MODEL 3600TR
TWIN-LINE® PLANTER
(Mechanical Seed Metering)

OPERATOR & PARTS MANUAL

M0210 Rev. 2/09

This manual is applicable to: Model: 3600TR Twin-Line® Planters
Serial Number: 620614 And On

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

Model Number 3600TR

Serial Number _____

Date Purchased _____

Monitor Serial Number _____

Measured Pulses Per Mile/Km (Radar Distance Sensor) _____

Measured Pulses Per Mile/Km (Magnetic Distance Sensor) _____

SERIAL NUMBER

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

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

D05260501

PREDELIVERY/DELIVERY CHECKLIST

TO THE DEALER

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

PREDELIVERY CHECKLIST

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

- ❑ Recheck to be sure row units are properly spaced and optional attachments are correctly assembled.
- ❑ The hardware box, containing the row unit drive chains and meter drive clutches, has been removed from the seed hopper on the L.H. side of the planter and those components have been installed. See “Row Unit Assembly And Installation Instruction”.
- ❑ The row marker blade assemblies have been removed from their shipping location over the planter hitch and installed on the row marker assembly at each end of the planter. See “Row Marker Length Adjustment” in the Machine Operation Section of this manual.
- ❑ Be sure all grease fittings are in place and lubricated.
- ❑ Check planter and make sure all working parts are moving freely, bolts are tight and cotter pins are spread.
- ❑ Check all drive chains for proper tension and alignment.
- ❑ Check for oil leaks and proper hydraulic operation.
- ❑ Check to be sure hydraulic hoses are routed correctly to prevent damage to hoses.
- ❑ Inflate tires to specified PSI air pressure. Tighten wheel lug bolts and lug nuts to specified torque.
- ❑ Check to be sure all safety decals are correctly located and legible. Replace if damaged.
- ❑ Check to be sure all reflective decals and SMV sign are correctly located and visible when the planter is in transport position.
- ❑ Check to be sure safety/warning lights are installed correctly and working properly.
- ❑ Paint all parts scratched in shipment or assembly.
- ❑ Be sure all safety lockup devices are on the planter and correctly located.
- ❑ Check seed meters on test stand to ensure proper performance.
- ❑ Auxiliary safety chain is properly installed and hardware is torqued to specification.

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. 3600TR 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.

- ❑ 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.
- ❑ Review with the customer the importance of proper maintenance and adherence with all safety precautions.
- ❑ Check for parts that may need to be adjusted or replaced.
- ❑ Check to be sure all safety warning signs (decals), reflective decals and SMV sign are correctly located and that decals are legible. Replace if damaged or missing.
- ❑ Check to be sure safety/warning lights are working properly.

_____

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

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

Tear Along Perforation

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TO THE OWNER

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

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

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

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

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

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

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

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

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

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

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

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

WARRANTY

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

The Model 3600TR Twin-Line® Planter is available in various configurations.

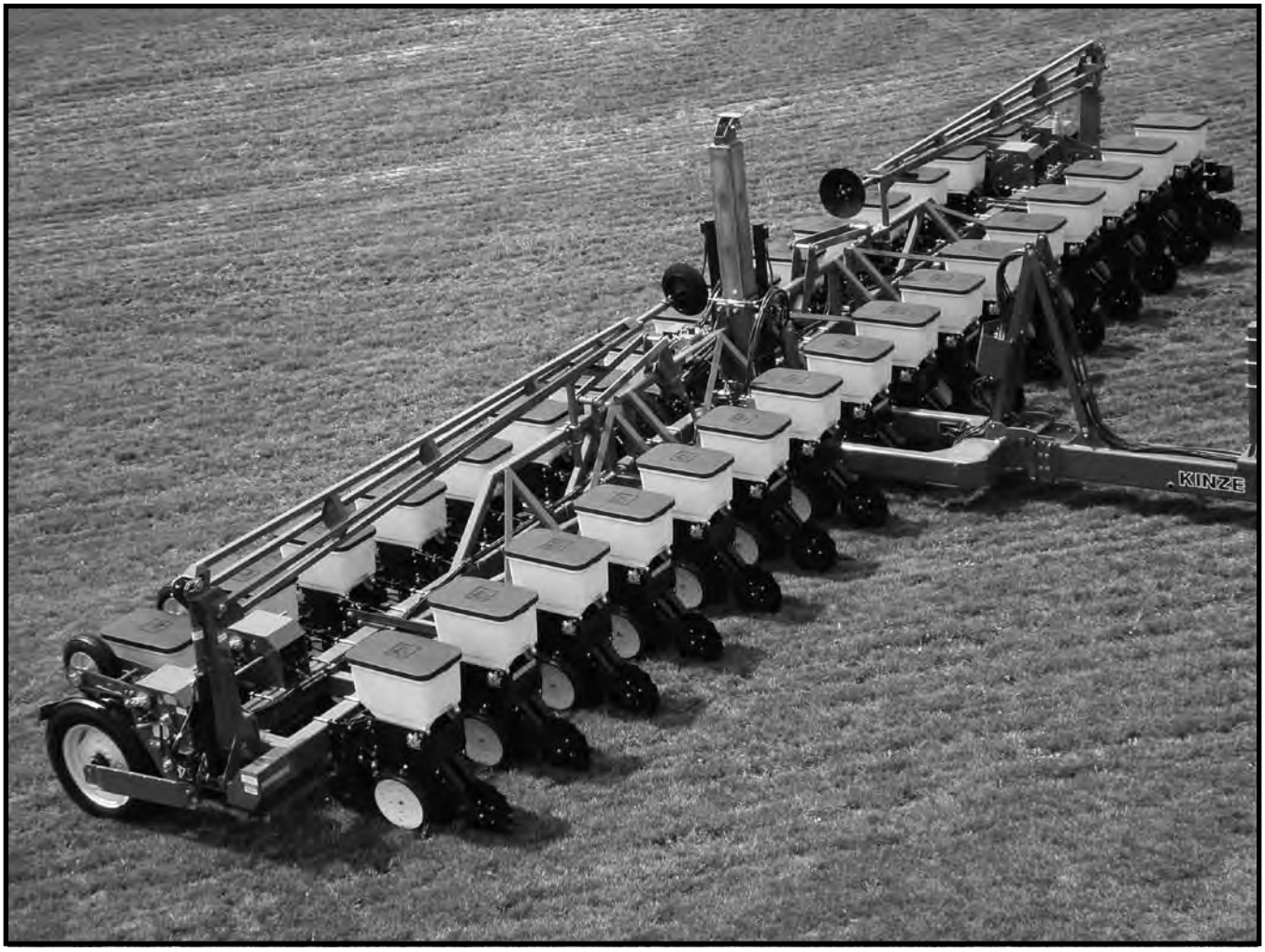
The Model 3600TR Twin-Line® Planter permits installation of various planter and row unit attachments.

GENERAL INFORMATION

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

D072007124



SPECIFICATIONS

BASE MACHINE TYPE - Pull Type (Hydraulically Rotates Endwise To Transport)

SEED METER TYPE - Mechanical Seed Metering System

PLANTING UNIT TYPES - Push And Pull Row Units

ROW SPACING **Standard**
12 Row Narrow - 30" - 7 ½" Twin Rows (24 Rows)
16 Row Narrow - 30" - 7 ½" Twin Rows (32 Rows)

DRIVE SYSTEM - Spring-Loaded Contact Drive System
- 7.50" x 20" 8 Ply Rib Implement Wing Tire - Two On 12 Row; Four On 16 Row
- 4.80" x 8" 4 Ply Contact Drive Tire - Two On 12 Row; Four On 16 Row
- No. 40 Roller Chain And Spring-Loaded Idlers
- Point Row Clutches Standard
- Hex Drill And Drive Shafts And End Mounted Seed Transmissions

TRANSPORT TIRES - Equipped With Four 255 - 70R 22.5" Radial Load Range H Tubeless Rib Implement Tires
- Adjustable Height Wheels For Ridge Planting

TYPE LIFT - Master/Slave Hydraulics
- 12 Row - 2 Center Lift (Master) Cylinders, 1 Cylinder Per Wing Wheel Module (2 Slave)
- 16 Row - 2 Center Lift (Master) Cylinders, 1 Cylinder Per Wing Wheel Module (2 Modules Per Wing - 4 Slave Cylinders Total)

ROW MARKERS - Independently Controlled. Two-Fold, Low Profile With Depth Band On Marker Disc Blade

MACHINE OPTIONS
- Electronic Seed Monitors
  KPM III With Magnetic Distance Sensor Or Radar Distance Sensor
- Two-Speed Point Row Clutch Package - Allows Half Width Planting And Reduced Rate Planting (Available Through KINZE® Repair Parts)
- Auxiliary Work Lights Package
- Half Rate (2 To 1) Drive Reduction Package
- Rear Trailer Hitch
- Piston Pump Mount And Drive Package
- Rock Guard Package For Transport Wheel Arms
- 2-Point Hitch Option

ROW UNIT OPTIONS/ATTACHMENTS
- Finger Pickup Or Brush-Type Seed Meters
- Brush-Type Seed Meter Discs
- Down Pressure Options
  Quick Adjustable Down Force Springs
  Pneumatic Down Pressure Package
- Closing Wheel Options
  Rubber “V” Closing Wheels
  Cast Iron “V” Closing Wheels
  Covering Discs/Single Press Wheel
  Drag Closing Attachment
- Granular Chemical Application
- Spring Tooth Incorporator
- Row Unit Extension Brackets
- Hopper Panel Extension Package
- Row Unit Mounted No Till Coulter
- Coulter Mounted Residue Wheels
- Row Unit Mounted Disc Furrowers
- Row Unit Mounted Bed Leveler
- Row Unit Mounted Residue Wheel
- Frame Mounted Coulter
- Residue Wheels For Frame Mounted Coulter

SPECIFICATIONS

DIMENSIONS/WEIGHTS

PLANTER SIZE	12 Row 30" - 7 ½" Twin-Rows	16 Row 30" - 7 ½" Twin-Rows
Transport Width	11' 2"	11' 2"
Transport Height	10' 8"	11' 0"
Transport Length	36' 10"	46' 10"
Operating Width	31' 2"	41' 2"
Operating Length	21' 0"	24' 0"

NOTE: L.H. transport wheel and axle stub assembly is removable for truck transport at 8' 6".

PLANTER SIZE	12 Row 30" - 7 ½" Twin-Rows	16 Row 30" - 7 ½" Twin-Rows
*Weight	16,490 lbs.	18,265 lbs.

* Base machine weights include frame, drive components; tires and wheels; transport safety chain; hyraulic cylinders and hoses; 12VDC control console; KINZE® push and pull row units less closing wheels (24 on 12 Row N; 32 on 16 Row N); and seed hoppers and lids.

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 markers are in operation or when rotating the planter.

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

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

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

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

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

Before operating the planter for the first time and periodically thereafter, check to be sure the lug bolts 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 using safety lockup devices.

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

D060299127a

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.

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

This planter is designed to be DRIVEN BY GROUND TIRES ONLY. The use of hydraulic, electric or PTO drives may create serious safety hazards to you and the people 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.

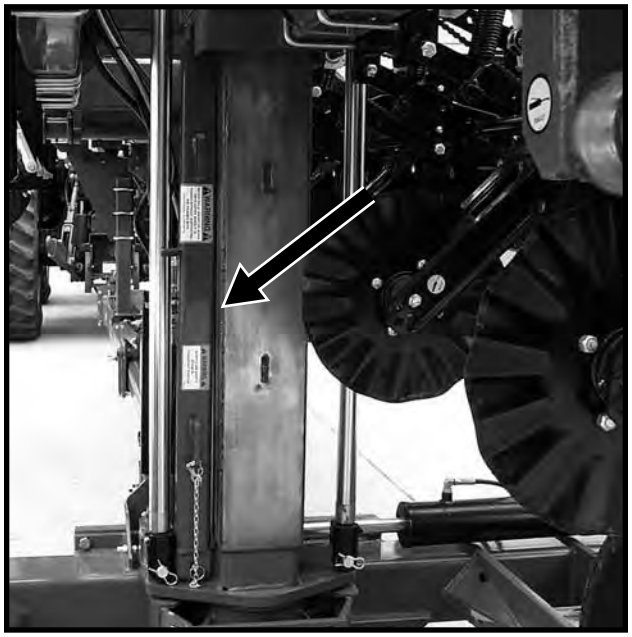
SAFETY PRECAUTIONS

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

D101807118

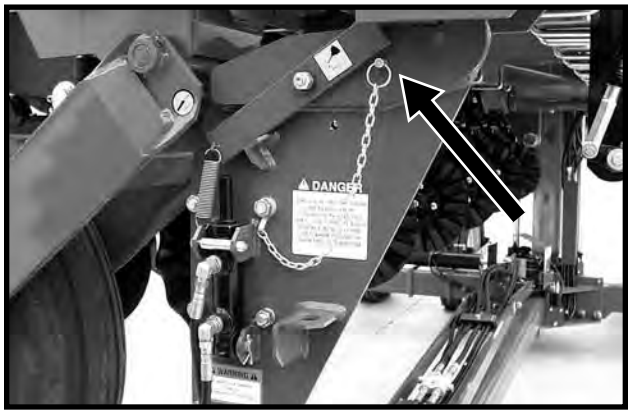
Tongue Safety Pin

D060299107



Manual Safety Lockup device

D060299106



Transport Latch Locking Pin

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

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

Check to be sure all safety/warning lights are working 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 rotating the planter.

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

Always make sure safety/warning lights, 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.

SAFETY PRECAUTIONS

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

Avoid sudden uphill turns on steep slopes.

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

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

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

Pressurized hydraulic fluid can penetrate body tissue and result in serious infection, injury, or death. Before applying pressure to the hydraulic system, make sure all connections are tight and that hoses and fittings have not been damaged. Leaks can be invisible. Keep away from suspected leaks. Relieve pressure in the hydraulic system before searching for leaks, disconnecting hoses, or performing any other work on the system. Fluid injected under the skin must be IMMEDIATELY removed by a surgeon familiar with this type of injury.

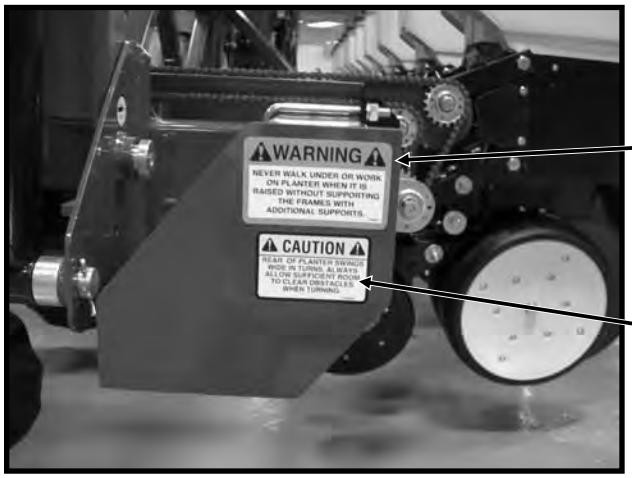
SAFETY WARNING SIGNS

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.

D081406303



Part No. G7100-68 (Qty. 1)

Part No. G7100-63 (Qty. 1)

D081406300

Part No. G7100-117 (Qty. 1)

Part No. G7100-02 (Qty. 1)

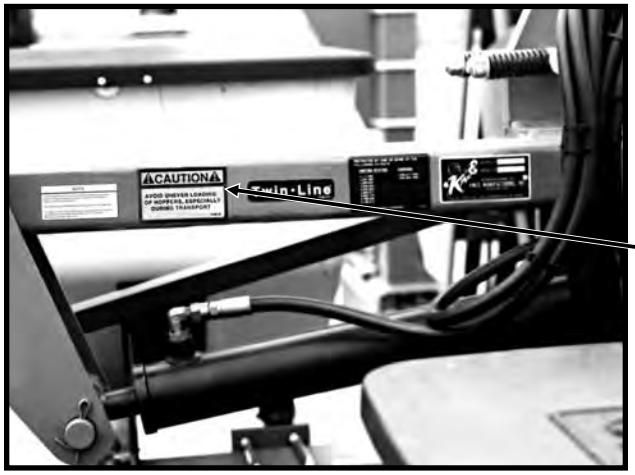
SAFETY WARNING SIGNS

D060299127a

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

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

76746-3b



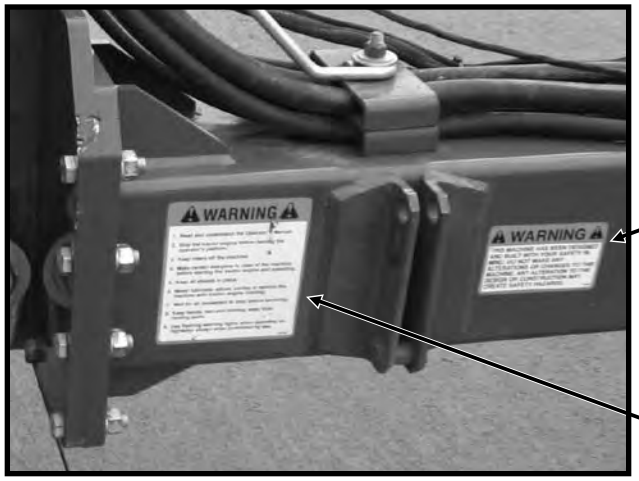
Part No. G7100-75
(Qty. 4 - Front And Rear/Left And Right)

D101807128

Part No. G7100-302 (Qty. 1)

SAFETY WARNING SIGNS

D101807108



WARNING

THIS MACHINE HAS BEEN DESIGNED AND BUILT WITH YOUR SAFETY IN MIND. DO NOT MAKE ANY ALTERATIONS OR CHANGES TO THIS MACHINE. ANY ALTERATION TO THE DESIGN OR CONSTRUCTION MAY CREATE SAFETY HAZARDS.

7100-90

Part No. G7100-90 (Qty. 1)

WARNING

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

7100-46

Part No. G7100-46 (Qty. 1)

D08169904

WARNING

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

7100-68

Part No. G7100-68 (Qty. 2 - Front And Rear)

WARNING

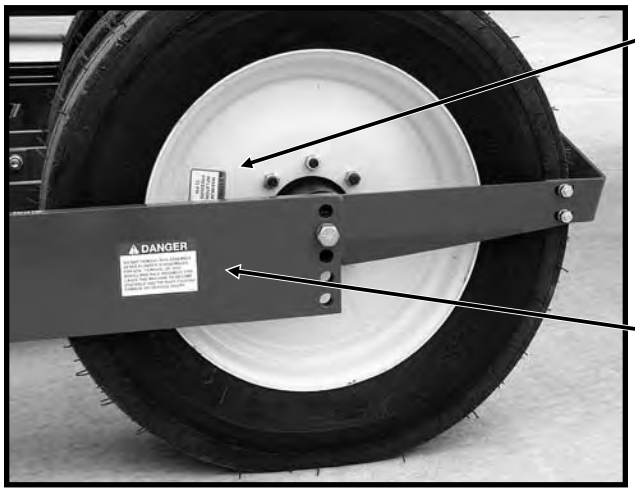
ALWAYS USE SAFETY STAND IN TRANSPORT POSITION

7100-200

Part No. G7100-200 (Qty. 2 - Front And Rear)

SAFETY WARNING SIGNS

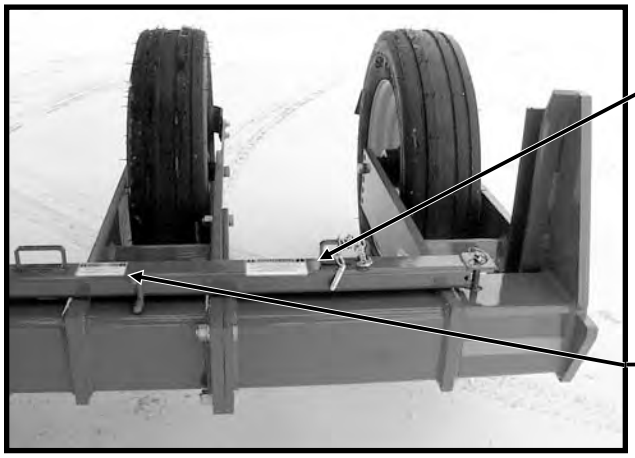
D060299108



Part No. G7100-219 (Qty. 4 - One On Each Transport Wheel)

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

D0205001102



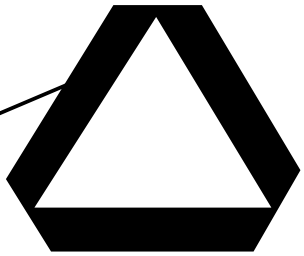
Part No. G7100-68 (Qty. 1)

Part No. G7100-200 (Qty. 1)

SAFETY WARNING SIGNS

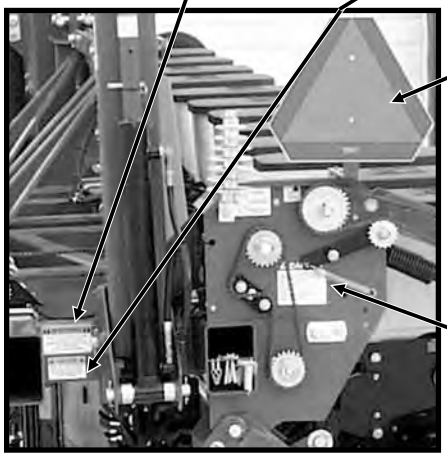
Part No. G7100-68 (Qty. 1)

Part No. G7100-63 (Qty. 1)



Part No. GD2199 (Qty. 1)

D020501108

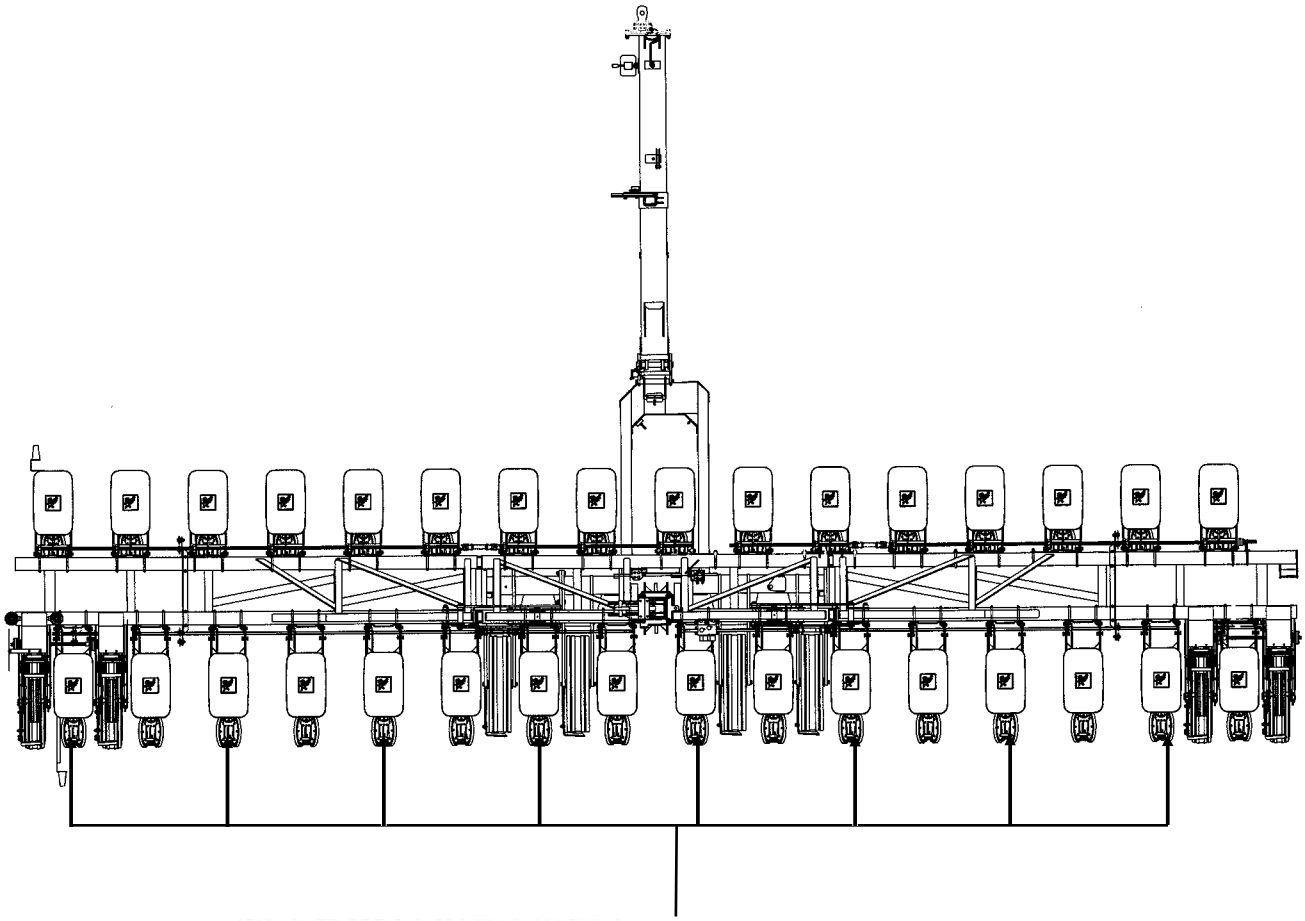


Part No. G7100-89 (Qty. 2 - Located On Wheel Modules On Both Ends Of Planter)

SAFETY WARNING SIGNS ⚠

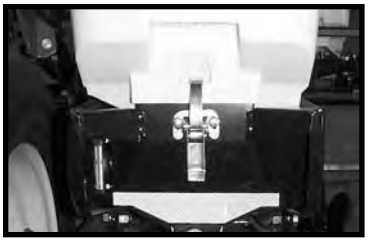
(PLTR194)

16 Row 30" Shown



Part No. G7100-262 Amber Reflective Decal (Located On The Hopper Support On Every Other Row Unit Beginning On The 1st Row Unit On The L.H. End Of The Planter - Side-Facing In Transport Position) **(Standard)**

D060800114



Part No. G7100-259 Amber Reflective Decal (Located On The Granular Chemical Hopper Panel Extension On Every Other Row Unit Beginning On The 1st Row Unit On The L.H. End Of The Planter - Side-Facing In Transport Position) (**With Optional Granular Chemical)**

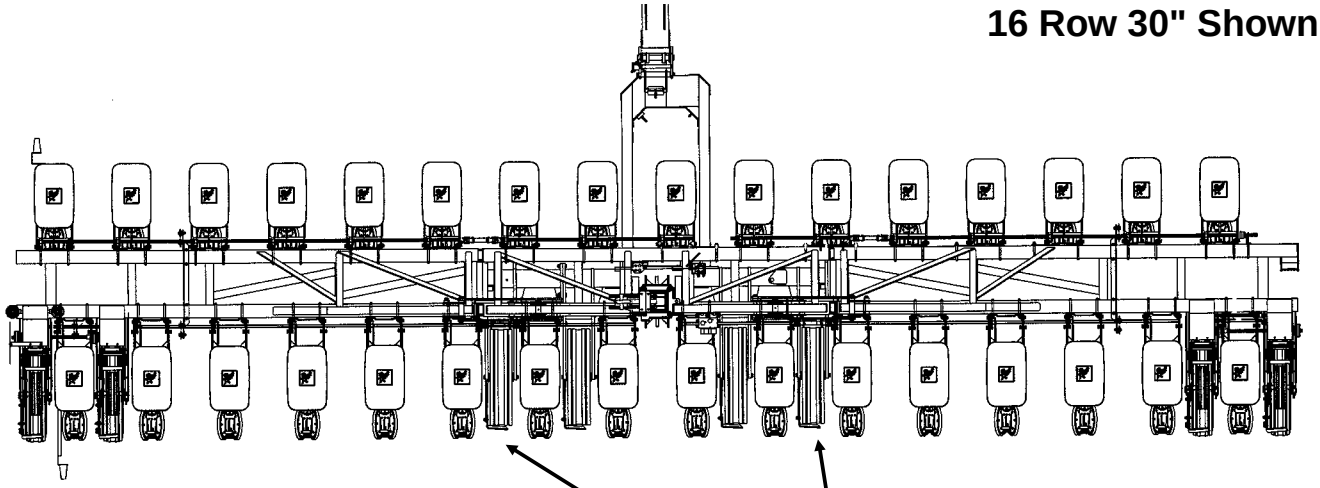
D062300102

NOTE: 6 Decals Used On 12 Row; 8 Used On 16 Row Sizes

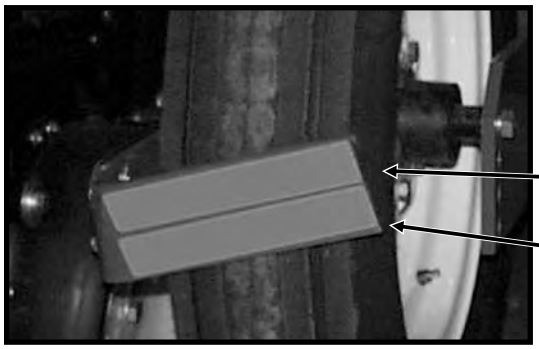
SAFETY WARNING SIGNS ⚠

(PLTR194/TWL173a)

16 Row 30" Shown



D060800115a

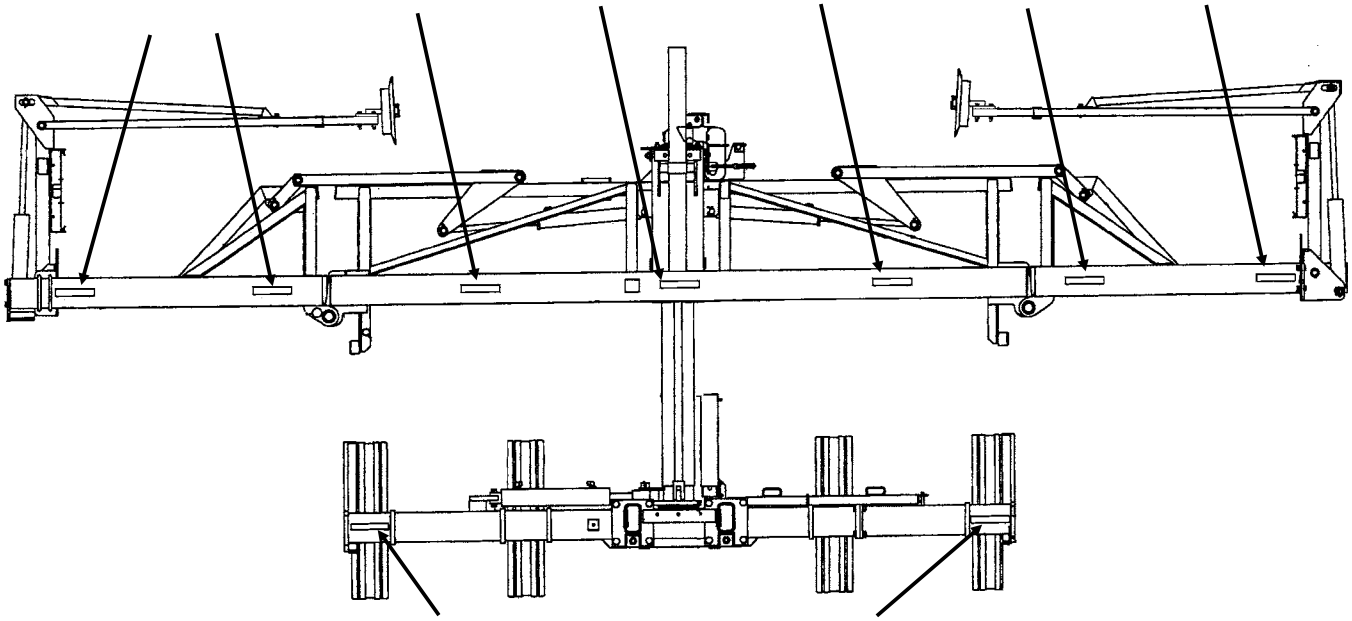


Part No. G7100-258 Red Reflective Decal
(Qty. 1 Per Outer Scraper - Located On Top)

Part No. G7100-260 Orange Reflective Decal
(Qty. 1 Per Outer Scraper - Located On Bottom)

Part No. G7100-259 Amber Reflective Decal (Located On The Front Side Of The Front Toolbar - Side-Facing In Transport Position)

NOTE: 7 Used On 12 Row 30"; 9 Used On 16 Row 30" Sizes (12 Row 30" Shown)



Part No. G7100-259 Amber Reflective Decal (Qty. 2 - Forward-Facing)

SAFETY WARNING SIGNS

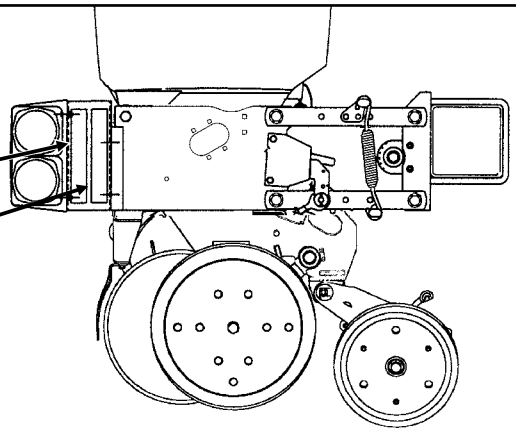
(PLTR159e/PLTR194/RU120l/TWL174b/RU120e)

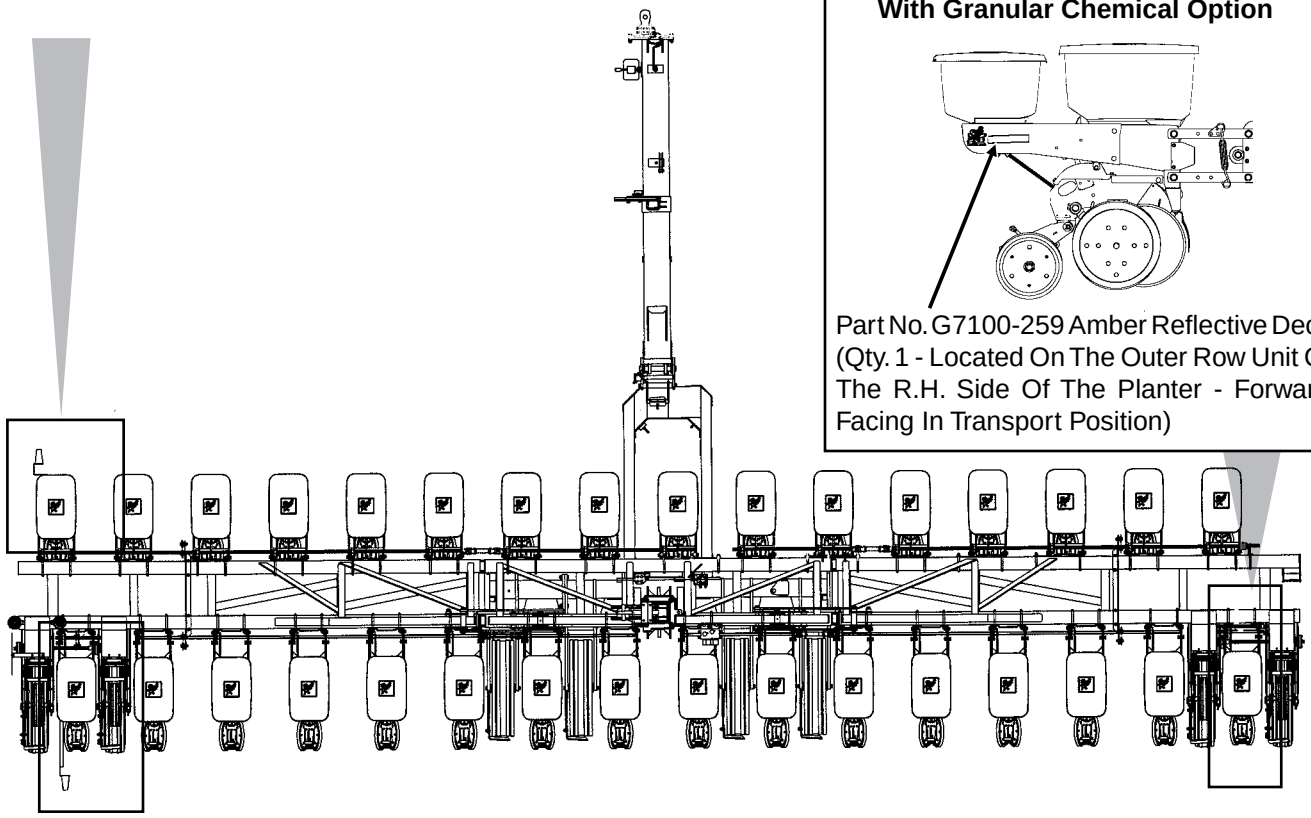
16 Row 30" Shown

Part No. G7100-258
Red Reflective Decal (Qty. 1)

Part No. G7100-260
Orange Reflective Decal (Qty. 1)

(Located On The L.H. End Of The Planter
- Rear-Facing In Transport Position)

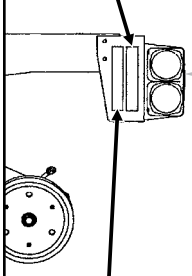




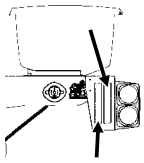
With Granular Chemical Option

Part No. G7100-259 Amber Reflective Decal (Qty. 1 - Located On The Outer Row Unit On The R.H. Side Of The Planter - Forward-Facing In Transport Position)

Part No. G7100-258 Red Reflective Decal (Qty. 1 - Located On The Outer Row Unit On the L.H. Side Of The Planter - Rear-Facing In Transport Position)



With Granular Chemical Option



Part No. G7100-260 Orange Reflective Decal (Qty. 1 - Located On The Outer Row Unit On the L.H. Side Of The Planter - Rear-Facing In Transport Position)

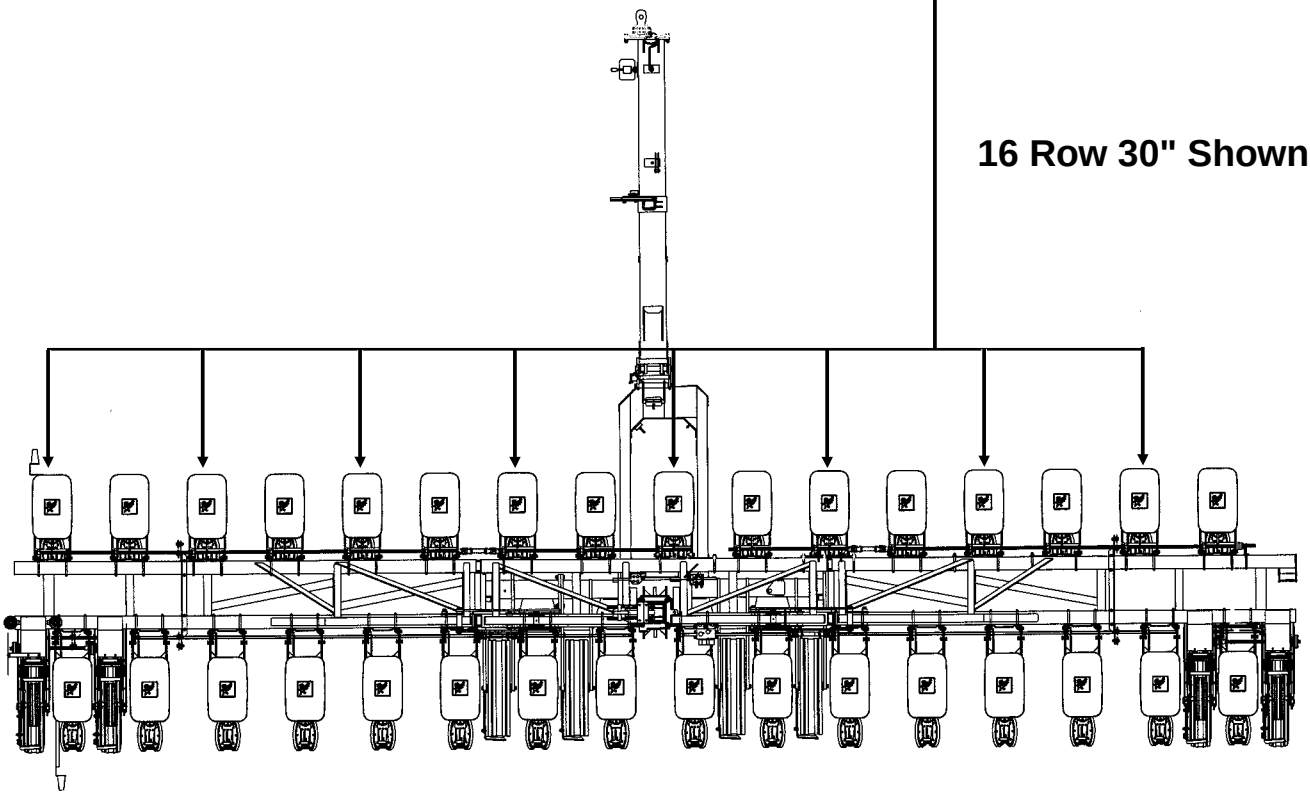
SAFETY WARNING SIGNS

(PLTR194)

PUSH ROW UNITS

D020101103

Part No. G7100-259
Amber Reflective Decal
(Qty. 6 Used On 12 Row; 8 On 16 Row - Located On The Front Of Every Other Push Row Unit Beginning With The Center Row Unit And Every Other Row Unit To Both Ends - Side-Facing In Transport Position)

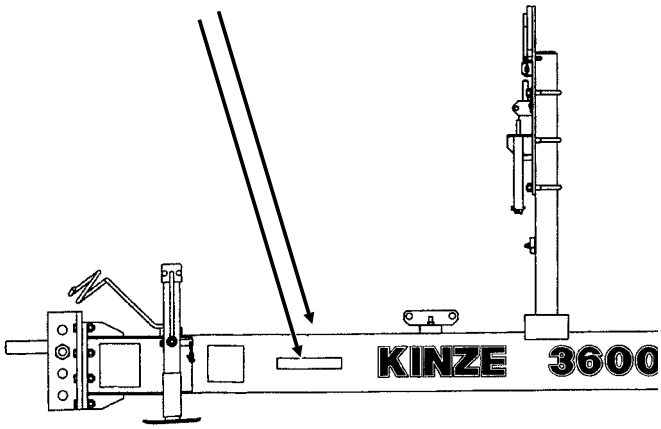


16 Row 30" Shown

SAFETY WARNING SIGNS ⚠

(TWL176)

Part No. G7100-259 Amber Reflective Decal (Qty. 2 - 1 Located On Each Side Of Hitch)



D06039901

⚠ WARNING ⚠

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

7100-115

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

D020101105

⚠CAUTION⚠

SET DOWN PRESSURE SPRINGS TO MINIMUM. LOWER PLANTER TO GROUND AND EMPTY SEED HOPPERS. REQUIRES 90 LB MIN TO LIFT. 7100-249

Part No. G7100-249 (Qty. 1 - Located On Interplant® Push Row Unit Lift Lever)

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.

ROW MARKER SAFETY LOCKUP

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

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

D08250007

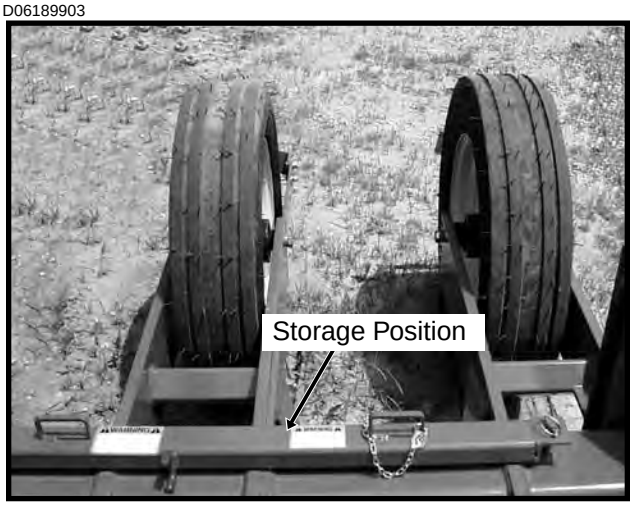
MANUAL SAFETY LOCKUP

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

D060299107

Manual Safety Lockup In Transport Position

D06189903



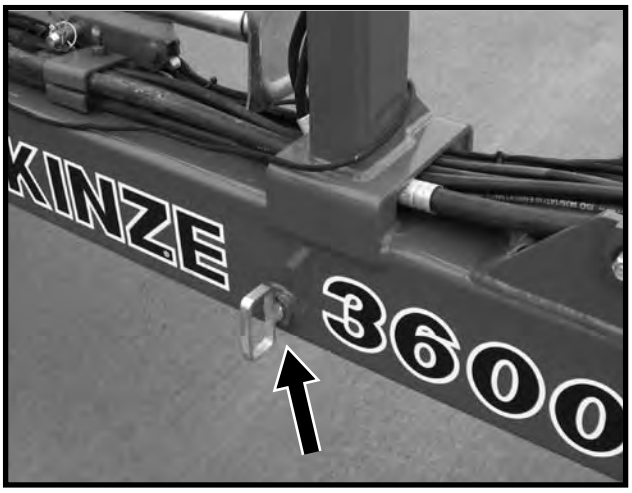
Manual Safety Lockup In Storage Position

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

TONGUE SAFETY PIN

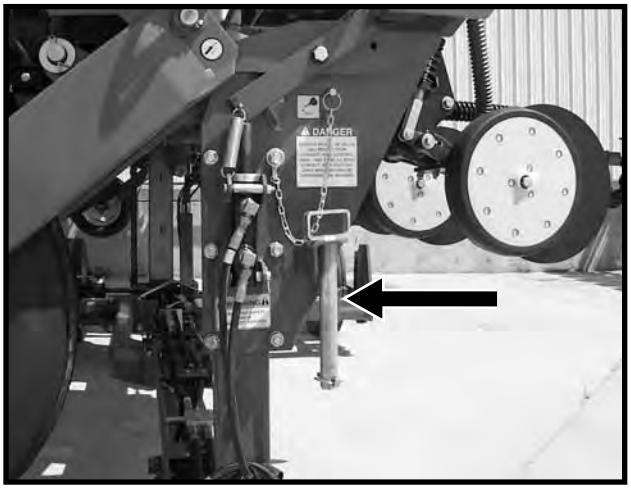
The tongue safety pin when installed will prevent the tongue cylinder from retracting should hydraulic failure occur or a sudden stop be made when transporting the planter. Never transport the planter without installing the tongue safety pin.

D101807118



Tongue Safety Pin Installed For Transport

D062501101



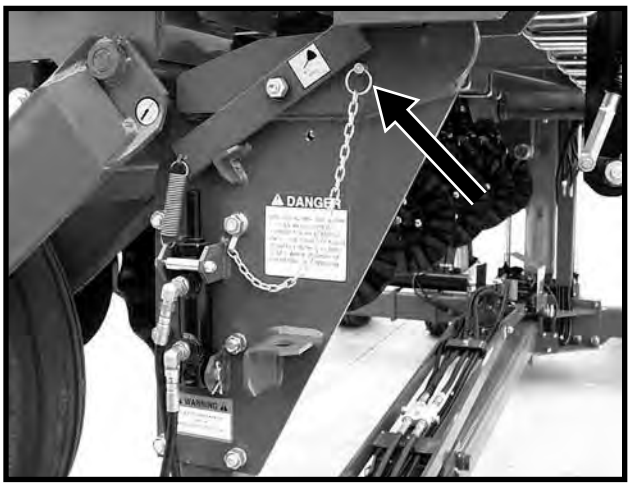
Tongue Safety Pin Stored For Field Operation

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

TRANSPORT LATCH LOCKING PIN

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

D060299106



Transport Latch Locking Pin Installed For Transport

D060299216

Transport Latch Locking Pin Stored For Field Operation

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

INITIAL PREPARATION OF THE PLANTER

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

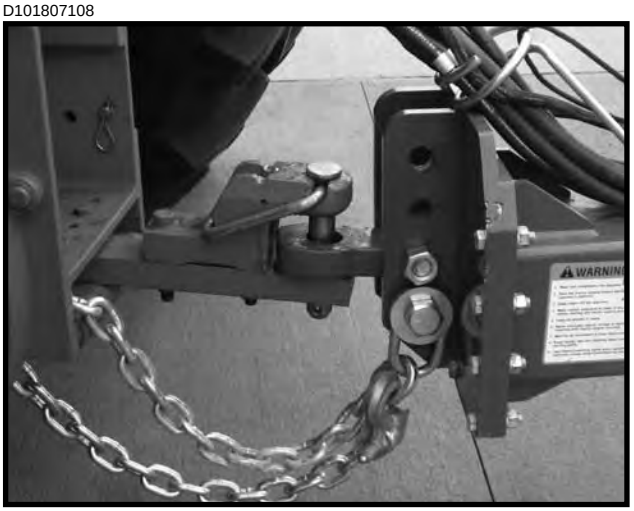
DANGER: The outer transport wheel on the left side of the machine is shipped removed (not bolted on) to allow narrower width truck shipment. DO NOT REMOVE THIS ASSEMBLY AFTER PLANTER IS ASSEMBLED FOR USE. DO NOT fold planter or tow planter while the outer transport wheel is removed. Tipping may occur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

TRACTOR REQUIREMENTS

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

TRACTOR PREPARATION AND HOOKUP

D101807108



NOTE: A 2-Point Hitch Option, which converts the planter from drawn to semi-mounted, is available for use with Category 3N or 3 three-point hitch designs. The safety chain is not applicable with the 2-point hitch.

1. Adjust tractor drawbar to 13-17 inches above the ground. Adjust the drawbar so the hitch pin hole is directly below the center line of the PTO shaft. Make sure the drawbar is in a stationary position.

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

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

   If two 6 volt batteries are connected in series, make sure the power connection provides 12 volt DC across the positive terminal on one battery and negative terminal of the second battery.

3. Back tractor to planter and connect with 1 ¼" - 1 ½" diameter hitch pin. If the tractor is not equipped with a hitch pin locking device, make sure hitch pin is secured with a locking pin or cotter pin.

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

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

The hydraulic hoses are color coded as follows:

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

DANGER: Before applying pressure to the hydraulic system, make sure all connections are tight and that 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.

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

7. Raise jack and remount horizontally on storage bracket.

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

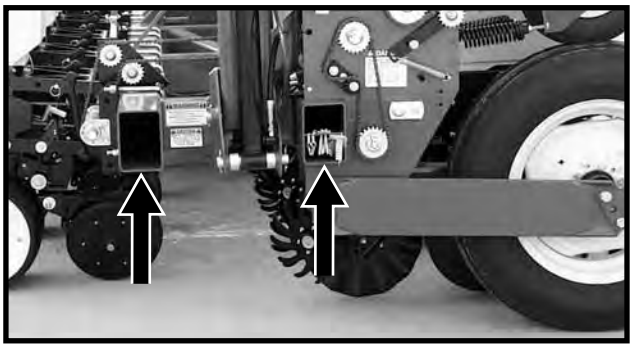
LEVELING THE PLANTER

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

D101807108

Four holes in the hitch bracket allow the clevis to be raised or lowered. In addition, the clevis may be turned over for a finer adjustment between mounting holes. When installing the clevis mounting bolt, make sure the lock nut is tightened to proper torque setting. (840 ft./lbs.)

D020501103



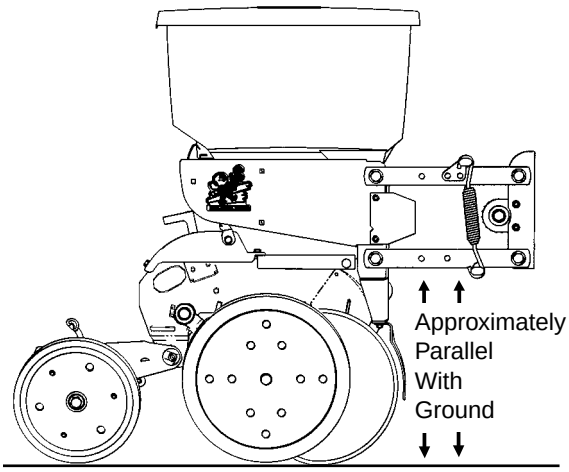
With the planter lowered to correct operating height, check to be sure the frame is level fore and aft. Recheck once planter is in the field.

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

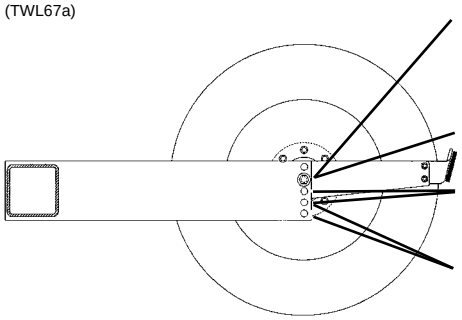
Field and actual planting conditions will dictate which of the transport wheel settings to use to ensure row unit parallel arms are approximately parallel with the planting surface. It may also be necessary to lower the ground drive wheels to ensure level lateral toolbar operation if the transport wheels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

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

(RU113h)



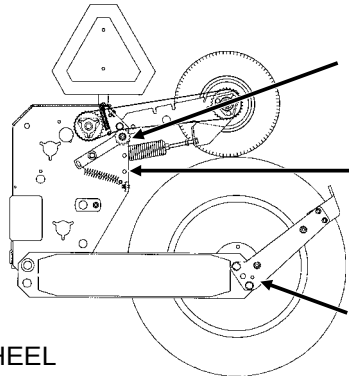
(TWL67a)



TRANSPORT WHEEL

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

(TWL73)



GROUND DRIVE WHEEL/ CONTACT DRIVE WHEEL

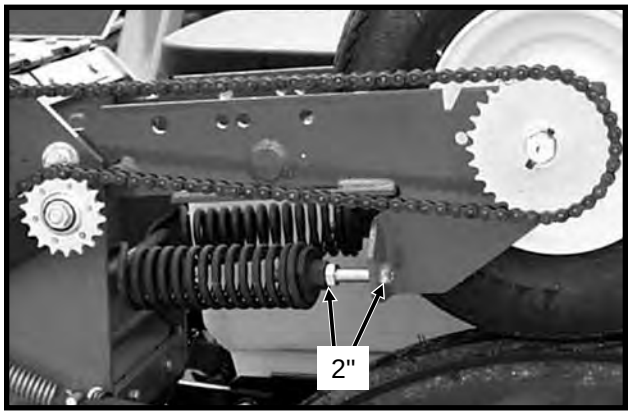
When the planter has been fully loaded with seed, granular chemicals, fertilizer, etc.; a field check should be made to be sure the wings are level with the center frame. If the wings are not level with the center frame, the drive wheels and/or transport wheels can be raised or lowered in the wheel arms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

NOTE: As the lift cylinders are port rephasing type, it is necessary for the cylinders to fully retract in order to rephase. Cylinder stops can not be used.

NOTE: On planters equipped with push row units and no till coulters, the uplift from the down pressure springs may cause the wings to rise slightly in planting position. The effect is compounded if static pressure is trapped in the planter's hydraulic lift system causing the wing cylinders to extend slightly. Operating the tractor's hydraulic system in the float position or moving the tractor's hydraulic lever to the float position briefly, to relieve the pressure, will help to maintain the proper toolbar height.

CONTACT WHEEL SPRING ADJUSTMENT

D06049909

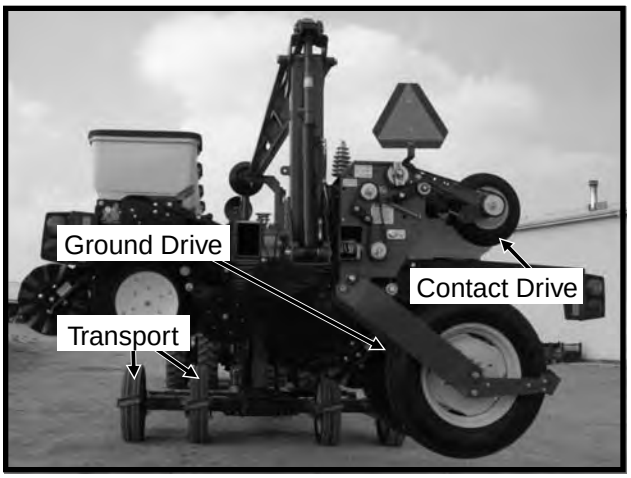


There are two down pressure springs on each contact drive wheel. The down pressure is factory preset and should require no further adjustment.

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

TIRE PRESSURE

D110907122



Tire pressure should be checked regularly and maintained as follows:

255-70R 22.5" Transport
(Center Section).....75 PSI
7.50" x 20" Ground Drive (Wings) .....40 PSI
4.80" x 8" Contact Drive .....50 PSI
7.60" x 15" Ground Drive
(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.

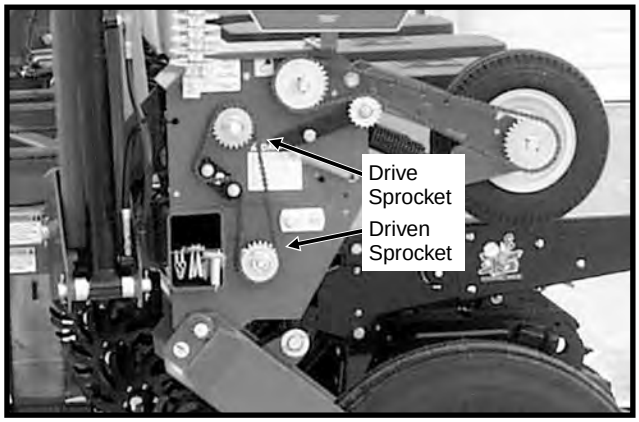
SEED RATE TRANSMISSION ADJUSTMENT

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

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

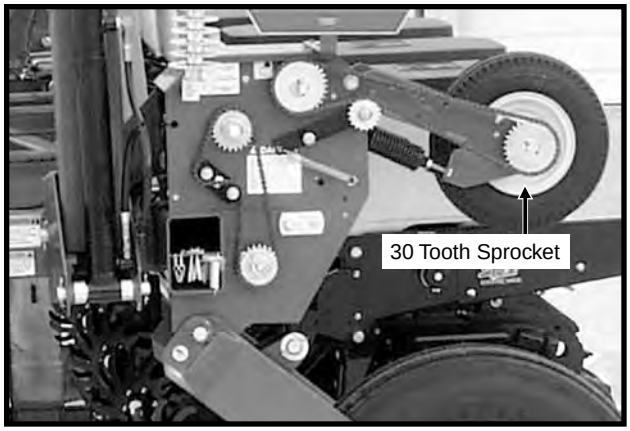
D020501108



12 Row 30" Machine Shown

STANDARD RATE DRIVE

D020501108



12 Row 30" Machine Shown

Seed planting rate charts are based on the standard rate drive. The standard rate drive uses a 30 tooth sprocket and No. 40 118 pitch chain on each contact wheel. Using the 15 tooth reduced rate sprocket in place of the 30 tooth sprocket will reduce the planting and application rates by approximately 50%. See “Half Rate (2 To 1) Drive”.

HALF RATE (2 TO 1) DRIVE

D070699113a

Half rate (2 to 1) drive is recommended only when desired population falls below that shown on planting rate charts. Replace the 30 tooth sprocket on each contact wheel with a 15 tooth sprocket and shorter No. 40 110 pitch chain. This will reduce the planter transmission speed and reduce planting and application rates by approximately 50%.

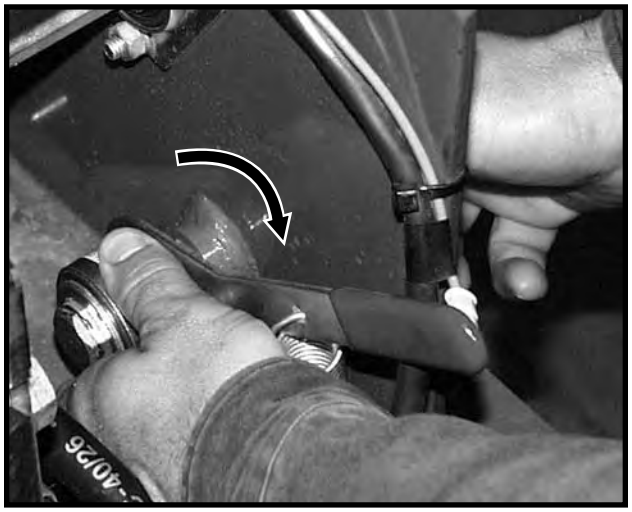
NOTE: After each sprocket combination adjustment, make a field check to be sure you are planting at the desired rate.

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.

D10290305



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

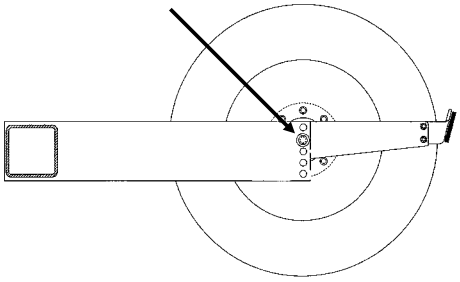
D10290304

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.

RIDGE PLANTING

When ridge planting, the drive wheels and transport wheels can be lowered 2" or 4" to the lower mounting holes in the wheel arms to increase the planter toolbar height. The contact drive tire must also be lowered to the lower set of holes in the wheel module and the down pressure springs hooked on the lower rod. Hitch height should be raised accordingly to ensure level operation.
(TWL67a)

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



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

SHEAR PROTECTION

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

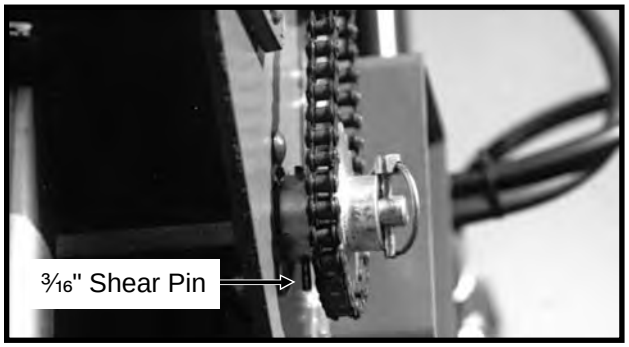
If excessive load should cause a pin to shear, it is important to determine where binding has occurred before replacing the pin. Replace shear pins with same size and type.

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

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

NOTE: Drill shaft/transmission coupler alignment is critical.

50981-10



Transmission Shaft

HYDRAULIC/ELECTRIC OPERATION

76746-24

The tractor's hydraulic system and switches on the control console located on the tractor are used to raise the planter to transport position, operate the rotate and tongue extension functions, lock and release the planter wings, and raise and lower the row markers.

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

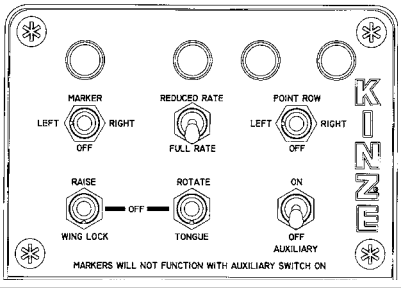
NOTE: The backlit console is equipped with a push button switch on the back of the console which may be used to turn the light off during extended periods of non-use.

Model 3600 planters are equipped for operation from two dual remote hydraulic outlets. One set of hydraulic outlets, in conjunction with a switch on the control console, are used to operate the raise to transport function. The second set, in conjunction with the switches on the control console, are used to operate the row markers and fold/unfold functions.

The marker and point row selector switches are an ON-OFF-ON type. (NOTE: Point row clutches are optional on 8 row sizes and standard on 12 and 16 row sizes. All 3600 planters are shipped with the point row switch installed in the control console.)

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

A7435(TWL81)



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

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 circuits or point row clutch circuits are energized.

The auxiliary switch is an ON-OFF type switch which is used in conjunction with the hydraulic marker/folding functions control lever to operate optional attachments. All 3600 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 other control console switches except the point row clutch switch.

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 can not be used.

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

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

TRANSPORT TO FIELD SEQUENCE

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

SUMMARIZED TRANSPORT TO FIELD SEQUENCE

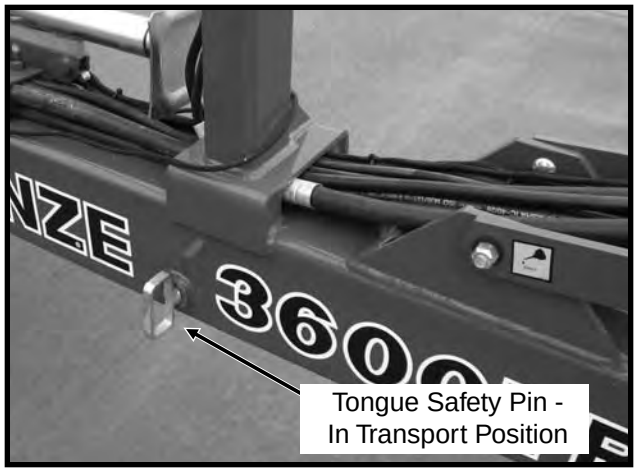
- Remove tongue safety pin.
- Remove transport latch locking pin.
- Remove manual safety lockup.
- Rotate planter to planting position.
- Raise planter slightly to release safety hook at top of center section.
- Lower planter to the ground.
- Release wing locks.
- Rephase planter lift cylinders.
- Raise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

NOTE: Read the following information for more detailed instructions.

D110907101

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

D101807118



D062501101

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

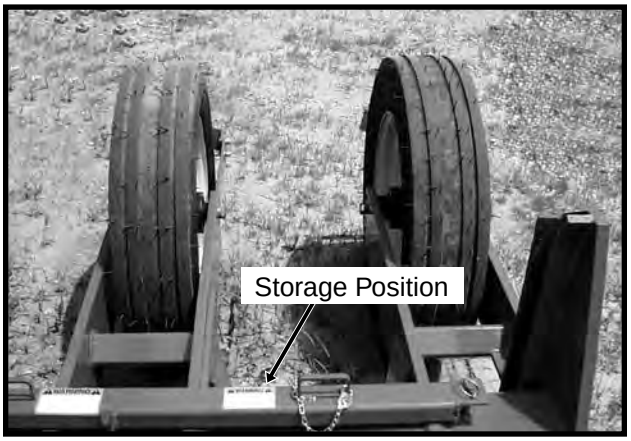
D060299106

D060299216

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

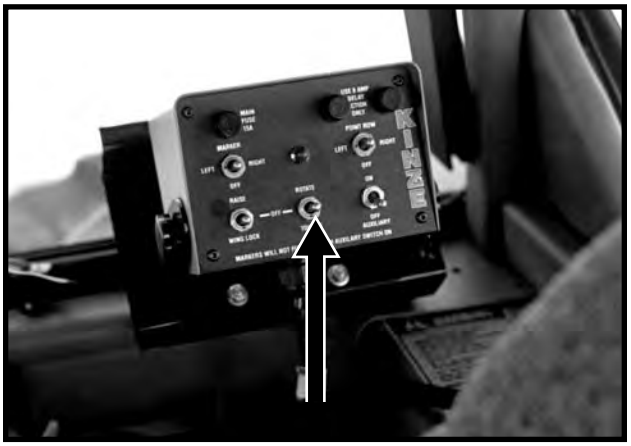
D060299107

D06189903



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

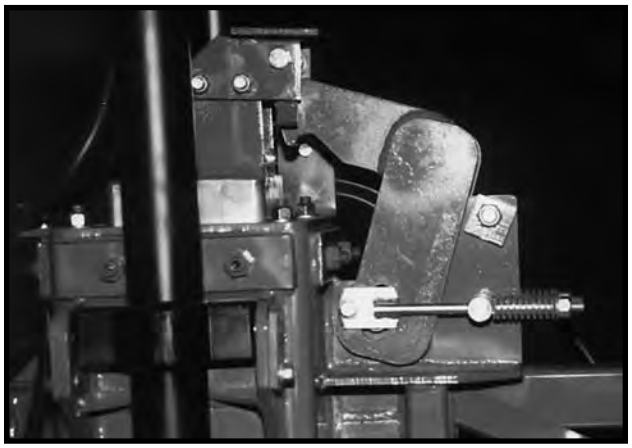
76746-24



D110907107

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

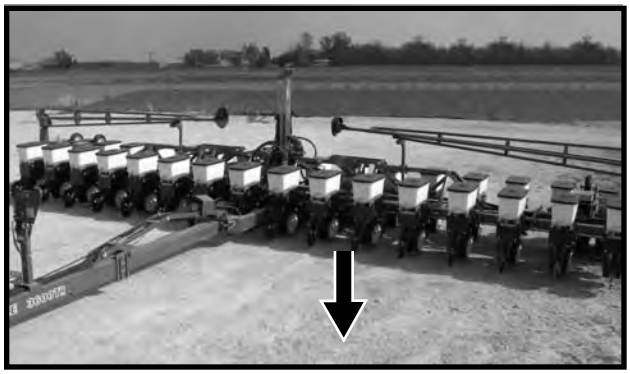
82316-16



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

6. Slowly lower the planter to the ground.

D110907108



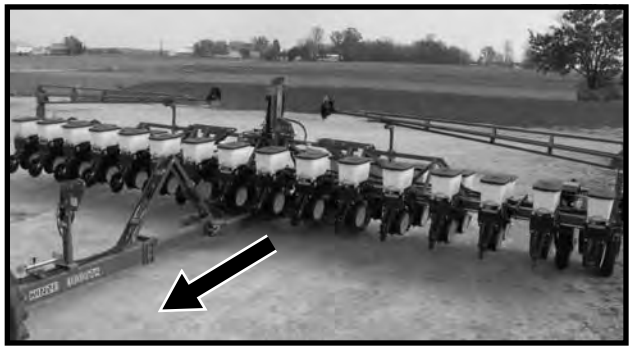
7. Hold the control console switch labeled "RAISE/ WING LOCK" in "**WING LOCK**" and operate the hydraulic lever to release the wing locks.

D110907115

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

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

D110907112



10. Remove and store row marker lockups.

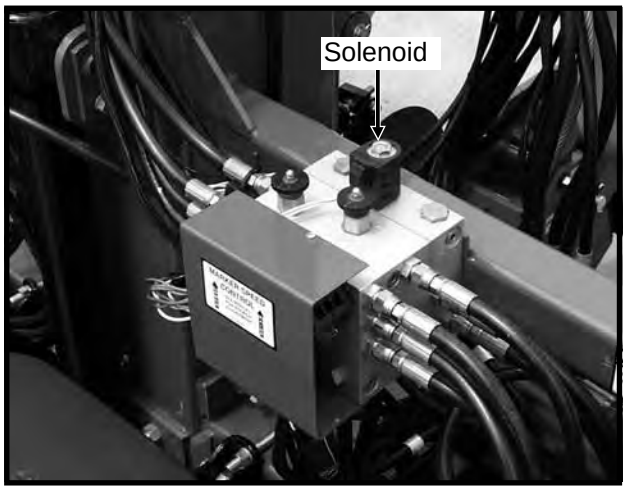
D08250007

FIELD OPERATION

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

D110907117

D060299126



See "Row Marker Operation" for field operation of row markers.

FIELD TO TRANSPORT SEQUENCE

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

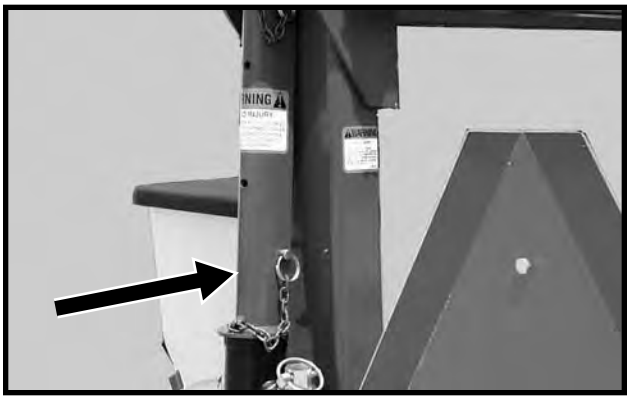
SUMMARIZED FIELD TO TRANSPORT SEQUENCE

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

NOTE: Read the following information for more detailed instructions.

1. Install row marker lockups.

D060299127a

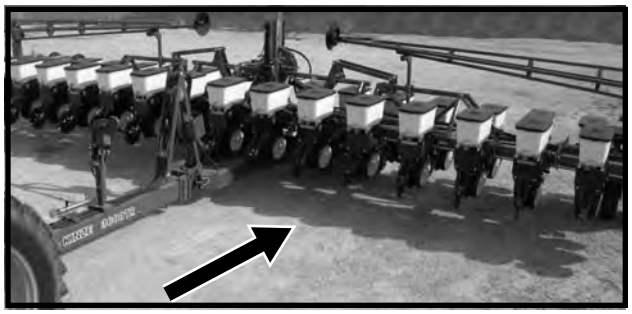


2. Using the hydraulic control, raise the planter to the raised field position as shown below.

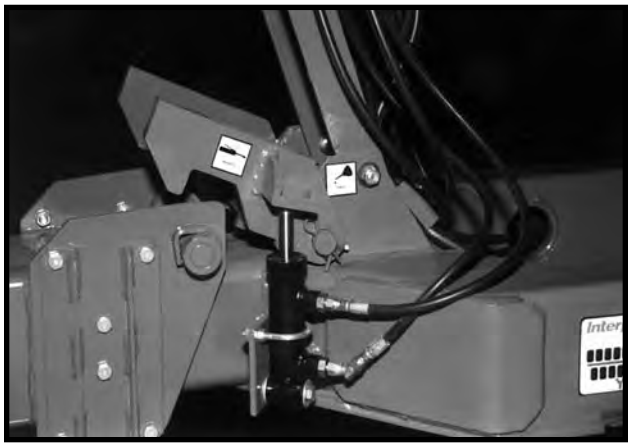
D110907117

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

D110907117

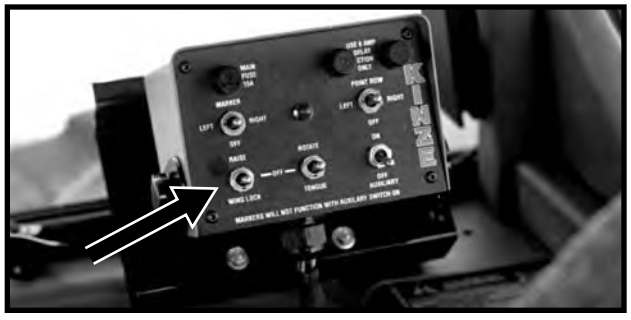


82316-20



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

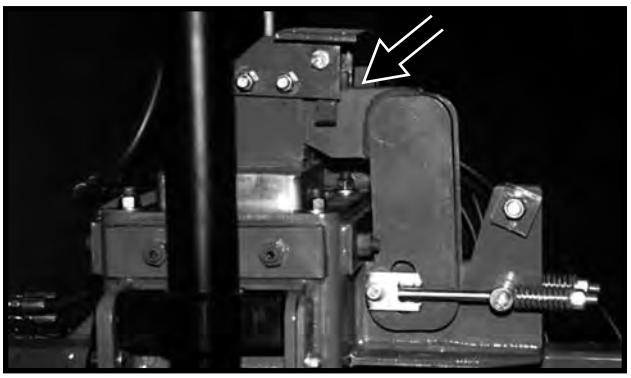
76746-24



D110907113

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

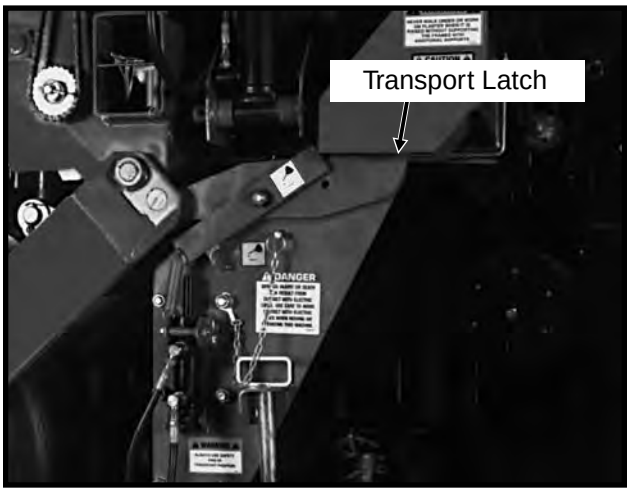
82316-15



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

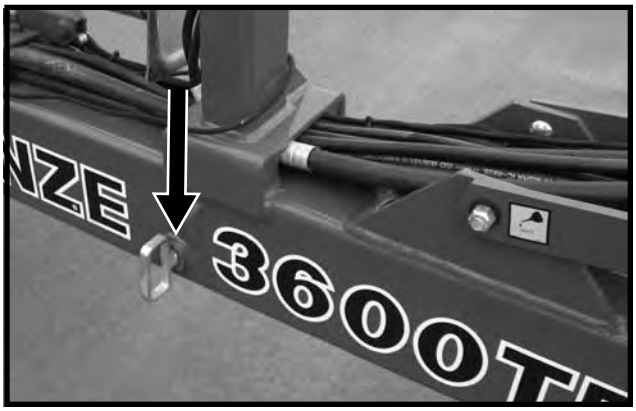
7. Hold the control console switch labeled “ROTATE/ TONGUE” in “**ROTATE**” and operate the hydraulic control to rotate the planter until the transport latch is engaged.

82079-2a



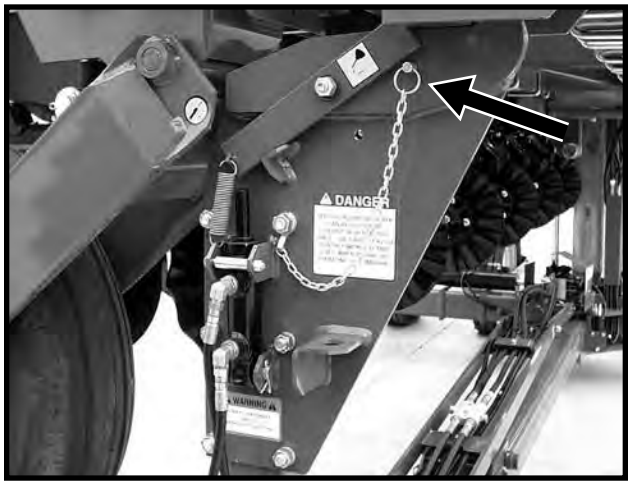
8. Install tongue safety pin.

D101807118



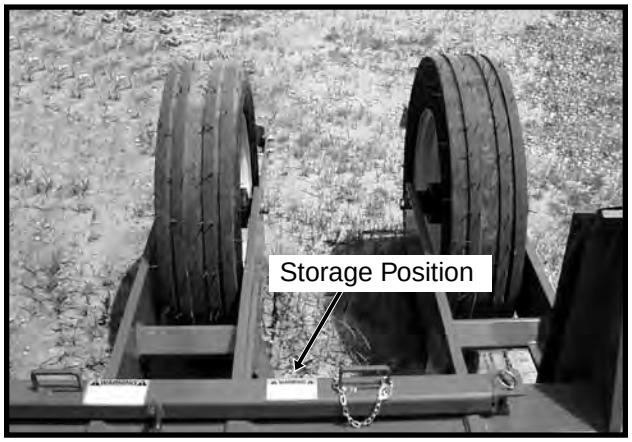
9. Install transport latch locking pin.

D060299106



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

D06189903

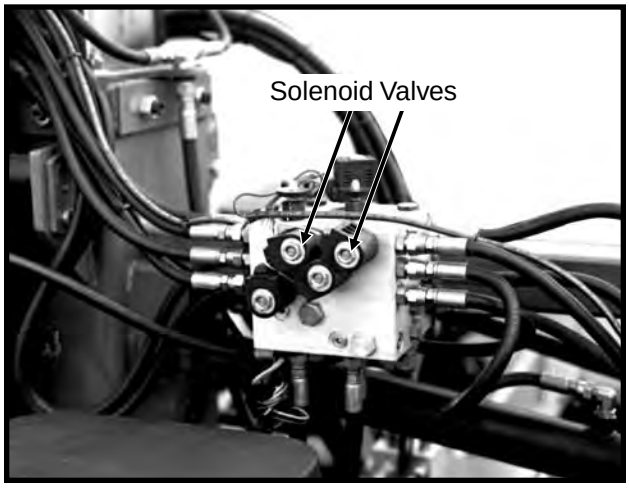


D060299107

DANGER: Always install the manual safety lockup prior to storage, working under the planter or transporting the planter.

ROW MARKER OPERATION

76740-28

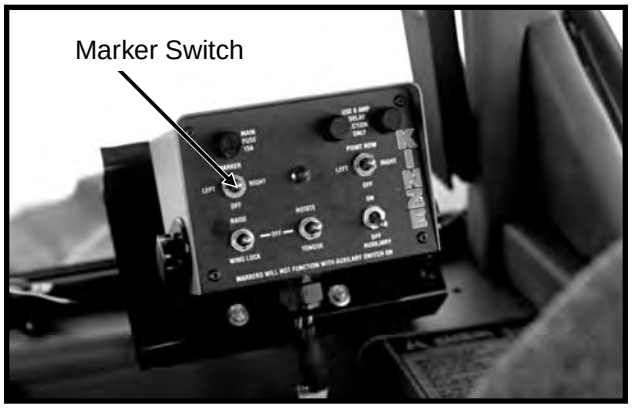


Shown With Cover Removed

D060299126

Shown With Cover Installed

76746-24



Three Position Selector Switch On Control Console

Two solenoid valves, located on the valve block on the rear R.H. side of the center frame, and 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 which marker you want to lower.
2. Operate hydraulic control to lower marker.
3. If opposite marker is to be used next, change control switch to other side.
4. At end of field, using hydraulic control, 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 markers can be lowered by operating the switch in each position and operating the hydraulic control twice. The row markers will raise simultaneously with the hydraulic control in the raise position.

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

If the electrical system fails to operate properly:

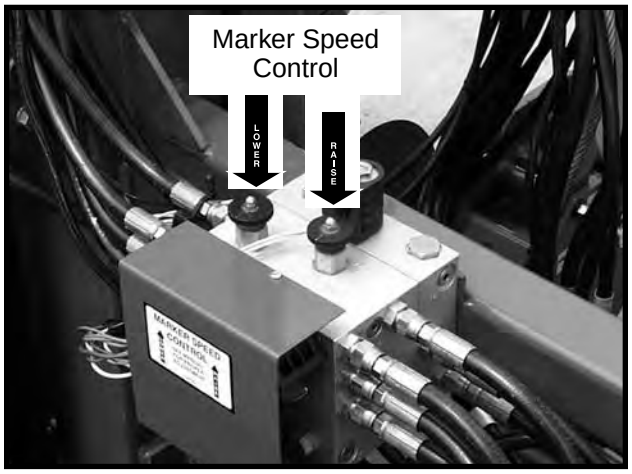
Check fuse.
Check wiring connections.
Check control switch.
Check solenoid. SOLENOID HOUSING WILL BE MAGNETIZED WHEN ENERGIZED.

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

ROW MARKER SPEED ADJUSTMENT

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

D060299126



IMPORTANT: The flow controls should be properly adjusted to restrict flow before the row marker assembly is first put into use. Excessive row marker travel speed of the marker 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 lever will have to be held until the cylinder reaches the end of its stroke. This occurs most often on tractors with an open center hydraulic system.

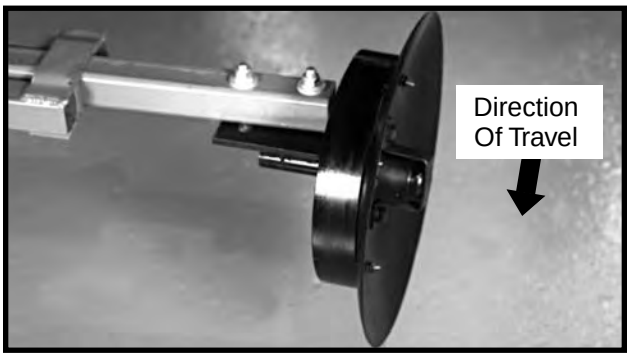
On tractors equipped with flow control valves, row marker speed adjustment should be made with the tractor flow controls in maximum position. After row marker speed is set, the tractor flow controls can be adjusted to allow the hydraulic lever to stay in detent during the marker raise or lower cycle.

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

ROW MARKER LENGTH ADJUSTMENT

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 as shown on the following page. Securely tighten clamping bolts.

60569-53



Row Marker Disc Blade Shown With Depth Band

The row 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 ½" hardware and move the assembly as required. Tighten bolts to the specified torque.

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

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

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

L.H. SIDE 30" - 7 ½" TWIN ROWS

Number Of Rows	x	Row Spacing (Inches)	+	3 ¾" Hitch Offset	=	Dimension Between Planter Center Line And Marker Blade

12 Rows x 30" + 3 ¾" = 363.75"
16 Rows x 30" + 3 ¾" = 483.75"

R.H. SIDE 30" - 7 ½" TWIN ROWS

Number Of Rows	x	Row Spacing (Inches)	-	3 ¾" Hitch Offset	=	Dimension Between Planter Center Line And Marker Blade

12 Rows x 30" - 3 ¾" = 356.25"
16 Rows x 30" - 3 ¾" = 476.25"

NOTE: If using 30" row spacing remove offset hitch and install customer supplied GA9836 12 Row 30"/ GA9837 16 Row 30" hitch mount so hitch is centered with center of planter. Adjust row markers as shown below:

12 Row 30" x 30" = 360" Marker Dimension Between Planter Center Line And Marker Blade

16 Row 30" x 30" = 480" Marker Dimension Between Planter Center Line And Marker Blade

MACHINE OPERATION

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.

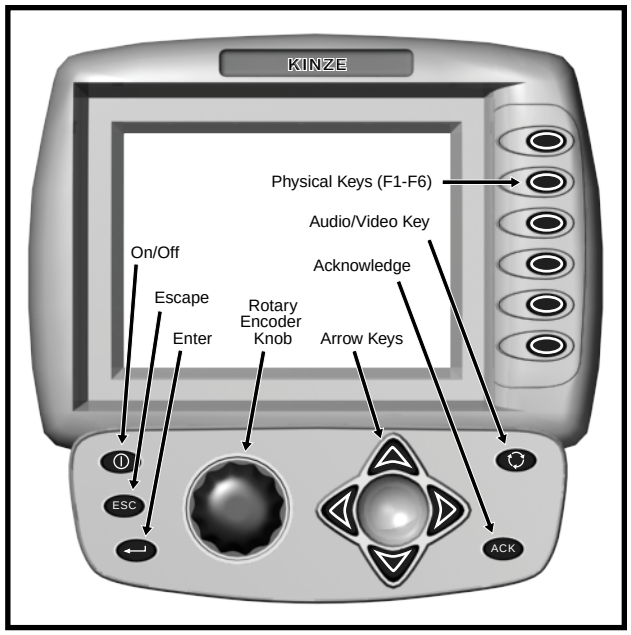
The console receives information from each of the sensors and displays this information.

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.

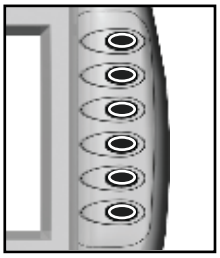
The monitor system will power down if no activity is detected within one hour. No activity means there has been no new seed flow and no operator push key input.

MONITOR KEY FUNCTIONS

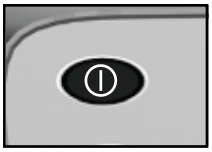
Push keys allow the user to select or change the operating mode, the active displays or the current configuration. Depending on the operating mode or the current display selected, some keys may not be active. Each key press, if valid, is acknowledged by a short beep and an action is taken. If the key 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.



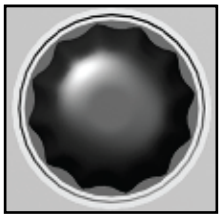
ON/OFF KEY
- Powers the unit on and off.



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.

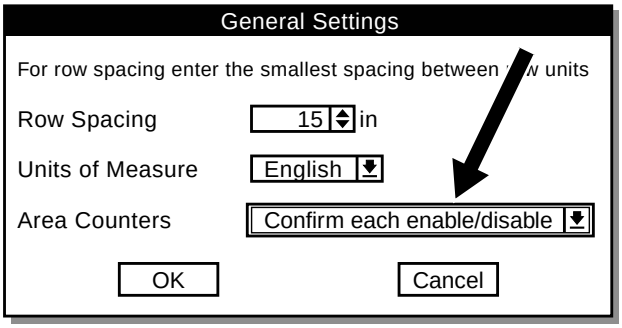


AV (AUDIO/VIDEO) KEY
- Set alarm volume.
- Adjust the contrast.
- Adjust backlighting of the LCD display. Can be used at any time.

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.

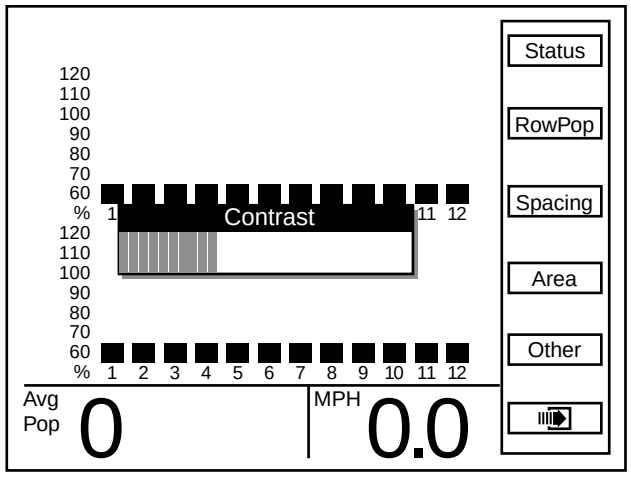


CHANGING VOLUME, CONTRAST AND BACKLIGHTING WITH THE AV KEY

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.

MTR90

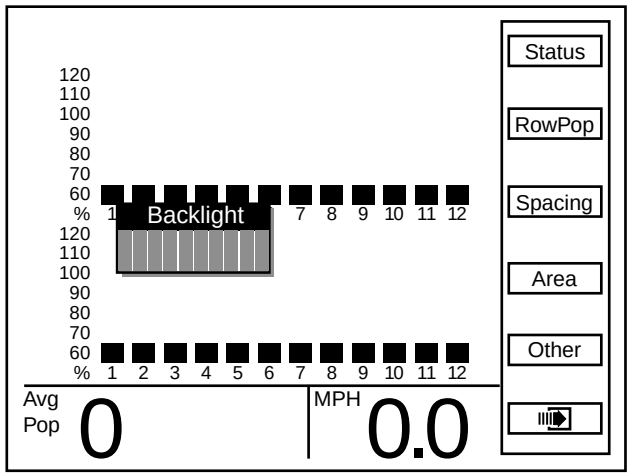


STEP 2 Use the arrow keys or turn the rotary encoder knob to adjust contrast. The adjustment will be visible on the screen.

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.

MTR91

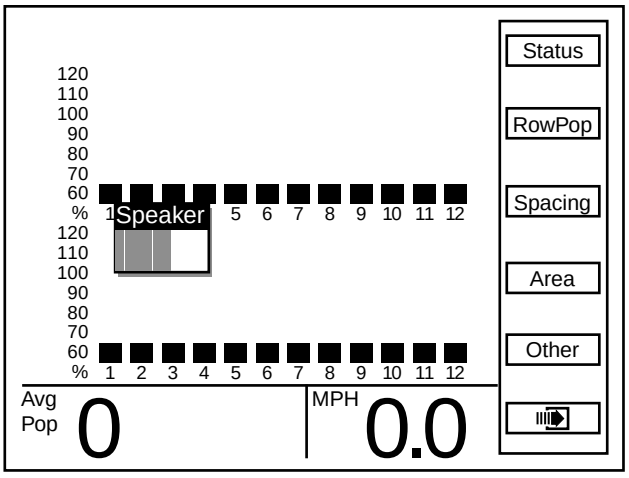


STEP 5 Use the arrow keys or turn the knob to adjust backlighting. The effect of the adjustment will be visible on the display.

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.

MTR92



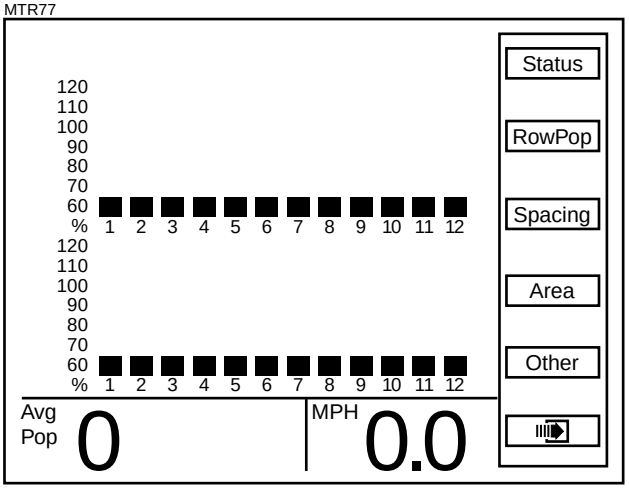
STEP 8 Use the arrow keys or turn the knob to adjust speaker volume. The volume of sound emitted from the speaker will change as adjustment is made.

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).

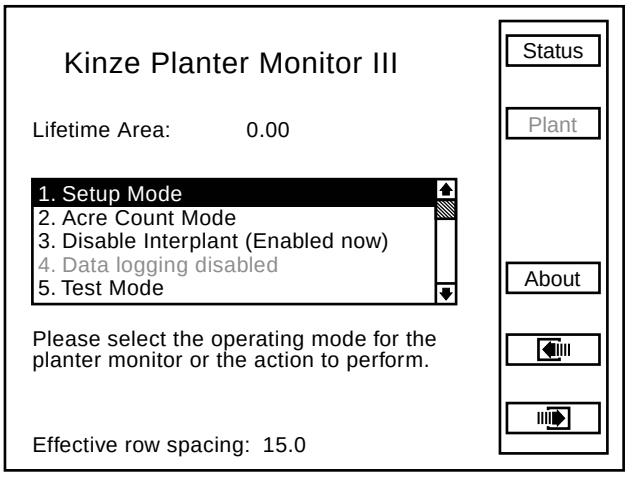
MTR77



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.

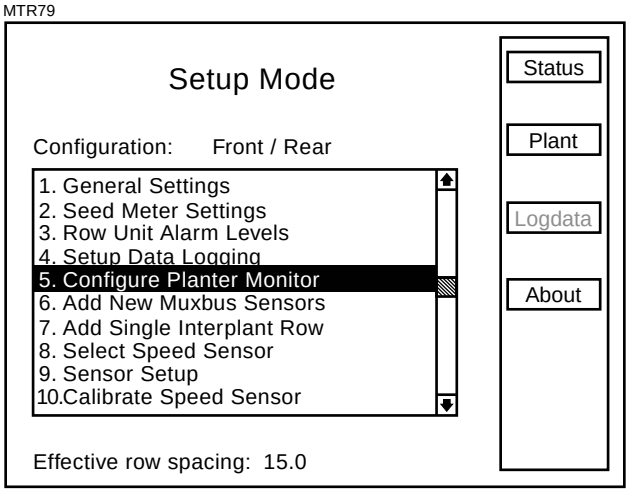
NOTE: There are 10 choices on the Setup Mode screen;

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.

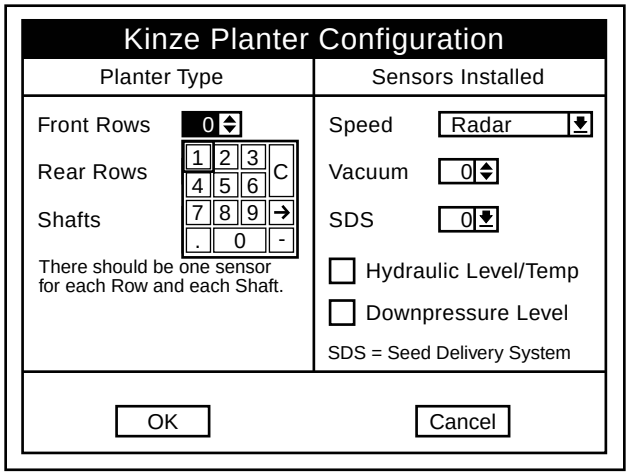
MTR79



NOTE: The planter monitor cannot be reconfigured while planting.

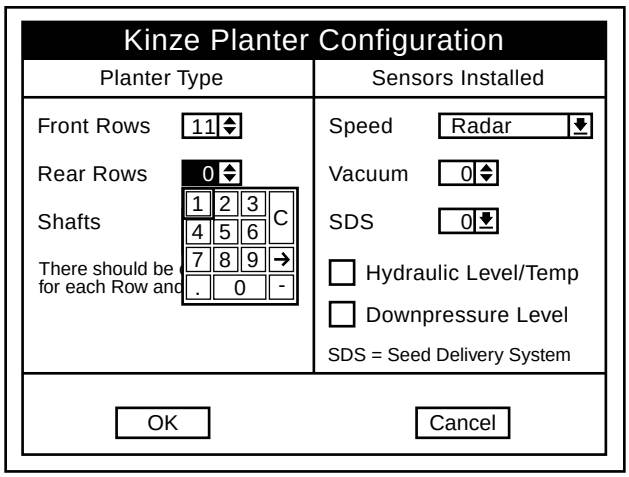
STEP 4 If there are front rows (Interplant) on the planter, press the knob or Enter key to highlight the “Front Rows” field. A drop down number pad will appear. Turn the knob or use the arrow keys to highlight the correct value then press the knob to select the number, for numbers containing more than 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



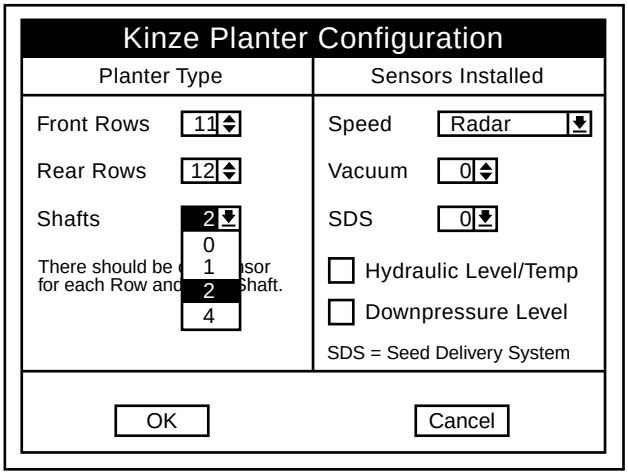
STEP 5 Press the knob or Enter key to select the “Rear Rows” field. A drop down number pad will appear. Turn the knob or use the arrow keys to highlight the correct value then press the knob to select the number, for numbers containing more than one digit select one digit at a time. When the desired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

MTR81



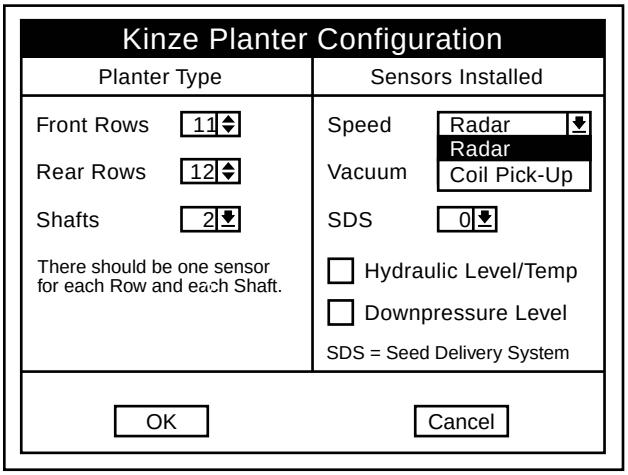
STEP 6 Rotate the knob or use the arrow keys to advance to “Shafts” field. Press the knob or Enter key to select the “Shaft” field. A drop down menu will appear. Turn the knob or use the arrow keys to highlight the number of “Shafts” on the planter. When the correct value is displayed, press the knob or Enter key to return to the “Kinze Planter Configuration” screen.

MTR82



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



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.

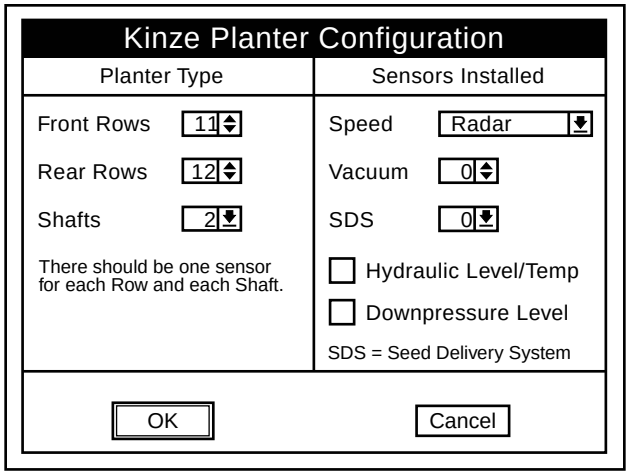
STEP 9 If applicable, turn the knob or use the arrow keys to advance to “SDS” (Seed Delivery System), Press the knob or Enter key. A drop down menu will appear. Select the correct number of SDS Sensors by turning the knob or using the arrow keys. Press the knob or Enter key to confirm selection.

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



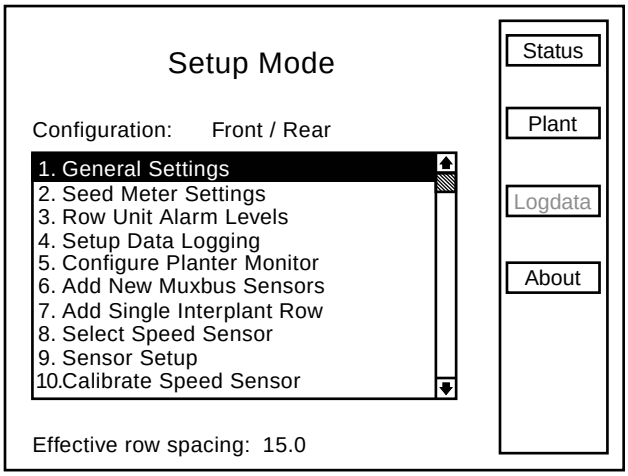
NOTE: To prevent the configuration from being saved select “Cancel” and press the rotary encoder knob or Enter key. The display will return to the “Setup Mode” screen without saving any changes.

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.

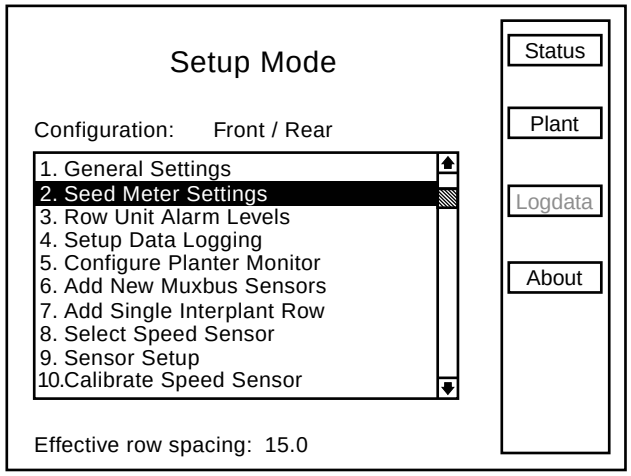
STEP 4 Turn the knob or use the arrow keys to highlight the “Area Counters” field. Select the “Area Counters” field by pressing the knob or Enter key, a drop down menu will appear. Turn the knob or use the arrow keys to highlight either “Confirm each enable/disable”, “Don’t confirm again today”, or “Don’t 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 imputed 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

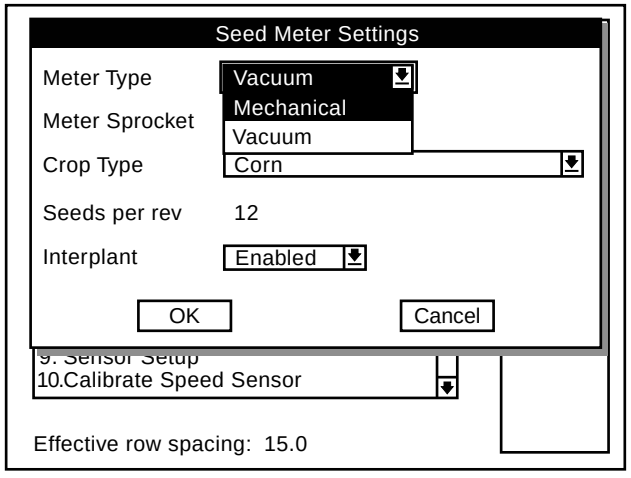
STEP 1 Scroll to “2. Seed Meter Settings” by turning the rotary encoder knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR159

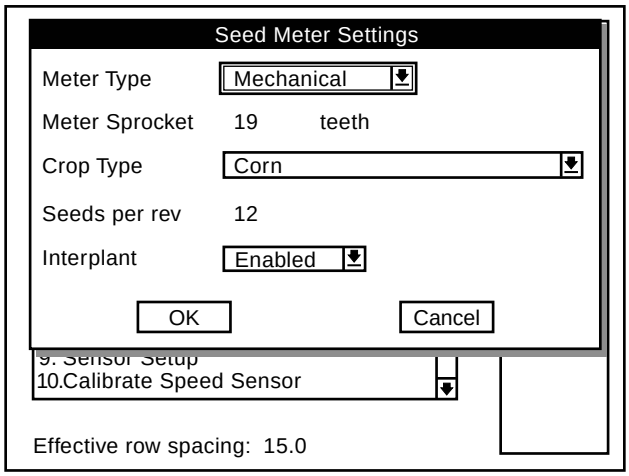


STEP 2 Select meter type by highlighting “Meter Type” and pressing the knob or Enter key, then highlight “Mechanical” or “Vacuum” and press the knob or enter key.

