

CS660/CS661 Spreader Controller

Operator Manual



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1 Operator Interface and Basic Operation



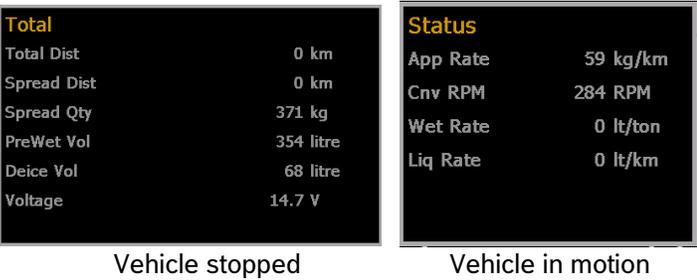
CS-660 Display

CS-661 Display + Knob Console

This diagram shows the main operator interface with various callouts explaining functions:

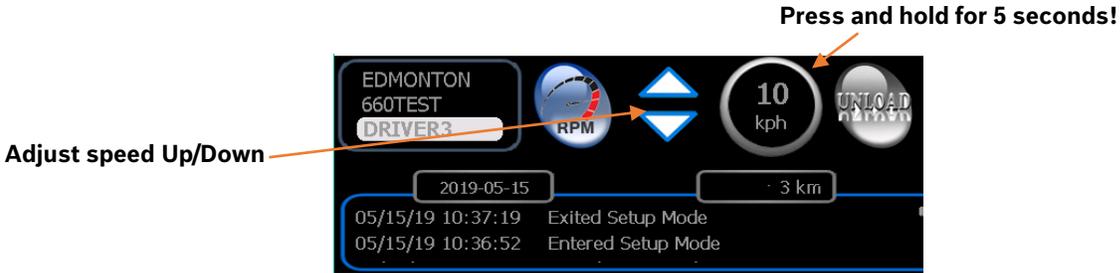
- [1] Status/Totals:** Press & hold icon 5s to clear (without key). Shows a screen with 'GSS=0' and various metrics like Total Dist, Spread Dist, Spread Qty, DryWet Tot, Dose Tot, Voltage.
- [2] Settings (PGM key required):** Shows a screen with 'GSS>0' and settings for App Rate, Cnv RPM, Wet Rate, Liq Rate, Voltage.
- [3] Vehicle speed:** Press & hold 5s to sim speed. Shows a speedometer icon.
- [4] Toolbox:** LOG key for Log data, PGM key for parms, Set vol & dim level. Shows a toolbox icon and Volume/Dim controls.
- [5] Driver ID:** Shows '12345 TRUCKID DRIVER2'.
- [6] Load WT:** Press and hold 2s To enter. Shows '56.9 kg' and '0 kg'.
- [7] Error Messages:** wipe up/down to view (OI & RC versions on the last line). Clear messages (PGM key required). Shows a log of system startup events.
- [8] Gate Position:** (tap to change). Shows a 'gate 5' indicator.
- Spinner:** Tap to change material. Shows '0 %' and 'Manual'.
- SALT--:** Tap to change material. Shows '0 kg/km' and 'Auto'.
- LIQUID1:** Tap to change material. Shows '0 lt/ton' and 'V Flow'.
- DEICE1:** Tap to change material. Shows '0 lt/km' and '1 Boom'.
- Buttons:** RPM, UNLOAD, Joy, Offline, WT, 0 kph.
- Knobs:** Turn: Spinner Press: Pause; Turn: Conveyor Press: Blast; Spreading Rate; Turn: Pre-wet Press: Momentary Conveyor Reverse; Turn: Anti-icing (if configured).

[1] **Status/Totals**– Display real time status and trip summary. Press and hold icon for 5 seconds to clear.



[2] **Settings**– Switch to program mode (a PGM key required)

[3] **Speed**– Displays current ground speed. You can simulate ground speed by pressing and holding in the circle for 5 seconds. The following arrows will appear which will allow you to adjust the speed:

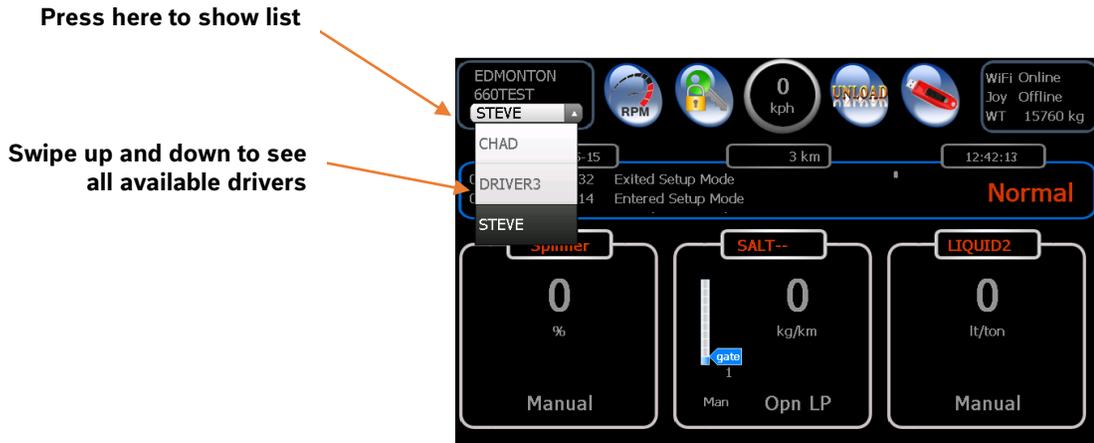


[4] **Toolbox**–This button changes depending on whether a Program key is inserted into the display or not. When not inserted, the icon is displayed. Pressing this icon will show the following:

