

Troubleshooting Guide

Laurel *DigiMax* 3 & 5 Column Vending Machines

(Red circuit board)

Use this guide in conjunction with the instruction manual located in the machine or online at www.laurelmetal.com. The pictures and parts number identifications in the manual will be used here.

When calling Laurel for help (888-528-7358) we will need the machine model #, serial # and manufacture date which is on a decal inside the cabinet, on the left side near the bottom.

Normal Operation:

The scrolling, red LED display has different styles of display:

1. If all the selections are programmed for the same price the LED display will scroll *Pay \$1.00 Insert Coins* (price amount may vary according to your settings)
2. If you have different prices for your products the LED display will scroll *Insert Coins*
3. If there is a credit card swiper installed the display will scroll *Insert Coins or Credit Card*

The vend price of any selection button can be viewed by simply pressing the PUSH button on the switch pad (#899-20) at any time, the price will appear on the LED display for 2 seconds and then return to normal scrolling.

A quarter inserted in the machine will have an audible 'beep' and register *\$0.25* on the LED display. Additional quarters will add upwards on the display. All quarters will pass down into the coin cup (#899-B19) and be held in the cup until there is successful operation of the column vend motor (#899-A42) which drops the shelf to vend the product. At that point then the coin cup motor runs to drop the quarters down into the coin box below.

Underpay & Overpay:

The machine is designed for exact pay and does not make change, this enables a much simpler design with less complex parts to maintain. For example, if 1 quarter is inserted and a selection button is pushed for a \$0.50 item the coin cup will run and return the quarter to the customer since it is an underpayment.

For overpayment the coin cup will also run and return the inserted coins to the customer if too much money is inserted for the column button pushed. Also, if the highest price set for the machine is \$1.00, for example, and a customer inserts more than \$1.00 then the coin cup automatically runs to return all coins to the customer, thus not allowing an overpayment.

There is an option in the circuit board programming to allow overpayments, this is discussed further down in the section titled **Optional Programming Modes**.

Problem example #1:

The LED display is not visible:

Verify that there is 24 volt AC power at the terminal block on the circuit board (#899-77). The terminal block is located at the bottom left corner of the circuit board. Voltage can vary between 22 – 28 volts.

After verifying proper voltage, power the machine down for at least 5 seconds and re-power back up.

Pressing the **UP & DOWN** buttons simultaneously on the circuit board is the next step to clear and reset any error codes and there is no harm in doing this reset at any time. If the LED display is still not coming on then the circuit board may be in need of repair. Since this same circuit board is used in both the 3 or 5 column Laurel machines it might be worth swapping it between any of these machines to try to isolate the problem, if you happen to have more than 1 machine.

Problem example #2:

When you press a selection button *Problem with Column 1 (or 2,3,4,5)* appears on the LED display:

This error message indicates that the vend motor associated with that particular column has not cycled properly and the column has been put inactive. Any customer trying to use this column will see *Problem with Column...* when the selection button is pushed and their inserted coins will be returned to them. This problem could be from the particular motor running too slow due to aging, the column being jammed due to physical blockage, or that the motor has simply failed.

First step:

First clear the error code by simultaneously pressing both the **UP & DOWN** buttons on the circuit board. The LED display will show *Clearing error* indicating all codes have been cleared out and now it is time to test this column by inserting the proper amount of quarters and pushing the selection button. If the identical error code reappears the vend motor is likely the problem and should be replaced. #899-A42 is the 3-column vend motor part number and #599-C24 is the 5-column vend motor part number. The particular column that is not functioning will not affect the operation of any other column.

Second step:

Power down the machine for at least 5 seconds and re-power back up. Power cycling is always worth trying when the *Problem with Column...* error code appears, or for any other issues. Now insert quarters and try vending the column, if the identical error code reappears the vend motor is likely the problem and should be replaced.

Problem example #3:

Out of order, please come back later is on the LED display:

This indicates the coin cup motor (#899-B19) is not functioning properly so the machine will not accept coins or vend product until repaired.

First step:

Inspect the coin cup motor assembly for jammed quarters, etc. that may have stopped the coin cup from running freely and depositing quarters into the coin box below it. To see the coin cup motor you unplug the white ribbon cable, loosen the 2 mounting screws on the front of the coin mechanism and lift the coin mechanism off the screws to see the coin cup motor assembly. Remove any quarters, foreign objects, or possibly even any power wires that may be causing the coin cup motor to not rotate freely. Power down the machine for at least 5 seconds and re-power back up. If the LED display is normal after powering up then test vend any column to see if the shelf drops and then the coin cup runs to deposit quarters into the coin box below it. If the error code reappears the coin cup motor assembly (#899-B19) may need to be replaced. There is a video at www.laurelmetal.com , under 'Support' that shows how to replace this motor. Worth a look.

Problem example #4:

Sold out, sorry... is on the LED display:

1. It could be that the machine is completely out of product. If all column empty switches are activated it will show ***Sold out, sorry.***
2. The next most likely cause is the main wire harness is not plugged in fully. The main wire harness plug is the largest of the 3 plugs and it located at the top of the circuit board (next to the small 4-wire harness plug), on the back of the circuit board. The common problem is when this is plugged into the circuit board it has a tendency to move the circuit board forwards (towards you) off of its mounting posts and not get fully plugged in. Lift up the red plastic sheet that is in front of the circuit board and use your fingers to hold the circuit board firmly in position while you are plugging in the main wire harness.

Problem example #5:

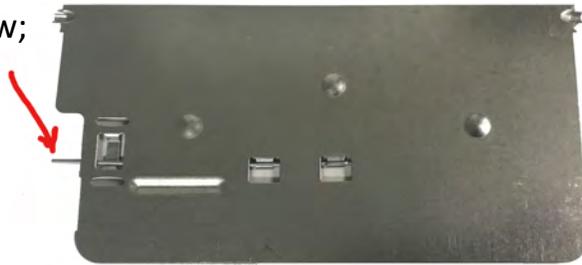
Vending machine exhibits normal operation but the shelf does not drop when it should.

First step:

Check to see if ***Problem with column...*** appears when you push the selection button for the column in question. If it does then clear the error code by simultaneously pressing the **UP & DOWN** buttons on the circuit board. ***Clearing error*** should appear on the LED display. Now insert coins and test vend the column. If the shelf still does not drop then clear the error code again and go to the second step.

Second step:

Using your index finger manually drop about 6 - 12 shelves at the bottom of the column by pushing out the wire on the underside of the shelf. This wire is what is holding the shelf up, it is shown by the red arrow below;



What we are doing is seeing if one of these shelves did not get reset properly and the wire is jammed and holding the shelf from dropping. If any one shelf is jammed the others above it will not drop until the one below it does. After manually dropping 6 – 10 shelves then insert coins and test vend this column. If the shelf still does not drop and *Problem with column...* appears on the LED display it likely means the vend motor assembly needs to be replaced. #899-A42 is the 3-column vend motor assembly and #599-C24 is the 5-column vend motor assembly. Important – remember to clear this error code out now by simultaneously pressing the **UP & DOWN** buttons on the circuit board since that error code will stay in the board regardless of when you change out to a new vend motor assembly.

Problem example #6:

Inserted coins are being rejected by the coin acceptor and returned to the tray.

The LED display should be displaying normal behavior for coins to be accepted, meaning if the display has *Sold out, sorry* or *Out of order, please come back later* then coins will be rejected due to a machine problem and not necessarily a coin acceptor problem. The instructions for each of these coin acceptors are on our website, select any electronic vending machine page and there are pdf's for all the coin acceptors and every machine instruction manual on each page.

The wire harness plug for any coin acceptor needs to be plugged in fully to the circuit board for it to function.

Slugbuster coin acceptor - try replacing the sample quarter (or token, etc.) in the acceptor. Next try adjusting the selectivity by turning the selectivity screw which is under the round black rubber plug.

MA850 coin acceptor - there is a small LED visible through a round hole in the cover of the MA850 which should be green. If it is flashing green/red or just solid red then there is a problem with the MA850 (assuming the LED display on the machine circuit board is scrolling normally).

Microcoin QL - there is a small LED that should be green. If it is not illuminated there is a problem with the QL.

Coin acceptor tips:

All coin acceptors for the Laurel vending machines are unique to the venders, these are not interchangeable with coin acceptors for bays or vacuums. All coin acceptors have a 6 wire Molex plug that mates to the socket on our circuit boards.

You can try swapping any Laurel vending machine coin acceptor, whether it is a single column machine, 3-column or the 5-column LITTLE TREES®, between machines to help diagnose any problem with an acceptor.

Optional Programming Modes

“OVERPAY” - V0.22 code and higher

This feature affects coin mode transactions only and is not used for credit card transactions. This feature overrides the standard programming where if a customer inserts more money (credits) than the highest priced product the machine will immediately refund all inserted coins. This is because the machine does not make change when there is an overpayment.

When OVERPAY is ON the machine will allow any amount of money (credits) to be inserted.

- If the customer does not push a selection button within 60 seconds then all coins are refunded to the customer
- If the customer inserts money and selects a product that is priced higher than the inserted amount we refund all inserted money and display *Not enough money, Refunding*
- When the customer selects a product that is less cost than the inserted credits the product will vend and *Thank You!!* appears on the display followed by *\$0.50 CREDIT* (for example)
- Customer can insert more money at this point and select a product or customer can vend a product priced at the exact credit amount remaining and the product will vend and the machine will return to the idle state

To turn on OVERPAY press and hold in the **DOWN** button on the circuit board for approximately 4 seconds and wait for the beep, then let go and the display will say: *Set OVERPAY mode*, now use the **UP & DOWN** buttons to turn on or off.

“BONUS VEND” - V0.20 code and higher

This feature was designed for a specific customer who wanted to provide a free vending item to customers buying high value washes through a pay station or autocashier. Using this feature will not allow any coins or credit card payments to be accepted. Customers who purchase a high value wash (the level to trigger this is set in autocashier) will get 40 seconds to select a product and it will vend immediately. If no selection is made within 40 seconds then the free item will be cancelled and the display will return to *Get a FREE PRODUCT with your purchase*

There are 2 options for providing a free vending product through BONUS VEND;

Option #1: If the identical product is in all columns.

Option #2: If you want to offer different products in the columns.

For #1 – you set BONUS VEND to ‘ON’ and SINGLE PRICE to ‘ON’.

For #2 – you set BONUS VEND to ‘ON’ and SINGLE PRICE to ‘OFF’.

To turn on the BONUS VEND feature you have to set the vend price for all 5 PUSH buttons to \$0.00. This will then bring the BONUS VEND option setting into the programming steps. To do this press **MODE** 3 times to get to the *To Change Price* then set all 5 PUSH buttons at \$0.00. Then press the **MODE** button 3 times to get to the *Set BONUS VEND* options. Use the **UP & DOWN** buttons to turn on or off. The next choice will appear: *Set SINGLE PRODUCT mode*, use the **UP & DOWN** buttons to turn on or off.

“DELAY REFUND” - V0.26 code and higher

This feature affects coin mode transactions only and is not used for credit card transactions. This feature allows input from an external source, such as an Auto Cashier, to give customer a free vend when they purchase a certain level of wash from the external source. The Auto Cashier has to be configured to output credits to the vending controller when the customer purchases a higher value wash cycle. A typical example is to allow the customer to get a towel or air freshener when they purchase a higher value wash and if they select a product that is sold out it will not cancel the input immediately but allow for another product to be selected within 60 seconds, after that time the input is cleared out from the vending controller.

To turn on the DELAY REFUND feature press and hold in the **DOWN** button on the circuit board, wait until the beeps and you will see *Set OVERPAY Mode* on the display. Now tap the **MODE** button one time and you will see *Set DELAY REFUND Mode* on the display. Now tap the **UP** button to turn on DELAY REFUND. You can wait 20 seconds and it will be activated, or you can tap the **MODE** button once and it will be active immediately.

More information on any of the optional programming features can be found on our website or by email at chip@laurelmetal.com