

# CS 440RC

Solid De-icer Controller Operator Manual



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## 1 CS-440RC Front Panel Controls



## 2 CS-440RC Operator Instructions

1. Start vehicle and turn on the CS-440RC.
2. Put the CS-440RC in UNLOAD mode, set the dials to 5 and check to make sure the conveyor and spinner are turning – see unloading material.
3. Take the CS-440RC out of UNLOAD mode and set all buttons to ZERO (0)
4. Load up vehicle.
5. Drive to the start of your beat.
6. At the start of your beat, set the spinner, application rate and liquid rate to the desired settings.
7. Only use the PAUSE function to stop the system for turn-a-rounds, spotting operations etc.
8. At the end of your beat (or if you run out of material) set all buttons to ZERO (0).
9. Drive back to the yard.

## 3 Modes of Operation

### A-SALT

- (A)utomatic – Uses groundspeed and conveyor speed.
- (O)pen loop – Uses only groundspeed.
- (M)anual – The output is in percentage 10% - 90%.

### V-BRINE

- (F)IXED – Pre-wet, for use with conveyor return oil.
- (V)olume – Proportional automatic mode.
- (M)anual – The output is in percentage 10% - 90%.
- (S)lave – The liquid pump uses the conveyor return oil.

### GATE

- (M)anual – The gate must be physically moved and the number set into the controller.
- (R)ead back – The gate must be physically moved but it has a sensor to update the controller.
- (C)losed loop – The gate has a cylinder controlling the opening.

## 4 Changing Gate and Material

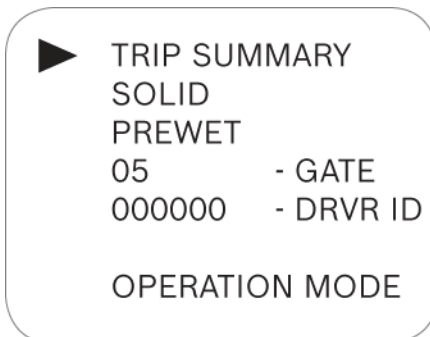
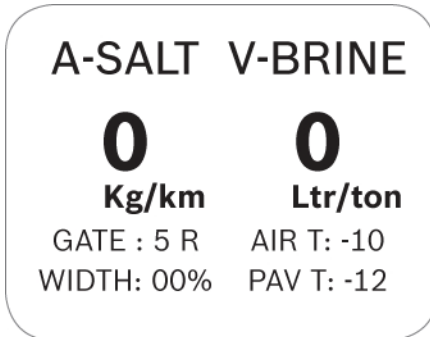
### 4.1 Manual Gate Change

1. Press the escape key to change to the screen shown to the left.
2. Arrow down to the gate number.
3. Press enter and change the number with the up/down arrows.
4. Press enter to accept.
5. Press escape again to return to the main screen.

Or if the gate is in READBACK mode, just move the gate and the controller will automatically change the gate number.

### 4.2 Material Change

1. Press the escape key.
2. Arrow down to solid or liquid.
3. Press enter and change the material with the up/down arrows.
4. Press enter to accept.
5. Press escape again to return to the main screen.



## 5 Unloading Material

1. Stop the vehicle.
2. Press both the pause and blast knobs at the same time.
3. Turn the dials to the desired output.
4. Press both dials to stop unloading.

## 6 Trip Summary

Press ESC to switch to OPERATOR SCREEN, as shown to the left.

▶ TRIP SUMMARY  
 SOLID  
 PREWET  
 05 - GATE  
 000000 - DRVR ID  
  
 OPERATION MODE

M1- 00100	0011000
M2- 00100	0011000
M3- 00100	0011000
M4- 00100	0011000
L1- 00100	0011000
L2- 00100	0011000
L3- 00100	0011000
L4- 00100	0011000

### 6.1 Season Total

When Trip Summary is ZERO, the same screen would show the season total. The TRIP SUMMARY is ZERO right after the CS-440RC controller is turned on and when the TRIP SUMMARY is cleared.

The first column is the total km or MI for all four materials and four liquids. And the second column gives the total quantities and volumes for all four materials and four liquids.

## 7 Error Action Messages

The controller monitors itself to make sure all functions are operating correctly. If there is a problem with the system, an error message will appear on the screen and the error alarm will sound.

Please check the error number on the screen and report the error number to management on return to the yard.

To shut off the alarm, press the ENTER button.

There is an ACTION MESSAGE programmed in for each error which tells the controller what to do after the error message comes in.

The ACTION messages are as follows:

### **TAKE NO ACTION**

Once you have pressed the ENTER button the controller goes back to normal operation.

### **GO TO OPEN**

Once you have pressed the ENTER button the controller goes from "AUTOMATIC" mode to "OPEN LOOP" mode, In front of the material name the "A" changes to "O".

### **GO TO MANUAL**

Once you have pressed the ENTER button the controller goes from "AUTOMATIC" mode to "MANUAL" mode, in front of the material name the "A" changes to "M".

### **OUTPUT FROZEN**

Once you have pressed the ENTER button, the controller freezes and operation is not possible.

### **OUTPUT TO ZERO**

Once you have pressed the ENTER button, the controller outputs are forced to zero and you will not be able to spread solids.

### **LIQUID GO TO MANUAL**

The same as number 3 above but for the liquid function only.

### **LIQUID OUTPUT TO ZERO**

The same as number 5 above but for the liquid function only.

