



## Testing a Pulse Type bill validator cont'd...

If you insert a bill, and if this bill is accepted, the pulse count will increase by the value of the bill. Along with the pulse count, the beep will sound so that you do not have to look at the screen to know if the bill validator gives the pulses. After the Vending Tester has received the last pulse, the total of pulse will stay on the display for about 2 seconds before switching back to zero.

Because of the nature of the pulse type bill validator, the only message you will receive from it is the pulse count.

If you want to test if your bill acceptor is not accepting bills when ordered to do so, you have to shut off the accept line by pressing on the accept line push button. Please note that some bill validator will not take into account the accept line and will accept all bills. Usually, if it is not ON, it should not accept bills. Again, it depends on the way the bill acceptor is programmed to work.



### List of Bill Validators the CT-2 can test

#### Type and model

#### Plug into socket...

Ardac USA	12 position
Ardac ABA	9 position
Coinco BA30SA *	9 position
Coinco BA32SA *	9 position
Conlux/Maka NB/NB2/NBE (120 volts only)	4 & 6 position
Maka MKA/NBV	9 position
Mars VFM serie	9 position
Mars VN2500	9 position
Mars GL4/GL5	9 position

**The CT2 will apply voltage to bill validator and detect pulses coming from it. The bill validator may need a special jumper to work in test mode. This jumper is not supplied with the CT2. Refer to bill validator user's manual as where to put this jumper or setting switches.**

\* Coinco jumper available at S.E.M. Part number A01560

## Testing a Pulse Type bill validator

### Testing a Pulse Type bill validator:

If you want to test a pulse type bill validator, you absolutely need the CT2 External Module called EBVM. The EBVM plugs itself in the 12 pin white socket on the right of the CT-2 Tester. Once plugged, you can then plug in your bill validator. The external module comes with different types of plug to fit with the majority of validators on the market. You will find on page 27 the list of Bill Validator the CT-2 can test.



*The External Bill Validator Module*

Once everything is plugged in, press on push button #1 on the CT-2. This button activates the external module. If the module is not plugged in, this push button is ineffective.

Once the #1 button pushed, the display will prompt you to press on START/STOP to begin the sequence. After that, the CT2 will ask you what is the voltage required to make the bill validator work. If it is a 117-volt, press the red button. If it is a 24-volt, press START/STOP again. Be sure to apply the proper voltage to the unit under test. A wrong decision could result in damages into the unit under test.

When ready to test, the Vending Tester will display the following screen.

**Pulse type Bill 117 v**  
**Pulse count = 000**

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## Introduction

Thank you for purchasing The Vending **Tester**. This tester will enable you to test and repair all 117-volt single price coin mechanism, all logic 24 & 117 VDC coin mechanism, all MDB coin mechanism and bill acceptor. The external module enables you to test a 24 volts or 117 volts pulse type bill validator. It is available as an option.

The 2 lines of characters LCD display will give you in depth information on the status of the tested device plus a step-by-step procedure.

Even though The Vending **Tester** is protected against any short circuit, it is strongly recommended to check all changers or bill validator with an ohmmeter before plugging it to the tester so that no damages occur to the CT2.

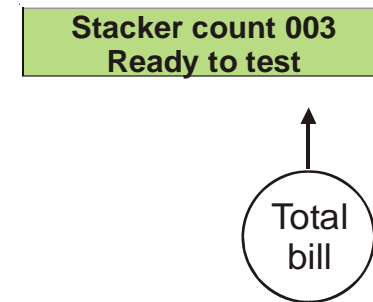
The Vending **Tester** will make you save a lot of money in repairs and will pay for itself within few weeks from purchasing. We are confident that The Vending **Tester** will soon be one of those tools that you just cannot live without.

## ATTENTION

The Vending **Tester** will not act like a vending machine; it goes much deeper. It enables you to check all functions of a coin changer. To do so, it will not perform a simple sale. It will take all the messages coming from the coin mechanism and display it on the screen. It is a fantastic tool that you will enjoy for many years to come.

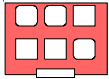
In the following pages, you will find a complete guide on how to get the most from The Vending **Tester**.

## Testing a MDB bill validator cont'd...

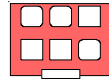


Note that certain type of bill validator starts to count at zero (0) while others start at one (1). Therefore, the count may look wrong but it is not. That is the way some bill validator works.

Insert different denominations of bills and different bills of the same denomination in order to make the best acceptance test possible.



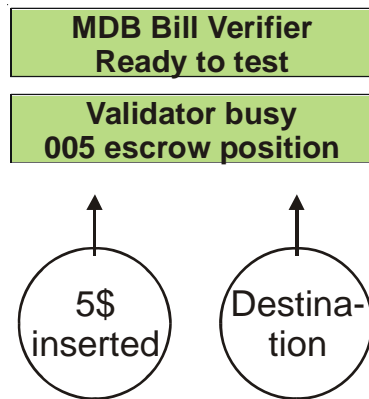
## Testing a MDB bill validator



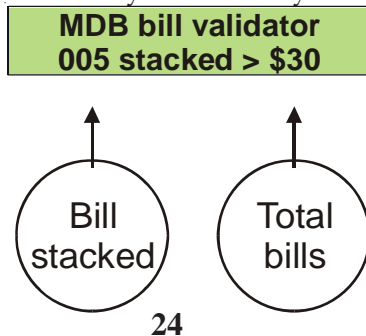
### Testing a bill validator:

After the bill validator has been plugged into the proper socket, press on START. The tester will ask you to press again if you want to send 24 volts to the unit or press the red button to send 117 volts to your bill validator. Make sure you apply the proper voltage. Usually MDB is 24-volt. On power up, the ACCEPT LINE will be ON and the ESCROW option disabled. If you insert a bill in the validator, the bill, if accepted, will go directly into the bill box and the information will be displayed.

If the escrow function is ON, an inserted bill will be left in a standby position until you either press on STACK to stack the bill or REJECT to eject the bill outside. Note that some bill validators do not have the escrow function.



Once the STACK push button has been depressed, you will have this new message immediately followed by another.



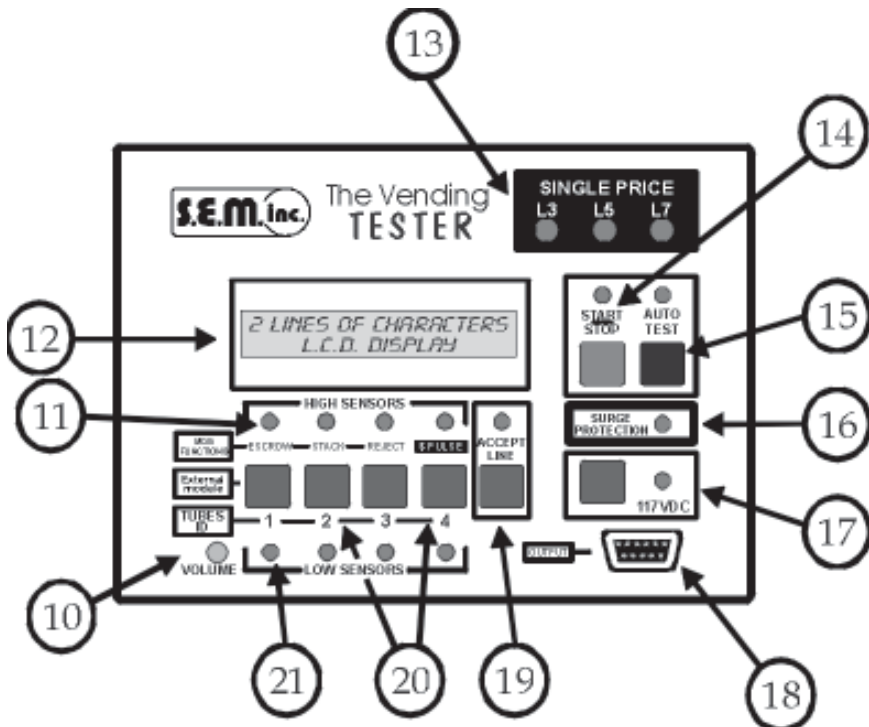
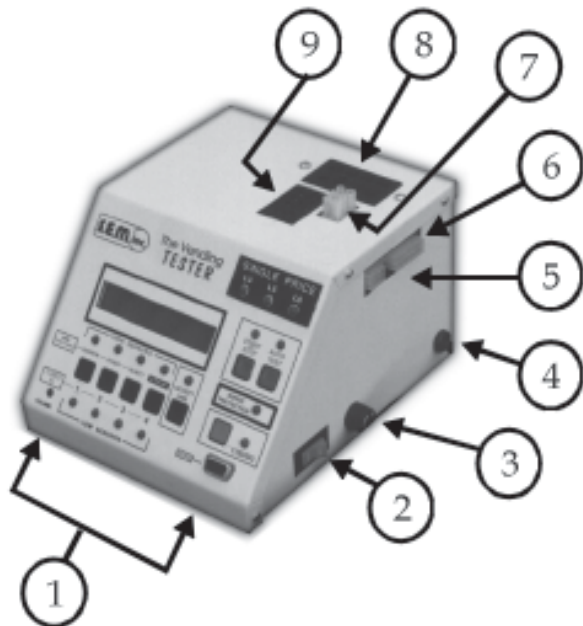
## On power up...

When you apply power to The Vending **Tester**, it automatically starts a self-test to see if all the internal functions are in good order. As it performs this self-test, you can see on the display the software version of your tester followed by the actual line voltage and the mention PASSED if successful.

Then, the display will invite you to connect a device and press START to begin. It is now safe to plug any coin mechanism or any bill validator as no power is currently applied to any of the sockets until you press start.

Once you have plugged **ONE** device -and only one at a time- you can press START to begin your testing.

START is for a manual operation of your tester. AUTO-TEST is for a step-by-step testing procedure.



**List of messages cont'd...**

The following is a list of potential messages the tester could send you when you are testing a **MDB bill validator** and their meanings.

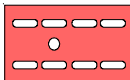
xxx Disabled/rejected	The bill validator does not have the permission to accept this type of bill.
Stacker count	Amount of bill into bill box.
Stacker is full	Stacker is full
Not available	This option is not available with this type of bill validator.
Unit must be enabled	Escrow button activated while accept line is OFF.

<b>List of messages:</b>	
The following is a list of potential messages the tester could send you when you are testing a <b><u>MDB bill validator</u></b> and their meanings.	
Validator busy	Bill validator is performing a task.
Validator jammed	Bill stuck inside.
Validator was reset	Bill validator has been reset.
ROM checksum error	The checksum of the bill validator does not match with its internal memory because of corrupted data.
Defective motor	The motor pulling the bill is defective.
Sensor problem	The internal sensors of the bill validator are defective.
Bill removed	Bill was removed manually while being accepted by the bill validator.
Cash box removed	Bill box is not in place.
Unit disabled	Bill validator does not have permission to accept bills or is performing a task.
Invalid escrow request	Stack or reject command cannot be performed as the bill is already in bill box.
Bill rejected	Bill was rejected by bill validator.
xxx Stacked -> \$xxx	Value of the bill being stacked plus total amount inserted so far.
xxx Escrow position	The displayed bill is currently in escrow position waiting to be stacked or rejected.
Bill returned	The bill has been returned because you pressed the reject button.

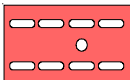
## Identification of components

1	Control panel
2	Main switch
3	Main fuse MDL ½ amp. (slo-blo)
4	Power cord entrance
5	MDB socket
6	External module socket
7	1\$ pulse socket
8	Single price socket
9	Logic 12 & 15 pins socket
10	Beep volume adjustment
11	High sensors LED
12	LCD display 2x20 characters
13	Indicator LED for single price
14	Start & Stop push button
15	Auto test push button
16	Surge protection LED indicator
17	117 VDC LED indicator and push button/ Reset button when changer is under test
18	DB9 socket for printer
19	Accept line push button and Tuning push button
20	Change payout push buttons or MDB bill validator functions and 1\$ pulse or pulse type bill validator functions
21	Low sensors LED





## Testing a 117 volt single price coin mech



When the display of The Vending **Tester**, invites you to connect a device, you are cleared to proceed. Plug a 117-volt single price coin mech into the proper socket and press on **START**. Once detected, it will display:

Press **START/STOP** to  
test 24 volts or

Red button for 117  
volts device

Auto-detecting...

Single-Price 117V  
Ready to test

In addition, two LEDs will be lit on the single price black rectangle on top right corner. L5 and L7 will be ON. L5, meaning line 5, is the Exact Change Indicator. It means that your tubes are empty and certain coins may be rejected depending on the vend price setting. L7 means line 7. It means that the coin changer is sending power to selection. It is the NC contact of the credit relay. L3, meaning line 3, is the credit line (credit relay NO contact) of the changer. When you have inserted enough money to reach the vend price, the credit relay inside the coin changer will be energized for approximately 250 milliseconds shutting L7 off and energizing L3.

Since a single price changer is totally self-sufficient, the only feedbacks the tester will give you on this changer are the red LEDs mentioned above. Insert coins to test the coin acceptance and the proper change payout.

When the testing is over, press on **STOP** before unplugging the coin changer

## Tuning mode

On some changer, it is possible to tune it in order to improve the acceptance rate. The tester enables you to do the tuning.

Before you press on **START** or **AUTO-TEST**, press on **ACCEPT LINE** push button. At this time the display will show:

Tuning mode, press  
**START/STOP** to begin

Press **START/STOP** to  
test 24 volts or

Red button for 117  
volts device

Tuning mode active  
press **STOP** to finish

If you have a 24-volt changer, press on **START** again in order to save the 7 seconds delay. If you do not press, the tester will stay on stand-by for 7 seconds before detecting that it is a 24-volt changer. If you have a 117-volt, press on the red button and the tester will then apply the higher voltage to your coin changer. Tune your coin mechanism like the manufacturer tells you.

### Note for the Canadian market:

It is not possible for a 2\$ Coinco coin mechanism to be tuned.



## Auto-Test function cont'd...

The tester will also inform you of the percentage rate of acceptance\* and reject as well as the information regarding the payout. If you have the printer plugged into the tester, a hard copy will come out.

Your Auto-Test is now completed. You can unplug the changer after you hear the final beep and that the display goes back to READY to TEST.

Please note that if you want to test a coin mechanism accepting tokens instead of money, you cannot use the Auto-Test function.

### Printed report

If you have plugged in the little portable printer to the tester, a report will come out automatically. Ask one of S.E.M. professional to help you in the choice of the printer.

*Test report coming  
from a Mars 560*

```
Vending Tester v-2.0
Test report
Device tested:
MDB changer level 3
Software version: 032:
Manufacturer code-MEI
Serial number: 000123456789
Model #/tuning revision:560 MDB 0002
-Alternative payout method supported
-Extended diagnostic command supported
-Controlled manual fill and payout commands
supported
Coins accepted: 100%
Coins rejected: 000%
-Escrow lever was not activated or is defective
-No error message reported by the device
End of test report
```

\* This information is only available with MDB coin changer

## List of messages:

The following is a list of potential messages the tester could send you when you are testing a **coin mechanism** and their meanings. (note than none of these can be seen with a single price changer)

Double arrival	A second coin was inserted while the first was in the acceptance process.
Coin jam	The coin path is jammed.
Slug	Unknown coin inserted
No strobe	Coin was accepted but it was not detected when it went to the tubes or the cashbox.
Not accepted	The coin is valid but was rejected usually because of the tubes status.
Defective sensors	The high level sensors are activated while the lows are not.
Escrow return	The coin return lever was activated.
Defective changer	The tester judges that the plugged unit can't be tested because of a failure inside the coin changer.
Payout busy	Changer is giving change.
ROM checksum error	The checksum of the coin mech does not match with its internal memory because of corrupted data.
No credit	Coin accepted and directed to the tube or the cashbox but was not detected in any of those places.
Routing error	A validated coin did not follow the intended route (tube or cashbox).
No tube payout	No coin value is attached to this push button. Even if the tube is present, its value is identical to another tube.
Acceptor unplugged	The changer does not communicate with its coin acceptor.

### List of messages cont'd...

The following is a list of potential messages the tester could send you when you are testing a **coin mechanism** and their meanings. *(note than none of these can be seen with a single price changer)*

Tube jam	The tester has detected a coin jam in the tubes.
Please wait	The tester is getting ready to do something.
Changer was reset	It can be seen on power up and when the device is being re-initialize.
Device is short	There is a short circuit inside the unit being tested Send it for repair to your local dealer. Or, you may have applied 117 volts to a 24-volt changer.
Cannot detect	The tester can't detect any device. Is your coin mechanism properly plugged?

### Auto-Test function

The Vending **Tester**, is equipped with an **Auto-Test function**. We strongly suggest that you always use this function to make sure you have tested all the features of your coin mechanism.

