

OPERATOR'S MANUAL



M0250

**KINZE ADVANCED ISOBUS
ELECTRONICS PACKAGE
(MODEL 4900 FRONT FOLDING PLANTER)**

Rev. 3/17

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(Model 4900 Front Folding Planter)

OPERATOR
MANUAL

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This manual is applicable to: Kinze Advanced ISOBUS Planter Monitoring/Control System
Firmware Version: 4.0

Record the serial numbers of your planter control system and the purchase date:

Master Module Serial Number _____

Date Purchased _____

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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 of an Advanced ISOBUS display. 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 is 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 OPERATE OR WORK ON** machine without all safety covers, shields, and lockup devices in place as required.

NOTE: Photos in this manual may be 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.

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 or hauling. 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.

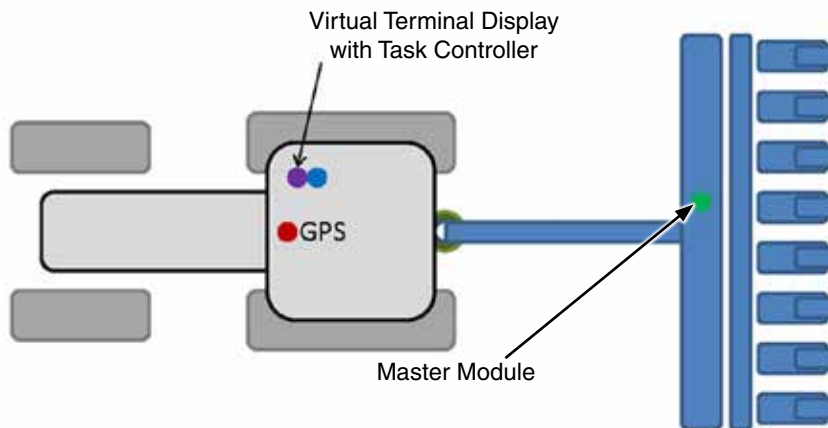
Kinze warranty does not include cost of travel time, mileage, hauling, or labor.

ISOBUS is an agricultural industry term used to describe software and hardware that complies with the global ISO11783 standard. ISO11783 was created by an international standards committee of representatives from different agricultural companies. The standard was created to allow *plug-and-play* compatibility between different manufacturers of tractors, harvesters, sprayers, implements, and more.

There are 14 different parts to the ISO11783 standard. A device does not have to support all 14 parts to be considered ISO compatible or certified. The main parts that are important to the Kinze Advanced ISOBUS solution are the Virtual Terminal (VT) and the Task Controller (TC).

ISOBUS COMPONENTS

- Virtual Terminal (VT) - A Kinze-specific application on the display in the cab of the tractor. The operator interacts with the display to monitor information and change settings.
- Task Controller (TC) - Makes automatic swath control, automatic rate control, and as-applied mapping possible. The functionality is software based, so does not require a separate box. When present, it is normally built into the display. Every ISOBUS display has a Virtual Terminal, but it might not have a Task Controller.
- Master Module - The brains of the system. This device is found on the planter and relays information to and takes inputs from the VT. It also executes the manual and automatic rate control, and swath control commands. These functions are available with the Kinze Advanced ISOBUS product control package.



GENERAL INFORMATION

The information used in this manual was current at the time of printing. However, due to Kinze's ongoing product improvement, production changes may cause your planter control system display to appear or operate slightly different in detail. Kinze Manufacturing, Inc. reserves the right to change specifications or design without notice and without incurring obligation to install the same on machines previously manufactured.

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

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ISOBUS SYSTEM

ISOBUS provides a consistent user interface for planter functionality, regardless of the tractor brand that is pulling the implement. The ISOBUS control system connects to and includes a compatible, existing monitor in the cab of the tractor. The existing monitor hosts the Virtual Terminal (VT) for Kinze planter controls and monitoring.

CAN-BUS TECHNOLOGY

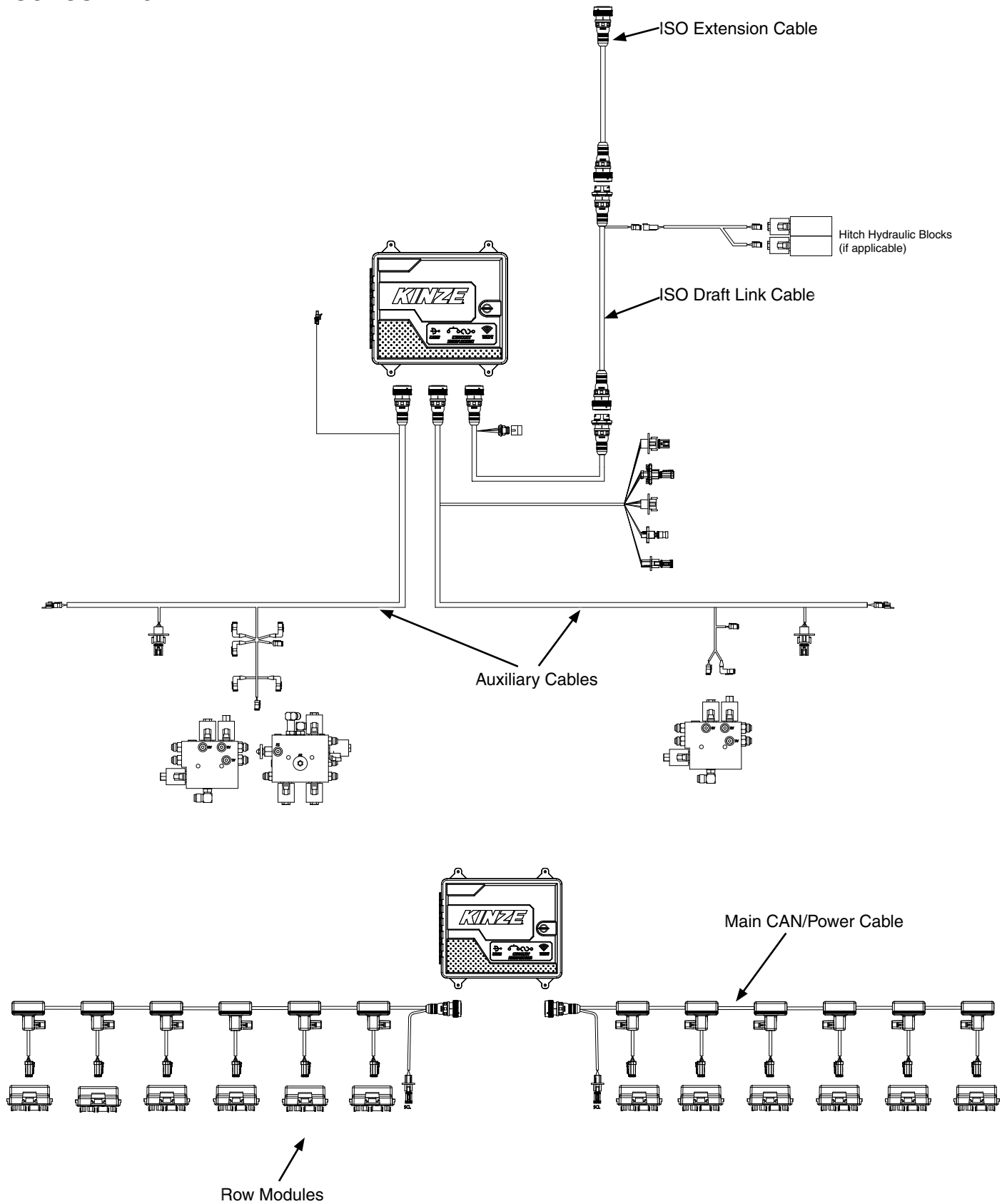
The ISOBUS system uses Controller Area Network (CAN) technology. CAN systems are comprised of individual modules, each with their own high speed processor, connected through a high-speed communications cable. CAN has many benefits, including greater ability to configure and expand the system, compatibility, simpler installs with less wiring and increased system dependability.

9-PIN ISOBUS CONNECTOR

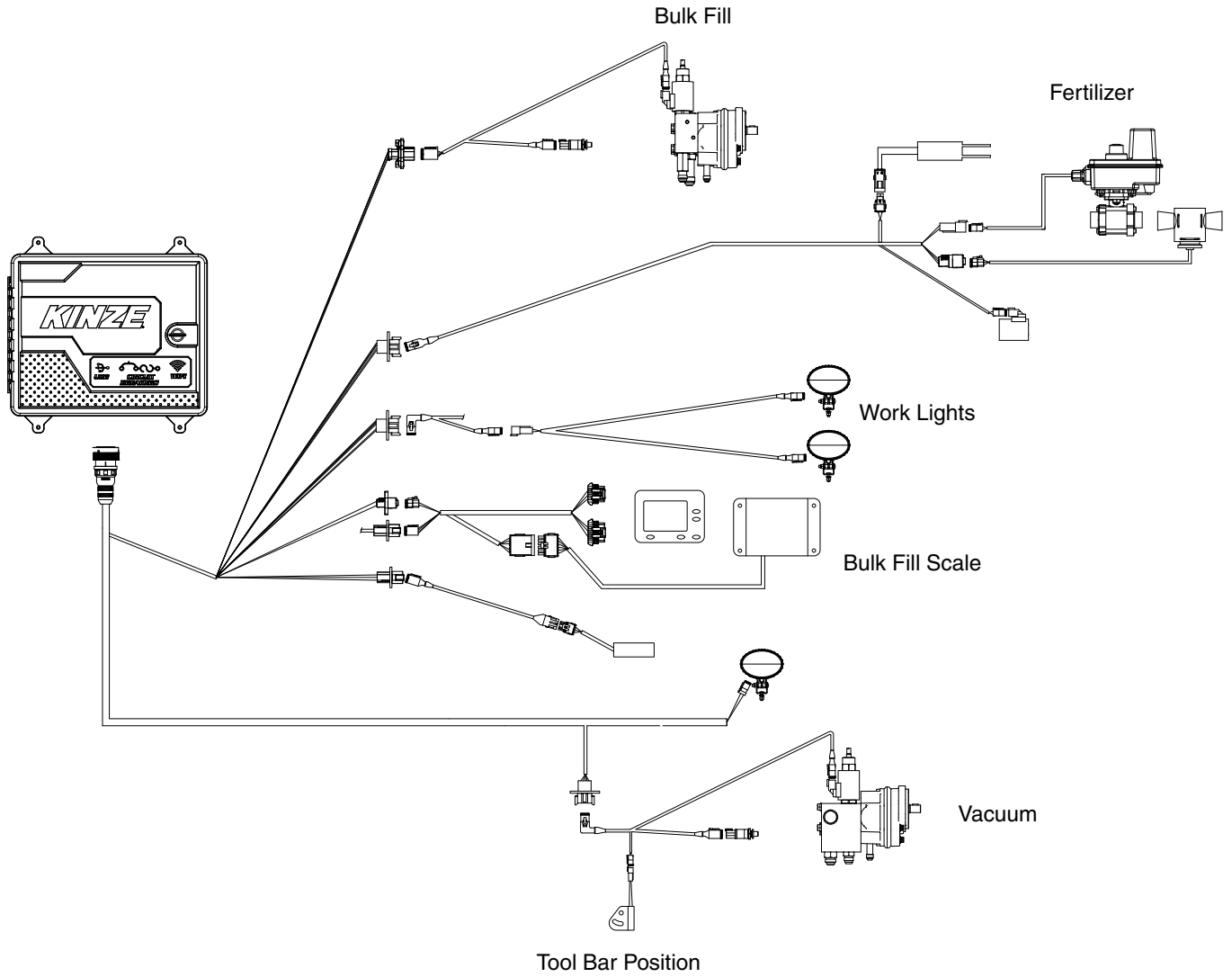
The 9-Pin round pin ISOBUS connector contains CAN, ECU power, solenoid power, and grounds.

NOTE: The display images used in this manual may vary slightly depending on the manufacturer.