## 8 Error Messages

1. UNDER APPLICATION – The controller cannot make the selected application rate.
  - MOST COMMON “ACTION” – Take no action – Driver simply presses ENTER button to stop alarm and carries on
  - Causes – Low hydraulic oil flow or high vehicle speed
  - High speed – The conveyor cannot go fast enough to meet the speed of the vehicle – Drop speed to lower spreading speed
  - Low engine RPM – The pump cannot put out enough oil flow – increase engine RPM – downshift one gear
  - Pump is wearing out and cannot produce enough oil flow – Replace pump
  
2. LIQUID UNDER APPLICATION – Same as above but for the liquid only.
  - MOST COMMON “ACTION” – OUTPUT TO ZERO – The driver presses the ENTER button to stop alarm and checks for the cause
  - Causes – Low hydraulic oil flow or high speed (see above); liquid tanks are empty

Note: If the cause is “low hydraulic oil flow” turn the controller “OFF” and “ON” again to reset the Error Action and continue spreading. If the cause is due to empty tanks, turn all buttons to ZERO and drive back to the yard.

3. OUTPUT ERROR – Safety error to avoid start-up of equipment without warning – usually for mechanics only.
  - MOST COMMON “ACTION” – Take no action – Press ENTER button to stop alarm and carry on
  
4. Blast TOO LONG – The blast function exceeded the time limit.
  - MOST COMMON “ACTION” – Take no action – Press ENTER button to stop alarm and carry on
  
5. OVER SPEEDING – Vehicle has exceeded the high speed setting.
  - MOST COMMON “ACTION” – Take no action – Press ENTER button to stop alarm and carry on
  
6. CALIBRATION – The settings selected by the driver cannot be done.
  - Check gate, material, and application rate settings to make sure these are correct
  - MOST COMMON “ACTION” – Take no action – Press ENTER button to stop alarm and carry on

7. NOT AVAILABLE

8. NOT AVAILABLE

9. KNOB INPUT FAILURE – Failure of the spinner, application rate or liquid rate button.

- MOST COMMON ACTION – Output frozen – Press the ENTER button to stop the alarm and drive back to the yard

10. OUTPUT FAILURE – The hydraulic valves are not functioning.

- MOST COMMON ACTION – Output frozen – Press the ENTER button to stop the alarm and drive back to the yard

11. RC 6/9 FAILURE – The mobile controller has failed.

- MOST COMMON ACTION – Output frozen – Press the ENTER button to stop the alarm and drive back to the yard

12. NO MATERIAL – The hopper is out of material, they conveyor is empty.

- MOST COMMON ACTION – Output frozen – Press the ENTER button to stop the alarm and drive back to the yard

Set all buttons to zero before driving back to the yard!

Note: If a lump of material has caused the gate to be blocked and this is the reason the conveyor is empty, clear the blockage.

Once the conveyor is loaded again, turn the CS-440RC “OFF” and “ON” again to reset the error action and continue spreading.

IF THIS ALARM COMES IN WHILE DRIVING TO THE DOME TO BE LOADED OR WHEN DRIVING BACK TO THE YARD MAKE SURE ALL BUTTONS ARE AT ZERO.

13. NO GROUND SPEED – The sensor on the transmission has failed or the wires are broken.

- MOST COMMON ACTION –TO MANUAL– Press the ENTER button to stop the alarm and continue spreading

Note: The application rate is now as “a percentage of conveyor speed”, set the application rate button on 5 and continue spreading. Watch the spinner while driving, if you have too much material coming off the spinner set the rate lower, if you do not have enough material set it higher.



14. NO CONVEYOR SENSOR – The sensor on the conveyor has failed or the wires are broken.

- MOST COMMON ACTION –TO OPEN LOOP – Press the ENTER button to stop the alarm and continue spreading

Note: The application rate is now as “a percentage of conveyor speed”, set the application rate button on 5 and continue spreading. Watch the spinner while driving, if you have too much material coming off the spinner set the rate lower, if you do not have enough material set it higher.

15. NO FLOW SENSOR – The flow meter has failed or the wires are broken.

- MOST COMMON ACTION – Output frozen – Press the ENTER button to stop the alarm and drive back to the yard

ERR16 – No Gate Back

- Gate Closed
- Sensor Failure
- Broken Cable

ENTER TO ACK

16. NO GATE SENSOR – The “gate location sensor” has failed or the wires are broken.

- The screen to the left will appear.
- DEFAULT ACTION – Output Zero – Press the ENTER button to acknowledge and stop the alarm

- 1 – Stop truck
- 2 – Check gate
- 3 – up/dn to change
- 4 – enter to proceed

▶ 01

Then the screen to the left will appear.

The operator has to follow the steps on the screen as shown above.

1. Stop the truck.
2. Check actual gate position.
3. Press UP/DOWN buttons to adjust the gate # to the actual position.
4. Press ENTER button to proceed

Then the controller changes its gate control mode to MANUAL. And operator can continue the spreading operation.

Note: When in closed loop gate an operator can move the hydraulic gate even after the gate sensor failed. Here are steps to move the hydraulic gate:

1. Stop the vehicle.
2. Press the escape key to enter into trip summary.
3. Press and hold the **up** arrow until it is at the top of the screen – the gate will raise.

4. Press and hold the **down** arrow until it is at the bottom of the screen – the gate will lower.
5. Enter the gate position into the controller.

Notes: