

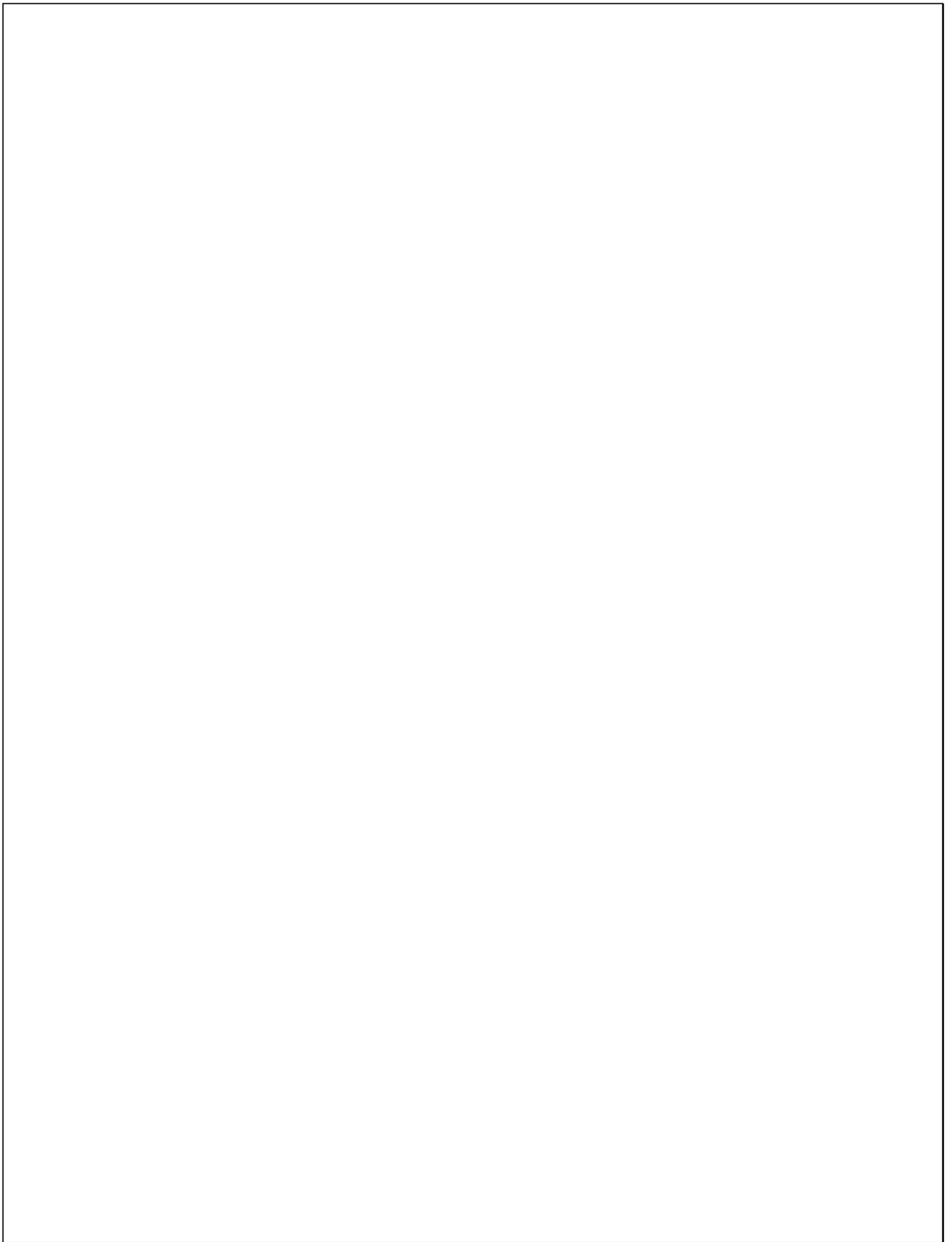
SEED RESEARCH EQUIPMENT SOLUTIONS

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Precision Vacuum Plot Planter

# SRES 2.0 User's Guide







SEED RESEARCH EQUIPMENT SOLUTIONS

# SRES 2.0 User's Guide

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## SAFETY PRECAUTIONS



This symbol means:

**ATTENTION  
BECOME ALERT  
YOUR SAFETY IS INVOLVED.**

When you see this symbol on the machine or in this manual, be alert to the potential for personal safety.

Follow all recommended precautions. Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. The operator can avoid many accidents by observing the warning signs. Keep the safety warning signs clean and readable. Replace all damaged warning labels on your machine that are not readable or are missing. The signal words used in this manual or on the machine are DANGER, WARNING, and CAUTION. The appropriate signal word for each has been selected using the following guidelines:

**DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

**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, or to alert against unsafe practices.

**CAUTION:** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury, or to alert against unsafe practices. Listed below are safety precautions that should become standard practice before and during operation, transport, and maintenance of the planter.



### General Safety

Carefully study and understand this manual.

Do not wear loose fitting clothing which may catch in moving parts.

It is recommended that suitable protective hearing and safety glasses be worn.

The operator may come in contact with certain materials which may require specific safety equipment, relative to the handling of such materials (examples: extremely dusty, molds, fungi, bulk fertilizers, insecticides, etc).

Assure that planter tires are inflated evenly.

Give the planter a visual inspection for any loose bolts, worn parts or cracked welds, and make necessary repairs. Never operate any equipment that is not in safe working condition.

Be sure that there are no tools lying on or in the planter.

Do not hurry the learning process or take the unit for granted. Ease into it and become familiar with your new planter.

Practice operation of your planter and its attachments. Completely familiarize yourself and other operators with its operation before using.



### **General Safety (continued)**

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

Always make sure there are no persons near the planter when the wings are being lowered from transport position.

Before applying pressure to the hydraulic system, make sure all connections are tight and that hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin causing injury.

Install lock ups on markers, as provided prior to transporting the planter or working around the unit.

## SAFETY PRECAUTIONS



### **During Operation**

Beware of bystanders, particularly children! Always look around to make sure that it is safe to start the engine of the towing vehicle.

Use necessary safety lights and devices and observe legal regulations before transporting on public roads.

Be especially observant of the operating area and terrain – watch for holes, rocks or other hidden hazards.

Always inspect the area to be planted prior to operation. Do not operate near the edge of drop-offs or banks. Be extra careful when working on inclines.

Do not operate on steep slopes as overturn may result.

Keep hands and clothing clear of moving parts.

Always make sure there are no persons near the planter when the marker assemblies are in operation.

If a marker cylinder has been removed for any reason, do not attach the rod end of the cylinder until the cylinder is cycled several times to remove any air that may be trapped in the system.

Serious injury or death can result from contact with electric lines. Use care to avoid contact with electric lines when moving or operating this machine.

Lower the planter when not in use and cycle the hydraulic control lever to relieve pressure in hoses.



### **Following Operation**

When halting operation, even periodically, stop the tractor, set the tractor or towing vehicle brakes, disengage the PTO and all power drives, shut off the engine and remove the ignition key.

Store the planter in an area away from human activity.

Do not permit children to play on or around the stored planter.

The planter should be stored in a dry and dust-free location with the hydraulic cylinders closed.

Engage all safety devices for storage.

Wheel chocks may be needed to prevent the parked planter from rolling.



### Performing Maintenance

Good maintenance is your responsibility.

Make repairs in an area with plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.

As a precaution, always recheck the hardware on equipment following every 50 hours of operation.

Correct all problems.

Before working on the planter, stop the towing vehicle, set the brakes, disengage the PTO and all power drives, shut off the engine and remove the ignition keys.

Never work under the planter while it is in a raised position.

Be certain all moving parts have come to a complete stop before attempting to perform maintenance.

Always use the proper tools or equipment for the job at hand.

Never use your hands to locate a hydraulic leak. Use a small piece of cardboard or wood. Hydraulic fluid escaping under pressure can penetrate the skin. If injured by escaping hydraulic fluid, see a doctor at once. Gangrene can result. Without immediate medical treatment, serious infection and reactions can occur.

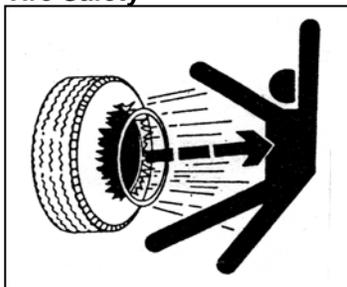
Replace all shields and guards after servicing and before moving.

After servicing, be sure all tools, parts and service equipment are removed.

### SAFETY PRECAUTIONS

If the planter has been altered in anyway from the original design, the manufacturer does not accept any liability for injury or warranty.

#### Tire Safety



Inflating or servicing tires can be dangerous. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job. Whenever possible, trained personnel should be called to service and/or mount tires.

Failure to follow proper procedures when mounting a tire on a rim can produce an explosion which may result in serious injury or death.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



#### Drive Line Safety

**DANGER** Rotating drive line contact can cause death – keep away. Do not operate without all driveline, tractor and equipment shields in place; without drivelines securely attached at both ends, and without driveline shields that turn freely on driveline.



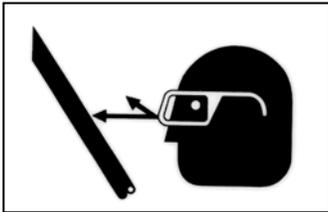
**Performing Maintenance (continued)**



**Hydraulic System Safety**

**DANGER** Before applying pressure to the hydraulic system, check that all connections are tight and that the hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can penetrate the skin causing serious injury. If injured by escaping hydraulic fluid see a doctor at once. Gangrene can result.

Relieve pressure on system before repairing or adjusting or disconnecting.



Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.

Keep all components in good repair.

## SAFETY PRECAUTIONS

Shown below are various safety stickers, part number and location. Keep the safety warning signs clean and readable. Replace all damaged warning labels on your machine that are not readable or are missing.

**CAUTION**

**Lock this unit in the up position before stacking the machine.**

# **ST053**  
On front of hopper of the inside wing unit of the stacking toolbar

**CAUTION**

1. Read and understand the operators manual.
2. Do not permit riders on the planter frame.
3. Clear the area of all persons when the planter is in operation.
4. Use extreme care when operating the planter near electrical lines.
5. Lower planter to the ground on a level surface before disengagement from tractor.
6. Use necessary safety precautions as safety lights and devices and observe legal regulations before transporting planter on public roads.
7. High pressure fluids can cause injury. Relieve pressure before disconnecting hydraulic lines. Tighten connections before applying pressure.

ATI 4

# **ST050**  
On front of toolbar

**Position for Pins / Posicion para Pasador**  
 "IN" for Raw or Small Seed  
 "DENTRO" Semillas Pequeñas Y/O Sin Pellet  
 "OUT" for Pelleted or Large Seed  
 "FUERA" Semillas Grandes Y/O Con Pellet  
**# ST051**  
 On MS metering box

**WARNING**  
**TOW ONLY**  
**WITH FARM**  
**TRACTOR**  
**# ST056**  
 On front of pull-type  
 Toolbar

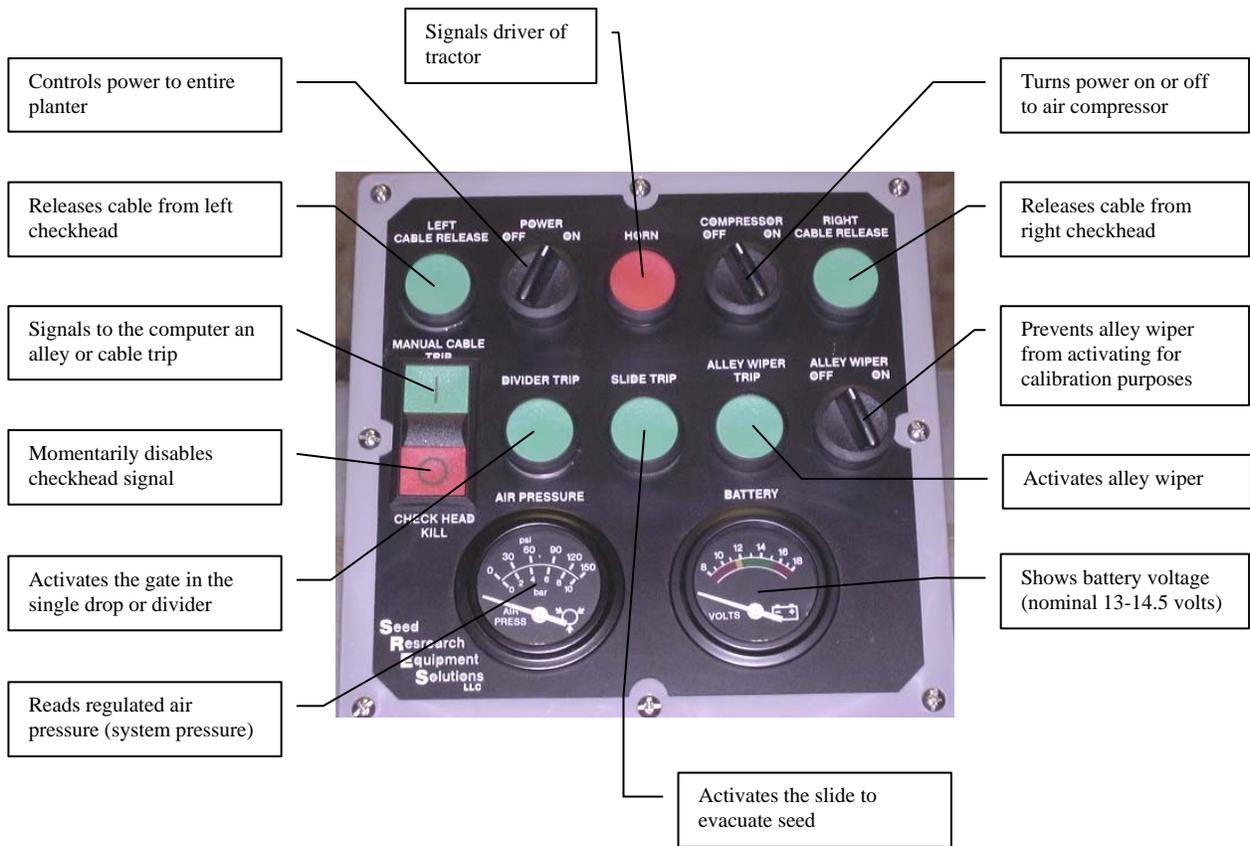
  
**WARNING**  
**TO AVOID INJURY**  
 Stand clear,  
 Keep others  
 away when  
 raising or  
 lowering  
 markers.  
 Lock row  
 markers for  
 transport  
 using the  
 locking  
 sleeve or  
 locking pin.  
**# ST052**  
 On row marker

**DANGER**  
  
**ROTATING DRIVELINE**  
 CONTACT CAN CAUSE DEATH  
**KEEP AWAY!**  
 DO NOT OPERATE WITHOUT —  
 • ALL DRIVELINE, TRACTOR AND  
 EQUIPMENT SHIELDS IN PLACE  
 • DRIVELINES SECURELY  
 ATTACHED AT BOTH ENDS  
 • DRIVELINE SHIELDS THAT TURN  
 FREELY ON DRIVELINE  
**# ST057**  
 On PTO shaft

**WARNING**  
  
 Agricultural chemicals can be  
 dangerous. Improper use can  
 result in injury to persons,  
 animals and soil. Handle with  
 care and follow instructions  
 of chemical manufacturer.  
**# ST055**  
 On inside of the granular  
 hopper lid

# Planter Controls

## *SRES Main Control Box*



## ARMOR X10

*Control Screen Console*

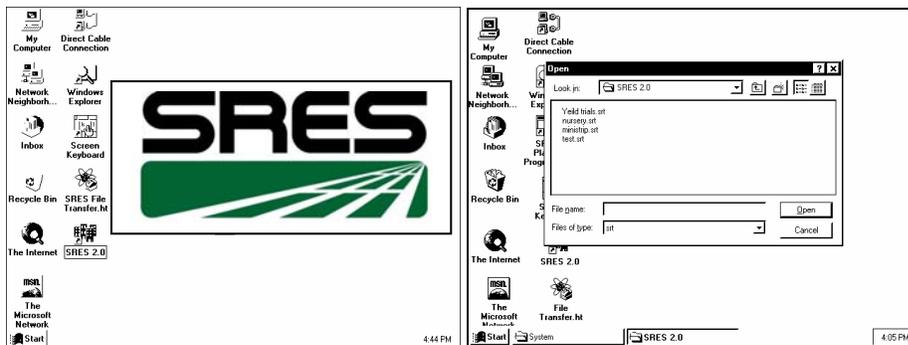
In the "OFF" position, the toggle switch on the Big John remote screen will stop or prevent the seed shaft, dividers/single drops, slides, and alley wipers from moving.

The key pad is used for selecting preset population (seed spacing in inches) rates during planting. Populations are displayed on the screen as seed spacing. The asteric (\*) key is used for a start cycle button (pg. 26).

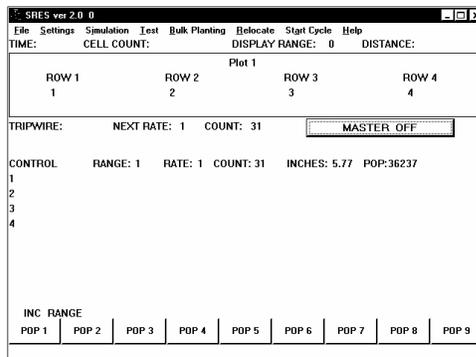
## Setup

### *Learning the Big John Control System*

1. Connect the computer to a power source: either from the planter, wall adapter, or car adapter.
2. Boot the Computer up by using the chrome toggle switch on the upper right hand side of the computer. Flipping the switch up turns the computer "ON", and down turns the computer "OFF".
3. The computer takes approximately 30-40 seconds to boot up. After the *Windows 95* appears, the desktop will come into view.



4. Using the stylus, click on the SRES 2.0 planter program icon twice quickly. This brings up an "Open" screen. To open existing settings, select the file and click on **Open**. If there are no settings saved yet, you can click on **Cancel** and it will start the program using default settings.
5. This brings you to the Run Screen.



6. Review the pull down menu bar in the run screen. The selections and their meanings are as follows in the chart below:

### Run Screen Top Menu

Menu	Selection	Operation
<b>File</b>	Open	Opens existing file
	Save As	Saves the existing file or saves as a new file
	Exit	Exits the program
<b>Settings</b>	Planter Settings	Settings for planter operation
	Plot Settings	Settings for plots (field map)
	Population Settings	Presetting for populations
	Calibrate Distance	Automatic Counts/Foot calibrate settings
<b>Simulation</b>	Speed	Simulate a speed determined by plot time in the Plot Settings screen
	Checkhead	When selected, the checkhead will be simulated by settings of the planted plot length, alley length, and the distance input from either the Simulate Speed or ground speed.
<b>Test</b>	Divider	Computer generated signal activates component
	Slide	Computer generated signal activates component
	Alley Wiper	Computer generated signal activates component
	Checkhead	Computer generated signal activates component
<b>Bulk Planting</b>	Disabled/Enabled	Activates/deactivates Bulk Planting mode. The planter gets input for speed and distance from ground speed encoder on the drive wheel. Planting will be at chosen seed population. No alleyway or activating of components will happen in bulk planting mode.
<b>Relocate</b>	Goes to Relocation screen. Specify range and plot or row of your current location. Specify direction of range and plot or row you are traveling in the field.	
<b>Start Cycle</b>	Dump first packet of seed into divider hopper. Activate Start Cycle. Planter evacuates and rotates seed plate to clean out planter. Planter then loads the first plot on the seed plate and is ready for the next pass. Message "Waiting for first checkhead" appears in bottom run screen. The * button on the remote box performs the same function.	
<b>Help</b>	Opens the help screen. This screen contains all of the help topics for the program. Use the scroll bar to scroll through the topics. In the settings screens, clicking on the name of the setting will link you to it's location in the help screen.	

## Settings Menus

7. Select Settings. Drop down and select **Planter Settings**.
8. The following is a chart listing the settings found in the **Planter Settings** menu and their significance in the operation of the planter. The settings are in the order of which they are set.

## Planter Settings

Setting Name	Use
<b>Gear Ratio</b>	Sprocket ratio from the hydraulic motor to the seed shaft. (Example – $(30/20)*(26/18) = 1.5*1.444 = 2.16$ )
<b>Plate Cells</b>	Number of holes in the seed plate
<b>Divider Time</b>	Time the divider is open in seconds
<b>Evac Start Point</b>	Increasing this number evacuates the plot earlier, decreasing this number evacuates the plot later.
<b>Evac Time</b>	Amount of time (in seconds) the slide is tripped and evacuating seeds from the seed chamber. SRES recommends 1.5 seconds to guarantee no carry over. This time can be adjusted but please contact SRES to help you in your particular situation.
<b>Speed up to Load</b>	This number controls the speed up in the alley way. Increasing the number increases the speed up, starting the plot sooner. Decreasing the number decreases the speedup, starting the plot later.
<b>Alley Wiper On</b>	This determines when the alley wiper is activated. Decreasing the number will activate the alley wiper sooner. Increasing the number will activate the alley wiper later.
<b>Alley Wiper Off</b>	This determines when the alley wiper is deactivated. Decreasing the number will deactivate the alley wiper sooner. Increasing the number will deactivate the alley wiper later.
<b>Alley Setback</b>	Alley Setback– Increasing Alley Setback moves the alleyway in the direction of travel. Decreasing Alley Setback moves the alleyway in the opposite direction of travel. Alley Setback is the distance in inches that the checkhead is in front of the actual seed drop.
<b>Rows/Plot</b>	Number of rows per plot
<b>Number of Rows</b>	Number of row units on planter

### HELP!

Much of the information above is used in detailed help screens throughout the program in the settings menus. Click on the setting's name and it will bring you to it's description in the help menu.

9. Select **Close** to exit the planter settings menu. This will bring you to “**Save Settings?**” box. Select **Save**, **Save As**, or **Close**.
  - *Close* will return to the run screen without saving changes.
  - *Save* will save the settings under the current settings file name.
  - *Save As* allows you to save the settings as a new file.
10. You should now be back in the run screen. On the menu bar, select **Settings**. Drop down and select **Plot Settings**.
11. The **Plot Settings** menu holds the settings for your plot data and some field mapping information. Plot Settings are as follows:

## Plot Settings

Setting Name	Use
<b>Planted Plot Length</b>	This is the length of the planted plot in inches. (Example – button to button distance <b>minus</b> the length of the alleyway)
<b>Alley Length</b>	Enter the Alley Length in inches.
<b>Checkhead Block</b>	The checkhead block will ignore all trip signals for the designated distance in inches in the box. This helps eliminate false trips caused by trash or cable bounce. This feature can also be used to skip a button. Example: Planting a 30’ plot with a 15’ button to button cable.
<b>Number of Ranges</b>	This setting represents the number of ranges including border ranges in a pass.
<b>Plot Time</b>	This is the time used for Simulate Speed and Start cycle. This should be set to the seconds between buttons.
<b>Counts per Foot</b>	This is the encoder counts per foot of distance moved.
<b>Database File Name</b>	Enter the name of the file to receive planting data here. The number should end in “.txt” and is limited to 8 characters.

12. Select **Close** to exit the plot settings menu. This will bring you to “**Save Settings?**” box. Select **Save**, **Save As**, or **Close**.
13. You should now be in the run screen. On the menu bar, select **Settings**. Drop down and select **Population Settings**.
14. The **Population Settings** screen allows you to enter up to nine different population presets as either seeds/acre or seeds/plot.

See chart on page 12.

## Population Settings

Heading	Description
<b>Spacing</b>	Seed spacing in inches. This is formulated from the population input column.
<b>Seeds/Plot</b>	Targeted amount of seeds to be planted in the planted plot length. This will match the input column when the Seed Per Plot figure rate is selected.
<b>Seeds/Acre</b>	Targeted population figured as seeds per acre. This will normally vary from the input column slightly, to the closest population that achieves the correct alley length.
Setting	Description
<b>Population 1</b>	Population 1 – Population one is the default population you want to plant. Depending on Figure Rate, input either the approximate population in seeds per acre you want to plant or the number of seeds per plot you want to plant. The computer figures the seed spacing by either using the population in seeds per acre and row spacing or the planted plot length and number of seeds per plot. The actual population, number of seeds per plot, and seed spacing are shown beside each population number.
<b>Population 2-9</b>	Depending on Figure Rate, input either the approximate population in seeds per acre you want to plant or the number of seeds per plot you want to plant. The computer figures the seed spacing by either using the population in seeds per acre and row spacing or the planted plot length and number of seeds per plot. The actual population, number of seeds per plot, and seed spacing are shown beside each population number.
<b>Row Width</b>	Spacing between row centers in inches. Row spacing is used to calculate seeds per acre populations.
<b>Alarm %</b>	The alarm will indicate FAILED on the screen if seed count is below the population of a selected rate. The controller checks the count every three feet. Example: Rate 2 population = 8", alarm = 80, you should have 4.5 seeds in three feet or 36 inches. FAILED will display for that row if seeds counted in three feet drop below 3 ( $4.5 * 80\% = 3.6$ rounded down to the nearest whole number). The higher percentage number, the tighter the tolerance of seed drop.
<b>Figure Rate (Button)</b>	This button is displayed as <i>Seeds Per Plot</i> or <i>Seeds Per Acre</i> . This represents the figure rate for the populations you enter (1-9).
<b>Seeds Per Plot</b>	The numbers entered in the population boxes will be figured as seeds per plot.
<b>Seeds Per Acre</b>	The numbers entered in the population boxes will be figured as seeds per acre.

15. Select **Close** to exit the Population Settings menu. A "**Save Settings?**" box will appear. Select **Save**, **Save As**, or **Close**.
16. You should now be in the run screen. On the menu bar, select **Settings**. Drop down and select **Calibrate Distance**.

17. A screen will appear in the lower right of the run screen, labeled **Counts/Foot Calibrate**. Checking the **Auto** box will allow the program to automatically update the encoder counts per foot of travel on every tenth range from an average of the previous ten ranges. See chart below.

## Calibrate Distance

Label	Description
<b>Counts Per Foot</b>	The counts per foot displayed here are calculated from the last plot. This is for display only and is not used by the program. The program uses number from the <i>Counts per Foot</i> setting found in the <i>Plot Settings</i> menu, unless the <b>Auto</b> box is checked (see <b>Auto</b> ).
<b>Cable Length</b>	This number is produced from the user's inputted planted plot length and alley length.
<b>Avg</b>	When <b>Auto</b> is checked, a counts/foot will be displayed here, averaged at every 10 ranges. This computer generated number will be used instead of the "Counts per Foot" setting in the Plot Setup
<b>Auto</b>	When <b>Auto</b> is checked, the planter will use the distance from the last ten ranges to produce a counts per foot setting, displayed in the box labeled "Avg" (Average). The planter will then use the average instead of the <i>Counts per Foot</i> found in the <i>Plot Settings</i> menu.

18. Select **Close** to exit the Calibrate Distance menu.
19. You should now be in the run screen. On the top menu, select **Relocate – Relocate**.
20. A screen labeled **Relocate Range/Plot** will appear. See chart below.

## Relocate Settings

Label	Description
<b>New Plot Number</b>	This is the location you are about to start from.
<b>New Range Number</b>	This is the location you are about to start from.
<b>Range Direction</b>	From the starting plot and range, this determines whether the planter counts up or down in ranges.
<b>Plot Direction</b>	From the starting plot and range, this determines whether the planter counts up or down in plots.
<b>First Turn</b>	This is the direction of the first turn from the starting point (the starting point is the New Plot Number and New Range Number)
<b>Arrangement</b>	Serpentine is planting in both directions, while straight is planting in only one direction.

21. Select **Close** to exit the **Relocate Range/Plot** menu. This will bring you to “**Save Settings?**” box. Select **Save, Save As,** or **Close**.

22. You should now be in the run screen. Details on the **Run Screen** are on the chart below.

## Run Screen Data

The items in this chart display information from the last range planted.	
<b>Time</b>	This is the time between checkhead trips, measured in seconds.
<b>Cell Count</b>	This is the number of cells in the seed plate that pass between checkhead buttons.
<b>Display Range</b>	This number tells what range is being displayed for the seed, cell, distance, and plot counts.
<b>Distance</b>	This is the distance in inches between checkhead switch trips.
<b>Plot</b>	This displays the plot number and depends on the setup.
<b>Rows</b>	This keeps track of the row each individual unit is planting, depending on direction and plot number.
<b>Units</b>	These are the physical planter unit, starting at the left as 1.
<b>Counts</b>	This shows the seed counts of display range or if a current range fails, it will show a failure of that unit.
The items in this chart display <i>real time</i> data.	
<b>MASTER OFF</b>	This is a button. The Master On/Off button is a software version of the remote box switch (pg. 7). This must show “Master On” for the planter to operate.
<b>Trip Wire</b>	This is the screen representation of the location of the trip wire switch. It displays where the slides (E) and alley wipers (W) are activated and deactivated. It also shows the start (#) and stop of the alleyway.
<b>Next rate</b>	This displays the rate preset number that will be planted in the next planting range.
<b>Count</b>	This is the seeds per plot the controller will be targeting in the next range.
<b>Range</b>	This displays the current range for the controller
<b>Rate</b>	This displays the current preset rate number
<b>Count</b>	This displays the seed count the planter will be targeting in the current range.
<b>Inches</b>	This displays the current spacing in inches
<b>Population</b>	This displays the current population in seeds per acre

## Connecting the planter to the tractor

1. Refer to the Monosem Vacuum Planter Operator & Parts Manual for details on connecting the planter to the tractor.
2. SRES uses colored heat shrink to color code the hydraulic hoses for easy hookup. The colors and what they represent are as follows.

Planter Hydraulic Hosed Color Code
Lift For Wheels
Hydraulic Fan
Hydraulic Drive Seed Shaft
8 Row Rotate
8 Row Row Markers
The Longer Heat Shrink Represents Pressure

3. Connect the hydraulic lines, for the hydraulic drive seed shaft, to a port on the tractor with a detent valve. If the valves on the tractor are prioritized, then the hydraulic drive seed shaft should be connected to port #1.

### Note

The seed shaft can be set to run with open-centered or close-centered hydraulic systems. Please contact SRES for information on which way is best for your tractor.

4. Connect all other hydraulic lines. Lines should be connected the same every time, for familiarity in operation.
5. Connect P.T.O. shaft. Be sure to secure the guard using the safety chains provided.

## Startup Sequence

1. Turn main power switch on Control Screen Console, Remote Screen, and Main Panel to OFF.
2. Start tractor.
3. Turn fan on.
4. Turn Main Control Box ON.
5. Turn Compressor Switch ON. Turn Alley Wiper Switch OFF.
6. Turn Power Switch on Control Screen Console ON. The computer takes 30-40 seconds to boot up.
7. Activate program SRES 2.0 by double clicking on the icon with the pen.
8. A "Look In" box will appear. Select a settings file (.srt) or Cancel to use default settings.
9. You should now be in the planter run screen.

## Settings File Saving

The settings you create when calibrating the planter can be saved as a file, allowing you to keep multiple sets of settings on the computer. To make a new setting file, go to **File**, and **save as**. Using the screen keyboard (click the "A" in the left of the text box), type the new file name and click **save**.

## Inputting Planter Settings

1. In the run screen, select **Settings - Planter Settings**.
2. **Gear Ratio** is factory set and should not be adjusted.
3. **Plate Cells** - Enter the number of plate cells on the seed plate in the box labeled Plate Cells. (Click the "A" in the left of the text entry box. This opens the screen keyboard. Enter the number and click OK.)

4. **Evac Time** should be set to 1.5 seconds to guarantee no carryover. This number can be adjusted but please contact SRES in your particular situation.
5. **Number of Rows** – This should be set to the number of row units on your planter
6. Select Close. When asked “Save Settings?” select Save or Save As.

The settings in the Planter Settings menu that are not covered here will be covered in the **Shop Calibration** and **Field Calibration** sections of this manual.

## Inputting Plot Settings

1. In the run screen, select **Settings – Plot Settings**.
2. Enter the **Planted Plot Length** and **Alley Length**.
3. Enter the **Checkhead Block** distance. This is the distance in inches that the planter will ignore any trips of the checkhead. This is to help eliminate false or early trips.
4. Enter the **Plot Time**. This is the time used to match simulation speed to actual field speed. Time is in seconds to plant button to button.

The settings in the Plot Settings menu not covered here will be covered in the **Shop Calibration** and **Field Calibration** sections of this manual.

## Inputting Population Settings

1. In the run screen, select Settings – Population Settings.
2. Select the desired **Figure Rate**. In the lower left of the Population Setup window, there will be a button labeled **Seeds per Plot** or **Seeds per Acre**. This is a button to toggle the Figure Rate for the numbers you will put in the population text entry boxes.
3. Enter the default population, according to the Figure Rate selected, into the box labeled **Population 1**.
4. Up to 8 additional populations may be entered, each corresponding with buttons on the bottom of the screen and on the remote box for population changes on the go.

5. Enter the **Row Width** in inches.
6. Enter the **Alarm** percentage.
7. Select Close. When asked "Save Settings?" select Save or Save As.

## Lining up Rows

1. Make sure everyone and everything is clear of the planter.
2. Turn ON the remote box.
3. Engage hydraulics. P.T.O. should be on and the vacuum should be 25-30" of water.
4. In the planter run screen, turn the master button **ON**. It should now read "**MASTER ON**".
5. – **NEXT TWO STEPS WILL START HYDRAULICS TURNING** –
6. On the top menu, select **Simulation – Checkhead**. In the bottom center of the screen a message should appear, "Simulate Checkhead".
7. On the top menu, select **Simulation – Speed**.
8. The planter hydraulics should be turning, the divider or single drop, and the slides should be tripping. This should be simulating the planting of plots.
9. Have someone dump in seeds every cycle.
10. If the seeds are not lining up vertically, go to step 11. If the seeds are lined up vertically go directly to *Shop Calibration*.
11. Find the row that has the seeds the farthest to the left on the screen. This row will **NOT** be adjusted.
12. On the top menu, select **Simulation – Speed**.
13. Disengage the tractor hydraulics to the seed shaft.
14. Adjust rows by "jumping" the chain on the bottom of the seed meter. You can loosen tension and jump one tooth at a time by pulling back toward the seed meter on the bottom chain. The seed meter should be turning backwards as the chain is "jumped".
15. This jumping will move seeds to the left on the screen once seeds are planted.
16. Make sure everyone and everything is clear of the planter.
17. Engage tractor hydraulics to the seed shaft.

**18. – NEXT TWO STEPS WILL START HYDRAULICS TURNING –**

**19.** On the top menu, select ***Simulation – Checkhead***. In the bottom center of the screen a message should appear, “Simulate Checkhead”.

**20.** On the top menu, select ***Simulation – Speed***.

**21.** Start back at step 8 until rows are lined up.

## Shop Calibration

### Divider Time

The **Divider Time** (found under *Settings – Planter Settings*) sets how long, in seconds, the gate in the divider or single drop remains open during a cycle. This does not affect anything else in the planter program.

The Divider Time should be set to allow adequate time for the packaged amount of seed to flow through the divider or single drop.

### Evac Start Point

The Alley Wiper switch on the Main Control Box should be **OFF** when calibrating the Evac Start Point.

1. In the planter run screen, turn the master button **ON**. It should now read “**MASTER ON**”.
2. – ***NEXT TWO STEPS WILL START HYDRAULICS TURNING –***
3. On the top menu, select ***Simulation – Checkhead***. In the bottom center of the screen a message should appear, “Simulate Checkhead”.
4. On the top menu, select ***Simulation – Speed***.
5. The planter hydraulics should be turning, the divider or single drop, and the slides should be tripping. This should be simulating the planting of plots.
6. Have someone dump in seeds every *other* cycle. Dump in seed, about 50% extra. This is to be certain that you are evacuating the seed, not running out.
7. On the screen, watch where the seeds end. This is the start point of the alleyway.



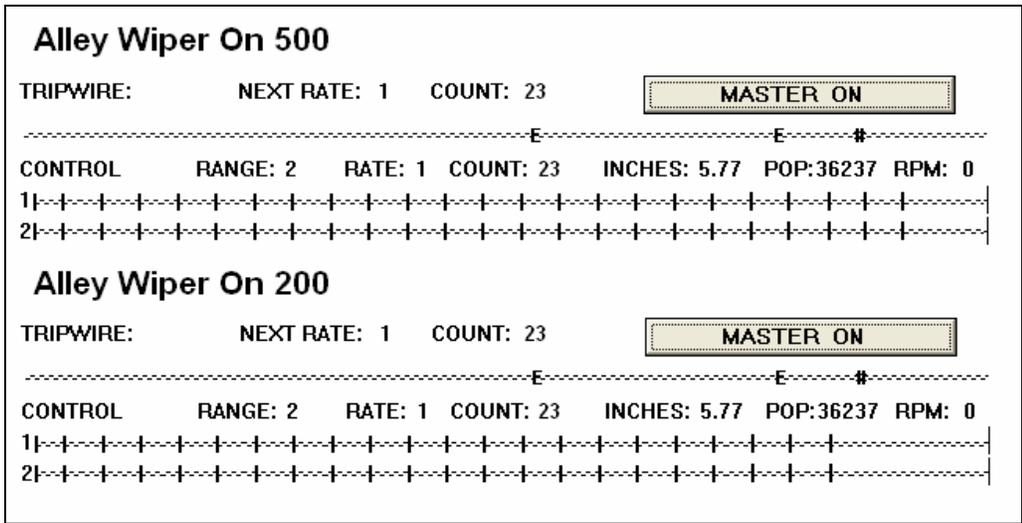


**SPEED UP TO LOAD** must be set so that the seeds always start right on the left end of the screen, or have one at the far right.

12. Select Close. When asked "Save Settings?" select Save or Save As.
13. Return to step 1.

## Alley Wiper On

1. Turn the Alley Wiper **switch** on the Main Control Box **ON**.
2. In the planter run screen, turn the master button **ON**. It should now read "**MASTER ON**".
3. – **NEXT TWO STEPS WILL START HYDRAULICS TURNING –**
4. On the top menu, select **Simulation – Checkhead**. In the bottom center of the screen a message should appear, "Simulate Checkhead".
5. On the top menu, select **Simulation – Speed**.
6. The planter hydraulics should be turning, the divider or single drop, and the slides should be tripping. This should be simulating the planting of plots.
7. Have someone dump in seeds every *other* cycle.
8. On the screen, watch where alley the starts. The last seed of the plot should be right under the "#" sign on the Tripwire line.
9. If the alley start needs to be adjusted, go to step 10. If it is correct, proceed to set the **Alley Wiper Off**.
10. On the top menu, select **Simulation – Speed** (this will stop the planter).
11. On the top menu, select **Settings – Planter Settings**.



THIS EXAMPLE shows the relationship of the end of the plot and the Alley Wiper On setting. Ideally, when this number is set correctly, the screen will show the plot ending right under the “#” sign on the tripwire line. In the example, the Alley Wiper On set at 500 turns the alley wiper on too late and 200 turns the wiper on too early.

12. Change Alley Wiper On. Increasing the number moves the start of the alley right on the screen, decreasing the number moves the start of the alley left on the screen.
13. Select Close. When asked “Save Settings?” select Save or Save As.
14. Return to step 2.

## Alley Wiper Off

The Alley Wiper switch on the Main Control Box must be **ON** when calibrating the Alley Wiper Off.

1. In the planter run screen, turn the master button **ON**. It should now read “**MASTER ON**”.
2. – **NEXT TWO STEPS WILL START HYDRAULICS TURNING** –
3. On the top menu, select **Simulation – Checkhead**. In the bottom center of the screen a message should appear, “Simulate Checkhead”.
4. On the top menu, select **Simulation – Speed**.



# Field Calibration

## Field Map Information

The planter can build a field map as you plant, recording seeds per plot, plot time, etc. To do this, the following things need to be set at the beginning of every field to let the planter know its location.

1. In the **Planter Settings** screen,
  - a. Enter the **Rows per Plot**. This is to set the rows per plot on the field map.  
  
Example: On a four-row planter planting two row plots, rows one and two can be recorded as plot one, and rows three and four will be plot two.
2. In the **Plot Settings** screen,
  - a. Enter the **Number of Ranges** you are going to plant in a pass, including border ranges.
  - b. Enter the **Database Filename** you would like to use. This can be up to eight characters and must end in **.txt**.
3. On the top menu, select **Relocate – Relocate**. This brings you to the **Relocate Range/Plot** screen.
  - a. Set the **New Plot Number**, the point in the field you are going to start planting.
  - b. Set the **New Range Number**, the point in the field you are going to start planting.
  - c. Set the **Range Direction**. This is a toggle button, from increasing (INC) to decreasing (DEC).
  - d. Set the **Plot Direction**. This is a toggle button, from increasing (INC) to decreasing (DEC).
  - e. Set the **First Turn** direction. This is clockwise (CW) or counter clockwise (CCW).

- f. Set the field **Arrangement**. This can be serpentine or straight.

## Start Cycle

The SRES Precision Vacuum Planter cycles *before* the alley, in order to have the seeds on the plate in time for the next plot. As a result, the planter must be “primed”, or have seed loaded onto the plate, to be ready to start planting at the first plot for every pass. To do this,

1. The operator must be ready for the first pass
2. The vacuum must be at the operating range
3. The seed shaft hydraulics must be engaged
4. The first range’s seed must be in the divider/single drops for all rows.
5. The Master On/Off button must show “MASTER ON”.
6. Press the star key on the remote box twice within three seconds, OR using the pen, on the top menu, select Start Cycle – Start Cycle.
7. The seed shaft should turn, the slides should cycle, and the divider/single drops should open to load the first plot. There should be a message displayed in bottom center of the screen, “Waiting For First Checkhead”.
8. Load the seed in for the next plot, and you are ready to start moving.

## Counts per Foot Calibration – *Manual*

The following procedures will calibrate the distance traveled in the computer to the actual distance traveled.

1. Set up the checkhead cable in the field.
2. Turn main power switch on Control Screen Console, Remote Box, and Main Panel to **OFF**.
3. Start tractor.
4. Turn fan on.
5. Turn Main Control Box **ON**.

6. Turn compressor switch **ON**. Turn Alley Wiper Switch **ON**.
7. Turn power switch on computer **ON**.
8. Turn Remote Box **ON**.
9. Double click on the **SRES 2.0** icon to enter the planter program.
10. Select the settings file set up for the field you are about to plant.
11. Position tractor so that it is 24 to 30 inches behind the first button.
12. In the planter run screen, turn the master button **ON**. It should now read "**MASTER ON**".
13. No seed needs to be added for this procedure but you can add seed if you want. Put the checkhead cable into the checkhead.
14. On the top menu, select Start Cycle – Start Cycle (OR: You may instead choose to press the "\*" key on the remote box twice within three seconds to activate a Start Cycle). The planter should go through a cleanout and then load the seed for the first plot.
15. In the upper right hand corner of the screen, the distance will be displayed in inches. The distance shown here is the distance traveled between buttons.
16. Drive the tractor through at least five buttons and watch the distance traveled.
17. The distance on the computer should be within 1 to 2% of the actual distance between buttons. If the distance is wrong, go to step 18. If the distance is right, go on to set the **Alley Setback**.
18. On the top menu, go to **Settings – Plot Settings**.
19. Change the **Counts per Foot setting**.
20. If the distance on the computer is higher than actual, the counts per foot need to be raised. If the distance on the computer is lower than actual, then the counts per foot need to be lowered. Example: The distance should be 209 and the distance is reading 180. (180 divided by 209 is 0.8612) The counts per foot are currently 32. Multiply 32 by 0.8612. The new counts per foot should be 27.56.

21. Select Close. When asked "Save Settings?" select Save or Save As.
22. Go to step 12.

## Counts per Foot Calibration – *Automatic*

The following procedures will automatically calibrate the distance traveled in the computer to the actual distance traveled.

1. Set up the checkhead cable in the field.
2. Turn main power switch on Control Screen Console, Remote Box, and Main Panel to **OFF**.
3. Start tractor.
4. Turn fan on.
5. Turn Main Control Box **ON**.
6. Turn compressor switch **ON**. Turn Alley Wiper Switch **ON**.
7. Turn power switch on computer **ON**.
8. Turn remote box **ON**.
9. Double click on the **SRES 2.0** icon to enter the planter program.
10. Select the settings file set up for the field you are about to plant.
11. On the top menu, select **Settings – Calibrate Distance**.
12. Check the box labeled Auto.
13. Select Close.
14. Put the checkhead cable into the checkhead.
15. Drive the tractor through at least 10 or more ranges. At every ten ranges the planter should recalibrate itself from an average of the previous ten ranges.
16. Go on to set the **Alley Setback**.

## Alley Setback

This procedure will center the alleyway over the button on the cable. If you are continuing from setting the Counts per Foot, skip to step 12.

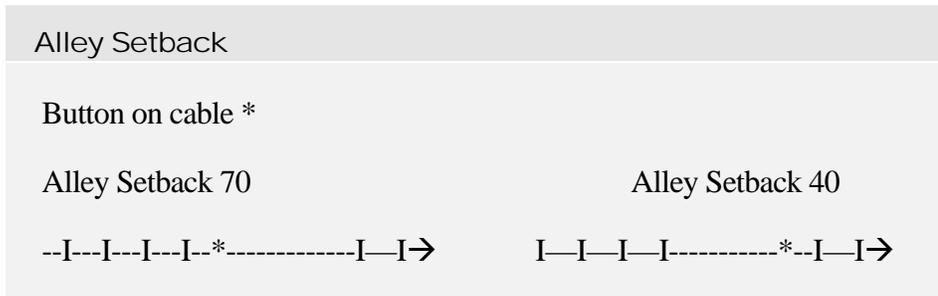
1. Set up the checkhead cable in the field.
2. Turn main power switch on Control Screen Console, Remote Screen, and Main Panel to **OFF**.
3. Start tractor.
4. Turn fan on.
5. Turn Main Control Box **ON**.
6. Turn compressor switch **ON**. Turn Alley Wiper Switch **ON**.
7. Turn power switch on computer **ON**.
8. Turn Remote Box **ON**.
9. Double click on the **SRES 2.0** icon to enter the planter program.
10. Select the settings file set up for the field you are about to plant.
11. Put cable into checkhead.
12. Position the tractor so that it is at least 24-30" behind the first button.
13. In the planter run screen, turn the master button **ON**. It should now read "**MASTER ON**".
14. Put seed for the first plot in the single drop or divider.
15. On the top menu, select **Start Cycle – Start cycle**, OR press the “\*” key on the remote box twice within three seconds to perform a start cycle. The planter should go through a cleanout and then load the seed for the first plot.
16. Put the seed for the second plot in for the single drop or divider.
17. Drive the tractor through at least 5 plots, planting seed.
18. Check to see if the alleyway is centered over the button on the cable.

19. If the alley is centered over the cable, then you are finished setting the Alley Setback. If it is not, then go to step 20.

20. Go to **Settings – Planter Settings**.

21. You need to change the **Alley Setback**.

22. If the alley is too far in the direction of travel, then the Alley Setback needs lowered by the amount of distance it is off. If the alleyway is not far enough in the direction of travel, then the Alley Setback needs raised by the amount of distance it is off.



23. Select **Close**. When asked “Save Settings?” select **Save** or **Save As**.

24. Return to step 11.

## Bulk Planting

**Bulk Planting** is activated by selecting **Bulk Planting – Disabled** on the top menu. The “Disabled” will change to show “Enabled”, and the message “Bulk Planting” will appear on the bottom center of the run screen.

In bulk planting mode the planter will act like a commercial planter, and the seed shaft will turn in proportion to the speed you are planting. The slides and the divider/single drop will not activate, and there will be no alleys.

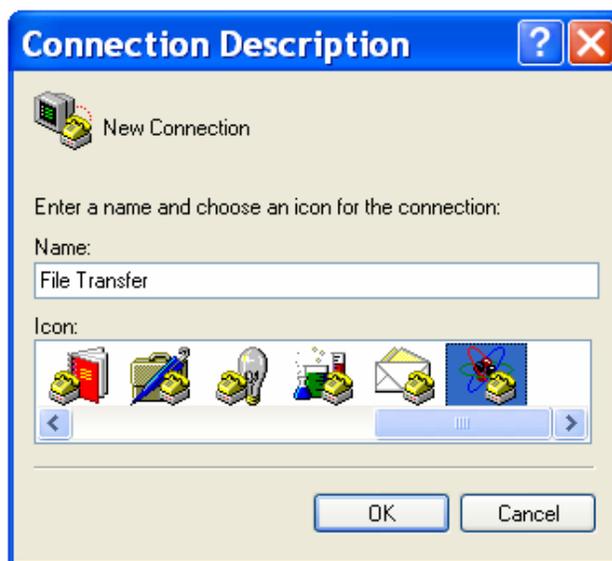
If you select **Simulate – Checkhead**, the screen will loop, and the seeds will show constantly, allowing constant monitoring of the seeds planted.

SRES recommends using our bulk hoppers for bulk planting larger areas of fill or strip tests, although this is not required. Bulk hoppers handle a larger volume of seed and faster speeds.

## Transferring Data

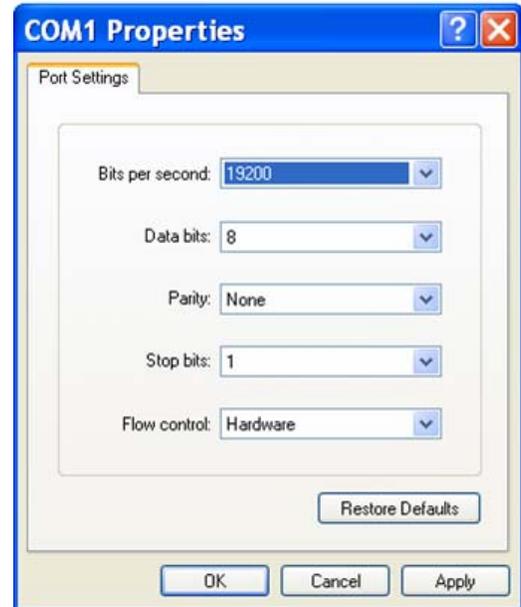
### Setting Up the File Transfer Icon

1. Locate a computer you want to transfer files to.
2. On the office computer, go to **Start – Programs – Communications – HyperTerminal**.



3. The **New Connection** dialog box will appear along with the **Connection Description** dialog box.
  4. Type in a name for the new icon, such as *File Transfer* or *SRES Planter Files Transfer*.
  5. Select an Icon and click **OK**.
  6. The **Connect To** box will appear.
  7. In the **“Connect using:”** box, select the COM port you will be using to connect your computer to the HammerHead.
-

8. Select **OK**.
9. The **Com Port Properties** box will appear.
10. The settings should be:
  - a. Bits per second: 19200
  - b. Data Bits: 8
  - c. Parity: None
  - d. Stop Bits: 1
  - e. Flow Control: Hardware
11. Select **OK**.
12. Now the connection has been made, and the **Transfer File** dialog box will appear.
13. Go to **File – Exit**.
14. A box will ask you “Are you sure you want to disconnect now?” Select **Yes**.
15. A box will appear asking, “Do you want to save the connection?” Select **Yes**. This way you will not have to go through the setup the next time and can go directly to the icon you created.
16. The HyperTerminal may store the new icon in the HyperTerminal folder. You can drag this icon out and leave it on your desktop.
17. You are now ready for **Transferring Files**.



## Transferring Files

On the same computer you used in the previous section, Setting Up the File Transfer Icon, you may transfer files by performing the following steps.

1. Plug the HammerHead into the wall using the power adapter provided with the planter.

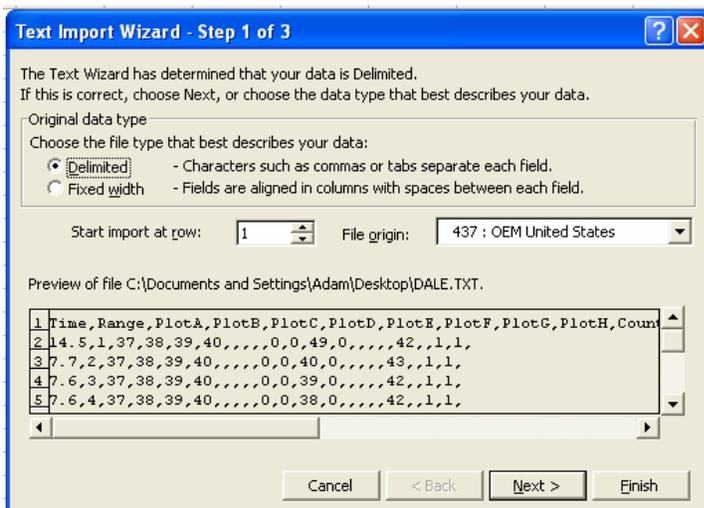
2. Plug the Null modem cable into COM 1 on the back of the HammerHead.
3. Connect the other end of the null modem cable to a Com port on your desktop.
4. Turn the HammerHead power switch **ON**.
5. On the desktop computer, select the file transfer icon you made in the previous section.
6. Now the connection has been made, and the **Transfer File** dialog box will appear.
7. On the top menu select ***Transfer – Receive File***
8. The **Receive** dialog box will appear.
9. Select **Browse** beside the **Place received file in the following folder** box.
10. The **Select a Folder** dialog box will appear. Select the subdirectory you want all of the files from the HammerHead to end up in.
11. Select **OK**
12. This folder should now be in the **Place received file in the following folder** box.
13. Select **Close**.
14. On the Big John Hammerhead double click on the icon **File Transfer**
15. This will open the **Transfer File – HyperTerminal** dialog box.
16. Both computers should have the same looking dialog box open.
17. On the HammerHead computer, select **Transfer** on the top menu.
18. Select **Send Files**.
19. The **Send Files** dialog box will appear.
20. Select the **Browse** button beside the **Filename** box.

21. The **Select file to send** dialog box will appear. All of the data files are stored in the SRES 2.0 subdirectory. Double click on the subdirectory.
22. Select the file you want to transfer. The data files all have the .txt extension on them. The name of the file is the one you gave it in the Database Filename in the Plot Settings screen.
23. Select **Open**.
24. The **Send File** dialog box appears again. Select **Send**.
25. A **File Send For Computer Transfer** dialog box will appear. If it is a small file it may appear for less than a second. A **File Receive For** dialog box will appear on your computer. This box may stay on your computer for a couple of minutes even though the **send** dialog box disappears right away. There will also be a line or two of jibberish or symbols that don't make any sense. Please ignore this; it is normal.
26. Repeat to step 17 until all of the files you want to transfer have been sent.
27. On the Hammerhead Computer on the top menu select **File – Exit**.
28. The hyperterminal box will appear. It is asking if you want to disconnect, select **Yes**.
29. You can now shut down your HammerHead computer. (Start-Shutdown)
30. On your computer on the top menu select **File – Exit**.
31. The HyperTerminal box will appear. It is asking if you want to disconnect, select **Yes**.
32. You are now ready to view your files in Microsoft Excel.

## Viewing the Field Data in Excel

1. Open the Microsoft Excel file **SRES Planter Calculations Etc**.
2. On the top menu select **File – Open**.
3. The **open** dialog box will appear. Select the **files of type** box.

4. Select **all files**.
5. Select the **look in box** and find the subdirectory that you selected in step 10 in the section labled Transferring Files. This is where the files were transferred to.
6. Select the file you want to look at. It should have the **.txt** extension.
7. Click on the **open** box.
8. The text import wizard should appear.
9. The original data type should be delimited.



10. Select **next**.
11. The comma is the only delimiter you want to have a check mark in front of.
12. Select **next**.
13. The last box needs nothing to be changed.
14. Select **Finished**.
15. The file should appear.
16. Select **Save As**. In the save file as box change it to an Excel spreadsheet.

17. Select **Save**. Now your data is saved in a spreadsheet and you can look at it in any way you like.

## Maintenance and Adjustment

### Servicing the Air Compressor

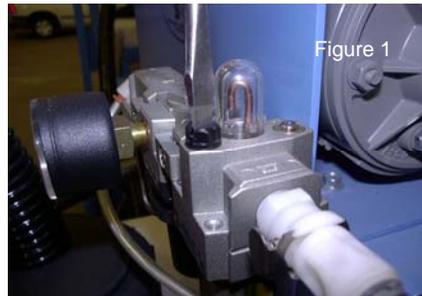


Figure 1

**To add oil to the system**, there is a plastic screw plug located on the top of the conditioning unit. Be sure to drain all air pressure from the system before removing the plug, to avoid a mess. This would be a good time to open the drain valve on the bottom of the air tank to drain off condensation buildup. Once you are sure there is no pressure, remove the fill plug (figure 1).



Figure 2

**Use pneumatic air tool oil** to fill the oil reservoir. Fill to the indicating mark on the metal casing around the sight glass (figure 2). Reinstall the fill plug.

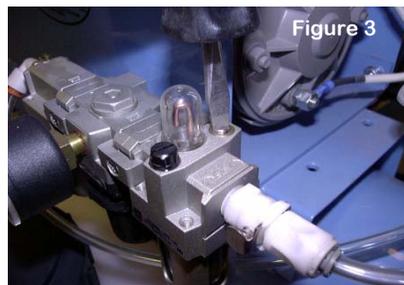


Figure 3

**Adjustment to the oil flow** can be made using the needle valve located adjacent to the oil fill plug. This is a small slotted metal valve, indicated in photo at the left (figure 3) by the arrow. To adjust, turn the screw clockwise until resistance is felt. Back the screw out one quarter of a turn. Now your oil flow is set.



**To drain the water out of the accumulator**, press up on the drain valve located on the bottom of the accumulator. Some models may be equipped with a turn valve for the drain. Note: this is the reservoir located on

the left of the conditioning unit, the side with the airline entering from the compressor.

**Air filter service** should be performed weekly. In especially dusty conditions the filter should be serviced more often to keep the compressor at it's peak performance. To service the air filter:



**Remove** the filter element from the cartridge by first unsnapping the lid. Take the filter out of the cartridge, being carefully not to tear it. You may remove the entire cartridge by unthreading it from the compressor head to make it easier to service.



**Clean** the filter using compressed air, blow the filter from the inside out. Holding the filter up to a light, inspect the filter. If there is any light visible through the filter, discard the filter and cartridge and replace with a new one



**Place** the filter element into the base. Look to make sure that it is not pushed down far enough into the base that with the lid on there is room for unfiltered air to move around the filter and into the compressor. Place the lid on the cartridge.



**Reinstall** the cartridge without using any sealing agent on the threads. This will prevent anything from coming off of the threads and into the compressor. The plastic will seal by itself.

## Servicing the Slide Assembly

The **cover assembly** should be cleaned and inspected at least twice during the operating season, or more often as needed. This will include making sure the slides and the alley wipers work properly.



**Remove the cover** from the planter. Inspect the cover for any obvious problems, such as broken or missing parts. Move the slide back and forth to make sure it glides freely in its tracks. The slide should operate on as little as 10 PSI. If it does not, the slide will have to be disassembled and cleaned.

**NOTE:** Do **NOT** loosen air cylinders or slide screws for any reason, they are factory set.

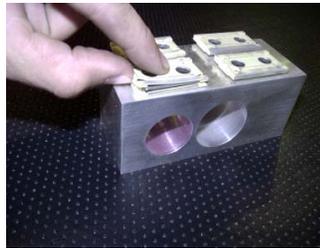
For cleaning the moving parts of the slide assembly:



**Remove** the bolt connecting the aluminum slide block to the air cylinder.

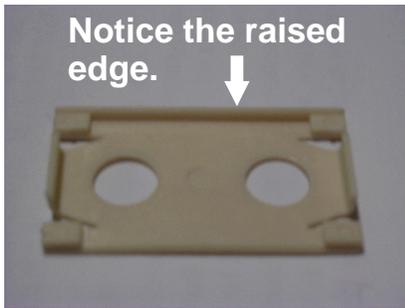
**Slide** the block out of the tracks carefully.

**Detach** the outer half of the bearing by snapping up the outer edge with your thumbnail.

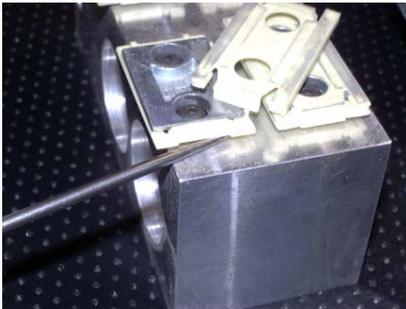


**Carefully inspect** the piece for cracks or breaks, and thoroughly clean it with soap and water.

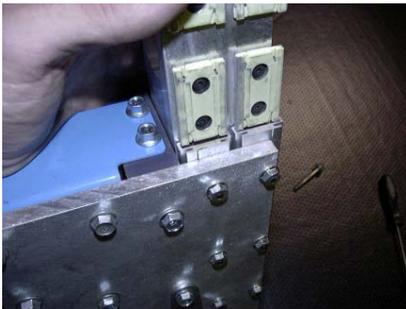
**Clean** all dirt and moisture from both the tracks and bearings on the block with a soft bristle brush, such as a tooth brush. If there is any moisture around the screws collecting dust, then it will need to be cleaned using rubbing alcohol. Thoroughly blow the parts dry using compressed air. All parts of the bearings should be dry and free of any oil before assembly.



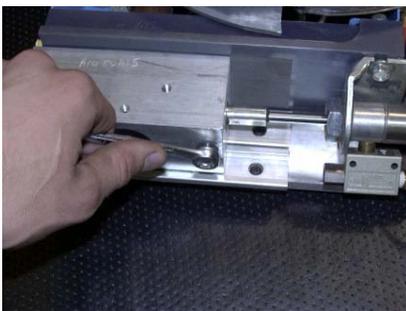
**For reassembly:** Notice that there is a raised edge on one side of both the top and bottom pieces of the bearing, so they will only fit together in one direction.



**To install** the bearing halve onto it's mating half on the block, raise the end of the bearing halve that is already attached up with a pick, so the outer halve can be snapped onto it. Make sure to do this for both ends.



**Line up the bearings** with the tracks carefully when installing them. Do not force the slide; this can break the bearings.



**Install the bolt** to reconnect the block with the cylinder rod end, and check the slide for movement. Now that the slides are cleaned and reassembled, they should glide back and forth without resistance.

Install the slides on the planter and reconnect the air supply.

If there are friction spots, or places where the slide gets stiff, contact SRES for additional service advice.

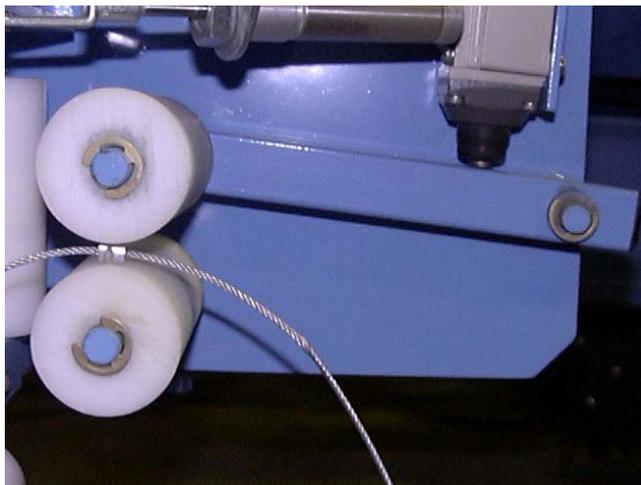
## Checkhead Adjustment



**To adjust the checkhead** for different cable sizes, there are two adjustment screws which allow the limit switch to move up or down.



**For proper adjustment:** Place the cable inside the checkhead rollers as shown. Loosen the two adjustment screws on the limit switch and adjust it so that the limit switch button comes in slight contact with the trip (see arrow).



Now that the switch is set, check it by moving the bead through the checkhead. You should be able to here the contacts in the limit switch click when the bead passes through the rollers.

## Quick Reference Sheet

**REMINDER:** Detailed help screens are available by clicking on the settings name or go to *HELP* on the top menu of the run screen.

Changing **Evac Start Point**. Increasing the number moves the start of the alley left on the screen. Decreasing the number moves the start of the alley right on the screen.

End of plot \* start of alley

---|---|---|---|---|---|---|---|--->      **Evac Start Point** 1000

---|---|---|---|---|----->      **Evac Start Point** 1700

Changing **Speed up to Load**. Increasing the number moves the end of the alley or the start of the plot left on the screen. Decreasing the number moves the end of the alley or the start of the plot right on the screen.

Start of Alley \* Start of Plot

-----||| | | | |---|---|>      **Speed up to Load** 1700

-----|---|>      **Speed up to Load** 1000

Changing **Alley Wiper On**. Increasing the number moves the start of the alley right on the screen. Decreasing the number moves the start of the alley left on the screen.

**Alley Wiper on** 500

Start of Alley \*

--|---|---|---|--->

**Alley Wiper on** 200

Start of Alley \*

---|---|----->

Changing **Alley Wiper Off**. Increasing the number moves the stop of the alley right on the screen. Decreasing the number moves the stop of the alley left on the screen.

**Alley Wiper off** 500

\* Start of Plot

-----|---|---|>

**Alley Wiper off** 200

\* Start of Plot

---|---|---|---|>

If the alley way is too far in the direction of travel the **Alley Setback** needs lowered. If the alley way is not far enough in the direction of travel the **Alley Setback** needs raised.

Button on Cable = \*

**Alley Setback** 70

---|---|---|\*-----|---|---|>

**Alley Setback** 40

---|---|-----\*---|---|---|>



## SRES Planter Troubleshooter's Guide

### 1. Problem: SEED SHAFT WILL NOT TURN

Inspect the following before diagnosing the system.

1. Make sure both the Control Box power and Remote Box power switches are **ON**. The volt meter on the Control Box should read between 12-14 volts and the Remote Box should be illuminated with numbers if you are in the run screen.
2. The Master On/Off button must read "**MASTER ON**".
3. Is the implement switch on?
4. Have you exited the program, got back in and tried it again?
5. Be sure there is proper flow from the tractors hydraulics.
  - a) Make sure the lever is not in float instead of it's detent position.
  - b) Check the connections on the back of the tractor to see if a line may not be in the port all the way.
  - c) Make sure the flow is in the right direction.

<p>With the main power turned "ON", and the computer in the run program, does the planter show an "NC" on the trip wire line?                  NO ↓                      YES →</p>	<p>There is No Communication between the computer and planter's electronics. Check to make sure the console cable is connected properly at both ends. Also, look for any corrosion or pins pushed up into the connectors.</p>
<p>Does the <i>remote box screen</i> fail to light up or show any data?                  NO ↓                      YES →</p>	<p>Turn off power, disconnect and inspect the remote box cables for pushed-in pins or corrosion. Reconnect. Also, be sure that the small port connector on the computer is in the Com #2 port.</p>
<p>Is the message "Implement switch on" displayed at the bottom of the screen while the problem occurs?                  NO ↓                      YES →</p>	<p>Adjust the implement switch so that it only sees metal when the planter is out of the ground. The sensor has an LED in the end where the wire enters. The LED illuminates when the sensor detects metal.</p>
<p>Exit clear out of the program and try again. Does the shaft rotate during the <i>Start Cycle</i>?                  NO ↓                      YES →</p>	<p>Check the connections between the box and the encoder driven off the drive wheel. Make sure that the encoder shaft turns when the planter is in motion.</p>
<p>Is there no pressure going to the port #1 on the hydraulic drive control valve?                  NO ↓                      YES →</p>	<p>Connect the line entering port #1 on the motor control valve as the pressure line.</p>

Contact SRES for additional help.	
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## 2. Problem: SEED SPACING IS VARYING THROUGH THE PLOT

Ask the operator the following before diagnosing the system.

1. At what point in the plot was the seed spacing varying?
2. Was the distance on the screen reading the button to button cable distance?
3. Are the hydraulic lines on the tractor hot (+170° F/76° C)?
4. Are the *Counts Per Foot* calibrated?

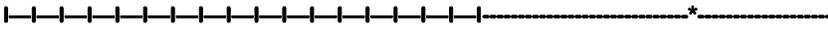
Find the statement that best suits your problem, then follow the troubleshooting sequence.

<p><b>a) The seed spacing is real close in the beginning of the plot, then it corrects. This problem is tied to when the distance is off, ± 6" or more from the distance entered into the plot setup</b></p>	
<p>Are any of the tires under inflated, including the smaller drive wheel for the ground speed encoder? NO ↓                      YES →</p>	<p>Inflate the tires to the proper PSI. Ground tires are 40 PSI, and contact drive tires are set to 50 PSI. Improper inflation dramatically reduces seed spacing quality.</p>
<p>Is the tire picking up mud? NO ↓                      YES →</p>	<p>Adjust the mud scrapers to remove as much mud from the tire as possible. Also check the down pressure springs for proper tension (specified in section 4-6, <u>Monosem Operator's Manual</u>).</p>
<p>Is the drive tire slipping while going through rather loose powdery soil? NO ↓                      YES →</p>	<p>If possible, set the planter up with the tractor so that the drive tire follows in the tracks of the tractor. This reduces slippage because the tire goes over already packed ground.</p>
<p>Contact SRES for additional help</p>	

<p><b>b) The seed spacing is real wide 1/2 to 2/3 the way across the screen then it plants close the rest of the way across. It also plants through the alleyway.</b></p>	
<p>Is there a vibration, possibly accompanied by a howl coming from the hydraulics motor? NO ↓                      YES →</p>	<p>The planter may need a vibration dampening coupler between the encoder and Hydraulic motor. Contact SRES for more information.</p>
<p>Contact SRES for additional help</p>	

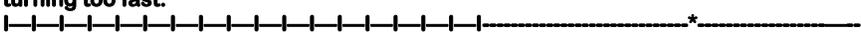
Continued

**c) The plot ends too early.**



Is the correct number of seeds being planted, but too soon? NO ↓                      YES →	Refer to problem "D".
Are there too few seeds being dumped? NO ↓                      YES →	Try dumping the suggested amount of seed. When using dividers, packet 25% extra. When using single drops, only 20% extra is needed.
Does turning "OFF" the alley wiper switch help? NO ↓                      YES →	Turn the alley wiper switch back on and set the alley wiper. Refer to <i>Shop Calibration – Alley Wiper On</i> , on page 22 of the operator's manual.
With the alley wipers "OFF", Does adjusting the <i>Evac Start Point</i> help? NO ↓                      YES →	Decrease the Evac Start Point. Refer to <i>Shop Calibration – Evac Start Point</i> , on page 19 of the operator's manual.
See problem "D", or contact SRES for additional help.	

**d) The seeds are all planted at the beginning of the plot but still evenly, as if the shaft were turning too fast.**



Is the number displayed under " <i>Counts</i> " lower than the number of seeds that the planter should plant? NO ↓                      YES →	Refer to problem "C"
Does this occur in the field but <i>not</i> in Simulation Speed? NO ↓                      YES →	This may mean the distance was not put in correctly. Be sure that the distance specified in the <i>Plot Settings (Planted Plot Length plus Alley Length)</i> is equal to the button to button distance.
Will the problem go away if you use the same settings that worked before? NO ↓                      YES →	Compare the numbers in the computer to the ones on the "calculations" spreadsheet. Make certain there are no errors.
The encoder may need replaced.	Contact SRES for additional help.

Continued

<p><b>e) The seed spacing appears random through the plot, and CELL 1 number varies.</b>  </p>	
<p>Is the seed shaft rotating at a constant speed excluding the speed up?                  NO↓ YES→</p>	<p>Singulators (seed scrapers) may need adjusted. See section 4-14 of the <u>Monosem Operator's Manual</u>.</p>
<p>Are you using a different tractor from when it worked a previous time?                  NO↓ YES→</p>	<p>Determine whether the tractor is equipped with closed or open center hydraulics, and contact SRES for information on possible changes needed in the plumbing of the hydraulic drive.</p>
<p>Are the bolts too loose on the back side of the hydraulic motor?                  NO↓ YES→</p>	<p>The bolts on the back of the hydraulic motor should be torqued to 22 ft. lbs.</p>
<p>The hydraulic valve may be faulty.</p>	<p>Contact SRES for additional help.</p>

<p><b>f) I cannot get the seeds to start at the beginning of the screen.</b>  </p>	
<p>Is the alley wiper switch on the main control box "ON"?                  NO↓ YES→</p>	<p>First, turn the alley wiper off to determine if it is the reason for the problem. If it is not the problem, leave it off while determining what the problem is.</p>
<p>Does the beginning consistently start late as illustrated whether the load count is increased or not?                  NO↓ YES→</p>	<p>Make sure the tractor is supplying enough oil. If the tractor is equipped with a flow control valve, try increasing the flow. In some cases, when the planter is equipped with a hydraulic fan drive, smaller tractors may not have the hydraulics needed to run both.</p>
<p>Do the seeds advance on the screen but leave skips?                  NO↓ YES→</p>	<p>Refer to troubleshooting section for skips at the beginning, on page 48.</p>
<p>Refer to the Operator's Manual <b>Shop Calibration</b> procedures, and if this does not help contact SRES.</p>	

Continued

<p><b>g) One row begins or ends later than the other row.</b></p>	
<p>Are the rows units out of time? NO↓ YES→</p>	<p>Set the row units to line the seeds up on the screen vertically as described on page 18 of the operator's manual in the Setup section.</p>
<p>Contact SRES for additional help.</p>	

<p><b>h) There are frequent skips at the beginning of the plot, and then it plants fine after that.</b></p>	
<p>When setting the planter, use the Planter Calculations spreadsheet to figure the plot and alley widths, and miles per hour. After these numbers are figured, are the <i>seconds in alley</i> under .80 seconds? NO↓ YES→</p>	<p>Choose a way to increase the seconds in alley to get a number <i>above</i> .80 seconds. You can do this by either lowering the M.P.H. through the plot or by increasing the alley length.</p>
<p>With the alley wiper switch in the "OFF" position, and running the planter in simulation, are there any seeds planted too early in the plot? NO↓ YES→</p>	<p>Decrease the Speed Up To Load just enough to get the seeds started at the left edge of the screen. This will slow the seed shaft down during the speed up in the alley way.</p>
<p>Are the singulators set too low? NO↓ YES→</p>	<p>Try adjusting the singulators. If you are not getting doubles, try increasing the singulator adjustment.</p>
<p>Is the vacuum too low? NO↓ YES→</p>	<p>Try increasing the vacuum to the planter. Do not increase it to 30 inches of water or above; this will shorten the belt life on the fan.</p>
<p>Try a seed plate with more holes. This allows the seed shaft to turn slower while planting the same amount of seeds. If this does not help, or you do not have a higher number plate, contact SRES for additional help.</p>	

Continued

<p><b>i) One row begins or ends later than the other row.</b></p>	
<p>Do the alley wiper adjustments vary from row to row? To check this, remove each cover and see if the alley wipers are all set the same.</p> <p>NO↓                      YES→</p>	<p>The alley wiper angle may need adjusted</p>
<p>Contact SRES for additional help.</p>	

**3. Problem: SEEDS IN ONE ROW ARE NOT BEING SHOWN**

<p>Check the seed tube. Is it plugged with dirt or has seed bridged?</p> <p>NO↓                      YES→</p>	<p>Clean out the seed tube. Make sure not to back up with the planting units in the ground, since this is a common cause of plugged seed tubes.</p>
<p>Is the slide malfunctioning?</p> <p>NO↓                      YES→</p>	<p>Clean the bearings on the slide. If this does not solve the problem, refer to the "Slides are sticking or moving slowly" section of this guide.</p>
<p>Are there seeds bridging up in the funnels on the slides?</p> <p>NO↓                      YES→</p>	<p>Remove any burs from inside the funnel allowing seed to bridge. If this is a continuing problem, contact SRES for additional help.</p>
<p>Watch the seed plate. Is it stopped while the seed shaft is turning?</p> <p>NO↓                      YES→</p>	<p>Check to make sure the drive chain from the seed shaft to the seed meter is in place. Check the shear pin on the seed meter shaft and replace if necessary. If the problem occurs again, contact SRES.</p>
<p>Is the alley wiper staying on through the plot?</p> <p>NO↓                      YES→</p>	<p>Check the 6-tube air connection on the cover, making certain it is on all the way. Also, move alley wiper manually and then by using the alley wiper trip. This can help determine if the malfunction is mechanical or pneumatic.</p>
<p>If you swap the cable of the faulty row to a working seed tube sensor on a different row unit, does the screen show seeds planted in the faulty row?</p> <p>NO↓                      YES→</p>	<p>There is a problem in the seed tube sensor if all of the other troubleshooting steps prior to this one were followed.</p>
<p>Visually inspect all of the connections and the over all integrity of the wire. Are there any noticeable problems?</p> <p>NO↓                      YES→</p>	<p>The cable may need replaced. However, if you are unsure that it is the cable causing the problem, proceed down the list to eliminate any other possibilities.</p>
<p>Contact SRES for additional help.</p>	

## 4. Problem: THE SLIDES ARE STICKING OR MOVING SLOWLY

<p>Are the slides wet? NO↓ YES→</p>	<p>Blow the slides out to dry. Run the planter in the simulation mode to aid in drying.</p>
<p>Are all of the slides moving slowly? NO↓ YES→</p>	<p>Check to see if the air compressor is on and above 60 P.S.I. See if the regulated pressure is at 50 P.S.I. If it is running and cannot catch up, listen for any leaks. Most leaks caused by pinched hoses can be fixed by using the hose splices included in the tool box. Connections are usually fixed by pushing the hoses on further or wiggling the connector.</p>
<p>Swap a six-tube connector from a working cover to the stubborn cover. Was the problem in the cover? NO↓ YES→</p>	<p>Follow the cleaning instructions on page 38-39 in the Maintenance and Adjustment section of this manual.</p>
<p>Listen for any leaks from the air lines anywhere between the cylinders on the cover to the valves in the box. Also look for any kinks in the hoses. Double-check all the air connections in line with the cover. Was a problem found? NO↓ YES→</p>	<p>If there was a leak, try to repair the problem by using the included hose splices in the tool kit. If other parts are needed, contact SRES.</p>
<p>Contact SRES for additional help.</p>	

## 5. Problem: THE REMOTE BOX IS NOT WORKING

<p>Is the screen illuminated but the numbers aren't showing up? NO↓ YES→</p>	<p>Be sure that the COM port connector on the back of the HammerHead is connected to the "COM 2" port.</p>
<p>Is the power "ON" on both the remote box and the main control box? NO↓ YES→</p>	<p>Check the connections on the cable between the remote and the main box. Make sure there are no pins loose or corroded in the connector. Check the cable over for pinches, cuts, or stretched wires. Replaced if necessary.</p>
<p>Turn the power switches to the "ON" position.</p>	
<p>Contact SRES for additional help.</p>	



## 6. Problem: THE PLANTER OCCASIONALLY SKIPS BUTTONS

<p>Is there trash going through the checkhead? NO↓ YES→</p>	<p>Be sure that the checkhead brushes are in place and functioning properly. New brushes may be ordered from SRES, part #1000262.</p>
<p>Go to the <i>Plot Set-up Menu</i>. Is the <i>Checkhead Block</i> distance set too close to the button-to-button distance? NO↓ YES→</p>	<p>Set the <i>Checkhead Block</i> distance lower. Generally, depending on how constant the speed remains, you should have the <i>Checkhead Block</i> set to at least 24 inches less than the total plot distance (button-to-button distance).</p>
<p>Is one of the checkheads in the raised position? NO↓ YES→</p>	<p>Unless using the <i>Simulate – Checkhead</i> mode, always plant with both checkheads down.</p>
<p>Are one of the switches or moving parts on the checkhead frozen up, causing the switch to remain “ON” longer than it should? NO↓ YES→</p>	<p>Clean and lubricated the part that is stiff or frozen up. Replace the limit switch if it is at fault.</p>
<p>Could the checkheads be out of adjustment for the cable you are using? See page 40 for details on setting the limit switches. NO↓ YES→</p>	<p>Adjust the limit switches on the checkheads so that they read the buttons on the cable you are using.</p>
<p>Is the planted terrain especially hilly or terraced, causing the cable to pull up on the checkhead switch? NO↓ YES→</p>	<p>Attach a spring to the top roller arm on the checkhead, so that it pulls down on the arm with greater force than what the cable could pull up.</p>
<p>Check the connections on the cables for bent or corroded pins. Check the cable for pinches or cuts. Is there any damage? NO↓ YES→</p>	<p>Replace the damaged parts.</p>
<p>Contact SRES for additional help.</p>	

## 7. Problem: THE IMPLEMENT SWITCH IS COMING ON AND GOING OFF DURING PLANTING

<p>Is the planter row unit sometimes coming out of the ground? NO↓            YES→</p>	<p>Run the planter all the way in the ground. If needed, lower the tension on the down pressure springs to reduce soil compaction instead of running the planter part of the way up.</p>
<p>Is the proximity sensor out of adjustment? NO↓            YES→</p>	<p>Adjust the implement switch so that it only sees metal when the planter is out of the ground. The sensor has an LED in the end where the wire enters. The LED illuminates when the sensor detects metal.</p>
<p>Inspect the cable connections for loose or corroded pins or wires. Check the overall integrity of the cable. For additional help, contact SRES.</p>	

## 8. Problem: PLANTER IS TRIPPING TOO SOON

**NOTE:** The SRES Precision Vacuum Planter always cycles before the alleyway.

<p>Are the brushes on the checkheads worn out or missing? NO↓            YES→</p>	<p>Replace brushes, SRES part #1000262.</p>
<p>Is the planted terrain especially hilly or terraced, causing the cable to pull up on the checkhead switch? NO↓            YES→</p>	<p>Attach a spring to the top roller arm on the checkhead, so that it pulls down on the arm with greater force than what the cable could pull up with.</p>
<p>Contact SRES for additional help.</p>	

## SRES Limited Warranty

Seed Research Equipment Solutions, LLC ("SRES") warrants that the Monosem™ Planter and SRES-produced components of planters manufactured by SRES to be free from defects in material and workmanship for a period of thirty-six consecutive months from the date of sale of the new SRES products to the original purchaser, provided such defect is reported and returned to SRES within thirty (30) days of failure.

Tires, belts, vacuum hoses and hydraulic hoses are excluded from such warranty.

Replacement parts and components provided by SRES are warranted to be free from defects in materials and workmanship for a period of ninety days from the date of purchase or for the remainder of the product warranty period, whichever is longer.

Certain components used in the manufacture of, or equipment attached to, SRES planters are manufactured by other companies or entities which provide warranties separate and apart from any warranty provided by SRES. Such components include the Big John™ Controller system, the Buzzanator™ alternator, MPM™ controls, Avcomm™ and Peltor™ Headsets and the liquid fertilizer system and pump, which are warranted by the manufacturers, subject to certain limitations, for a period of one year from the date of purchase.

The sole obligation of SRES under this limited warranty is to repair or replace, at the option of SRES, free of charge to the original purchaser, any part or component SRES determines to be defective, provided such part or component is returned to SRES, transportation charges prepaid, within thirty days from the date of failure. All parts or components replaced by SRES under this limited warranty becomes the property of SRES.

Under no circumstances shall this warranty be construed to render SRES liable for injury or damages of any kind or character to persons or property. This warranty does not extend to or impose any liability upon SRES for loss of crops or any expense or loss incurred for labor or for the purchase or rental of substitute equipment or for any other cost or expense.

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