ADVANTAGE+
SNOW & ICE SYSTEM

MUNCIE ®

AIR TEMP 00
ROAD TEMP 00
TOTALS 0000000 LBS
0000000 GALS
PUMP PSI 0000
LOAD PSI 0000
OK
OFF AUTO ALT2 LBS/MILE
OFF LIQUID%
OFF SPINNER%

AUGER RATE
PUSH SCREEN SELECTION
SPREADER

LIQUID RATE
PUSH LIQUID ON/OFF
BLAST

SPINNER RATE
PUSH SCREEN SELECTION
PAUSE

ADVANTAGE+ SYSTEM

Muncie Power Products

CAL-TRANS SPREADER CONTROL CONFIGURATION MANUAL

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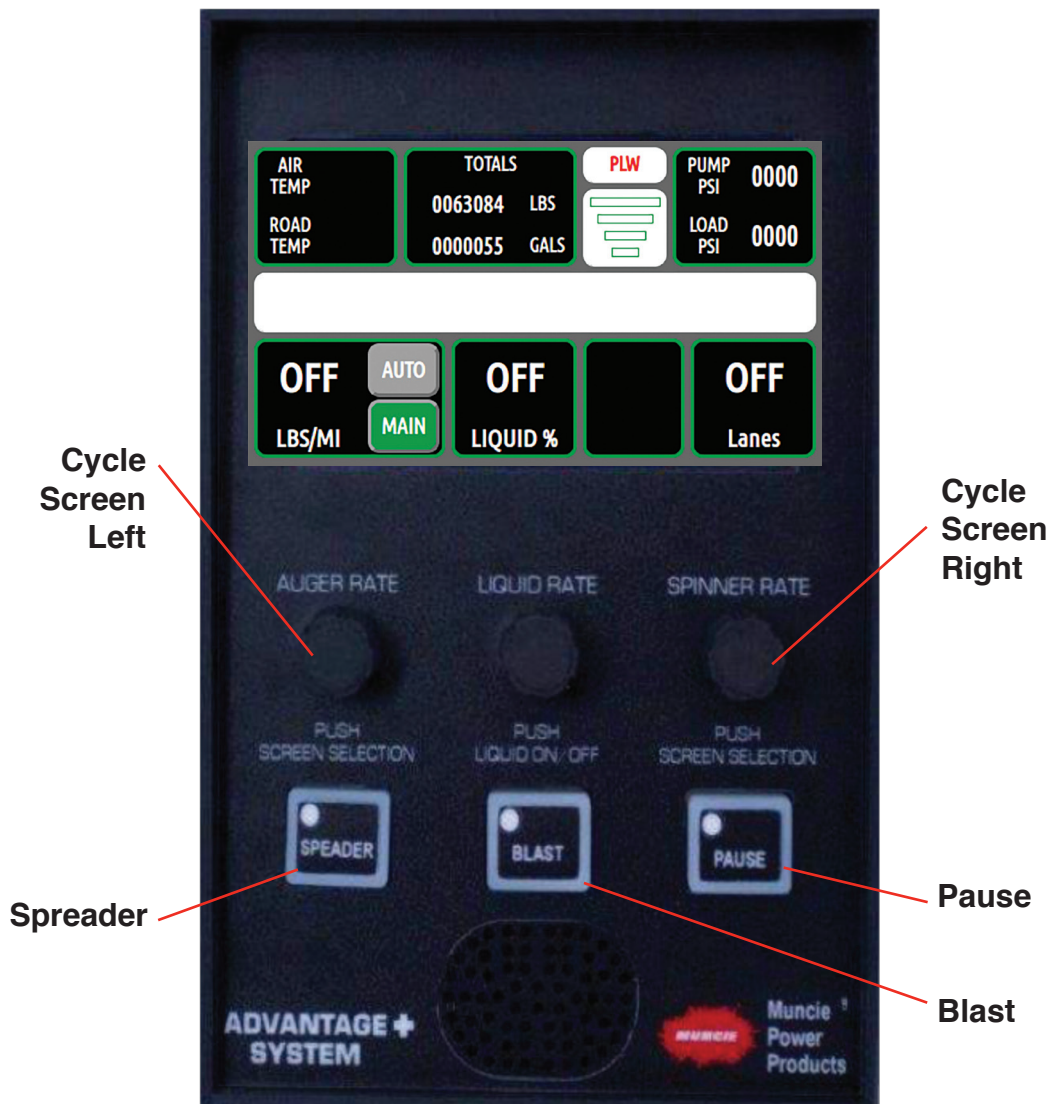**Cycle Screens** – Depress the Auger or Spinner knob to cycle screens.

Operation – Use the appropriate buttons and rotary knobs to control the spreader operation.

Button Assignments

Spreader – Press to initiate the spreader system.

Blast – Press to "Blast" or increase the granular rate to a configurable set point for a preset time.

Pause – Press to pause the auger operation.

NAVIGATING MENU/OPERATION SCREENS

Body Selection & Diagnostic Options

This screen should be checked to make sure the "Body" selection type is correct for the given body that is currently on the vehicle.
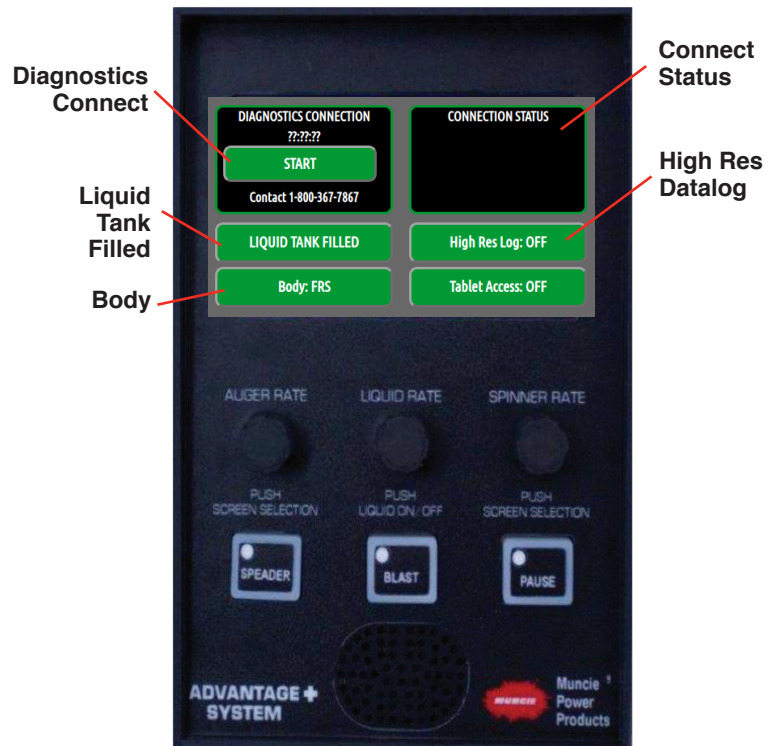
Body – Depress the Body button to sequence through different body configurations. Pre-set Body configurations are: Standard Spreader, Anti-Ice and Directional Spinner. More body configurations can be added by contacting the Muncie Power Products Snow and Ice team.

Liquid Tank Filled: Press Button when liquid tank is completely full, this will ensure that the controller properly calculates the remaining liquid while in operation.

High Res Datalog – For Diagnostic purposes, initiating the High Res Log will capture all controller functionality down to the processor level. See the service manual for more information.

Connect Status – Displays the current state of the wireless connectivity. (Muncie Use Only)

Diagnostics Connect – This feature allows the user to connect to Muncie for Diagnostic Purposes. Simply connect to a Wi-Fi network, input the diagnostic key in the white box, and press the Start button to connect to Muncie for Diagnostic help. Contact Muncie for the diagnostic key.

Diagnostics Connect

Liquid Tank Filled

Body

Connect Status

High Res Datalog

DIAGNOSTICS CONNECTION
??:??:??
START
Contact 1-800-367-7867

CONNECTION STATUS

LIQUID TANK FILLED

High Res Log: OFF

Body: FRS

Tablet Access: OFF

AUGER RATE   LIQUID RATE   SPINNER RATE

PUSH
SCREEN SELECTION

PUSH
LIQUID ON / OFF

PUSH
SCREEN SELECTION

SPEADER   BLAST   PAUSE

ADVANTAGE+
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Power
Products

MAIN OPERATION SCREENS

Main Operating Screen – V-Body

Air Temp / Road Temp – Displays air and road temperatures. Temperatures will only display if IR temperature sensor is installed.

Totals – Displays the material and liquid totals per trip. Simply tap to reset. Keep in mind that resetting these totals does not reset the spreader datalog.

Joystick Mode – Displays the current piece of equipment the joystick is controlling.

Wi-Fi Strength – Displays the Wi-Fi signal strength.

System Pressures – Displays the Pump and Load Sense Pressures.

Message Bar – Displays error messages. Tap to clear messages.

Spinner Rate – Displays the Spinner Rate as a percent.

Pre-Wet Rate – Displays the Pre-Wet Rate.

Product Type – Displays the material being spread. Tap to change products.

Auger Rate – Displays the Auger Rate.

> In *Manual Mode*, the setting is displayed as a percent. Keep in mind that in manual mode the output is constant, but the material rate is changing as ground speed changes.

> In *Auto Mode*, the rate is displayed as Lbs / Mile. Keep in mind that this value will be constant since the material discharged varies per vehicle speed to keep a constant output per mile.

Mode – Displays the mode of operation. Toggle button to change between Auto and Manual.

Main Operating Screen – Anti Ice

Air Temp / Road Temp – Displays air and road temperatures Temperatures will only display if IR temperature sensor is installed.
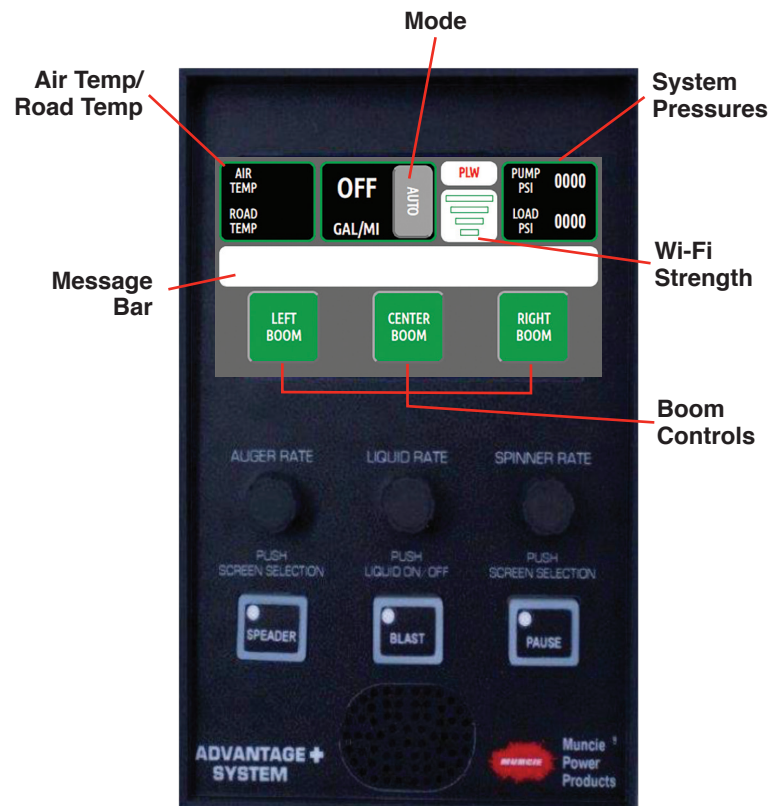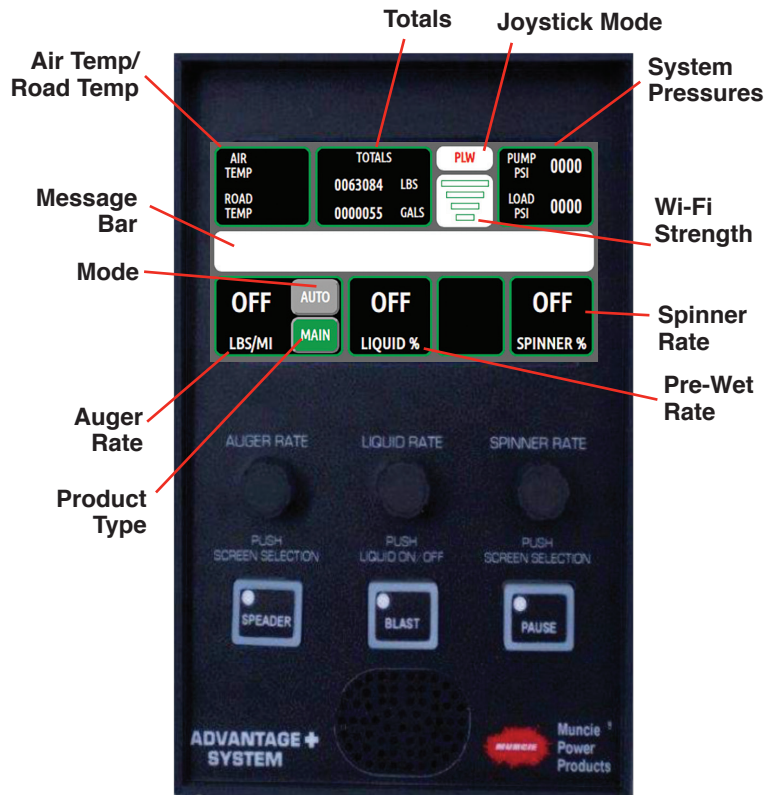
Mode – Displays the mode of operation. Toggle button to change between Auto and Manual.

Wi-Fi Strength – Displays the Wi-Fi signal strength.

System Pressures – Displays the Pump and Load Sense Pressures.

Message Bar – Displays error messages.

Boom Controls – Press appropriate boom controls to actuate. When a boom is actuated, the button will latch orange to indicate that it is "on".

MAIN OPERATION SCREENS

Main Operating Screen – Directional Spinner

Air Temp / Road Temp – Displays air and road temperatures. Temperatures will only display if IR temperature sensor is installed.

Totals – Displays the material and liquid totals per trip. Simply tap to reset. Keep in mind that resetting these totals does not reset the spreader datalog.

Joystick Mode – Displays the current piece of equipment the joystick is controlling.

Wi-Fi Strength – Displays the Wi-Fi signal strength.

System Pressures – Displays the Pump and Load Sense Pressures.

Message Bar – Displays error messages.

Product Type – Displays the material being spread. Tap to change products.

Liquid Rate – Displays the Auger Rate.

> In *Manual Mode*, the setting is displayed as a percent.
>
> In *Auto Mode*, the rate is displayed as Lbs / Mile. Keep in mind that this value will be constant since the material and liquid discharged varies per vehicle speed to keep a constant output per mile. The spinner is controlled by the amount of lanes selected.
>
> By depressing the Liquid Rate knob, you can cycle between the pre-wet and the material discharge rate.

Mode – Displays the mode of operation. Toggle button to change between Auto and Manual.

Auger Rate & Spinner Rate - Controls the spinner speed and direction, by increasing the lanes on the left using the Auger Rate knob you will increase the material discharge to the set lane width to the left of the vehicle. To increase or decrease the number of lanes to the right use the Spinner Rate knob. The controller will only allow you to select a combined maximum of 3 lanes total.

*These rates can be configured in lanes or in feet. See the configuration menu "Aux Equipment Pg. 15" and select "Directional Spin Mode."

OPERATION SCREEN ADJUSTMENTS

Operator Adjustment

Brightness Setting – First, select Day or Night under the brightness setting. If the brightness is not satisfactory, adjust the button and screen settings as needed.

**Screen Brightness –** Select to adjust the screen brightness.

Button Brightness – Select to adjust the button brightness.

Volume – Select to adjust the volume of the controller.

Configuration Menu – Reference page 9 to access the configuration menu and make adjustments. This menu allows a maintenance supervisor to make setting adjustments to the system. It is password protected to limit access to unauthorized personnel.

Route – Select to change the route name.

Driver – Select to scroll through the driver names.
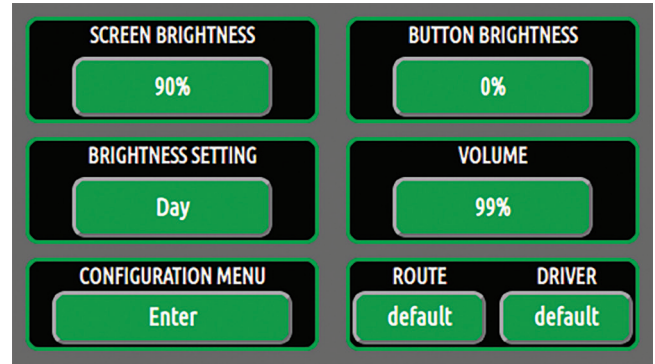
Spreader Log

Totals – Displays the following:

GRAN – Displays the total amount of granular material discharged since log last cleared.

LIQ – Displays the total amount of liquid pre-wet discharged since log last cleared.

AUTO – Displays the total distance spread in Auto Mode.

MAN – Displays the total distance spread in Manual Mode.

Speed – Displays the current Speed of the truck in MPH.

Granular Averages – Displays the following:

GRAN - Displays the average spreader rates in Lbs / Mile.

LIQ – Displays the average pre-wet rate in Gallons / Ton.

SPEED –Displays the average speed of the vehicle while spreading.
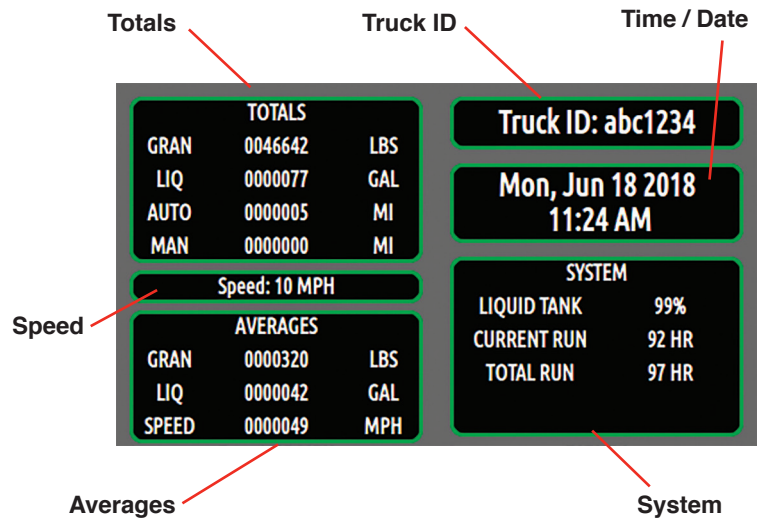
Truck ID – Displays the truck ID.

Time / Date – Displays the Time and Date. Press Box to adjust.

System – Displays the following:

LIQUID TANK- Displays the amount of liquid inside the tank in a percentage form.

CURRENT RUN- Displays the amount of time the system has run without a power cycle.

TOTAL RUN- Displays the total amount of time the system has been on.

CONFIGURATION MENU

Accessing the Configuration Menu

This menu is pass code protected to limit access to non-authorized personnel. It is recommended to change the passcode from the default value to limit access and prevent unintentional system adjustments.
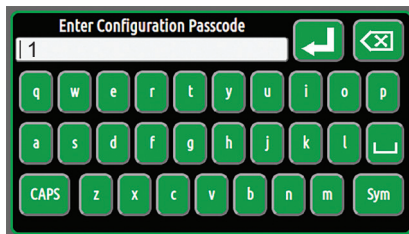
Follow the steps below to enter the menu:

1. Using the touch screen, press the white box under Configuration Menu. A keyboard should appear to enter the passcode.
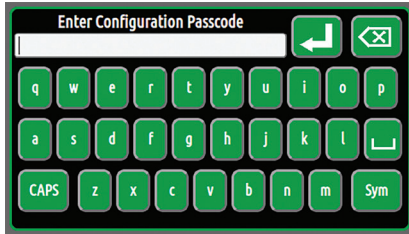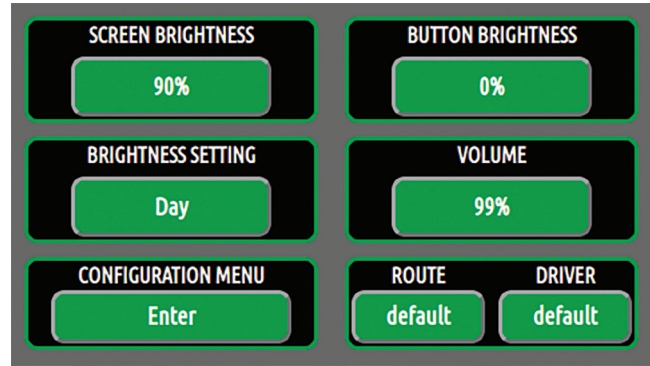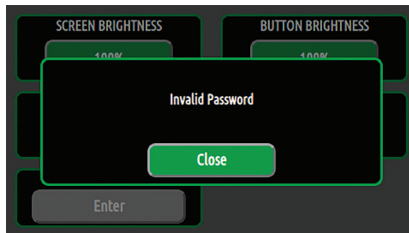

2. Using the on screen keyboard, enter the passcode. Toggle the Caps button to change the case and enter numerical values.

(Default Pass Code = 1)

3. Once the passcode has been entered, press the "Enter arrow" button. The keyboard will close.

4. If the passcode is entered incorrectly, the following message will appear.

CONFIGURATION MENU

System Information – Pg. 1

This screen allows the user to update the firmware version if instructed by Muncie, you can also view the system module versions. New firmware can be downloaded to a flash drive and uploaded to the controller.

Truck ID: To change, select the truck ID box. The truck ID allows the user to keep the datalog information separate between trucks.

Flash Drive Status: Displays the status of the flash drive. To connect, insert a USB flash drive in the top USB port and push "USB DISCONNECTED" button.

Firmware Update: If instructed by Muncie, connect flash drive with the appropriate firmware files and hit the "Update Firmware" button to update.

Note – This process can take up to 10 minutes to complete. Do not shut off controller during this process.

Save and Exit: Click the "SAVE & EXIT" button when you are finished making adjustments. This will return you to the main operating screens.

Software Versions: Displays the current version of software installed (Muncie Use Only).
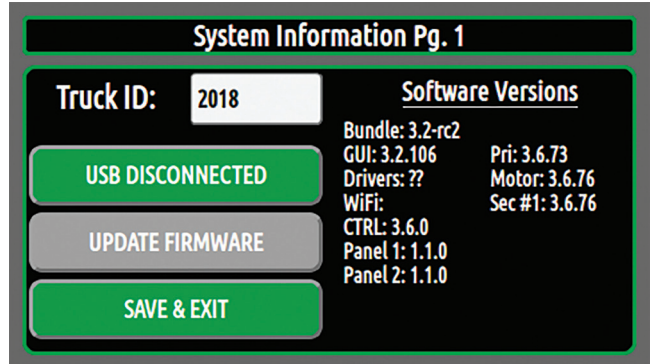
System Information – Pg. 2

This screen allows the user to setup the system profile, the system profile contains all of the calibration settings, button mapping, and more. The user is able to download a profile to a flash drive or load a profile from a flash drive to mirror settings.

Flash Drive Status: This box indicates the status of the connected flash drive. Simply connect a flash drive in the top USB port and press the "USB DISCONNECTED" button. The flash drive may take up to 10 seconds to initiate.

Load Profile: The load profile button allows the user to transfer the truck profile from the flash drive to the spreader controller. (Upload)

Download Profile: The download profile button allows the user to transfer the truck profile from the controller to the flash drive.

Sync Profile: Whenever a new module is exchanged on the system, press "Sync Profile" to download the truck profile to the new module.

Truck Profile Name: This number is generated by Muncie. The value is a "system number" that helps Muncie identify which components and software are included with the system.

Pass Code: Select this box to change the Configuration Menu Pass Code.

CONFIGURATION MENU

Data Logging – Pg. 3

This screen allows the user to download the data logs.

Flash Drive Status: This box indicates the status of the connected flash drive. Simply connect a flash drive in the top USB port and press the "USB DISCONNECTED" button. The flash drive may take up to 10 seconds to initiate.
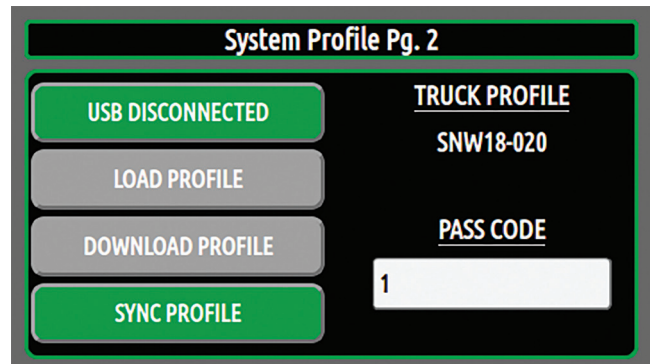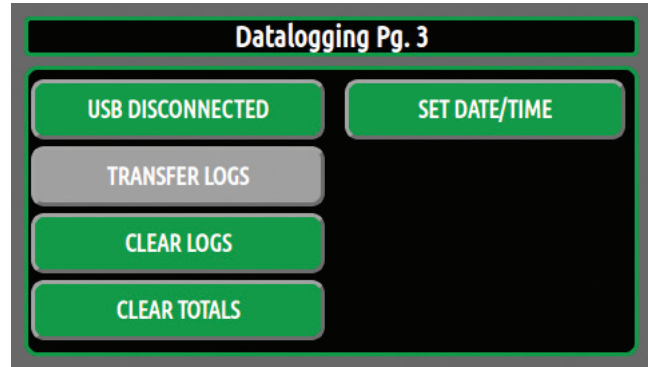
Transfer Logs: Press the transfer datalogging files to USB flash drive.

Clear Logs: Press this button to clear the logs.

Clear Totals: Press this button to clear the totals

Set Date/Time: Press this button to adjust the date and time. An additional menu screen will appear to set the date and time.

Data Logging – Pg. 4

This screen allows the user to set up the E-mail datalogging feature. This allows the Advantage+ Controller to automatically transmit datalogging files through a Wi-Fi Connection. The files are sent to a designated e-mail address. This process is triggered anytime the controller connects to a wireless network

Time Interval: Press this button to set how often the system records data points.

Log Clear: Press the button to set when the datalog file is cleared.

   AUTO - clears the datalog after downloading.

   DAILY - means that the logs are cleared once a day.

   NEVER - allows the controller to continue recording unless manually cleared through the configuration menu.

Log E-Mail: This box lets you insert the email address you would like the datalogs sent to.

1. Press the white box next to Log E-Mail to enter the E-Mail address the datalogging files need to be sent to.

NOTE: The system needs to connect to a wireless network with internet access to send the log files. See the section on Connecting to a Wireless Network below to learn how to go through the setup procedure.

2. The datalog files are sent out 10 times a day in two hour intervals. Any log files with the same E-mail address will be sent at the same time. Files will come from noreply@munciepower.com. This is an unmonitored address so do not send E-mail replies to it.

3. To download the files from the E-mail with Outlook, right click the attachment and select the "Save As" option and save the file to the desired location.

Route IDs: Press each white box to enter the Route ID. The correct Route ID must be selected in the operations screen. The datalogs will now show the Route ID.
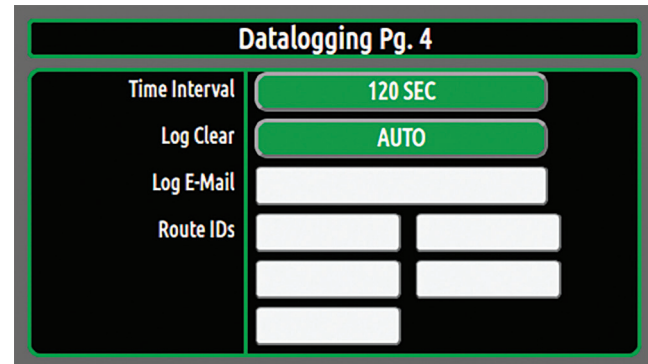
Data Logging – Pg. 5

This screen allows the user to pre-set Driver ID's.

Driver IDs: Press each white box to enter the driver name. This allows the operator to select his/her name from the operations screen. The Driver ID will then appear in the corresponding datalogs.

ADVANTAGE+ CONFIGURATION MANUAL
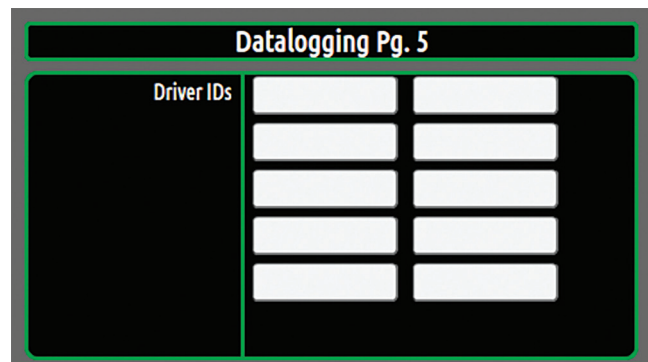
CONFIGURATION MENU

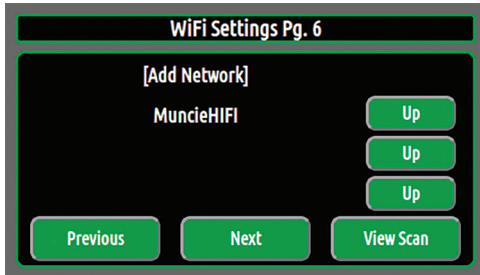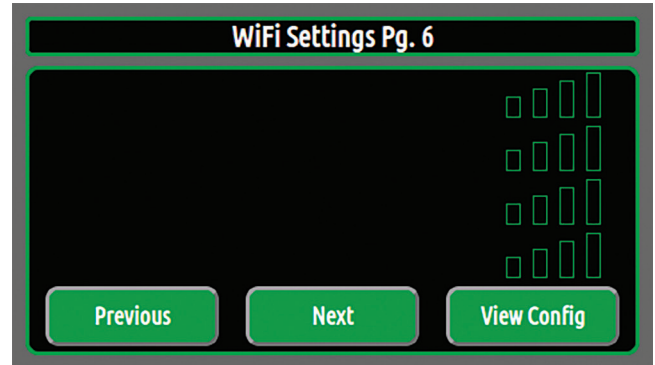## Connecting to a Wireless Network

Wi-Fi Settings – Pg. 6

This page will display the Wi-Fi networks in range.

Previous: Button can be used to scroll through the list of available networks.

Next: Button can be used to scroll through the list of available networks.

View Config: This button will make a new screen appear. (Screen shown below.)

To Connect to an Available Network:

1. Select the available network on the Wi-Fi Configuration screen. *Networks in range may take a couple of minutes to show up after the panel is turned on.

2. The Network Credentials Screen should pop up. The SSID field and Security type should auto-populate.

3. Select the white box next to "Key" to input the network pass code.

4. If applicable, the network can be prioritized using the index field.

5. Once entered, press change to connect to network or remove to disconnect from the network.

To Manually Add Network: If the network is unavailable or hidden, the user may have to manually connect to the network.

1. Click [Add Network] on the Wi-Fi configuration screen and populate the appropriate fields.

2. If network is hidden, select this option on network credentials page.

3. Push "Change" to Save Entry and Connect.
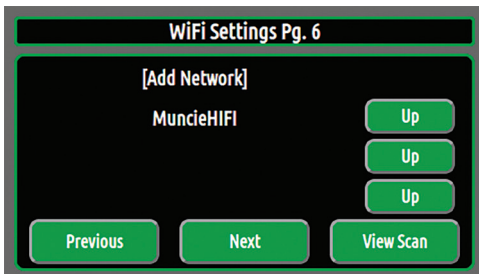
CONFIGURATION MENU

Global Settings – Pg. 7

Pump Type: Select the appropriate pump type by toggling the button.
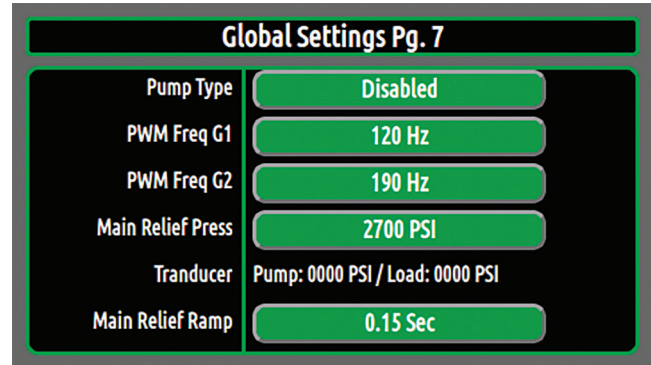> The options are as follows: Disabled, Piston Pump, or Gear Pump

PWM Freq G1: Muncie Use Only - The frequency of the electrical current to the valves can be tuned per output.

PWM Freq G2: Muncie Use Only - The frequency of the electrical current to the valves can be tuned per output.

Main Relief Pressure: Select to adjust the Main Relief Pressure. The system can be set to a maximum of 3,000 PSI. Deadhead the plow angle to view the main relief pressure.

Transducer: The pump and load sense pressures are displayed for the user to set the main relief.

Main Relief Ramp: A ramp time can be set for the main relief setting.This ramp time helps dampen the shock loads to the actuators.

Global Settings Pg. 7	
Pump Type	Disabled
PWM Freq G1	120 Hz
PWM Freq G2	190 Hz
Main Relief Press	2700 PSI
Tranducer	Pump: 0000 PSI / Load: 0000 PSI
Main Relief Ramp	0.15 Sec

Global Settings – Pg. 8

PWM Freq Motor: Muncie Use Only- the frequency of the electrical current to the valves can be tuned per output.
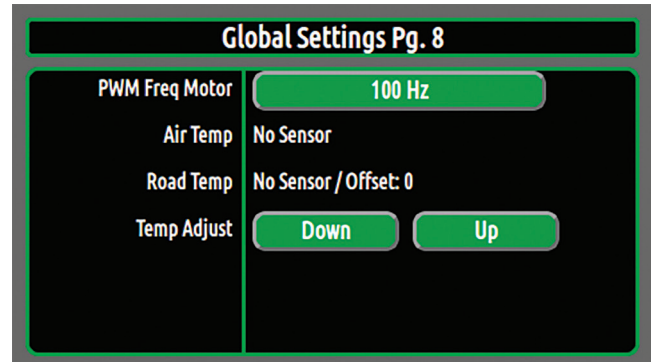
Air Temp: This will indicate if an air temp sensor is connected.

Road Temp: This will indicate if a road temp sensor is connected, and the offset that has been set.

Temperature Adjust: This adjustment allows road temperature to be tuned if it is slightly off.

1. To check the accuracy of the road temperature, insert a cup of ice water under the IR sensor. The temperature should read 32.

2. If the temperature is off, use the up and down buttons to tune the temperature.

3. Adjust the road temperature until the display reads 32 degrees

   * The air temperature cannot be adjusted. Keep in mind that the air temperature is slow to adjust since it is a function of the sensor housing.

Global Settings Pg. 8	
PWM Freq Motor	100 Hz
Air Temp	No Sensor
Road Temp	No Sensor / Offset: 0
Temp Adjust	Down / Up

CONFIGURATION MENU

Spreader Settings – Pg. 9

Retain Settings: The retain settings button allows the system to retain the Auger, Liquid, and Spinner rates when the system is turned off.

Caution: This will cause the spreader controller to retain the settings after the controller has been powered off. Be aware that simply pressing the Spreader button "on" will actuate the hydraulic motors.
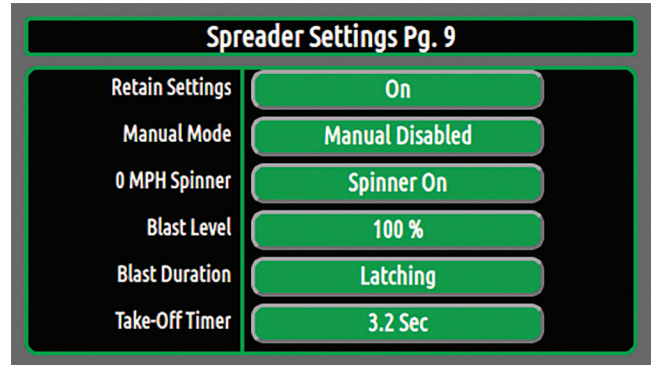
Manual Mode Lockout: Manual Mode can be enabled or disabled by toggling the push button. Disabling manual mode will prevent the operator from accessing this mode above 7 MPH.

0 MPH Spinner: The 0 MPH Spinner determines if the Spinner operation continues when the truck comes to a complete stop. If it is set to "on," it will remain spinning. If it is off, it will stop spinning when the truck stops.

Blast Level: The Blast Level sets the auger speed when the blast button is pressed. This is adjustable from 0 – 100%

Blast Duration: The Blast Duration can be adjusted from 0-200 seconds, when adjusting the blast duration you can go past 200 seconds and it will display "Latching". This will keep Blast on until the button is pressed again.

Take Off Timer: Take-Off Timer is adjustable from 0-5 seconds. Turning this setting above 0 seconds will cause the auger to blast material for the set increment of time after the truck has accelerated from a stop.

Spreader Settings Pg. 9	
Retain Settings	On
Manual Mode	Manual Disabled
0 MPH Spinner	Spinner On
Blast Level	100 %
Blast Duration	Latching
Take-Off Timer	3.2 Sec

Spreader Calibration – Pg. 10

Product Name: This allows the user to change the text for the primary spreader material. Select box to change.

Ground Speed Cal: Ground Speed Calibration is the value of pulses per mile that the truck sends to the controller. This allows the controller to read in MPH. Ground Speed can be set two different ways listed below:

Option 1– If the pulses per mile are known for the chassis, simply input the value in the Ground Speed box. (Allison Transmission are typically around 32,000 Pulses Per Mile)

Option 2 – Drive the truck to 20 MPH and simultaneously press the "Calibrate" button. This will automatically populate an updated pulse count in the "Ground Speed Cal" box.

Preset Mode: You can select two types of Preset Mode:

Fixed – If fixed is selected, the user has the ability to dial in the exact auto mode settings available to the operator. Up to six pre-wet rates are available. Therefore the spreader rate can be limited to one or two settings if desired.
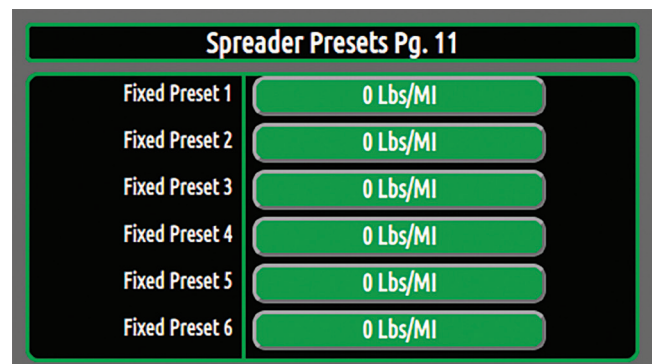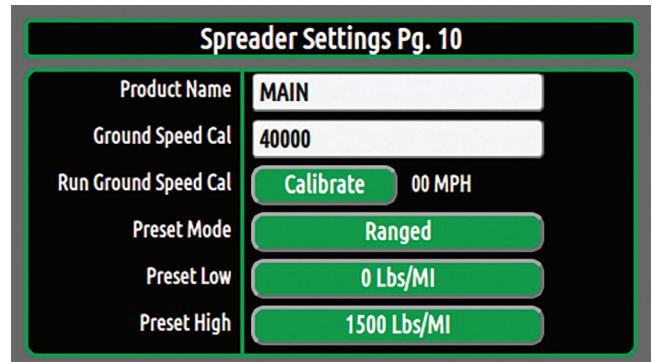
Ranged – If range is selected, the user has the ability to set the Low and High auto rates. This gives the operator a range of settings in Lbs/Mile.

Preset Low: If Preset Mode is set to Ranged, you can adjust the lowest allowed setting in Lbs/Mile.

Preset High: If Preset Mode is set to Ranged, you can adjust the highest allowed setting in Lbs/Mile.

Spreader Settings Pg. 10	
Product Name	MAIN
Ground Speed Cal	40000
Run Ground Speed Cal	Calibrate 00 MPH
Preset Mode	Ranged
Preset Low	0 Lbs/MI
Preset High	1500 Lbs/MI

Spreader Presets – Pg. 11

Fixed Preset: If fixed is selected under Preset Mode on Spreader Settings Pg.10, you can enter up to six pre-wet rates in Lbs / Mile. This allows the spreader rate to be limited to only the preset configuration rates.

Spreader Presets Pg. 11	
Fixed Preset 1	0 Lbs/MI
Fixed Preset 2	0 Lbs/MI
Fixed Preset 3	0 Lbs/MI
Fixed Preset 4	0 Lbs/MI
Fixed Preset 5	0 Lbs/MI
Fixed Preset 6	0 Lbs/MI

CONFIGURATION MENU

Granular Ratio Setup – Pg. 12

Product Name: Select the white boxes to change the alternate product names.

Granular Ratios: If multiple products are used, setting product ratios will increase the accuracy of the material spread. For example, if the user spreads sand as an alternate product, he could input the material name in the Alt 1 Box. In addition, he could input the product ratio to know the difference in weights of the materials.

> **To calculate the ratio:** Take a 5 Gallon Bucket of Alternate Product's Weight and Divide by a 5 Gallon Bucket of Salt Weight: (52 Lbs/45 Lbs) = 1.15 or 115%

Granular Ratios Pg. 12

ALT1	111 %
ALT2	116 %
ALT3	126 %
ALT4	132 %
ALT5	136 %

Liquid Settings – Pg. 13

Liquid Tank: Select the button to adjust the liquid capacity of the tank. Next, toggle the up and down buttons to adjust the settings.

Liquid Ratio: Select the button to adjust the mixture ratio of material to liquid. Next, toggle the up and down buttons to adjust the settings.

Liquid Weight: Select the box to input the weight of the liquid in pounds per gallon. A new screen will appear as shown below. Use the touch screen to enter the weight of the liquid in pounds per gallon. When complete tap the "enter arrow" beside the text box to enter this value into the "Liquid Weight" box.

Liquid Settings Pg. 13

Liquid Tank	2600 Gal
Liquid Ratio	30 %
Liquid Weight	10.2

Enter Liquid Lbs/Gal

10.2

1	2	3	0
4	5	6	.
7	8	9	

CONFIGURATION MENU

Anti-Ice Control Settings – Pg. 14

Preset Mode: The user can select two types of Preset Modes:

> **Fixed –** If fixed is selected, the user has the ability to dial in the exact auto mode settings available to the operator. Up to three anti-ice rates are available. Therefore rate can be limited to one or two settings if desired.
>
> > **Preset 1 – 3:** Select the preset button. Next, toggle the up and down buttons to adjust the settings. (Image not shown, the screen will change when Preset Mode is changed to "Fixed".)
>
> **Ranged –** If range is selected, the user has the ability to set the Low and High auto rates. This gives the operator a range of settings in gallons per mile.
>
> > **Preset Low:** If Preset Mode is set to Ranged, you can adjust the lowest allowed setting in Gal/Mile.
> >
> > **Preset High:** If Preset Mode is set to Ranged, you can adjust the highest allowed setting in Gal/Mile.

Anti-Ice Control Settings Pg. 14

Preset Mode	Ranged
Range Low	0 Gal/Mi
Range High	112 Gal/Mi
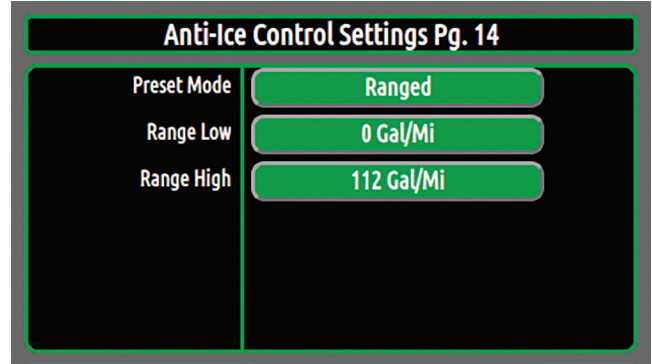
BODY CONFIGURATION MENU

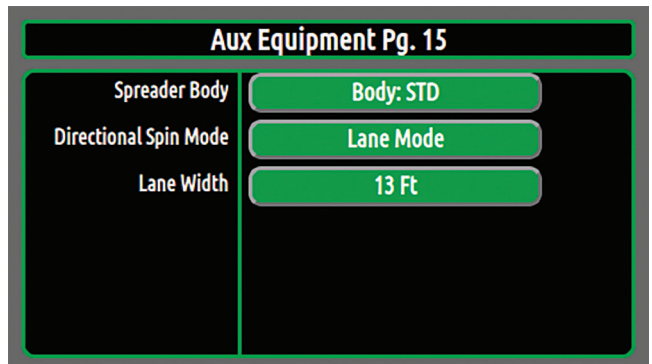## Auxiliary Equipment – Pg. 15

Spreader Body: Select the type of body you wish to configure in the configuration menu. The pre-set body types are: Standard (STD), Anti-Ice, or Directional Spinner (DSPIN, or FRS). By changing the Spreader Body the following configuration menu pages also will change: Pg. 16 & Pg. 17. More body configurations can be added by contacting the Muncie Power Products Snow & Ice team.

Directional Spin Mode: This changes the main operating screen to show the operator the material spread distance in either feet or lanes.

> **Distance Mode –** By selecting Distance Mode the operating screen will now show the area the material will spread in feet.
>
> **Lane Mode –** By selecting Lane Mode the operating screen will now show the area the material will spread in lanes. You can select in increments of 0.5 Lanes.

Lane Width: This calibrates the controller to the correct lane width for your area. This will increase the accuracy of the material spread. To change this value, press the Lane Width button and toggle the Up and Down buttons to the desired width.

Aux Equipment Pg. 15

Spreader Body	Body: STD
Directional Spin Mode	Lane Mode
Lane Width	13 Ft

BODY CONFIGURATION MENU – V-Body

Auxiliary Equipment – Pg. 15

Spreader Body: Select the type of body you wish to configure in the configuration menu. For following two pages we will be looking at the preset Standard Spreader Body (STD).

Refer to the previous pages for the other functions on PG. 15

Body Standard Spreader Settings – Pg. 16

Warning: The spreader motors will initiate when the speed settings are adjusted.

Auger Flow: Select the Auger Flow "Min/Max" button to adjust the speeds. The min setting needs to be adjusted so that the auger is barely turning. The max setting is the maximum preferred auger speed.

Spinner Flow: Select the Spinner Flow "Min/Max" button to adjust the speeds. The min setting needs to be adjusted so that the spinner is barely turning. The max setting is the maximum preferred spinner speed.

Closed Loop: The Closed Loop can be adjusted from open loop to closed loop by pressing the button. Closed loop requires that the auger has a feedback sensor installed. Open Loop doesn't require a feedback sensor.

Auger Cal (OL) – Calibration Value (Open Loop) – This value is mathematically generated whenever a spreader calibration has been performed. This value can be plugged into other trucks with identical hydraulic setups to prevent having to do multiple calibrations.
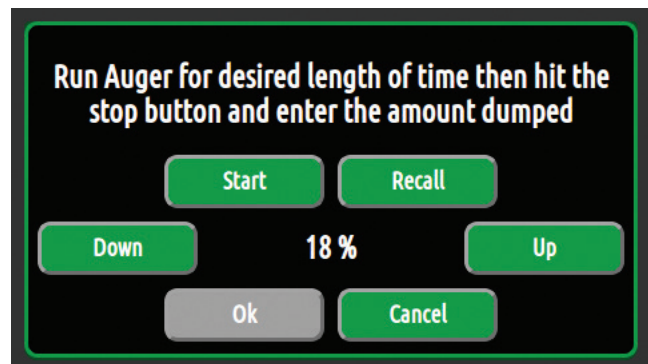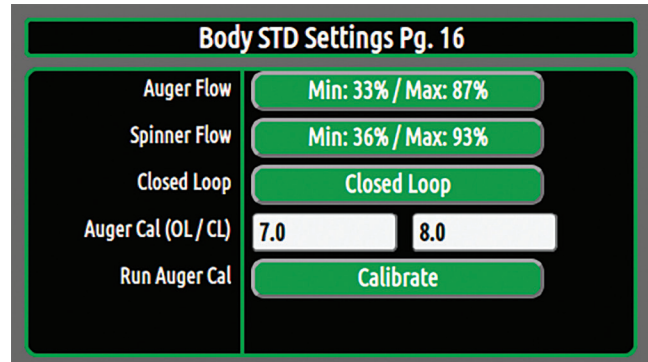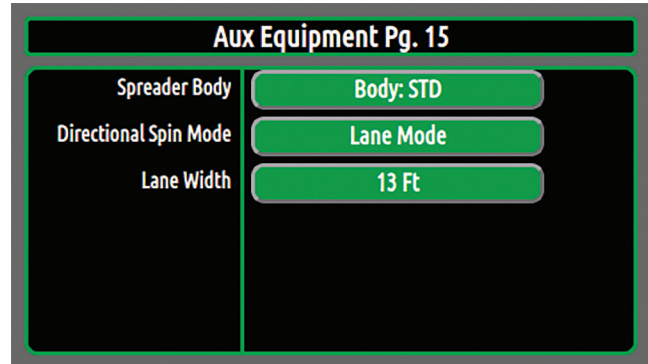
Auger Cal (CL) – Calibration Value (Closed Loop) – This value is automatically generated whenever a spreader calibration has been performed. However, it will only populate if a feedback sensor is installed on the auger. Again, this value can be plugged into different trucks to prevent having to do multiple calibrations.

Run Auger Cal: Performing an auger calibration increases the accuracy of the auger output.

Auger Calibration Process

Purpose: The spreader calibration is recommend for Auto Mode Accuracy. It allows the controller to accurately discharge material at the rate shown and accurately log how much material is discharged.

1. Load the spreader with the primary material and weigh the truck. Before beginning the unloading process, increase and hold the engine at 1,000 RPM.

2. Press the Spreader Cal button on page 8 to begin the spreader calibration process.

3. Use the up and down buttons to select a drive current. We recommend setting this between the min and max auger settings for best accuracy.

   Press Start to begin the offloading process.

4. Allow the spreader to unload for 5-7 minutes. During the unloading process, hit "Stop" to pause and "Resume" to continue the offloading process.

5. When the offloading process is complete:

   a. Press the "Stop" button
   b. Reweigh the truck and calculate the amount of material dumped.
   c. Use the up and down buttons to enter the weight of material dumped
   d. Press the "Save" button.

*The recall button will recall the offloading time and % drive of the last session. If the process gets interrupted or the truck shuts off simply press this button to recall the values

BODY CONFIGURATION MENU – V-Body

Body Standard Spreader Settings – Pg. 17

Pre-Wet Flow: Select the button to adjust the min and max pre-wet speeds. Next, toggle the up and down buttons to adjust the settings.

Pre-Wet Closed Loop: The "Control Loop" can be adjusted from open to closed loop by pressing the button. Closed loop requires a feedback sensor (turbine).

Pre-Wet Cal (OL) – Open Loop Calibration Value - The open loop pre-wet calibration is displayed in this box. This value is automatically generated when a calibration is performed. This value can be input into identical setups to prevent having to perform multiple calibrations.
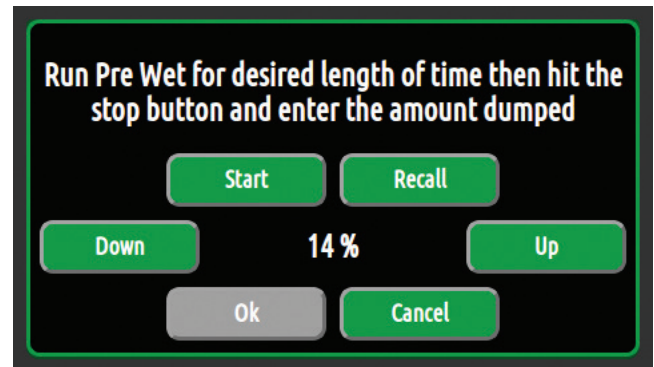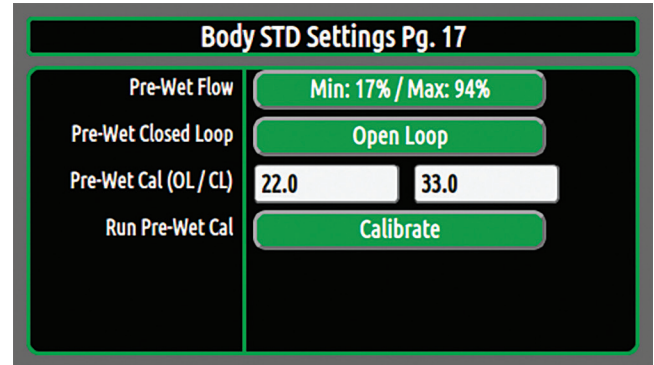
Pre-Wet Cal (CL) – Closed Loop Calibration Value - The closed loop pre-wet calibration is displayed in this box. This value is automatically generated when a calibration is performed. If the pulses per gallon are known, directly input the value into this field.

Run Pre-Wet Cal: Performing a pre-wet calibration increases the accuracy of the pre-wet output.

Pre-Wet Calibration Process

Pre-Wet Cal: Performing a pre-wet calibration increases the accuracy of the pre-wet output.

1. Place a 5-gallon bucket or other known volume container under the pre-wet nozzle.

2. Press the "Calibrate Button" to initiate the process.

3. Use the up and down buttons to select a drive current. We recommend setting this between the min and max pre-wet settings for best accuracy.

   Press Start to begin the calibration process.

4. Allow the pre-wet to spray until the 5 gallons bucket is full. During the process, hit "Stop" to pause and "Resume" to continue.

5. When the 5 Gallon Bucket is full:

   a. Press the "Stop" button
   b. Use the up and down buttons to enter 5 gallons
   c. Press the "Save" button.

*The recall button will recall the offloading time and % drive of the last session. If the process gets interrupted or the truck shuts off simply press this button to recall the values
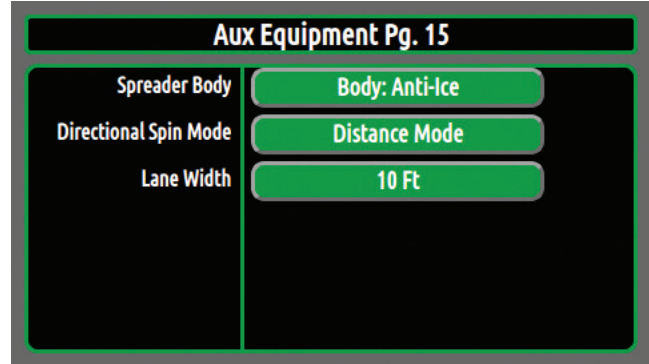
BODY CONFIGURATION MENU – Anti-Ice Body

Auxiliary Equipment – Pg. 15

Spreader Body: Select the type of body you wish to configure in the configuration menu. For following page we will be looking at the Anti-Ice Body.

**Refer to the previous pages for the other functions on PG. 15**

Aux Equipment Pg. 15

Spreader Body	Body: Anti-Ice
Directional Spin Mode	Distance Mode
Lane Width	10 Ft

Body Anti-Ice Settings – Pg. 16

Warning: The spreader motors will initiate when the speed settings are adjusted.

Anti-Ice Flow: Select the Anti-Ice Flow "Min/Max" button to adjust the speeds. Next, toggle the up and down buttons to adjust the settings.

Anti-Ice Cal: The Anti-Ice calibration is displayed in this box. The value is automatically generated when a calibration is performed. If the value is known, you can manually input the values to prevent having to perform the calibration multiple times.

Body AICE Settings Pg. 16

Anti-Ice Flow	Min: 4% / Max: 76%
Anti-Ice Cal	9.0

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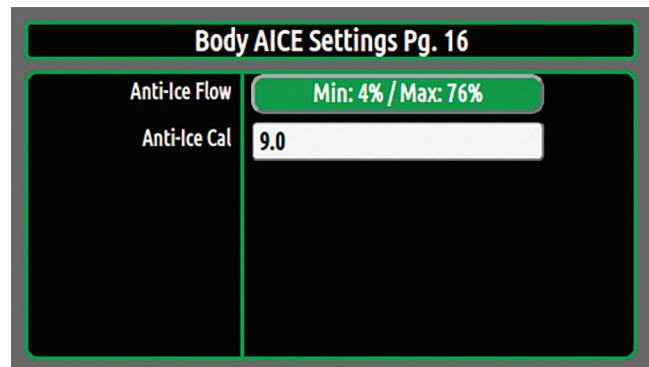
BODY CONFIGURATION MENU – FRS Body

Auxiliary Equipment – Pg. 15

Spreader Body: Select the type of body you wish to configure in the configuration menu. For following two pages we will be looking at the Directional Spreader Body, for this particular setup we will look at a type of directional spinner made by Henderson called the FRS.

Refer to the previous pages for the other functions on PG. 15

Body FRS Settings – Pg. 16

Warning: The spreader motors will initiate when the speed settings are adjusted.

Auger Flow: Select the Auger Flow "Min/Max" button to adjust the speeds. The min setting needs to be adjusted so that the auger is barely turning. The max setting is the maximum preferred auger speed.

Spinner Flow: Select the Spinner Flow "Min/Max" button to adjust the speeds. The min setting needs to be adjusted so that the spinner is barely turning. The max setting is the maximum preferred spinner speed.

Closed Loop: The Closed Loop can be adjusted from open loop to closed loop by pressing the button. Closed loop requires that the auger has a feedback sensor installed. Open Loop doesn't require a feedback sensor.

Auger Cal (OL) – Calibration Value (Open Loop) – This value is mathematically generated whenever a spreader calibration has been performed. This value can be plugged into other trucks with identical hydraulic setups to prevent having to do multiple calibrations.

Auger Cal (CL) – Calibration Value (Closed Loop) – This value is automatically generated whenever a spreader calibration has been performed. However, it will only populate if a feedback sensor is installed on the auger. Again, this value can be plugged into different trucks to prevent having to do multiple calibrations.

Run Auger Cal: Performing an auger calibration increases the accuracy of the auger output.

Max Spinner Dist: Max Spinner Distance can be set to the max overall distance the user wants the operator to be able to spread material.

Auger Calibration Process

Purpose: The spreader calibration is recommend for Auto Mode Accuracy. It allows the controller to accurately discharge material at the rate shown and accurately log how much material is discharged.
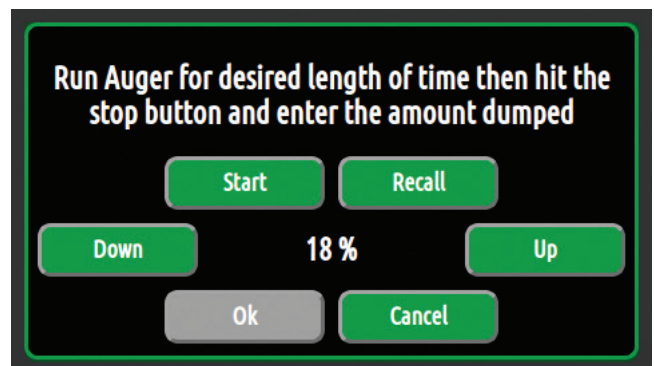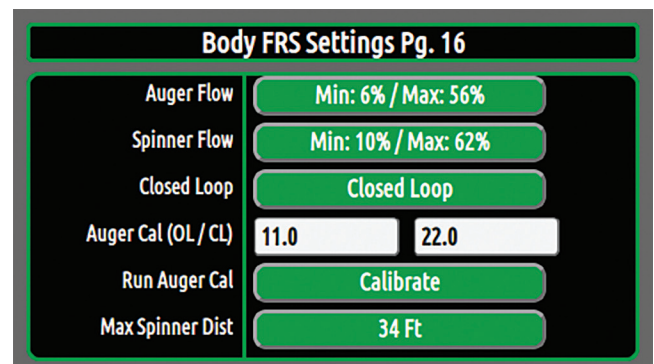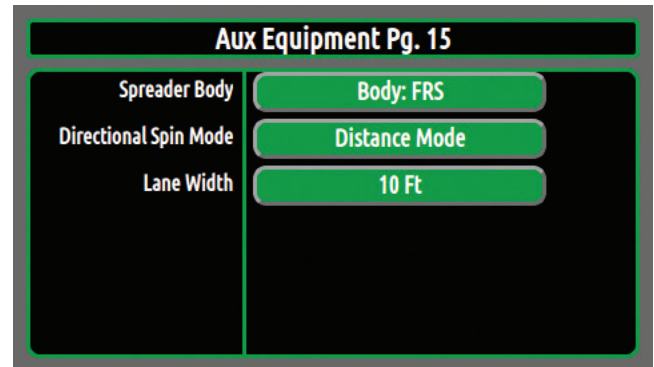
1. Load the spreader with the primary material and weigh the truck Before beginning the unloading process, increase and hold the engine at 1,000 RPM.

2. Press the Spreader Cal button on page 8 to begin the spreader calibration process.

3. Use the up and down buttons to select a drive current. We recommend setting this between the min and max auger settings for best accuracy.

Press Start to begin the offloading process.

4. Allow the spreader to unload for 5-7 minutes. During the unloading process, hit "Stop" to pause and "Resume" to continue the offloading process.

5. When the offloading process is complete:

   a. Press the "Stop" button
   b. Reweigh the truck and calculate the amount of material dumped.
   c. Use the up and down buttons to enter the weight of material dumped
   d. Press the "Save" button.

*The recall button will recall the offloading time and % drive of the last session. If the process gets interrupted or the truck shuts off simply press this button to recall the values

BODY CONFIGURATION MENU – FRS Body

Body FRS Settings – Pg. 17

Spinner Height: Select the correct spinner height range for the vehicle.

Pre-Wet Flow: Select the button to adjust the min and max pre-wet speeds. Next, toggle the up and down buttons to adjust the settings.

Pre-Wet Closed Loop: The "Control Loop" can be adjusted from open to closed loop by pressing the button. Closed loop requires a feedback sensor (turbine).

Pre-Wet Cal (OL) – Open Loop Calibration Value - The open loop pre-wet calibration is displayed in this box. This value is automatically generated when a calibration is performed. This value can be input into identical setups to prevent having to perform multiple calibrations.

Pre-Wet Cal (CL) – Closed Loop Calibration Value - The closed loop pre-wet calibration is displayed in this box. This value is automatically generated when a calibration is performed. If the pulses per gallon are known, directly input the value into this field.

Run Pre-Wet Cal: Performing a pre-wet calibration increases the accuracy of the pre-wet output.

Pre-Wet Callibration Process

Pre-Wet Cal: Performing a pre-wet calibration increases the accuracy of the pre-wet output.

1. Place a 5 gallon bucket or other known volume container under the pre-wet nozzle.

2. Press the "Calibrate Button" to initiate the process.

3. Use the up and down buttons to select a drive current. We recommend setting this between the min and max pre-wet settings for best accuracy.

    Press Start to begin the calibration process.

4. Allow the pre-wet to spray until the 5 gallons bucket is full. During the process, hit "Stop" to pause and "Resume" to continue.

5. When the 5 Gallon Bucket is full:

    a. Press the "Stop" button
    b. Use the up and down buttons to enter 5 gallons
    c. Press the "Save" button.

*The recall button will recall the offloading time and % drive of the last session. If the process gets interrupted or the truck shuts off simply press this button to recall the values