1	Scraper
26.	G10013	1	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10205	1	Washer, 5/8" SAE
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
27.	GA0262	1	Idler Sprocket W/Bearing, 15 Tooth
28.	GD7817-05	1	Spacer, 1 1/16" I.D. x 1 1/4" Long
29.	GD0844	1	Tire, 7.60" x 15", 8 Ply (Specify Brand*)
30.	GA2559	1	Spindle
31.	GA0252	2	Seal
32.	GA0251	2	Bearing
33.	GR0267	5	Lug Nut, 1/2"-20
34.	G2500-84	1	Sprocket, 48 Tooth
35.	G10019	4	Hex Head Cap Screw, 5/16"-18 x 1"
	G10232	4	Lock Washer, 5/16"
36.	GD0831	2	Shoulder Nut, 1 1/4"-12 UNF-2A
37.	GA0547	1	Hub W/Cups And Studs, 5 Bolt
	GR0190	2	Cup
	GR0204	5	Stud
38.	G3200-63	1	Chain, No. 2050, 63 Pitch Including Connector Link
	GR0195	1	Connector Link, No. 2050
	GR0200	1	Offset Link, No. 2050

\* 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 tires.

# LIQUID FERTILIZER FLOW DIVIDER MOUNT AND HOSES

(FRTZ299)





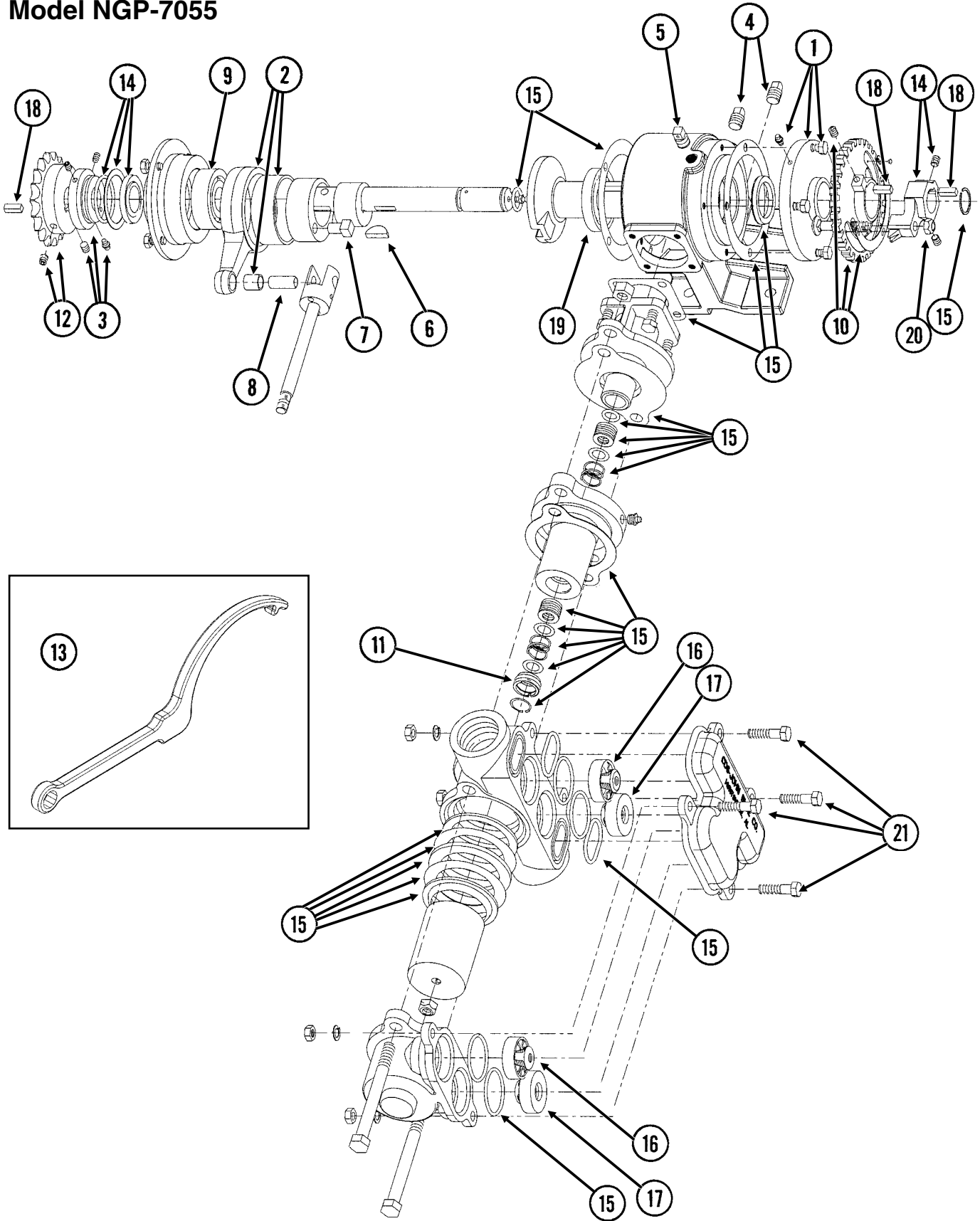
# LIQUID FERTILIZER FLOW DIVIDER MOUNT AND HOSES

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G4301-02	-	Hose, 3/8" x 50'
	G4301-04	-	Hose, 3/8" x 100'
	G4301-08	-	Hose, 3/8" x 250'
2.	G10681	24-32	Hose Clamp, No. 6
3.	GD11700	12-16	Adapter, 1/4" NPT To 3/8" Barb
4.		-	See "Liquid Fertilizer Piston Pump Flow Divider", Page P150
5.	G10292	-	Pipe Plug, 1/4" NPT
6.	G10995	1	Reducing Bushing, 1" Male NPT To 3/4" Female, Stainless Steel, 36 Row 30"
7.	GA6527	1	Mount, 3/4" NPT
8.	GD1114	1	U-Bolt, 7" x 7" x 5/8"-11
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11
9.	G11083	1	Coupler, 3/4" Female NPT
10.	G10917	2	Elbow, 90°, 3/4" NPT To Barb
11.	G10278	2	Hose Clamp, No. 16
12.	G4205-10	-	Hose, 3/4" x 200"
13.		-	See "Liquid Fertilizer Piston Pump", Pages P148 And P149
14.	G11237	1	Reducing Bushing, 1 1/2" Male NPT To 3/4" Female
15.	G10615	1	Reducing Bushing, 1 1/2" Male NPT To 1 1/4" Female
16.	G10619	1	Close Nipple, 1 1/4" NPT
17.	G10674	2	Hose Clamp, No. 24
18.		-	Hose, 1 1/4", See "Liquid Fertilizer Tanks, Saddles, Saddle Mounts And Hoses", Pages P140-P143
19.	G10626	3	Adapter, 1 1/4" NPT To Barb
20.	GA3893	1	Strainer Complete
	GR0880	-	Screen, No. 40 Mesh
	GR0881	-	Gasket
	GR0882	-	Y-Body
	GR0883	-	End Cap
21.	GA4976	-	Shutoff Valve, 1 1/4" NPT
	GR1015	-	Body O-Ring
	GR1016	-	Stem O-Ring
	GR1017	-	Teflon Seat
	GR1018	-	Ball
	GR1019	-	Handle
22.	G10887	2	Elbow, 90°, 1 1/4" Male NPT To Female
23.	GD15483	1	Mount, 36 Row 30"
24.	G10046	2	Hex Head Cap Screw, 5/8"-11 x 5"
	G10230	2	Lock Washer, 5/8"
	G10104	2	Hex Nut, 5/8"-11

# LIQUID FERTILIZER PISTON PUMP (Uses 18 Tooth Sprocket)

(A12335a/GR1808)

## Model NGP-7055

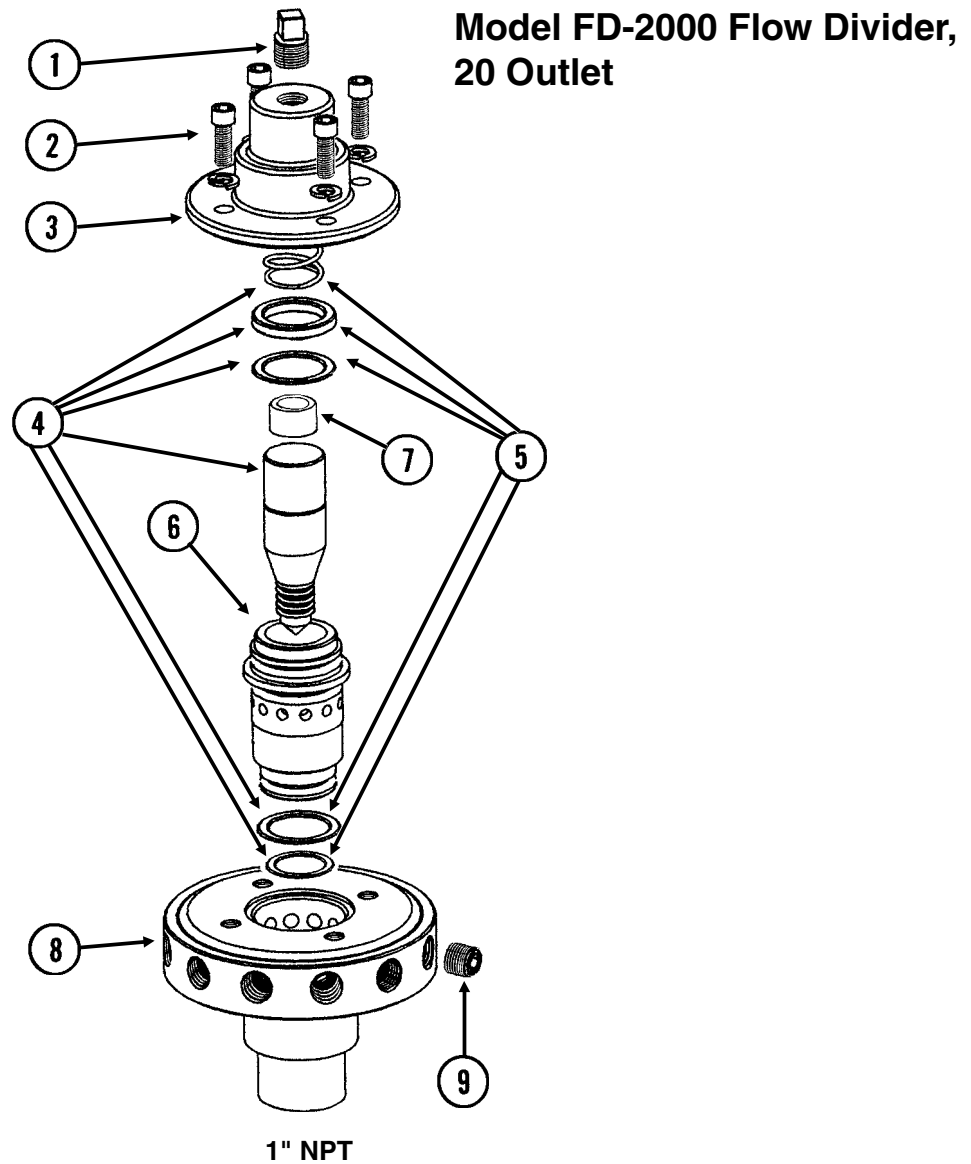


# LIQUID FERTILIZER PISTON PUMP (Uses 18 Tooth Sprocket)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1804	1	Flange Cover Assembly
	G10991	4	Hex Head Cap Screw, 5/16"-18 x 7/8"
2.	GR1803	1	Connecting Rod Assembly
3.	GR1801	1	Spacer Assembly
	G10693	3	Hex Socket Head Set Screw, 5/16"-18 x 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.	GR1146	1	Sprocket, 18 Tooth
13.	GR1808	1	Adjustment Wrench
14.	GR1806	1	Setting Pointer Assembly
15.	GR1796	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.	GR1800	2	Discharge Valve Assembly
17.	GR1798	2	Suction Valve Assembly
18.	GR1118	3	Setting Arm Key
19.	GR1116	1	Bearing
20.	G10306	1	Carriage Bolt, 3/8"-16 x 2"
	G10108	1	Lock Nut, 3/8"-16
21.	G10003	4	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10210	4	Washer, 3/8" USS
	G10229	4	Lock Washer, 3/8"
	G10101	4	Hex Nut, 3/8"-16
A.	GA12335	-	Piston Pump Complete W/18 Tooth Sprocket (Model NGP-7055)

# LIQUID FERTILIZER PISTON PUMP FLOW DIVIDER

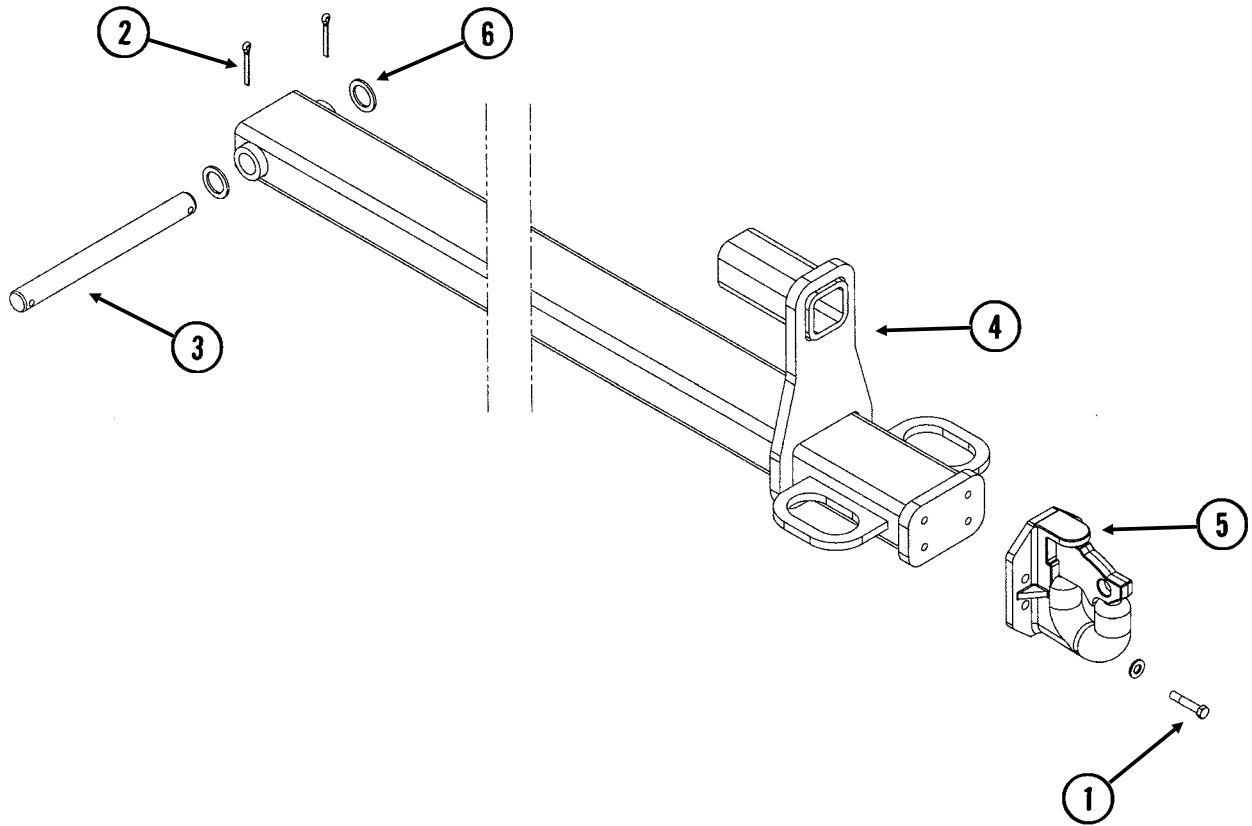
(FRTZ202d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR1543	1	Vent Plug
2.	GR1542	4	Hex Socket Head Screw, 1/4"-20 x 3/4", Stainless Steel
	GR1541	4	Lock Washer, 1/4", Stainless Steel
3.	GR1566	1	Cap
4.	GR1567	1	Needle Assembly W/Seal Kit (Item 5)
5.	GR1568	1	Seal Kit, Includes: (3) O-Rings, (1) Seal, (1) Spring
6.	GR1561	1	Sleeve
7.	GR1574	1	Sleeve, 1" O.D. x 1/2" Long, Stainless Steel
8.	GR1559	1	Body, 20 Outlets
9.	G10350	4	Hex Socket Head Plug, 1/4" NPT, Stainless Steel
A.	GA9407	1	Liquid Fertilizer Piston Pump Flow Divider Complete, 20 Outlet (Model FD-2000)

# REAR TRAILER HITCH

(FWD159)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G11264	4	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	GD14674	4	Special Washer, 1/2", Hardened
2.	G10460	2	Cotter Pin, 1/4" x 2"
3.	GD19148	1	Pin, 1 1/4" x 9 1/4"
4.	GA13238	1	Hitch Mount
5.	GA10859	1	Pintle Hitch
6.	G10159	2	Machine Bushing, 1 1/4", 10 Gauge

# DECALS, PAINT AND MISCELLANEOUS

**⚠ 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

1

**⚠ WARNING**

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

2

**⚠ WARNING**

**TOW ONLY WITH FARM TRACTOR**

7100-56

3

**⚠ WARNING**

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

7100-68

4

**⚠ 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

5

**⚠ 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

6

 WEEKLY

7

 DAILY

8

**⚠ 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

9

 DAILY

7100-116

10

**⚠ 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


11

**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

12

**ROTATION**



7100-192

13

**NOTE**

It is the responsibility of the user to read and understand the Operator's Manual in regards to safety, operation, lubrication and maintenance before operation of this equipment.

AN OPERATOR & PARTS MANUAL IS AVAILABLE FOR THIS MACHINE.

To obtain a manual, furnish model number and serial number and contact your KINZE Dealer or KINZE Manufacturing, Inc., P.O. Box 806 Williamsburg, IA 52361-0806 USA

14

**⚠ WARNING**

**MAXIMUM INFLATION PRESSURE**

**75 PSI**

7100-219

15

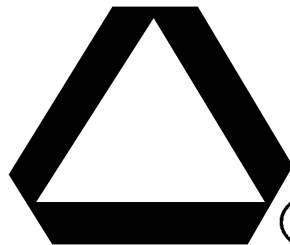
**TORQUE 5/8" SPINDLE BOLTS TO 120 FT/LBS. CHECK PERIODICALLY AND RE-TORQUE AS NEEDED.**

7100-234

16



17



18

**⚠ CAUTION**

**SET DOWN PRESSURE SPRINGS TO MINIMUM. LOWER PLANTER TO GROUND AND EMPTY SEED HOPPERS. REQUIRES 90 LB MIN TO LIFT.**

7100-249

19



20



21

 ANNUALLY

22

# DECALS, PAINT AND MISCELLANEOUS

ROTATE KNURLED COLLAR  
ON WRAP SPRING TIGHTENER  
TO RELEASE SPRING  
TENSION

7100-295

23

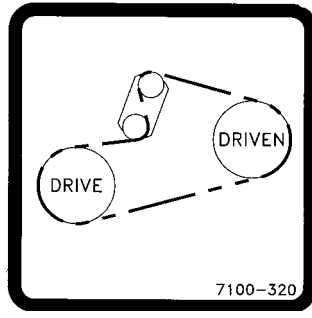
# KINZE

# 3800

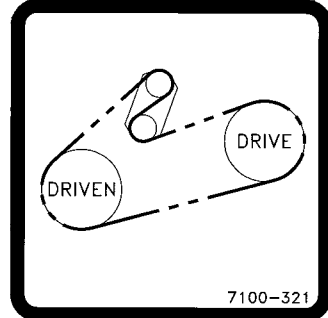
24

A A

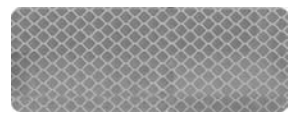
25



26



27



28

**⚠ WARNING ⚠**

STAY CLEAR  
OF DISCHARGE  
WHILE FAN  
IS RUNNING

7100-301

29

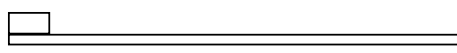
TRANSPORT

7100-317

30

# KINZE

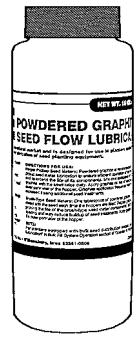
31



32



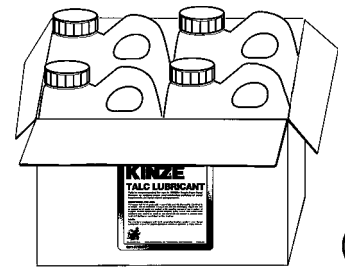
33



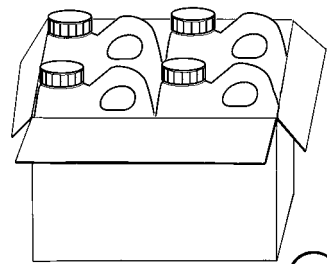
34



35



36



37

**⚠ DANGER ⚠**

ELECTRO-HYDRAULIC AUGER OPERATION.  
AUGER MAY AUTOMATICALLY START  
ANYTIME. DISCONNECT HYDRAULIC LINES  
FROM TRACTOR OR SHUTOFF TRACTOR  
ENGINE BEFORE SERVICING.

7100-319

38

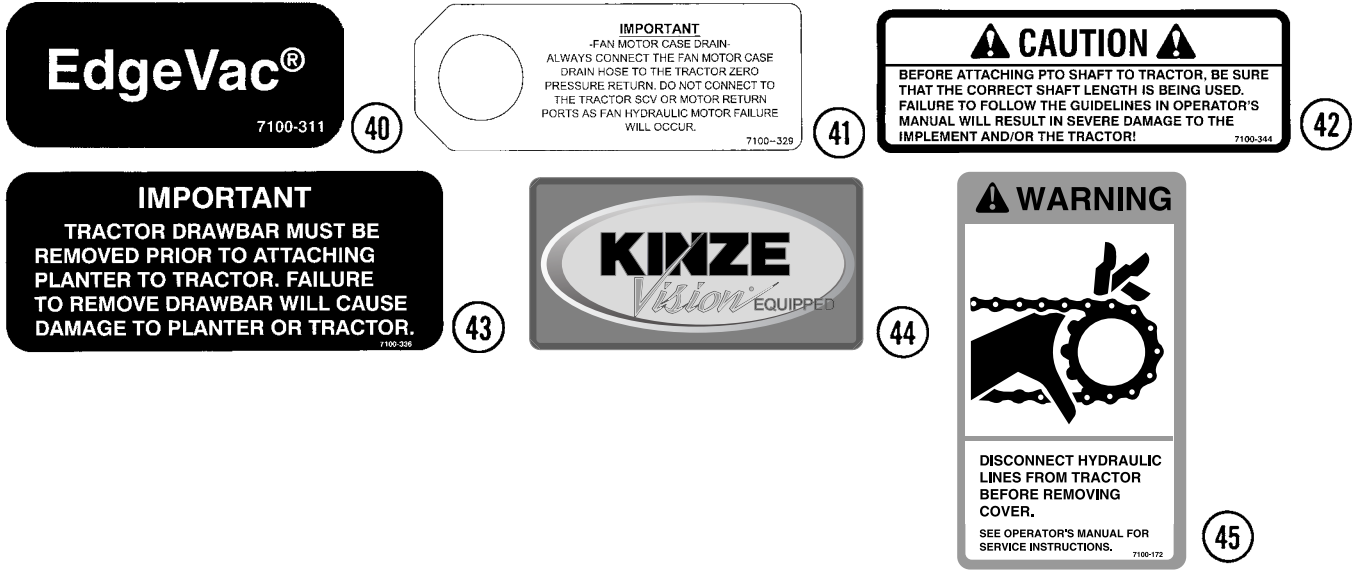
**⚠ DANGER**

**DO NOT RIDE  
ON EQUIPMENT**

7100-266

39

# DECALS, PAINT AND MISCELLANEOUS



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G7100-42	4	Decal, Warning
2.	G7100-46	1	Decal, Warning
3.	G7100-56	1	Decal, Warning
4.	G7100-68	3	Decal, Warning
5.	G7100-89	2	Decal, Danger
6.	G7100-90	1	Decal, Warning
7.	G7100-110	-	Decal, Grease Weekly
8.	G7100-111	-	Decal, Oil Daily
9.	G7100-115	-	Decal, Warning (1 Per Granular Chemical Hopper)
10.	G7100-116	-	Decal, Grease Daily
11.	G7100-117	1	Decal, Danger
12.	G7100-153	-	Decal, Information (1 Per Seed Meter)
13.	G7100-192	-	Decal, Point Row Clutch Rotation
14.	G7100-217	-	Decal, Note
15.	G7100-219	-	Decal, Warning
16.	G7100-234	-	Decal, Bolt Torque
17.	G7100-247	-	Decal, Logo, 4 3/8" x 4 1/2" (2 Per Row Unit)
	G7100-252	-	Decal, Logo, 3 1/2" x 3 5/8" (Hopper Panel Extension)
18.	GD2199	1	SMV Sign
19.	G7100-249	-	Decal, Caution
20.	G7100-258	-	Reflective Decal, Red, 1 1/2" x 9", Rectangular (If Applicable)
	G7100-259	-	Reflective Decal, Amber, 1 1/2" x 9", Rectangular (If Applicable)
	G7100-260	-	Reflective Decal, Orange, 1 1/2" x 9", Rectangular (If Applicable)
21.	G7100-261	-	Reflective Decal, Red, 1 3/4" x 9", Die-Cut (If Applicable)
	G7100-262	-	Reflective Decal, Amber, 1 3/4" x 9", Die-Cut (If Applicable)
	G7100-263	-	Reflective Decal, Orange, 1 3/4" x 9", Die-Cut (If Applicable)
22.	G7100-277	-	Decal, Grease Annually
23.	G7100-295	-	Decal, Spring Tension Release
24.	G7100-300	2	Decal, KINZE® 3800

(Continued On Following Page)



# DECALS, PAINT AND MISCELLANEOUS

ITEM	PART NO.	QTY.	DESCRIPTION
25.	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
	GD10057-05	-	Hose Identification Sleeve, Green AA
	GD10057-06	-	Hose Identification Sleeve, Green BB
	GD10057-09	-	Hose Identification Sleeve, White AA
	GD10057-10	-	Hose Identification Sleeve, White BB
26.	G7100-320	-	Decal, Transmission, R.H.
27.	G7100-321	-	Decal, Transmission, L.H.
28.	G7100-322	-	Reflective Decal, Orange-Red, 1 1/2" x 4"
29.	G7100-301	-	Decal, Warning
30.	G7100-317	-	Decal, Transport
31.	G7100-310	-	Decal, KINZE®, 6 11/16" x 28 5/16"
32.	GD1512	-	Tie Strap, 7 1/2"
	GD2117	-	Tie Strap, 14 1/2"
	GD1162	-	Tie Strap, 28"
	GD2984	-	Tie Strap, 34"
33.	GM0230	-	Operator & Parts Manual, Model 3800 And 3800 SDS (EdgeVac® Seed Metering)
34.	GR0146MPP	-	Powdered Graphite, Twenty-Four 1 Pound Containers
35.	GR0155MPP	-	Blue Paint, Twelve Aerosol Cans
36.	GR1570MPP	-	Talc Lubricant, Four 8 Pound Containers
37.	GR1842MPP	-	Graphite Lubricant, Four 5 Pound Containers
38.	G7100-319	-	Decal, Danger
39.	G7100-266	-	Decal, Danger
40.	G7100-311	-	Decal, EdgeVac®
41.	G7100-329	-	Tag, Fan Motor Case Drain
42.	G7100-344	-	Decal, Caution
43.	G7100-336	-	Decal, Important
44.	G7100-335	-	Decal, KINZE Vision®
45.	G7100-172	-	Decal, Warning

**This page left blank intentionally.**

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
*A1018.....	P120	*A8226.....	P120	G10028.....	P141
*A1031.....	P120	*A8229.....	P121	G10033.....	P44, P107
*A1033.....	P120	*A8230.....	P121	G10035.....	P30
*A1039.....	P120	*A8231.....	P121, P123	G10036.....	P41, P107
*A1055.....	P120	*A8260.....	P120	G10037.....	P7, P63, P67, P77, P103, P105
*A1057.....	P121	A10255.....	P113	G10039.....	P7, P43, P47, P61, P63, P67, P83
*A1076.....	P121	A10365.....	P109	G10040.....	P35
*A1082.....	P120	A10372.....	P111	G10042.....	P67
*A1098.....	P121	A10759.....	P37	G10043.....	P30, P61, P135
*A1132.....	P121	A11020.....	P112	G10044.....	P141, P143
*A11400.....	P123	A11368.....	P109	G10045.....	P44, P58
*A11410.....	P50	A11372.....	P110	G10046.....	P30, P47, P147
*A11425.....	P123	A8827.....	P110	G10047.....	P5, P23, P33, P87, P93, P103
*A11434.....	P123	D13169.....	P111	G10049.....	P31, P73, P90, P99
*A11435.....	P50	G10001.....	P7, P12, P17, P18, P26, P27, P29, P35, P55, P65, P93, P132, P135	G10053.....	P93, P97
*A11436.....	P50	G10002.....	P27, P37, P115, P123, P137	G10054.....	P61, P75
*A11438.....	P120	G10003.....	P5, P33, P39, P45, P73, P94, P149	G10055.....	P30
*A11439.....	P50	G10004.....	P7, P31, P73, P79, P81, P87	G10056.....	P141
*A11806.....	P50	G10005.....	P47, P57, P144	G10058.....	P141
*A11807.....	P50	G10006.....	P17, P44	G10061.....	P21
*A1192.....	P121	G10007.....	P7, P12, P13, P19, P47, P65, P94, P145	G10062.....	P49, P93, P107
*A12014.....	P50	G10008.....	P31, P51, P67, P69, P85, P103	G10063.....	P55, P58, P91, P117
*A12041.....	P121	G10009.....	P65, P85	G10064.....	P18, P26, P30, P33, P131, P143
*A12053.....	P121	G10010.....	P15, P45, P47, P138	G10069.....	P91, P119
*A12055.....	P50	G10011.....	P47, P137	G10071.....	P7, P57, P58, P85
*A12056.....	P50	G10012.....	P137, P145	G10082.....	P31
*A12064.....	P120	G10013.....	P18, P107, P145	G10096.....	P140
*A12067.....	P120	G10014.....	P15, P47, P67, P73, P83, P141, P143	G10101.....	P7, P12, P18, P19, P39, P55, P73, P79, P81, P87, P90, P93, P94, P99, P107, P108, P111, P132, P133, P135, P149
*A12703.....	P123	G10015.....	P17	G10102.....	P17, P35, P44, P47, P57, P58, P63, P71, P83, P97, P101, P105, P106, P108, P131, P135, P137, P141, P143, P145
*A12710.....	P123	G10016.....	P69, P77, P79, P81, P93, P94, P97, P139	G10103.....	P39, P67, P73, P99, P131, P143
*A12723.....	P120	G10017.....	P43, P63, P73, P75, P77, P97, P131, P137, P145	G10104.....	P7, P12, P19, P30, P57, P58, P69, P85, P90, P93, P94, P108, P139, P144, P145, P147
*A12724.....	P120	G10018.....	P15, P17, P26	G10105.....	P69, P71, P79, P81, P85, P145
*A12725.....	P120	G10019.....	P11, P27, P29, P55, P63, P101, P103, P145	G10106.....	P11, P17, P43, P86, P88, P90, P103, P135
*A12729.....	P121	G10020.....	P33, P67		
*A12730.....	P121	G10021.....	P11, P26		
*A12907.....	P50	G10022.....	P57		
*A3153.....	P121	G10023.....	P37, P57, P99		
*A3158.....	P120	G10025.....	P69, P75, P85		
*A3159.....	P123	G10026.....	P69, P69, P81, P85, P145		
*A3199.....	P120	G10027.....	P69, P73, P143		
*A3223.....	P121				
*A3225.....	P120				
*A3228.....	P121				
*A3236.....	P121				
*A3259.....	P120				
*A3290.....	P50				
*A3381.....	P50				
*A3384.....	P50				
*A3392.....	P50				
*A3398.....	P50				
*A7613.....	P121				
*A7614.....	P121				
*A7615.....	P121				
*A8225.....	P120				

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
G10107.....	P17, P18, P35, P41, .....P43, P47, P51, P79, .....P87, P103, P107, .....P137, P144, P145	G10207.....	P5	G10253.....	P99
G10108.....	P5, P7, P21, P27, P33, ...P35, P37, P49, P55, P58, ...P61, P65, P67, P73, P83, .....P87, P91, P93, P103, .....P115, P117, P137, .....P141, P143, P149	G10209.....	P11, P25, P38, P39	G10257.....	P38, P99
G10109.....	P15, P17, P18, P35, .....P44, P45, P47, P55, .....P73, P91, P101, .....P103, P119	G10210.....	P5, P17, P18, P19, .....P21, P27, P37, P55, .....P65, P83, P87, P149	G10260.....	P25
G10110.....	P25, P26, P27, P29, .....P30, P33, P35, P39, .....P57, P97, P131	G10211.....	P33, P73, P125, P127	G10278.....	P141, P143, P147
G10111.....	P7, P18, P27, P30, .....P31, P41, P43, P44, .....P47, P63, P69, P73, .....P75, P79, P81, P83, .....P85, P91, P93, P94, .....P97, P106, P107	G10213.....	P13, P45, P47	G10283.....	P137
G10112.....	P35, P47, P73, P75, .....P103, P141, P143	G10216.....	P7, P15, P27, P30, .....P43, P58, P61, P69, .....P71, P73, P77, P103, .....P141, P143, P145	G10287.....	P141, P143
G10113.....	P103, P107	G10217.....	P12, P69, P79, .....P137, P145	G10292.....	P147
G10130.....	P27, P86, P88, .....P93, P97	G10218.....	P35	G10299.....	P107
G10133.....	P18, P44, P45, P47	G10219.....	P11, P17, P35, .....P55, P61, P137	G10301.....	P33, P35, P73, P83
G10139.....	P69, P85	G10221.....	P26, P103, P116, P119	G10303.....	P17, P31, P35, P86, .....P88, P90
G10148.....	P141, P143	G10226.....	P69, P73, P77	G10305.....	P27, P29, P40, P57
G10152.....	P12, P17, P57, .....P79, P144	G10227.....	P11, P39, P57, P67, .....P99, P118, P131, P143	G10306.....	P39, P137, P149
G10157.....	P67, P73	G10228.....	P7, P15, P35, P44, .....P57, P58, P63, P67, .....P71, P73, P77, P79, .....P81, P83, P97, P101, .....P103, P105, P106, .....P107, P108, P131, .....P135, P137, P139, .....P141, P143, P145	G10308.....	P18, P40
G10159.....	P85, P107, P151	G10229.....	P7, P12, P18, P19, .....P23, P27, P31, P37, .....P39, P45, P55, P65, .....P73, P79, P81, P87, .....P93, P94, P99, P108, .....P112, P123, P132, .....P133, P135, P149	G10309.....	P21, P29
G10168.....	P101	G10230.....	P7, P12, P15, P18, .....P19, P30, P57, P58, .....P65, P67, P69, P85, .....P90, P93, P94, P103, .....P108, P139, P144, .....P145, P147	G10310.....	P39
G10171.....	P11, P17, P25, .....P35, P116	G10231.....	P69, P71, P75, P81, .....P85, P145	G10312.....	P5, P27, P37, P57, .....P58, P131
G10177.....	P139	G10232.....	P11, P17, P25, P26, .....P30, P61, P63, P86, .....P88, P90, P103, P116, .....P135, P137, P145	G10315.....	P17, P18, P39
G10183.....	P29	G10233.....	P27, P86, P88, P91, .....P93, P97, P105, .....P107, P138	G10318.....	P43
G10189.....	P67	G10235.....	P87, P91	G10323.....	P25
G10191.....	P79, P81	G10239.....	P65, P77	G10325.....	P13, P37
G10194.....	P45, P71	G10243.....	P29, P133, P135	G10326.....	P5
G10198.....	P75	G10252.....	P25	G10328.....	P13, P112
G10199.....	P103, P107			G10330.....	P71
G10201.....	P5, P37			G10338.....	P15, P21
G10203.....	P5, P7, P33, P55, .....P67, P73, P87, P99, .....P115, P117, .....P141, P143			G10341.....	P11
G10204.....	P13, P15, P138			G10348.....	P31, P44
G10205.....	P35, P47, P55, P145			G10350.....	P150
G10206.....	P7, P45, P63, P67, .....P91, P94, P97			G10356.....	P103
				G10362.....	P103
				G10371.....	P44
				G10373.....	P75
				G10374.....	P99
				G10400.....	P47, P75
				G10403.....	P26, P27, P29, .....P30, P35
				G10412.....	P7, P12, P21
				G10418.....	P69
				G10427.....	P13, P17
				G10430.....	P27, P86, P88
				G10438.....	P5, P7
				G10448.....	P71
				G10450.....	P137
				G10452.....	P39
				G10453.....	P86, P88
				G10457.....	P65, P73
				G10460.....	P65, P69, P75, P85, .....P103, P105, P107, .....P144, P151
				G10462.....	P137
				G10463.....	P17
				G10464.....	P27
				G10470.....	P73

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
G10471.....	P75	G10641.....	P144	G10928.....	P115, P133
G10477.....	P103	G10643.....	P47	G10931.....	P133, P135
G10485.....	P141, P143	G10644.....	P103, P107	G10932.....	P113
G10496.....	P91, P99	G10660.....	P38	G10939.....	P87, P111
G10497.....	P99	G10669.....	P5	G10940.....	P15
G10499.....	P55	G10670.....	P37	G10953.....	P87
G10501.....	P44, P87	G10674.....	P141, P143, P147	G10958.....	P109, P110
G10503.....	P43, P45, P47	G10676.....	P57, P141	G10961.....	P63, P138
G10523.....	P39	G10681.....	P53, P147	G10969.....	P110
G10527.....	P91, P93, P97	G10686.....	P65, P133, P135	G10972.....	P111, P112, P113
G10529.....	P40	G10688.....	P61, P94	G10974.....	P45, P47, P63
G10536.....	P43	G10693.....	P149	G10983.....	P112
G10541.....	P35	G10722.....	P101, P107	G10984.....	P112
G10543.....	P79, P81	G10724.....	P101, P105, P107	G10991.....	P137, P149
G10544.....	P101, P105, P107	G10725.....	P101, P105, P107	G10992.....	P11
G10546.....	P21, P38	G10726.....	P75	G10995.....	P147
G10551.....	P5	G10732.....	P7, P12	G10996.....	P99, P115, P116, P118, P125
G10560.....	P94	G10739.....	P142	G10999.....	P23
G10567.....	P21, P37, P38	G10751.....	P21	G11000.....	P30
G10570.....	P38	G10752.....	P21	G11007.....	P5
G10572.....	P43	G10753.....	P141, P143	G11008.....	P5
G10574.....	P41, P44, P47, P57	G10756.....	P67	G11009.....	P25
G10581.....	P27, P63, P85, P91	G10757.....	P39, P133, P135	G11010.....	P47
G10585.....	P43, P83, P97	G10758.....	P39, P133, P135	G11015.....	P5
G10597.....	P43	G10765.....	P45, P47, P99	G11016.....	P111
G10599.....	P18, P19, P55, P83, P141, P143	G10770.....	P111	G11018.....	P7
G10602.....	P21, P25, P27, P29, P37, P38, P87	G10801.....	P17, P18	G11034.....	P106
G10603.....	P25	G10802.....	P73	G11042.....	P143, P145
G10606.....	P123	G10804.....	P99	G11046.....	P63
G10610.....	P85	G10809.....	P61, P65, P73	G11065.....	P135
G10615.....	P147	G10844.....	P101	G11066.....	P11
G10616.....	P141, P143	G10848.....	P61	G11067.....	P115, P116, P117
G10619.....	P140, P143, P147	G10857.....	P73	G11071.....	P71
G10620.....	P5, P15, P21, P27, P29, P31, P37, P57, P58, P131, P138	G10859.....	P99	G11073.....	P38, P97
G10621.....	P21, P29, P37, P40	G10860.....	P87	G11075.....	P91
G10622.....	P13, P26, P27, P29, P31, P33, P35, P40, P57, P83, P115	G10862.....	P103	G11078.....	P91
G10623.....	P141, P143	G10864.....	P39	G11081.....	P85
G10625.....	P75	G10871.....	P73	G11083.....	P147
G10626.....	P141, P143, P147	G10880.....	P27, P29, P97	G11095.....	P69
G10628.....	P141, P143	G10887.....	P147	G11097.....	P67
G10629.....	P141, P143	G10888.....	P141, P143	G11099.....	P65, P69, P112
G10636.....	P71, P85	G10890.....	P63, P87	G11103.....	P91
G10640.....	P15, P65, P67, P69, P71, P73, P75, P77, P79, P81, P83, P85, P90, P103, P105, P106, P107, P109, P110, P112, P137, P143	G10897.....	P141, P143	G11105.....	P77
		G10900.....	P99	G11108.....	P35, P103
		G10901.....	P55, P141, P143	G11110.....	P103
		G10909.....	P31	G11112.....	P127
		G10912.....	P13	G11116.....	P137
		G10913.....	P71	G11118.....	P87
		G10917.....	P141, P143, P147	G11119.....	P87
		G10921.....	P38	G11122.....	P145
		G10923.....	P27, P86, P88, P93, P97	G11124.....	P55
		G10924.....	P15	G11130.....	P73
		G10927.....	P133, P135	G11132.....	P67

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
G11133.....	P55, P108	G1K385 .....	P39	G6408-08.....	P113, P115, P118
G11134.....	P108	G1K395 .....	P9, P125	G6408-10.....	P53
G11137.....	P58	G1K396 .....	P9, P125	G6408-20.....	P50
G11145.....	P57, P58	G1K465 .....	P7	G6408-H06-0.....	P53, P115, P116, P118
G11147.....	P57	G1K467 .....	P45	G6410-16-20 .....	P50
G11162.....	P101	G1K472 .....	P25	G6500-06.....	P52
G11165.....	P141, P143	G2100-03.....	P27, P29, P86, P88, P91	G6500-08.....	P115, P118, P121, P123
G11166.....	P55, P57	G2404-10-08 .....	P50	G6500-10.....	P115, P117, P118
G11167.....	P31	G2500-84.....	P145	G6500-12.....	P50
G11172.....	P25	G2603-08.....	P120	G6502-06.....	P116, P120
G11173.....	P25	G2603-10.....	P120	G6502-08.....	P121
G11174.....	P75	G2700-06-06 .....	P121	G6502-12.....	P50, P55
G11179.....	P73	G2701-08.....	P112	G6602-08.....	P121
G11180.....	P29	G2704-06.....	P121	G6801-06.....	P51, P115
G11182.....	P26, P29	G304-C-10.....	P50	G6801-08.....	P115, P117, P118, P120
G11188.....	P57, P58	G306-06.....	P121	G6801-08-06 .....	P116
G11192.....	P26	G306-08.....	P112	G6801-08-10 .....	P50
G11197.....	P29	G3200-63.....	P145	G6801-10-12 .....	P52
G11199.....	P57	G3303-108.....	P5, P38	G6801-12.....	P50, P51
G11202.....	P135	G3303-16.....	P5	G6801-20.....	P50, P51
G11203.....	P118	G3305-01.....	P40	G6801-L-20 .....	P50
G11205.....	P29	G3310-108.....	P93, P97	G6801-LL-08 .....	P117
G11206.....	P29	G3310-112.....	P27	G6801-LL-20 .....	P50
G11207.....	P30	G3310-168.....	P86	G6803-08.....	P120
G11209.....	P39	G3316-80.....	P91	G7100-110.....	P154
G11210.....	P25	G3317-16.....	P123	G7100-111.....	P154
G11213.....	P25	G3400-01.....	P27, P29, P86, P88, P91	G7100-115.....	P154
G11215.....	P55	G4200-05.....	P141	G7100-116.....	P154
G11220.....	P7	G4200-13.....	P143	G7100-117.....	P154
G11226.....	P33	G4201-02.....	P141, P143	G7100-153.....	P154
G11228.....	P45	G4205-10.....	P141, P143, P147	G7100-172.....	P155
G11236.....	P45	G4206-01.....	P141, P143	G7100-192.....	P154
G11237.....	P147	G4301-02.....	P147	G7100-217.....	P154
G11240.....	P61	G4301-04.....	P147	G7100-219.....	P154
G11247.....	P11	G4301-08.....	P147	G7100-234.....	P154
G11260.....	P53	G4427-01.....	P143	G7100-247.....	P154
G11264.....	P151	G4427-02.....	P143	G7100-249.....	P154
G1K248 .....	P9, P125, P129, P133, P135	G6326X .....	P7, P12	G7100-252.....	P154
G1K249 .....	P133	G6400-06.....	P52, P53, P116	G7100-258.....	P154
G1K252 .....	P9, P125, P129, P133, P135	G6400-06-08 .....	P121	G7100-259.....	P154
G1K267 .....	P9, P125, P133	G6400-08.....	P113, P115, P116, P117, P118, P119, P120	G7100-260.....	P154
G1K268 .....	P9, P125, P133	G6400-08-04 .....	P112	G7100-261.....	P154
G1K296 .....	P15	G6400-08-06 .....	P116	G7100-262.....	P154
G1K320 .....	P9, P55, P129, P133	G6400-08-10 .....	P123	G7100-263.....	P154
G1K321 .....	P9, P55, P129, P133	G6400-10.....	P53, P115	G7100-266.....	P155
G1K322 .....	P133	G6400-10-08 .....	P115, P117	G7100-277.....	P154
G1K323 .....	P132	G6400-12.....	P50, P52, P53, P55	G7100-295.....	P154
G1K324 .....	P87	G6400-20-16 .....	P50	G7100-300.....	P154
G1K345 .....	P18	G6400-L-08 .....	P115	G7100-301.....	P155
G1K362 .....	P133, P135	G6400-L-10 .....	P118	G7100-310.....	P155
G1K363 .....	P133, P135	G6403-NWO-12.....	P53	G7100-311.....	P155
G1K364 .....	P133				

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
G7100-317	P155	GA10253	P113	GA10503	P73
G7100-319	P155	GA10256	P113	GA10504	P73
G7100-320	P155	GA10269	P67	GA10507	P106
G7100-321	P155	GA10275	P83	GA10510	P141, P143
G7100-322	P155	GA10276	P83	GA10553	P71
G7100-329	P155	GA10277	P83	GA10571	P131
G7100-335	P155	GA10278	P83	GA10572	P131
G7100-336	P155	GA10279	P73, P75	GA10576	P131
G7100-344	P155	GA10280	P65	GA10584	P73
G7100-42	P154	GA10281	P67	GA10621	P144
G7100-46	P154	GA10282	P67, P73	GA10623	P113
G7100-56	P154	GA10287	P77	GA10632	P116
G7100-68	P154	GA10297	P131	GA10634	P22
G7100-89	P154	GA10307	P125	GA10635	P55
G7100-90	P154	GA10308	P125	GA10646	P137
G7566X	P19	GA10329	P125	GA10647	P137
G7848X	P125	GA10334	P129	GA10663	P141, P143
G8081X	P55	GA10335	P129	GA10682	P125
GA0167	P101	GA10336	P129	GA10683	P125
GA0167	P105, P107	GA10337	P129	GA10684	P125
GA0173	P105	GA10338	P129	GA10685	P125
GA0241	P144	GA10343	P69	GA10686	P125
GA0243	P101, P105, P107	GA10355	P144	GA10704	P137
GA0245	P101, P105, P107	GA10356	P141	GA10705	P137
GA0251	P145	GA10357	P141	GA10714	P113
GA0252	P145	GA10358	P141	GA10743	P81
GA0257	P101, P105, P107	GA10359	P110	GA10752	P55
GA0262	P145	GA10363	P109	GA10755	P25
GA0378	P27, P86, P88	GA10366	P109	GA10765	P55
GA0530	P75	GA10373	P111	GA10799	P55
GA0531	P75	GA10375	P106	GA10859	P151
GA0532	P75	GA10378	P79	GA10894	P145
GA0547	P145	GA10382	P107	GA10907	P145
GA0895	P85	GA10383	P105	GA10908	P145
GA0899	P101, P105, P107	GA10384	P105	GA10917	P55
GA10036	P138	GA10385	P105	GA10923	P139
GA10037	P138	GA10386	P105	GA10987	P118
GA10054	P99	GA10394	P103	GA11021	P112
GA10137	P21	GA10395	P103	GA11027	P83
GA10139	P71	GA10401	P103	GA11028	P83
GA10148	P55	GA10409	P105, P107	GA11039	P133
GA10149	P52	GA10413	P81	GA11061	P58
GA10151	P21	GA10414	P81	GA11063	P141, P143
GA10155	P21	GA10426	P106	GA11066	P127
GA10157	P5	GA10452	P129	GA11079	P65
GA10173	P86, P88	GA10455	P73	GA11082	P65
GA10194	P125	GA10456	P77	GA11112	P75
GA10195	P127	GA10457	P105, P107	GA11156	P55
GA10201	P140	GA10458	P105, P107	GA11169	P97
GA10206	P125	GA10466	P73	GA11174	P71
GA10242	P112	GA10468	P108	GA11186	P97
GA10243	P112	GA10483	P67	GA11187	P97
GA10245	P112	GA10493	P103	GA11204	P57
GA10246	P112	GA10496	P107	GA11206	P73

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GA11215	P69	GA11391	P26	GA11670	P83
GA11227	P71	GA11392	P23	GA11671	P58
GA11235	P91	GA11393	P27	GA11672	P58
GA11236	P91	GA11394	P91	GA11673	P57
GA11237	P91	GA11395	P26	GA11674	P57
GA11238	P91	GA11396	P26	GA11675	P57
GA11239	P91	GA11502	P127	GA11676	P51
GA11240	P91	GA11506	P127	GA11677	P51
GA11241	P91	GA11507	P127	GA11678	P51
GA11242	P91	GA11513	P27	GA11679	P53
GA11243	P91	GA11515	P27	GA11680	P53
GA11244	P91	GA11520	P41	GA11682	P53
GA11245	P91	GA11532	P29	GA11684	P31
GA11249	P77	GA11536	P35	GA11689	P55
GA11250	P77	GA11537	P35	GA11691	P55
GA11255	P12	GA11538	P29	GA11705	P30
GA11256	P93	GA11539	P29	GA11706	P30
GA11257	P93	GA11540	P29	GA11708	P30
GA11258	P93	GA11541	P29	GA11709	P30
GA11262	P73	GA11548	P29	GA11710	P30
GA11263	P73	GA11555	P29	GA11711	P30
GA11264	P73	GA11556	P29	GA11714	P30
GA11265	P75	GA11562	P29	GA11715	P30
GA11266	P75	GA11563	P29	GA11716	P31
GA11267	P99	GA11575	P30	GA11717	P30
GA11268	P99	GA11579	P33	GA11718	P30
GA11276	P85	GA11580	P29	GA11721	P30
GA11277	P75	GA11581	P29	GA11722	P30
GA11278	P75	GA11584	P26	GA11723	P30
GA11280	P86, P88	GA11585	P27	GA11724	P30
GA11281	P86, P88	GA11587	P33	GA11727	P30
GA11285	P87	GA11607	P143	GA11728	P30
GA11287	P87	GA11608	P143	GA11729	P30
GA11297	P90	GA11615	P33	GA11730	P31
GA11299	P129	GA11616	P33	GA11731	P31
GA11311	P91	GA11617	P33	GA11732	P31
GA11312	P91	GA11619	P99	GA11733	P30
GA11323	P79	GA11620	P99	GA11736	P127
GA11324	P79	GA11623	P26	GA11743	P142
GA11348	P127	GA11624	P26	GA11757	P55
GA11360	P118	GA11625	P26	GA11763	P27
GA11362	P99	GA11626	P27	GA11774	P123
GA11363	P99	GA11627	P27	GA11775	P35
GA11365	P118	GA11634	P73	GA11778	P30
GA11367	P109	GA11635	P33	GA11799	P53
GA11370	P109	GA11636	P35	GA11900	P53
GA11371	P110	GA11637	P35	GA11906	P127
GA11374	P109	GA11638	P35	GA11911	P25
GA11375	P27	GA11639	P35	GA11934	P53
GA11378	P127	GA11640	P35	GA11935	P25
GA11381	P33	GA11651	P55	GA11964	P94
GA11387	P127	GA11656	P57, P58	GA11982	P7
GA11389	P26	GA11660	P57	GA11987	P55
GA11390	P26	GA11669	P83	GA11988	P11



# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GA11989	P11	GA13169	P11	GA2660	P141, P143
GA11991	P11	GA13198	P125	GA3407	P116, P119
GA11992	P11	GA13238	P151	GA3413	P115
GA11993	P11	GA13240	P61	GA3552	P87
GA11994	P11	GA13241	P63	GA3553	P87
GA11995	P11	GA13242	P61	GA3584	P115, P124
GA11997	P11	GA13243	P61	GA3893	P147
GA12102	P11	GA13244	P61	GA4444	P37
GA12104	P11	GA13257	P63	GA4722	P71
GA12110	P137	GA13258	P61, P63	GA4723	P71
GA12111	P137	GA13278	P63	GA4729	P71
GA12114	P97	GA13279	P63	GA4976	P140, P143, P147
GA12127	P81	GA13280	P63	GA5106	P27, P93, P97
GA12128	P81	GA13281	P63	GA5108	P27
GA12133	P25	GA13282	P63	GA5116	P91, P93, P97
GA12154	P25	GA13283	P63	GA5121	P69, P85
GA12171	P127	GA13286	P63	GA5122	P85
GA12173	P127	GA13288	P63	GA5164	P27
GA12174	P127	GA13291	P63	GA5165	P27
GA12180	P127	GA13329	P105	GA5202	P93, P97
GA12235	P45, P47	GA13333	P105	GA5600	P132, P135
GA12236	P44, P45, P47	GA13334	P105	GA5651	P7, P12
GA12256	P45	GA13362	P61	GA5654	P43, P44, P45, P47
GA12335	P149	GA13474	P103	GA5698	P25
GA12358	P11	GA13476	P107	GA5715	P43
GA12403	P133	GA13477	P105	GA5718	P43
GA12404	P11	GA13478	P105	GA5719	P43
GA12487	P139	GA13480	P58	GA5853	P101
GA12488	P139	GA13481	P58	GA6108	P125
GA12538	P135	GA13490	P50	GA6109	P124
GA12557	P135	GA13547	P63	GA6147	P133, P135
GA12563	P135	GA13562	P135	GA6171	P15, P17, P18, P138
GA12626	P11	GA1676	P101	GA6434	P18
GA12636	P133, P135	GA1677	P101	GA6527	P147
GA12641	P135	GA1678	P101	GA6597	P18
GA12644	P9	GA1679	P101	GA6618	P17
GA12645	P9	GA1720	P7, 12	GA6619	P17
GA12646	P9	GA2007	P21	GA6620	P17
GA12650	P133, P135	GA2012L	P13	GA6733	P17
GA12655	P135	GA2012R	P13	GA6741	P39
GA12657	P65	GA2014	P13, P17, P43, P44, P45, P47	GA6761	P69
GA12671	P9	GA2054	P17	GA6801	P17
GA12672	P29	GA2068	P63, P87	GA6832	P44
GA12673	P29	GA2075	P39	GA6833	P44
GA12679	P65	GA2094	P40	GA6834	P44
GA12681	P65	GA2142	P85	GA6838	P44
GA12683	P9	GA2147	P85	GA6907	P39
GA12688	P65	GA2148	P85	GA6975	P55, P125, P127
GA12689	P65	GA2180	P12	GA6977	P125, P127
GA12818	P61	GA2528	P125	GA6978	P9, P125, P127
GA12845	P50	GA2558	P85	GA7051	P94
GA12864	P63	GA2559	P145	GA7052	P94
GA13006	P65	GA2612	P125, P127	GA7137	P99
GA13007	P65			GA7154	P27, P93, P97

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GA7372	P87	GA9437	P137	GB0356	P69
GA7376	P85	GA9472	P138	GB0358	P25
GA7399	P125	GA9481	P125	GB0365	P139
GA7409	P85	GA9510	P117	GB0366	P7, P12
GA7412	P45	GA9544	P71	GB0370	P139
GA7434	P71, P75, P85	GA9712	P144	GB0371	P23
GA7572	P86, P88	GA9843	P27	GB0383	P45
GA7849	P133, P135	GA9844	P47	GB0386	P47
GA7851	P133, P135	GA9845	P47	GB0387	P44, P45
GA7852	P133, P135	GA9846	P87	GB0393	P7
GA7853	P133	GA9861	P47	GB0394	P7
GA7854	P133	GA9862	P47	GB0395	P7
GA7855	P133	GA9864	P47	GB0396	P7
GA7856	P9, P125, P127, P133	GA9865	P47	GB0397	P7
GA7858	P132	GA9877	P85	GB0398	P7
GA7859	P133, P135	GA9954	P127	GB0399	P137
GA7862	P125	GA9963	P9	GB0400	P137
GA7863	P125	GA9964	P9, P55	GB0401	P45
GA7949	P15	GA9965	P127	GD0453-07	P106
GA7975	P15	GA9978	P133, P135	GD0740	P83, P97
GA7976	P15	GA9979	P133, P135	GD0746	P101
GA8001	P97	GB0115	P38	GD0752-53	P75
GA8022	P133, P135	GB0116	P38	GD0831	P145
GA8026	P132	GB0165	P105	GD0840	P101, P105, P107
GA8046	P133, P135	GB0186	P12	GD0844	P145
GA8047	P125, P133, P135	GB0196	P145	GD0914-10.5	P93
GA8130	P111	GB0212	P65	GD0914-13.5	P93
GA8322	P18	GB0213	P137	GD0914-156	P93
GA8324	P13	GB0218	P7, P12, P21, P30, P47, P51, P87, P103, P144	GD0914-20	P93
GA8326	P38			GD0914-21	P93
GA8328	P9, P55, P129			GD0914-218	P94
GA8329	P9, P55, P129	GB0230	P73	GD0914-228	P94
GA8364	P38	GB0234	P73	GD0914-36	P93
GA8371	P37	GB0239	P17, P18	GD0914-60	P93
GA8393	P99	GB0254	P18	GD0914-68	P97
GA8603	P41, P47, P137	GB0265	P5	GD0914-76	P93
GA8641	P41, P47	GB0266	P5	GD0914-78	P97
GA8731	P125	GB0267	P5	GD10036	P7, P12
GA8760	P45	GB0268	P17, P18	GD10057-01	P155
GA8768	P141, P143	GB0274	P5	GD10057-02	P155
GA8828	P110	GB0276	P15	GD10057-03	P155
GA8831	P110	GB0278	P21, P38	GD10057-04	P155
GA8877	P138	GB0282	P18	GD10057-05	P155
GA8983	P137	GB0283	P27, P29	GD10057-06	P155
GA9068	P99	GB0285	P5	GD10057-09	P155
GA9097	P115, P127	GB0301	P13	GD10057-10	P155
GA9098	P116, P127	GB0314	P21	GD10063	P69
GA9131	P47	GB0319	P25	GD10102	P99
GA9144	P133	GB0322	P137	GD10103	P99
GA9145	P103, P107	GB0323	P137	GD10104	P99
GA9205	P111	GB0328	P25	GD10123	P99
GA9306	P75	GB0331	P21	GD10126	P93
GA9315	P75	GB0332	P69	GD10243	P125
GA9407	P150	GB0355	P69	GD1026	P5, P37, P87

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GD10283	P101	GD1143	P40	GD13170	P111
GD1033	P5	GD1144	P40	GD13171	P111
GD10356	P91, P93, P94, P97	GD1145	P40	GD13172	P111
GD10473	P13, P17	GD11453	P15	GD13173	P111
GD10510	P99	GD11474	P133, P135	GD13226-02	P49, P61, P63
GD10519	P45, P47	GD11490	P85	GD13309	P138
GD1059L	P37	GD11508	P19	GD13328	P145
GD1059R	P37	GD11509	P19	GD13361	P5
GD1060	P37	GD11557	P137	GD13400	P111
GD1061	P38	GD11558	P137	GD13401	P85
GD1063	P38	GD1162	P155	GD13412	P23
GD1065	P5	GD11652	P41, P47	GD13524-01	P123
GD10705	P21	GD1166	P144	GD13562	P63
GD10777	P141, P143	GD11677	P41	GD13575-05	P33
GD1085	P18	GD11695	P85	GD1359	P75
GD1086	P15	GD11700	P53, P147	GD1360	P75
GD10867	P5	GD11751	P111	GD13740	P75
GD10963	P39	GD11845	P5, P13, P17	GD13744	P145
GD10984	P39	GD11953	P138	GD14089	P112
GD10991	P15	GD11954	P138	GD14095-04	P61
GD10993	P5	GD11962	P5, P37	GD14170	P47
GD11001	P5	GD11963-03	P33	GD14217	P12
GD11017	P13	GD11963-04	P7	GD14257	P27
GD11045	P27, P86, P88, P93, P97	GD11985	P110	GD14258	P9
GD11089	P125, P129, P133, P135	GD11986	P110	GD14343	P91
GD1109	P17, P18	GD11993	P133, P135	GD14398	P41
GD11120	P99	GD12239	P113	GD14413	P91
GD11123	P141, P143	GD12522	P109, P111, P113	GD14414	P91
GD1114	P7, P12, P93, P108, P147	GD12539	P112	GD14431	P91
GD1115L	P39	GD12543	P71, P85	GD14432	P91
GD1115R	P39	GD1255	P27, P86, P88	GD14467	P25
GD1116	P39	GD1256	P27, P86, P88	GD14468	P25
GD11169	P133	GD12597	P112	GD14477	P25
GD11170	P133	GD12613	P107	GD14512	P99
GD1118	P39	GD12670	P112	GD14513	P99
GD11219	P37	GD12672	P112	GD14528	P119
GD11239	P21, P37, P38	GD12676	P137	GD14541	P25
GD11240	P38	GD12677	P137	GD14562	P79
GD11259	P5, P13	GD12679	P137	GD14563	P77, P79, P81
GD11279	P22	GD12723	P131	GD14564	P79
GD11297	P38	GD12724	P131	GD14565	P77
GD11305	P37	GD12725	P131	GD14592	P25
GD11306	P13	GD12726	P99, P124	GD14626	P57
GD11313	P19	GD12790	P75	GD14627	P57
GD1132	P43, P44, P45, P47	GD12797-02	P23	GD14640	P55, P127
GD11394-23	P27	GD12797-04	P23	GD14645	P141
GD11395	P27, P29	GD12797-05	P23	GD14649	P137
GD11413	P21, P38	GD12797-09	P23	GD14651	P137
GD11422	P7, P12	GD12817	P47, P137	GD14659	P39
GD11423	P15, P138	GD12826	P47	GD14660	P9
GD11424	P37	GD12827	P47	GD14666	P63
		GD12829	P47	GD14667	P63
		GD13088	P63	GD14668	P63
		GD13110	P21	GD14671	P139

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GD14672	P137	GD15233	P105	GD15792-21	P57
GD14673	P137	GD15234	P105	GD15792-22	P57
GD14674	P43, P151	GD15235	P83, P106	GD15796	P69
GD14812	P65	GD15282	P79, P81	GD15799	P57, P58
GD14841	P67	GD15283	P35, P103	GD15803	P55
GD14842	P67, P69	GD15285	P79, P81	GD15804	P55
GD14843	P67	GD15290	P107	GD15833	P58
GD14897	P110	GD15406	P71	GD15849-02	P55
GD14898	P110	GD15450	P69	GD15850	P57
GD14901	P109	GD15472	P141	GD15854	P57, P58
GD14902	P109	GD15473	P141	GD15856-02	P58
GD14908	P111	GD15474	P141	GD15856-07	P57
GD14910	P111	GD15475	P141	GD15856-08	P57, P58
GD14915	P112	GD15483	P147	GD15856-09	P57, P58
GD14923	P115	GD15489	P105, P107	GD15856-10	P58
GD14925	P117	GD15492	P73	GD15856-11	P58
GD14926	P69	GD15532	P87, P88	GD15856-12	P57
GD14941	P69	GD15538	P87, P88	GD15867-03	P57
GD14987	P131	GD15545	P108	GD15867-04	P57
GD15041	P75	GD15552	P108	GD15923	P25
GD15042	P75	GD15560	P108	GD15968	P131
GD15045	P69	GD15568	P137	GD16037	P53
GD15046	P69	GD15582	P131	GD16038	P53
GD15047	P69	GD15600	P137	GD16058	P75
GD15051	P69	GD15605	P140, P142	GD16060	P112
GD15064	P81	GD15623	P113	GD16119-12	P58
GD15065	P81	GD15634	P115	GD16146	P115
GD15066	P79	GD15649	P107	GD16147	P112
GD15067	P77	GD15663	P25	GD16184	P112
GD15068	P77	GD15664	P73	GD16189	P141, P143
GD15069	P77	GD15668	P67	GD16210	P141, P143
GD15070	P77	GD15669	P67	GD16227	P65
GD15072	P77	GD15674	P67	GD16245	P5
GD15074	P79, P81	GD15675	P67	GD16315	P135
GD15109	P79	GD15677	P73	GD16316	P135
GD15110	P79, P81	GD15679	P73	GD16317-01	P58
GD15114	P93	GD15700	P25	GD16324-01	P55
GD1512	P155	GD15706	P141, P143	GD16355-01	P97
GD15131	P103, P105	GD15719	P79	GD16355-02	P97
GD15140	P103	GD15720	P79	GD16355-03	P97
GD15169	P69	GD15742	P103	GD16356	P35
GD15170	P69	GD15747	P21	GD16362	P93, P97
GD15172	P69	GD15774	P113	GD16370	P91
GD15187-01	P115	GD15783	P73	GD16385-07	P30
GD15192	P103	GD15784	P108	GD16385-08	P30
GD15193	P103	GD15789	P55	GD16388	P73
GD15194	P103	GD15790	P55	GD16392	P73
GD15226	P137	GD15791-03	P58	GD16393	P73
GD15227	P103	GD15791-05	P58	GD16394	P73
GD15228	P103	GD15792-05	P57	GD16399-01	P23
GD15229	P107	GD15792-06	P57	GD16400	P26, P27, P29, P30
GD15230	P105	GD15792-14	P57	GD16401	P26, P27, P29, P30
GD15231	P107	GD15792-16	P57	GD16417	P93
GD15232	P107	GD15792-20	P57	GD16437	P87

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GD16438	P87	GD16840	P55	GD17308	P33
GD16439	P91	GD16842	P57	GD17309	P33
GD16440	P91	GD16844	P57	GD17450	P79
GD16446	P91	GD16854	P57	GD17794	P7
GD16447	P91	GD16855	P57	GD17973	P139
GD16448	P91	GD16864	P57	GD18004	P67
GD16449	P91	GD16873	P53	GD18010	P9, P11
GD16450	P93	GD16887	P83	GD18011	P11
GD16451	P93	GD16890	P83	GD18013	P135
GD16466	P93	GD16898	P57	GD18078	P11
GD16467	P93	GD16913	P30	GD18081	P11
GD16478	P141, P143	GD16942	P143	GD18095	P25
GD16479	P141, P143	GD16943	P143	GD18096	P115
GD16489	P123	GD16944	P143	GD18098	P25
GD16490	P123	GD16957	P31	GD18099	P117
GD16500	P118	GD16972	P31	GD18100	P116, P117
GD16530	P35	GD16973	P31	GD18101	P117
GD16535	P27	GD16979	P33	GD18102	P116
GD16537	P123	GD16982	P29	GD18112	P11
GD16538	P123	GD16983	P29	GD18118	P133, P135
GD16539	P27	GD16991	P55	GD18143	P65
GD16540	P27	GD16992	P55	GD18151	P65
GD16542	P27	GD16994	P51	GD18152	P65
GD16547	P27	GD17002	P27	GD18168	P133, P135
GD16550	P27	GD17006	P137	GD18170	P65
GD16556	P30	GD17014	P5	GD18173	P11
GD16572	P143	GD17015	P57	GD18175	P65
GD16608	P55	GD17016	P57	GD18275	P9
GD16620	P29	GD17021	P25	GD18283	P51
GD16634	P29	GD17028	P25	GD18307	P61
GD16672	P29	GD17039	P69, P139	GD18308	P61
GD16674	P29	GD17047	P25	GD18318	P61, P63
GD16675	P29	GD17048	P25	GD18324	P61
GD16680	P31	GD17049	P25	GD18325	P61
GD16691	P33	GD17050	P25	GD18601	P67
GD16692	P33	GD17051	P94	GD1862	P141, P143
GD16693	P33	GD17094	P94	GD18631	P116
GD16694	P33	GD17095	P94	GD18706	P116
GD16701	P31	GD17099	P25	GD18715-01	P63
GD16705	P27	GD17100	P97	GD18715-02	P63
GD16706	P27	GD17104	P25	GD18715-03	P63
GD16707	P27	GD17141	P11	GD18725	P61
GD16714	P143	GD17143	P11	GD18726	P61
GD16716	P143	GD17144	P11	GD18731	P61
GD16717	P143	GD17150-07	P11	GD18760	P57
GD16718	P143	GD17151-06	P9	GD18761	P57
GD16731	P143	GD17152	P25	GD18770	P63
GD16733	P143	GD17154	P11	GD18783	P63
GD16751	P143	GD17156	P11	GD18796	P9
GD16766	P26	GD17162	P25	GD18798	P63
GD16778	P35	GD17180	P81	GD18802	P63
GD16779	P35	GD17186	P25	GD18803	P63
GD16787	P67	GD17187	P25	GD18845	P61
GD16788	P30	GD17298	P11	GD18880	P61

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GD18881	P61	GD5857	P44, P73, P87,	GD9530	P99, P124
GD18901	P11		P90, P94, P133	GD9562	P17
GD18904	P107	GD5875	P103	GD9667	P99
GD18905	P107	GD5892	P73	GD9671	P99
GD18934	P107	GD5900-20	P105	GD9672	P99
GD18935	P107	GD5900-21	P105	GD9715	P44
GD18939	P107	GD5900-28	P143	GD9720	P44
GD18957	P103	GD6279-05	P53	GD9724	P44, P45, P47
GD1908	P12	GD6291	P125, P132, P135	GD9896	P125
GD19148	P151	GD6551	P93, P97	GM0230	P155
GD19221	P63	GD6775	P87	GR0146MPP	P155
GD19246-01	P55	GD7079	P71	GR0150	P101, P105, P107
GD19344	P91	GD7089	P71	GR0151	P101, P105, P107
GD19379-01	P63	GD7127	P91	GR0155MPP	P155
GD2117	P23, P155	GD7137	P65, P73	GR0190	P145
GD2199	P67, P154	GD7145	P57, P135	GR0191	P75
GD2423	P39	GD7148	P38	GR0192	P75
GD2460	P40	GD7258	P38	GR0195	P145
GD2548-104	P87, P88	GD7318	P5	GR0196	P5, P38
GD2548-16	P97	GD7426	P87	GR0200	P145
GD2548-93	P87, P88	GD7803	P41, P47	GR0204	P145
GD2558	P65, P87,	GD7804	P41, P47	GR0267	P145
	P91, P145	GD7805	P7, P12, P18, P21,	GR0270	P85
GD2597	P101, P105		P30, P43, P51, P57,	GR0434	P85
GD2681	P144		P75, P85, P87, P90,	GR0508	P142
GD2721	P106		P103, P138,	GR0513	P142
GD2829	P55, P125, P127		P144, P145	GR0528	P71
GD2947	P39	GD7817-01	P43	GR0531	P71
GD2962	P27	GD7817-04	P43	GR0586	P133
GD2971-09	P65, P73	GD7817-05	P145	GR0594	P133, P135
GD2971-10	P37	GD7823	P43	GR0761	P115, P116
GD2971-15	P73	GD7831	P145	GR0763	P115, P116
GD2984	P155	GD7864	P71	GR0764	P115
GD3180-12	P17	GD7889	P43	GR0880	P147
GD3180-29	P31	GD7890	P43	GR0881	P147
GD3180-30	P7	GD8175	P90	GR0882	P147
GD3180-33	P11	GD8188	P83	GR0883	P147
GD3180-35	P103, P107	GD8189	P83	GR0912	P27, P86, P93, P97
GD3180-36	P107	GD8249	P7, P12	GR1005	P142
GD3248	P105	GD8307	P43	GR1006	P142
GD3612	P5	GD8460	P18	GR1015	P140, P143, P147
GD3622	P141, P143	GD8739	P125	GR1016	P140, P143, P147
GD3623	P141, P143	GD8740	P125	GR1017	P140, P143, P147
GD3737	P65	GD8741	P125	GR1018	P140, P143, P147
GD3860	P125, P127	GD8751	P132, P135	GR1019	P140, P143, P147
GD3951	P141, P143	GD8770	P132, P135	GR1037	P113, P115, P116,
GD4086	P121, P123	GD8771	P133, P135		P117, P118, P119,
GD4123	P63	GD8893-07	P57		P120, P121
GD4700	P87	GD9093	P73	GR1045	P51, P52, P53,
GD4701	P87	GD9120	P18		P115, P116, P118
GD4743	P57, P58, P105, P108	GD9254	P41, P47	GR1169	P109
GD4887-10	P27	GD9290	P17	GR1208	P131
GD5625	P79, P81	GD9305	P17	GR1220	P49
GD5841	P69, P85	GD9529	P99, P124	GR1246	P49

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page
GR1290	P125, P127	GR1691	P111, P113	GR1870	P49
GR1292	P9, P125, P127	GR1702	P140	GR1871	P49
GR1293	P94	GR1707	P131	GR1872	P49
GR1294	P94, P97	GR1708	P140	GR1874	P49
GR1295	P94, P97	GR1731	P131	GR1875	P49
GR1296	P94	GR1732	P131	GR1911	P123
GR1297	P94	GR1733	P131	GR1960	P49
GR1298	P94	GR1734	P52		
GR1300	P97	GR1736	P55		
GR1301	P94, P97	GR1737	P133, P135		
GR1303	P99	GR1739	P140		
GR1304	P99	GR1741	P97		
GR1305	P99	GR1743	P91		
GR1306	P99	GR1748	P118		
GR1352	P97	GR1756	P118		
GR1363	P9, P125, P127	GR1757	P109		
GR1364	P125, P127	GR1762	P133		
GR1365	P97	GR1764	P133		
GR1377	P97	GR1777	P55		
GR1414	P133, P135	GR1778	P11		
GR1415	P133, P135	GR1786	P50		
GR1430	P49	GR1787	P50, P51		
GR1435	P142	GR1790	P123		
GR1445	P115, P116	GR1796	P149		
GR1465	P112	GR1798	P149		
GR1466	P53, P115, P118, P123	GR1800	P149		
GR1467	P50, P51, P52, P53, P55	GR1801	P149		
GR1468	P50	GR1803	P149		
GR1515	P119	GR1804	P149		
GR1517	P113, P116	GR1805	P149		
GR1522	P110	GR1806	P149		
GR1541	P150	GR1808	P149		
GR1542	P150	GR1809	P11		
GR1543	P149, P150	GR1842MPP	P155		
GR1552	P112	GR1843	P11		
GR1557	P94	GR1850	P49		
GR1559	P150	GR1851	P49		
GR1561	P150	GR1852	P49		
GR1566	P150	GR1853	P49		
GR1567	P150	GR1854	P49		
GR1568	P150	GR1855	P49		
GR1570MPP	P155	GR1856	P49		
GR1571	P142	GR1857	P49		
GR1574	P150	GR1858	P49		
GR1598	P111	GR1859	P49		
GR1630	P112	GR1861	P49		
GR1635	P115, P116, P117, P127	GR1862	P49		
GR1681	P75	GR1863	P49		
GR1686	P140	GR1864	P49		
GR1688	P110	GR1865	P49		
GR1689	P109	GR1866	P49		
		GR1867	P49		
		GR1868	P49		
		GR1869	P49		

# NUMERICAL INDEX

Part No.	Page	Part No.	Page	Part No.	Page