

Harriston

When Quality Counts



USER GUIDE

HARRISTON HYDRALUIC DRIVE

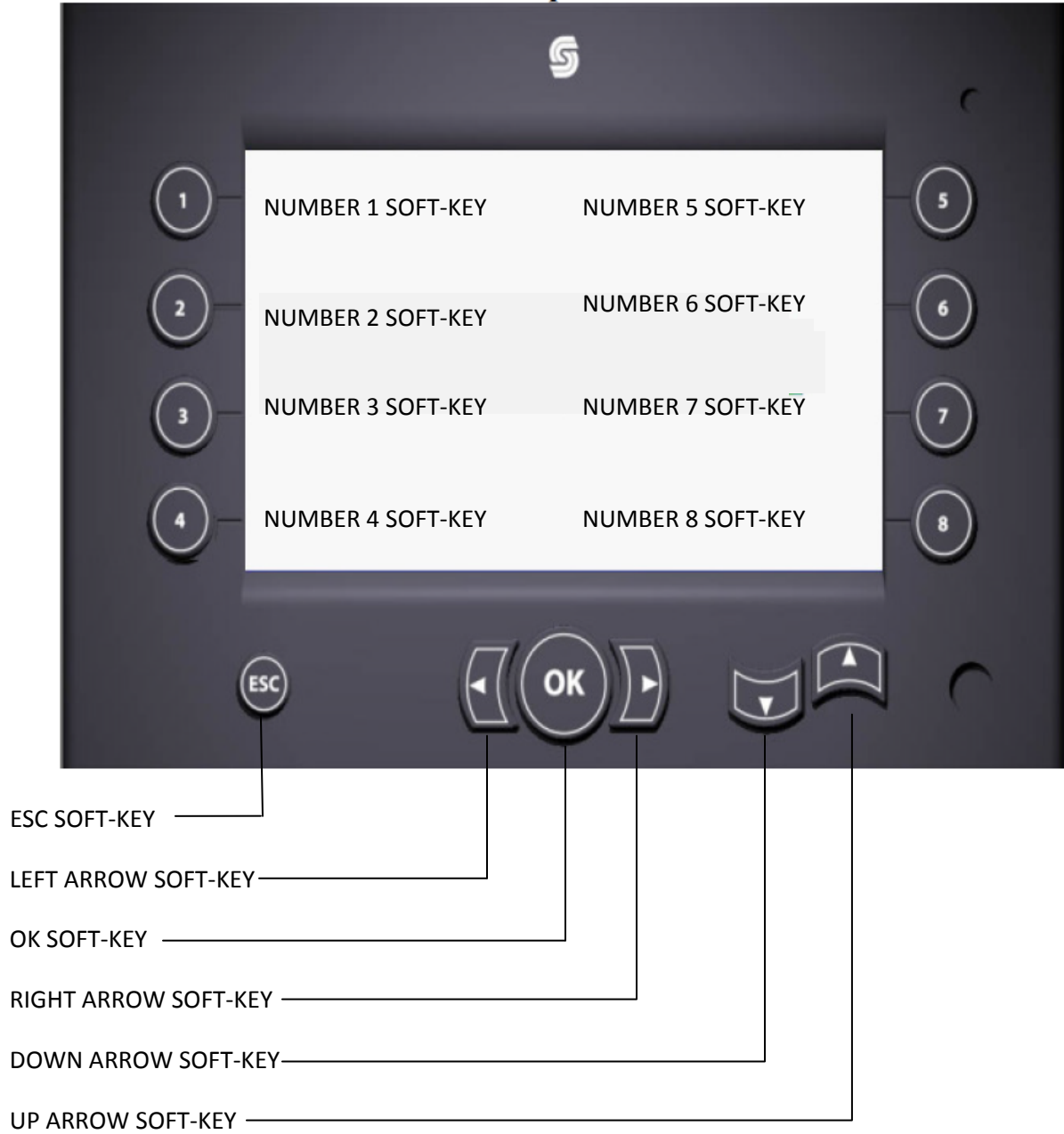
4/6/8 ROW PLANTER

PLANTING RATE CONTROL

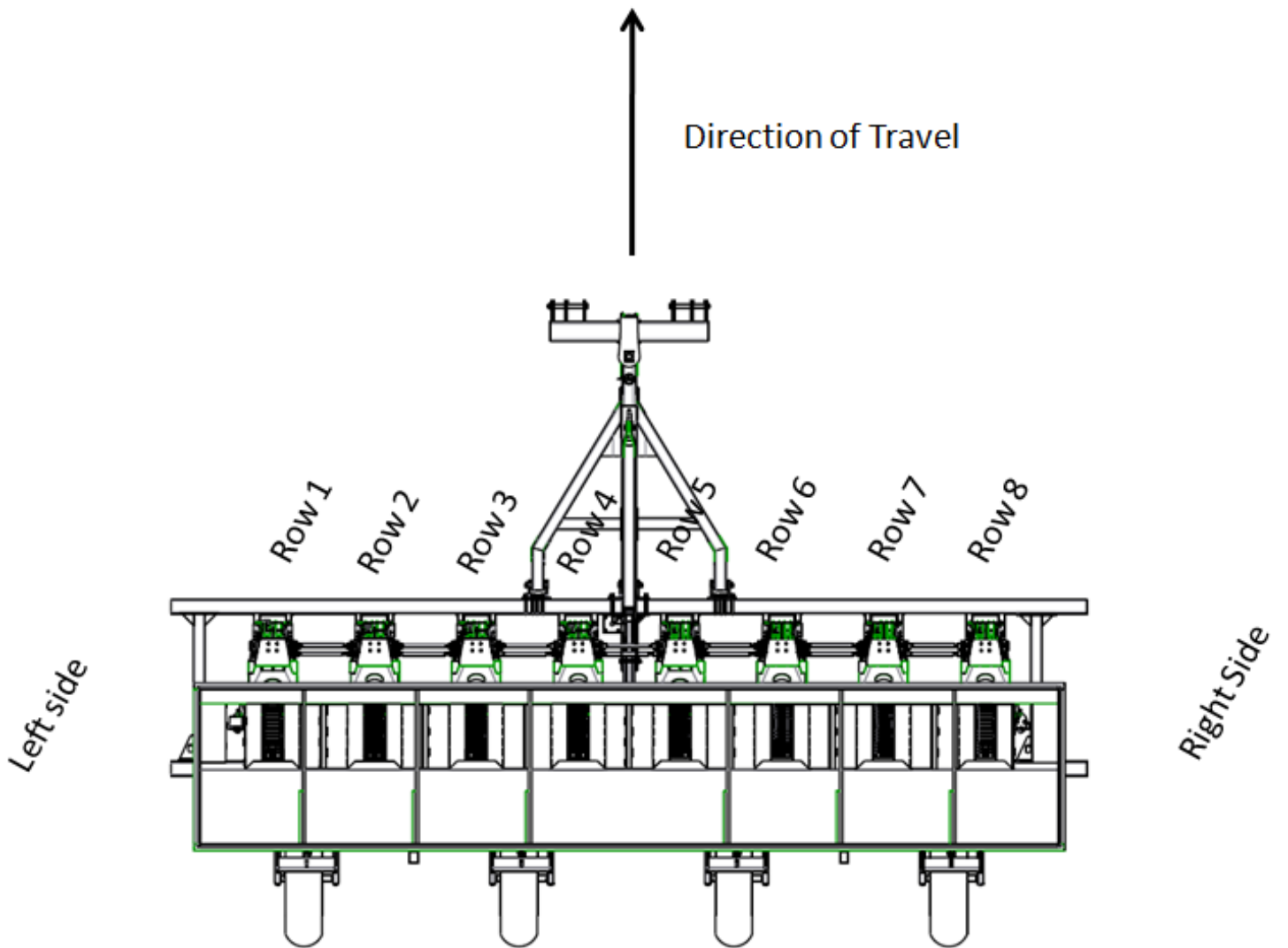
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MASTER LIST OF SOFT-KEYS

