MODEL 5670
PIVOT FOLD PLANTER

OPERATOR'S MANUAL

M0322-01 10/24

This manual is applicable to: Model 5670 Pivot Fold Planter
True Rate - 2025 Production Year and on

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

Model Number 5670

Serial Number _____

Date Purchased _____

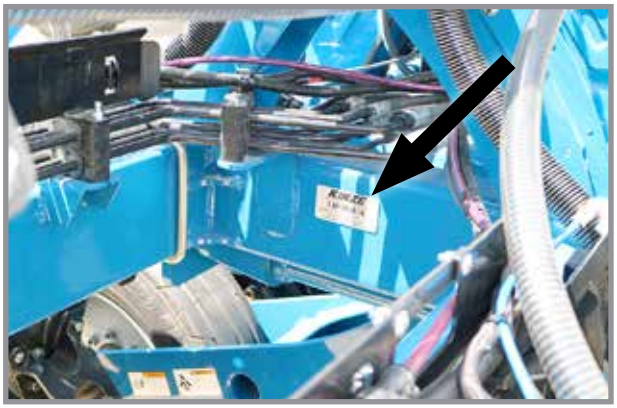
Monitor Serial Number _____

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 as shown below. The serial number provides important information about your planter and is needed to obtain correct replacement parts. Always provide model number and serial number to your Kinze Dealer when ordering parts or when contacting Kinze Manufacturing, Inc.



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TO THE DEALER

Predelivery service includes assembly, lubrication, adjustment and test. This service helps ensure planter is delivered to retail customer/end user ready for field use.

PREDELIVERY CHECKLIST

Use the following checklist after planter is completely assembled. Check off each item as it is found satisfactory or after proper adjustment is made.

- ❑ Center pivot base mounting and transport wheel spindle hex head cap screws torqued to 450 ft-lb (610.1 n-m).
- ❑ Row units properly spaced and optional attachments correctly assembled.
- ❑ Row marker assemblies installed and adjusted at each end of the planter.
- ❑ Vacuum and bulk fill components properly installed.
- ❑ All grease fittings in place and lubricated.
- ❑ All working parts move freely, bolts are tight, and cotter pins are spread.
- ❑ Check for oil leaks and proper hydraulic operation.
- ❑ Hydraulic hoses correctly routed to prevent damage.
- ❑ Inflate tires to specified air pressure and torque wheel lug bolts and lug nuts as specified in the manual.
- ❑ All safety decals correctly located and legible. Replace if damaged.
- ❑ All reflective decals and SMV sign correctly located and visible when the planter is in transport position.
- ❑ Safety/warning lights correctly installed and working properly.
- ❑ Paint all parts scratched during shipment or assembly.
- ❑ All safety lockup devices on the planter and correctly located.
- ❑ Auxiliary safety chain properly installed and hardware torqued to specification.
- ❑ Vacuum fan PTO-driven pump correctly attached to tractor. Oil reservoir filled to capacity and system inspected for leaks.
- ❑ Ensure fertilizer pump and hydraulic compressor oil levels are adequate.

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. 5670 Serial No. _____

City, State/Province _____ Dealer Name _____

ZIP/Postal Code _____ Dealer No. _____

DELIVERY CHECKLIST

Use the following checklist at time planter is delivered as a reminder of very important information which should be conveyed to retail customer/end user. Check off each item as it is fully explained.

- ❑ Check proper operation of vacuum fan, bulk fill fan, and PTO-driven pump (If applicable) with tractor used with planter.
- ❑ Check for proper hitch clearance between tractor and PTO System.
- ❑ Life expectancy of this or any other machine is dependent on regular lubrication as directed in the Operator Manual.
- ❑ All applicable safety precautions.
- ❑ Along with retail customer/end user, check reflective decals and SMV sign are clearly visible with planter in transport position and attached to tractor. Check safety/warning lights are in working condition. Tell retail customer/end user to check federal, state/provincial, and local regulations before towing or transporting on a road or highway.
- ❑ Give Operator Manual, Parts Manual, and all Instruction Sheets to retail customer/end user and explain all operating adjustments.
- ❑ Read warranty to retail customer/end user.
- ❑ 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 planter performance with retail customer/end user.
- ❑ Check performance of vacuum or mechanical seed metering system with retail customer/end user.
- ❑ Review importance of proper maintenance and adherence to all safety precautions with retail customer/end user.
- ❑ Check for parts that may need to be adjusted or replaced.
- ❑ Check all safety decals, reflective decals, and SMV sign are correctly located as shown in the Parts Manual and that decals are legible. Replace if damaged or missing.
- ❑ Check safety/warning lights are working properly.

_____

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

All registrations must be submitted online at "business.kinze.com" within 5 business days of delivery.
Retain a copy of this form for auditing purposes.

Tear Along Perforation

OVERVIEW

MACHINE OPERATION

ROW UNIT OPERATION

FERTILIZER

LUBRICATION AND MAINTENANCE

TROUBLESHOOTING

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Kinze Manufacturing, Inc. thanks 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 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 Manual. We have attempted to cover all areas of safety, operation, lubrication and maintenance; however, there may be times when special care must be taken to fit your conditions.

Throughout this manual the symbol  and the words **DANGER, WARNING,** and **CAUTION** are used to call attention to safety information that if not followed, will or could result in death or injury. **NOTICE** and **NOTE** are used to call your attention to important information. The definition of each of these terms follows:

DANGER	**Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations, typically for machine components which, for functional purposes, cannot be guarded.**
WARNING	**Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.**
CAUTION	**Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.**
NOTICE	**Used to address safety practices not related to personal injury.**

NOTE: Special point of information or machine adjustment instructions.

WARNING

Improperly operating or working on this equipment could result in death or serious injury. Read and follow all instructions in Operator Manual before operating or working on this equipment.

WARNING

Some photos in this manual may show safety covers, shields, or lockup devices removed for visual clarity. NEVER OPERATOR OR WORK ON machine without all safety covers, shields, and lockup device in place as required.

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 retail purchaser's copy of the Warranty And Delivery Receipt 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 Receipt form must be completed by the Kinze Dealer and signed by the retail purchaser, with copies to the Dealer, and to the retail purchaser. Registration must be completed and submitted to Kinze Manufacturing, Inc. within 5 business 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 Receipt 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.

General Information

The Model 5670 planter is available with vacuum or mechanical meters, conventional hoppers or bulk fill, Interplant, liquid fertilizer, and various other options. Contact your Kinze Dealer for available options and configurations. To obtain the most recent version of your publication, please contact your Kinze dealer.

Information used in these instructions was current at 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 direction machine travels in use unless otherwise stated.

Specification	Bulk Fill	
Number of Rows	12 Row (23R 15")	16 Row (31R 15")
Seed Capacity	80 Bu.	120 Bu.
Weight (Empty)		
Base Machine	20, 720 lb.	25, 580 lb.
Hitch	3, 544 lb.	4, 205 lb.
Length		
Planting	22' 6"	25' 10"
Transport	37' 2"	47' 2"
Width		
Panting	30' 11"	40' 9"
Transport	11' 4"	11' 4"
Height		
Planting	8' 7"	8' 7"
Transport	13' 1"	13' 1"
Tires - Center (Transport & Field Operation)	VF245/70R19.5"	VF295/75R22.5"
Tires - Wing (Field Operation)	VF245/70R19.5" (1 Tire / Wing)	VF245/70R19.5" (2 Tires / Wing)
Hydraulic Lift System (Field Operation)	4 Master Cylinders 2 Slave Cylinders	4 Master Cylinders 4 Slave Cylinders

PTO hydraulic pump comes standard on 5670 and supplies oil flow for all circuits (bulk fill, weight distribution, vacuum, power pack, True Depth hydraulic down force, fertilizer, Yetter hydraulic air compressor) except lift, markers/fold.

2350 psi; with PTO pump			
PTO System	**GPM**	**SCV**	
Blue Drive (Electric Drive) / Bulk Fill / Weight Distribution / Vacuum / Power Pack / True Depth (Hydraulic Down Force) / Fertilizer / Yetter Hydraulic Air Compressor	30	2	Planter Lift (red labels)
			Markers / Fold (blue labels)

1. Read and understand instructions provided in this manual and warning labels. Review these instructions frequently!

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

3. A large portion of farm accidents happen from fatigue or carelessness. Safe and careful operation of tractor and planter will help prevent accidents.

4. Never allow planter to be operated by anyone unfamiliar with operation of all functions of the unit. Operators must read and thoroughly understand all instructions given in this manual before operating or working on equipment.

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

6. Make sure planter weight does not exceed towing capacity of tractor, or bridge and road limits. This is critical to maintain safe control and prevent death or injury, or property and equipment damage.

7. Never ride or allow others to ride on planter.

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

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

10. Always wear protective clothing, shoes, gloves, hearing, and eye protection applicable for the situation.

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

13. Prevent electrocution, other injuries, or property and equipment damage. Watch for obstructions such as wires, tree limbs, etc. when operating machine. Be aware of clearances during turns and when folding/unfolding planter.

14. Reinstall all guards removed for maintenance activities. Never leave guards off during operation.

15. Use of aftermarket hydraulic, electric, or PTO drives may create serious safety hazards to you and people nearby. If you install such drives, follow all appropriate safety standards and practices to protect you and others near this planter from injury.

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

17. Make sure all safety/warning lights, SMV sign, and reflective decals are in place and working properly before transporting the machine on public roads.

18. Limit towing speed to 15 MPH. Tow only with farm tractor of a minimum 90 HP. Allow for unit length when making turns.

19. Reduce speed prior to turns to avoid the risk of overturning. Always drive at a safe speed relative to local conditions and ensure your speed is slow enough for a safe emergency stop.

20. Chemical application is often an integral part of planting. Follow label instructions for proper chemical mixing, handling and container disposal methods.

21. Be familiar with safety procedures for immediate first aid should you accidentally contact chemical substances.

22. Use the proper protective clothing and safety equipment when handling chemicals.

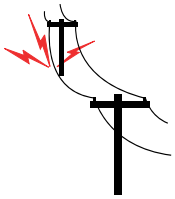
23. Chemicals are supplied with Material Safety Data Sheets (MSDS) that provide full information about the chemical, its effects on exposure, and first aid needs in the event of an emergency. Keep your MSDS file up-to-date and available for first responders in case of emergency.

24. When servicing ground engaging components such as opening disks and firming points, use special care to avoid points and edges worn sharp during use.

25. Use professional help if you are unfamiliar with working on hydraulic systems. Pressurized hydraulic fluid can penetrate body tissue and result in death, serious infection, or other injuries.

Following are some common hazard warnings associated with this equipment. Pay close attention to all safety, operating, and maintenance information in this manual and decals applied to your equipment.

DANGER



Contacting or coming close to power lines or other high energy sources will cause death or serious injury.

Keep away from power lines or high energy sources at all times.

WARNING

Improperly operating or working on this equipment could result in death or serious injury. Read and follow all instructions in Operator Manual before operating or working on this equipment.

WARNING

Falling equipment can cause death or serious injury. Install all lockup devices or lower planter to ground before working on equipment.

WARNING

Explosive separation of rim and tire parts can cause death or serious injury. Overinflation, rim and tire servicing, improper use of rims and tires, or worn or improperly maintained tires could result in a tire explosion.

SAFETY SIGNS AND DECALS

WARNING

All safety/warning lights, reflective decals, and SMV sign must be in place and visible before transporting machine on public roads or death, serious injury, and damage to property and equipment may result. Check federal, state/ provincial, and local regulations before transporting equipment on public roads.

Safety signs and decals are placed on the machine to warn of hazards and provide important operating and maintenance instructions. Information on these signs are for your personal safety and the safety of those around you. FOLLOW ALL SAFETY INSTRUCTIONS!

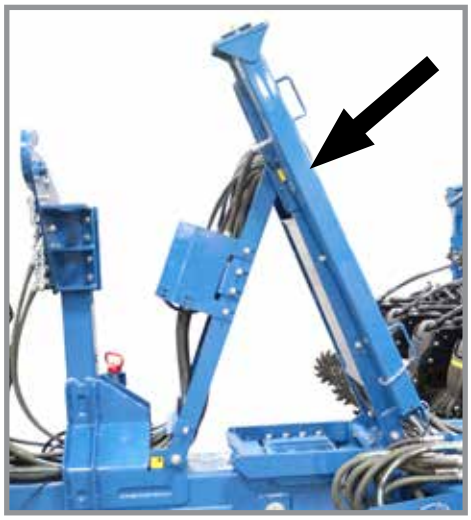
- **Keep signs clean so they can be easily seen. Wash with soap and water or cleaning solution as required.**
- **Replace safety signs if damaged, painted over, or missing.**
- **Check reflective decals and SMV sign periodically. Replace if they show any loss of of reflective properties.**
- **When replacing decals, clean machine surface thoroughly with soap and water or cleaning solution to remove all dirt and grease.**

NOTE: Safety sign and decal locations are shown in the Parts Manual for this machine.

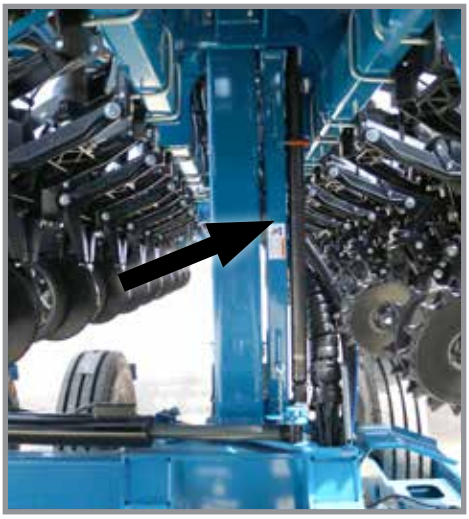
NOTE: Style and locations of SMV sign, reflective decals, and safety/warning lights conform to ANSI/ASABE S279.14 JUL 2008 and ANSI/ASABE S276.6 JAN 2005.

PLANTER LIFT SAFETY LOCKUP

Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Install all safety pins before transporting equipment.



Safety lockup in storage position



Safety lockup in transport/ maintenance position

Planter lift safety lockup is installed between center post and lift cylinder. It is held in place by a clevis pin near the base of the lift cylinder rod and a strap towards the top of cylinder rod. Remove safety lockup and store on hose take-up for field operation.

ROW MARKER SAFETY LOCKUP

WARNING

Row marker can lower at any time and could cause death or serious injury. Stay away from row markers! Install safety lockup device when not in use.

Always install row marker lockups when working on, storing, or transporting planter. Hold in place with two clevis pins.

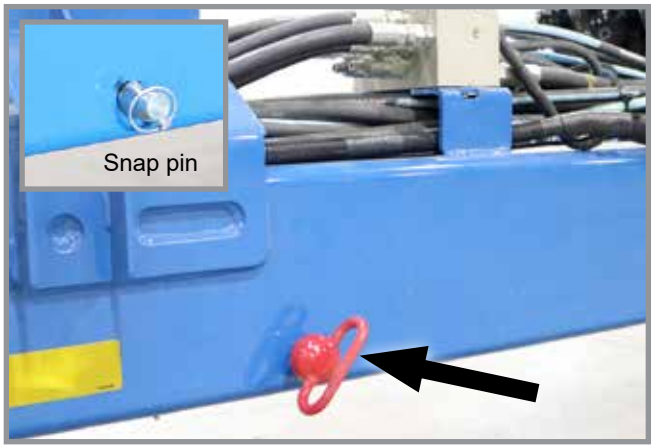
Row marker safety lockup installed

Row Marker Safety Lockup Stored

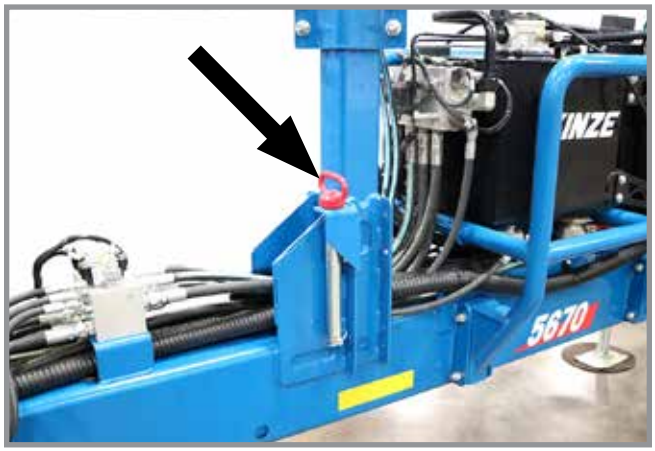
TONGUE SAFETY PIN

WARNING

Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Install all safety pins before transporting equipment.



Tongue safety pin installed for transport

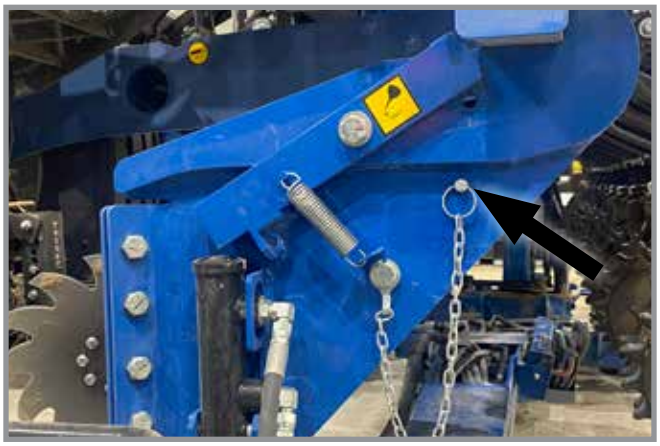


Tongue safety pin stored for field operation

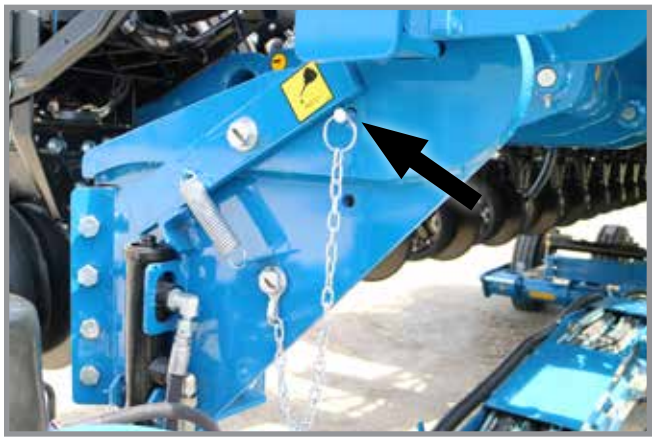
Never transport planter without installing tongue safety pin. Tongue safety pin prevents tongue cylinder from retracting should hydraulic failure occur or a sudden stop be made when transporting planter.

Secure safety pin in hitch with snap pin. Remove tongue safety pin and store in bracket on transport latch post at center of planter for field operation.

TRANSPORT LATCH LOCKING PIN



Transport latch locking pin stored



Transport latch locking pin installed

Never transport planter without installing transport latch locking pin. Transport latch locking pin prevents latch bar from disengaging and allowing planter frame to swing away.

Remove transport latch locking pin and store in location provided on latch post for field operation.

INITIAL PREPARATION

Following information is general in nature to aid in preparation of tractor and planter for use, and to provide general operating procedures. Operator experience, familiarity with the machine, and the following information should combine for efficient planter operation and good working habits.

WARNING

Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Install all safety pins before transporting equipment.

WARNING

Uncontrolled machine movement can crush or cause loss of control resulting in death, serious injury, or damage to property and equipment. Install all safety lockup devices before working under or transporting this equipment.

WARNING

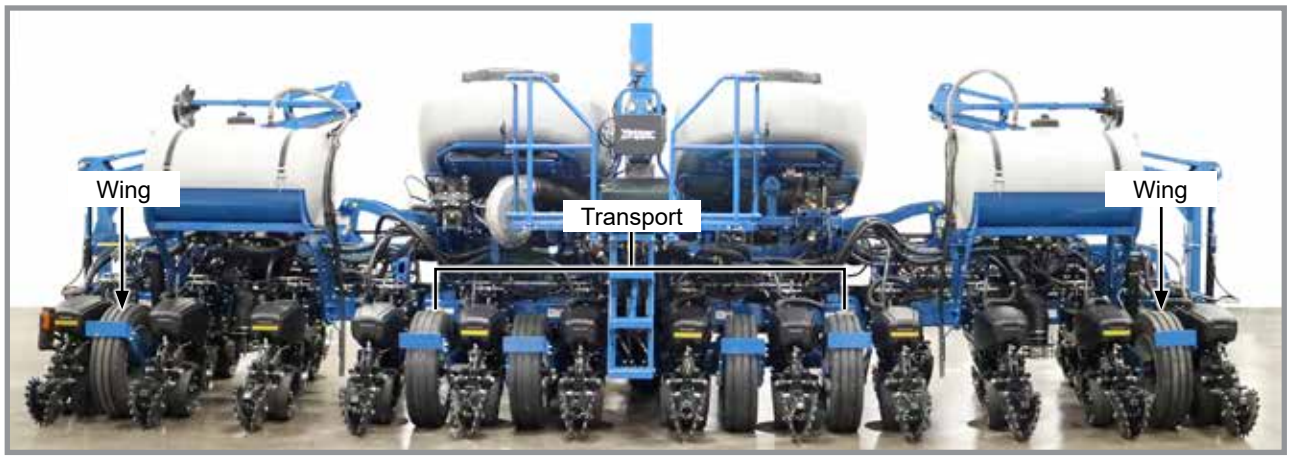
Tanks must be empty when transporting to avoid death, serious injury, or damage to property or equipment. Do not pull planters in transport configuration with seed or fertilizer in tanks.

WARNING

To avoid unintended movement of axle during transport, return all SCV controls to the neutral position before transporting machine. DO NOT operate any hydraulic function while transporting machine. Doing so could result in death, serious injury, or damage to property and equipment.

WARNING

Transport axle can lower from transport position without the use of any controller, causing death, serious injury, or damage to property and equipment. Do not operate any hydraulic function while transporting the planter. Make sure all transport safety lockups are installed on the four transport cylinders and all SCV controls are in their neutral state before transporting, storing and working on the planter.



Tire locations (12 Row Shown)

1. Torque transport wheel ⅝"- 18 lug nuts to 200 ft-lb (271 N-m).

2. Inflate tires to the following specifications:

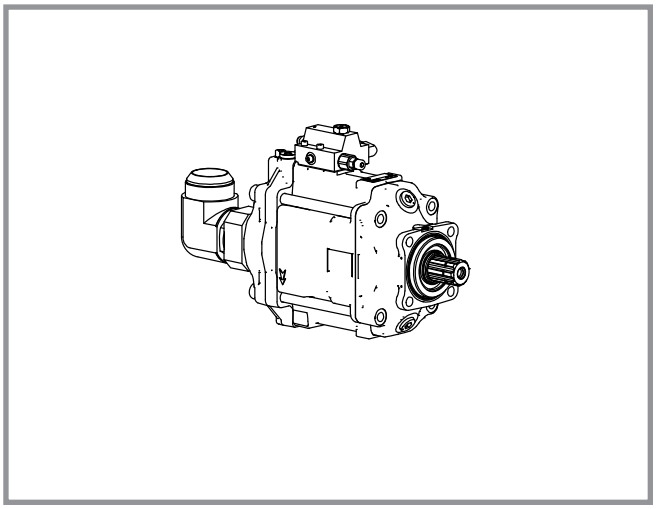
   Transport (center section)
   12 Row: VF245/70R19.5 . . . . . .75 psi (517.1 kPa)
   16 Row: VF295/75R22.5 . . . . . .65 psi (448.1 kPa)

   Wings VF245/70R19.5 . . . . . .50 psi (344.7 kPa)

3. Lubricate planter following instructions in Lubrication and Maintenance section of supplied Operator's manual.

TRACTOR MOUNTED PTO PUMP AND PLANTER HYDRAULICS

20 gal (75.7 L) Reservoir



PTO Hydraulic Pump

PTO equipped planters require 1¾" (45 mm)-20 or 1⅜"(35 mm)-21 spline 1000 RPM PTO to operate PTO pump.

NOTE: A tractor model-specific mount kit is required for the PTO-mounted pump.

Contact Command Hydraulics (800-778-6200 or www.commandhydraulics.com) for your tractor pump mount requirements.

PTO hydraulic system operates from a 20 gallon capacity oil reservoir.

Other system components include an oil cooler with reversing fan, replaceable cartridge-type filter, pressure relief valve and two high pressure filters.

Piston pump PTO system operates all planter functions other than lift / fold / markers.

TRACTOR REQUIREMENTS

Consult your dealer for information on horsepower requirements and tractor compatibility. Requirements vary with planter options, tillage, and terrain.

A 12 volt DC electrical system is required on all sizes.

TRACTOR PREPARATION AND HOOKUP

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

2. Install control console or Blue Vantage Display on tractor in a convenient location within easy reach of operator and close to hydraulic controls. Mount control console securely and route power cord to power source. Control console operates on 12 volt DC only. If two 12 volt batteries are connected in series, ALWAYS make power connection on battery grounded to tractor chassis.

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

3. Back tractor to planter and connect with 1¼" - 1½" diameter hitch pin. If tractor is not equipped with a hitch pin locking device, make sure hitch pin is secured with a locking pin or cotter pin.

4. Safety chain must be used to keep planter and tractor connected in case of a hitch pin/drawbar failure.

Kinze Blue Vantage

Planter/safety chain hookup to tractor

Continued on following pages.

NOTICE

Routing of hydraulic hoses from planter to tractor is very important. If done improperly, hoses can be pinched, cut or broken when planter is operated.

⚠ WARNING

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

NOTICE

Wipe hose ends to remove any dirt before connecting couplers to tractor ports or contamination may cause equipment failure.

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

Blue Drive

Color and Label	Machine Function	Hose Size	Hose Function
Red Extend	Field Lift	⅝"	Pressure/Return
Red Retract		⅝"	Pressure/Return
Blue Extend	Planter Fold & Row Marker	½"	Pressure/Return
Blue Retract		½"	Pressure/Return

NOTE: Set adjustable flow outlet (SCV) to full flow position.

6. (If applicable) Install PTO pump onto tractor PTO shaft. Make sure shaft rotation matches direction indicated on pump housing.

NOTICE	**Clean and grease PTO shaft coupling with high-pressure industrial coupling grease (Chevron® coupling grease or equivalent) meeting AGMA CG-1 and CG-2 Standards each time driveshaft is installed or premature wear and equipment failure can occur.**

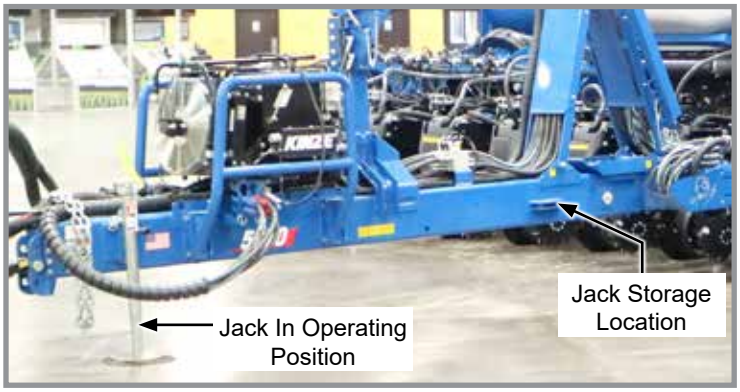
NOTICE	**Check for proper hitch clearances between tractor and PTO system.**

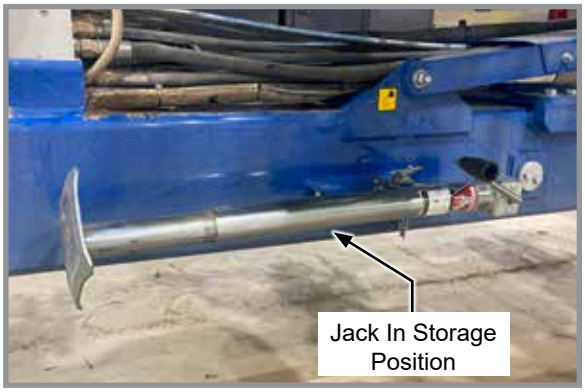
NOTE: A tractor model-specific PTO mount kit is required and available from Ag Power Systems, LLC (319-646-2770 or www.agpowersystems.com) and Command Hydraulics (800-778-6200 or commandhydraulics.com).

NOTE: Follow instructions provided with PTO mount to ensure proper installation. The PTO pump requires a minimum of ⅛" between shafts and proper alignment to prevent premature pump failure.

7. If equipped with Blue Drive, attach the Blue Drive 6 pin connector and Ethernet cable to the Blue Vantage display.

8. Connect ASABE Standards 7 terminal connector for safety/warning lights on planter to ASABE Standards receptacle on tractor. If your tractor is not equipped with an ASABE Standards receptacle, check with your tractor manufacturer for availability. Check warning lights on planter work in conjunction with warning lights on tractor.



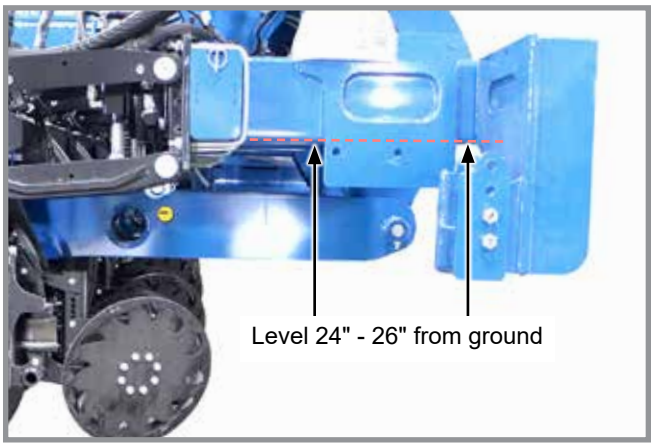


9. Raise jack stand and remount horizontally on storage bracket on opposite side of hitch.

LEVEL PLANTER

Lateral adjustment is maintained by tire pressure. Check tires are inflated to specification.

Front and rear level adjustment is maintained by hitch clevis position unless tractor drawbar is adjustable for height. Planter frame and row unit parallel arms must be level for proper planter and row unit operation. Bottom of toolbar should be 24" to 26" from planting surface.



Level planter toolbars

1. Lower planter to planting position and check planter is level front to rear. Go to step 2 if hitch is too high or low.

   NOTE: DO NOT install safety chain using clevis hardware. Move safety chain location if necessary.

2. Remove clevis hitch hex head cap screw and lock nut using a torque wrench. Replace if off-torque is below 75 ft-lb (101.6 N-m) or there is corrosion or damage.

   NOTE: Clevis must be free to move on hitch. DO NOT OVERTIGHTEN hardware.

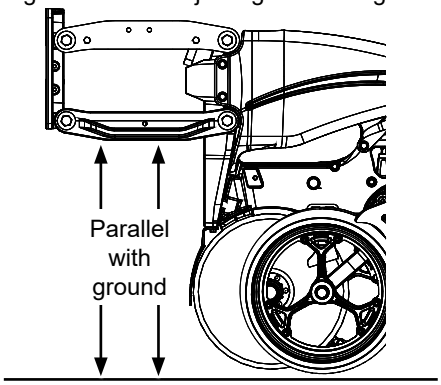
3. Align clevis to hitch holes at new location and install hex head cap screw and lock nut. Tighten lock nut until threads are fully engaged and hex head cap screw and lock nut are firmly against hitch bracket.

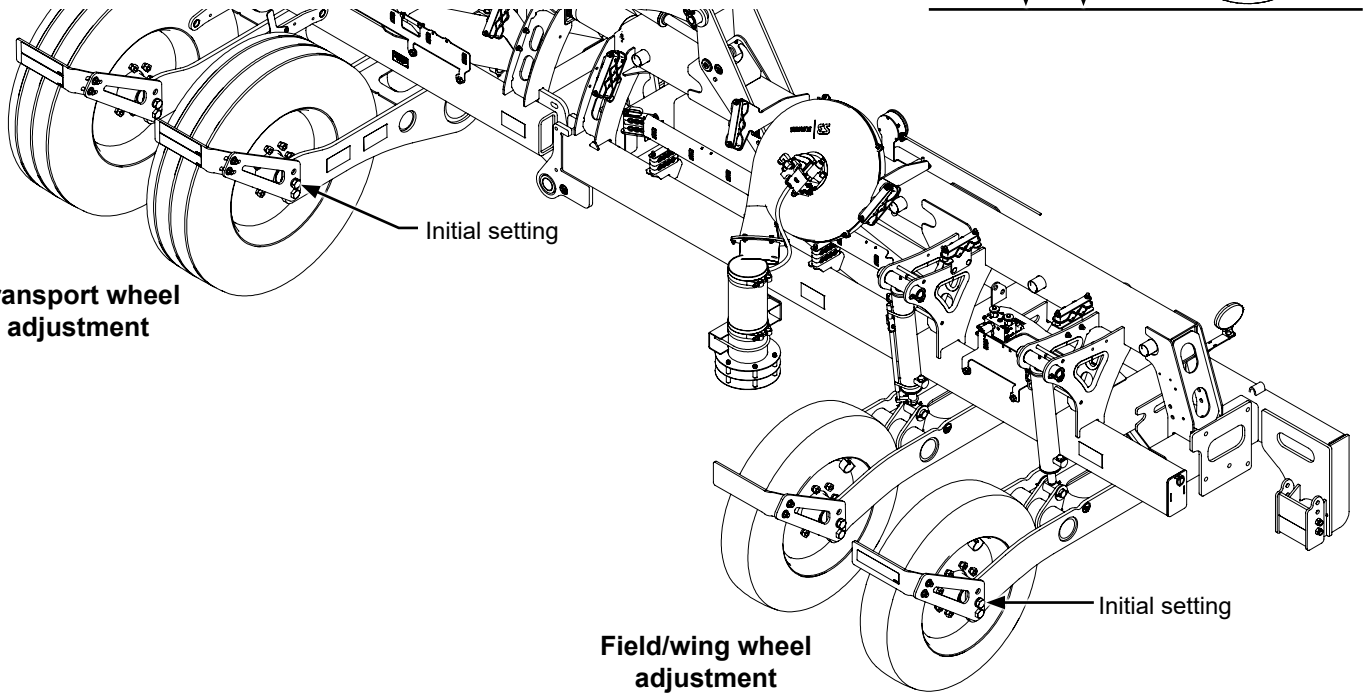
   NOTE: On planters with push row units and no till coulters, uplift from down force springs or air springs in pneumatic down pressure system may cause wings to rise slightly in planting position. Problem may be compounded if static pressure is trapped in planter's hydraulic lift system which can cause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

4. Field check planter.

   Field and actual planting conditions dictate which transport wheel setting to use so row unit parallel arms are parallel with ground. It may be necessary to lower or raise wheels to ensure level lateral toolbar operation if transport wheels are set in one of the lower sets of holes. Make a field check when planter is fully loaded with seed, granular chemicals, fertilizer, etc. to be sure wings are level with center frame. If wings are not level with center frame, drive wheels and/or transport wheels can be raised or lowered in wheel arms to increase or decrease planter toolbar height. Raise hitch to ensure level operation.

Keep row unit parallel arms parallel to ground when adjusting wheel heights.





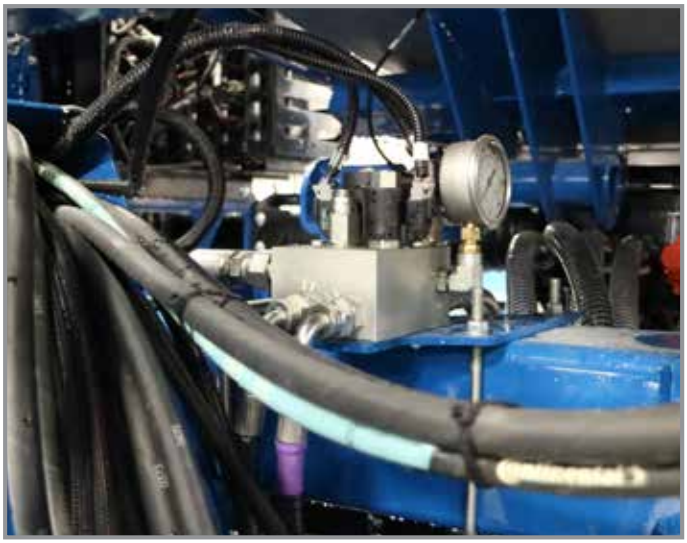
Transport wheel adjustment

Field/wing wheel adjustment

RIDGE PLANTING

Move drive and transport wheels 2" or 4" to lower mounting holes in wheel arms when ridge planting to increase planter toolbar height. Raise hitch height to ensure level operation.

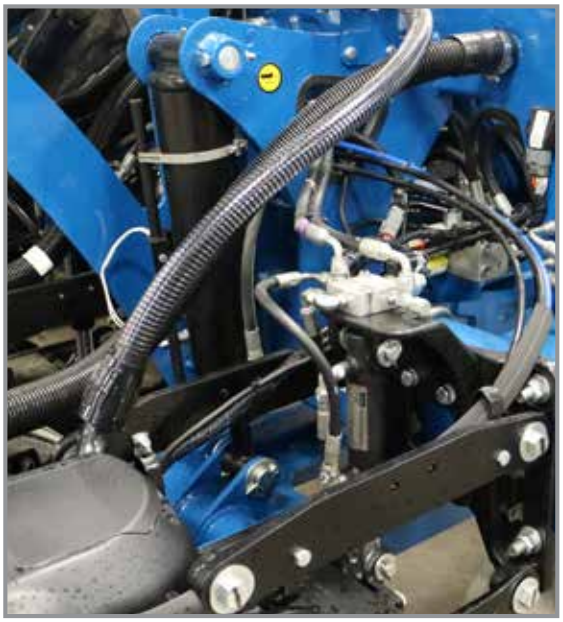
TRUE DEPTH HYDRAULIC SYSTEM OVERVIEW



True Depth Pressure Gauge

WARNING

Remove all hydraulic power sources and verify True Depth pressure gauge reads zero before servicing.



True Depth Cylinder

WARNING

Flow out of the rod end port of the cylinder must not be restricted when pressurizing cap end port as 4.5:1 pressure intensification will occur on the rod end of the cylinder potentially resulting in failure of the cylinder and loss of containment of the piston rod assembly.

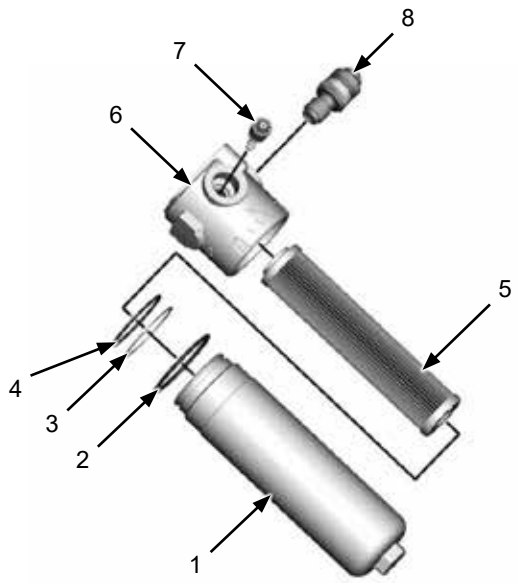
TRUE DEPTH FILTER

Replace filter cartridge annually, every 100 hours of operation, or when the clogging indicators point out the limit pressure drop created inside the filter.

True Depth Filter

To replace the cartridge:

1. Stop the system in “Machine Stopped” status
2. Secure any shut-off valves on the hydraulic circuit.
3. Unscrew the filter container (1).
4. Remove the clogged filtering cartridge (5), making sure no residual particles have settled in the bowl bottom.
5. Make sure the O-ring (2-4) and the anti-extrusion ring (3) are not damaged, otherwise replace them and consequently position the new ones correctly.
6. Insert the new filtering cartridge, lubricating the sealing O-ring beforehand.
7. Screw the container tight (1) making sure the threading is screwed correctly. Tighten to a tightening torque of 65 Nm.
8. Start the machine for a few minutes.
9. Make sure there are no leaks.



1. Filter Bowl
2. External O-Ring
3. Anti-extrusion ring
4. Sealing O-Ring
5. Filtering Element
6. Filter Head
7. By-pass valve
8. Visual differential indicator

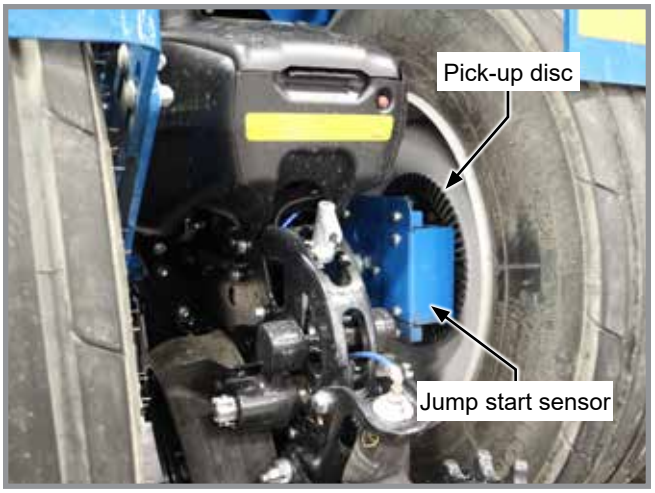
True Depth Cylinder

JUMP START SENSOR

The jump start sensor is intended to reduce the seed gap when starting from a stop with the planter in the ground. For the jump start sensor to work as intended, the planter speed sensor needs to be set within ⅛" of the pick-up disc. The planter speed sensor also needs to be calibrated properly and have the speed source set to automatic. Refer to Kinze Blue Vantage Operator's Manual for calibration instructions.

If the planter speed sensor is setup properly, the start-up gap should be no more than 4 feet. (1.2M)

If no gap is desired, there are two options for eliminating the gap completely:



Jump Start Sensor and Pick-up Disc

1. Use the jump start button available on the Blue Vantage display. Pressing this button will start turning the drives. Once a speed source is acquired, it will take over control. Refer to the Blue Vantage Manual for further instructions on the jump start button.

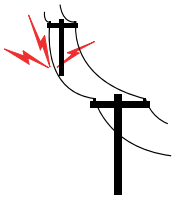
2. Pick the planter up, back up 10 - 12 feet (3 - 3.6M), set the planter down and resume planting. The section control will turn the drives on at the correct time.

HYDRAULIC WEIGHT TRANSFER TOOLBAR

The hydraulic weight transfer system is standard. The PTO pump powers the hydraulic weight transfer system. Pressure is set from the factory and does not require mechanical adjustment. Settings can be adjusted in Blue Vantage, refer to Blue Vantage Operator's Manual.

FIELD OPERATION

DANGER



Contacting or coming close to power lines or other high energy sources will cause death or serious injury.

Keep away from power lines or high energy sources at all times.

Planters are designed to operate within a speed range of: True Rate 2 - 8 mph (3 - 13 kph); True Speed 3 - 12 mph (5 - 19 kph) . Higher ground speeds can cause more variation in seed spacing.

NOTICE

Always raise planter out of ground when making sharp turns or backing up.

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

NOTICE

Row markers should not operate faster than 8 mph (13 kph) or damage may occur.

Operate row markers with Blue Vantage control or tractor's hydraulic control. Marker speed is controlled with flow control valves located at the end of each wing. One valve controls raise speed and other valve controls lower speed. See “Row Marker Speed Adjustment” on page 2-19.

Refer to M0288 - Kinze Blue Vantage Operator’s Manual for marker control.

NOTE: Center post lift is used only for folding or unfolding planter. Raising and lowering planter during field operation is performed using field lift (axle rockshaft).

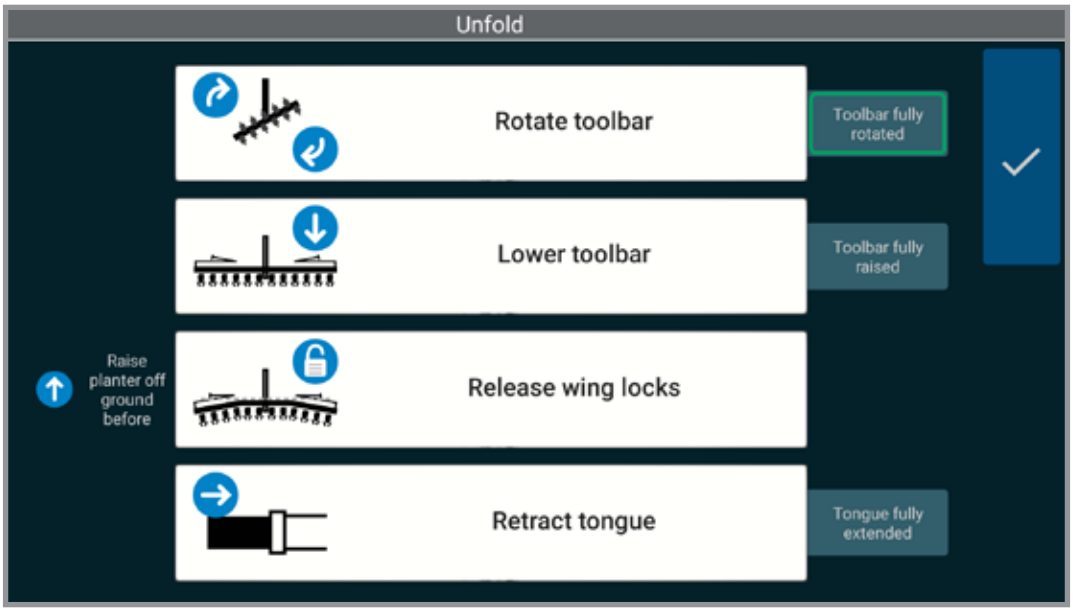
UNFOLD SEQUENCE

NOTICE

DO NOT fold or unfold planter without planter attached to a tractor. DO NOT unhitch planter from tractor unless fully folded for transport or fully unfolded with planting units lowered to ground.

⚠ WARNING

Improperly operating or working on this equipment could result in death or serious injury. Make sure there is no one in the area of the moving parts of the planter.



Position the planter in a relatively flat open area. Avoid an area with furrows, etc.

1. Remove and store the tongue safety pin.
2. Remove and store the transport latch locking pin.
3. Remove and store the safety lockup.
4. Press and hold “Rotate toolbar”. Operate proper hydraulic tractor control until planter has fully rotated into field position. Transport latch will automatically release.
5. Press and hold “Lower toolbar”. Operate proper hydraulic tractor control to fully lower the planter on center post.
6. Operate hydraulic control to raise the planter using field lift.
7. Press and hold “Release wing locks”. Operate proper hydraulic tractor control, releasing wing locks.
8. Press and hold “Retract tongue”. Operate proper hydraulic tractor control to fully retract the tongue. Tongue latch automatically engages.
9. Lower the planter to the ground.
10. Remove the row marker lockups.

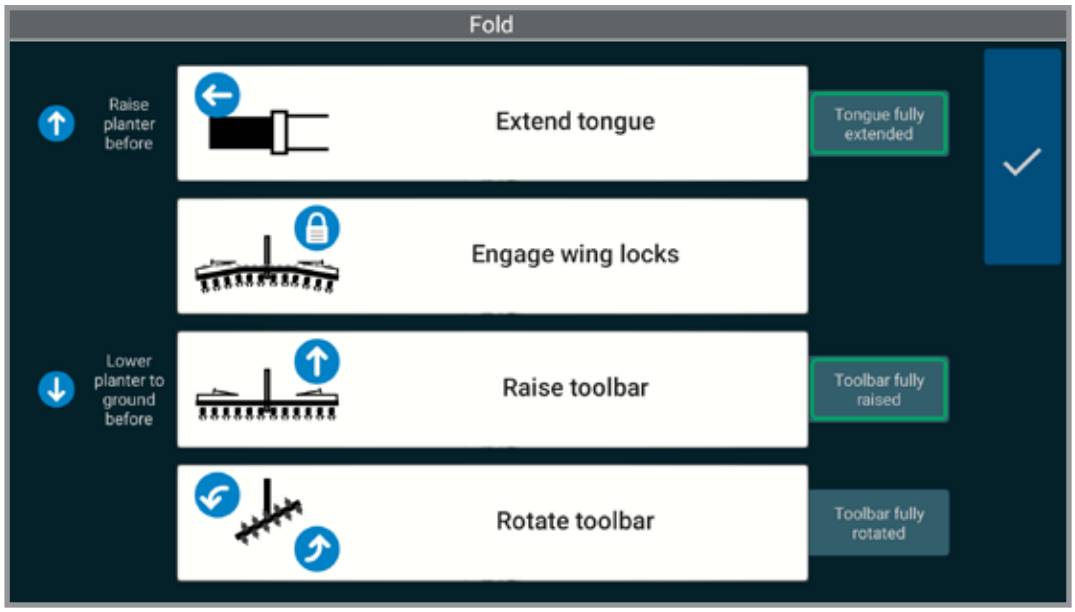
FOLD SEQUENCE

NOTICE

DO NOT fold or unfold planter without planter attached to a tractor. DO NOT unhitch planter from tractor unless fully folded for transport or fully unfolded with planting units lowered to ground.

⚠ WARNING

Improperly operating or working on this equipment could result in death or serious injury. Make sure there is no one in the area of the moving parts of the planter.



Position the planter in a relatively flat open area. Avoid an area with furrows, etc.

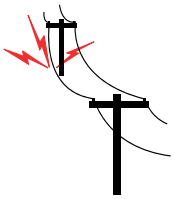
1. Install the row marker lockups.
2. Operate the hydraulic control to raise planter using field lift.
3. Press and hold “Extend tongue”. Operate the hydraulic control to fully extend the tongue. The tongue latch automatically engages.
4. Press and hold “Engage wing locks”. Operate the hydraulic control.

.

5. Lower the planter to ground.
6. Press and hold “Raise toolbar”. Operate the hydraulic control to fully raise the planter on center post.
7. Press and hold “Rotate toolbar”. Operate the hydraulic control to rotate the planter to transport position. Transport latch automatically engages.
8. Install the safety lockup.
9. Install the hitch safety pin.
10. Install the transport latch locking pin.

ROW MARKER OPERATION USING BLUE VANTAGE DISPLAY

DANGER



Contacting or coming close to power lines or other high energy sources will cause death or serious injury.

Keep away from power lines or high energy sources at all times.

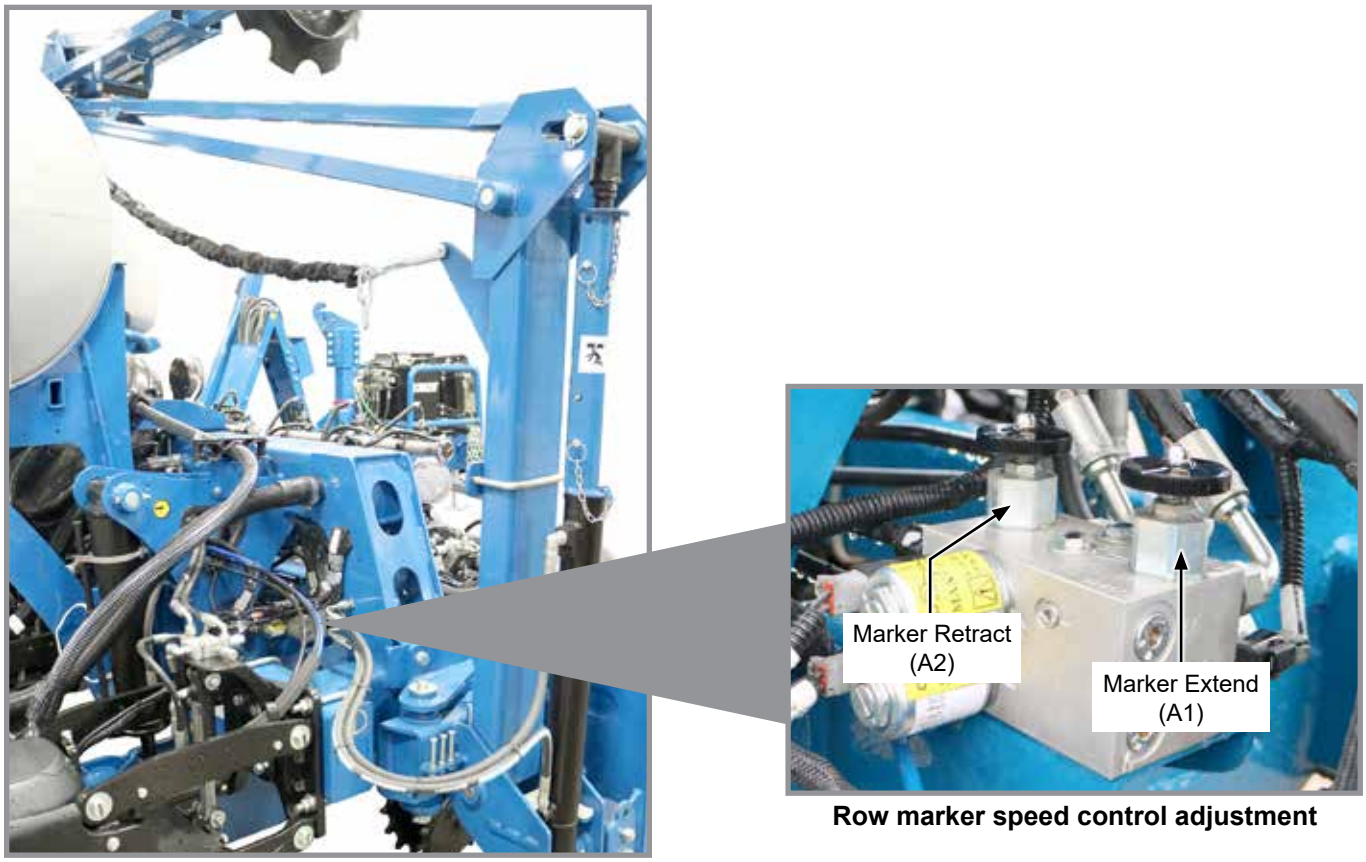
NOTE: See row marker adjustments on following pages. If the planter is equipped with Blue Drive refer to M0288 - Kinze Blue Vantage Operator's Manual for marker control

ROW MARKER SPEED ADJUSTMENT

NOTICE

Excessive row marker travel speed can damage row markers. Adjust flow controls before row markers are first used.

NOTE: Row markers should not operate faster than 8 mph (13 kph).



Row marker speed control adjustment

Marker hydraulic system includes two flow control valve blocks located on both wings. In each block; one flow control valve sets lowering speed and one sets raising speed of the marker.

Row marker speed should be between 8-10 seconds. Loosen jam nut and turn control clockwise, or IN to slow travel speed. Turn counterclockwise, or OUT to increase travel speed. Tighten jam nut after adjustments are complete.

NOTE: Tractors with flow control valves. Make row marker speed adjustment with tractor flow controls in maximum position. After row marker speed is set, adjust tractor flow controls to allow hydraulic control to stay in detent during marker raise or lower cycle.

NOTE: Hydraulics operate slowly when oil is cold. Make all adjustments with oil warm.

NOTE: On a tractor where oil flow cannot be controlled, tractor flow rate may be greater than rate marker cylinder can accept. Hold tractor hydraulic control lever until cylinder reaches end of its stroke. This occurs most often on tractors with an open center hydraulic system.

ROW MARKER CABLE ADJUSTMENT

WARNING

Uncontrolled marker movement can cause death or serious injury. Set marker switch to OFF and shut off tractor prior to adjustment.

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

NOTE: A cable or chain may be used. For continuity, cable will be used in this manual.

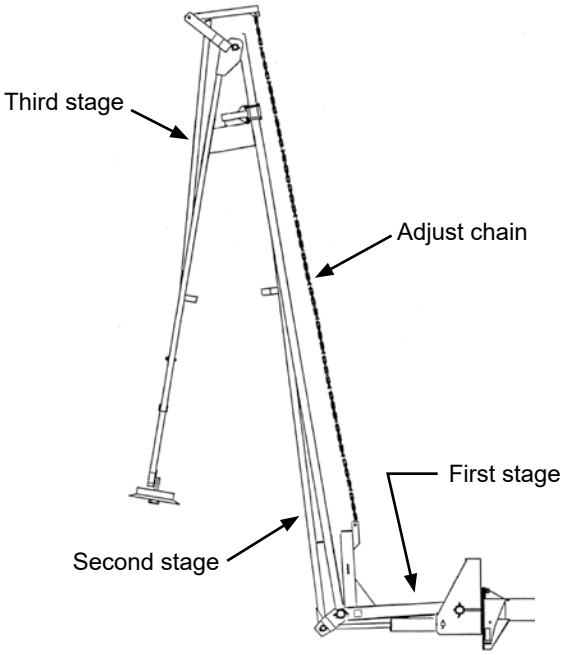
Cable adjustment is critical. Adjust with second stage of marker in vertical position and first stage in horizontal position.

Cable must be adjusted so third stage of marker is pulled out as soon as second stage begins outward travel. Cable stretches with use and needs routine adjustment. It may be necessary to twist for a finer adjustment.

Marker cable is PROPERLY ADJUSTED if marker blade pushes dirt 12" or less as marker completes fold into field operating position. Cable should have some slack when marker is in field operating position.

Marker cable is TOO LOOSE and should be adjusted if marker blade pushes dirt more than 12" as it completes the fold into field operating position.

Marker cable is TOO TIGHT if it will not allow marker blade to follow ground contour and cable is tight when marker is in field operating position.



ROW MARKER LENGTH AND DISC BLADE ADJUSTMENT

1. Lower planter and row marker assembly to ground.

2. Adjust row marker extensions according to table below. Measurements can be taken from the centerline of planter or the last furrow on either side of planter. The dimensions shown are a starting point and may need to be adjusted.

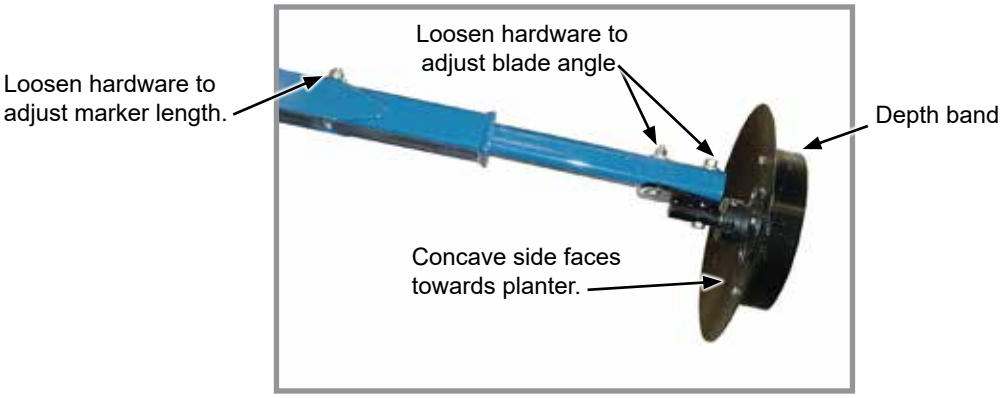
Adjusting Row Marker Lengths

	Hitch Configuration	Distance From Planter Centerline		Distance From Outside Furrow (Pull Row)	
		Left	Right	Left	Right
12 Row 30" (30 Foot Toolbar)	No Offset	360"	360"	195"	195"
23 Row 15" (30 Foot Toolbar)	No Offset	345"	345"	180"	180"
24 Row 15" (30 Foot Toolbar)	No Offset	375"	345"	210"	180"
24 Row 15" (30 Foot Toolbar)	7.5" Offset	367.5"	352.5"	202.5"	187.5"
16 Row 30" (40 Foot Toolbar)	No Offset	480"	480"	255"	255"
31 Row 15" (40 Foot Toolbar)	No Offset	465"	465"	240"	240"
32 Row 15" (40 Foot Toolbar)	No Offset	495"	465"	270"	240"
32 Row 15" (40 Foot Toolbar)	7.5" Offset	487.5"	472.5"	262.5"	247.5"

3. Adjust marker disc blade. Marker disc blade is installed with concave side facing inward. Spindle assembly is slotted so hub and blade can be angled to throw more or less dirt.

4. Tighten hardware to specified torque.

5. Perform a field test to ensure markers are properly adjusted.



Row Marker Disc Blade Angle Adjustment

NOTICE

Setting marker disc blade assembly at a sharper angle than needed adds stress to row marker assembly and shortens bearing and blade life. Set blade angle only as needed to leave a clear mark.

NOTE: A notched marker blade is available from Kinze through your Kinze Dealer for use in more severe no till conditions.

VACUUM METER SYSTEM

Kinze vacuum seed metering system includes seed meters, seed discs, and an air system consisting of a hydraulic driven vacuum fan which draws air through manifolds, hoses, and seed meters on each row unit.

WARNING

Moving fan blades can cause amputation or severe injury. Never operate vacuum fan with cover removed.

DIGITAL VACUUM READOUT

Digital vacuum readout is incorporated into in-cab display. Refer to the in-cab display operation manual for instructions.

VACUUM FAN AND BULK FILL MOTOR VALVE BLOCK ASSEMBLY

A PWM valve is incorporated into the vacuum system to control fan speed with Blue Drive equipped planters.

Refer to “Row Marker Length And Disc Blade Adjustment” on page 2-21 in Lubrication and Maintenance section.

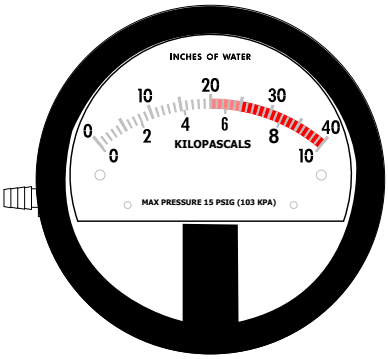
Valve block contains a check valve that prevents vacuum fan from operating in wrong direction if pressure is applied to return side of motor and allows fan to coast to a stop when tractor hydraulic control is returned to neutral position.

NOTE: Fan turns at a reduced speed If reverse pressure is applied.

ANALOG VACUUM OR PRESSURE GAUGE

Analog vacuum or pressure gauge connects directly to vacuum meter (vacuum) or bulk fill (pressure) manifold and is teed into digital sending units.

Only adjustment is to “zero” needle with no vacuum or pressure present. If there is a significant difference between gauge and a reading taken at meters, a different manifold location should be found to connect hose to gauge and digital sending unit.



Analog Gauge

NOTE: Analog gauges are identical EXCEPT for plug and hose barb locations in side of gauge housing. DO NOT connect vacuum meter or bulk fill hose to wrong gauge. Check plug and hose barb installation if readout is erratic or appears inaccurate.

BULK FILL SYSTEM

WARNING

Do not remove lid during machine operation. Contents are pressurized and could result in death, serious injuries or equipment damage.

Review operator manual for proper filling procedure.

WARNING

Tanks must be empty when transporting to avoid death, serious injury, or damage to property or equipment. Do not pull planters in transport configuration with seed or fertilizer in tanks.

CAUTION

Seed flying out of disconnected delivery tube at high velocity can cause injury. Do not disconnect delivery tubes when system is operating.

DANGER

DO NOT ENTER. Hazardous conditions inside will result in death or serious injury. Follow OSHA confined space procedures.

NOTICE

Foreign materials can plug system. Make sure seed is clean and free of debris when filling bulk fill hoppers.

NOTICE

Do not turn on system with tractor engine at full speed or system damage may occur.

NOTICE

Do not operate bulk fill system above maximum system operating pressure of 20 inches of water or seed bridging may occur.

1. **Before filling hoppers refer to** "Additives" on page 3-20.
   Fill hoppers with seed and latch lids.

2. Start bulk fill system with tractor engine at idle.

3. Increase engine speed to full and set initial system pressure through Blue Vantage.

4. Allow system to warm up and adjust pressure if necessary.

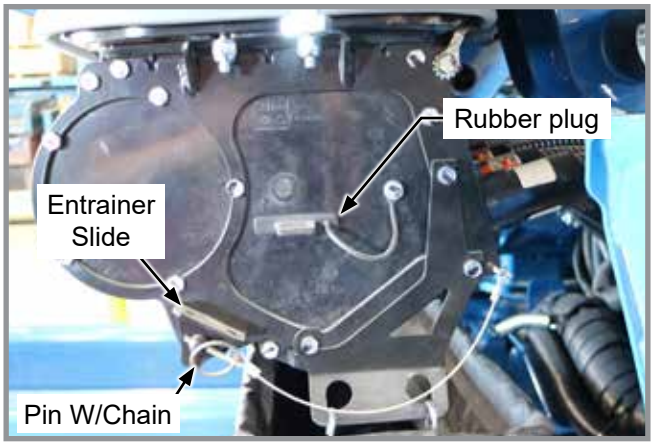
Bulk Fill Lid

Recommended pressures:

- Corn – 12 inches of water
- Soybeans – 10 inches of water
- Actual pressure needed is affected by seed size, shape, and coating.

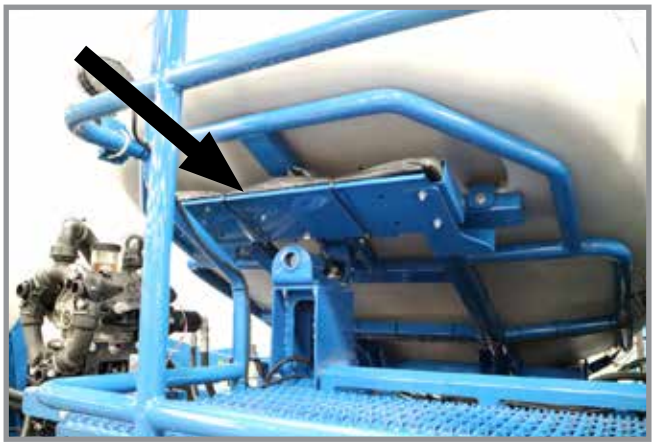
BULK FILL ENTRAINER ACCESS

1. Shut down bulk fill system.
2. Pull pin holding entrainer slide in place and remove.
3. Remove rubber plug closest to area in entrainer needing attention.
4. Insert entrainer slide into open slot and push into entrainer at a slight upward angle.
5. When work is complete, remove entrainer slide, return slide to storage location, and plug open slot.

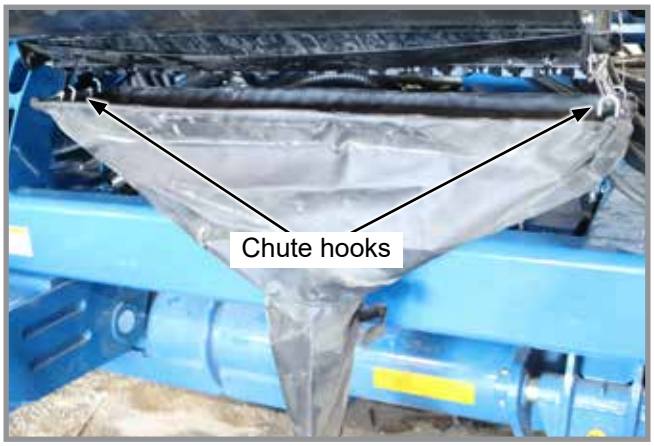


Bulk Fill Entrainer (End View)

BULK FILL TANKS - CLEAN OUT



Cleanout chute storage bracket



Cleanout chute installed

1. Remove bulk fill tank cleanout chute from storage location beneath catwalk.
2. Position tube of chute under entrainer and attach hooks on each end of entrainment assembly.
3. Open cleanout doors and empty tank.
4. Close all cleanout doors and return cleanout chute to storage location.

BULK FILL SCALE PACKAGE OPTION

NOTICE

High-pressure water can damage display. Remove display before power washing planter.

NOTICE

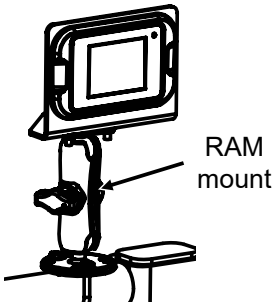
Remove and store display at end of planting season. Damage from sun and weather exposure may result.

Bulk Fill Scale Package is capable of:

- Displaying seed weights and estimated acres remaining for bulk fill hoppers separately.
- Setting alarm to warn operator when seed goes below a pre-defined level.

NOTE: Operation of Bulk Fill Scale Package display is controlled by touchscreen.

NOTE: Screen position is changed by loosening the thumb screw on RAM™ mount.



Continued on following pages.

To monitor seed levels (Main Screen):

NOTE: Refer to Blue Vantage manual for bulk fill scale user information.

1. Main screen displays information for left and right hoppers.
2. Tap "Weight" to display left and right hopper weight.
3. Tap "Area to Empty" to dispaly left and right acres to empty.

4. Tap either "L" or "R" to display detailed hopper screen.

   NOTE: "Zero" is selected to zero hopper that is selected. If hopper(s) is zeroed out with seed, weight in hopper will not be recognized. To reset hopper correctly seed must be emptied from hopper(s) and then zeroed to reset.

5. Tap "Back" to return to main screen.
6. Tap "Planter Setup" to enter Seed information. See follow page for more information.

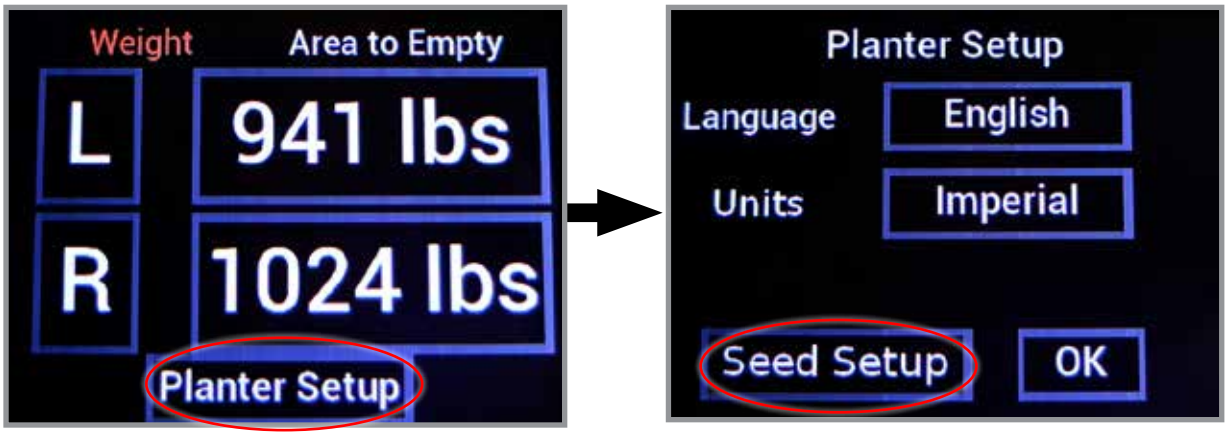
To enter seed information (Not applicable on Blue Vantage):

NOTE: Seed information entered must be accurate for remaining estimated acres to calculate correctly.

- SEEDS/ACRE is population rate.
- SEEDS/LB value comes from seed specifications.

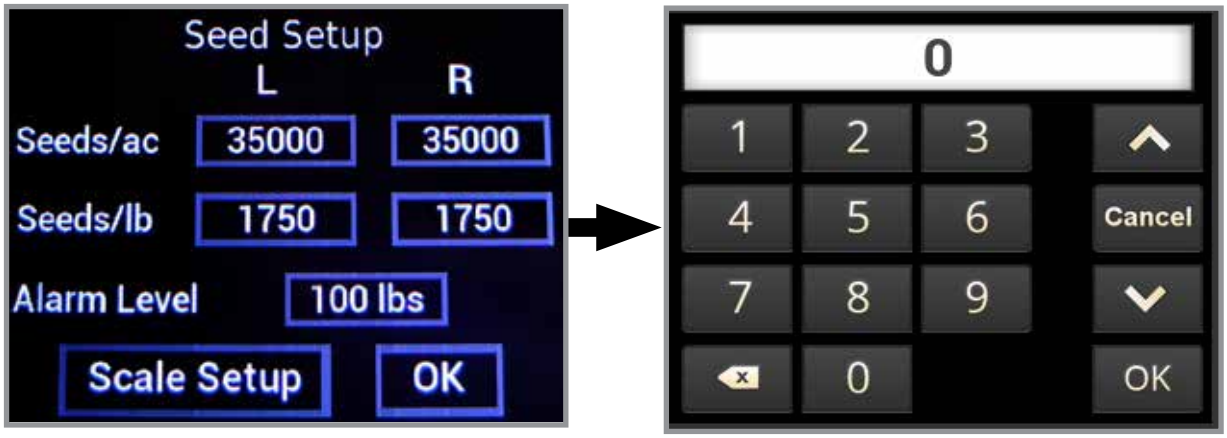
1. From main screen, tap "Planter Setup".

2. From planter setup screen, tap "Seed Setup".



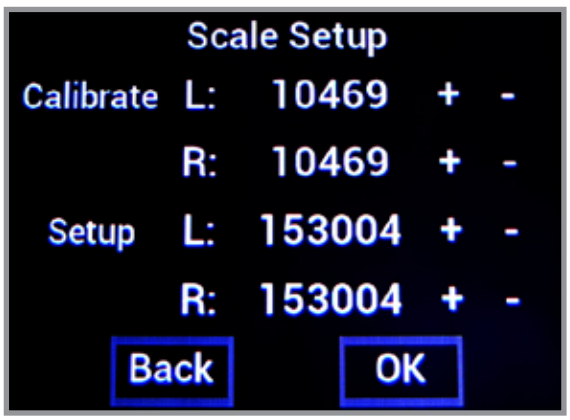
3. To change values in either "Seeds/Ac", "Seeds/lb", or "Alarm Level" tap in appropriate box.

4. At input screen, enter desired value. Tap "OK".



5. Once desired values have been entered tap "OK", to confirm changes tap "Accept" to return to main screen.

NOTE: It is <u>NOT RECOMMENDED</u> to make adjustments to setup in the "Scale Setup" screen.



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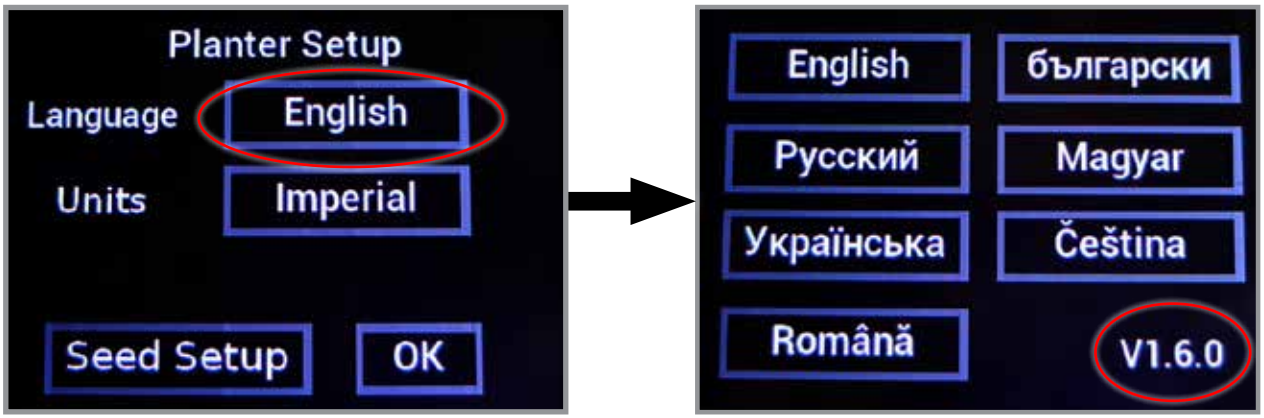
Software Version:

1. From main screen, tap "Planter Setup".
2. Tap on "English" to display software version.

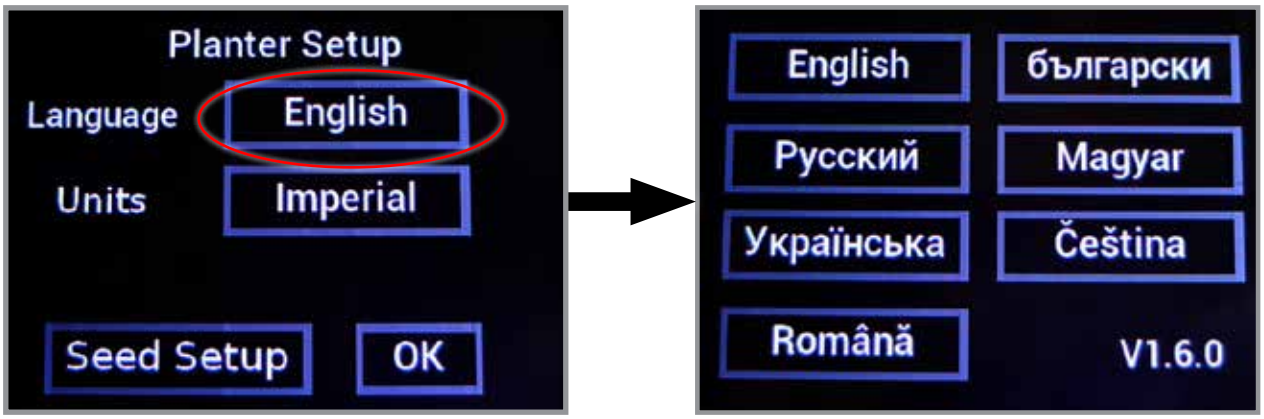


4. Tap "English" to return to planter setup screen.
3. Tap "OK" to return to main screen.

Language/Units:

NOTE: English is the default language. Imperial is the default units.

1. From main screen, tap "Planter Setup".
2. Tap on "English" to display language options.



3. Tap on desired language to select and return to planter setup screen.
4. Tap on "Imperial" to switch to metric units and vice versa.

   NOTE: If units are switched back and forth between imperial and metric, measurements will round up each time.

3. Tap "OK" to return to main screen.

BLUE DRIVE AUX MOUNT

The Blue Drive aux mount houses all modules for controlling vacuum, bulkfill, fold, and various sensors. The intelligent planter router is also housed at this location.

KINZE BLUE VANTAGE

Blue Vantage can be ready to plant in three taps after proper setup. The health screen provides all critical planting parameters and controls. The grower can observe row-by-row planting performance in real-time.

NOTE: See Kinze Blue Vantage Operator's Manual for system operation and programming.

Kinze Blue Vantage

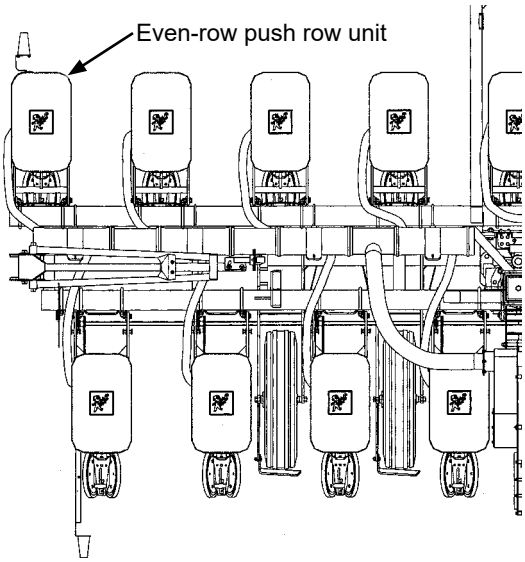
EVEN-ROW PUSH ROW UNIT

An Even-Row Push Row Unit Package is available to add one additional push row unit on outer L.H. side of front toolbar for use with split row package.

NOTE: See “Adjusting Row Marker Lengths” on page 2-21 **for determining correct length to set row marker assemblies when planting with even-row push row unit option.**

An inner hitch with a 7½" offset mount is available from Kinze through your Kinze Dealer to plant two 15" rows between last year’s 30" rows and avoid tire damage from stalks by driving off row

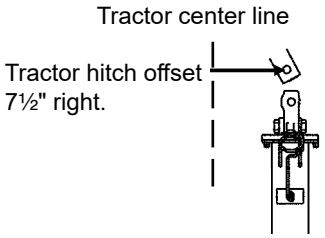
NOTE: install hitch onto 2-point hitch bar using R.H. hole If 2-Point Hitch Option is used. A 7½" offset mount is not needed. See “Offset Hitch Adjustment” for additional information.



OFFSET HITCH ADJUSTMENT

An offset hitch is available from Kinze through your Kinze Dealer. Offset hitch provides centered and offset mounting positions for hitch clevis.

If tractor hitch is offset 7½" right of tractor center line, add 7½" to marker dimension on R.H. side of planter and subtract 7½" from marker dimension on L.H. side of planter.



AUXILIARY HYDRAULIC OPTION

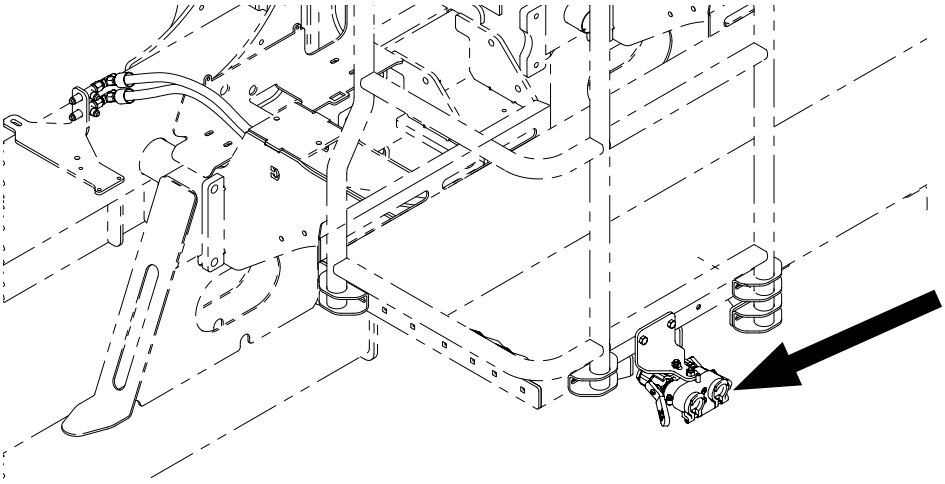
A customer-supplied auxiliary hydraulic option may be added to provide 10 gpm of oil flow at rear of planter. It is designed for powering bulk seed handling equipment when planter is not in motion and is controlled by the same tractor hydraulic control as the fold functions.

WARNING

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

NOTICE

Make sure planter is not in motion when using auxiliary hydraulic circuit.



NOTE: Auxiliary Hydraulic Hookup Valve Kit (G1K795) is available through your Kinze Dealer.

REAR TRAILER HITCH

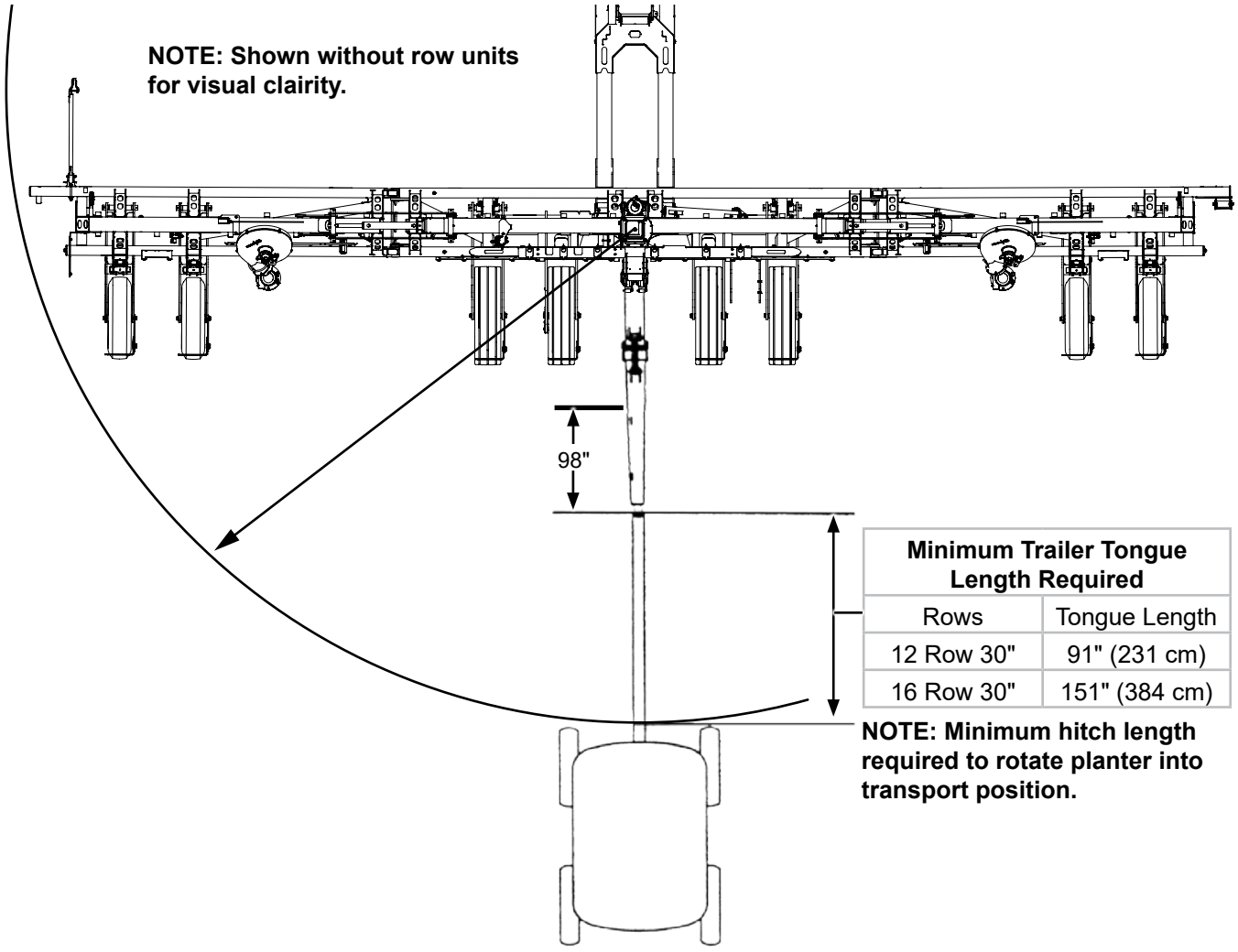
Rear trailer hitch can tow a 3 or 4 wheel wagon behind planter. The 1-1/2” feed hose is routed alongside the planter umbilical cord up to the auxiliary suction valve. This extra length or loop is required to allow for planter to move into transport position without stretching hose.

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

Trailer hitch

NOTICE

Maximum allowable hitch weight is 200 lb (90.71 kg). Do not exceed 6,000 lb (2,721.55 kg) gross towing weight or the equivalent of a loaded 500 gal (1,892.7 L) tank and running gear or equipment can be damaged.



Minimum Trailer Tongue Length Required	
Rows	Tongue Length
12 Row 30"	91" (231 cm)
16 Row 30"	151" (384 cm)

NOTE: Minimum hitch length required to rotate planter into transport position.

FIELD TEST

Perform a field test with any change of field and/or planting conditions, seed size or planter adjustment to ensure proper seed placement and operation of row units.

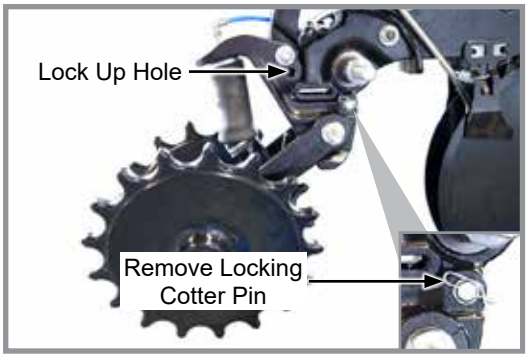
- ❒ Check planter for front to rear and lateral level operation. See “Level Planter”.
- ❒ Check **all** row units to be certain they are running level. Row unit parallel arms should be approximately parallel to the ground when planting.
- ❒ Check row markers for proper operation and adjustment. See “Row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

Reinspect machine after field testing.

- ❒ Hoses And Fittings
- ❒ Bolts And Nuts
- ❒ Cotter Pins And Spring Pins

FIELD CHECK SEED POPULATION

1. Remove locking cotter pin.
2. Lock up one or more sets of closing wheels putting in locked position.
3. Pull closing wheel arm up and align with lock up hole. Secure with ½" x 3½" clevis pin and locking cotter pin.



Closing Wheels in Lowered Position


Closing Wheels in Raised Position

4. 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.

Planting Depth Adjustment

5. Measure ⅟₁₀₀₀ of an acre. See chart for correct distance for row width being planted. For example, planting 30” rows ⅟₁₀₀₀ of an acre is 17’ 5”.

⅟₁₀₀₀ **Acre Seed Population Count Row Width/ Distance**		
	15" Rows	30" Rows
Distance	34'10"	17'5"

NOTE: Seeds may bounce or roll when planting with closing wheels raised and planting depth set shallow affecting seed spacing accuracy.

6. Count seeds in measured distance.

7. Multiply number of seeds placed in 1/1000 of an acre by 1000. This gives total population.

> EXAMPLE: 30" row spacing 17' 5" equals 1/1000 acre.
>
> 26 seeds counted x 1000 = 26,000 seeds per acre

DETERMINING POUNDS PER ACRE

Seeds per acre ÷ Seeds per pound (from label) = Pounds per acre

If seeds per pound information is not available use the following averages:
2,600 seeds per pound for medium size soybeans
15,000 seeds per pound for medium size milo/grain sorghum
4,500 seeds per pound for medium size cotton

DETERMINING BUSHELS PER ACRE

Pounds per acre ÷ Seed unit weight = Bushels per acre

Average Unit Weight of:
1 Bushel Soybeans = 60 Pounds (27.2 kg)
1 Bushel Milo/Grain Sorghum = 56 Pounds (25.4 kg)
1 Bushel Cotton = 32 Pounds (14.5 kg)

YETTER 2940 AIR ADJUST RESIDUE MANAGER

DANGER

Serious injury or death may occur if modifications are made to water seperator valve, pressure switch, safety relief valve or other comonents that control tank pressure.

Never make adjustments to components that control tank pressure. Do not make alterations to factory operating pressure settings. Check operation of safety valve on a regular basis and never operate without a factory approved safety valve.

DANGER

Serious injury or death may occur if accessories or attachments are operated above the manufacturer's recommened pressure ratings, causing them to explode or fly apart.

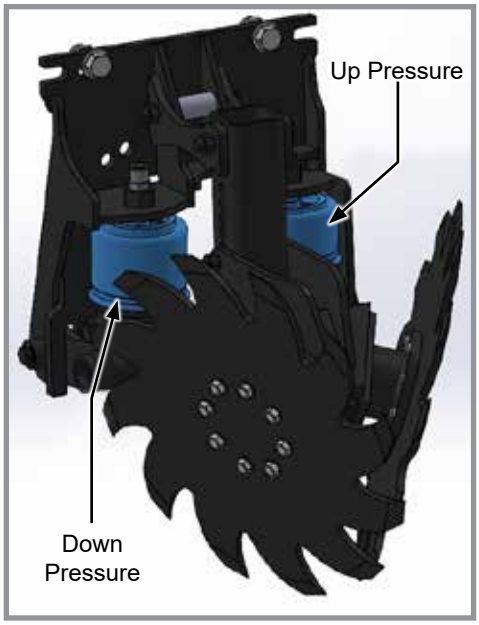
Do not use air tools or attachments before reading operator's manual to determine maximum pressure recommendations. Never exceed manufacturer's allowable pressure ratings. Do not use compressor to inflate small low pressure objects such as toys.

WARNING

Serious burn injuries could occur from touching exposed metal parts such as compressor head, copper/ braided discharge lines, and hydraulic motor during operation and even after compressor is shut down for sometime.

Never touch any of the exposed metal parts during operation and for an extended period of time after air compressor has shut down. Do not attempt maintenance on the unit until it has beeen allowed to completely cool.

Yetter Coulter/Row Cleaner Combo



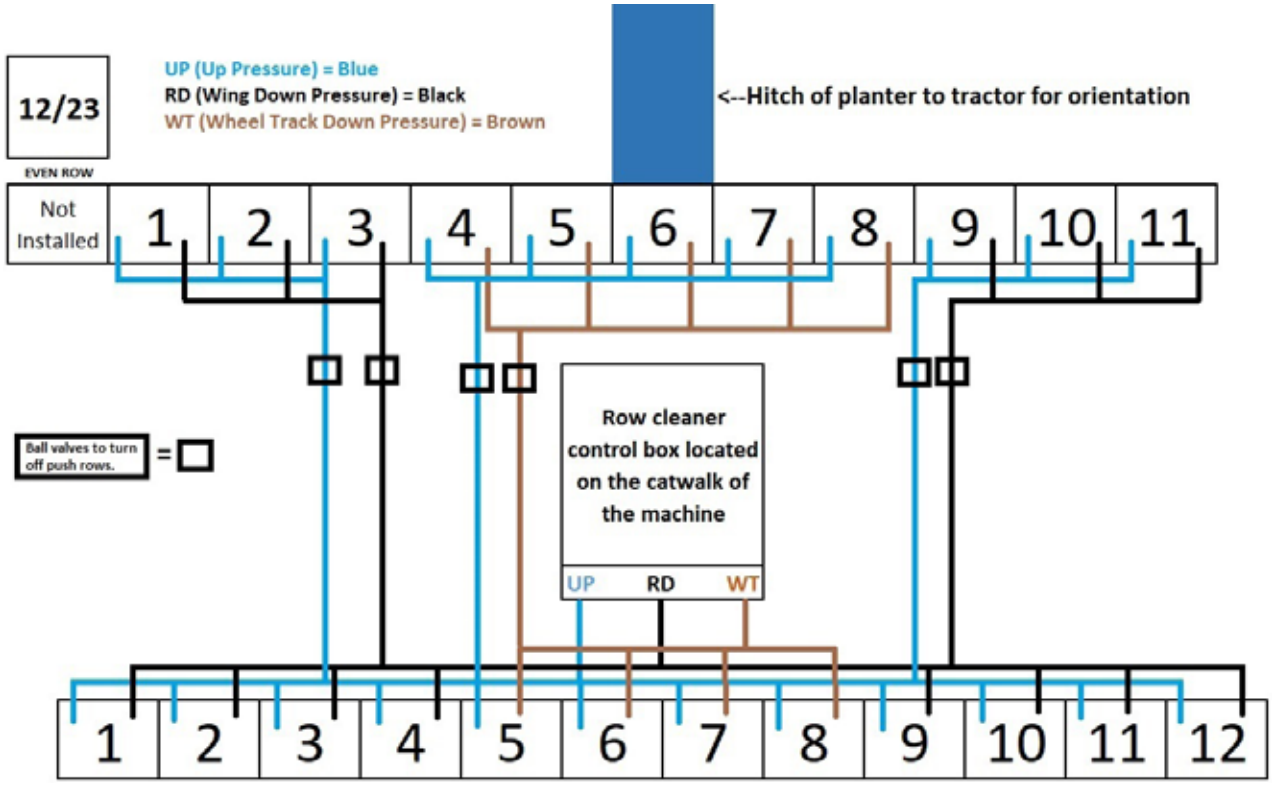
Yetter Row Cleaner

Model	Width	Row Size	Configuration
5670	30	12/23	Pull (4-4-4), Push (3-5-3)
5670	40	16/31	Pull (5-6-5), Push (4-7-4)
5670	30	12/24	Pull (4-4-4), Push (4-5-3)
5670	40	16/32	Pull (5-6-5), Push (5-7-4)

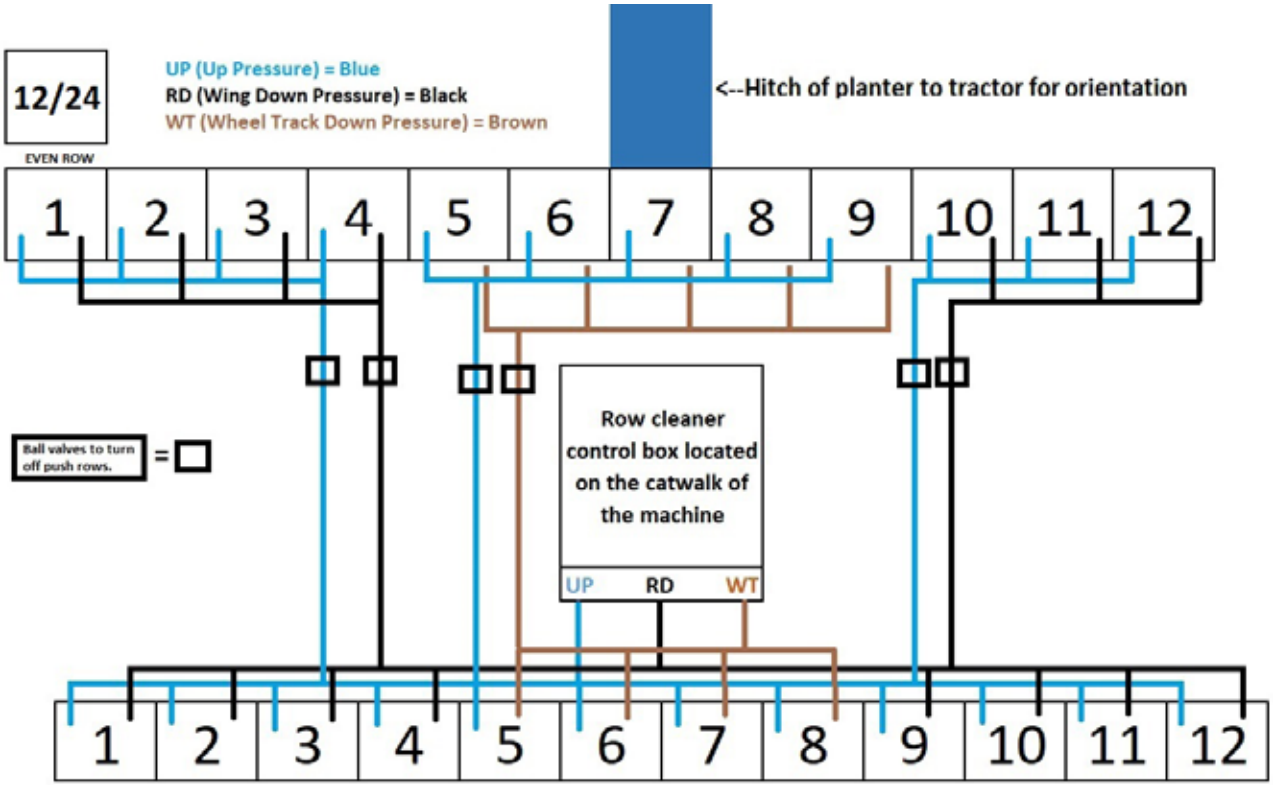
Wheel track layouts shown below: WT circuit is dictated by where the wing flex happens. Stub wing row units are all on wheel track circuit.

Kinze Air Tubing Chart			
Kinze Part Number	**Size**	**Color**	**Function**
GD17150-17 (250')	⅜"	Blue	• Yetter UP Pressure • Electric Compressr to Tank • Tank to Valve Supply (If Electric Compressor) • Valve to Valve Supply
GD17151-21 (250')	¼"	Blue	• PDP Branch Lines • PCW Branch Lines
G10609001 (500')	⅜"	Black	• Yetter Wing Section Down Pressure • Fertilizer Branch Lines
G10658001 (500')	⅜"	Brown	• Yetter Wheel Track Section Down Pressure • Yetter Tank to Yetter Control Box • Supply to Regulator for PDP or PCW (If Equipped w/Yetter)
G10829307 (500')	⅜"	Purple	• PDP Main Trunk
G10829507 (500')	⅜"	White	• PCW Center Section Main Trunk
G10829407 (500')	⅜"	Grey	• PCW Wing Section Main Trunk
PDP = Pneumatic Down Pressure PCW = Pneumatic Closing Wheels (Air Closing Wheels)			

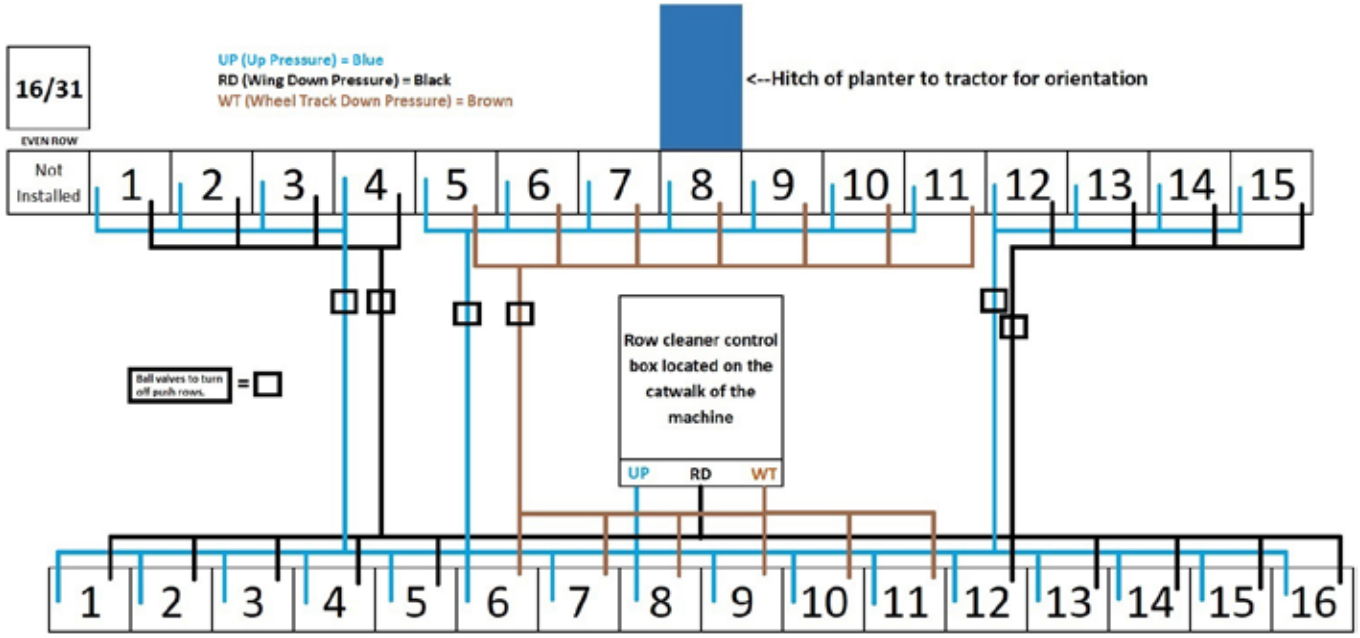
12 Row with Split Rows (23 Rows/15" Spacing)



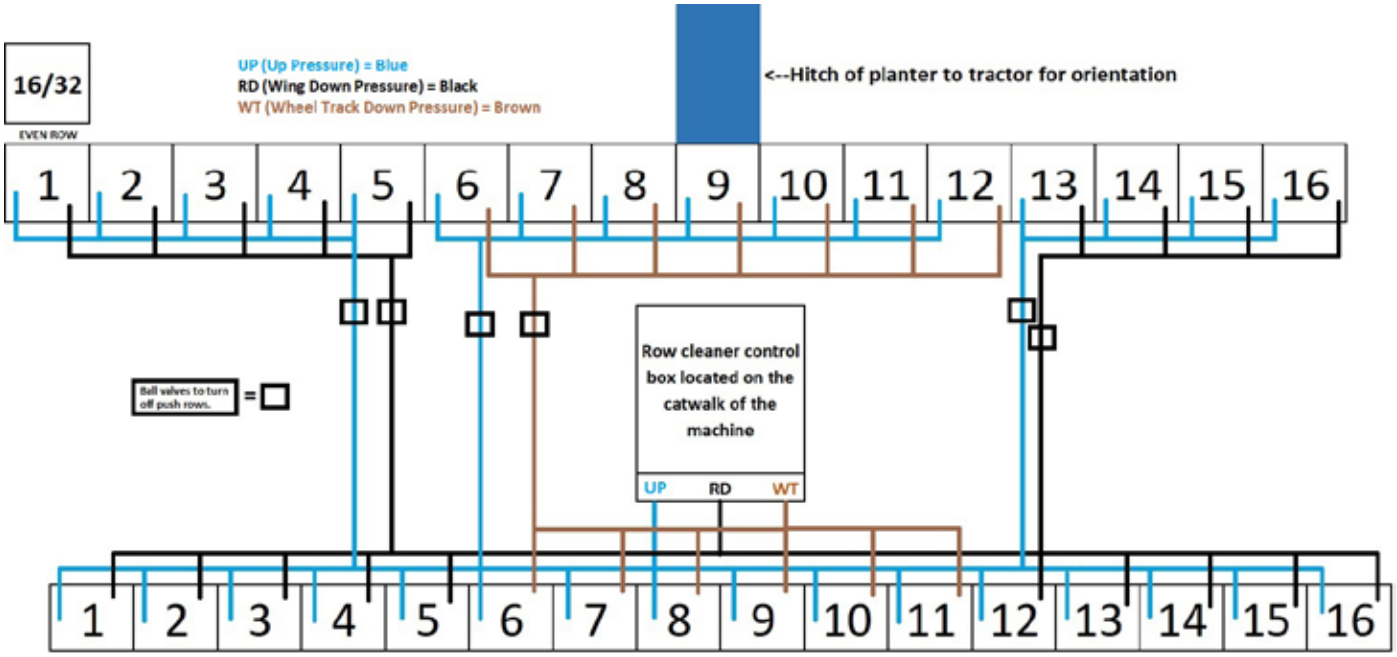
12 Row with Split Rows and Even-Row (24 Rows/15" Spacing)



16 Row with Split Rows (31 Rows/15" Spacing)



16 Row with Split Rows and Even-Row (32 Rows/15" Spacing)



Operation

Failure to properly set the planter frame height and levelness can result in less than successful operation of the planter and the row cleaners. This may result in damaged equipment. All operators should read and thoroughly understand the instructions given prior to using the Yetter residue managers.

NOTE: DO NOT use row cleaners if the planter is not adjusted properly!

For proper operation of the planter attachments and row units, it is imperative that the planter toolbars and row unit parallel arms be level side-to-side and front-to-rear. The toolbar frame should operate at a recommended height from the planting surface.

Refer to “Leveling Planter” in the machine operation section of the planter operator’s manual. Always recheck planter after filling with seed and fertilizer to make sure level hasn’t changed with added weight.

System Start Up Procedure

NOTE: For proper operation, the planter frame must operate level (fore, aft, and side to side) and at the correct height.

NOTE: Regularly inspect the row cleaners for loose or worn bolts and hardware. Repair or replace as needed.

System startup procedure should be followed every time the system is turned on. This will ensure that component parts of the system are working correctly. Refer to the Blue Vantage Operator's Manual for display operation.

Begin outside of a planting task to ensure the compressor will build pressure and there are no leaks in the system. If the compressor turns on and the system builds pressure the compressor will shut off at 140-145 psi. If 140-145 psi isn't reached and held while there are no residue manager adjustments being made, there is likely a leak in the system. Check hose connections and walk around planter listening for leaks. Best to do this investigation without vac and bulk fill fans running. When compressor has shut off because it reached the appropriate pressure, select the quick raise preset to apply air to the air bags to raise all of the residue managers. Allow the compressor to refill if it dropped below 120 psi while doing this. This may or may not happen based on the number of rows on your planter. (12 row planter requires less air to make adjustments when compared to a 36 row planter)
After it is verified all residue managers went up, choose another preset on the Blue Vantage display and watch to ensure all row cleaners were adjusted to a lower height appropriately.

System Settings

The amount of down/lift pressure will vary greatly across soil types, tillage practices, soil moisture, row unit weight and many other variables. Manage pressure in the down and/or lift circuits in order to maintain 90%+ ground contact while keeping pressure between 20-60 psi.

Typical starting range for residue managers would be 35 psi up, 30 psi down, and 32 psi WT. Typical starting range for residue mangers w/coulter combo would be 30 psi up, 35 psi down, and 37 psi WT. Pressure settings can be saved as a preset in the Blue Vantage Display. All of the above information can be edited on the row cleaners tab of the Actions page in the Blue Vantage display.

If the residue managers are not removing enough residue, add down pressure or subtract up pressure. If the residue managers are being too aggressive, subtract down pressure or add up pressure.

Normal operating ranges:
Down Pressure Bags: 20-60 psi
Lift Pressure Bags: 20-60 psi
Tank Pressure: The gauge at the tank will read between 140-145 psi when full. The tank pressure reading on the Blue Vantage display will be around 100-120 psi, depending on what the pressure regulator on the water separator assembly is set at. The system has a safety relief valve that will automatically exhaust excess pressure in the event that the pressure would exceed 175 psi.

The health screen on the Blue Vantage display will show:

- Pressure supplied to pneumatic control box (psi)
- RU up pressure (psi)
- WT down pressure (psi)
- RD down pressure (psi)
- Compressor status
- Total number of compressor run hours

ROW CLEANER DO'S AND DON'TS

1. DO NOT use as a tillage tool; Residue Managers are designed to move crop residue and to break up clods and crust.

2. DO NOT operate planter at slow speeds. Ground speed affects how aggressive the residue manager wheels are. Operate at sufficient speed (refer to you OEM planter manufacturer manual) to maintain good residue flow.

3. DO NOT expect 100% of crop residue to be cleared, it is not necessary and would necessitate engaging the soil. The width of path cleared depends on ground conditions, depth setting, and ground speed.

4. DO expect to see wheels occasionally quit turning, indicating ideal (shallow) setting which is not moving soil.

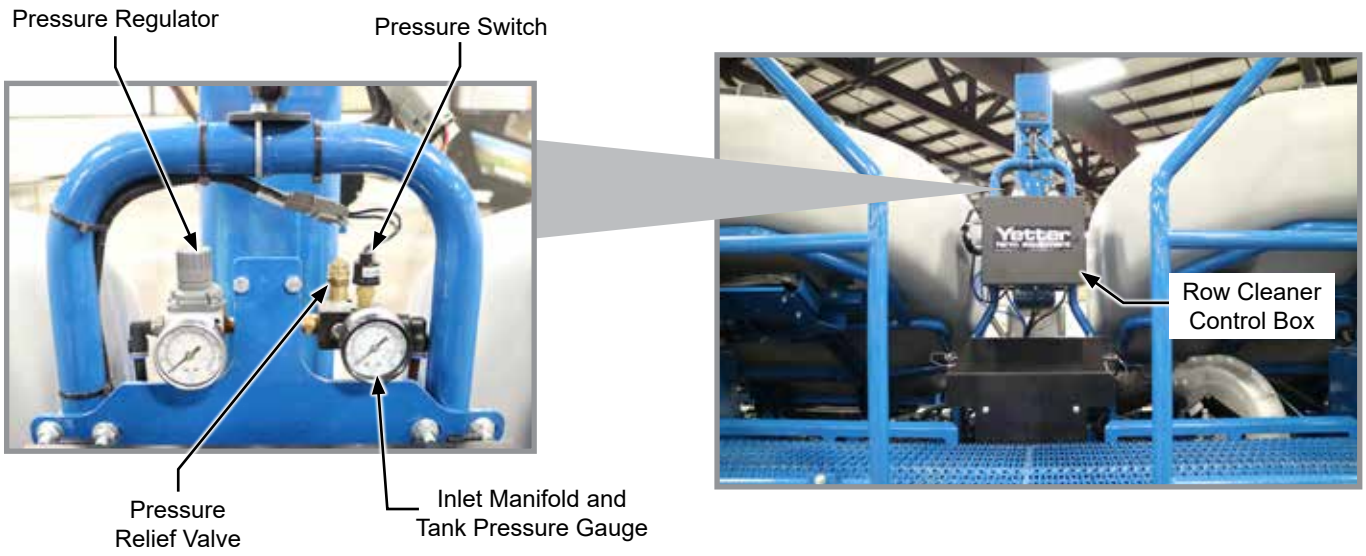
5. DO adjust toolbar frame height and drawbar correctly. It is very important to ensure planter opener will follow ground contours properly.

6. DO NOT run air pressure to bags below 20 psi or above 60 psi. Full range of travel can be achieved between these settings.

7. DO grease the hub cavity of the bearings regularly. Even though the bearings are sealed, filling the hub keeps moisture, dirt, and debris from entering the hub and ruining the seal.

8. DO NOT run the coulter blades, if equipped, deeper than the disc opener blades. Coulter should be set to run even or slightly above disc opening blades depth. See "Yetter 2940 Air Adjust Residue Manager" on page 2-38 in Row Unit Section for more information.

Row Cleaner Control Box



Row Cleaner Control Box - Contains valves that control air pressure delivered to 3 circuits on planter.

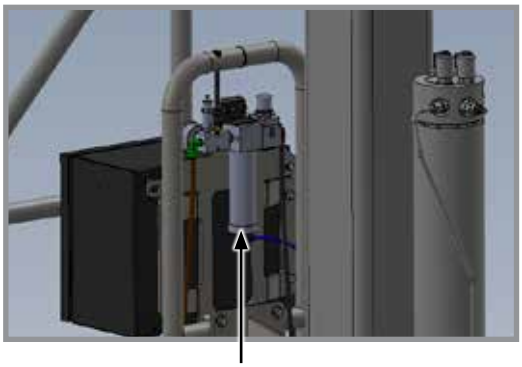
Inlet Manifold and Tank Pressure Gauge - Gauge = 140-145 psi tank full, 120 psi when compressor turns back on.

Pressure Regulator - Sets pressure that goes into control box, should be set between 100-120 psi.

Pressure Switch - Turns on compressor at 120 psi.

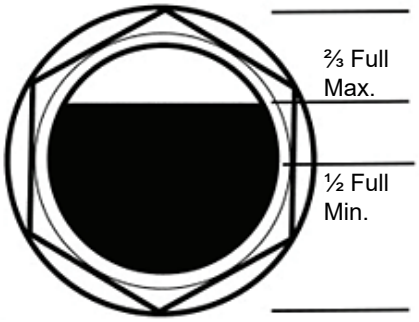
Pressure Relief Valve - Will discharge air at 175 psi.

Air to Water Separator - Removes water from system before air is delivered to control valves in box.



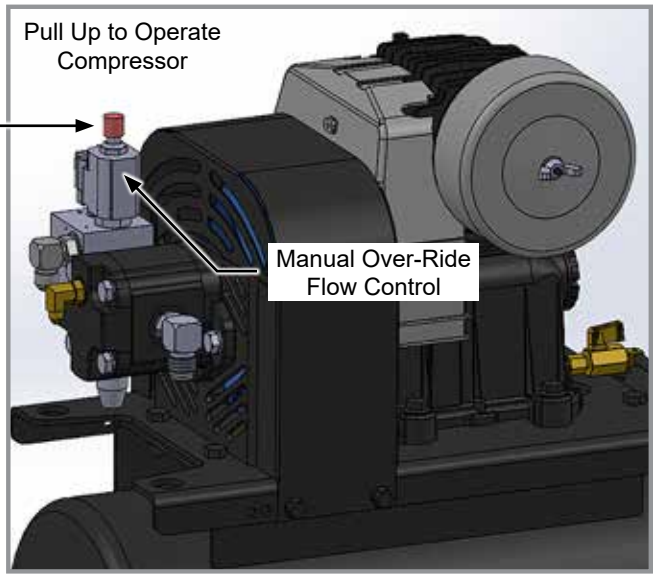
Air Compressor

Prior to daily operation check the oil in the compressor when the planter is on level ground. The oil level can be checked in the clear sight glass on the end of the compressor. Always maintain oil level to read 2/3 full on the sight glass. Oil levels over this amount can result in oil blowing past rings or through crankcase breather. Lower amounts of oil can result in insufficient lubrication of moving parts.



The compressor has a manual over-ride for troubleshooting, to operate manual override pull up on the knurled knob on hydraulic valve to operate compressor.

When tractor is at operating PTO speed, it will flow at 4 gpm that the compressor is set to at the factory. If user continues to pull the knob, pressure will eventually relieve at blow off valve at the end of copper tube assembly going to tank. When knob is released, flow stops and compressor ceases operation.



Residue Manager Settings

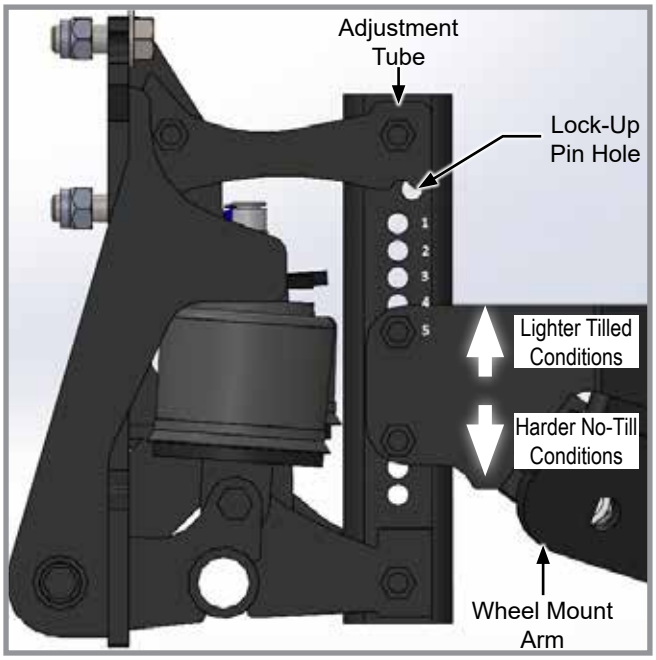
The default position for the wheel mount arm will be set in the fifth hole from the top.

Heavy tillage conditions - move wheel mount arm up to the 3rd or 4th hole.

No-till conditions - Move wheel mount arm down to the 6th or 7th hole from the top.

Residue manager wheels should lift completely out of the ground but also be 50% of travel with desired setting for each specific field condition. Wheel mount will be higher in tilled conditions and lower in harder no-till conditions.

To adjust position, 9/16 sockets/wrenches are required. Hardware should be tightened so there is no motion between wheel mount arm and adjustment tube.

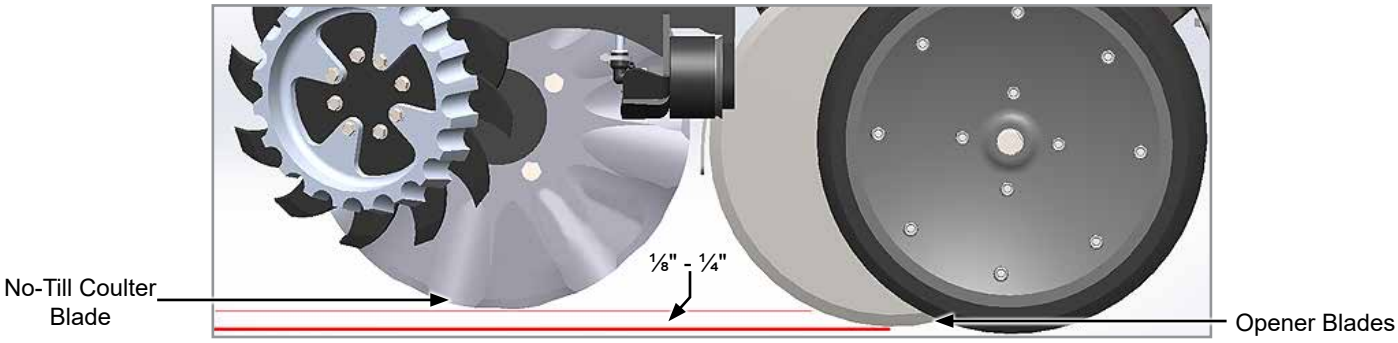


Coulter Combo Settings

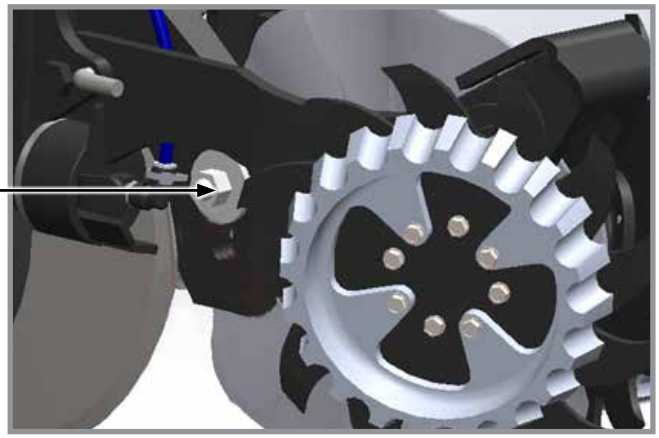
Maintain a gap between the bottom of no-till coulter and bottom of opener blades.

If no-till coulters are deeper than opener blades, adjustments are necessary.

Check dimension while planter is down on a level concrete floor, ⅛" - ¼" spacing needs to be maintained between bottom of no till coulter and bottom of opener blades. As blades wear recheck spacing. Replace blades as needed.



Adjust position of no-till coulter, loosen the nut and move coulter vertically to proper location.



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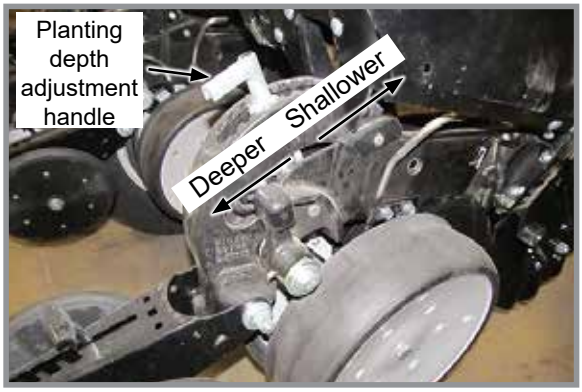
PLANTING DEPTH

Planting depth is maintained by adjustable row unit gauge wheels. Depth adjustment range is approximately ½" to 3½".

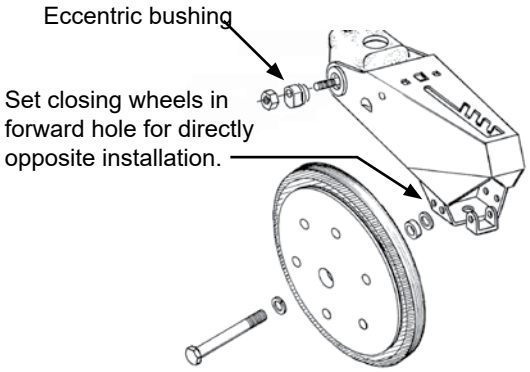


1. Raise planter to remove weight from wheels.
2. Push down on depth adjustment handle and reposition it forward to decrease or rearward to increase planting depth. Initially adjust all units to the same setting.
3. Lower planter and check operation and planting depth of all row units. Readjust individual rows as needed for uniform operation.

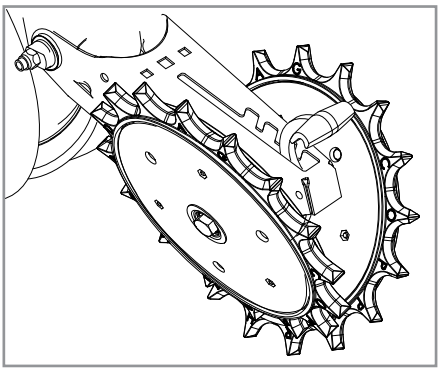
CLOSING WHEEL GENERAL ADJUSTMENTS

Eccentric bushings in the wheel arm stop allow for lateral adjustment of the “V” closing wheel assembly. Use a ¾” wrench to loosen hardware attaching closing wheel arm to wheel arm stop. Use another ¾” wrench to turn eccentric bushings until **closing wheels are aligned with seed trench**. Tighten hardware.

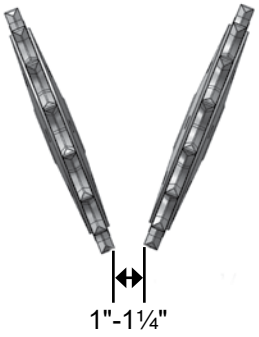
Closing wheels can be installed “offset” (to improve residue flow) or “directly” opposite. Use forward installation holes If set “directly” opposite.



Spiked Closing Wheel



Spiked Closing Wheel



Spiked closing wheels crumble the sidewall, allowing roots to pentrate soil. They can be used on pull row units and push row units.

Align spiked closing wheels straight across from each other, in most forward holes on closing wheel arm. Set the wheels 1” - 1¼” (2.5 - 3.1 cm) apart at the closest point.

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AIR ADJUST CLOSING WHEEL ARM (PCW)

Adjust closing wheels from the cab for optimum seed-to-soil contact using Blue Vantage-controlled, air-adjustable closing wheels. Refer to your Blue Vantage Operator Manual for more information.

NOTICE

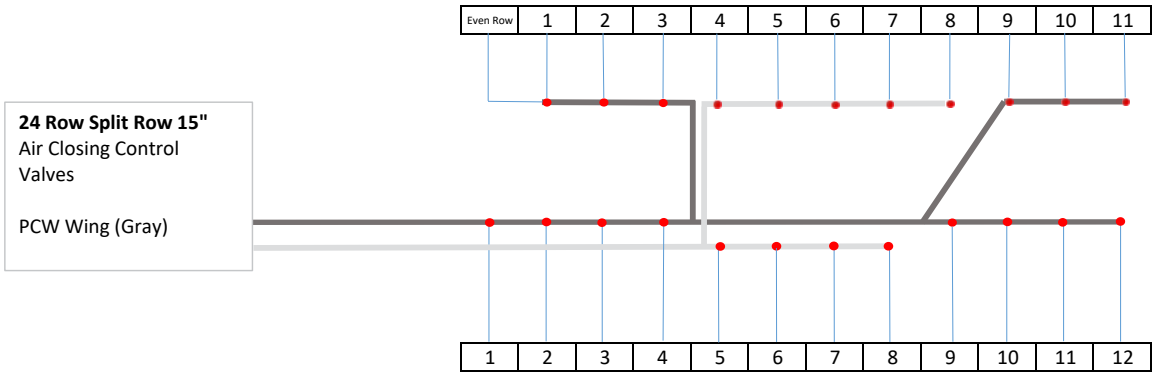
When inflating air bags, ensure the airbags are not folded. If a bag is folded, reduce air pressure to 25 psi and straighten out bag. If bag runs folded, this will reduce the performance life of the air bag.

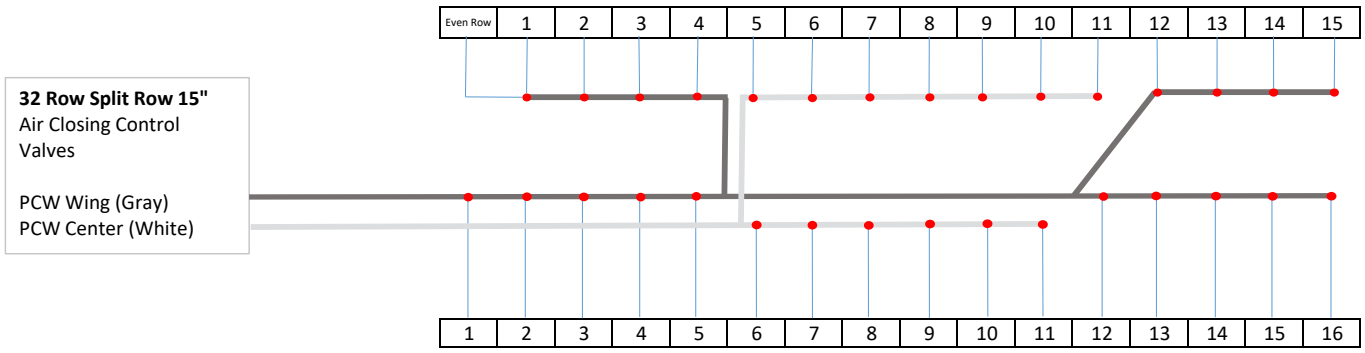
Kinze Air Tubing Chart

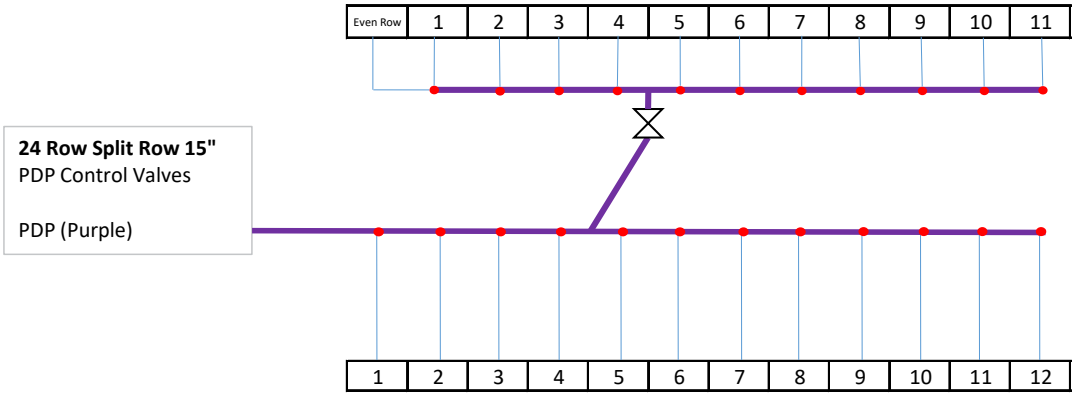
Kinze Part Number	Size	Color	Function
GD17150-17 (250')	⅜"	Blue	• Yetter UP Pressure • Electric Compressr to Tank • Tank to Valve Supply (If Electric Compressor) • Valve to Valve Supply
GD17151-21 (250')	¼"	Blue	• PDP Branch Lines • PCW Branch Lines
G10609001 (500')	⅜"	Black	• Yetter Wing Section Down Pressure • Fertilizer Branch Lines
G10658001 (500')	⅜"	Brown	• Yetter Wheel Track Section Down Pressure • Yetter Tank to Yetter Control Box • Supply to Regulator for PDP or PCW (If Equipped w/Yetter)
G10829307 (500')	⅜"	Purple	• PDP Main Trunk
G10829507 (500')	⅜"	White	• PCW Center Section Main Trunk
G10829407 (500')	⅜"	Grey	• PCW Wing Section Main Trunk

PDP = Pneumatic Down Pressure
PCW = Pneumatic Closing Wheels (Air Closing Wheels)

PDP AND AIR CLOSING WHEEL SCHEMATICS

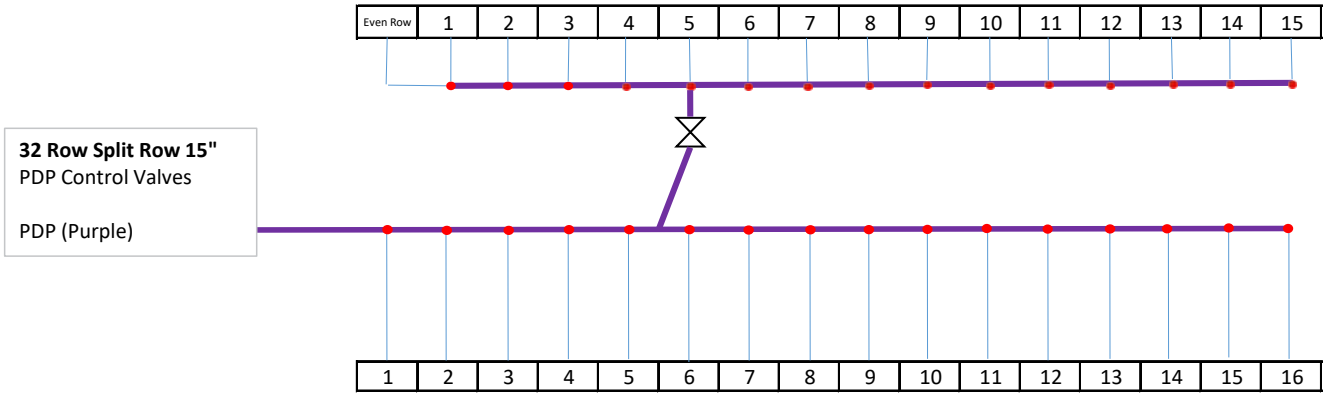






24 Row Split Row 15"
PDP Control Valves

PDP (Purple)



32 Row Split Row 15"
PDP Control Valves

PDP (Purple)

ROW UNIT MOUNTED NO TILL COULTER

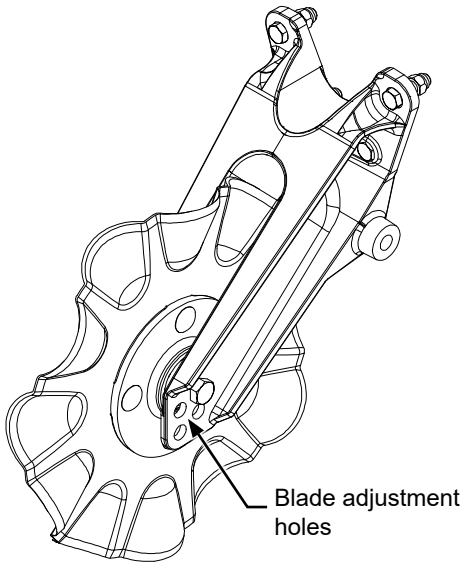
Row unit mounted no till coulter blades may be used on row units.

Coulter blade can be adjusted to one of four ½" incremental settings in the forked arm. Initial location is the top hole.

Move blade as it wears to one of the three lower hole to maintain coulter blade at or slightly above opener discs. Adjust coulter below depth of double disc opener blades in very hard soil conditions such as compacted wheel tracks to improve opener penetration and cutting of surface residue.

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

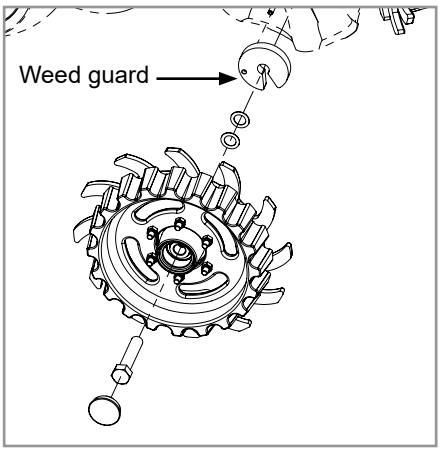
NOTE: Torque ⅝" spindle hardware to 120 ft-lb (162.7 N-m).



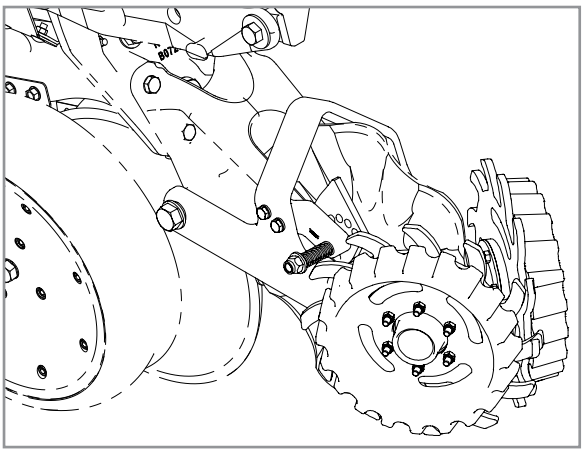
Row Unit Mounted No Till Coulter

COULTER MOUNTED RESIDUE WHEELS W/TREADER

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



NOTE: Opening in weed guard must face down.



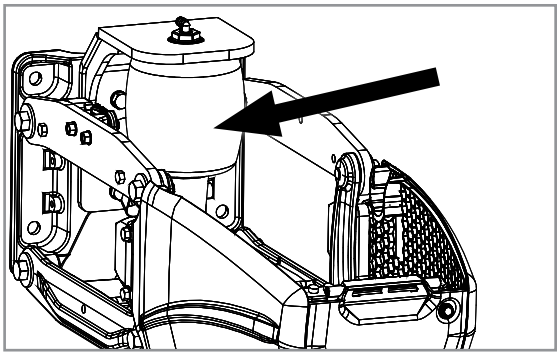
Residue wheels attach to row unit mounted coulter with two cap screws and sleeves allowing unit to free-float. A 2-position spindle bolt mounting positions wheels interlocked or staggered. Depth adjustment is made with a spring-loaded cam and pin with 8 positions in 7⁄16” (6 mm) increments. A high point on the cam allows wheels to be locked up.

A weed guard on the inboard side of each wheel helps prevent weed wrap which can cause premature bearing failure.

PNEUMATIC DOWN PRESSURE (PDP)

NOTE: Adjust down pressure with planter lowered and row openers in ground for most accurate adjustment. Pressure can be adjusted using your Blue Vantage monitor. Refer to the Blue Vantage manual for more information.

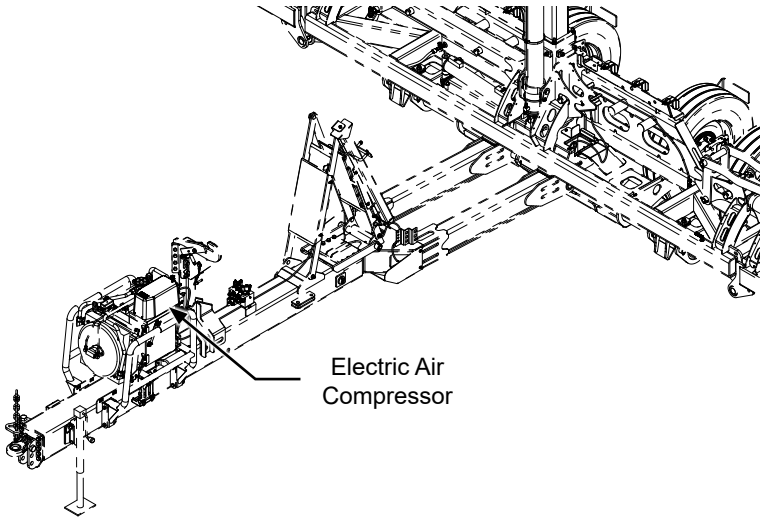
Row unit down pressure can be adjusted on-the-go as field conditions change. Refer to M0288 - Kinze Blue Vantage Operator's Manual for pressure adjustment with Blue Vantage.



Row Unit Air Spring

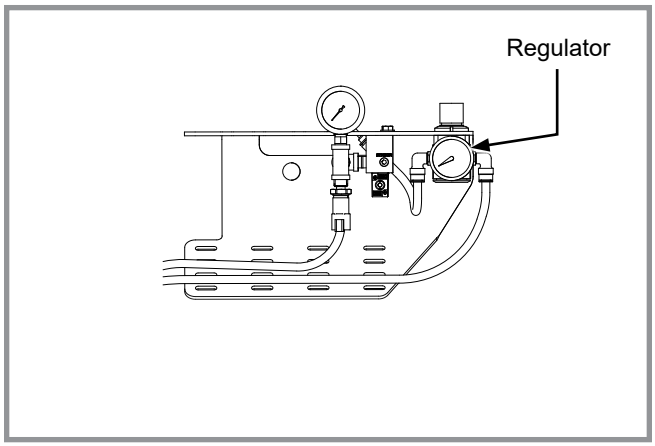
Electric Air Compressor: If equipped with an electric air compressor, tank pressure will be limited to 120 psi through compressor limit switch.

NOTE: Air tank can be prefilled using the valve stem. DO NOT prefill above 120 psi. This is not applicable if Yetter is installed.



Hydraulic Compressor: If equipped with a hydraulic compressor, tank pressure will be as high as 140 psi. An additional regulator is included to reduce pressure to air control valves for PDP as well as air adjust closing wheels (PCW) if equipped. This regulator should be set to 110-120 psi max.

Hydraulic Compressor



PDP Air Supply W/Yetter Air Compressor

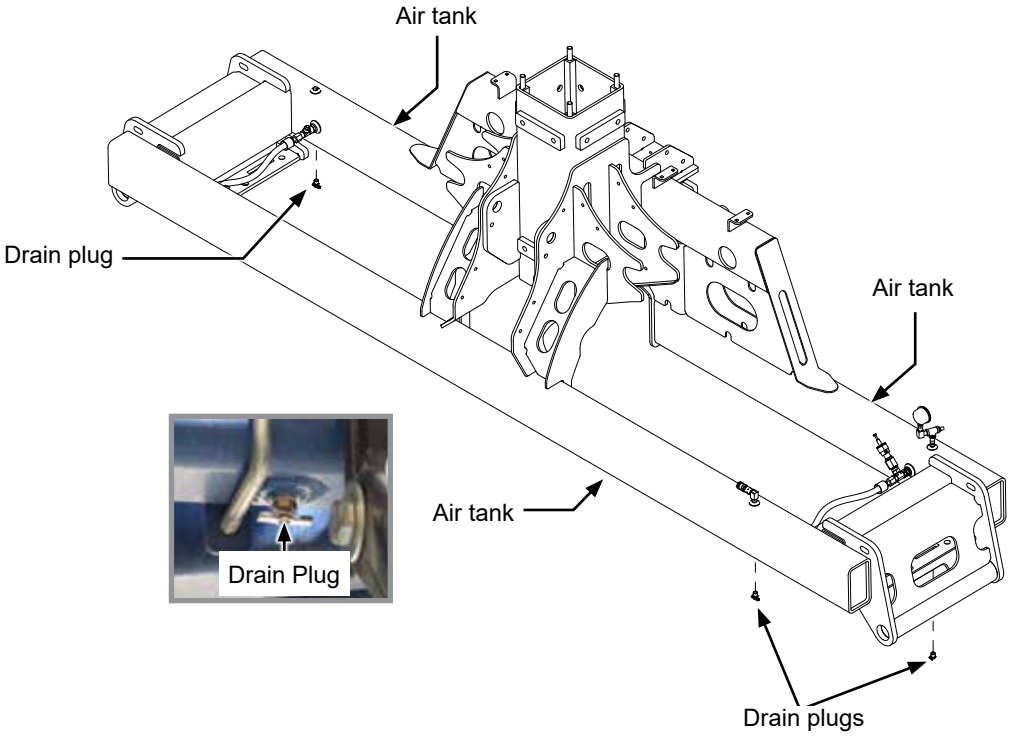
Kinze Air Tubing Chart			
Kinze Part Number	**Size**	**Color**	**Function**
GD17150-17 (250')	⅜"	Blue	• Yetter UP Pressure • Electric Compressr to Tank • Tank to Valve Supply (If Electric Compressor) • Valve to Valve Supply
GD17151-21 (250')	¼"	Blue	• PDP Branch Lines • PCW Branch Lines
G10609001 (500')	⅜"	Black	• Yetter Wing Section Down Pressure • Fertilizer Branch Lines
G10658001 (500')	⅜"	Brown	• Yetter Wheel Track Section Down Pressure • Yetter Tank to Yetter Control Box • Supply to Regulator for PDP or PCW (If Equipped w/Yetter)
G10829307 (500')	⅜"	Purple	• PDP Main Trunk
G10829507 (500')	⅜"	White	• PCW Center Section Main Trunk
G10829407 (500')	⅜"	Grey	• PCW Wing Section Main Trunk
PDP = Pneumatic Down Pressure PCW = Pneumatic Closing Wheels (Air Closing Wheels)			

PNEUMATIC DOWN PRESSURE AIR COMPRESSOR TANKS

The air tanks are located in the frame. Moisture should be drained daily from the tank. Tank should be drained completely for storage.

To drain tank, locate drain plug on the bottom of tank . Stand off to the side of tank and pull cable attached to drain.

NOTE: If mositure is not drained from tank rust particles will form inside tank.



Air Tank and Drain Plug Locations (12 Row Shown)

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TRUE DEPTH

True Depth provides on demand row by row hydraulic row unit down force ranging from 150 lbs. up force to 650 lbs. down force at 2350 psi.

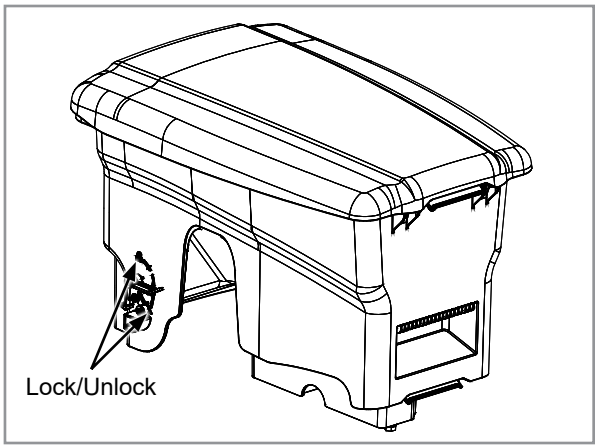
True Depth

SEED HOPPERS

Seed hoppers have a capacity option of 0.8 bushels (True Rate) or 0.9 bushels (True Speed). Mini hopper extension is also available.

Use clean seed and make certain there are no foreign objects inside when filling seed hopper. **Place hopper lids on hoppers after filling to prevent accumulation of dust or dirt in seed meter which can cause premature wear.**

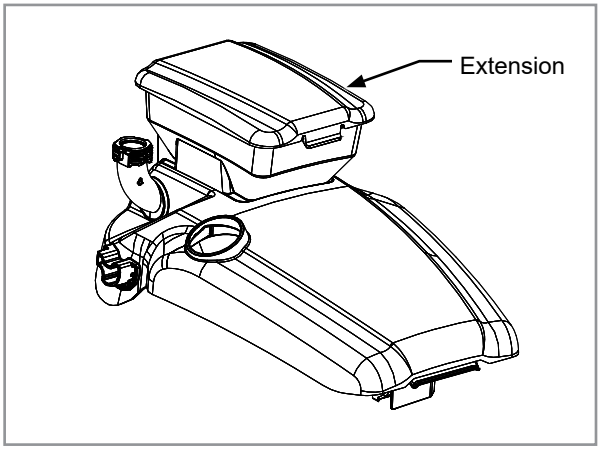
Periodically empty hoppers completely to remove any foreign objects and to ensure proper seed meter operation.



Seed Hopper

<u>To remove hopper:</u>
1. Disconnect vacuum meter and drive connections.
2. Unlock each side of hopper.
3. Unlock rear of hopper.
4. Lift vertically off hopper support.

<u>To install hopper:</u>
1. Align hopper onto hopper support.
2. Lock rear of hopper.
3. Lock each side of hopper.



Mini Hopper Extension

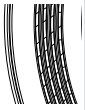
MANUAL RUN BUTTON (BLUE DRIVE)

Use the manual run button to turn on the seed meter and all optional equipment on each row unit to check functionality.

TRUE RATE SETTINGS

Crop		**Seed Disc Kit	Seed Disc Part No.	Ejector Wheel (Color)	Cells	Seed Size Range	Singulator Zone Setting	Vacuum Setting Inches of Water (kPa)	Lubricant
	Corn ‡ Large Sweet Corn	G11152X	B1219 (Light Blue)	1 row 5 punches (Light Blue)	40	35-70 lbs/80k (2500-5000 seeds/kg)	2	18-20 (4.5-5.0)	**Graphite* Talc*** Bayer Fluency† (if mandated)
	Soybean	G11047X	B1232 (Black)	2 rows 6 punches (Black)	120	2200-4000 seeds/lb (4850-8820 seeds/kg)	0	10-14 (2.5-3.5)	**Graphite* Talc*** Bayer Fluency† (if mandated)
	Soybean Disc	G11048X	B1238 (Black)	1 row 6 punches (Green)	60	2200-4000 seeds/lb (4850-8820 seeds/kg)	0	10-14 (2.5-3.5)	**Graphite* Talc*** Bayer Fluency† (if mandated)
	Sugar Beet	G11154X	B1229 (Dark Orange)	1 row 6 punches (Dark Orange)	60	Pelletized	2	15 (3.75)	**Graphite*** Bayer Fluency† (if mandated)
	Milo	G11045X	B1229 (Dark Orange)	1 row 6 punches (Dark Orange)	60	10,000-20,000 seeds/lb (22000-44000 seeds/kg)	2	15 (3.75)	**Graphite* Talc*** Bayer Fluency† (if mandated)
	Sunflower ‡ Small Sweet Corn	G11153X	B1230 (Gray)	1 row 5 punches (Gray)	40	Oil seeds #2, 3, 4	2	12-18 (3.0-4.5)	**Graphite* Talc*** Bayer Fluency† (if mandated)
	Sunflower	G11044X	B1230 (Gray)	1 row 5 punches (Gray)	40	Oil seeds #5	2	5-8 (1.25-2.0)	**Graphite* Talc*** Bayer Fluency† (if mandated)
	Specialty Disc 1	G11105X	B1233 (Green)	1 row 6 punches (Green)	60	Cotton	2	15-20 (3.75-5.0)	**Graphite* Talc as needed*** Bayer Fluency† (if mandated)

TRUE RATE SETTINGS

Crop		**Seed Disc Kit	Seed Disc Part No.	Ejector Wheel (Color)	Cells	Seed Size Range	Singulator Zone Setting	Vacuum Setting Inches of Water (kPa)	Lubricant
	Specialty Disc 2	G11106X	B1235 (Brown)	1 row 6 punches (Green)	60	Black turtle & navy edible beans	2	15-20 (3.75-5.0)	**Graphite* Talc as needed*** Bayer Fluency† (if mandated)
	Specialty Disc 3	G11107X	B1234 (Dark Blue)	1 row 6 punches (Green)	60	Pinto & Great Northern edible beans & low-rate soybean	2	15-20 (3.75-5.0)	**Graphite* Talc as needed*** Bayer Fluency† (if mandated)
	Wheat Disc	G11042X	B1236 (Purple)	Brush Type	54	N/A Volumetric	0	6-16 (15-41)	**Graphite* Talc as needed*** Bayer Fluency† (if mandated)
	Wheat Disc	G11332X	10783001 (Red)	3 rows 9 punches (Red)	231	8,000-20,000 seeds/lb (17,600-44,000 seeds/kg)	§N/A	15-24	**Graphite* Talc as needed*** Bayer Fluency† (if mandated)

Install selected seed disc. Position vacuum cover on meter by aligning keyhole slots over bolt heads. Push cover on meter and turn counter clockwise to lock in place.

***For More information on application rate, see "Additives" on page 3-20.**
****Includes seed disc, ejector wheel, and spring.**

†Bayer Fluency Agent is only required to be used in place of graphite or talc lubricants on vacuum equipped planters that are sowing neonicotinoid treated seeds in Canada. Refer to "Bayer Fluency Agent" on page 3-21 section for more information.
‡Conventional hoppers only, not applicable with bulk fill.
§Wheat disc wiper must be installed, refer to "Wheat Disc Wiper Installation" on page 3-18.

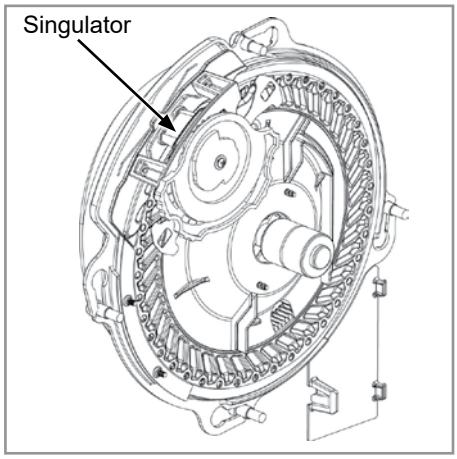
NOTE: See "Field Check Seed Population" on page 2-42 for more information. Always field check seed population to ensure planting rates are correct.

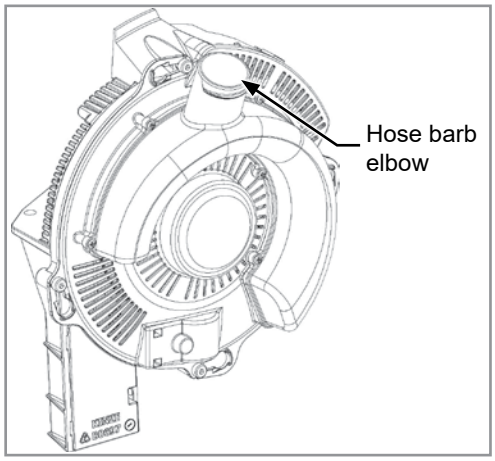
NOTE: Singulator settings are marked from 0 - 3.

NOTE: Mixing seed sizes and shapes affects meter performance. Use consistent seed size and shape.

NOTE: Use 1 tablespoon powdered graphite with each standard hopper fill of seed. Seed treatment, foreign material, dirt or seed chaff may cause gradual reduction of seed disc fill (population). See "Additives" pages for more information.

NOTE: Excessive seed treatment, humidity, and light-weight seed can affect meter performance. Use ½ cup of talc with each standard hopper fill of seed and mix thoroughly to coat all seeds and adjust rates as needed. Use of talc aids seed flow into meter, singulation, and disc seed drop.

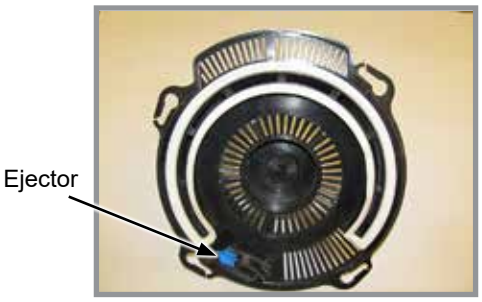




NOTE: Foreign material in seed disc orifices, such as seed chips, hulls, stems, etc., may affect seed delivery. Clean seed ensures accurate seed metering from vacuum seed meter. Remove Seed discs daily to check for buildup of foreign material in seed disc orifices.

Air inlet screens allow air to enter system and aids in keeping field residue or other foreign material out of meter.

See **"Vacuum Seed Meter Maintenance" on page 6-24** and **"Preparation for Storage" on page 6-45** in Lubrication and Maintenance section for more information.



NOTE: Damaged seed or seed containing foreign material will cause plugging of seed disc orifices and require more frequent seed meter cleanout to prevent underplanting.

Wheel-Type Ejectors

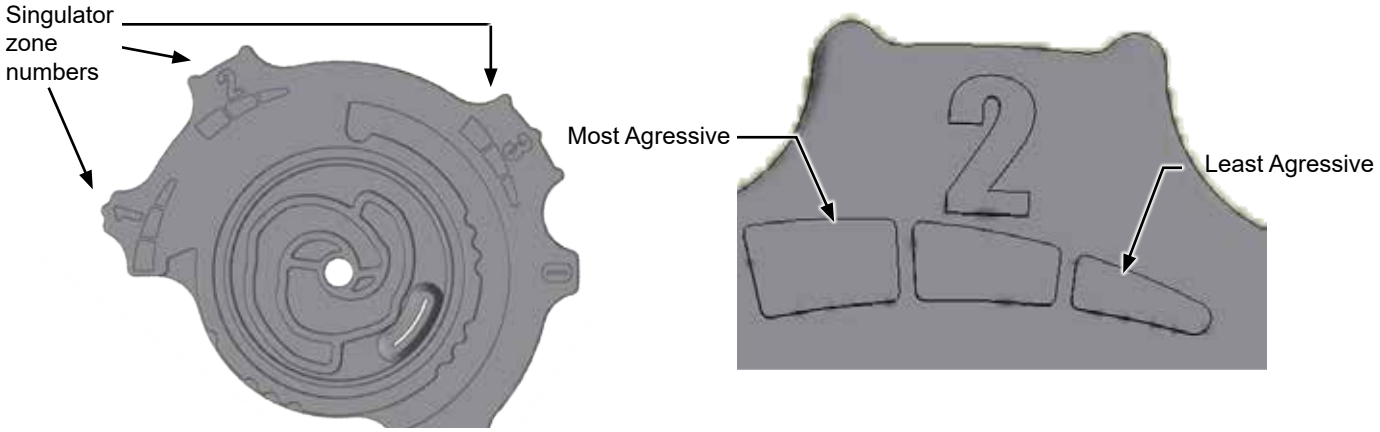
Wheel-type ejectors expel seed remants from seed disc orifices. These ejectors are disc specific and colored coded to match disc.

NOTICE

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

NOTE: Seed size, seed shape, seed treatments, travel speed, and planting rate affect meter performance.

1. Select seed disc and ejector to match crop and population.



Singulator Adjustment Wheel

2. Adjust singulator wheel to initial setting. Seed size, seed shape, seed treatments, travel speed and planting rate all affect meter performance.

3. With vacuum fan running, use priming sequence on Blue Vantage display to load seed into seed disc cells.

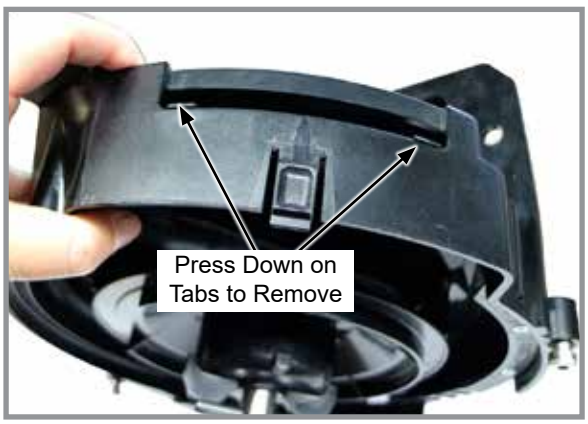
4. Adjust vacuum level to initial setting according to tables on page.

NOTE: Vacuum reading will be much lower when seed disc cells are empty. Load all seed cells before setting vacuum level.

NOTE: Operate vacuum fan 3-5 minutes to bring oil up to normal operating temperature prior to making final vacuum level adjustment.

WHEAT DISC WIPER INSTALLATION

1. Disengage seed drive and remove seed hopper and meter.
2. Rotate seed disc hub clockwise to unlock and remove seed disc.
3. Remove singulator.
4. Install wheat brush singulator in place of original singulator.
5. Reinstall seed disc.
6. To remove wheat brush singulator press on tabs to release.



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ADDITIVES

Lubricant Application Rate	
Graphite	
Conventional Hoppers	1 Tbs./Hopper Fill
Bulk Fill Hoppers	1 Pound Bottle/50 Unit Fill
80/20 Talc-Graphite	
Conventional Hoppers	½ C.**
Bulk Fill Hoppers	4 Pounds/50 Unit Fill**
**Must be evenly mixed during fill.	
Talc	
Conventional Hoppers	¼ C.*
Bulk Fill Hoppers	4 Pounds/50 Unit Fill*
*Double amount of talc for sunflowers.	

GRAPHITE

The use of graphite is the primary recommendation to promote seed flow, provide lubrication for the seed meter and to help dissipate static charge buildup. Among the available dry seed lubricants graphite is the most effective and easiest to use and it requires no mechanical agitation

Conventional Hoppers
Mix one tablespoon of **powdered graphite** with seed each time hoppers are filled. Regular graphite use prolongs life of the seed meter components, improves seed spacing, and may reduce buildup of seed treatments.

NOTE: DO NOT apply graphite only in center of hopper. It will filter too quickly through the seed and not distribute as evenly as desired.

Apply graphite around outer perimeter of hopper.

Bulk Fill Hoppers
Mix 1 pound bottle of powdered graphite each time the bulk seed hopper is filled. Graphite should be added in layers as the bulk seed hoppers are filled. Regular graphite use prolongs life of the seed meter components, improves seed spacing, and may reduce buildup of seed treatments.


Adding graphite to conventional hopper


Adding graphite bulk fill hopper

NOTE: Additional graphite may be required to retard buildup of seed treatments on meter components. More frequent cleaning of monitor seed tubes may be necessary due to use of additional graphite.

80/20 TALC-GRAPHITE
Talc-Graphite lubricant is to be used for treated seed, providing benefits of both talc and graphite. It absorbs mositure to prevent bridging, minmizes static electricity for improved seed flow, and lubricates seed and meters.

Conventional Hoppers
Mix ½ C. of 80/20 talc-graphite evenly with seed each time hoppers are filled. Regular graphite use prolongs life of the seed meter components, improves seed spacing, and may reduce buildup of seed treatments.

NOTE: Talc-Graphite lubricant MUST be mixed evenly during fill.

Bulk Fill Hoppers
Mix 4 lbs. of 80/20 talc-graphite each time the bulk seed hopper is filled. Regular graphite use prolongs life of the seed meter components, improves seed spacing, and may reduce buildup of seed treatments.

NOTE: Talc-Graphite lubricant MUST be mixed evenly during fill.

TALC

Talc seed lubricant may be used as a drying agent in addition to graphite lubrication. The drying agent may improve seed release and/or **to retard buildup of seed treatments on meter components.**

1. Fill hopper ½ full of seed, add ¼ cup (conventional); 2 pounds (Bulk Fill) of talc and **mix thoroughly**.
2. Finish filling hopper, add another ¼ cup (conventional); 2 pounds (Bulk Fill) of talc and **mix thoroughly**.
3. Adjust rate of talc use as needed so all seeds are coated, while avoiding a buildup of talc in bottom of hopper.

Humid conditions and/or small sized seeds with extra seed treatment may require additional talc to maintain meter performance.

NOTE: Liquid seed treatments or innoculants may create buildup on the seed disc or brushes. Check frequently for proper population and/or seed delivery when using any liquid seed treatment.

Completely mix all treatments with seed following manufacturers' recommendations. Seed treatment dumped on top of seed after hopper is filled may not mix properly and cause seed bridging, reducing population or stopping meter from planting.

BAYER FLUENCY AGENT

Bayer Fluency Agent is an alternate seed lubricant by Bayer Crop Science. The intent of this product is to replace graphite and talc lubricants and to lower the amount of dust emissions from planter vacuum fans.

This product, as tested by Kinze, is compatible with Kinze's bulk fill system and vacuum meters. Due to limited testing, wear life characteristics of meters and bulk fill systems that use Bayer Fluency Agent are not yet known. Please follow Bayer Fluency Agent instructions for rates and mixing directions.

NOTE: Presently, Bayer Fluency Agent is only required to be used in Canada with Bulk Fill or Vacuum planters that plant corn or beans treated with neonicotinoids. Farms outside of Canada, farms not using seed treated with neonicotinoids, and farms not using pneutmatic metering devices do not need to use Bayer Fluency Agent. All planters not equipped with vacuums or fans are exempt from using Bayer Fluency Agent.

GRANULAR CHEMICAL

WARNING

Agricultural chemicals can cause death or serious injury to persons, animals, and plants or seriously damage soil, equipment, or property. Read and follow all chemical and equipment manufacturers labels and instructions.

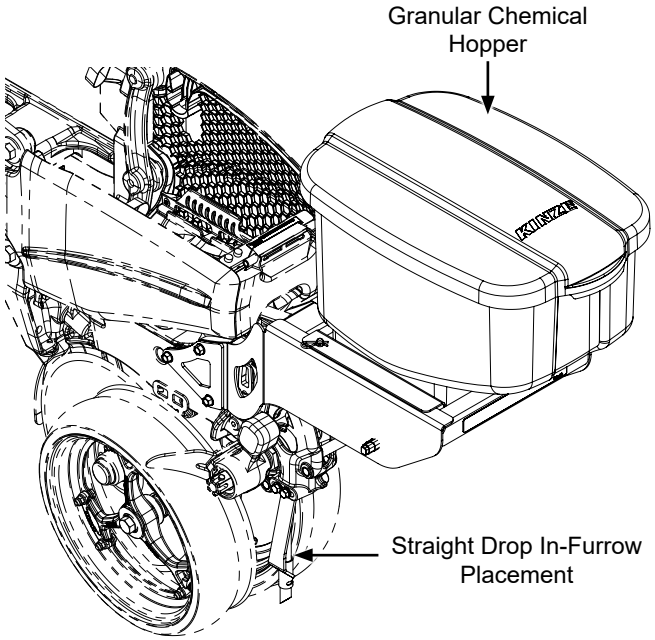
NOTICE

Do not store granular products in granular chemical hoppers. High humidity or rain may cause stored granular products to bind and block the product from flowing.

The granular chemical hopper has a 1.4 cubic feet capacity.

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

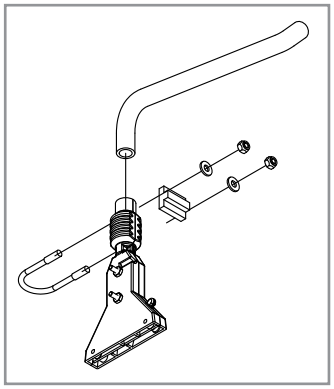
A metering gate on bottom of hopper regulates the application rate. Calibrate using chemical manufacturers' instructions.



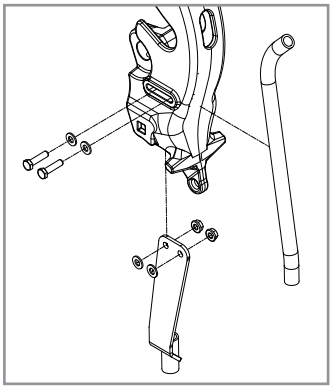
GRANULAR CHEMICAL BANDING OPTIONS

Granular chemical banding options allow 4½" slope-compensating banding, straight drop in-furrow placement or 14" rear banding.

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



4½" Slope-compensating Bander



Straight Drop In-furrow Placement

FIELD CHECK GRANULAR CHEMICAL APPLICATION

Temperature, humidity, speed, ground conditions, flowability of different material, or meter obstructions can affect granular chemical rate of delivery.

WARNING

Agricultural chemicals can cause death or serious injury to persons, animals, and plants or seriously damage soil, equipment, or property. Read and follow all chemical and equipment manufacturers labels and instructions.

Perform a field check to determine application rates.

1. Fill insecticide and/or herbicide hoppers.
2. Place a container under hopper to catch the insecticide.
3. Push the manual run button until it times out. **NOTE: Insecticide will be delivered at 25 RPM for 10 seconds.**
4. Weigh insecticide in grams.
5. Multiply the number of grams by 1.1758 to get density.
6. If using multiple rows, average these numbers to get a more accurate value.

NOTE: Check calibration of all rows.

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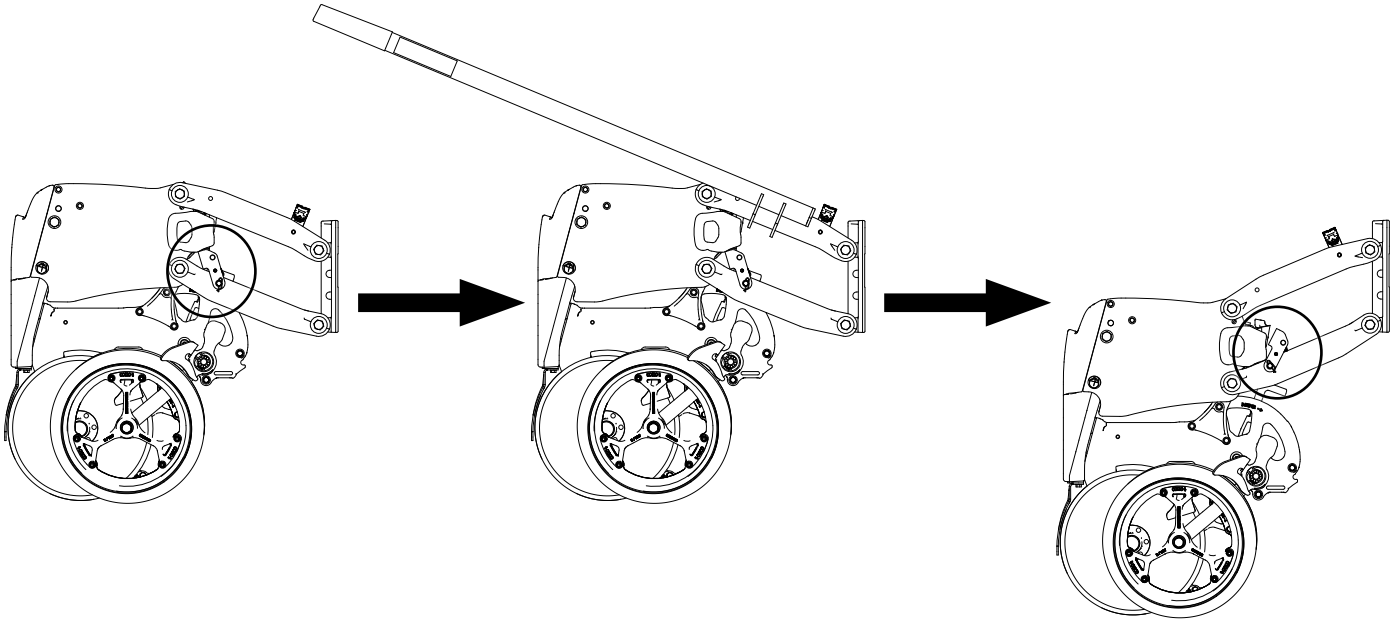
SPLIT ROW LOCKUPS

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

CAUTION

Improper lifting of row units can cause serious injury. An empty row unit requires minimum 100 lb (45.3 kg) lift. Lower planter to ground, and empty seed hopper before attempting to lift with this lever.



Push Row Unit Locked In Raised Position

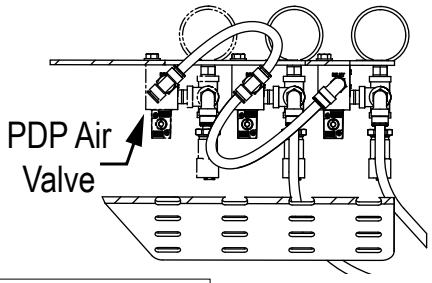
Lift Lever Positioned On Push Row Unit

Lockup Released For Field Operation

To Lock Row Unit in Raised Position:

1. If equipped with pneumatic down pressure, remove air from bags.
2. Lower the planter to the planting position.
3. Empty seed hoppers.

   Note: If planter is equipped with True Depth, enable Lift Assist Mode with the Blue Vantage display.



WARNING

Turning Lift Assist on or off may cause the planter to move or row units to fall causing injury or death.

4. On each push row unit lockup, flip the spring tabs forward on each side.

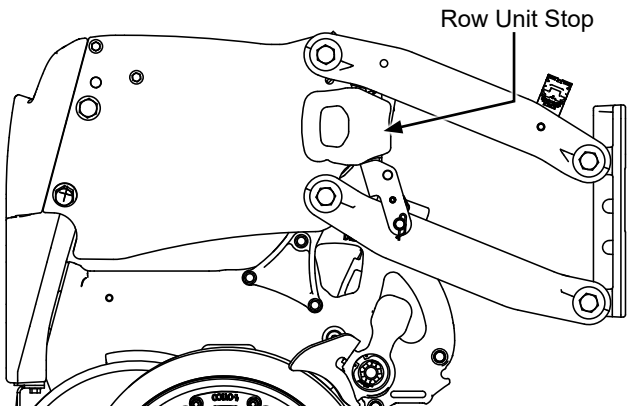
DANGER

Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Keep clear of row unit while lowering it to the ground.

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. Ensure that the row unit is lowered onto the stops.

7. Repeat Steps 4 through 6 on remaining push row units.



To Release Row Unit to Planting Position:

1. Lower the planter to the planting position.

Note: If planter is equipped with True Depth, enable Lift Assist Mode with the Blue Vantage display.

WARNING

Turning Lift Assist on or off may cause the planter to move or row units to fall causing injury or death. Please ensure that all row units are pushed down before exiting Lift Assist mode.

2. On each push row unit lockup, flip the spring tab rearward.

DANGER

Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Keep clear of row unit while lowering it to the ground.

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. Ensure that the row unit is lowered all the way to the ground.

5. Repeat Steps 2 through 4 on remaining push row units.

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SYSTEM OVERVIEW

Fertilizer is controlled through the Blue Vantage Display. You can increase or decrease fertilizer rate, turn fertilizer function on or off, and load a prescription. Refer to your Blue Vantage manual for more information.

LIQUID FERTILIZER ATTACHMENT

WARNING

Agricultural chemicals can cause death or serious injury to persons, animals, and plants or seriously damage soil, equipment, or property. Read and follow all chemical and equipment manufacturers labels and instructions.

CAUTION

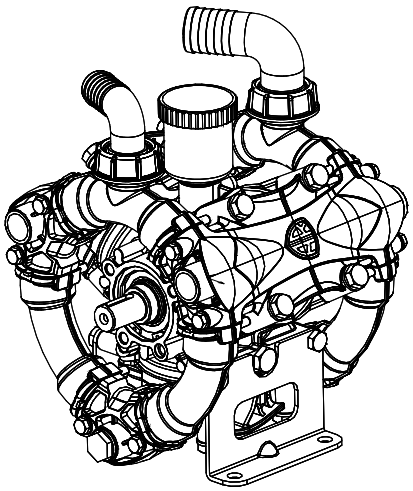
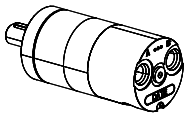
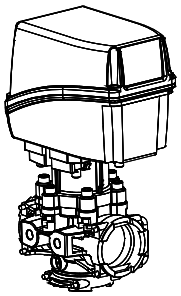
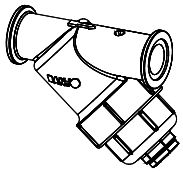
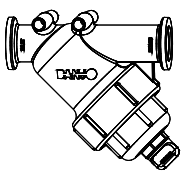
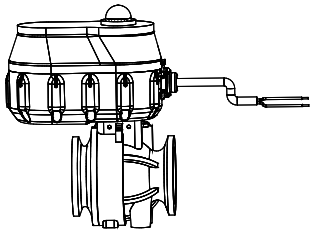
Overfilling tank can cause siphoning, tank collapse, personal injury, and damage to property and equipment. Do not overfill tank. Do not leave planter unattended when filling tank. Close fill valve and open tank lid if siphoning occurs. Follow all chemical manufacturers first aid, cleanup, and handling instructions.

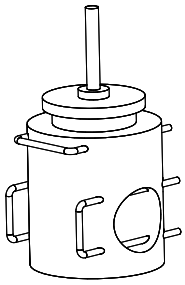
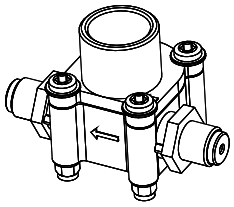
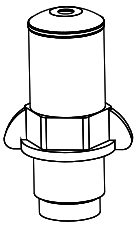
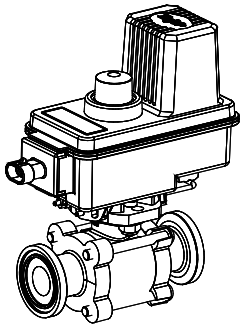
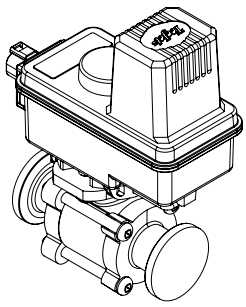
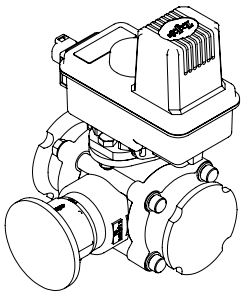
NOTICE

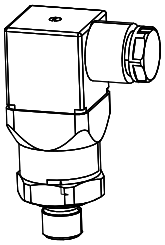
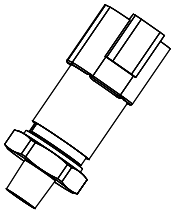
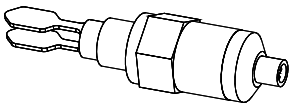
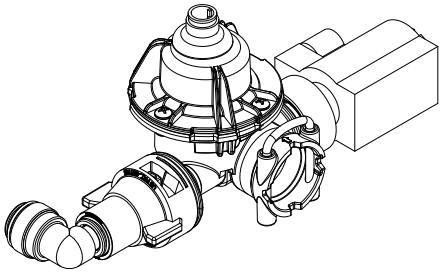
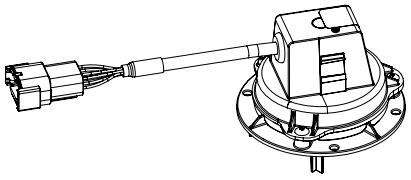
Placing fertilizer too close to seeds or in excessive amounts can cause germination or seedling damage. Check with your fertilizer dealer or manufacturer for correct amount and placement.

FERTILIZER SYSTEMS PARTS OVERVIEW

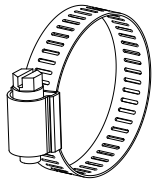
NOTE: See parts manual for part numbers.

COMPONENT		DESCRIPTION
Diaphragm Pump	 3 Cylinder	Small pump, used on 30' and 40' toolbars. Oil Capacity: 36 oz Diaphragm Kit: Available, see parts manual. Check Valve Kit: Available, see parts manual. Seal Kit: Available, see parts manual. Oil: Available, see parts manual. Winterizer: Available, see parts manual.
Hydraulic Motor		Fertilizer Pump Motor. Seal Kit: Available, see parts manual.
Pressure Regulator		Controls delivery manifold pressure and bypasses overhead flow for agitation.
Suction Strainer		30 mesh. Clean regularly.
Pressure Strainer		80 mesh. Clean regularly.
Suction Ball Valve		On/off valve that opens flow of fertilizer to the pump. This feature is used when entering planting task in Blue Vantage.

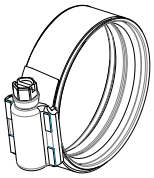
COMPONENT		DESCRIPTION
Large System Flow Meter		Full flow flow meter.
Small System Flow Meter		Arrows on housing indicates direction of flow.
		Small flow meter sensor.
Flow Meter Transition Electric Ball Valve (2 Pin)		Under Catwalk: Closes to send flow through small flowmeter at low flow rates.
L.H. / R.H. Electric Ball Valve (4 Pin)		Under Liquid Tank: Used for tank leveling.
3-Way Electric Distributor Ball Valve		Tank leveling functionality.

COMPONENT		DESCRIPTION
Suction Sensor		Located in suction strainer. Sends pump suction pressure to Blue Vantage controls.
Pressure Sensor		Sends delivery manifold pressure to Blue Vantage controls.
Fluid Switch		Located in suction circuit to know when to indicate pump has fluid supply. Green = Has power, but no fluid is present; Green/Orange = Fluid is present
Row Flow Meter		Indicates flow or no flow to each row.
Jet Orifice		Used for all orifices smaller than .055 and not used for .065 and larger.
4916 Orifice		Different orifices used for different application rates.
Tank Level Sensor		Tank level for hillside tank leveling.

HOSE CLAMP TORQUE VALUES CHART



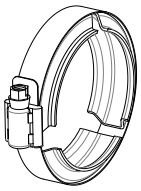
Standard



Heavy Duty

Diameter	Standard	Heavy Duty
1¼"	42 in-lb	75 in-lb
1½"	42 in-lb	75 in-lb
2"	42 in-lb	X

FLANGE CLAMP TORQUE VALUES CHART

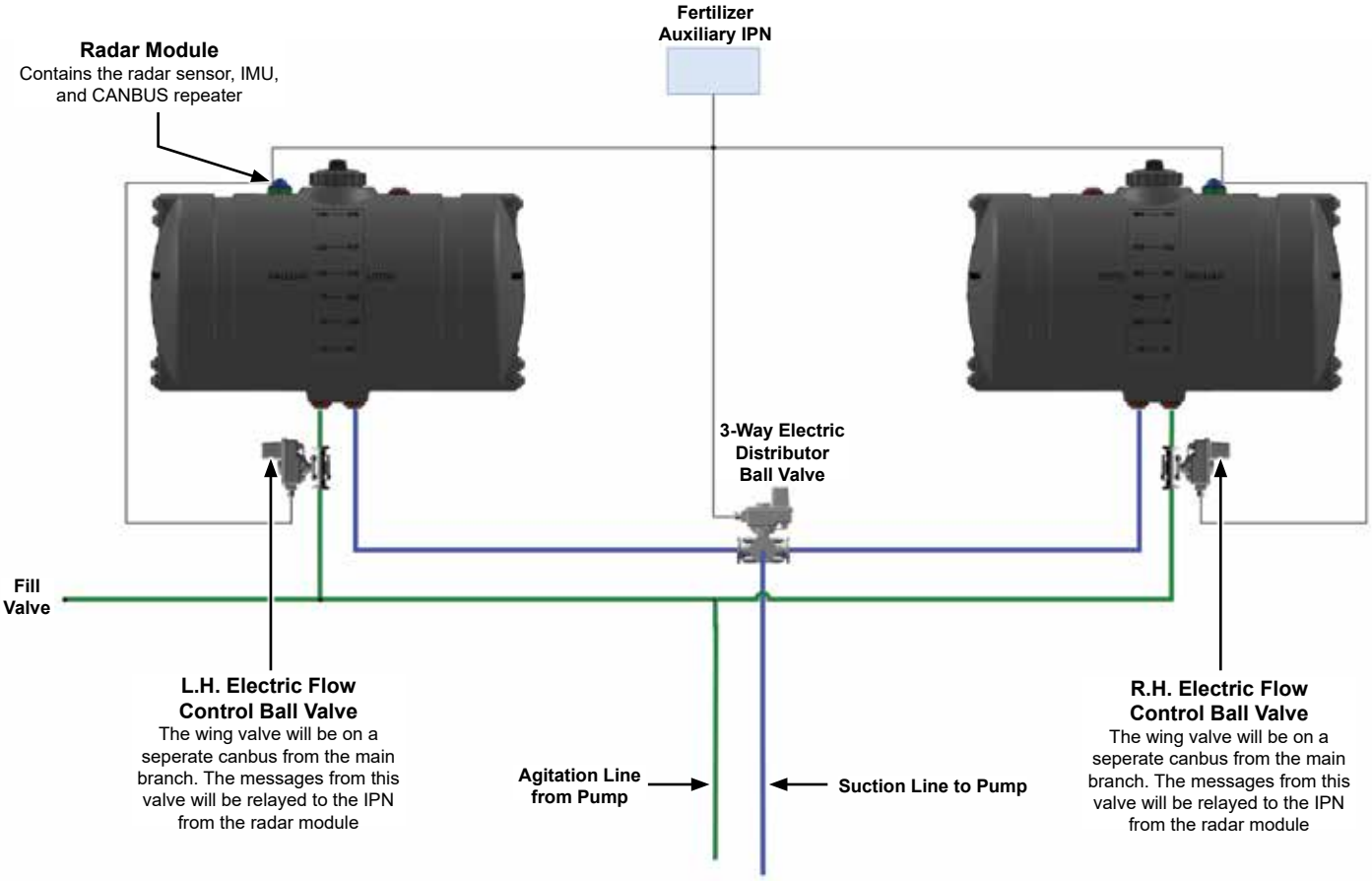


Diameter	Torque
1"	50-60 in-lb
2"	90-100 in-lb

LIQUID FERTILIZER SYSTEM SCHEMATICS

Fertilizer is controlled through the Blue Vantage display. Increase or decrease fertilizer rate, turn fertilizer function on or off, and load perscription. Refer to your Blue Vantage manual for more information.

Rear Trailer or Hitch Auxiliary Tank



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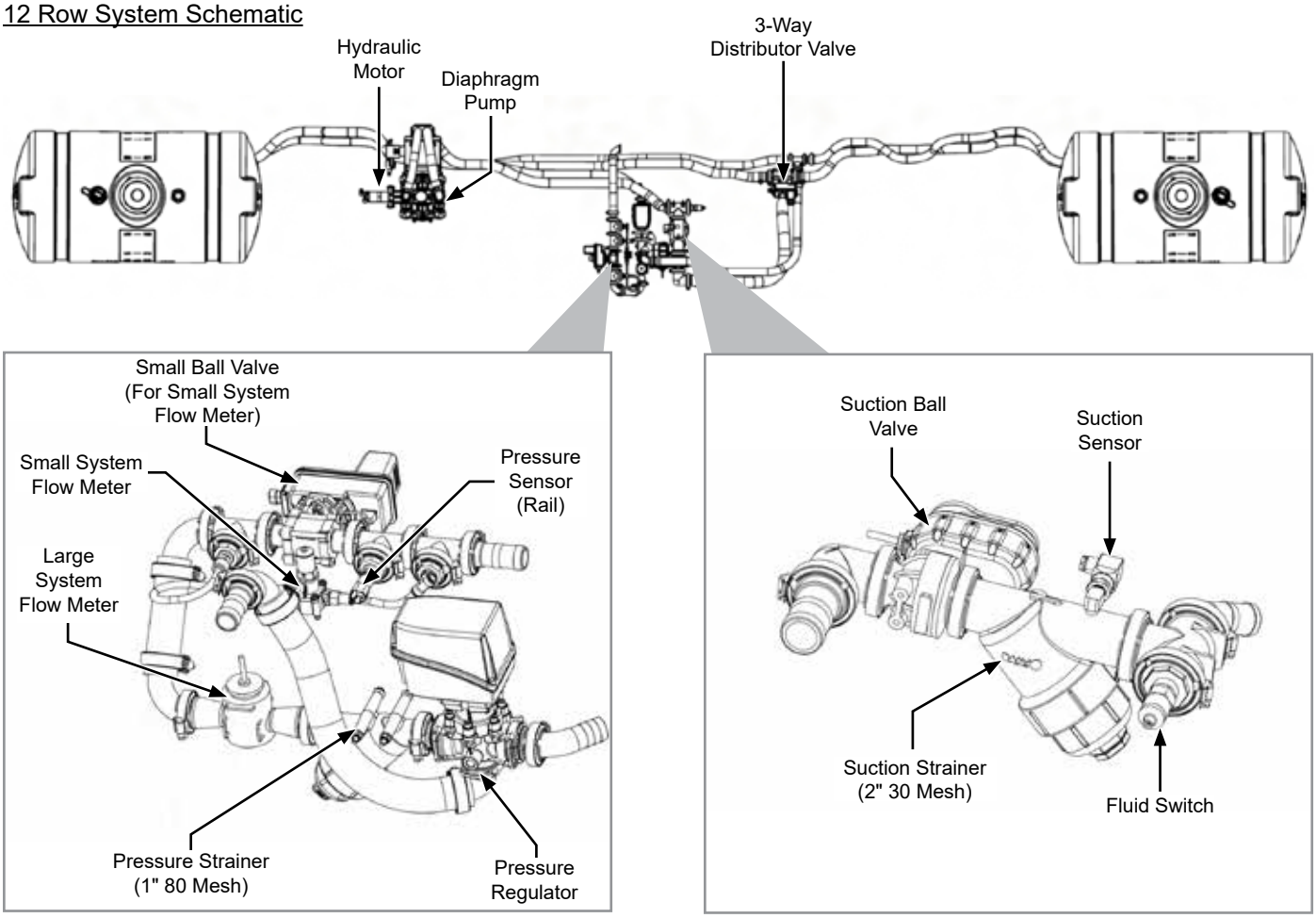
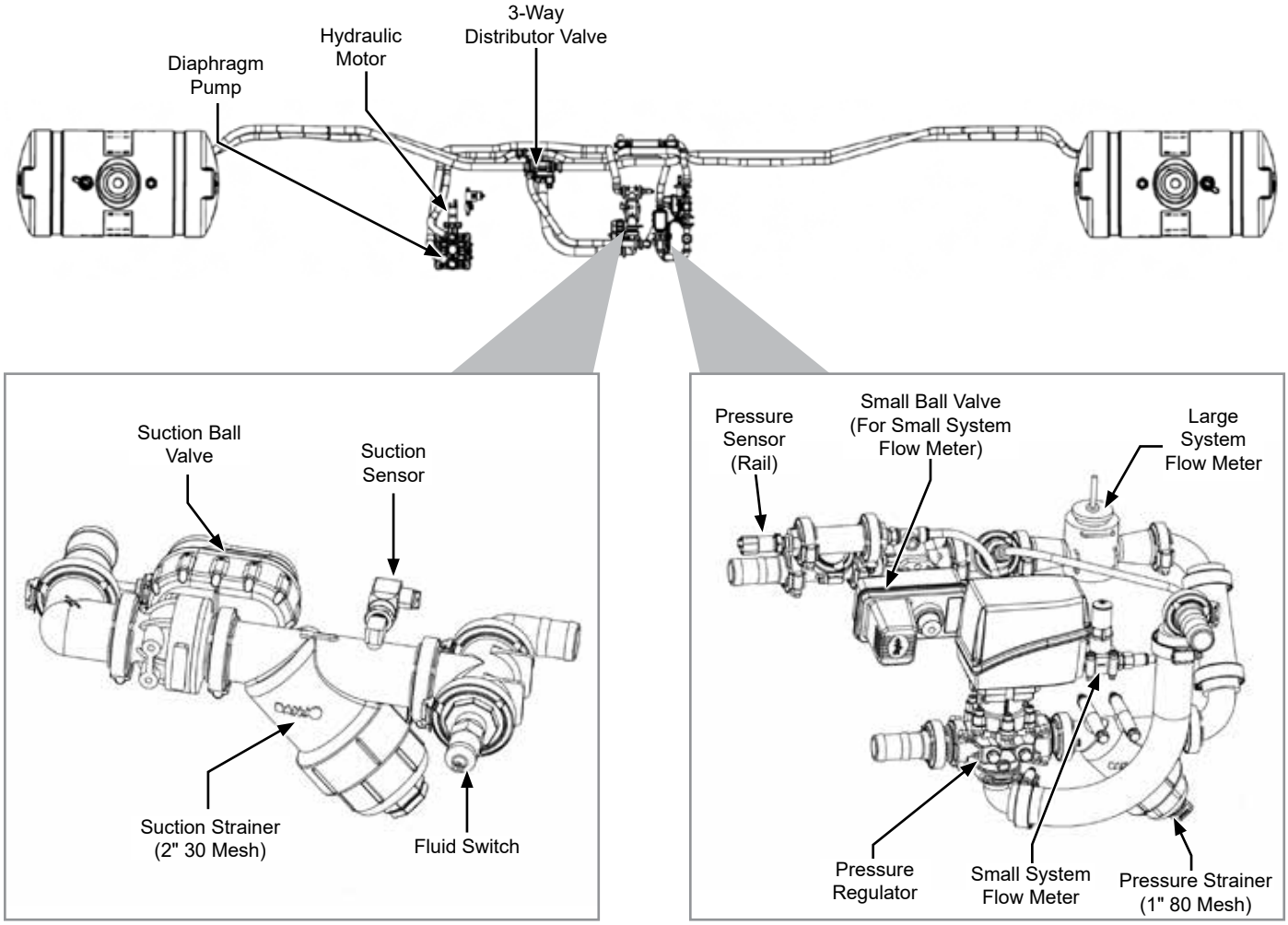
12 Row System Schematic

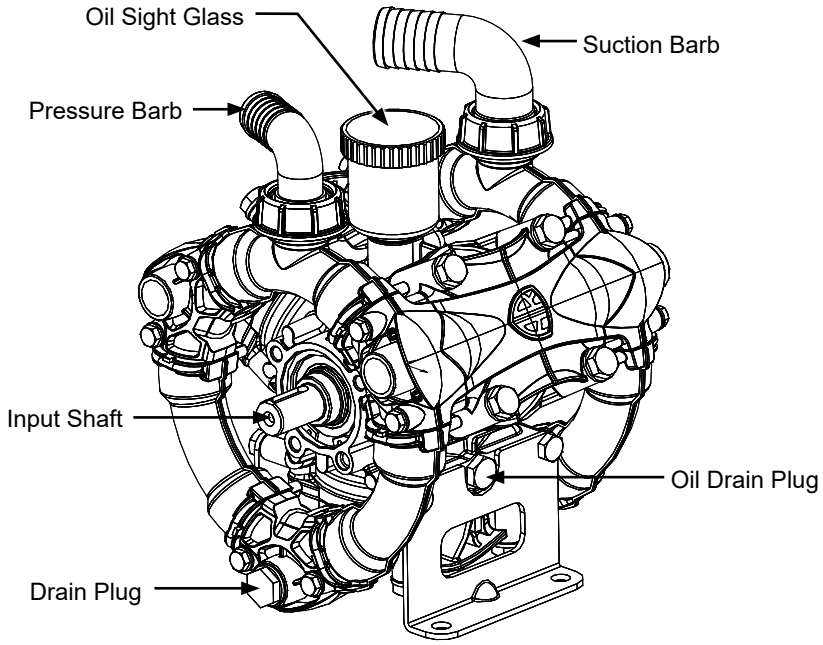


16 Row System Schematic



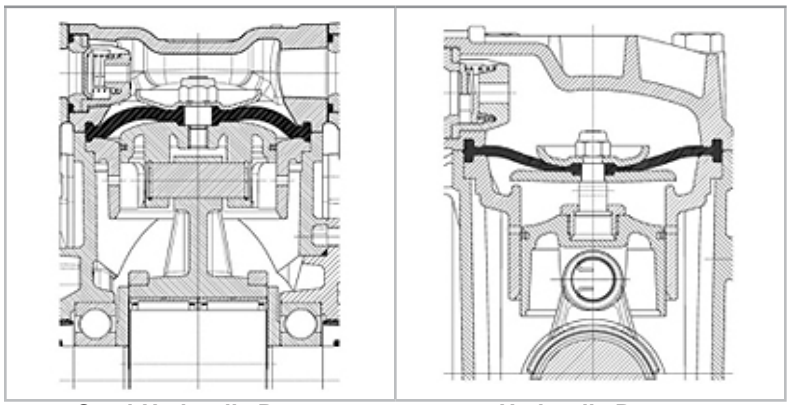
SYSTEM OVERVIEW

Diaphragm Pump - Model Number AR120



Operating Pressure Range	
	AR120
Max GPM	30.8
Max PSI	220
Weight	34 lbs
Cylinders	3
Oil Capacity	36 oz
Max Speed	550
Pulsation Damper	No

Diaphragm pumps are reciprocating positive displacement pumps. Reciprocating movement of the diaphragms expands and compresses volumes. This mechanical work and change in volumes cause transfer of liquid. The main difference between a diaphragm pump and other types of reciprocating pumps, is the presence of a flexible separating component (the diaphragm) between mechanical parts and pumped liquid circuit. This enables diaphragm pumps to transfer liquids which would be detrimental to other types of reciprocating pumps. Pistons are generally in a “Boxer” type opposing cylinder arrangement, or in a radial layout around the axis of the crankshaft which drives them.

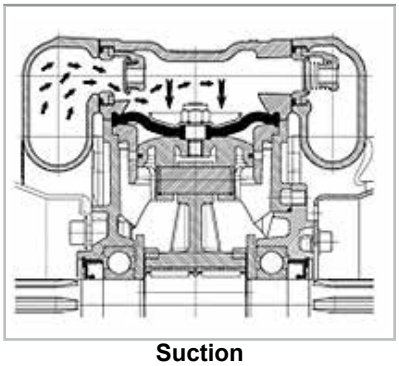


Semi-Hydraulic Pump **Hydraulic Pump**

The piston is mechanically connected to the diaphragm. The diaphragm is mechanically operated by the piston at it’s center and at the same time it’s outer edge ensuring a watertight seal around the pumping chamber. In a “semi-hydraulic diaphragm pump”, the diaphragm is rigidly secured to the piston by a stud screwed on the piston and a plate tightened by a nut. In a “Hydraulic diaphragm pump” the center of the diaphragm is fixed to a floating component on piston. The suction and delivery valves, fitted at the pumping chamber suction and delivery ports, are operated by the alternating negative and positive pressure inside circuit.

Suction

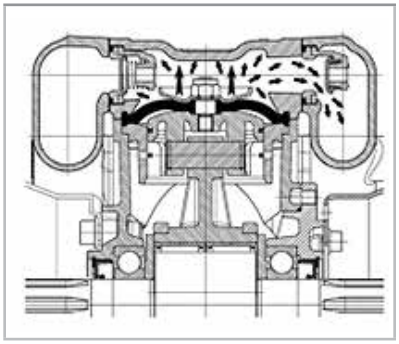
During the suction stroke (piston retreating), the difference between the suction pressure and the pressure inside the pump head opens the suction valve and closes the delivery valve. The transferred liquid is drawn into the head by the suction line.



Suction

Compression

During the compression stroke (advancing piston), the suction valve closes and the delivery valve opens due the pressure generated inside the head by the piston. The transferred liquid is pumped out of the head and into the delivery line.



Compression

Oil

When pump is new, oil in tank is clear and yellowish in color. After a few operating hours, the oil in tank loses its transparency and becomes dark due to metal particles removed by rubbing of internal components during functioning. This is normal color for this type of diaphragm pump. This occurs regardless of the type of oil used and pump's working conditions. In heavy-duty working conditions, oil will become dark more quickly. When oil in the tank becomes light grey and looks milky (color also depends on color of the liquid being pumped), stop using the pump immediately, it is likely that one or more diaphragms have ruptured, allowing the aqueous solution pumped to pass into the lubricating oil and form a water/oil emulsion inside pump body.

Oil in New Pump

Oil in Functioning Pump

Oil After Diaphragm Rupture

Replacing Diaphragms

Aside from its lubricating function, in diaphragm pumps the oil passes through the calibrated holes in the sleeves uncovered at every piston stroke to form a protective cushion between piston and diaphragm. The volume of this oil cushion is not constant; it varies with pressure/vacuum inside pumping chamber. However, the oil cushion is only effective when it does not contain residual air. After replacing diaphrams the oil cushion should be restored, by removing as much air as possible inside the body and specifically between pistons and diaphragms.

Restore oil cushion:

1. Calibrated holes in the sleeves must always be mounted in vertical position, allowing air to flow out, and cap must be off tank.

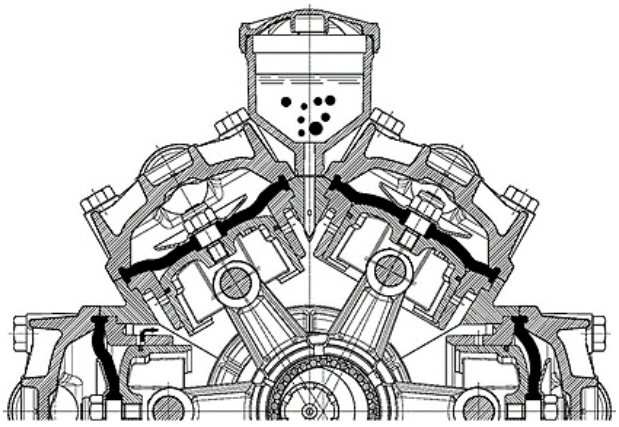
2. Before proceeding weigh quantity of oil stated in manual for the specific pump model.

3. Turn pump shaft by hand and tilt at various angles; air bubbles will be seen coming out of tank.

4. When the entire amount of oil specified for the pump has been poured in, oil is between the minimum and maximum level marks on the tank and no air is bubbling out. The system has been vented correctly.

NOTE: Particularly heavy or bulky pumps can be operated at low RPM for a few minutes at 0 bar without oil cap on oil sight reservoir. Air bubbles will come out, causing level to drop. Top up until entire quantity of oil specified for the pump has been added.

NOTE: During operation, if working pressure increases, the level in tank will increase, if pump is working with a high suction pressure (obstructed filter, suction from a strong gradient), level in tank will reduce.

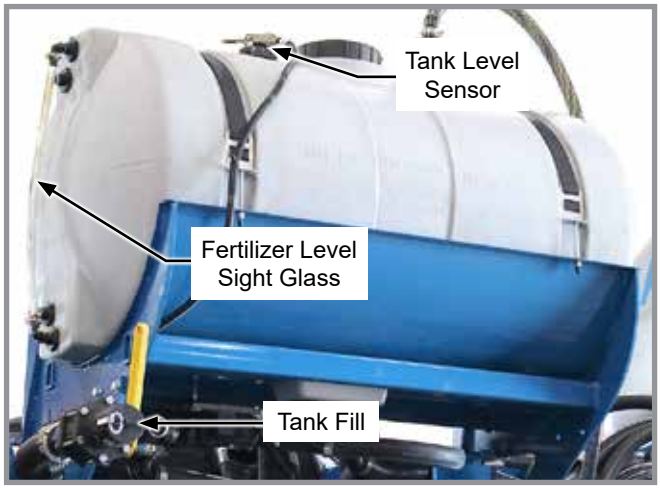


Improper Fertilizer Pump Operation

- Do not use the pump in a potentially explosive atmosphere.
- Do not use the pump for flammable, or liquids with unsuitable density, especially seawater, adhesives, bitumens, asphalt sealers, two-step curing compounds, concrete sealers, liquefied gases or solvents of any kind, paints of any kind or liquids containing solids in suspension.
- Do not draw in liquids at temperatures above 122°F (50°C) or below 41°F (5°C).
- Do not use the pump in drinking water supply systems.
- Do not use the pump on products for human consumption.
- Do not use the pump without first checking that the intake and delivery circuit pipelines are correctly secured and free from leaks.
- Do not use the pump without the safety devices provided: guards for shafts and drive couplings and suitably rated relief valve on the delivery circuit.
- Do not use the pump to wash or spray: people, animals or delicate items, live electrical equipment or chemicals whose characteristics are not known.

FERTILIZER TANK

Fertilizer Level Sight Glass
Indicates how much liquid is left in fertilizer tank(s). Fertilizer level sight glass is located on both ends of each fertilizer tank. Planter must be on level gound to get an accurate level.



16 Row Shown (150 Gallon Tank)

Fertilizer Pressure Gauge
Pressure gauge is connected directly to the fertilizer pressure manifold. The analog pressure gauge is located between bulkfill tanks on front of center post. Visually check from tractor cab that the sensor is reading the pressure of the system correctly.

Tank Level Sensor
Tank level for hillside leveling. Also commuicates how much liquid is in each fertilizer tank.

Radar Sensor Blink Codes

LED Color	LED Behavior	Mode	Solution
White	Solid	Sensor in bootloader mode.	Normal operation.
Green	Blink	Sensor on, waiting for communciation.	Check harnessing if this persists.
Green	Solid	Sensor reading.	Normal operation.
Red	Fast Blink	Error.	Power cycle. If issue persists, replace sensor.
Blue	Slow Blink	Upgrading.	Normal operation, wait for sensor to finish upgrading.
Orange	Solid	Strapping error.	Check harnessing.

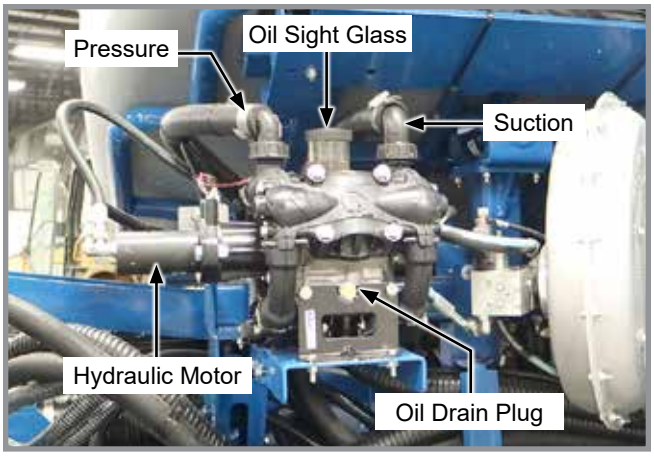
Onboard Fertilizer Tank Fill Valve
Used to fill onboard fertilizer tanks, for schematic see page 4-6. **NOTE: Before filling tank, turn key power ON to enable tank leveling.**

150 Gallon Liquid Fertilizer Tank Fill Location

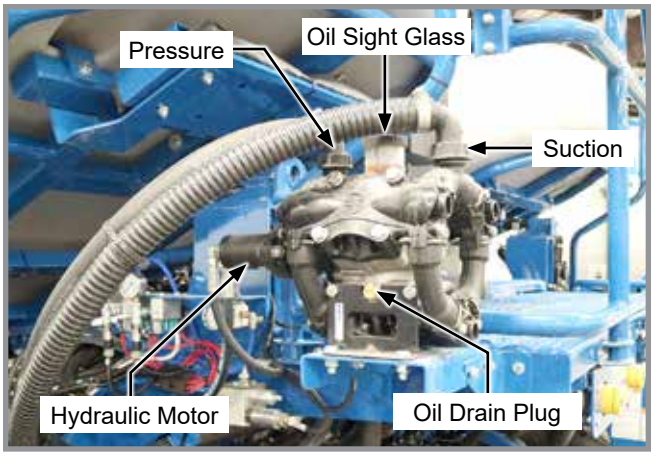
Servicing Pump
Refer to the parts manual for all service kit part numbers. Use the chart below for maintenance intervals.

MAINTENANCE INTERVAL	ACTION
Each time used.	Check level and status of oil.
	Check suction filter and clean if necessary.
Every 50 hours.	Check pulsation damper inflation pressure (if applicable).
	Check if suction line is intact.
	Check if pump is tightly fastened to chassis of machine. **NOTE: Should the pump not be securely fastened, DO NOT use the machine for any reason.**
Every 300 hours.	Check the diaphragms and replace if necessary. Replace all diaphragms in the pump, regardless of conditions if agresssive cheicals are used.
	Check damper diaphragm (if applicable) and replace if necessary.
	Replace oil. Oil MUST be changed every time diaphragms are replaced. First oil change must be made after 300 hours.
	Check to be sure pump screws are tight. If pump operates in conditions of heavy vibration, check more frequently.

Checking Oil Level
- Check oil with pump level, ensuring that it has been running for at least 5 minutes in normal working conditions.
- If oil level is not visible or completely full, add or remove oil to restore this level and check, still with the pump running, that the oil level does not vary so much that it leaks from the cap or is no longer visible in tank.
- If necessary, add oil with A/R Premium Diaphragm Pump Oil.
- Check oil level regularly, as it may vary significantly with operating conditions.



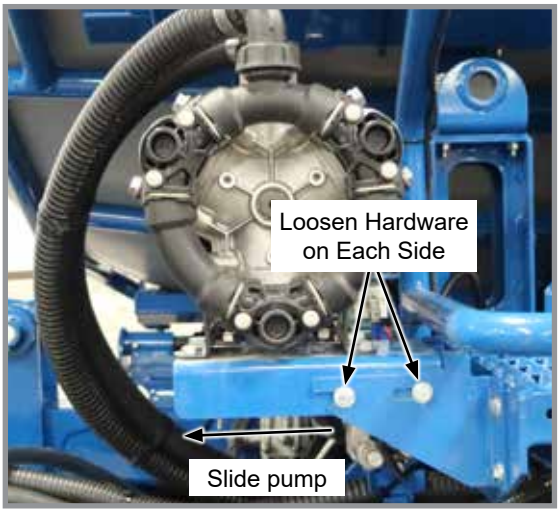
12 Row

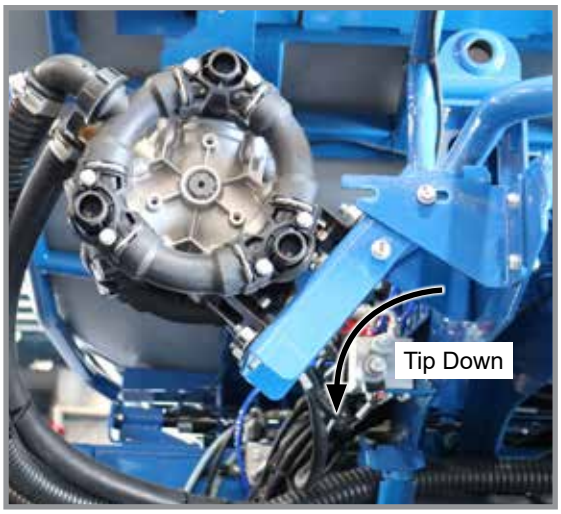


16 Row

Changing Pump Oil

1. Loosen flanged pump mounting hardware (but do not remove) on each side of pump.
2. Slide the pump to the end of the horizontal slots.
3. Tip the pump down until it hits the kick stand on the mounting plate.
4. Loosen cap on oil sight glass.
5. Remove oil drain plug (use container large enough to capture 36 oz of oil).
6. Reinstall drain plug
7. Tip the pump back to horizontal and slide back into the rear of the slots
8. Retighten mounting hardware.
9. Refill pump with approximately 36 oz of oil.
   NOTE: Pump may need oil added after it has been through the purge/spin cycle on the Blue Vantage. Once oil level is in the correct range and stops going down, pump oil level is correct.
10. Tighten the cap to the sight glass on the pump before running the pump.
11. Remove and replace the cap while putting correct oil level back in the pump.





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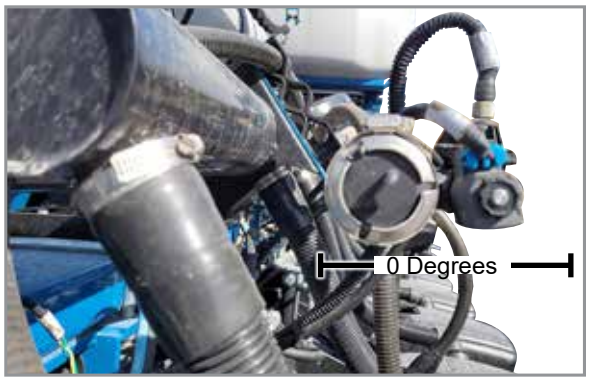
ROW FLOW METER



End View

When planter toolbar is on level ground, check to ensure all flow meters are also as horizontal as possible for best operation. If flow meter is not level while planter is on level ground, adjust by rotating manifold(s).

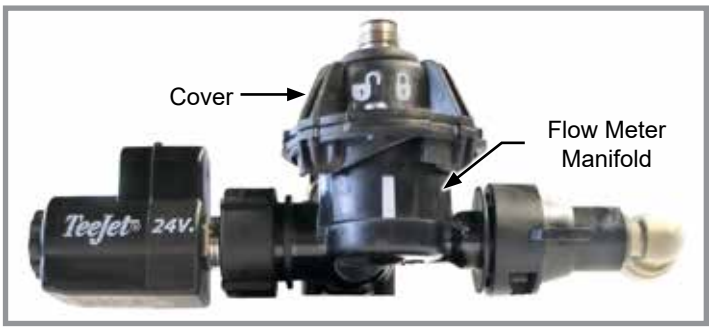
ROW FLOW METER CLEANOUT

Fertilizer can salt out when certain conditions of time and temperature are met. This causes a buildup of fertilizer granules in and around areas of low flow. This will cause errors in the performance of the fertilizer flow manifold.

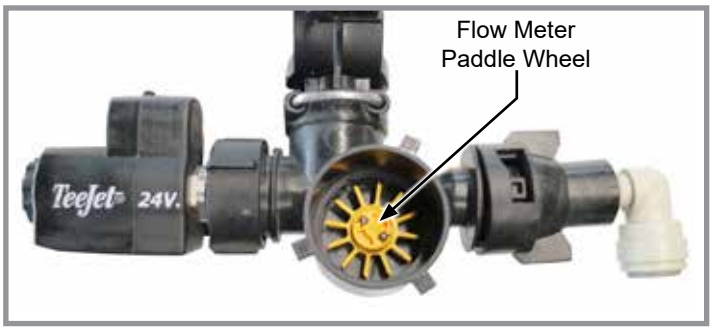
To properly clean, disassemble the entire assembly. Use the illustrations below as a guide for disassembly and reassembly.

Clean all parts thoroughly with clean water at the end of planting season or prior to an extended period of non-use. Do not allow fertilizer to crystallize from cold temperatures or evaporation.

1. Turn cover counterclockwise to unlock and remove cover from flow meter.



2. Remove paddle wheel from cavity.
3. Clean all parts thoroughly with clean water. Remove any debris inside of cavity.



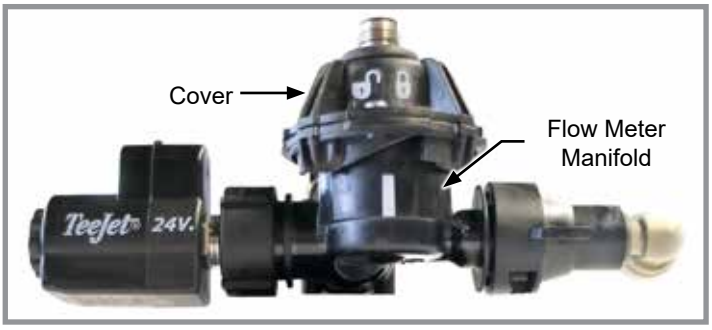
4. Once clean, place paddle wheel back onto pin inside cavity and spin the paddle wheel to ensure it is seated correctly.

5. Reinstall cover and turn clockwise until the “lock symbol” is directly above the white line.

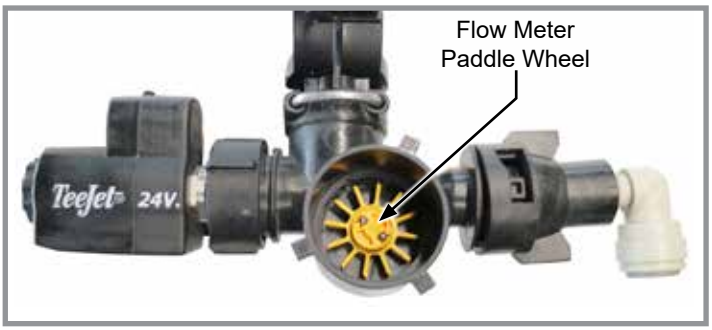
NOTE: If cover does not go on easily, paddle wheel is not aligned correctly on pin.

ROW FLOW METER JET ORIFICE REMOVAL

1. Turn cover counterclockwise to unlock and remove cover from flow meter.



2. Remove paddle wheel from cavity.

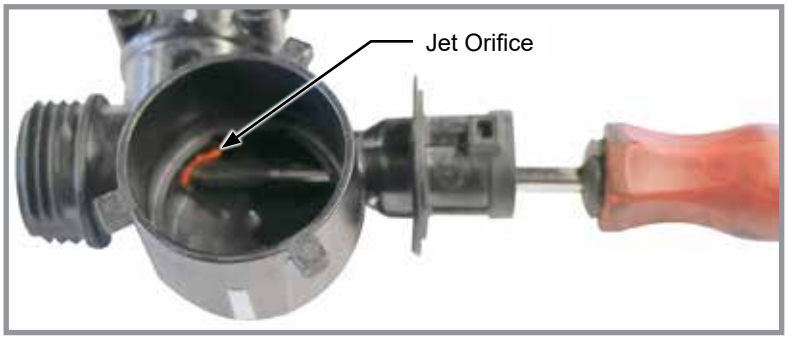


3. Rotate the nozzle assembly counterclockwise 90° and pull nozzle off.

4. Pull strainer out of flow meter.

5. Remove row shutoff valve by spinning nut counterclockwise and pulling valve out.

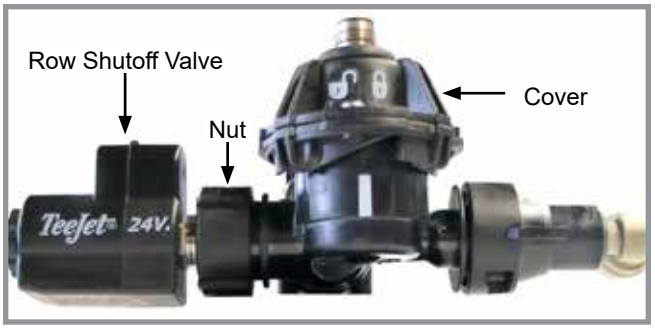
6. Remove jet orifice:
    - Insert #1 Phillips screwdriver from the nozzle assembly side until the tip is in the jet orifice as shown. Then push the jet orifice out.



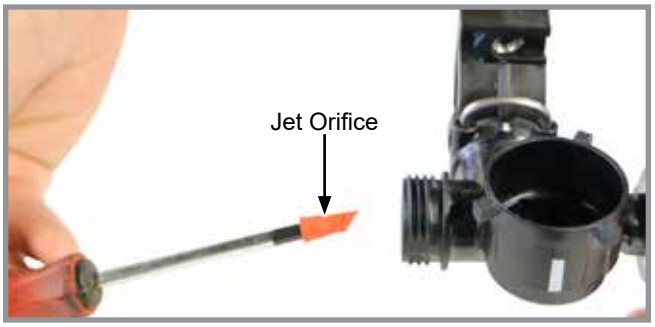
7. Reassemble flow meter
    - Reinstall row shutoff valve and tighten nut clockwise.
    - Place the paddle wheel on the pin in the cavity and spin paddle wheel to ensure it is seated correctly.
    - Reinstall cover and turn clockwise until the lock symbol is directly above the white line.
    - Reinstall strainer.
    - Reinstall gasket, orifice, and nozzle assembly.

ROW FLOW METER JET ORIFICE INSTALLATION

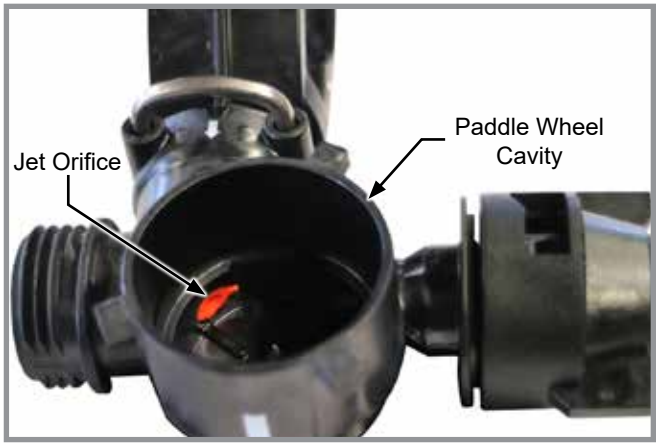
1. Remove row shutoff valve by spinning nut counterclockwise and pulling valve out.
2. Turn cover counterclockwise to unlock and remove cover from flow meter.



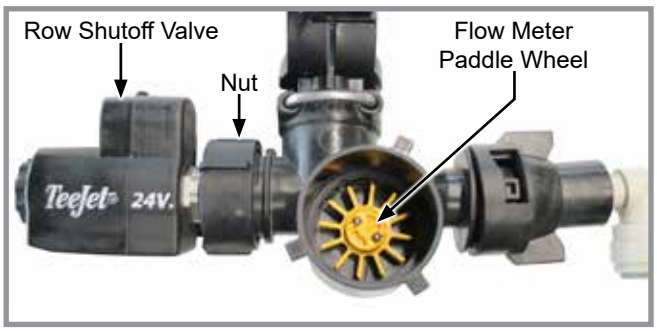
3. Place jet orifice on the end of #1 Phillips screwdriver, with the long tip closest to the rail and pointing toward the paddle wheel cavity.



4. Insert jet orifice into center hole on the row shutoff valves, gently twisting back and forth to help align the rib on the orifice and the groove in the housing. The jet orifice should be flush with paddle wheel cavity wall when installed completely.

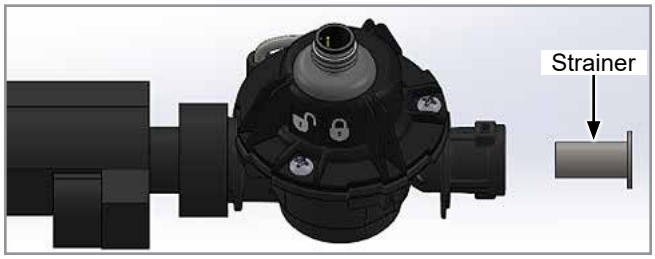


5. Reinstall row shutoff valve and tighten nut clockwise.
6. Place paddle wheel on the pin in the cavity and spin the paddle wheel to ensure it is seated correctly.



7. Reinstall cover and turn clockwise until the lock symbol is directly above the white line.

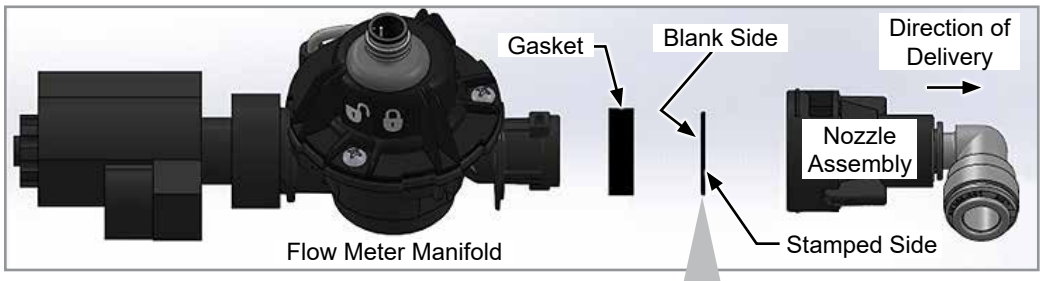
8. Reinstall strainer.



9. Reinstall gasket, orifice, and nozzle assembly.

NOTE: Orifices must be installed correctly. Install orifice with the blank side towards the flow meter manifold and the stamped side facing nozzle assembly (pointing downstream toward the direction of delivery).

NOTE: Orifice is installed in center groove of gasket.



Orifice

FLOW METER STRAINER AND ORIFICE CLEANING AND/OR REPLACEMENT

Strainer

1. Rotate the nozzle assembly counterclockwise 90° and pull nozzle off.

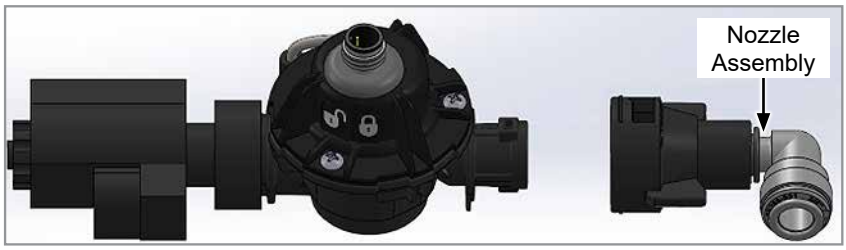
2. Pull strainer out of flow meter and clean or replace it.

NOTE: Reinstall a clean strainer with the flange towards the nozzle cap. Refer to table to ensure the correct strainer is chosen for the orifice selected.

Orifice Size	Strainer Mesh Size	Part Number	Color
0.015 and Below	200	G10943201	Pink
0.016 - 0.039	100	G10943101	Green
0.040-0.070	50	GD27290	Blue
0.072 and Larger	---	---	---

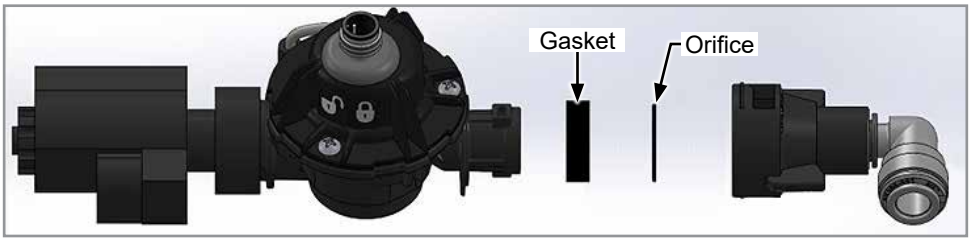
Orifice

1. Rotate the nozzle assembly counterclockwise 90° and pull nozzle off.



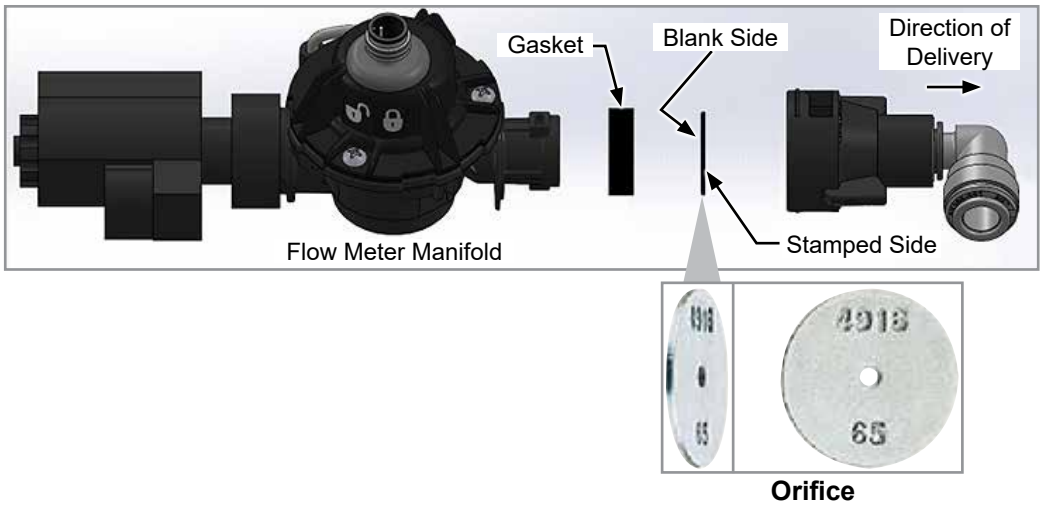
2. Remove gasket with orifice currently installed.

3. Remove orifice from gasket.



NOTE: Orifices must be installed correctly. Install orifice with the blank side towards the flow meter manifold and the stamped side facing nozzle assembly (pointing downstream toward the direction of delivery).

NOTE: Orifice is installed in center groove of gasket.



Orifice

ORIFICE CONFIGURATION RATES

How to select an orifice configuration (using Orifice Look Up Chart below):

- Find the closest listed Gallons per Acre [GPA] value and its group of rows.

Identify the slowest and highest planting speed that will be used. Follow those rows over to corresponding row spacing being used, this equals Gallons per Minute [GPM].

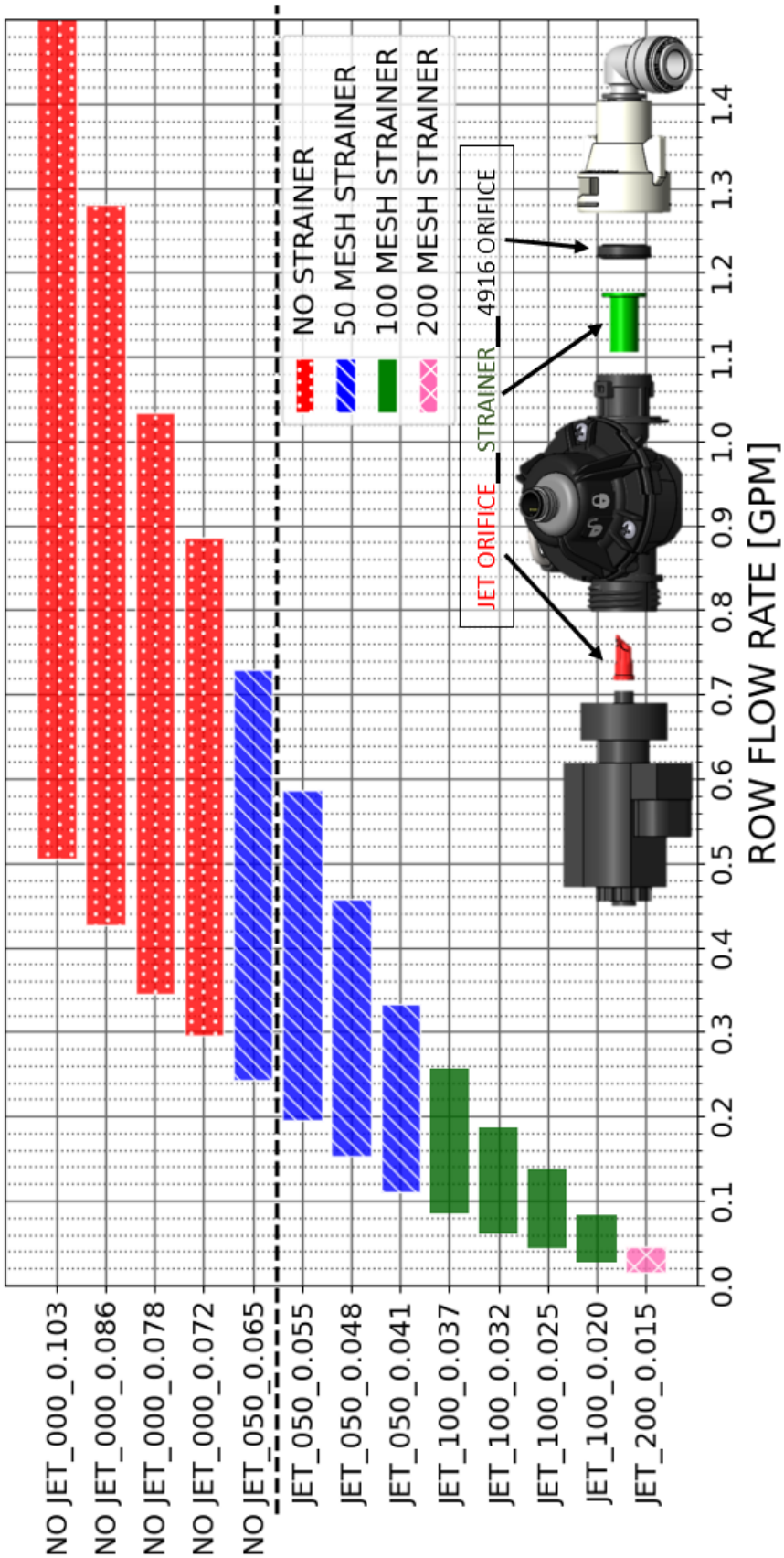
- For a more accurate GPM, use this formula: $GPM = \frac{(Row\ Spacing \times MPH \times GPA)}{5940}$

- Take the low and high GPMs, trace them vertically on Orifice Rate Chart. Whichever bar best covers that range, this is the configuration that should be used.

NOTE: If GPM is high enough, the jet orifice may have to be removed, see "Row Flow meter Jet Orifice Removal" on page 4-20

ORIFICE LOOK UP CHART

GPA	MPH	30in GPM	15in GPM	GPA	MPH	30in GPM	15in GPM	GPA	MPH	30in GPM	15in GPM	GPA	MPH	30in GPM	15in GPM	GPA	MPH	GPM
2	4	0.04	0.02	7	4	0.14	0.07	14	4	0.28	0.14	22	4	0.44	0.22			
2	6	0.06	0.03	7	6	0.21	0.11	14	6	0.42	0.21	22	6	0.67	0.33			
2	8	0.08	0.04	7	8	0.28	0.14	14	8	0.57	0.28	22	8	0.89	0.44			
2	10	0.10	0.05	7	10	0.35	0.18	14	10	0.71	0.35	22	10	1.11	0.56			
2	12	0.12	0.06	7	12	0.42	0.21	14	12	0.85	0.42	22	12	1.33	0.67			
4	4	0.08	0.04	8	4	0.16	0.08	16	4	0.32	0.16	24	4	0.48	0.24			
4	6	0.12	0.06	8	6	0.24	0.12	16	6	0.48	0.24	24	6	0.73	0.36			
4	8	0.16	0.08	8	8	0.32	0.16	16	8	0.65	0.32	24	8	0.97	0.48			
4	10	0.20	0.10	8	10	0.40	0.20	16	10	0.81	0.40	24	10	1.21	0.61			
4	12	0.24	0.12	8	12	0.48	0.24	16	12	0.97	0.48	24	12	1.45	0.73			
5	4	0.10	0.05	10	4	0.20	0.10	18	4	0.36	0.18							
5	6	0.15	0.08	10	6	0.30	0.15	18	6	0.55	0.27							
5	8	0.20	0.10	10	8	0.40	0.20	18	8	0.73	0.36							
5	10	0.25	0.13	10	10	0.51	0.25	18	10	0.91	0.45							
5	12	0.30	0.15	10	12	0.61	0.30	18	12	1.09	0.55							
6	4	0.12	0.06	12	4	0.24	0.12	20	4	0.40	0.20							
6	6	0.18	0.09	12	6	0.36	0.18	20	6	0.61	0.30							
6	8	0.24	0.12	12	8	0.48	0.24	20	8	0.81	0.40							
6	10	0.30	0.15	12	10	0.61	0.30	20	10	1.01	0.51							
6	12	0.36	0.18	12	12	0.73	0.36	20	12	1.21	0.61							


NO STRAINER
50 MESH STRAINER
100 MESH STRAINER
200 MESH STRAINER
JET ORIFICE__STRAINER__4916 ORIFICE
NO JET_000_0.103
NO JET_000_0.086
NO JET_000_0.078
NO JET_000_0.072
NO JET_050_0.065
JET_050_0.055
JET_050_0.048
JET_050_0.041
JET_100_0.037
JET_100_0.032
JET_100_0.025
JET_100_0.020
JET_200_0.015
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
ROW FLOW RATE [GPM]

PUMP CLEAN OUT AND STORAGE

NOTE: Do not let fertilizer sit in pump and system for longer than a day. Fertilizer will crystalize and cause issues with small moving parts and nozzles in the fertilizer system.

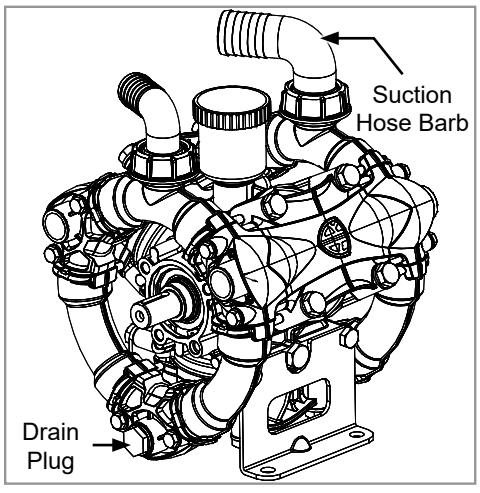
NOTE: Chemical solutions may become extremely corrosive if system is not cleaned out properly.

After each use, flush out circuit with clean water by running pump with clean water for a few minutes. Then drain it by operating without pressure and suck-in air by opening a ball valve on suction line or remove suction fitting until the pump runs dry.

Inspect pump and other circuit components with regularity, or at the end of the season, replacing any components which shows signs of wear.

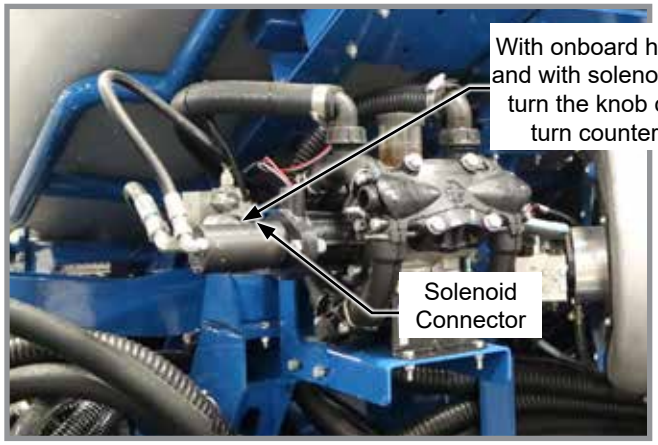
If pump is stored for the winter in a zone with risk of frost, liquid anti-freeze should be added to the circuit, flushing water.

1. Remove as much fertilizer out of tank(s) and row unit manifolds as possible.
2. Fill tank(s) with 50-100 gallons of clean water.
3. Run system on Blue Vantage so that manual run buttons can be used to clean row unit plumbing.
4. Beginning in the middle of the planter, flushing each row unit (with manual run button) for 5-10 seconds each. Row unit is clean once mostly clear water is seen. After every row has been cleaned out, repeat process on each row for an additional 2-3 seconds per row. This will clean out the components on each row unit.
5. Clean flow meters on every row. See "Row Flow Meter Cleanout" on page 4-19
6. Cleanout complete, complete remaining steps for winterization.
7. Remove suction hose barb. NOTE: Suction valve will be closed when not in a Blue Vantage task.
8. Remove the discharge manifold drain plug from the pump.

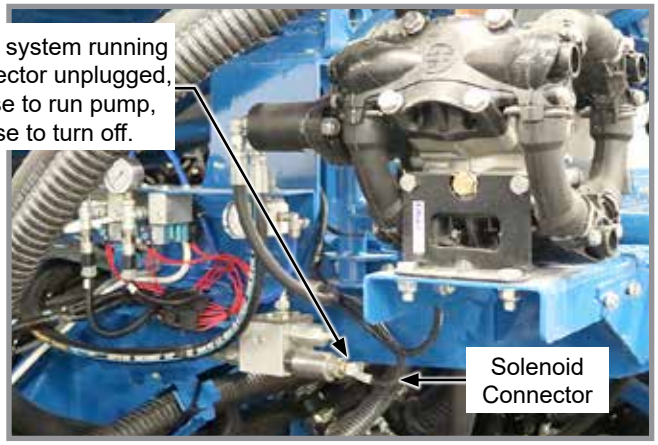


Diaphragm Pump - Model Number AR120

9. Turn the pump over by hand (or with the motor) for 15-20 seconds to remove any fluid in the manifolds and heads.



12 Row



16 Row

10. Reinstall discharge drain plug.
11. Add a 50:50 mix of water and RV antifreeze through the same inlet access port
12. Run the pump for a few seconds to distribute the mix through the manifolds and heads.
13. Fill onboard fertilizer tank with small amount of liquid anti-freeze for winter storage.

WARNING

Antifreeze can cause death or serious injury to persons, animals, and plants or seriously damage soil, equipment, or property. Read and follow all chemical manufacturers labels and instructions.

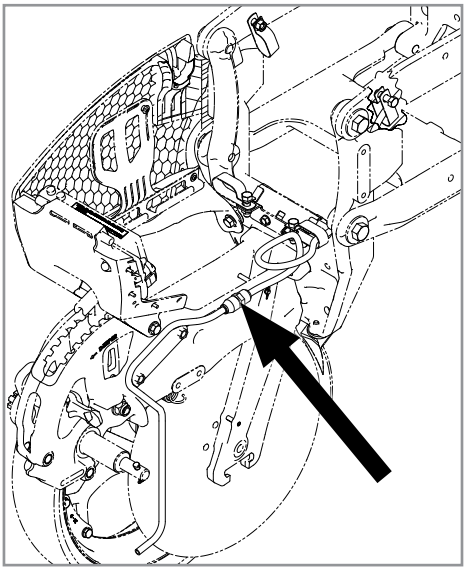
14. Run system so liquid anti-freeze distributes through the manifolds and flow meter on every row unit. Use manual run buttons so antifreeze comes out of every row unit.

NOTICE

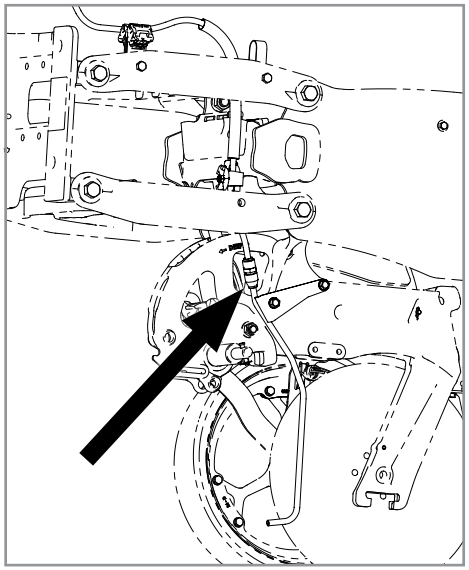
Catch any antifreeze in a container and dispose in a safe manner, to appropriate waste disposal facility, in accordance with local/regional regulations.

15. Wash any excess fertilizer or winterizing fluid off planter before putting into storage.

IN FURROW



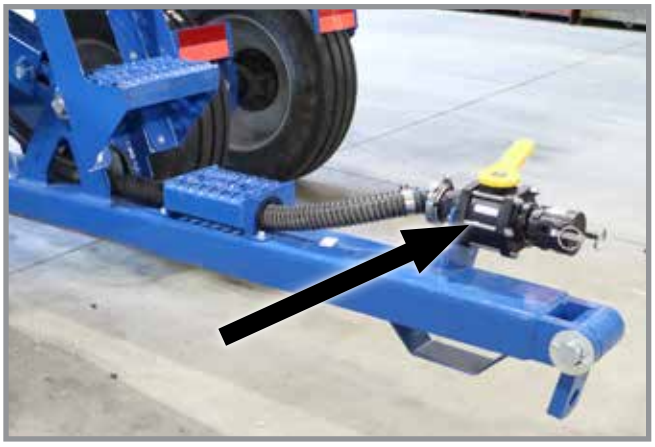
Pull Row Unit



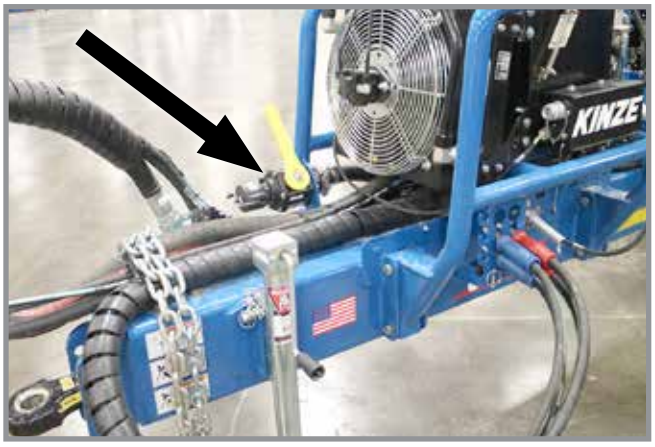
Push Row Unit

In Furrow is available for in-line installation to ensure equal distribution of product at low rates and siphon protection for field turns.

AUXILIARY PLUMBING FOR LIQUID FERTILIZER



Rear Trailer Hitch Auxiliary Plumbing



Front Hitch Auxiliary Plumbing - 16 Row

Rear trailer hitch is used to tow a 3 or 4 wheel wagon behind planter. Hitch height during field operation and transport is 15". Hitch height will raise to approximately 42" when planter is lifted.

NOTICE	**Rear trailer hitch is designed for use with diaphragm pump only. Maximum allowable hitch weight is 200 lb (90.71kg). Do not exceed 6,000 lb (2,721.55 kg) gross towing weight or the equivalent of a loaded 500 gal (1,892.7 L) tank and running gear or equipment can be damaged.**

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

Front Hitch auxiliary plumbing is used to connect to tractor tanks.

Auxiliary plumbing (front or rear) pulls fluid from an auxiliary source with the onboard pump, then is applied with the fertilizer system and controlled with Blue Vantage controls.

Front Auxiliary Valve

Located on the front hitch. This valve should be opened when hooked to a tractor tank for the planting season. Before disconnecting planter from tractor, close this valve and disconnect fluid supply from tractor tanks.

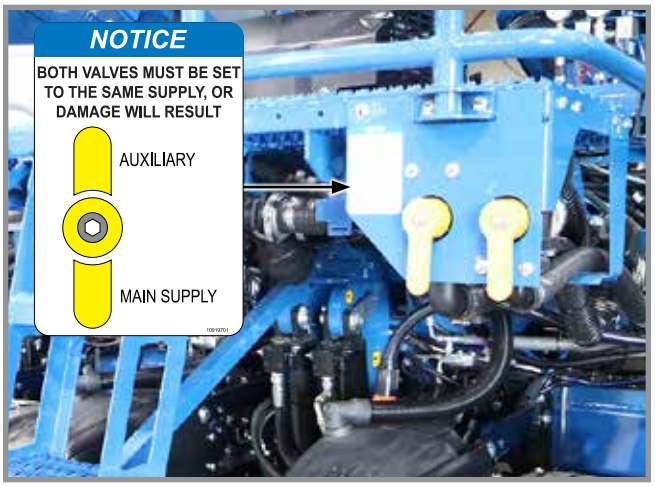
NOTE: Always make sure there is enough slack between the tractor and planter, when making turns and lifting and lowering the planter.

Rear Auxiliary Valve

There is a second valve that will be located on trailer hitch in the rear of the planter so you can pull from a tank on a trailer if you have the trailer hitch.

NOTE: Always make sure there is enough slack between the trailer and planter, when making turns and lifting and lowering the planter.

NOTE: Switch two valves under rear catwalk and the valve at the point of auxiliary hook up either at the front of the planter for tractor tank or on the rear hitch of the planter for trailer tank.



12 Row

16 Row

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FERTILIZER PUMP TROUBLESHOOTING

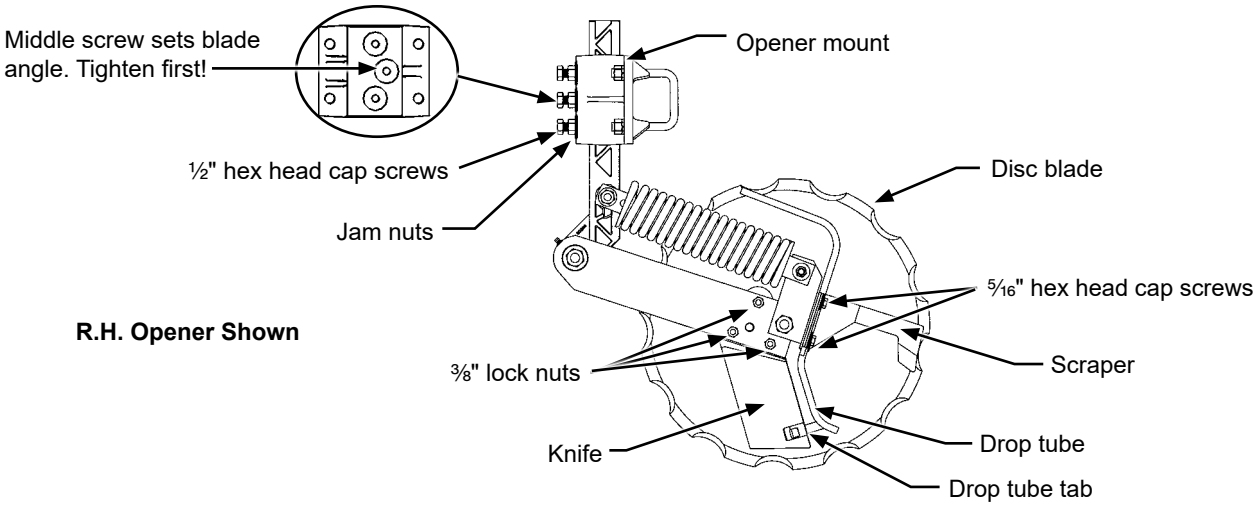
PROBLEM	CAUSE	SOLUTION
Pump does not prime.	Air being sucked in from suction line.	Check suction line connections and inspect it for damage.
	One or more valves not properly sealing.	Check the valves and replace them (if necessary).
Pump does not reach rated working pressure.	One or more valves not properly sealing.	Check the valves and replace them (if necessary).
	Nozzles worn or not correct diameter.	Check nozzles and replace them (if necessary).
	Suction filter plugged.	Clean filter.
	Presence of air pockets or collapsed suction hose.	Check suction line.
Pressure gauge needle fluctuates.	Air being sucked in from suction line.	Check suction line connections and inspect it for damages.
	One or more valves jammed.	Check the valves and replace them (if necessary).
Flow rate falls and pump is noisy.	Oil level in tank has dropped.	Top off oil to correct level.
Excessive noise and vibrations and fall in performance.	Cavitation.	Clean filter.
	Suction hose collapsed.	Check suction line and eliminate any restriction found.
	Suction filter plugged.	Clean filter or change filter cartridge.
	Suction vertical drop to high.	Reduce suction vertical drop.
Oil disappears from tank (after oil topped off)	One or more diaphragms are ruptured.	Stop pump immediately and replace diaphragm.
Oil going into tank changing to milky white color.	Oil/water emulsion into tank. One or more diaphragms are ruptured.	Stop pump immediately and replace diaphragm.

FERTILIZER SYSTEM TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Fertilizer flow not detected.	Plugged orifice.	Clean debris from orifice.
	Row shutoff valve plugged.	Clean debris from shutoff valve, replace if necessary.
	Flow meter plugged.	Open cover and check for debris.
	Jet orifice installed backwards.	Correct orientation of jet orifice.
Fertilizer flow unexpected.	Row shutoff valve stuck open.	Clean debris from shutoff valve, replace if necessary.
Fertilizer rail pressure high.	Improper orifice selection.	Refer to orifice charts.
	Check valve on agitation line installed backwards.	Turn valve around so flow arrow points out of regulator.
No fluid detected.	Fluid inlet sensor does not have power.	Check wiring harness.
	No fluid at pump.	Clean suction strainer regularly.
		Ensure fluid is in tanks, prime pump.
Fertilizer Off - rail sensor error.	Rail pressure sensor is not being powered properly.	Check wiring harness.
	Rail pressure sensor is damaged.	Replace pressure sensor.
Fertilizer Off - suction sensor error.	Suction pressure sensor is not being powered properly.	Check wiring harness.
	Suction pressure sensor is damaged.	Replace pressure sensor.
Fertilizer off - high suction pressure.	Suction pressure has exceeded -7 PSI.	Clean suction strainer regularly.
	Suction strainer is clogged.	
	Suction hose is kinked/damaged.	Replace hose.
	Electronic ball valve is not opening.	Check wiring harness and ball valve.
Pump RPM not detected.	RPM sensor is not being powered properly.	Check wiring harness.
Pump will not run or turn on.	No hydraulic flow to motor.	Send hydraulic flow to pump.
	No fertilizer control enabled.	Blue Vantage must be on and in a fertilizer task.
Pump will not prime or pump.	Plugged suction strainer.	Clean strainers regularly.
	Suction ball valve not opening.	Check wiring harness and ball valve.
Unable to achieve rate.	Plugged row strainers or orifice.	Inspect and clean row flow components.
	Plugged pressure strainer.	Clean strainers regularly.
Flow rate does not read properly below 1.5 GPM.	Lower small system flow meter installed backwards.	Ensure lower small system flow meter is in correct orientation (check arrow direction).
	Lower small system flow meter does not have power/reading incorrectly.	Check wiring harness.
Pump will not pull from auxiliary tank.	Plugged suction strainer.	Clean strainers regularly.
	Air leak in auxiliary hose.	Tighten any loose connections.
Analog pressure gauge needle bouncing.	Inline orifice not installed in hose.	Add orifice to system before gauge.

NOTCHED SINGLE DISC OPENERS

Standard Notched single disc opener adjustments



R.H. Opener Shown

CAUTION

Compressed spring may fly out of this assembly if attempting to disassemble and cause injury. Do not take apart this assembly.

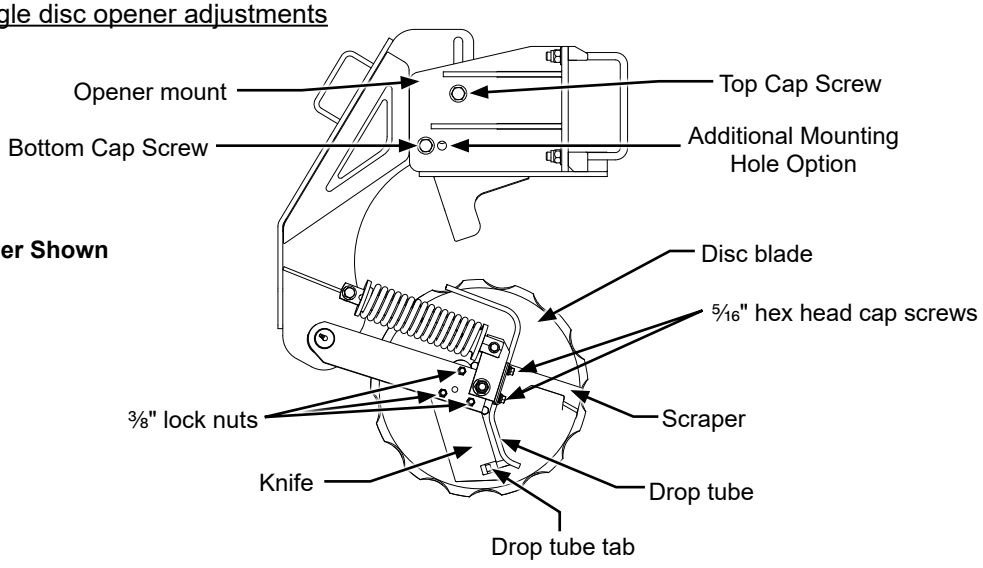
Disc blades are sharp and can cut causing serious injury. Wear gloves when working on or turning disc blades by hand.

NOTICE

Never strike knife with heavy object. Damage to knife will occur.

If knife to disc blade clearance is too large, soil or residue can wedge between knife and blade, and blade will not turn.

Narrow Notched single disc opener adjustments



R.H. Opener Shown

1. Adjust knife to disc blade contact. Loosen or tighten ⅜" lock nuts to adjust knife's entire leading edge against disc blade. Turn blade and check for slight resistance without freewheeling. Readjust knife to blade's tight spot as needed.

NOTICE	**Adjust liquid drop tube out of path of soil flow across knife. Drop tube and tab wear quickly if not correctly adjusted.**

2. Adjust scraper and drop tube. Loosen two 5⁄16" hex head cap screws. Adjust scraper until just touching disc blade. Adjust drop tube until it is centered between knife and disc blade. Tighten screws. Turn blade and check for slight resistance without freewheeling. Repeat as needed. Insert flat bladed pry bar or screwdriver between knife and drop tube above drop tube tab. Carefully bend tube until ¼"-⅜" (6.35 - 9.5 mm) from disc blade.

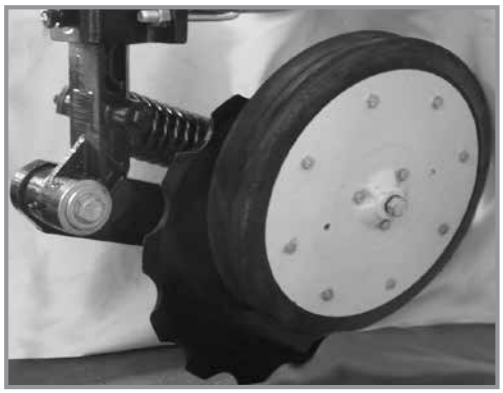
   NOTE: Maximum disc blade depth 4" (10.2 cm).

3. Adjust blade depth.

   Standard Notched single disc opener adjustments:
   Loosen three ½" hex head cap screws and jam nuts in opener mount. Adjust opener assembly up or down to desired blade depth. Tighten center hex head cap screw and jam nut first to set proper disc blade angle. Tighten remaining hex head cap screws and jam nuts. Torque hex head cap screws and jam nuts to 57 ft-lb (77.29 N-m). Check fertilizer hose clearance and adjust as necessary.

   Narrow Notched single disc opener adjustments:
   Loosen top cap screw on mount and leave installed. Remove bottom cap screw, flat washer, and lock nut. Adjust opener to desired height. Reinstall bottom hardware in the corresponding hole. **NOTE: Hardware may need to move to the other hole location depending on selected height.**

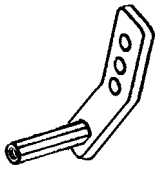
DEPTH/GAUGE WHEEL ATTACHMENT FOR NOTCHED SINGLE DISC FERTILIZER OPENER



Notched single disc opener depth/gauge wheel

Depth/gauge wheel attachment for notched single disc fertilizer opener is used where additional gauging is required to maintain desired fertilizer opener depth. Depth/gauge wheel is attached to notched single disc fertilizer opener using a mounting block fastened to the pivot arm with ⅝" hardware through disc blade bearing.

Depth adjustment is made using 3 adjustment holes in depth/gauge wheel mounting block. Moving depth/gauge wheel increases/decreases depth in approximate 1" increments in relation to blade depth setting made at vertical mounting post.



NOTICE

Disconnect all electronic monitor and control modules prior to making any repairs or modifications to the planter or mounted attachments. Failure to do so will result in permanent damage to sensitive electronic components and could void your warranty.

NOTICE

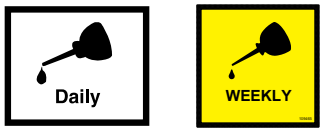
Do not pressure wash any electronic modules directly. Direct pressure washing will result in permanent damage to sensitive electronic components and could void your warranty.

LUBRICATION

Following pages show locations of all lubrication points. Proper lubrication of moving parts helps ensure efficient operation of your Kinze planter and prolongs the life of friction producing parts.

LUBRICATION SYMBOLS

Lubricate at frequency indicated with SAE multipurpose grease.



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

WHEEL BEARINGS

All drive, transport, and marker hub wheel bearings should be repacked annually and checked for wear.

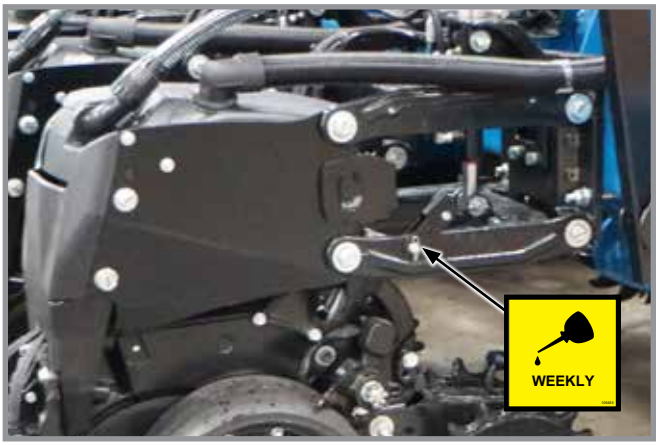
1. Raise wheel off ground.
2. Check for bearing endplay by moving wheel side to side.
3. Rotate wheel to check for bearing roughness. If bearings sound rough, remove hub and inspect bearings.

NOTE: To repack wheel hubs, follow procedure outlined for wheel bearing replacement in this section except bearings and bearing cups are reused.

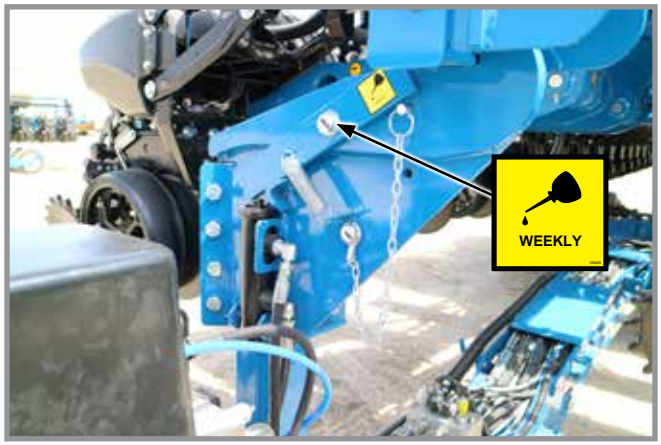
BUSHINGS

Lubricate bushings at frequency indicated.

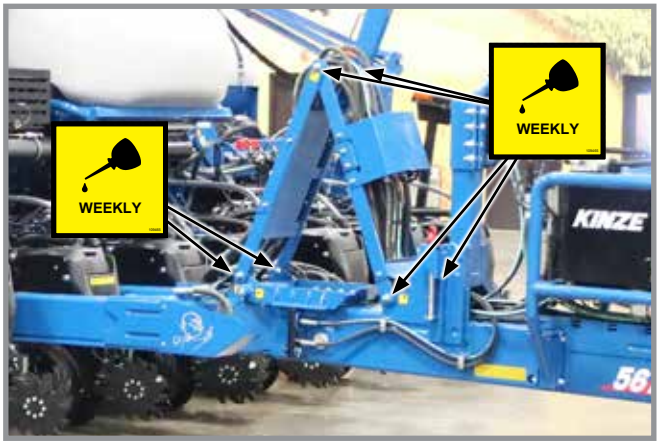
Check each bolt for proper torque. If bolt is loose, removed it and inspect bushing for cracks and wear. Replace bushing if necessary. Use **only hardened flat washers. Replace damaged flat washers with proper part. Torque hardware to 130 ft-lb (176.2 N-m).**



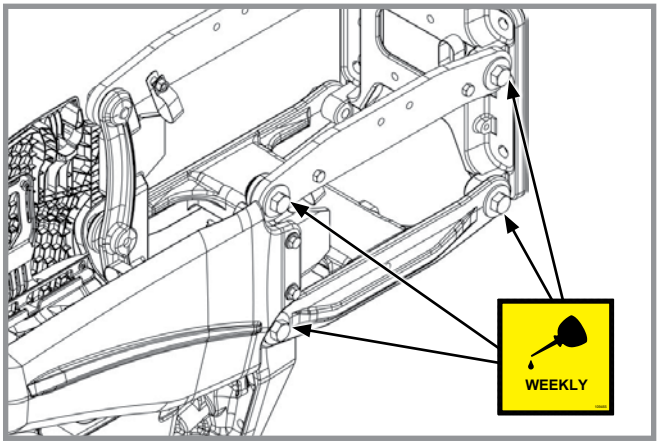
Split Row Push Row Unit Lockups (2 Per Row)



Transport latch (1 location)



Hose take-up (6 locations)



Pull Row Unit Parallel Linkages
8 Per Row

Closing Wheel Arm (2 Per Row)

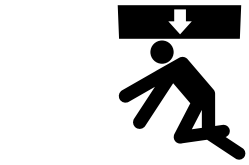
CENTER POST

NOTICE

Any oil or grease on center post and poly wear pads will attract dirt and accelerate wear. Do not lubricate center post and poly wear pads.

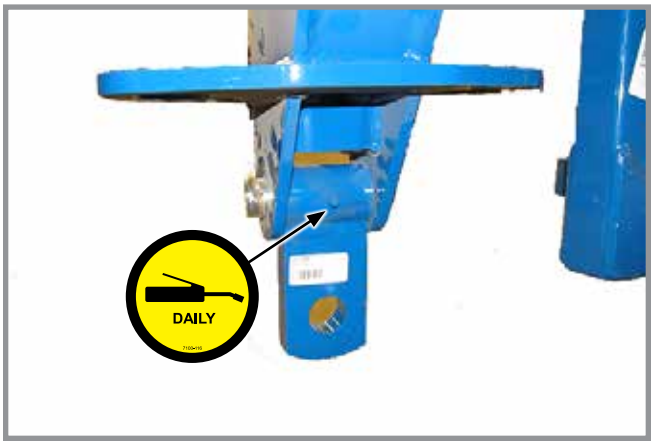
Keep center post surface clean and free of any lubrication to prolong service life. See "Center Frame Wear Pads" on page 5-33 for more information.

GREASE FITTINGS

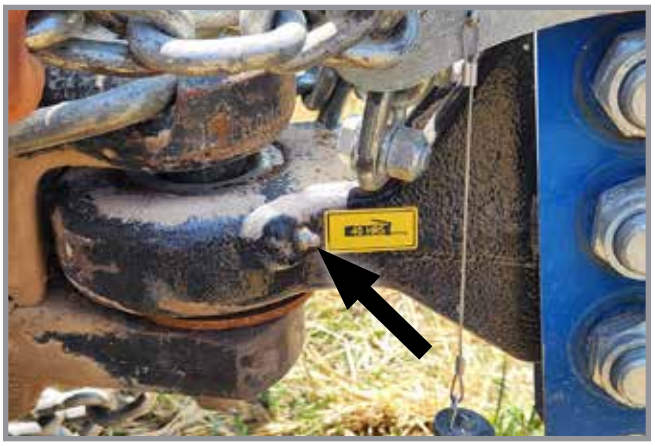


Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Install all safety lockup devices before transporting equipment.

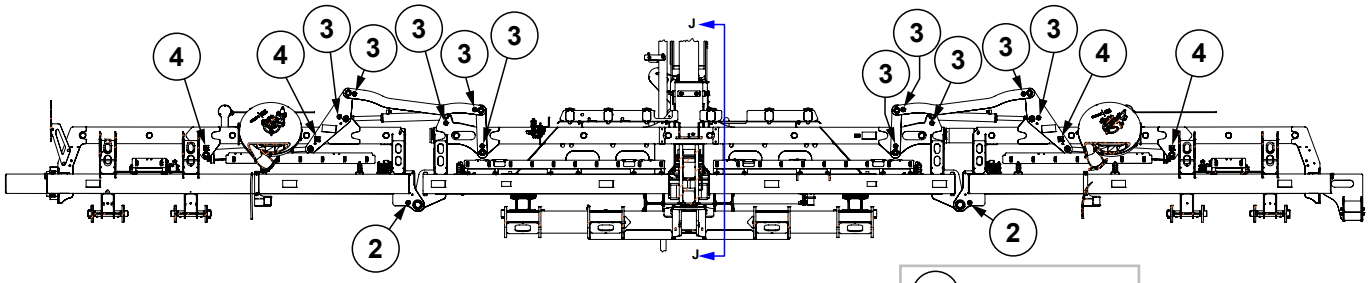
Parts equipped with grease fittings should be lubricated at frequency indicated with an SAE multipurpose grease. Clean fitting thoroughly before using grease gun. Frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent attention.



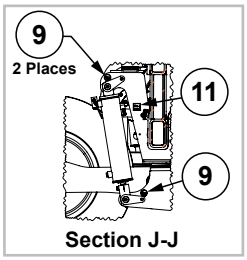
Trailer Hitch
1 fitting



Drawbar Hitch
2 fittings



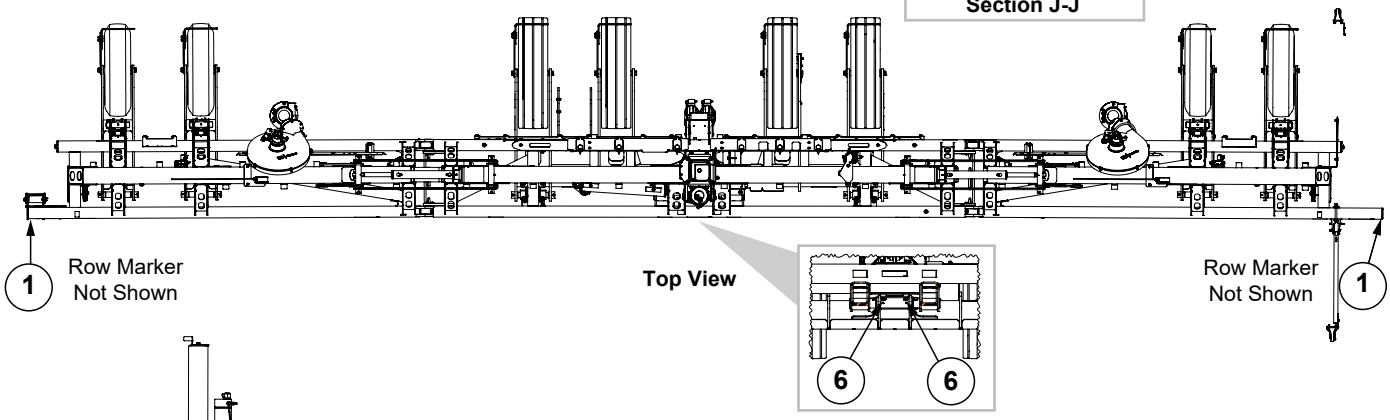
Rear View



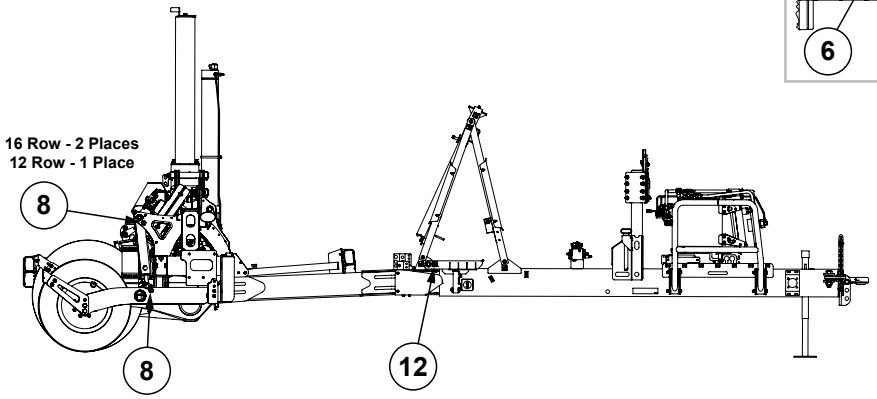
Section J-J

NOTE: Shown with no row units or row markers.

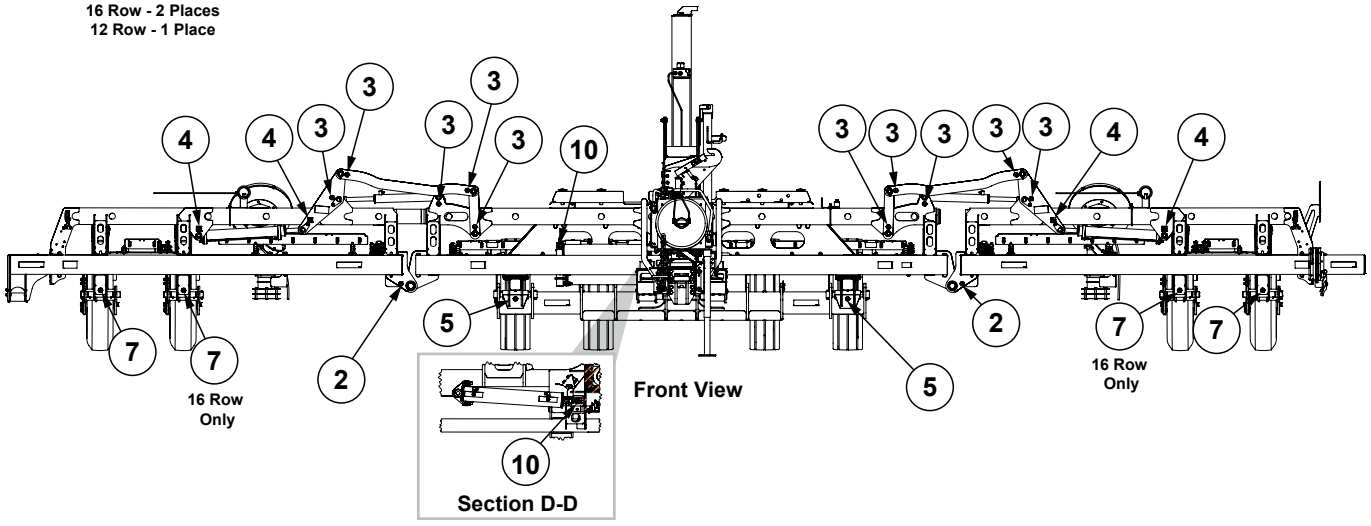
NOTE: Numbers on illustrations correspond to photos on following pages showing lubrication frequencies.



Top View

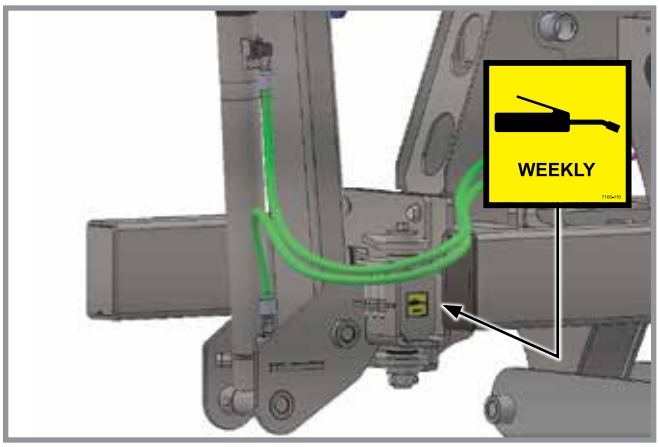


Side View

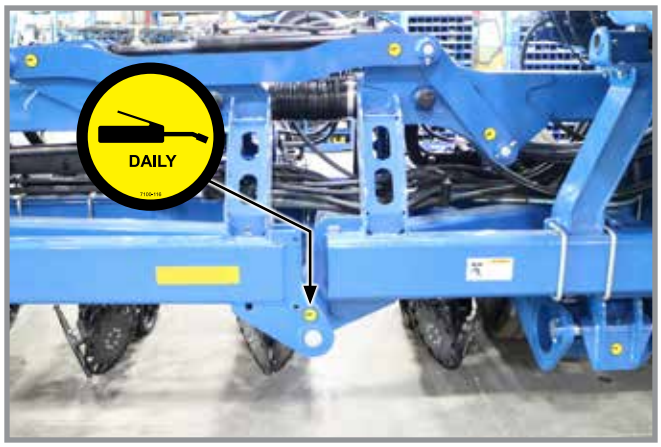


Front View

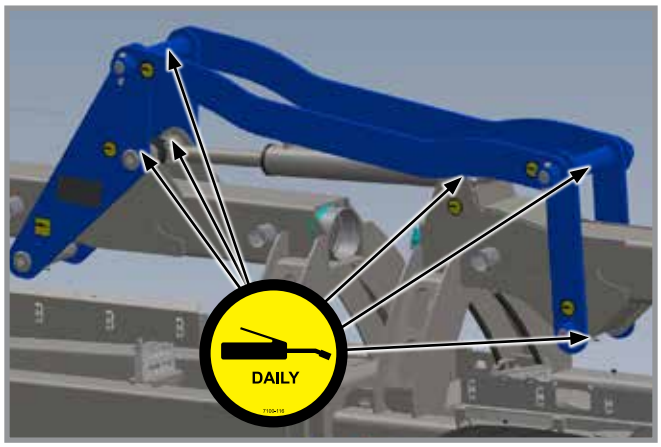
Section D-D



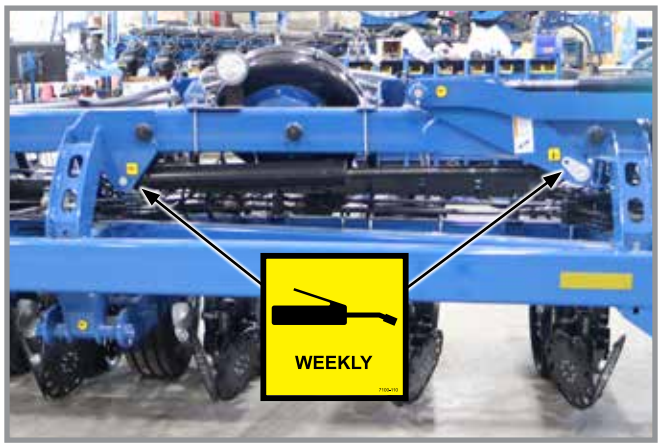
1. Row marker assemblies (if applicable)
1 fittings per assembly - 2 assemblies



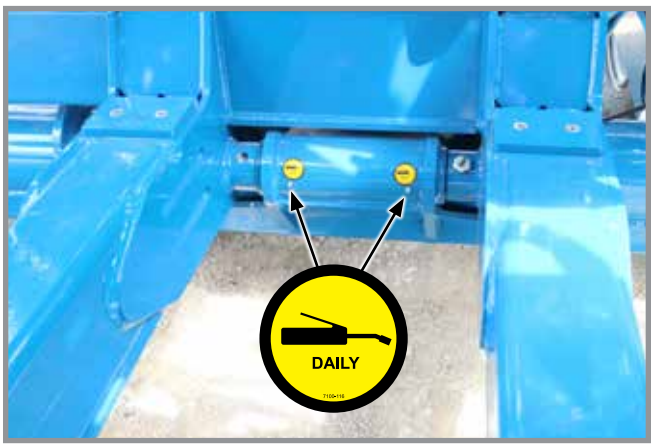
2. Wing hinges
2 fittings per hinge - 2 hinges



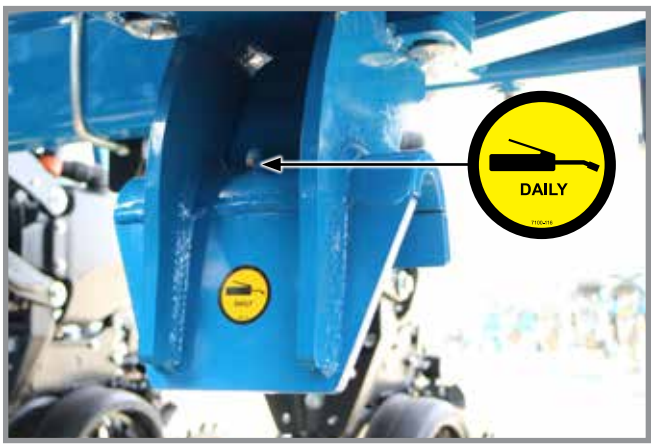
3. Wing Down Force Cylinder and Wing Lock
6 fittings per wing - 2 wings



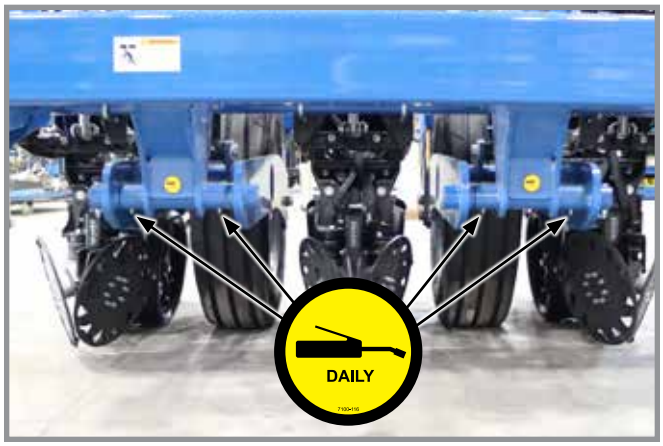
4. Wing Lock Cylinder
2 fittings per cylinder - 1 cylinder on each wing



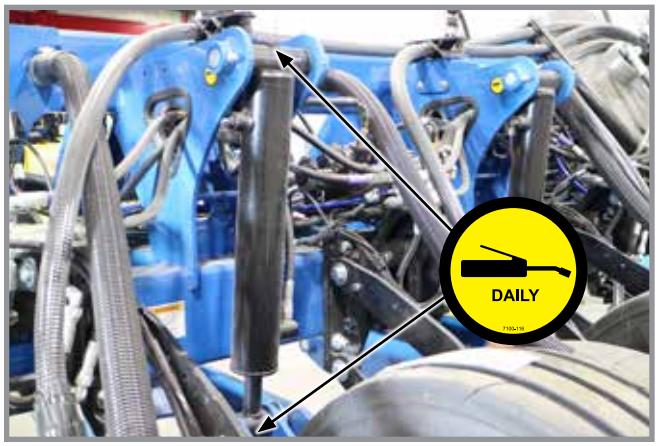
5. Rock shaft
2 fittings



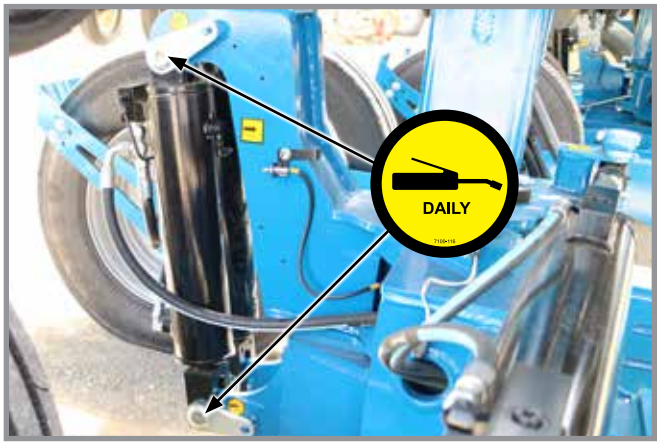
6. Field stabilizer
1 fitting per stabilizer - 2 stabilizers



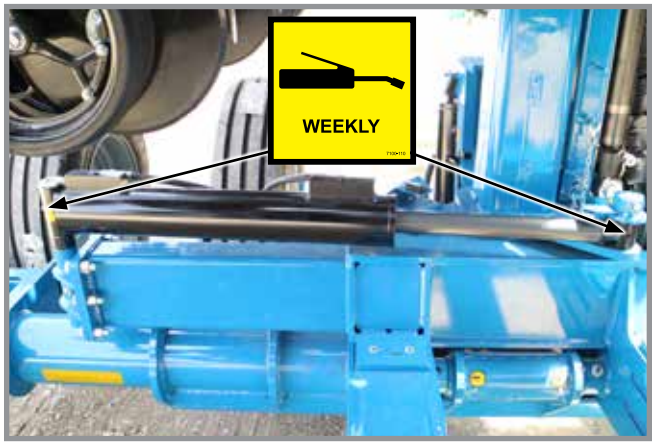
7. Wheel Modules
4 fittings per wing wheel
4 wing wheels (16 Row); 2 wing wheels (12 Row)



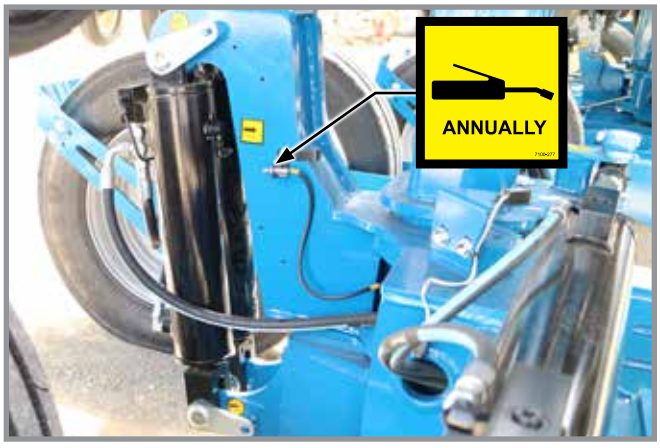
8. Wing lift cylinders
2 fittings per cylinder
4 cylinders (16 Row); 2 cylinders (12 Rows)



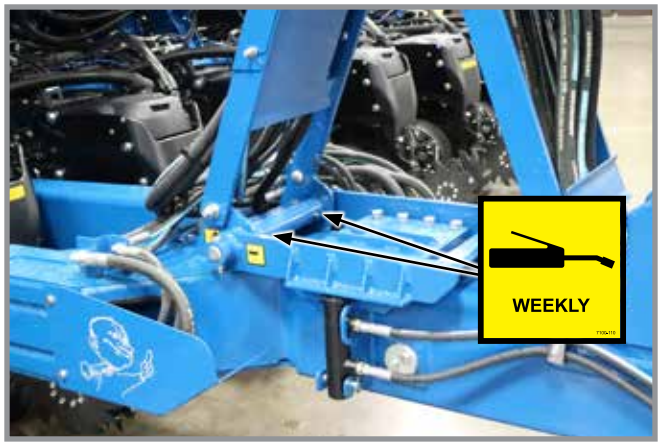
9. Rock Axle cylinders
2 per cylinder - 2 cylinders



10. Rotate cylinders
2 per cylinder - 1 cylinders



11. Center Post
1 fitting



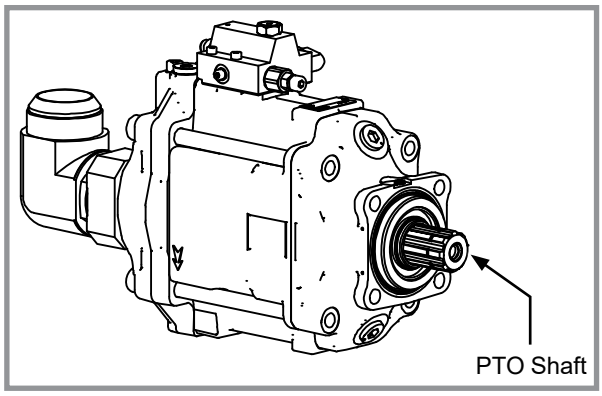
12. Tongue Hook
2 fittings

PTO SHAFT COUPLING

Clean and grease PTO shaft coupling each time pump is installed.

Apply coating of high-speed industrial coupling grease, such as Chevron® Coupling Grease meeting AGMA CG-1 and CG-2 Standards to extend shaft spline life.

Apply chain lubricant twice daily to chain coupler.



Two-section PTO Hydraulic Pump

MOUNTING BOLTS AND HARDWARE

Before operating planter for the first time, check all hardware is tight. Check all hardware again after first 50 hours of operation and beginning of each planting season.

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. Hardware must be replaced with equal size, strength, and thread type.

WARNING

Loose transport wheel lug bolts can result in wheel separation from planter and result in death, serious injury, and damage to property and equipment. Check transport wheel lug nut torque before operating planter for the first time and periodically thereafter.

NOTICE

Over-tightening hardware can reduce its shock load capacity and cause equipment failure.

TORQUE VALUES CHART - PLATED HARDWARE

	Grade 2 (No marks)		Grade 5 (3 marks)		Grade 8 (6 marks)	
Diameter	Coarse	Fine	Coarse	Fine	Coarse	Fine
¼"	50 in-lb	56 in-lb	76 in-lb	87 in-lb	9 ft-lb (12 N-m)	10 ft-lb (14 N-m)
5⁄16"	8 ft-lb (11 N-m)	9 ft-lb (12 N-m)	13 ft-lb (18 N-m)	14 ft-lb (19 N-m)	18 ft-lb (24 N-m)	20 ft-lb (27 N-m)
⅜"	15 ft-lb (20 N-m)	17 ft-lb (23 N-m)	23 ft-lb (31 N-m)	26 ft-lb (35 N-m)	33 ft-lb (45 N-m)	37 ft-lb (50 N-m)
7⁄16"	25 ft-lb (34 N-m)	27 ft-lb (37 N-m)	37 ft-lb (50 N-m)	41 ft-lb (56 N-m)	52 ft-lb (71 N-m)	58 ft-lb (79 N-m)
½"	35 ft-lb (48 N-m)	40 ft-lb (54 N-m)	57 ft-lb (77 N-m)	64 ft-lb (87 N-m)	80 ft-lb (108 N-m)	90 ft-lb (122 N-m)
9⁄16"	50 ft-lb (68 N-m)	60 ft-lb (81 N-m)	80 ft-lb (108 N-m)	90 ft-lb (122 N-m)	115 ft-lb (156 N-m)	130 ft-lb (176 N-m)
⅝"	70 ft-lb (95 N-m)	80 ft-lb (108 N-m)	110 ft-lb (149 N-m)	125 ft-lb (169 N-m)	160 ft-lb (217 N-m)	180 ft-lb (244 N-m)
¾"	130 ft-lb (176 N-m)	145 ft-lb (197 N-m)	200 ft-lb (271 N-m)	220 ft-lb (298 N-m)	280 ft-lb (380 N-m)	315 ft-lb (427 N-m)
⅞"	125 ft-lb (169 N-m)	140 ft-lb (190 N-m)	320 ft-lb (434 N-m)	350 ft-lb (475 N-m)	450 ft-lb (610 N-m)	500 ft-lb (678 N-m)
1"	190 ft-lb (258 N-m)	205 ft-lb (278 N-m)	480 ft-lb (651 N-m)	530 ft-lb (719 N-m)	675 ft-lb (915 N-m)	750 ft-lb (1017 N-m)
1⅛"	265 ft-lb (359 N-m)	300 ft-lb (407 N-m)	600 ft-lb (814 N-m)	670 ft-lb (908 N-m)	960 ft-lb (1302 N-m)	1075 ft-lb (1458 N-m)
1¼"	375 ft-lb (508 N-m)	415 ft-lb (563 N-m)	840 ft-lb (1139 N-m)	930 ft-lb (1261 N-m)	1360 ft-lb (1844 N-m)	1500 ft-lb (2034 N-m)
1⅜"	490 ft-lb (664 N-m)	560 ft-lb (759 N-m)	1100 ft-lb (1491 N-m)	1250 ft-lb (1695 N-m)	1780 ft-lb (2413 N-m)	2030 ft-lb (2752 N-m)
1½"	650 ft-lb (881 N-m)	730 ft-lb (990 N-m)	1450 ft-lb (1966 N-m)	1650 ft-lb (2237 N-m)	2307 ft-lb (3128 N-m)	2670 ft-lb (3620 N-m)

NOTE: Torque unplated hardware and bolts with lock nuts approximately ⅓ higher than above values. Torque bolts lubricated prior to installation to 70% of value shown in chart.

SPECIAL TORQUE VALUES AND INSTRUCTIONS

Row unit parallel linkage bushing hardware	190 ft-lb (258 N-m)
⅝" No till coulter spindle hardware	120 ft-lb (162 N-m)
Row Unit Disc Opener Blade Bolt**	125 ft-lb (169 N-m) **Left hand side is left hand thread.
⅝" - 18 Wheel Lug Nuts and Lug Bolts	200 ft-lb (271 N-m)
9/16" - 18 Wheel Lug Nuts and Lug Bolts	125 ft-lb (169 N-m)
Row Unit Support (Face Plate)	115 ft-lb (156 N-m)
Notched Single Disc Opener - ¾" L-bolts	160 ft-lb (217 N-m)
Notched Single Disc Opener - ⅝" Hex Head Cap Screws	90 ft-lb (122 N-m)
Notched Single Disc Opener - ¾" Hex Set Screws	160 ft-lb (217 N-m)
Gauge Wheel Spindle	1000 ft-lb (1356 N-m)
Master Cylinder - ½"-13 Hex Socket Head Cap Screws (24 Row 20" Only)	125 ft-lb (169 N-m)

CYLINDER ROD PISTON RETAINING NUT TORQUE CHART

	Non-Nylock Nut	Nylock Nut
½"-20	55-70 ft-lb (75-95 N-m)	45-55 ft-lb (61-75 N-m)
¾"-16	115-125 ft-lb (156-169 N-m)	100-115 ft-lb (136-156 N-m)
⅞"-14	150-180 ft-lb (203-244 N-m)	130-150 ft-lb (176-203 N-m)
1"-14	275-330 ft-lb (373-447 N-m)	250-275 ft-lb (339-373 ft-lb)
1⅛"-12	300-375 ft-lb (407-508 N-m)	275-300 ft-lb (373-407 N-m)
1¼"-12	300-375 ft-lb (407-508 N-m)	275-300 ft-lb (373-407 N-m)

TORQUE VALUES- ALUMINUM

Diameter	Torque Value
⅛"	180-220 in-lb
⅜"	350-380 in-lb
½"	350-400 in-lb
¾"	350-400 in-lb
NOTE: Use these torque values with pneumatic down pressure components.	

TORQUE VALUES - TRUE DEPTH HYDRAULIC DOWN FORCE

Cylinder Head to Body:	70 ft-lb
Cylinder Piston to Rod:	50 ft-lb
Row Unit Valve Cartridge to Line Body:	30 ft-lb
Row Unit Valve Solenoid to Valve:	4-6 ft-lb

NOTE:
1. **A 6-Pt Socket must be used to torque the cylinder head to the body.**
2. **Apply blue threadlocker to cylinder head threads when reassembling.**
3. **Replace piston to rod locknut with equivalent 7/16-20 locknut before reassembling.**

ETHERNET CABLE TORQUE VALUES

Ethernet Cables	 **Torque Driver (P/N: GA26173)**	0.7 N-m

TIRE PRESSURE

WARNING

Explosive separation of rim and tire parts can cause death or serious injury. Overinflation, rim and tire servicing, improper use of rims and tires, or worn or improperly maintained tires could result in a tire explosion.

- Maintain proper tire pressure. Inflating a tire above or below the recommended pressure can cause tire damage.
- Mount tires only by properly trained personnel using proper equipment.
- Replace tires with cuts or bubbles. Replace damaged rims. Replace missing lug bolts and nuts.
- Do not weld or heat wheel assembly. Heating increases tire pressure.

TRANSPORT TIRES

WARNING

Overinflation of tires can result in explosive separation of rim and tire and cause death or serious injury. Different size rims are designed for different tire pressures. Inflate to correct pressure for specific rim size.

INFLATION SPECIFICATIONS

Tire locations (12 Row Shown)

1. Torque transport wheel ⅝"- 18 lug nuts to 200 ft-lb (271 N-m).

2. Inflate tires to the following specifications:

   Transport (center section)
   12 Row: VF245/70R19.5 . . . . . .75 psi (517.1 kPa)
   16 Row: VF295/75R22.5 . . . . . .65 psi (448.1 kPa)
   Wings VF245/70R19.5 . . . . . .50 psi (344.7 kPa)

3. Lubricate planter following instructions in Lubrication and Maintenance section of supplied Operator's manual.

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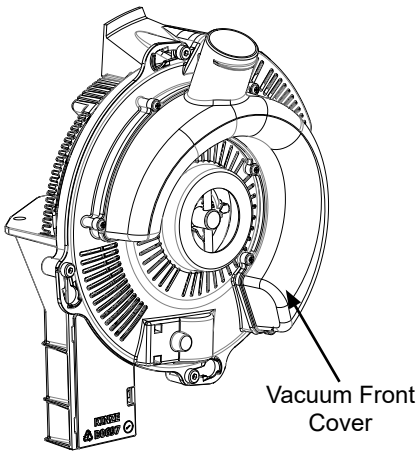
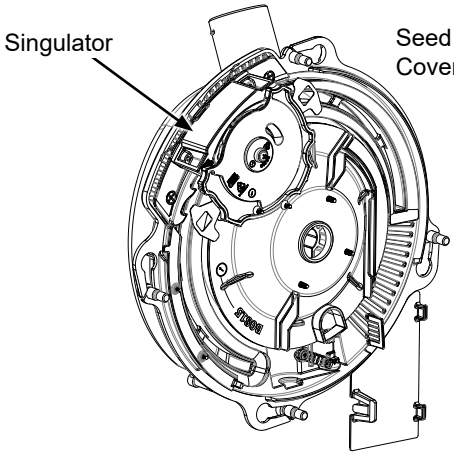
TRUE RATE METER MAINTENANCE





Before each planting season inspect seed discs and singulator and clean or replace as needed.

Use clean, high quality seed for maximum meter accuracy. Damaged or cracked seed, hulls, and foreign material may become lodged in seed disc orifices and greatly reduce meter accuracy.

Inspect and clean seed discs daily checking for any buildup of foreign material and blocked orifices. If seed disc orifices are plugged frequently with seed remnants, clean out brush with ball-type ejector (if applicable) may need to be replaced. Clean seed disc by washing it with soap and water. Dry thoroughly.

Inspect singulator blades and guide for wear after every 80 ha per row of operation. If adjustment of singulator blade does not affect meter performance or if blades appear worn, singulator blade may need to be replaced.

Replace seed disc or vacuum seal if abnormally high vacuum is required or if consistent operation cannot be achieved. See "Preparation for Storage" on page 5-38 for additional Vacuum Seed Metering System maintenance.

NOTE: Remove seed discs from meters for annual storage and store them vertically on a dowel or pipe.

TRUE RATE SEED METER CLEANOUT

NOTE: Use of damaged seed or seed containing foreign material will cause plugging of seed cell orifices and require more frequent seed meter cleanout to prevent underplanting.

Thorough seed meter cleanout is important to maintain genetic purity.

1. Disengage seed drive and remove seed hopper and meter.
2. Dump seed from right rear corner of hopper into a container.
3. Lay hopper on its right side. Push release button and rotate seed meter vacuum cover clockwise to align keyhole slots with bolt heads. Lift off cover.
4. Rotate seed disc hub clockwise to unlock and remove seed disc.
5. Empty meter.
6. Thoroughly inspect meter to ensure all seed is removed.
7. Replace seed disc. Install vacuum cover.

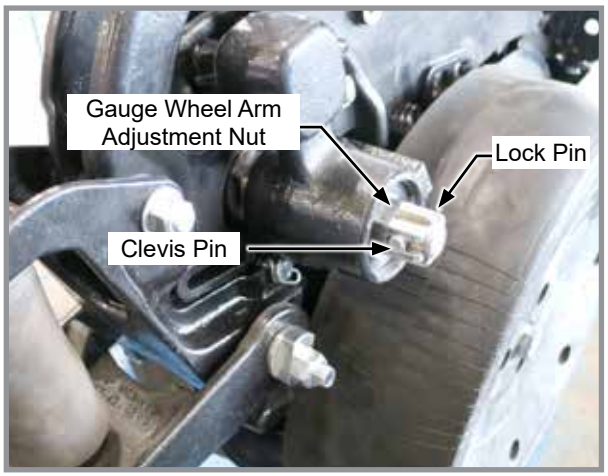
NOTE: See "Preparation for Storage" on page 5-32 to prepare seed meters and seed delivery tubes for storage.

VACUUM MANIFOLD MAINTENANCE

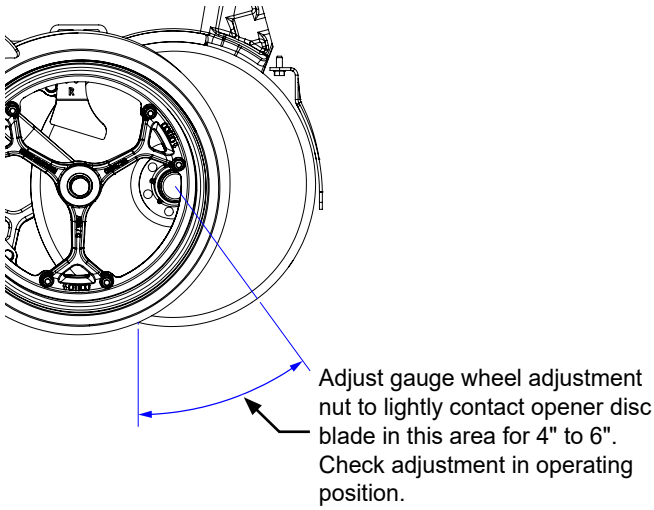
Dust accumulates in manifolds and hoses during normal operation. Clean manifolds annually. Abnormally dusty planting conditions may require more frequent cleaning.

1. Remove vacuum hose from each seed meter.
2. Operate vacuum fan at full hydraulic flow from tractor for two minutes to clear manifolds, hoses, and fittings of dust and debris.
3. Shut down fan and replace hoses.

GAUGE WHEEL ADJUSTMENT



Align the closest adjustment nut slot and hole in spindle, secure with clevis pin and lock pin.



Gauge Wheel Adjustment

Remove lock pin and clevis pin from gauge wheel arm adjustment nut. Unscrew or screw in nut to adjust contact between gauge wheels and opener blades. Gauge wheels should lightly contact opener blades to prevent accumulation of dirt or trash. Gauge wheels and opener blades should turn with only slight resistance.

Use the following guidelines:

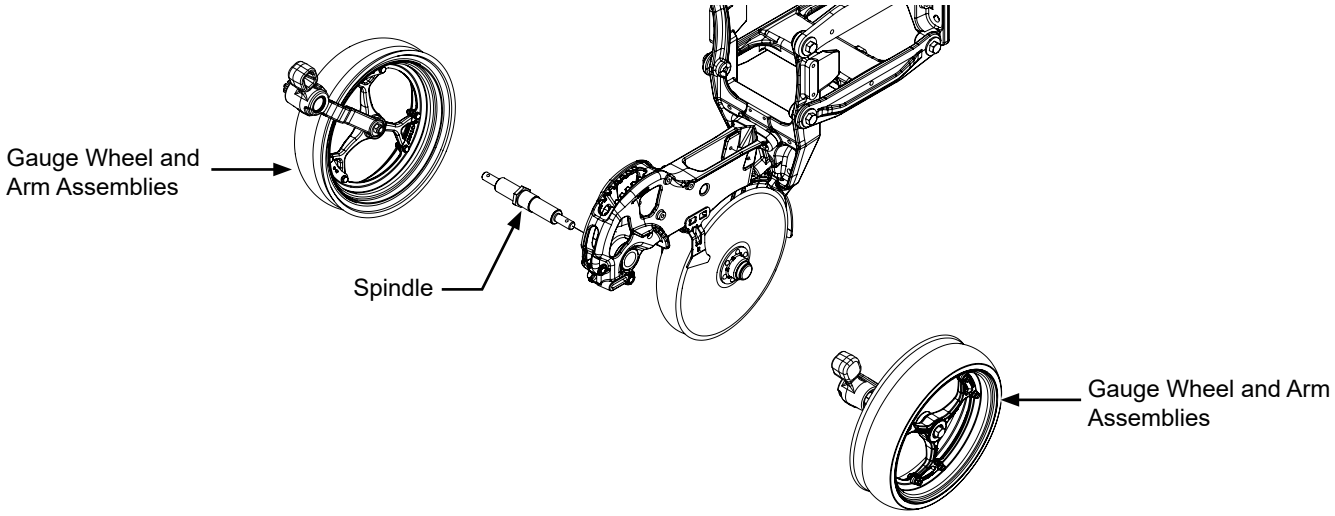
NOTE: Set depth adjustment handle at 3x2 position and lift gauge wheel to stop one side at a time.

Contact should be no less than one half of the rotation of the wheel, while not sticking in any position (it does not have to be continuous). Wheel should rotate in the direction of travel of the row unit. Wheel can be held in position by supporting the spindle bolt head.

GAUGE WHEEL ARM PIVOT SPINDLE REPLACEMENT

NOTE: Spindle replacement should take place if threads are damaged and/or worn.

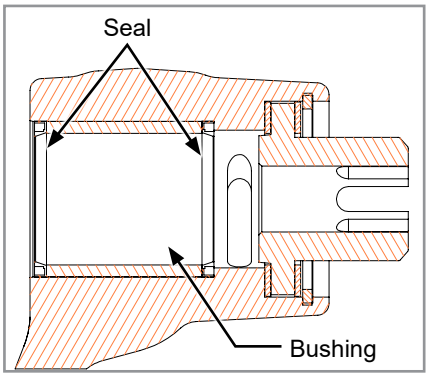
1. Remove lock pin and clevis pin from gauge wheel arm adjustment nut, that locks pivot spindle in place. Rotate nut counter-clockwise to unscrew from spindle.
2. Remove gauge wheel and arm assemblies from shank assembly.
3. Remove spindle using impact socket tool (P/N: G10974201).
4. Ensure spindle threads are clean and apply anti-seize on threads.
5. Install replacement spindle and position as shown. Torque spindle to 1000 ft-lbs.
6. Reinstall gauge wheel and arm assemblies. Adjust for proper gauge wheel tire/disc blade clearance.

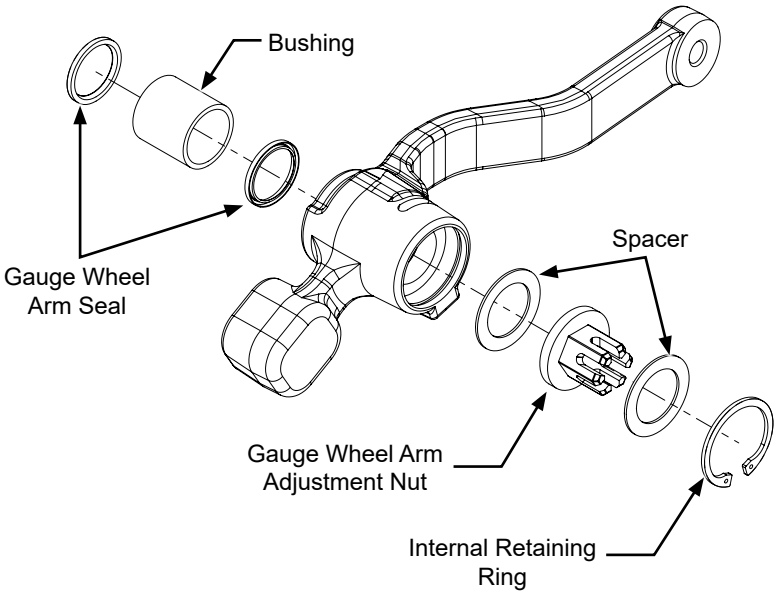


GAUGE WHEEL ARM BUSHING/SEAL

NOTE: If there is ¼"-⅜" of side-to-side movement at the the gauge wheel, this will indicate that the bushing/ seals are worn or damaged in the gauge wheel arm. Replace entire gauge wheel arm if movement occurs.

NOTE: Replace spacers if gauge wheel arm slides back and forth.



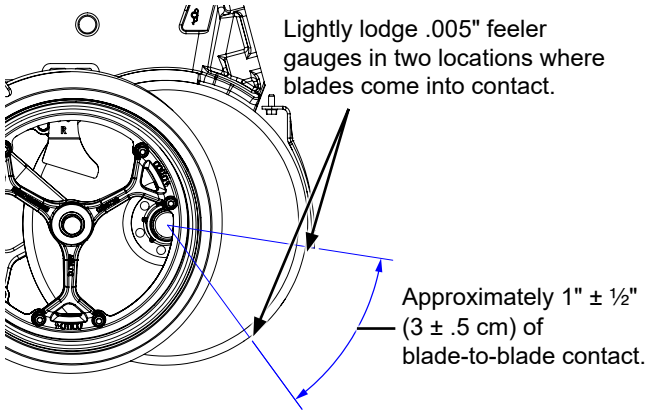


15" SEED OPENER DISC BLADE/BEARING ASSEMBLY

NOTICE

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, opposite blade should rotate with less than 5 pounds force (22 newtons) at outer edge of blade.

Maintain approximately 1" ± ½" (3 ± 5 cm) of blade-to-blade contact to properly open and form seed trench. As blade diameter decreases due to wear, it is necessary to relocate machine bushings from inside to outside to maintain 1" ± ½" (3 ± 5 cm) of contact.



NOTE: Proper blade clearance is critical. Blades should have 1" ± ½" (3 ± 5 cm) contact in this area. Contact can be measured with two 0.005" feeler gauges, lightly lodge between the blades oriented per the dimension in the illustration. When blades are turned by hand in opposite directions against each other, there should be only light resistance to turning. Re-adjust blade scraper if necessary to center it between the blades.

NOTE: Replace blades If proper blade-to-blade contact cannot be maintained after relocating machine bushings or if blade diameter wears below 14½" (36.8 cm). If there is an opening between the top of the blade and the shank, the blades are below 14½".

REPLACE DISC BLADE/BEARING ASSEMBLY

NOTE: Only bearing may need to be replaced if there is excessive endplay or if bearing sounds or feels rough when disc blade is rotated.

1. Remove gauge wheel, scraper, and bearing dust cap.
2. Remove cap screw, washer and disc blade/bearing assembly. Machine bushings between shank and disc blade are used to maintain approximate 1" ± ½" (3 ± 5 cm) of blade-to-blade contact.

NOTICE

Left hand side of opener uses a left hand threaded cap screw. DO NOT OVER TIGHTEN. Damage to shank threads require replacement of row unit shank assembly.

3. Install machine bushing(s), new disc blade bearing assembly, washer and cap screw. Torque ⅝"-11 Grade 5 cap screw to 125 ft-lb (169 N-m).

NOTE: Replace disc blades only with disc blades of equal thickness.

4. Install bearing dust cap, scraper, and gauge wheel.

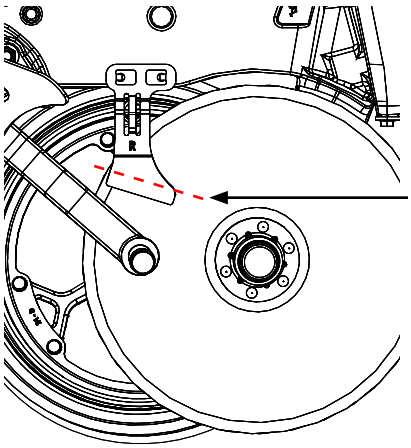
15" SEED OPENER DISC BLADE/BEARING ASSEMBLY (CONTINUED)

REPLACE BEARING ONLY

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. Installing new bearing. Install three evenly spaced ¼" cap screws into three of six holes in bearing housing to hold bearing and bearing housing in place. Install rivets in 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 110 ft-lb.
5. Install bearing dust cap, scraper, and gauge wheel.

REPLACE DISC BLADE SCRAPER

Disc blade scraper should maintain adequate contact with blade. Scraper needs to be replaced once there is no longer contact with blade.



SEED TUBE GUARD/INNER SCRAPER

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

Remove seed tube and check for wear. Excessive wear on seed tube indicates a worn seed tube guard. Replace seed tube guard if it measures ⅝" or less at lower end. A new seed tube guard measures approximately ⅞".

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

Remove gauge wheel and disc blade from one side of row unit. Lift up inner scraper approximately 90° to remove from slot when replacement is necessary.

Seed Tube Guard/Inner Scraper
(Gauge wheel/seed opener disc blade removed for easier identification of scraper)
True Rate Scraper Shown

ROW UNIT MOUNTED NO TILL COULTER

Check nuts and hardware periodically for proper torque.

NOTE: Torque ⅝" spindle hardware to 120 ft-lb (162 N-m).

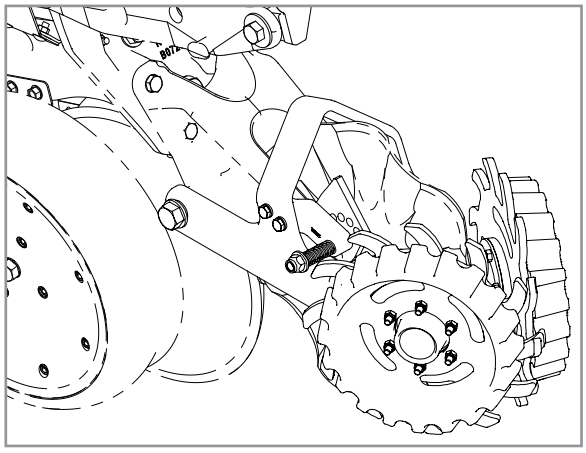
Be sure coulter is positioned square with row unit and aligned in front of row unit disc opener.

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

Replace 16" diameter coulter blade when worn to 14½" (37 cm).

Row Unit Mounted No Till Coulter

COULTER OR ROW UNIT MOUNTED RESIDUE WHEELS W/TREADER

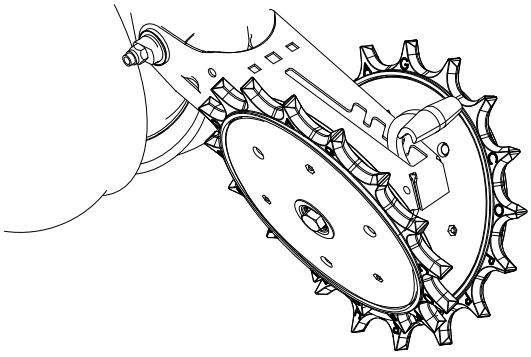


Coulter Mounted Residue Wheels W/Treader

Wheel hubs are equipped with sealed bearings. If a bearing sounds or feels rough when wheel is rotated, replace them.

SPIKED CLOSING WHEEL

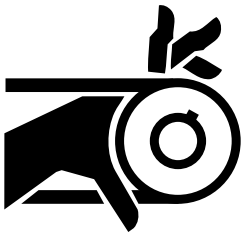
Inner parts of spiked closing wheel will begin to wear at approximately 70% of life. Flip/reverse wheel to utilize remaining life of wheel.



Row Unit Spiked Closing Wheel

YETTER 2940 AIR ADJUST RESIDUE MANAGER MAINTENANCE

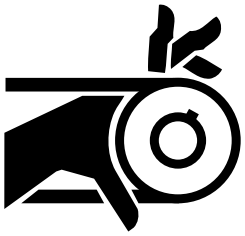
WARNING



Serious injury may occur from moving parts such as belts, pulleys, flywheels, or fans if they come in contact with you or your clothing.

Do not operate air compressor without protective belt guards installed. Replace damaged protective covers or guards immediately.

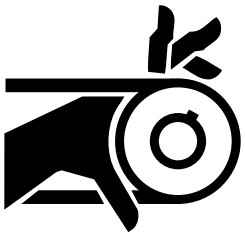
WARNING



Hydraulic air compressor with automatic controls can restart at any time and cause bodily injury.

Always unplug air compressor and drain air tanks completely before attempting any repairs or performing maintenance. Never allow children or adolescents to operate air compressor.

WARNING



Serious injury may occur if repairs are attempted with damaged, missing, or removed protetive guards, shrouds, or missing covers.

All repair to the air compressor should be made only by authorized or trained service personnel.

WARNING

Serious burn injuries could occur from touching exposed metal parts such as compressor head, copper/ braided discharge lines, and hydraulic motor during operation and even after compressor is shut down for sometime.

Never touch any of the exposed metal parts during operation and for an extended period of time after air compressor has shut down. Do not attempt maintenance on the unit until it has beeen allowed to completely cool.

Compressor oil change

Compressor needs oil changed after initial 50 hour break in, then oil should be changed every 1000 hours. 17 ounces (½ liter) of oil is required to fill compressor.

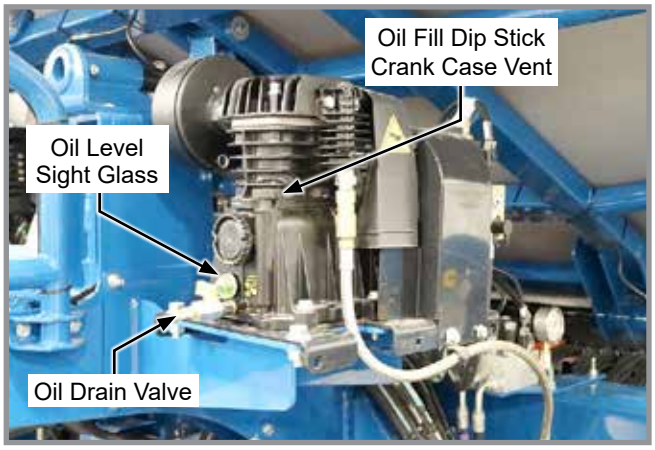
NOTE: 1 quart of hydraulic air compressor oil is P/N: G10649401.

Reciprocating air compressor pumps will consume a certain amount of oil under normal operation. When filling crankcase with oil, use a single viscosity, non-detergent oil blend specifically for air compressor use (refer to chart). DO NOT USE A DETERGENT OIL!!

	TEMPERATURE			
Fahrenheit (Celsius)	0°-32°F (-17°-0°C)	32°-55°F (0°-13°C)	56°-100°F (14°-38°C)	-10°-115°F (-23°-47°C)
Non-Detergent Air Compressor Oil*	10 WT	20 WT	30 WT	Synthetic Oil

*A suitable air compressor oil has additives to reduce wear, eliminate foaming, and prevent carboning.

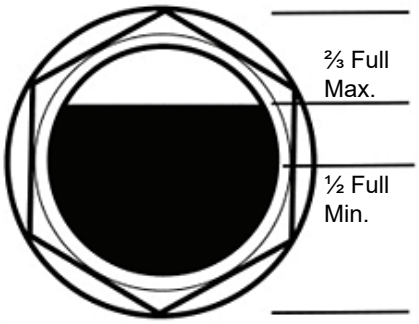
NOTE: All models are splash lubricated by means of dippers on connecting rods. The pump MUST be operated in a level position for proper lubrication, pump is located on planter toolbar for this purpose. The planter toolbar should be level so the compressor should always be level.



NOTE: Compressor must be on level ground to avoid over or under filling oil.

1. Place container (capable of holding approximately 1 quart) underneath oil drain hose.
2. Open oil drain valve on compressor to start flow of old oil. When oil stops coming out close drain valve.
3. Remove oil dipstick and slowly fill pump with oil until oil reaches fill line on sight glass.

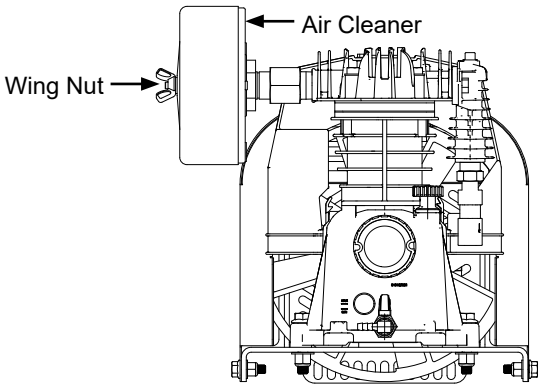
   NOTE: Fill pump slowly as there is a delay between oil entering pump and seeing oil on the sight glass.
4. Confirm oil level is full on the dipstick as well.
5. Reinstall dipstick.



Replacing Air Filter

Air filter needs to be replaced annually.

1. Remove wing nut on the air filter housing.
2. Remove air filter cover and air filter.
3. Reinstall new air filter. See parts manual for filter part number.
4. Reinstall filter cover and wing nut, making sure filter is sealed between filter base plate and cover.



Compressor Air Tank Water Drain

The air tank is located in the frame.

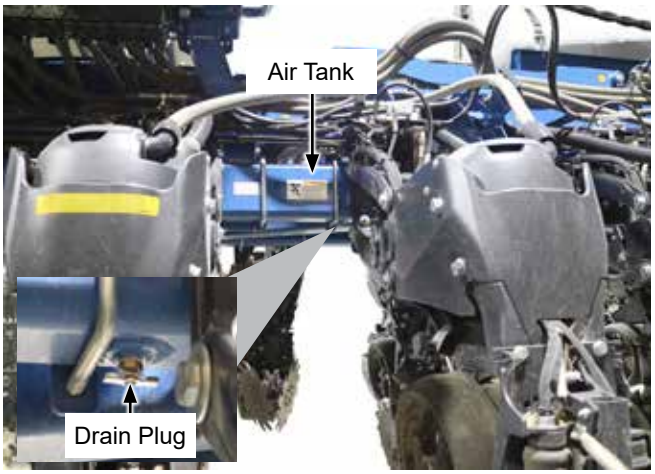
NOTE: It is recommended to drain water out of the tank after each day of use.

NOTE: Planter needs to be level when draining tank.

NOTE: If moisture is not drained from tank rust particles will form inside tank.

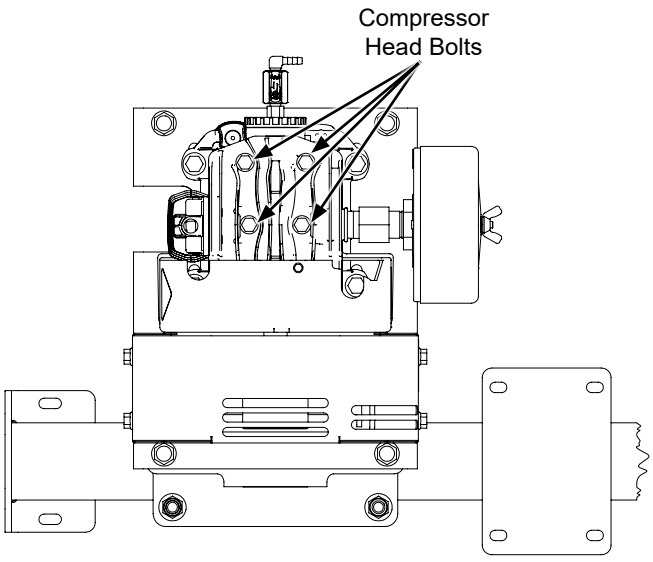
NOTE: Tank should be drained completely for storage.

To drain tank, locate drain plug on the bottom of tank. Stand off to the side of tank and pull cable attached to drain.



Re-Torque Compressor Head Bolts

Compressor head bolts should be re-torqued after a break in period of 200 hours or 4 weeks of operation. Re-torque head bolts to 19 ft-lbs.



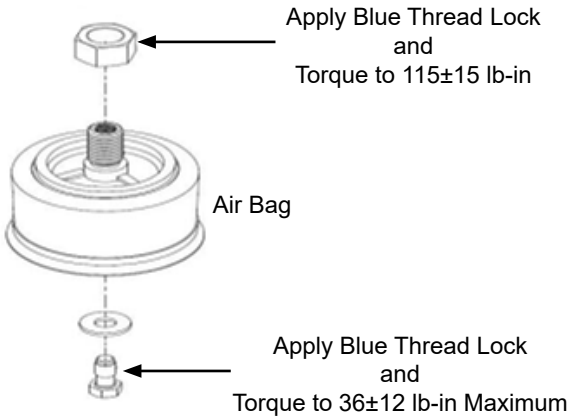
Air Bag Replacement

Replace air bags as needed.

Remove existing airbag and hardware. Discard.

Install new airbag using ⅝" hex nut and 5⁄16"-18 x ¾" cap screw applying blue thread lock.

Torque hex nut to 115±15 lb-in; cap screw to 36±12 lb-in maximum.



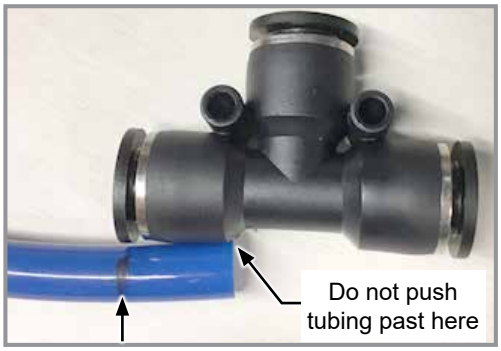
Pneumatic Tubing

NOTICE

Do not distort or crush tubing when cutting. Cut tubing square using tube cutters (Kinze part number GA13169). An angle cut can cause air leaks affecting performance.

Air connections are made using push to connect adapters. If an airline pops out of an adapter, push it all the way back in. If an airline needs to be removed from an adapter, the push to connect collet must be pushed in before the airline can be removed.

NOTE: Do not push tubing into adapters too far, doing so could block flow to the outlet. Visually check airline before pushing in, a mark on tubing can be made for reference.



TRACTOR MOUNTED PUMP DRIVE AND OIL COOLER

NOTICE

Clean and grease PTO shaft coupling with high-pressure industrial coupling grease (Chevron® coupling grease or equivalent) meeting AGMA CG-1 and CG-2 Standards each time driveshaft is installed or premature wear and equipment failure can occur.

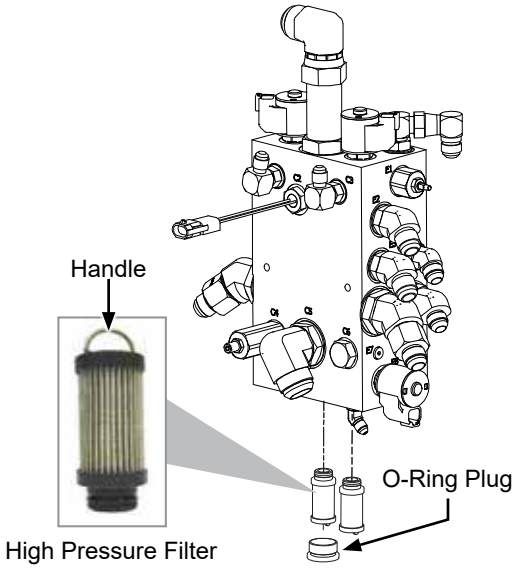
NOTE: Periodically check and clean oil coolers.

1. Replace 10-micron spin-on filters on tank annually.
2. Fill system with SAE 10W-20 multigrade wide temperature range transmission hydraulic fluid. Reservoir capacity is approximately 20 gallons (75.7 L).
3. Start system and run with tractor at idle and fans turned off for 1-2 minutes. Switch fans to full speed and run with tractor at idle for 1-2 minutes.
4. Check reservoir fluid level and fill as required. Hydraulic fluid level should be within 1"- 2" from top of reservoir after pump has run and hydraulic hoses have been primed to allow fluid to expand when heated.

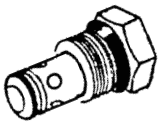
<u>High Pressure Filters</u>

NOTE: Replace high pressure filter after first season and then check annually. If debris has collected on filter, replace filter.

1. Remove O-ring plug on top of filter.
2. Pull old filter straight out using handle.
3. Insert new filter.
4. Reinstall O-ring plug. **NOTE: Ensure handle is seated down before installing O-Ring plug to avoid crushing filter.**

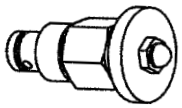


CHECK VALVE



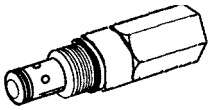
A check valve is located in each vacuum fan motor block assembly and operates as a return line check to prevent vacuum fan motor reverse operation. Remove and inspect valve If it does not operate properly. Check for foreign material and if O-ring is leaking internally. Replace if defective.

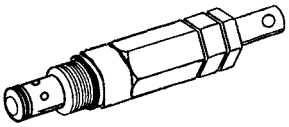
FLOW CONTROL VALVES



Two flow control valves are located in valve block on both wings of planter. Flow control valves should be adjusted for row marker raise and lower speed as part of assembly procedure or upon initial operation. If valve fails to function properly or requires frequent adjustment, it should be removed for inspection. Check for foreign material and contamination on valve and seating areas of valve body. Replace defective components.

PRESSURE RELIEF VALVES

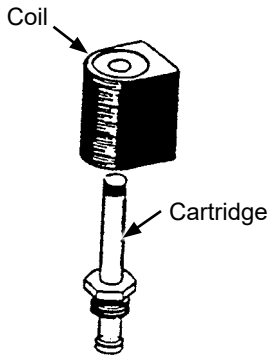




Pressure relief valves are used in the PTO block assembly, hitch block assembly and True Depth Block Assembly. There are two pressure relief valves in the hitch block assembly, one is for the tongue cylinder and the other is for the rotate cylinder, they both ensure the lock cylinder extends to release the rotate lock before the planter extends. The PTO block relief valve and True Depth relief valve are to catch spikes in system pressure to help prevent damage to PTO system components due to over pressurization. All valves are factory set and should require no additional adjustment. Contact your Kinze Dealer for service

NOTICE	**Connect hydraulic motor case drain to a case drain return line with zero pressure on tractor or hydraulic motor will be damaged. DO NOT connect hydraulic motor case drain to SCV outlet. Contact tractor manufacturer for specific details on “zero pressure return”.**

SOLENOID VALVE



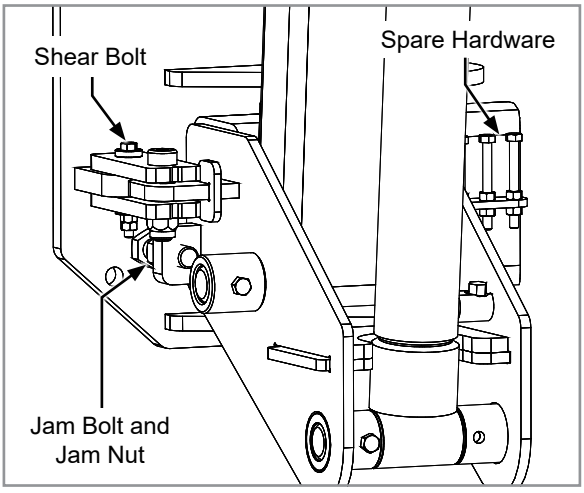
Solenoid valve consists of a chambered body with an electric coil actuated cartridge valve.

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

ROW MARKER BREAK AWAY

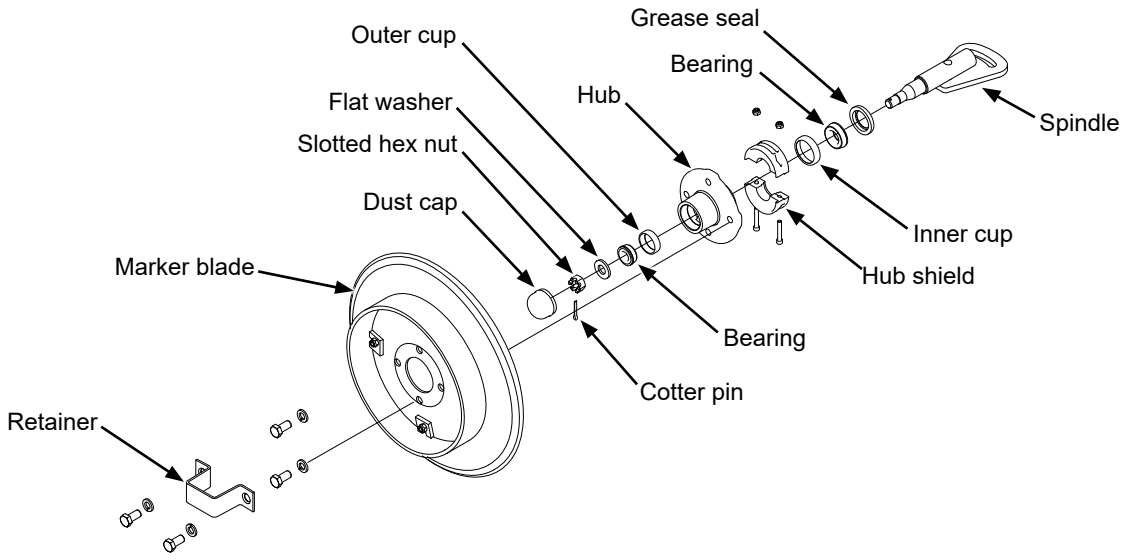
When replacing marker shear bolts, the jam bolt must be re-adjusted. The jam bolt acts as a stop and puts a slight pre-load on the shear bolt.

1. Remove broken shear bolt.
2. Install new shear bolt with spare provided on the marker.
3. Reverse or spin jam bolt out to remove slack in the joint. This tightens the marker breakaway.
4. Once initial slack has been removed, turn the jam bolt 1 additional flat (60°) to pre-load the shear bolt.
5. Hold the jam bolt head in place and tighten hex jam nut to secure jam bolt.



40’ Toolbar

ROW MARKER BEARING LUBRICATION OR REPLACEMENT

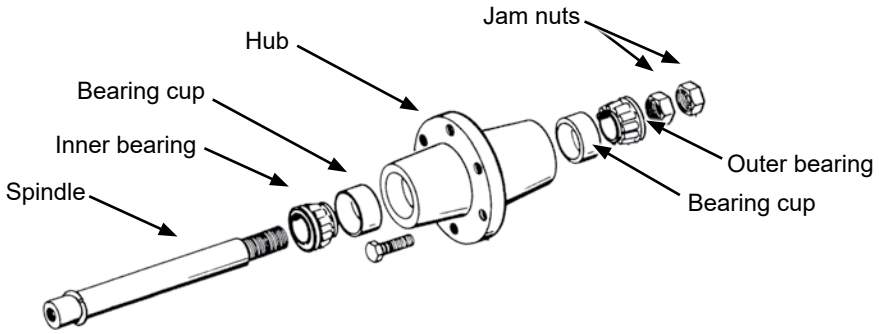


1. Remove retainer and marker blade.
2. Remove dust cap from hub.
2. Remove hub shield. Note direction of installation.
3. Remove cotter pin, slotted hex nut, and washer.
4. Slide hub from spindle.
5. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings 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. 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 ensures 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 hub shield.
13. Install marker blade and retainer on hub. Tighten hardware evenly.

TRANSPORT AND LIFT/GROUND DRIVE WHEEL BEARING REPACK OR REPLACEMENT

WARNING

Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Install all safety lockup devices before transporting equipment.



1. Raise tire clear of ground and remove wheel.
2. Remove double jam nuts and slide hub from spindle.
3. Remove bearings and cups and discard if bearings are being replaced. Clean hub and dry. Remove bearings only and not cups if repacking.
4. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
5. Pack bearings with heavy duty wheel bearing grease thoroughly forcing grease between roller cone and bearing cage. Fill space between bearing cups and hub with grease.
6. Place inner bearing in place.
7. Clean spindle and install hub.
8. Install outer bearing and jam nut. Tighten jam nut while rotating hub until there is some drag. This ensures all bearing surfaces are in contact. Back off jam nut ¼ turn or until there is only slight drag when rotating hub. Install second jam nut to lock against first.
9. Install wheel on hub. Tighten hardware evenly. Refer to the torque chart information included previously in this section.

BATTERY CARE

NOTICE

Read and follow all manufacturers labels and instructions.

Battery Specifications	
Chemistry:	Wet lead acid (Low maintenance)
Voltage:	12.00
Milliamp Hours:	0 mAH
Capacity:	17.00 AH
Weight:	15.30 lb
Length:	7.72"
Width:	5.19"
Height:	7.30"
Termination:	Top post (auto type)

BEFORE PLANTING SEASON

- Check and clean all connections.
- Fully charge batteries before installing into the planter.
- Batteries more than two years old should be load checked.
- Reinstall batteries or connect the negative ground cables.

PREPARATION FOR STORAGE

Planter batteries that are stored for more than one month should be cared for as follows:

- Remove the batteries or disconnect the negative ground cables.
- Fully charge batteries before storing.
- Store in a cool dry location.
- Keep from freezing.

PREPARATION FOR STORAGE

- Store planter in a dry sheltered area if possible.
- Remove all trash from row units and frame. Remove dirt that can draw and hold moisture.
- Lubricate planter and row units at all lubrication points.
- Inspect planter for parts that are in need of replacement and order during “off” season.
- Make sure all seed and granular chemical hoppers are empty and clean.
- Remove vacuum hose from each seed meter. Operate vacuum fan at full hydraulic flow from tractor for two minutes to clear manifolds, hoses and fittings of dust and debris.
- Clean breather on analog vacuum and pressure gauges.
- Grease or paint disc openers/blades and row marker disc blades to prevent rust.
- Flush liquid fertilizer tanks, hoses and metering pump with clean water. See "Pump Clean Out and Storage" on page 4-28 if applicable.
- See "Battery Care" on page 5-31 if planters are equipped with batteries.
- Seed Meters and Seed Delivery Tubes:

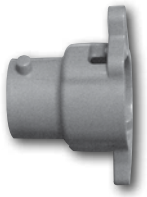
  NOTE: It is recommended to store delivery tube assemblies in a separate location during off-season to prevent damage from rodents.

  1. Remove all seed from meter. Blow seed meter clean with air.
  2. Remove seed disc and wash with soap and water and dry thoroughly if seed treatment buildup is present.
  3. Remove seal, clean with compressed air, and reinstall vacuum seal if debris buildup is observed.
  4. Inspect all parts and replace worn parts.
  5. Reassemble meter except for seed disc. Store meter and seed tube in a safe dry location.

  NOTE: Remove seed discs from meters for annual storage and store them in a safe dry rodent free location.

- Bulk Fill System:

  1. Clean out bulk fill hopper, entrainment assembly, and delivery hoses.
  2. Disconnect delivery hoses from entrainer ports. Install small orange caps onto ports. Attach hoses to caps.
  3. Disconnect delivery hoses from air dissipator at each row unit. Install large orange caps. Attach hoses to caps.



Entrainer Cap

Row Unit Cap

  4. Check all bolts and fasteners used to assemble and attach entrainment device are tight.
  5. Loosen latches on entrainer cleanout doors to remove pressure from door gasket.
  6. Inspect all seed delivery hoses and replace any that are worn, cut, or cracked.

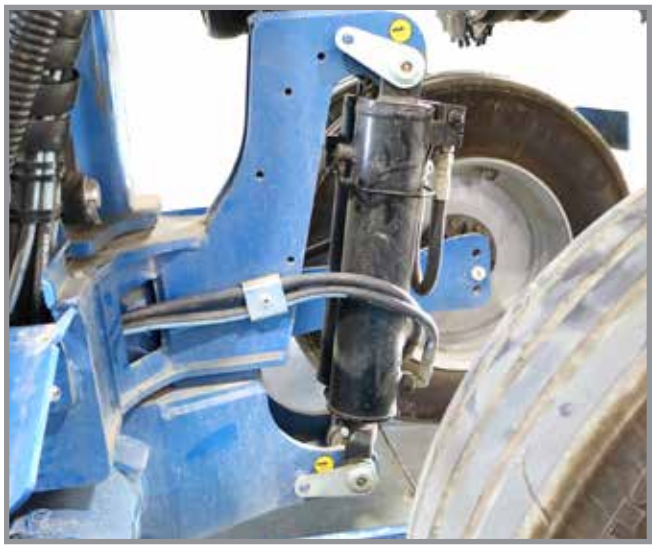
CENTER FRAME WEAR PADS

Uncontrolled movement of equipment can cause loss of control and could result in death, serious injury, or damage to property and equipment. Install all safety pins before transporting equipment.

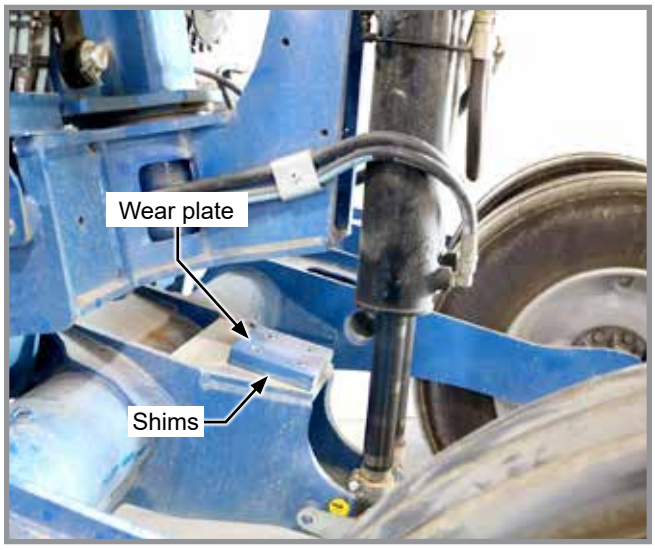
The 5670 planter includes a center frame section that slides up and down on a central 7" x 7" tube to move between transport and operation positions. Part of the center frame is a slide assembly consisting of four wear pad assemblies held in place by ¾" set screws and jam nuts, riding against a powder coated center tube.

Inspect and adjust wear pads annually to ensure planter frame is stable and planter tracks correctly. Wear pads should lightly make full contact with center post when properly adjusted. Excessive preload on pads will cause increased hydraulic lift pressure and may fail to lift planter when fully loaded.

ROCKSHAFT TO HITCH SHIM ADJUSTMENT



Install Cylinder



Wear plate and shim installation

1. Install rockshaft cylinder location and establish 28¼" center-to-center cylinder mount distance.

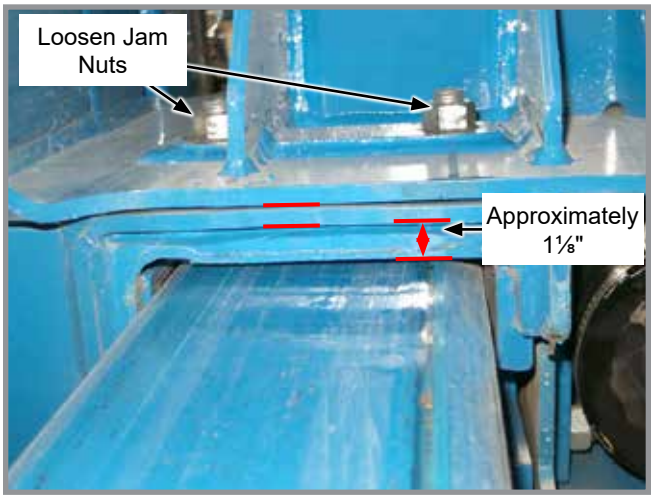
2. Place ¼" thick wear plate between cylinder mount bracket and lower cylinder mount. Install shims under wear plate to maintain 28¼" distance. **NOTE: Planter frame should be sitting on axle, when shimmed correctly the rockshaft cylinders will not be loaded.**

CENTER FRAME RELATION TO INNER HITCH ADJUSTMENTS

NOTE: Planter must be in transport position with safety lockup installed and rock shaft cylinders fully retracted.

1. Lock wing frames for transport, fully raise planter, and install safety lockup. Make sure top latch is around cylinder rod and fastened with safety pin and that lower end is secured with detent pin.

2. Adjust lower wear pads. Loosen jam nuts. Loosen and tighten set screws to move center frame slide tube until distance from outside of center tube to inside of slide tube is equal on all four sides - approximately 1⅛". Tighten all eight set screws. **NOTE: Ball end allen socket will be needed for adjustment behind transport lift cylinder.**



NOTE: Perform Step 3 one set screw at a time.

3. Set contact pressure of lower wear pads. Loosen set screw, then tighten to 20 ft-lb (27.1 N-m). Hold set screw with a wrench to prevent it from turning and tighten jam nut to 75 ft-lb (101.6 N-m). Repeat with remaining set screws.

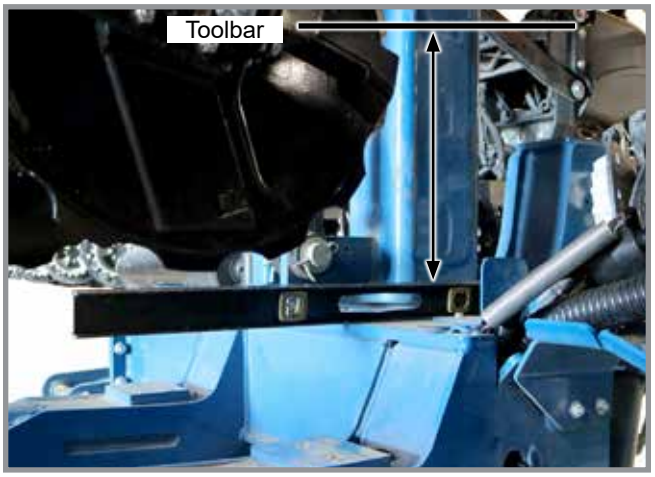
4. Remove safety lockup and lower planter frame until approximately 2′ above top surface of inner hitch. Turn off hydraulic power source.

   Top surface of bearing housing must be parallel to bottom of center frame. Distance between them is measured at four points:
   - Top front of bearing housing to bottom of center frame – left and right sides.
   - Top rear of bearing housing to bottom of center frame – left and right sides.

5. Place a straight object or a 4′ level on top bearing housing as shown at right.

6. Measure from the straight edge to the bottom of the front and rear toolbar. **NOTE: All measuring points should be within an ⅛" of each other.**

7. Repeat on opposite side of bearing housing.

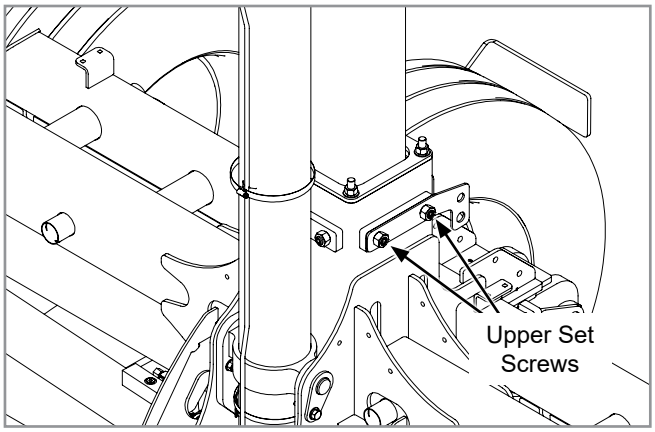


8. Loosen jam nuts. Loosen and tighten set screws until all four measurements in Steps 5 - 7 are equal.

9. Tighten all eight set screws.

NOTE: Perform Step 10 one set screw at a time.

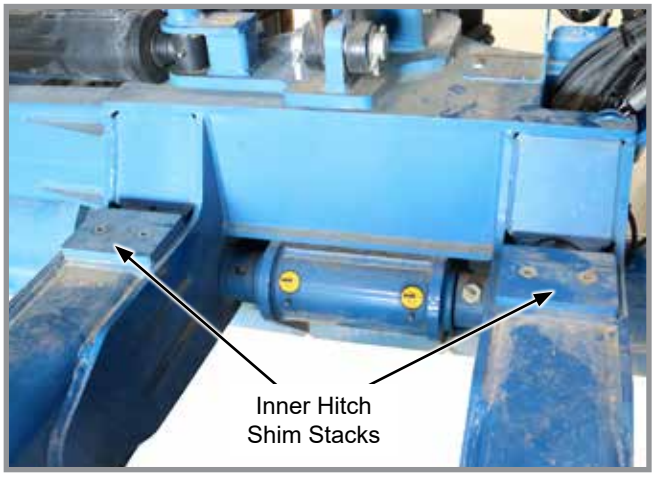
10. Set contact pressure of upper wear pads. Loosen set screw, then tighten to 20 ft-lb (27.1 N-m). Hold set screw with a wrench to prevent it from turning and tighten jam nut to 75 ft-lb (101.6 N-m). Repeat with remaining set screws.

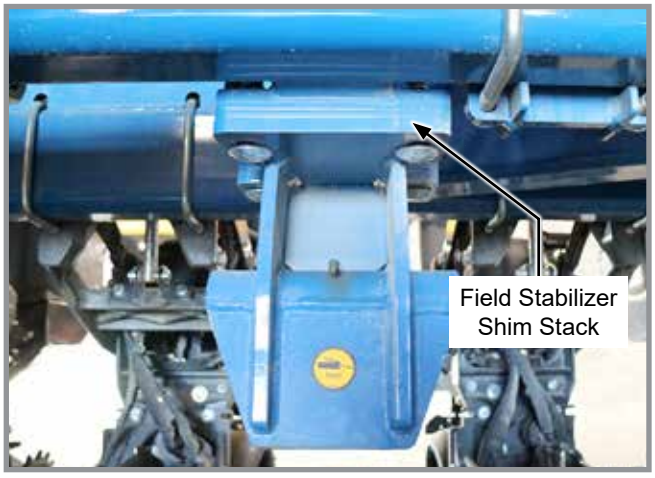


11. Some shims must be removed to preventing pre-loading of planter frame in preparation of adjusting shim stack thicknesses.

    Loosen fasteners and remove one or two shims from the following locations:

    - Inner hitch shim stack – left and right sides.
    - Field stabilizer shim stack – left and right sides.
    - Rear landing pad.

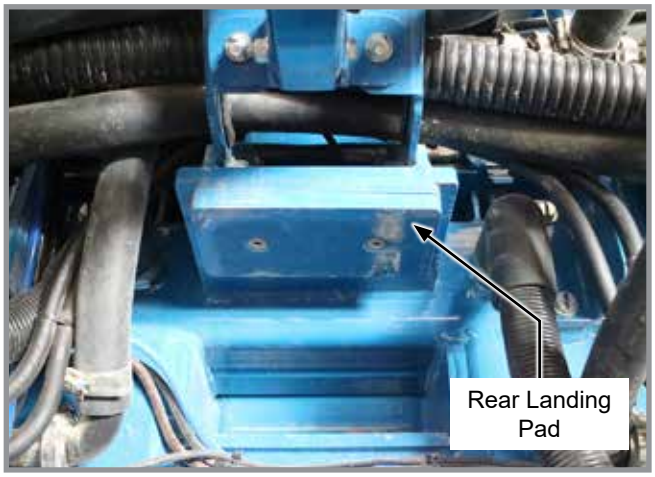




12. Replace fasteners at field stabilizers to keep shim stack in place.

13. Raise landing pad bolts to prepare for adjusting shim stack thickness. Loosen jam nuts and thread in bolts several turns.

    Lower center frame all the way down, making sure the post cylinder pin to pin dimension is 14 5/16"



NOTE: When planter is lowered, no planter frame weight is to be supported at shim stacks or landing pad bolts – there must be space for adding shims and adjusting bolts downward.

14. Measure 3.06" from post flange to bottom of center frame post tube on all four sides.

NOTE: Completely fill open space with appropriate combination of shims. Tolerance for filling open space is +0.030"/-0.000".

15. Add shims to fill open space at the following locations:

    - Inner hitch shim stack – left and right sides; make sure ½" thick wear plates remain on top.
    - Field stabilizer shim stack – left and right sides.
    - Rear landing pad - make sure ½" thick wear plates remain on bottom.

16. After adding shims, shim stack fasteners on inner hitch may be tightened. DO NOT fully tighten fasteners at field stabilizers.

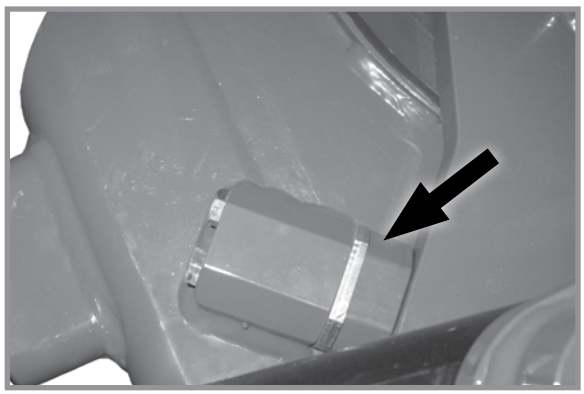
NOTE: Planter frame should be sitting on axle, when shimmed correctly the post cylinder will not be loaded.

TRIANGULATE AND SET PLANTER SQUARENESS

NOTICE

Planter frame must be square with hitch frame to ensure planter tracks correctly during operation.

1. Raise planter to transport position and install safety lockup.
2. Loosen fasteners and remove rotation stop tap block and shims.
3. Remove safety lockup and fully lower planter.



Rotation stop tap block and shims

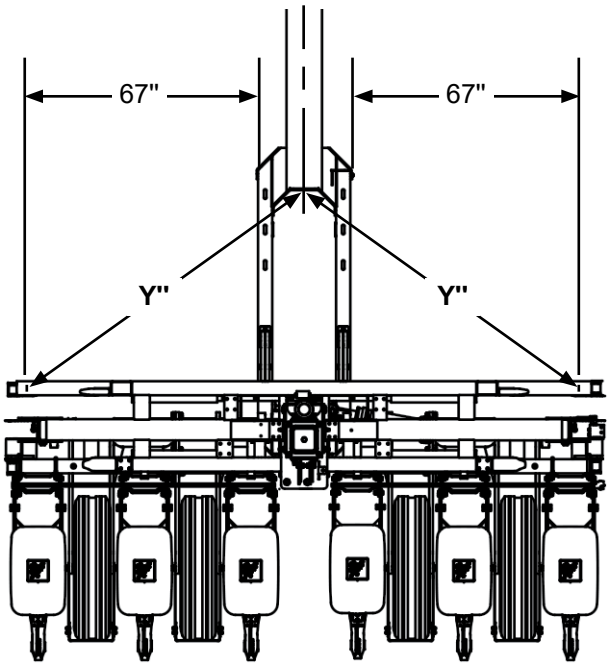
4. Measure 67" from left side of inner hitch along lower frame member of center frame; place reference mark with an appropriate marker. Repeat on right side.

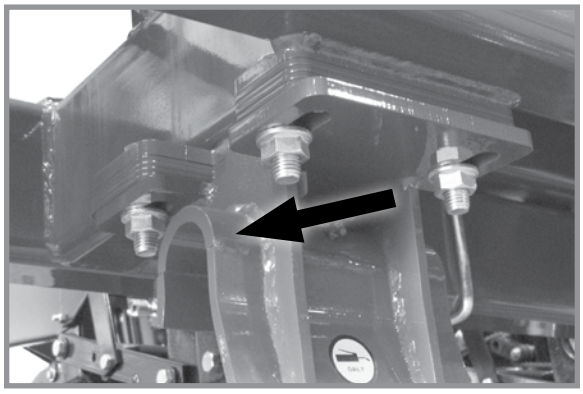
5. Measure width of inner hitch, divide value by 2, measure from one side of hitch, and place a centerline reference mark at that point on upper hitch cross member.

6. Measure from centerline to each of the reference marks on center frame (Y"). If measurements are NOT equal go to next step. If measurements are equal skip to Step 8.

7. Rotate center post or push on end of planter frame with shorter distance. Re-measure from centerline to reference marks. Repeat until measurements are equal.

8. Tighten field stabilizer fasteners when measurements are equal on both sides of planter.



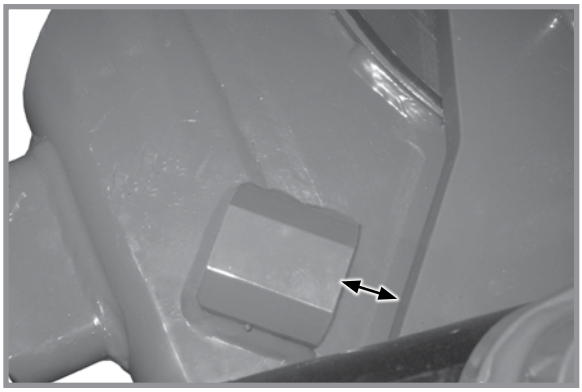


Field stabilizer

INSTALL ROTATION STOP BLOCK

1. Raise planter to transport position and install safety lockup.

2. Measure distance between stop mount on inner hitch and stop surface on center post. Include stop tap block to determine required combination of shims to completely fill this space. Tolerance for filling the space is +1/16"/-0".



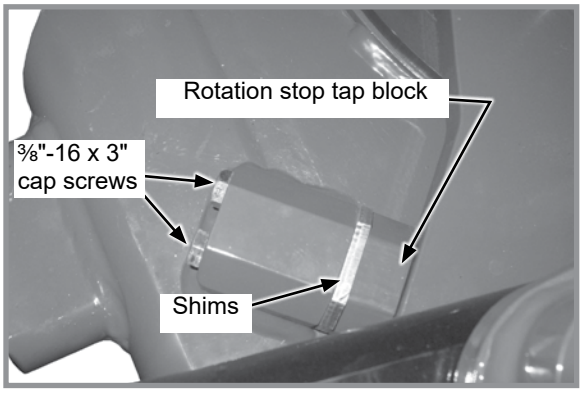
Stop block measurement

3. Rotate center post slightly to provide room to install shims.

   NOTE: In situations where few shims are required, attachment cap screws may protrude beyond stop tap block. Install shims beneath cap screw heads to prevent them from protruding.

4. Attach required shims and stop tap block using two 3/8"-16 x 3" cap screws.

5. Rotate center post against stop tap block.



Stop tap block installation

INSPECT AND ADJUST ROTATION CYLINDER MOUNT

1. Make sure center post is rotated against stop block. Inspect rotation cylinder for correct amount of retraction.

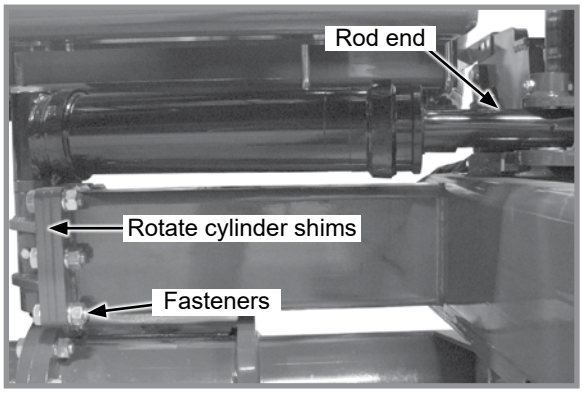
   A correctly retracted cylinder will have 1/16" or less exposed sliding surface on the rod.

   If cylinder has more than 1/16" sliding surface exposed, shims will need to be removed from cylinder mount.

   If cylinder has no slide surface exposed, AND center post cannot be fully rotated against stop block, shims will need to be added to cylinder mount.

2. Disconnect rod end of cylinder and remove six sets of fasteners from cylinder mount. Add or subtract shims as necessary.

3. Reassemble cylinder mount and connect rod end of cylinder. Inspect for correct amount of retraction.



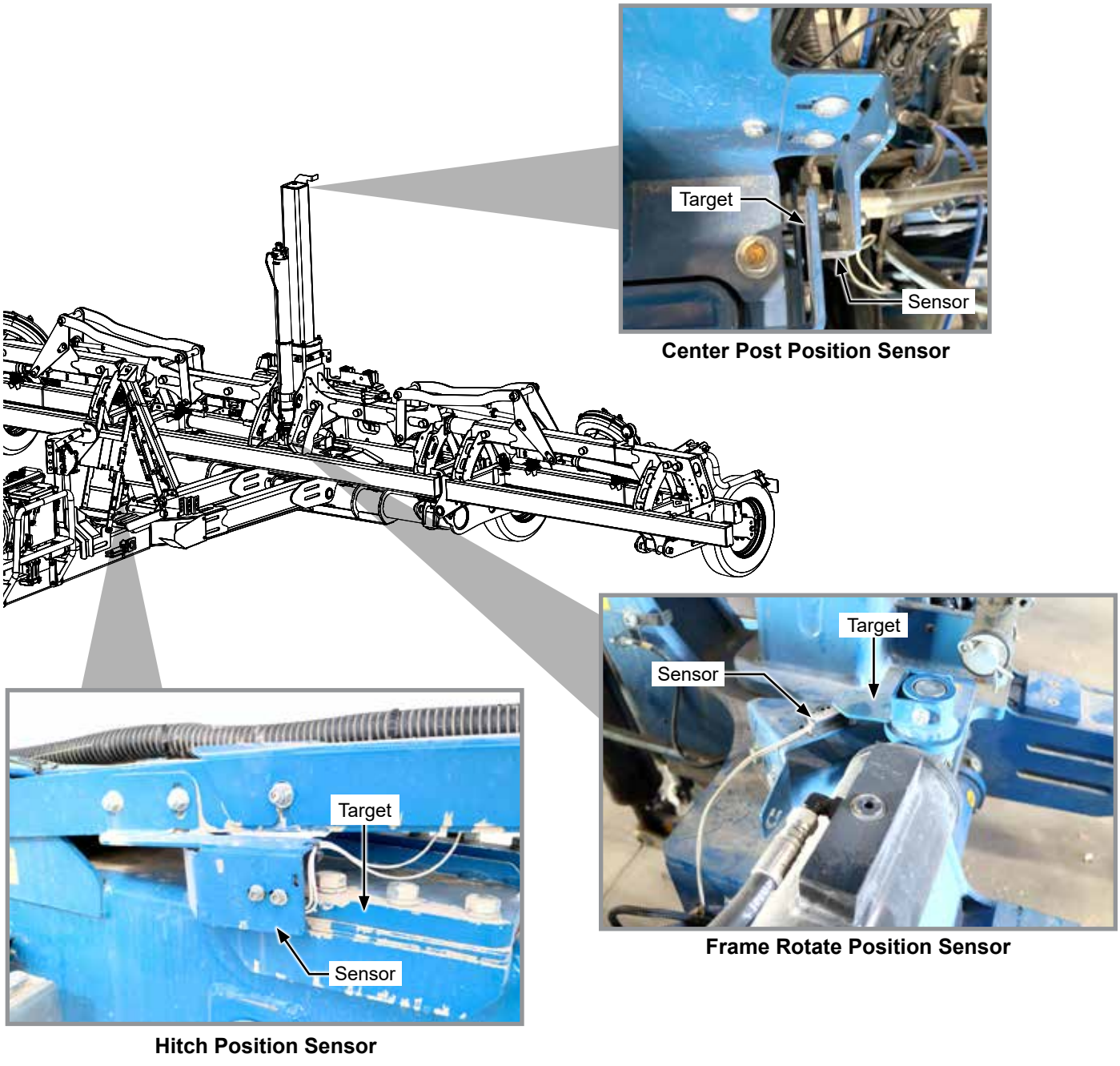
Rotate Cylinder mount adjustment

POSITION SWITCHES

The 5670 is equipped with position switches to assist during folding sequences. There are 3 position switches total that help determine the planters current position.

1. Hitch Position Sensor - detects when hitch is extended.
2. Frame Rotate Position Sensor - detects when planter is in “Plant” rotation position.
3. Center Post Position Sensor - detects when the planter is raised completely up center post.

All switches should be adjusted so they trigger when sequence is fully extended or retracted. Switches should be set so there is approximately ⅛" - ⅜" gap between face of the switch and target it is sensing off of.



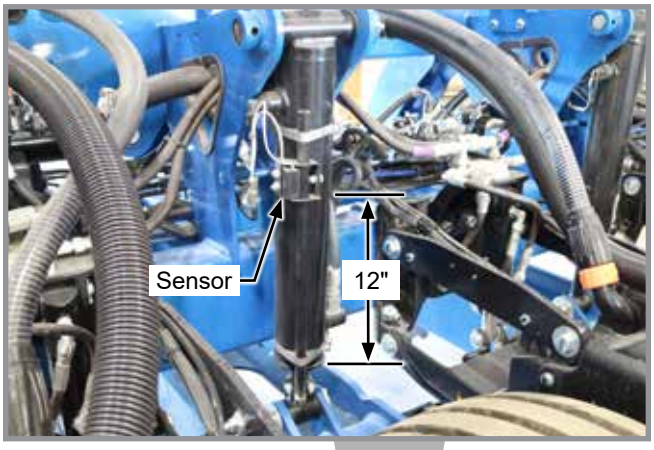
Center Post Position Sensor

Frame Rotate Position Sensor

Hitch Position Sensor

IMPLEMENT SWITCHES

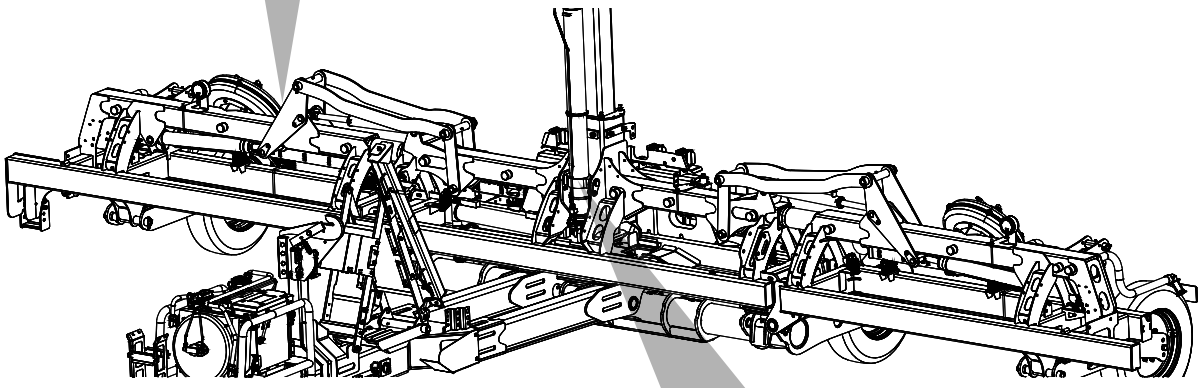
The 5670 is equipped with 2 implement switches wired in series, one located on wing cylinder and the other on transport lift cylinder. If either switch is positioned incorrectly, this indicates planter is not in plant position preventing seed from dropping (e.g. field turnaround position or when planter is folded for transport).



Wing Cylinder Adjustment:

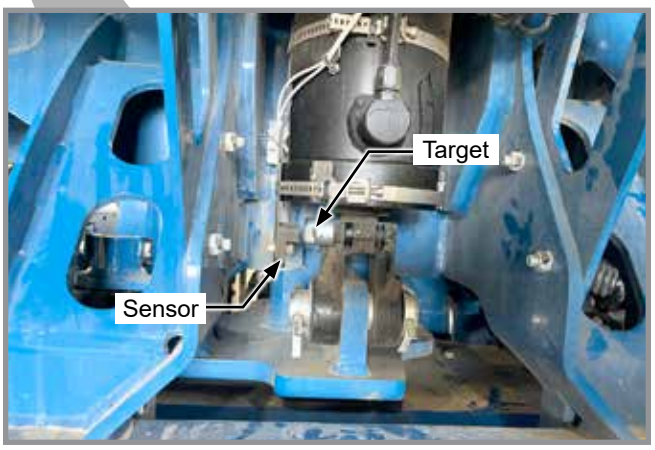
1. Lower planter completely to ground.
2. Release wing locks, rephase axle and wing cylinders if needed.
3. Raise axle to field turn around position.
4. Position switch on wing cylinder to 12".
5. Verify on Blue Vantage health screen that implement switch triggers as row units contact ground, when lowering planter from field turnaround position.

6. If necessary adjust wing cylinder switch until it indicates on Blue Vantage display.

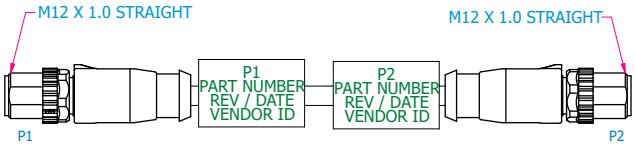


Transport Lift Cylinder Adjustment:

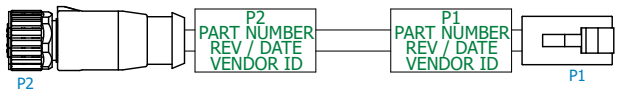
1. Lower planter completely to ground. If necessary adjust tranpsort lift cylinder switch so there is approximately ⅛" - ⅜" gap between face of the switch and target.



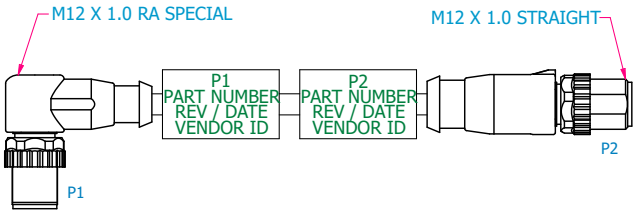
ETHERNET CABLES



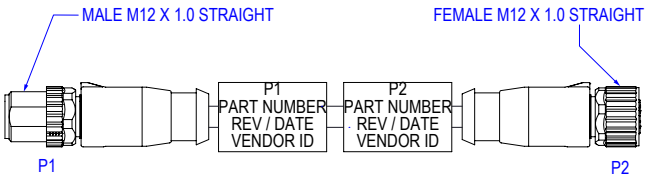
Part Number	Description
A22554-	Ethernet Ca CAT 5E (M12 STR-M12 STR)



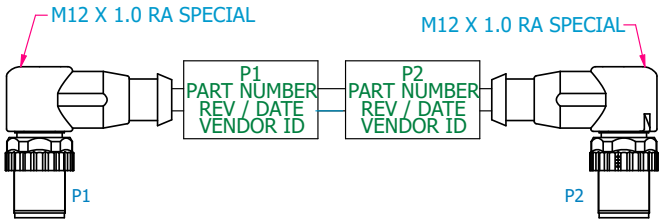
Part Number	Description
A25399-	Ethernet Ca CAT 5E (RJ45-Female M12 STR)



Part Number	Description
A22555-	Ethernet Ca CAT 5E (M12 RA-M12 STR)

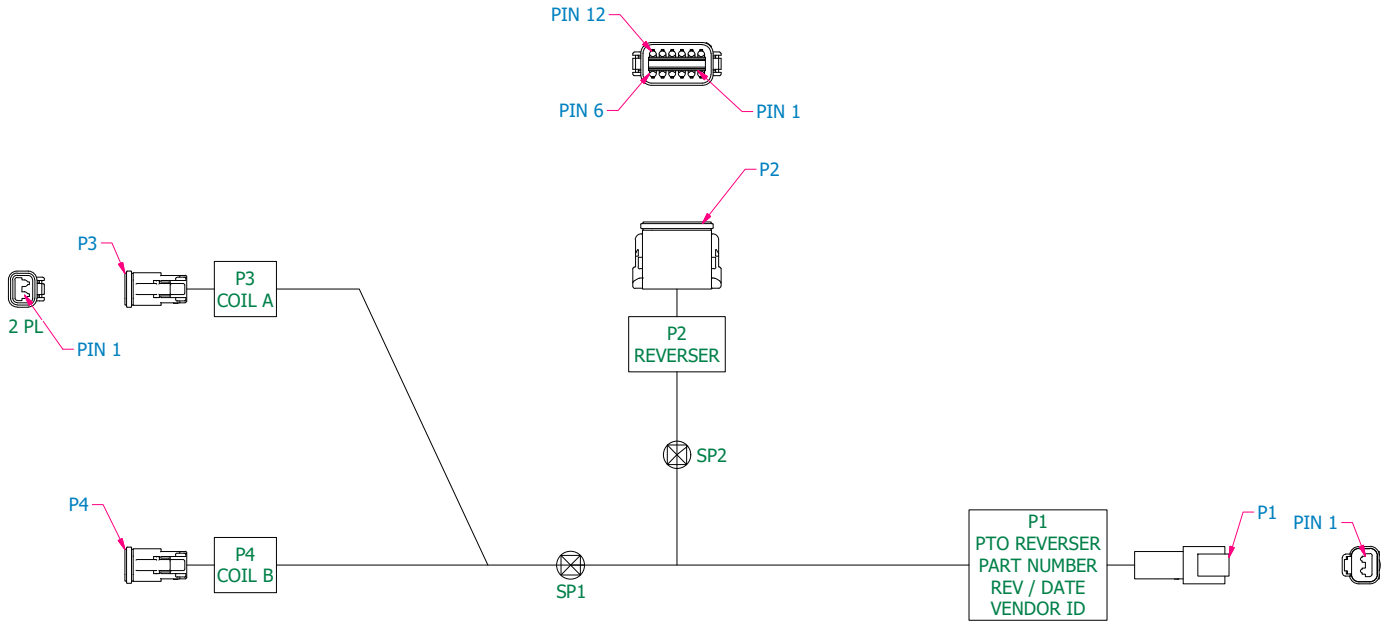


Part Number	Description
A27298-	Ethernet Ca CAT 5 (Male M12 STR - Female M12 STR)



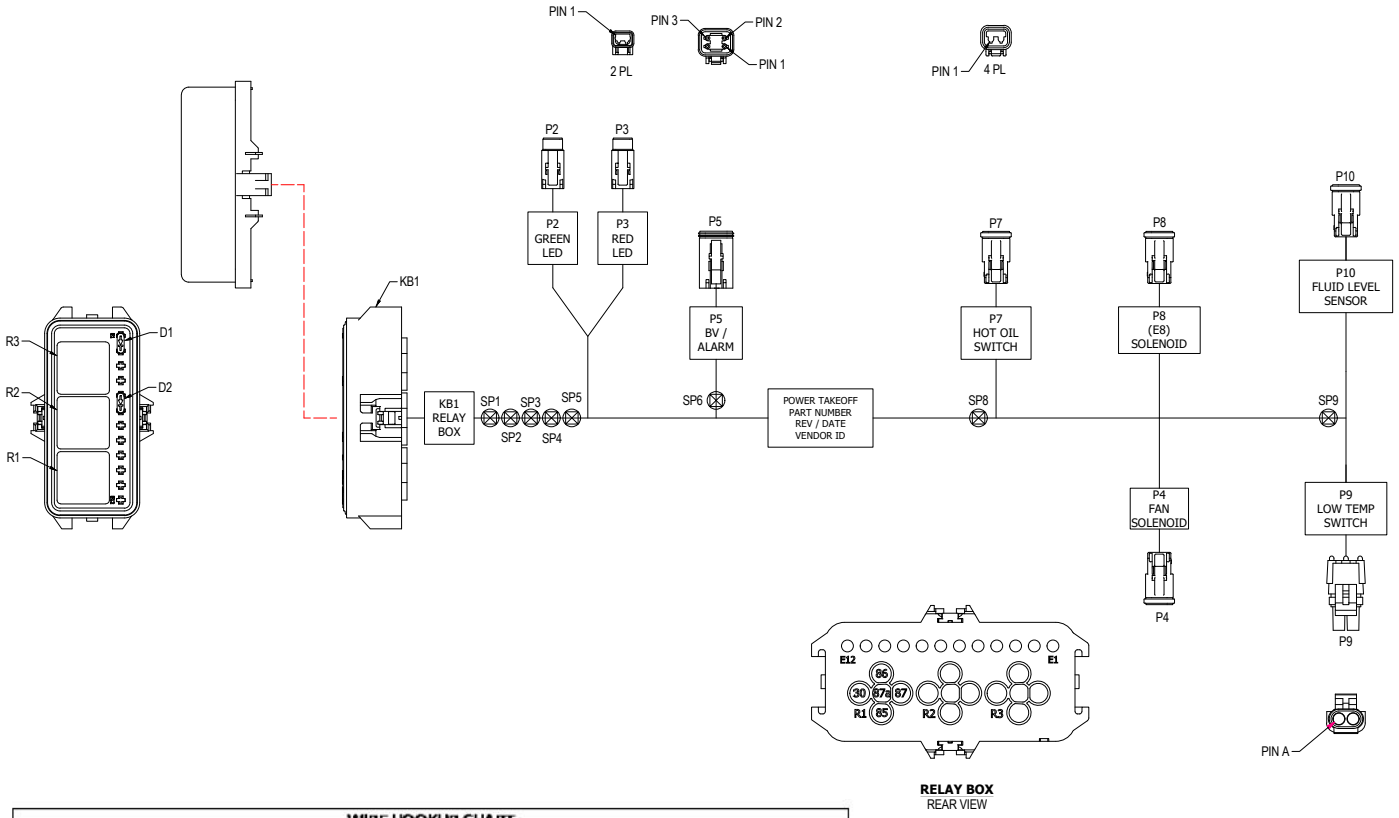
Part Number	Description
A22556-	Ethernet Ca CAT 5E (M12 RA-M12 RA)

PTO REVERSER HARNESS (P/N: 10263101)



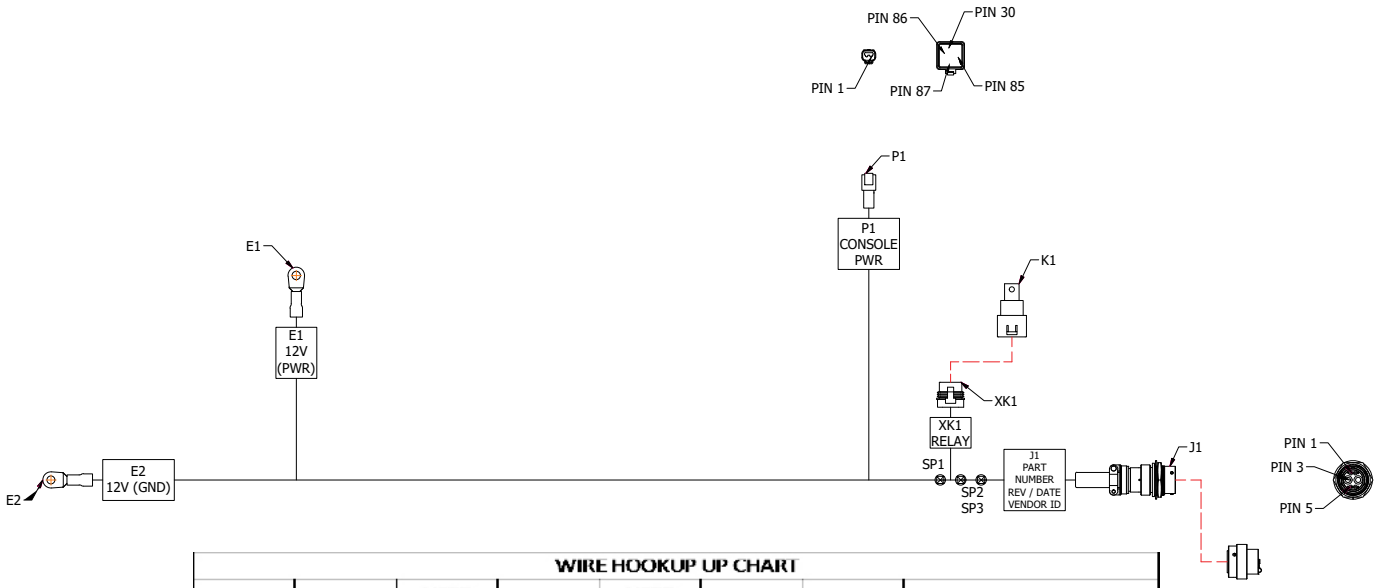
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P1-1	5	SP2	—	16	RED	12V +
W2	P1-2	5	SP1	—	16	BLK	GND
W3	SP1	—	P2-7	4	16	BLK	GND
W4	SP1	—	P4-2	4	16	BLK	GND
W5	SP1	—	P4-2	4	16	BLK	GND
W6	SP2	—	P2-8	4	16	RED	12V+
W7	SP2	—	P2-9	4	16	RED	12V+
W8	P2-10	4	P2-11	4	18	RED	5V SIGNAL
W9	P2-6	4	P3-1	4	18	BLU	COIL A OUT (FWD)
W10	P2-4	4	P4-1	4	18	BRN	COIL B OUT (REV)

PTO HARNESS (12 ROW - P/N: 10200301; 16 ROW - P/N: 10200302)



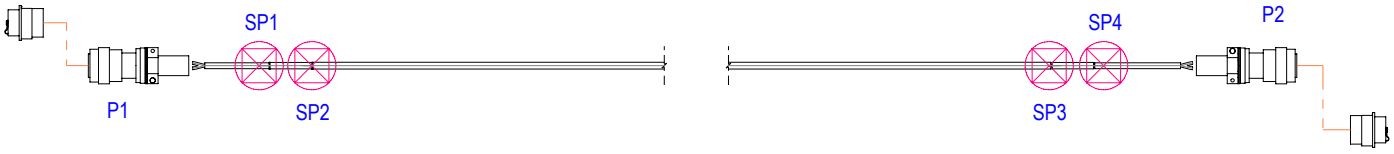
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P5-4	16	SP1	—	16	RED	12V PWR
W2	SP1	—	P1-R1-30	25	14	RED	FAN RELAY (12V PWR)
W3	SP1	—	P1-R2-30	25	14	RED	FLUID LVL RELAY (12V PWR)
W4	SP1	—	P2-1	15	18	RED	GREEN LED (12V PWR)
W5	SP1	—	SP8	—	18	RED	12V PWR
W6	SP8	—	P7-1	16	18	RED	HOT OIL SWITCH (12V PWR)
W7	SP8	—	SP9	—	18	RED	12V PWR
W8	SP9	—	P9-A	19	18	RED	LOW TEMP SWITCH (12V PWR)
W9	SP9	—	P10-1	16	18	RED	FLUID LVL SWITCH (12V PWR)
W10	P4-2	—	SP6	16	18	BLK	FAN (GND)
W11	SP6	—	P5-1	16	18	BLK	BV (GND)
W12	SP6	—	P8-2	16	18	BLK	SOLENOID (GND)
W13	SP6	—	SP2	—	16	BLK	GND
W14	SP2	—	KB1-R1-86	25	14	BLK	FAN RELAY (COIL GND)
W15	SP2	—	KB1-R2-86	25	14	BLK	FLUID LVL RELAY (COIL GND)
W16	SP2	—	KB1-R3-86	25	14	BLK	HOT OIL RELAY (COIL GND)
W17	SP2	—	P2-2	15	18	BLK	GREEN LED (GND)
W18	SP2	—	P3-2	15	18	BLK	RED LED (GND)
W19	KB1-R1-85	25	P9-B	19	14	GRN	LOW TEMP SIGNAL (FAN COIL PWR)
W20	KB1-R1-87	25	P4-1	17	14	RED	FAN PWR (FROM RELAY)
W21	KB1-R2-85	25	P10-2	16	14	GRY	FLUID LVL SIGNAL (FLUID LVL COIL PWR)
W22	KB1-R2-87	25	KB1-R3-30	25	14	ORG	HOT OIL RELAY (PWR)
W23	KB1-R2-87a	25	SP3	—	14	BLU	FLUID LVL RELAY (NC OUT)
W24	SP3	—	KB1-E5	13	18	BLU	FLUID LVL RELAY (NC OUT RED LED)
W25	SP3	—	P5-2	16	18	BLU	FLUID LVL RELAY (NC OUT BV SIGNAL)
W26	KB1-R3-85	25	P7-2	16	14	WHT	HOT OIL SIGNAL (HOT OIL COIL PWR)
W27	KB1-R3-87	25	P8-1	16	14	VIO	ON/OFF POWER (NO OUT HOT OIL)
W28	KB1-R3-87a	25	SP4	—	14	YEL	HOT OIL SIGNAL
W29	SP4	—	P5-C	16	18	YEL	HOT OIL RELAY (NC OUT BV SIGNAL)
W30	SP4	—	KB1-E1	13	18	YEL	HOT OIL SIGNAL (NO DIODE)
W31	KB1-E2	13	SP5	—	18	BRN	RED LED POWER
W32	KB1-E6	13	SP5	—	18	BRN	RED LED POWER
W33	SP5	—	P3-1	15	18	BRN	RED LED POWER

TRACTOR POWER HARNESS (P/N: 10211901)



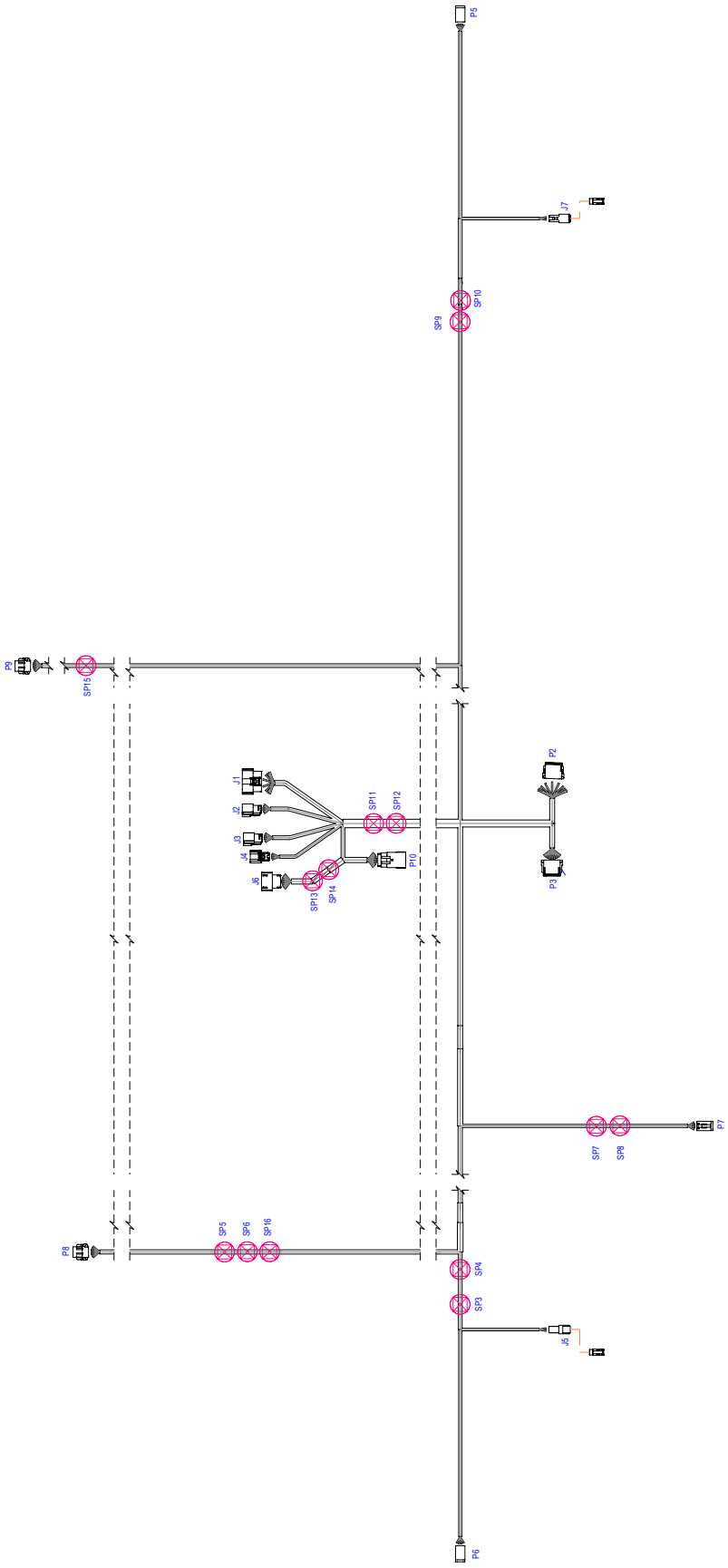
WIRE HOOKUP UP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	E1	---	SP1	---	2	RED	12V (PWR)
W2	SP1	---	XK1-30	13	10	RED	12V (PWR)
W3	XK1-87	13	SP2	---	10	RED	12V (PWR)
W4	SP2	---	J1-3	9	6	RED	12V (PWR)
W5	E2	---	SP3	---	2	BLK	12V (GND)
W6	SP3	---	J1-4	9	6	BLK	12V (GND)
W7	XK1-86	14	P1-1	11	18	BLU	SWITCH PWR (CONSOLE)
W8	XK1-85	14	P1-2	11	18	BLU	SWITCH GND (CONSOLE)

TRACTOR POWER EXTENSION HARNESS (P/N: 11074801 / 11074802 / 11074803)



LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
P1	TRACTOR POWER EXTENSION
P2	POWER EXTENSION
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.

FERTILIZER TANK HARNESS (P/N:10960701)



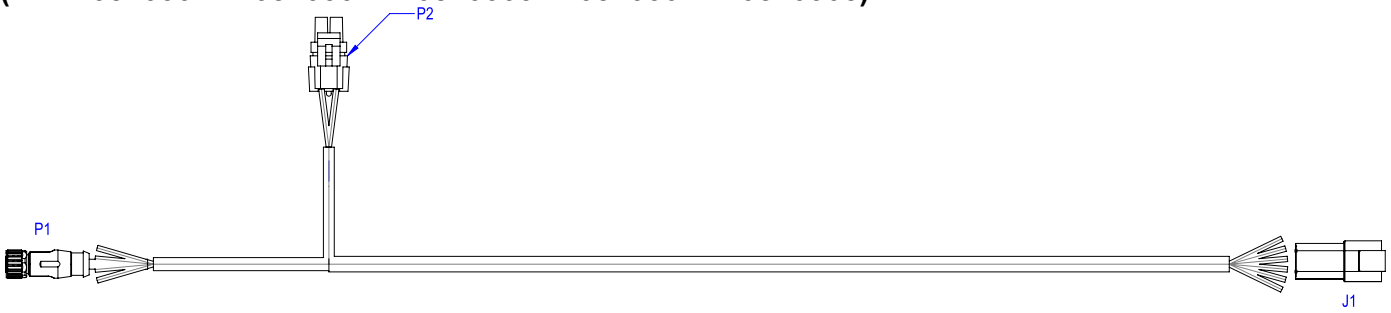
WIRE HOOKUP CHART

REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
								W29	P2:10	14	J18	5	18	GRY	FERTILIZER FLOW METER [FREQ] [5C] 1K ohm PU TO [12V]
W2	P2:12	14	J13	3	16	RED	FERT REGULATOR -PWM-	W30	P2:12	14	J2.7	5	18	BRN	
								W31	J41	5	SP63N	—	18 (TP)	YEL	
								W32	J42	5	SP62N	—	18 (TP)	GRN	
								W33	P8:7	25	SP53N	—	18 (TP)	YEL	
								W34	P8:8	25	SP43N	—	18 (TP)	GRN	
W7	P3:11	14	J14	3	16	BLK	FERT REGULATOR -PWM-	W35	SP53:OUT	—	P:6:3	19	18 (TP)	YEL	
W8	P3:10	14	J113	3	16	WHT	FERT RAIL PRESS SENSOR (ANALOG)	W36	SP42:OUT	—	P:6:4	19	18 (TP)	GRN	
W9	P5:7	14	J115	3	16	YEL	FERT FLOW METER SIGNAL [FREQ] [1K ohm PU TO 12V]	W37	SP53:OUT	—	J5:1	10	18 (TP)	YEL	
W10	P5:9	14	J119	3	16	BLK	FERT RAIL PRESS SENSOR (GND)	W38	SP42:OUT	—	J5:2	10	18 (TP)	GRN	
W11	P5:8	14	J120	3	16	RED	FERT FLOW METER SUPPLY [12V] [PWR]	W39	SP1:OUT	—	P8:1	26	16	RED	
W12	J1:17	3	P2:5	14	16	BLK	FERT FLOW METER [12V] [PWR]	W40	J4:6	3	SP12:N	—	16	BLK	
W13	J1:18	3	P2:5	14	16	RED	FERT FLOW METER [12V] [PWR]	W41	J4:6	3	SP12:N	—	16	RED	
								W43	SP12:OUT	—	SP14:N	—	16	BLK	
								W44	SP:5:OUT	—	SP7:N	—	18 (TP)	YEL	
W16	P2:4	14	J25	3	16	WD/WHT	FERT PUMP INTEL SUCTION / LOW FLOW METER / LOW FLOW METER PULL UP SENSOR [12V PWR]	W45	SP6:OUT	—	SP8:N	—	18 (TP)	GRN	
W18	P2:3	14	J26	3	16	BLK	FERT PUMP INLET SUCTION SENSOR / FLOW METER / LOW FLOW METER PULL UP SENSOR [GND]	W46	SP5:OUT	—	P8:3	25	18 (TP)	YEL	
W19	P2:8	14	J21	3	16	WD/WHT	FERT SYSTEM SHUT OFF VALVE [+]	W47	SP6:OUT	—	P8:4	25	18 (TP)	GRN	
W20	P3:1	14	J28	3	16	YEL	FERT PUMP INLET SUCTION SENSOR [ANALOG]	W48	SP12:OUT	—	SP13:N	—	16	BLK	
W21	P2:7	14	J22	3	16	BLK	FERT SYSTEM SHUTOFF VALVE [-]	W49	SP2:OUT	—	J7:1	10	18 (TP)	GRN	
W22	P2:6	14	J31	3	16	RED	FERT HYD MOTOR SOLE + PWM	W50	SP10:OUT	—	J7:2	10	18 (TP)	YEL	
W23	P2:5	14	J32	3	16	BLK	FERT HYD MOTOR SOLE - PWM	W51	SP9:OUT	—	P:5:3	19	18 (TP)	GRN	
W24	P2:4	14	J33	3	16	RED	FERT PUMP RPM SENSOR / FERT PUMP INLET FLUID SWITCH [PWR]	W52	SP10:OUT	—	P:5:4	19	18 (TP)	GRN	
W25	P2:3	14	J36	3	16	BLK	FERT PUMP RPM SENSOR / FERT PUMP INLET FLUID SWITCH [GND]	W53	SP14:OUT	—	P:5:2	19	16	BLK	
W26	P2:2	14	J37	3	16	BLU	FERTILIZER PUMP INLET FLUID SWITCH [DIGITAL]	W54	SP15:OUT	—	P:9:6	26	16	BLK	
W27	P2:1	14	J38	3	16	YEL	FERTILIZER PUMP RPM SENSOR INPUT [FREQ]	W55	SP15:OUT	—	P9:2	26	16	BLK	
W28	P3:9	14	J17	5	18	ORN	FERTILIZER FLOW METER TRANSITION VALVE + PWM	W56	SP7:OUT	—	P9:3	2.5	18 (TP)	YEL	CAN H
							FERTILIZER FLOW METER [FREQ] [5C] 1K ohm PU TO [12V]	W57	SP8:OUT	—	P9:4	2.5		GRN	CAN L
								W58	SP7:OUT	—	P7:3	19	18 (TP)	YEL	CAN H
								W59	SP8:OUT	—	P7:4	19		GRN	CAN L
								W60	J61	3	SP13:N	—	16	RED	POWER (+)
								W61	SP13:OUT	—	P10:1	24	16	RED	POWER (+)
								W62	SP13:OUT	—	P5:1	19	16	RED	RIGHT ELEC BALL VALVE [PWR]
								W63	SP13:OUT	—	P6:1	19	16	RED	LEFT ELEC VALL VALVE [PWR]
								W64	SP14:OUT	—	P7:2	19	16	BLK	CENTER BALL VALVE [GND]
								W63	J62	3	SP14:N	—	16	BLK	POWER (-)
								W65	SP14:OUT	—	P10:2	24	16	BLK	POWER (-)
								W66	SP13:OUT	—	P7:1	19	16	RED	CENTER BALL VALVE [PWR]
								W68	P7:2	24	SP9:N	—	18 (TP)	YEL	CAN H
								W69	P9:8	26	SP13:N	—	18 (TP)	GRN	CAN L
								W70	J63	3	P10:3	24	16	RED	POWER (+)
								W71	J64	3	P10:4	24	16	BLK	POWER (-)
								W72	J65	5	P10:5	24	20	YEL	IPN STRAPPING (1)
								W73	J66	5	P10:6	24	20	ORN	IPN STRAPPING (2)
								W74	J67	5	P10:7	24	20	WHT	IPN STRAPPING (3)
								W75	J68	5	P10:8	24	20	GRN	IPN STRAPPING (4)
								W76	J69	5	P10:9	24	20	BLU	IPN STRAPPING (5)
								W77	J610	5	P10:10	24	20	VIO	IPN STRAPPING (6)
								W78	J611	5	P10:11	24	20	GRY	IPN STRAPPING (PARTY)
								W79	J612	5	P10:12	24	20	BRN	IPN STRAPPING (GND)
								W80	SP14:OUT	—	P6:2	19	16	BLK	LEFT ELEC BALL VALVE [GND]
								W81	SP16:OUT	—	P8:2	25	16	BLK	LEFT LIDAR SENSOR [GND]
								W82	SP16:OUT	—	P8:5	25	16	BLK	STRAPPING

LABEL TABLE

CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P2	P2- TO FERT MODULE	J1	J1- TO IPN J7
P3	P3- TO FERT MODULE	J2	J2- TO IPN J5
P5	P5- RIGHT ELEC BALL VALVE	J3	J3- TO IPN J4
P6	P6- LEFT ELEC BALL VALVE	J4	J4- TO IPN J6
P7	P7- CENTER ELEC BALL VALVE	J5	J5- CAN TERM.
P8	P8- LEFT LIDAR SENSOR	J6	J6- TO IPN J3
P9	P9- RIGHT LIDAR SENSOR	J7	J7- CAN TERM.
P10	P10- J3 PASS THROUGH	HARNESS LABEL	PART / NUMBER REV / DATE VENDOR I.D.

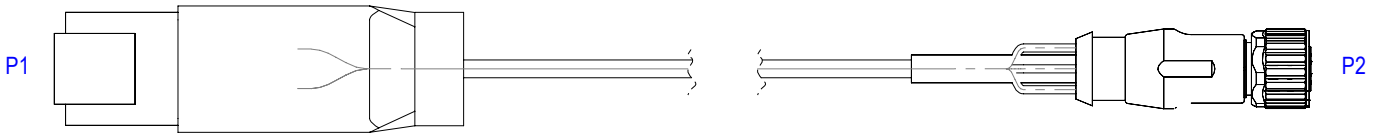
FERTILIZER ROW UNIT EXTENSION HARNESS (P/N:10840301 / 10840302 / 10840303 / 10840304 / 10840305)



WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1:5	7	P2:A	3	18	RED	FERT ROW CUTOFF VALVE (PWR)
W2	J1:6	7	P2:B	3	18	BLK	FERT ROW CUTOFF VALVE (GND)
W3	J1:1	7	P1:1	---	18	BRN	FERT FLOW SENSOR (PWR)
W4	J1:2	7	P1:3	---	18	BLU	FERT FLOW SENSOR (GND)
W5	J1:3	7	P1:4	---	18	BLK	FERT FLOW SENSOR (SIGNAL)

LABEL TABLE			
J1	TO ROW UNIT	P2	FERT CUTOFF VALVE
P1	FERT FLOW SENSOR	HARNESS LABEL	PART NUMBER REV/DATE VENDOR I.D.

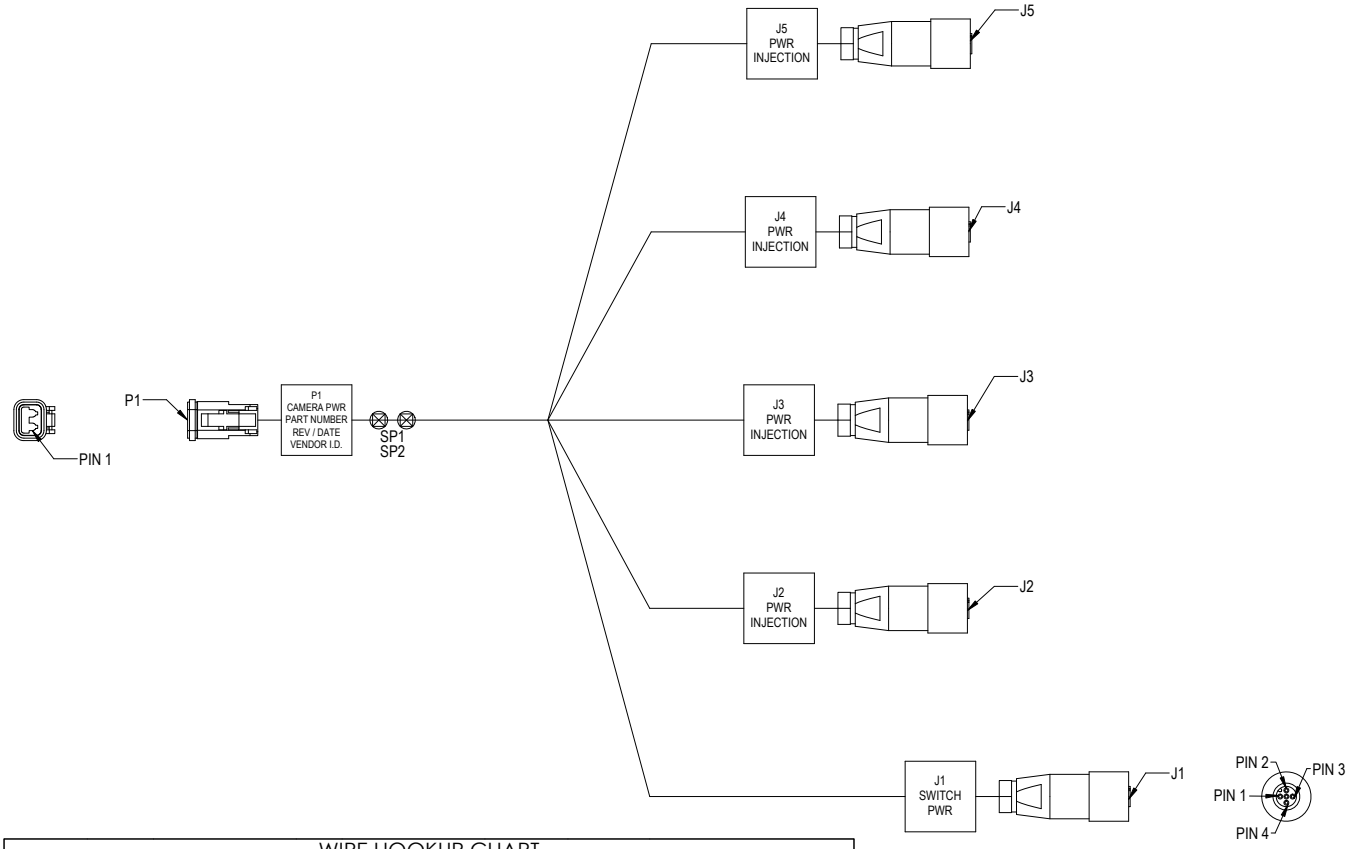
AIR PRESSURE ADAPTER CABLE (P/N:11009201)



LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
P1	P1 - AIR PRESSURE EXTENTION
P2	P2 - AIR PRESSURE SENSOR
P/N	PART NUMBER REV/DATE VENDOR I.D.

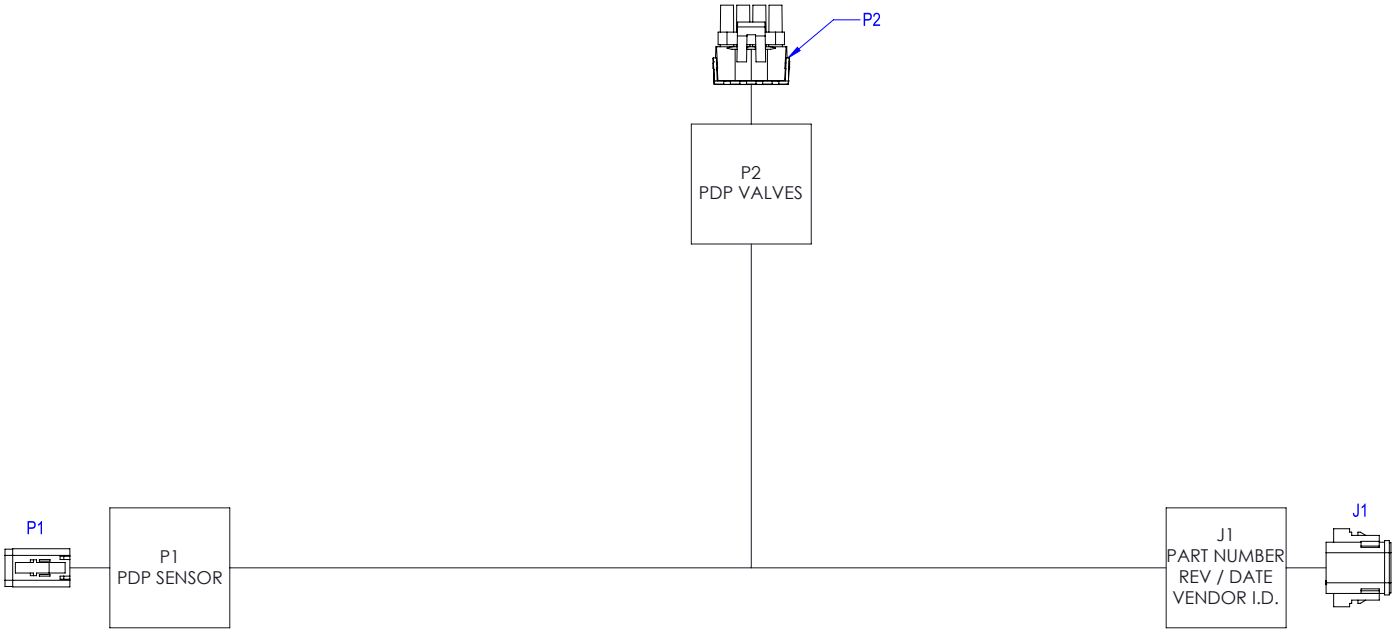
WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:1	3	P2:3	---	18	BLU	AIR PRESSURE SENSOR (GND)
W2	P1:2	3	P2:1	---	18	BRN	AIR PRESSURE SENSOR (PWR)
W3	P1:4	3	P2:4	---	18	BLK	AIR PRESSURE SENSOR (ANALOG)

CAMERA POWER HARNESS (P/N: 10269201)



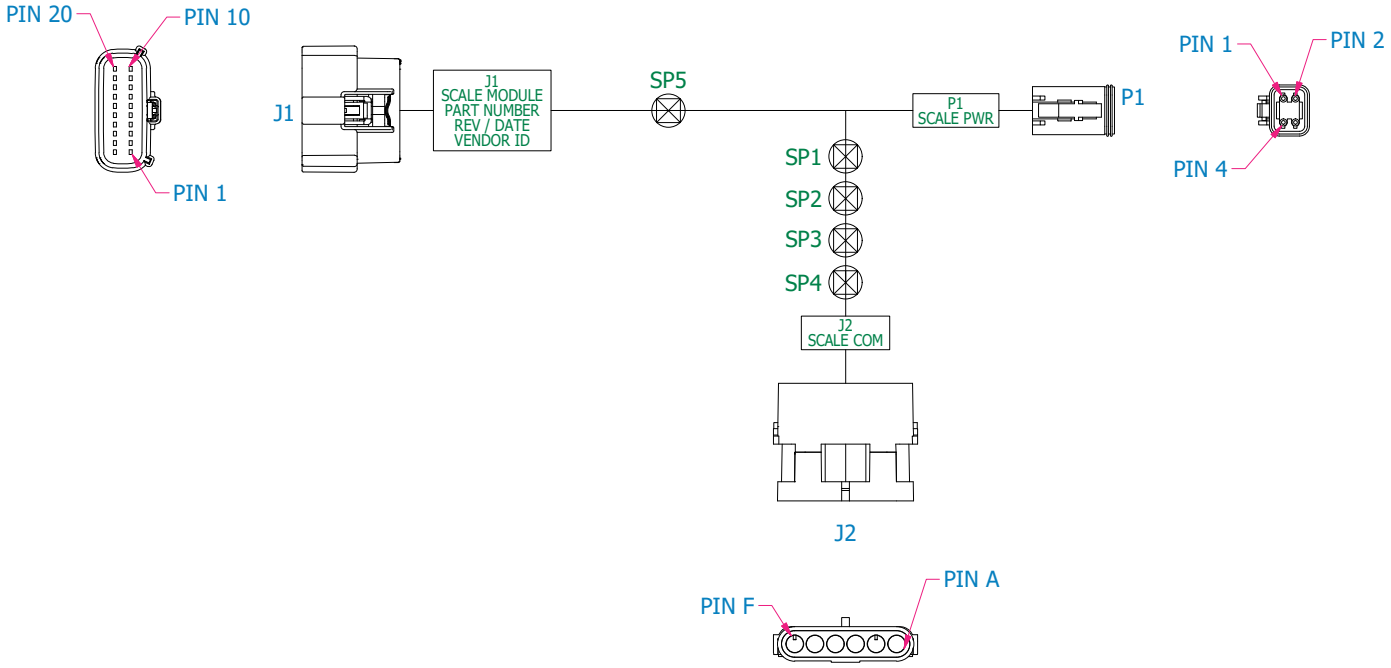
WIRE HOOKUP CHART							
REF DES	FROM	USED W/ ITEM	TO	USED W/ ITEM	GAUGE	COLOR	FUNCTION
W1	P1-2	4	XF1-1	7	16	RED	PWR (+)
W2	SP1	---	J1-3	---	18	RED	SWITCH PWR (+)
W3	SP1	---	J1-4	---	18	RED	SWITCH PWR (+)
W4	SP1	---	J2-2	---	18	RED	CAMERA PWR (+)
W5	SP1	---	J2-3	---	18	RED	CAMERA PWR (+)
W6	SP1	---	J3-2	---	18	RED	CAMERA PWR (+)
W7	SP1	---	J3-3	---	18	RED	CAMERA PWR (+)
W8	SP1	---	J4-2	---	18	RED	CAMERA PWR (+)
W9	SP1	---	J4-3	---	18	RED	CAMERA PWR (+)
W10	SP1	---	J5-2	---	18	RED	CAMERA PWR (+)
W11	SP1	---	J5-3	---	18	RED	CAMERA PWR (+)
W12	P1-1	4	SP2	---	16	BLK	PWR (-)
W13	SP2	---	J1-1	---	18	BLK	SWITCH PWR (-)
W14	SP2	---	J1-2	---	18	BLK	SWITCH PWR (-)
W15	SP2	---	J2-1	---	18	BLK	CAMERA PWR (-)
W16	SP2	---	J2-4	---	18	BLK	CAMERA PWR (-)
W17	SP2	---	J3-1	---	18	BLK	CAMERA PWR (-)
W18	SP2	---	J3-4	---	18	BLK	CAMERA PWR (-)
W19	SP2	---	J4-1	---	18	BLK	CAMERA PWR (-)
W20	SP2	---	J4-4	---	18	BLK	CAMERA PWR (-)
W21	SP2	---	J5-1	---	18	BLK	CAMERA PWR (-)
W22	SP2	---	J5-4	---	18	BLK	CAMERA PWR (-)
W23	XF1-2	7	SP1	--	16	RED	PWR (+)

PDP CONTROL/SENSOR HARNESS (P/N: 10820101)



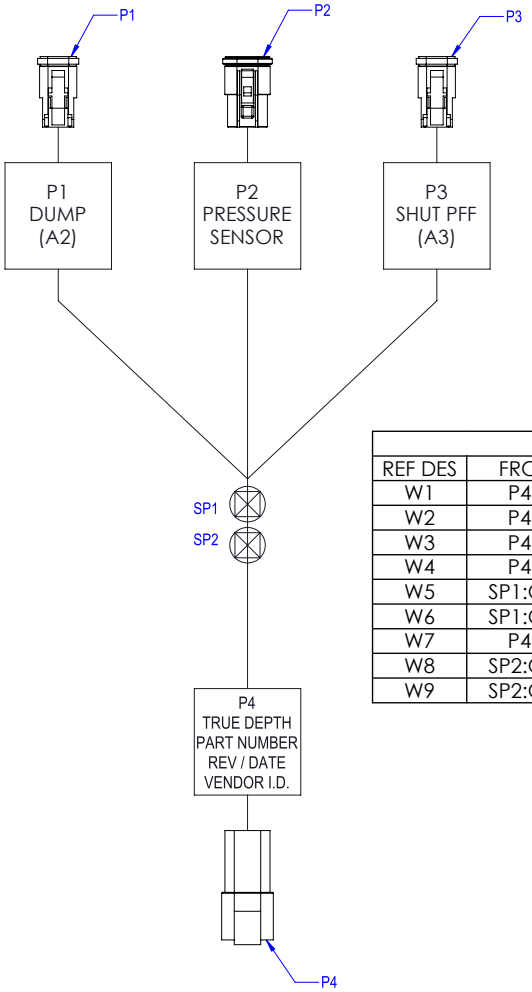
WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1:1	4	P2:A	8	16	RED	PDP INCREASE SOLENOID +
W2	J1:2	4	P2:B	8	16	YEL	PDP INCREASE SOLENOID -
W3	J1:3	4	P2:C	8	16	VLT	PDP DECREASE SOLENOID +
W4	J1:4	4	P2:D	8	16	BRN	PDP DECREASE SOLENOID -
W5	J1:5	4	P1:4	4	18	WHT	PDP SENSOR (SIGNAL)
W6	J1:6	4	P1:1	4	18	BLK	PDP SENSOR (GND)
W7	J1:7	4	P1:2	4	18	ORN	PDP SENSOR (PWR)

BULK FILL SCALE CAN CABLE PHD28 HARNESS (P/N: 10242801)



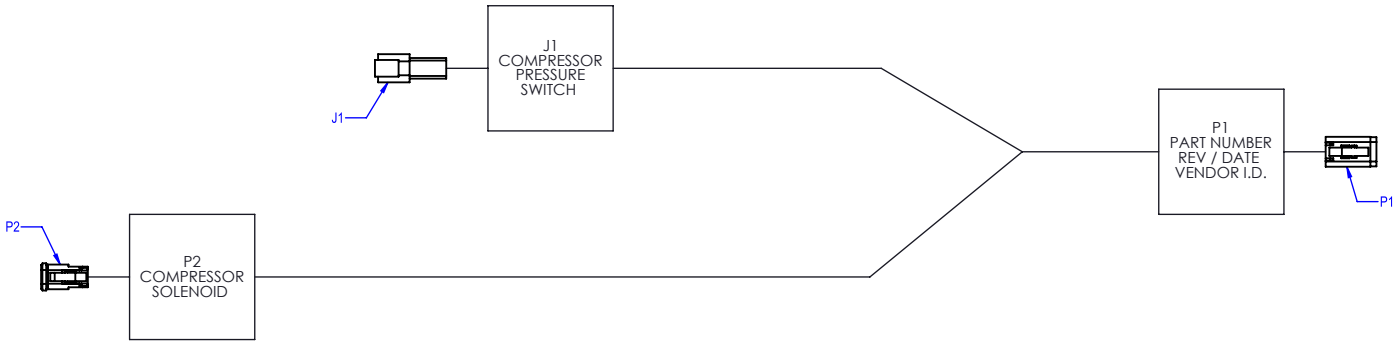
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	J1-10	4	SP1	---	16	RED	PWR 12VDC
W2	SP1	---	P1-1	7	16	RED	PWR 12VDC
W3	SP1	---	J2-A	11	16	RED	PWR 12VDC
W4	J1-9	4	SP2	---	16	BLK	GROUND
W5	SP2	---	P1-2	7	16	BLK	GROUND
W6	SP2	---	J2-B	11	16	BLK	GROUND
W7	J1-8	5	SP5	---	18 TP	YEL	CAN HI
W8	SP3	---	P1-3	7	18 TP	YEL	CAN HI
W9	SP3	---	J2-E	12	18 TP	YEL	CAN HI
W10	J1-7	5	SP4	---	18 TP	GRN	CAN LOW
W11	SP4	---	P1-4	7	18 TP	GRN	CAN LOW
W12	SP4	---	J2-F	12	18 TP	GRN	CAN LOW
W13	SP5	---	SP3	---	18	YEL	CAN HI
W14	SP5	---	J1-5	5	18	YEL	CAN TERM

INTEGRATED TRUE DEPTH ROW UNIT HARNESS (P/N: 10803401)



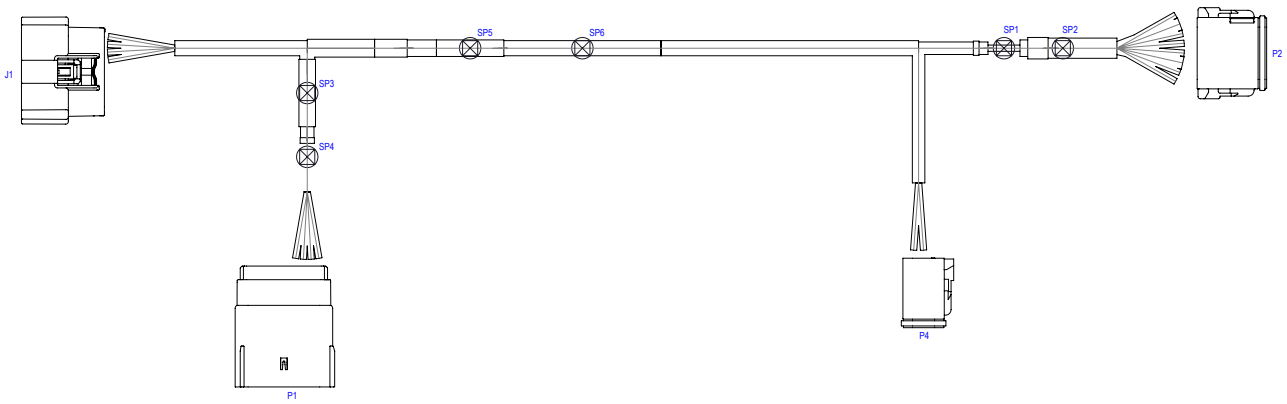
WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P4:1	8	P2:C	3	18	WHT	HDP SENSOR (SIGNAL)
W2	P4:2	8	P2:A	3	18	ORN	HDP SENSOR 12V (PWR)
W3	P4:3	8	P2:B	3	18	BLK	HDP SENSOR (GND)
W4	P4:4	8	SP1:IN	---	18	VLT	HDP PWM +
W5	SP1:OUT	---	P1:1	3	18	VLT	HDP PWM + DUMP VALVE
W6	SP1:OUT	---	P3:1	3	18	VLT	HDP PWM + SHUT OFF
W7	P4:5	8	SP2:IN	---	18	BRN	HDP PWM -
W8	SP2:OUT	---	P1:2	3	18	BRN	HDP PWM - DUMP VALVE
W9	SP2:OUT	---	P3:2	3	18	BRN	HDP PWM - SHUT OFF

YETTER ROW CLEANER COMPRESSOR HARNESS (P/N:10558201)



WIRE HOOK UP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1-1	7	J1-1	5	16	RED	COMPRESS SWITCH SUPPLY
W2	P1-2	7	J1-2	5	16	BLU	COMPRESSOR SWITCH SIG
W3	P1-3	7	P2-1	7	16	ORG	COMPRESSOR VALVE SIG
W4	P1-4	7	P2-2	7	16	BLK	COMPRESSOR VALVE GROUND

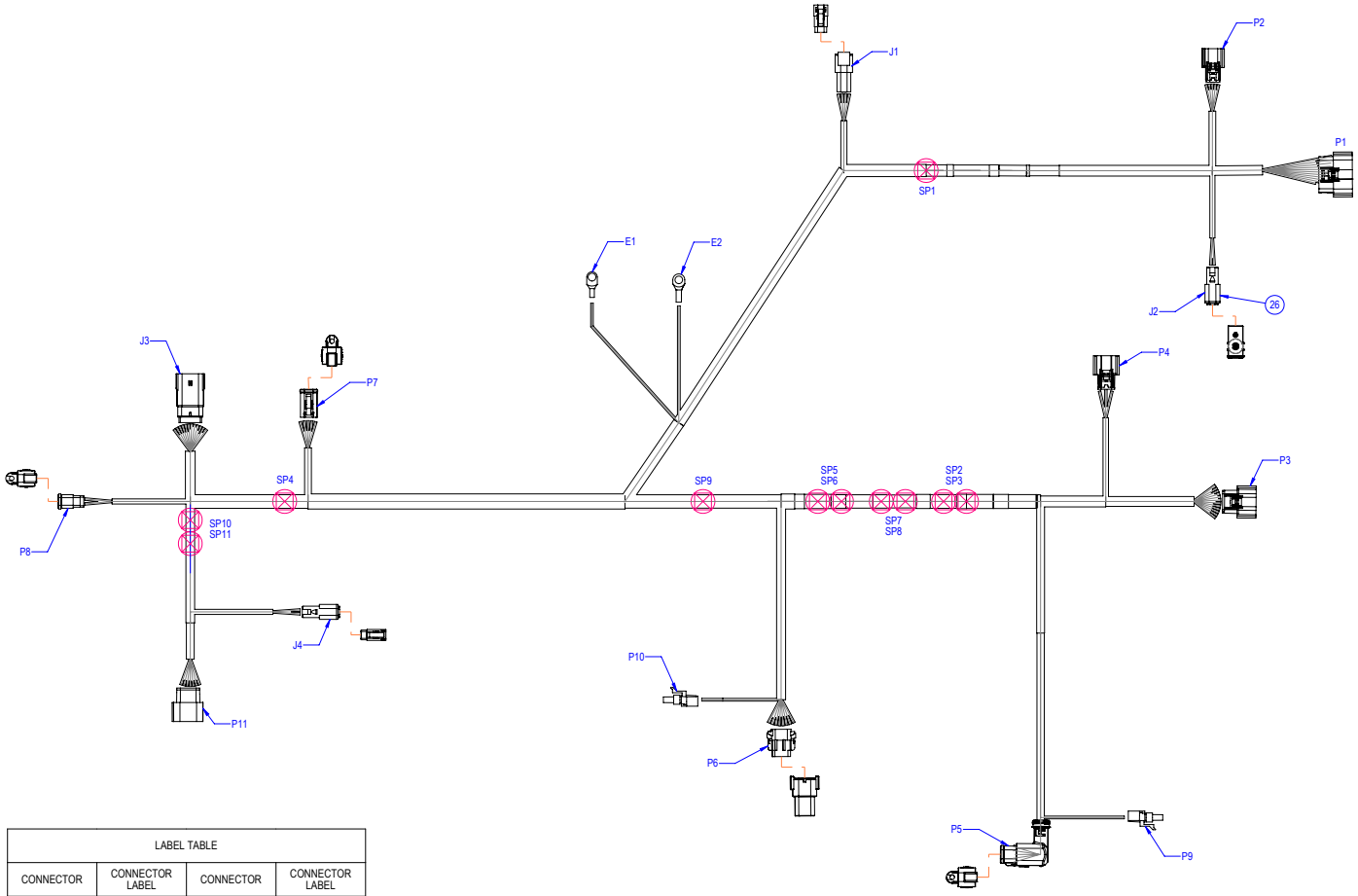
YETTER ROW CLEANER PWR/CAN HARNESS (P/N:10946801)



LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
J1	BF SCALE
P1	BF SCALE HARNESS
P2	ROW CLEANER PWR
P4	ROW CLEANER CAN
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.

WIRE HOOKUP CHART															
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P1:10	3	SP5:IN	---	18	RED	SCALE / ROW CLEANER 12V (PWR)	W11	SP1:OUT	---	P2:3	4	18	RED	ROW CLEANER 12V (PWR)
W2	P1:9	3	SP6:IN	---	18	BLK	SCALE / ROW CLEANER 12V (GND)	W12	SP1:OUT	---	P2:12	4	18	RED	ROW CLEANER 12V (PWR)
W3	P1:8	3	SP3:IN	---	18 (TP)	YEL	CAN HI	W13	SP2:OUT	---	P2:4	4	18	BLK	ROW CLEANER 12V (GND)
W4	P1:7	3	SP4:IN	---		GRN	CAN LOW	W14	SP2:OUT	---	P2:5	4	18	BLK	ROW CLEANER 12V (GND)
W5	SP3:OUT	---	J1:8	1	18 (TP)	YEL	CAN HI	W15	SP2:OUT	---	P2:6	4	18	BLK	ROW CLEANER 12V (GND)
W6	SP4:OUT	---	J1:7	1		GRN	CAN LOW	W16	SP2:OUT	---	P2:11	4	18	BLK	ROW CLEANER 12V (GND)
W7	SP3:OUT	---	P4:4	4	18 (TP)	YEL	CAN HI	W17	SP5:OUT	---	J1:10	1	18	RED	SCALE 12V (PWR)
W8	SP4:OUT	---	P4:5	4		GRN	CAN LOW	W18	SP5:OUT	---	SP1:IN	---	18	RED	ROW CLEANER 12V (PWR)
W9	SP1:OUT	---	P2:1	4	18	RED	ROW CLEANER 12V (PWR)	W19	SP6:OUT	---	J1:9	1	18	BLK	SCALE 12V (GND)
W10	SP1:OUT	---	P2:2	4	18	RED	ROW CLEANER 12V (PWR)	W20	SP6:OUT	---	SP2:IN	---	18	BLK	ROW CLEANER 12V (GND)

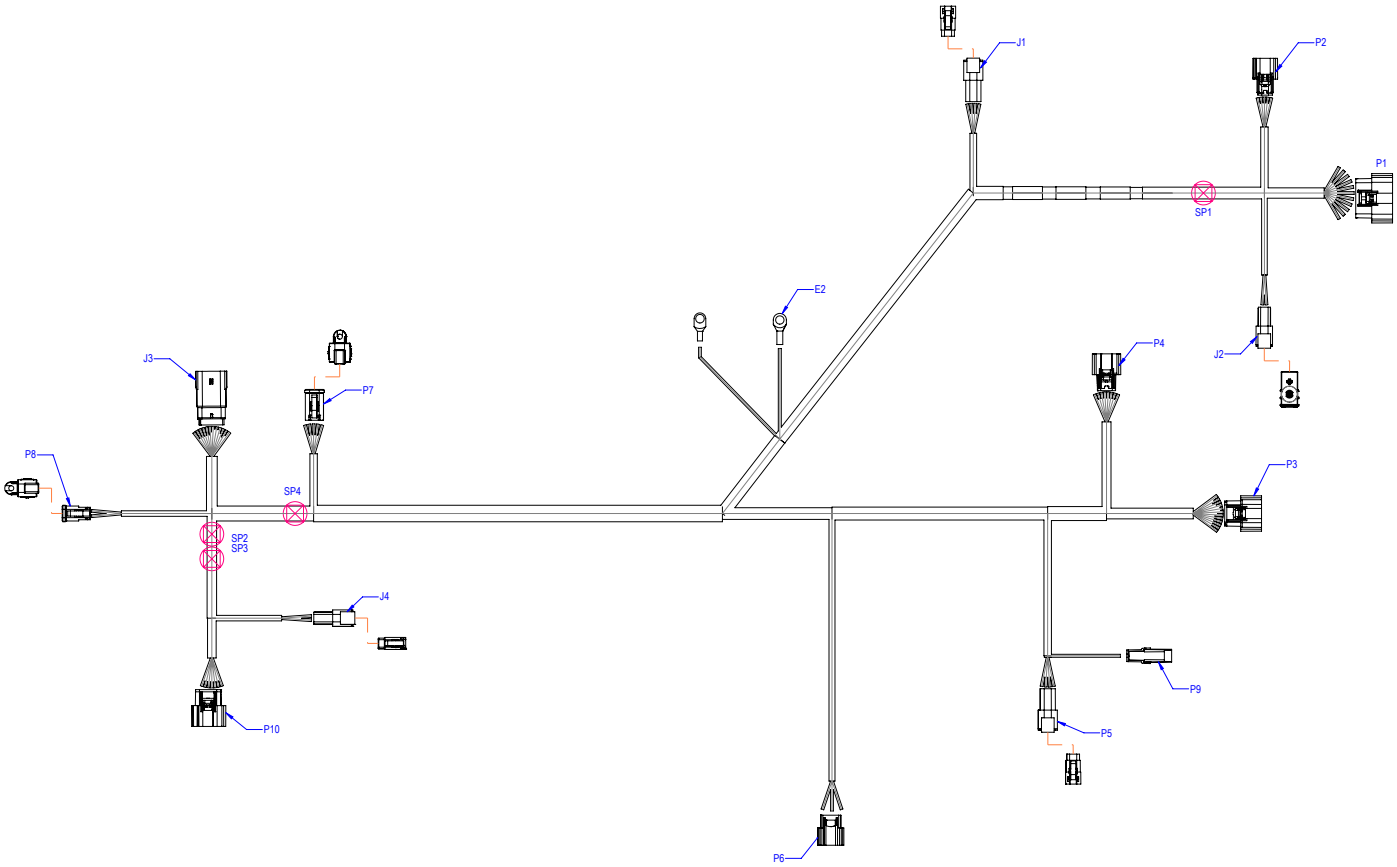
TRUE SPEED PULL ROW UNIT W/IPP HARNESS (P/N: 10916001)



LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P6	SEED SENSOR
P2	RU IPN J6	P7	FERTILIZER
P3	RU IPN J3	P8	TRUE DEPTH SOLENOID
P4	RU IPN J4	P9	BRAIDED ESD CABLE
J1	LINK SENSOR	P10	BRAIDED ESD CABLE
J2	MANUAL RUN	P11	RU IPP
J3	IPN PWR	E1	GND
J4	CAN TERM	E2	BRAIDED ESD CABLE
P5	SEED METER	HARNESS LABEL	PART NUMBER REV/DATE VENDOR I.D.

WIRE HOOKUP CHART															
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:1	29	P11:1	29	18 (TP)	ORG	RS232 RX	W30	SP2:OUT	---	P5:3	25	18 (TP)	YEL	CAN H
W2	P1:2	29	P11:2	29		BRN	RS232 TX	W31	SP3:OUT	---	P5:4	25		GRN	CAN L
W3	P1:3	29	P7:5	25	18	RED	FERT ROW CUTOFF VALVE (PWR)	W32	P2:3	29	SP4:IN	---	18	RED	IPP / FERT FLOW SENSOR (PWR)
W4	P1:4	29	P7:6	25	18	BLK	FERT ROW CUTOFF VALVE (GND)	W33	SP4:OUT	---	P7:1	25	18	RED	FERT FLOW SENSOR (PWR)
W5	P1:7	29	P8:1	25	18	VLT	TRUE DEPTH CYLINDER PWM +	W34	SP4:OUT	---	P11:12	29	18	RED	IPP PWR+
W6	P1:8	29	P8:2	25	18	BLU	TRUE DEPTH CYLINDER PWM -	W35	P2:4	29	P11:6	29	18	BLK	IPP PWR-
W7	P4:8	29	P7:3	25	18	VLT	FERT FLOW SENSOR (SIGNAL)	W36	P2:5	29	P11:11	29	18	BLU	IPP SOFTWARE UPDATE
W8	P1:16	29	J1:2	23	18	WHT	TRUE DEPTH LINK SENSOR (SIGNAL)	W37	J3:2	27	SP6:IN	---	16	BLK	24V IPN GND
W9	P1:19	29	SP1:IN	---	18	GRY	FERT / TRUE DEPTH SENSOR (GND)	W38	SP6:OUT	---	P3:2	31	16	BLK	24V IPN GND
W10	SP1:OUT	---	P7:2	25	18	GRY	FERT FLOW SENSOR (GND)	W39	SP6:OUT	---	P6:2	35	16	BLK	BELT BLDC DRIVER (24V GND)
W11	SP1:OUT	---	J1:4	23	18	GRY	TRUE DEPTH SENSOR (GND)	W40	J3:3	27	SP7:IN	---	16	RED	24V IPN PWR
W12	P4:5	29	P6:5	35	18	PNK	SEED SENSOR (PWR)	W41	SP7:OUT	---	P3:3	31	16	RED	24V IPN PWR
W13	P4:6	29	P6:6	35	18	GRY	SEED SENSOR (GND)	W42	SP7:OUT	---	P5:1	25	16	RED	METER BLDC DRIVER (24V PWR)
W14	J3:1	27	SP5:IN	---	16	RED	24V IPN PWR	W43	J3:4	27	SP8:IN	---	16	BLK	24V IPN GND
W15	SP5:OUT	---	P3:1	31	16	RED	24V IPN PWR	W44	SP8:OUT	---	P3:4	31	16	BLK	24V IPN GND
W16	SP5:OUT	---	P6:1	35	16	RED	BELT BLDC DRIVER (24V PWR)	W45	SP8:OUT	---	P5:2	25	16	BLK	METER BLDC DRIVER (24V GND)
W17	J3:5	27	P3:5	29	20	YEL	IPN STRAPPING	W46	SP8:OUT	---	P5:6	25	16	BLK	METER BLDC DRIVER (STRAPPING)
W18	J3:6	27	P3:6	29	20	ORG	IPN STRAPPING	W47	E2	---	SP9:IN	---	ESD	---	BRAIDED ESD CABLE
W19	J3:7	27	P3:7	29	20	WHT	IPN STRAPPING	W48	SP9:OUT	---	P10:1	37	ESD	---	BRAIDED SEED TUBE ESD CABLE
W20	J3:8	27	P3:8	29	20	GRN	IPN STRAPPING	W49	SP9:OUT	---	P9:1	37	ESD	---	BRAIDED METER ESD CABLE
W21	J3:9	27	P3:9	29	20	BLU	IPN STRAPPING	W50	P6:7	35	SP10:IN	---	18 (TP)	YEL	CAN H
W22	J3:10	27	P3:10	29	20	VLT	IPN STRAPPING	W51	P6:8	35	SP11:IN	---		GRN	CAN L
W23	J3:11	27	P3:11	29	20	GRY	IPN STRAPPING (PARITY)	W52	SP10:OUT	---	J4:1	23	18 (TP)	YEL	TERM (CAN H)
W24	J3:12	27	P3:12	29	20	BRN	IPN STRAPPING (GND)	W53	SP11:OUT	---	J4:2	23		GRN	TERM (CAN L)
W25	J1:1	23	P1:20	29	18	PNK	TRUE DEPTH LINK SENSOR (PWR)	W54	SP10:OUT	---	P11:5	29	18 (TP)	YEL	IPP (CAN H)
W26	P2:1	29	SP2:IN	---	18 (TP)	YEL	IPN (CAN H)	W55	SP11:OUT	---	P11:4	29		GRN	IPP (CAN L)
W27	P2:2	29	SP3:IN	---		GRN	IPN (CAN L)	W56	E1	---	J1:3	23	18	GRN	TRUE DEPTH LINK SENSOR (SHIELD)
W28	SP2:OUT	---	P6:3	35	18 (TP)	YEL	SEED SENSOR (CAN H)	W57	J2:2	28	P1:14	29	18	BRN	MANUAL RUN (PWR)
W29	SP3:OUT	---	P6:4	35		GRN	SEED SENSOR (CAN L)	W58	J2:1	28	P1:17	29	18	GRY	MANUAL RUN (GND)

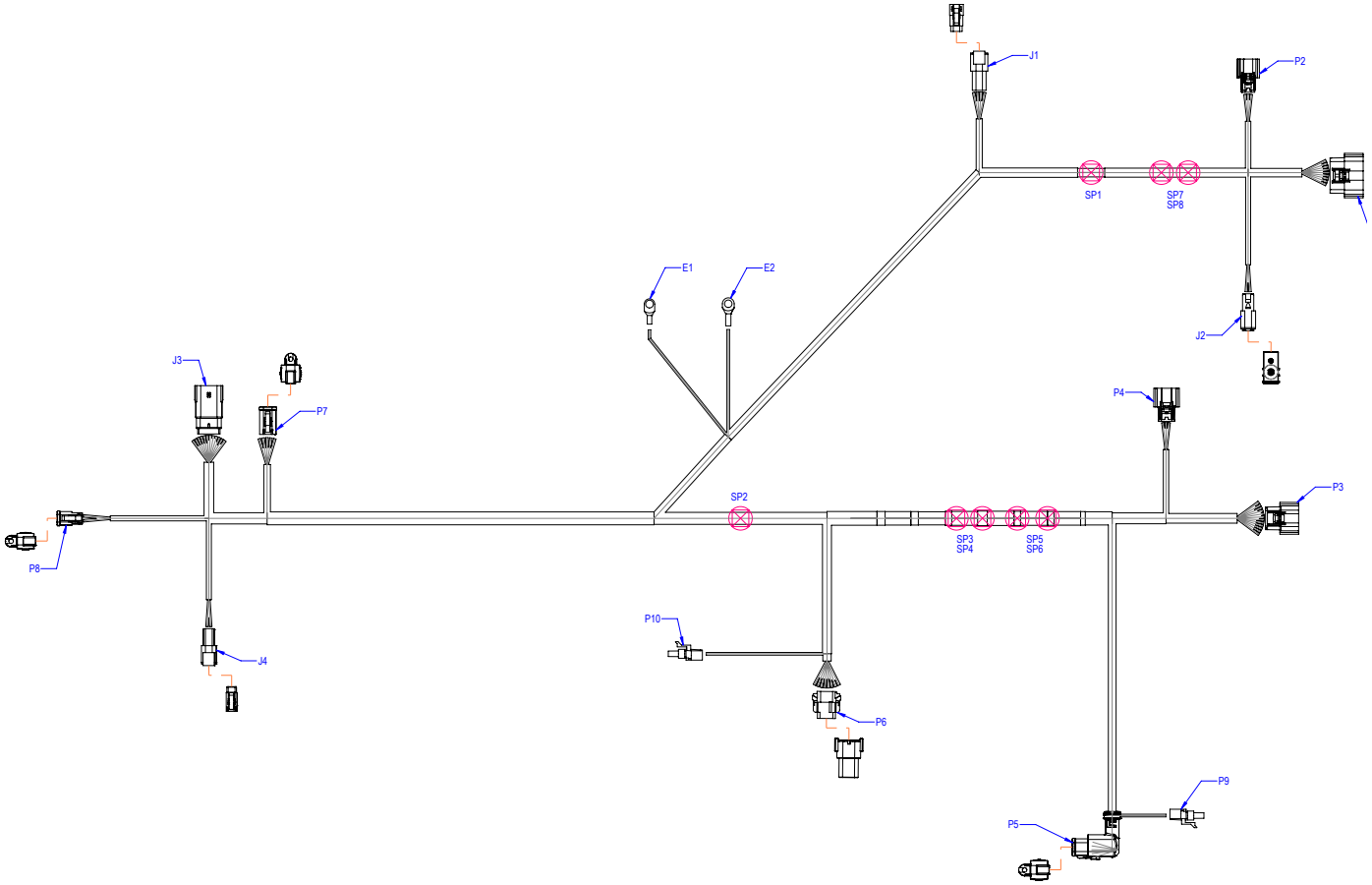
TRUE RATE PULL ROW UNIT W/IPP HARNESS (P/N: 10915901)



LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	P10	RU IPP
J3	IPN PWR	E1	GND
J4	CAN TERM	E2	BRAIDED ESD CABLE
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.		

WIRE HOOKUP CHART															
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:3	26	P7:5	23	18	RED	FERT ROW CUTOFFVALVE (PWR)	W24	J3:11	24	P3:11	26	20	GRY	IPN STRAPPING (PARITY)
W2	P1:4	26	P7:6	23	18	BLK	FERT ROW CUTOFF VALVE (GND)	W25	J3:12	24	P3:12	26	20	BRN	IPN STRAPPING (GND)
W3	P1:7	26	P8:1	23	18	VLT	TRUE DEPTH CYLINDER PWM+	W26	J1:3	20	E1	---	18	GRN	TRUE DEPTH LINK SENSOR (SHIELD)
W4	P1:8	26	P8:2	23	18	BLU	TRUE DEPTH CYLINDER PWM-	W27	P9:1	34	E2	---	ESD	---	BRAIDED ESD CABLE
W5	P4:8	26	P7:3	23	18	VLT	FERT FLOW SENSOR (SIGNAL)	W28	P1:14	26	J2:2	25	18	BRN	MANUAL RUN (PWR)
W6	P1:16	26	J1:2	20	18	WHT	TRUE DEPTH LINK SESNOR (SINGAL)	W29	P1:17	26	J2:1	25	18	GRY	MANUAL RUN (GND)
W7	P1:19	26	SP1:IN	---	18	GRY	FERT / TRUE DEPTH SENSOR (GND)	W30	P4:1	26	P5:1	29	18	RED	SEED METER MOTOR 1+
W8	SP1:OUT	---	P7:2	23	18	GRY	FERT FLOW SENSOR (GND)	W31	P4:2	26	P5:2	29	18	WHT	SEED METER MOTOR 1-
W9	SP1:OUT	---	J1:4	20	18	GRY	TRUE DEPTH LINK SESNOR (GND)	W32	P4:4	26	P5:3	29	18	GRN	SEED METER MOTOR 2+
W10	P1:20	26	J1:1	20	18	PNK	TRUE DEPTH LINK SENSOR (PWR)	W33	P4:3	26	P5:4	29	18	BLK	SEED METER MOTOR 2-
W11	P2:3	26	SP4:IN	---	18	RED	IPP / FERT FLOW SESNOR (PWR)	W34	P4:5	26	P6:1	31	18	RED	SEED SENSOR (PWR)
W12	SP4:OUT	---	P7:1	23	18	RED	FERT FLOW SENSOR (PWR)	W35	P4:6	26	P6:6	31	18	BLK	SEED SENSOR (GND)
W13	SP4:OUT	---	P10:12	26	18	RED	IPP PWR+	W36	P4:7	26	P6:2	31	18	BLU	SEED SENSOR (LIN)
W14	J3:1	24	P3:1	28	16	RED	24V IPN PWR	W37	P1:1	26	P10:1	26	18 (TP)	ORG	RS232 RX
W15	J3:2	24	P3:2	28	16	BLK	24V IPN GND	W38	P1:2	26	P10:2	26		BRN	RS232 TX
W16	J3:3	24	P3:3	28	16	RED	24V IPN PWR	W39	P2:1	26	SP3:IN	---	18 (TP)	YEL	IPN (CAN H)
W17	J3:4	24	P3:4	28	16	BLK	24V IPN PWR	W40	P2:2	26	SP2:IN	---		GRN	IPN (CAN L)
W18	J3:5	24	P3:5	26	20	YEL	IPN STRAPPING	W41	SP3:OUT	---	J4:1	20	18 (TP)	YEL	TERM (CAN H)
W19	J3:6	24	P3:6	26	20	ORG	IPN STRAPPING	W42	SP2:OUT	---	J4:2	20		GRN	TERM (CAN L)
W20	J3:7	24	P3:7	26	20	WHT	IPN STRAPPING	W43	SP3:OUT	---	P10:5	26	18 (TP)	YEL	IPP (CAN H)
W21	J3:8	24	P3:8	26	20	GRN	IPN STRAPPING	W44	SP2:OUT	---	P10:4	26		GRN	IPP (CAN L)
W22	J3:9	24	P3:9	26	20	BLU	IPN STRAPPING	W45	P2:5	26	P10:11	26	18	BLU	IPP SOFTWARE UPDATE
W23	J3:10	24	P3:10	26	20	VLT	IPN STRAPPING	W46	P2:4	26	P10:6	26	18	BLK	IPP PWR-

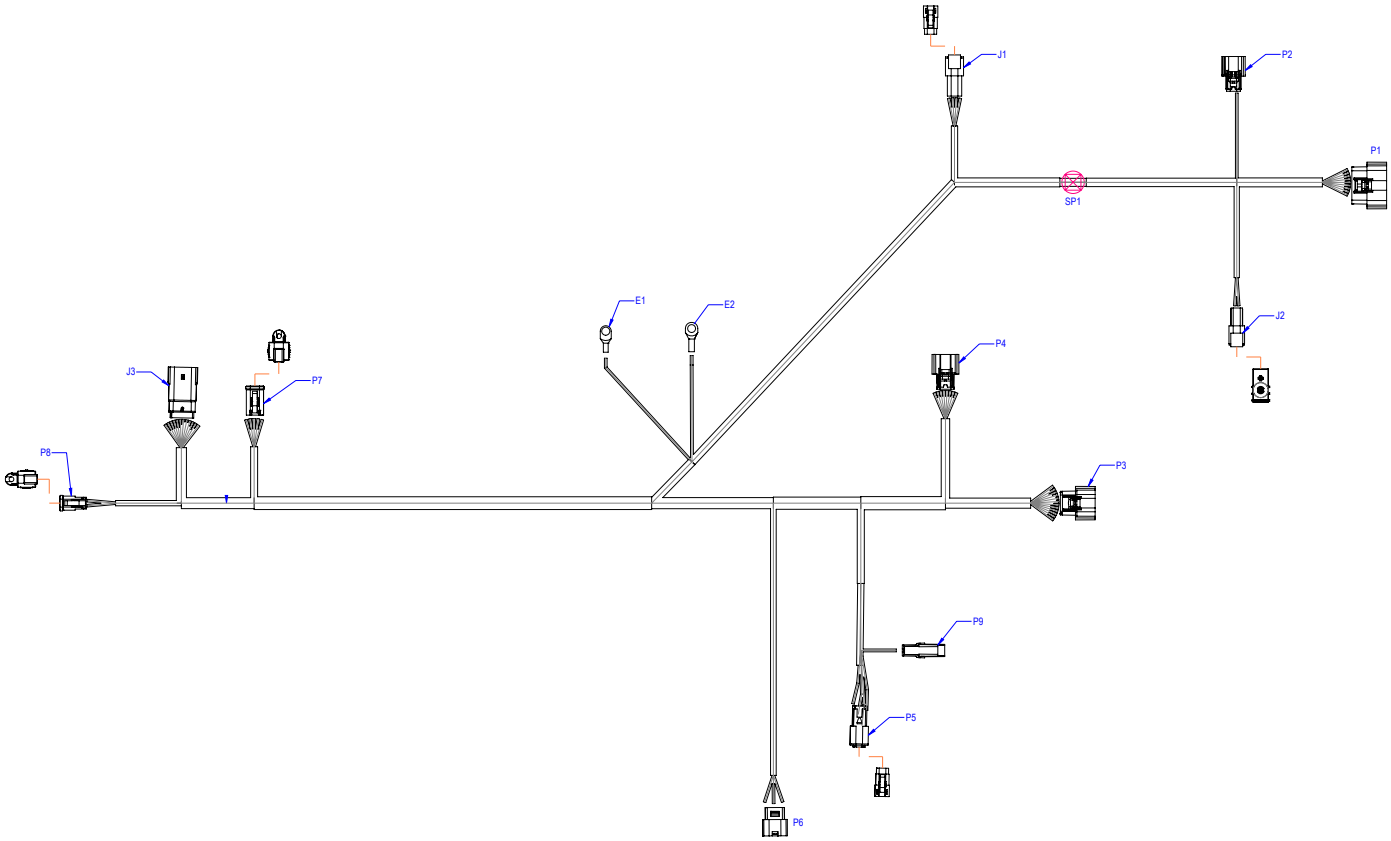
TRUE SPEED PULL ROW UNIT HARNESS (P/N:10915801)



LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	P10	BRAIDED ESD CABLE
J3	IPN PWR	E1	GND
J4	CAN TERM	E2	BRAIDED ESD CABLE
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.		

WIRE HOOKUP CHART															
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:3	28	P7:5	25	18	RED	FERT ROW CUT OFF VALVE (PWR)	W25	SP5:OUT	---	P5:1	25	16	RED	METER BLDC DRIVER (24V PWR)
W2	P1:4	28	P7:6	25	18	BLK	FERT ROW CUTOFF VALVE (GND)	W26	P1:14	28	J2:2	39	18	BRN	MANUAL RUN (PWR)
W3	P1:7	28	P8:1	25	18	VLT	TRUE DEPTH CYLINDER PWM+	W27	P1:17	28	J2:1	39	18	GRY	MANUAL RUN (GND)
W4	P1:8	28	P8:2	25	18	BLU	TRUE DEPTH CYLINDER PWM-	W28	J3:4	26	SP6:IN	---	16	BLK	24V IPN GND
W5	P4:8	28	P7:3	25	18	VLT	FERT FLOW SENSOR (SIGNAL)	W29	E2	---	SP2:IN	---	ESD	---	BRAIDED ESD CABLE
W6	P1:16	28	J1:2	22	18	WHT	TRUE DEPTH LINK SENSOR (SINGAL)	W30	SP6:OUT	---	P5:2	25	16	BLK	METER BLDC DRIVER (24V GND)
W7	P1:19	28	SP1:IN	---	18	GRY	FERT / TRUE DEPTH SENSOR (GND)	W31	SP6:OUT	---	P3:4	30	16	BLK	24V IPN GND
W8	SP1:OUT	---	P7:2	25	18	GRY	FERT FLOW SENSOR (GND)	W32	J3:5	26	P3:5	28	20	YEL	IPN STRAPPING
W9	SP1:OUT	---	J1:4	22	18	GRY	TRUE DEPTH LINK SENSOR (GND)	W33	J3:6	26	P3:6	28	20	ORG	IPN STRAPPING
W10	P1:20	28	J1:1	22	18	PNK	TRUE DEPTH LINK SENSOR (PWR)	W34	J3:7	26	P3:7	28	20	WHT	IPN STRAPPING
W11	P2:3	28	P7:1	25	18	RED	FERT FLOW SENSOR (PWR)	W35	J3:8	26	P3:8	28	20	GRN	IPN STRAPPING
W12	P2:1	28	SP7:IN	---	18 (TP)	YEL	IPN (CAN H)	W36	J3:9	26	P3:9	28	20	BLU	IPN STRAPPING
W13	P2:2	28	SP8:IN	---		GRN	IPN (CAN L)	W37	J3:10	26	P3:10	28	20	VLT	IPN STRAPPING
W14	P4:5	28	P6:5	32	18	PNK	SEED SENSOR (PWR)	W38	J3:11	26	P3:11	28	20	GRY	IPN STRAPPING (PARITY)
W15	P4:6	28	P6:6	32	18	GRY	SEED SENSOR (GND)	W39	J3:12	26	P3:12	28	20	BRN	IPN STRAPPING (GND)
W16	J3:1	26	SP3:IN	---	16	RED	24V IPN PWR	W40	SP7:OUT	---	P5:3	25	18 (TP)	YEL	CAN H
W17	SP3:OUT	---	P3:1	30	16	RED	24V IPN PWR	W41	SP8 :OUT	---	P5:4	25		GRN	CAN L
W18	SP3:OUT	---	P6:1	32	16	RED	BELT BLDC DRIVER (24V PWR)	W42	SP7:OUT	---	P6:3	32	18 (TP)	YEL	SEED SENSOR (CAN H)
W19	SP4:OUT	---	P6:2	32	16	BLK	BELT BLDC DRIVER (24V GND)	W43	SP8:OUT	---	P6:4	32		GRN	SEED SENSOR (CAN L)
W20	SP4:OUT	---	P3:2	30	16	BLK	24V IPN GND	W44	J4:1	22	P6:7	32	18 (TP)	YEL	CAN H
W21	J3:2	26	SP4:IN	---	16	BLK	24V IPN GND	W45	J4:2	22	P6:8	32		GRN	CAN L
W22	J3:3	26	SP5:IN	---	16	RED	24V IPN PWR	W46	SP2:OUT	---	P9:1	37	ESD	---	BRAIDED SEED TUBE ESD CABLE
W23	SP5:OUT	---	P3:3	30	16	RED	24V IPN PWR	W47	SP2:OUT	---	P10:1	37	ESD	---	BRAIDED METER ESD CABLE
W24	E1	---	J1:3	22	18	GRN	TRUE DEPTH LINK SENSOR (SHIELD)	W48	SP6:OUT	---	P5:6	25	16	BLK	METER BLDC DRIVER (STRAP)

TRUE RATE PULL ROW UNIT HARNESS (P/N:10915701)



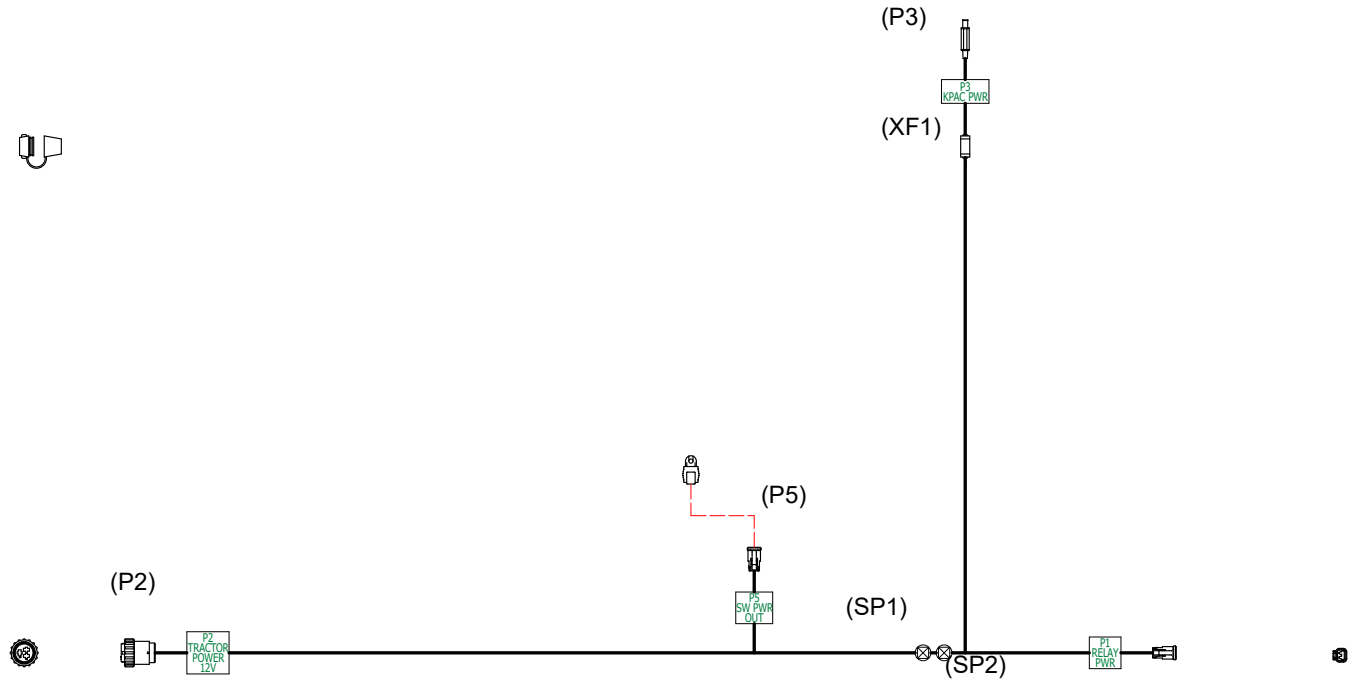
WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:3	24	P7:5	22	18	RD	FERT ROW CUT OFF VALVE (PWR)
W2	P1:4	24	P7:6	22	18	BK	FERT ROW CUTOFF VALVE (GND)
W3	P1:7	24	P8:1	22	18	VT	TRUE DEPTH CYLINDER PWM+
W4	P1:8	24	P8:2	22	18	BU	TRUE DEPTH CYLINDER PWM-
W5	P4:8	24	P7:3	22	18	VT	FERT FLOW SENSOR (SIGNAL)
W6	J1:2	19	P1:16	24	18	WH	TRUE DEPTH LINK SENSOR (SINGAL)
W7	P1:19	24	SP1:IN	---	18	GY	FERT / TRUE DEPTH SENSOR (GND)
W8	SP1:OUT	---	P7:2	22	18	GY	FERT FLOW SENSOR (GND)
W9	SP1:OUT	---	J1:4	19	18	GY	TRUE DEPTH LINK SENSOR (GND)
W10	J1:1	19	P1:20	24	18	RDWH	TRUE DEPTH LINK SENSOR (PWR)
W11	P2:3	24	P7:1	22	18	RD	FERT FLOW SENSOR (PWR)
W12	J3:1	23	P3:1	26	16	RD	24V IPN PWR
W13	J3:2	23	P3:2	26	16	BK	24V IPN GND
W14	J3:3	23	P3:3	26	16	RD	24V IPN PWR
W15	J3:4	23	P3:4	26	16	BK	24V IPN GND
W16	J3:5	23	P3:5	24	20	YE	IPN STRAPPING
W17	J3:6	23	P3:6	24	20	OG	IPN STRAPPING
W18	J3:7	23	P3:7	24	20	WH	IPN STRAPPING
W19	J3:8	23	P3:8	24	20	GN	IPN STRAPPING
W20	J3:9	23	P3:9	24	20	BU	IPN STRAPPING
W21	J3:10	23	P3:10	24	20	VT	IPN STRAPPING
W22	J3:11	23	P3:11	24	20	GY	IPN STRAPPING (PARITY)
W23	J3:12	23	P3:12	24	20	BN	IPN STRAPPING (GND)
W24	E1	---	J1:3	19	18	GN	TRUE DEPTH LINK SENSOR (SHIELD)
W25	E2	---	P9:1	31	ESD	---	BRAIDED ESD CABLE
W26	J2:2	34	P1:14	24	18	BN	MANUAL RUN (PWR)
W27	J2:1	34	P1:17	24	18	GY	MANUAL RUN (GND)
W28	P4:1	24	P5:1	27	18	RD	SEED METER MOTOR 1+
W29	P4:2	24	P5:2	27	18	WH	SEED METER MOTOR 1-
W30	P4:4	24	P5:3	27	18	GN	SEED METER MOTOR 2+
W31	P4:3	24	P5:4	27	18	BK	SEED METER MOTOR 2-
W32	P4:5	24	P6:1	28	18	RD	SEED SENSOR (PWR)
W33	P4:6	24	P6:6	28	18	BK	SEED SENSOR (GND)
W34	P4:7	24	P6:2	28	18	BU	SEED SENSOR (LIN)

LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	E1	GND
J3	IPN PWR	E2	BRAIDED ESD CABLE
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.		

TAILLIGHT EXTENSION HARNESS (P/N: A25207)

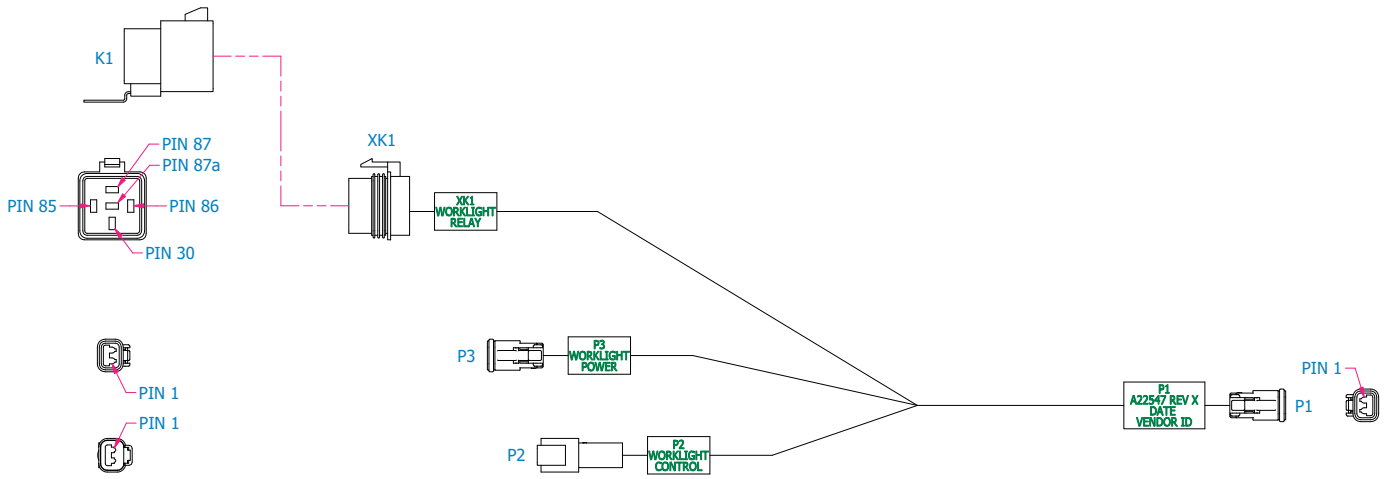
Signal	Wire Gauge	Color	From	To
Ground	16	WHT	P1-1	P2-1
LH Turn	16	YEL	P1-3	P2-3
RH Turn	16	GRN	P1-5	P2-5
Tail	16	BRN	P1-6	P2-6

TRACTOR CONSOLE HARNESS (P/N: A25031)



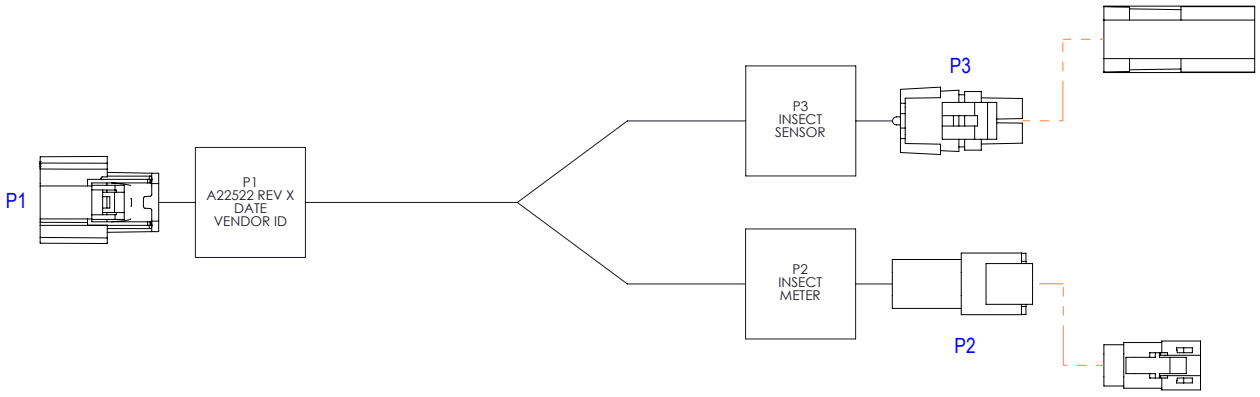
Signal	Wire Gauge	Color	FROM	TO
12V Switched (PWR)	16	RED	P2-1	SP1
Relay (PWR)	18	BLUE	SP1	P1-1
12V Switched (PWR)	18	RED	SP1	XF1-1
12V Switched (PWR)	18	ORN	SP1	P5-1
12V Switched (PWR)	18	RED	XF1-2	P3-1
12V Switched (PWR)	16	BLK	P2-3	SP2
12V Switched (PWR)	18	BLK	SP2	P1-2
12V Switched (PWR)	18	BLK	SP2	P3-2
12V Switched (PWR)	18	BLK	SP2	P5-2

WORK LIGHT HARNESS (P/N: A22547)



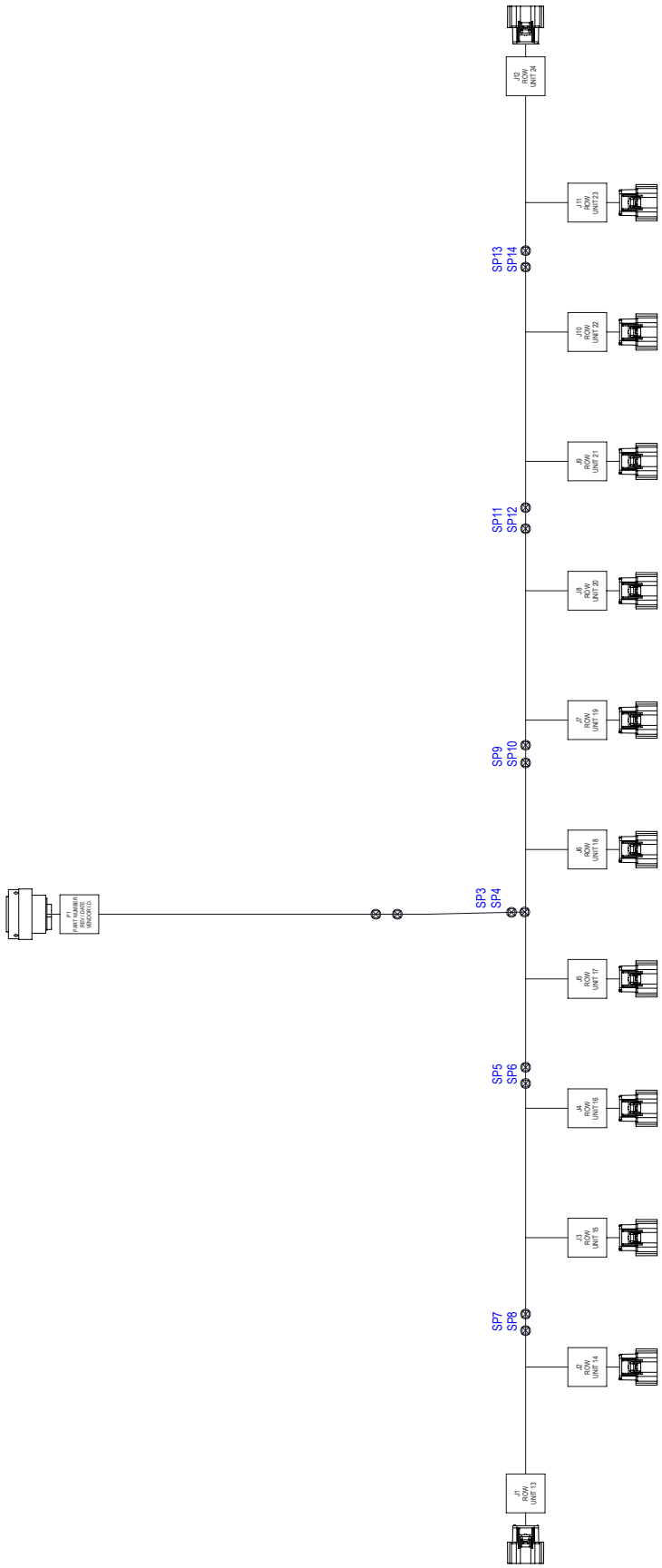
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P3-1	7	P1-1	7	16	BLK	WORKLIGHT POWER -
W2	P3-2	7	XK1-30	---	16	RED	WORKLIGHT POWER +
W3	P2-1	8	XK1-85	---	16	BLK	RELAY GROUND
W4	P2-2	8	XK1-86	---	16	BLU	RELAY 12V
W5	XK1-87	---	P1-2	7	16	RED	WORKLIGHT POWER +

INSECTICIDE HARNESS (P/N: A22522)



WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:1	6	P2:1	8	18	RED	INSECTICIDE METER MOTOR 1+
W2	P1:2	6	P2:2	8	18	WHT	INSECTICIDE METER MOTOR 1-
W3	P1:3	6	P2:4	8	18	BLK	INSECTICIDE METER MOTOR 2-
W4	P1:4	6	P2:3	8	18	GRN	INSECTICIDE METER MOTOR 2+
W5	P1:6	6	P3:B	10	18	BLK	INSECTICIDE SENSOR (GND)
W6	P1:7	6	P3:A	10	18	RED	INSECTICIDE SENSOR (PWR/SIGNIAL)

PUSH ROW UNIT POWER HARNESS, 12 ROW (P/N: 10478201)



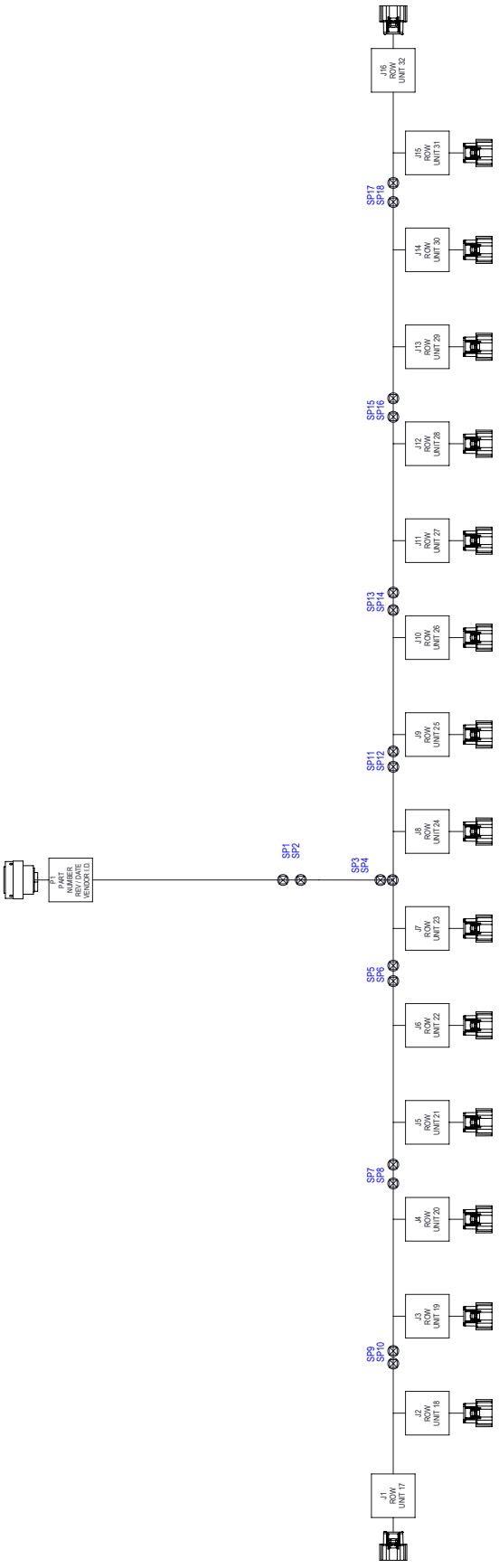
WIRE HOOKUP CHART

REF DES	FROM	TO	GAUGE	COLOR	DESCRIPTION	REF DES	FROM	TO	GAUGE	COLOR	DESCRIPTION
10404 W1	P1:6	SP1:IN	4	RD	24V (PWR)	10404 W32	J5:4	SP4:OUT	16	BK	RU 17 24V (GND)
10404 W2	P1:4	SP2:IN	4	BK	24V (GND)	10404 W33	J6:4	SP4:OUT	16	BK	RU 18 24V (GND)
10404 W3	J1:1	SP7:OUT	16	RD	RU 13 24V (PWR)	10404 W34	J6:2	SP4:OUT	16	BK	RU 18 24V (GND)
10404 W4	J1:3	SP7:OUT	16	RD	RU 13 24V (PWR)	10404 W35	SP6:OUT	SP8:IN	14	BK	24V (GND)
10404 W5	J2:3	SP7:OUT	16	RD	RU 14 24V (PWR)	10404 W36	J7:2	SP10:OUT	16	BK	RU 19 24V (GND)
10404 W6	J2:1	SP7:OUT	16	RD	RU 14 24V (PWR)	10404 W37	J7:4	SP10:OUT	16	BK	RU 19 24V (GND)
10404 W7	J3:1	SP5:OUT	16	RD	RU 15 24V (PWR)	10404 W38	J8:2	SP10:OUT	16	BK	RU 20 24V (GND)
10404 W8	J3:3	SP5:OUT	16	RD	RU 15 24V (PWR)	10404 W39	J8:4	SP10:OUT	16	BK	RU 20 24V (GND)
10404 W14	J6:1	SP5:OUT	16	RD	RU 18 24V (PWR)	10404 W45	J11:3	SP13:OUT	16	RD	RU 23 24V (PWR)
10404 W9	J4:1	SP5:OUT	16	RD	RU 16 24V (PWR)	10404 W40	SP4:OUT	SP6:IN	10	BK	24V (GND)
10404 W10	J4:3	SP5:OUT	16	RD	RU 16 24V (PWR)	10404 W41	SP2:OUT	SP10:IN	4	BK	24V (GND)
10404 W11	J6:3	SP3:OUT	16	RD	RU 18 24V (PWR)	10404 W42	SP2:OUT	SP4:IN	4	BK	24V (GND)
10404 W12	J5:1	SP5:OUT	16	RD	RU 17 24V (PWR)	10404 W43	J11:1	SP13:OUT	16	RD	RU 23 24V (PWR)
10404 W13	J5:3	SP5:OUT	16	RD	RU 17 24V (PWR)	10404 W44	J12:3	SP13:OUT	16	RD	RU 24 24V (PWR)
10404 W14	J6:1	SP5:OUT	16	RD	RU 18 24V (PWR)	10404 W45	J11:3	SP13:OUT	16	RD	RU 23 24V (PWR)
10404 W15	SP5:OUT	SP7:IN	14	RD	24V (PWR)	10404 W46	J12:1	SP13:OUT	16	RD	RU 24 24V (PWR)
10404 W16	SP9:OUT	J7:1	16	RD	RU 19 24V (PWR)	10404 W47	J12:4	SP14:OUT	16	BK	RU 24 24V (GND)
10404 W17	SP9:OUT	J7:3	16	RD	RU 19 24V (PWR)	10404 W48	J11:2	SP14:OUT	16	BK	RU 23 24V (GND)
10404 W18	SP9:OUT	J8:1	16	RD	RU 20 24V (PWR)	10404 W49	J11:4	SP14:OUT	16	BK	RU 23 24V (GND)
10404 W19	SP9:OUT	J8:3	16	RD	RU 20 24V (PWR)	10404 W50	J12:2	SP14:OUT	16	BK	RU 24 24V (GND)
10404 W20	SP3:OUT	SP5:IN	10	RD	24V (PWR)	10404 W51	SP9:OUT	SP11:IN	10	RD	24V (GND)
10404 W21	SP1:OUT	SP9:IN	4	RD	24V (PWR)	10404 W52	J9:4	SP12:OUT	16	BK	RU 21 24V (GND)
10404 W22	SP1:OUT	SP3:IN	4	RD	24V (PWR)	10404 W53	J9:2	SP12:OUT	16	BK	RU 21 24V (GND)
10404 W23	J1:2	SP8:OUT	16	BK	RU 13 24V (GND)	10404 W54	J10:2	SP12:OUT	16	BK	RU 22 24V (GND)
10404 W24	J2:4	SP8:OUT	16	BK	RU 14 24V (GND)	10404 W55	J10:4	SP12:OUT	16	BK	RU 22 24V (GND)
10404 W25	J1:4	SP8:OUT	16	BK	RU 13 24V (GND)	10404 W56	SP12:OUT	SP14:IN	14	BK	24V (GND)
10404 W26	J2:2	SP8:OUT	16	BK	RU 14 24V (GND)	10404 W57	J9:3	SP11:OUT	16	RD	RU 21 24V (PWR)
10404 W27	J3:4	SP6:OUT	16	BK	RU 15 24V (GND)	10404 W58	J9:1	SP11:OUT	16	RD	RU 21 24V (PWR)
10404 W28	J3:2	SP6:OUT	16	BK	RU 15 24V (GND)	10404 W59	J10:1	SP11:OUT	16	RD	RU 22 24V (PWR)
10404 W29	J4:2	SP6:OUT	16	BK	RU 16 24V (GND)	10404 W60	J10:3	SP11:OUT	16	RD	RU 22 24V (PWR)
10404 W30	J4:4	SP6:OUT	16	BK	RU 16 24V (GND)	10404 W61	SP11:OUT	SP13:IN	10	RD	24V (PWR)
10404 W31	J5:2	SP4:OUT	16	BK	RU 17 24V (GND)	10404 W62	SP10:OUT	SP12:IN	10	BK	24V (GND)

STRAPPING TABLE 1

CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12
J1	GND	---	GND	GND	---	---	---	GND
J2	---	GND	GND	GND	---	---	---	GND
J3	GND	GND	GND	GND	---	---	GND	GND
J4	---	---	---	---	GND	---	---	GND
J5	GND	---	---	---	GND	---	GND	GND
J6	---	GND	---	---	GND	---	GND	GND
J7	GND	GND	---	---	GND	---	---	GND
J8	---	---	GND	---	GND	---	GND	GND
J9	GND	---	GND	---	GND	---	---	GND
J10	---	GND	GND	---	GND	---	---	GND
J11	GND	GND	GND	---	---	GND	GND	GND
J12	---	---	---	GND	GND	---	---	GND

PUSH ROW UNIT POWER HARNESS, 16 ROW (P/N: 10404001)



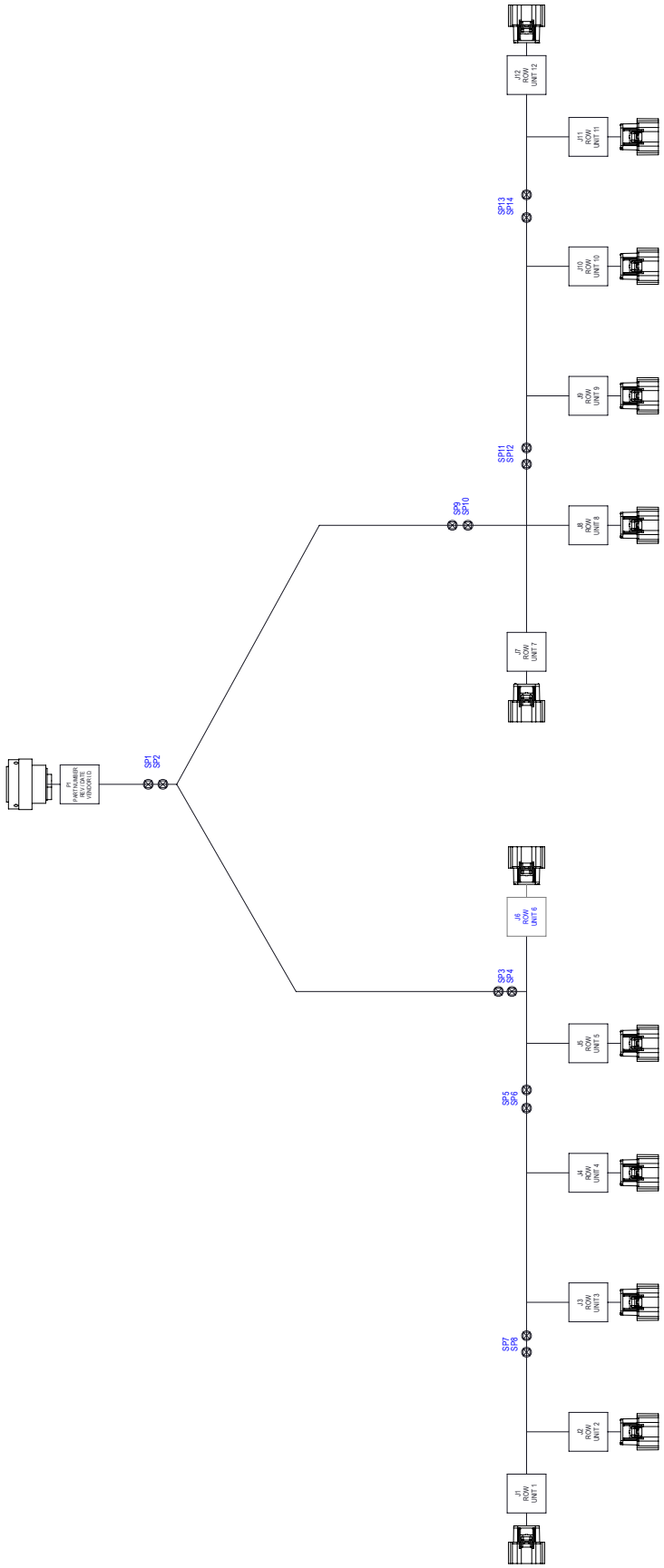
WIRE HOOKUP CHART

REF DES	FROM	TO	GAUGE	COLOR	DESCRIPTION	REF DES	FROM	TO	GAUGE	COLOR	DESCRIPTION
10404001W1	J5:1	SP5	16	RD	RU 21 (PWR)	10404001W42	J8:4	SP4	16	BK	RU 24 (GND)
10404001W2	P1:6	SP1	4	RD	24V (PWR)	10404001W43	SP1	SP11	4	RD	24V (PWR)
10404001W3	P1:4	SP2	4	BK	24V (GND)	10404001W44	SP2	SP12	4	BK	24V (GND)
10404001W4	J1:1	SP9	16	RD	RU 17 (PWR)	10404001W45	J12:1	SP13	16	RD	RU 28 (PWR)
10404001W5	J5:3	SP5	16	RD	RU 21 (PWR)	10404001W46	J16:1	SP17	16	RD	RU 32 (PWR)
10404001W6	J1:3	SP9	16	RD	RU 17 (PWR)	10404001W47	J12:3	SP13	16	RD	RU 28 (PWR)
10404001W7	SP7	SP9	10	RD	24V (PWR)	10404001W48	J16:3	SP17	16	RD	RU 32 (PWR)
10404001W8	J6:1	SP5	16	RD	RU 22 (PWR)	10404001W49	SP15	SP17	10	RD	24V (PWR)
10404001W9	SP3	SP5	6	RD	24V (PWR)	10404001W50	J11:1	SP13	16	RD	RU 27 (PWR)
10404001W10	J2:1	SP9	16	RD	RU 18 (PWR)	10404001W51	SP11	SP13	6	RD	24V (PWR)
10404001W11	J3:1	SP7	16	RD	RU 19 (PWR)	10404001W52	J15:1	SP17	16	RD	RU 31 (PWR)
10404001W12	J6:3	SP5	16	RD	RU 22 (PWR)	10404001W53	J14:1	SP15	16	RD	RU 30 (PWR)
10404001W13	J7:1	SP3	16	RD	RU 23 (PWR)	10404001W54	J11:3	SP13	16	RD	RU 27 (PWR)
10404001W14	J2:3	SP9	16	RD	RU 18 (PWR)	10404001W55	J10:1	SP11	16	RD	RU 26 (PWR)
10404001W15	J3:3	SP7	16	RD	RU 19 (PWR)	10404001W56	J15:3	SP17	16	RD	RU 31 (PWR)
10404001W16	SP5	SP7	8	RD	24V (PWR)	10404001W57	J14:3	SP15	16	RD	RU 30 (PWR)
10404001W17	J7:3	SP3	16	RD	RU 23 (PWR)	10404001W58	SP13	SP15	8	RD	24V (PWR)
10404001W18	SP1	SP3	4	RD	24V (PWR)	10404001W59	J10:3	SP11	16	RD	RU 26 (PWR)
10404001W19	J4:1	SP7	16	RD	RU 20 (PWR)	10404001W60	J13:1	SP15	16	RD	RU 29 (PWR)
10404001W20	J8:1	SP3	16	RD	RU 24 (PWR)	10404001W61	J9:1	SP11	16	RD	RU 25 (PWR)
10404001W21	J4:3	SP7	16	RD	RU 20 (PWR)	10404001W62	J13:3	SP15	16	RD	RU 29 (PWR)
10404001W22	J8:3	SP3	16	RD	RU 24 (PWR)	10404001W63	J9:3	SP11	16	RD	RU 25 (PWR)
10404001W23	J5:2	SP6	16	BK	RU 21 (GND)	10404001W64	J12:2	SP14	16	BK	RU 28 (GND)
10404001W24	J1:2	SP10	16	BK	RU 17 (GND)	10404001W65	J16:2	SP18	16	BK	RU 32 (GND)
10404001W25	J5:4	SP6	16	BK	RU 21 (GND)	10404001W66	J12:4	SP14	16	BK	RU 28 (GND)
10404001W26	J1:4	SP10	16	BK	RU 17 (GND)	10404001W67	J16:4	SP18	16	BK	RU 32 (GND)
10404001W27	SP8	SP10	10	BK	24V (GND)	10404001W68	SP16	SP18	10	BK	24V (GND)
10404001W28	J6:2	SP6	16	BK	RU 22 (GND)	10404001W69	J11:2	SP14	16	BK	RU 27 (GND)
10404001W29	SP4	SP6	6	BK	24V (GND)	10404001W70	SP12	SP14	6	BK	24V (GND)
10404001W30	J2:2	SP10	16	BK	RU 18 (GND)	10404001W71	J15:2	SP18	16	BK	RU 31 (GND)
10404001W31	J3:2	SP8	16	BK	RU 19 (GND)	10404001W72	J14:2	SP16	16	BK	RU 30 (GND)
10404001W32	J6:4	SP6	16	BK	RU 22 (GND)	10404001W73	J11:4	SP14	16	BK	RU 27 (GND)
10404001W33	J7:2	SP4	16	BK	RU 23 (GND)	10404001W74	J10:2	SP12	16	BK	RU 26 (GND)
10404001W34	J2:4	SP10	16	BK	RU 18 (GND)	10404001W75	J15:4	SP18	16	BK	RU 31 (GND)
10404001W35	J3:4	SP8	16	BK	RU 19 (GND)	10404001W76	J14:4	SP16	16	BK	RU 30 (GND)
10404001W36	SP6	SP8	8	BK	24V (GND)	10404001W77	SP14	SP16	8	BK	24V (GND)
10404001W37	J7:4	SP4	16	BK	RU 23 (GND)	10404001W78	J10:4	SP12	16	BK	RU 26 (GND)
10404001W38	SP2	SP4	4	BK	24V (GND)	10404001W79	J13:2	SP16	16	BK	RU 29 (GND)
10404001W39	J4:2	SP8	16	BK	RU 20 (GND)	10404001W80	J9:2	SP12	16	BK	RU 25 (GND)
10404001W40	J8:2	SP4	16	BK	RU 24 (GND)	10404001W81	J13:4	SP16	16	BK	RU 29 (GND)
10404001W41	J4:4	SP8	16	BK	RU 20 (GND)	10404001W82	J9:4	SP12	16	BK	RU 25 (GND)

STRAPPING TABLE 1

CONNECTOR	P/N 5	P/N 6	P/N 7	P/N 8	P/N 9	P/N 10	P/N 11	P/N 12
J1	GND	---	---	---	GND	---	GND	GND
J2	---	GND	---	---	GND	---	GND	GND
J3	GND	GND	---	---	GND	---	---	GND
J4	---	---	GND	---	GND	---	GND	GND
J5	GND	---	GND	---	GND	---	---	GND
J6	---	GND	GND	---	GND	---	---	GND
J7	GND	GND	GND	---	GND	---	GND	GND
J8	---	---	---	GND	GND	---	GND	GND
J9	GND	---	---	GND	GND	---	---	GND
J10	---	GND	---	GND	GND	---	---	GND
J11	GND	GND	---	GND	GND	---	GND	GND
J12	---	---	GND	GND	GND	---	---	GND
J13	GND	---	GND	GND	GND	---	GND	GND
J14	---	GND	GND	GND	GND	---	GND	GND
J15	GND	GND	GND	GND	---	---	---	GND
J16	---	---	---	---	---	GND	---	GND

PULL ROW UNIT POWER HARNESS, 12 ROW (P/N: 10478301)



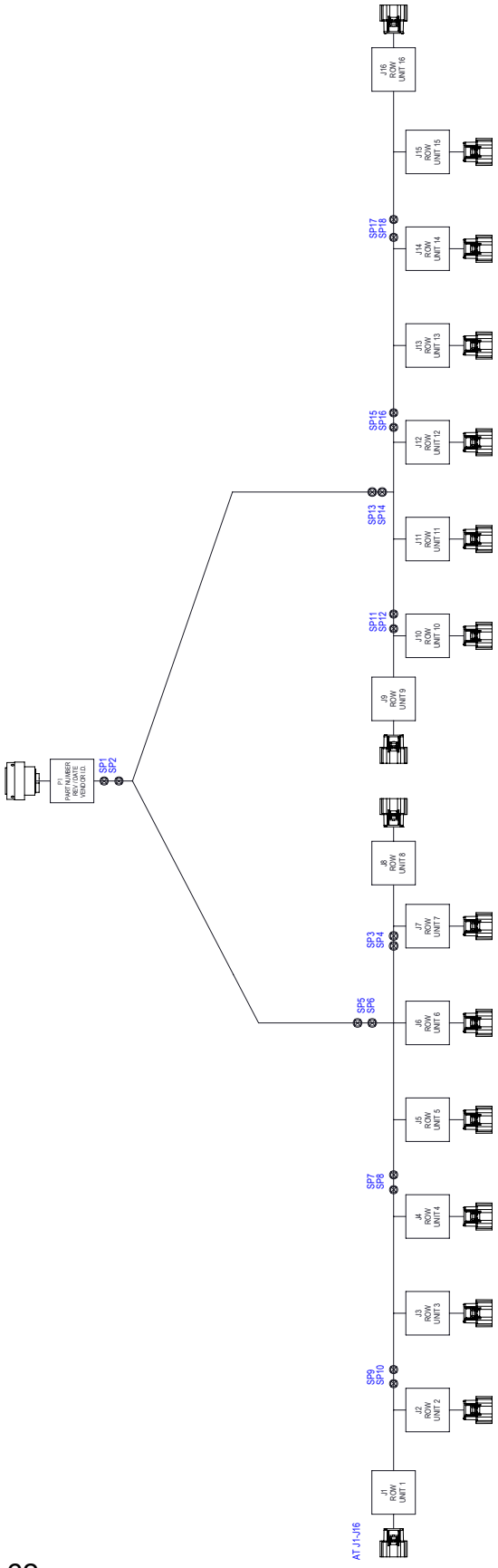
WIRE HOOKUP CHART

REF DES	FROM	TO	GAUGE	COLOR	DESCRIPTION	REF DES	FROM	TO	GAUGE	COLOR	DESCRIPTION
10A041 W1	P1:6	SP1:IN	4	RD	24V (PWR)	10A041 W32	J5:4	SP4:OUT	16	BK	RU 5 24V (GND)
10A041 W2	P1:4	SP2:IN	4	BK	24V (GND)	10A041 W33	J6:4	SP4:OUT	16	BK	RU 6 24V (GND)
10A041 W3	J1:1	SP7:OUT	16	RD	RU 1 24V (PWR)	10A041 W34	J6:2	SP4:OUT	16	BK	RU 6 24V (GND)
10A041 W4	J1:3	SP7:OUT	16	RD	RU 1 24V (PWR)	10A041 W35	SP6:OUT	SP8:IN	14	BK	24V (GND)
10A041 W5	J2:3	SP7:OUT	16	RD	RU 3 24V (PWR)	10A041 W36	J7:2	SP10:OUT	16	BK	RU 7 24V (GND)
10A041 W6	J2:1	SP7:OUT	16	RD	RU 2 24V (PWR)	10A041 W37	J7:4	SP10:OUT	16	BK	RU 7 24V (GND)
10A041 W7	J3:1	SP5:OUT	16	RD	RU 3 24V (PWR)	10A041 W38	J8:2	SP10:OUT	16	BK	RU 8 24V (GND)
10A041 W8	J3:3	SP5:OUT	16	RD	RU 3 24V (PWR)	10A041 W39	J8:4	SP10:OUT	16	BK	RU 8 24V (GND)
10A041 W9	J4:1	SP5:OUT	16	RD	RU 4 24V (PWR)	10A041 W40	SP4:OUT	SP6:IN	10	BK	24V (GND)
10A041 W10	J4:3	SP5:OUT	16	RD	RU 4 24V (PWR)	10A041 W41	SP2:OUT	SP10:IN	4	BK	24V (GND)
10A041 W11	J6:3	SP3:OUT	16	RD	RU 6 24V (PWR)	10A041 W42	SP2:OUT	SP4:IN	4	BK	24V (GND)
10A041 W12	J5:1	SP5:OUT	16	RD	RU 5 24V (PWR)	10A041 W43	J11:1	SP13:OUT	16	RD	RU 11 24V (PWR)
10A041 W13	J5:3	SP5:OUT	16	RD	RU 5 24V (PWR)	10A041 W44	J12:3	SP13:OUT	16	RD	RU 12 24V (PWR)
10A041 W14	J6:1	SP5:OUT	16	RD	RU 6 24V (PWR)	10A041 W45	J11:3	SP13:OUT	16	RD	RU 11 24V (PWR)
10A041 W15	SP5:OUT	SP7:IN	14	RD	24V (PWR)	10A041 W46	J12:1	SP13:OUT	16	RD	RU 12 24V (PWR)
10A041 W16	SP9:OUT	J7:1	16	RD	RU 7 24V (PWR)	10A041 W47	J12:4	SP14:OUT	16	BK	RU 12 24V (GND)
10A041 W17	SP9:OUT	J7:3	16	RD	RU 7 24V (PWR)	10A041 W48	J11:2	SP14:OUT	16	BK	RU 11 24V (GND)
10A041 W18	SP9:OUT	J8:1	16	RD	RU 8 24V (PWR)	10A041 W49	J11:4	SP14:OUT	16	BK	RU 11 24V (GND)
10A041 W19	SP9:OUT	J8:3	16	RD	RU 8 24V (PWR)	10A041 W50	J12:2	SP14:OUT	16	BK	RU 12 24V (GND)
10A041 W20	SP3:OUT	SP5:IN	10	RD	24V (PWR)	10A041 W51	SP9:OUT	SP11:IN	10	RD	24V (PWR)
10A041 W21	SP1:OUT	SP9:IN	4	RD	24V (PWR)	10A041 W52	J9:4	SP12:OUT	16	BK	RU 9 24V (GND)
10A041 W22	SP1:OUT	SP3:IN	4	RD	24V (PWR)	10A041 W53	J9:2	SP12:OUT	16	BK	RU 9 24V (GND)
10A041 W23	J1:2	SP8:OUT	16	BK	RU 1 24V (GND)	10A041 W54	J10:2	SP12:OUT	16	BK	RU 10 24V (GND)
10A041 W24	J2:4	SP8:OUT	16	BK	RU 2 24V (GND)	10A041 W55	J10:4	SP12:OUT	16	BK	RU 10 24V (GND)
10A041 W25	J1:4	SP8:OUT	16	BK	RU 1 24V (GND)	10A041 W56	SP12:OUT	SP14:IN	14	BK	24V (GND)
10A041 W26	J2:2	SP8:OUT	16	BK	RU 2 24V (GND)	10A041 W57	J9:1	SP11:OUT	16	RD	RU 9 24V (PWR)
10A041 W27	J3:4	SP6:OUT	16	BK	RU 3 24V (GND)	10A041 W58	J9:3	SP11:OUT	16	RD	RU 9 24V (PWR)
10A041 W28	J3:2	SP6:OUT	16	BK	RU 3 24V (GND)	10A041 W59	J10:1	SP11:OUT	16	RD	RU 10 24V (PWR)
10A041 W29	J4:2	SP6:OUT	16	BK	RU 4 24V (GND)	10A041 W60	J10:3	SP11:OUT	16	RD	RU 10 24V (PWR)
10A041 W30	J4:4	SP6:OUT	16	BK	RU 4 24V (GND)	10A041 W61	SP10:OUT	SP12:IN	10	BK	24V (GND)
10A041 W31	J5:2	SP4:OUT	16	BK	RU 5 24V (GND)	10A041 W62	SP11:OUT	SP13:IN	14	RD	24V (PWR)

STRAPPING TABLE 1

CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12
J1	GND	---	---	---	---	---	---	GND
J2	---	GND	---	---	---	---	---	GND
J3	GND	GND	---	---	---	---	GND	GND
J4	---	---	GND	---	---	---	---	GND
J5	GND	---	GND	---	---	---	GND	GND
J6	---	GND	GND	---	---	---	GND	GND
J7	GND	GND	GND	---	---	---	---	GND
J8	---	---	---	GND	---	---	---	GND
J9	GND	---	---	GND	---	---	GND	GND
J10	---	GND	---	GND	---	---	GND	GND
J11	GND	GND	---	GND	---	---	---	GND
J12	---	---	GND	GND	---	---	---	GND

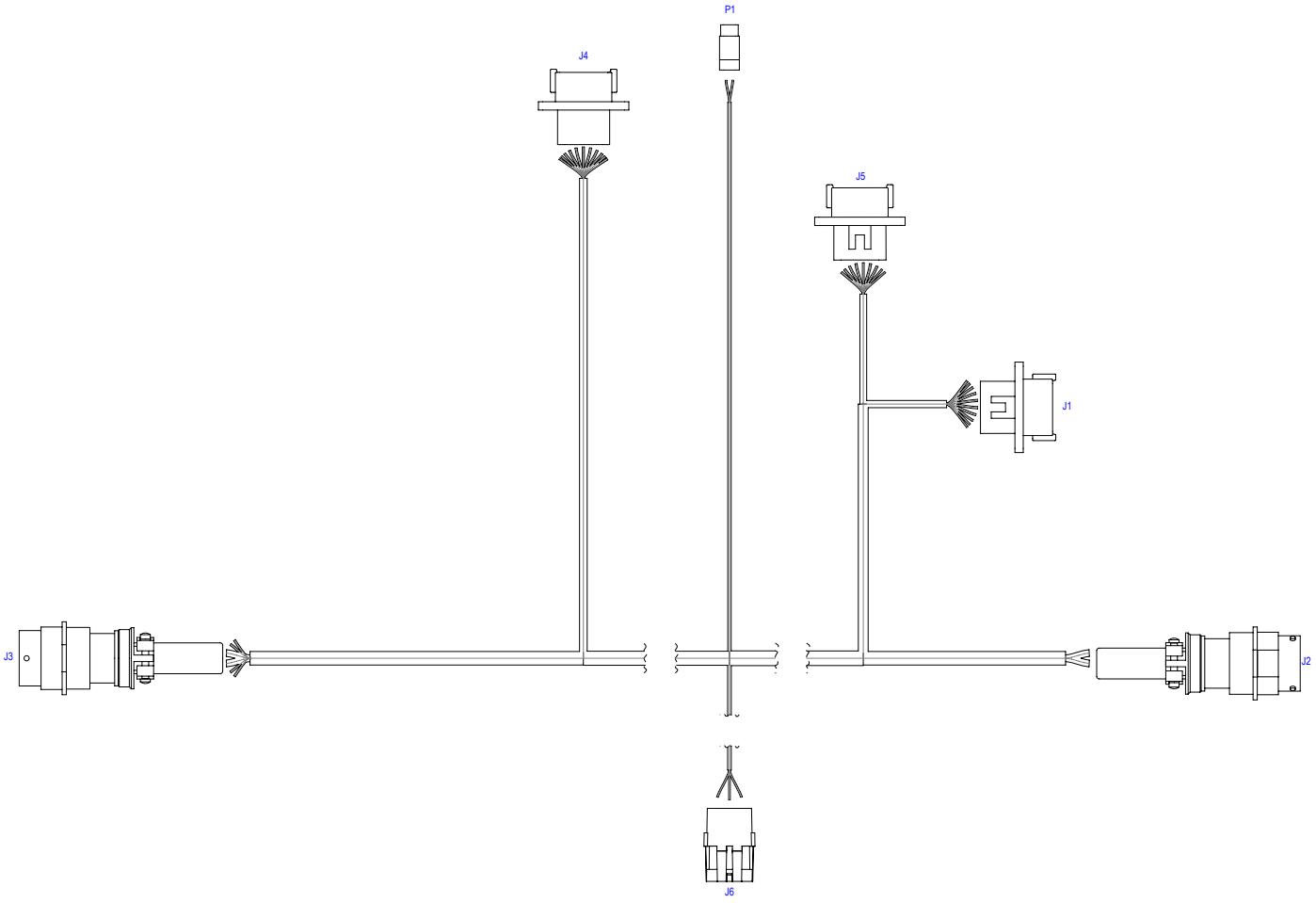
PULL ROW UNIT POWER HARNESS, 16 ROW (P/N: 10404101)



STRAPPING TABLE

PLUG	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	P12
1	GND	---	---	---	---	---	---	GND
2	---	GND	---	---	---	---	---	GND
3	GND	GND	---	---	---	---	GND	GND
4	---	---	GND	---	---	---	---	GND
5	GND	---	GND	---	---	---	GND	GND
6	---	GND	GND	---	---	---	GND	GND
7	GND	GND	GND	---	---	---	---	GND
8	---	---	---	GND	---	---	---	GND
9	GND	---	---	GND	---	---	GND	GND
10	---	GND	---	GND	---	---	GND	GND
11	GND	GND	---	GND	---	---	---	GND
12	---	---	GND	GND	---	---	GND	GND
13	GND	---	GND	GND	---	---	---	GND
14	---	GND	GND	GND	---	---	---	GND
15	GND	GND	GND	GND	---	---	GND	GND
16	---	---	---	---	GND	---	---	GND

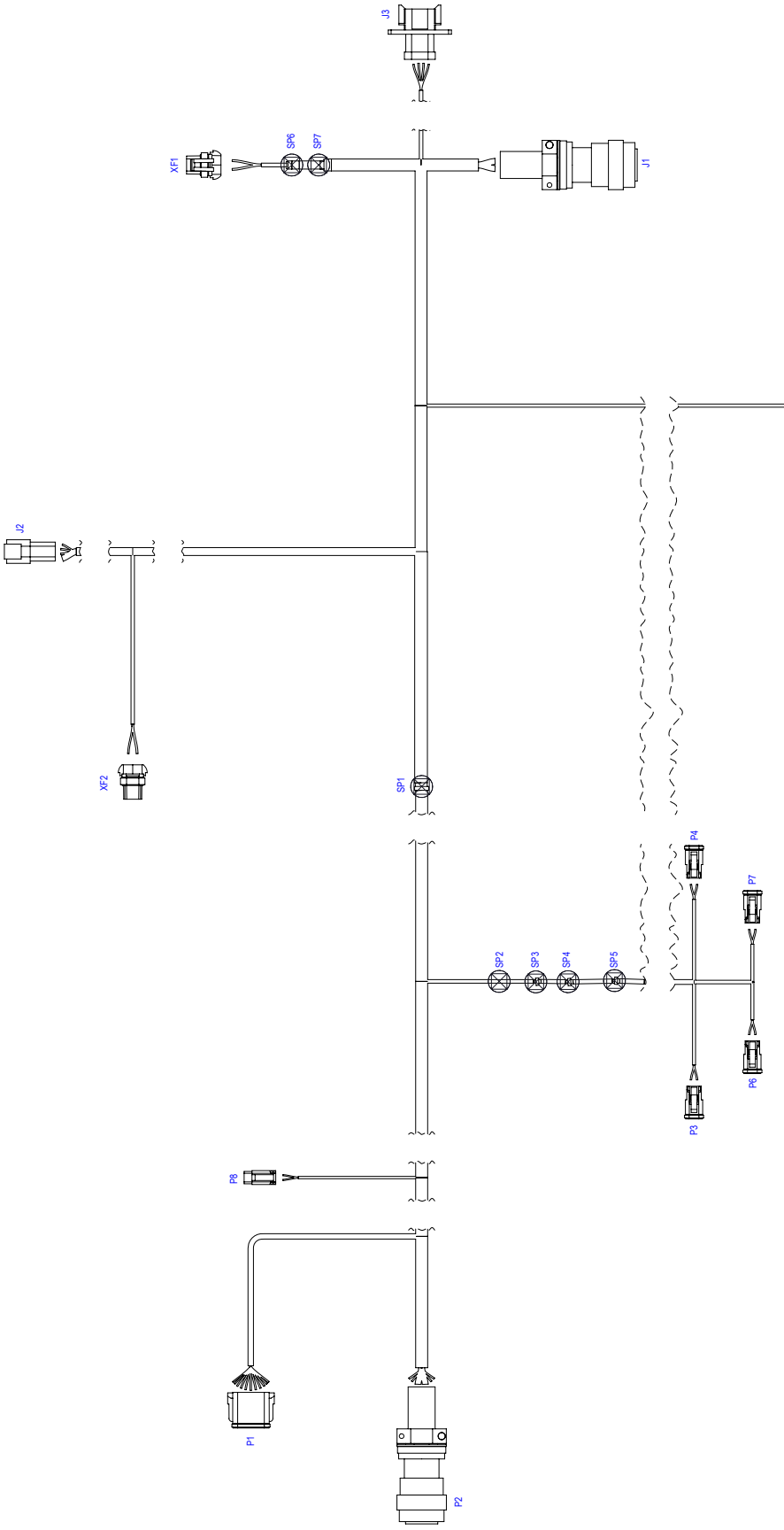
UMBILICAL HARNESS (P/N: 10404301)



LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
J1	J1 - BULK FILL
J2	J2 - 12V PWR AUX
J3	J3 - 12V PWR HITCH
J4	J4 - CONTROLS HITCH
J5	J5 - TAIL LIGHTS AUX
J6	J6 - WHEEL SPEED
P/N	PART NUMBER REV / DATE VENDOR I.D.

WIRE HOOKUP CHART															
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1:1	2	J4:1	2	16	RED/WHT	PTO PRESS SENSOR 5V (PWR)	W13	J5:4	2	J3:6	2	16	GRN	RH FLASH
W2	J1:2	2	J4:2	2	16	VIO	PTO HYD PRESS SENSOR (GND)	W14	J2:3	4	J3:3	4	6	RED	12V (PWR)
W3	J1:3	2	J4:3	2	16	ORN	PTO HYD PRESS SENSOR (SIG)	W15	J2:4	4	J3:4	4	6	BLK	12V (GND)
W4	J1:4	2	J4:4	2	16	GRY	PTO HOT OIL SWITCH	W16	J1:8	2	J6:B	11	18	BLK	WHEEL SPEED (GND)
W5	J1:5	2	J4:5	2	16	GRN	PTO FLUID LEVEL SWITCH	W17	J1:9	2	J6:A	11	18	RED	WHEEL SPEED (PWR)
W6	J5:6	2	J4:6	2	16	BLK	ROTATE SOLE (-)	W18	J1:10	2	J6:C	11	18	YEL	WHEEL SPEED (FREQ)
W7	J5:5	2	J4:7	2	16	BLU	ROTATE SOLE (+)	W19	J5:7	2	SP1:IN	---	18	BLK	ROTATE/TONGUE POSITION SENSOR (GND)
W8	J1:11	2	J4:11	2	16	ORN/BLK	TAIL LIGHT (GND)	W20	SP1:OUT	---	J4:8	2	18	BLK	TONGUE POSITION SENSOR (GND)
W9	J1:12	2	J4:12	2	16	ORN	LH FLASH	W21	SP1:OUT	---	P1:2	14	18	BLK	ROTATE POSITION SENSOR (GND)
W10	J5:1	2	J3:2	2	16	BRN	TAIL LIGHT (PWR)	W22	J5:8	2	P1:1	14	18	VIO	ROTATE POSITION SENSOR (SIG)
W11	J5:2	2	J3:1	2	16	BLK	TONGUE SOLE (-)	W23	J5:9	2	J4:9	2	18	PNK	TONGUE POSITION SENSOR (SIG)
W12	J5:3	2	J3:5	2	16	YEL	TONGUE SOLE (+)								

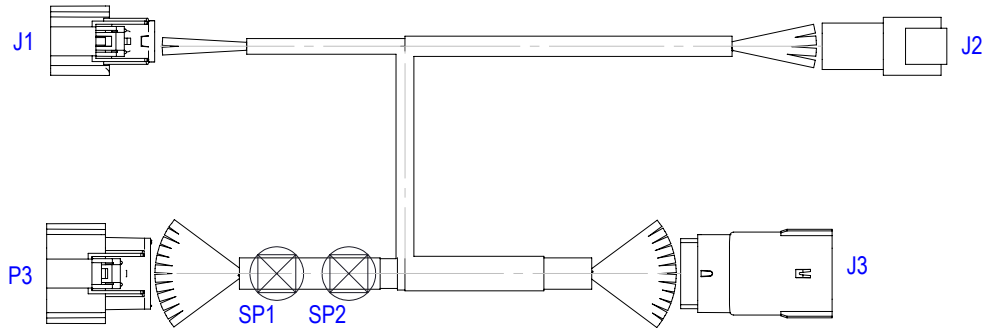
HITCH HARNESS, 12 ROW (P/N: 10404202); 16 ROW (P/N: 10404201)



LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
P1	P1 - TO CONTROL BOX
P2	P2 - TO UMBILICAL HARNESS
P3	P3 - TONGUE A1
P4	P4 - ROTATE A2
P5	P5 - PTO PRESS SENSOR
P6	P6 - TONGUE A4
P7	P7 - ROTATE A5
P8	P8 - TONGUE POSITION SWITCH
J1	J1 - TRACTOR PWR
J2	J2 - PTO HARNESS
J3	J3 - TAIL LIGHT
XF1	XF1 - PTO FUSE
XF2	XF2 - PLANTER FUSE
P/N	PART NUMBER REV / DATE VENDOR I.D.

WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:1	2	P5:A	2	16	RED	PTO PRESS SENSOR 12V (PWR)
W2	P1:2	2	P5:B	2	16	BLK	PTO HYD PRESS SENSOR (GND)
W3	P1:3	2	P5:C	2	16	ORN	PTO HYD PRESS SENSOR (SIG)
W4	J2:3	22	P1:4	2	16	GRY	PTO HOT OIL SWITCH
W5	P1:5	22	SP5:N	---	16	GRN	PTO FLUID LEVEL SWITCH
W6	P1:6	2	SP5:N	---	16	BLU	ROTATE (-)
W7	P1:7	2	SP4:N	---	16	BLU	ROTATE (+)
W8	P1:11	2	SP3:N	---	16	ORN/BLK	TONGUE (-)
W9	P1:12	2	SP2:N	---	16	ORN	TONGUE (+)
W10	J2:4	22	XF2:1	16	14	BLK	PTO 12V (PWR)
W11	SP1:OUT	---	J1:4	11	4	BLK	12V (GND)
W12	SP1:OUT	---	J2:1	22	16	BLK	PTO HYD PRESS SENSOR (GND)
W13	SP7:OUT	---	XF2:2	16	14	RED	PTO 12V PWR (FUSED)
W14	SP7:OUT	---	XF1:2	16	14	RED	12V PWR (+)
W15	XF1:1	---	SP6:N	16	14	RED	12V PWR (+)
W16	P2:1	2	J3:1	2	16	BLK	TAIL LIGHT (GND)
W17	P2:2	2	SP7:N	---	4	RED	12V PWR (+)
W18	P2:3	2	J3:6	2	16	BRN	TAIL LIGHT (PWR)
W19	SP6:OUT	---	J1:3	11	4	RED	12V PWR (+)
W20	P2:4	6	SP1:N	---	4	BLK	PTO HYD PRESS SENSOR (GND)
W21	P2:5	2	J3:3	2	16	YEL	LH FLASH
W22	P2:6	2	J3:5	2	16	GRN	RH FLASH
W23	SP2:OUT	---	P8:1	2	16	ORN/WHT	TONGUE (+)
W24	SP2:OUT	---	P6:1	2	16	ORN/WHT	TONGUE (+)
W25	SP3:OUT	---	P3:2	2	16	ORN/BLK	TONGUE (-)
W26	SP3:OUT	---	P6:2	2	16	ORN/BLK	TONGUE (-)
W27	SP4:OUT	---	P4:1	2	16	BLU	ROTATE (+)
W28	SP4:OUT	---	P7:1	2	16	BLU	ROTATE (+)
W29	SP5:OUT	---	P4:2	2	16	BLU/BLK	ROTATE (-)
W30	SP5:OUT	---	P7:2	2	16	BLU/BLK	ROTATE (-)
W31	P1:8	2	P8:2	24	18	BLK	TONGUE POSITION SENSOR (GND)
W32	P1:9	2	P8:1	24	18	PNK	TONGUE POSITION SENSOR (SIG)

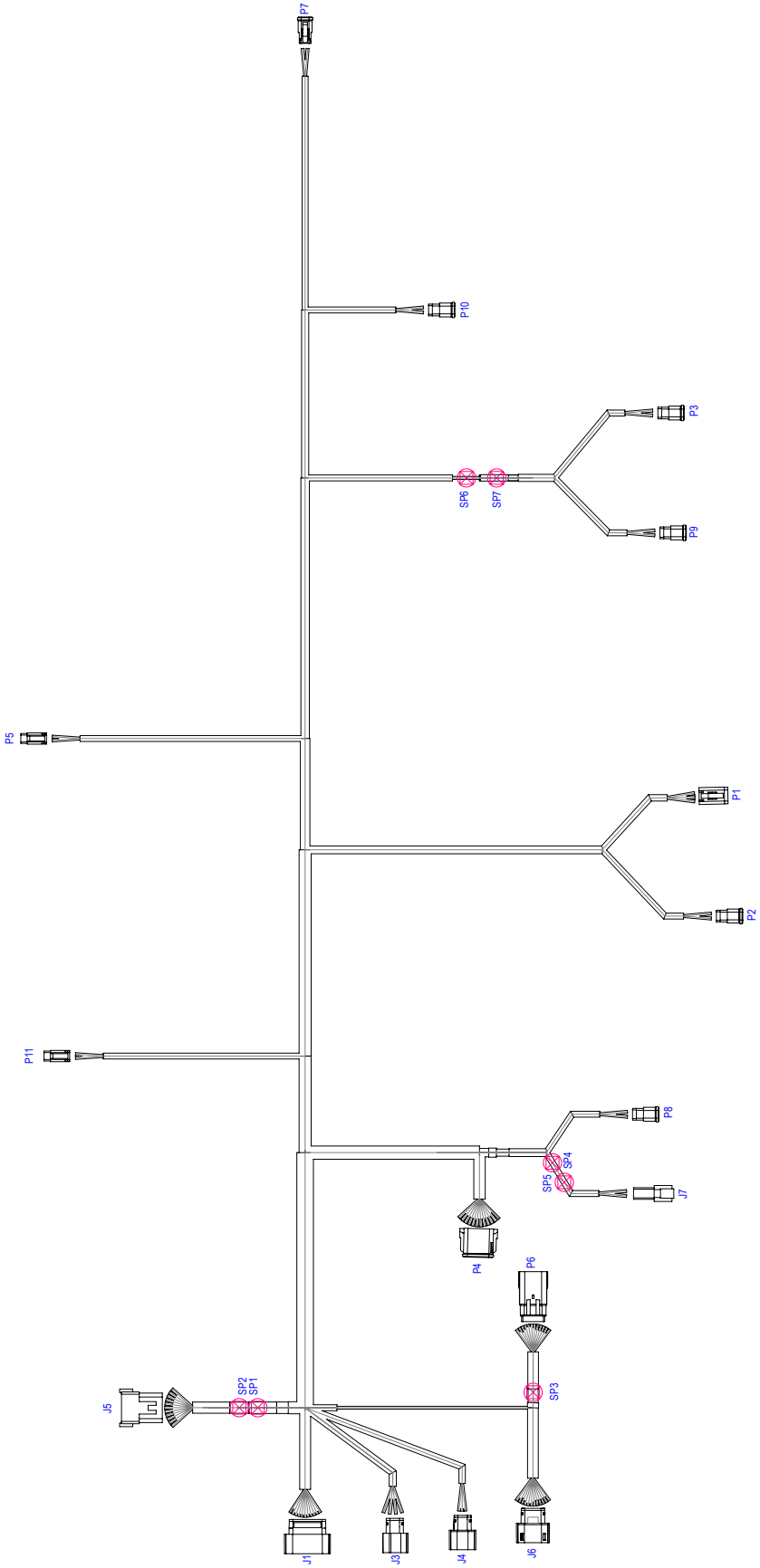
CAN STUB HARNESS (P/N: 10946701)



LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
J1	J1 BF-J6 SCALE MODULE
J2	J2 SCALE PWR
P3	TO BE IPN J3
J3	TO BF PWR
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.

WIRE HOOKUP CHART															
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	J1:1	1	J2:3	3	18 (TP)	YEL	CAN HI	W10	P3:4	1	J3:4	6	18	BLK	IPN 12V (GND)
W2	J1:2	1	J2:4	3		GRN	CAN LOW	W11	P3:5	1	J3:5	6	18	BLK	STRAPPING
W3	P3:1	5	SP1:IN	---	16	RED	IPN / SCALES 12V (PWR)	W12	P3:6	1	J3:6	6	18	BLK	STRAPPING
W4	P3:2	5	SP2:IN	---	16	BLK	IPN / SCALES 12V (GND)	W13	P3:7	1	J3:7	6	18	BLK	STRAPPING
W5	SP1:OUT	---	J2:1	3	16	RED	SCALES 12V (PWR)	W14	P3:8	1	J3:8	6	18	BLK	STRAPPING
W6	SP1:OUT	---	J3:1	6	16	RED	IPN 12V PASSTHROUGH (PWR)	W15	P3:9	1	J3:9	6	18	BLK	STRAPPING
W7	SP2:OUT	---	J2:2	3	16	BLK	SCALES 12V (GND)	W16	P3:10	1	J3:10	6	18	BLK	STRAPPING
W8	SP2:OUT	---	J3:2	6	16	BLK	IPN 12V PASSTHROUGH (GND)	W17	P3:11	1	J3:11	6	18	BLK	STRAPPING
W9	P3:3	1	J3:3	6	18	RED	IPN 12V (PWR)	W18	P3:12	1	J3:12	6	18	BLK	STRAPPING

RAISE HARNESS (P/N: 10404501)

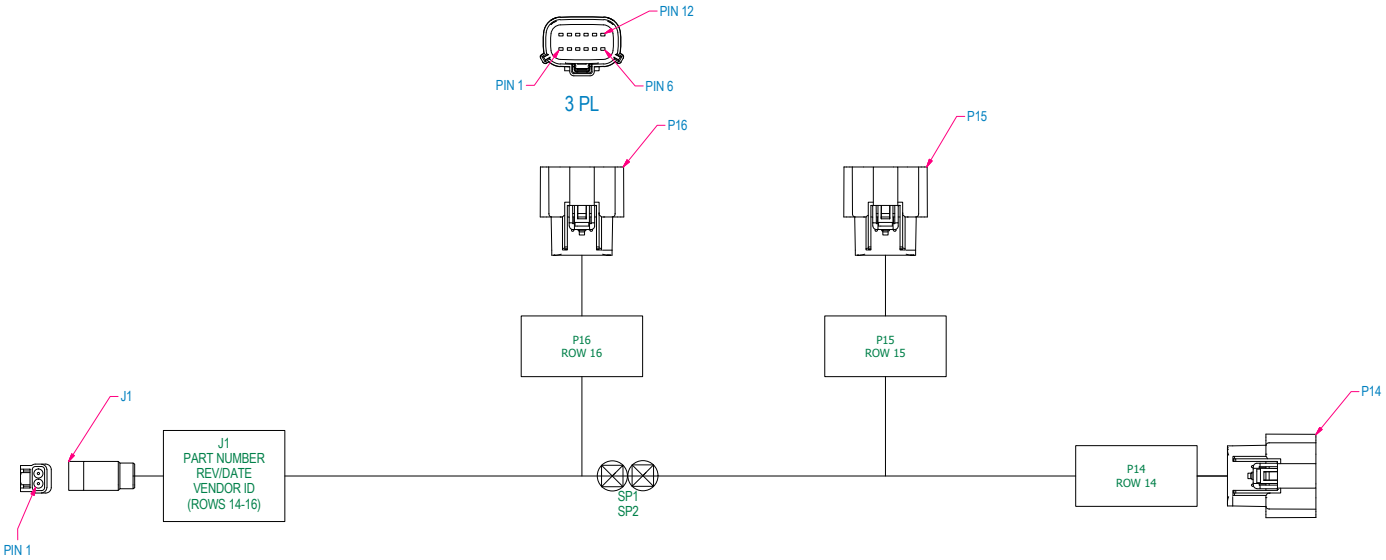


WIRE HOOKUP CHART

REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1:23	16	SP1:2N	12	16	BRN	WING LOCK SOLE (+)	W30	SP6:OUT	16	P:4B	22	16	BLK	BATTERY PACK RELAY (GND)
W2	SP1:OUT	---	J5:8	12	16	BRN	LEFT WING LOCK SOLE (+)	W31	J3:2	16	P:10:1	22	16	RED	RIGHT MARKER SOLE (+)
W3	SP1:OUT	---	SP6:IN	---	16	BRN	RIGHT WING LOCK SOLE (+)	W31	J3:2	16	P:10:2	22	16	BLK	RIGHT MARKER SOLE (-)
W4	J1:4	16	SP2:IN	---	16	BLK	WING LOCK SOLE (-)	W32	J3:5	16	P:11:1	14	16	VLT	IPM SWITCH SENSOR (PWR)
W5	SP2:OUT	---	J5:9	12	16	BLK	LEFT WING LOCK SOLE (-)	W33	J3:7	16	P5:2	14	16	BLK	RIGHT IMP SWITCH SENSOR INPUT (1K OHM)(DIGITAL)
W6	SP2:OUT	---	SP7:IN	---	16	BLK	RIGHT WING LOCK SOLE (-)	W34	J4:1	16	P:4:9	22	16	BLU	RAISE SOLE (+)
W7	J1:7	16	J5:6	12	16	GRN	LEFT MARKER SOLE (+)	W35	J4:2	16	P4:10	22	16	BLK	RAISE SOLE (-)
W8	SP5:OUT	---	P4:3	22	16	BLK	WORK LIGHT (GND)	W36	J4:8	16	P4:11	22	16	BRN	ALTERNATOR SENSE (SIG)
W9	SP5:OUT	---	J5:12	12	16	BLK	WORK LIGHT (GND)	W37	P11:2	14	P5:1	14	16	PNK	RIGHT IMP SWITCH SENSOR (PWR)
W10	SP5:OUT	---	P7:1	22	16	BLK	WORK LIGHT (GND)	W38	SP3:OUT	---	J6:1	16	16	RED	12V PWR (+)
W11	J1:8	16	J5:7	12	16	BLK	LEFT MARKER SOLE (-)	W39	SP3:OUT	---	P4:7	22	16	RED	BATTERY PACK RELAY (PWR)
W12	SP4:OUT	---	P4:12	22	16	RED	WORK LIGHT (PWR)	W40	J6:2	16	SP8:IN	25	16	BLK	12V PWR (-)
W13	SP4:OUT	---	J5:11	12	16	RED	WORK LIGHT (PWR)	W41	J6:3	16	P6:3	25	16	RED	12V PWR (+)
W14	SP4:OUT	---	P7:2	22	16	RED	WORK LIGHT (PWR)	W42	J6:4	16	P6:4	25	16	BLK	12V PWR (-)
W15	J1:13	18	P4:1	22	20	YEL	ROW UNIT PWR FEED BACK (SIG)	W43	J6:5	18	P6:5	25	18	BLK	STRAPPING
W16	J1:14	16	P4:2	22	16	ORG	BATTERY VOLTAGE 1	W44	J6:6	18	P6:6	25	18	BLK	STRAPPING
W17	J5:5	12	P1:1	22	16	BLK	VAC PRESS SENSOR (GND)	W45	J6:7	18	P6:7	25	18	BLK	STRAPPING
W18	J5:4	12	P1:2	22	16	RED	VAC PRESS SENSOR (PWR)	W46	J6:8	18	P6:8	25	18	BLK	STRAPPING
W19	J1:16	16	P4:4	22	16	BLU	BATTERY VOLTAGE 2	W47	J6:9	18	P6:9	25	18	BLK	STRAPPING
W20	J5:3	12	P2:2	22	16	BLK	VAC SOLE (-)	W48	J6:10	18	P6:10	25	18	BLK	STRAPPING
W21	J1:17	16	P4:5	22	16	BLK	ROW UNIT PWR RELAY (GND)	W49	J6:11	18	P6:11	25	18	BLK	STRAPPING
W22	J5:2	12	P2:1	22	16	BLU	VAC SOLE (+)	W50	J6:12	18	P6:12	25	18	BLK	STRAPPING
W23	J1:18	16	P4:6	22	16	RED	ROW UNIT PWR RELAY (12V)	W51	SP7:OUT	---	P3:2	22	16	BLK	WING LOCK (-)
W24	J5:1	12	P1:4	22	16	GRY	VAC PRESS SENSOR (SIG)	W52	SP7:OUT	---	P9:2	22	16	BLK	WING LOCK (-)
W25	J1:19	16	P8:1	22	16	GRY	WORK LIGHT RELAY (-)	W53	SP6:OUT	---	P3:1	22	16	BRN	WING LOCK (+)
W26	J1:20	16	P8:2	22	16	BLK	WORK LIGHT RELAY (12V)	W54	SP6:OUT	---	P9:1	22	16	BRN	WING LOCK (+)
W27	J7:2	12	SP5:IN	---	16	BLK	WORK LIGHT (GND)	W55	P4:C	---	SP3:IN	---	16	RED	12V PWR (+)
W28	J7:2	12	SP4:IN	---	16	RED	WORK LIGHT (PWR)	W56	P6:2	25	SP8:OUT	---	16	BLK	12V PWR (-)

LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
J1	J1 - RAISE IPN J7	P3	P3 - WING LOCK
J3	J3 - RAISE IPN J5	P4	P4 - TO BULK FILL HARNESS
J4	J4 - RAISE IPN J4	P5	P5 - IMP SWITCH
J5	J5 - TO ROTATE HARNESS	P6	P6 - PWR PASS
J6	J6 - RAISE IPN J3	P7	P7 - WORK LIGHT
J7	J7 - WORK LIGHT PWR	P8	P8 - WORK LIGHT RELAY
P1	P1 - VAC. PRESS SENSOR	P9	P9 - WING LOCK
P2	P2 - VAC SOLE	P10	P10 - MARKERS
P/N	PART NUMBER REV / DATE VENDOR I.D.	P11	P11 - IMP SWITCH

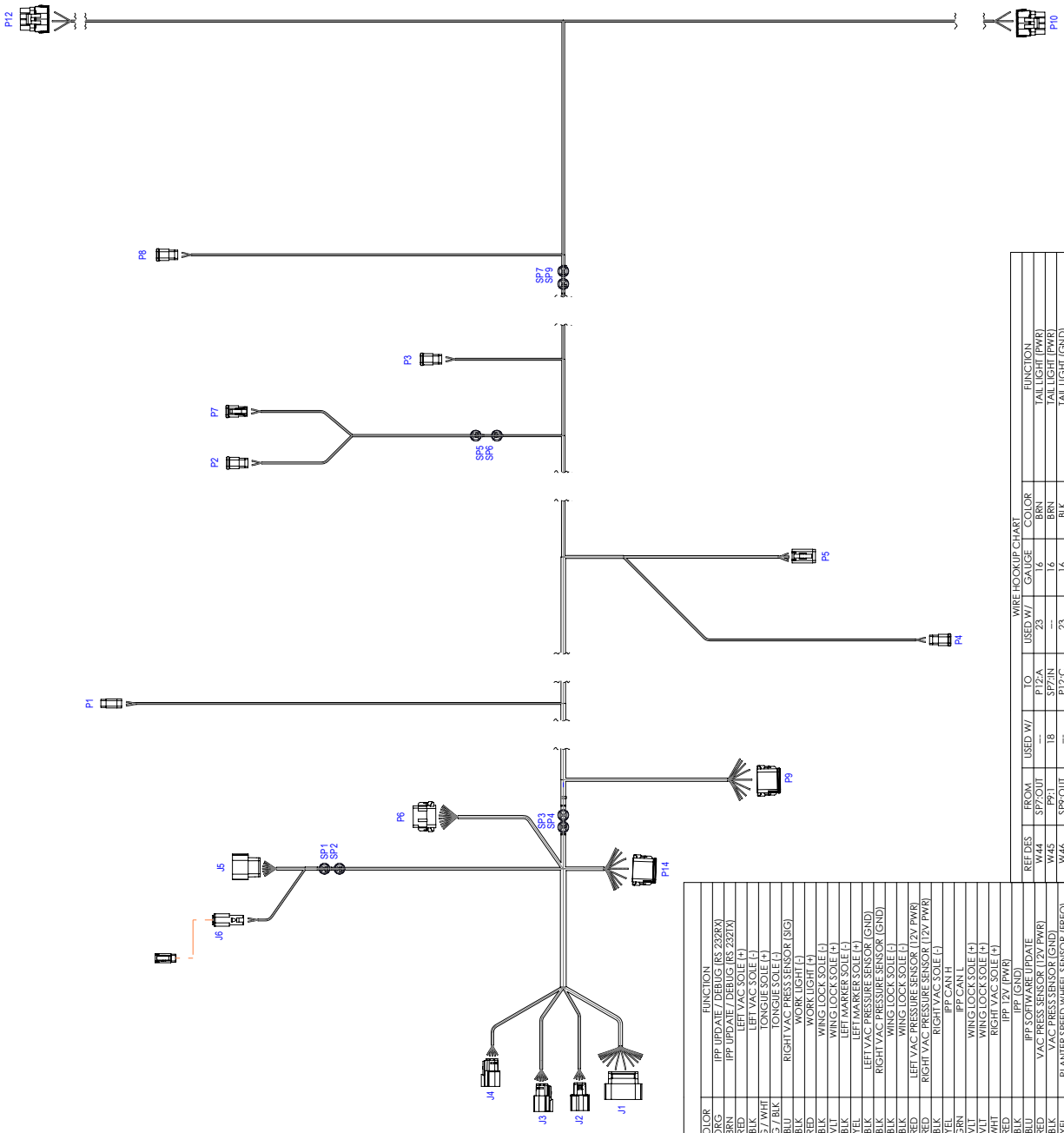
FERTILIZER MODULE HARNESS (P/N: 10960801)



WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1-1	6	SP1	---	16	RED	PWR
W2	J1-2	6	SP2	---	16	BLK	GND
W3	SP1	---	P16-1	2	18	RED	RU 16 (PWR)
W4	SP1	---	P16-3	2	18	RED	RU 16 (PWR)
W5	SP2	---	P16-2	2	18	BLK	RU 16 (GND)
W6	SP2	---	P16-4	2	18	BLK	RU 16 (GND)
W7	SP1	---	P15-1	2	18	RED	RU 15 (PWR)
W8	SP1	---	P15-3	2	18	RED	RU 15 (PWR)
W9	SP2	---	P15-2	2	18	BLK	RU 15 (GND)
W10	SP2	---	P15-4	2	18	BLK	RU 15 (GND)
W11	SP1	---	P14-1	2	18	RED	RU 14 (PWR)
W12	SP1	---	P14-3	2	18	RED	RU 14 (PWR)
W13	SP2	---	P14-2	2	18	BLK	RU 14 (GND)
W14	SP2	---	P14-4	2	18	BLK	RU 14 (GND)

STRAPPING TABLE								
CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12
P14	---	GND	GND	GND	---	---	---	GND
P15	GND	GND	GND	GND	---	---	GND	GND
P16	---	---	---	---	GND	---	---	GND

ROTATE HARNESS (P/N: 10404601)



LABEL TABLE												
J1	J1 ROTATE J7	P4	P4 VAC SOLE									
J2	J2 ROTATE J6	P5	P5 VAC PRESS SENSOR									
J3	J3 ROTATE J5	P6	P6 BULKFILL									
J4	J4 ROTATE J4	P7	P7 WING LOCK									
J5	J5 IPP	P8	P8 WORK LIGHT									
J6	J6 CAN TERM.	P9	P9 UMBILICAL									
P1	P1 LIFT POSITION SWITCH	P10	P10 LH TAIL									
P2	P2 WING LOCK	P12	P12 RH TAIL									
P3	P3 MARKERS	P14	P14 RAISE									
P / N	PART NUMBER REV / DATE VENDOR I.D.											

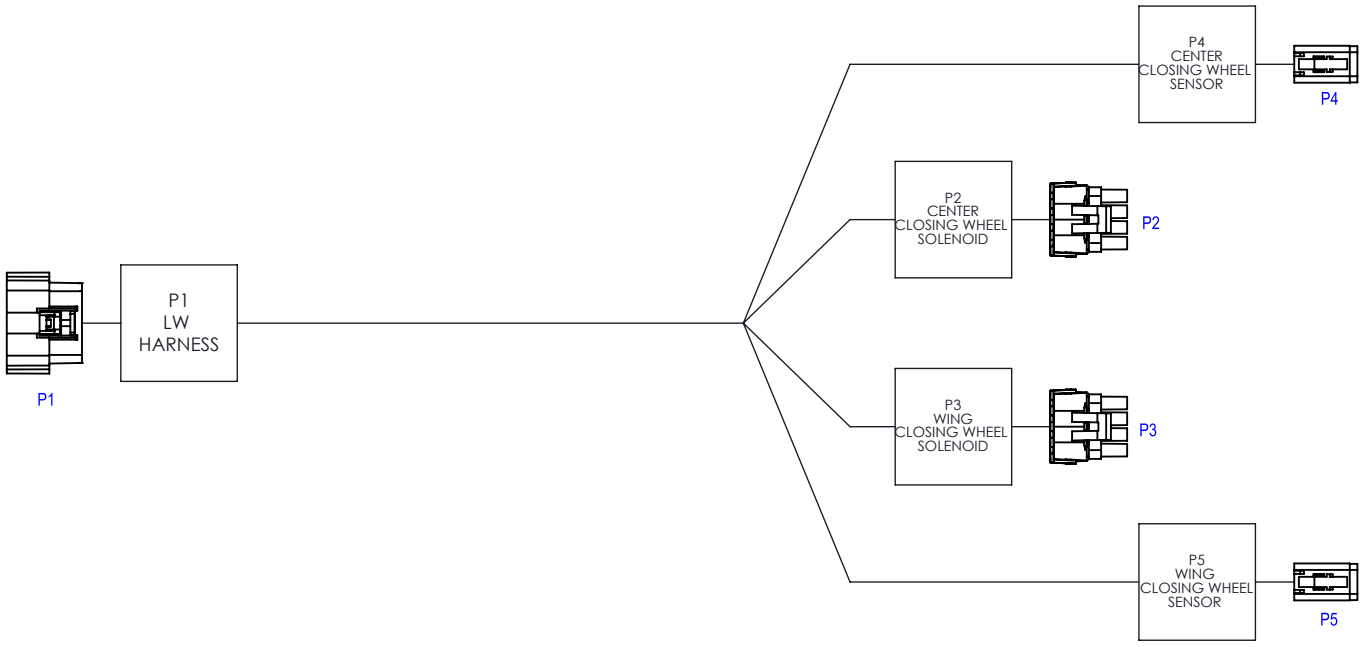
WIRE HOOK UP CHART

REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1:1	12	J5:1	12	16	ORG	IPP UPDATE / DEBUG (RS 232RX)
W2	J1:2	12	J5:2	12	16	BRN	IPP UPDATE / DEBUG (RS 232TX)
W3	J1:3	12	P4:1	18	16	RED	LEFT VAC SOLE (+)
W4	J1:4	12	P4:2	18	16	BLK	LEFT VAC SOLE (-)
W5	J1:7	12	P6:1	26	16	ORG / WHT	TONGUE SOLE (+)
W6	J1:8	12	P6:2	26	16	ORG / BLK	TONGUE SOLE (-)
W7	J1:13	12	P14:1	18	16	BLU	RIGHT VAC PRESS SENSOR (SIG)
W8	P14:12	18	P8:1	18	16	BLK	WORK LIGHT (-)
W9	P14:11	18	P8:2	18	16	RED	WORK LIGHT (+)
W10	P14:9	18	SP5:IN	---	16	BLK	WING LOCK SOLE (-)
W11	P14:8	18	SP6:IN	---	16	VLT	WING LOCK SOLE (+)
W12	P14:7	18	P3:2	18	16	BLK	LEFT MARKER SOLE (-)
W13	P14:6	18	P3:1	18	16	YEL	LEFT MARKER SOLE (+)
W14	SP4:OUT	---	P14:5	18	16	BLK	LEFT VAC PRESSURE SENSOR (GND)
W15	SP5:OUT	---	P7:5	18	16	BLK	RIGHT VAC PRESSURE SENSOR (GND)
W16	SP5:OUT	---	P7:2	18	16	BLK	WING LOCK SOLE (-)
W17	SP5:OUT	---	P2:2	18	16	BLK	WING LOCK SOLE (-)
W18	SP3:OUT	---	P5:2	18	16	RED	LEFT VAC PRESSURE SENSOR (12V PWR)
W19	SP3:OUT	---	P14:4	18	16	RED	RIGHT VAC PRESSURE SENSOR (12V PWR)
W20	J3:2	12	P14:3	18	16	BLK	RIGHT VAC SOLE (-)
W21	J2:1	14	SP1:IN	---	18 (TP)	YEL	IPP CAN H
W22	J2:2	14	SP2:IN	---	18 (TP)	GRN	IPP CAN L
W23	SP6:OUT	---	P7:1	18	16	VLT	WING LOCK SOLE (+)
W24	SP6:OUT	---	P2:1	18	16	VLT	WING LOCK SOLE (+)
W25	J3:1	12	P14:2	18	16	WHT	RIGHT VAC SOLE (+)
W26	J2:3	12	J5:12	12	16	RED	IPP 12V (PWR)
W27	J2:4	12	J5:6	12	16	BLK	IPP (GND)
W28	J2:5	12	J5:11	12	16	BLU	IPP SOFTWARE UPDATE
W29	J3:5	12	SP3:IN	---	16	RED	VAC PRESS SENSOR (12V PWR)
W30	J3:6	12	SP4:IN	---	16	BLK	VAC PRESS SENSOR (GND)
W31	J3:7	12	P6:3	26	16	YEL	PLANTER SPEED WHEEL SENSOR (FREQ)
W32	J4:1	12	P9:5	18	16	BLU	ROTATE SOLE (+)
W33	J4:2	12	P9:6	18	16	BLU / BLK	ROTATE SOLE (-)
W34	J4:6	12	P6:6	26	16	RED	PLANTER WHEEL SPEED (12V+)
W35	J4:6	12	P6:7	26	16	BLK	PLANTER WHEEL SPEED (-)
W36	P9:3	18	P10:B	23	16	ORG	LH FLASH
W37	SP9:OUT	---	P10:C	23	16	BLK	TAIL LIGHT (GND)
W38	SP1:OUT	---	J5:5	14	16	YEL	IPP CAN H
W39	SP2:OUT	---	J5:4	14	18 (TP)	GRN	IPP CAN L
W40	SP1:OUT	---	J6:1	15	18 (TP)	YEL	CAN H TERM
W41	SP2:OUT	---	J6:2	15	18 (TP)	GRN	CAN L TERM
W42	P9:2	18	SP9:IN	---	16	BLK	TAIL LIGHT (GND)
W43	SP7:OUT	---	P10:A	23	16	RED	TAIL LIGHT (PWR)

WIRE HOOK UP CHART

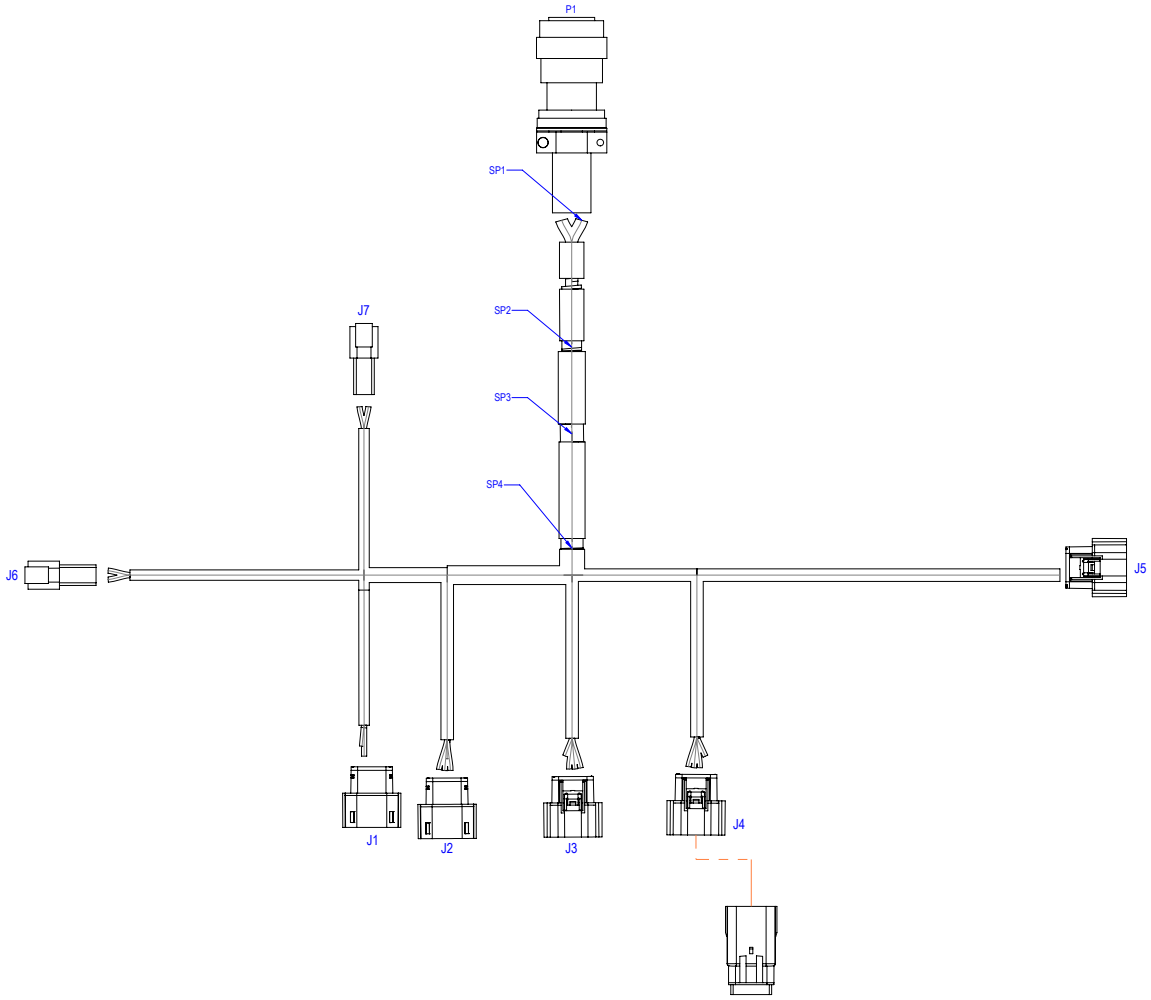
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W44	SP7:OUT	---	P12:A	23	16	BRN	TAIL LIGHT (PWR)
W45	P9:1	18	SP7:IN	---	16	BRN	TAIL LIGHT (PWR)
W46	SP1:OUT	---	P8:C	23	16	BLK	TAIL LIGHT (GND)
W47	P1:28	23	P8:4	18	16	BLU	RH FLASH
W48	J1:14	12	P5:4	18	16	GRY	VAC PRESS SENSOR (SIG)
W49	J4:8	12	P6:12	26	18	BLU	CENTER CLOSING WHEEL SENSOR (ANALOG)
W50	J1:17	12	P6:11	26	18	BLK	CENTER CLOSING WHEEL INCREASE (-)
W51	J1:18	12	P6:10	26	18	RED	CENTER CLOSING WHEEL INCREASE (+)
W52	J1:19	12	P6:9	26	18	BLK	CENTER CLOSING WHEEL DECREASE (-)
W53	J1:20	12	P6:8	26	16	RED	CENTER CLOSING WHEEL DECREASE (+)
W54	J1:15	12	P1:1	26	18	GRN	LIFT POSITION SENSOR (SIG)
W56	SP3:OUT	---	P1:2	26	18	RED	LIFT POSITION SENSOR (12V PWR)
W57	SP3:OUT	---	P9:7	18	18	RED	ROTATE / TONGUE POSITION SENSOR (12V PWR)
W58	J1:16	12	P9:8	18	18	VIO	ROTATE POSITION SENSOR (SIG)
W59	J3:8	12	P9:9	18	18	PNK	TONGUE POSITION SENSOR (SIG)

AIR CLOSING WHEEL HARNESS (P/N: 10806201)



WIRE HOOKUP CHART							
REF DES	FROM	USE W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:1	4	P5:1	8	18	BLK	WING CLOSING WHEEL SENSOR (GND)
W2	P1:2	4	P5:2	8	18	RED	WING CLOSING WHEEL SENSOR (12V PWR)
W3	P1:4	4	P5:4	8	18	BLU	WING CLOSING WHEEL SENSOR (ANALOG)
W4	P1:6	4	P3:A	6	18	ORN	WING CLOSING WHEEL INCREASE (+)
W5	P1:7	4	P3:B	6	18	BLK	WING CLOSING WHEEL INCREASE (-)
W6	P1:8	4	P3:C	6	18	ORN	WING CLOSING WHEEL DECREASE (+)
W7	P1:9	4	P3:D	6	18	BLK	WING CLOSING WHEEL DECREASE (-)
W8	P1:11	4	P4:2	8	18	RED	CENTER CLOSING WHEEL SENSOR (12V PWR)
W9	P1:12	4	P4:1	8	18	BLK	CENTER CLOSING WHEEL SENSOR (GND)
W10	P1:13	4	P4:4	8	18	YEL	CENTER CLOSING WHEEL SENSOR (ANALOG)
W11	P1:15	4	P2:A	6	18	ORN	CENTER CLOSING WHEEL INCREASE (+)
W12	P1:16	4	P2:B	6	18	BLK	CENTER CLOSING WHEEL INCREASE (-)
W13	P1:17	4	P2:C	6	18	ORN	CENTER CLOSING WHEEL DECREASE (+)
W14	P1:18	4	P2:D	6	18	BLK	CENTER CLOSING WHEEL DECREASE (-)

AUXILIARY 12V POWER HARNESS (P/N: 10403901)



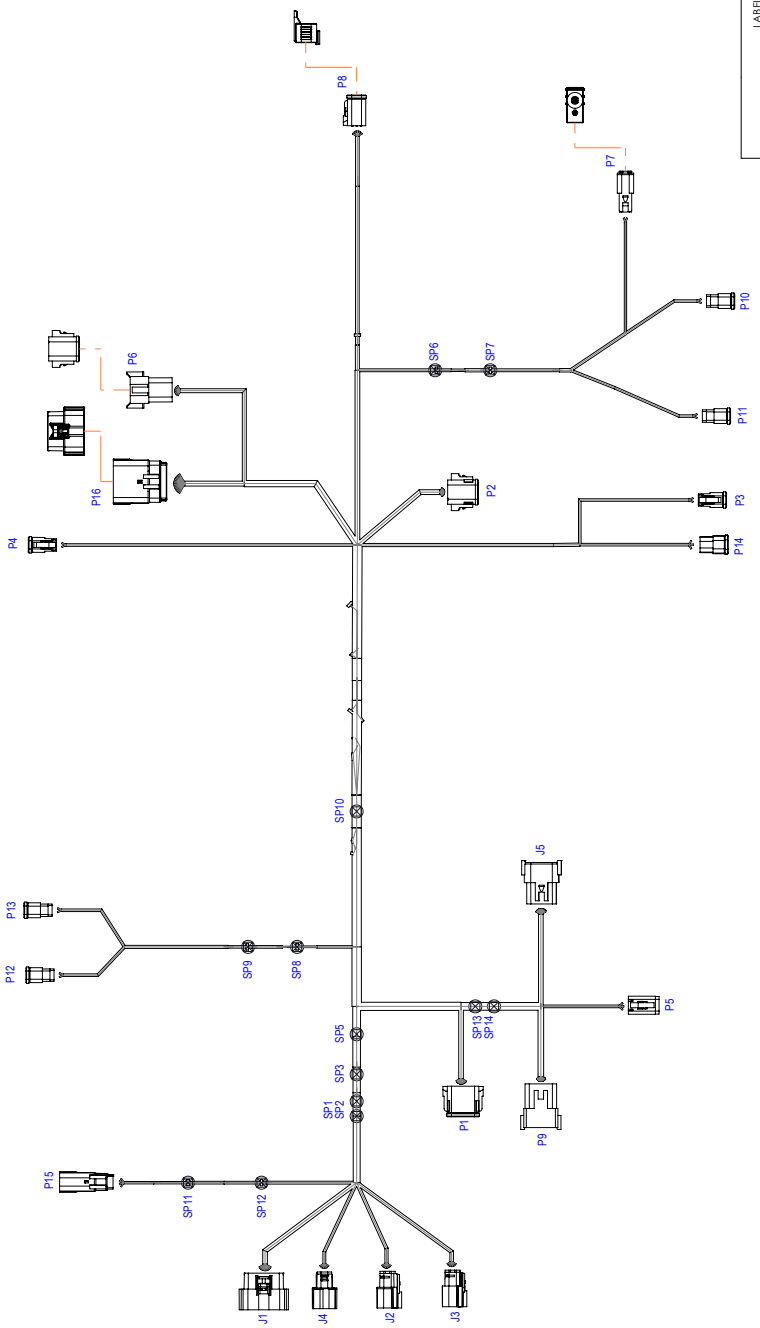
WIRE HOOK UP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:4	9	SP2:IN	---	6	BLK	12V PWR (GND)
W2	P1:3	9	SP1:IN	---	6	RED	12V PWR (PWR)
W3	SP1:OUT	---	SP3:IN	---	6	RED	12V PWR (PWR)
W4	SP1:OUT	---	J1:1	4	16	RED	12V PWR (PWR)
W5	SP1:OUT	---	J2:1	4	16	RED	12V PWR (PWR)
W6	SP1:OUT	---	J2:3	4	16	RED	12V PWR (PWR)
W7	SP1:OUT	---	J6:2	7	16	RED	12V PWR (PWR)
W8	SP1:OUT	---	J7:2	7	16	RED	12V PWR (PWR)
W9	SP3:OUT	---	J3:1	4	16	RED	12V PWR (PWR)
W10	SP3:OUT	---	J5:1	4	16	RED	12V PWR (PWR)
W11	SP3:OUT	---	J3:3	4	16	RED	12V PWR (PWR)
W12	SP3:OUT	---	J4:1	4	16	RED	12V PWR (PWR)
W13	SP3:OUT	---	J4:3	4	16	RED	12V PWR (PWR)
W14	SP3:OUT	---	J5:3	4	16	RED	12V PWR (PWR)
W15	SP2:OUT	---	SP4:IN	---	6	BLK	12V PWR (GND)
W16	SP2:OUT	---	J1:2	4	16	BLK	12V PWR (GND)
W17	SP2:OUT	---	J2:2	4	16	BLK	12V PWR (GND)
W18	SP2:OUT	---	J6:1	7	16	BLK	12V PWR (GND)
W19	SP2:OUT	---	J7:1	7	16	BLK	12V PWR (GND)
W20	SP2:OUT	---	J2:4	4	16	BLK	12V PWR (GND)
W21	SP4:OUT	---	J3:2	4	16	BLK	12V PWR (GND)
W22	SP4:OUT	---	J3:4	4	16	BLK	12V PWR (GND)
W23	SP4:OUT	---	J4:2	4	16	BLK	12V PWR (GND)
W24	SP4:OUT	---	J4:4	4	16	BLK	12V PWR (GND)
W25	SP4:OUT	---	J5:2	4	16	BLK	12V PWR (GND)
W26	SP4:OUT	---	J5:4	4	16	BLK	12V PWR (GND)

LABEL TABLE	
P1	P1 PART NUMBER REV / DATE VENDOR I.D.
J1	J1 HHR
J2	J2 ROTATE
J3	J3 BULK FILL
J4	J4 FERTILIZER
J5	J5 RAISE
J6	J6 WRIGHT PWR
J7	J7 CAMERA PWR

STRAPPING TABLE 2			
CONNECTOR	PIN 10	PIN 11	PIN 12
J1	GND	---	GND

STRAPPING TABLE 1								
CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12
J2	GND	---	GND	GND	GND	GND	---	GND
J3	GND	GND	GND	GND	GND	GND	GND	GND
J4	---	---	---	GND	GND	GND	---	GND
J5	---	GND	GND	GND	GND	GND	---	GND

BULK FILL HARNESS (P/N: 10404401)

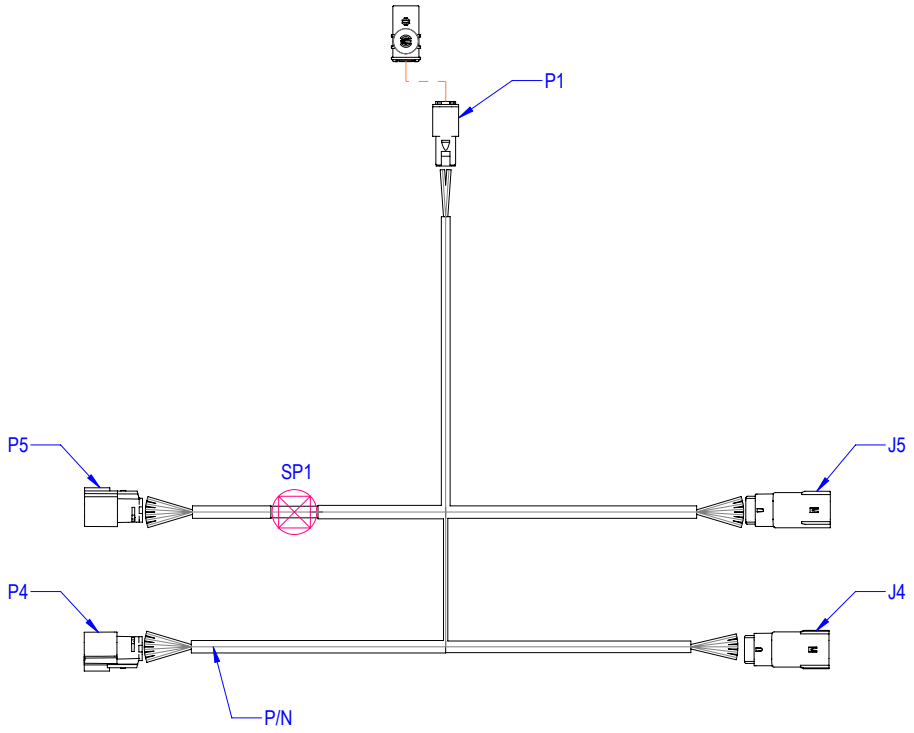


LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
J1	J1 - BULKFILL - J7	P7	P7 - BULKFILL FAN SHUTOFF SWITCH
J2	J2 - BULKFILL - J5	P8	P8 - TRUE DEPTH
J3	J3 - BULKFILL - J4	P9	P9 - TO RAISE HARNESS
J4	J4 - BULKFILL - J6	P10	P10 - CENTER WORKLIGHT
J5	J5 - TO ROTATE HARNESS	P11	P11 - CENTER WORKLIGHT
P1	P1 - TO HITCH HARNESS	P12	P12 - RAISE
P2	P2 - BATTERY PACK	P13	P13 - RAISE
P3	P3 - ELEC WEIGHT TRANS. SOLE	P14	P14 - ELEC WEIGHT TRANS. SENSOR
P4	P4 - BULK FILL FAN SOLE	P15	P15 - BULKFILL SCALE/PASS THRU
P5	P5 - BULK FILL PRESS SENSOR	P16	P16 - CLOSING WHEEL
P6	P6 - PDP HARNESS	P/N	PART NUMBER REV / DATE VENDOR I.D.

WIRE HOOKUP CHART

REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	SP2:OUT	---	P8:5	13	16	BLK	TRUE DEPTH SOLE REAR (-)	W42	J3:2	2	P4:2	13	16	BLK	BF SOLE (-)
W2	SP2:OUT	---	P6:4	22	16	BLK	PDP SOLE DECREASE (-) PWM	W43	P16:8	35	J3:5	6	18	ORG	WING CLOSING WHEEL DECREASE (+)
W3	SP1:OUT	---	P8:4	13	16	BLU	TRUE DEPTH SOLE REAR (+)	W44	P16:9	35	J3:6	6	18	BLK	WING CLOSING WHEEL DECREASE (-)
W4	SP1:OUT	---	P6:3	22	16	BLU	PDP SOLE DECREASE (+) PWM	W45	P9:10	22	SP9:IN	---	16	BLK	RAISE SOLE (-)
W5	SP5:OUT	---	P8:3	13	16	BLK	TRUE DEPTH SENSOR (GND)	W46	P16:4	35	J3:8	6	18	BLU	WING CLOSING WHEEL SENSOR (ANALOG)
W6	SP5:OUT	---	P6:6	22	16	BLK	PDP SENSOR (GND)	W47	P9:9	22	SP8:IN	---	16	BLU	RAISE SOLE (+)
W7	SP5:OUT	---	P14:3	13	16	BLK	EWT PRESSURE SENSOR 12V (GND)	W48	P9:1	22	P2:4	13	20	YEL	ROW UNIT PWR FEED BACK (SIG)
W8	SP10:OUT	---	P8:2	22	16	OGBK	HYD DOWN FORCE PRESS SENSOR 12V (PWR)	W49	P9:2	22	P2:7	13	16	ORG	BATTERY VOLTAGE
W9	SP10:OUT	---	P8:1	13	16	OGBK	PTO HITCH PRESS SENSOR 12V (PWR)	W50	P9:4	22	P2:8	13	16	BLU	ROW UNIT PWR RELAY (SIG)
W10	SP3:OUT	---	P6:5	22	16	YEL	TRUE DEPTH SENSOR INPUT (SIG)	W51	P9:5	22	P2:1	13	16	RED	ROW UNIT PWR RELAY (12V)
W11	SP3:OUT	---	P6:5	22	16	YEL	PDP SENSOR INPUT (SIG)	W52	P9:6	22	P2:1	13	16	RED	ROW UNIT PWR RELAY (12V)
W12	SP10:OUT	---	P1:4/2	13	16	OGBK	EWT PRESS SENSOR 12V (PWR)	W53	P9:7	22	P2:5	13	16	RDBK	BATTERY PACK RELAY (PWR)
W13	SP10:OUT	---	P6:7	22	16	OGBK	PDP PRESS SENSOR 12V (PWR)	W54	P9:8	22	P2:6	13	16	BLK	BATTERY PACK RELAY (GND)
W14	J2:2	2	P6:2	22	16	BLK	PDP INVREASE SOLE (-) PWM	W55	P9:11	22	P2:3	13	16	BRN	ALTERNATOR SENSOR (SIG)
W15	J2:1	2	P6:1	22	16	RED	PDP INCREASE SOLE (+) PWM	W56	J5:6	10	SP13:IN	---	16	RED	WHEEL SPEED / CCW SENSOR 12V (PWR)
W16	J1:3	2	SP1:IN	---	16	BLU	PDP / TRUE DEPTH SOLE (+)	W57	SP13:OUT	---	P1:9	13	16	RED	WHEEL SPEED SENSOR 12V (PWR)
W17	J1:4	2	SP2:IN	---	16	BLK	PDP / TRUE DEPTH SOLE (-)	W58	SP13:OUT	---	P16:11	35	16	RED	CENTER CLOSING WHEEL SENSOR 12V (PWR)
W18	J1:7	2	P3:1	13	16	BRN	EWT SOLE (+) PWM	W59	J5:7	10	SP14:IN	---	16	BLK	WHEEL SPEED / CCW SENSOR (GND)
W19	J1:8	2	P3:2	13	16	BLK	EWT SOLE (-) PWM	W60	SP14:OUT	---	P1:8	13	16	BLK	WHEEL SPEED SENSOR (GND)
W20	J1:13	2	P1:5	13	16	GRN	PTO FLUID LEVEL SWITCH	W61	SP14:OUT	---	P16:12	35	16	BLK	CENTER CLOSING WHEEL SENSOR (GND)
W21	J1:14	2	P1:4	13	16	GRY	PTO HOT OIL SWITCH	W62	J5:1	10	P1:12	13	16	ORG	TOUNGUE SOLE (+)
W22	J1:15	2	P1:3	13	16	ORG	PTO HYD PRESS SENSOR (SIG)	W63	J5:2	10	P1:11	13	16	OGBK	TOUNGUE SOLE (-)
W23	SP5:16	2	SP3:IN	---	16	BLU	PDP / TRUE DEPTH SENSOR 12V (SIG)	W64	J5:3	10	P1:10	13	16	YEL	WHEEL SPEED SENSOR (FREQ)
W24	SP5:OUT	---	P1:2	13	16	BLK	PTO HYD PRESS SENSOR 12V (PWR)	W65	J5:4	10	P16:17	35	16	ORG	CENTER CLOSING WHEEL DECREASE (+)
W25	SP6:OUT	---	P10:1	13	16	BLK	CENTER WORK LIGHT (-)	W66	J5:9	10	P16:18	35	16	BLK	CENTER CLOSING WHEEL DECREASE (-)
W26	SP6:OUT	---	P11:1	13	16	BLK	CENTER WORK LIGHT (-)	W67	J5:10	10	P16:15	35	16	ORG	CENTER CLOSING WHEEL INCREASE (+)
W27	J1:19	2	SP5:IN	---	16	BLK	PDP / TRUE DEPTH SENSOR (GND)	W68	J5:11	10	P16:16	35	16	BLK	CENTER CLOSING WHEEL INCREASE (-)
W28	SP7:OUT	---	P10:2	13	16	RED	CENTER WORK LIGHT (+)	W69	J5:12	10	P16:13	35	16	BLU	CENTER CLOSING WHEEL SENSOR (ANALOG)
W29	SP7:OUT	---	P11:2	13	16	RED	CENTER WORK LIGHT (+)	W70	J4:1	6	P1:5:1	35	18 (TP)	YEL	BULKFILL SCALE / ROW CLEANERS (CAN HI)
W30	J1:20	2	SP10:IN	---	16	OGBK	EWT/PDP/PTO/TRUE DEPTH PRESS SENSOR 12V (PWR)	W71	J4:2	6	P1:5:2	35	18	GRN	BULKFILL SCALE / ROW CLEANERS (CAN LI)
W31	P9:3	22	SP4:IN	---	16	BLK	WORK LIGHT (-)	W72	J4:3	6	SP11:IN	---	18	RED	BULKFILL SCALE / WCW / ROW CLEANERS 12V (PWR)
W32	P9:12	22	SP7:IN	---	16	RED	WORK LIGHT PWR (+)	W73	SP11:OUT	---	P1:5:3	35		RED	BULKFILL SCALE / ROW CLEANERS 12V (PWR)
W33	J2:5	2	P5:2	13	16	BLU	BF PRESSURE SENSOR (PWR)	W74	SP11:OUT	---	P16:2	35	18	RED	WING CLOSING WHEEL SENSOR 12V (PWR)
W34	J2:6	2	P5:1	13	16	BLK	BF PRESSURE SENSOR (GND)	W75	J4:4	6	SP12:IN	---	18	BLK	BULKFILL SCALE / WCW / ROW CLEANERS (GND)
W35	J2:7	2	P5:4	13	16	YEL	BF PRESSURE SENSOR (SIG)	W76	J4:5	6	P1:6:6	35	18	ORG	WING CLOSING WHEEL INCREASE (+)
W36	J2:8	6	P14:1	13	18	BLU	EWT SENSOR (ANALOG)	W77	J4:6	6	P1:6:7	35	18	BLK	WING CLOSING WHEEL INCREASE (-)
W37	SP9:OUT	---	P12:2	13	16	BLK	RAISE SOLE (-)	W78	SP12:OUT	---	P1:5:4	35	18	BLK	BULKFILL SCALE / ROW CLEANERS (GND)
W38	SP9:OUT	---	P13:2	13	16	BLK	RAISE SOLE (-)	W79	SP12:OUT	---	P16:1	35	18	BLK	WING CLOSING WHEEL SENSOR (GND)
W39	SP8:OUT	---	P12:1	13	16	BLU	RAISE SOLE (+)	W80	SP10:OUT	---	P7:1	10	16	BLU	BULK FILL FAN SHUT-OFF SWITCH (PWR)
W40	SP8:OUT	---	P13:1	13	16	BLU	RAISE SOLE (+)	W81	J3:7	2	P7:2	10	16	BLK	BULK FILL FAN SHUT-OFF SWITCH (GND)
W41	J3:1	2	P4:1	13	16	RED	BF SOLE (+)								

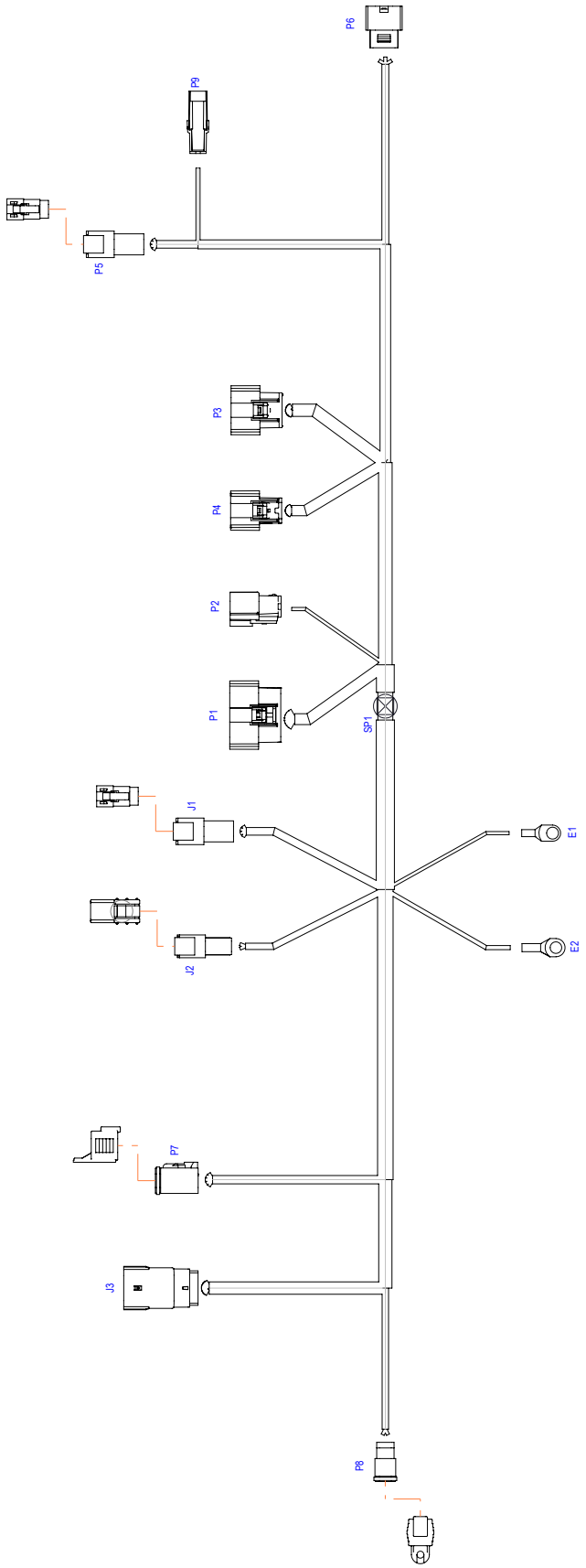
BULK FILL SHUTOFF INTERCEPT HARNESS (P/N: 10963101)



WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P5:1	4	J5:1	6	18	WHT	PASSTHROUGH
W2	P5:2	4	J5:2	6	18	WHT	PASSTHROUGH
W3	P5:5	4	SP1:IN	---	18	RED	BULK FILL FAN SHUT-OFF SWITCH (PWR) / PASSTHROUGH
W4	SP1:OUT	---	J5:5	6	18	RED	PASSTHROUGH
W5	SP1:OUT	---	P1:1	1	18	RED	BULK FILL FAN SHUT-OFF SWITCH (PWR)
W6	P5:6	4	J5:6	6	18	WHT	PASSTHROUGH
W7	P5:7	4	J5:7	6	18	WHT	PASSTHROUGH
W8	P5:8	4	J5:8	6	18	WHT	PASSTHROUGH
W9	P4:1	4	J4:1	6	18	WHT	PASSTHROUGH
W10	P4:2	4	J4:2	6	18	WHT	PASSTHROUGH
W11	P4:5	4	J4:5	6	18	WHT	PASSTHROUGH
W12	P4:6	4	J4:6	6	18	WHT	PASSTHROUGH
W13	P4:7	4	P1:2	1	18	BLU	BULK FILL FAN SHUT OFF SWITCH (GND)
W14	P4:8	4	J4:8	6	18	WHT	PASSTHROUGH

LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
P1	BF SHUT-OFF
P4	BF IPN J4
P5	BF IPN J5
J4	TO BF HARNESS
J5	TO BF HARNESS
P/N	PART NUMBER REV / DATE VENDOR I.D.

TRUE RATE PUSH ROW UNIT HARNESS (P/N: 10916101)



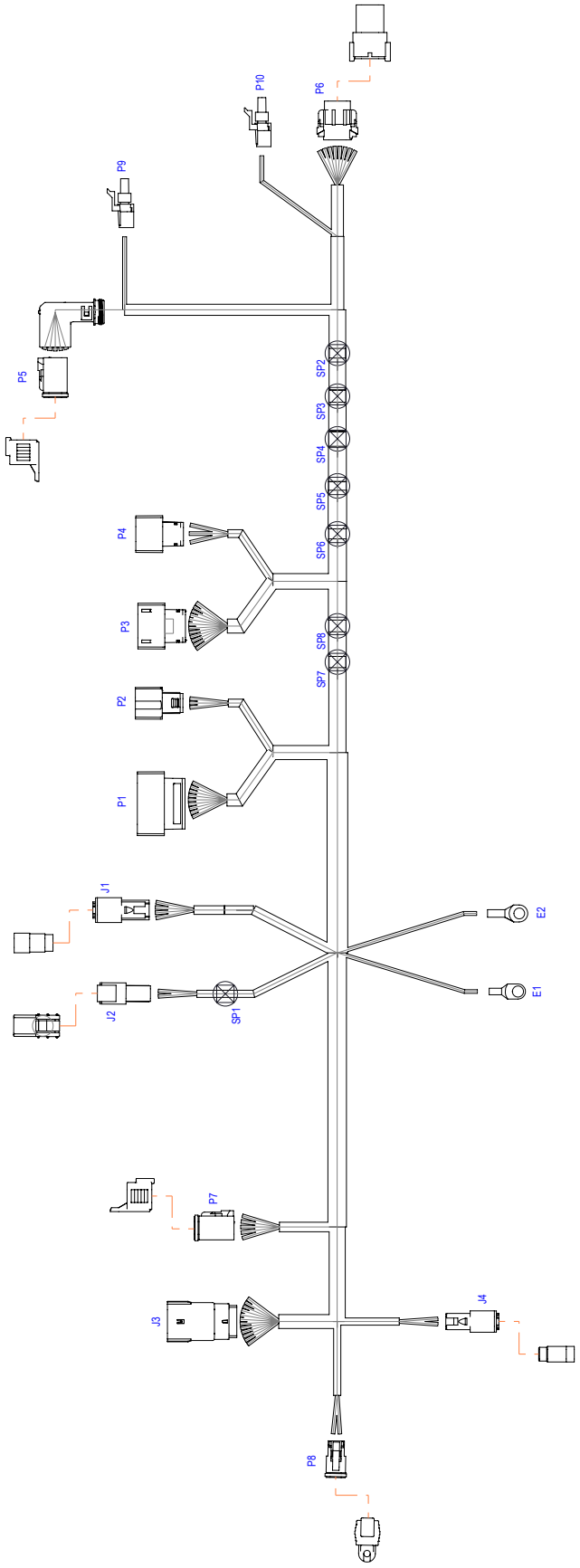
WIRE HOOKUP CHART

REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:3	13	P7:5	5	18	RED	FERT ROW CUT OFF VALVE (PWR)
W2	P1:4	13	P7:6	5	18	BLK	FERT ROW CUT OFF VALVE (GND)
W3	P1:7	13	P8:1	5	18	V/O	TRUE DEPTH CYLINDER PWM (+)
W4	P1:8	13	P8:2	5	18	BLU	TRUE DEPTH CYLINDER PWM (-)
W5	P4:8	13	P7:3	5	18	V/O	FERT FLOW SENSOR (SIGNAL)
W6	J1:2	28	P1:16	13	18	WHT	TRUE DEPTH LINK SENSOR (SIGNAL)
W7	P1:19	13	SP1:IN	---	18	GRY	FERT / TRUE DEPTH SENSOR (GND)
W8	SP1:OUT	---	P7:2	5	18	GRY	FERT FLOW SENSOR (GND)
W9	SP1:OUT	---	J1:4	28	18	GRY	TRUE DEPTH LINK SENSOR (GND)
W10	J1:1	28	P1:20	13	18	RD/WH	TRUE DEPTH LINK SENSOR (PWR)
W11	P2:3	13	P7:1	5	18	RED	FERT FLOW SENSOR (PWR)
W12	J3:1	7	P3:1	18	16	RED	24V IPN PWR
W13	J3:2	7	P3:2	18	16	BLK	24V IPN GND
W14	J3:3	7	P3:3	18	16	RED	24V IPN PWR
W15	J3:4	7	P3:4	18	16	BLK	24V IPN GND
W16	J3:5	7	P3:5	13	20	YEL	IPN STRAPPING
W17	J3:6	7	P3:6	13	20	ORN	IPN STRAPPING
W18	J3:7	7	P3:7	13	20	WHT	IPN STRAPPING
W19	J3:8	7	P3:8	13	20	GRN	IPN STRAPPING
W20	J3:9	7	P3:9	13	20	BLU	IPN STRAPPING
W21	J3:10	7	P3:10	13	20	V/O	IPN STRAPPING
W22	J3:11	7	P3:11	13	20	GRY	IPN STRAPPING (PARITY)
W23	J3:12	7	P3:12	13	20	BRN	IPN STRAPPING (GND)
W24	E1	---	J1:3	28	18	GRN	TRUE DEPTH LINK SENSOR (SHIELD)
W25	E2	---	P9:1	35	ESD	---	BRAIDED ESD CABLE
W26	J2:2	20	P1:14	13	18	BRN	MANUAL RUN (PWR)
W27	J2:1	20	P1:17	13	18	GRY	MANUAL RUN (GND)
W28	P4:1	13	P5:1	30	18	RED	SEED METER MOTOR 1+
W29	P4:2	13	P5:2	30	18	WHT	SEED METER MOTOR 1-
W30	P4:4	13	P5:3	30	18	GRN	SEED METER MOTOR 2+
W31	P4:3	13	P5:4	30	18	BLK	SEED METER MOTOR 2-
W32	P4:5	13	P6:1	33	18	RED	SEED SENSOR (PWR)
W33	P4:6	13	P6:6	33	18	BLK	SEED SENSOR (GND)
W34	P4:7	13	P6:2	33	18	BLU	SEED SENSOR (LIN)

LABEL TABLE

CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	E1	GND
J3	IPN PWR	E2	BRAIDED ESD CABLE
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.		

TRUE SPEED PUSH ROW UNIT HARNESS (P/N: 10916201)



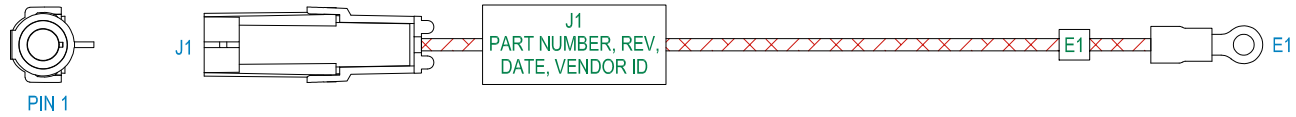
WIRE HOOKUP CHART

REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:3	1	P7:5	14	18	RED	FERT ROW CUT OFF VALVE (PWR)	W25	SP5:OUT	---	P5:1	14	16	RED	METER BLDC DRIVER (24V PWR)
W2	P1:4	1	P7:6	14	18	BLK	FERT ROW CUT OFF VALVE (GND)	W26	P1:14	1	J2:2	39	18	BRN	MANUAL RUN (PWR)
W3	P1:7	1	P8:1	14	18	VIO	TRUE DEPTH CYLINDER PWM+	W27	P1:17	1	J2:1	39	18	GRY	MANUAL RUN (GND)
W4	P1:8	1	P8:2	14	18	BLU	TRUE DEPTH CYLINDER PWM-	W28	J3:4	4	SP6:IN	---	16	BLK	24V IPN GND
W5	P4:8	1	P7:3	14	18	VIO	FERT FLOW SENSOR (SIGNAL)	W29	E2	---	SP2:IN	---	ESD	---	BRAIDED ESD CABLE
W6	P1:16	1	J1:2	10	18	WHT	TRUE DEPTH LINK SENSOR (SIGNAL)	W30	SP6:OUT	---	P5:2	14	16	BLK	METER BLDC DRIVER (24V GND)
W7	P1:19	1	SP1:IN	---	18	GRY	FERT / TRUE DEPTH SENSOR (GND)	W31	SP6:OUT	---	P3:4	3	16	BLK	24V IPN GND
W8	SP1:OUT	---	P7:2	14	18	GRY	FERT FLOW SENSOR (GND)	W32	J3:5	4	P3:5	1	20	YEL	IPN STRAPPING
W9	SP1:OUT	---	J1:4	10	18	GRY	TRUE DEPTH LINK SENSOR (GND)	W33	J3:6	4	P3:6	1	20	ORG	IPN STRAPPING
W10	P1:20	1	J1:1	10	18	PNK	TRUE DEPTH LINK SENSOR (PWR)	W34	J3:7	4	P3:7	1	20	WHT	IPN STRAPPING
W11	P2:3	1	P7:1	14	18	RED	FERT FLOW SENSOR (PWR)	W35	J3:8	4	P3:8	1	20	GRN	IPN STRAPPING
W12	P2:1	1	SP7:IN	---	18	YEL	IPN (CAN H)	W36	J3:9	4	P3:9	1	20	BLU	IPN STRAPPING
W13	P2:2	1	SP8:IN	---	18	GRN	IPN (CAN L)	W37	J3:10	4	P3:10	1	20	VLT	IPN STRAPPING
W14	P4:5	1	P6:5	17	18	PNK	SEED SENSOR (PWR)	W38	J3:11	4	P3:11	1	20	GRY	IPN STRAPPING (PARITY)
W15	P4:6	1	P6:6	17	18	GRY	SEED SENSOR (GND)	W39	J3:12	4	P3:12	1	20	BRN	IPN STRAPPING (GND)
W16	J3:1	4	SP3:IN	---	16	RED	24V IPN PWR	W40	SP7:OUT	---	P5:3	14	18 (TP)	YEL	CAN H
W17	SP3:OUT	---	P3:1	3	16	RED	24V IPN PWR	W41	SP8:OUT	---	P5:4	14		GND	CAN L
W18	SP3:OUT	---	P6:1	17	16	RED	BELT BLDC DRIVER (24V PWR)	W42	SP7:OUT	---	P6:3	17	18 (TP)	YEL	SEED SENSOR (CAN H)
W19	SP4:OUT	---	P6:2	17	16	BLK	BELT BLDC DRIVER (24V GND)	W43	SP8:OUT	---	P6:4	17		GND	SEED SENSOR (CAN L)
W20	SP4:OUT	---	P3:2	3	16	BLK	24V IPN GND	W44	J4:1	10	P6:7	17		YEL	CAN H
W21	J3:2	4	SP4:IN	---	16	BLK	24V IPN GND	W45	J4:2	10	P6:8	17	18 (TP)	GND	CAN L
W22	J3:3	4	SP5:IN	---	16	RED	24V IPN PWR	W46	SP2:OUT	---	P9:1	22	ESD	---	BRAIDED SEED TUBE ESD CABLE
W23	SP5:OUT	---	P3:3	3	16	RED	24V IPN PWR	W47	SP2:OUT	---	P10:1	22	ESD	---	BRAIDED METER ESD CABLE
W24	E1	---	J1:3	10	18	GRN	TRUE DEPTH LINK SENSOR (SHIELD)	W48	SP6:OUT	---	P5:6	14	16	BLK	METER BLDC DRIVER (STRAP)

LABEL TABLE

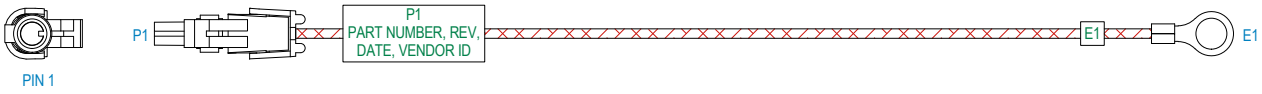
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RV IPN J7	P5	SEED METER
P2	RV IPN J6	P6	SEED SENSOR
P3	RV IPN J3	P7	FERTILIZER
P4	RV IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	P10	BRAIDED ESD CABLE
J3	IPN PWR	E1	GND
J4	CAN TERM	E2	BRAIDED ESD CABLE
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.		

TRUE SPEED ESD GROUND STRAP HARNESS (P/N: 10213501)



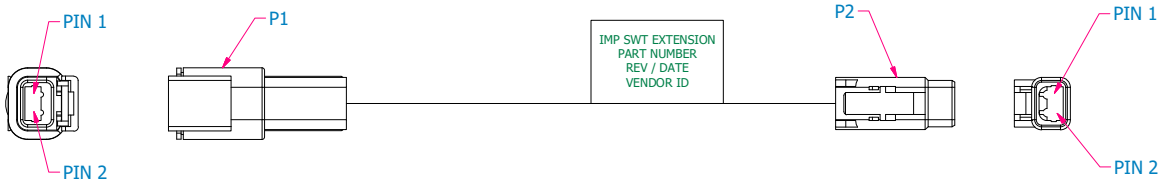
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	J1-1	2	E1	-	SEE VIEW	SEE VIEW	ESD GND

TRUE SPEED ESD GROUND STRAP HARNESS (P/N: 10213601 / 10213602)



WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P1-1	2	E1	-	SEE VIEW	SEE VIEW	ESD GND

IMPLEMENT SWITCH EXTENSION HARNESS (P/N: A26923)



WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P1-1	3	P2-1	4	18	BLK	IMP SWITCH GND
W2	P1-2	3	P2-2	4	18	WHT	IMP SWITCH (SIG)

HYDRAULIC HOSE LIFE

WARNING

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

Proper storage of hydraulic hoses can significantly increase the life of the hoses, for a period of three to five years. After this period, service life of hoses may decrease, depending on variables such as variances in rubber materials and storage environment. Refer to the guidelines below for best practices when storing.

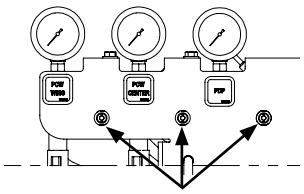
- Store in a clean, cool and dry area
- Avoid direct sunlight or moisture
- Do not store near high power electrical equipment
- Avoid contact with corrosive chemicals
- Avoid ultraviolet light
- Avoid areas with obvious signs of insects or rodents

Unusually long periods of storage or poor storage environment may lead to performance issues or premature failure. Always inspect all hoses prior to use for extensive wear, cuts, or holes. If such flaws are identified, replace immediately to avoid potential failure, property damage or bodily injury.

BULK FILL

PROBLEM	POSSIBLE CAUSE	SOLUTION
Seed does not travel through delivery tubes.	System pressure set too low.	Increase system pressure.
Seed stops flowing to row unit during planting.	Seed surging.	Shut down air seed delivery system and restart system from idle; seed should start flowing.
	Debris in system.	Insert shutoff door, open clean out door. Remove plug.
Seed does not move from entrainer at startup after exposure to water.	Seed swelled in entrainer.	Insert shutoff door, open clean out door. Remove swelled seed.
Seed bridging in entrainer.	System pressure too high.	Decrease system pressure to recommended pressures: • Corn - 12" (30 cm) of water • Soybean - 10" (25 cm) of water **NOTE: Actual pressure needed is affected by seed size, shape and coating.**

AIR CLOSING WHEELS

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.	Not enough 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 “Closing Wheel General Adjustments” on page 3-1
Single closing wheel not directly over seed.	Improper centering.	Align. See “Closing Wheel General Adjustments” on page 3-1
Folded air bag.	Initial inflation with planter on ground.	Inflate system to a lower pressure and manually straighten out airbags.
System unable to maintain pressure.	Loose fitting(s) or bad compressor.	Verify compressor is running.
		Verify tank pressure.
		Check for air leaks.
		Verify pressure in circuit gauges at control valves.
System is building pressure but individual circuits are not pressurizing (tank pressure is good, circuit pressure gauge is zero).	Loose fitting(s) or bad solenoid.	Check circuit for air leaks.
		Verify air control valve solenoids are functioning.  Push solenoid button(s) to manually operate.

ROW MARKER OPERATION

PROBLEM	POSSIBLE CAUSE	SOLUTION
Right marker lowering slower than left marker.	Solenoid valve cartridge in port B4 of R.H. block not opening completely.	Switch with cartridge in port B4 of L.H. block. If problem repeats, 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 B4 of L.H. block not opening completely.	Switch with cartridge in port B4 of R.H block. If problem repeats, replace cartridge.
	Hose pinched or collapsed.	Inspect hose routing. Replace or repair hoses as required.
Both markers lowering.	Solenoid valve cartridge stuck open. If left marker switch is selected, right cartridge (B4) is defective. If right marker switch is selected, left cartridge (B4) is defective.	Replace solenoid valve cartridge.
Neither marker lowers.	Coils at B4 not energized.	Poor ground on wire, bad wire connection or damaged wire. Repair as required.
	Marker flow control valve closed too far.	See “Row Marker Speed Adjustment” on page 2-19
Neither marker will raise.	Marker flow control valve closed too far.	See “Row Marker Speed Adjustment” on page 2-19
Right marker will not lower.	Solenoid coil in port C2 not energized.	Inspect wiring harness back to IPN.
	Solenoid cartridge in port C2 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 C1 not energized.	Inspect wiring harness back to IPN.
	Solenoid cartridge in port C1 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.	Adjust row marker flow control valve.	See “Row Marker Speed Adjustment” on page 2-19

TRUE RATE SEED METER

PROBLEM	POSSIBLE CAUSE	SOLUTION
Low seed count.	Meter RPM too high.	Reduce planting rate or planting speed.
	Singulator blade setting too aggressive.	Adjust singulator blade.
	Vacuum level too low.	Increase fan speed.
	Seed sensor not picking up all seeds dropped.	Clean seed tube. Move meter to different row.
	Seeds sticking to seed disc.	Use graphite or talc to aid release.
	Seed treatment buildup in seed disc recesses.	Reduce amount of treatment used and or mix thoroughly. Add talc.
	Seed size too large for disc used.	Use appropriate disc for seed size.
	Wrong seed disc.	Use appropriate disc for seed type and size.
	Failed/worn drive components.	Inspect and replace parts as required.
	Plugged orifices in seed disc.	Inspect and clean disc. Check remnant ejector.
	Loss of vacuum at meter.	Check for foreign material between vacuum cover and disc. Inspect parts for wear/damage. Clean or replace as required.
	Seed bridging in hopper.	Add graphite to improve seed flow.
	Faulty vacuum gauge reading.	Repair/replace gauge.
	Dirt in vacuum manifold.	Check vacuum manifold for dirt and clean.
	Seed baffle (If applicable) not allowing seed flow due to bridging of seed.	Mix talc thoroughly to coat all seeds. Remove seed baffle. See Row Unit Operation section.
	Seed disc worn.	Replace.
	Vacuum seal worn.	Replace.
Not planting seed.	Seed hoppers empty.	Fill seed hopper.
	Seed tube plugged/damaged.	Clean or replace tube.
	Meter drive damaged.	Repair/replace drive components.
	Low/no vacuum.	Inspect vacuum system and repair as necessary.
	Singulator blade setting too aggressive.	Adjust singulator blade.
	Faulty vacuum gauge.	Repair/replace vacuum gauge.
	Seed bridging in hopper.	Add graphite to improve seed flow.
	Loss of vacuum at meter.	Check for foreign material between vacuum cover and disc. Inspect parts for wear/ damage. Clean and/or replace as required.
	Wrong seed disc.	Use appropriate disc for seed type and size.
	Fan not running.	Start fan.
	Dirt in vacuum manifold.	Check vacuum manifold for dirt and clean.
	Seed baffle (if applicable) not allowing seed flow due to bridging of seed.	Mix talc thoroughly to coat all seeds. Remove seed baffle. Row Unit Operation section.
	High vacuum.	Adjust vacuum level to appropriate level.
	Wrong seed disc.	Replace seed disc.
	Singulator setting not aggressive enough.	Adjust singulator.
	Faulty vacuum gauge.	Check gauge line for dirt/obstruction. Repair/replace vacuum gauge.

TRUE RATE SEED METER - Continued

PROBLEM	POSSIBLE CAUSE	SOLUTION
Poor seed spacing.	Obstruction in seed tube.	Clean seed tube.
	Dirty/damaged seed disc.	Inspect seed disc for damage, foreign material in orifices or seed treatment buildup in recesses. Clean or replace.
	Wrong vacuum setting.	Adjust vacuum to appropriate level.
	Excess foreign material in seed.	Inspect and clean meter and seed discs. Use clean, undamaged seed.
	Incorrect singulator setting.	Adjust singulator to appropriate setting.
	Inconsistent driveline.	Inspect drive components for rust, misalignment, worn or damaged parts. Replace/repair as required.
	Toolbar not level or wrong height.	Adjust hitch to level toolbar and row units.
	Planting too fast for conditions.	Reduce speed.
	Rough field conditions.	Reduce speed.
Irregular seed population.	Driving too fast.	Reduce speed.
Unable to achieve desired vacuum level.	Tractor hydraulic flow set too low.	Increase flow to fan motor.
	Incorrect hydraulic connections.	Check all hydraulic connections and hose routings.
	Damaged fan components.	Inspect motor and impeller for wear/damage and repair/replace as necessary.
	Vacuum hose pinched/kinked/blocked.	Inspect air lines for any damage or obstruction. Clean air lines and manifold by removing end cap from manifold and running fan at high speed.
	Vacuum hose loose/disconnected.	Inspect and reattach all air hoses.
	Tractor not producing required hydraulic flow/ pressure.	Have tractor serviced by qualified technician.
	Dirt in vacuum gauge line.	Check gauge line for dirt/obstruction and clean.

SOLENOID VALVE

PROBLEM	POSSIBLE CAUSE	SOLUTION
No solenoids operate.	Tablet not registering touch.	Clean fingers and/or screen.
		Restart tablet.
	Low voltage	Must be connected to 12 volt DC only. Negative ground.
	Battery connection.	Clean and tighten.
	Wiring harness damaged .	Repair or replace.
One solenoid valve will not operate	Cut wire in harness.	Locate and repair or replace.
	Bad coil.	Replace coil.
	Poor connection at coil.	Check connection at coil. Check harness for loose terminals.
	Valve stem stuck closed.	Replace valve.
Valve operating when not energized.	Valve stem stuck open.	Replace valve.
	O-ring leaking.	Install new o-ring.
	Foreign material under poppet.	Remove and clean cartridge. Replace if necessary.

PISTON PTO PUMP AND OIL COOLER

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump is squealing.	Lack of oil to pump.	Check for plugged suction strainer. Check oil level.
Pump shaking.	Pump mount misaligned.	Realign mount. Coupler should slide freely.
	Pump mount hardware loose.	Tighten hardware.
Oil temp high.	Low oil level.	Check oil level and add as required.
	Oil bypassing to return.	Check hose connections.
	Stuck relief valve.	Check valve. Clean or replace.
	Cooling fan plugged.	Clean cooling fan, cooler screen and cooler.
Low system pressure.	Oil bypassing to return.	Check hose connections.
	Pump setting too low.	To adjust, loosen nut on top of pump and turn set screw clockwise to increase pressure.
High system pressure.	Pump setting too high.	To adjust, loosen nut on top of pump and turn set screw counter clockwise to decrease pressure.
Cooling fan not spinning in forward or reverse.	Solenoids on PTO Block ports “A3” and “A5” not operating correctly.	See solenoid valve section.
	Low temp switch in PTO block port “A4” bad.	Replace switch.
Cooling fan will spin forward but not reverse.	Reverser module is bad.	Replace module.
Cooling fan spinning slow.	Flow Control orifice in PTO block ports “D1” and/or “E1” blocked.	Check orifices. Clean or replace.

LIFT CIRCUIT TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Right wing raises faster than the left wing. Right wing may even raise completely before rock shaft and left wing start to raise. If planter is loaded, rock shaft and right wing may not be able to raise at all.	Master cylinder located on right side of rock shaft, is leaking internally. **Note: Make sure lift system is completely re-phased.**	Repair master cylinder.
Left wing raises faster than the right wing. Left wing may even raise completely before rock shaft and right wing start to raise. If planter is loaded, rock shaft and left wing may not be able to raise at all.	Master cylinder located on left side of rock shaft, is leaking internally. **Note: Make sure lift system is completely re-phased.**	Repair master cylinder.
Rock shaft will raise but wings do not.	Planter hydraulic circuit is out of phase. Usually occurs when planter is lowered from transport position.	Hold hydraulic control in lowering position to give hydraulic circuit more time to re-phase.
Planter will not raise or raises slowly.	Low hydraulic flow/pressure.	Switch remote outlets being used. If no change, check tractor hydraulics.
	Planter may be overloaded with seed, fertilizer, extra tanks or other non-Kinze attachments.	Remove weight.
Planter will not re-phase.	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 re-phase system. Lower cylinder pins must be free to rotate in this position. If pins are tight, adjust cylinder clevises.

ROTATION CIRCUIT

PROBLEM	POSSIBLE CAUSE	SOLUTION
Rotate cylinder and rotate lock cylinder will not extend or retract.	Solenoid Valves in “A2” and/or “A4” not operating correctly (closed).	See “Solenoid Valve” on page 5-28
	Low hydraulic flow/pressure.	Check SCV connections for full engagement.
		Switch remote outlets being used. If no change, check tractor hydraulics.
Rotate cylinder will not retract but tongue lock cylinder extends.	Pressure relief valve in port “C9” stuck closed or pressure setting too high (valve is factory set to open at 1000 PSI).	Replace or adjust relief valve. To adjust, loosen lock nut and turn counter clockwise to decrease pressure.
Rotate lock does not release before rotate cylinder begins to retract.	Pressure relief valve in port “C9” stuck open or pressure setting too low (valve is factory set to open at 1000 PSI).	Replace or adjust relief valve. To adjust, loosen lock nut and turn clockwise to increase pressure.
Rotate cylinder extends and retracts slowly.	Foreign material stuck in orifices restricting oil flow.	Check orifices under cylinder ports, inspect and clean if needed. Orifice on cap end of the cylinder should be .120" in diameter. Orifice on rod end of cylinder should be .060" in diameter.
	Bad piston seal.	Check seals and replace.
Rotate cylinder extends or retracts with no button press.	Solenoid valves in “A2” and/or “A4” not operating correctly (Open).	See “Solenoid Valve” on page 5-28

TONGUE/HITCH CIRCUIT

PROBLEM	POSSIBLE CAUSE	SOLUTION
Tongue cylinder and tongue lock cylinder will not extend or retract.	Solenoid valves in “A1” and/or “A5” not operating correctly (closed).	See “Solenoid Valve” on page 5-28
	Low hydraulic flow/pressure.	Check SCV connections for full engagement.
		Switch remote outlets being used. If no change, check tractor hydraulics.
Tongue cylinder will not extend but tongue lock cylinder extends	Pressure relief valve in port “C10” stuck closed or pressure setting too high (valve is factory set to open at 1000 PSI).	Replace or adjust relief valve. To adjust, loosen lock nut and turn counter clockwise to decrease pressure.
Tongue lock does not release before tongue cylinder begins to extend.	Pressure relief valve in port “C10” stuck open or pressure setting too low (valve is factory set to open at 1000 PSI).	Replace or adjust relief valve. To adjust, loosen lock nut and turn clockwise to increase pressure.
Tongue cylinder extends and retracts slowly.	Bad piston seal.	Check seals and replace.
Tongue cylinder extends or retracts with no button press.	Solenoid valves in “A1” and/or “A5” not operating correctly (open).	See “Solenoid Valve” on page 5-28

WING LOCK CYLINDER CIRCUIT

PROBLEM	POSSIBLE CAUSE	SOLUTION
Cylinders will not extend or retract.	Solenoid valves in left and right marker block ports “C1” and “C2” not operating correctly (closed).	See “Solenoid Valve” on page 5-28
	Low hydraulic flow/pressure.	Check SCV connections for full engagement.
		Switch remote outlets being used. If no change, check tractor hydraulics.
Cylinders will extend or retract with no button press.	Solenoid valves in left and right marker block ports “C1” and “C2” not operating correctly (open).	See “Solenoid Valve” on page 5-28
Cylinders will retract but not extend (wing locks release but will not engage).	Too much weight on wings.	Ensure planter frame is on the ground.
Cylinders extend and retract slow	Bad piston seal.	Check seals and replace.

CENTER LIFT CYLINDER CIRCUIT

PROBLEM	POSSIBLE CAUSE	SOLUTION
Cylinder will not extend or retract.	Solenoid valves on cylinder end cap not operating correctly (closed).	See “Solenoid Valve” on page 5-28
	Low hydraulic flow/pressure.	Check SCV connections for full engagement.
		Switch remote outlets being used. If no change, check tractor hydraulics.
Cylinder will extend or retract with no button press.	Solenoid valves on cylinder end cap not operating correctly (open).	See “Solenoid Valve” on page 5-28
Cylinder extends and retracts slow.	Bad piston seal.	Check seals and replace.
Cylinder will extend but not retract.	Counterbalance valve stuck closed.	Replace valve.

ROW MARKER CYLINDER CIRCUIT

PROBLEM	POSSIBLE CAUSE	SOLUTION
Cylinders will not retract (marker extend).	Marker button not selected on tablet.	Select marker to operate.
	Solenoid valves on left and right marker block port “B4” not operating correctly (closed).	See “Solenoid Valve” on page 5-28
	Low hydraulic flow/pressure.	Check SCV connections for full engagement.
		Switch remote outlets being used. If no change, check tractor hydraulics.
Cylinder will retract (marker extend) with no button press.	Solenoid valves on cylinder end cap not operating correctly (open).	See “Solenoid Valve” on page 5-28
Cylinder retracts (marker extend) slow.	Flow control valve in port “A1” set too low	See “Row Marker Speed Adjustment” on page 2-19
	Bad piston seal.	Check seals and replace.
	Hose pinched or collapsed	Inspect hose routing. Replace hoses as required.
Cylinder extends (marker retract) slow.	Flow control valve in port “A2” set too low	See “Row Marker Speed Adjustment” on page 2-19
	Bad piston seal.	Check seals and replace.
	Hose pinched or collapsed	Inspect hose routing. Replace hoses as required.
Cylinder retracts (marker extend) fast.	Flow control valve in port “A1” set too high	See “Row Marker Speed Adjustment” on page 2-19
Cylinder extends (marker retract) fast.	Flow control valve in port “A2” set too high	See “Row Marker Speed Adjustment” on page 2-19
Cylinder does not extend (marker retract).	Low hydraulic flow/pressure.	Check SCV connections for full engagement.
		Check tractor hydraulic flow/pressure.
	Flow control valve in port “A2” blocked	Open valve if closed. Clean valve if blocked or replace.

BLUE DRIVE

Refer to M0288 - Kinze Blue Vantage Operator’s manual for Blue Drive / Blue Vantage troubleshooting.

YETTER SYSTEM

PROBLEM	POSSIBLE CAUSE	SOLUTION
Tank Pressure drops when compressor shuts off.	Improper check valve function.	Replace check valve on compressor.
	Loose connections/air leak.	Perform leak check.
	Water separator drain valve leaking.	Replace water separator drain valve.
Compressor runs continuously/air flow lower than normal, compressor run time high warning on cab controller if compressor runs continuously for 15 mins.	Excessive air usage.	Decrease air usage. Perform leak check.
	Loose connections/air leak.	Perform leak check.
	Improper pressure switch function.	Replace pressure switch.
	Clogged air filter element.	Clean/replace filter element.
	Worn compressor.	Replace compressor.
	Defective safety valve.	Replace safety valve.
	Tank drain valve open.	Close tank drain valve.
	Water separator valve leaking.	Replace water separator valve.
Compressor will not run.	Air system is off.	Turn PTO pump on.
	Hydraulics disengaged.	Engage compressor hydraulic circuit.
	No power to control box.	Check connections at control box.
	Communication harness connection issue.	Check harnessing from compressor to control box.
	Shut-off psi (145 psi) reached.	Compressor will restart after tank pressure drops below 125 psi.
	Worn compressor.	Replace compressor.
	Improper pressure switch function.	Replace pressure switch.
No air output from the RU, RD, and WT ports even though pressure is commanded and tank pressure reads 75 psi or greater.	Air system is off.	Turn PTO pump and Blue Vantage on.
	75 psi of tank pressure not achieved.	Allow the compressor to build at least 75 psi.
	Improperly functioning mac valves.	Replace mac valves as needed.
	Communication harness connection issue.	Check ends of all connectors to make sure terminal pins are all flush to the end of the male connectors and the connectors are sealed tightly.
Low or sporadic tank pressure reading. Air leaking out regulator knob.	Water separator/regulator assembly plumbed incorrectly.	Plumb water separator/regulator correctly (air compressor→water separator→exit regulator side→enter control box inlet port).
Compressor struggles to build/ won't build 145 psi.	Flow control valve adjustment needed.	Flow control valve adjustment needed.
Excessive noise from compressor.	Loose mounting bolts.	Tighten bolts.
	Worn bearings.	Replace compressor.
	Cylinder or piston is worn.	Rebuild compressor.
Excessive moisture in discharge.	Excessive water in air tank.	Drain tank, drain tank more frequently.
	High humidity.	
Hydraulic motor front seal leakage.	Case drain clogged or unplugged.	Remove case drain plumbing and clean out debris/obstruction, replace seal.
Row cleaners do not react uniformly.	Check each row cleaner for drag.	Replace bushings/parts causing drag or check hardware tightness.

YETTER SYSTEM COMPRESSOR

PROBLEM	POSSIBLE CAUSE	SOLUTION
Knocking.	Lack of oil in crankcase.	Add oil.
	Worn piston pin.	Consult dealer.
	Worn main bearings.	Consult dealer.
	Worn connecting rod.	Consult dealer.
	Excessive crankshaft end play.	Consult dealer.
	Piston hitting head due to foreign matter/carbon deposits.	Consult dealer.
Low discharge pressure/ pumps slowly.	Air leaks.	Check system for air leaks.
	Broken or dirty valves.	Consult dealer.
	Restricted air intake.	Replace filter element.
	Blown gaskets.	Consult dealer.
	Defective gauges.	Consult dealer.
	Pump too small for application.	Consult dealer.
Excessive oil consumption.	Restricted or dirty air filter.	Clean or replace air filter.
	Crankcase is overfilled with oil.	Drain oil and refill to proper lever.
	Worn piston rings.	Consult dealer.
Overheating pump.	Poor ventilation.	Move pump to allow for better ventilation.
	Dirty cooling surface.	Clean pump.
	Restricted air intake.	Replace filter.
	Low oil level.	Add non-detergent, single viscosity oil.
	Dirty or defective reed valve.	Consult dealer.
Oil in the discharge air.	Worn piston rings.	Consult dealer.
	Pump air intake restricted.	Replace filter.
	Restricted crankcase breather.	Clean crankcase breather.
	Excessive oil in pump.	Check gauge and adjust to proper oil level.
	Wrong oil viscosity.	Drain and replace with non-detergent, single viscosity oil.
Compressor tries to start but won’t actually run a full cycle.	Tractor is at idle.	Maintain a tractor PTO RPM of at least 850 RPM to operate all demands functioning properly.

YETTER ROW CLEANER BLUE VANTAGE ALERTS

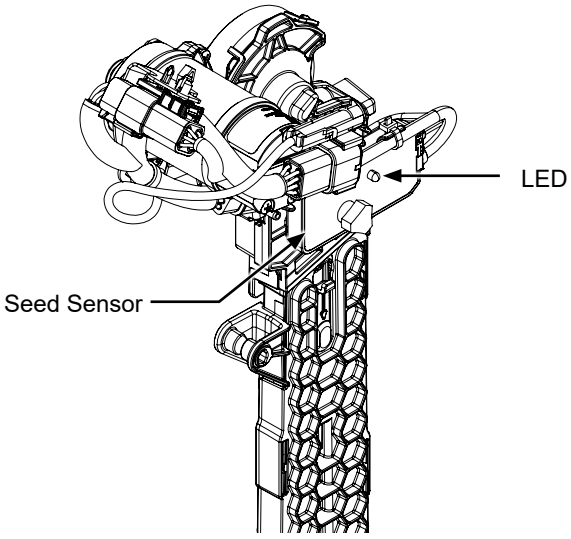
ALERT	REASON	CONDITION
Row cleaners lost.	Lost CAN communication with row cleaners control box.	No communication with Yetter control box.
Row cleaners error.	Error with the row cleaners system	System pressure error or battery voltage error (<11.7V).
		Section (circuit) error.
Row cleaners system pressure low.	Low row cleaners tank pressure.	System pressure below maximum section operating pressure (60 psi).
Row cleaners section pressure low.	Specified row cleaners section could not reach target pressure.	Section pressure 25% below target.
Row cleaners compressor error.	Row cleaners compressor has encountered an error.	High compressor runtime (7 minutes).
		Water dump or compressor valve fault.

TRUE SPEED METER

PROBLEM	POSSIBLE CAUSE	SOLUTION
Low seed count.	Vacuum level too low.	Increase fan speed.
	Plugged orifices in seed disc.	Inspect and clean disc. Check remnant ejector.
	Loss of vacuum at meter.	Check for foreign material between vacuum cover and disc. Inspect parts for wear/damage. Clean or replace as required.
	Meter Speed too high for current settings	Reduce planting speed and increase vacuum setting.
	Seed sensor not picking up all seeds dropped.	Clean seed sensor lens and delivery tube.
	Brush wheel worn out	Replace brush wheel.
	Wrong seed disc or seed ejector.	Use appropriate disc and ejector for seed type and size.
	Seed size too large for current speed or vacuum setting.	Suggest decreasing ground speed or increasing vacuum.
	Improper meter engagement.	Check meter to delivery tube engagement.
	Vacuum seal worn.	Replace.
	Seed disc worn.	Replace.
	Worn remnant ejector.	Replace.
	Meter baffle door closed too far.	Mix talc thoroughly to coat all seeds. Set baffle to correct setting. Row Unit Operation section.
	Seed bridging in mini hopper.	Add graphite to improve seed flow.
	Failed/worn drive components.	Inspect and replace parts as required.
	Seeds sticking to seed disc.	Use graphite or talc to aid release.
	Seed treatment buildup in seed disc recesses.	Reduce amount of treatment used and or mix thoroughly. Add talc.
	Faulty vacuum gauge reading.	Repair/replace gauge.
	Dirt in vacuum manifold.	Check vacuum manifold for dirt and clean.
	Obstructed delivery tube exit.	Clean delivery tube exit.
	Bulk fill pressure too low.	Increase bulk fill pressure.
High seed count.	Vacuum level too high.	Decrease fan speed.
	Wrong seed disc.	Use appropriate disc for crop.
	Damaged or deformed belts.	Replace belt with new part.
	Baffle setting incorrect.	Lower baffle setting.
	Meter Speed too low for planting conditions or seed type.	Increase planting rate, planting speed, or decrease vacuum
	Meter overfilling with seed.	Decrease speed. Reduce meter baffle door setting.
	Singulator not installed or installed incorrectly.	Install singulator.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Not planting seed.	Low/no vacuum.	Inspect vacuum system and repair as necessary.
	Worn ejector.	Replace ejector.
	Seed bridging in mini hopper.	Add graphite to improve seed flow. Adjust baffle setting
	Meter drive damaged.	Repair/replace drive components.
	Loss of vacuum at meter.	Check for foreign material between vacuum cover and disc. Inspect parts for wear/damage. Clean or replace as required.
	Seed baffle (if applicable) not allowing seed flow due to bridging of seed.	Mix talc thoroughly to coat all seeds. Remove seed baffle. Row Unit Operation section.
	High vacuum.	Adjust vacuum level to appropriate level
	Not stripping seed from the disc.	Replace brush wheel.
	Delivery tube plugged or damaged.	Clean or replace delivery tube.
	Faulty vacuum gauge.	Check gauge line for dirt/obstruction. Repair/ replace vacuum gauge.
	Wrong seed disc.	Use appropriate disc for seed type and size.
	Dirt in vacuum manifold.	Check vacuum manifold for dirt and clean.
Poor seed spacing.	Brush wheel worn.	Replace.
	Planting too fast for conditions.	Reduce speed.
	Obstruction in delivery tube.	Clean delivery tube.
	Wrong vacuum setting.	Adjust vacuum to appropriate level.
	Damaged singulator brush pack.	Replace singulator.
	Missing scrubber block.	Insert scrubber block into delivery tube assembly.
	Incorrect singulator state.	Add or remove singulator according to crop type.
	Excess foreign material in seed.	Inspect and clean meter and seed discs. Use clean, undamaged seed.
	Dirty/damaged seed disc.	Inspect seed disc for damage, foreign material in orifices or seed treatment buildup in recesses. Clean or replace.
	Incorrect baffle setting.	Set to recommended baffle setting.
	Toolbar not level or wrong height.	Adjust hitch to level toolbar and row units.
Irregular seed population.	Inspect for worn ejector wheel.	Replace as necessary.
	Dirty seed sensor lens.	Clean seed sensor lens and delivery tube.
	Rough field conditions.	Reduce speed.
	Check for worn comb teeth.	Replace as necessary.

SEED SENSOR COLOR SCHEME



Seed Delivery Tube

LED COLOR	LED BEHAVIOR	MODE
White	Solid	Sensor in bootloader mode.
Green	Solid	Power ON and running normal.
Red	Blinking	Sensor error. Please reboot system.
Red	Solid	Error. Sensor fault. Replace sensor.
Blue	Solid	Upgrading normally.
Yellow	Heartbeat blink	Seed detected.

NOTE: Solid red light indicates application firmware is not running. Service issue, replace sensor.