

CS 550i, 551i/150RC Towplow

Spreader and Joystick Controller Calibration Manual



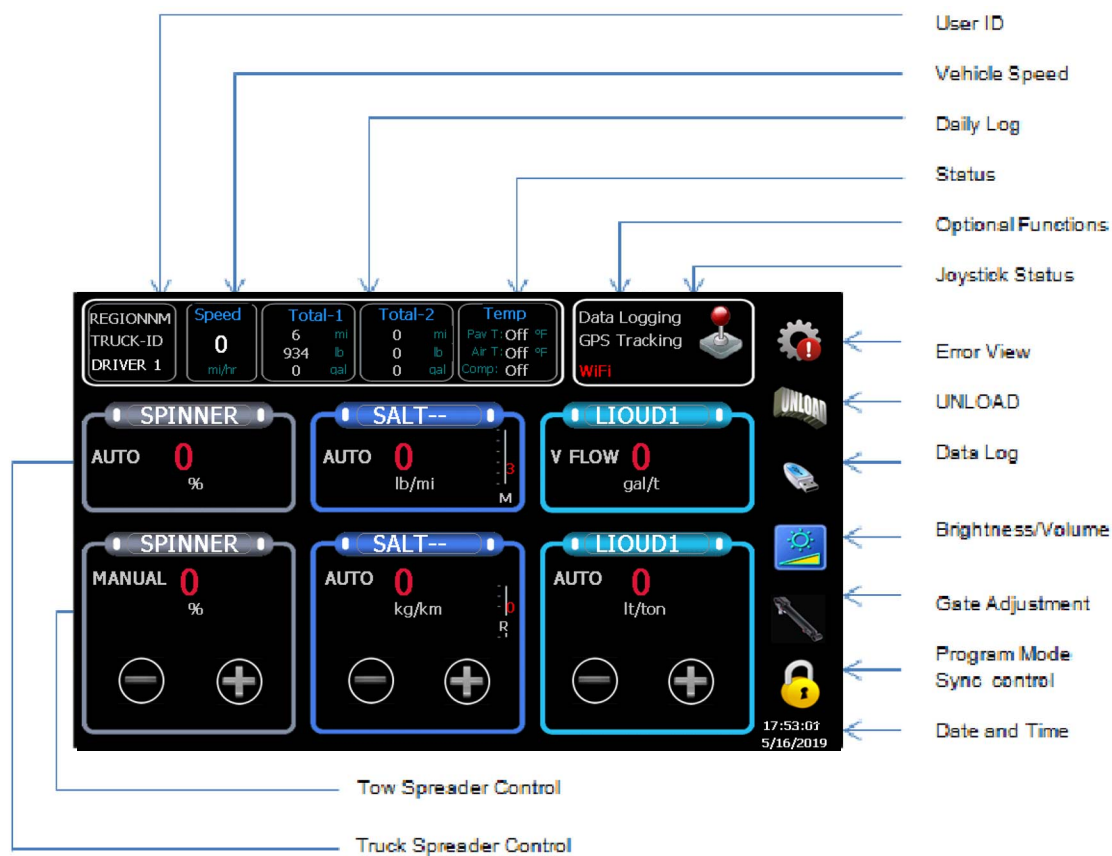
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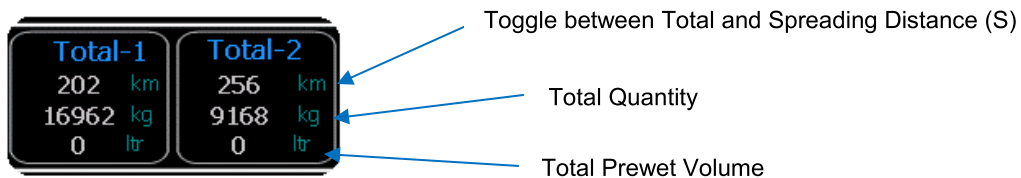
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Please check for updates at: www.boschrexroth.ca/compu-spread

1 Operation Screen Layout

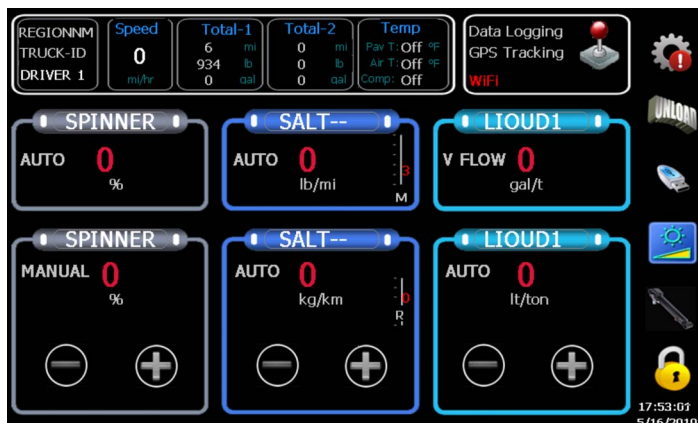


SPNR	SALT - -	LIQUID1
Spinner Label	Solid Name	Liquid Name
Spread Width %	Gate Mode/Solid Rate	Liquid Rate
Spinner Setpoint	Gate Position/Conv Set.	Liquid Setpoint
Spinner Mode	Conveyor Mode	Liquid Mode
Pause Button	Blast Button	Reverse Button




2 Programming Mode

All symbols on the right of the screen require a tap and hold for >1 second.



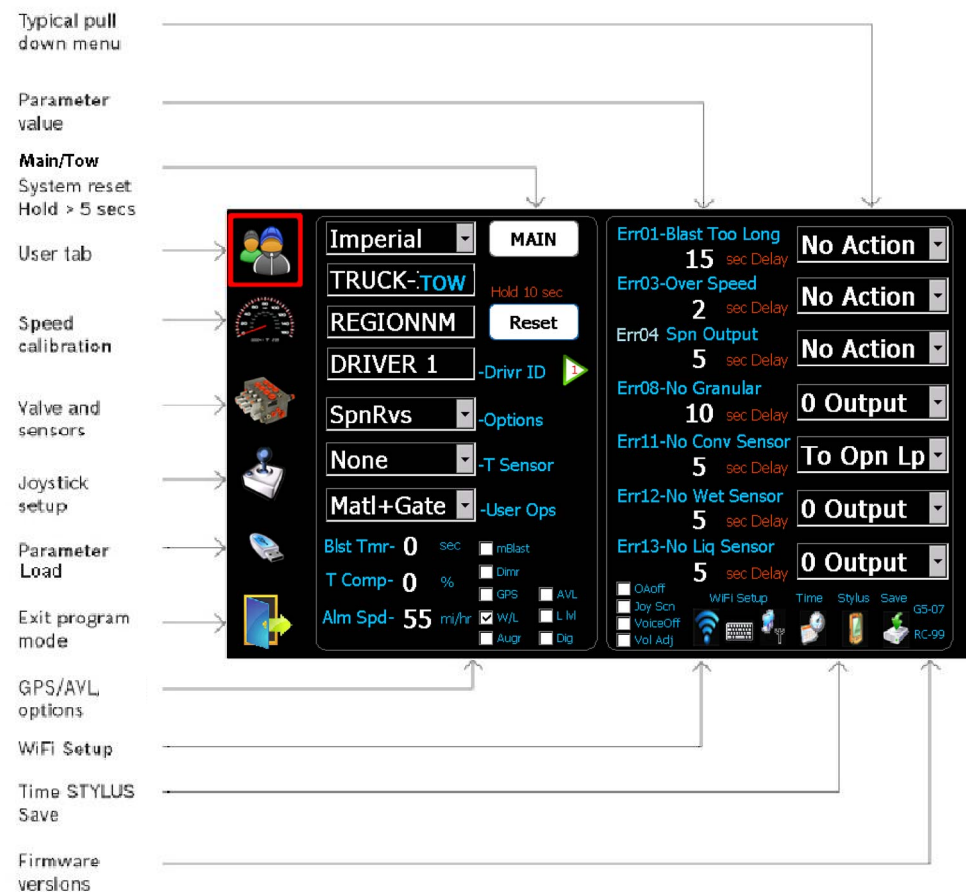
Note: A valid PROGRAM USB key must be on the USB port. The PROGRAMMING USB key is for programming and log data, and the LOG DATA USB key will only retrieve data.

Press  symbol to enter into programming mode.



3 Program Screen Layout

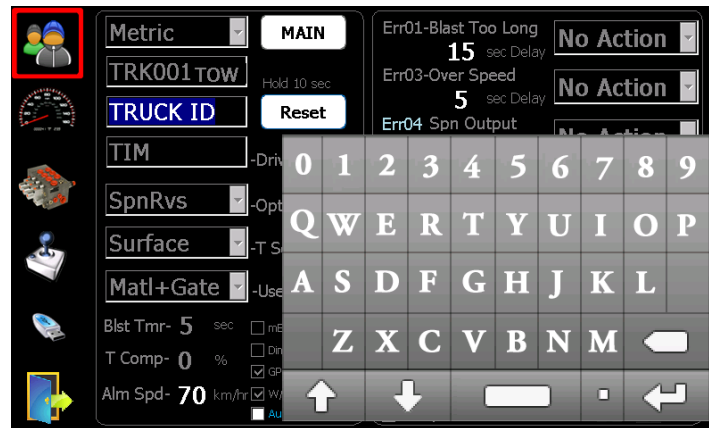
Note: Due to the compact nature of these screens, the use of a selection tool like a stylus is recommended.



4 Changing Fields

Note: Due to the compact nature of these screens, the use of a selection tool like a stylus is recommended.