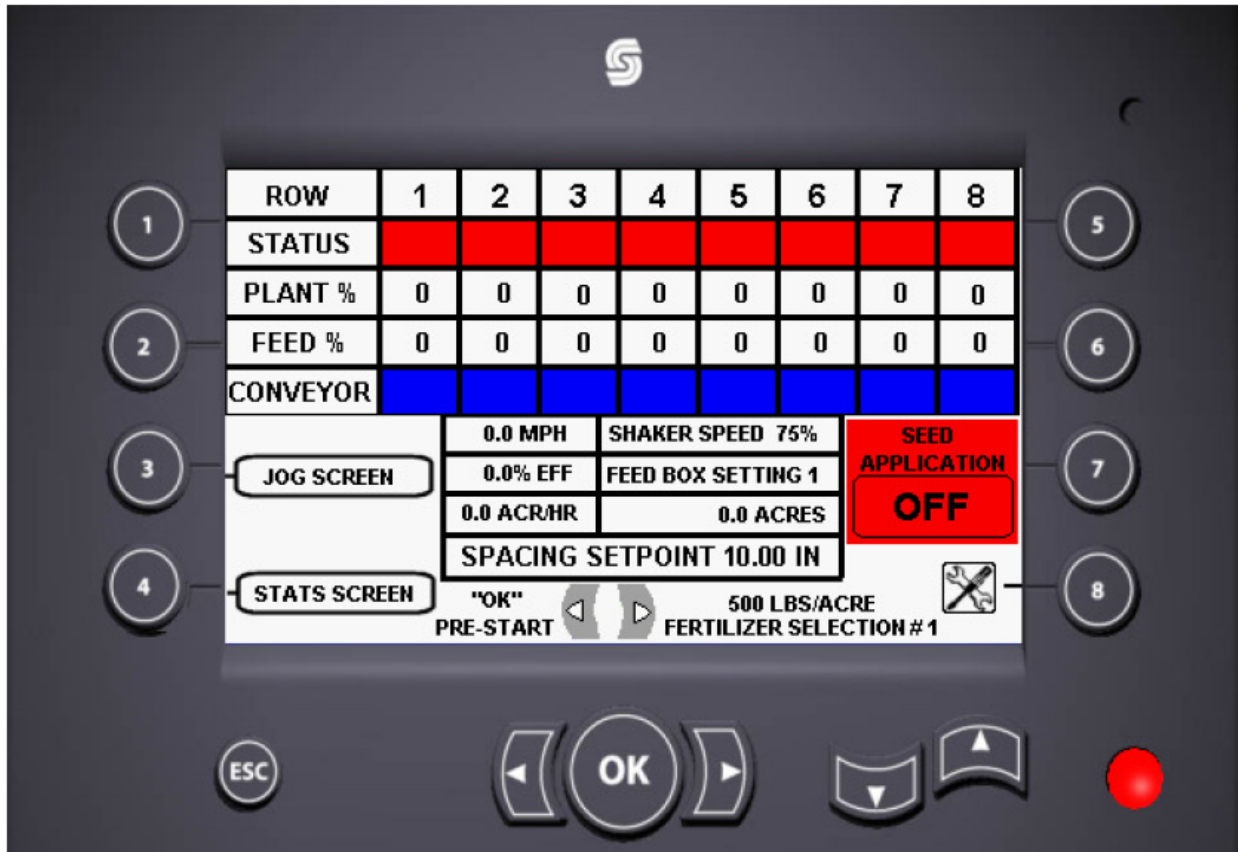


PLANTER VIEW



Row 1 is always orientated on left side of planter when in operation.

MAIN SCREEN

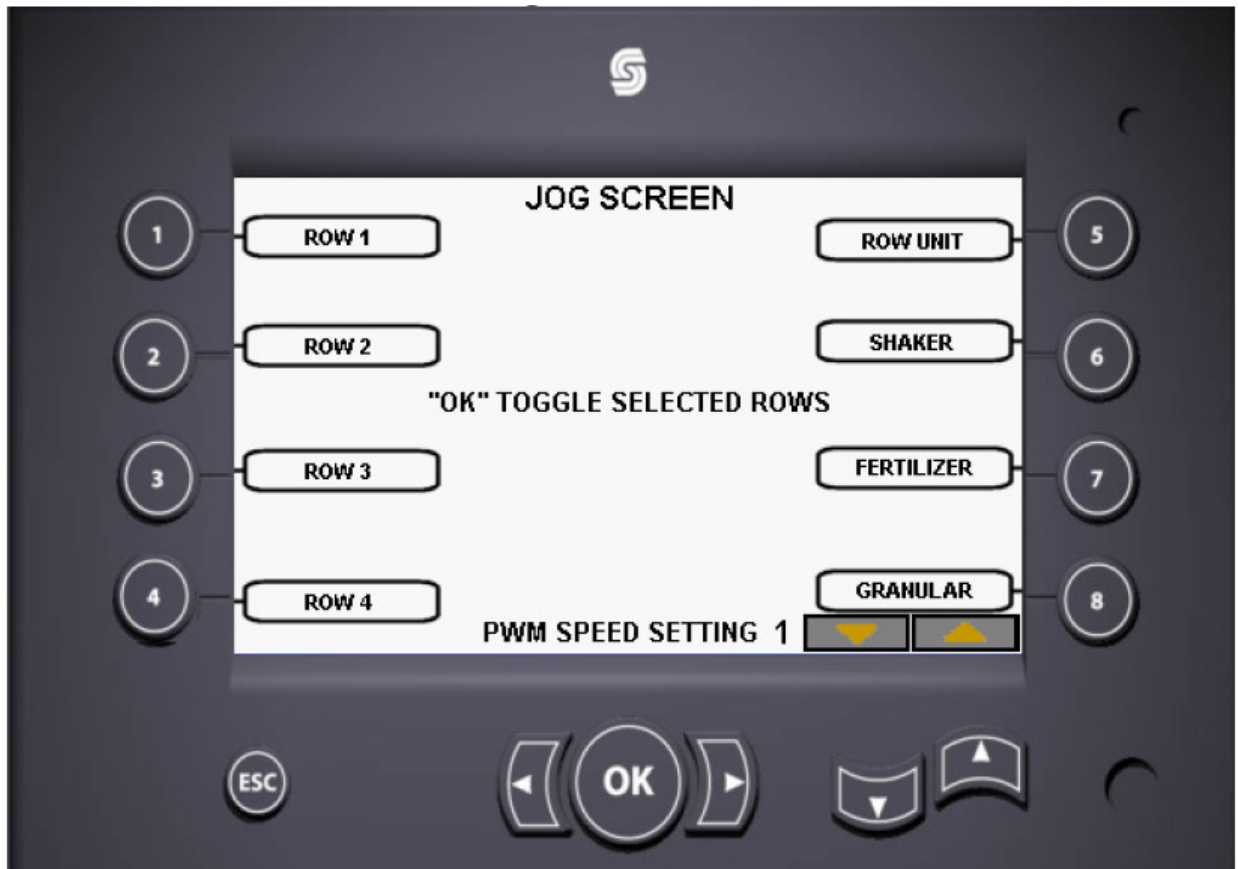


Before user starts it is important to remember that if you are lost anywhere in the computer the ESC soft-key on the monitor always brings you back to the main screen.

On this screen the system tracks and displays several important values. The short term planter efficiency for each row that is in use is displayed. With the calculated value the system displays an indicator color. Green indicates good or ok, yellow indicates a warning, and red would be a full out alarm. Underneath the status it shows us a short term percentage as well. The feed % shows you the percentage of time that the feed chains are running and conveyor tells you when the feed chain is on and when it is off. The blue indicator color means the chain is not running and when it is running it will change to orange. It also shows us speed, percent of efficiency, acres per hour, shaker speed, feed box setting, acres planted and your seed spacing. Also some of the soft-keys are used on this screen as well. The number 3 soft-key takes you to the Jog screen. The number 4 soft-key takes you to a stats screen. The OK soft-key will start the fertilizer pre-start. The Left and Right soft-keys allow you to change the amount of fertilizer between 3 preset amounts. It can be changed on the go. The number 7 soft-key starts all the functions on the planter. And the number 8 soft-key will let you into all the other set up screens outlined in this manual.

JOG SCREEN

From the main screen, depressing the number 3 soft-key will take user to this screen.



This screen allows us to fill rows individually in the event there is a malfunction in a single row. If you would depress the number 1 soft-key and hold it, only the number 1 feed chain would fill. This would work for soft-keys 1-4. If you had a 6 row or an 8 row planter by depressing the OK soft-key the soft-keys 1-4 would change to rows 5 through 8. If the planter has just been filled with seed and there are no seed pieces in the bowl or on the cup belt, depressing the number 5 soft-key the row units and the feed chains would all turn to fill the planter before you start. By depressing the number six soft-key the shaker would run across all rows. The number 7 soft-key would start dry fertilizer across all rows. Also same goes with the number 8 soft-key if you use granular chemical. The up and down soft-keys are for the PWM speed. This is how fast the row unit, shaker, fertilizer and granular would turn, 1 would be the slowest it would move and 10 would be the fastest. The feedbox chains are controlled by a manual flow control valve on the planter near the seed tank on the left side. This has an adjustable rod with settings 1 through 10 to control the speed of the feed chains. After you are finished adjusting these functions by depressing the esc key you will go back to the main screen.

STATS SCREEN

From the main screen, depressing the 4 soft-key will bring you to this screen.

STATS SCREEN				MORE
ROW	SEEDS	SKIPS	EFFICIENCY	
1	0	0	0.00 %	
2	0	0	0.00 %	
3	0	0	0.00 %	
4	0	0	0.00 %	
5	0	0	0.00 %	
6	0	0	0.00 %	
7	0	0	0.00 %	
8	0	0	0.00 %	
SEEDS/ACRE		0		
SKIPS/ACRE		0		

ESC MAIN HOLD "OK" RESET STATS SEED APPLICATION

This screen gives us a table displaying the stats for each row, total seeds planted, total skips, and efficiency. It also shows total seeds per acre and total skips per acre. By depressing and holding the OK soft-key all stats will reset and the ESC soft-key will bring the user back to the main screen. Also by depressing the number 5 soft-key on this screen will allow the user into another stats screen.

STATS SCREEN 2

From the main work screen depressing the number 4 soft-key followed by the number 5 soft-key will bring the user to this screen.



This screen allows the user to track how many acres the planter has planted. It will keep a running total until the user resets it by depressing the OK soft-key to reset the counter. Also by depressing the ESC soft-key will bring the user to the main work screen.

SETUP SCREEN 1

From the main screen, depressing the 8 soft-key will bring you to this screen.



On this screen we can change a number of settings. By depressing the 1 soft-key we can choose between standard units or metric units. (Note when metric units are selected everything that was standard will change to metric units.) In the event that your radar would fail, by pressing the number 2 soft-key it will turn the radar override on and allow you to plant without radar. To match the desired planting ground speed, the number 3 soft-key will increase the speed and the number 4 soft-key will decrease the speed. Also you can use this function to run the planter in place without moving to check planter functions. Remember what speed you pick in case of radar failure you will have to drive that speed on the tractor to plant accurately. It should also be displayed on the main screen next to the MPH box. The number 5 soft-key increases the speed of the shaker and the number 6 soft-key decreases the speed of the shaker. The number 7 soft-key will increase your seed spacing by quarter inch measurements and the number 8 soft-key will decrease seed spacing by quarter inch measurements. By depressing the right soft-key we will go into the second setup screen. Also by depressing the OK soft-key it will bring us into a password protected screen that will be outlined later in this manual. And the ESC soft-key will bring us back to the main screen.

SETUP SCREEN 2

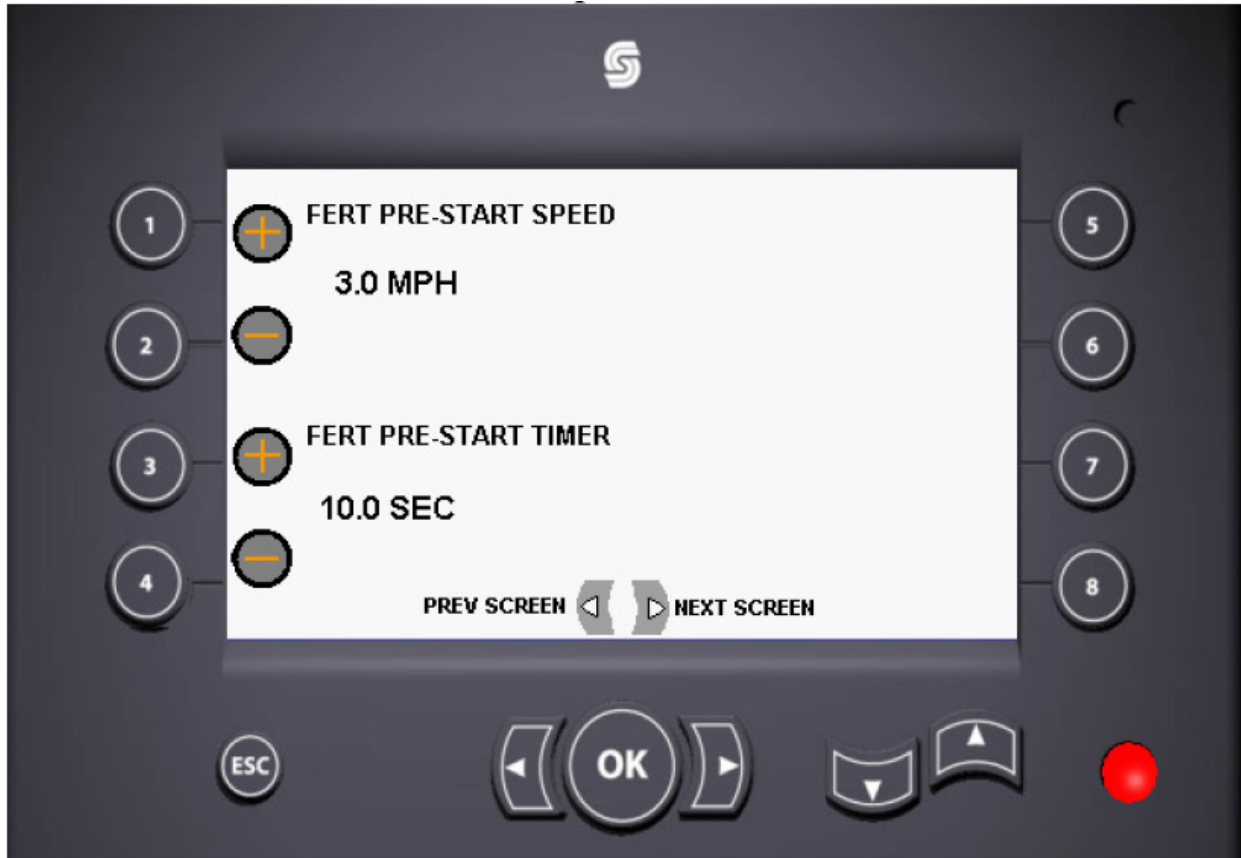
From the main screen depress the number 8 soft-key which will bring us to the setup screen 1. From setup screen 1 depress the right arrow soft-key to bring you to this screen.



The number 1 soft-key will increase pounds per acre in preset fertilizer setting 1 by 10 pound increments. By depressing the number 2 soft-key the number will decrease the amount of pounds per acre by 10 pound increments. By depressing and holding any of the numbered soft-keys it will change at a more rapid rate. Also the preset fertilizer settings for 2 and 3 work the same as 1. The granular setting is changed by .1 pounds per acre increments the same as setting the fertilizer settings. The left arrow soft-key will bring us to the setup screen 1 and the right arrow soft-key will bring us to the next setup screen. And the ESC softkey will bring us back to the main screen.

SETUP SCREEN 3

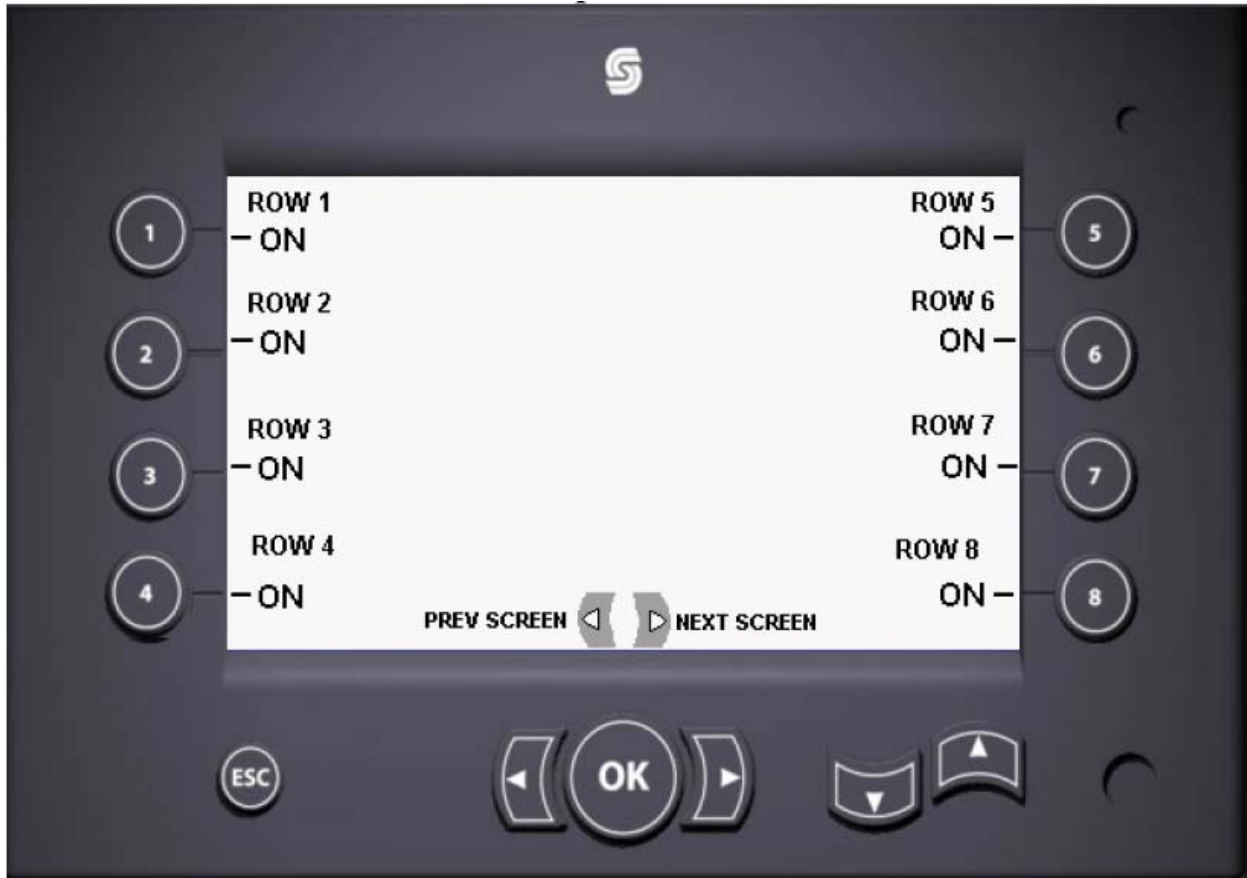
From the main screen, depress the number 8 soft-key and the right arrow soft-key twice to bring you to this screen.



In this screen you can setup the fertilizer pre-start. This engages the fertilizer motor at a given ground speed for a given amount of time. When the ground speed exceeds the set speed or the pre-start timer runs out, the program will take over and operate the planter. When setting this speed you will have to be going that speed in order for the motor to turn on. You can also set the amount of time it will run in seconds, increasing or decreasing by .1 seconds with a max amount of 15 seconds and low amount of 2 seconds. The left arrow soft-key will bring you to the previous screen and the right arrow screen will bring you to the next screen. And the ESC soft-key will bring us back to the main screen.

SETUP SCREEN 4

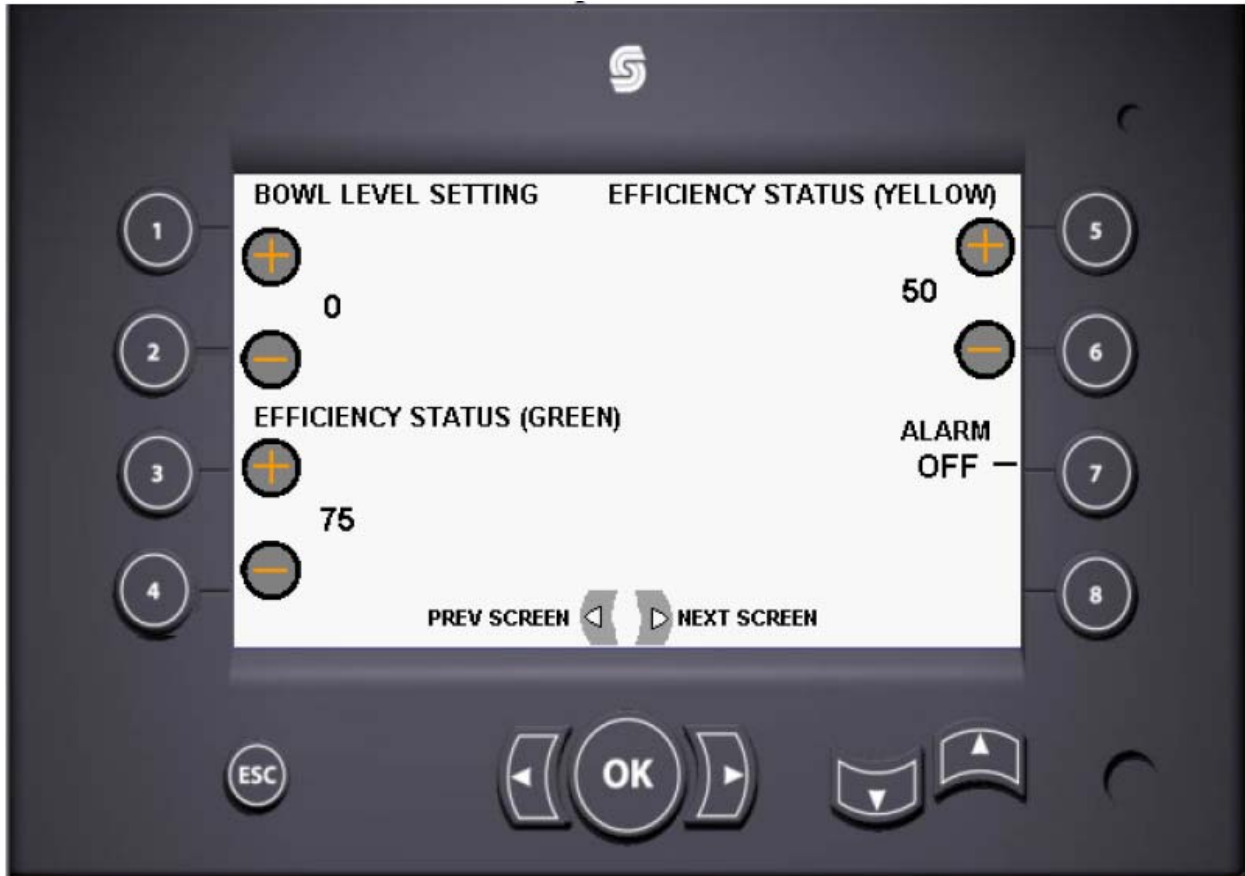
From the main screen, depress the number 8 soft-key and the right arrow soft-key three times to take you to this screen.



In this screen it allows you to shut any row feedbox off for a given row you want to leave in any arrangement. To turn rows "OFF" just simply depress any of the numbered soft-keys to turn that matching row off. Now the screen will have changed that row to off to turn it back on depress that soft-key that you pressed earlier. Now this will only turn the feed chain off not the row unit so it will take a little time for the bowl to empty out. The left arrow soft-key will take you to the previous screen and the right arrow soft-key will take you to the next screen. And depressing the ESC soft-key will take you back to the main screen.

SETUP SCREEN 5

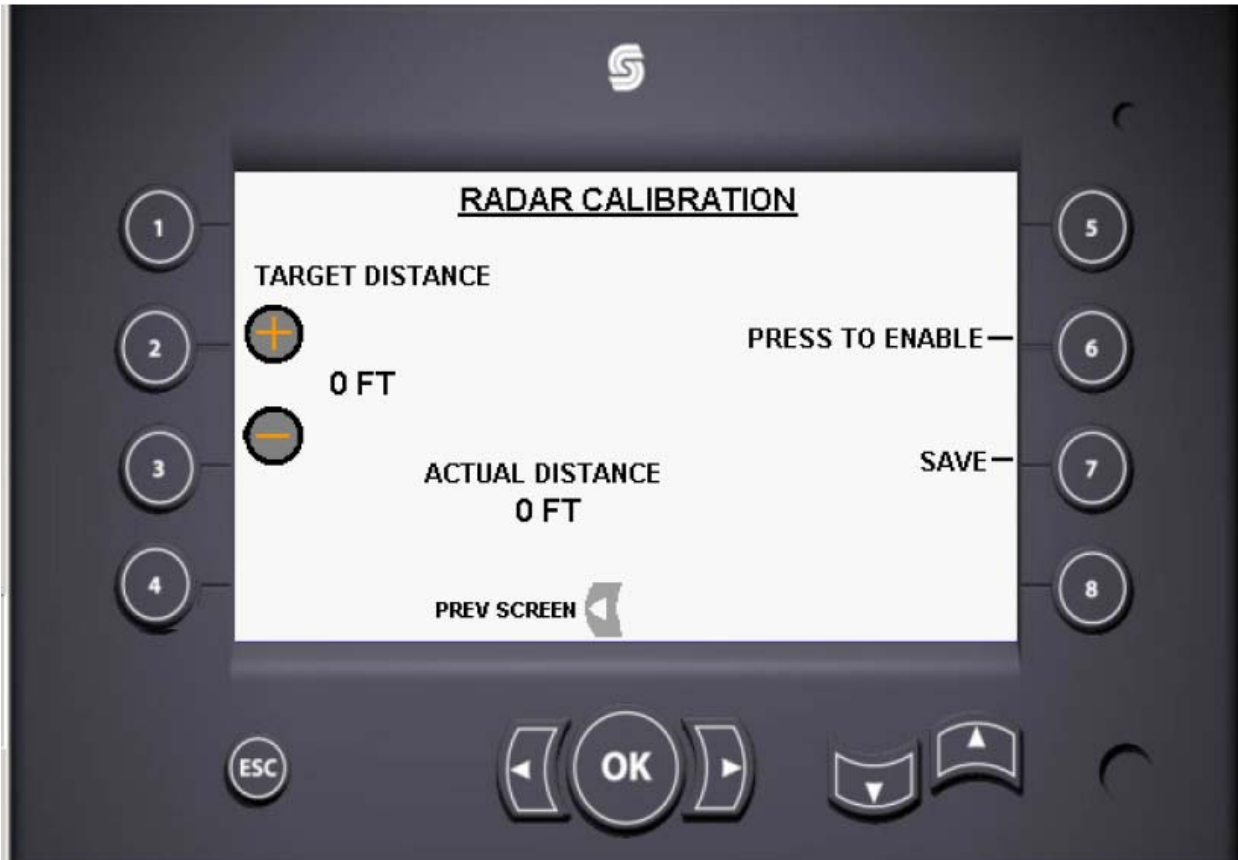
From the main screen depress the number 8 soft-key and then depress the right arrow soft-key four times which will take us to this screen.



In this screen under the heading bowl level setting it is necessary to understand how the bowl ultrasonic sensor works. This sensor gives off a 0-5 volt signal which is automatically ramped between the high and low set points. This signal is filtered in the sensor to eliminate the effects of brief signals such as a potato falling past the sensor. The operator can set the bowl levels in a range of 1-5 from the display. This will correspond to outputs of 1-5 volts. 0 is the lowest bowl level with the least amount of seed pieces in the bowl. 5 is the highest bowl level setting with the most amount of seed pieces in the bowl. If Level 1 is selected, the feed chain should be turned off if a signal of 1 volt or higher is reached. Level 2 would shut off the feed chains at 2 volts or higher and so forth. Also you can change the efficiency status that you would see on the main screen for both green and yellow. This is a percent that you will use to monitor the seed spacing as a percent. You can also turn the alarm off in the event you feel it is necessary to turn it off.

RADAR CALIBRATION SCREEN

From the main screen depress the number 8 soft-key and then depress the right arrow soft-key five times to take you to this screen.

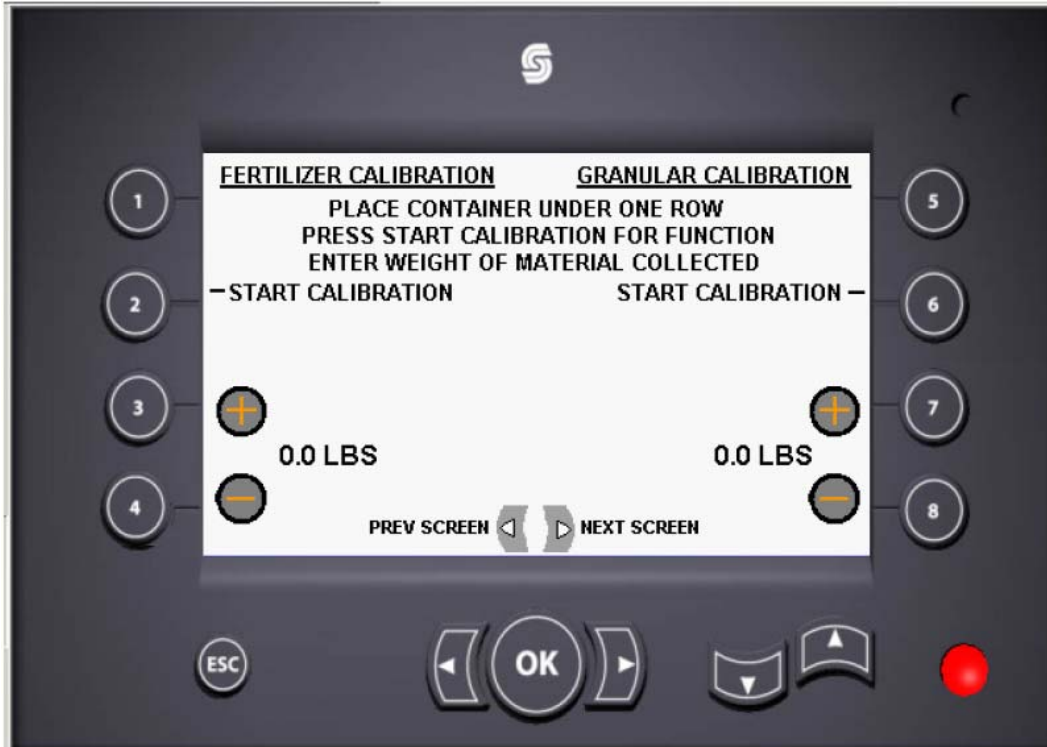


On this screen it may be necessary to recalibrate the radar if the system speed does not match the tractor speed. The very first thing we need to do is mark out 500 feet. You will need to use something visible like a flag for the beginning and the end. Now we want the tractor to be running on a smooth surface and at an even speed of 3 mph. When you reach the first flag by your rear tire of the tractor depress the number 6 soft-key and this will start the calibration process. Continue to your second flag and when the rear tire of the tractor reaches the same spot as when you started depress the number 7 soft-key. This saves the entry number that it calculated and now you will be able to see if your speed of the tractor and the monitor are the same. Depress the ESC soft-key that will take you back to the main screen where you will be able to see if the speeds match. If they don't match you will need to follow the steps again.