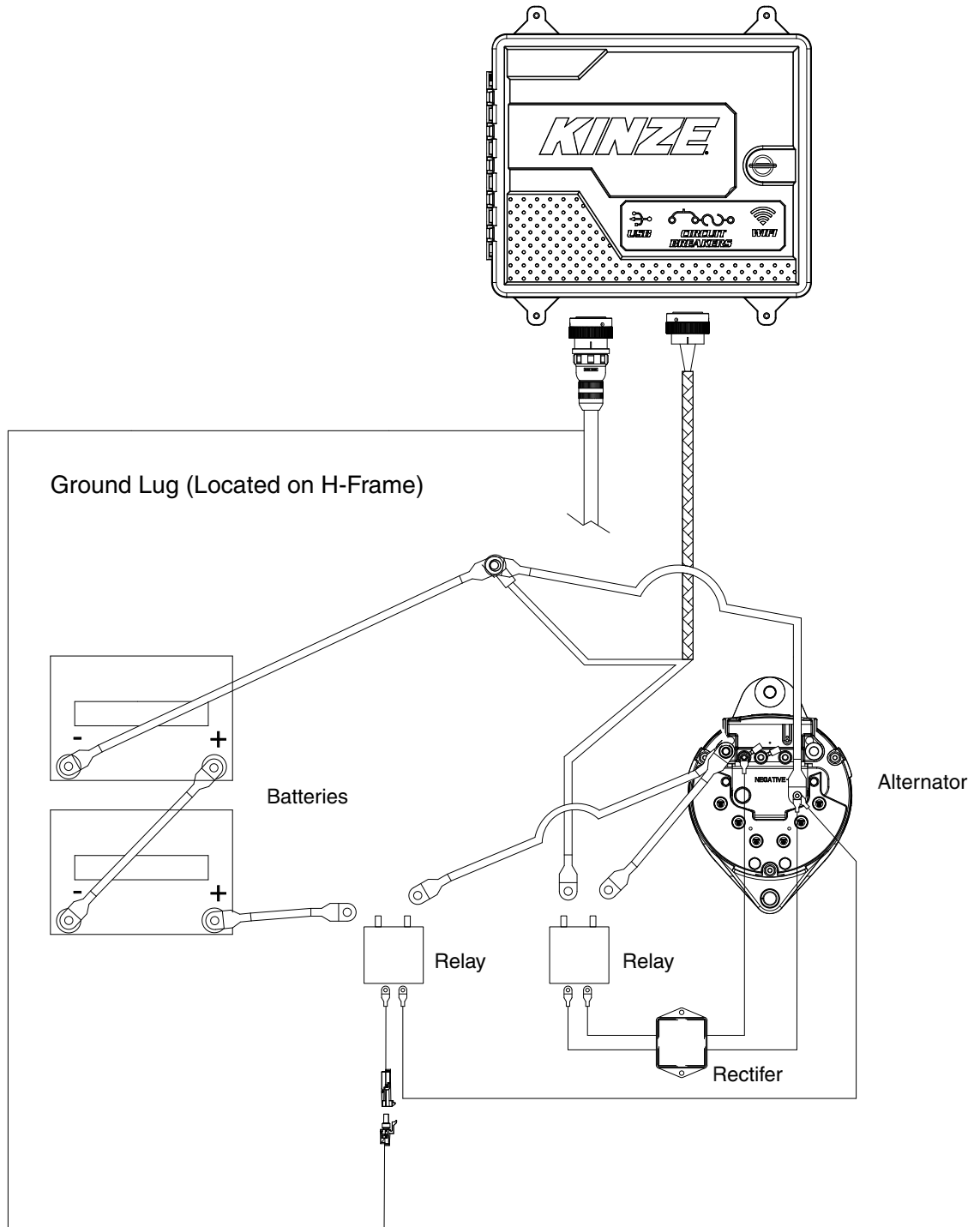
ISOBUS DIAGRAM



BASE MACHINE OPTIONS DIAGRAM

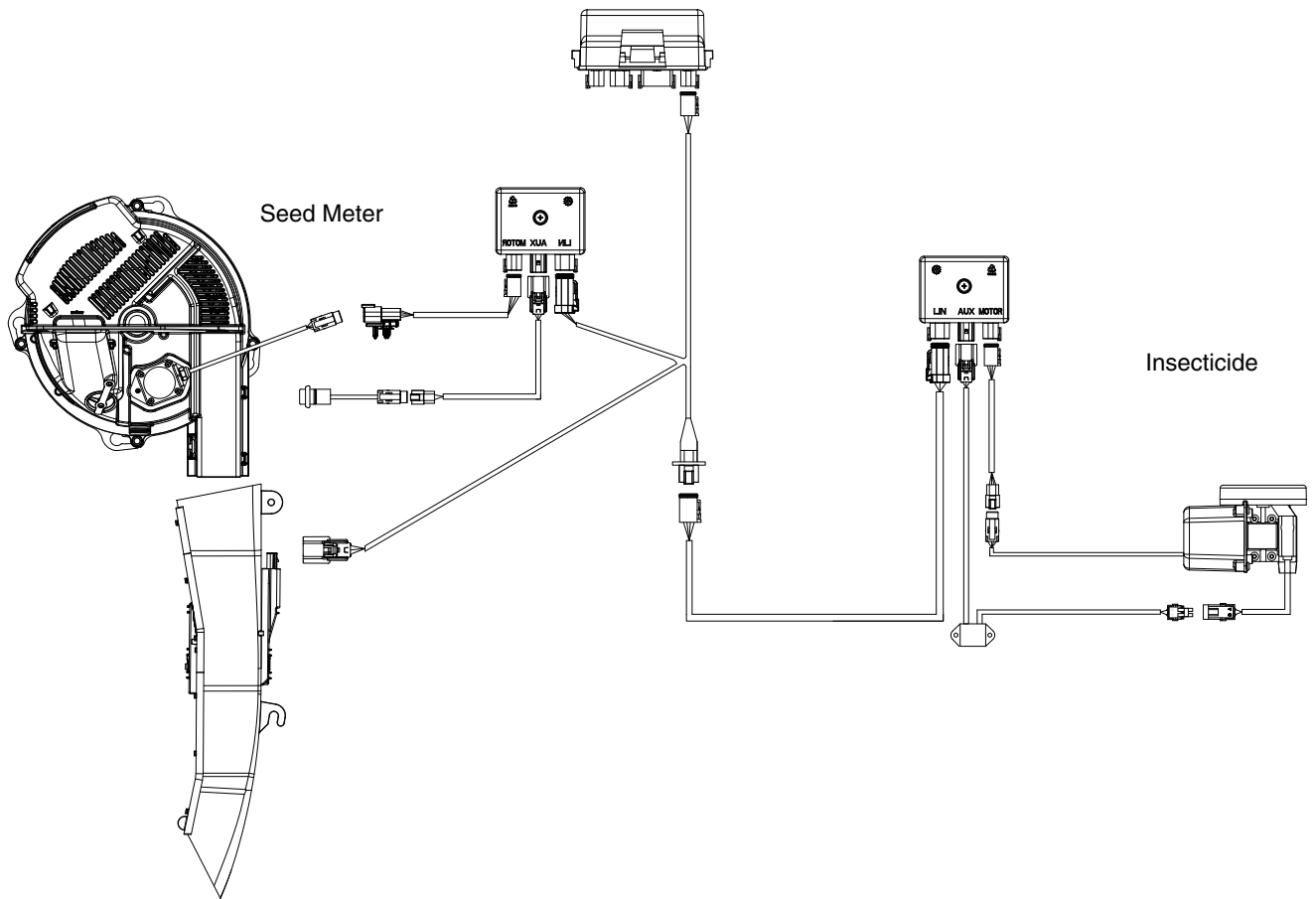


POWER BATTERY PACK DIAGRAM

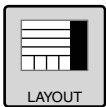
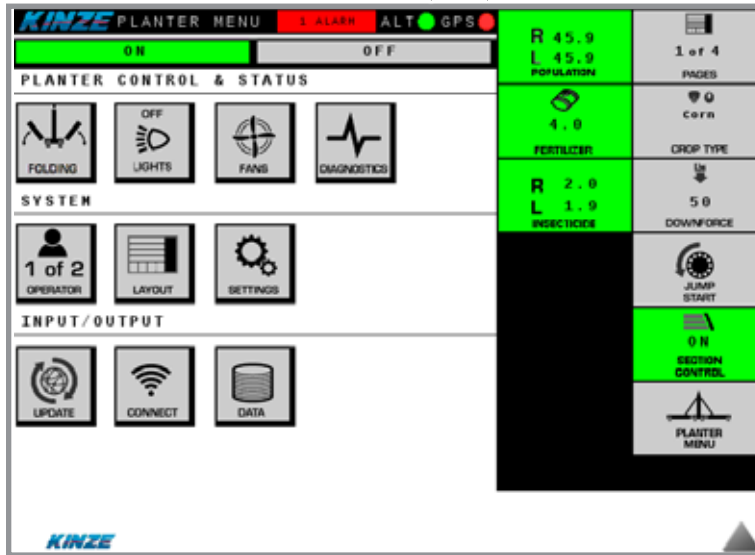
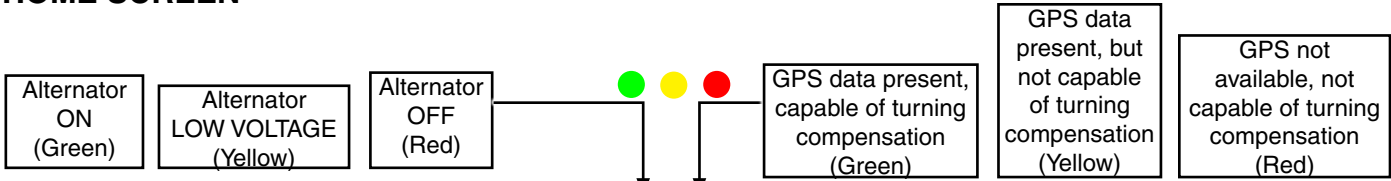


ROW UNIT HARNESS DIAGRAM

Row Unit Electric Drive



HOME SCREEN



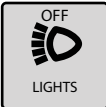
Layout button opens window to set the layout and visibility of the plant screens 1-6.



Settings button opens window that display Configuration, Tool Bar Sensing, Downforce, Population Monitoring, Seed Drive, Insecticide, Fertilizer, Bulkfill Scale, Vacuum Fan Drive, Bulk Fill Fan, and Speed. For more information, see the Settings Section.



Update button opens window that displays upgrades that are available on a USB Drive.



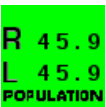
Work Lights button turns planter work lights on and off.



Section Control button indicates whether automatic section control is on or off.



Pages Tapping on the "Pages" button allows you to toggle through the plant screens and pages.



Population button opens window that lets you select a desired planting rate.



Crop Type button opens window that allows you to select crop type and row spacing.



Fans button opens window that allows you to turn vacuum and bulk fill fans on and off and set vacuum and pressure levels.



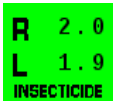
Data button is used to transfer data to and from the Master Module to a device.



Connect button enables the Advanced ISOBUS system to connect to Wifi.



Operator button allows two different operators their own plant screen layout. Toggling will change all plant screen setups to the other person.



Insecticide button sets insecticide rates.



Downforce button increases or decreases downforce pressure on row unit.



Fertilizer button sets fertilizer rates.



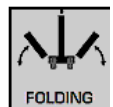
Planter Menu button takes you to the planter menu for fold, work lights, and all the other screens listed on the main page.



Diagnostics button opens window that shows the status of electronic modules on the planter and shows alarm history.



Jump Start manually turns meters on before desired speed is reached by pushing button and holding.



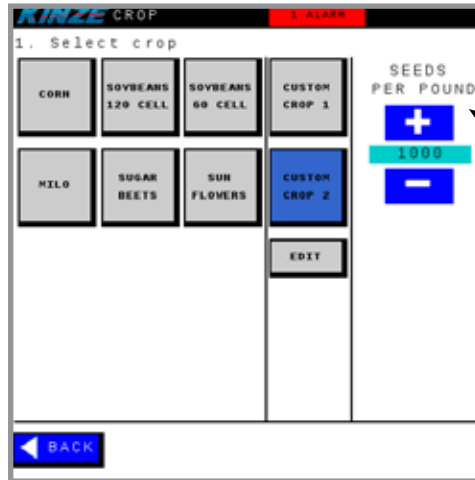
Folding button opens a window that allows you to control the folding and unfolding options of the planter.

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CROP TYPE SCREEN

The start of Field Operations begins at the Home screen. First press the Crop Type button to go to Crop Selection screen.



FOR BULK FILL SCALE OPTION ONLY

1. First, select a Crop. If crop desired is not available, select Custom Crop button 1 or 2. Then select Edit to create a new crop. See Custom Crop below for more information. When crop is entered, the following message will appear:

NOTE: Make sure all seed disks are installed in all meters.

2. Once this is verified, select DONE. By setting the crop, you are setting the seeds per revolution and seed sensor sensitivity.

CUSTOM CROP

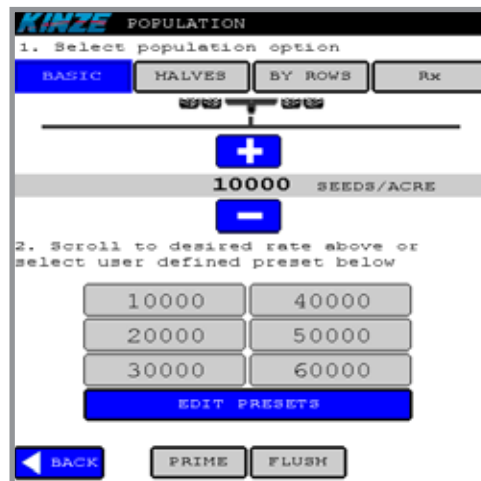


1. Enter custom crop data in the following fields: Crop Name, Cells Per Disc, Seed Size and Bulk Fill Air. Tap on the box to access the screen keyboard and enter the information. Select Done to save data and return to Crop Selection screen. Select Cancel to discard data and return to Crop Selection screen.

The new crop entered will now be available for selection on Crop Selection screen.

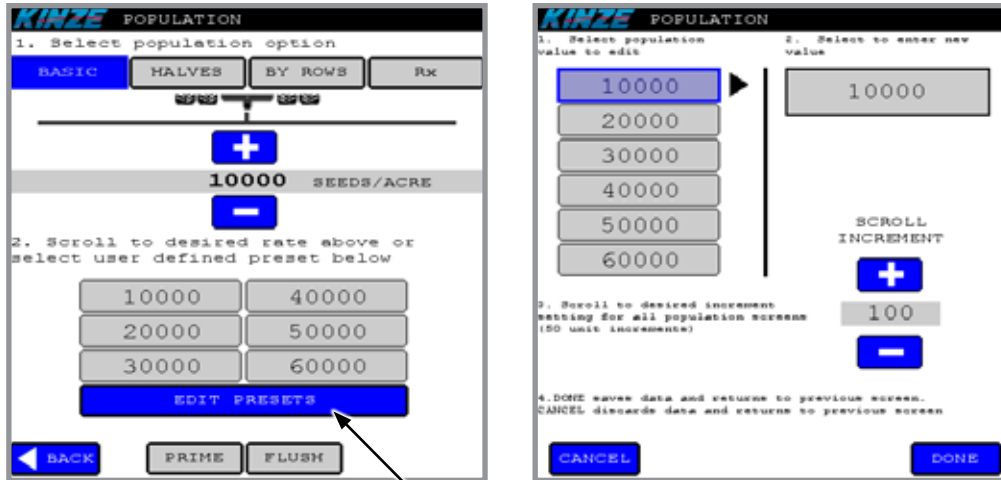
B **SET POPULATION SCREENS**
R 10.0
L 10.0
POPULATION

Select the Population Button to set seed population.



1. First, select population option: Basic, Halves, By Rows, or Prescription (Rx).
2. Select desired rate for all selections except Prescription.

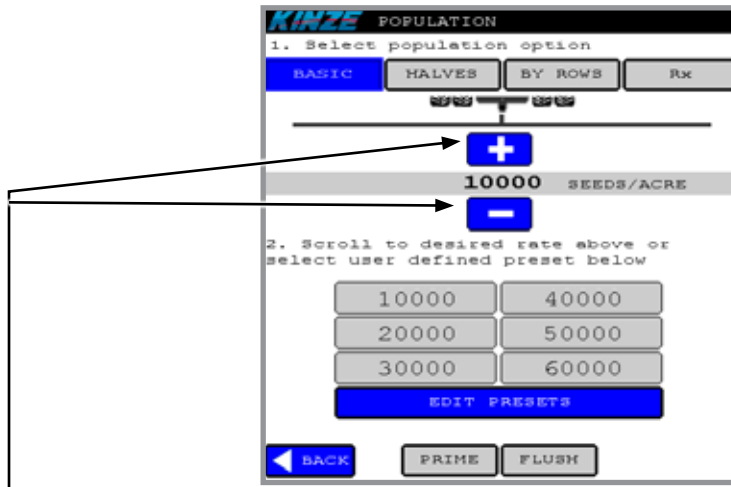
EDIT PRESETS



To change any of the population presets, select Edit Presets.

1. On the next screen, select preset population value on left, then select value on right to enter new value.
2. Enter new value by tapping on the newly-populated box and the pop-up keyboard appears. Enter the desired value.
3. Use the “+” or “-” buttons under Scroll Increment to set desired increment setting for all population screens on the Set Population main page in 50 unit increments.
4. Select Done to save data and return to previous screen. Select Cancel to discard data and return to previous screen.

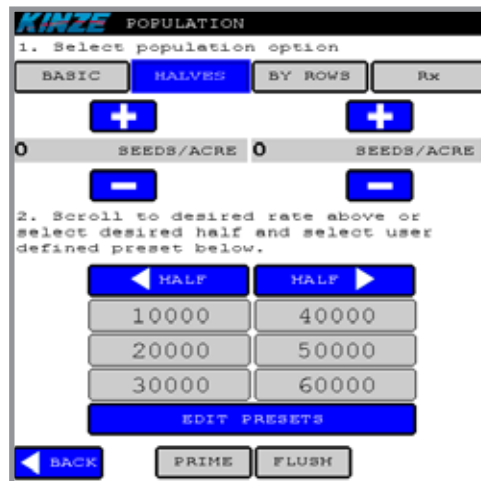
BASIC POPULATION



Select desired rate either manually using the "+" or "-" buttons at the top of the screen or by selecting the user defined preset.

The manual increase and decrease increments for the "+" and "-" buttons are specified in the Edit Presets screen under Scroll Increment.

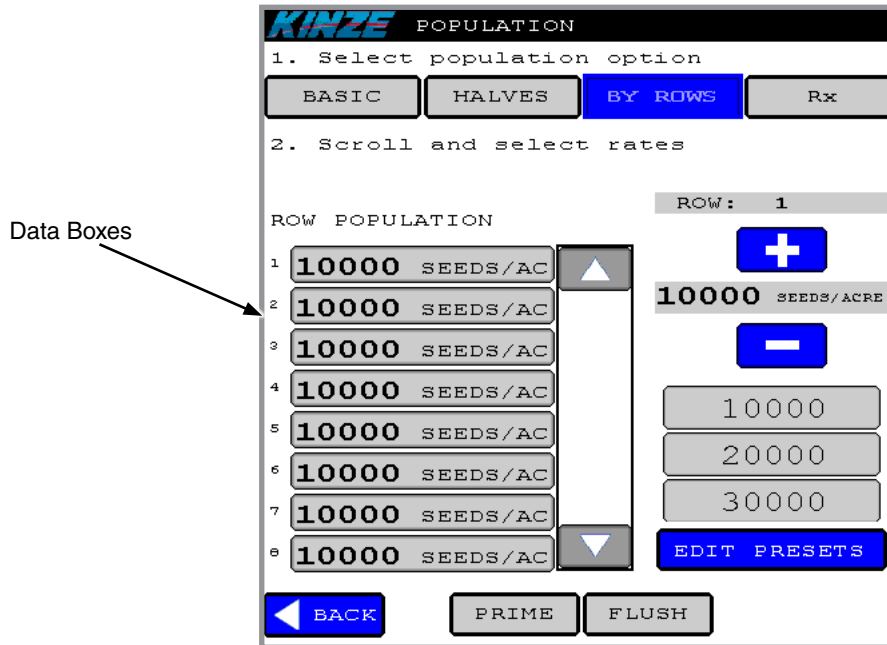
HALVES POPULATION



Select desired rate for each half either manually or by selecting the user defined preset.

Select the half you want to change, then select a Preset, or change values using the "+" and "-" buttons.

BY ROWS



The data boxes show the set population by row.

1. Select the row you wish to change, then use the “+” or “-” buttons or the presets to adjust data.

PRESCRIPTION POPULATION (Rx)



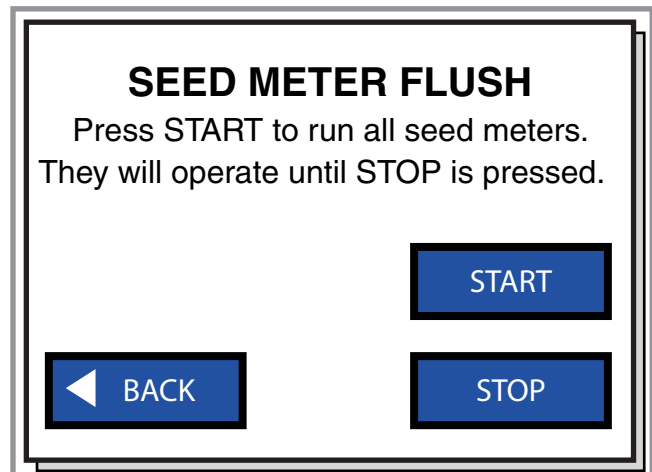
Prescription rates come from the Task Controller which is commonly located inside the display in the tractor cab. Prescription maps must be created in farm management software and loaded into the display prior to planting.

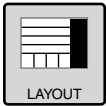
Rates supplied by the Task Controller will be displayed on the prescription screen. You must select the Rx button to use the prescription rate supplied by the Task Controller.

The data boxes show the target population for the left and right sides of the planter at your current location. Prescription rates will only be used if Rx is selected.

PRIME AND FLUSH

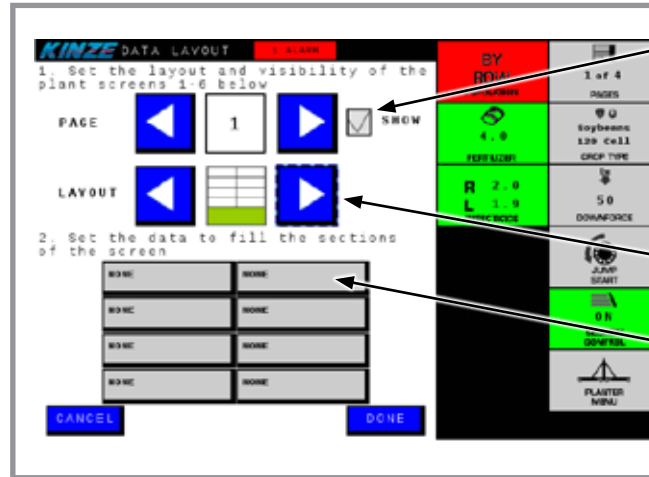
1. Raise planter to field position, turn Master Switch ON, turn Alternator ON.
2. Select Prime or Flush to prime or flush seed meters.
3. Prime will turn the meters one and a quarter revolution to load seed in disc. Flush will turn the seed disc at a set rate until Stop button is pushed.
4. If process is not ready to be performed, select Back.





PAGE LAYOUT SCREENS

Use the page layout tool to determine how many pages are visible on the display and how they are set up. There are a maximum of 6 pages available.

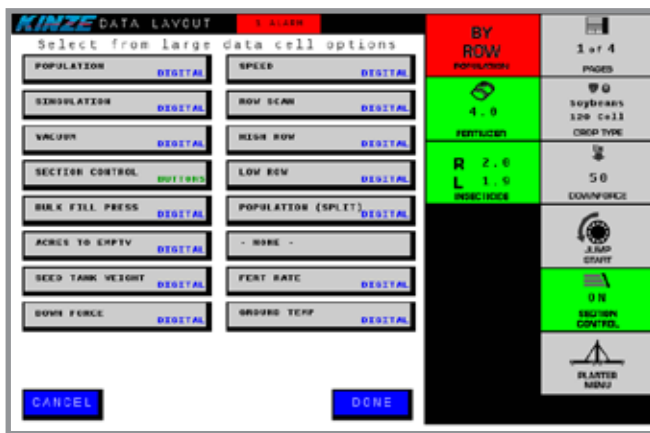


Select "SHOW" beside pages you want to be able to select with the "Pages" button.

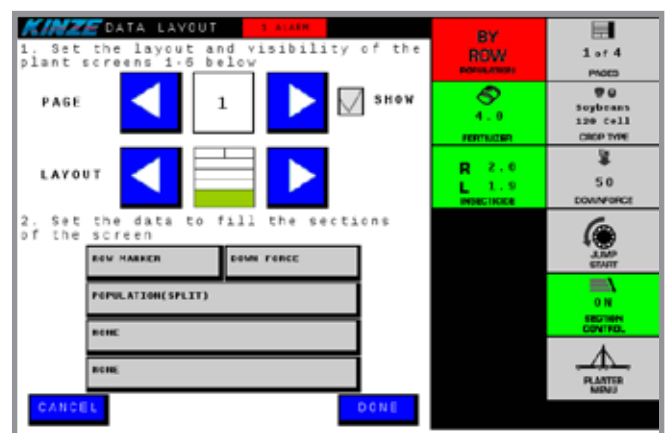
For initial setup, tap arrow until the cells read NONE

Tap cell to enter Data Layout screen shown below

1. Determine how many pages to show in the rotation by clicking the SHOW button beside each page. For example, if you want 3 pages of plant screens, you need to click SHOW next to pages 1, 2, and 3 but not next to 4, 5, and 6.
2. Determine the page layout for each selected page. Tap the right arrow in the LAYOUT row to see the 3 choices for page layout - large blocks, small blocks, or a combination of both. The cells should read "NONE" during the initial setup. If the cells are blank, tap the right arrow until they read "NONE".
3. Next, tap on a cell labeled "NONE" to enter the Data Layout screen and choose from the list of choices for information to be displayed on that specific cell. This allows you to arrange data bars in order best suited to your needs. Click "DONE" to return to the Page Layout screen. Continue with each cell until desired order of information is reached. Information about data displayed for each category is listed on the next page.



Data Layout Screen



Example of Partially Completed Combination Screen Layout

PAGE LAYOUT SCREENS (CONTINUED)

Planter ON/OFF is the master on/off switch for the planter.

Population displays a large readout of the average seed population as well as seed spacing and the population accuracy.

NOTE: Population accuracy = 100% + % of Doubles - % of Skips.

NOTE: Singulation is a measurement of how well the seed meter is dropping seeds consistently.

NOTE: Singulation accuracy = 100% - % of Doubles - % of Skips.

Speed displays the miles per hour, along with how many acres planted per hour, and the area planted.

Population Bar Graph represents one row per bar. The green line is the target rate. Red bars indicate when the population is above or below the specified off-target thresholds. See Population Monitoring to adjust thresholds.

Vacuum displays vacuum pressure levels.

Bulk Fill Pressure displays the pressure level of the bulk fill system.

Row Scan displays a large readout of seed population for individual rows as well as singulation accuracy, skips and doubles. This box will rotate through all rows, changing every 5 seconds.

Section Control provides manual control of 4 sections of the planter when set to OFF.

Fertilizer Rate displays the rate of fertilizer application.

Ground Temperature displays current ground temperature.

High Row displays a large readout of seed population for the row that is planting at the highest rate as well as singulation accuracy, skips, and doubles.

Low Row displays a large readout of seed population for the row that is planting at the lowest rate as well as singulation accuracy, skips, and doubles.

Seed Tanks displays the weight of each bulk fill seed tank.

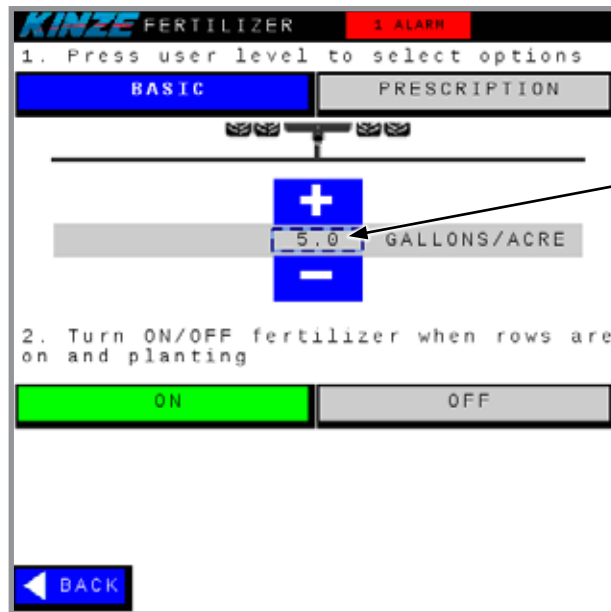
Acres to Empty displays approximately how many acres can be planted with the seed remaining in the tanks.

Down Force displays the amount of down force being placed on the row unit by the air bags.

Marker Control is used to control the markers. Either the right or left marker can be selected to be deployed. There is also an auto function that automatically switches the marker whenever the planter is lifted. The OFF button turns both markers off.

NOTE: The electronics do not control the lift of the markers. They only control the deployment. Both markers can be lifted by using the hydraulics.

SET FERTILIZER SCREENS



Fertilizer is controlled through the Virtual Terminal.

1. First, press the Fertilizer button on the right side of the main Virtual Terminal screen.
2. Select fertilizer option: Basic or Prescription.
2. Select desired rate of gallons per acre in "Basic" mode by using the "+" and "-" buttons, or press on the number outlined above, to enter a new value directly into the pop-up keyboard.

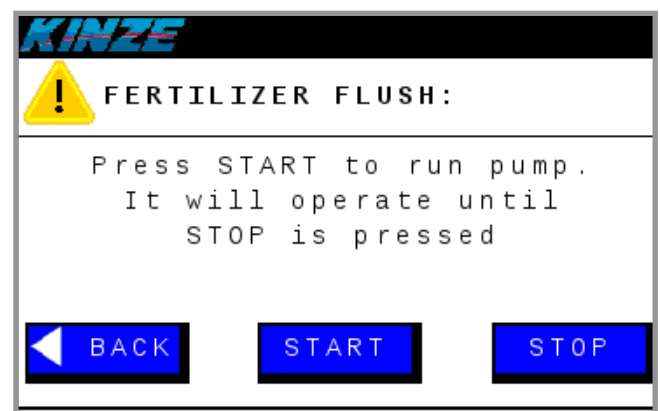
Prescription rates come from the Task Controller which is commonly located inside the display in the tractor cab. Prescription maps must be created in farm management software and loaded into the display prior to planting.

Rates supplied by the Task Controller will be displayed on the prescription screen. You must select the prescription button to use the prescription rate.

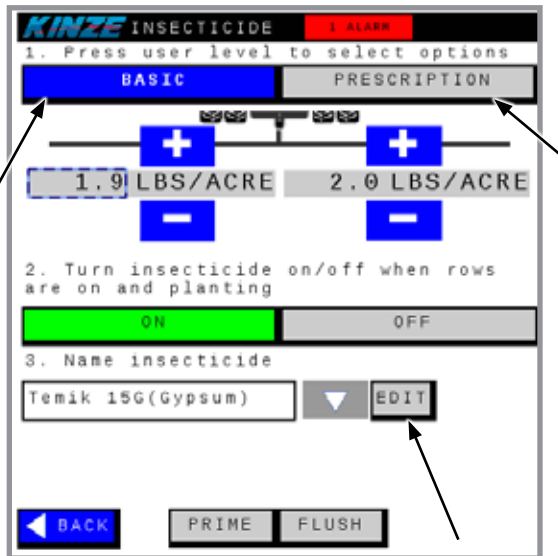
The data boxes below the tractor and planter graphic show the set rate for your current location. Prescription rates will only be used if prescription is selected on this screen.

PRIME AND FLUSH

1. Raise planter to field position, turn Master Switch ON, turn Alternator ON.
2. Select Prime or Flush to prime or flush fertilizer system.
3. Prime will charge the system for 3 - 5 seconds. Flush will start the flow of liquid at a set rate until Stop button is pushed.
4. If process is not ready to be performed, select Back.



SET INSECTICIDE SCREENS



1. First, select insecticide option: Basic or Prescription.
2. Select desired rate of pounds per acre in "Basic" mode using the "+" or "-" buttons, or press on the number outlined above, to enter a new value directly into the pop-up keyboard.

Prescription rates come from the Task Controller which is commonly located inside the display in the tractor cab. Prescription maps must be created in farm management software and loaded into the display prior to planting.

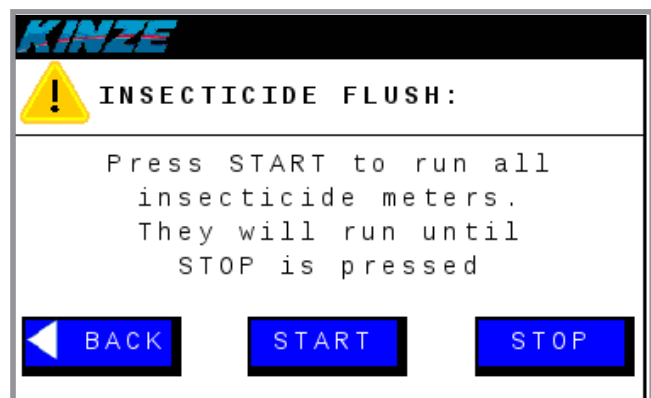
Rates supplied by the Task Controller will be displayed on the prescription screen. You must select the prescription button to use the prescription rate.

The data boxes below the tractor and planter graphic show the set rate for your current location. Prescription rates will only be used if prescription is selected in this screen.

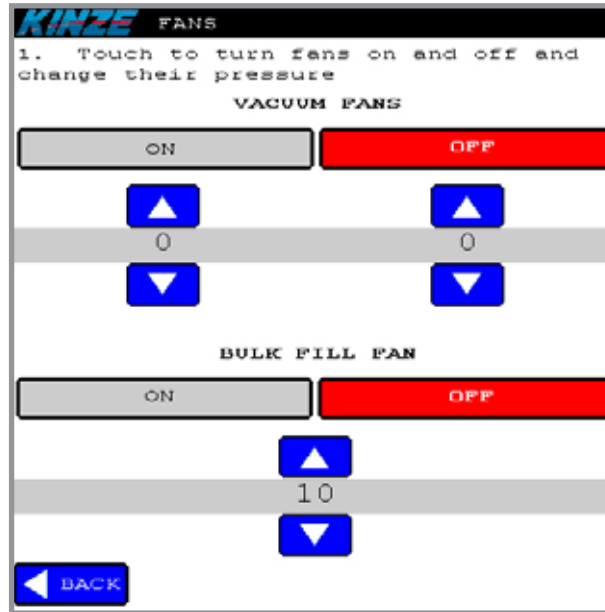
NOTE: Selecting an insecticide name sets the product density which is used to determine the correct rate. Use the EDIT button next to the insecticide name to change insecticide.

PRIME AND FLUSH

1. Raise planter to field position, turn Master Switch ON, turn Alternator ON.
2. Select Prime or Flush to prime or flush insecticide system.
3. Prime will discharge granules from hopper for 3 - 5 seconds. Flush will discharge granules at a set rate until Stop button is pushed.
4. If process is not ready to be performed, select Back.



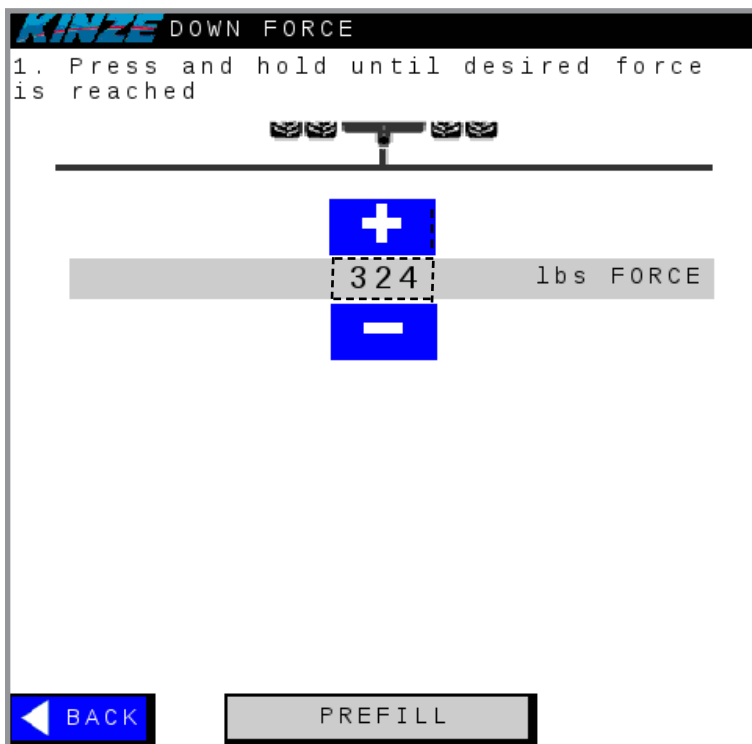
SET FANS SCREEN



1. Touch selection to turn fans on and off. Use up and down arrow buttons to change pressure.

Auto Pressure Setting

The recommended pressures will be automatically loaded when selecting the crop to be planted. Use the up and down arrow buttons to make changes.

SET DOWN FORCE SCREEN

Use “+” or “-” buttons to set the desired down force or press the number outlined above in between the “+” and “-” buttons to enter a value into the pop-up keyboard.

PREFILL

1. Raise planter to field position, turn Master Switch ON, turn Alternator ON.
2. Select Prefill button to fill the airbags to the prefill target of 70%.

SECTION CONTROL AND GPS ACCURACY

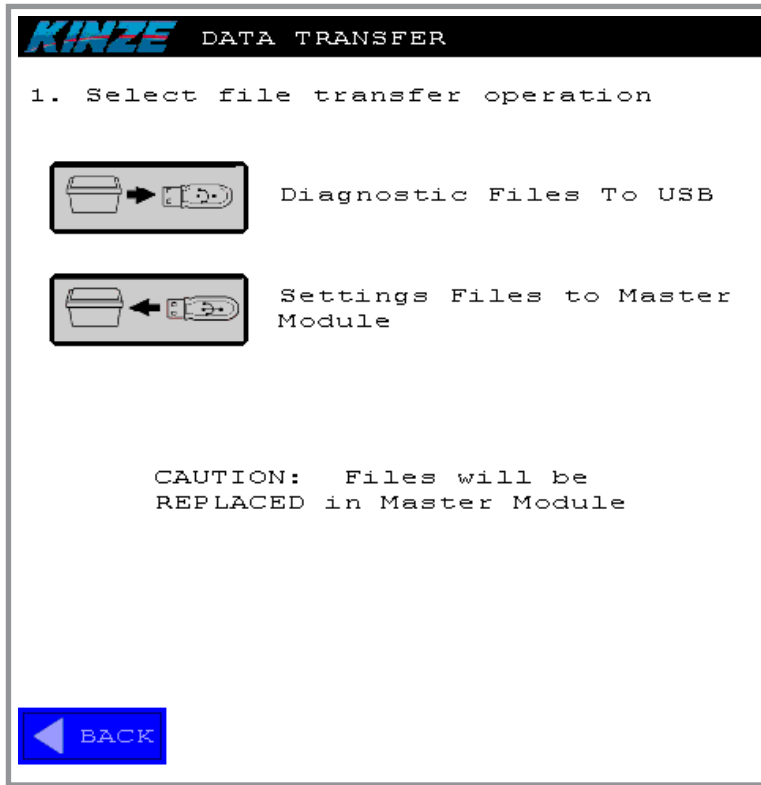
GPS accuracy is one of the biggest determining factors in the performance of Section Control. Without good GPS signal, getting accurate shut-off performance is not possible. Both signal quality and receiver quality will affect GPS accuracy.

Some brands of receivers are more accurate than others. Determine the level of accuracy your operation requires and choose your receiver accordingly. Below is a list of what to expect from the different GPS signal types available. These numbers could be better or worse depending on the GPS receiver you are using.

- **WAAS**
Expected GPS-related variation: approximately 4 ft (1.2 M)
- **Subscription (OmniSTAR, SF2)**
Expected GPS-related variation: approximately 2 ft (0.6 M)
- **RTK**
Expected GPS-related variation: less than 6 in (15.2 cm)

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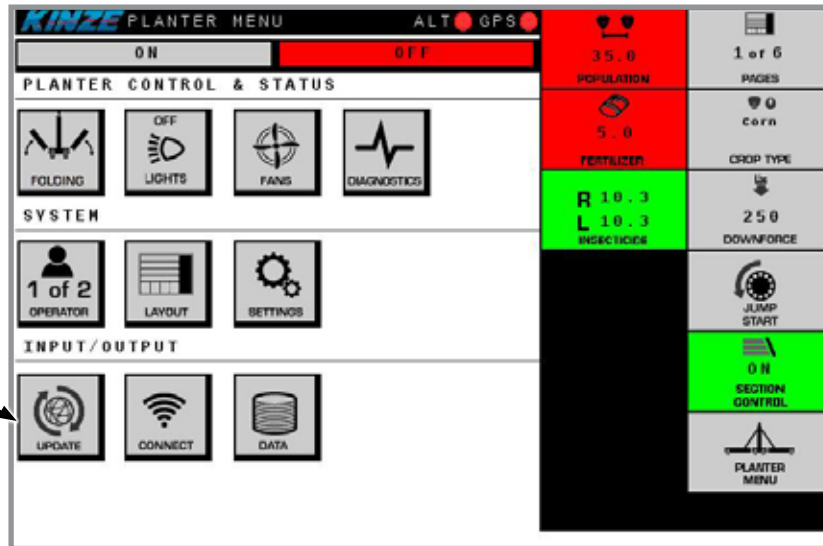
DATA TRANSFER



This function is used for diagnostics. It can be used to transfer files using a USB device. Files can be moved from the Master Module to the USB or from the USB to the Master Module.

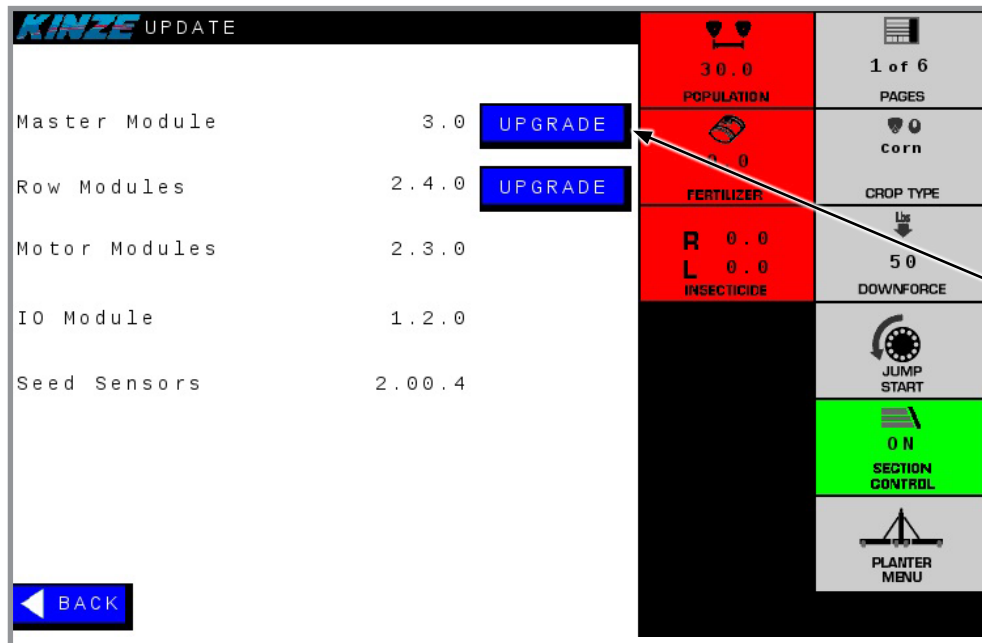


UPDATE

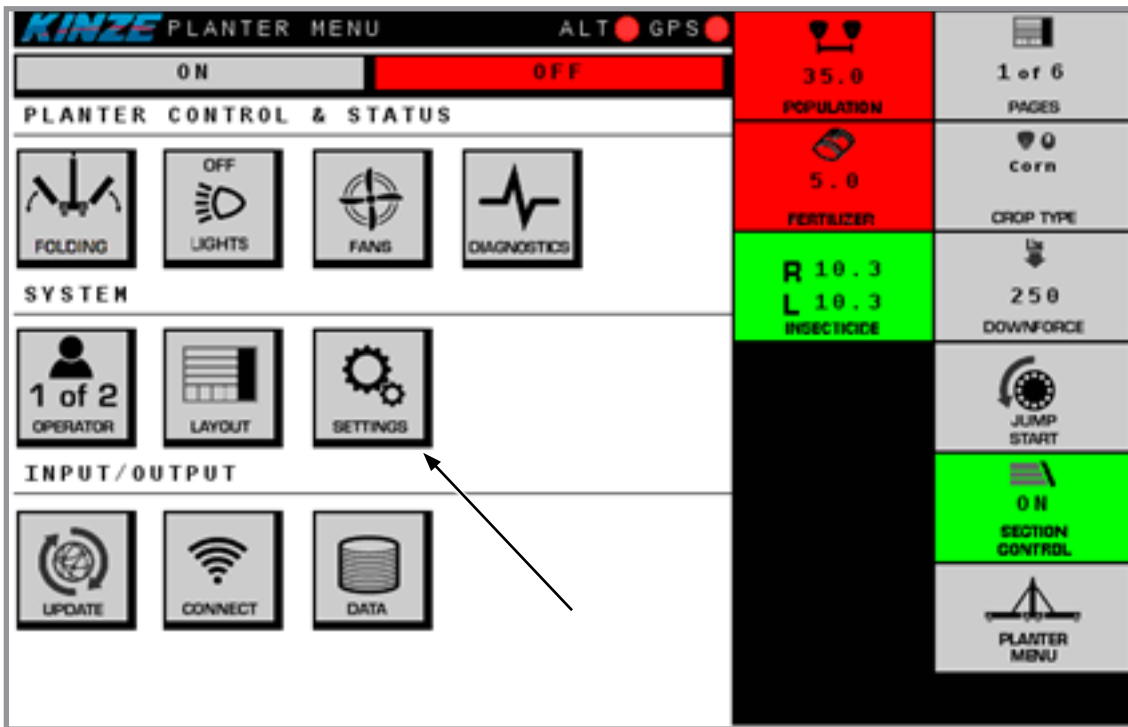


1. Go to the Kinze Firmware update page at <http://www.kinze.com/firmware.aspx> and download the latest set of updates.
2. Once the folder is downloaded, **unzip/extract** the file on computer.
3. Inside the folder, there will now be 5 files:
 - a. MasterModule.exe
 - b. MasterIO.s19
 - c. MotorModule.s19
 - d. RowModule.s19
 - e. SeedSensor.s19
4. Copy and paste the files into a blank USB flash drive.

NOTE: The files must be stored in the root of the flash drive, not in a folder.
5. Insert the USB flash drive into the USB port on the Master Module.
6. Start up the tractor, display and alternator.
7. From the Planter Menu on the Kinze screen, select UPDATE.



8. Select the UPGRADE button next to Master Module.
9. A screen will appear saying the update is in progress and the system will restart in 5 seconds.
10. Once the upgrade is complete, the display will lose communication with planter.
DO NOT REMOVE POWER UNTIL THE KINZE SCREENS REAPPEAR.
11. Once the Kinze screens reappear, select the CONTINUE button. Several alarms may appear, such as "Mismatch Serial Numbers" and "No Communication". These alarms will clear when a reconfigure is performed.

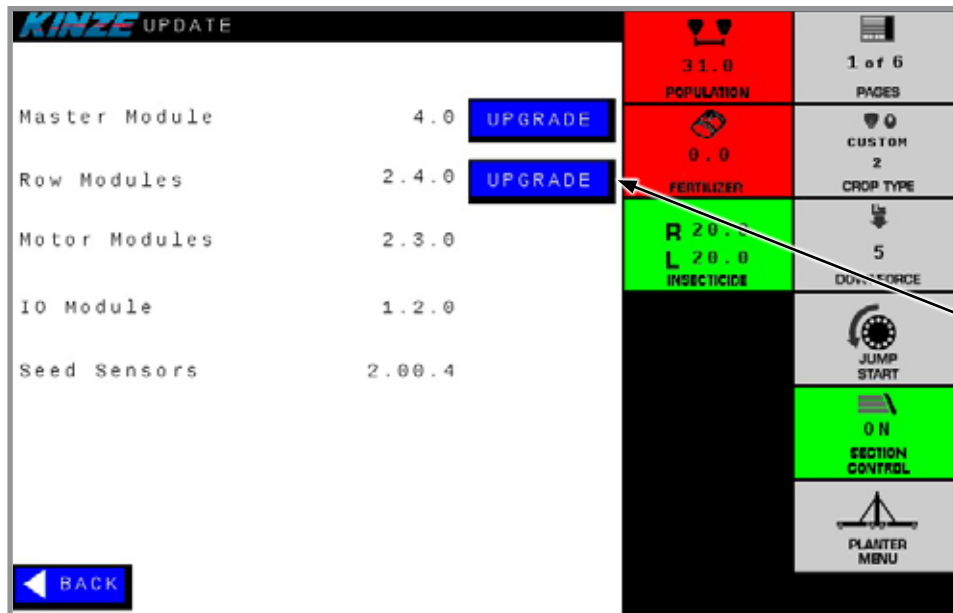


12. Select the PLANTER MENU key on the right side of the Kinze screen.
13. Select the SETTINGS button from the Planter Menu.
14. Select the CONFIG button from the Settings screen.





15. Select the START button from the Configuration screen.
16. Step through the configuration process and ensure the planter is reporting all rows. If not, check the rows that do not appear for module or wiring issues.
17. Select FINISH when all the rows are found in the configuration process. The Master Module will restart.
18. Once the Kinze screens reappear, select the CONTINUE button.
19. Select the PLANTER MENU key on the right side of the Kinze screen.



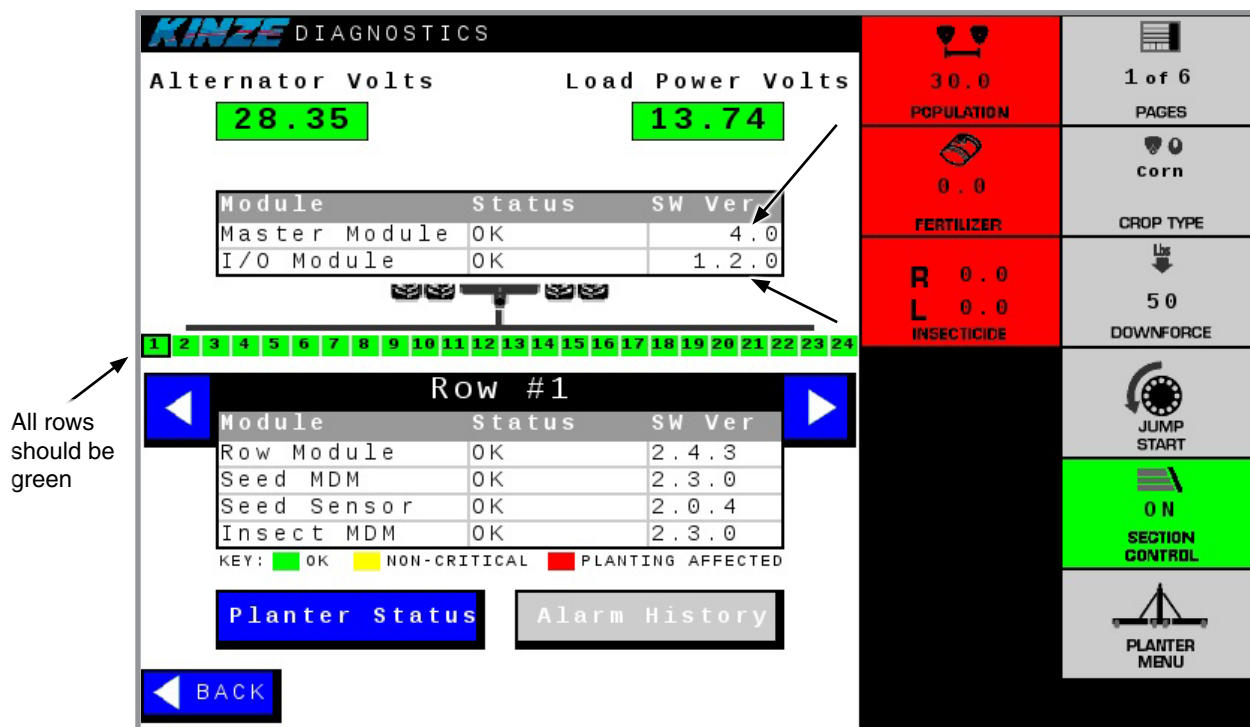
20. Navigate back to the update screen and make sure the new version is listed for the Master Module.
21. Next, the Row Modules will be updated.
22. Turn on the alternator if it is not already on.
DO NOT TURN OFF THE ALTERNATOR UNTIL ROW MODULE UPDATE IS COMPLETE.
23. Select the UPGRADE button beside the Row Modules.
24. A screen will appear giving the update status. Each Row Module will be updated one at a time. Update could take up to 10 minutes, depending on planter size.
25. When the update is complete, you will be returned to the UPDATE screen.
26. Verify that the new version is now displayed beside the Row Modules.
27. When the Row Module update is complete, turn off the alternator, then power off the display.
28. Wait 5 seconds after the display is powered off, then turn the display back on.
29. After the power-up process is complete, turn the alternator back on.
30. If there is an upgrade button next to Motor Modules, IO Module, or Seed Sensors, the outdated module can be upgraded by pressing the UPGRADE button.

MODULE SOFTWARE

Firmware versions shown in the illustrations that follow may not be current. Refer to the current Released Versions Table found on Kinze.com under Resources, then Firmware, then View Firmware Updates. If a module's software version is older than listed in the table, use the update process included in the "Data Transfer" section of this manual for any module that requires an update.

Make sure the following conditions are met:

- a. Correct file is loaded on the USB drive.
- b. Alternator power was not disrupted during the upgrade.
- c. Tractor power was not disrupted during the upgrade.



1. Select the DIAGNOSTICS button from the Planter Menu screen.
2. Verify the Master Module software version is current.
3. Verify the I/O Module software version is current.
4. Verify that all rows are green.

KINZE DIAGNOSTICS

Alternator Volts: **28.35** Load Power Volts: **13.74**

Module	Status	SW Ver
Master Module	OK	4.0
I/O Module	OK	1.2.0

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Row #1

Module	Status	SW Ver
Row Module	OK	2.4.3
Seed MDM	OK	2.3.0
Seed Sensor	OK	2.0.4
Insect MDM	OK	2.3.0

KEY: ■ OK ■ NON-CRITICAL ■ PLANTING AFFECTED

Buttons: **Planter Status**, **Alarm History**, **BACK**

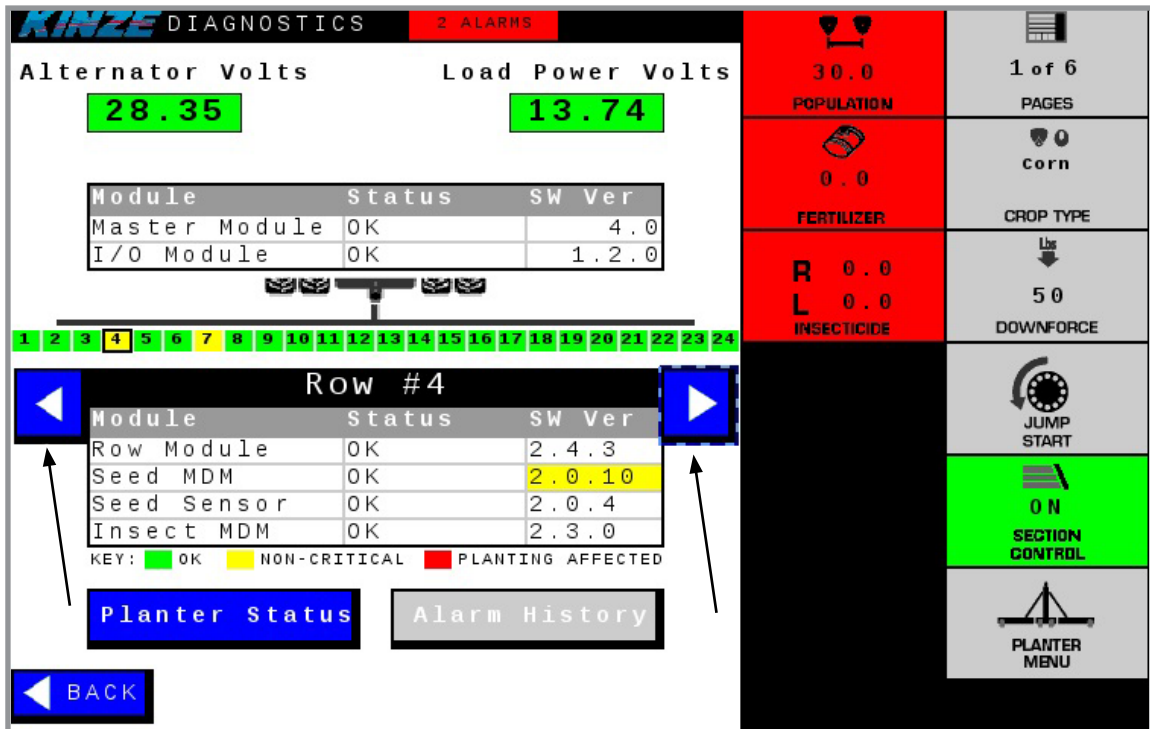
Right Panel (Red background):

- POPULATION: 30.0
- FERTILIZER: 0.0
- R 0.0
- L 0.0
- INSECTICIDE: 0.0

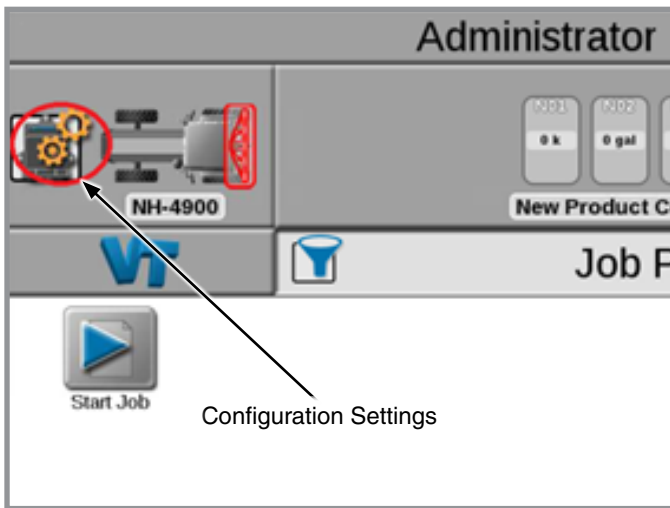
Right Panel (Grey background):

- 1 of 6 PAGES
- corn CROP TYPE
- 50 DOWNFORCE
- JUMP START
- ON SECTION CONTROL**
- PLANTER MENU

5. Verify that the Row Module software version is current.
6. Verify the Motor Driver Module (MDM) software version is current.
7. Verify the Seed Sensor software version is current.



8. If any row on the Diagnostics screen is yellow, scroll to select that row by using the left and right arrows.
9. The detailed information for that row will identify in yellow which module has out-of-date software compared to other rows. Return to the UPDATE screen and update the software associated with the module that has old software installed. Refer to page 29 for instructions.
10. When the updating process is complete, the final step is to clear the memory of the old version from the display. Refer to the following page for instructions.

CLEAR VERSION MEMORY FROM DISPLAY

Raven Viper 4 Display Shown

For Raven Viper 4

1. Go to the Viper 4 Main Menu.
2. Select the gears icon in the upper left corner to enter Configuration Settings.
3. Scroll through the settings screens (or tap the boxes at the bottom of the page) until you reach the screen with the VT button, then select the VT button.
4. Select the second tab. Select the button labeled "Clear All ISOBUS Data".

For John Deere

1. Go to the John Deere Main Menu and select "Message Center".
2. Select "Clean-up". Check the box labeled "Controllers".
3. Select "Begin Clean-up".

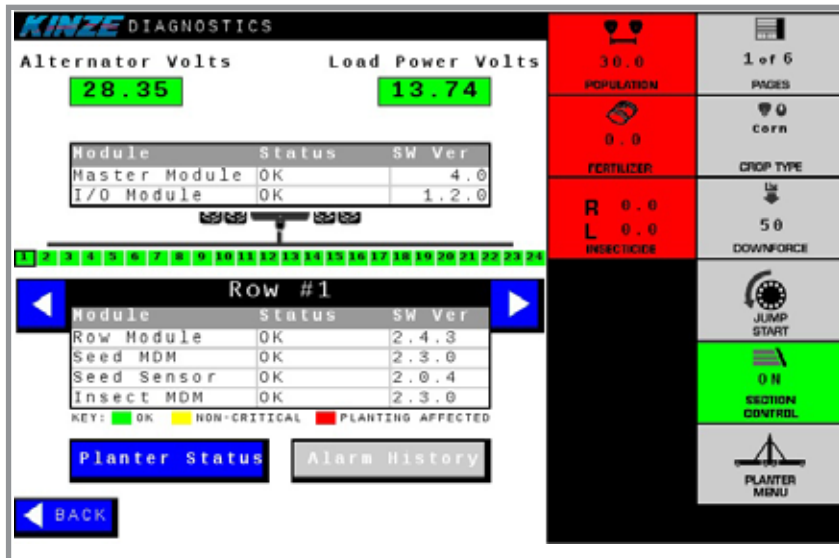
For CNH

1. Go to the CNH Main Menu and select "Diagnostics".
2. Select "VT", then select "NVM".
3. Select "Delete Folder".

For Ag Leader

1. Go to the VT tab and select the wrench icon.
2. Select "Clear Virtual Terminal".

DIAGNOSING ELECTRONICS ISSUES



Use the Diagnostics screens to assist in diagnosing electronics issues on the 4900 electric drive planter. Open the window to the Diagnostics screen by pressing the Diagnostics button on the Planter Menu screen.

Alternator Volts

The alternator voltage is provided to help determine if the alternator system is performing correctly.

- If the box around the alternator voltage is GREEN, the system is working correctly.
- If the box around the alternator voltage is YELLOW, the system will work for only a short period of time, as the system is running off the planter batteries. Eventually, the batteries will drain and the planter will stop working correctly.
- If the box around the alternator voltage is RED, the system will not work.

Load Power Volts

- If the box around the load power voltage is GREEN, the system is functioning correctly.
- If the box around the load power voltage is RED, the system will not function.

Master Module and I/O Module Software Version

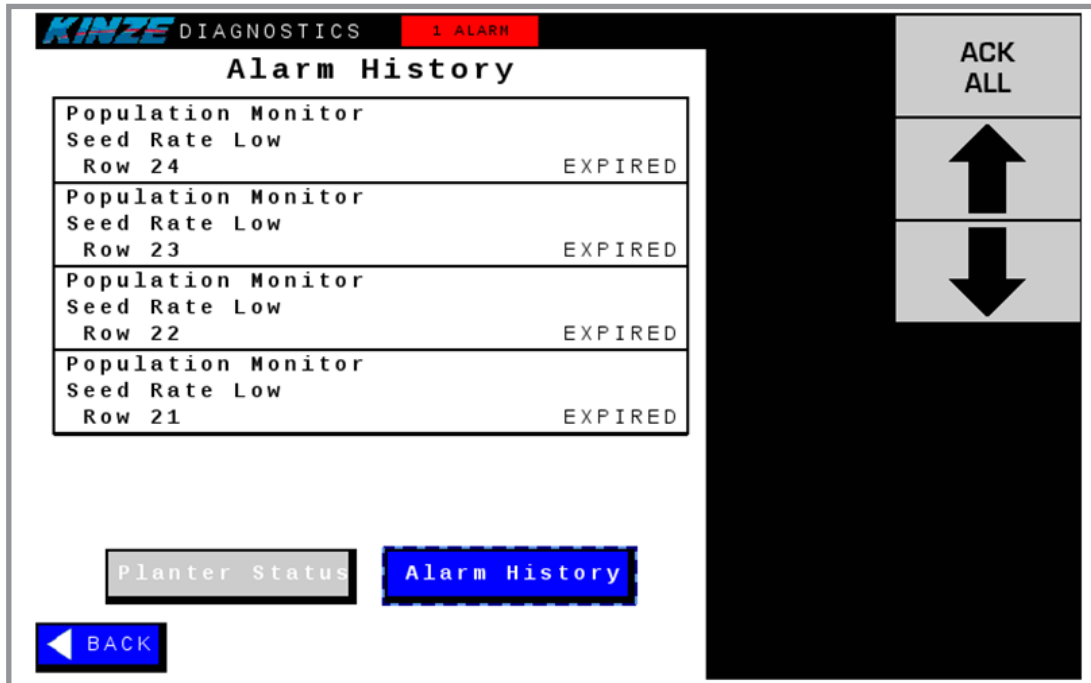
This table indicates which software version (SW) is loaded in the Master and I/O Modules. Verify that you have the most current version installed by referring to the Released Version Table on Kinze.com. Refer to page 33 for information on updating any necessary software.

Row Numbers

Row numbers are color-coded to provide general status information about each row. Refer to the legend below the status table for the module statuses.

- Rows coded GREEN indicate all modules on those individual rows are communicating and have the latest software version installed.
- Rows coded YELLOW indicate those individual rows are in a non-critical status but have out-of-date software compared to other rows.
- Rows coded RED indicate that planting is affected. This generally means that a module on these individual rows is not communicating properly with other modules. The status column will read "MISSING", and the software (SW) version will read "???".

ALARM HISTORY



The Alarm History button will display all alarms that have occurred while the alternator has been on. This includes active and expired alarms. The Alarm History will clear when the alternator is turned off.

Kinze recommends using your electronics to check your equipment before the start of the planting season to ensure equipment is operational and field-ready. Perform the following checks before planting.

Make sure the tractor, display and alternator are turned on before running these tests.

CHECK LIGHTING

Check that all lighting is working properly by using the Left Turn, Right Turn, Tail Lights and Work Lights (if installed).

CHECK TOOL BAR POSITION SENSORS

Check that the tool bar position sensors (implement switches) are operational and set correctly.

1. Go to the Planter Menu and select Settings, then select Tool Bar Sensing.
2. A display will appear that indicates the status of the left and right switches. UP means the planter is up and DOWN means the planter is in the ground.
3. Raise and lower the planter to make sure the status changes accordingly.

CHECK VACUUM FANS

Check vacuum fans to make sure they are operational.

1. Turn on the hydraulics or the PTO for the vacuum. Turn the Master Switch and Fans to ON.
2. Go to the Planter Menu and select Settings, then select Vacuum Fan Drive.
3. Refer to the Diagnostics section at the bottom of the screen. Check to see that the Actual readout on the screen roughly matches the analog gauges mounted on the planter.
4. If they do not roughly match, shut off the fans, zero out the sensor or analog gauge and repeat procedure.

CHECK BULK FILL FANS

Check bulk fill fans to make sure they are operational.

1. Turn on the hydraulics for the bulk fill fans. Turn the Master Switch and Fans to ON.
2. Go to the Planter Menu and select Settings, then select Bulk Fill Fan.
3. Refer to the Diagnostics section at the bottom of the screen. Check to see that the Actual readout on the screen roughly matches the analog gauge mounted on the planter.
4. If they do not roughly match, shut off the fans, zero out the sensor or analog gauge and repeat procedure.

CHECK MOTORS

Check to make sure all motors on the planter are turning properly.

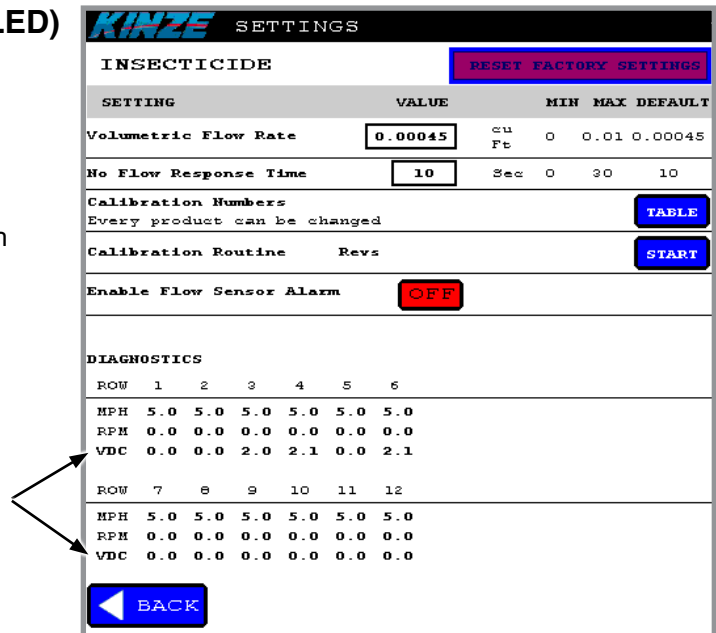
1. Go to the Planter Menu and select Settings, then select Speed.
2. Select Manual Speed and check that a speed is entered. Select BACK to return to the Planter Menu.
3. Turn on the Master Switch and lower the planter.
4. Check that the motors for the seed meters and insecticide meters (if installed) start turning.
5. Check each row individually to make sure the motor on each row meter is turning.
6. If installed, take notice of the insecticide motors to make sure they are all turning at the same speed. If one motor is turning noticeably faster, this may indicate a wiring issue.
7. After testing is complete, return to the Speed Settings screen and change from Manual to your desired speed source. Kinze recommends using Automatic.

CHECK SEED SENSORS

Insert a seed tube brush in the seed tube and move it up and down. Check that the red light on the seed sensor blinks when it recognizes the brush.

CHECK INSECTICIDE SENSORS (IF INSTALLED)

1. Go to the Planter Menu and select Settings, then select Insecticide.
2. Refer to the Diagnostics section at the bottom of the screen. In the row labeled VDC, each row with insecticide installed should display a voltage reading.
3. If any row reads 0.0, the sensor is not functioning properly.



CHECK FERTILIZER CONTROL SYSTEM (IF INSTALLED)

1. If possible, fill approximately $\frac{1}{8}$ of the tank with water. Turn on hydraulics for the fertilizer pump.
2. Set the rate to 5 gallons per acre. Turn the Master Switch and Fertilizer ON. The fertilizer pump should start running.
3. Go to the Planter Menu and select Settings, then select Speed.
4. Select Manual Speed and check that a speed is entered. Select the BACK button, then select Fertilizer.
5. Lower planter to ground.
6. Refer to the Diagnostics section at the bottom of the screen. Check that after 20 seconds, the Actual Rate matches the Set Rate.
7. Check that the rows labled FS (Flow Sensor) all display ON. If OFF is displayed, this may indicate a problem with that individual row.
8. Drain the water from the system, then return to the Speed Settings screen and change from Manual to your desired speed source. Kinze recommends using Automatic.

CHECK PNEUMATIC DOWN FORCE (IF INSTALLED)

1. Check that the compressor engages when the tank is below 80 psi. The compressor will turn off at 120 psi.
2. Turn on the Master Switch, lower planter, and check that it adjusts to the correct force.
3. Check the planter for leaks.

CHECK BULK FILL SCALES (IF INSTALLED)

Check that both the left and right tanks are indicated on both the Remote Display, located on the catwalk, and in the cab.

CHECK JUMP START SENSOR

Inspect the wiring going from the Jump Start sensor to the Master Module for damage. Repair any damage, or if you choose not to use the sensor, ensure the wires are taped up out of the way where they will not touch any steel or other sensors.

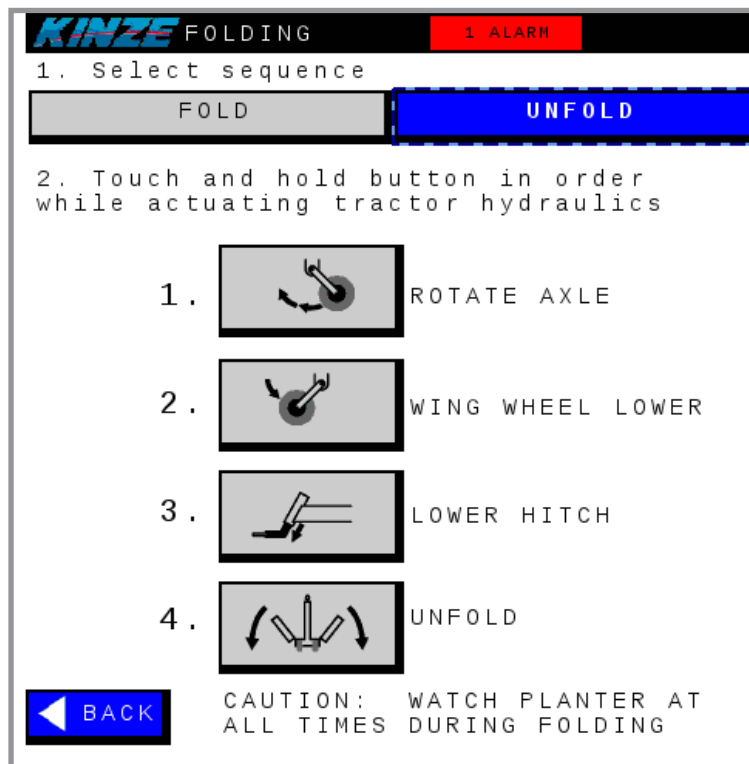
Inspect the sensor position to the pick-up wheel. The gap should be between $\frac{1}{8}$ " and $\frac{1}{4}$ ". Turn the tire one full revolution to make sure the sensor does not touch the pick-up wheel.

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FOLDING SCREEN



Press and hold each screen in order from 1 - 4 to perform the required actions for folding the planter. For detailed information on folding the planter, refer to your 4900 Operators Manual.

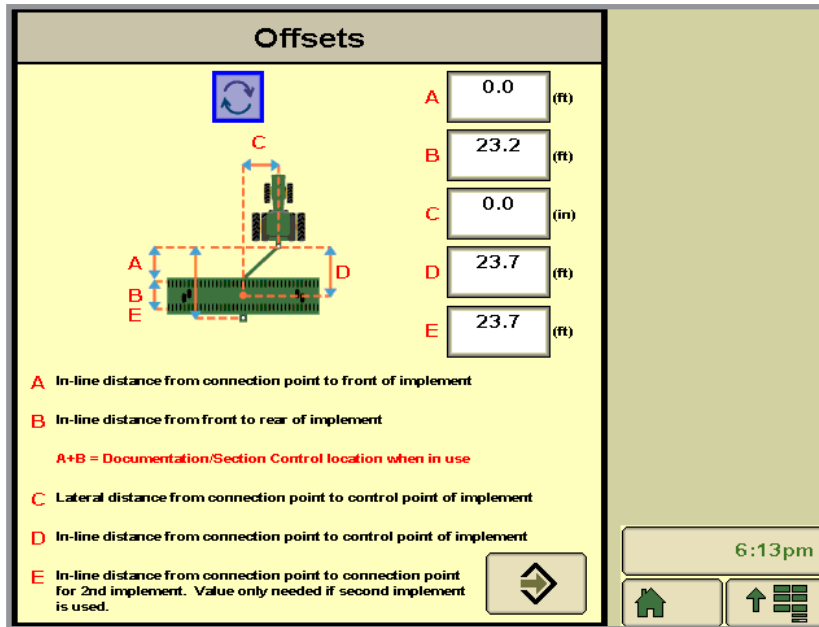
UNFOLDING SCREEN

Press and hold each screen in order from 1 - 4 to perform the required actions for unfolding the planter. For detailed information on unfolding the planter, refer to the 4900 Operator's Manual.

OFFSETS

The offsets for the planter will be prepopulated in the Task Controller. It is recommended that these measurements are checked and adjusted on each planter. Also ensure that the measurements for the tractor are entered and correct.

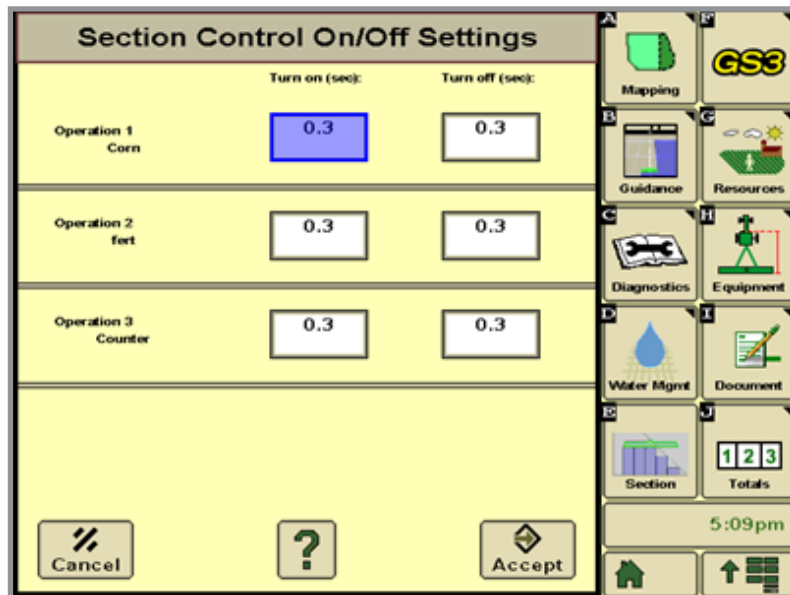
Below is an example of John Deere's offset entry screen for the planter. Measurements will be prepopulated in this screen but the measurements need to be confirmed on the planter prior to planting.



John Deere's Change Planter Offsets Screen

LOOK-AHEADS

Look aheads or section control on/off times will be prepopulated in the display per meter type. These numbers provide a good baseline for starting but should be adjusted in the field if needed. Turn on time is how long it takes the meter to turn on and start dropping seed when coming out of a preplanted area or boundary. Turn off time is how long it takes for the seed meter to turn off when entering a preplanted area or boundary. Below is an example of the John Deere Section Control On/Off Settings.



John Deere's Section Control On/Off Settings Screen

Field Check – Offsets and Look-Aheads

A field check must be performed to ensure accuracy of the shut-offs. To perform a field check drive in and out of a preplanted area at your desired planting speed. Dig for seed on multiple rows of the planter. Then follow the instructions below depending on what is found:

Planter is turning off early and turning back on early by roughly the same distance:

The offsets are too short. Measure the distance from where you would like it to shut off/on and where it did shut-off/on. Increase the hitch to application point by the distance of the gap/overlap measured in the field. Recheck after adjustment.

Planter is turning off late and turning back on late by roughly the same distance:

The offsets are too long. Measure the distance from where you would like it to shut off/on and where it did shut-off/on. Decrease the hitch to application point by the distance of the gap/overlap measured in the field. Recheck after adjustment.

Planter is turning off early:

The look-ahead or turn off time is too long. Measure the distance from where you would like it to shut off and where it did shut-off. Then enter your information into the equation below:

d = Distance of the gap in inches
v = Tractor speed in miles/hour

$$0.057d/v = \text{Time}$$

Decrease the turn off time by the value you get for time. Recheck after adjustment.

Planter is turning off late:

The look-ahead or turn off time is too short. Measure the distance from where you would like it to shut off and where it did shut-off. Then enter your information into the equation below:

d = Distance of the overlap in inches
v = Tractor speed in miles/hour

$$0.057d/v = \text{Time}$$

Increase the turn off time by the value you get for time. Recheck after adjustment.

Planter is turning on early:

The look-ahead or turn on time is too long. Measure the distance from where you would like it to turn on and where it did turn on. Then enter your information into the equation below:

d = Distance of the overlap in inches
v = Tractor speed in miles/hour

$$0.057d/v = \text{Time}$$

Decrease the turn on time by the value you get for time. Recheck after adjustment.

Planter is turning on late:

The look-ahead or turn on time is too short. Measure the distance from where you would like it to turn on and where it did turn on. Then enter your information into the equation below:

d = Distance of the gap in inches
v = Tractor speed in miles/hour

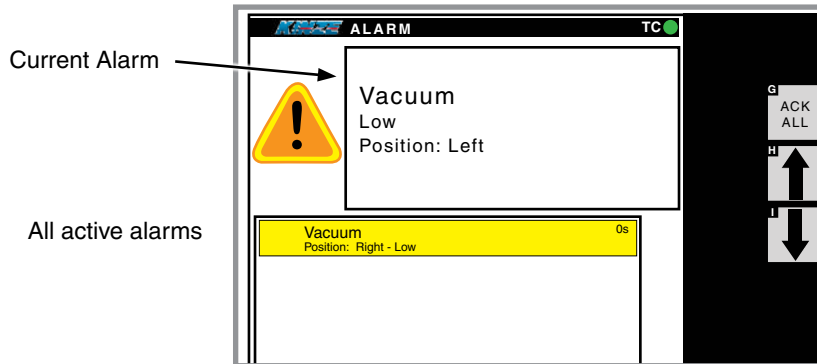
$$0.057d/v = \text{Time}$$

Increase the turn on time by the value you get for time. Recheck after adjustment.

NOTE: It is important that you drive a consistent speed in and out of preplanted areas and boundaries to ensure accuracy of the shut-offs. See your Task Controller's operators manual for more information about adjusting offsets and look aheads.

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ALARMS



If a threshold is crossed (either high or low), an alarm screen will appear and the data cell with the corresponding data will turn red.

There are two sections to the alarm screen: the large box at the top and the box at the bottom.

The large box will contain the most current alarm. The function will be listed first, followed by the alarm state (i.e. high or low), then the position or row. The box at the bottom of the screen contains all of the active alarms as well as a counter of how long the alarm has been active. The up and down arrows on the right side of the screen can be used to scroll through alarms.

If you select ACK ALL, all alarms will be acknowledged and you will return to the plant screen. Acknowledging the alarm will not clear it. The alarm box will appear at the top of the plant screen until you correct the problem or the value returns to inside the threshold and the alarm clears itself.

Note: No matter what screen you are in, the alarm will always pop up over it.

If you acknowledge the alarms and return to the plant screen a status box with the alarm status will appear at the top of the screen. It is red and will say ALARMS and then will state how many alarms are active. If you need to return to the list of alarms simply press this red button and you will return to the list of alarms.

Note: See settings to change alarm thresholds.

ALARMS (CONT)

FAULT TYPE	ALARM DESCRIPTION
Low Population	Alarm appears when the population is below the high/low population threshold for longer than the alarm response time threshold.
High Population	Alarm appears when the population is above the high/low population threshold for longer than the alarm response time threshold.
Low Singulation	Alarm appears when the singulation is below the low singulation threshold for longer than the alarm response time threshold.
Seed Sensor Communication	Alarm appears when electronic communication is lost with a seed sensor.
Seed Meter MDM Communication	Alarm appears when electronic communication is lost with a seed meter motor drive module.
Insecticide MDM Communication	Alarm appears when electronic communication is lost with a insecticide meter motor drive module.
No Insecticide Flow	Alarm appears when no insecticide flow is detected for longer than the no flow response time threshold.
Row Module Communication	Alarm appears when electronic communication is lost with a row module.
Bulk Fill Scale Communication	Alarm appears when electronic communication is lost with the bulk fill scale system.
Low Tank Weight	Alarm appears when the seed weight is below the low weight alarm threshold for longer than the alarm response time threshold.
Low Down Force	Alarm appears when the down force pressure is below the down force pressure threshold for longer than the alarm response time threshold.
High Down Force	Alarm appears when the down force pressure is above the down force pressure threshold for longer than the alarm response time threshold.
Increase Down Force Solenoid Not Detected	Alarm appears when the increase down force solenoid is not detected.
Decrease Down Force Solenoid Not Detected	Alarm appears when the decrease down force solenoid is not detected.
Down Force Sensor Not Detected	Alarm appears when the down force solenoid is not detected.
Low Fertilizer Rate	Alarm appears when the fertilizer rate is below the high/low fertilizer rate threshold for longer than the alarm response time threshold.
High Fertilizer Rate	Alarm appears when the fertilizer rate is above the high/low fertilizer rate threshold for longer than the alarm response time threshold.
No Fertilizer Flow	Alarm appears when no fertilizer flow is detected on a row.
Fertilizer Solenoid Failure	Alarm appears when the row fertilizer solenoid is off but fertilizer flow is detected at the row.
Low Fertilizer Tank Level	Alarm appears when the fertilizer tank level is low for longer than the low tank level alarm response time.
Low Vacuum	Alarm appears when the vacuum pressure is below the high/low vacuum pressure threshold for longer than the alarm response time threshold.
High Vacuum	Alarm appears when the vacuum pressure is above the high/low vacuum pressure threshold for longer than the alarm response time threshold.

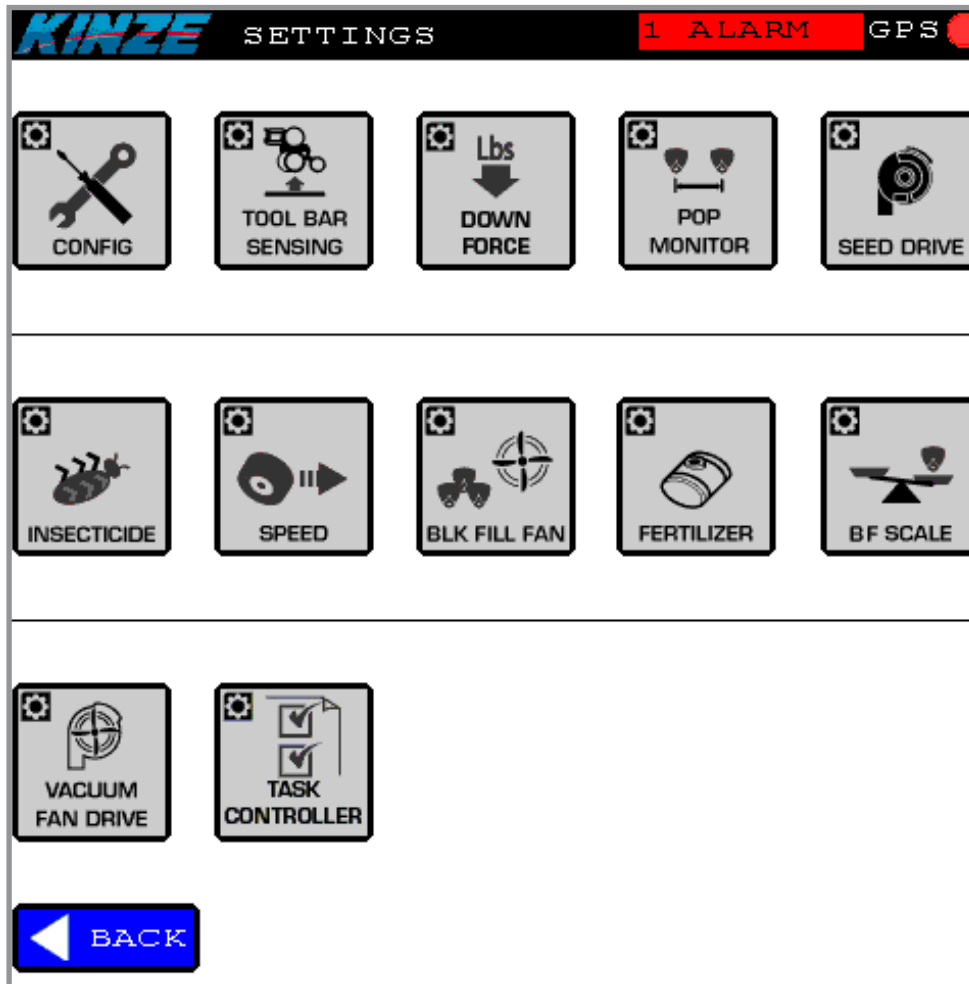
ALARMS (CONT)

FAULT TYPE	ALARM DESCRIPTION
Low Bulk Fill Pressure	Alarm appears when the bulk fill pressure is below the high/low
High Bulk Fill Pressure	Alarm appears when the bulk fill pressure is above the high/low bulk fill pressure threshold for longer than the alarm response time threshold
Alternator Power Lost	Alarm appears when 24V alternator power is lost.
Alternator Low Voltage	Alarm appears when alternator voltage is between 18V and 24V.
Load Power Lost	Alarm appears when 12V load power is lost.
No Communication and/or No Serial Number	Alarm appears if one of the modules on the Communication bus is not present when the system restarts. This could be either a motor or row module.
Serial Number Mismatch	Alarm appears if a motor or row module is switched out. If this alarm appears the user should reconfigure the planter.

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SETTINGS SCREEN



Tap the settings button to toggle through the settings screens. Options include Configuration, Tool Bar Sensing, Down Force, Population Monitoring, Seed Drive, Speed, Bulk Fill Fan, Vacuum Fan Drive, Task Controller, Insecticide, Fertilizer and Bulk Fill Scale. Tap on each item to view settings and make adjustments.

NOTE: On all Settings screens with values that can be changed, there will be a Reset to Factory Settings button. This will return all of the values on that page back to the factory defaults.

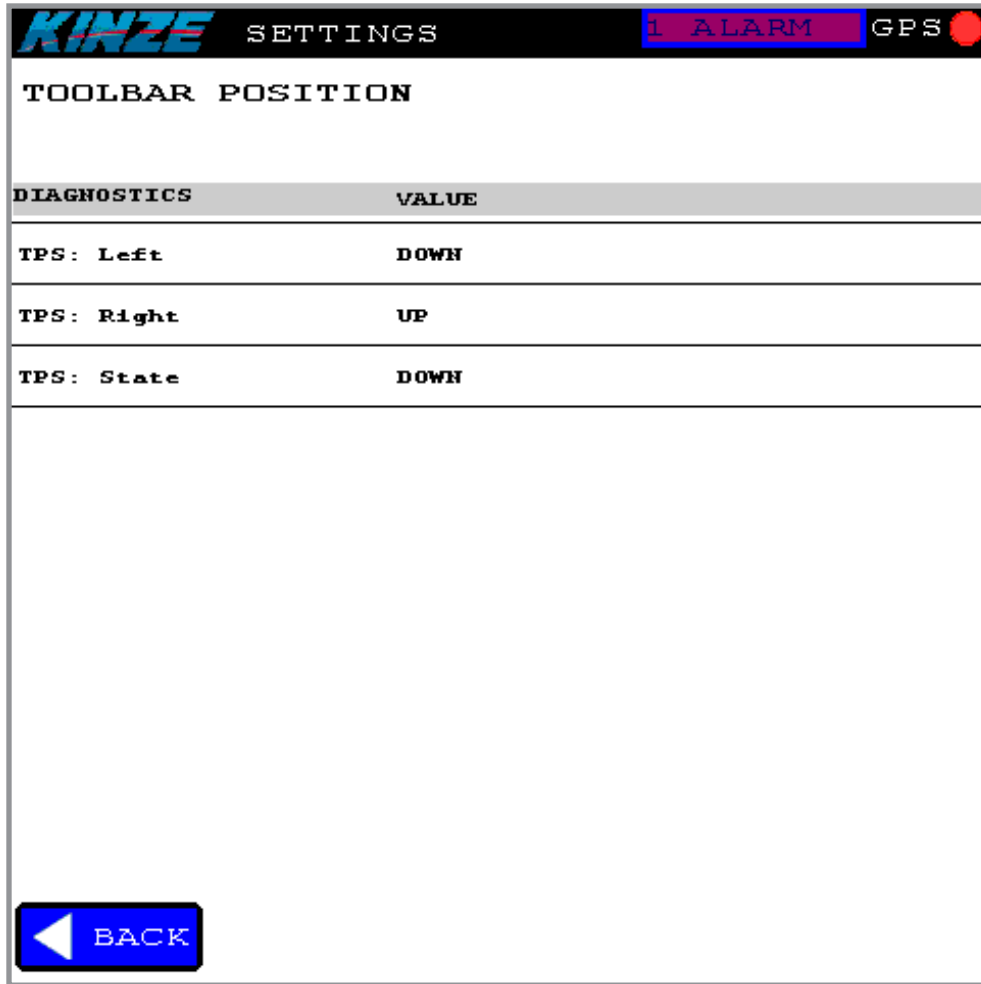
CONFIGURATION



Tap on the START screen to configure each option for your planter. The Master Module will detect which options are installed. Scroll through each screen to confirm settings are correct. When finished, you will see the screen below. Click Finish.



TOOL BAR SENSING



The tool bar position settings screen shows diagnostics for the tool bar position sensors. There are two sensors on the planter. One is on each wing, located on a row unit close to the vacuum fan.

If the planter is lifted, both the right, left and overall state should read UP. If the planter is down, they should all read DOWN. If one row unit is up, the state for that sensor should read UP, while the overall state should remain DOWN.

If this behavior is not seen, the sensor adjustment should be checked.

POPULATION MONITORING

KINZE SETTINGS

POPULATION MONITOR RESET FACTORY SETTINGS

SETTING	VALUE	MIN	MAX	DEFAULT
High/Low Population Threshold	40 %	5	50	40
Low Singulation Threshold	20 %	1	20	20
Population Alarm Response Time	3 Sec	1	10	3
Average Seed Diameter for all crops				TABLE
Crop Calibration Factor Soybeans	0 %	0	20	0
SINGULATION Alarm Disabled	OFF			
Enable POPULATION Alarms	Low <input checked="" type="checkbox"/> ON High <input type="checkbox"/> OFF			

DIAGNOSTICS

ROW	1	2	3	4	5	6	7	8	9	10	11	12
S/S	0	0	0	0	0	0	0	0	0	0	0	0
ROW	13	14	15	16	17	18	19	20	21	22	23	24
S/S	0	0	0	0	0	0	0	0	0	0	0	0

Right sidebar controls: PLANTER MENU, 0 of 3 PAGES, Soy Beans CROP TYPE, 30.0 POPULATION, 17 FERTILIZER, 2.0 R INSECTICIDE, 1.6 L INSECTICIDE, DOWNFORCE 50, JUMP START, ON SECTION CONTROL, 10:04 am, 1/2, Home icon.

Tap on the box in the VALUE column to adjust each setting. A number pad will appear to enter the desired setting. The singulation, low population, and high population alarms can be toggled ON or OFF from this screen as well.

High/Low Population Threshold

This sets the threshold for where a visual and audible alarm for high or low population will appear while planting. If the threshold is set at 10%, that means an alarm will appear if the population for a row goes above 110% or below 90%.

Singulation Threshold

This sets the threshold for where a visual and audible alarm for low singulation will appear while planting. If the threshold is set at 5%, that means an alarm will appear if the singulation is below 95%.

Alarm Response Time

This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 3 seconds, the population has to be above the threshold for 3 seconds before a high population alarm is displayed.

Seed Diameter

The seed diameter determines how sensitive the seed sensor is. Larger diameters will be less sensitive and smaller diameters will be more sensitive.

If the population is showing high on screen and ground checks have shown that the correct population is being planted, increase the seed size gradually until the correct population shows on screen. If the population is reading low, decrease the seed size. Tap on the TABLE box for average seed diameter information.

Diagnostics

The diagnostics display the seeds per second for each row.

Crop Calibration Factor

Used only for soybeans to caibrate the seed counts. Increasing this number will increase the sensitivity and decreasing the number will decrease the sensitivity.

SEED DRIVE

KINZE SETTINGS

SEED METER DRIVE RESET FACTORY SETTINGS

SETTING	VALUE	MIN	MAX	DEFAULT
Tire Diameter	<input type="text" value="37"/> Inches	1	100	37
Gear Ratio	<input type="text" value="12"/> RATIO	1	15	12
Jump Start Pulses per Rev	<input type="text" value="60"/> PULSES /REV	1	500	60
Turning Comp:	<input checked="" type="checkbox"/> ENABLED			

DIAGNOSTICS

ROW	1	2	3	4	5	6	7	8	9	10	11	12
MPH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RPM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROW	13	14	15	16	17	18	19	20	21	22	23	24
MPH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RPM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

← BACK

Tap on the box in the VALUE column to adjust each setting. A number pad will appear to enter the desired setting.

Tire Diameter

This sets the diameter of the tire that has the planter speed sensor installed.

Gear Ratio

This sets the gear ratio between the motor and meter.

Jump Start Pulses/Rev

This sets the amount of pulses per revolution for the planter speed sensor.

Turning Comp

This gives the operator the ability to enable or disable turning compensation.

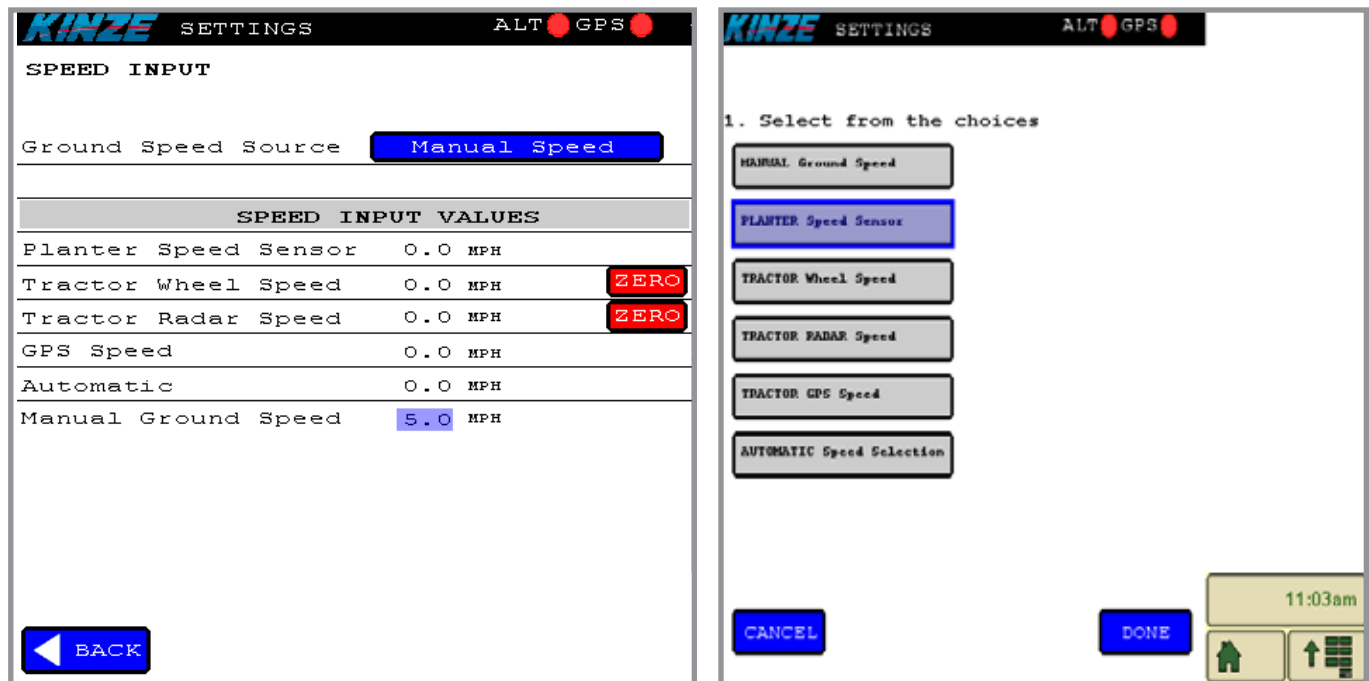
PLANTER WHEEL SPEED CALIBRATION

If the planter sensor is not reading correctly, use the following routine to calibrate the sensor.

1. Identify a known good speed source, such as GPS speed, tractor wheel speed, or tractor radar speed.
2. Go to the Speed Settings screen.
3. Begin driving at 5 mph.
4. Record the speed for known good speed source and the planter speed source.
 - a. Example
 - i. GPS speed - 5.1 mph
 - ii. Planter speed - 4.5 mph
5. Divide the planter speed by the known good speed.
 - a. Example
 - i. $4.5/5.1 = 0.88$
6. Travel to the Seed Meter Drive Settings Screen.
7. Take the value in the field labeled Tire Diameter time the number from step 5.
 - a. Example
 - i. $37 \times 0.88 = 32.56$
8. Enter this new number into the Tire Diameter field.
9. If the planter speed is still off, repeat these steps.

The seed meters diagnostics show the ground speed and seed meter speed for each row. These will vary row to row when using turning compensation.

SPEED INPUT



In the Speed Input settings screen, the ground speed source can be selected, the planter speed sensor can be calibrated, the manual ground speed can be set, and speed readouts can be seen for each speed source. Tap on the box next to "Ground Speed Source" to pull up an options menu and select your ground speed source.

NOTE: If the tractor radar or wheel speeds show a value when stationary, press the ZERO button beside the speed readout. This will set the zero point of the speed source.

Selecting a Current Ground Speed Source

There are 6 possible selections for the Ground Speed Sources:

- Manual – Uses a ground speed source that is set by the user. This speed is also your simulated speed for jump start.
- Planter Ground Speed – A speed sensor located on the planter that is connected to the Master Module.
- Tractor Wheel Speed – Wheel speed sent by the tractor over the ISOBUS.
- Tractor Radar Speed – Radar speed sent by the tractor over the ISOBUS.
- GPS Speed – GPS speed sent by the GPS Receiver over the ISOBUS.
- Automatic – Uses the best possible speed available from one of the following sources, in this order:
 1. GPS
 2. Radar
 3. Wheel
 4. Planter

NOTE: Kinze recommends that the speed source be set to automatic under normal operating circumstances.

NOTE: Not all tractors and GPS receivers broadcast speed over the ISOBUS check with your equipment manufacturer to see if it is compliant.

Manual Ground Speed

The manual ground speed can be used as a speed source if no other speed source is available. The speed that is entered into the box is the speed that the planter will use for control and calculations. To use this speed as your source select Manual from the Current Ground Speed Source list.



This value is also used for jump start button on Planter Menu page, if it is installed. When the planter stops from a dead stop it takes 2-3 seconds to acquire ground speed from GPS or Radar therefore the manual speed is used for those first seconds after start-up. Kinze recommends that the manual ground speed be set at **2 mph**.

Note: Manual Ground Speed selection is normally only used if the planter needs to be run while sitting still.

Speed Input Values

The speed input list shows what each possible ground speed source is reading.

VACUUM

KINZE SETTINGS

VACUUM FAN RESET FACTORY SETTINGS

SETTING	VALUE	MIN	MAX	DEFAULT	
Zero Vacuum Sensor Command	ZERO				
Gain	<input type="text" value="0.80"/>	0	1	0.01	
Zero Flow Offset	<input type="text" value="25"/>	Duty Cycle	0	100	50
High/Low Alarm Threshold	<input type="text" value="10"/>	%	0	50	10
High/Low Alarm Response Time	<input type="text" value="10"/>	Sec	0	30	10

Pressure Settings-All Crops TABLE

DIAGNOSTICS	VOLT	TARGET	ACTUAL	DUTY CYCLE
Right VAC	0.71	21	39	-1
Left VAC	0.71	21	39	-1

← BACK

In the Vacuum settings screen, the Low Vacuum Threshold and Alarm Response time can be adjusted. The vacuum sensors can also be zeroed. Tap on the TABLE box to bring up pressure settings for all crops.

Zero Vacuum Sensor Command

If the vacuum fans are off and either is still reading pressure, this button can be used to set the zero point of the sensor.

Gain

This controls how fast the vacuum fans adjust. If it is taking too long for the fans to adjust to the correct vacuum, slowly increase this number until the desired results are reached.

Zero Flow Offset

This sets how far the hydraulic valve will open when the fans are first turned on. If the fans are taking too long to come up to vacuum, gradually increase this number until the desired result is reached. If the fans are overshooting the vacuum level, decrease this value until the desired result is reached.

High/Low Vacuum Threshold

This sets the threshold for where a visual and audible alarm for high or low vacuum will appear while planting.

Alarm Response Time

This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 10 seconds, the vacuum has to be above the threshold for 10 seconds before a high vacuum alarm is displayed.

Crop Settings

In this screen, vacuum levels for all crops can be set. These will be the values used when a crop is selected from the Crop Type screen.

The diagnostics section will display the sensor voltage, actual vacuum, target vacuum, and PWM duty cycle for each fan.

BULK FILL PRESSURE

SETTING	VALUE	MIN	MAX	DEFAULT
Gain	0.10	0.0	0.30	0.10
Zero Flow Offset	50	Duty Cycle	0	100
High/Low Alarm Threshold	10	%	0	50
High/Low Alarm Response Time	10	Sec	0	30

DIAGNOSTICS	VOLTS	TARGET	ACTUAL	DUTY CYCLE
BFF	0.00	15	101	100

In the Bulk Fill Pressure settings screen, the Low Pressure Threshold and Alarm Response time can be adjusted. The pressure sensor can also be zeroed. Tap on the TABLE box to view pressure settings for all crops.

Zero Pressure Sensor Command

If the bulk fill fan is off and the sensor is still reading the pressure, this button can be used to set the zero point of the sensor.

Gain

This controls how fast the bulk fill fan adjusts. If it is taking too long for the fan to adjust to the correct pressure, slowly increase this number until the desired results are reached.

Zero Flow Offset

This sets how far the hydraulic valve will open when the fan is first turned on. If the fan is taking too long to come up to the correct pressure, gradually increase this number until the desired result is reached. If the fan is overshooting the pressure level when first turned on, decrease this value until the desired result is reached.

High/Low Vacuum Threshold

This sets the threshold for where a visual and audible alarm for high or low pressure will appear while planting.

Alarm Response Time

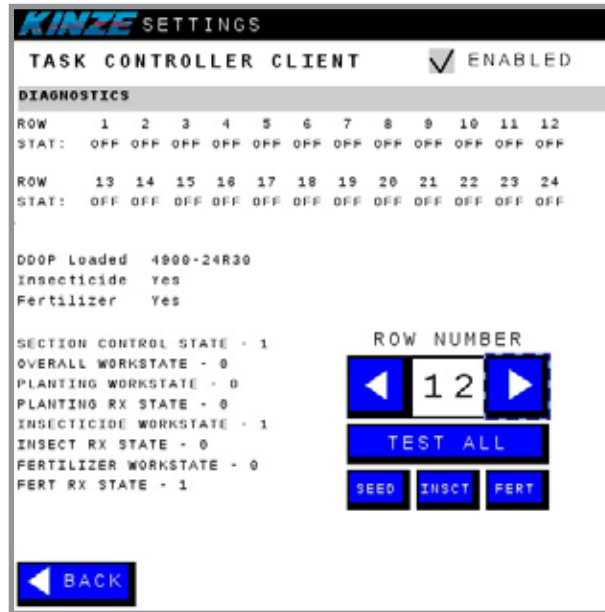
This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 10 seconds, the pressure has to be above the threshold for 10 seconds before a high bulk fill pressure alarm is displayed.

Crop Settings

In this screen, pressure levels for all crops can be set. These will be the values used when a crop is selected from the Crop Type screen.

The diagnostics section will display the sensor voltage, actual pressure, target pressure, and PWM duty cycle.

TASK CONTROLLER

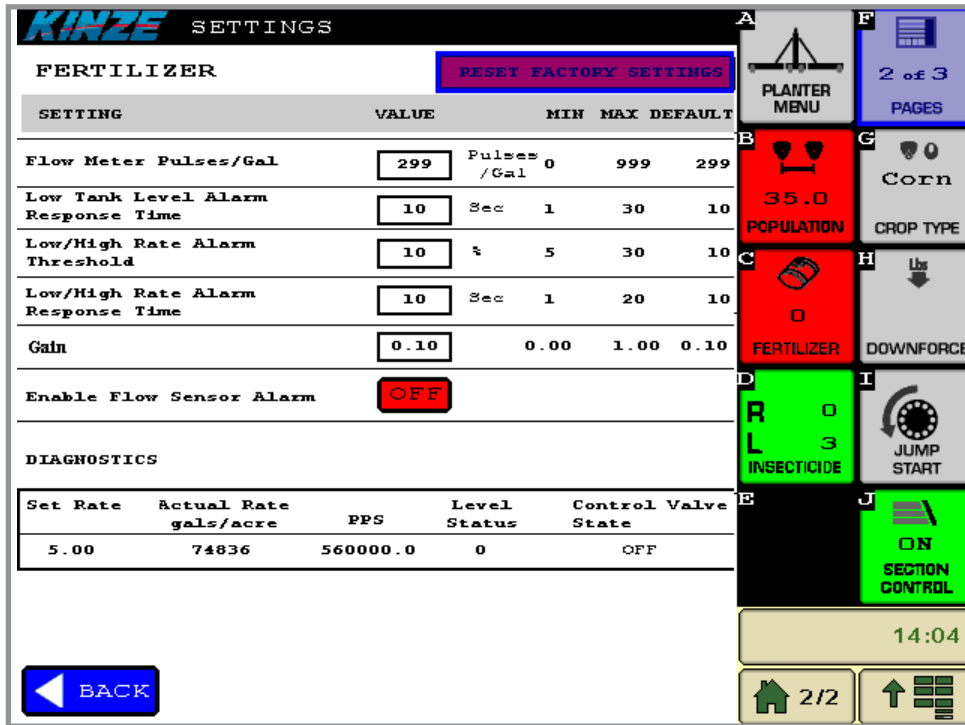


The task controller settings screen contains a checkbox to enable or disable the Task Controller Client. This either turns on or off the communication to the Task Controller. This defaults to ENABLED, DO NOT DISABLE THIS UNLESS MAPPING, SECTION CONTROL, and PRESCRIPTION CONTROL IS NOT DESIRED.

The task controller settings screen also contains diagnostic information which includes the ON/OFF status for each row coming from the Task Controller, the planter model and options that have been loaded to the Task Controller, and the current work states for the planter.

There is also a row test feature in this screen. Select a row and then select the TEST ALL button. This will turn the Seed Meter, Insecticide Meter, and Fertilizer Shut-off ON one at a time for that row. Each product can also be run individually for a row by pressing and holding its individual test button.

FERTILIZER



Flow Meter Pulses/Gallon

This sets the pulses per gallon for the flow sensor being used.

Low Tank Level Alarm Response Time

This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 10 seconds, the tank level sensor must show LOW for 10 seconds before an alarm will appear.

High/Low Rate Threshold

This sets the threshold for where a visual and audible alarm for high or low fertilizer rate will appear while planting.

Alarm Response Time

This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 10 seconds, the fertilizer rate has to be above the threshold for 10 seconds before a high fertilizer rate alarm is displayed.

Enable Flow Sensor Alarm

This setting turns the individual flow sensor alarms on and off.

Gain

This sets the step size for fertilizer adjustment. Increase this number for faster response time. Decrease it for more accurate control.

This screen also displays diagnostic information for fertilizer which includes the current set rate, actual rate being applied, pulses per second from the flow meter, tank level status and control valve state.

INSECTICIDE

SETTING	VALUE	MIN	MAX	DEFAULT
Volumetric Flow Rate	0.00045	cu Ft	0	0.01
No Flow Response Time	10	Sec	0	30

ROW	1	2	3	4	5	6
MPH	5.0	5.0	5.0	5.0	5.0	5.0
RPM	0.0	0.0	0.0	0.0	0.0	0.0
VDC	0.0	0.0	2.0	2.1	0.0	2.1

	LBS/CU FT	MIN	MAX	DEFAULT
Temik 15G (Gypsum)	63	1	99	63
Temik 20G (Gypsum)	68	1	99	68
Temik 15G (Grit)	32	1	99	32
Temik 20G (Grit)	0	1	99	41
Thimet 15G	63	1	99	63
Thimet 20G	68	1	99	68
Fortress 5G	40	1	99	40
Aztec	40	1	99	40
Bolster 15G	65	1	99	65
Counter 15G	53	1	99	53
Lorsban 15G	0	1	99	45

Volumetric Flow Rate

This sets the cubic feet per revolution to calculate the insecticide meter speed.

No Flow Alarm Response Time

This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 10 seconds, no flow will have to be seen on a particular row for more than 10 seconds before an alarm will appear.

Calibration Numbers

See ["Calibration Routine" on page 66](#) .

Enable Flow Sensor Alarm

This setting turns the individual flow sensor alarms on and off.

This screen also displays diagnostic information for insecticide which includes speed for each row, meter speed for each row, and voltage coming from the sensor for each row. These will vary row to row when using turning compensation.

Insecticide Calibration Table

Tap on the table button to see the insecticide calibration and densities.

CALIBRATION ROUTINE

Materials Needed:

- A scale capable of measuring grams
- Containers capable of capturing insecticide

1. Select at least 4 rows on the planter, spread equally across the planter. Put a container for collecting insecticide under the insecticide meter. Insecticide can be collected on as many rows as desired. Increasing the number of rows increases the accuracy of the calibration.
2. Start the tractor and turn on the hydraulics.
3. From the Planter Menu screen, select Settings.
4. Select Insecticide.
5. Select the Start button beside the Calibration Routine label.
6. The insecticide meters will begin to turn.
7. They will turn 10 revolutions, which will take approximately 60 seconds.
8. Once all of the meters stop, collect the containers used to collect insecticide.
9. Place an empty container on the scale and zero the scale.
10. Dump one of the containers with insecticide in it into the container on the scale.
11. Record the weight in grams.
12. Empty the container on the scale and zero the scale again.
13. Weigh the next sample and repeat this for the remaining containers with insecticide.
14. Once all the weights are taken, compare the results. If any container contains a lot more or less than the other containers, check the meter that sample came from for damage or debris. If a meter is found to have an issue, do not use it in the calibration.
15. If each sample is approximately the same weight, sum the weight of all containers.
 - a. Example
 - i. Row 1 - 126 grams
 - ii. Row 5 - 123 grams
 - iii. Row 11 - 126 grams
 - iv. Row 16 - 125 grams
 - v. Total = 500 grams
16. Divide the total weight by the number of samples to get the average.
 - a. Example
 - i. $500/4 = 125$ grams
17. Insert the average weight into the following calculation to determine the product density:

w = Average Weight in Grams
d = Product Density in Pounds/Cubic Feet

$$d = w/2.04$$
18. Round the number to the nearest unit.
 - a. Example
 - i. $125/2.04 = 61$ lbs/cubic feet
19. In the Insecticide Settings screen, select the TABLE button beside the Calibration Numbers.
20. Enter the density in for the insecticide you plan to use.

BULK FILL SCALE SETTINGS

SETTING	VALUE	MIN	MAX	DEFAULT
Alarm Threshold	100	0	1000	100
Alarm Response Time	10	1	30	10

Low Weight Threshold

This sets the threshold for where a visual and audible alarm for low tank weight will appear while planting.

Alarm Response Time

This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 10 seconds, when the tank weight has been below the threshold for more than 10 seconds, an alarm will appear.

DOWN FORCE SETTINGS

KINZE SETTINGS					
DOWNFORCE					RESET FACTORY SETTINGS
SETTING	VALUE	MIN	MAX	DEFAULT	
PSI to Force Formula	<input type="text" value="3.50"/>	1.0	4.0	3.5	
Zero Pressure Sensor Command					ZERO
Low Down Force Threshold	<input type="text" value="10"/> %	5	50	10	
Alarm Response Time	<input type="text" value="10"/> Sec	1	30	10	
Gain	<input type="text" value="0.10"/>	0.01	1.00	0.10	
Prefill Percentage	<input type="text" value="70"/> %	40	80	70	
DIAGNOSTICS	VOLTS	TARGET	ACTUAL	DUTY	CYCLE
Downforce	0.56	5	6		OFF
<input type="button" value="← BACK"/>					

PSI to Force Formula

This sets the conversion from pounds per square inch to pounds of force.

Zero Pressure Sensor Command

If there is zero pressure in the air bags but the screen is still reading a force, the zero button can be used to set the zero point of the sensor.

Low Down Force Threshold

This sets the threshold for where a visual and audible alarm for low down force will appear while planting.

Alarm Response Time

This sets the amount of time the alarm condition must exist before the visual and audible alarm comes up. If the response time is set to 10 seconds and the down force has been below the threshold for more than 10 seconds, an alarm will appear.

Gain

This adjusts the rate of change to achieve desired down force.

Prefill Percentage

This sets percentage of down force the system maintains when planter is raised.

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