

MODEL 5670 PIVOT FOLD PLANTER OPERATOR'S MANUAL

M0322-01

Rev. 9/26

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 _____

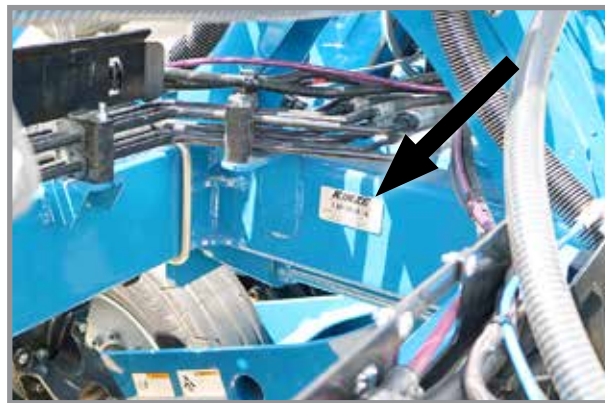
Monitor Serial Number _____

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

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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.

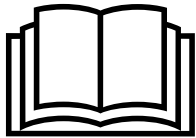
This manual has been prepared to aid you in the operation and maintenance of the planter. It should be considered a permanent part of the machine and remain with the machine when you sell it.

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 30"	23 Row 15"	16 Row 30"	31 Row 15"
Seed Capacity	80 Bu.	80 Bu.	120 Bu.	120 Bu.
Weight (Empty)				
Base Machine	17,800 lbs.	20, 720 lbs.	24,600 lbs.	28,580 lbs.
Hitch	3,043 lbs.	3,544 lbs.	3,616 lbs.	4,205 lbs.
Length				
Planting	22' 6"	22' 6"	25' 10"	25' 10"
Transport	37' 2"	37' 2"	47' 2"	47' 2"
Width				
Planting	30' 11"	30' 11"	40' 9"	40' 9"
Transport	11' 4"	11' 4"	11' 4"	11' 4"
Height				
Planting	8' 7"	8' 7"	8' 7"	8' 7"
Transport	13' 1"	13' 1"	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 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)

Power Beyond

Tractor requirements

- Power beyond plumbing capable
- Load sensing required
- **MINIMUM 80 GPM HYDRAULIC PUMP**

Quick Disconnect Couplers

- Identical male-female connection types are required for correct operation.
- Some tractor brands may require different female quick disconnect couplers than what is installed. Female quick disconnect couplers are provided with the planter for use if needed.

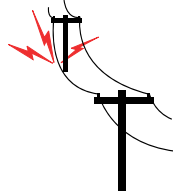
NOTE: To avoid reducing or restricting flow, do not use multiple adapter fittings. The system requires up to 40 GPM of flow, depending on planter options.

3/4" Coupler is ISO 7241 A Standard	Uses a 3/4" NPTF Threaded Connection
1/2" Coupler is ISO 7241 A Standard and ISO 5675 Interchangeable	Uses a 1/2" NPTF Threaded Connection
1/4" Coupler is ISO 5675 Standard	Uses a 1/4" NPTF Threaded Connection

The diagram shows a bundle of hydraulic hoses and couplers. Labels with arrows point to specific components: 3/8" Case Drain (Orange CD) points to an orange hose; 1/4" Load Sense (Yellow LS) points to a yellow hose; 1" Return (Black RR) points to a black hose; 3/4" Pressure (Purple PP) points to a purple hose. On the right side, three different sizes of NPTF female hydraulic couplers are shown: 1/4", 1/2", and 3/4".

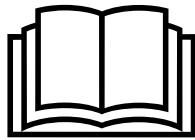
1. Read and understand instructions provided in this manual and warning labels. Review these instructions frequently!
2. This machine is designed and built with your safety in mind. Do not make any alterations or changes to this machine. Any alteration to design or construction may create safety hazards.
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.



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.



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.



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



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



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!

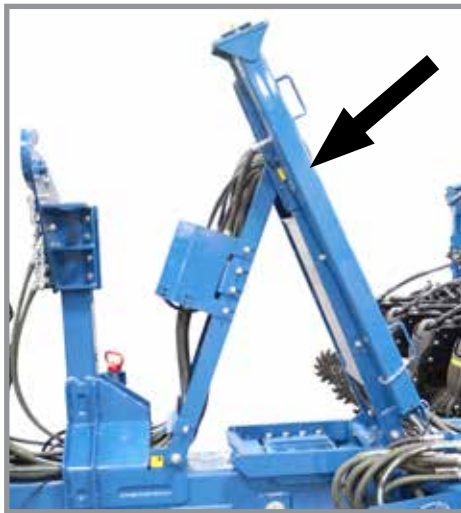
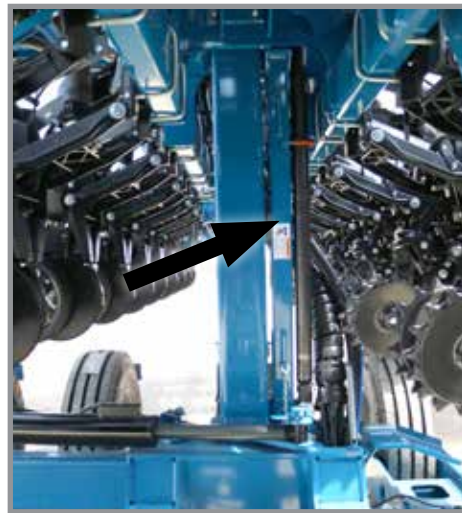
- Keep signs clean so they can be easily seen. Wash with soap and water or cleaning solution as required.
- Replace safety signs if damaged, painted over, or missing.
- Check reflective decals and SMV sign periodically. Replace if they show any loss of reflective properties.
- When replacing decals,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

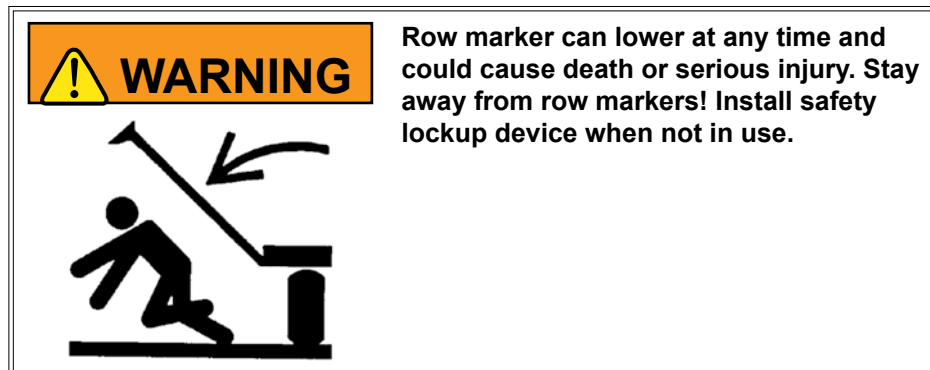
NOTE: Style and locations of SMV sign, reflective decals, and safety/warning lights conform to ANSI/ASABE S279.14 JUL 2008 and ANSI/ASABE S276.6 JAN 2005.

PLANTER LIFT SAFETY LOCKUP

 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.
	

**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

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

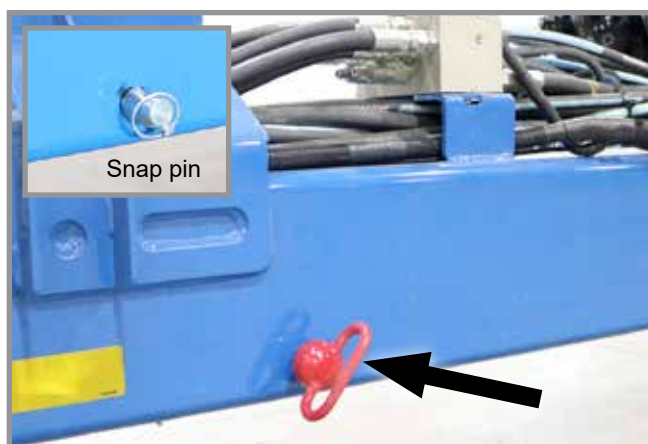
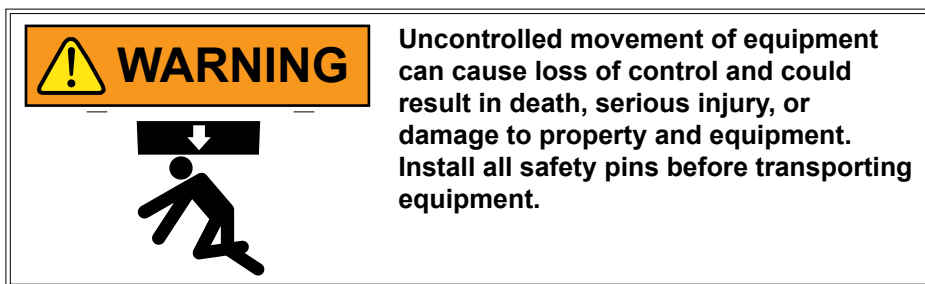


Row marker safety lockup installed

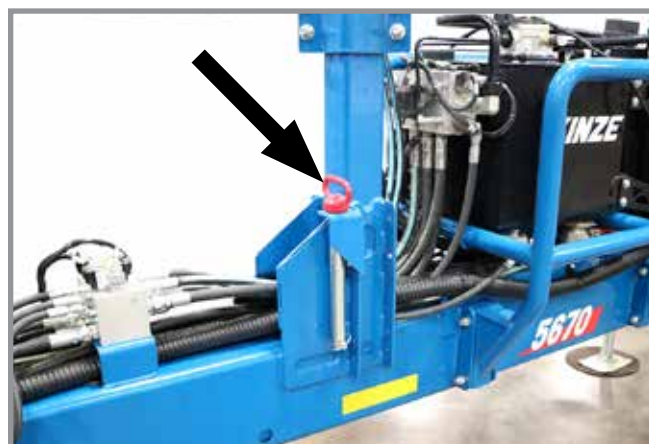


Row Marker Safety Lockup Stored

TONGUE SAFETY PIN



Tongue safety pin installed for transport



Tongue safety pin stored for field operation

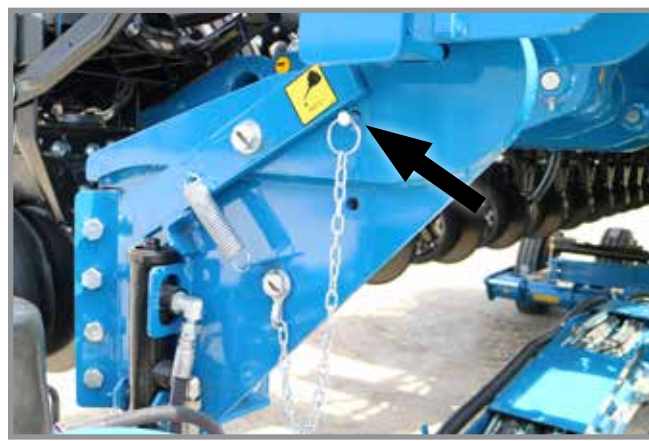
Never transport planter without installing tongue safety pin. Tongue safety pin prevents tongue cylinder from retracting should hydraulic failure occur or a sudden stop be made when transporting planter.

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.



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.



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.



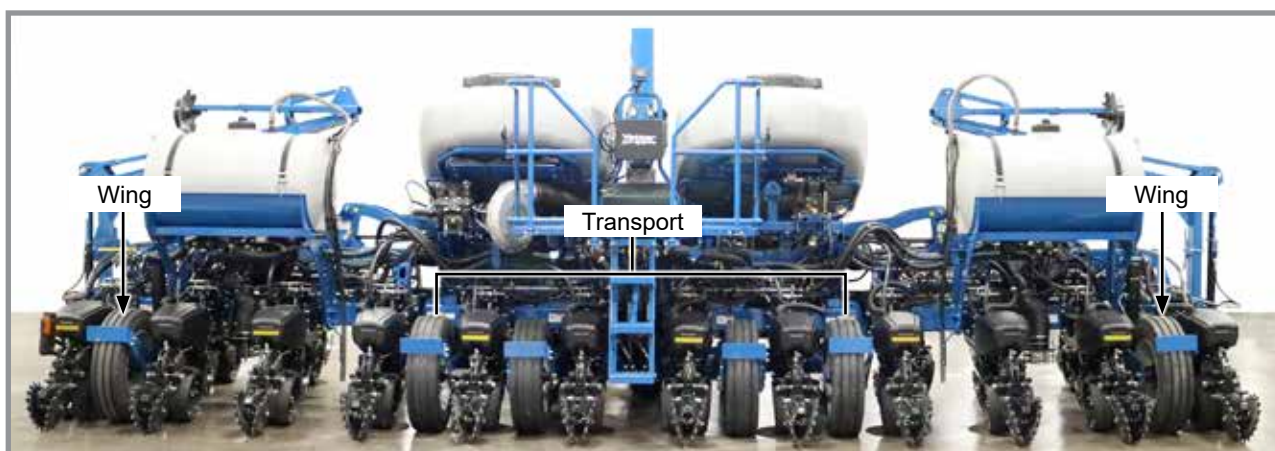
Tanks must be empty when transporting to avoid death, serious injury, or damage to property or equipment. Do not pull planters in transport configuration with seed or fertilizer in tanks.



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.



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 $\frac{5}{8}$ "- 18 lug nuts to 200 ft-lb (271 N-m).

2. Inflate tires to the following specifications:

Transport (center section)

12 Row: VF245/70R19.575 psi (517.1 kPa)

16 Row: VF295/75R22.565 psi (448.1 kPa)

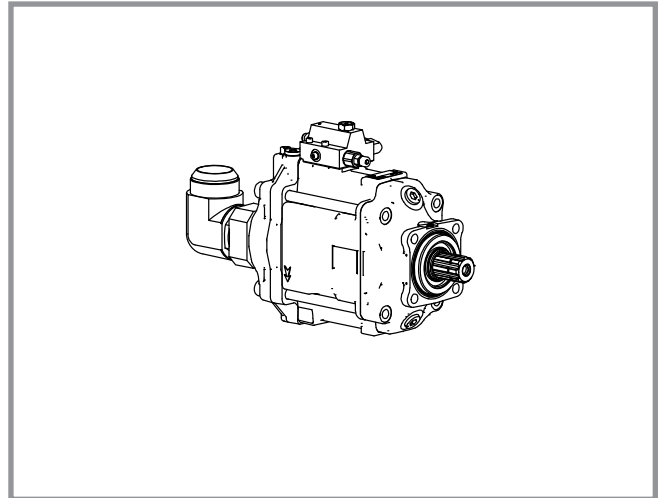
Wings VF245/70R19.550 psi (344.7 kPa)

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 1 $\frac{3}{4}$ " (45 mm)-20 or 1 $\frac{3}{8}$ " (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

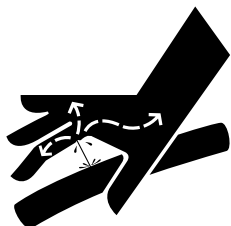


Planter/safety chain hookup to tractor

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	5/8"	Pressure/Return
Red Retract		5/8"	Pressure/Return
Blue Extend	Planter Fold & Row Marker	1/2"	Pressure/Return
Blue Retract		1/2"	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 $\frac{1}{8}$ " 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.

POWER BEYOND STARTUP

NOTICE

Tractor **MUST** be off, prior to connecting hydraulic hoses.

NOTICE

Ensure all hydraulic hoses are properly connected.

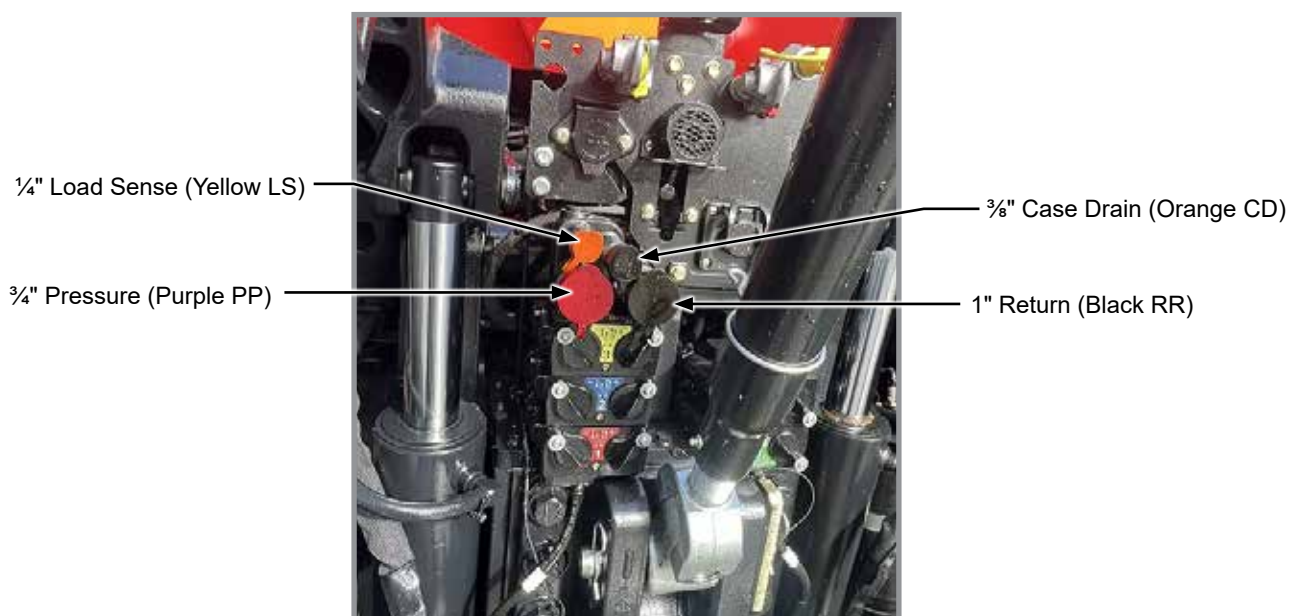
1. Connect hydraulic hoses to tractor.

NOTE: Ensure the correct connections to the tractor are being used. Refer to [“Quick Disconnect Couplers” on page 1-5](#) in the Specifications section and applicable tractor manual for more information. See photo below.

The power Beyond hoses are labeled and color coded for identification:

- Return (Black RR)
- Pressure (Purple PP)
- Case Drain (Orange CD)
- Load Sense (Yellow LS)

2. Turn tractor on, blue LED should light up.
3. When ready, turn on Power Beyond system, press rocker switch “on”. Green light will turn on and blue light will turn off. **NOTE:** To turn off press bottom of rocker switch, green off, blue on.
4. Ready to plant.



CASE IH Magnum 400 Shown

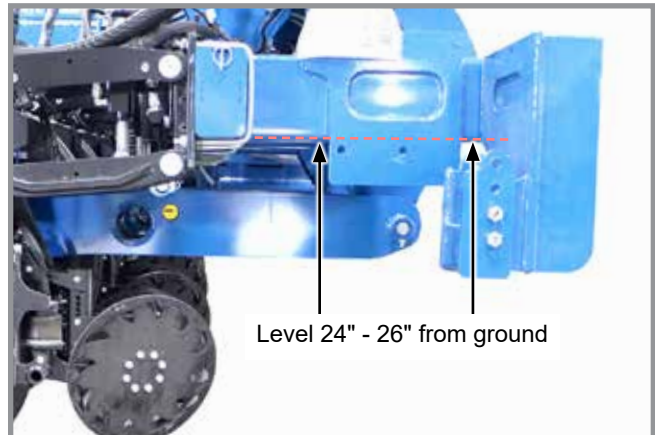
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LEVEL PLANTER

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.

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.



Level planter toolbars

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.

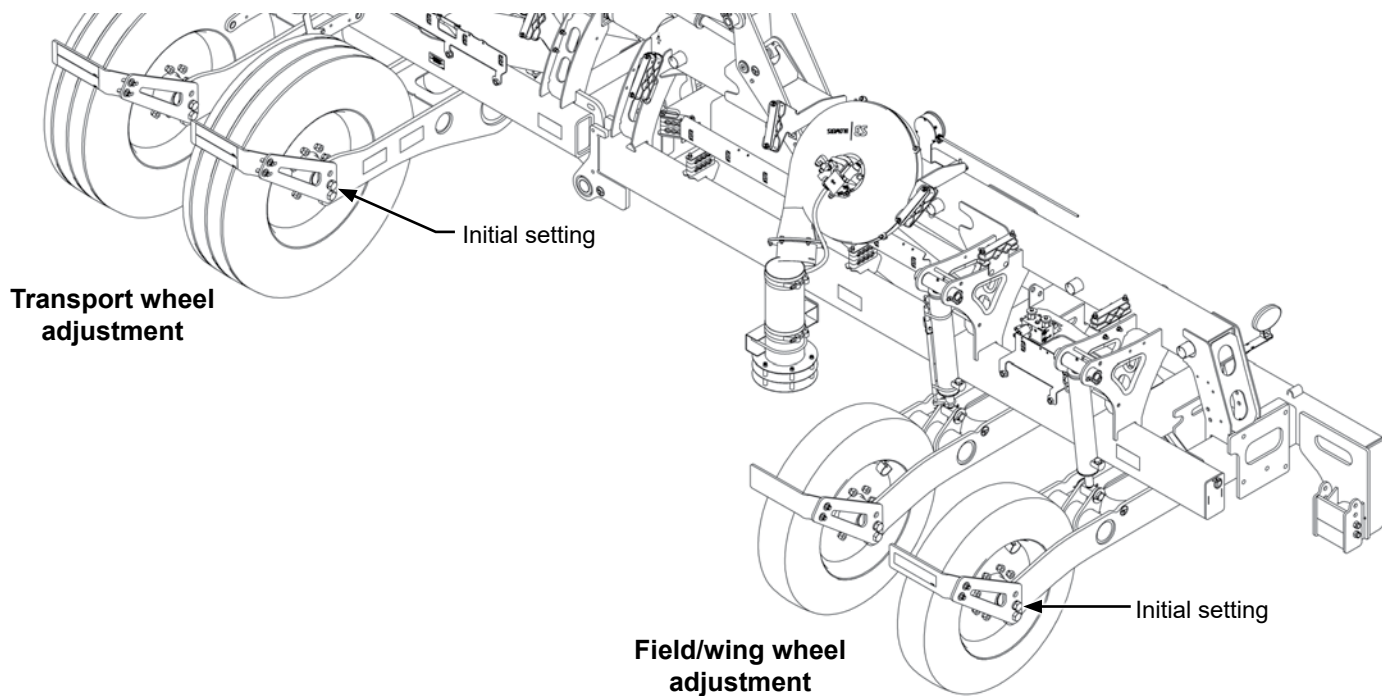
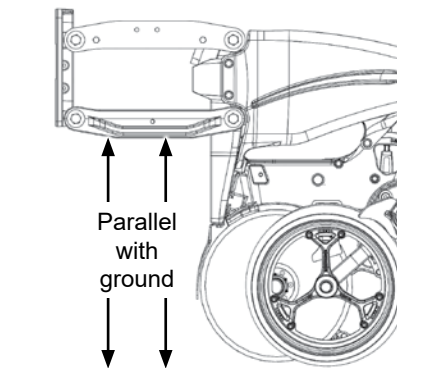
3. Align clevis to hitch holes at new location and install hex head cap screw and lock nut. Tighten lock nut until threads are fully engaged and hex head cap screw and lock nut are firmly against hitch bracket.

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.

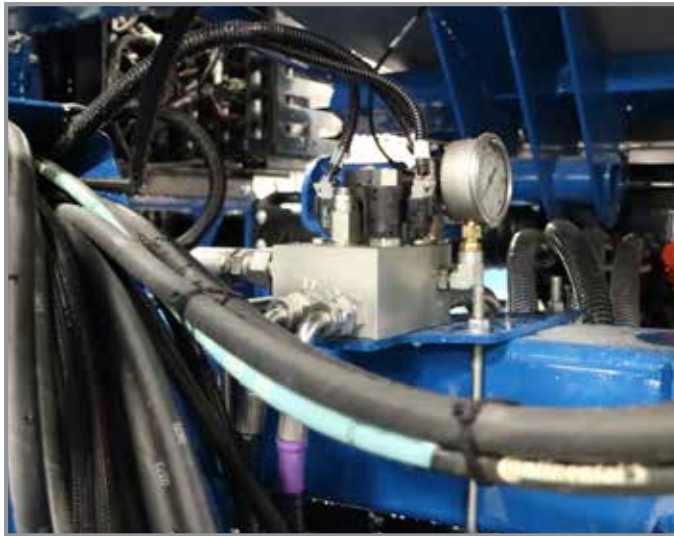
Field and actual planting conditions dictate which transport wheel setting to use so row unit parallel arms are parallel with ground. It may be necessary to lower or raise wheels to ensure level lateral toolbar operation if transport wheels are set in one of the lower sets of holes. Make a field check 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.

**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

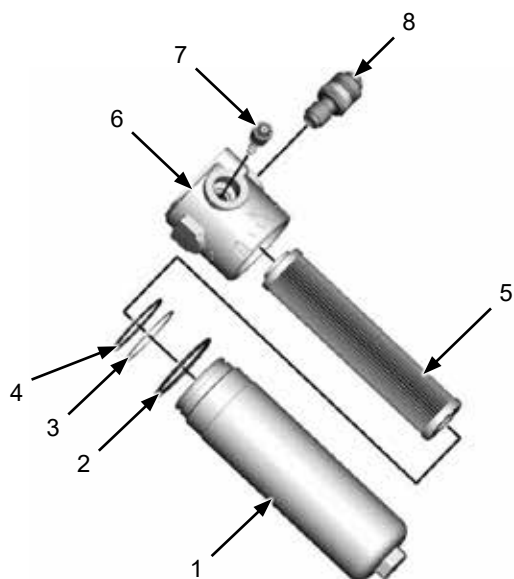
Replace filter cartridge annually, every 100 hours of operation, or when the clogging indicators point out the limit pressure drop created inside the filter.



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

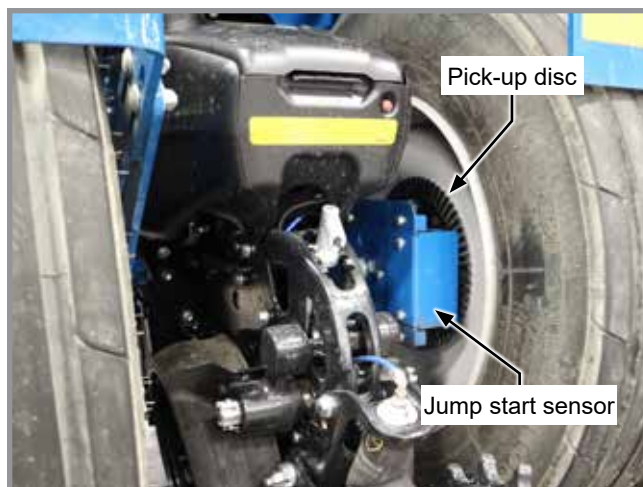
JUMP START SENSOR

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 $\frac{1}{8}$ " 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:

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.

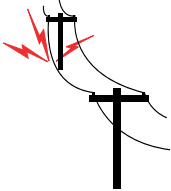


Jump Start Sensor and Pick-up Disc

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 and adverse planting conditions can affect seed spacing, depth, and trench closing. Always monitor planter operation and adjust settings to what the conditions will allow.

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 2-21](#).

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

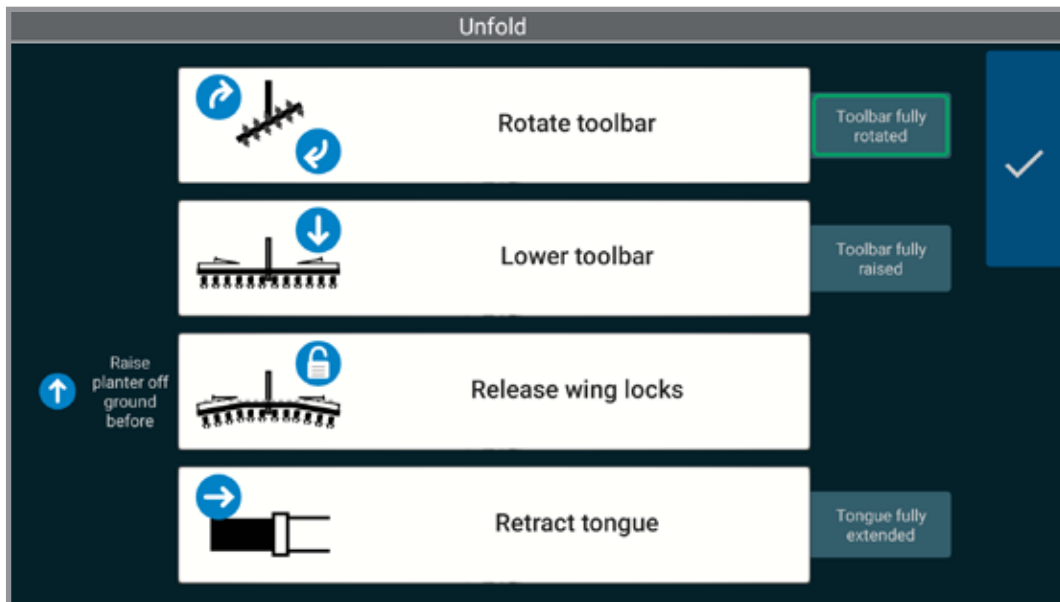
NOTICE

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

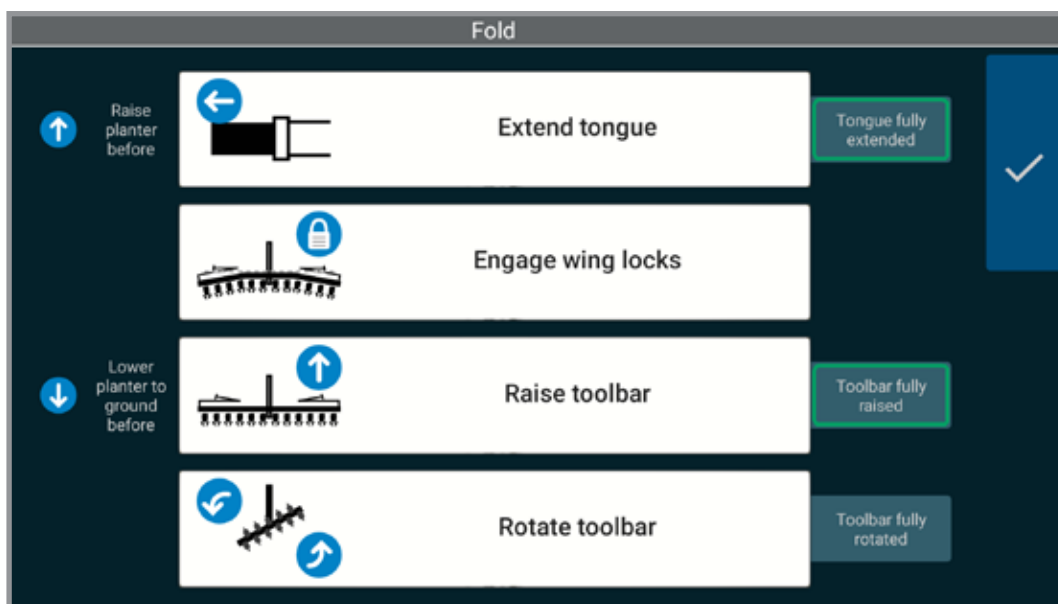
NOTICE

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

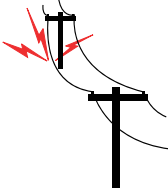
Improperly operating or working on this equipment could result in death or serious injury. Make sure there is no one in the area of the moving parts of the planter.



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.

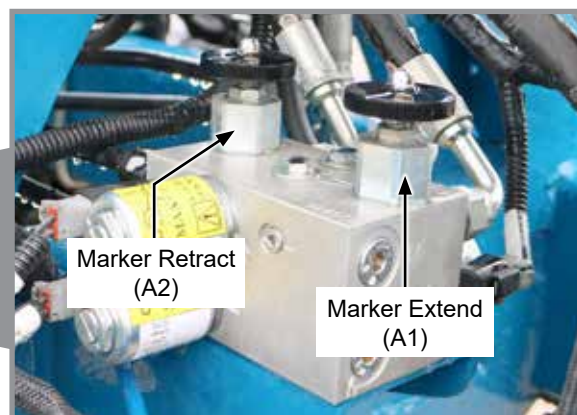
NOTE: See row marker adjustments on following pages. If the planter is equipped with Blue Drive refer to M0288 - Kinze Blue Vantage Operator's Manual for marker control

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.

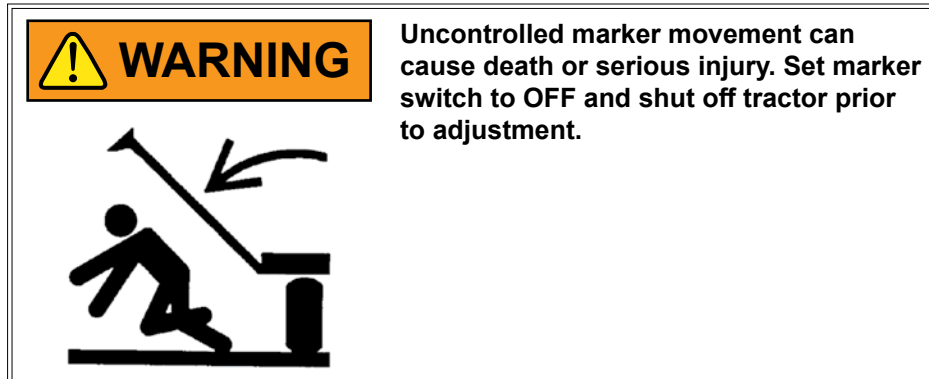
Row marker speed should be between 8-10 seconds. Loosen jam nut and turn control clockwise, or IN to slow travel speed. Turn counterclockwise, or OUT to increase travel speed. Tighten jam nut after adjustments are complete.

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



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.

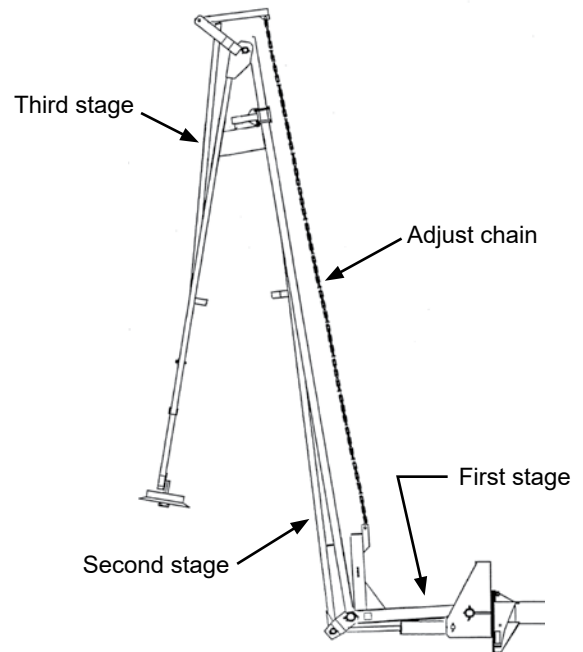
Cable adjustment is critical. Adjust with second stage of marker in vertical position and first stage in horizontal position.

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.

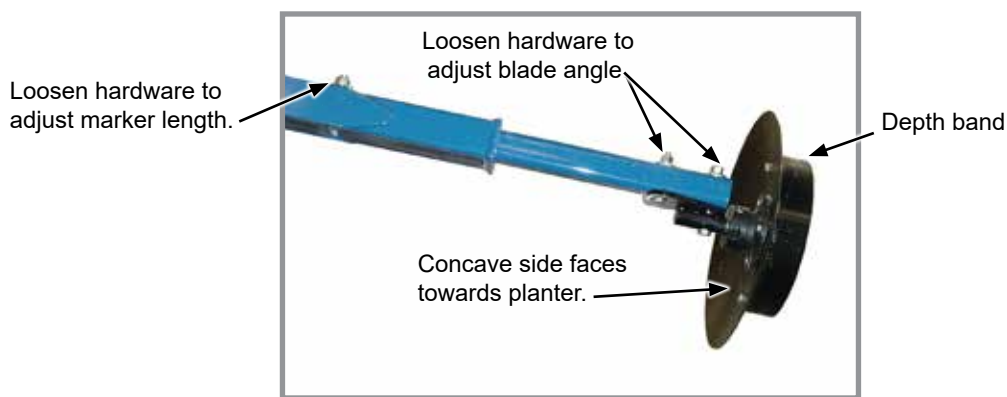


ROW MARKER LENGTH AND DISC BLADE ADJUSTMENT

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

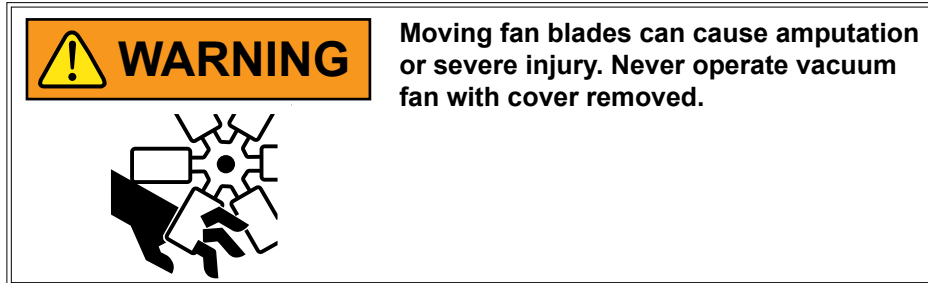
NOTICE

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.



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 2-23](#) in Lubrication and Maintenance section.

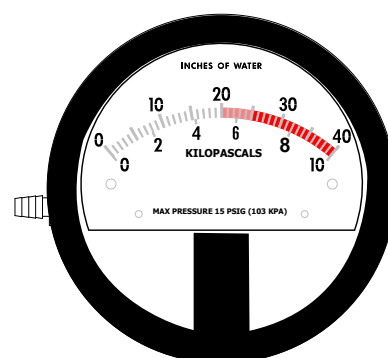
Valve block contains a check valve that prevents vacuum fan from operating in wrong direction if pressure is applied to return side of motor and allows fan to coast to a stop when tractor hydraulic control is returned to neutral position.

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 3-44.](#)**
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.

Recommended pressures:

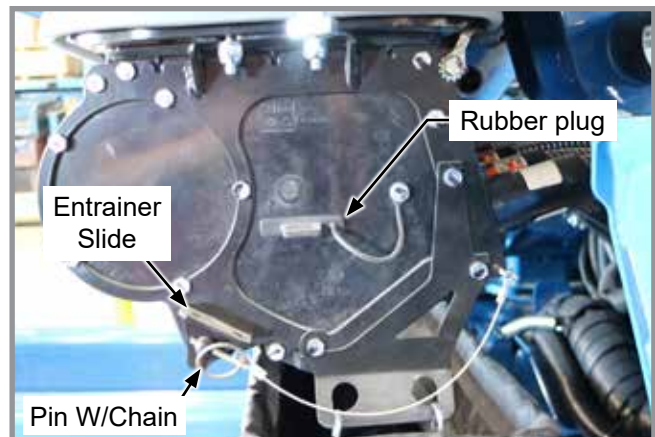
- Corn – 12 inches of water
- Soybeans – 10 inches of water
- Actual pressure needed is affected by seed size, shape, and coating.



Bulk Fill Lid

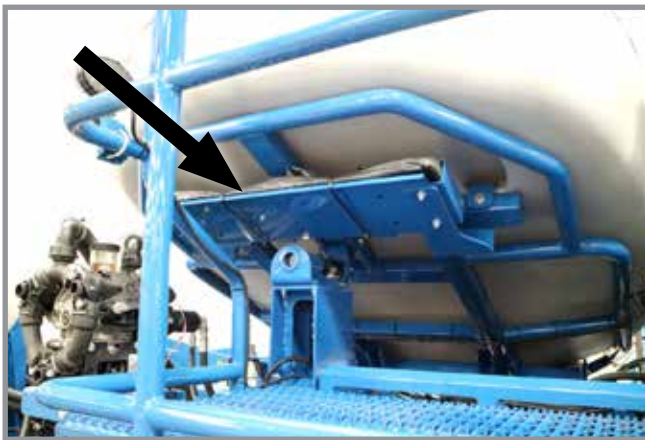
BULK FILL ENTRAINER ACCESS

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.

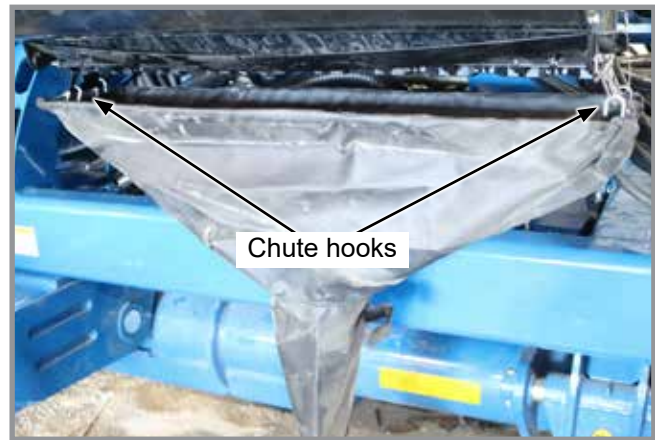


Bulk Fill Entrainer (End View)

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

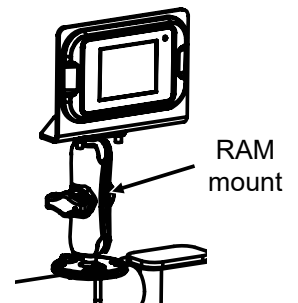
Remove and store display at end of planting season. Damage from sun and weather exposure may result.

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 display 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.



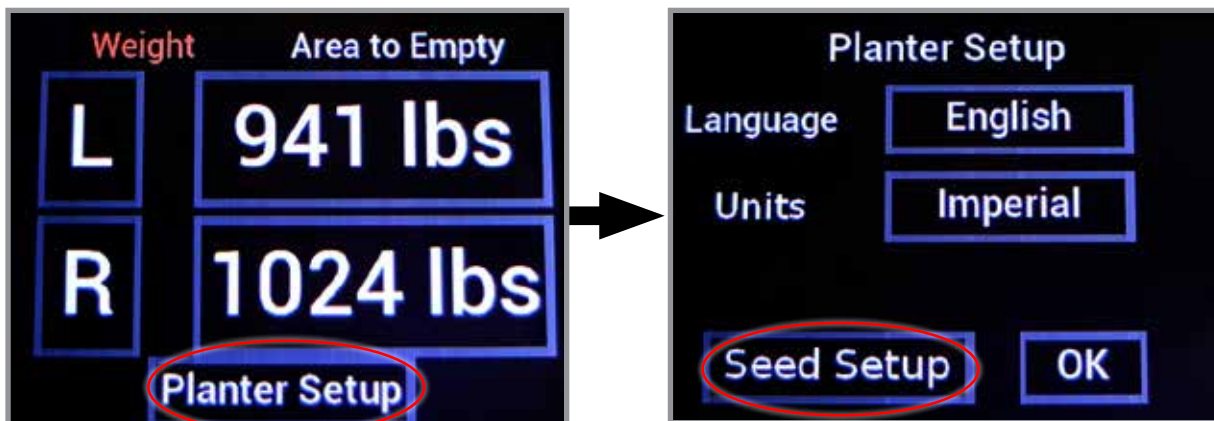
5. Tap "Back" to return to main screen.
6. Tap "Planter Setup" to enter Seed information. See follow page for more information.

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".

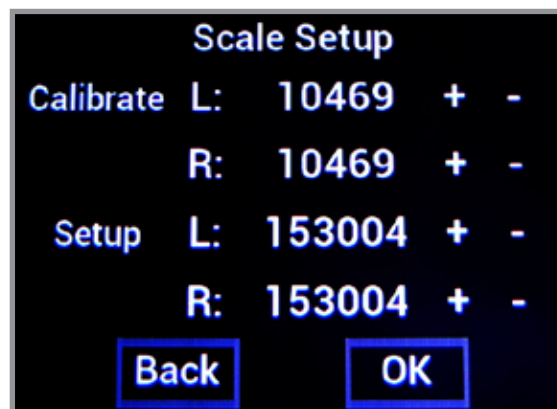


3. To change values in either "Seeds/Ac", "Seeds/lb", or "Alarm Level" tap in appropriate box.
4. At input screen, enter desired value. Tap "OK".



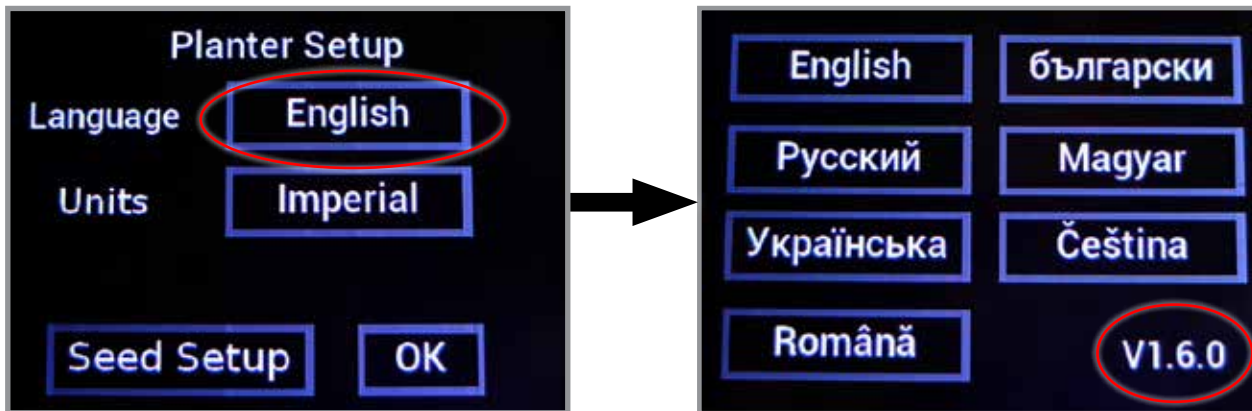
5. Once desired values have been entered tap "OK", to confirm changes tap "Accept" to return to main screen.

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



Software Version:

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

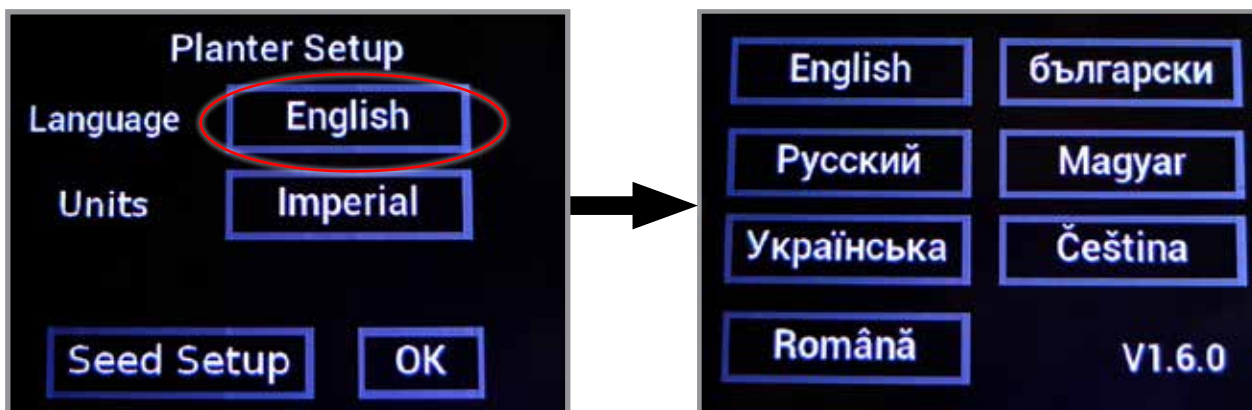


4. Tap "English" to return to planter setup screen.
3. Tap "OK" to return to main screen.

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.



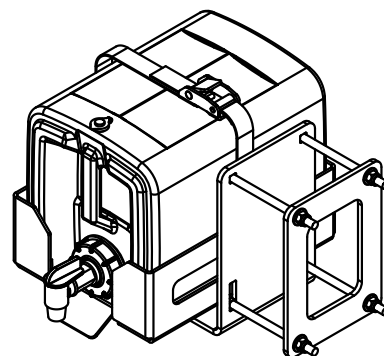
Kinze Blue Vantage

HANDWASHING STATION

NOTICE

Drain tank if environmental conditions are 32° Fahrenheit (0° Celsius) or below to prevent tank from cracking.

The water tank is to only be filled with clean water or preferably potable water (water meeting local standards for drinking). The tank holds 2.5 gallons of water. Be sure to check for regulations pertaining to this use. Tank should be filled with new water at the beginning of each planting season and drained at the end of each planting season.



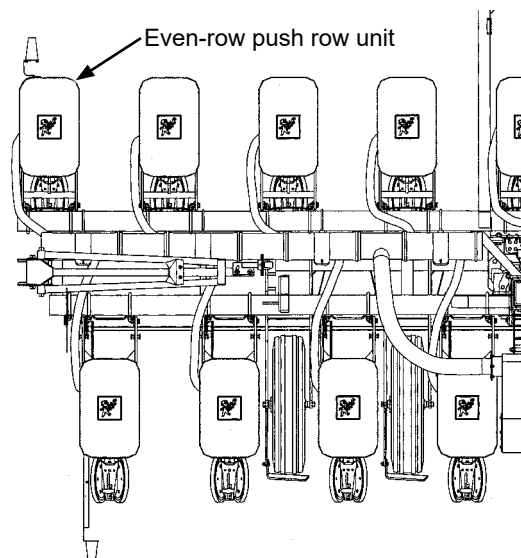
EVEN-ROW PUSH ROW UNIT

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 2-23](#) 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

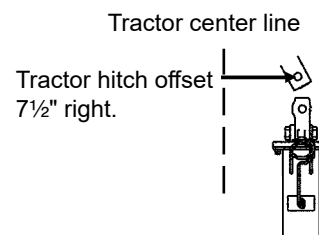
NOTE: install hitch onto 2-point hitch bar using R.H. hole. If 2-Point Hitch Option is used. A 7½" offset mount is not needed. See “Offset Hitch Adjustment” for additional information.



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.



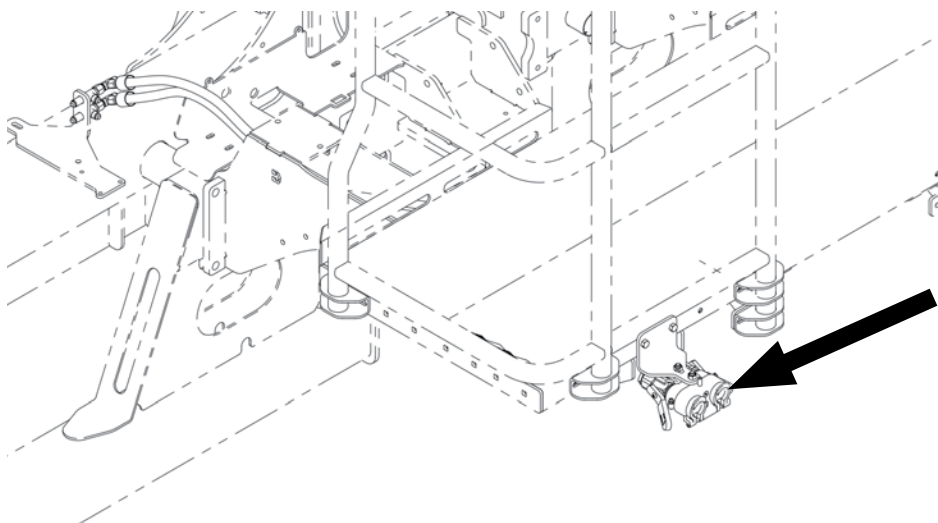
WARNING



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.

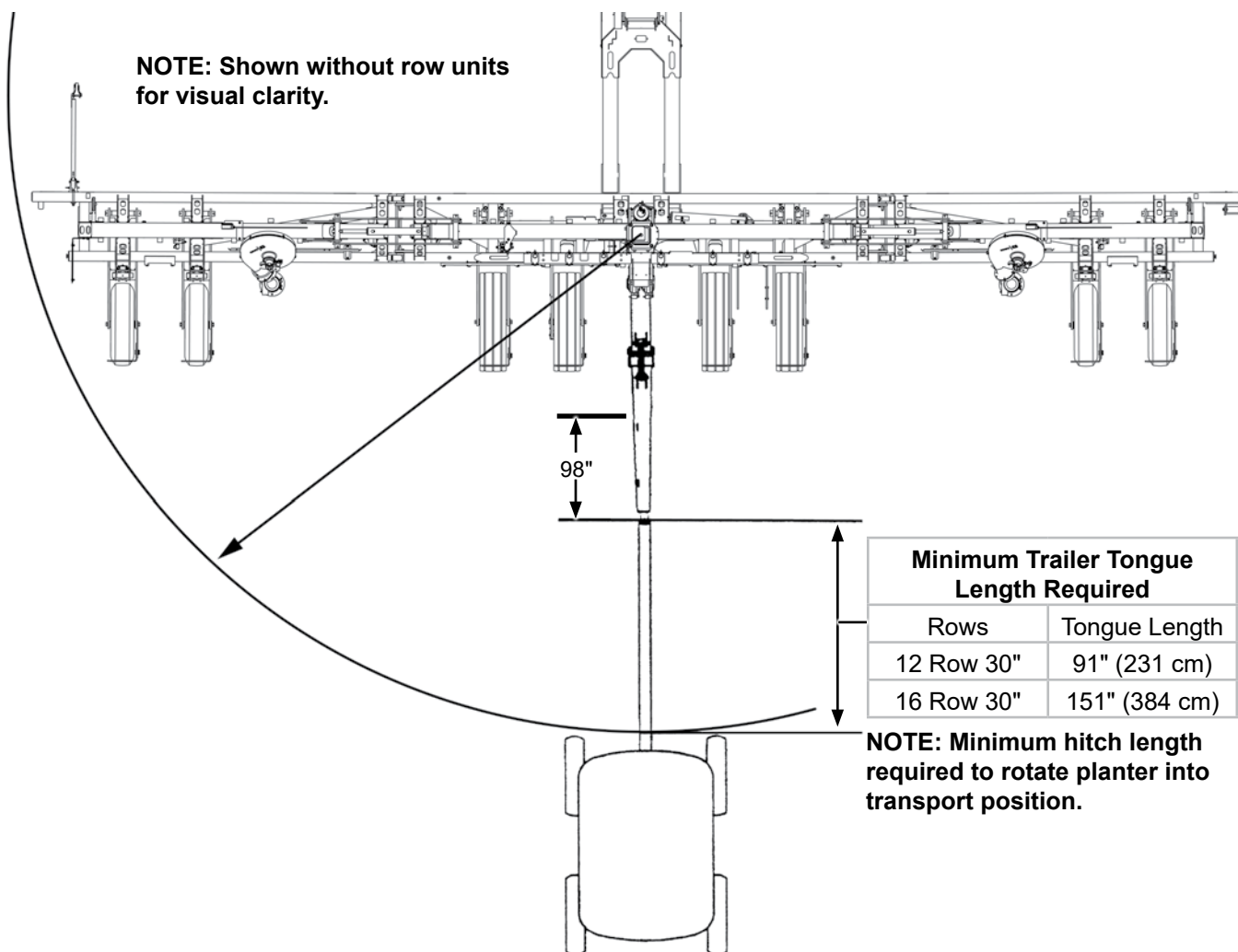


Trailer hitch

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.

NOTE: Shown without row units for visual clarity.



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.

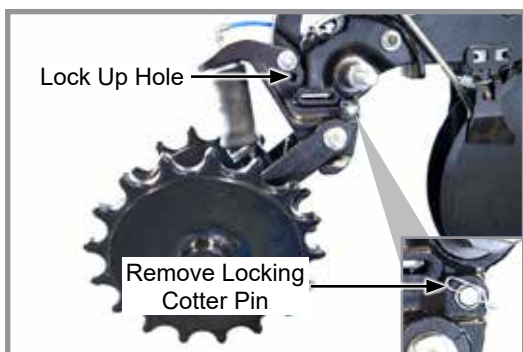
- ☐ Check planter for front to rear and lateral level operation. See "Level Planter".
- ☐ Check **all** row units to be certain they are running level. Row unit parallel arms should be approximately parallel to the ground when planting.
- ☐ Check row markers for proper operation and adjustment. See "Row 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 $\frac{1}{2}$ " x $3\frac{1}{2}$ " 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 handle



Planting Depth Adjustment

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

$\frac{1}{1000}$ 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 $\frac{1}{1000}$ of an acre by 1000. This gives total population.

EXAMPLE: 30" row spacing 17' 5" equals $\frac{1}{1000}$ acre.

26 seeds counted x 1000 = 26,000 seeds per acre

DETERMINING POUNDS PER ACRE

Seeds per acre $\div$ 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 $\div$ 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 separator valve, pressure switch, safety relief valve or other components 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 recommended 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.

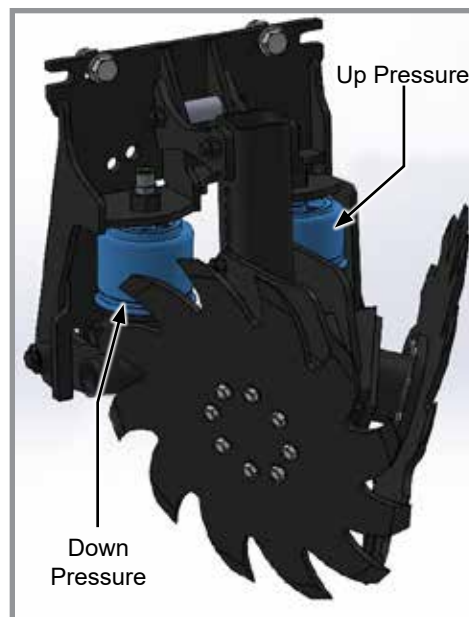
**WARNING**

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 been allowed to completely cool.



Yetter Coulter/Row Cleaner Combo



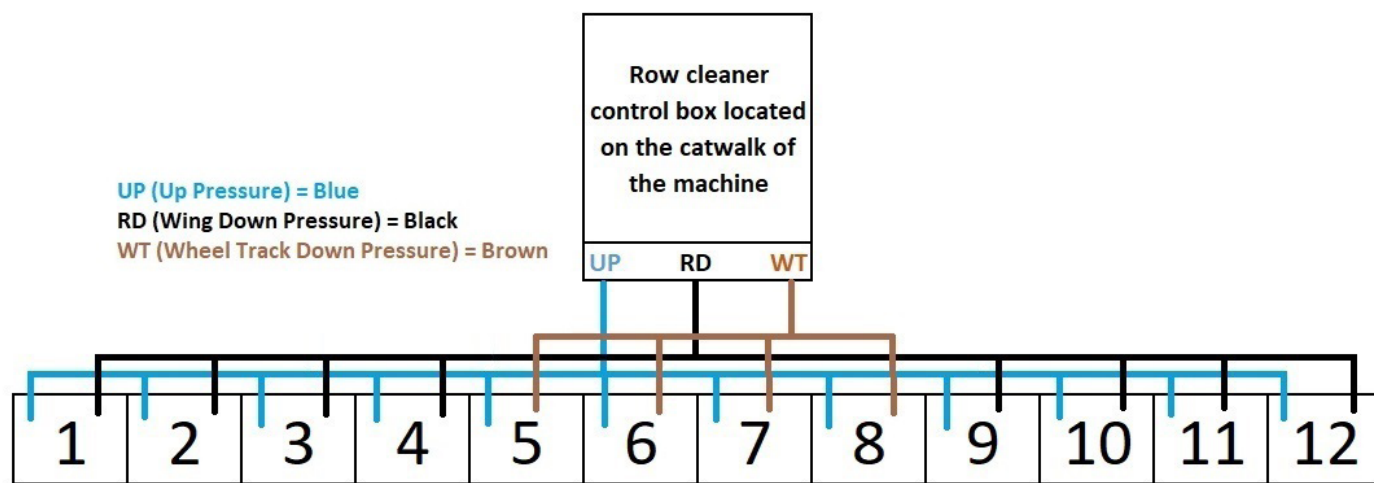
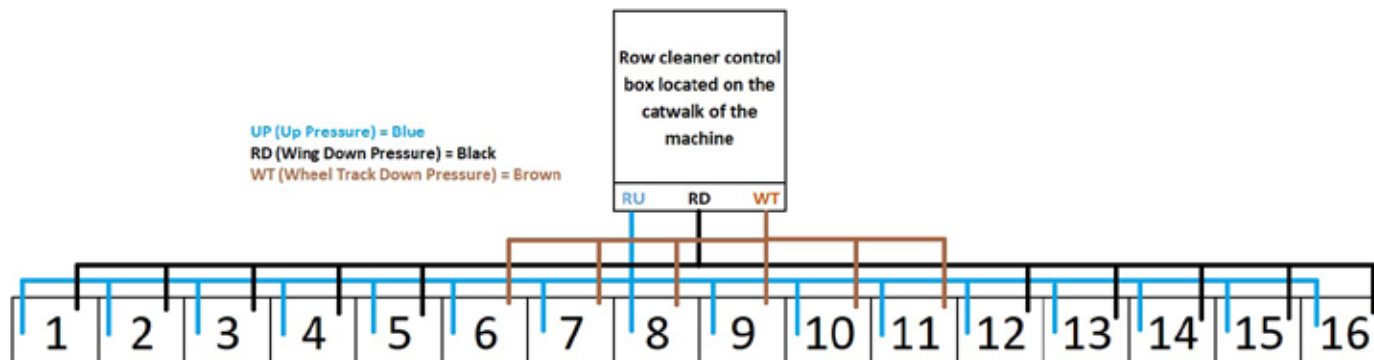
Yetter Row Cleaner

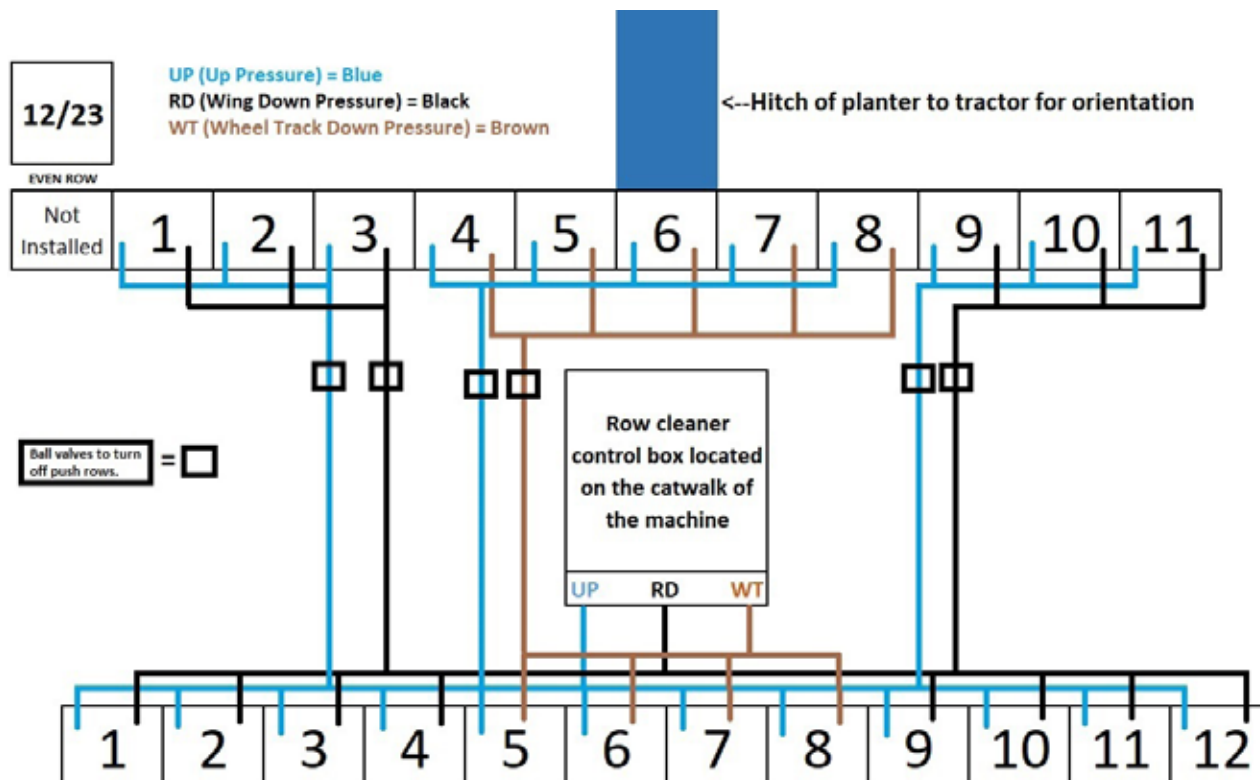
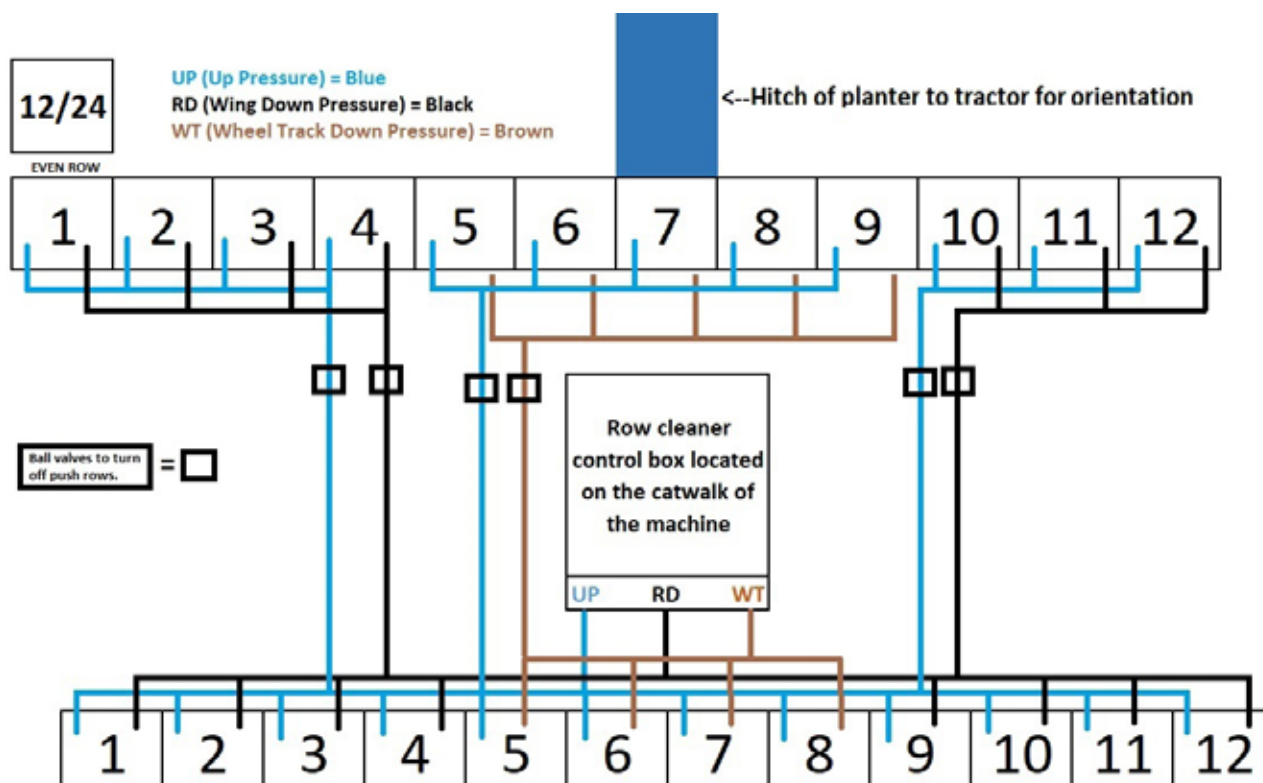
Model	Width	Row Size	Configuration
5670	30	12/23	Pull (4-4-4), Push (3-5-3)
5670	40	16/31	Pull (5-6-5), Push (4-7-4)
5670	30	12/24	Pull (4-4-4), Push (4-5-3)
5670	40	16/32	Pull (5-6-5), Push (5-7-4)

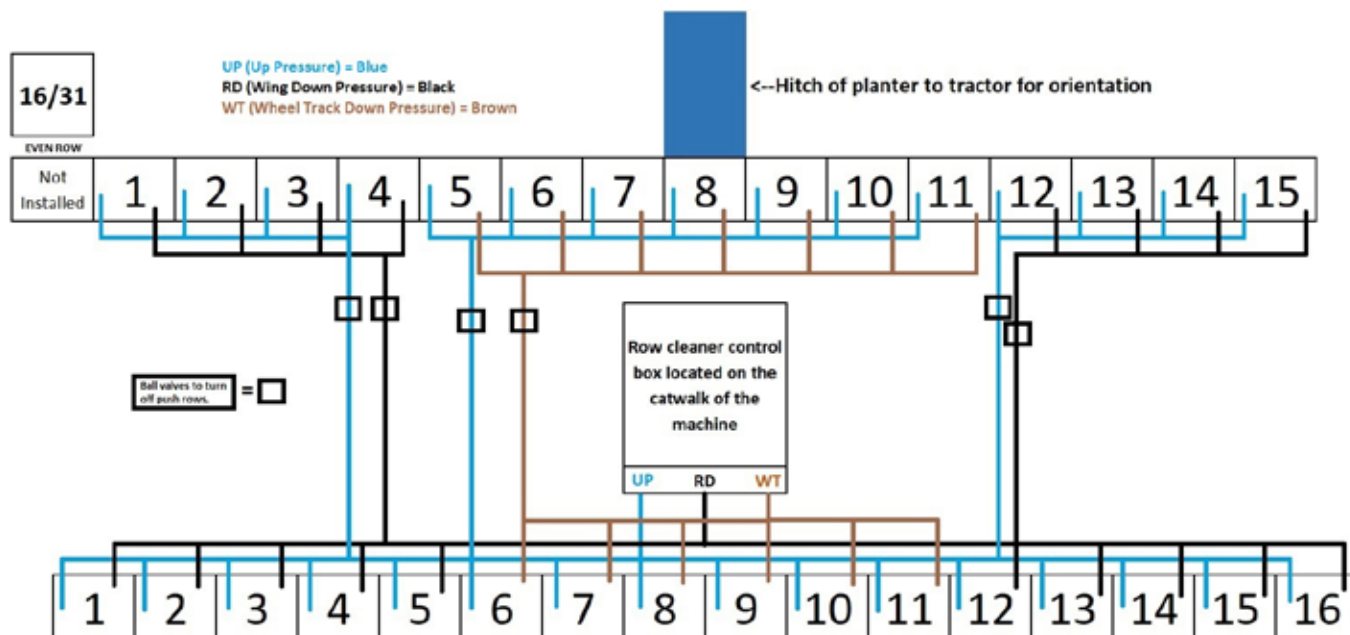
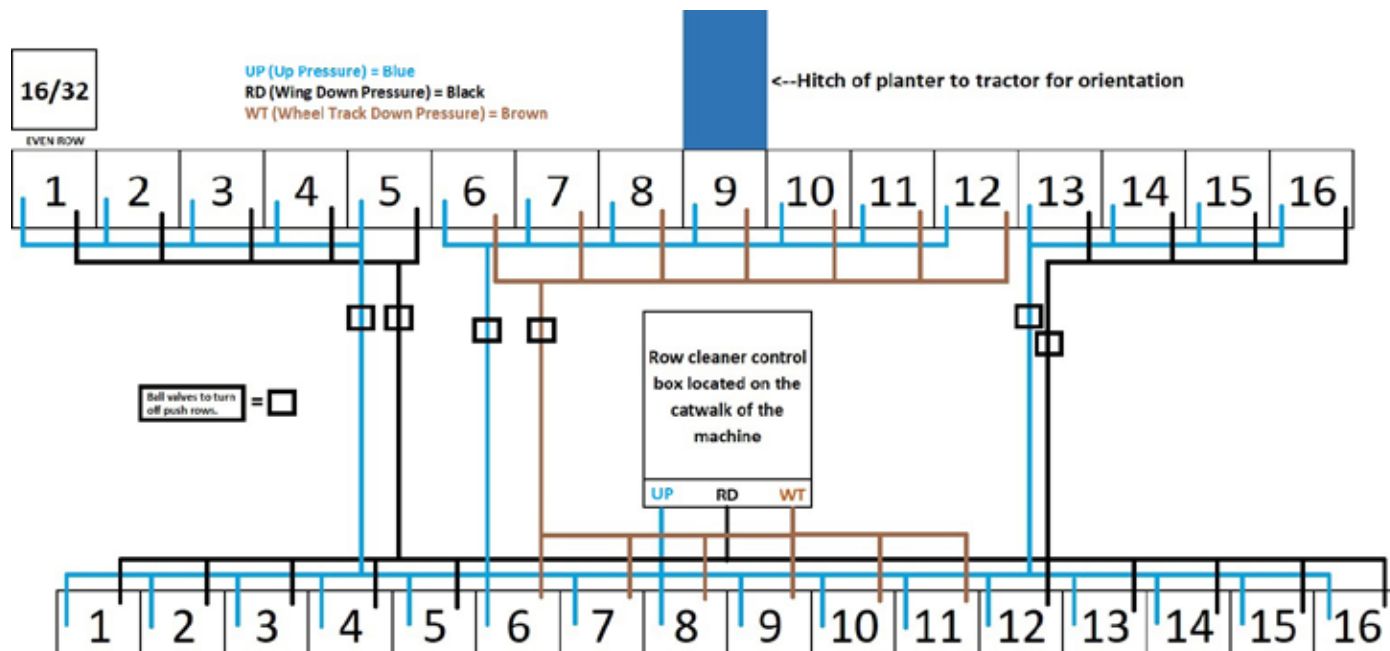
Wheel track layouts shown below: WT circuit is dictated by where the wing flex happens. Stub wing row units are all on wheel track circuit.

Kinze Air Tubing Chart			
Kinze Part Number	Size	Color	Function
GD17150-17 (250')	3/8"	Blue	- Yetter UP Pressure - Electric Compressor to Tank - Tank to Valve Supply (If Electric Compressor) - Valve to Valve Supply
GD17151-21 (250')	1/4"	Blue	- PDP Branch Lines - PCW Branch Lines
G10609001 (500')	3/8"	Black	- Yetter Wing Section Down Pressure - Fertilizer Branch Lines
G10658001 (500')	3/8"	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')	3/8"	Purple	PDP Main Trunk
G10829507 (500')	3/8"	White	PCW Center Section Main Trunk
G10829407 (500')	3/8"	Grey	PCW Wing Section Main Trunk
PDP = Pneumatic Down Pressure			
PCW = Pneumatic Closing Wheels (Air Closing Wheels)			

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12 Row 30"**16 Row 30"**

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 managers 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

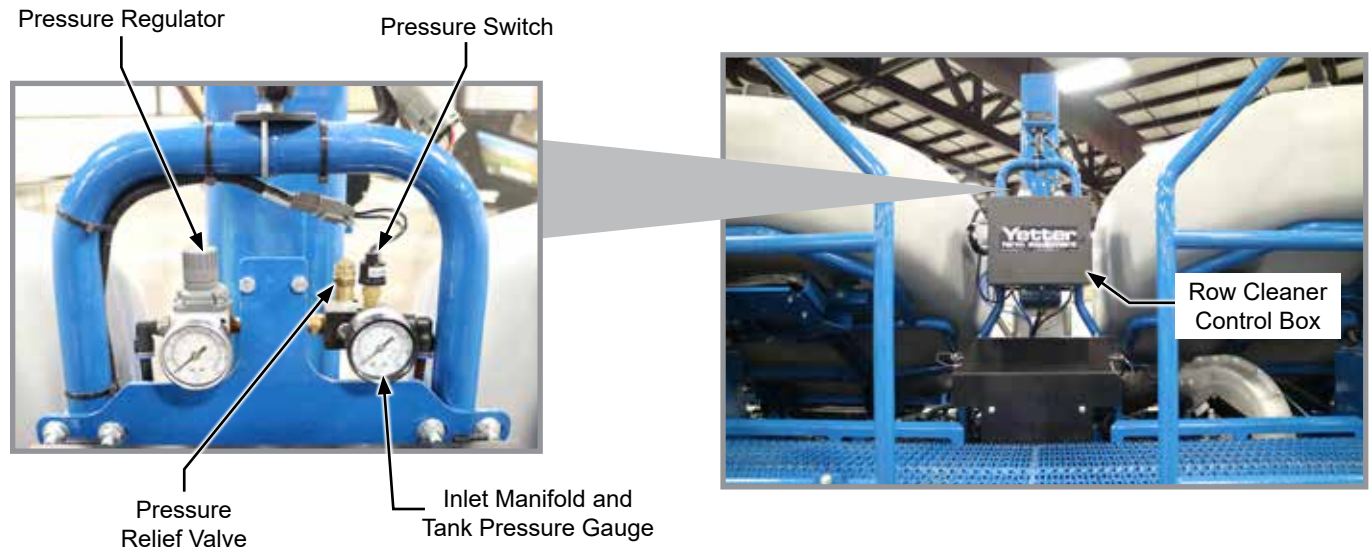
Tank Pressure: The gauge at the tank will read between 140-145 psi when full. The tank pressure reading on the Blue Vantage display will be around 100-120 psi, depending on what the pressure regulator on the water separator assembly is set at. The system has a safety relief valve that will automatically 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 2-40](#) 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.

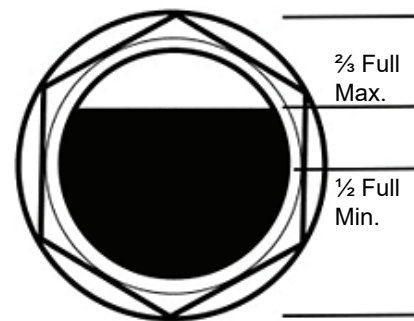
Pressure Relief Valve - Will discharge air at 175 psi.

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



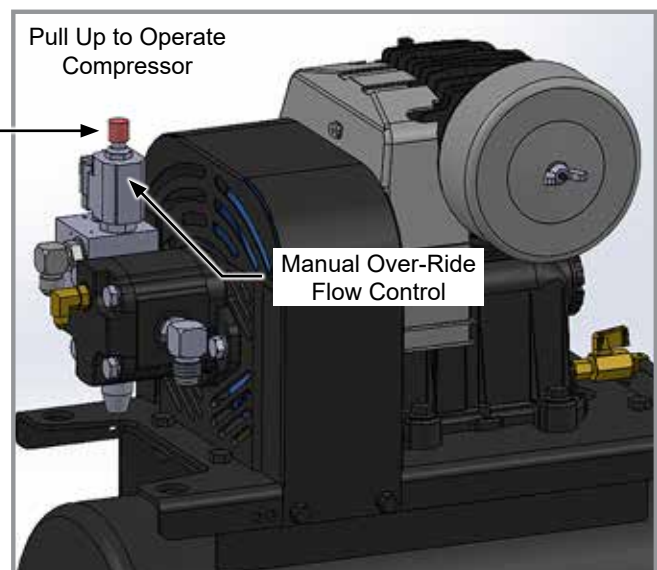
Air Compressor

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

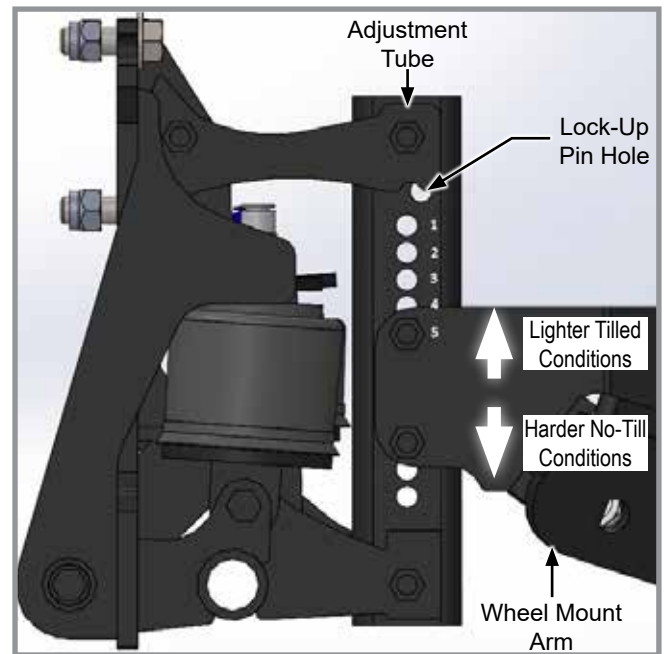
The default position for the wheel mount arm will be set in the fifth hole from the top.

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.

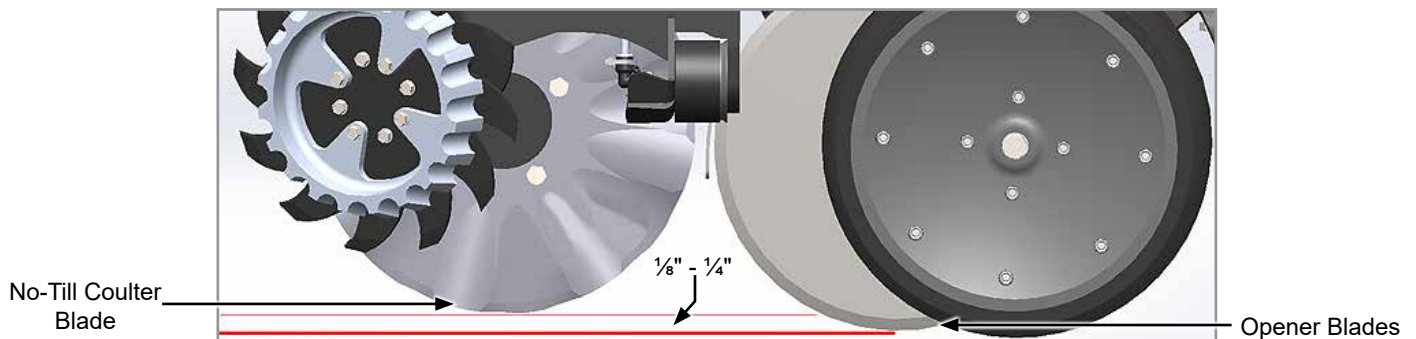


Coulter Combo Settings

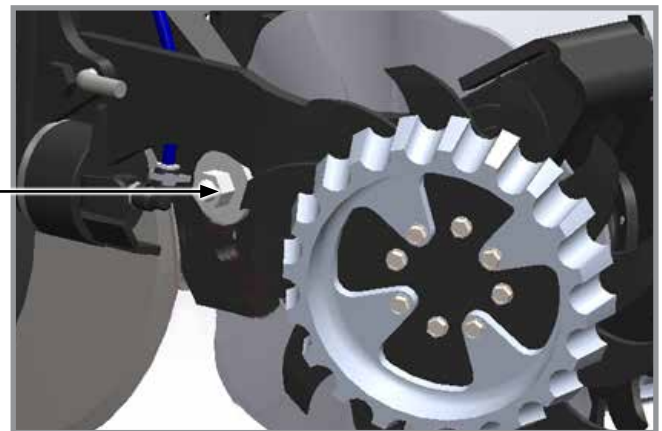
Maintain a gap between the bottom of no-till coulter and bottom of opener blades.

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

Check dimension while planter is down on a level concrete floor, $\frac{1}{8}$ " - $\frac{1}{4}$ " 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.

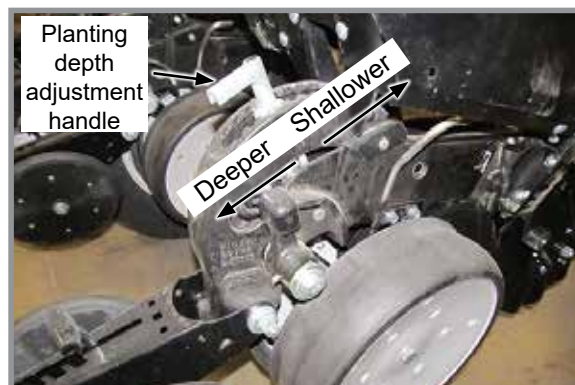


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PLANTING DEPTH

Planting depth is maintained by adjustable row unit gauge wheels. Depth adjustment range is approximately $\frac{1}{2}$ " to $3\frac{1}{2}$ ".

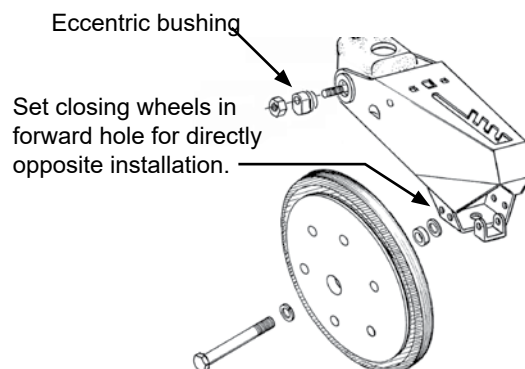
1. Raise planter to remove weight from wheels.
2. Push down on depth adjustment handle and reposition it forward to decrease or rearward to increase planting depth. Initially adjust all units to the same setting.
3. Lower planter and check operation and planting depth of all row units. Readjust individual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



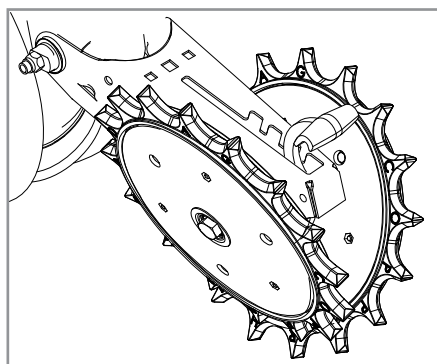
CLOSING WHEEL GENERAL ADJUSTMENTS

Eccentric bushings in the wheel arm stop allow for lateral adjustment of the "V" closing wheel assembly. Use a $\frac{3}{4}$ " wrench to loosen hardware attaching closing wheel arm to wheel arm stop. Use another $\frac{3}{4}$ " wrench to turn eccentric bushings until **closing wheels are aligned with seed trench**. Tighten hardware.

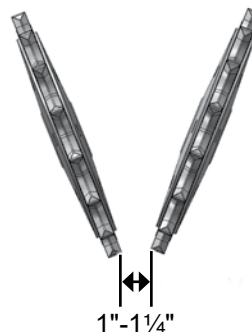
Closing wheels can be installed "offset" (to improve residue flow) or "directly" opposite. Use forward installation holes if set "directly" opposite.



Spiked Closing Wheel



Spiked Closing Wheel



Spiked closing wheels crumble the sidewall, allowing roots to penetrate 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" - 1 $\frac{1}{4}$ " (2.5 - 3.1 cm) apart at the closest point.

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AIR ADJUST CLOSING WHEEL ARM (PCW)

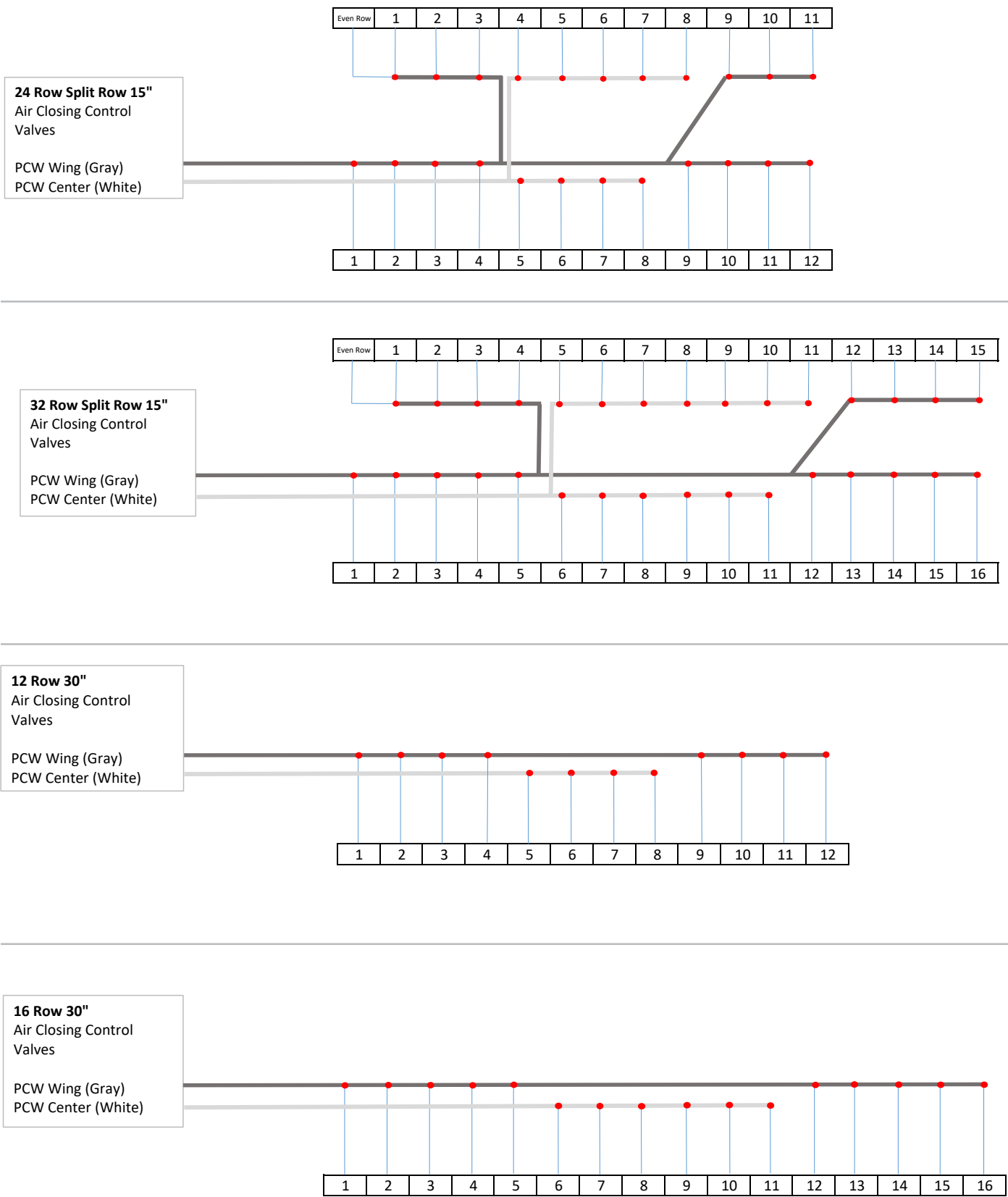
Adjust closing wheels from the cab for optimum seed-to-soil contact using Blue Vantage-controlled, air-adjustable closing wheels. Refer to your Blue Vantage Operator Manual for more information.

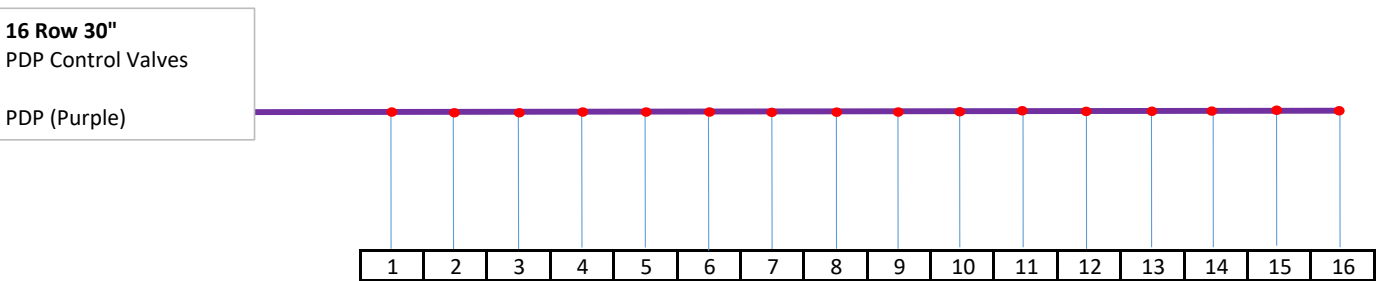
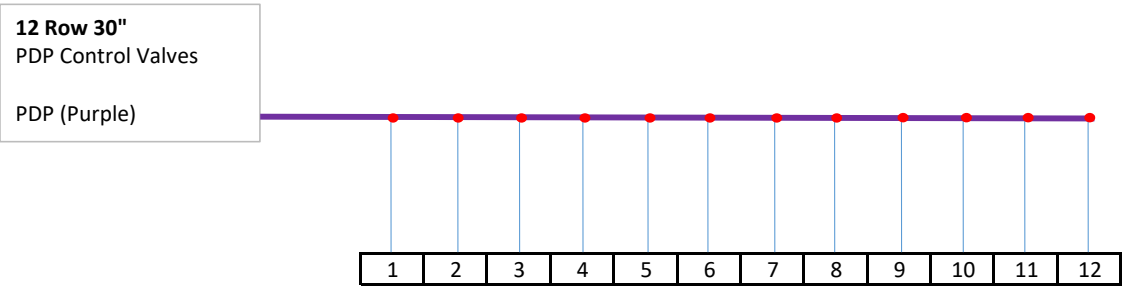
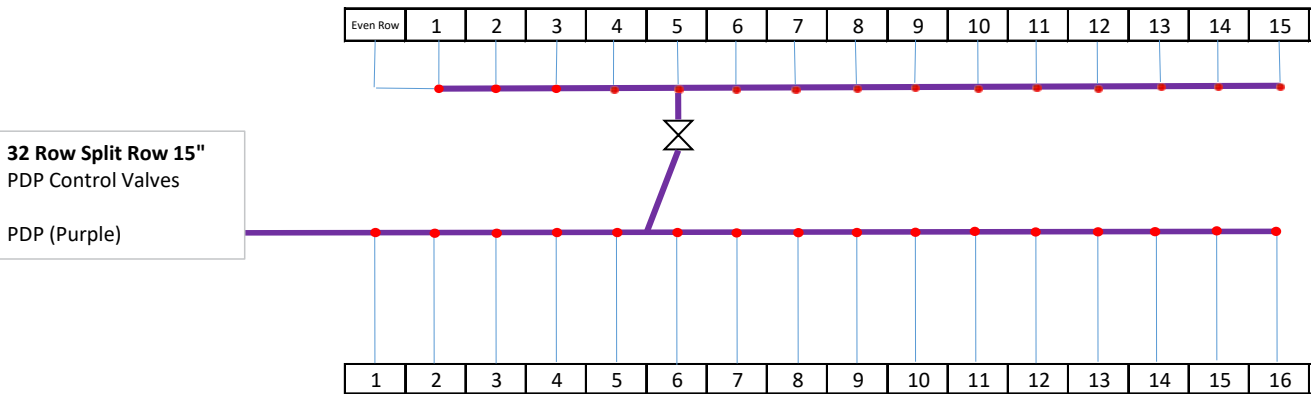
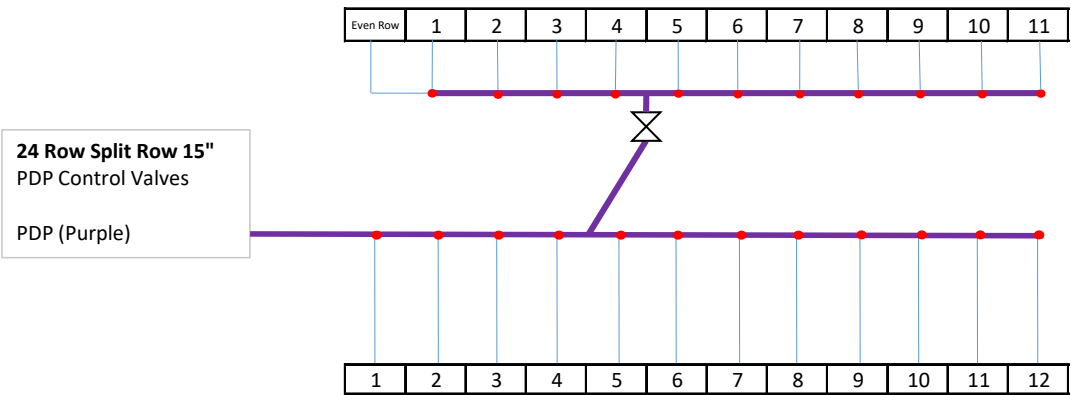
NOTICE

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')	3/8"	Blue	• Yetter UP Pressure • Electric Compressor to Tank • Tank to Valve Supply (If Electric Compressor) • Valve to Valve Supply
GD17151-21 (250')	1/4"	Blue	• PDP Branch Lines • PCW Branch Lines
G10609001 (500')	3/8"	Black	• Yetter Wing Section Down Pressure • Fertilizer Branch Lines
G10658001 (500')	3/8"	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')	3/8"	Purple	• PDP Main Trunk
G10829507 (500')	3/8"	White	• PCW Center Section Main Trunk
G10829407 (500')	3/8"	Grey	• PCW Wing Section Main Trunk
PDP = Pneumatic Down Pressure			
PCW = Pneumatic Closing Wheels (Air Closing Wheels)			

PDP AND AIR CLOSING WHEEL SCHEMATICS





ROW UNIT MOUNTED NO TILL COULTER

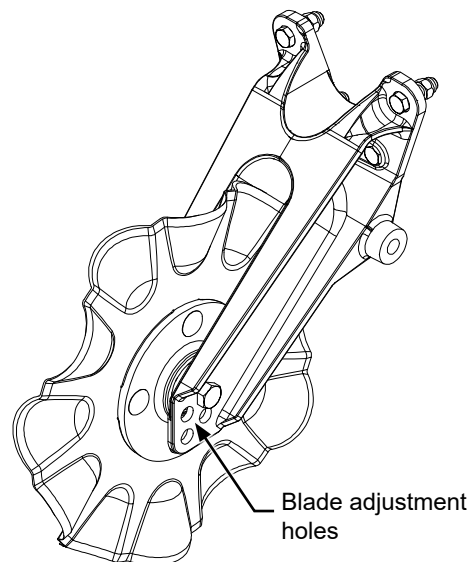
Row unit mounted no till coulters may be used on row units.

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 holes 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.

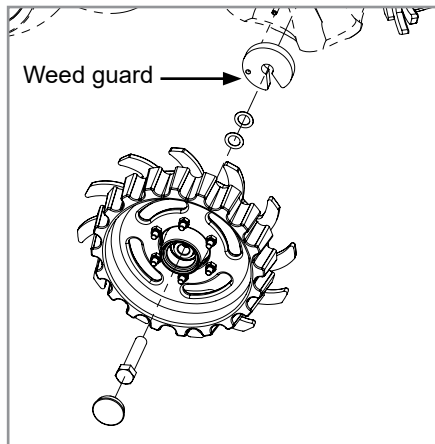
NOTE: Torque ⅝" spindle hardware to 120 ft-lb (162.7 N-m).



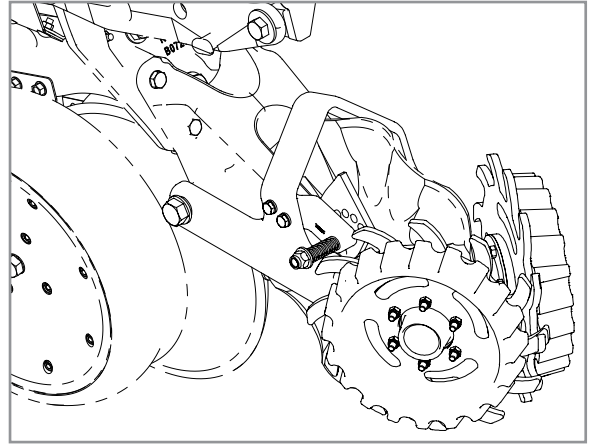
Row Unit Mounted No Till Coulter

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.



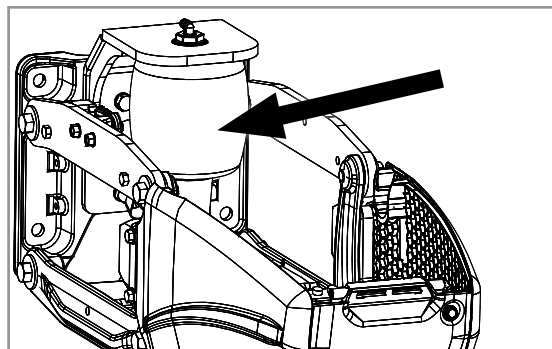
Residue wheels attach to row unit mounted coulter with two cap screws and sleeves allowing unit to free-float. A 2-position spindle bolt mounting positions wheels interlocked or staggered. Depth adjustment is made with a spring-loaded cam and pin with 8 positions in $\frac{7}{16}$ " (6 mm) increments. 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.

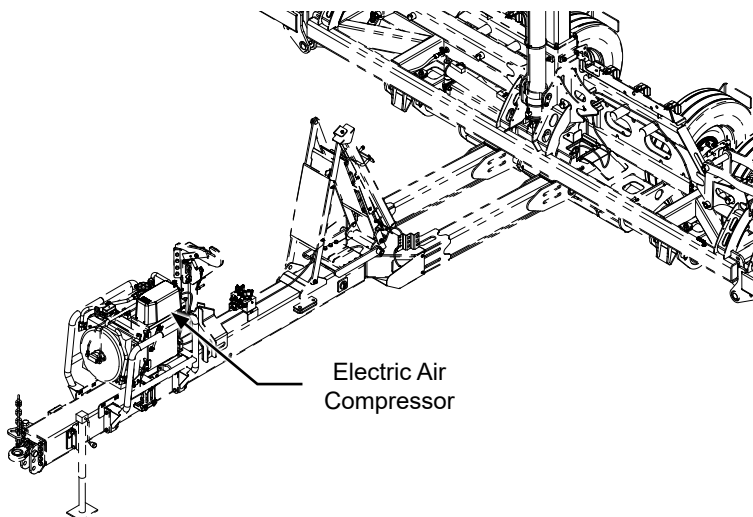
Row unit down pressure can be adjusted on-the-go as field conditions change. Refer to M0288 - Kinze Blue Vantage Operator's Manual for pressure adjustment with Blue Vantage.



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.

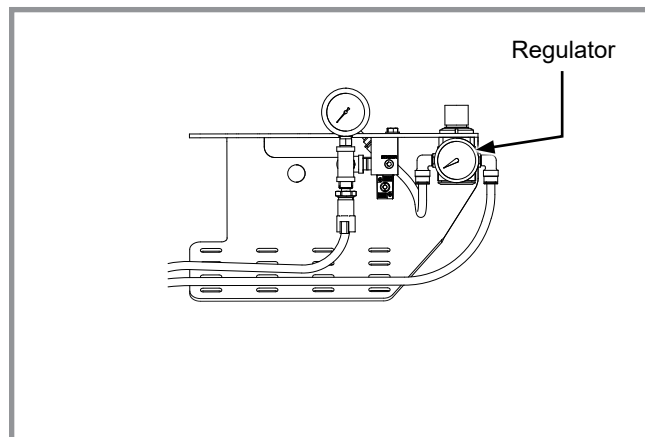
NOTE: Air tank can be prefilled using the valve stem. DO NOT prefill above 120 psi. This is not applicable if Yetter is installed.



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

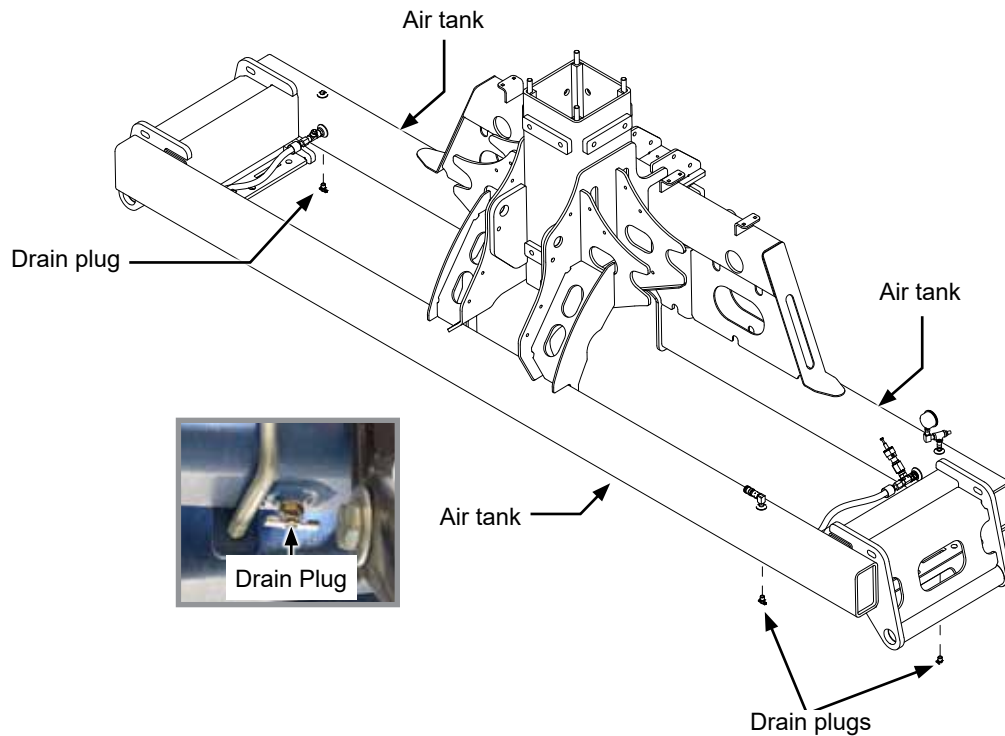
Kinze Air Tubing Chart			
Kinze Part Number	Size	Color	Function
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G10609001 (500')	3/8"	Black	• Yetter Wing Section Down Pressure • Fertilizer Branch Lines
G10658001 (500')	3/8"	Brown	• Yetter Wheel Track Section Down Pressure • Yetter Tank to Yetter Control Box • Supply to Regulator for PDP or PCW (If Equipped w/Yetter)
G10829307 (500')	3/8"	Purple	• PDP Main Trunk
G10829507 (500')	3/8"	White	• PCW Center Section Main Trunk
G10829407 (500')	3/8"	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 moisture 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.**

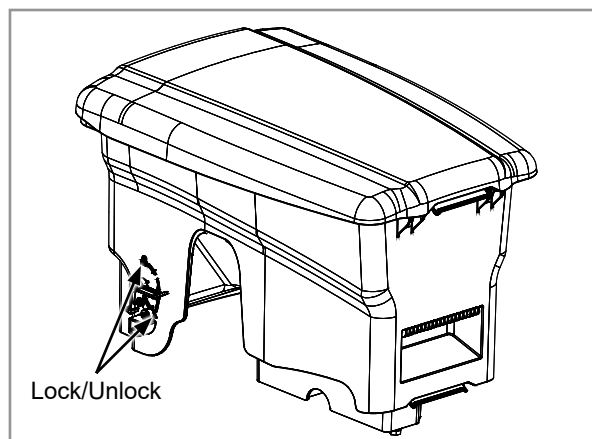
Periodically empty hoppers completely to remove any foreign objects and to ensure proper seed meter operation.

To remove hopper:

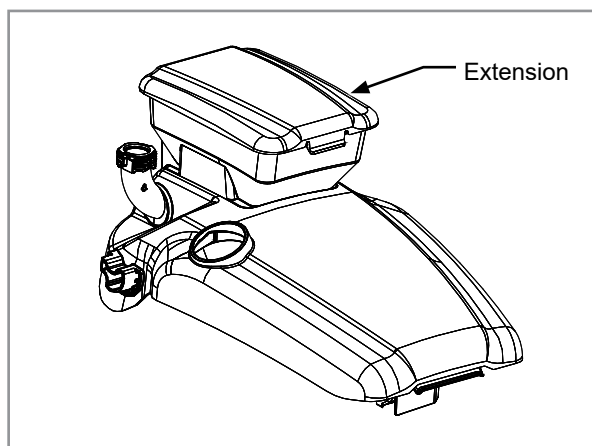
1. Disconnect vacuum meter and drive connections.
2. Unlock each side of hopper.
3. Unlock rear of hopper.
4. Lift vertically off hopper support.

To install hopper:

1. Align hopper onto hopper support.
2. Lock rear of hopper.
3. Lock each side of hopper.



Seed Hopper



Mini Hopper Extension

MANUAL RUN BUTTON (BLUE DRIVE)

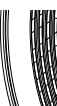


Use the manual run button to turn on the seed meter and all optional equipment on each row unit to check functionality.

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* Talc* 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 3-44](#).

**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 3-45](#) 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](#).

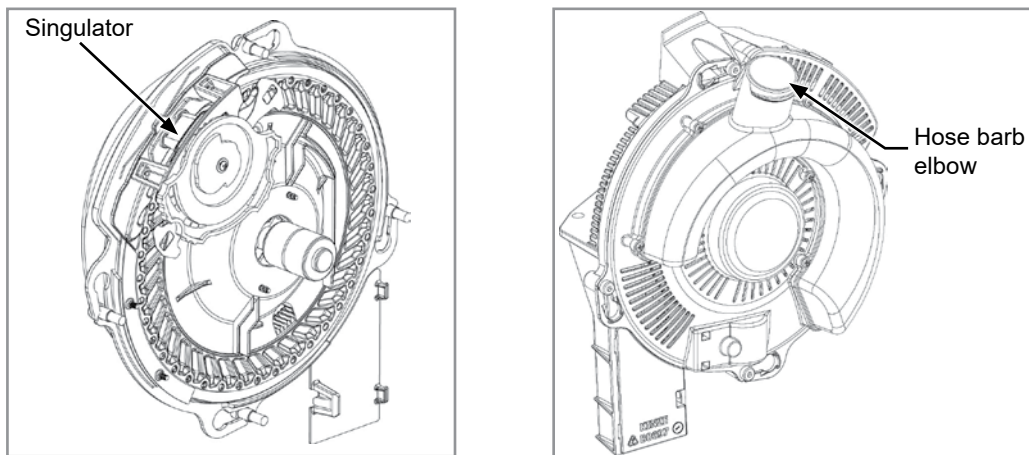
NOTE: See [“Field Check Seed Population” on page 2-38](#) for more information. Always field check seed population to ensure planting rates are correct.

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.

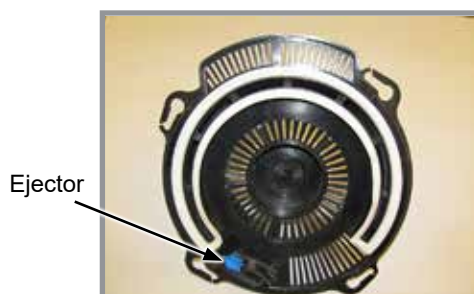
NOTE: Excessive seed treatment, humidity, and light-weight seed can affect meter performance. Use ½ cup of talc with each standard hopper fill of seed and mix thoroughly to coat all seeds and adjust rates as needed. Use of talc aids seed flow into meter, singulation, and disc seed drop.



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 [“True Rate Meter Maintenance” on page 5-13](#) and [“Preparation for Storage” on page 5-40](#) 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

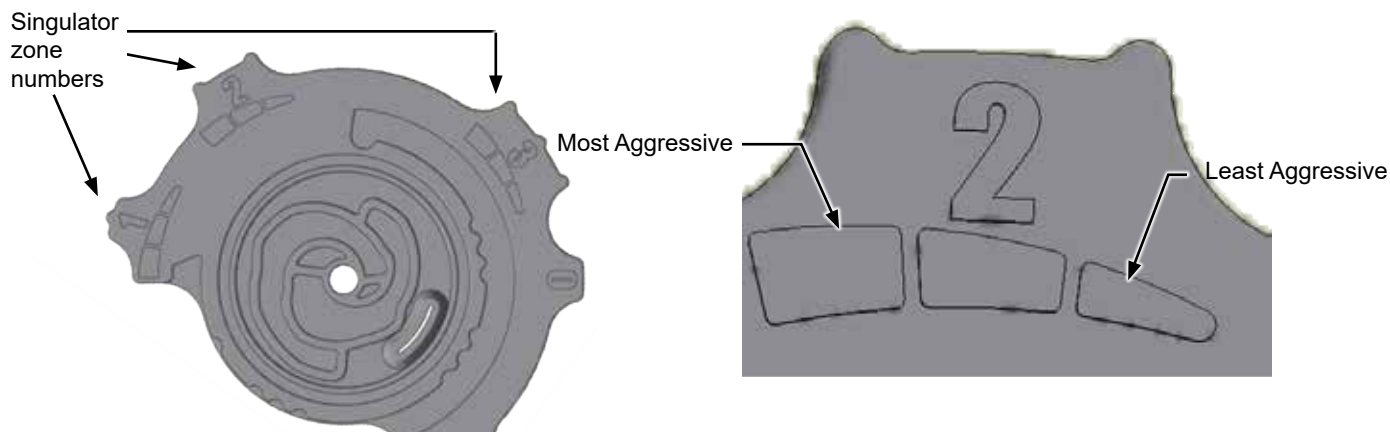
Wheel-type ejectors expel seed remnants from seed disc orifices. These ejectors are disc specific and colored coded to match disc.

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

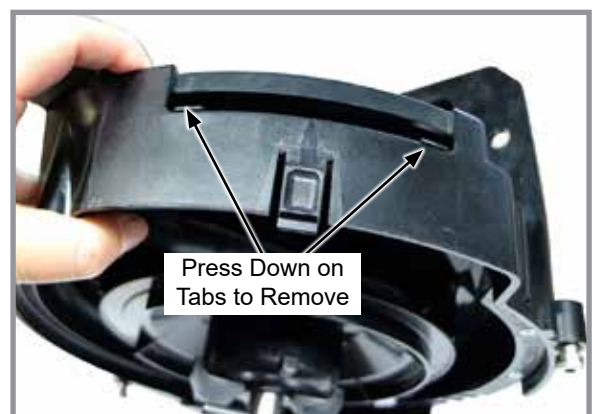
2. Adjust singulator wheel to initial setting. Seed size, seed shape, seed treatments, travel speed and planting rate all affect meter performance.
3. With vacuum fan running, use priming sequence on Blue Vantage display to load seed into seed disc cells.
4. Adjust vacuum level to initial setting according 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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TRUE SPEED METER SETTINGS

Crop - Seed Disc Part No. - ‡Seed Disc Kit	Ejector Wheel (color)	Baffle Setting	Seed Size Range	Population	Singulator Installed	Vacuum Setting Inches of Water	Lubricant
 Corn , 32 Cell (Light Blue) - P/N: G10347701 - Kit: 10892X	1 row 6 punches (Blue)	1	1140-2280 seeds/lb	15-40K sds/acre	Yes	*12 to 20 (See “Row Unit Operation” on page 3-1)	Graphite† Talc† Bayer Fluency§ (If mandated)
 Soybean , 46 Cell (Black) - P/N: G10369101 - Kit: 10894X	1 row 8 punches (Black)	3	2200-4000 seeds/lb	All 15" and 20" Rows up to 130k sds/acre	No	*15 to 25 (See “Row Unit Operation” on page 3-1)	Graphite† Talc† Bayer Fluency§ (If mandated)
 Soybean , 92 Cell (Black) - P/N: G10369001 - Kit: 10893X	2 rows 8 punches (Black)	3-5	2200-4000 seeds/lb	All 30" Rows 20" above 130k sds/ acre	No	*15 to 25 (See “Row Unit Operation” on page 3-1)	Graphite† Talc† Bayer Fluency§ (If mandated)
 Cotton , 46 Cell (Green) - P/N: G10407701 - Kit: 10992X	1 row 8 punches (Green)	1	4000-6500 seeds/lb	20-75k	Yes	8-18 (See “Row Unit Operation” on page 3-1)	Graphite† Talc† Bayer Fluency§ (If mandated)
 Sugar Beets/Milo , 46 Cell (Orange) - P/N: GB1303 - Kit: 10860X	1 row 8 punches (Orange)	1 Use Part Number G10407001 (Orange Door)	Milo: 10k-18k seeds/lb	20-100k	Yes	Milo: 12	Graphite† Talc† Bayer Fluency§ (If mandated)
			Sugar beets: Pelletized			Sugar beets: 15	
 Sunflower , 23 Cell (Yellow) - P/N: G10761701 - Kit: 11124X	1 row 8 punches (Yellow)	1	Oil # 2, 3, 4	12K-35K	Yes	#2: 20-30	Graphite† Talc† Bayer Fluency§ (If mandated)
						#3: 15-25	
						#4: 12-18	
 Canola/Rapeseed , 104 Cell (Dark Gray) - P/N: G10771201 - Kit: 11340X	1 row 19 punches (Dark Gray)	1 Use P/N G10989501	19k-33k sds/kg	375k-875k sds/ha	Yes	15 to 38 cmwc (6-15inwc) (See “True Speed Vacuum Settings Charts” on page 3-22)	Graphite† Talc† Bayer Fluency§ (If mandated)

Continued on Next Page.

TRUE SPEED METER SETTINGS

Crop - Seed Disc Part No. - ‡Seed Disc Kit	Ejector Wheel (color)	Baffle Setting	Seed Size Range	Population	Singulator Installed	Vacuum Setting Inches of Water	Lubricant
 Wheat/Barley, 210 Cell (Red) - P/N: G10958101 - Kit: 11551X	3 rows 14 punches (Red)	1-3	15k-30k sds/kg (6.8k-13.6k sds/lb)	1.2M-3.95M sds/ha (500k-1600k sds/ac)	No	65cmwc (26inwc)	Graphite Talc Bayer Fluency (If mandated)

Install selected seed disc and ejector.

*Use low vacuum for small seeds/slow speed and high vacuum for big seeds/high speed.

†For more information on application rate, see Additives section.

‡Includes seed disc and ejector wheel.

§Bayer Fluency Agent is only required to be used in place of graphite or talc lubricants on vacuum equipped planters that are sowing neonicotinoid rated seeds in Canada. Refer to the Bayer Fluency Agent section for more information.

NOTE: See [“Field Check Seed Population” on page 2-38](#) for more information. Always field check seed population to ensure planting rates are correct.

NOTE: Baffle settings are marked from 1 – 5.

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

NOTE: 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.

See [“True Speed Seed Meter Maintenance” on page 5-15](#) and [“True Speed Seed Meter Cleanout” on page 5-16](#) in Lubrication and Maintenance section for more information.

TRUE SPEED VACUUM SETTINGS CHARTS

NOTE: Vacuum charts are a recommendation to help select the starting vacuum setting for a particular seed size and target planting speed. Due to variation in seed size, seed shape, and planting conditions, it is likely that additional adjustments in the vacuum setting may be necessary. Decrease vacuum from the listed setting if doubles or high population are displayed and increase vacuum if skips or low population are displayed.

Recommended Vac Chart for Corn Flat Seed Types

Meter Speed (RPM)	75											
	70											
	65											
	60											
	55											
	50											
	45											
	40											
	35											
	30											
	25											
		1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
Seed Size (Sds/Lb)												

Target Vac
InWC

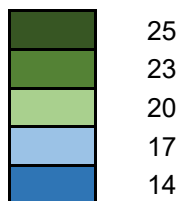
	19
	17
	15
	13
	11

Recommended Vac Chart for Corn Round Seed Types

Meter Speed (RPM)	75											
	70											
	65											
	60											
	55											
	50											
	45											
	40											
	35											
	30											
	25											
		1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
Seed Size (Sds/Lb)												

Recommended Vac Chart for Soybeans (Single Row and Dual Row)																
Meter Speed (RPM)	95															
	90															
	85															
	80															
	75															
	70															
	65															
	60															
	55															
	50															
	45															
	40															
		2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000
		Seed Size (Sds/Lb)														

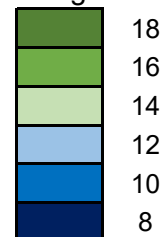
Target Vac
InWC



Recommended Vac Setting for Cotton

Meter Speed (RPM)	90										
	80										
	70										
	60										
	50										
	40										
	30										
	20										
		4250	4500	4750	5000	5250	5500	5750	6000	6250	6500
		Seed Size (Sds/lb)									

Target Vac



Recommended Vac Chart for Oil Sunflowers

65	30	30	30	30	30	25	22	16	14	12	12
60	30	30	30	30	30	25	22	16	14	12	12
55	30	30	30	30	25	25	22	16	14	12	12
50	30	30	30	30	25	22	16	14	14	12	12
45	30	30	30	25	25	22	16	14	12	12	12
40	30	30	25	25	22	16	14	12	12	12	10
35	30	25	25	22	20	16	14	12	12	10	10
30	25	25	22	22	20	14	12	12	10	10	8
25	25	22	22	20	16	14	12	10	10	8	8
20	22	22	20	18	16	12	10	10	8	8	8
15	20	20	18	16	14	12	10	8	8	8	8
Seed Size (Sds/Lb)											
5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000											

Target Vac InWC

	30
	25
	22
	16
	14
	12
	10
	8

Recommended Vac Chart for Canola/Rapeseed

Meter Speed (RPM)	90									
	80									
	70									
	60									
	50									
	40									
	30									
	20									
			100000	120000	140000	160000	180000	200000	225000	290000
			Seed Size (sds/kg)							

Target Vac
cmWC

	38
	30
	23
	18

Meter Speed (20" Row Spacing 32 Cell Disc- Corn)

		Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Population Setpoint (sds/ac.)	24000	5	8	10	13	15	18	20	23	25	28	30
	26000	5	8	11	14	16	19	22	25	27	30	33
	28000	6	9	12	15	18	21	24	27	29	32	35
	30000	6	9	13	16	19	22	25	28	32	35	38
	32000	7	10	13	17	20	24	27	30	34	37	40
	34000	7	11	14	18	21	25	29	32	36	39	43
	36000	8	11	15	19	23	27	30	34	38	42	45
	38000	8	12	16	20	24	28	32	36	40	44	48
	40000	8	13	17	21	25	29	34	38	42	46	51
	42000	9	13	18	22	27	31	35	40	44	49	53
	44000	9	14	19	23	28	32	37	42	46	51	56
	46000	10	15	19	24	29	34	39	44	48	53	58
	48000	10	15	20	25	30	35	40	45	51	56	61
	50000	11	16	21	26	32	37	42	47	53	58	63

Meter Speed (30" Row Spacing 32 Cell Disc- Corn)

		Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Population Setpoint (sds/ac.)	24000	8	11	15	19	23	27	30	34	38	42	45
	26000	8	12	16	21	25	29	33	37	41	45	49
	28000	9	13	18	22	27	31	35	40	44	49	53
	30000	9	14	19	24	28	33	38	43	47	52	57
	32000	10	15	20	25	30	35	40	45	51	56	61
	34000	11	16	21	27	32	38	43	48	54	59	64
	36000	11	17	23	28	34	40	45	51	57	63	68
	38000	12	18	24	30	36	42	48	54	60	66	72
	40000	13	19	25	32	38	44	51	57	63	69	76
	42000	13	20	27	33	40	46	53	60	66	73	80
	44000	14	21	28	35	42	49	56	63	69	76	83
	46000	15	22	29	36	44	51	58	65	73	80	87
	48000	15	23	30	38	45	53	61	68	76	83	91
	50000	16	24	32	39	47	55	63	71	79	87	95

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

Meter Speed (20" Row Spacing 92 Cell Disc - Soybean)

		Target Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Target Population (sds/ac)	80000	6	9	12	15	18	20	23	26	29	32	35
	85000	6	9	12	16	19	22	25	28	31	34	37
	90000	7	10	13	16	20	23	26	30	33	36	40
	95000	7	10	14	17	21	24	28	31	35	38	42
	100000	7	11	15	18	22	26	29	33	37	40	44
	105000	8	12	15	19	23	27	31	35	38	42	46
	110000	8	12	16	20	24	28	32	36	40	44	48
	115000	8	13	17	21	25	29	34	38	42	46	51
	120000	9	13	18	22	26	31	35	40	44	48	53
	125000	9	14	18	23	27	32	37	41	46	50	55
	130000	10	14	19	24	29	33	38	43	48	52	57
	135000	10	15	20	25	30	35	40	44	49	54	59
	140000	10	15	20	26	31	36	41	46	51	56	61
	145000	11	16	21	27	32	37	42	48	53	58	64
	150000	11	16	22	27	33	38	44	49	55	60	66
	155000	11	17	23	28	34	40	45	51	57	62	68
	160000	12	18	23	29	35	41	47	53	59	64	70
	165000	12	18	24	30	36	42	48	54	60	66	72
	170000	12	19	25	31	37	44	50	56	62	68	75
	175000	13	19	26	32	38	45	51	58	64	70	77
	180000	13	20	26	33	40	46	53	59	66	72	79

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

Meter Speed (30" Row Spacing 92 Cell Disc - Soybean)

		Target Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Target Population (sds/ac)	80000	9	13	18	22	26	31	35	40	44	48	53
	85000	9	14	19	23	28	33	37	42	47	51	56
	90000	10	15	20	25	30	35	40	44	49	54	59
	95000	10	16	21	26	31	37	42	47	52	57	63
	100000	11	16	22	27	33	38	44	49	55	60	66
	105000	12	17	23	29	35	40	46	52	58	63	69
	110000	12	18	24	30	36	42	48	54	60	66	72
	115000	13	19	25	32	38	44	51	57	63	69	76
	120000	13	20	26	33	40	46	53	59	66	72	79
	125000	14	21	27	34	41	48	55	62	69	75	82
	130000	14	21	29	36	43	50	57	64	71	79	86
	135000	15	22	30	37	44	52	59	67	74	82	89
	140000	15	23	31	38	46	54	61	69	77	85	92
	145000	16	24	32	40	48	56	64	72	80	88	96
	150000	16	25	33	41	49	58	66	74	82	91	99
	155000	17	26	34	43	51	60	68	77	85	94	102
	160000	18	26	35	44	53	61	70	79	88	97	105
	165000	18	27	36	45	54	63	72	82	91	100	109
	170000	19	28	37	47	56	65	75	84	93	103	112
	175000	19	29	38	48	58	67	77	86	96	106	115
	180000	20	30	40	49	59	69	79	89	99	109	119

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

Meter Speed (15" Row Spacing 46 Cell Disc - Soybean, Cotton, Surgarbeet/Milo)

		Target Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Target Population (sds/ac)	20000	2	3	4	5	7	8	9	10	11	12	13
	25000	3	4	5	7	8	10	11	12	14	15	16
	30000	3	5	7	8	10	12	13	15	16	18	20
	35000	4	6	8	10	12	13	15	17	19	21	23
	40000	4	7	9	11	13	15	18	20	22	24	26
	45000	5	7	10	12	15	17	20	22	25	27	30
	50000	5	8	11	14	16	19	22	25	27	30	33
	55000	6	9	12	15	18	21	24	27	30	33	36
	60000	7	10	13	16	20	23	26	30	33	36	40
	65000	7	11	14	18	21	25	29	32	36	39	43
	70000	8	12	15	19	23	27	31	35	38	42	46
	75000	8	12	16	21	25	29	33	37	41	45	49
	80000	9	13	18	22	26	31	35	40	44	48	53
	85000	9	14	19	23	28	33	37	42	47	51	56
	90000	10	15	20	25	30	35	40	44	49	54	59
	95000	10	16	21	26	31	37	42	47	52	57	63
	100000	11	16	22	27	33	38	44	49	55	60	66
	105000	12	17	23	29	35	40	46	52	58	63	69
	110000	12	18	24	30	36	42	48	54	60	66	72
	115000	13	19	25	32	38	44	51	57	63	69	76
	120000	13	20	26	33	40	46	53	59	66	72	79
	125000	14	21	27	34	41	48	55	62	69	75	82
	130000	14	21	29	36	43	50	57	64	71	79	86
	135000	15	22	30	37	44	52	59	67	74	82	89
	140000	15	23	31	38	46	54	61	69	77	85	92
	145000	16	24	32	40	48	56	64	72	80	88	96
	150000	16	25	33	41	49	58	66	74	82	91	99
	155000	17	26	34	43	51	60	68	77	85	94	102
	160000	18	26	35	44	53	61	70	79	88	97	105
	165000	18	27	36	45	54	63	72	82	91	100	109
	170000	19	28	37	47	56	65	75	84	93	103	112
	175000	19	29	38	48	58	67	77	86	96	106	115
	180000	20	30	40	49	59	69	79	89	99	109	119

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

Meter Speed (20" Row Spacing 46 Cell Disc - Soybean, Cotton, Sargarbeet/Milo)

		Target Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Target Population (sds/ac)	20000	3	4	6	7	9	10	12	13	15	16	18
	25000	4	5	7	9	11	13	15	16	18	20	22
	30000	4	7	9	11	13	15	18	20	22	24	26
	35000	5	8	10	13	15	18	20	23	26	28	31
	40000	6	9	12	15	18	20	23	26	29	32	35
	45000	7	10	13	16	20	23	26	30	33	36	40
	50000	7	11	15	18	22	26	29	33	37	40	44
	55000	8	12	16	20	24	28	32	36	40	44	48
	60000	9	13	18	22	26	31	35	40	44	48	53
	65000	10	14	19	24	29	33	38	43	48	52	57
	70000	10	15	20	26	31	36	41	46	51	56	61
	75000	11	16	22	27	33	38	44	49	55	60	66
	80000	12	18	23	29	35	41	47	53	59	64	70
	85000	13	19	25	31	37	44	50	56	62	68	75
	90000	14	20	26	33	40	46	53	59	66	72	79
	95000	15	21	28	35	42	49	56	63	70	76	83
	100000	15	22	29	37	44	51	59	66	73	81	88
	105000	15	23	31	38	46	54	61	69	77	85	92
	110000	16	24	32	40	48	56	64	72	81	89	97
	115000	17	25	34	42	51	59	67	76	84	93	101
	120000	18	26	35	44	53	61	70	79	88	97	105
	125000	18	27	37	46	55	64	73	82	91	101	110
	130000	19	29	38	48	57	67	76	86	95	105	114
	135000	20	30	40	49	59	69	79	89	99	109	119
	140000	20	31	41	51	61	72	82	92	102	113	120
	145000	21	32	42	53	64	74	85	96	106	117	120
	150000	22	33	44	55	66	77	88	99	110	120	120
	155000	23	34	45	57	68	79	91	102	113	120	120
	160000	23	35	47	59	70	82	94	105	117	120	120
	165000	24	36	48	60	72	85	97	109	120	120	120
	170000	25	37	50	62	75	87	100	112	120	120	120
	175000	26	38	51	64	77	90	102	115	120	120	120
	180000	26	40	53	66	79	92	105	119	120	120	120

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

Meter Speed (30" Row Spacing 46 Cell Disc - Soybean, Cotton, Sargarbeet/Milo)

		Target Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Target Population (sds/ac)	20000	4	7	9	11	13	15	18	20	22	24	26
	25000	5	8	11	14	16	19	22	25	27	30	33
	30000	7	10	13	16	20	23	26	30	33	36	40
	35000	8	12	15	19	23	27	31	35	38	42	46
	40000	9	13	18	22	26	31	35	40	44	48	53
	45000	10	15	20	25	30	35	40	44	49	54	59
	50000	11	16	22	27	33	38	44	49	55	60	66
	55000	12	18	24	30	36	42	48	54	60	66	72
	60000	13	20	26	33	40	46	53	59	66	72	79
	65000	14	21	29	36	43	50	57	64	71	79	86
	70000	15	23	31	38	46	54	61	69	77	85	92
	75000	16	25	33	41	49	58	66	74	82	91	99
	80000	18	26	35	44	53	61	70	79	88	97	105
	85000	19	28	37	47	56	65	75	84	93	103	112
	90000	20	30	40	49	59	69	79	89	99	109	119
	95000	21	31	42	52	63	73	83	94	104	115	120
	100000	22	33	44	55	66	77	88	99	110	120	120
	105000	23	35	46	58	69	81	92	104	115	120	120
	110000	24	36	48	60	72	85	97	109	120	120	120
	115000	25	38	51	63	76	88	101	114	120	120	120
	120000	26	40	53	66	79	92	105	119	120	120	120
	125000	27	41	55	69	82	96	110	120	120	120	120
	130000	29	43	57	71	86	100	114	120	120	120	120
	135000	30	44	59	74	89	104	119	120	120	120	120
	140000	31	46	61	77	92	108	120	120	120	120	120
	145000	32	48	64	80	96	111	120	120	120	120	120
	150000	33	49	66	82	99	115	120	120	120	120	120
	155000	34	51	68	85	102	119	120	120	120	120	120
	160000	35	53	70	88	105	120	120	120	120	120	120
	165000	36	54	72	91	109	120	120	120	120	120	120
	170000	37	56	75	93	112	120	120	120	120	120	120
	175000	38	58	77	96	115	120	120	120	120	120	120
	180000	40	59	79	99	119	120	120	120	120	120	120

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

Meter Speed (30" Row Spacing 23 Cell Sunflower Disc)

		Ground Speed (mph)										
		2	3	4	5	6	7	8	9	10	11	12
Population Setpoint (sds/ac.)	16000	7	10	14	18	21	25	28	32	35	39	42
	18000	8	12	16	20	24	28	32	36	39	43	47
	20000	9	13	18	22	26	31	35	39	44	48	53
	22000	10	14	19	24	29	34	39	43	48	53	58
	24000	11	16	21	26	32	37	42	47	53	58	63
	26000	11	17	23	28	34	40	46	51	57	63	68
	28000	12	18	24	31	37	43	50	55	61	68	74
	30000	13	20	26	33	39	46	53	59	66	72	79
	32000	14	21	28	35	42	49	56	63	70	77	84
	34000	15	22	30	37	45	52	60	67	75	82	90
	36000	16	24	32	39	47	55	63	71	79	87	95

Meter Speed (70cm Row Spacing 104 Cell Disc - Canola/Rapeseed)

		Ground Speed (km/h)																
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Target Population (sds/ha)	350000	6	8	10	12	14	16	18	20	22	24	26	27	29	31	33	35	37
	400000	7	9	11	13	16	18	20	22	25	27	29	31	34	36	38	40	43
	450000	8	10	13	15	18	20	23	25	28	30	33	35	38	40	43	45	48
	500000	8	11	14	17	20	22	25	28	31	34	36	39	42	45	48	50	53
	550000	9	12	15	19	22	25	28	31	34	37	40	43	46	49	52	56	59
	600000	10	13	17	20	24	27	30	34	37	40	44	47	50	54	57	61	64
	650000	11	15	18	22	26	29	33	36	40	44	47	51	55	58	62	66	69
	700000	12	16	20	24	27	31	35	39	43	47	51	55	59	63	67	71	75
	750000	13	17	21	25	29	34	38	42	46	50	55	59	63	67	72	76	80
	800000	13	18	22	27	31	36	40	45	49	54	58	63	67	72	76	81	85
	850000	14	19	24	29	33	38	43	48	52	57	62	67	72	76	81	86	91

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

Meter Speed (35cm Row Spacing 210 Cell Disc - Wheat/Barley)

		Ground Speed (km/h)																
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Target Population (sds/ha)	1200000	10	13	17	20	23	27	30	33	37	40	43	47	50	53	57	60	63
	1400000	12	16	19	23	27	31	35	39	43	47	51	54	58	62	66	70	74
	1600000	13	18	22	27	31	36	40	44	49	53	58	62	67	71	76	80	84
	1800000	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
	2000000	17	22	28	33	39	44	50	56	61	67	72	78	83	89	94	100	106
	2200000	18	24	31	37	43	49	55	61	67	73	79	86	92	98	104	110	116
	2400000	20	27	33	40	47	53	60	67	73	80	87	93	100	107	113	120	120
	2600000	22	29	36	43	51	58	65	72	79	87	94	101	108	116	120	120	120
	2800000	23	31	39	47	54	62	70	78	86	93	101	109	117	120	120	120	120
	3000000	25	33	42	50	58	67	75	83	92	100	108	117	120	120	120	120	120
	3200000	27	36	44	53	62	71	80	89	98	107	116	120	120	120	120	120	120
	3400000	28	38	47	57	66	76	85	94	104	113	120	120	120	120	120	120	120
	3600000	30	40	50	60	70	80	90	100	110	120	120	120	120	120	120	120	120
	3800000	32	42	53	63	74	84	95	106	116	120	120	120	120	120	120	120	120
	4000000	33	44	56	67	78	89	100	111	120	120	120	120	120	120	120	120	120

Meter Speed (15" Row Spacing 210 Cell Disc - Wheat/Barley)

		Ground Speed (mph)									
		3	4	5	6	7	8	9	10	11	12
Target Population (sds/ac)	500000	18	24	30	36	42	48	54	60	66	72
	600000	22	29	36	43	51	58	65	72	79	87
	700000	25	34	42	51	59	67	76	84	93	101
	800000	29	38	48	58	67	77	87	96	106	115
	900000	32	43	54	65	76	87	97	108	119	120
	1000000	36	48	60	72	84	96	108	120	120	120
	1100000	40	53	66	79	93	106	119	120	120	120
	1200000	43	58	72	87	101	115	120	120	120	120
	1300000	47	63	78	94	109	120	120	120	120	120
	1400000	51	67	84	101	118	120	120	120	120	120
	1500000	54	72	90	108	120	120	120	120	120	120
	1600000	58	77	96	115	120	120	120	120	120	120

	Optimal Zone
	Low or high meter speed, may require vacuum adjustment
	Exceeding maximum meter speed, expect performance degradation

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TRUE SPEED SEED METER COVER REMOVAL

1. Remove meter cover.

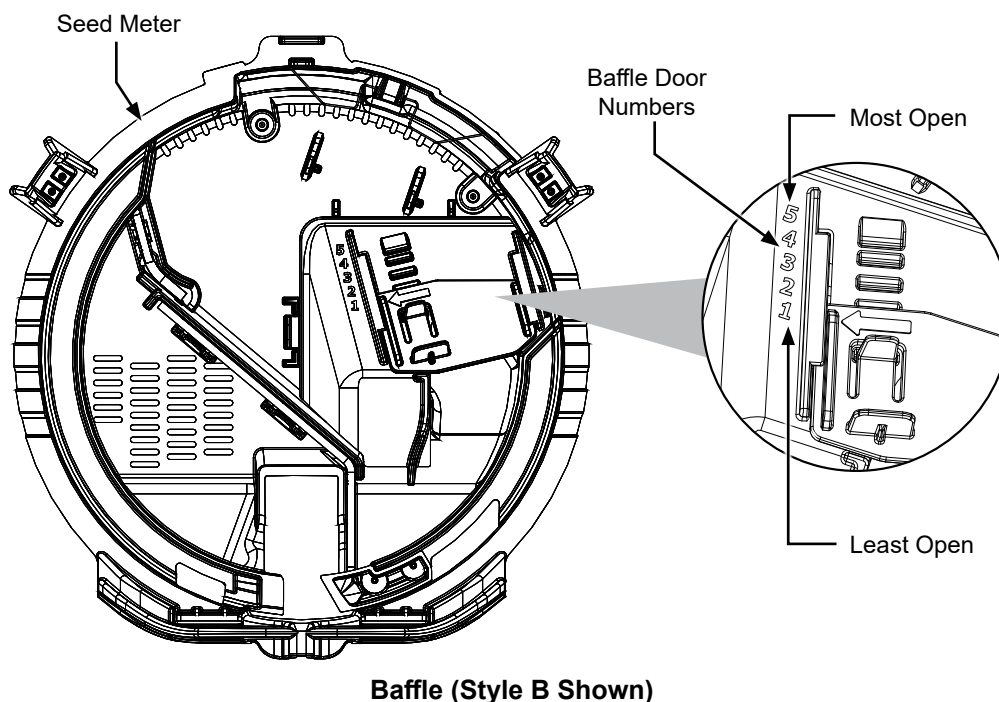


Style A: Push latch and rotate cover clockwise.



Style B: Push wire latch down on each side of cover to unlock, pull towards you to rotate out and remove.

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



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 and remnants from seed disc cells. These ejectors are disc specific, color -coded to match their corresponding disc, and necessary for proper meter performance.

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



3. Adjust baffle door to recommended setting.
4. Install cover.
4. With vacuum fan running, use priming sequence on Blue Vantage display to load seed onto seed discs.

NOTE: Vacuum reading will be much lower when seed disc cells are empty. Prime seed meters and allow vacuum to stabilize before starting to plant.

CANOLA / RAPESEED METER PREPARATION

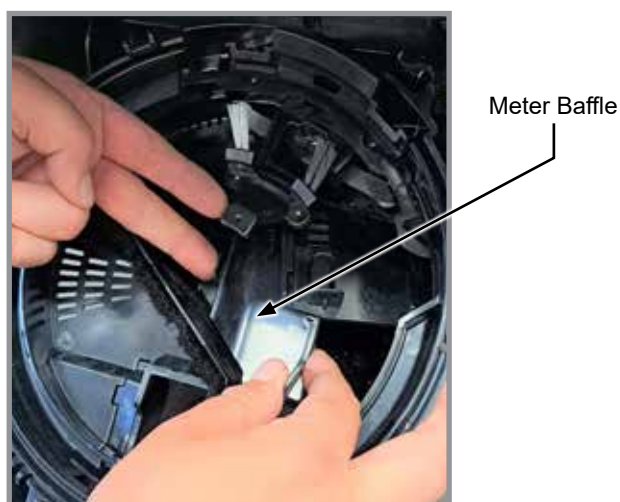
This section installs a baffle door (P/N G10989501), a diffuser seal (P/N G10947901), and a meter wall brush (P/N G10990801) into a True Speed meter when using canola rapeseed seed disc. Retain any removed parts.

Note: The combination of these parts is intended to be used only with the canola/rapeseed seed disc.

1. Install baffle door in the meter baffle.

Remove the meter cover assembly and set aside.

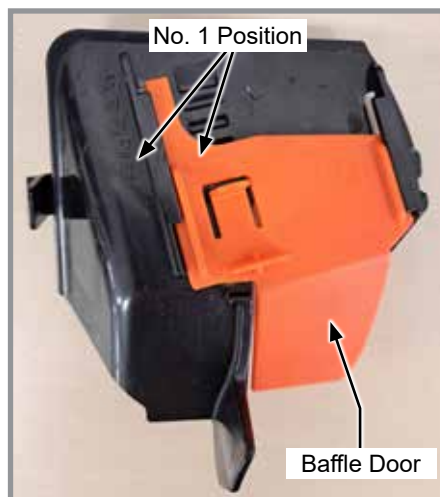
Remove the meter baffle from the meter housing assembly by pressing the clip on the side of the meter baffle.



Pull the baffle door tab up (as shown below) and slide it out of the meter baffle.

Install the baffle door onto the meter baffle by sliding it up from the bottom until the arrow on the baffle door aligns with number 1 on the meter baffle.

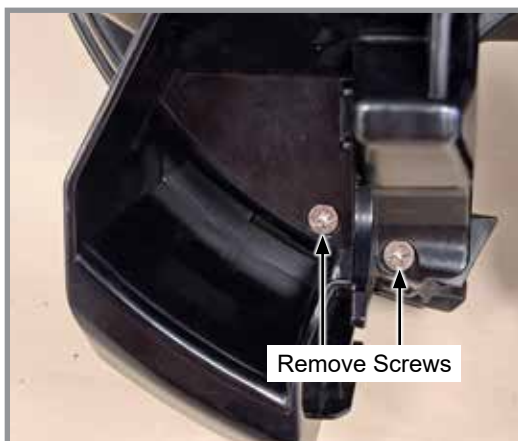
NOTE: Do not place the meter baffle back into the meter housing assembly yet.



2. Install the meter wall brush.

Remove lower seed relief located at the bottom of the meter housing by removing screw(s) on the other side of the meter housing.

Lower
Seed
Relief



Style A: Remove two screws.



Style B: Remove one screw.

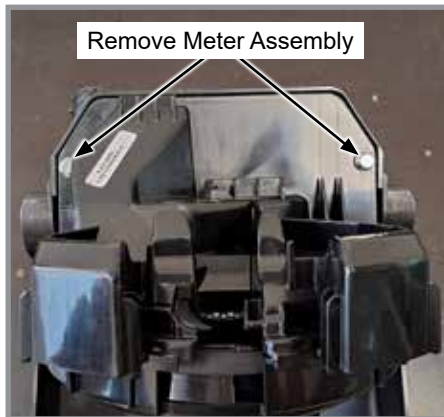
Use a flathead screwdriver and press the lower clip from the inside to remove the brush from meter housing. Install meter wall brush (P/N: G10990801).



3. Install diffuser seal.

Turn the mini hopper assembly with the attached meter assembly over and remove the two screws at the top of meter assembly.

Remove meter assembly and set aside.



**Shown with Meter Assembly
Removed**

Return the mini hopper assembly to its initial position and remove the lid by sliding it down. Ensure diffuser door is fully pushed down.



Turn the mini hopper over again and insert diffuser seal. Diffuser seal must be fully inserted into the hole and flush with the top of the mini hopper. **NOTE: Check to ensure diffuser door is still down.**



Reinstall meter assembly and secure with screws.



When planting canola/rapeseed is complete, remove parts installed specifically for canola/rapeseed seed disc (except for meter wall brush, it can be used with any other seed discs). Return meter back to it's original state.

WHEAT / BARLEY METER PREPARATION

NOTE: Planting wheat may result in increased wear on certain components such as: brush, comb, ejector, and more. These parts may have a shorter lifespan and will likely require more frequent replacements.

1. Check and prepare the meter.

Before planting with the wheat/barley disc, remove the singulator.

Style A

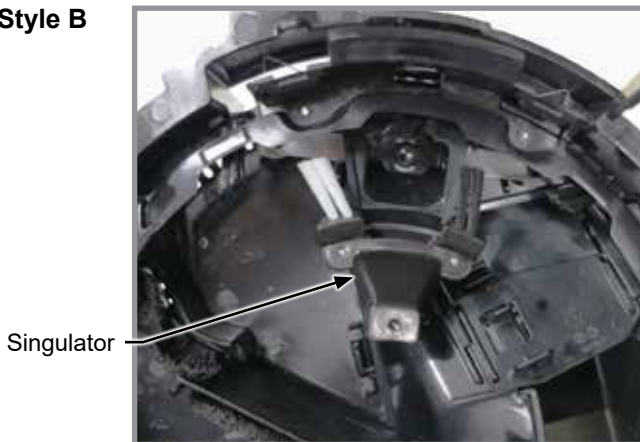


Singulator installed



Singulator removed

Style B



Singulator installed



Singulator removed

Set the baffle door position according to seed size, population, and speed. Refer to table shown in [“Wheat / Barley Planting Recommendations” on page 3-42](#)



Baffle Door Position 1

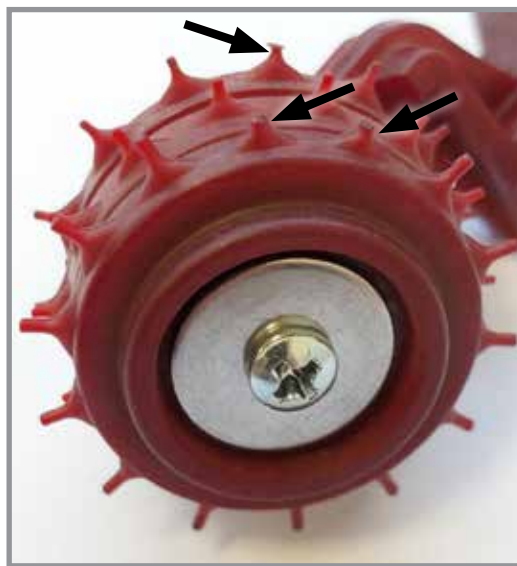


Baffle Door Position 3

Inspect the ejector wheel for any signs of wear or damage. Do not use an ejector wheel with damaged pins (see pictures below). The ejector wheel is considered worn out or damaged when the pins are worn down by 50% or are broken.



Ejector with intact pins



Ejector with damaged pins, indicated by arrows.

Install the ejector wheel and the seed disc properly.

After installing the ejector wheel and disc, rotate disc by hand to ensure the ejector wheel rotates freely and without any excessive noise. The ejector wheel pins should move smoothly in and out of the seed disc.

2. Prepare the seeds.

Evenly cover seeds with graphite, using approximately 100 grams (3.5oz) of graphite per 100 kilograms (220lbs) of seed.

WHEAT / BARLEY PLANTING RECOMMENDATIONS

1. Adjust the vacuum settings.

Adjust the vacuum level based on seed size, population, and speed. For the initial position of the baffle door and vacuum level, refer to the table on page 4. Note that these are starting points, and the actual values will depend on the specific seed and other variables.

After setting the vacuum level, allow it to stabilize for 15 seconds.

NOTE: The system is highly sensitive to the vacuum level. Uneven or unstable vacuum can lead to inconsistent row-to-row performance. It is recommended to set a slightly higher vacuum level, which will increase the seed population by about 10% above the desired amount. For example, if you aim to plant 1,000,000 seeds, set the monitor population to 900,000 and increase the vacuum so the monitor reads approximately 1,000,000 seeds. This will improve row-to-row performance.

RECOMMENDED VACUUM SETTINGS FOR WHEAT / BARLEY, 35CM ROW WIDTH

LIGHT SEEDS (28000-33000 KERNELS/kg), 35cm Row Width												
	1.2M/ha	BAFFLE POSITION	1.8M/ha	BAFFLE POSITION	2.2M/ha	BAFFLE POSITION	3M/ha	BAFFLE POSITION	3.5M/ha	BAFFLE POSITION	3.95M/ha	BAFFLE POSITION
5 km/h	10 cmwc	1	13 cmwc	1	17 cmwc	1	22 cmwc	1	25 cmwc	1	32 cmwc	1
8 km/h	16 cmwc	1	20 cmwc	1	22 cmwc	1	26 cmwc	1	35 cmwc	1	42 cmwc	1
13 km/h	21 cmwc	1	26 cmwc	1	35 cmwc	1	42 cmwc	1	48 cmwc	1	N/A	N/A
16 km/h	35 cmwc	1	42 cmwc	1	52 cmwc	1	N/A	N/A	N/A	N/A	N/A	N/A
19 km/h	46 cmwc	1	52 cmwc	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MEDIUM SEEDS (21000-27000 KERNELS/kg), 35cm Row Width												
	1.2M/ha	BAFFLE POSITION	1.8M/ha	BAFFLE POSITION	2.2M/ha	BAFFLE POSITION	3M/ha	BAFFLE POSITION	3.5M/ha	BAFFLE POSITION	3.95M/ha	BAFFLE POSITION
5 km/h	14 cmwc	1	17 cmwc	1	20 cmwc	1	22 cmwc	1	25 cmwc	1	32 cmwc	1
8 km/h	19 cmwc	1	22 cmwc	1	27 cmwc	1	32 cmwc	1	40 cmwc	1	47 cmwc	1
13 km/h	24 cmwc	1	32 cmwc	1	40 cmwc	1	47 cmwc	1	55 cmwc	1	N/A	N/A
16 km/h	40 cmwc	1	47 cmwc	1	55 cmwc	1	N/A	N/A	N/A	N/A	N/A	N/A
19 km/h	47 cmwc	1	55 cmwc	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HEAVY SEEDS (<20000 KERNELS/kg), 35cm Row Width												
	1.2M/ha	BAFFLE POSITION	1.8M/ha	BAFFLE POSITION	2.2M/ha	BAFFLE POSITION	3M/ha	BAFFLE POSITION	3.5M/ha	BAFFLE POSITION	3.95M/ha	BAFFLE POSITION
5 km/h	20 cmwc	1	22 cmwc	1	25 cmwc	1	28 cmwc	1	32 cmwc	1	40 cmwc	3
8 km/h	25 cmwc	1	27 cmwc	1	33 cmwc	1	37 cmwc	1	48 cmwc	1	53 cmwc	3
13 km/h	30 cmwc	1	35 cmwc	1	40 cmwc	1	48 cmwc	3	53 cmwc	3	N/A	N/A
16 km/h	47 cmwc	1	53 cmwc	1	60 cmwc	3	N/A	N/A	N/A	N/A	N/A	N/A
19 km/h	53 cmwc	3	60 cmwc	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

RECOMMENDED VACUUM SETTINGS FOR WHEAT / BARLEY, 15" ROW WIDTH

LIGHT SEEDS (13000-15000 KERNELS/lb), 15" Row Width												
	500k/acre	BAFFLE POSITION	700k/acre	BAFFLE POSITION	900k/acre	BAFFLE POSITION	1200k/acre	BAFFLE POSITION	1400k/acre	BAFFLE POSITION	1600k/acre	BAFFLE POSITION
3MPH	5inwc	1	6inwc	1	7inwc	1	9inwc	1	10inwc	1	13inwc	1
5MPH	7inwc	1	8inwc	1	9inwc	1	11inwc	1	14inwc	1	17inwc	1
8MPH	9inwc	1	11inwc	1	14inwc	1	17inwc	1	19inwc	1	N/A	N/A
10MPH	14inwc	1	17inwc	1	21inwc	1	N/A	N/A	N/A	N/A	N/A	N/A
12MPH	19inwc	1	21inwc	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MEDIUM SEEDS (10000-12000 KERNELS/lb), 15" Row Width												
	500k/acre	BAFFLE POSITION	700k/acre	BAFFLE POSITION	900k/acre	BAFFLE POSITION	1200k/acre	BAFFLE POSITION	1400k/acre	BAFFLE POSITION	1600k/acre	BAFFLE POSITION
3MPH	6inwc	1	7inwc	1	8inwc	1	9inwc	1	10inwc	1	13inwc	1
5MPH	8inwc	1	9inwc	1	11inwc	1	13inwc	1	16inwc	1	19inwc	1
8MPH	10inwc	1	13inwc	1	16inwc	1	22inwc	1	25inwc	1	N/A	N/A
10MPH	16inwc	1	20inwc	1	25inwc	1	N/A	N/A	N/A	N/A	N/A	N/A
12MPH	22inwc	1	25inwc	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HEAVY SEEDS (<9000 KERNELS/lb), 15" Row Width												
	500k/acre	BAFFLE POSITION	700k/acre	BAFFLE POSITION	900k/acre	BAFFLE POSITION	1200k/acre	BAFFLE POSITION	1400k/acre	BAFFLE POSITION	1600k/acre	BAFFLE POSITION
3MPH	8inwc	1	9inwc	1	10inwc	1	11inwc	1	13inwc	1	16inwc	3
5MPH	10inwc	1	11inwc	1	13inwc	1	15inwc	1	19inwc	1	21inwc	3
8MPH	12inwc	1	14inwc	1	16inwc	1	20inwc	3	21inwc	3	N/A	N/A
10MPH	20inwc	1	21inwc	1	25inwc	3	N/A	N/A	N/A	N/A	N/A	N/A
12MPH	22inwc	3	25inwc	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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 moisture to prevent bridging, minimizes 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 inoculants may create buildup on the seed disc or brushes. Check frequently for proper population and/or seed delivery when using any liquid seed treatment.

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 pneumatic 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.

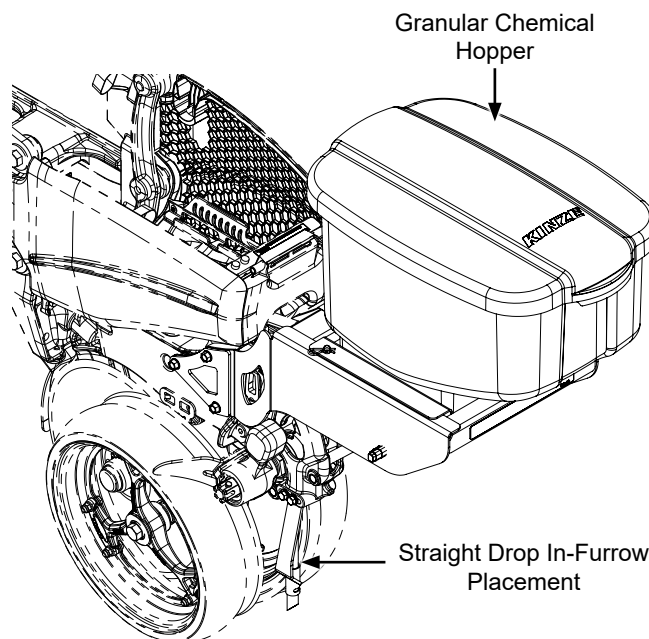
NOTICE

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.

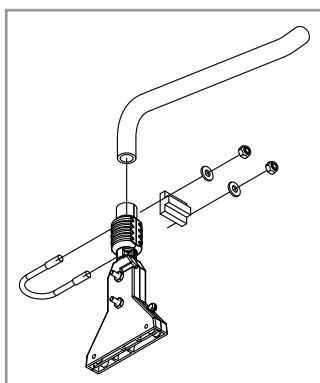
A metering gate on bottom of hopper regulates the application rate. Calibrate using chemical manufacturers' instructions.



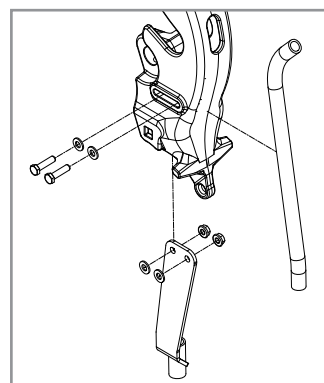
GRANULAR CHEMICAL BANDING OPTIONS

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



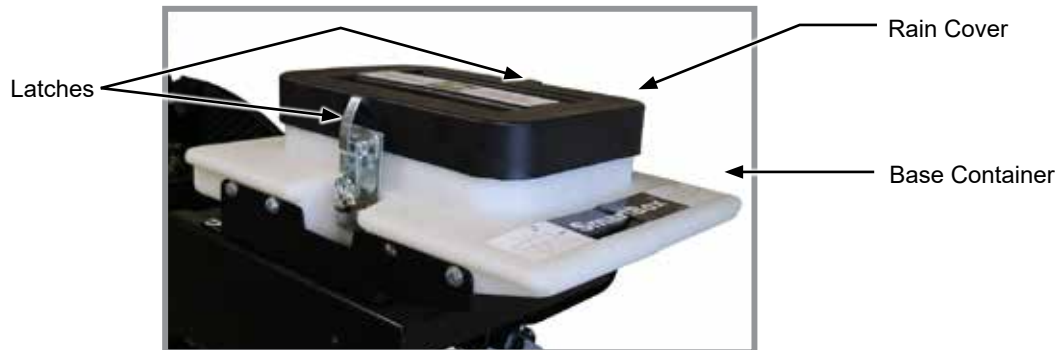
Straight Drop In-furrow
Placement

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AMVAC SMARTBOX READY OPTION

The SmartBox System is electronically controlled through the Kinze Blue Vantage display. It is a closed transfer granular application system, allowing accurate application with no exposure to granular insecticides.

Granular insecticides come in 50 lb transfer containers that are only opened when attached to the SmartBox System base containers that are mounted on planter.



TRANSFER CONTAINER INSTALLATION

1. Remove clip pins on each side of base container, unlock latches, and remove rain cover. **NOTE: Store rain cover for later use when SmartBox is not being used.**
2. Apply a light dusting of baby powder/talc to base container seal.

NOTE: If seal is not properly lubricated, damage could occur during removal of transfer container.

NOTE: DO NOT use petroleum based silicon spray or graphite to lubricate seals.



3. Remove valve cover from the transfer container. **NOTE: Retain cover and use on empty container.**
4. Position transfer container to the valve handles face away from the seed hopper.
5. Lower transfer container, ensure each valve is fully seated into the base container valve. **NOTE: Valves will not open and release product if seated incorrectly.**
6. Latch transfer container to the base container. Rock transfer container side to side making sure container is secure. If container is secure, reinstall clip pins.
7. Rotate the valves toward the "Off" position before trying to open, then turn valves counter-clockwise 60° to "Open". If valves do not open smoothly, they may not be seated properly, repeat steps 4-6. **NOTE: Both valves must be closed before removing the transfer container.**

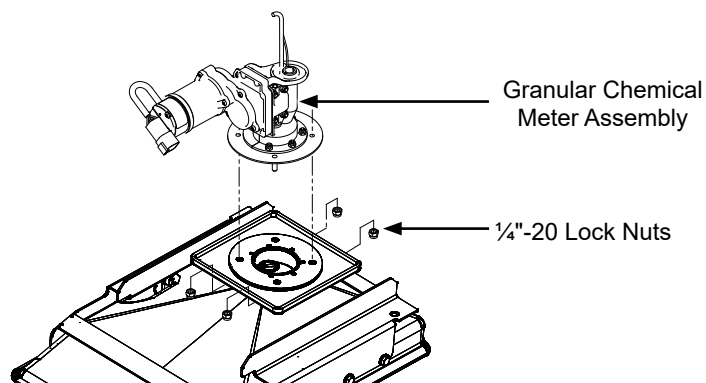


CLEANING OF METER

1. Turn off controller.
2. Unplug meter from wiring harness.
3. Close transfer container valves, then remove transfer container.
4. Secure rain cover to base container.
5. Remove No. 3 hair clip pins attaching the base container to the cradle.



6. Invert the base container and remove lock nuts attaching the meter to the base container.



7. Remove the meter assembly from the base container. Clear any wet product or obstructions from the impellor and base container.
8. Reinstall base container/meter assembly onto row unit and then connect wiring harness.

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.
	

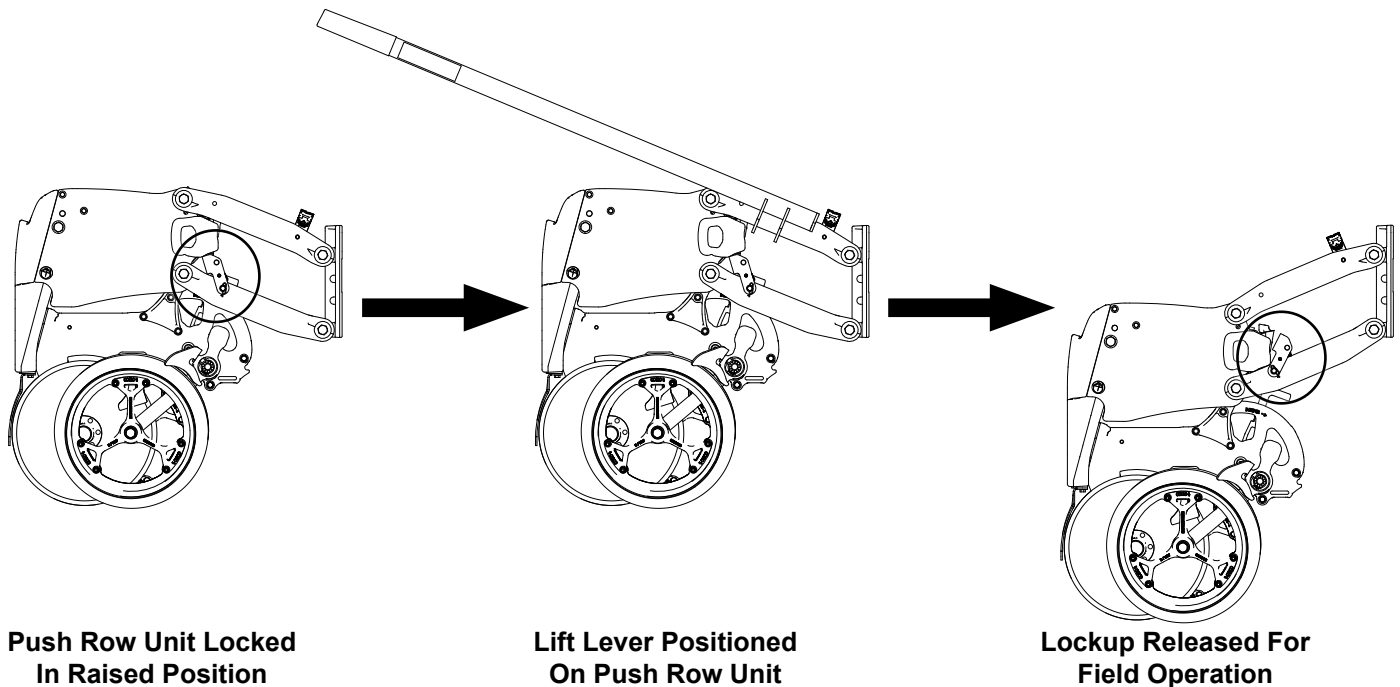
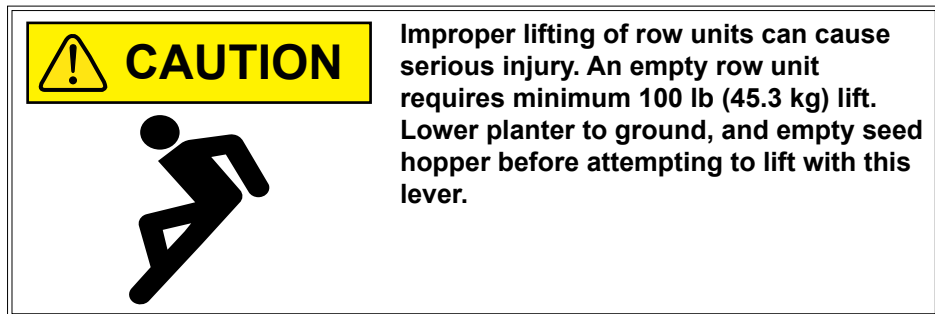
Perform a field check to determine application rates.

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.

SPLIT ROW LOCKUPS

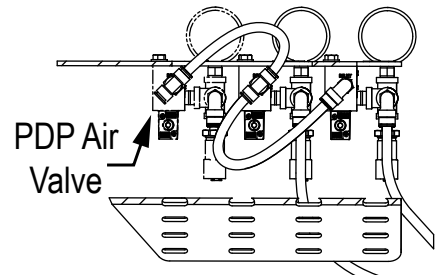
Split row lockups are designed to allow the push row units to be locked in the raised position.



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**

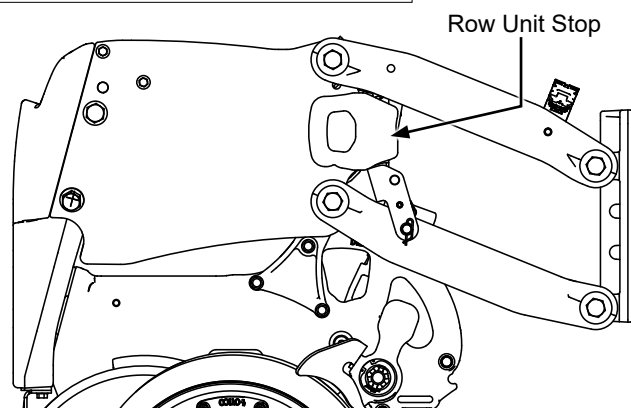
Turning Lift Assist on or off may cause the planter to move or row units to fall causing injury or death.

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.

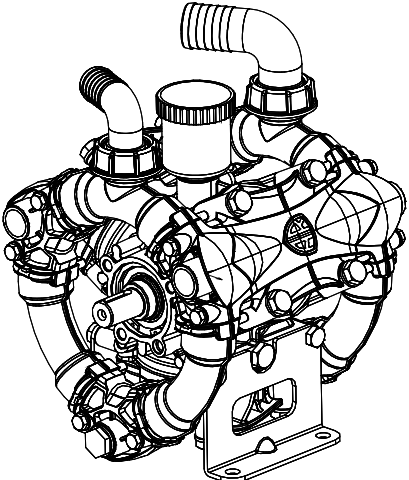
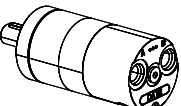
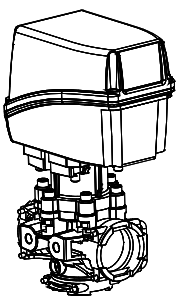
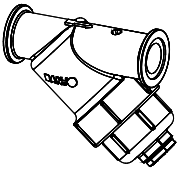
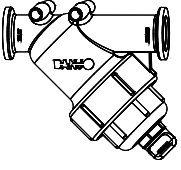
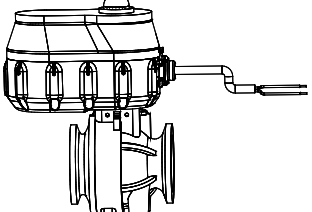
CAUTION

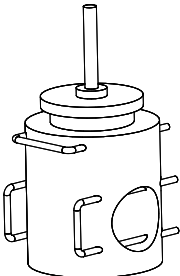
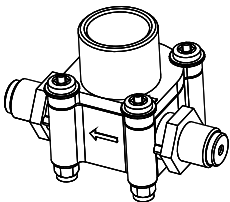
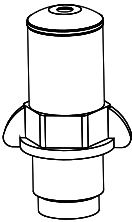
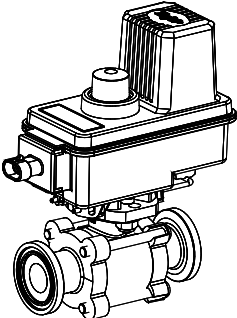
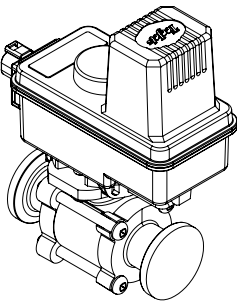
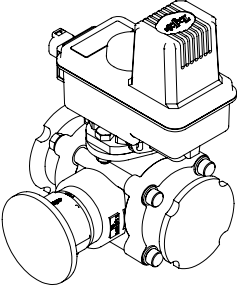


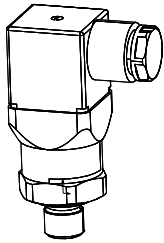
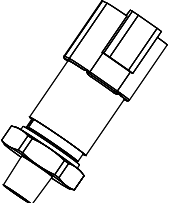
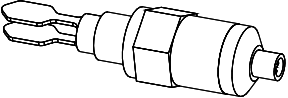
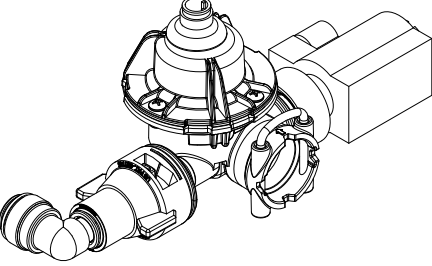
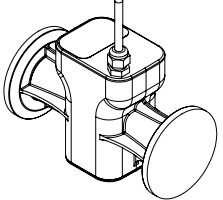
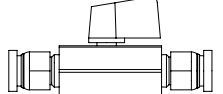
The Fertilizer system is pressurized during normal operation and can cause serious injury. Always vent the system before working on any fertilizer components with the manual air purge valve. Refer to the fertilizer section in operator's manual for valve location.

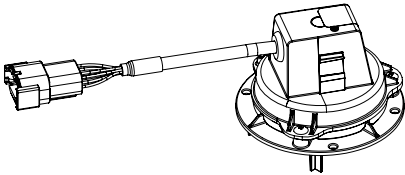
FERTILIZER SYSTEMS PARTS OVERVIEW

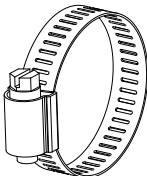
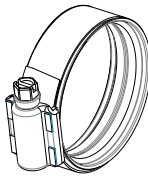
NOTE: See parts manual for part numbers.

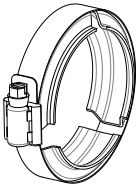
COMPONENT		DESCRIPTION
Diaphragm Pump	 3 Cylinder	Small pump, used on 30' and 40' toolbars. Oil Capacity: 36 oz Diaphragm Kit: Available, see parts manual. Check Valve Kit: Available, see parts manual. Seal Kit: Available, see parts manual. Oil: Available, see parts manual. Winterizer: Available, see 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 (2024-2025 Production)		Full flow meter.
Small System Flow Meter (2024-2025 Production)		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.
Single System Flow Meter (2026 Production and On)		Replaces large and small flow meters in 2026 production and newer.
Manual Air Purge Valve (2026 Production and On)		Used to purge air from system or relieve system pressure.

COMPONENT		DESCRIPTION
Tank Level Sensor		Tank level for hillside tank leveling.

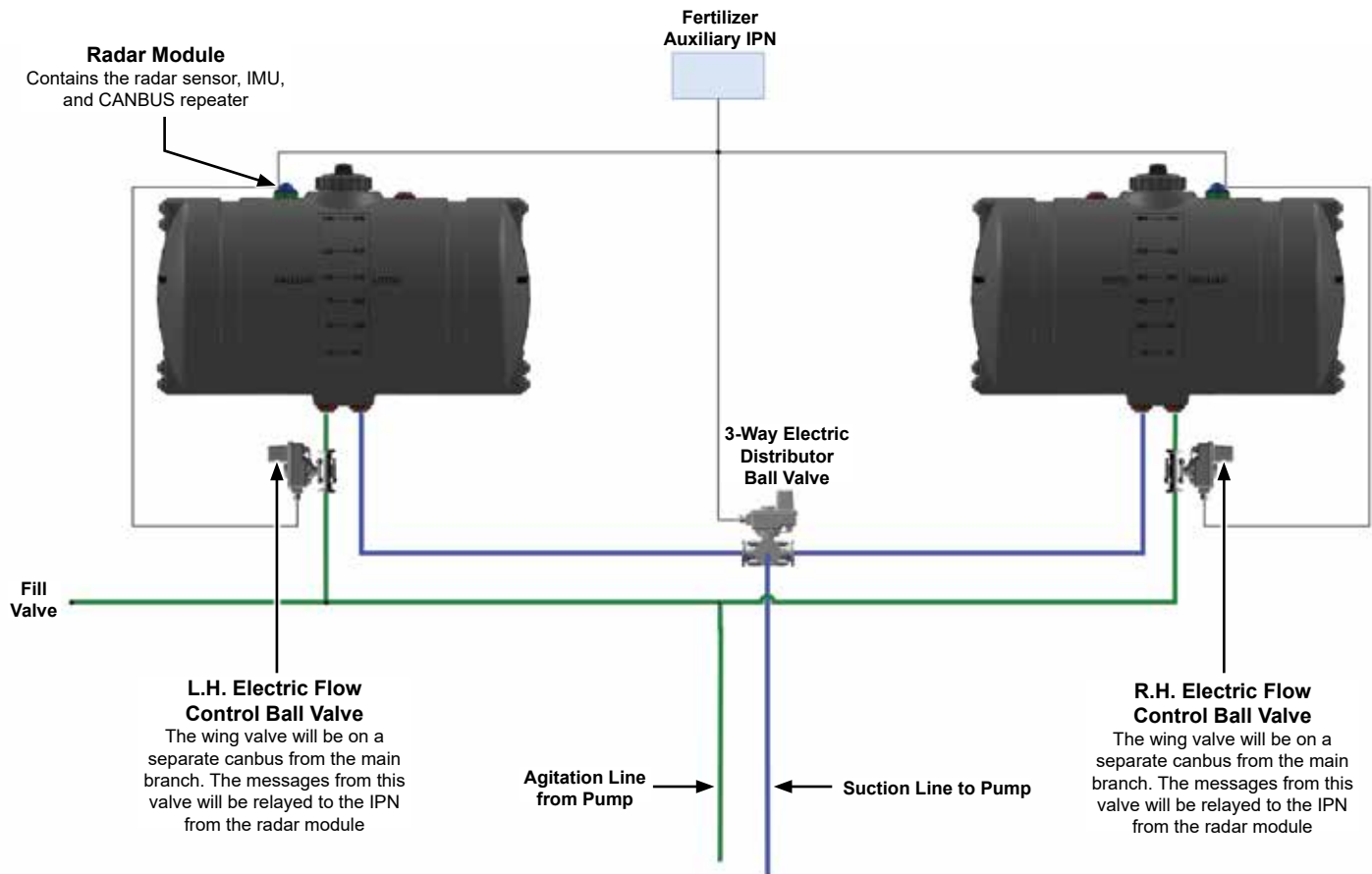
HOSE CLAMP TORQUE VALUES CHART				
		Diameter	Standard	Heavy Duty
		1¼"	42 in-lb	75 in-lb
		1½"	42 in-lb	75 in-lb
		2"	42 in-lb	X
Standard	Heavy Duty			

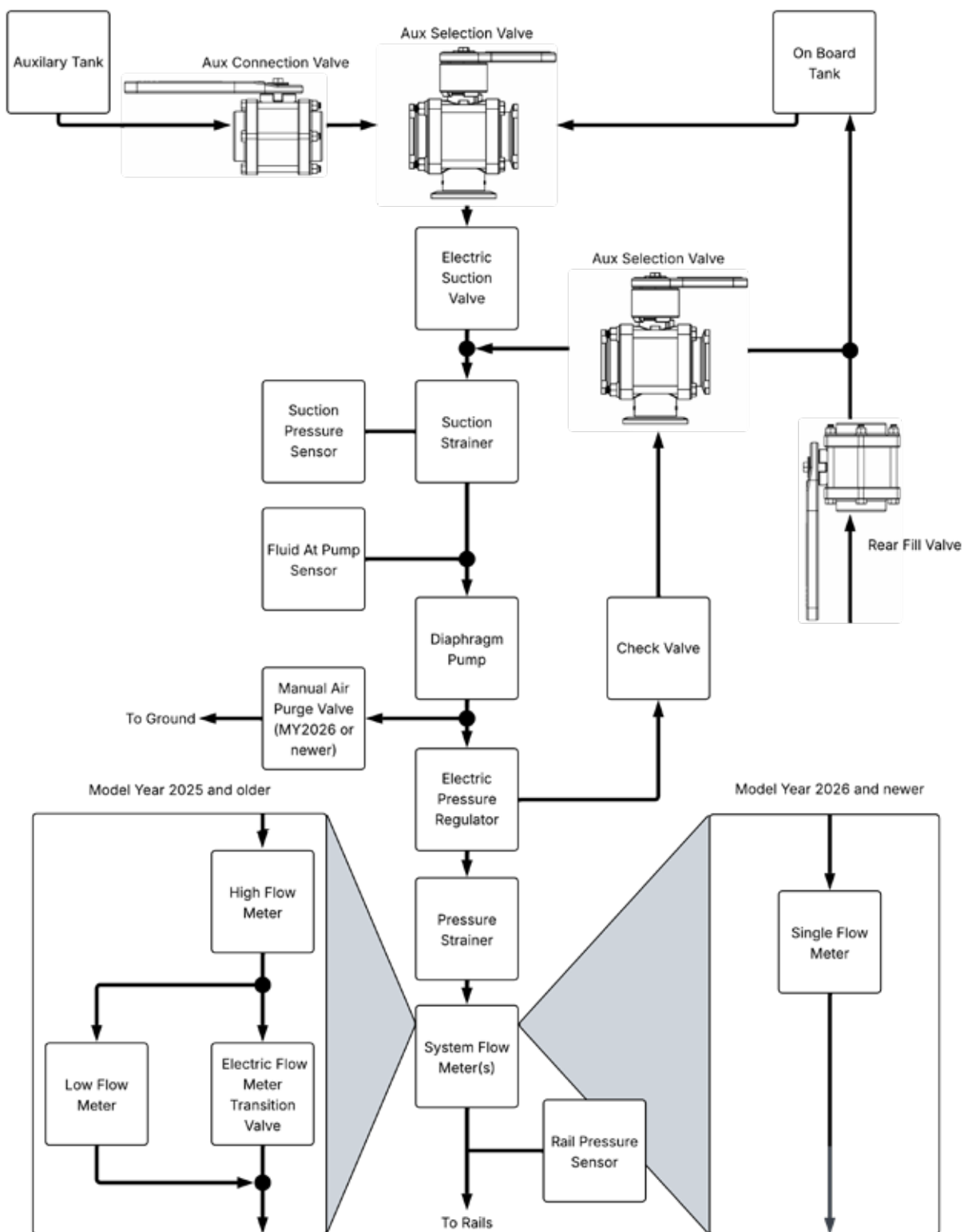
FLANGE CLAMP TORQUE VALUES CHART		
	Diameter	Torque
	1"	50-60 in-lb
	2"	90-100 in-lb

LIQUID FERTILIZER SYSTEM SCHEMATICS

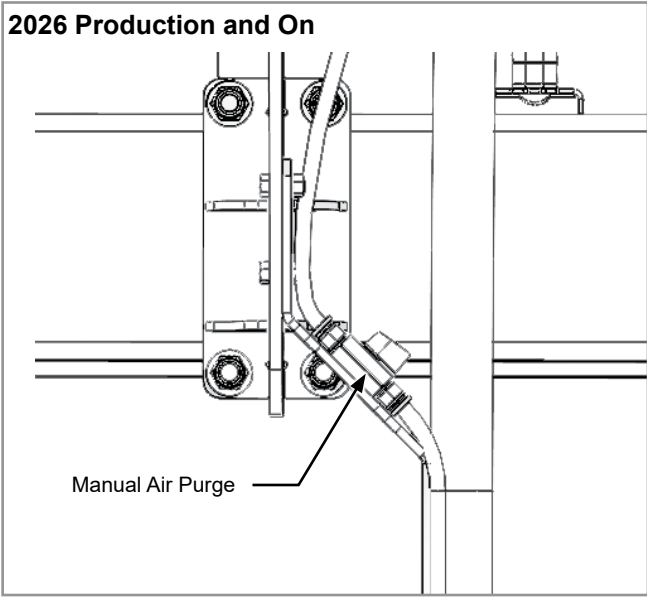
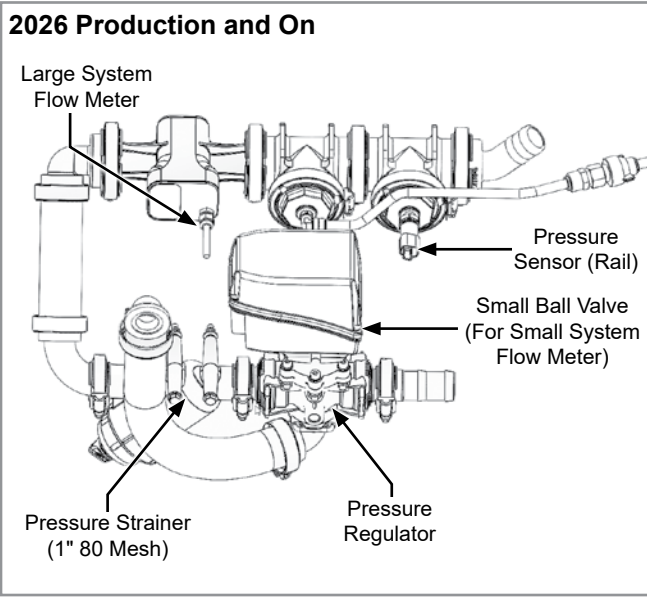
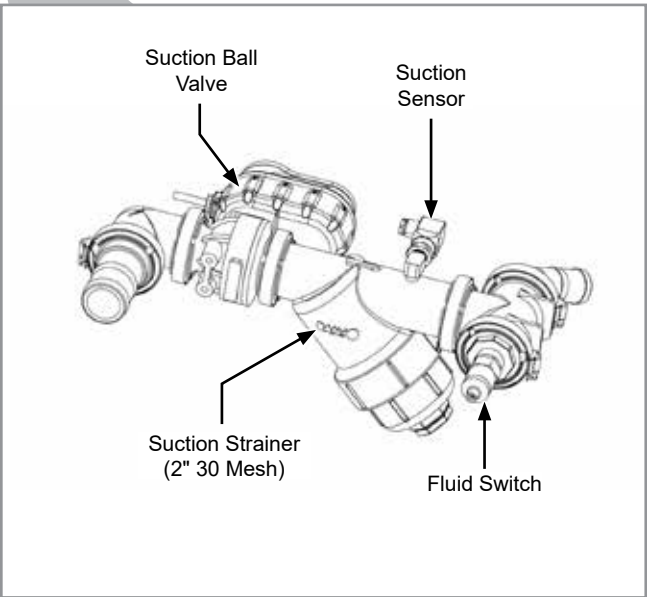
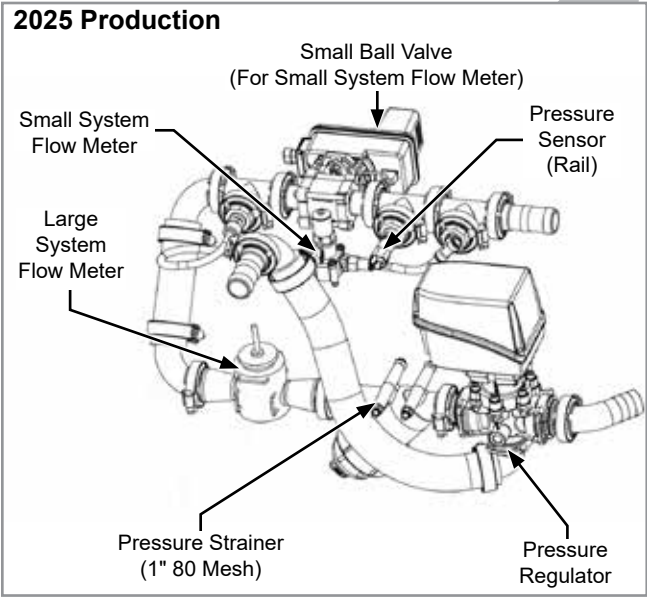
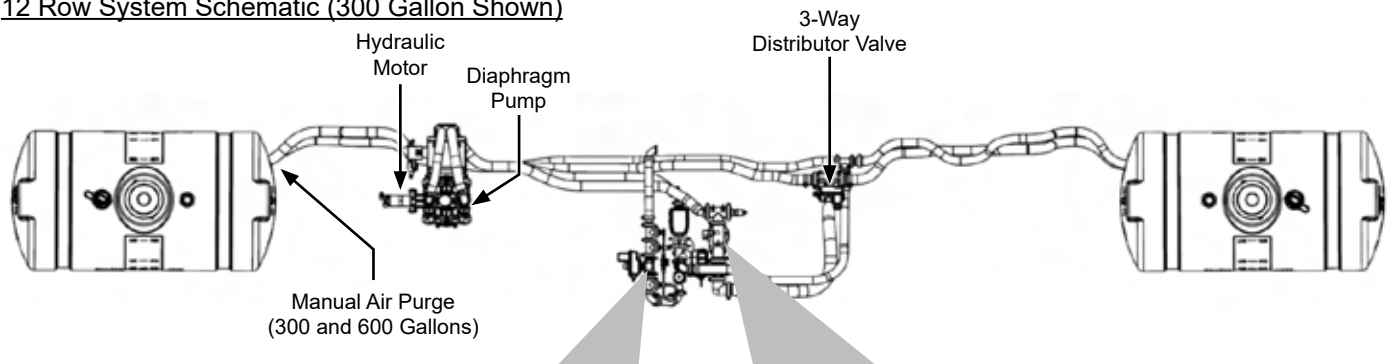
Fertilizer is controlled through the Blue Vantage display. Increase or decrease fertilizer rate, turn fertilizer function on or off, and load prescription. Refer to your Blue Vantage manual for more information.

On Board Tank Leveling

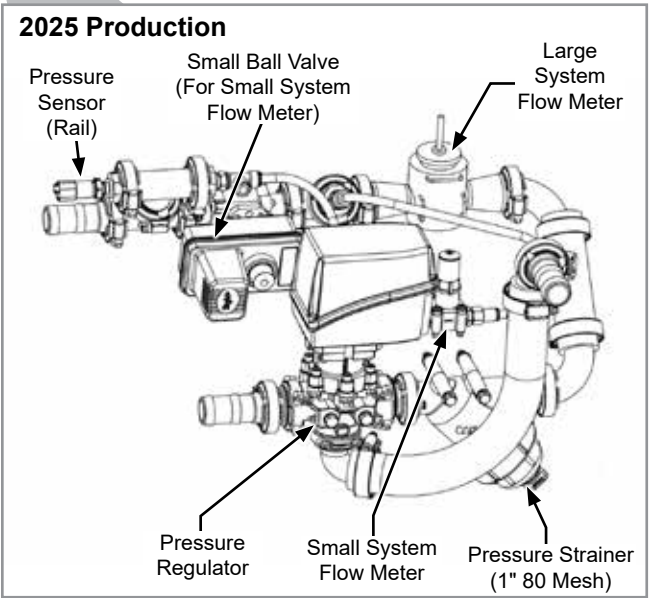
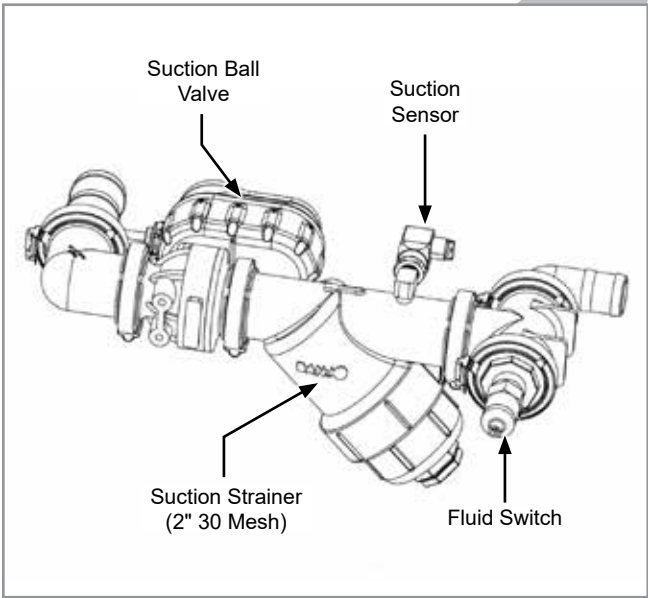
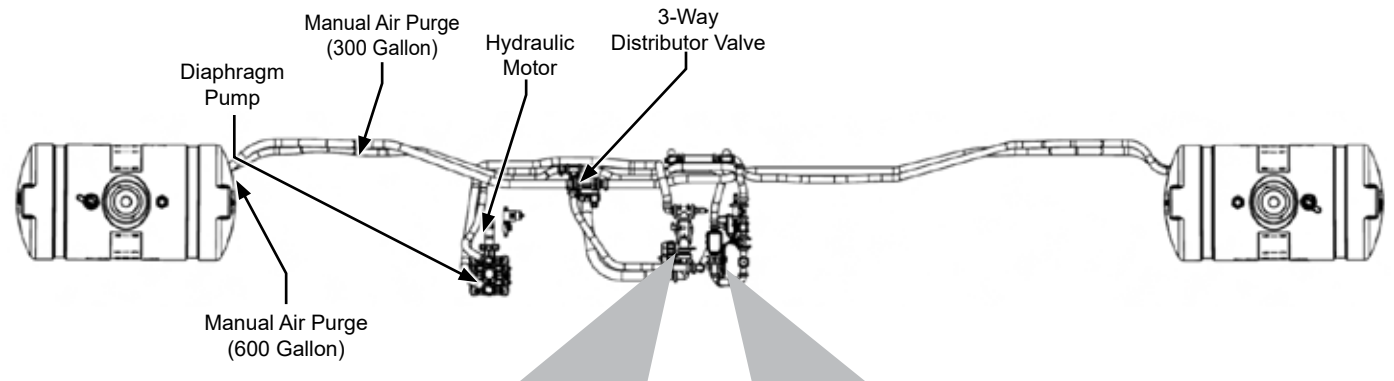




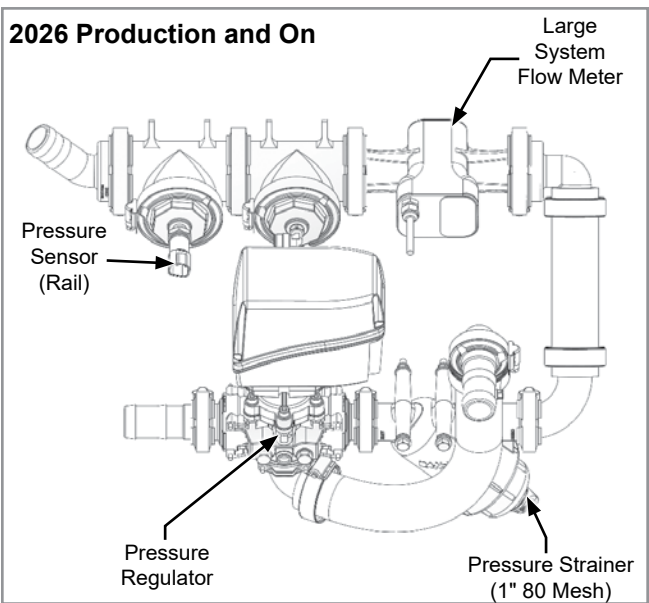
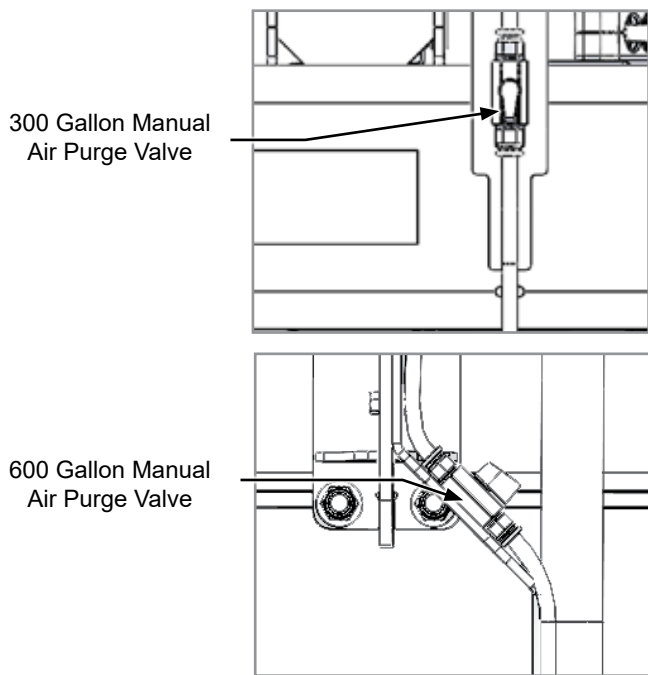
12 Row System Schematic (300 Gallon Shown)



16 Row System Schematic

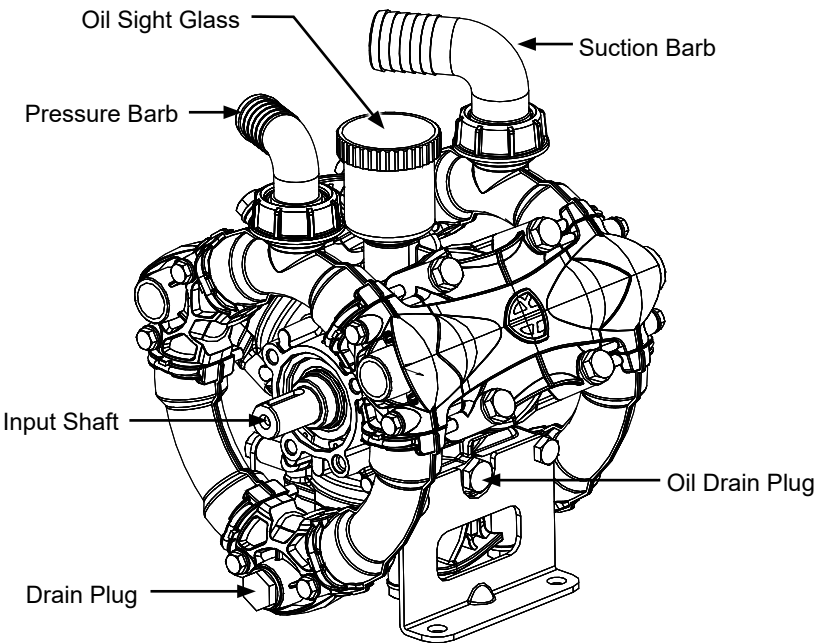


2026 Production and On



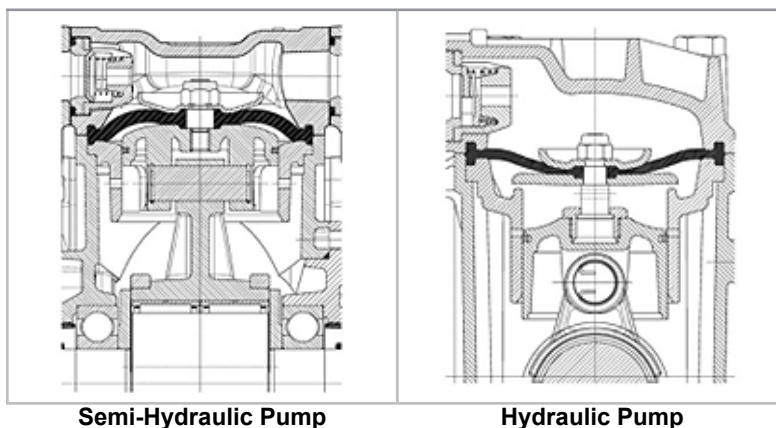
SYSTEM OVERVIEW

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

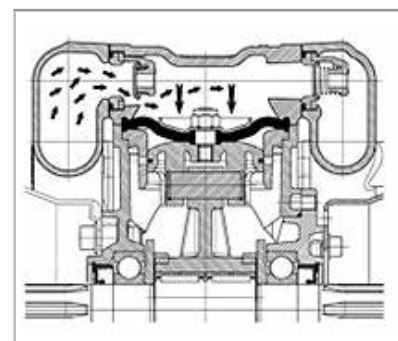
Diaphragm pumps are reciprocating positive displacement pumps. Reciprocating movement of the diaphragms expands and compresses volumes. This mechanical work and change in volumes cause transfer of liquid. The main difference between a diaphragm pump and other types of reciprocating pumps, is the presence 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.



The piston is mechanically connected to the diaphragm. The diaphragm is mechanically operated by the piston at its center and at the same time its 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

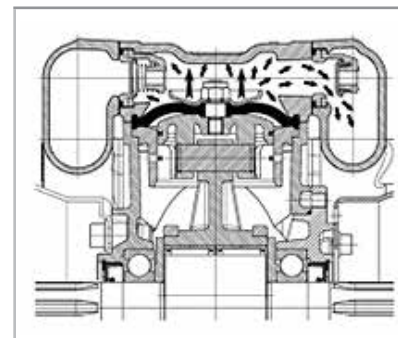
During the suction stroke (piston retreating), the difference between the suction pressure and the pressure inside the pump head opens the suction valve and closes the delivery valve. The transferred liquid is drawn into the head by the suction line.



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

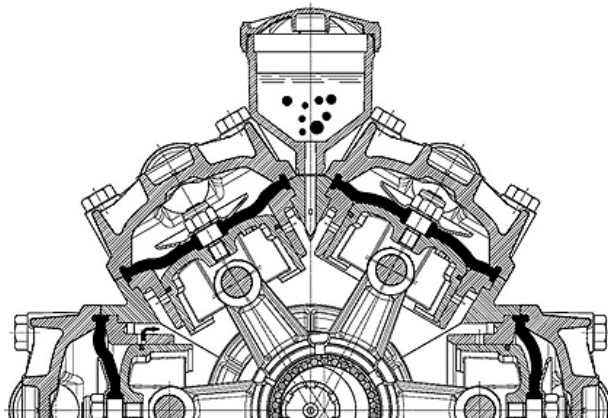
Aside from its lubricating function, in diaphragm pumps the oil passes through the calibrated holes in the sleeves uncovered at every piston stroke to form a protective cushion between piston and diaphragm. The volume of this oil cushion is not constant; it varies with pressure/vacuum inside pumping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



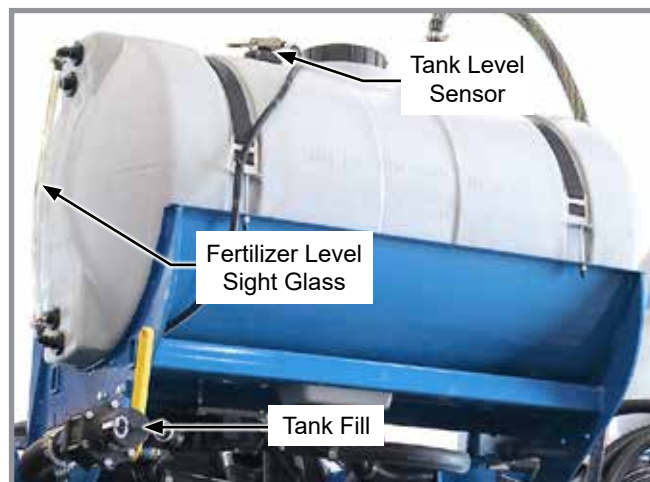
Improper Fertilizer Pump Operation

- 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

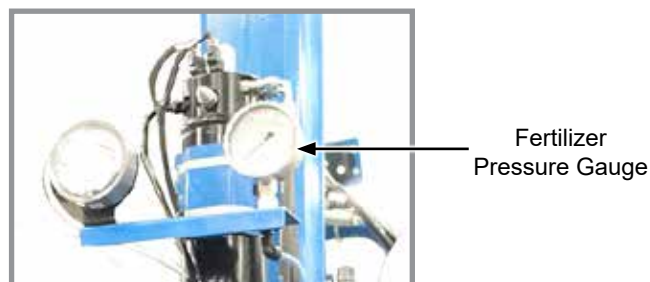
Indicates how much liquid is left in fertilizer tank(s). Fertilizer level sight glass is located on both ends of each fertilizer tank. Planter must be on level ground to get an accurate level.



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 communicates 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 communication.	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

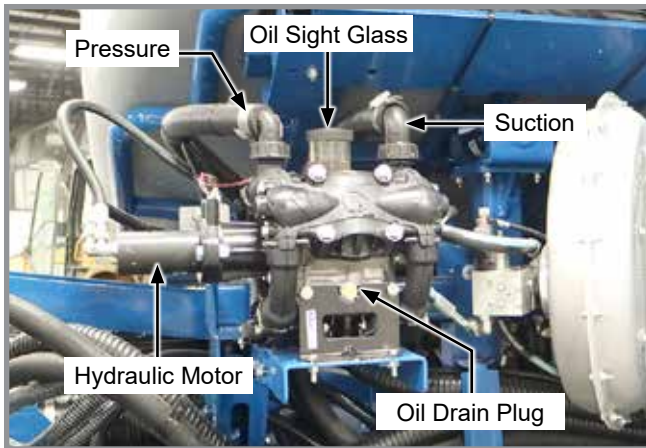
Refer to the parts manual for all service kit part numbers. Use the chart below for maintenance intervals.

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, <u>DO NOT</u> 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 aggressive chemicals 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.

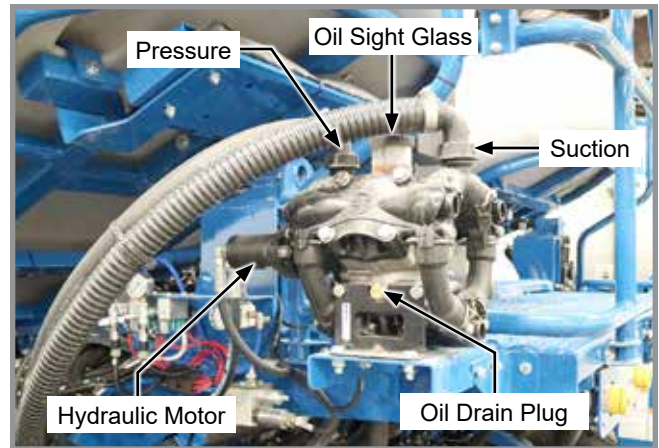
Checking Oil Level

- 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.





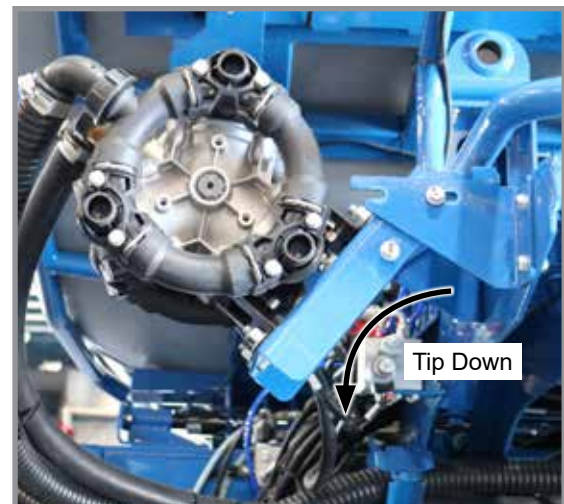
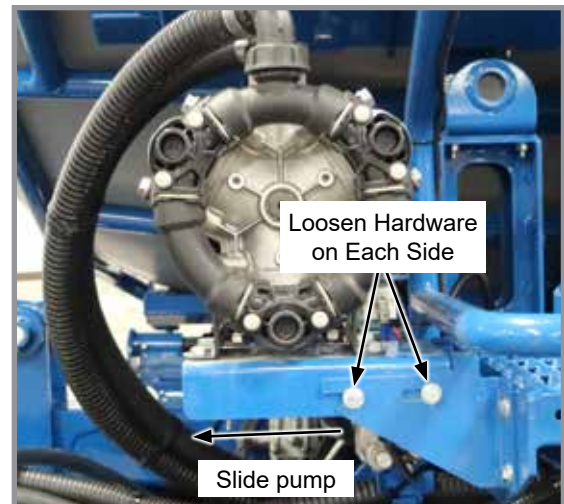
12 Row



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).

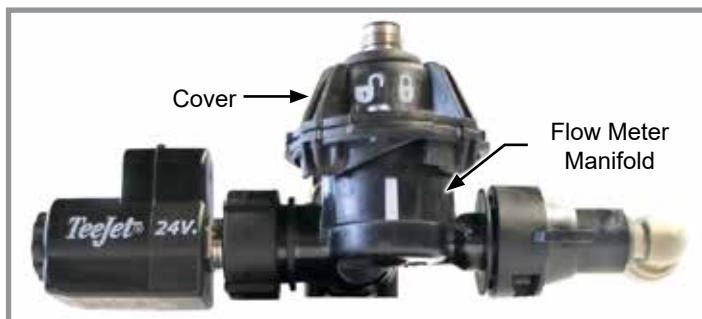
ROW FLOW METER CLEANOUT

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.

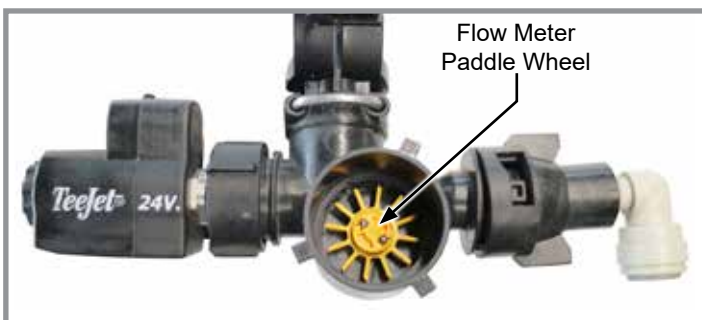
To properly clean, disassemble the entire assembly. Use the illustrations below as a guide for disassembly and reassembly.

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.



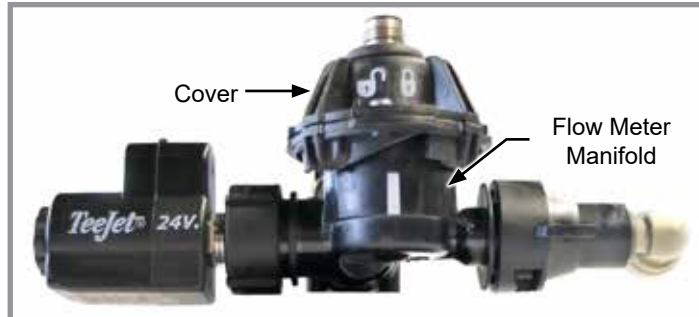
5. Reinstall cover and turn clockwise until the "lock symbol" is directly above the white line.

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

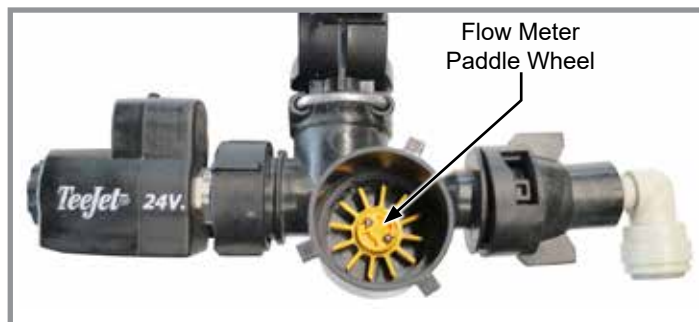


ROW FLOW METER JET ORIFICE REMOVAL

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



2. Remove paddle wheel from cavity.

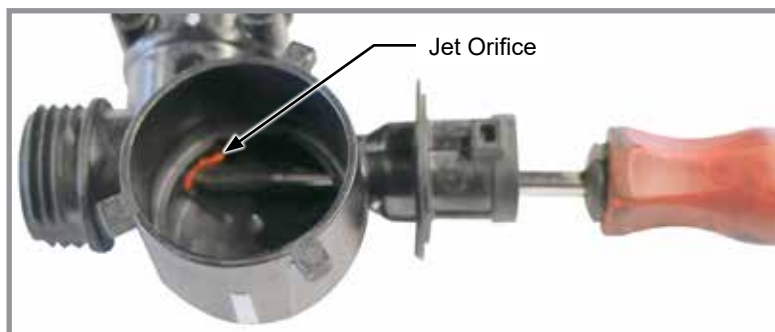


3. Rotate the nozzle assembly counterclockwise 90° and pull nozzle off.
4. Pull strainer out of flow meter.
5. Remove row shutoff valve by spinning nut counterclockwise and pulling valve out.



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.

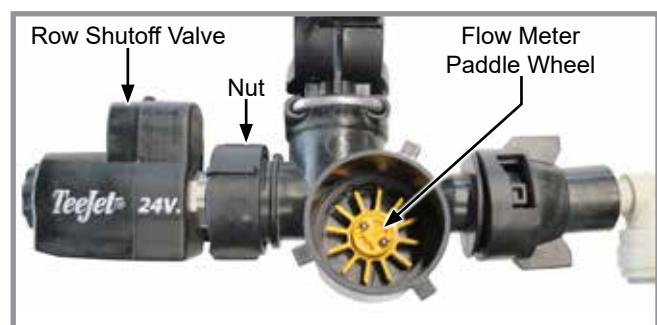
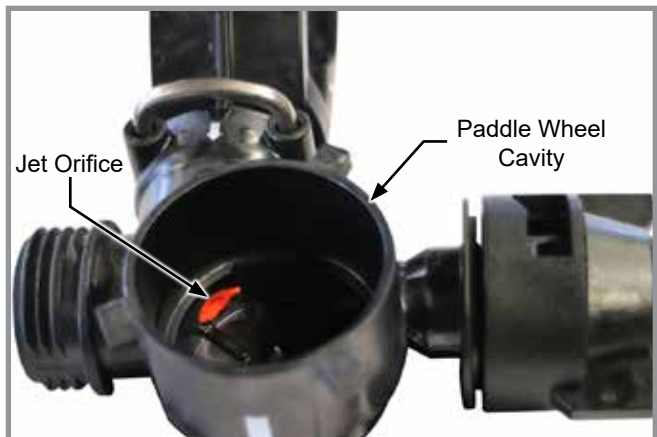
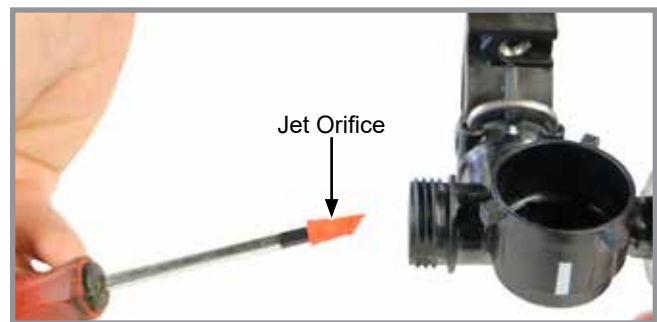
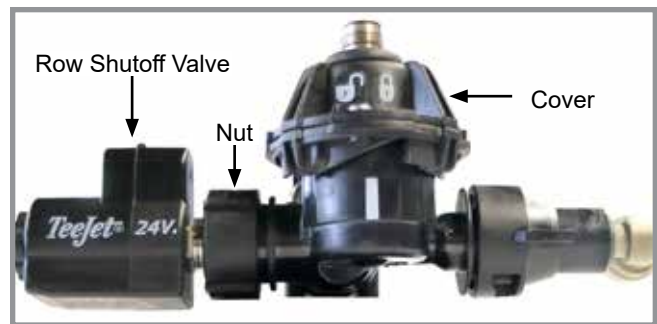


7. Reassemble flow meter

- 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

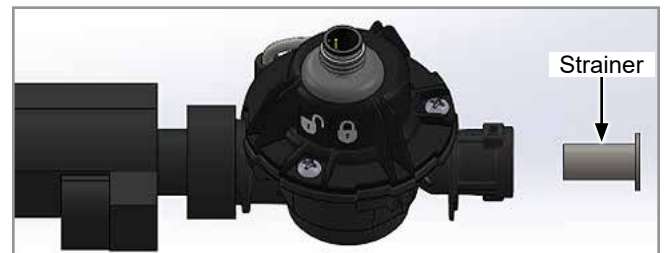
1. Remove row shutoff valve by spinning nut counterclockwise and pulling valve out.
2. Turn cover counterclockwise to unlock and remove cover from flow meter.
3. Place jet orifice on the end of #1 Phillips screwdriver, with the long tip closest to the rail and pointing toward the paddle wheel cavity.
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.



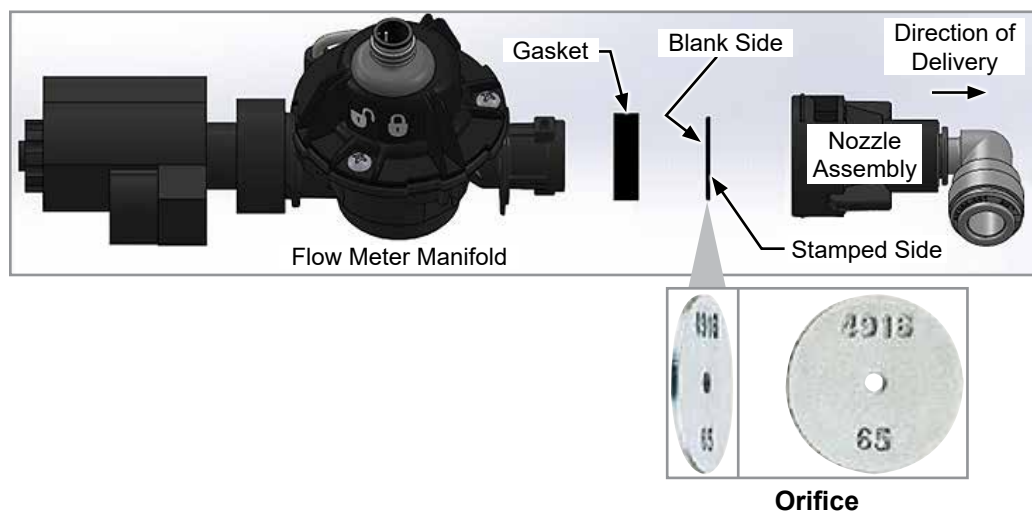
8. Reinstall strainer.



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.



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.

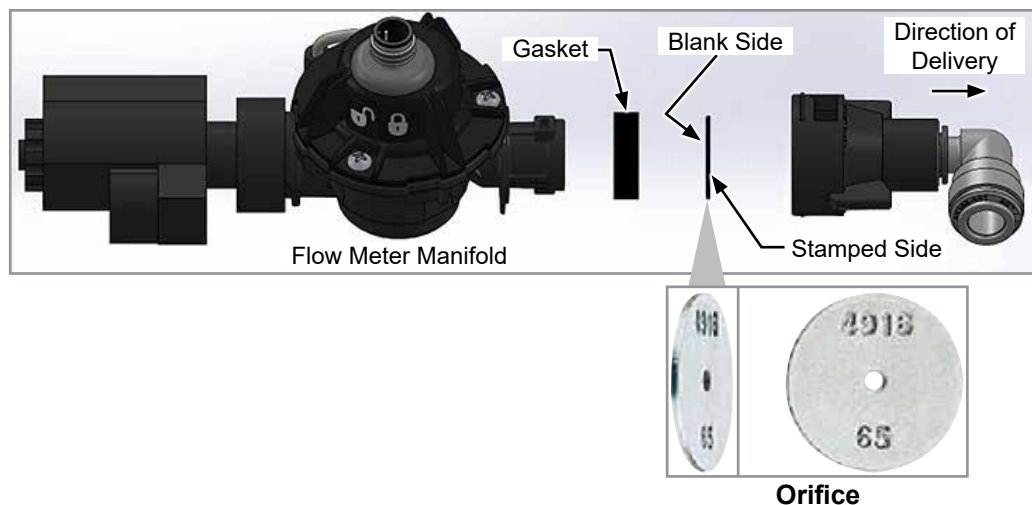


2. Remove gasket with orifice currently installed.
3. Remove orifice from gasket.



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 CONFIGURATION RATES

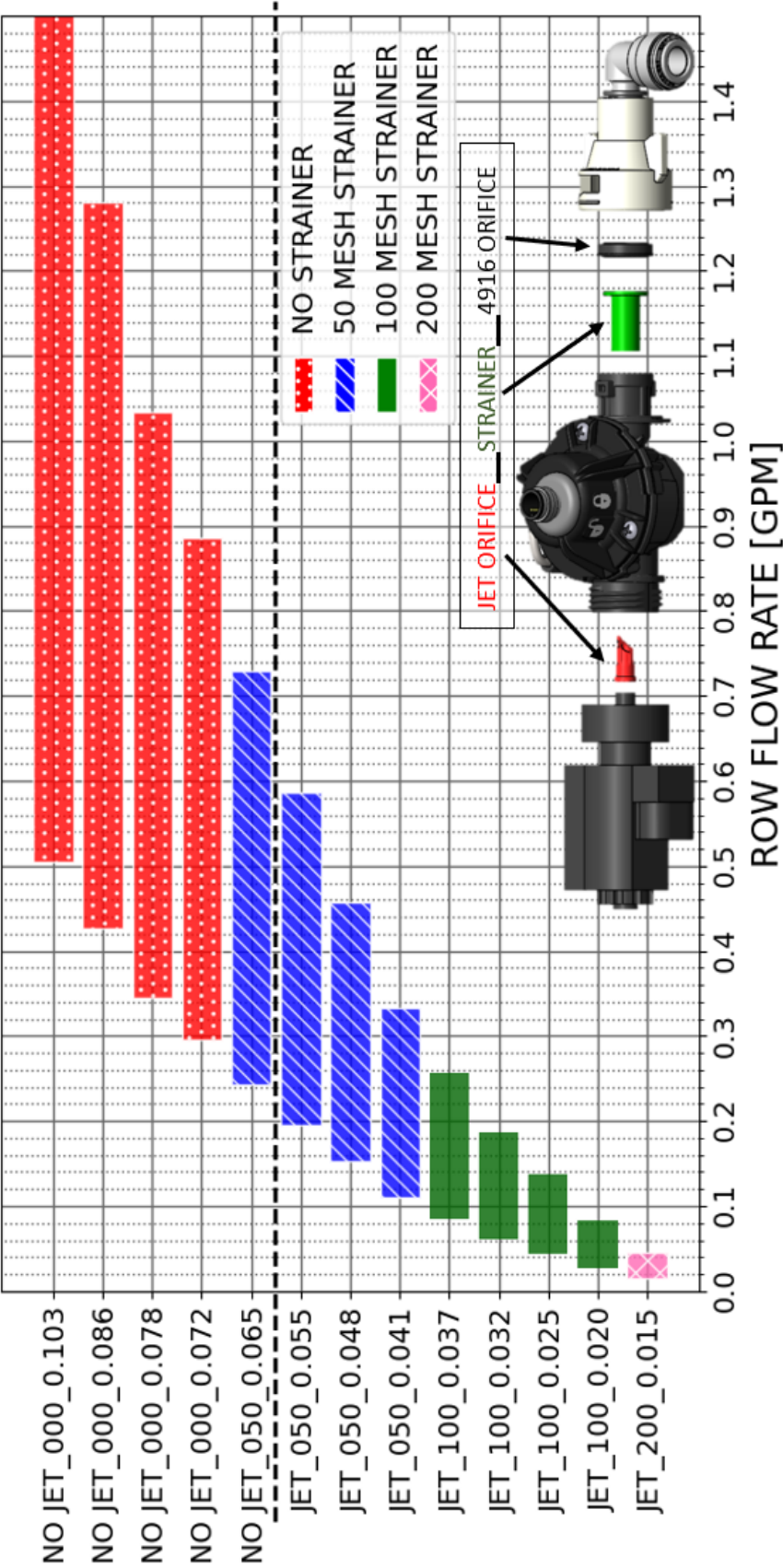
- How to select an orifice configuration (using Orifice Look Up Chart below):
- Find the closest listed Gallons per Acre [GPA] value and its group of rows.
- Identify the slowest and highest planting speed that will be used. Follow those rows over to corresponding row spacing being used, this equals Gallons per Minute [GPM].
- For a more accurate GPM, use this formula:
$$GPM = \frac{(Row\ Spacing\ x\ MPH\ x\ GPA)}{5940}$$
 - 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

NOTE: Orifice configuration rates are built into to Blue Vantage.

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	30in GPM	15in 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								



PUMP CLEAN OUT AND STORAGE

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

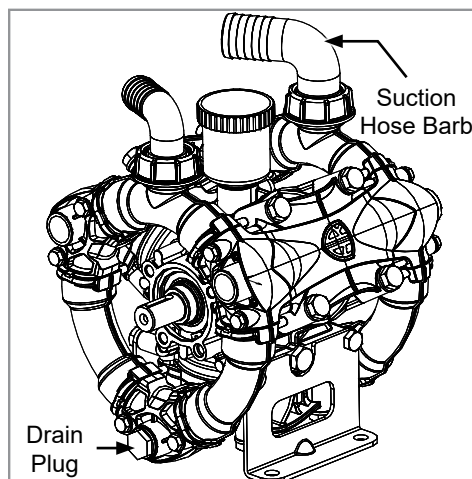
NOTE: Chemical solutions may become extremely corrosive if system is not cleaned out properly.

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.

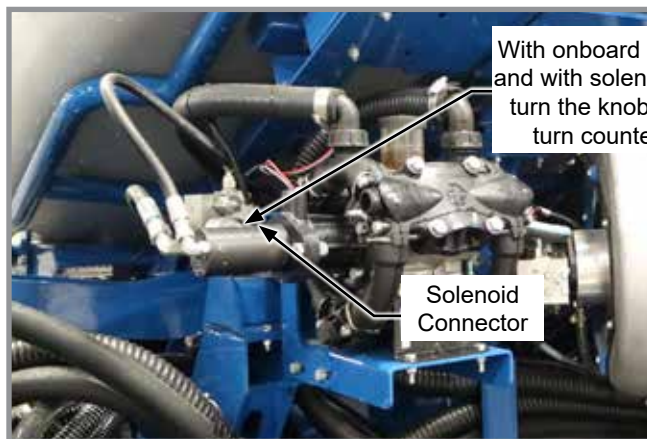
If pump is stored for the winter in a zone with risk of frost, liquid anti-freeze should be added to the circuit, flushing water.

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.

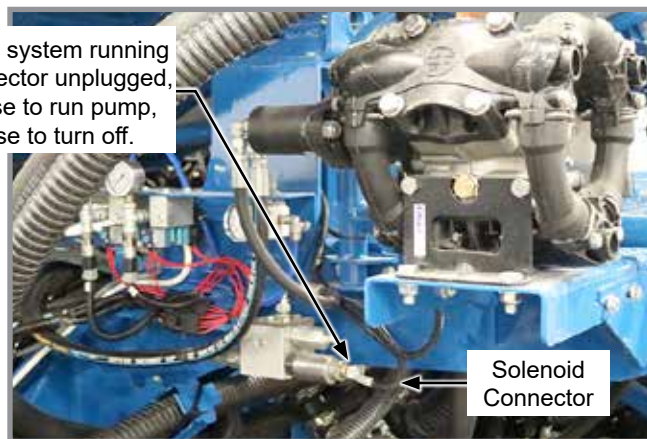


Diaphragm Pump - Model Number AR120

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

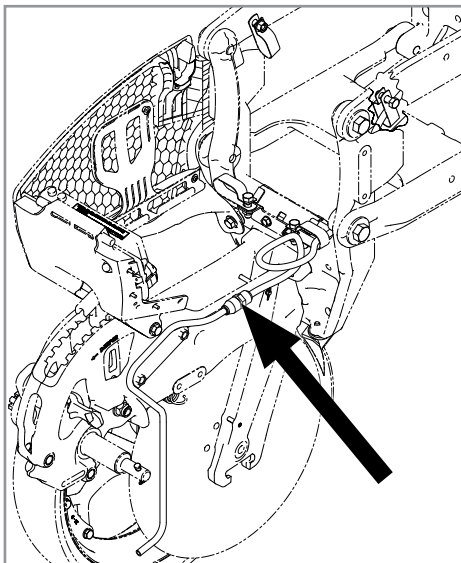
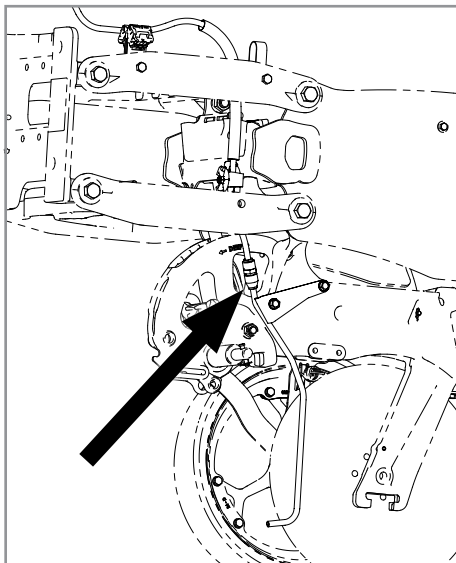
10. Reinstall discharge drain plug.
11. Add a 50:50 mix of water and RV antifreeze through the same inlet access port
12. Run the pump for a few seconds to distribute the mix through the manifolds and heads.
13. Fill onboard fertilizer tank with small amount of liquid anti-freeze for winter storage.

 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.

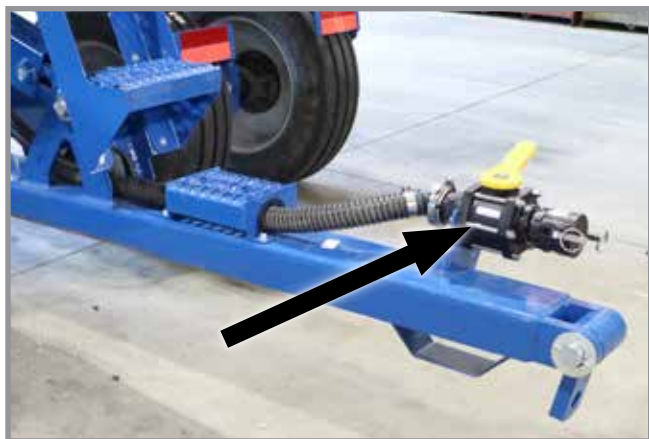
NOTICE	Catch any antifreeze in a container and dispose in a safe manner, to appropriate waste disposal facility, in accordance with local/regional regulations.
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15. Wash any excess fertilizer or winterizing fluid off planter before putting into storage.

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.

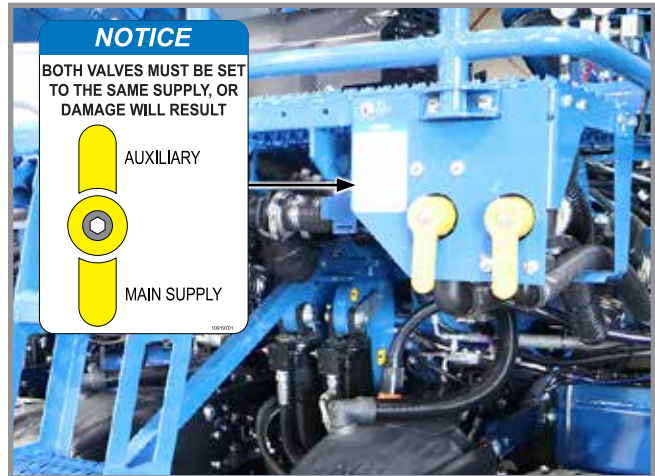
Rear Auxiliary Valve

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.

NOTE: Ensure auxiliary tank has a vent rated for >40 gpm to allow system to properly function.



12 Row



16 Row

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FERTILIZER SYSTEM TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Fertilizer row flow not detected.	Missing jet orifice.	Verify rate is achievable with installed orifices, Jet and/or 4916 orifices, at desired ground speed in Blue Vantage rate chart.
	Plugged orifice/strainer.	Clean debris from orifice/strainer. Verify correct strainer is installed.
	Row unit harness or extension harness damage.	Inspect and replace harness if necessary. 12V sensor and 24V solenoid.
	Row shutoff valve plugged.	Clean debris from shutoff valve, replace if necessary.
	Flow meter plugged.	Open cover and check for debris.
	Missing Paddle wheel and/or balls.	Replace/install paddle wheel.
	Flow meter housing cracked.	Replace as necessary.
Fertilizer row flow unexpected.	Row shutoff valve stuck open.	Clean debris from shutoff valve, replace if necessary.
Unable to achieve rate.	Rate is not achievable with installed orifice size.	Verify rate is achievable with installed orifices, Jet and/or 4916 orifices, at desired ground speed in Blue Vantage rate chart.
	Plugged row strainers or orifice.	Inspect and clean row flow components.
	Plugged pressure strainer.	Clean strainers regularly.
	Rail pressure sensor not reading correctly.	Verify rail pressure sensor and analog gauge match readings, replace pressure sensor if necessary.
System flow rate does not read properly below 1.5 GPM. (2025 Production)	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.
Fertilizer Off - rail sensor error.	Rail pressure sensor is not being powered properly.	Check wiring harness. 12V power.
	Rail pressure sensor is damaged.	Replace pressure sensor.
Fertilizer Off - suction sensor error.	Suction pressure sensor is not being powered properly.	Check wiring harness. 12V power.
	Suction pressure sensor is damaged.	Replace pressure sensor.

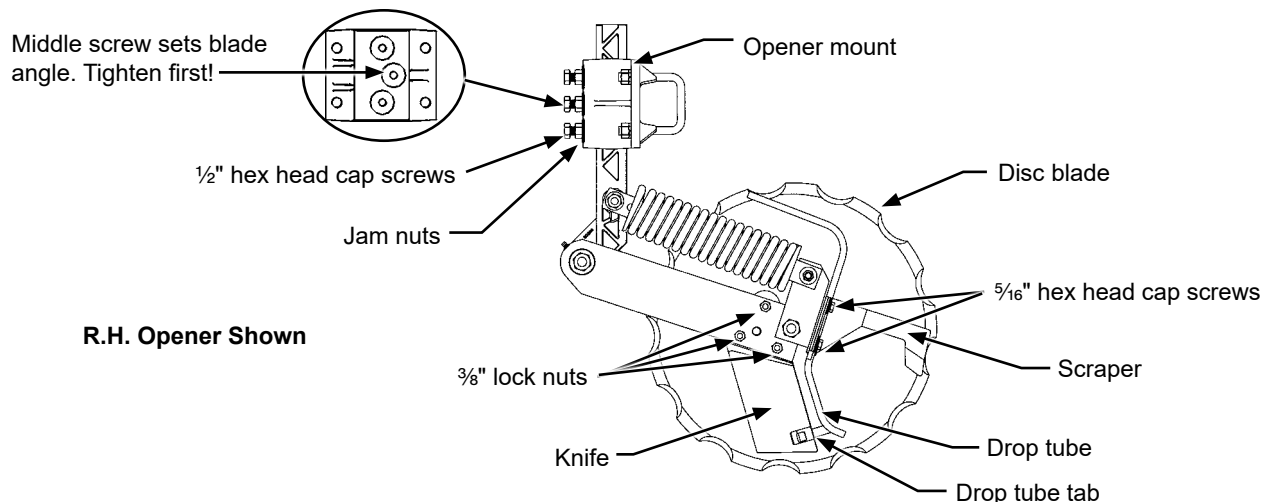
(Continued on following page.)

FERTILIZER SYSTEM TROUBLESHOOTING

Fertilizer off - high suction pressure.	Suction pressure has exceeded -9 PSI.	Verify auxiliary connection valve is open.
	Suction strainer fouled.	Clean strainer.
	Suction hose is kinked/damaged.	Replace hose.
	Electronic ball valve is not opening.	Check wiring harness and ball valve.
Excessive noise and vibrations and fall in performance.	Cavitation.	See high suction pressure above.
	Suction hose collapsed.	Check suction line and eliminate any restriction found.
	Suction strainer fouled.	Clean strainer.
	Oil level in sight glass has dropped.	Top off oil to correct level.
Oil leaking from shaft seal.	Oil seal damaged or worn.	Replace oil seal.
	Pressure inside pump body too high.	Check oil level, if excessive restore level.
Oil disappears from sight glass (after oil topped off)	One or more diaphragms are ruptured.	Stop pump immediately and replace diaphragm.
Oil going into sight glass changing to milky white color.	Oil/water emulsion into tank. One or more diaphragms are ruptured.	Stop pump immediately and replace diaphragm.

NOTCHED SINGLE DISC OPENERS

Standard Notched single disc opener adjustments



CAUTION

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

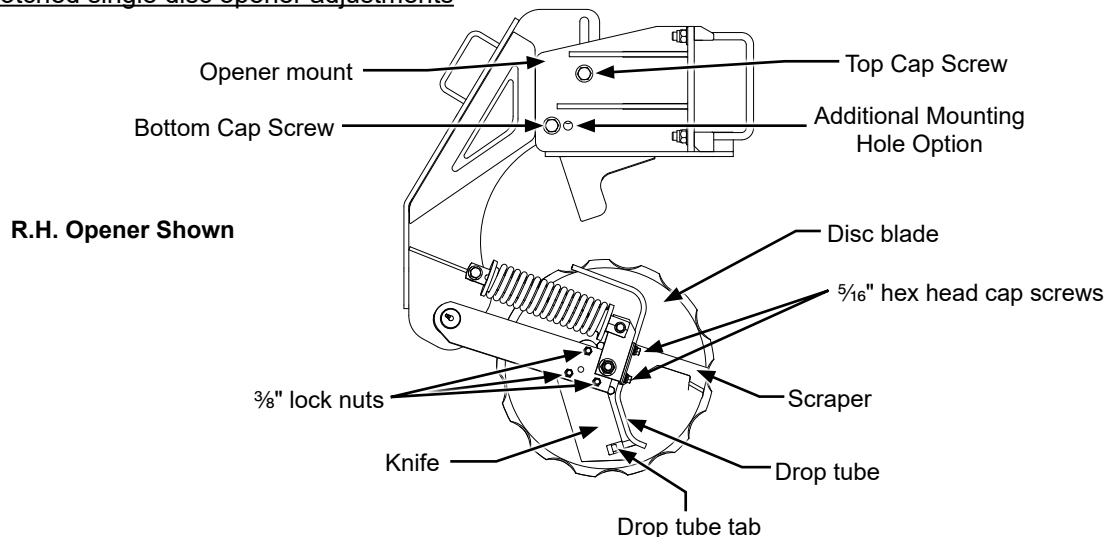
Disc blades are sharp and can cut causing serious injury. Wear gloves when working on or turning disc blades by hand.

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



1. Adjust knife to disc blade contact. Loosen or tighten $\frac{3}{8}$ " 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 $\frac{5}{16}$ " 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 $\frac{1}{4}$ "- $\frac{3}{8}$ " (6.35 - 9.5 mm) from disc blade.

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

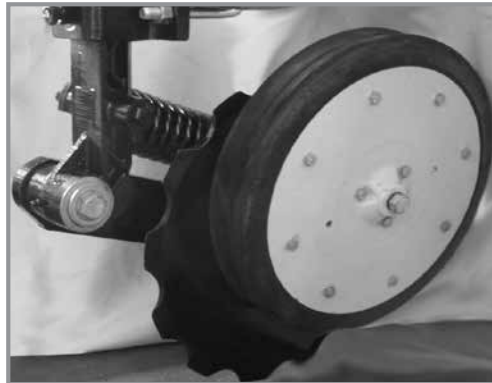
3. Adjust blade depth.

Standard Notched single disc opener adjustments:

Loosen three $\frac{1}{2}$ " 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:

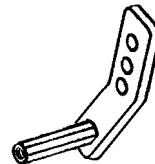
Loosen top cap screw on mount and leave installed. Remove bottom cap screw, flat washer, and lock nut. Adjust opener to desired height. Reinstall bottom hardware in the corresponding hole. **NOTE: Hardware may need to move to the other hole location depending on selected height.**

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 $\frac{5}{8}$ " 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.

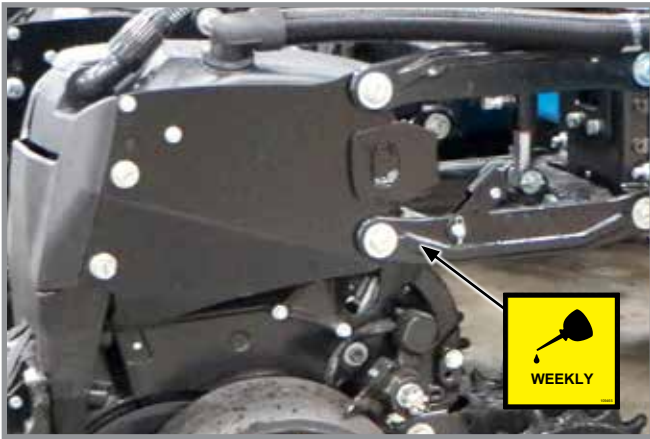
1. Raise wheel off ground.
2. Check for bearing endplay by moving wheel side to side.
3. Rotate wheel to check for bearing roughness. If bearings sound rough, remove hub and inspect bearings.

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

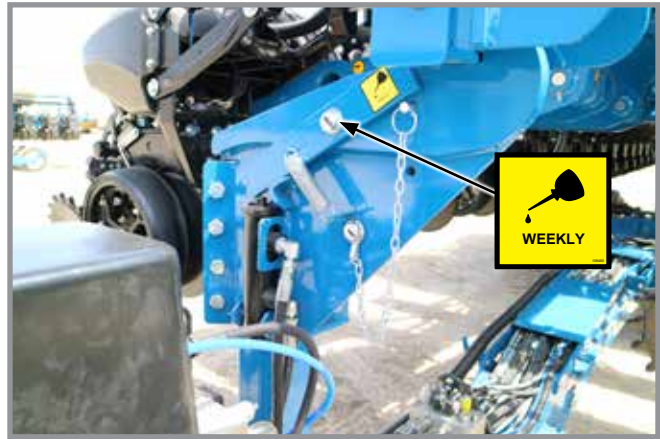
BUSHINGS

Lubricate bushings at frequency indicated.

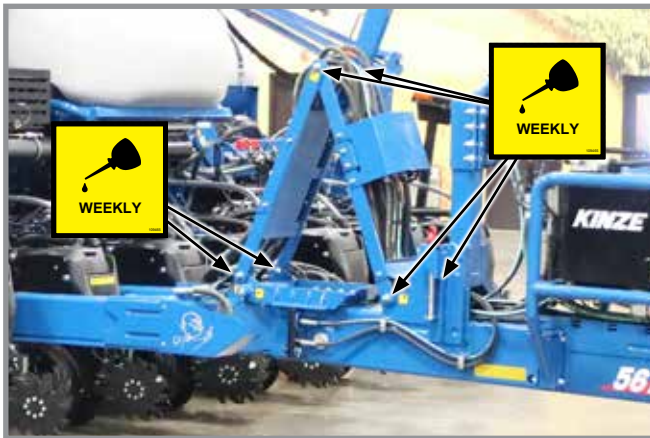
Check each bolt for proper torque. If bolt is loose, removed it and inspect bushing for cracks and wear. Replace bushing if necessary. Use **only hardened flat washers**. Replace damaged flat washers with proper part. Torque hardware to 130 ft-lb (176.2 N-m).



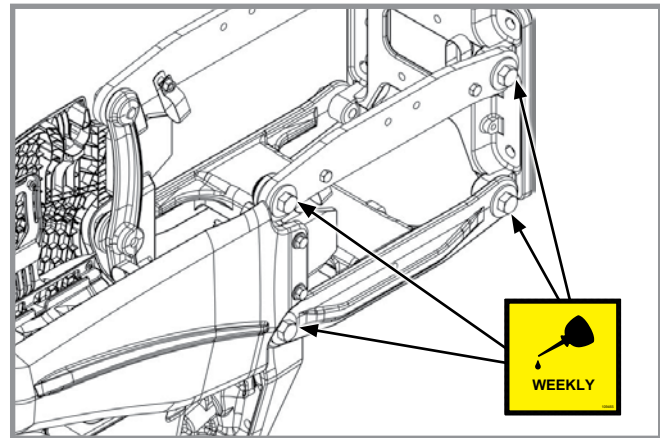
Split Row Push Row Unit Lockups (2 Per Row)



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**

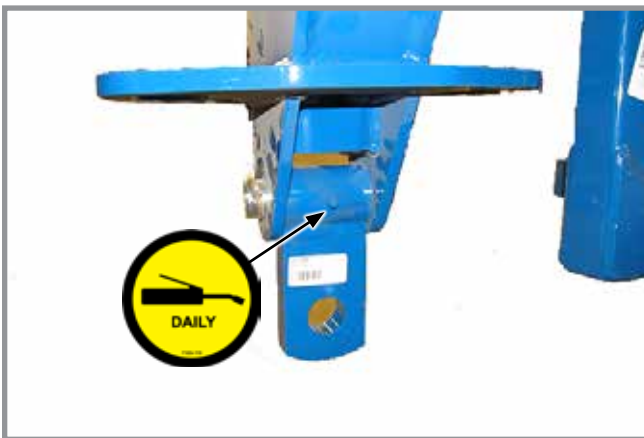
Any oil or grease on center post and poly wear pads will attract dirt and accelerate wear. Do not lubricate center post and poly wear pads.

Keep center post surface clean and free of any lubrication to prolong service life. See [“Center Frame Wear Pads” on page 5-41](#) for more information.

GREASE FITTINGS

 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.
	

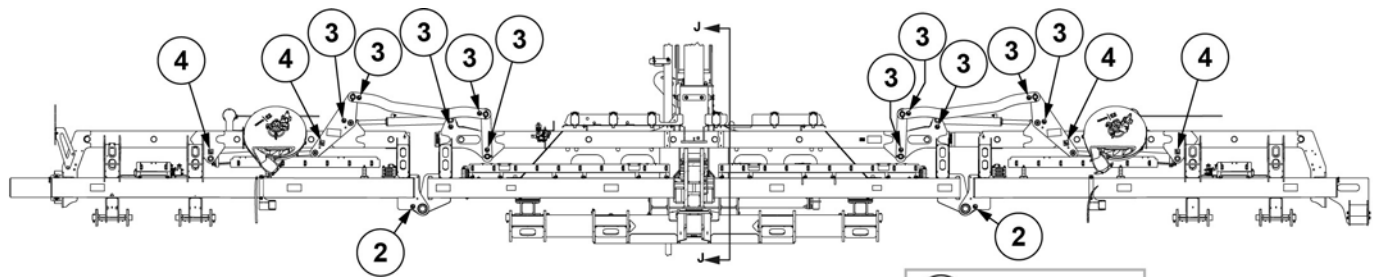
Parts equipped with grease fittings should be lubricated at frequency indicated with an SAE multipurpose grease. Clean fitting thoroughly before using grease gun. Frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent attention.



Trailer Hitch
1 fitting



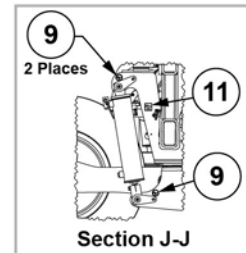
Drawbar Hitch
2 fittings



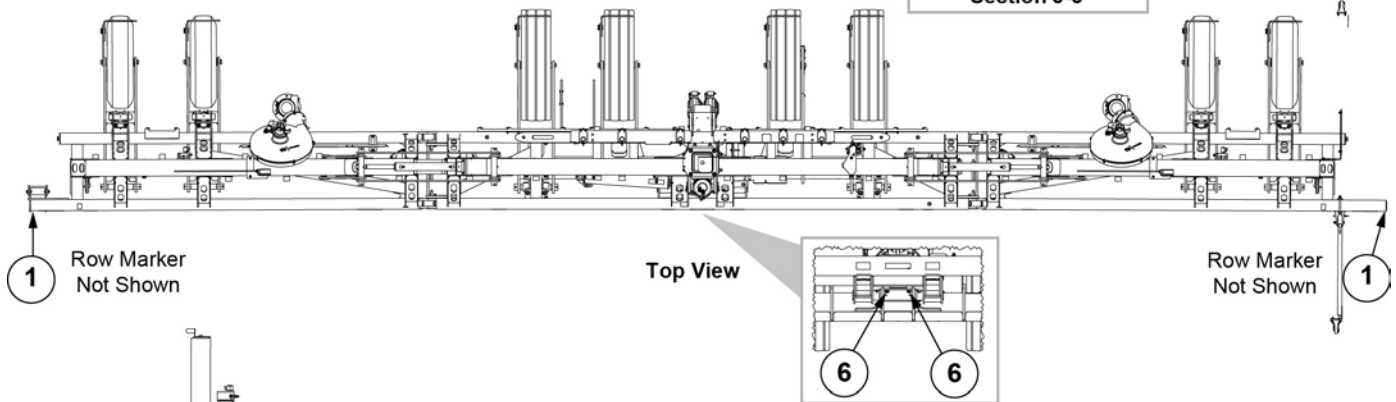
Rear View

NOTE: Shown with no row units or row markers.

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

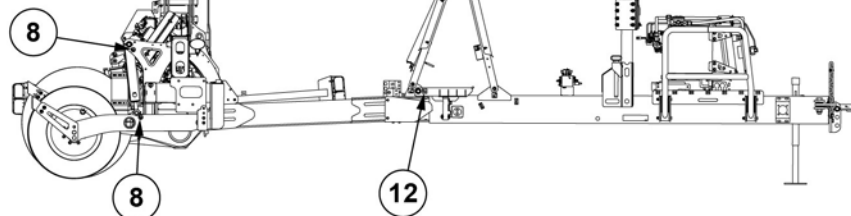


Section J-J



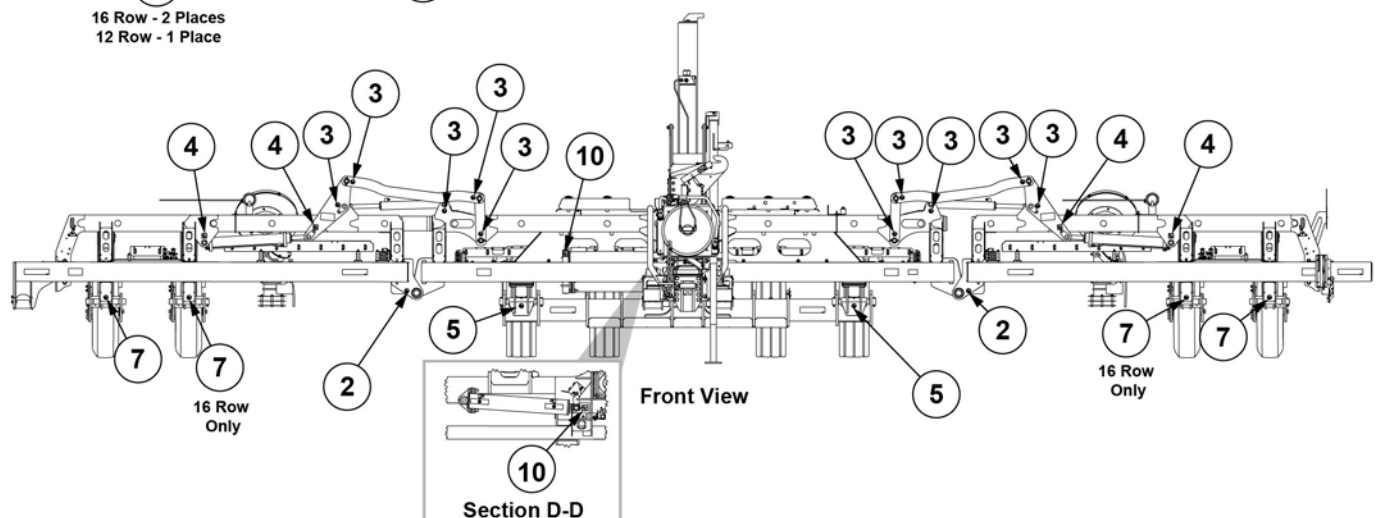
Top View

16 Row - 2 Places
12 Row - 1 Place



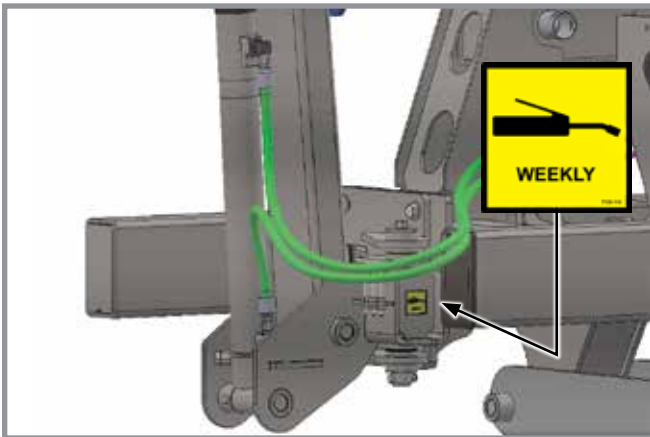
Side View

16 Row - 2 Places
12 Row - 1 Place



Front View

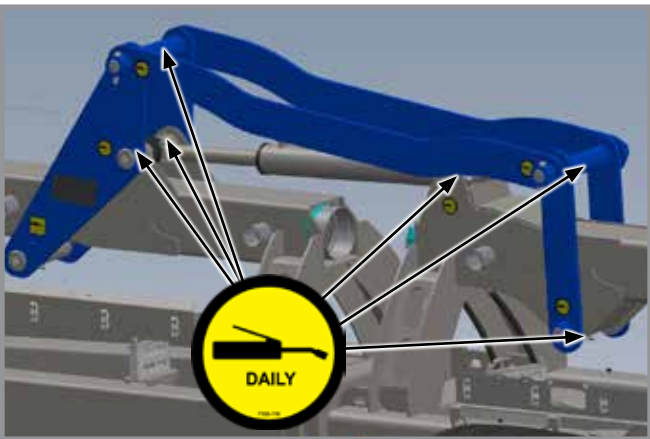
Section D-D



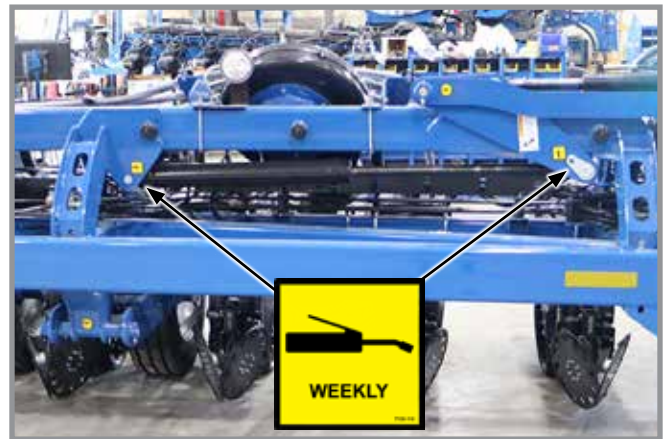
1. Row marker assemblies (if applicable)
1 fittings per assembly - 2 assemblies



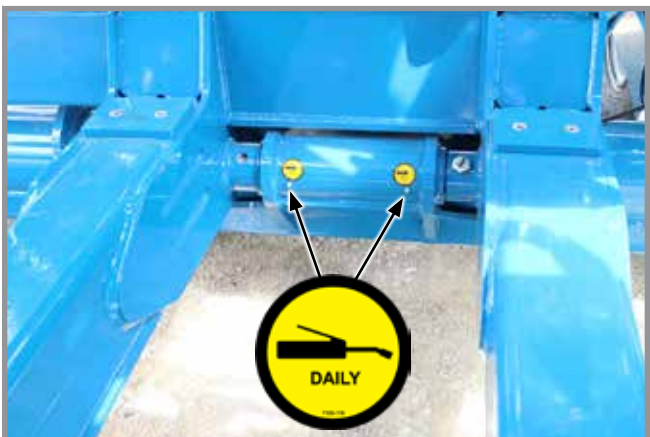
2. Wing hinges
2 fittings per hinge - 2 hinges



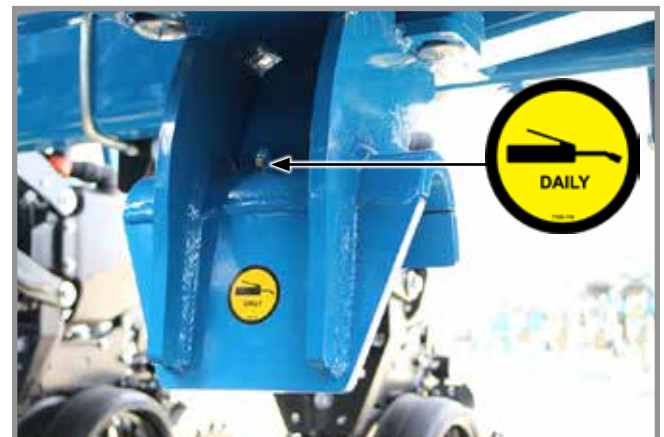
3. Wing Down Force Cylinder and Wing Lock
6 fittings per wing - 2 wings



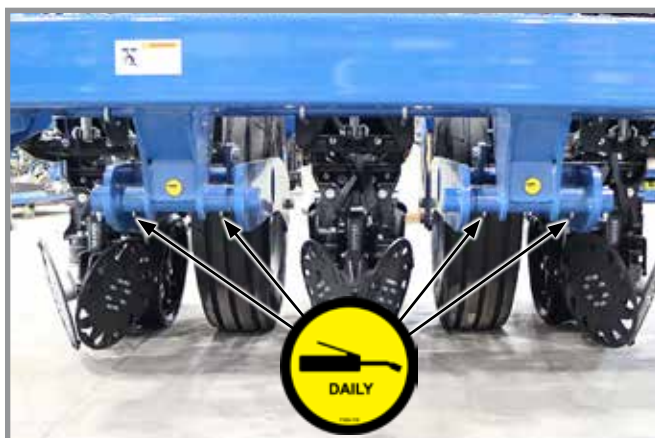
4. Wing Lock Cylinder
2 fittings per cylinder - 1 cylinder on each wing



5. Rock shaft
2 fittings



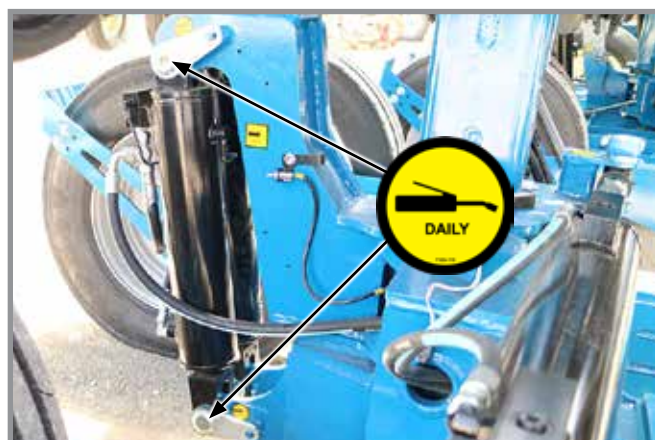
6. Field stabilizer
1 fitting per stabilizer - 2 stabilizers



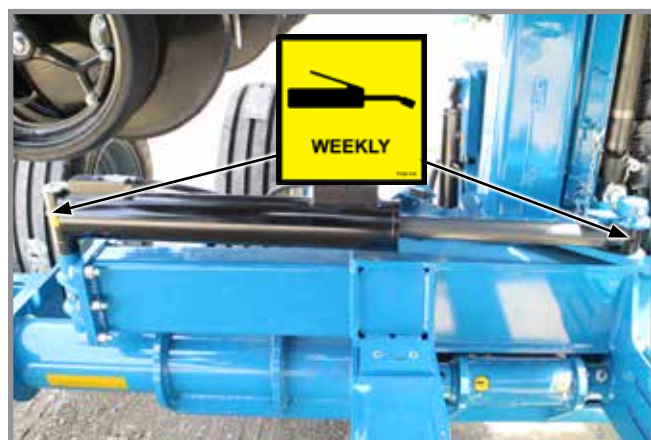
7. Wheel Modules
4 fittings per wing wheel
4 wing wheels (16 Row); 2 wing wheels (12 Row)



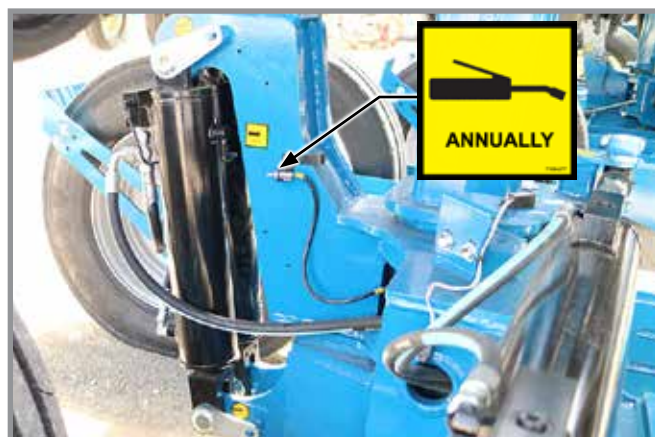
8. Wing lift cylinders
2 fittings per cylinder
4 cylinders (16 Row); 2 cylinders (12 Rows)



9. Rock Axle cylinders
2 per cylinder - 2 cylinders



10. Rotate cylinders
2 per cylinder - 1 cylinders



11. Center Post
1 fitting



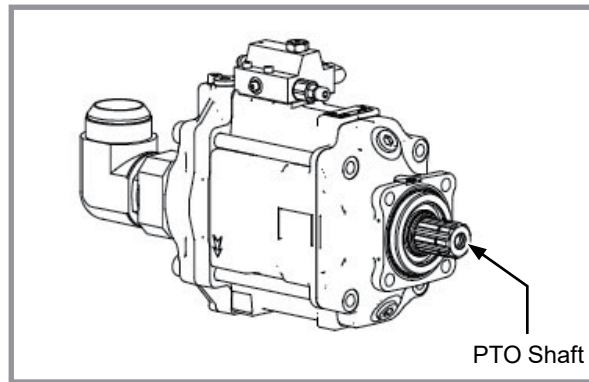
12. Tongue Hook
2 fittings

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
1/4"	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)
3/8"	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)
1/2"	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)
5/8"	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)
3/4"	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)
7/8"	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)
1 1/8"	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)
1 1/4"	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)
1 3/8"	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)
1 1/2"	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: Tighten pre-lubricated bolts and those with anti-seize to 70% of chart value.

NOTE: Prevailing torque hardware (i.e. top lock nuts, nylock nuts) come waxed and are thus treated as pre-lubricated.

SPECIAL TORQUE VALUES AND INSTRUCTIONS

Row unit parallel linkage bushing hardware	190 ft-lb (258 N-m)
5/8" No till coultter 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.
5/8" - 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 - 3/4" L-bolts	160 ft-lb (217 N-m)
Notched Single Disc Opener - 5/8" Hex Head Cap Screws	90 ft-lb (122 N-m)
Notched Single Disc Opener - 3/4" Hex Set Screws	160 ft-lb (217 N-m)
Gauge Wheel Spindle	1000 ft-lb (1356 N-m)
Master Cylinder - 1/2"-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
1/2"-20	55-70 ft-lb (75-95 N-m)	45-55 ft-lb (61-75 N-m)
3/4"-16	115-125 ft-lb (156-169 N-m)	100-115 ft-lb (136-156 N-m)
7/8"-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)
1 1/8"-12	300-375 ft-lb (407-508 N-m)	275-300 ft-lb (373-407 N-m)
1 1/4"-12	300-375 ft-lb (407-508 N-m)	275-300 ft-lb (373-407 N-m)

TORQUE VALUES- ALUMINUM

Diameter	Torque Value
1/8"	180-220 in-lb
3/8"	350-380 in-lb
1/2"	350-400 in-lb
3/4"	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
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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 $\frac{5}{8}$ "- 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)

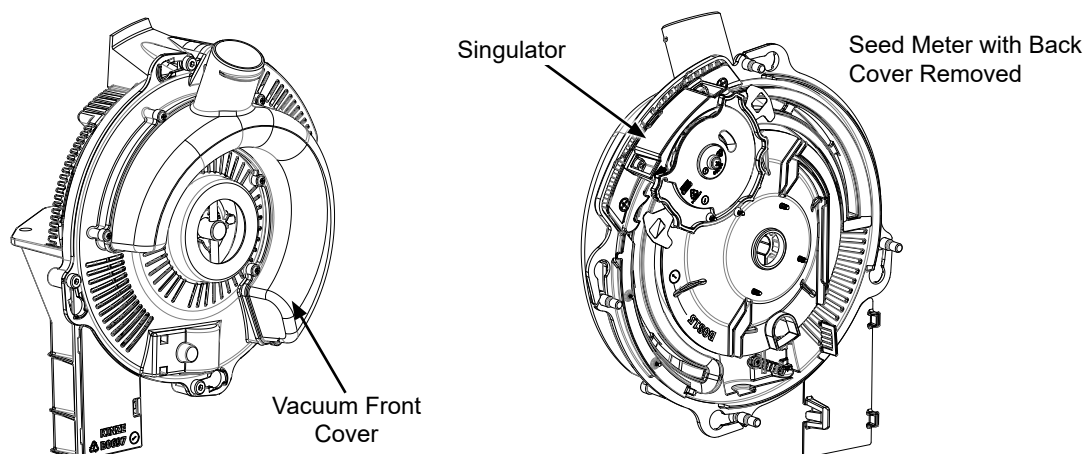
16 Row: VF295/75R22.5 65 psi (448.1 kPa)

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 5-40](#) 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.

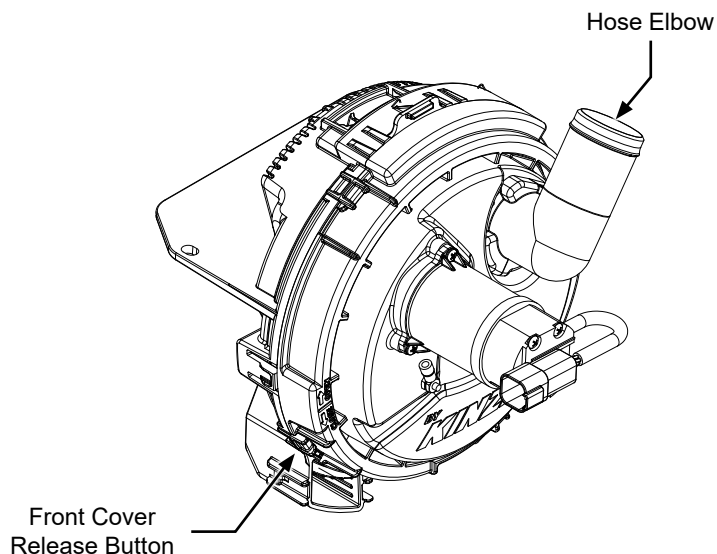
NOTE: See [“Preparation for Storage” on page 5-40](#) to prepare seed meters and seed delivery tubes for storage.

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.

TRUE SPEED SEED METER MAINTENANCE



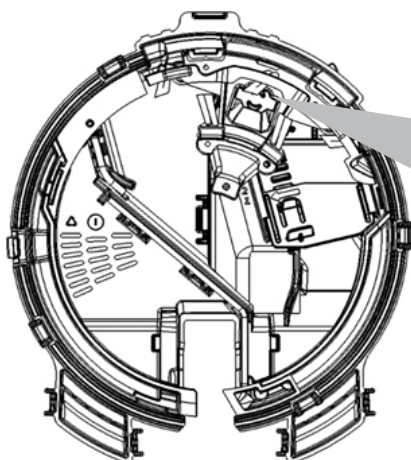
Seed Meter With Back Cover Removed

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, ejector wheel may need to be replaced. Clean seed disc by washing it with soap and water. Dry thoroughly.

Inspect singulator for wear after every 150 acres per row of operation. If singulation is low or inspection marks are not visible, replace singulator. Also inspect singulator brushes, if brushes are worn/frayed replace singulator. Replace singulator by 500 individual row acres.



See [“True Speed Seed Meter Cleanout” on page 5-16](#) for additional Vacuum Seed Metering System maintenance.

TRUE SPEED SEED METER CLEANOUT

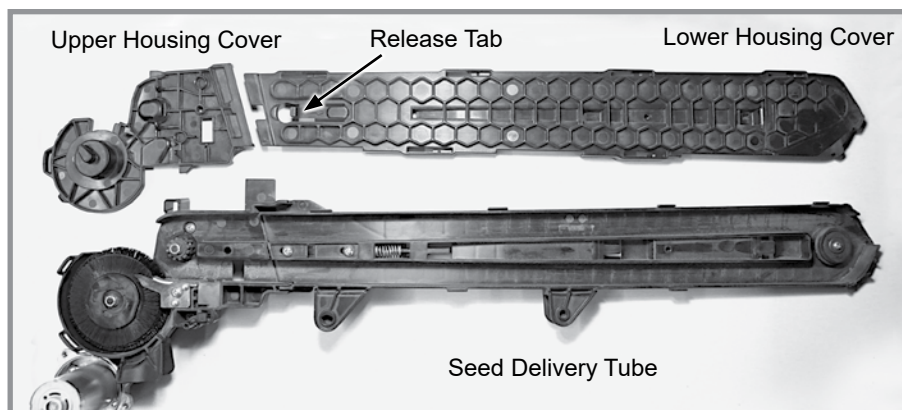
NOTE: Use of damaged seed or seed containing foreign material will cause plugging of seed cell orifices and require more frequent seed meter cleanout to prevent underplanting.

Thorough seed meter cleanout is important to maintain genetic purity.

1. Remove bulk fill and vacuum hose fittings from meter.
2. Rotate meter into service position.
3. Unplug electrical connections and ground straps.
4. Push release button and rotate seed meter vacuum cover clockwise to align locking tabs with slots.
5. Lift meter cover off meter assembly.
5. Remove mini-hopper and dump seed into a container.
6. Inspect mini-hopper door for any remaining seed.
7. If changing crop type, change seed disc, ejector, remove or install singulator, and adjust baffle setting.
8. Reassemble meter and latch into row unit.

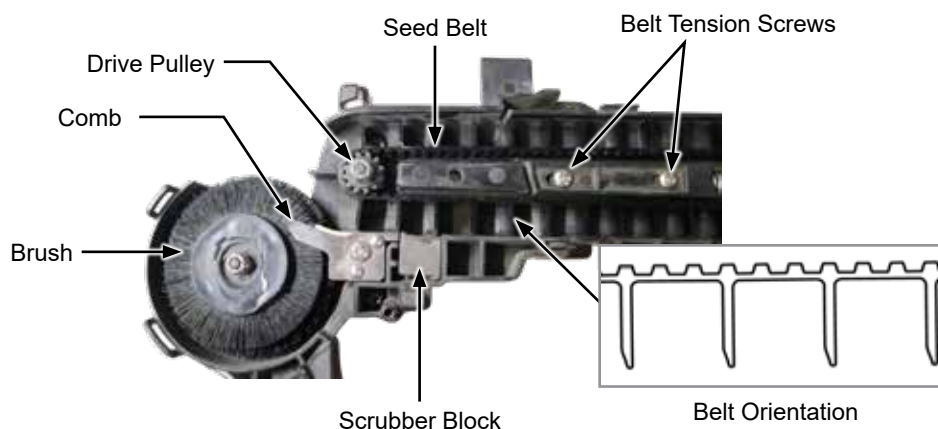
NOTE: See [“Preparation for Storage” on page 5-40](#) to prepare seed meters and seed delivery tubes for storage.

TRUE SPEED DELIVERY TUBE MAINTENANCE



Delivery Tube Disassembly

1. Unplug electrical connections and remove delivery tube from row unit.
2. Unscrew and remove seed sensor from delivery tube.
3. Lift release tab and slide lower housing cover downward. Lift and remove.
4. Lightly lift under the cover and slide down to release the upper housing cover.



Before every planting season inspect brush wheel and seed belt. Clean or replace as needed.

Turn and reuse other side of scrubber block if one side is worn. Replace if both sides are worn.

Belt Tension Adjustment:

Proper belt tension is necessary for long life and optimum performance of seed delivery system. Excessive belt tension can cause increased wear of upper drive pulley and under tensioned belts can cause faulty seed sensor readings.

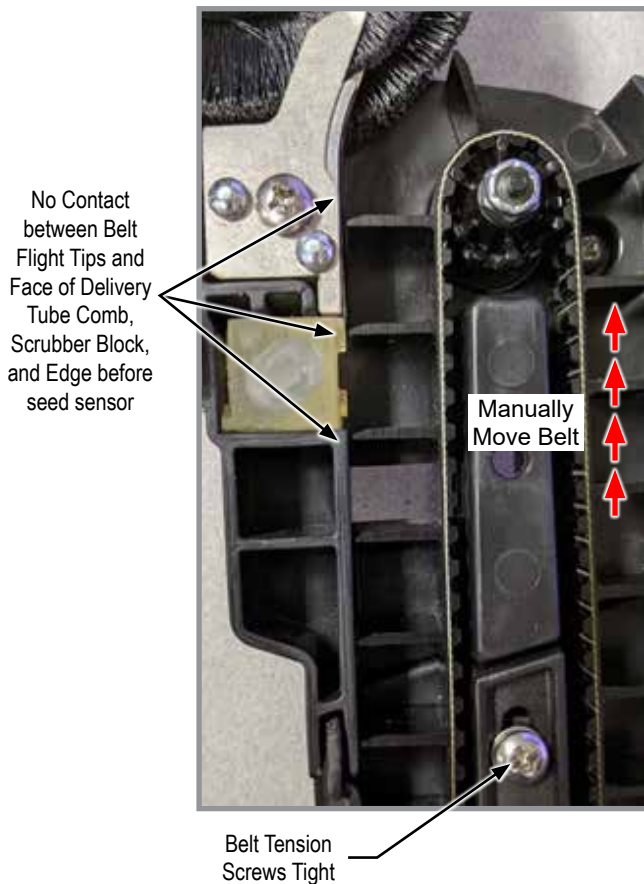
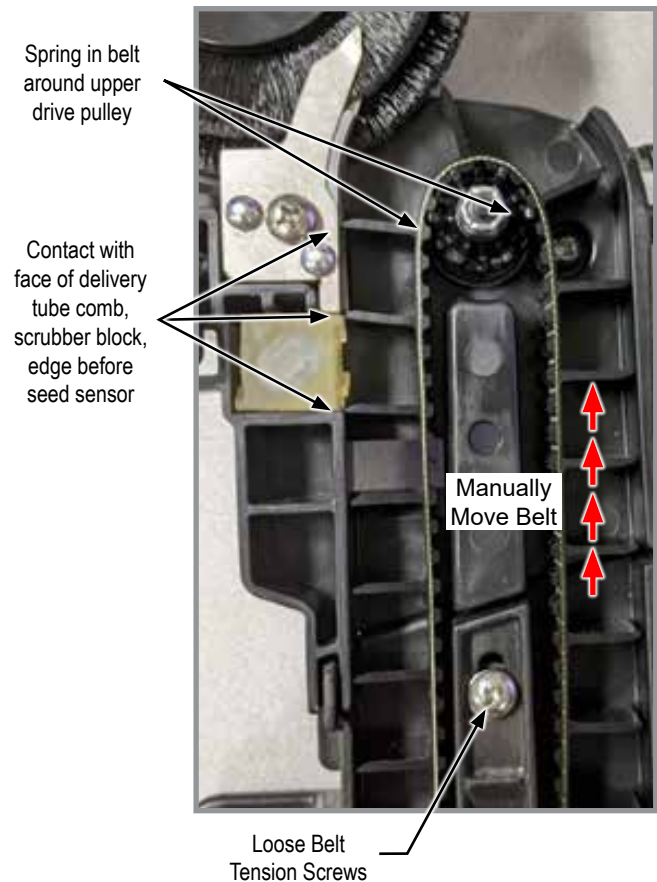
Belt Tensioning Procedure:

When installing or changing parts, tensioning belt will be necessary.

1. Loosen belt tension screws.
2. Compress and loosen upper and lower halves of delivery tube to verify the two parts moves freely.
3. Manually pull upper and lower half apart and let go so the two halves are held only by tension spring.
4. Tighten belt tension screws.

Visual Belt Tension Inspection:

Belt tension can also be checked visually without performing the re-tension process. Manually move belt in the correct direction from the return side of the delivery tube. There should be no contact between tips of belt flights and face of delivery tube comb, ribs on scrubber block, or wall edge before seed sensor window. Under tensioned delivery tube belts will usually drag on these surfaces and can also exhibit outward spring around upper drive pulley.

Properly Tensioned Belt Characteristics**Under Tensioned Belt Characteristics**

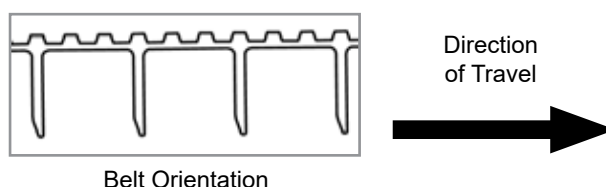
NOTE: Inspect delivery belt after first season of use and re-tension as needed.

Seed Belt Replacement

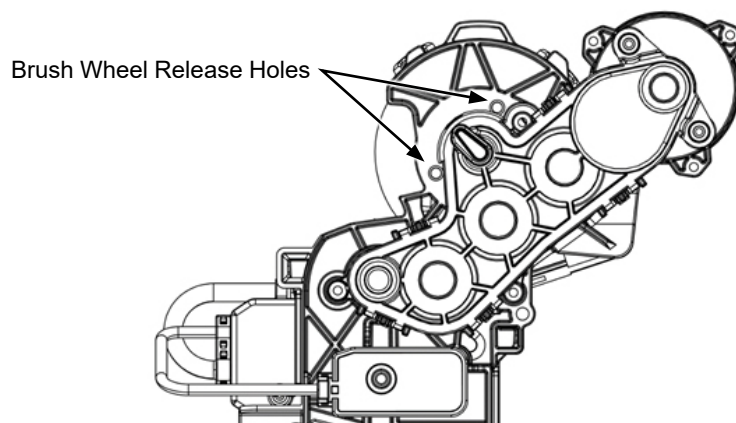
1. Lift release tab and slide lower housing cover downward. Lift and remove.
2. Unscrew the seed sensor bolt with triangular head and remove seed sensor.
3. Lightly lift under the cover and slide down to release the upper housing cover.
4. Loosen belt tensioning screws.
5. Roll seed belt down and over idler pulley.
6. Replace new belt by aligning on drive pulley and rolling onto lower idler pulley.
7. Re-tension seed belt.

NOTE: Clean drive pulley for proper belt alignment.

NOTE: Seed belt flights should be oriented as shown.



BRUSH WHEEL REPLACEMENT



1. Remove retaining locknut on top of brush wheel.
2. Push brush wheel off of drive shaft by threading two seed sensor mounting screws into the brush wheel release holes. Thread screws in evenly on both sides to provide even pressure on brush wheel and prevent damage to shaft or wheel.
3. Replace new brush wheel and locknut.

NOTE: All meters and delivery tubes should be thoroughly cleaned of seed before storage to help prevent rodent damage.

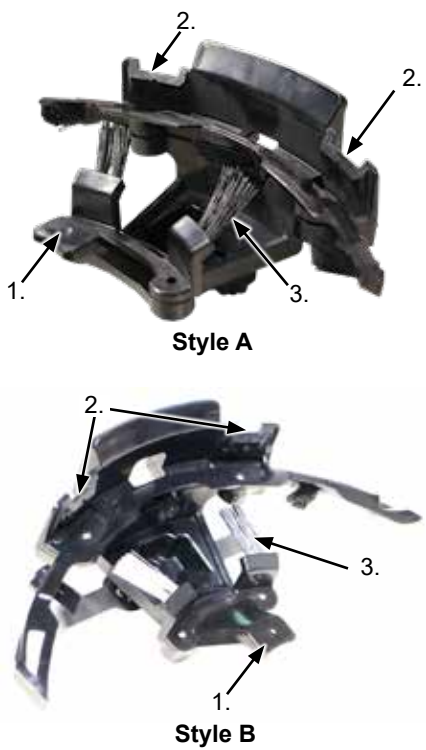
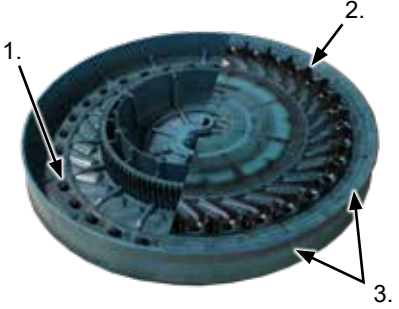
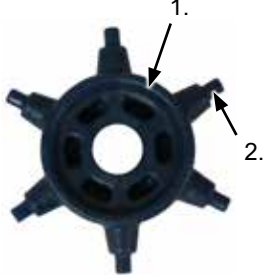
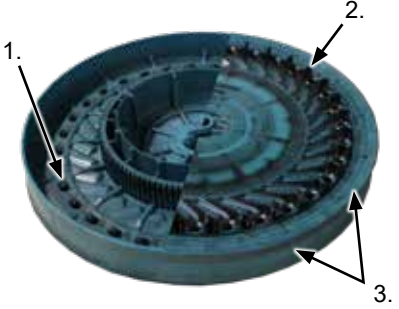
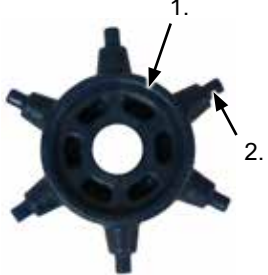
NOTE: Replace locknut after brush wheel replacement if it has been removed more than 5 times as locking feature may be compromised.

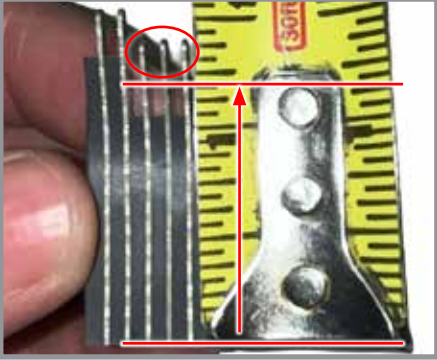
NOTE: Poor seed spacing could be caused by missing scrubber block in delivery tube assembly.

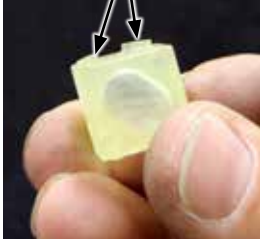
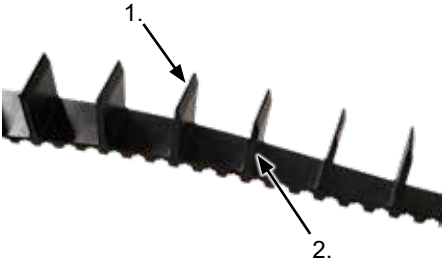
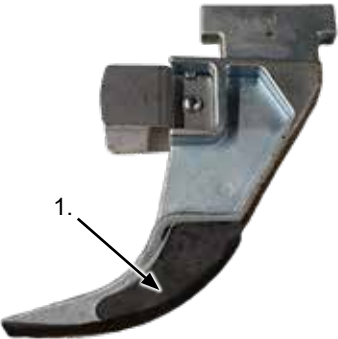
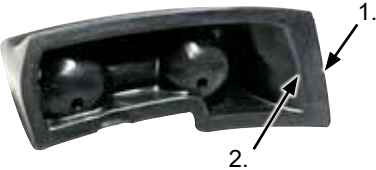
NOTE: It is recommended to store delivery tube assemblies in a separate location during off-season to prevent damage from rodents.

NOTE: Be sure nothing is sitting/applying pressure to brush wheel.

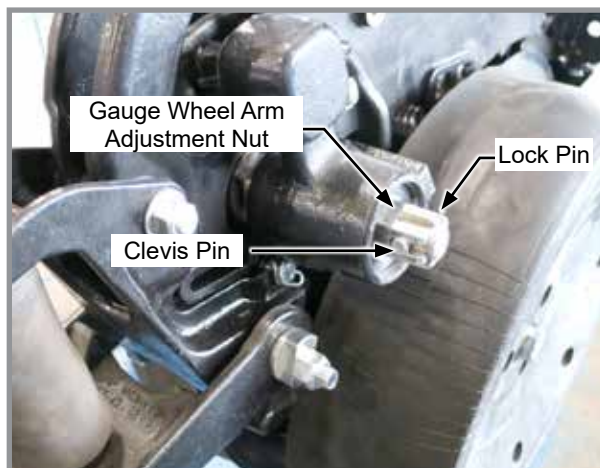
TRUE SPEED MAINTENANCE CHART

COMPONENT	INSPECT	REPLACE	WEAR CHARACTERISTICS	
Singulator	Annually	Every 500 row acres or as needed	 Style A Style B	1. Reduced volume of wear indicator.
				2. Reduced depth in wear indicator.
Seed disc	Annually	Every 1000 row acres or as needed		3. Reduced brush pack stiffness.
				4. Frayed bristles or having a permanent set.
Ejector wheel	Annually	Every 500 row acres or as needed		1. Prominent wear on seed orifice edges.
				2. Deformed/damaged seed paddles.
Seed disc	Annually	Every 1000 row acres or as needed		3. Pronounced ridges.
Ejector wheel	Annually	Every 500 row acres or as needed		1. Deformed/damaged ejector wheel punches.
				2. Worn ejector pins.

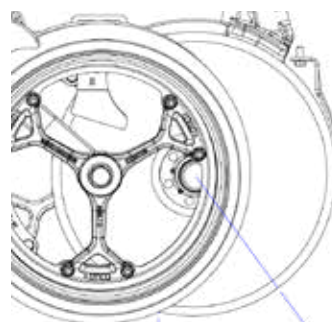
COMPONENT	INSPECT	REPLACE	WEAR CHARACTERISTICS	
Meter drive gear	Annually	Every 2000 row acres or as needed	 1. Style A  1. Style B	1. Deformed/damaged gear teeth. 2. Loose shaft bearings.
Brush wheel	Annually	Every 500 row acres or as needed	 1.	1. Frayed, bent, or broken brush wheel bristles. 2. Missing brush filament. 3. Exposed filament retention wire.
Delivery tube gearbox	Annually	As needed	 1.	1. Loose bearings.
Comb	Annually	As needed		1. Reduced comb tip length. 2. Consider replacement if any of these blades are less than $1\frac{3}{16}$" tall. 3. Crop types other than corn or soybeans may require taller blades for optimal performance.

COMPONENT	INSPECT	REPLACE	WEAR CHARACTERISTICS	
Scrubber block	Annually	Every 500 row acres or as needed		1. Reduced volume on <u>both</u> sides of block. Replace when ribs are less than .025 tall.
Seed belt	Annually	Every 1500 row acres or as needed		1. Deformed/damaged flight tips. 2. Bent flights.
Scraper	Every 200 row acres	Every 500 row acres or as needed		1. Noticeable wear on both scraper pads. Replace when scraper pads are less than 1/16" thick or worn down to the level of the surrounding metal.
Lower Seed Relief	Every 250 row acres	Every 500 row acres or as needed		1. Wear on leading edge. 2. Replace when wear line is reached.

GAUGE WHEEL ADJUSTMENT



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



Adjust gauge wheel adjustment nut to lightly contact opener disc blade in this area for 4" to 6". Check adjustment in operating position.

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:

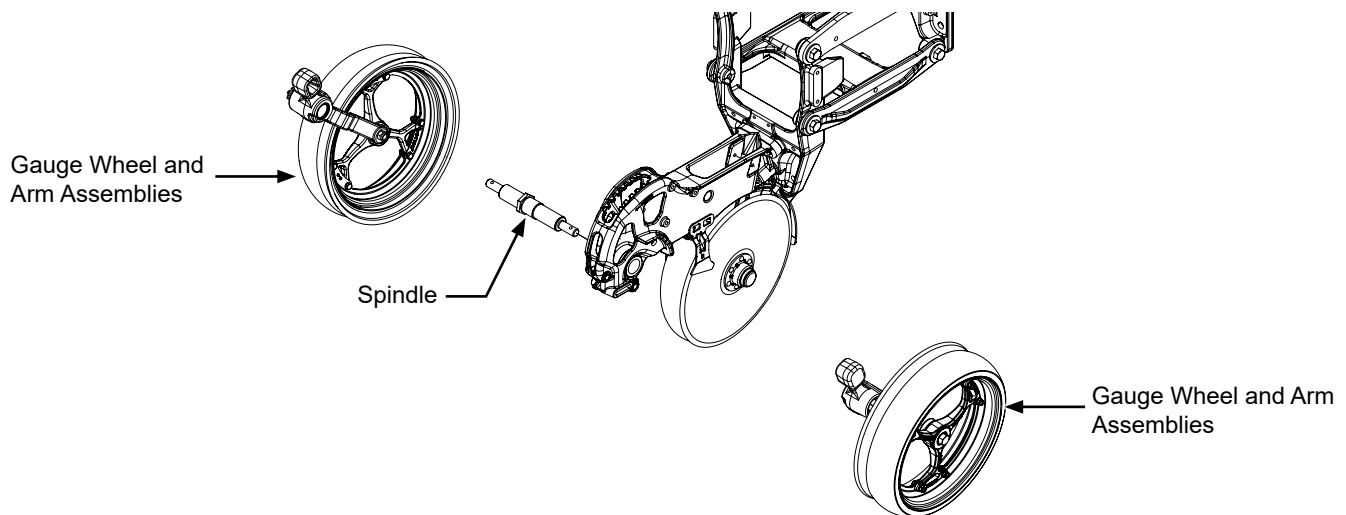
NOTE: Set depth adjustment handle at 3x2 position and lift gauge wheel to stop one side at a time.

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.

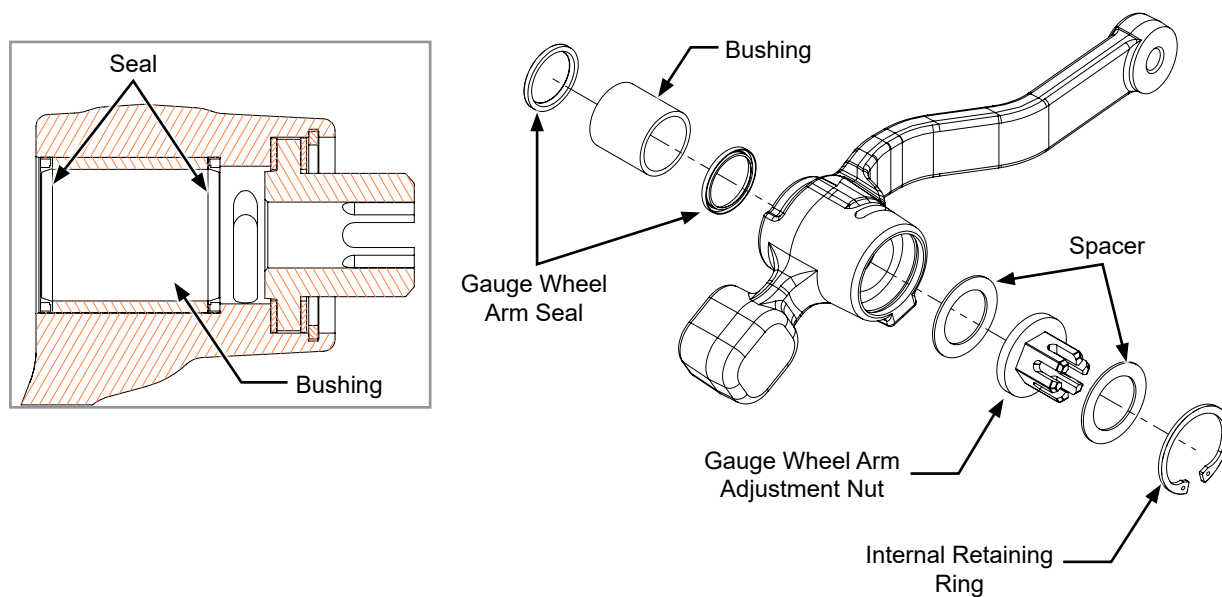
1. Remove lock pin and clevis pin from gauge wheel arm adjustment nut, that locks pivot spindle in place. Rotate nut counter-clockwise to unscrew from spindle.
2. Remove gauge wheel and arm assemblies from shank assembly.
3. Remove spindle using impact socket tool (P/N: G10974201).
4. Ensure spindle 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 $\frac{1}{4}$ "- $\frac{3}{8}$ " of side-to-side movement at 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.



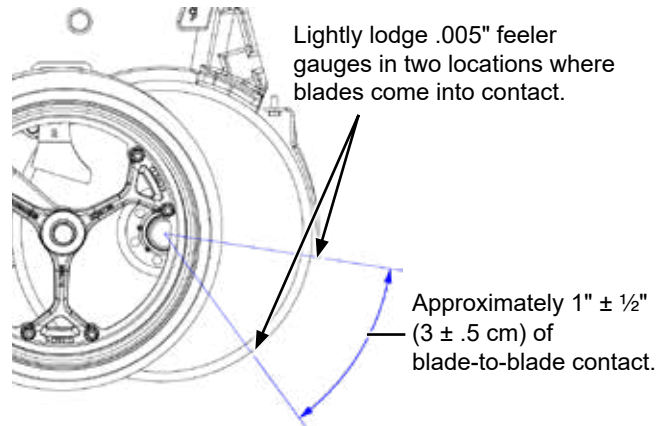
15" SEED OPENER DISC BLADE/BEARING ASSEMBLY

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 $1" \pm \frac{1}{2}"$ (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 $1" \pm \frac{1}{2}"$ (3 ± 5 cm) of contact.

NOTE: Proper blade clearance is critical. Blades should have $1" \pm \frac{1}{2}"$ (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 $14\frac{1}{2}"$ (36.8 cm). If there is an opening between the top of the blade and the shank, the blades are below $14\frac{1}{2}"$.



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 $1" \pm \frac{1}{2}"$ (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 $\frac{5}{8}"$ -11 Grade 5 cap screw to 125 ft-lb (169 N-m).

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

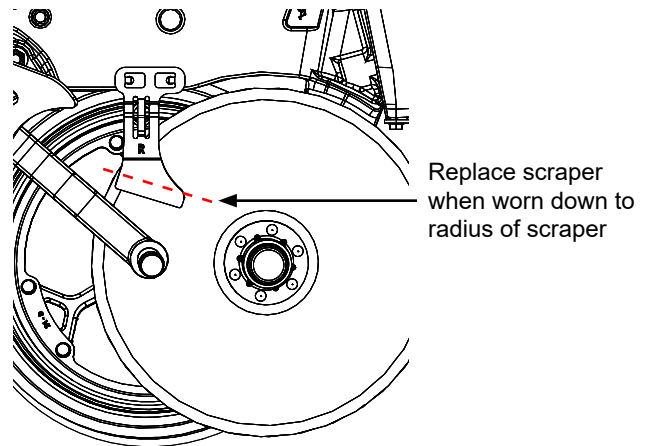
4. Install bearing dust cap, scraper, and gauge wheel.

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 $\frac{5}{8}$ " or less at lower end. A new seed tube guard measures approximately $\frac{7}{8}$ ".

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 $\frac{5}{8}$ " spindle hardware to 120 ft-lb (162 N-m).

Be sure coulters are positioned square with row unit and aligned in front of row unit disc opener.

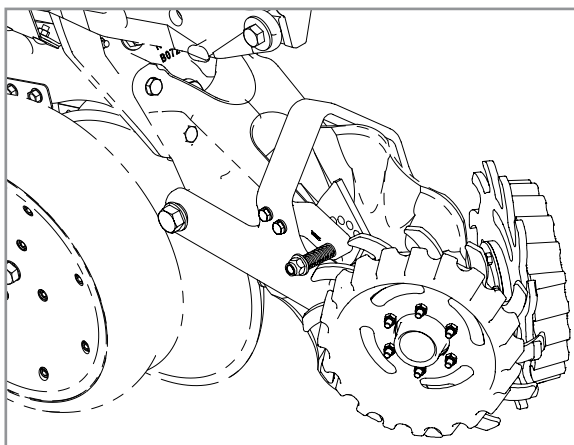
Coulter blade can be adjusted to one of four settings. Initially blade is set in highest position. As blade wears it can be adjusted to one of three lower settings. See "Row Unit Mounted No Till Coulter" in Row Unit Operation section of this manual.

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



Row Unit Mounted No Till Coulter

COULTER OR ROW UNIT MOUNTED RESIDUE WHEELS W/TREADER

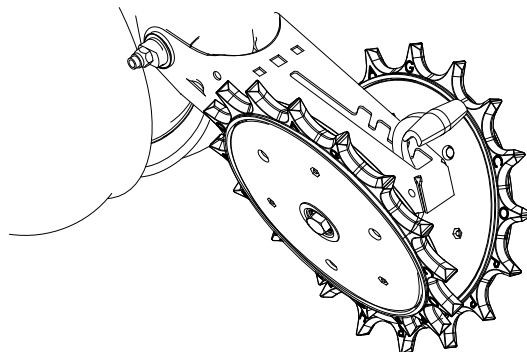


Coulter Mounted Residue Wheels W/Treader

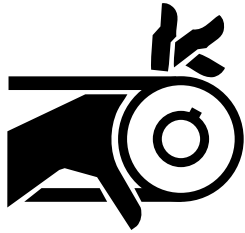
Wheel hubs are equipped with sealed bearings. If a bearing sounds or feels rough when wheel is rotated, replace them.

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.

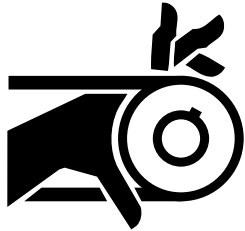


Row Unit Spiked Closing Wheel

YETTER 2940 AIR ADJUST RESIDUE MANAGER MAINTENANCE **WARNING**

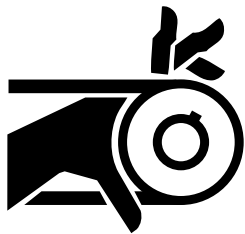
Serious injury may occur from moving parts such as belts, pulleys, flywheels, or fans if they come in contact with you or your clothing.

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 protective 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 been 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.

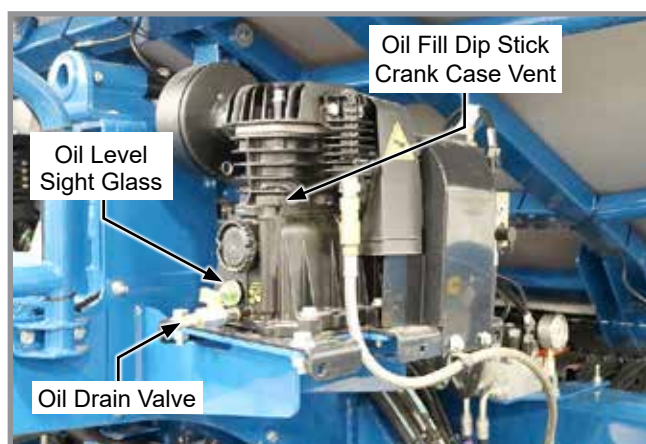
Reciprocating air compressor pumps will consume a certain amount of oil under normal operation. When filling crankcase with oil, use a single viscosity, non-detergent oil blend specifically for air compressor use (refer to chart). **DO NOT USE A DETERGENT OIL!!**

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.

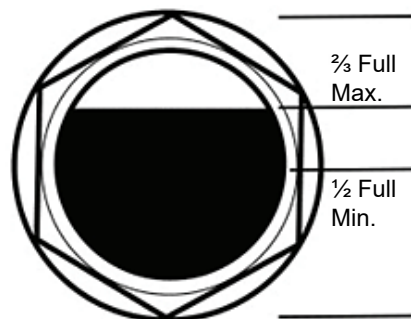


NOTE: Compressor must be on level ground to avoid over or under filling oil.

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.

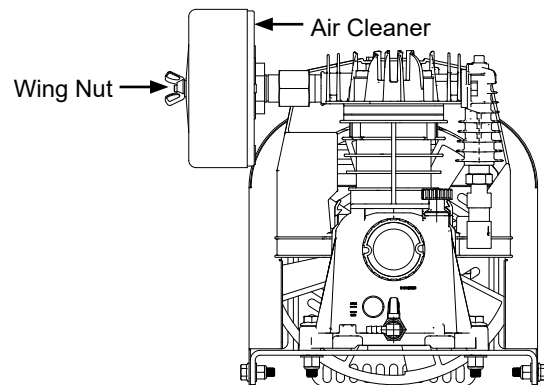
4. Confirm oil level is full on the dipstick as well.
5. Reinstall dipstick.



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.

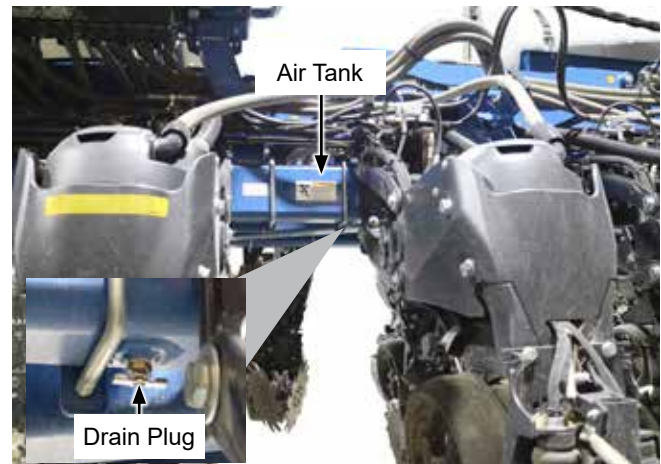
NOTE: It is recommended to drain water out of the tank after each day of use.

NOTE: Planter needs to be level when draining tank.

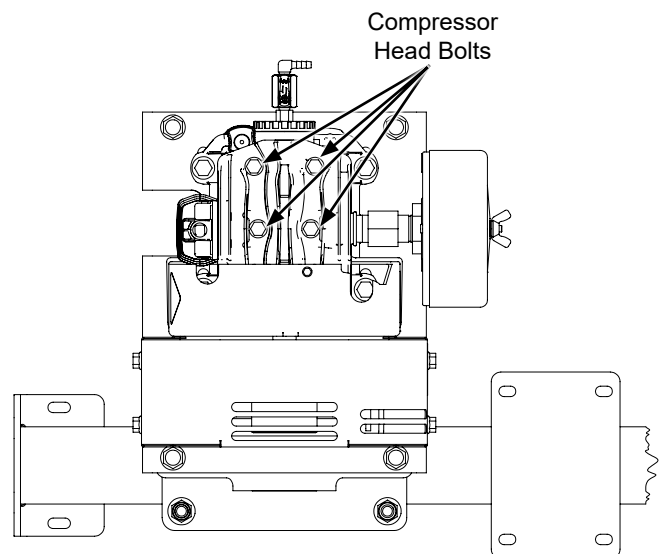
NOTE: If moisture is not drained from tank rust particles will form inside tank.

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.



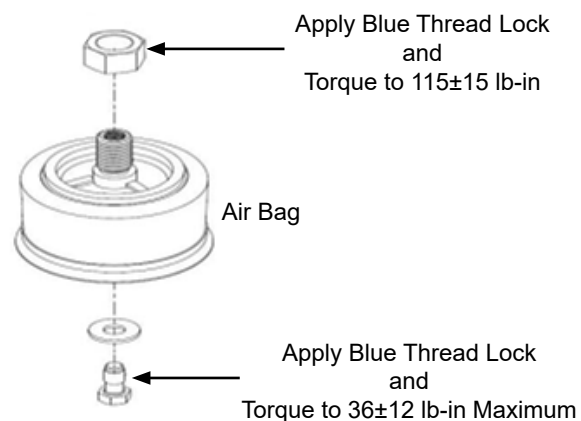
Air Bag Replacement

Replace air bags as needed.

Remove existing airbag and hardware. Discard.

Install new airbag using $\frac{5}{8}$ " hex nut and $\frac{5}{16}$ "-18 x $\frac{3}{4}$ " cap screw applying blue thread lock.

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



Pneumatic Tubing

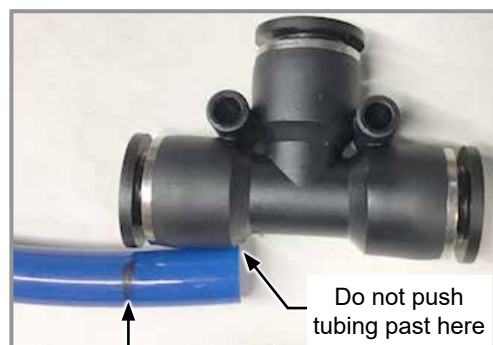
NOTICE

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.

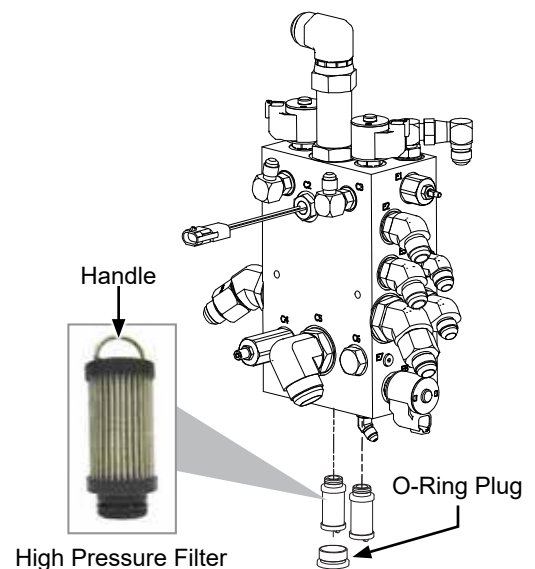
NOTE: Periodically check and clean oil coolers.

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.

High Pressure Filters

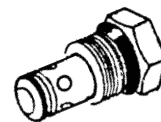
NOTE: Replace high pressure filter after first season and then check annually. If debris has collected on filter, replace filter.

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.



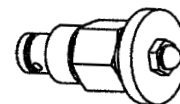
CHECK VALVE

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.



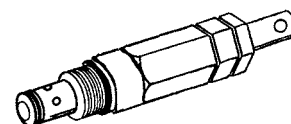
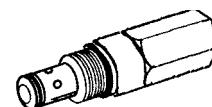
FLOW CONTROL VALVES

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.



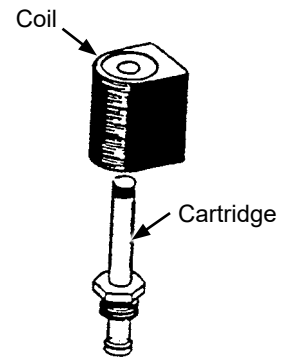
NOTICE

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.

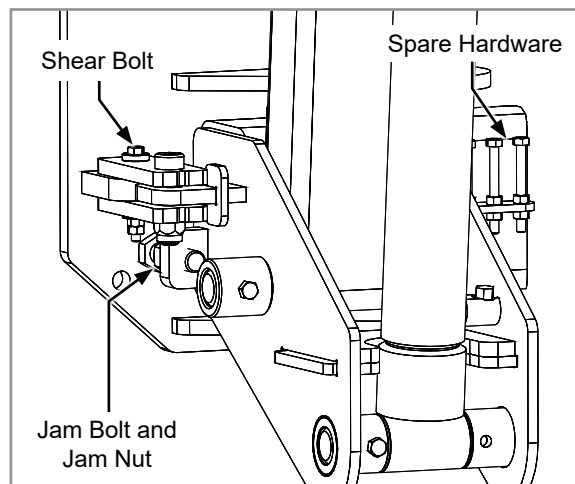
If solenoid or solenoids fail to operate, first determine if problem is electrical or hydraulic. If valve is working properly, a click will be heard when solenoid coil is energized and valve stem opens. If no sound is heard, check solenoid coil by touching top of coil housing with a metallic object such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



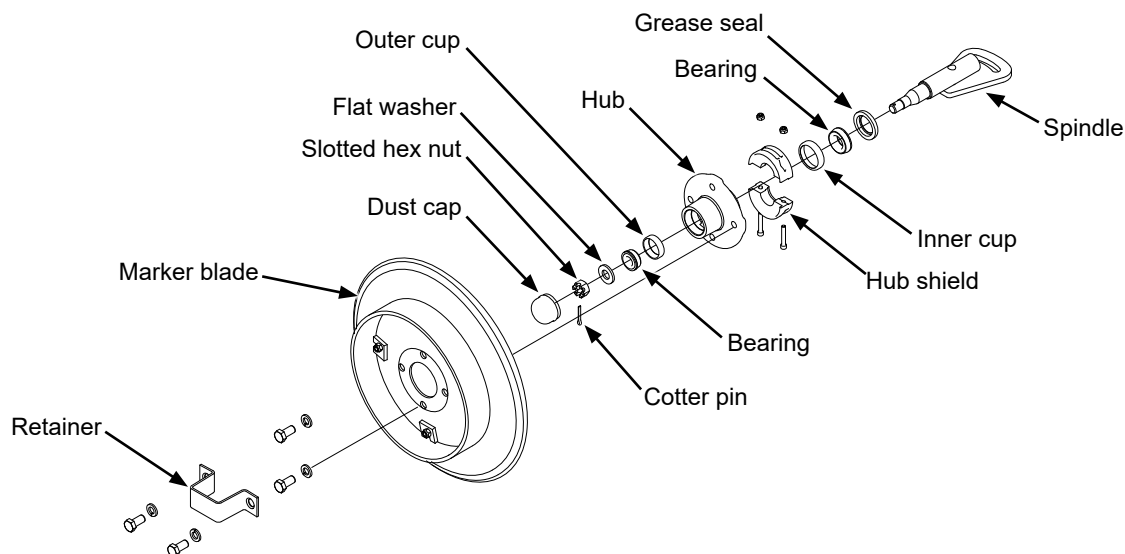
ROW MARKER BREAK AWAY

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.

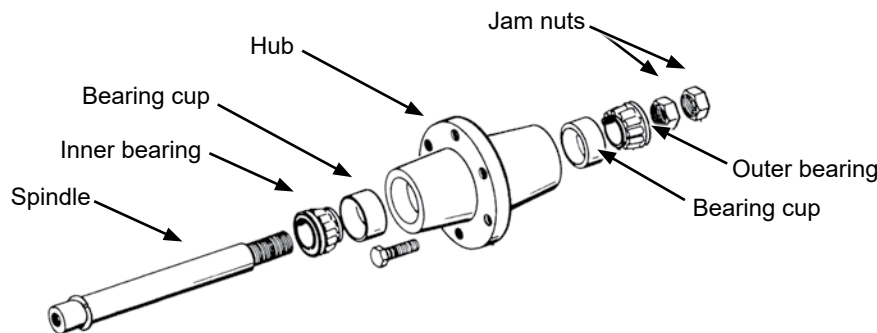
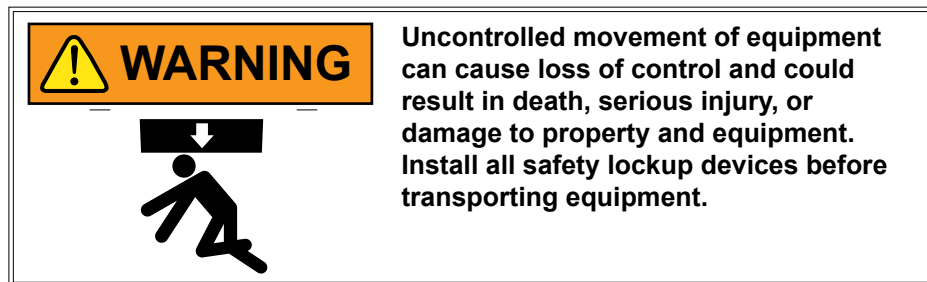
1. Remove broken shear bolt.
2. Install new shear bolt with spare provided on the marker.
3. Reverse or spin jam bolt out to remove slack in the joint. This tightens the marker breakaway.
4. Once initial slack has been removed, turn the jam bolt 1 additional flat (60°) to pre-load the shear bolt.
5. 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 $\frac{3}{4}$ 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

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 $\frac{1}{4}$ 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 [“Fertilizer System Troubleshooting” on page 4-34](#) if applicable.
- See [“Battery Care” on page 5-39](#) if planters are equipped with batteries.
- Seed Meters and Seed Delivery Tubes:

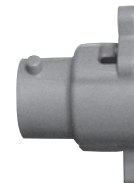
NOTE: It is recommended to store delivery tube assemblies in a separate location during off-season to prevent damage from rodents.

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.
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.



Entrainer Cap



Row Unit Cap

CENTER FRAME WEAR PADS

 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.
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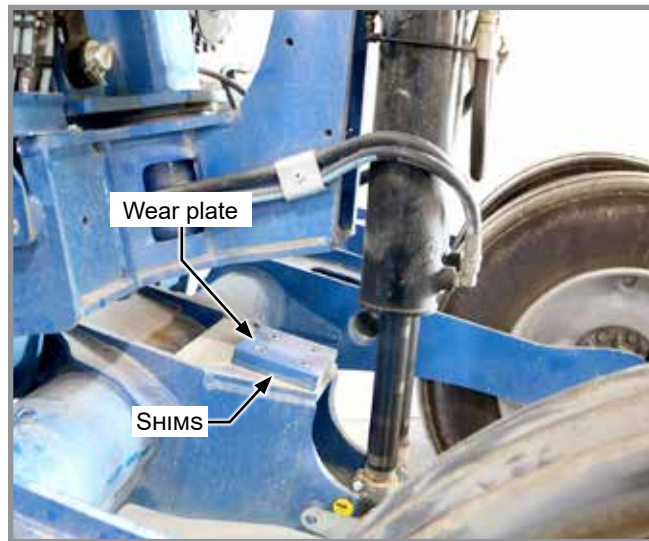
The 5670 planter includes a center frame section that slides up and down on a central 7" x 7" tube to move between transport and operation positions. Part of the center frame is a slide assembly consisting of four wear pad assemblies held in place by $\frac{3}{4}$ " set screws and jam nuts, riding against 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



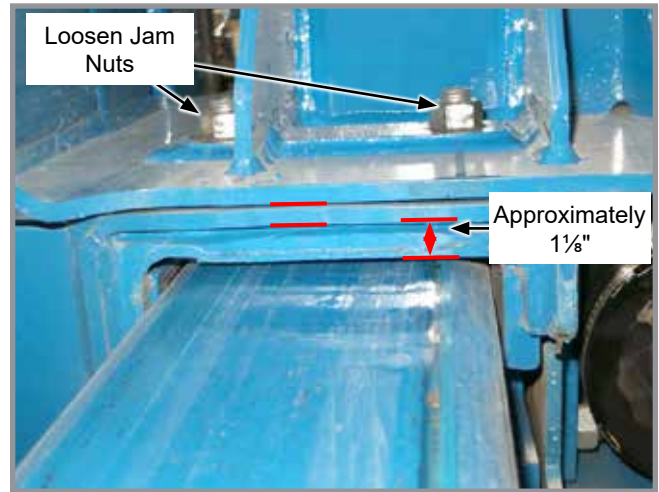
Wear plate and shim installation

1. Install rockshaft cylinder location and establish 28 $\frac{1}{4}$ " center-to-center cylinder mount distance.
2. Place $\frac{1}{4}$ " thick wear plate between cylinder mount bracket and lower cylinder mount. Install shims under wear plate to maintain 28 $\frac{1}{4}$ " 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 1 $\frac{1}{8}$ ". Tighten all eight set screws. **NOTE: Ball end allen socket will be needed for adjustment behind transport lift cylinder.**



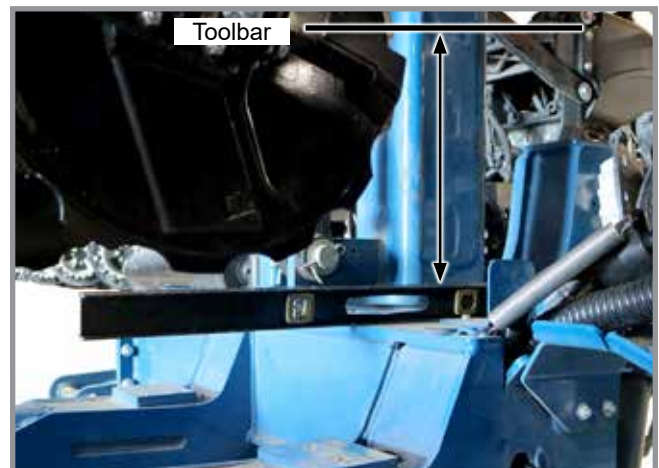
NOTE: Perform Step 3 one set screw at a time.

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 $\frac{1}{8}$ " of each other.**
7. Repeat on opposite side of bearing housing.

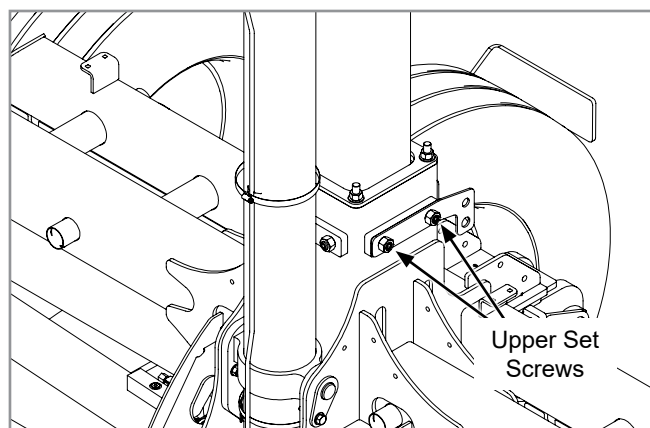


8. Loosen jam nuts. Loosen and tighten set screws until all four measurements in Steps 5 - 7 are equal.

9. Tighten all eight set screws.

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

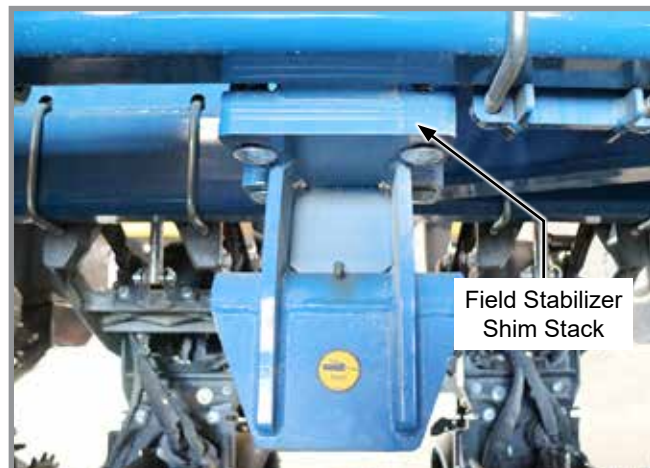
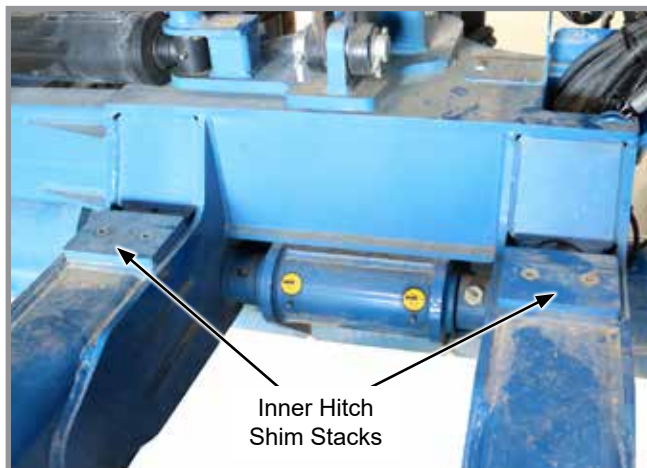
10. Set contact pressure of upper wear pads. Loosen set screw, then tighten to 20 ft-lb (27.1 N-m). Hold set screw with a wrench to prevent it from turning and tighten jam nut to 75 ft-lb (101.6 N-m). Repeat with remaining set screws.



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 $14\frac{5}{16}$ "



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 $\frac{1}{2}$ " thick wear plates remain on top.
- Field stabilizer shim stack – left and right sides.
- Rear landing pad - make sure $\frac{1}{2}$ " 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.

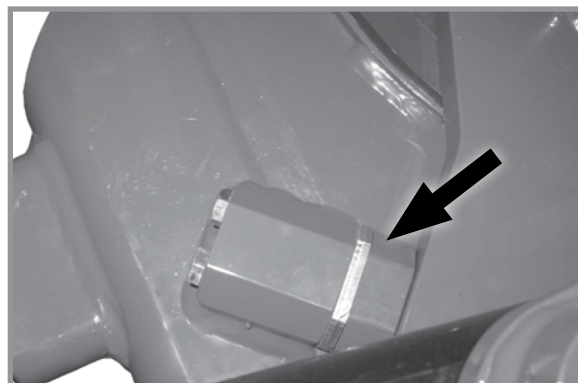
NOTE: Planter frame should be sitting on axle, when shimmed correctly the post cylinder will not be loaded.

TRIANGULATE AND SET PLANTER SQUARENESS

NOTICE

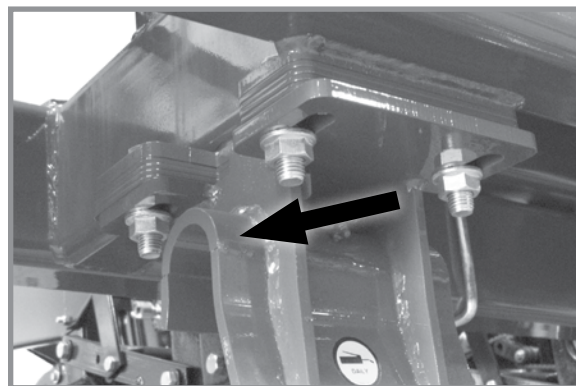
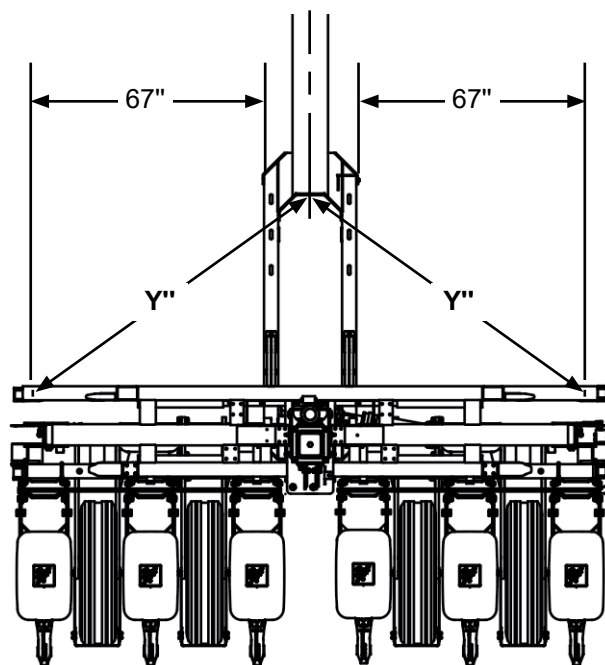
Planter frame must be square with hitch frame to ensure planter tracks correctly during operation.

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

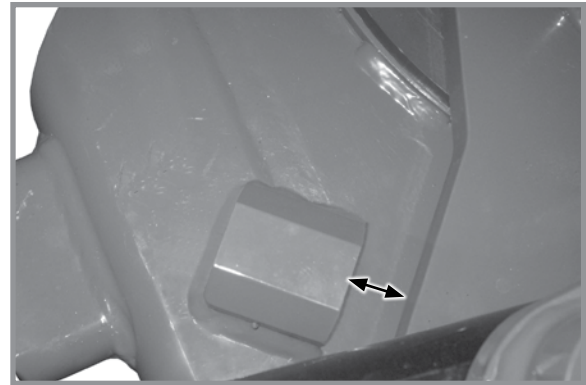
4. Measure 67" from left side of inner hitch along lower frame member of center frame; place reference mark with an appropriate marker. Repeat on right side.
5. Measure width of inner hitch, divide value by 2, measure from one side of hitch, and place a centerline reference mark at that point on upper 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 $+\frac{1}{16}"$ / $-0"$.

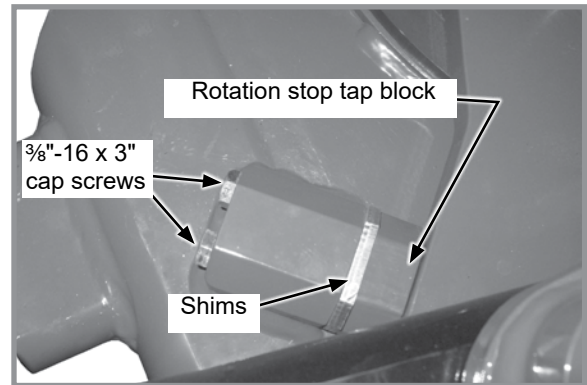


Stop block measurement

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 $\frac{3}{8}"$ -16 x 3" cap screws.
5. Rotate center post against stop tap block.



Stop tap block installation

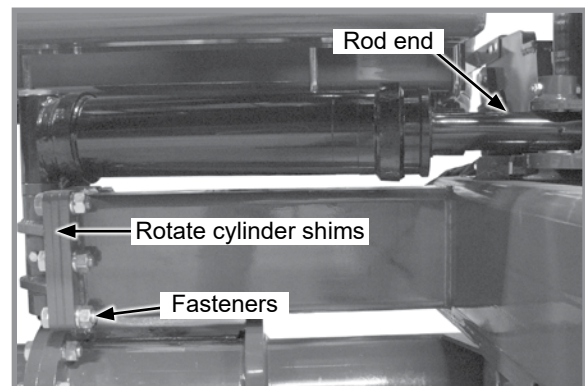
INSPECT AND ADJUST ROTATION CYLINDER MOUNT

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

A correctly retracted cylinder will have $\frac{1}{16}"$ or less exposed sliding surface on the rod.

If cylinder has more than $\frac{1}{16}"$ 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.



Rotate Cylinder mount adjustment

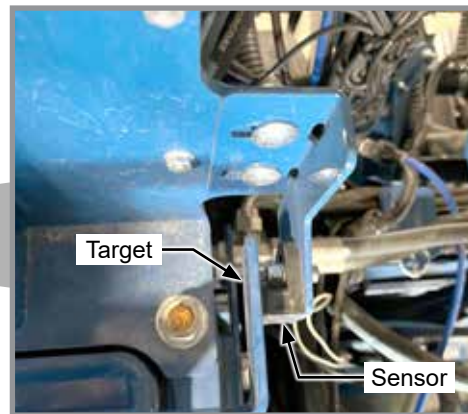
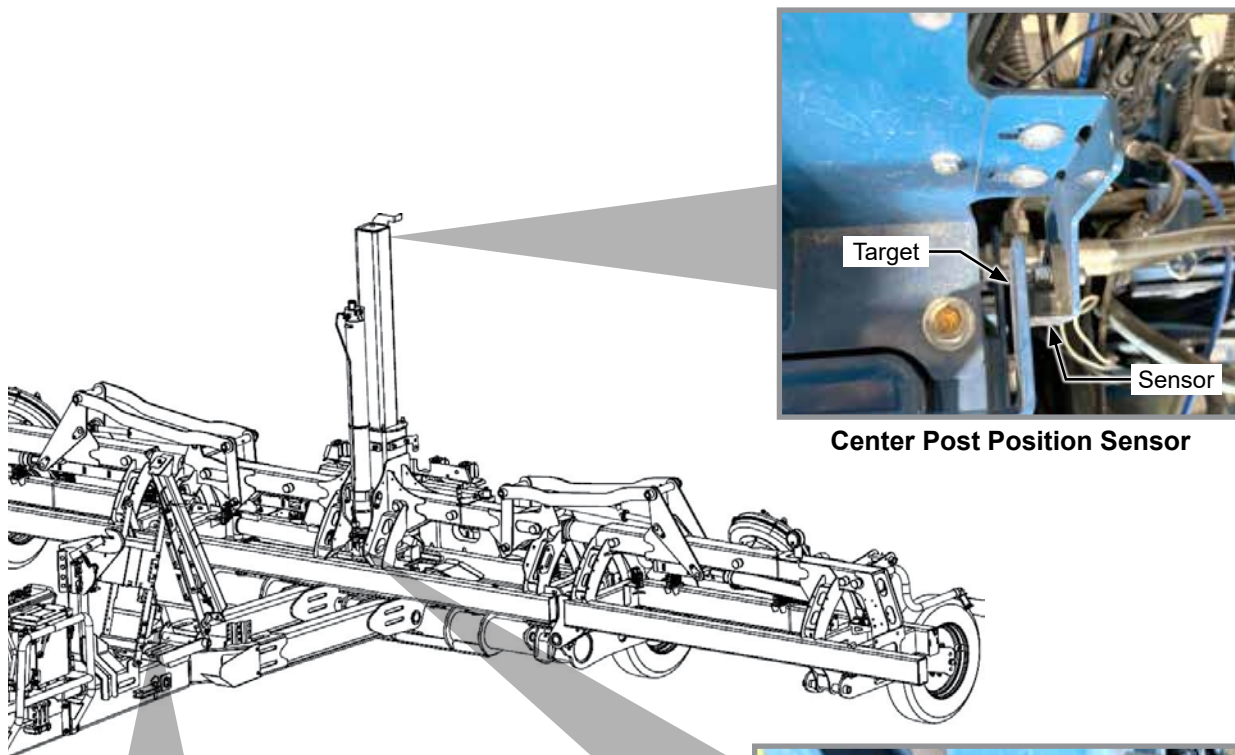
2. Disconnect rod end of cylinder and remove six sets of fasteners from cylinder mount. Add or subtract shims as necessary.
3. Reassemble cylinder mount and connect rod end of cylinder. Inspect for correct amount of retraction.

POSITION SWITCHES

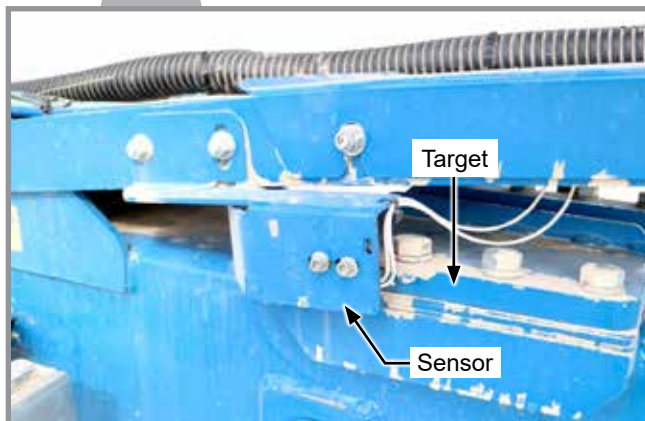
The 5670 is equipped with position switches to assist during folding sequences. There are 3 position switches total that help determine the planter's current position.

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.

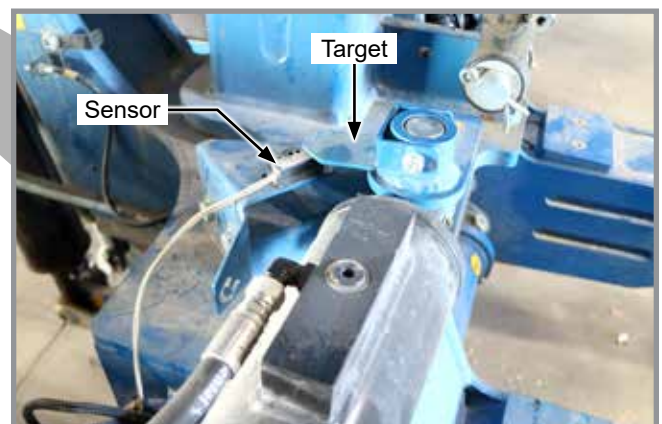
All switches should be adjusted so they trigger when sequence is fully extended or retracted. Switches should be set so there is approximately $\frac{1}{8}$ " - $\frac{3}{8}$ " gap between face of the switch and target it is sensing off of.



Center Post Position Sensor



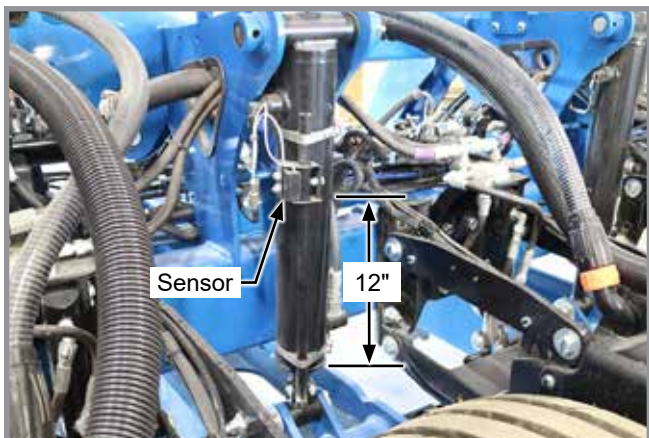
Hitch Position Sensor



Frame Rotate Position Sensor

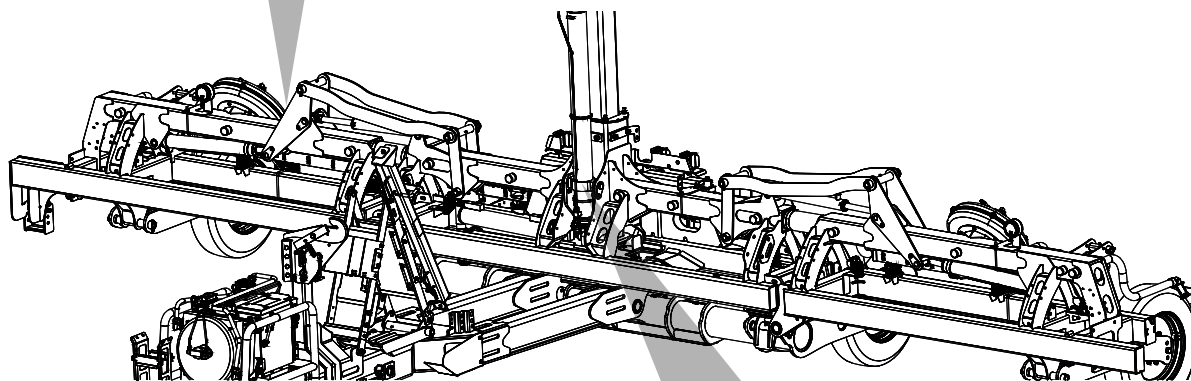
IMPLEMENT SWITCHES

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).



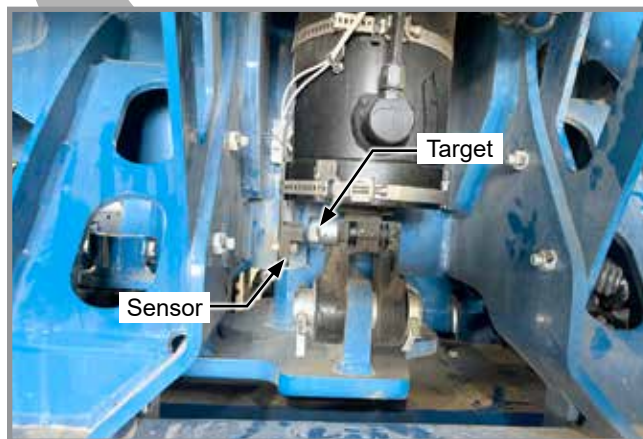
Wing Cylinder Adjustment:

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 transport lift cylinder switch so there is approximately $\frac{1}{8}$ " - $\frac{3}{8}$ " gap between face of the switch and target.



ETHERNET CABLES



Diagram illustrating the Ethernet Ca CAT 5E (M12 STR-M12 STR) cable assembly. The assembly consists of two M12 X 1.0 STRAIGHT connectors connected by a cable. The cable is labeled with P1, PART NUMBER, REV / DATE, and VENDOR ID. The connectors are labeled P1 and P2.

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

Diagram illustrating the Ethernet Ca CAT 5E (RJ45-Female M12 STR) cable assembly. The assembly consists of an RJ45 connector connected to an M12 X 1.0 STRAIGHT connector. The cable is labeled with P2, PART NUMBER, REV / DATE, and VENDOR ID. The connectors are labeled P2 and P1.

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

Diagram illustrating the Ethernet Ca CAT 5E (M12 RA-M12 STR) cable assembly. The assembly consists of an M12 X 1.0 RA SPECIAL connector connected to an M12 X 1.0 STRAIGHT connector. The cable is labeled with P1, PART NUMBER, REV / DATE, and VENDOR ID. The connectors are labeled P1 and P2.

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

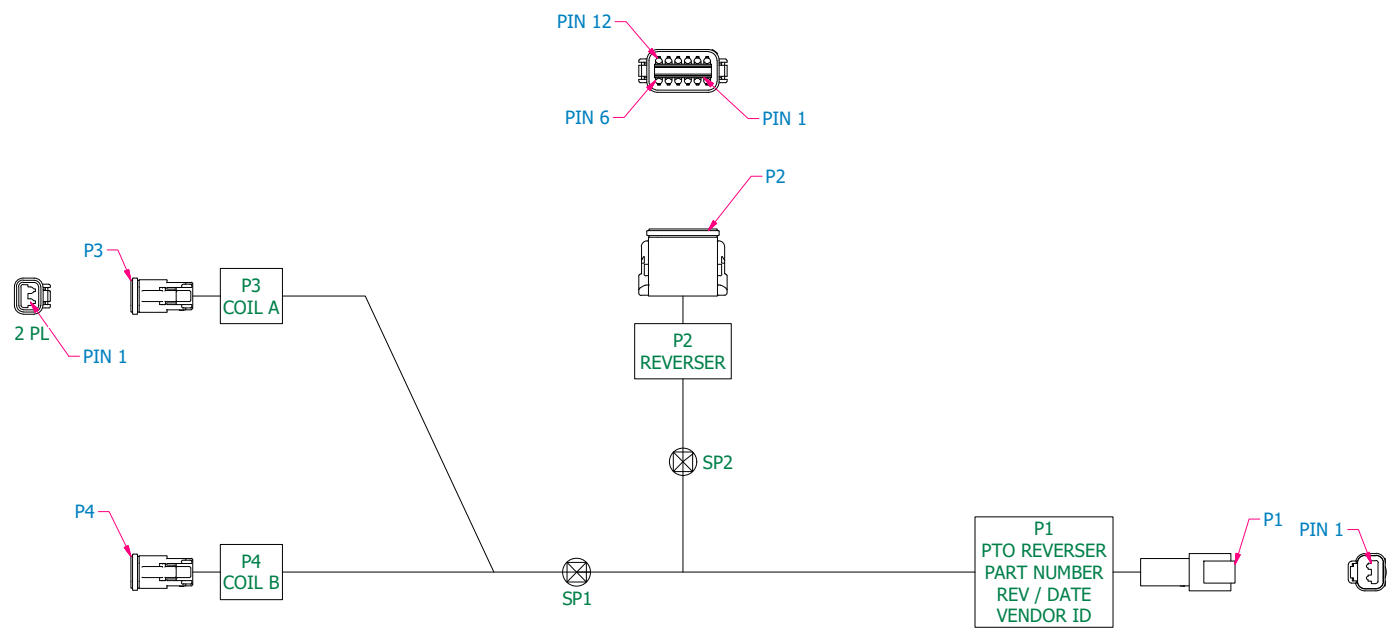
Diagram illustrating the Ethernet Ca CAT 5 (Male M12 STR - Female M12 STR) cable assembly. The assembly consists of a MALE M12 X 1.0 STRAIGHT connector connected to a FEMALE M12 X 1.0 STRAIGHT connector. The cable is labeled with P1, PART NUMBER, REV / DATE, and VENDOR ID. The connectors are labeled P1 and P2.

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

Diagram illustrating the Ethernet Ca CAT 5E (M12 RA-M12 RA) cable assembly. The assembly consists of two M12 X 1.0 RA SPECIAL connectors connected by a cable. The cable is labeled with P1, PART NUMBER, REV / DATE, and VENDOR ID. The connectors are labeled P1 and P2.

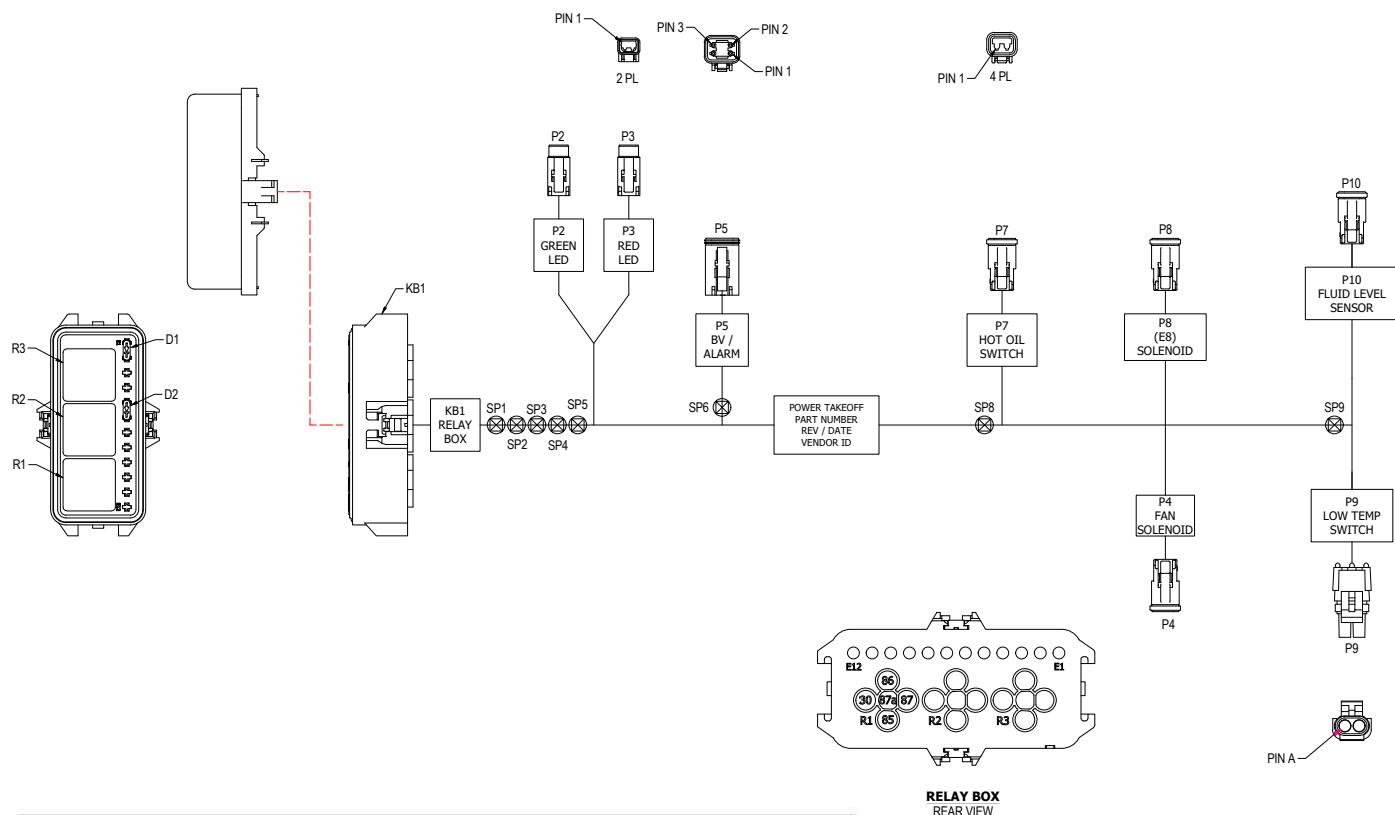
Part Number	Description
A22556-	Ethernet Ca CAT 5E (M12 RA-M12 RA)

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	—	P3-2	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)



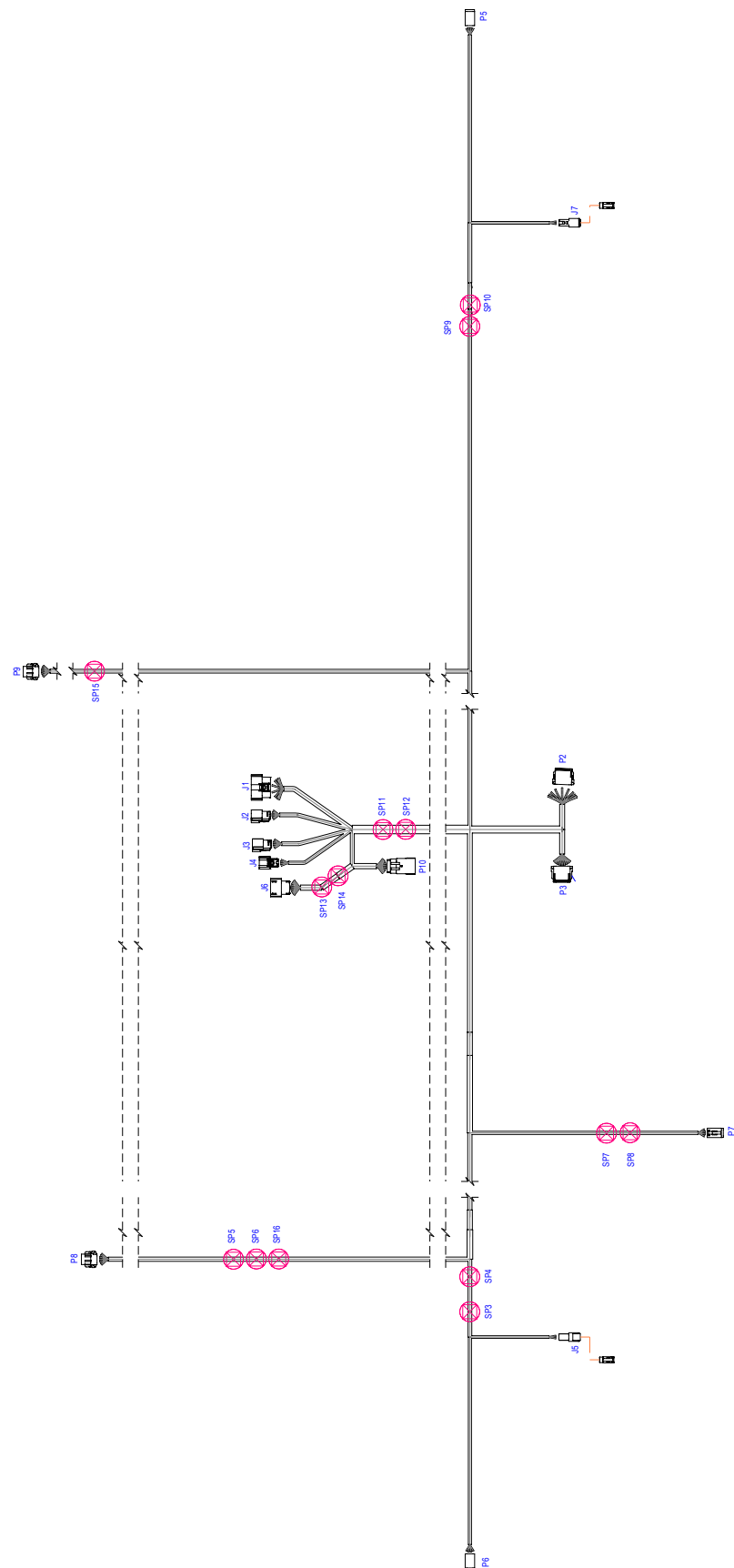
WIRE HOOKUP CHART						
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR
W1	P5-4	16	SP1	—	16	RED
W2	SP1	—	P1-R1-30	25	14	RED
W3	SP1	—	P1-R2-30	25	14	RED
W4	SP1	—	P2-1	15	18	RED
W5	SP1	—	SP8	—	18	RED
W6	SP8	—	P7-1	16	18	RED
W7	SP8	—	SP9	—	18	RED
W8	SP9	—	P9-A	19	18	RED
W9	SP9	—	P10-1	16	18	RED
W10	P4-2	—	SP6	16	18	BLK
W11	SP6	—	P5-1	16	18	BLK
W12	SP6	—	P8-2	16	18	BLK
W13	SP6	—	SP2	—	16	BLK
W14	SP2	—	KB1-R1-86	25	14	BLK
W15	SP2	—	KB1-R2-86	25	14	BLK
W16	SP2	—	KB1-R3-86	25	14	BLK
W17	SP2	—	P2-2	15	18	BLK
W18	SP2	—	P3-2	15	18	BLK
W19	KB1-R1-85	25	P9-B	19	14	GRN
W20	KB1-R1-87	25	P4-1	17	14	RED
W21	KB1-R2-85	25	P10-2	16	14	GRY
W22	KB1-R2-87	25	KB1-R3-30	25	14	ORG
W23	KB1-R2-87a	25	SP3	—	14	BLU
W24	SP3	—	KB1-E5	13	18	BLU
W25	SP3	—	P5-2	16	18	BLU
W26	KB1-R3-85	25	P7-2	16	14	WHT
W27	KB1-R3-87	25	P8-1	16	14	VIO
W28	KB1-R3-87a	25	SP4	—	14	YEL
W29	SP4	—	P5-C	16	18	YEL
W30	SP4	—	KB1-E1	13	18	YEL
W31	KB1-E2	13	SP5	—	18	BRN
W32	KB1-E6	13	SP5	—	18	BRN
W33	SP5	—	P3-1	15	18	BRN

WIRE HOOKUP UP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	F1	---	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	F2	---	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)

The diagram illustrates a fiber-optic communication system. On the left, a transmitter is connected to a coupler labeled P1. From P1, the signal splits into two parallel paths. The upper path consists of a series of couplers labeled SP1 and SP2, followed by a long fiber segment. The lower path consists of a series of couplers labeled SP3 and SP4, followed by a long fiber segment. Both paths converge at a coupler labeled P2 on the right, which is connected to a receiver. The entire system is shown within a dashed rectangular boundary.

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FERTILIZER TANK HARNESS (P/N:10960701)



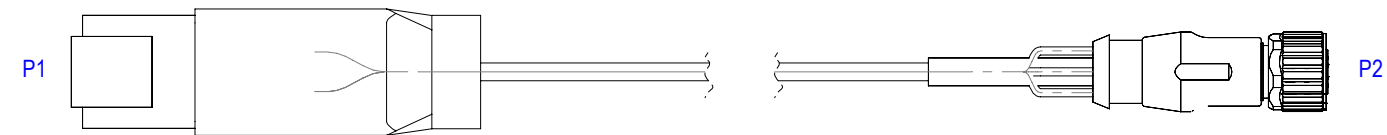
WIRE SCHEDULE CHART											
REF ID#	FROM	TO	WIRE GAUGE	COLOR	FUNCTION	REF ID#	FROM	TO	WIRE GAUGE	COLOR	FUNCTION
W0P	P2-10	418	5	GRN	FERTILIZER FLOW METER BATTERY VALVE - PANA	W06	SP10C	ROOM	USED IN	GAUGE	COLOR
W0P	P2-12	14	4-27	5	BRN	W07	SP10C	---	---	P9-3	25
W01	J4-1	5	SP18N	---	18 (P)	W08	SP10C	---	---	P9-3	25
W01	J4-1	5	SP18N	---	18 (P)	W08	SP10C	---	---	P9-3	25
W02	P2-25	SP18N	---	18 (P)	CANH	W09	SP10C	---	---	P9-3	25
W02	P2-25	SP18N	---	18 (P)	CANH	W09	SP10C	---	---	P9-3	25
W03	P2-25	SP18N	---	18 (P)	CANH	W10	SP10C	---	---	P9-3	25
W03	P2-25	SP18N	---	18 (P)	CANH	W10	SP10C	---	---	P9-3	25
W04	P2-25	SP18N	---	18 (P)	CANH	W11	SP10C	---	---	P9-3	25
W04	P2-25	SP18N	---	18 (P)	CANH	W11	SP10C	---	---	P9-3	25
W05	SP10C	---	P6-3	19	GRN	W12	SP10C	---	---	P9-3	25
W05	SP10C	---	P6-3	19	GRN	W12	SP10C	---	---	P9-3	25
W06	SP10C	---	P6-3	19	GRN	W13	SP10C	---	---	P9-3	25
W06	SP10C	---	P6-3	19	GRN	W13	SP10C	---	---	P9-3	25
W07	SP10C	---	P6-3	19	GRN	W14	SP10C	---	---	P9-3	25
W07	SP10C	---	P6-3	19	GRN	W14	SP10C	---	---	P9-3	25
W08	SP10C	---	P6-3	19	GRN	W15	SP10C	---	---	P9-3	25
W08	SP10C	---	P6-3	19	GRN	W15	SP10C	---	---	P9-3	25
W09	SP10C	---	P6-3	19	GRN	W16	SP10C	---	---	P9-3	25
W09	SP10C	---	P6-3	19	GRN	W16	SP10C	---	---	P9-3	25
W10	SP10C	---	P6-3	19	GRN	W17	SP10C	---	---	P9-3	25
W10	SP10C	---	P6-3	19	GRN	W17	SP10C	---	---	P9-3	25
W11	SP10C	---	P6-3	19	GRN	W18	SP10C	---	---	P9-3	25
W11	SP10C	---	P6-3	19	GRN	W18	SP10C	---	---	P9-3	25
W12	SP10C	---	P6-3	19	GRN	W19	SP10C	---	---	P9-3	25
W12	SP10C	---	P6-3	19	GRN	W19	SP10C	---	---	P9-3	25
W13	SP10C	---	P6-3	19	GRN	W20	SP10C	---	---	P9-3	25
W13	SP10C	---	P6-3	19	GRN	W20	SP10C	---	---	P9-3	25
W14	SP10C	---	P6-3	19	GRN	W21	SP10C	---	---	P9-3	25
W14	SP10C	---	P6-3	19	GRN	W21	SP10C	---	---	P9-3	25
W15	SP10C	---	P6-3	19	GRN	W22	SP10C	---	---	P9-3	25
W15	SP10C	---	P6-3	19	GRN	W22	SP10C	---	---	P9-3	25
W16	SP10C	---	P6-3	19	GRN	W23	SP10C	---	---	P9-3	25
W16	SP10C	---	P6-3	19	GRN	W23	SP10C	---	---	P9-3	25
W17	SP10C	---	P6-3	19	GRN	W24	SP10C	---	---	P9-3	25
W17	SP10C	---	P6-3	19	GRN	W24	SP10C	---	---	P9-3	25
W18	SP10C	---	P6-3	19	GRN	W25	SP10C	---	---	P9-3	25
W18	SP10C	---	P6-3	19	GRN	W25	SP10C	---	---	P9-3	25
W19	SP10C	---	P6-3	19	GRN	W26	SP10C	---	---	P9-3	25
W19	SP10C	---	P6-3	19	GRN	W26	SP10C	---	---	P9-3	25
W20	SP10C	---	P6-3	19	GRN	W27	SP10C	---	---	P9-3	25
W20	SP10C	---	P6-3	19	GRN	W27	SP10C	---	---	P9-3	25
W21	SP10C	---	P6-3	19	GRN	W28	SP10C	---	---	P9-3	25
W21	SP10C	---	P6-3	19	GRN	W28	SP10C	---	---	P9-3	25
W22	SP10C	---	P6-3	19	GRN	W29	SP10C	---	---	P9-3	25
W22	SP10C	---	P6-3	19	GRN	W29	SP10C	---	---	P9-3	25
W23	SP10C	---	P6-3	19	GRN	W30	SP10C	---	---	P9-3	25
W23	SP10C	---	P6-3	19	GRN	W30	SP10C	---	---	P9-3	25
W24	SP10C	---	P6-3	19	GRN	W31	SP10C	---	---	P9-3	25
W24	SP10C	---	P6-3	19	GRN	W31	SP10C	---	---	P9-3	25
W25	SP10C	---	P6-3	19	GRN	W32	SP10C	---	---	P9-3	25
W25	SP10C	---	P6-3	19	GRN	W32	SP10C	---	---	P9-3	25
W26	SP10C	---	P6-3	19	GRN	W33	SP10C	---	---	P9-3	25
W26	SP10C	---	P6-3	19	GRN	W33	SP10C	---	---	P9-3	25
W27	SP10C	---	P6-3	19	GRN	W34	SP10C	---	---	P9-3	25
W27	SP10C	---	P6-3	19	GRN	W34	SP10C	---	---	P9-3	25
W28	SP10C	---	P6-3	19	GRN	W35	SP10C	---	---	P9-3	25
W28	SP10C	---	P6-3	19	GRN	W35	SP10C	---	---	P9-3	25
W29	SP10C	---	P6-3	19	GRN	W36	SP10C	---	---	P9-3	25
W29	SP10C	---	P6-3	19	GRN	W36	SP10C	---	---	P9-3	25
W30	SP10C	---	P6-3	19	GRN	W37	SP10C	---	---	P9-3	25
W30	SP10C	---	P6-3	19	GRN	W37	SP10C	---	---	P9-3	25
W31	SP10C	---	P6-3	19	GRN	W38	SP10C	---	---	P9-3	25
W31	SP10C	---	P6-3	19	GRN	W38	SP10C	---	---	P9-3	25
W32	SP10C	---	P6-3	19	GRN	W39	SP10C	---	---	P9-3	25
W32	SP10C	---	P6-3	19	GRN	W39	SP10C	---	---	P9-3	25
W33	SP10C	---	P6-3	19	GRN	W40	SP10C	---	---	P9-3	25
W33	SP10C	---	P6-3	19	GRN	W40	SP10C	---	---	P9-3	25
W34	SP10C	---	P6-3	19	GRN	W41	SP10C	---	---	P9-3	25
W34	SP10C	---	P6-3	19	GRN	W41	SP10C	---	---	P9-3	25
W35	SP10C	---	P6-3	19	GRN	W42	SP10C	---	---	P9-3	25
W35	SP10C	---	P6-3	19	GRN	W42	SP10C	---	---	P9-3	25
W36	SP10C	---	P6-3	19	GRN	W43	SP10C	---	---	P9-3	25
W36	SP10C	---	P6-3	19	GRN	W43	SP10C	---	---	P9-3	25
W37	SP10C	---	P6-3	19	GRN	W44	SP10C	---	---	P9-3	25
W37	SP10C	---	P6-3	19	GRN	W44	SP10C	---	---	P9-3	25
W38	SP10C	---	P6-3	19	GRN	W45	SP10C	---	---	P9-3	25
W38	SP10C	---	P6-3	19	GRN	W45	SP10C	---	---	P9-3	25
W39	SP10C	---	P6-3	19	GRN	W46	SP10C	---	---	P9-3	25
W39	SP10C	---	P6-3	19	GRN	W46	SP10C	---	---	P9-3	25
W40	SP10C	---	P6-3	19	GRN	W47	SP10C	---	---	P9-3	25
W40	SP10C	---	P6-3	19	GRN	W47	SP10C	---	---	P9-3	25
W41	SP10C	---	P6-3	19	GRN	W48	SP10C	---	---	P9-3	25
W41	SP10C	---	P6-3	19	GRN	W48	SP10C	---	---	P9-3	25
W42	SP10C	---	P6-3	19	GRN	W49	SP10C	---	---	P9-3	25
W42	SP10C	---	P6-3	19	GRN	W49	SP10C	---	---	P9-3	25
W43	SP10C	---	P6-3	19	GRN	W50	SP10C	---	---	P9-3	25
W43	SP10C	---	P6-3	19	GRN	W50	SP10C	---	---	P9-3	25
W44	SP10C	---	P6-3	19	GRN	W51	SP10C	---	---	P9-3	25
W44	SP10C	---	P6-3	19	GRN	W51	SP10C	---	---	P9-3	25
W45	SP10C	---	P6-3	19	GRN	W52	SP10C	---	---	P9-3	25
W45	SP10C	---	P6-3	19	GRN	W52	SP10C	---	---	P9-3	25
W46	SP10C	---	P6-3	19	GRN	W53	SP10C	---	---	P9-3	25
W46	SP10C	---	P6-3	19	GRN	W53	SP10C	---	---	P9-3	25
W47	SP10C	---	P6-3	19	GRN	W54	SP10C	---	---	P9-3	25
W47	SP10C	---	P6-3	19	GRN	W54	SP10C	---	---	P9-3	25
W48	SP10C	---	P6-3	19	GRN	W55	SP10C	---	---	P9-3	25
W48	SP10C	---	P6-3	19	GRN	W55	SP10C	---	---	P9-3	25
W49	SP10C	---	P6-3	19	GRN	W56	SP10C	---	---	P9-3	25
W49	SP10C	---	P6-3	19	GRN	W56	SP10C	---	---	P9-3	25
W50	SP10C	---	P6-3	19	GRN	W57	SP10C	---	---	P9-3	25
W50	SP10C	---	P6-3	19	GRN	W57	SP10C	---	---	P9-3	25
W51	SP10C	---	P6-3	19	GRN	W58	SP10C	---	---	P9-3	25
W51	SP10C	---	P6-3	19	GRN	W58	SP10C	---	---	P9-3	25
W52	SP10C	---	P6-3	19	GRN	W59	SP10C	---	---	P9-3	25
W52	SP10C	---	P6-3	19	GRN	W59	SP10C	---	---	P9-3	25
W53	SP10C	---	P6-3	19	GRN	W60	SP10C	---	---	P9-3	25
W53	SP10C	---	P6-3	19	GRN	W60	SP10C	---	---	P9-3	25
W54	SP10C	---	P6-3	19	GRN	W61	SP10C	---	---	P9-3	25
W54	SP10C	---	P6-3	19	GRN	W61	SP10C	---	---	P9-3	25
W55	SP10C	---	P6-3	19	GRN	W62	SP10C	---	---	P9-3	25
W55	SP10C	---	P6-3	19	GRN	W62	SP10C	---	---	P9-3	25
W56	SP10C	---	P6-3	19	GRN	W63	SP10C	---	---	P9-3	25
W56	SP10C	---	P6-3	19	GRN	W63	SP10C	---	---	P9-3	25
W57	SP10C	---	P6-3	19	GRN	W64	SP10C	---	---	P9-3	25
W57	SP10C	---	P6-3	19	GRN	W64	SP10C	---	---	P9-3	25
W58	SP10C	---	P6-3	19	GRN	W65	SP10C	---	---	P9-3	25
W58	SP10C	---	P6-3	19	GRN	W65	SP10C	---	---	P9-3	25
W59	SP10C	---	P6-3	19	GRN	W66	SP10C	---	---	P9-3	25
W59	SP10C	---	P6-3	19	GRN	W66	SP10C	---	---	P9-3	25
W60	SP10C	---	P6-3	19	GRN	W67	SP10C	---	---	P9-3	25
W60	SP10C	---	P6-3	19	GRN	W67	SP10C	---	---	P9-3	25
W61	SP10C	---	P6-3	19	GRN	W68	SP10C	---	---	P9-3	25
W61	SP10C	---	P6-3	19	GRN	W68	SP10C	---	---	P9-3	25
W62	SP10C	---	P6-3	19	GRN	W69	SP10C	---	---	P9-3	25
W62	SP10C	---	P6-3	19	GRN	W69	SP10C	---	---	P9-3	25
W63	SP10C	---	P6-3	19	GRN	W70	SP10C	---	---	P9-3	25
W63	SP10C	---	P6-3	19	GRN	W70	SP10C	---	---	P9-3	25
W64	SP10C	---	P6-3	19	GRN	W71	SP10C	---	---	P9-3	25
W64	SP10C	---	P6-3	19	GRN	W71	SP10C	---	---	P9-3	25
W65	SP10C	---	P6-3	19	GRN	W72	SP10C	---	---	P9-3	25
W65	SP10C	---	P6-3	19	GRN	W72	SP10C	---	---	P9-3	25
W66	SP10C	---	P6-3	19	GRN	W73	SP10C	---	---	P9-3	25
W66	SP10C	---	P6-3	19	GRN	W73	SP10C	---	---	P9-3	25
W67	SP10C	---	P6-3	19	GRN	W74	SP10C	---	---	P9-3	25
W67	SP10C	---	P6-3	19	GRN	W74	SP10C	---	---	P9-3	25
W68											

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



WIRE HOOKUP CHART								LABEL TABLE			
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	J1	TO ROW UNIT	P2	FERT CUTOFF VALVE
W1	J1:5	7	P2:A	3	18	RED	FERT ROW CUTOFF VALVE (PWR)	P1	FERT FLOW SENSOR	HARNESS LABEL	PART NUMBER REV/DATE VENDOR I.D.
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)				

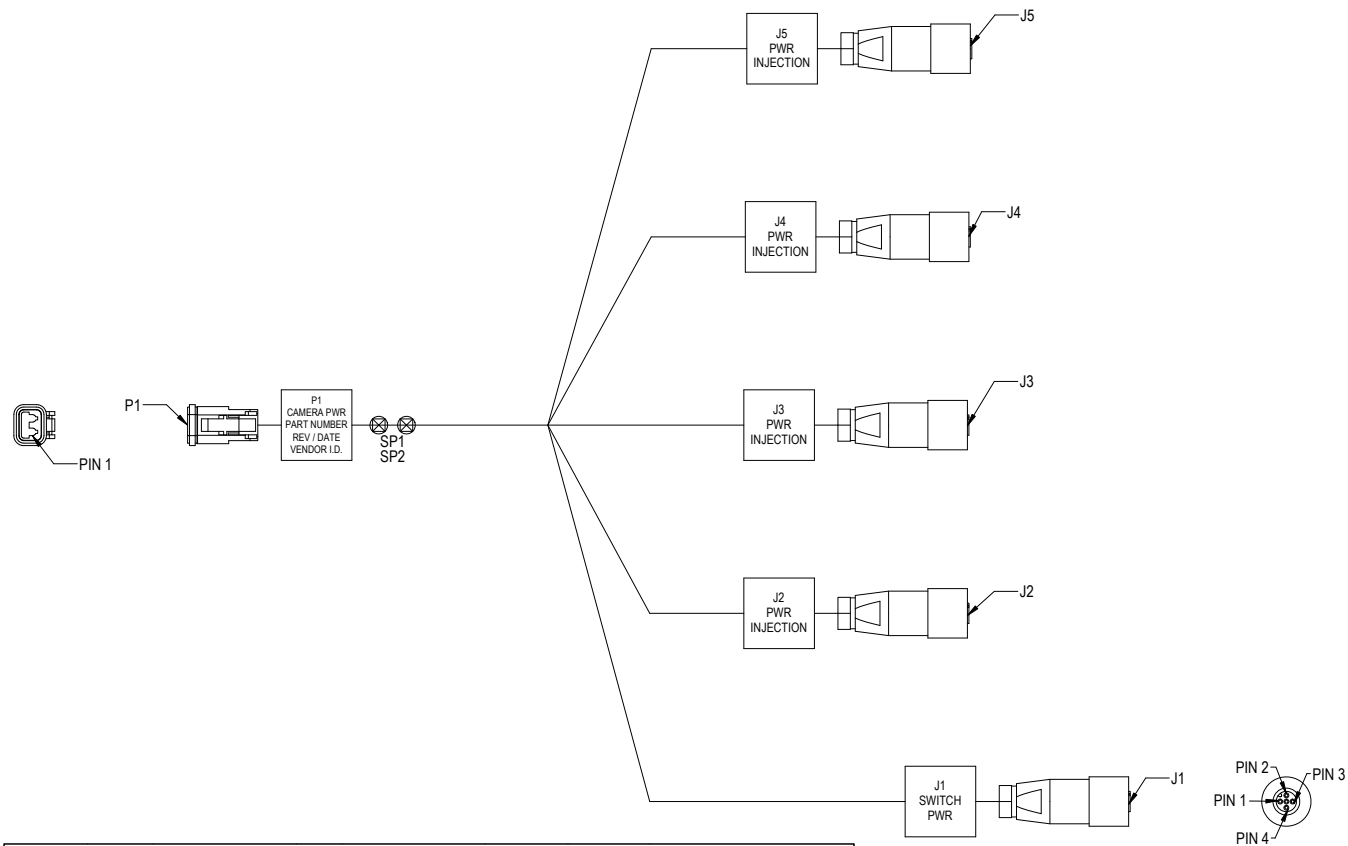
AIR PRESSURE ADAPTER CABLE (P/N:11009201)



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

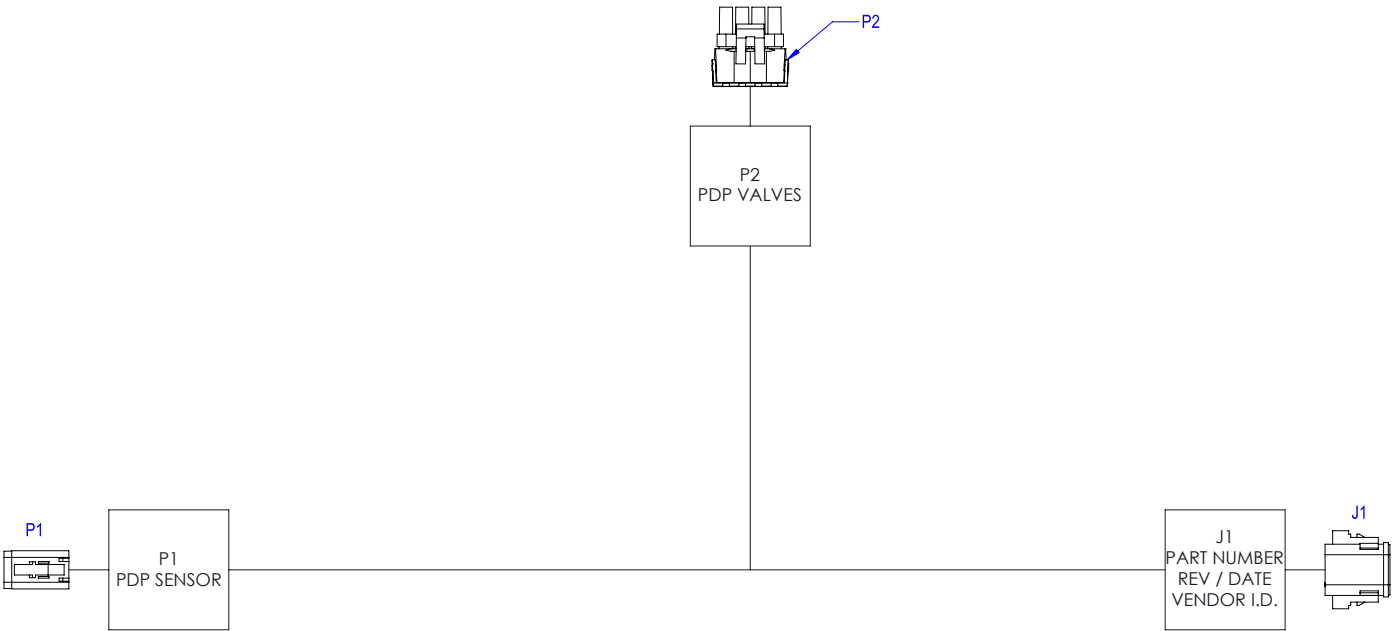
WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:1	3	P2:3	---	18	BLU	AIR PRESSURE SENSOR (GND)
W2	P1:2	3	P2:1	---	18	BRN	AIR PRESSURE SENSOR (PWR)
W3	P1:4	3	P2:4	---	18	BLK	AIR PRESSURE SENSOR (ANALOG)

CAMERA POWER HARNESS (P/N: 10269201)



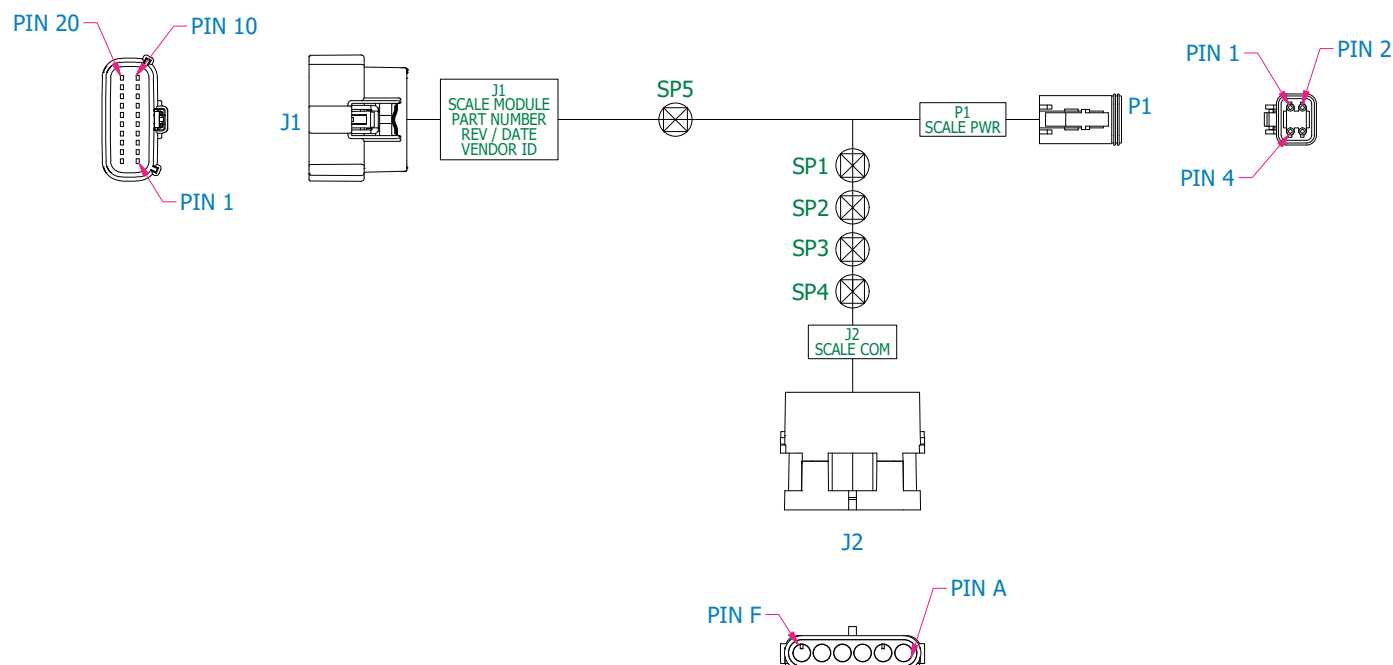
WIRE HOOKUP CHART							
REF DES	FROM	USED W/ ITEM	TO	USED W/ ITEM	GAUGE	COLOR	FUNCTION
W1	P1-2	4	XF1-1	7	16	RED	PWR (+)
W2	SP1	---	J1-3	---	18	RED	SWITCH PWR (+)
W3	SP1	---	J1-4	---	18	RED	SWITCH PWR (+)
W4	SP1	---	J2-2	---	18	RED	CAMERA PWR (+)
W5	SP1	---	J2-3	---	18	RED	CAMERA PWR (+)
W6	SP1	---	J3-2	---	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)



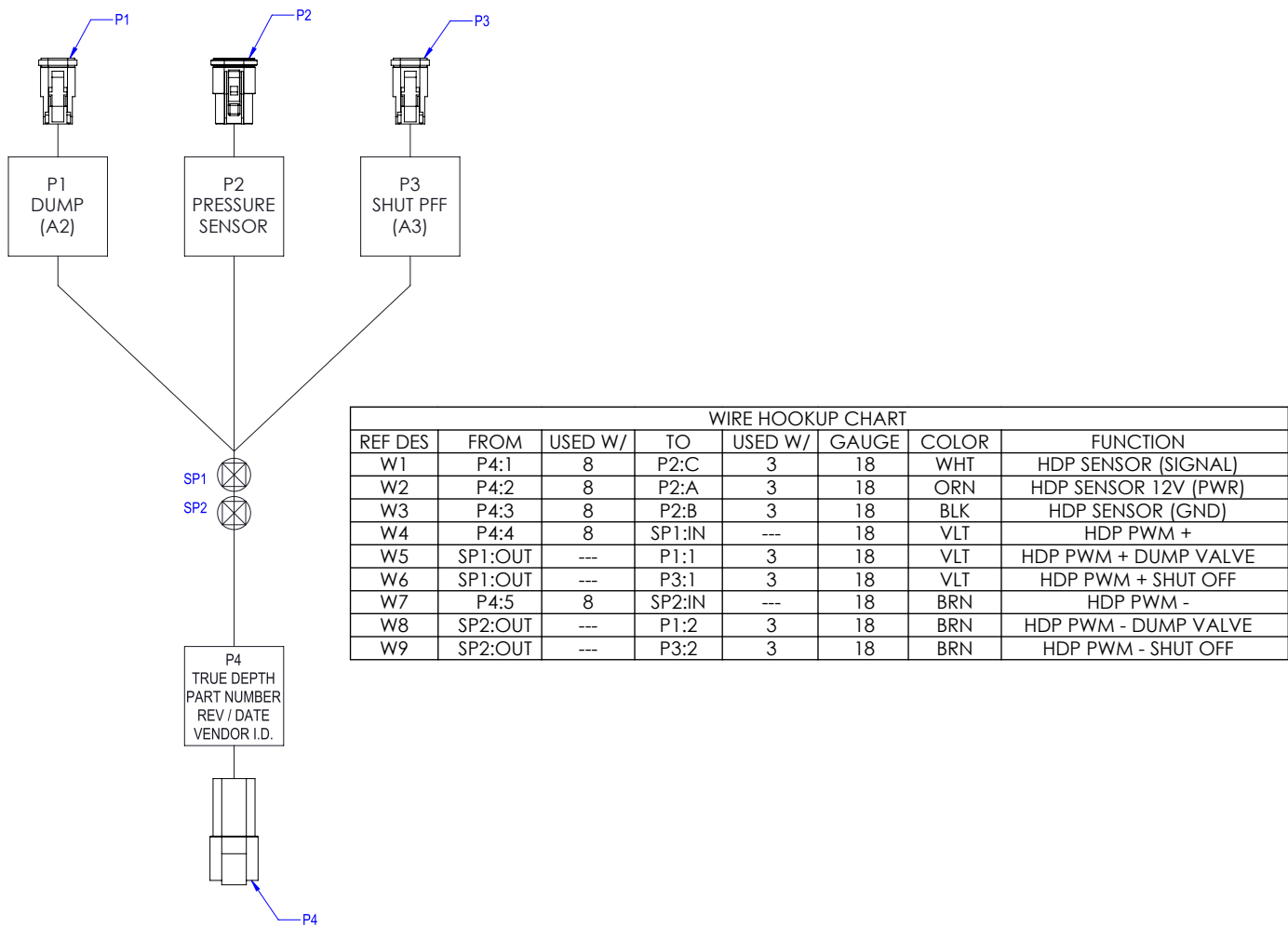
WIRE HOOKUP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1:1	4	P2:A	8	16	RED	PDP INCREASE SOLENOID +
W2	J1:2	4	P2:B	8	16	YEL	PDP INCREASE SOLENOID -
W3	J1:3	4	P2:C	8	16	VLT	PDP DECREASE SOLENOID +
W4	J1:4	4	P2:D	8	16	BRN	PDP DECREASE SOLENOID -
W5	J1:5	4	P1:4	4	18	WHT	PDP SENSOR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

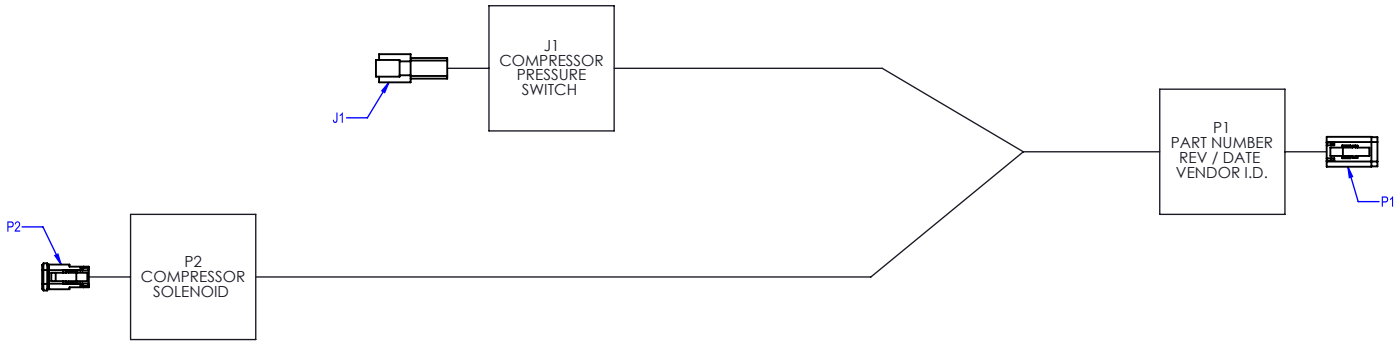


WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	J1-10	4	SP1	---	16	RED	PWR 12VDC
W2	SP1	---	P1-1	7	16	RED	PWR 12VDC
W3	SP1	---	J2-A	11	16	RED	PWR 12VDC
W4	J1-9	4	SP2	---	16	BLK	GROUND
W5	SP2	---	P1-2	7	16	BLK	GROUND
W6	SP2	---	J2-B	11	16	BLK	GROUND
W7	J1-8	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)

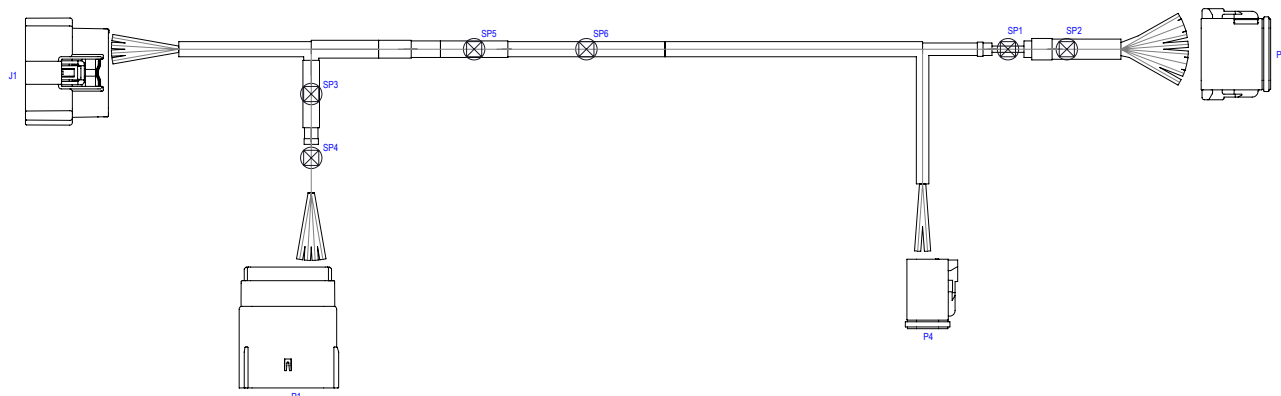


YETTER ROW CLEANER COMPRESSOR HARNESS (P/N:10558201)



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)

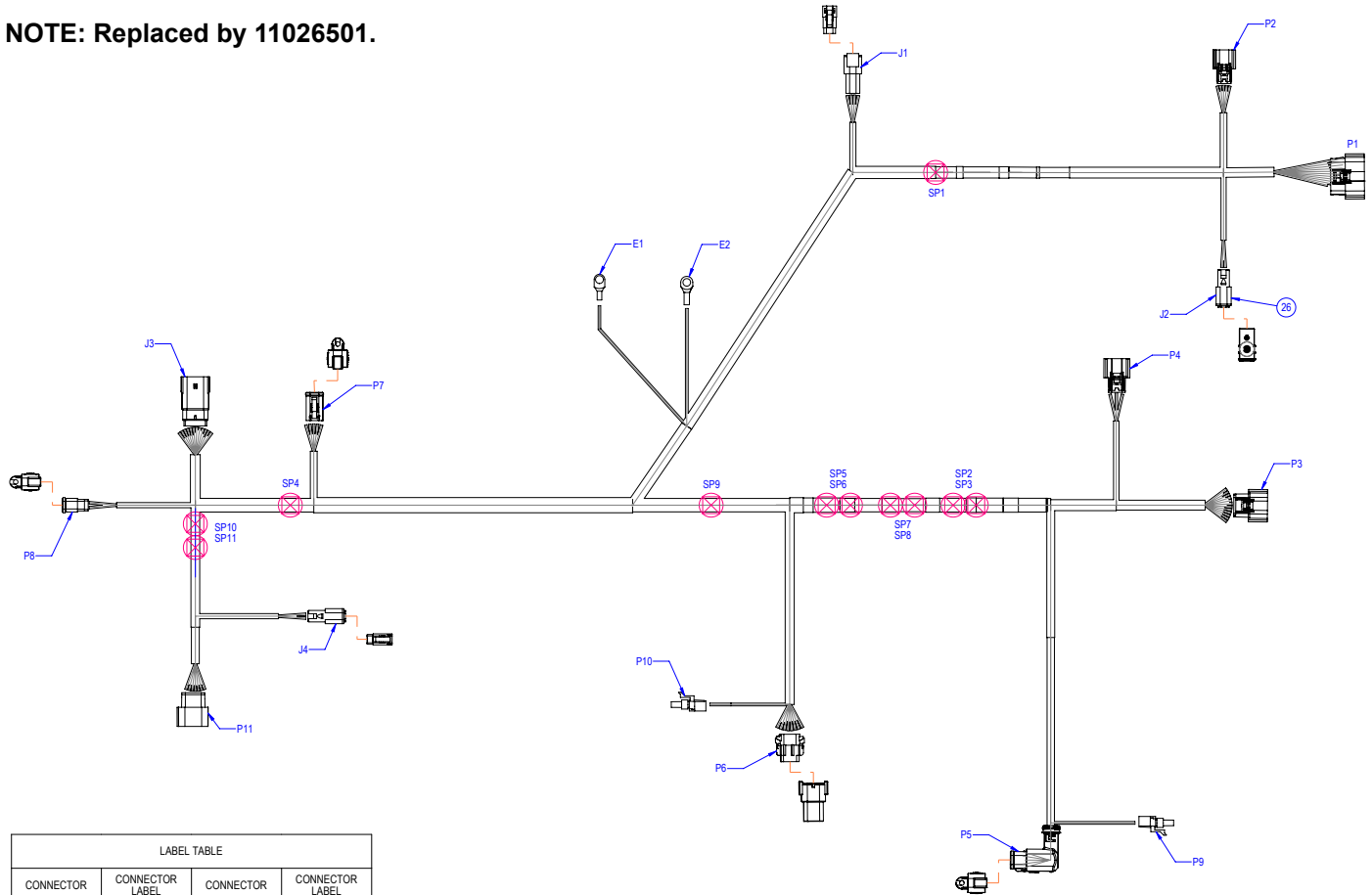


LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
J1	BF SCALE
P1	BF SCALE HARNESS
P2	ROW CLEANER PWR
P4	ROW CLEANER CAN
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.

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)

NOTE: Replaced by 11026501.

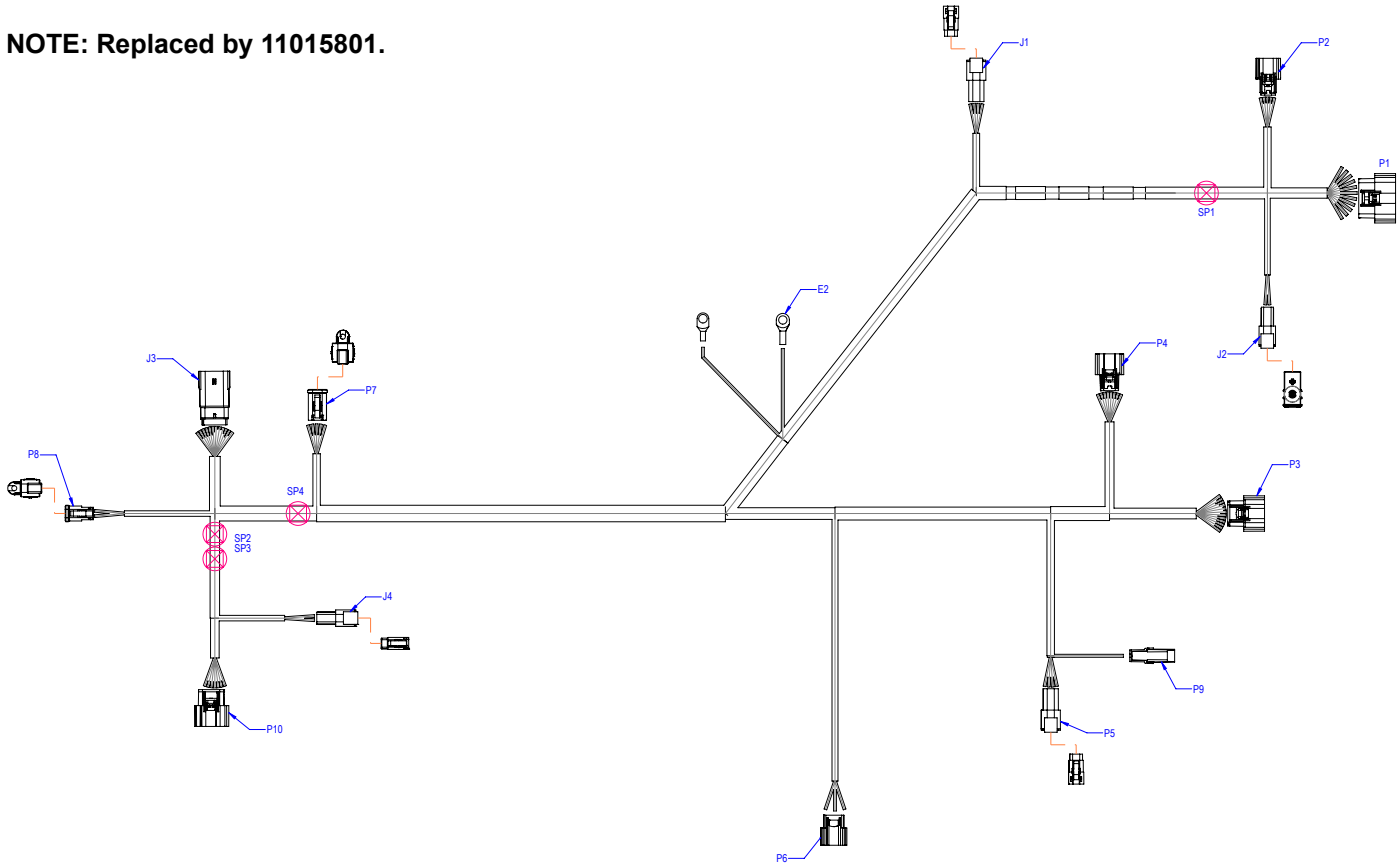


LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P6	SEED SENSOR
P2	RU IPN J6	P7	FERTILIZER
P3	RU IPN J3	P8	TRUE DEPTH SOLENOID
P4	RU IPN J4	P9	BRAIDED ESD CABLE
J1	LINK SENSOR	P10	BRAIDED ESD CABLE
J2	MANUAL RUN	P11	RU IPP
J3	IPN PWR	E1	GND
J4	CAN TERM	E2	BRAIDED ESD CABLE
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	18 (TP)	BRN	RS232 TX	W31	SP3:OUT	---	P5:4	25	18 (TP)	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	P8:2	25	18	VL	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	VL	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	VL	IPN STRAPPING	W51	P6:8	35	SP11:IN	---	18 (TP)	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	18 (TP)	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	18 (TP)	GRN	IPP (CAN L)
W27	P2:2	29	SP3:IN	---	18 (TP)	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	18 (TP)	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)

NOTE: Replaced by 11015801.

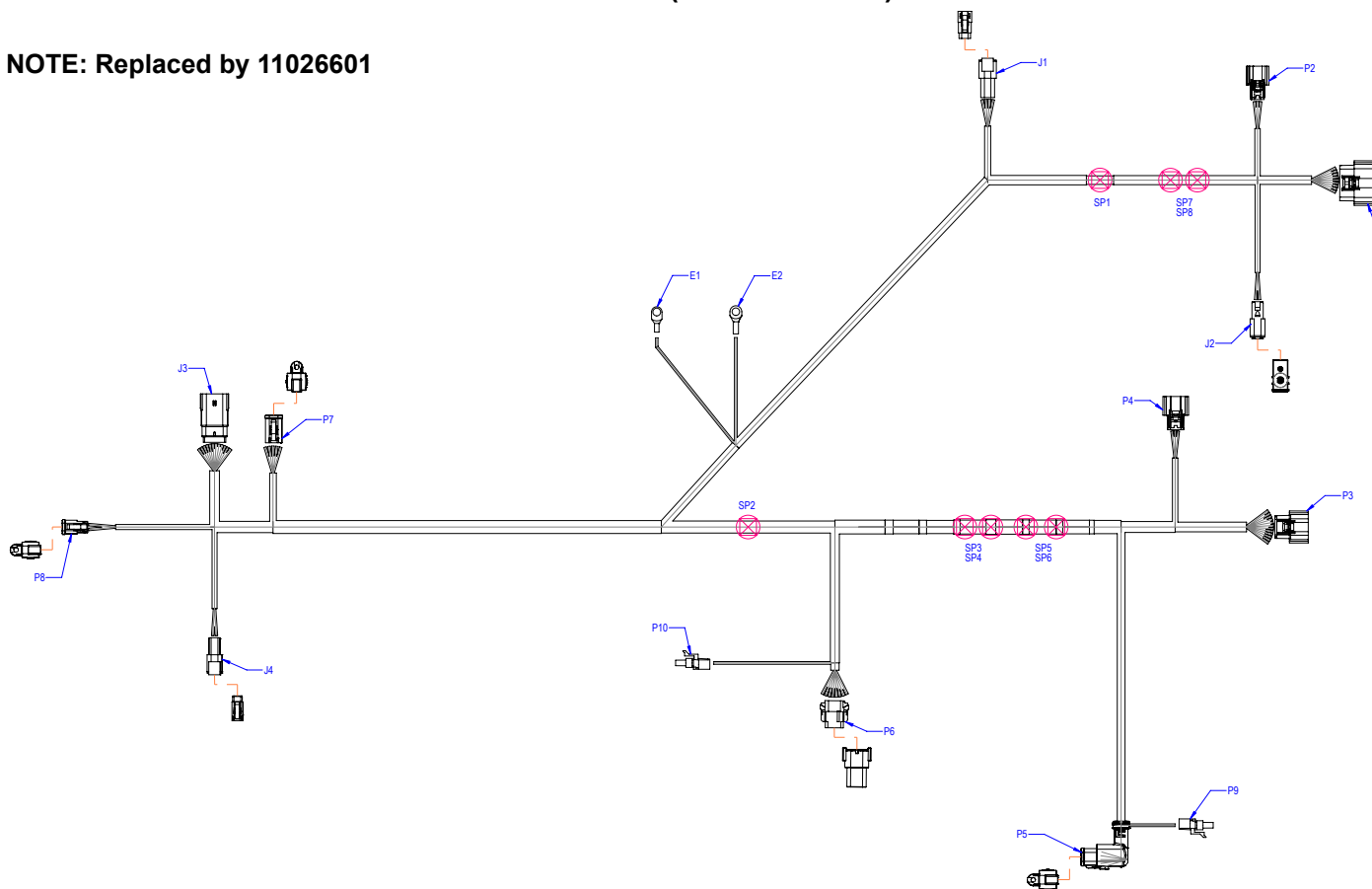


LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	P10	RU IPP
J3	IPN PWR	E1	GND
J4	CAN TERM	E2	BRAIDED ESD CABLE
HARNESS 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 CUTOFF VALVE (PWR)	W24	J3:11	24	P3:11	26	18	GRN	IPN STRAPPING (PARITY)
W2	P1:4	26	P7:6	23	18	BLK	FERT ROW CUTOFF VALVE (GND)	W25	J3:12	24	P3:12	26	18	BRN	IPN STRAPPING (GND)
W3	P1:7	26	P8:1	23	18	BLU	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	BLU	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 SENSOR (SIGNAL)	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 SENSOR (GND)	W32	P4:3	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	P4:4	26	P5:4	29	18	BLK	SEED METER MOTOR 2-
W11	P2:3	26	SP4-IN	---	18	RED	IPP / FERT FLOW SENSOR (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	18	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	---	18 (TP)	GRN	IPN (CAN L)
W18	J3:5	24	P3:5	26	18	YEL	IPN STRAPPING	W41	SP3-OUT	---	J4:1	20	18 (TP)	YEL	TERM (CAN H)
W19	J3:6	24	P3:6	26	18	ORG	IPN STRAPPING	W42	SP2-OUT	---	J4:2	20	18 (TP)	GRN	TERM (CAN L)
W20	J3:7	24	P3:7	26	18	WHT	IPN STRAPPING	W43	SP3-OUT	---	P10:5	26	18 (TP)	YEL	IPP (CAN H)
W21	J3:8	24	P3:8	26	18	GRN	IPN STRAPPING	W44	SP2-OUT	---	P10:4	26	18 (TP)	GRN	IPP (CAN L)
W22	J3:9	24	P3:9	26	18	BLU	IPN STRAPPING	W45	P2:5	26	P10:11	26	18	BLU	IPP SOFTWARE UPDATE
W23	J3:10	24	P3:10	26	18	BLU	IPN STRAPPING	W46	P2:4	26	P10:6	26	18	BLK	IPP PWR-

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

NOTE: Replaced by 11026601

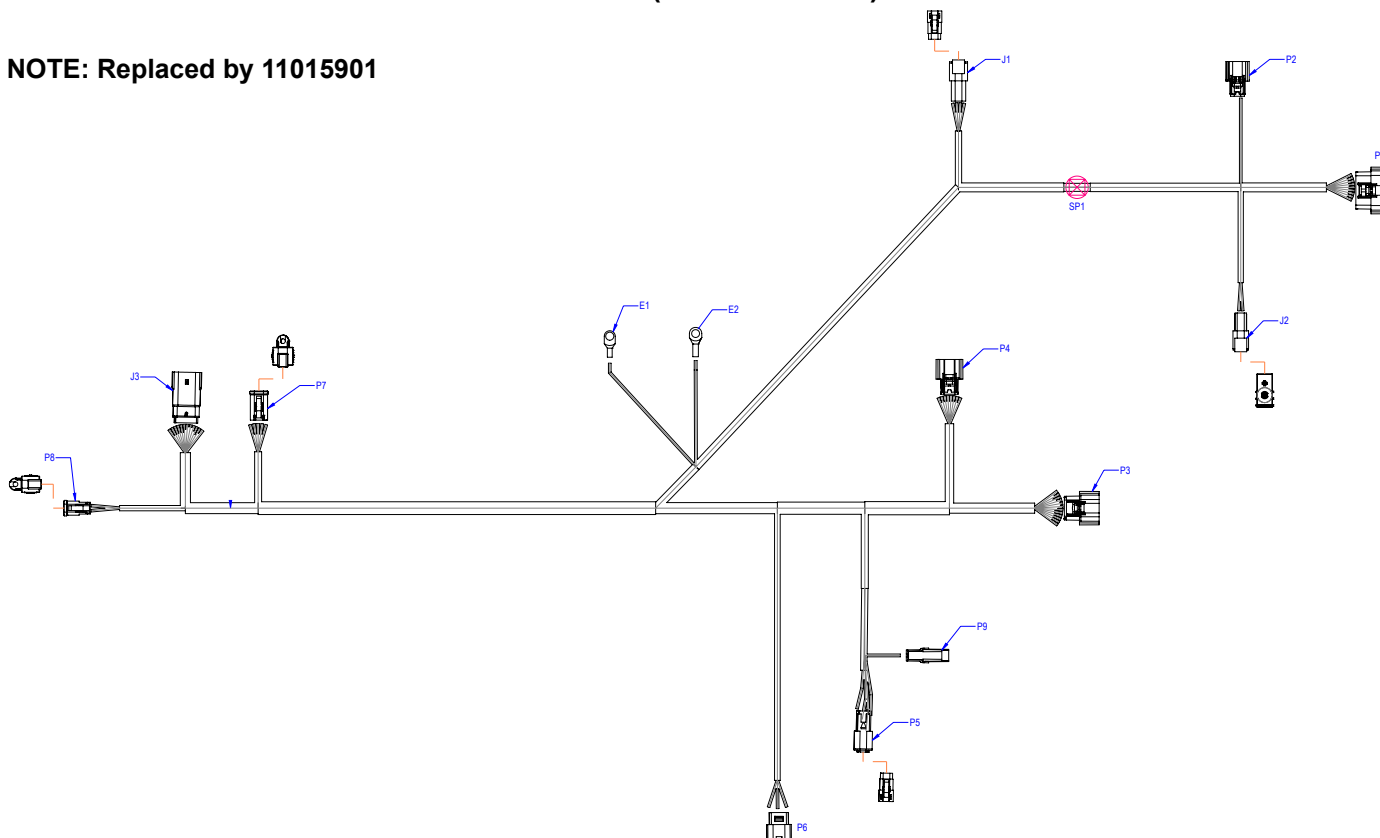


LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	P10	BRAIDED ESD CABLE
J3	IPN PWR	E1	GND
J4	CAN TERM	E2	BRAIDED ESD 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 CUTOFF 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	WHY	TRUE DEPTH LINK SENSOR (SIGNAL)	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	WHI	IPN STRAPPING
P2-3	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	---	18 (TP)	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	18 (TP)	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	18 (TP)	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	18 (TP)	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	SP6-OUT	---	P3-3	30	16	RED	24V IPN PWR	W47	SP2-OUT	---	P10-1	37	ESD	---	BRAIDED SEED TUBE ESD CABLE
W24	F1	---	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)

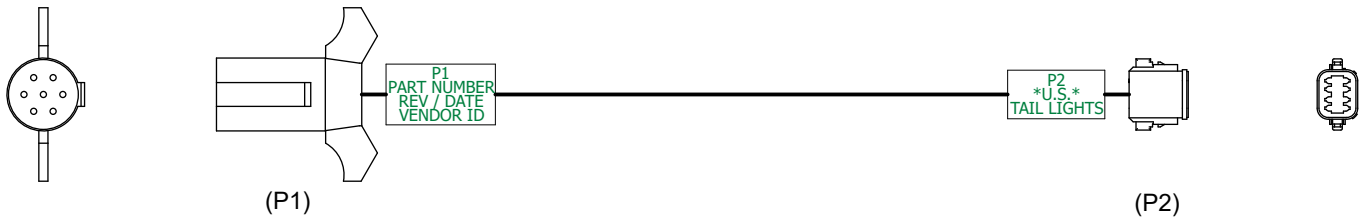
NOTE: Replaced by 11015901



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 (SIGNAL)
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	18	YE	IPN STRAPPING
W17	J3:6	23	P3:6	24	18	OG	IPN STRAPPING
W18	J3:7	23	P3:7	24	18	WH	IPN STRAPPING
W19	J3:8	23	P3:8	24	18	GN	IPN STRAPPING
W20	J3:9	23	P3:9	24	18	BU	IPN STRAPPING
W21	J3:10	23	P3:10	24	18	VT	IPN STRAPPING
W22	J3:11	23	P3:11	24	18	GY	IPN STRAPPING (PARITY)
W23	J3:12	23	P3:12	24	18	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)

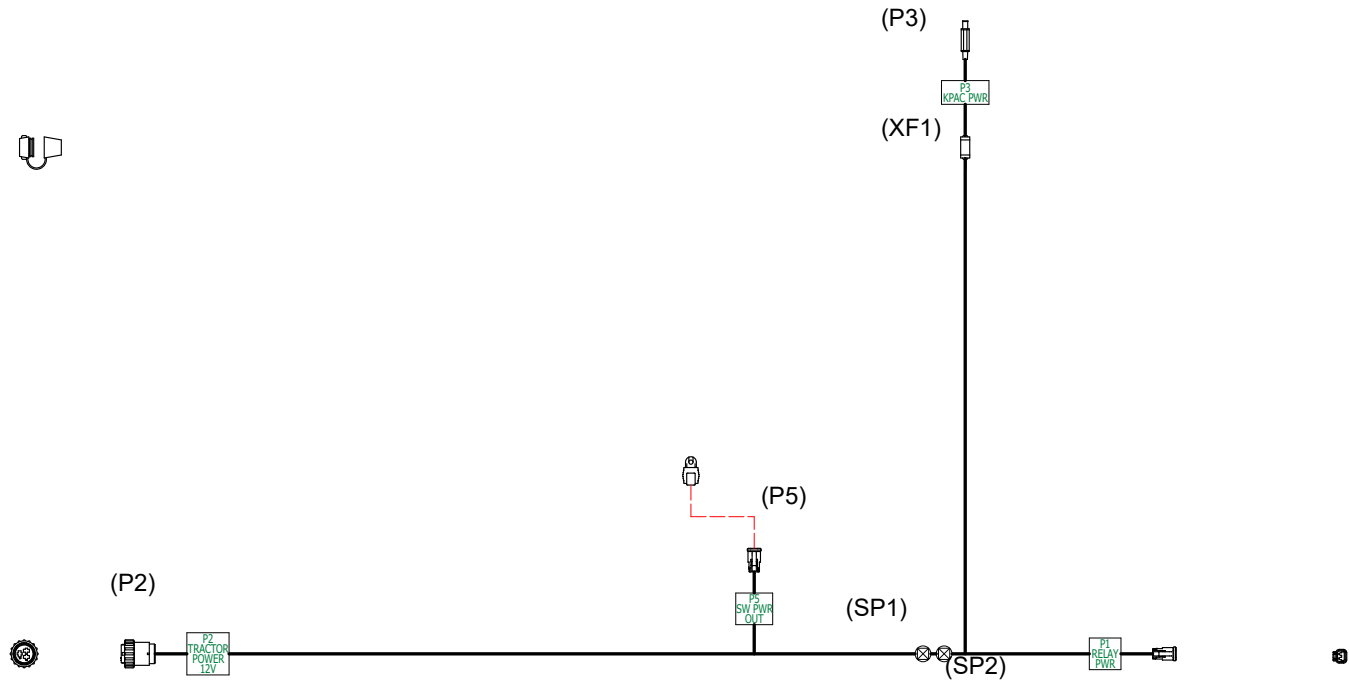
LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	E1	GND
J3	IPN PWR	E2	BRAIDED ESD CABLE
HARNESS LABEL	PART NUMBER REV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

TAILLIGHT EXTENSION HARNESS (P/N: A25207)



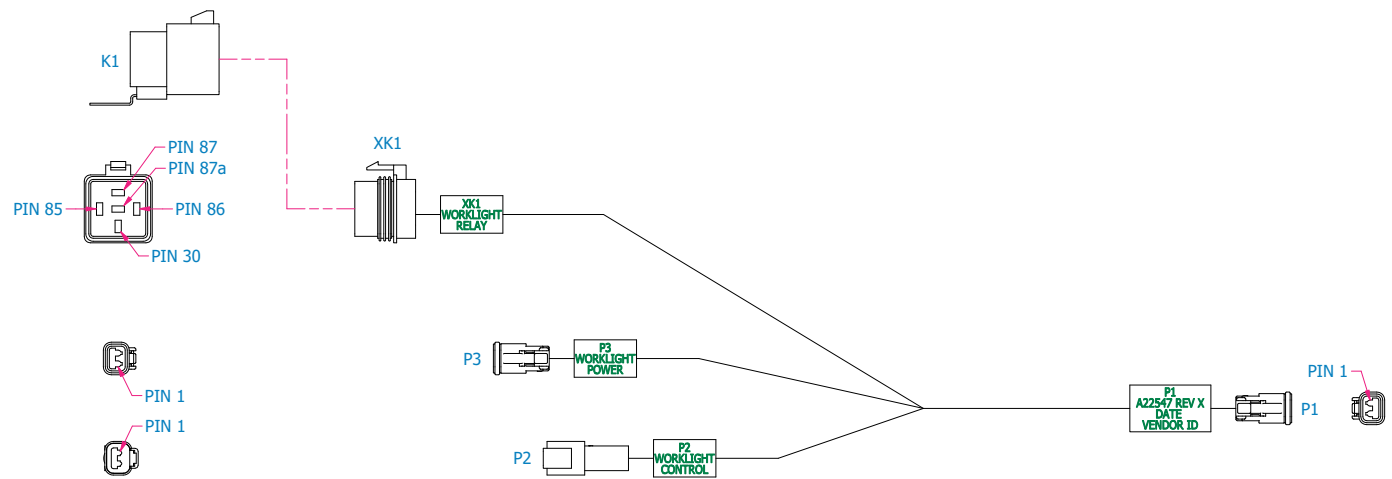
Signal	Wire Gauge	Color	From	To
Ground	16	WHT	P1-1	P2-1
LH Turn	16	YEL	P1-3	P2-3
RH Turn	16	GRN	P1-5	P2-5
Tail	16	BRN	P1-6	P2-6

TRACTOR CONSOLE HARNESS (P/N: A25031)



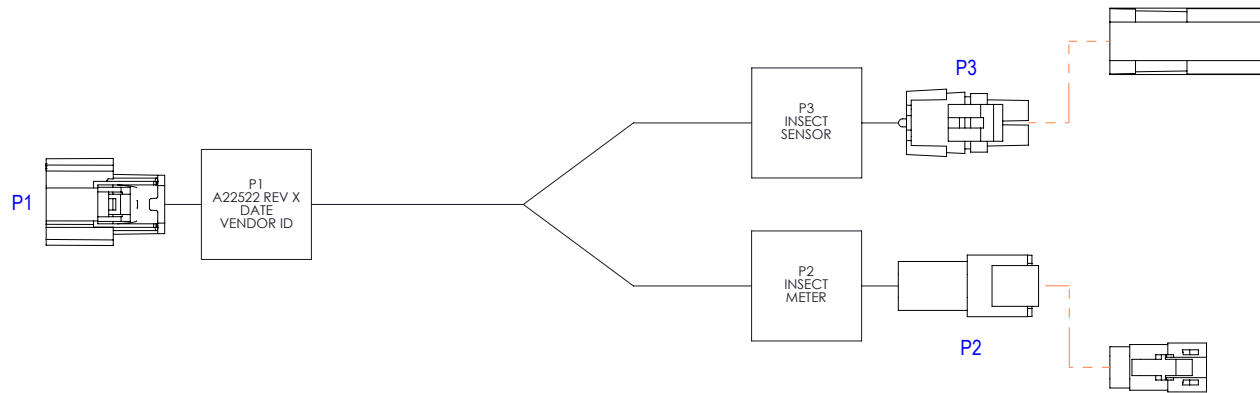
Signal	Wire Gauge	Color	FROM	TO
12V Switched (PWR)	16	RED	P2-1	SP1
Relay (PWR)	18	BLUE	SP1	P1-1
12V Switched (PWR)	18	RED	SP1	XF1-1
12V Switched (PWR)	18	ORN	SP1	P5-1
12V Switched (PWR)	18	RED	XF1-2	P3-1
12V Switched (PWR)	16	BLK	P2-3	SP2
12V Switched (PWR)	18	BLK	SP2	P1-2
12V Switched (PWR)	18	BLK	SP2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

WORK LIGHT HARNESS (P/N: A22547)



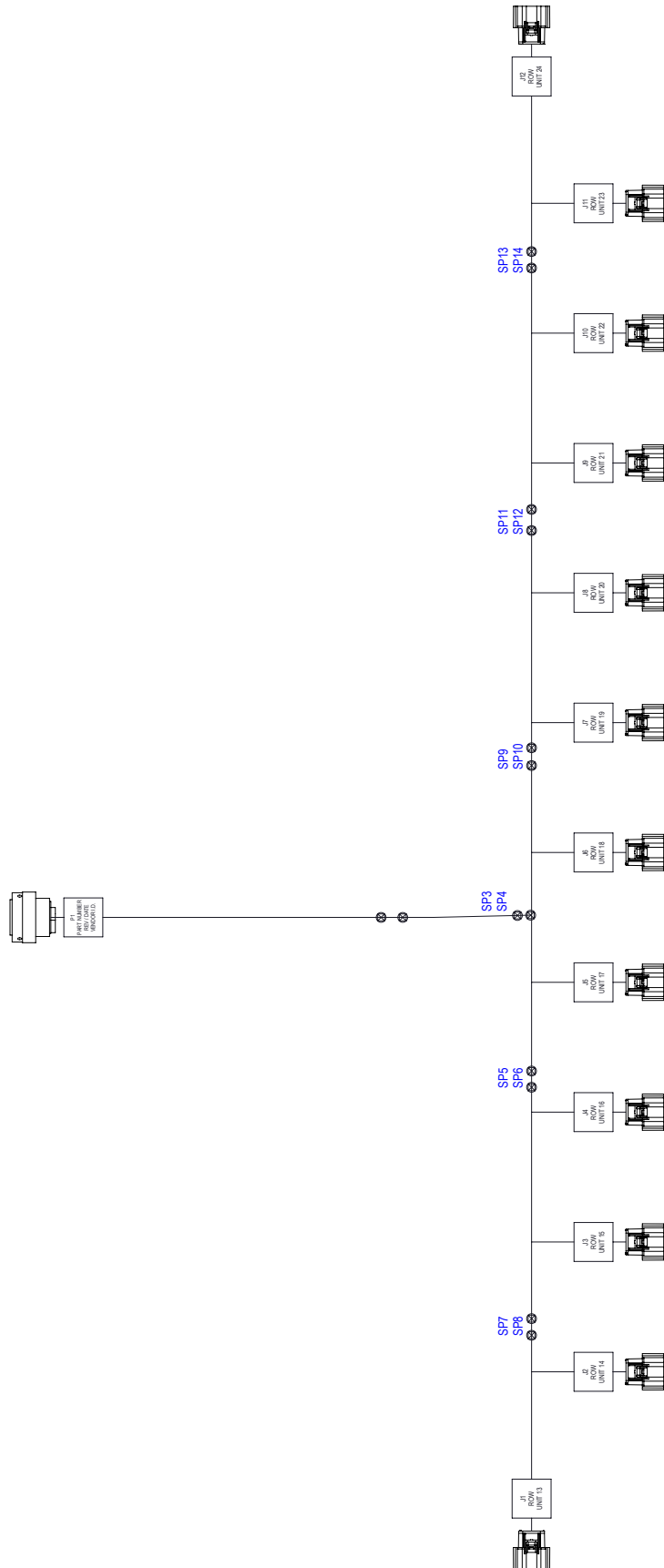
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P3-1	7	P1-1	7	16	BLK	WORKLIGHT POWER -
W2	P3-2	7	XK1-30	---	16	RED	WORKLIGHT POWER +
W3	P2-1	8	XK1-85	---	16	BLK	RELAY GROUND
W4	P2-2	8	XK1-86	---	16	BLU	RELAY 12V
W5	XK1-87	---	P1-2	7	16	RED	WORKLIGHT POWER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

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/SIGNAL)

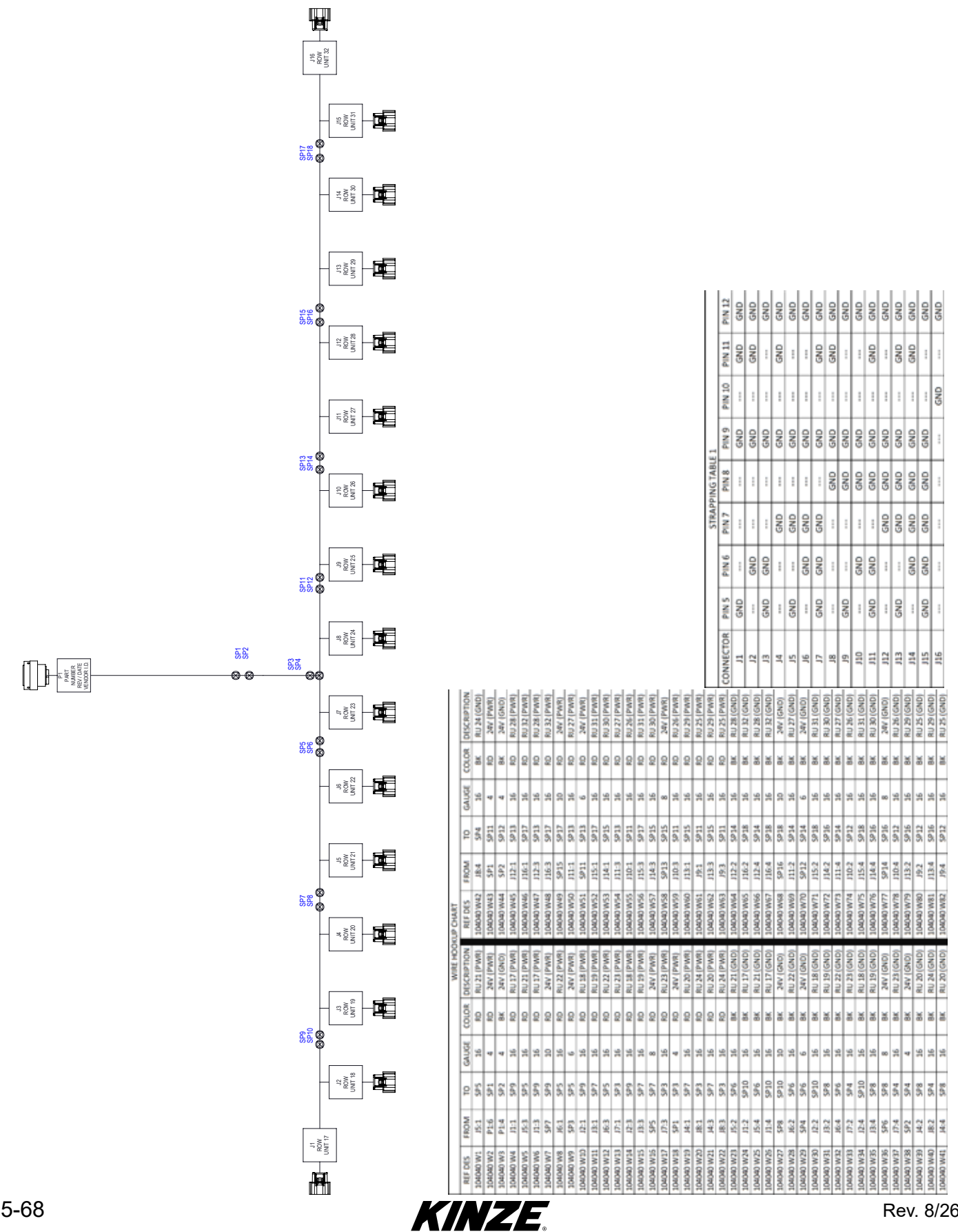
PUSH ROW UNIT POWER HARNESS, 12 ROW (P/N: 10478201)



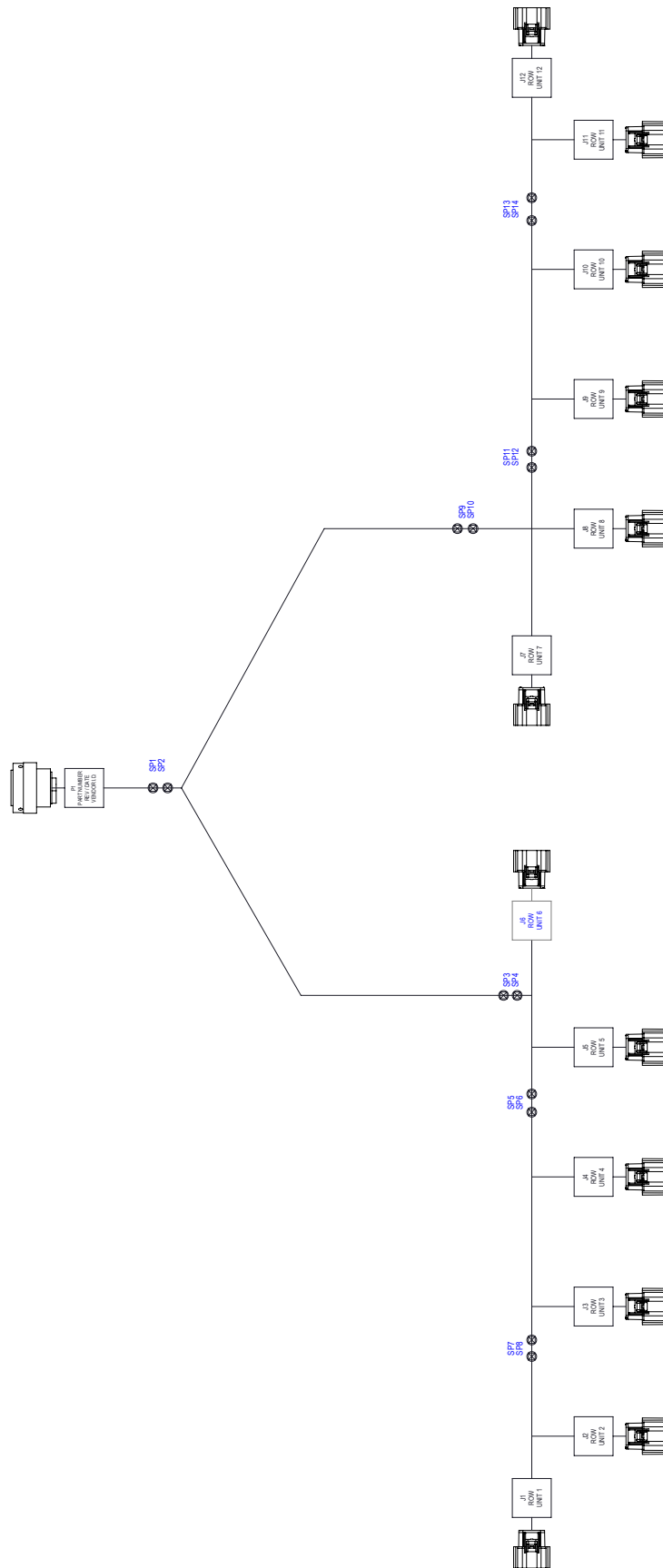
WIRE HOOKUP CHART									
REF DES.	FROM	TO	Gauge	Color	Description	Ref Des	From	To	Color
104041 W1	P1.5	SP1 IN	4	RD	24V (PWR)	104041 W32	J6.4	SP4 OUT	BK
104041 W2	P1.4	SP2 IN	4	BK	24V (GND)	104041 W33	J6.4	SP4 OUT	BK
104041 W3	J1.1	SP7 OUT	25	RD	RU 13.24V (PWR)	104041 W34	J6.3	SP4 OUT	BK
104041 W4	J1.3	SP7 OUT	25	RD	RU 13.24V (PWR)	104041 W35	SP6 OUT	SP5 IN	BK
104041 W5	J2.3	SP7 OUT	25	RD	RU 14.24V (PWR)	104041 W36	J7.2	SP10 OUT	BK
104041 W6	J2.1	SP7 OUT	25	RD	RU 14.24V (PWR)	104041 W37	J7.4	SP10 OUT	BK
104041 W7	J3.1	SP7 OUT	25	RD	RU 15.24V (PWR)	104041 W38	J8.2	SP10 OUT	BK
104041 W8	J3.3	SP7 OUT	25	RD	RU 15.24V (PWR)	104041 W39	J8.4	SP10 OUT	BK
104041 W9	J4.1	SP7 OUT	25	RD	RU 16.24V (PWR)	104041 W40	SP4 OUT	SP6 IN	BK
104041 W10	J4.3	SP7 OUT	25	RD	RU 16.24V (PWR)	104041 W41	SP7 OUT	SP10 IN	BK
104041 W11	J6.3	SP7 OUT	25	RD	RU 17.24V (PWR)	104041 W42	SP7 OUT	SP4 IN	BK
104041 W12	J5.1	SP7 OUT	25	RD	RU 17.24V (PWR)	104041 W43	J11.1	SP13 OUT	RD
104041 W13	J5.3	SP7 OUT	25	RD	RU 17.24V (PWR)	104041 W44	J12.3	SP13 OUT	RD
104041 W14	J6.1	SP7 OUT	25	RD	RU 18.24V (PWR)	104041 W45	J11.3	SP13 OUT	RD
104041 W15	SP7 IN	SP7 IN	24	RD	24V (PWR)	104041 W46	J12.1	SP13 OUT	RD
104041 W16	SP7 OUT	J7.1	25	RD	RU 19.24V (PWR)	104041 W47	J12.4	SP14 OUT	BK
104041 W17	SP9 OUT	J7.3	25	RD	RU 19.24V (PWR)	104041 W48	J11.2	SP14 OUT	BK
104041 W18	SP9 OUT	J8.1	25	RD	RU 20.24V (PWR)	104041 W49	J11.4	SP14 OUT	BK
104041 W19	SP9 OUT	J8.3	25	RD	RU 20.24V (PWR)	104041 W50	J12.2	SP14 OUT	BK
104041 W20	SP9 OUT	SP9 IN	20	RD	24V (PWR)	104041 W51	SP9 OUT	SP11 IN	RD
104041 W21	SP9 OUT	SP9 IN	4	RD	24V (PWR)	104041 W52	SP9 OUT	SP11 IN	RD
104041 W22	SP1 OUT	SP3 IN	4	RD	24V (PWR)	104041 W53	J9.2	SP12 OUT	BK
104041 W23	J1.2	SP8 OUT	25	BK	RU 13.24V (GND)	104041 W54	J9.2	SP12 OUT	BK
104041 W24	J2.4	SP8 OUT	25	BK	RU 14.24V (GND)	104041 W55	J10.4	SP12 OUT	BK
104041 W25	J1.4	SP8 OUT	25	BK	RU 13.24V (GND)	104041 W56	SP12 OUT	SP14 IN	RD
104041 W26	J2.2	SP8 OUT	25	BK	RU 14.24V (GND)	104041 W57	J9.3	SP11 OUT	RD
104041 W27	J3.4	SP6 OUT	25	BK	RU 15.24V (GND)	104041 W58	J10.1	SP11 OUT	RD
104041 W28	J3.2	SP6 OUT	25	BK	RU 15.24V (GND)	104041 W59	J10.1	SP11 OUT	RD
104041 W29	J4.2	SP6 OUT	25	BK	RU 16.24V (GND)	104041 W60	J10.3	SP11 IN	RD
104041 W30	J4.4	SP6 OUT	25	BK	RU 16.24V (GND)	104041 W61	SP11 IN	SP13 IN	RD
104041 W31	J5.2	SP4 OUT	25	BK	RU 17.24V (GND)	104041 W62	SP10 OUT	SP12 IN	RD

STRAPPING TABLE 1											
CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12			
J1	---	GND	---	GND	GND	---	---	---			
J2	---	GND	GND	GND	GND	---	---	GND			
J3	GND	GND	GND	GND	GND	---	---	GND			
J4	---	---	---	---	---	---	---	GND			
J5	GND	---	---	---	---	---	---	GND			
J6	---	GND	---	---	---	---	---	GND			
J7	GND	---	---	---	---	---	---	GND			
J8	---	---	---	---	---	---	---	GND			
J9	GND	---	---	---	---	---	---	GND			
J10	---	GND	GND	GND	GND	---	---	GND			
J11	GND	GND	GND	GND	GND	---	---	GND			
J12	---	---	---	---	---	---	---	GND			

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



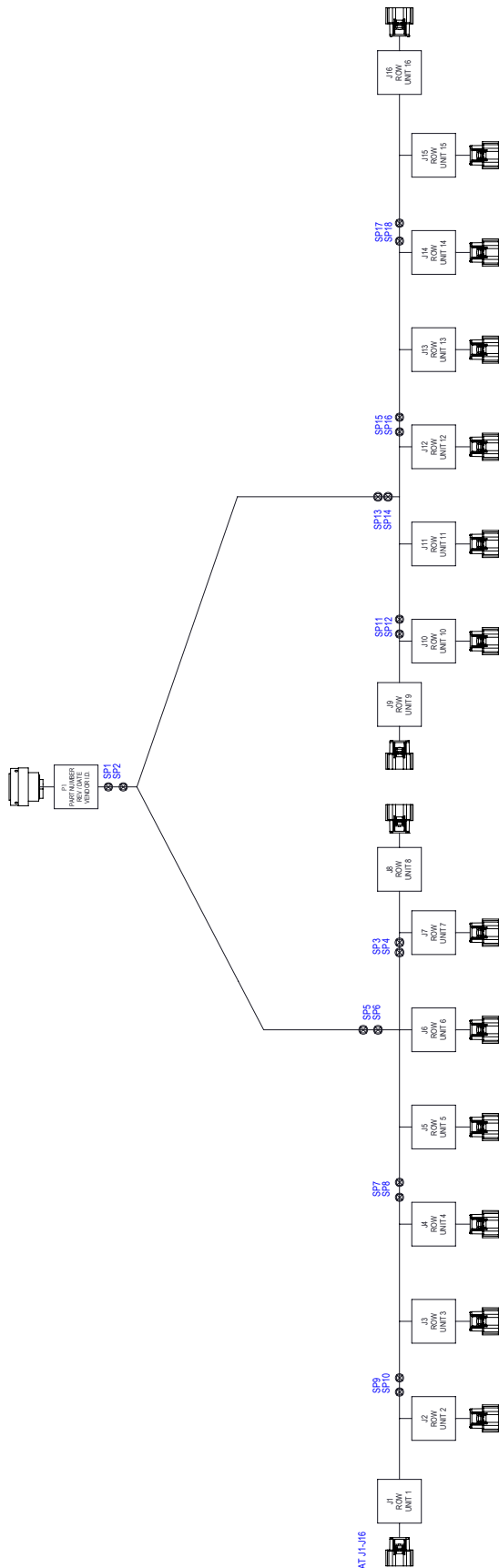
PULL ROW UNIT POWER HARNESS, 12 ROW (P/N: 10478301)



WIRE HOOKUP CHART											
WIRE HOOKUP CHART						WIRE HOOKUP CHART					
REF DES	FROM	TO	GAGE	COLOR	DESCRIPTION	REF DES	FROM	TO	GAGE	COLOR	DESCRIPTION
104041 W1	P1-6	SPT-IN	4	RD	24V (PWR)	104041 W32	P5-4	SMA-OUT	16	BK	RU 5.24V (GND)
104041 W2	P1-6	SPT-IN	4	BK	24V (GND)	104041 W33	P6-4	SMA-OUT	16	BK	RU 6.24V (GND)
104041 W3	J1-1	SPT-OUT	16	RD	RU 1.24V (PWR)	104041 W34	P6-2	SMA-OUT	16	BK	RU 6.24V (GND)
104041 W4	J1-1	SPT-OUT	16	RD	RU 1.24V (PWR)	104041 W35	SPT-IN	14	BK	24V (GND)	
104041 W5	J2-3	SPT-OUT	16	RD	RU 2.24V (PWR)	104041 W36	P7-2	SPT-OUT	16	BK	RU 7.24V (GND)
104041 W6	J2-1	SPT-OUT	16	RD	RU 2.24V (PWR)	104041 W37	P7-4	SPT-OUT	16	BK	RU 7.24V (GND)
104041 W7	J3-1	SPT-OUT	16	RD	RU 3.24V (PWR)	104041 W38	P8-2	SPT-OUT	16	BK	RU 8.24V (GND)
104041 W8	J3-3	SPT-OUT	16	RD	RU 3.24V (PWR)	104041 W39	P8-4	SPT-OUT	16	BK	RU 8.24V (GND)
104041 W9	J4-1	SPT-OUT	16	RD	RU 4.24V (PWR)	104041 W40	SMA-OUT	10	BK	24V (GND)	
104041 W10	J4-3	SPT-OUT	16	RD	RU 4.24V (PWR)	104041 W41	P9-2	SPT-OUT	16	BK	RU 9.24V (GND)
104041 W11	J6-3	SPT-OUT	16	RD	RU 6.24V (PWR)	104041 W42	P9-4	SPT-OUT	16	BK	RU 9.24V (GND)
104041 W12	J5-1	SPT-OUT	16	RD	RU 5.24V (PWR)	104041 W43	J11-1	SPT-OUT	16	RD	RU 11.24V (PWR)
104041 W13	J5-3	SPT-OUT	16	RD	RU 5.24V (PWR)	104041 W44	J12-3	SPT-OUT	16	RD	RU 12.24V (PWR)
104041 W14	J6-1	SPT-OUT	16	RD	RU 6.24V (PWR)	104041 W45	J11-3	SPT-OUT	16	RD	RU 11.24V (PWR)
104041 W15	SPT-OUT	SPT-IN	14	RD	24V (PWR)	104041 W46	J12-1	SPT-OUT	16	RD	RU 12.24V (PWR)
104041 W16	SPT-OUT	P7-1	16	RD	RU 7.24V (PWR)	104041 W47	J12-4	SPT-OUT	16	BK	RU 12.24V (GND)
104041 W17	SPT-OUT	P7-3	16	RD	RU 7.24V (PWR)	104041 W48	J11-2	SPT-OUT	16	BK	RU 11.24V (GND)
104041 W18	SPT-OUT	J8-1	16	RD	RU 8.24V (PWR)	104041 W49	J11-4	SPT-OUT	16	BK	RU 11.24V (GND)
104041 W19	SPT-OUT	J8-3	16	RD	RU 8.24V (PWR)	104041 W50	J12-2	SPT-OUT	16	BK	RU 12.24V (GND)
104041 W20	SPT-OUT	SPT-IN	30	RD	24V (PWR)	104041 W51	SPT-OUT	20	RD	24V (PWR)	
104041 W21	SPT-OUT	SPT-IN	4	RD	24V (PWR)	104041 W52	P9-4	SPT-OUT	16	BK	RU 9.24V (GND)
104041 W22	SPT-OUT	SPT-IN	4	RD	24V (PWR)	104041 W53	P9-2	SPT-OUT	16	BK	RU 9.24V (GND)
104041 W23	J12-2	SPT-OUT	16	BK	RU 12.24V (GND)	104041 W54	J10-2	SPT-OUT	16	BK	RU 10.24V (GND)
104041 W24	J2-4	SPT-OUT	16	BK	RU 2.24V (GND)	104041 W55	J10-4	SPT-OUT	16	BK	RU 10.24V (GND)
104041 W25	J1-4	SPT-OUT	16	BK	RU 1.24V (GND)	104041 W56	SPT-OUT	14	BK	24V (GND)	
104041 W26	J2-2	SPT-OUT	16	BK	RU 2.24V (GND)	104041 W57	P9-1	SPT-OUT	16	RD	RU 9.24V (PWR)
104041 W27	J3-4	SPT-OUT	16	BK	RU 3.24V (GND)	104041 W58	P9-3	SPT-OUT	16	RD	RU 9.24V (PWR)
104041 W28	J3-2	SPT-OUT	16	BK	RU 3.24V (GND)	104041 W59	J10-1	SPT-OUT	16	RD	RU 10.24V (PWR)
104041 W29	J4-2	SPT-OUT	16	BK	RU 4.24V (GND)	104041 W60	J10-1	SPT-OUT	16	RD	RU 10.24V (PWR)
104041 W30	J4-4	SPT-OUT	16	BK	RU 4.24V (GND)	104041 W61	SPT-OUT	16	BK	24V (GND)	
104041 W31	J5-2	SPT-OUT	16	BK	RU 5.24V (GND)	104041 W62	SPT-OUT	14	RD	24V (PWR)	

STRAPPING TABLE 1											
CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	CONNECTOR	PIN 5	PIN 6
J1	GND	GND	GND	GND	GND	GND	GND	GND	J1	GND	GND
J2	GND	GND	GND	GND	GND	GND	GND	GND	J2	GND	GND
J3	GND	GND	GND	GND	GND	GND	GND	GND	J3	GND	GND
J4	GND	GND	GND	GND	GND	GND	GND	GND	J4	GND	GND
J5	GND	GND	GND	GND	GND	GND	GND	GND	J5	GND	GND
J6	GND	GND	GND	GND	GND	GND	GND	GND	J6	GND	GND
J7	GND	GND	GND	GND	GND	GND	GND	GND	J7	GND	GND
J8	GND	GND	GND	GND	GND	GND	GND	GND	J8	GND	GND
J9	GND	GND	GND	GND	GND	GND	GND	GND	J9	GND	GND
J10	GND	GND	GND	GND	GND	GND	GND	GND	J10	GND	GND
J11	GND	GND	GND	GND	GND	GND	GND	GND	J11	GND	GND
J12	GND	GND	GND	GND	GND	GND	GND	GND	J12	GND	GND

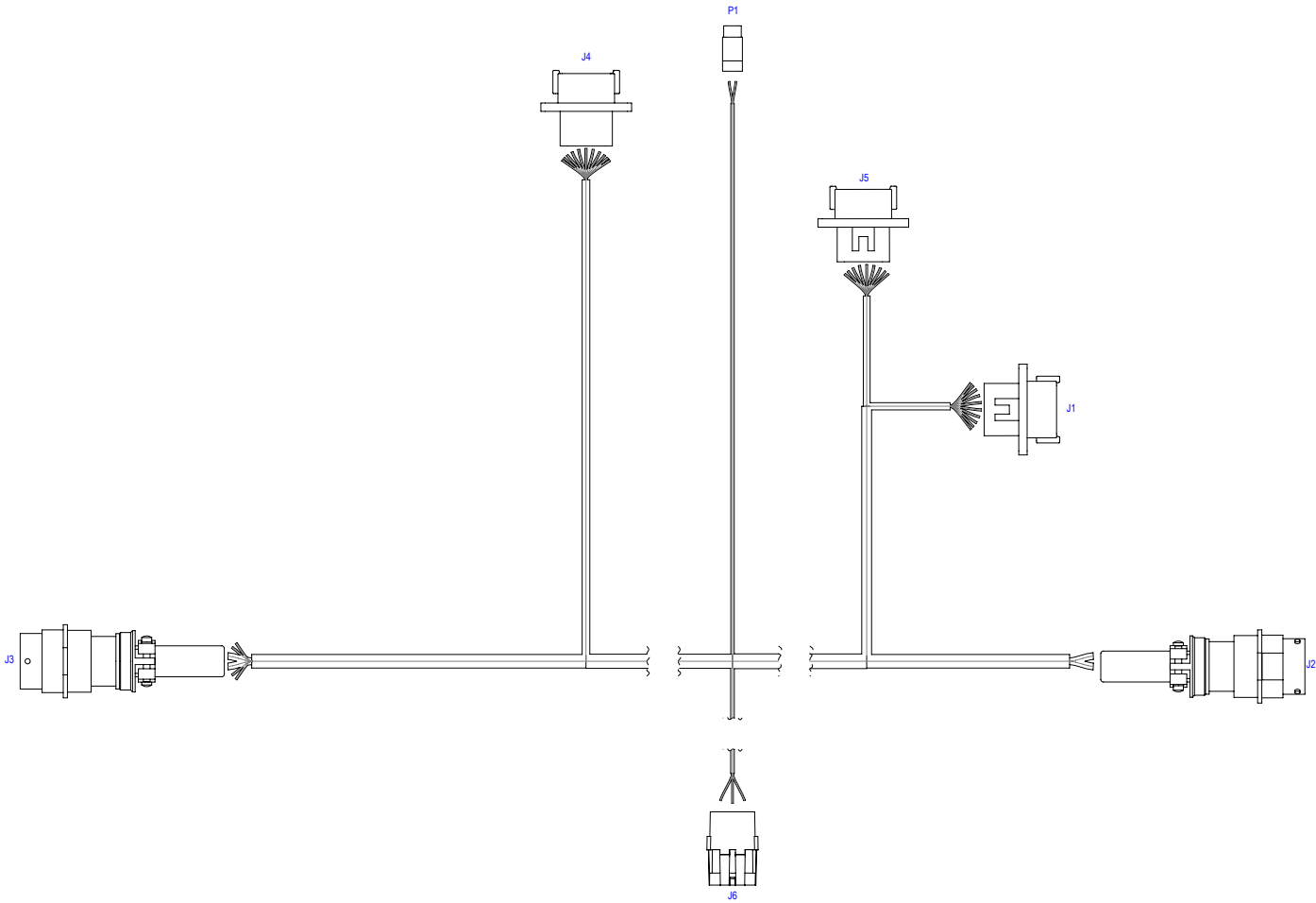
PULL ROW UNIT POWER HARNESS, 16 ROW (P/N: 10404101)



STRAPPING TABLE

STRAPPING TABLE								
PLUG	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	P12
1	GND	0000	0000	0000	0000	0000	0000	GND
2	0000	GND	0000	0000	0000	0000	0000	GND
3	GND	GND	0000	0000	0000	0000	GND	GND
4	0000	0000	GND	0000	0000	0000	0000	GND
5	GND	0000	GND	0000	0000	0000	GND	GND
6	0000	GND	GND	0000	0000	0000	GND	GND
7	GND	GND	GND	0000	0000	0000	0000	GND
8	0000	0000	0000	GND	0000	0000	0000	GND
9	GND	0000	0000	GND	0000	0000	GND	GND
10	0000	GND	0000	GND	0000	0000	GND	GND
11	GND	GND	0000	GND	0000	0000	0000	GND
12	0000	0000	GND	GND	0000	0000	GND	GND
13	GND	0000	GND	GND	0000	0000	0000	GND
14	0000	GND	GND	GND	0000	0000	0000	GND
15	GND	GND	GND	GND	0000	0000	GND	GND
16	0000	0000	0000	0000	GND	0000	0000	GND

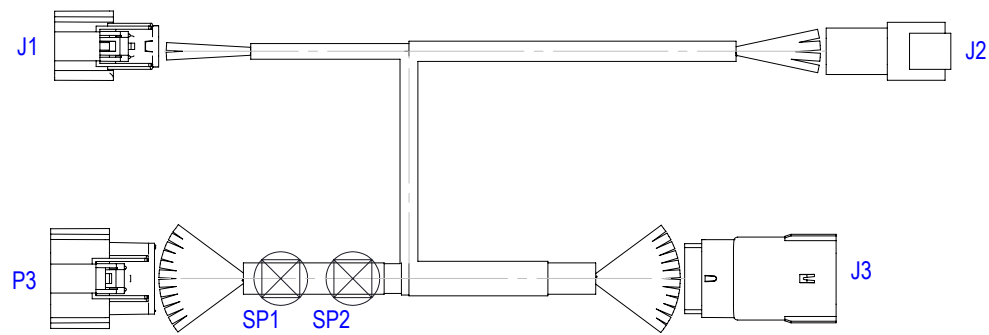
UMBILICAL HARNESS (P/N: 10404301)



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.

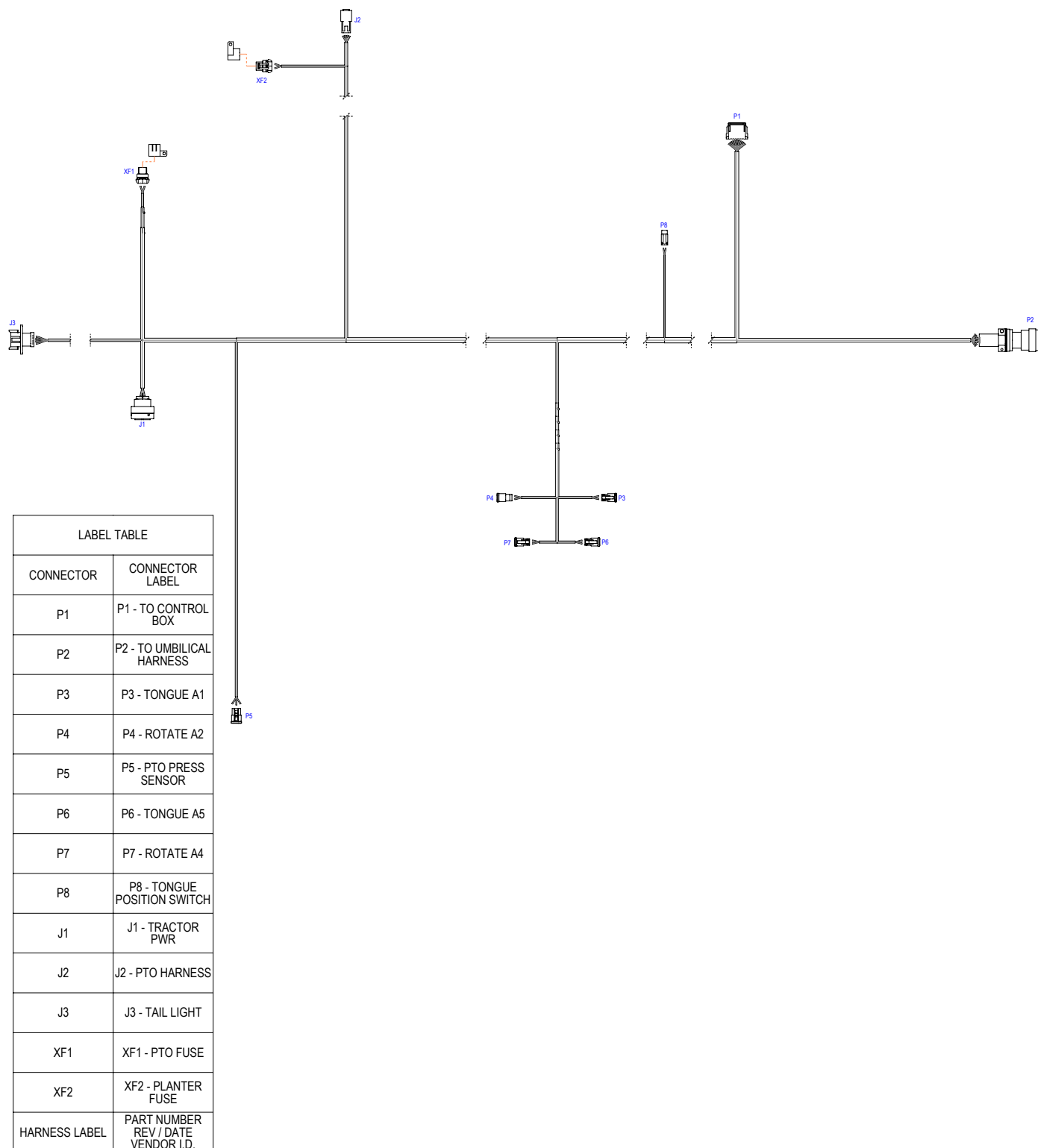
WIRE HOOKUP CHART															
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	J1:1	2	J4:1	2	16	RED/WH	PTO PRESS SENSOR 5V (PWR)	W13	J5:4	2	J3:6	2	16	GRN	RH FLASH
W2	J1:2	2	J4:2	2	16	VIO	PTO HYD PRESS SENSOR (GND)	W14	J2:3	4	J3:3	4	6	RED	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 (+)								

CAN STUB HARNESS (P/N: 10946701)



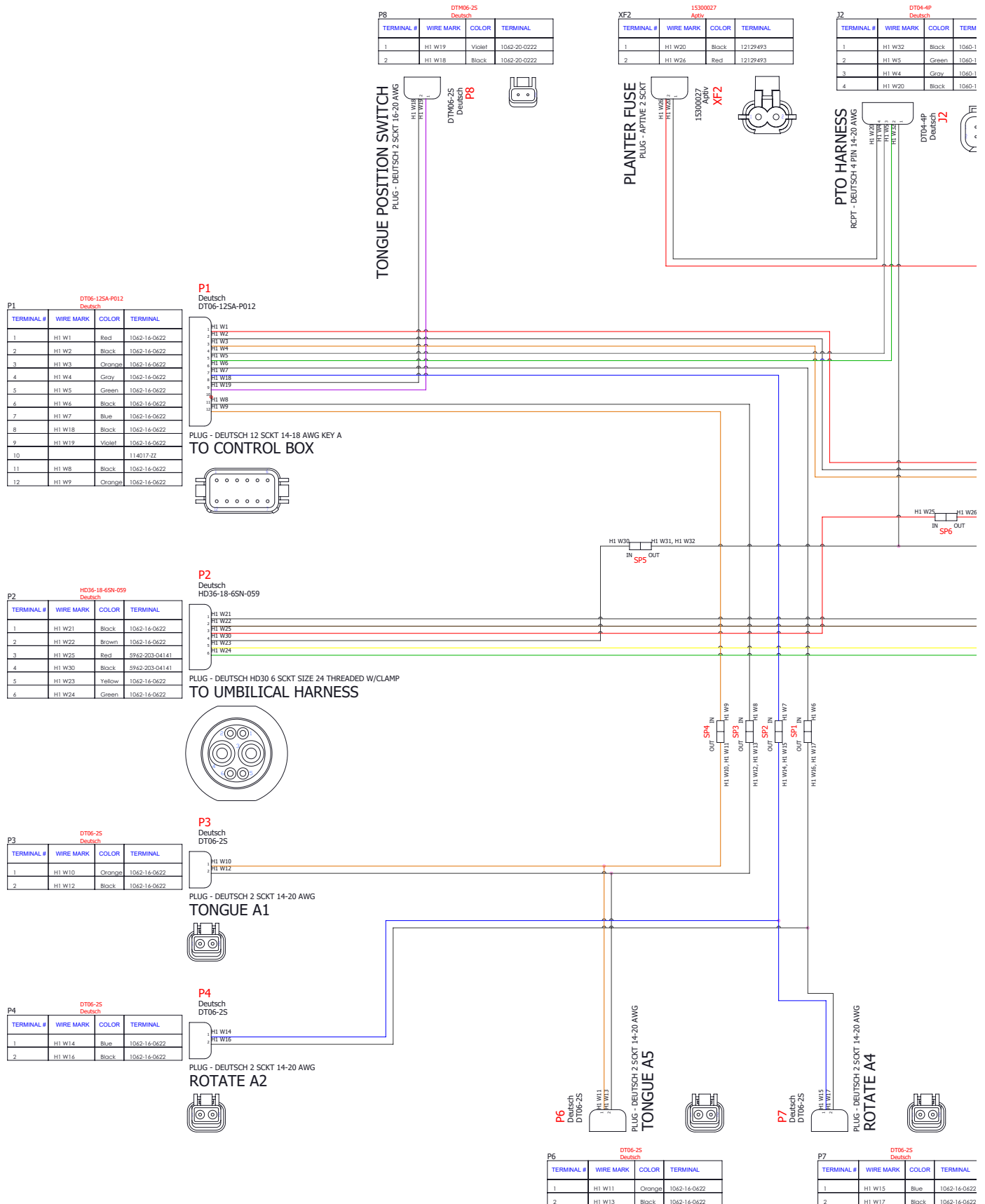
LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
J1	J1 BF-J6 SCALE MODULE
J2	J2 SCALE PWR
P3	TO BE IPN J3
J3	TO BF PWR
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.

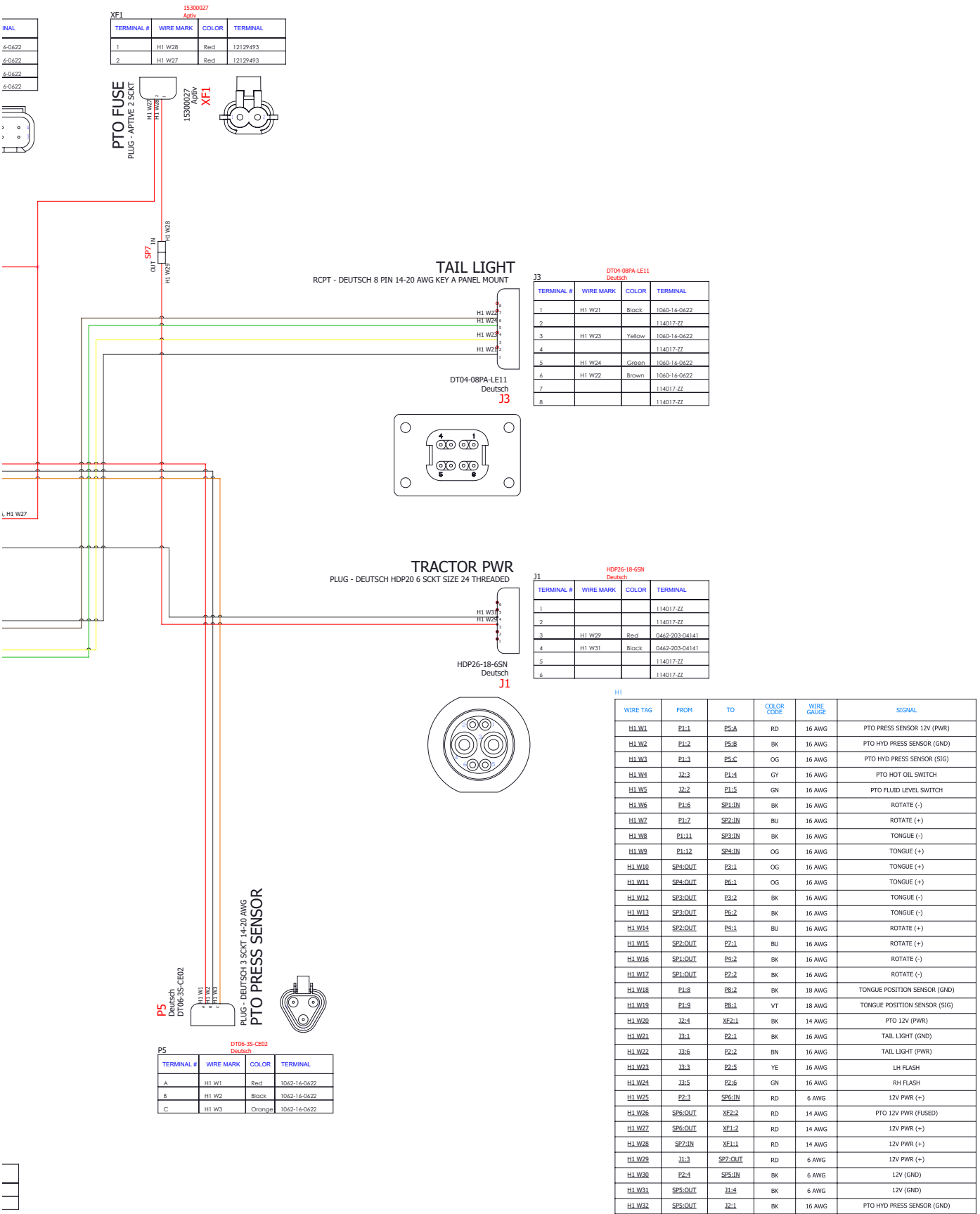
WIRE HOOKUP CHART															
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION	REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	J1:1	1	J2:3	3	18 (TP)	YEL	CAN HI	W10	P3:4	1	J3:4	6	18	BLK	IPN 12V (GND)
W2	J1:2	1	J2:4	3		GRN	CAN LOW	W11	P3:5	1	J3:5	6	18	BLK	STRAPPING
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

HITCH HARNESS, 12 ROW (P/N: 11147702); 16 ROW (P/N: 11147701)


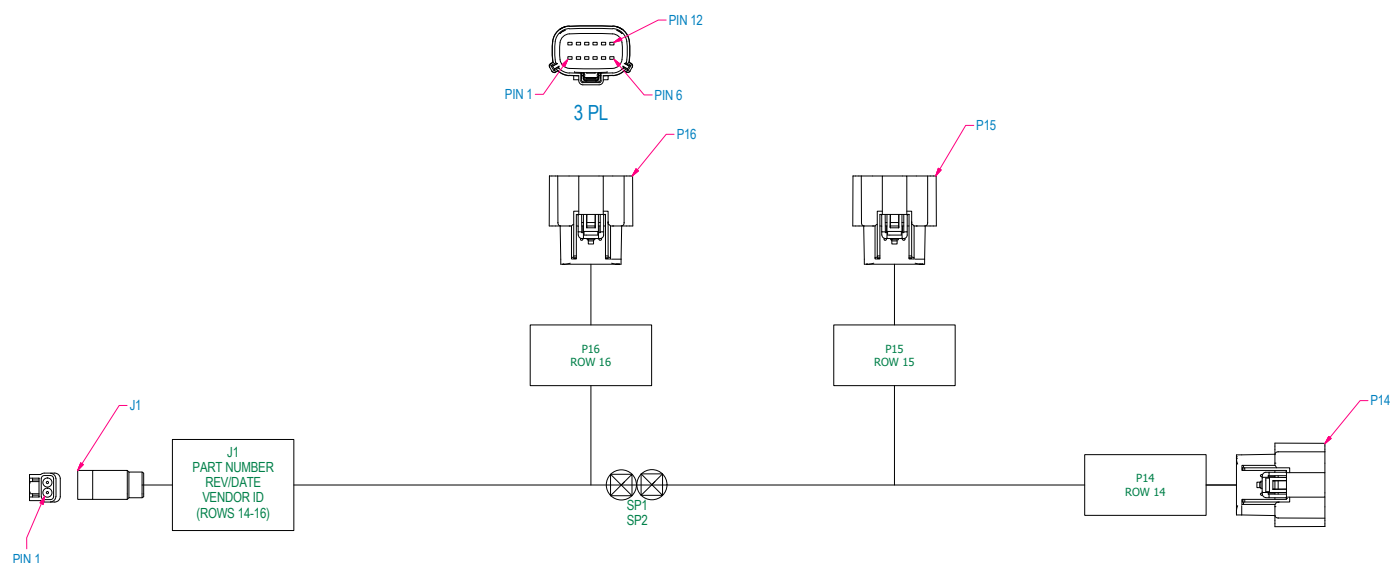
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HITCH HARNESS, 12 ROW (P/N: 11147702); 16 ROW (P/N: 11147701) CONTINUED





FERTILIZER MODULE HARNESS (P/N: 10960801)



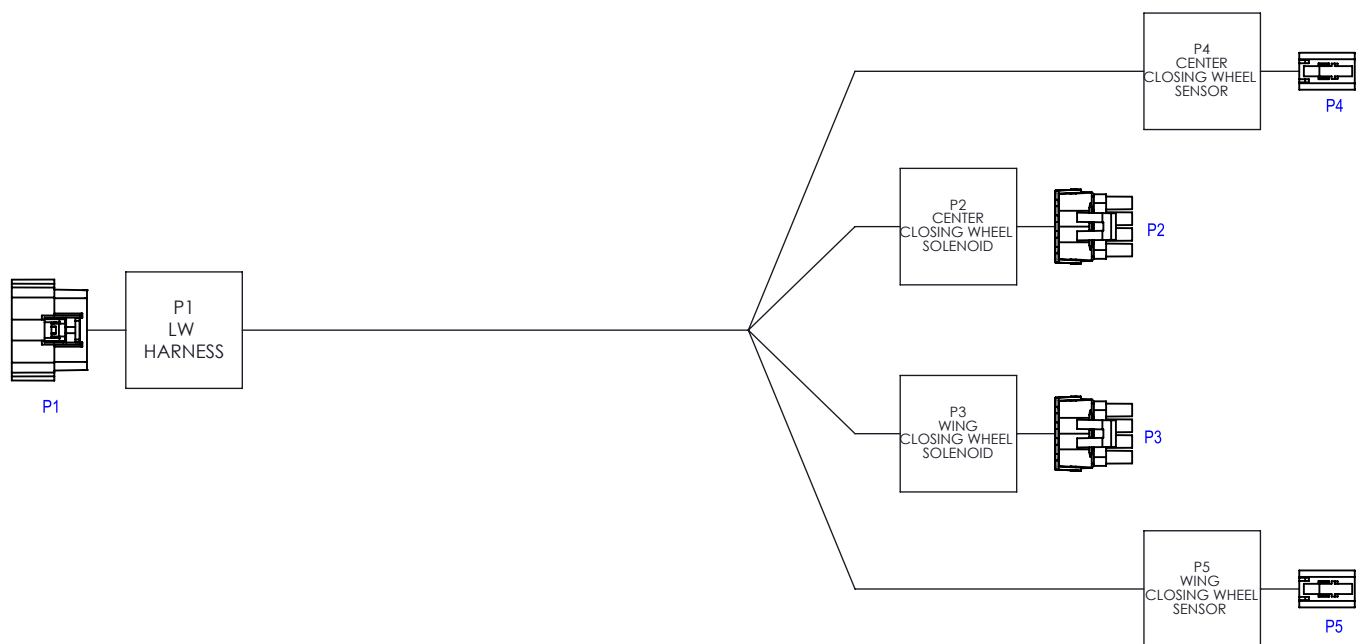
WIRE HOOKUP CHART

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

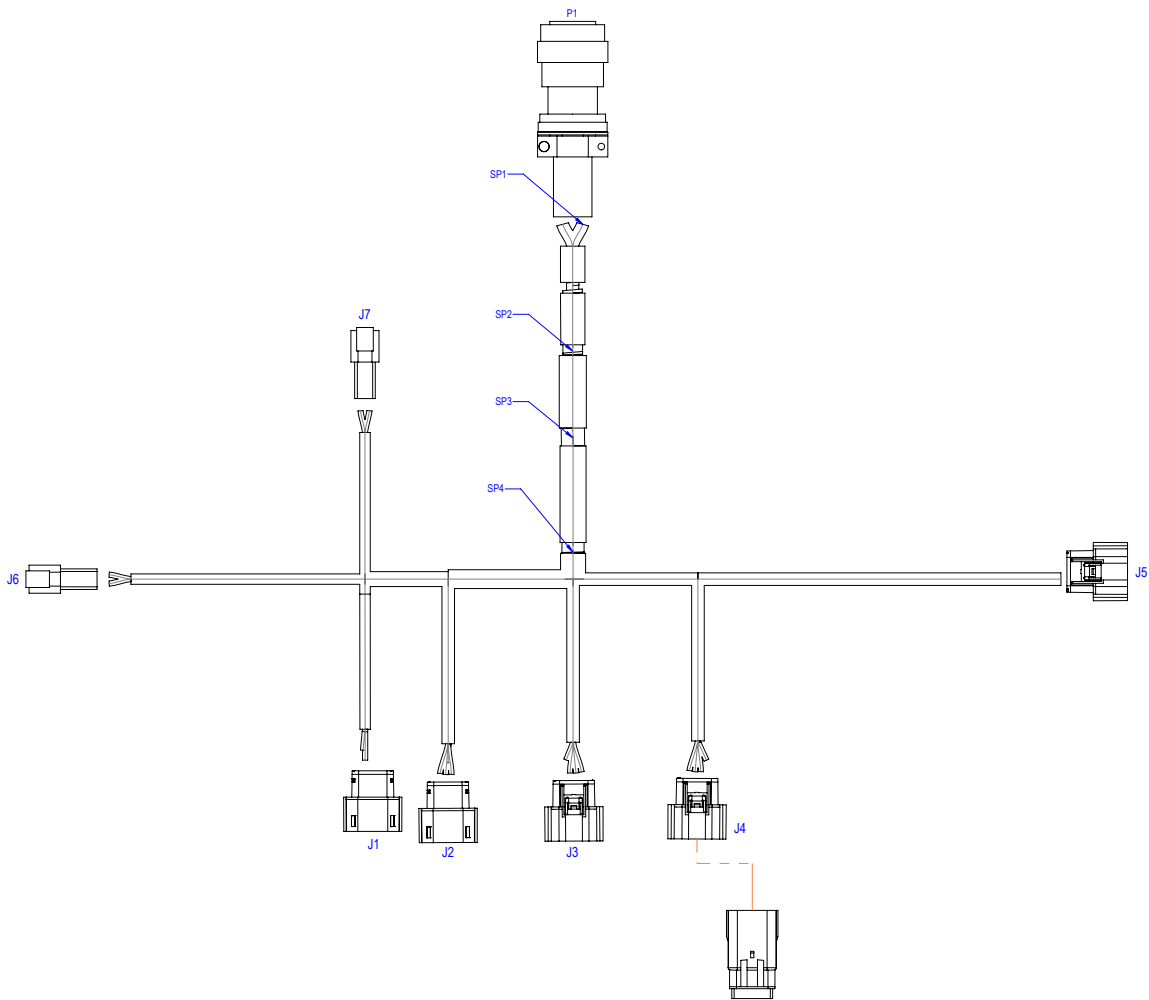
CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12
P14	---	GND	GND	GND	---	---	---	GND
P15	GND	GND	GND	GND	---	---	GND	GND
P16	---	---	---	---	GND	---	---	GND

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)



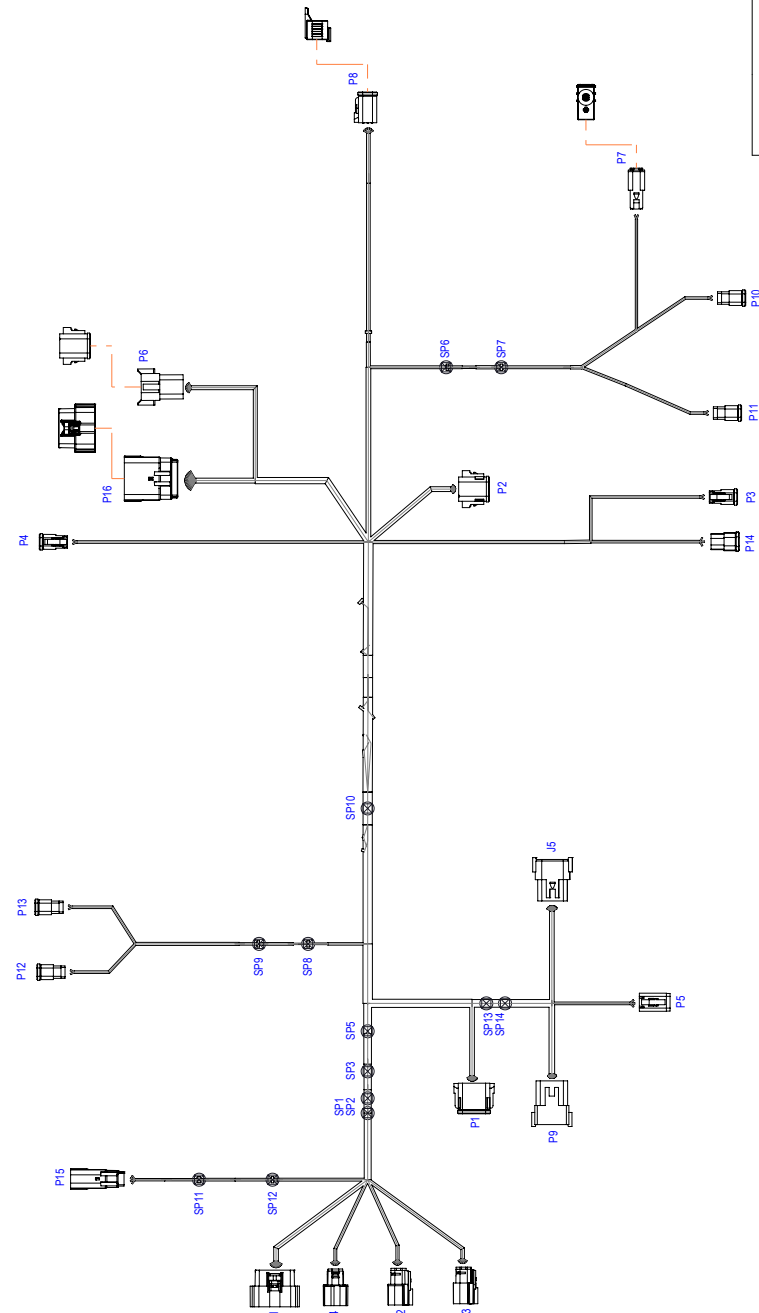
WIRE HOOK UP CHART							
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION
W1	P1:4	9	SP2:IN	---	6	BLK	12V PWR (GND)
W2	P1:3	9	SP1:IN	---	6	RED	12V PWR (PWR)
W3	SP1:OUT	---	SP3:IN	---	6	RED	12V PWR (PWR)
W4	SP1:OUT	---	J1:1	4	16	RED	12V PWR (PWR)
W5	SP1:OUT	---	J2:1	4	16	RED	12V PWR (PWR)
W6	SP1:OUT	---	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	SP4: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.
11	11 1996
12	12 ROTATE
13	13 BULK FILL
14	14 FERTILIZER
15	15 RAUSE
16	16 WRIGHT
17	17 CAMERA PWR

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

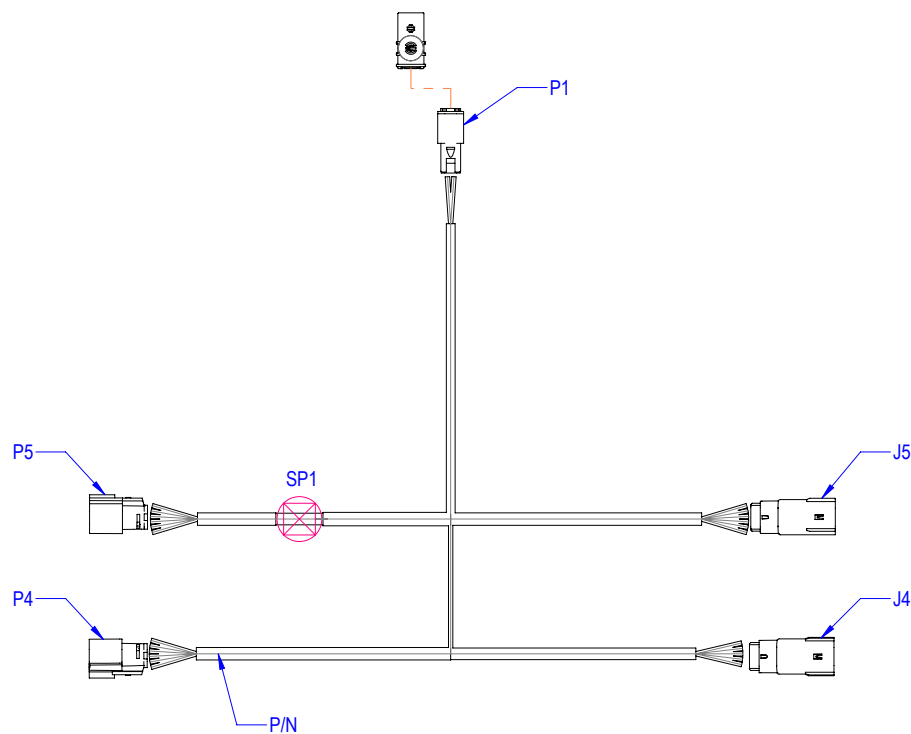
STRAPPING TABLE 1							
CONNECTOR	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11
J2	GND	---	GND	GND	GND	GND	---
J3	GND	GND	GND	GND	GND	GND	GND
J4	---	---	---	GND	GND	GND	---
J5	---	GND	GND	GND	GND	GND	GND

BULK FILL HARNESS (P/N: 10404401)



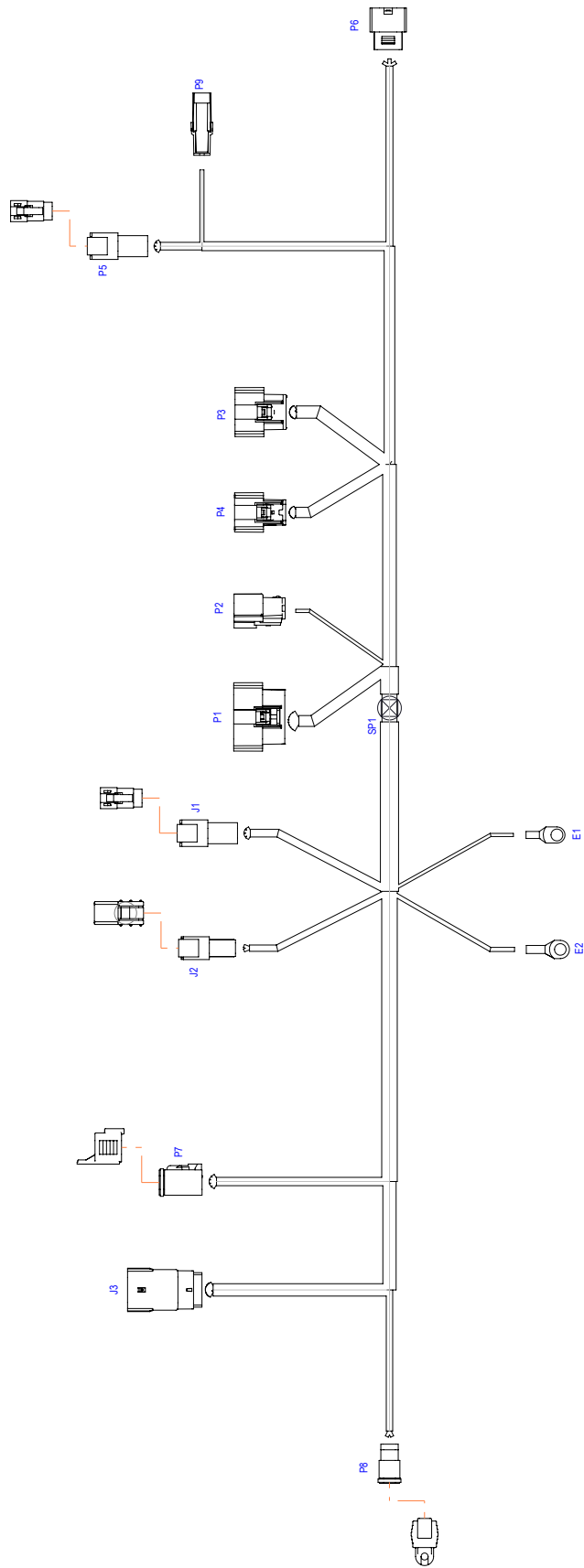
WIRE HOOKUP CHART										LABEL TABLE					
REF DIS	FROM	USED W/	TO	USED W/	GUAGE	COLOR	FUNCTION	CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL				
W1	SP2-OUT	---	P8-5	---	16	BLK	TRUE DEPTH SOLE REAR (-)	W42	J32	2	P4-2	13	16	BLK	BF SOLE (-)
W2	SP2-OUT	---	P8-4	---	22	BLK	PDP SOLE DECREASE (-) PWR	W43	P16-8	33	J3-5	6	18	ORG	WING CLOSING WHEEL DECREASE (-)
W3	SP1-OUT	---	P8-4	---	16	BLU	TRUE DEPTH SOLE REAR (-)	W44	P16-9	33	J3-6	6	18	BLK	WING CLOSING WHEEL DECREASE (-)
W4	SP1-OUT	---	P8-3	---	16	BLK	PDP SOLE INCREASE (+) PWR	W45	P16-4	33	J3-8	6	18	BLU	WING CLOSING WHEEL SENSOR (ANALOG)
W5	SP5-OUT	---	P8-3	---	16	BLK	TRUE DEPTH SENSOR (GND)	W46	P16-4	33	J3-8	6	18	BLU	BASE SOLE (+)
W6	SP5-OUT	---	P8-6	---	22	BLK	PDP SENSOR (GND)	W47	P9-9	22	SP8-9	---	16	BLU	BASE SOLE (+)
W7	SP5-OUT	---	P14-3	---	13	BLK	EWI PRESSURE SENSOR 12V (GND)	W48	P9-2	22	P2-4	13	20	YEL	ROW UNIT FUEL BACK (SG)
W8	SP10-OUT	---	P8-2	---	22	ORG	HWI DOWN FORCE PRESS SENSOR 12V (PWR)	W49	P9-2	22	P2-7	13	16	ORG	BATTERY VOLTAGE
W9	SP10-OUT	---	P11-1	---	16	ORG	PDP HYD PRESS SENSOR 12V (PWR)	W50	P9-4	22	P2-8	13	16	BLU	ROW UNIT FUEL BACK (SG)
W10	SP10-OUT	---	P11-1	---	16	ORG	PDP HYD PRESS SENSOR 12V (PWR)	W51	P9-4	22	P2-8	13	16	BLU	ROW UNIT FUEL BACK (SG)
W11	SP3-OUT	---	P6-5	---	22	YEL	PDP SENSOR INPUT (SG)	W52	P9-6	22	P1-8	13	16	RED	ROW UNIT PWR RELAY (12V)
W12	SP10-OUT	---	P14-2	---	16	ORG	PDP PRESS SENSOR 12V (PWR)	W53	P9-7	22	P2-5	13	16	ROBK	BATTERY PACK RELAY (PWR)
W13	SP10-OUT	---	P6-7	---	22	BLK	EWI PRESS SENSOR 12V (PWR)	W54	P9-8	22	P2-6	13	16	BLK	BATTERY PACK RELAY (GND)
W14	J2-2	2	P6-2	---	22	BLK	PDP INCREASE SOLE (-) PWR	W55	P9-11	22	P2-3	13	16	BRN	ALTERNATOR SENSOR (SG)
W15	J2-2	2	P6-2	---	22	BLK	PDP INCREASE SOLE (-) PWR	W56	P9-11	22	P2-3	13	16	BRN	ALTERNATOR SENSOR (SG)
W16	J2-1	1	SP1-1	---	16	RED	PDP TRUE DEPTH SOLE (-)	W57	SP13-OUT	10	SP8-9	---	16	RED	WHEEL SPEED SENSOR 12V (PWR)
W17	J1-4	2	SP2-1	---	16	BLK	PDP TRUE DEPTH SOLE (-)	W58	SP13-OUT	10	SP8-9	---	16	RED	WHEEL SPEED SENSOR 12V (PWR)
W18	J1-7	2	P3-1	---	13	BLN	EWI SOLE (-) PWR	W59	J5-7	10	SP14-9	---	16	RED	CENTER CLOSING WHEEL SENSOR 12V (PWR)
W19	J1-8	2	P3-2	---	13	BLK	EWI SOLE (-) PWR	W60	SP14-OUT	---	---	---	16	BLK	WHEEL SPEED / CCW SENSOR (GND)
W20	J11-3	2	P11-5	---	13	GRN	PLOT LIFT LEVEL SWITCH	W61	SP14-OUT	---	P16-12	33	16	BLK	CENTER CLOSING WHEEL SENSOR (GND)
W21	J11-3	2	P11-5	---	13	GRN	PLOT LIFT LEVEL SWITCH	W62	SP14-OUT	---	P16-12	33	16	BLK	CENTER CLOSING WHEEL SENSOR (GND)
W22	J11-5	2	P13	---	16	ORG	PDP HYD PRESS SENSOR (SG)	W63	J5-2	10	P11-13	13	16	ORG	TO INQUIE SOLE (-)
W23	J11-6	2	SP3-3N	---	16	YEL	PDP TRUE DEPTH SENSOR INPUT (SG)	W64	J5-3	10	P11-10	13	16	YEL	WHEEL SPEED SENSOR (REQ)
W24	SP6-OUT	---	P12-2	---	13	BLK	PDP HYD PRESSURE SENSOR 12V (PWR)	W65	J5-8	10	P16-17	33	16	ORG	CENTER CLOSING WHEEL DECREASE (+)
W25	SP6-OUT	---	P10-1	---	16	BLK	CENTER WORK LIGHT (-)	W66	J5-9	10	P16-18	33	16	BLK	CENTER CLOSING WHEEL DECREASE (+)
W26	SP6-OUT	---	P10-1	---	16	BLK	CENTER WORK LIGHT (-)	W67	J5-10	10	P16-15	33	16	ORG	CENTER CLOSING WHEEL INCREASE (+)
W27	SP7-OUT	2	SP5-1	---	16	RED	PDP CENTER WORK LIGHT (GND)	W68	J5-12	10	P16-13	33	16	BLU	CENTER CLOSING WHEEL SENSOR (ANALOG)
W28	SP7-OUT	2	P10-2	---	13	RED	CENTER WORK LIGHT (+)	W69	J5-12	10	P16-13	33	16	BLU	CENTER CLOSING WHEEL SENSOR (ANALOG)
W29	SP7-OUT	---	P11-2	---	13	RED	CENTER WORK LIGHT (+)	W70	J4-1	6	P15-1	35	18 (TP)	YEL	BULKFILL SCALE / ROW CLEANERS (CAN-H)
W30	J1-20	2	SP10-1N	---	16	ORG	EWI/PDP/PTO/TRUE DEPTH PRESS SENSOR 12V (PWR)	W71	J4-2	6	P15-2	35	18	GRN	BULKFILL SCALE / ROW CLEANERS (CAN-L)
W31	P9-3	2	SP6-1N	---	16	BLK	WORK LIGHT (-)	W72	J4-3	6	SP11-1N	---	18	RED	BULKFILL SCALE / WCV / TROW CLEANERS 12V (PWR)
W32	P91-2	22	SP7-1N	---	16	RED	WORK LIGHT PWR (+)	W73	SP11-OUT	---	P15-3	35	18	RED	BULKFILL SCALE / WCV / TROW CLEANERS 12V (PWR)
W33	J2-5	2	P5-2	---	13	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	BLK	BF PRESSURE SENSOR (GND)	W75	J4-4	6	SP12-1N	---	18	BLK	BULKFILL SCALE / WCV / ROW CLEANERS
W35	J2-7	2	P5-4	---	13	BLK	BF PRESSURE SENSOR (SG)	W76	J4-5	6	P16-6	35	18	ORG	WING CLOSING WHEEL INCREASE (+)
W36	J2-8	6	P14-1	---	13	BLU	EWI SENSOR (ANALOG)	W77	J4-6	6	P16-7	35	18	BLK	WING CLOSING WHEEL INCREASE (-)
W37	SP8-OUT	---	P12-2	---	13	BLK	BASE SOLE (-)	W78	SP12-OUT	---	P15-4	35	18	BLK	BULKFILL SCALE / TROW CLEANERS (GND)
W38	SP8-OUT	---	P13-2	---	16	BLK	BASE SOLE (-)	W79	SP12-OUT	---	P16-1	35	18	BLK	WING CLOSING WHEEL SENSOR (GND)
W39	SP8-OUT	---	P12-1	---	13	BLU	BASE SOLE (+)	W80	SP10-OUT	---	P7-1	10	16	BLU	BULK FILL FAN SHUT-OFF SWITCH (PWR)
W40	SP8-OUT	---	P13-1	---	16	BLU	BASE SOLE (+)	W81	J5-7	2	P7-2	10	16	BLK	BULK FILL FAN SHUT-OFF SWITCH (GND)
W41	J3-1	2	P4-1	---	13	RED	BASE SOLE (+)								

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



WIRE HOOKUP CHART								LABEL TABLE	
REF DES	FROM	USED W/	TO	USED W/	GAUGE	COLOR	FUNCTION	CONNECTOR	CONNECTOR LABEL
W1	P5:1	4	J5:1	6	18	WHT	PASSTHROUGH		
W2	P5:2	4	J5:2	6	18	WHT	PASSTHROUGH	P1	BF SHUT-OFF
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	P4	BF IPN J4
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	P5	BF IPN J5
W7	P5:7	4	J5:7	6	18	WHT	PASSTHROUGH		
W8	P5:8	4	J5:8	6	18	WHT	PASSTHROUGH	J4	TO BF HARNESS
W9	P4:1	4	J4:1	6	18	WHT	PASSTHROUGH		
W10	P4:2	4	J4:2	6	18	WHT	PASSTHROUGH	J5	TO BF HARNESS
W11	P4:5	4	J4:5	6	18	WHT	PASSTHROUGH		
W12	P4:6	4	J4:6	6	18	WHT	PASSTHROUGH	P/N	PART NUMBER REV / DATE VENDOR I.D.
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		

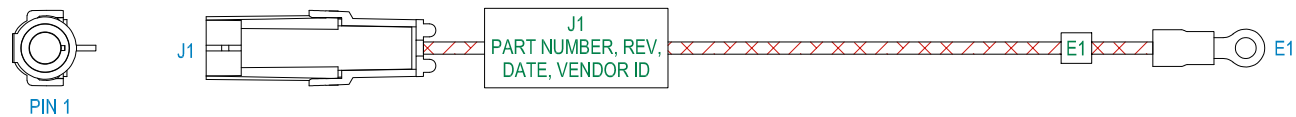
TRUE RATE PUSH ROW UNIT HARNESS (P/N: 10916101)



WIRE HOOKUP CHART				FUNCTION	
REF DES	FROM	USED W/	TO	Gauge	COLOR
W1	P1-3	13	P7-5	5	RED
W2	P1-4	13	P7-6	5	BLK
W3	P1-7	13	P8-1	5	VIO
W4	P1-8	13	P8-2	5	BLU
W5	P4-8	13	P7-3	5	VIO
W6	J1-2	28	P1-16	13	WHT
W7	P1-19	13	SP1-IN	---	GRY
W8	SP1-OUT	---	P7-2	5	GRY
W9	SP1-OUT	---	J1-4	28	GRY
W10	J1-1	28	P1-20	13	RDWH
W11	P2-3	13	P7-1	5	RED
W12	J3-1	7	P3-1	18	RED
W13	J3-2	7	P3-2	18	BLK
W14	J3-3	7	P3-3	18	RED
W15	J3-4	7	P3-4	18	BLK
W16	J3-5	7	P3-5	13	YEL
W17	J3-6	7	P3-6	13	ORN
W18	J3-7	7	P3-7	13	WHT
W19	J3-8	7	P3-8	13	GRN
W20	J3-9	7	P3-9	13	BLU
W21	J3-10	7	P3-10	13	VIO
W22	J3-11	7	P3-11	13	GRY
W23	J3-12	7	P3-12	13	BRN
W24	E1	---	J1-3	28	GRN
W25	E2	---	P9-1	35	ESD
W26	J2-2	20	P1-14	13	BRN
W27	J2-1	20	P1-17	13	GRY
W28	P4-1	13	P5-1	30	RED
W29	P4-2	13	P5-2	30	WHT
W30	P4-3	13	P5-3	30	GRN
W31	P4-4	13	P5-4	30	BLK
W32	P4-5	13	P6-1	33	RED
W33	P4-6	13	P6-6	33	BLK
W34	P4-7	13	P6-2	33	BLU

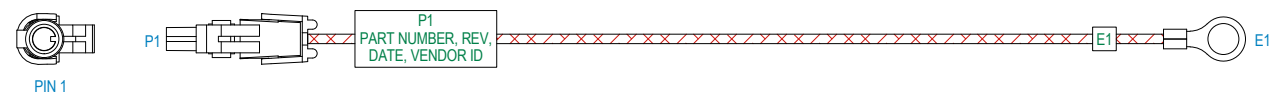
LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P5	SEED METER
P2	RU IPN J6	P6	SEED SENSOR
P3	RU IPN J3	P7	FERTILIZER
P4	RU IPN J4	P8	TRUE DEPTH SOLENOID
J1	LINK SENSOR	P9	BRAIDED ESD CABLE
J2	MANUAL RUN	E1	GND
J3	IPN PWR	E2	BRAIDED ESD CABLE
HARNESS LABEL		PART NUMBER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

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



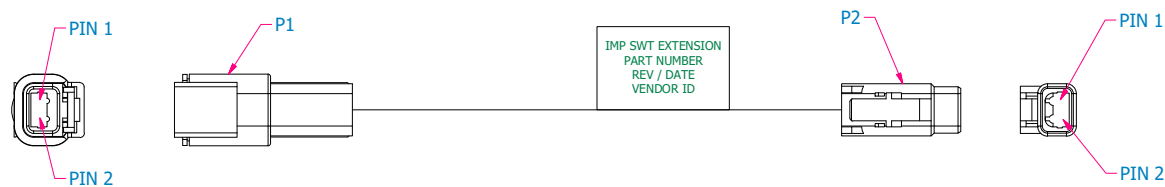
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	J1-1	2	E1	-	SEE VIEW	SEE VIEW	ESD GND

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



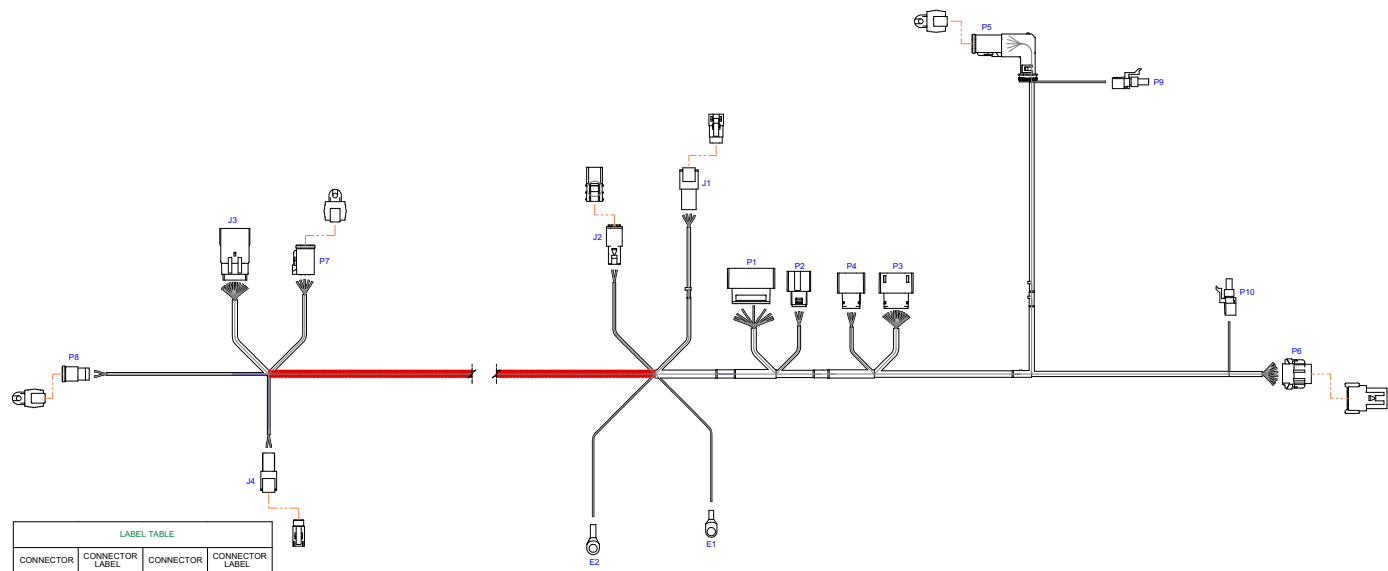
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P1-1	2	E1	-	SEE VIEW	SEE VIEW	ESD GND

IMPLEMENT SWITCH EXTENSION HARNESS (P/N: A26923)



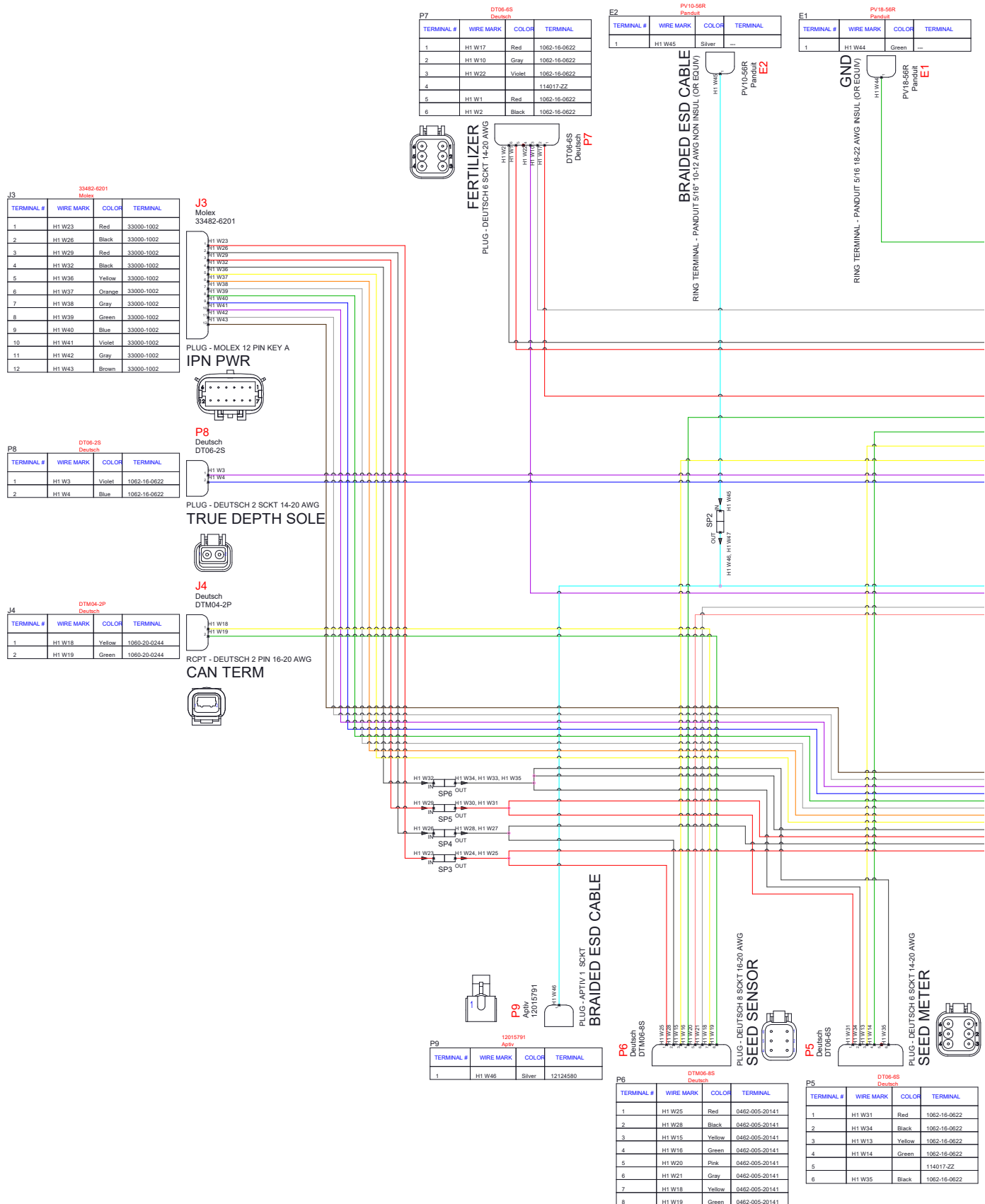
WIRE HOOKUP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	FUNCTION
W1	P1-1	3	P2-1	4	18	BLK	IMP SWITCH GND
W2	P1-2	3	P2-2	4	18	WHT	IMP SWITCH (SIG)

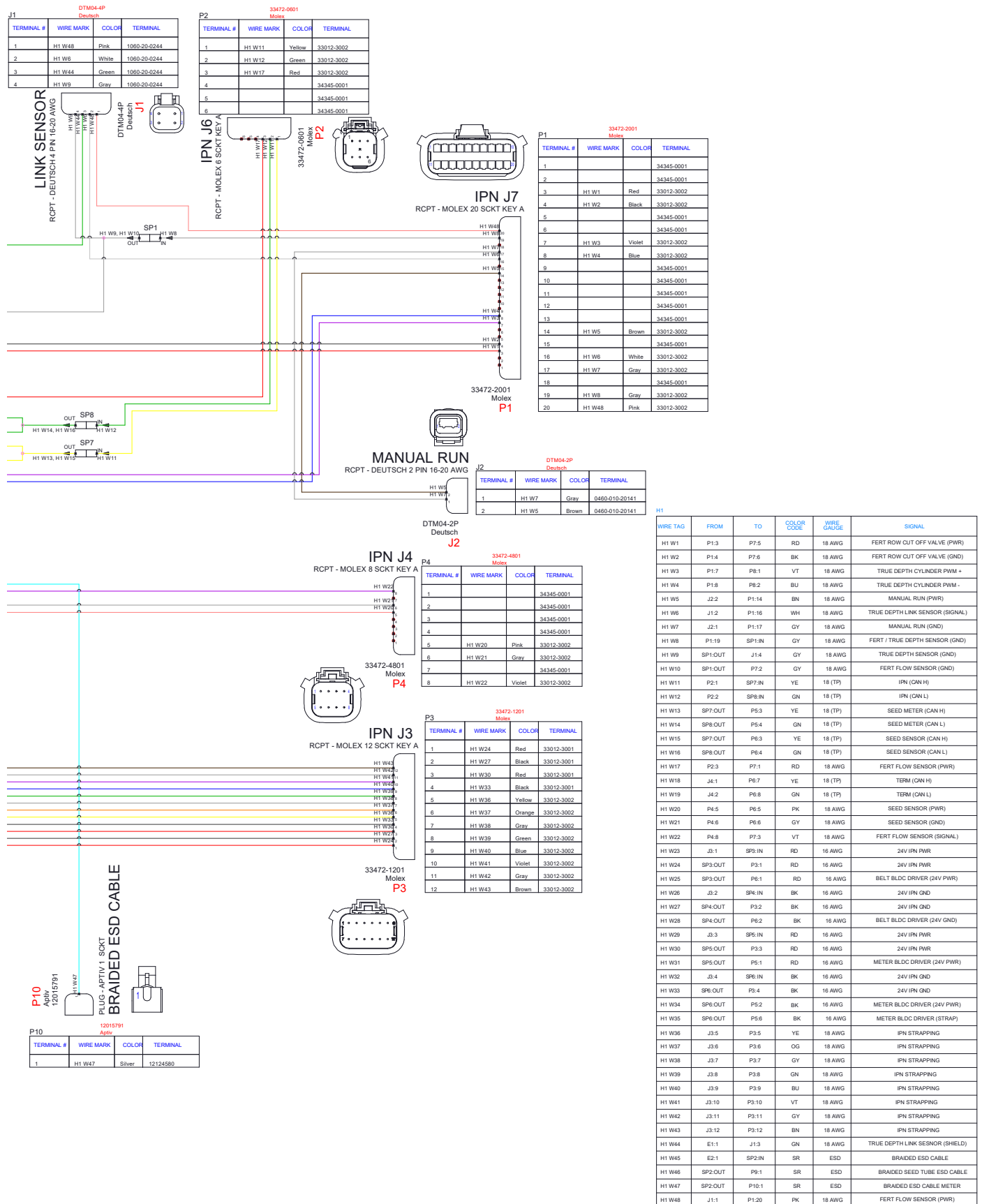
TRUE SPEED PUSH ROW UNIT HARNESS (P/N: 11165501)



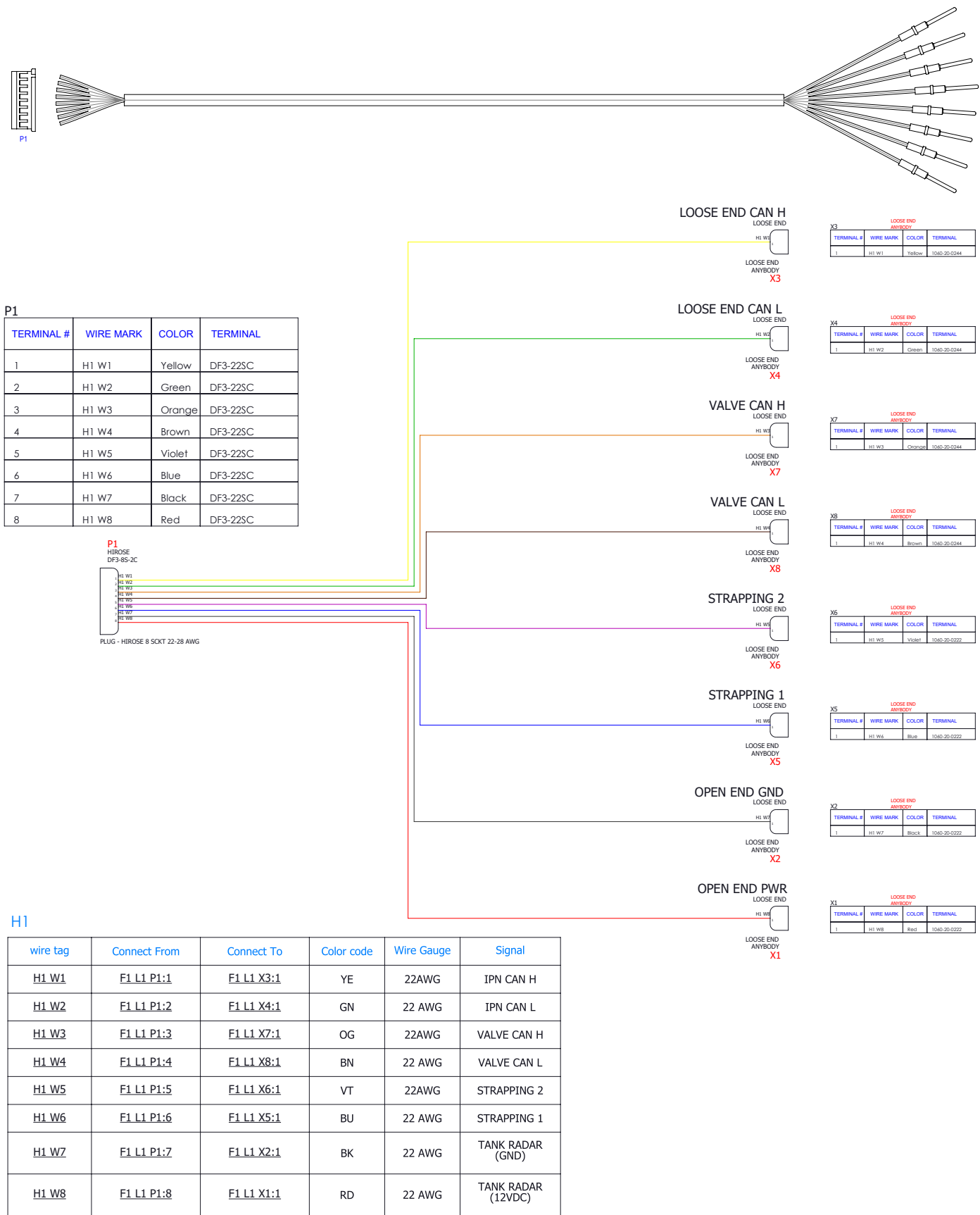
LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P9	BRAIDED ESD CABLE
P2	RU IPN J6	P10	BRAIDED ESD CABLE
P3	RU IPN J3	J1	LINK SENSOR
P4	RU IPN J4	J2	MANUAL RUN
P5	SEED METER	J3	IPN PWR
P6	SEED SENSOR	J4	CAN TERM
P7	FERTILIZER	E1	GND
P8	TRUE DEPTH SOLENOID	E2	BRAIDED ESD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

TRUE SPEED PUSH ROW UNIT HARNESS (P/N: 11165501) CONTINUED



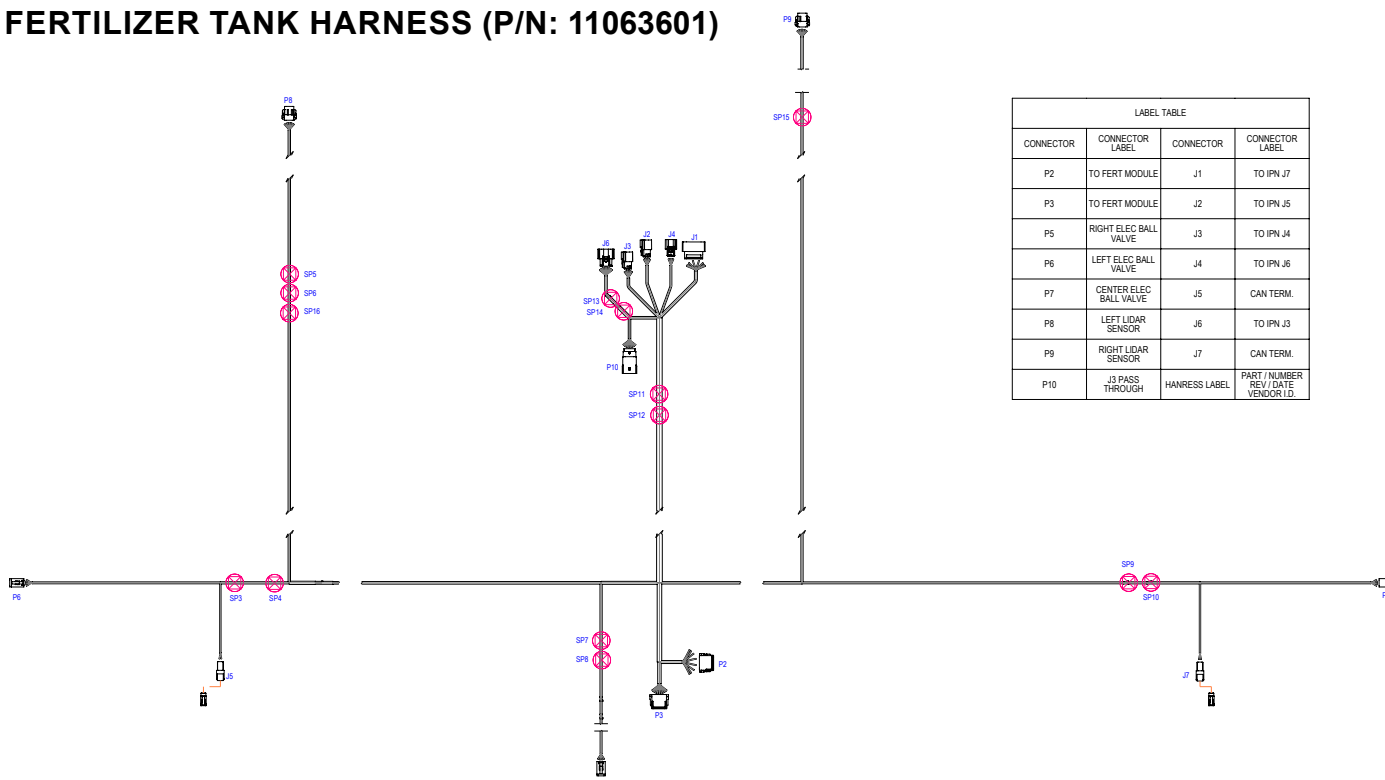


TANK RADAR STUB HARNESS (P/N: 11004201)



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FERTILIZER TANK HARNESS (P/N: 11063601)

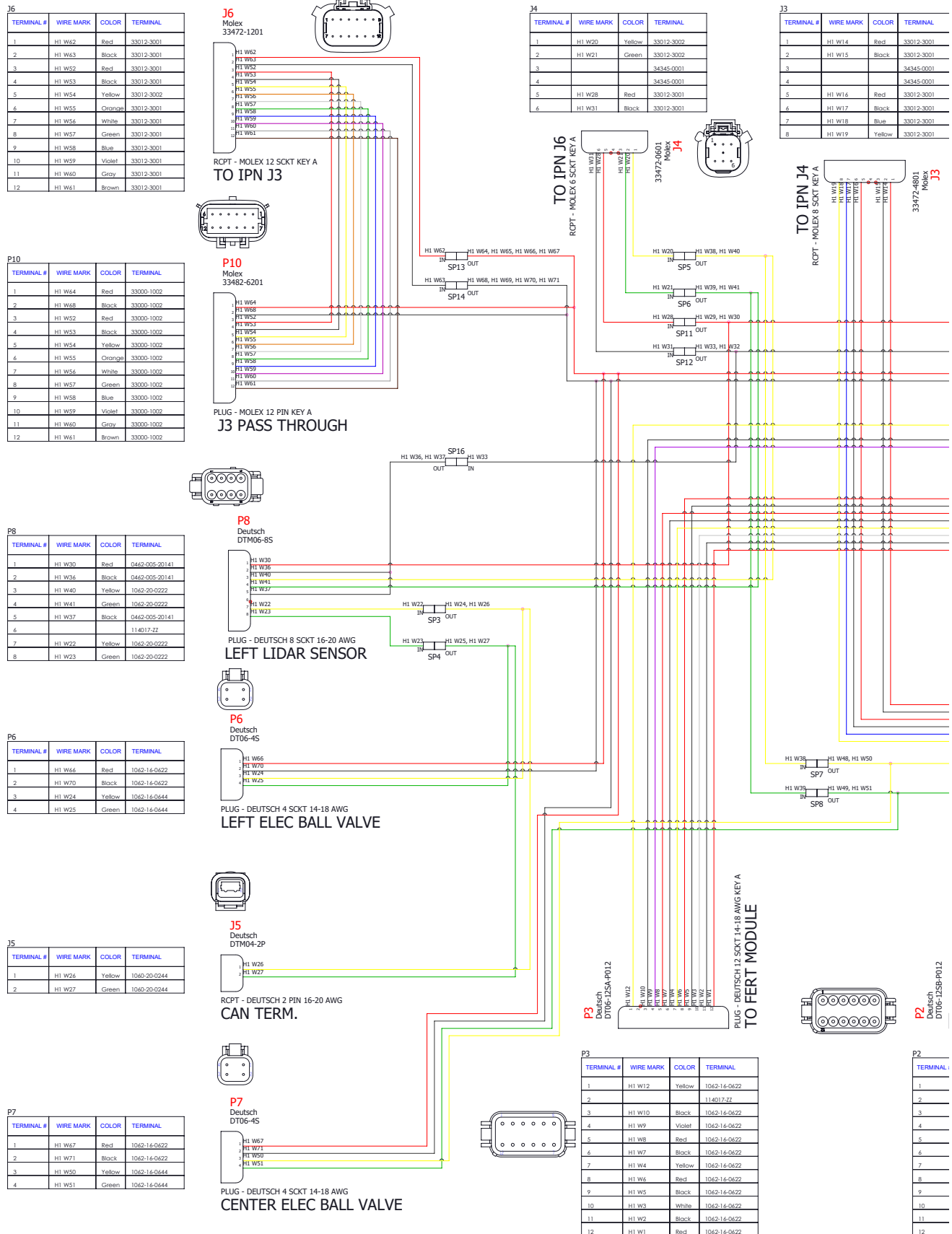


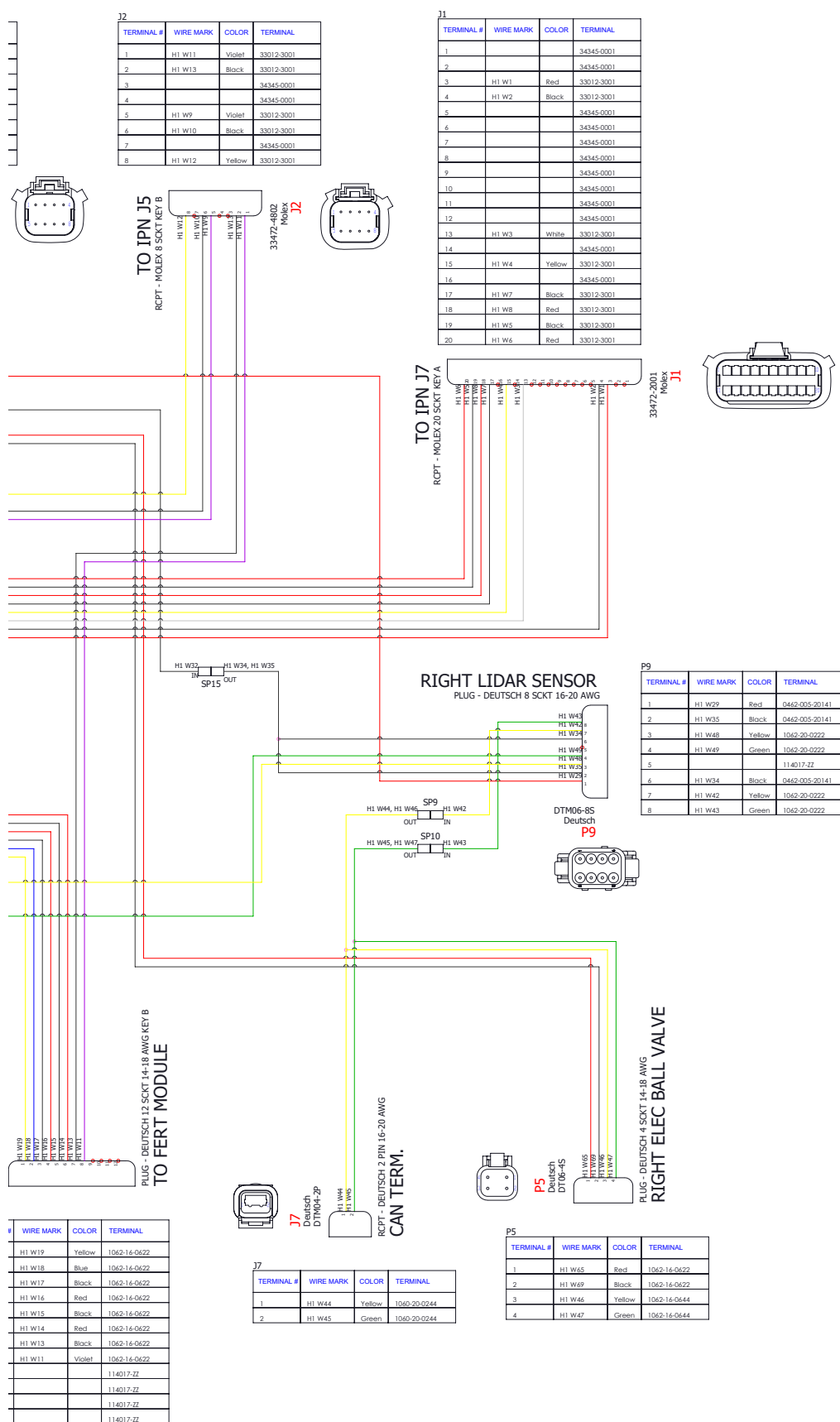
-> H1

wire tag	Connect From	Connect To	Color code	Wire Gauge	Signal
H1 W55	F1 L1 J6:6	F1 L1 P10:6	OG	20AWG	IPN STRAPPING (2)
H1 W56	F1 L1 J6:7	F1 L1 P10:7	WH	20AWG	IPN STRAPPING (3)
H1 W57	F1 L1 J6:8	F1 L1 P10:8	GN	20 AWG	IPN STRAPPING (4)
H1 W58	F1 L1 J6:9	F1 L1 P10:9	BU	20 AWG	IPN STRAPPING (5)
H1 W59	F1 L1 J6:10	F1 L1 P10:10	VT	20AWG	IPN STRAPPING (6)
H1 W60	F1 L1 J6:11	F1 L1 P10:11	GY	20 AWG	IPN STRAPPING (PARITY)
H1 W61	F1 L1 J6:12	F1 L1 P10:12	BN	20 AWG	IPN STRAPPING (GND)
H1 W62	F1 L1 J6:1	F1 L1 SP13:IN	RD	16 AWG	POWER (+)
H1 W63	F1 L1 J6:2	F1 L1 SP14:IN	BK	16 AWG	POWER (-)
H1 W64	F1 L1 SP13:OUT	F1 L1 P10:1	RD	16 AWG	POWER (+)
H1 W65	F1 L1 SP13:OUT	F1 L1 P5:1	RD	16 AWG	RIGHT ELEC BALL VALVE (PWR)
H1 W66	F1 L1 SP13:OUT	F1 L1 P6:1	RD	16 AWG	LEFT ELEC BALL VALVE (PWR)
H1 W67	F1 L1 SP13:OUT	F1 L1 P7:1	RD	16 AWG	CENTER ELEC BALL VALVE (PWR)
H1 W68	F1 L1 SP14:OUT	F1 L1 P10:2	BK	16 AWG	POWER (-)
H1 W69	F1 L1 SP14:OUT	F1 L1 P5:2	BK	16 AWG	RIGHT ELEC BALL VALVE (GND)
H1 W70	F1 L1 SP14:OUT	F1 L1 P6:2	BK	16 AWG	LEFT ELEC BALL VALVE (GND)
H1 W71	F1 L1 SP14:OUT	F1 L1 P7:2	BK	16 AWG	CENTER ELEC BALL VALVE (GND)

H1

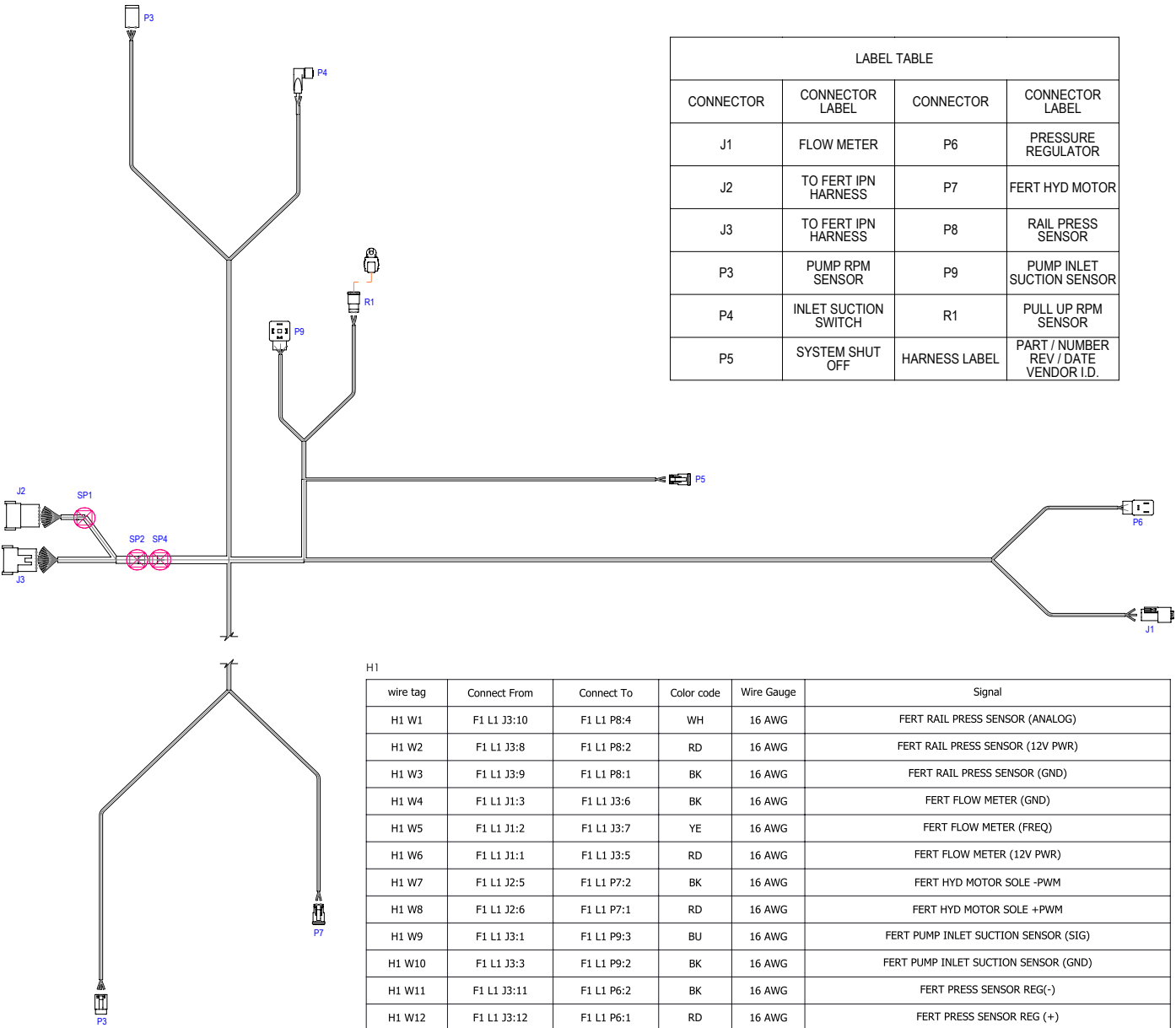
wire tag	Connect From	Connect To	Color code	Wire Gauge	Signal
H1 W1	F1 L1 J1:3	F1 L1 P3:12	RD	16 AWG	FERT REGULATOR +PWM
H1 W2	F1 L1 J1:4	F1 L1 P3:11	BK	16 AWG	FERT REGULATOR - PWM
H1 W3	F1 L1 J1:13	F1 L1 P3:10	WH	16 AWG	FERT RAIL SENSOR (ANALOG)
H1 W4	F1 L1 J1:15	F1 L1 P3:7	YE	16 AWG	FERT FLOW METER SIGNAL (FREQ) (1K ohm PU TO 12V)
H1 W5	F1 L1 J1:19	F1 L1 P3:9	BK	16 AWG	FERT RAIL SENSOR (GND)
H1 W6	F1 L1 J1:20	F1 L1 P3:8	RD	16 AWG	FERT RAIL PRESS SENSOR (12V) (PWR)
H1 W7	F1 L1 J1:17	F1 L1 P3:6	BK	16 AWG	FERT FLOW METER (GND)
H1 W8	F1 L1 J1:18	F1 L1 P3:5	RD	16 AWG	FERT FLOW METER (12V PWR)
H1 W9	F1 L1 J2:5	F1 L1 P3:4	VT	16 AWG	FERT PUMP INTEL SUCTION SENSOR (12V PWR)
H1 W10	F1 L1 J2:6	F1 L1 P3:3	BK	16 AWG	FERT PUMP INLET SUCTION SENSOR (GND)
H1 W11	F1 L1 J2:1	F1 L1 P2:8	VT	16 AWG	FERT SYSTEM SHUT OFF VALVE (+)
H1 W12	F1 L1 J2:8	F1 L1 P3:1	YE	16 AWG	FERT PUMP INLET SUCTION SENSOR (ANALOG)
H1 W13	F1 L1 J2:2	F1 L1 P2:7	BK	16 AWG	FERT SYSTEM SHUTOFF VALVE (+)
H1 W14	F1 L1 J3:1	F1 L1 P2:6	RD	16 AWG	FERT HYD MOTOR SOLE + PWM
H1 W15	F1 L1 J3:2	F1 L1 P2:5	BK	16 AWG	FERT HYD MOTOR SOLE - PWM
H1 W16	F1 L1 J3:5	F1 L1 P2:4	RD	16 AWG	FERT PUMP RPM SENSOR / FERT PUMP INLET FLUID SWITCH (PWR)
H1 W17	F1 L1 J3:6	F1 L1 P2:3	BK	16 AWG	FERT PUMP RPM SENSOR / FERT PUMP INLET FLUID SWITCH (GND)
H1 W18	F1 L1 J3:7	F1 L1 P2:2	BU	16 AWG	FERTILIZER PUMP INLET FLUID SWITCH (DIGITAL)
H1 W19	F1 L1 J3:8	F1 L1 P2:1	YE	16 AWG	FERTILIZER PUMP RPM SENSOR INPUT (FREQ)
H1 W20	F1 L1 J4:1	F1 L1 SP5:IN	YE	18 (TP)	CAN H
H1 W21	F1 L1 J4:2	F1 L1 SP6:IN	GN	18 (TP)	CAN L
H1 W22	F1 L1 P8:7	F1 L1 SP3:IN	YE	18 (TP)	CAN H
H1 W23	F1 L1 P8:8	F1 L1 SP4:IN	GN	18 (TP)	CAN L
H1 W24	F1 L1 SP3:OUT	F1 L1 P6:3	YE	18 (TP)	LEFT ELEC BALL VALVE (CAN H)
H1 W25	F1 L1 SP4:OUT	F1 L1 P6:4	GN	18 (TP)	LEFT ELEC BALL VALVE (CAN L)
H1 W26	F1 L1 SP3:OUT	F1 L1 J5:1	YE	18 (TP)	TERM (CAN H)
H1 W27	F1 L1 SP4:OUT	F1 L1 J5:2	GN	18 (TP)	TERM (CAN L)
H1 W28	F1 L1 J4:5	F1 L1 SP11:IN	RD	16 AWG	RIGHT / LEFT LIDAR (12V PWR)
H1 W29	F1 L1 SP11:OUT	F1 L1 P9:1	RD	16 AWG	RIGHT LIDAR SENSOR (12V PWR)
H1 W30	F1 L1 SP11:OUT	F1 L1 P8:1	RD	16 AWG	LEFT LIDAR SENSOR (12V PWR)
H1 W31	F1 L1 J4:6	F1 L1 SP12:IN	BK	16 AWG	RIGHT / LEFT LIDAR (GND)
H1 W32	F1 L1 SP12:OUT	F1 L1 SP15:IN	BK	16 AWG	RIGHT LIDAR SENSOR (GND)
H1 W33	F1 L1 SP12:OUT	F1 L1 SP16:IN	BK	16 AWG	LEFT LIDAR SENSOR (GND)
H1 W34	F1 L1 SP15:OUT	F1 L1 P9:6	BK	16 AWG	STRAPPING
H1 W35	F1 L1 SP15:OUT	F1 L1 P9:2	BK	16 AWG	RIGHT LIDAR SENSOR (GND)
H1 W36	F1 L1 SP16:OUT	F1 L1 P8:2	BK	16 AWG	LEFT LIDAR SENSOR (GND)
H1 W37	F1 L1 SP16:OUT	F1 L1 P8:5	BK	16 AWG	STRAPPING
H1 W38	F1 L1 SP5:OUT	F1 L1 SP7:IN	YE	18 (TP)	CAN H
H1 W39	F1 L1 SP6:OUT	F1 L1 SP8:IN	GN	18 (TP)	CAN L
H1 W40	F1 L1 SP5:OUT	F1 L1 P8:3	YE	18 (TP)	LEFT ELEC BALL VALVE (CAN H)
H1 W41	F1 L1 SP6:OUT	F1 L1 P8:4	GN	18 (TP)	LEFT ELEC BALL VALVE (CAN L)
H1 W42	F1 L1 P9:7	F1 L1 SP9:IN	YE	18 (TP)	CAN H
H1 W43	F1 L1 P9:8	F1 L1 SP10:IN	GN	18 (TP)	CAN L
H1 W44	F1 L1 SP9:OUT	F1 L1 J7:1	YE	18 (TP)	TERM (CAN H)
H1 W45	F1 L1 SP10:OUT	F1 L1 J7:2	GN	18 (TP)	TERM (CAN L)
H1 W46	F1 L1 SP9:OUT	F1 L1 P5:3	YE	18 (TP)	RIGHT ELEC BALL VALVE (CAN H)
H1 W47	F1 L1 SP10:OUT	F1 L1 P5:4	GN	18 (TP)	RIGHT ELEC BALL VALVE (CAN L)
H1 W48	F1 L1 SP7:OUT	F1 L1 P9:3	YE	18 (TP)	RIGHT LIDAR SENSOR (CAN H)
H1 W49	F1 L1 SP8:OUT	F1 L1 P9:4	GN	18 (TP)	RIGHT LIDAR SENSOR (CAN L)
H1 W50	F1 L1 SP7:OUT	F1 L1 P7:3	YE	18 (TP)	CENTER ELEC BALL VALVE (CAN H)
H1 W51	F1 L1 SP8:OUT	F1 L1 P7:4	GN	18 (TP)	CENTER ELEC BALL VALVE (CAN L)
H1 W52	F1 L1 J6:3	F1 L1 P10:3	RD	16 AWG	POWER (+)
H1 W53	F1 L1 J6:4	F1 L1 P10:4	BK	16 AWG	POWER (-)
H1 W54	F1 L1 J6:5	F1 L1 P10:5	YE	20AWG	IPN STRAPPING (1)



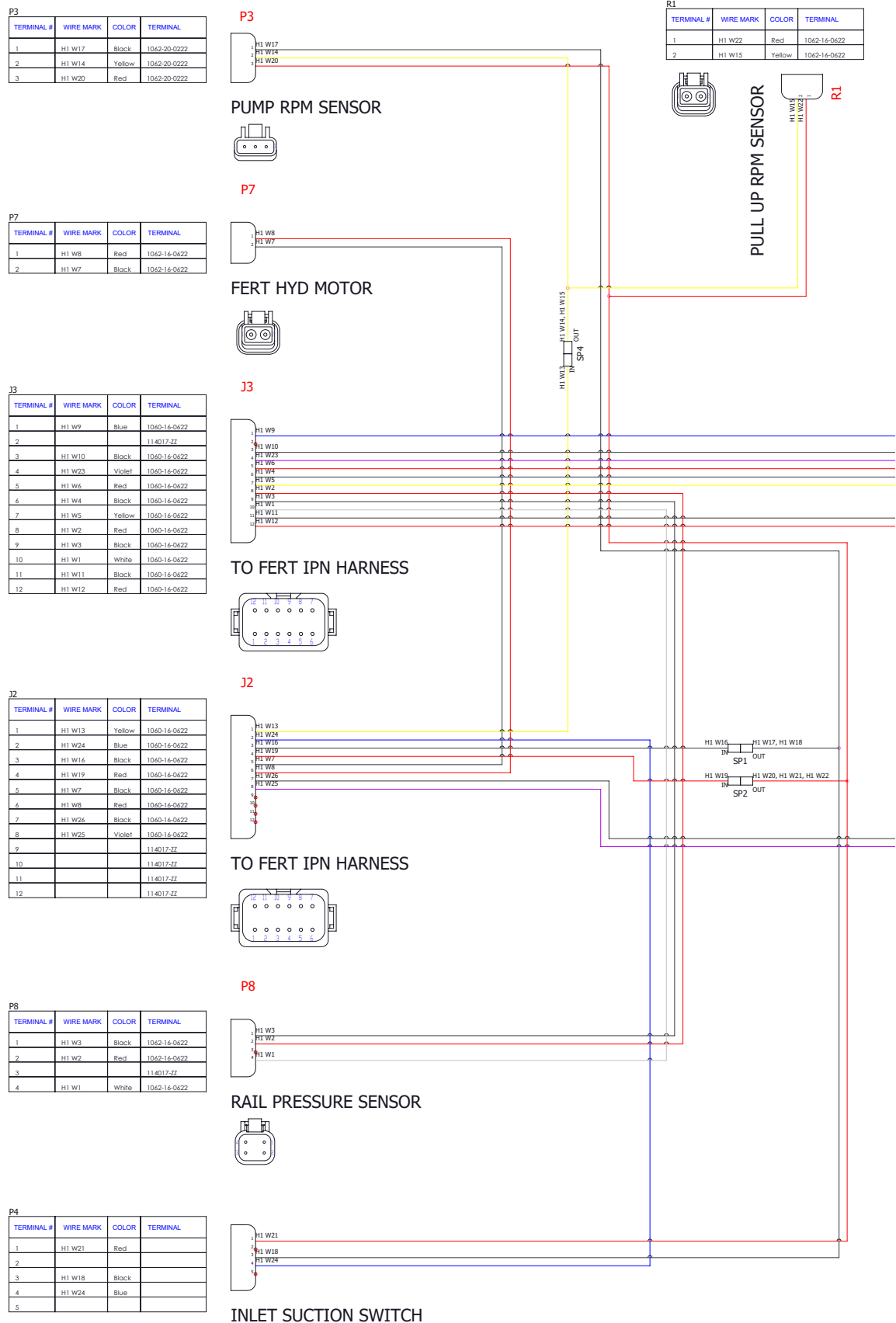


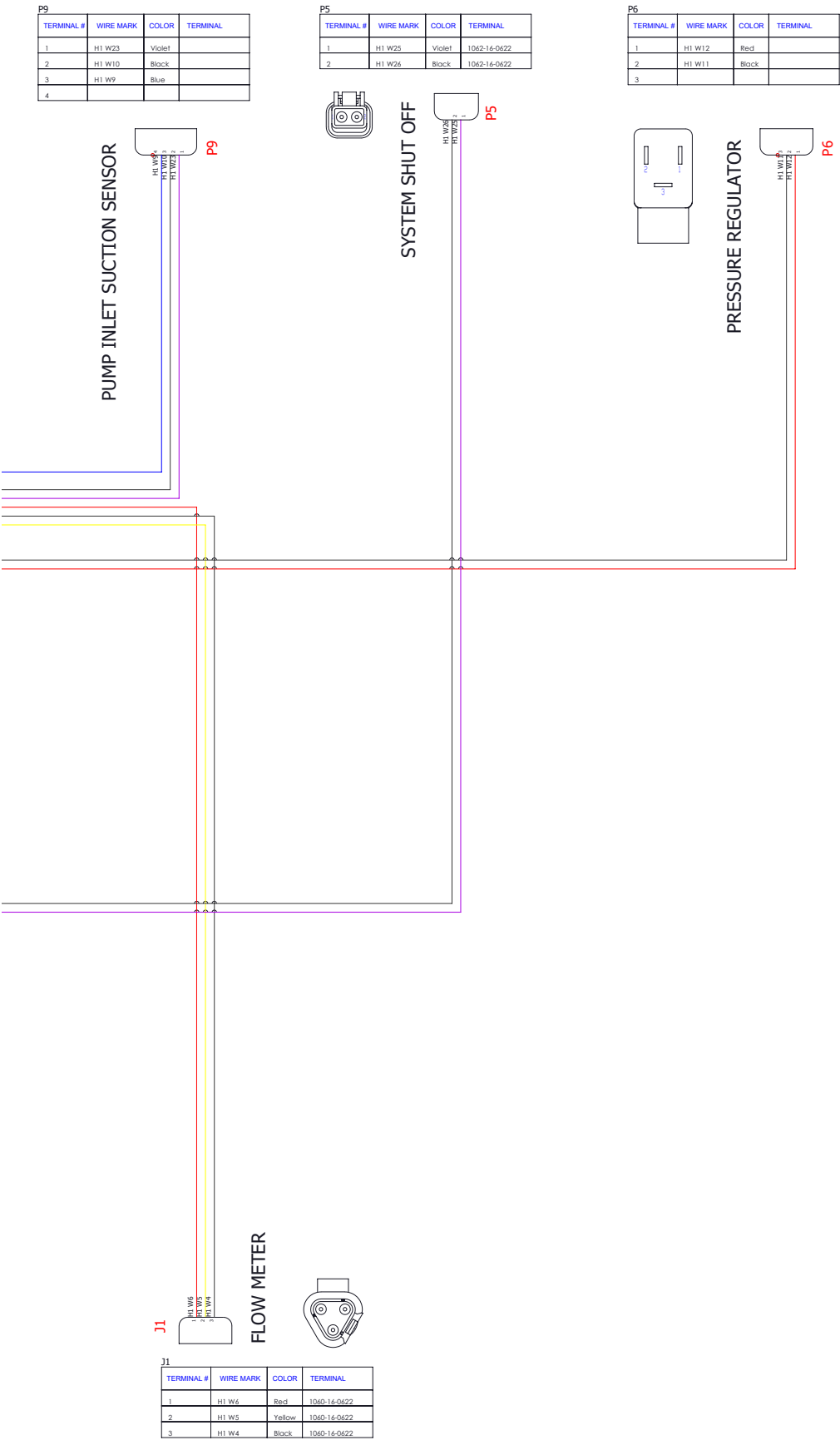
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FERTILIZER MODULE HARNESS (P/N: 11063701)



wire tag	Connect From	Connect To	Color code	Wire Gauge	Signal
H1 W1	F1 L1 J3:10	F1 L1 P8:4	WH	16 AWG	FERT RAIL PRESS SENSOR (ANALOG)
H1 W2	F1 L1 J3:8	F1 L1 P8:2	RD	16 AWG	FERT RAIL PRESS SENSOR (12V PWR)
H1 W3	F1 L1 J3:9	F1 L1 P8:1	BK	16 AWG	FERT RAIL PRESS SENSOR (GND)
H1 W4	F1 L1 J1:3	F1 L1 J3:6	BK	16 AWG	FERT FLOW METER (GND)
H1 W5	F1 L1 J1:2	F1 L1 J3:7	YE	16 AWG	FERT FLOW METER (FREQ)
H1 W6	F1 L1 J1:1	F1 L1 J3:5	RD	16 AWG	FERT FLOW METER (12V PWR)
H1 W7	F1 L1 J2:5	F1 L1 P7:2	BK	16 AWG	FERT HYD MOTOR SOLE -PWM
H1 W8	F1 L1 J2:6	F1 L1 P7:1	RD	16 AWG	FERT HYD MOTOR SOLE +PWM
H1 W9	F1 L1 J3:1	F1 L1 P9:3	BU	16 AWG	FERT PUMP INLET SUCTION SENSOR (SIG)
H1 W10	F1 L1 J3:3	F1 L1 P9:2	BK	16 AWG	FERT PUMP INLET SUCTION SENSOR (GND)
H1 W11	F1 L1 J3:11	F1 L1 P6:2	BK	16 AWG	FERT PRESS SENSOR REG(-)
H1 W12	F1 L1 J3:12	F1 L1 P6:1	RD	16 AWG	FERT PRESS SENSOR REG (+)
H1 W13	F1 L1 J2:1	F1 L1 SP4:IN	YE	16 AWG	FERT PUMP RPM SENSOR INPUT (FREQ)
H1 W14	F1 L1 SP4:OUT	F1 L1 P3:2	YE	16 AWG	FERT PUMP RPM SENSOR INPUT (FREQ)
H1 W15	F1 L1 SP4:OUT	F1 L1 R1:2	YE	16 AWG	FERT PUMP RPM SENSOR INPUT (PULL UP)
H1 W16	F1 L1 J2:3	F1 L1 SP1:IN	BK	16 AWG	FERT PUMP RPM / INLET FLUID SWITCH (GND)
H1 W17	F1 L1 SP1:OUT	F1 L1 P3:1	BK	16 AWG	FERT PUMP RPM SENSOR (GND)
H1 W18	F1 L1 SP1:OUT	F1 L1 P4:3	BK	16 AWG	INLET FLUID SWITCH (GND)
H1 W19	F1 L1 J2:4	F1 L1 SP2:IN	RD	16 AWG	FERT PUMP RPM / INLET FLUID SWITH (12V PWR)
H1 W20	F1 L1 SP2:OUT	F1 L1 P3:3	RD	16 AWG	FERT INLET SWITCH (12V PWR)
H1 W21	F1 L1 SP2:OUT	F1 L1 P4:1	RD	16 AWG	FERT PUMP RPM SENSOR (12V PWR)
H1 W22	F1 L1 SP2:OUT	F1 L1 R1:1	RD	16 AWG	FERT MOTOR RPM (PULL UP)
H1 W23	F1 L1 J3:4	F1 L1 P9:1	VT	16 AWG	FERT PUMP INLET SUCTION SENSOR (12V PWR)
H1 W24	F1 L1 J2:2	F1 L1 P4:4	BU	16 AWG	FERT INLET SWITCH (SIG)
H1 W25	F1 L1 J2:8	F1 L1 P5:1	VT	16 AWG	FERT SYSTEM SHUTOFF (+)
H1 W26	F1 L1 J2:7	F1 L1 P5:2	BK	16 AWG	FERT SYSTEM SHUTOFF (-)

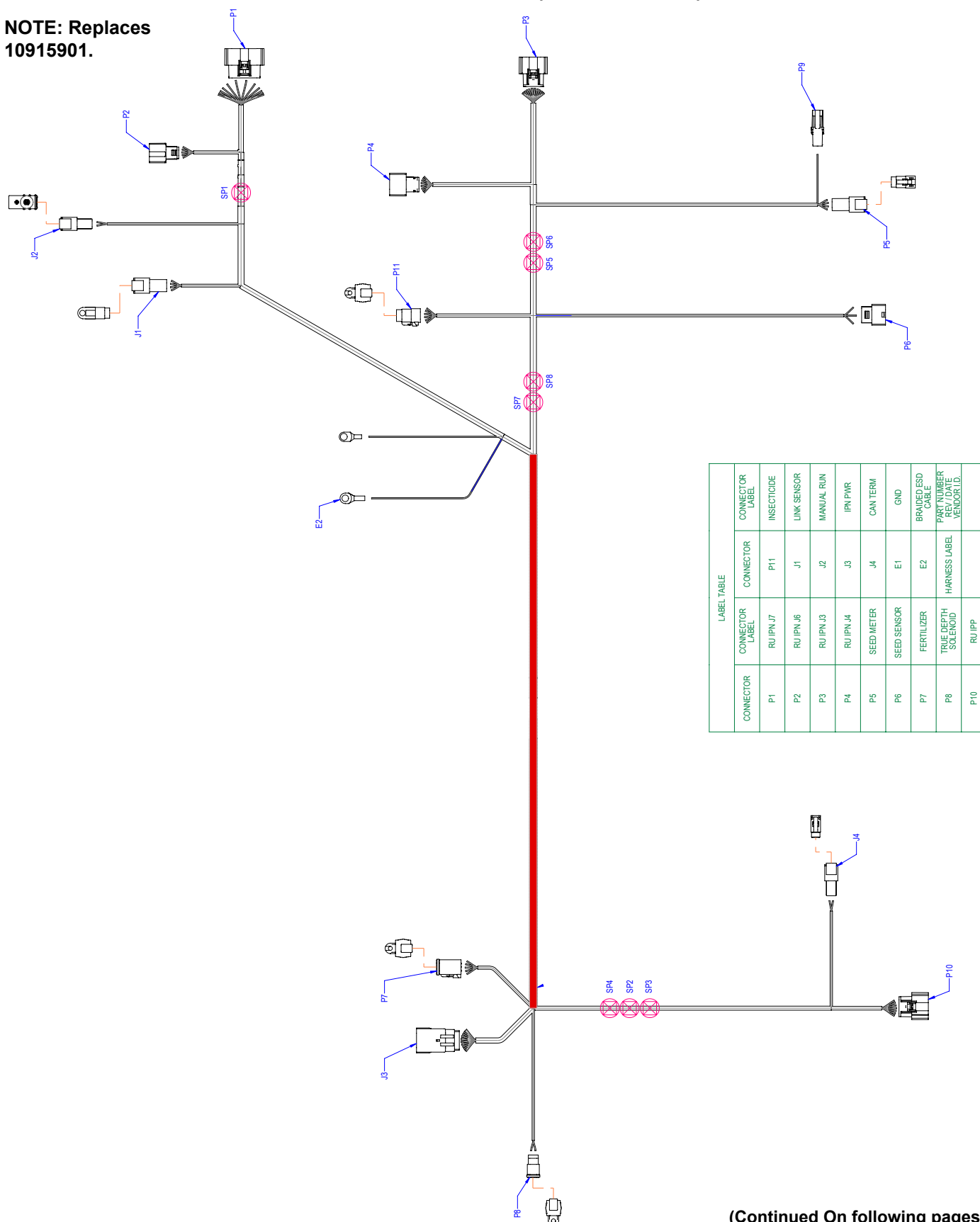




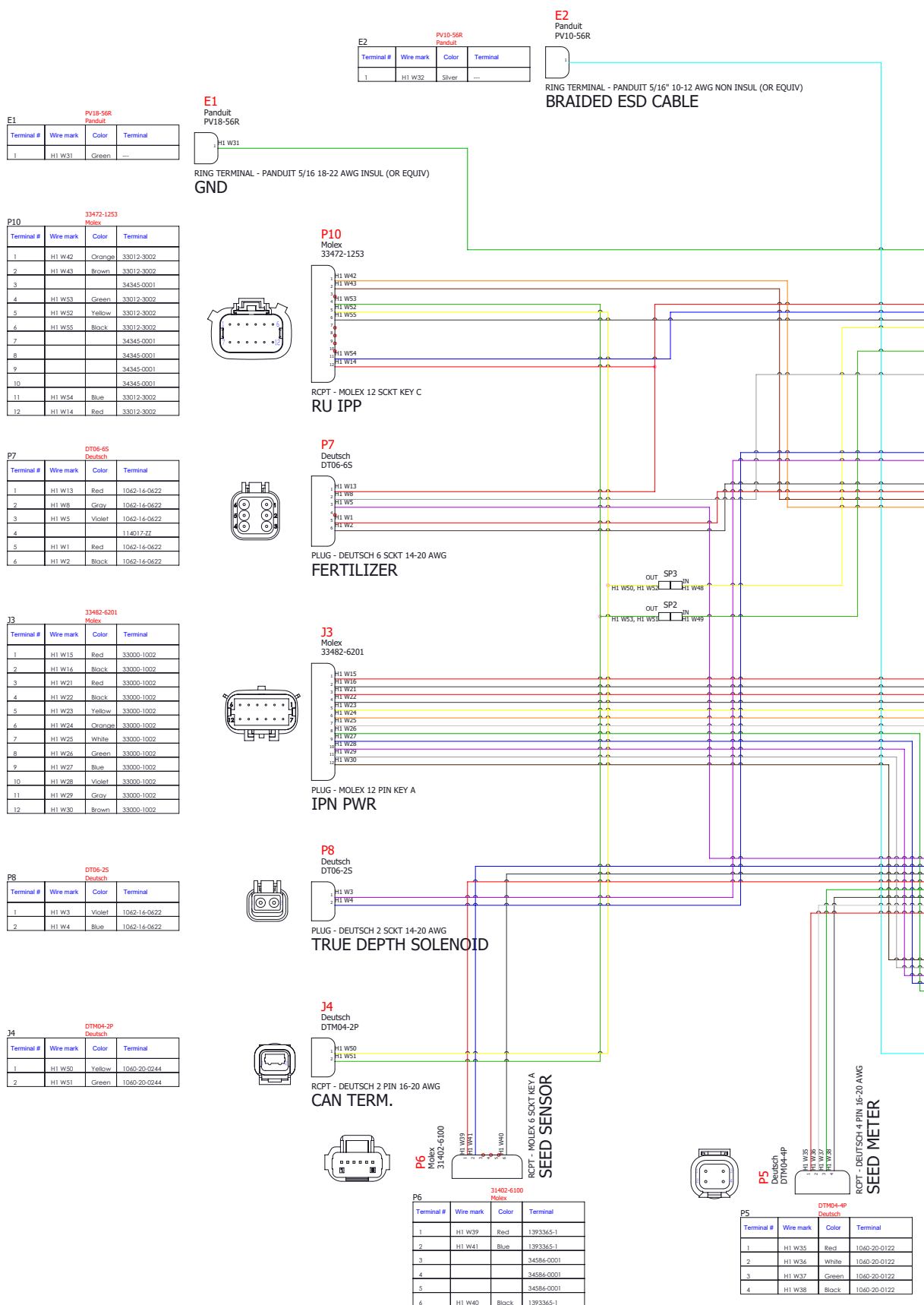
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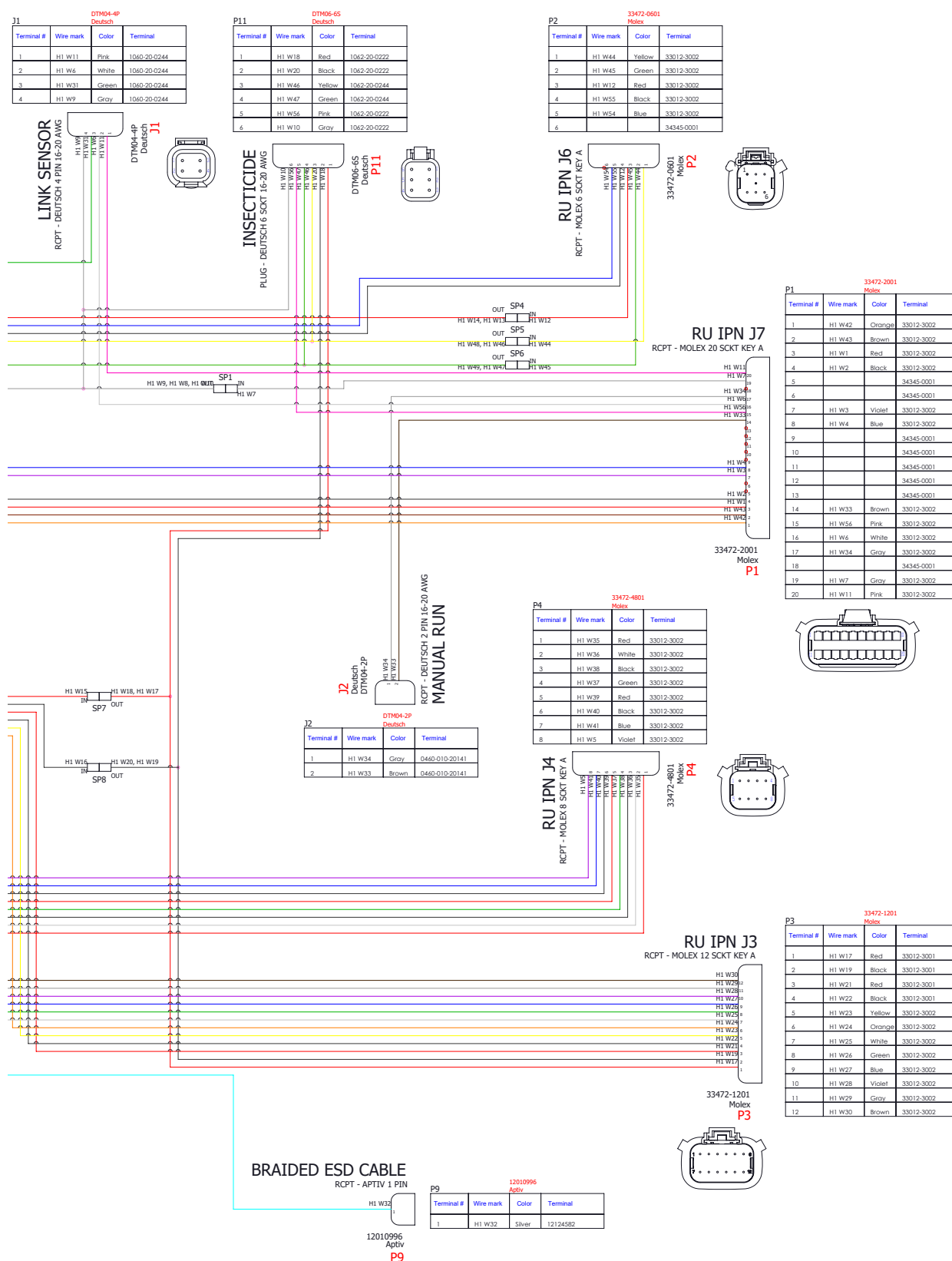
TRUE RATE PULL ROW UNIT W/IPP HARNESS (P/N: 11015801)

NOTE: Replaces 10915901.



(Continued On following pages.)



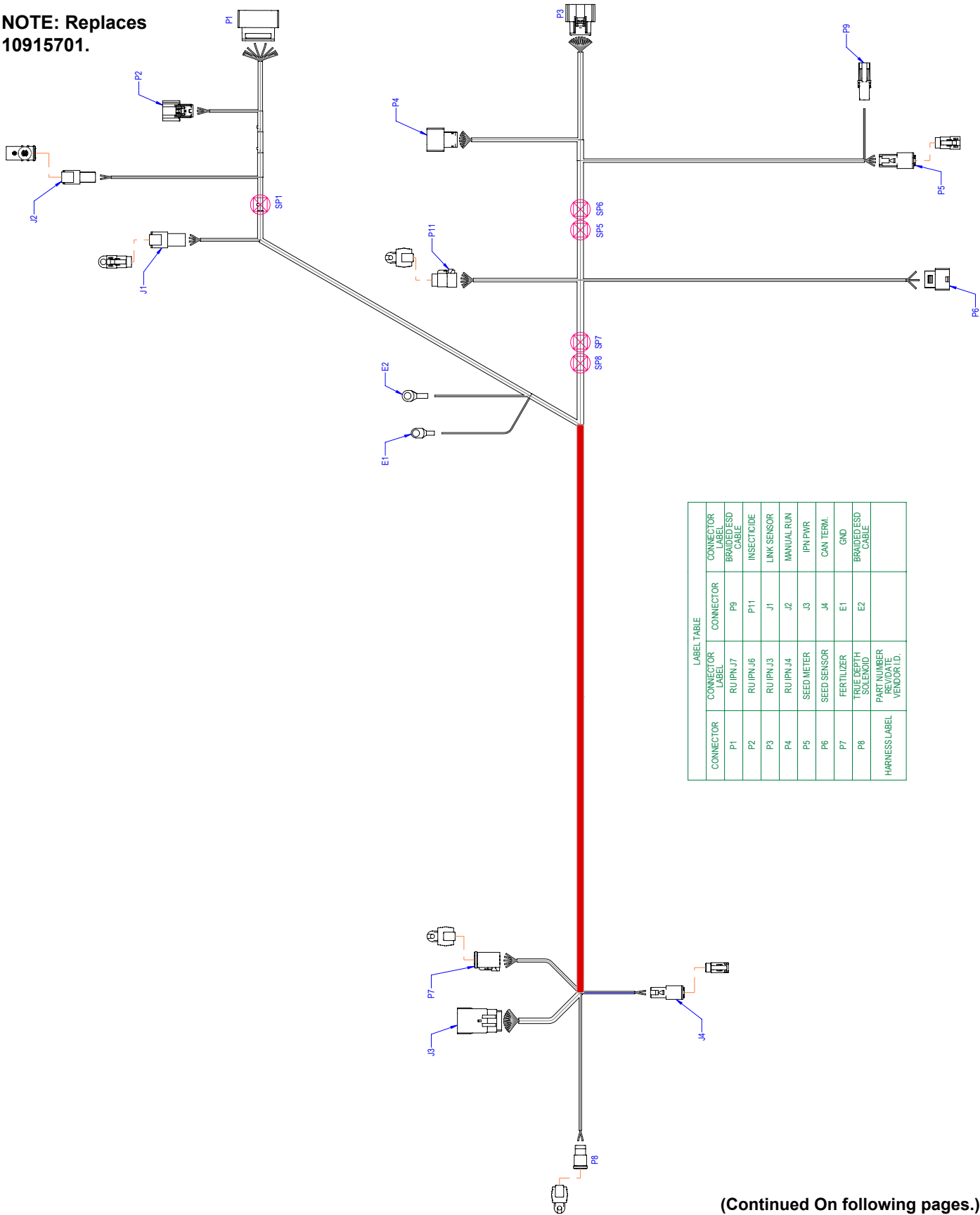


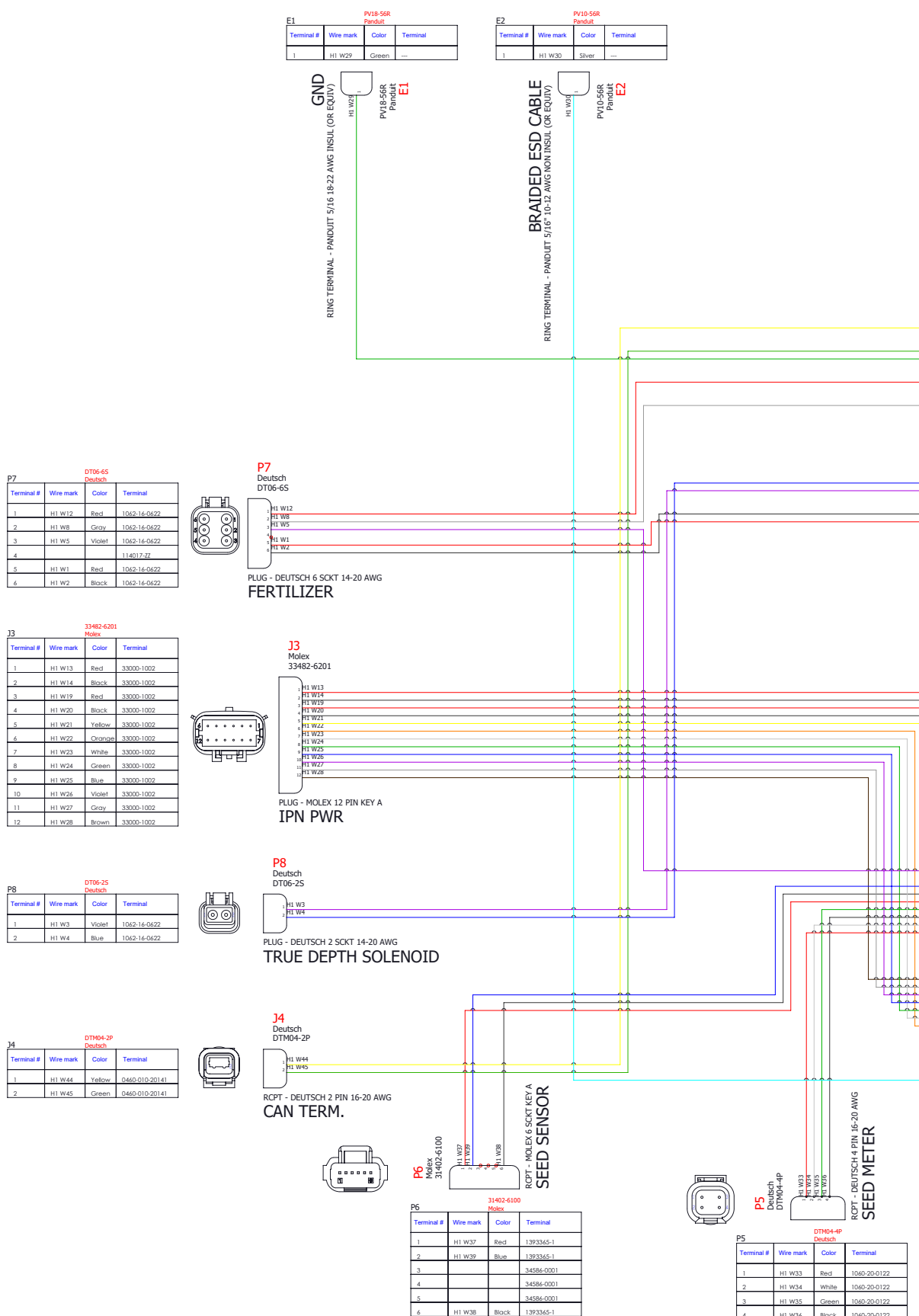
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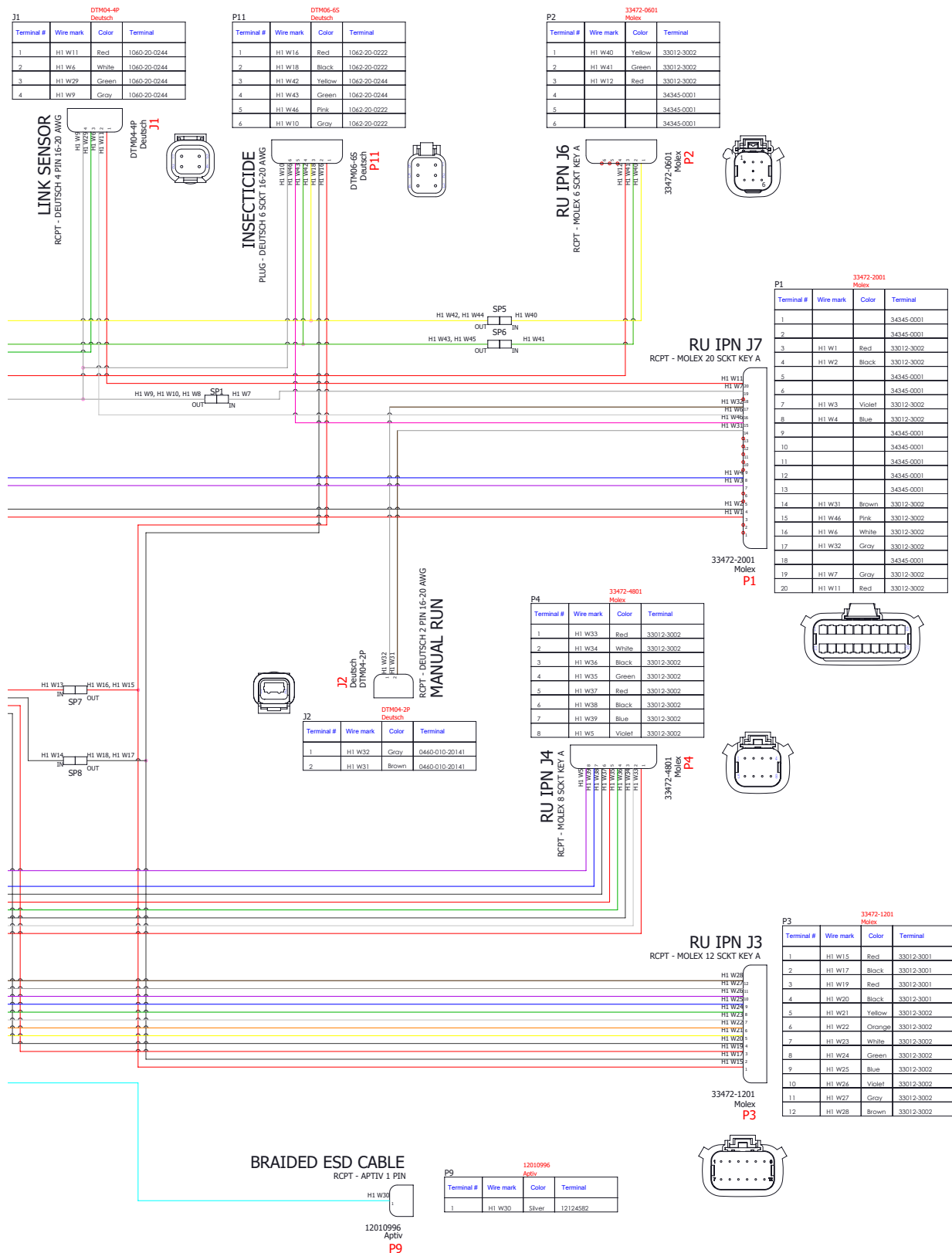
H1	WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
	H1 W1	P1:3	P7:5	RD	18 AWG	FERT ROW CUTOFF VALVE (PWR)
	H1 W2	P1:4	P7:6	BK	18 AWG	FERT ROW CUTOFF VALVE (GND)
	H1 W3	P1:7	P8:1	VT	18 AWG	TRUE DEPTH CYLINDER PWM+
	H1 W4	P1:8	P8:2	BU	18 AWG	TRUE DEPTH CYLINDER PWM-
	H1 W5	P4:8	P7:3	VT	18 AWG	FERT FLOW SENSOR (SIGNAL)
	H1 W6	J1:2	P1:16	WH	18 AWG	TRUE DEPTH LINK SENSOR (SIGNAL)
	H1 W7	P1:19	SP1:IN	GY	18 AWG	FERT/TRUE DEPTH SENSOR (GND)
	H1 W8	SP1:OUT	P7:2	GY	18 AWG	FERT FLOW SENSOR (GND)
	H1 W9	SP1:OUT	J1:4	GY	18 AWG	TRUE DEPTH LINK SENSOR (GND)
	H1 W10	SP1:OUT	P11:6	GY	18 AWG	INSECTICIDE SENSOR (GND)
	H1 W11	J1:1	P1:20	PK	18 AWG	TRUE DEPTH LINK SENSOR (PWR)
	H1 W12	P2:3	SP4:IN	RD	18 AWG	IPP / FERT FLOW SENSOR (PWR)
	H1 W13	SP4:OUT	P7:1	RD	18 AWG	FERT FLOW SENSOR (PWR)
	H1 W14	SP4:OUT	P10:12	RD	18 AWG	IPP PWR+
	H1 W15	J3:1	SP7:IN	RD	16 AWG	24V IPN PWR
	H1 W16	J3:2	SP8:IN	BK	16 AWG	24V IPN GND
	H1 W17	SP7:OUT	P3:1	RD	18 AWG	24V IPN PWR
	H1 W18	SP7:OUT	P11:1	RD	18 AWG	INSECTICIDE (PWR 24V)
	H1 W19	SP8:OUT	P3:2	BK	18 AWG	24V IPN GND
	H1 W20	SP8:OUT	P11:2	BK	18 AWG	INSECTICIDE (GND)
	H1 W21	J3:3	P3:3	RD	16 AWG	24V IPN PWR
	H1 W22	J3:4	P3:4	BK	16 AWG	24V IPN GND
	H1 W23	J3:5	P3:5	YE	18 AWG	IPN STRAPPING
	H1 W24	J3:6	P3:6	OG	18 AWG	IPN STRAPPING
	H1 W25	J3:7	P3:7	WH	18 AWG	IPN STRAPPING
	H1 W26	J3:8	P3:8	GN	18 AWG	IPN STRAPPING
	H1 W27	J3:9	P3:9	BU	18 AWG	IPN STRAPPING
	H1 W28	J3:10	P3:10	VT	18 AWG	IPN STRAPPING
	H1 W29	J3:11	P3:11	GY	18 AWG	IPN STRAPPING (PARITY)
	H1 W30	J3:12	P3:12	BN	18 AWG	IPN STRAPPING (GND)
	H1 W31	E1:1	J1:3	GN	18 AWG	TRUE DEPTH LINK SENSOR (SHIELD)
	H1 W32	E2:1	P9:1	SR	18 AWG	BRAIDED ESD CABLE
	H1 W33	J2:2	P1:14	BN	18 AWG	MANUAL RUN (PWR)
	H1 W34	J2:1	P1:17	GY	18 AWG	MANUAL RUN (GND)
	H1 W35	P4:1	P5:1	RD	18 AWG	SEED METER MOTOR 1+
	H1 W36	P4:2	P5:2	WH	18 AWG	SEED METER MOTOR 1-
	H1 W37	P4:4	P5:3	GN	18 AWG	SEED METER MOTOR 2+
	H1 W38	P4:3	P5:4	BK	18 AWG	SEED METER MOTOR 2-
	H1 W39	P4:5	P6:1	RD	18 AWG	SEED SENSOR (PWR)
	H1 W40	P4:6	P6:6	BK	18 AWG	SEED SENSOR (GND)
	H1 W41	P4:7	P6:2	BU	18 AWG	SEED SENSOR (LIN)
	H1 W42	P1:1	P10:1	OG	18 (TP)	RS232 RX
	H1 W43	P1:2	P10:2	BN	18 (TP)	RS232 TX
	H1 W44	P2:1	SP5:IN	YE	18 (TP)	IPN (CAN H)
	H1 W45	P2:2	SP6:IN	GN	18 (TP)	IPN (CAN L)
	H1 W46	SP5:OUT	P11:3	YE	18 (TP)	INSECTICIDE (CAN H)
	H1 W47	SP6:OUT	P11:4	GN	18 (TP)	INSECTICIDE (CAN L)
	H1 W48	SP5:OUT	SP3:IN	YE	18 (TP)	CAN H
	H1 W49	SP6:OUT	SP2:IN	GN	18 (TP)	CAN L
	H1 W50	SP3:OUT	J4:1	YE	18 (TP)	TERM (CAN H)
	H1 W51	SP2:OUT	J4:2	GN	18 (TP)	TERM (CAN L)
	H1 W52	SP3:OUT	P10:5	YE	18 (TP)	IPP (CAN H)
	H1 W53	SP2:OUT	P10:4	GN	18 (TP)	IPP (CAN L)
	H1 W54	P2:5	P10:11	BU	18 AWG	IPP SOFTWARE UPDATE
	H1 W55	P2:4	P10:6	BK	18 AWG	IPP PWR-
	H1 W56	P1:15	P11:5	PK	18 AWG	INSECTICIDE SENSOR (PWR/SIG)

TRUE RATE PULL ROW UNIT HARNESS (P/N: 11015901)

NOTE: Replaces
10915701.





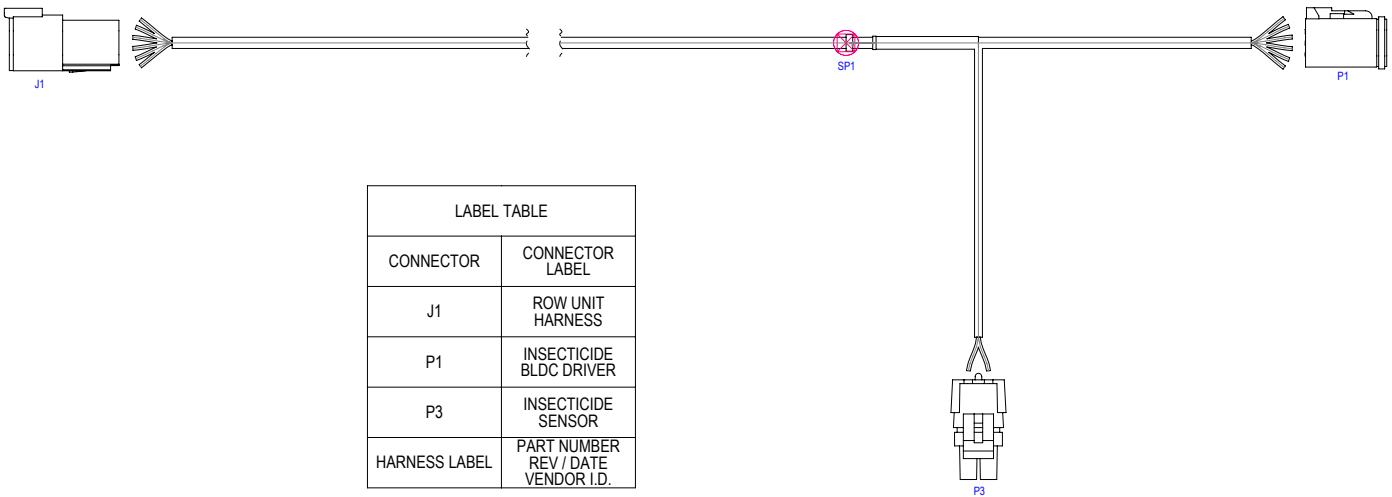


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H1	WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
	H1 W1	P1:3	P7:5	RD	18 AWG	FERT ROW CUTOFF VALVE PWM +
	H1 W2	P1:4	P7:6	BK	18 AWG	FERT ROW CUTOFF VALVE PWM -
	H1 W3	P1:7	P8:1	VT	18 AWG	TRUE DEPTH CYLINDER PWM+
	H1 W4	P1:8	P8:2	BU	18 AWG	TRUE DEPTH CYLINDER PWM -
	H1 W5	P4:8	P7:3	VT	18 AWG	FERT FLOW SENSOR (12V SIGNAL)
	H1 W6	J1:2	P1:16	WH	18 AWG	TRUE DEPTH LINK SENSOR (SIGNAL)
	H1 W7	P1:19	SP1:IN	GY	18 AWG	FERT / INSECT / TRUE DEPTH SENSOR (5V GND)
	H1 W8	SP1:OUT	P7:2	GY	18 AWG	FERT FLOW SENSOR (12V GND)
	H1 W9	SP1:OUT	J1:4	GY	18 AWG	TRUE DEPTH LINK SENSOR (5V GND)
	H1 W10	SP1:OUT	P11:6	GY	18 AWG	INSECTICIDE SENSOR (GND)
	H1 W11	J1:1	P1:20	RD	18 AWG	TRUE DEPTH LINK SENSOR (5V PWR)
	H1 W12	P2:3	P7:1	RD	18 AWG	FERT FLOW SENSOR (12V PWR)
	H1 W13	J3:1	SP7:IN	RD	16 AWG	IPN 24V PWR
	H1 W14	J3:2	SP8:IN	BK	16 AWG	IPN 24V GND
	H1 W15	SP7:OUT	P3:1	RD	18 AWG	24V IPN PWR
	H1 W16	SP7:OUT	P11:1	RD	18 AWG	INSECTICIDE BLDC DRIVER (24V PWR)
	H1 W17	SP8:OUT	P3:2	BK	18 AWG	24V IPN GND
	H1 W18	SP8:OUT	P11:2	BK	18 AWG	INSECTICIDE BLDC DRIVER (24V GND)
	H1 W19	J3:3	P3:3	RD	16 AWG	IPN 24V PWR
	H1 W20	J3:4	P3:4	BK	16 AWG	IPN 24V GND
	H1 W21	J3:5	P3:5	YE	18 AWG	IPN STRAPPING
	H1 W22	J3:6	P3:6	OG	18 AWG	IPN STRAPPING
	H1 W23	J3:7	P3:7	WH	18 AWG	IPN STRAPPING
	H1 W24	J3:8	P3:8	GN	18 AWG	IPN STRAPPING
	H1 W25	J3:9	P3:9	BU	18 AWG	IPN STRAPPING
	H1 W26	J3:10	P3:10	VT	18 AWG	IPN STRAPPING
	H1 W27	J3:11	P3:11	GY	18 AWG	IPN STRAPPING (PARITY)
	H1 W28	J3:12	P3:12	BN	18 AWG	IPN STRAPPING (GND)
	H1 W29	E1:1	J1:3	GN	18 AWG	TRUE DEPTH LINK SENSOR (SHIELD)
	H1 W30	E2:1	P9:1	SR	ESD	BRAIDED ESD CABLE
	H1 W31	J2:2	P1:14	BN	18 AWG	MANUAL RUN (12V SIGNAL)
	H1 W32	J2:1	P1:17	GY	18 AWG	MANUAL RUN (GND)
	H1 W33	P4:1	P5:1	RD	18 AWG	SEED METER MOTOR 1+
	H1 W34	P4:2	P5:2	WH	18 AWG	SEED METER MOTOR 1-
	H1 W35	P4:4	P5:3	GN	18 AWG	SEED METER MOTOR 2+
	H1 W36	P4:3	P5:4	BK	18 AWG	SEED METER MOTOR 2-
	H1 W37	P4:5	P6:1	RD	18 AWG	SEED SENSOR (12V PWR)
	H1 W38	P4:6	P6:6	BK	18 AWG	SEED SENSOR (12V GND)
	H1 W39	P4:7	P6:2	BU	18 AWG	SEED SENSOR (12V LIN)
	H1 W40	P2:1	SP5:IN	YE	18 (TP)	IPN (CAN H)
	H1 W41	P2:2	SP6:IN	GN	18 (TP)	IPN (CAN L)
	H1 W42	SP5:OUT	P11:3	YE	18 (TP)	INSECTICIDE (CAN H)
	H1 W43	SP6:OUT	P11:4	GN	18 (TP)	INSECTICIDE (CAN L)
	H1 W44	SP5:OUT	J4:1	YE	18 (TP)	TERM (CAN H)
	H1 W45	SP6:OUT	J4:2	GN	18 (TP)	TERM (CAN L)
	H1 W46	P1:15	P11:5	PK	18 AWG	INSECTICIDE SENSOR (SIGNAL)

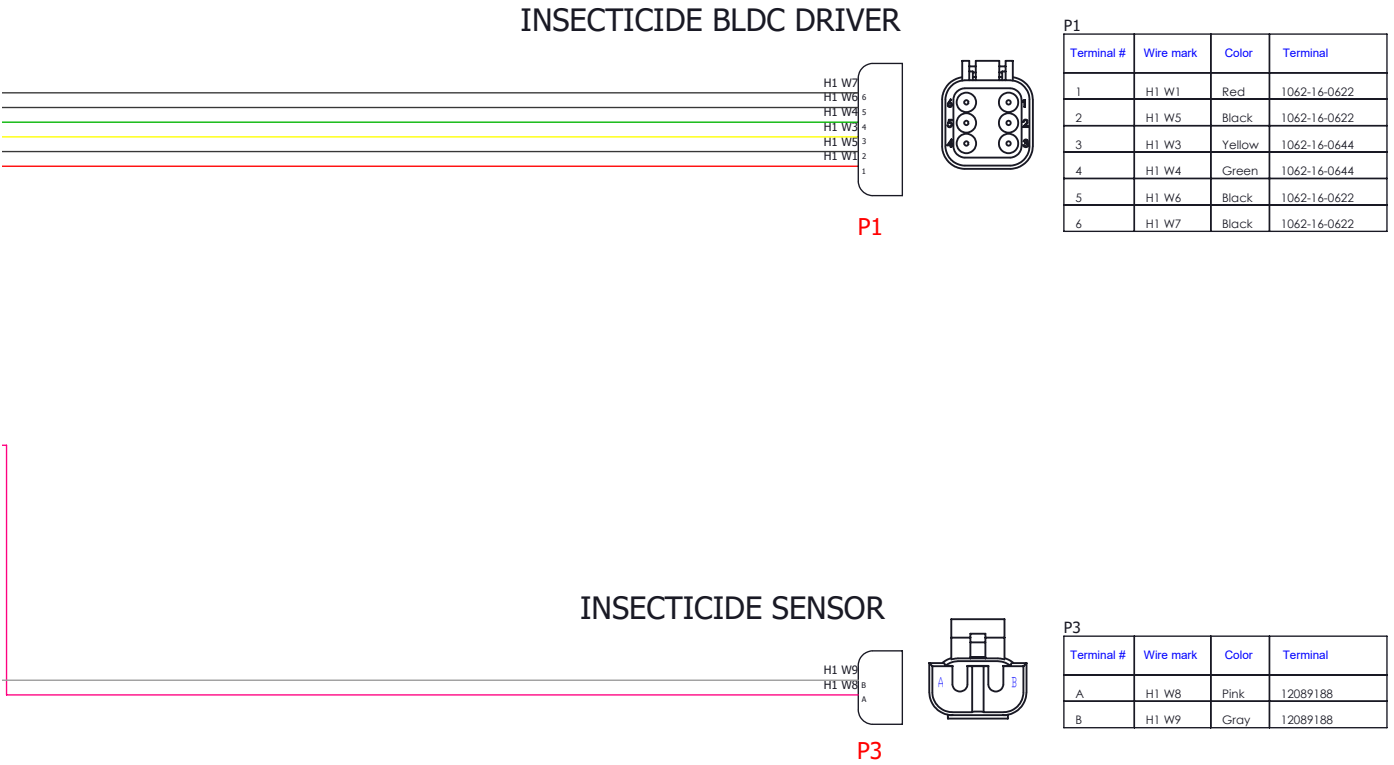
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INSECTICIDE EXTENSION HARNESS (P/N: 11015201)



H1

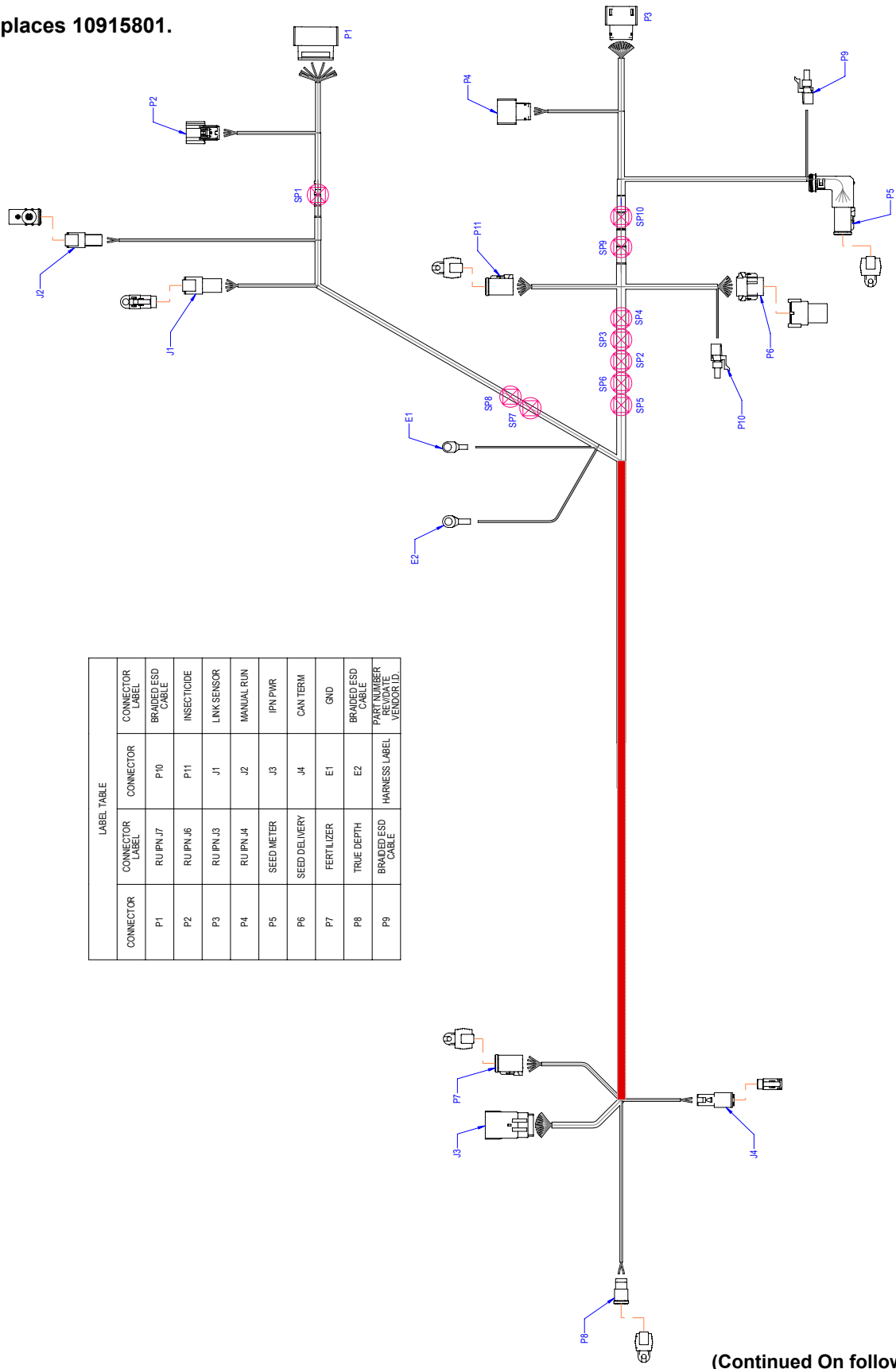
wire tag	Connect From	Connect To	Color code	Wire Gauge	Signal
H1 W1	F1 L1 J1:1	F1 L1 P1:1	RD	18 AWG	INSECTICIDE BLDC DRIVER (24V PWR)
H1 W2	F1 L1 J1:2	F1 L1 SP1:IN	BK	18 AWG	IPN (24V GND)
H1 W3	F1 L1 J1:3	F1 L1 P1:3	YE	18 TP	INSECTICIDE (CAN H)
H1 W4	F1 L1 J1:4	F1 L1 P1:4	GN	18 TP	INSECTICIDE (CAN L)
H1 W5	F1 L1 SP1:OUT	F1 L1 P1:2	BK	18 AWG	INSECTICIDE BLDC DRIVER (24V GND)
H1 W6	F1 L1 SP1:OUT	F1 L1 P1:5	BK	18 AWG	STRAPPING 2
H1 W7	F1 L1 SP1:OUT	F1 L1 P1:6	BK	18 AWG	STRAPPING 1
H1 W8	F1 L1 J1:5	F1 L1 P3:A	PK	18 AWG	INSECTICIDE SENSOR (SIGNAL)
H1 W9	F1 L1 J1:6	F1 L1 P3:B	GY	18 AWG	INSECTICIDE SENSOR (GND)

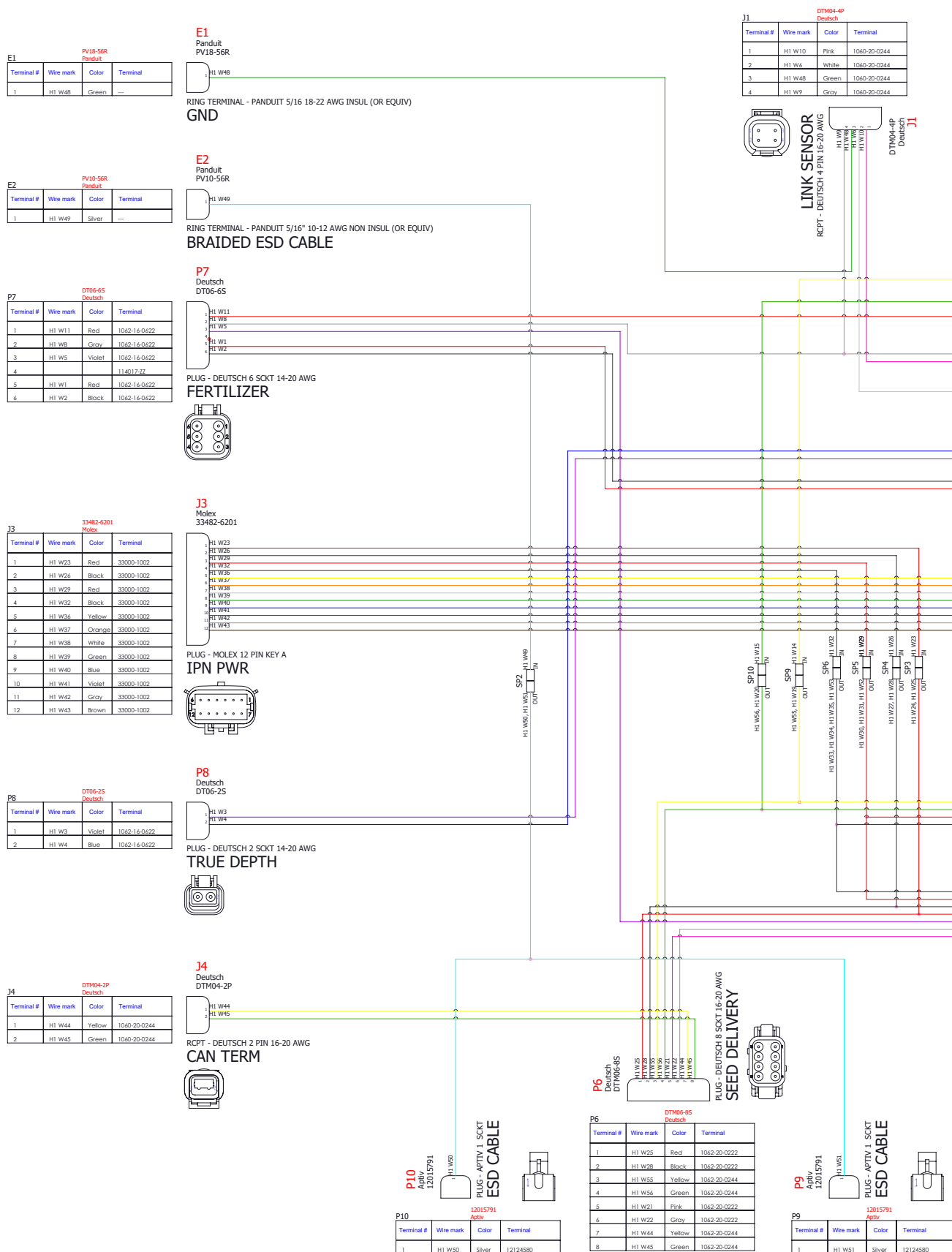


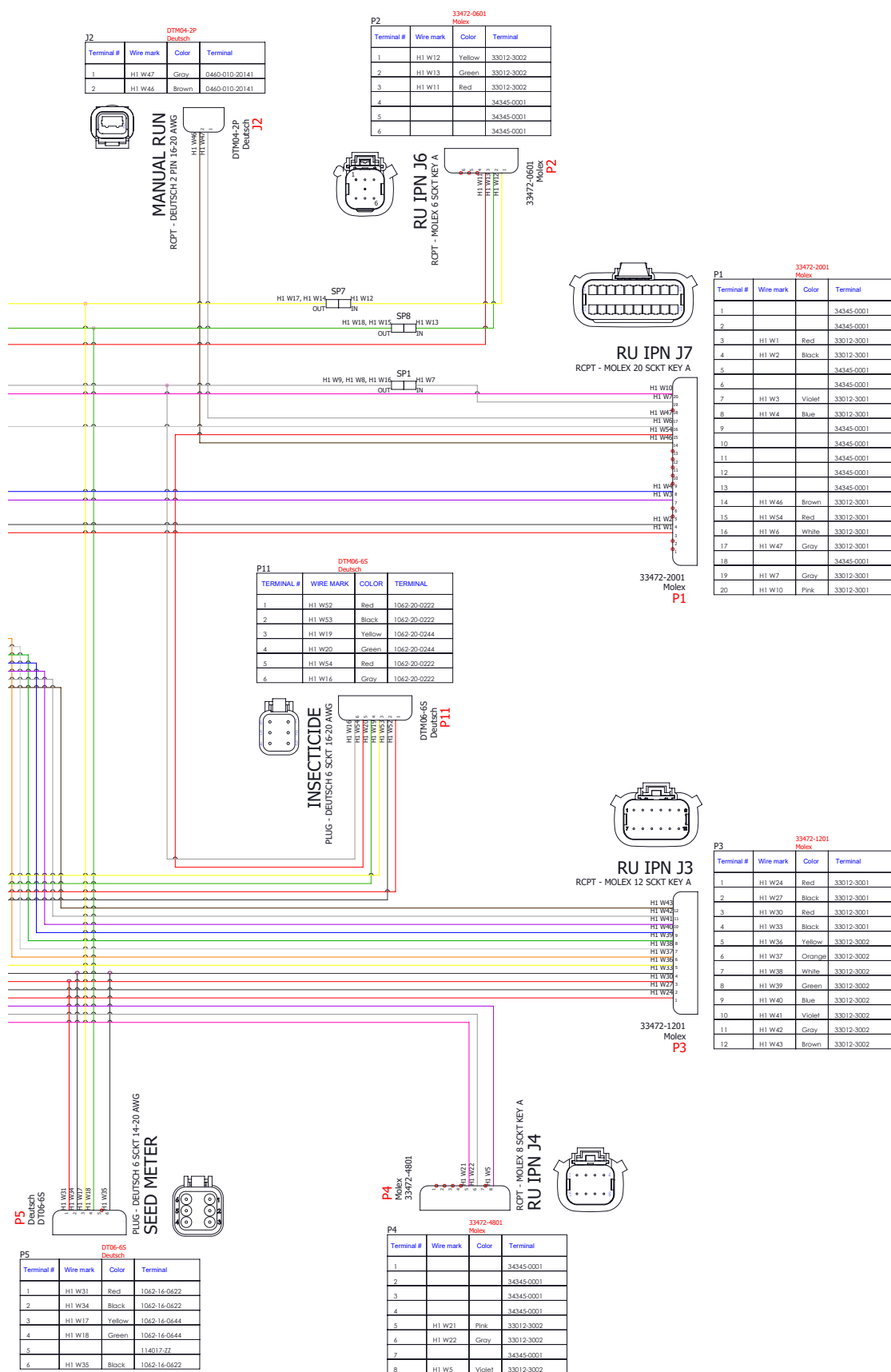
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TRUE SPEED PULL ROW UNIT HARNESS (P/N: 11026601)

NOTE: Replaces 10915801.







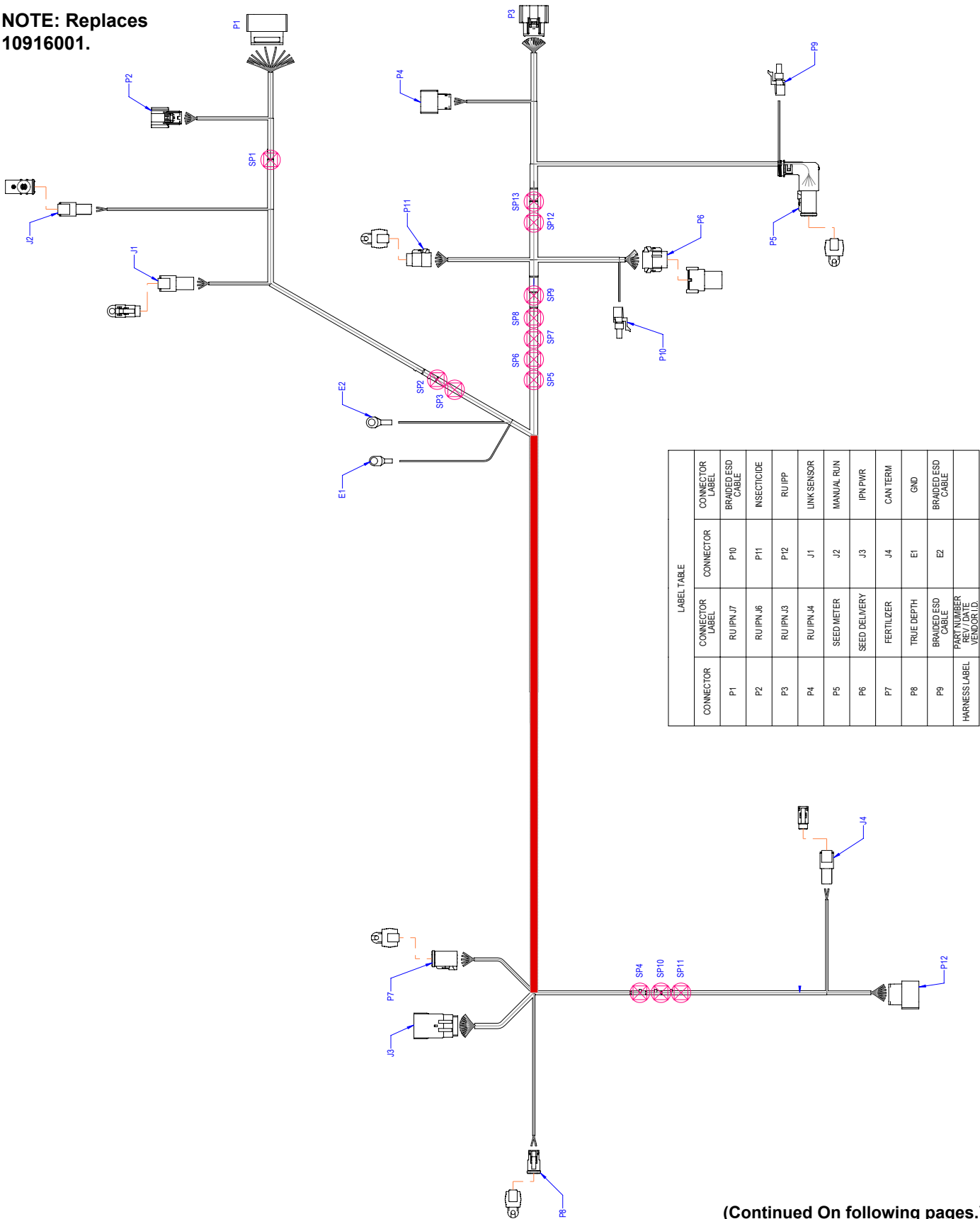
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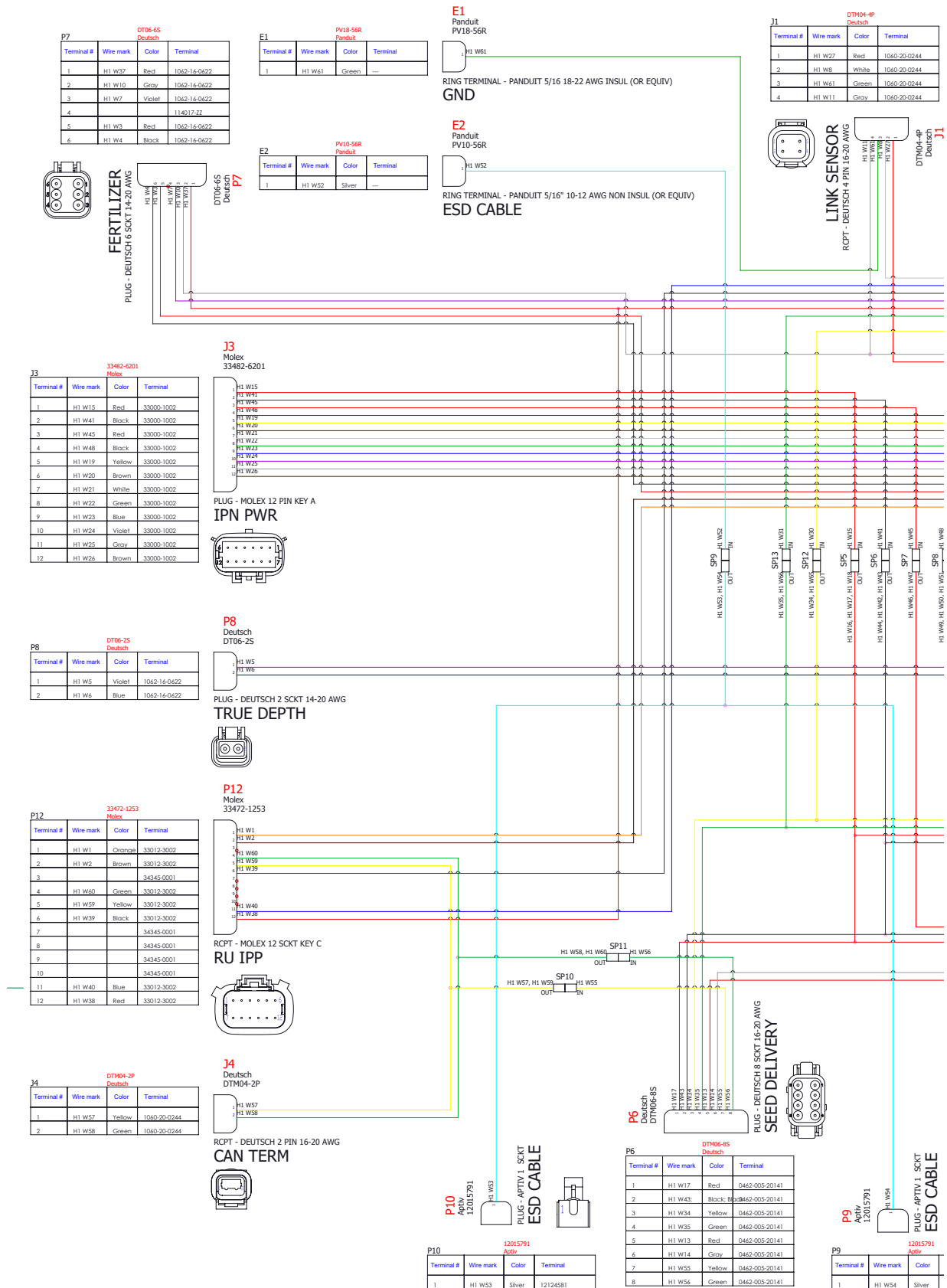
H1

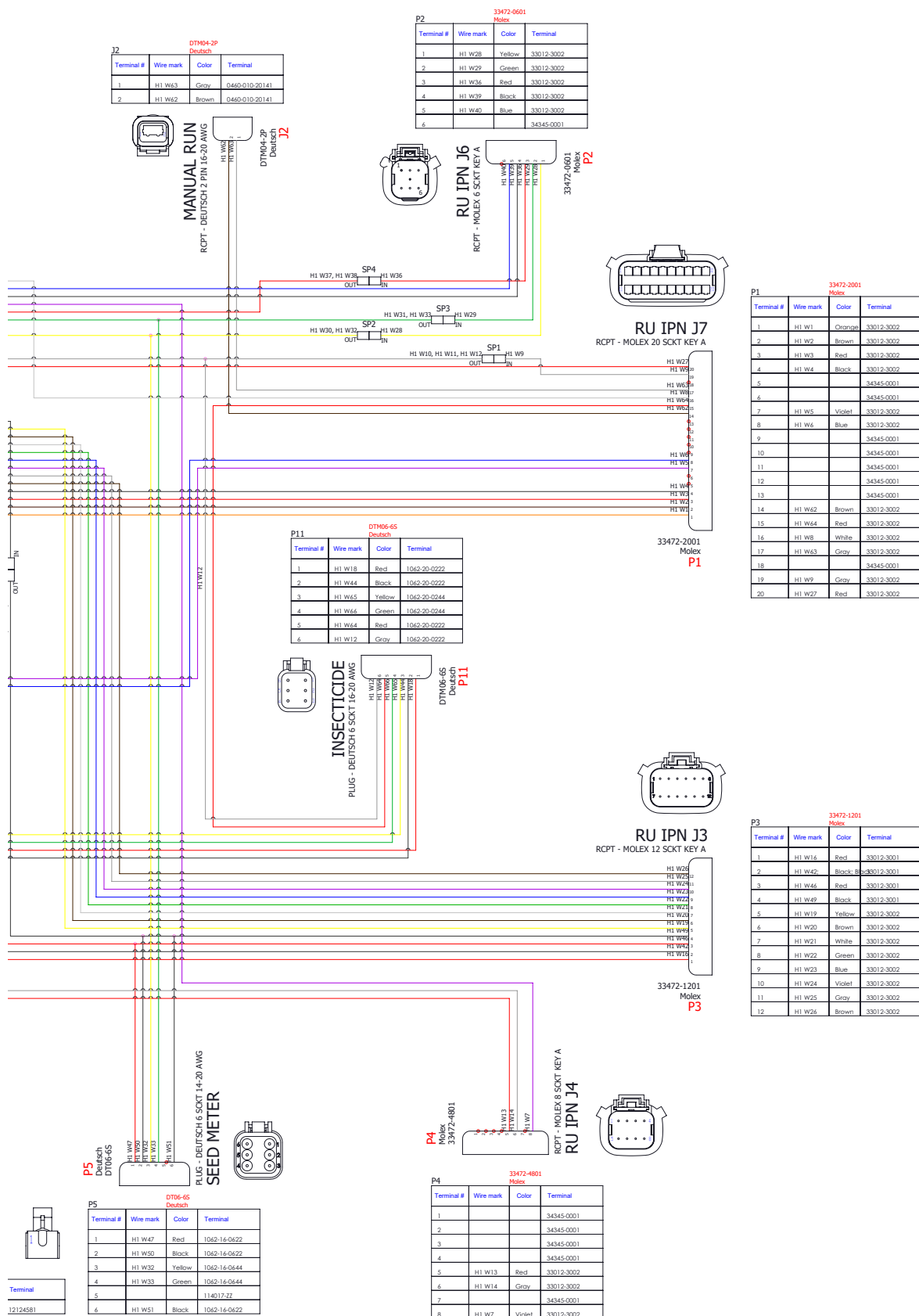
WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
H1 W1	P1:3	P7:5	RD	18 AWG	FERT ROW CUT OFF VALVE PWM+
H1 W2	P1:4	P7:6	BK	18 AWG	FERT ROW CUT OFF VALVE PWM-
H1 W3	P1:7	P8:1	VT	18 AWG	TRUE DEPTH CYLINDER PWM+
H1 W4	P1:8	P8:2	BU	18 AWG	TRUE DEPTH CYLINDER PWM-
H1 W5	P4:8	P7:3	VT	18 AWG	FERT FLOW SENSOR (5V SIGNAL)
H1 W6	J1:2	P1:16	WH	18 AWG	TRUE DEPTH LINK SENSOR (5V SIGNAL)
H1 W7	P1:19	SP1:IN	GY	18 AWG	FERT / INSEC / TRUE DEPTH SENSOR (GND)
H1 W8	SP1:OUT	P7:2	GY	18 AWG	FERT FLOW SENSOR (24V GND)
H1 W9	SP1:OUT	J1:4	GY	18 AWG	TRUE DEPTH LINK SENSOR (5V GND)
H1 W10	J1:1	P1:20	PK	18 AWG	TRUE DEPTH LINK SENSOR (5V PWR)
H1 W11	P2:3	P7:1	RD	18 AWG	FERT FLOW SENSOR (12V PWR)
H1 W12	P2:1	SP7:IN	YE	18 (TP)	IPN (CAN H)
H1 W13	P2:2	SP8:IN	GN	18 (TP)	IPN (CAN L)
H1 W14	SP7:OUT	SP9:IN	YE	18 (TP)	IPN CAN H
H1 W15	SP8:OUT	SP10:IN	GN	18 (TP)	IPN CAN L
H1 W16	SP1:OUT	P11:6	GY	18 AWG	INSECTICIDE SENSOR (GND)
H1 W17	SP7:OUT	P5:3	YE	18 (TP)	SEED METER (CAN H)
H1 W18	SP8:OUT	P5:4	GN	18 (TP)	SEED METER (CAN L)
H1 W19	SP9:OUT	P11:3	YE	18 (TP)	INSECTICIDE (CAN H)
H1 W20	SP10:OUT	P11:4	GN	18 (TP)	INSECTICIDE (CAN L)
H1 W21	P4:5	P6:5	PK	18 AWG	SEED DELIVERY (12V PWR)
H1 W22	P4:6	P6:6	GY	18 AWG	SEED DELIVERY (12V GND)
H1 W23	J3:1	SP3:IN	RD	16 AWG	IPN 24V PWR
H1 W24	SP3:OUT	P3:1	RD	16 AWG	IPN 24V PWR
H1 W25	SP3:OUT	P6:1	RD	16 AWG	BELT BLDC DRIVER (24V PWR)
H1 W26	J3:2	SP4:IN	BK	16 AWG	IPN 24V GND
H1 W27	SP4:OUT	P3:2	BK	16 AWG	IPN 24V GND
H1 W28	SP4:OUT	P6:2	BK	16 AWG	BELT BLDC DRIVER (24V GND)
H1 W29	J3:3	SP5:IN	RD	16 AWG	IPN 24V PWR
H1 W30	SP5:OUT	P3:3	RD	16 AWG	IPN 24V PWR
H1 W31	SP5:OUT	P5:1	RD	16 AWG	METER BLDC DRIVER (24V PWR)
H1 W32	J3:4	SP6:IN	BK	16 AWG	IPN 24V GND
H1 W33	SP6:OUT	P3:4	BK	16 AWG	IPN 24V GND
H1 W34	SP6:OUT	P5:2	BK	16 AWG	METER BLDC DRIVER (24V GND)
H1 W35	SP6:OUT	P5:6	BK	16 AWG	METER BLDC DRIVER (STRAPPING 1)
H1 W36	J3:5	P3:5	YE	18 AWG	IPN STRAPPING
H1 W37	J3:6	P3:6	OG	18 AWG	IPN STRAPPING
H1 W38	J3:7	P3:7	WH	18 AWG	IPN STRAPPING
H1 W39	J3:8	P3:8	GN	18 AWG	IPN STRAPPING
H1 W40	J3:9	P3:9	BU	18 AWG	IPN STRAPPING
H1 W41	J3:10	P3:10	VT	18 AWG	IPN STRAPPING
H1 W42	J3:11	P3:11	GY	18 AWG	IPN STRAPPING (PARITY)
H1 W43	J3:12	P3:12	BN	18 AWG	IPN STRAPPING (GND)
H1 W44	J4:1	P6:7	YE	18 (TP)	TERM (CAN H)
H1 W45	J4:2	P6:8	GN	18 (TP)	TERM (CAN L)
H1 W46	J2:2	P1:14	BN	18 AWG	MANUAL RUN (12V SIGNAL)
H1 W47	J2:1	P1:17	GY	18 AWG	MANUAL RUN (GND)
H1 W48	E1:1	J1:3	GN	18 AWG	TRUE DEPTH LINK SENSOR (SHIELD)
H1 W49	E2:1	SP2:IN	SR	ESD	BRAIDED ESD CABLE
H1 W50	SP2:OUT	P10:1	SR	ESD	BRAIDED METER ESD CABLE
H1 W51	SP2:OUT	P9:1	SR	ESD	BRAIDED SEED TUBE ESD CABLE
H1 W52	SP5:OUT	P11:1	RD	16 AWG	INSECTICIDE BLDC DRIVER (24V PWR)
H1 W53	SP6:OUT	P11:2	BK	16 AWG	INSECTICIDE BLDC DRIVER (24V GND)
H1 W54	P1:15	P11:5	RD	18 AWG	INSECTICIDE SENSOR (SIGNAL)
H1 W55	SP9:OUT	P6:3	YE	18 (TP)	SEED DELIVERY (CAN H)
H1 W56	SP10:OUT	P6:4	GN	18 (TP)	SEED DELIVERY (CAN L)

TRUE SPEED PULL ROW UNIT W/IPP HARNESS (P/N: 11026501)

NOTE: Replaces
10916001.







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H1

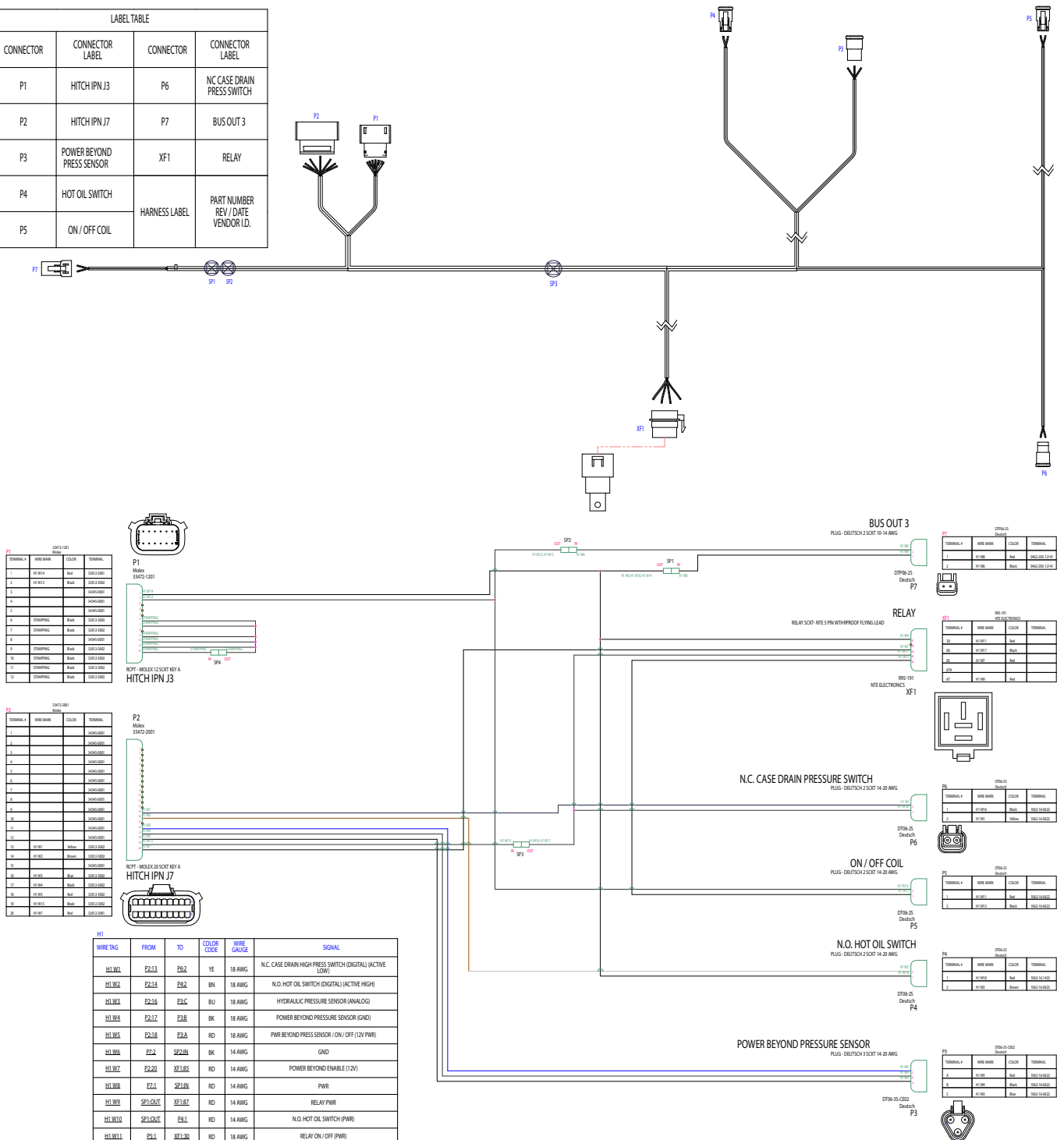
WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
H1 W1	P1:1	P12:1	OG	18 (TP)	RS232 RX
H1 W2	P1:2	P12:2	BN	18 (TP)	RS232 TX
H1 W3	P1:3	P7:5	RD	18 AWG	FERT ROW CUTOFF VALVE PWM+
H1 W4	P1:4	P7:6	BK	18 AWG	FERT ROW CUTOFF VALVE PWM-
H1 W5	P1:7	P8:1	VT	18 AWG	TRUE DEPTH CYLINDER PWM+
H1 W6	P1:8	P8:2	BU	18 AWG	TRUE DEPTH CYLINDER PWM-
H1 W7	P4:8	P7:3	VT	18 AWG	FERT FLOW SENSOR (SIGNAL)
H1 W8	J1:2	P1:16	WH	18 AWG	TRUE DEPTH LINK SENSOR (SIGNAL)
H1 W9	P1:19	SP1:IN	GY	18 AWG	FERT / INSEC / TRUE DEPTH SENSOR (GND)
H1 W10	SP1:OUT	P7:2	GY	18 AWG	FERT FLOW SENSOR (12V GND)
H1 W11	SP1:OUT	J1:4	GY	18 AWG	TRUE DEPTH SENSOR (5V GND)
H1 W12	SP1:OUT	P11:6	GY	18 AWG	INSECTICIDE SENSOR (GND)
H1 W13	P4:5	P6:5	RD	18 AWG	SEED DELIVERY (12V PWR)
H1 W14	P4:6	P6:6	GY	18 AWG	SEED DELIVERY (12V GND)
H1 W15	J3:1	SP5:IN	RD	16 AWG	IPN 24V PWR
H1 W16	SP5:OUT	P3:1	RD	16 AWG	IPN 24V PWR
H1 W17	SP5:OUT	P6:1	RD	16 AWG	BELT BLDC DRIVER (12V PWR)
H1 W18	SP5:OUT	P11:1	RD	16 AWG	INSECTICIDE BLDC DRIVER (24V PWR)
H1 W19	J3:5	P3:5	YE	18 AWG	IPN STRAPPING
H1 W20	J3:6	P3:6	BN	18 AWG	IPN STRAPPING
H1 W21	J3:7	P3:7	WH	18 AWG	IPN STRAPPING
H1 W22	J3:8	P3:8	GN	18 AWG	IPN STRAPPING
H1 W23	J3:9	P3:9	BU	18 AWG	IPN STRAPPING
H1 W24	J3:10	P3:10	VT	18 AWG	IPN STRAPPING
H1 W25	J3:11	P3:11	GY	18 AWG	IPN STRAPPING (PARITY)
H1 W26	J3:12	P3:12	BN	18 AWG	IPN STRAPPING (GND)
H1 W27	J1:1	P1:20	RD	18 AWG	TRUE DEPTH LINK SENSOR (5V PWR)
H1 W28	P2:1	SP2:IN	YE	18 (TP)	IPN (CAN H)
H1 W29	P2:2	SP3:IN	GN	18 (TP)	IPN (CAN L)
H1 W30	SP2:OUT	SP12:IN	YE	18 (TP)	IPN (CAN H)
H1 W31	SP3:OUT	SP13:IN	GN	18 (TP)	IPN (CAN L)
H1 W32	SP2:OUT	P5:3	YE	18 (TP)	SEED METER (CAN H)
H1 W33	SP3:OUT	P5:4	GN	18 (TP)	SEED METER (CAN L)
H1 W34	SP12:OUT	P6:3	YE	18 (TP)	SEED DELIVERY (CAN H)
H1 W35	SP13:OUT	P6:4	GN	18 (TP)	SEED DELIVERY (CAN L)
H1 W36	P2:3	SP4:IN	RD	18 AWG	IPP / FERT FLOW SENSOR (12V PWR)
H1 W37	SP4:OUT	P7:1	RD	18 AWG	FERT FLOW SENSOR (12V PWR)
H1 W38	SP4:OUT	P12:12	RD	18 AWG	IPP 12V PWR+
H1 W39	P2:4	P12:6	BK	18 AWG	IPP 12V PWR-
H1 W40	P2:5	P12:11	BU	18 AWG	IPP SOFTWARE UPDATE
H1 W41	J3:2	SP6:IN	BK	16 AWG	IPN 24V GND
H1 W42	SP6:OUT	P3:2	BK	16 AWG	IPN 24V GND
H1 W43	SP6:OUT	P6:2	BK	16 AWG	BELT BLDC DRIVER (GND)
H1 W44	SP6:OUT	P11:2	BK	16 AWG	INSECTICIDE BLDC DRIVER (24V GND)
H1 W45	J3:3	SP7:IN	RD	16 AWG	IPN 24V PWR
H1 W46	SP7:OUT	P3:3	RD	16 AWG	IPN 24V PWR
H1 W47	SP7:OUT	P5:1	RD	16 AWG	METER BLDC DRIVER (24V PWR)
H1 W48	J3:4	SP8:IN	BK	16 AWG	IPN 24V GND
H1 W49	SP8:OUT	P3:4	BK	16 AWG	IPN 24V GND
H1 W50	SP8:OUT	P5:2	BK	16 AWG	METER BLDC DRIVER (24V GND)
H1 W51	SP8:OUT	P5:6	BK	16 AWG	METER BLDC DRIVER (STRAPPING 1)
H1 W52	E2:1	SP9:IN	SR	ESD	BRAIDED ESD CABLE
H1 W53	SP9:OUT	P10:1	SR	ESD	BRAIDED SEED TUBE ESD CABLE
H1 W54	SP9:OUT	P9:1	SR	ESD	BRAIDED SEED METER ESD CABLE
H1 W55	P6:7	SP10:IN	YE	18 (TP)	CAN H
H1 W56	P6:8	SP11:IN	GN	18 (TP)	CAN L
H1 W57	SP10:OUT	J4:1	YE	18 (TP)	TERM (CAN H)
H1 W58	SP11:OUT	J4:2	GN	18 (TP)	TERM (CAN L)

-> H1

WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
H1 W59	SP10:OUT	P12:5	YE	18 (TP)	IPP (CAN H)
H1 W60	SP11:OUT	P12:4	GN	18 (TP)	IPP (CAN L)
H1 W61	E1:1	J1:3	GN	18 AWG	TRUE DEPTH LINK SENSOR (SHIELD)
H1 W62	J2:2	P1:14	BN	18 AWG	MANUAL RUN (12V SIGNAL)
H1 W63	J2:1	P1:17	GY	18 AWG	MANUAL RUN (GND)
H1 W64	P1:15	P11:5	RD	18 AWG	INSECTICIDE SENSOR (SIGNAL)
H1 W65	SP12:OUT	P11:3	YE	18 (TP)	INSECTICIDE (CAN H)
H1 W66	SP13:OUT	P11:4	GN	18 (TP)	INSECTICIDE (CAN L)

POWER BEYOND HARNESS (P/N: 11193501)

LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	HITCH IPN J3	P6	NC CASE DRAIN PRESS SWITCH
P2	HITCH IPN J7	P7	BUS OUT 3
P3	POWER BEYOND PRESS SENSOR	XF1	RELAY
P4	HOT OIL SWITCH	HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.
P5	ON / OFF COIL		



TERMINAL #	WIRE NAME	COLOR	TERMINAL
1	111-011	Red	111-011
2	111-012	Red	111-012
3	111-013	Red	111-013
4	111-014	Red	111-014
5	111-015	Red	111-015
6	111-016	Red	111-016
7	111-017	Red	111-017
8	111-018	Red	111-018
9	111-019	Red	111-019
10	111-020	Red	111-020
11	111-021	Red	111-021
12	111-022	Red	111-022
13	111-023	Red	111-023
14	111-024	Red	111-024
15	111-025	Red	111-025
16	111-026	Red	111-026
17	111-027	Red	111-027
18	111-028	Red	111-028
19	111-029	Red	111-029
20	111-030	Red	111-030

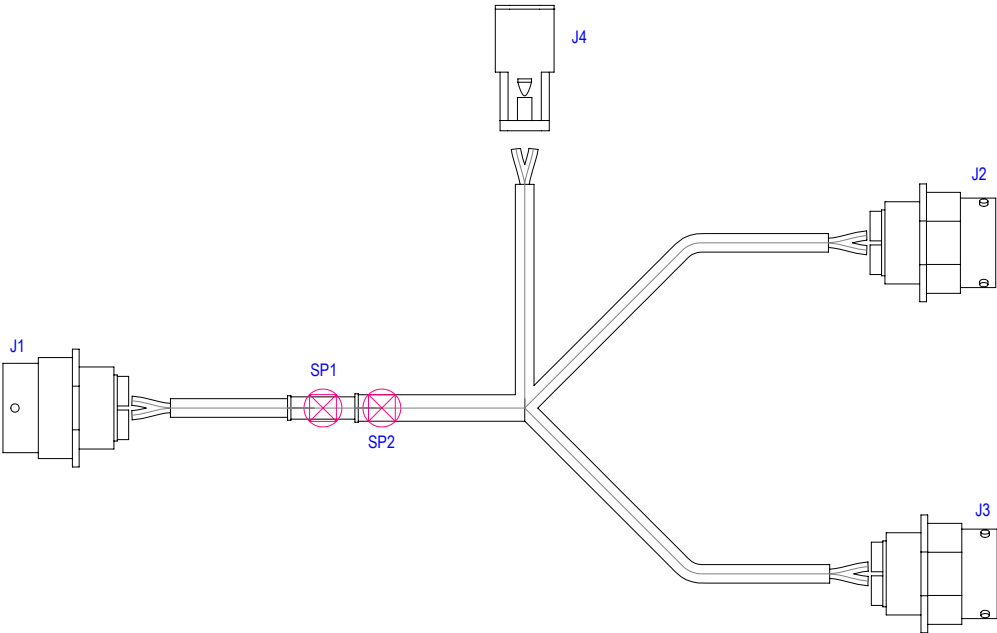
TERMINAL #	WIRE NAME	COLOR	TERMINAL
1	111-031	Red	111-031
2	111-032	Red	111-032
3	111-033	Red	111-033
4	111-034	Red	111-034
5	111-035	Red	111-035
6	111-036	Red	111-036
7	111-037	Red	111-037
8	111-038	Red	111-038
9	111-039	Red	111-039
10	111-040	Red	111-040
11	111-041	Red	111-041
12	111-042	Red	111-042
13	111-043	Red	111-043
14	111-044	Red	111-044
15	111-045	Red	111-045
16	111-046	Red	111-046
17	111-047	Red	111-047
18	111-048	Red	111-048
19	111-049	Red	111-049
20	111-050	Red	111-050

WIRE TAG	FROM	TO	COLOR	WIRE GAUGE	SIGNAL
111-001	P2-13	P6-2	YE	18 AWG	N.C. CASE DRAIN HIGH PRESS SWITCH (DIGITAL) (ACTIVE LOW)
111-002	P2-14	P6-2	BN	18 AWG	N.O. HOT OIL SWITCH (DIGITAL) (ACTIVE HIGH)
111-003	P2-16	P3-1	BU	18 AWG	HYDRAULIC PRESSURE SENSOR (ANALOG)
111-004	P2-17	P3-1	BK	18 AWG	POWER BEYOND PRESSURE SENSOR (GND)
111-005	P2-18	P3-1	RD	18 AWG	PWR BEYOND PRESS SENSOR / ON / OFF (12V PWR)
111-006	P2-2	SP2-1N	BK	14 AWG	GND
111-007	P2-20	XF1-1B5	RD	14 AWG	POWER BEYOND ENABLE (12V)
111-008	P2-1	SP2-1N	RD	14 AWG	PWR
111-009	SP2-1OUT	XF1-1B7	RD	14 AWG	RELAY PWR
111-010	SP2-1OUT	P6-1	RD	14 AWG	N.O. HOT OIL SWITCH (PWR)
111-011	P5-1	XF1-1B9	RD	18 AWG	RELAY ON / OFF (PWR)
111-012	SP2-1OUT	P1-2	BK	18 AWG	GND
111-013	SP2-1OUT	P5-2	BK	18 AWG	ON / OFF COIL GND
111-014	SP2-1OUT	P1-1	RD	14 AWG	PWR PASS
111-015	P2-19	SP2-1N	BK	18 AWG	N.C. CASE DRAIN PRESS SWITCH / RELAY (GND)
111-016	SP2-1OUT	P6-1	BK	18 AWG	N.C. CASE DRAIN PRESS SWITCH (GND)
111-017	SP2-1OUT	XF1-1B6	BK	18 AWG	RELAY (GND)

WIRE TAG	FROM	TO	COLOR	WIRE GAUGE	SIGNAL
STRAPPING	P1-12	SP2-1N	BK	18 AWG	STRAPPING
STRAPPING	SP2-1OUT	P1-6	BK	18 AWG	STRAPPING
STRAPPING	SP2-1OUT	P1-2	BK	18 AWG	STRAPPING
STRAPPING	SP2-1OUT	P1-9	BK	18 AWG	STRAPPING
STRAPPING	SP2-1OUT	P1-10	BK	18 AWG	STRAPPING
STRAPPING	SP2-1OUT	P1-11	BK	18 AWG	STRAPPING

12V BUS HARNESS (P/N: 11147301)

LABEL TABLE	
CONNECTOR	CONNECTOR LABEL
J1	J1 - BUS IN
J2	J2 - BUS OUT 1
J3	J3 - BUS OUT 2
J4	J4 - BUS OUT 3
HARNESS LABEL	PART NUMBER REV / DATE VENDOR I.D.



J4 DTP04-2P Deutsch			
TERMINAL #	WIRE MARK	COLOR	TERMINAL
1	H1 W4	Red	0460-204-12141
2	H1 W8	Black	0460-204-12141



BUS OUT 3

RCPT - DEUTSCH 2 PIN 10-14 AWG

H1 W6
H1 W2

DTP04-2P
Deutsch

J4

BUS OUT 1

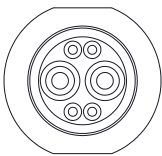
RCPT - DEUTSCH HDP20 6 PIN SIZE 24 THREADED

H1 W6
H1 W2

HDP24-18-6PN
Deutsch

J2

J2 HDP24-18-6PN Deutsch			
TERMINAL #	WIRE MARK	COLOR	TERMINAL
1			
2			
3	H1 W2	Red	0460-204-0490
4	H1 W6	Black	0460-204-0490
5			
6			



BUS OUT 2

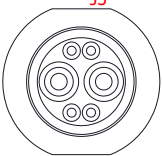
RCPT - DEUTSCH HDP20 6 PIN SIZE 24 THREADED

H1 W7
H1 W3

HDP24-18-6PN
Deutsch

J3

J3 HDP24-18-6PN Deutsch			
TERMINAL #	WIRE MARK	COLOR	TERMINAL
1			
2			
3	H1 W3	Red	0460-204-0490
4	H1 W7	Black	0460-204-0490
5			
6			



J1 HD34-18-6PN-C030 Deutsch			
TERMINAL #	WIRE MARK	COLOR	TERMINAL
1			
2			
3	H1 W1	Red	0460-204-0490
4	H1 W5	Black	0460-204-0490
5			
6			

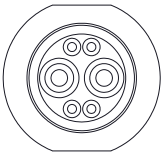
J1

Deutsch
HD34-18-6PN-C030

H1 W1
H1 W5

RCPT - DEUTSCH HD30 2 PIN SIZE 24 THREADED

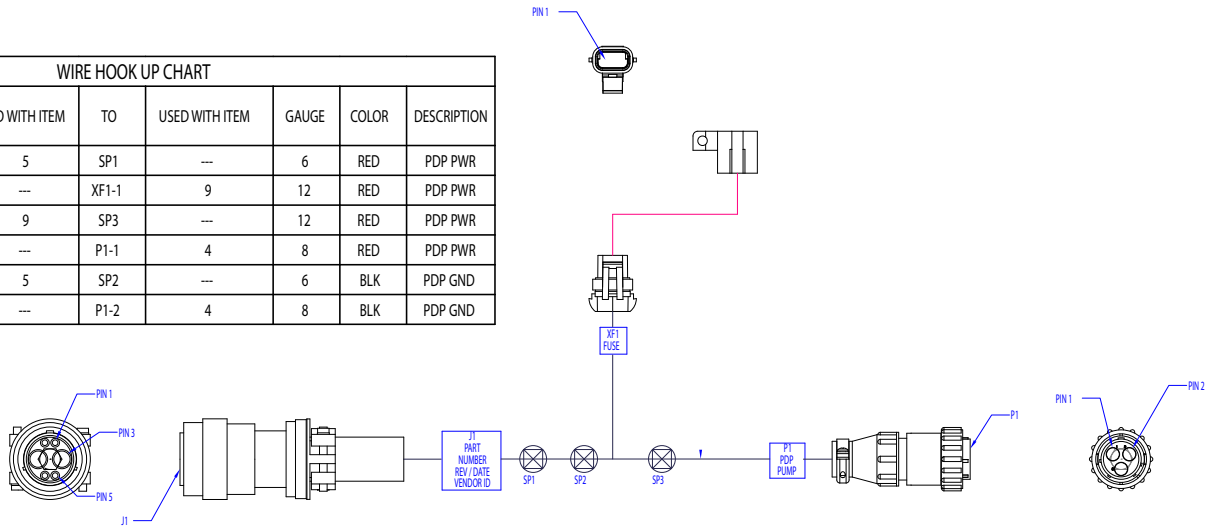
BUS IN



WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
H1 W1	J1:3	SP1:IN	RD	6 AWG	12V +
H1 W2	SP1:OUT	J2:3	RD	6 AWG	12V +
H1 W3	SP1:OUT	J3:3	RD	6 AWG	12V +
H1 W4	SP1:OUT	J4:1	RD	14 AWG	12V +
H1 W5	J1:4	SP2:IN	BK	6 AWG	12V -
H1 W6	SP2:OUT	J2:4	BK	6 AWG	12V -
H1 W7	SP2:OUT	J3:4	BK	6 AWG	12V -
H1 W8	SP2:OUT	J4:2	BK	14 AWG	12V -

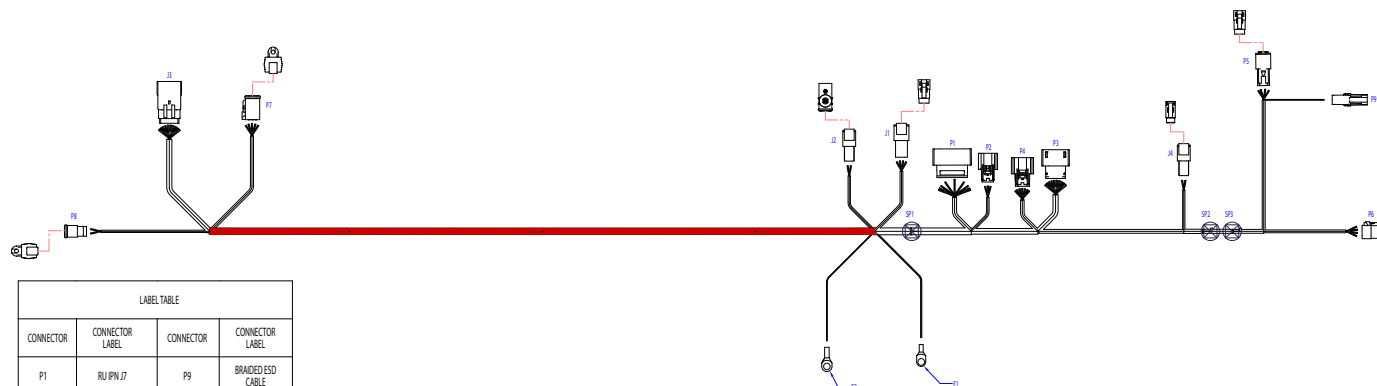
12V AIR PUMP HARNESS (P/N: 10188101)

WIRE HOOK UP CHART							
REF DES	FROM	USED WITH ITEM	TO	USED WITH ITEM	GAUGE	COLOR	DESCRIPTION
W1	J1-3	5	SP1	---	6	RED	PDP PWR
W2	SP1	---	XF1-1	9	12	RED	PDP PWR
W3	XF1-2	9	SP3	---	12	RED	PDP PWR
W4	SP3	---	P1-1	4	8	RED	PDP PWR
W5	J1-4	5	SP2	---	6	BLK	PDP GND
W6	SP2	---	P1-2	4	8	BLK	PDP GND



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TRUE RATE CAN SS PUSH ROW UNIT HARNESS (P/N: 11156801)

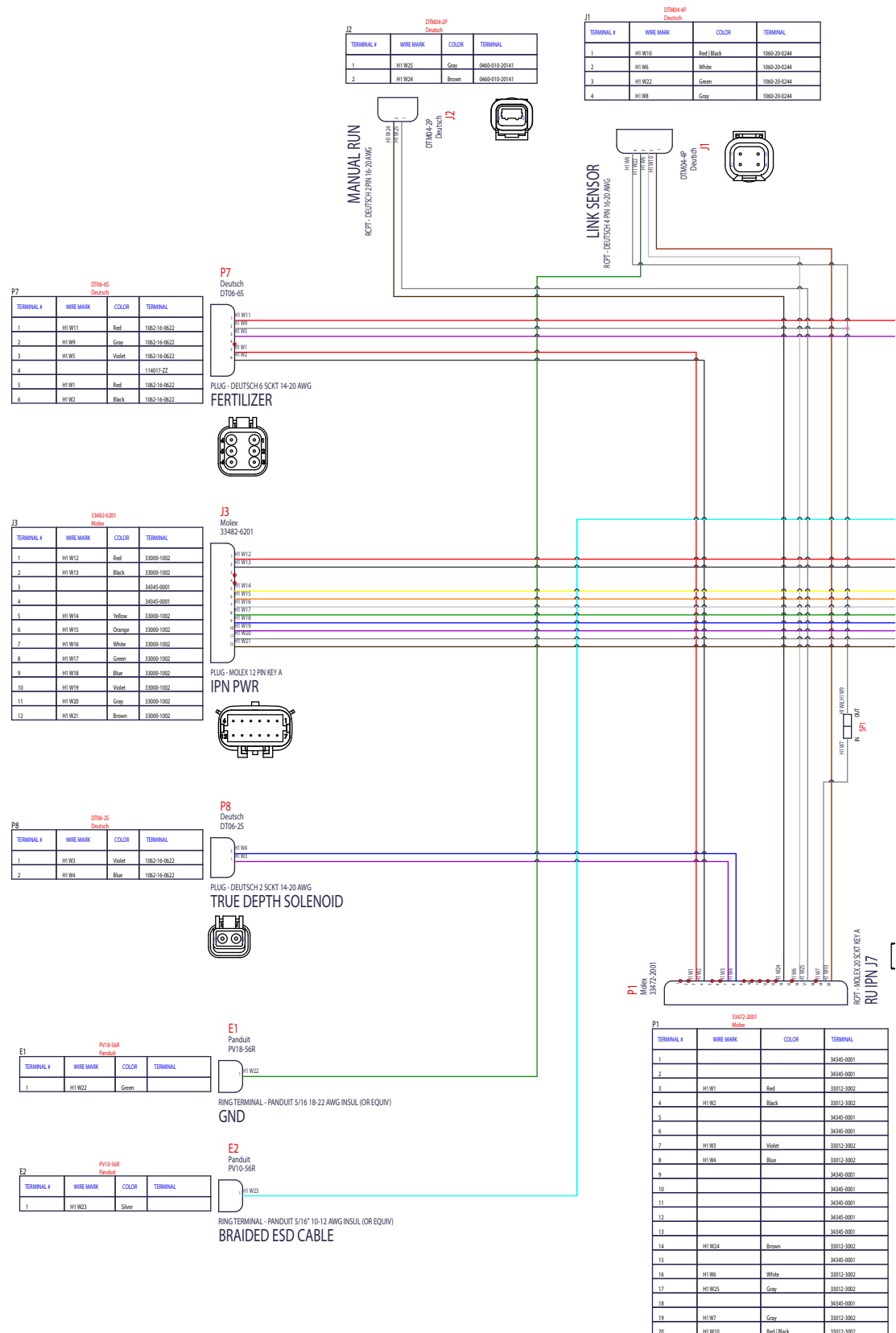


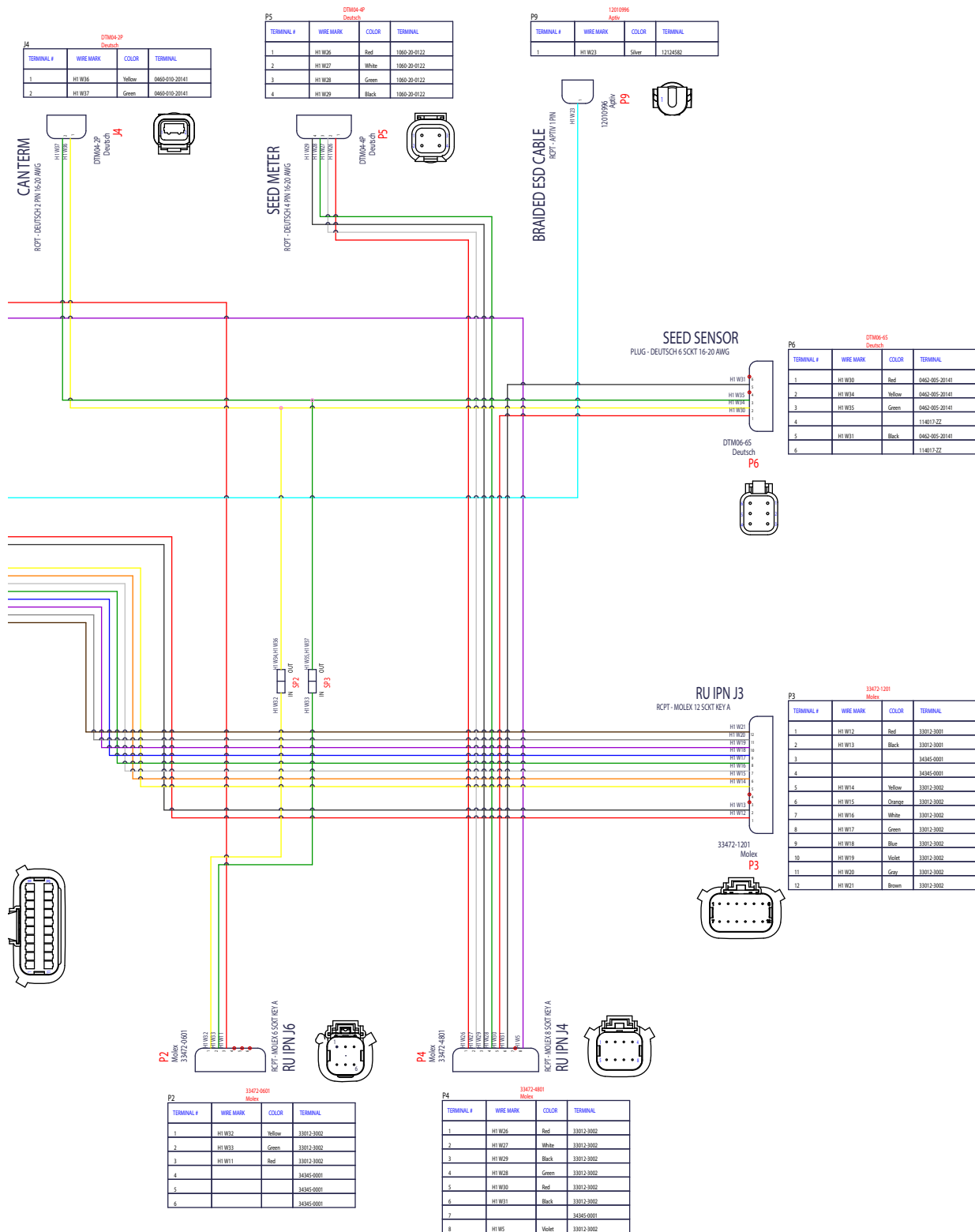
LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU IPN J7	P9	BRAIDED ESD CABLE
P2	RU IPN J6	J1	LINK SENSOR
P3	RU IPN J3	J2	MANUAL RUN
P4	RU IPN J4	J3	IPN PWR
P5	SEED METER	J4	CAN TERM
P6	SEED SENSOR	E1	GND
P7	FERTILIZER	E2	BRAIDED ESD CABLE
P8	TRUE DEPTH SOLENOID		HARNESS LABEL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

WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
H1 W1	P1:3	P7:5	RD	18 AWG	FERT ROW CUT OFF VALVE (PWR)
H1 W2	P1:4	P7:6	BK	18 AWG	FERT ROW CUT OFF VALVE (GND)
H1 W3	P1:7	P8:1	VT	18 AWG	TRUE DEPTH CYLINDER PWM (+)
H1 W4	P1:8	P8:2	BU	18 AWG	TRUE DEPTH CYLINDER PWM (-)
H1 W5	P4:8	P7:3	VT	18 AWG	FERT FLOW SENSOR (SIGNAL)
H1 W6	J1:2	P1:16	WH	18 AWG	TRUE DEPTH LINK SENSOR (SIGNAL)
H1 W7	P1:19	SP1:IN	GY	18 AWG	FERT / TRUE DEPTH SENSOR (GND)
H1 W8	SP1:OUT	J1:4	GY	18 AWG	TRUE DEPTH LINK SENSOR (GND)
H1 W9	SP1:OUT	P7:2	GY	18 AWG	FERT FLOW SENSOR (GND)
H1 W10	J1:1	P1:20	RDBK	18 AWG	TRUE DEPTH LINK SENSOR (PWR)
H1 W11	P2:3	P7:1	RD	18 AWG	FERT FLOW SENSOR (PWR)
H1 W12	J3:1	P3:1	RD	16 AWG	24V IPN PWR
H1 W13	J3:2	P3:2	BK	16 AWG	24V IPN GND
H1 W14	J3:5	P3:5	YE	18 AWG	IPN STRAPPING
H1 W15	J3:6	P3:6	OG	18 AWG	IPN STRAPPING
H1 W16	J3:7	P3:7	WH	18 AWG	IPN STRAPPING
H1 W17	J3:8	P3:8	GN	18 AWG	IPN STRAPPING
H1 W18	J3:9	P3:9	BU	18 AWG	IPN STRAPPING
H1 W19	J3:10	P3:10	VT	18 AWG	IPN STRAPPING
H1 W20	J3:11	P3:11	GY	18 AWG	IPN STRAPPING (PARTY)
H1 W21	J3:12	P3:12	BN	18 AWG	IPN STRAPPING (GND)
H1 W22	E1:1	J1:3	GN	18 AWG	TRUE DEPTH LINK SENSOR (SHIELD)
H1 W23	E2:1	P9:1	SR	ESD	BRAIDED ESD CABLE
H1 W24	J2:2	P1:14	BN	18 AWG	MANUAL RUN (PWR)
H1 W25	J2:1	P1:17	GY	18 AWG	MANUAL RUN (GND)
H1 W26	P4:1	P5:1	RD	18 AWG	SEED METER MOTOR 1+
H1 W27	P4:2	P5:2	WH	18 AWG	SEED METER MOTOR 1-
H1 W28	P4:4	P5:3	GN	18 AWG	SEED METER MOTOR 2+
H1 W29	P4:3	P5:4	BK	18 AWG	SEED METER MOTOR 2-
H1 W30	P4:5	P6:1	RD	18 AWG	SEED SENSOR (PWR)
H1 W31	P4:6	P6:5	BK	18 AWG	SEED SENSOR (GND)
H1 W32	P2:1	SP2:IN	YE	18 (TP)	IPN (CAN H)
H1 W33	P2:2	SP3:IN	GN	18 (TP)	IPN (CAN L)
H1 W34	SP2:OUT	P6:2	YE	18 (TP)	SEED SENSOR (CAN H)
H1 W35	SP3:OUT	P6:3	GN	18 (TP)	SEED SENSOR (CAN L)
H1 W36	SP2:OUT	J4:1	YE	18 (TP)	TERM (CAN H)
H1 W37	SP3:OUT	J4:2	GN	18 (TP)	TERM (CAN L)

(Continued On following pages.)
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TRUE RATE CAN SS PUSH ROW UNIT HARNESS (P/N: 11156801) (CONTINUED)

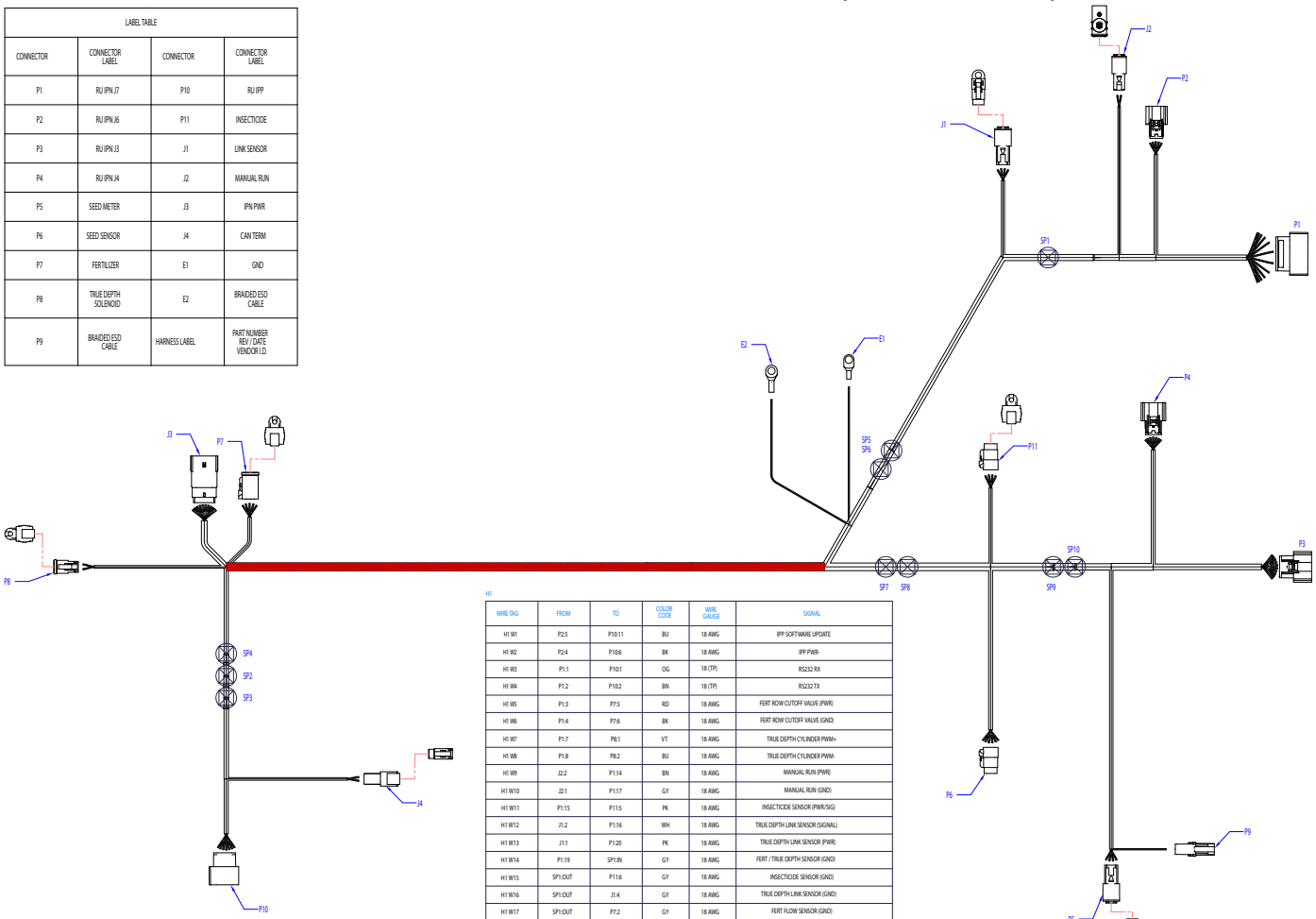




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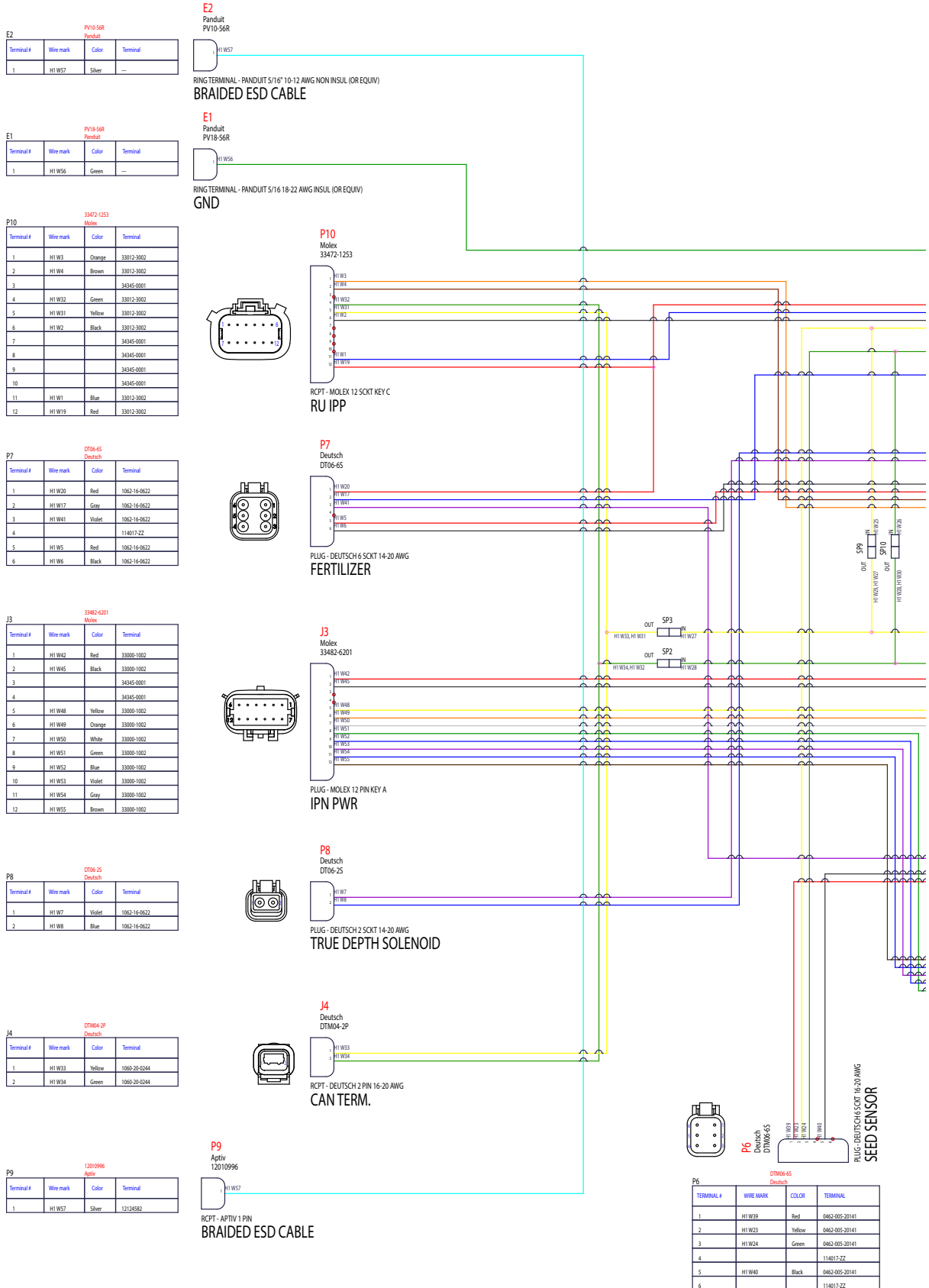
TRUE RATE CAN SS W/IPP PULL ROW UNIT HARNESS (P/N: 11144401)

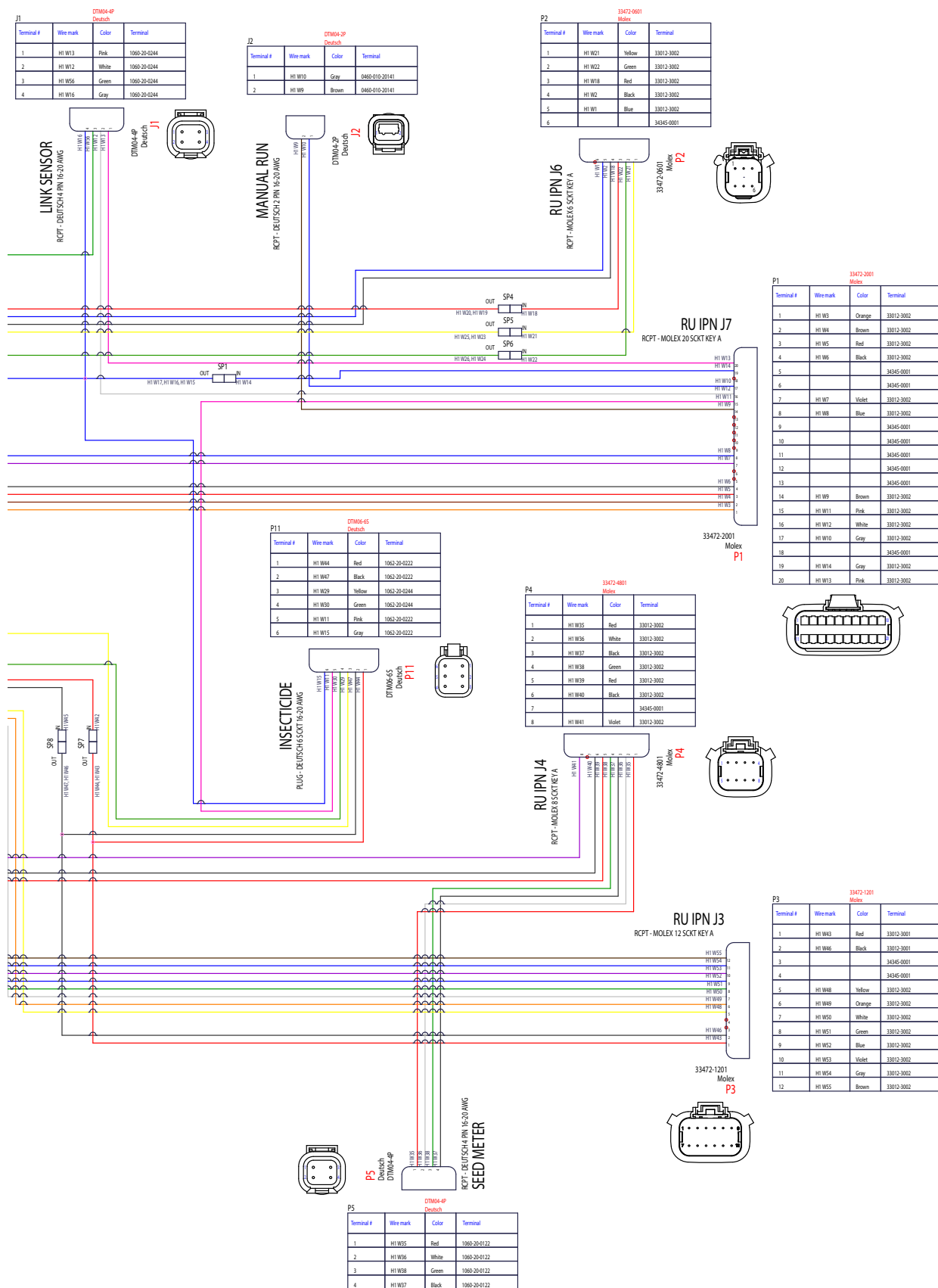
LABEL TABLE			
CONNECTOR	CONNECTOR LABEL	CONNECTOR	CONNECTOR LABEL
P1	RU/PPN.J7	P10	RU/IPP
P2	RU/PPN.J6	P11	INSECTICIDE
P3	RU/PPN.J3	J1	LINK SENSOR
P4	RU/PPN.J4	J2	MANUAL RUN
P5	SEED METER	J3	PPN PWR
P6	SEED SENSOR	J4	CAN TERM
P7	FERTILIZER	E1	GND
P8	TRUE DEPTH SOLENOID	E2	BRAIDED ESD CABLE
P9	BRAIDED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



WIRE TAG	FROM	TO	COLOR CODE	WIRE GAUGE	SIGNAL
W1 W1	P2.5	P10.11	BU	18 AWG	IPP SOFTWARE UPDATE
W1 W2	P2.4	P10.6	BL	18 AWG	IPP PWR
W1 W3	P1.1	P10.1	OG	18 (TP)	RS232 RX
W1 W4	P1.2	P10.2	BN	18 (TP)	RS232 TX
W1 W5	P1.3	P1.5	RD	18 AWG	FEET ROW CUTOFF VALVE (PWR)
W1 W6	P1.4	P1.6	BK	18 AWG	FEET ROW CUTOFF VALVE (GND)
W1 W7	P1.7	P6.1	VT	18 AWG	TRUE DEPTH CYLINDER PWR
W1 W8	P1.8	P6.2	BU	18 AWG	TRUE DEPTH CYLINDER PWR
W1 W9	J2.1	P11.4	BN	18 AWG	MANUAL RUN (PWR)
W1 W10	J2.1	P11.7	GY	18 AWG	MANUAL RUN (GND)
W1 W11	P1.15	P11.5	PK	18 AWG	INSECTICIDE SENSOR (PWR/SIG)
W1 W12	J1.2	P11.6	WH	18 AWG	TRUE DEPTH LINK SENSOR (SIGNAL)
W1 W13	J1.1	P1.20	PK	18 AWG	TRUE DEPTH LINK SENSOR (PWR)
W1 W14	P1.19	SP1.26	GY	18 AWG	FEET / TRUE DEPTH SENSOR (GND)
W1 W15	SP1.00T	P11.9	GY	18 AWG	INSECTICIDE SENSOR (GND)
W1 W16	SP1.00T	J1.4	GY	18 AWG	TRUE DEPTH LINK SENSOR (GND)
W1 W17	SP1.00T	P2.2	GY	18 AWG	FEET FLOW SENSOR (GND)
W1 W18	P2.3	SP4.26	RD	18 AWG	IPP / FEET FLOW SENSOR (PWR)
W1 W19	SP4.00T	P10.12	RD	18 AWG	IPP PWR
W1 W20	SP4.00T	P1.1	RD	18 AWG	FEET FLOW SENSOR (PWR)
W1 W21	P2.1	SP1.26	YE	18 (TP)	PPN (CAN H)
W1 W22	P2.2	SP4.26	GN	18 (TP)	PPN (CAN L)
W1 W23	SP4.00T	P6.2	YE	18 (TP)	SEED SENSOR (CAN H)
W1 W24	SP4.00T	P6.3	GN	18 (TP)	SEED SENSOR (CAN L)
W1 W25	SP1.00T	SP1.26	YE	18 (TP)	PPN CAN H
W1 W26	SP4.00T	SP10.26	GN	18 (TP)	PPN CAN L
W1 W27	SP4.00T	SP1.26	YE	18 (TP)	PPN CAN H
W1 W28	SP1.00T	SP1.26	GN	18 (TP)	PPN CAN L
W1 W29	SP4.00T	P11.3	YE	18 (TP)	INSECTICIDE (CAN H)
W1 W30	SP1.00T	P11.4	GN	18 (TP)	INSECTICIDE (CAN L)
W1 W31	SP1.00T	P10.5	YE	18 (TP)	IPP (CAN H)
W1 W32	SP1.00T	P10.4	GN	18 (TP)	IPP (CAN L)
W1 W33	SP1.00T	J4.1	YE	18 (TP)	TERM (CAN H)
W1 W34	SP1.00T	J4.2	GN	18 (TP)	TERM (CAN L)
W1 W35	P4.1	P5.1	RD	18 AWG	SEED METER MOTOR 1+
W1 W36	P4.2	P5.2	WH	18 AWG	SEED METER MOTOR 1-
W1 W37	P4.3	P5.4	BK	18 AWG	SEED METER MOTOR 2-
W1 W38	P4.4	P5.3	GN	18 AWG	SEED METER MOTOR 2+
W1 W39	P4.5	P6.1	RD	18 AWG	SEED SENSOR (12V PWR)
W1 W40	P4.6	P6.5	BK	18 AWG	SEED SENSOR (12V GND)
W1 W41	P4.8	P1.3	VT	18 AWG	FEET FLOW SENSOR (SIGNAL)
W1 W42	J3.1	SP1.26	RD	16 AWG	24V PPN PWR
W1 W43	SP1.00T	P5.1	RD	18 AWG	24V PPN PWR
W1 W44	SP1.00T	P11.1	RD	18 AWG	INSECTICIDE (24V PWR)
W1 W45	J3.2	SP1.26	BK	16 AWG	24V PPN GND
W1 W46	SP1.00T	P3.2	BK	18 AWG	24V PPN GND
W1 W47	SP1.00T	P11.2	BK	16 AWG	INSECTICIDE (GND)
W1 W48	J3.5	P3.5	YE	18 AWG	PPN STRAPPING
W1 W49	J3.6	P3.6	OG	18 AWG	PPN STRAPPING
W1 W50	J3.7	P3.7	WH	18 AWG	PPN STRAPPING
W1 W51	J3.8	P3.8	GN	18 AWG	PPN STRAPPING
W1 W52	J3.9	P3.9	BU	18 AWG	PPN STRAPPING
W1 W53	J3.10	P3.10	VT	18 AWG	PPN STRAPPING
W1 W54	J3.11	P3.11	GY	18 AWG	PPN STRAPPING (PARTY)
W1 W55	J3.12	P3.12	BN	18 AWG	PPN STRAPPING (GND)
W1 W56	J3.1	J1.3	GN	18 AWG	TRUE DEPTH LINK SENSOR (GND)
W1 W57	E2.1	P9.1	SK	ESD	BRAIDED ESD CABLE

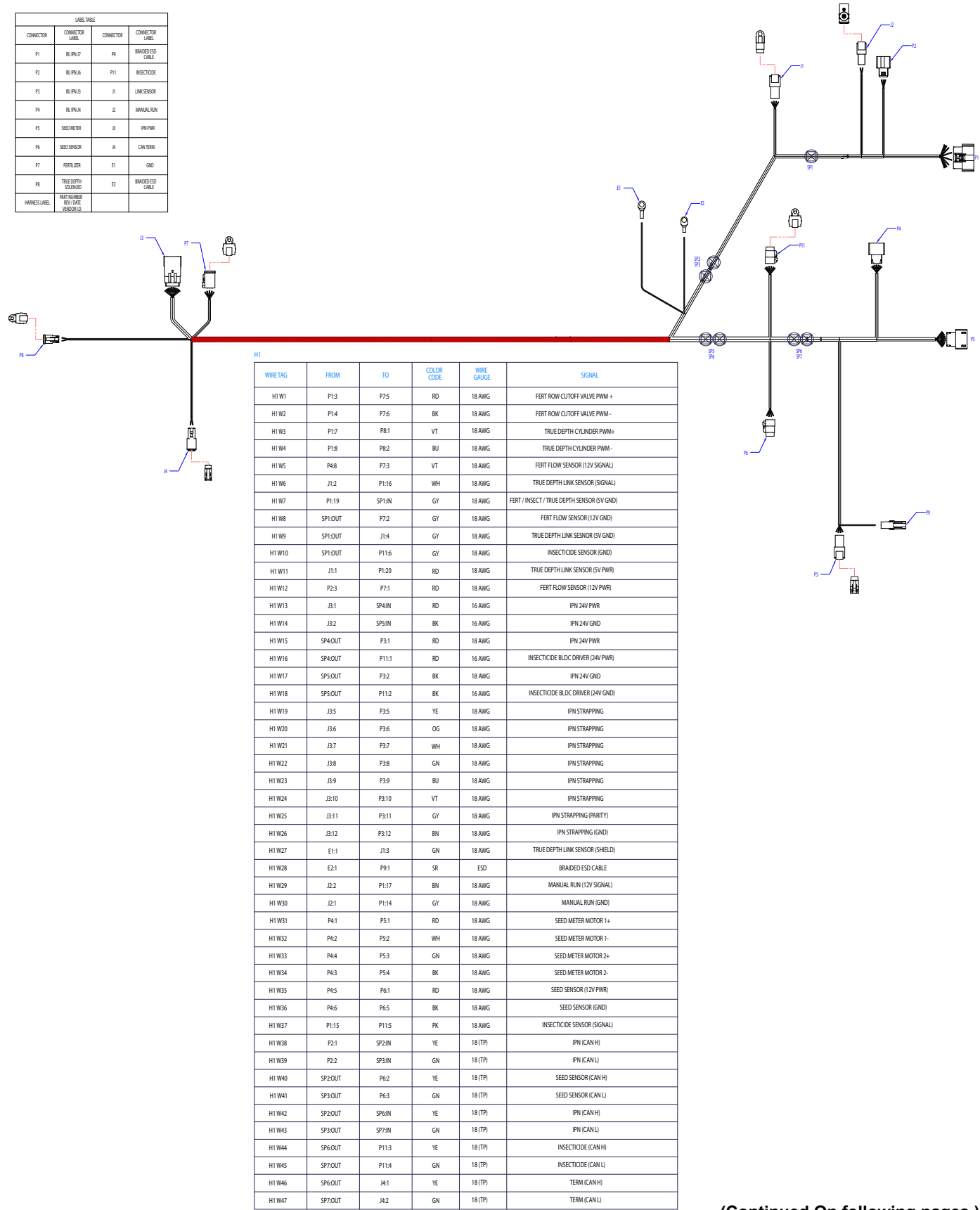
TRUE RATE CAN SS W/IPP PULL ROW UNIT HARNESS (P/N: 11144401) (CONTINUED)



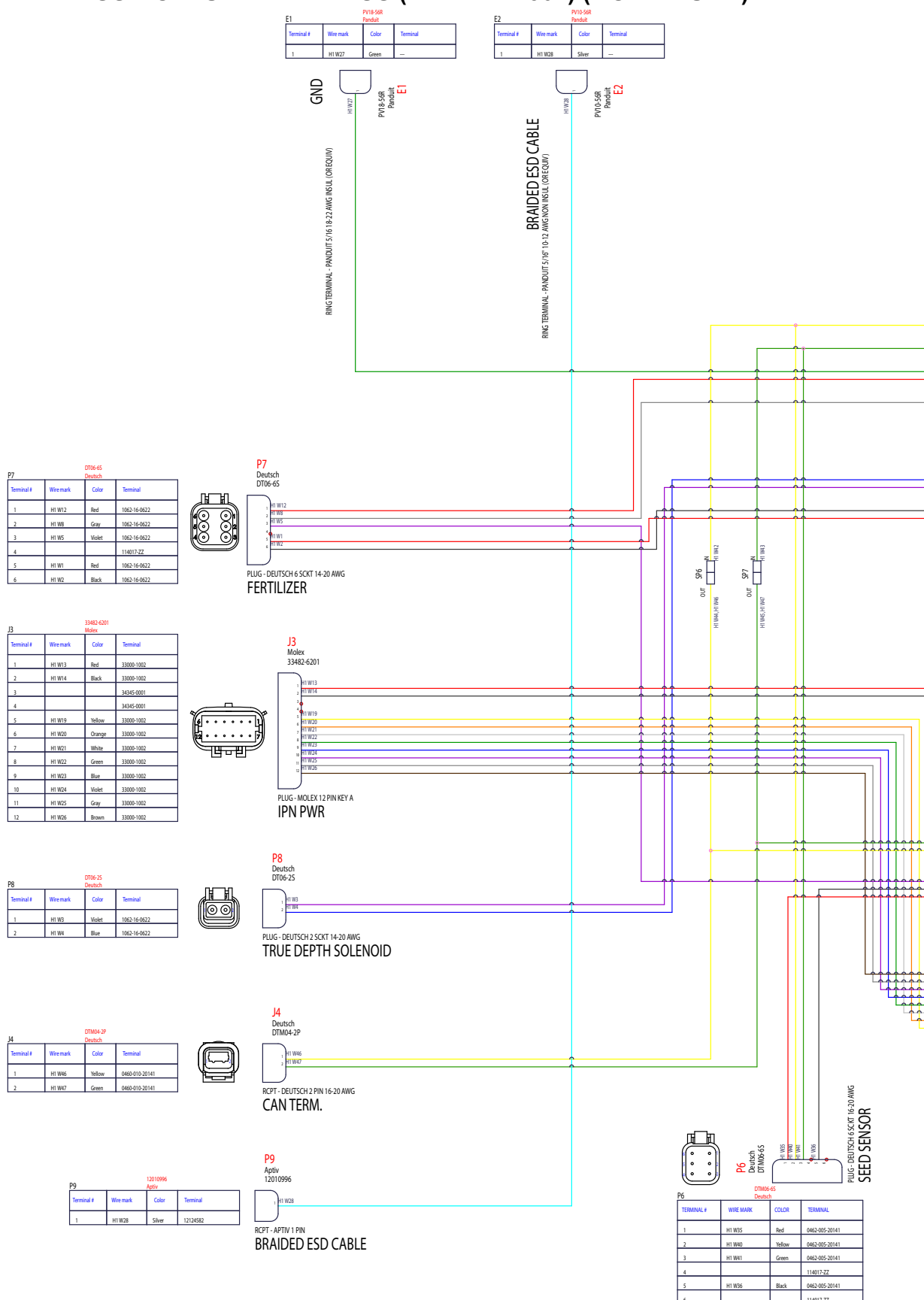


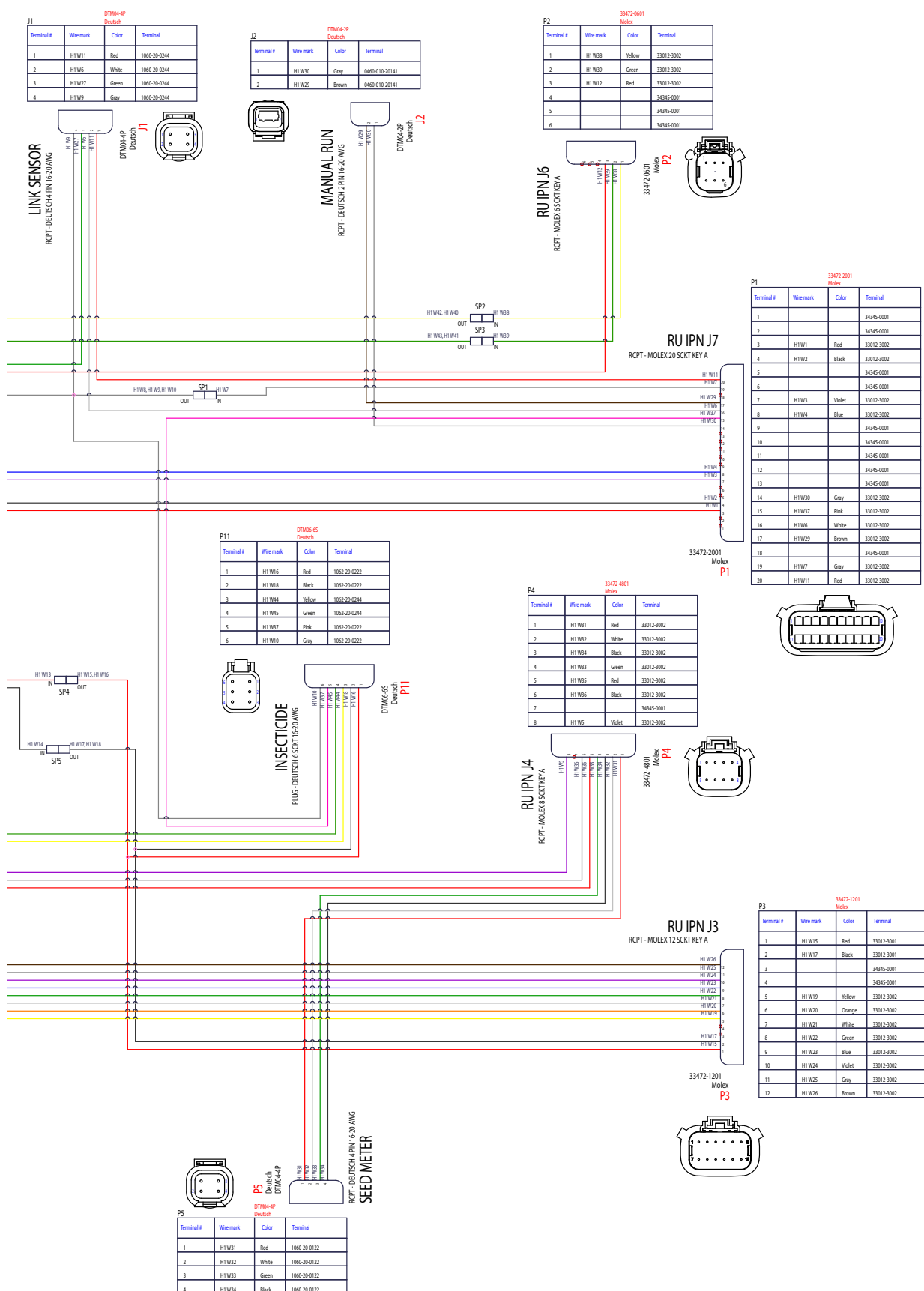
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TRUE RATE CAN SS ROW UNIT HARNESS (P/N: 11144301)



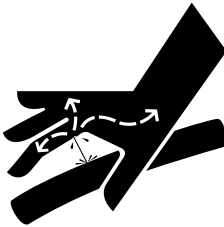
TRUE RATE CAN SS ROW UNIT HARNESS (P/N: 11144301) (CONTINUED)





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

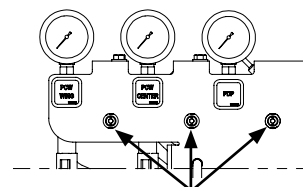
Unusually long periods of storage or poor storage environment may lead to performance issues or premature failure. Always inspect all hoses prior to use for extensive wear, cuts, or holes. If such flaws are identified, replace immediately to avoid potential failure, property damage or bodily injury.

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. "Closing Wheel General Adjustments" on page 3-1
Single closing wheel not directly over seed.	Improper centering.	Align. "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.	"Row Marker Speed Adjustment" on page 2-21
Neither marker will raise.	Marker flow control valve closed too far.	"Row Marker Speed Adjustment" on page 2-21
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.	"Row Marker Speed Adjustment" on page 2-21

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).	"Solenoid Valve" on page 5-36
	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).	"Solenoid Valve" on page 5-36

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).	"Solenoid Valve" on page 5-36
	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).	"Solenoid Valve" on page 5-36

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).	"Solenoid Valve" on page 5-36
	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).	"Solenoid Valve" on page 5-36
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).	"Solenoid Valve" on page 5-36
	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).	"Solenoid Valve" on page 5-36
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).	"Solenoid Valve" on page 5-36
	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).	"Solenoid Valve" on page 5-36
Cylinder retracts (marker extend) slow.	Flow control valve in port "A1" set too low	"Row Marker Speed Adjustment" on page 2-21
	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	"Row Marker Speed Adjustment" on page 2-21
	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	"Row Marker Speed Adjustment" on page 2-21
Cylinder extends (marker retract) fast.	Flow control valve in port "A2" set too high	"Row Marker Speed Adjustment" on page 2-21
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 level.
	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.

POWER BEYOND

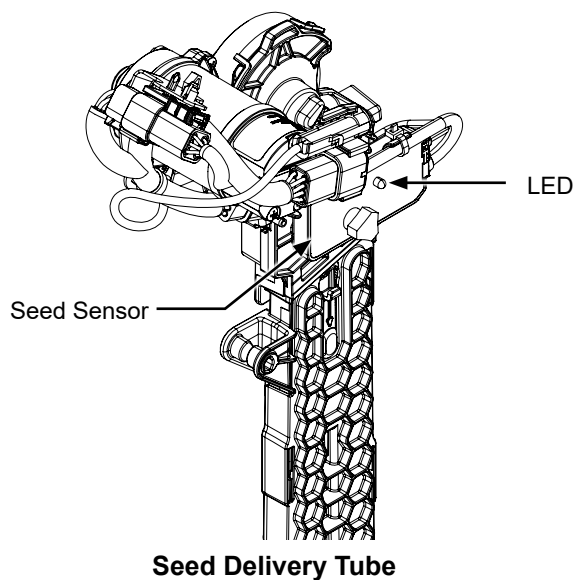
PROBLEM	POSSIBLE CAUSE	SOLUTION
Power beyond system cuts out while running and blue light is on.	Case drain hose is unplugged.	Verify case drain hose is plugged in.
No LED light is lit up with tractor power.	Bad harness.	Inspect harness.
	Harness unplugged.	Verify harness is plugged in.
Green light is on but alternator is not running.	Hydraulic hoses are not connected.	Ensure all hydraulic hoses are connected.

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.
High seed count.	Bulk fill pressure too low.	Increase bulk fill pressure.
	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.
	Singularator not installed or installed incorrectly.	Install singularator.

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.
Irregular seed population.	Toolbar not level or wrong height.	Adjust hitch to level toolbar and row units.
	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



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.