Remember this is a very important step as the computer uses the speed to help calculate your seed spacing.

FERTILIZER/GRANULAR CALIBRATION SCREEN

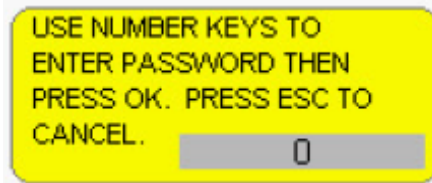
From the main screen depress the number 8 soft-key and then depress the right arrow soft-key six times to get you to this screen.



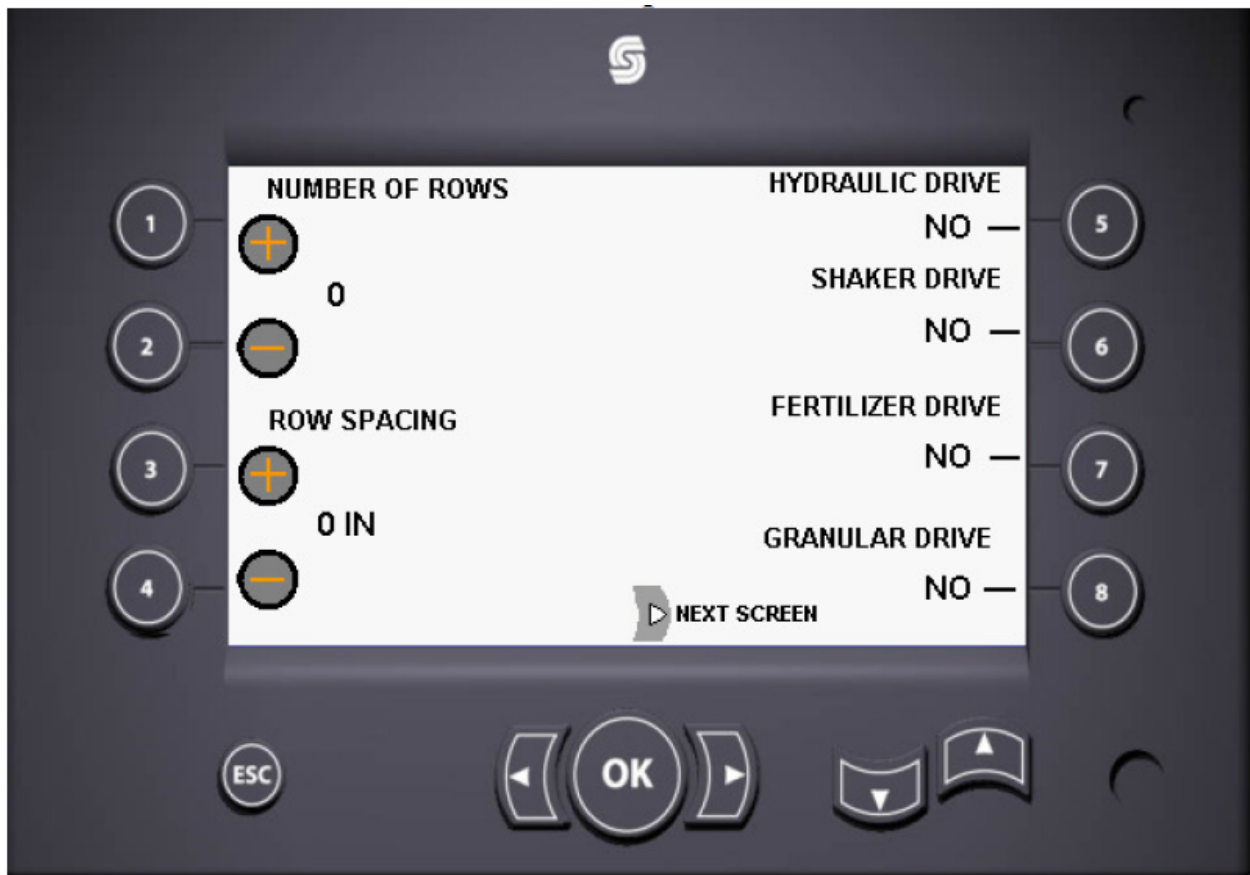
In this screen you can calibrate the fertilizer and granular functions on the planter. It is necessary to perform this if you have fertilizer or granular before you start planting because it will ensure that the planter is putting on the correct amount. You will first start by gathering an accurate scale and 5 gallon buckets for the right amount of rows for your planter. First weigh the buckets on your scale and with a marker write the weight of the bucket on the side you will have to subtract the weight of the bucket to get an accurate weight. Before you fill the planter it is important that the fertilizer gates be set at the same height. Take a ½ inch steel plate to set the gates for lower amounts of under 1,000 pounds per acre and a 1 inch steel plate if you are applying over 1,000 pounds per acre. Once the fertilizer hopper has fertilizer in it and the buckets have been placed under every row you will be able to begin. With the tractor hydraulics engaged depress the number 2 soft-key to start the calibration. It will only take a couple of minutes for the computer to do this process since it is done by only turning the shaft a metered amount of times. Once this is finished weigh the buckets individually and subtract the weight of the bucket. If all rows weigh the same, you will then enter the amount weighed for only one row by depressing the number 3 soft-key and holding it until it reads the correct amount. If the buckets do not all weigh the same it will be necessary to adjust the fertilizer gate until you get the same amount (use gate 1 as your control) across all the rows by repeating the steps above. Repeat these steps for the granular calibration also.

TECH SETUP SCREEN

From the main screen depress the number 8 soft-key and then depress the OK soft-key and it will prompt you to enter a password that is made up of numbers. The password for the tech setup screen is 321182 once these numbers are entered depress the OK soft-key.



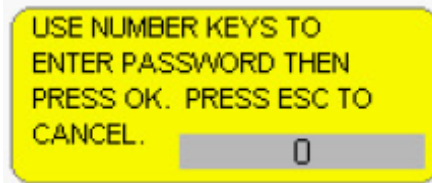
Once all of the above procedure is followed it will take you to this screen



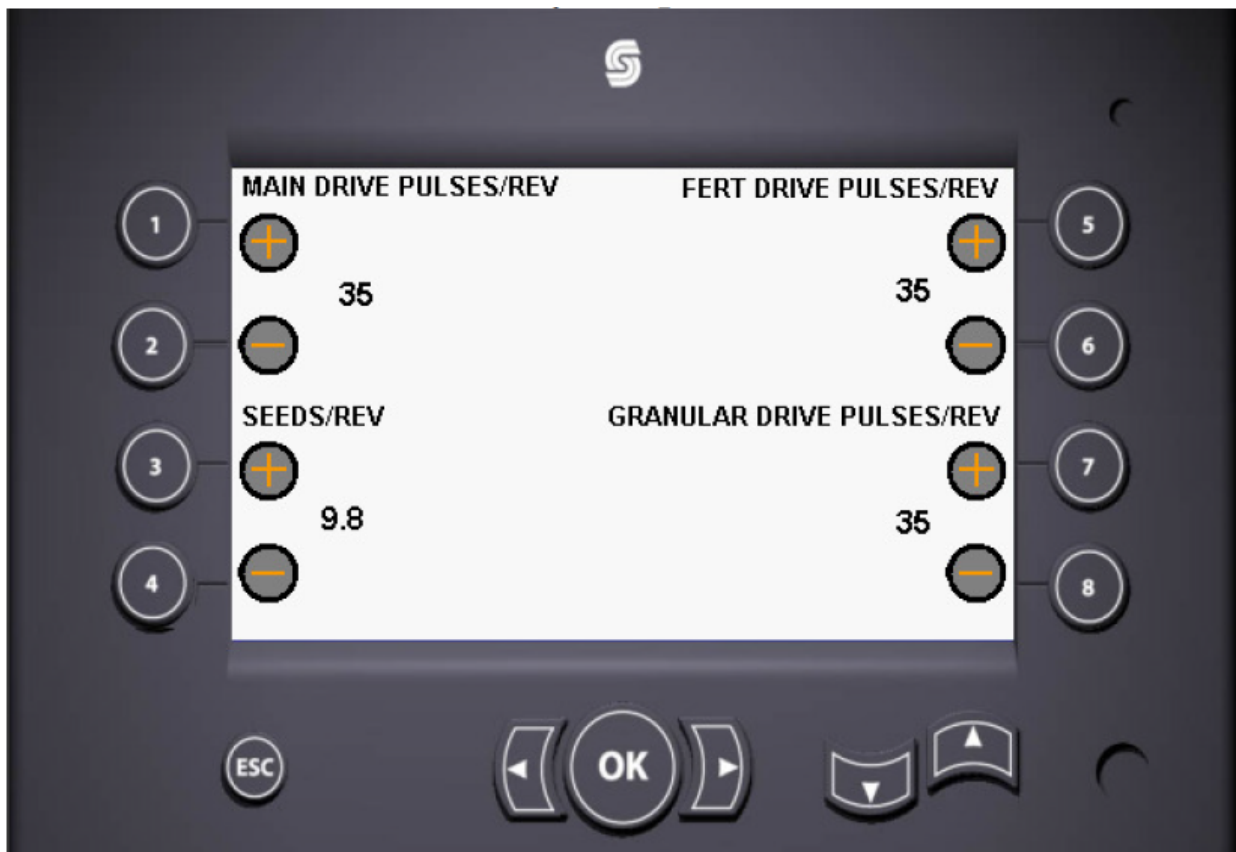
This screen allows you to change number of rows, change row spacing in inches, turn the drive off, shaker drive off, fertilizer drive off, and granular drive off. This will be programmed prior to you getting the planter.

FACTORY SETUP SCREEN

From the main screen depress the number 8 soft-key and then depress the OK soft-key and it will prompt you to enter a password made up of numbers. The password for the factory setup screen is 113161 once these numbers are entered depress the OK soft-key.



Once all of the above procedure is followed it will take you to this screen

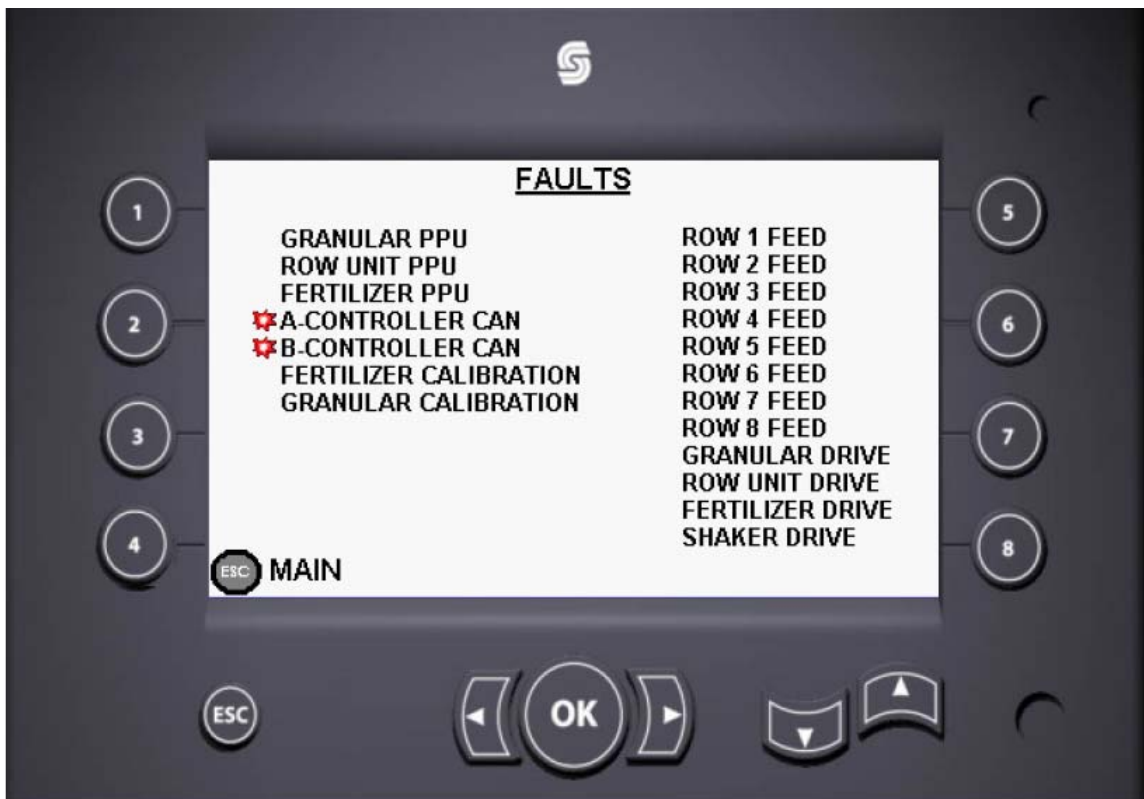


In this screen you can change the number of pulses that the motor uses for the main drive, fertilizer drive, and the granular drive. If the planter has Sauer Danfoss motors the pulse count is 35, if it has Eaton brand motors the pulse count is 60. Seeds per revolution are 9.8 for a cup planter and 24 for a pick planter. In any case this will have been done before the planter was shipped to you. This will only need to be changed if the motor is replaced with a different pulse count per revolution motor.

Troubleshooting



If you see in the left hand corner a red box with an exclamation point flashing, it means there is something wrong with the system. Depress the number 1 soft-key and it will take you to the fault screen.



Troubleshooting Continued

Notice the bullets that have red outlining them; this indicates where the problem would be.

Granular PPU refers to the motor pick up of that would run the granular part of the planter. Check to see if motor harness is plugged into C13 of the main harness.

Row Unit PPU refers to the motor pick up that would run the row units on the planter. Check to see if the motor harness is plugged into C9 of the main harness. This alarm can also be triggered if there is no hydraulic flow.

Fertilizer PPU refers to the motor pick up that would run the fertilizer part of the planter. Check to see if the motor harness is plugged into C11 of the main harness.

A & B Controller Can refers to the 2 gray controllers located in the middle of the planter in the back. The larger of the 2 controllers plugs into C3 of the main harness and the smaller has C1 & C2 of the main harness plugged into it. If you have a 4 row planter C1 will be the only connection plugged into the smaller controller. Check to make sure connection is connected.

Fertilizer Calibration, follow steps outlined on page 14.

Granular Calibration, follow steps outlined on page 14.

Row 1 Feed refers to the C7 connection from the harness to the feed box coil on row one. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C7 plug for any damage.

Row 2 Feed refers to the C6 connection from the harness to the feed box coil on row 2. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C6 plug for any damage.

Row 3 Feed refers to the C5 connection from the harness to the feed box coil on row 3. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C5 plug for any damage.

Row 4 Feed refers to the C4 connection from the harness to the feed box coil on row 4. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C4 plug for any damage.

Row 5 Feed refers to the C41 connection from the harness to the feed box coil on row 5. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C41 plug for any damage.

Troubleshooting Continued

Row 6 Feed refers to the C42 connection from the harness to the feed box coil on row 6. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C42 plug for any damage.

Row 7 Feed refers to the C43 connection from the harness to the feed box coil on row 7. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C43 plug for any damage.

Row 8 Feed refers to the C44 connection from the harness to the feed box coil on row 8. Check to make sure motor is not jammed or that a rock or stick has not jammed feed chain. Also check the C44 plug for any damage.

Granular Drive refers to the C12 connection from the harness to the PWM valve that controls the granular motor. Inspect plug for damage.

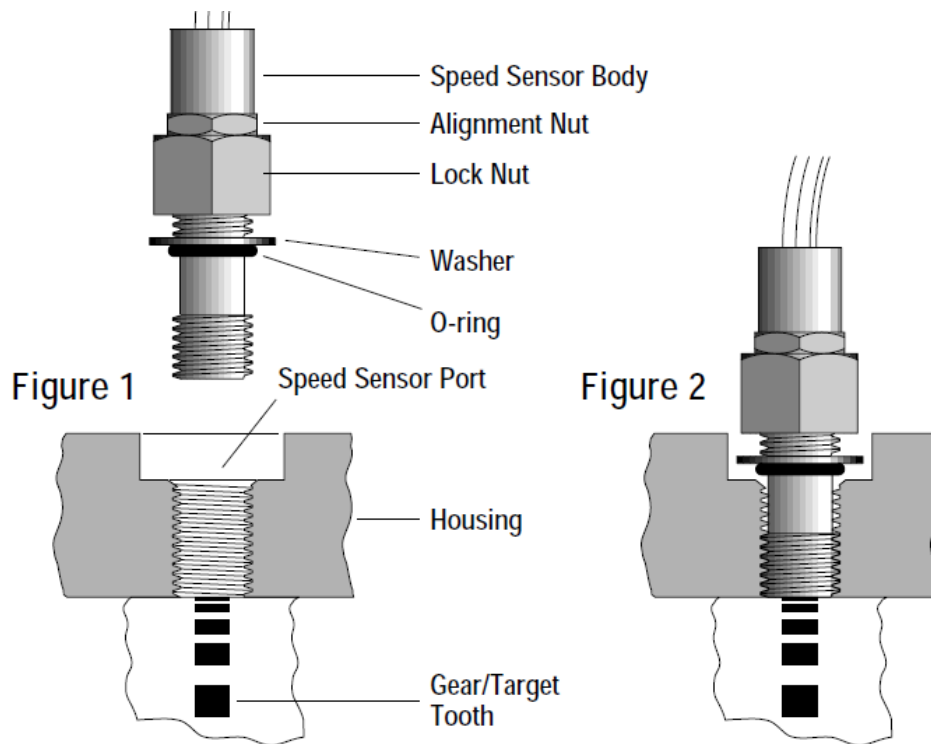
Row Unit Drive refers to the C8 connection from the harness to the PWM valve that controls the row unit drive motor. Inspect plug for damage.

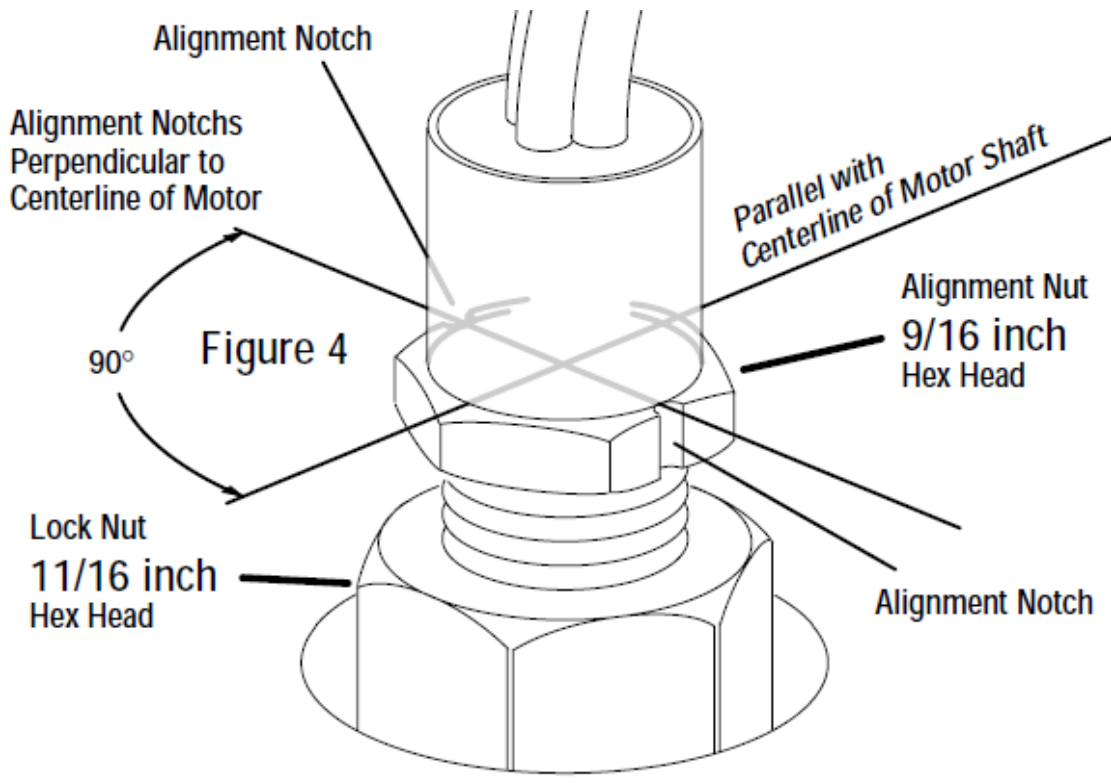
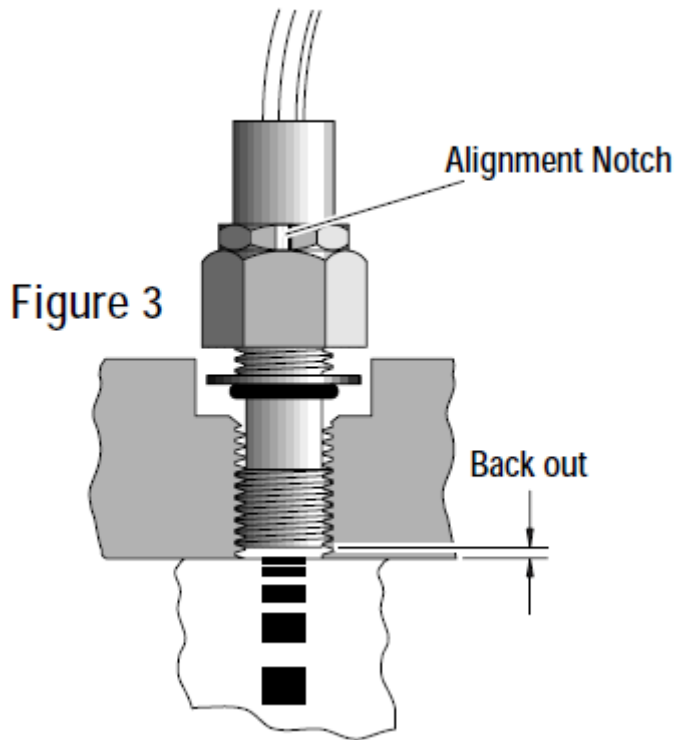
Fertilizer Drive refers to the C10 connection from the harness to the PWM valve that controls the fertilizer motor. Inspect plug for damage

Shaker Drive refers to the C46 connection from the harness to the PWM valve that controls the shaker motor. Inspect plug for damage.

SPEED SENSOR INSTALLATION INSTRUCTIONS

1. Rotate the motor shaft until a (gear/target) tooth is centered in the speed sensor port. If this is not done, the sensor may be damaged during the operation of the motor.
2. Make sure the lock nut and its threads are clean and dry for the proper torque. Position the lock nut against the alignment nut as shown Figure 1.
3. Move the washer and the o-ring up against the speed sensor body threads as shown in Figure 1.
4. By hand, lightly thread the speed sensor body into housing until the sensor touches against the motor (gear/target) tooth. Do not force the sensor against the (gear/target) tooth, damage may occur. Make sure the o-ring or the washer does not touch the housing- see figure 2.
5. Turn the speed sensor body out one quarter turn (CCW) plus the additional amount (CCW) need to make the alignment notches perpendicular to the motor shaft centerline ($90^{\circ} \pm 5$ degrees from the motor shaft centerline- Figure 3 & 4).
6. Maintain the speed sensor body alignment (Figure 4), and tighten the lock nut to 8,5-14 Nm (75-125 lb-in) (torque values are for clean dry threads).
7. Check the speed sensor body for correct alignment (Figure 4), reinstall the sensor if it is not correct.





NOTES



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PRINTED IN USA
ISSUE DATE: 2011