# AR-6 Setup Guide

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# Introduction

This document will cover in great detail how to setup and optimize your AR-6 system.

You require an activated disk to access the Setup. One is shipped with each system.

Always setup the System first then the Hydraulics next followed by the Materials.

Typically there are only four buttons on each screen that have a good description of exactly where they are going to take you.

Each screen has an EXIT button at the bottom right corner with a description of where you are exiting to.

With these descriptions beside each button you can very easily navigate through the menus and screens.

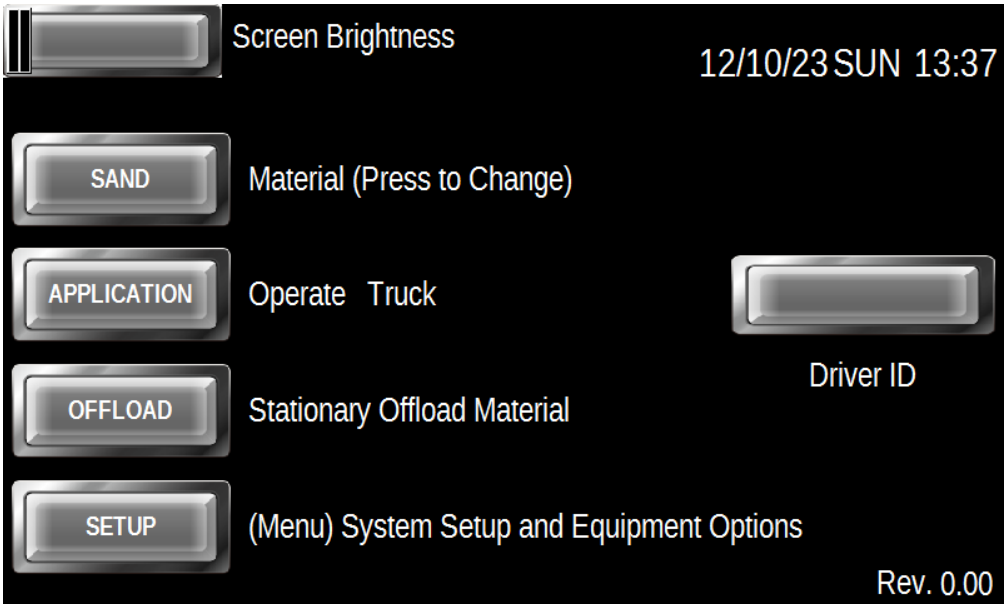
At the top of each screen there is a Title at the upper right corner and a number below it. The number is there in case you need to contact tech support for help on setting the system up. If this Title is yellow tapping on it will take you to the Help file for the screen. This Help documentation is actually this manual built right into the screen so you have it there with you at all times.

All Settings are done by Tapping the Button or Data Entry field you are working with.

Numeric values are changed by tapping on THE NUMBER ITSELF.

Always Exit all the way back to the Driver ID screen before powering off in order to save the changes you make.

# Start Screen




In order to access the SETUP functions you must have a secure key on a Thumb Drive inserted in the USB port at the bottom of the armrest. One of these is supplied with each system.

The Setup Screen will appear as soon as it has verified the License File on the disk.

Note: If you get a No Access message and you have an acivated disk installed  press the Setup Button again.

Once you have entered the Setup process the Thumb Drive can be removed and the Setup will be active until Key Off occurs.

From the Start Screen select SETUP and the System Setup and Equipment Options Select Menu will show.

# System Setup and Options Select Menu


Select from the four buttons to take you to the function you want to adjust or modify using the description beside the button as a guide. It's sort of like having someone there to explain it for you.

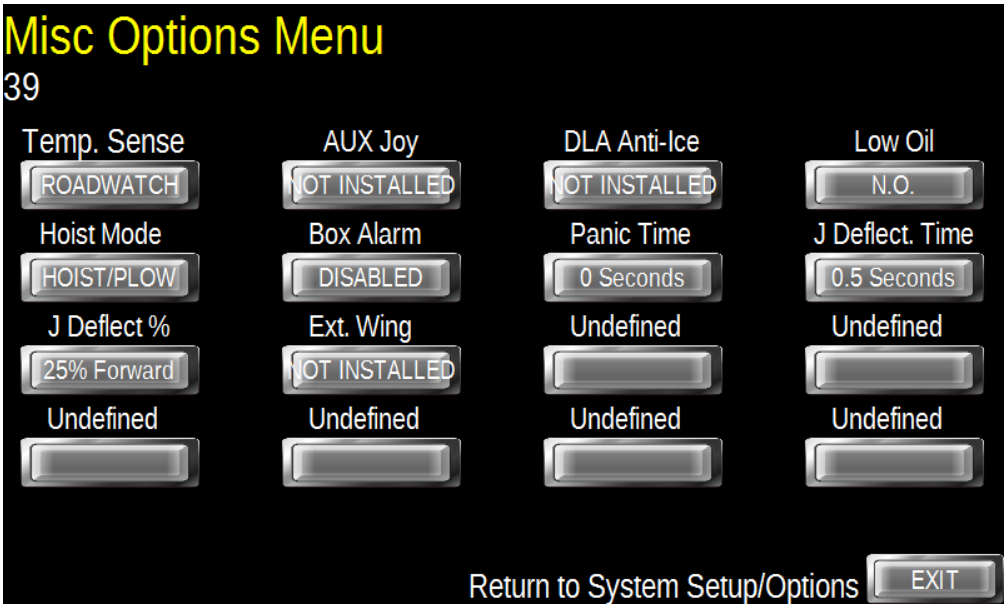
Auxiliary Options are for functions added on after the original release.

Wide Wing is for an operator alert while using a Wide Wing.

Equipment options are just Gate and Pre-Wet setups.

System Setup is to access the Truck Setup menus.

# Misc. Options




Tapping the text on the button under **Temp Sense** will toggle between the VAISALA ™ sensor and the ROADWATCH ™ sensor.

**Aux Joy** is to tell the system if an Auxiliary Joystick module is installed

**DLA Anti-Ice** is to tell the system if the DLA module is installed.

**Low Oil** selects between Normally Open or Normally Closed low oil level sensors.

**Hoist Mode** forces Hoist only so the joystick will only operate the hoist when selected.

When **Box Alarm** has a rate set, if the truck is moving at or above the set rate and the box is Not Down it will cause a Persistent Alarm until the truck is moving under the set rate or the box is down.

**Panic Time** is the duration of time for the panic function.

# Misc. Options Continued

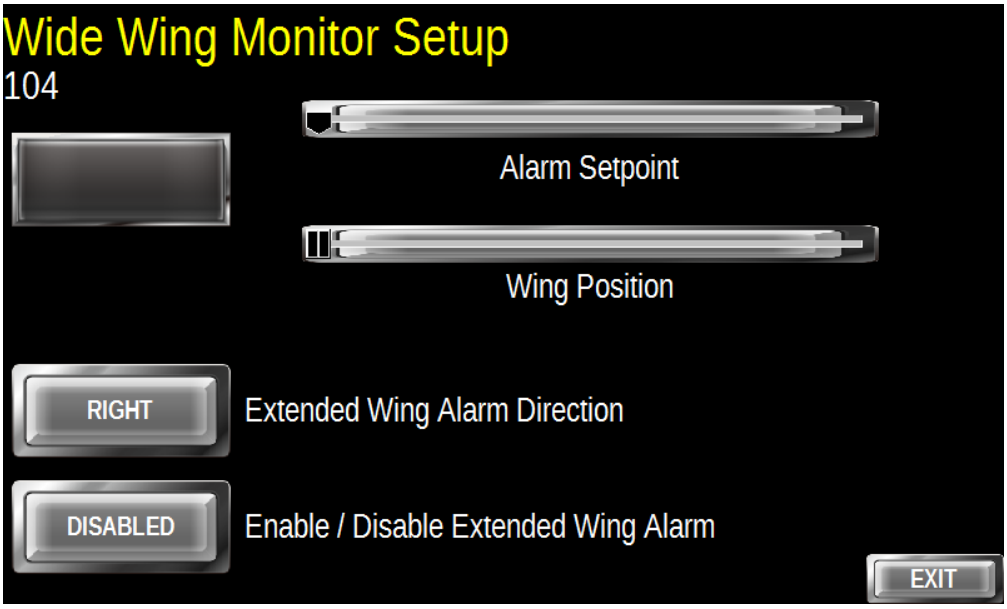
**J Deflect. Time** is the duration the Joystick has to be equal to or greater than the Deflection Setpoint to deem the Selected Plow as being Down.

**J Deflect. %** is the percentage of deflection threshold to need to be met or exceeded to engage the Joystick Deflection Timer above.

Notes: The Selected Plow will be deemed as Up when the Joystick is pulled Back (Y Axis Plow) or Left (X Axis Plow) to activate an Up motion.

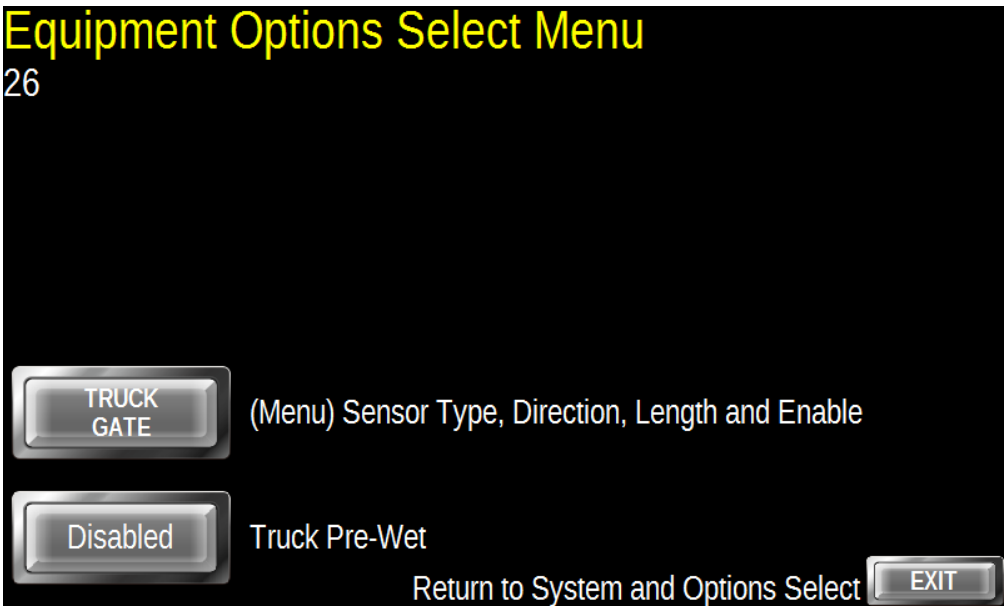
**Ext. Wing** allows for the Wing Plow to operate as a Six way Plow. If it is selected Joystick 3 Left and Right control is disabled. If the Joystick has Button 4 pressed the Left and Right directions control the Extend and Retract Functions of the Wing Plow.

# Wide Wing Monitor Setup




This function is under development at the time of writing. It is designed around a Wide Wing and is used to alert the operator if the wing is outside of the preset maximum distance from the truck.

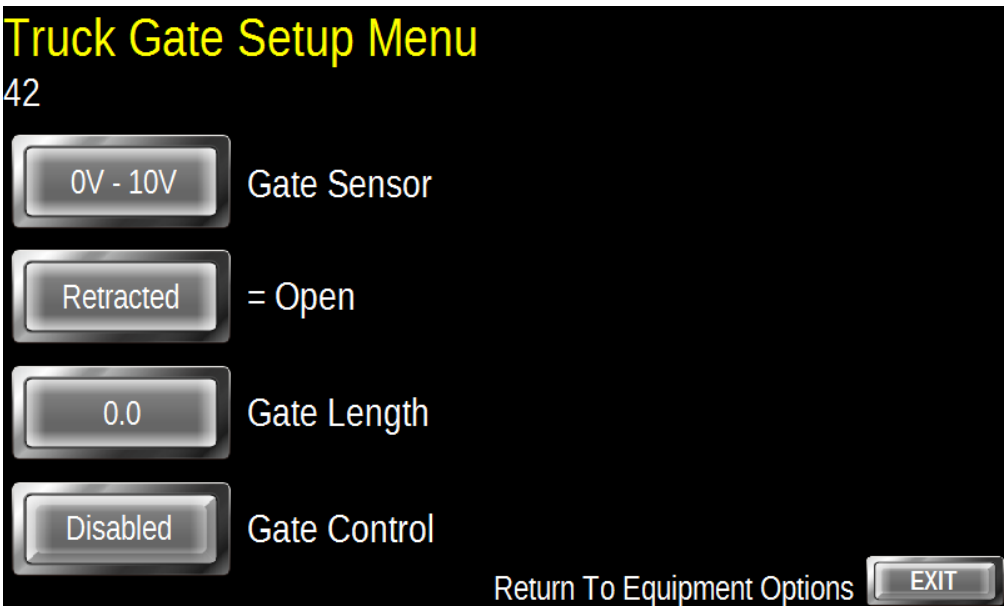
# Equipment Options Select




There are Gate Control functions for the Truck Sanding system. The details are beside each button and can be set up in that menu.

Enable or Disable the Pre-Wet systems per installed equipment.

# Truck Gate Equipment



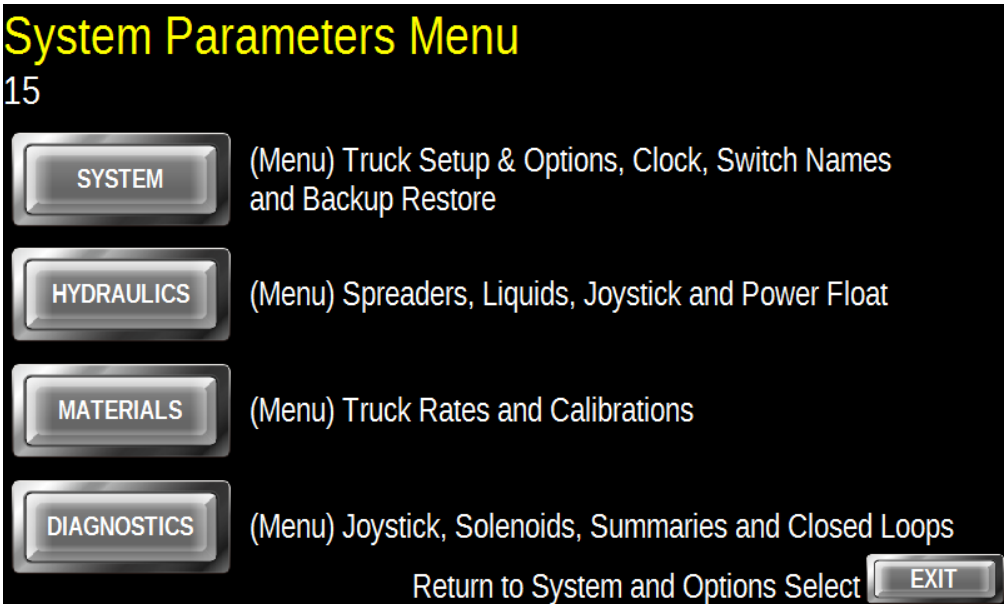

Select the Gate Sensor type to either 0.5V to 4.5V or 0V to 10V depending on the type of sensor you have.

Set the Gate Direction to the way the gate is mounted.

Enter the length of the gate stroke.

Enable or Disable the Gate control.

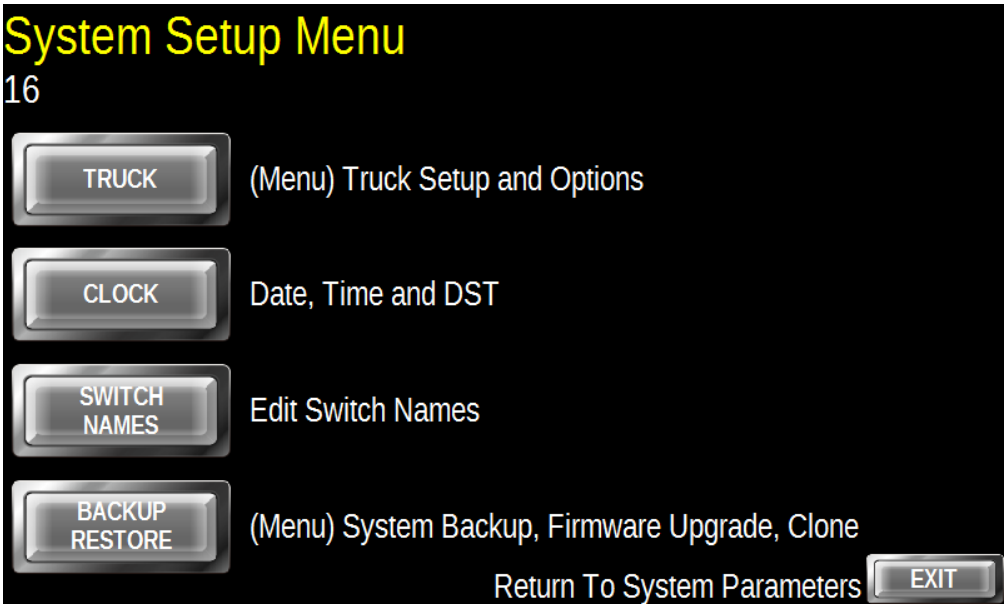
# System Parameters




Select which category you want to view or change based on the description beside the button.

Always Setup the System details first. This information is used for Reports, Configuration files and is where you place names for the Switches located on the Armrest.

# System Setup



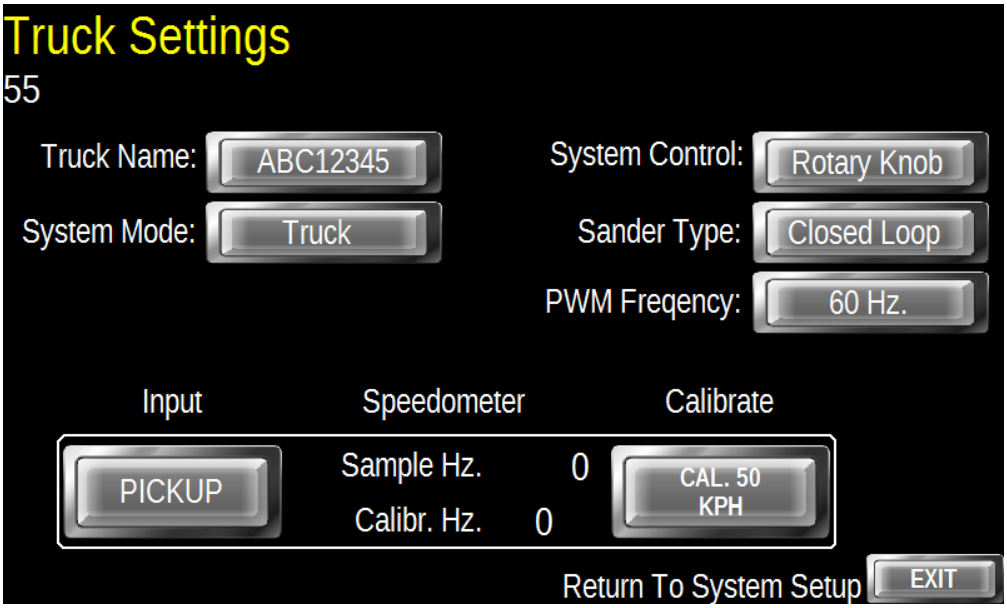

Always Setup the Truck and Options first.

Clock setup sets the Date and Time along with Enabling or Disabling DST as required.

Switch Names allow you to Edit 8 names for the Switches. These names are displayed on the operator screen so they can see what Lighting Functions are on or off at a glance.

Backup and Restore functions save the existing settings in the event that they are changed and no longer working correctly. There are other functions that use the USB Port for System Upgrades and creating Configuration files.

# Truck Settings




The Truck Name is very important to set. It must be a maximum of 8 characters and is used by the Reporting, CFG Generation and Cloning functions. It must be uppercase letters and numbers or one of the following characters: $ % ‘ - _ @ ~ ` ! ( ) { } ^ # &. It must not contain Spaces.

System Mode sets the Truck modes the Operator will be using in normal operation.

System Control is for future use and must be set to Rotary Knob.

Sander type is Closed Loop Manual or Ground Speed.

If the Speed signal is taken from the TCM or pickup inputs drive the truck at 50kph and press the Cal. 50 KPH button.

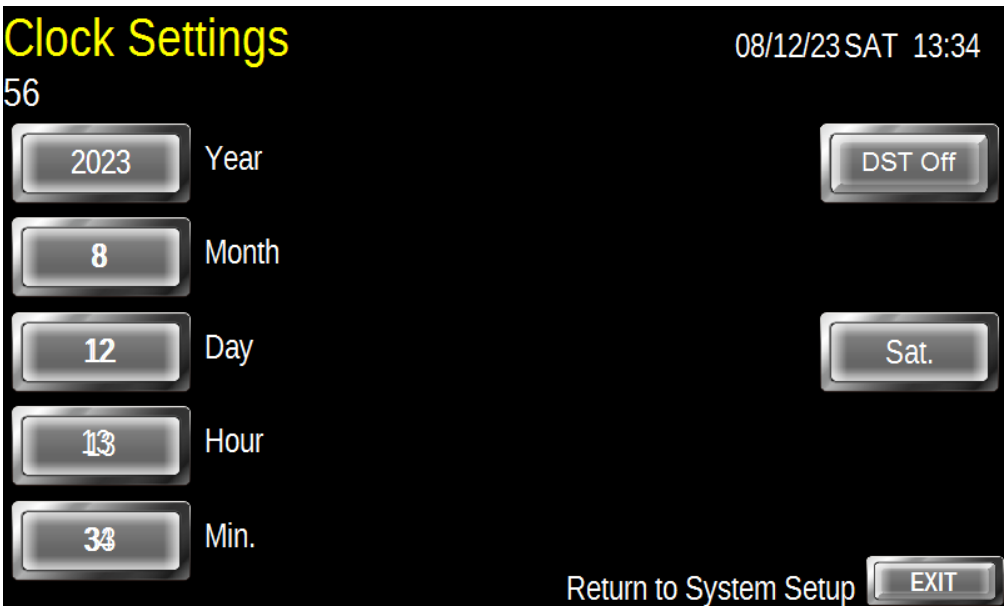
# Truck Settings Continued

Set the PWM Frequency per the valve manufacturers specification.

Speedometer can be set to J1939, Reluctor (sensor mounted on the transmission) or TCM inputs. J1939 requires no calibration.

To Calibrate the Speedometer in TCM or Pickup mode drive the Truck at 50 kph and tap the CAL 50 KPH button.

# Clock Settings




Enter the correct Date and Time as well as the preferred DST Mode as set for your location.

The day of week is displayed and is not able to be set. It is displayed in case there is an error in the Year or Month entries. If it does not match the current day of the week there is an error.

# Switch Names Editor


The Switches on the top row are Switches 1, 2 and 3 reading from left to right. The bottom row are Switches 4, 5, and 6 in order.

Switches 1, 2, 3 and 6 are for ON/OFF control typically used for Lighting. Switch 4 is a Momentary Double Throw Switch typically used for Tarp control. Switch 5 is a Maintained Double Throw Switch typically used for Tailgate control.

Tap any name and a Keyboard will pop-up allowing the Switch Name to be edited. Names can be up to 10 characters in length.

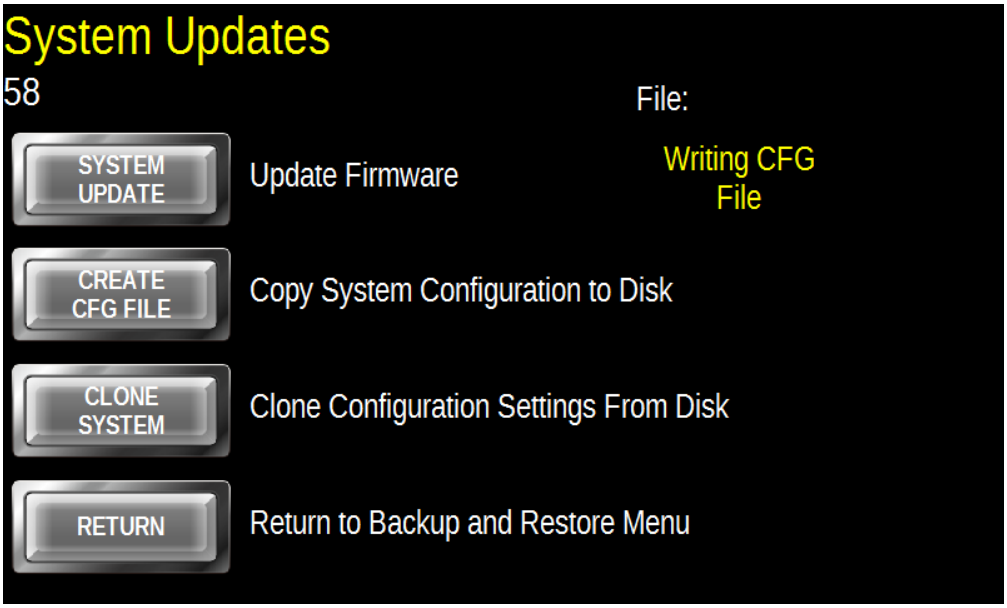
# Backup and Restore


Backup System should be done at the end of completely setting up the Truck Parameters. FIRST ensure you exit out of the setup back to the Driver ID screen. THEN return to this screen to backup. If a setting gets changed you can use the Restore System to recover these values.

The Truck has a Backup created by the OEM at the time the truck was built. If the settings get changed to something that is causing issues you can always get back to Factory settings with this button.

System Update takes you to a menu which is covered in System Updates.

# System Updates

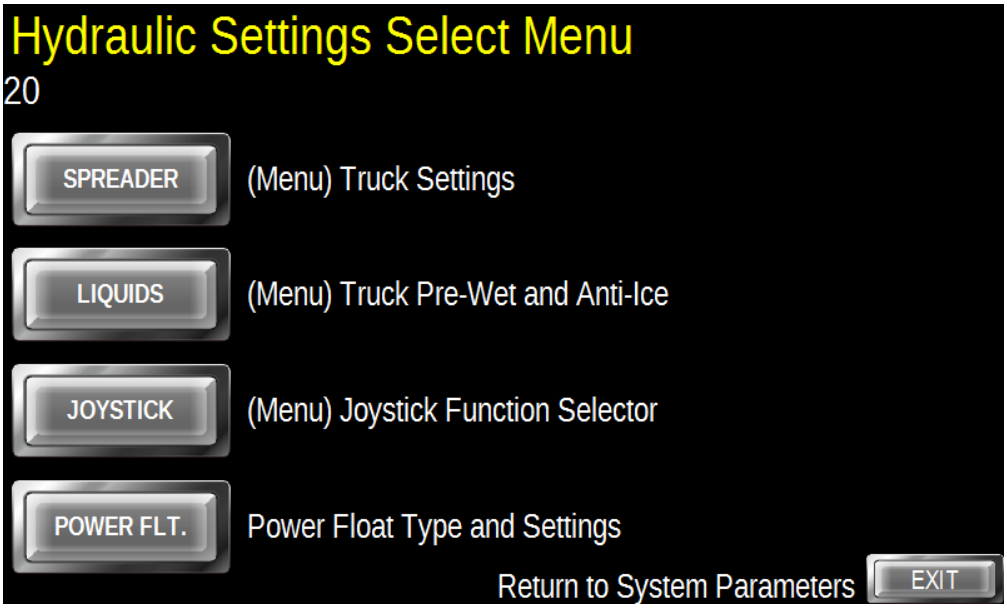



System Update will update the Operating System from a file on a Thumb Drive. The file format is X:\SYSUPBIN\SYSUPxxx.s19. The xxx will be the revision number eg. SYSUP100.s19 is version 1.00. Insert the Thumb Drive in the USB at the bottom of the Armrest and wait for 10 seconds to allow the System to read it. Then tap the System Update button and it will display the File Name. You can either press the System Update button to proceed or wait 5 seconds and the System Update will exit.

Create CFG File copies the current System Parameters onto the Thumb Drive using the Truck Name you set at the beginning.

Clone System copies the settings of the CFG File into the current truck. The CFG File has to be in the root directory of the Thumb Drive. THIS WILL OVER-WRITE ALL PARAMETER DATA INCLUDING TRUCK NAME. If you make a clone you MUST edit the Truck Name after.

# Hydraulic Settings Select

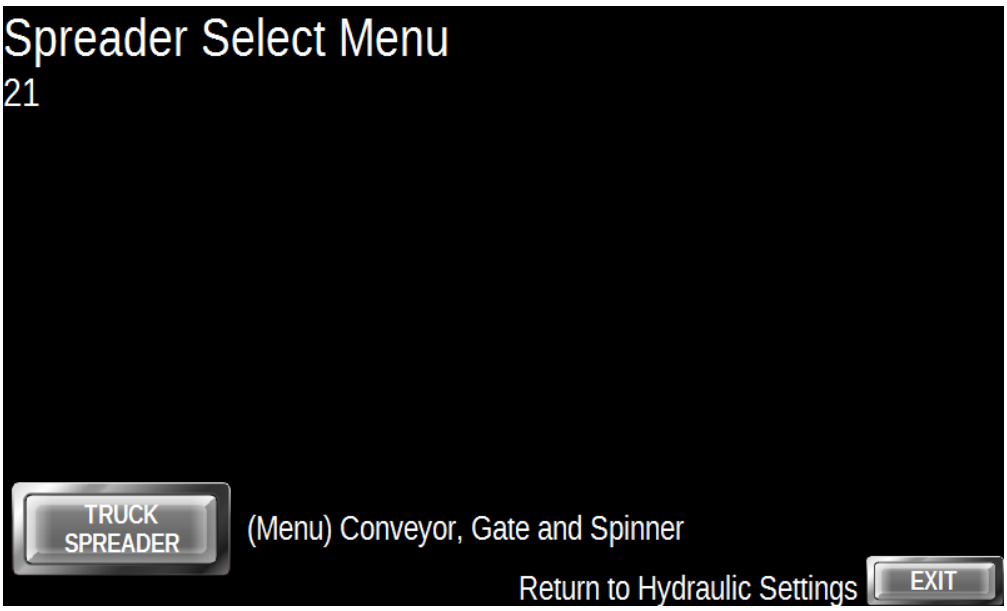



Select the category you want to work on based on the description beside the button.

Spreader, Liquid and Joystick all have menus to guide you through the Hydraulic Settings.

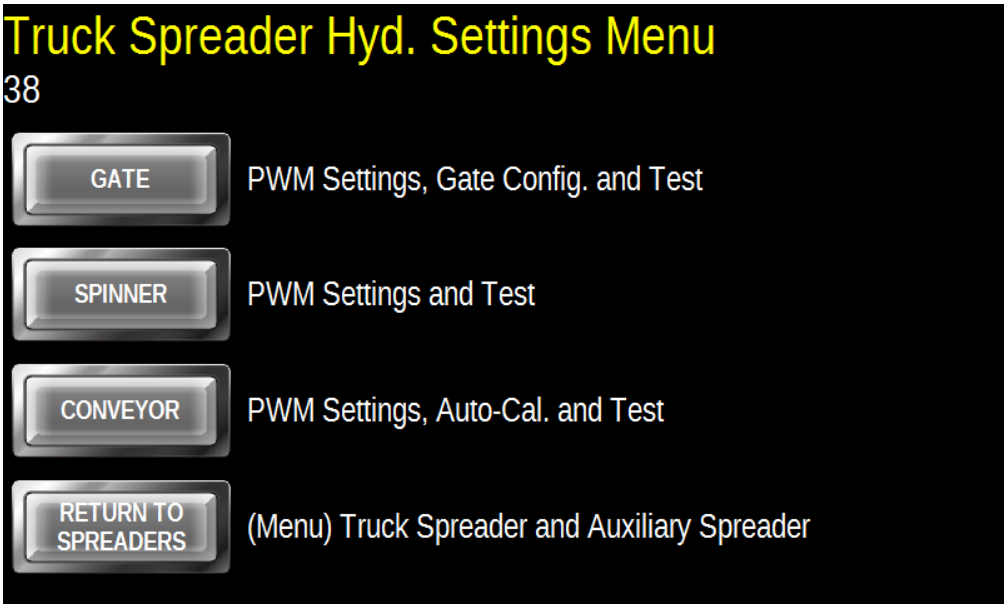
The Power-Float Setting are available through the Power Flt button.

# Spreader Select Menu




Select the Truck Spreader and that will take you to the required Screen.

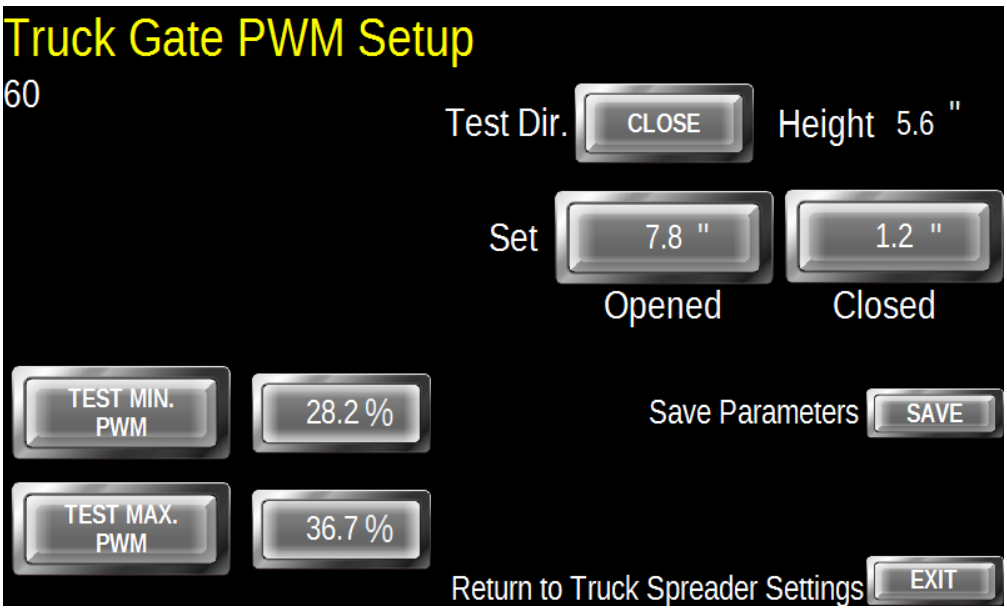
# Truck Spreader Hydraulic Settings




Select which Hydraulic System you want to setup and it will take you to the required screen.

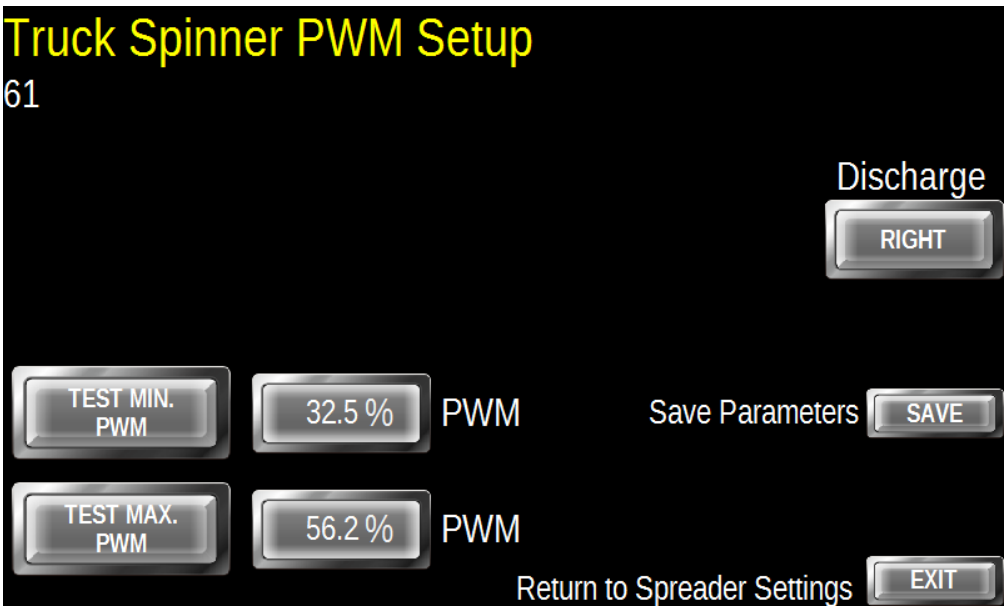
Press Return To Spreaders to exit back to the previous screen.

# Truck Gate Hydraulic Settings




Set the direction you want the gate to move during this setup.
Test the PWM Minimum and see if it is too fast or too slow. Tap on the Number to the Right of the Test button and change the value and re-run the test. Do this until the Gate is moving very slowly.
Test the PWM Maximum and see if it is too fast or too slow. Tap on the Number to the Right of the Test button and change the value and re-run the test. Do this until the Gate is moving very quickly.
The Gate Height is displayed at the top right With the Gate fully Open tap the Opened Button. Close the gate until it has about half of an inch still open and press the Closed Button.
Press Save Parameters to Save and Exit or press Exit to exit without saving the parameters.

# Truck Spinner Hydraulic Settings



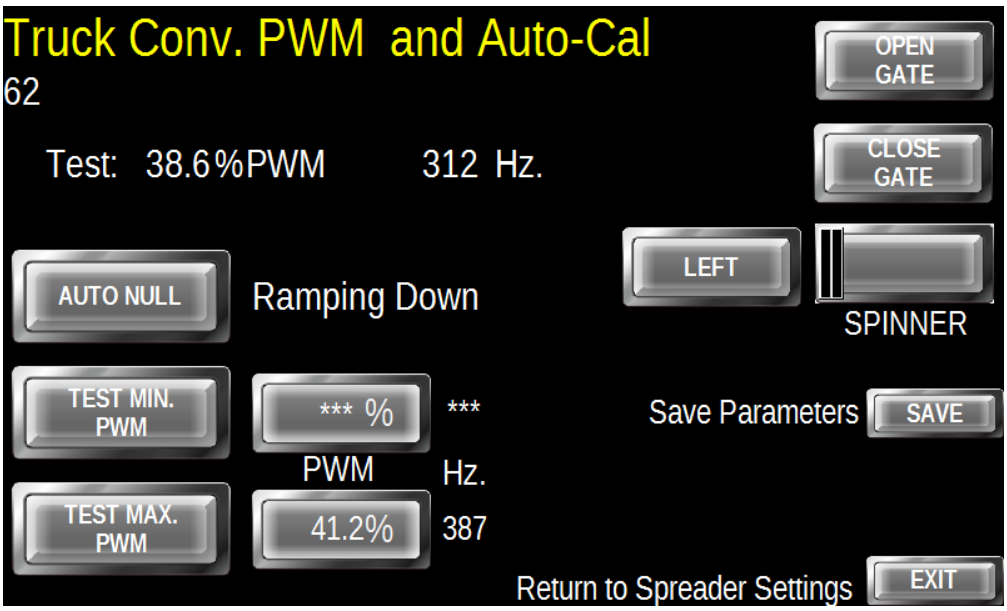

Set the Discharge Direction as needed to avoid casting Material or debris that may be on the spinner.

Test the Minimum PWM and adjust until the spinner rotates very slowly.

Test the Maximum PWM and adjust until the spinner rotates very quickly without excessive vibration.

Press Save Parameters to Save and Exit or press Exit to exit without saving the parameters.

# Truck Conveyor Hydraulic Settings



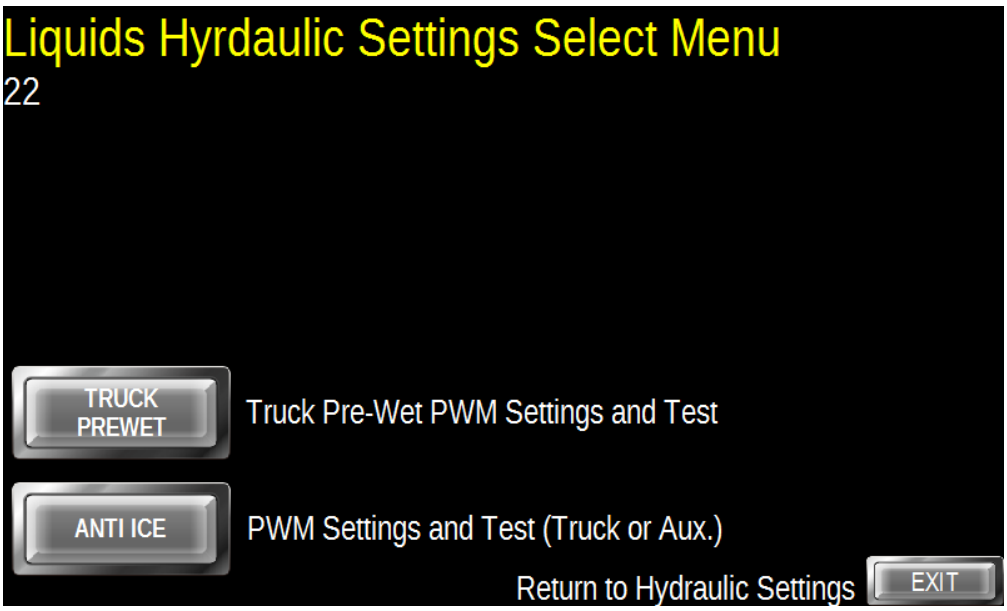

Gate and Spinner controls are available if required. Set the Spinner Speed and Direction before using Auto Null.

You can test the Conveyor using the Test Minimum and Maximum buttons. When you release the Test button the Conveyor will stop and the PWM will display along with the frequency.

It is HIGHLY RECOMMENDED that you use the Auto Null as the system gathers a lot of information about how the conveyor reacts. Just press the Auto Null button and it will advise you of the progress beside the Auto Null button.

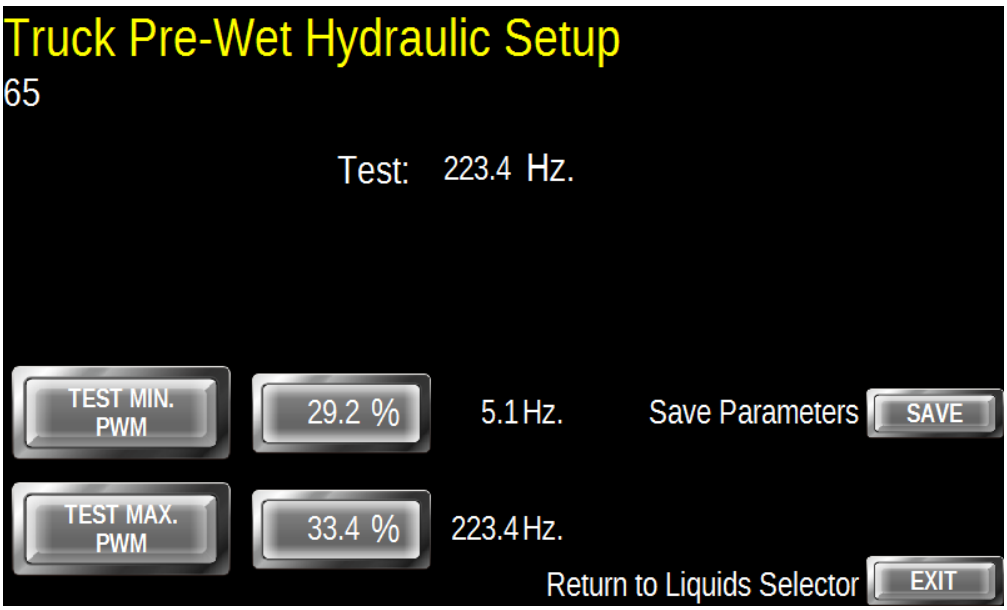
Press Save Parameters to Save and Exit or press Exit to exit without saving the parameters.

# Truck Liquid Hydraulic Settings



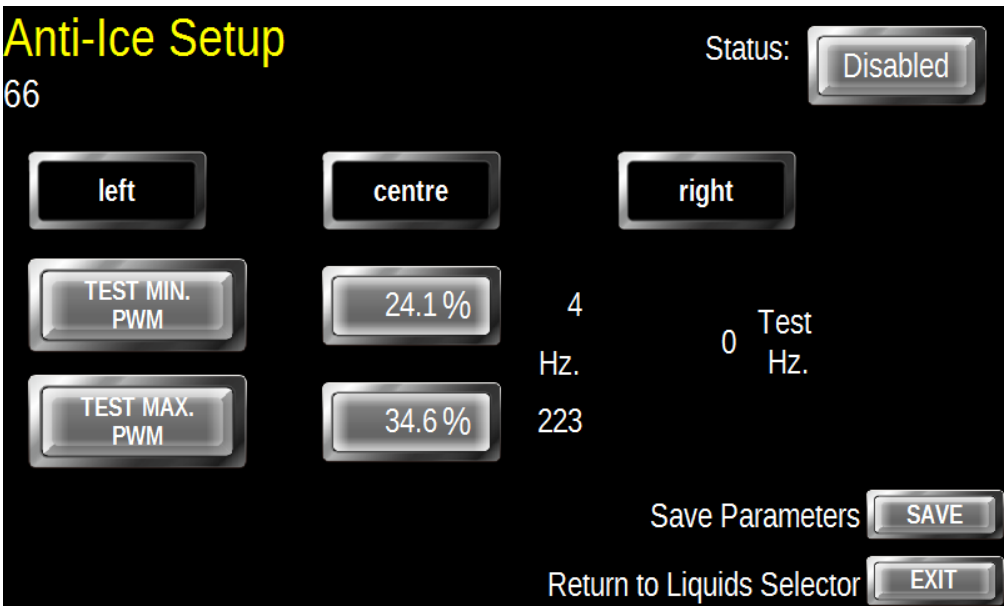

Select which Liquid System you want to work with.

# Truck Pre-Wet Hydraulic Settings




Test with the Minimum and Maximum PWM buttons and set the Minimum and Maximum PWM values so that the pump still turns without hesitation at the Minimum and so that the pump does not exceed the manufacturers specification at Maximum. The frequency will display beside each PWM value. Either press Save to save settings and exit or press Exit to exit without saving.

# Anti-Ice (DLA) Hydraulic Settings

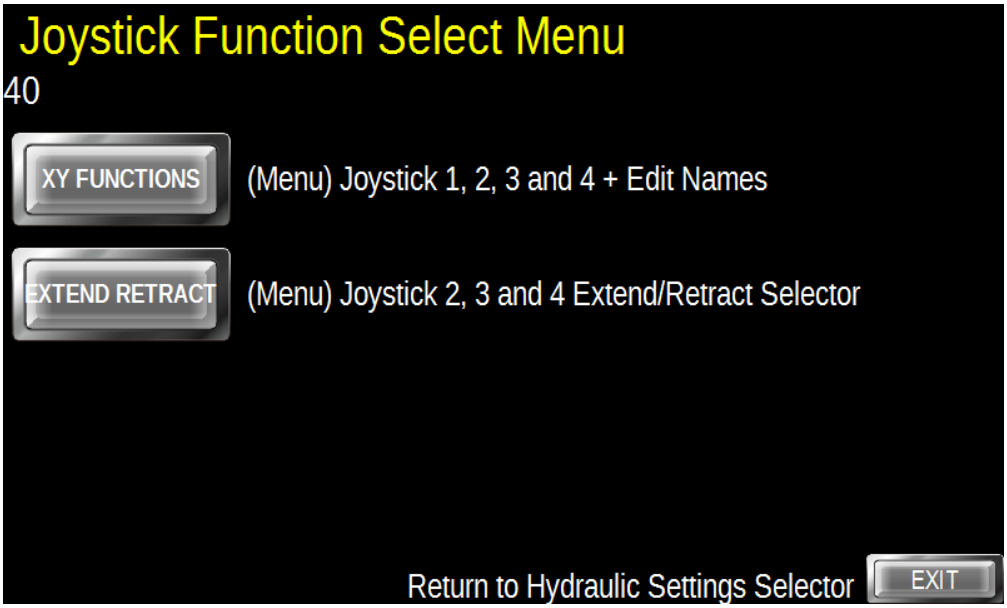



The Anti-Ice (DLA) System is used in Truck and Auxiliary applications.

The lane valves are controlled by pressing on the three knobs that are on the side. they will toggle the Lane Status when pressed for two seconds.

Test with the Minimum and Maximum PWM buttons and set the Minimum and Maximum PWM values so that the pump still turns without hesitation at the Minimum and so that the pump does not exceed the manufacturers specification at Maximum. The frequency will display beside each PWM value. Either press Save to save settings and exit or press Exit to exit without saving.
Note: If you Enabled the Anti-Ice in this screen you will need to exit out of the setup all the way to save the Enable prior to setting up the Hydraulic settings.

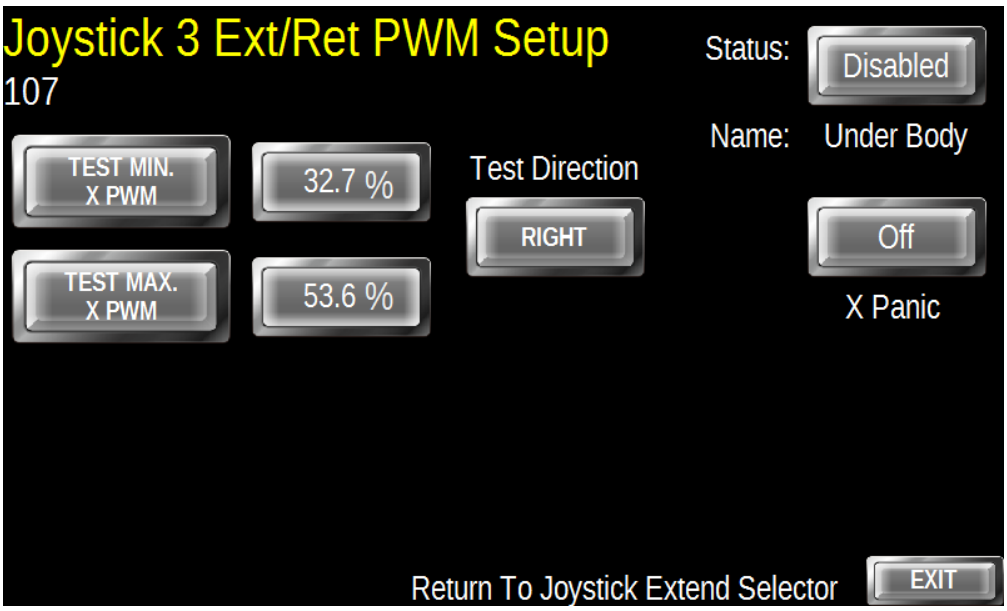
# Joystick Function Select Menu




The XY Functions Button takes you to a menu where you can select one of the four Joystick Functions to view and modify the PWM settings of the XY axes. In this menu you can view or modify the assigned names to the Joystick Functions.

The Extend Retract Button will take you to a menu where you can select the Extend Retract Functions of Joystick 2, 3 and 4 to view or modify PWM settings.

# Joystick Extend Retract PWM Setup

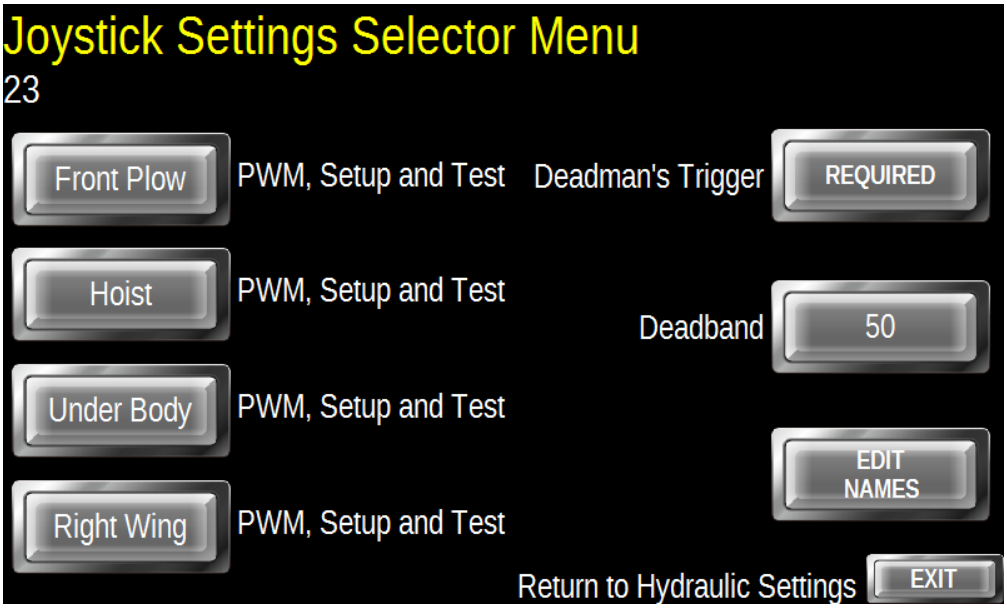



All three of the Extend Retract Functions are identical in setup. Only Joystick 3 Extend Retract PWM Setup is discussed.

The Joystick Extend Retract PWM Setup allows the viewing, modifying and testing of the Extend Retract PWM. Pressing the Test PWM buttons will apply Minimum and Maximum PWM to the Extend Retract cylinders in the direction selected in the Test Direction field. PWM values can be modified by tapping on the number and entering new values using the pop-up keypad.

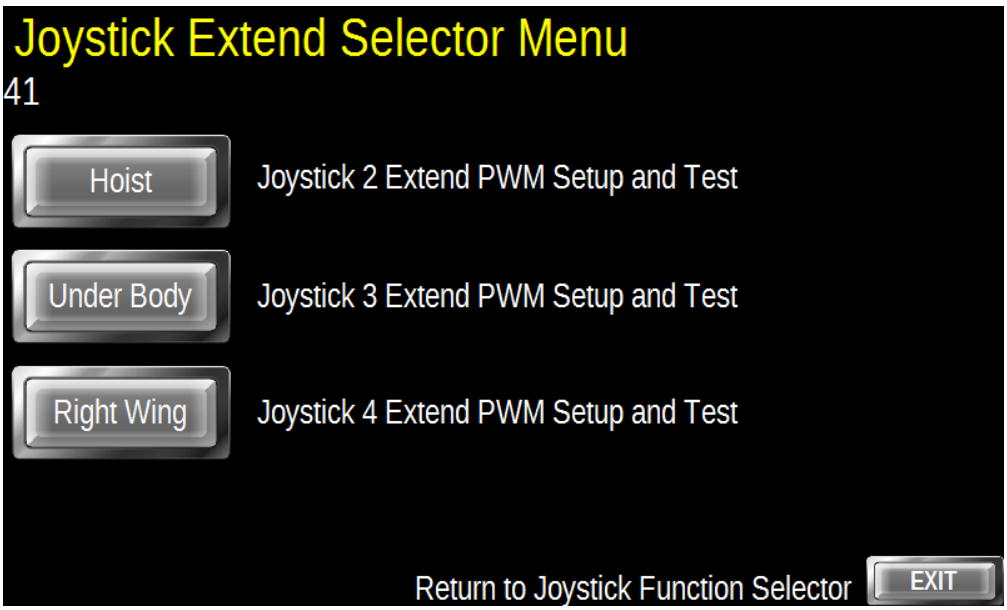
Pressing the EXIT button will return you to the Joystick Extend Selector menu.

# Joystick Settings Selector




Select the type of “Deadman’s Trigger” type as required by the government regulations in your area.
“Not Required” will allow the operator to operate the selected plow or hoist functions without pulling back on the trigger.
“Required” will require that the operator has the trigger pulled to operate the current selected plow or hoist function.
“Alt Function” will operate the front plow without the trigger being pulled unless the Hoist Mode (see Misc. Options) is set to Hoist Only and the Joystick Mode is Hoist. In this case the joystick will only operate Hoist and Pup Hoist functions. Pulling the trigger will switch from the front plow to the selected function and releasing will return to the front plow.
Deadband is the travel from centre to start the Joystick PWM. The smaller the number the more reactive the Joystick becomes.
The joystick function names can be edited in the menu reached with the Edit Names button.
Select the joystick function you want to setup and it will take you to that setup page.

# Joystick Settings Selector



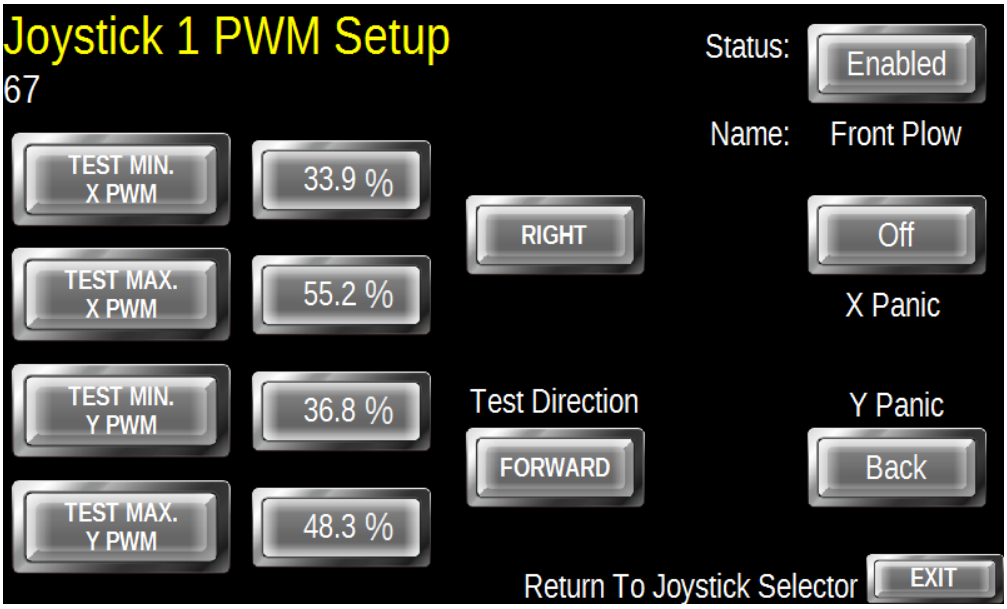

Select the Joystick Function that you want to view or modify the PWM Settings for. This will take you to the PWM settings screen for that Joystick Function. Of note: Joystick 2 is the default Truck and Pup Hoist Control. The Extend and Retract Functions are the default for a Side Dump body. Joysticks 3 and 4 are typically used for Under Body and Wing functions and the Extend Retract are default for those functions.

Pressing the EXIT button will return you to the Joystick Function Selector,

# Joystick Names Editor

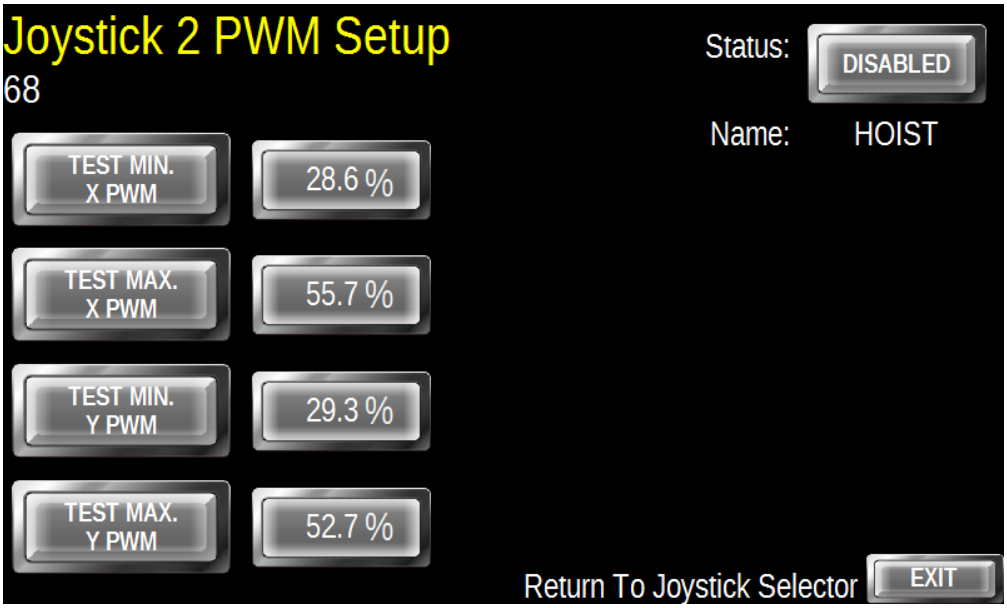

Tap directly on the name on the button you want to edit and a Pop-Up keyboard will appear. Enter the name you want to assign to the function and press Enter.
Press Return To Joystick Selector and it will take you back to the Joystick Selector.

# Joystick 1 PWM Setup




Joystick 1 is unique to the other three functions. It is intended to operate the Front Plow and the Power-Float system works off of this as well. This plow function can be Enabled or Disabled.
Using the Test Direction buttons select the direction of travel on either the X or Y axis. Setup the Minimum PWM so that the plow travels very slowly when the Test button is pressed. Setup the Maximum PWM so that the plow moves quickly, but slow enough for the operator to control it.
Set the panic directions to the way the operator would have to move the plow to retract the plow. This example shows Panic X as Off and Panic Y as being Pulled Back. In this example a panic condition will raise the plow only.

# Joystick 2 PWM Setup




Joystick 2 is unique to the other three functions. It is intended to operate the Truck Hoist and Pup Hoist (if installed). This hoist function can be Enabled or Disabled.

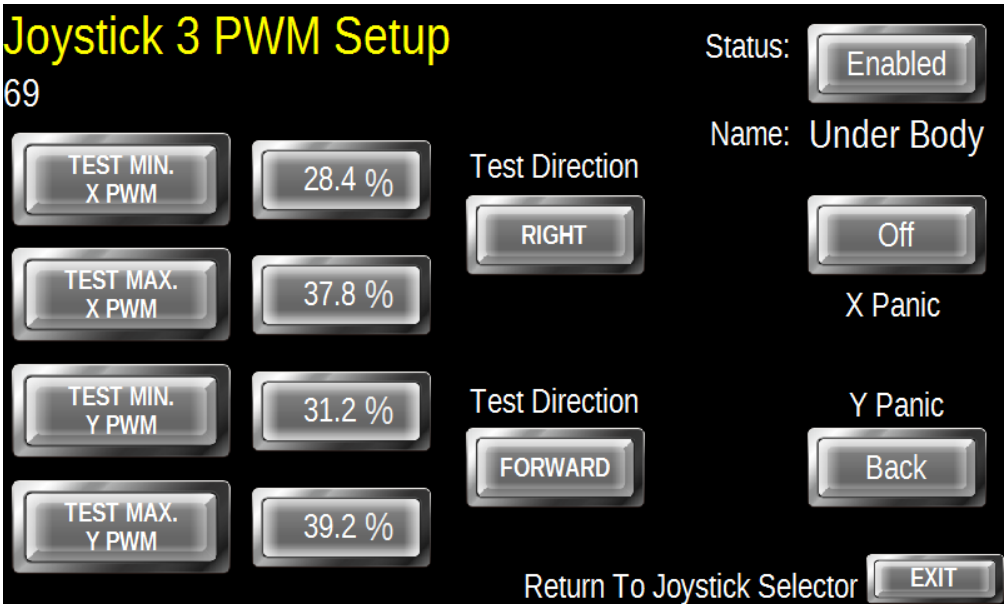
Using the Test Direction buttons select the direction of travel on either the X or Y axis. Setup the Minimum PWM so that the Hoist travels very slowly when the Test button is pressed. Setup the Maximum PWM so that the Hoist moves quickly.

The X axis controls the Pup.

Of note: the hoist down is gravity operated so your setup should focus on the Hoist Up speed.

There are no panic functions on hoists.

# Joystick 3 PWM Setup



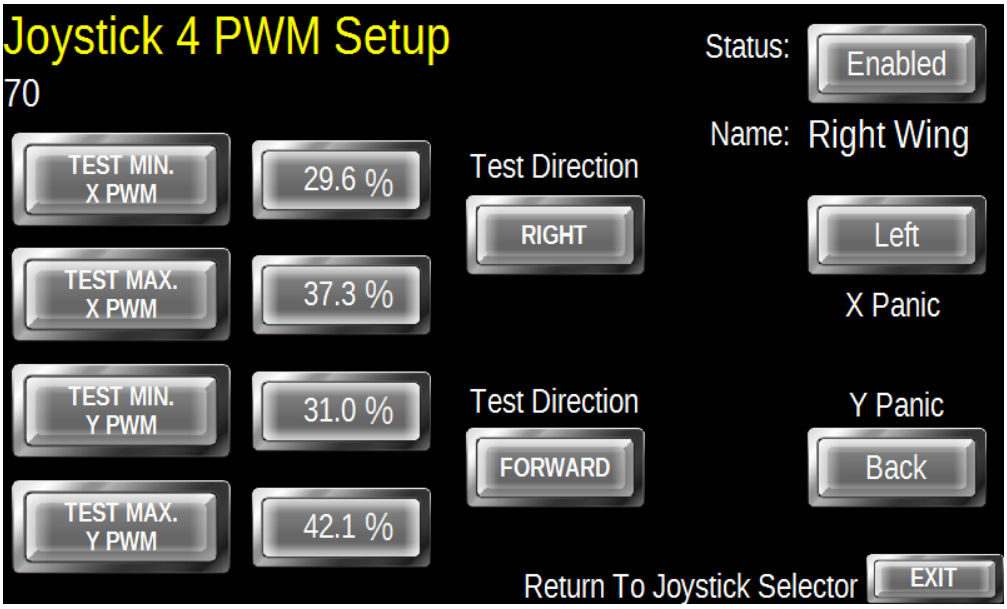

Joysticks 3 and 4 can either be generic four-way plow controls or the Joystick 3 X Axis can be redirected to accommodate a Six Way Wing in the Options Menu. The Joystick 3 settings including panic apply to the Wing Extend and Retract Functions.

These plow functions can be Enabled or Disabled. This example is that of a 4 way Under Body Plow.

Using the Test Direction buttons select the direction of travel on either the X or Y axis. Setup the Minimum PWM so that the plow travels very slowly when the Test button is pressed. Setup the Maximum PWM so that the plow moves quickly, but slow enough for the operator to control it.

Set the panic directions to the way the operator would have to move the plow to retract the plow. This example shows Panic X as Off and Panic Y as being Pulled Back. A panic condition will raise the Plow.

# Joystick 4 PWM Setup



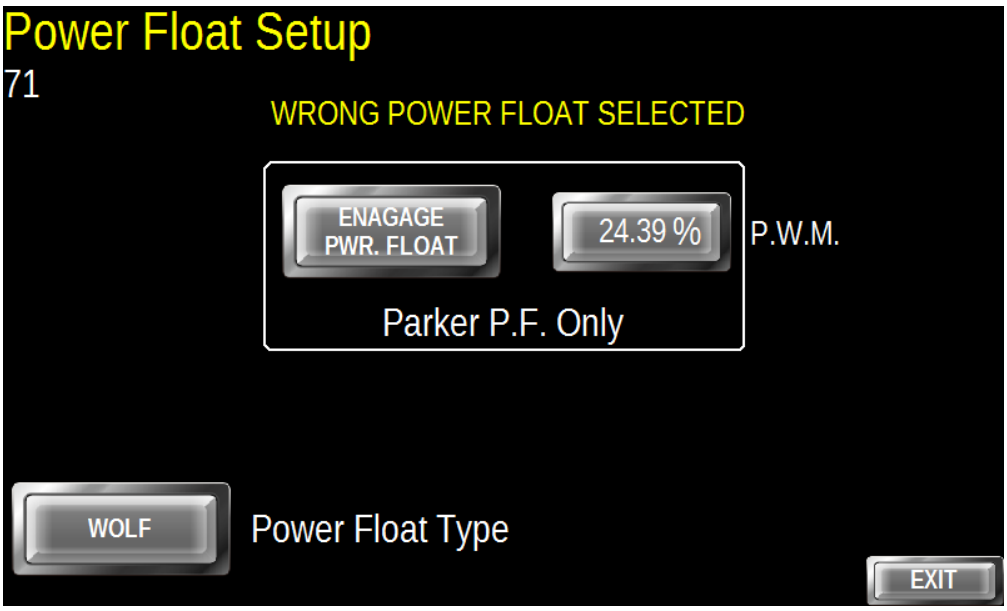

Joysticks 3 and 4 can either be generic four-way plow controls or the Joystick 3 X Axis can be redirected to accommodate a Six Way Wing in the Options Menu. The Joystick 3 settings including panic apply to the Wing Extend and Retract Functions.

These plow functions can be Enabled or Disabled. This example shown is that of a 4 way Right Wing.

Using the Test Direction buttons select the direction of travel on either the X or Y axis. Setup the Minimum PWM so that the plow travels very slowly when the Test button is pressed. Setup the Maximum PWM so that the plow moves quickly, but slow enough for the operator to control it.

Set the panic directions to the way the operator would have to move the plow to retract the plow. This example shows Panic X as Left and Panic Y as being Pulled Back. A panic condition will raise the plow and move it to the Left as is is a Right wing.

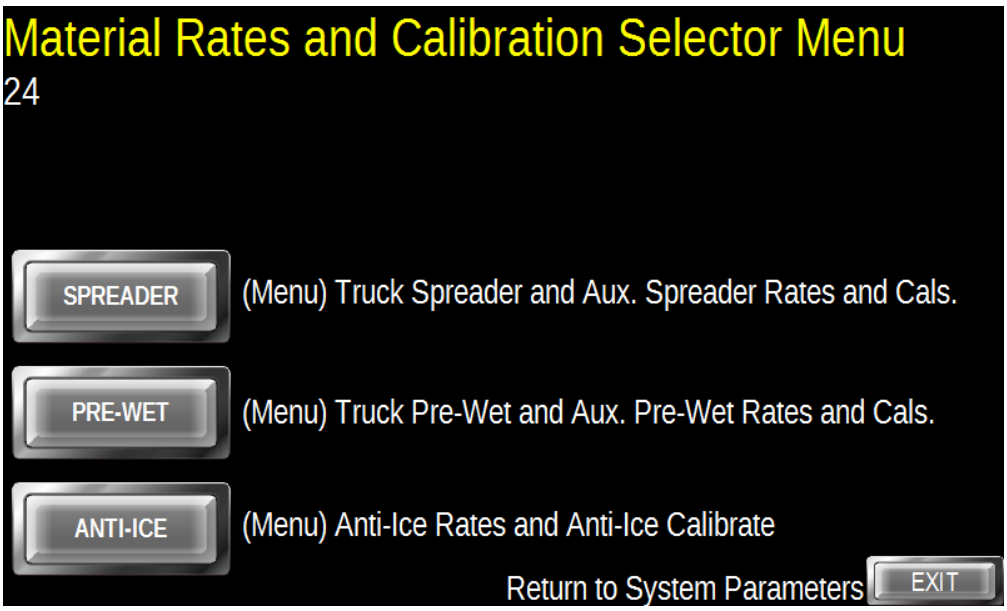
# Power-Float Setup




The system supports multiple Power-Float arrangements. Select from Off, Wolf ™, Danfoss ™ (same as Rexroth ™) or Parker ™.

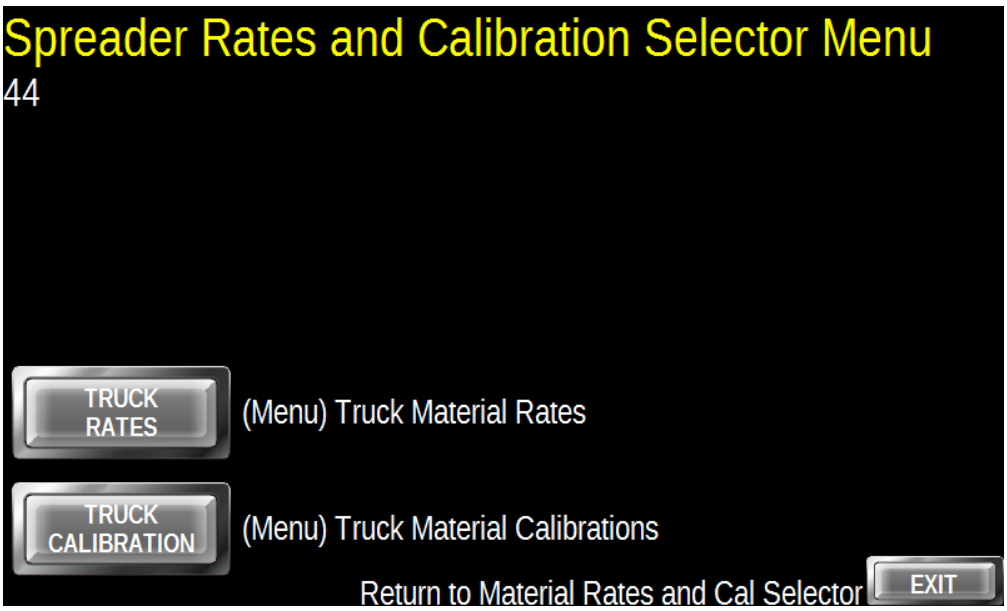
The Parker ™ arrangement requires a PWM calibration and has two decimal places resolution. Even very small changes to this value have a great effect. Place the blade on a concrete or asphalt surface, engage the Power-Float and adjust the PWM until the desired weight is on the plow.

# Material Rates and Calibration Selector



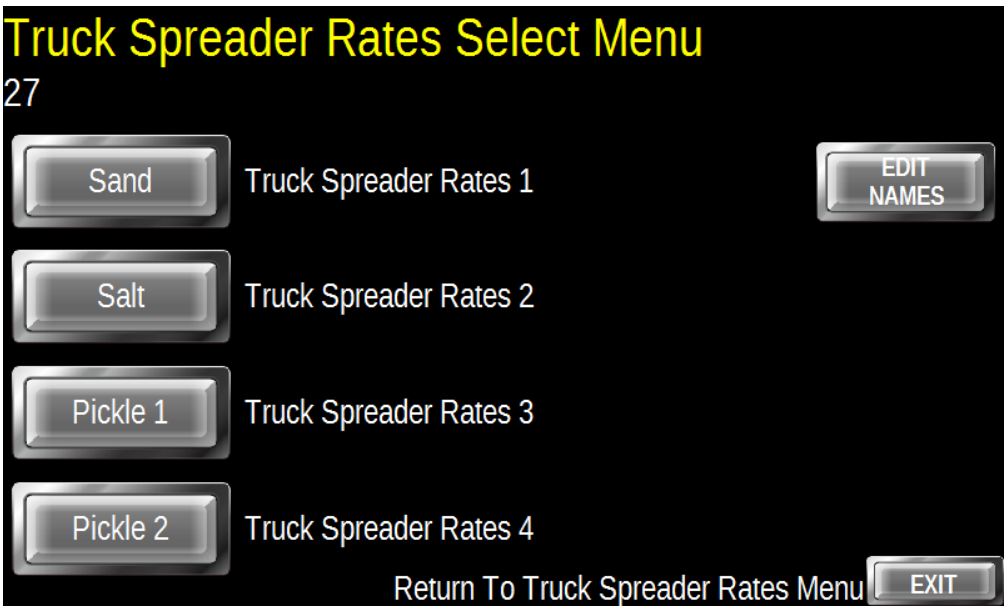

Select which system you want to setup rates for or calibrate material values.

# Spreader Rates and Calibration




Select which operation you want Rates or Calibration

# Spreader Rates Select

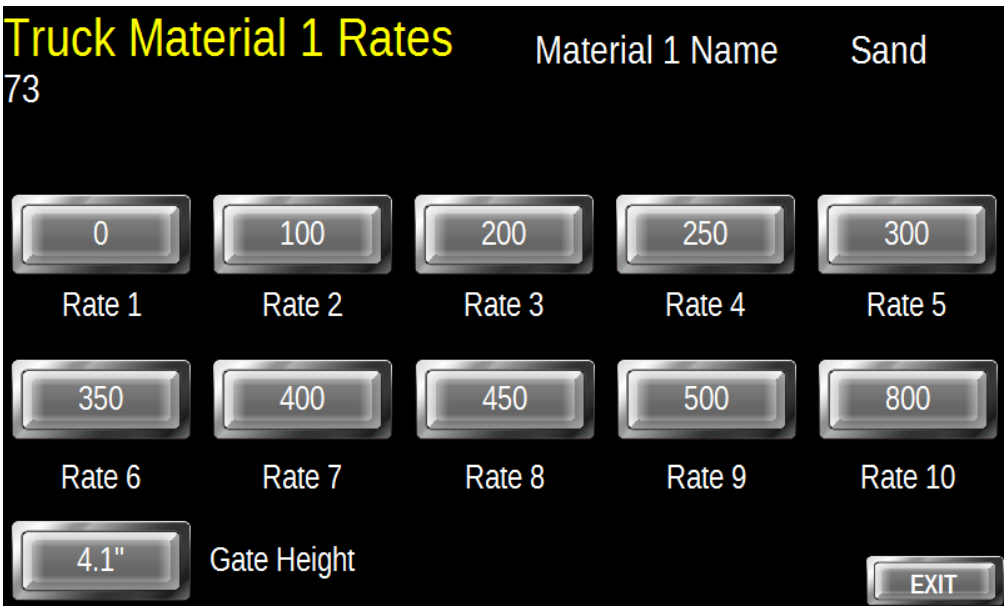



Select which material you want to setup rates for. You can change the names of the materials by pressing the Edit Names Button.

# Truck Material Names Editor

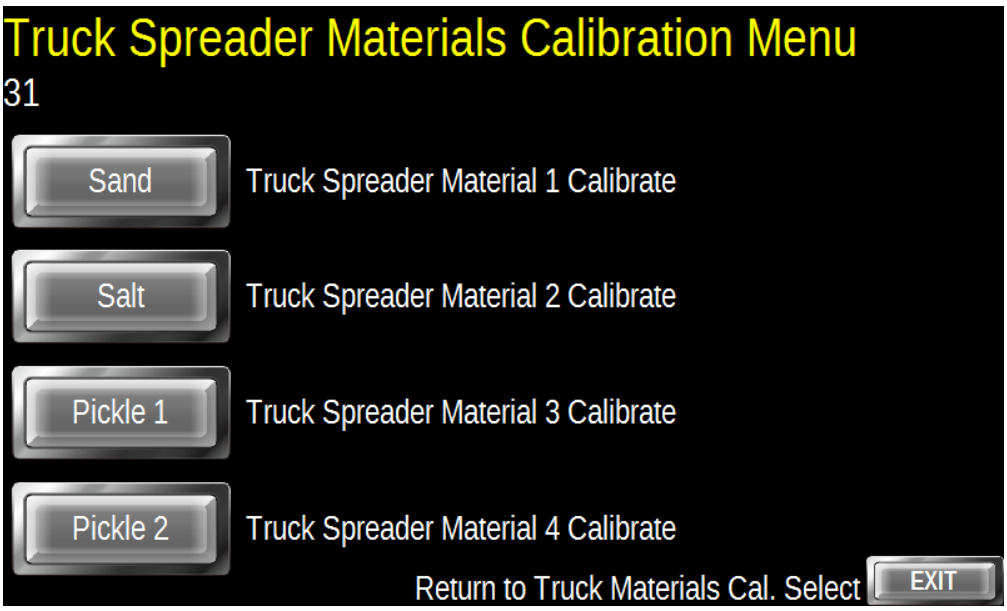

Tap directly on the name on the button you want to edit and a Pop-Up keyboard will appear. Enter the name you want to assign to the function and press Enter.
Press Return To Spreader Rates and it will take you back to the Spreader Rates screen.

# Truck Material 1 Rates



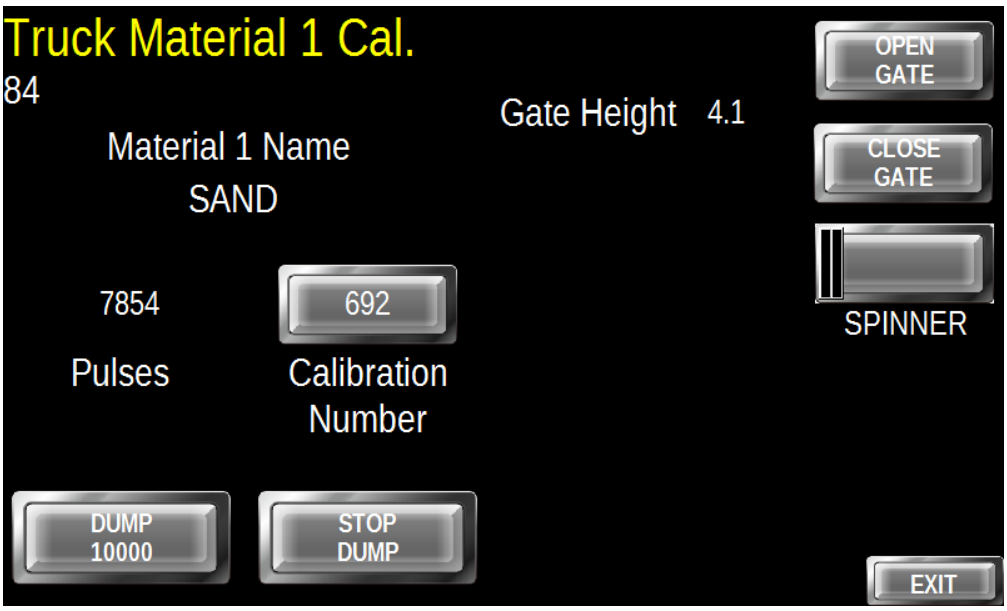

All Material Rates are setup identically so only Material 1 Rates are discussed.
Material Rates are expressed as kg./km.
Always set Rate 1 as 0.Enter the rates as required by pressing on the number on the button and using the Pop-Up Keypad to enter the values.
The Gate Height is set the same way, just tap on the number and change as required.

# Truck Material Calibration Selector




Select which material you want to calibrate

# Truck Material 1 Calibration




All Material Calibrations are identical so only material 1 is discussed.

Ensure the truck has enough of a load in it so that the material is enough to complete a calibration. Typically 1000kg is more than ample.

Make sure you are in a safe environment and that there are no persons or equipment that can be damaged.

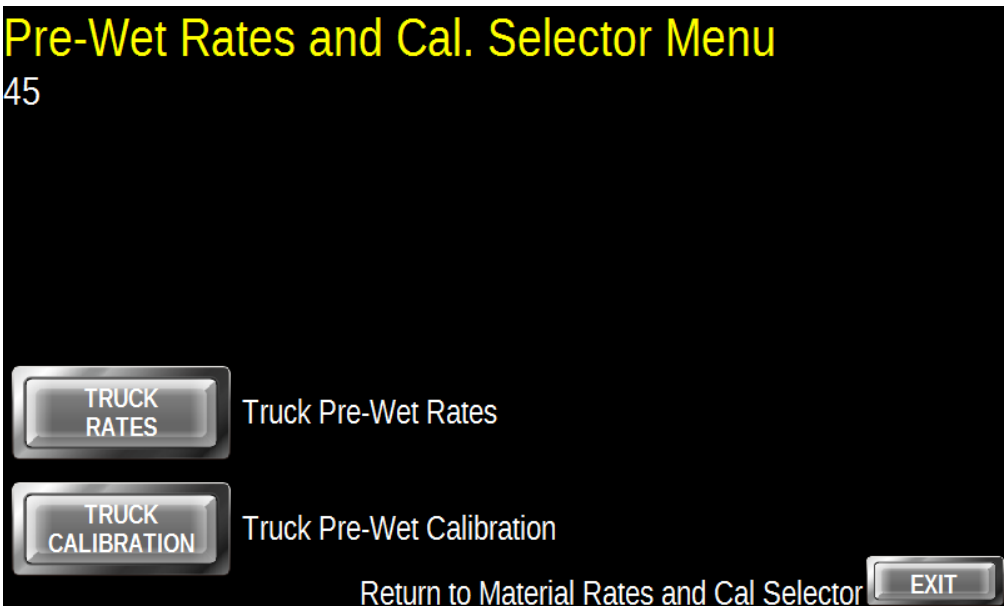
Weigh the truck. If the gate is manually set complete this with the Gate Control buttons at the top right. If it is a mechanical gate set it by hand.

With the truck engine at 800+ RPM press the Dump 10000 button and the system will offload 10000 pulses. The Closed Loop Gate Control will open the gate to position prior to the offload.

Close the gate if required and weigh the truck again. Enter the difference in the Calibration Number field by pressing the existing number and using the Pop-Up keypad.

Press Exit to return to Materials Selector.

# Pre-Wet Rates and Cal. Selector



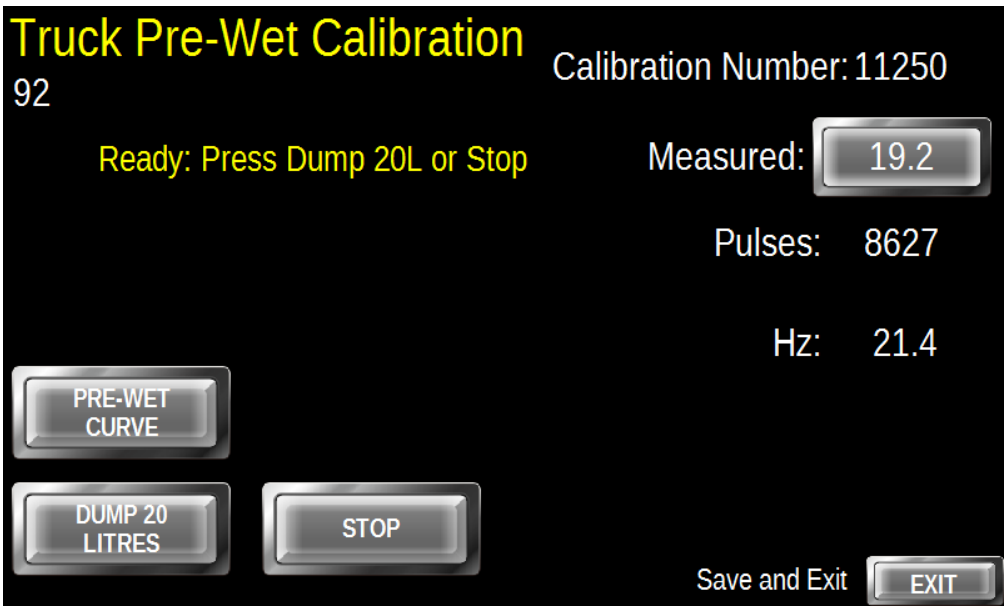

Select either Rates or Calibration

# Truck Pre-Wet Rates


Pre-Wet Rates are expressed as l./t.

Rate 0 is always 0. Enter the rates by pressing on any number and a Pop-Up keypad will show to enter the new value.

# Truck Pre-Wet Calibration

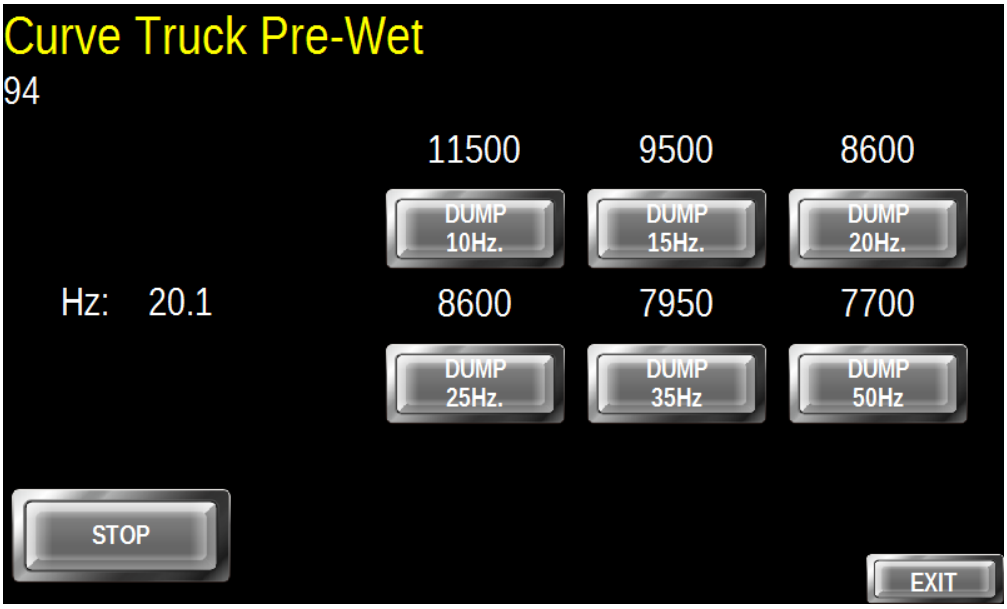



Place a 25 l. graduated container below the Pre-Wet nozzle. Press Dump 20 Litres and the Pre-Wet system will dispense an amount of liquid as calculated by the existing Calibration Number. A dialog will indicate progress and advise the operator where it is as well as prompt the operator to take action when required. The sequence is as follows:

- The operator presses the Dump 20 Litres button.
- The system attempts to dump 20 litres and displays Dumping
- When the calculated dump is complete it displays Finished.
- It then prompts the operator to enter the measured volume or to Exit the calibration without saving.

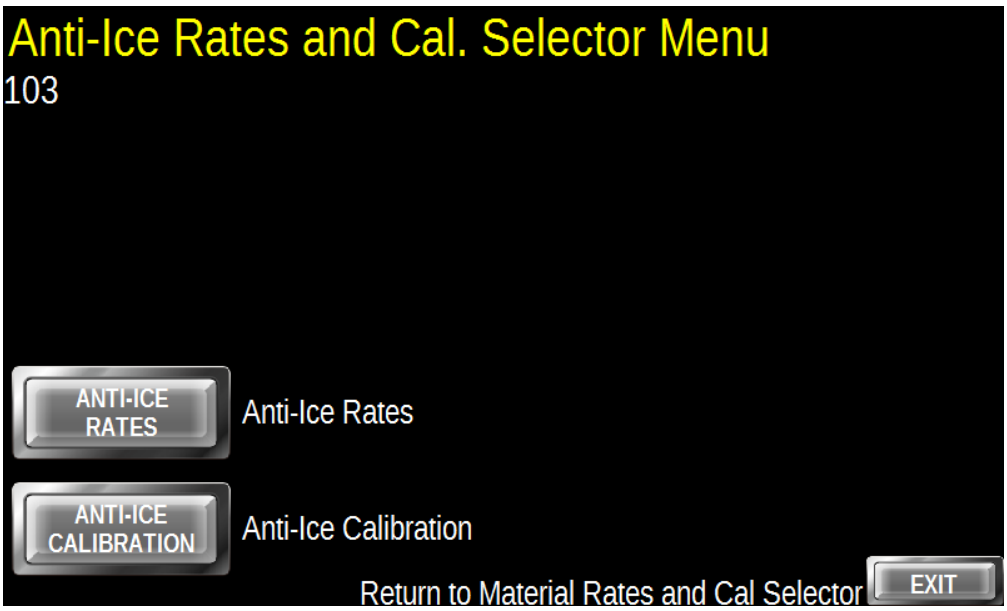
The Pre-Wet curve is pre-set from historical data to compensate for flow meter inaccuracies at low volume flow. This should only be used if a new flow meter is causing calibration errors.

# Truck Pre-Wet Curve



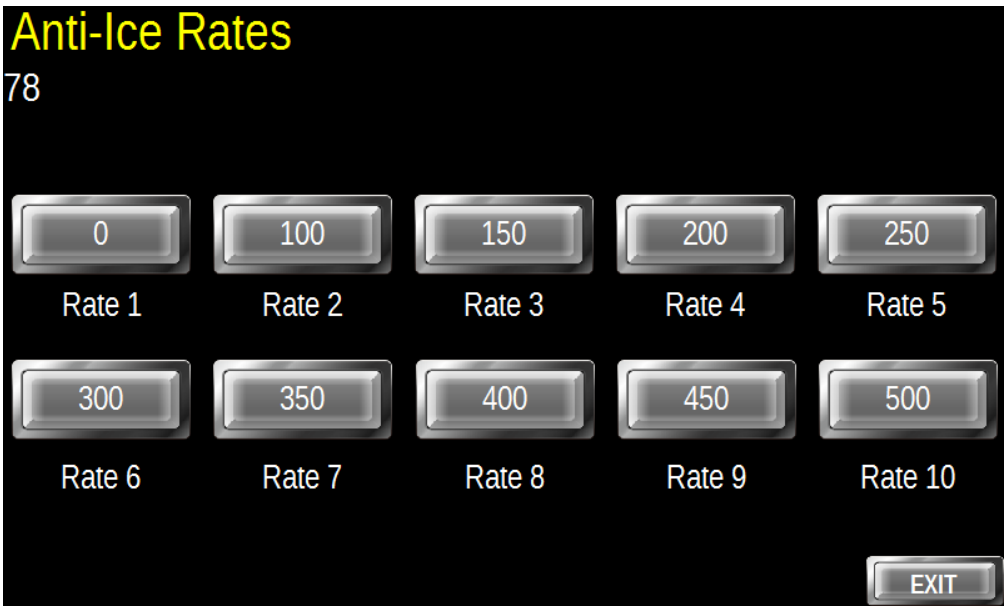

The Pre-Wet curve is pre-set from historical data to compensate for flow meter inaccuracies at low volume flow. This should only be used if a new flow meter is causing calibration errors.
Place a 20 l. graduated container below the Pre-Wet nozzle.
Press on each frequency in sequence and each time it will dump the calculated number of pulses for 20l. You will have to calculate the calibration number for each zone.
- The operator presses the Dump 20 Litres button.
- The system attempts to dump 20 litres and displays Dumping
- When the calculated dump is complete it displays Finished.
- It then prompts the operator to enter the measured volume or to Exit the calibration without saving.

# Anti-Ice Rates and Cal. Selector




Select between Rates Setup or Calibration

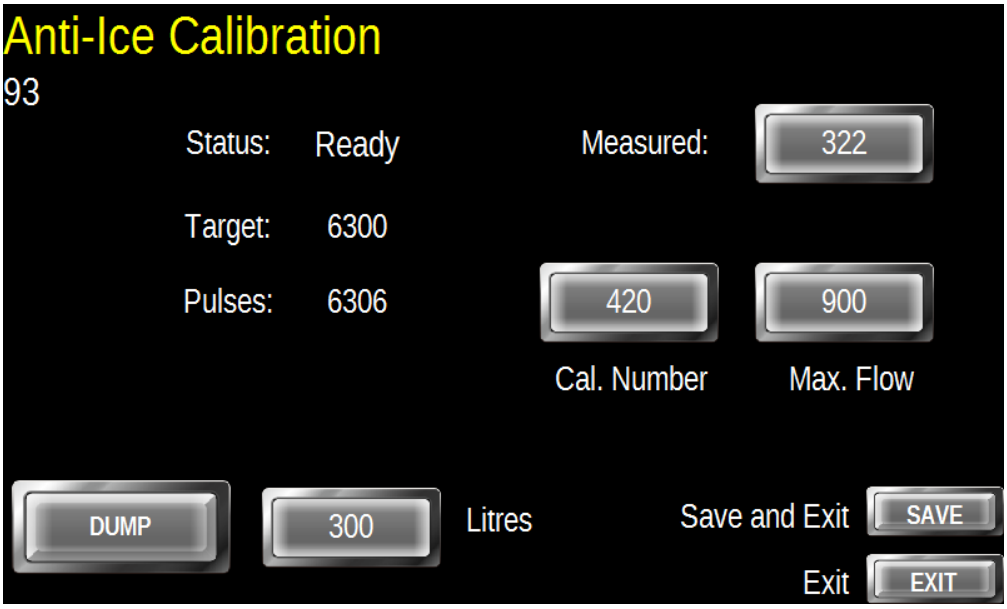
# Anti-Ice Rates Settings




Anti-Ice Rates are expressed as litres per lane kilometer.

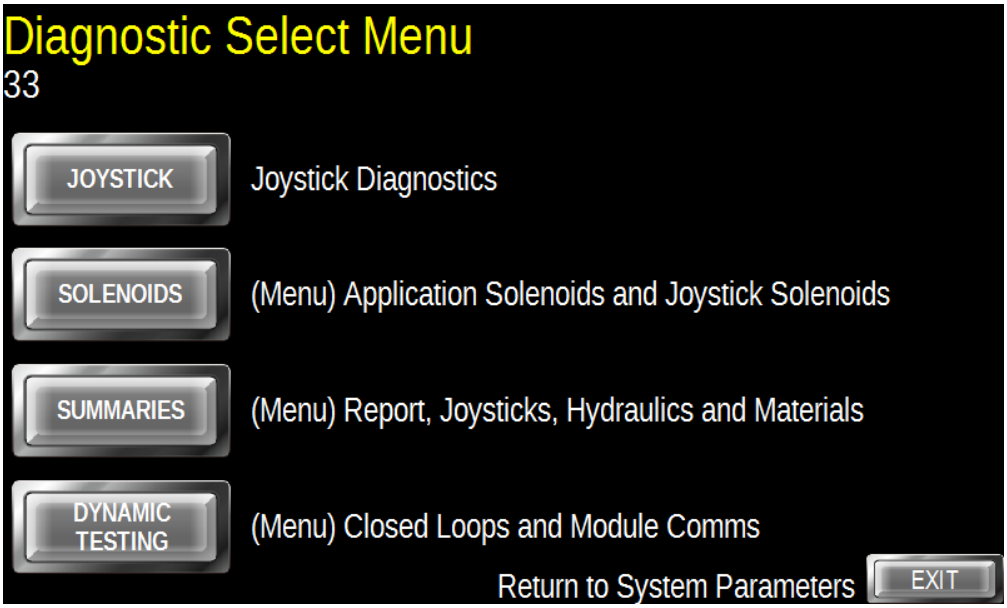
Rate 0 is always 0. Enter the rates by pressing on any number and a Pop-Up keypad will show to enter the new value.

# Anti-Ice Calibration




Setup a graduated tote that can hold at least 400 litres and run a hose from the Left Lane output into the tote.
Enter the flow meter calibration (number counts per 20 litres) located on the side of the flow meter and enter the maximum flow rate for the flow meter.
Enter the number of litres for your test (minimum 250) and press the Dump button. This will display the calculated number of pulses in the Target field, open the left lane valve and dump the number of pulses displayed in the Target Field. When the Status reports Complete enter the measured volume by tapping on the Measured field. If you choose Save it will recalculate the Cal. Number save and exit. You can choose Exit to exit without saving.

# Diagnostics Selector




This section is for trouble-shooting the system.

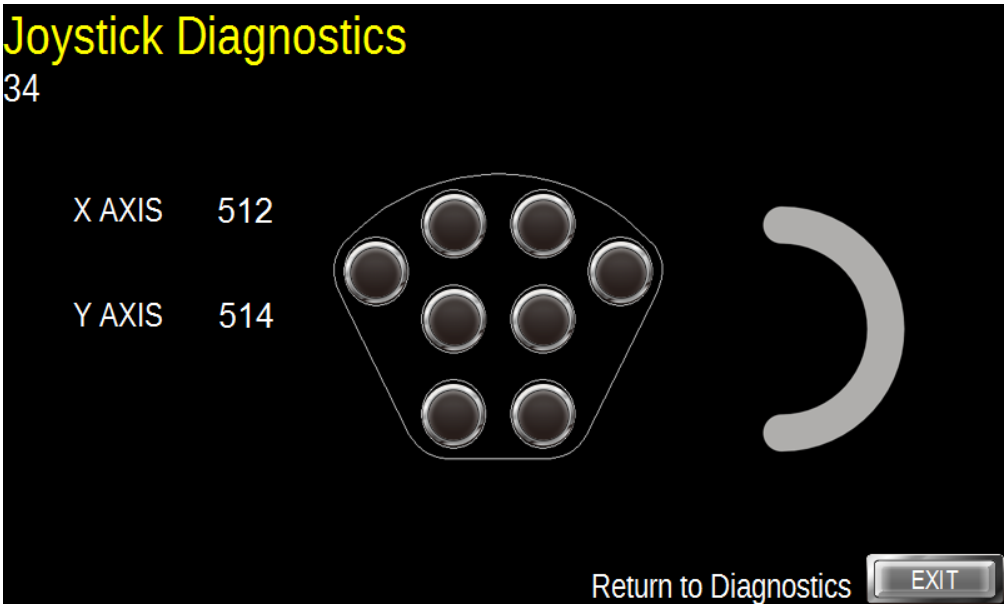
Joystick Diagnostics allow testing of the buttons as well as the X and Y axes.

Solenoids Diagnostics measures the current draw of any solenoid in the system for easy testing without leaving the cab.

Summaries is a reporting of the groups of settings to quickly go through the installed equipment at a glance.

Dynamic Testing takes you to Module Communications Diagnostics and Closed Loop setup.

# Joystick Diagnostics

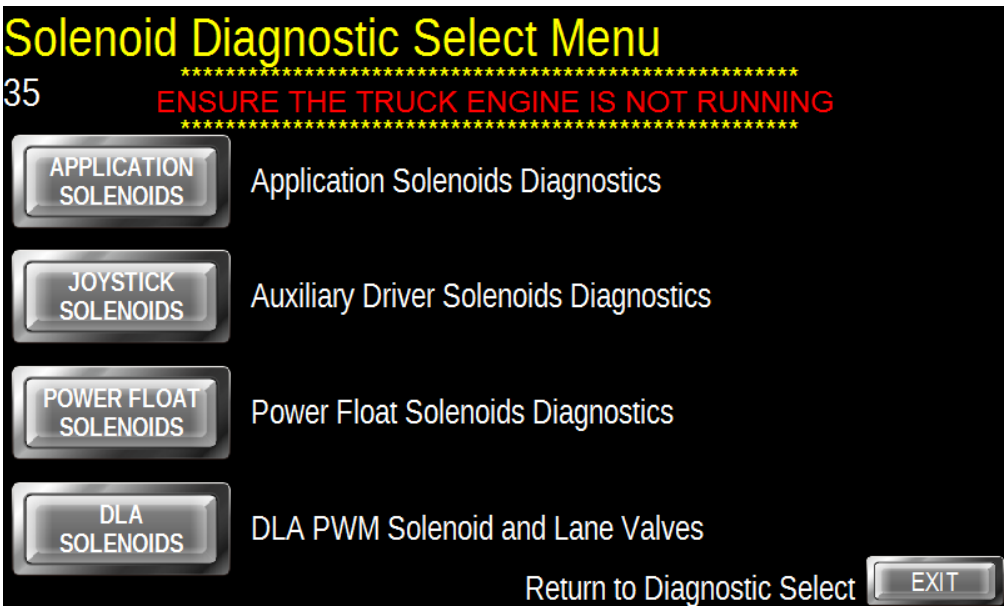



The X and Y axes  are displayed at the left of the screen. Centre position should read about 512. Full left on the X axis and full back on the Y axis should read about 105. Full right on the X axis and full forward on the Y axis should read about 920.

The 8 buttons on the face plate will turn white when that button is pressed.

Moving the trigger forward and back will show on the trigger graphic at the right.

# Solenoid Diagnostic Select

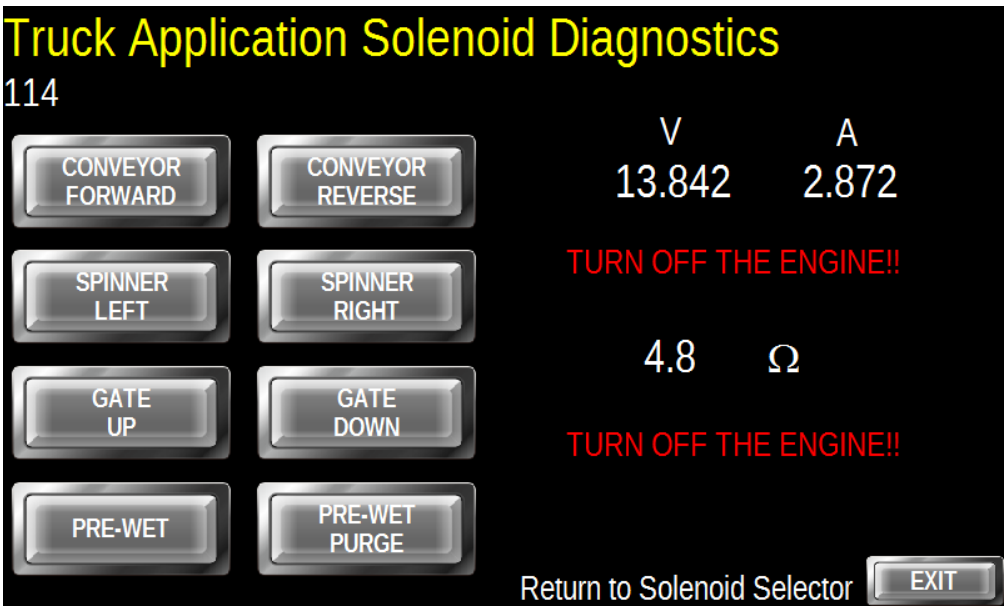



!!!!!!!!!!!!!!!ENSURE THE TRUCK ENGINE IS NOT RUNNING!!!!!!!!!!!!!!!!!!

Select which Solenoid Group you want to test.

!!!!!!!!!!!!!!!ENSURE THE TRUCK ENGINE IS NOT RUNNING!!!!!!!!!!!!!!!!!!

# Application Solenoid Diagnostics

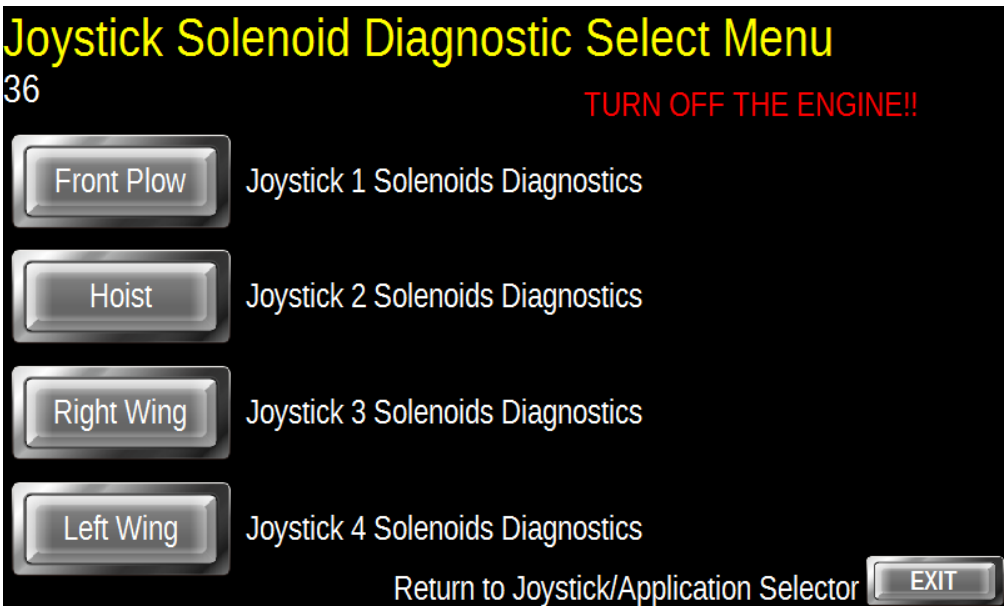



!!!!!!!!!!!!!!!ENSURE THE TRUCK ENGINE IS NOT RUNNING!!!!!!!!!!!!!!!!!!

Press on the button of the Solenoid you wish to test. The Module Voltage, Solenoid Current Draw and the Solenoid Resistance will show to the right of the screen. Only one solenoid can be tested at a time..

Asterisks indicate an open circuit.

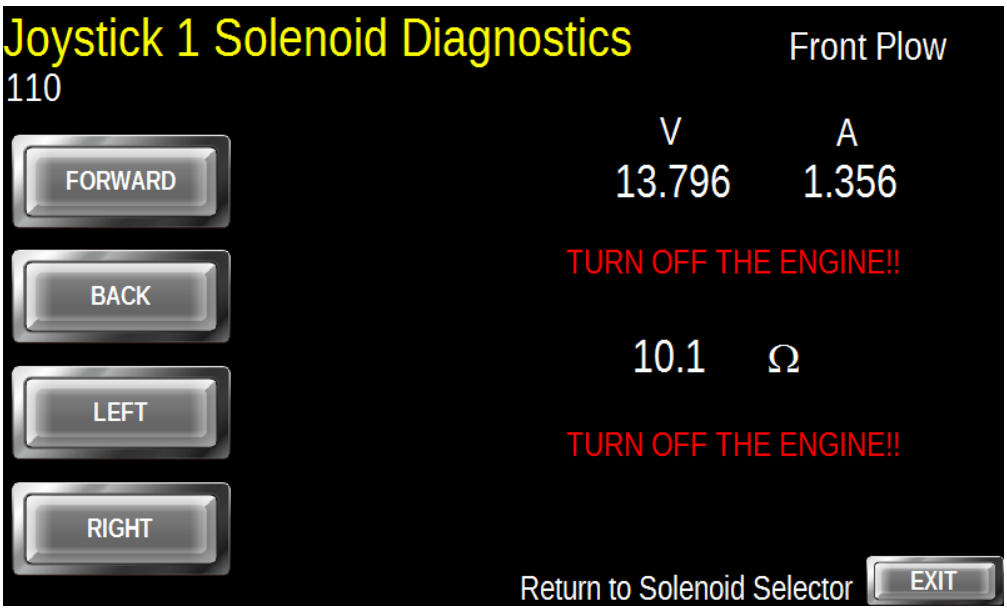
# Joystick Solenoid Diag. Select




!!!!!!!!!!!!!!!ENSURE THE TRUCK ENGINE IS NOT RUNNING!!!!!!!!!!!!!!!!!!

Select the Joystick to test.

# Joystick 1 Solenoid Diagnostics

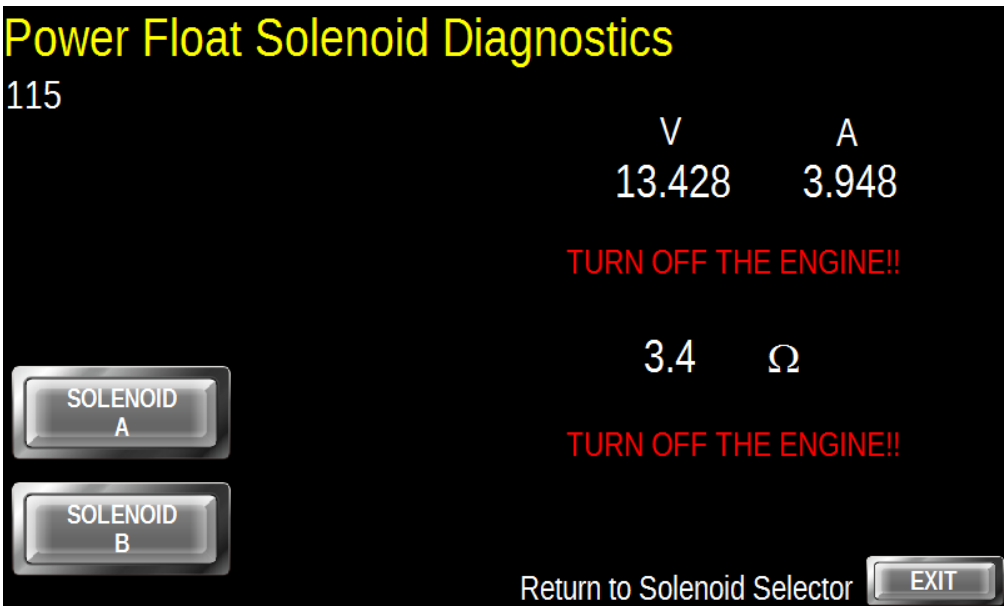



!!!!!!!!!!!!!!!ENSURE THE TRUCK ENGINE IS NOT RUNNING!!!!!!!!!!!!!!!!!!
All Joystick Solenoid diagnostics are identical so only Joystick 1 will be discussed here.

Press on the button of the Solenoid you wish to test. The Module Voltage, Solenoid Current Draw and the Solenoid Resistance will show to the right of the screen. Only one solenoid can be tested at a time.

Asterisks indicate open circuit

# Power Float Solenoid Diagnostics

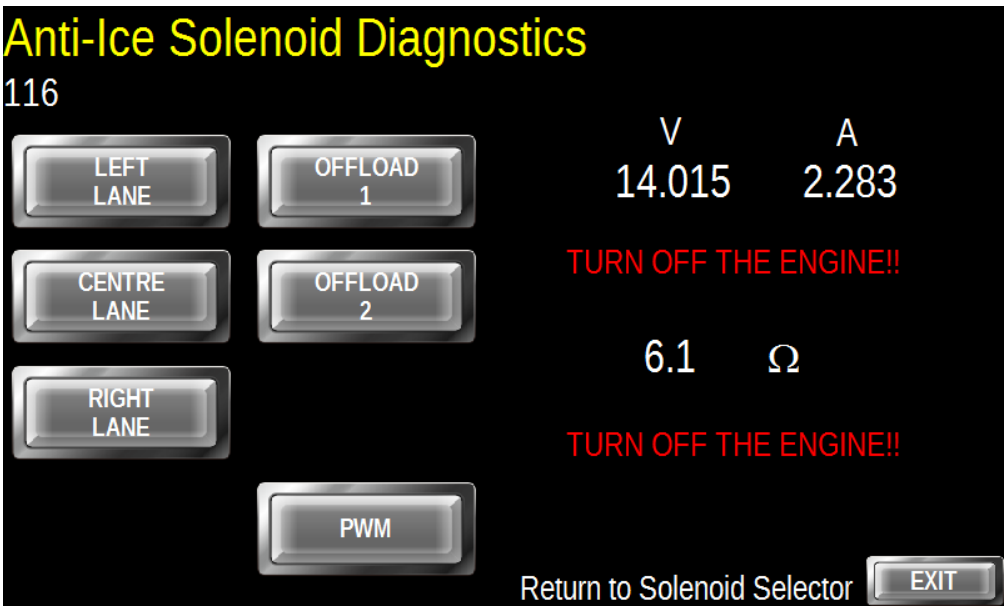



!!!!!!!!!!!!!!!ENSURE THE TRUCK ENGINE IS NOT RUNNING!!!!!!!!!!!!!!!!!!

Press on the button of the Solenoid you wish to test. The Module Voltage, Solenoid Current Draw and the Solenoid Resistance will show to the right of the screen. Only one solenoid can be tested at a time.

Asterisks indicate open circuit

# Anti-Ice Solenoid/Motor Diagnostics



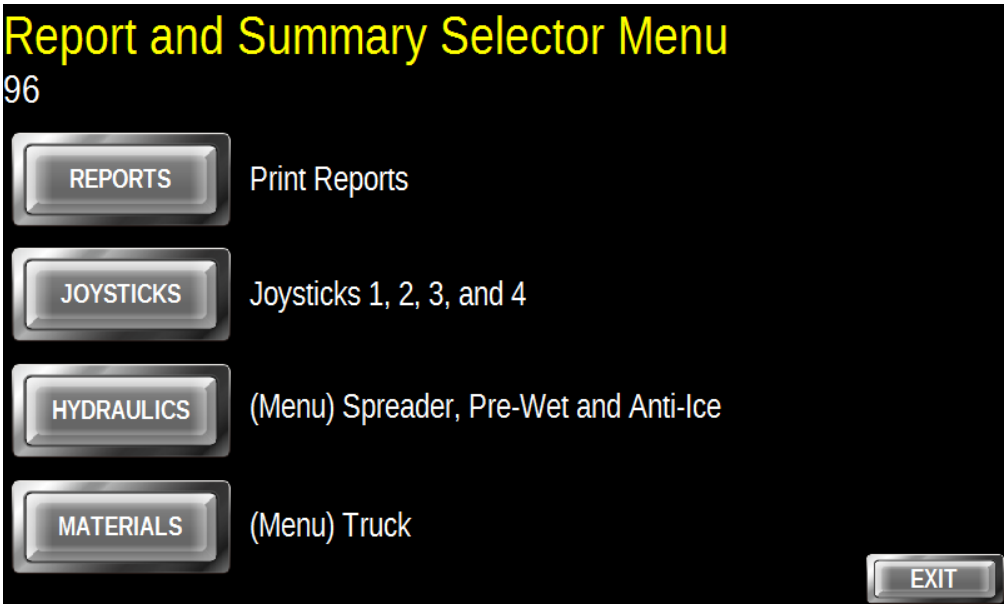

!!!!!!!!!!!!!!!ENSURE THE TRUCK ENGINE IS NOT RUNNING!!!!!!!!!!!!!!!!!!

There are five valves and one PWM solenoid to test. The Lane Valves and Offload Valves will only read if they are powered from the DLA Anti-Ice module. If separate power is supplied there will be no reading of the valve motors.

Press on the button of the Solenoid/Motor you wish to test. The Module Voltage, Solenoid/Motor Current Draw and the Solenoid Resistance will show to the right of the screen. Only one solenoid/motor can be tested at a time. The Valve Motors only draw current when they are opening or closing, not when they are in position.

Asterisks indicate open circuit

# Report and Summary Selector



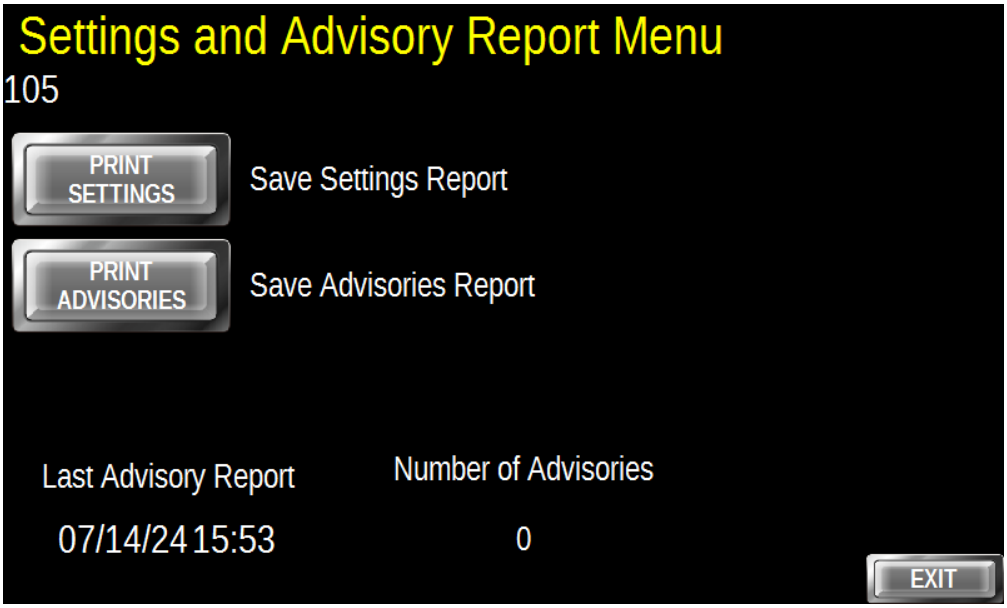

Reports takes you to a Menu to select a Settings Report or an Advisories Report.

All Joystick functions are displayed as a  summary so the operator can see all the Joystick settings.

Hydraulics takes you to a Menu to select Spreader, Pre-Wet or Anti-Ice Summaries.

Materials takes you to a Menu which at the time of writing only has one selection Truck. This is to allow for future expansion.

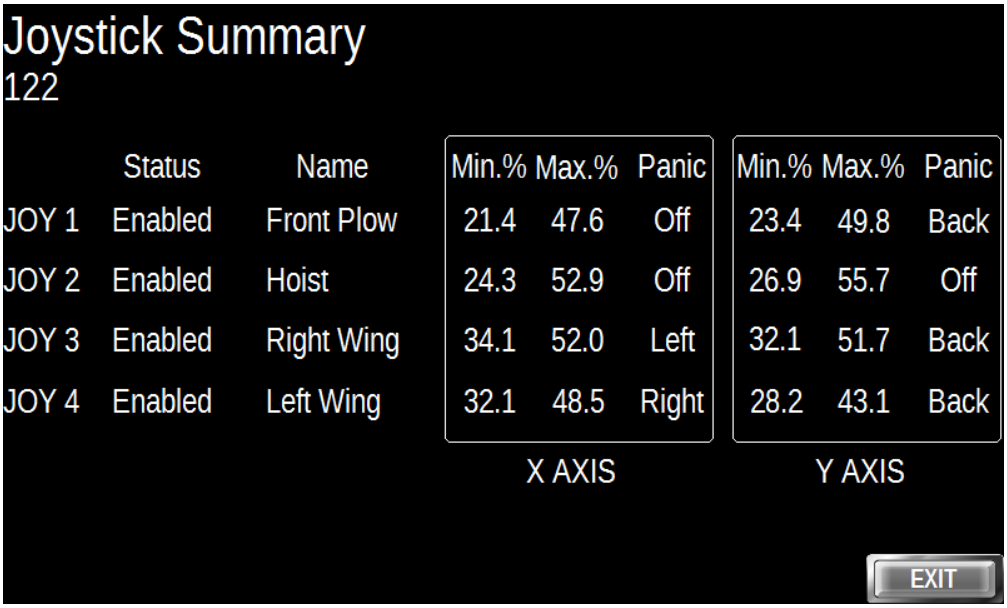
# Report Selector




Print Settings Report to Disk creates a text file on a thumb drive inserted into the bottom of the armrest. This allows the operator to view all hydraulic settings for the system. This report can be submitted as proof of calibration to any governing body.

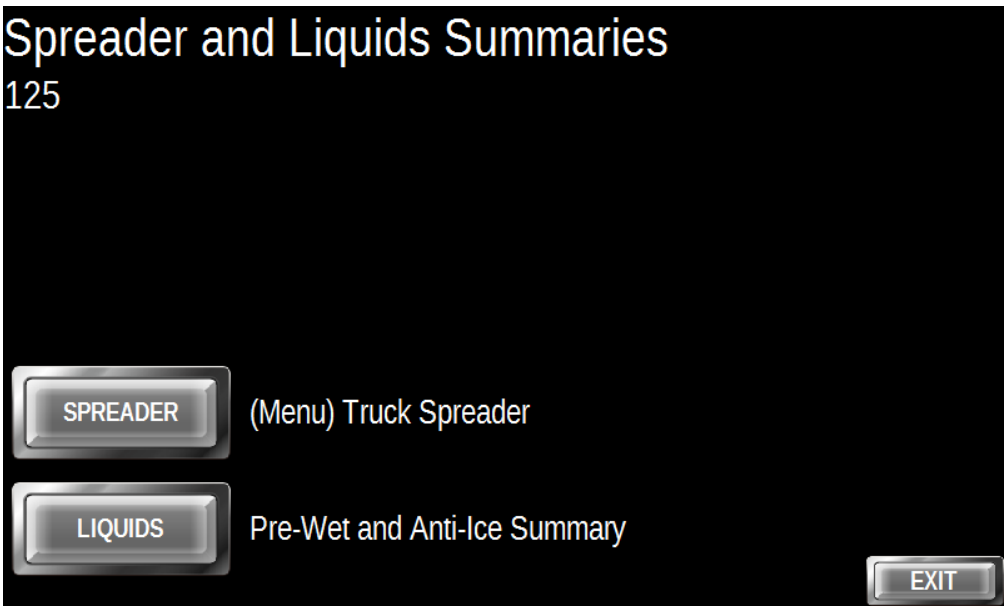
Print Advisories to Disk creates a text file of up to the last 999 Time Stamped Advisory Alerts the operator received. It contains “Low Oil”, “Panic”, “Conveyor Fail” etc.. The Time Stamp of the last advisory is displayed and the operator selects how many Advisories to report.

# Joystick Summary



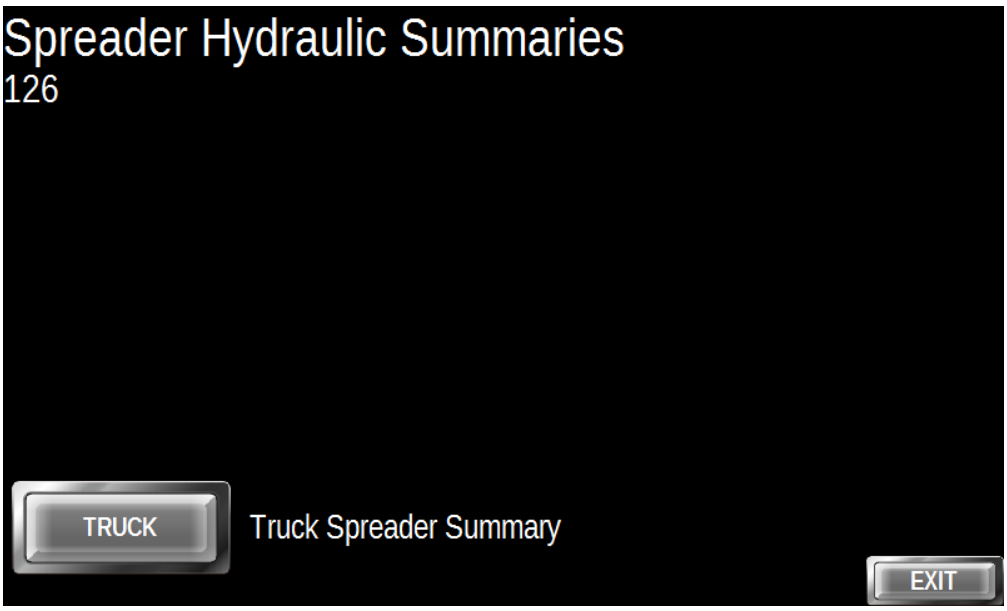

The Joystick Summary shows the entire setup values for all of the Joystick Functions. These include the Joystick Status (Enabled/Disabled), the Assigned Name, the PWM Settings and panic direction.

# Spreader and Liquids Summaries



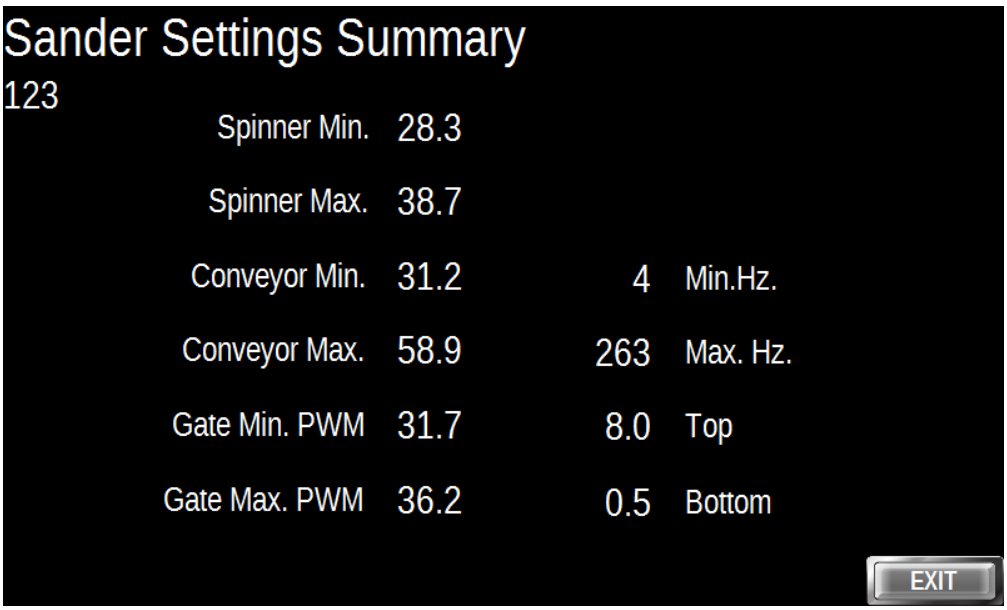

Choose which summaries you want to view.

# Spreader Hydraulic Selector



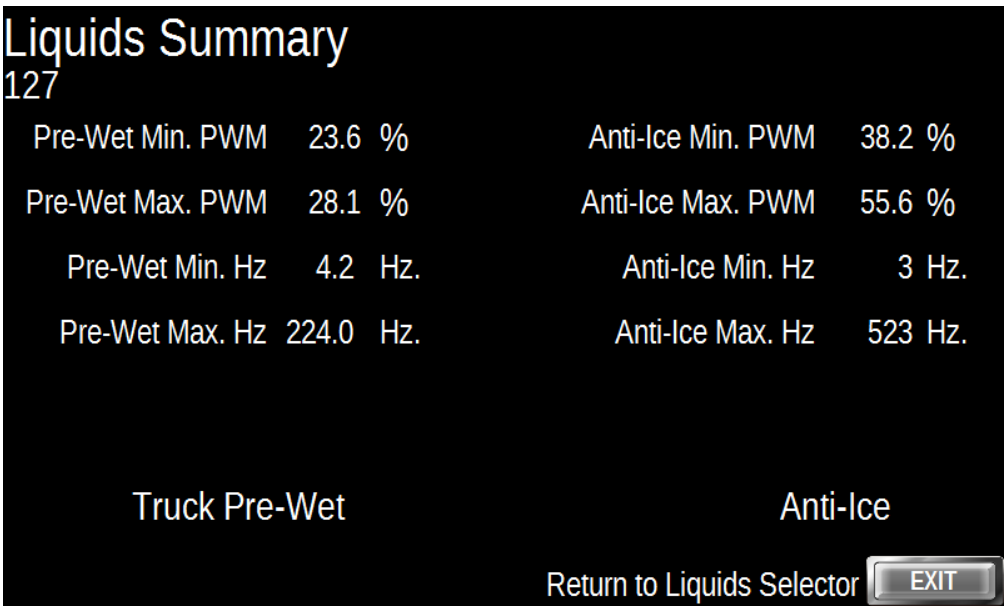

Select Truck Spreader Summary

# Truck Spreader Hydraulic Settings Summary



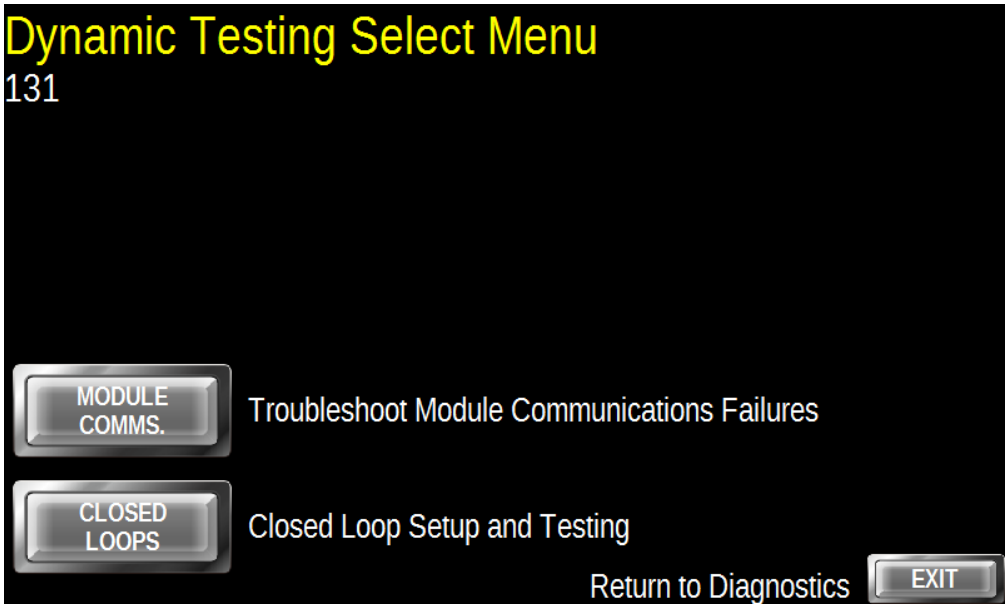

The Truck Spreader Settings Summary shows the PWM values, Conveyor Speed Limits and Gate Position data.

# Liquid Hydraulic Settings Summary




The Truck Liquids Settings Summary shows the PWM values and Speed Limits for both the Pre-Wet and Anti-Ice systems.

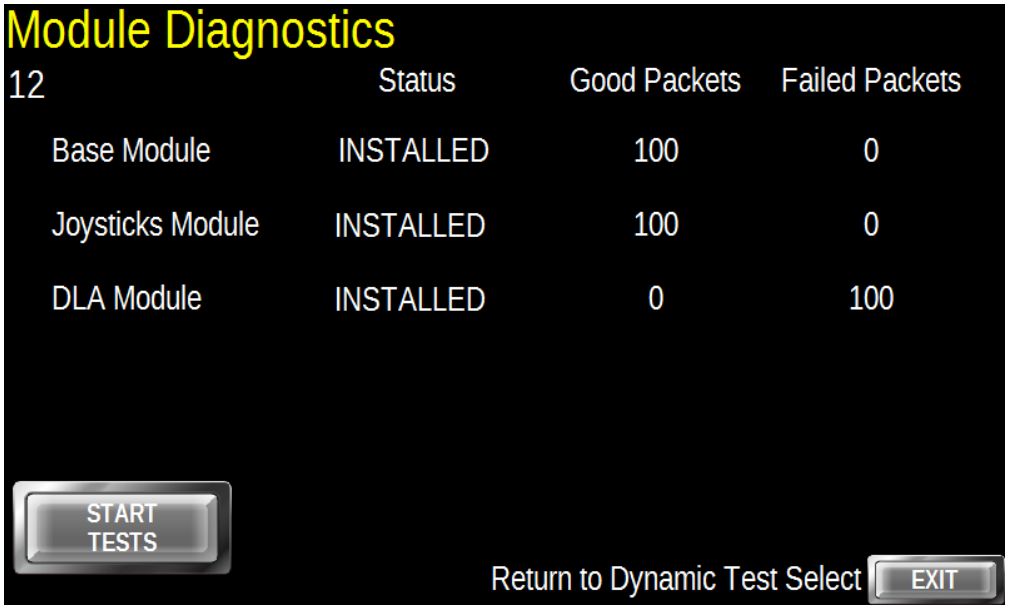
# Dynamic Test Select Menu




Dynamic testing has two sections to evaluate real-time operations in the AR-6 system.

Select Module Communication Troubleshooting or Closed Loop Setup and Testing

# Module Diagnostics



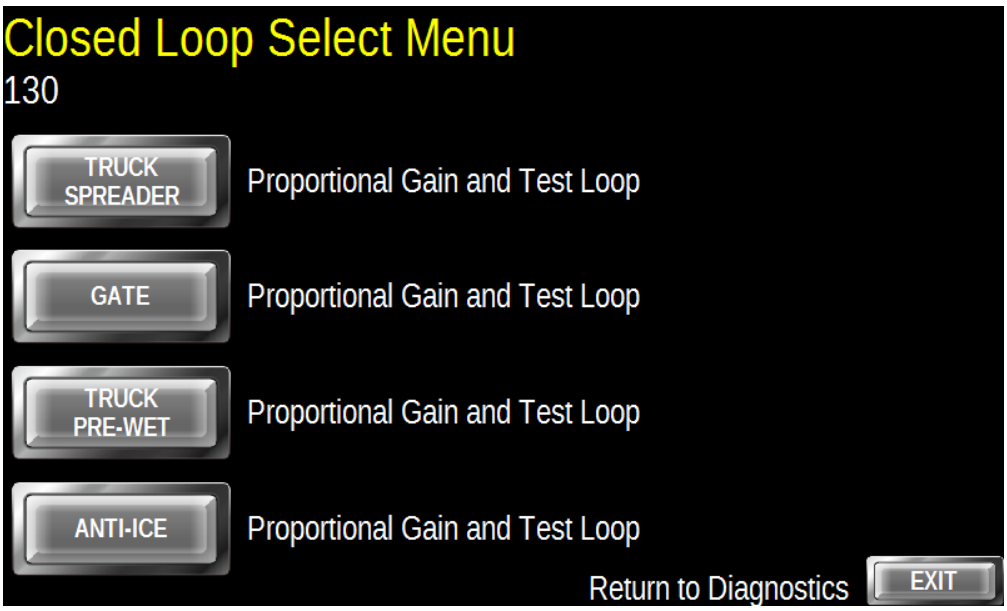

The Base Module is installed on all systems.

To start the modules testing press Start Tests. To stop the testing press Stop Tests.

The Module Daignostics utility will test the exchange of 100 data packets.

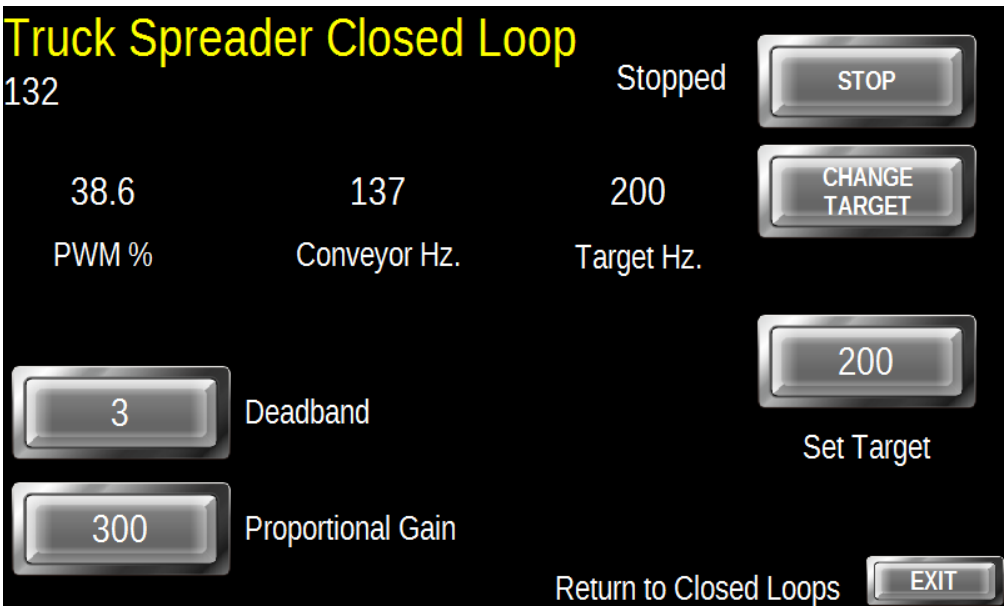
The Module Diagnostics Screen shows the status of the modules and communicates with the installed modules displaying the results of these communications. See Troubleshooting section in the AR-6 Service Manual.

# Closed Loop Selector




Choose which Function you want to test or adjust

# Truck Spreader Closed Loop



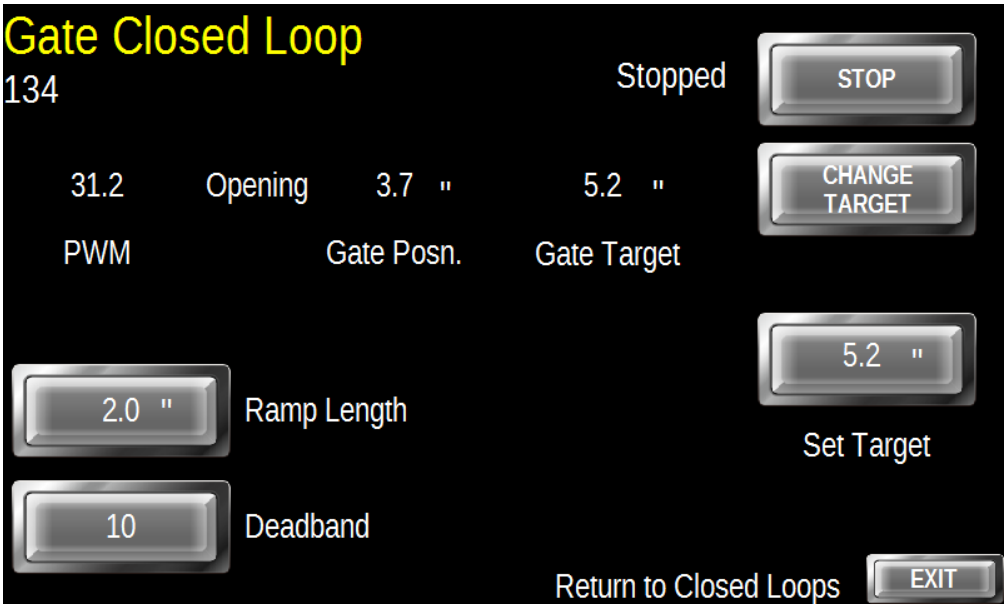

This loop is used to fine-tune the Truck Spreader. There are two values that can be adjusted.

Dead-band is the tolerance of the loop. In this example if the Conveyor is within +/- 3Hz it is deemed to be at frequency. Setting the Dead-band at a high value will result in inaccurate output at the low end. Setting it too low will cause the system to hunt.

Proportional Gain is how aggressively the system reacts to compensate changes to material demand. Too high of a setting will cause hunting and too low of a setting will result in sluggish control.

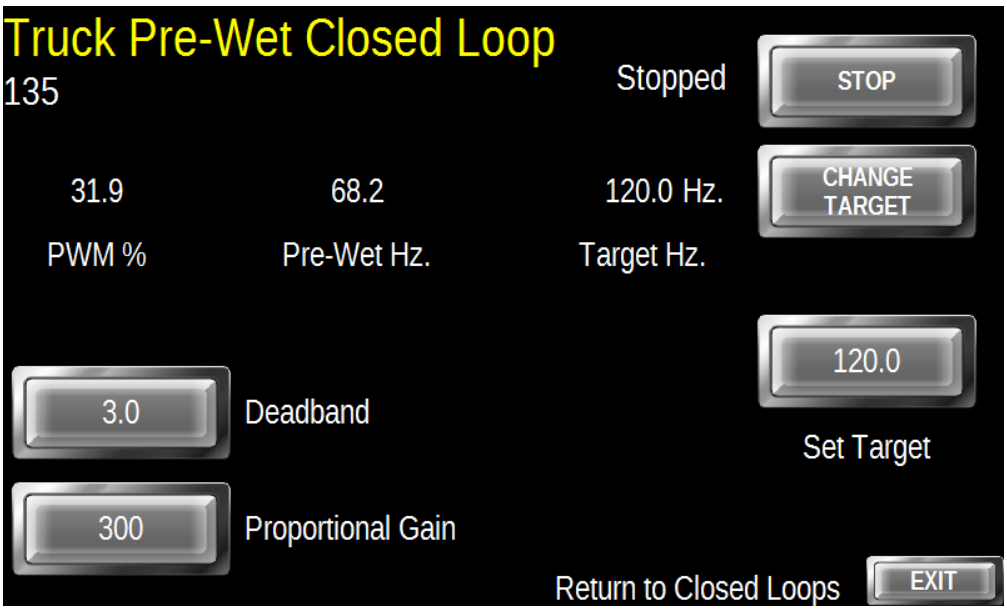
Use the Set Target button to enter a new target speed. Pressing the Change Target button will set that new target. All the system parameters are displayed to observe the system dynamics.

# Truck Gate Closed Loop




This loop is used to fine-tune the Truck Gate. There are two values that can be adjusted.
Ramp Length is the area of controlled PWM. This example shows a Ramp Length of 2” indicating that it will control the gate proportionately if it is within +/- 1” of the target height. If it is outside of the ramp the gate runs at the maximum PWM.
Dead-band is the tolerance of the loop in hundredths of an inch. This example shows a tolerance of 10/100” or 0.1” so if the gate is within +/- a tenth of an inch it is deemed to be in position.

# Truck Pre-Wet Closed Loop



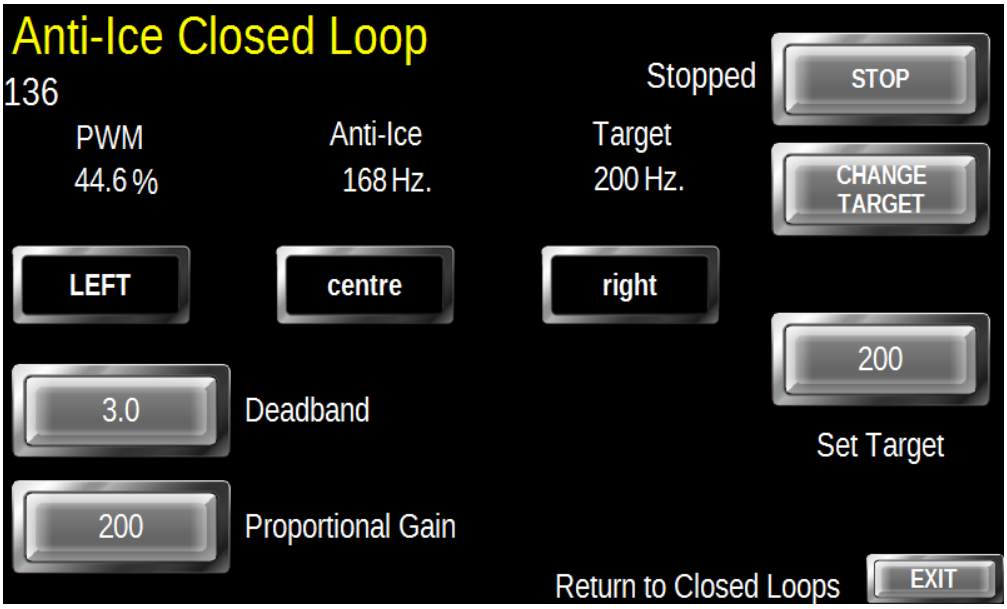

This loop is used to fine-tune the Truck Pre-Wet. There are two values that can be adjusted.

Dead-band is the tolerance of the loop. In this example if the Conveyor is within +/- 3Hz it is deemed to be at frequency. Setting the Dead-band at a high value will result in inaccurate output at the low end. Setting it too low will cause the system to hunt.

Proportional Gain is how aggressively the system reacts to compensate changes to material demand. Too high of a setting will cause hunting and too low of a setting will result in sluggish control.

Use the Set Target button to enter a new target speed. Pressing the Change Target button will set that new target. All the system parameters are displayed to observe the system dynamics.

# Anti-Ice Closed Loop




This loop is used to fine-tune the Anti-Ice. There are two values that can be adjusted.

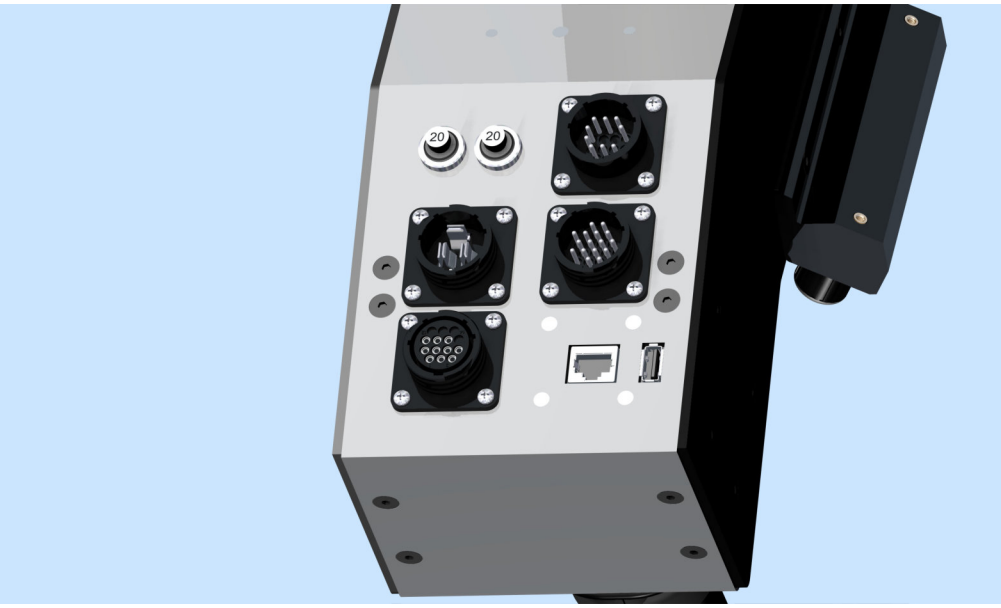
Dead-band is the tolerance of the loop. In this example if the Conveyor is within +/- 3Hz it is deemed to be at frequency. Setting the Dead-band at a high value will result in inaccurate output at the low end. Setting it too low will cause the system to hunt.

Proportional Gain is how aggressively the system reacts to compensate changes to material demand. Too high of a setting will cause hunting and too low of a setting will result in sluggish control.

Use the Set Target button to enter a new target speed. Pressing the Change Target button will set that new target. All the system parameters are displayed to observe the system dynamics.

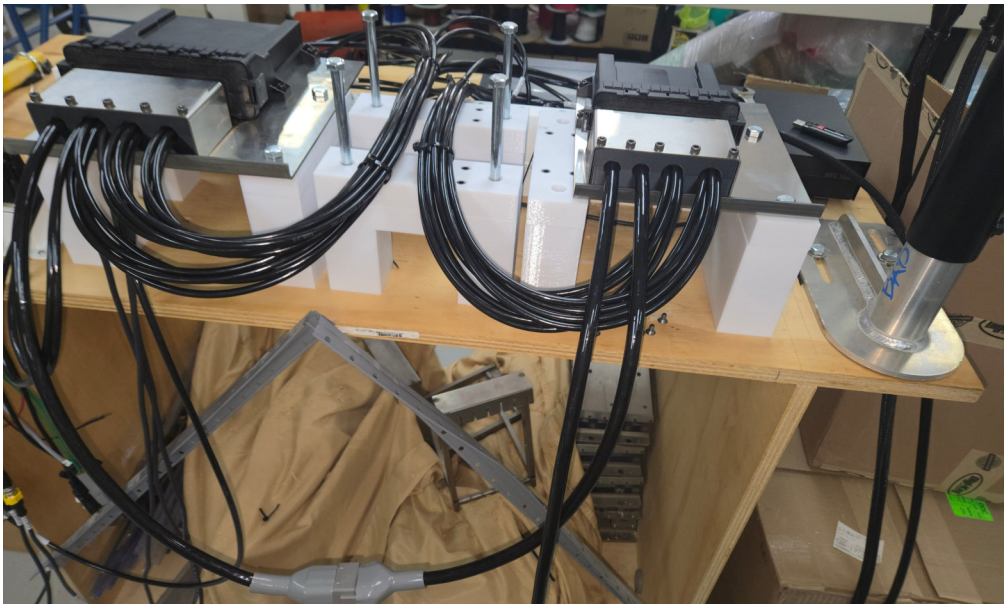
# Electrical Connections

# Armrest Electrical Connections



There are five Electrical Connections to install the system and one USB Port for a thumb drive.
Beside the Breakers is the Valve interface . It connects to the valve drivers located in the valve compartment using Cable AR-01-0003
The Power Connector is below the Breakers and it connects to a Switched Battery Supply using Cable AR-01-0001. System Power, System Ground and Lighting Power are supplied.
Beside that are the Truck Connections for Temperature Monitor, AVLS, TCM Signal, Transmission Pickup as well as TCM Control and ECU Control overrides via the AR-01-0002 Cable.
The Electrical/Lighting Connector has Female Sockets. It provides System Lighting Outputs as well as Switched Battery Outputs in the Valve Compartment using Cable AR-01-0004.
The Display connects to the RJ-45 Connector via Cable AR-01-0005 (2') or AR-01-0006 (10'). DO NOT USE A CAT-5 Cable.

# Valve Driver Modules



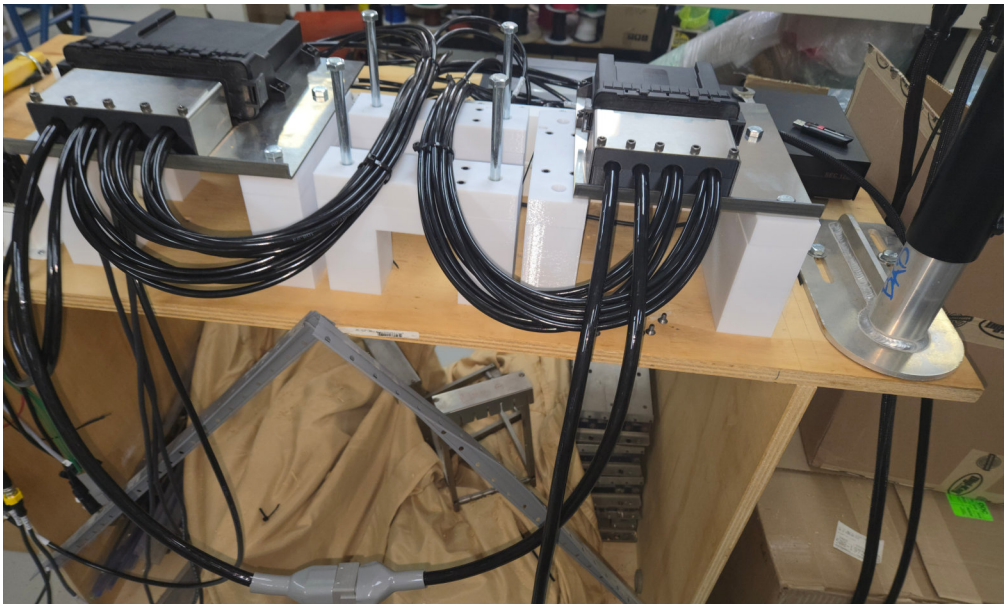
Mount the Auxiliary Joystick Module (smaller module) on the right hand side of the Valve Body. Connect the Wing Wiring (4), and the Pup Wiring (2).

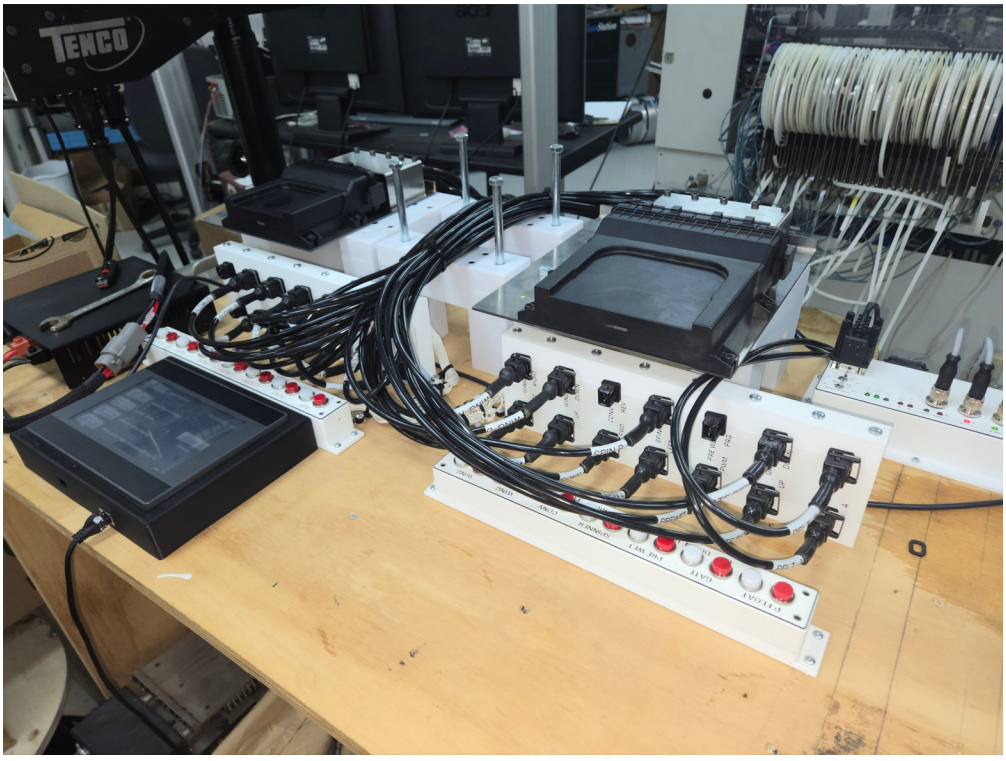
Mount the Sander Module (larger module) on the centre of the Valve Body. Connect the Hoist Wiring (2), Conveyor Wiring (1), the Spinner Wiring (2), the Pre-Wet Wiring (1) ,the Gate Wiring (2), Power Float Wiring (2), the Under Body (4) Wiring and then the Plow Wiring (4).

Connect the Conveyor Sensor Cable, the Pre-Wet Sensor Cable and the Gate Sensor Cable.

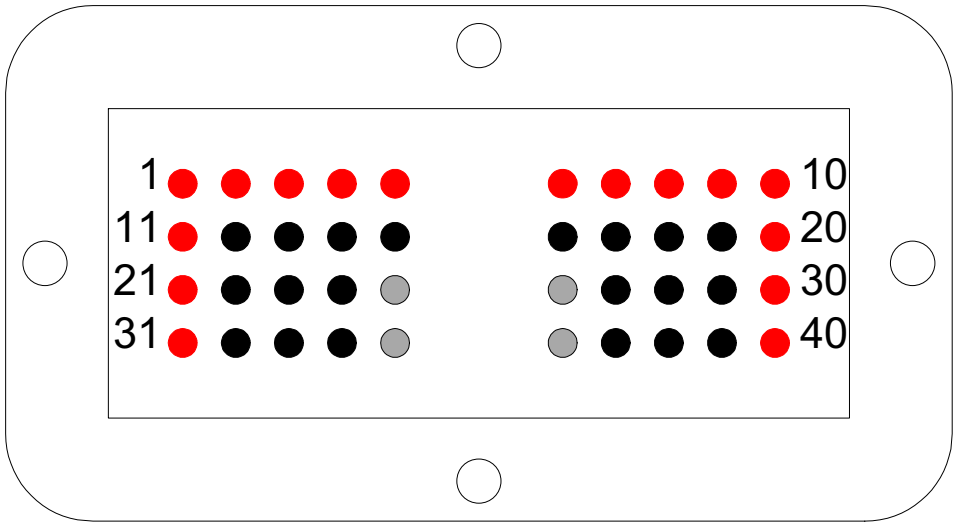
Connect the Cable AR-01-0004 (from Cab) to the Auxiliary Joystick Module and the Auxiliary Module to the Sander Module via the 12 pin Deutsch connections.

# Valve Driver Modules





# Electrical and Lighting




Switch 1 Beacons = Pins 11, 21 and 31
Switch 2 Hopper = Pins 20, 30 and 40
Switch 3 Work 1 = Pins 3 and 4
Switch 4 Back = Pin 1
Switch 4 Forward = Pin 2
Switch 5 Back= Pin 9
Switch 5 Forward = Pin 10
Switch 6 = Pins 7 and 8
Key On 1 = Pin 5
Key On 2 = Pin 6
All Black Pins Ground
4 Grey Pins Ground In

The Lighting Switches, Tarp Switch, Tailgate Switch and two Key On Powers are connected via the AR-01-0004 Cable to the Electrical Box. Fusing is under the cushion of the Armrest.

Lighting ground is supplied via a 5m 10 awg. wire attached to pins 25, 26, 35 and 36.

# Truck Connections

## Truck Interface Cable

There are two DB-9 connectors that connect the AVLS and Roadwatch™ interfaces directly.

The 4 pin DT series connector is pinned out as follows:

Pin 1 Blue TCM Speed in.
Pin 2 White Pickup Speed in.
Pin 3 Green ECU Control (future).
Pin 4 Grey TCM Control (future).

## Power Cable

The 4 pin DTP series is pinned out as follows:

Pin 1 Red System Power
Pin 2 Lighting Power
Pin 3 N.C.
Pin 4  System Ground