MTR212

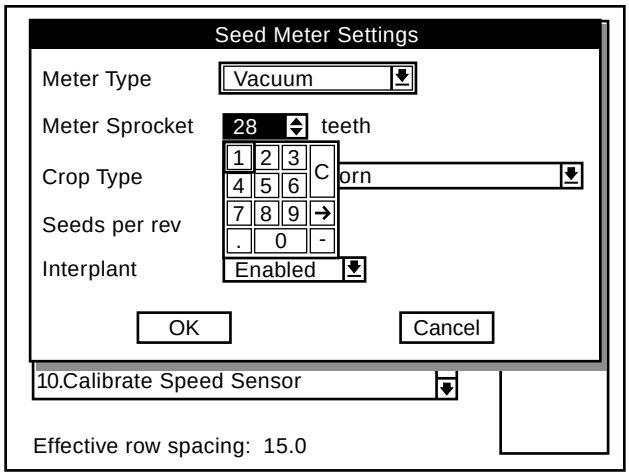


MTR210



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

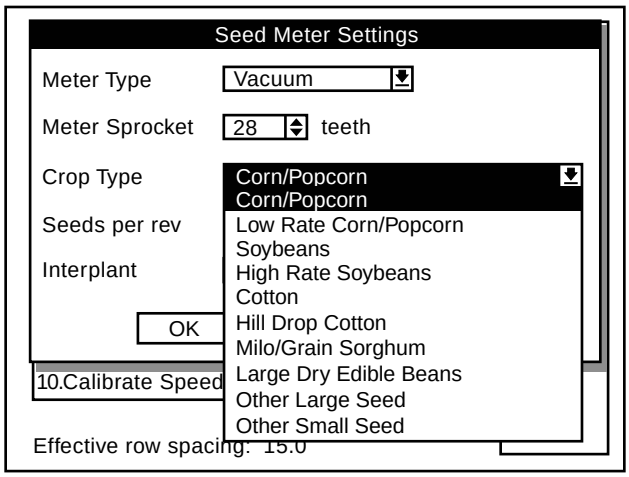
MTR206



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 obtain 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.

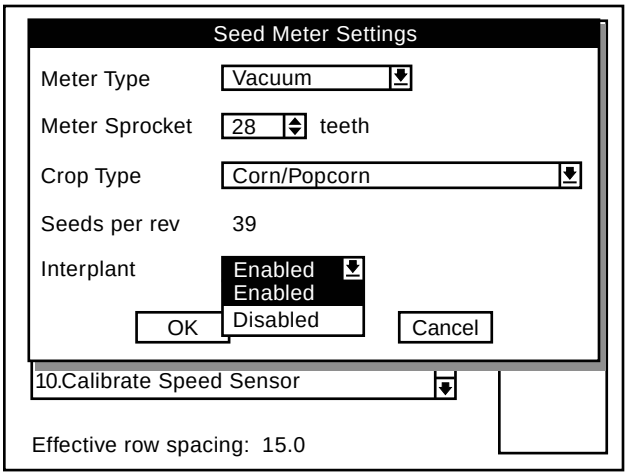
MTR207



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.

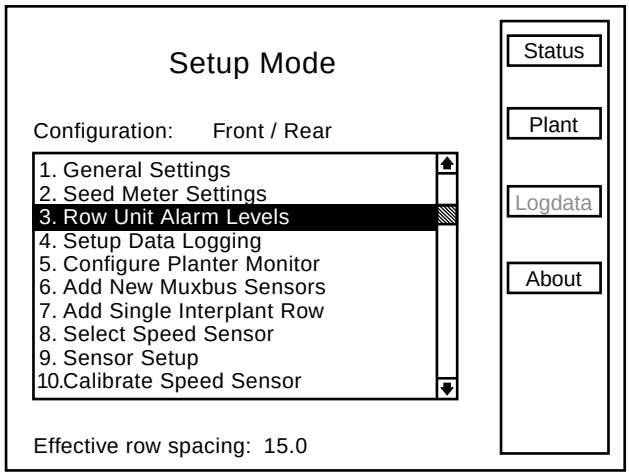
STEP 7 When all changes have been made, highlight “OK” and press the knob or Enter key to return to the “Setup Mode” screen.

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

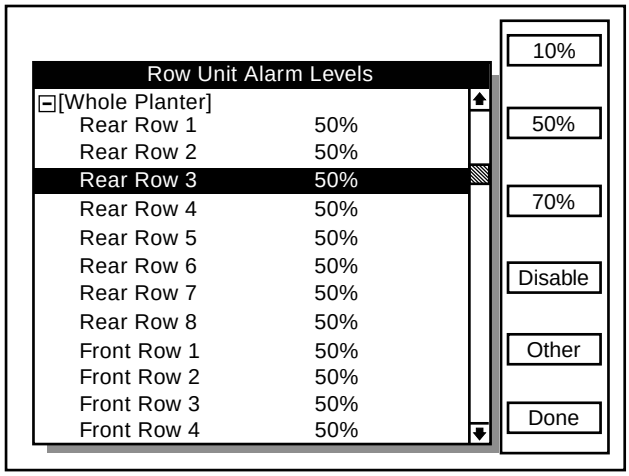


The alarm thresholds can be set for the whole planter, any planter section or individual rows.

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.

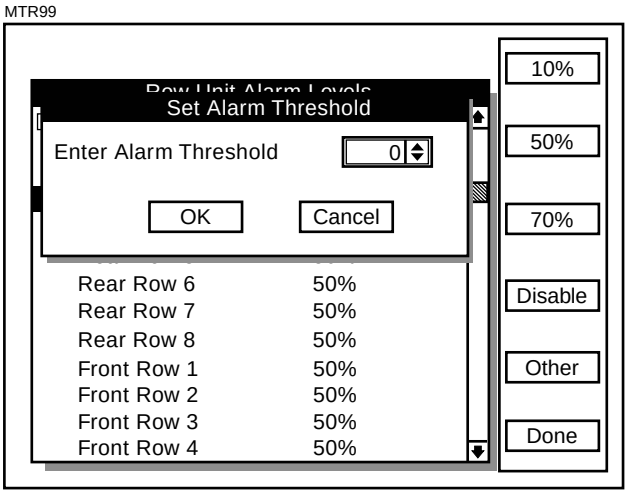
To set the alarm thresholds for all the rows in one section, highlight the desired section. Press the key next to the desired threshold. When the desired threshold has been specified for all row units, press the F6 key next to "Done".

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.

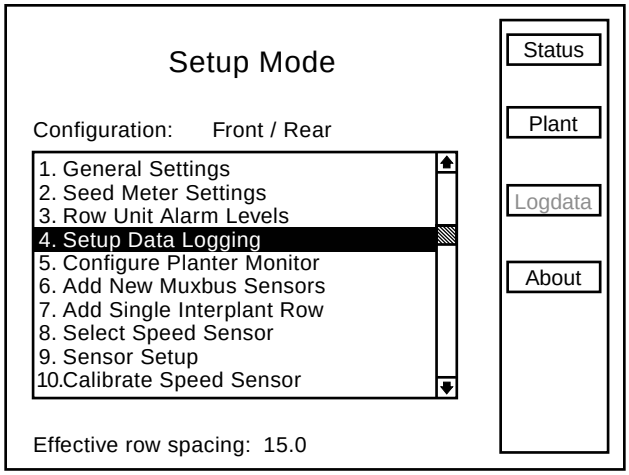
MTR99



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.

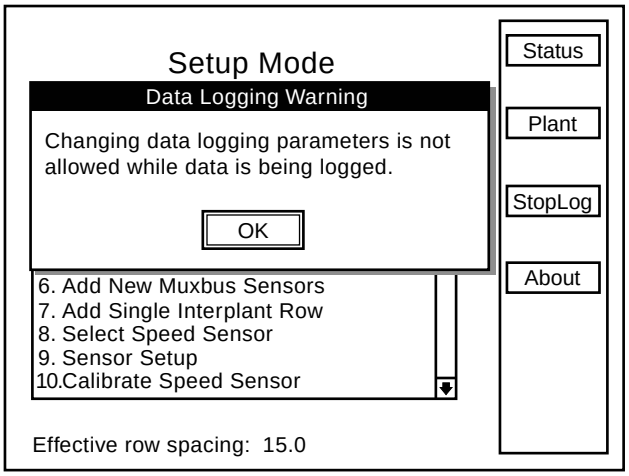
MTR164



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.

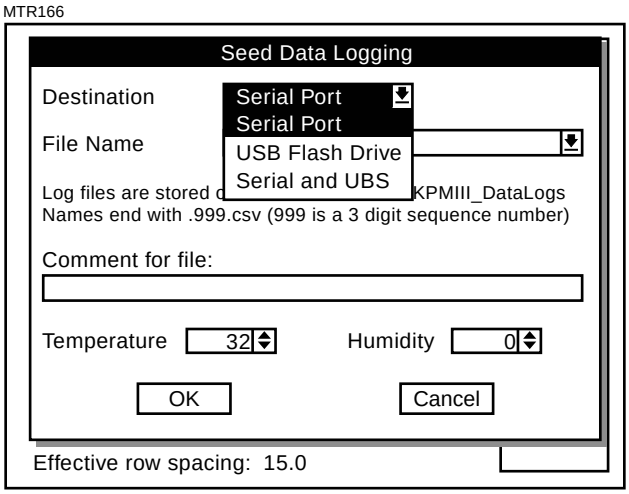
- Press the knob or Enter key to close the warning.
- Then in the “Setup Mode” press the F3 key next to “StopLog”.

MTR165



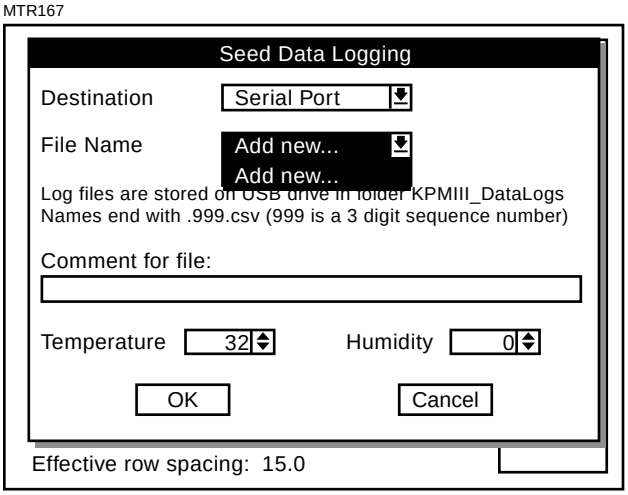
STEP 2 Turn the knob or use the arrow keys to highlight the “Destination” box then press the knob or Enter key. Highlight the desired option either “Serial Port”, “USB Flash Drive”, or “Serial and USB” and press the knob or Enter key.

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.

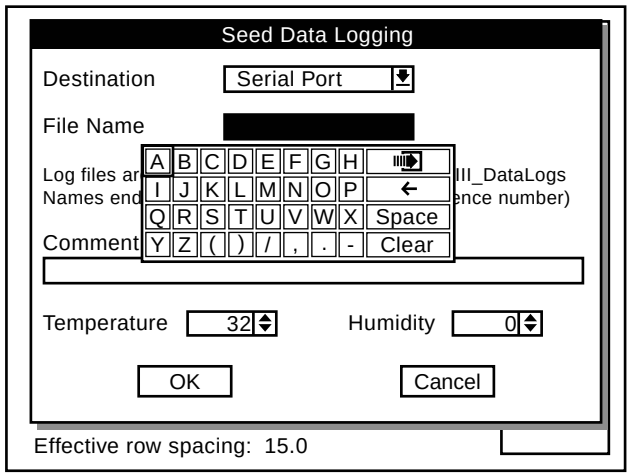
MTR167



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

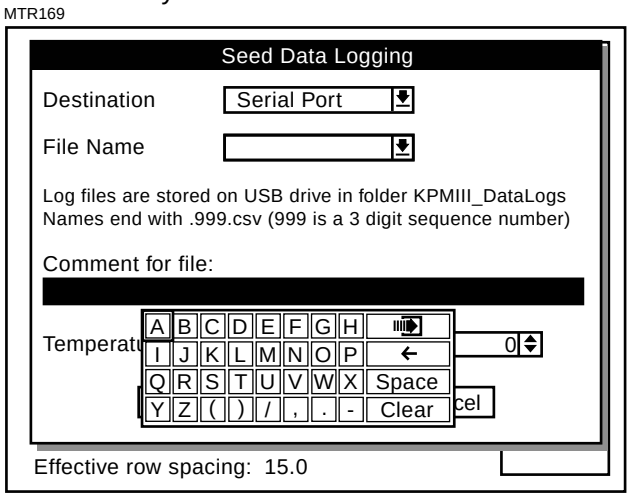
STEP 5 Add a new file name by using the drop down keyboard. Spell out the file name by highlighting each letter and pressing the knob or Enter key.

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.

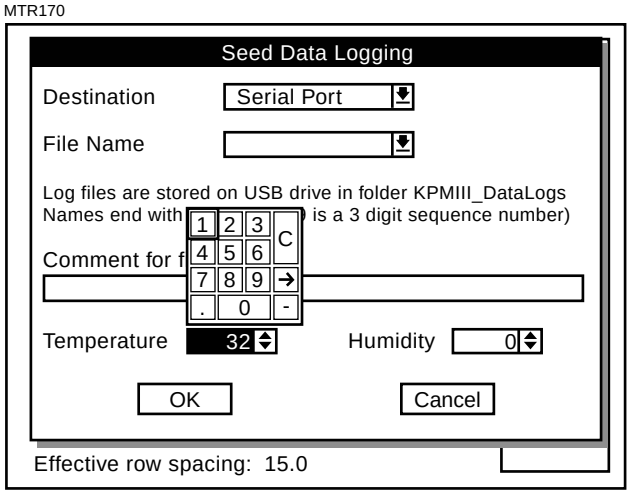
MTR169



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.

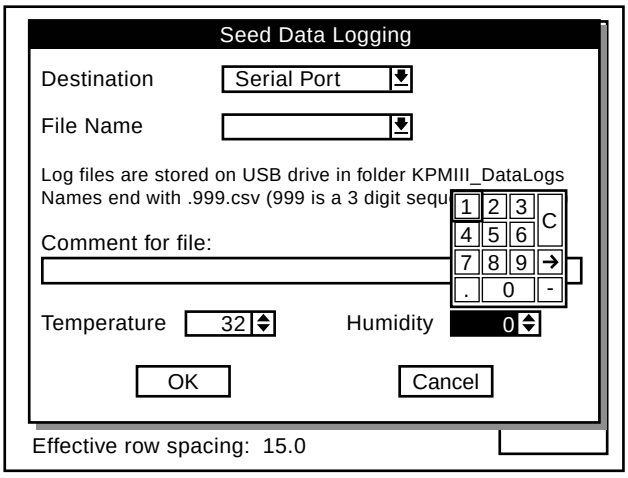
STEP 8 Use the knob or arrow keys to scroll to the Humidity box. Press the knob or Enter key to display the drop down keyboard. Use the keyboard to enter the humidity then press the Enter key.

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.

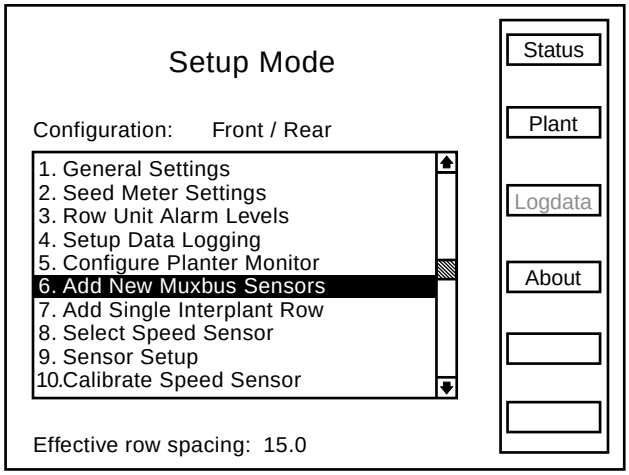
STEP 12 Press the F3 key next to "Stoplog" to end logging.

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.

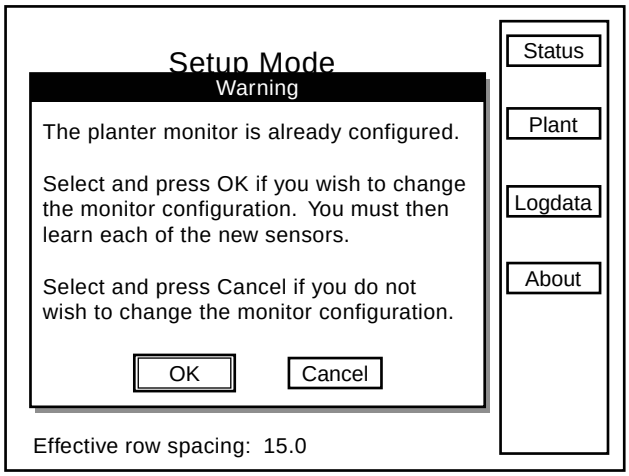
STEP 1 Highlight "6. Add New Muxbus Sensors" by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

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



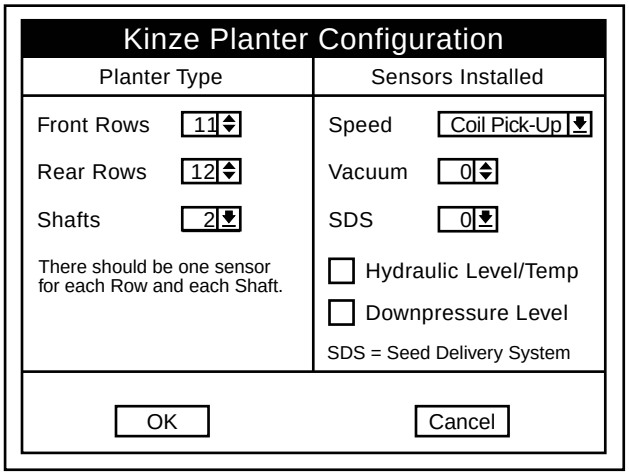
NOTE: To prevent the configuration from being changed, select Cancel, then press the knob, Enter key or ESC key.

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.

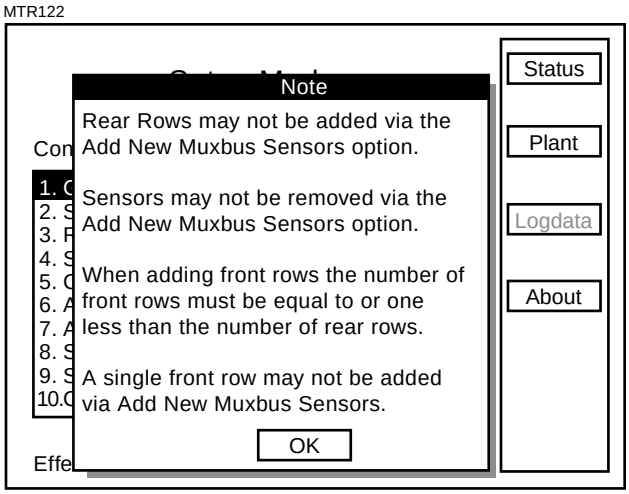
NOTE: To prevent the configuration from being changed select Cancel, then press the knob, Enter key or ESC key.

MTR121



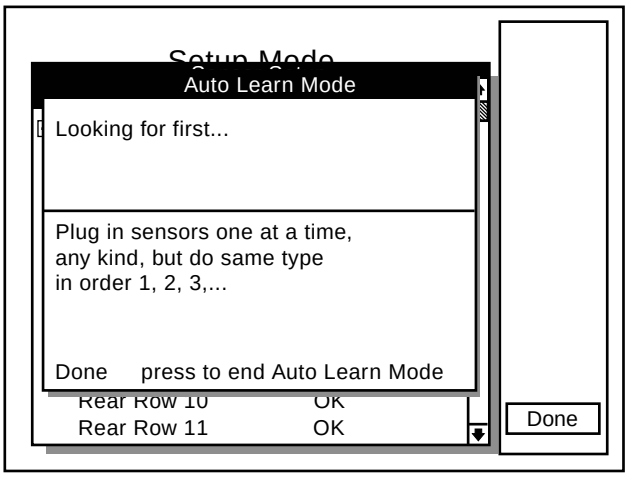
NOTE: Attempting to add rear rows while adding new Muxbus sensors will cause the following note to appear.

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



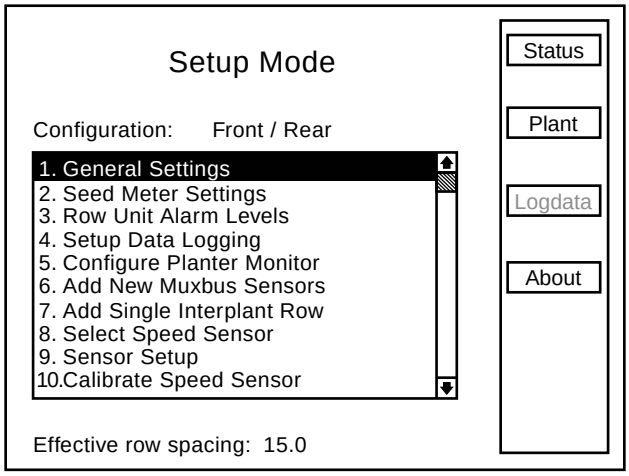
STEP 6 When all sensors are learned select F1 to end installation. The “Auto Learn Mode” box will appear. Press the F6 key next to “Done”.

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.

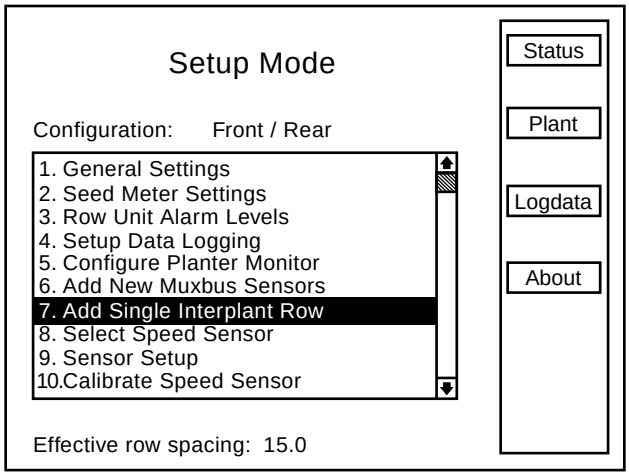
NOTE: To prevent the configuration from being changed select Cancel, then press the knob, Enter key or ESC key.

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)

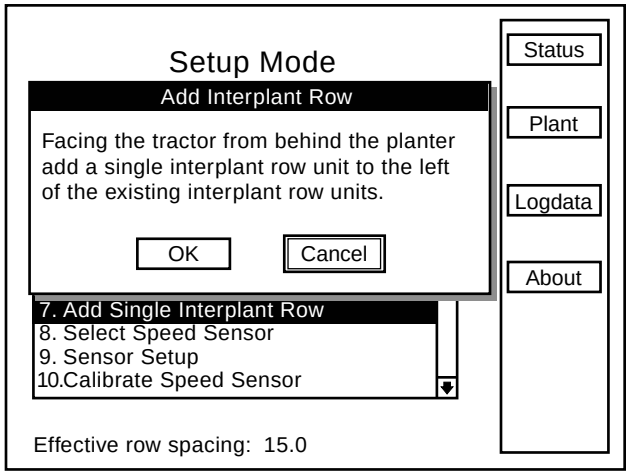
STEP 1 Turn the knob or use the arrow keys to highlight “7. Add Single Interplant® Row”. Press the knob or the Enter key to display the highlighted item.

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.

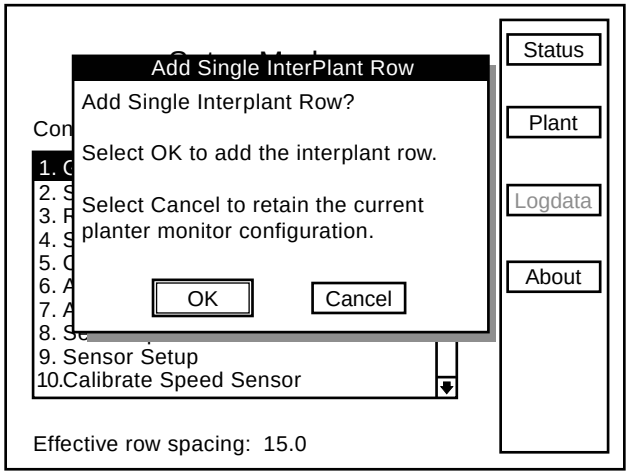
MTR127



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

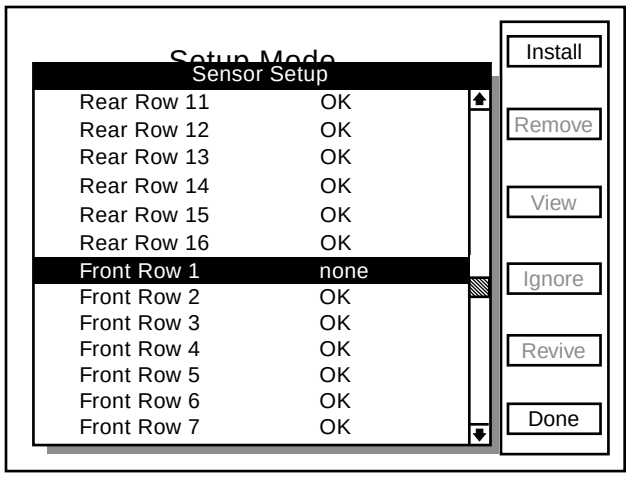
If the single Interplant® row is to be added turn the knob or use the arrow keys to highlight the “OK” button and then press the knob or Enter key to add the Interplant® row. If the single Interplant® row is not to be added select the Cancel key and press the knob or Enter key to cancel or press the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

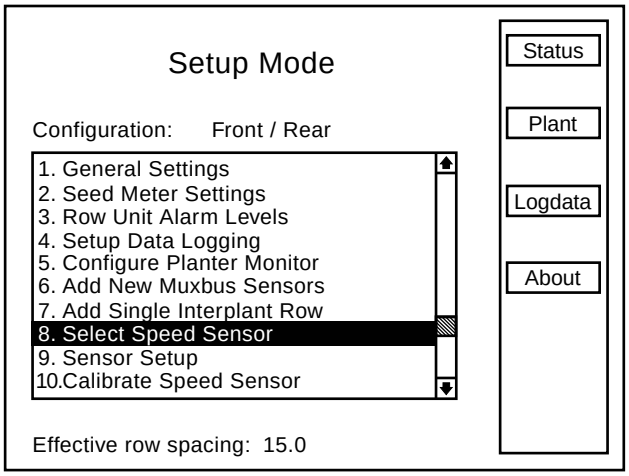
This setting must be specified when the monitor is first configured. It will be necessary to reprogram to use an alternate speed sensor.

NOTE: Speed sensors may not be changed while planting.

RADAR TO MAGNETIC DISTANCE SENSOR

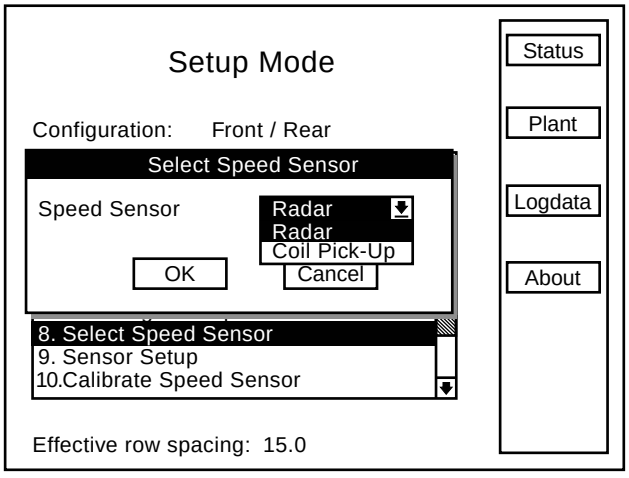
STEP 1 Turn the knob or use the arrow keys to highlight “8. Select Speed Sensor”. Press the knob or Enter key to display the highlighted item.

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.

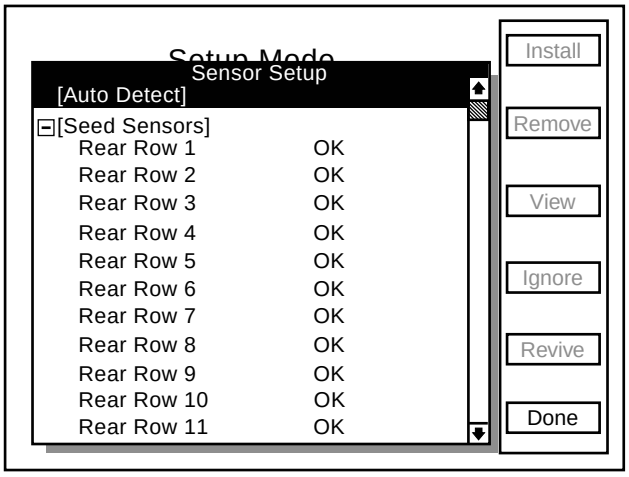
STEP 4 Turn the knob or use the arrow keys to highlight “9. Sensor Setup” and press the knob or Enter key.

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.

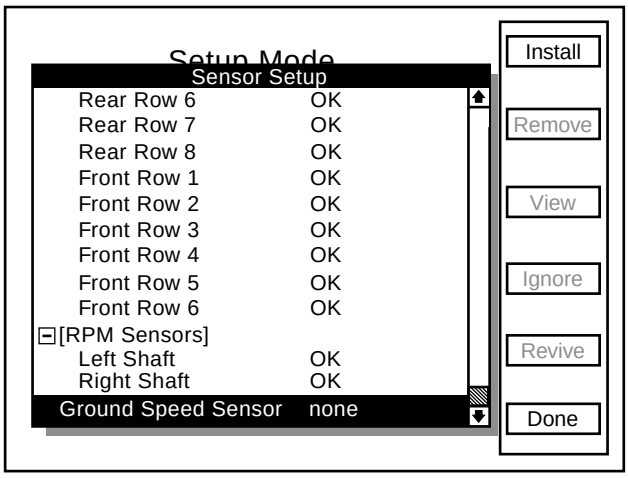
STEP 6 Plug in Magnetic Distance Sensor (MDS) and press the F1 key next to Install. Press the knob or Enter key to save information. The Sensor Setup screen will appear.

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.

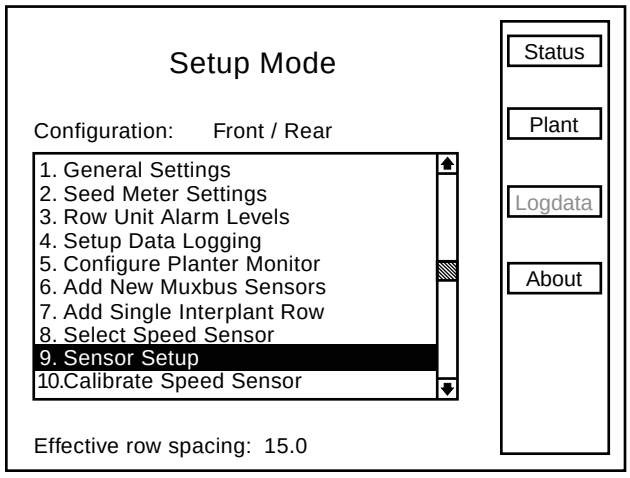
NOTE: When switching between speed sensors, verify the distance pulse count is correct for the chosen sensor. There will be significant distance pulse count variation between radar and coil pickup sensors.

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.

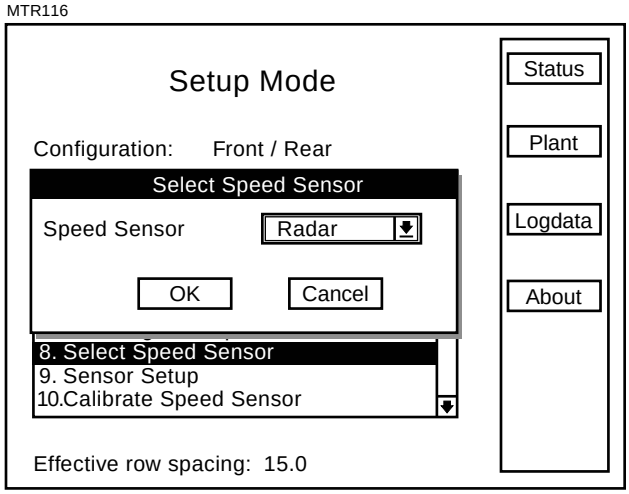
STEP 2 Press the F6 key next to Done. The display will return to the Setup Mode screen.

MTR114



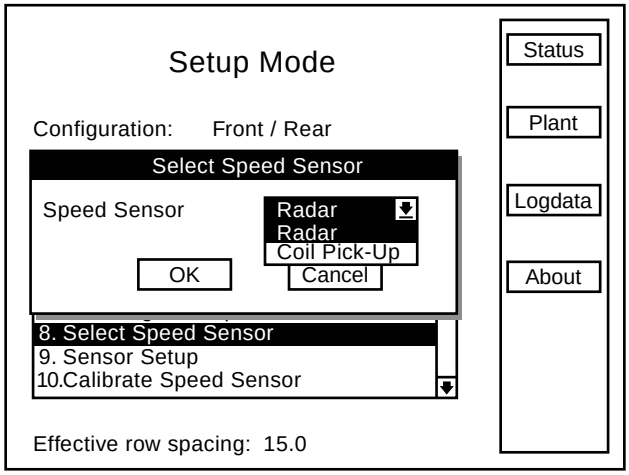
STEP 3 Turn the knob or use the arrow keys to highlight “8. Select Speed Sensor” and press the knob or Enter key.

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.

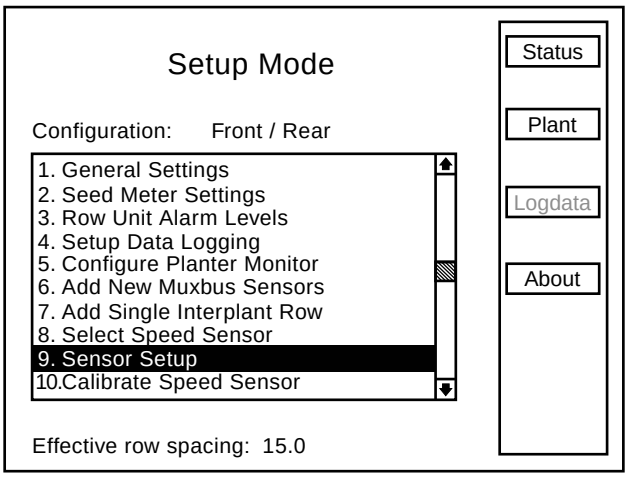
IMPORTANT: All sensors MUST be unplugged before programming begins.

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.

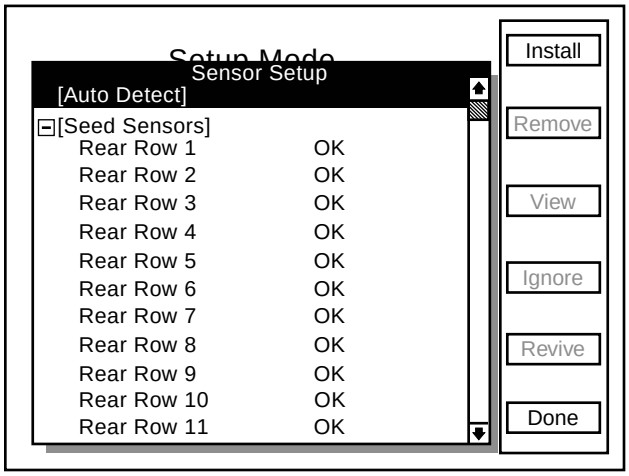
STEP 3 Select "9. Sensor Setup" by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR85



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



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.

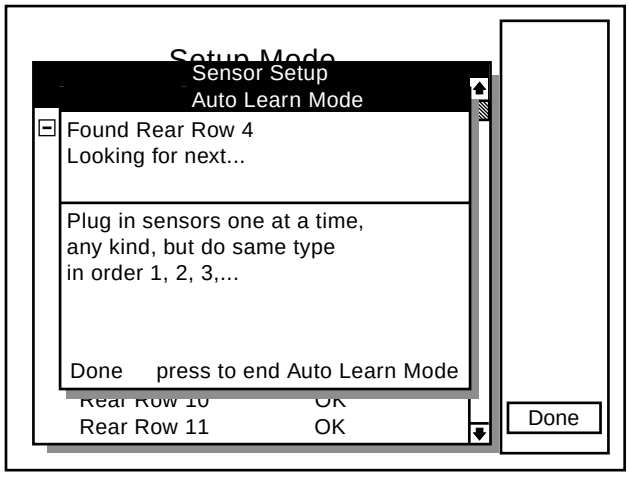
Connect shaft rotation sensors or speed sensors in the same way seed sensors were connected, making sure to work from left to right across the planter.

(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.

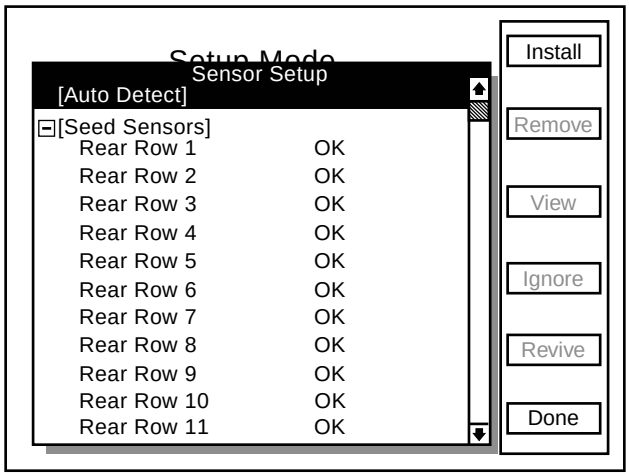
When all sensors are installed press the F6 key to end the installation and return to the "Setup Mode" screen.

MTR87



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

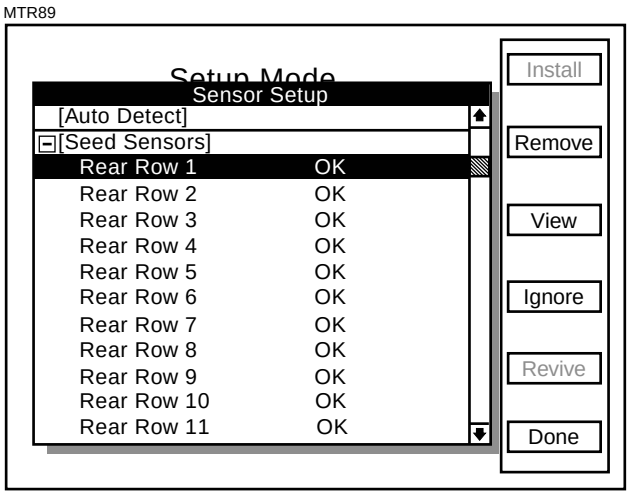
MTR86



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.

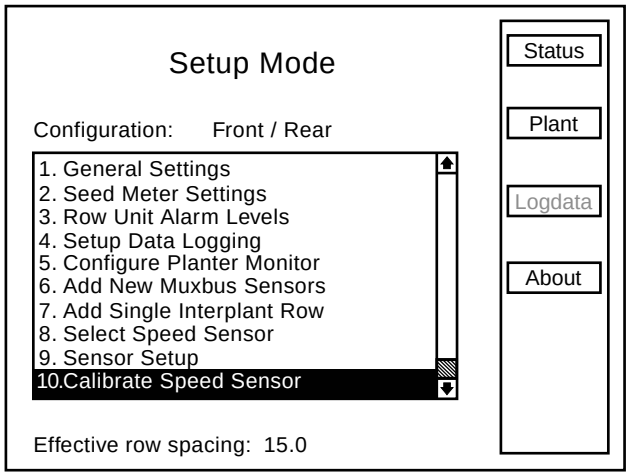
MTR89



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.

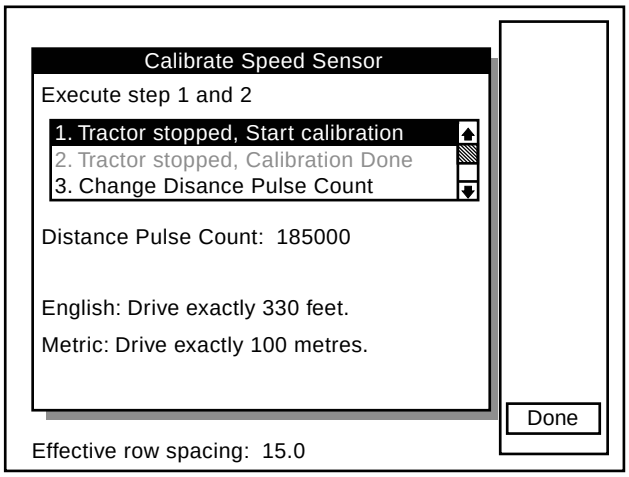
MTR100



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

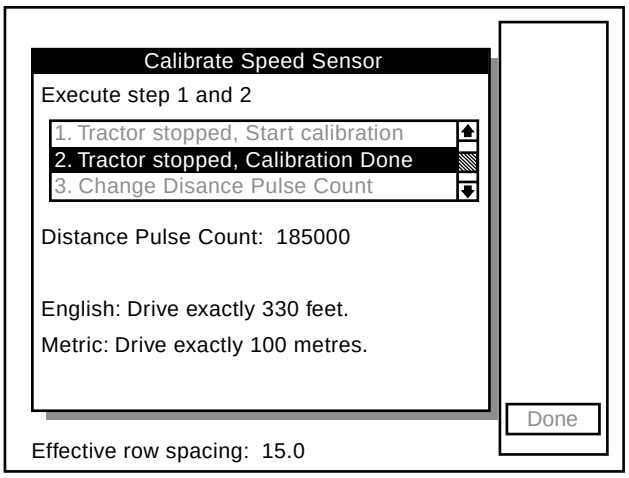
NOTE: A field calibration must be performed to establish the Distance Pulse Count number. Several factors can affect this value, such as wheel slip on the magnetic distance sensor. IT IS NOT UNCOMMON FOR THE SPEED ON THE MONITOR TO VARY SLIGHTLY FROM THE TRACTOR SPEEDOMETER. *Adjusting the Distance Pulse 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



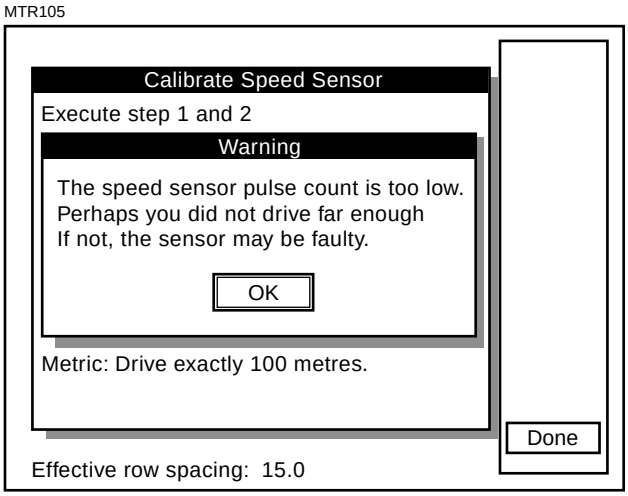
- In field conditions, measure 330 feet or 100 meters, depending on the unit of measurement selected. Place a marker at the start point and end point.
- Pull the tractor up to the starting point.
- Turn the knob or use the arrow keys to highlight “1. Tractor stopped, Start calibration” and press the 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



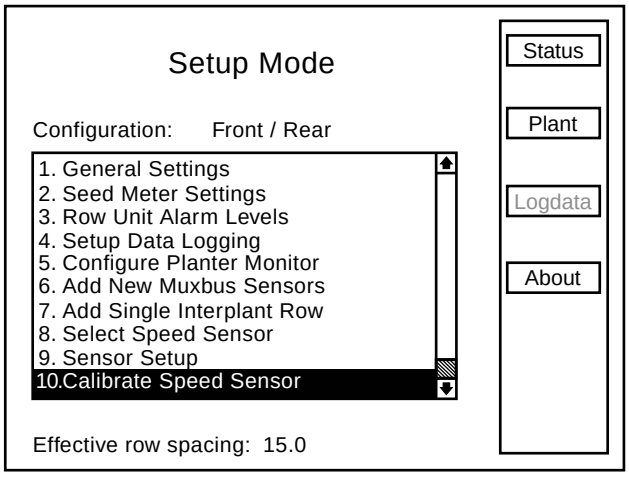
NOTE: Repeat the above steps multiple times. Record and average the values. Use this average for the Distance Pulse Count number constant.

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.

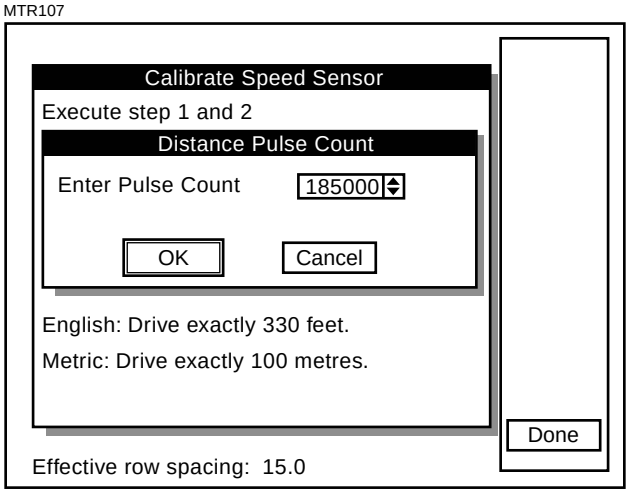
STEP 1 Turn the knob or use the arrow keys to highlight ‘’10. Calibrate Speed Sensor” and press the knob or Enter key

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.

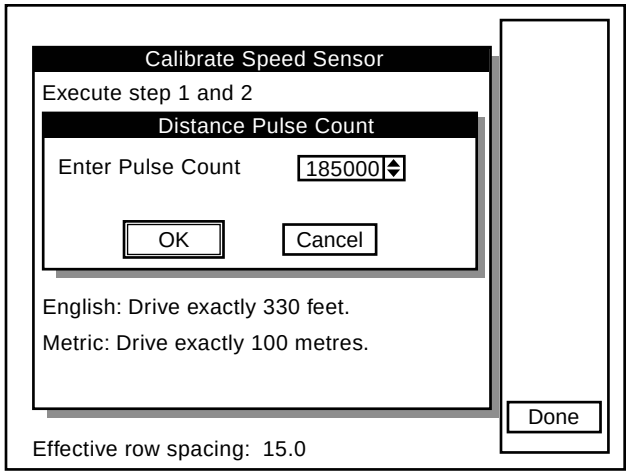
STEP 3 Turn the knob or use the arrow keys to highlight the first digit of the average pulse count and press the knob. The number will appear in the “Enter Pulse Count” line. Highlight the next digit of the number and press the knob. Repeat this procedure until the entire number is entered then press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

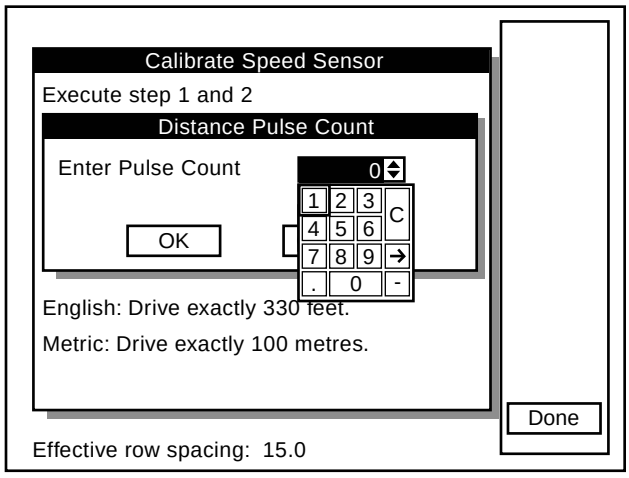
The monitor will display the current pulses per mile/ kilometer using a 6 digit, no decimal place format labeled “Distance Pulse Count”. Turn the knob or use the arrow keys to highlight “Change Pulse Count” then press the knob or Enter key. The “Distance Pulse Count” box will appear.

MTR102



- When the “Enter Pulse Count” value is highlighted press the knob or Enter key and a drop down key pad 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”.

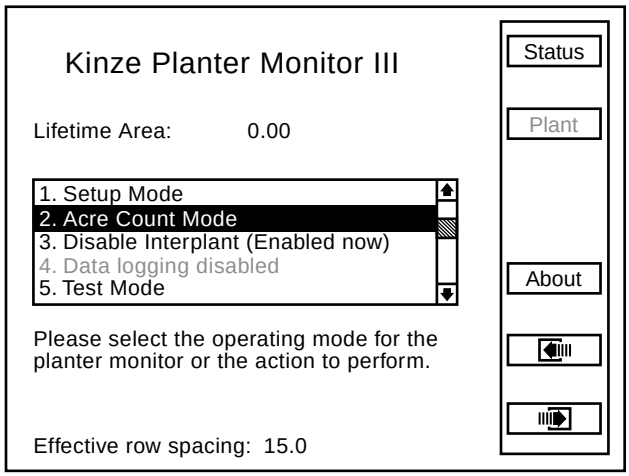
STEP 2 Enter into “Acre Count Mode”.

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



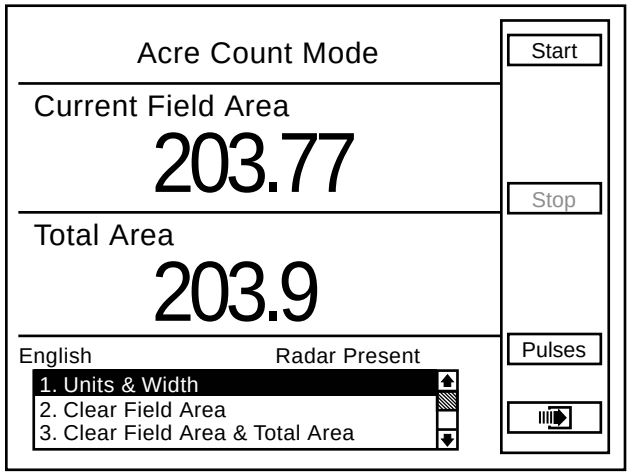
NOTE: If the radar unit is not detected a warning will appear.

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.

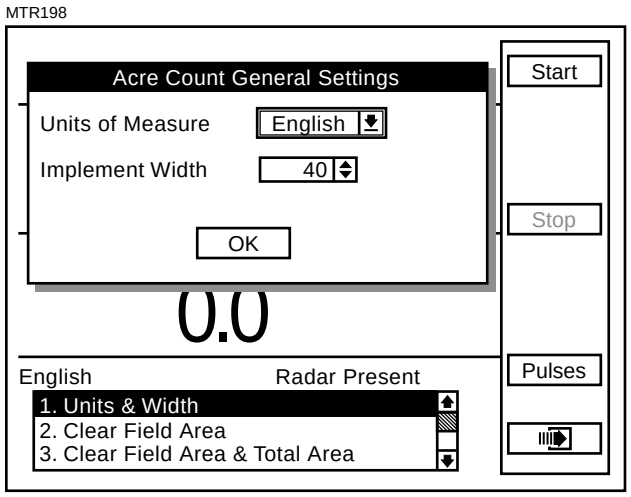
MTR197



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.

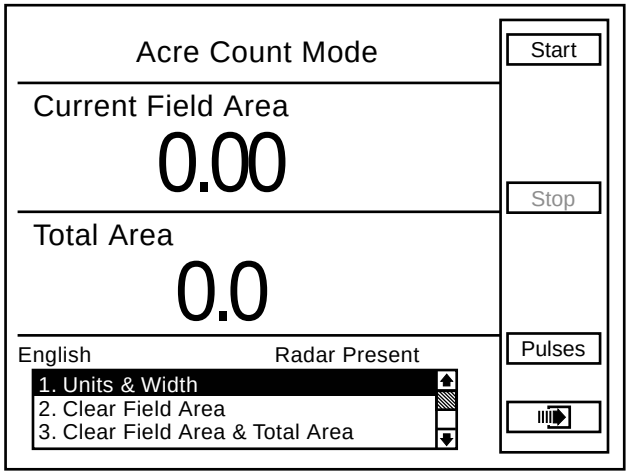
STEP 8 To begin accumulating area press the F1 key next to Start.

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



• 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®

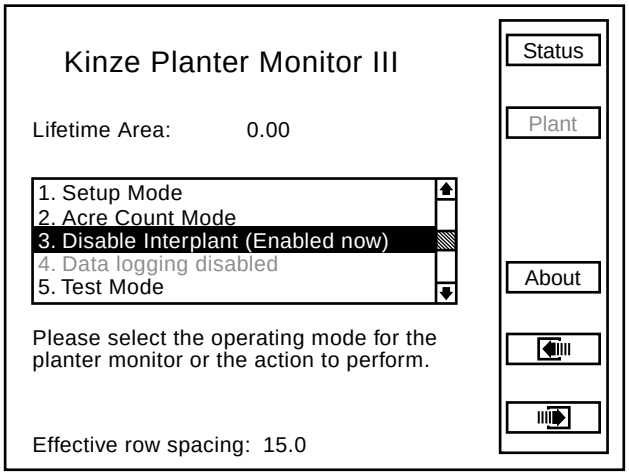
STEP 1 Return to the "Planter Configuration" screen by pressing the F2 key next to "Plant".

STEP 2 Press the F6 key until the "Kinze Planter Monitor III" screen appears.

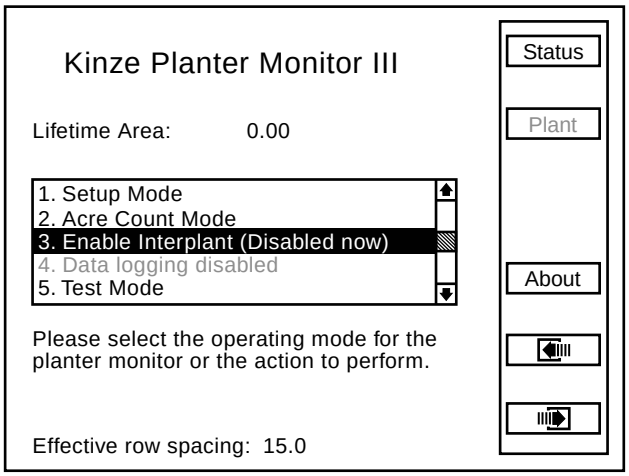
STEP 3 Turn the rotary encoder knob or use the arrow keys to highlight "3. Disable Interplant (Enabled now) or Enable Interplant (Disabled now).

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.

MTR130

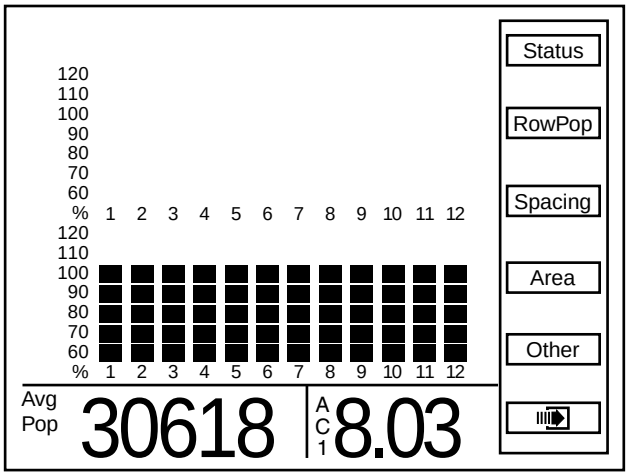


MTR131



Press F6 to return to the Plant screen.

MTR132

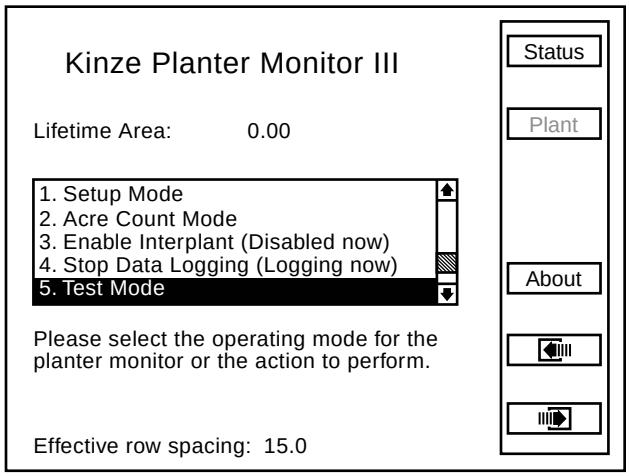


TEST MODE

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

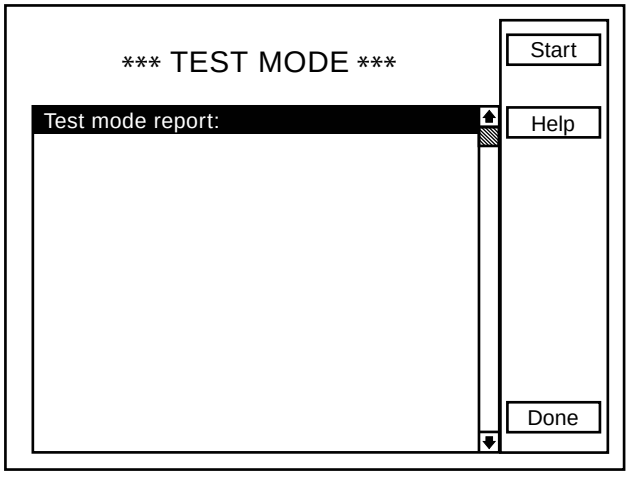
STEP 2 Select “5. Test Mode” by turning the rotary encoder knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR173



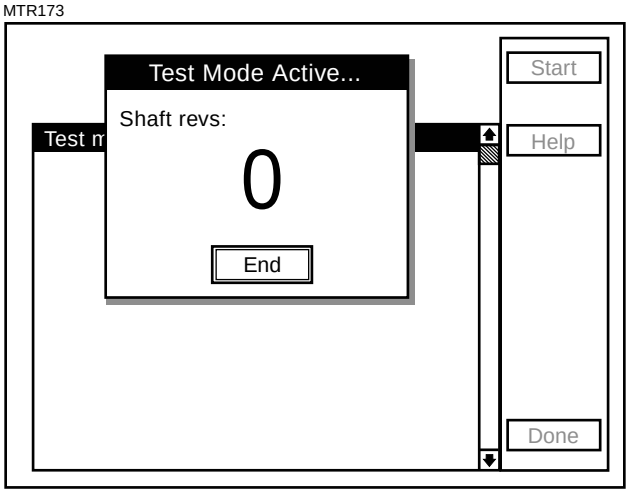
STEP 3 Press the F1 key next to Start.

MTR174



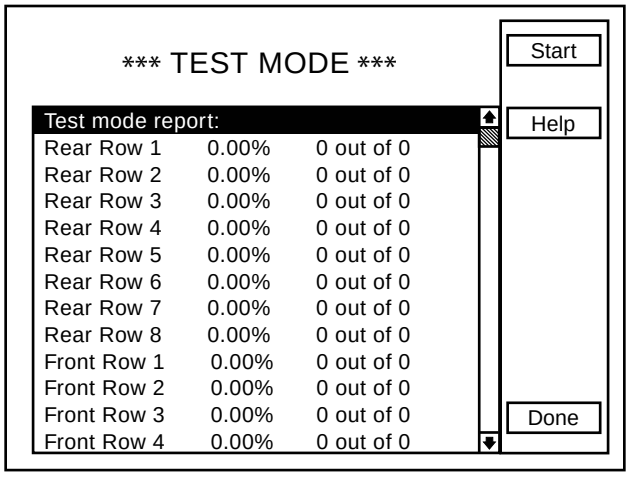
STEP 4 The “Test Mode Active” box will appear showing the number of shaft revolutions. The “End” box will be highlighted. Press the knob or Enter key. The “Test Mode Active” box will appear displaying the drill shaft revolutions.

MTR173



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

MTR176

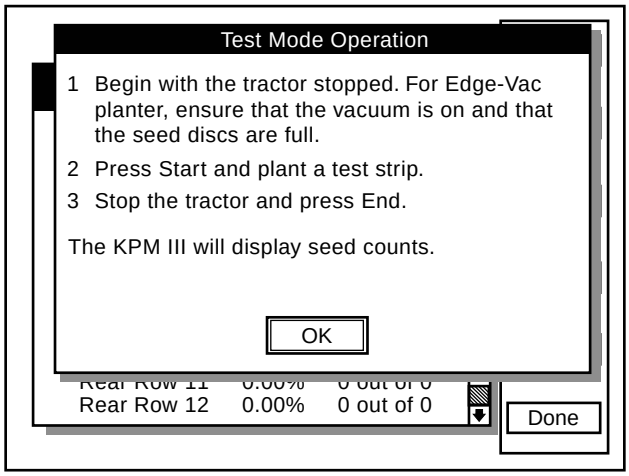


STEP 6 Begin the test with the tractor stopped. For EdgeVac planters, ensure the vacuum is on and that the seed discs are full.

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



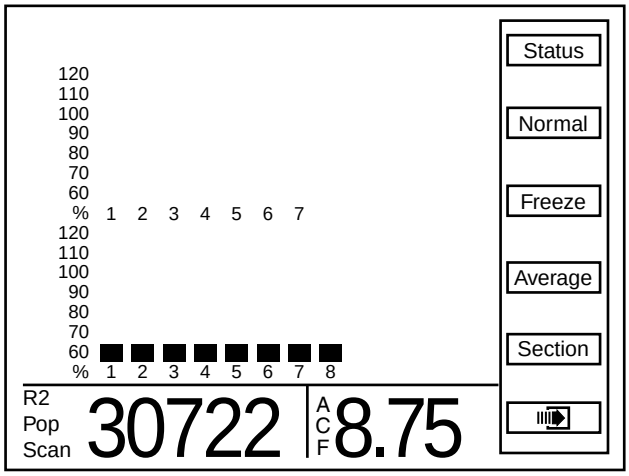
NOTE: The above instructions will display on the screen when the F2 key next to “Help” is pressed.

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

ROW POPULATION

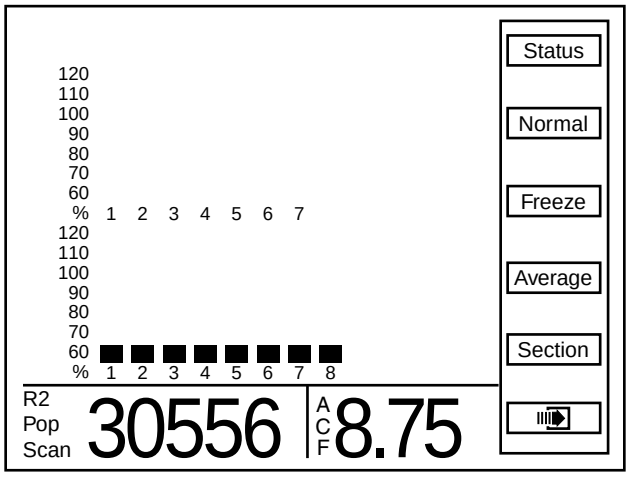
Press the F2 key next to “RowPop” to display row population. Average planter population will be shown in the lower L.H. corner of the display.

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.

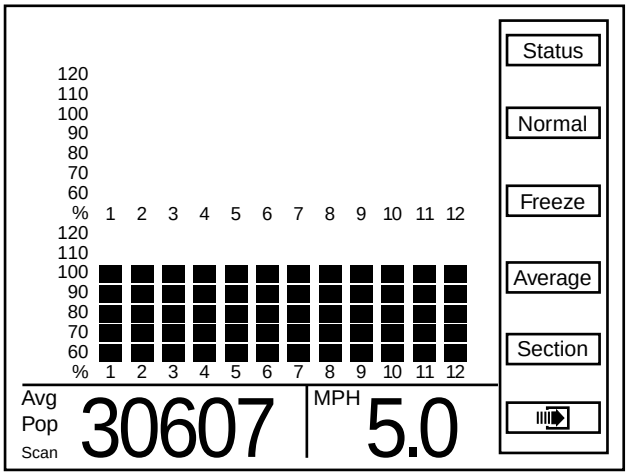
MTR134



- 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.

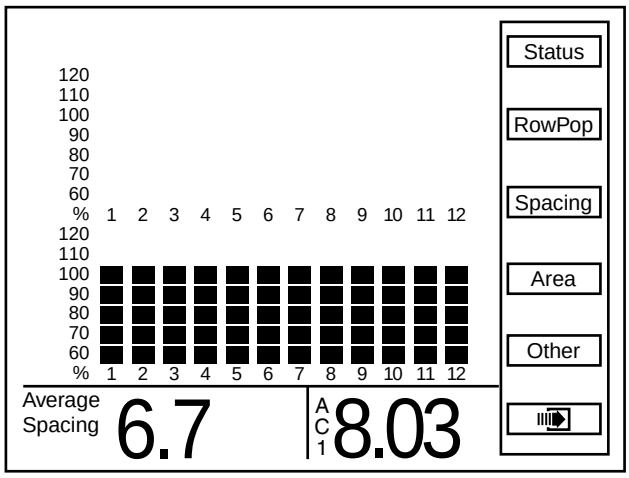
- Press the F2 key next to Normal to display the normal screen for the Planter Configuration screen.

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

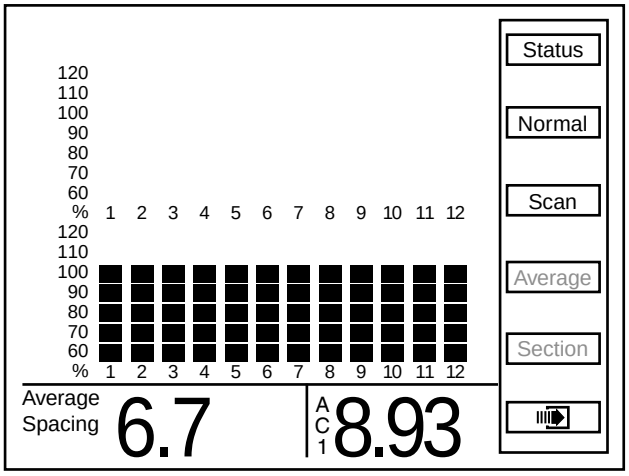
ROW SPACING

- 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

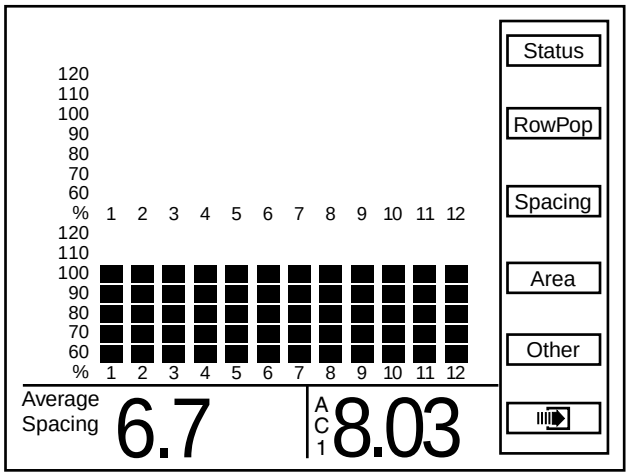


- Press the F3 key next to Scan and the monitor will scan through each row in ascending order displaying the average seed spacing for each row. Scan appears in the L.H. corner to indicate the display is scanning. After all rows have been scanned the average population is displayed and scanning will continue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

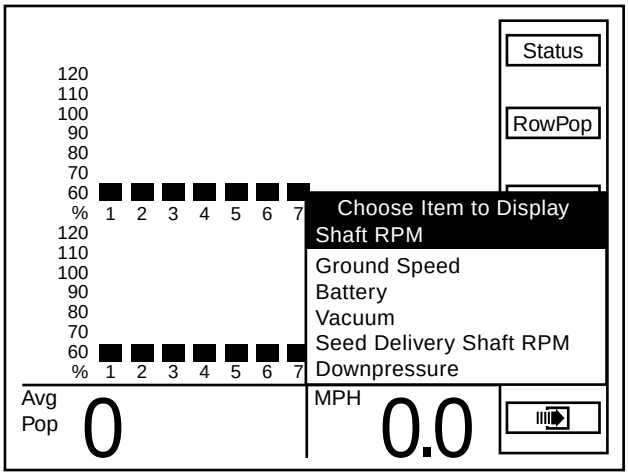
NOTE: If the rows are being scanned and the F4 key next to Average is selected the scan function will stop.

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 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).

- 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”.

WARNINGS AND ALARMS

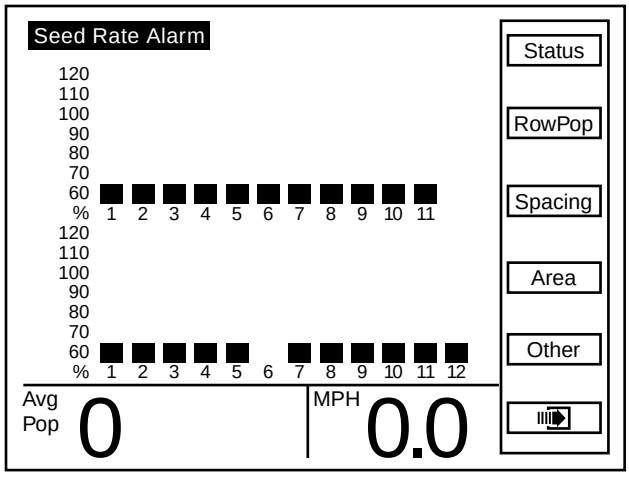
STEP 1 Seed Rate Alarm - A seed rate alarm is activated whenever the row average seed population drops below the threshold set for that row.

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.

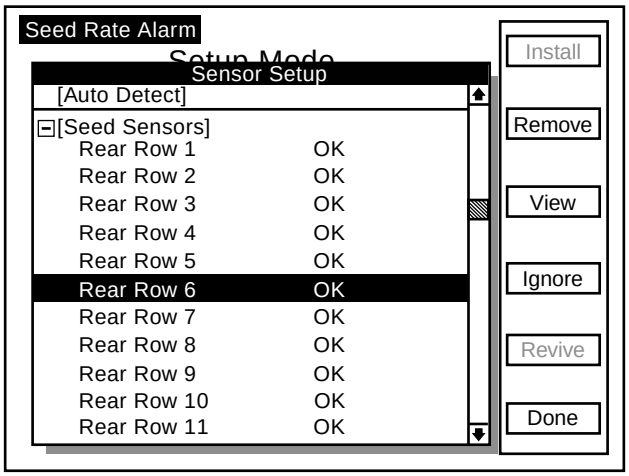
The status message associated with an alarm contains more information about the alarm. To view the “Status Message” for a seed rate alarm, press the F1 key next to Status.

MTR143



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

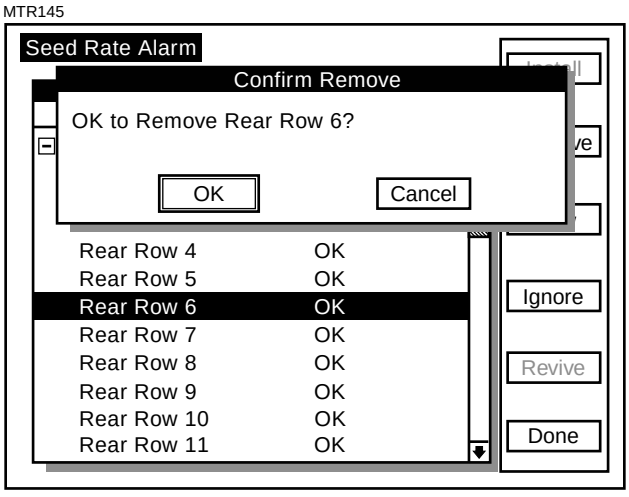


NOTE: The only way to remove an alarm is to find the problem and correct it. Alarms are not reported for rows with the seed rate alarm thresholds disabled.

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

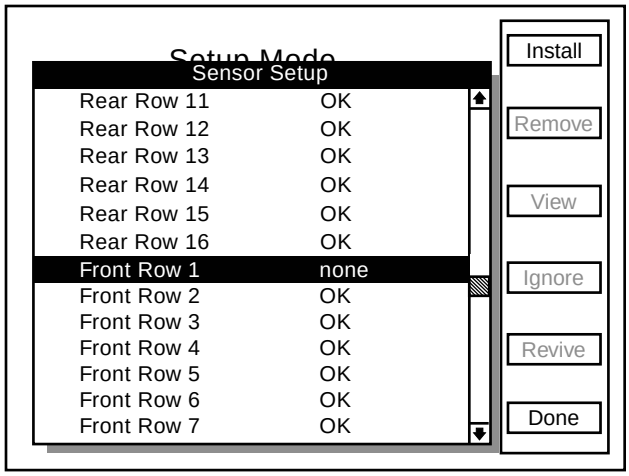
The row can be removed by pressing the F2 key next to Remove. A box will appear asking for confirmation to remove the row. The “OK” box will be highlighted in the box.

MTR145



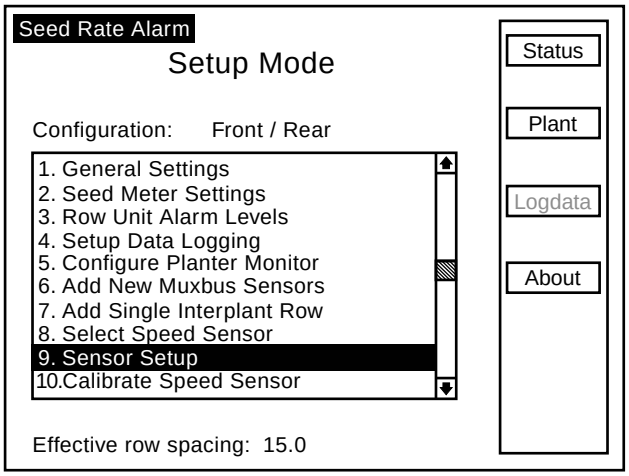
Press the knob or Enter key to confirm removal. The Sensor Setup screen will display “none” next to the row that was removed. Press the F6 key next to “Done”. The setup mode screen will appear.

MTR146



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

MTR147

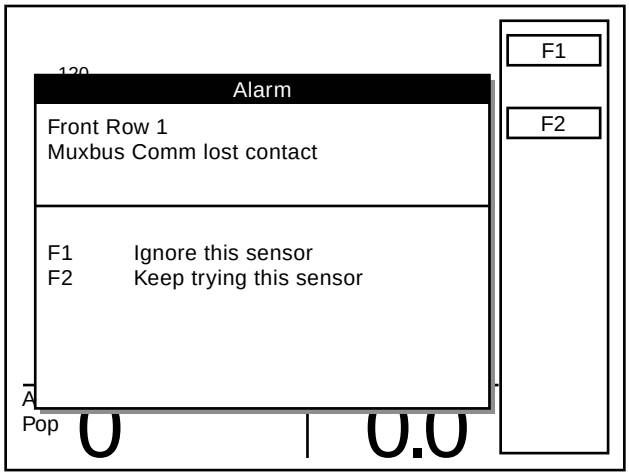


STEP 2 Section Not Planting - When the monitor detects an entire section not planting, three beeps will sound to alert the user. The bargraph for the affected section flashes and is reduced to the lowest segment. An alarm message is added to the list of "Status Messages". Press the F1 key next to Status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

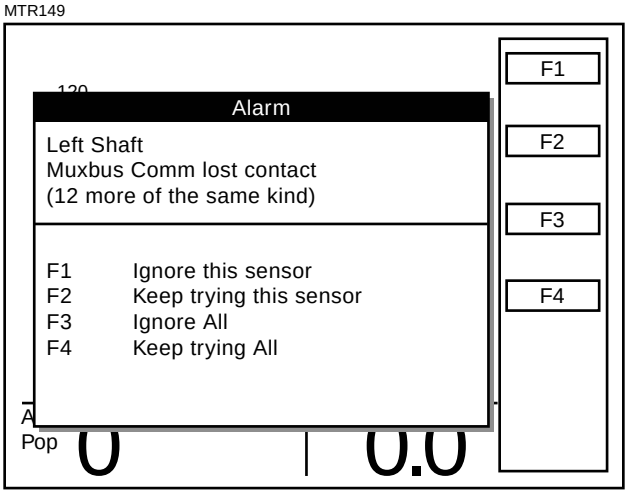
- Try to reestablish communication with sensor(s) by pressing F2.
- If the monitor is unable to establish communication there may be a faulty sensor, poor electrical connection, or a cut or pinched wire harness.

MTR148



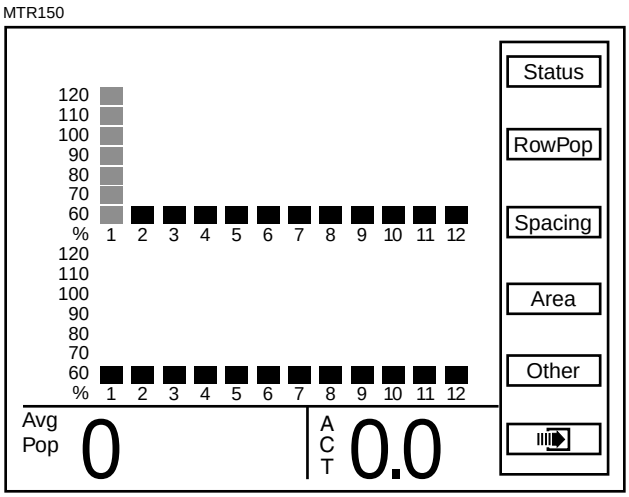
If multiple sensors have lost contact, the message will indicate which sensors have lost contact, see below.

MTR149



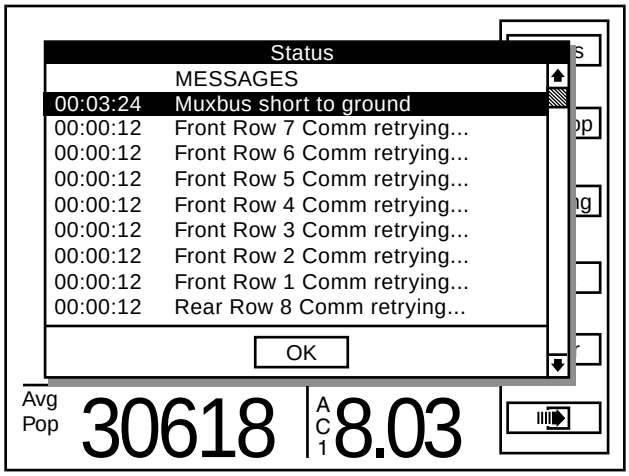
NOTE: When a known sensor or group of sensors are faulty, F1 or F3 should be pressed. The monitor will stop communication with the sensor(s) and the corresponding bargraphs will be grayed out on the main "Planter Configuration" screen as shown below.

MTR150



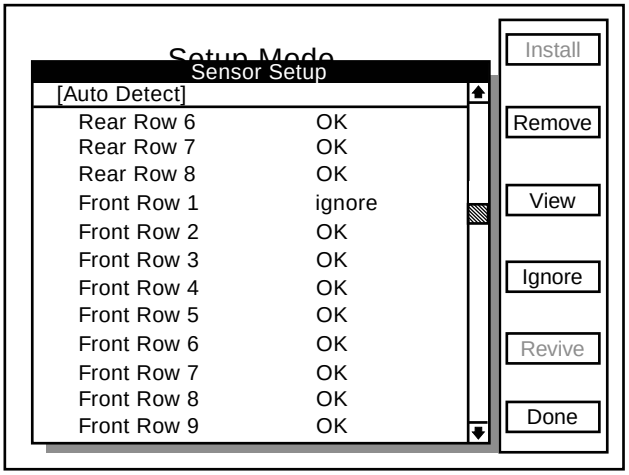
NOTE: If sensors are not faulty, F2 or F4 should be pressed. After pressing F2 or F4 a message similar to the one below will appears when the "Status" button F1 is pressed.

MTR151



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

MTR152

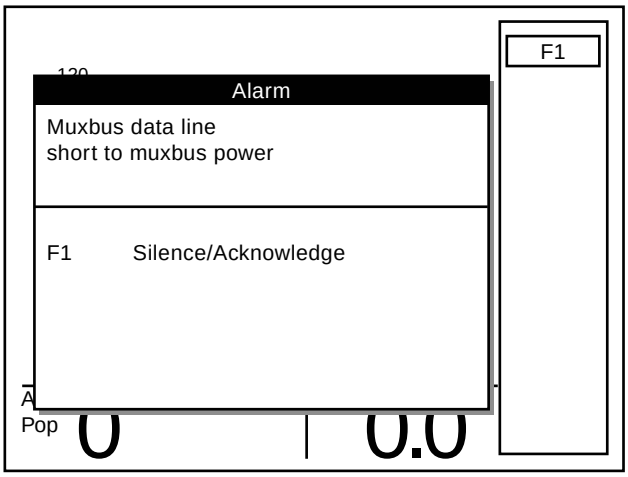


STEP 4 Seed Counting Sensors Too Dirty Warning - When powering on the KPM III, each of the seed sensors will do a self check. If a seed tube is too dirty, the message "Clean Or Replace Sensor As Necessary" will be displayed and the bargraph for that row will flash.. The sensor will not function until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

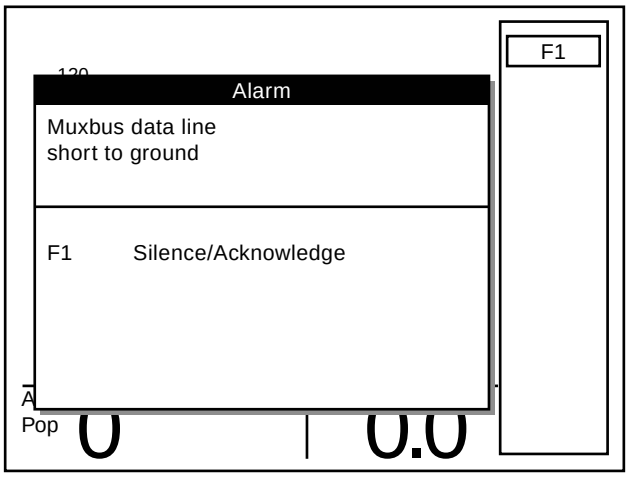
NOTE: After the alarms have been acknowledged and the alarm condition still present, the LCD screen will continue to display the alarm condition.

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

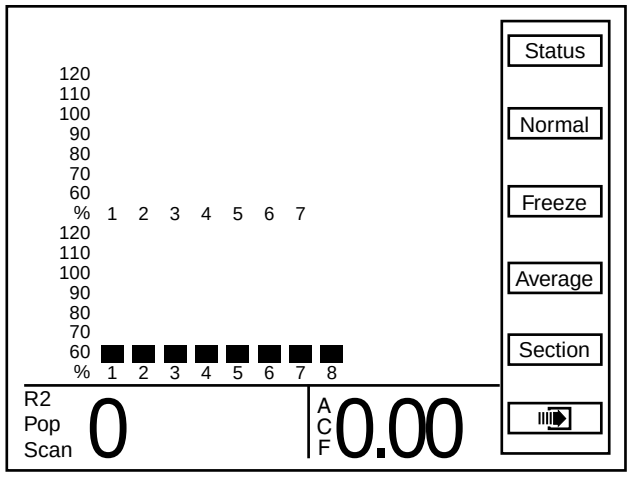


MTR154



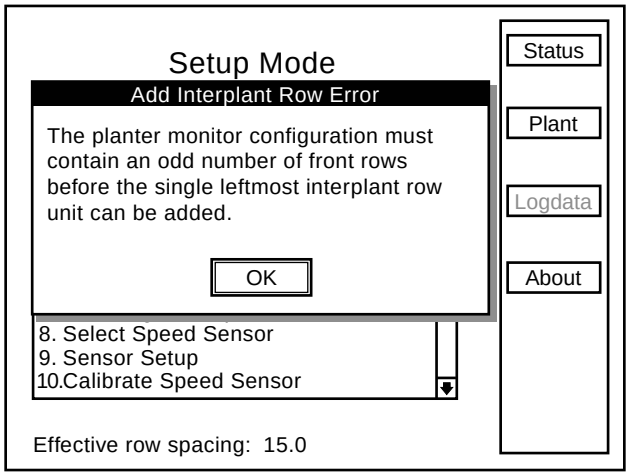
STEP 6 Add Interplant® Row Error – The planter monitor configuration must contain an odd number of front rows before the single Interplant® row unit can be added.

MTR155



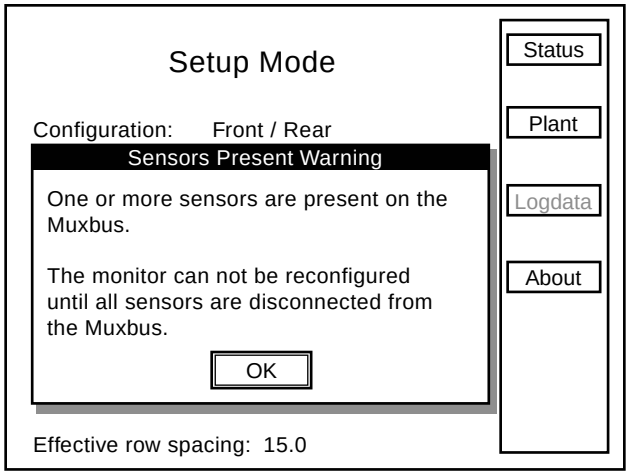
NOTE: The planter monitor configuration above has an even number of front (Interplant®) rows (8).

MTR156



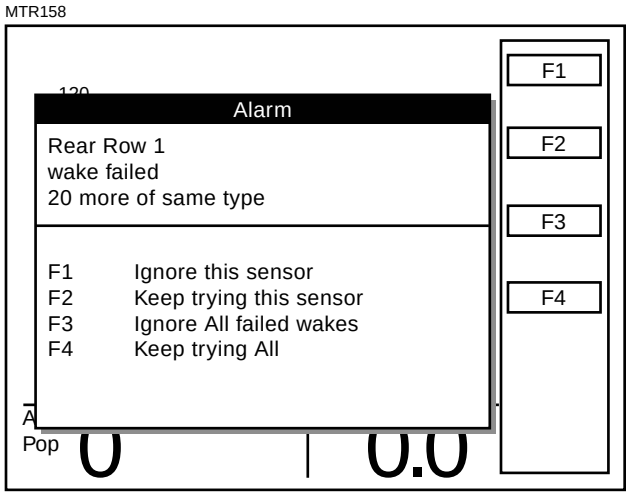
STEP 7 Sensor Present Warning – One or more sensors are present on the Muxbus.

MTR157



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

MTR158

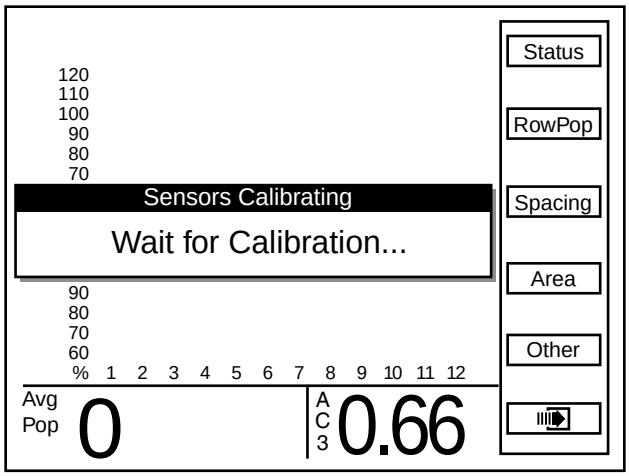


FIELD OPERATION

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.

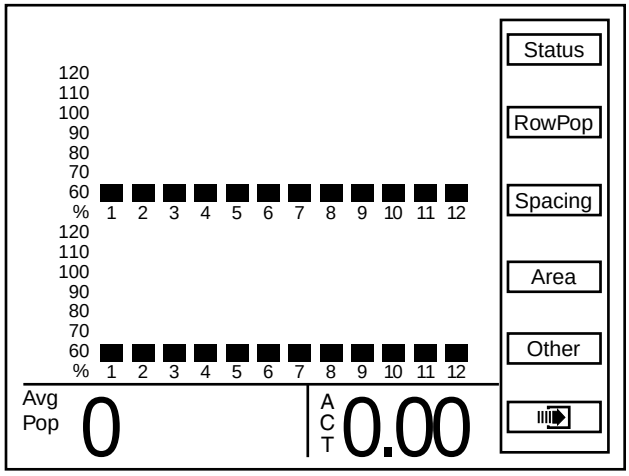
MTR179



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.

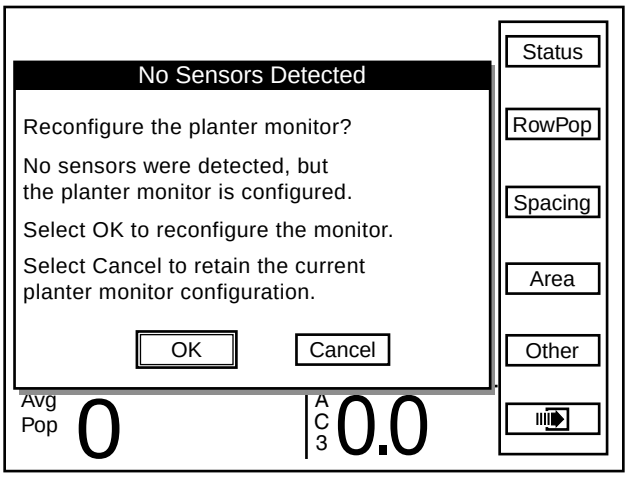
NOTE: If the monitor can communicate with the sensors the Planter Configuration screen will be displayed.

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.

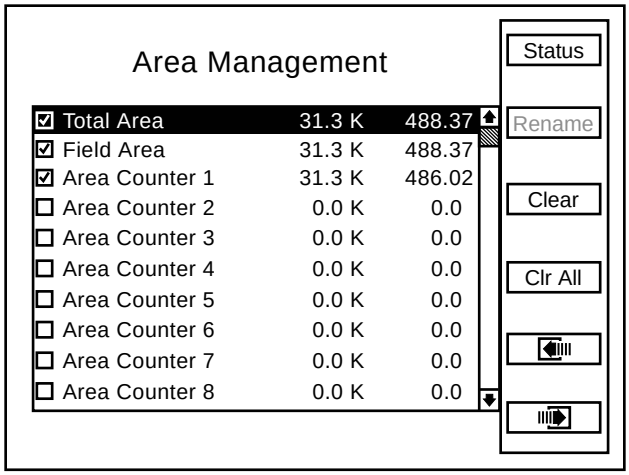
AREA MANAGEMENT

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).

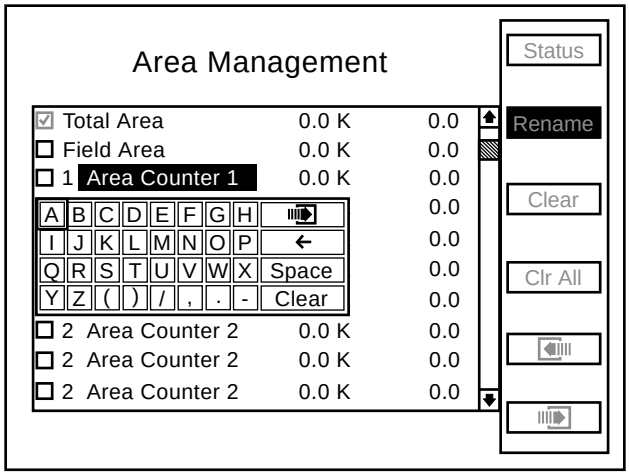
- The check mark (✓) in the box next to the name of the area counter indicates the area counter is enabled and accumulating area.

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.

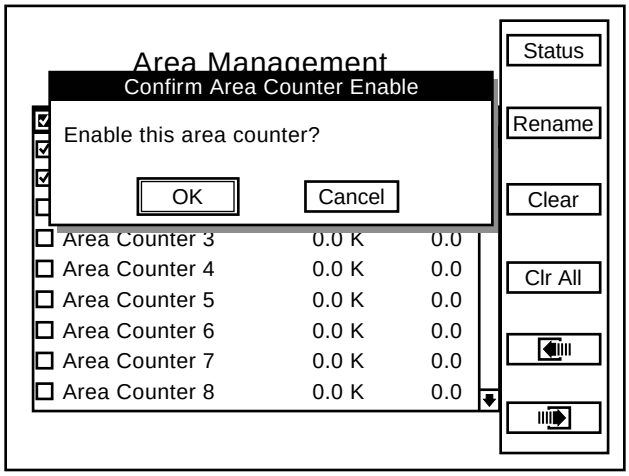
MTR202



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.

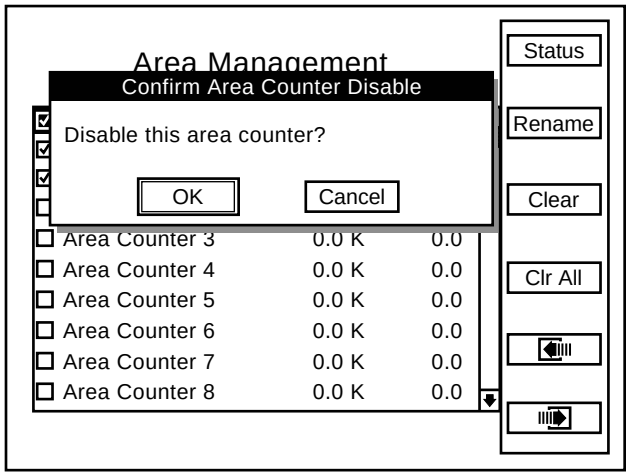
- Use the knob or arrow keys to highlight the “OK” button and press the knob or Enter key. The enabled “Area Counter” will then start accumulating area.

DISABLE AREA COUNTER

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

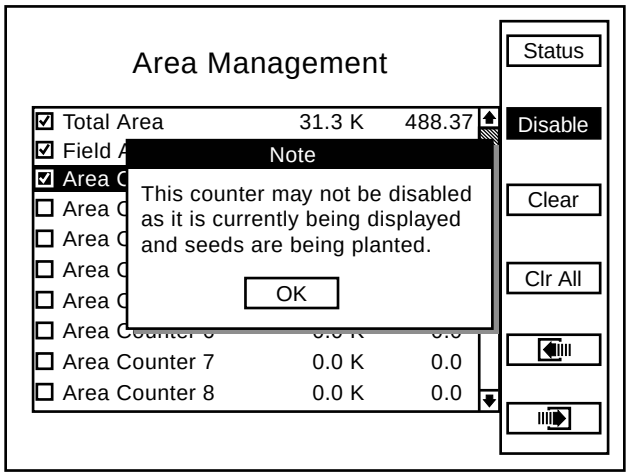
- Highlight the desired “Area Counter” by turning the rotary encoder knob or using the arrow keys.
- Press the knob or Enter key. A “Confirm Area Counter Disable” box will appear.
- Use the knob or arrow keys to highlight the “OK” button and press the knob or Enter key. The disabled “Area Counter” will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

MTR184

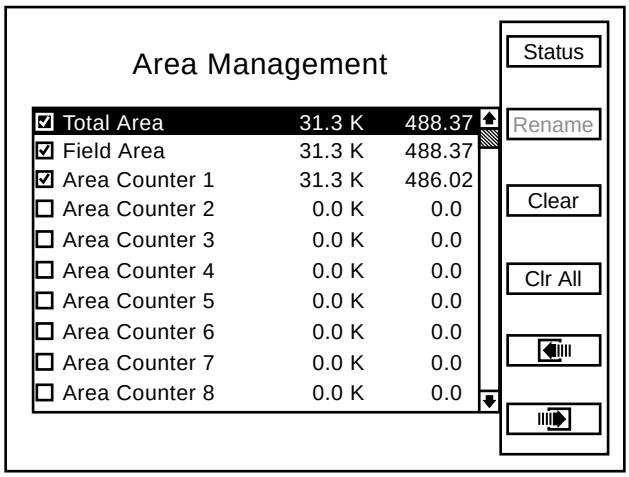


NOTE: Attempts to disable an Area Counter that is planting will cause the following alarm.

MTR185

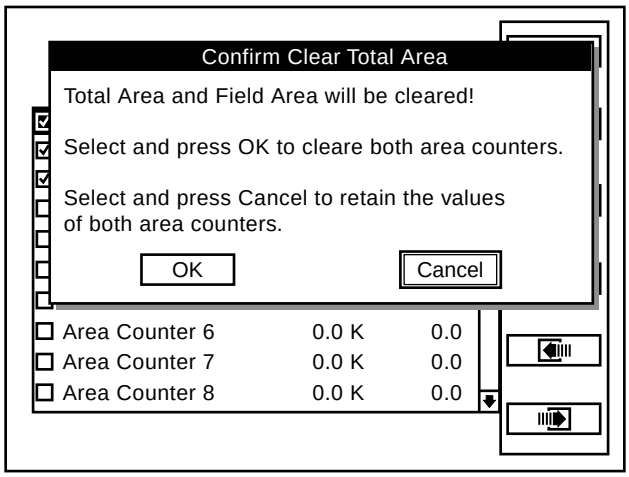


MTR186



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.

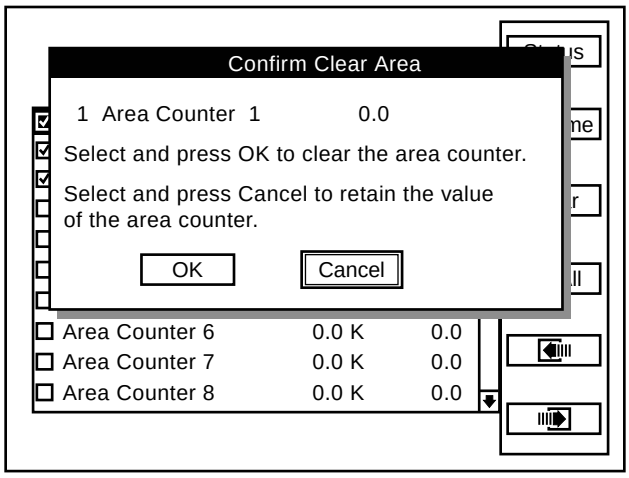
Clearing an Area Counter

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



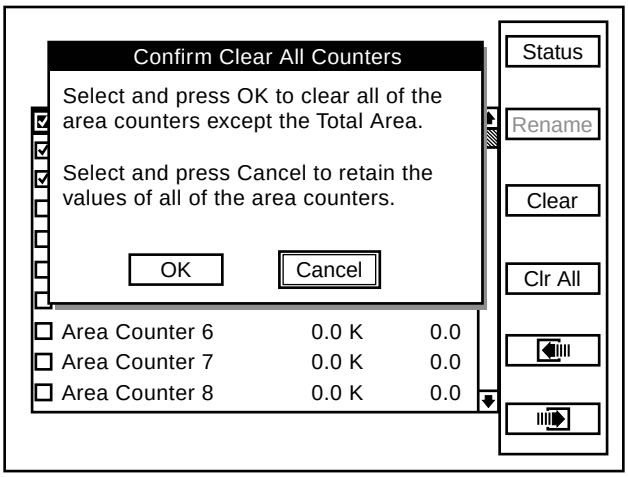
Clearing All the Area Counters

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.

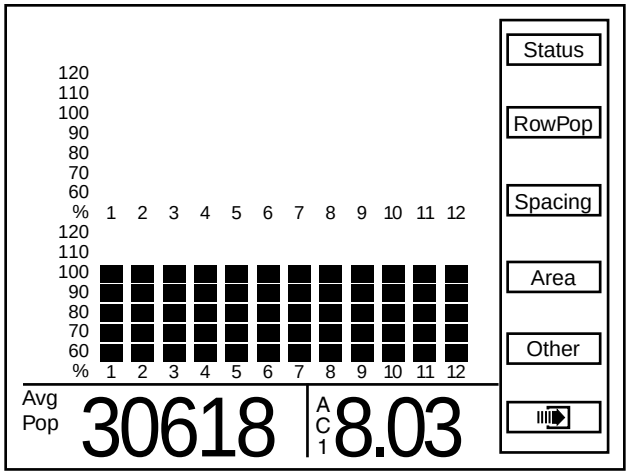
MTR189



AREA COUNTERS

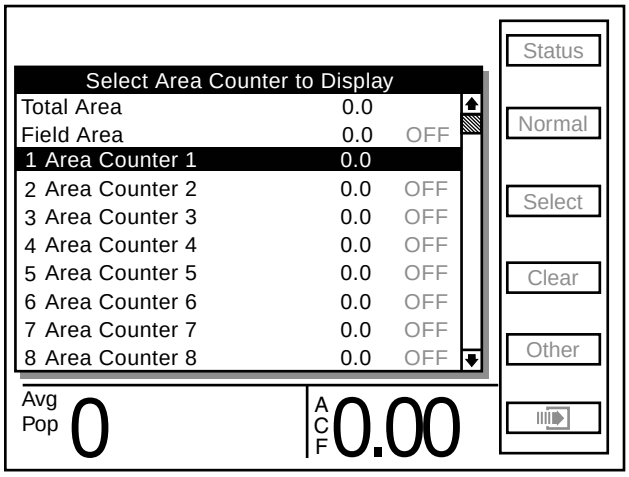
STEP 1 On the Planter Configuration screen press the F4 key next to “Area”.

MTR190



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

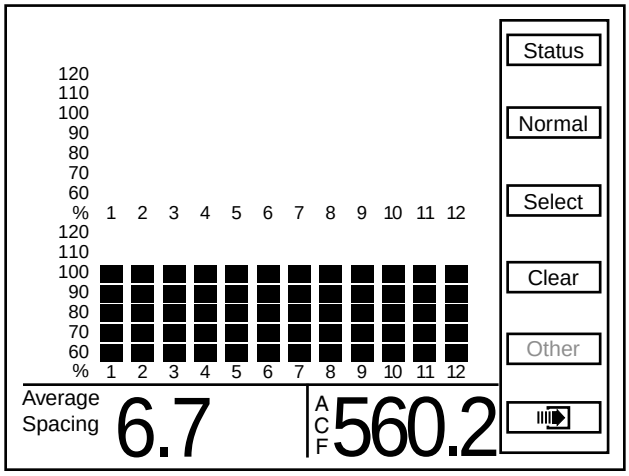
MTR192



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.

MTR193



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

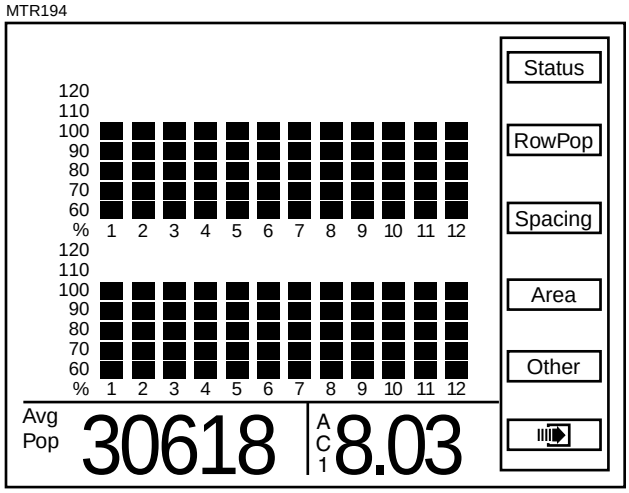
STEP 1 To reset the counter, display the Plant screen.

NOTE: If "Area" is not displayed next to F4, press F2 next to "Normal".

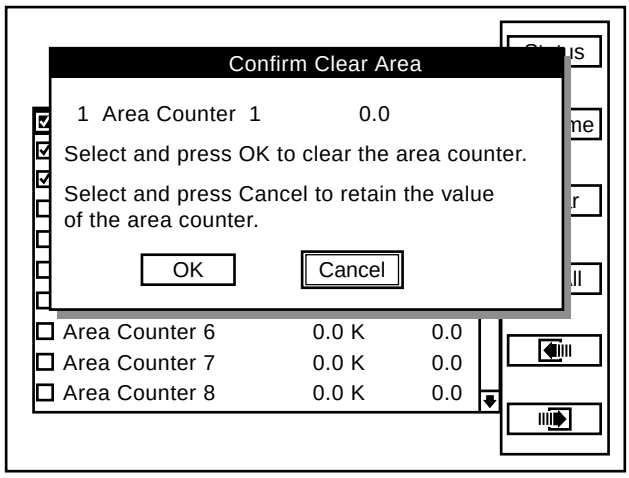
STEP 2 Press the F4 key next to Area then press the F4 key next to Clear, a dialog box will appear requesting confirmation to clear.

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)

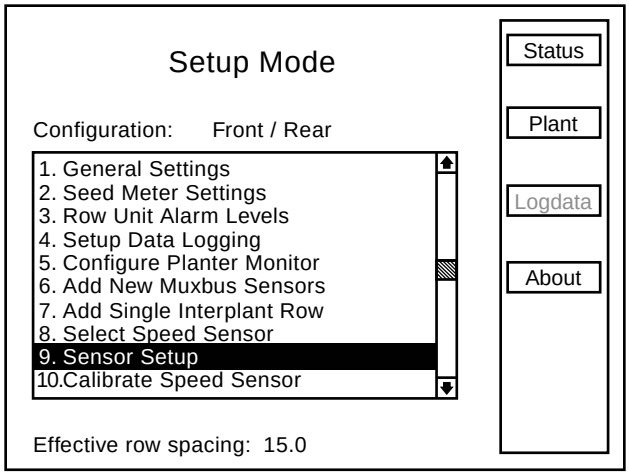
NOTE: The monitor will beep twice when the new sensor(s) is learned.

