

Released Version Numbers

Module	Version
Master Module	2.0
I/O Module	1.2
Row Module	2.4
Motor Module	2.3
Seed Sensor	2.0

1.0 New Features

- Down Force is Automatically Controlled
 - Now a desired down force can be entered and the system will automatically adjust to that force.
- Independent Control of left and right Vacuum Fans
 - A different vacuum level can now be set on the left and right side of the planter.

2.0 Improvements

- Added No Communication Alarms
 - If a Row or Motor Module is not present when you start up the system an alarm will be displayed showing which row is not communicating.
- Default Soybean Calibration factor was changed to 0 instead of 7%.
 - This change will not automatically happen you will have to go to Planter Menu, Settings, Population Monitor, and select reset to defaults. Or simply change the calibration factor to 0 for Soybeans.
- Insecticide rate can now be adjusted in tenths of a lb/ac.
- Increased accuracy of shut-offs.
- Increased reaction time for the centrifugal fertilizer control.
- Centrifugal fertilizer pump now runs all the time when the Fertilizer switch is on and the Master switch is on.
- Improved motor ramp up time so seed meters spin up to population faster.
 - Also improved reaction time for speed changes.
- Improved error handling in the Master Module to eliminate Kinze Screen crashes.
- Bug fixes for Ground Temperature sensor.
- Fixed bug where fertilizer row alarms would appear when the rate was set to zero.
- Improved population monitoring algorithm which solves the following issues:
 - Brief population dropouts for random rows.
 - Brief population spikes on random rows.
- Number of revolutions for a Seed Meter prime has been reduced to 1.25.
- Improved the bar graph behavior when large speed changes are made.

3.0 Known Planter Software Issues

Issue	Description	Workaround
Population Spike when switching Rx Zones	When you switch population zones a spike in population will be observed for 2 seconds.	The planter is planting the correct population the monitor just takes 2 seconds to reset.
Certain rows take a long time to alarm once fertilizer runs out.	If the fertilizer system runs dry not all the row sensors alarm at the same time.	The sensors that we currently use only need a very small amount of flow to trigger. So if there was any fluid left in the system they would still be triggered. Looking at improvements for the future.
Marker does not switch sides in Auto Mode when planter is lifted.	The planter is lifted in the headlands and the marker does not change sides when you are set in automatic mode.	Cycle the button off and then on again.
Continue button pressed on start-up screen but nothing happens	Occasionally when the system starts up and the Continue button is selected on the Start-up screen it will not go to the Planter Menu.	If the alternator is not already on; turn it on. Otherwise restart the system.
Meters will only turn 20rpm after a prime	If you prime the meters they will max out at 20rpm's until you lift and lower the planter. It controls fine under 20rpm's.	Workaround is to lift and lower the planter before you start or use the Jump Start button to prime instead of the Prime button.
Planter GPS indicator is green but turning compensation is not working	The planter requires GPS messages at a frequency of at least 5hz to operate. However the GPS indicator on the Kinze screens will turn green at lower frequencies.	Ensure that the frequency of the GPS messages are set to at least 5hz. To verify that turning compensation is working go the the Seed Meter Settings and look at the Diagnostics while turning. You should see a difference in speed from the right to left side of the planter.
Bad Calibration sent to Seed Sensor	Occasionally the correct calibration factor will not be sent to the seed sensors causing bad readings. Usually only happens when switching from one crop type to another.	Turn the alternator off and then back on.
Population Alarms take too long to trigger	Some users prefer alarms for population to trigger faster than the default settings.	The default is 3 seconds this can be adjusted down to 1 second in the Population Monitor Settings.

4.0 Approved Displays

- Raven Viper 4
 - Version 2.1.5
- John Deere 2630
 - Version 3.25.1152
- CNH Pro 700 and IntelliView IV
 - Version 30.1
- Ag Leader Integra
 - Version 6.2

4.1 Display Improvements

- Raven Viper 4
 - New Kinze Preferred Monitor
 - Allows you to view planting and mapping data at the same time
 - Several planter widgets are available to be placed on screen where needed:
 - Population Readout and Adjustment
 - Markers
 - Jump Start
- CNH Pro 700 and IntelliView IV
 - You can now log separate varieties on the right and left side of the planter.
 - An improvement has been implemented to start a new task when the current task data file gets too large. It will notify you of this on screen with a warning saying the task data file is full and it is starting a new task. Do not be alarmed this is normal, just select Ok and continue planting.
 - Offsets are now saved through power cycles.
- Ag Leader
 - Turning compensation will now work without the need for a special GPS harness.
 - To enable this go to the ISOBUS settings and enable the broadcast GPS messages checkbox.

4.2 Known Raven Viper 4 Issues

Raven Viper 4		
Issue	Description	Workaround
Can't log different hybrids on right and left side of the planter	The Viper 4 can only log 1 hybrid for the entire planter.	None, planned addition for the future.
Only 1 section of rate control	The Viper 4 can only do one rate for the entire planter in Rx mode.	None, planned addition for the future.
Only logs actual rate for the whole planter	If you set a different rate on the right and left side of the planter it will average it for the as applied map.	None, planned addition for the future.
Limited integration with farm management software	It will only work with Mapshots and SST to view as applied data. There is also a pdf that can be exported directly from the display.	None, planned addition for the future.
Viper 4 population bar graph does not match Kinze VT bar graph	The population displayed on the Viper 4 widget does not match the population displayed on the Kinze VT screen.	The information presented on the Viper 4 widget is slightly behind the population presented in the Kinze screens. This is due to some slight delays in the communication. So both numbers are correct; one is just a slightly newer value.
Planter flips around on screen when backing up	If the GPS quality is low; issues could be encountered with backing into a corner. The planter on screen will flip around and be pointing the wrong direction.	Press the direction arrow widget on the Viper 4 to flip the direction before you begin planting. Then override the auto section control so the rows do not shut off when the planter flips around.
Planter starts out mapping backward on screen and then flips around causing sections to shut off	If you start up the tractor and planter and immediately start trying to plant the Display has not found it's heading yet. The planter will flip around the tractor and plant over some area where it thinks it has already been causing sections to turn off where they should not.	Drive forward for at least 200 yards before you begin planting so the display can establish its heading. Or you can press the Section Control override button so the planter stays on through the mis-mapped area.
Viper 4 Bar Graph does not appear to have the same resolution as the Kinze bar graph	The bar jumps look larger on the Viper 4 bar graph.	The resolution is the same but looks different on the Viper 4 bar graph. Working on improvements.
Issue with Seeds/Acre Rx maps	If you create your Rx map in seeds/acre instead of kds/ac then the rate will be 1000 times what you want when loading it into the Viper 4.	For 2015 a correction factor can be entered to correct for this. Select Rx and then enter 0.001 for the correction factor.

4.3 Known John Deere 2630 Issues

John Deere		
Issue	Description	Workaround
Display Lock-ups	The display is still sluggish at times and is prone to lock-ups if too much data is on the display.	Clear data and controllers regularly.
Equipment Screen Issues with Fert and Insect	If fertilizer and insecticide are installed the sections in the Equipment screen will not look correct.	Does not cause planting issue, it just looks wrong on screen.
Summary Mapping looks wrong with Fert and Insect	If fertilizer and insecticide are installed the summary mapping does not look correct.	The workaround is still to view the products individually.
When you switch fields mapping won't start	If you switch fields the map will not paint until you cycle the Section Control button off and then on again.	Cycle Section Control button off and then on.
Phantom Coverage	The planter will shut-off for a pass in the middle of the field like it had already been planted. John Deere was telling us to shut-off.	Low occurrence rate; not aware of any updates to solve this issue.

4.4 Known CNH Issues

CNH		
Issue	Description	Resolution
Turning Compensation hard to set-up	It takes several steps to enable the GPS messages needed to make the turning compensation work.	Instructions are available.
Acre Counters Read High	Acre Counters on the display count high.	Known issue, acres are correct in Farm Management software.
General Issues with Data Card being full	If the USB and display memory gets too full random issues will appear with the display and planter.	This is still occurring with version 30, workaround is to clear display and USB memory often.

4.5 Known Ag Leader Integra Issues

Ag Leader		
Issue	Description	Resolution
Changing look aheads cause Rx Map to Disappear	The report was that after the look aheads were changed for the section control the Rx Map was lost on screen then the display crashed. It restarted in safe mode and did a self check. After this and a restart the Rx map was reloaded and everything worked fine.	Shut the system down and restart.

5.0 Approved GPS Receivers

There are many GPS receivers on the market that will operate with the Kinze system however Kinze has only tested a select few receivers. We cannot confirm the compatibility of any GPS receivers that is not on the list below.

- John Deere Starfire
 - Version - Varies per Starfire Receiver; check with your John Deere dealer for the latest software.
- Case 252, 262, 372 and Trimble equivalent
 - Version 3.15
- Ag Leader 1500/1600/3000
 - Version - Varies per Receiver; check with your Ag Leader dealer for the latest software.

6.1 Effects of Driving Habits on Section Control

Section Control is much more accurate if a few basic driving rules are followed.

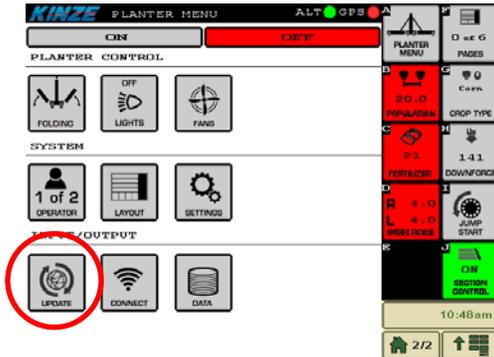
1. Make sure you drive at a constant speed in and out of the headlands. Due to the communication lag and time for seed to stop falling from the meter, the display will actually send the command to turn on/off before you leave or enter the headlands. So if you are slowing down right before you come into the headland, the section control will shut off too early because it was shutting off for a faster speed.
 - a. If you plan to slow down for the headlands, do so 100 feet before you enter the headlands and maintain that speed until the rows have turned back on coming out of the headlands. Also make sure when you set your shut-offs that you are traveling the same speed as you will be in the field.
2. Make sure you get the planter down in time coming out of the headlands. If you do not get your planter down in time there will be gaps.
 - a. To avoid this, it is recommended that you get the planter in the ground at least 10 feet before you leave the headlands.
3. Make sure the planter is straight before you leave the headlands. If you are still turning as you leave your headlands, this could cause erratic performance of the shut-offs because the outside of the planter is traveling at a higher speed than the inside of the planter. This doesn't mean you have to be 90 degrees to the headland but you need to be on the path you intend to drive before you leave the headlands.
 - a. To avoid this, it is recommended that the planter be on the intended path at least 10 feet before the first row leaves the headlands.

6.2 Effects of Display Variability on Section Control

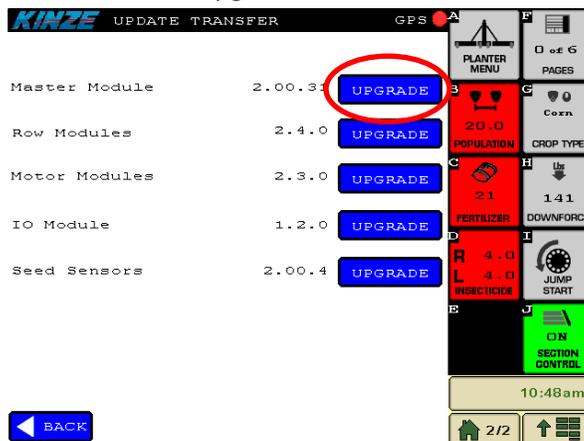
Each display has its own algorithms for calculating when a row should be on and off, and at times they can vary quite a bit. For example, if you are coming into you headlands at a slight angle, say 88 degrees to the headlands, some Displays might choose to shut the planter all off at the same time because the time to shut the first row off to the last is so small. However on a 60 foot planter this would still result in a 2 foot difference from one side of the planter to the other.

7.0 How to 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 the file.
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 these into a blank flash drive.
5. Insert the flash drive into the USB port in the Master Module.
6. Start-up the tractor, display, and alternator.
7. From the Planter Menu select the Update button.



8. Then select the Upgrade button beside the Master Module label as seen below.

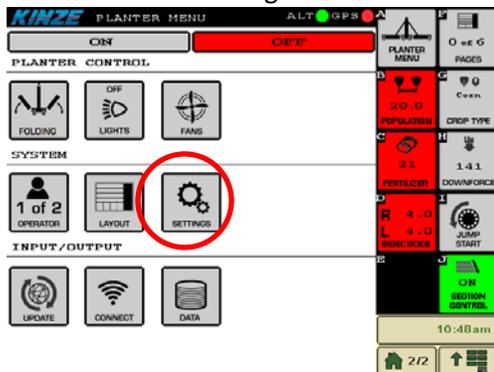


9. A screen will appear saying the update is in progress and the system will restart in 5 seconds.
10. Once the update is complete the display will lose communication with planter.

a. **DO NOT REMOVE POWER UNTIL THE KINZE SCREENS REAPPEAR!**

11. Once the Kinze Screens reappear, select Continue. You will get several alarms like Mismatch Serial Numbers and No Communication. Don't be alarmed, these will go away once we reconfigure.

12. Then select the Settings button from the Planter Menu.



13. Then select Config.



14. Then select Start.



15. Step through the configuration process and ensure the planter is reporting all the rows.

a. If not, check the rows that do not appear for module or wiring issues.

16. If all the rows are found, finish the configuration process and the Master Module will restart.

- Once the Kinze Screens reappear, navigate back to the update screen and make sure the new version is listed for the Master Module.
- Next the IO Module will be updated; select the Upgrade button beside the IO Module label as seen below.



- A screen will appear saying the update is in progress.
- Once the update is complete, you will be returned to the Update screen; ensure the new version is listed for the IO module now.
- Next the Row Modules will be updated.
- Turn on the Alternator if it is not already on.

a. DO NOT TURN THE ALTERNATOR OFF UNTIL THE ROW MODULE UPDATE IS COMPLETE!

- Select the Upgrade button beside the Row Modules label as seen below.

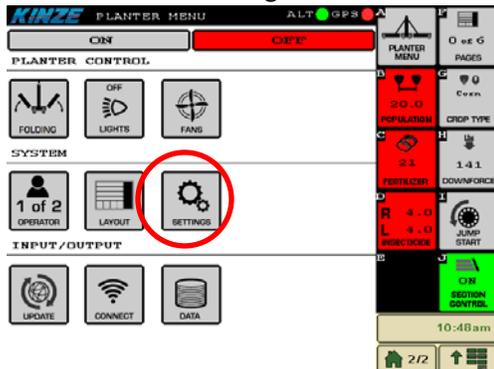


- A screen will appear giving the update status. Each Row Module will be updated one at a time.
- This update could take up to 10 minutes depending on planter size.
- Once the update is complete you will be returned to the Update screen.
- Verify that the correct version is now displayed beside the Row Modules label.

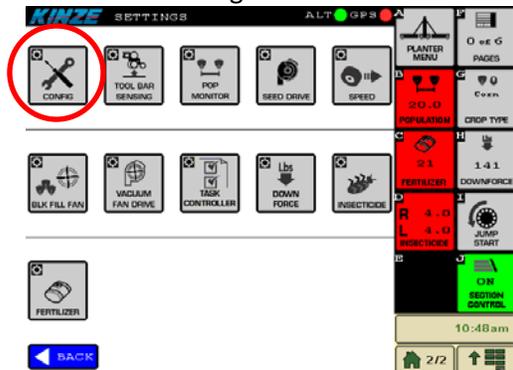
28. If the correct version is not displayed power down the display and planter and redo the update, make sure all conditions below are met.
 - a. Correct file is loaded on the USB stick
 - b. Alternator power was not disrupted during the upgrade
 - c. Tractor power was not disrupted during the upgrade
29. If the correct version appears for Row Modules; then select the Back button on the Update screen.



30. Then select the Settings button from the Planter Menu.



31. Then select Config.



32. Then select Start.



- 33. Step through the configuration process and ensure the planter is reporting all the rows.
- 34. If rows are missing in the configuration process shutdown the display and planter and restart.
- 35. Then update the Row Modules again ensuring the conditions below are met:
 - a. Correct file is loaded on the USB stick
 - b. Alternator power was not disrupted during the upgrade
 - c. Tractor power was not disrupted during the upgrade
- 36. If all the rows are found finish the configuration process and the Master Module will restart.
- 37. Once the system restarts, select Update from the Planter Menu.



- 38. Next the Motor Modules will be updated.
- 39. Turn on the Alternator if it is not already on.
 - a. **DO NOT TURN THE ALTERNATOR OFF UNTIL THE MOTOR MODULE UPDATE IS COMPLETE!**
- 40. Select the Upgrade button beside the Motor Modules label as seen below.



41. A screen will appear giving the update status. Each Motor Module will be updated one at a time.
42. This update could take up to 30 minutes depending on planter size.
43. Once the update is complete, you will be returned to the Update screen.
44. Verify that the correct version is now displayed beside the Motor Modules label.
45. If the correct version is not displayed, power down the display and planter and redo the update, make sure all conditions below are met.
 - a. Correct file is loaded on the USB stick
 - b. Alternator power was not disrupted during the upgrade
 - c. Tractor power was not disrupted during the upgrade
46. If the correct version appears for Motor Modules then select the Back button on the update screen.



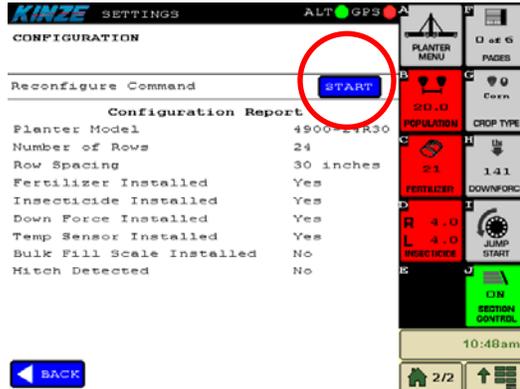
47. Then select the Settings button from the Planter Menu.



48. Then select Config.



49. Then select Start.



50. Step through the configuration process and ensure the planter is reporting all the rows.

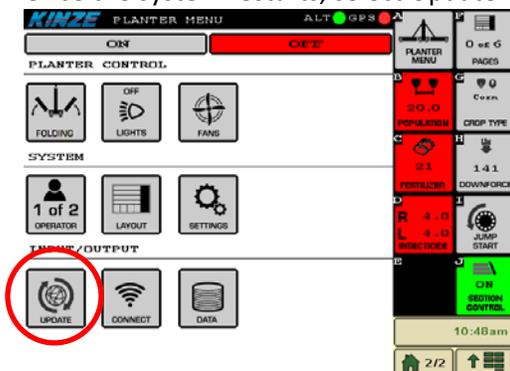
51. If rows are missing in the configuration process, shutdown the display and planter and restart. Then update the Motor Modules again ensuring the conditions below are met:

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

52. If all the rows are found, finish the configuration process and the Master Module will restart.

53. If the planter is a model year 2014, a Seed Sensor update will need to be done next. If your planter is a model year 2015, the Seed Sensors are already up to date and you can skip to step 62.

54. Once the system restarts, select Update from the Planter Menu.



55. Turn on the Alternator if it is not already on.

- a. **DO NOT TURN THE ALTERNATOR OFF UNTIL THE SEED SENSOR UPDATE IS COMPLETE!**

56. Select the Upgrade button beside the Seed Sensor label as seen below.



57. A screen will appear giving the update status. Each Seed Sensor will be updated one at a time.
58. This update could take up to 1 hour and 30 minutes depending on planter size.
59. Once the update is complete, you will be returned to the Update screen.
60. Verify that the correct version is now displayed beside the Seed Sensor label.
61. If the correct version is not displayed, power down the display and planter and redo the update make sure all conditions below are met.
- Correct file is loaded on the USB stick
 - Alternator power was not disrupted during the upgrade
 - Tractor power was not disrupted during the upgrade
62. The updates are now complete; the final step is to clear the memory of the old versions off the display.
63. Below are instructions on clearing the version memory off the display you are using:
- Raven Viper 4
 - Go to the Viper 4 Main Menu
 - Select Configuration Settings (Icon with gears on it)
 - Scroll through the settings screens until you find the button that says VT.
 - Select this button.
 - Then select the second tab.
 - Then select the button that is labeled Clear All ISOBUS Data.
 - John Deere
 - Go to the John Deere Main Menu
 - Select Message Center
 - Select Clean-up
 - Checkmark Controllers
 - Select Begin Clean-up

- c. CNH
 - i. Go to the CNH Main Menu
 - ii. Select Diagnostics
 - iii. Select VT
 - iv. Select NVM
 - v. Select Delete Folder
- d. Ag Leader
 - i. Go to the VT tab
 - ii. Select the Wrench
 - iii. Select Clear Virtual Terminal

8.0 Electronics Pre-Season Check Out

It is always a good idea to check your equipment before the start of the season to make sure everything is operational and ready to go to the field. Below are some checks that should be done prior to planting.

To run these tests make sure the tractor, display and alternator are turned on.

1. Check to make sure your lighting is working properly.
 - a. Left Turn
 - b. Right Turn
 - c. Tail Lights
 - d. Work Lights (if installed)

2. Check to make sure your tool bar position sensors (implement switches) are operational and set correctly.
 - a. To do this go to the Planter Menu and select Settings.
 - b. Then select Tool Bar Sensing.
 - c. This will give you a display of the states of the left and right switches. Up means the planter is up and Down means the planter is in the ground.
 - d. Lift and lower the planter and make sure the states change accordingly.

3. Check your vacuum fans to ensure they are operational.
 - a. Turn the hydraulics or PTO on for the Vacuum.
 - b. Turn the Master Switch and Fans on.
 - c. Go to the Planter Menu and select Settings.
 - d. Then select Vacuum Fan Drive.
 - e. At the bottom of the screen there is a Diagnostics Section.
 - f. Check to see that the Actual readout on screen roughly matches the Analog gauges mounted on the planter.
 - g. If they do not roughly match, you may need to zero the sensor or Analog gauge.

4. Check your bulk fill fan to ensure it is operational.
 - a. Turn the hydraulics on for the Bulk Fill Fan.
 - b. Turn the Master Switch and Fans on.
 - c. Go to the Planter Menu and select Settings.
 - d. Then select Blk Fill Fan.
 - e. At the bottom of the screen there is a Diagnostics Section.
 - f. Check to see that the Actual readout on screen roughly matches the Analog gauge mounted on the planter.
 - g. If they do not roughly match, you may need to zero the sensor or Analog gauge.

5. Check to make sure all motors on the planter spin.
 - a. To do this go to the Planter Menu and select Settings.
 - b. Then select Speed.
 - c. Then select Manual Speed and make sure a speed is entered.
 - d. Select back until you get to the Planter Menu.

- e. Then Turn on the Master Switch and set the planter down.
 - f. The motors for the seed meters and insecticide meters (if installed) should start spinning.
 - g. Go through each row one-by-one and make sure the motor on each row meter is turning.
 - h. Pay special attention to the insecticide motors (if installed) and make sure they are all spinning at the same speed. If one is spinning noticeably faster, this could be a wiring issue.
 - i. After your test is complete, make sure you go back to the Speed Settings screen and change it from Manual to your desired speed source. (Automatic Recommended)
6. Check to ensure the Seed Sensors are reading properly.
- a. To do this stick a seed tube brush up and down the tube and make sure the red light on the seed sensor blinks when it sees the brush.
7. If Insecticide is installed, check to ensure the sensors are reading properly.
- a. To do this go to the Planter Menu and select Settings.
 - b. Then select Insecticide.
 - c. At the bottom of the screen there is a Diagnostics Section.
 - d. In the row labeled VDC, each row with insecticide installed should have a voltage reading.
 - e. If it reads 0.0 on any such row, then there is an issue with the sensor.
8. If Fertilizer is installed, check to ensure the control system is working properly.
- a. If possible, fill the tank with water; 1/8 of a tank should be enough for these tests.
 - b. Turn hydraulics for the fertilizer pump on.
 - c. Set the rate to 5 gal/ac.
 - d. Turn the fertilizer and master switch on, then set the planter down.
 - e. The fertilizer pump should start running.
 - f. Go to the Planer Menu and select Settings.
 - g. Then select Speed.
 - h. Then select Manual Speed and make sure a speed is entered.
 - i. Then select the back button.
 - j. Then select Fertilizer.
 - k. At the bottom of the screen you will find a Diagnostics Section.
 - l. Ensure that after 20 seconds the Actual Rate matches the Set Rate.
 - m. Ensure that in the rows labeled FS (Flow Sensor) all say on. If they say off, that indicates that there could be a problem with that row.
 - n. Drain the rest of the water from the system and make sure you change the Speed setting back to your desired force. (Automatic is Recommended)
9. If Pneumatic Down Force is installed, ensure it is working properly.
- a. Ensure that the compressor kicks on when the tank is below 60 psi.
 - b. Ensure that once the Master Switch is turned on it adjusts to the correct force.
 - c. Check the planter for leaks.

10. If Bulk Fill Scales are installed, ensure they are working properly.
 - a. Ensure that both the right and left tanks are reading on both the Remote Display (catwalk) and in the cab.

11. Check the Jump Start Sensor for Damage and Proper Adjustment
 - a. Inspect the wiring going from the Jump Start sensor to the Master Module for damage. If damaged repair, 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 each other.
 - b. Inspect the sensor position to the pick-up wheel. The gap should be between 1/8" and 1/4". Turn the tire one full revolution and make sure that the sensor does not touch the pick-up wheel.