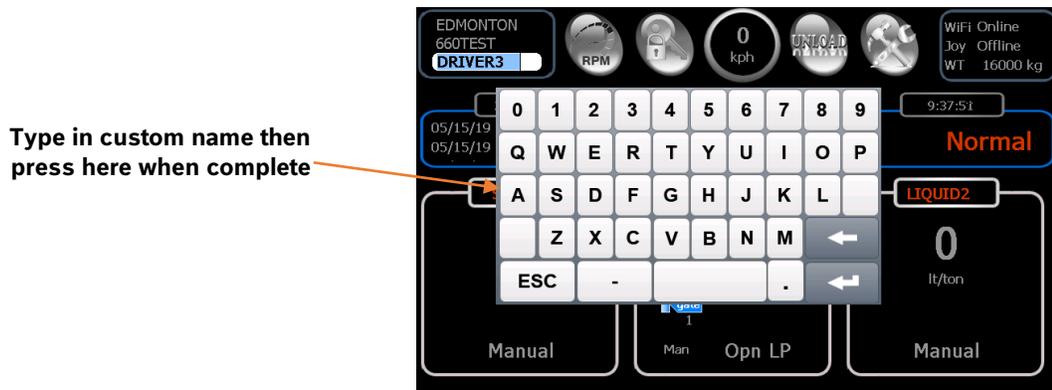


When a Log or Program key are inserted, you will see the icon instead. Please see the Parameter and Log transfer section in this manual for more information. This button also displays the GPS/AVL status if GPS or AVL connection is active.

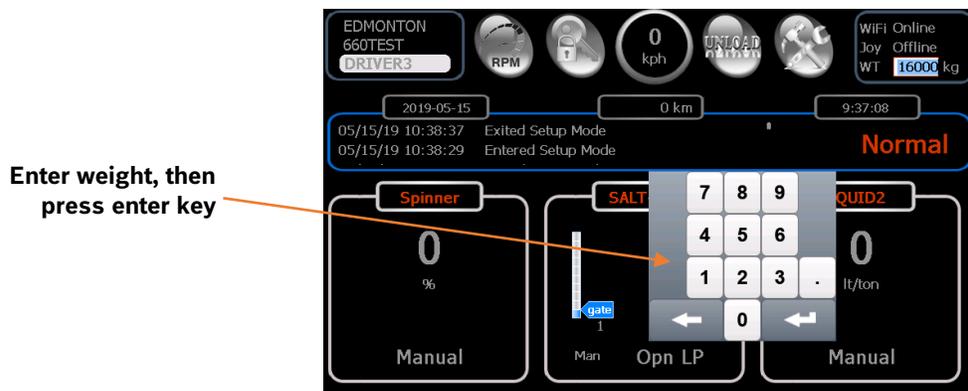
[5] Driver ID– This shows the current Driver ID, and allows the selection and naming of Driver IDs. To select one of four Driver IDs, press on the Driver name and a list will drop down.



If the 4th driver ID is configured as “USER”, then the keyboard will appear when clicked. This allows the operator to enter a custom name:



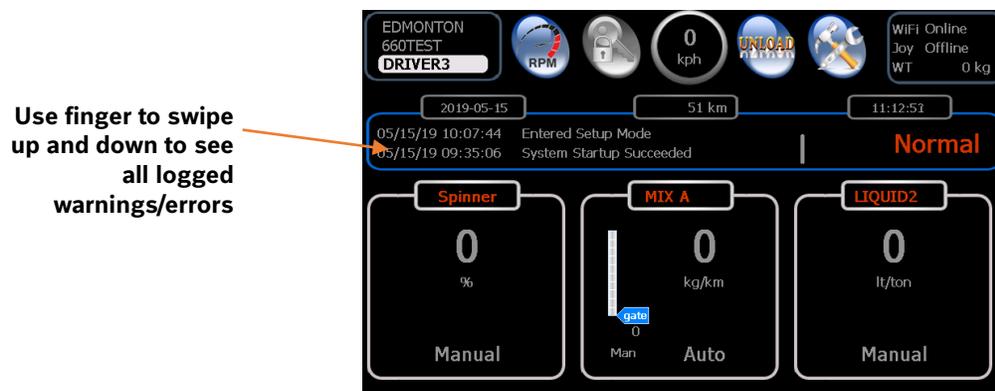
[6] Load WT – This displays the current calculated weight of the solid material on the truck. The operator enters the current weight, and as spreading is performed, the weight decreases. To enter the weight, press and hold the weight for 5 seconds and a keypad will pop up:



[7] Error Messages – During the operation when an error occurs, a message will appear in the notification area. Tap anywhere in the rectangle to acknowledge the warning.



Whenever there are warnings or errors, they are added to a list (log) in the notification area. To clear the log, press and hold anywhere in the rectangle for 5 seconds **with a PGM key inserted**.



When the auxiliary option 'Full Screen Low Oil/Dump Limit/Body Up Msg' is enabled then the warning messages will be displayed on full screen. These warning messages can be cleared only if the warnings are rectified.

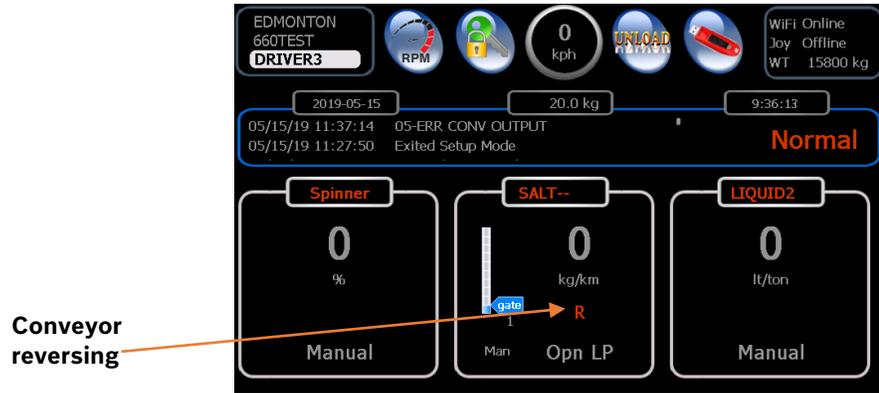


[8] Gate Position– This indicates current gate **position and control type (Auto, Readbk, AirGate, Man)**. The gate position can be adjusted here when using a Manual gate. Please refer to the Manual Gate Control section under Spreader Operation in this manual. Please refer to the 660 Calibration Manual for setting up the gate control type.

2 Additional Feature Functions

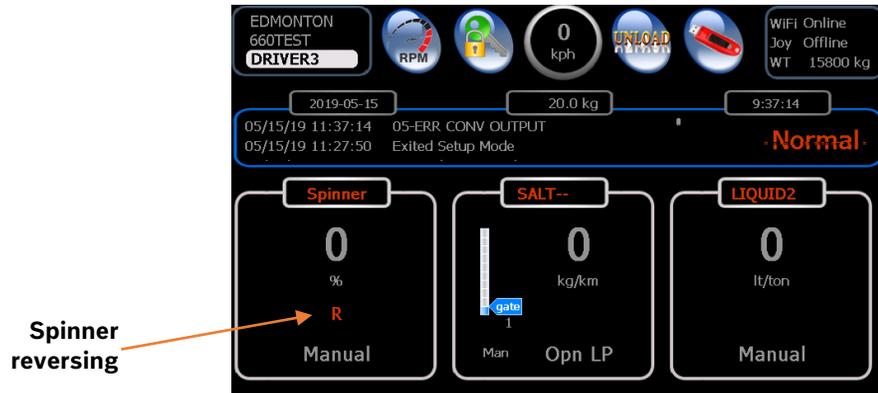
2.1 Conveyor Forward and Reverse

The Conveyor can work in either forward or reverse direction selected by a rocker switch wired to a digital input of the 660 system. The Reverse operation is indicated by a red “R” in the conveyor control panel.



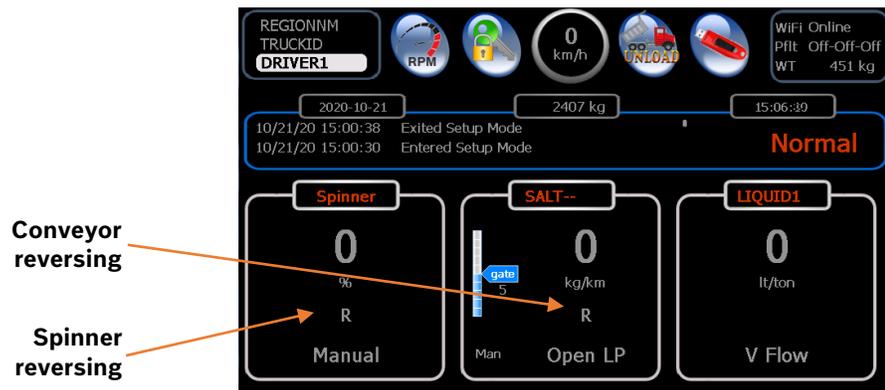
2.2 Spinner Forward and Reverse

The Spinner can work in either forward or reverse direction selected by a rocker switch wired to a digital input of the 660 system. The Reverse is indicated by a red “R” in the spinner control panel.



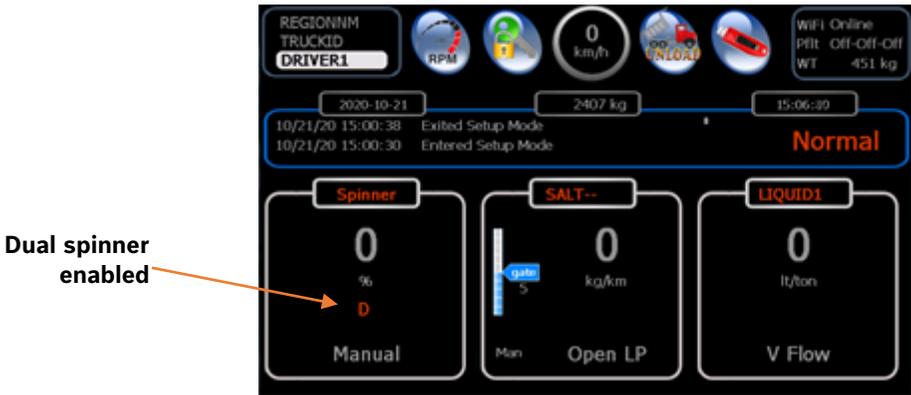
2.3 Spinner & Conveyor Forward and Reverse

Both spinner and conveyor can work in either forward or reverse direction separately selected by a switch. The Reverse is indicated by a red “R” in the Spinner and Conveyor control panels.



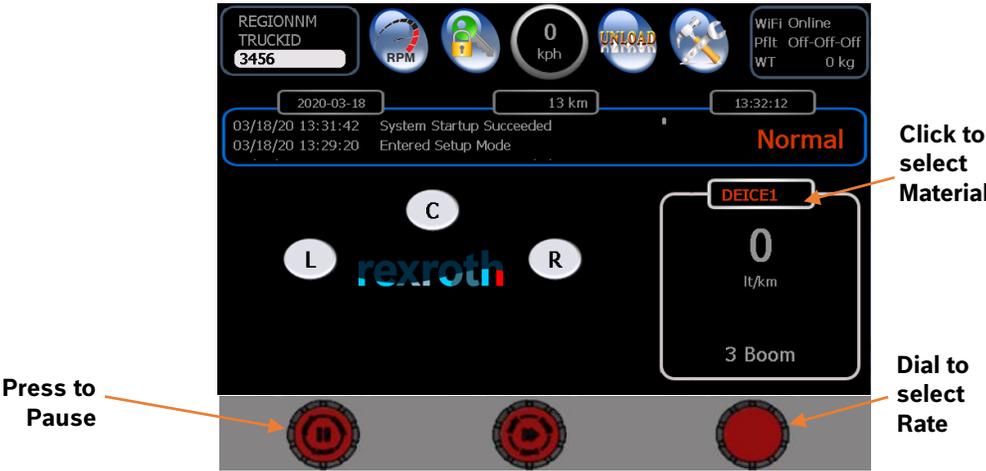
2.4 Dual Spinner

Dual spinner is selected by a switch. A red 'D' is displayed in the spinner panel when it is selected.



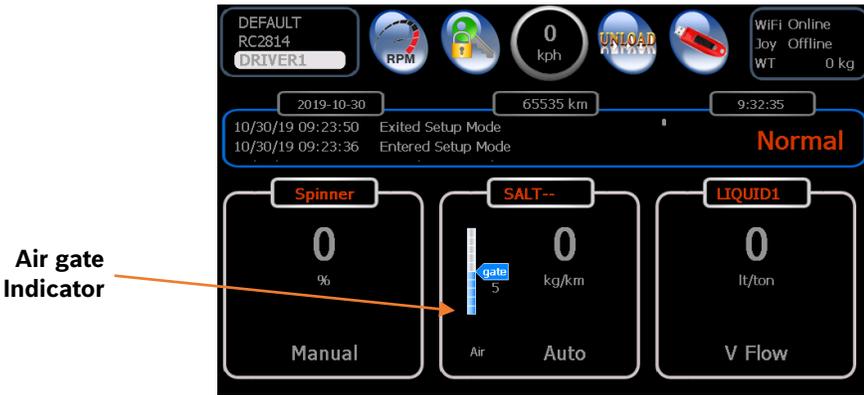
2.5 3 Boom Anti-ice

This is a dedicated 3 boom Anti-ice set up. It has 3 boom switches built in the armrest or a separate enclosure.



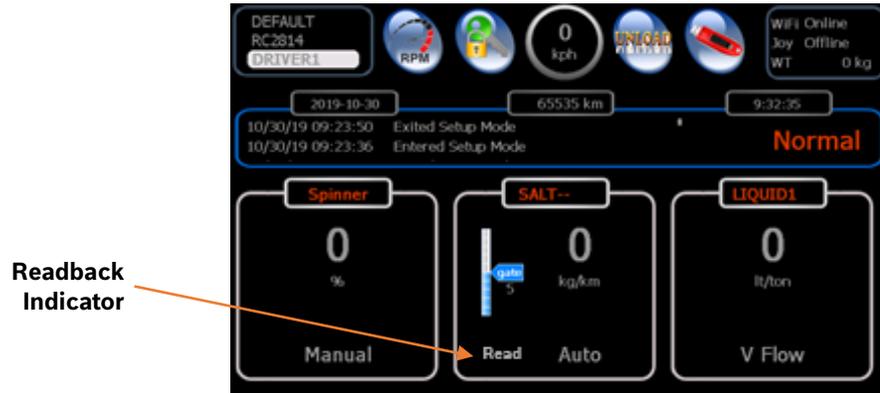
2.6 Air Gate

It uses an electrical switch to control an air cylinder to toggle between two gate positions. Turning on/off the switch would toggle between two materials, and automatically set the operation gate to the calibrated gate for the material selected.

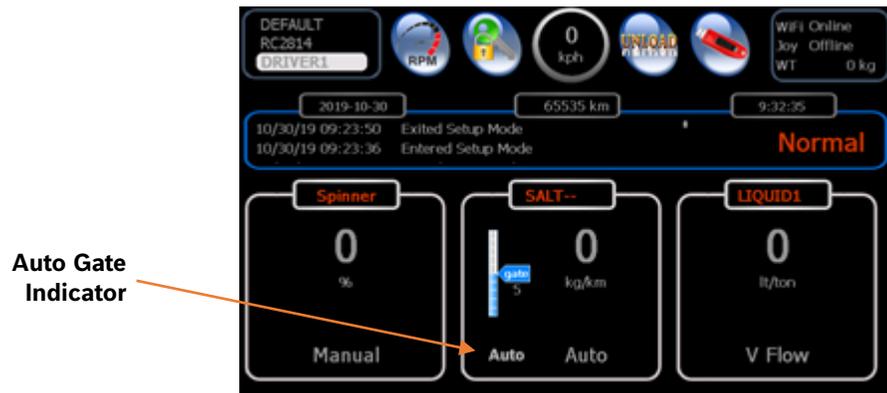


2.7 Gate Read back and Automatic Gate

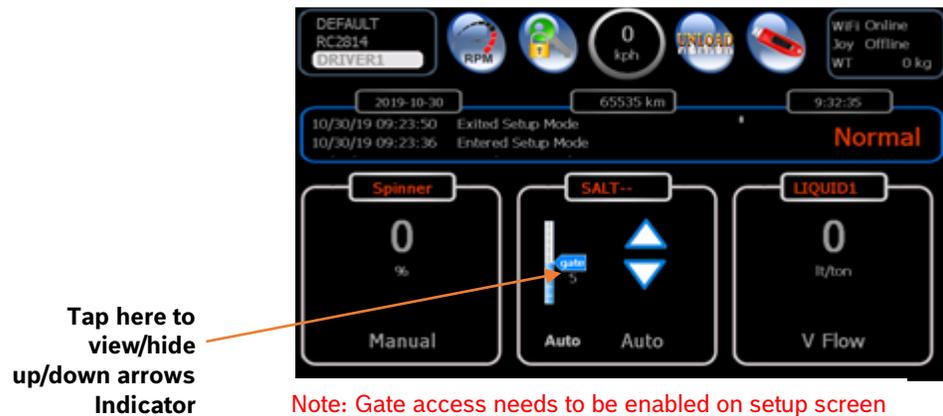
Gate Read back - A gate position sensor to monitor the actual gate position in real time. With the Read back sensor operators do not need to enter on screen when adjusting gate position for different materials.



Automatic Gate - A hydraulic gate cylinder with built in position sensor automatically move the gate up and down based on the spreading rate, vehicle speed and material selected.

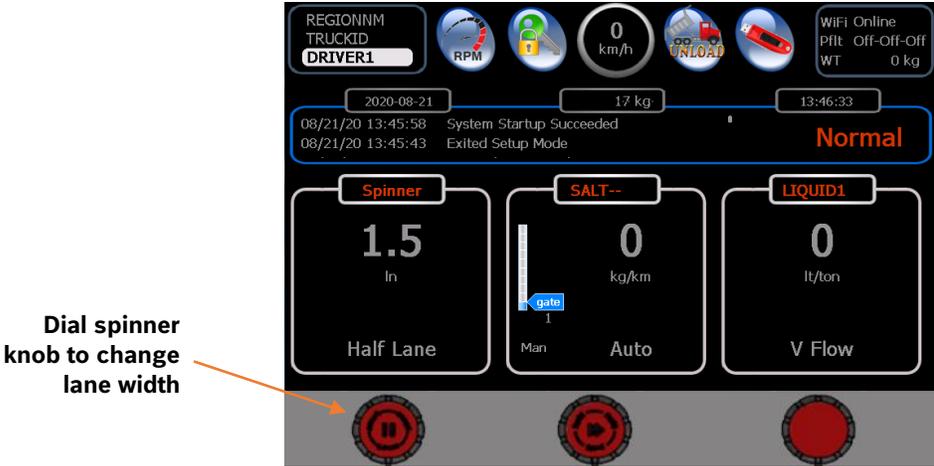


In case of a need to move the gate manually due to jam or other reason the operator can tap on the gate bar on the screen to pop up the up/down arrows, adjust to a desired position, and tap on the bar again to hide arrows.



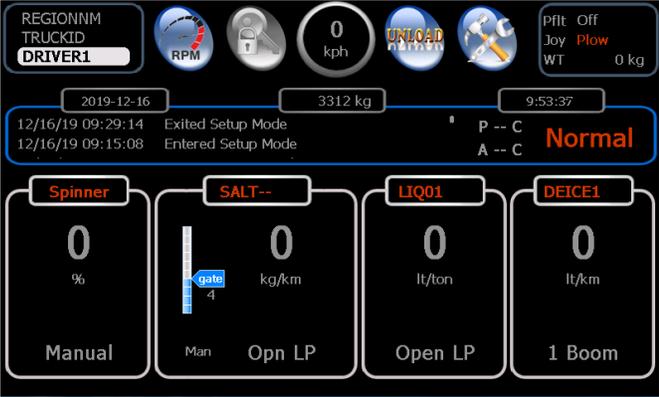
2.8 Lane Control

Operator can adjust spreading width by an increment of half lane or one lane depending on the configuration. With the lane control the solid application rate is lbs per lane mi or kg per lane km.



2.9 (4 knob) Spreader + 1Boom Anti-ice

This 4 knob configuration allows to run a standard spreader (Spinner, Conveyor, Prewet) and a single boom Anti-ice simultaneously. The 4 knobs (left→right) are for Spinner, Conveyor, Prewet and Anti-ice.



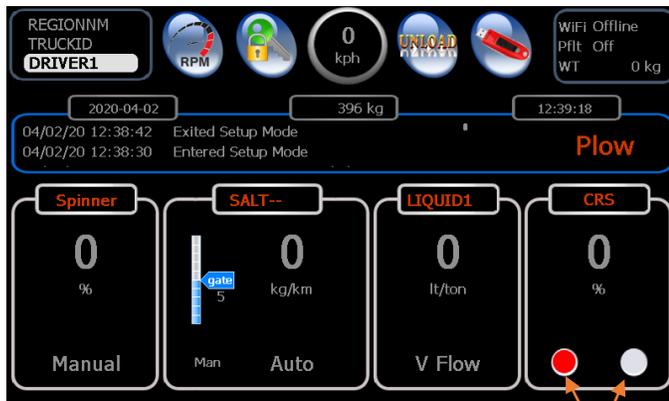
2.10 (4 knob) Spreader + 3Boom Anti-ice

The 4 knobs (left→right) are for Spinner, Conveyor, Prewet and Anti-ice. It has 3 external switches built in the armrest or a separate enclosure to switch booms On/Off. When a boom is ON the color of the boom indication letter changes to RED.



2.11 (4 knob) Spreader + Cross Conveyor

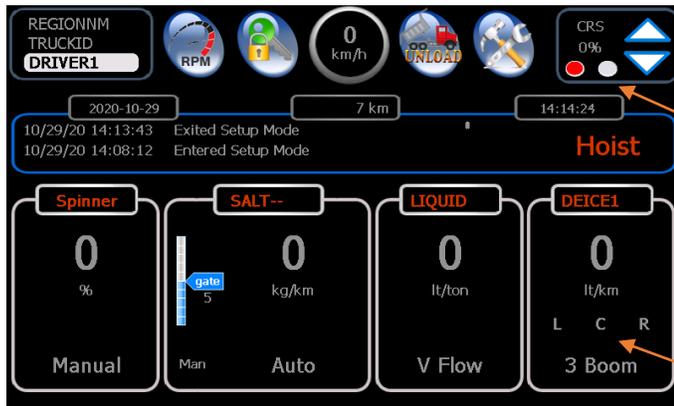
The 4 knobs(left→right) are for Spinner, Conveyor, Prewet and Cross Conveyor. This requires a 4 knob console with an external direction switch to control the cross conveyor direction that is displayed with the RED dot at the bottom of the cross conveyor panel.



Direction indicators

2.12 (4 knob) Spreader + 3Boom Anti-icing + Cross Conveyor

The 4 knobs (left→right) are for Spinner, Conveyor, Prewet and Anti-ice. The Up/Down arrows at the top left are for cross conveyor speed control. It has 4 external switches built in the armrest or a separate enclosure to switch booms On/Off and switch cross conveyor direction. When a boom is ON the color of the boom indication letter changes to RED.



Adjust CRS CNV speed

CRS CNV direction

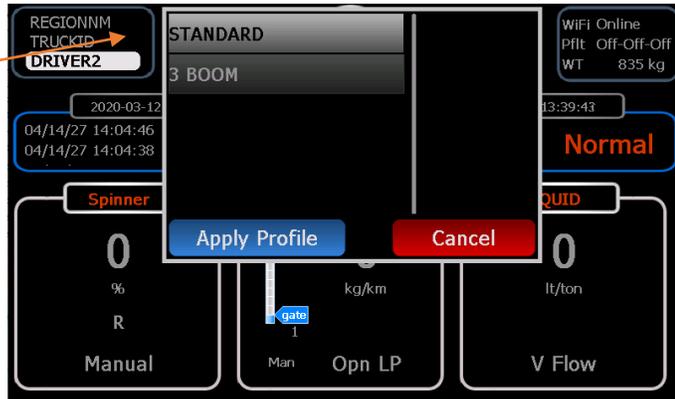
Boom On/Off indicators

3 Selecting Profiles

Profiles allow the system to be configured in different ways. For example, you may have a profile for standard spreading operation, and another for anti-icing only. To select profiles, press and hold down in the truck information panel. If profiles are available, the menu shown below will pop up. Select a profile and then press “Apply Profile”.

Note: You will need to reboot the system 2 times for changes to take effect.

Press and hold 5 seconds for profile menu

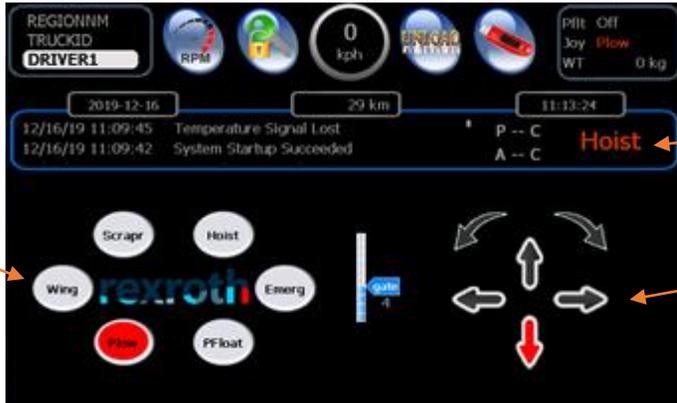


4 Joystick Operation

Available only when equipped with a joystick Armrest Console. When the Deadman Trigger is pressed, the joystick screen will be shown. When the trigger is released, the screen reverts to the spreader layout. The PAUSE, BLAST and Power Float (PFloat, PFloat2) functions on joystick buttons can always be activated by pressing the button without pressing the Deadman trigger.

Note: The joystick will only operate while the Deadman Trigger is pulled. The default spreader or joystick screen is selectable on USER setup screen.

The oval buttons represent the push buttons on the handle of the joystick. When a joystick button is pushed, the proper mode or function activated (illuminated in red). The voice output feature audibly lets the operator know which mode has been selected.



Current joy mode selected

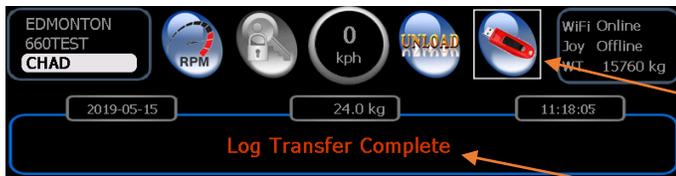
Direction the joystick handle deflected

5 Data Retrieval & Clear Trip Summary

Two different types of data can be retrieved from the 660/661, Log data, and parameter data. To get log data, you must use a 660 USB LOG Key. Parameter data, which is information about the current configuration can be retrieved using a 660 USB PROGRAM Key. The system will detect the type of USB Key inserted, so when the USB icon is pressed, the appropriate data will be downloaded to the Key.

With a 'LOG DATA KEY' inserted

Press the 'USB' symbol to transfer the log data.



Press here to transfer log data

Confirmation message

With a 'PROGRAMMING KEY' inserted

Press the 'USB' symbol to transfer the parameter data.



Press here to transfer parameter data

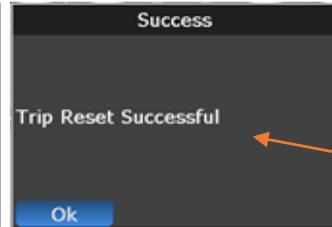
Confirmation message

Clear Trip Summary

With NO USB Key inserted. Press on the RPM icon  to display trip summary information.

Once this window is visible, press and hold the RPM icon for 5 seconds

Total	
Total Dist	0 km
Spread Dist	0 km
Spread Qty	371 kg
PreWet Vol	354 litre
Deice Vol	68 litre
Voltage	14.7 V



Confirmation message

6 Set Up Error Messages

Error Messages	#	Suggested Solution	Warning Messages	#	Suggested Solution
01-BLAST TOO LONG	1	Blast held too long	21-UNLOAD NOT ALLOWED	21	Vehicle needs to be stationary
02-LIQ BLST TOO LONG	2	Liquid blast held too long	22-SYSTEM ERROR !!!	22	Reboot, or re-flash
03-OVER SPEED	3	Slow down, reset max speed	23-NO RC,CHK FUSE/CONNECTION	23	Comm failure between display and RC
04-ERR SPN OUTPUT	4	Check cables, check coil	24-LIQUID BOOM OPERATION ERROR	24	Need at least one boom to work
05-ERR CONV OUTPUT	5	Check cables, check coil	25-NO JOY1,CHK CONNECTION	25	Comm failure between RC and Joy 1
06-ERR CRS1 OUTPUT	6	Check cables, replace coil	26-NO JOY2,CHK CONNECTION	26	Comm failure between RC and Joy 2
07-ERR CRS2 OUTPUT	7	Check cables, replace coil	27-NO GATE POS SENSOR	27	Check gate sensor, cable break
08-NO GRANULAR DET	8	Load material, check sensor	28-GATE CLOSED	28	Gate closed in READBACK mode
09-NO LIQUID DET	9	Load material, check sensor	29-NO SIMULATE	29	Speed Simulation mode stopped
10-NO GROUND SPEED	10	Check cable/sensor	30-SPN UNDER APP	30	Spinner not able to reach desired RPM
11-NO CONV FEEDBACK	11	Check cable/sensor	31-SOLID UNDER APP	31	Rate or spd too hi, incorrect calib
12-NO WET FEEDBACK	12	Check cable/sensor	32-PREWET UNDER APP	32	Rate or spd too hi, incorrect calib
13-NO LIQ FEEDBACK	13	Check cable/sensor	33-LIQ UNDER APP	33	Rate or spd too hi, incorrect calib
			37-GND SPD CALIBRATION	37	Too few or no pulses, recalibrate
			38-SPINNER CALIBRATION	38	Bad or no sensor
			39-CONVEYOR CALIBRATION	39	Bad or no sensor
			40-PREWET CALIBRATION	40	Too few pulses, or sensor failed
			41-LIQ CALIBRATION	41	Too few pulses, or sensor failed
			42-SPN CAL: WRONG CTRL MODE	42	Auto null not allowed for MAN mode
			43-CNV CAL:WRONG CTRL MODE	43	Auto-null or calibration not allowed
			44-PREWET CAL:WRONG CTRL MODE	44	Auto-null or calibration not allowed
			45-LIQ CAL:WRONG CTRL MODE	45	Check Anti-icing or CrsCnv modes
			46-CRS CNV CAL:WRONG MODE	46	Check Cross-Conv mode setting
			47-CALIBRATION ERROR	47	Check sensor, recalibrate
			48-CALIBRATION ERROR	48	Check sensor, recalibrate
			49-CALIBRATION ERROR	49	Check sensor, recalibrate
			70-CALIBRATION ERROR	70	Check sensor, recalibrate
			71-NO SPIN FEEDBACK	71	If no sensor, set to manual Check feedback sensor and cable
			72-SPN OVER APP	72	Reduce spinner rate or lower ground speed
			73-PREWET ANTI-ICING CHG FORBIDDEN	73	
			74-NO CHUTE POS SENSOR	74	Check chute sensor and cable
			83-WARNING: LOW OIL	83	Safely stop vehicle, check oil level
			84-WARNING: DUMP LIMIT	84	Dump body has reached limit, Lower to clear
			84-WARNING: AUTO RAISE	84	Body is auto raising for specified time.
			85-WARNING: BODY UP	85	Dump body has reached up sensor, Lower to clear

Error Messages	#	Suggested Solution
01-SURDOSAGE TROP LONG	1	Blast held too long
02-SURDOSAGE LIQUIDE TROP LONG	2	Liquid blast held too long
03-EXCÈS DE VITESSE	3	Slow down, reset max speed
04-ERREUR SORTIE TOURNIQUET	4	Check cables, check coil
05-ERREUR SORTIE CONVOYEUR	5	Check cables, check coil
06-ERREUR SORTIE CRS1	6	Check cables, replace coil
07-ERREUR SORTIE CRS2	7	Check cables, replace coil
08-MANQUE DE MATÉRIEL	8	Load material, check sensor
09-MANQUE DE LIQUIDE	9	Load material, check sensor
10-AUCUNE VITESSE AU SOL	10	Check cable/sensor
11-PAS DE SIGNAL DU CONVOYEUR	11	Check cable/sensor
12-PAS DE SIGNAL PRÉ-TREMPAGE	12	Check cable/sensor
13-PAS DE SIGNAL DE LIQUIDE	13	Check cable/sensor

Warning Messages	#	Suggested Solution
21-VIDER NON PERMIS	21	Vehicle needs to be stationary
22-ERREUR SYSTÈME !!!	22	Reboot, or re-flash
23-PAS DE RC, VÉRIFIER FUSIBLE/ CONNEXION	23	Comm failure between display and RC
24- ERREUR D'OPÉRATION DE BUSE LIQUIDE	24	Need at least one boom to work
25-PAS DE JOY1, VÉRIFIER CONNEXION	25	Comm failure between RC and Joy 1
26-PAS DE JOY2, VÉRIFIER CONNEXION	26	Comm failure between RC and Joy 2
27-PAS DE CAPTEUR DE PORTE	27	Check gate sensor, cable break
28-PORTE FERMÉE	28	Gate closed in READBACK mode
29-PAS DE SIMULATION	29	Speed Simulation mode stopped
30-TOURNIQUET SOUS APPLICATION	30	Spinner not able to reach desired RPM
31-SOLIDE SOUS APPLCATION	31	Rate or spd too hi, incorrect calib
32-PRÉ-TREMPAGE SOUS APPLICATION	32	Rate or spd too hi, incorrect calib
33-LIQUIDE SOUS APPLICATION	33	Rate or spd too hi, incorrect calib
37-ÉTALONNAGE VITESSE AU SOL	37	Too few or no pulses, recalibrate
38-ÉTALONNAGE TOURNIQUET	38	Bad or no sensor
39-ÉTALONNAGE CONVOYEUR	39	Bad or no sensor
40-ÉTALONNAGE PRÉ-TREMPAGE	40	Too few pulses, or sensor failed
41-ÉTALONNAGE LIQUIDE	41	Too few pulses, or sensor failed
42-ÉTALONNAGE TOURNIQUET: MAUVAIS MODE CTRL	42	Auto null not allowed for MAN mode
43-ÉTALONNAGE CONVOYEUR: MAUVAIS MODE CTRL	43	Auto-null or calibration not allowed
44-ÉTALONNAGE PRÉ-TREMPAGE: MAUVAIS MODE CTRL	44	Auto-null or calibration not allowed
45-ÉTALONNAGE LIQUIDE: MAUVAIS MODE CTRL	45	Check Anti-icing or CrsCnv modes
46-ÉTALONNAGE CONVOYEUR TRANSVERSAL: MAUVAIS MODE CTRL	46	Check Cross-Conv mode setting
47-CALIBRATION ERROR	47	Check sensor, recalibrate
48-ERREUR D'ÉTALONNAGE	48	Check sensor, recalibrate
49- ERREUR D'ÉTALONNAGE . . 70- ERREUR D'ÉTALONNAGE	49 . . 70	Check sensor, recalibrate
71-PAS DE SIGNAL TOURNIQUET	71	If no sensor, set to manual. Check feedback sensor and cable
72-TOURNIQUET APPLICATION DÉPASSÉ	72	Reduce spinner rate or lower ground speed
73-PRÉ-TREMPAGE ANTI-GLAÇAGE CHG INTERDIT	73	
74-CAPTEUR POS SANS GOULOTTE	74	Check chute sensor and cable
83-AVIS: BAS NIVEAU D'HUILE	83	Safely stop vehicle, check oil level
84-AVIS: LIMITE DE BENNE 84-AVIS: AUTO-RELEVER	84 84	Dump body has reached limit, Lower to clear Body is auto raising for specified time.
85-AVIS: CORPS EN HAUT	85	Dump body has reached up sensor Lower to clear