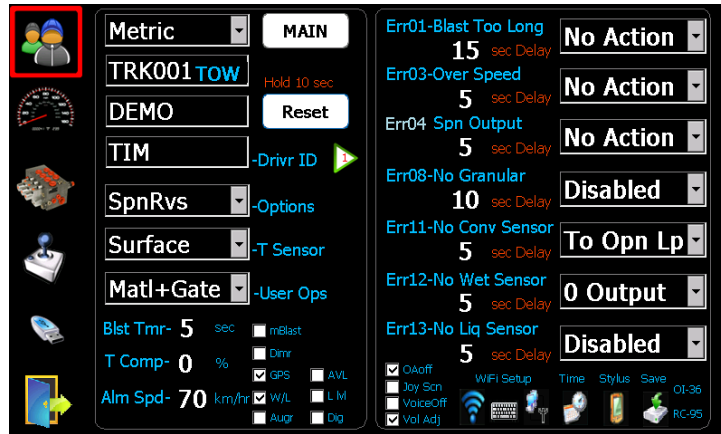
When selecting an item without a pull-down selection menu, a keypad is required. This keypad is used to enter text or numeric values. The example shown is "TRUCK-ID".



5 Initial Set-up

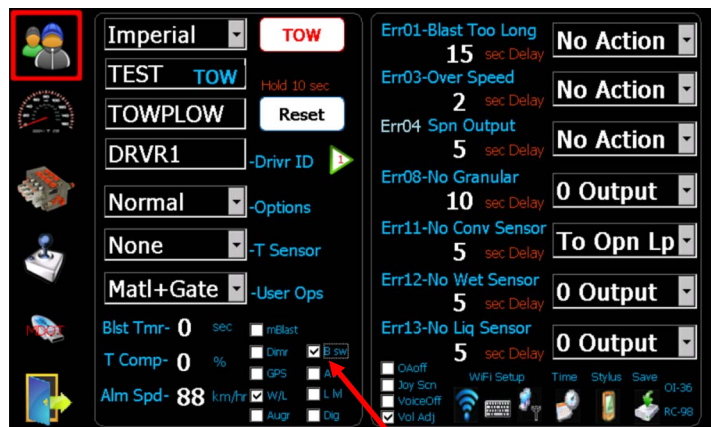
1. Set the units to imperial (LBS/Mile) or metric (Kg/Km).
2. Set the TRUCK ID.
3. Set the REGION NAME.
4. Set the DRIVER ID (optional), 4 driver IDs allowed.
Note: Configuring 4th driver ID to 'USER' enables operators to enter user defined driver ID on operator screen for AVL interface.
5. Set the type of Temperature Sensor (optional).
6. Set the Options – see Advanced Features on page 16 (optional).
7. Set the items that the user has access to (optional).
8. Set Blast Timer, 0-timer disabled (optional). This should be set less than Err01 delay.
9. Set Percentage of Temp. compensation when there is a 3 degree change (optional).
10. Set the vehicle speed alarm (optional).
11. Select AVL or GPS tracking (optional).

12. Set WIFI/TIME/STYLUS (if required). Note: Save only applies to changes to Date/Time/WiFi/Stylus.



TOW 3Boom Anti-icing with external boom switches is supported. To enable this option 'bSW' needs to be checked.

Note: The 3Boom Anti-icing operation IS NOT supported on the truck (MAIN).




'bSW' – 3boom with external boom switches

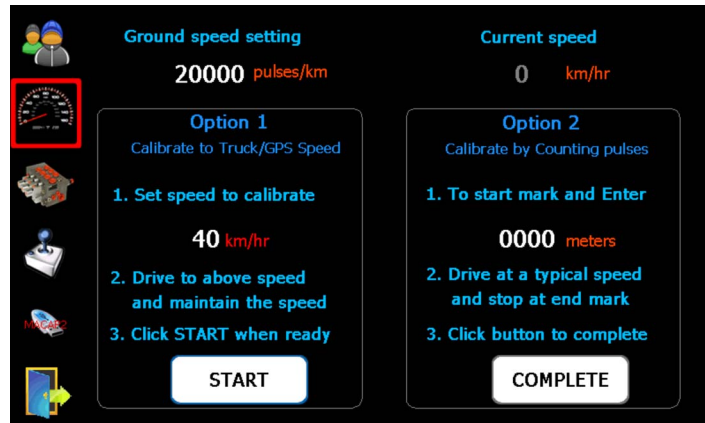
The default error configuration values will work well for most applications, no changes required.



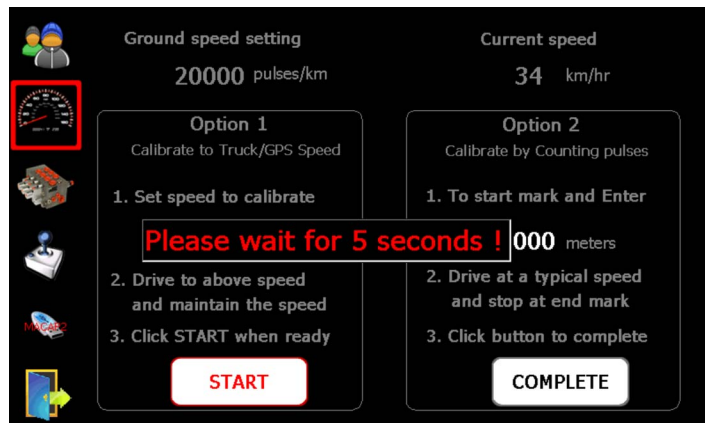
6 Ground Speed Calibration

1. Select  symbol to enter into the ground speed calibration screen.
2. Choose which calibration option best suits your situation.

- Follow the instructions on the screen.





- Press Start when the vehicle speed is steady. Note: Speed is best calibrated between 20-25 MPH for the best accuracy.



- Once calibration is complete, verify the speed by driving the vehicle through its speed range and verify if the controller matches the speedometer.

7 Valve Nulling – Conv/Spn/Prewet/Norm

- Select symbol to enter into the calibration screen.
- Click  on **MAIN** button to select between **MAIN** and **TOW** to calibrate
- Select  the appropriate mode:
Spinner – Auto, PPS, Manual (*default*)
Conveyor/Auger – Auto (*default*), Open, Man-Spd, Manual, SQM
Prewet – Off, Fixed, V-Flow (*default*), Manual, Manual-SPD, Return Oil
Gate – Manual (*default*), Read Back, Auto

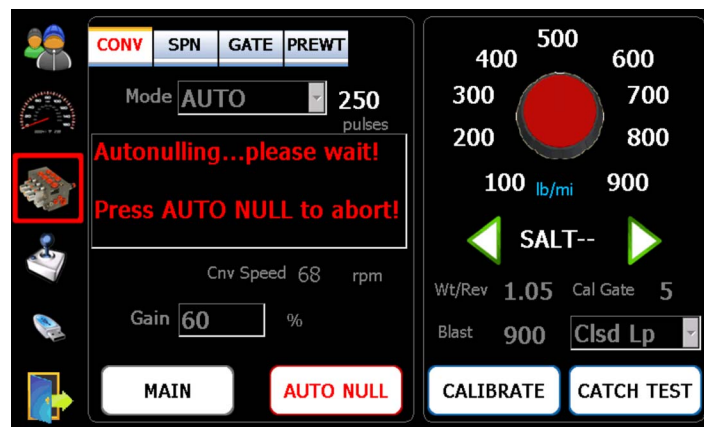
****TOW ONLY Norm** (Anti-icing) – Off (*default*), 1 Boom, 3 Boom, Manual

4. Set correct conveyor sensor pulses/rev if the AUTO mode is selected.
5. Ensure the hopper is empty, and the truck is safe to operate.
6. Start the engine to achieve adequate oil flow.

If the AUTO mode is selected for **Conveyor**, V-Flow or Return Oil mode for **Prewet**, and 1Boom or 3 Boom is selected for **Norm** (Anti-icing) it is strongly recommended to run **Auto Null**. For manual mode please skip **6.1** and follow **6.2** Manual Nulling instructions.

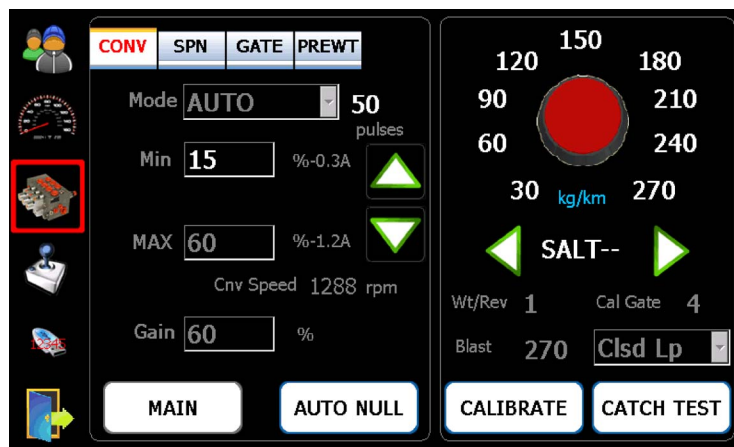
7.1 Auto Nulling

1. Press “Auto Null” to start. This procedure automatically run the system, and set both “Min” and “Max” for the motor selected, Auger, Prewet, Anti-icing, etc...). Note: This feature can only be used with motors with speed or flow feedback (i.e. Conveyor/Auger, Prewet, Anti-icing, etc.).
2. Please check the “Min” null value to verify it is minimum. (Ex. 1,2,3 RPM)



7.2 Manual Nulling

1. Press “Min” value field to pop up the UP/DN arrows and enter into edit mode.
2. Use up and down arrows to adjust speed so that the motor just begins to turn
3. Press the “Min” value field again to end the edit mode and accept the value
4. Do the same for “Max” except adjust the motor to a safe maximum speed or until the RRM readout stops to increase.
5. Forward Gain and Blast settings can also be adjusted
6. Repeat this procedure for all the vehicle motors (i.e. Conveyor/Auger, Spinner, Prewet, Anti-icing, etc.).

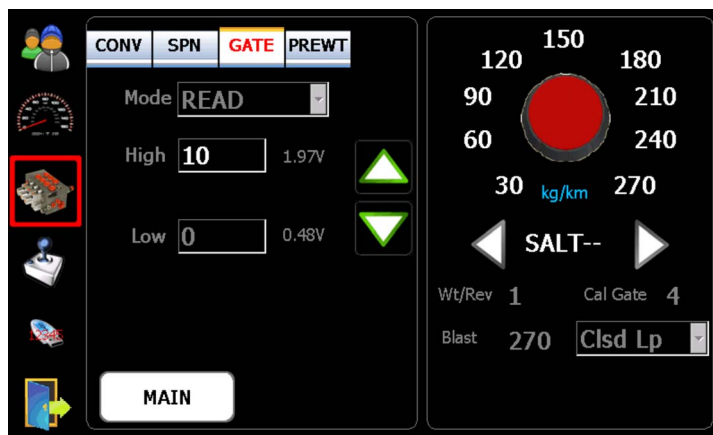


8 Gate Calibration

1. Select the Gate tab.
2. Select the appropriate mode of gate operation :
 - Manual** - No further calibration required.
 - Read back** - Press **High** value field to enter into edit mode
 - Move the gate to its max opening
 - Press **High** value field to end mode and save the value
 - Repeat the same procedure for **Low** value

Note: A Gate Position Sensor required for Read back.
 - Auto** - Press **High** value field to enter into edit mode
 - Press Up/Down buttons to move the gate to max opening
 - Press **High** value field to end mode and save the value
 - Repeat the same procedure for **Low** value

Note: A gate cylinder with a position Sensor required.

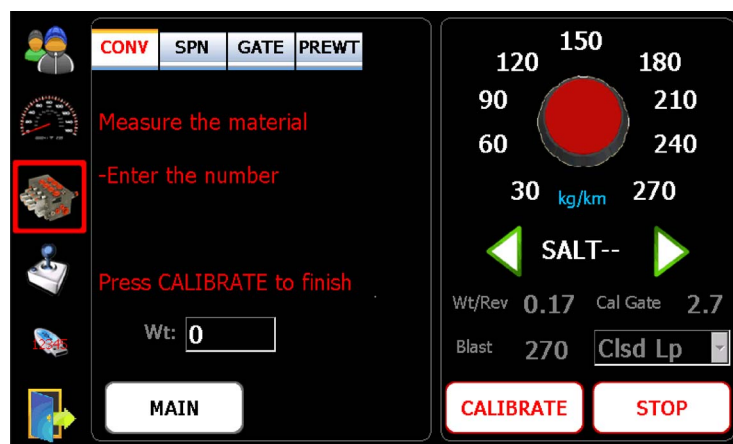
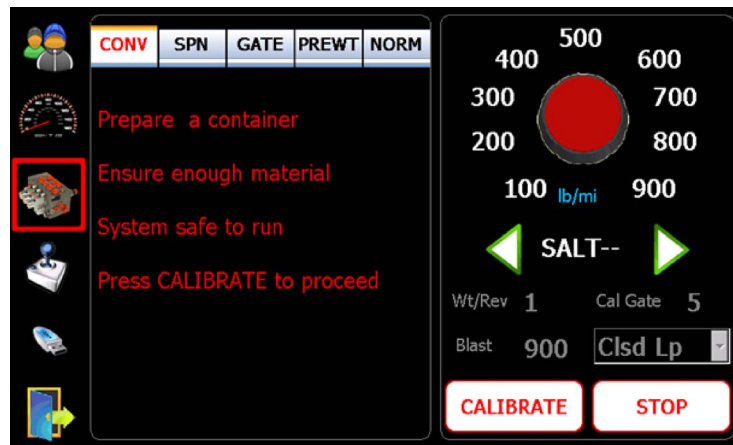


9 Material Calibration


Solid Material Calibration

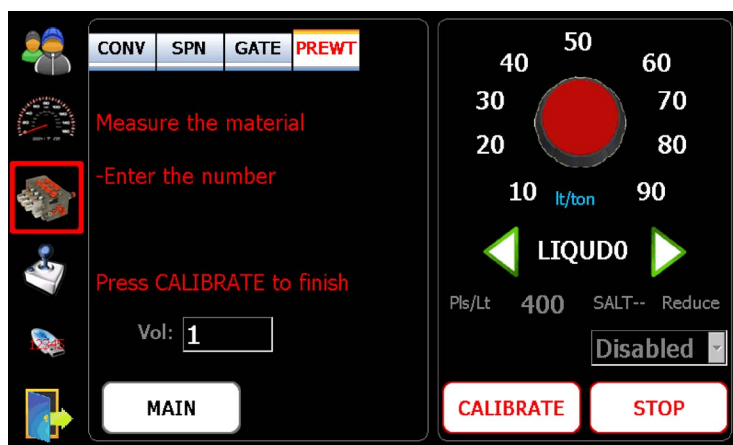
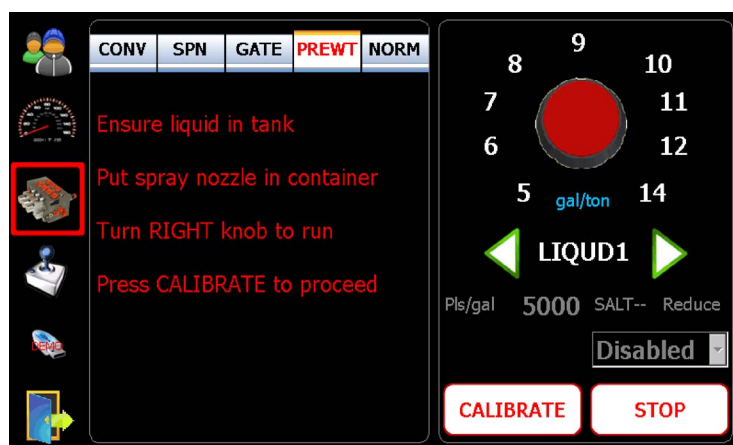
1. Tap on the “valve” symbol and **CONV** tab to enter into solid calibration.
2. Place an adequate catch container under the spreader discharge chute.
3. Make sure that sufficient material in the hopper and the system is safe to run.
4. Set gate position:
 - Manual** - Change CAL Gate to match actual gate position
 - Readback** - Adjust actual gate position on the truck
 - Auto** - Set to a desired gate position for calibration
5. Press “CALIBRATION” button to proceed.
6. Turn CONV Knob and/or SPN Knob to run.
7. Stop when desired amount is reached.
8. Weigh the material and enter the value.
9. Press “CALIBRATION” Button to complete.

Note: Press “STOP” button to stop the process anytime during calibration.




Liquid Material Calibration (Prewet or Anti-icing)

1. Tap on  symbol and **PREWET/NORM** tab to enter into liquid calibration.
2. Place an adequate catch container under the liquid spray nozzle.
3. Make sure that sufficient liquid in the tank and the system is safe to run.
4. Press "CALIBRATION" button to proceed.
5. Turn PREWET Knob to run.
6. Stop when desired amount is reached.
7. Measure the liquid volume and enter the value.
8. Press "CALIBRATION" Button to complete.

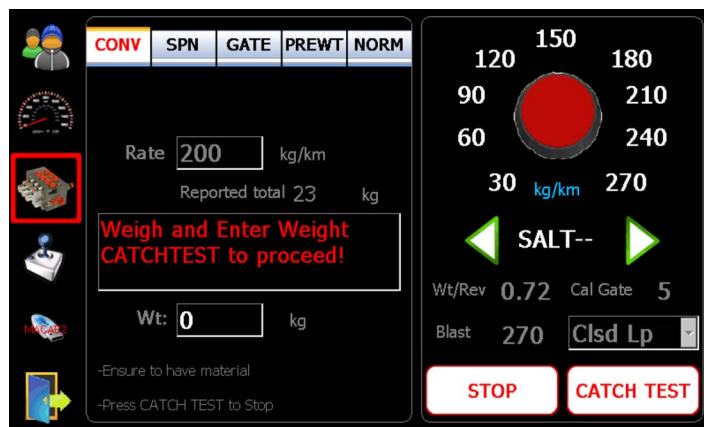
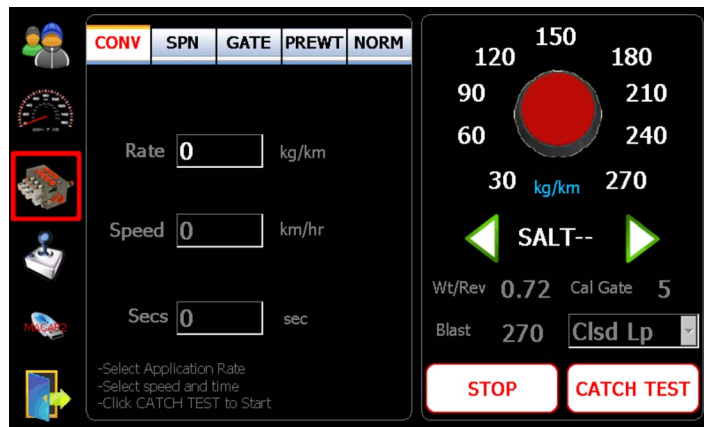


10 Material Catch Test

1. Tap on  symbol to enter into the material calibration screen.
2. Place an adequate catch container under the spreader discharge chute.
3. Press "CATCH TEST" button to start, and enter the desired rate, speed and duration (seconds) using on-screen keypad.
4. Press "CATCH TEST" button to begin material dispensing (hydraulics must be active).
5. When dispensing is stopped, weigh the material and enter the value.
6. Press "CATCH TEST" button again to end.
7. A wt/rev will be calculated and displayed on the bottom right of the screen.


8. Repeat this procedure for all solid materials (use the green left and right arrows to select material types).
9. Rates can be adjusted by tapping the rate and editing the value with the keypad.
10. These same procedures apply to pre-wet and liquid. Note: Granular spread rate is defaulted to 2000 lbs/Mile.

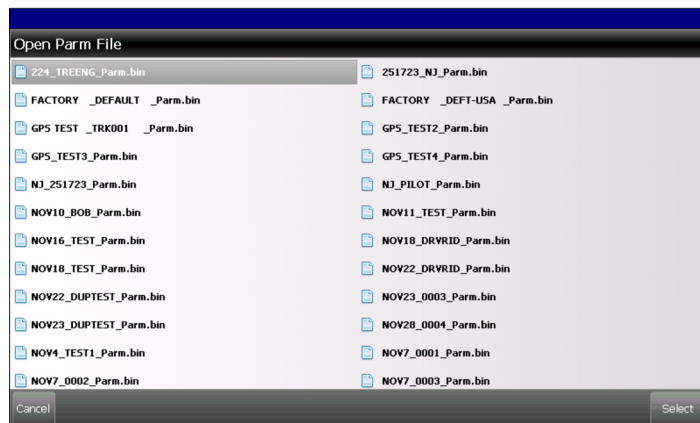
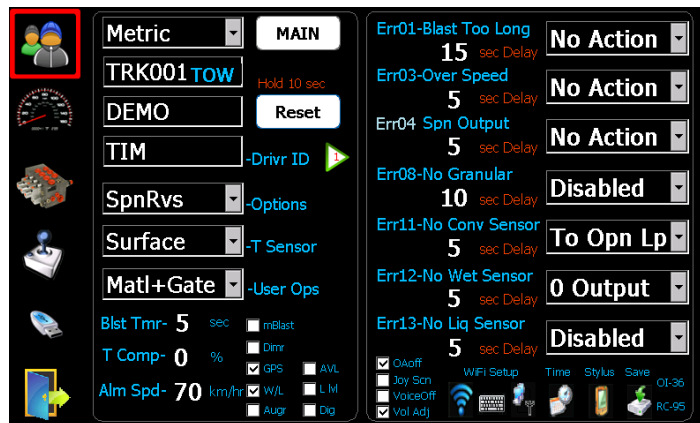
Note: The material names can be changed by tapping on the text "SALT -" and using the keypad to edit.



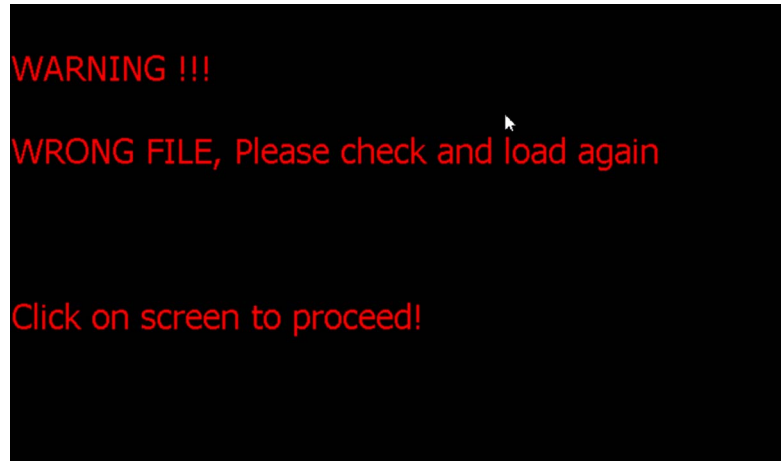
11 Load Parameters

The operation requires an USB PROGRAM key. It allows end users to load parameters from an existing file on the USB stick.

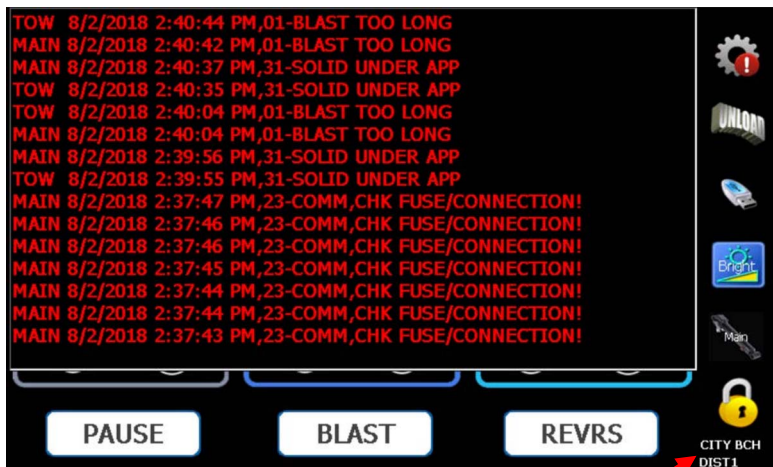
1. Ensure an USB PROGRAM key inserted
2. Tap on  USB symbol.
3. Select a file to load from the popup file window.
For towplow there should be two parameters for both the truck and the tow. The file names should be like this:
REGINNM_1234_Parm.bin
REGINNM_1234TOW_Parm.bin
4. Click on the “Select” or “Cancel” button to select or cancel.
Then the popup file window would close, and red “Load” text shows up on the USB symbol if a file is selected.
5. Tap on the Door Symbol to exit to the operation mode.
6. Turn the unit off, and on again for the new parameter to take effect.



If a wrong file is selected (550 lite or xxxTOW_Parms.bin) an error message will pop up.




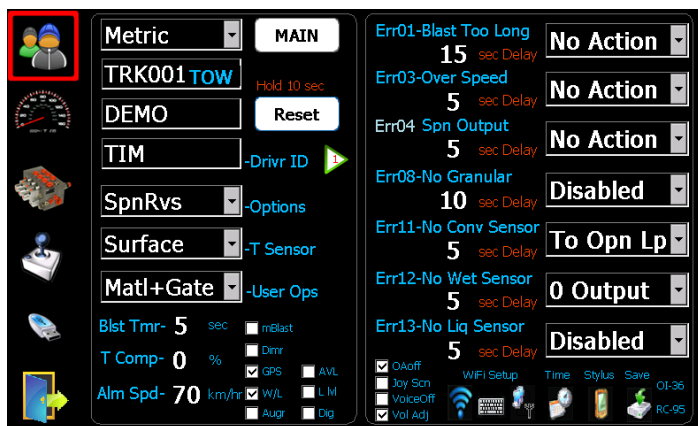
To check the parameter file loaded by clicking on the 'gear' icon on the operator screen when the truck is stationary (firmware build38 or newer).



Parameter file name (Region, TruckID) loaded last

12 Advanced Features

Tap on  symbol to enter into the user calibration screen. This series of drop-down menus allow the adjustment of special features of the 550 system.



System Reset – Press and hold the preset button for 5 seconds.

WARNING: All parameters will be reset to factory defaults.

Temperature Sensors – Roadwatch, Surface Patrol

System Options – Normal, Air Gate, Spinner Reverse

User Options – MATERIAL and or GATE (operators allowed to adjust without a programming key).

Blast Timer – Blast turns off automatically when time out

Speed alarm – alarm will sound when the set speed is exceeded.

Temp Comp – Temp compensation, per three degree change

Check Marks:

****TOW ONLY B sw** – Enable external boom switches (AUX pin3-R, pin4-C, pin5-L)

(Version 33 and later)

mBlast – Option to set Blast to momentary action (Version 26 and later)

Dimr – Screen auto dimmer

GPS/AVL – GPS tracking, require a serial cable (R987376776) and a GPS receiver Puck (R987380745), or AVL interface.

W/L – Prewet and Anti-icing operation interlock with an asymmetrical valve (Version 15 and higher)

Lvl – Use MAT change input as liquid level detection. (Version 15 and higher)

Auger – Once checked the gate change is disabled

Dig – Disable remote Pause/Blast, and use them as digital inputs

OAOff – Disable Over Application Error Messages (Version 32 and later)

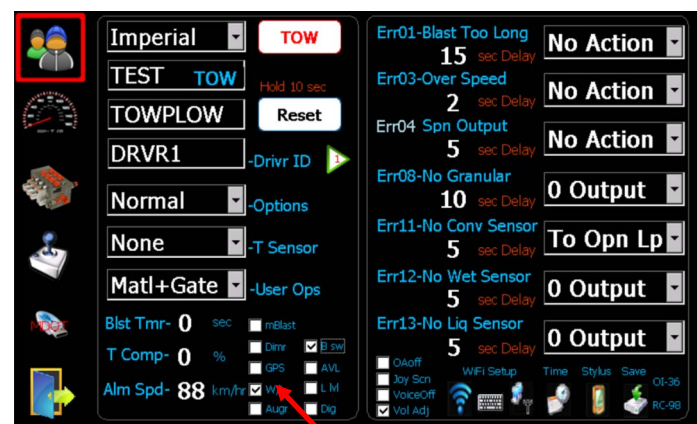
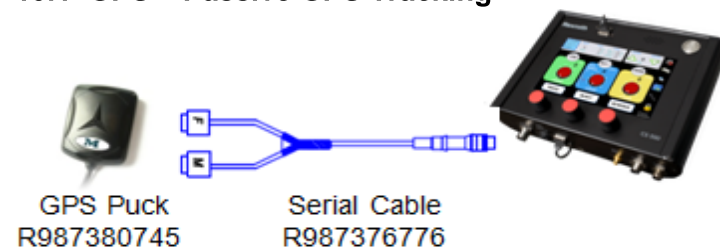
JoyScn – Operator screen defaults to joystick screen.

VoiceOff – Turn off voice readout for spreader functions. (Version 11 and later)

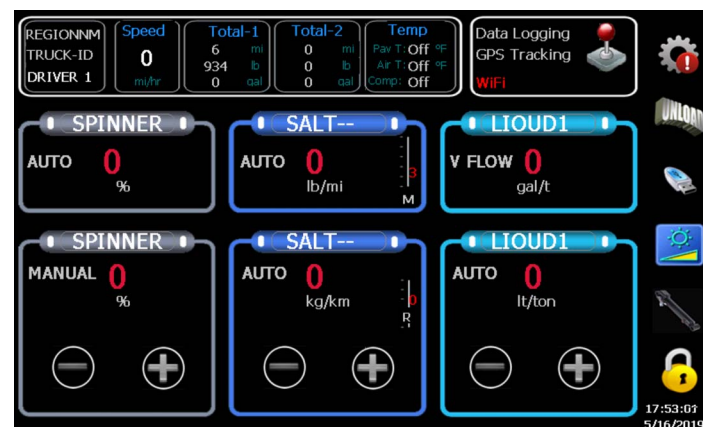
VolAdj – Allow operators to adjust volume without programming key

13 GPS Options and WiFi Data Transfer

13.1 GPS – Passive GPS Tracking

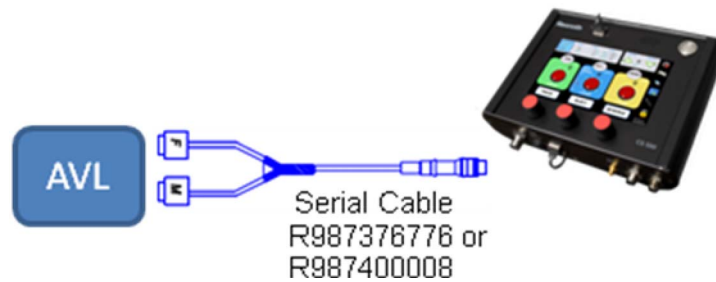


GPS tracking



'GPS'
displayed if
Satellites are
locked

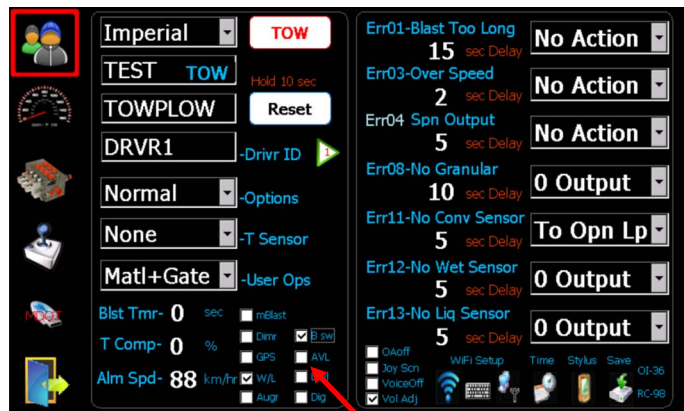
13.2 AVL – Active Vehicle Locating Interface



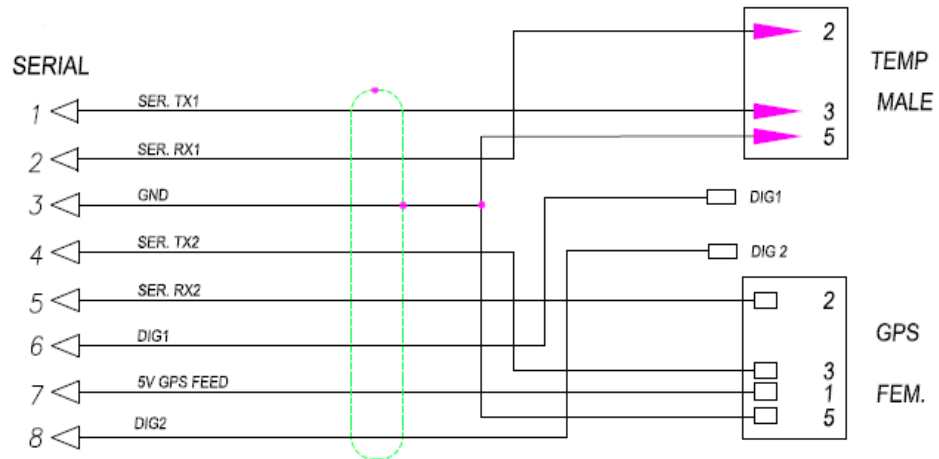
Note: AVL vendor needs to decide which cable to use



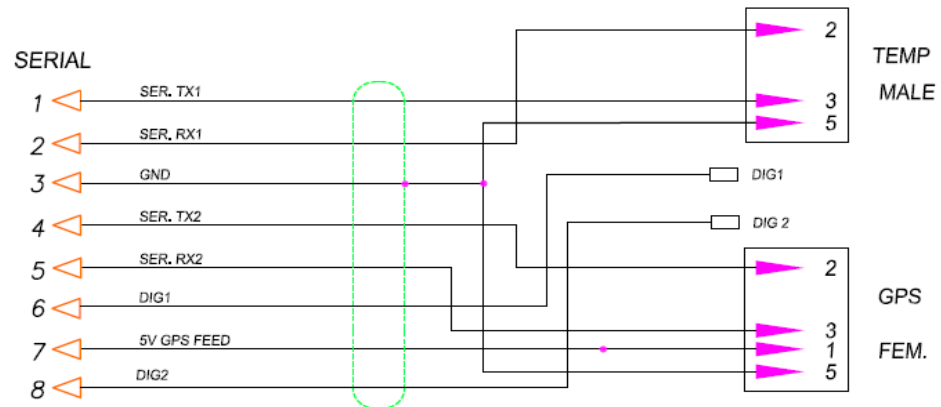
‘AVL’ displayed if the interface is OK.



AVL Interface



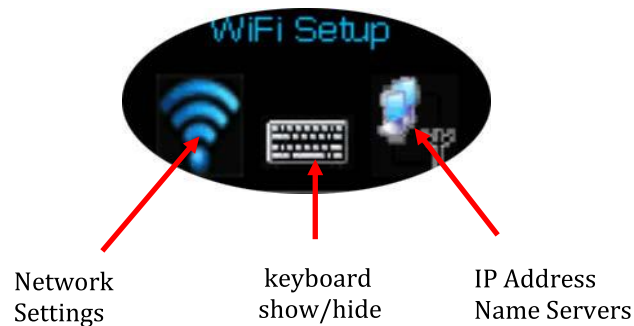
Serial cable PN: R987376776




Serial cable PN: R987400008

13.3 550 WiFi Data transfer

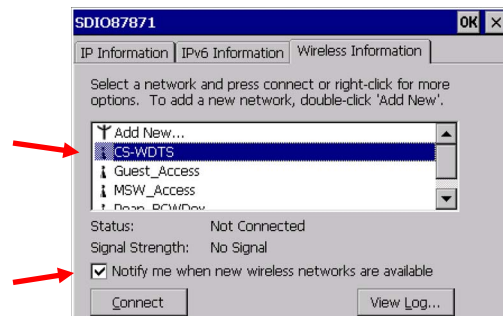
If equipped with WiFi option make sure an internal or external antenna is connected before setting it up. Similar to standard PC there are two parts that need to be set up, Wireless Connection and Network Settings



When the WiFi network  icon is pressed, the following window will pop up:

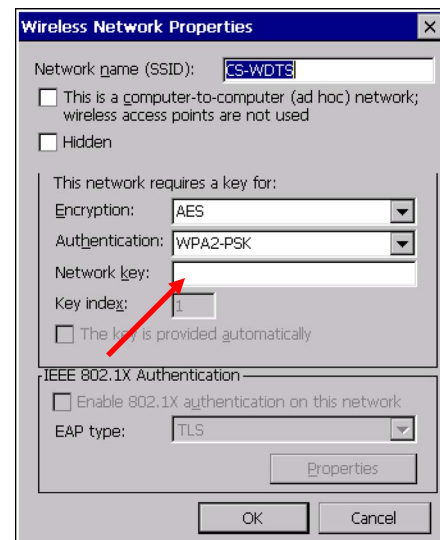
The WiFi setup is almost identical to standard Windows:

- Select the Wireless Information tab at the top
- Uncheck 'Notify me...' to stop this window from popping up every time the system starts up.
- Select the network you wish to use
- Click on 'Connect'
- Enter 'network key'



Note: Only one preferred network can be stored at a time, or this will cause a conflict. If a preferred network already exists, please ensure you have firmware version 6 or higher installed and do the following:

- Close the Wifi setup dialogs shown on the right so you are back to the setup screen.
- Press and hold the WiFi network icon for 5 seconds, and this will clear any preferred networks.
- Now you can perform the WiFi setup.



When the 'IP Address/Name Server' icon is pressed the Following window will open up:



GSPI86861(WiFi Setup), click this icon ONLY to configure IP Address and name servers if it is required.

SDIO87872(Future connection, **NOT USED**)

AX88772B1(Ethernet, **NOT USED**)

For each 550 controller a unique static IP address needs to be assigned, record all the IP addresses for setting up in the WiFi Desktop Program.

'Marvell SDIO8787 Wireless Card' Settings [OK] [X]

IP Address | Name Servers

An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space provided.

☐ Obtain an IP address via DHCP
☒ Specify an IP address

IP Address: 192.168.2.201

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.254


To connect the controllers to a network DNS/WINS need to be set up too (consult to IT department for correct settings)

'Marvell SDIO8787 Wireless Card' Settings [OK] [X]

IP Address | Name Servers

Name server addresses may be automatically assigned if DHCP is enabled on this adapter. You can specify additional WINS or DNS resolvers in the space provided.

Primary DNS: . . .
 Secondary DNS: . . .
 Primary WINS: . . .
 Secondary WINS: . . .

Note: Any changes to **WiFi/ Network settings/ Time/ Stylus** recalibration need to be saved by clicking the  save icon on the bottom of the screen.

If multiple preferred networks were configured by accident, pressing save will delete all set up networks and a dialog will pop up stating they were deleted. You will have to reconfigure the Wifi network settings.

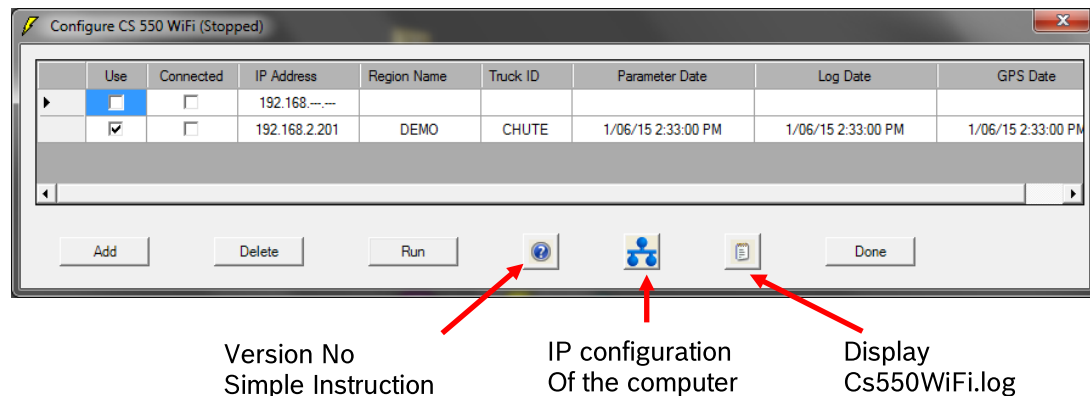
Note: Since WiFi Transfer loads all parameter and log files it is necessary to remove all unused data files. Follow this procedure to clear unnecessary files:

- Make sure you are on the main operator screen
- Turn each of the 3 control knobs on the display 8 clicks in the clockwise direction
- Press & Hold USB icon on the screen for 20 seconds. This will delete the files. There is no user prompt which says operation is completed.

A PROGRAM key is required for this operation

13.4 550 WiFi Data Transfer Program

When the 550 Desktop software is installed an icon is created on the desktop for the WiFi Program.



- Add the IP addresses of all the 550 controllers to the list
- Check/Uncheck 'Use' to enable/Disable any individual 550 controller connection
- Click on 'Run' to start up the program to automatically download both parameter and log data as well as GPS data.
- Click on 'Done' to minimize the WiFi Desktop program.

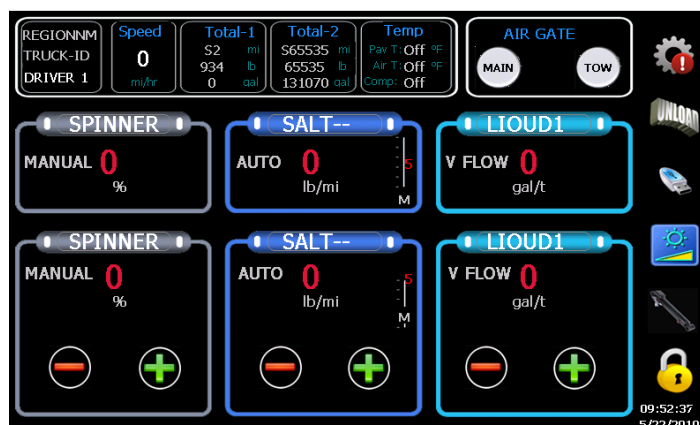
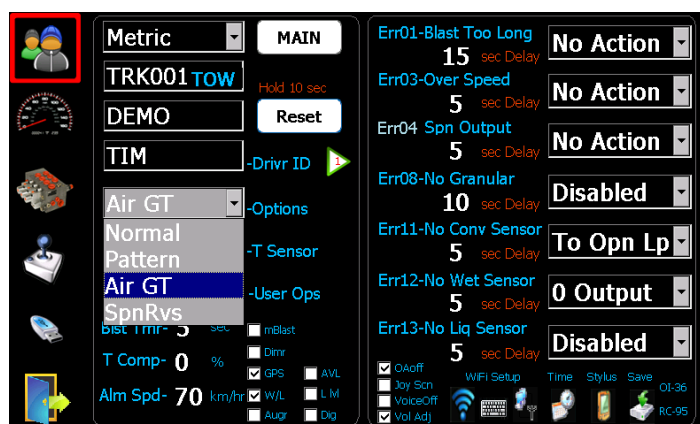
14 Optional Modes and Operation

Only 3 modes of operations, 'NORMAL', 'AIR GATE', and 'SPINNER REVERSE' modes are supported in the Towplow system.

14.1 Air Gate Mode

(Version 12 and later) This mode allows a two position gate control with an air cylinder for two different materials, like SAND and SALT. It provides a digital output signal (0, 12V) to toggle between two materials and two calibrated gate positions. When gate position changes the 550 controller also automatically set the gate position to the correct calibrated gate position for the material.

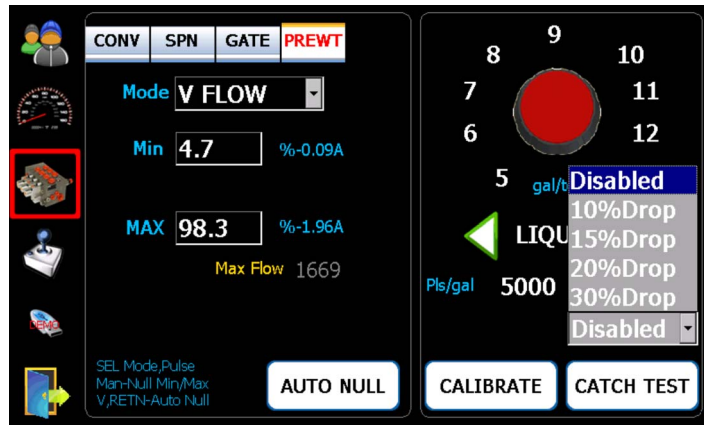
1. Select the **Air Gate** mode under "Options" menu from USER screen.
2. Click buttons on operator screen to turn on/off Air Gate.



14.2 Solid Reduction for Pre-wet

This feature helps to save salt usage when prewet is turned on. End users are able to define a percentage of salt rate reduction in material configuration.

1. Select the **Prewet** tab.
2. The pull-down menu for solid reduction percentage is in the bottom right of the screen (i.e. 10%, 15%, 20%, 30%)

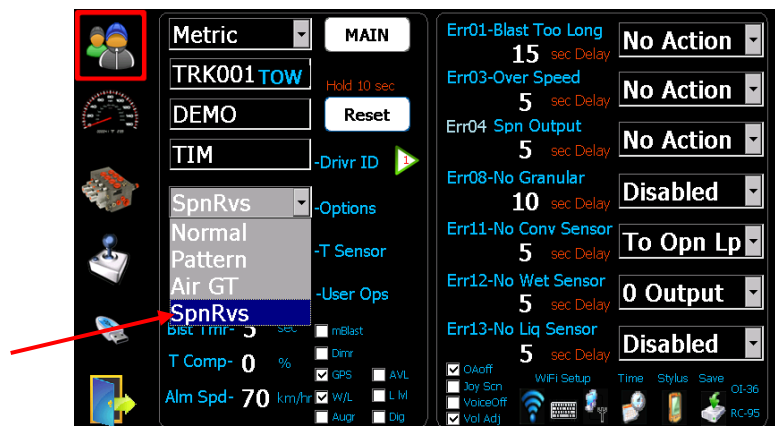


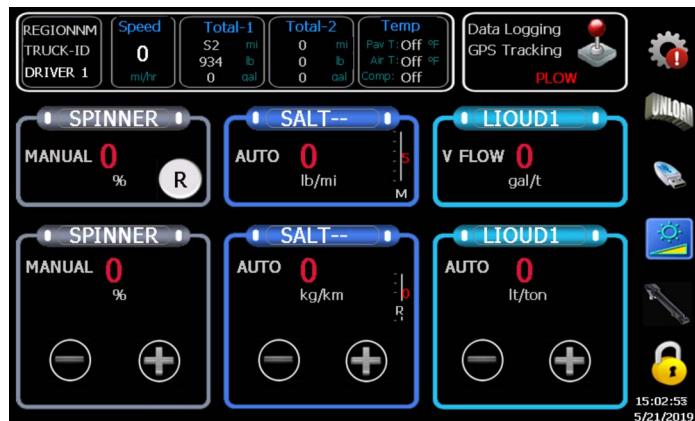
14.3 Spinner Reverse Mode

This mode allows end users to control a Spinner in either forward or reverse direction by providing two proportional spinner outputs. With RC firmware version 98 and lower. The operator can press the **R** button on screen to reverse the spinner direction. The controller ramps down from the current direction and ramps up to the opposite direction.

Note: As of RC firmware version 99 and higher, reverse is triggered by an external switch and not by tapping on screen. Also with this version, output G12 from the controller is ON when system is Paused, and OFF when not paused.

1. Select the **Spn Rvs** under “Options” menu from the USER screen.
2. System assume the same Min&Max for Spinner reverse output
3. Click ‘R’ button to select spinner forward or reverse operation

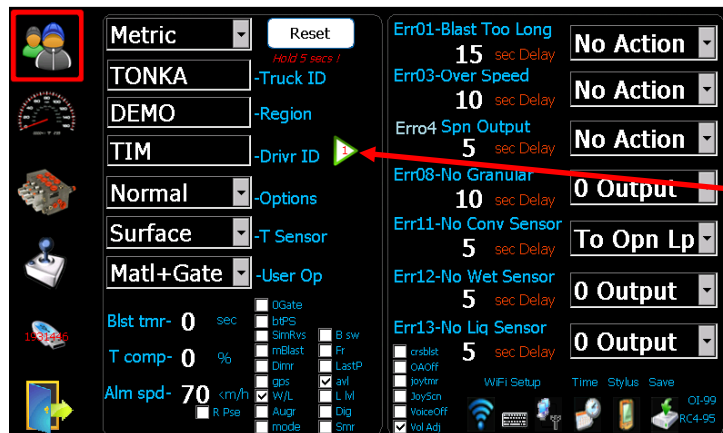




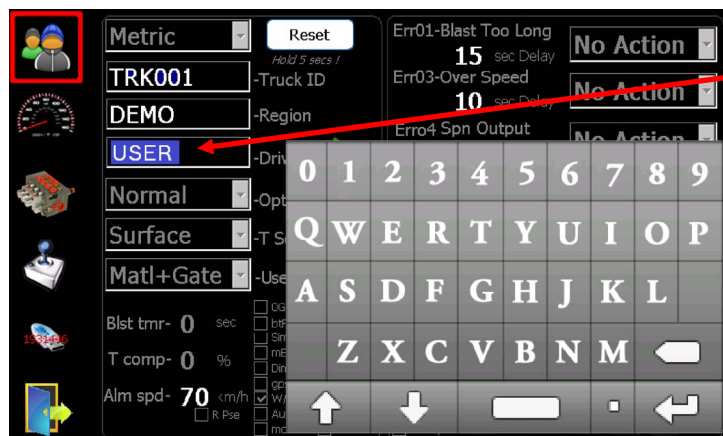
15 Operator ID Input

By enabling this feature, operators may enter a unique ID, which is only supported for the AVL system.

- Select DRIVER ID #4 by using the green arrow in the main program screen.
- Enter 'USER' in the ID field
- Exit the setup screen to save changes



Select #4



Type in 'USER'

16 Error Codes

The following error messages are user configurable, both timeouts and controller actions.

Error Description	#	Suggested Solution
ERROR_BLAZT_TOO_LONG	1	Turn off blast/time too short
ERROR_DEICE_BLAZT_TOO_LONG	2	Turn off blast/time too short
ERROR_OVERSPEED	3	Slow down or raise gate
ERROR_SPIN_PROP	4	Check cables, replace coil
ERROR_CONV_PROP	5	Check cables, replace coil
ERROR_CROSS1_PROP	6	Check cables, replace coil
ERROR_CROSS2_PROP	7	Check cables, replace coil
ERROR_NO_MATL_DETECT	8	Load material, check sensor
ERROR_NO_LIQ_DETECT	9	Load material, check sensor
ERROR_NO_GROUNDSPEED	10	Check cable/sensor
ERROR_NO_CONVEYOR	11	Check cable/sensor
ERROR_NO_LIQUID	12	Check cable/sensor
ERROR_NO_DEICE	13	Check cable/sensor

The following Errors are warning messages, and not user configurable.

Error 20 - Output Non-Zero. This is a safety function to prevent the controller from accidentally sending an unexpected output when the controller is turned on, or when the user leaves programming mode and enters normal operation mode. The outputs will be kept at zero until the error condition is removed. To recover, set the application rates to zero or exit Blast mode.

Error 21 - Unload Not Allowed. An attempt was made to enter Unload mode while the truck was moving, which is not allowed. The Unload command will be ignored in this case.

Error 22 - BB3 System Error. This is an unrecoverable error in the RC controller. Try rebooting the controller to see if it goes away, otherwise report the failure to Bosch Rexroth. This error can also occur if an attempt is made to run a joystick without having an RCE controller present.

Error 23 - This is a communication failure between the RC controller and the display. It will show up in the logging history in the RC controller after the display is re-connected.

Error 24 - RCE communication failure. This is a communication failure between the RC controller and the RCE controller in a system with a joystick. It will automatically shut down

the joysticks. The status of this communication can also be monitored using the display item called DIG which is available by double-tapping on the gear icon while in normal operation mode. The item called DIG at the bottom right corner of the display should normally be zero. It will be E0 if this error occurs.

Error 25 - Joystick 1 communication failure. This will shut down the joystick outputs, and will show up as a 40 in the live DIG display item.

Error 26 - Joystick 2 communication failure. This will shut down the joystick outputs, and will show up as a 80 in the live DIG display item.

Error 27 - No Gate Sensor. Gate sensor failure, most likely caused by cable break. This will force the gate control into Manual.

Error 28 - Gate Position is Zero. This will occur only if the gate position is zero while in gate read-back mode. The conveyor will not be allowed to move until this is fixed.

Error 29 - No Ground Speed Simulation. This is just an information message to indicate that ground speed simulation mode has been stopped.

Error 30 - Under-Application: Spinner. The spinner cannot meet the desired RPM setpoint. This should not happen in manual mode, but could happen if the spinner is in PPS mode and the ground speed is high.

Error 31 - Under-Application: Conveyor. The conveyor cannot meet the desired RPM setpoint. Caused by too high application rate or too high ground speed or incorrect calibration.

Error 32 - Under-Application: Pre-Wet. The pre-wet pump cannot meet the desired flow setpoint. Caused by too high application rate or too high ground speed or incorrect calibration.

Error 33 - Under-Application: Anti-Ice. The anti-ice pump cannot meet the desired flow setpoint. Caused by too high application rate or too high ground speed or incorrect calibration.

Error 34 - Over-Application: Conveyor. The solid application rate is above setpoint. Most likely caused by a minimum null value for conveyor output that is too high, so the conveyor never stops.

Error 35 - Over-Application: Pre-Wet. The pre-wet application rate is above setpoint. Most likely caused by a minimum null value for the pre-wet pump output that is too high, so the pump never stops.

Error 36 - Over-Application: Anti-Ice. The anti-ice application rate is above setpoint. Most likely caused by a minimum null value for the anti-ice pump output that is too high, so the pump never stops.

Error 37 - Calibration: Ground-Speed Pulses Too Low. Calculated pulses per km is too low during calibration. Possibly caused by no sensor feedback, or try recalibrating the ground speed sensor.

Error 38 - Spinner Maximum RPM Too Low. During auto nulling, the calculated maximum RPM was too low, most likely caused by no sensor feedback.

Error 39 - Conveyor Maximum RPM Too Low. During auto nulling, the calculated maximum RPM was too low, most likely caused by no sensor feedback.

Error 40 - Pre-Wet Maximum Hz Too Low. During auto nulling, the calculated maximum Hz was too low, most likely caused by no sensor feedback.

Error 41 - Anti-Ice Maximum Hz Too Low. During auto nulling, the calculated maximum Hz was too low, most likely caused by no sensor feedback.

Error 42 - Wrong Spinner Control Mode. An attempt was made to perform auto nulling of a spinner while it was in manual.

Error 43 - Wrong Conveyor Control Mode. Not Used.

Error 44 - Wrong Pre-Wet Control Mode. An attempt was made to perform auto nulling, or volume calibration, of a pre-wet pump while it was in manual.

Error 45 - Wrong Anti-Ice Control Mode. An attempt was made to perform auto nulling, or volume calibration, of an anti-ice pump while it was in manual. This error could also be caused by an I/O conflict between a cross conveyor mode and the anti-ice pump output, in which case the anti-ice pump will be disabled.

Error 46 - Wrong Cross-Conveyor Mode. An attempt was made to go into Reverse while this output was being used by a cross-conveyor mode. The Reverse command will be ignored in this case. Could also be caused by attempting to use gm/sq.m. mode while there was an I/O conflict with a Cross-Conveyor CA mode, in this case gm/sq.m. mode will not be allowed. Could also be caused by attempting to use closed-loop gate control while in Cross-Conveyor US mode or Liquid-Plus mode, in which case the gate control will be forced into gate readback mode.

Error 47 - Wt. per Revolution Too Low. During conveyor weight calibration, the calculated weight per revolution was too low, most likely caused by typing in zero for the weight.

Error 48 - Wt. per Revolution Too High. During conveyor weight calibration, the calculated weight per revolution was too high, most likely caused by no conveyor sensor feedback.

Error 49 - Pre-Wet Pulses per Gallon Too Low. During calibration of pre-wet volume output, the pulses/gal was too low, most likely caused by no flow sensor feedback.

Error 50 - Pre-Wet Pulses per Gallon Too Hi. During calibration of pre-wet volume output, the pulses/gal was too high, most likely caused by typing in zero for the volume.

Error 51 - Anti-Ice Pulses per Gallon Too Low. During calibration of anti-ice volume output, the pulses/gal was too low, most likely caused by no flow sensor feedback.

Error 52 - Anti-Ice Pulses per Gallon Too Hi. During calibration of anti-ice volume output, the pulses/gal was too high, most likely caused by typing in zero for the volume.

Error 53 - Spinner mm at zero RPM too Low. During calibration of the relationship between spinner RPM and spinner spread width, a value of 0 mm at zero RPM was used.

Error 54 - Spinner mm per RPM too Low. During calibration of the relationship between spinner RPM and spinner spread width, a value of maximum spread width was used that was less than the mm at zero RPM.

Error 55 - Gate Movement Too Low. During calibration of gate maximum and minimum position, the difference between minimum and maximum height was less than 1 inch.

Error 56 - Gate Zero in Manual. While in manual gate control mode, the operating gate position was specified to be zero.

Error 57 - Gate at Calibration Too Low. While calibrating the weight per revolution for a specific material, the gate position at calibration was specified to be zero.

Error 58 - Spinner PPR Too Low. A value of zero was used for spinner pulses per revolution.

Error 59 - Conveyor PPR Too Low. A value of zero was used for conveyor pulses per revolution.

Error 60 - Spinner Output Range Too Low. The difference between maximum and minimum spinner nulling values was less than 5%.

Error 61 - Conveyor Output Range Too Low. The difference between maximum and minimum conveyor nulling values was less than 5%.

Error 62 - Cross Conveyor 1 Output Range Too Low. The difference between maximum and minimum cross conveyor nulling values was less than 5%.

Error 63 - Cross Conveyor 2 Output Range Too Low. The difference between maximum and minimum cross conveyor nulling values was less than 5%.

Error 64 - Pre-Wet Output Range Too Low. The difference between maximum and minimum pre-wet nulling values was less than 5%.

Error 65 - Anti-Ice Output Range Too Low. The difference between maximum and minimum anti-ice nulling values was less than 5%.

Error 66 - Joystick 1 Output Range Too Low. The difference between maximum and minimum joystick nulling values for one of the six outputs was less than 5%.

Error 67 - Joystick 2 Output Range Too Low. The difference between maximum and minimum joystick nulling values for one of the six outputs was less than 5%.


Error 68 - Theoretical Maximum Conveyor RPM Too High. Based on the specified application rate setpoints, and the maximum ground speed, the maximum theoretical conveyor RPM required has been calculated to be more than twice the actual conveyor capacity, which will lead to serious under-application problems. The actual controller RPM setpoint will be clamped at this value to prevent the controller from becoming unstable, and the conveyor should be re-calibrated to determine the source of the problem.

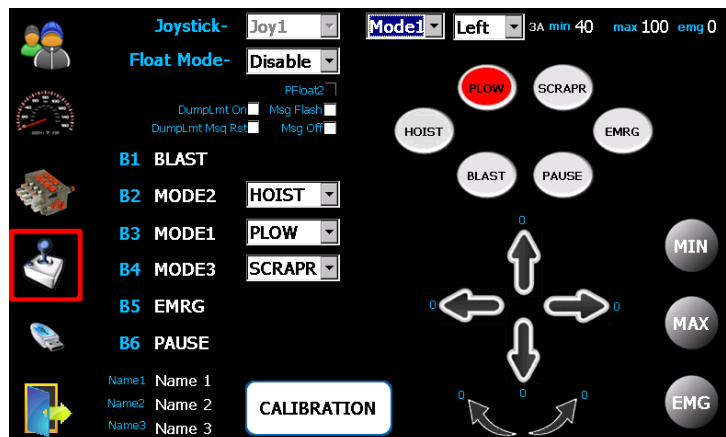
Error 69 - Theoretical Maximum Pre-Wet Hz Too High. Based on the specified application rate setpoints, and the maximum ground speed, the maximum theoretical pre-wet pump flow required has been calculated to be more than twice the actual pump capacity, which will lead to serious under-application problems. The actual pump flow setpoint will be clamped at this value to prevent the controller from becoming unstable, and the pre-wet pump should be re-calibrated to determine the source of the problem.

Error 70 - Theoretical Maximum Anti-Ice Hz Too High. Based on the specified application rate setpoints, and the maximum ground speed, the maximum theoretical anti-ice pump flow required has been calculated to be more than twice the actual pump capacity, which will lead to serious under-application problems. The actual pump flow setpoint will be clamped at this value to prevent the controller from becoming unstable, and the anti-ice pump should be re-calibrated to determine the source of the problem.

17 Joystick Calibration

17.1 Solenoid Nulling

1. Start vehicle and achieve full pump flow.
2. Tap on  Joystick symbol.



Check Marks:

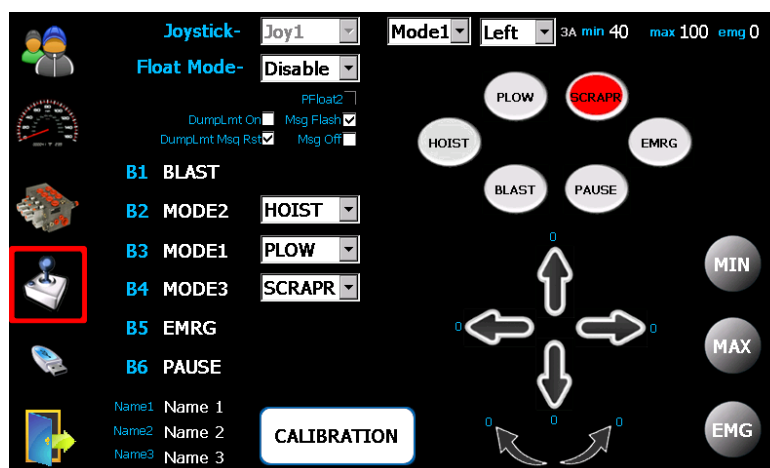
PFloat2 – Option to turn ON/OFF 2nd Power float

DumpLmt On – Option to turn ON/OFF Dump Limit Function (Version 16 and higher)

Msg Flash – Option to flash dump limit message

DumpLmt Msg Rst – Only show message on rising edge (Version 11 and later)

Msg Off – Option to disable dump limit message (Version 26 and later)



3. Press "CALIBRATION" button and press a mode button on the joystick to select a desired mode to adjust.
4. Move the joystick slightly until the hydraulic actuator moves slowly – press "Min" while the stick is deflected.
5. Move the joystick until the actuator moves at a safe maximum speed – press "Max".
6. Repeat this for all axis', directions and modes.

LmtRst – Dump limit warning disappears once acknowledged

Press "CALIBRATION" button again to save all changes.

17.2 Emergency (Panic Button) – If Configured

1. Select the desired mode on the joystick and pull the joystick in the direction that the emergency button should activate.
2. Press the round "EMG" button while the stick is deflected.

Any mode or direction can be assigned to Panic Button. In operation mode when the Panic button is pushed in conjunction with the Deadman trigger, the selected function(s) will activate simultaneously.

This joystick calibration is only required when a multifunction CANbus Joystick Console is included with the system.

All the mode names and special functions will be configured by the factory. Only solenoid nulling may be required.

18 Advanced Joystick Set-up

18.1 Power Float

If equipped, the Power Float mode can also be edited.

Resetting - Re-engages float when the joystick is returned to neutral.

Non-resetting - The button must be pushed to re-enable the float after the stick is deflected.

Check Marks:

PFloa2– Display if the 2nd Power float ON or not

DumpLmt On – Option to turn ON/OFF Dump Limit Function

Msg Flash – Option to flash dump limit message

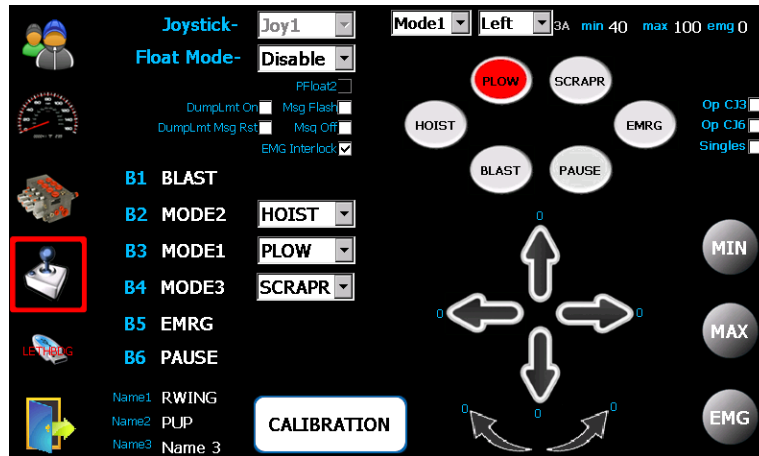
Msg Off – Option to disable dump limit message

DumpLmt Msg Rst – Only show message on rising edge

Op CJ3, Op CJ6 – Optional CJ style 2-Axis 3 or 6 button joystick

Singles- If using the CS154 single stick joysticks

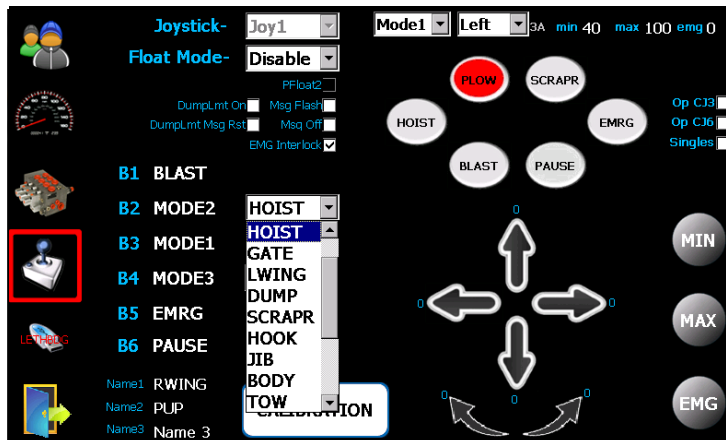
EMG Interlock-Pause spreader when Emrg pressed to give more flow to attachments



18.2 Mode Names

All the joystick button names and function will be preset by the factory. The joystick button names can be edited via the pull-down selection menus.

B1 is at the bottom left location and the buttons count up clockwise.

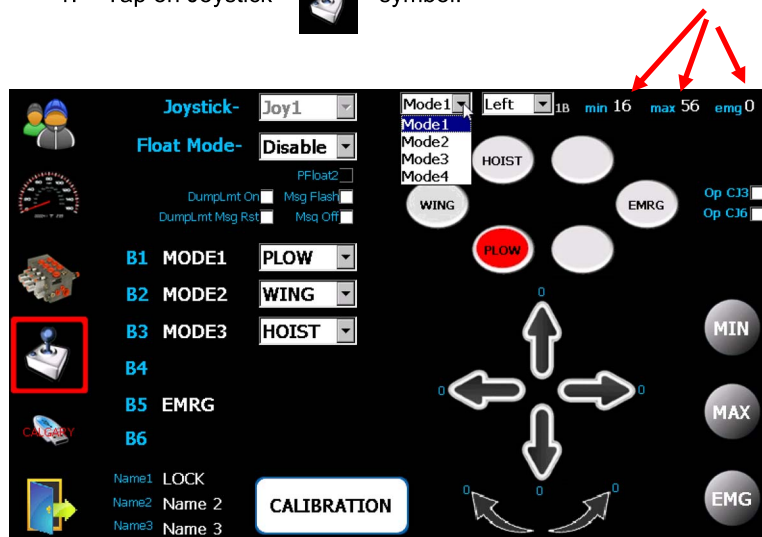


Note: Editing mode names does not re-allocate outputs on the valve cable. They are fixed and defined in the valve layout for a specific system.

19 Joystick Min/Max/Emg Set-up

(Version 35 and later) Aside from the standard calibration described in the previous section, values can be entered directly using the following method:

1. Tap on Joystick  symbol.



2. Select the joystick direction for which you want to enter values.
3. Press 'Min' on the top right corner to enter a percentage value.
4. Follow this procedure for 'Max' and 'Emg'
5. Exit calibration screen to save new values.

20 Warning

This glass LCD touch screen display has been extensively tested and validated against its intended use. This glass could crack and break if the display is dropped on to a hard surface or receives substantial impact. If the glass chips or cracks, discontinue use and contact Bosch Rexroth Canada to have it replaced - do not touch or attempt to remove the broken glass. Any misuse/abuse causing damage, whether intended or not, will become the sole responsibility of the owner/buyer which will render the warranty of this product, void.

Notes: