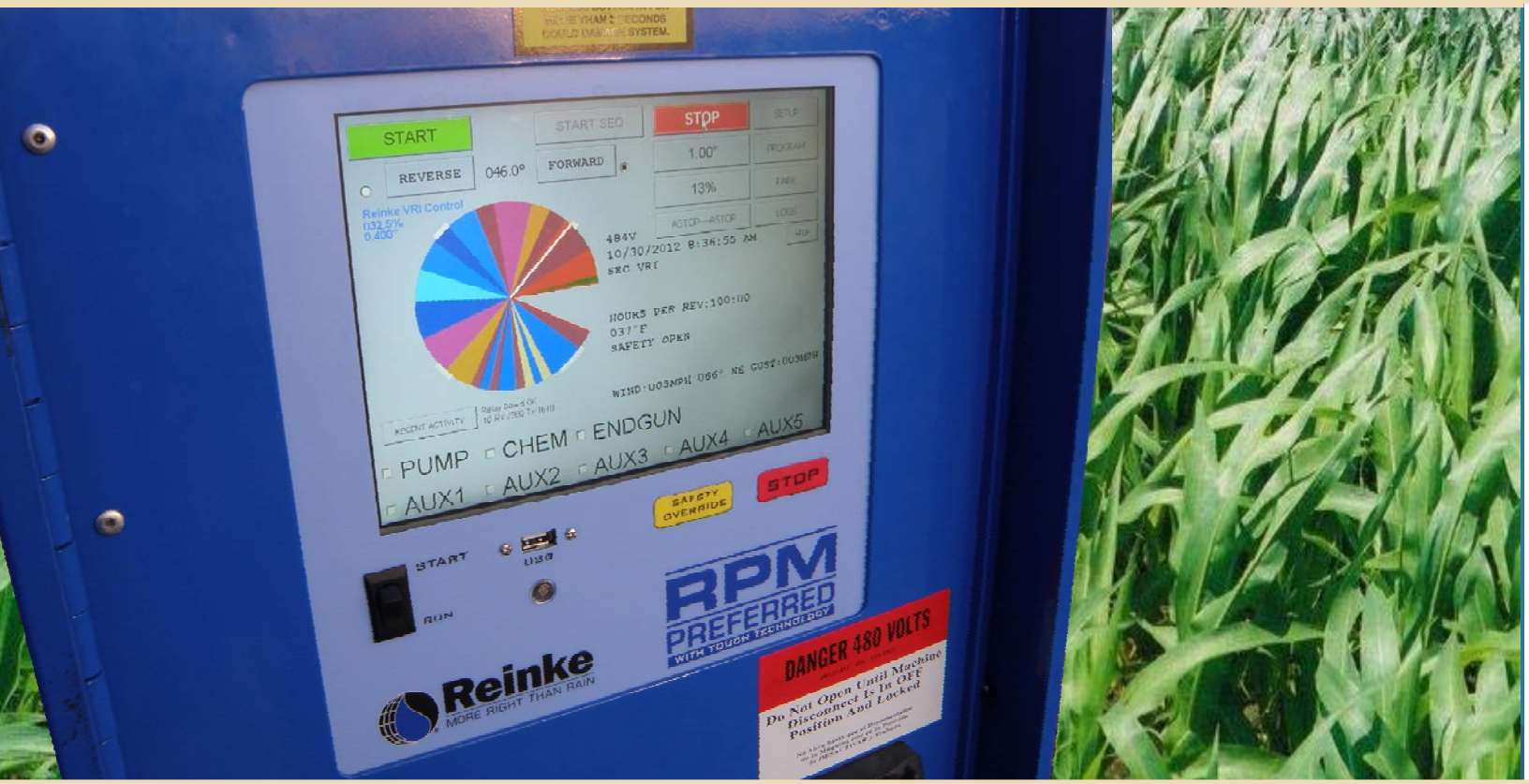
RPM Preferred with Touch Technology Operators Manual



RPM Preferred With VRI Operation Manual

Reinke
MORE RIGHT THAN RAIN

Touch Screen

Operation Manual

RPM™ PREFERRED WITH TOUCH TECHNOLOGY

P/N 117112-1.0

Revision D (01/15)

Reinke MORE RIGHT THAN RAIN

Our mission... to exceed our customers' expectations of quality, service, and innovation.

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System Safety

The Reinke Electrogator II System is designed with many electrical and mechanical safety features. However, each operator must read and understand this and all other accompanying owners manuals for the safe and efficient operation of your Reinke Electrogator II System. If this System is operated incorrectly, it can pose a safety threat to the operator and others. The following is a list of safety operating tips which all service and operating personnel must read and understand.

The safety alert symbol is displayed many places throughout this manual and on your system to indicate when there is a potential for personal injury.

Throughout this manual and on system decals, the words "DANGER", "WARNING", and "CAUTION" are used with the safety alert symbol to alert the operator of potential hazards. DANGER" identifies the most serious hazards. "DANGER" or "WARNING" safety signs identify specific hazards. "CAUTION" signs identify specific safety instructions.

Moving parts are exposed and may present a potential hazard. Therefore, keep all equipment, vehicles, people, etc., out of the system's path.

DO NOT attempt to perform any maintenance procedures until the main control panel disconnect switch and all pump and other sisconnect switches are locked in the "OFF" position. Electrical component trouble-shooting and replacement should be performed only by a certified service technician to ensure built-in safety features remain intact. This also ensures system remains compliant with the national electric code and the manufacturers specifications. Replace all protective guards and shields before restoring power to the system.

Do not allow anyone to ride or climb on the System unless they are qualified and required to do so for maintenance purposes.

The tower steps have been provided for access to the tower control boxes only. They are not intended for access to the span. For instance, should the sprinkler heads require service, use a ladder to reach them from the ground.

Exercise caution when handling fuel near systems equipped with combustion engine-driven generators and pumps.

If you want to attempt to repair your system and are uncertain of the proper prodedure, contact an authorized service person.

Keep away from the system during thunderstorms or other severe weather conditions. The center pivot is grounded and the system is probably the highest object in the field, making it a good lightning receptor.

Be sure protective guards are installed on all belts and driveshafts of ancillary equipment such as combustion engines, electric motors, pumps, etc.

If you suspect a short circuit, or the system is not working correctly, do not touch the system and keep others away from it. Call your service technician. Electrical component trouble-shooting and replacement should be performed by a certified service technician to ensure built-in safety features remain intact. This also ensures system remains compliant with the national electric code and the manufacturers specifications.

System Safety

When towing a System from field to field, avoid ditches, rough terrain, overhead power lines, etc. The ground wire MUST be re-attached to the ground rod and checked for electrical integrity each time the system is towed.

Avoid any bodily contact with high pressure water streams from sprinklers and end guns.

Keep away from fields where the system is chemigating. Make sure the applied chemical and water does not blow or drift past the area of intended operation. A check valve must be installed between the pivot center and the pump to prevent the mixture of water and chemical from siphoning back into the irrigation water source. Comply with all local, state, and federal regulations.

Do not oversize fuses. Fuses are sized for a specific circuit. It is very important to make sure you have the proper fuse size in place before initially starting the system and when replacing fuses.

Do not operate the system when temperatures are below 40°F (4.5°C). This can cause structural damage to the system.

In most states it is unlawful to spray water on state and county roadways. This is a serious hazard and must not be allowed.

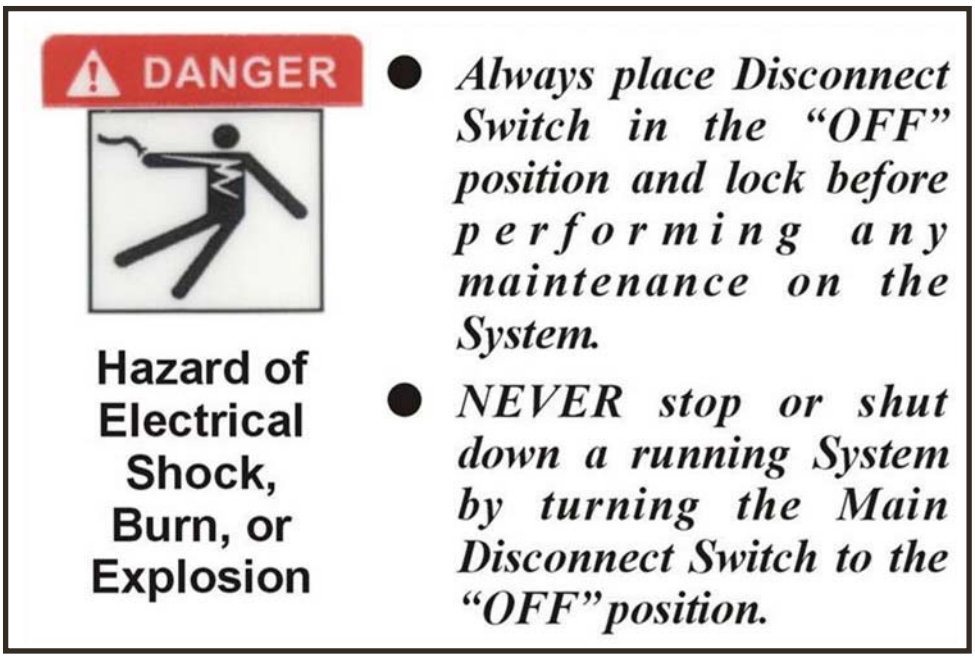
If your System is equipped with any Auto-Stop or Auto-Reverse Mechanism, make sure they are working correctly and a Tower Barricade is properly installed as per this manual. ***Reinke disclaims any and all liability (including any liability created pursuant to the Irrigation Systems Warranty) with regard to damage to the Irrigation System, or to other property, or personal injury or death, caused by improper installation or maintenance of Reinke-supplied Tower Auto-Reverse or Auto-Stop Switches or Tower Barricades, or by use of customer-supplied Barricades.***

Driveshafts may start without warning. Keep away from Driveshafts to prevent clothing or limbs from being entangled, resulting in severe injury.

Mechanized irrigation equipment can be very dangerous. Always remain alert and cautious when operating.

Be aware that the system may start automatically, depending on how your system is setup, monitored, and controlled.

Safety Decals - located on Main Control Panel



Do not attempt to perform **any** maintenance procedure until the main control panel disconnect switch and all pump and other disconnect switches are **locked** in the **"OFF"** position.

Main Screen

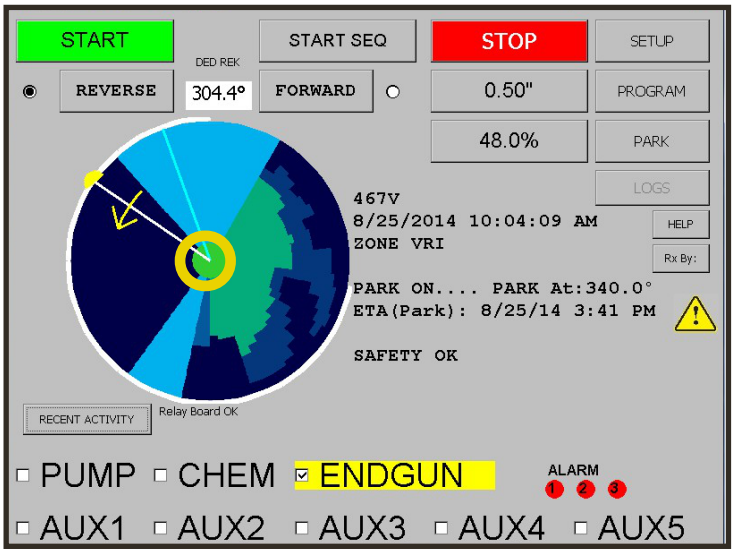
System Status

Displays the current status of the system: stopped, running, direction of movement, running wet, running chemical, end gun, and park position.

System Status Color Codes

Blue=system moving wet
Green=system moving dry
Dark Green=system moving w/chemicals
Red Blinking Line on Location=safety shutdown

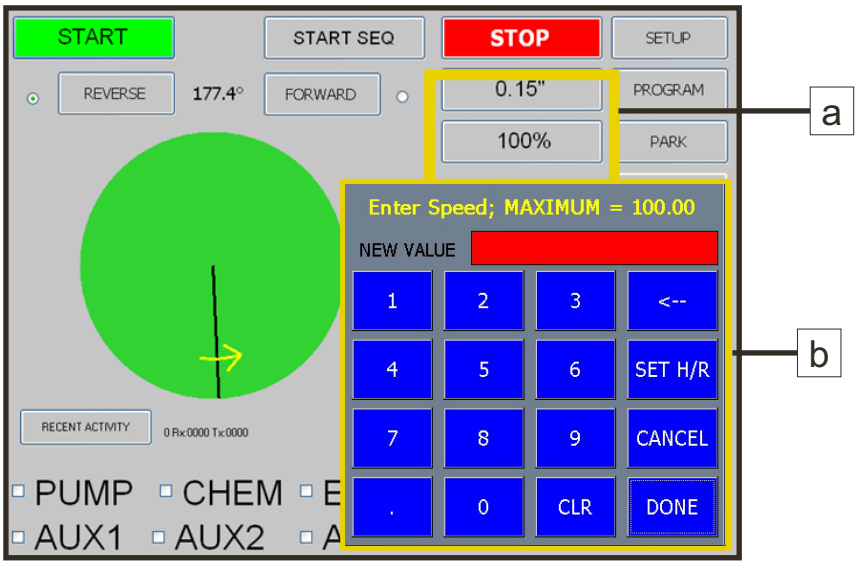
Note: VRI controlled pivot is shown in this diagram and only the very center circle will show the system status (green in this instance).
On non-VRI system the diagram will show one solid color for the full pivot diagram.



Speed Control

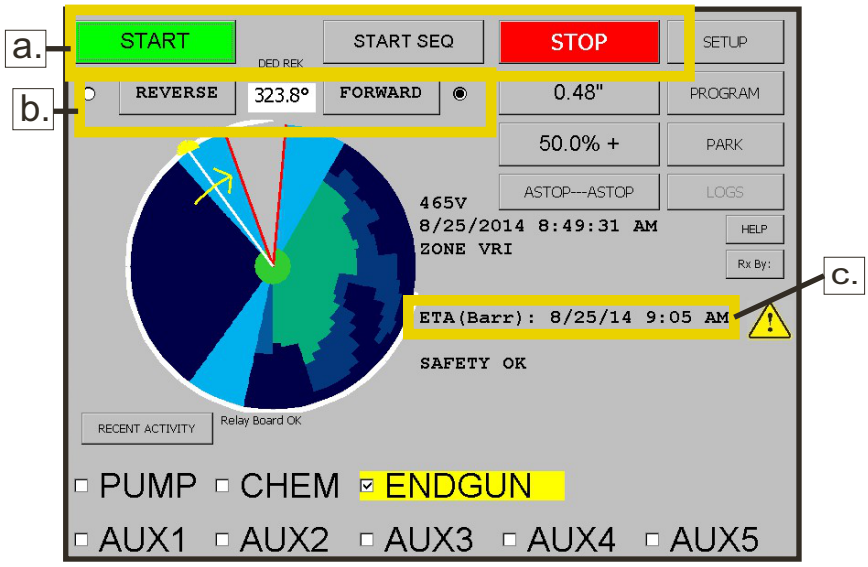
Depth: Select the amount of water to apply in inches.
Speed: Select the speed to run the system as a percentage, 100% being full speed.
Note: a "+" sign next to the percentage indicates when the end tower is moving, and percent timer output is energized.

a. Pressing the depth button will open the keypad allowing the application rate in inches to be entered. *Note: The SET H/R button will not be shown.*
b. The SET H/R button will only be shown if the percentage button is selected. It is used to set the desired hours per revolution for application and it will automatically set the application rate/speed.



a. Start and Stop Control Buttons

Use the START button to start the system moving in the forward or reverse direction.
Use the STOP button to stop the system at any time.
If there is a start sequence set up, the START SEQ button can be used to start the system using that sequence.



b. FORWARD and REVERSE

Use the FORWARD button to select the forward direction.
Use the REVERSE button to select the reverse direction.
When switching directions there will be a 7 second delay before the system will start in the new direction.

The position indicator located between the FORWARD and REVERSE buttons has several functions. It can show GPS signal, resolver signal, position sensor, number of satellites, whether or not you have WAAS, dead reckoning or tell you when something is wrong. When something is wrong the background color will change from white to yellow.

Note: GPS users, system will enter forced dead reckoning after 5 minutes if no GPS signal is found.

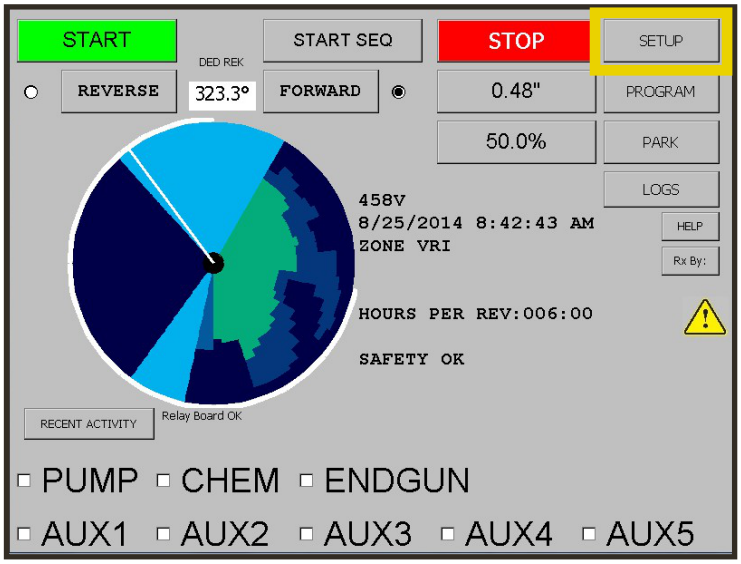
c. ETA (Barr):

This displays estimated time of arrival to the barrier or park position, whichever is closer to the current position, or it will show "hours per revolution" if there are no barrier or park positions programmed.

Main Screen

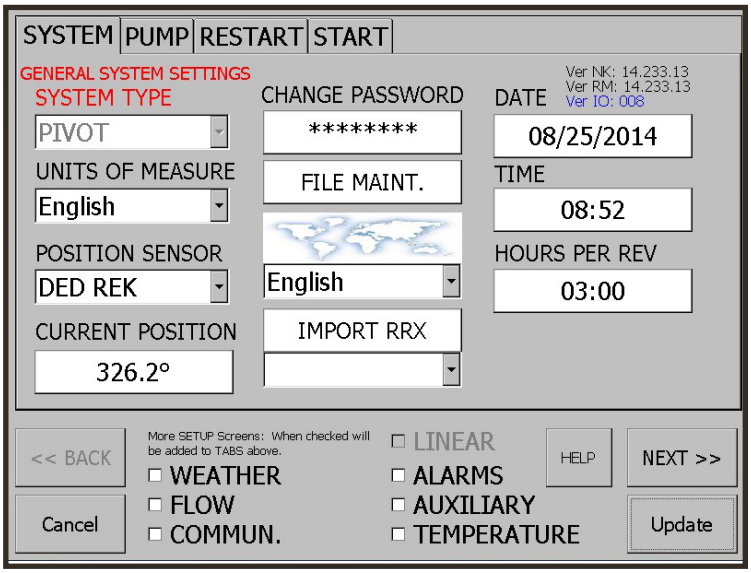
SETUP Button

Pressing the SETUP button as shown below will take you to the setup screen. If the system is running you will only be allowed to view the current setup. To change the system setup you must first stop the system.



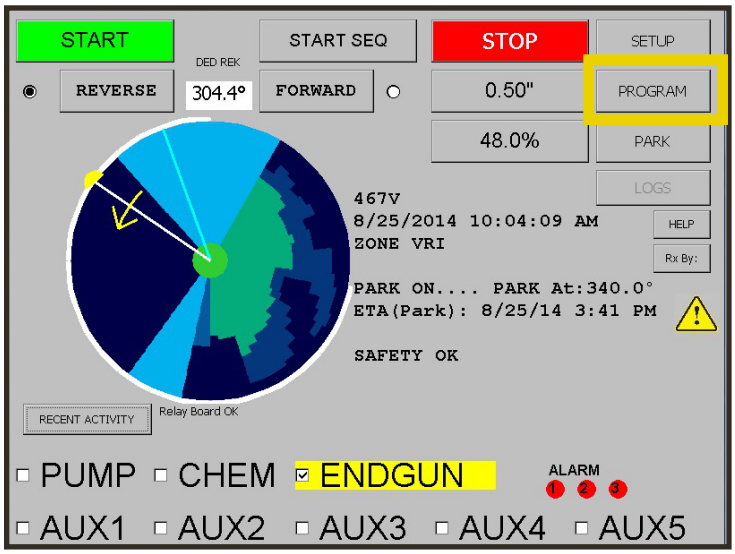
Setup Screen

More detail about setting up the system can be found in a later section of the manual.
(Setup: pages 9-21)



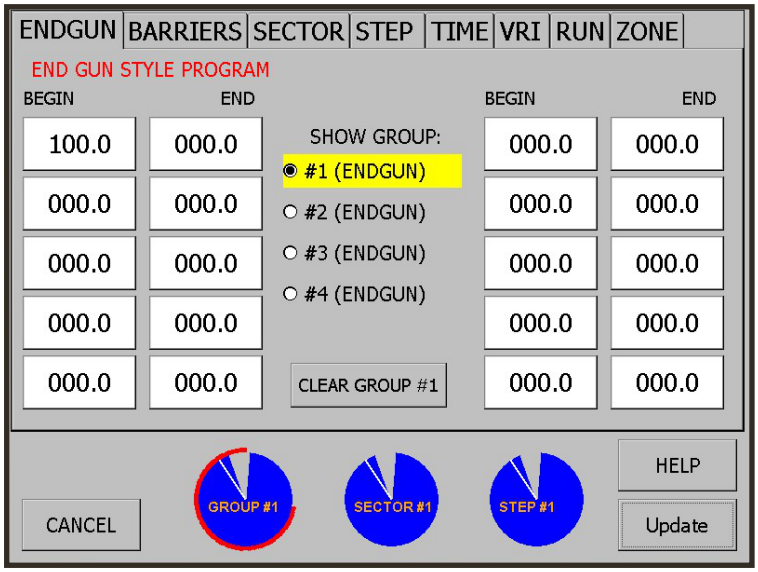
PROGRAM Button

Pressing the PROGRAM button will take you to the program screen as shown below.



Program Screen

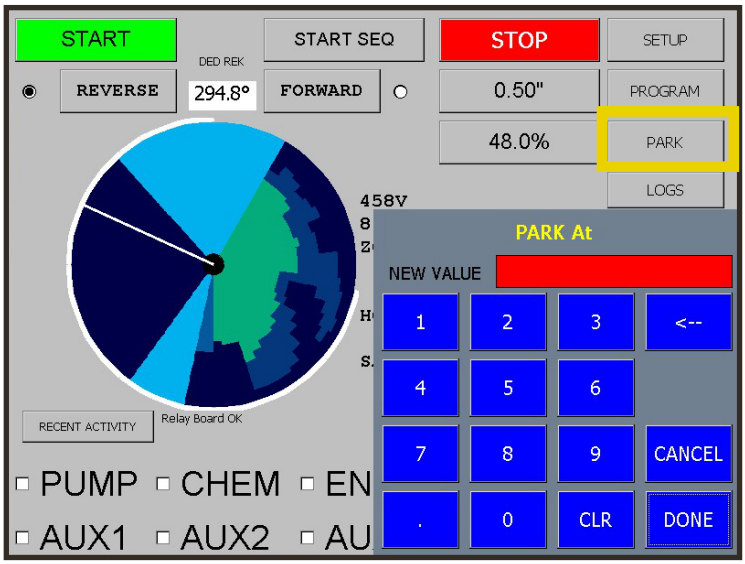
More detail about programming the system can be found in a later section of the manual. (Programming Options: pages 22-30).



Main Screen

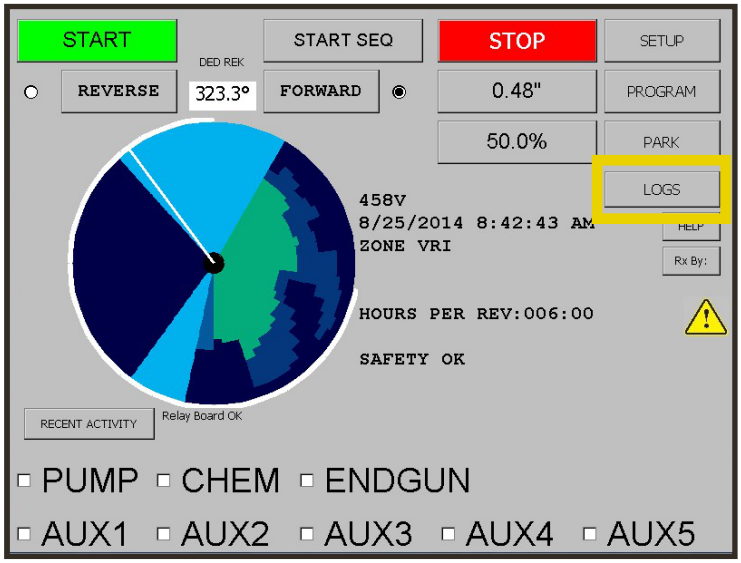
PARK Button

Pressing the PARK button will open a keypad as shown so you can enter the position in which the system should park. If there is already a park position entered pressing the park button again will turn off the park position.



LOGS Button

Press the LOGS button to access the data that has been logged by the system. An example of the Logs screen is shown on the opposite page. This button is only active when the system is stopped.



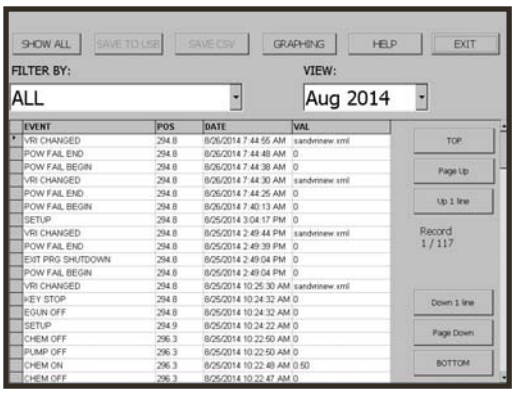
Logs Table & Graphs

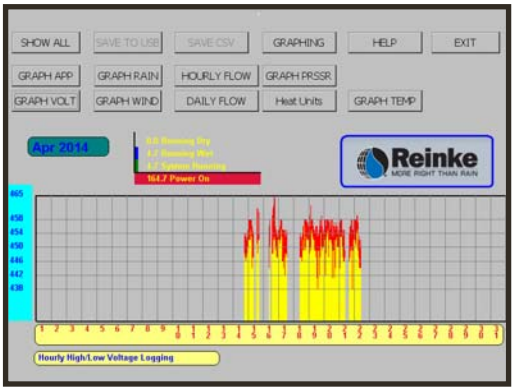
The logs table shows a spreadsheet of the data that has been logged by the system. The table can be filtered using the "Filter By" pull down menu. The data is displayed in the table by month. The month displayed can be changed by using the "View" pull down menu.

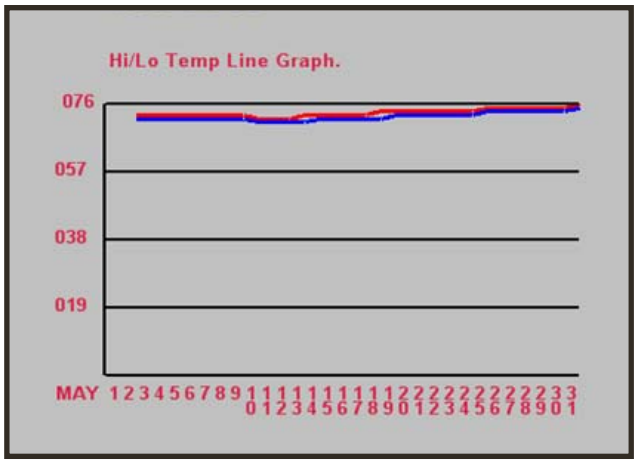
The "SAVE TO USB" button saves the logs to a USB flash drive. Note that each month needs to be saved individually. For example, if June and July data are required to be saved then first select June from the drop down menu, then save to USB. Next select July and then save to USB.

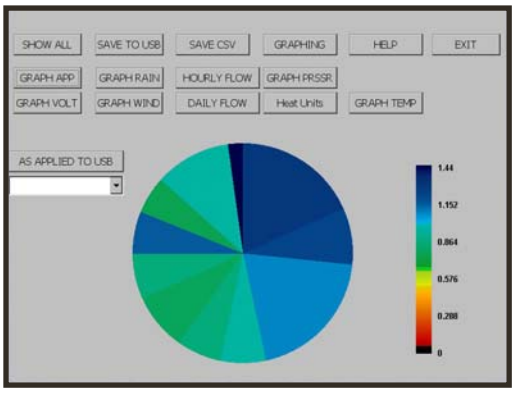
The "GRAPHING" button shows graphs of the data collected (shown below). Use the buttons located at the top of the "Graphing Screen" to navigate through the available graphs. Similar to the logs screen each graph only displays one month at a time. In order to save multiple graghs, each month must be individually selected and saved. Graphs are saved in the bitmap (.bmp) format.

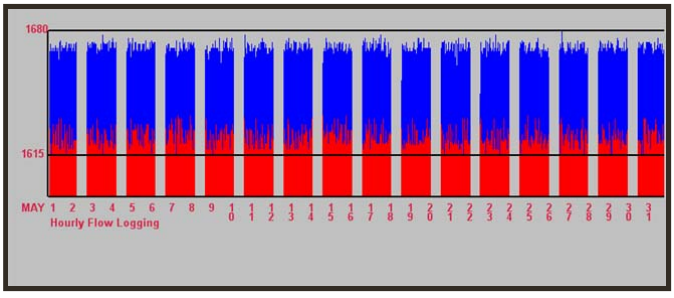
Note: To use the heat units function and graph, a temperature sensor must be installed on the system.







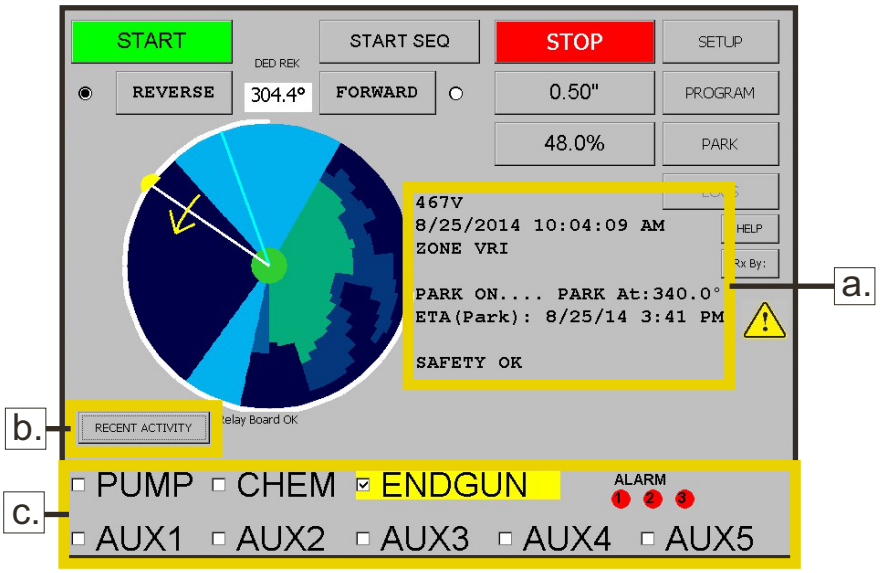




Main Screen

a. Information Center

Different information will be displayed in this area pertaining to the status and operation of the system.

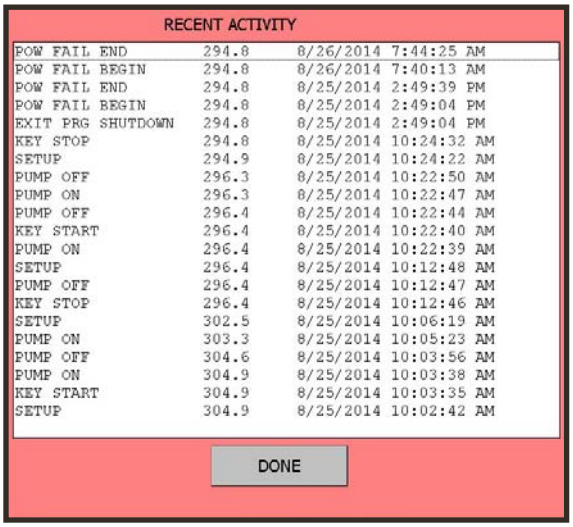


b. Recent Activity

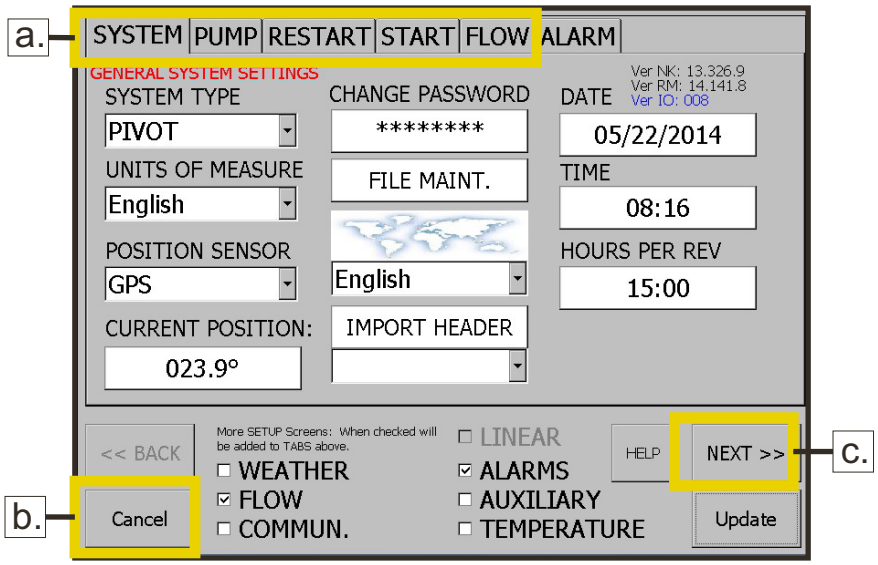
Pressing the RECENT ACTIVITY button will display the most recent actions of the system (see screen below).

c. Output Control Buttons

Checking any of these boxes allows the user to manually control output of the systems pump, chemical, end gun, and all auxiliaries. Clicking the output turns them on and off. If the option is on then it will be highlighted and a check will appear in the box next to the option as shown above.



System Setup:



a. Setup Tabs

The tabs at the top of the screen are used to easily navigate through the different set up screens.

b. Cancel Button

The CANCEL button exits to the main screen without saving any settings that have been changed.

c. Next Button

The NEXT button scrolls forward through the tab pages.

d. Percent Timer

The 30sec and 60sec radial buttons allow the operator to set the “Base Percent Timer” cycle.

e. Back Button

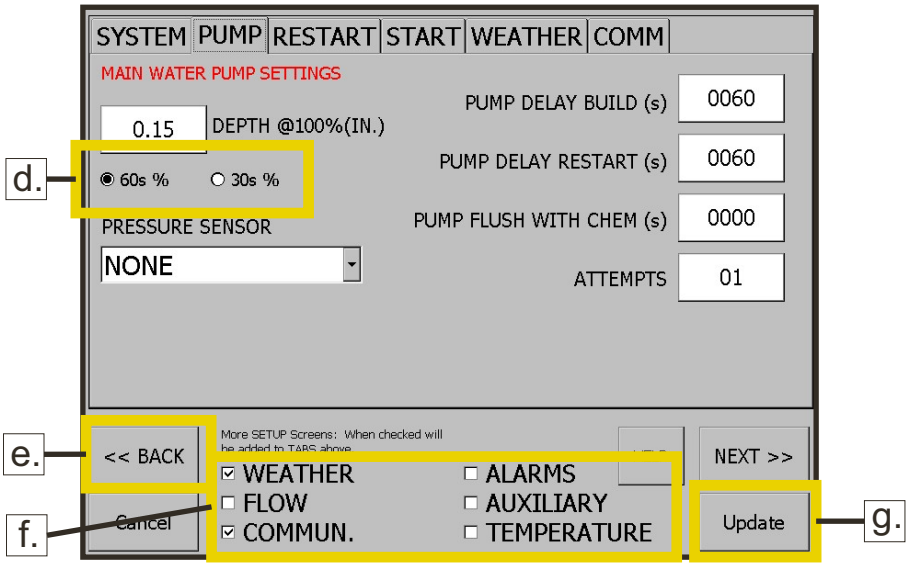
The BACK button is used to scroll backward through the tab pages.

f. Check Boxes for Options

The check boxes add additional options to the system setup.

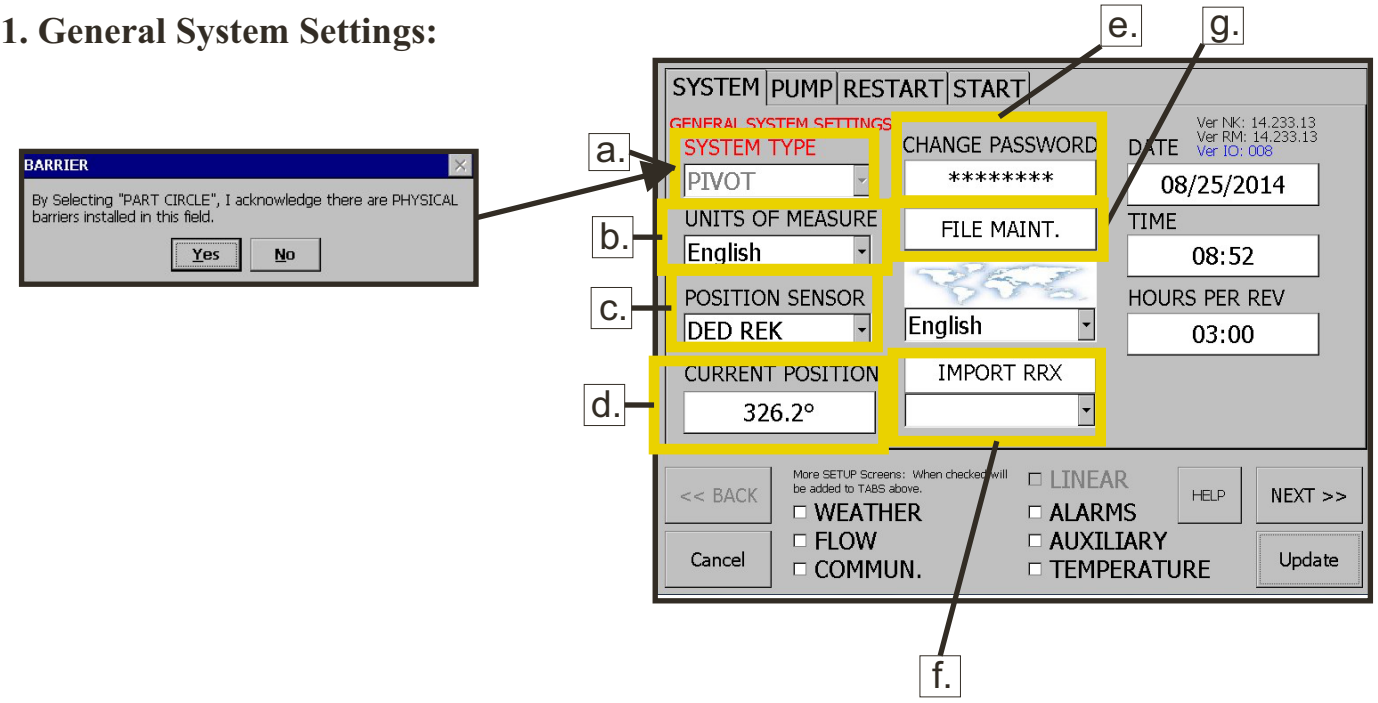
g. Update Button

The UPDATE button saves all settings and exits to the main screen.



System Setup

1. General System Settings:



a. System Type

The "System Type" drop down menu allows selection of Pivot, Linear, or Part Circle or Pivoting Lateral. If Pivoting/Lateral is selected also select the Linear checkbox. "Part Circle" allows the user to set a barrier down to 1° from 5°. Use extreme caution when selecting this option. Operator must select "yes" on the barrier pop-up to use this option. See page 25 for barrier programming.

b. Units of Measure

The "Units Of Measure" drop down menu allows selection of English or Metric measurements. In Metric, the date on any screen will appear as day/month/year instead of month/day/year. Also, length measurements will be in meters, and depths in mm.

c. Position Sensor - This option will not appear with Pivoting Lateral selected.

The "Position Sensor" drop down menu allows selection of GPS, resolver or dead reckoning.

d. Current Position - Set after field design is complete for Pivoting/Lateral.

"Current Position" shows the current position of the system.

e. Change Password

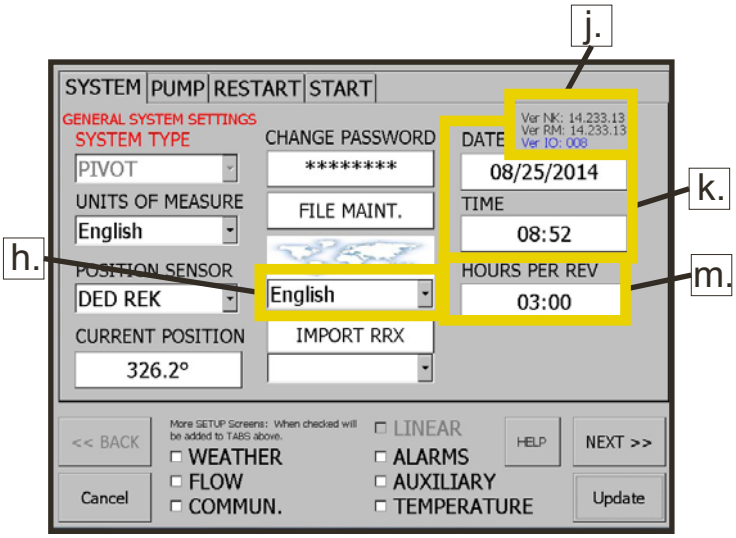
The change password field is used to password protect the setup from other users. To disable this function set the password to "0" (zero).

f. Import RRx - This option not used for Pivoting/Lateral system.

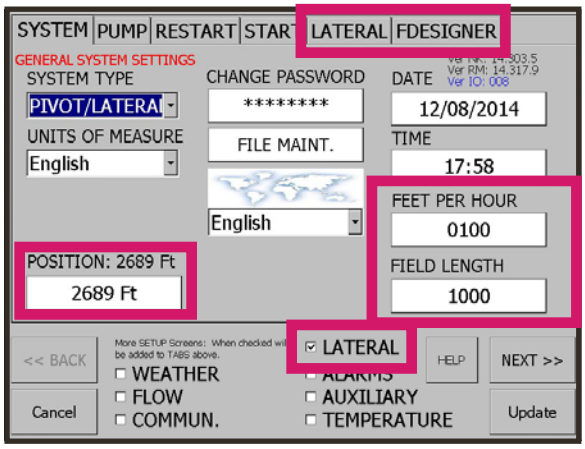
Allows selection of an RRx that is located on the "root" of the USB drive for downloading.

g. File Maintenance

By pressing the FILE MAINTENANCE button the file maintenance screen will appear (shown on page 11).



Pivoting/Lateral Systems



h. Language Drop Down Menu

Select local languages here. Supported languages/fonts are English, Spanish, Russian and Simplified Chinese. Please note that all buttons and logs will be re-labled in the selected language.

j. Version Indicator

Shows all software versions currently running on Touch Screen.

k. Date and Time

"Date" is entered by Month/Day/Year.

"Time" is entered on a 24hr format. Example: 1:00pm would be entered as 13:00.

m. Hours Per Revolution - This option will change for Pivoting/Lateral depending upon what stage is currently selected.

Is the time it takes the system to travel a full circle at 100% using hours and minutes. Refer to chart located inside the main panel as shown below for this value. Keep in mind that it makes no difference that the system is only moving 270°, the time entered is based on 360°.

n. Pivoting/Lateral Systems Only:

Pivoting/Lateral Machines have different options than standard Pivot, Lateral Move or Part Circle see highlights in pink above.

Note: Some options will no longer be visible. Turn to the Pivoting/Lateral Section of the manual next starting on page 40. All other setup and programming will be completed under LATERAL or FDESIGNER tabs.

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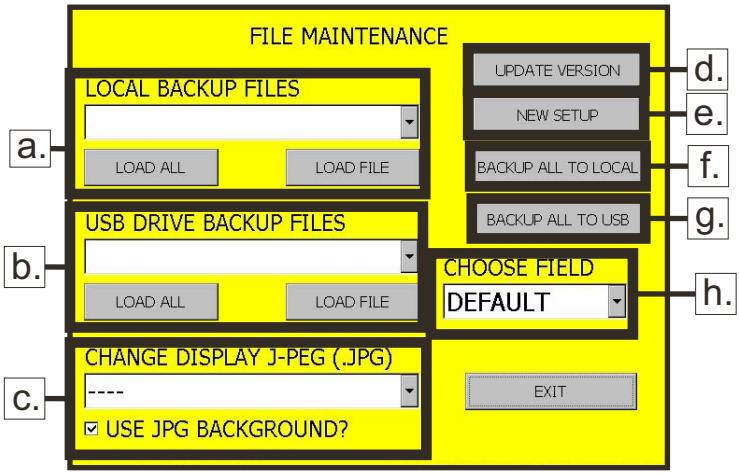
Reinke Manufacturing Co. Inc.
101 Reinke Road P.O. Box 166
Deshler, Nebraska 68340
USA
(402) 365-7251 www.reinke.com

System Serial No:	REINKE SAC	Ext./Ret. Design Flowrate (gpm):	400	System Length (ft):	897.6
Owner's Name:	REINKE CUSTOMER	System Press. (psi):	31.0	Dist. To H-Tower (ft.):	628.3
End (H) Tower Tire Size:	11.2x24	(H) Center Drive Spd:	40:1	(H) Speed @ 100% (fpm)	9.38
SAC (S) Tower Tire Size:	18.4x26	(S) Center Drive Gear Ratio:	25:1	(S) Speed @ 100% (fpm):	19.48
SAC % Timer Setting:	25%	SAC Options:	E.S.P.	End Gun Model No:	SR100 100.4 (ft.)
Min. Transition Flowrate (gpm):	287.5	Max. Transition Flowrate (gpm):	510.3		

Water Application Depth (in):	0.218	0.49	0.75	0.99	1.28	1.45
Percent Timer Setting 60 Hz.:	100%	44%	29%	22%	17%	15%
Application Duration (hr : min):	11:49	26:52	40:46	53:44	69:33	78:49
End Gun Trip Adjustment:	1/4 inch at the cam wheel is equivalent to 15 feet at the end of the system.					

System Sertup



Note: In "File Maintenance", unless a USB drive is inserted into the control panel, only local hard drive buttons will be available to save or backup files to.

a. Local Backup Files

Backs up current setup and programs to the system hard drive.

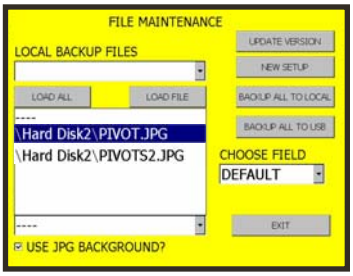
1. Load All: Reloads all setup and programs on the system hard drive.
2. Load File: Select and load a file from the system hard drive.

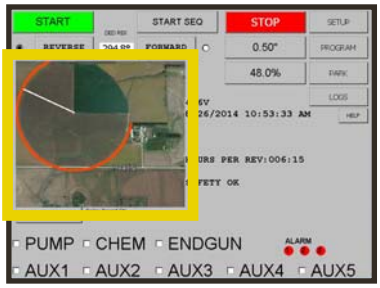
b. USB Drive Backup Files

After a USB drive is inserted in the panel the USB buttons will appear and will function like the system buttons except the information will be saved/loaded or to/from the USB instead of the system hard drive.

c. Change Display J-PEG (.JPG)

Press the box to check the use jpg background the using the drop-down menu to select a background for the main screen. Note pixel size of the .jpg must be 320 x 320 to fit.



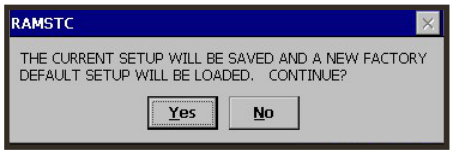


d. Update Version

The software may be updated by using the USB jump drive with a current NK.BIN file loaded to the jump drive by the dealer then pressing the UPDATE VERSION button. Further instruction can be found on the last page of this manual.

e. New Setup

Pressing the NEW SETUP button will bring up a pop-up to save current setup and reset system to default option.



f. Backup All to Local

Back up all current setups and programs to the hard drive.

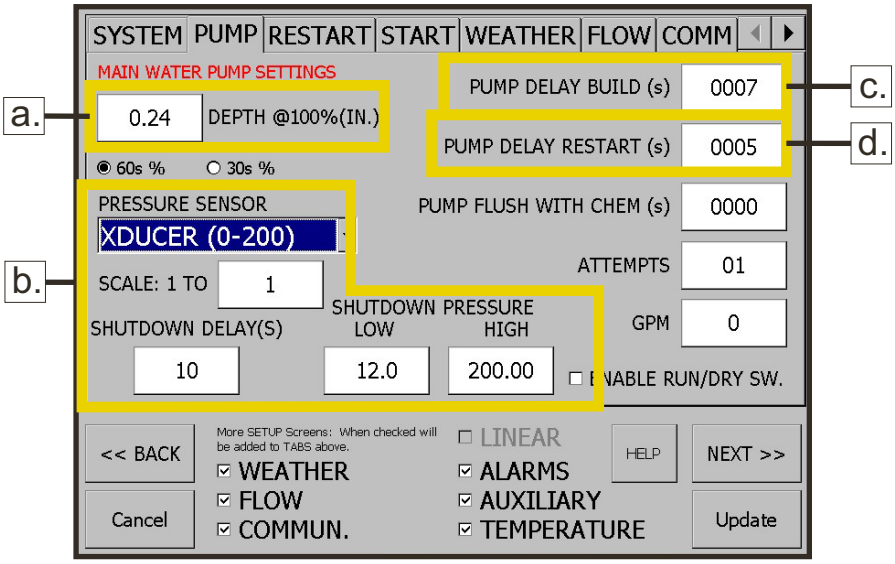
g. Backup All to USB

Back up current setups and programs to the USB jump drive.

h. Choose field

Allows for 5 separate field set-ups and programs to be stored at the same time, reducing field to field moving time.

2. Main Water Pump Settings:



a. Depth @100%(IN.)

For "Depth" enter the depth of water applied by the system while running at 100%. Again see system chart in panel. (Shown below)

b. Pressure Sensor

On the "Pressure Sensor" drop down menu select the pressure device installed: None, Switch, Transducer (0-200, Transducer (0-25) or EOS Transducer (0-200)

1. If Switch is selected only the scale and shutdown delay will be shown.
   A. "Scale" controls input voltage. For instance, a 1 to 2 scale would make 5V into 10V.
   B. In "Shutdown Delay", enter the time in seconds to delay a pressure shutdown in order to reduce nuisance shutdowns. If the system suddenly loses pressure and goes below the set pressure, this time will allow the system to continue to run for set time allowing the pressure to rebuild.
   C. "Shutdown Pressure" should be set according to the type of pressure transducer selected.

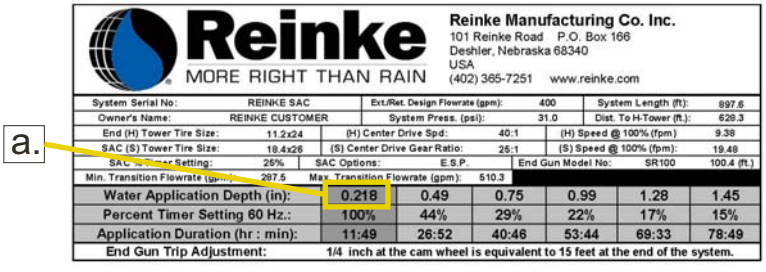
c. Pump Delay Build

In "Pump Delay Build" enter the number of seconds to allow the pump to operate to build up pressure. When the pump is started or restarted by automatic restart, the pump will be allowed to operate for this amount of time in seconds to build up pressure. The computer will then check to see if the pressure is above the minimum water pressure before it will start or restart the system.

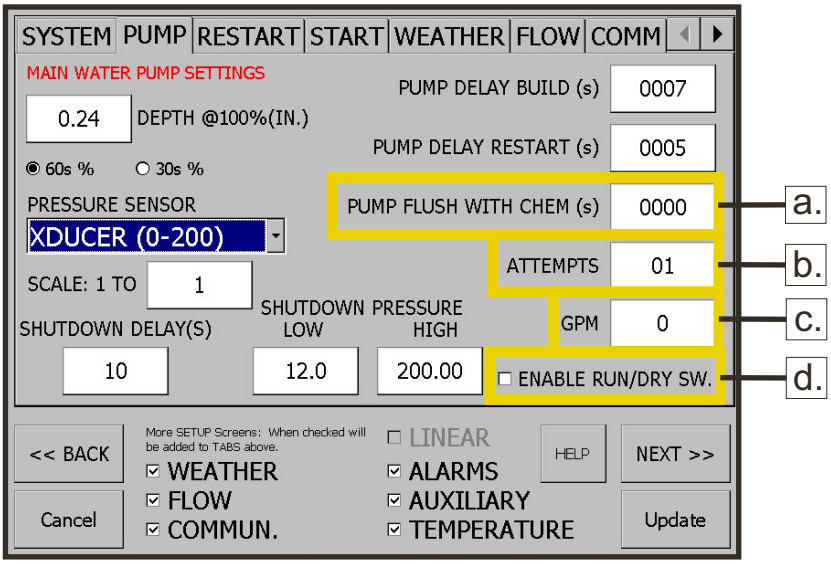
d. Pump Delay Restart

"Pump Delay Re-Start" entered in seconds, so if the pressure switch does not close or the pressure transducer does not reach minimum pressure during the pressure build up delay, the pump will shut down and wait.. This allows the well time to settle before allowing the pump to be restarted.

.



2. Main Water Pump Settings Continued:



a. Pump Flush with Chem (s)

When adding chemicals, enter the number of seconds for the water pump to continue running in order to flush the chemical out of the system once the system is stopped.

b. Attempts

"Attempts" enter the number of times the pump will be allowed to try to restart using the "Pump Delay Build" and "Pump Delay Restart". *Note that if all attempts fail, the pump and system will be shut down.*

c. GPM

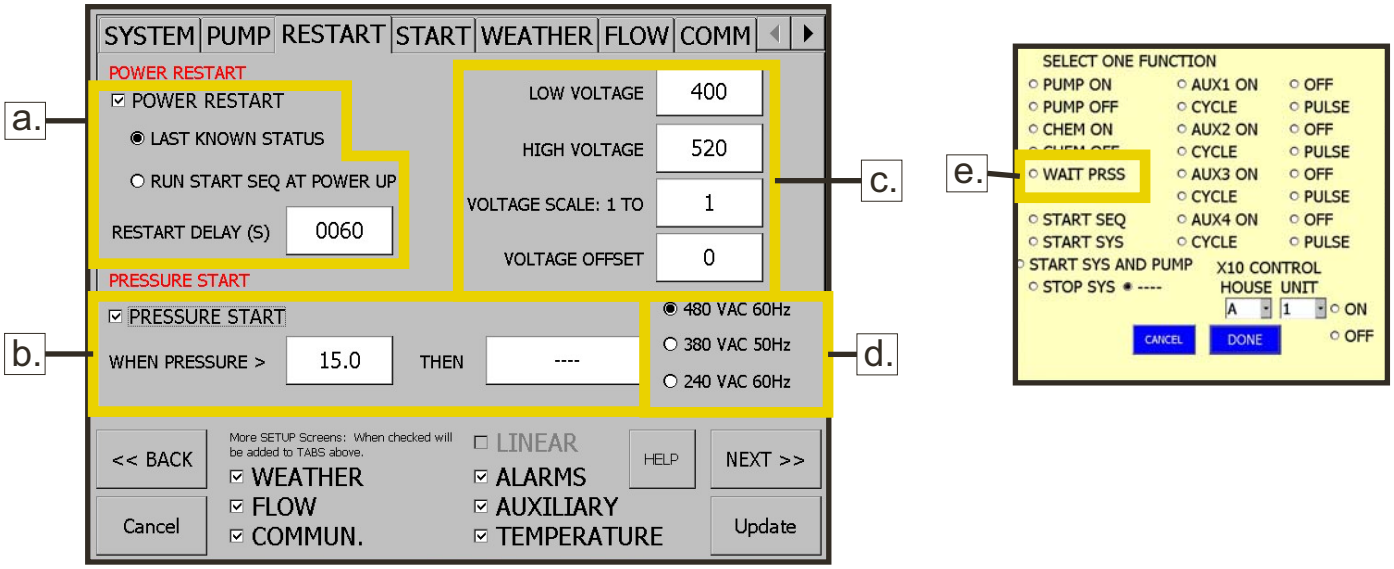
Enter the rate in gallons per minute for the pump being used.

d. Enable Run/Dry Switch

Check this box to add a RUN/DRY button to the main screen. This will allow the pump to run and ignore the pressure switch or transducer. *NOTE: This is only used to **run dry** when pump & generator are on the same power unit. This is controlled by the "RunDry" option button on the main screen that appears only when this box is checked.*

3. Power/Pressure Restart Settings:

Warning: If power restart is checked it is possible for the system to restart on it's own if the main power supply is in the ON position, ensure when auto-restart is not desired shut main power supply OFF.



a. Power Restart

Check the "Power Restart" box if you want the system to automatically restart once an acceptable voltage is re-obtained.

A. "Last Known Status" the system will restart to its last known status.

B. "Run Start Seq at Power Up" *Note: After 7 days of no activity this will no longer work and will have to be re-selected. (see start tab)*

C. "Restart Delay" is entered in seconds for the length of time which the voltage must remain between the high and low set points before it will try to restart. Both the high and low set points need to be entered.

b. Pressure Start

Check "Pressure Start" to start the system once the pressure switch closes or the transducer reaches a safe value. If using pressure transducer enter the PSI at which the system can restart. Then select an option from the popup menu for the start up procedure to follow.

Note: If using pressure switch the system will execute the selected function once the switch sees pressure.

c. Voltage Settings

Low Voltage: Set this voltage to the minimum allowable voltage for normal system operation.

High Voltage: Set this voltage to the maximum allowable voltage for normal system operation.

Voltage Scale: Controls input voltage. If voltage reads 470 but is actually 480 enter 1.02 to calibrate closer to the actual voltage on system.

Voltage Offset: Enter either a negative or positive number to offset what the actual voltage coming in to what is shown.

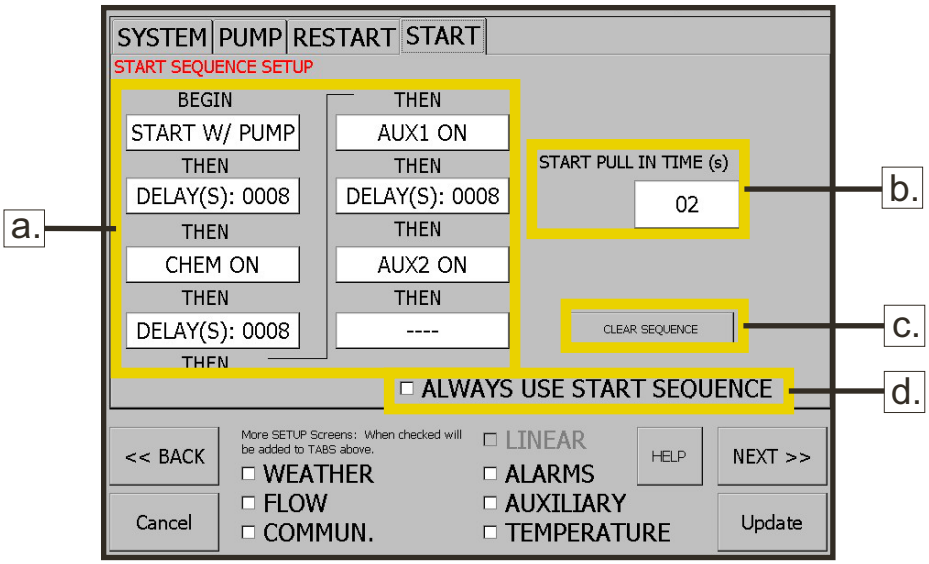
d. Voltage Selection Radial Buttons

Select the voltage and frequency that best fits the available power supply. If you are unsure which is correct please contact your dealer before changing this setting.

e. Wait Prss

If "Wait Prss" is selected for pressure start, the pump will remain energized all of the time and the pressure input will start/stop the system.

4. Start Sequence Set Up:



a. Start Sequence Setup

Select all "Start Sequence Setup" commands which the system should run upon startup from the popup menu.

b. Start Pull In Time

"Start Pull In Time" is the amount of time the computer will hold-in the forward or reverse contactor, overriding the limit circuit. The maximum value is 15 seconds, but 2 seconds is recommended for most systems.

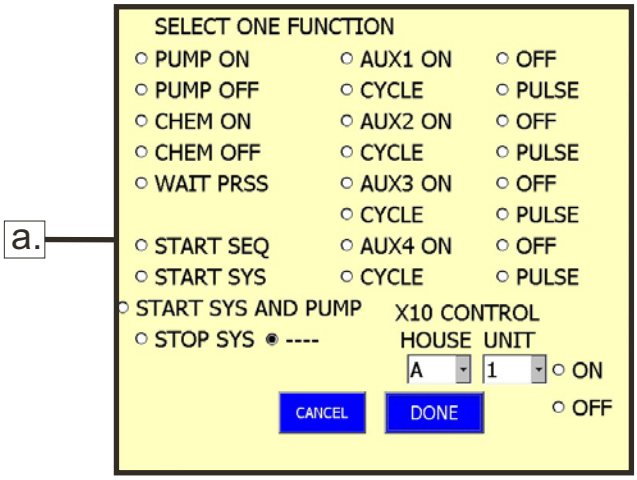
Warning: Safety Limit circuit will be overwritten during this time.

c. Clear Sequence

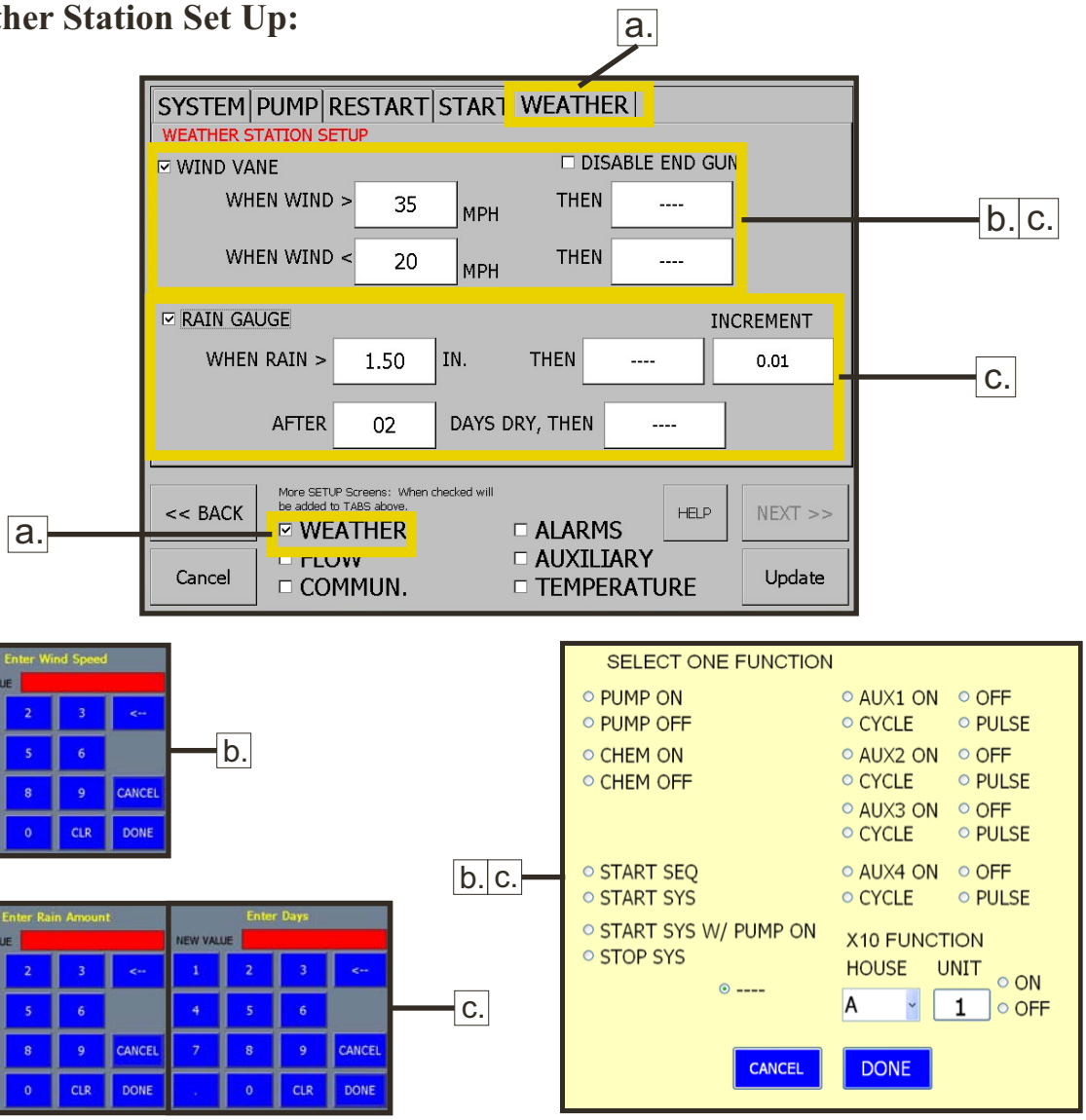
Clear the current start sequence.

d. Alway Use Start Sequence

Check the box for "Always Use Start Sequence" only if you want this sequence used every time the system starts. This disables the "start sequence" button on main screen.



5. Weather Station Set Up:



a. Weather Check Box

a. Check box to enable the weather tab.

b. Wind Vane Check Box

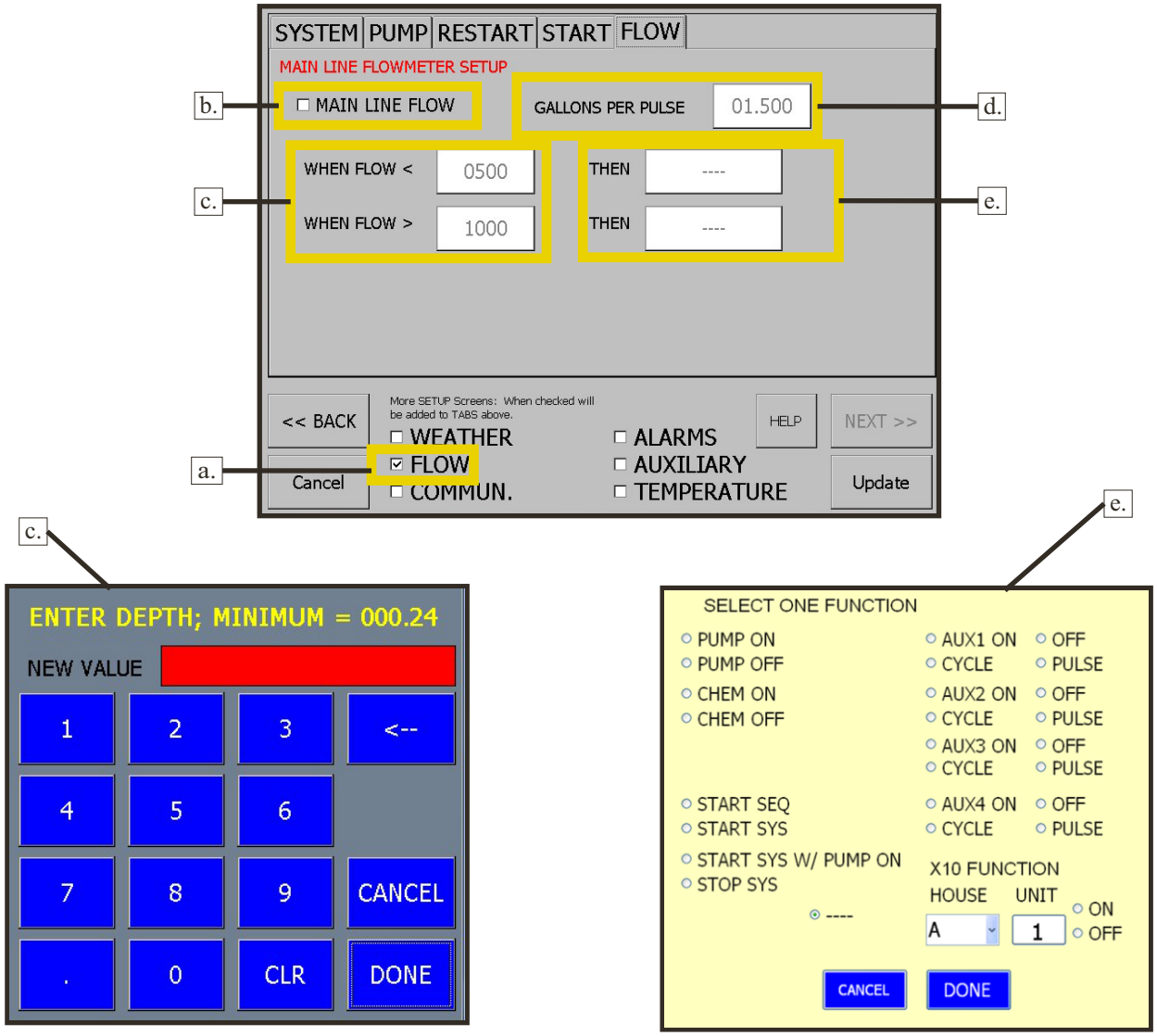
b. Check the box to enable wind options. Select an operation from the popup menu for when the wind gets greater and less than the speeds entered. Select the "Disable End Gun" check box to turn the end gun off during high winds.

c. Rain Gauge Check Box

c. Check box to enable the rain options. Select an operation to run from the popup menu when the amount of rain reaches the amount entered, then enter the hours of dry weather before the selected operation can run.

NOTE: The increment setting must be set by the dealer only during set-up and must be set according to installed rain gauge for calibration.

6. Main Line Flow Meter Settings:



a. "Flow" Check Box

Check the "Flow" box to enable the flow tab.

b. "Main Line Flow"

Put a check in the "Main Line Flow" box to turn on and use the flow meter if installed.

c. "When" Flow Settings

Enter the number of gallons per pulse for the flow meter that is installed. Enter the "Low" and "High" flow values.

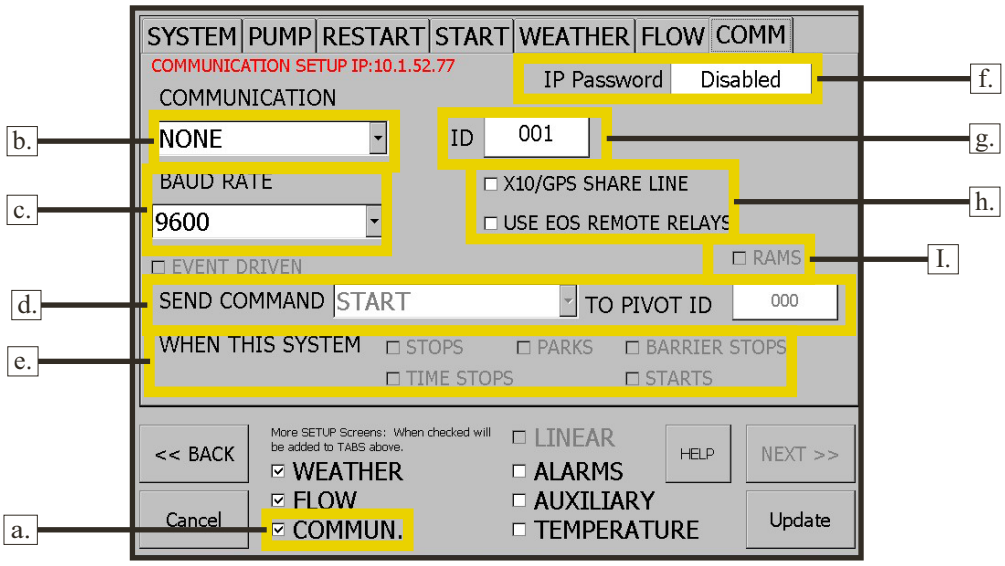
d. "Gallons per Pulse"

This setting must be set by the dealer only during set-up and must be set according to installed flow meter for calibration.

e. "Then" Function Settings

Select the system function for the set flow values from the popup menu.

7. Communication Settings:



a. "Commun."

Check the "Commun." box to enable the communications or (COMM) tab.

b. "Communication"

Select the communication device that is installed from the drop down menu:

1. None(allows no remote access)
2. Phone Link (option #350955 system ID must be set to 001)
3. Remote PC (to use this selection the system must have the telemetry option installed also requires software and radios provided by your local dealer)
4. Open Comm (allows communication between Touch Screen and another Reinke computer panel, via radio signal, to send start, start/pump or stop commands to another system. Keep in mind each system has to have a different ID # and if connecting to RAMS panel put a check in the RAMS box see item "D").

c. "Baud Rate"

Select the Baud Rate from the drop down menu: 1200, 2400, 4800, 9600 or 19200 (9600 is the most standard) ensure that each communication device is set to same baud rate.

d. "Send Command"

Select a send command to send to the remote system then enter system number under pivot ID (this is only allowed when using open comm selection).

e. "When this System"

Select the operations that will trigger the local system to send a command to the remote system.

f. "IP Password"

Further unlocks remote access features. Contact dealer for more information.

g. "ID"

Enter the local unique system ID here. The range available is 1-99.

h. "x10/GPS or EOS" Check Boxes

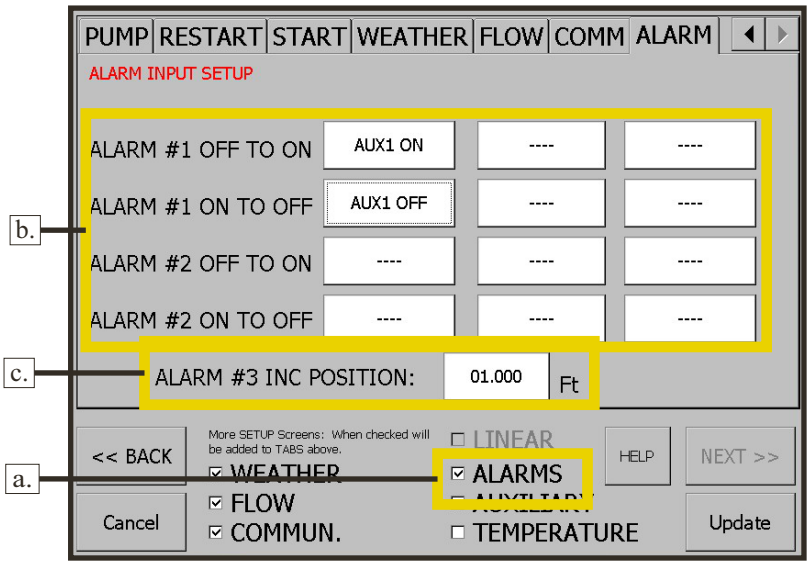
x10/GPS: Check box if using x10 relays and have the GPS & EOS working together.
EOS Remote: Check box to use GPS EOS relays. Required for zone VRI. This can be used as a substitute for x10 relays

i. "RAMS"

Check the RAMS box if the remote system is a RAMS Panel.

Alarm Setup

8. Alarm Input Set Up:



a. "Alarms" Check Box

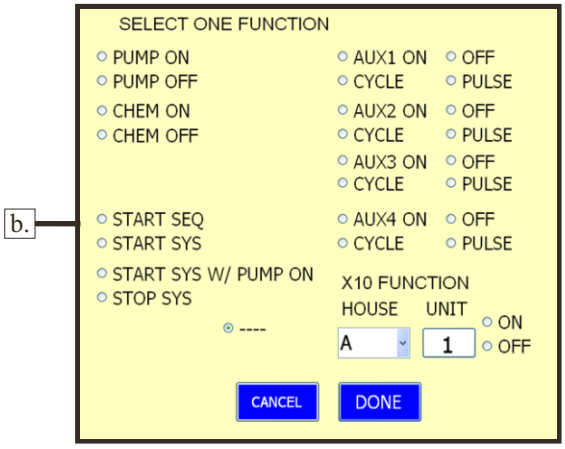
Check the "Alarms" box to enable the alarms tab.

b. "Alarms #1 & #2"

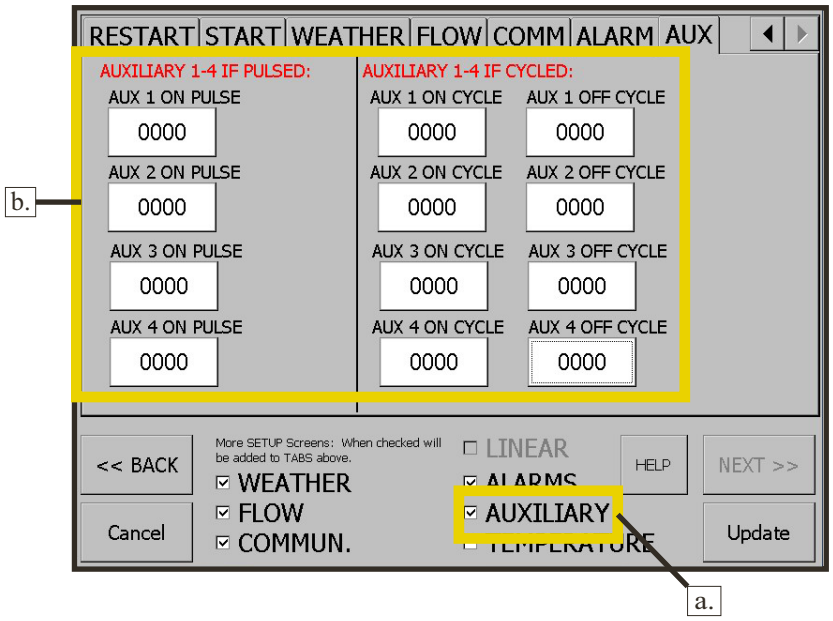
Alarm #1 or #2 is a switched 120V device such as a chemical mixer, diesel fuel tank, flow switch or any other external input outside the irrigation system. For Alarm #1 or #2 select up to three functions from the popup menu for when they switch from OFF to ON. For example when Alarm #1 switches from OFF to ON- AUX1 will turn on in the example to the right. Many different commands can be controlled by using alarms.

c. "Alarm #3

"Alarm #3 INC Position" this alarm is only used on Linear systems. Enter the number of feet the Linear system should increment per pulse. This defaults to 1' but is generally set using a wheel counter switch on a system wheel and the distance that wheel travels in one rotation.



9. Auxiliary Output Set Up:



a. "Auxiliary" Check Box

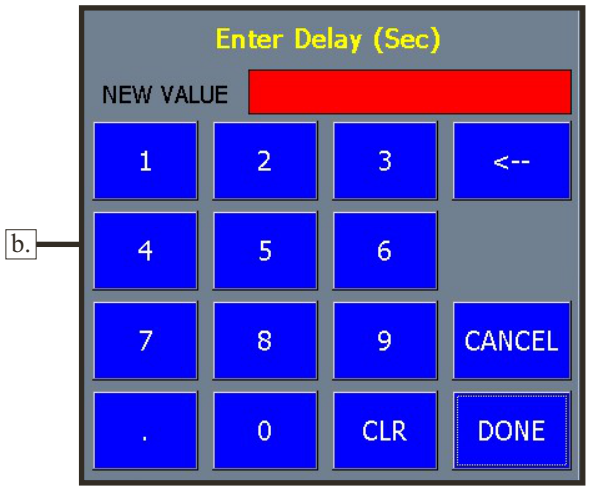
Check the "Auxiliary" box to enable the auxiliary tab.

b. "Auxiliary 1-4"

Pulsed: For "Auxiliary 1-4 if Pulsed" use the popup menu to enter the number of seconds the pulsed output should remain on. This is a one time pulse for duration specified only.

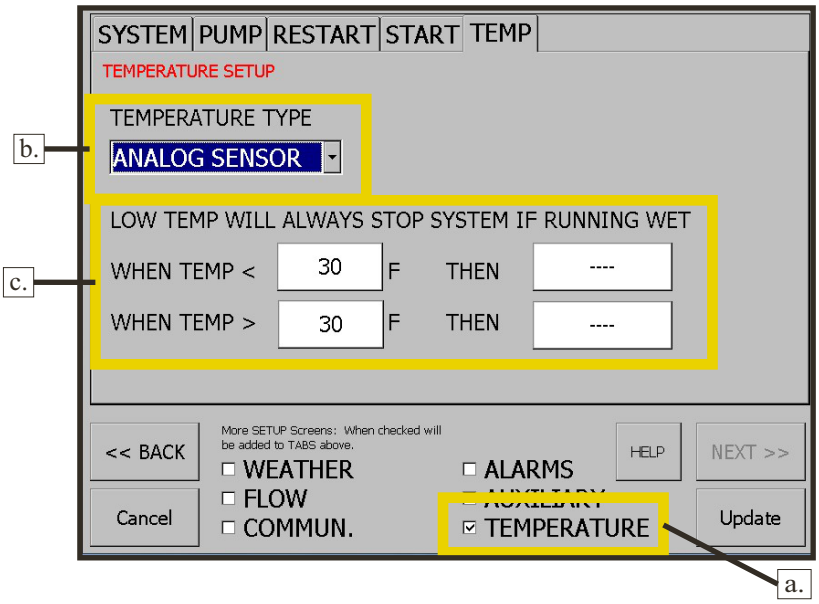
Cycled: For "Auxiliary 1-4 if Cycled" use the popup menu to enter the time in seconds in which the output should remain both on and off. This is used for applications such as running an agitator in the chemicals as needed to keep them mixed for application. *Note: This will cycle on and off until turned off.*

Note: This page is setup only. To use these functions the operator must go to a program screen, start setup screen or any screen that has the pop up menu that is shown on the opposite page to turn these functions on.



Temp Setup

10. Temperature Set Up:



a. "Temperature" Check Box

Check the "Temperature" box to enable the temp tab.

b. "Temperature Type"

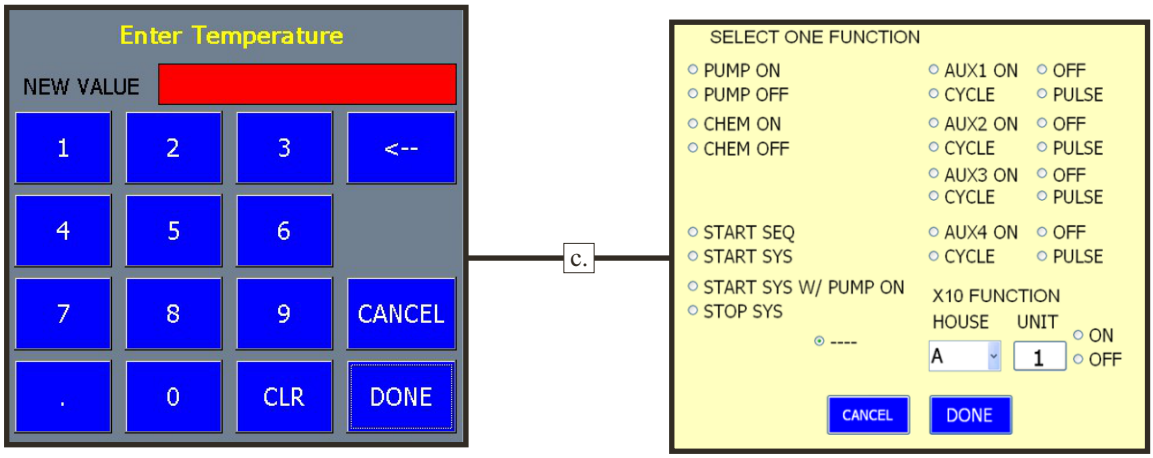
None: No temperature control is installed on panel.

Analog: With the "Analog Sensor" enter the low and high temperatures and then select the function from the popup menu to run when the set temps are met.

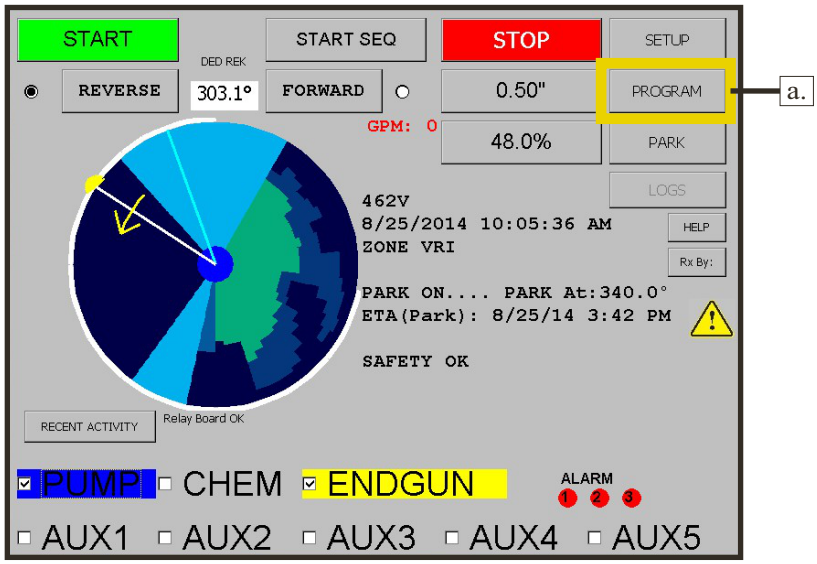
Note: Temperature Switch is only used when retrofitting a RAMS panel with a Touch Screen and the RAMS had an existing Temperature Switch. The temperature is preset & new switches are not available.

c. "Low Temp"

With the "Analog Sensor" enter the low and high temperatures and then select the function from the popup menu to run when the set temps are met.



11 Programming:

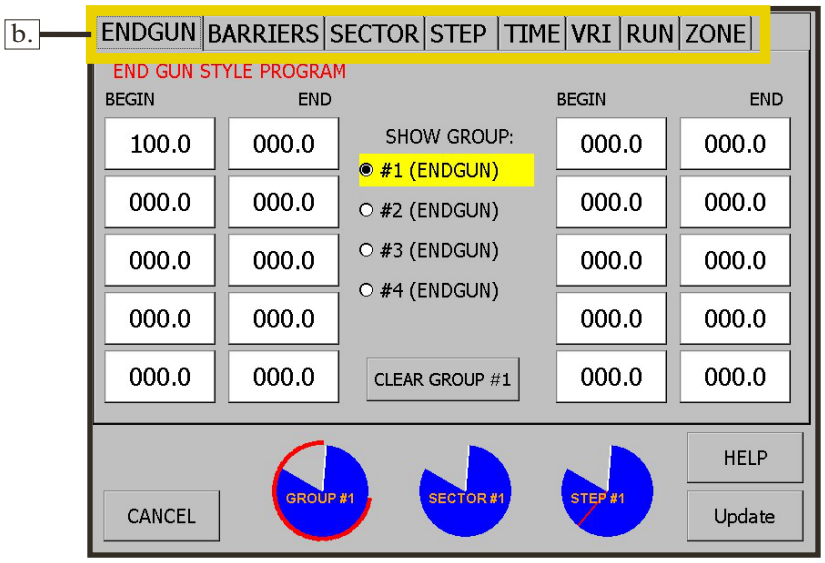


a. "Program" Button

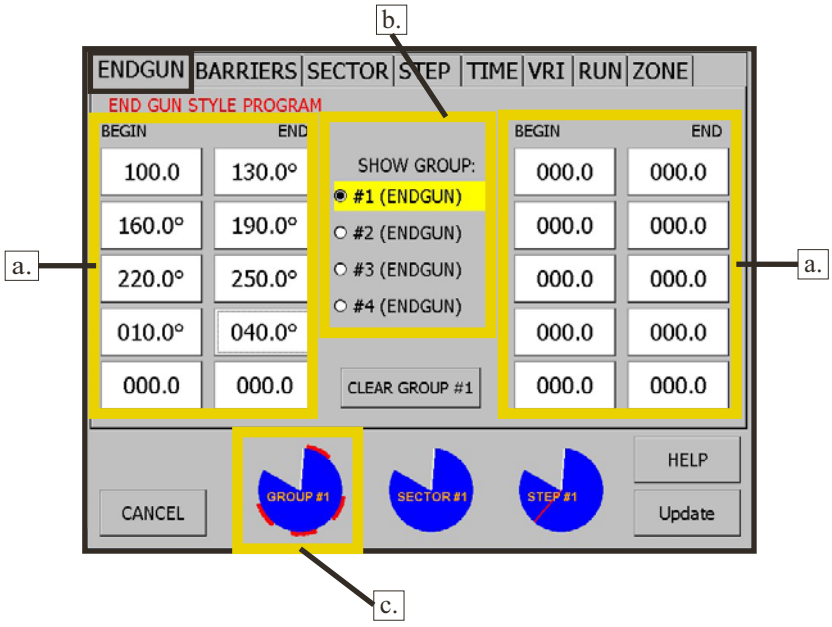
From the main screen, select the program button to begin the programming of the system.

b. "Programming Tabs"

Tabs will bring up pages for programming the end gun, barriers, sector, step, time, VRI, run and zone functions.



1. End Gun:



a. "Begin & End"

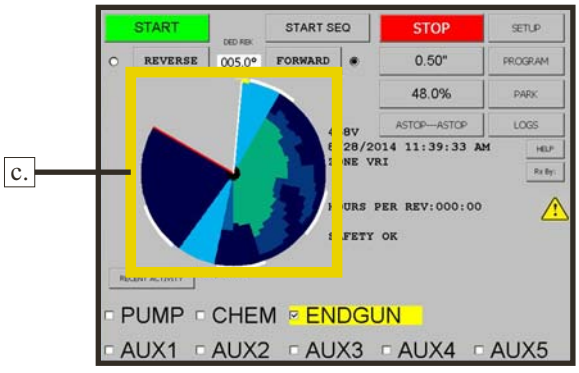
Enter the begin and end positions for each area that the selected group should run. Each group can hold up to ten different sectors. Multiple groups can be ran simultaneously allowing for up to 40 positions to operate the end gun or another output.

b. "Show Group"

Select the "End Gun" program group that you are wanting to change or add. There are 4 program groups available on the Touch Screen. Beside each group number is the output to which that group is tied to. The output type can be changed under the run tab.

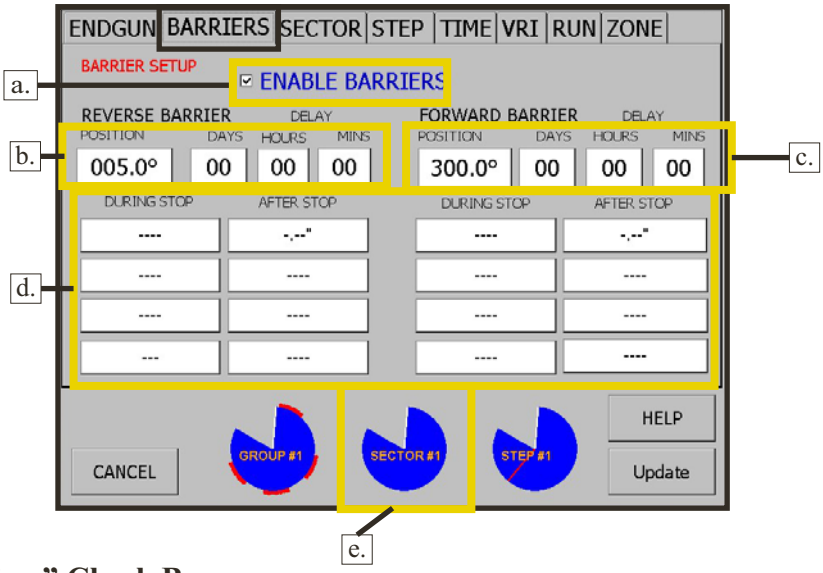
c. "Graphics" for End Gun Settings

As positions are entered for the end gun the graphic diagram below will show on the system main screen display (below). Also on the end gun page (above) the red lines on the graph at the bottom also show the end gun program or programs.



Warning: This page is only to program the end-guns. To enable the end-guns to operate go to the Run Tab and select the group number, sector program or step program required.

2. Barriers:



a. "Enable Barriers" Check Box

This box must be checked in order for the barriers to be present. The box can be unchecked to turn off the barriers without deleting the current barrier settings.

NOTE: 10° is the minimum distance allowed between barriers, unless "Part Circle" is selected, from system type on the "System Set-up" screen. Selecting Part Circle will allow a 5° minimum between barriers.

b. "Reverse Barrier"

"Reverse Barrier" position is entered here in degrees. Enter the amount of delay in, days, hours and minutes, when the system reaches the reverse barrier.

c. "Forward Barrier"

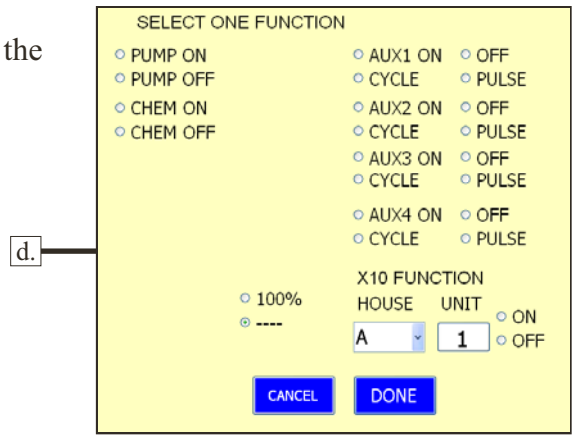
"Forward Barrier" position is entered here in degrees. Enter the amount of delay, in days hours and minutes, when the system reaches the forward barrier.

d. "Functions"

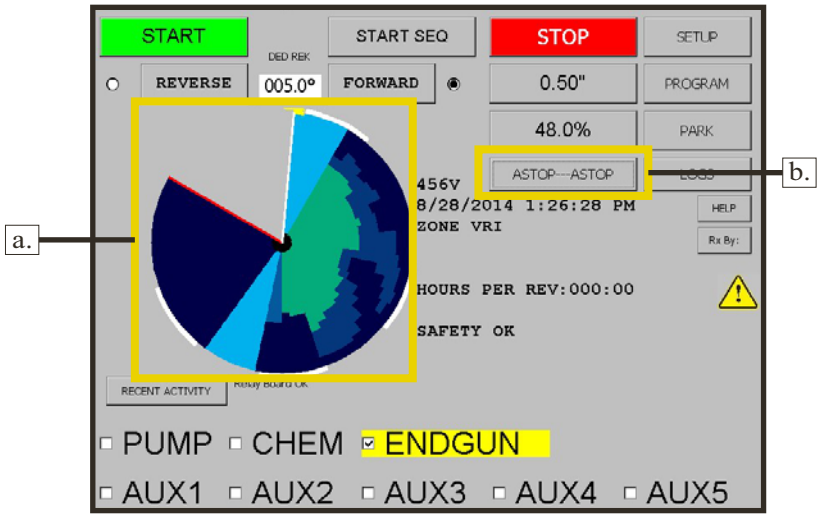
Used with forward & reverse barriers during stop, select the desired operations for the pivot once it reaches the barrier from the popup menu. Then select the desired operations from the popup menu for the pivot to run after the delay.

e. "Pie Charts"

The grey area of the pie charts at the bottom of the page will show the location of the entered barriers.



2. Barriers Continued:



a. "System Status Display"

The system status display shows a pictorial display of the barrier location. A red barrier means the pivot will auto stop. A green barrier means the pivot will auto reverse. Both will occur at the barrier in the direction the system is moving.

b. "Barrier Control Button"

When looking at the main screen with barriers enabled the BARRIER CONTROL button will display one of the following. Each time the button is pressed it will toggle through each setting one at a time.

ASTOP---ASTOP = Stops the system at forward barrier limits and reverse barrier.
Barrier lines shown on the screen will both be red.

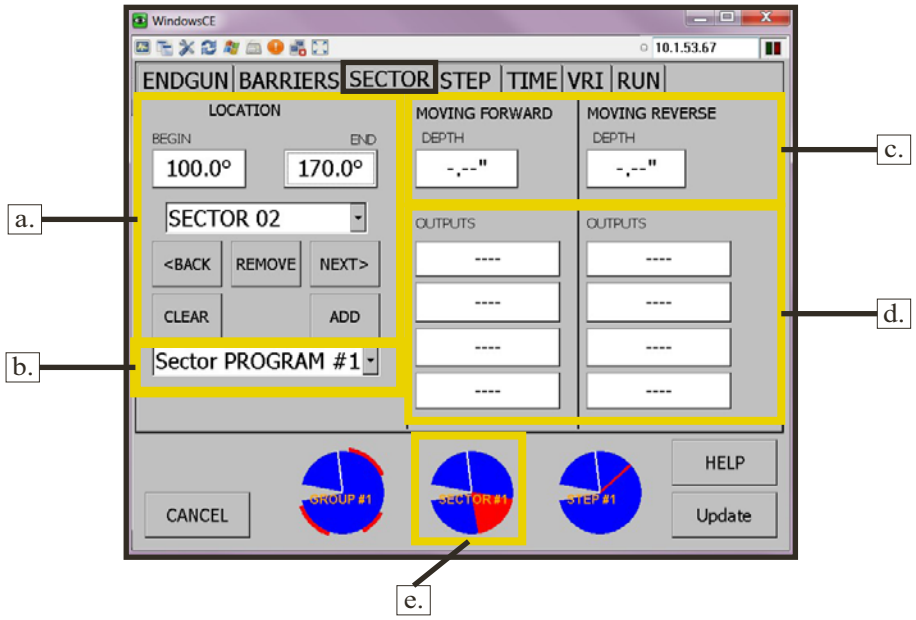
AREV---AREV = Auto reverse from forward to reverse or reverse to forward at barrier limits.
Both barrier lines shown on the screen will be green.

AREV---ASTOP = Auto reverse when system at reverse barrier and auto stop at forward barrier.
Reverse barrier line will be green and forward barrier line will be red.

ASTOP---AREV = Auto stop the system at reverse barrier and auto reverse at forward barrier.
Reverse barrier line will be red and forward barrier line will be green.

Warning: This button can be pushed and selection can be changed while system is running or stopped. Please use caution.

3. Sectors: Pivot Only



a. "Location"

To determine a sector of the field, enter the beginning and end points of the selected sector in degrees.

In this example sector 2 has been selected to run. [Use the BACK and NEXT buttons to navigate through the sectors. To delete one sector from the program select remove. This will delete only that sector. To delete all sectors from a program, use the CLEAR button.]

b. "Sector" dropdown

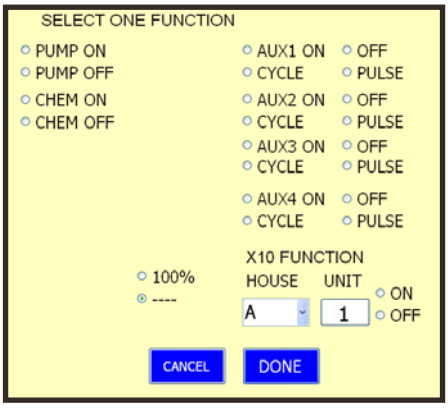
Select a sector program to set up. The system can will hold up to 3 sector programs and each sector program can hold up to 25 sectors. Only one sector program can be run at a time.

c. "Moving Forward/Reverse Depth"

Enter the depth in inches and functions from the popup menu that should run while moving in the forward or reverse direction respectively in the selected sector. See the pie chart below to determine which sector is being programmed. For instance, if the sector shown needs an auxiliary pump to turn on then you would set the depth (if needed) and select AUX1 on for either moving forward or moving reverse or both depending on the need.

d. "Outputs"

Use the Popup Menu to select what needs to happen in each selected sector. (i.e. pump on, pump off, cycle or pulse etc.)

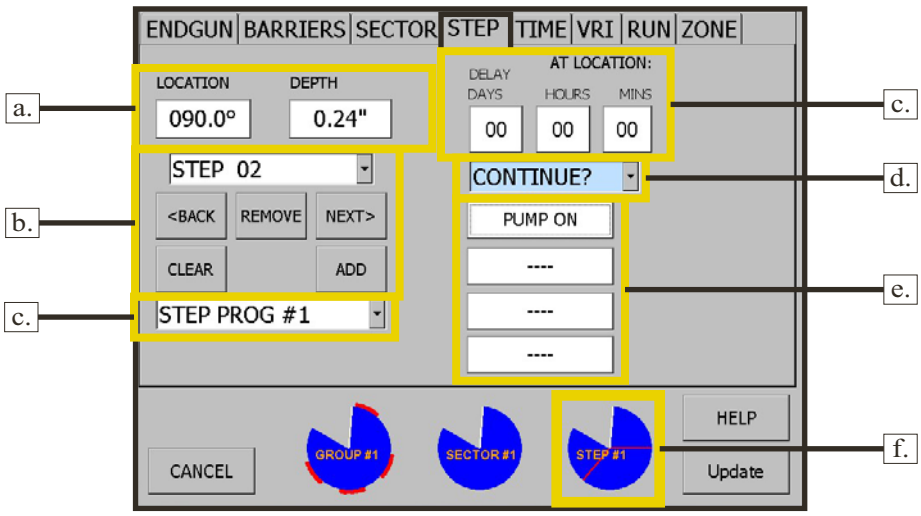


e. "Pie Chart Grapic"

As sectors are programmed they will be highlighted in red at the bottom of the screen.

Note: For Lateral Move strip programming please see page 52.

4. Step:



a. "Location and Depth"

Enter the desired location of the selected step in degrees and enter the depth at which the pivot should run during the selected step.

b. "Step drop down"

Select the step from the drop down menu. If more steps are required use the ADD button to add up to 25 steps per program. Buttons below drop down menu work the same as the sector buttons.

c. "Step Program drop down"

Select the program number from the drop down menu. Up to three programs can be saved, but only one program can be ran at a time.

d. "At Location"

Enter the amount of Delay, if any, when the pivot hits the location for the selected step in days, hours and minutes.

e. "Action drop down"

Choose and action for when the system reaches the location for the selected step.

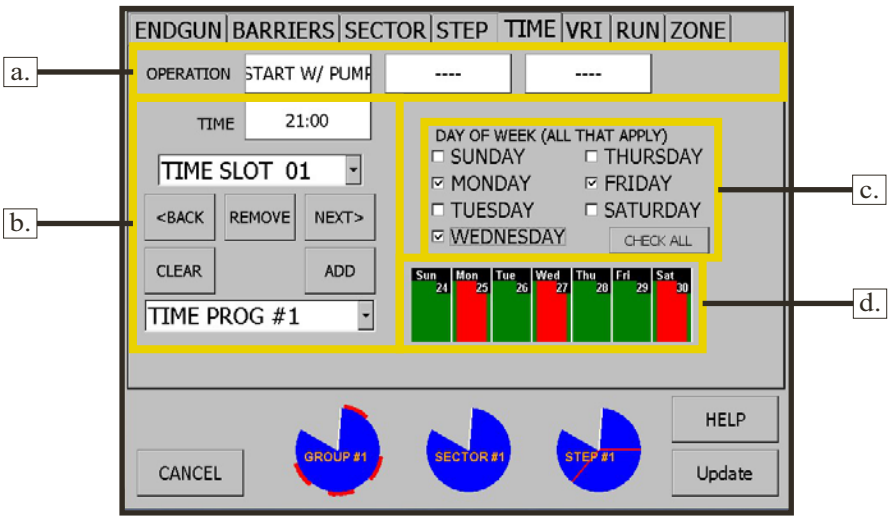
f. "Function popup"

Choose and function for when the system reaches the location for the selected step, from the popup menu.

g. "Pie Chart"

Each programmed step will be shown as a red line.

5. Time:



a. "Operation"

Select up to three operations from the popup screen for the system to run at the scheduled time entered.

b. "Time Section"

Select the time slot from the drop down menu. Enter the time (in 24 hours time or military time) in which the selected time slot should start. Use the ADD button to add up to 25 time slots to a program. Select the time program from the drop down menu. Up to three programs can be saved to the computer, but only one program can be ran at a given time.

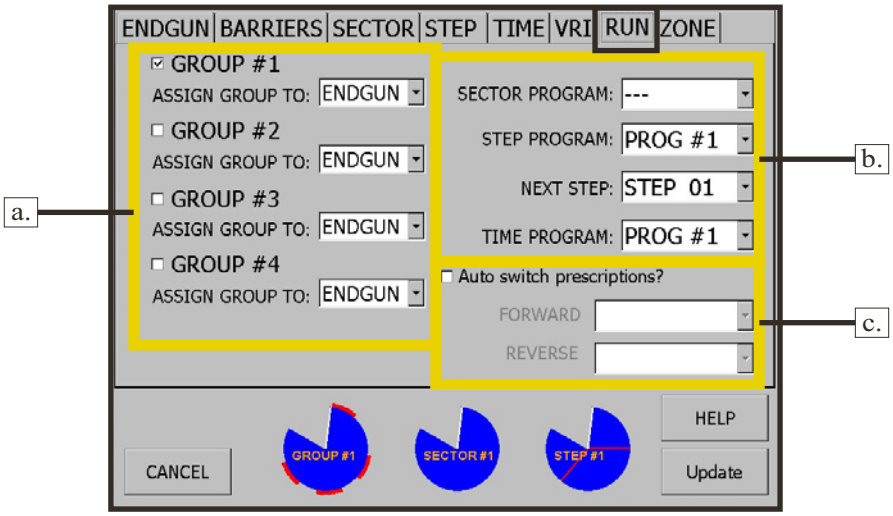
c. "Day of the Week"

Select the days of the week that the selected time slot should run or select the "Check All" button to select every day.

d. "Time Graphic"

The program running and stopped times will be displayed graphically. Green is when the system is running and red is when the system is stopped.

6. Run:



a. "Group # and Assign Group To"

For each group program, check the box next to the group that is to run. From the drop down menu choose the output to use with that group. Multiple groups can be run at the same time.

b. Program Types: "Sector, Step or Time"

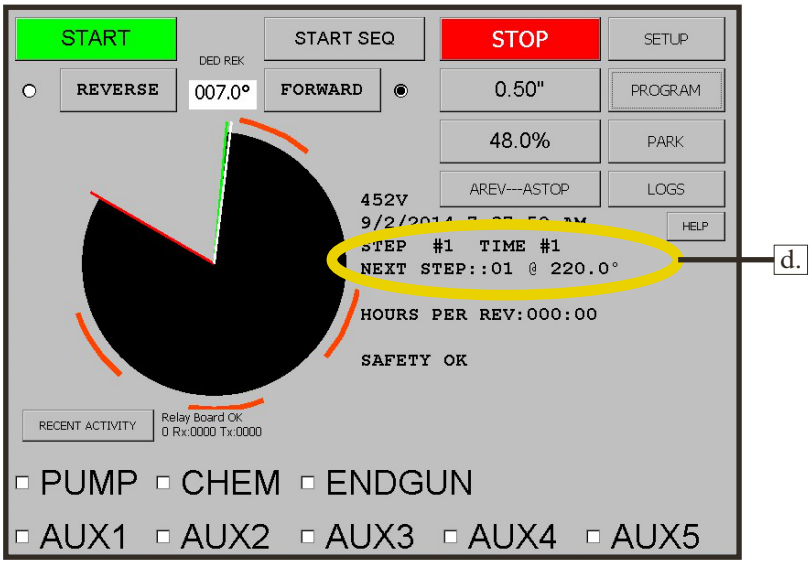
Select a "Sector Program" from the drop down menu. Next select a "Step Program" from the drop down menu. If a "Step Program" is selected choose the step that the pivot should start at. Last select a "Time Program" from the drop down menu. ***Note: All of these are optional***

c. "Auto Switch Prescriptions"

This is a New option for VRI only that allows the user to run a separate prescription in each direction. To use this function check the "Auto Switch Prescription" box. Then select which prescription from the hard drive to run while system is moving forward and which should run when the system is running backward.

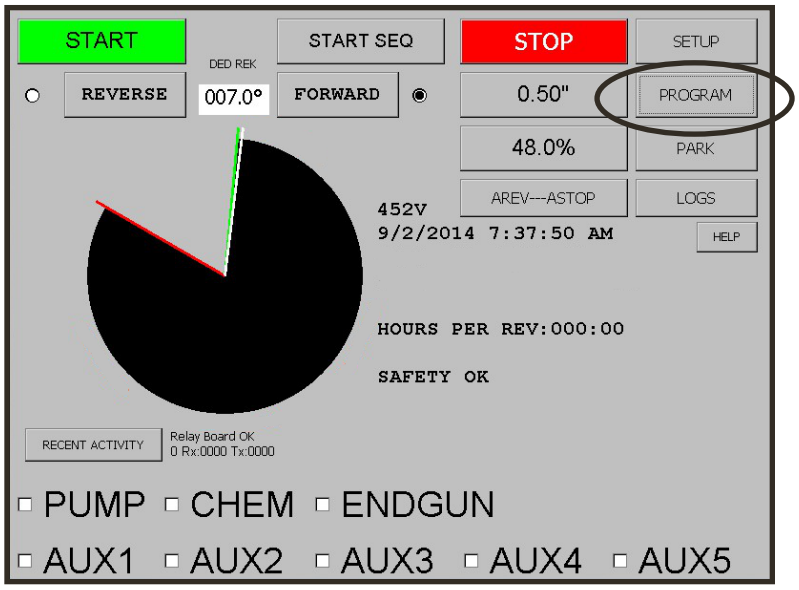
c. "Auto Switch Prescriptions"

The main screen will show what programs are currently running and the position of the current step.

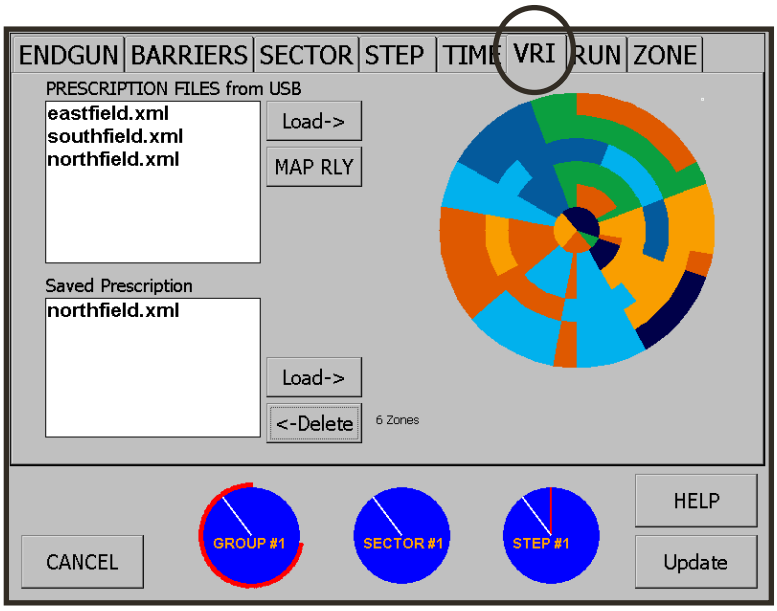


Congratulations on completing programming of a Reinke Touch Screen System!!

I. Getting Started with VRI



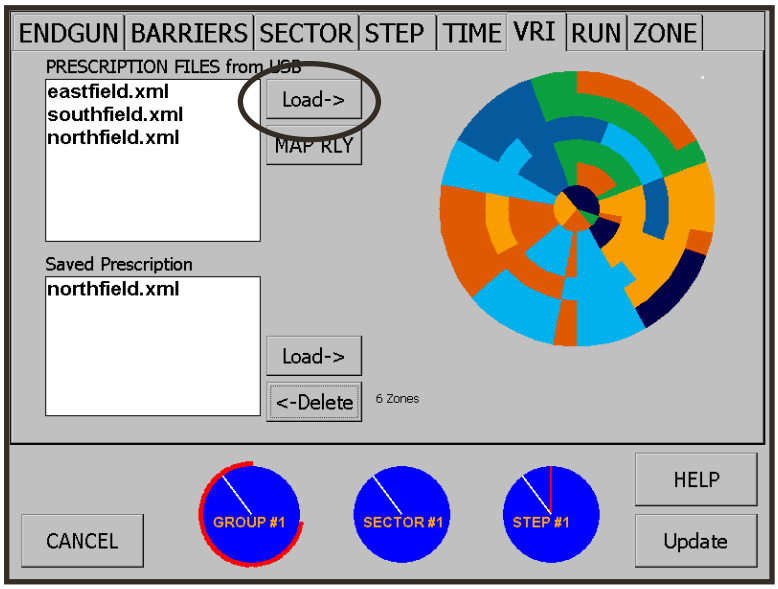
Step 1. Insert a thumb drive into the panel using the USB Port.
Step 2. Press the "Program" button on the main screen.



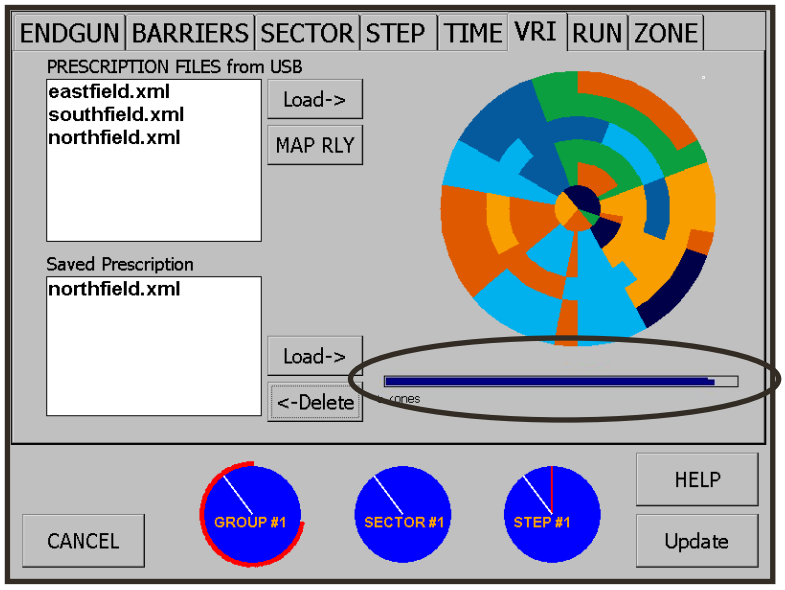
Step 3. Select the "VRI" tab at the top of the screen.
Step 4. A list of all prescriptions available on the thumb drive will appear under the "Prescription Files" window.
Step 5. If no box appears that means you have no loaded prescriptions.

Note: The panel will have to be restarted after a prescription has been loaded for the first time.

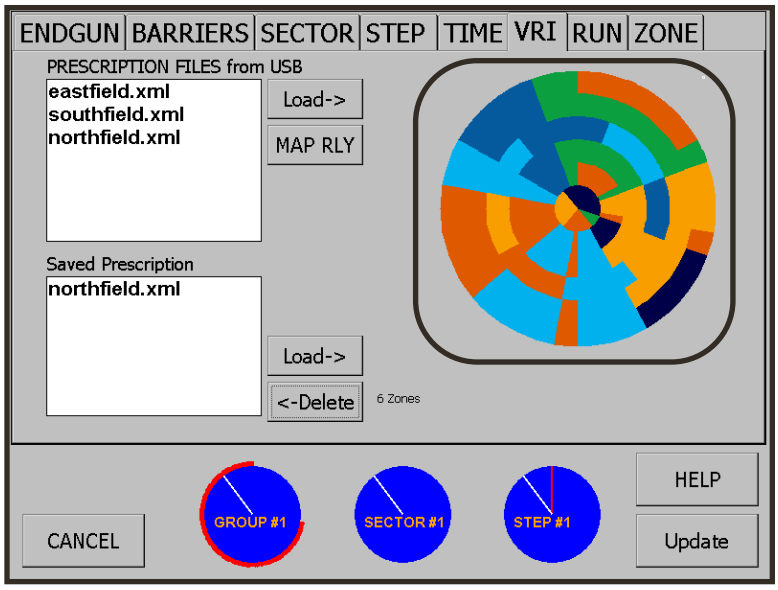
II. Downloading the VRI Precription:



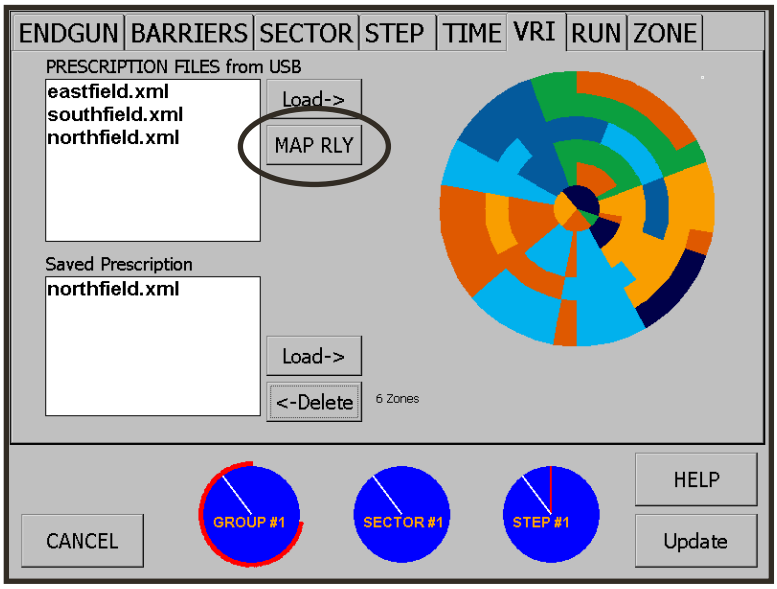
Step 1. Select a prescription by clicking on it.
Step 2. Press the "Load" button to begin the download.



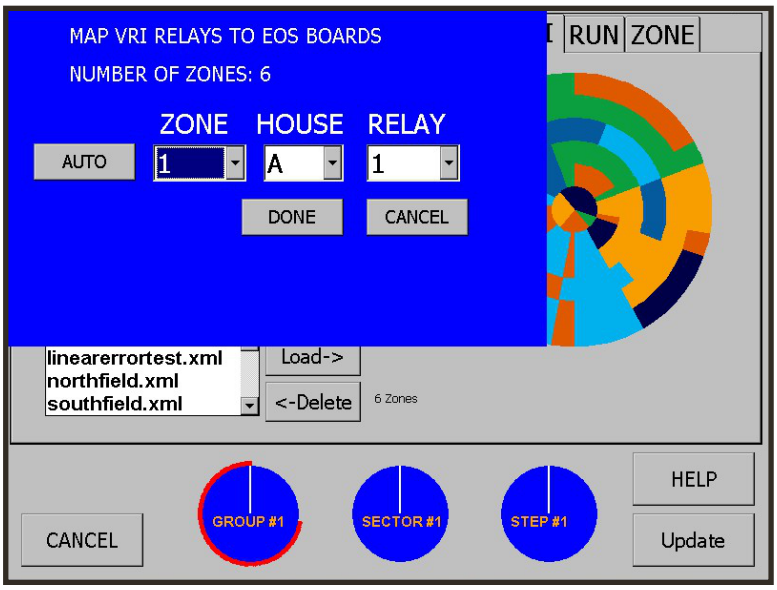
Step 3. A progress bar will display on the screen while the prescription downloads.
Step 4. Please ***Do Not Touch*** the screen while downloading is in progress.



Step 5. When download is complete, A diagram of the loaded prescription will appear.
Step 6. If the system is using "Sector VRI Prescription" skip to **(Step 16)**.
Step 7. If the system is using "Zone VRI Prescription" proceed to **(Step 8)**.

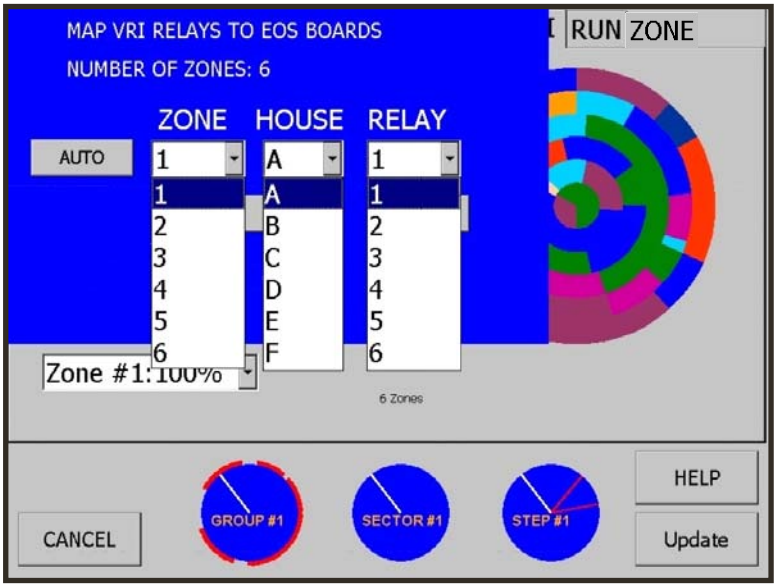


Step 8. When download is complete, Notice the "MAP RLY" button is available for selection. If the loaded prescription needs its zones re-assigned, then proceed to **(step 9)**. Otherwise skip to **(step 16).**



Step 9. Now Coordinate each zone with a touch screen address as shown below.

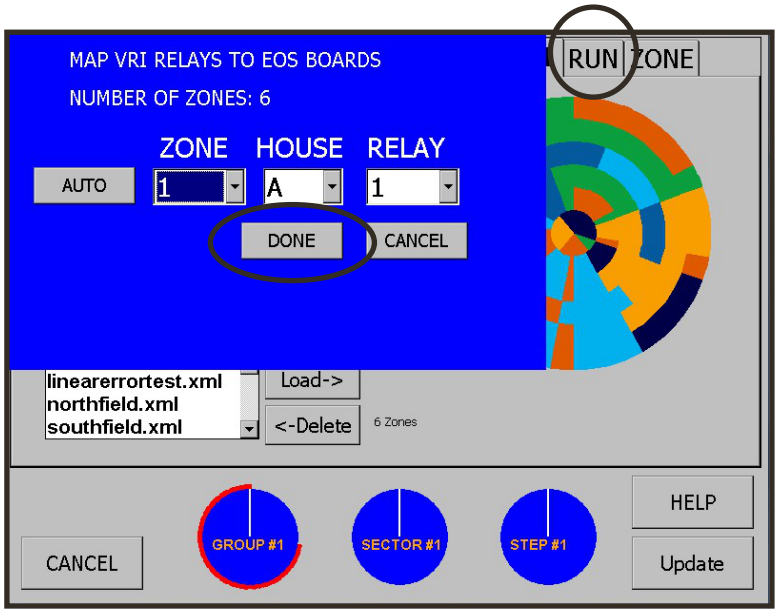
Step 10. If the system is using all 6 relays in order.For each valve box throughout the system, select the "AUTO" and skip to **(step 15).** (If unsure contact the dealer who installed the system)



Step 11. If it is determined that "AUTO" cannot be used for zone set up, then create an address for each zone.

Step 12. "House" refers to the valve box(s) and "Relay" refers to the control relays (typically 6) in each box.

Step 13. "House A, Relay 1" would be closest to the pivot center and "House A, Relay 6" would be the furthest from the pivot center. This is true for each House (valve box) on the system.



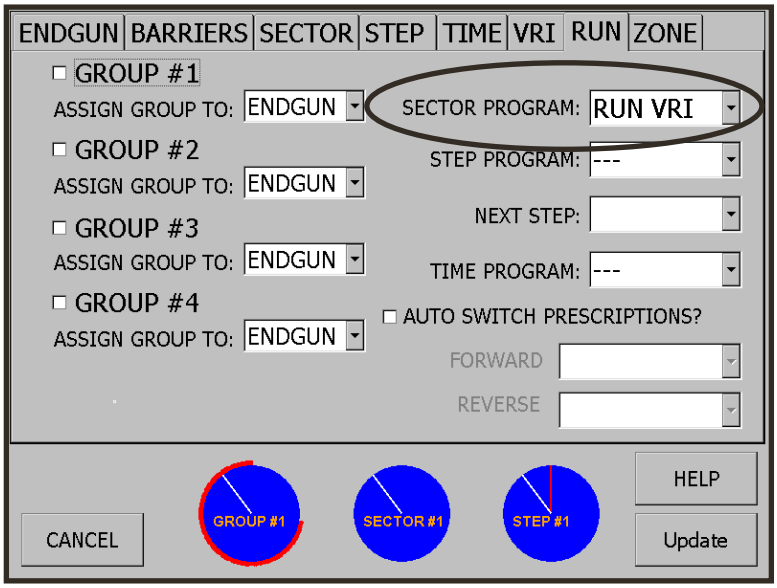
Step 14. Reasons for manually entering zone zddresses:

a. Incorrect installation of tubing. This may need to be programmed in a different order to fix the issue rather than re-plumbing the valve box.

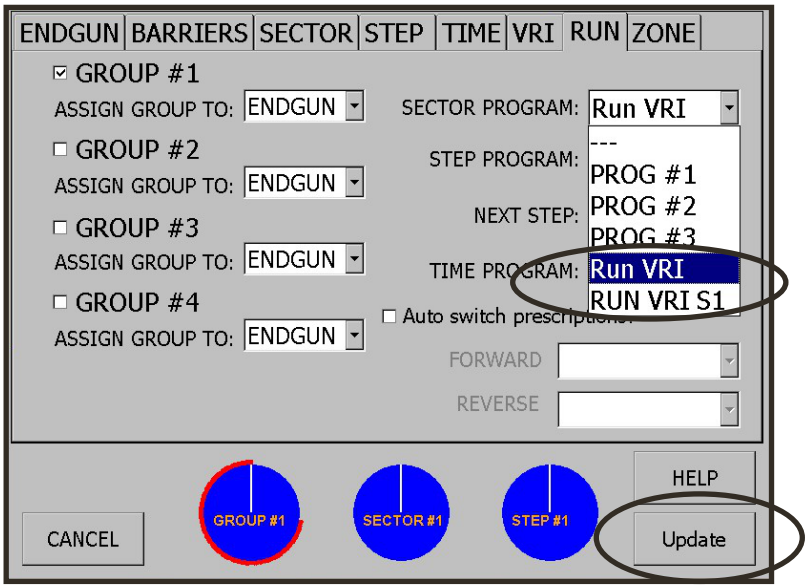
b. Some control valves in the valve boxes are unused. This requires skipping some of the relays that would normally be set up in "AUTO" mode.

Step 15. After completing the zone addresses, whether entered manually or using the "AUTO" function, select "DONE" (all drop down menus have to be closed to select this).

Step 16. Select "Run" tab at the top right hand side of the screen.



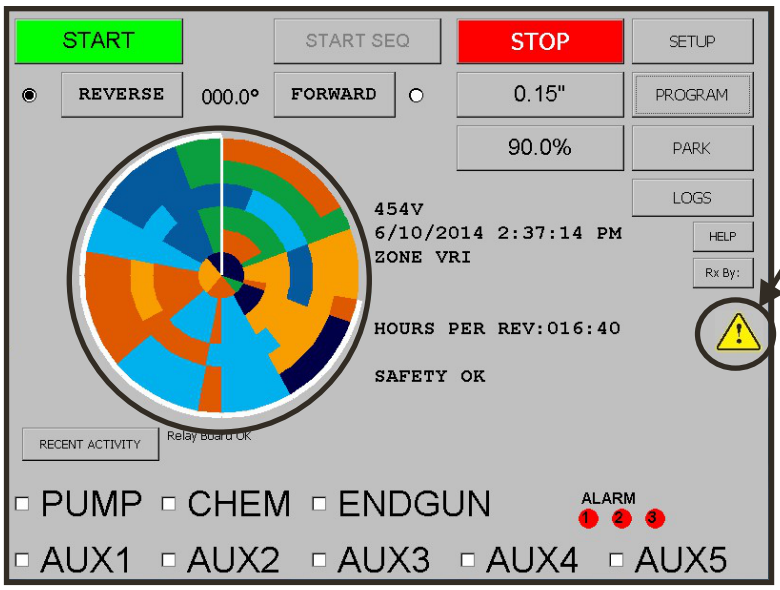
Step 17. To use the loaded VRI program, select the drop down next to the title "Sector Program".



Step 18. There are two options available to run the VRI program. "Run VRI" runs only the VRI program and the "Run VRI S1" runs the VRI and the Sector Program #1 (from the program, sector tab) together.

NOTE: Step and Time programs can be selected to run also with either of these VRI options.

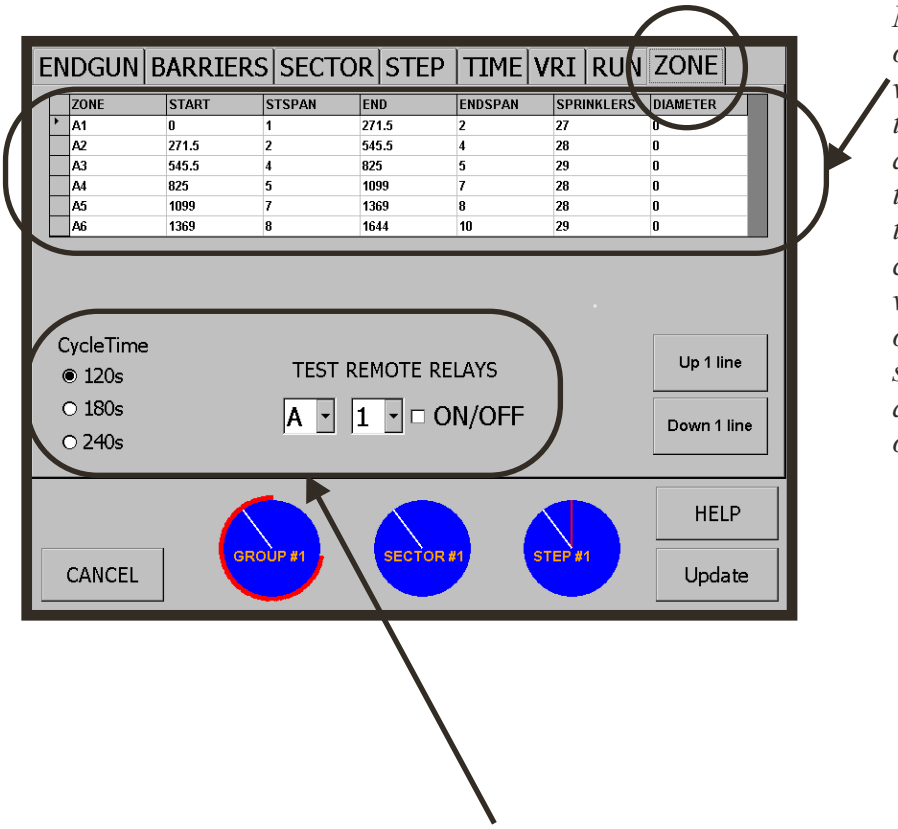
Step 19. Select "UPDATE" button at the bottom right hand side of the screen.



Note: This warning sign will appear if the prescription downloaded does not match the Rrx file's description of the mechanical abilities of the system. System may not water as intended.

Step 20. The VRI prescription map will be displayed on the Main Screen now. Congratulations, you have completed setting up the VRI prescription for this system.

III. Zone tab:

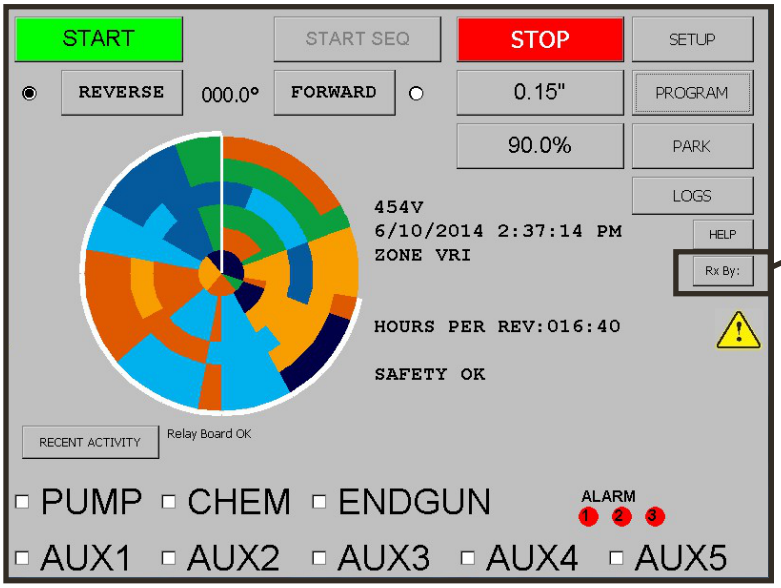


Note: This area of the Zone tab will show blank if the prescription does not match the RRx file for the system. A caution symbol will also display on the main screen. See diagram bottom of facing page.

Step 1. Select the desired VRI cycle time in seconds. For example, if 180s is selected, over a 75% zone the sprinklers will be on for 135s out of every 180s.

Step 2. If it is desired that a zone be tested. Select the alpha and numeric character for that zone using the drop downs and check the box to turn on this function.

IV. Review of the VRI settings:

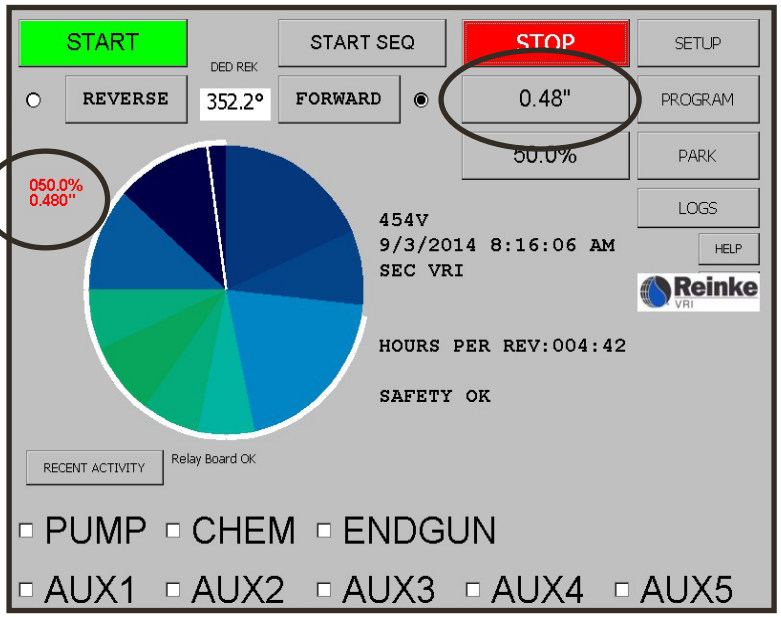


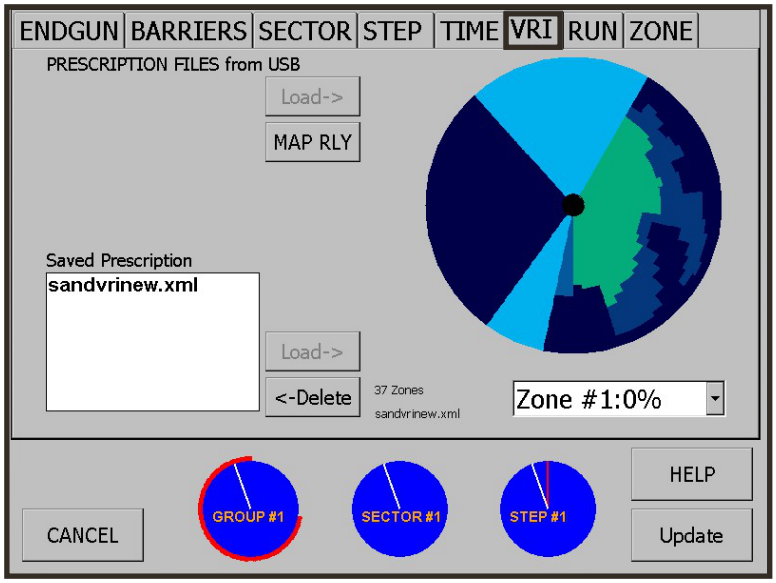
Shows who wrote the Rx when pressed.

The following steps are for Sector prescriptions only, with the system running, and the pump on.

Step 1. Once a base depth is set for watering and the system is running, the actual Current Speed and Depth applied is displayed on the left side of the graphics. The numbers are red if the system has not been started or the system cannot match the desired depth. If the numbers are blue the system is performing as desired.

Step 2. In this instance, the system is in a sector of the prescription that was set to 50% of the base water rate. So for this sector, the machine adjusts speed to put 0.48" of water or 50% of the base depth of 1.00" and subsequently must travel at 30% or twice the base speed of 15% to achieve this.





The following steps are for Zone prescriptions only.

Step 3. When the system is running in the Zone VRI mode, the operator can view the rate of watering in each zone at the pivot's current location by pressing the program button and looking under the VRI tab. This rate of watering will be a percentage (100% or less) of the desired base water depth entered on the SETUP/PUMP screen.

Step 4. A list of all zones will appear with the percentage of the base watering rate for each zone at the system's current position.

Touch Screen Update

IN-FIELD UPDATE PROCEDURE:

Step 1: With the touch screen powered up, insert a USB thumb drive into the front USB port of the main control panel.

Step 2: Press the SETUP button and then press FILE MAINTENANCE. Look for the button labeled UPDATE VERSION. If this button is not shown on the screen, either the USB thumb drive was not recognized by the computer (start over at step 1) OR the file named NK.BIN is not in the root directory of the thumb drive.

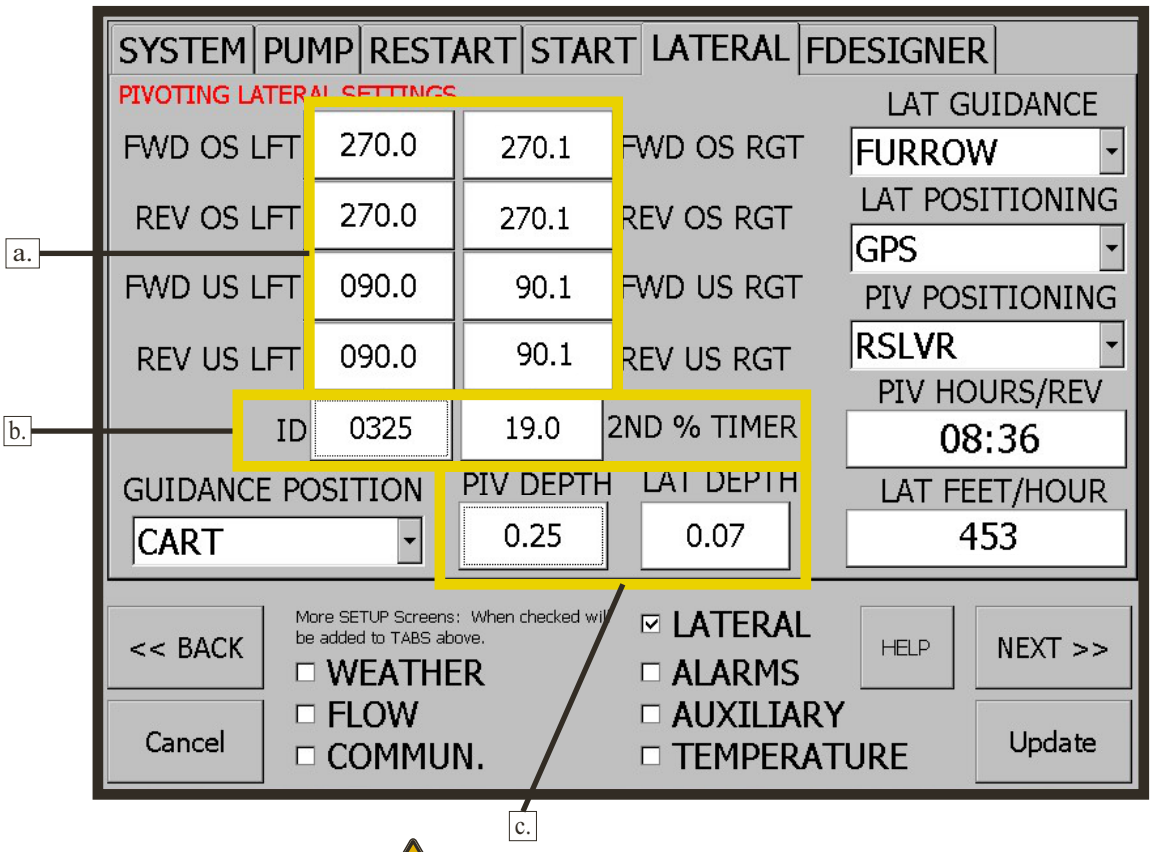
Step 3: You will be prompted to override the previous version. Check the dates of the files and make sure you are updating to a newer version. Press YES to update, NO to exit. You will be prompted to reset the power after the file is copied.

Step 4: After the file is copied, exit back to the main screen and restart the sytem by turning the disconnect OFF then ON.

Pressing the SETUP key will show the current version you have updated.

Example: NK V09.177.10 This means the NK (operating system) was built in the year 09 on day 177 at hour 10. The RM file will have a similar version and this is the actual application that is running to control the system. The IO board version is currently 008. If your IO board version is something less than this, call the tech service department for instructions on how to update the IO board.

Pivot/Lateral Setup



a. "FWD OS/US LFT/RGT" : CAUTION ONLY FOR ADVANCED USERS

The following is the number of degrees cart and span are allowed off of perpendicular before the cart begins to steer. Click on each of these buttons to open a keypad popup.

OS = Overspan = While standing facing main control panel, the system is in front of you.

US = Underspan = While standing facing main control panel, and you are under the system.

FWD OS LFT = Forward direction, overspan, left; in degrees.
REV OS LFT = Reverse direction, overspan, left; in degrees.
FWD US LFT = Forward direction, underspan, left; in degrees.
REV US LFT = Reverse direction, underspan, left; in degrees.
FWD OS RGT = Forward direction, overspan, right; in degrees.
REV OS RGT = Reverse direction, overspan, right; in degrees.
FWD US RGT = Forward direction, underspan, right; in degrees.
REV US RGT = Reverse direction, underspan, right; in degrees.

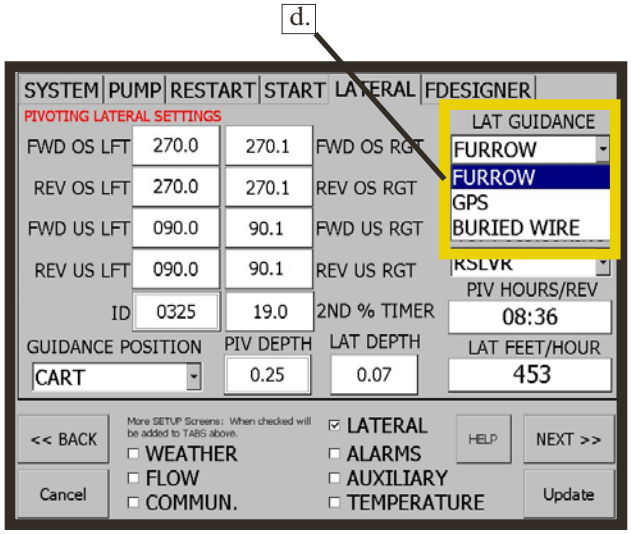
b. "ID and Second % Timer"

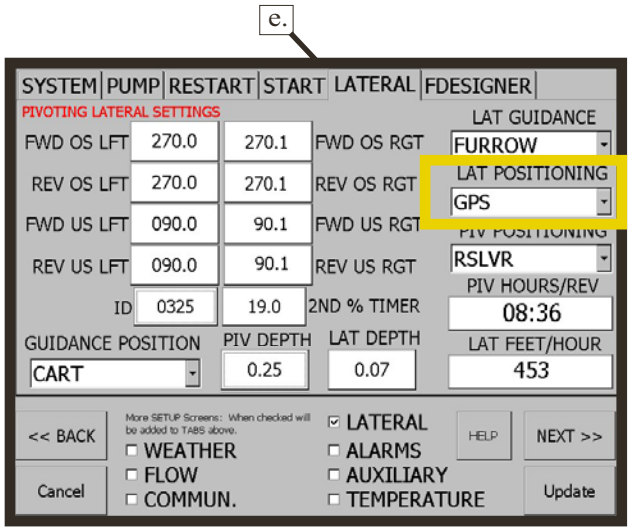
Unique field identifier.
Second percent timer = A percent of the main percent timer which slows the end of system when it is too far ahead.

c. "Piv Depth & Lat Depth"

PIV DEPTH: Enter in amount of water to be applied using inches or millimeters during pivot stages of program.
LAT DEPTH: Enter in amount of water to be applied using inches or millimeters during lateral stages of program.

Pivot/Lateral Setup





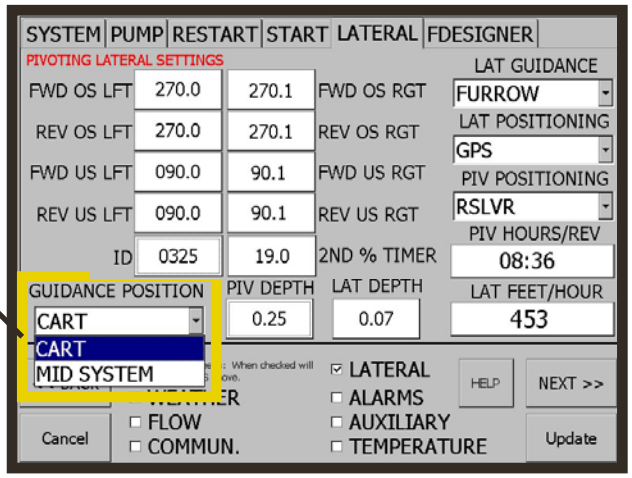
d. Lateral Guidance:

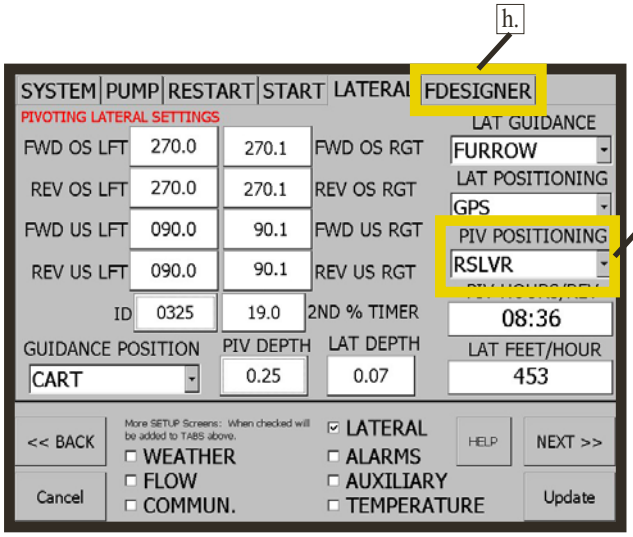
Highlight to select guidance to be used in field; Furrow, GPS, or Buried Wire.

e. Lateral Positioning

GPS is the default selection and is recommended.

DED REK should only be used if GPS is not functioning.





f. Guidance Position:

Select CART or MID SYSTEM depending upon where guidance is placed on the system.

g. Pivot Positioning

RSLVR is the default selection and is recommended.

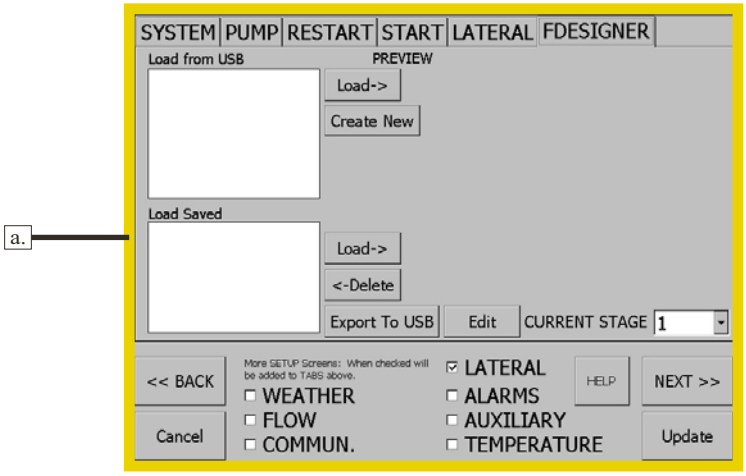
DED REK should only be used if Resolver is not functioning

h. Field Designer:

Select tab now to start Field Designer. All other programming and setup will be completed under this tab for pivoting lateral machines.

I. Getting Started with Field Designer:

Before starting into field design, gathering as much information as possible about the field is helpful. It is especially good to have a scaled aerial picture of the field (like what Google maps can offer). If the scale of a picture is not available, know a given distance within the field such as from a building to a road, for use in scaling the picture later.

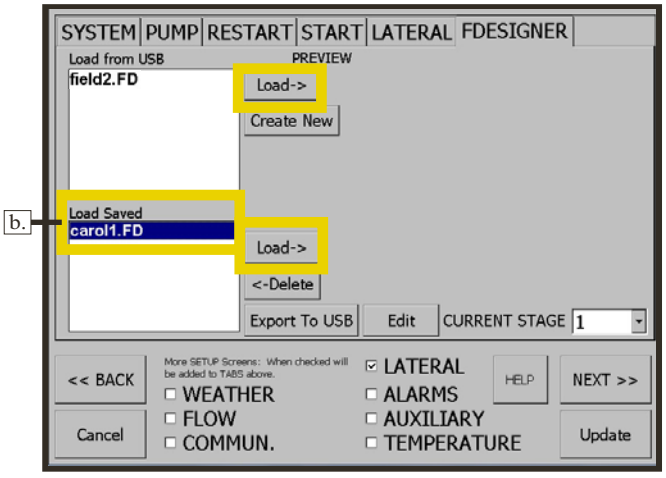


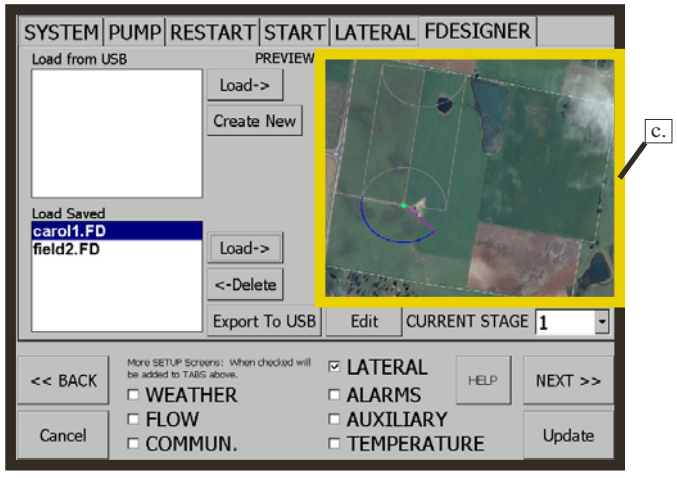
a. Field Designer main screen.

i. If there is a field design program already created and put on a USB flash drive and the flash drive is in the touchscreen it will appear in the "Load from USB" window.

ii. If there is a field design program already saved to the hard drive of the touch screen it will appear in the "Load Saved" window.

iii. If there there is nothing preprogrammed both windows will be blank as shown in graphic above.



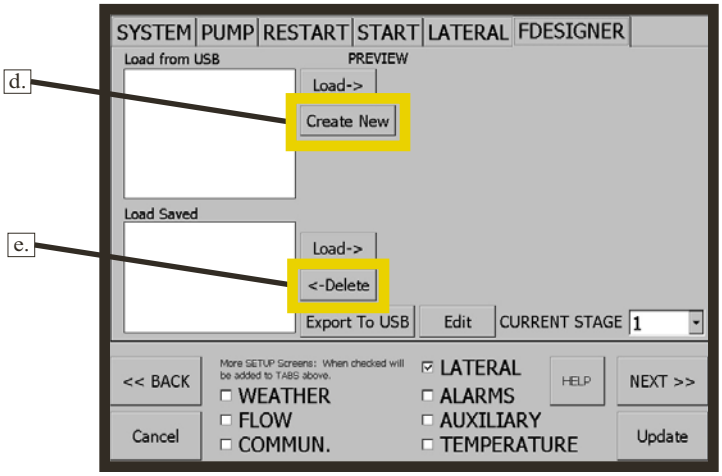


b. Pre-loaded files:

Select the file to be loaded onto the system either from the "Load from USB" or the "Load Saved" window and then press the corresponding Load button.

c. Preview Graphics:

A preview will appear in this area once the Load button has been pressed. This also confirms that a program has been loaded correctly.



d. Create New Button:

This button is used to create a new program using field designer. Skip to next page if starting a new program.

e. Delete:

Select this button to delete a field design that is no longer required for the system.

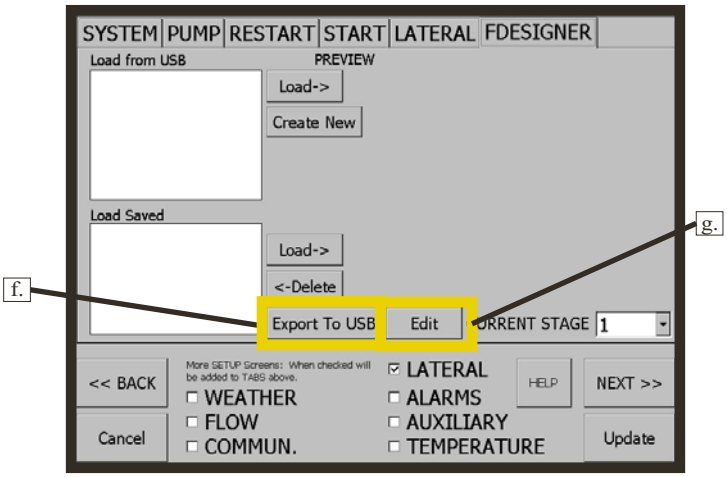
Caution: this will permanently delete the selected program from the touchscreen hard drive.

f. Export to USB:

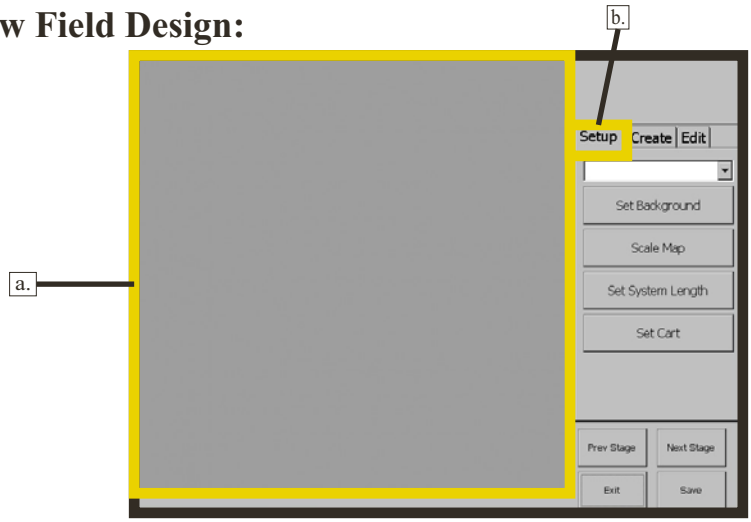
Use this button to export a file to a flash drive that has been inserted into the touchscreen; this is an optional step.

g. Edit:

This will allow editing of the currently loaded field design.



II. Starting a New Field Design:



a. Graphics Window:

The graphics window will be used to build the system path for the system. This is how the field design screen will look once the "Create New" button is pressed on the setup screen.

b. Setup Tab:

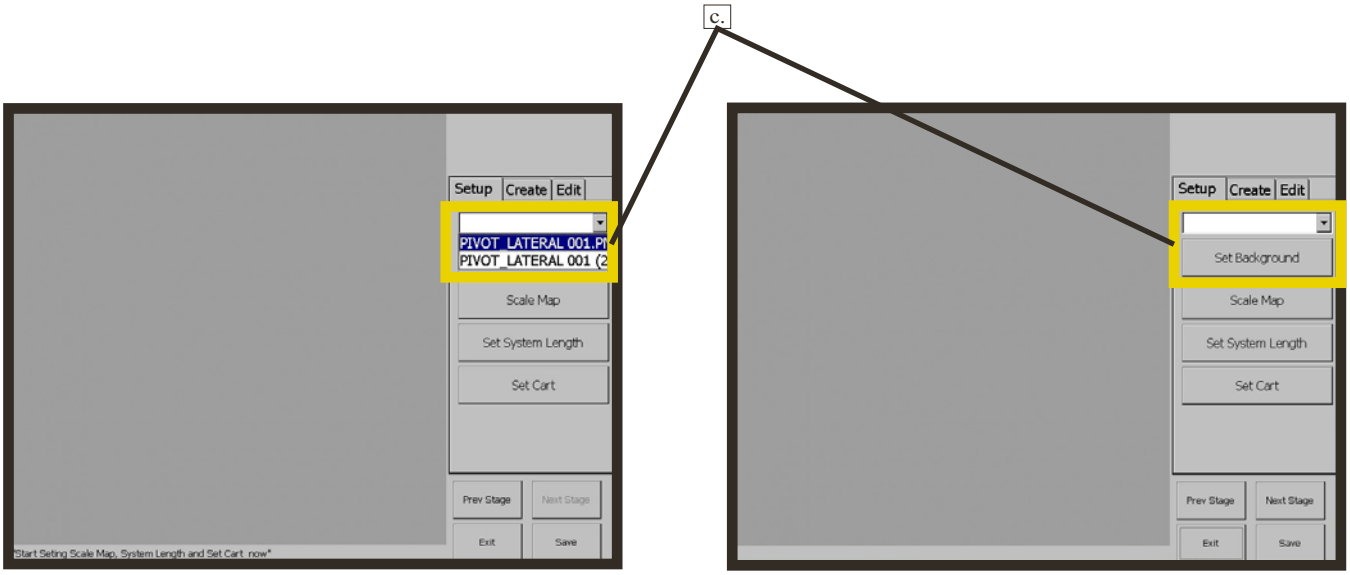
The setup tab will be selected by default when entering into the field designer software either through the create new or load buttons.

c. Setting the Background: (Optional but recommended for new systems)

If a background is desired so that actual field can assist in the design, a .jpg or .png file must have been previously uploaded to a flash drive, and that flash drive must then be inserted into the touchscreen.

Note: *Picture must be 575 x 575 or less pixels to fit into the graphics window.*

1. Select the drop down box above "Set Background" to select a picture from the USB.
2. Press the "Set Background" button to upload the selected picture into the graphics window.



d. Scale Map Button:

Select Scale Map.

1. If using a picture that has a scale available, (Example: 300ft), click one end of the scale then the other end of that scale to set the scale of this map. Then select the "Confirm" button. Go to step 3.
2. If the picture scale is not known, but a distance has been measured in field, select the first field reference point then the second field reference point to set the scale of the picture. Fine tune line created, if necessary, by using the direction buttons (Up, Down, Right and Left). Once the line is accurate, select the "Confirm" button.
3. The confirm button will bring up an "Enter Length" popup. Input the length of the selected line, then press "Done".

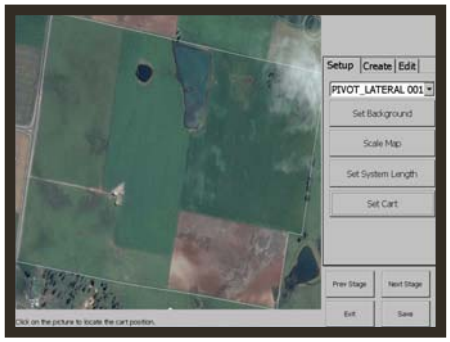
e. Set System Length:

1. The confirm button will bring up an "Enter Length" popup. Input the length of the selected line, then press "Done".

f. Set Cart:

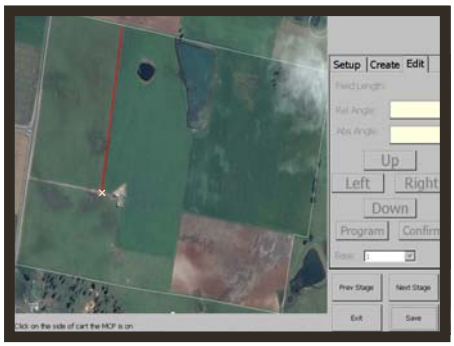
1. Select the "Set Cart" button.
2. Click on the picture/graphics window to locate the cart's starting position.
3. Click on a second point to show the direction the cart will move in stage 1.
4. After fine tuning cart direction using the direction buttons, click "Confirm".
5. Locate the main control panel (MCP) in relationship to the cart by clicking on the side of the path where the MCP is located. The green dot that appears is the cart's starting location for the first stage.

f. 1

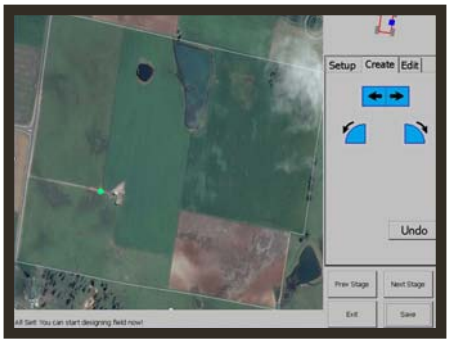


f. 2

f. 3



f. 4



f. 5

III. Building Stages in Field Designer:

a. Selection of first stage:

Determine how you want the system to function; i.e. lateral forward/reverse or pivot forward/reverse by clicking on the icon showing the desired motion. In this instance lateral forward was selected.

b. Field length stage 1:

Click a location on the graphic screen to determine the field length. Fine tune the selection by using the "+ 1/10 ft" and "-1/10 ft" buttons, then select the "Confirm" button.

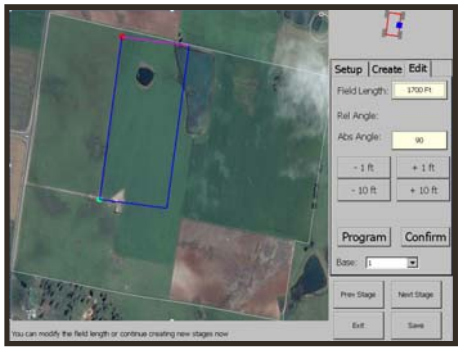
c. System direction stage 1:

Select which side of the path the system is on. Be mindful of how the MCP is located on the cart in relation to the system. In this instance a click on the left side of the red line would indicate an overspan system position, (i.e. the MCP is **NOT** under the system. This can be seen in the top right diagram). On the other hand, clicking on the right side of the red line would indicate an underspan system position (MCP is under the system).

c.

Overspan

c.



Underspan

Note: Field length can also be adjusted manually by selecting the white box next to field length. Once everything is complete select the Confirm button.

Congradulations stage 1 completed.

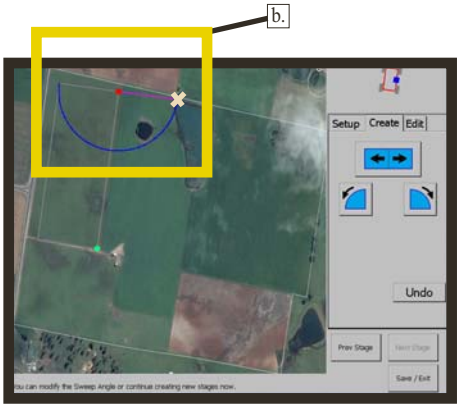
a. Selection of second stage:

Again determine how you want the system to function. In this example pivoting reverse will be used. Select "Pivot with arrow showing counterclockwise" button.

b. Tap on picture to indicate where the end of system will be after pivoting.

c. Fine tune: By selecting the "Rel Angle" box and entering the desired sweep angle press "Done", or by using the "+" or "-" buttons.

Note: System and Cart need to be about perpendicular for lateral move to occur.

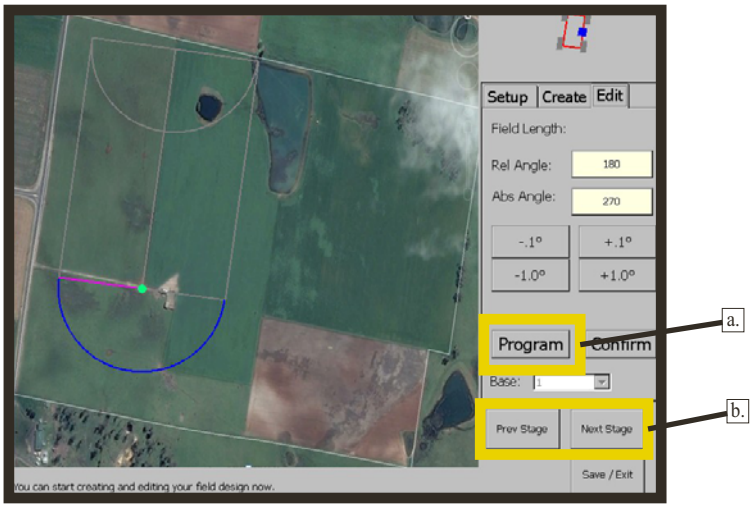


Congratulations stage 2 is now complete!! Continue to add stages until field design is complete.

d. The "Undo" button will undo one stage at a time, beginning with the last stage completed.

e. "Save/Exit" button is used to save a program to the hard drive and exit field designer.

IV. Programming Stages within Field Designer:



a. "Program" button:

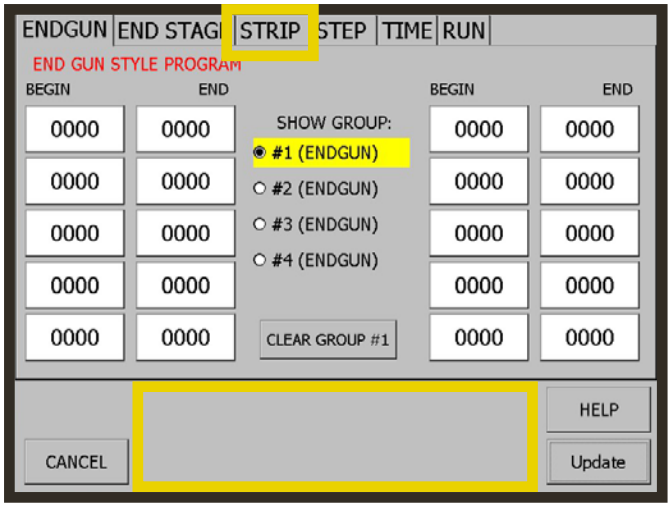
Each stage can be programmed anytime this button is available.

b. Use the "Previous Stage" or "Next Stage" to navigate between stages.

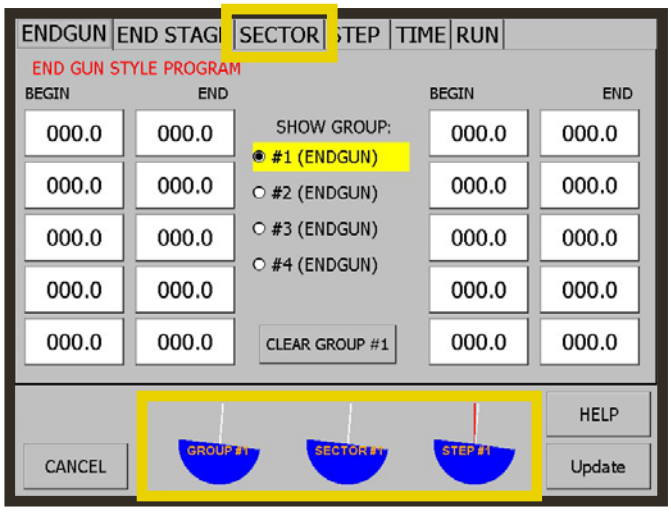
c. Programming Screens:

Depending upon which stage is being programmed; different tab options and slightly different information will be shown dependant upon whether in pivot stage or lateral stage. Differences are highlighted below.

Lateral Stage



Pivot Stage



Programming the stages:

Note: Each stage can be programmed anytime the program button is available.

ENDGUN: Refer to page 23 of this manual.

ENDSTAGE: Refer to next page.

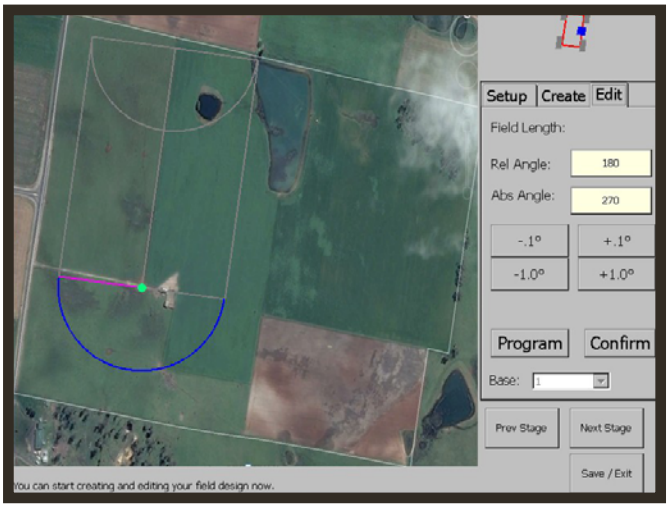
SECTOR: Refer to page 26. *Only used with pivot stages.*

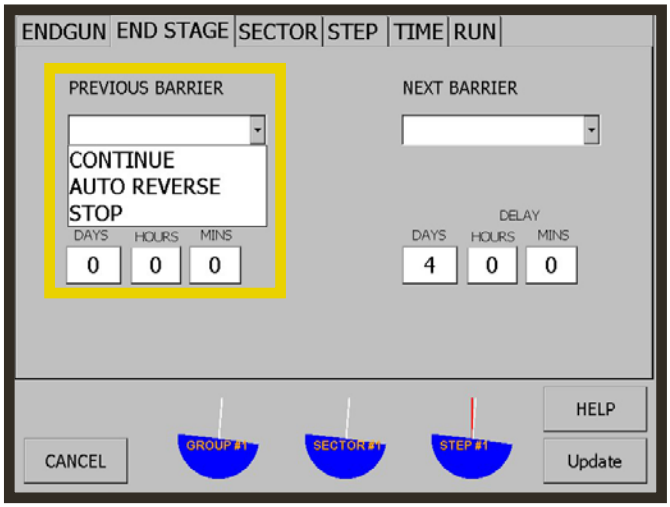
STRIP: Refer to page 52. *Only used with lateral stages.*

STEP: Refer to page 27.

TIME: Refer to page 28.

RUN: Refer to page 29.





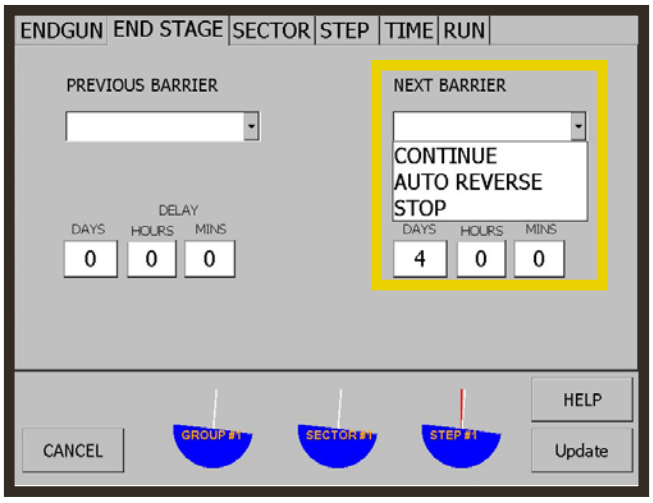
a. End Stage Programming:

Field designs are divided into 'stages'. Stages represent the system moving a certain distance in either lateral or pivot mode. There is also a separate stage for when the system needs manual intervention (car rotation) in certain field designs. This occurs whenever a lateral move stage is programmed after a pivot stage causing the cart to be out of line with the system.

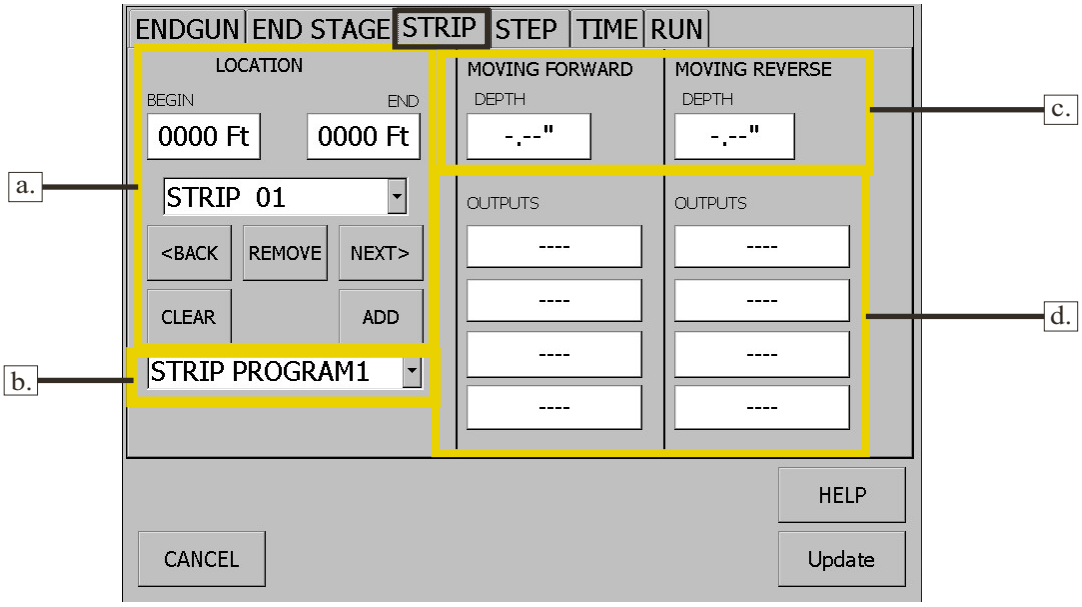
At the end of each stage the system needs to be told it should continue to the next stage, automatically reverse the system, or stop the system These options are selectable in the drop-down box above, and can be different from when the system is running forward to when it is running in reverse. It is also allowed to set a delay time in days, hors, and seconds. The delay will take place before the system reverses or continues, but has no relation to when the system stops.

Note: 'Continue' is not an option for both the first stage's 'previous action' and the last stage's 'forward action' field. This is because the system has no stage to continue to at that point. If it is desired for the system switch directions at that point, please use the 'Auto Reverse' option.

In most cases, the action at the end of each stage should be 'Continue' with either 'Auto Reverse' or 'Stop' at the beginning and end of the field.



Strip Programming: Lateral Move Only



a. "Location"

To determine a strip in the field, enter the beginning and end points of the selected strip in feet or meters.

In this example strip 1 has been selected to run. [Use the BACK and NEXT buttons to navigate through the strips. To delete one strip from the program select remove. This will delete only that strip. To delete all strips from a program, use the CLEAR button.]

b. "Strip" dropdown

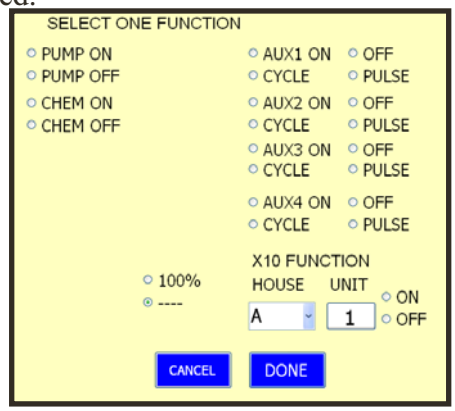
Select a strip program to set up. The system can will hold up to 3 strip programs and each strip program can hold up to 25 strips. Only one strip program can be run at a time.

c. "Moving Forward/Reverse Depth"

Enter the depth in inches and functions from the popup menu that should run while moving in the forward or reverse direction respectively in the selected strip. For instance, if the strip needs an auxiliary pump to turn on then you would set the depth (if needed) and select AUX1 on for either moving forward or moving reverse or both depending on the need.

d. "Outputs"

Use the Popup Menu to select what needs to happen in each selected strip. (i.e. pump on, pump off, cycle or pulse etc.)



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To Exceed Our Customers' Expectations of Quality, Service, and Innovation.

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