J.H.M.C. Robotics, Inc.

Design Excellence by Choice in Material Controllers Since 1972

August 22, 2005   Version 6.08 Build 60

OPERATION MANUAL
for the Regal Material Bin Fill Controller

Main Menu

A **Login User Name** is now required to enter the Password, System Editor and the Regal run screens.

When starting the Regal, pressing the F1, F4 or F5 key in the main menu, a Login box will appear. Enter your login **User name** and press the Enter key or click on the OK button. If this is a new user name a **Please enter password** box will appear (the default password for entering a new User is 333). Enter the default password or the changed password if it has been changed and press the Enter key or click on the OK button. Next the **User License Acknowledgment** box will appear with the End-User License Agreement for you to read. If you click on the **I accept** button, the **Enter User Information** box will appear. Enter your **First** name and press the Enter Key, Enter your **Last** name and press the enter key 2 times to Finish setting up a new User name. Once a user name has been set up you will have to enter it each time the Regal is booted. If more than 2 user names are in the computer, all user names that has not logged in for 60 days will be automatically deleted form the computer.

The License Agreement will be displayed by clicking on the <u>License Agreement</u> or
"Alt + L" to display, **"Enter"** to close.

F1 = Password Editor Screen (Default # 111)   F4 = System Editor Screens
F5 = Regal Run & Monitoring Screen   F10 = Exit to Windows Desk Top for System shutdown
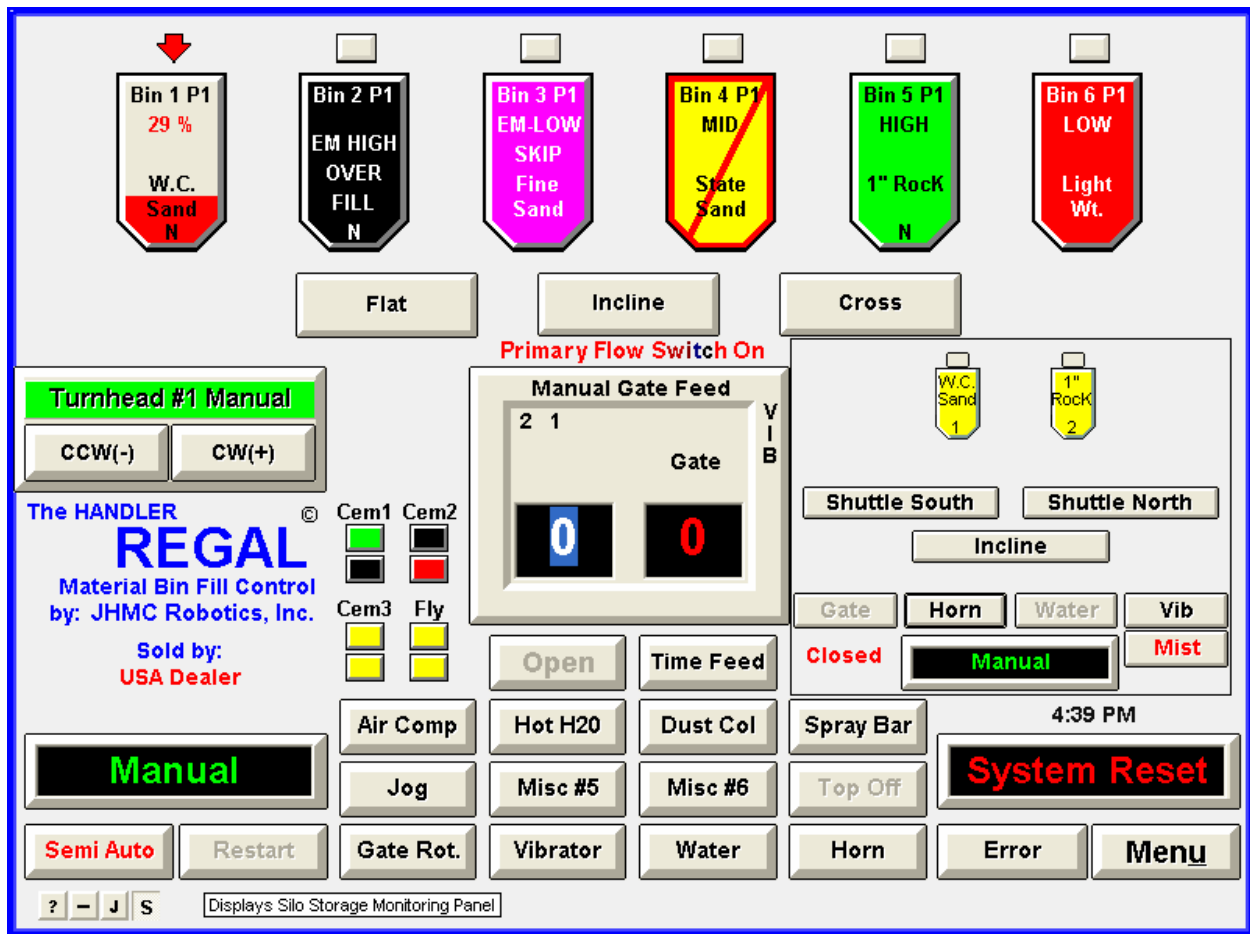
Password Screen

Password Entry Screen

Password Screen	(F1)	000111	General System Setup	(Pg - 1)	000000
Run Handler	(F5)	000000	Gate Setup	(Pg - 2)	000000
Auto Setup	(F4)(F2)	000000	Bin Setup	(Pg - 3)	000000
System Editor	(F4)	000000	Misc. Setup	(Pg - 4)	000000
Disk Utility's	(F4)(F3)	000000	Product Gate Assignments	(Pg - 5)	000000
Restore I/O		000222	Future Use		000000
New User Login		000333	Future Use		000000

F5 Save Changes
F10 Exit Screen

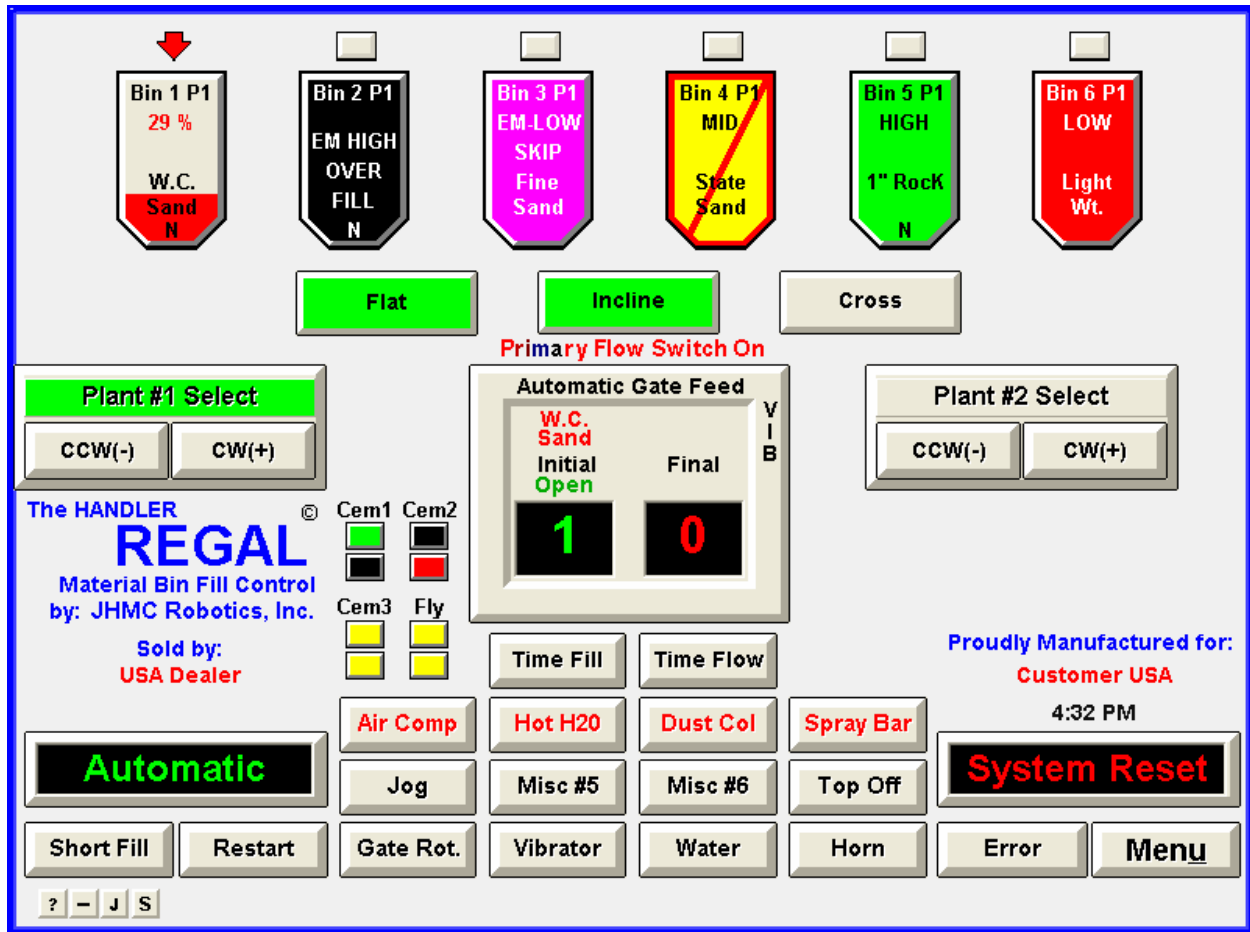[Save]   [Exit]

Any combination of **numbers** and / or **upper case** letters only may be used for the passwords.

Regal Monitoring Screen with Silo Pop up window.

Material Bin Fill Control Panel

Bin 1 P1	Bin 2 P1	Bin 3 P1	Bin 4 P1	Bin 5 P1	Bin 6 P1
29 %	EM HIGH	EM-LOW	MID	HIGH	LOW
W.C.	OVER	SKIP		1" RocK	Light
Sand	FILL	Fine	State		Wt.
N	N	Sand	Sand	N	

Flat   **Incline**   **Cross**

Primary Flow Switch On

Turnhead #1 Manual

CCW(-)   **CW(+)**

Manual Gate Feed

2 1   VIB

Gate

0   0

The HANDLER
REGAL ©
Material Bin Fill Control
by: JHMC Robotics, Inc.
Sold by:
USA Dealer

Cem1 Cem2

Cem3 Fly

W.C. Sand 1   1" RocK 2

Shuttle South   **Shuttle North**

Incline

Gate   **Horn**   Water   **Vib**

Closed   **Manual**   **Mist**

Manual

Open   **Time Feed**

Air Comp   **Hot H20**   **Dust Col**   **Spray Bar**

4:39 PM

System Reset

Semi Auto   Restart   **Gate Rot.**   **Vibrator**   **Water**   **Horn**   **Error**   **Menu**

Jog   **Misc #5**   **Misc #6**   Top Off

? − J S   Displays Silo Storage Monitoring Panel
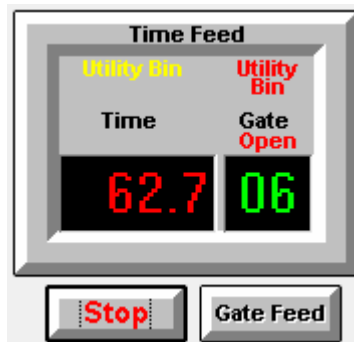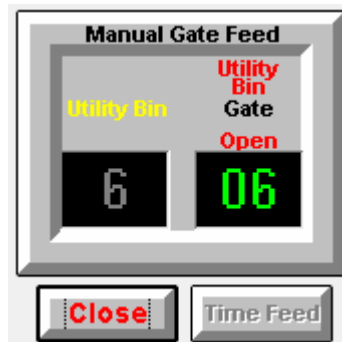
Regal Monitoring Screen.

The above screen is a 2 plant version of the Regal. There are 6 more bins for plant #2 that will be displayed instead of plant #1 bins when the turn head is positioned on the cross belt feeding plant #2.
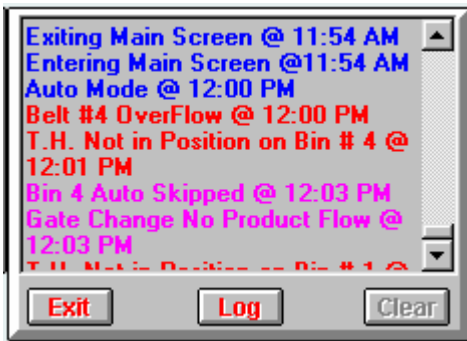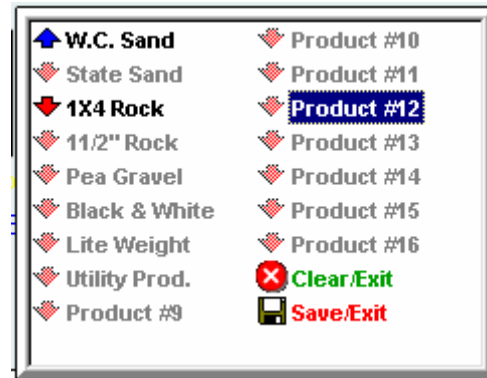

View #1	View #2	View #3
Utility Bin Product change Box	Manual Time Feed Display	Manual Feed Display

View #4   View #5
Main Screen Error Pop up Box   Storage Gate Select Pop up Box

A description of the items on the Regal Monitoring Screen.
Rectangular Gray Buttons at Top of Screen

A **red** arrow above a bin is where the turn head is presently located.

To move the turn head / shuttle belt semi-automatically from **a** bin **to** another bin. The turn head / shuttle belt must be **on** a bin with the **red** arrow pointing **to** a bin. By pressing **Ctrl + Alt + F1-F12** or when you double click the button on top of a bin, the button will turn to a **green** down arrow and the turn head / shuttle belt will proceed **to** the bin with the **green** arrow.

If the turn head is not on a bin you may use the **"J"**ump button feature at the bottom of the screen. **"J"**ump   Clicking the **J** button will turn it **ON** or **OFF. ON** will move the turn head to the next bin when the **CW/CCW** button is clicked on. **OFF** moves the Turn head when the **CW/CCW** is held down.

Bin Boxes at Top of Screen

Across the top of the screen are boxes labeled bin # 1 thorough number of bins on the plant.   A **green** box will indicate that the bin is high and the word **HIGH** will be displayed. If the material is off of the high bin indicator, the box will turn **Yellow** and **MID** will replace the word HIGH. If the material is off of the low bin indicator, the box will turn **Red** and **LOW** will replace the word MID. If the bin is outlined in RED with a diagonal red line through it, the bin has been taken out of the automatic fill mode on edit page #3

When a bin box is clicked on, the word **Skip** will appear. This tells the system to **not** fill this bin in the **Automatic** or the **Semi Auto** mode. If clicked on again the **skip** will be canceled.
If the system **automatically skips** a bin due to no material coming out of any of the assigned feed gates for this overhead bin, the word **A-Skip** will appear and all words in the box will flash gray and black. The system will no longer look at this bin to fill in the automatic mode until you click on the bin twice to clear the **A-Skip**, this tells the system that you have material in a gate and are ready to fill the bin automatically.   **Note**: See edit page #3. Cancel all automatically skipped bins when the bin search starts over.

Below **Skip** or **A-Skip**, is an area that displays the name of the product in the bin.
Edit page #5 is where the gates and bins are assigned to the products.
Below the product name will be a **P1**=Plant #1 or **P2**=Plant #2, if this is a two plant system.

Utility Bin See: View #1

        If a bin is assigned as a **Utility Bin** on edit page #3, the bin will be outlined in an **orange/brown** color. If the **ctrl** key is held down and the bin is **right** clicked on with the mouse (you may also use the **ctrl + shift + one of the F keys** instead), a box with the available product names will appear in the center of the screen. Clicking on a product name in that box will select the new product and name for that bin. During this process the bin will automatically go to **skip** mode. You may un-skip when selection is finished.

           Note: Only click **1** time on the product name and **WAIT** for it to change!

Gate Linking   When Gate linking is assigned on Edit page 2a

        If the bin is a Utility Bin and is **ctrl + right** clicked, the products that have gates linked together will be displayed as "Linked". If you do not want the feed to this bin, gate linked, select the product without "Linked" after the product name.

        If the bin is not a Utility bin, **ctrl + right** clicking on the bin will bring up a box in the center of the screen stating if the gates assigned to this bin are Linked or Not. The box will have **Yes   No** buttons allowing you to turn gate "Linking" **ON** or **OFF.**

Belt Buttons

        Right below the bin boxes, are the **belt** buttons. If there is one belt on the plant, feeding material from the storage area to the plant, there will be one of these buttons. If there are two belts, there will be two of them.   Up to five belts are displayable in this area. If a material flow switch is on the belt and material is flowing, **Belt # Flow**, will appear in red in place of **Belt #** in black. The belts can be named on edit page #4.

        When the button in the lower left hand corner of the screen is displaying **Manual** you can: Manually start a belt by clicking on a belt button. The horn will blow for a period of time and the button will flash red and black prior to the belt starting.   When the belt has started successfully and all interlocks are working properly, the belt button will turn green indicating the belt is running. If the belt fails to start successfully the belt button will flash red and black.

Two plant system

        If there are two plants in a system there will be a **Turnhead #1 Manual** box on the left and a **Turnhead #2 Manual** box displayed on the right of the screen.

        When the top of a box is **green**, it's telling you which plant bins are being displayed. By clicking on the top half of the other box, that plants bins will be displayed for 20 seconds then switch back to the other plant. Also the left arrow key will display plant #1 bins and the right arrow key will display plant #2 bins.

Turn Head or Shuttle Belt Manual Buttons

        A box marked **Turnhead # 1 manual** or **Shuttle Belt #1 Manual** on the left of the screen with **CCW (-)** and **CW (+)** buttons is for manual operation only. The **minus** means that you can press the **(-)** button and the **plus** means that you can press the **(+)** button on your keyboard and it will do the same thing as a mouse click on that button. When the **CW** button or **CCW** button turns red, indicates that power is being sent out to turn the turn head.

        If a **shuttle belt** is used there will also be a **Start/Stop** and a **Fwd/Rev** button displayed to the right of the shuttle belt manual button block. These buttons are for manually running the shuttle belt either forward or in reverse

There may be a **diverter** used to direct material **on** or **to** the plant/s. If so, a diverter block with 2 buttons in it will be displayed on the right hand side of the screen. When the diverter is **on** a position the writing in the button will be **red** for that position. The buttons are named on <u>edit page #4</u>.

 By Right clicking on the **JHMC** Logo a slider bar with 3 sliders will appear. Clicking on and dragging a slider will change the **Screen Background** color. Right clicking on the box will make it disappear. This overrides the color setting on edit page #4 that only has 3 colors to it.

Manual Semi-Auto and Automatic Feed of Overhead Bins

Manual Feed See: View #3
The large square box in the center of the screen has, **Manual Gate Feed**, in it. Below it are two buttons. One is marked **Open**. The other is marked **Time Feed**.

First, **manually** position the **turn head / shuttle belt** on the desired overhead bin to be filled. Start the **belts**. The assigned gate numbers <u>for</u> the bin that the turn head is <u>on</u> will be displayed in the top of the box. When all belts are running, click on the desired gate number in the top of the box with the mouse or type in the **gate #** to feed from in the left number window. By right clicking in the box, will erase the number clicked on so you can change the number if desired, the backspace will also erase the number entered. The **open** button will now be green if the number entered is a valid gate number. When the **open** button is green, press the **enter** key **twice** or click on the **open** button with the mouse to open the gate. If a gate number other than one that is assigned to the bin has been entered, an error box will appear describing the problem otherwise the feeding gate number will appear in the right number window, when the gate opens**, open** will be displayed above it, and the gate name will appear above <u>gate</u> and the **Open** button will change to **Close**. To close the feeding gate, press the **enter** key once or click on the **close** button. If the semi auto button, located in the lower left corner of the screen, is **black**, the feed gate will <u>not</u> close when the bin **high** comes on. If the semi auto button is **red**, the gate <u>will</u> close when the bin **high** comes on or **skip** is turned on.

Semi Auto
First, **manually** position the **turn head / shuttle belt** on the desired overhead bin to be filled. Hold the **Ctrl** key down and click on the desired gate number to feed from. The belts will start and the selected gate will open. When the bin fills or the bin is skipped the gate will close at the proper time. Or from the keyboard you can enter a gate number listed for this bin, then pres the CTRL and the ENTER key to start the belts and open the gate.

Manual Timed Feed See: View #2
When the **Time Feed** button is clicked on, the time feed box appears with 2 buttons displayed below it marked **Start** and **Gate Feed**.

First, **manually** position the **turn head / shuttle belt** on the desired overhead bin to be filled. Start the **belts**. The assigned gate numbers for the bin that the turn head is on will be displayed in the top of the box. When all belts are running, type in the **amount** of time for material to feed in the **time** window **and** either click on the desired gate number in the top of the box with the mouse or type in the **gate #** to feed from in the gate window.   The **start** button will now be green if the number entered is a valid gate number. When the **start** button is green, press the **enter** key **twice** or click on the **start** button with the mouse to open the gate.   If a gate number other than one that is assigned to the bin has been entered, an error box will appear describing the problem otherwise the start button will change to **Stop**. When the gate opens, **open** will appear above the gate number, and the gate name will appear above <u>gate</u> and the time will start to count down.

When the time reaches zero the gate will close. To stop the timing cycle, press the **enter** key once or click on the **stop** button. If the **semi auto** button, located in the lower left corner of the screen, is **black**, the feed gate will <u>not</u> close if the bin **high** comes on. If the semi auto button is **red**, the gate <u>will</u> close if the bin **high** comes on or **skip** is turned on.

Automatic Mode

When the system is in the automatic mode, the box changes to **Automatic Gate Feed** with **Initial** and **Final** displayed above the two number windows. When a gate is feeding material with a **mid/yellow** or **low/red** bin the **gate #** will be displayed in the **initial** window with **open** displayed above it, indicating that the gate limit switch is <u>on</u> and the gate name will appear above <u>initial</u>. When the overhead bin gets full **high/green**, the gate number will transfer to the right-hand window, **final**, with the word **open** above it and the gate name will appear above **final.** That will be the final feed to trim the bin off.

In some cases, if you have a long tunnel belt, it is possible to have two gates open at one time of different materials. If the final feeding gate does not close at the appropriate time, a **contamination** error will be displayed, the feeding belt will stop and the system will attempt to close all gates. Usually this will happen only if a gate hangs open due to a rock or some other object getting stuck in the gate or the gate just fails to close because of a mechanical or air supply problem.

Time Flow Button

This button turns on the **"TF"** feature see Edit page #3 for operation. This is a click **ON** click **OFF** button. When this button is **ON/Red** the **Short Fill** feature/button will be disabled and grayed out.

Time Fill Button

This button turns on the **"Bin Fill Time"** feature see Edit page #3 for operation. This is a click **ON** click **OFF** button. When this button is **ON/Red** the **Short Fill** feature/button will be disabled and grayed out.

Storage Gate Feed Select

If any gates were selected as storage gates on Edit page #5 **SGS Column**, this feature will be enabled and available while running in Automatic and a Gate is feeding in the Initial box. By **RIGHT** clicking on the Gate box in the center of the screen, the Storage Gate Select Pop up Box will appear, **See: View #5.**

The products displayed in bold were selected with **some** gates as storage gates.
When the arrow to the left of the product is up, the higher number gates will feed.
When the arrow to the left of the product is down, the lower gates will feed.
When the arrow to the left of the product is up & down, all assigned gates will feed.
When the arrow is clicked on it will rotate to the next option, (UP, DOWN, UP & DOWN).

When your selection is complete, click the **save/Exit** in the lower right of the box. The new settings will take place the next time a gate change occurs for a feed from the above changes.

Priority Button

If plant Priority and Parallel belts on <u>edit page 6</u> has been enabled, a **Priority** button will be displayed above the Automatic/Manual button. This button can only be turned **ON and OFF** in the Manual mode, **(" Alt + P")** will also work.

When 2 Regal's are operating 2 separate plants and plant #2 storage belt is reversible to feed plant #1, if plant #1 has priority and needs material from plant #2 storage area, will stop plant #2 filling and allow plant #1 to use plant #2's storage belt for material feed.

Automatic / Manual Button

The lower left-hand button is displayed in black with green writing **Manual** or **Automatic**. If you click on **manual**, it will go to **automatic**. If you click on **automatic**, it will go to **manual**.

Alt + A = Automatic, **Alt + M** = Manual or **F5** will toggle between auto and manual

Jog Button

Alt + J or clicking on the **jog** button will close the gate that is feeding. The gate will stay closed as long as the button is held down. When released the gate will open again.

Misc. #1 - 6 Buttons

The **Misc**. **#1 - #6** buttons are miscellaneous switches. These buttons can be used for whatever is needed and each one can be configured to be either **momentary** or **toggle**. The name can be changed on Edit page #4.

Top Off Button

Any bins set to fill on a low bin but the bin is not low, will fill automatically when the **Top Off** button is clicked on. This is for topping plant off at the end of day.

System Reset Button

The long button on the lower right of the screen is the **System Reset**. While doing something manually from the CRT, or in the automatic mode from the CRT, pressing the (~) key or clicking the **System Reset** button will reset the system to **manual** standby mode ready for operation. All belts will stop, all gates will close and stop the turn head / shuttle belt if it was turning / moving.

Semi Auto / Short Fill Button

Manual Mode:

The button on the lower left-hand side of your screen is the **Semi Auto** button. It can be configured to start up in the **on** or **off** mode in <u>Edit Screen #4</u>. If the Semi Auto is **on**, the writing will be **red**. If the Semi Auto is **off**, the writing will be **black**.

If **semi auto** is **on,** the gates automatically close when the filling overhead bin goes **high** or is **skipped**.

If the bin that the turn head is on is **high** or **skipped** and you attempt to fill it either in the manual or time feed mode, the feed gate will not be allowed to open.

If a turn head plugged sensor is installed and the **semi auto** button is **on** when filling a bin and the turn head plugs the belts will stop and the gates will close but no alarm will sound.

Semi Auto can be toggled **on** and **off** by clicking on it, the **Alt + S** keys will toggle it also.

Semi Auto:

First, **manually** position the **turn head / shuttle belt** on the desired overhead bin to be filled. Hold the **Ctrl** key down and click on the desired gate number to feed from. The belts will start and the selected gate will open. When the bin fills or the bin is skipped the gate will close at the proper time.

Automatic Mode:

In the automatic mode, the **Semi Auto** button changes to the **Short Fill** button. If there are two or more overhead bins calling for material, the **Short Fill** button can be clicked on to turn it **on/red, Alt +S** will also do it. The system will fill each calling overhead bin for a **timed** period (see edit page #3 to set short fill times). When the **short fill** is active the time left to fill the current bin will be displayed in the center box on the screen under the initial gate number box.

As the bins go high or are skipped and only one bin is left to fill in the **short fill** mode, the short fill button will automatically be canceled (Short Fill = Black) and the system will continue to fill the last bin in the plant until it becomes high. There **must** be two or more bins calling for material before the short fill mode can be turned on again.

Restart Button

If one of the belts stops, **Alt - R** or clicking the **Restart** button restarts the belt/s that has stopped. If belt #2, (or if you have 3 and belt #3) continues to run, but belt #1 has stopped, then instead of starting all the belts over again, pressing **restart** will only attempt to start the belts that have stopped.

Gate Rotate Button

In the automatic mode, if more than one gate is assigned to feed the receiving overhead bin, and you want to change to the next assigned gate, **Alt + G** or clicking on the **Gate Rot** button will open the next assigned gate for this overhead bin. You may rotate through all the gates that are assigned to that overhead bin.

Vibrator Button

If there are vibrators on the sand storage gates, the system will automatically run them as needed in the automatic mode. To vibrate the feeding gate manually, **Alt + V** or click the **Vibrator** button.

Horn Button

The **Horn** button will turn **red** whenever the system blows the horn outside. **Alt + H** or clicking on it will blow the horn for as long as you hold the button down.

Water Button

The **Water** button will turn **red** when the system is calling for watering **rock** on the belt in the automatic mode. To manually run the water, press **Alt + W** or click the **Water** button. (This is a toggle button).

Error Button

If an **Error** occurs in the operation of the plant, the writing in this button will flash **red** and a message will be displayed on the bottom left of the screen as well as a voice prompt of the error.

Clicking this button, (or "Pressing **Alt + E**"), will bring up an error window to view the errors that have occurred.

See: View #4

Lines displayed in blue are system info.

Lines displayed in green are related to the edit screens.

Lines displayed in red are system errors.

Lines displayed in light purple are system <u>non critical</u> errors

Lines displayed in orange are Silo errors

This window has 3 buttons on the bottom, **Exit**, **Log**, and **Clear**. You may clear this window, but the messages will not be cleared in the log file. To clear the window, click on the Clear button.

To select a **Log** to view, click the **log** button to bring up the log menu. Highlight the **day** from the menu and click on **view** to view those errors. The last 60 days of errors can be viewed.

To view another days errors click on **log** and highlight the day you wish to look at then click **view**.

If a printer is connected to the computer and **printing** in <u>edit screen #4</u> is turned on, the logs can be printed by clicking on the **print** button.

Clicking the **exit** button in the error box will take you back one window at a time until the error box disappears. This also tells the system that you have acknowledged the error(s) which may have occurred and cancels the flashing **red** error button.

Menu Button

The **Menu** button is at the lower right hand corner of the screen. Clicking on this button or pressing **F10** will take you back to **Main Menu.**

Time Display

Right above the system reset button is the **Time** display. You may drag this field to another position on the screen. Pressing **F11** will place the field back to its original position.

Customer Name

Above the time is the customer name that was entered on Edit page #4.

Operators Manual

On the lower left-hand corner, is a "**?**", when clicked on will bring up a copy of this **Operators Manual** for review.

Minimize button

Clicking the (**--**) button will minimize the **Regal** screen to the task bar. The system will continue to control and monitor the plant as usual. If an error occurs in the plant the **Regal** screen will come forward and when the error is corrected you may again minimize the **Regal** and continue using whatever software you were using.

"J"ump   Clicking the **J** button will turn it **ON** or **OFF**. **ON** will move the turn head to the next bin when the **CW/CCW** button is held down until the turn head is OFF of a bin. **OFF** moves the Turn head when the **CW/CCW** is held down.

Plant change button

Right of the minimize button is the plant view change button. This button will only be displayed if there are 2 separate Regals/plants on this computer.

"S" Button

If an Aggregate Silo control option is enabled a "**S**" button will be displayed. Clicking the **S** button will display the Silo Fill Control box on the right hand center of the screen. Clicking it again will make it disappear.

Editor Select Screen

Clicking on **Auto Setup** or pressing **F2** will display the **Auto Setup** screen.
Clicking on **Disk Utility's** or pressing **F3** will display the **Disk Utility's** screen.
Clicking on **System Editor** or pressing **F4** will display the **Editor** Screens.
F10 = Exit back to **Main Menu** Screen

Auto Setup Screen

Auto Setup

Plant Waste Bin # `0`	Is #1 T.H. a 360º ? `Y`
Gate Open time for this setup run `0`	Is #2 T.H. a 360º ? `N`
Are Turnhead Flow Switches Used ? `N`	T.H. #2 Timing Only `N`
Time Between Gate Openings `0`	
Set Gate's & Belt's Timing ? `N`	Set Turn Head Turn Times ? `N`

RPM Belt Setup

Belt # to Monitor `0`

RPM Setpoint % `0`   **Save**

Buttons: #1 #2 #3 #4 #5 #6 #7 #8 Load Save GO Back

Manual Edit Pages #1 - #5 Must be Filled in
(Except Turnhead Times, Belt Clear Times (Page 1) & Gate Timing (Page 2))
Before Auto Setup is run

Plant Waste Bin

During the automatic gate timing sequence, a miscellaneous bin # must be selected to run all of the test material into. A 10 to 20 second feed of material from each gate will be run into this bin.

Gate Open time for this setup run

Enter the gate open time desired for this timing run. 10 to 20 seconds recommended.

Are Turn Head Flow Switches used?

When flow switches are not used at the turn head/s, place an "N" here.
Note: If an "N" is used, **All** belt clear times **MUST** be entered on Edit page #1.

Time between Gate openings

Enter a time to wait after a gate closes before the next gate opens in this auto setup mode.

Set Gates & Belts Timing?

A **"Y"** will enable this feature for this run.

Is #1 T.H. a 360 ?

        If #1 turn head is a <u>360 degree</u>, enter a **"Y".**

        If the turn head is a <u>reversible</u>, enter a **"N".**

Is #2 T.H. a 360 ?

        If #2 turn head is a <u>360 degree</u>, enter a **"Y".**

        If the turn head is a <u>reversible</u>, enter a **"N".**

        Note: If only 1 T.H. is on control, this field will be grayed out.

T.H. #2 Timing Only

        To auto time set #2 turn head only, enter a **"Y"**, for both turn heads, enter an **"N"**.

Set Turn Head Times?

        Enter a **"Y"** will automatically turn the turn head/s and set the timing into memory in this run.

<u>You must press the enter key to go from field to field while filling out this screen, the **Red** must be out of **all** the boxes</u>.

        Pressing Enter will **Save** the above entered information and the **GO** button will be visible. Pressing the **GO** button will change the screen to the main monitoring screen with the **Start** and **Stop** buttons on a panel on the bottom of the screen. Pressing the Start button will start the auto timing run.

NOTE: For the automatic timing to work for the **gates** and **belt/s**, a flow switch **must** be mounted in front of the first feed gate or at the reference point **and** at the turn head/s. For more accurate timing a gate closed limit switch should be used on all gates, <u>the limit switch should make contact **just** as the gate opens</u>.   If there are 2 turn heads, the waste bin **<u>must</u>** be in plant #2.

The sequence for the auto timing:

        The turn head for plant #1 turns from bin #1 through all its bins and enters the time into memory.

        Next, the turn head for plant #2 turns from its bin #1 through all its bins and enters the timing for it into memory.

        Next, the horn blows for the belt start time. The belts start and the last gate opens for the time entered in "Gate open time for this run". The timing is monitored from the flow switches and the time for that gate to the 1st flow switch is entered into memory.

        The time from the 1st flow switch to the flow switch at the 1st turn head is entered for the <u>belt clear</u> time.

        Then the time from the flow switch at the 1st turn head to the 2nd turn head flow switch is entered into the <u>Cross Belt clear time</u>.

        Then the next to last gate opens and the time from it to the 1st flow switch is entered for that gate and so on for all gates.

RPM Belt Setup: The belt to setup pulse time on edit page #1 must be entered and the belt must be running before this feature will operate.

Belt # to Monitor: Enter the Belt number to setup here.

RPM Setpoint %: Enter the desired belt stop setpoint in percentage here. When the belt is running empty, the belt is running at 100 percent, if you entered 80, the belt will stop and the gates will close when the belt slows down below 80 percent of empty speed.

      Next, with the belt running click the Save button, this will write the information to the PLC, clicking the Save button again will bring a pop up box up asking if the belt is running, click Yes if it is, No if it is not. "Yes" will perform the speed setup in the PLC, if it is not running click "No" and start the belt from the manual panel, then click Save again and answer "Yes" when the Pop up box appears. To turn OFF this feature place a zero in the "Belt # to Monitor" box and click Save 2 times.

Disk Utility's
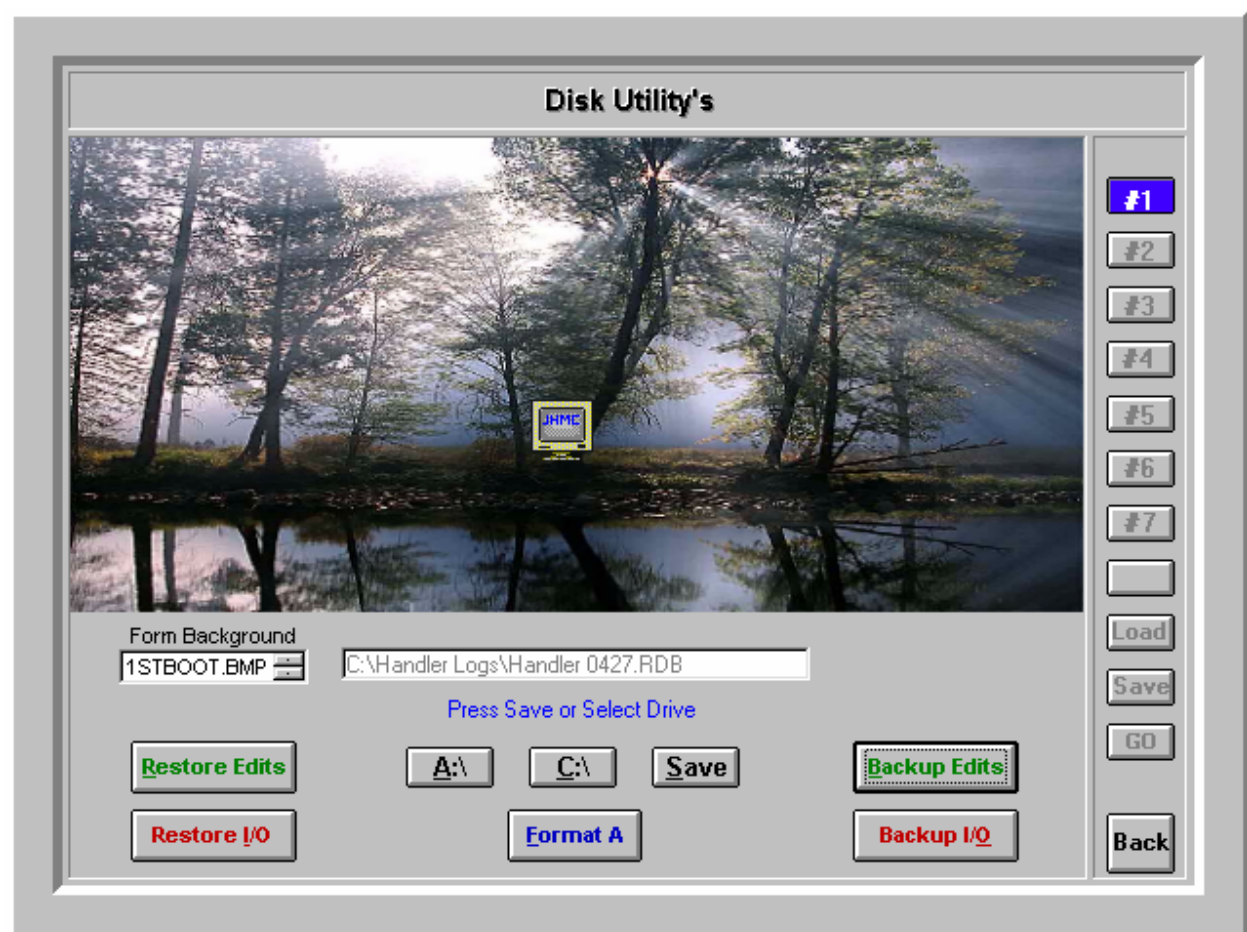
The Utility screen gives the choice of either **Backing Up** or **Restoring** the plant **Setup Edits** and **I/O Assignment** data. Wait for **"Working -- Please wait"** to disappears before pressing any other buttons!

Backing Up Data

Edits:
When this screen comes up, the **Backup edits** button should be highlighted. If not, press **("Alt + B"** or **"click on the Backup edits** button**")**. Pressing **("Alt + A"** or **"click the "A:\"** button**")** or **("Alt + C"** or **"click the "C:\"** button**")** to select the drive to **Backup** to. When the name of the file appears in the window press **("Alt + S"** or **"click on Save")**. This will copy the data to the hard drive and/or Drive **"A"**. If you selected Drive **"A"**, it will backup to Drive **"A"** and to Drive **"C"**. If Drive **"C"** was selected, it will backup to Drive **"C"** only.

I/O Assignments:
Pressing **("Alt + O"** or **"click on the Backup I/O** button**")** then pressing **("Alt + A"** or **"click the "A:\"** button**")** or **("Alt + C"** or **"click the "C:\"** button**")** to select the drive to **Backup** to. When the name of the file appears in the window press **("Alt + S"** or **"click on Save")**. This will copy the data to the hard drive and/or Drive **"A"**. If you selected Drive **"A"**, it will backup to Drive **"A"** and to Drive **"C"**. If Drive **"C"** was selected, it will backup to Drive **"C"** only.

Restoring Data

Edits:
Pressing **("Alt + R"** or **"click on the Restore Edits** button**")** then pressing **("Alt + A"** or **"click the "A:\"** button**")** or **("Alt + C"** or **"click the "C:\"** button**")** will select the drive to **Restore** from. **There may be more than 1 file to restore from on the selected drive, if so, there will be up/down arrows on the right side of the file window to select the desired file**. After selecting the desired file press **("Alt + L"** or **"click the Load** button**")**. This will restore the data from the selected drive into the system.

I/O Assignments:
Pressing **("Alt + I"** or **"click on the Restore I/O** button**")** then pressing **("Alt + A"** or **"click the "A:\"** button**")** or **("Alt + C"** or **"click the "C:\"** button**")** will select the drive to **Restore** from. **There may be more than 1 file to restore from on the selected drive, if so, there will be up/down arrows on the right side of the file window to select the desired file**. After selecting the desired file press **("Alt + L"** or **"click the Load** button**")**. This will restore the data from the selected drive into the system.

Drive **"A"** may be **Formatted** by clicking the **("press Alt + F"** or **"Format A** button**")**.

Form Background Box
Clicking in the Form Background box with the mouse, then using the Home, End, up arrow, down arrow, page up or page down keys will move through the picture options to be displayed on this screen

Clicking the **Back** button or **F10** will go back one screen.

Edit Page #1

General System Setup

General System

# T.H.'s	2	# Bin's	12
# Belt's	3	# Gates	12
Incline Belt #	2	Future Use	0

Water On Delay	50
# of Bin's for Plant #1	6
Plant Priority	N

T.H. Turn Time

T.H. #	Value		Plant #1	Plant #2
#1	0	L.S. Cntr. Time	6	0
#2	30	360 Turn Time	180	0
#3	60	T.H. Seek Cont. ?	Y	N
#4	90	360 Reversible ?	Y	N
#5	120	T.H. Settle/Belt Restart	10	
#6	150	More Time for T.H. to Turn Before Alarm	20	
#7	0	Space Before T.H. Turns	20	
#8	30	Space After T.H. Turns	20	
#9	60	Turn Head Start Delay	1	
#10	90	Diverter, CCW / Left Time	0	
#11	120	Diverter, CW / Right Time	0	
#12	150	Plant #2 F.G./Belt is At/After Plant #1 Bin Number	3	
C.B. Pos.	75	Is Plant #2 Fed By Flop Gate ?	N	
		Does Flop Gate Feed a Belt ?	N	

Belts / Time

	Time	Time
Plant #1 / #2 Belt Horn	30	50
Plant #1 / #2 Belt Clear	250	100
Clear Transfer Point	0	
Belt Clear to Diverter	0	
Parrallel Belt Clear	0	
Semi Auto High Bin Delay ON	N	
Additional Belts OFF	1	
Belt Pan Water ON/OFF	0	0
Manual Belt Run Interlock	N	
Belt 1 Flow Sw. Off Time	10	
Turn Off PRODUCT ON BELT Interlock	N	
Flow Switch # 2/ # 3 at Gate #'s	0	0

Gate #'s to Start Belt # 1, # 2, # 3	0	0	0	0	0	0
Belt Off Times	0		0		0	

Belt	#1	#2	#3	#4	#5
Pulse Time	0	0	0	0	0
On Check	30	30	30	30	30

Disable Incline Brake Alarm N

Buttons: #1 #2 #3 #4 #5 #6 #7 #8 Load Save Back

Number of Turn Heads
  If **One** is on plant, enter a **"1"**.
  If **Two** are on the plant, enter a **"2".**

Number of Belts
  If there are **Two**, enter a **"2".**
  If there are **Three**, enter a **"3"**, and so on, maximum 5 belts.

Incline Belt #
  Enter the Incline Belt # for the control logic and the Brake Failure alarm.

Number of Overhead Bins
  Enter the total number of **Overhead Bins** that are on plant/s.

Number of Gates
  Enter the number of **Gates** that are available to feed material to the plant/s.

Future   or future options

 Water On Delay
> Enter a **Time** <u>from</u> the reference point <u>to</u> the watering or spray bar.

# of Bin's for Plant #1
> If the system has 2 turn heads, enter the number of bins for turn head #1.

Plant Priority
> Entering a **"Y"** will tell another **Regal** control that this plant #1 needs to use it's storage feed belt. If plant #2 is feeding material, the plant will abort all feed cycles and shut down and allow plant #1 to start plant #2's storage feed belt in reverse. When plant #1 is finished using plant #2's storage feed belt, plant #2 will resume filling in a normal manner until plant #1 needs plant #2's storage feed belt again.

Turn Head Turn Time
> There are twelve boxes in the left part of this heading. If the time was set automatically, those times will be entered here.
> Or times can be manually entered and/or changed here.

The time to enter here is the time it takes to turn from bin 1 to 2; from bin 1 to 3; from bin 1 to 4; bin 1 to 5 and so on.

 C.B. Pos. (Cross Belt Position)
> Enter a time from bin #1 on plant #1, to the cross belt turn head position on plant #1.
> This time will set automatically if auto set up is used.

L.S. Cntr. Time Plant #1 & #2
> The Turn Head will run for this amount of time after it has reached the new Bin position **Limit Switch,** in the automatic mode <u>only</u>. This can help in centering the turn head on a bin.

360 Turn Time Plant #1 & #2   This applies only if automatic timing set up is **not** used
> For a **360** degree **turn head**, enter the **time** that it takes to go from **bin 1** around to **bin 1** here.
> A **"0"** tells the system there is a **reversible turn head**.

.**T.H. Seek Cont**inue **?** Plant #1 & #2
> Entering a **"Y":**
> When the turn head momentarily sees the target bin position limit switch and coasts past it, the T.H. will continue to the next bin and reverse direction, coming back to try and find it again. If the turn head is a 360, it will continue all the way around and try to find it again.
> Entering an **"N":**
> When the turn head momentarily see the target bin limit switch, it will cancel the feed to the turn head so the turn head will stop though it may stop off of the position that it was supposed to be on.

360 Reversible ?
> If the turnhead is a <u>reversible 360</u>, then enter a **"Y"** here and the turn head will go the shortest distance to the next bin to fill in the automatic mode.

More Time for T.H. to turn Before Alarm
      Caution with this one! If "T.H. not in position" alarm keeps going off just before the T.H. gets to the new position, enter <u>only enough time</u> here to stop it alarm sounding.

Space Before T.H. Turns
      Time desired **after** the material clears the turn head and **before** the turn head starts to turn to the next bin. A time for additional material spacing

Space After T.H. Turns
      Time desired **after** the turn head turns and **before** the material arrives at the turn head. A time for additional material spacing

Turn Head Start Delay
      A time may be entered to delay the run (turn) of the turn head by the system. This applies in the automatic and the manual modes. If the turn head is reversed it will keep it from snapping in the opposite direction.

Diverter, CCW / Left Time
      The time it takes the diverter to turn or move to this position.

Diverter, CW / Right Time
      The time it takes the diverter to turn or move to this position.

Plant #2 F.G./ Belt is At/After Plant #1 Bin Number (Cross Belt)
      For a 2 turn head system with a **Cross Belt** to plant #2:
      Turnhead: Enter the bin number that the cross belt is after on plant #1.
      Flop Gate: Enter the bin position number if a flop gate feeds a bin on plant #1 **and** a chute to feed plant #2.

Is Plant #2 Fed By Flop Gate ?
      If plant #2 is fed by a Flop Gate from plant #1 turnhead, enter a **"Y"** here. Position Limit switches will be used to verify flop gate position. This disables the cross belt and its timing to plant #2.

Does Flop Gate Feed a Belt ?
      If a flop gate feeds a belt to plant #2, enter a **"Y"** here. This enables the cross belt and its timing to plant #2.

<h3 style="text-align:center">Belts</h3>

Plant #1 / #2 Belt Horn Time
      Enter a time for the **horn** to blow before a **belt** and/or **turn head/s** starts in automatic mode.
      Enter a time for the **horn** to blow before a **belt** starts in manual mode.

Plant #1 / #2 Belt Clear   (#2 = Plant #2 Cross belt clear time)
>   **A:** The time it takes the **material** to get from the reference point by gate #1 to the turn head on plant #1 (first Turn Head).
>   **B:** When a diverter is used to select the plant to fill, this time is from the diverter to the turn head of plant #1
>   This time will set automatically if T.H. flow switches and auto set up is used.

Clear Transfer Point Time
>   If there are two or more belts, add extra time here if the product has a tendency to roll back on the belt at a transfer point.

Belt Clear To Diverter Time
>   When a diverter is used to select the feed to plant #1or plant #2 then:
This is the time it takes the **material** to get from the reference point by Gate #1 to the diverter.

Parallel Belt Clear
>   The time it takes to clear the longest belt in the feed area.

Semi Auto High Bin Delay ON
>   In Manual mode, with Semi Auto ON, and filling a bin, when the high light comes on:
>>   A **"Y"** here will continue to fill the bin for the time entered on Edit Page #3 in the
>>   " High Bin Delay " column for the bin filling.
>>   An **"N"** will close the gate when the high light comes on.

Additional Belts Off Time
Note: If a "**0**" is in this box, the belts will continue to run. A "**1**" or greater will:
>   When all the overhead bins are full, the system will clear all belts before stopping them.
If the belts need to run longer, up to fifteen minutes maximum may be added here. After that time, the belts will shut down if all bins are full.

Belt Pan Water ON / OFF   Auto Mode Only
>   **ON:** For washing the material down a belt drip pan mounted under the Incline belt.
Entering a time in the **ON** time field enables this feature. The water will not start running for approximately 60 seconds after the material reaches the Turnhead then will run for the entered time.
>   If no time is entered in the **Belt Pan Water OFF time** then the water will run for the ON time, stop and not turn on until the next time the plant calls for material.
<div align="center">And</div>

>   **OFF:** When a time is entered for the **OFF** time, the water will cycle ON and OFF for the entered times until all bins are filled and the material clears the turnhead.

Manual Belt Run Interlock
Applies only if Belt/s are started from the CRT screen!
> **N** = No Interlocks
> **1** = Random Belts Interlock.
> > If 1 & 2 Belt buttons are clicked on and running but 3 was not clicked on, and 2 stops, 1 will also stop. If 1 & 2 are running and 3 is clicked on, 1 & 2 will stop until 3 is running then 1 & 2 will start in sequence.
> **2** = If a belt stops, all belts feeding it will stop.
> > If 1, 2 & 3 are running and 2 stops, 1 will stop but 3 will keep running

Belt 1 flow Sw. off time
> This is a time delay **off** to the system if belt #1 flow switch is not consistent.
Must be set to zero for automatic gate timing.

Turn Off PRODUCT ON BELT Interlock
> **"N"** = <u>Will Not</u> allow the belts to start if the **Master Flow Switch** is <u>on</u> in the automatic mode.
> **"Y"** = <u>Will</u> allow the belts to start if the **Master Flow Switch** is <u>on</u> in the automatic mode.

Flow Switch #2 / #3 at Gate #'s
> Enter the gate # that the flow switch is in front of for each switch, if used.
> This does not apply to flow switch #1, which must be mounted in front of **gate #1** (the gate closest to the plant by belt).
>
> There may be up to 2 **additional** flow switch locations for a total of 3 locations over **Belt #1**.
> If the feed gates are far apart over the belt, time wise, flow switch #2 and/or #3 may be needed for optimum performance.
> If there are two or more feed belts (parallel feed belts) a flow switch may be needed for these belts also.

Gate #'s to Start Belt #1, #2, #3
> When there are 2 or 3 flat belts (with gates over them in the storage area) that feed another flat belt or an incline belt (with gates over them) the gate numbers are entered here. The belts will run only when the assigned gates are feeding material.

Belt Off Times
> If the above gates to belt assignments are used, this is the belt/s clear time.

<p align="center">Belt #n</p>

Pulse Time   If an **electronic limit switch** is used to sense movement or running of a belt, then enter a **time** between the pulses.
> Leaving a **zero** here tells the system that its looking for a contact closure (a solid contact) when the belt is running.

On Check   This is the belt start time before a **Belt Not On** error is generated.

Disable Incline Brake Alarm

        " Y " = Disable alarm
        " N " = Do not disable alarm

Edit Page #2

Gate Setup

#	TIME	T	U	JOG	#	TIME	T	U	JOG
1	0	S	N	500	17	0	N	N	0
2	10	S	N	500	18	0	N	N	0
3	20	R	N	800	19	0	N	N	0
4	30	R	N	800	20	0	N	N	0
5	40	N	N	400	21	0	N	N	0
6	50	N	N	0	22	0	N	N	0
7	60	N	N	0	23	0	N	N	0
8	70	N	N	0	24	0	N	N	0
9	80	N	N	0	25	0	N	N	0
10	90	N	N	0	26	0	N	N	0
11	100	N	N	0	27	0	N	N	0
12	110	N	N	0	28	0	N	N	0
13	0	N	N	0	29	0	N	N	0
14	0	N	N	0	30	0	N	N	0
15	0	N	N	0	31	0	N	N	0
16	0	N	N	0	32	0	N	N	0

Are there Gate Open L.S. ?   N

Gate Close to Open Time	20
Gate Open to Close Time	20
Gate Delay Open Time	0
Gate Change, No Flow	350
Gate Auto Rotate Time	450
Longest Gate Time	110
Disable Parallel Belt # W / Gates	0
Number of Jogs per Gate	5
Jog On Time Multiplier	2
Vibrator Off Delay	20

Storage Probe / Vibrator Assignments

	Gate		Gate		Gate
Prb. # 1	0	Prb. # 3	0	Prb. # 5	0
Prb. # 2	0	Prb. # 4	0	Prb. # 6	0
Vib # 1	1	Vib # 5	0	Vib # 9	0
Vib # 2	2	Vib # 6	0	Vib # 10	0
Vib # 3	3	Vib # 7	0	Vib # 11	0
Vib # 4	4	Vib # 8	0	Vib # 12	0

Buttons: #1, #2, #3, #4, #5, #6, #7, #8, Load, Save, Back

Time From This Gate to The Reference Point; 10 = 1 second

  There are sixty-four gates available in the system, 32 are displayed on this page, if more are enabled, an arrow button will be visible that will change the page to page 2A for the rest of the gates.
Useable gates for the plant will be highlighted.

Gate

Time

      The time it takes for the material to flow from **each** gate to the **reference** point <u>must</u> be entered. Typically, the flow switch mounted in front of the first gate is the reference point.

Type

"N"	= Neither.	No **Spray Bar** or **Vibrating** or **Pan Water** for this product
"S"	= **S**and.	A **Vibrator** will run automatically for this product
"SP"	= **S**and & **P**an Water	A **Vibrator** & **Pan Water**, will run automatically for this product
"R"	= **R**ock.	A **Spray Bar**, over belt, will run automatically for this product
"RP"	= **R**ock & **P**an Water	A **Spray Bar** & **Pan Watering** will run automatically for this product
"P"	= **P**an Water	**Pan Water** will run automatically for this product

Utility Gate for Special Products:

N = This gate is a **norma**l gate, not a utility gate.

Y = This gate **is** a **utility** gate.

D = Will disable this gate from use and will not let it be assigned on **edit** page #5

1 = Will feed the assigned bin for **one** time, then will **disable** the assigned bin until you re-enable it from the drop down menu by **Ctrl-right clicking on the bin box**.

U = Will turn **OFF** a **utility** gate in automatic feed but allow it to be used in manual feed.

M = Will turn **OFF** a **norma**l gate in automatic feed but allow it to be used in manual feed.

When a "**U**" or an "**M**" is assigned to a gate, that gate number on edit page #5 will be displayed in **Red**. A "**Y**" will allow you to have more than one product name for this gate on **edit** page #5.

JOG Also see: Number of Jogs per Gate and Jog on time multiplier

If the feed gate needs to Jog when it opens, enter a time here for opening before closing. The time is a 50% duty cycle. **"1500"** will open it for **"1.5"** seconds and close it for **"1.5"** seconds, **"0"** disables the feature for this gate. **JOG** time is entered in .001 sec., 200 = .2 seconds.

Are there Gate Open L.S. ?

If gate open limit switches are used enter a **"Y".** Gate limit switches must be used for the gate **not closed,** gate **not open**, automatic **gate timing** and belt **contamination** features to work.

Gate Close to Open Time

Enter a time to **open** the feed gates. Time before gate not open alarm.

Gate Open to Close Time

Enter a time to **close** the feed gates. Time before gate not closed alarm.

Gate Delay Open Time

If the feed gates are **not allowed** to open (edit page #4 col. **DO=Y**) until the turn head has reached its new position, you may enter a time here to delay the gate opening if the turn head passes the bin without stopping.

If the turn head does not settle down on the new bin (passes the position switch within this time) it will not open the gate. Otherwise, if a zero is here, when the turn head sees its new position, it will open the gate immediately then close the gate if the T.H. does not stop on the position. This can happen if the T.H. brake fails.

Gate Change, No Flow

The time the system will attempt to feed material out of **a** gate with no material flow before it changes to the **next** assigned gate, if any, of the same product to the receiving overhead bin.

Gate Auto Rotate Time

An **"A"** must be entered on "Edit page #4 in the **"CO"** column (**CO** = Change Option)" of each Bin desired for this feature to work.

If the assigned gates of the filling overhead bin are to **rotate** automatically on a **time** bases, this is the rotate time. This will tell the system how long to feed material out of an assigned gate before it automatically switches to the next assigned gate for that overhead bin.

Longest Gate Time

This time **sets** automatically, this is a read only field.

Disable Parallel Belt # W / Gates

If there are parallel tunnel feed belts and you need to disable one of them with their assigned gates, enter the belt # here. **"1"** will disable belt #1, **"2"** will disable belt #2

Number of Jogs per Gate

Set the number of Jogs for all gates if the gate has a time entered in the JOG column.

Jog On Time Multiplier   Also see: **JOG** Column under GATE settings

Multiplies the gate **JOG** time for the jog gate **open** time.
If **JOG** time = 1500, then gate jog open time will be:
1 = 1.5 sec, 2 = 3.0 sec, 3 = 4.5 sec. **JOG** time is entered in .001 sec., 200 = .2 seconds.

Vibrator Off Delay

Vibrator off delay, time the vibrator will run **after** material is flowing in the automatic mode.

Storage Probe / Vibrator Assignments

Prb. #1 – Prb #6   >>>>>   Enter a Gate # for each Probe installed
Vib. #1 – Vib. #12 >>>>>   Enter a Gate # for each Vibrator

Edit Page 2A

Gate Setup

GATE #	TIME	T	U	JOG	GATE #	TIME	T	U	JOG	#	PG	B	C	PG	B	C	PG	B	C	Bin #	GL
33	0	N	N	0	49	0	N	N	0	1	2	1	0	0	0	0	0	0	0	1	N
34	0	N	N	0	50	0	N	N	0	2	0	0	0	0	0	0	0	0	0	2	N
35	0	N	N	0	51	0	N	N	0	3	0	0	0	0	0	0	0	0	0	3	N
36	0	N	N	0	52	0	N	N	0	4	0	0	0	0	0	0	0	0	0	4	N
37	0	N	N	0	53	0	N	N	0	5	7	6	0	0	0	0	0	0	0	5	N
38	0	N	N	0	54	0	N	N	0	6	0	0	0	0	0	0	0	0	0	6	N
39	0	N	N	0	55	0	N	N	0	7	0	0	0	0	0	0	0	0	0	7	N
40	0	N	N	0	56	0	N	N	0	8	0	0	0	0	0	0	0	0	0	8	N
41	0	N	N	0	57	0	N	N	0	9	0	0	0	0	0	0	0	0	0	9	N
42	0	N	N	0	58	0	N	N	0	10	0	0	0	0	0	0	0	0	0	10	N
43	0	N	N	0	59	0	N	N	0	11	0	0	0	0	0	0	0	0	0	11	N
44	0	N	N	0	60	0	N	N	0	12	0	0	0	0	0	0	0	0	0	12	N
45	0	N	N	0	61	0	N	N	0	13	0	0	0	0	0	0	0	0	0		
46	0	N	N	0	62	0	N	N	0	14	0	0	0	0	0	0	0	0	0		
47	0	N	N	0	63	0	N	N	0	15	0	0	0	0	0	0	0	0	0		
48	0	N	N	0	64	0	N	N	0	16	0	0	0	0	0	0	0	0	0		

Product to Multiple Gate Assigment

Buttons: #1 #2 #3 #4 #5 #6 #7 #8 Load Save ◄ Back

When 2 or 3 Gates of the same product are desired to be "Linked" (opened) at the same time, it may be done here. You cannot open 2 or 3 gates on different belts. The # 1 – 16 is the product number on page #5. The **"PG"** (primary gate) column should have the gate that is the farthest (of this group) from the plant by belt. The **"B"** column is for the second gate to be opened with this group. The **"C"** column is for the third gate to be opened with this group. You may have up to 3 groups of 3 gates for each product.

A **"Y"** in the **"GL"** column will open assigned Linked group gates when the **"PG"** gate number is called to open for this bin.

An **"N"** disables the "Linked" feature for this bin and the gates are opened separately as called.

NOTE: When gate assignments are changed on Edit page #5 for a product, you must re-enter these gate assignments

Bin Setup

Bin Step Order	Bin #	P	H/L	LT	D	Gate CO	DO	DC	Short Fill Time	Bin Fill Time	High Bin Delay	Fill Start Delay	Max Fill Time	Analog Bin Level Low %	High %	Em Low %	UB	SF	TF	LF
1	1	0	H	N	N	D	N	N	300	250	20	20	320	30.0	85.0	20.0	N	P	Y	Y
2	2	5	H	N	N	D	N	Y	300	150	20	20	0	0.0	0.0	0.0	N	P	Y	Y
3	3	5	E	N	N	D	N	Y	300	150	20	20	0	0.0	0.0	0.0	N	P	Y	Y
4	4	15	H	N	Y	D	N	Y	300	180	20	20	310	0.0	0.0	0.0	N	P	Y	Y
5	5	0	L	N	N	D	N	Y	300	100	20	20	0	0.0	0.0	0.0	N	P	N	Y
6	6	0	H	N	N	D	N	Y	150	320	20	20	0	0.0	0.0	0.0	N	P	N	Y
7	7	0	H	N	N	D	N	Y	210	120	20	20	0	0.0	0.0	0.0	N	P	N	Y
8	8	0	H	N	N	D	N	Y	220	110	20	20	0	0.0	0.0	0.0	N	P	N	Y
9	9	0	H	N	N	D	N	Y	310	50	20	20	0	0.0	0.0	0.0	N	P	N	Y
10	10	0	H	N	N	D	N	Y	190	70	20	20	0	0.0	0.0	0.0	N	P	N	Y
11	11	0	H	N	N	D	N	Y	180	80	20	20	0	0.0	0.0	0.0	N	P	N	Y
12	12	0	H	N	N	D	N	Y	170	60	20	20	0	0.0	0.0	0.0	N	P	N	Y

Emerg. High Damping Time 10   Additional Emergency Low Fill Time 0   Pri. Select Y

Bin Level Sw. Damping Time 10   Time to Cancel All Auto Skipped Bins 0   Future Use 0

Cancel All Auto Skipped Bins when a Fill Cycle Starts N

Continue Bin Search Step Order when a Bin fills ? Y

Emergency Low to Bin Assigment
1 0   2 0   3 0   4 0   5 0   6 0

#1 #2 #3 #4 #5 #6 #7 #8 Load Save Back

Bin "#" = To set Priority Bin Search. Enter Bin Number

Bin Step Order

The **1-12** is the order the system looks at the bins to fill

Bin

#

Put **any** valid Bin number, in any order for the **priority search order.**

For instance: If Step order # 1 has a **"3"** entered, the first bin to be checked to fill is bin #3.
If Step order # 2 has a **"2"** entered, the second bin to be checked to fill is bin # 2.

If Step order # 3 has a **"6"** entered, the third bin to be checked to fill is bin # 6.

P   Bin fill Priority # (0 to 99). **Note:** <u>Cannot</u> be used with Bin Linking #1 & #2

When a number is assigned to a bin/s those bins will fill before bins that do not have a number assigned. If a bin without a number is filling and a bin with a number calls for filling the filling will stop and start filling the bin/s with a number assigned. If a bin with a number is filling and another bin with the same number calls for filling with an "**N**" in the "**Pri. Select**" Box (lower right side of this screen) the filling will continue. If a "**Y**" is in the "**Pri. Select**" Box the filling will stop and go to the other bin with the same number as the one filling **IF** the other bin is in a lower fill order in the "**#**" column. When a numbered bin is filling and a bin with a higher number calls for filling the filling will stop and fill the higher numbered bin. All bins without a number will fill in the "**#**" column assigned order. Bins using the Emergency Low feature will abort all other filling and fill them in the "**#**" assigned order.

H/L   High / Low Start.
H = Start filling when bin is **NOT** high
E = Start filling when bin is **NOT** high and using the low bin signal for emergency **LOW** start
L = Start filling on a **LOW** signal. (Not as an emergency low)

LT   Low Timing
If "**H/L**" is set to "**L**" and you want the filling of this bin to stop before the high light comes on, do the following.
1: Enter a "**Y**" in the "**LT**" column
2: Enter an "**N**" in the "**DC**" column
3: Enter a **Time** in the **"High Bin Delay"** column "for the feeding gate to feed after the <u>Low</u> light goes <u>out</u>."
If timing is correct, when the material clears the belts, the bin should be full. This will compensate for extra long and/or large belts feeding the plant.

D   Disable Automatic filling
To **disable** this **bin** from the automatic fill cycle, enter a "**Y**".

CO   Change Options**:**
Entering a   "**D**" = Gate change on no material flow (default)
                 "**A**" = Gate change on auto rotate time + no material flow
                 "**C**" = Gate change on bin fill start + no material flow

DO   Gate Delay Open.
A "**Y**" keeps the gate from opening until the turn head gets **to** the bin to fill.
An "**N**" will open the next feed gate **before** the turn head turns and at the appropriate time so when the turn head stops on the **next** bin to fill, the material will be there shortly.

DC   Gate Delay Closed.
A"**Y**" keeps the feeding gate open for a calculated amount of time "longest gate time" after the bin goes high to keep an equal space of material on the belt for all gates.
An "**N**" closes the gate when the bin goes high. See **High Bin Delay** below.

Short Fill Time

Enter a time you want for each bin to fill in the short fill mode automatically. The time entered should be **greater** than **15** Seconds which is the system minimum default time. If you enter a time **less** than 15 seconds the system will ignore it.

Bin Fill Time for extra large bins.
Entering a time **greater** than **15** Seconds which is the system minimum default time and the bin does not fill before this time elapses, the filling will stop for this feed cycle and go to other bins to fill, if this is the last bin to fill, filling will continue until full. Entering a **"0"** or a time less than the system minimum default time, will turn this feature off.
This time is also used if the **TF** column has a "**Y**" in it for this bin.
Also see **Time Fill** Button on the Regal Monitoring screen of this manual.

High Bin Delay   Gate close time
      Auto Mode: If a **"Y"** was entered in **DC**, then:
                  On a high bin, the feeding gate will wait for this **additional** amount of time to close.
              If an **"N"** was entered in **DC**, then:
                  On a high bin, the feeding gate will wait for this amount of time to close.
      Manual Mode: with **Semi Auto ON** and a **"Y"** is entered in **"Semi Auto High Bin Delay ON"**
              on Edit Page #1, then:
                  On a high bin, the feeding gate will wait for this amount of time to close.

Fill Start Delay
A time the system will wait before it accepts a **not high** bin input from a bin indicator. This will prevent a false fill start

Max Fill Time
A **maximum** fill time for this Bin. If the bin does not fill within this time, the high bin indicator may be bad. The feeding gate will close, the belts will stop and an alarm will sound.

Analog Bin Level
      Low %
          If analog inputs are enabled this is where the **Low** level input set-point for this bin (in percentage) is entered.

      High %
          If analog inputs are enabled this is where the **High** level input set-point for this bin (in percentage) is entered.
              Note: If **Emergency High** monitoring is used, they must have a separate, not an analog, bin indicator with a dry contact. If the analog sensing device for the High and Low set points errors out then the **Emergency High** will still work.

      Em Low %
          If analog inputs are enabled this is where the **Emergency Low** level input set-point for this bin (in percentage) is entered.

Edit Page #3 A

Bin Setup

Bin Step Order	Bin #	H/L	LT	D	CO	DO	DC	Short Fill Time	Bin Fill Time	High Bin Delay	Fill Start Delay	Max Fill Time	Zero	Span	OP	UB	SF	TF	LF
1	1	E	N	N	D	N	Y	435	200	10	20	0	0	31000	31000	N	B	N	Y
2	2	E	N	N	D	N	Y	510	150	15	25	0	0	0	0	N	B	N	Y
3	3	H	N	N	D	N	Y	780	185	500	50	0	0	0	0	N	P	N	Y
4	4	E	N	N	D	N	Y	679	541	265	45	0	0	0	0	N	B	N	Y
5	5	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y
6	6	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y
7	7	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y
8	8	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y
9	9	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y
10	10	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y
11	11	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y
12	12	H	N	N	D	N	Y	0	0	0	0	0	0	0	0	N	P	N	Y

Emerg. High Damping Time   5
Bin Level Sw. Damping Time   5
Cancel All Auto Skipped Bins when a Fill Cycle Starts   N
Continue Bin Search Step Order when a Bin fills ?   N

Emerg. Low Time Fill On a Mid Level Bin   100
Time to Cancel All Auto Skipped Bins   0

Future Use   N
Future Use   0

Emergency Low to Bin Assigment
1 0   2 0   3 0   4 0   5 0   6 0

Buttons: #1 #2 #3 #4 #5 #6 #7 #8 Load Save Back

By right clicking on the "**Analog Bin Level**" words, the **"Low%, High% & Em Low%"** columns will be replaced with **"Zero, Span & OP"** columns. These columns are for calibrating the analog inputs.

UB Utility Bin enable

A **"Y"** designates this bin as a utility bin. This will allow the bin name to be changed if you want a different product in this bin on the Regal monitoring screen.

An **"N"** will not allow you to change the bin name from the monitoring screen.

SF (**S**econdary **F**eed)

With Plant Priority enabled, each bin can be set up to:

"P" = Use Primary Feed storage only.

"A" = **Ask** Before using Secondary Feed

"B" = Use Secondary Feed without Asking.

TF (**T**ime **F**low)   Useful for small bins with large, long belts
        A "**Y**" enables a time flow for this bin. The time entered in the **Bin Fill Time** column will start when the material reaches the (**Ref.**) Flow switch and will close the feed gate when the time has elapsed. If the bin does not fill (high light comes on)by the time the material clears the turn head, the feed gate will open again for the system minimum default time (15 seconds). The control will continue to repeat this cycle until the bin becomes full.
        Also see **Time Flow** Button on the Regal Monitoring screen of this manual.

LF (Last gate **F**ed option)
        " **Y** " = The last gate to feed for this bin will be the first gate to feed next time
        " **N** " = Feed starts with the first gate assigned to this bin on page #5

Emerg. High Damping Time   A damping time for all Emergency High level switches

Bin Level Sw. Damping Time   A damping time for all bin high level switches

Cancel All Auto Skipped Bins when a Fill cycle starts
        Entering a **"Y"** will tell the system to cancel **all** the **A-skip** bins **only**, when a fill cycle starts. If there are no other bins to be filled when a bin is **A-Skip**ped, the system will shut down and wait for a **non** A-Skip bin to call for material.

Continue Bin Search Step Order When a Bin fills?
        Enter a **"Y"** if the **bin search step order** should continue from the last bin filled instead of
            starting the search over on a high bin.
            For instance, if bin # 2 is filling in step order # 2, and step order #1 bin goes low, it will look at
            step order 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 before it looks at step order # 1 again.
        An **"N"** will start the **bin search step order** over every time a bin is filled.

Additional Emergency Low Time Fill   On a Mid Level Bin
        When a bin is emergency filling and another bin is calling for emergency fill also then:
        When the bin fills above the emergency low level "Bin is yellow" it will continue to fill for the time entered, then abort this filling cycle and start filling the next emergency low bin. If no other bins are calling for emergency low, the bin will not use this time and continue filling the bin in a normal manor.

Time to Cancel All Auto Skipped Bins   Time is in **minutes**.
        Time to cancel all **A-Skip** bins and try to fill them. System must be in the Automatic mode for this to work. The time will be reset when all bins are filled or skipped, put in manual mode and when **"Y"** in entered to cancel **A_Skip** bins on fill start cycle.
        This cycle will continue until the bins are **manually skipped** or are filled with material.

Pri. Select
        This works with the "**P**" column above left. An "**N**" does not abort feeding Bins of the same Priority.

Emergency Low to Bin Assignment **"**Option"

                  #1 - #6 >>>   Enter a Bin number for each Probe number enabled.

The Emergency Low Fill option works as follows:

        Emergency low probes in a bin will, when low, cancel any filling cycle in progress other than another emergency low fill cycle and will fill all bins calling for emergency filling.

Edit Page #4

Belt Names   The name for the belts on the main monitoring screen can be entered here.

Diverter Left   Enter the name for the diverter left hand button

Diverter Right Enter the name for the diverter right hand button

Plant Name   If dual plants are on one monitor, the plant name is entered here.

Plant Number   For **Priority** Plant with **Parallel** feed belts. If this is plant #2, all gates, <u>for this plant</u>,

                      above the number in (**Parallel Belts Enabled -----** on page #6) will be assigned on

                      this belt #1 and all low gates on this belt #2

Plant 1 / Plant 2 Change Time.   To change back to the active monitoring screen in a 2 plant system.

Cem. Silo Names   Cement Silo High / Low displays on the Regal run screen can be named here.

Customer Name   The data here will display on the Regal run screen.
Switch Names
        These 6 Misc. switch buttons may be displayed on the main screen. They can be named here.

T/M
        These switch buttons can be either (**"M"** for **m**omentary) or (**"T"** for **t**oggle). Leaving the box blank will <u>not</u> display the button.

S (Shared)
        When **Enable Plant Priority** and **Dual Plant Shared Data Enable** are enabled on edit page #6 this column will be enabled.
        With 2 Regal controls:
                When a "**Y**" is entered for a switch in this column and the switch is set to a "**T**" in the
        T/M column, this must be on both plants, the two switches will act as 3 way switches.

Voice   (synthesized)
        Clicking on the down arrow on the right side of this window will display the available
        synthesized voices to select from.

Voice Pitch
        Increasing or decreasing this number will raise or lower the synthesized voice.

Voice Speed
        Increasing or decreasing this number will speed or slow up the synthesized voice.

Rev. Cem Silo Colors The cement Silo display on the run screen colors can be reversed here.
        From (Green = High and Red = Low) to (Red = High and Green = Low)

Print Logged Events ?
        A **"Y"** turns the printer port on.
        This will allow printing of the error log. A printer must be hooked to the computer and turned on with paper in it, otherwise a printer error will keep appearing on the screen.

Semi-Auto Default On?
        A **"Y"** will turn the **Semi-Auto** button on the main screen on = **Red**.
        An **"N"** will turn the **Semi-Auto** button on the main screen off = **Black** mode.

T.H. Turn Alarm On?
        A **"Y"** will pulse the belt horn outside before the turn head turns in the automatic mode only.

Display Minimize **Button?**

A **"Y"** entered will display the minimize button on the Regal run screen.

An **"N"** will not display the minimize button on the Regal run screen.

Voice Alert On?

A **"Y"** will turn on the voice prompting feature for the error messages.

A **"N"** will turn off the voice prompting feature.

Voice Selection (S,M,F)

A **"S"** will turn on the synthesized voice for the error messages.

A **"M"** will turn on a Male voice for the error messages.

Music?

A **"Y"** will play music <u>after</u> a voice message has been announced.

Handler Audio Alert?

A **"Y"** will sound an audio alert <u>prior</u> to a voice message.

Storage Alert Mode For Aggregate Silo control

"**N**" = No Audio or Voice

"**E**" = Audio and Voice on Errors Only

"**A**" = Audio and Voice on All

CD Audio?

A **"Y"** will play music from a CD <u>after</u> an error voice message.

CD Track Number

Enter a track number for the CD to play after an error. Entering **"00"** will rotate to the next track /song for each error.

Display Fade Speed

This is the Fade speed color change for the Headings on the **Edit menu** and the **Main menu** screens. A 10 is the fastest setting allowed and 9999 is the slowest allowed. Entering a zero will turn off the color change of the 2 screens.

Error Configuration Box   The Errors displayed can be set to:

Enable / Disable Alert

Enable / Disable Voice

Enable / Disable Music

Communication Port #   This is the serial port that connects to the PLC communication line.

Menu Background

Use the mouse to highlight the bottom left window and the up or down arrows to select the wallpaper for the main menu screen.

Edit Page #5 SGS View

Product Gate Assignments

Bin Numbers				Products	Gate Numbers																SGS
2	3	8	0	W.C. Sand	1	2	3	4	13	14	15	16	1	2	3	4	13	14	15	16	±13
4	0	0	0	State Sand	7	26	7	26	7	26	7	26	7	26	7	26	7	26	7	26	-0
5	6	10	0	1X4 Rock	8	9	17	18	8	9	17	18	8	9	17	18	8	9	17	18	+17
0	0	0	0	11/2" Rock	10	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
9	0	0	0	Pea Gravel	12	19	12	19	12	19	12	19	12	19	12	19	12	19	12	19	-0
0	0	0	0	Black & Whi	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Lite Weight	21	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
1	7	0	0	Utility Prod.	5	6	5	6	5	6	5	6	5	6	5	6	5	6	5	6	-0
0	0	0	0	Product #9	23	24	25	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Product #10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Product #11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Product #12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Product #13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Product #14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Product #15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0
0	0	0	0	Product #16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0

Buttons: #1, #2, #3, #4, #5, #6, #7, Load, Save, Back

If the product name is in **Rust** this product gate/s have been designated as a **Utility** gate on edit page 2 in the "U" column).

If the product name is in **Blue** the gate/s assigned to it are disabled (**"D"** on edit page 2 in the "U" column).

If the product name is in **Green**, the gate/s assigned to it are a 1 time fill gate (**"1"** on edit page 2 in the "U" column). This will fill the assigned over head bin for one time then disable that bin until you re-enable it from the "Utility Bin Product change Box" (View #1) on the main screen **or** enable it on edit page #3.

You can enter up to:
4 = Bins to each product.
16 = **Product** Names.   Product names **can not** be the same.
16 = **Gates** can be assigned to **a** product.   All assigned gates to a product **MUST** be of the same material.

Bin Link Set #1 and Bin Link Set #2

Linking 2 Bins of the same material will not stop feeding when one fills and the other one is calling for material. <u>THESE BINS MUST BE SIDE BY SIDE AND FILLING FROM LOW TO HIGH ORDER IN THE FILL SEQUENCE FOR THIS FEATURE TO WORK.</u>

SGS   **(**Right click on the **SGS** will bring up the **DFGS** column)
The column on the far right of the screen is the **S**torage **G**ate **S**elect range entries.
If the gates entered for a product is 1,2,3,4,5,6,15,16,17,18 then:
When a – 6 is entered for that line in the SGS column, Gates 1,2,3,4 & 5 will be enabled for feed.
When a + 6 is entered for that line in the SGS column, Gates 6,15,16,17 & 18 will be enabled for feed.
When a - 0 is entered for that line in the SGS column, all assigned gates will be enabled for feed.
If a + - 6 appears for that line in the SGS column, you have chosen the UP & Down arrow in the <u>Storage Gate Select Pop up box</u> on the main monitoring screen and all assigned gates will be enabled for feed.
  Also See: **Storage Feed Select** on **Regal Monitoring Screen** & View #5

Edit Page #5 DFGS View

DFGS   DeFault Gate Start   **(**Right click on the **DFGS** to bring up the **SGS** column)

When an assigned bin for this product has auto skipped and the system is waiting for a bin to fill, this primary feed gate will be used to feed first when the bin is un-skipped.

If a probe is installed for this gate, enabled and assigned to that bin, when material is put into the storage for that gate, the auto skipped bin will unskip and the feed cycle will begin to fill that bin.

Edit Page #6

System Configuration - UnLocked

PC Software Version	6.08	Parrallel Belts Enabled by Max. Gates on Belt #1	0	#1
System Ship Date	12/30/1899	Max. Gates in System	12	
PLC Software Version	12.39	Max. Bins in System	12	#2
System Serial Number	1000	Max. Belts in System	3	#3
Communication Port #	1	Max. TurnHeads	2	
Snpx Com. Delay Multiplier	2	Maximum # Vibrators	4	#4
Backup Reminder Enabled	Y	Max. Storage Probes	0	#5
Day's to Save Backups	365	Enable the Diverter	N	
Enable Auto Setup	Y	T.H. #1 Fwd/Rev Visible	N	#6
Enable Dn. Green Arrow	Y	T.H. #2 Fwd/Rev Visible	N	#7
Enable Silo Control Option	Y	Enable Emerg. Bin High	Y	
Maximum Silo Shuttle Belts	0	Max. Emerg. Bin Lows	0	#8
Maximum Silo Belts	1	Bin Level Analog Inputs Enabled	Y	Load
Max. Silos on Shuttle Belt #1	2	# of Gate Assigned Belts	0	
Max. Silos on Shuttle Belt #2	0	Gate Linking/Blending	Y	Save
Maximum Grizzly Gates	1	Allow Multiple Regals	N	
Enable Plant Priority	N	Disable Comm. Error Box	N	
Dual Plant Shared Data Enable	N	Number of Cement Silo's	4	Back
Enabled Automatic Features	A	Dealer USA Dealer		

This screen is for factory use only.

Edit Page #7 Button

Edit page #7 button has a total of 10 pages. These are I/O assignment pages for the assignable I/O feature of the **Regal** and is for factory use only.

Assignable Inputs Page #1 - Locked

Bin 1 High	1	Bin 5 High	33	Bin 7 High	0	Bin 11 High	0
Bin 1 Low	2	Bin 5 Low	34	Bin 7 Low	0	Bin 11 Low	0
Bin 1 T.H. Pos.	3	Bin 5 T.H. Pos.	35	Bin 7 T.H. Pos.	41	Bin 11 T.H. Pos.	0
Bin 2 High	4	Bin 6 High	0	Bin 8 High	0	Bin 12 High	0
Bin 2 Low	5	Bin 6 Low	0	Bin 8 Low	0	Bin 12 Low	0
Bin 2 T.H. Pos.	6	Bin 6 T.H. Pos.	0	Bin 8 T.H. Pos.	0	Bin 12 T.H. Pos.	0
Bin 3 High	7	Belt 1 Flw Sw. 2	0	Bin 9 High	0	Spare # 1	0
Bin 3 Low	8	Belt 1 Flw Sw. 3	0	Bin 9 Low	0	Spare # 2	0
Bin 3 T.H. Pos.	9	Ext. A/M Sw.	26	Bin 9 T.H. Pos.	0	Future Use	0
Bin 4 High	10	A.C Line Mon.	25	Bin 10 High	0	Belt 4 O.F. / Track	0
Bin 4 Low	11	Blt 1 F Sw. At TH.	0	Bin 10 Low	0	Belt 4 Mat. Flow	0
Bin 4 T.H. Pos.	12	Plnt 1 TH at CB	0	Bin 10 T.H. Pos.	0	Belt 4 Running	0
Primary Flow Sw.	15	Ext. Emerg. Stop	24	Future Use	28	Future Use	0
Belt 1 O.F. / Track	14	Belt 2 O.F. / Track	0	Belt 3 O.F. / Track	0	Belt 5 O.F. / Track	0
Belt 1 Mat. Flow	0	Belt 2 Mat. Flow	0	Belt 3 Mat. Flow	0	Belt 5 Mat. Flow	0
Belt 1 Running	16	Belt 2 Running	32	Belt 3 Running	48	Belt 5 Running	0

#1 #2 #3 #4 #5 #6 #7 #8 Load Save Back

Edit Page #7 Button

Edit page #7 button has a total of 10 pages. These are I/O assignment pages for the assignable I/O feature of the **Regal** and is for factory use only.

Assignable Inputs Page #2 - Locked

Emerg. Low # 1	0	Bin # 5 Em. High	0	Misc. Input # 5	0
Emerg. Low # 2	0	Bin # 6 Em. High	0	Misc. Input # 6	0
Emerg. Low # 3	0	Bin # 7 Em. High	0	Cem Silo #1 High	36
Emerg. Low # 4	0	Bin # 8 Em. High	0	Cem Silo #1 Low	37
Emerg. Low # 5	0	Bin # 9 Em. High	0	Cem Silo #2 High	39
Emerg. Low # 6	0	Bin # 10 Em. High	0	Cem Silo #2 Low	40
Storage Probe # 1	0	Bin # 11 Em. High	0	Cem Silo #3 High	0
Storage Probe # 2	0	Bin # 12 Em. High	0	Cem Silo #3 Low	0
Storage Probe # 3	0	Priority - Input # 1	0	Cem Silo #4 High	0
Storage Probe # 4	0	Priority - Input # 2	0	Cem Silo #4 Low	0
Storage Probe # 5	0	Priority - Input # 3	0	Future Input # 1	0
Storage Probe # 6	0	Priority - Input # 4	0	Future Input # 2	0
Bin # 1 Em. High	0	Misc. Input # 1	0	Future Input # 3	0
Bin # 2 Em. High	38	Misc. Input # 2	0	Future Input # 4	0
Bin # 3 Em. High	0	Misc. Input # 3	0	Future Input # 5	0
Bin # 4 Em. High	0	Misc. Input # 4	0	Future Input # 6	0

Buttons: #1, #2, #3, #4, #5, #6, #7, #8, Load, Save, Back

Edit Page #7 Button

Edit page #7 button has a total of 10 pages. These are I/O assignment pages for the assignable I/O feature of the **Regal** and is for factory use only.

Gate Limit Switch Inputs Page #3 - Locked

Gate	Value	Gate	Value	Gate	Value	Gate	Value
Gate # 1	17	Gate # 17	0	Gate # 33	0	Gate # 49	0
Gate # 2	18	Gate # 18	0	Gate # 34	0	Gate # 50	0
Gate # 3	19	Gate # 19	0	Gate # 35	0	Gate # 51	0
Gate # 4	20	Gate # 20	0	Gate # 36	0	Gate # 52	0
Gate # 5	21	Gate # 21	0	Gate # 37	0	Gate # 53	0
Gate # 6	22	Gate # 22	0	Gate # 38	0	Gate # 54	0
Gate # 7	23	Gate # 23	0	Gate # 39	0	Gate # 55	0
Gate # 8	0	Gate # 24	0	Gate # 40	0	Gate # 56	0
Gate # 9	0	Gate # 25	0	Gate # 41	0	Gate # 57	0
Gate # 10	0	Gate # 26	0	Gate # 42	0	Gate # 58	0
Gate # 11	0	Gate # 27	0	Gate # 43	0	Gate # 59	0
Gate # 12	0	Gate # 28	0	Gate # 44	0	Gate # 60	0
Gate # 13	0	Gate # 29	0	Gate # 45	0	Gate # 61	0
Gate # 14	0	Gate # 30	0	Gate # 46	0	Gate # 62	0
Gate # 15	0	Gate # 31	0	Gate # 47	0	Gate # 63	0
Gate # 16	0	Gate # 32	0	Gate # 48	0	Gate # 64	0

Buttons: #1 #2 #3 #4 #5 #6 #7 #8 Load Save ◄ ► Back

Edit Page #7 Button

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Assignable Silo Shuttle #1 Inputs Page #4 - Locked

Silo 1 Select Sw.	38	Silo 7 Pos. Sw.	0	Silo 4 High	0	Silo 8 Em. High	0
Silo 2 Select Sw.	41	Silo 8 Pos. Sw.	0	Silo 4 Low	0	Silo 8 Skip	0
Silo 3 Select Sw.	0	Silo 9 Pos. Sw.	0	Silo 4 Em. High	0	Silo 9 High	0
Silo 4 Select Sw.	0	Silo 10 Pos. Sw.	0	Silo 4 Skip	0	Silo 9 Low	0
Silo 5 Select Sw.	0	Silo 11 Pos. Sw.	0	Silo 5 High	0	Silo 9 Em. High	0
Silo 6 Select Sw.	0	Silo 12 Pos. Sw.	0	Silo 5 Low	0	Silo 9 Skip	0
Silo 7 Select Sw.	0	**Silo 1 High**	0	Silo 5 Em. High	0	Silo 10 High	0
Silo 8 Select Sw.	0	**Silo 1 Low**	0	Silo 5 Skip	0	Silo 10 Low	0
Silo 9 Select Sw.	0	**Silo 1 Em. High**	0	Silo 6 High	0	Silo 10 Em. High	0
Silo 10 Select Sw	0	**Silo 1 Skip**	0	Silo 6 Low	0	Silo 10 Skip	0
Silo 11 Select Sw	0	**Silo 2 High**	0	Silo 6 Em. High	0	Silo 11 High	0
Silo 12 Select Sw	0	**Silo 2 Low**	0	Silo 6 Skip	0	Silo 11 Low	0
Silo 1 Pos. Sw.	0	**Silo 2 Em. High**	0	Silo 7 High	0	Silo 11 Em. High	0
Silo 2 Pos. Sw.	0	**Silo 2 Skip**	0	Silo 7 Low	0	Silo 11 Skip	0
Silo 3 Pos. Sw.	0	Silo 3 High	0	Silo 7 Em. High	0	Silo 12 High	0
Silo 4 Pos. Sw.	0	Silo 3 Low	0	Silo 7 Skip	0	Silo 12 Low	0
Silo 5 Pos. Sw.	0	Silo 3 Em. High	0	Silo 8 High	0	Silo 12 Em. High	0
Silo 6 Pos. Sw.	0	Silo 3 Skip	0	Silo 8 Low	0	Silo 12 Skip	0

Buttons: #1, #2, #3, #4, #5, #6, #7, #8, Load, Save, Back

Edit Page #7 Button

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Assignable Silo Shuttle #2 Inputs Page #5 - Locked

Silo 1 Select Sw.	0	Silo 7 Pos. Sw.	0	Silo 4 High	0	Silo 8 Em. High	0
Silo 2 Select Sw.	0	Silo 8 Pos. Sw.	0	Silo 4 Low	0	Silo 8 Skip	0
Silo 3 Select Sw.	0	Silo 9 Pos. Sw.	0	Silo 4 Em. High	0	Silo 9 High	0
Silo 4 Select Sw.	0	Silo 10 Pos. Sw.	0	Silo 4 Skip	0	Silo 9 Low	0
Silo 5 Select Sw.	0	Silo 11 Pos. Sw.	0	Silo 5 High	0	Silo 9 Em. High	0
Silo 6 Select Sw.	0	Silo 12 Pos. Sw.	0	Silo 5 Low	0	Silo 9 Skip	0
Silo 7 Select Sw.	0	Silo 1 High	0	Silo 5 Em. High	0	Silo 10 High	0
Silo 8 Select Sw.	0	Silo 1 Low	0	Silo 5 Skip	0	Silo 10 Low	0
Silo 9 Select Sw.	0	Silo 1 Em. High	0	Silo 6 High	0	Silo 10 Em. High	0
Silo 10 Select Sw	0	Silo 1 Skip	0	Silo 6 Low	0	Silo 10 Skip	0
Silo 11 Select Sw	0	Silo 2 High	0	Silo 6 Em. High	0	Silo 11 High	0
Silo 12 Select Sw	0	Silo 2 Low	0	Silo 6 Skip	0	Silo 11 Low	0
Silo 1 Pos. Sw.	0	Silo 2 Em. High	0	Silo 7 High	0	Silo 11 Em. High	0
Silo 2 Pos. Sw.	0	Silo 2 Skip	0	Silo 7 Low	0	Silo 11 Skip	0
Silo 3 Pos. Sw.	0	Silo 3 High	0	Silo 7 Em. High	0	Silo 12 High	0
Silo 4 Pos. Sw.	0	Silo 3 Low	0	Silo 7 Skip	0	Silo 12 Low	0
Silo 5 Pos. Sw.	0	Silo 3 Em. High	0	Silo 8 High	0	Silo 12 Em. High	0
Silo 6 Pos. Sw.	0	Silo 3 Skip	0	Silo 8 Low	0	Silo 12 Skip	0

Buttons: #1, #2, #3, #4, #5, #6, #7, #8, Load, Save, ◄ ►, Back

Edit Page #7 Button

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Assignable Silo Inputs Page #6 - Locked

Silo Auto/Manual	44	Silo Belt # 3 Track/Overfill	0	
A/C Power Monitoring	64	Silo Belt # 4 Track/Overfill	0	
Silo Belt # 1 Run	51	Silo Belt # 5 Track/Overfill	0	
Silo Belt # 2 Run	0	Silo Shuttle #1 Track/Overfill	0	
Silo Belt # 3 Run	0	Silo Shuttle #2 Track/Overfill	0	
Silo Belt # 4 Run	0	Emergency Pull Cord	49	
Silo Belt # 5 Run	0	External Emergency Stop	52	
Silo Shuttle # 1 Right Run	51	External Mister	43	
Silo Shuttle # 1 Left Run	51	External Gate	57	
Silo Shuttle # 2 Right Run	0	External Water	58	
Silo Shuttle # 2 Left Run	0	External Vibrator	59	
Silo Grizzley # 1 Limit Sw.	50	External Incline	60	
Silo Grizzley # 2 Limit Sw.	0	External Reverse Left	61	
Silo Flow Switch	53	External Reverse Right	62	
Silo Belt # 1 Track/Overfill	0	External Horn	63	
Silo Belt # 2 Track/Overfill	0	Silo Spare # 1	0	

Buttons: #1, #2, #3, #4, #5, #6, #7, #8, Load, Save, Back

Edit Page #7 Button

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Assignable Gate Outputs Page #1 - Locked

Gate # 1	17	Gate # 17	0	Gate # 33	0	Gate # 49	0	#1
Gate # 2	18	Gate # 18	0	Gate # 34	0	Gate # 50	0	#2
Gate # 3	19	Gate # 19	0	Gate # 35	0	Gate # 51	0	#3
Gate # 4	20	Gate # 20	0	Gate # 36	0	Gate # 52	0	
Gate # 5	21	Gate # 21	0	Gate # 37	0	Gate # 53	0	#4
Gate # 6	22	Gate # 22	0	Gate # 38	0	Gate # 54	0	#5
Gate # 7	23	Gate # 23	0	Gate # 39	0	Gate # 55	0	#6
Gate # 8	0	Gate # 24	0	Gate # 40	0	Gate # 56	0	
Gate # 9	0	Gate # 25	0	Gate # 41	0	Gate # 57	0	#7
Gate # 10	0	Gate # 26	0	Gate # 42	0	Gate # 58	0	#8
Gate # 11	0	Gate # 27	0	Gate # 43	0	Gate # 59	0	Load
Gate # 12	0	Gate # 28	0	Gate # 44	0	Gate # 60	0	Save
Gate # 13	0	Gate # 29	0	Gate # 45	0	Gate # 61	0	
Gate # 14	0	Gate # 30	0	Gate # 46	0	Gate # 62	0	
Gate # 15	0	Gate # 31	0	Gate # 47	0	Gate # 63	0	
Gate # 16	0	Gate # 32	0	Gate # 48	0	Gate # 64	0	Back

Edit Page #7 Button

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Assignable Outputs Page #2 - Locked

Vibrator Output Com.	7	Misc. Switch # 1 Output	0
Vibrator # 1 Output	8	Misc. Switch # 2 Output	0
Vibrator # 2 Output	0	Misc. Switch # 3 Output	0
Vibrator # 3 Output	0	Misc. Switch # 4 Output	0
Vibrator # 4 Output	0	Misc. Switch # 5 Output	0
Vibrator # 5 Output	0	Misc. Switch # 6 Output	0
Vibrator # 6 Output	0	Shuttle Belt # 1 Rev. Output	0
Vibrator # 7 Output	0	Shuttle Belt # 1 Fwd. Output	0
Vibrator # 8 Output	0	Shuttle Belt # 1 Run Output	0
Vibrator # 9 Output	0	Shuttle Belt # 2 Rev. Output	0
Vibrator # 10 Output	0	Shuttle Belt # 2 Fwd. Output	0
Vibrator # 11 Output	0	Shuttle Belt # 2 Run Output	0
Vibrator # 12 Output	0	Priority - Output # 1	0
Flop Gate Output	0	Priority - Output # 2	0
Diverter CCW Output	0	Priority - Output # 3	0
Diverter CW Output	0	Priority - Output # 4	0

#1 #2 #3 #4 #5 #6 #7 #8 Load Save Back

Edit Page #7 Button

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Assignable Outputs Page #3 - Locked

Turnhead # 1 CW	1	Turn Head Horn	5	
Turnhead # 1 CCW	2	Belt # 1 Horn	0	
Turnhead # 2 CW	0	Belt # 2 Horn	0	
Turnhead # 2 CCW	0	Belt # 3 Horn	0	
Horn Output	5	Belt # 4 Horn	0	
Man. Panel Vib # 1 Sw.	6	Belt # 5 Horn	0	
Man. Panel Vib # 2 Sw.	0	Belt Pan Water Output	0	
Man. Panel Vib # 3 Sw.	0	Manual Emerg. High	0	
Man. Panel Vib # 4 Sw.	0	Manual Power	0	
Belt # 1 Motor Starter	11	Future Output # 1	0	
Belt # 2 Motor Starter	12	Future Output # 2	0	
Belt # 3 Motor Starter	13	Future Output # 3	0	
Belt # 4 Motor Starter	0	Future Output # 4	0	
Belt # 5 Motor Starter	0	Future Output # 5	0	
Watering Coil	15	Future Output # 6	0	
Man. Full Alarm Output	16	Future Output # 7	0	

Buttons: #1 #2 #3 #4 #5 #6 #7 #8 Load Save ◄ ► Back

Edit Page #7 Button

Edit page #7 button has a total of 10 pages. These are I/O assignment pages for the assignable I/O feature of the **Regal** and is for factory use only.

Assignable Silo Outputs Page #4 - Locked

Silo Belt # 1 Run	33	Silo Grizzley Vibrator # 2	0	#1	
Silo Belt # 2 Run	0	Silo Grizzley Water # 1	38	#2	
Silo Belt # 3 Run	0	Silo Grizzley Water # 2	0	#3	
Silo Belt # 4 Run	0	Silo Horn	39	#4	
Silo Belt # 5 Run	0	Silo Mister	0	#5	
Silo Shuttle # 1 Move Left	0	Silo Spare # 2	0	#6	
Silo Shuttle # 1 Move Right	0	Silo Spare # 3	0		
Silo Shuttle # 1 Run Left	34	Silo Spare # 4	0	#7	
Silo Shuttle # 1 Run Right	35	Silo Spare # 5	0	#8	
Silo Shuttle # 2 Move Left	0	Silo Spare # 6	40		
Silo Shuttle # 2 Move Right	0	Silo Spare # 7	0	Load	
Silo Shuttle # 2 Run Left	0	Silo Spare # 8	0	Save	
Silo Shuttle # 2 Run Right	0	Silo Spare # 9	0		
Silo Grizzley Gate # 1	36	Silo Spare # 10	0		
Silo Grizzley Gate # 2	0	Silo Spare # 11	0		
Silo Grizzley Vibrator # 1	37	Silo Spare # 12	0	Back	

Edit Page #8

Custom Data

Shuttle #1 Silo #				Shuttle #2 Silo #					SH#1	SH#2		SH#1	SH#2	
G	S	D	T	G	S	D	T							
1	0		N	# 1	0	0		N # 1	N	N	Stop Between Bins ?	0	0	Belt Rev. Silo #
1	0		N	# 2	0	0		N # 2	0	0	Shuttle Park Position	0	0	Shuttle Pause Time
0	0		N	# 3	0	0		N # 3	0	0	Shuttle Max Move Time	5	0	# of Switches
0	0		N	# 4	0	0		N # 4	75	75	Name Cycle Time	250	250	Limit Flash Time
0	0		N	# 5	0	0		N # 5	50		Belt Start Horn	100		Belt Clear
0	0		N	# 6	0	0		N # 6	50		Vibrator Off	50		Flow Delay On
0	0		N	# 7	0	0		N # 7	50		Water Delay On	75		Flow Cycle Time
0	0		N	# 8	0	0		N # 8						
0	0		N	# 9	0	0		N # 9						
0	0		N	# 10	0	0		N # 10						
0	0		N	# 11	0	0		N # 11						
0	0		N	# 12	0	0		N # 12						

#1	#2	#3	#4	#5	S1	S2	Belt
0	0	0	0	0	0	30	Pulse Time
30	0	0	0	0	30	0	On Check

0	0	Rpm Belt #
0	0	RPM Setpoint %

Setup   Setup

Incline	**Belt #1**
Belt #2	**Belt #2**
Belt #3	**Belt #3**	Shuttle Belt	**Shuttle #1**		Shuttle #2
Belt #4	**Belt #4**	Shuttle South	**Move Left**		Move Left
Belt #5	**Belt #5**	Shuttle North	**Move Right**		Move Right

Buttons: #1 #2 #3 #4 #5 #6 #7 #8 Load Save Back

Gate Assigned to Silo

This page is for special features such as Silo filling software edit

Manual Operation from the PLC I/O Box
Manual Switches

The Auto / Manual Switch
        This switch must be in the Auto position before the computer can be put into the automatic mode from the CRT monitoring screen.
        To operate the plant with the manual switches on the I/O Box, this switch must be in the Manual position.

The Belt switches
        The belt switches are interlocked so the incline belt switch must be ON before the other belt switches will operate. When a belt switch is turned on an alarm signal is sent out to blow a horn before the belt will start.

Emergency Stop Button on the I/O Box with the manual switches
        Pressing this button will stop all power sent to the plant from this box. To reset the button, gentle twist the button in the direction of the arrow displayed on the button.

External Auto / Manual Switch The light next to the switch will light when in the Auto mode.
        Toggling this switch 1 time will put the PLC into **automatic** fill mode for 1 plant fill cycle.
If in auto mode, Toggling it 1 time will place the PLC into **Manual** mode all skipped bins will stay skipped. If you want to un-skip <u>all</u> skipped bins, from the manual mode, toggle the switch 5 times, this cancels all skipped bins and puts the PLC in auto mode.

Manual Feed Gate Select   Rotary Switch
        The Turn Head should be on the bin to fill and the Belts should be running.
        Turn the selector switch to the desired gate number then place the toggle switch to the gate open position for the rotary switch used.

Bin full Alarm
        When the Turn Head is on a Bin and the High light lights, an alarm signal is sent out to an output, this has a switch and buzzer connected to turn the alarm off when the bin is full.
        If the bin is not full and the skip or auto skip is turned on or an emergency high is on for that bin the alarm will sound as if the bin is full. A skipped bin can be canceled from the PC screen or cancel all skipped bins from the PLC I/O box by toggling the External Auto/Manual switch 5 times, this will put the PLC into automatic mode, when the light by the switch lights, toggle the switch 1 time to take the PLC out of Auto mode.

Keyboard Keystrokes
Can be used instead of the mouse
on the REGAL - CRT keyboard
In the Main Monitor Screen

ALT + key
Alt + A = Manual/Auto
Alt + E = Show errors
Alt + F = Gate/Time Feed
Alt + G = Gate Rotate
Alt + H = Horn
Alt + J = Jog
Alt + M = Auto/Manual
Alt + P = Priority
Alt + W = Water on/off
Alt + V = Vibrator
Alt + R = Belt Restart
Alt + S = Short Fill On/Off
Alt + (+) = Turn Head 2 CW
Alt + (-) = Turn Head 2 CCW
Alt + 1 = Misc. #1 Switch
Alt + 2 = Misc. #2 Switch
Alt + 3 = Misc. #3 Switch
Alt + 4 = Misc. #4 Switch
Alt + 5 = Misc. #5 Switch
Alt + 6 = Misc. #6 Switch

Center Screen Error Box
Alt + O = Error Box **OK**
Alt + N = Error Box = NO
Alt + Y = Error Box = YES

For Utility Bins
Ctrl key plus right mouse click
on a bin
Esc Key exits the product name
select box

Ctrl + Shift keys + F1 to F12
F1 = Bin #1 Prod Change
F2 = Bin #2 Prod Change
F3 = Bin #2 Prod Change
F4 = Bin #4 Prod Change
F5 = Bin #5 Prod Change
F6 = Bin #6 Prod Change
F7 = Bin #7 Prod Change
F8 = Bin #8 Prod Change
F9 = Bin #9 Prod Change
F10 Bin #10 Prod Change
F11 Bin #11 Prod Change 12 Bin
#12 Prod Change

Shift + F keys
Shift + F1 = Skip Bin 1
Shift + F2 = Skip Bin 2

Shift + F3 = Skip Bin 3
Shift + F4 = Skip Bin 4
Shift + F5 = Skip Bin 5
Shift + F6 = Skip Bin 6
Shift + F7 = Skip Bin 7
Shift + F8 = Skip Bin 8
Shift + F9 = Skip Bin 9
Shift + F10 = Skip Bin 10
Shift + F11 = Skip Bin 11
Shift + F12 = Skip Bin 12

Ctrl + Keys
Ctrl + F1 = Belt 1 start/stop
Ctrl + F2 = Belt 2 start/stop
Ctrl + F3 = Belt 3 start/stop
Ctrl + F4 = Belt 4 start/stop
Ctrl + F5 = Belt 5 start/stop
Ctrl + (+) = Diverter Right
Ctrl + (-) = Diverter Left
Ctrl + ← = Display Plant #1
Ctrl + → = Display Plant #2

Turn Head Semi Auto move
Ctrl + Alt keys + F1 to F12
F1 = Jump to Bin #1
F2 = Jump to Bin #2
F3 = Jump to Bin #3
F4 = Jump to Bin #4
F5 = Jump to Bin #5
F6 = Jump to Bin #6
F7 = Jump to Bin #7
F8 = Jump to Bin #8
F9 = Jump to Bin #9
F10 Jump to Bin #10
F11 Jump to Bin #11
F12 Jump to Bin #12

Enter Gate # then Ctrl + Enter
key to start simi auto feed and
start belts.

F Keys
F5 = Auto Start/Stop
F10 = Exit to Main Menu
F11 = Reset Time to original
        position

(+) key = Turn Head 1 CW
(-) key = Turn Head 1 CCW
Alt + (+) = Turn Head 2 CW
Alt + (-) = Turn Head 2 CCW

(~) key = System Reset From
main monitoring screen

System Editor Screens
Alt + # = Display page #
(Page UP & Page DN will move
from page to page)
Alt + L or F4 = Load Button
Alt + S or F5 = Save Button
F10. = Main Edit Screen

Disk Utility Screen
Alt + F = Format
Alt + S = Start
Alt + C = Cancel
Alt + R = Restore Edits
Alt + I   = Restore I/O
Alt + B = Backup Edits
Alt + O = Backup I/O
Alt + A = Select Drive A
Alt + C = Select Drive C
Alt + L = Start Restore
Alt + S = Save/Backup

Main Menu
Alt + L = Display License
       Agreement
Enter = Close License
       Agreement

SGS Screen
H = Higher Gates
L = Lower Gates
A = All Gates

March 17, 2000

REGAL
SETUP/STARTUP CHECK LIST.

Note: A material flow switch mounted over Belt #1 just before the first Gate is needed for the <u>automatic vibrator</u> and <u>auto gate change</u> feature.

        Flow switches mounted at the Head pulley feeding the Turn Head/s must be installed for the Automatic timing to work.

        Gate closed limit switches (set to make contact as gate just opens) are needed if the <u>material contamination</u> on Belt & <u>Gate Not Open</u> or <u>Gate Not Closed</u> features are to be used.

        Belt <u>zero speed</u> or <u>electronic limit (prox.) switches</u> on all Belt/s tail pulleys are needed for <u>Belt running</u> inputs.

        Belt <u>tracking</u> and Belt <u>Over Flow</u> switches are needed if these 2 features are to be used.

#1   **Test all plant functions manually to make sure all devises work properly.**

#2   **Turn Head turn time:** Edit page #1
        Set Turn Head turn time from Bin to Bin

#3   **Horn Blow time.** Edit page #1
        Set a time the Horn blows before the Belts start.

#4   **Number of belts.** Edit page #1
        Enter the number of <u>Belts</u> to plant

#5   **Belt Clear time.** Edit page #1
        Enter time for material to clear belt from the <u>reference point</u> to the <u>Turn Head</u>.

#6   **Belt zero speed switch.** Edit page #1
        If you are using an electronic limit switch for Belt running, you will need to <u>give a time</u> for sensing pulses from the limit switch.
        The System defaults to a normal contact closure for a Belt run signal.

#7   **Number of storage Gates.** Edit page #1
        Enter the number of storage Gates for plant.

#8   **Storage Gate assignments.** Edit page #5
        Assign storage Gates to <u>All</u> Products used.

#9   **The time from <u>each</u> Feed Gate to the reference point** (usually the ref. Point is the first Gate) **must be entered.** Edit page #3

#10   **Vibrator Off delay.** Edit page #2
        If Vibrators are used, set the <u>running</u> time <u>after</u> flow has began.

#11   **Number of Bins on plant.** Edit page #1
        Enter the number of <u>over head Bins</u> on plant.

#12   **Assign Bins to Products on Edit page #5**