



# HAMILTON

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## **LED MATRIX DISPLAY ACW REPLACEMENT**

### **KIT (100-0200)**

The blue vacuum florescent display (part# 49-0500) used in the ACW4 and AutoTec controllers is being replaced with a new red LED Display assembly (part# 104-0118). The new assembly is a 7x45 LED matrix that displays bigger and brighter message characters. We expect most customers to be happier with the new LED display because it is much easier to read in the sunlight. Display contrast can be further enhanced by using a red plastic filter (part# 63-5233).

In order to display all 20 possible message characters the new LED display scrolls the message similar to our large external scrolling display.

#### **Installation**

When used as a separate replacement part the 104-0118 will plug in and mount just like the 49-0500 did without modifications. If the 104-0118 is included as part of a complete controller assembly the controller will be modified to supply a higher voltage to the display for improved performance. Once a controller has been modified the original 49-0500 VFD can no longer be used unless the modification is reversed.

Depending on which version controller the display is used in it must be set to operate at one of three baud rates (2400, 4800, or 9600). On the original 49-0500 display this baud rate setting was accomplished by soldering different pads together on the back of the display PCB. This made it a requirement to know the version number of the controller the display would be used in so that it could be configured properly before being sent out as a parts order. The new 104-0118 display will be set by default to auto-detect the proper baud rate every time power is applied. This should allow it to work automatically without configuration in most cases. However, should this prove unreliable it is still strongly encouraged to get the version number of the controller so the correct baud rate can be set using a shorting plug jumper on the top side of the PCB. A drawing showing the different jumper configurations is attached.

#### **Operation**

When power is first applied the LED display will read the jumper settings to determine what baud rate it should operate at. If set for 2400, 4800, or 9600 the display will turn on immediately and show its own version number until it receives the first message from the controller. If set to Auto Detect the display will remain dark until the first character is sent to it from the controller at which time it will try to determine the baud rate and set itself accordingly. If successful it will flash its own version number very briefly then begin displaying the controller messages. If it fails to detect the baud rate successfully the message "BAUD?" will be displayed.

Because the messages must be scrolled across the display it takes longer to read and therefore they do not update as quickly as the original display. This difference has the following consequences.

When the Welcome messages are sent to the display for the first time after power-up or after a transaction is completed you will see the display blink as each new message is loaded into the displays message queue. Once loaded the Welcome messages should scroll smoothly from one to the next.

Because of timing considerations using one, two, or four “Welcome Prompts” will work fine but using three is no longer supported. If a customer wants to use only three message lines you can add a fourth line that is completely blank or repeat one of the lines to make it work properly.

When programming “Proceed Prompts” you should not use more than two of the possible four message lines because there will not be enough time to read more before they are replaced by the Welcome messages for the next transaction.

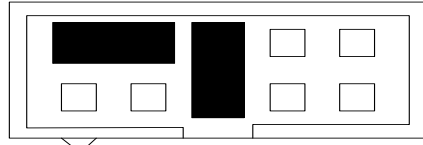
In program mode and selecting options you should wait until you see the selection you want displayed a couple times in a row before exiting to be sure you are not looking at a queued message from a previous choice.

### **Enhancements**

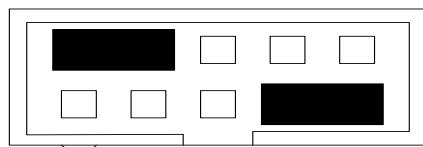
Normally when a wash selection button is pressed the controller will display the DEPOSIT \$x.xx message then alternate with the WASH NAME. When the LED display detects a new DEPOSIT message it will immediately display the dollar amount stationary and centered and then begin scrolling the WASH NAME and DEPOSIT \$x.xx messages. This gives the user immediate feedback when they make a selection and gets attention focused on the amount of money they must pay.

Similarly when money is added without having made a selection the CREDIT \$x.xx message would be displayed. When the LED display detects a new CREDIT message the dollar amount is displayed stationary and centered and then begins scrolling.

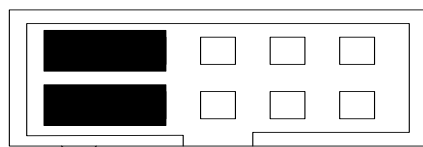
### **Jumper Placement on ACW4 LED Display Board 104-0118**



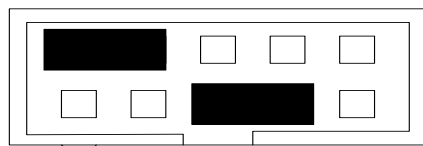
**Auto Baud Detect**  
Vertical jumper is not required, it is just parked here.



**2400 Baud**  
AutoTec, Standard Credit Card



**4800 Baud**  
Basic ACW Controller



**9600 Baud**  
ACW Retro-fit Credit Card

## Tools Required:

Flat Head Screwdriver  
Phillips Screwdriver

Step 1. Turn off power to machine.

Step 2. Make note of wire routing and connector position. Disconnect harnesses from controller. Note: One may have to first remove environmental cover to see controller.

Step 3. Use a flat head screwdriver and remove the 2 controller mounting studs. Place them in a safe place.

Step 4. Remove Controller from ACW. (Tilt top portion of controller back and then up and out.)

Step 5. Place Controller on a clean, flat surface with display facing up.

Step 6. If Controller has a Pan Cover, use a Phillips Screwdriver to remove screws holding cover in place. Then remove cover and place in a safe place.

Step 7. Remove the 4 screws holding display in place and place in a safe place.

Step 8. Carefully lift display and unplug the three pin connector from the back side of the display.

Step 9. Set the old display aside. Holding the LED Matrix Display plug the three pin connector into the 3 pin connector on the back side of display.

Step 10. Position the LED Matrix Display over the 4 standoffs and secure the display by using the 4 screws that were holding the old display.

Step 11. Position the Pan Cover & Red Lens over the controller pan. Secure the cover using the (2) #6-32 screw at the middle hole on the right and left side of controller.

Step 12. Inspect display opening in ACW, and clean. Remove Blue filter if currently installed.

Step 13. Replace Controller in ACW, and secure using controller mounting studs saved in Step 3.

Step 14. Reconnect all harnesses on controller.

Step 15. Replace Environmental cover is applicable.

Step 16. Restore power to machine.