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.

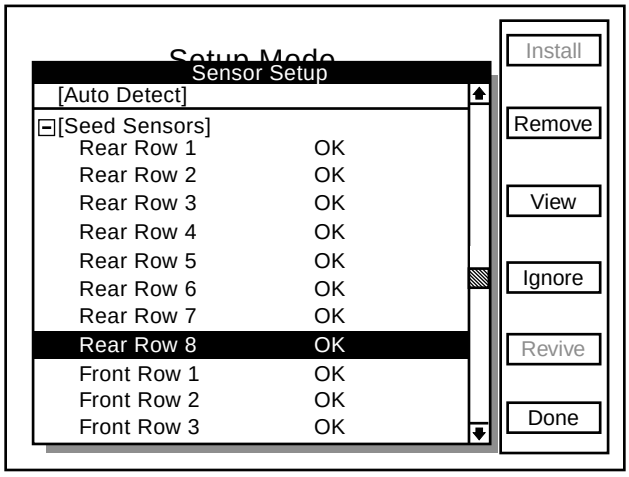
STEP 3 Highlight "9. Sensor Setup" by turning the knob or using the arrow keys. Press the knob or Enter key to display the highlighted item.

MTR200



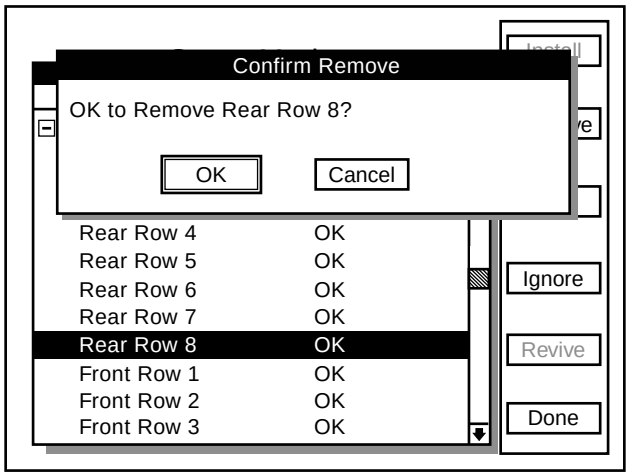
STEP 4 Turn the knob or use the arrow keys to highlight the faulty sensor and press the F2 key next to Remove.

MTR203

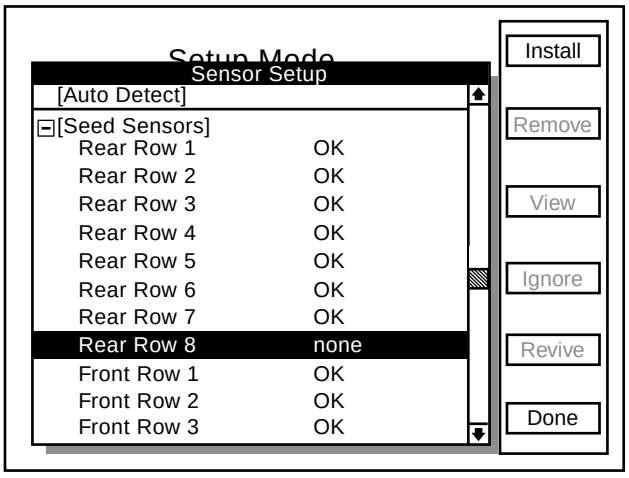


STEP 5 The following message will appear. Select OK to confirm by pressing the knob or ENTER key. Select Cancel to exit.

MTR204



MTR205



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

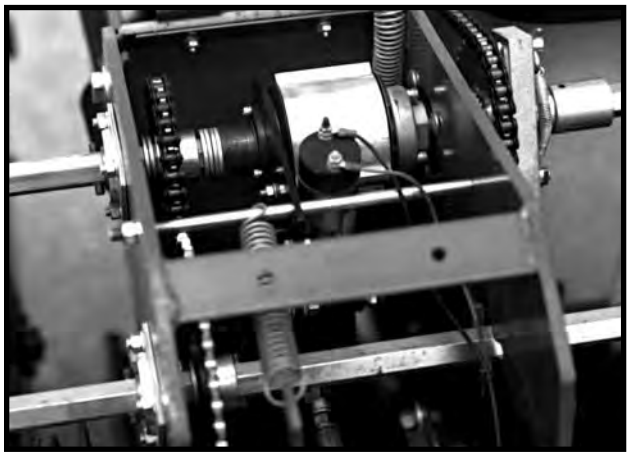
NOTE: The monitor will beep twice when the new sensor(s) is learned.

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.

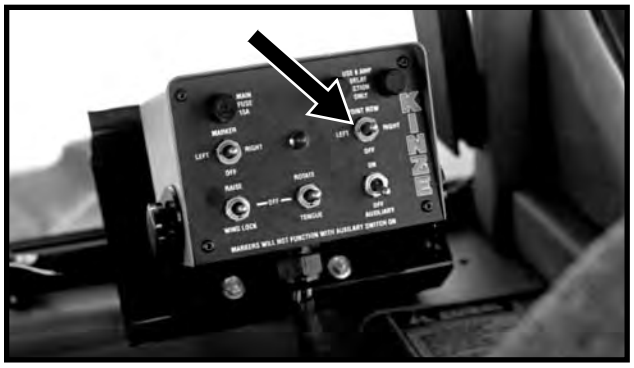
POINT ROW CLUTCHES

76740-2



16 Row 30" Machine Shown

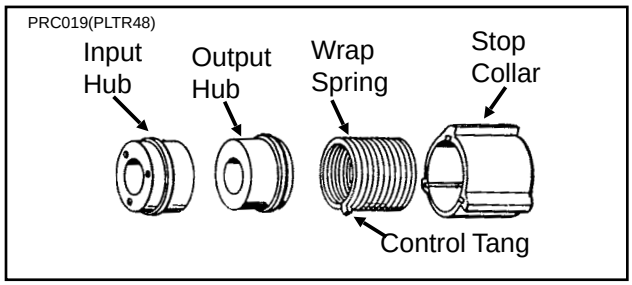
With the use of electric-activated clutches, which disengage the drive, either half of the planter may be shut off for finishing up fields or for long point row situations.



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

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

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



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.

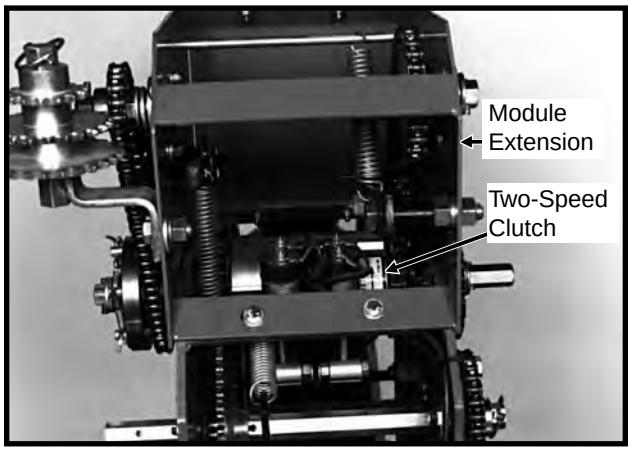
The input end of the spring is bent outward and is referred to as the control tang. The control tang fits into a slot in the stop collar that is located between the input and output hubs and over the wrap spring. If the stop collar is allowed to rotate with the input hub, the clutch is engaged. If the 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.

TWO-SPEED POINT ROW CLUTCHES

81826-8

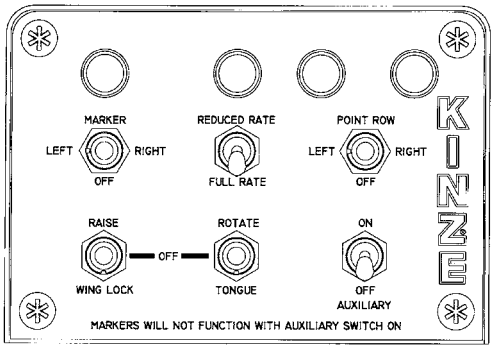


The Two-Speed Point Row Clutch Package is designed to allow on-the-go population rate adjustment as well as the capability to shutoff either half of the planter for finishing up fields or for long point row situations.

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

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

A7435(TWL81)



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

(7100-214)76740-61

TRANSMISSION RATE REDUCTION

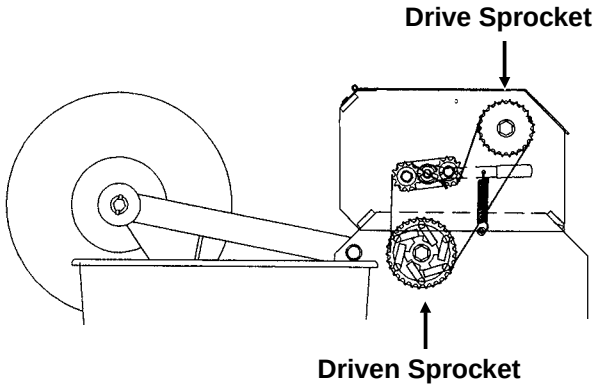
DRIVE	DRIVEN	% REDUCTION IN POPULATION
15	30	50
17	30	43
23*	30	23
24	30	20
25*	30	17
26*	30	13
27	30	10

* Use sprockets off seed drive transmission

7100-214

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

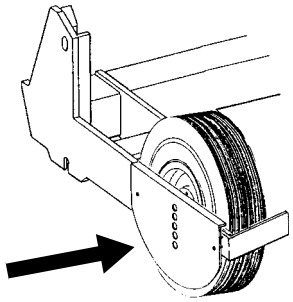
(TWL80)



NOTE: Since the two-speed point row clutch is located ahead of the liquid fertilizer squeeze pump and/or dry fertilizer drive, activating the two-speed point row clutch reduced rate switch will cause the same per cent of reduction in dry fertilizer or liquid fertilizer (squeeze pump) application rates. Liquid fertilizer (piston pump) application rates will not be affected as the piston pump uses a dedicated drive tire.

ROCK GUARDS

(PLTR49a)



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

AUXILIARY WORK LIGHTS PACKAGE

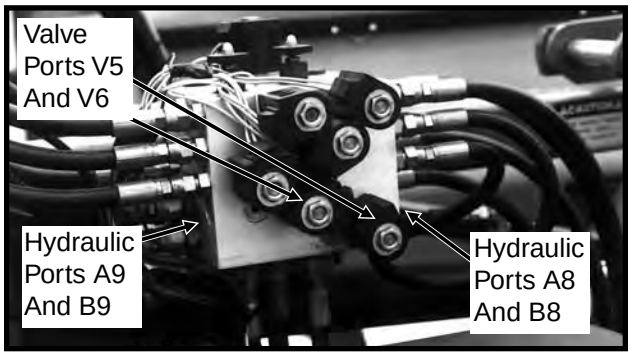
D05160505a

The optional Auxiliary Work Lights Package includes two 50 watt, 3" x 5" halogen flood lamps, hardware to mount lights at the top of one of the center lift cylinders and a wiring harness to plug into the existing planter light harness.

AUXILIARY HYDRAULIC OPTION

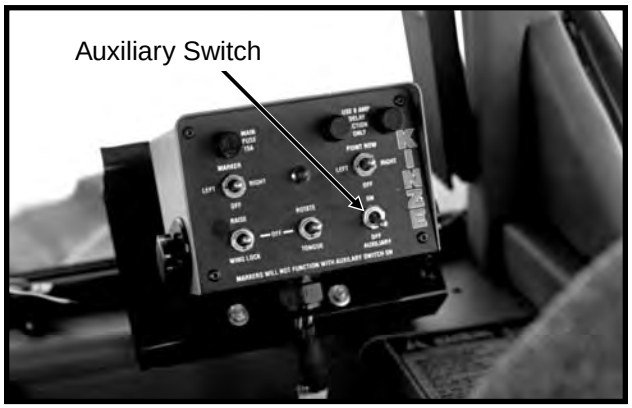
A customer-supplied auxiliary hydraulic option may be added to provide 10 GPM of oil flow at the rear of the planter. This option may be used for powering fertilizer attachments, bulk seed handling equipment, etc. Two customer-supplied solenoid valve kits (G1K275) are required to activate the auxiliary hydraulic option using the auxiliary switch on the control console.

77612-6



Valve Block Located On Rear Center Frame (Shown With Cover Removed)

76746-24



NOTE: Be sure row markers are in transport position and all pressure is removed from the hydraulic system.

Remove the cover from the valve block, located on the rear center frame of the planter. Remove plugs from ports V5 and V6 and install the solenoid valve assemblies following the installation instruction supplied with each kit. Power to the solenoid assemblies should be connected to the orange/black wire located in the wiring harness connection to the L.H. side of the valve block.

Remove plugs from ¾"-16 O-ring ports A8 and B8 on R.H. side of valve block or ports A9 and B9 on L.H. side of valve block. Connect customer-supplied hydraulic hoses.

Refer to "Hydraulic System Schematics" and "Electrical Wiring Schematics" in the Maintenance Section of this manual for additional information.

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

Before operating the auxiliary system be sure the marker switch on the control console is in the OFF position. Move the auxiliary switch on the control console to ON position. Operate hydraulic control lever (marker/folding functions) to engage auxiliary system.

NOTE: Auxiliary switch left in ON position disables all other control console switches.

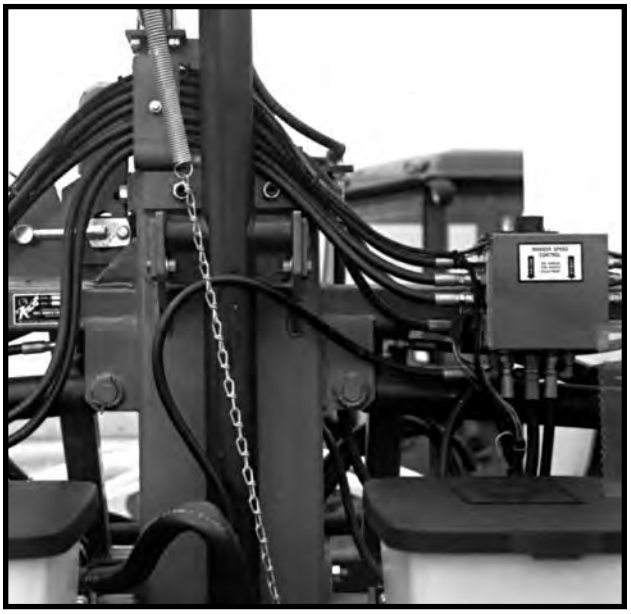
REAR TRAILER HITCH

D07309901a

The Rear Trailer Hitch is used to tow a 3 or 4 wheel wagon behind the planter. A spring, chain and mounting bracket are used to support the 1 ¼" feed hose from the hitch to the piston pump. This extra length or loop is required to allow the planter to be moved into transport position without stretching the hose.

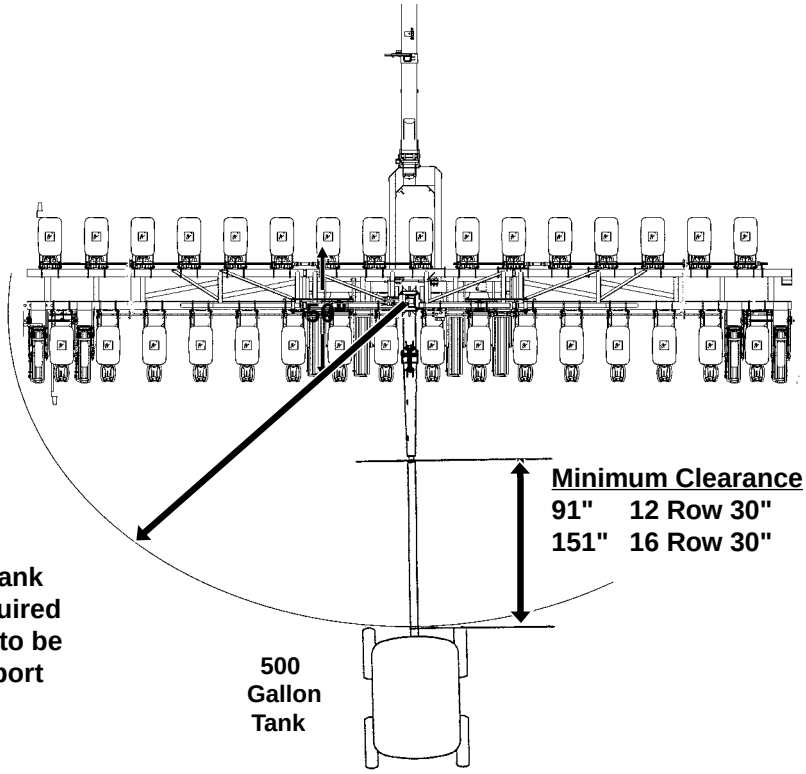
IMPORTANT: The rear trailer hitch is designed for use with piston pump only. Maximum allowable hitch weight is 200 lbs. Gross towing weight should not exceed 6000 lbs. or the equivalent of a loaded 500 gallon tank and running gear.

76782-80



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

(PLTR186b)



Note minimum tank hitch length required to allow planter to be rotated to transport position.

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 rotating the planter.

WARNING: Always install safety lockup devices before transporting the planter.

METRIC CONVERSION TABLE

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

PLANTING SPEED

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

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

FIELD TEST

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

- ❑ Check the planter for fore to aft and lateral level operation. See "Leveling The Planter"
- ❑ Check **all** row units to be certain they are running level. When planting, the row unit parallel arms should be approximately parallel to the ground.
- ❑ Check row markers for proper operation and adjustment. See "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 proper "Fertilizer Application Rate Chart".

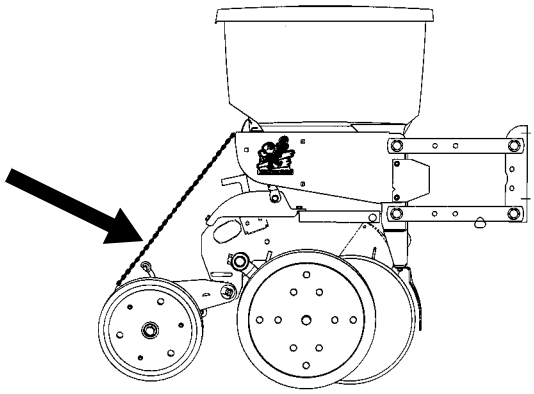
After the planter has been field tested, reinspect the machine.

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

CHECKING SEED POPULATION

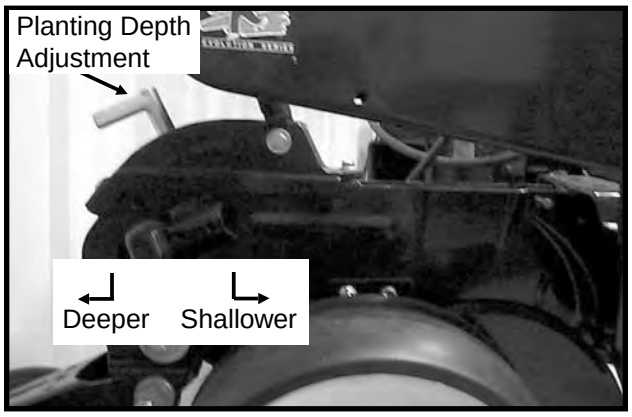
1. Tie up one or more sets of closing wheels by running a chain or rubber tarp strap between the hopper support panel and closing wheels. It may be necessary to decrease closing wheel arm spring tension.

(RU113g)



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

D020705102



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

LENGTH OF ROW IN FEET AND INCHES	
Fraction	Row Width
Of Acre	30"
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 1/1000 of an acre by 1000. This will give you total population.

EXAMPLE: With 30" row spacing 17' 5" equals 1/1000 acre.

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

EXAMPLE: With 30"-7 ½" twin row spacing 17' 5" x 2 equals 1/1000 acre.

26 Seeds Counted	x	1000	x	2	=	52,000 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 finger has lost its seed. If two seeds are found within a short distance of each other, the finger has metered two seeds instead of one.

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

Determining Pounds Per Acre (Brush-Type Seed Meter)

To determine pounds per acre:

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

To determine bushels per acre:

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

The unit weight of:

1 Bushel Soybeans = 60 Pounds
1 Bushel Milo/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 “Brush-Type Seed Meter Maintenance” and “Brush-Type Seed Meter Troubleshooting”.

CHECKING GRANULAR CHEMICAL APPLICATION RATE (30" Rows Only)

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.

GENERAL PLANTING RATE INFORMATION

These planting rate charts are applicable to KINZE® Model 3600TR Twin-Line® Planters. See “Tire Pressure” for recommended tire pressures.

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

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

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

Finger Pickup Corn Meter

Larger grades will generally plant more accurately at the high end of the ground speed range than smaller grades. Higher than optimum speeds may result in population rate increase or higher incidence of doubles, particularly with small seed. Medium round corn seed is most desirable for planting accuracy at optimum speed.

Finger Pickup Oil Sunflower Meter

Larger grades will generally plant more accurately at the high end of the ground speed range than smaller grades. Higher than optimum speeds may result in population rate increase or higher incidence of doubles, particularly with small seed. No. 3 and/or No. 4 size oil sunflower seeds are recommended for use in the finger pickup seed meter equipped with oil sunflower fingers. No. 1 and/or No. 2 size confectionery sunflower seeds are recommended for use in the finger pickup seed meter equipped with corn fingers.

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

Brush-Type Seed Meter (Soybean, Milo/Grain Sorghum, Acid-Delinted Cotton)

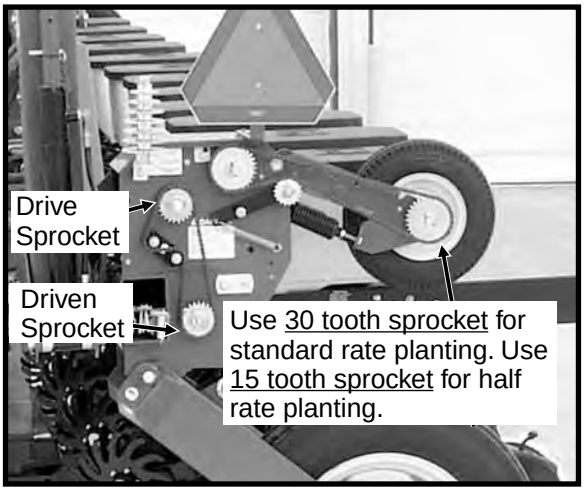
Rate charts are given in seeds per acre as well as seed spacing in inches rounded to the nearest tenth of an inch. Because of the large range in seed size, pounds per acre is not a suggested method of selecting transmission settings. When using smaller size seeds it may appear the pounds per acre is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

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

In some cases a **Half Rate (2 To 1) Drive Reduction Package** may be required to obtain the desired population and seed spacing.

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

D020501108



PLANTING RATES FOR FINGER PICKUP SEED METERS (STANDARD DRIVE)
APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

30" - 7 ½" Twin Rows	30" Rows	Transmission Sprockets Drive	Driven	Recomm. Speed Range (MPH)	Average Seed Spacing In Inches
32,372	16,186	17	28	4 to 6	12.9
33,570	16,785	17	27	4 to 6	12.5
34,862	17,431	17	26	4 to 6	12.0
36,180	18,090	19	28	4 to 6	11.6
36,256	18,128	17	25	4 to 6	11.5
37,520	18,760	19	27	4 to 6	11.1
37,766	18,883	17	24	4 to 6	11.1
38,962	19,481	19	26	4 to 6	10.7
39,408	19,704	17	23	4 to 6	10.6
40,522	20,261	19	25	4 to 6	10.3
42,208	21,104	19	24	4 to 6	9.9
43,796	21,898	23	28	4 to 6	9.5
44,044	22,022	19	23	4 to 6	9.5
45,418	22,709	23	27	4 to 6	9.2
45,700	22,850	24	28	4 to 6	9.2
47,166	23,583	23	26	4 to 6	8.9
47,394	23,697	24	27	4 to 6	8.8
47,604	23,802	25	28	4 to 6	8.8
47,706	23,853	17	19	4 to 6	8.8
49,052	24,526	23	25	4 to 6	8.5
49,216	24,608	24	26	4 to 6	8.5
49,368	24,684	25	27	4 to 6	8.5
49,510	24,755	26	28	4 to 6	8.4
51,096	25,548	23	24	4 to 6	8.2
51,184	25,592	24	25	4 to 6	8.2
51,266	25,633	25	26	4 to 6	8.2
51,342	25,671	26	27	4 to 6	8.1
51,414	25,707	27	28	4 to 6	8.1
53,318	26,659	23	23	4 to 6	7.8
55,292	27,646	28	27	4 to 6	7.6
55,368	27,684	27	26	4 to 6	7.6
55,540	27,770	25	24	4 to 6	7.5
55,636	27,818	24	23	4 to 6	7.5
57,418	28,709	28	26	4 to 6	7.3
57,582	28,791	27	25	4 to 6	7.3
57,954	28,977	25	23	4 to 6	7.2
59,590	29,795	19	17	4 to 6	7.0
59,716	29,858	28	25	4 to 6	7.0
59,982	29,991	27	24	4 to 6	7.0
60,272	30,136	26	23	4 to 6	7.0
62,204	31,102	28	24	3 to 6	6.7
62,590	31,295	27	23	3 to 6	6.7
64,542	32,271	23	19	3 to 5.5	6.5
64,908	32,454	28	23	3 to 5.5	6.5
67,348	33,674	24	19	3 to 5.5	6.2
70,154	35,077	25	19	3 to 5	6.0
72,136	36,068	23	17	2 to 5	5.8
72,960	36,480	26	19	3 to 5	5.7
75,272	37,636	24	17	3 to 5	5.6
75,766	37,883	27	19	3 to 5	5.5
78,408	39,204	25	17	3 to 4.5	5.3
78,574	39,287	28	19	3 to 4.5	5.3
81,544	40,772	26	17	3 to 4.5	5.1
84,680	42,340	27	17	3 to 4.5	4.9
87,816	43,908	28	17	3 to 4.5	4.8

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

PLANTING RATES FOR BRUSH-TYPE SEED METERS (STANDARD DRIVE)

APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

Transmission Sprockets		60 Cell Soybean Or High-Rate Milo/ Grain Sorghum		Average Seed Spacing In Inches	48 Cell Specialty Soybean Or High-Rate Acid-Delinted Cotton		Average Seed Spacing In Inches	Speed Range (MPH)
Drive	Driven	30" - 7 ½" Twin Rows	30" Rows		30" - 7 ½" Twin Rows	30" Rows		
17	28	161,856	80,928	2.6	129,484	64,742	3.2	2 to 8
17	27	167,852	83,926	2.5	134,282	67,141	3.1	2 to 8
17	26	174,308	87,154	2.4	139,446	69,723	3.0	2 to 8
19	28	180,898	90,449	2.3	144,718	72,359	2.9	2 to 8
19	27	187,598	93,799	2.2	150,078	75,039	2.8	2 to 8
17	24	188,832	94,416	2.2	151,066	75,533	2.8	2 to 8
17	23	197,042	98,521	2.1	157,634	78,817	2.7	2 to 8
19	25	202,606	101,303	2.1	162,084	81,042	2.6	2 to 8
19	24	211,048	105,524	2.0	168,838	84,419	2.5	2 to 8
23	28	218,982	109,491	1.9	175,186	87,593	2.4	2 to 8
19	23	220,224	110,112	1.9	176,180	88,090	2.4	2 to 8
24	28	228,504	114,252	1.8	182,804	91,402	2.3	2 to 8
24	27	236,966	118,483	1.8	189,572	94,786	2.2	2 to 8
17	19	238,526	119,263	1.8	190,820	95,410	2.2	2 to 8
24	26	246,080	123,040	1.7	196,864	98,432	2.1	2 to 8
26	28	247,546	123,773	1.7	198,036	99,018	2.1	2 to 8
24	25	255,924	127,962	1.6	204,740	102,370	2.0	2 to 8
26	27	256,714	128,357	1.6	205,372	102,686	2.0	2 to 8
23	23	266,588	133,294	1.6	213,270	106,635	2.0	2 to 8
27	26	276,840	138,420	1.5	221,472	110,736	1.9	2 to 8
24	23	278,178	139,089	1.5	222,542	111,271	1.9	2 to 8
25	23	289,768	144,884	1.4	231,814	115,907	1.8	2 to 8
19	17	297,950	148,975	1.4	238,360	119,180	1.8	2 to 8
27	24	299,910	149,955	1.4	239,928	119,964	1.7	2 to 8
28	24	311,018	155,509	1.3	248,814	124,407	1.7	2 to 8
23	19	322,710	161,355	1.3	258,168	129,084	1.6	2 to 8
28	23	324,540	162,270	1.3	259,632	129,816	1.6	2 to 8
24	19	336,742	168,371	1.2	269,392	134,696	1.6	2 to 8
25	19	350,772	175,386	1.2	280,618	140,309	1.5	2 to 8
23	17	360,676	180,338	1.2	288,540	144,270	1.5	2 to 8
26	19	364,804	182,402	1.1	291,844	145,922	1.4	2 to 7
27	19	378,834	189,417	1.1	303,068	151,534	1.4	2 to 7
28	19	392,866	196,433	1.1	314,292	157,146	1.3	2 to 7
26	17	407,722	203,861	1.0	326,178	163,089	1.3	2 to 7
27	17	423,404	211,702	0.9	338,724	169,362	1.2	2 to 7
28	17	439,084	219,542	0.9	351,268	175,634	1.2	2 to 7

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

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

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

RH/Z215

PLANTING RATES FOR BRUSH-TYPE SEED METERS (STANDARD DRIVE)

APPROXIMATE SEEDS/ACRE FOR VARIOUS ROW WIDTHS

Transmission Sprockets		36 Cell Acid-Delinted Large Cotton		Average Seed Spacing In Inches	30 Cell Milo/Grain Sorghum Or Acid-Delinted Cotton		Average Seed Spacing In Inches	Speed Range (MPH)
Drive	Driven	30" - 7 ½" Twin Rows	30" Rows		30" - 7 ½" Twin Rows	30" Rows		
17	28	97,114	48,557	4.3	80,928	40,464	5.2	2 to 8
17	27	100,712	50,356	4.2	83,926	41,963	5.0	2 to 8
17	26	104,584	52,292	4.0	87,154	43,577	4.8	2 to 8
19	28	108,538	54,269	3.9	90,450	45,225	4.6	2 to 8
19	27	112,558	56,279	3.7	93,800	46,900	4.5	2 to 8
17	24	113,300	56,650	3.7	94,416	47,208	4.4	2 to 8
17	23	118,226	59,113	3.5	98,522	49,261	4.2	2 to 8
19	25	121,564	60,782	3.5	101,304	50,652	4.1	2 to 8
19	24	126,628	63,314	3.3	105,524	52,762	4.0	2 to 8
23	28	131,390	65,695	3.2	109,492	54,746	3.8	2 to 8
19	23	132,134	66,067	3.2	110,112	55,056	3.8	2 to 8
24	28	137,102	68,551	3.0	114,252	57,126	3.7	2 to 8
24	27	142,180	71,090	2.9	118,484	59,242	3.5	2 to 8
17	19	143,116	71,558	2.9	119,262	59,631	3.5	2 to 8
24	26	147,648	73,824	2.8	123,040	61,520	3.4	2 to 8
26	28	148,528	74,264	2.8	123,772	61,886	3.4	2 to 8
24	25	153,544	76,772	2.7	127,962	63,981	3.3	2 to 8
26	27	154,028	77,014	2.7	128,356	64,178	3.3	2 to 8
23	23	159,952	79,976	2.6	133,294	66,647	3.1	2 to 8
27	26	166,104	83,052	2.5	138,420	69,210	3.0	2 to 8
24	23	166,906	83,453	2.5	139,088	69,544	3.0	2 to 8
25	23	173,860	86,930	2.4	144,884	72,442	2.9	2 to 8
19	17	178,770	89,385	2.3	148,976	74,488	2.8	2 to 8
27	24	179,946	89,973	2.3	149,956	74,978	2.8	2 to 8
28	24	186,610	93,305	2.2	155,510	77,755	2.7	2 to 8
23	19	193,626	96,813	2.2	161,356	80,678	2.6	2 to 8
28	23	194,724	97,362	2.1	162,270	81,135	2.6	2 to 8
24	19	202,046	101,023	2.1	168,370	84,185	2.5	2 to 8
25	19	210,464	105,232	2.0	175,386	87,693	2.4	2 to 8
23	17	216,466	108,233	1.9	180,338	90,169	2.3	2 to 8
26	19	218,882	109,441	1.9	182,402	91,201	2.3	2 to 7
27	19	227,300	113,650	1.8	189,418	94,709	2.2	2 to 7
28	19	235,720	117,860	1.8	196,432	98,216	2.1	2 to 7
26	17	244,634	122,317	1.7	203,860	101,930	2.1	2 to 7
27	17	254,042	127,021	1.6	211,702	105,851	2.0	2 to 7
28	17	263,450	131,725	1.6	219,542	109,771	1.9	2 to 7

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

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

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

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

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

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

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

Transmission Sprockets		NUMBER OF HILLS PER ACRE 12 Cell Hill-Drop Cotton, Acid-Delinted		Average Hill Spacing In Inches	Speed Range (MPH)
Drive	Driven	30" - 7 ½" Twin Rows	30" Rows		
17	28	32,372	16,186	12.9	2 to 8
17	27	33,570	16,785	12.5	2 to 8
17	26	34,862	17,431	12.0	2 to 8
19	28	36,180	18,090	11.6	2 to 8
19	27	37,520	18,760	11.1	2 to 8
17	24	37,766	18,883	11.1	2 to 8
17	23	39,408	19,704	10.6	2 to 8
19	25	40,522	20,261	10.3	2 to 8
19	24	42,210	21,105	9.9	2 to 8
23	28	43,796	21,898	9.5	2 to 8
19	23	44,044	22,022	9.5	2 to 8
24	28	45,700	22,850	9.2	2 to 8
24	27	47,394	23,697	8.8	2 to 8
17	19	47,706	23,853	8.8	2 to 8
24	26	49,216	24,608	8.5	2 to 8
26	28	49,510	24,755	8.4	2 to 8
24	25	51,184	25,592	8.2	2 to 8
26	27	51,342	25,671	8.1	2 to 8
23	23	53,318	26,659	7.8	2 to 8
27	26	55,368	27,684	7.6	2 to 8
24	23	55,636	27,818	7.5	2 to 8
25	23	57,954	28,977	7.2	2 to 8
19	17	59,590	29,795	7.0	2 to 8
27	24	59,982	29,991	7.0	2 to 8
28	24	62,204	31,102	6.7	2 to 8
23	19	64,542	32,271	6.5	2 to 8
28	23	64,908	32,454	6.5	2 to 8
24	19	67,348	33,674	6.2	2 to 8
25	19	70,154	35,077	6.0	2 to 8
23	17	72,136	36,068	5.8	2 to 8
26	19	72,960	36,480	5.7	2 to 7
27	19	75,766	37,883	5.5	2 to 7
28	19	78,574	39,287	5.3	2 to 7
26	17	81,544	40,772	5.1	2 to 7
27	17	84,680	42,340	4.9	2 to 7
28	17	87,816	43,908	4.8	2 to 7

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

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

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

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

Meter Setting	30" Rows
CLAY GRANULES	
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
SAND GRANULES	
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.

DRY HERBICIDE APPLICATION RATES

APPROXIMATE POUNDS/ACRE AT 5 MPH FOR VARIOUS ROW WIDTHS

CLAY GRANULES

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 chart above 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.

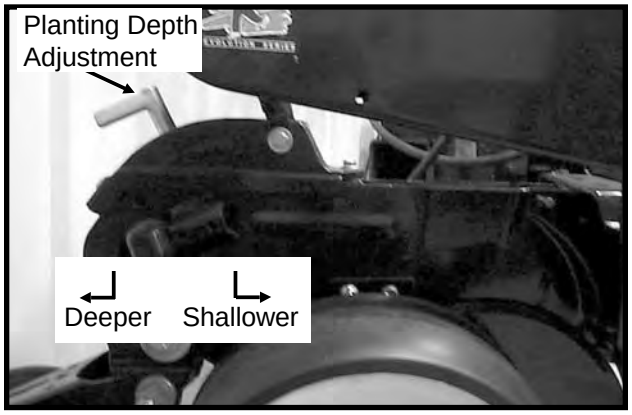
ROW UNIT OPERATION

PLANTING DEPTH

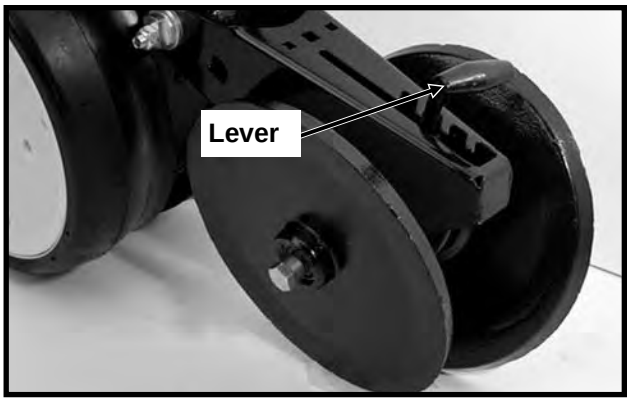
Planting depth is maintained by the row unit gauge wheels. To increase or decrease the planting depth, first raise the planter to remove weight from the wheels. Then push down on the depth adjustment handle and reposition it forward to decrease depth or rearward to increase planting depth. Adjust all 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 ½" to 3 ½".

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

D020705102



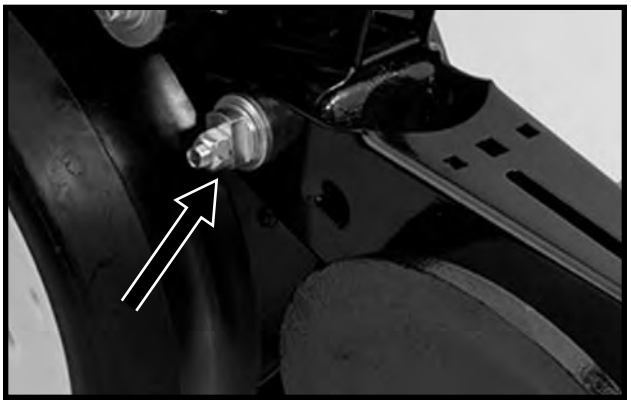
LF212299-15



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 ¾" wrench, loosen the hardware which attaches the closing wheel arm to the wheel arm stop. Using another ¾" wrench turn the eccentric bushings until the **closing wheels are aligned with the seed trench**. Tighten hardware.

LF2122299-15



“V” CLOSING WHEEL ADJUSTMENT (Rubber And Cast Iron)

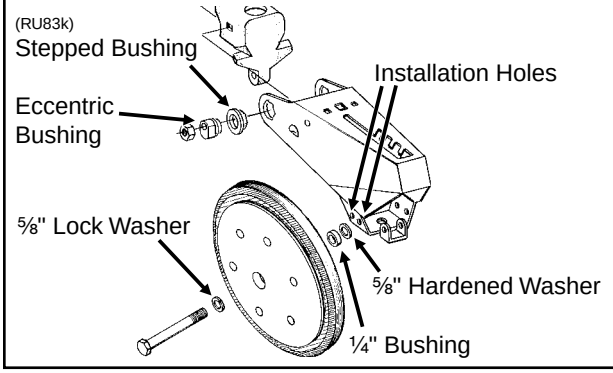
WARNING: Raise planter and install safety lockup devices before making closing wheel adjustments.

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.

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.

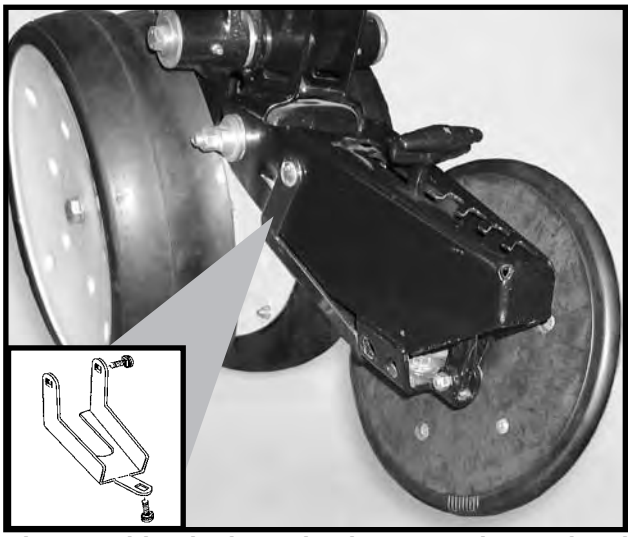
(RU83k)



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

(Not Compatible With Push Row Units)

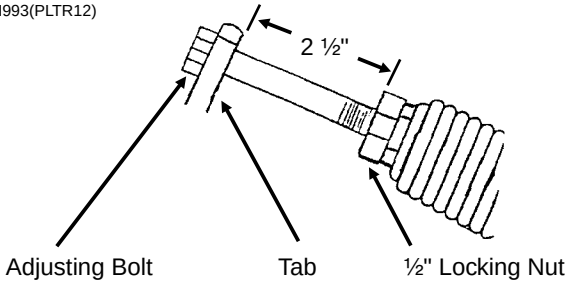
WARNING: Raise planter and install safety lockup devices before making covering discs/single press wheel adjustments.

72359-31

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

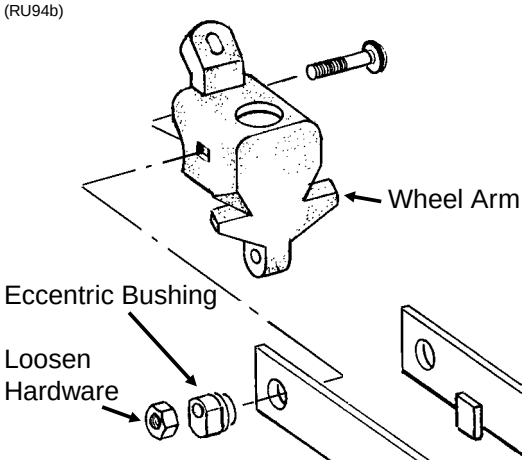
Initial press wheel down force setting should be with 2 ½" between mounting arm tab and locking nut. To adjust down force spring, loosen ½" locking nut and turn adjusting bolt in to increase down force or out to decrease down force. Tighten locking nut against spring plug. Adjust all row units to a similar setting.

RH993(PLTR12)



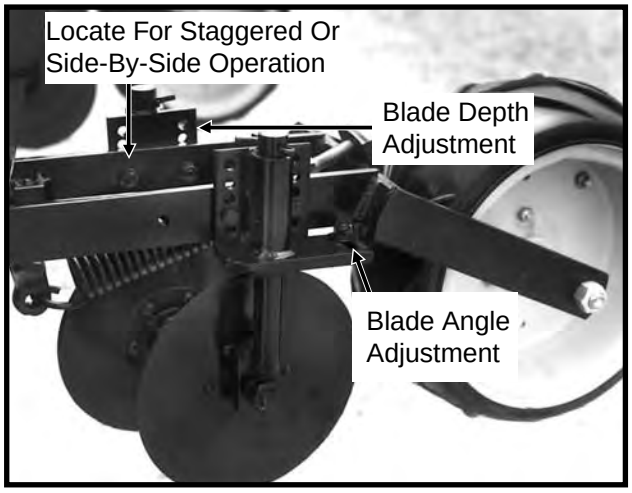
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the covering discs/single press wheel assembly. Using a ¾" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another ¾" wrench, turn the eccentric bushings until the press wheel is aligned with 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



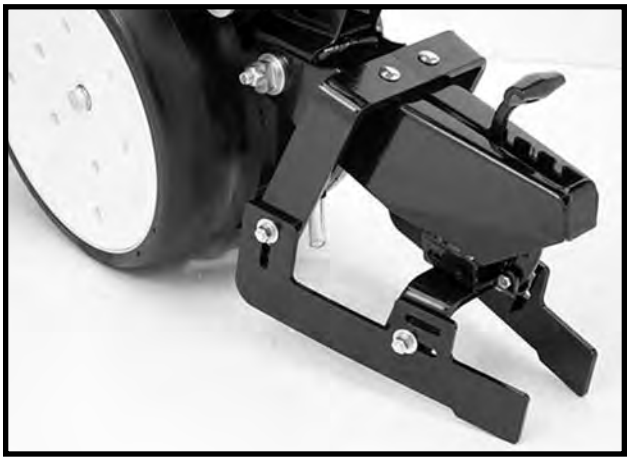
Five sets of holes in each disc bracket allow for ½" incremental blade depth adjustment.

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



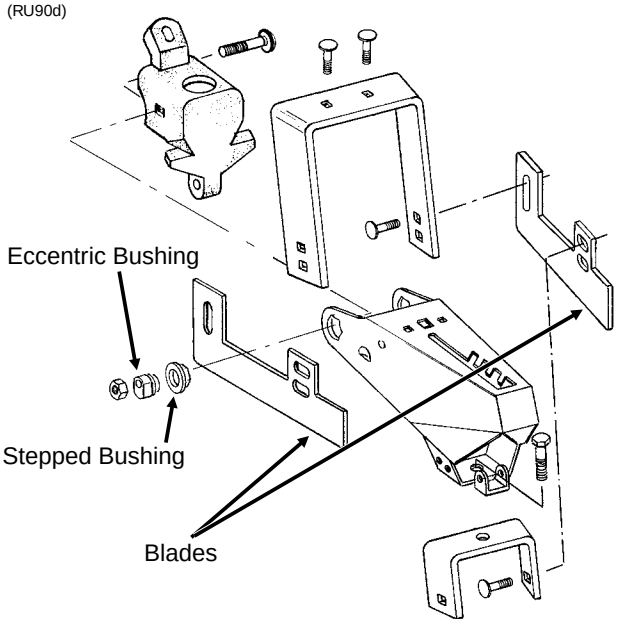
The drag closing attachment is designed to pull loose soil over the seed trench.

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)

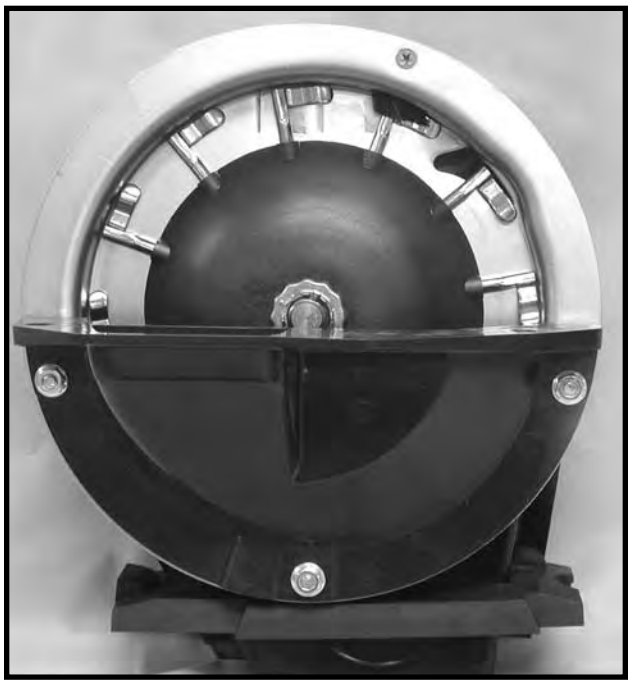


Eccentric bushings allow for lateral adjustment of the drag closing attachment. Using a ¾" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another ¾" wrench, turn the eccentric bushings until the drag closing attachment is aligned with the seed trench.

FINGER PICKUP SEED METER

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

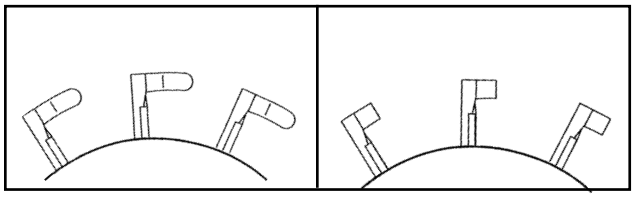
D12220401



Shown With Corn Fingers Installed

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

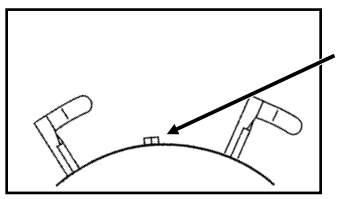
(PLTR91/PLTR92/PLTR91a)



Corn Fingers **Oil Sunflower Fingers**

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

No. 1 and/or No. 2 size confectionery sunflower seeds are recommended for use in the finger pickup seed meter equipped with corn fingers.



Half Rate Blank Finger

Blank fingers are used to replace alternate fingers in the finger wheel to reduce the planting rate by half while allowing the finger wheel to maintain a minimum of 40 RPM when planting low rates.

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

NOTE: Powdered graphite is recommended for finger pickup seed meter lubrication to ensure efficient operation of the mechanism and to extend the life of its components. Mix one teaspoon of powdered graphite with the seed twice daily. Apply graphite on top of seed around the outer perimeter of the hopper as shown below. Graphite application frequency and volume may need to be increased if using additional seed treatments.

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.

D05230121b

NOTE: Follow manufacturer's recommendations when applying and mixing other seed treatments. If the additive is to be applied on top of the seed, apply around the outer perimeter of the hopper as with graphite.

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

CLEANOUT

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

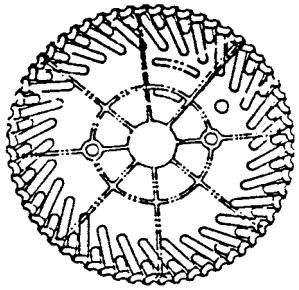
To clean the seed meter, disengage the seed drive and remove the seed hopper and meter. Dump the seed from the right rear corner of the hopper into a container. Turn the seed drive several times. Invert hopper to dump seed again. Shake the hopper and listen for any remaining seed. Turn seed drive and shake and dump hopper until all seed is removed.

BRUSH-TYPE SEED METER

D12220403

Shown Without Seed Disc Installed

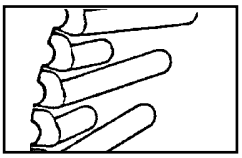
60607-40a(PLTR13)



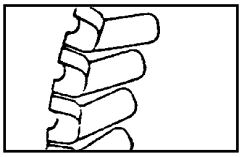
60 Cell Soybean Disc Shown

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

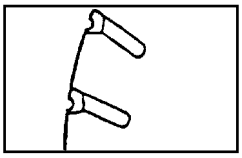
Soybean: *60 cells to meter seed sizes from 2200 to 4000 seeds per pound (Black color-coded).*
(PLTR14)



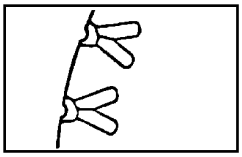
Specialty soybean: *48 cells to meter seed sizes from 1400 to 2200 seeds per pound (Dark blue color-coded).*
(PLTR15)



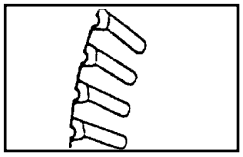
Small milo/grain sorghum: *30 cells to meter seed sizes from 14,000 to 20,000 seeds per pound (Red color-coded).*
(PLTR16)



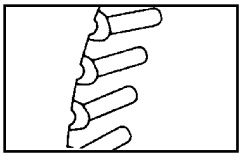
Large milo/grain sorghum: *30 cells to meter seed sizes from 10,000 to 16,000 seeds per pound (Light blue color-coded).*
(PLTR17)



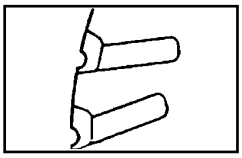
High-rate small milo/grain sorghum: *60 cells to meter seed sizes from 12,000 to 18,000 seeds per pound (Red color-coded).* (PLTR18)



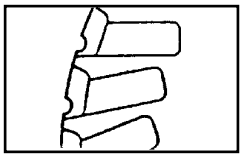
High-rate large milo/grain sorghum: *60 cells to meter seed sizes from 10,000 to 14,000 seeds per pound (Yellow color-coded).* (PLTR19)



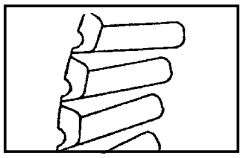
Cotton, acid-delinted: *30 cells to meter seed sizes from 4200 to 5200 seeds per pound (White color-coded).*
(PLTR20)



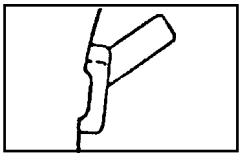
Large cotton, acid-delinted: *36 cells to meter seed sizes from 3800 to 4400 seeds per pound (Tan color-coded).*
(PLTR21)



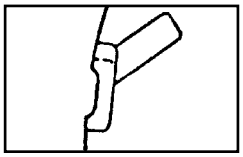
High-rate cotton, acid-delinted: *48 cells to meter seed sizes from 4200 to 5200 seeds per pound (Light green color-coded).*
(PLTR22)



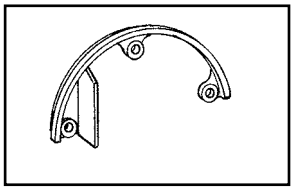
Hill-drop cotton, acid-delinted: *12 cells, 3 to 6 seeds/cell, to meter seed sizes from 4000 to 5200 seeds per pound (Brown color-coded).* (PLTR23)



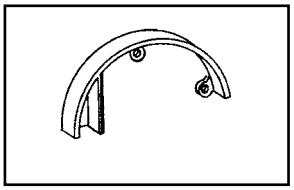
Small hill-drop cotton, acid-delinted: *12 cells, 3 to 6 seeds/cell, to meter seed sizes from 5000 to 6200 seeds per pound (Dark green color-coded).*
(PLTR23)



(RU14c)



Use GD11122 upper brush retainer when using soybean and cotton discs.



Use GD8237 upper brush retainer when using milo/ grain sorghum discs.

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

The brush-type seed meter attaches to the seed hopper in the same manner as the finger pickup seed meter. Secure to bottom of seed hopper with two 5⁄16" thumbscrews. Tighten thumbscrews slightly with pliers. DO NOT OVER TIGHTEN.

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

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

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 disc and meter components. Coat seed disc and brushes with talc before installing meter. Fill hopper ½ full of seed, add ¼ cup of talc and **mix thoroughly**. Finish filling hopper, add another ¼ cup of talc and **mix thoroughly**. Adjust rate of talc use as needed so all seeds are coated, while avoiding a buildup of talc in the bottom of the hopper. Humid conditions and/or small sized seeds with extra seed treatment may require as much as one cup of talc per hopper to prevent seed treatment buildup on seed disc and/or brushes.

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

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

CLEANOUT

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. Dump the seed from the right rear corner of the hopper into a container. Disassemble seed disc by removing wing nuts. Empty the meter. Thoroughly inspect brushes in meter to ensure all seed is removed. Replace seed disc and install wing nuts.

ROW UNIT OPERATION

SEED HOPPER

LF212199-7a

Seed hopper has capacity is 1.9 bushels.

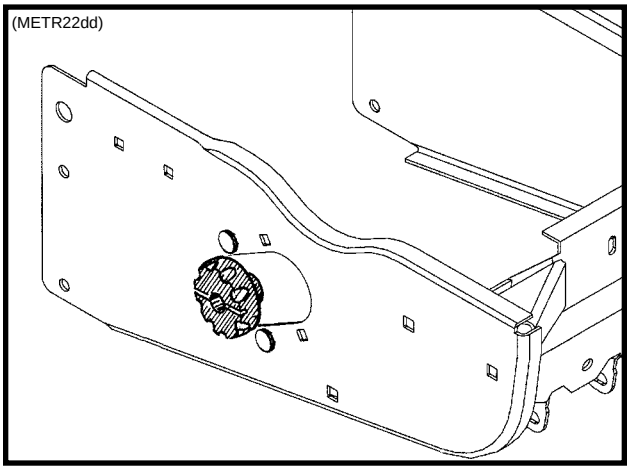
When filling the seed hopper use clean seed and make certain there are no foreign objects in the hopper. **Replace hopper lids after hoppers are filled to prevent the accumulation of dust or dirt in the seed meter which will cause premature wear.** See “Finger Pickup Seed Meter” and/or “Brush-Type Seed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

Periodically empty the hoppers completely to remove any foreign materials 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”.

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 hopper. Disconnecting the drive allows the operator to check granular chemical application rates without dropping seed. It also allows one or more of the rows to be disconnected when finishing fields.

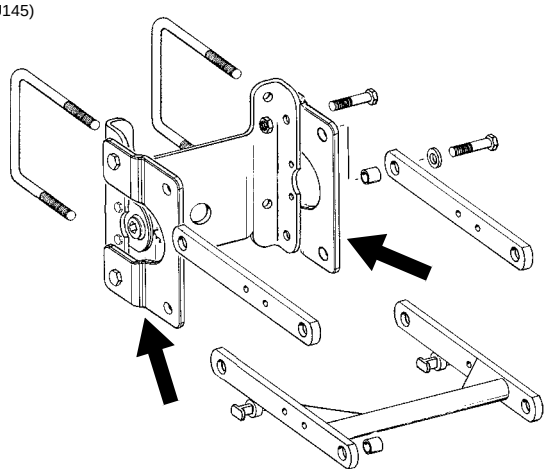
(METR22dd)



To disengage the drive, turn the knob ¼ turn counter-clockwise. To engage the drive, turn the knob ¼ turn clockwise.

ROW UNIT EXTENSION BRACKETS

(RU145)



Row unit extension brackets are required on the 4 center pull row units if the Model 3600TR planter is equipped with coulter mounted residue wheels. The brackets extend the row units rearward 4" to provide required clearance.

ROW UNIT OPERATION

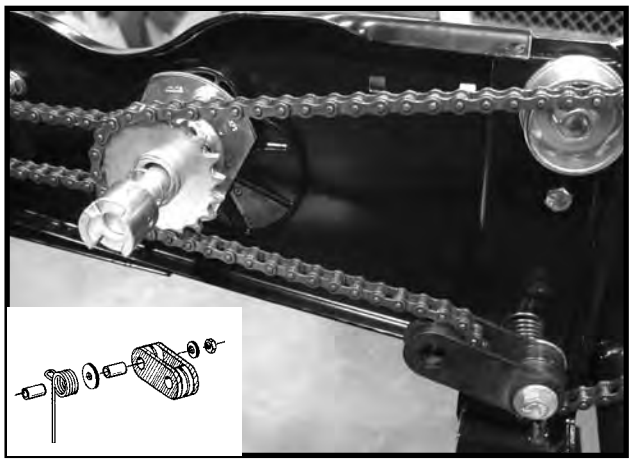
ROW UNIT CHAIN ROUTING

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

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

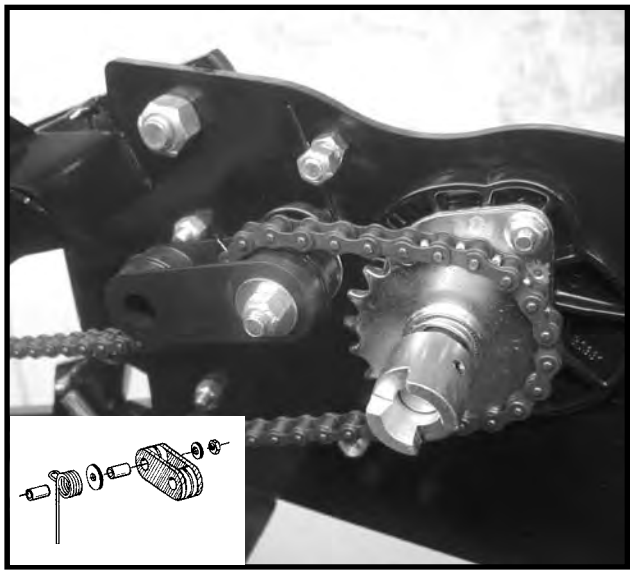
NOTE: When idler shows signs of wear, it can be reversed for prolonged use.

D051705103



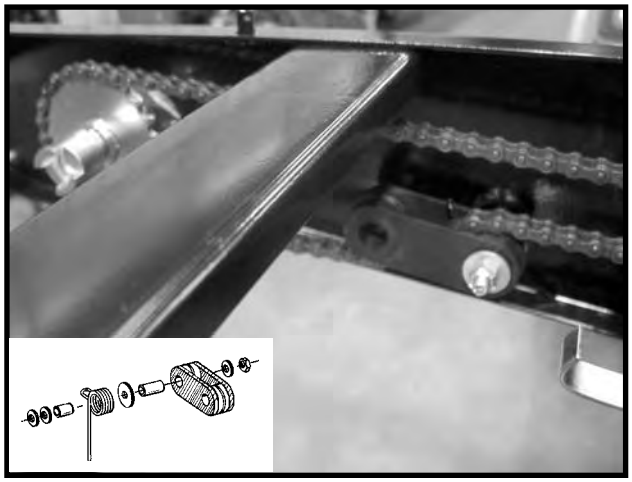
Pull Row Unit Meter Drive

D042905101(RU80g)



Push Row Unit Meter Drive

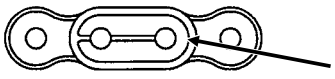
D051705102



Row Unit Granular Chemical Drive

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

(PLTR24)



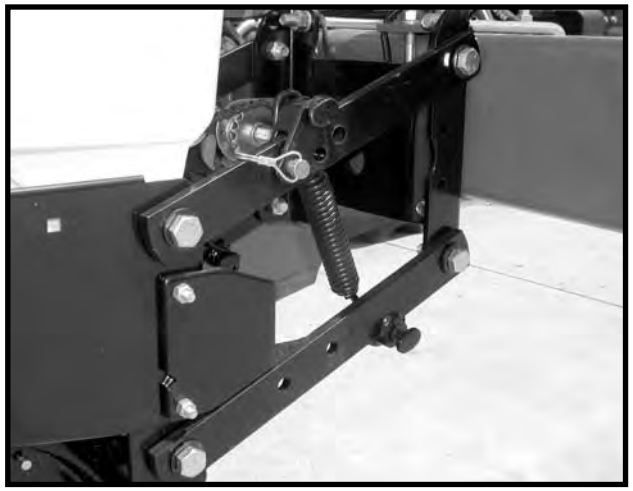
Direction Of Chain Travel

QUICK ADJUSTABLE DOWN FORCE SPRINGS OPTION

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

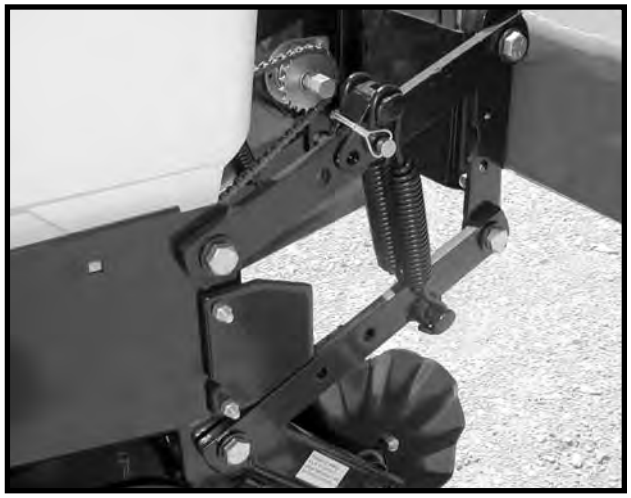
Two springs per row, one on the L.H. parallel arms and one on the R.H. parallel arms, are used unless equipped with row unit mounted no till coulters. Four springs per row are used with row unit mounted no till coulters.

D06300305



Two Springs Per Row (Dual)

D07010301

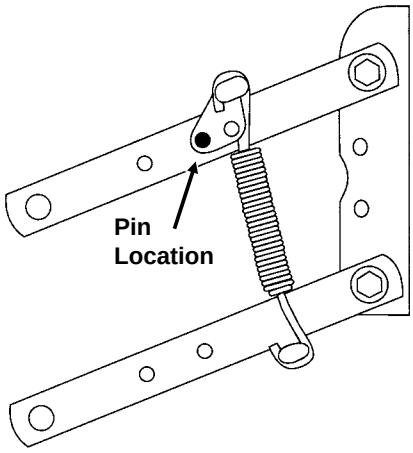


Four Springs Per Row (Quad)
(Used Only In Conjunction With Row Unit Mounted No Till Coulters)

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

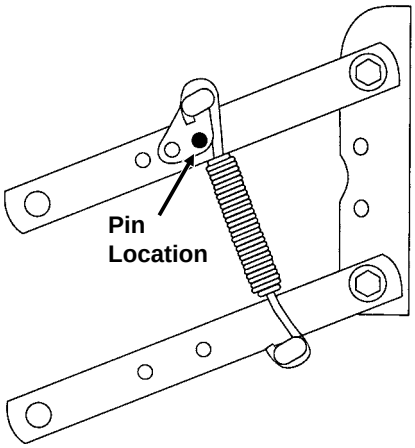
There are four positions for spring tension adjustment. Position 1 allows for minimum down pressure and position 4 for maximum down pressure.

L0096(PLTR27e)



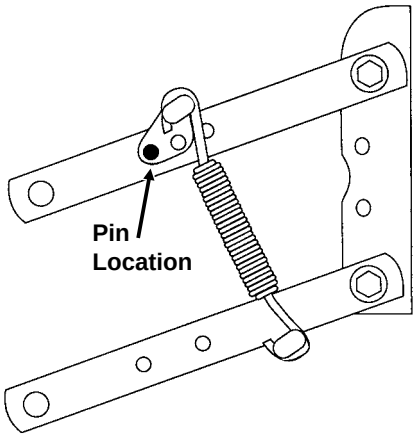
Position 1 (Minimum)

(PLTR28e)



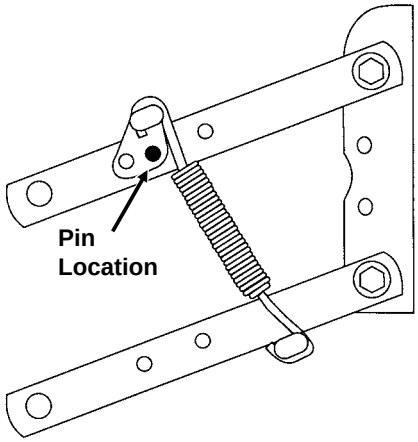
Position 2

(PLTR29e)



Position 3

(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.

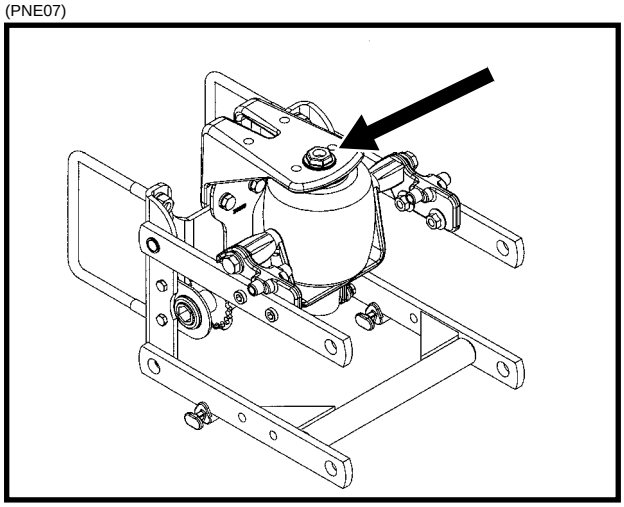
PNEUMATIC DOWN PRESSURE PACKAGE OPTION

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 (fore and aft air spring mounting castings for push row units), 150 psi rated air springs, ⅜" 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.

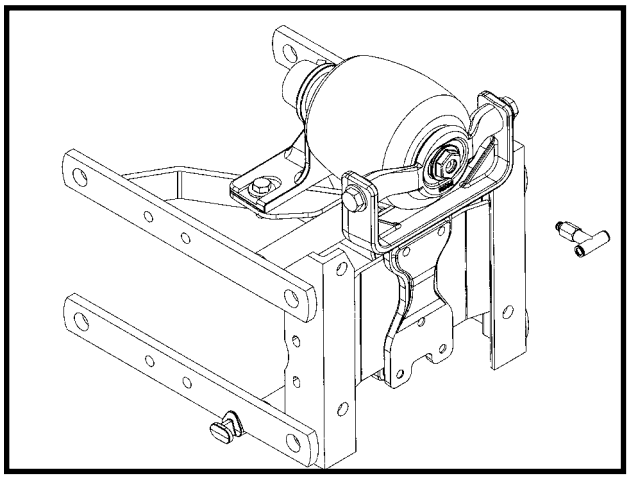
(PNE07)



Pull Row Unit Air Spring

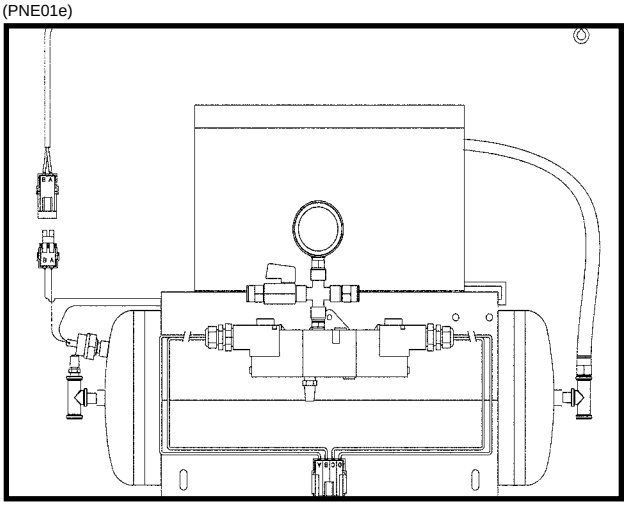
NOTE: Shoulder nut(s) should be torqued to 350 in. lbs. Refer to page 9-1 for additional torque values.

(PNE09)



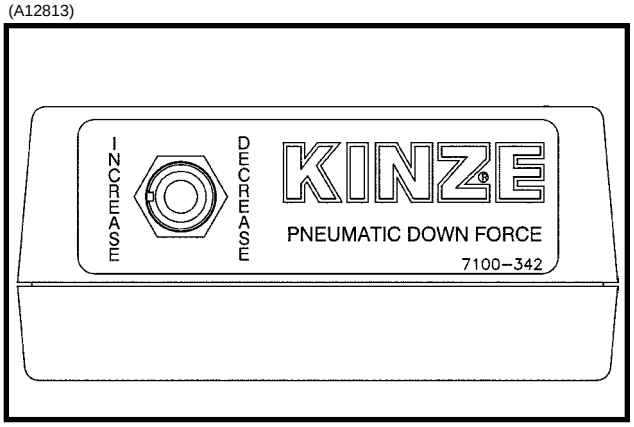
Push Row Unit Air Spring

(PNE01e)



Air Compressor With Dual Solenoid Assembly

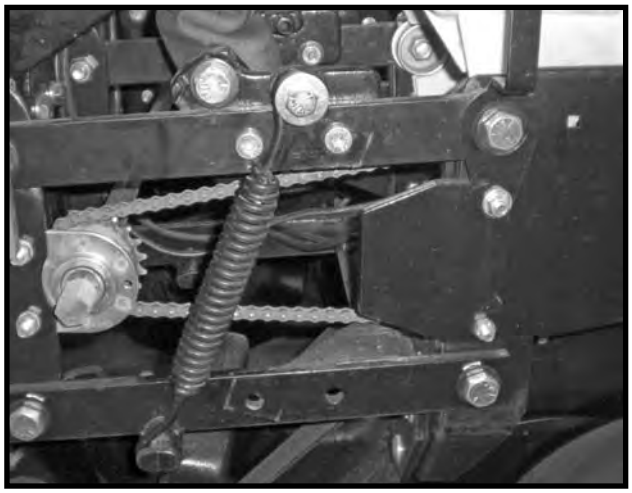
(A12813)



Control Console Assembly

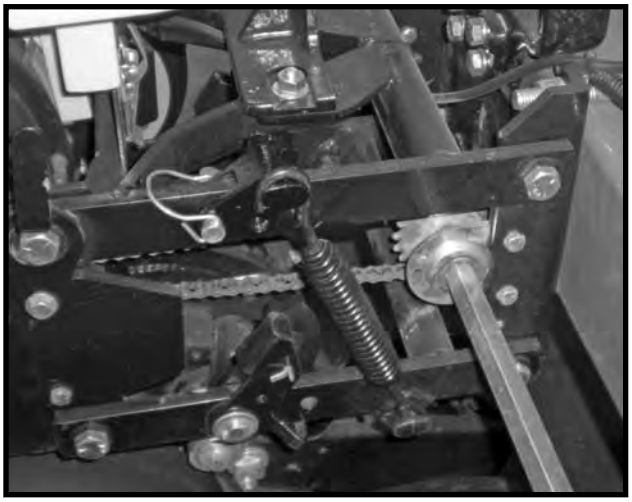
NOTE: If additional down pressure is needed with the Pneumatic Down Pressure Package, assist springs are available through your KINZE® dealer. One spring is installed on the outer side of the parallel arms on each side of the row unit as shown below.

D11280753a



Pull Row Unit Assist Springs

D11280749a

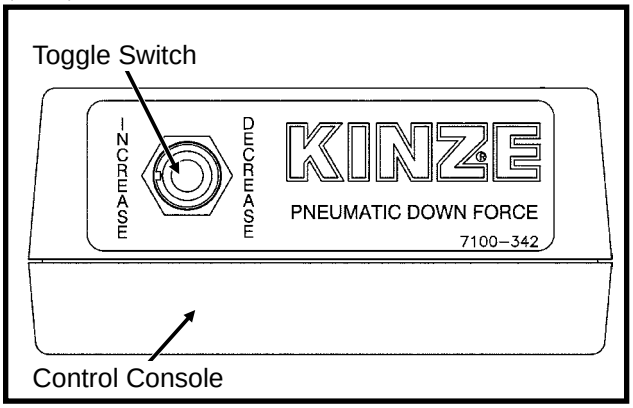


Push Row Unit Assist Springs

FIELD OPERATION

NOTE: For the most accurate adjustment, adjust down pressure with planter lowered and row openers in the ground. Pressure can be adjusted from tractor using the control console, or at planter using the manual control valves.

(A12813)



To adjust down pressure from cab:

To INCREASE pressure, push toggle switch left.

To DECREASE pressure, push toggle switch right.

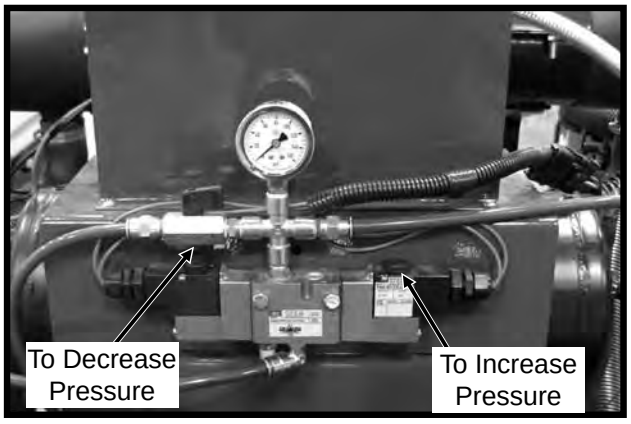
To adjust down pressure from planter:

To INCREASE pressure, press and hold button on solenoid as shown below.

To DECREASE pressure, press and hold button on solenoid as shown below.

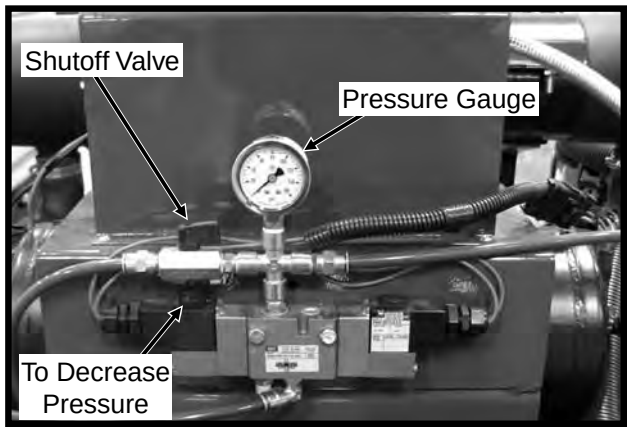
The readout value on the air pressure gauge is NOT the down pressure force value. To calculate the force value, multiply the air pressure (psi) by four (4).

D112907100



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

D112907100



To lock up push row units equipped with pneumatic down pressure springs:

STEP 1 Disconnect electric power supply to compressor.

STEP 2 Press and hold button on solenoid until pressure gauge reads zero.

STEP 3 Lock up units. See “Interplant Push Unit Lockup” for instructions.

STEP 4 Turn the shutoff valve handle perpendicular to valve body. This turns off air supply to the push row units.

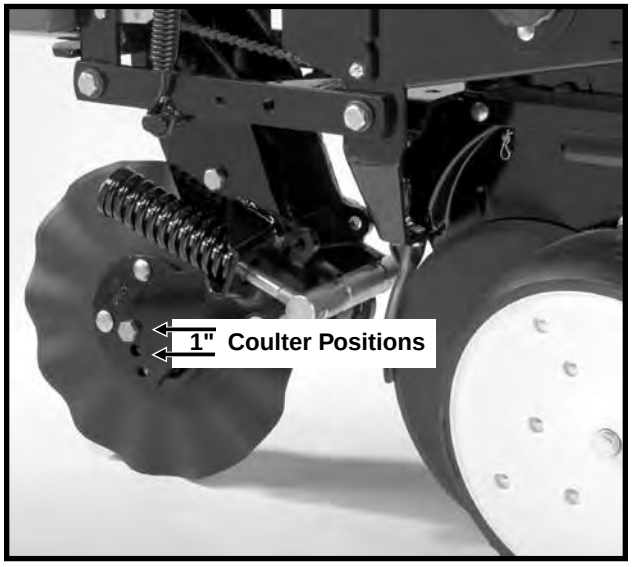
NOTE: If control console is ON and the hydraulic down force is not set to zero, compressor will start when electric power supply is reconnected.

STEP 5 Reconnect electric power supply to compressor.

ROW UNIT OPERATION

FRAME MOUNTED COULTER

LF083002101

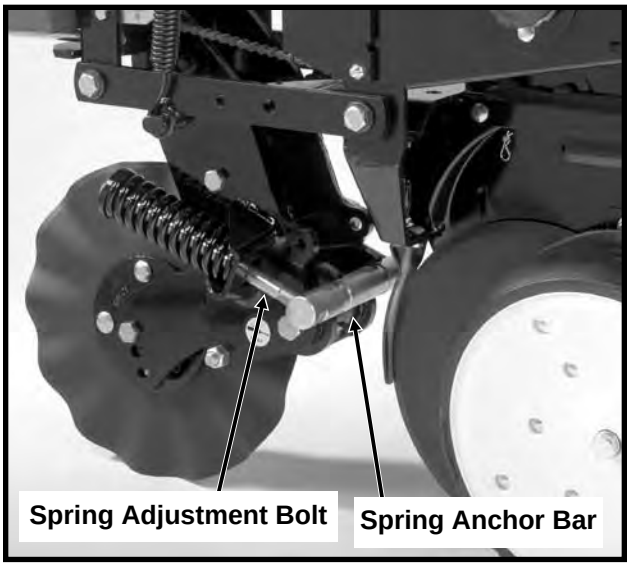


Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or ¾" fluted (13 flutes) blades may be used on pull row units only. **They are not compatible with push row units.**

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

The initial location of the coulter 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 ½" Through Spring Anchor Bar	All Threads Used (Maximum)
275 lbs.	400 lbs.	500 lbs.

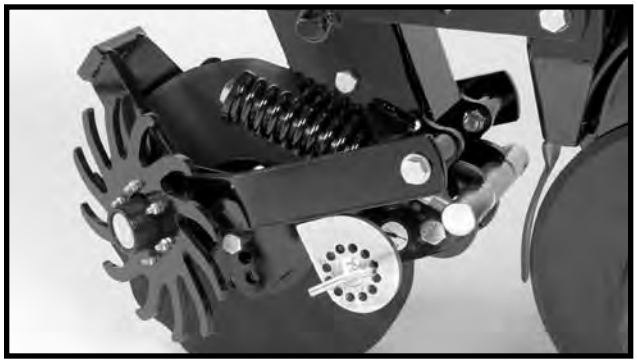
NOTE: Avoid setting down pressure higher than is required for consistent soil penetration. Excessive pressure will increase the chances of damage to coulter components when the coulter strikes an obstacle.

ROW UNIT OPERATION

RESIDUE WHEELS
(For Use With Frame Mounted Coulter)

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

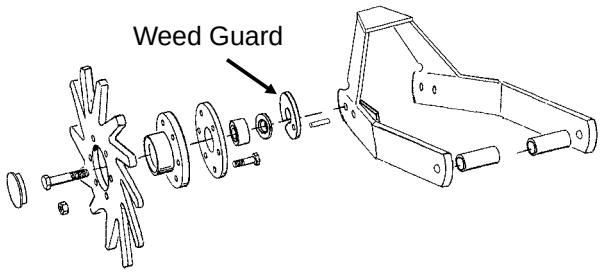
LF083002102



STYLE A Shown

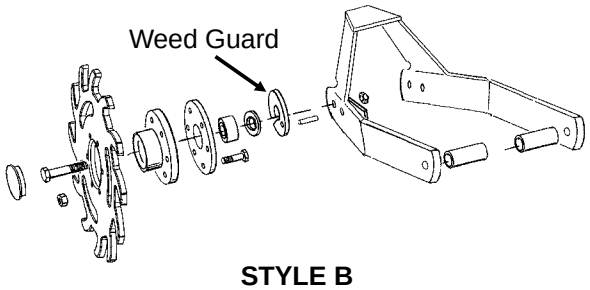
The residue wheels are attached to the frame mounted coulter with two cap screws and sleeves allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in ¼" 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.

(RU135k)



STYLE A

(RU135m)



STYLE B

NOTE: Opening in weed guard must point down.

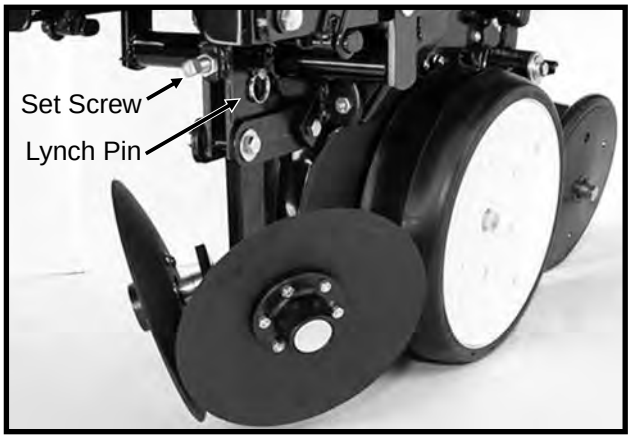
IMPORTANT: The forward mounting positions of the tined wheels can not be used on the four rows behind the axle on the 3600TR machine due to inadequate clearance.

ROW UNIT MOUNTED DISC FURROWER

The row unit mounted disc furrower is for use on pull row units only. **They are not compatible with push row units.** The disc furrower may be equipped with either 12" solid blades or 12" notched blades.

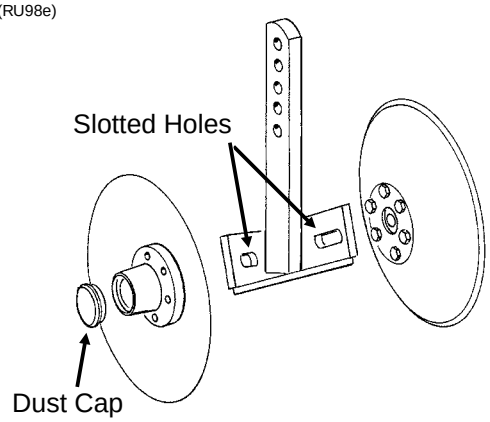
Disc furrowers are used to clear crop residue, dirt clods and dry soil from in front of the row units for a clean and smooth seed bed. Notched blades are used for heavier residue conditions. The notched blades cut crop residue and move it aside to prevent plugging or pushing.

LF212299-22



Vertical adjustment in ⅓" 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 ⅝" x 2 ¼" set screw to clamp the support arm in the required position.

(RU98e)

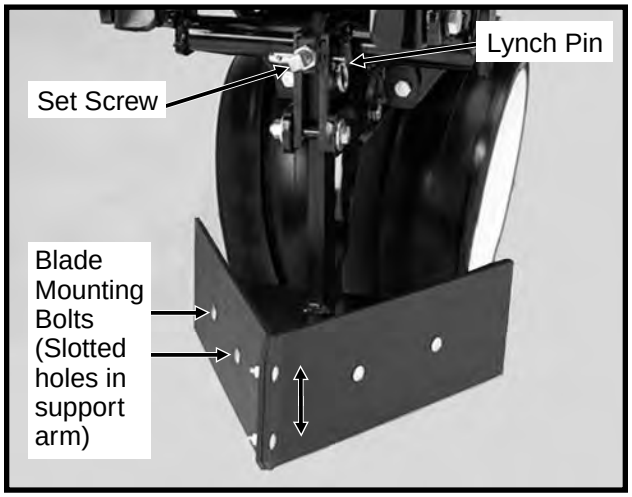


Slotted holes in the support arm where the blades are mounted allow fore and aft adjustment of the disc blades. Blades can be adjusted so the front edges meet or one blade can be moved to the rear and the other to the front of the slot so the cutting edge of one blade overlaps the edge of the other blade.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

ROW UNIT OPERATION

ROW UNIT MOUNTED BED LEVELER

LF212299-25a



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

Vertical adjustment in ⅓" 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 ⅝" x 2 ¼" set screw to clamp the support arm in the required position.

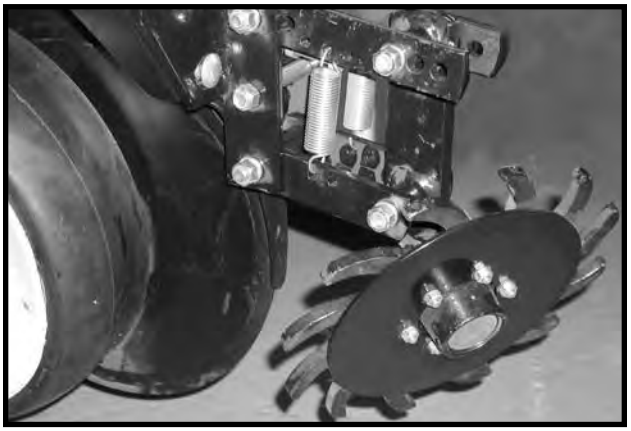
Slotted holes in the support arm where the blades are mounted allow tilting of the blades. The blades can be tilted up or down at the front for desired adjustment.

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

ROW UNIT MOUNTED RESIDUE WHEEL

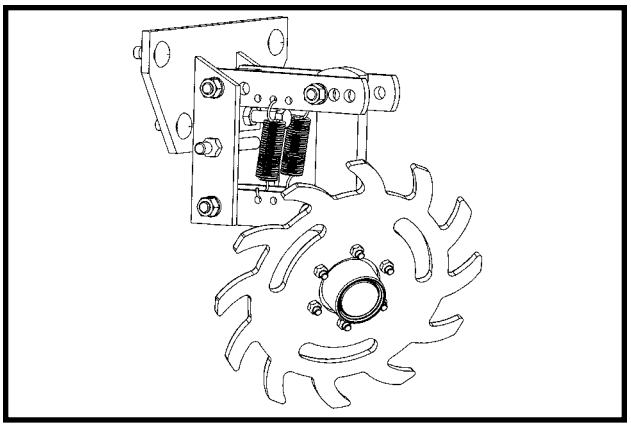
The row unit mounted residue wheel may be used on pull row units and push row units.

D101701113



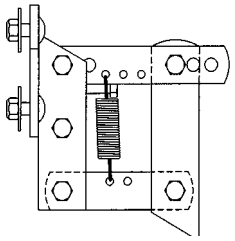
STYLE A

(A12685)

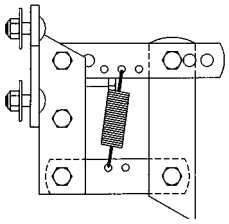


STYLE B

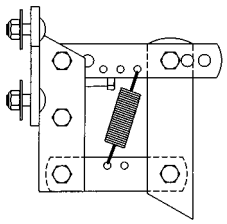
Two adjustable springs on the parallel links on each residue wheel allow for down force adjustment. Position 1 as shown below provides minimum down pressure and position 3 maximum down pressure.



Position 1 *(Minimum)* (PLTR31a)



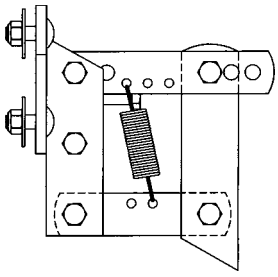
Position 2 (PLTR32a)



Position 3 *(Maximum)* (PLTR33a)

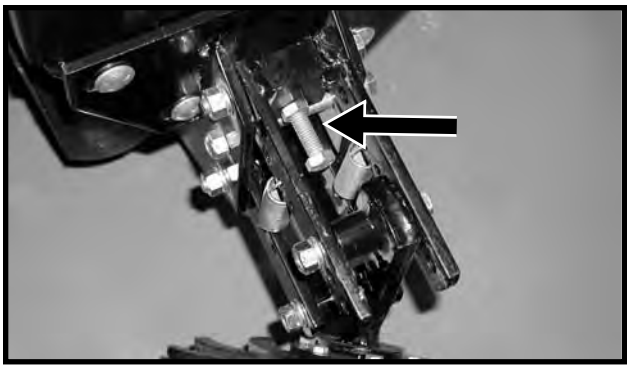
For additional uplift or float, position springs as shown below.

(PLTR34a)



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

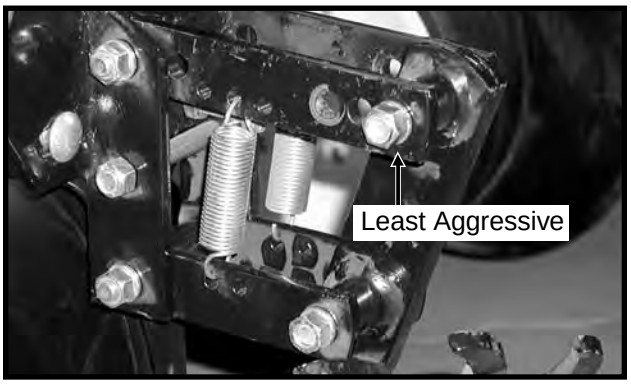
D101701112



A full threaded bolt and jam nut located on the upper link allows maximum depth to be set for loose soil conditions. Initial setting should be 1 ¾" above the depth of the row unit double disc opener.

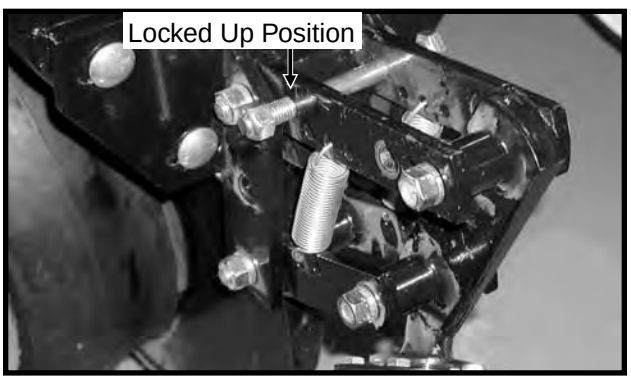
Three holes in the upper link allow for wheel angle adjustment. With the wheel mount in the most vertical position, using the rear hole in the upper link, the residue wheel is most aggressive. Moving the wheel mount to one of the forward holes reduces the aggressiveness of the wheel for use in mulch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

D101701202



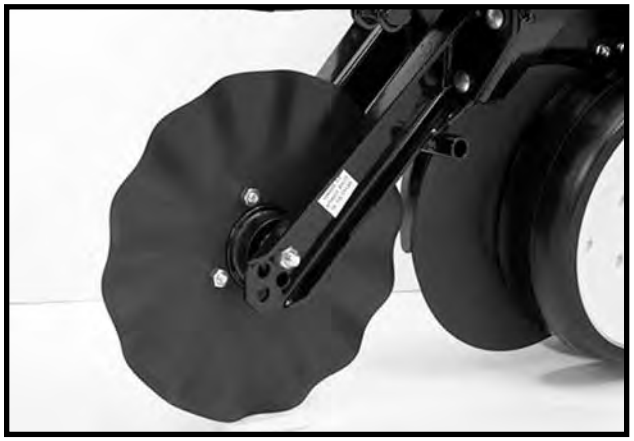
To lock the residue wheel up out of the ground, remove the ½" x 5" lockup bolt, raise the residue wheel and install bolt.

D011701203



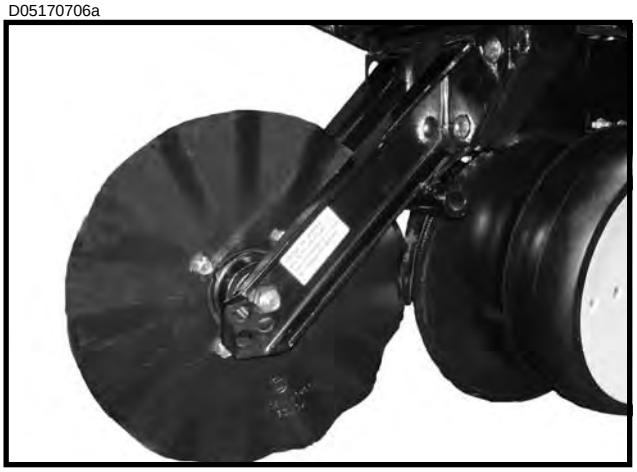
ROW UNIT MOUNTED NO TILL COULTER

LF212299-19a



STYLE A (Two Sleeves For Installing Coulter Mounted Residue Wheels)

D05170706a



STYLE B (One Sleeve For Installing Coulter Mounted Residue Wheels)

Row unit mounted no till coulters with 1" bubbled, 1" fluted (8 flutes) or ¾" fluted (13 flutes) blades may be used on pull row units and push row units. (¾" fluted shown)

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

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

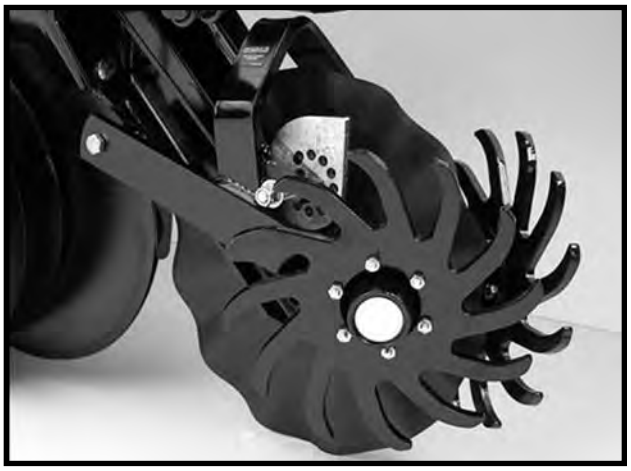
The coulter blade can be adjusted to one of four ½" incremental settings in the forked arm. Initial location of the coulter is in the top hole. As the coulter blade wears, the blade should be adjusted downward to one of the three lower settings to maintain the coulter blade at or slightly below the opener discs. In very hard soil conditions such as compacted wheel tracks, opener penetration and cutting of surface residue may be improved by adjusting the coulter to operate below the depth of the double disc opener blades.

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

NOTE: Torque ⅝" spindle bolts to 120 ft. lbs.

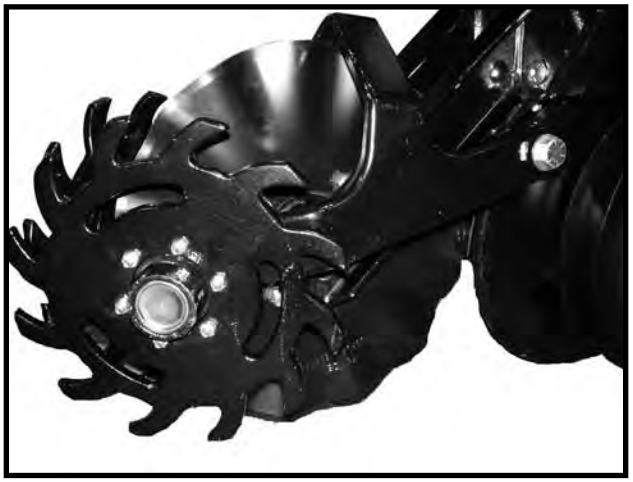
COULTER MOUNTED RESIDUE WHEELS

LF212299-23



STYLE A - Used With Style A Row Unit Mounted No Till Coulter

D05170708a

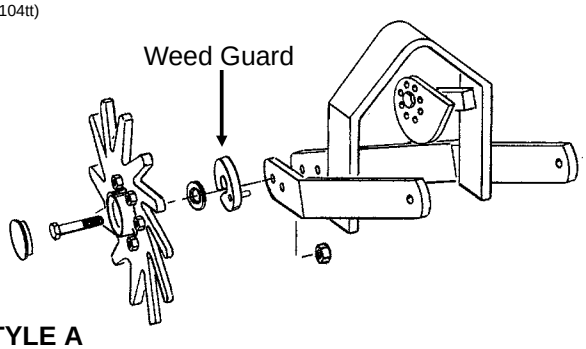


STYLE B - Used With Style B Row Unit Mounted No Till Coulter

Coulter 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 coulter mounted residue wheels.

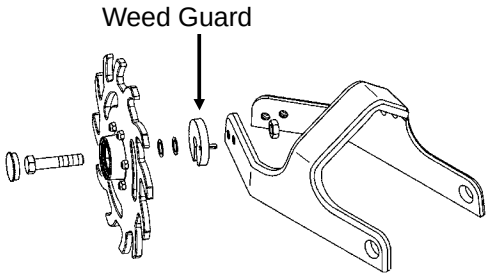
The coulter mounted residue wheels are attached to the row unit mounted no till coulter with one cap screw and sleeve allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in ¼" increments. A high point on the cam allows the wheels to be locked up so they do not contact the ground. A weed guard, located on the inboard side of each wheel, aids in the prevention of weed wrap which can cause premature bearing failure.

(RU104tt)



STYLE A

(RU153a)



STYLE B

NOTE: Opening in weed guard must point down.

GRANULAR CHEMICAL HOPPER AND DRIVE

LF212299-6

The granular chemical hopper has a 1.4 cubic feet capacity.

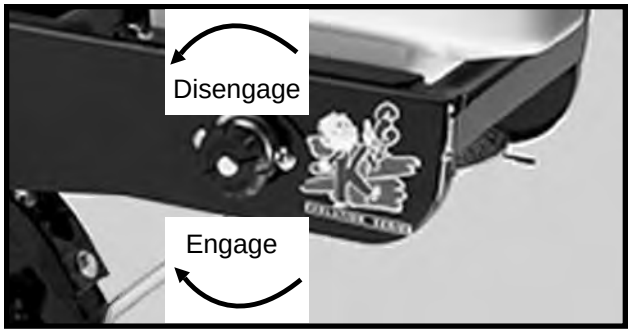
Be sure no foreign objects get into the hopper when it is being filled. Replace the hopper lids after filling the hoppers to prevent the accumulation of dirt and moisture.

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

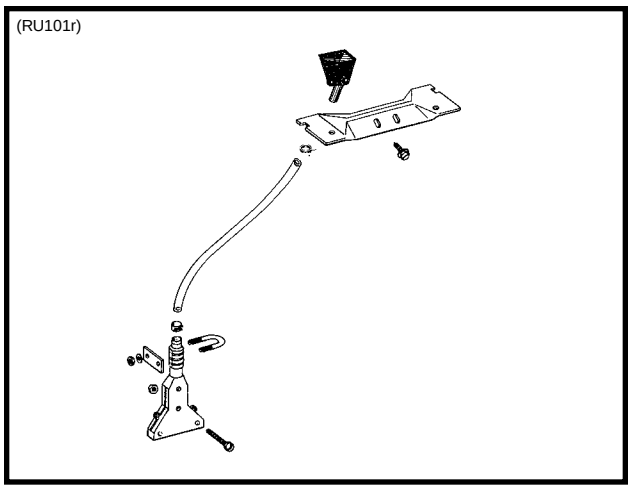


GRANULAR CHEMICAL BANDING OPTIONS

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

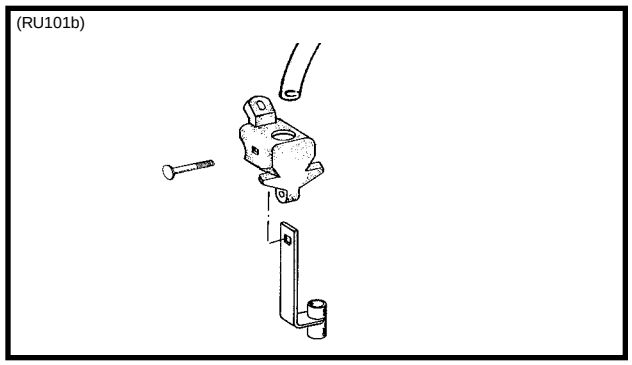
NOTE: The granular chemical rear bander is not compatible with the covering discs/single press wheel option.

(RU101r)



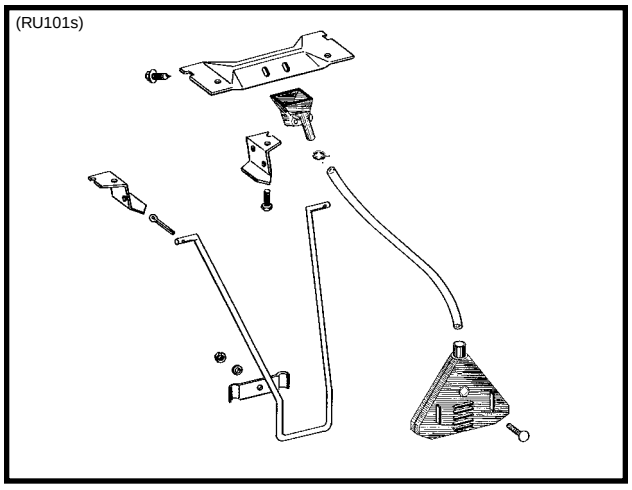
4 ½" Slope-Compensating Bander

(RU101b)



Straight Drop In-Furrow Placement

(RU101s)

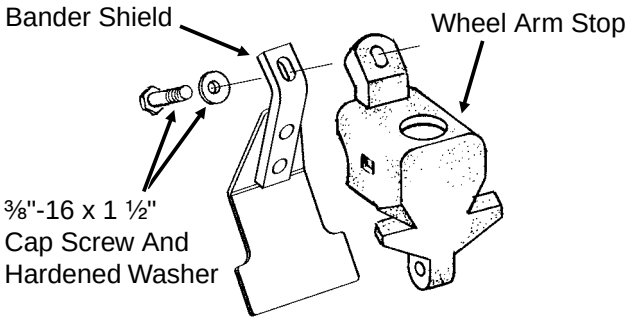


14" Rear Banding

GRANULAR CHEMICAL BANDER SHIELD

The optional granular chemical bander shield is designed to be installed onto the underside of the wheel arm stop to shield crop residue from lodging in the granular chemical bander.

(RU83m)

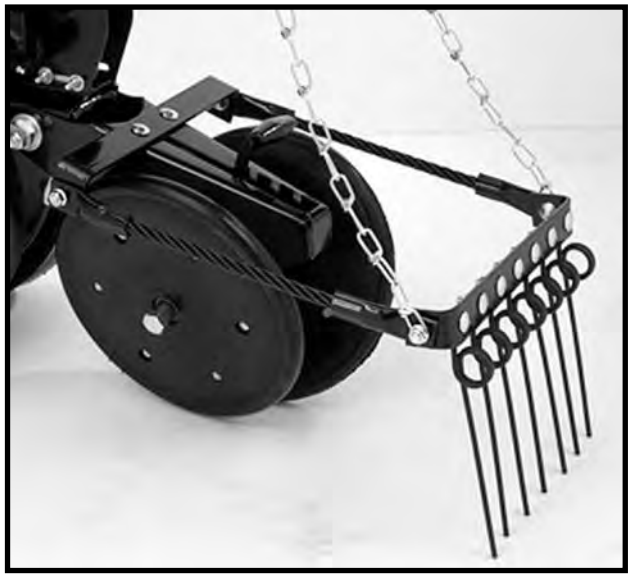


SPRING TOOTH INCORPORATOR

The spring tooth incorporator smoothes 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 ⅛" 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

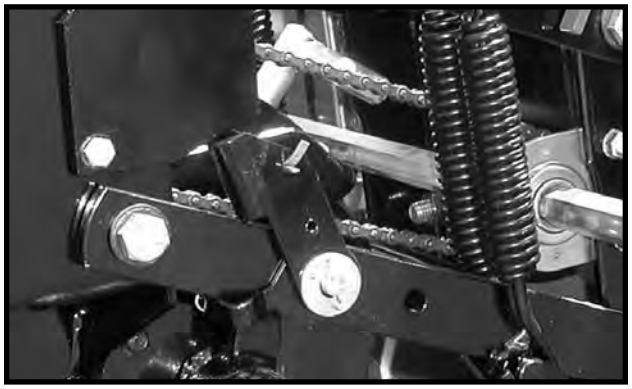


PUSH ROW UNIT LOCKUPS

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

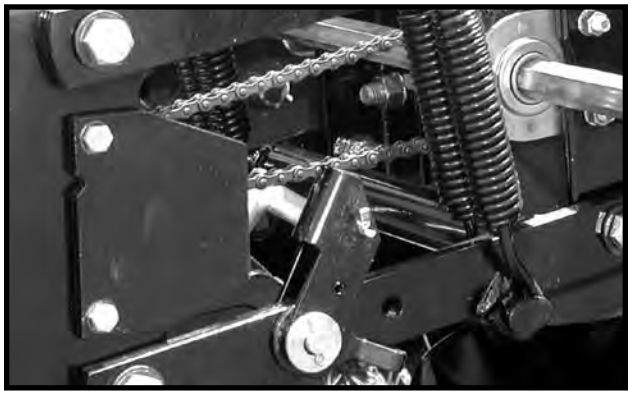
WARNING: Always install all safety lockup devices or lower planter to the ground before working under or around the machine.

D062603106



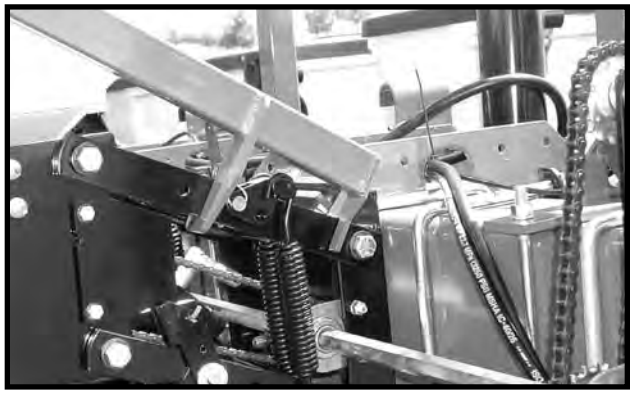
Push Row Unit Locked In Raised Position

D062603103



Lockup Released For Field Operation

D062603106

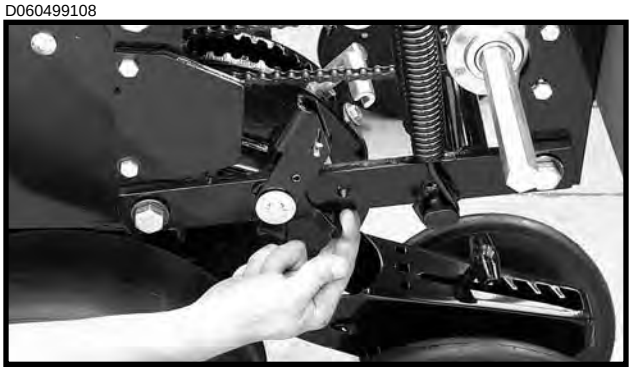


Lift Lever Positioned To Lift Push Row Unit

To lock in raised position:

1. Set row unit down pressure springs to minimum setting.
2. Lower the planter to the planting position.
3. Empty seed hoppers.
4. On each push row unit lockup, flip the spring tab forward.

D060499108

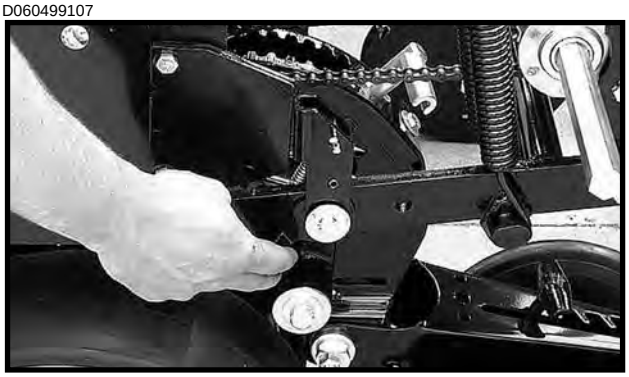


5. Using the lift lever, raise the push row unit to allow the spring loaded lockups to snap into locked position under the row unit stops.
6. Repeat Steps 4 and 5 on remaining push row units.

To release lockups:

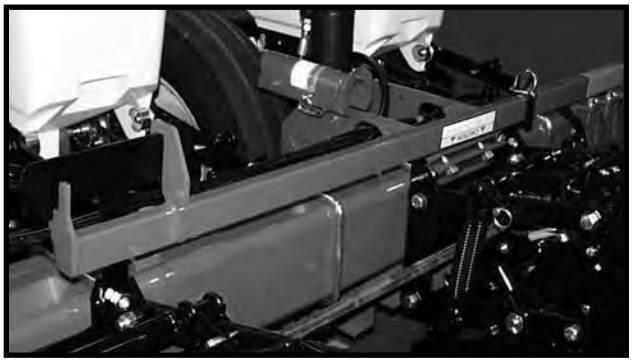
1. Lower the planter to the planting position.
2. On each push row unit lockup, flip the spring tab rearward.

D060499107



3. Using the lift lever, raise the push row unit to allow the spring loaded lockups to snap out of locked position. Lower row unit to the ground.
4. Repeat Step 3 on remaining push row units.

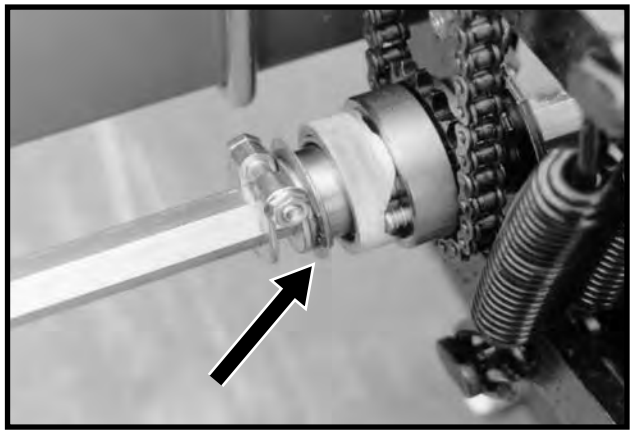
D070699109



Lift Lever In Storage Location

PUSH ROW UNIT CLUTCH SPROCKET

06309716



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

To disengage the push row unit drill shaft using the clutch sprocket, rotate the knurled collar on the clutch sprocket ¼ turn. Then using a ⅞" wrench on the drill shaft, rock the drill shaft slightly to take pressure off of the spring loaded pins in the clutch to allow the pins to "pop" out, disengaging the drive. To engage the drive, rotate the knurled collar ¼ turn and turn the drill shaft with a ⅞" wrench until the drive pins engage the drive sprocket.

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

LUBRICATION

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

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

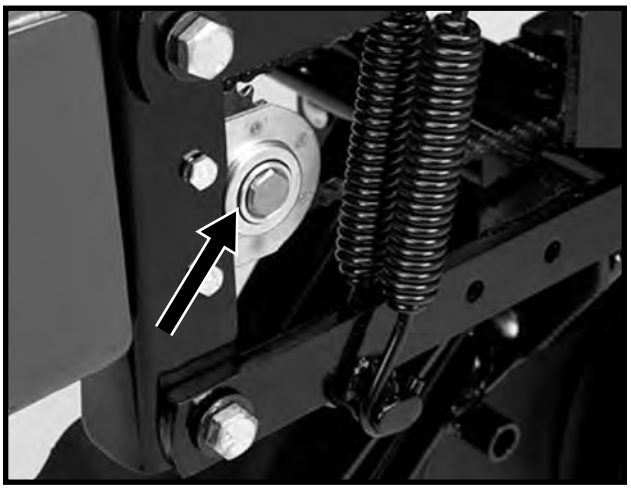
LUBRICATION SYMBOLS

Lubricate at frequency indicated with an SAE multipurpose grease.

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

SEALED BEARINGS

LF212199-3



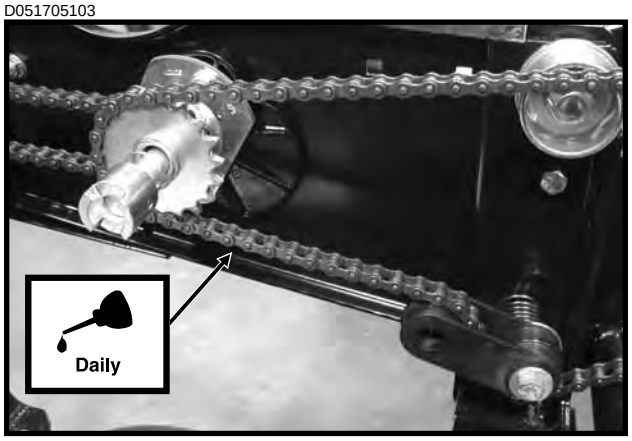
A number of sealed bearings are used on your KINZE® planter to provide trouble free operation. These are located in such areas as the drive shaft, row units and transmission bearings. Sealed bearings are lubricated for life. Due to the seals, relubrication is not practical.

LUBRICATION

DRIVE CHAINS

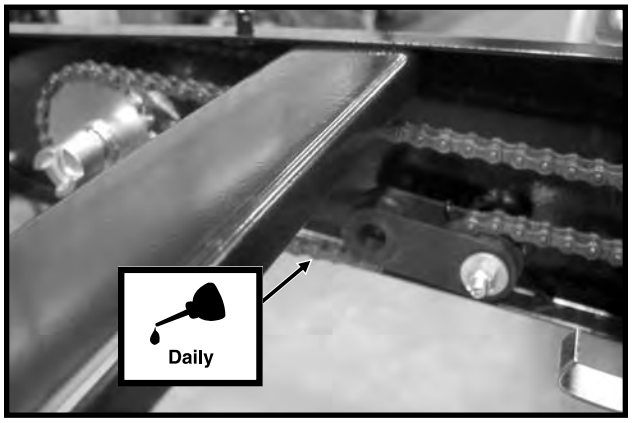
All transmission and drive chains should be lubricated daily with a high quality chain lubricant. Extreme operating conditions such as dirt, temperature or speed may require more frequent lubrication. If a chain becomes stiff, it should be removed, soaked and washed in solvent to loosen and remove dirt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

D051705103



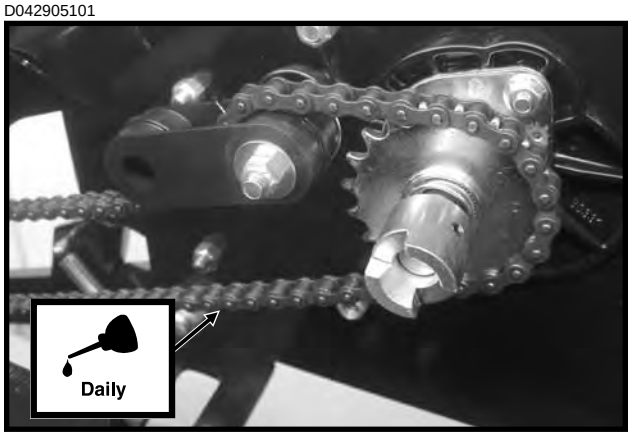
Pull Row Unit Drive Chains

D051705102



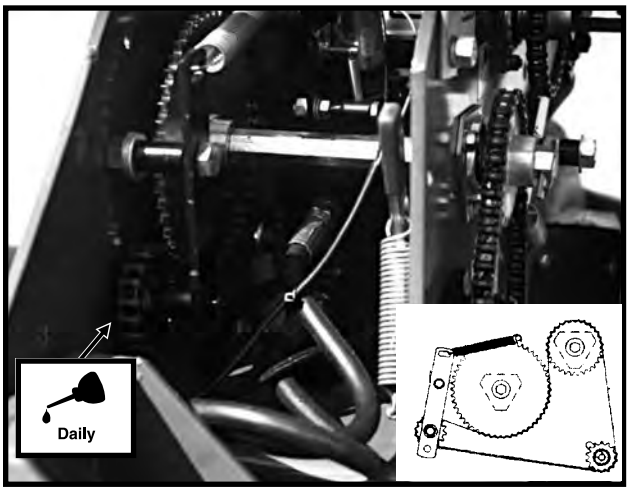
Row Unit Granular Chemical Drive Chains

D042905101



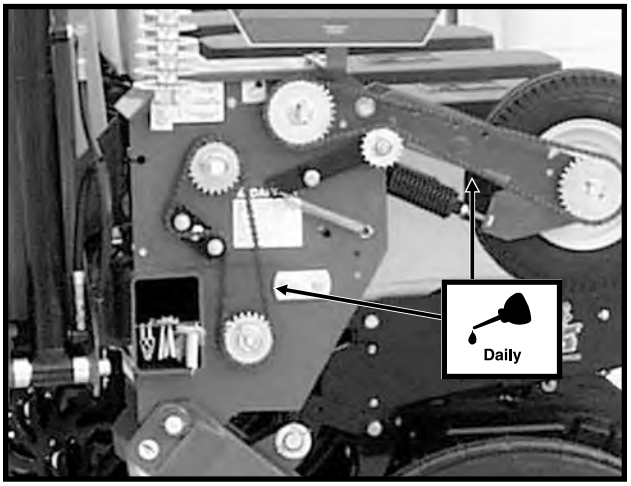
Push Row Unit Drive Chains

77387-8(PLTR52)



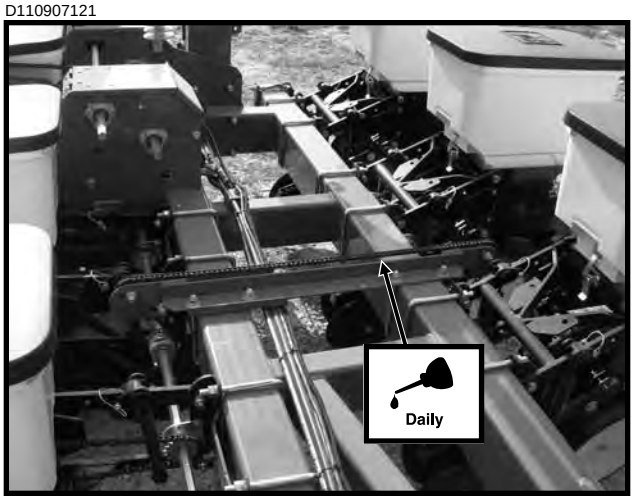
Inner Wheel Module Drive Chains

D020501108



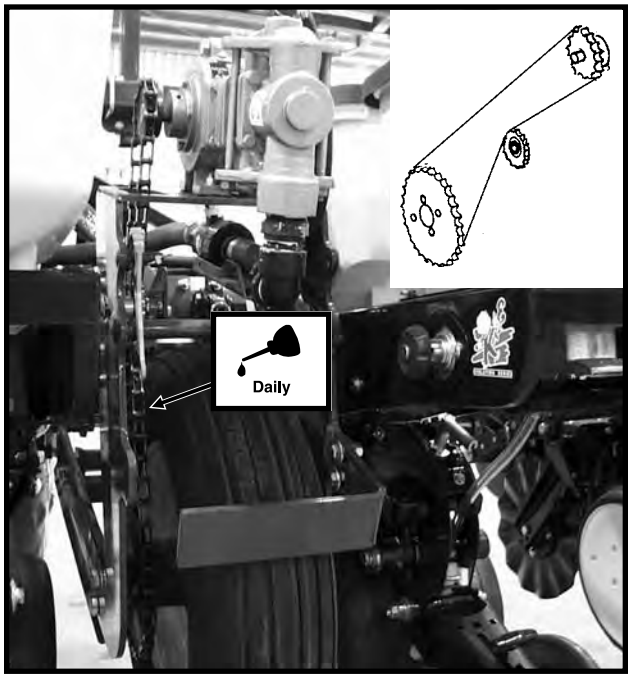
Contact Wheel Drive Chains
Seed Rate Transmission Drive Chains

D110907121



Push Row Unit Drive Chains

D070804112(TWL219e)



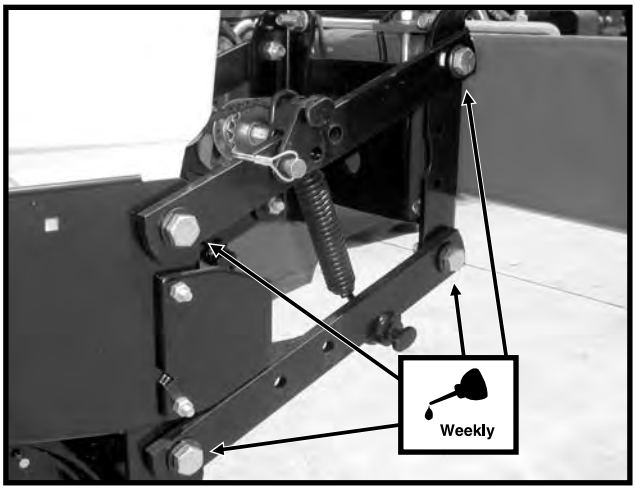
Liquid Fertilizer Ground Drive Chain (Piston Pump)

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.**

D06300305

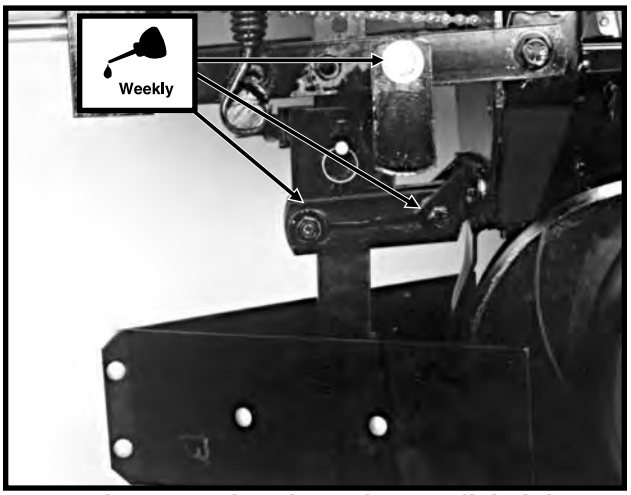


Pull Row Unit And/Or Push Row Unit Parallel Linkages (8 Per Row)

LF212299-22

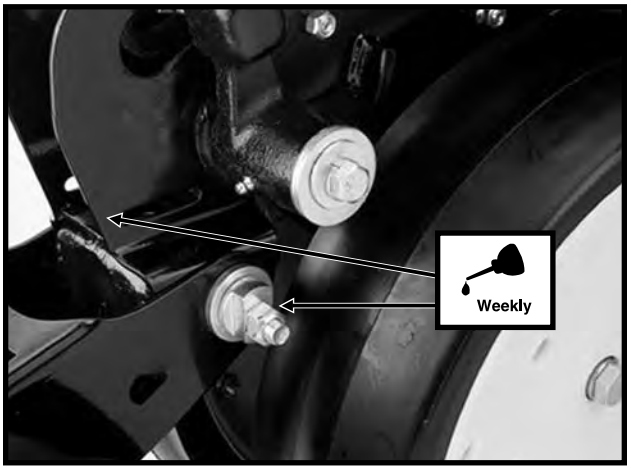
Row Unit Mounted Disc Furrower Parallel Linkages (6 Per Row)

59386-26



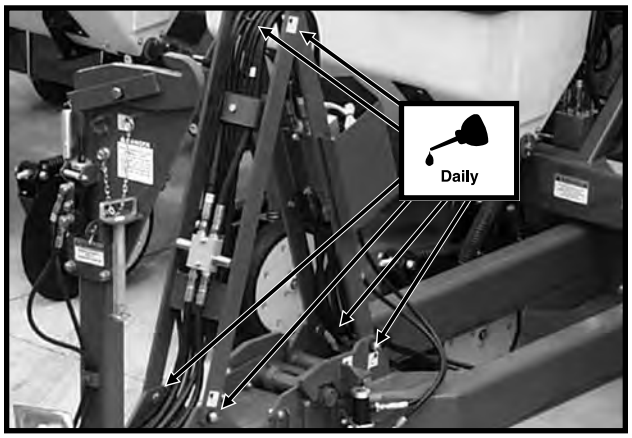
Row Unit Mounted Bed Leveler Parallel Linkages (6 Per Row)

LF212199-2



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

D061901128

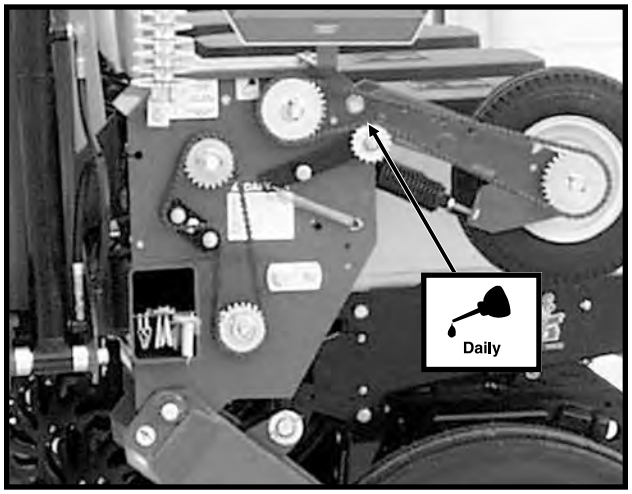


Hose Take-Up (6 Locations)

D060299216

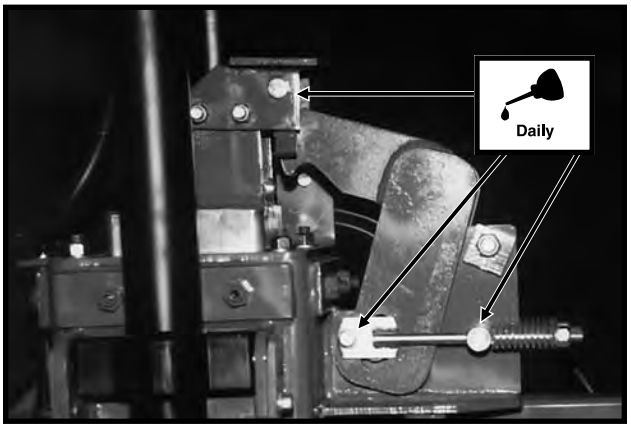
Transport Latch (1 Location)

D020501108



Contact Drive Wheel Arm (2 Per Wheel Assembly)

82316-16

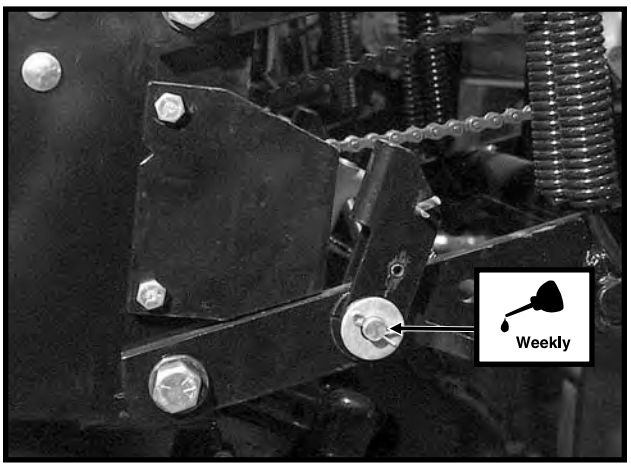


Safety Hook Located At Top Of Center Section

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

PUSH ROW UNIT LOCKUPS

D06099906



2 Per Row

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 ¼"-20 x ½" 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

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.

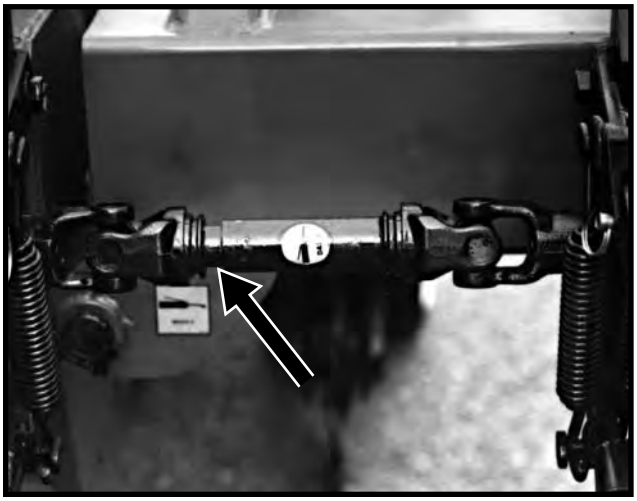
To check for wear, lift the wheel off the ground. Check for endplay in the bearings by moving the tire side to side. Rotate the tire to check for roughness in the bearings. If bearings sound rough, the hub should be removed and the bearings inspected and replaced if necessary. See “Wheel Bearing Lubrication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

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

U-JOINT SLIDES

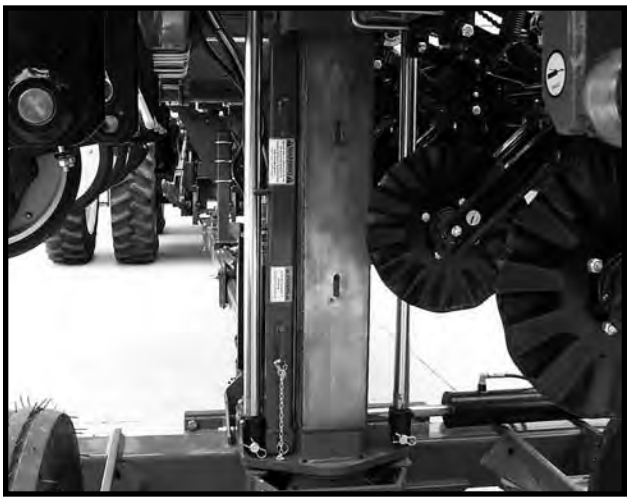
Lubricate all U-joint slides daily with a high quality lubricant.

76740-54



CENTER POST

D060299107



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

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

See “Wear Pad Replacement/Adjustment” for additional information.

LUBRICATION

GREASE FITTINGS

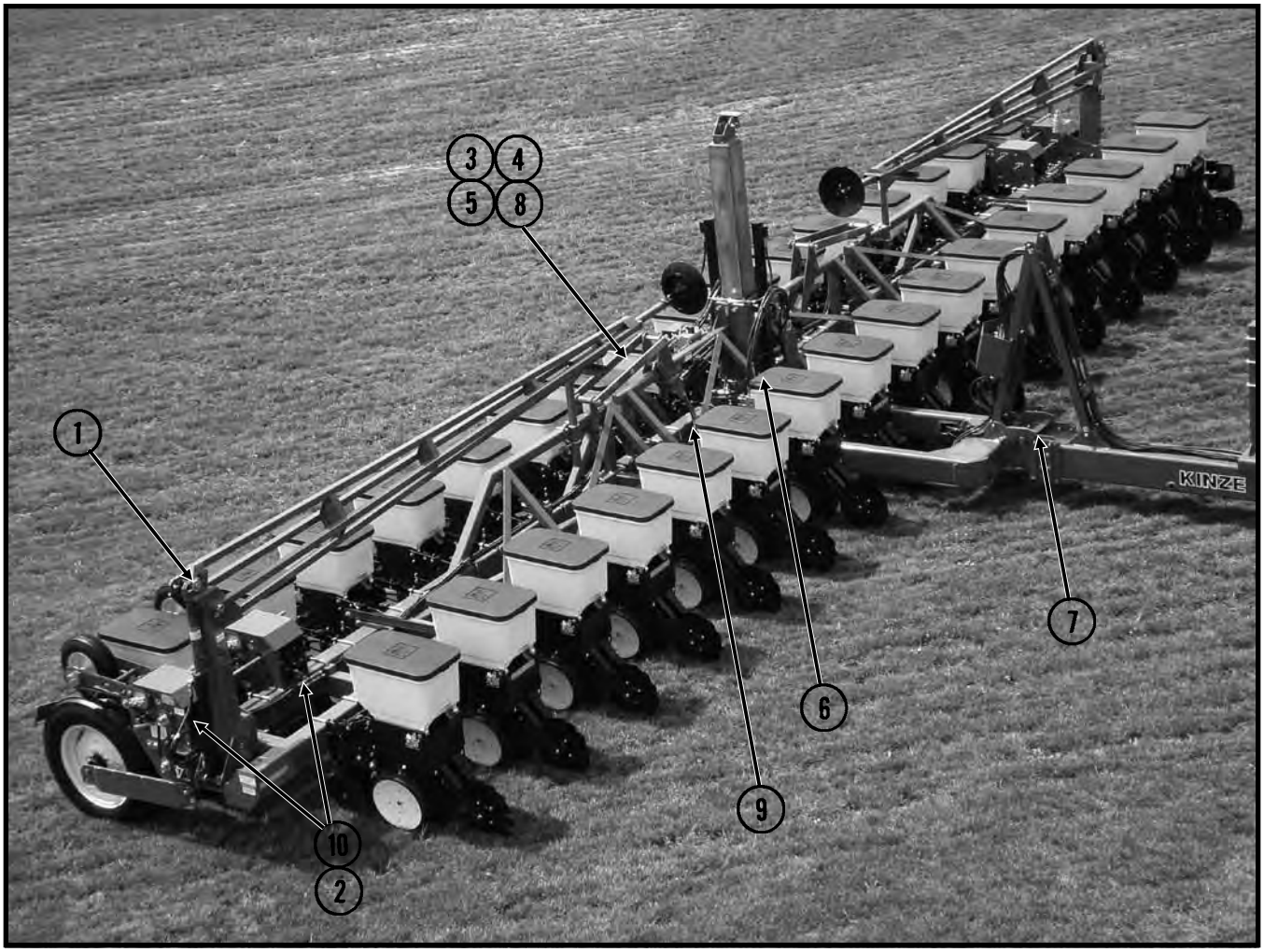
Those parts equipped with grease fittings should be lubricated at the frequency indicated with an SAE multipurpose grease. Be sure to clean the fitting thoroughly before using grease gun. The frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions may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

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

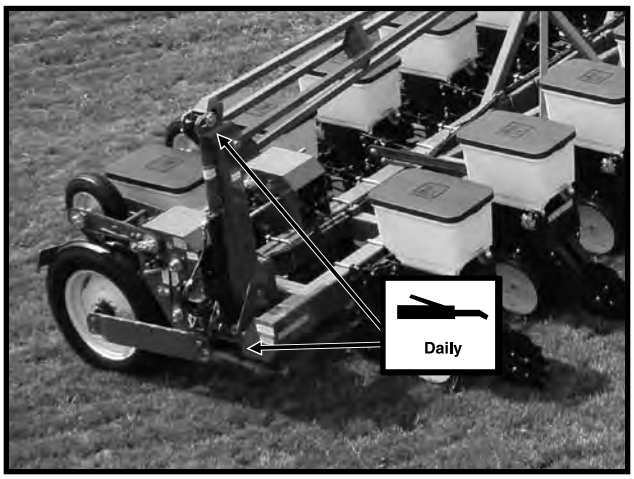
NOTE: Numbers on below photo correspond to photos on following pages showing lubrication frequencies.

D072007124

16 Row 30" Shown

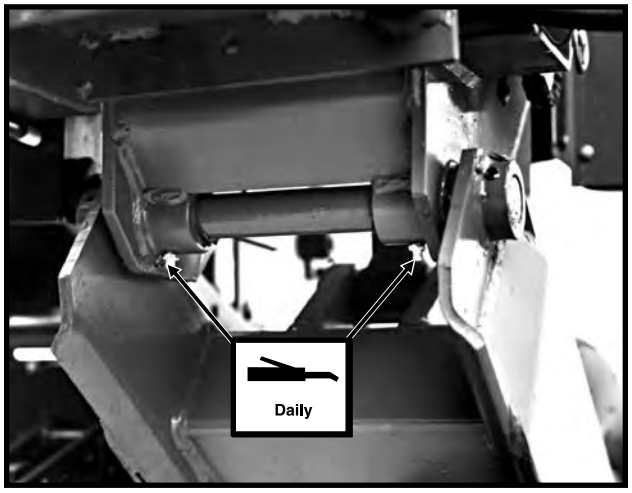


D072007124



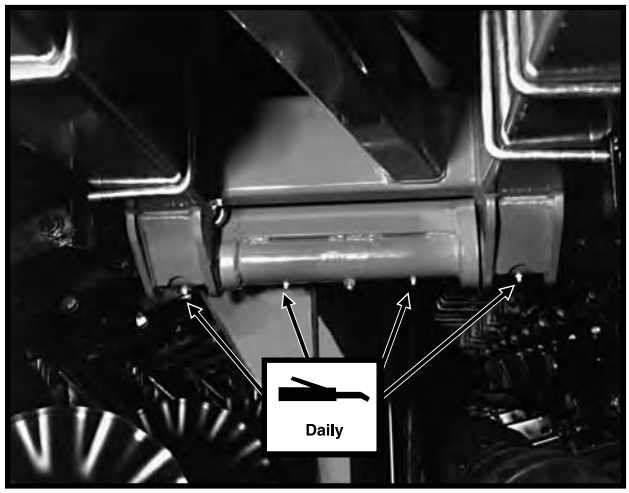
1. Row Marker Assemblies - 4 Zerks Per Assembly On 8 Row Wide And 12 Row 30". 2 Zerks Per Assembly On 12 Row Wide And 16 Row 30".

76609-17



2. Wing Wheel Pivot - 2 Zerks Per Wheel Module

81439-29

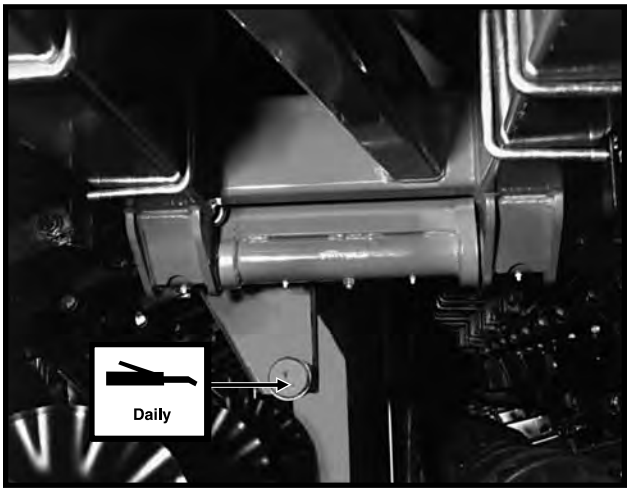


3. Wing Hinges - 4 Zerks Per Wing

D110907115

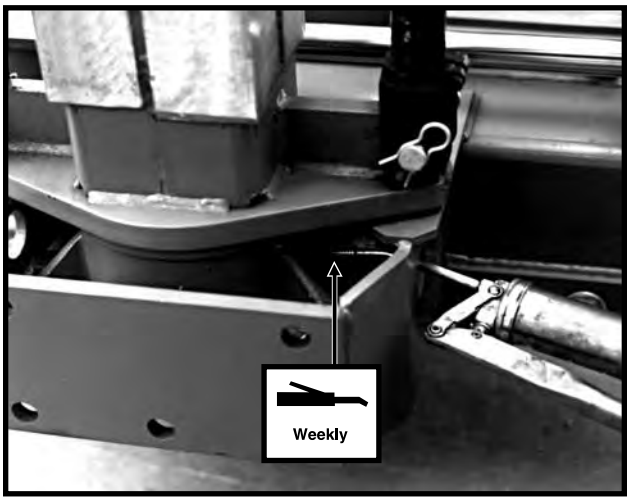
4. Wing Locks - 3 Zerks Per Wing

81439-29



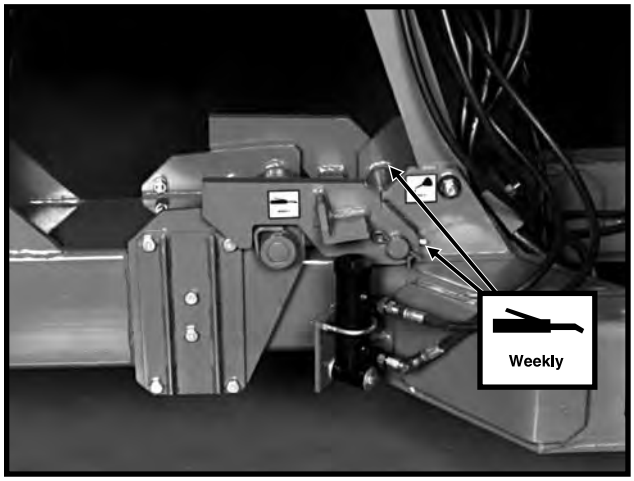
5. Cam Follower - 1 Zerk Per Follower

76609-36



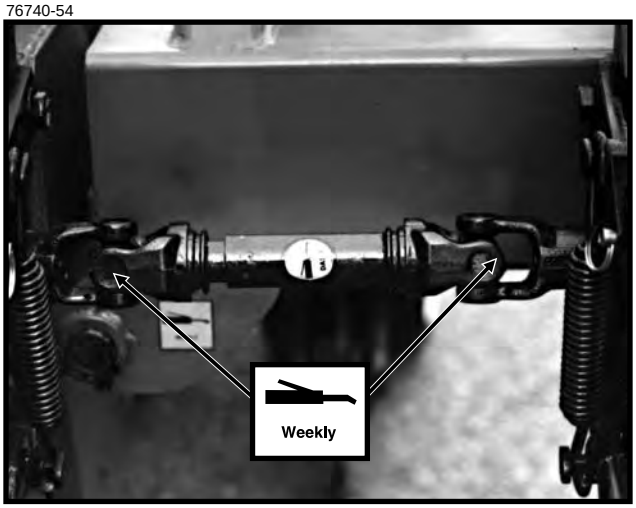
6. Center Pivot - 1 Zerk

81439-7



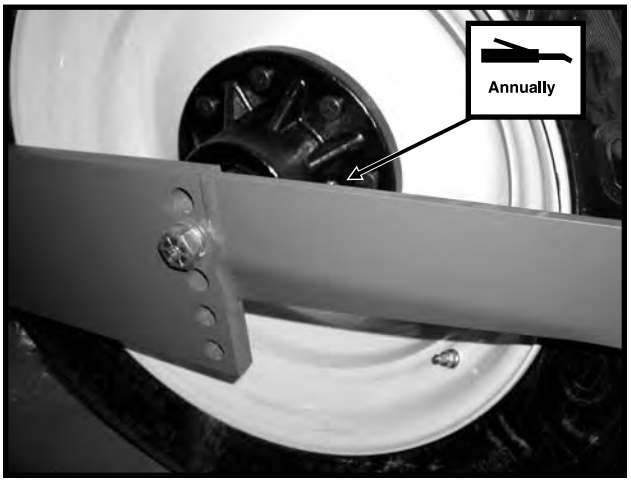
7. Tongue Hook - 2 Zerks

76740-54



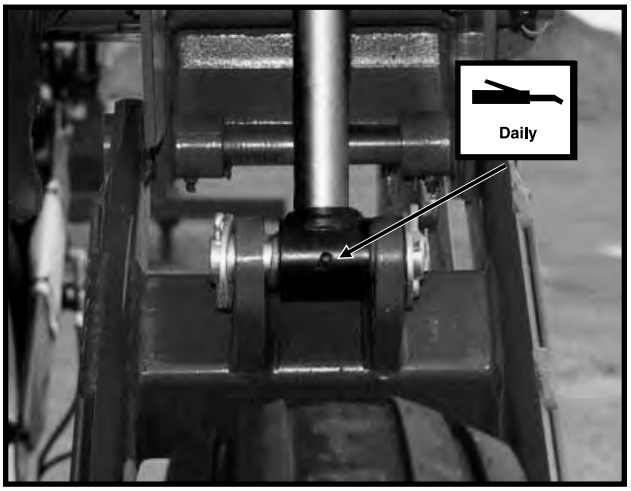
8. U-Joints - 2 Zerks Per Hinge Area

D091602101



9. Transport Wheel Bearings - 1 Zerk Per Hub

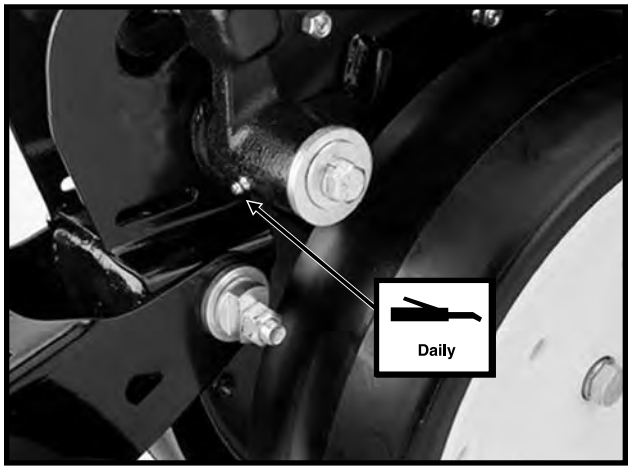
05199819a



10. Wing Lift Cylinders - 1 Zerk Per Cylinder

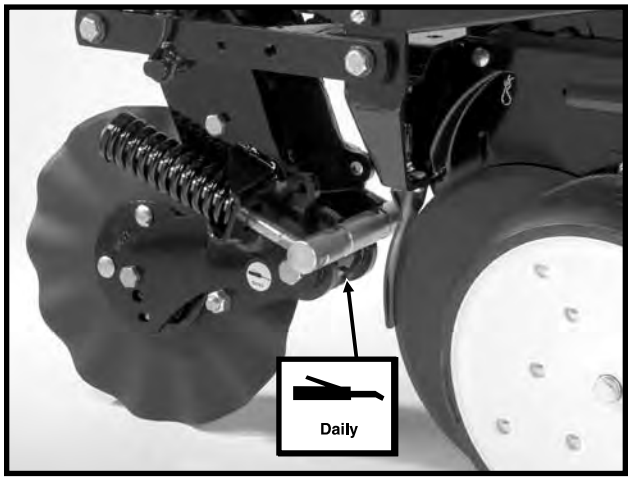
Row Unit

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

LF212299-19

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

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 bolts - 130 Ft. Lbs. (See "Bushings" in the Lubrication section of this manual.)

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.

Center Section Transport Tire Lug Nuts - 180 Ft. Lbs.
Wing Ground Drive Tire Lug Bolts - 90 Ft. Lbs.
⅝" No Till Coulter Spindle Bolts - 120 Ft. Lbs.

TORQUE VALUES CHART - PLATED HARDWARE

Bolt Diameter	Grade 2		Grade 5		Grade 8	
	Coarse	Fine	Coarse	Fine	Coarse	Fine
¼"	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.
⅜"	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.
½"	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.
⅝"	70 Ft. Lbs.	80 Ft. Lbs.	110 Ft. Lbs.	125 Ft. Lbs.	160 Ft. Lbs.	180 Ft. Lbs.
¾"	130 Ft. Lbs.	145 Ft. Lbs.	200 Ft. Lbs.	220 Ft. Lbs.	280 Ft. Lbs.	315 Ft. Lbs.
⅞"	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 ⅛"	265 Ft. Lbs.	300 Ft. Lbs.	600 Ft. Lbs.	670 Ft. Lbs.	960 Ft. Lbs.	1075 Ft. Lbs.
1 ¼"	375 Ft. Lbs.	415 Ft. Lbs.	840 Ft. Lbs.	930 Ft. Lbs.	1360 Ft. Lbs.	1500 Ft. Lbs.
1 ⅜"	490 Ft. Lbs.	560 Ft. Lbs.	1100 Ft. Lbs.	1250 Ft. Lbs.	1780 Ft. Lbs.	2030 Ft. Lbs.
1 ½"	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 ⅓ 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

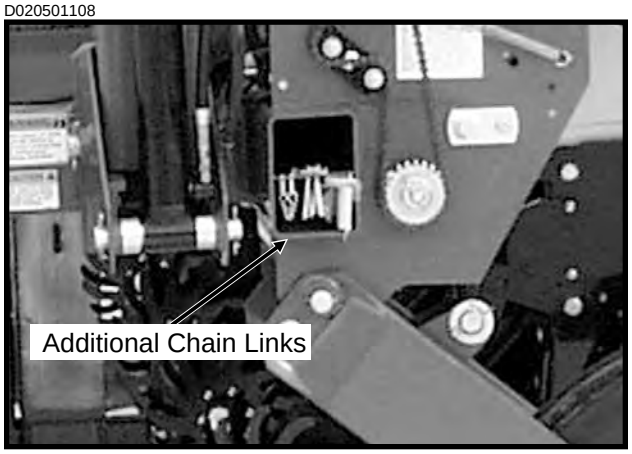
MAINTENANCE

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” (on applicable idler assemblies) in Lubrication Section for additional information.

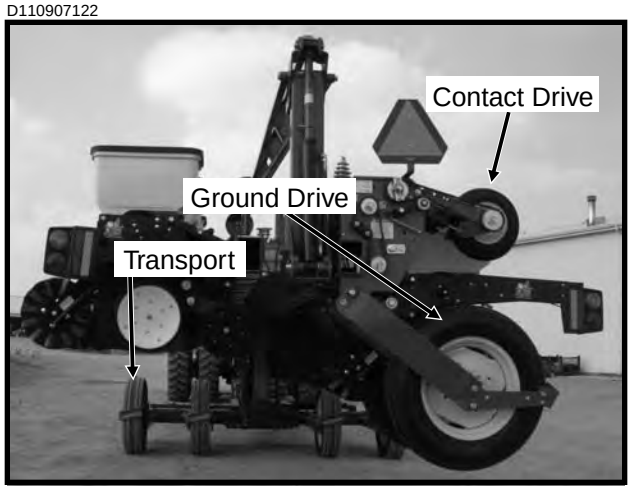
Additional chain links can be found in the storage box located inside the planter frame.

D020501108



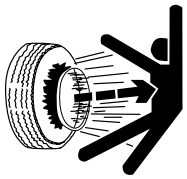
TIRE PRESSURE

D110907122



Tire pressure should be checked regularly and maintained as follows:

255-70R 22.5" Transport (Center Section) ..... 75 PSI
7.50" x 20" Ground Drive (Wings) ..... 40 PSI
4.80" x 8" Contact Drive ..... 50 PSI
7.60" x 15" Ground Drive
(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 pressure. Do not inflate the tires above the recommended pressure.

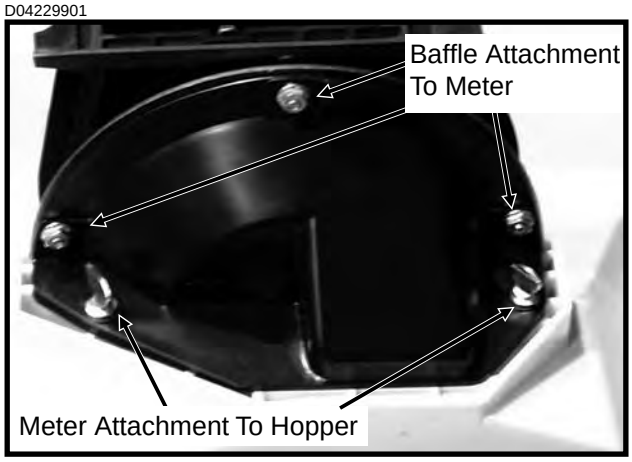
When inflating tires, use a clip-on air chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage to enclose the tire and rim assembly when inflating.

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

FINGER PICKUP SEED METER INSPECTION/ADJUSTMENT

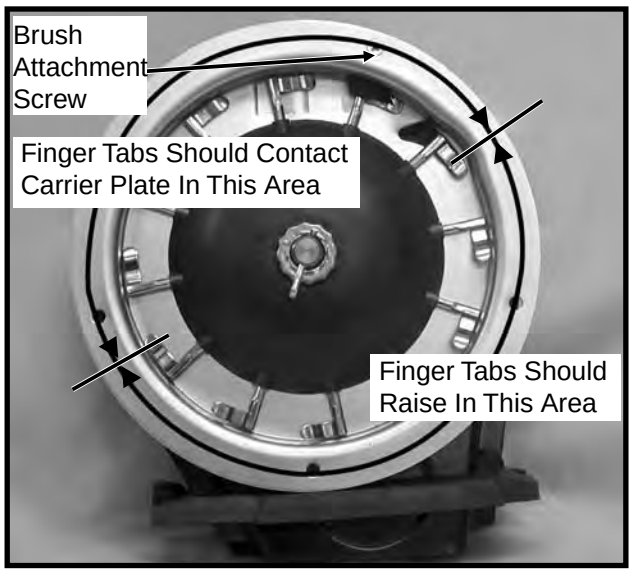
To inspect or service the finger pickup seed meter, remove the meter from the seed hopper by removing the two thumbscrews which secure the mechanism to the hopper. Remove the baffle from the meter assembly by removing three cap screws. This will permit access to the finger pickup.

D04229901



Rotate the seed meter drive by hand to ensure that the springs are holding the tabs of the fingers against the carrier plate where indicated in the photo and that the fingers are being raised in the correct area.

D12220402a

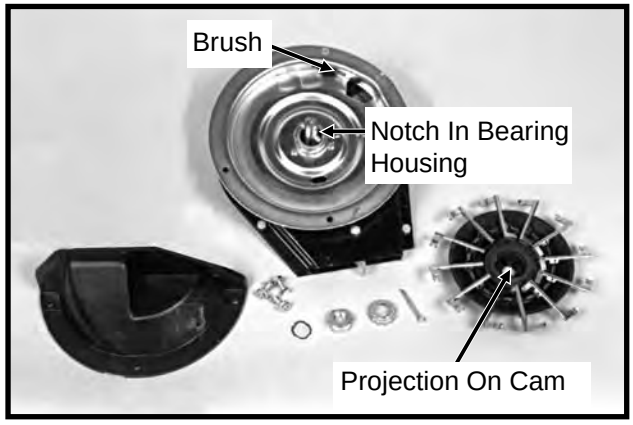


A buildup of debris or chaff may prevent proper finger operation and will require disassembly and cleaning of the finger pickup meter as follows:

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

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

60620-3b



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

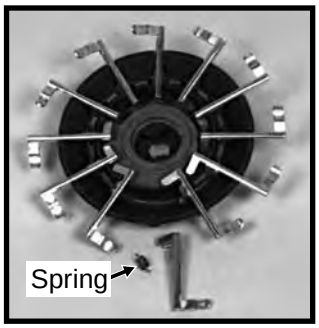
EXAMPLE: Approximately 800 acres of corn or sunflowers on a 8 row machine, 1200 acres on a 12 row machine or 1600 acres on a 16 row machine.

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

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

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

60620-22



Corn Finger Assembly
(Position Spring Opening Toward Holder)

D07299902

Oil Sunflower Finger Assembly

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

D021506100

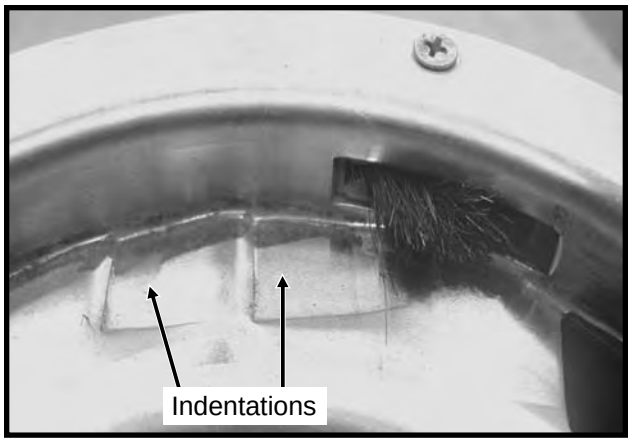


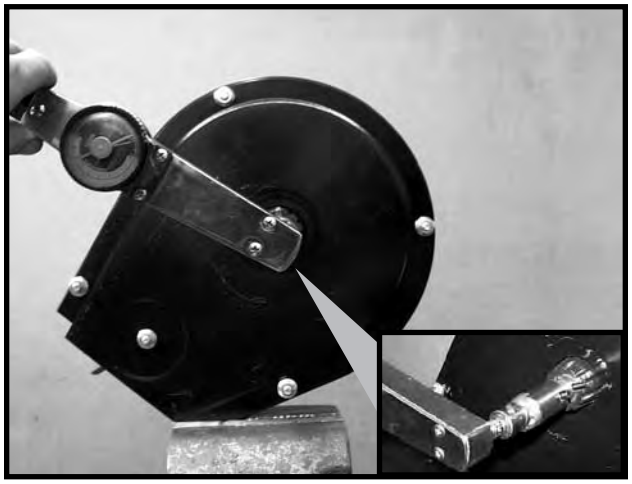
Photo Shows Worn Carrier Plate

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

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

8. With finger holder flush against the carrier, install wave washer and adjusting nut. Tighten adjusting nut to fully compress wave washer. Then back off nut ½ to 2 flats (1/12 to ⅓ turn) to obtain rolling torque of 22 to 25 inch pounds.

D07299903/D07309912



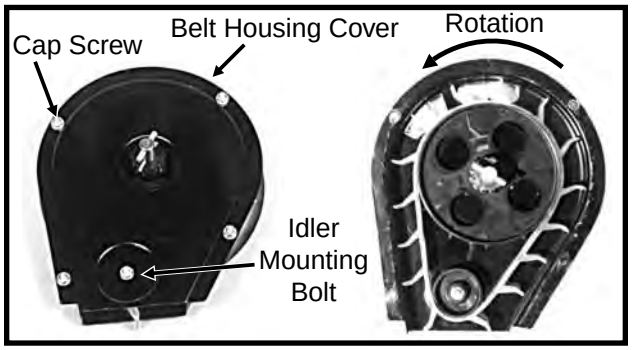
9. Turn finger holder by hand to make sure it is positioned firmly against the carrier plate, but is not over tightened and can be rotated with moderate force.

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

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

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

60620-13a/60887-97



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

Reinstall the housing cover. DO NOT TIGHTEN hardware at this time. Wedge a screwdriver between the sprocket hub and housing cover as shown below. Pry cover down until it is centered on the belt housing and tighten hardware. Check idler alignment by rotating meter drive shaft. The seed belt should "run" centered on the idler or with only slight contact with the belt housing or cover.

IMPORTANT: Do not over tighten hardware.

D06200030

FINGER PICKUP SEED METER CLEANING

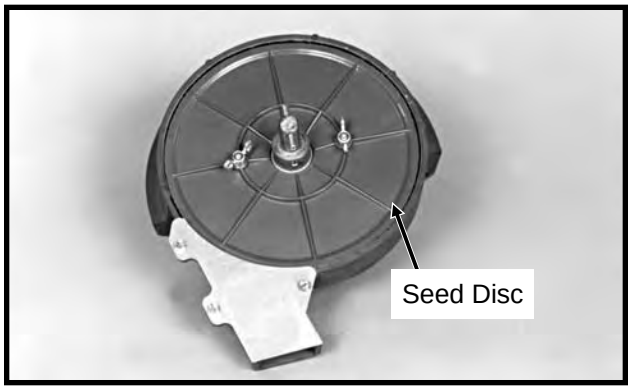
1. Disassemble meter.
2. Blow out any foreign material present in the meter mechanism.
3. Wash in mild soap and water. DO NOT USE GASOLINE, KEROSENE OR ANY OTHER PETROLEUM BASED PRODUCT.
4. Dry thoroughly.
5. Coat lightly with a rust inhibiter.
6. Rotate finger assembly so finger does not touch brush.
7. Reassemble and store in a dry rodent-free place.

FINGER PICKUP SEED METER TROUBLESHOOTING

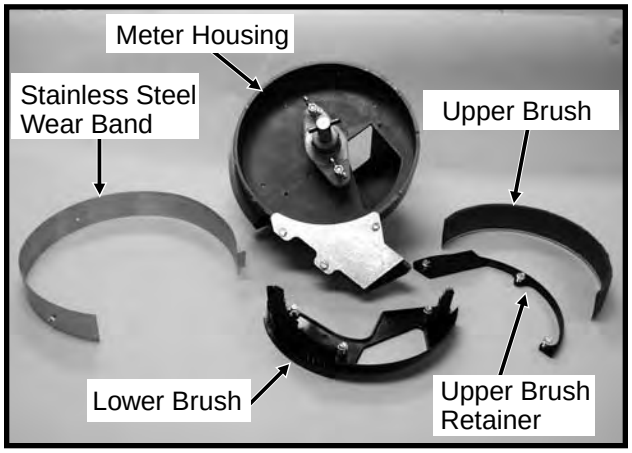
PROBLEM	POSSIBLE CAUSE	SOLUTION
One row not planting seed.	Drive release not engaged.	Engage drive release mechanism.
	Foreign material in hopper.	Clean hopper and finger carrier mechanism.
	Seed hopper empty.	Fill seed hopper.
	Row unit drive chain off of sprocket or broken.	Check drive chain.
Unit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

BRUSH-TYPE SEED METER MAINTENANCE

60607-10a



D04239911



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

D04239912a

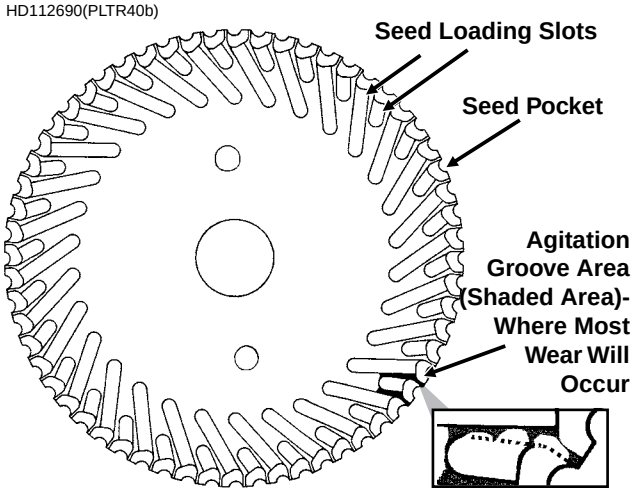
IMPORTANT: Replace hopper lids after hoppers are filled to prevent accumulation of dust or dirt in the seed meter which will cause premature wear.

Cleaning brush-type seed meter for storage:

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

Seed Disc Wear

HD112690(PLTR40b)

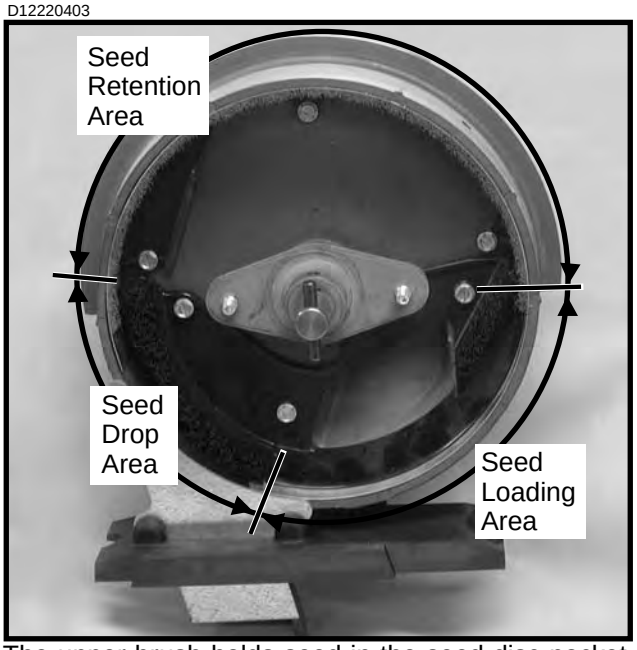


Most wear on the seed disc will be found in the agitation groove area (area between the seed loading slots). Wear will affect planting accuracy at high RPM. To measure for wear, lay a straight edge across the surface of the disc and measure the gap between the disc (at the agitation groove area) and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

Estimated life expectancy of the seed disc under normal operating conditions should be approximately 200 acres per row. Severe operating conditions such as dust, lack of lubrication or abrasive seed coating could reduce life expectancy of the seed disc to under 100 acres per row.

Upper Brush

D12220403



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

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

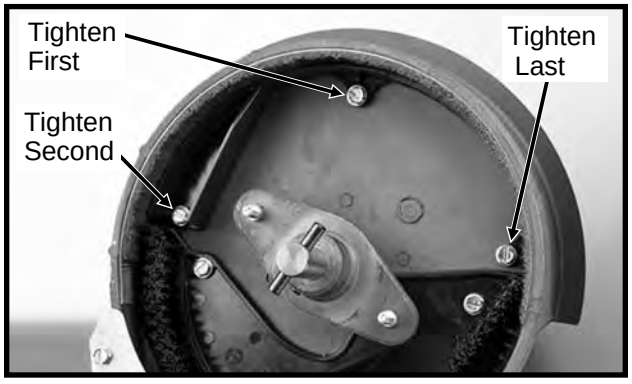
The upper brush should be replaced at approximately 120-400 acres per row of use or sooner if damage or excessive wear is found.

Installation Of Upper Brush

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

NOTE: Use GD11122 upper brush retainer when using soybean and cotton discs. Use GD8237 upper brush retainer when using milo/grain sorghum discs. GD11122 brush retainer shown.

LF212299-13a



Stainless Steel Wear Band

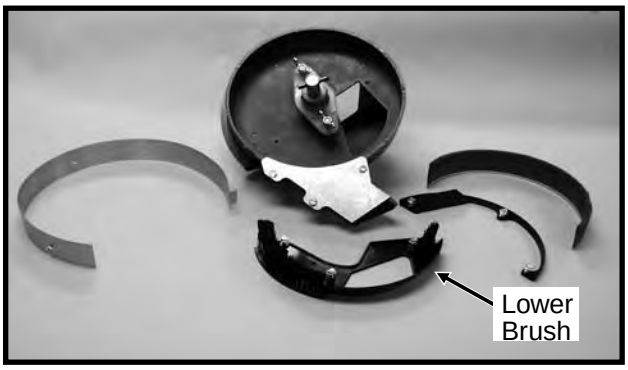
D04239917a

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

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

Lower Brush

D04239911



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

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

BRUSH-TYPE SEED METER TROUBLESHOOTING

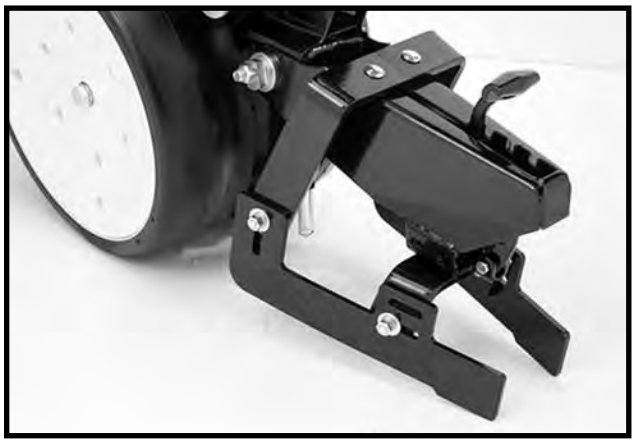
PROBLEM	POSSIBLE CAUSE	SOLUTION
Low count.	Meter RPM too high.	Reduce planting speed.
	Seed sensor not picking up all seeds dropped.	Clean seed tube. Switch meter to different row. If problem stays with same row, replace sensor.
	Lack of lubrication causing seeds not to release from disc properly.	Use graphite or talc as recommended.
	Seed size too large for seed disc being used.	Switch to smaller seed or appropriate seed disc. See “Brush-Type Seed Meter” for proper seed disc for size of seed being used.
	Seed treatment buildup in meter.	Reduce amount of treatment used and/or thoroughly mix treatment with seed. Add talc.
Low count at low RPM and higher count at higher RPM.	Foreign material lodged in upper brush.	Remove seed disc and remove foreign material from between brush retainer and bristles. Clean thoroughly.
	Worn upper brush.	Replace. See “Maintenance”.
Low count at higher RPM and normal count at low RPM.	Seed disc worn in the agitation groove area.	Replace disc. See “Maintenance”.
High count.	Seed size too small for seed disc.	Switch to larger seed or appropriate seed disc.
	Incorrect seed rate transmission setting. manual.	Reset transmission. Refer to proper rate chart in “Machine Operation” section of
	Upper brush too wide (fanned out) for small seed size.	Replace upper brush.
High count. (Milo/Grain Sorghum)	Incorrect brush retainer being used.	Make sure GD8237 brush retainer is installed to keep upper brush from fanning out.
Upper brush laid back.	Seed treatment buildup on brush.	Remove brush. Wash with soap and water. Dry thoroughly before reinstalling. See “Maintenance”.
	Buildup of foreign material at base of brush.	Remove brush retainer and brush. Clean thoroughly. Reinstall.

CLOSING WHEEL TROUBLESHOOTING

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

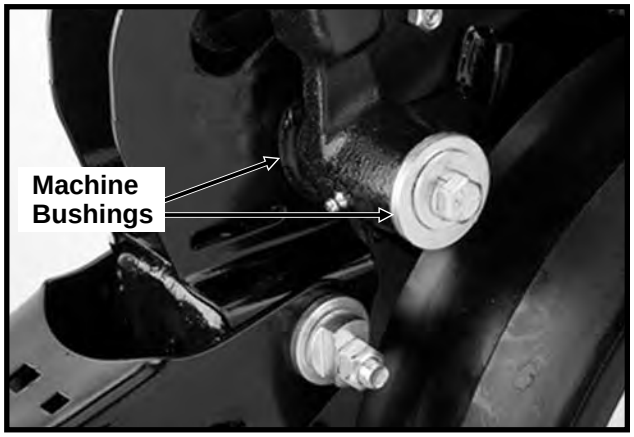
DRAG CLOSING ATTACHMENT

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



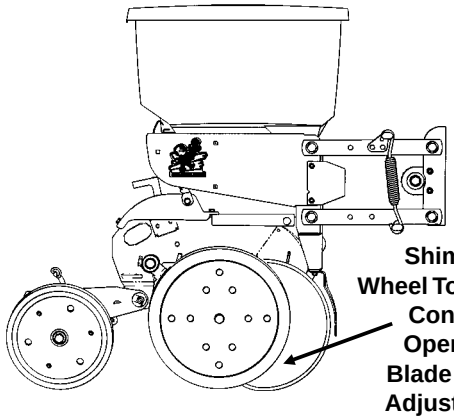
(RU113g)

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.

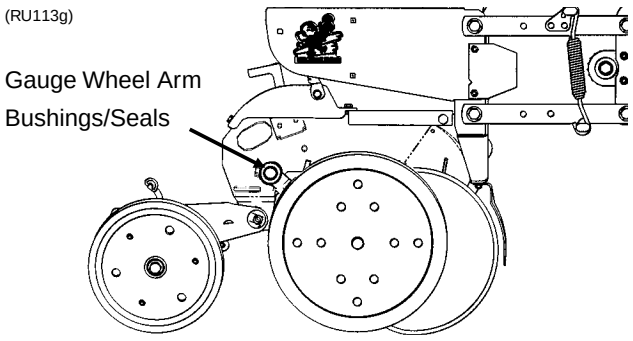
To adjust clearance between gauge wheels and opener blades, add or remove machine bushings between the shank and gauge wheel arm. Store remaining machine bushings between gauge wheel arm and flat washer on outer side of gauge wheel arm.

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



GAUGE WHEEL ARM BUSHING AND/OR SEAL REPLACEMENT

(RU113g)

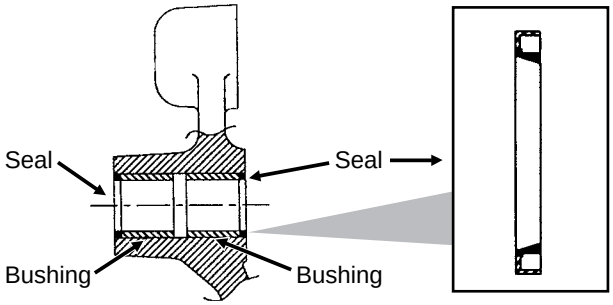


NOTE: A Gauge Wheel Arm Bushing And Seal Driver Kit (G1K296), for use in bushing and seal replacement, is available through your KINZE® Dealer.

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)



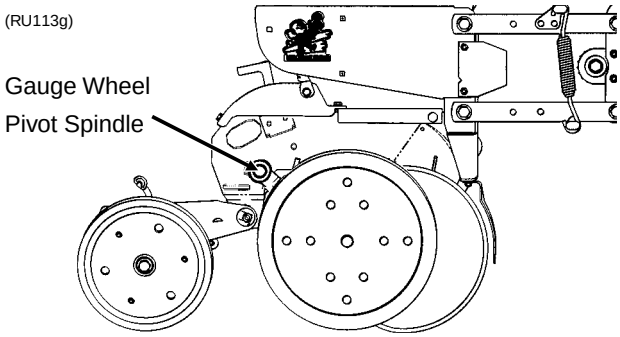
4. Drive/press replacement bushing inside bore of arm to a depth of .125" below flush.
5. Coat wiping edge of seal with grease.
6. Drive/press seal into place with lip to the outside as shown above.

   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

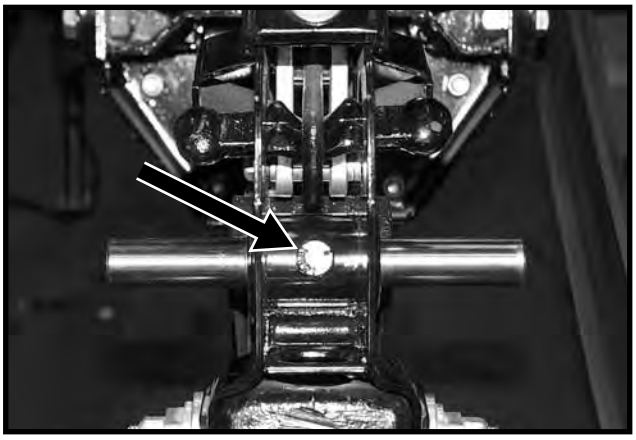
(RU113g)



To replace gauge wheel pivot spindle:

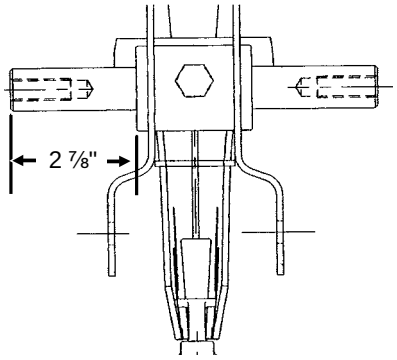
1. Remove the gauge wheel and arm assemblies from the shank assembly.
2. Remove ½" x ¾" cap screw that locks the pivot spindle in place and remove the spindle.

D06189902



3. Install the replacement spindle and position as shown below. Exact centering is critical.

(A7966)



4. Install ½" x ¾" 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.

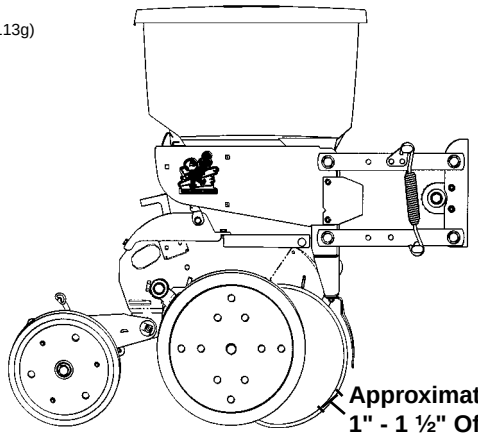
15" SEED OPENER DISC BLADE/ BEARING ASSEMBLY

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:

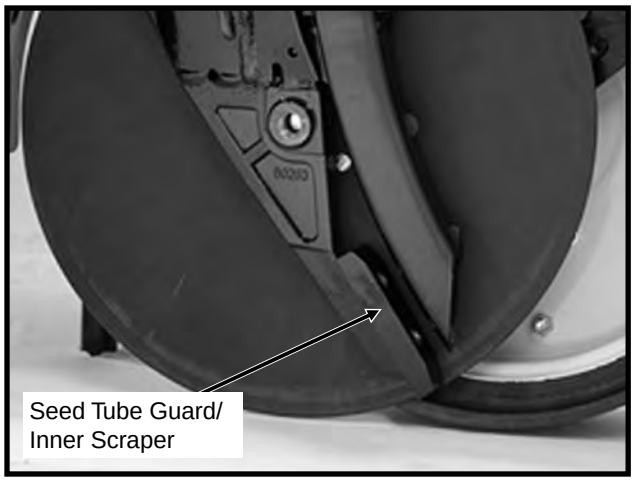
1. Remove gauge wheel, scraper, bearing cap, cap screw, washer and disc blade/bearing assembly.
2. Remove ¼" rivets from bearing housing to expose bearing.
3. After installing new bearing, install three evenly spaced ¼" cap screws into three of the six holes in the bearing housing to hold the bearing 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.

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 ⅝" or less at the lower end. A new seed tube guard measures approximately ⅞".

LF212199-12



Shown With Gauge Wheel And Seed Opener Disc Blade Removed For Visual Clarity

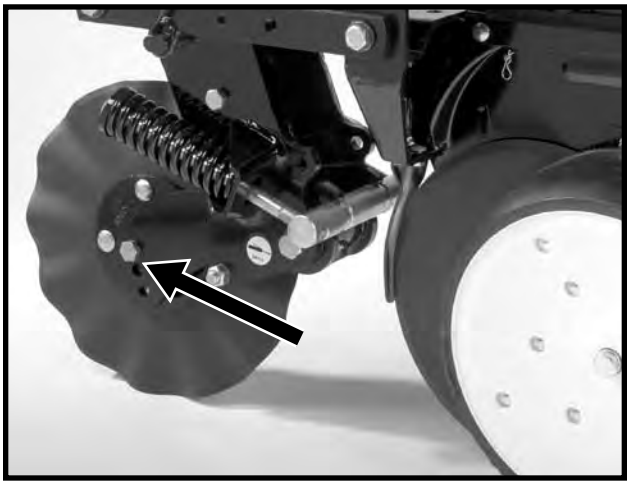
IMPORTANT: No till planting or planting in hard ground conditions, especially when the planter is not equipped with no till coulters, and/or excessive blade-to-blade contact will increase seed tube guard wear and necessitate more frequent inspection and/or replacement.

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



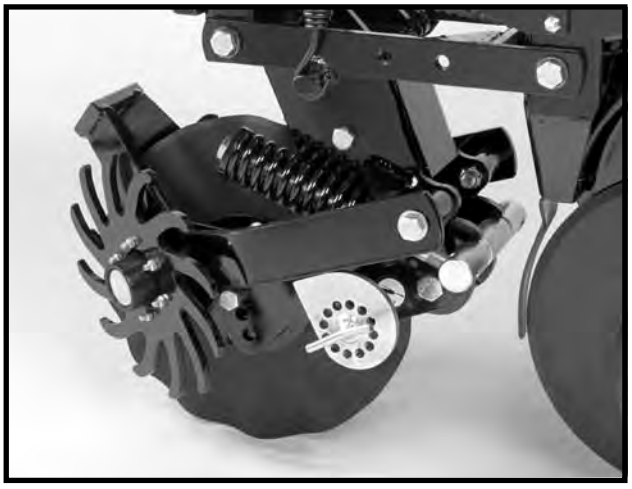
NOTE: Torque ⅝" spindle hardware to 120 ft. lbs.

See “Frame Mounted Coulter” in Row Unit Operation Section of this manual for depth and spring adjustment.

When the 16" diameter coulter blade (1" fluted, 1" bubbled or ¾" fluted) is worn to 14 ½" (maximum allowable wear), it should be replaced.

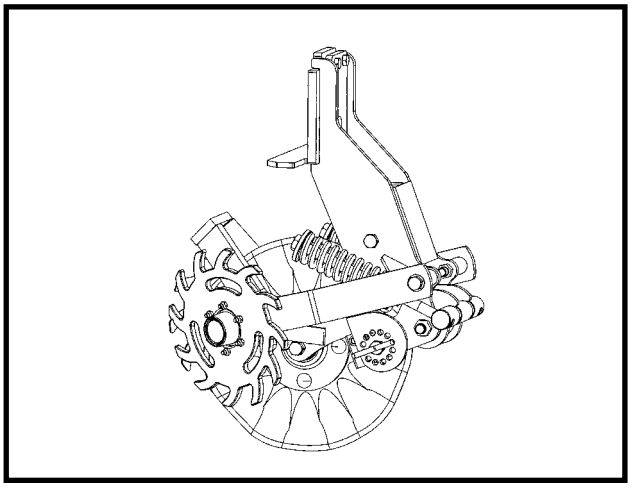
RESIDUE WHEELS (For Use With Frame Mounted Coulter)

LF083002102



STYLE A

(RU154)

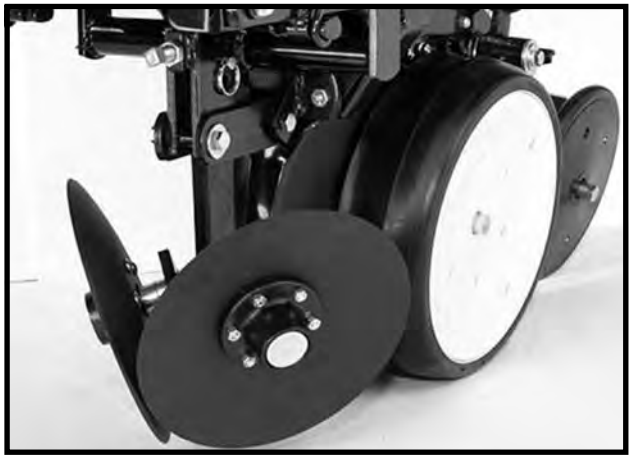


STYLE B

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

ROW UNIT MOUNTED DISC FURROWER

LF212299-22



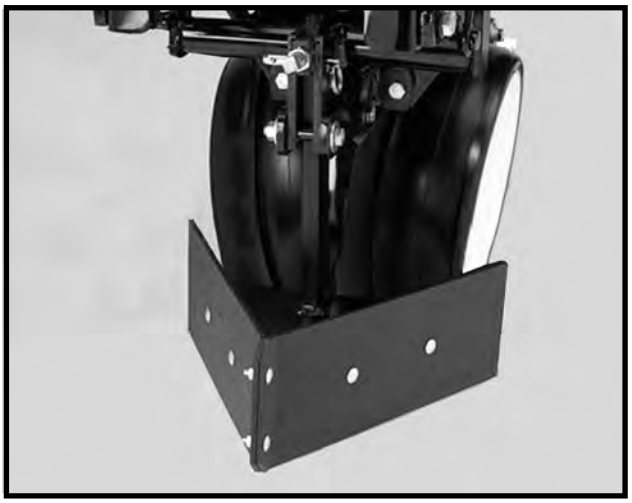
Lubricate the bushings in the support arm and mounting bracket at the frequency indicated in the Lubrication Section of this manual. Using a torque wrench, check each bolt for proper torque. If the bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushings as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

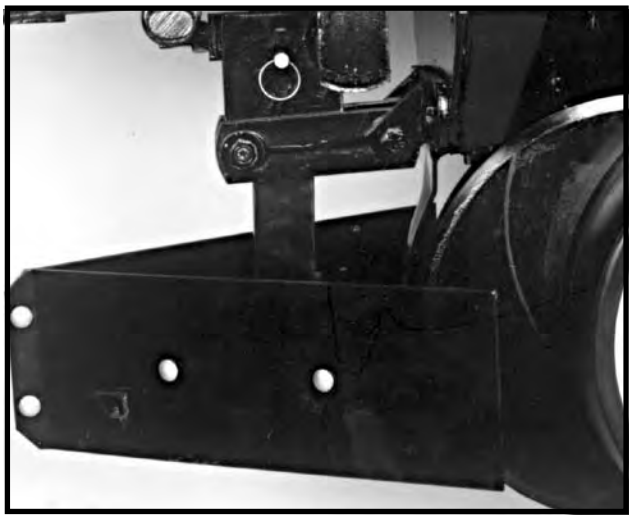
When the 12" diameter blades (solid or notched) are worn to 11", they should be replaced.

ROW UNIT MOUNTED BED LEVELER

LF212299-25a



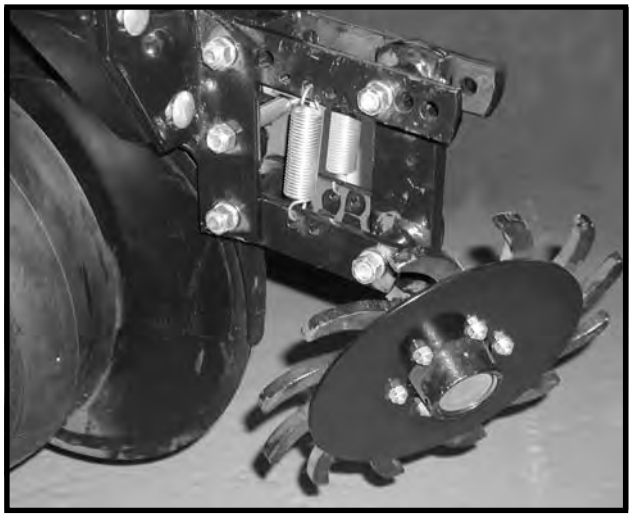
59386-26



Lubricate the bushings in the mounting bracket and links 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 bushing if necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque cap screws to 57 ft. lbs.**

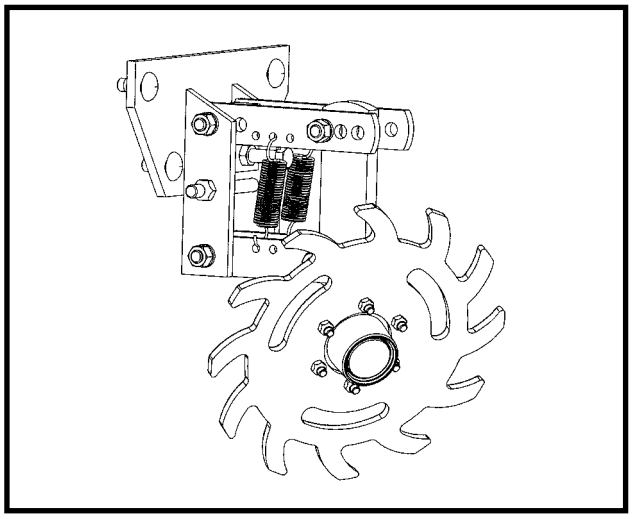
ROW UNIT MOUNTED RESIDUE WHEEL

D101701113



STYLE A

(A12685)

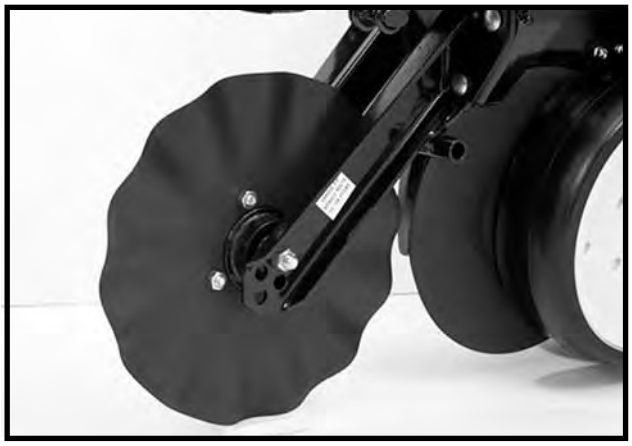


STYLE B

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

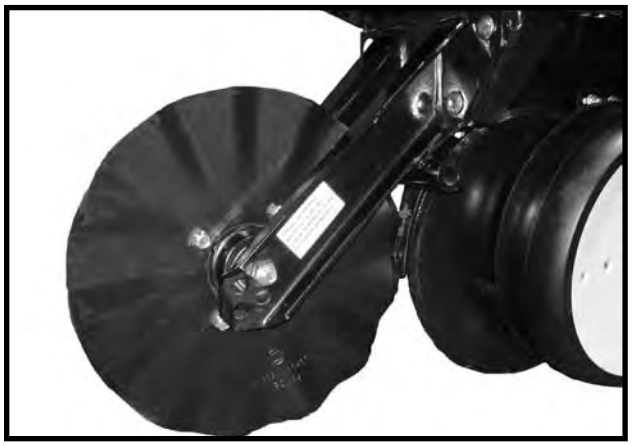
ROW UNIT MOUNTED NO TILL COULTER

LF212299-19a



STYLE A (Two Sleeves For Installing Coulter Mounted Residue Wheels)

D05170706a



STYLE B (One Sleeve For Installing Coulter Mounted Residue Wheels)

Check periodically to be sure nuts and hardware are tightened to proper torque specification.

NOTE: Torque ⅝" spindle hardware to 120 ft. lbs.

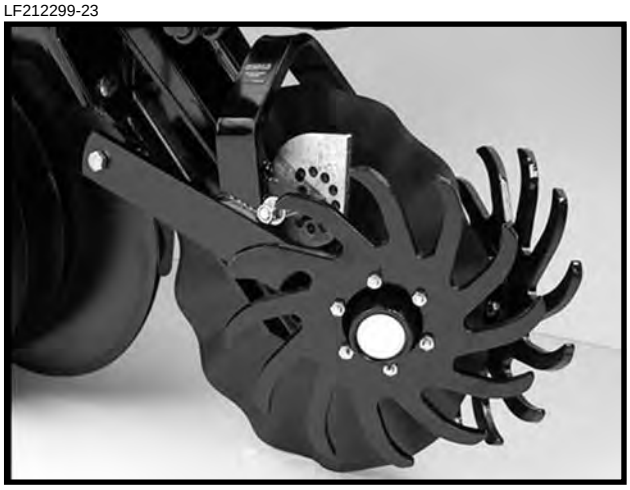
Be sure the coulter is positioned square with the row unit and aligned in front of row unit disc opener.

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

When the 16" diameter coulter blade is worn to 14½" (maximum allowable wear), it should be replaced.

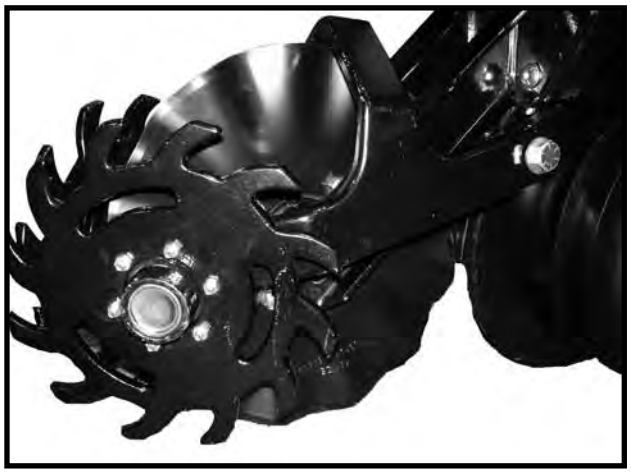
COULTER MOUNTED RESIDUE WHEELS

LF212299-23



STYLE A - Used With Style A Row Unit Mounted No Till Coulter

D05170708a



STYLE B - Used With Style B Row Unit Mounted No Till Coulter

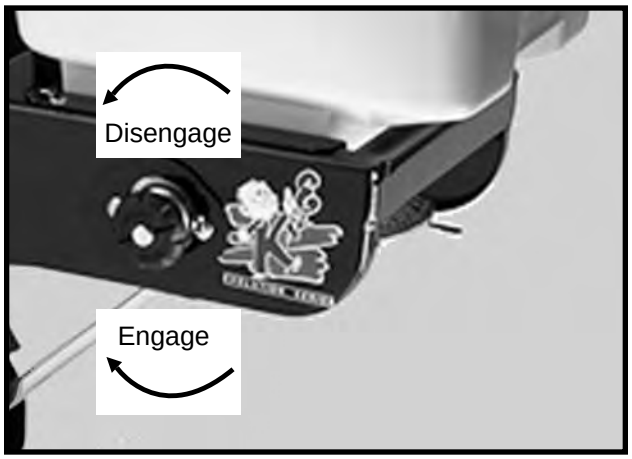
The wheel hubs are equipped with sealed bearings. If bearings sound or feel rough when the wheel is rotated, replace the bearings.

GRANULAR CHEMICAL ATTACHMENT

Prior to storage of the planter, disengage the granular chemical drive by rotating the throwout knob ¼ 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.

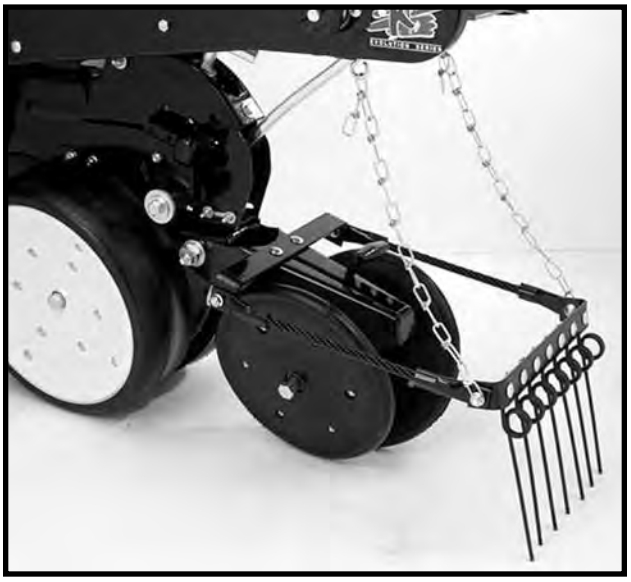
LF212299-4



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



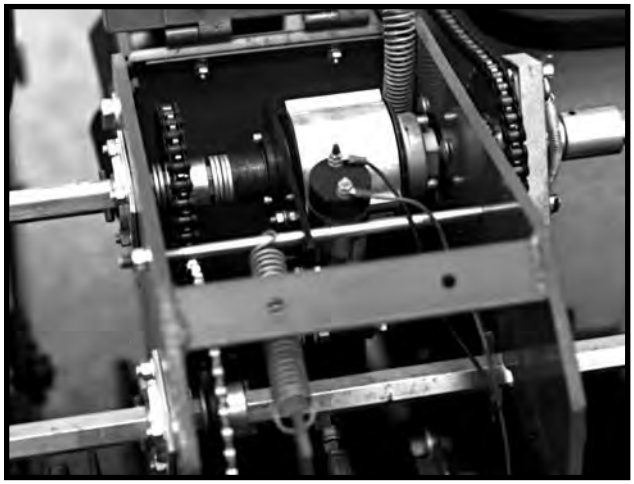
KPM III ELECTRONIC SEED MONITOR TROUBLESHOOTING

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.

POINT ROW CLUTCH INSPECTION

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

76740-2



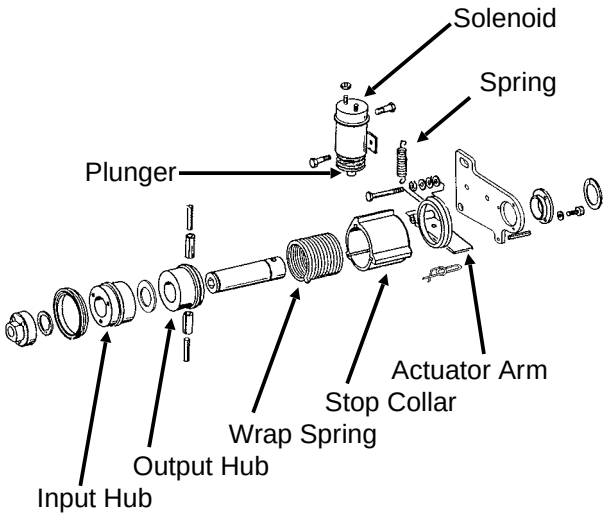
The right hand clutch operates clockwise and the left hand clutch operates counterclockwise. Therefore, some of the parts of the clutch such as the wrap spring differ from one side of the planter to the other. Be sure to use the correct repair part if a clutch must be repaired.

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

If the clutch or clutches fail to operate, first determine if the problem is electrical or mechanical. Place the operational switch in the RIGHT or LEFT position. When the switch is in the RIGHT or LEFT position and the fuse on the rear of the control console is in working condition, the red indicator light on the control console should be lighted. If light does not come on, check the fuses on the front of the control console. See "Point Row 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.

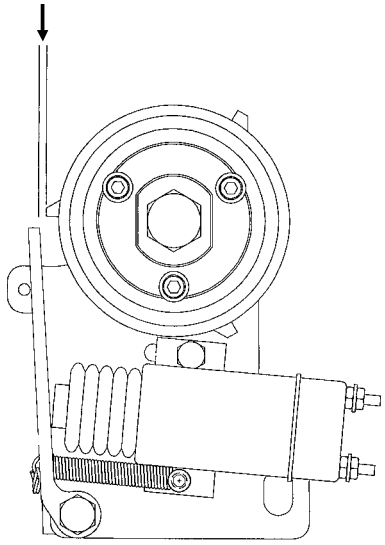
(TWL70c)



(A7110)

ACTUATOR ARM ADJUSTMENT

NOTE: Gap between actuator arm and stop on stop collar should be ⅛"(±1⁄32") when the solenoid is NOT engaged.



NOTE: To adjust gap between actuator arm and stop, loosen nut on mounting pin and move pin in slot until there is ⅛"(±1⁄32") gap between arm and stop on stop collar. Retighten nut.

POINT ROW CLUTCH TROUBLESHOOTING

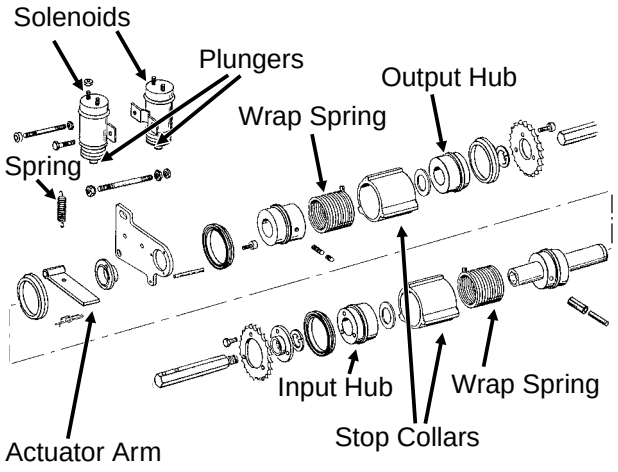
PROBLEM	POSSIBLE CAUSE	SOLUTION
None of the clutches will disengage.	Main fuse blown in control console.	Replace defective fuse.
	Poor terminal connection in wiring harness.	Repair or replace.
	Wiring damage in wiring harness.	Repair or replace.
	Low voltage at coil. (12 volts required)	Check battery 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 ⅛" 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. Place torque wrench on input shaft	"Lock" clutch output shaft from turning. 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.

TWO-SPEED POINT ROW CLUTCHES
Optional On All Sizes

The two-speed point row clutch is similar in design and operation to the standard point row clutch except for the two-speed function. If a two-speed clutch or clutches fail to operate properly, refer to “Point Row Clutch Inspection” and “Point Row Clutch Troubleshooting” for additional information.

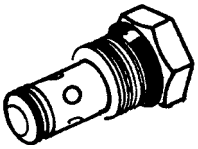
NOTE: If the “Reduced Rate/Full Rate” functions fail to engage or disengage, see troubleshooting chart for possible cause.

(FF47b)



CHECK VALVE

(TWL30)



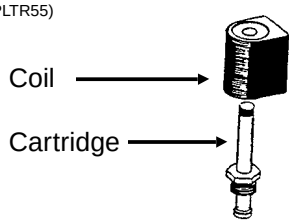
The check valves, located in the valve block on the right side of the center post, trap oil flow in the planter’s lift system to keep the toolbar level during field operation. Consult your KINZE® Dealer for service.

SOLENOID VALVE INSPECTION

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

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

VVB019(PLTR55)

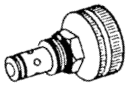


SOLENOID VALVE TROUBLESHOOTING

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

FLOW CONTROL VALVE INSPECTION

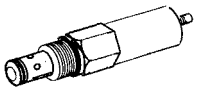
VVB020(TWL28)



The flow control valves should be adjusted for 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.

PRESSURE RELIEF VALVE INSPECTION

VVB020(TWL29)



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

LIFT CIRCUIT TROUBLESHOOTING

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

LIFT CIRCUIT TROUBLESHOOTING (Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
(Continued) Planter will raise to raised field position, but will not raise to transport position.	Solenoid valve cartridge in port V16 is stuck closed.	All solenoid valves used on the planter are the same. Switch the solenoid cartridge with one you know is working. If this cures the problem, replace defective cartridge.
Left wing lowering slower than center frame and right wing. If hydraulic lever is held in lowering position, the left wing cylinder will attempt to extend.	Check valve in port V17 leaking internally.	Remove check valve in port V17 and inspect for foreign material in valve and remove if possible. Replace check valve. If above fails, switch check valve in port V17 with check valve in port V15. If problem moves or switches to right wing, replace defective check valve.
Right wing lowering slower than center frame and left wing. If hydraulic lever is held in lowering position, the right wing cylinder will attempt to extend.	Check valve in port V15 leaking internally.	Remove check valve in port V15 and inspect for foreign material in valve and remove if possible. Replace check valve. If above fails, switch check valve in port V15 with check valve in port V17. If problem moves or switches to right wing, replace defective check valve.
Planter will not raise or raises slowly.	Tractor may have hydraulic problem.	Switch remote outlets being used. Repair tractor hydraulics.
	Planter may be overloaded with hopper extensions and/or extra fertilizer tanks, coulters or other non-KINZE® attachments.	Remove weight.
	Center pivot wear pads may be adjusted too tight and are binding on the post.	Adjust pads.
	Relief valves on hitch leaking. Valves should hold 2500 PSI (±50 PSI).	Remove and inspect relief valve cartridge. Check for blown O-rings. Replace bad cartridge.
Planter will not rephase.	All cylinders not completely retracted. Caused by mechanical interference on or between planter frame and wheel lift module.	Remove interference.
	Center cylinders not retracting completely.	Lower planter and hold hydraulic lever in lower position to rephase system. Lower cylinder pins must be free to rotate in this position. If pins are tight, adjust cylinder clevises

TONGUE CYLINDER CIRCUIT TROUBLESHOOTING

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

ROTATION CYLINDER CIRCUIT TROUBLESHOOTING

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

WING LOCK CYLINDER CIRCUIT TROUBLESHOOTING

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

ROW MARKER OPERATION TROUBLESHOOTING

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

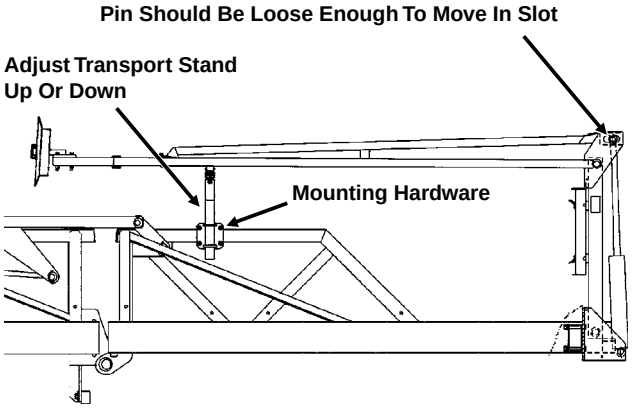
ROW MARKER TRANSPORT STAND ADJUSTMENT

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

To adjust the transport stands:

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

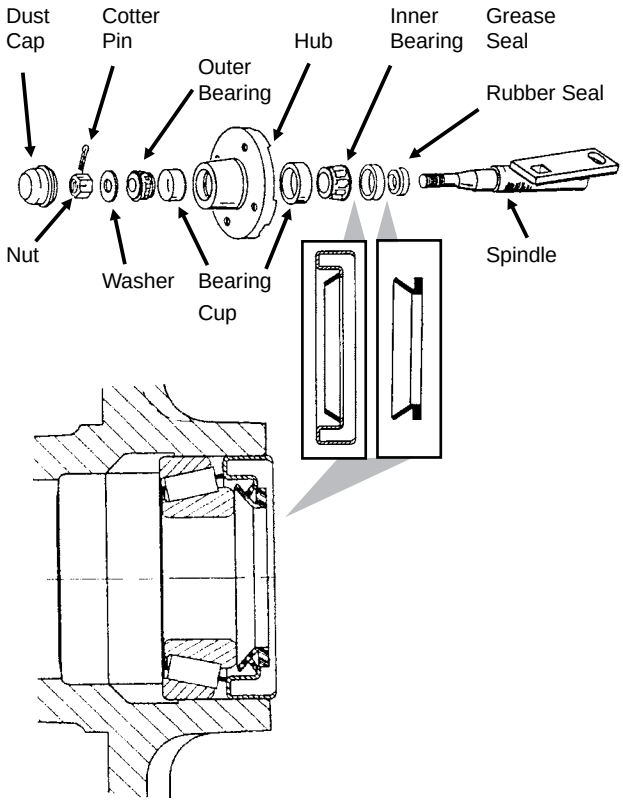
A7102-1(TWL104)



ROW MARKER BEARING LUBRICATION OR REPLACEMENT

1. Remove marker blade.
2. Remove dust cap from hub.
3. Remove cotter pin, nut and washer.
4. Slide hub from spindle.
5. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
6. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
7. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.
8. 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 ¾ full of wheel bearing grease and install on hub.
12. Install blade and dust cap retainer on hub and tighten evenly and securely.

(PLTR45/PLTR99/PLTR98/PLTR102)



WHEEL BEARING LUBRICATION OR REPLACEMENT

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

1. Raise tire clear of ground and remove wheel.

2. Remove double jam nuts and slide hub from spindle.

3. Remove bearings, seals (Where Applicable) and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.

4. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)

5. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Also fill the space between the bearing cups in the hub with grease.

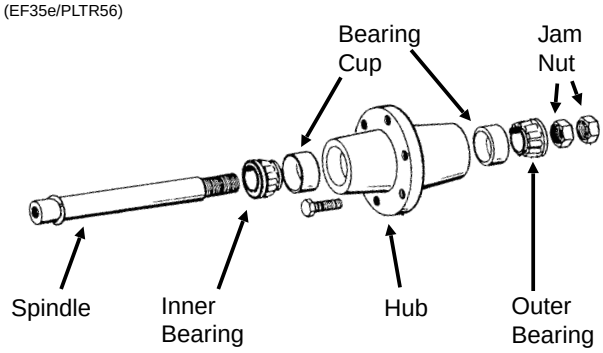
6. Place inner bearing and seal (If Applicable) in place.

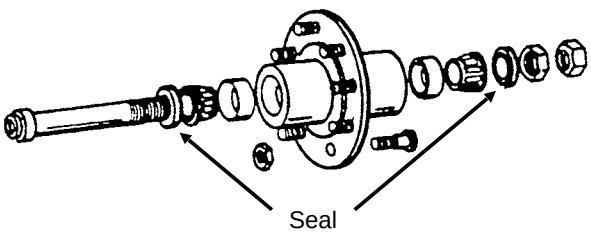
7. Clean spindle and install hub.

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 ¼ turn or until there is only slight drag when rotating the hub. Install second jam nut to lock against first.

9. Install wheel on hub and tighten evenly and securely. Torque wheel bolts to specified torque.

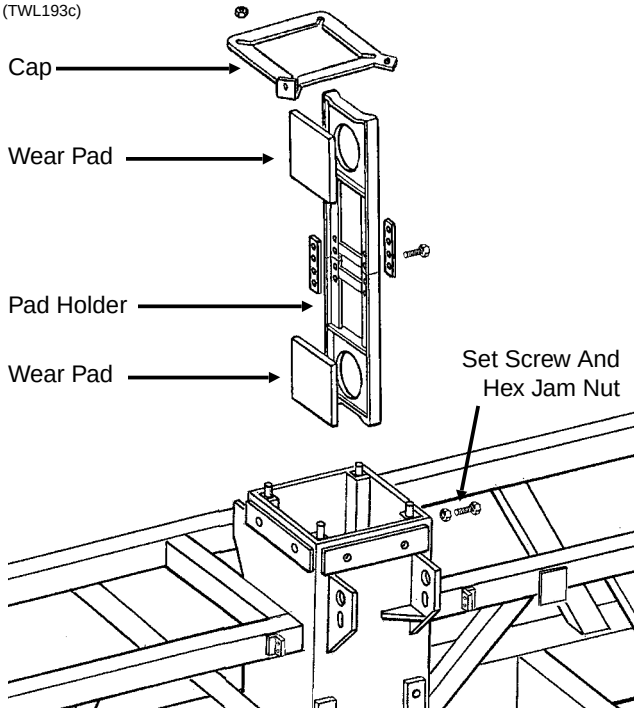
(EF35e/PLTR56)





WEAR PAD REPLACEMENT AND ADJUSTMENT

(TWL193c)



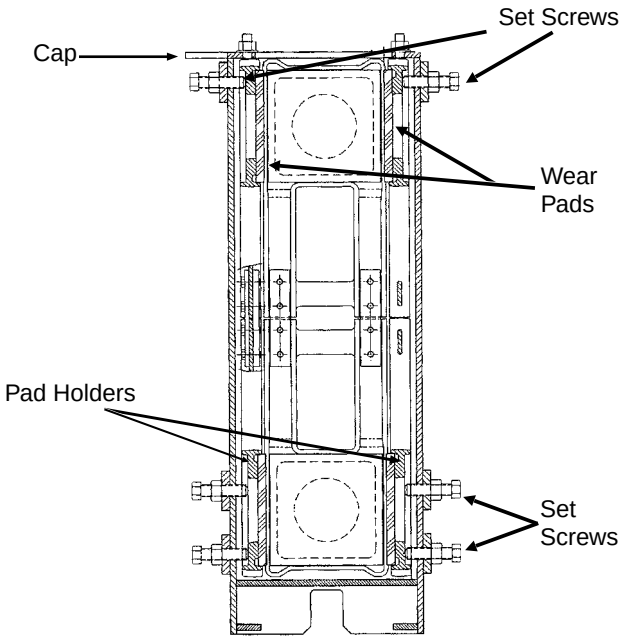
The center section of the planter is contructed around a steel tubular frame with four wear pad assemblies that ride against a stainless steel clad center post. Each wear pad assembly includes a pad holder and two wear pads. The wear pads are held by the pad holder and locked in place by ¾" set screws and hex jam nuts.

Inspect for wear and check pad adjustment annually to ensure the center section is stabilized and the planter tracks properly. Replace any broken or missing adjustment set screws. When properly adjusted the pads should make full contact with the center post with light contact. Too much preload on the pads will cause the hydraulic lift pressure to be higher than necessary or will not allow the planter to raise when the planter is loaded.

WARNING: Always install all safety lockup devices before working under the unit.

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

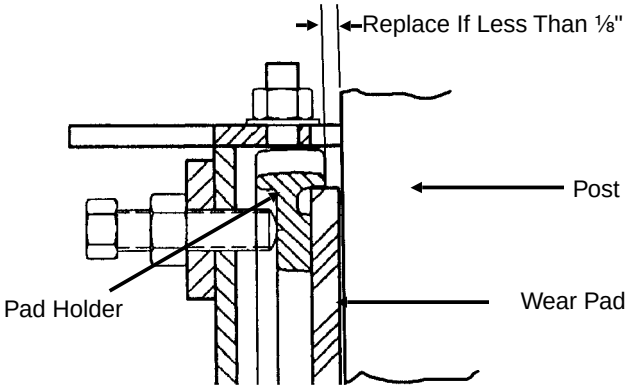
(TWL109b)



If adjustment is necessary proceed as follows: (a) Lower the planter to field operation position. It may be necessary to the loosen cap mounting nuts to allow wear pad adjustment. (b) Loosen the necessary hex jam nuts. (c) Tighten set screws until the wear pad lightly contacts the stainless steel clad center post. DO NOT OVER TIGHTEN. (d) Tighten hex jam nuts. (e) Recheck clearance. If clearance is not to specifications, repeat adjustment steps. (f) Torque hex jam nuts to 200 ft. lbs. Tighten cap mounting bolts if applicable.

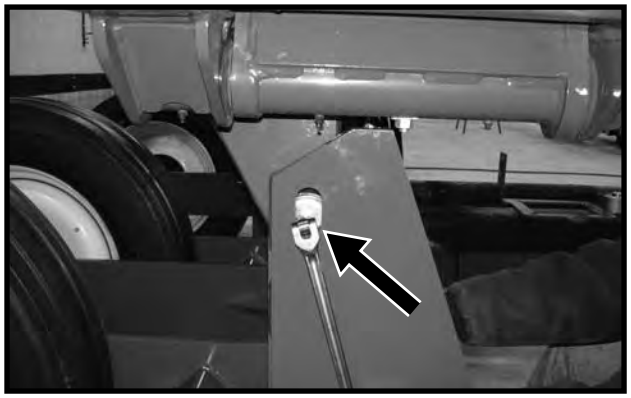
NOTE: If exposed portion of wear pad is worn to less than ⅛" as shown below, replace the wear pad.

(TWL149a)



If major adjustment or replacement is necessary proceed as follows: (a) Loosen cam rollers as shown below so they move freely. (b) Lower the planter to field operation position and release wing locks. (c) Eliminate all uplift on planter frame by backing off row unit down pressure springs and uplift on any other planter attachments.

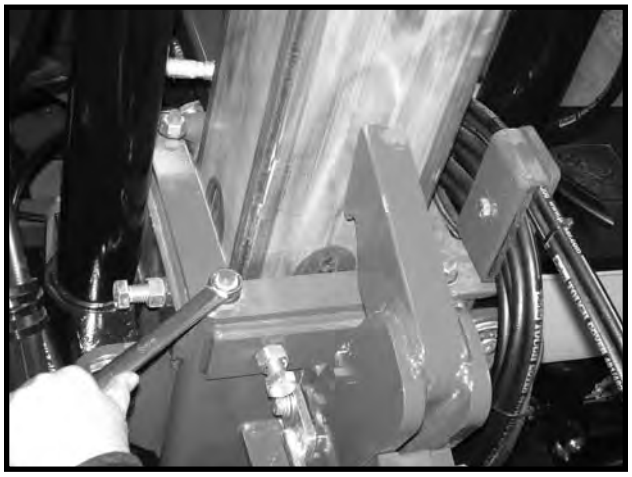
D01190716



For pad adjustment only (d) Check position of center frame to axle cam roller guides. Gap between guides and frame should be the same side to side. Gap on the back sides of the roller guide should be equal on both sides.Final adjustment will be done later. (e) Loosen the four cap mounting nuts as shown below.(f) Loosen the hex jam nuts and use the pad set screws to position the frame to center correctly. (g) To adjust the pads, the pad set screws should be drawn tight, backed off and turned in until there is light contact with the pad holder. (h) Tighten hex jam nuts. (i) Torque hex jam nuts to 200 ft. lbs. (g) Tighten cap mounting nuts. (h) Reset row unit down pressure and other attachments from STEP c.

IMPORTANT: DO NOT OVERTIGHTEN WEAR PADS. OVER TIGHTENING WILL CAUSE PREMATURE WEAR AND EXCESSIVE HYDRAULIC LIFT PRESSURES.

D01190745



For pad replacement (d) As shown below, remove safety hook, disconnect hydraulic hose, remove nut on bulkhead fitting and remove fitting from cap..

D01190729

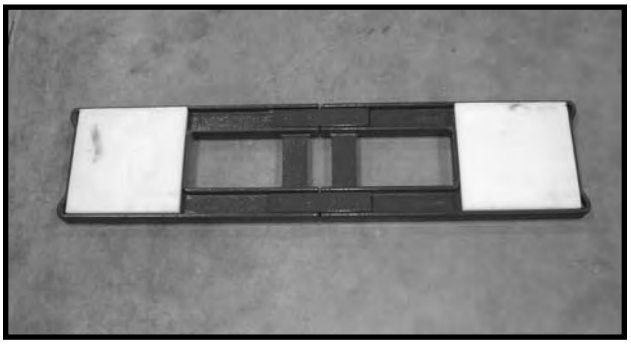
D01190725

(e) Loosen the four cap mounting nuts and remove pad holder cap. (f) Loosen the pad hex jam nuts, back the pad screws our and remove the four pad holder assemblies as shown below.

D01190737

(g) Remove old pads and install new pads. NOTE: Apply a small amount of weather stripping adhesive to hold the pads in place while the pad holder is being reinstalled.

D01190739

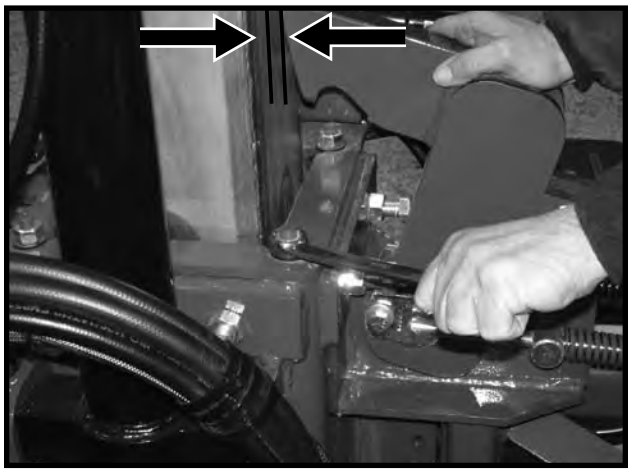


(h) To adjust the pads, the pad set screws should be drawn tight, backed off and turned in until there is light contact with the pad holder. (i) Tighten hex jam nuts. (j) Torque hex jam nuts to 200 ft. lbs.

IMPORTANT: DO NOT OVERTIGHTEN WEAR PADS. OVER TIGHTENING WILL CAUSE PREMATURE WEAR AND EXCESSIVE HYDRAULIC LIFT PRESSURES.

(k) Reinstall cap and tighten cap mounting nuts. (l) Reinstall hydraulic hose, fittings and safety hook.

D01190744

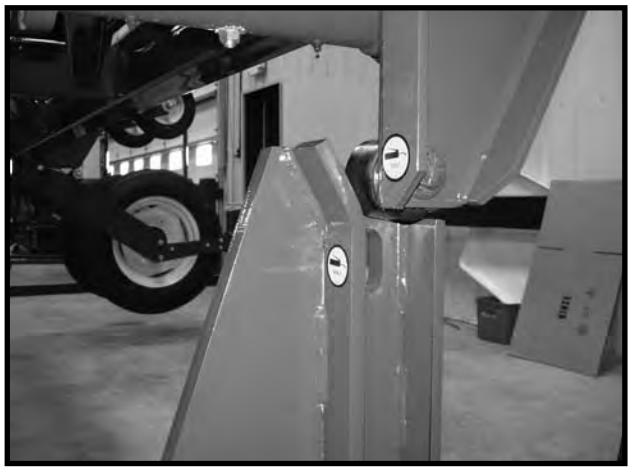


(m) Adjust stop on safety hook. Maximum clearance should be ½" and minimum clearance ⅛" as shown above.

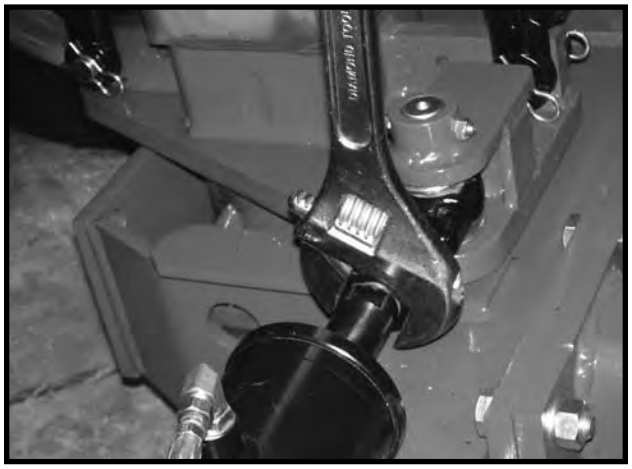
D01190727

(n) Rotate cam roller against front guide and tighten to 200 ft. lbs. Make sure gap between roller guide and center frame are equal on both sides. (o) Raise planter out of the roller guides and lower back down into roller guides to be sure the roller guides operate smoothly. If not, adjust the roation cylinder rod as shown below.

D01190731



D01190732



(p) Reset row unit down pressure and other attachments from STEP c.

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.

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

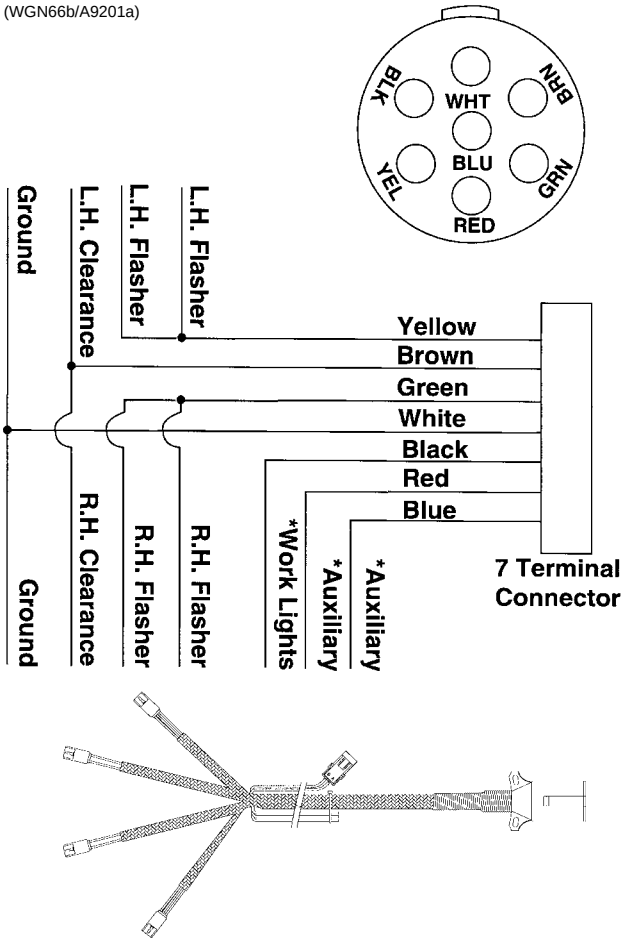
Remove seed discs from brush-type seed meters, clean and store meters with discs removed.

Disassemble, clean and grease all U-joint slides.

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

ELECTRICAL WIRING DIAGRAM FOR LIGHT PACKAGE

(WGN66b/A9201a)



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

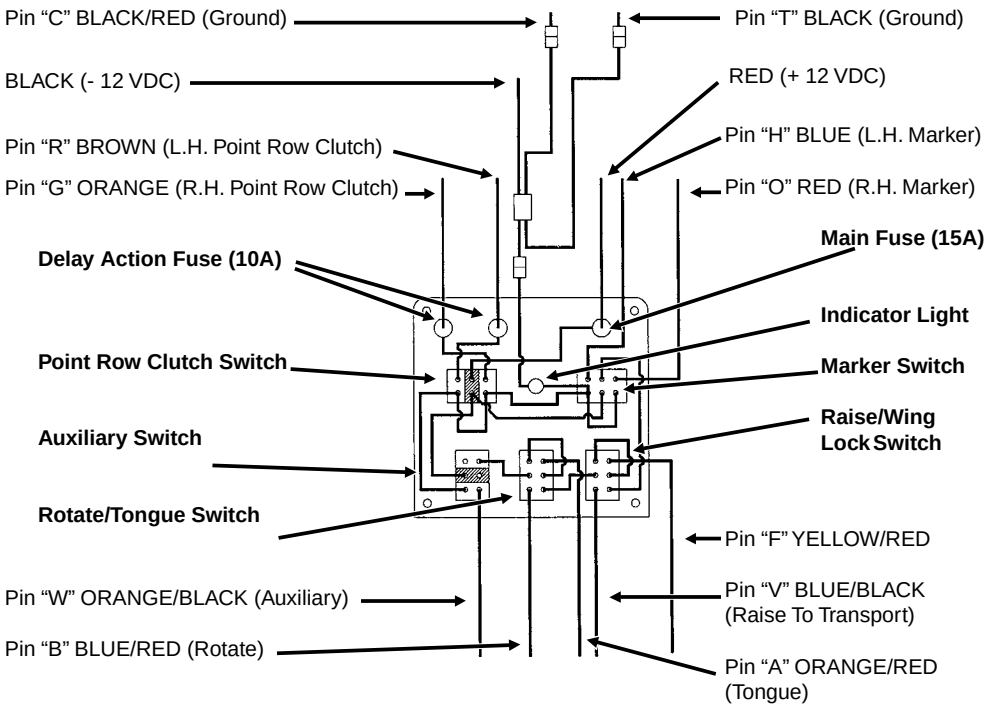
The Light package supplied on the Model 3600TR Twin-Line® Planter meets ASAE Standards. For the correct wiring harness to be wired into the lights on your tractor, check with the tractor manufacturer.

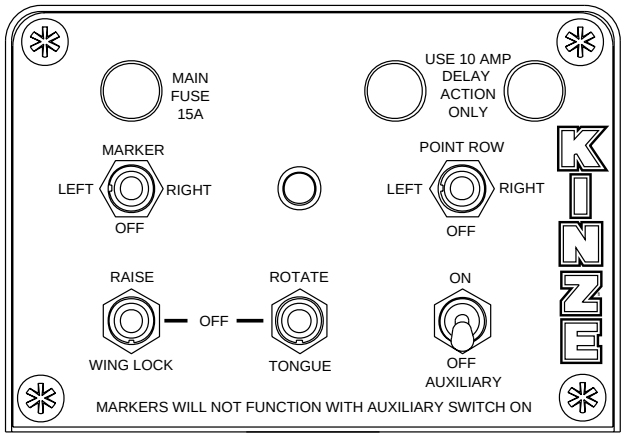
69922-35

ELECTRICAL CONTROL CONSOLE SCHEMATIC

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

(PLTR82a)





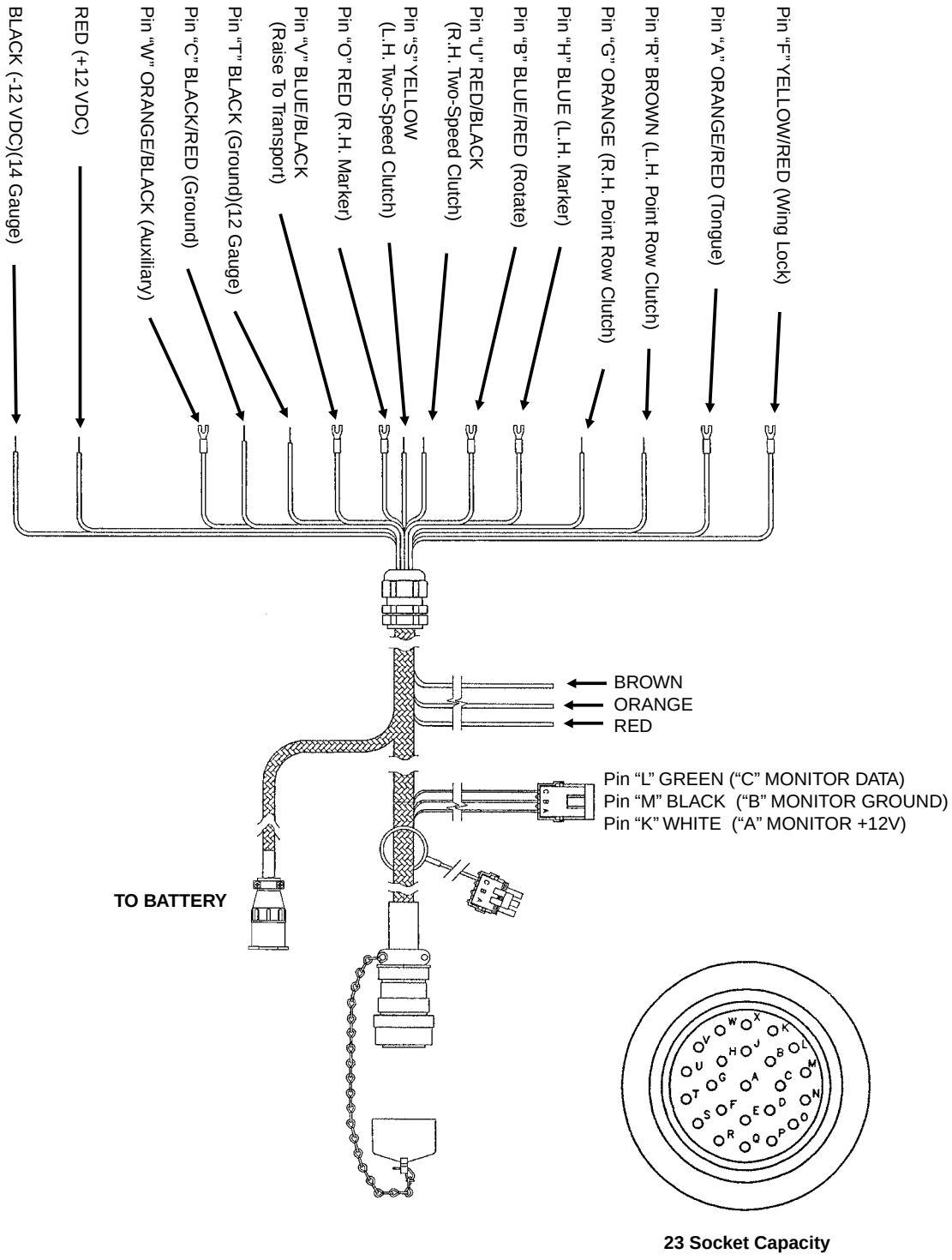
NOTE:

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

See page 9-39 for electrical control console schematic and wiring harness to two-speed point row clutch solenoids for planter equipped with the optional Two-Speed Point Row Clutch Package.

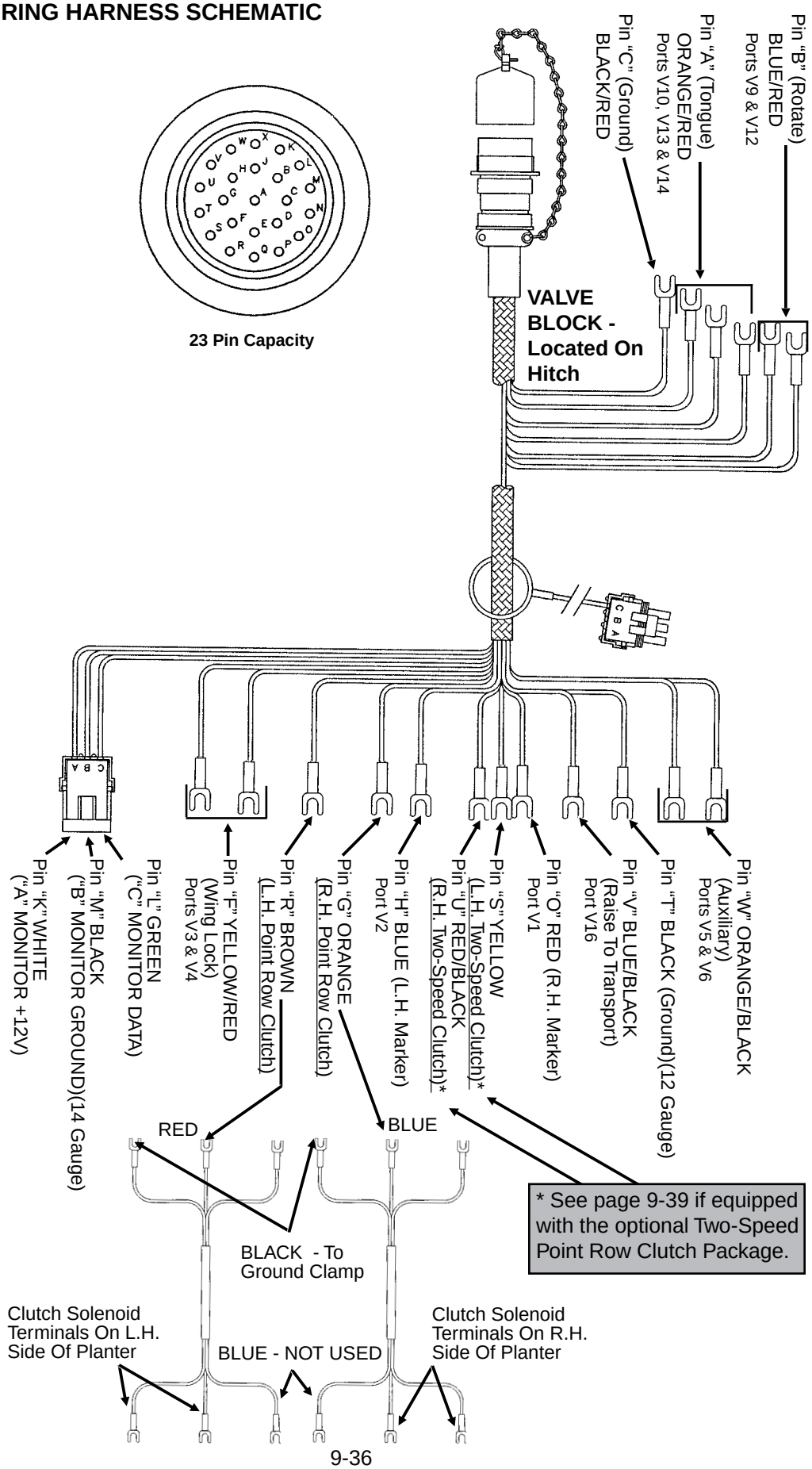
ELECTRICAL WIRING HARNESS SCHEMATIC (On Tractor)

(ELC10c/ELC13)



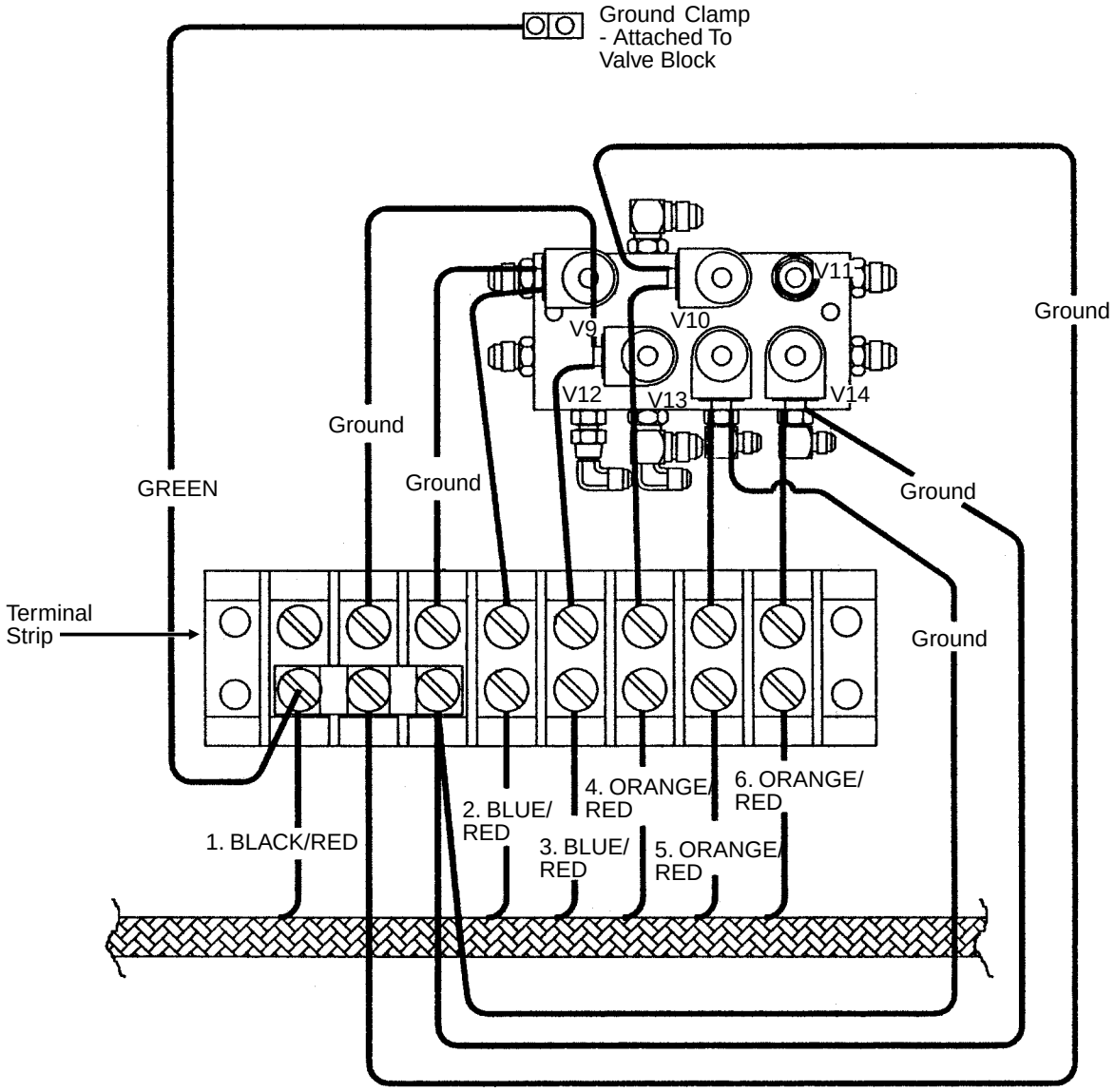
ELECTRICAL WIRING HARNESS SCHEMATIC (On Planter)

(ELC13/ELC12b/TWL71d)



(A7012a)

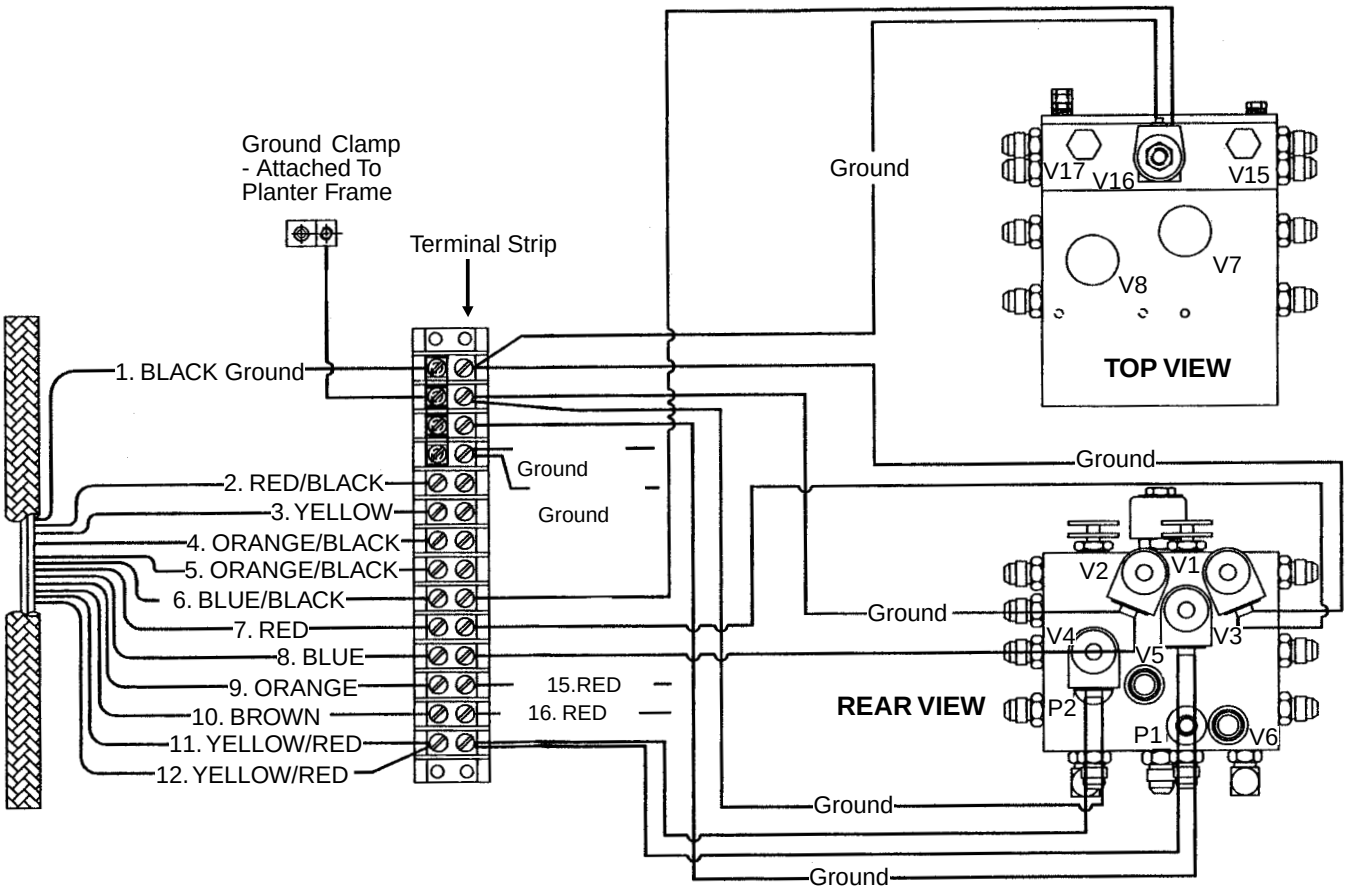
VALVE BLOCK - Located On Hitch



1. BLACK/RED - Pin “C” (Ground)
2. BLUE/RED - Pin “B” (Rotate) - Port V9
3. BLUE/RED - Pin “B” (Rotate) - Port V12
4. ORANGE/RED - Pin “A” (Tongue) - Port V10
5. ORANGE/RED - Pin “A” (Tongue) - Port V13
6. ORANGE/RED - Pin “A” (Tongue) - Port V14

(A7102a)

VALVE BLOCK - Located On Rear Center Frame

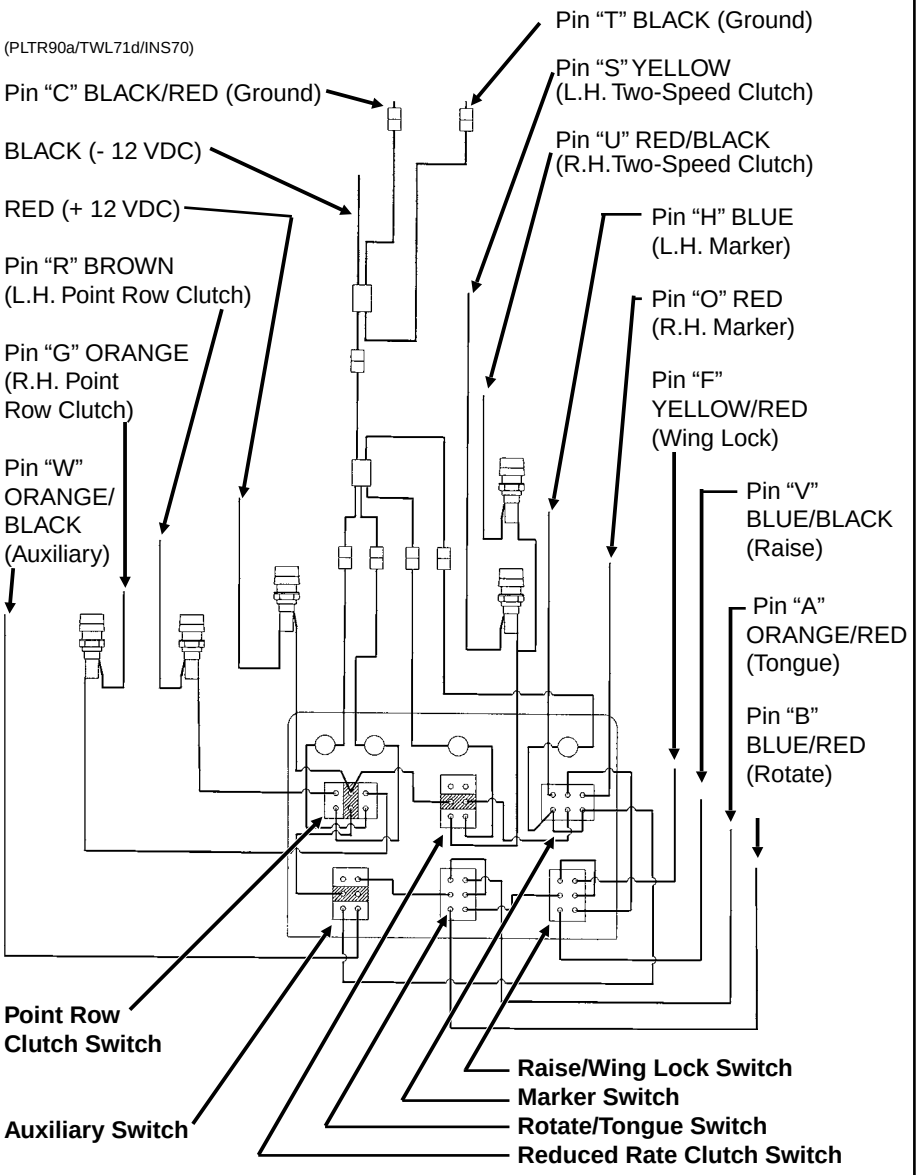


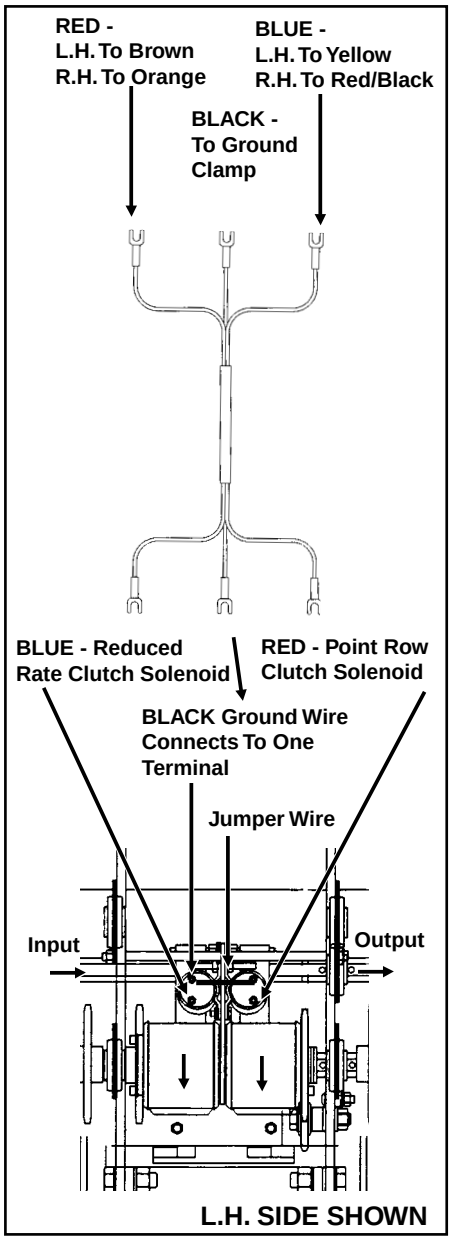
1. BLACK - Pin “T” (Ground)
2. RED/BLACK - Pin “U” (R.H. Two-Speed Clutch)*
3. YELLOW - Pin “S” (L.H. Two-Speed Clutch)*
4. ORANGE/BLACK - Pin “W” (Auxiliary) - Ports V5 & V6
5. ORANGE/BLACK - Pin “W” (Auxiliary) - Ports V5 & V6
6. BLUE/BLACK - Pin “V” (Raise To Transport) - Port V16
7. RED - Pin “O” (R.H. Marker) - Port V1
8. BLUE - Pin “H” (L.H Marker) - Port V2
9. ORANGE - Pin “G” (Right Point Row Clutch)
10. BROWN - Pin “R” (Left Point Row Clutch)
11. YELLOW/RED - Pin “F” (Wing Lock) - Ports V3 & V4
12. YELLOW/RED - Pin “F” (Wing Lock) - Ports V3 & V4
13. BLACK - (R.H. Point Row Ground)
14. BLACK - (L.H. Point Row Ground)
15. RED - (R.H. Point Row)
16. RED - (L.H. Point Row)

* See page 9-39 if equipped with the optional Two-Speed Point Row Clutch Package.

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

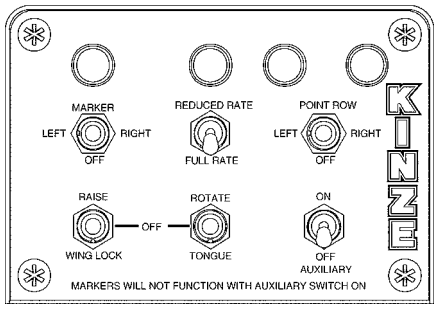
(PLTR90a/TWL71d/INS70)





L.H. SIDE SHOWN

(INS260)



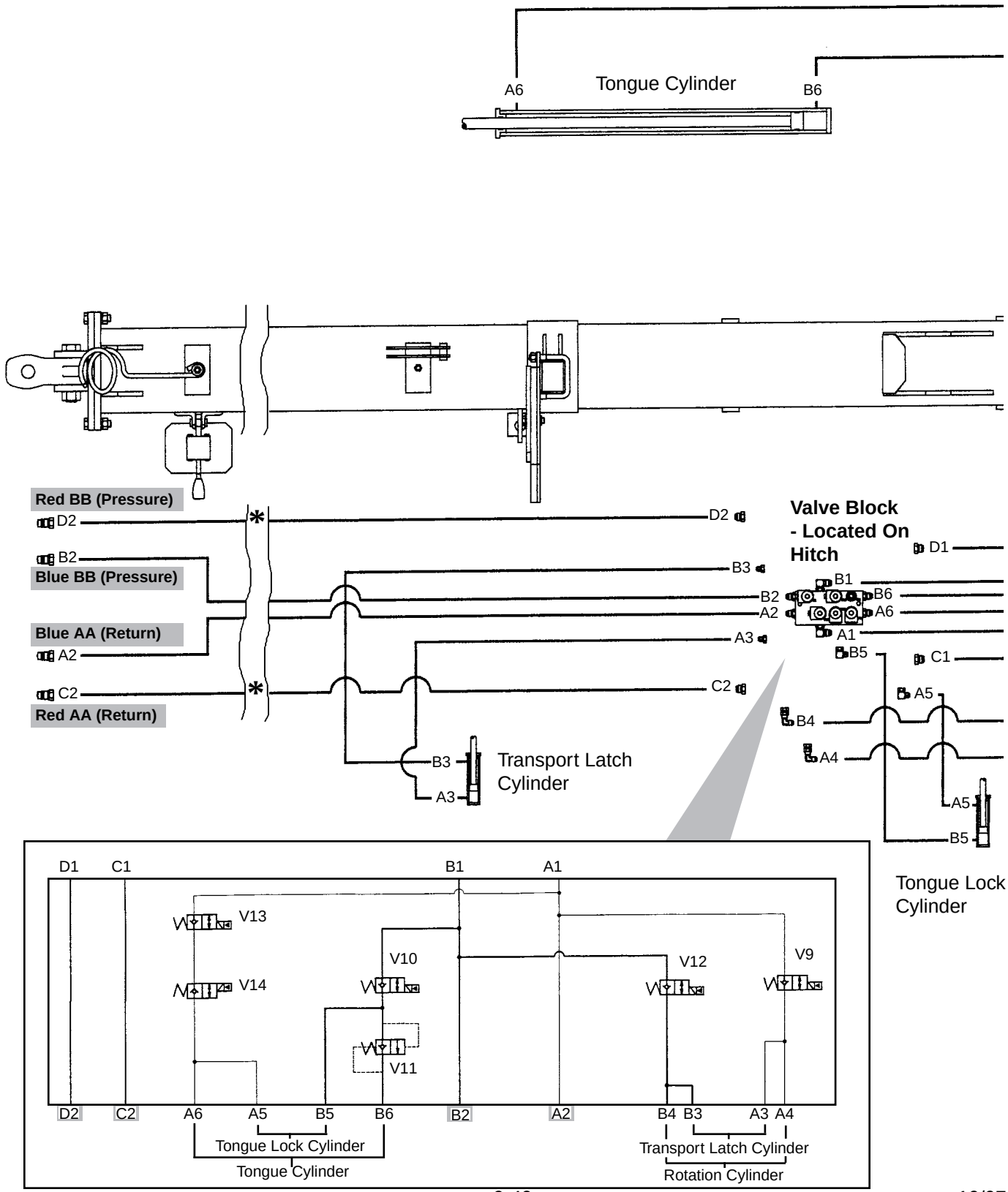
NOTE:

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

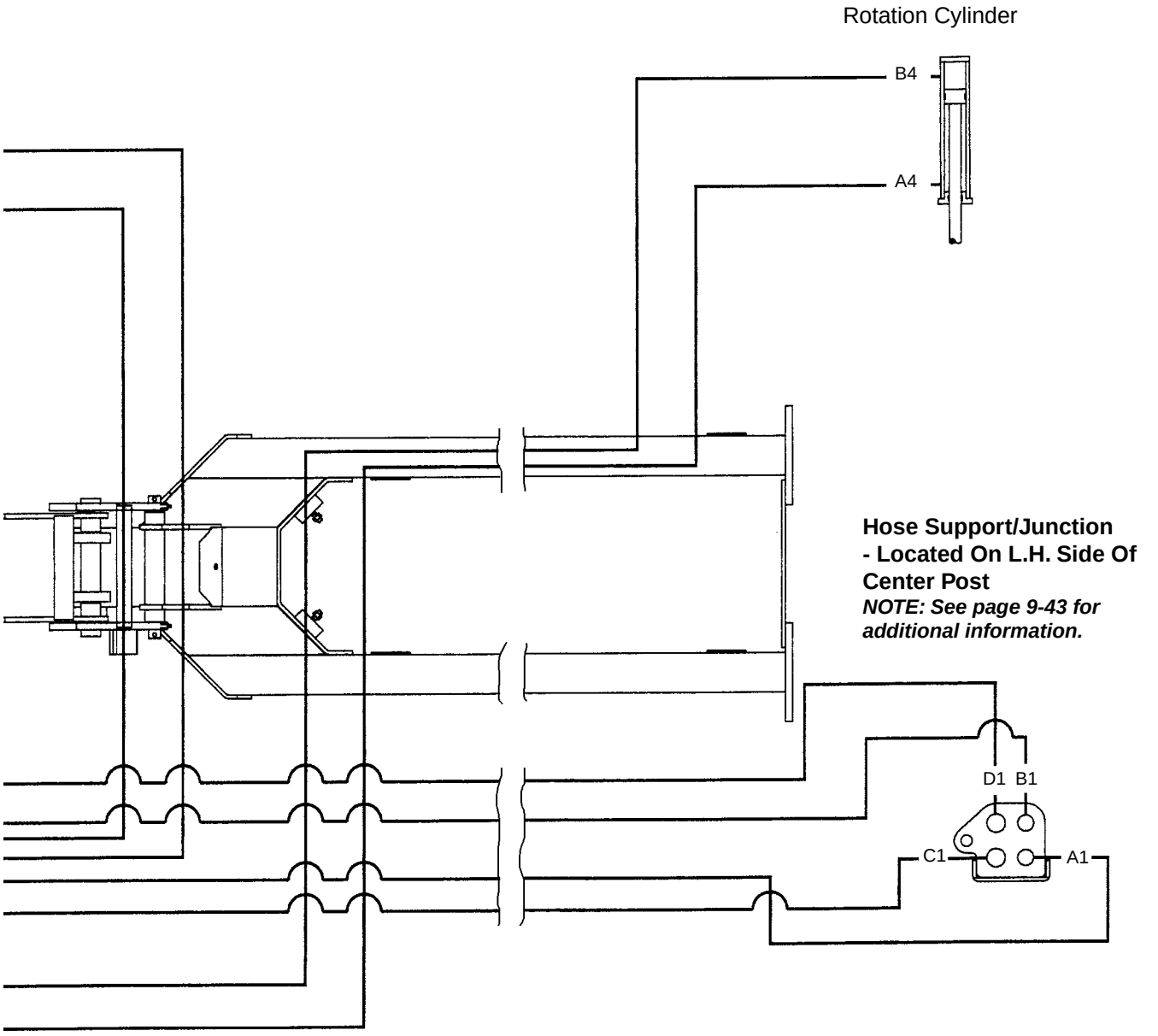
IMPORTANT: Before doing any electrical work, disconnect the control console from the tractor battery. Keep wiring harnesses away from high temperature areas or sharp edges. DO NOT route the wiring harnesses along battery cables. Use tie straps to keep wire harness away from moving parts on tractor and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

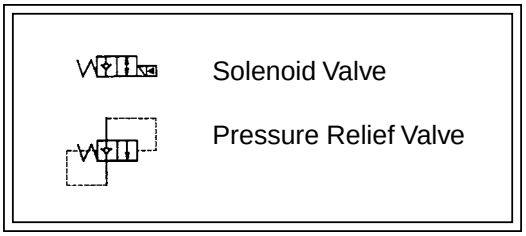
HYDRAULIC SYSTEM SCHEMATIC

(TWL143/TWL107/TWL111)



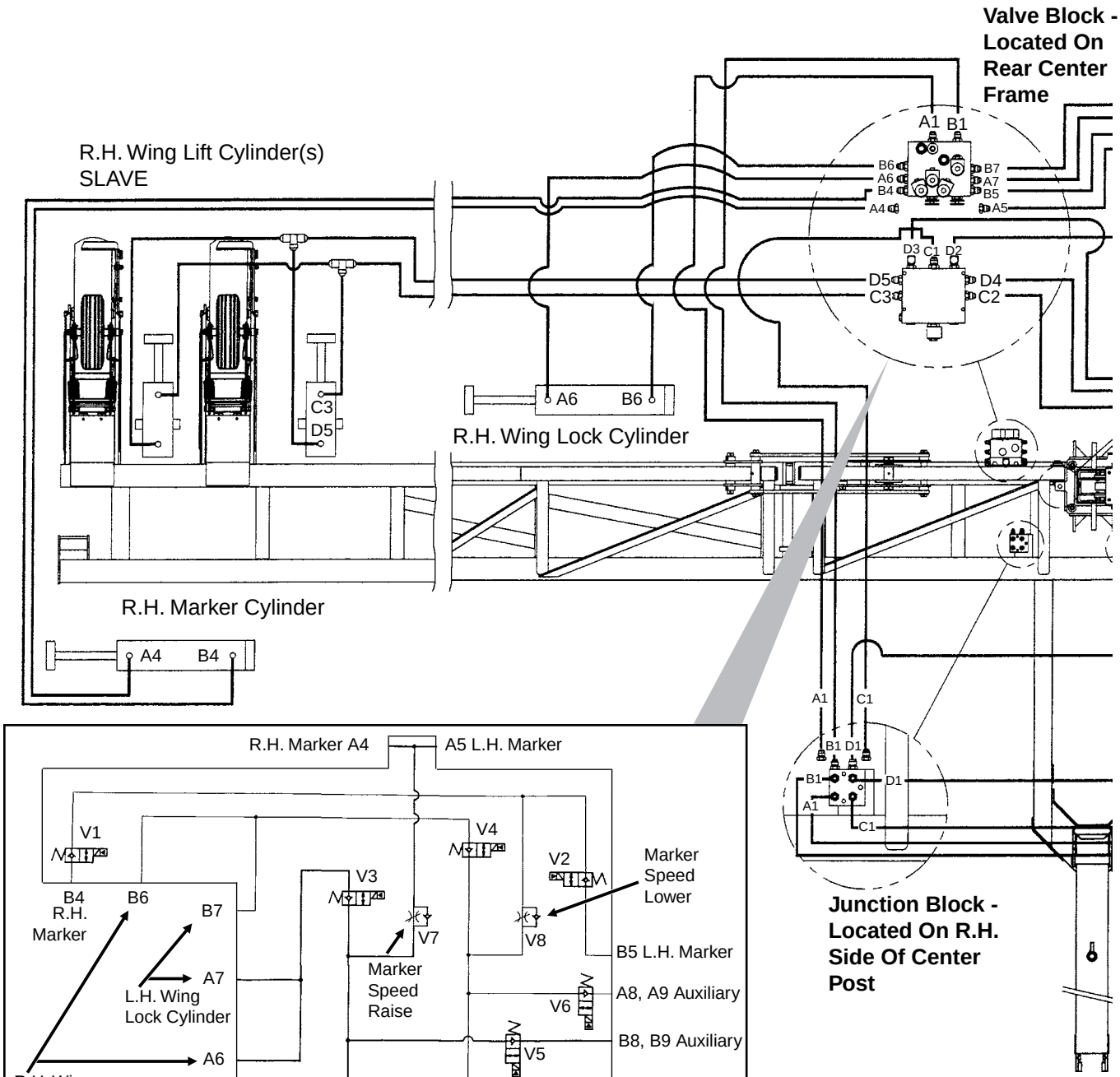
(TWL108/TWL115)

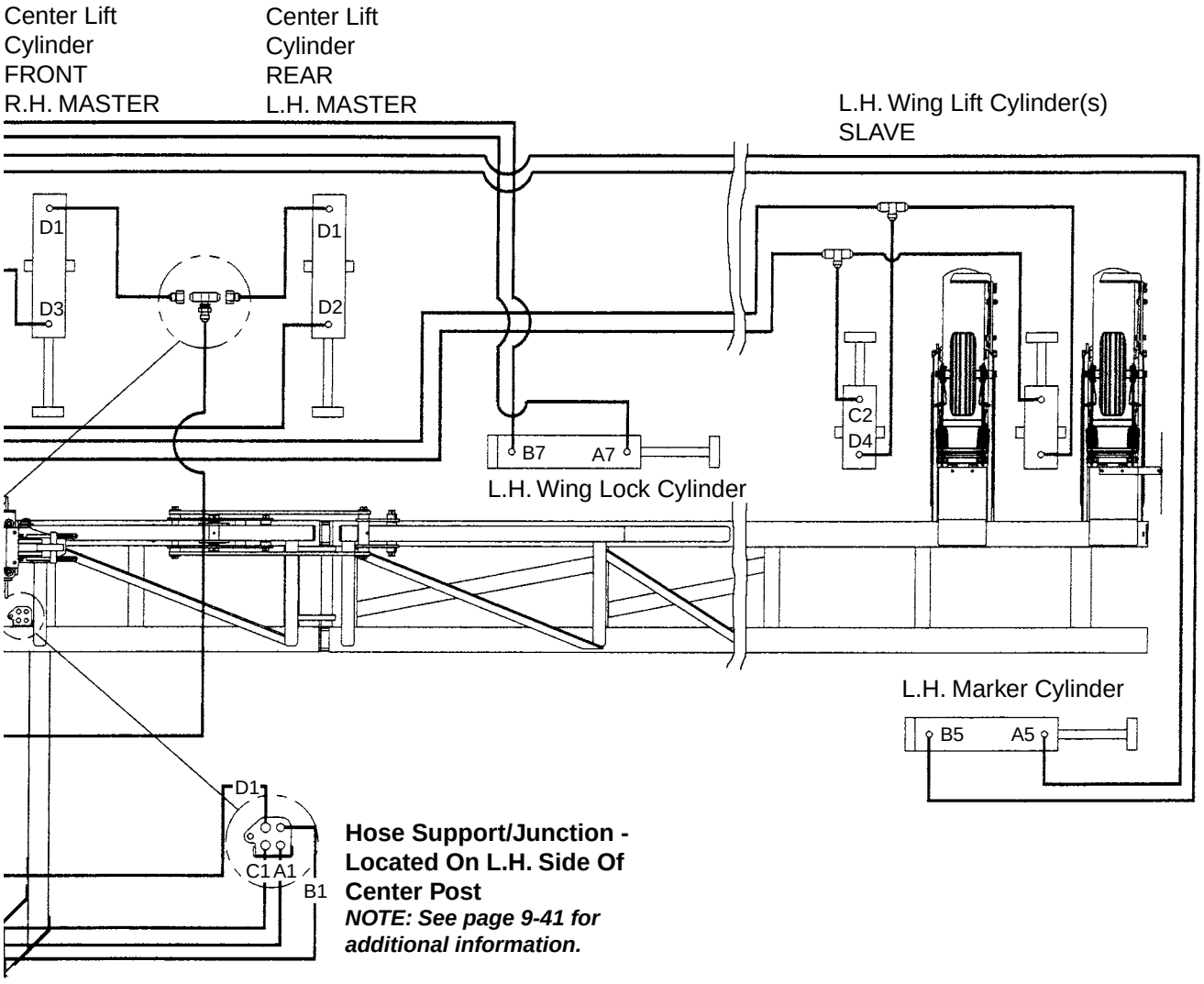




HYDRAULIC SYSTEM SCHEMATIC (Continued)
(TWL105/TWL113/TWL114)

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



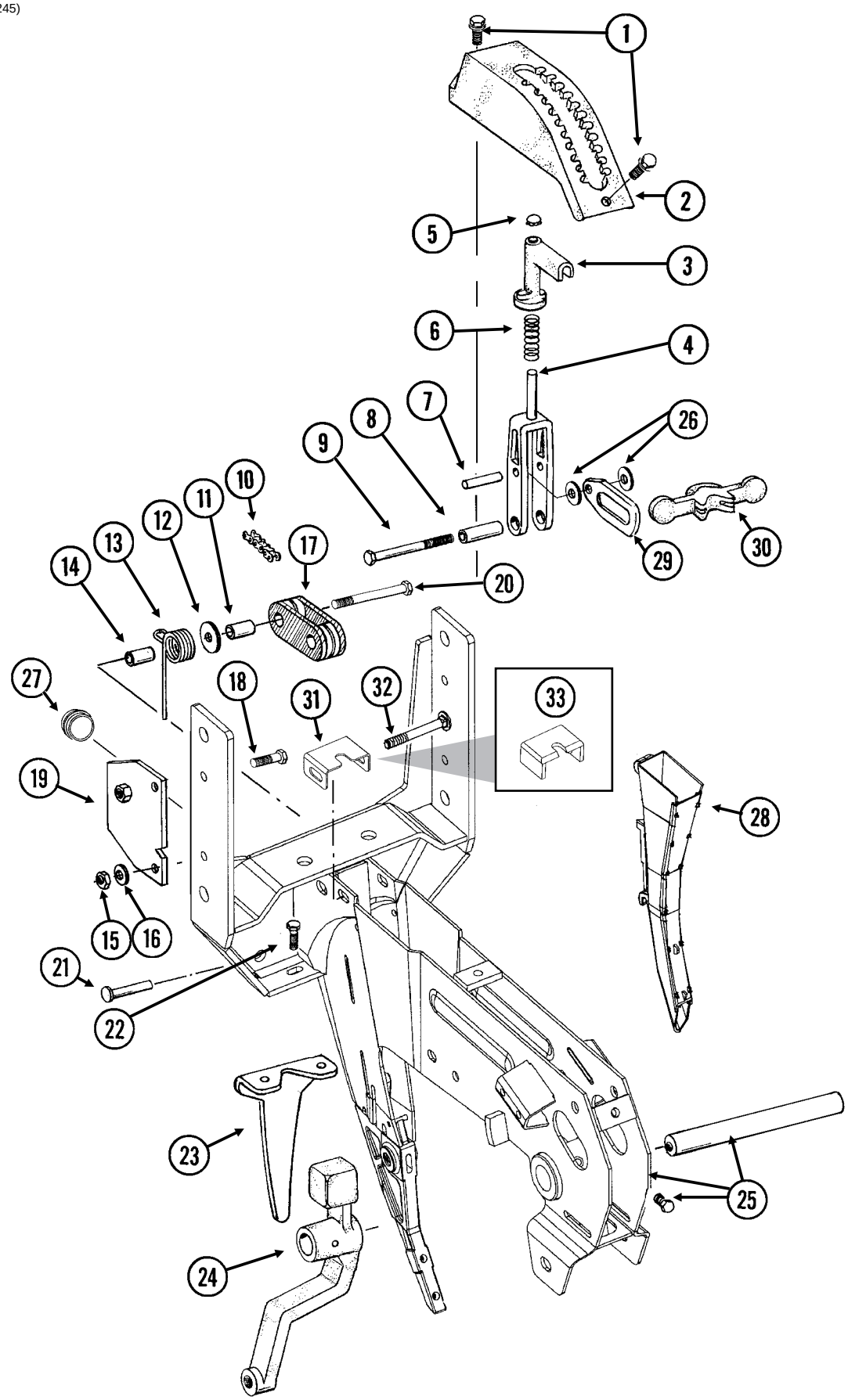


	Check Valve
	Solenoid Valve
	Row Marker Flow Control Valve

PARTS LIST INDEX

SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

(METR29cc/D16245)



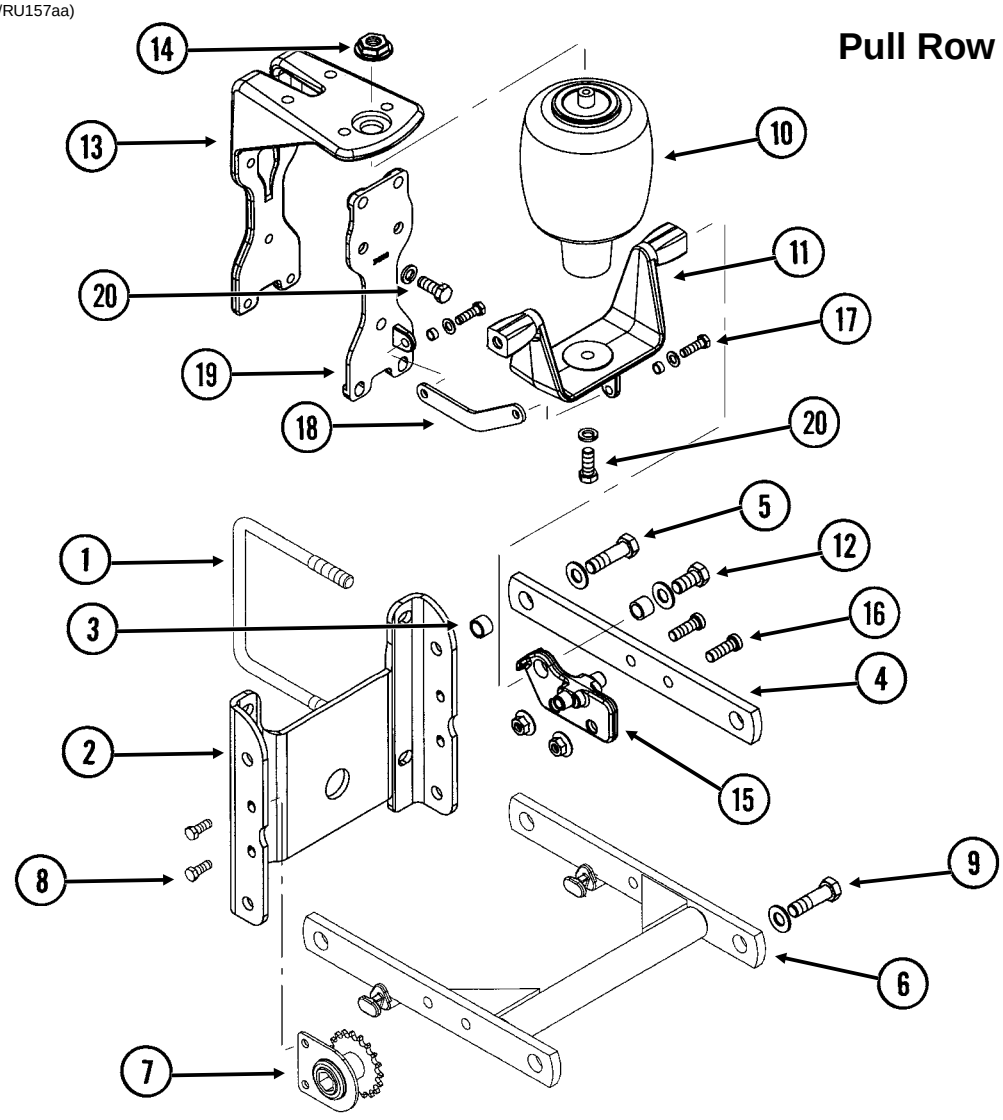
SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

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.	G3303-98	1	Chain, No. 41, 98 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.		-	See “Gauge Wheels”, Pages P12 And P13
25.	GA10157	1	Shank W/Gauge Wheel Pivot Spindle And Set Screw
	GD11001	-	Spindle
	G10438	-	Hex Head Cap Screw, 1/2"-13 x 3/4"
26.	G10207	2	Washer, 7/8" O.D. x 13/32" I.D. x .134" (If Applicable)
27.	GD11845	1	Dust Cap
28.			See “KPM III Electronic Seed Monitor”, Pages P96 And P97
29.	GB0285	1	Collar, Depth Adjustment
30.	GB0265	1	Pivot Link, Depth Adjustment
31.	GD15970	1	Sun Shade
32.	G10304	1	Carriage Bolt, 3/8"-16 x 3"
	G10108	1	Lock Nut, 3/8"-16
33.	GD16245	-	Sun Shade (Rubber)

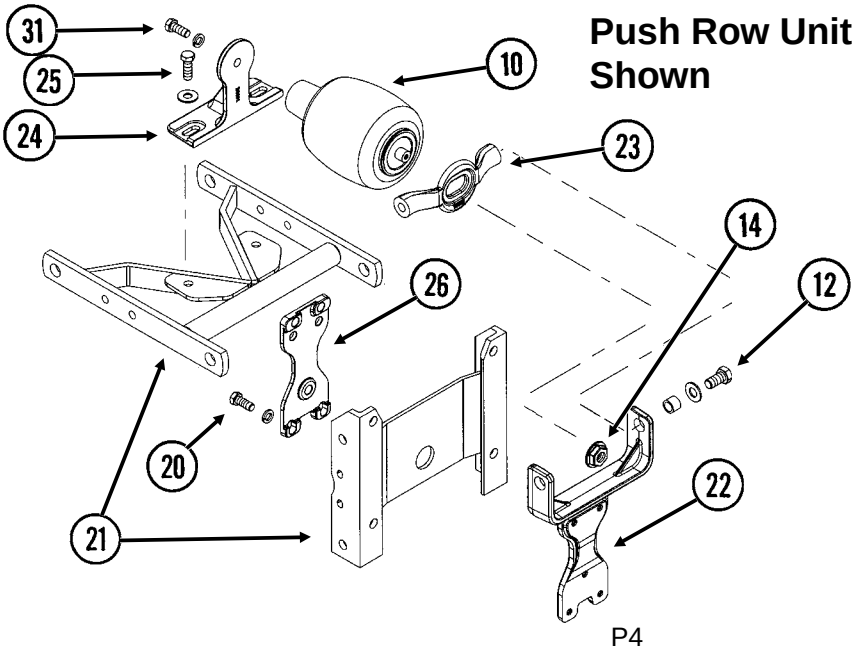
PARALLEL ARMS, MOUNTING SUPPORT PLATE AND PNEUMATIC DOWN PRESSURE PACKAGE OPTION

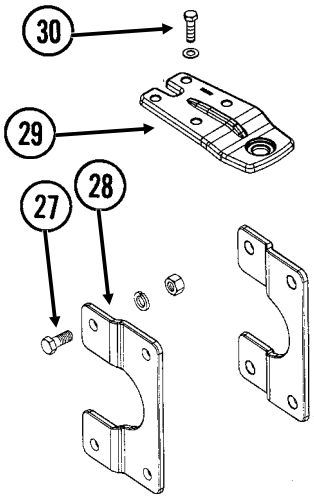
(RU157a/RU159/RU157aa)

Pull Row Unit Shown



Push Row Unit Shown



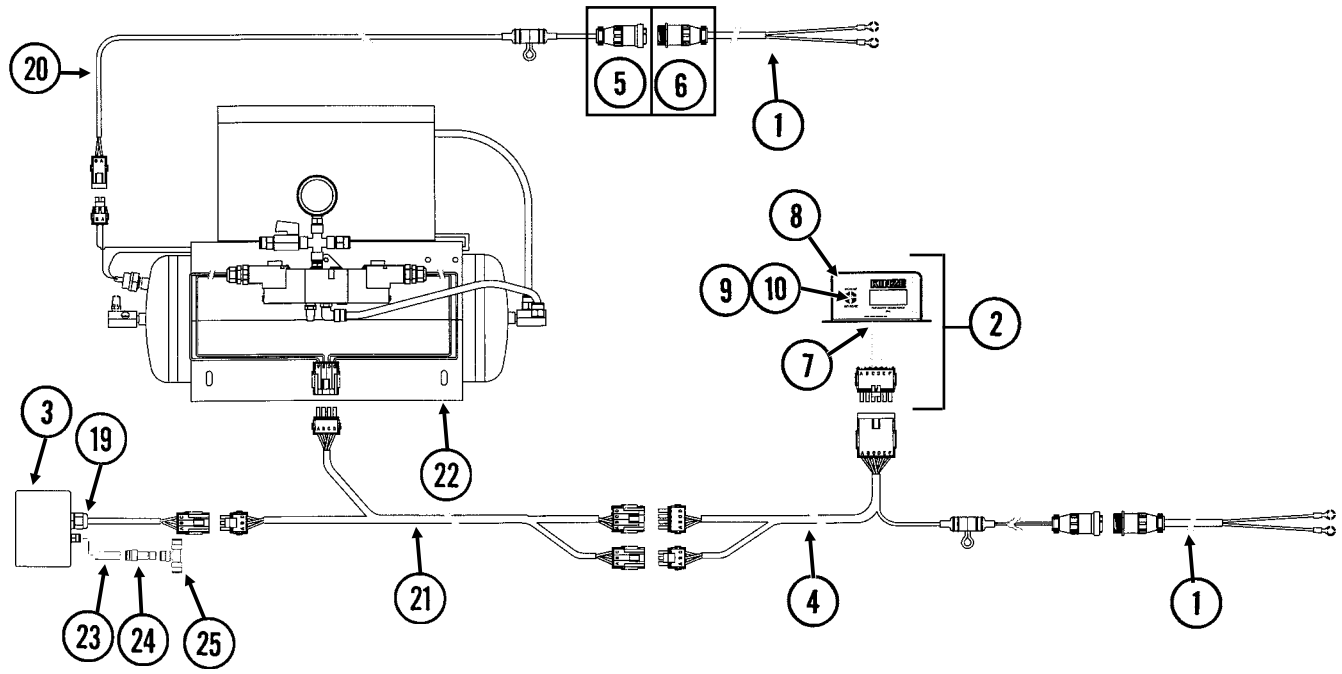


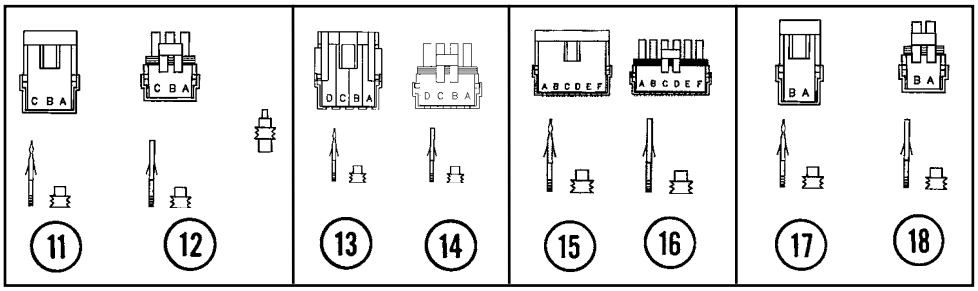
PARALLEL ARMS, MOUNTING SUPPORT PLATE AND PNEUMATIC DOWN PRESSURE PACKAGE OPTION

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1113	2	U-Bolt, 5" 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, 21/32" I.D. x 7/8" O.D. x 19/32" Long
4.	GD11422	2	Upper Parallel Arm
5.	G10732	4	Hex Head Cap Screw, 5/8"-18 x 2"
	GD7805	4	Special Washer, 5/8", Hardened
	G10412	4	Lock Nut, 5/8"-18
6.	GA5651	1	Lower Parallel Arm
7.	GA1720	1	Bearing/Sprocket, 7/8" Hex Bore
8.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
9.		-	See “Hopper Support And Meter Drive”, Page P18
10.	GA11982	1	Air Spring Assembly
11.	GB0394	1	Saddle
12.	G11018	2	Hex Head Cap Screw, 5/8"-18 x 1 1/4"
	GD7805	2	Special Washer, 5/8", Hardened
	GD3180-30	2	Sleeve, 7/8" O.D. x 5/8" I.D. x 21/32"
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.		-	See “Push Row Unit”, Pages P38 And P39
22.	GB0390	1	Yoke Mount
23.	GB0392	1	Yoke
24.	GB0391	1	Mount
25.	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"-11
26.	GB0389	1	Plate
27.	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
28.	GB0366	2	Extension Bracket
29.	GB0398	1	Extension
30.	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
31.	G10037	1	Hex Head Cap Screw, 1/2"-13 x 1 1/4"
	G10228	1	Lock Washer, 1/2"
A.	G6325X	-	U-Bolt Package For 5" x 7" Toolbar, Includes: (2) GD1113, (4) G10230, (4) G10104

PNEUMATIC DOWN PRESSURE CONTROL BOX, SENDING UNIT AND HARNESSES

(PNE01a/MTR27a/ELC27b/MTR45/MTR27t)



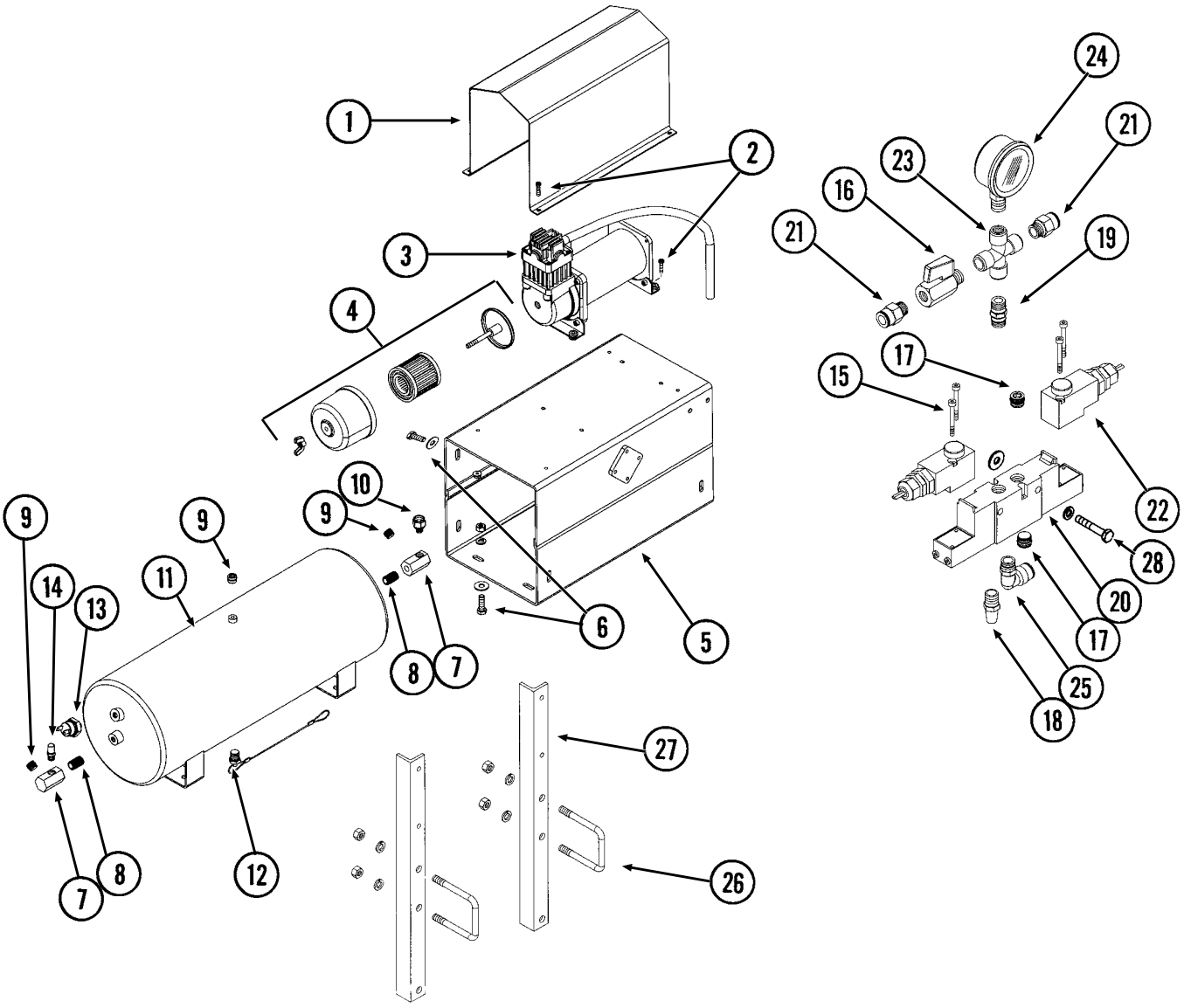


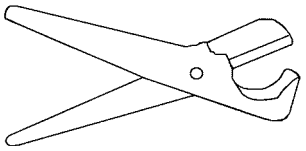
PNEUMATIC DOWN PRESSURE CONTROL BOX, SENDING UNIT AND HARNESSES

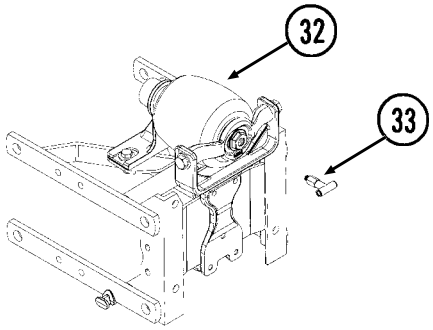
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7856	2	Power Lead Adapter
2.	GA12644	1	Control Console Assembly
3.	GA12646	1	Sending Unit
4.	GA12645	1	Wiring Harness W/Fuse Holder And Fuse, 206"
	GD14258	-	Fuse Holder
	GD14660	-	Fuse, 2 Amp Delay Action
5.	G1K268	-	Console Cable Connector Kit, Includes: (1) 3-Pin 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 ½"
9.	GR1363	1	Hex Face Nut, 15⁄32"-32
10.	GA6978	2	Switch, 3 Position Toggle, ON-OFF-ON
11.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
12.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
13.	GA8328	-	4-Pin Female Connector Kit, Includes: (1) 4-Pin Female Housing, (4) Pin Contacts, (4) Seals
14.	GA8329	-	4-Pin Male Connector Kit, Includes: (1) 4-Pin Male Housing, (4) Socket Contacts, (4) Seals
15.	G1K396	-	6-Pin Female Connector Kit (Black), Includes: (3) 6-Pin Female Housings,(18) Pin Contacts, (18) Seals
16.	G1K395	-	6-Pin Male Connector Kit (Black), Includes: (3) 6-Pin Male Housings, (18) Socket Contacts, (18) Seals
17.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
18.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
19.	GA9964	2	Strain Relief
20.	GA12684	1	Wiring Harness W/Fuse Holder And Fuse, 60'
	GD14258	-	Fuse Holder
	GD18275	-	Fuse, 20 Amp
21.	GA12674	1	Wiring Harness, 60'
22.		-	See “Pneumatic Down Pressure Air Compressor, Dual Solenoid Assembly, Tubing And Fittings”, Pages P8 And P9
23.	GD17151-06	1	Nylon Tubing, ¼" O.D. x 1 ½"
24.	GD18796	1	Reducer, ⅜" To ¼"
25.	GD18010	1	Tee, ⅜" Tube Union

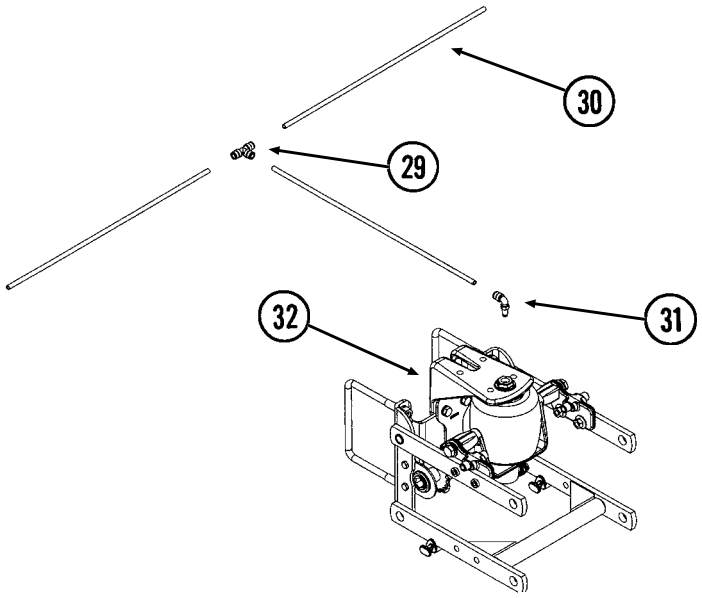
PNEUMATIC DOWN PRESSURE AIR COMPRESSOR, DUAL SOLENOID ASSEMBLY, TUBING AND FITTINGS

(PNE06/PNE02/PNE05/A13169/PNE09/PNE08)







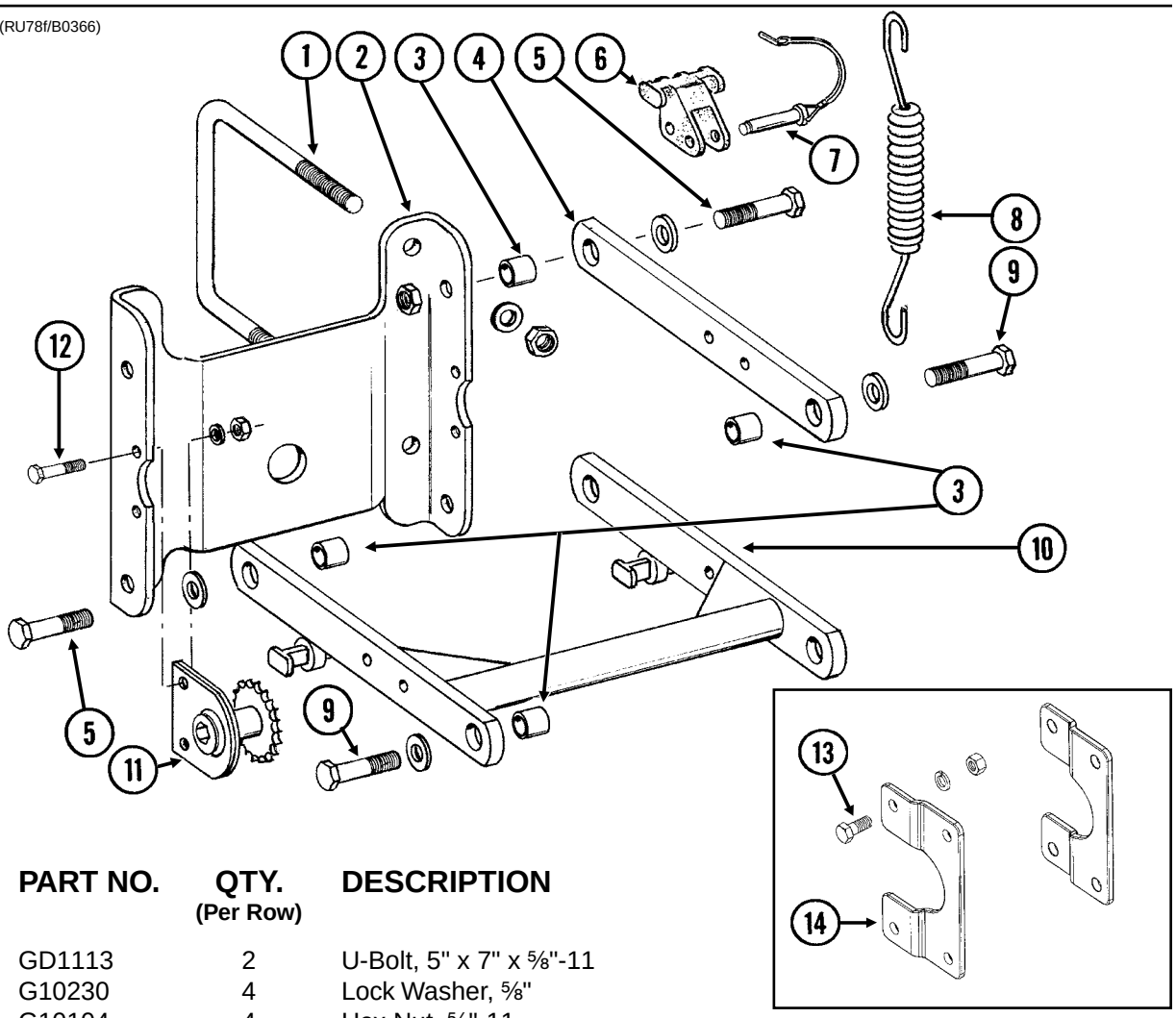


PNEUMATIC DOWN PRESSURE AIR COMPRESSOR, DUAL SOLENOID ASSEMBLY, TUBING AND FITTINGS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD18112	1	Cover
2.	G11066	8	Phillips Pan Head Machine Screw, No. 10-24 x ¾", 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, ¼" NPT
8.	GD18081	2	Close Nipple, ¼" NPT
9.	GD17156	3	Plug, ¼" NPT
10.	GD17144	1	Reducer, ⅛" Male To ¼" Female
11.	GA11988	1	Tank, 3 Gallon
12.	GA11991	1	Drain, ¼" NPT
13.	GR1778	1	Pressure Switch
14.	GA11989	1	Valve Stem, ⅛" NPT
15.	G11247	4	Slotted Pan Head Machine Screw, M4-0.7 x 8
16.	GA11992	1	Shutoff Valve, ¼" NPT
17.	GD17156	2	Plug, ¼" NPT
18.	GA11997	1	Breather, ¼" NPT
19.	GD17154	1	Connector, ¼" Male
20.	GA11993	1	Block
21.	GD17141	3	Connector, ¼" Male
22.	GA11994	2	Solenoid
23.	GD18078	1	Female Cross, ¼" NPT
24.	GA12104	1	Pressure Gauge, ¼" NPT
25.	GD17143	1	Swivel Elbow, ¼" NPT x ⅜"
26.	GD4743	2	U-Bolt, 3" x 3" x ½"-13
	G10228	4	Lock Washer, ½"
	G10102	4	Hex Nut, ½"-13
27.	GD18119	2	Bracket
28.	G10021	2	Hex Head Cap Screw, ¼"-20 x 1 ½"
	G10227	2	Lock Washer, ¼"
	G10209	2	Washer, ¼" USS
29.	GD18010	-	Tee, ⅜" Tube Union
30.	GD17150-03	2	Nylon Tubing, ⅜" O.D. x 64', 12 Row
	GD17150-04	2	Nylon Tubing, ⅜" O.D. x 86', 16 Row
31.	GD18011	-	Elbow, ⅜" x ⅛" NPT Extended
32.		-	See “Parallel Arms, Mounting Support Plate And Pneumatic Down Pressure Package Option”, Pages P4 And P5
33.	GD18274	-	Tee, ⅜" x ⅛" NPT Extended, Push Row Unit
34.	GA13169	1	Tube Cutter W/Blade
	GR1843	-	Blade
A.	GA12626	-	Air Compresor Assembly (Items 1-14)
B.	GA11995	-	Dual Solenoid Assembly (Items 15-25)

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

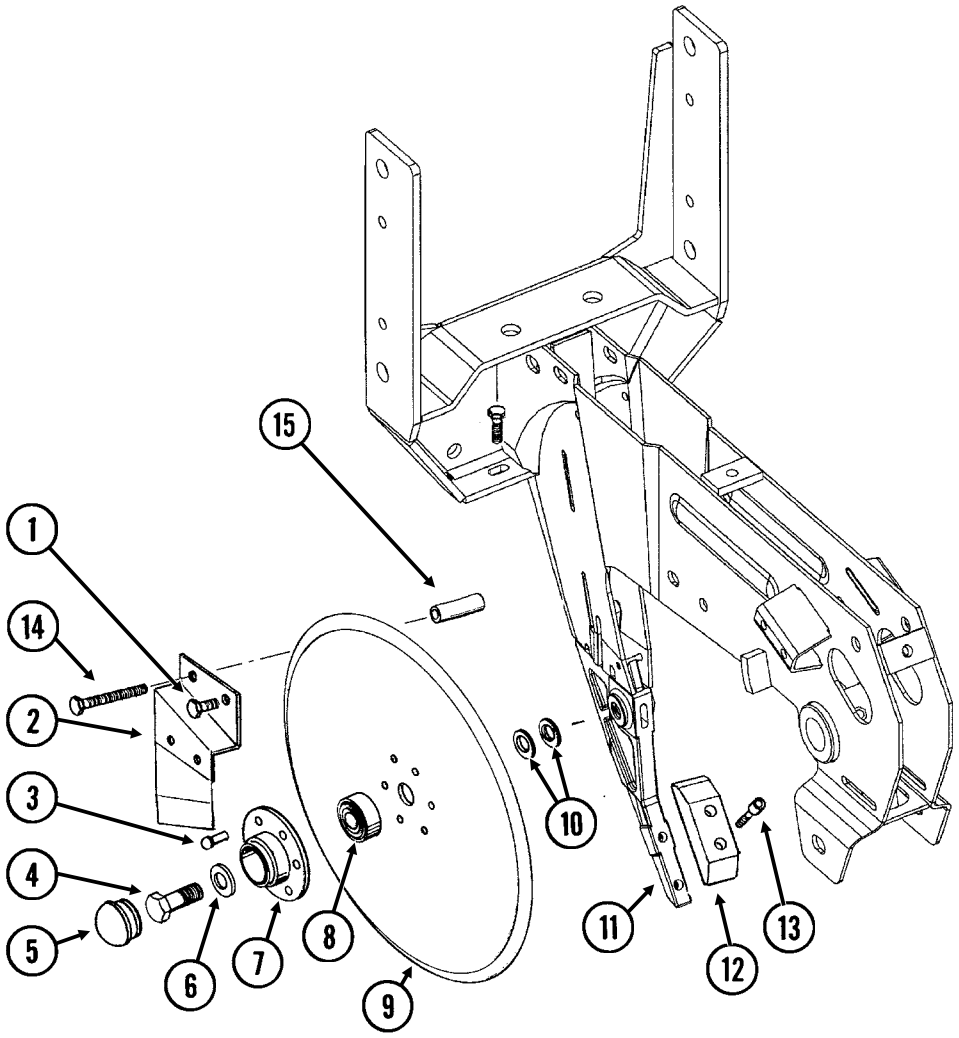
RUB021/RUB022(RU78f/B0366)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1113	2	U-Bolt, 5" x 7" x ⅝"-11
	G10230	4	Lock Washer, ⅝"
	G10104	4	Hex Nut, ⅝"-11
2.	GD10036	1	Mounting Support Plate
3.	GB0218	4	Bushing, 2 1/32" I.D. x ⅞" O.D. x 1 9/32" Long
4.	GD11422	2	Upper Parallel Arm
5.	G10732	4	Hex Head Cap Screw, ⅝"-18 x 2"
	GD7805	4	Special Washer, ⅝", Hardened
	G10412	4	Lock Nut, ⅝"-18
6.	GB0186	2	Spring Anchor
7.	GD14217	2	Tab Lock Pin, 7/16" x 1 ½"
8.	GD8249	2-4	Spring
9.		-	See “Hopper Support And Meter Drive”, Page P18
10.	GA5651	1	Lower Parallel Arm
11.	GA1720	1	Bearing/Sprocket, ⅞" Hex Bore
12.	G10001	2	Hex Head Cap Screw, ⅜"-16 x 1"
	G10229	2	Lock Washer, ⅜"
	G10101	2	Hex Nut, ⅜"-16
13.	G10007	4	Hex Head Cap Screw, ⅝"-11 x 1 ½"
	G10230	4	Lock Washer, ⅝"
	G10104	4	Hex Nut, ⅝"-11
14.	GB0366	2	Extension Bracket
A.	G6325X	-	U-Bolt Package For 5" x 7" Toolbar, Includes: (2) GD1113, (4) G10230, (4) G10104

15" SEED OPENER DISC BLADE/BEARING ASSEMBLY AND SCRAPERS

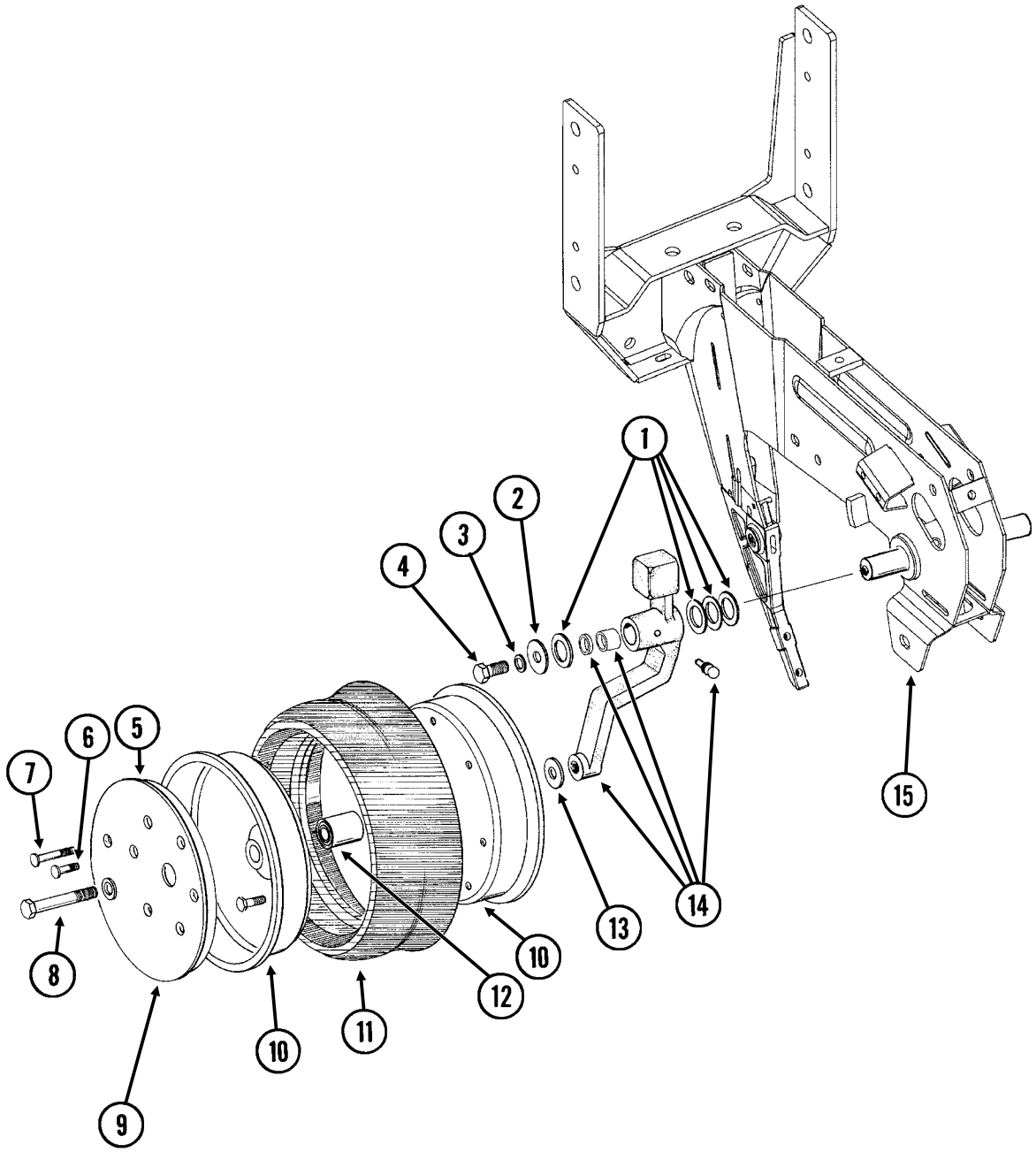
(RU139)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10328	2	Hex Head Cap Screw, ⅜"-16 x ⅝"
	G10622	2	Serrated Flange Nut, ⅜"-16
2.	GA2012R	1	Disc Scraper, R.H.
	GA2012L	-	Disc Scraper, L.H. (Shown)
3.	G10427	12	Rivet, ¼" x ½"
4.	GD11017	1	Special Hex Head Cap Screw, ⅝"-11 x 1 ½", L.H. Threads
	G10007	1	Hex Head Cap Screw, ⅝"-11 x 1 ½"
5.	GD11845	2	Dust Cap
6.	G10204	2	Special Machine Bushing, ⅝" 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, ⅝" (.030" Thick)(As Required)
11.		-	See “Shank Assembly”, Pages P2 And P3
12.	GB0301	1	Seed Tube Guard/Inner Scraper
13.	G10912	2	Hex Socket Head Cap Screw, 5⁄16"-18 x 1", Grade 8
14.	G10325	1	Hex Head Cap Screw, ⅜"-16 x 2 ¾"
	G10622	1	Serrated Flange Nut, ⅜"-16
15.	GD11259	1	Sleeve, ⅜" I.D. x ⅝" O.D. x 1 25⁄32" Long
A.	GA8324	-	Disc Blade/Bearing Assembly, Less Dust Cap (Items 3 And 7-9)

GAUGE WHEELS

(RU140)

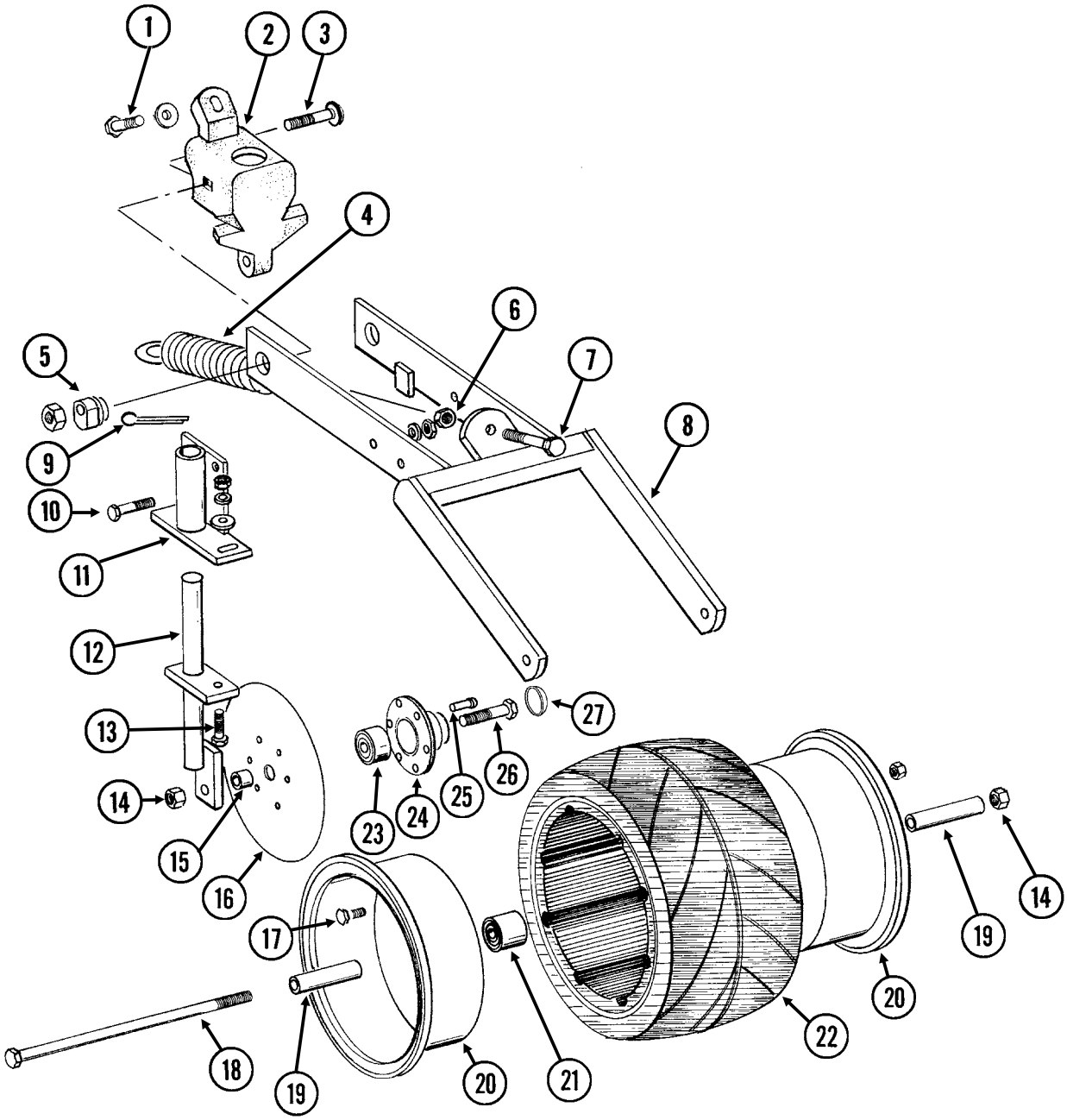


GAUGE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10940	-	Machine Bushing, 1" (.048" Thick)
2.	G10216	2	Washer, ½" USS
3.	G10228	2	Lock Washer, ½"
4.	G10014	1	Hex Head Cap Screw, ½"-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 ¾"
	G10620	8	Serrated Flange Nut, 5/16"-18
8.	G10010	2	Hex Head Cap Screw, ⅝"-11 x 3"
	G10230	2	Lock Washer, ⅝"
9.	G10018	14	Hex Head Cap Screw, 5/16"-18 x ⅝"
	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, ⅝" 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, ¼"-28 (Per Arm)
	GB0276	2	Bushing, 1" I.D. x 1 ¼" O.D. x 1" Long (Per Arm)
	GD10991	2	Seal (Per Arm)
15.		-	See “Shank Assembly”, Pages P2 And P3
A.	GA7949	-	Gauge Wheel Complete (Items 5-7 And 9-12)
B.	G1K296	-	Gauge Wheel Arm Bushing And Seal Driver Kit, Includes: (1) Seal Driver, (1) Bushing Driver, (1) Instruction

COVERING DISCS/SINGLE PRESS WHEEL

RUA054/RUB026(RU94d)

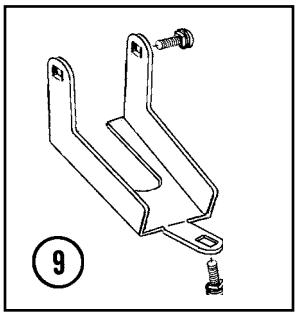


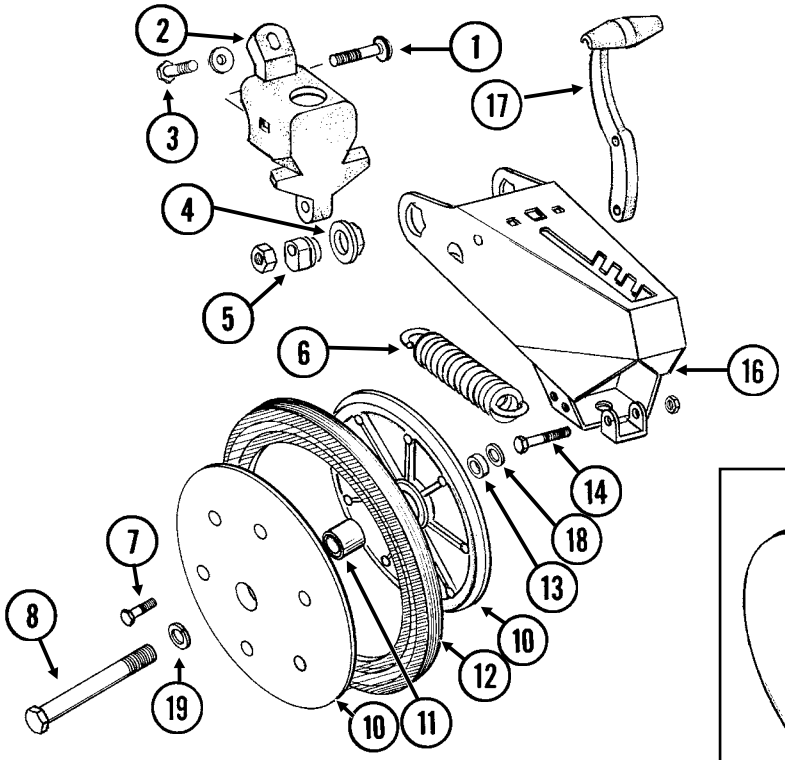
COVERING DISCS/SINGLE PRESS WHEEL

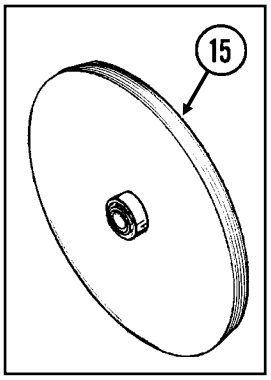
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10001	1	Hex Head Cap Screw, ⅜"-16 x 1"
	G10210	1	Washer, ⅜" USS
2.	GB0268	1	Wheel Arm Stop
3.	G10801	2	Carriage Bolt, ½"-13 x 2 ¼"
	G10315	-	Carriage Bolt, ½"-13 x 2 ½" (Used W/Straight Drop In-Furrow Granular Chemical Bracket)
	G10102	2	Hex Nut, ½"-13
4.	GA2054	1	Spring
5.	GB0239	2	Eccentric Bushing
6.	G10102	1	Hex Nut, ½"-13
7.	G10015	1	Adjusting Bolt, ½"-13 x 5"
8.	GA6619	1	Mounting Arm
9.	G10463	2	Cotter Pin, ¼" x 1 ½"
10.	G10171	4	Hex Head Cap Screw, 5⁄16"-18 x 1 ¼"
	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, ⅝"-11
15.	GD1109	2	Bushing, 41⁄64" I.D. x ⅞" O.D. x ¼" Long
16.	GD9290	2	Disc Blade, 8"
17.	G10018	7	Hex Head Cap Screw, 5⁄16"-18 x ⅝"
	G10109	7	Lock Nut, 5⁄16"-18, Grade 8
18.	G10152	1	Hex Head Cap Screw, ⅝"-11 x 9"
19.	GD3180-12	2	Sleeve, ⅝" I.D. x ⅞" O.D. x 2 ⅞" 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, ¼" x ½"
26.	G10006	2	Hex Head Cap Screw, ⅝"-11 x 2 ¼"
27.	GD11845	2	Dust Cap
A.	GA6733	-	Single Press Wheel Complete W/Bearing (Items 17 And 20-22)
B.	GA6801	-	Covering Disc Blade Complete W/Bearing (Items 16 And 23-25)

“V” CLOSING WHEELS

(RU83i/RU83n)



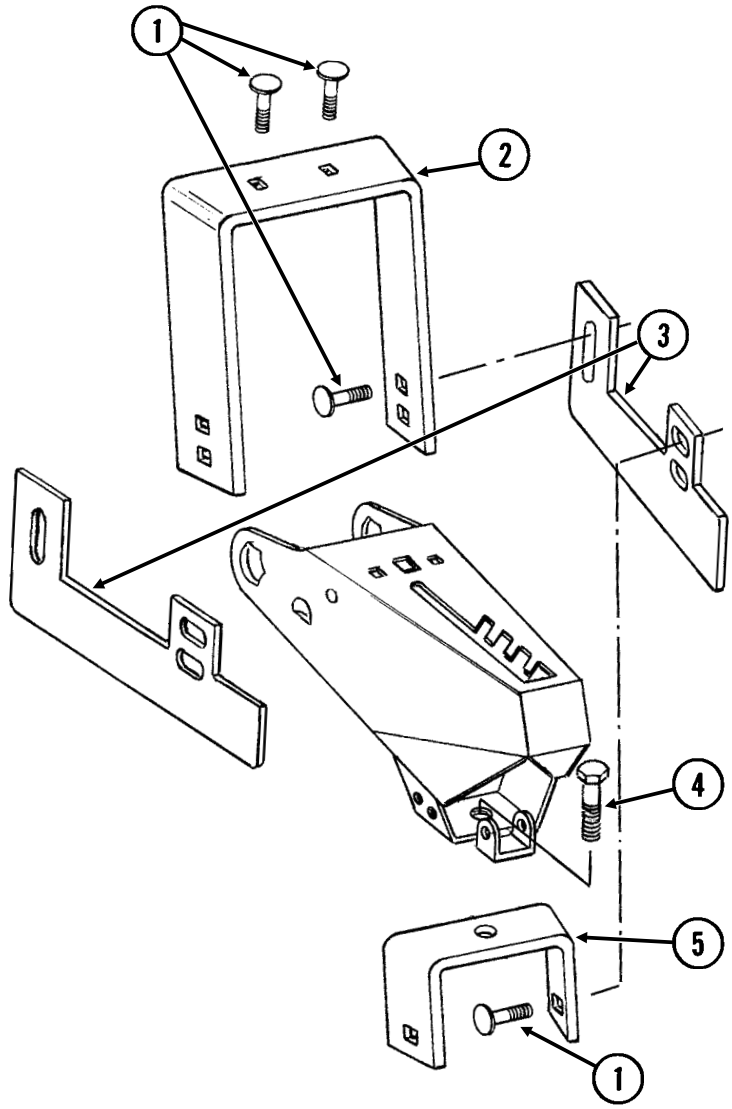




ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10801	2	Carriage Bolt, ½"-13 x 2 ¼"
	G10315	-	Carriage Bolt, ½"-13 x 2 ½" (Used W/Straight Drop In-Furrow Granular Chemical Bracket)
	G10111	2	Lock Nut, ½"-13
2.	GB0268	1	Wheel Arm Stop
3.	G10001	1	Hex Head Cap Screw, ⅜"-16 x 1"
	G10210	1	Washer, ⅜" USS
4.	GB0282	2	Stepped Bushing
5.	GB0239	2	Eccentric Bushing
6.	GD8460	1	Spring
7.	G10064	6	Hex Head Cap Screw, ¼"-20 x 1"
8.	G10013	2	Hex Head Cap Screw, ⅝"-11 x 3 ½"
	G10107	2	Lock Nut, ⅝"-11
9.	G1K345	-	Closing Wheel Shield Kit W/Hardware And Instruction
	G10308	2	Carriage Bolt, ⅜"-16 x ¾"
	G10599	1	Carriage Bolt, ⅜"-16 x 1 ¼"
	G10210	1	Washer, ⅜" USS
	G10229	3	Lock Washer, ⅜"
	G10101	3	Hex Nut, ⅜"-16
10.	GD9120	4	Nylon Half Wheel
11.	GA6171	2	Bearing
12.	GD1085	2	Rubber Tire, 1" x 12"
13.	GD1109	2	Bushing, 41⁄64" I.D. x ⅞" O.D. x ¼" Long
14.	G10133	1	Hex Head Cap Screw, 5⁄16"-18 x 1 ½"
	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, ⅝", Hardened
19.	G10230	2	Lock Washer, ⅝"
A.	GA6434	-	Rubber Closing Wheel Complete W/Bearing (Items 7 And 10-12)

DRAG CLOSING ATTACHMENT

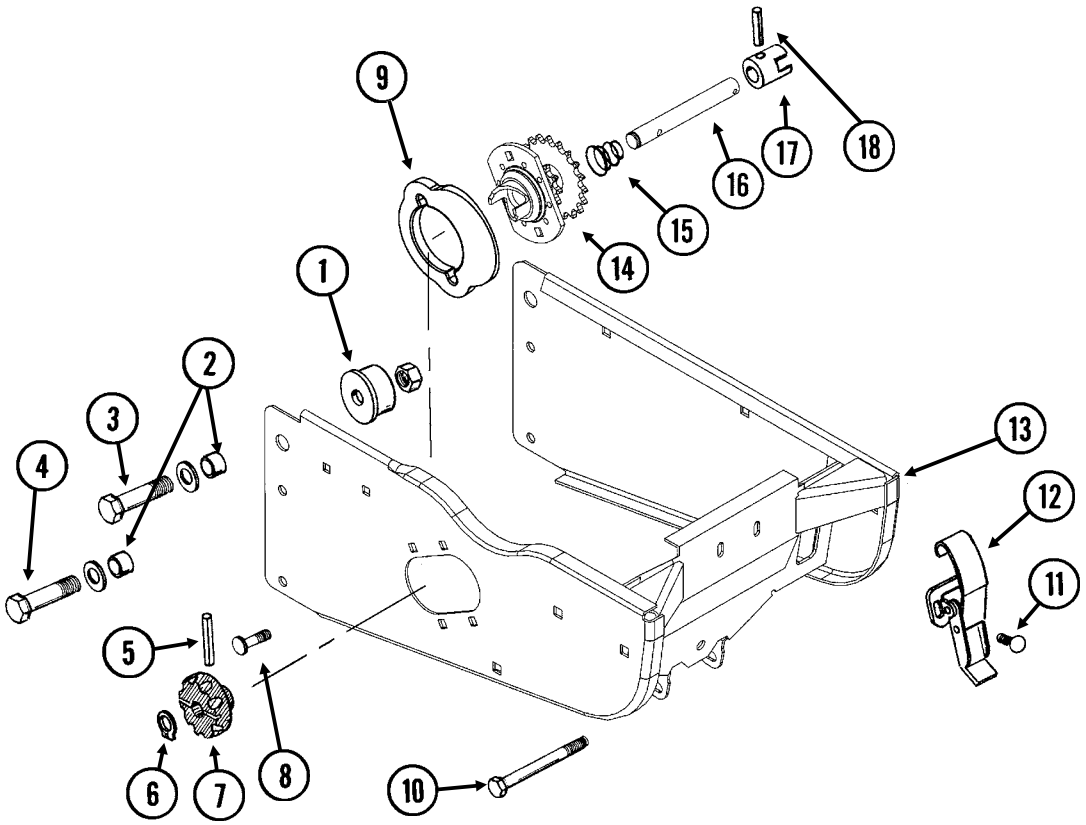
RUB050(RU90c)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10599	6	Carriage Bolt, ⅜"-16 x 1 ¼"
	G10210	6	Washer, ⅜" USS
	G10229	6	Lock Washer, ⅜"
	G10101	6	Hex Nut, ⅜"-16
2.	GD11508	1	Front Bracket
3.	GD11313	2	Blade
4.	G10007	1	Hex Head Cap Screw, ⅝"-11 x 1 ½"
	G10230	1	Lock Washer, ⅝"
	G10104	1	Hex Nut, ⅝"-11
5.	GD11509	1	Rear Bracket
A.	G7566X	-	Drag Closing Attachment Complete (Items 1-5)

HOPPER SUPPORT AND METER DRIVE

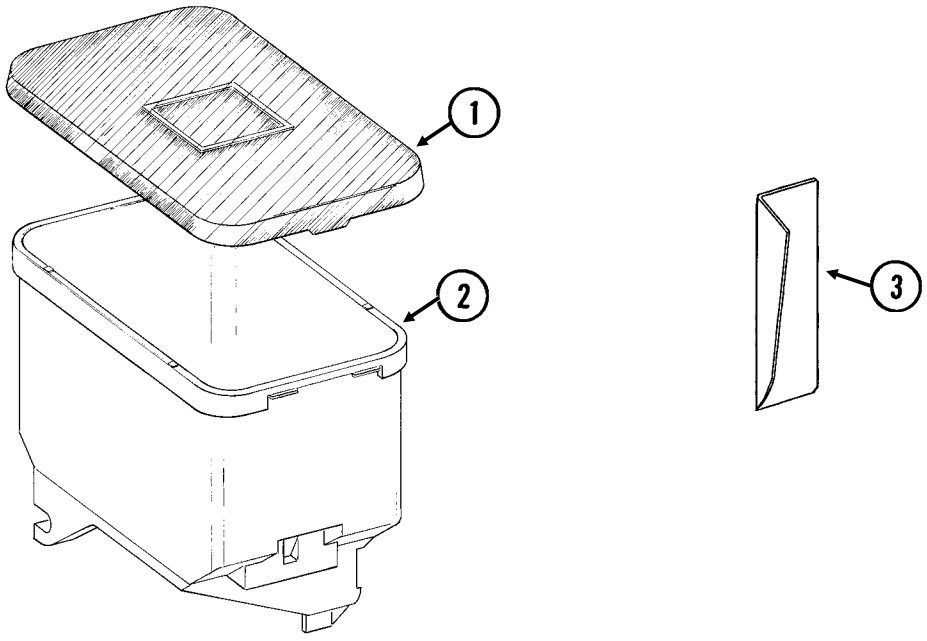
(METR22d)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GB0314	2	Hopper Mount
2.	GB0218	4	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
3.	G10752	2	Hex Head Cap Screw, 5/8"-18 x 2 1/4"
	GD7805	2	Special Washer, 5/8", Hardened
	G10412	2	Lock Nut, 5/8"-18
4.	G10751	2	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	GD7805	2	Special Washer, 5/8", Hardened
	G10412	2	Lock Nut, 5/8"-18
5.	G10602	1	Spring Pin, 1/4" x 1 1/2"
6.	G10567	1	External Retaining Ring, 5/8"
7.	GD11239	1	Knob
8.	G10338	2	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10620	2	Serrated Flange Nut, 5/16"-18
9.	GB0331	1	Clutch Adapter Plate
10.	G10061	1	Hex Head Cap Screw, 3/8"-16 x 3 1/2"
	G10210	2	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
11.	G10309	2	Carriage Bolt, 1/4"-20 x 5/8", Grade 2
	G10621	2	Serrated Flange Nut, 1/4"-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, 3/16" x 1 1/4"
A.	GA10151	-	Meter Drive Assembly Complete, 11/19 Tooth (Items 5-7 And 14-18)

SEED HOPPER AND LID

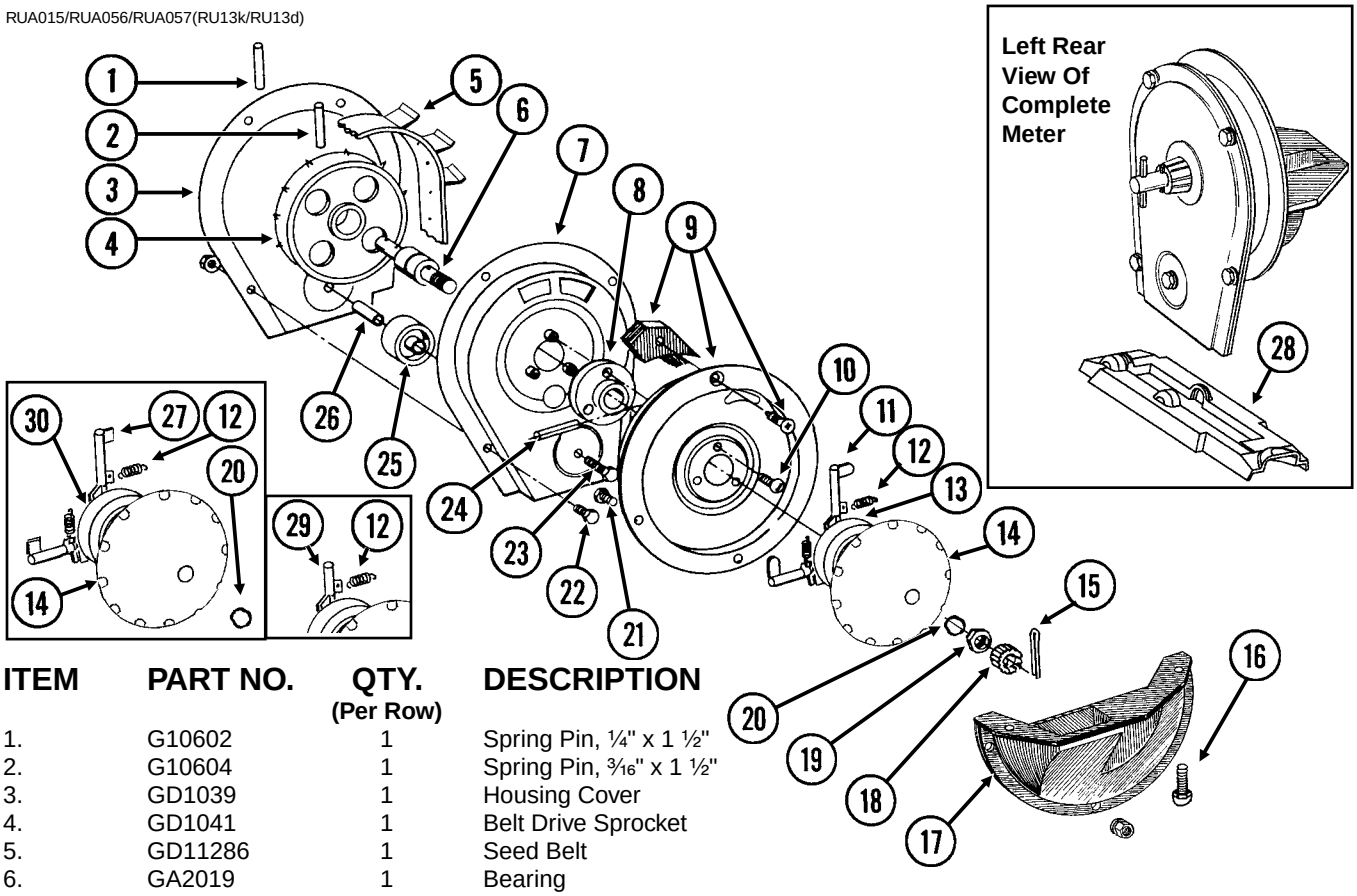
(RU87e/RU87a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD11279	1	Lid
2.	GA9714	1	Seed Hopper, Reinforced
3.	GD11747	1	Seed Reserve Baffle

FINGER PICKUP SEED METER

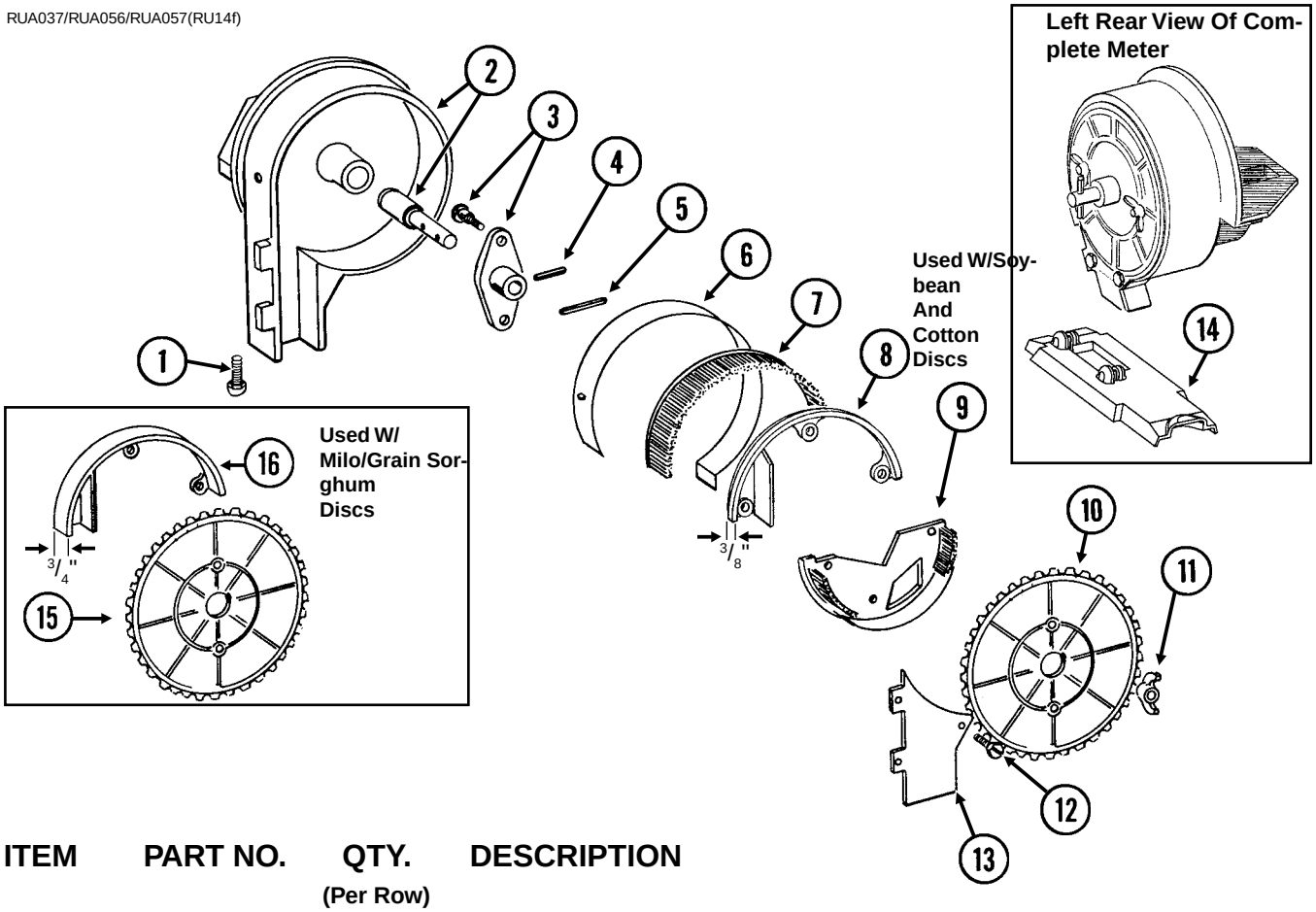
RUA015/RUA056/RUA057(RU13k/RU13d)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10602	1	Spring Pin, ¼" x 1 ½"
2.	G10604	1	Spring Pin, 3⁄16" x 1 ½"
3.	GD1039	1	Housing Cover
4.	GD1041	1	Belt Drive Sprocket
5.	GD11286	1	Seed Belt
6.	GA2019	1	Bearing
7.	GA2018	1	Conveyor Housing
8.	GB0110	1	Bearing Housing
9.	GR1569	-	Carrier Plate W/Brush And Screw (Corn)
	GR0664	-	Carrier Plate W/Brush And Screw (Sunflower)
	GA2020	-	Brush
	G10690	-	Rolling Thread Screw, No. 10 x ¾"
10.	G10401	3	Slotted Hex Washer Head Screw, No. 10-32 x 5⁄8"
11.	GD18704	12	Finger, Corn
12.	GD6501	12	Spring
13.	GB0410	1	Cam (Corn)
14.	GD11528	1	Finger Holder
15.	G10470	1	Cotter Pin, 5⁄32" x 1"
16.	G11009	2	Locking Thumbscrew, 5⁄16"-18 x ¾"
17.	GD11311	1	Seed Baffle
18.	GD1083	1	Cover Nut
19.	G10500	1	Jam Nut, 5⁄8"-18 UNF
20.	GA8343	1	Wave Washer, 5⁄8" (Triple Wave)
21.	G10020	3	Hex Head Cap Screw, ¼"-20 x 5⁄8"
	G10323	3	Hex Flange Nut, ¼"-20, No Serrations
22.	G10022	4	Hex Head Cap Screw, ¼"-20 x ½"
	G10621	4	Serrated Flange Nut, ¼"-20
23.	G10021	1	Hex Head Cap Screw, ¼"-20 x 1 ½"
	G10621	1	Serrated Flange Nut, ¼"-20
24.	G10603	1	Spring Pin, ¼" x 1 ¼"
25.	GD1042	1	Idler
26.	GB0120	1	Bushing, 17⁄64" I.D. x 1 1⁄32" Long
27.	GD19333	12	Finger, Oil Sunflower
28.	GD15698	1	Shank Cover, Finger Pickup Seed Meter
29.	GD11787	-	Half Rate Blank Finger
30.	GB0111	1	Cam (Sunflower)
A.	GR1848	-	Finger Assembly, Corn (Items 11-14 And 20)
B.	GR1897	-	Finger Assembly, Oil Sunflower (Items 12, 14, 20, 27 And 30)

BRUSH-TYPE SEED METER

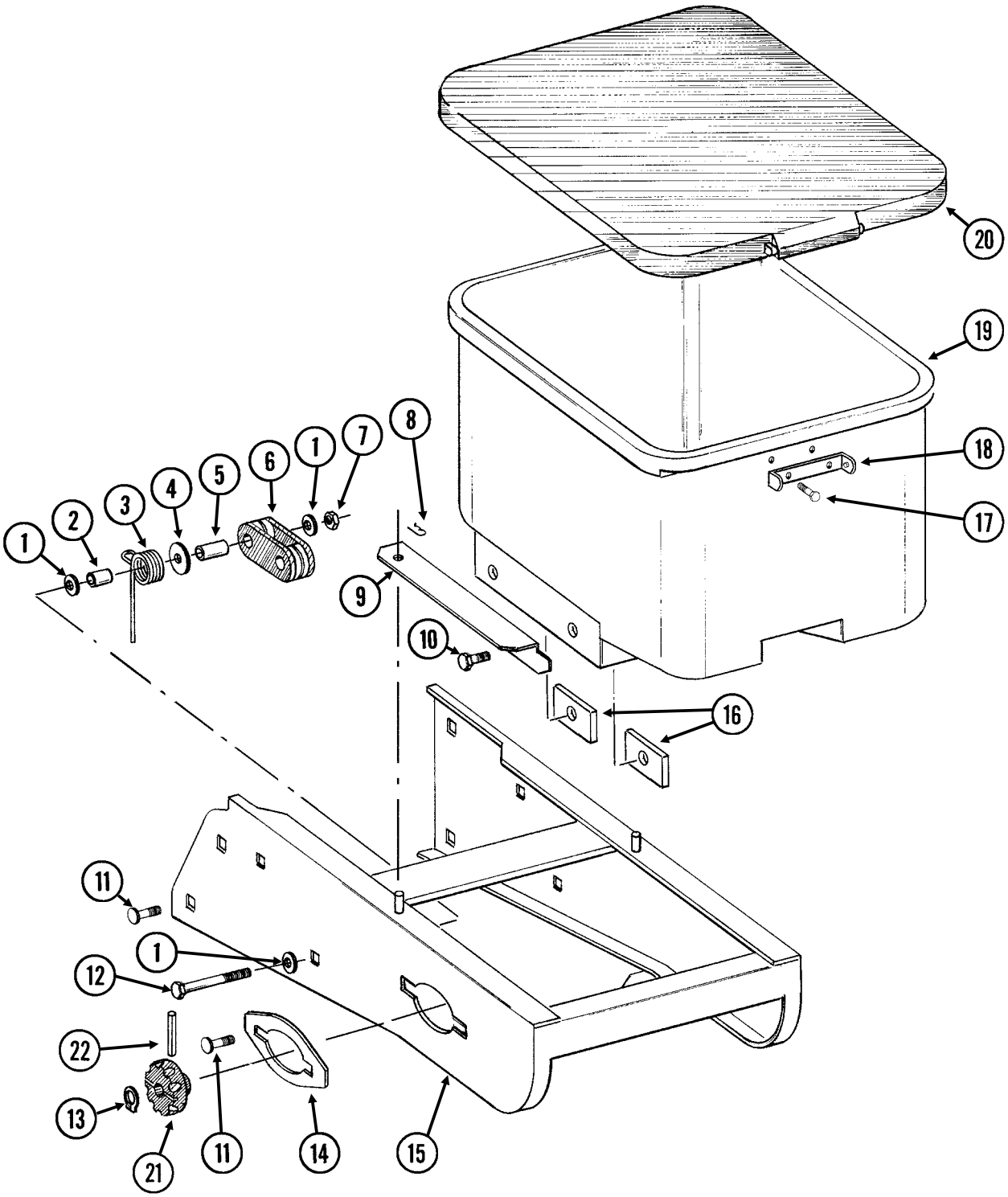
RUA037/RUA056/RUA057(RU14f)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G11009	2	Locking Thumbscrew, 5/16"-18 x 3/4"
2.	GA6027	1	Housing W/Bearing
	GA5698	-	Bearing
3.	GA6038	1	Hub W/Shoulder Bolts
	GD1755	-	Shoulder Bolt, 1/4"-20 (2 Used)
4.	G10603	1	Spring Pin, 1/4" x 1 1/4"
5.	G10602	1	Spring Pin, 1/4" x 1 1/2"
6.	GD8778	1	Wear Strip
7.	GA5699	1	Upper Brush
8.	GD11122	1	Upper Brush Retainer (Used W/Soybean And Cotton Discs)
9.	GA5834	1	Lower Brush
10.	GA5794	-	Seed Disc, Soybean, 60 Cell, Black Color-Coded
	GA6184	-	Seed Disc, Specialty Soybean, 48 Cell, Dark Blue Color-Coded
	GA5796	-	Seed Disc, Cotton, Acid-Delinted, 30 Cell, White Color-Coded
	GA6168	-	Seed Disc, Large Cotton, Acid-Delinted, 36 Cell, Tan Color-Coded
	GA6478	-	Seed Disc, High-Rate Cotton, Acid-Delinted, 48 Cell, Light Green Color-Coded
	GA6182	-	Seed Disc, Hill-Drop Cotton, Acid-Delinted, 12 Cell, Brown Color-Coded
	GA7255	-	Seed Disc, Small Hill-Drop Cotton, Acid-Delinted, 12 Cell, Dark Green Color-Coded
11.	G10531	2	Wing Nut W/Nylon Insert, 1/4"-20
12.	G11151	9	Hex Washer Head Screw, No. 10-24 x 1/2"
	G10634	-	Slotted Tap Screw, No. 10-24 x 5/8" (Use As Required)
13.	GD7878	1	Cover
14.	GD15699	1	Shank Cover, Brush-Type Seed Meter
15.	GA5982	-	Seed Disc, Small Milo/Grain Sorghum, 30 Cell, Red Color-Coded
	GA6187	-	Seed Disc, Large Milo/Grain Sorghum, 30 Cell, Light Blue Color-Coded
	GA5795	-	Seed Disc, High-Rate Small Milo/Grain Sorghum, 60 Cell, Red Color-Coded
	GA6633	-	Seed Disc, High-Rate Large Milo/Grain Sorghum, 60 Cell, Yellow Color-Coded
16.	GD8237	-	Upper Brush Retainer (Used W/Milo/Grain Sorghum Discs)

GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

(METR14d)

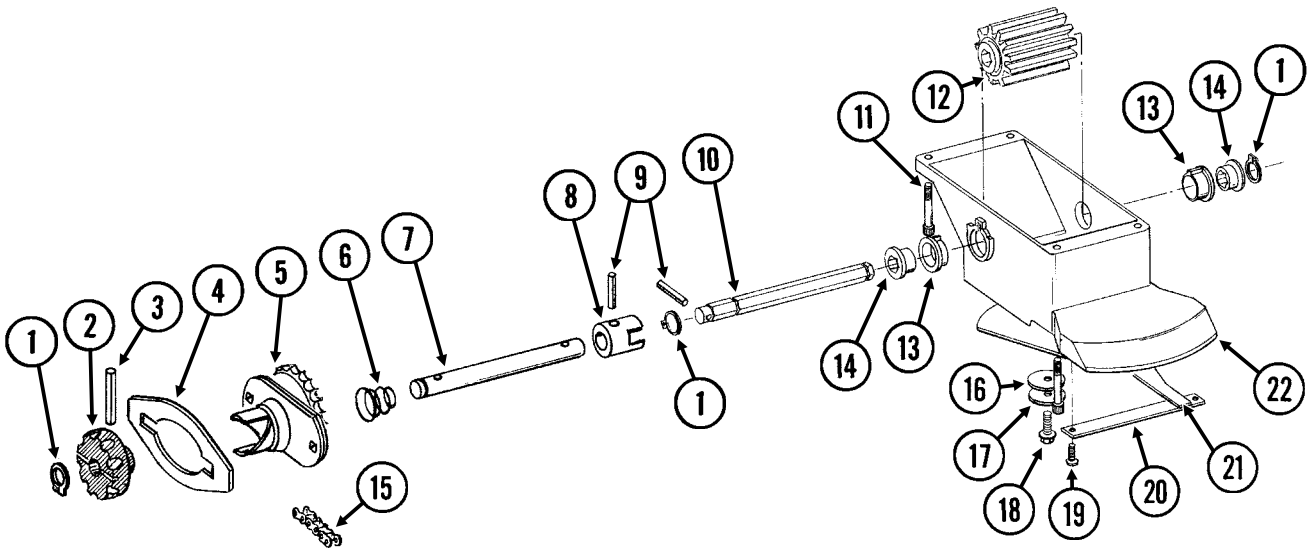


GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10210	3	Washer, ⅜" USS
2.	GD2971-10	1	Sleeve, 9⁄16" Long
3.	GD11219	1	Spring
4.	G10201	1	Special Washer, ⅜" x 1 ½" O.D.
5.	GD1026	1	Sleeve, 1 3⁄16" Long
6.	GD11962	1	Idler
7.	G10108	1	Lock Nut, ⅜"-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, ⅜"-16 x ¾"
	G10229	4	Lock Washer, ⅜"
11.	G10312	8	Carriage Bolt, 5⁄16"-18 x ¾"
	G10620	8	Serrated Flange Nut, 5⁄16"-18
12.	G10325	1	Hex Head Cap Screw, ⅜"-16 x 2 ¾"
13.	G10567	3	External Retaining Ring, ⅝"
14.	GD11305	1	Plate
15.	A10759	1	Hopper Panel Extension **(Non-Stock Item)** **(Sub Wholegoods Order Code 700-01099)**
16.	GD11424	4	Block
17.	G10023	2	Hex Head Cap Screw, ¼"-20 x ¾"
	G10621	2	Serrated Flange Nut, ¼"-20
18.	GD1060	1	Hinge
19.	GA8371	1	Hopper
20.	GA4444	1	Lid
21.	GD11239	1	Knob
22.	G10602	1	Spring Pin, ¼" x 1 ½"

GRANULAR CHEMICAL METER AND METER DRIVE

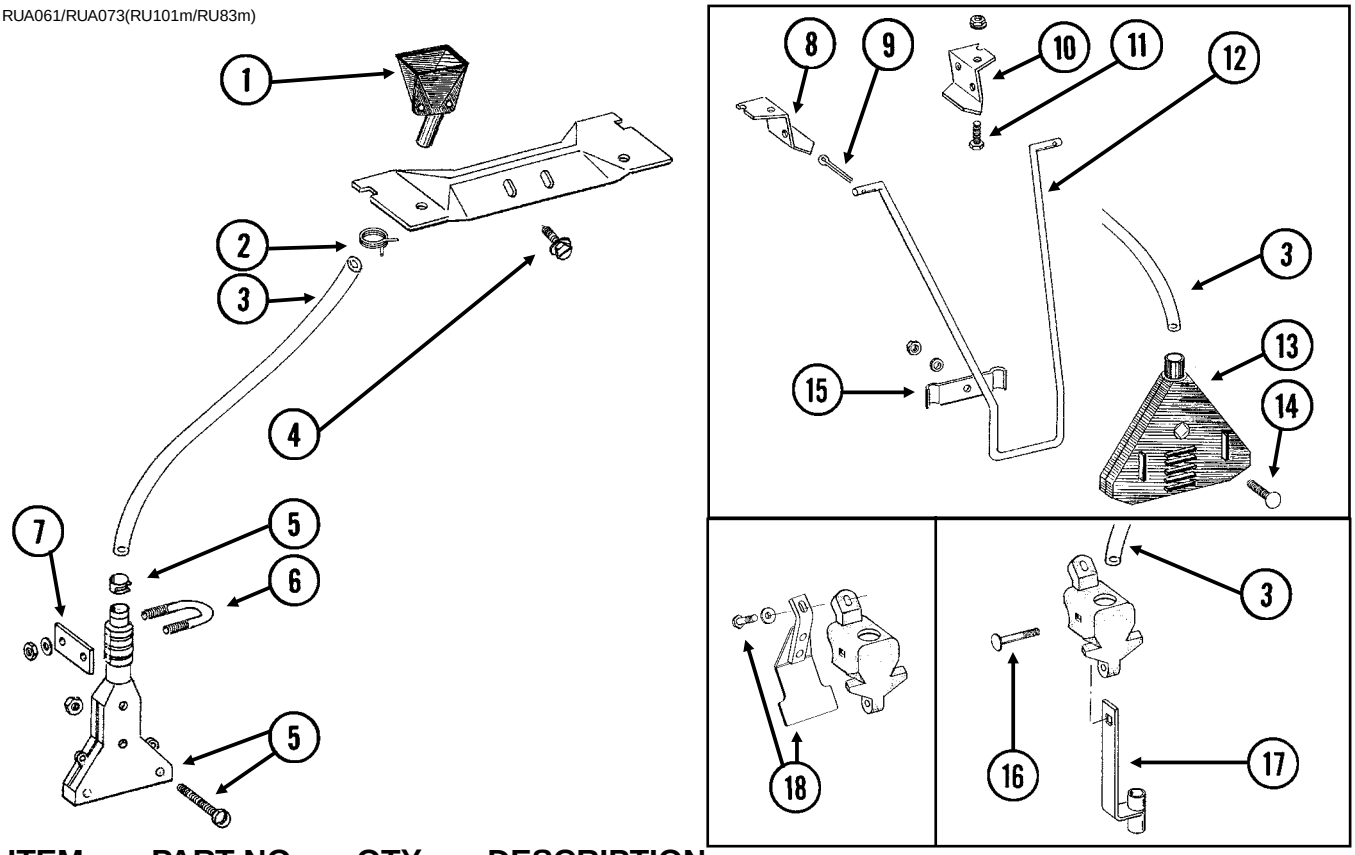
RUA051/RUB028(RU91a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10567	3	External Retaining Ring, ⅝"
2.	GD11239	1	Knob
3.	G10602	1	Spring Pin, ¼" x 1 ½"
4.		-	See “Granular Chemical Hopper And Hopper Panel Extension”, Pages P22 And P23
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 ¼"
10.	GD11297	1	Shaft
11.	G10921	4	Hex Socket Head Cap Screw, No. 10-24 x ⅞"
	G10257	4	Lock Washer, No. 10
12.	GD7148	1	Feed Roller, Hex Bore
13.	GB0115	2	Bearing
14.	GD7258	2	Hex Bushing
15.	G3303-114	1	Chain, No. 41, 114 Pitch Including Connector Link
	GR0196	1	Connector Link, No. 41
16.	G10660	1	Wave Washer, ½"
17.	G10209	1	Washer, ¼" USS
18.	G10570	1	Slotted Hex Self-Tapping Screw, ¼"-20 x ¾"
19.	G11073	2	Slotted Hex Self-Tapping Screw, No. 10 x ⅜"
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

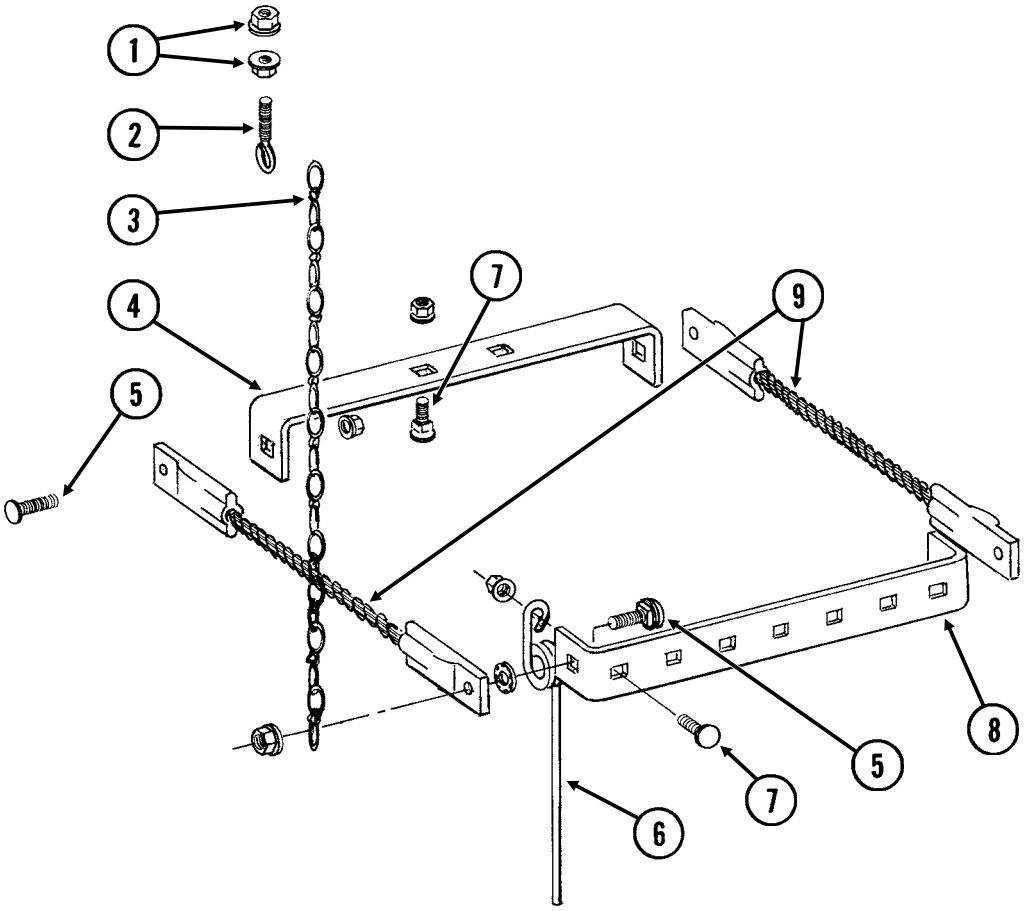
RUA061/RUA073(RU101m/RU83m)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2423	1	Funnel
2.	G11209	1	Wire Hose Clamp, ¾"
3.	GD2947	1	Hose, 7⁄16" x 28"
4.	G10523	2	Slotted Pan Head Self-Tapping Screw, No. 10 x ½"
5.	GA6907	1	Slope-Compensating Bander W/Hardware (4 ½" Band Width)
	G10864	1	Uni-Clamp
	G10757	2	Pan Head Screw, No. 10-32 x 1 ¼"
	G10758	2	Hex Nut, No. 10-32
6.	GD10963	1	U-Bolt, 1 ½" x 1 5⁄16" x ¼"-20
	G10209	2	Washer, ¼" USS
	G10110	2	Lock Nut, ¼"-20, Grade B
7.	GD10984	1	Spacer
8.	GD1115L	-	Hanger Bracket, L.H.
9.	G10452	-	Cotter Pin, ⅛" x ½"
10.	GD1115R	-	Hanger Bracket, R.H.
11.	G10310	-	Carriage Bolt, ¼"-20 x 3¾", Grade 2
	G10227	-	Lock Washer, ¼"
	G10103	-	Hex Nut, ¼"-20
12.	GD1116	-	Hanger
13.	GA2075	-	Diffuser, 14" Band
14.	G10306	-	Carriage Bolt, ⅜"-16 x 2"
	G10229	-	Lock Washer, ⅜"
	G10101	-	Hex Nut, ⅜"-16
15.	GD1118	-	Clamp
16.	G10315	1	Carriage Bolt, ½"-13 x 2 ½" (Replaces Existing ½" x 2 ¼" Hardware)
17.	GA6741	1	Bracket (Straight Drop In-Furrow)
18.	G1K385	-	Bander Shield Kit W/Hardware And Instruction
	G10003	1	Hex Head Cap Screw, ⅜"-16 x 1 ½"
	GD14659	1	Special Washer, ⅜", Hardened

SPRING TOOTH INCORPORATOR

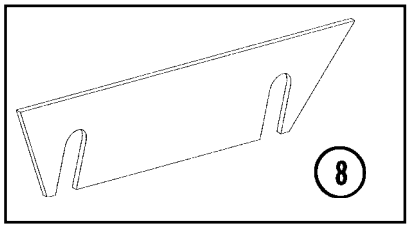
RUA055(RU95)

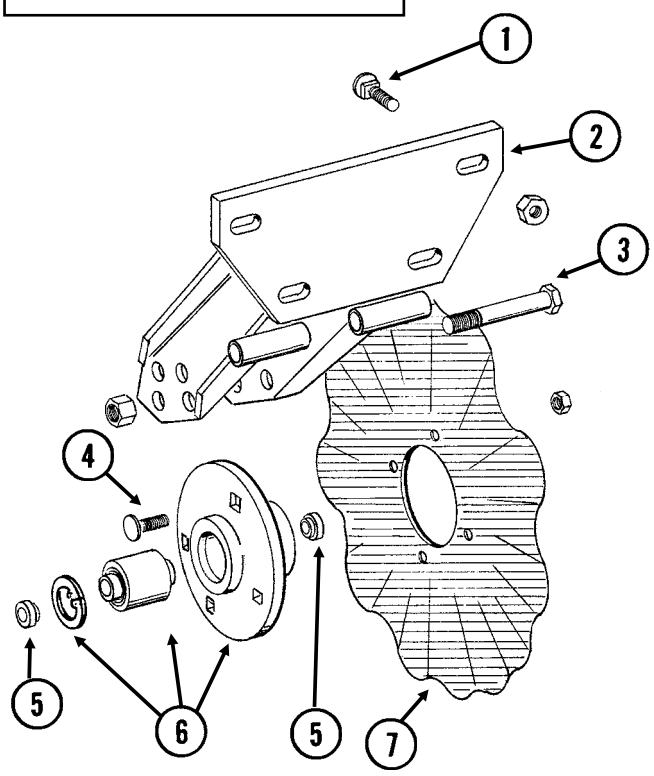


ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10621	4	Serrated Flange Nut, ¼"-20
2.	GD2460	2	Eyebolt, ¼"-20
3.	G3305-01	4	Twin Loop Chain, 9 Links
4.	GD1143	1	Front Bracket
5.	G10305	4	Carriage Bolt, ⅜"-16 x 1"
	G10529	4	External Tooth Lock Washer, ⅜"
	G10622	4	Serrated Flange Nut, ⅜"-16
6.	GD1145	7	Spring Tooth
7.	G10308	9	Carriage Bolt, ⅜"-16 x ¾"
	G10622	9	Serrated Flange Nut, ⅜"-16
8.	GD1144	1	Rear Bracket
9.	GA2094	2	Cable Assembly

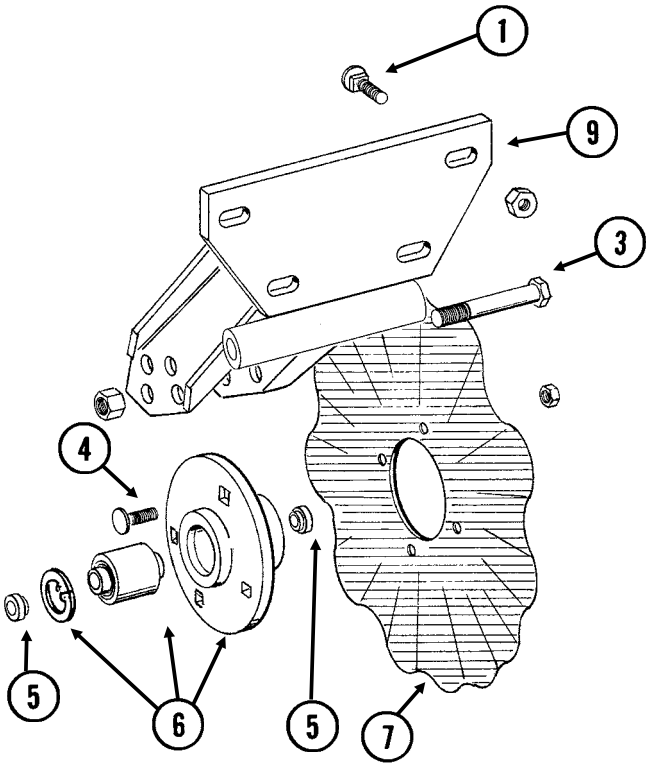
ROW UNIT MOUNTED NO TILL COULTER

(D14398/RU102c/RU152)





STYLE A

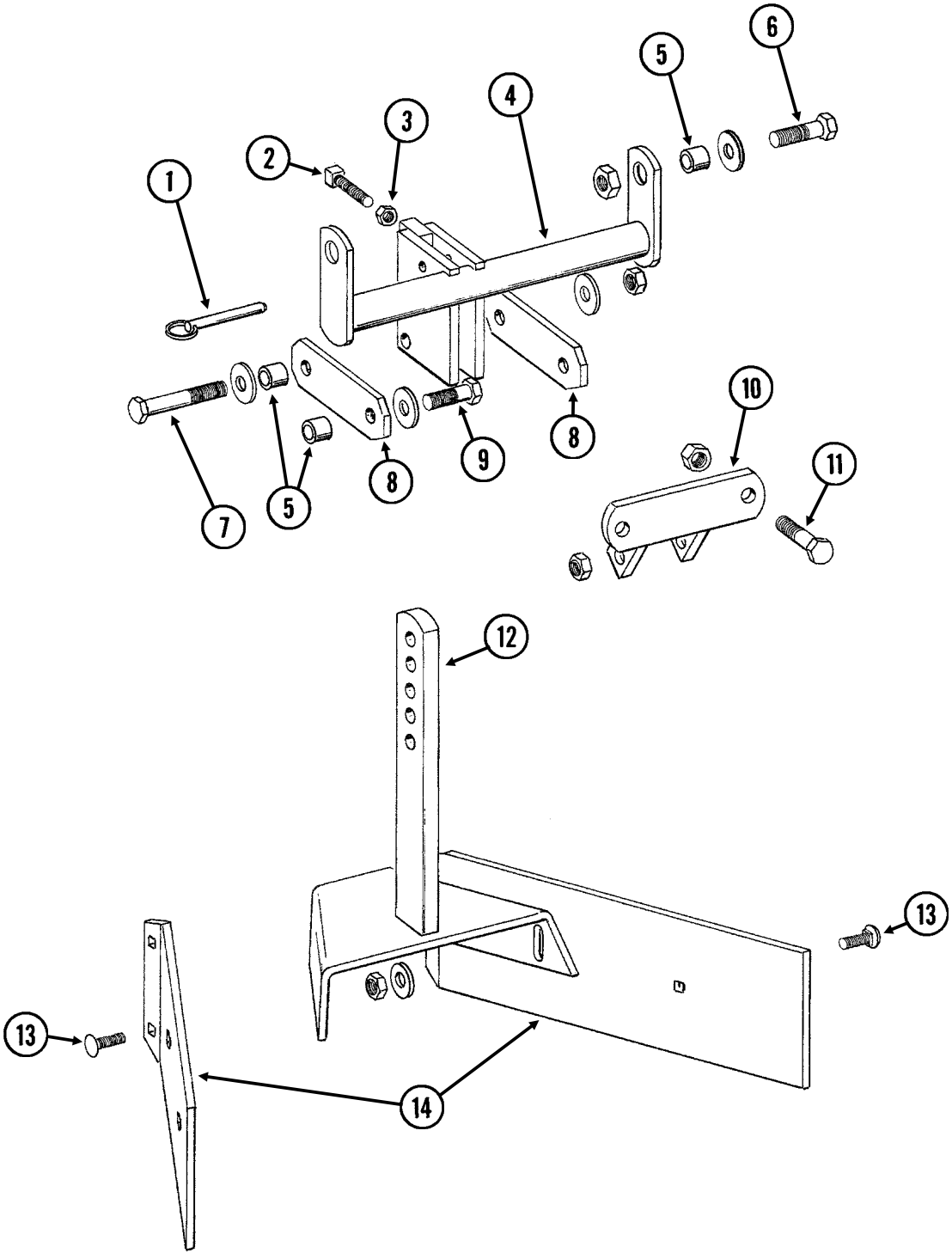


STYLE B

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10574	4	Carriage Bolt, ½"-13 x 1 ¼"
	G10111	4	Lock Nut, ½"-13
2.	GA5625	1	Arm (Style A)
3.	G10036	1	Hex Head Cap Screw, ⅝"-11 x 4"
	G10107	1	Lock Nut, ⅝"-11
4.	G10574	4	Carriage Bolt, ½"-13 x 1 ¼"
	G10111	4	Lock Nut, ½"-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, ¾", 13 Flutes
8.	GD14398	-	Spacer
9.	GA11520	1	Arm (Style B)

ROW UNIT MOUNTED BED LEVELER

RUA059/RUA060(RU99/RU100)

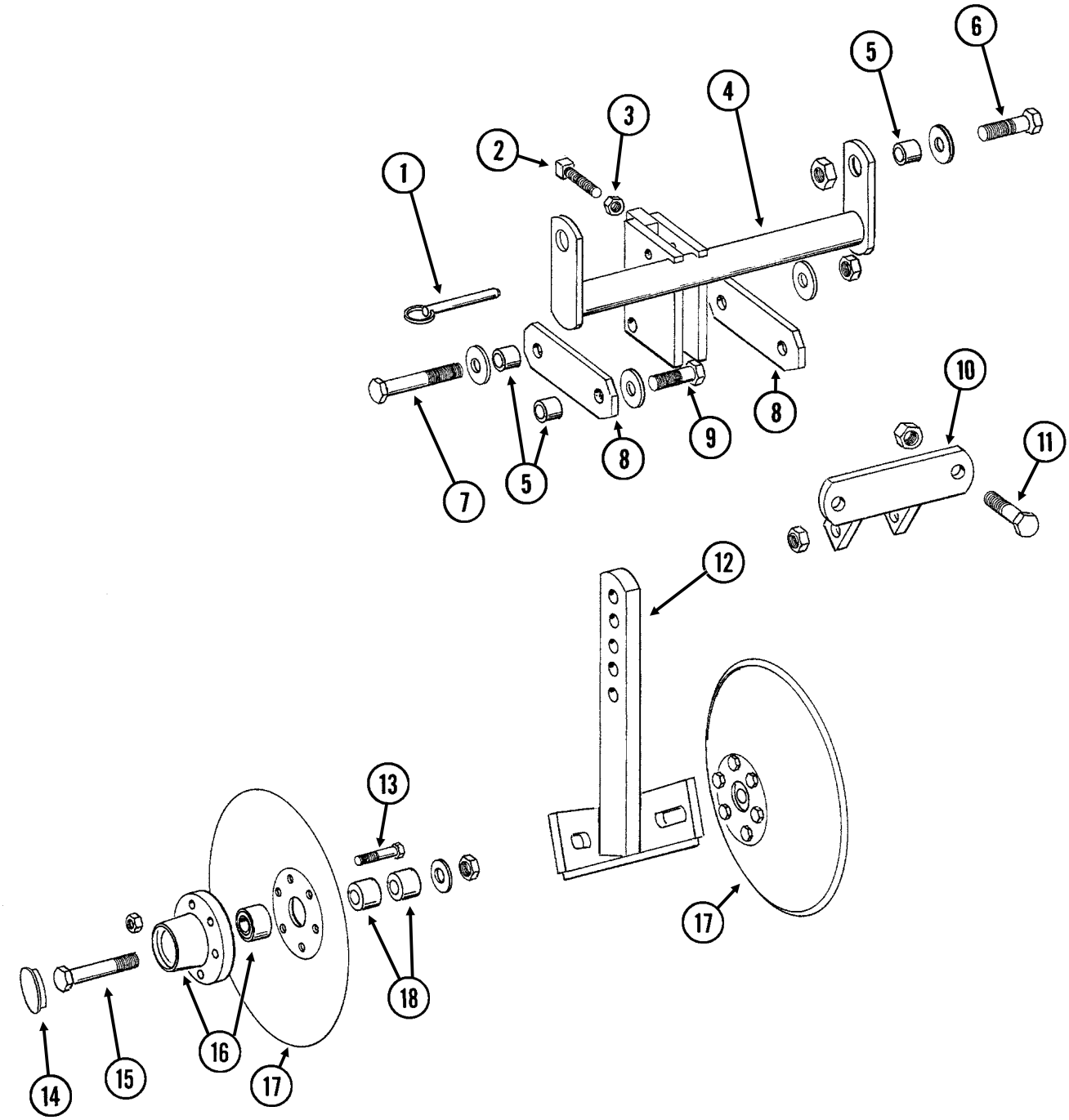


ROW UNIT MOUNTED BED LEVELER

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10536	1	Detent Pin, ½" x 2 ½" Grip
2.	G10597	1	Square Head Set Screw, ⅝"-11 x 2 ¼"
3.	G10503	1	Hex Jam Nut, ⅝"-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, ½"-13 x 1 ¾"
	GD14674	2	Special Washer, ½", Hardened
	G10111	2	Lock Nut, ½"-13
7.	G10585	1	Hex Head Cap Screw, ½"-13 x 3 ¼"
	G10216	2	Washer, ½" USS
	G10111	1	Lock Nut, ½"-13
8.	GD7890	2	Link
9.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10216	2	Washer, ½" USS
	G10111	2	Lock Nut, ½"-13
10.	GA5715	1	Anchor
11.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10111	2	Lock Nut, ½"-13
12.	GA5892	1	Leveler
13.	G10303	6	Carriage Bolt, ⁵⁄₁₆"-18 x 1"
	G10219	4	Washer, ⁵⁄₁₆" USS
	G10109	6	Lock Nut, ⁵⁄₁₆"-18, Grade 8
14.	GD8266	2	Blade

ROW UNIT MOUNTED DISC FURROWER

RUA059/RUA058(RU99/RU98g)

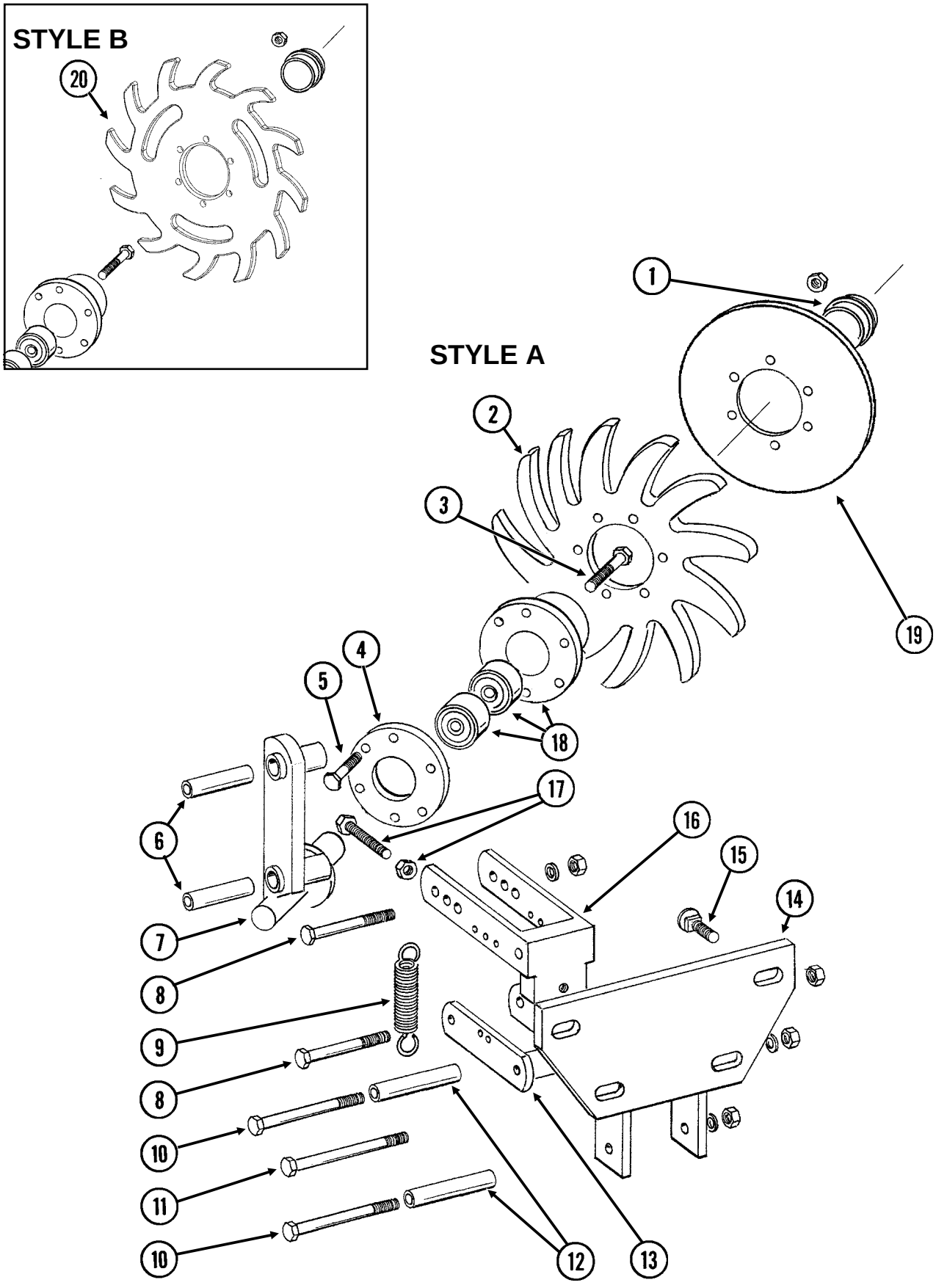


ROW UNIT MOUNTED DISC FURROWER

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10536	1	Detent Pin, ½" x 2 ½" Grip
2.	G10597	1	Square Head Set Screw, ⅝"-11 x 2 ¼"
3.	G10503	1	Hex Jam Nut, ⅝"-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, ½"-13 x 1 ¾"
	GD14674	2	Special Washer, ½", Hardened
	G10111	2	Lock Nut, ½"-13
7.	G10585	1	Hex Head Cap Screw, ½"-13 x 3 ¼"
	G10216	2	Washer, ½" USS
	G10111	1	Lock Nut, ½"-13
8.	GD7890	2	Link
9.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10216	2	Washer, ½" USS
	G10111	2	Lock Nut, ½"-13
10.	GA5715	1	Anchor
11.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10111	2	Lock Nut, ½"-13
12.	GA5718	1	Support Arm
13.	G10572	6	Truss Head Slotted Machine Screw, 5⁄16"-18 x ⅞"
	G10106	6	Hex Nut, 5⁄16"-18
14.	GD1132	2	Dust Cap
15.	G10318	2	Hex Head Cap Screw, ⅝"-11 x 4 ½"
	GD7805	2	Special Washer, ⅝", Hardened
	G10107	2	Lock Nut, ⅝"-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, 11⁄16" I.D. x ¾" Long
	GD7817-04	2	Spacer, 11⁄16" I.D. x ½" Long

ROW UNIT MOUNTED RESIDUE WHEEL

(RU103dd/RU103d)



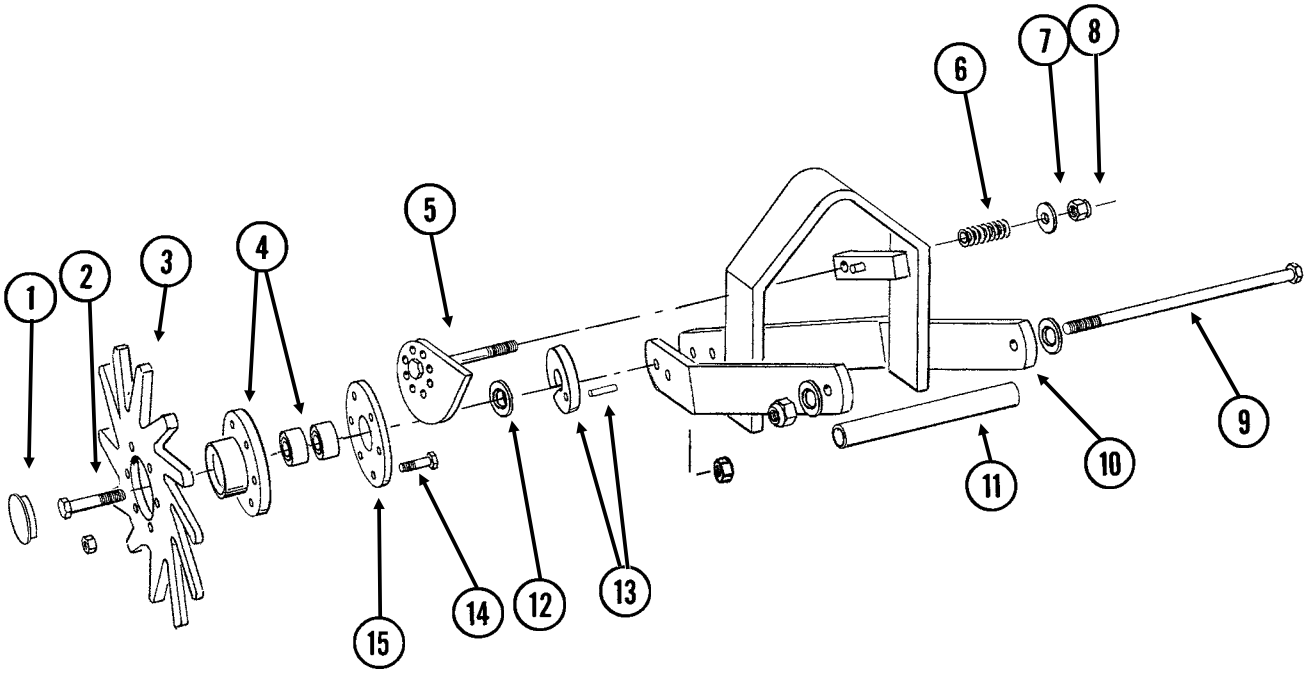
ROW UNIT MOUNTED RESIDUE WHEEL

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1132	1	Dust Cap
2.	GD10552	1	Wheel, 12 Tine, ⅜" x 12"
3.	G10006	1	Hex Head Cap Screw, ⅝"-11 x 2 ¼"
4.	GD9724	1	Backing Plate
5.	G10133	6	Hex Head Cap Screw, 5⁄16"-18 x 1 ½"
	G10109	6	Lock Nut, 5⁄16"-18, Grade 8
6.	GD9720	2	Spacer, ½" x 2 3⁄16" Long
7.	GA6838	1	Wheel Mount
8.	G10033	2	Hex Head Cap Screw, ½"-13 x 3 ½"
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
9.	GD5857	2	Spring
10.	G10045	2	Hex Head Cap Screw, ½"-13 x 4 ½"
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
11.	G10348	1	Hex Head Cap Screw, ½"-13 x 5" (Lockup Bolt)
	G10111	1	Lock Nut, ½"-13
12.	GD9715	2	Spacer, ½" x 3" Long
13.	GA6834	1	Lower Link
14.	GA6832	1	Mount
15.	G10574	4	Carriage Bolt, ½"-13 x 1 ¼"
	G10111	4	Lock Nut, ½"-13
16.	GA6833	1	Upper Link
17.	G10371	1	Hex Head Cap Screw, ½"-13 x 3", Full Thread
	G10501	1	Hex Jam Nut, ½"-13, Grade 2
18.	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
19.	GD12534	-	Cover
20.	GB0387	1	Wheel, 12 Tine, ⅜" x 12"
A.	GA7446	-	Wheel Assembly, 12 Tine (Items 2, 4, 5 And 18)
B.	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 4, 5, 18 And 20)

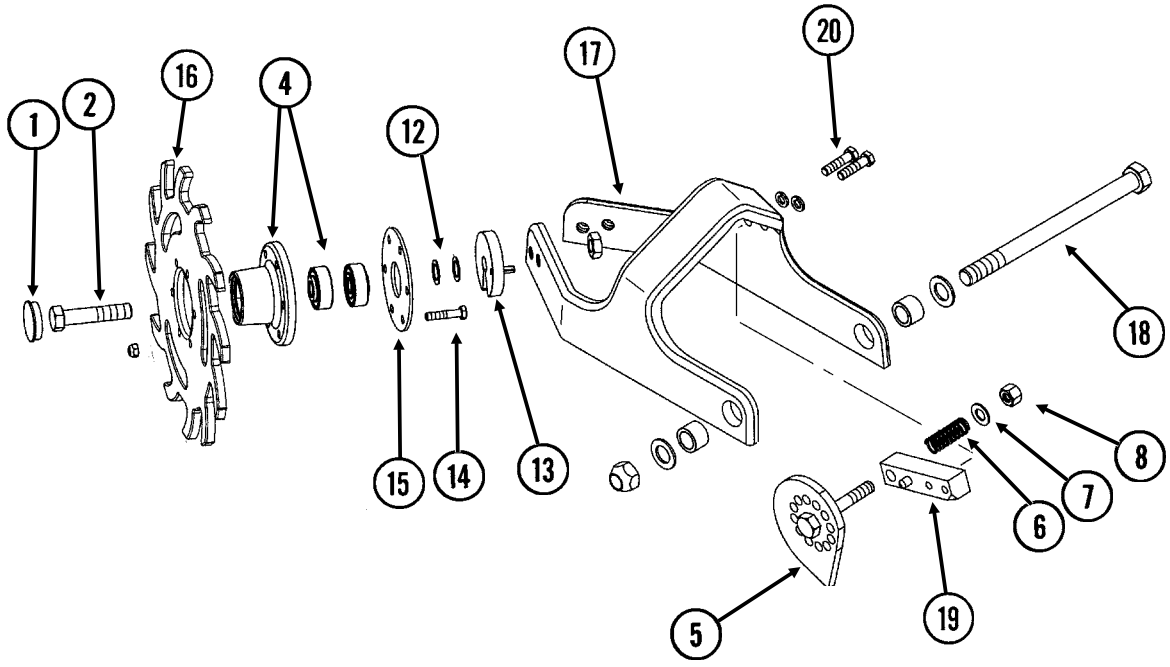
COULTER MOUNTED RESIDUE WHEELS

(RU104uuu/RU153)

STYLE A - Used With Style A Row Unit Mounted No Till Coulter



STYLE B - Used With Style B Row Unit Mounted No Till Coulter

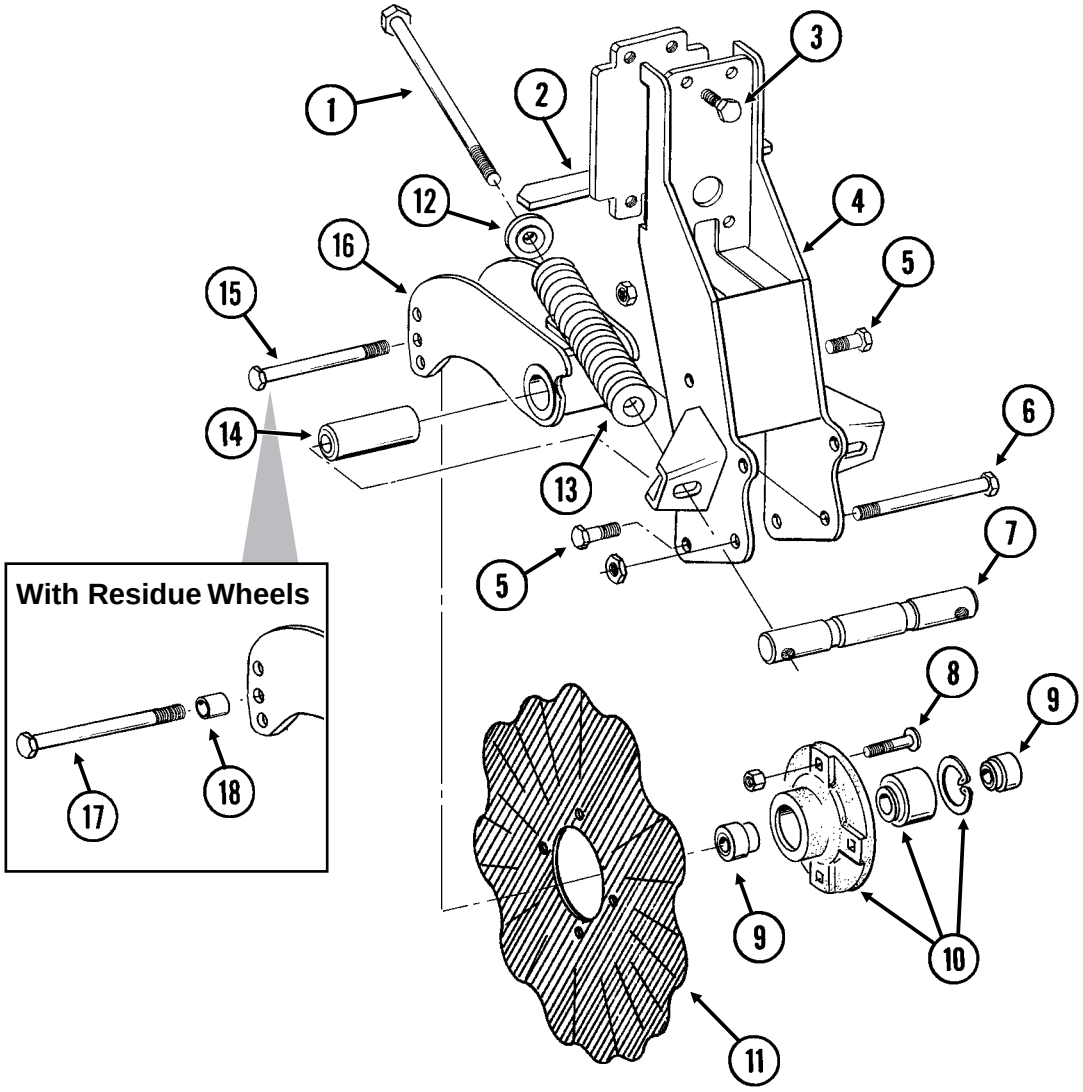


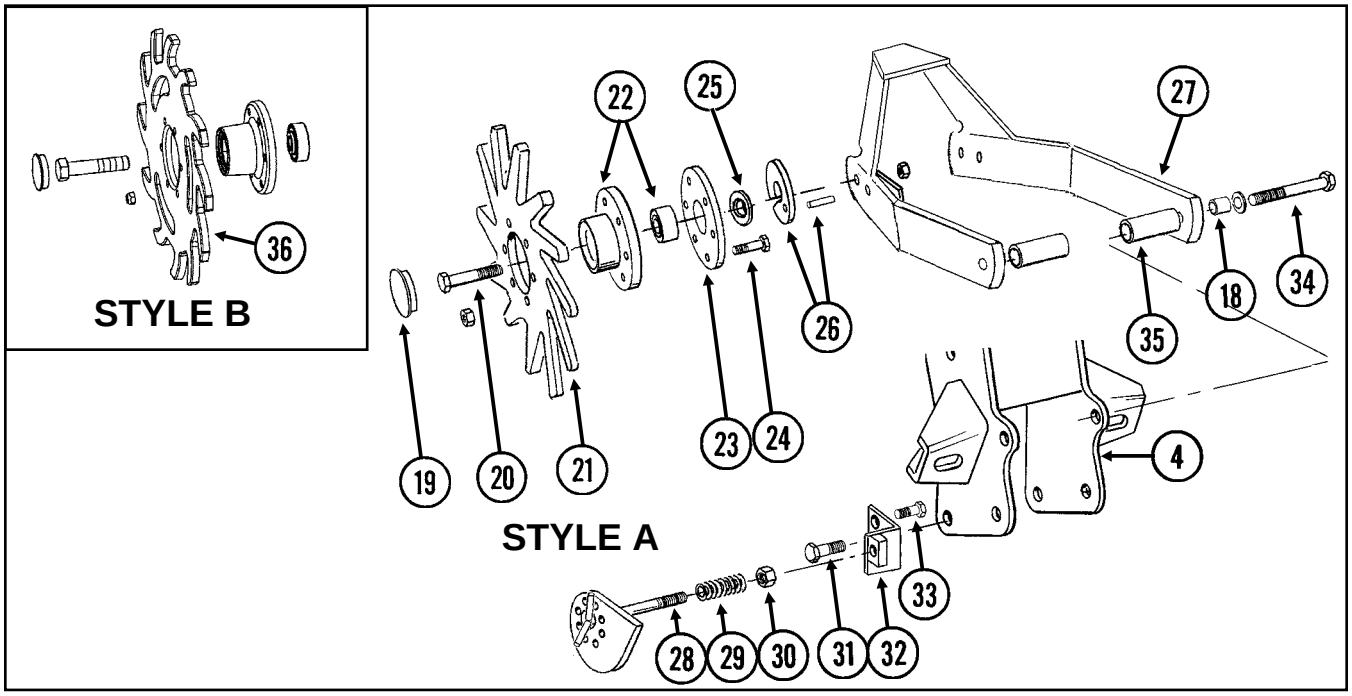
COULTER MOUNTED RESIDUE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1132	2	Dust Cap
2.	G10010	2	Hex Head Cap Screw, ⅝"-11 x 3"
	G10503	2	Hex Jam Nut, ⅝"-11, Grade 2
3.	GD10552	2	Wheel, 12 Tine, ⅜" x 12"
4.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
5.	GA7412	1	Cam
6.	GD10519	1	Spring
7.	G10206	1	Washer, ½" SAE
8.	G10974	1	Lock Nut W/Nylon Insert, ½"-13
9.	G11098	1	Hex Head Cap Screw, ½"-13 x 9 ½", Grade 8
	GD14674	2	Special Washer, ½", Hardened
	G10974	1	Lock Nut W/Nylon Insert, ½"-13
10.	GA7271	1	Mount
11.	GD10526	1	Sleeve, 7 ½"
12.	G10213	2-4	Machine Bushing, ⅝" (.030" Thick)
13.	GA8760	2	Weed Guard W/Spring Pin
	G10765	-	Spring Pin, ¼" x 1"
14.	G10133	12	Hex Head Cap Screw, 5/16"-18 x 1 ½"
	G10109	12	Lock Nut, 5/16"-18, Grade 8
15.	GD9724	2	Backing Plate
16.	GB0387	2	Wheel, 12 Tine, ⅜" x 12"
17.	GB0401	1	Mount
18.	G11236	1	Hex Head Cap Screw, ¾"-10 x 10 ½"
	GB0383	2	Bushing, 1 ⅛" O.D. x 25/32" I.D. x ¾" Long
	G10194	2	Washer, ¾" SAE
	G11228	1	Lock Nut, ¾"-10
19.	GA12256	1	Locking Pin
20.	G10003	2	Hex Head Cap Screw, ⅜"-16 x 1 ½"
	G10229	2	Lock Washer, ⅜"
A.	GA7446	-	Wheel Assembly, 12 Tine, R.H. (Items 3, 4, 14 And 15) (Shown)
	GA7445	-	Wheel Assembly, 12 Tine, L.H. (Items 3, 4, 14 And 15)
B.	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 4, 14, 15 And 16) (Shown)
	GA12235	-	Wheel Assembly, 12 Tine, L.H. (Items 4, 14, 15 And 16)
C.	G1K467	-	Residue Wheel Mount Kit (Items 17-20)

FRAME MOUNTED COULTER W/RESIDUE WHEELS

(RU135c/RU135g/RU135hh)





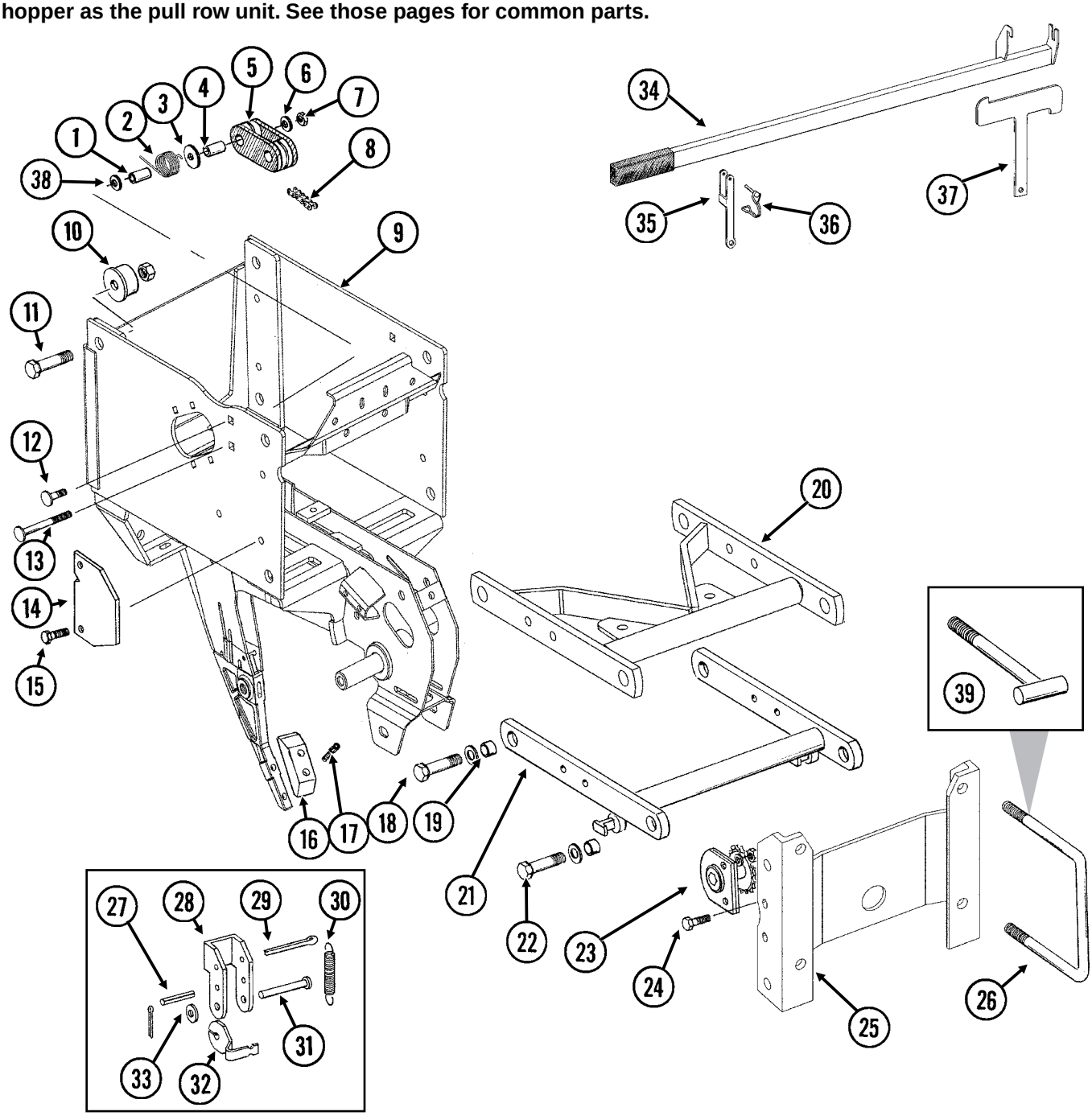
FRAME MOUNTED COULTER W/RESIDUE WHEELS

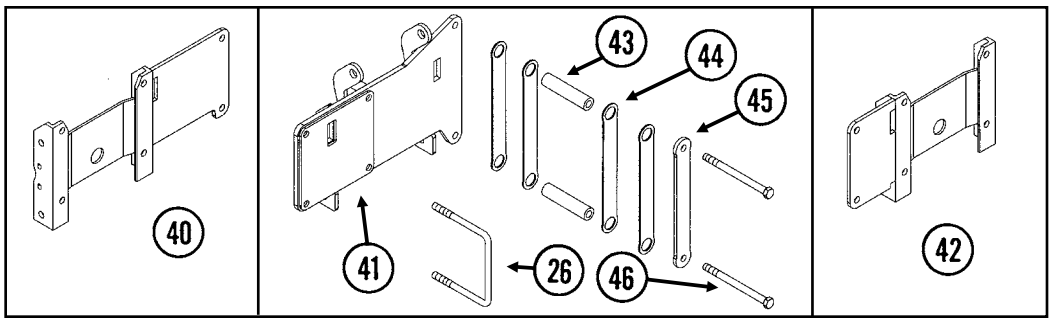
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G11010	2	Hex Head Cap Screw, ¾"-10 x 12"
2.	GA9844	1	Plate W/Angle
3.	G10039	4	Hex Head Cap Screw, ½"-13 x 1 ¾"
4.	GA9131	1	Coulter Frame
5.	G10007	4	Hex Head Cap Screw, ⅝"-11 x 1 ½"
	G10107	4	Lock Nut, ⅝"-11
6.	G10400	1	Hex Head Cap Screw, ¾"-10 x 6 ½"
	G10112	1	Lock Nut, ¾"-10
7.	GD12826	1	Spring Anchor Bar
8.	G10574	4	Carriage Bolt, ½"-13 x 1 ¼"
	G10111	4	Lock Nut, ½"-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, ¾", 13 Flutes
12.	GB0213	2	Spring Seat
13.	GD12817	2	Compression Spring
14.	GD12829	1	Sleeve
15.	G10046	1	Hex Head Cap Screw, ⅝"-11 x 5"
	G10107	1	Lock Nut, ⅝"-11
16.	GA9845	1	Coulter Arm W/Grease Fitting
	G10643	-	Grease Fitting, 45°, ¼"-28
17.	G10011	1	Hex Head Cap Screw, ⅝"-11 x 5 ½"
	G10107	1	Lock Nut, ⅝"-11
18.	GB0218	3	Bushing, 2 1⁄32" I.D. x ⅞" O.D. x 19⁄32" Long
19.	GD1132	2	Dust Cap
20.	G10010	2	Hex Head Cap Screw, ⅝"-11 x 3"
	G10503	2	Hex Jam Nut, ⅝"-11, Grade 2
21.	GD10552	2	Wheel, 12 Tine, ⅜" 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 ½"
	G10109	12	Lock Nut, 5⁄16"-18, Grade 8
25.	G10213	2	Machine Bushing, ⅝" (.030" Thick)
26.	GA9862	2	Weed Guard W/Spring Pin
	G10765	-	Spring Pin, ¼" x 1"
27.	GA9865	1	Mount
28.	GA9861	1	Cam
29.	GD10519	1	Spring
30.	G10974	1	Lock Nut W/Nylon Insert, ½"-13
31.	G10005	1	Hex Head Cap Screw, ⅝"-11 x 1 ¾"
	G10107	4	Lock Nut, ⅝"-11
32.	GA9864	1	Support
33.	G10014	1	Hex Head Cap Screw, ½"-13 x 1"
	G10102	1	Hex Nut, ½"-13
34.	G10011	2	Hex Head Cap Screw, ⅝"-11 x 5 ½"
	G10205	2	Washer, ⅝" SAE
	G10730	2	Lock Nut W/Nylon Insert, ⅝"-11
35.	GD14170	2	Sleeve, 3"
36.	GB0386	2	Wheel, 12 Tine, ⅜" x 12"
A.	GA7446	-	Wheel Assembly, 12 Tine, R.H. (Items 21-24) (Shown)
	GA7445	-	Wheel Assembly, 12 Tine, L.H. (Items 21-24)
B.	GA12236	-	Wheel Assembly, 12 Tine, R.H. (Items 22, 23, 24 And 36) (Shown)
	GA12235	-	Wheel Assembly, 12 Tine, L.H. (Items 22, 23, 24 And 36)

PUSH ROW UNIT

(RU156c/R141dd/RU89qq/PNE31a)

NOTE: Push row units use the same seed tube, row unit depth adjustment components, quick adjustable down force springs option, 15" opener disc blades, gauge wheels, closing wheels, meter drive and seed hopper as the pull row unit. See those pages for common parts.



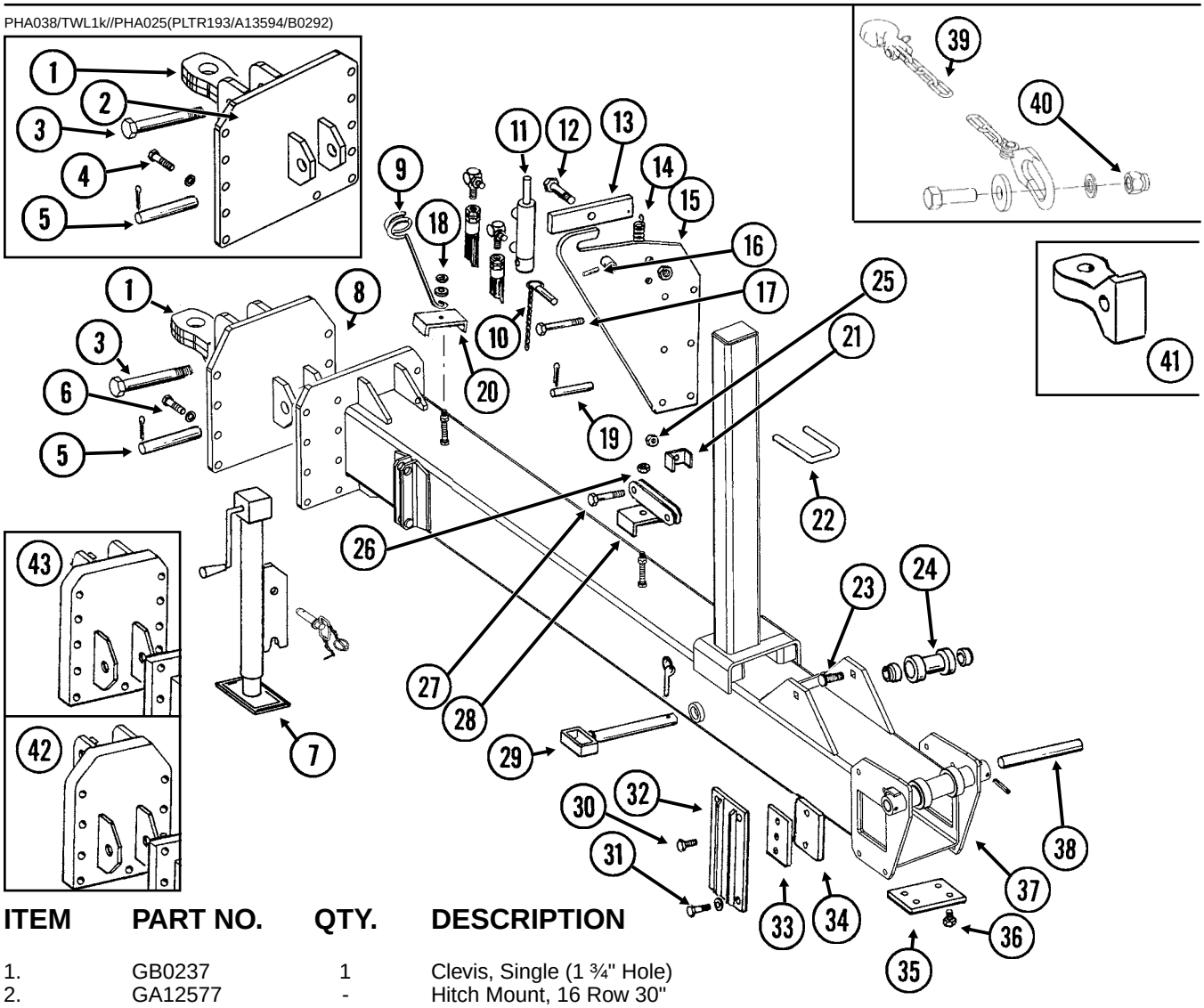


PUSH ROW UNIT

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1026	1	Sleeve, 1 3⁄16" Long
2.	GD11218	1	Spring
3.	G10201	1	Special Washer, 3⁄8" x 1 1⁄2" O.D.
4.	GD8893-01	1	Sleeve, 1 3⁄8" Long
5.	GD11962	1	Idler
6.	G10210	1	Washer, 3⁄8" USS
7.	G10108	1	Lock Nut, 3⁄8"-16
8.	G3303-96	1	Chain, No. 41, 96 Pitch Including Connector Link
	GR0196	1	Connector Link, No. 41
9.	GA10161	-	Push Row Unit Shank
10.	GB0314	2	Hopper Mount
11.	G10751	2	Hex Head Cap Screw, 5⁄8"-18 x 1 3⁄4"
	G10412	2	Lock Nut, 5⁄8"-18
12.	G10599	1	Carriage Bolt,3⁄8"-16 x 1 1⁄4"
	G10101	1	Hex Nut,3⁄8"-16
	G10108	1	Lock Nut, 3⁄8"-16
13.	G10307	1	Carriage Bolt, 3⁄8"-16 x 3 1⁄2"
14.	GD10867	2	Stop
15.	G10004	4	Hex Head Cap Screw, 3⁄8-16 x 1 1⁄4"
	G10108	4	Lock Nut,3⁄8"-16
16.	GB0301	1	Seed Tube Guard/Inner Scraper
17.	G10912	2	Hex Socket Head Cap Screw, 5⁄16"-18 x 1", Grade 8
18.	G10751	4	Hex Head Cap Screw, 5⁄8"-18 x 1 3⁄4"
	GD7805	4	Special Washer,5⁄8", Hardened
	G10412	4	Lock Nut,5⁄8"-18
19.	GB0218	8	Bushing, 21⁄32" I.D. x 7⁄8" O.D. x 19⁄32" Long
20.	GA11969	1	Upper Arm
21.	GA5787	1	Lower Arm
22.	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
23.	GA1720	1	Bearing/Sprocket, 7⁄8" Hex Bore
24.	G10004	2	Hex Head Cap Screw, 3⁄8"-16 x 1 1⁄4"
	G10229	2	Lock Washer, 3⁄8"
	G10101	2	Hex Nut, 3⁄8"-16
25.	GA11971	1	Mounting Plate
26.	GD1113	2	U-Bolt, 5" x 7" x 5⁄8"-11
	G10230	4	Lock Washer, 5⁄8"
	G10104	4	Hex Nut, 5⁄8"-11
27.	G10718	2	Spring Pin, 5⁄16" x 1 1⁄8"
28.	GD11264	2	Lockup
29.	G10463	2	Cotter Pin, 1⁄4" x 1 1⁄2"
30.	GD11447	2	Spring
31.	G10284	2	Clevis Pin, 1⁄2" x 1 1⁄2"
	G10456	2	Cotter Pin, 1⁄8" x 3⁄4"
32.	GD11263	2	Spring Tab
33.	G10216	2	Washer, 1⁄2" USS
34.	GA8651	1	Lift Lever W/Boot
	GD11649	-	Boot
35.	GD18073	1	Bracket
36.	GD9695	1	Wire Lock Pin, 1⁄4" x 1 3⁄4"
37.	GD18074	1	Mount
38.	G10203	1	Washer, 3⁄8" SAE
39.	GA9105	-	T-Bolt, 5⁄8"-11 x 6" (12 Row 30")
	G10230	-	Lock Washer, 5⁄8"
	G10104	-	Hex Nut, 5⁄8"-11
40.	GA12676	-	Offset Mount
41.	GA12677	-	Offset Hinge Mount
42.	GA12675	-	Offset Mount
43.	GD7817-18	2	Spacer, 11⁄16" I.D. x 5 1⁄2" Long
44.	GD18136	4	Pad
45.	GD18135	1	Bar
46.	G10341	-	Hex Head Cap Screw, 5⁄8"-11 x 8"
	G10230	-	Lock Washer, 5⁄8"
	G10104	-	Hex Nut, 5⁄8"-11

OUTER HITCH/SAFETY CHAIN

PHA038/TWL1k//PHA025(PLTR193/A13594/B0292)



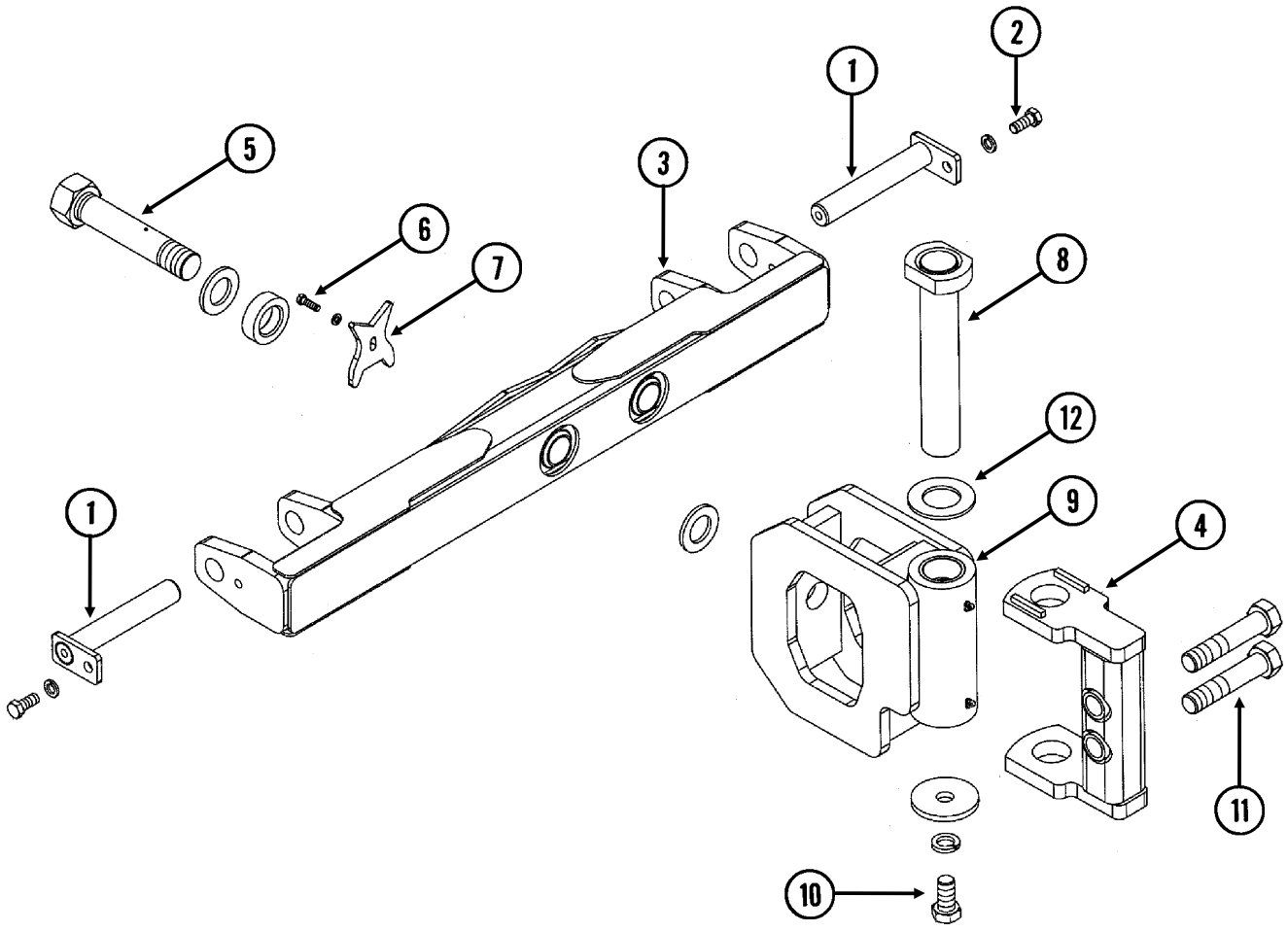
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GB0237	1	Clevis, Single (1 ¾" Hole)
2.	GA12577	-	Hitch Mount, 16 Row 30"
3.	G10169	1	Hex Head Cap Screw, 1 ¼"-7 x 6"
	G10157	1	Lock Nut, 1 ¼"-7
4.	G10802	11	Hex Head Cap Screw, ¾"-10 x 2 ¾"
	G10231	11	Lock Washer, ¾"
	G10105	11	Hex Nut, ¾"-10
5.	GD5173	1	Pin, 1 ¼" x 5 ⅛"
	G10462	2	Cotter Pin, 3/16" x 2"
6.	G10009	9	Hex Head Cap Screw, ⅝"-11 x 2 ½"
	G10230	9	Lock Washer, ⅝"
	G10104	9	Hex Nut, ⅝"-11
7.	GA4994	1	Jack Assembly Complete
	GA4995	-	Detent Pin Assembly
	GR0517	-	Pin
	GR0516	-	Crank Assembly
	GR0515	-	Bevel Gear Set, Includes: (2) Bevel Gears, (1) Gear Pin, (1) Groove Pin
8.	GA12584	1	Hitch Mount, 12 Row 30"
9.	GD8260	1	Hose Holder
10.	GA7022	1	Detent Pin W/Chain (Transport Latch Locking Pin)
11.			See “Transport Latch Cylinder”, Page P80
12.	G10006	1	Hex Head Cap Screw, ⅝"-11 x 2 ¼"
	GB0218	1	Bushing, 21/32" I.D. x ⅞" O.D. x 19/32" Long
	GD7805	1	Special Washer, ⅝", Hardened
	G10107	1	Lock Nut, ⅝"-11
13.	GA7016	1	Catch Bar
14.	GD5857	1	Spring
15.	GA7433	1	Transport Latch
16.	G10765	-	Spring Pin, ¼" x 1"

OUTER HITCH/SAFETY CHAIN

ITEM	PART NO.	QTY.	DESCRIPTION
17.	G10062	1	Hex Head Cap Screw, ⅜"-16 x 3"
	GD2971-09	1	Sleeve, 2" Long
	G10108	1	Lock Nut, ⅜"-16
18.	G10216	1	Washer, ½" USS
	G10111	1	Lock Nut, ½"-13
19.	GD7137	1	Pin, ¾" x 3 ⅜"
	G10457	2	Cotter Pin, 5/32" x 1 ½"
20.	GD8188	-	Hose Clamp, ⅞" x 3" x 5 ⅜"
	GD8189	-	Rubber Pad
21.	GD5892	2	Hose Clamp, ⅝" x 1 ½" x 1 ½"
22.	GD9953	3	U-Bolt, 3" x 4" x ⅝"-11
	G10205	1	Washer, ⅝" SAE
	G10230	6	Lock Washer, ⅝"
	G10104	6	Hex Nut, ⅝"-11
23.			See “Hose Take-Up”, Pages P46 And P47
24.	GA4418	1	Roller W/Bronze Bushings, 12 Row 30"
	GA4842	-	Roller W/Bronze Bushings, 16 Row 30"
	GD6556	1	Bronze Bushing
25.	G10108	1	Lock Nut, ⅜"-16
26.	G10111	1	Lock Nut, ½"-13
27.	G10026	1	Hex Head Cap Screw, ¾"-10 x 2"
	G10112	1	Lock Nut, ¾"-10
28.	GA5842	1	Bracket, Jack Mount
	GD8189	-	Rubber Pad
29.	GA4402	1	Safety Pin, 12 ¾", 12 Row 30"
	GA4845	-	Safety Pin, 14 ¾", 16 Row 30"
	GD2558	-	Lynch Pin, ¼"
	GD2557	-	Lynch Pin, 7/16"
30.	G10014	4	Hex Head Cap Screw, ½"-13 x 1"
	G10228	4	Lock Washer, ½"
31.	G10017	8	Hex Head Cap Screw, ½"-13 x 1 ½", 12 Row 30"
	G10016	10	Hex Head Cap Screw, ½"-13 x 2", 16 Row 30"
	G10228	8-10	Lock Washer, ½"
	G10102	8-10	Hex Nut, ½"-13
32.	GA7029	2	Wear Mount, 12 Row 30"
	GA7084	-	Wear Mount, L.H., 16 Row 30"
	GA7085	-	Wear Mount, R.H., 16 Row 30"
	GA7083	-	Wear Pad Retainer, 16 Row 30"
33.	GD5154	-	Shim, 4" x 4" (As Required), All Sizes
	GD3501	-	Shim, 4" x 6" (As Required), 16 Row 30"
34.	GD9959	-	Wear Pad, Nylatron, 4" x 4" (As Required), All Sizes
	GD9960	-	Wear Pad, Nylatron, 4" x 6" (As Required), 16 Row 30"
35.	GD7519	3	Shim, 16 Gauge (16 Row 30" Only)
	GD7518	1	Shim, ⅜" (16 Row Only)
36.	G10014	4	Hex Head Cap Screw, ½"-13 x 1"
	G10228	4	Lock Washer, ½"
	G10216	4	Washer, ½" USS
37.	A12583	-	Outer Hitch, “Y”, 97", 12 Row 30" **(Non-Stock Item)**
	A12529	-	Outer Hitch, “Y”, 127 ½", 16 Row 30" **(Non-Stock Item)**
38.	GD5804	1	Pin, 1 ¼" x 12", 12 Row 30"
	GD7251	1	Pin, 1 ¼" x 14", 16 Row 30"
	G10610	2	Spring Pin, ⅜" x 2"
39.	GA13594	1	Safety Chain W/Hook, ½"
	G1K412	-	Safety Chain Repair Kit, Includes: (1) Hook, (1) Flat Washer, (1) Latch Pin, (1) Safety Latch, (1) Spring And (1) Retaining Ring
40.	G11058	1	Hex Head Cap Screw, 1 ¼"-7 x 3"
	GD10646	1	Special Washer
	G10226	1	Washer, 1 ¼" SAE
	G10157	1	Lock Nut, 1 ¼"-7
41.	GB0292	-	Hitch Clevis, Single (2" Hole)
42.	GA9836	-	Hitch Mount, 12 Row 30"
43.	GA9837	-	Hitch Mount, 16 Row 30"

2-POINT HITCH OPTION

(A12406)

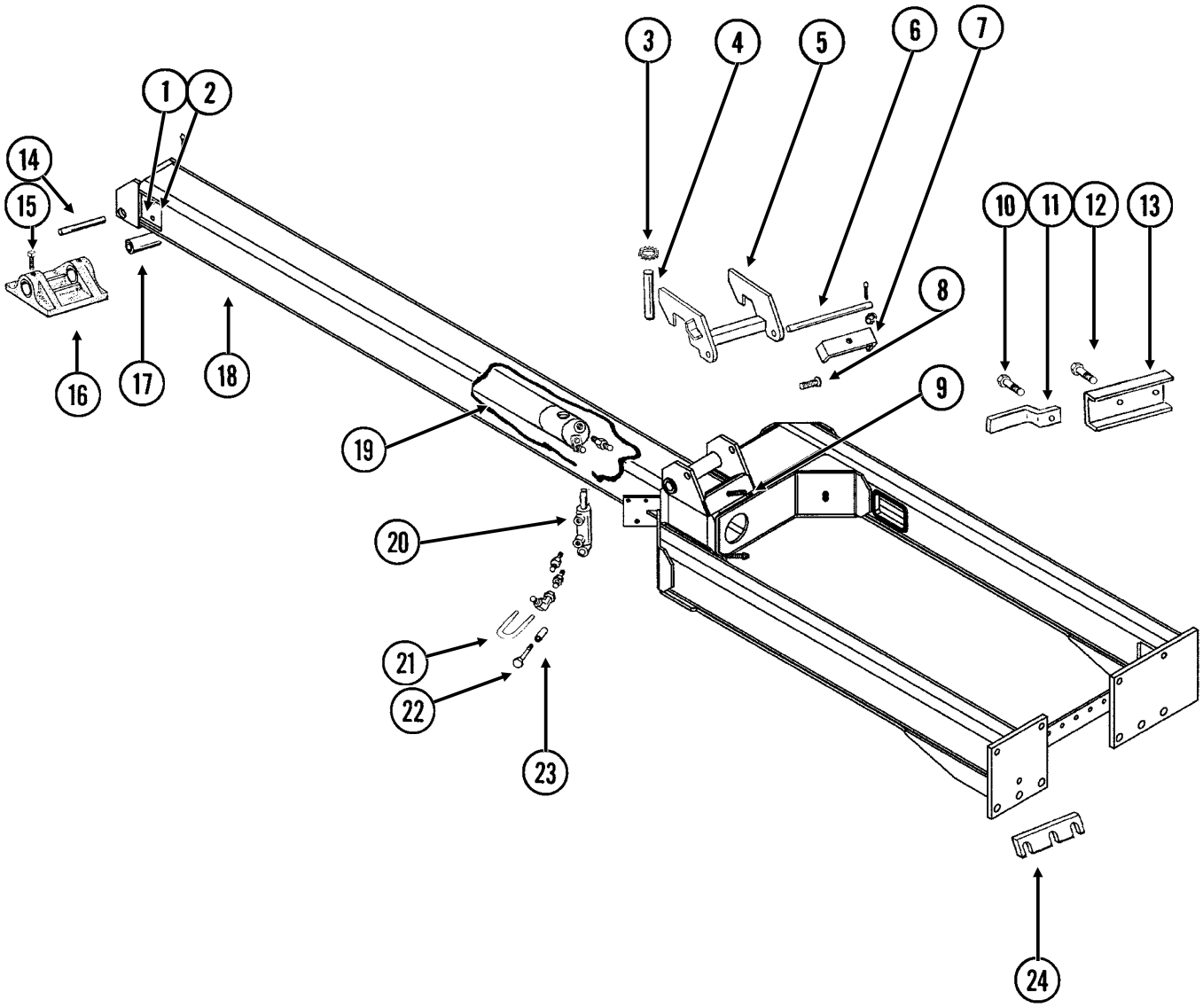


2-POINT HITCH OPTION

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA11079	2	Hammer Strap, 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.	GA12164	1	Hitch Bar
4.	GA12165	1	Pivot Mount
5.	GA11082	1	Pivot Bolt W/Grease Fitting, 1 3/4" x 10 3/8" (Total Length)
	G10640	-	Grease Fitting, 1/4"-28
	GD16303	2	Washer, 3" O.D. x 1 25/32" x 1/4" Thick
	GD16226	1	Sleeve, 3" O.D. x 1 25/32" x 29/32 Thick
6.	G10005	1	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	G10217	1	Washer, 5/8" USS
7.	GD15100	1	Pivot Lock
8.	GA12163	1	Pin, 13 3/8"
9.	GA11083	1	Hitch Pivot W/Bushings And Grease Fittings
	GD14562	2	Hardened Bushing, 2 3/4" O.D. x 2 1/4" I.D. x 3”
	G10779	2	Grease Fitting, 90°, 1/4"-28
10	G11223	1	Hex Head Cap Screw, 1"-8 x 2"
	G10118	1	Lock Washer, 1"
	GD17245	1	Washer, 4" O.D. x 1 1/32" I.D. x 3/8"
11.	G10169	2	Hex Head Cap Screw, 1 1/4"-7 x 6"
	G10157	2	Lock Nut, 1 1/4"-7
12.	GD15725	1	Washer, 4" O.D. x 2 1/4" I.D. x 1/4"

INNER HITCH, “Y”

PHA035/PHA037(PNE34a)

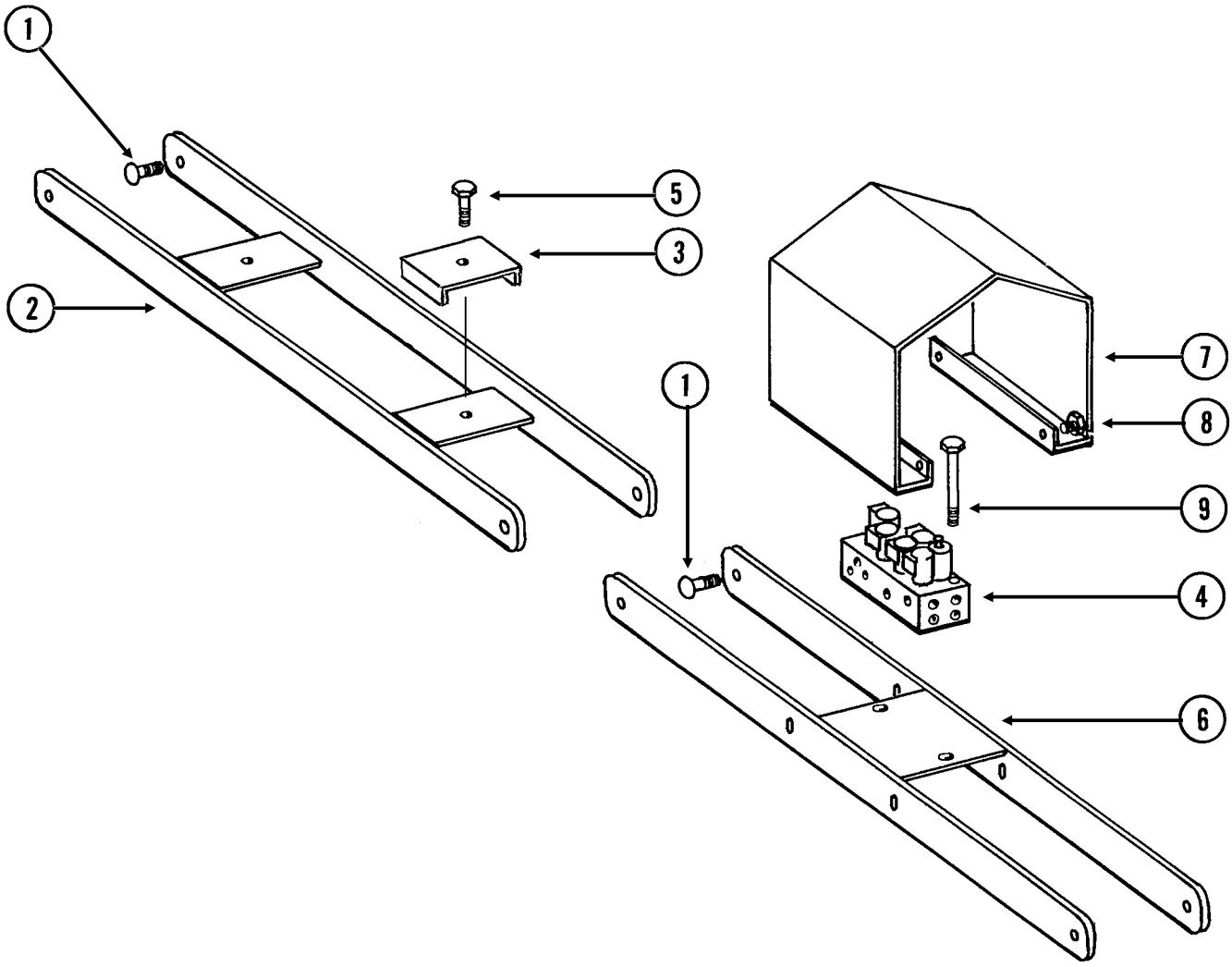


INNER HITCH, “Y”

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10014	4	Hex Head Cap Screw, ½"-13 x 1", 12 Row 30"
	G10017	4	Hex Head Cap Screw, ½"-13 x 1 ½", 16 Row 30"
	G10228	4	Lock Washer, ½", 16 Row 30"
2.	GD9959	2	Wear Pad, Nylatron, 4" x 4"
	GD5154	4-6	Shim, 4" x 4"
3.	G10894	-	External Washer
4.	GD3537-17	1	Shaft, 1 ¼" x 6 ⅜", 12 Row 30"
	GD3537-18	-	Shaft, 1 ¼" x 7 ⅜", 16 Row 30"
5.	GA7423	1	Tongue Hook W/Grease Fittings, 12 Row 30"
	GA7424	-	Tongue Hook W/Grease Fittings,16 Row 30"
	G10641	-	Grease Fitting, ⅛" NPT
6.	GD5804	1	Pin, 1 ¼" x 12", 8/12 Row
	GD7883	-	Pin, 1 ¼" x 14 ½", 16 Row
	G10468	2	Cotter Pin, ⅜" x 2"
7.	GD8188	-	Hose Clamp, ⅞" x 3" x 5 ⅜"
	GD8189	-	Rubber Pad
8.			See “Hose Take-Up”, Pages P46 And P47
9.	G11169	1	Hex Head Cap Screw, ½"-13 x 3 ½"
	G10111	1	Lock Nut, ½"-13
10.	G10004	1	Hex Head Cap Screw, ⅜"-16 x 1 ¼"
	G10229	1	Lock Washer, ⅜"
	G10101	1	Hex Nut, ⅜"-16
11.	GD10650	1	Hose Clamp
12.	G10003	1	Hex Head Cap Screw, ⅜"-16 x 1 ½"
	G10210	1	Washer, ⅜" USS
	G10108	1	Lock Nut, ⅜"-16
13.	GD10664	1	Shield (If Applicable)
14.	GD5173	1	Pin, 1 ¼" x 5 ⅛"
	G10462	1	Cotter Pin, 3⁄16" x 2"
15.	G10131	1	Square Head Set Screw, 5⁄16"-18 x ¾"
16.	GB0246	1	Shoe
17.	GD3537-11	1	Shaft, 1 ¼" x 7", 8/12 Row
	GD3537-12	-	Shaft, 1 ¼" x 8", 16 Row
18.	A12582	-	Inner Hitch, 169 ⅜", 12 Row 30" (Shown) **(Non-Stock Item)**
	A12528		Inner Hitch, 205 ⅜", 16 Row 30" **(Non-Stock Item)**
19.		-	See “Tongue Cylinder”, Pages P81 And P82
20.		-	See “Tongue Lock Cylinder”, Page P80
21.	GD10530	1	U-Bolt, 2 ⅛" x 1 ⅞" x ⅜"-16
	G10229	2	Lock Washer, ⅜"
	G10101	2	Hex Nut, ⅜"-16
22.	G10585	1	Hex Head Cap Screw, ½"-13 x 3 ¼"
	G10216	1	Washer, ½" USS
	G10228	1	Lock Washer, ½"
	G10102	1	Hex Nut, ½"-13
23.	GD10538-01	1	Sleeve
24.	GD13543	1	Shim, 2 ½" x 10", 7 Gauge
	GD13544	1	Shim, 2 ½" x 10", 10 Gauge
	GD13545	1	Shim, 2 ½" x 10", 12 Gauge
	GD13546	1	Shim, 2 ½" x 10", 14 Gauge

HOSE TAKE-UP

(TWL137c)



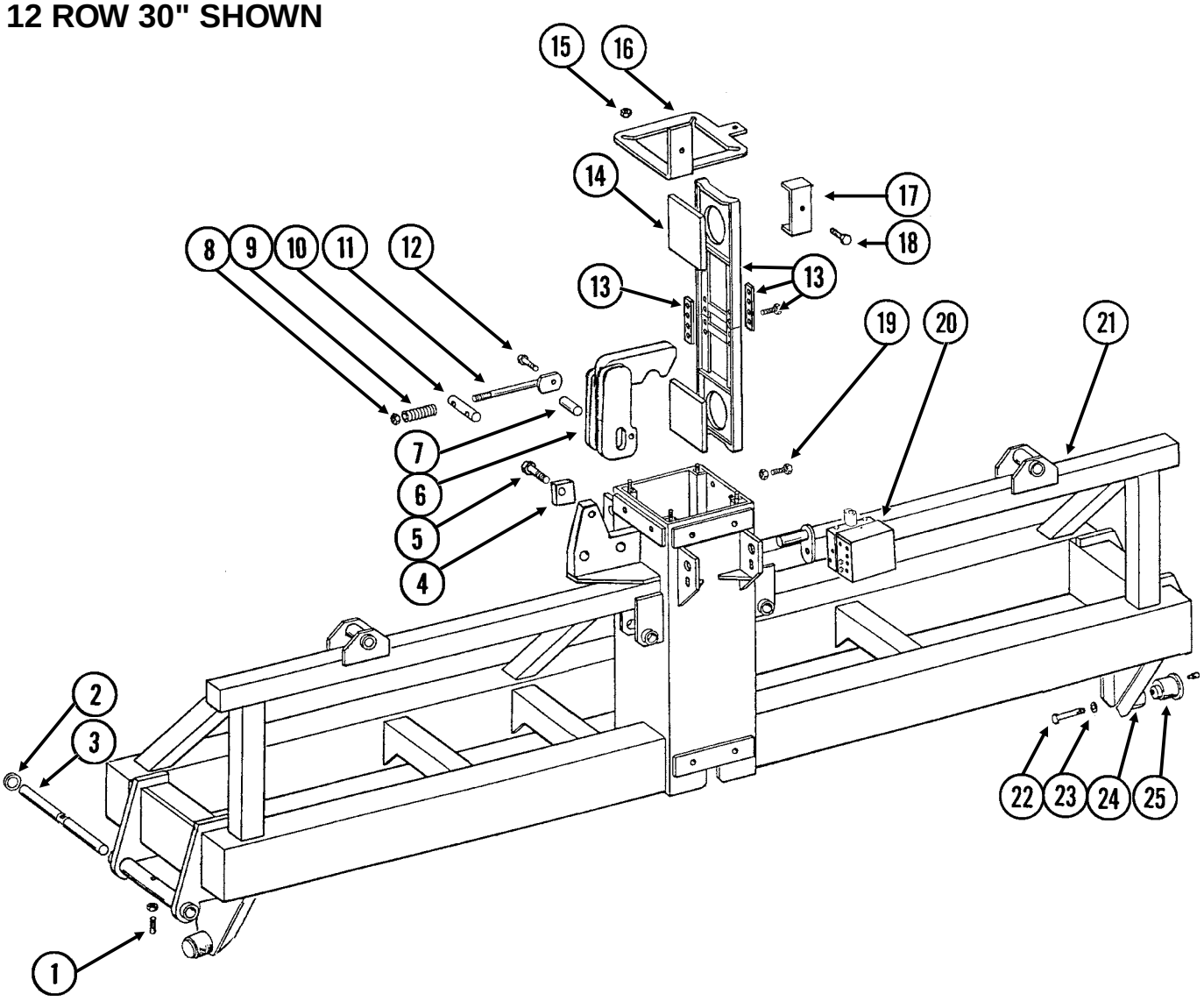
HOSE TAKE-UP

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10689	6	Carriage Bolt, 5/8"-11 x 2"
	GB0218	6	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
	GD7805	6	Special Washer, 5/8", Hardened
	G10107	6	Lock Nut, 5/8"-11
2.	GA7013	-	Take-Up, 44 1/4", 12 Row 30" (Shown)
	GA7049	-	Take-Up, 56 1/4", 16 Row 30"
3.	GD8188	2	Hose Clamp, 7/8" x 3" x 5 3/8"
	GD8189	2	Rubber Pad
4.			See “Valve Block - Located On Hitch”, Pages P86 And P87
5.	G10581	1	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10111	1	Lock Nut, 1/2"-13
6.	GA7021	-	Take-Up, 44 1/4", 12 Row 30" (Shown)
	GA7050	-	Take-Up, 56 1/4", 16 Row 30"
7.	GD9952	1	Cover
8.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	4	Lock Washer, 3/8"
	G10203	8	Washer, 3/8" SAE
	G10101	4	Hex Nut, 3/8"-16
9.	G10172	2	Hex Head Cap Screw, 3/8"-16 x 5"
	G10210	2	Washer, 3/8" USS
	G10108	2	Lock Nut, 3/8"-16

CENTER FRAME

PFA070/VVB034(TWL138a)

12 ROW 30" SHOWN

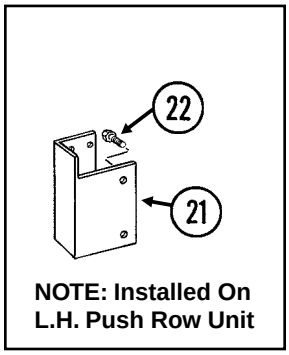


CENTER FRAME

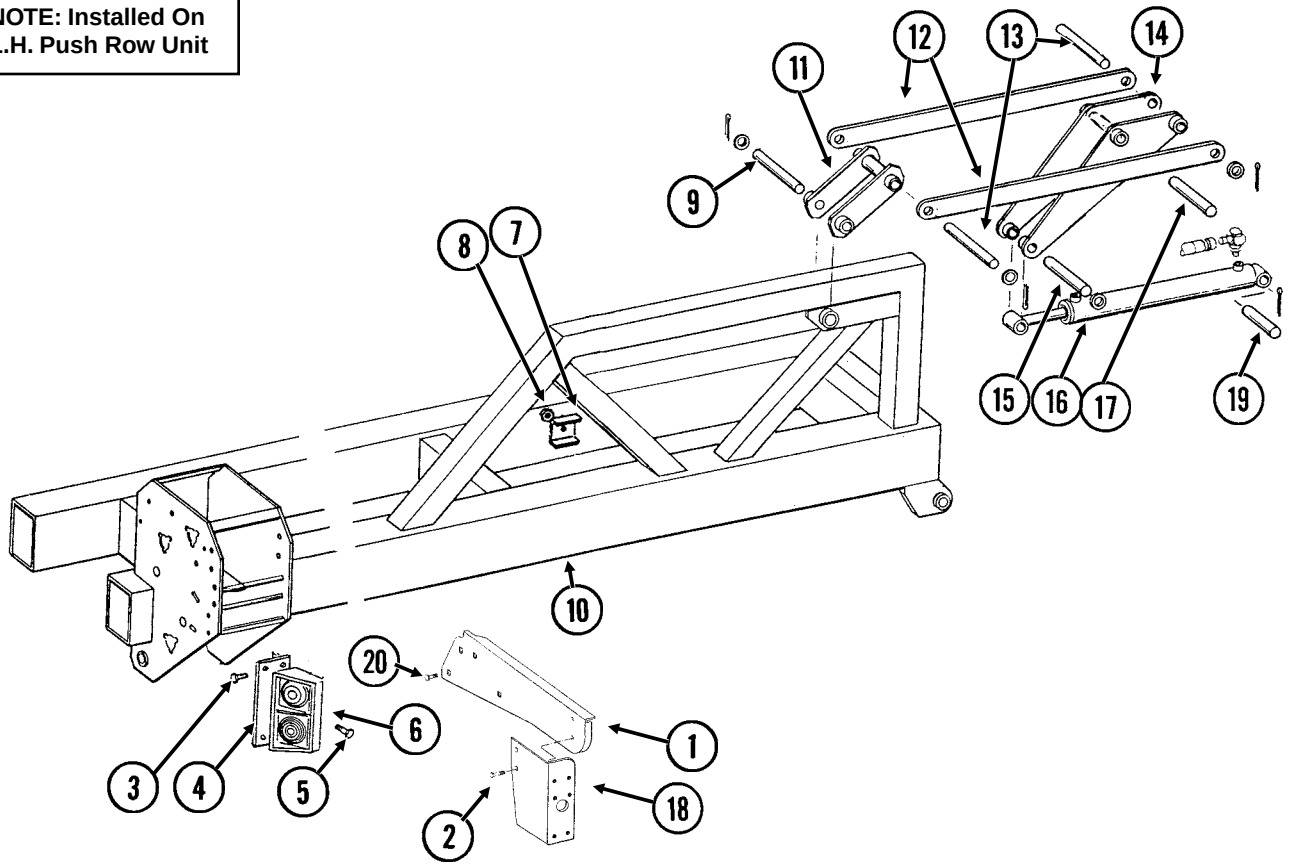
ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10102	1	Hex Nut, ½"-13
	G10828	1	Hex Socket Set Screw, ½"-13 x 1 ¼"
2.	G10404	-	Machine Bushing, 3 ⅛" x 2 ⅛" x 3⁄16" (As Required)
	G10234	-	Machine Bushing, 2 ⅛", 10 Gauge (As Required)
	G10336	-	Machine Bushing, 2 ⅛", 14 Gauge (As Required)
3.	GD10531	1	Hinge Pin, 2 ⅛" x 25 ¾"
4.	GD10492	2	Adjustment Block
5.	G10085	-	Hex Head Cap Screw, ¾"-10 x 3 ¾"
	G10218	-	Washer, ¾" USS
	G10112	-	Lock Nut, ¾"-10
6.	GA7390	-	Safety Hook
7.	GD9898	1	Pin, 1 ¼" x 2 15⁄16"
8.	G10205	2	Washer, ⅝" SAE
	G10107	2	Lock Nut, ⅝"-11
9.	GD10006	2	Spring
10.	GD9870	1	Pin, 1 ¼" x 6"
11.	GA6943	2	Spring Rod
12.	G10037	2	Hex Head Cap Screw, ½"-13 x 1 ¼"
	G10206	2	Washer, ½" SAE
	G10228	2	Lock Washer, ½"
	GD7904-02	2	Sleeve, ½" x ½" Long
13.	GA7579	4	Pad Holder W/Bars
	GD10706	-	Bar, 1 ¼" x 6" (¼" Thick)
	GD10707	-	Bar, 1 ¼" x 6" (⅜" Thick)
	G10001	-	Hex Head Cap Screw, ⅜"-16 x 1"
14.	GD10053	8	Wear Pad, 7" x 7", ½" Thick
15.	GD7805	4	Special Washer, ⅝", Hardened
	G10104	4	Hex Nut, ⅝"-11
16.	GD9968	1	Cap
17.	GD8188	1	Hose Clamp, ⅞" x 3" x 5 ⅜"
	GD8189	1	Rubber Pad
18.	G10053	1	Hex Head Cap Screw, ½"-13 x 2 ½"
	G10228	1	Lock Washer, ½"
	G10102	1	Hex Nut, ½"-13
19.	G10543	16	Hex Head Cap Screw, ¾"-10 x 3", Full Thread
	G10105	16	Hex Nut, ¾"-10
20.		-	See “Valve Blocks - Located On Rear Center Frame”, Page P85
21.	A7393	-	Frame W/Cam Follower Mounts, 136" **(Non-Stock Item)**
	GA6929	-	Cam Follower Mount, L.H.
	GA6928	-	Cam Follower Mount, R.H.
22.	G10025	2	Hex Head Cap Screw, ¾"-10 x 1 ½"
23.	GB0409	2	Spring Washer
24.	GD10532	2	Sleeve
25.	GA6497	2	Cam Follower W/Grease Fitting
	G10640	-	Grease Fitting, ¼"-28

WING FRAME

(TWL180a/TWL139h)



NOTE: Installed On L.H. Push Row Unit



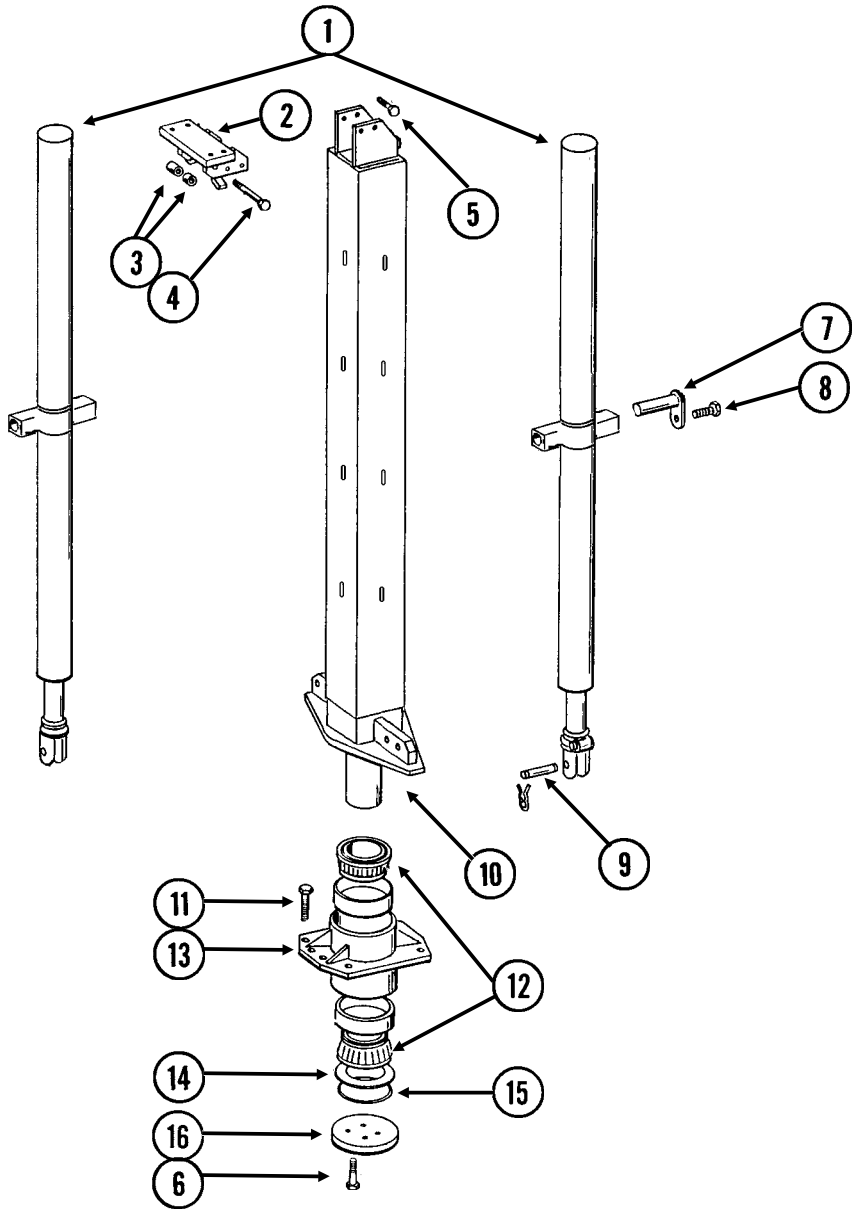
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD15950	1	Light Mount Extension
2.	G10064	2	Hex Head Cap Screw, ¼"-20 x 1"
	G10227	2	Lock Washer, ¼"
	G10103	2	Hex Nut, ¼"-20
3.	G10001	2	Hex Head Cap Screw, ⅜"-16 x 1"
	G10210	1	Washer, ⅜" USS
	G10229	2	Lock Washer, ⅜"
	G10101	2	Hex Nut, ⅜"-16
4.	GD9681	1	Light Bracket (Wide Row Sizes Only)
5.	G10064	8	Hex Head Cap Screw, ¼"-20 x 1"
	G10110	8	Lock Nut, ¼"-20, Grade B
6.		-	See “Electrical Components”, Pages P94 And P95

WING FRAME

ITEM	PART NO.	QTY.	DESCRIPTION
7.	GD5875	-	Hose Clamp, 9⁄16" x 2 ½" x 2"
8.	G10108	-	Lock Nut, ⅜"-16
9.	GD9963	1	Pin, 1 ¼" x 9"
	G10460	2	Cotter Pin, ¼" x 2"
10.	A6904	-	Wing, R.H., 119 ¼", 12 Row 30" **(Non-Stock Item)**
	A6905	-	Wing, L.H., 119 ¼", 12 Row 30" **(Non-Stock Item)**
	A6892	-	Wing, R.H., 179 ¼", 16 Row 30" (Two Wheel Towers Per Wing) **(Non-Stock Item)**
	A6893	-	Wing, L.H., 179 ¼", 16 Row 30" (Two Wheel Towers Per Wing) **(Non-Stock Item)**
11.	GA7018	1	Link
12.	GD9956	2	Strap, 41"
13.	GD9964	2	Pin, 1 ¼" x 10 ½"
	G10159	4	Machine Bushing, 1 ¼", 10 Gauge
	G10460	4	Cotter Pin, ¼" x 2"
14.	GA7019	1	Toggle Link
15.	GD4108	1	Pin, 1 ¼" x 7"
	G10159	2	Machine Bushing, 1 ¼", 10 Gauge
	G10460	2	Cotter Pin, ¼" x 2"
16.		-	See “Wing Lock Cylinder”, Page P83
17.	GD9955	1	Pin 1 ¼" x 7"
	G10606	2	Spring Pin, ¼" x 2"
18.	GD12724	1	Bracket
19.	GD6136	2	Pin, 1 ¼" x 5"
	G10460	4	Cotter Pin, ¼" x 2"
20.	G10312	2	Carriage Bolt, 5⁄16"-18 x ¾"
	G10620	2	Serrated Flange Nut, 5⁄16"-18
21.	GA9130	1	Push Row Unit Light Bracket
22.	G10001	2	Hex Head Cap Screw, ⅜"-16 x 1"
	G10229	2	Lock Washer, ⅜"
	G10101	2	Hex Nut, ⅜"-16
A.	G7698X	-	Push Row Unit Mounted Light Bracket Package (Items 21 And 22 On This Page And 42" Harness Extension, Item 5 On Pages P94 And P95)

CENTER PIVOT

PFA067/PFA068(TWL7c)

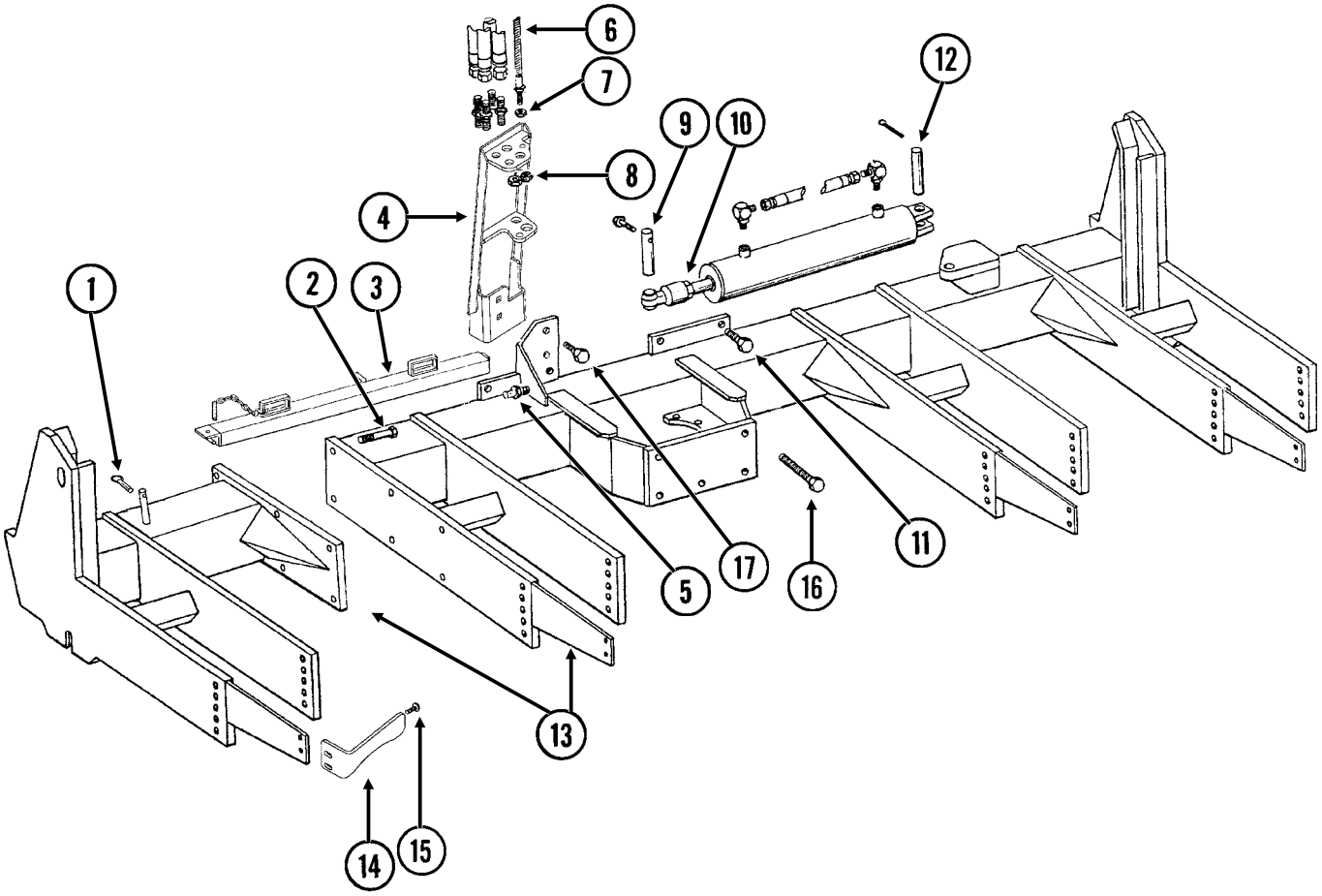


CENTER PIVOT

ITEM	PART NO.	QTY.	DESCRIPTION
1.		-	See “Center Lift Cylinder”, Page P78
2.	GA6964	1	Hook Strap
3.	GD10447	1	Sleeve, 3 5/8"
	GD10446	1	Sleeve, 3 13/16"
4.	G10011	1	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10107	1	Lock Nut, 5/8"-11
5.	G10689	4	Carriage Bolt, 5/8"-11 x 2"
	G10107	4	Lock Nut, 5/8"-11
6.	G10027	4	Hex Head Cap Screw, 3/4"-10 x 2 1/2"
	GD2169	1	Special Washer, 25/32" I.D. x 1 1/4" O.D., Hardened
7.	GA5121	4	Pin, 2 1/8"
8.	G10017	4	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10216	4	Washer, 1/2" USS
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
9.	GR0375	2	Pin, 1" x 3 1/2"
	GR0193	4	Hair Pin Clip
10.	GA7540	1	Center Post
11.	G10441	8	Hex Head Cap Screw, 7/8"-9 x 3", Grade 8
	GD10063	8	Hardened Washer, 7/8"
	G11053	8	Hex Nut, 7/8"-9, Grade 8
12.	GA7096	2	Cone
13.	GA7067	1	Bearing Housing W/Cups, Less Grease Fitting
	GD10011	2	Cup
	G10779	1	Grease Fitting, 90°, 1/4"-28
14.	GD10012	-	Shim, .005" Thick (As Required)
	GD10013	-	Shim, .020" Thick (As Required)
	GD10014	-	Shim, .007" Thick (As Required)
15.	GD9130	1	O-Ring
16.	GD9636	1	Bearing Cap

AXLE ASSEMBLY

HTA043/HTA044/PFA071/PHA033/PHA034/PFA073(TWL140cc)

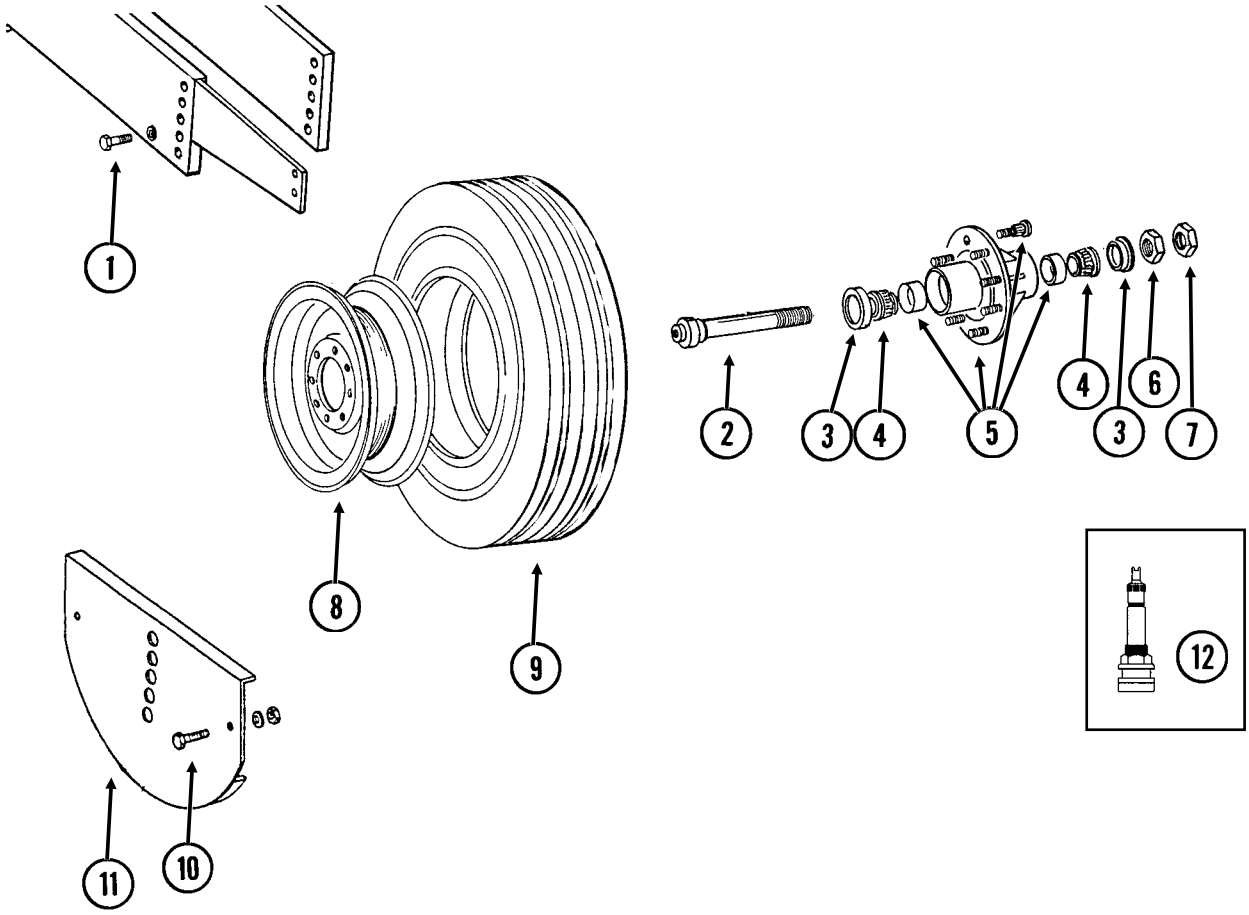


AXLE ASSEMBLY

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2558	1	Lynch Pin, ¼"
2.	G10802	6	Hex Head Cap Screw, ¾"-10 x 2 ¾"
	G10028	-	Hex Head Cap Screw, ¾"-10 x 3"
	G10231	6	Lock Washer, ¾"
	G10105	6	Hex Nut, ¾"-10
3.	GA7098	1	Manual Safety Lockup W/Detent Pin
	GA7022	1	Detent Pin W/Chain
4.	GA11200	1	Bulkhead Mount
5.	GD8276	1	Pin
	G10237	1	Lock Washer, 7⁄16"
	G10100	1	Hex Nut, 7⁄16"-14
6.	GA6608	-	Cable Assembly
7.	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
8.	G306-08	2	Lock Nut, ¾"-16
	G306-10	2	Lock Nut, ⅞"-14
9.	GD10092	1	Pin, 1 ¼" x 5 1/4"
	G10226	4	Washer, 1 ¼" SAE
	G10049	1	Hex Head Cap Screw, ⅜"-16 x 2 ½"
	G10108	1	Lock Nut, ⅜"-16
10.		-	See “Rotation Cylinder”, Page P78
11.	G10437	4	Hex Head Cap Screw, ¾"-8 x 2 ½", Grade 8
	GD2169	4	Special Washer, 25⁄32" I.D. x 1 ¼" O.D., Hardened
	G10436	4	Hex Nut, ¾"-10
12.	GD10064	1	Pin, 1 ¼" x 5 ¼", All Sizes
	G10460	2	Cotter Pin, ¼" x 2"
13.	GA8062	-	Axle W/Stub Axle
	GA9883	-	Stub Axle
14.	GD12543	-	Scraper
15.	G10636	-	Carriage Bolt, ½"-13 x 1 ½"
	G10216	-	Washer, ½" USS
	G10228	-	Lock Washer, ½"
	G10102	-	Hex Nut, ½"-13
16.	G10808	6	Hex Head Cap Screw, 1"-8 x 10", Grade 8
	GD10231	6	Special Washer, 1 1⁄16" I.D. x 2" O.D.
	G10647	6	Hex Nut, 1"-8, Grade 8
17.	G10636	-	Carriage Bolt, ½"-13 x 1 ½"
	G10228	-	Lock Washer, ½"
	G10102	-	Hex Nut, ½"-13

TRANSPORT WHEELS/ROCK GUARDS

HTA032/HTA040/HTA043/HTA004(TWL141c)



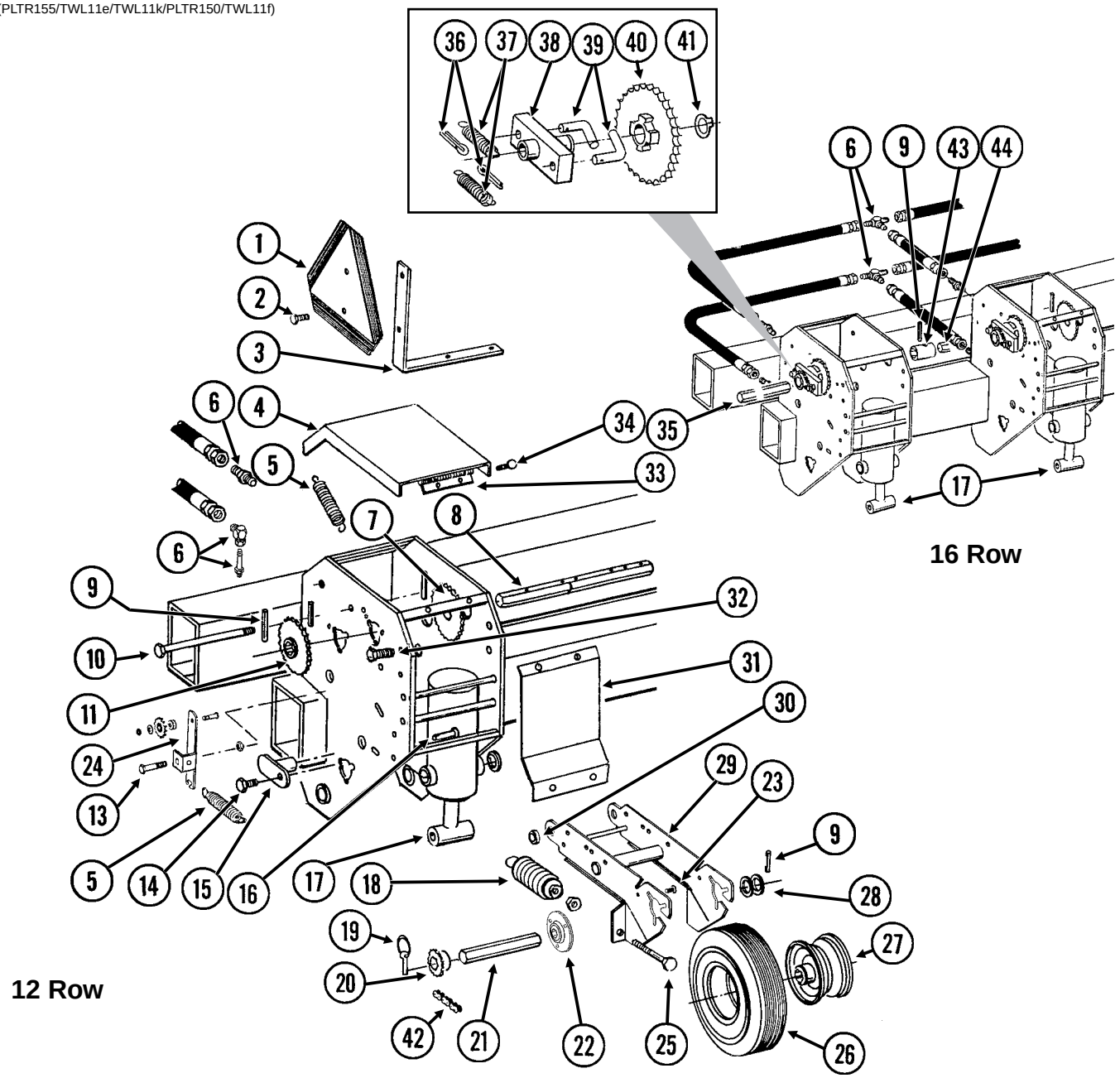
TRANSPORT WHEELS/ROCK GUARDS

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10448	2	Hex Head Cap Screw, ⅞"-9 x 2 ½", Grade 8
	G10330	2	Lock Washer, ⅞"
2.	GA4727	1	Spindle W/Retaining Ring, 1 ¾"
	G10913	-	External Retaining Ring, 2 ½"
3.	GA4722	2	Seal
4.	GA4723	2	Bearing
5.	GA4729	1	Hub W/Cups, Bolts, Nuts And Grease Fitting, 8 Bolt, 1 ¾" Bore
	G10640	-	Grease Fitting, ¼"-28
	GD7079	-	Cup
	GR0528	-	Lug Bolt, ⅝"-12 x 2 ¼"
	GR0531	-	Lug Nut, ⅝"-18 UNF
6.	GD7089	1	Special Nut, 1 ¾"-12 UNF
7.	GD7864	1	Special Hex Nut, 1 ¾"-12 UNF
8.	GA9544	-	Rim, 5.5" x 22.5", All Sizes
9.	GD13409	-	Tire, 255-70R 22.5" W/O Center Rib, Tubeless (Specify Brand*)
10.	G10037	-	Hex Head Cap Screw, ½"-13 x 1 ¼"
	G10228	-	Lock Washer, ½"
	G10102	-	Hex Nut, ½"-13
11.	GA5716	-	Rock Guard (Optional)
12.	GA7434	-	Valve Stem
A.	GA9545	-	Tire And Rim Assembly (Items 8, 9 And 12) (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.**

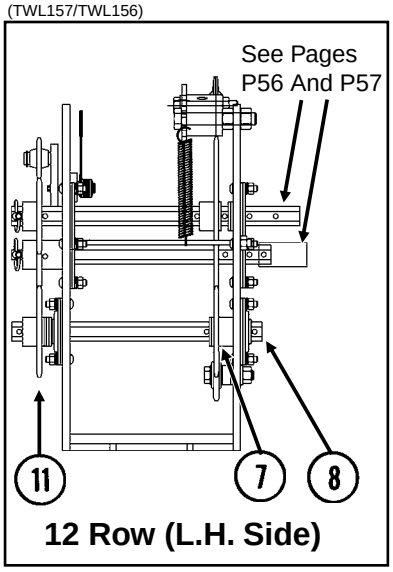
CONTACT WHEEL AND DRIVE SHAFT(S)

(PLTR155/TWL11e/TWL11k/PLTR150/TWL11f)

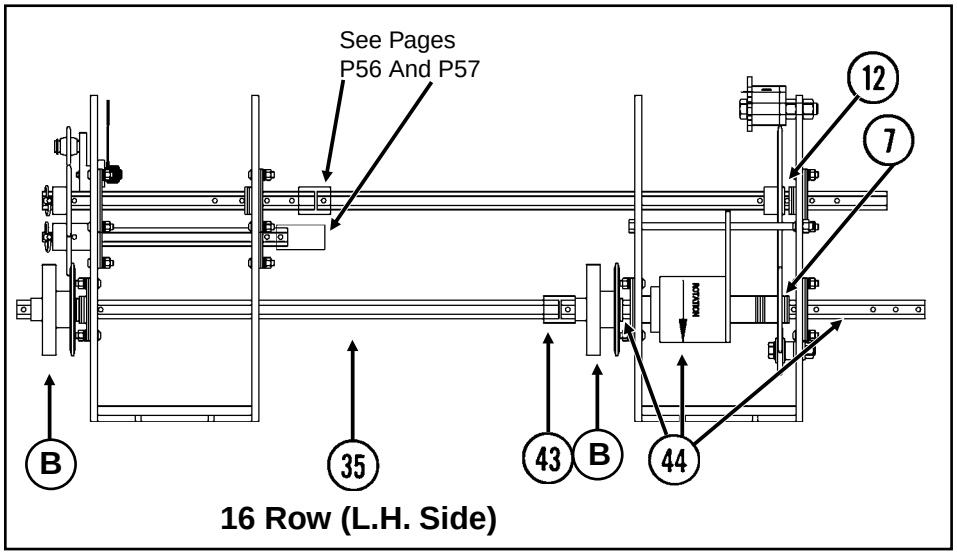


CONTACT WHEEL AND DRIVE SHAFT(S)

(TWL157/TWL156)



12 Row (L.H. Side)



16 Row (L.H. Side)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD2199	1	SMV Sign
2.	G10022	2	Hex Head Cap Screw, ¼"-20 x ½"
	G10227	2	Lock Washer, ¼"
	G10103	2	Hex Nut, ¼"-20
3.	GD9969	1	Bracket
4.	GD10298	1	Cover
5.	GD5857	2	Spring
6.		-	See “Hydraulic Hoses And Fittings On Planter Frame”, Pages P92 And P93
7.		-	See “Inner Module Drive”, Page P67
8.	GD10543	1	Hex Shaft, ⅞" x 13", See “Point Row Clutch”, Pages P66-P69 For 12 Row Machines Equipped With Point Row Clutches
9.	G10602	4	Spring Pin, ¼" x 1 ½"
10.	G10595	-	Hex Head Cap Screw, ⅜"-16 x 10" (Used To Secure Point Row Clutch)
	G10108	-	Lock Nut, ⅜"-16
11.	GA5114	1	Sprocket, 30 Tooth
12.	G10233	2	Machine Bushing, 1", 10 Gauge
	G10345	2	Machine Bushing, 1", 14 Gauge
13.	G10036	1	Hex Head Cap Screw, ⅝"-11 x 4"
	G10104	1	Hex Nut, ⅝"-11
	G10107	1	Lock Nut, ⅝"-11
14.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10216	2	Washer, ½" USS
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
15.	GA5121	2	Pin, 2 ⅛"
16.	G10870	1	Clevis Pin, ⅜" x 1"
	G10860	1	Retaining Ring, ⅜"
17.		-	See “Wing Lift Cylinder”, Page P79
18.	GA2068	2	Spring W/Plug
19.	GD2558	1	Lynch Pin, ¼"
20.	GA5114	1	Sprocket, 30 Tooth
	GA5105	-	Sprocket, 15 Tooth, Half Rate (2 To 1) Drive

(Continued On Following Page)

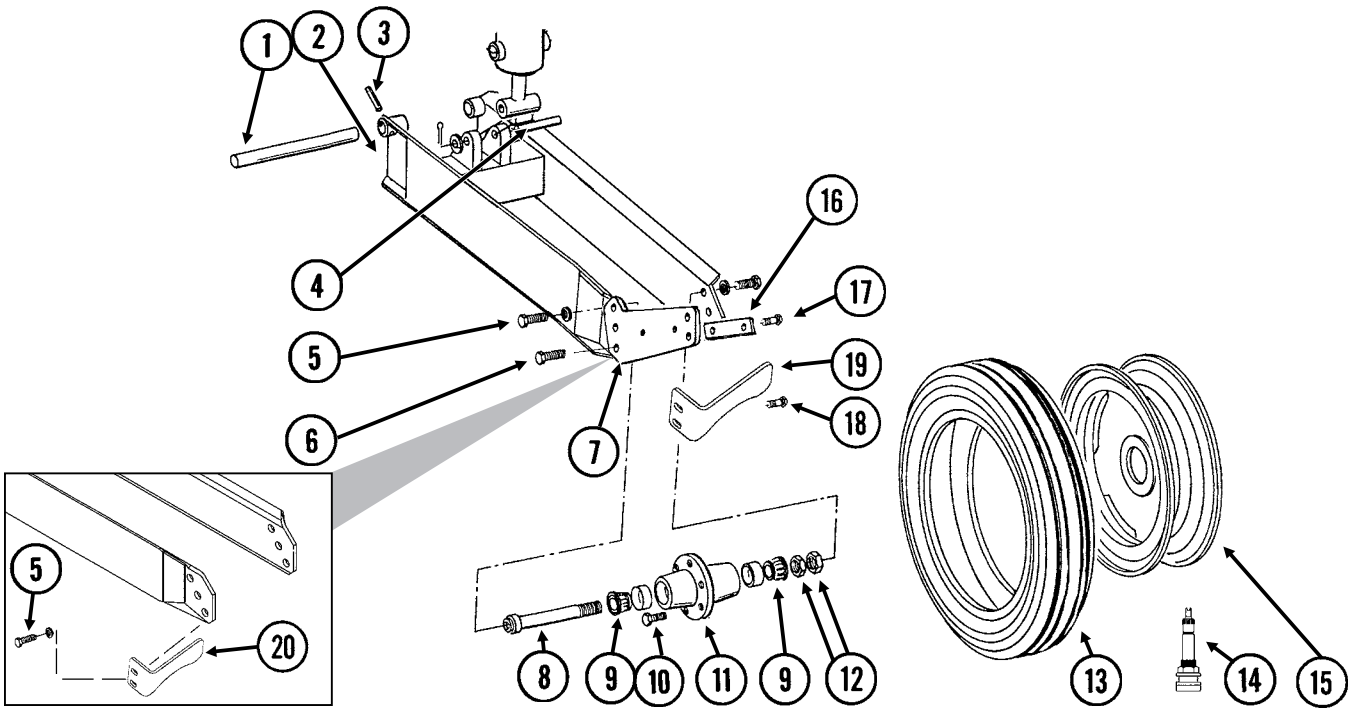
CONTACT WHEEL AND DRIVE SHAFT(S)

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
(Continued)			
21.	GD6775	1	Hex Shaft, 7/8" x 11 3/4" (2 Holes)
22.	GA9846	-	Flanged Bearing, 7/8" Hex Bore
23.	G10303	6	Carriage Bolt, 5/16"-18 x 1"
	G10232	6	Lock Washer, 5/16"
	G10106	6	Hex Nut, 5/16"-18
24.	GA9553	1	Idler W/Sprocket And Hardware, L.H. Side Of Planter
	GA9554	-	Idler W/Sprocket And Hardware, R.H. Side Of Planter
	GA7154	-	Sprocket W/Bearing, 18 Tooth
	G10017	-	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10128	-	Machine Bushing, 1/2", 14 Gauge
	G10501	-	Hex Jam Nut, 1/2"-13, Grade 2
25.	G10890	2	Hex Head Adjusting Bolt, 1/2"-13 x 4", Grade 2
	G10501	2	Hex Jam Nut, 1/2"-13, Grade 2
26.	GD4700	1	Tire, 4.80" x 8", 4 Ply, Rib Implement (Specify Brand*)
	GD4701	-	Valve Stem
27.	GA3553	1	Rim, 3.75" x 8"
28.	G10233	-	Machine Bushing, 1", 10 Gauge
29.	GA7372	1	Wheel Arm
30.	GB0218	2	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
31.	GD6895	1	Shield
32.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10235	4	Machine Bushing, 7/8", 14 Gauge
	GD7805	2	Special Washer, 5/8", Hardened
	G10205	2	Washer, 5/8" SAE
	G10107	2	Lock Nut, 5/8"-11
33.	GD5789	1	Hinge, Female
	GD5790	1	Hinge W/Pins, Male
34.	G10064	6	Hex Head Cap Screw, 1/4"-20 x 1"
	G10209	4	Washer, 1/4" USS
	G10227	6	Lock Washer, 1/4"
	G10103	6	Hex Nut, 1/4"-20
35.	GD10099	-	Hex Shaft, 7/8" x 29 5/8"
36.	G10453	2	Cotter Pin, 3/16" x 1"
37.	GD1256	2	Spring
38.	GA0378	1	Block And Hub Assembly
39.	GD1255	2	L-Pin
40.	GA5165	1	Sprocket, 30 Tooth
41.	G10430	1	External Retaining Ring, 1 1/4"
42.	G3310-110	1	Chain, No. 40, 110 Pitch Including Connector Link, Half Rate (2 To 1) Drive
	G3310-118	-	Chain, No. 40, 118 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
43.	GD5212	1	Coupler, 1 3/4", 16 Row Only
44.		-	See “Point Row Clutch”, Pages P66-P69
A.	GA3552	-	Tire And Rim Assembly (Items 26 And 27) (Specify Brand*)
B.	GA5164	-	Ratchet/Sprocket Assembly, L.H. Side Of Planter (Items 36-41)
	GA9843	-	Ratchet/Sprocket Assembly, R.H. Side Of Planter (Items 36-41)
C.	G1K324	-	Contact Wheel Arm Replacement Kit (Items 9, 21-23, 25, 28 And 29)

*** 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.**

GROUND DRIVE WHEEL

PTD057(TWL142c/TWL142d)

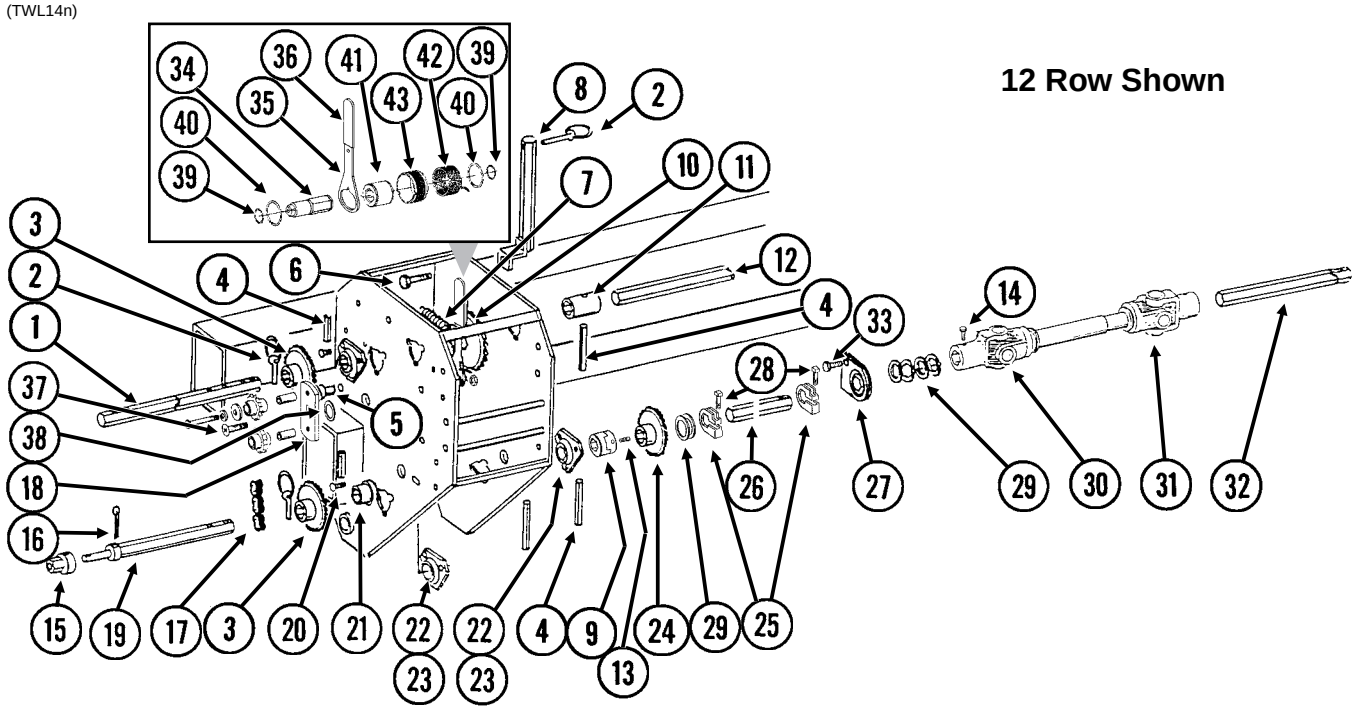


ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD11695	-	Pin, 1 ¼" x 13 ¼"
2.	GA8677	1	Wheel Module
3.	G10610	-	Spring Pin, ⅜" x 2"
4.	GD5841	1	Pin, 1 ¼" x 5 ⅝"
	G10226	2	Washer, 1 ¼" SAE
	G10460	2	Cotter Pin, ¼" x 2"
5.	G10026	2	Hex Head Cap Screw, ¾"-10 x 2"
	G10231	2	Lock Washer, ¾"
6.	G10026	2	Hex Head Cap Screw, ¾"-10 x 2"
	G10231	2	Lock Washer, ¾"
	G10105	2	Hex Nut, ¾"-10
7.	GD10128	1	Scraper Arm
8.	GA4376	1	Spindle W/Round External Retaining Ring, 10"
	GD11490	-	Round External Retaining Ring
9.	GA0895	2	Bearing
10.	GR0270	6	Lug Bolt, 9/16"-18
11.	GA2148	1	Hub W/Cups, 6 Bolt
	GR0434	-	Cup
12.	G11081	2	Hex Jam Nut, 1 ½"-12, Grade 2
13.	GD13401	1	Tire, 7.50" x 20", 8 Ply, Tubeless W/O Center Rib (Specify Brand*)
14.	GA7434	-	Valve Stem
15.	GA2908	1	Rim, 5.5" x 20"
16.	GD10144	1	Bar Clamp
17.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
18.	G10636	2	Carriage Bolt, ½"-13 x 1 ½"
	G10216	2	Washer, ½" USS
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
19.	GD12543	1	Scraper
20.	GA13335	1	Scraper
A.	GA7997	-	Tire And Rim Assembly (Specify Brand*) (Items 13-15)
B.	GA4377	-	Hub And Spindle Assembly (Items 8, 9, 11 And 12)

*** 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.**

SEED RATE TRANSMISSION AND ROW UNIT DRILL SHAFTS

(TWL14n)



ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	GD6780	1	Shaft, ⅞" x 15"
2.	GD2558	3	Lynch Pin, ¼"
3.	GA5106	1	Sprocket, 17 Tooth
	GA5107	1	Sprocket, 19 Tooth
	GA5108	2	Sprocket, 23 Tooth
	GA5109	1	Sprocket, 24 Tooth
	GA5110	1	Sprocket, 25 Tooth
	GA5111	1	Sprocket, 26 Tooth
	GA5112	1	Sprocket, 27 Tooth
	GA5113	1	Sprocket, 28 Tooth
4.	G10602	-	Spring Pin, ¼" x 1 ½"
5.	G10870	1	Clevis Pin, ⅜" x 1"
	G10860	1	Retaining Ring, ⅜"
6.	G10581	1	Hex Head Cap Screw, ½"-13 x 2 ¼"
	GD4887-14	1	Sleeve, 1" O.D. x 9⁄16" I.D. x ⅞"
	G10527	2	Lock Washer, ½", Internal/External
	G10111	1	Lock Nut, ½"-13
7.	GD5857	1	Spring
8.	GA4630	1	Sprocket Storage Rod
9.	GB0287	2	Coupler
10.		-	See “Inner Module Drive”, Page P64
11.	GD5212	1	Coupler, 1 ¾", 16 Row Only
12.	GD10100	1	Hex Shaft, ⅞" x 31 ⅜", 16 Row Only
13.	G10131	4	Square Head Set Screw, 5⁄16"-18 x ¾"
14.	G10688	-	Square Head Set Screw, ⅜"-16 x ⅝"
15.	GD7127	1	Shear Coupler
16.	G10462	-	Cotter Pin, 3⁄16" x 2"
17.	G3310-80	1	Chain, No. 40, 80 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
18.	GA7336	1	Idler W/Bolt-On Sprockets
	GD7426	-	Sprocket, 12 Tooth
	G10047	-	Hex Head Cap Screw, ⅜"-16 x 1 ¾"
	GD1026	-	Sleeve, 1 3⁄16" Long
	G10210	-	Washer, ⅜" USS
	G10229	-	Lock Washer, ⅜"

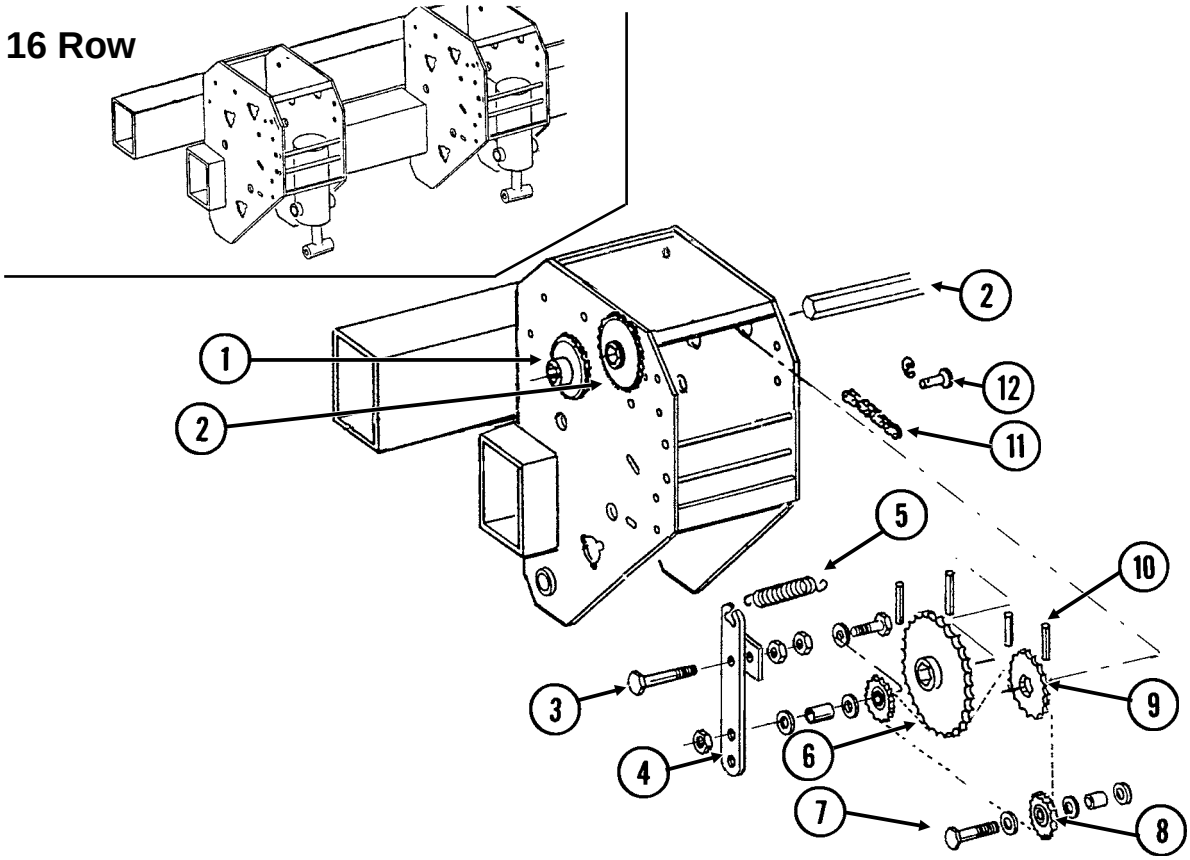
SEED RATE TRANSMISSION AND ROW UNIT DRILL SHAFTS

ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
19.	GD7612	1	Shaft, 7/8" x 13 1/2"
20.	G10303	-	Carriage Bolt, 5/16"-18 x 1"
	G10232	-	Lock Washer, 5/16"
	G10106	-	Hex Nut, 5/16"-18
21.	GA5548	1	Special Bearing
22.	G3400-01	-	Flangette
23.	G2100-03	-	Bearing, 7/8" Hex Bore, Spherical
24.	GA5107	1	Sprocket, 19 Tooth, Interplant® Package Drive
25.	GD11045	-	Lock Clamp
26.	GD0914-106.5	-	Hex Shaft, 7/8" x 106 1/2" (No Holes), Wing, 12 Row 30"
	GD0914-166.75	-	Hex Shaft, 7/8" x 166 3/4" (No Holes), Wing, 16 Row 30"
27.	GA2180	-	Hanger Bearing, 7/8" Hex Bore
28.	G10130	-	Square Head Machine Bolt, 5/16"-18 x 1 3/4"
	G10923	-	Flange Nut, 5/16"-18, No Serration
29.	G10233	-	Machine Bushing, 1", 10 Gauge
30.	GA7052	1	U-Joint W/Grease Fitting, Female, 10 1/4" Long
	GR1557	-	Grease Fitting, 45°, Metric
	GR1297	-	Inboard Yoke And Outer Profile (10 1/4" U-Joint)
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
31.	GA7051	-	U-Joint W/Grease Fitting, Male, 12 1/4 " Long
	GR1557	-	Grease Fitting, 45°, Metric
	GR1296	-	Inner Profile
	GR1295	-	Inboard Yoke
	GR1301	-	Spring Pin, 8mm x 50mm
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, 7/8" Hex
32.	GD0914-45	1	Hex Shaft, 7/8" x 45" (No Holes), R.H. Main Frame
	GD0914-35	-	Hex Shaft, 7/8" x 35" (No Holes), L.H. Main Frame
33.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	2	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
34.	GD14426	1	Tightener Shaft, 3 3/8"
35.	GD14431	1	Handle
36.	G11078	1	Vinyl Cap
37.	G11100	1	Hex Socket Button Head Cap Screw, 1/4"-20 x 1/2", Grade 8
	G10227	1	Lock Washer, 1/4"
	G10209	1	Washer, 1/4" USS
38.	G10235	1	Machine Bushing, 7/8", 14 Gauge
39.	G10496	2	External Inverted Snap Ring, 1 1/2"
40.	G11075	2	Internal Inverted Snap Ring, 7/8"
41.	GD14432	1	Sleeve, 1 1/4"
42.	GD14414	1	Torsion Spring, R.H. (Used In L.H. Wrap Spring Wrench)(Shown)
	GD14413	-	Torsion Spring, L.H. (Used In R.H. Wrap Spring Wrench)
43.	GD19344	-	Release Collar, L.H. (Shown)
	GD19343	1	Release Collar, R.H.
A.	G1K269	-	Lock Clamp Kit (Items 25 And 28)
B.	G1K381	-	Wrap Spring Wrench Replacement Kit, Silver Collar, L.H. (Items 34-43) (Shown)
	G1K380	1	Wrap Spring Wrench Replacement Kit, Gold Collar, R.H. (Items 34-43)

INNER MODULE DRIVE

PTD058/PFA046/PTD077(TWL16e)

16 Row



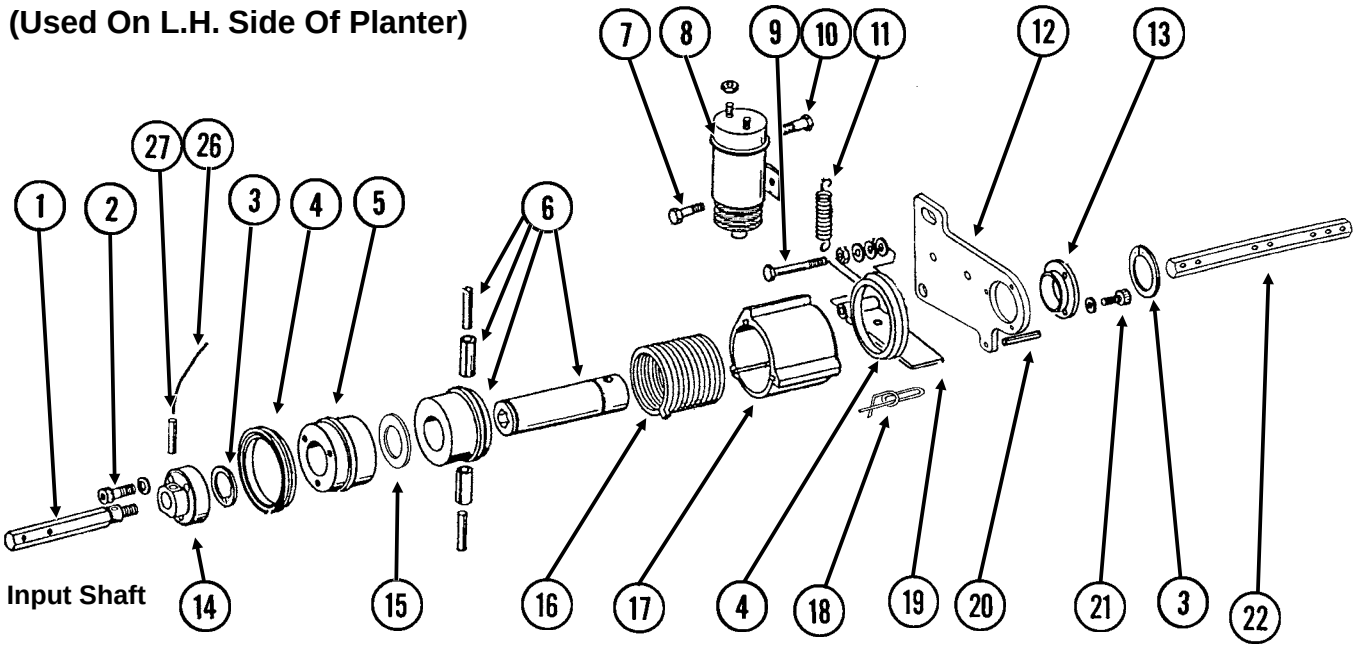
INNER MODULE DRIVE

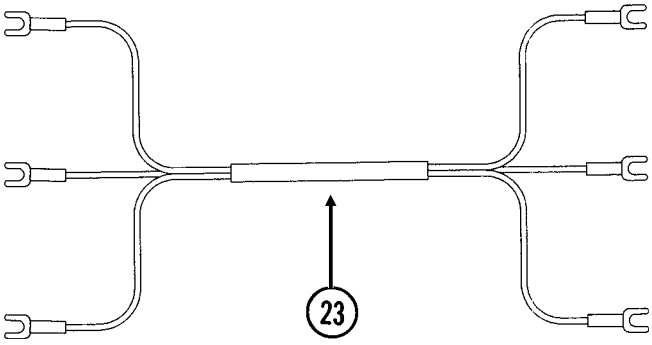
ITEM	PART NO.	QTY. (Per Module)	DESCRIPTION
1.		-	See “Seed Rate Transmission And Row Unit Drill Shafts”, Pages P62 And P63
2.		-	See “Contact Drive Wheel And Drive Shaft(s)”, Pages P58-P60
3.	G10743	1	Hex Head Cap Screw, ⅝"-11 x 3 ¾"
	G10918	3	Machine Bushing, ⅝", 14 Gauge (As Required)
	G10104	1	Hex Nut, ⅝"-11
	G10107	1	Lock Nut, ⅝"-11
4.	GA9558	1	Idler W/Sprocket And Hardware, L.H. Side Of Planter
	GA9557	-	Idler W/Sprocket And Hardware, R.H. Side Of Planter
	GA7154	-	Sprocket W/Bearing, 18 Tooth
	G10038	-	Hex Head Cap Screw, ½"-13 x 3"
	GD10007	-	Spacer, 1 ⅛"
	G10206	-	Washer, ½" SAE
	G10111	-	Lock Nut, ½"-13
5.	GD5857	1	Spring
6.	GA5194	1	Sprocket, 50 Tooth
7.	G10581	1	Hex Head Cap Screw, ½"-13 x 2 ¼"
	GD7889	1	Bushing, 1" O.D. x 9⁄16" I.D. x 7⁄16" Long
	G10168	2	Machine Bushing, ½", 7 Gauge
	G10205	2	Washer, ⅝" SAE
	G10111	1	Lock Nut, ½"-13
8.	GA7154	1	Sprocket W/Bearing, 18 Tooth
9.	GA5113	1	Sprocket, 28 Tooth
10.	G10602	-	Spring Pin, ¼" x 1 ½"
11.	G3310-100	1	Chain, No. 40, 100 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
12.	G10870	1	Clevis Pin, ⅜" x 1"
	G10860	1	Retaining Ring, ⅜"

POINT ROW CLUTCH

PRC019(TWL70d/TWL71d/TWL71/TWL18/A10054)

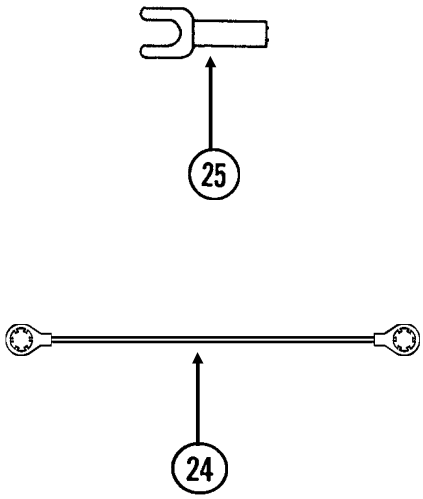
L.H. Point Row Clutch Shown
(Used On L.H. Side Of Planter)





Connects To
Clutch Solenoid

Connects To Planter
Harness At Valve Block
On Rear Center Frame



On Point Row Clutch

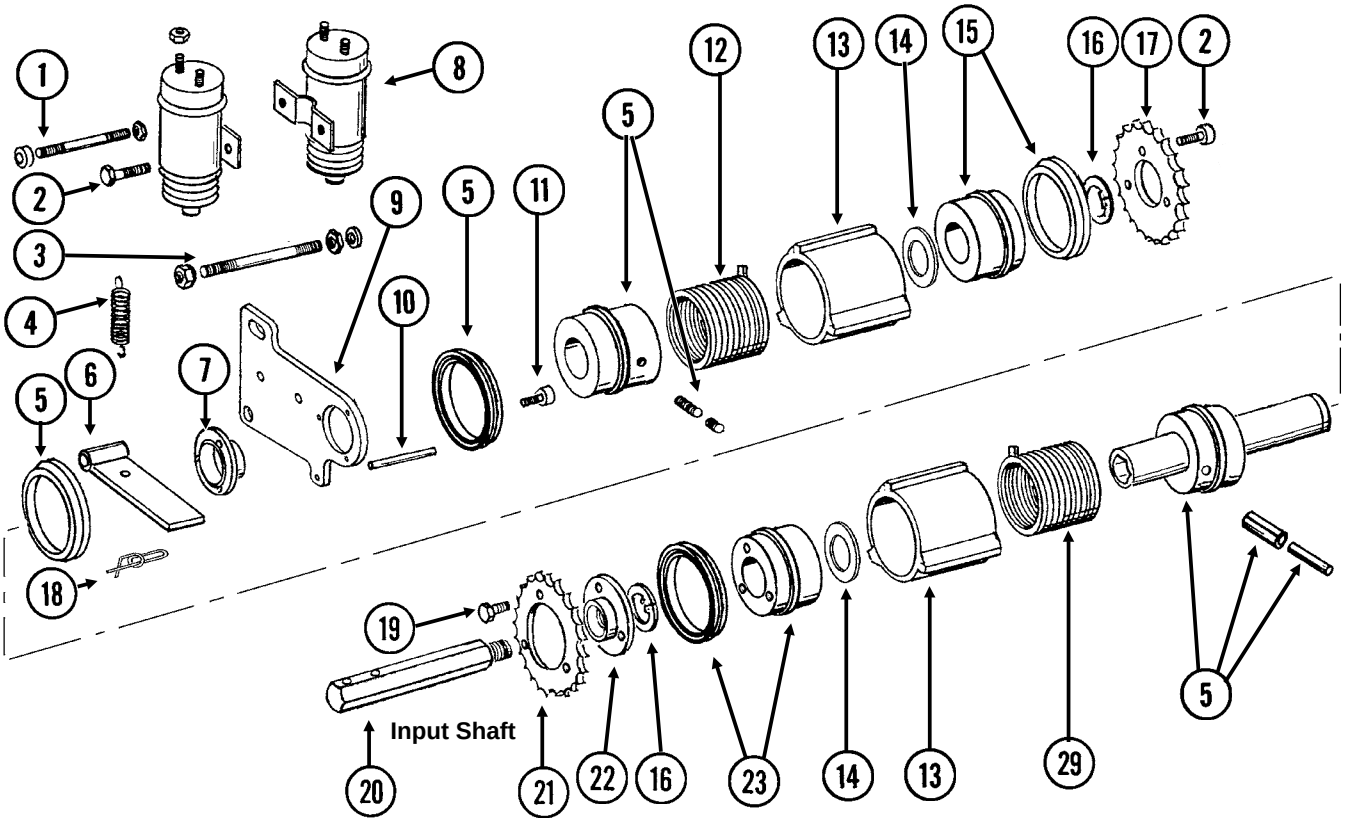
POINT ROW CLUTCH

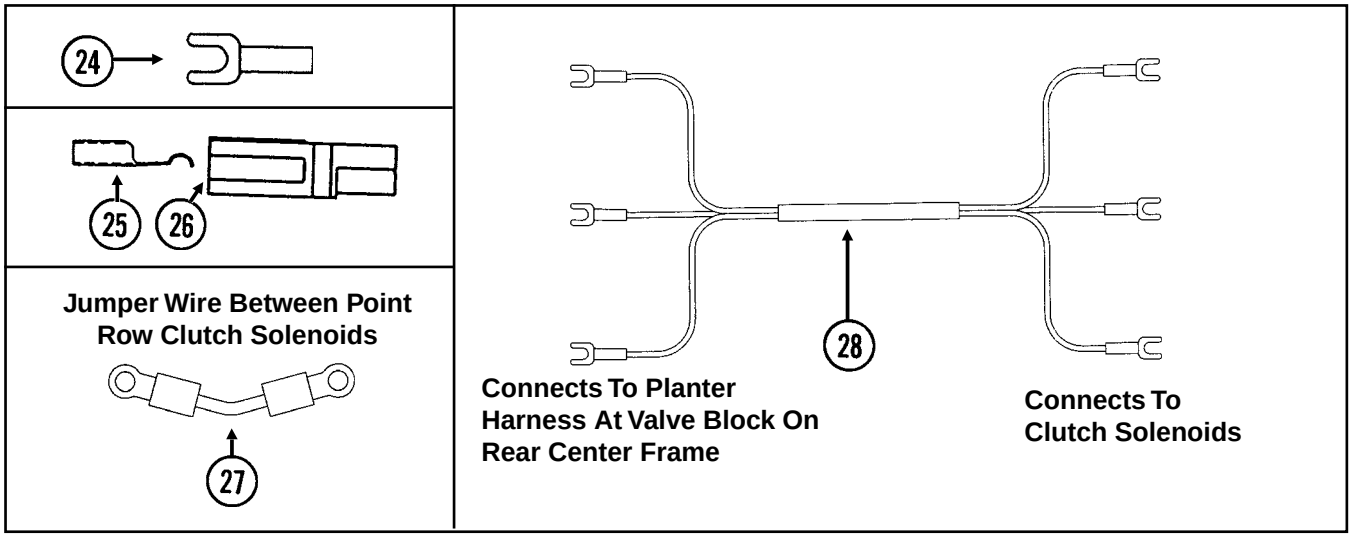
ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD10068	1	Input Shaft, R.H. Threads (Shown)
	GD10069	1	Input Shaft, L.H. Threads
2.	G10374	3	Hex Socket Head Screw, ¼"-20 x 1"
	G10227	3	Lock Washer, ¼"
3.	G10496	2	External Inverted Snap Ring, 1 ½"
4.	GD14512	2	V-Ring Seal
5.	GD10104	1	Input Hub
6.	GA7137	1	Hub/Sleeve Assembly W/Spring Pins
	G10765	-	Spring Pin, ¼" x 1"
	G10804	-	Spring Pin, 5⁄32" x 7⁄8"
7.	G10023	1	Hex Head Cap Screw, ¼"-20 x ¾"
	G10227	1	Lock Washer, ¼"
	G10103	1	Hex Nut, ¼"-20
8.	GA8393	1	Solenoid Complete
	GR1306	1	Snap Ring
	GR1303	1	Spring
	GR1304	1	Boot
	GR1305	1	Plunger
9.	G10049	1	Hex Head Cap Screw, ⅜"-16 x 2 ½"
	G10101	1	Hex Nut, ⅜"-16
	G10203	1	Washer, ⅜" SAE
	G10229	2	Lock Washer, ⅜"
	G10497	1	Hex Jam Nut, ⅜"-16, Grade 2
10.	G10900	1	Hex Socket Head Cap Screw, ¼"-20 x 1 ¾", Grade 8
	G10227	1	Lock Washer, ¼"
	G10103	2	Hex Nut, ¼"-20
11.	GD10123	1	Spring
12.	GD10103	1	Mounting Plate
13.	GD9667	1	Bushing
14.	GD10070	1	Coupler W/R.H. Threads (Shown)
	GD10071	1	Coupler W/L.H. Threads
15.	GD14513	1	Felt Washer
16.	GD9671	-	Spring, L.H. (Shown)
	GD9672	-	Spring, R.H.
17.	GD10102	1	Stop Collar
18.	GD11120	1	Rue Ring Cotter, 5⁄16"
19.	GD10510	1	Actuator Arm
20.	G10859	1	Spring Pin, 3⁄16" x 2 ¼"
21.	G10253	3	Hex Socket Head Screw, No. 10-32 x ½"
	G10257	3	Lock Washer, No. 10
22.	GD10543	-	Hex Shaft, 7⁄8" x 13"
23.	GA9479	1	Wiring Harness, 228", R.H. Side, 12 Row 30"
	GA9480	-	Wiring Harness, 264", L.H. Side, 12 Row 30"
	GA9483	-	Wiring Harness, 252", R.H. Side, 16 Row 30"
	GA9482	-	Wiring Harness, 300", L.H. Side, 16 Row 30"
24.	GA10054	-	Ground Cable, Green
25.	G10996	-	Fork Terminal
26.	GD13524-01	1	Lock Wire, 10", Stainless Steel
27.	G10546	1	Spring Pin, 3⁄16" x 1 ¼"
A.	GA7110	-	Point Row Clutch Assembly, R.H. (R.H. Side Of Machine) (Items 1-21, 24, 26 And 27)
	GA7111	-	Point Row Clutch Assembly, L.H. (L.H. Side Of Machine) (Items 1-21, 24, 26 And 27)

TWO-SPEED POINT ROW CLUTCH

PRC023(FF47b/A7274/TWL71/TWL18/A10054)

L.H. Two-Speed Point Row Clutch Shown (Used On L.H.Side Of Planter)



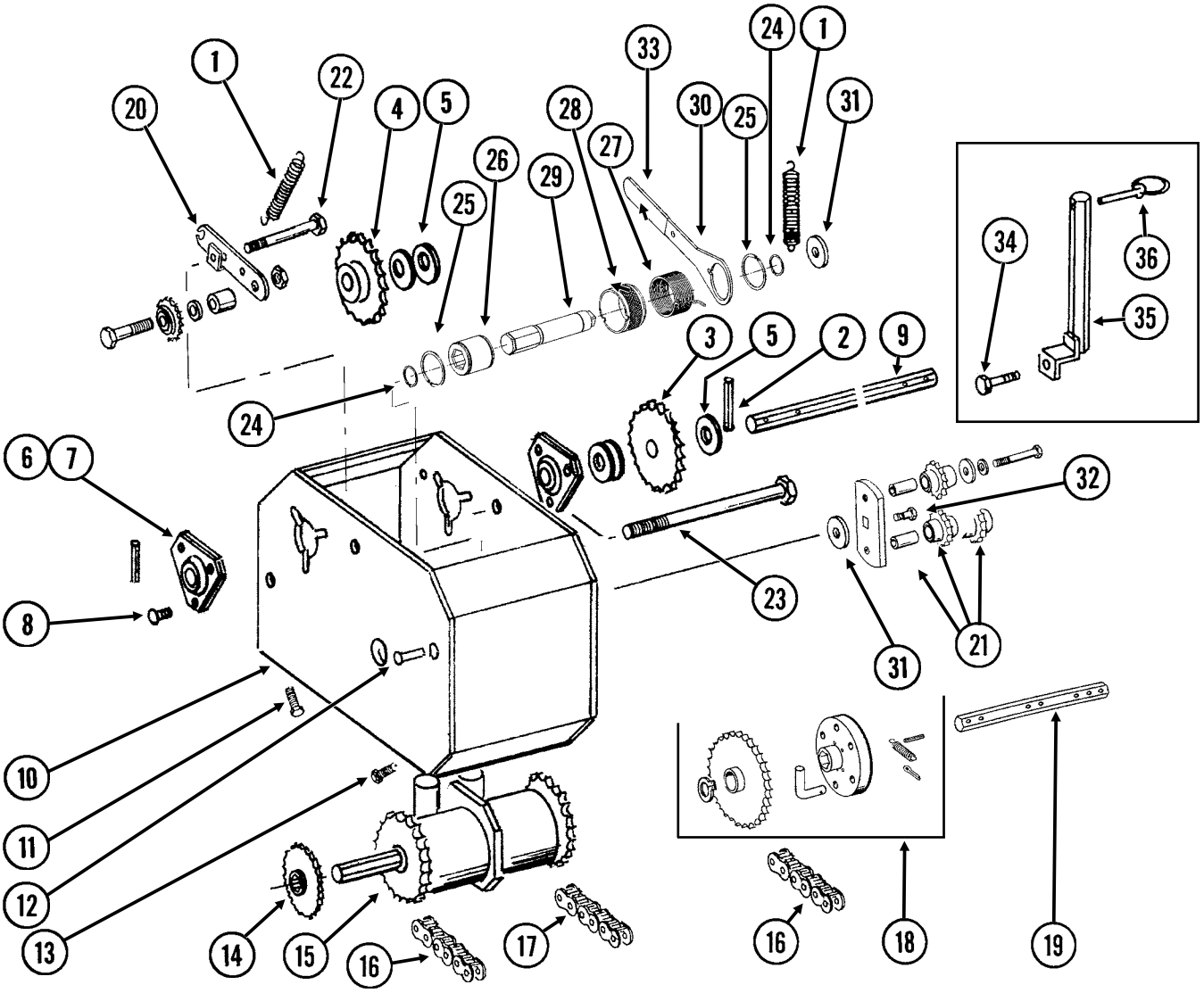


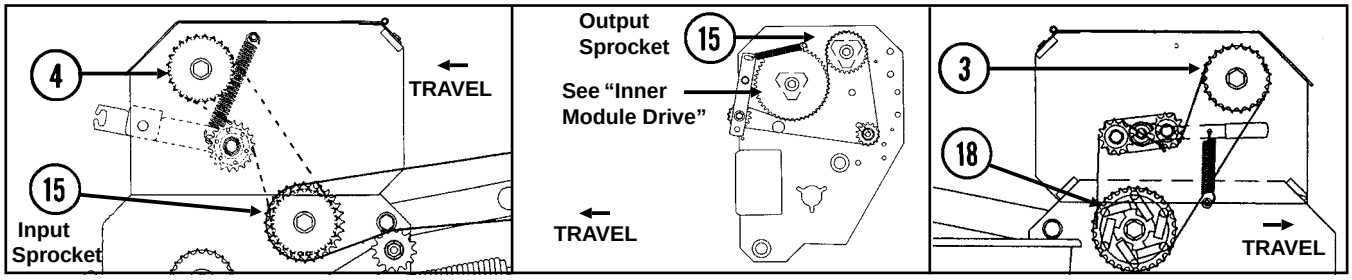
TWO-SPEED POINT ROW CLUTCH

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD10635	1	Threaded Rod, ¼"-20 x 3 ½"
	G10103	2	Hex Nut, ¼"-20
	G10227	2	Lock Washer, ¼"
	GD10282	2	Allen Nut, ¼"-20
2.	G10023	4	Hex Head Cap Screw, ¼"-20 x ¾"
	G10227	4	Lock Washer, ¼"
	G10103	1	Hex Nut, ¼"-20
3.	GD10636	1	Threaded Rod, ⅜"-16 x 4 ¼"
	G10108	2	Lock Nut, ⅜"-16
	G10229	2	Lock Washer, ⅜"
	G10101	2	Hex Nut, ⅜"-16
4.	GD10123	2	Spring
5.	GA7463	1	Hub/Sleeve Assembly W/Seals, Sleeve, Pins And Screws
	GD10120	-	Seal
	GD10584	-	Sleeve
	G10873	-	Hex Socket Set Screw, 5⁄16"-18 x ¾"
	G10872	-	Hex Socket Set Screw, 5⁄16"-18 x ¼"
	G10804	-	Spring Pin, 5⁄32" x ⅞"
	G10765	-	Spring Pin, ¼" x 1"
6.	GD10510	2	Actuator Arm
7.	GD10586	1	Bushing
8.	GA8393	2	Solenoid Complete
	GR1306	-	Snap Ring
	GR1303	-	Spring
	GR1304	-	Boot
	GR1305	-	Plunger
9.	GD10103	1	Mounting Plate
10.	G10859	1	Spring Pin, 3⁄16" x 2 ¼"
11.	G10876	3	Hex Socket Head Screw, No. 10-32 x ¼"
12.	GD9671	2	Spring, L.H. (Shown)
13.	GD10585	2	Stop Collar
14.	GD14513	2	Felt Washer
15.	GA9572	1	Hub W/Seal
	GD10120	-	Seal
16.	G10496	2	External Inverted Snap Ring, 1 ½"
17.	GD10579	1	Output Sprocket, 28 Tooth
18.	GD11120	2	Rue Ring Cotter, 5⁄16"
19.	G10374	3	Hex Socket Head Screw, ¼"-20 x 1"
	GD10588	3	Key
20.	GD10068	1	Input Shaft, R.H. Threads (Shown)
	GD10069	-	Input Shaft, L.H. Threads
21.	GD10578	1	Input Sprocket, 28 Tooth
22.	GD10638	1	Coupler W/R.H. Threads (Shown)
	GD10587	-	Coupler W/L.H. Threads
23.	GA9571	1	Hub W/Seal
	GD10120	-	Seal
24.	G10996	-	Fork Terminal
25.	GD9530	-	Contact
26.	GD9529	-	Housing, Black
	GD12726	-	Housing, Red
27.	GA7274	1	Jumper Wire W/Ring Terminals, 2 3⁄16"
28.	GA9479	1	Wiring Harness, 228", R.H. Side, 12 Row 30"
	GA9480	-	Wiring Harness, 264", L.H. Side, 12 Row 30"
	GA9483	-	Wiring Harness, 252", R.H. Side, 16 Row 30"
	GA9482	-	Wiring Harness, 300", L.H. Side, 16 Row 30"
29.	GD9672	-	Spring, R.H.

TWO-SPEED POINT ROW CLUTCH WHEEL MODULE EXTENSION

(TWL77g/TWL84b/TWL79a/TWL80)





TWO-SPEED POINT ROW CLUTCH WHEEL MODULE EXTENSION

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GD5857	2	Spring
2.	G10602	3	Spring Pin, ¼" x 1 ½"
3.	GA5109	1	Sprocket, 24 Tooth
	GA5105	1	Sprocket, 15 Tooth
	GA5106	1	Sprocket, 17 Tooth
	GA5112	1	Sprocket, 27 Tooth
	GA5108	-	Sprocket, 23 Tooth (From Transmission)
	GA5110	-	Sprocket, 25 Tooth (From Transmission)
	GA5111	-	Sprocket, 26 Tooth (From Transmission)
4.	GA5113	1	Sprocket, 28 Tooth
5.	G10233	-	Machine Bushing, 1", 10 Gauge
6.	G3400-01	-	Flangette
7.	G2100-03	-	Bearing, ⅞" Hex Bore, Spherical
8.	G10312	6	Carriage Bolt, 5⁄16"-18 x ¾"
	G10232	6	Lock Washer, 5⁄16"
	G10106	6	Hex Nut, 5⁄16"-18
9.	GD10355	1	Shaft, ⅞" x 13 ¾"
10.	GA7306	1	Extension Bracket
11.	G10857	2	Hex Head Cap Screw, ¼"-20 x 1 ¼"
	G10209	2	Washer, ¼" USS
	G10227	2	Lock Washer, ¼"
	G10103	2	Hex Nut, ¼"-20
12.	G10408	1	Clevis Pin, 5⁄16" x ¾"
	G10409	1	Retaining Ring, 5⁄16"
13.	G10064	2	Hex Head Cap Screw, ¼"-20 x 1"
	G10209	2	Washer, ¼" USS
	G10227	2	Lock Washer, ¼"
	G10103	2	Hex Nut, ¼"-20
14.		-	See “Contact Wheel And Drive Shaft(s)”, Pages P58-P60
15.		-	See “Two-Speed Point Row Clutch”, Pages P68 And P69
16.	G3310-74	2	Chain, No. 40, 74 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
17.	G3310-100	1	Chain, No. 40, 100 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
18.	GA7320	1	Overrunning Sprocket Assembly, R.H.
	GA7321	-	Overrunning Sprocket Assembly, L.H.
	G10430	1	External Retaining Ring, 1 ¼"
	GD1255	6	L-Pin
	G10546	6	Spring Pin, 3⁄16" x 1 ¼"
	G10470	6	Cotter Pin, 5⁄32" x 1"
	GD10366	6	Spring
	GA7317	1	Block
	GA7319	1	Sprocket W/Bushing, 30 Tooth
19.	GD10543	1	Hex Shaft, ⅞" x 13"
20.	GA9918	1	Idler W/Sprocket And Hardware
	GD10356	-	Bushing, ¾" Long
	G10128	-	Machine Bushing, ½", 14 Gauge
	G10501	-	Hex Jam Nut, ½"-13, Grade 2
	G10053	-	Hex Head Cap Screw, ½"-13 x 2 ½"
	GA7154	-	Sprocket W/Bearing, 18 Tooth

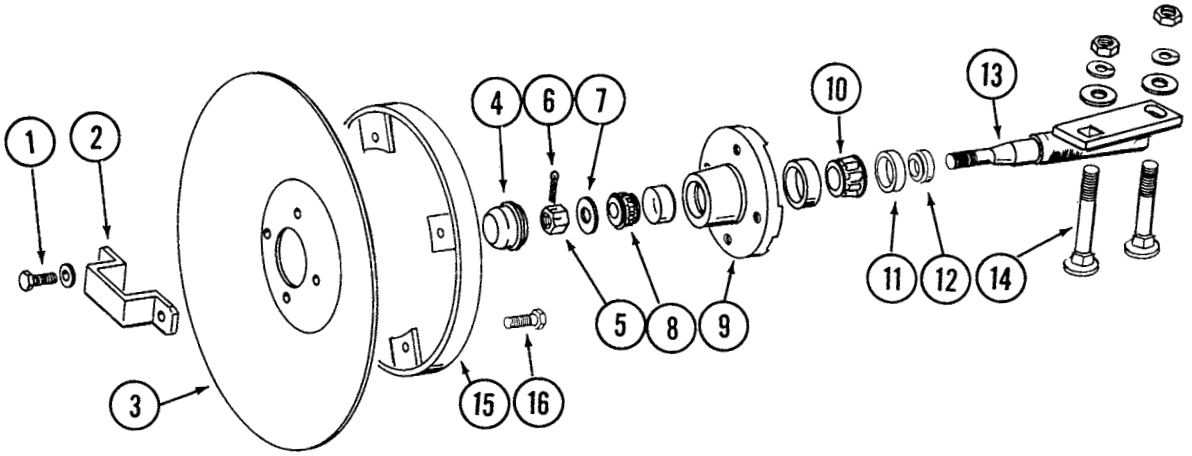
(Continued On Following Page)

TWO-SPEED POINT ROW CLUTCH WHEEL MODULE EXTENSION

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
(Continued)			
21.	GA7336	1	Idler W/Bolt-On Sprockets
	GD7426	-	Sprocket, 12 Tooth
	GD1026	-	Sleeve, 1 3⁄16" Long
	G10210	-	Washer, 3⁄8" USS
	G10229	-	Lock Washer, 3⁄8"
	G10047	-	Hex Head Cap Screw, 3⁄8"-16 x 1 3⁄4"
22.	G10036	1	Hex Head Cap Screw, 5⁄8"-11 x 4"
	G10107	1	Lock Nut, 5⁄8"-11
	G10104	1	Hex Nut, 5⁄8"-11
23.	G10595	1	Hex Head Cap Screw, 3⁄8"-16 x 10"
	G10108	1	Lock Nut, 3⁄8"-16
24.	G10496	2	External Inverted Snap Ring, 1 1⁄2"
25.	G11075	2	Internal Inverted Snap Ring, 7⁄8"
26.	GD14432	1	Sleeve, 1 1⁄4"
27.	GD14414	1	Torsion Spring, R.H. (Used On L.H. Wrap Spring Wrench) (Shown)
	GD14413	-	Torsion Spring, L.H. (Used On R.H. Wrap Spring Wrench)
28.	GD19344	-	Release Collar, L.H. (Shown)
	GD19343	1	Release Collar, R.H.
29.	GD14426	1	Tightener Shaft, 3 3⁄8"
30.	GD14431	1	Handle
31.	G10235	2	Machine Bushing, 7⁄8", 14 Gauge
32.	G11100	1	Hex Socket Button Head Cap Screw, 1⁄4"-20 x 1⁄2", Grade 8
	G10227	1	Lock Washer, 1⁄4"
	G10209	1	Washer, 1⁄4" USS
33.	G11078	1	Vinyl Cap
34.	G10037	1	Hex Head Cap Screw, 1⁄2"-13 x 1 1⁄4"
	G10216	1	Washer, 1⁄2" USS
	G10228	1	Lock Washer, 1⁄2"
	G10102	1	Hex Nut, 1⁄2"-13
35.	GA7313	1	Sprocket Storage Rod
36.	GD2558	2	Lynch Pin, 1⁄4"
A.	G1K381	-	Wrap Spring Wrench Replacement Kit, Silver Collar, L.H. (Items 24-33) (Shown)
	G1K380	1	Wrap Spring Wrench Replacement Kit, Gold Collar, R.H. (Items 24-33)

ROW MARKER SPINDLE/HUB/BLADE

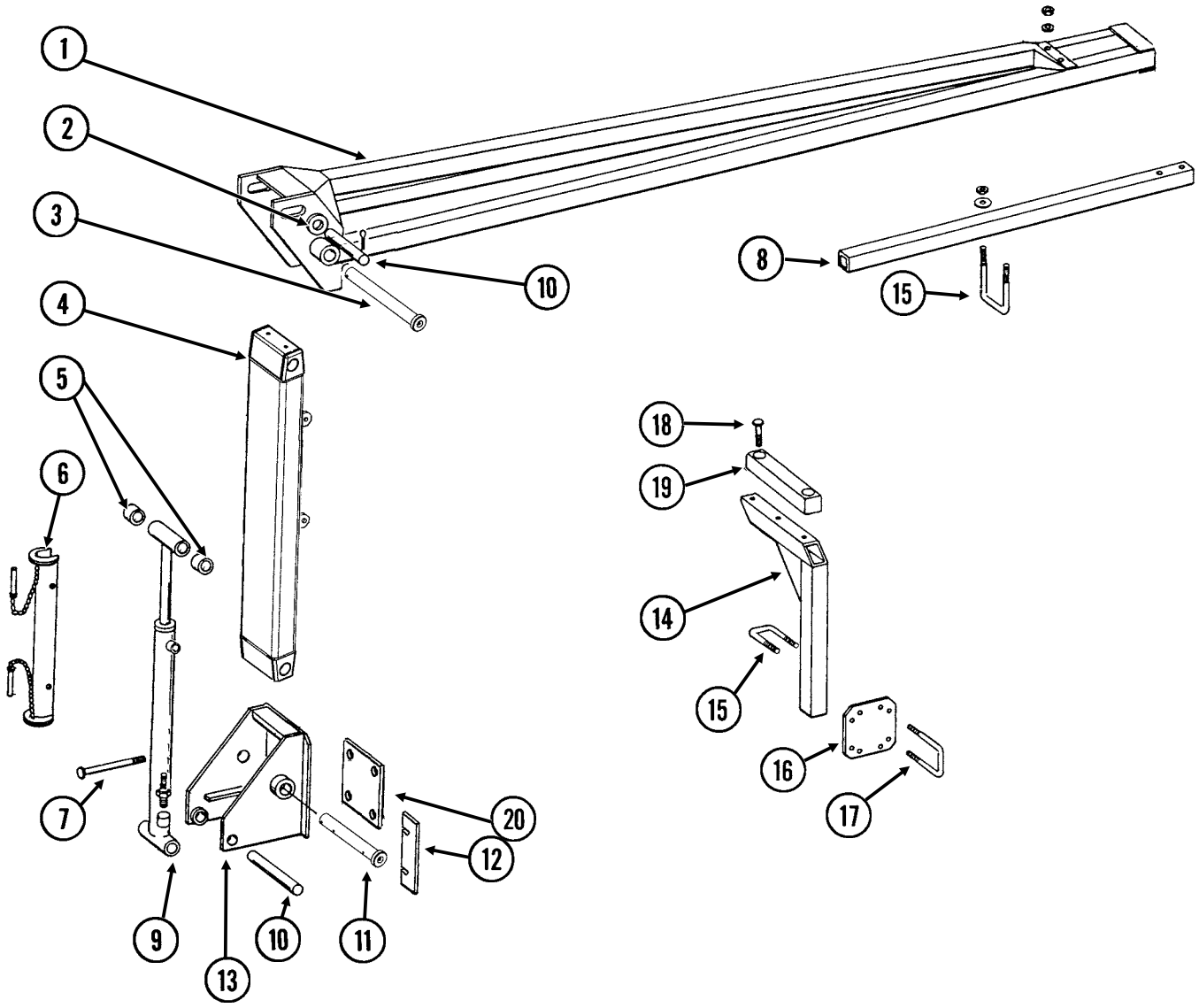
MKR020(MKR4)



ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	G10722	4	Hex Head Cap Screw, ½"-20 x 1"
	G10228	4	Lock Washer, ½"
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, ⅝"-18
6.	G10544	1	Cotter Pin, 5⁄32" x 1"
7.	G10724	1	Washer, ⅝" 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, ½"-13 x 3 ½"
	G10168	2	Machine Bushing, ½", 7 Gauge
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-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, 12 ROW 30"

MKR14ii)

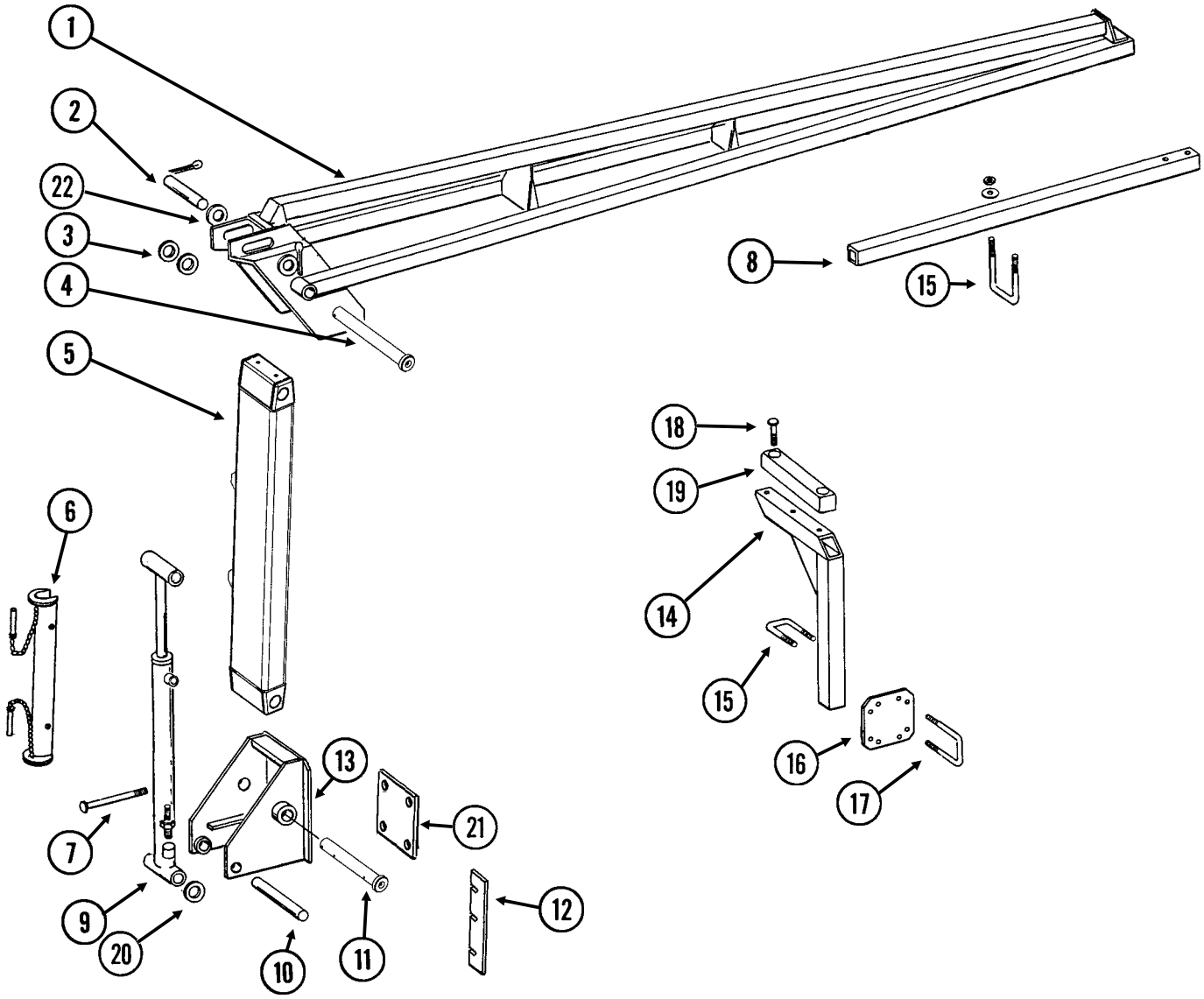


ROW MARKER ASSEMBLY, 12 ROW 30"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA4353	1	Arm W/Grease Fittings, Second Stage, 110"
	G10641	-	Grease Fitting, ⅛" NPT
2.	G10226	-	Washer, 1 ¼" SAE (As Required)
	G10159	-	Machine Bushing, 1 ¼", 10 Gauge (As Required)
	G10322	-	Machine Bushing, 1 ¼", 18 Gauge (As Required)
3.	GA11766	-	Pin W/Grease Fitting, 1 ¼" x 11 13⁄16"
	G10640	-	Grease Fitting, ¼"-28
	G10463	-	Cotter Pin, ¼" x 1 ½"
4.	GA11590	-	Arm, First Stage
5.	GD0752-41	4	Sleeve, 1"
6.	GA8170	1	Safety Lockup W/Detent Pins, 19 ⅜"
	G10536	-	Detent Pin, ½" x 2 ½"
7.	G10011	4	Hex Head Cap Screw, ⅝"-11 x 5 ½" (If Applicable)
	G10046	-	Hex Head Cap Screw, ⅝"-11 x 5" (If Applicable)
	G10008	-	Hex Head Cap Screw, ⅝"-11 x 2" (If Applicable)
	GD7805	8	Special Washer, ⅝", Hardened
	G10205	-	Washer, ⅝" SAE
	G10230	4	Lock Washer, ⅝"
	G10104	4	Hex Nut, ⅝"-11
8.	GD0453-07	1	Extension Tube, 45", R.H.
	GD0453-04	-	Extension Tube, 60", L.H.
9.		-	See “Row Marker (Cushion) Cylinder”, Page P83
10.	GD2161	2	Pin, 1 ¼" x 8 ¼"
	G10460	4	Cotter Pin, ¼" x 2"
11.	GA11767	-	Pin W/Grease Fitting, 1 ¼" x 9 ½"
	G10640	-	Grease Fitting, ¼"-28
	G10463	-	Cotter Pin, ¼" x 1 ½"
12.	GD10792	-	Shim, 2 ½" x 7 ¼", 16 Gauge (As Required)
13.	GA5130	1	Mount
14.	GA7042	1	Stand, 20" (12 Row 30" Only)
15.	GD2721	3	U-Bolt, 2" x 2" x ½"-13
	G10228	6	Lock Washer, ½"
	G10102	6	Hex Nut, ½"-13
16.	GD9981	1	Bar
17.	GD4743	2	U-Bolt, 3" x 3" x ½"-13
	G10216	4	Washer, ½" USS
	G10228	4	Lock Washer, ½"
	G10102	4	Hex Nut, ½"-13
18.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10206	2	Washer, ½" SAE
	G10111	2	Lock Nut, ½"-13
19.	GA9088	-	Molded Stop, 12 ¼" Long
20.	GD13360	2	Plate, 6" x 6"

ROW MARKER ASSEMBLY, 16 ROW 30"

(MKR15jj)

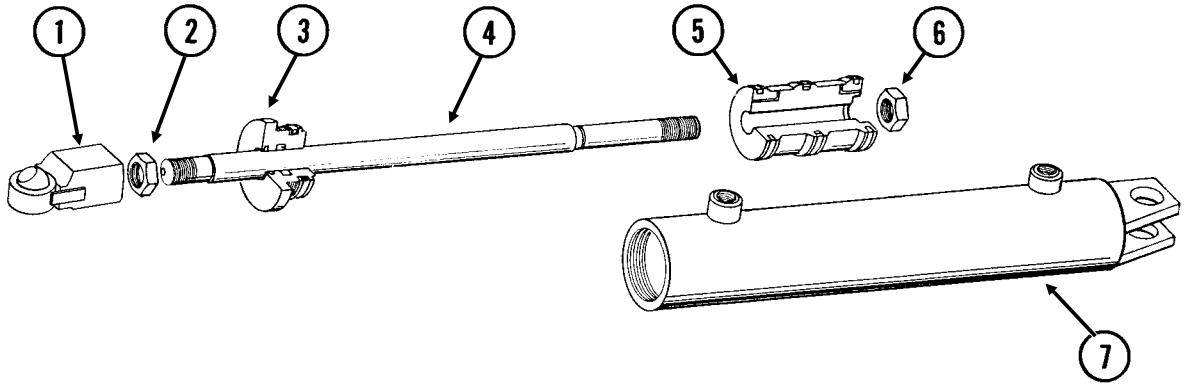


ROW MARKER ASSEMBLY, 16 ROW 30"

ITEM	PART NO.	QTY. (Per Assy.)	DESCRIPTION
1.	GA7118	-	Arm, Second Stage, 172 ¼"
2.	GD1701	1	Pin, 1 ¼" x 6 ½"
	G10460	2	Cotter Pin, ¼" x 2"
3.	G10979	4	Special Washer, 1 ¼" (As Required)
	G10159	-	Machine Bushing, 1 ¼", 10 Gauge (As Required)
	G10322	-	Machine Bushing, 1 ¼", 18 Gauge (As Required)
4.	GA11768	-	Pin W/Grease Fitting, 1 ¼" x 13"
	G10640	-	Grease Fitting, ¼"-28
	G10463	-	Cotter Pin, ¼" x 1 ½"
5.	GA11569	-	Arm, First Stage, L.H. (Shown)
	GA11568	-	Arm, First Stage, R.H.
6.	GA8170	1	Safety Lockup W/Detent Pins, 19 ⅜"
	G10536	-	Detent Pin, ½" x 2 ½"
7.	G10012	-	Hex Head Cap Screw, ⅝"-11 x 6 ½" (If Applicable)
	G10068	-	Hex Head Cap Screw, ⅝"-11 x 6" (If Applicable)
	G10009	-	Hex Head Cap Screw, ⅝"-11 x 2 ½" (If Applicable)
	GD7805	8	Special Washer, ⅝", Hardened
	G10205	-	Washer, ⅝" SAE
	G10230	6	Lock Washer, ⅝"
	G10104	6	Hex Nut, ⅝"-11
8.	GD0453-09	1	Extension Tube, 75", L.H.
	GD0453-03	-	Extension Tube, 50", R.H.
9.		-	See “Row Marker (Cushion) Cylinder”, Page P83
10.	GD0652	1	Pin, 1 ¼" x 9 ½"
	G10460	2	Cotter Pin, ¼" x 2"
11.	GA11769	-	Pin W/Grease Fitting, 1 ¼" x 11 ½"
	G10640	-	Grease Fitting, ¼"-28
	G10463	-	Cotter Pin, ¼" x 1 ½"
12.	GD10793	-	Shim, 2 ½" x 12 ½", 16 Gauge (As Required) (Shown)
	GD11791	-	Shim, 2 ½" x 8 ¼", 16 Gauge (As Required)
13.	GA4877	1	Mount
14.	GA7043	1	Stand, 30"
15.	GD2721	3	U-Bolt, 2" x 2" x ½"-13
	G10228	6	Lock Washer, ½"
	G10102	6	Hex Nut, ½"-13
16.	GD9981	1	Bar
17.	GD4743	2	U-Bolt, 3" x 3" x ½"-13
	G10216	4	Washer, ½" USS
	G10228	4	Lock Washer, ½"
	G10102	4	Hex Nut, ½"-13
18.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10206	2	Washer, ½" SAE
	G10111	2	Lock Nut, ½"-13
19.	GA9088	-	Molded Stop, 12 ¼" Long
20.	G10979	4	Special Washer, 1 ¼" (As Required)
21.	GD13359	2	Plate, 7" x 7"
22.	G10226	2	Washer, 1 ¼" SAE
	G10322	2	Machine Bushing, 1 ¼", 18 Gauge

ROTATION CYLINDER, ALL SIZES

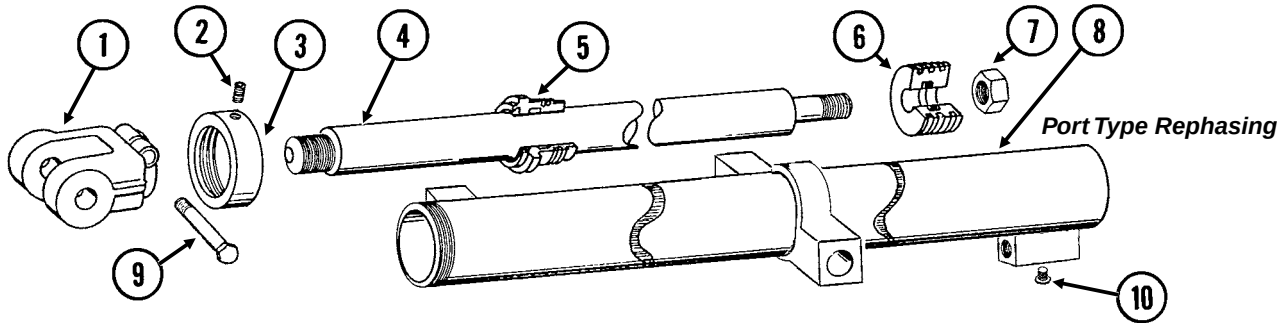
(CYL11i)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7221	1	Threaded Ball Joint End
2.	G10509	1	Hex Jam Nut, 1 ¼"-12, Grade 2
3.	GD11988	1	Gland
4.	GD11991	1	Rod
5.	GD11992	1	Piston
6.	G10972	1	Lock Nut, 1 ¼"-12
7.	A7220	1	Barrel **(Non-Stock Item)**
A.	GA8904	-	Cylinder Complete, 4" x 16" *(Part Number Stamped On Barrel)*
B.	GR1524	-	Seal Kit, Includes: (2) O-Rings, (1) U-Cup, (1) Wiper, (1) Seal, (2) Cast Iron Rings, (1) BU Ring, (1) Expander

CENTER LIFT CYLINDER, ALL SIZES

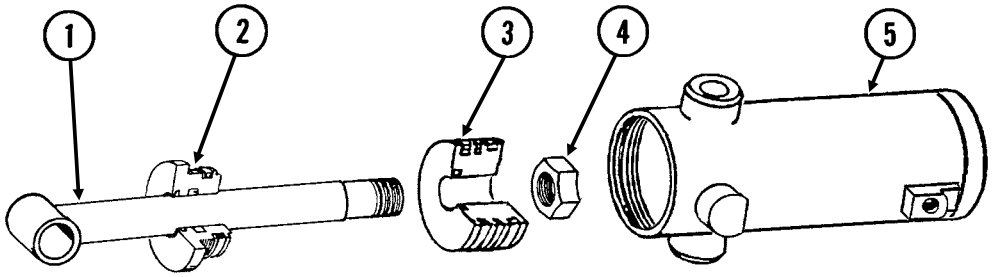
(CYL39c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD11951	1	Clevis
2.	G10907	1	Set Screw, ¼"-20 x ¼"
3.	GD11193	1	Cap
4.	GD10936	1	Rod
5.	GD10211	1	Gland
6.	GD11253	1	Piston
7.	G10958	1	Lock Nut, 1"-14
8.	GA8149	1	Barrel
9.	G10939	1	Hex Head Cap Screw, ⅜"-16 x 2 ¼"
	G10108	1	Lock Nut, ⅜"-16
10.	G6408-H04-O	1	Hex Socket Head Plug W/O-Ring, 7⁄16"-20 O-Ring
	GR1465	1	O-Ring
A.	GA8908	-	Cylinder Complete, 3" x 48" *(Part Number Stamped On Barrel)*
B.	GR1428	-	Seal Kit, Includes: (2) O-Rings, (2) BU Rings, (1) Wiper, (1) U-Cup, (1) Piston Seal, (2) Cast Iron Rings, (1) Expander

WING LIFT CYLINDER, 12 ROW

~~CYL031/CYL011(CYL45d)~~

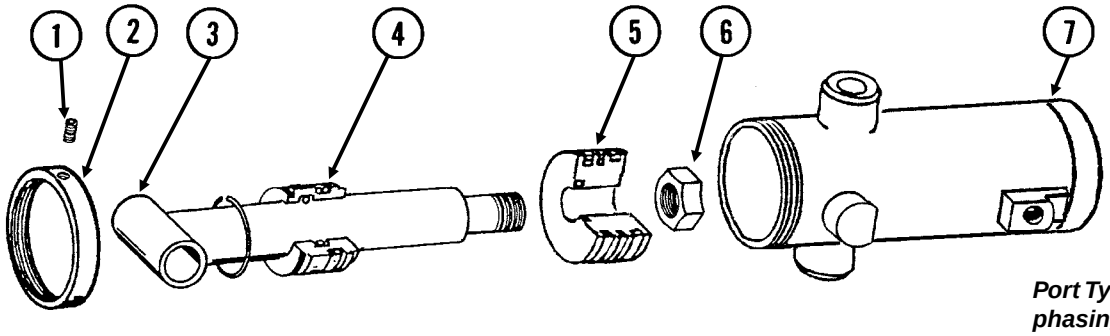


Port Type Re-phasing

ITEM	PART NO.	QTY	DESCRIPTION
1.	GA8320	1	Rod Assembly W/Grease Fitting
	G10640	-	Grease Fitting, ¼"-28
2.	GD11995	1	Gland
3.	GD11994	1	Piston
4.	G10958	1	Lock Nut, 1"-14
5.	A8797	1	Barrel **(Non-Stock Item)**
A.	GA8909	-	Cylinder Complete, 4 ¼" x 6" *(Part Number Stamped On Barrel)*
B.	GR1523	-	Seal Kit, Includes: (1) Wiper, (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Seal, (2) Cast Iron Rings, (1) Expander

WING LIFT CYLINDER, 16 ROW

CYL031/CYL011(CYL41c)



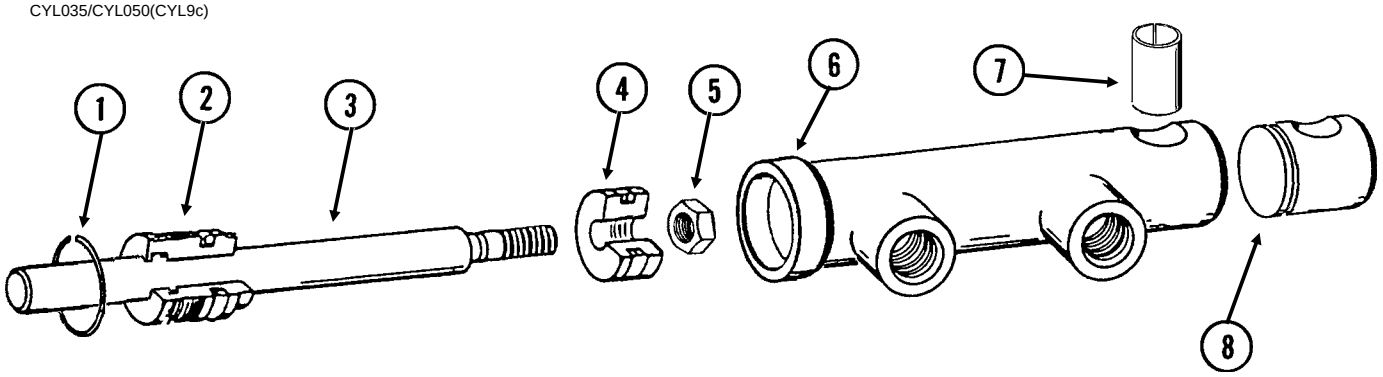
Port Type Re-phasing

ITE

1.	G10907	1	Set Screw, ¼"-20 x ¼"
2.	GD11193	1	Cap
3.	GA8157	1	Rod Assembly W/Grease Fitting
	G10449	-	Grease Fitting, 3⁄16", Drive-In
4.	GD11194	1	Gland
5.	GD11253	1	Piston
6.	G10958	1	Lock Nut, 1"-14
7.	A8873	1	Barrel **(Non-Stock Item)**
A.	GA8874	-	Cylinder Complete, 3" x 6" *(Part Number Stamped On Barrel)*
B.	GR1417	-	Seal Kit, Includes: (2) O-Rings, (2) BU Rings, (1) Expander, (1) Wiper, (1) U-Cup, (1) Piston Seal, (2) Cast Iron Rings

TRANSPORT LATCH CYLINDER, ALL SIZES

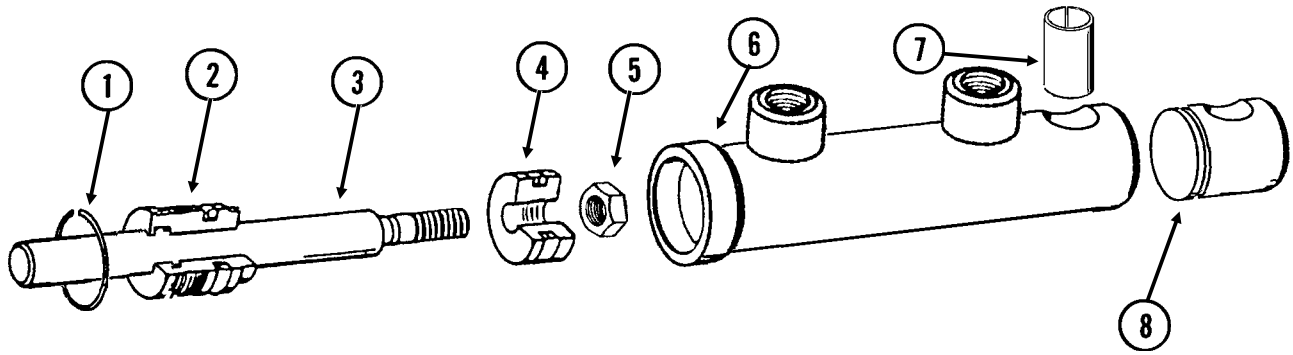
CYL035/CYL050(CYL9c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10770	1	Internal Retaining Ring, 1 11/16"
2.	GD13170	1	Gland
3.	GD13425	1	Rod
4.	GD13172	1	Piston
5.	G11016	1	Lock Nut, ½"-20
6.	D13426	1	Barrel **(Non-Stock Item)**
7.	GD13400	1	Tension Bushing, 1" x 2" Long
8.	GD13173	1	End Cap
A.	GA9559	-	Cylinder Complete, 1 ½" x 2 ½" *(Part Number Stamped On Barrel)*
B.	GR1598	-	Seal Kit, Includes: (3) O-Rings, (2) BU Rings, (1) Wiper, (1) T-Seal, (1) Bronze Bushing, (1) Seal, (1) U-Cup

TONGUE LOCK CYLINDER, ALL SIZES

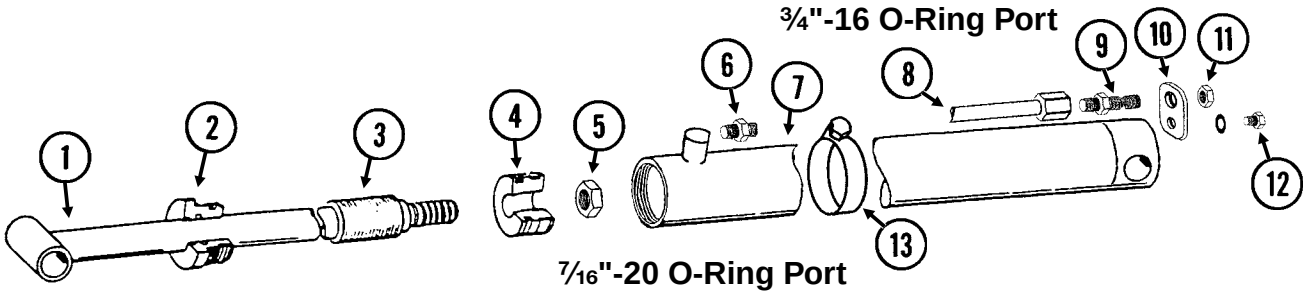
CYL035(CYL9d)



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, ½"-20
6.	D13169	1	Barrel **(Non-Stock Item)**
7.	GD13400	1	Tension Bushing, 1" x 2" Long
8.	GD13173	1	End Cap
A.	GA9205	-	Cylinder Complete, 1 ½" x 2 ½" *(Part Number Stamped On Barrel)*
B.	GR1598	-	Seal Kit, Includes: (3) O-Rings, (2) BU Rings, (1) Wiper, (1) T-Seal, (1) Bronze Bushing, (1) Seal, (1) U-Cup

TONGUE CYLINDER, 12 ROW 30"

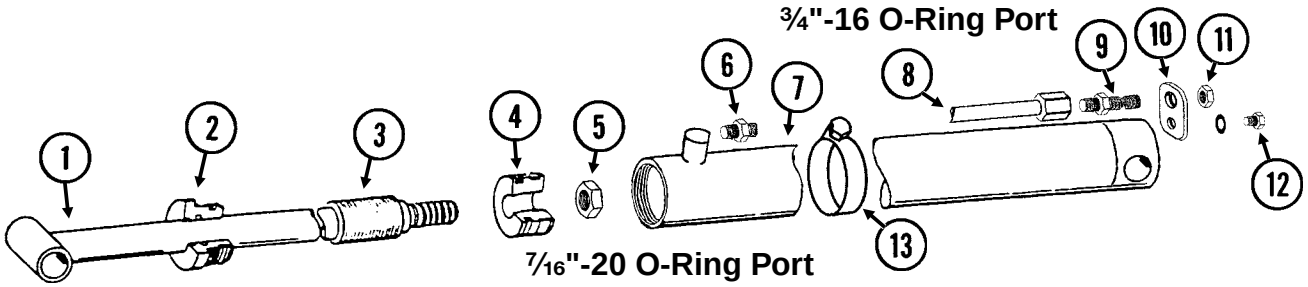
(CYL12f)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8893	1	Rod Assembly
2.	GD11984	1	Gland
3.	GD7147	1	Spacer
4.	GD11970	1	Piston
5.	G10972	1	Lock Nut, 1 ¼"-12
6.	G6400-08-04	1	Connector W/O-Ring, ¾"-16 Male JIC To 7/16"-20 O-Ring
	GR1465	-	O-Ring
7.	GA8858	1	Barrel
8.	GA8978	1	Steel Hydraulic Line, 68 11/16"
9.	G2700-08	1	Bulkhead Tube Union, ¾"-16 Male JIC
10.	GD12597	1	Bracket
11.	G306-08	1	Lock Nut, ¾"-16
12.	G10328	1	Hex Head Cap Screw, ⅜"-16 x ⅝"
	G10229	1	Lock Washer, ⅜"
13.	G10990	1	Hose Clamp, No. 52
A.	GA8857	-	Cylinder Complete, 3" x 60" *(Part Number Stamped On Barrel)*
B.	GR1519	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) Wear Ring, (1) Wiper, (1) U-Cup, (1) T-Seal

TONGUE CYLINDER, 16 ROW 30"

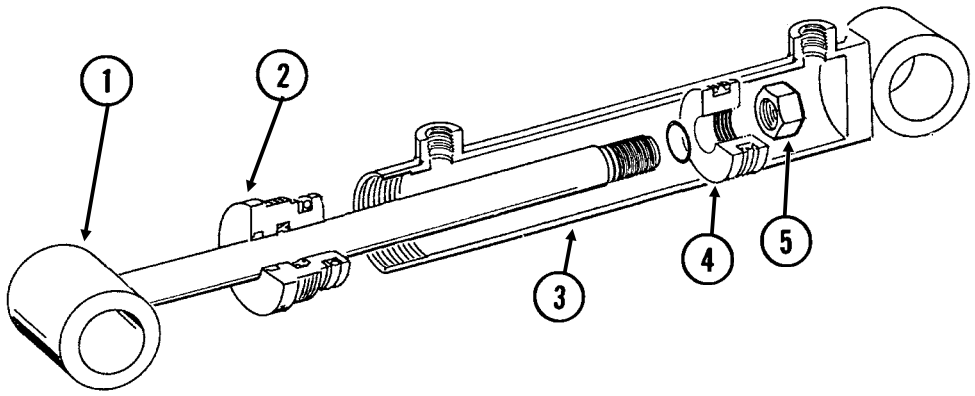
CYL036(CYL12f)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8859	1	Rod Assembly
2.	GD11984	1	Gland
3.	GD7147	1	Spacer
4.	GD11970	1	Piston
5.	G10972	1	Lock Nut, 1 ¼"-12
6.	G6400-08-04	1	Connector W/O-Ring, ¾"-16 Male JIC To 7/16"-20 O-Ring
	GR1465	-	O-Ring
7.	GA8861	1	Barrel
8.	GA8979	1	Steel Hydraulic Line, 92 11/16"
9.	G2700-08	1	Bulkhead Tube Union, ¾"-16 Male JIC
10.	GD12597	1	Bracket
11.	G306-08	1	Lock Nut, ¾"-16
12.	G10328	1	Hex Head Cap Screw, ⅜"-16 x ⅝"
	G10229	1	Lock Washer, ⅜"
13.	G10990	1	Hose Clamp, No. 52
A.	GA8862	-	Cylinder Complete, 3" x 84" *(Part Number Stamped On Barrel)*
B.	GR1519	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring, (1) Wear Ring, (1) Wiper, (1) U-Cup, (1) T-Seal

WING LOCK CYLINDER, ALL SIZES

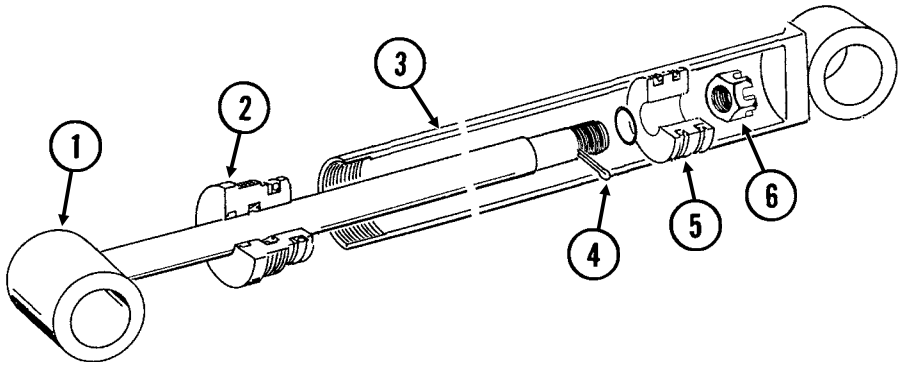
CYL032(CYL3f)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8898	1	Rod Assembly
2.	GD11985	1	Gland
3.	A8822	1	Barrel **(Non-Stock Item)**
4.	GD11986	1	Piston
5.	G10969	1	Lock Nut, $^{7}/_{8}$"-14
A.	GA8899	-	Cylinder Complete, 2 $^{1}/_{2}$" x 20 $^{1}/_{16}$" *(Part Number Stamped On Barrel)*
B.	GR1522	-	Seal Kit, Includes: (1) T-Seal, (2) O-Rings, (1) BU Ring, (1) U-Cup, (1) Wiper

MARKER (Cushion) CYLINDER, ALL SIZES

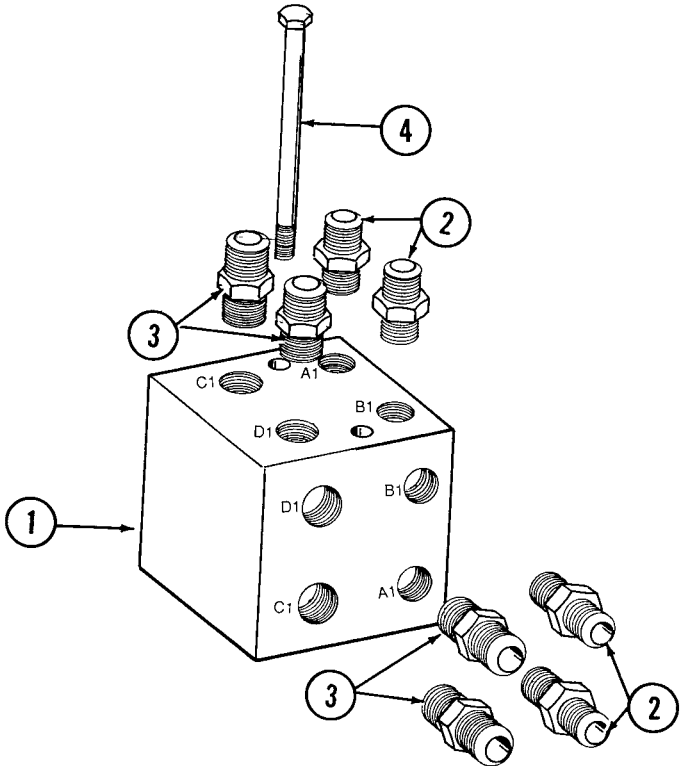
(CYL3d)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA8871	1	Rod Assembly
2.	GD10207	1	Gland
3.	A7524	1	Barrel **(Non-Stock Item)**
4.	G10827	1	Cotter Pin, $^{1}/_{8}$" x 1 $^{3}/_{4}$"
5.	GD11983	1	Piston
6.	G10962	1	Slotted Hex Nut, $^{7}/_{8}$"-14
A.	GA8895	-	Cylinder Complete, 2 $^{1}/_{2}$" x 20 $^{1}/_{16}$" *(Part Number Stamped On Barrel)*
B.	GR1521	-	Seal Kit, Includes: (1) T-Seal, (2) O-Rings, (1) BU Ring, (1) Cast Iron Ring, (1) Wiper, (1) U-Cup

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

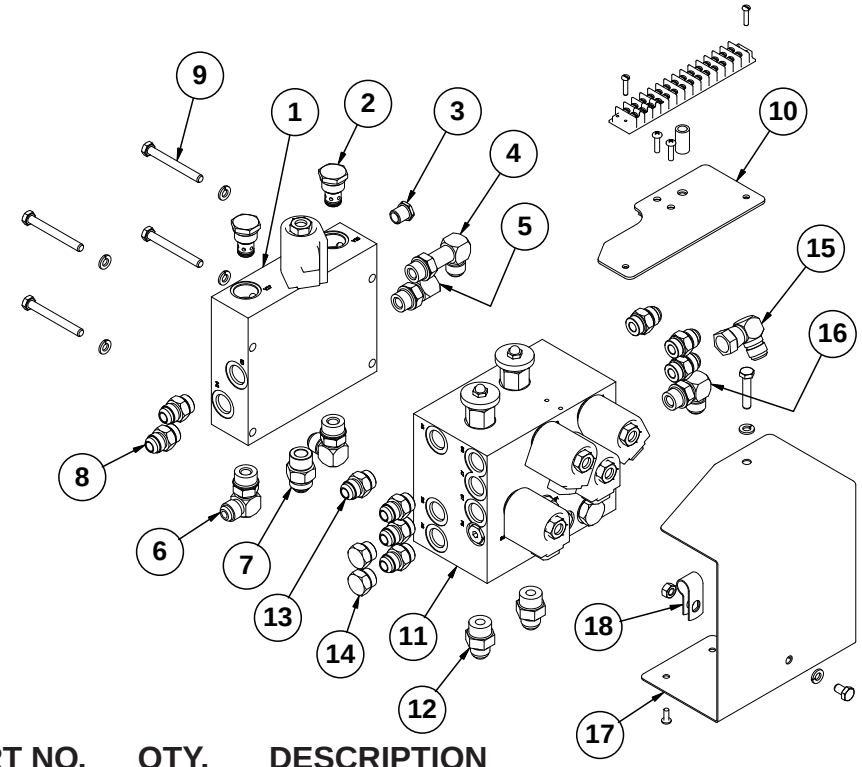
VVB036(TWL24)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9971	1	Manifold Block
2.	G6400-08	4	Connector W/O-Ring, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
3.	G6400-10-08	4	Connector W/O-Ring, ⅞"-14 Male JIC To ¾"-16 O-Ring
	GR1037	-	O-Ring
4.	G10172	2	Hex Head Cap Screw, ⅜"-16 x 5"
	G10229	2	Lock Washer, ⅜"
	G10101	2	Hex Nut, ⅜"-16

VALVE BLOCKS - LOCATED ON REAR CENTER FRAME

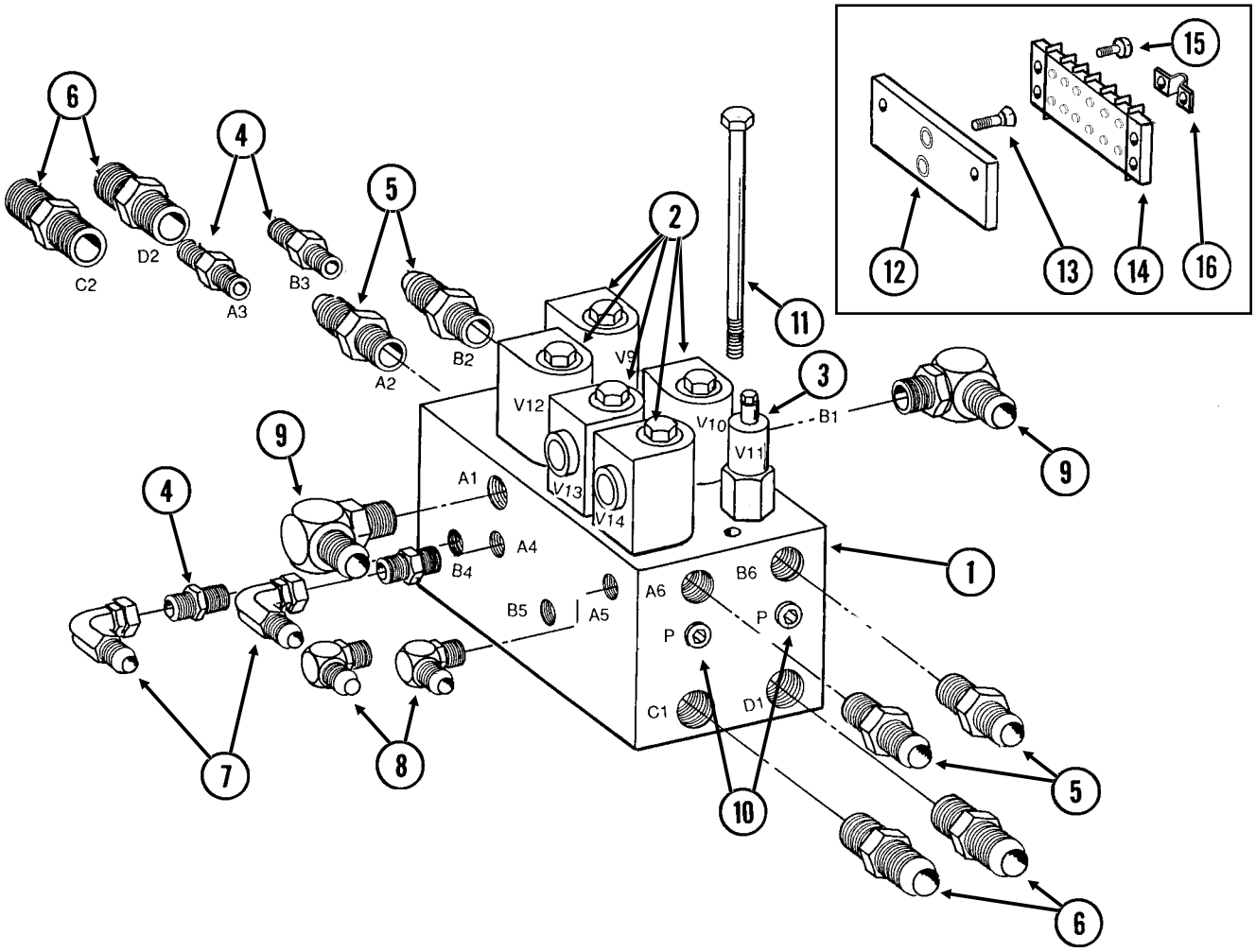
(IP1081)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9977	1	Block
	GR1445	1	Coil
	GR0763	1	Cartridge
	GR0761	1	Special Hex Nut, ½"-20
2.	GA4293	2	Check Valve
3.	G6408-H06-0	1	Hex Socket Head Plug W/O-Ring, 9⁄16"-18
4.	G6801-L-08	1	Long Elbow W/O-Ring, 90°, ¾"-16 Male JIC To O-Ring
5.	G6801-08	1	Elbow W/O-Ring, 90°, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
6.	G6801-08-10	2	Elbow W/O-Ring, 90°, ¾"-16 Male JIC To ⅞"-14 O-Ring
	GR1466	-	O-Ring
7.	G6400-10	1	Connector W/O-Ring, ⅞"-14 Male JIC To O-Ring
	GR1466	-	O-Ring
8.	G6400-08	2	Connector W/O-Ring, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
9.	G10583	4	Hex Head Cap Screw, 5⁄16"-18 x 2 ¾"
	G10232	4	Lock Washer, 5⁄16"
10.	GA9095	1	Terminal Strip Mount
	GD8066-02	1	Sleeve, 1" Long
	G11066	2	Phillips Pan Head Machine Screw, No. 10-24 x ¾", Stainless Steel
	GA9097	1	Terminal Strip W/Screws, No. 6, 14 Terminal
	GR1635	-	Screw, No. 6-32 x ¼"
	GD13310	3	Jumper, 7/16"
	G11067	2	Phillips Pan Head Machine Screw, No. 8-32 x ¾", Stainless Steel
11.	GD9533	1	Block
	GA3413	2	Flow Control Valve
	GR1445	4	Coil
	GR0763	4	Cartridge
	GR0761	4	Special Hex Nut, ½"-20
	G6408-H06-0	5	Hex Socket Head Plug W/O-Ring, 9⁄16"-18
	G6408-10	2	Plug W/O-Ring, ⅞"-14 O-Ring
	GR1466	-	O-Ring
12.	G6400-08-10	2	Connector W/O-Ring, ¾"-16 Male JIC To ⅞"-14 O-Ring
13.	G6400-08	7	Connector W/O-Ring, ¾"-16 Male JIC To ⅞"-14 O-Ring
	GR1466	-	O-Ring
14.	G6408-08	4	Plug W/O-Ring, ¾"-16 O-Ring
	GR1037	-	O-Ring
15.	G6500-08	1	Swivel Elbow, 90°, ¾"-16 Male JIC To Female
16.	G6801-08	1	Elbow W/O-Ring, 90°, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
17.	GD13146	1	Cover
	G10133	1	Hex Head Cap Screw, 5⁄16"-18 x 1 ½"
	G10232	2	Lock Washer, 5⁄16"
	G10977	2	Phillips Pan Head Machine Screw, No. 10-24 x ½", Stainless Steel
	G10054	1	Hex Head Cap Screw, 5⁄16"-18 x ½"
18.	GD13348	1	Insulated Clamp, 1 1⁄16"
	G10106	1	Hex Nut, 5⁄16"-18

VALVE BLOCK - LOCATED ON HITCH

VVB035(TWL26f)



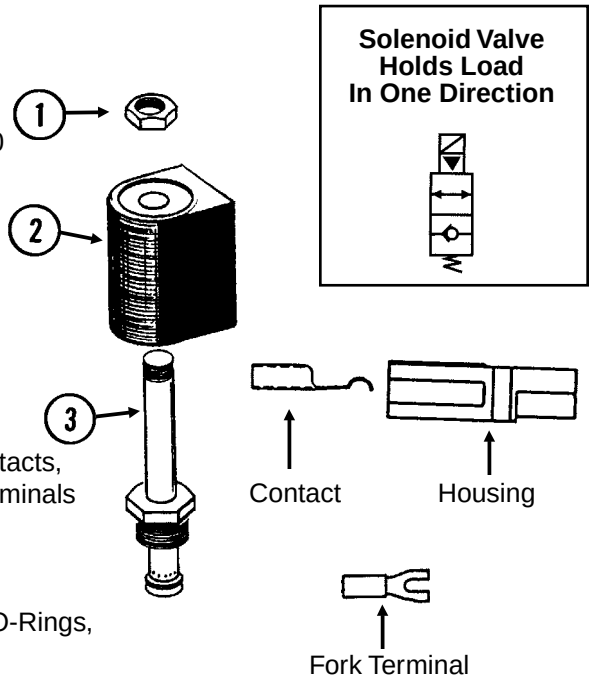
VALVE BLOCK - LOCATED ON HITCH

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD9905	1	Block
2.		-	See “Solenoid Valve”, Page P88
3.		-	See “Pressure Relief Valve”, Page P89
4.	G6400-06	4	Connector W/O-Ring, 9⁄16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
5.	G6400-08	4	Connector W/O-Ring, 3⁄4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
6.	G6400-10	4	Connector W/O-Ring, 7⁄8"-14 Male JIC To O-Ring
	GR1466	-	O-Ring
7.	G6500-06	2	Swivel Elbow, 90°, 9⁄16"-18 Male JIC To Female
8.	G6801-06	2	Elbow W/O-Ring, 90°, 9⁄16"-18 Male JIC To O-Ring
	GR1045	-	O-Ring
9.	G6801-08	2	Elbow W/O-Ring, 90°, 3⁄4"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
10.	G6408-H06-O	2	Hex Socket Head Plug W/O-Ring, 9⁄16"-18 O-Ring
	GR1045	-	O-Ring
11.		-	See “Hose Take-Up”, Pages P46 And P47
12.	GD12818	-	Terminal Strip Mount
13.	G11068	2	Phillips Flat Head Machine Screw, No. 10-24 x 5⁄8", Stainless Steel
14.	GA9098	-	Terminal Strip W/Screws, No. 6, 8 Terminal
	GR1635	-	Screw, No. 6-32 x 1⁄4"
15.	G11065	2	Phillips Pan Head Machine Screw, No. 8-32 x 5⁄8", Stainless Steel
16.		-	See “Electrical Components”, Pages P94 And P95

SOLENOID VALVE

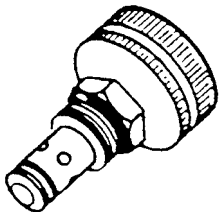
VVB019(TWL27c/TWL18/PLTR75c/A9481)

ITEM	PART NO.	QTY.	DESCRIPTION
1.	GR0761	1	Special Hex Nut, ½"-20
2.	G1K274	1	Coil Kit W/Contacts, Housings And Fork Terminals
	GD9529	2	Housing, Black
	GD9530	2	Contact
	G10996	2	Fork Terminal
3.	GR0763	1	Cartridge
A.	G1K275	-	Solenoid Valve Kit W/Solenoid Valve, Contacts, Housings And Fork Terminals
	GD9529	2	Housing, Black
	GD9530	2	Contact
	G10996	2	Fork Terminal
B.	GR0764	-	Seal Kit, Includes: (2) O-Rings, (1) BU Ring



FLOW CONTROL VALVE

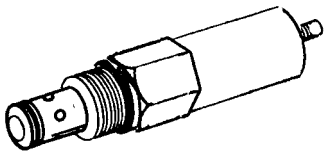
VVB020(TWL28)



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

PRESSURE RELIEF VALVE

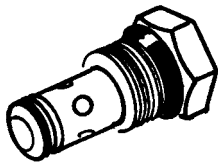
VVB020(TWL29)



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

CHECK VALVE

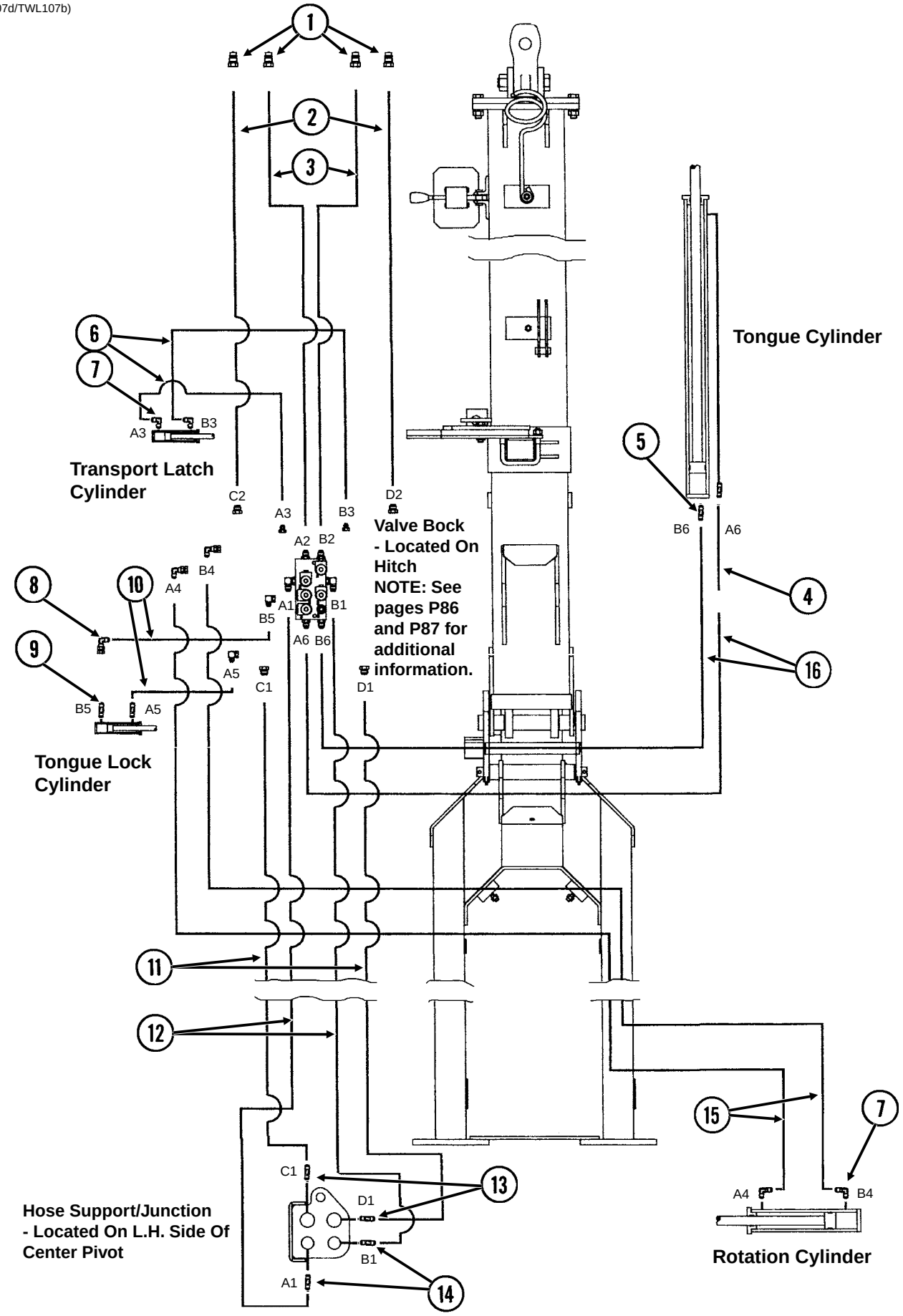
VVB020(TWL30)



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

HYDRAULIC HOSES AND FITTINGS ON HITCH

(TWL107d/TWL107b)



HYDRAULIC HOSES AND FITTINGS ON HITCH

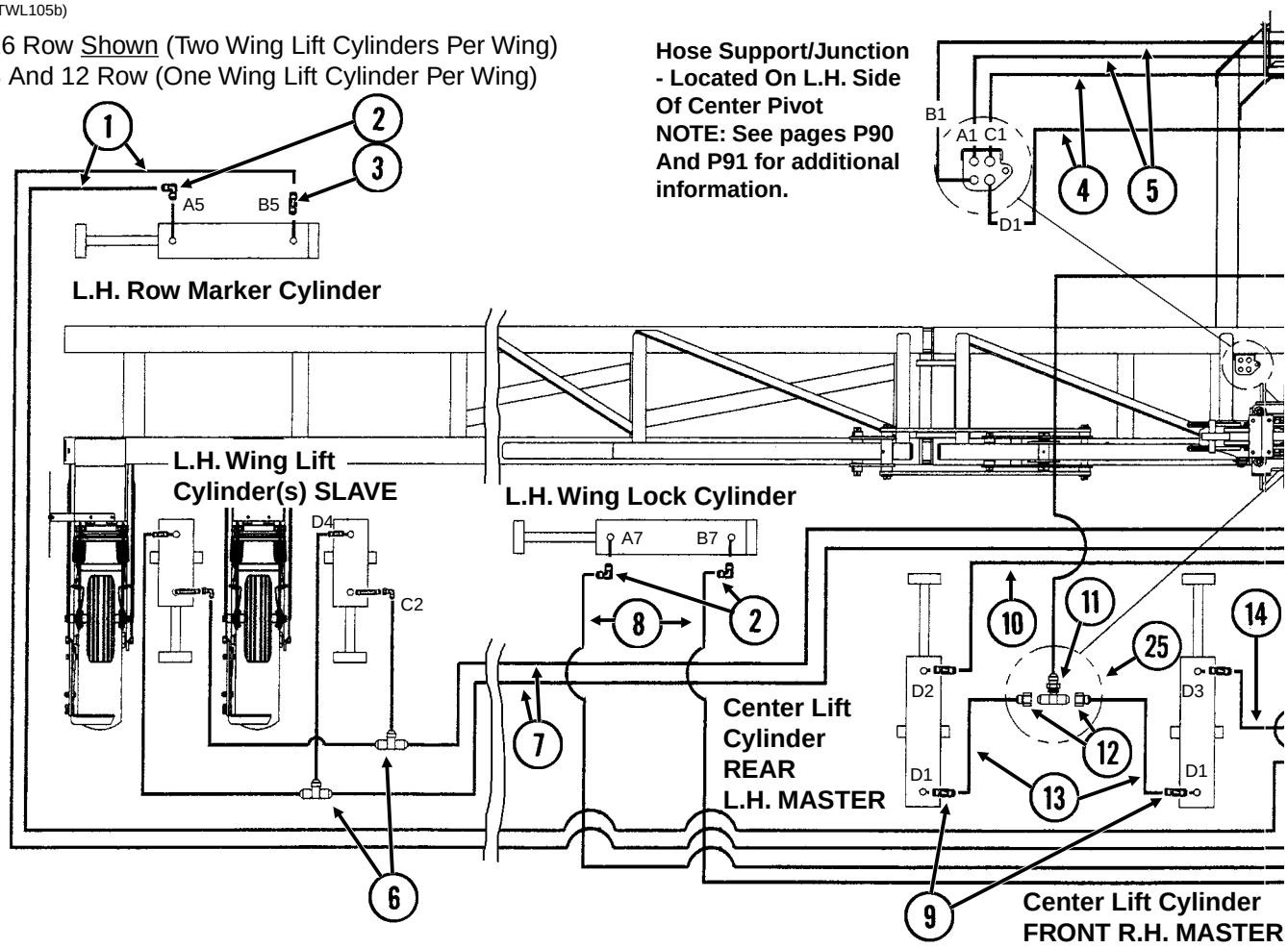
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD4086	4	ISO Coupler
2.	*A1489	2	Hose Assembly, ½" x 191", 12 Row 30"
	*A1491	2	Hose Assembly, ½" x 246", 16 Row 30"
3.	*A3133	2	Hose Assembly, ⅜" x 191", 12 Row 30"
	*A3183	2	Hose Assembly, ⅜" x 246", 16 Row 30"
4.	*A3215	1	Hose Assembly, ⅜" x 72", 12 Row 30"
	*A3216	1	Hose Assembly, ⅜" x 96", 16 Row 30"
5.	G6400-08	1	Connector W/O-Ring, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
6.	*A1103	2	Hose Assembly, ¼" x 110", 12 Row 30"
	*A1129	2	Hose Assembly, ¼" x 168", 16 Row 30"
7.	G6801-06-08	4	Elbow W/O-Ring, 90°, 9⁄16"-18 Male JIC To ¾"-16 O-Ring
	GR1037	-	O-Ring
8.	G6502-06	1	Swivel Elbow, 45°, 9⁄16"-18 Male JIC To Female
9.	G6400-06-08	2	Connector W/O-Ring, 9⁄16"-18 Male JIC To ¾"-16 O-Ring
	GR1037	-	O-Ring
10.	*A1139	2	Hose Assembly, ¼" x 40"
11.	*A1467	2	Hose Assembly, ½" x 120", 12 Row 30"
	*A1478	2	Hose Assembly, ½" x 128", 16 Row 30"
12.	*A1011	2	Hose Assembly, ⅜" x 125", 12 Row 30"
	*A1041	2	Hose Assembly, ⅜" x 130", 16 Row 30"
13.	G2700-10	2	Bulkhead Tube Union, ⅞"-14 Male JIC
14.	G2700-08	2	Bulkhead Tube Union, ¾"-16 Male JIC
15.	*A1106	2	Hose Assembly, ¼" x 130", 12 Row 30"
	*A1116	2	Hose Assembly, ¼" x 136", 16 Row 30"
16.	*A3156	2	Hose Assembly, ⅜" x 68", 12 Row 30"
	*A3118	2	Hose Assembly, ⅜" x 80", 16 Row 30"

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

HYDRAULIC HOSES AND FITTINGS ON PLANTER FRAME

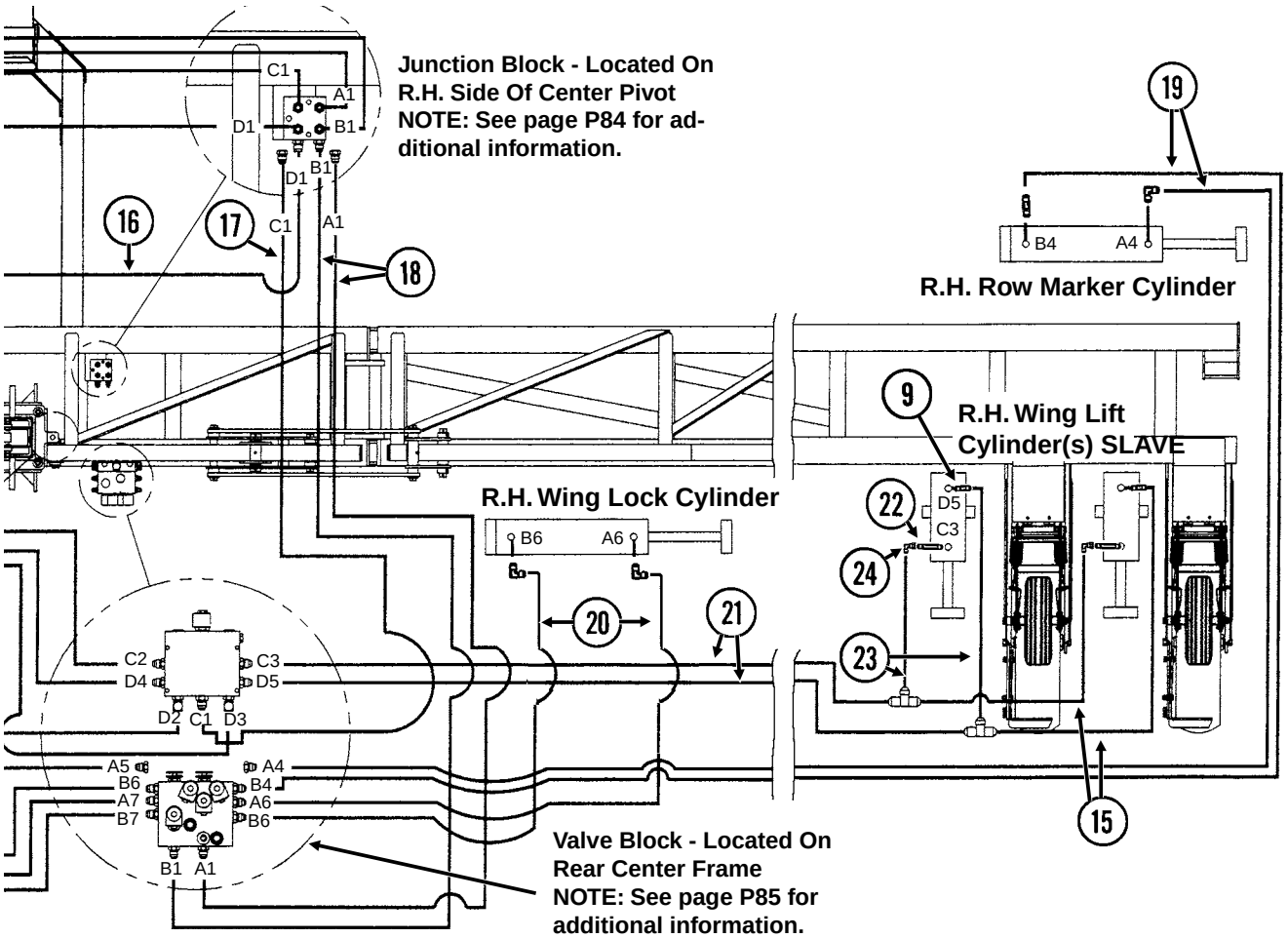
(TWL105b)

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



ITEM	PART NO.	QTY.	DESCRIPTION
1.	*A1034	2	Hose Assembly, ⅜" x 272", 12 Row 30"
	*A3181	2	Hose Assembly, ⅜" x 332", 16 Row 30"
2.	G6801-08	6	Elbow W/O-Ring, 90°, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
3.	G6400-08-04	2	Connector W/O-Ring, ¾"-16 Male JIC To 7/16"-20 O-Ring
	GR1465	-	O-Ring
4.	*A8267	2	Hose Assembly, ½" x 58"
5.	*A3127	2	Hose Assembly, ⅜" x 58"
6.	G2603-08	4	Tee, ¾"-16 Male JIC, 16 Row 30"
7.	*A1033	2	Hose Assembly, ⅜" x 250", 12 Row 30"
	*A1034	2	Hose Assembly, ⅜" x 272", 16 Row 30"
8.	*A1055	2	Hose Assembly, ⅜" x 66"
9.	G6400-08	8	Connector W/O-Ring, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
10.	*A3131	1	Hose Assembly, ⅜" x 42"
11.	G2703-10	1	Bulkhead Tee, ⅞"-14 Male JIC
12.	G2406-10-08	2	Reducer, ⅞"-14 Female JIC To ¾"-16 Male JIC
13.	*A1076	2	Hose Assembly, ⅜" x 30"

HYDRAULIC HOSES AND FITTINGS ON PLANTER FRAME

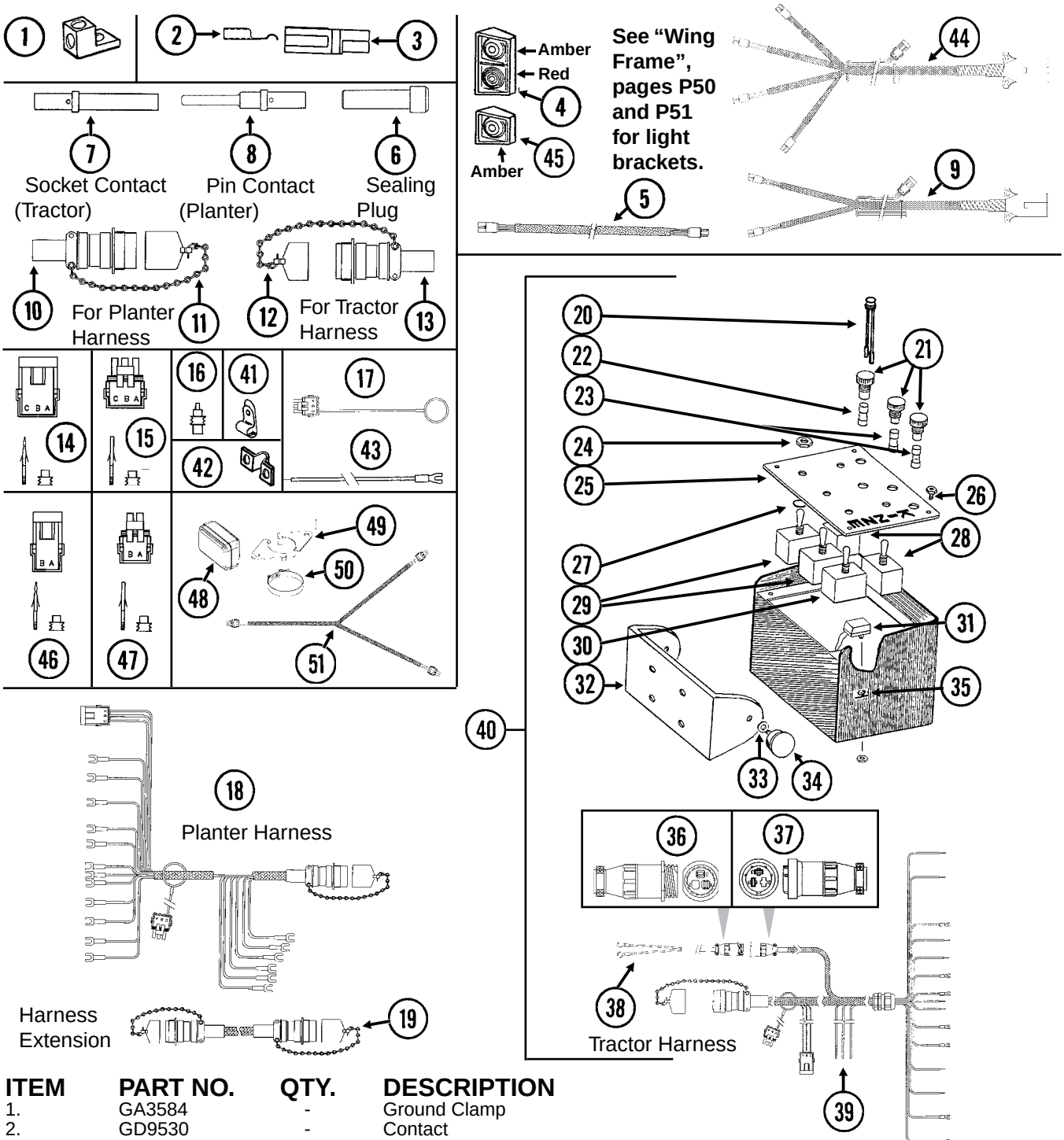


ITEM	PART NO.	QTY.	DESCRIPTION
14.	*A3128	1	Hose Assembly, ⅜" x 52"
15.	*A1018	4	Hose Assembly, ⅜" x 40", 16 Row 30"
16.	*A1404	1	Hose Assembly, ½" x 41"
17.	*A1424	1	Hose Assembly, ½" x 30"
18.	*A1076	2	Hose Assembly, ⅜" x 30"
19.	*A3163	2	Hose Assembly, ⅜" x 225", 12 Row 30"
	*A1097	2	Hose Assembly, ⅜" x 288", 16 Row 30"
20.	*A1076	2	Hose Assembly, ⅜" x 30"
21.	*A1028	2	Hose Assembly, ⅜" x 186", 12 Row 30"
	*A1057	2	Hose Assembly, ⅜" x 216", 16 Row 30"
22.	G6400-L-08	-	Long Connector W/O-Ring, ¾"-16 Male JIC To O-Ring
	GR1037	-	O-Ring
23.	*A3122	4	Hose Assembly, ⅜" x 10 ½", 16 Row 30"
24.	G6500-08	-	Swivel Elbow, 90°, ¾"-16 Male JIC To Female
25.	G2703-08-08-10	-	Bulkhead Tee, ⅞"-14 Male JIC To ¾"-16 JIC

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

ELECTRICAL COMPONENTS

(TWL19a/TWL18/ELC14/ELC3a/ELC5c/MTR27a/ELC39/TWL26e/ELC8/A9481/ELC12b/MTR27t/A9689b/A10924ELC4/FF27b/FF27c/ELC38/A9201a/A9202a/TWL20g/ELC34/ELC35/ELC10c)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA3584	-	Ground Clamp
2.	GD9530	-	Contact
3.	GD9529	-	Housing, Black
	GD12726	-	Housing, Red
4.	GA6699	1	Double Light Assembly (Shown)
	GA6700	1	Double Light Assembly
	GR1203	-	Red Lens
	GR1204	-	Amber Lens
	GR1205	-	Cover
	GR1206	-	Rubber Grommet (4)
	GR1207	-	Lamp Unit
	GR1208	-	Bulb
5.	GA9096	-	Harness Extension, 42"
6.	GD8739	-	Sealing Plug, No. 12
7.	GD8740	-	Socket Contact, No. 14
8.	GD8741	-	Pin Contact, No. 14

ELECTRICAL COMPONENTS

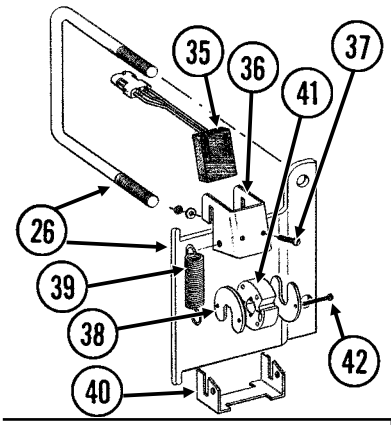
ITEM	PART NO.	QTY.	DESCRIPTION
9.	GA9202	-	Wiring Harness W/7 Terminal Female Connector, 786" (2 Light Connections), 12 Row 30"
	GA9204	-	Wiring Harness W/7 Terminal Female Connector, 882" (2 Light Connections), 16 Row 30"
	GA5385	-	7 Terminal Female Connector
10.	GA6109	1	Connector W/Cable Clamp, 23 Pin Capacity
11.	GA7862	-	Dust Cap W/Chain
12.	GA7863	-	Dust Cap W/Chain
13.	GA6108	1	Connector W/Cable Clamp, 23 Socket Capacity
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.	GD11089	-	Sealing Plug
17.	GA8047	-	Dust Plug (Black)
18.	GA9112	1	Wiring Harness W/Dust Cap, 516", 12 Row 30"
	GA9113	-	Wiring Harness W/Dust Cap, 612", 16 Row 30"
19.	GA7399	-	Harness Extension W/Dust Caps, 180"
20.	GA7077	1-4	Indicator Light
21.	GA2612	3-5	Fuse Holder W/Spade, 1 33/50"
22.	GD2829	1-2	Fuse, 15 Amp, Type AGC
23.	GD10243	2-6	Fuse, MDL 10 Amp Delay Action
24.	GR1363	5	Hex Face Nut, 15/32"-32
	GR1364	5	Internal Tooth Lock Washer, 15/32"
25.	GA8734	1	Cover Plate (Shown)
	GA8735	-	Cover Plate, Planters Equipped With Two-Speed Point Row Clutches
26.	GR1292	4	Pan Head Screw, No. 8-32 x ½"
27.	GD3860	-	O-Ring (If Applicable)
28.	GA2528	2	Switch, 3 Position Toggle, On-Off-On
29.	GA6978	2	Switch, 3 Position Toggle, Momentary On-Off-Momentary On
30.	GA6977	1-2	Switch, 2 Position Toggle, On-Off
31.	GA8731	1	Switch, Push Button W/Transformer
32.	GD9896	1	Mounting Bracket
33.	G10211	4	Washer, ¼" SAE
34.	GA6975	2	Knob
35.	GR1290	2	Cage Nut, ¼"-20
36.	G1K267	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (3) Male Terminal Pins
37.	G1K268	-	Console Cable Connector Kit, Includes: (1) 3-Pin Connector, (1) Cable Clamp, (1) Lock Ring, (3) Female Terminal Pins
38.	GA7856	1	Power Lead Adapter
39.	GA8729	1	Wiring Harness W/Dust Cap And Power Cable
40.	G7633X	-	Backlit Control Console Assembly W/Mounting Brackets, Short Harness W/Dust Cap And Power Cable
	G7639X	-	Backlit Control Console Assembly W/Mounting Brackets, Short Harness W/Dust Cap And Power Cable, Planters Equipped With Two-Speed Point Row Clutches
41.	GD6291	-	Insulated Clamp, ⅜"
	GD13348	-	Insulated Clamp, 11/16"
42.	GD13310	-	Jumper, 7/16"
43.	GA9481	-	Jumper Wire W/Fork Terminal, 13"
	G10996	-	Fork Terminal
44.	GA9201	1	Wiring Harness W/7 Terminal Female Connector, 714" (4 Light Connections), 8 Row 36"/38"
	GA9203	-	Wiring Harness W/7 Terminal Female Connector, 870" (4 Light Connections), 12 Row 36"/38"
	GA5385	-	7 Terminal Female Connector
45.	GA6701	1	Single Amber Light Assembly
	GR1204	-	Amber Lens
	GR1206	-	Rubber Grommet (2)
	GR1207	-	Lamp Unit
	GR1208	-	Bulb
46.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
47.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
48.	GA9689	2	Work Light Assembly
49.	GD16046	2	Bracket, 4 ¼" x 4"
50.	G11159	1-2	T-Bolt Clamp, 3 ½" Stainless Steel
51.	GA10924	1	Wiring Harness, 348"

NOTE: See "Point Row Clutch" or "Two-Speed Point Row Clutch" for R.H. and L.H. Wiring Harness for the point row clutches.

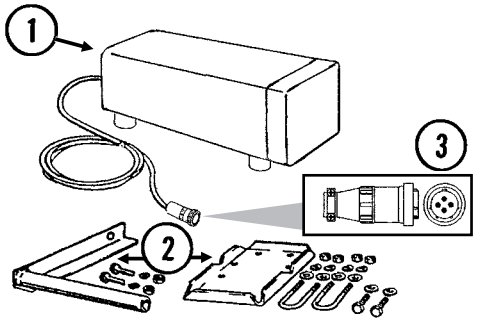
KPM III ELECTRONIC SEED MONITOR

(MTR59)

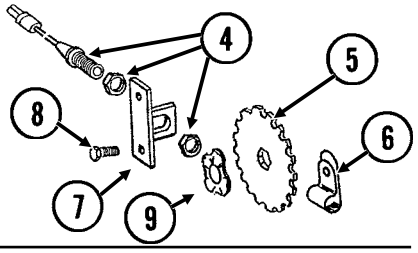
Shaft Rotation Sensor

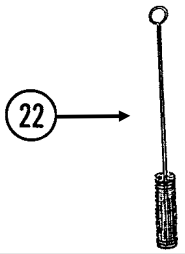


Radar Distance Sensor

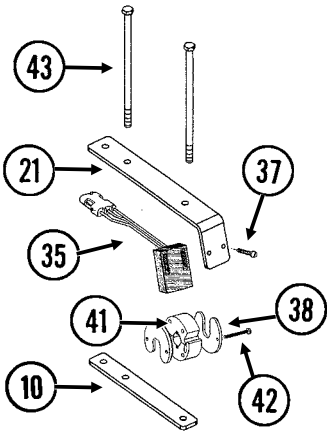


Magnetic Distance Sensor (MDS)

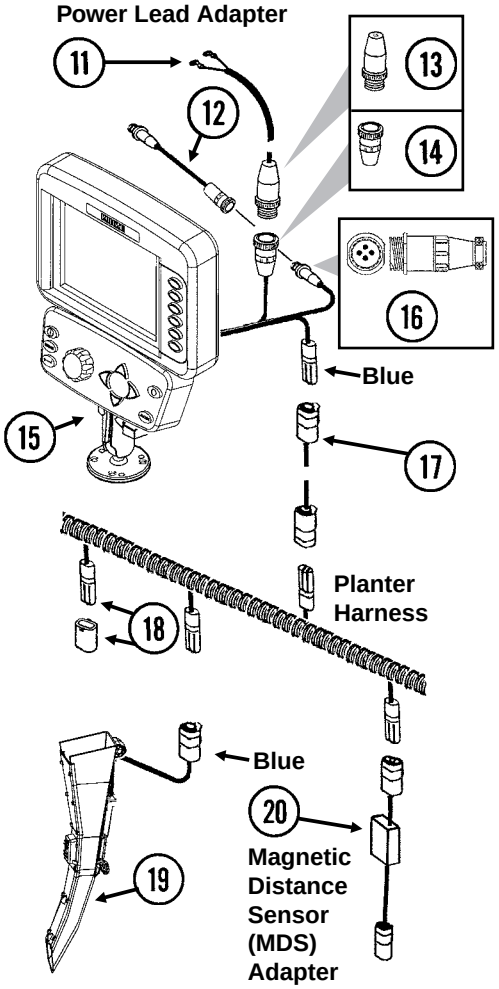


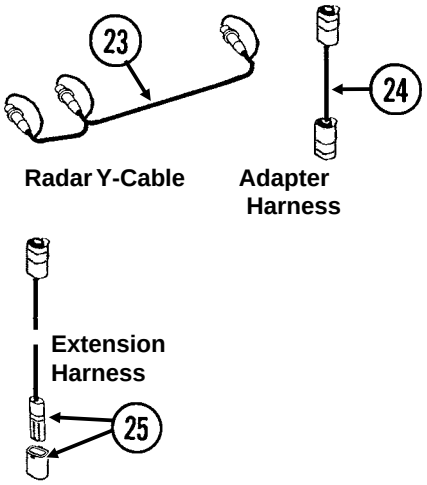


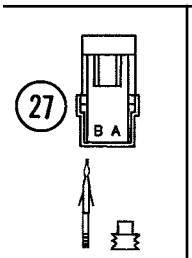
Shaft Rotation Sensor

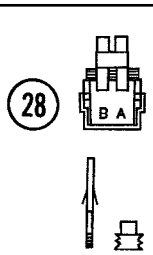


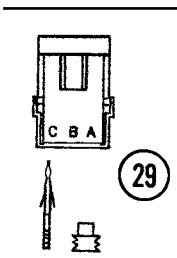
Power Lead Adapter

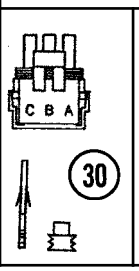


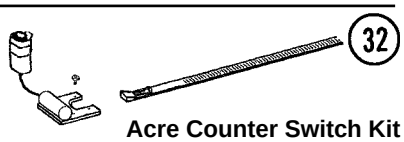


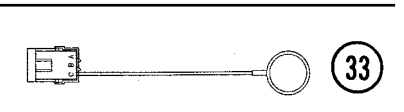


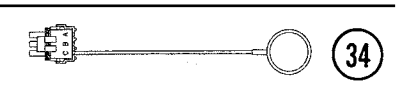












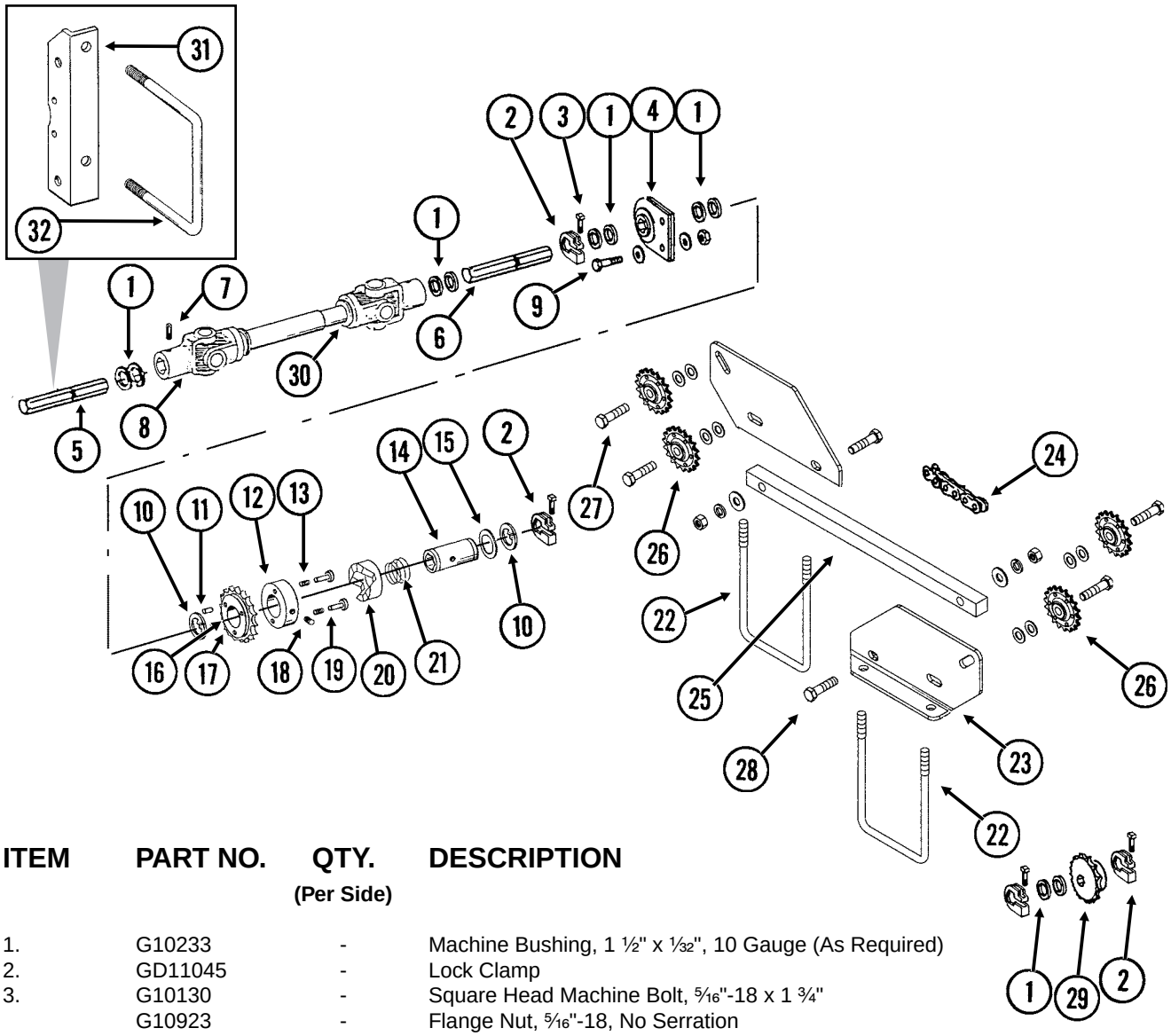
ITEM	PART NO.	QTY.	DESCRIPTION
1.	GA7858	-	Radar Distance Sensor W/20' Cable
2.	GA8026	-	Radar Sensor Pipe/Mounting Bracket Package
3.	G1K323	-	4-Pin Connector Kit W/Female Housing, Includes: (4) Pins, (1) Cable Clamp
4.	GA5600	1	Magnetic Distance Sensor
5.	GD8751	-	Magnetic Distance Sensor Pulse Wheel
6.	GD6291	-	Insulated Clamp, ⅜"
7.	GD8770	1	Bracket
8.	G10001	2	Hex Head Cap Screw, ⅜"-16 x 1"
	G10229	2	Lock Washer, ⅜"
	G10101	2	Hex Nut, ⅜"-16
9.	GD8771	1	Spring Wave Washer

KPM III ELECTRONIC SEED MONITOR

ITEM	PART NO.	QTY.	DESCRIPTION
10.	GD18168	2	Mount
11.	GA7856	1	Power Lead Adapter
12.	GA9144	-	Monitor/Radar Adapter Cable, 10"
13.	G1K267	-	Console Cable Connector Kit, Includes: (1) Cable Clamp, (1) 3-Pin Connector, (3) Male Terminal Pins
14.	G1K268	-	Console Cable Connector Kit, Includes: (1) Cable Clamp, (1) 3-Pin Connector, (1) Lock Ring, (3) Female Terminal Pins
15.	GA11039	-	KPM III Backlit Console W/Brush (Item 22), Dust Plug (Item 33), 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) ¼"-20 x 1 ¾" Hex Head Cap Screw, (1) ¼" Plastic Washer, (1) ¼" Steel Washer
	GR1762	-	Console Mounting Bracket Hardware Package, Includes: (3) No. 10-32 x ⅝" Hex Socket Pan Head Screws, (3) No. 10 Lock Washers
	GR1764	-	Power Harness
16.	G1K322	-	4-Pin Connector Kit W/Male Housing, (4) Female Socket Contacts And (1) Cable Clamp
17.		-	See Tractor /Planter Wiring Harness, Items 18 And 39 On Pages P94 And P95
18.	GA7851	-	Planter Harness W/Dust Caps, 12 Row (16 Connectors)
	GA7852	-	Planter Harness W/Dust Caps, 16 Row (20 Connectors)
	GD11993	-	Dust Cap
19.	GA10901	-	Seed Tube W/Computerized Sensor
	GR1629	-	Sensor Only
	GA10940	-	Seed Tube (With Holes For Sensor Installation)
20.	GA7859	1	Magnetic Distance Sensor Adapter (Analog To Digital)
21.	GD18118	2	Shaft Sensor Mount
22.	GR0594	-	Brush
23.	GR0586	1	Radar Y-Cable (Used To Connect Radar Distance Sensor For Multiple Functions)
24.	GA7857	-	Adapter Harness, 1'
25.	GA7854	-	Extension Harness W/Dust Cap, 15'
	GA7855	-	Extension Harness W/Dust Cap, 30'
	GD11993	-	Dust Cap
26.	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
27.	G1K321	-	2-Pin Female Connector Kit (Black), Includes: (3) 2-Pin Female Housings, (6) Pin Contacts, (6) Seals
28.	G1K320	-	2-Pin Male Connector Kit (Black), Includes: (3) 2-Pin Male Housings, (6) Socket Contacts, (6) Seals
29.	G1K248	-	3-Pin Female Connector Kit (Black), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
	G1K362	-	3-Pin Female Connector Kit (Blue), Includes: (3) 3-Pin Female Housings, (9) Pin Contacts, (9) Seals
30.	G1K252	-	3-Pin Male Connector Kit (Black), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
	G1K363	-	3-Pin Male Connector Kit (Blue), Includes: (3) 3-Pin Male Housings, (9) Socket Contacts, (9) Seals
31.	GD11089	-	Sealing Plug
32.	G1K249	-	Acre Counter Switch Kit
33.	GA8046	-	Dust Plug (Black)
	GA9978	-	Dust Plug (Blue)
34.	GA8047	-	Dust Plug (Black)
	GA9979	-	Dust Plug (Blue)
35.	GR1415	1	Rotation Sensor
36.	GD11169	1	Mount
37.	G10757	2	Pan Head Screw, No. 10-32 x 1 ¼"
	G10243	2	Washer, No. 10 SAE
	G10758	2	Hex Nut, No. 10-32
38.	GD11474	2	Cover
39.	GD5857	2	Spring
40.	GD11170	1	Spring Mount
41.	GR1414	1	Actuator
42.	G10927	2	Pan Head Machine Screw, No. 8-32 x 1 ¼", Stainless Steel
	G10931	2	Lock Washer, No. 8, Internal/External, Stainless Steel
	G10928	2	Hex Nut, No. 8-32, Stainless Steel
43.	G10686	4	Hex Head Cap Screw, ⅜"-16 x 8"
	G10229	4	Lock Washer, ⅜"
	G10101	4	Hex Nut, ⅜"-16
A.	GA6147	-	Magnetic Distance Sensor And Mounting Package (Items 4-9)

PUSH ROW UNIT DRIVE

(TWL316RU163)



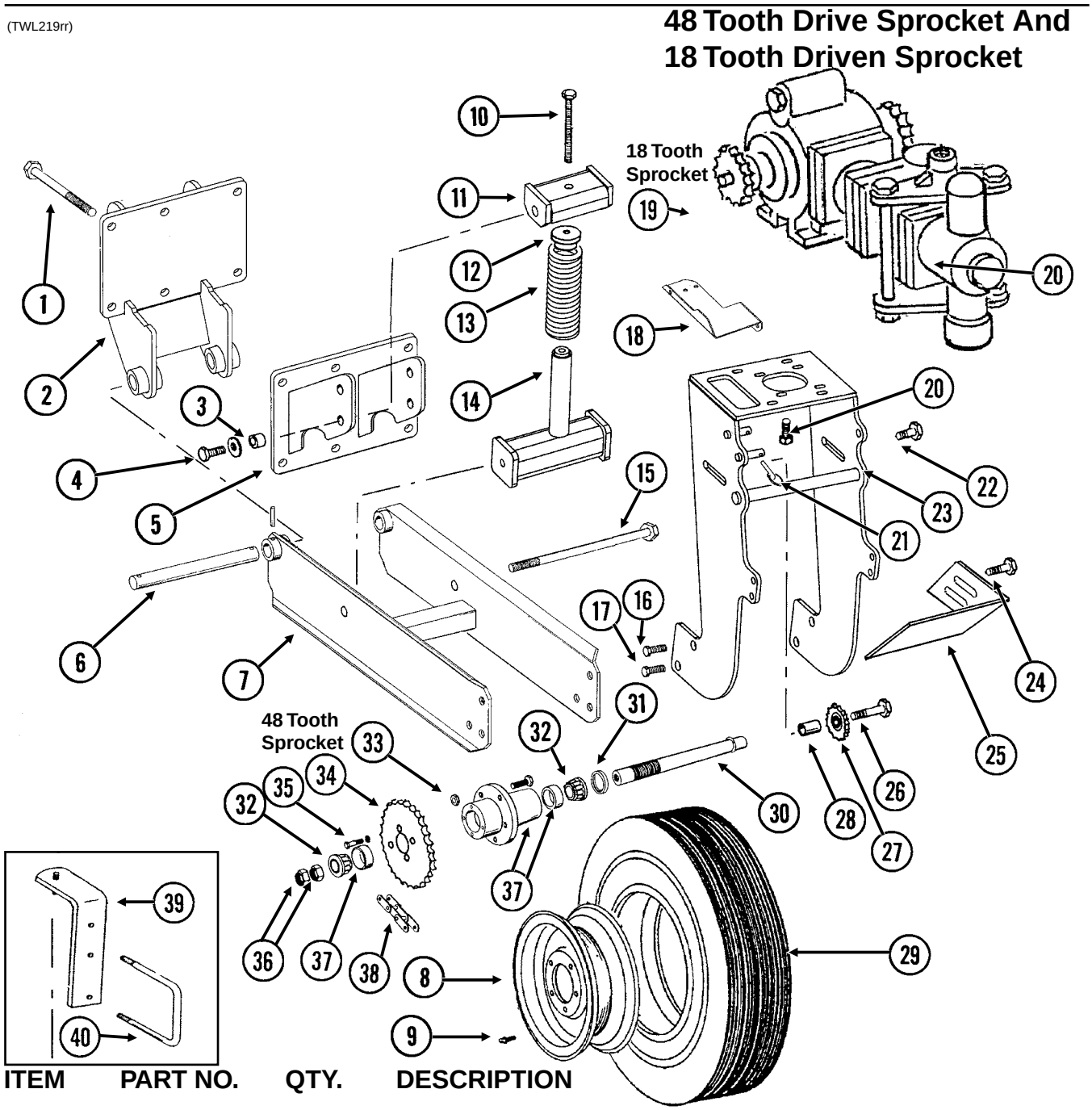
ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
1.	G10233	-	Machine Bushing, 1 ½" x ⅓₂", 10 Gauge (As Required)
2.	GD11045	-	Lock Clamp
3.	G10130	-	Square Head Machine Bolt, ⅝₁₆"-18 x 1 ¾"
	G10923	-	Flange Nut, ⅝₁₆"-18, No Serration
4.	GA2180	-	Hanger Bearing, ⅞" Hex Bore
5.	GD0914-35	1	Hex Shaft, ⅞" x 35" (No Holes), Inner R.H. Side, 12 Row 30"
	GD0914-76	1	Hex Shaft, ⅞" x 76" (No Holes), Inner L.H. Side, 12 Row 30"
	GD0914-48	-	Hex Shaft, ⅞" x 48" (No Holes), Inner R.H. Side, 16 Row 30"
	GD0914-72	-	Hex Shaft, ⅞" x 72" (No Holes), Inner L.H. Side, 16 Row 30"
6.	GD0914-90	1	Hex Shaft, ⅞" x 90" (No Holes), Outer R.H. Side, 12 Row 30"
	GD0914-107	1	Hex Shaft, ⅞" x 107" (No Holes), Outer L.H. Side, 12 Row 30"
	GD0914-128	-	Hex Shaft, ⅞" x 128" (No Holes), Outer R.H. Side, 16 Row 30"
	GD0914-166.75	-	Hex Shaft, ⅞" x 166 ¾" (No Holes), Outer L.H. Side, 16 Row 30"
7.	G10688	-	Square Head Set Screw, ⅜"-16 x ⅝"
8.	GA7052	-	U-Joint W/Grease Fitting, Female, 10 ¼" Long
	GR1557	-	Grease Fitting, 45°, Metric
	GR1297	-	Inboard Yoke And Outer Profile
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, ⅞" Hex

PUSH ROW UNIT DRIVE

ITEM	PART NO.	QTY. (Per Side)	DESCRIPTION
9.	G10004	-	Hex Head Cap Screw, ⅜"-16 x 1 ¼"
	G10210	-	Washer, ⅜" USS
	G10229	-	Lock Washer, ⅜"
	G10101	-	Hex Nut, ⅜"-16
10.	G10496	2	External Inverted Snap Ring, 1 ½"
11.	G10968	1	Spring Pin, 5⁄32" x 7⁄16"
12.	GR1405	1	Lock Collar
13.	GR1413	1	Spring
14.	GR1407	1	Drive Shaft
15.	GR1411	1	Shim
16.	GR1406	1	Bushing
17.	GR1412	1	Sprocket, 19 Tooth
18.	G10535	1	Hex Socket Set Screw, ⅜"-16 x ¾"
19.	GR1410	1	Pin
20.	GR1409	1	Knurled Collar
21.	GR1408	1	Compression Spring
22.	GD8306	2	U-Bolt, 7" x 5" x ½"-13
	G10228	4	Lock Washer, ½"
	G10102	4	Hex Nut, ½"-13
23.	GD18094	2	Plate (Shown)
	GD18066	-	Plate
24.	G3310-226	1	Chain, No. 40, 226 Pitch Including Connector Link
	GR0912	-	Connector Link, No. 40
25.	GD18067	1	Brace
26.	GA7154	4	Sprocket W/Bearing, 18 Tooth
27.	G10016	4	Hex Head Cap Screw, ½"-13 x 2"
	G10206	8	Washer, ½" SAE
	G10228	4	Lock Washer, ½"
	G10102	4	Hex Nut, ½"-13
28.	G10016	2	Hex Head Cap Screw, ½"-13 x 2"
	G10216	2	Washer, ½" USS
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
29.	GA5107	2	Sprocket, 19 Tooth
30.	GA7051	1	U-Joint W/Grease Fitting, Male, 12 ¼" Long
	GR1557	-	Grease Fitting, 45°, Metric
	GR1296	-	Inner Profile
	GR1295	-	Inboard Yoke
	GR1301	-	Spring Pin, 8mm x 50mm
	GR1294	-	Cross And Bearing Kit
	GR1293	-	Yoke, ⅞" Hex
31.	GD11972	1	Support Angle, R.H.
32.	GD1113	-	U-Bolt, 5" x 7" x ⅝"-11
	G10230	-	Lock Washer, ⅝"
	G10104	-	Hex Nut, ⅝"-11
A.	GA8092	-	Clutch Sprocket Assembly, 19 Tooth (Items 10-21)
B.	G1K269	-	Lock Clamp Kit (Items 2 And 3)
C.	G1K331	-	Clutch Sprocket Kit (Items 11, 16 And 17)

LIQUID FERTILIZER PISTON PUMP MOUNT AND GROUND DRIVE WHEEL

(TWL219rr)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	G10830	6	Hex Head Cap Screw, ⅝"-11 x 7 ½"
	G10230	6	Lock Washer, ⅝"
	G10104	6	Hex Nut, ⅝"-11
2.	GA10624	1	Wheel Arm Mount
3.	GB0218	2	Bushing, 21/32" I.D. x ⅞" O.D. x 19/32" Long
4.	G10005	2	Hex Head Cap Screw, 5/8"-11 x 1 ¾"
	GD7805	2	Special Washer, ⅝", Hardened
	G10107	2	Lock Nut, ⅝"-11
5.	GA10622	1	Spring Mount
6.	GD2681	1	Pin, 1 ¼" x 13 ½"
	G10460	2	Cotter Pin, ¼" x 2"
7.	GA10621	1	Arm W/Grease Fittings
	G10641	2	Grease Fitting, ⅛" NPT
8.	GA0241	1	Wheel, 5" x 15"
9.	GD1166	1	Valve Stem

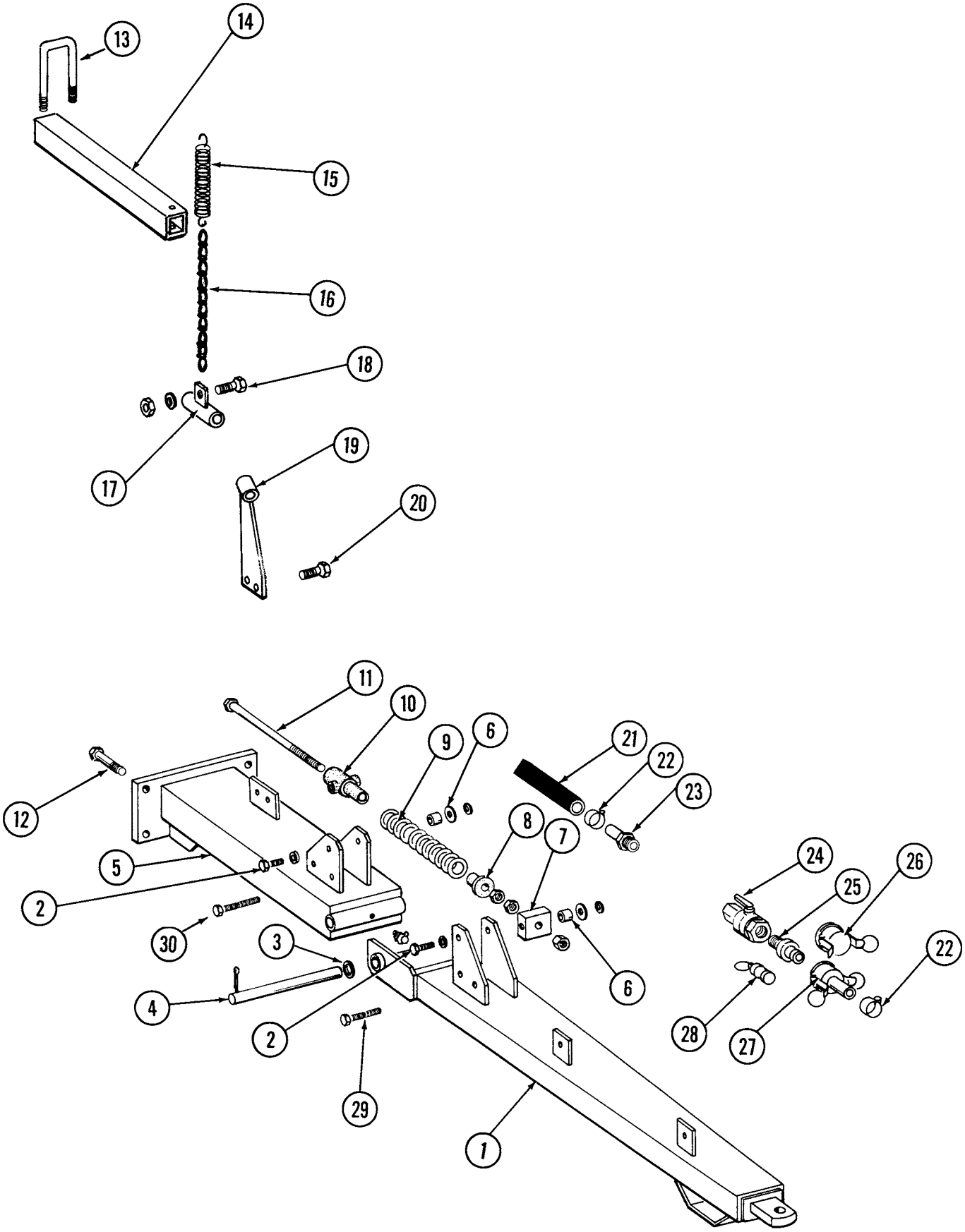
LIQUID FERTILIZER PISTON PUMP MOUNT AND GROUND DRIVE WHEEL

ITEM	PART NO.	QTY.	DESCRIPTION
10.	G10012	1	Hex Head Cap Screw, ⅝"-11 x 6 ½"
	GD7805	1	Special Washer, ⅝", 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, ⅝"-11 x 12"
	G10107	1	Lock Nut, ⅝"-11
16.	G10026	2	Hex Head Cap Screw, ¾"-10 x 2"
	G10231	2	Lock Washer, ¾"
17.	G11042	2	Hex Head Cap Screw, ¾"-10 x 1 ¾"
	G10231	2	Lock Washer, ¾"
	G10105	2	Hex Nut, ¾"-10
18.	GD13744	1	Hose Holder
19.	GR1146	1	Sprocket, 18 Tooth
20.		-	Customer Supplied Piston Pump
21.	GD2558	1	Lynch Pin, ¼"
22.	G10007	2	Hex Head Cap Screw, ⅝"-11 x 1 ½"
	G10217	2	Washer, ⅝" USS
	G10230	2	Lock Washer, ⅝"
	G10104	2	Hex Nut, ⅝"-11
23.	GA10894	1	Pump Mount
24.	G10017	2	Hex Head Cap Screw, ½"-13 x 1 ½"
	G10216	2	Washer, ½" USS
	G10228	2	Lock Washer, ½"
	G10102	2	Hex Nut, ½"-13
25.	GD13328	1	Scraper
26.	G10013	1	Hex Head Cap Screw, ⅝"-11 x 3 ½"
	G10205	1	Washer, ⅝" SAE
	G10230	1	Lock Washer, ⅝"
	G10104	1	Hex Nut, ⅝"-11
27.	GA0262	1	Idler Sprocket W/Bearing, 15 Tooth
28.	GD7817-05	1	Spacer, 1 1/16" I.D. x 1 ¼" 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, ½"-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 ¼"-12 UNF-2A
37.	GA0547	1	Hub W/Cups And Studs, 5 Bolt
	GR0190	2	Cup
	GR0204	5	Stud
38.	G3200-62	1	Chain, No. 2050, 62 Pitch Including Connector Link
	GR0195	-	Connector Link, No. 2050
39.	GA6527	1	Mount, ¾" NPT
40.	GD1113	1	U-Bolt, 5" x 7" x ⅝"-11
	G10230	2	Lock Washer, ⅝"
	G10104	2	Hex Nut, ⅝"-11

*** 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.**

REAR TRAILER HITCH

PHA032/LFC003(TWL47a)



REAR TRAILER HITCH

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

DECALS, PAINT AND MISCELLANEOUS

1

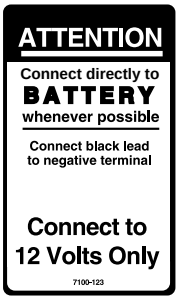
2

3

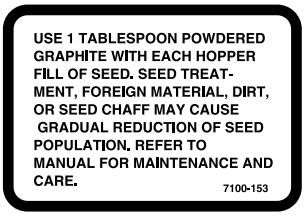
4

5

6

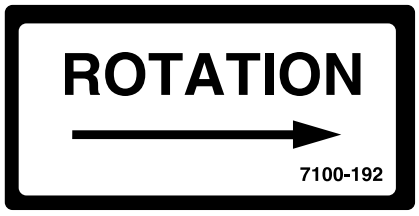


7



8

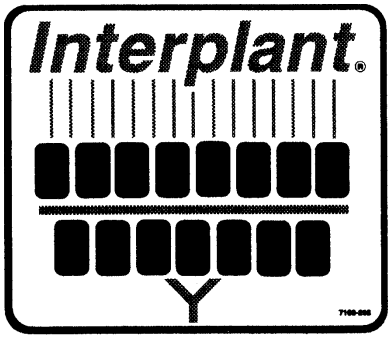
9



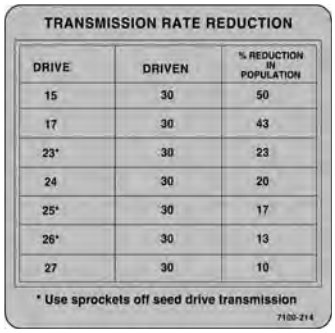
10

11

12

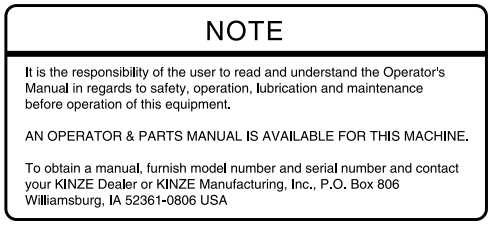


13



14

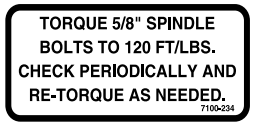
15



16

17

18



KINZE 3600TR

19

20

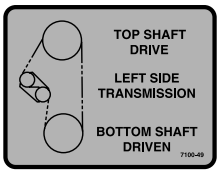
DECALS, PAINT AND MISCELLANEOUS

21

22

23

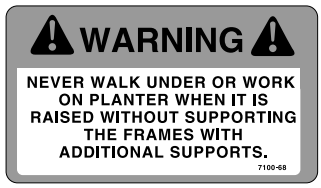
24



25

26

27

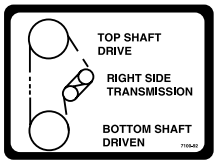


28

29

30

32

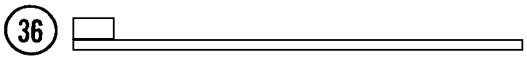


33

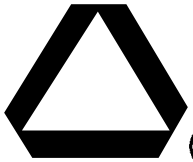
34

31

35



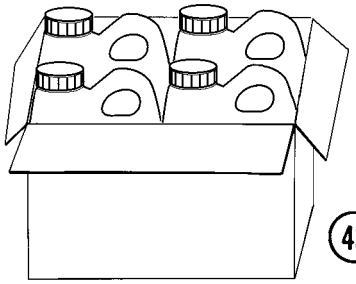
36



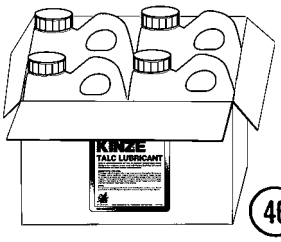
37

38

39



43



40

41

42

DECALS, PAINT AND MISCELLANEOUS

ITEM	PART NO.	QTY.	DESCRIPTION
1.	G7100-02	3	Decal, Warning
2.	G7100-110	-	Decal, Grease Weekly
3.	G7100-111	-	Decal, Oil Daily
4.	G7100-115	-	Decal, Warning (1 Per Granular Chemical Hopper)
5.	G7100-116	-	Decal, Grease Daily
6.	G7100-117	1	Decal, Danger
7.	G7100-123	1	Decal, Attention
8.	G7100-153	-	Decal, Information (1 Per Brush-Type Seed Meter)
9.	G7100-177	1	Decal, Twin-Line®, ¾" x 3"
10.	G7100-192	-	Decal, Point Row Clutch Rotation
11.	G7100-200	-	Decal, Warning
12.	G7100-201	1	Decal, Information
13.	G7100-208	-	Decal, Interplant®
14.	G7100-214	-	Decal, Two-Speed Point Row Clutch Rate Reduction
15.	G7100-215	1	Decal, Danger
16.	G7100-217	-	Decal, Note
17.	G7100-219	-	Decal, Warning
18.	G7100-234	-	Decal, Bolt Torque
19.	G7100-332	2	Decal, KINZE® 3600TR
20.	G7100-247	-	Decal, Logo, 4 ⅜" x 4 ½" (2 Per Row Unit)
	G7100-252	-	Decal, Logo, 3 ½" x 3 ⅝" (Hopper Panel Extension)
21.	G7100-295	-	Decal, Spring Tension Release
22.	G7100-249	-	Decal, Caution
23.	G7100-42	4	Decal, Warning
24.	G7100-46	1	Decal, Warning
25.	G7100-49	1	Decal, Left Side Transmission
26.	G7100-302	1	Decal, Warning
27.	G7100-63	2	Decal, Caution
28.	G7100-68	3	Decal, Warning
29.	G7100-75	4	Decal, Caution
30.	G7100-83	2	Decal, Warning (1 Per Marker Lockup)
31.	G7100-89	2	Decal, Danger
32.	G7100-90	1	Decal, Warning
33.	G7100-92	1	Decal, Right Side Transmission
34.	GD10057-01	-	Hose Identification Sleeve, Red AA
	GD10057-02	-	Hose Identification Sleeve, Red BB
	GD10057-03	-	Hose Identification Sleeve, Blue AA
	GD10057-04	-	Hose Identification Sleeve, Blue BB
35.	GM0195	-	Operator & Parts Manual, Model 3600 (Mechanical Seed Metering)
36.	GD1512	-	Tie Strap, 7 ½"
	GD2117	-	Tie Strap, 14 ½"
	GD1162	-	Tie Strap, 28"
	GD2984	-	Tie Strap, 34"
37.	GD2199	1	SMV Sign
38.	GR0146MPP	-	Powdered Graphite, Twenty-Four 1 Pound Containers
39.	GR0155MPP	-	Blue Paint, Twelve Aerosol Cans
40.	GR1570MPP	-	Talc Lubricant, Four 8 Pound Containers
	GR1828	-	Talc Lubricant, 30 Pound Container
41.	G7100-261	-	Reflective Decal, Red, 1 ¾" x 9", Die-Cut (If Applicable)
	G7100-262	-	Reflective Decal, Amber, 1 ¾" x 9", Die-Cut (If Applicable)
	G7100-263	-	Reflective Decal, Orange, 1 ¾" x 9", Die-Cut (If Applicable)
42.	G7100-258	-	Reflective Decal, Red, 1 ½" x 9", Rectangular (If Applicable)
	G7100-259	-	Reflective Decal, Amber, 1 ½" x 9", Rectangular (If Applicable)
	G7100-260	-	Reflective Decal, Orange, 1 ½" x 9", Rectangular (If Applicable)
43.	GR1842MPP	-	Powdered Graphite, Four-Five Pound Containers

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX

NUMERICAL INDEX