Once you have plugged your device into the proper socket, press on **Auto-Test** and follow the instructions.

First, the tester will ask you for the power requirement. Make sure you apply the correct voltage. Then, the only thing you have to do is to follow the instructions on the display. If you want to skip one of the sequences, or shorten it, press on **Auto-Test** button.

The first test the tester is asking you to do is to test the escrow return. Then it will ask you to drop 12 nickels followed by 12 dimes and 12 quarters. If the changer can accept other coins, it will ask you to drop them. If it does accept other coins, proceed the same manner as previously. If it does not accept, press **Auto-Test** to step to the next sequence. An MDB coin changer however will know if it can accept other type of coins and will invite you to drop them.

Note that with logic changers, the message displayed will be 1\$ coin each time you insert a 2\$ coin \*. The total amount inserted will increase by two meaning that the coin changer is sending twice a 1\$ pulse instead of a 2\$ pulse. As you may guess it, in a logic changer, the 2\$ pulse does not exist. It is twice a 1\$ pulse. The display can also show «Please wait to resume payout». This is normal thing and just wait for the tester to keep on or press **Auto-Test** again.

At the end of the process, the display will show you how many coins went to the tube and their total value and how many coins went to the cash box and their total value.

Then the tester will prompt you to press on **Auto-Test** again. At this moment, it is testing the pay out while it is sending you back the coins you have inserted.

(\*) Two-dollar coin is only available in Canada.

## Testing a 4-tube MDB coin mech cont'd...

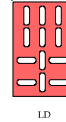
Some changers do have a safe count. It is a safe level of coins that neither the tester nor the changer will go below. Usually, depending on the thickness of coins, the safe count is approximately 3 to 5 coins.

### **Unplugging your changer:**

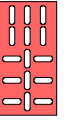
Once you have tested every function of your coin mechanism, press STOP before unplugging. Failure to comply may cause damages inside your coin changer.

### **NOTE:**

While your changer is undergoing test, you can press on the red 117 volts push button. This will not send higher voltage to the unit but will instead reset it.

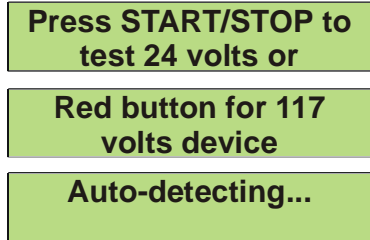


## Testing a 24 volt or a 117 volt logic coin mech



When the display of The Vending **Tester**, invites you to connect a device, you are cleared to proceed. Plug a 24 or a 117-volt coin mechanism into the proper socket. At this time, no power is present into the socket. When your coin mech is plugged in correctly, you can then press on **START** or **AUTO-TEST**.

The tester starts to poll all of its sockets trying to find out what's connected. Of course, since you can plug either a 24 volts or a 117 volt coin mech in the same socket, the tester will not poll using a 117-volt source. It will start safely by applying only 24-volt. If the unit plugged is really a 24-volt coin changer, press START/STOP again. If this unit is a 117-volt coin mechanism, press the red button to apply the higher voltage. If you do not press the red button within 8 seconds, the tester will presume that a 24-volt device is plugged in and then apply this voltage to it.



Depending which type of power is feeding your coin mechanism, you will get one of the two displays.

**Logic Changer 24V  
Ready to test**

A 24-volt coin changer is now ready for test

**Logic Changer 117V  
Ready to test**

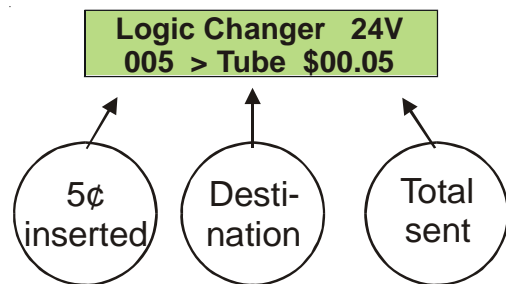
A 117-volt coin changer is now ready for test.

Each action you will undertake will prompt a new message on the display. That message will stay on the display for a few seconds if nothing happens or will be replaced by a new one by an immediate action of your part or from the device being tested.

### Testing a 24 volt or a 117 volt logic coin mech cont'd...

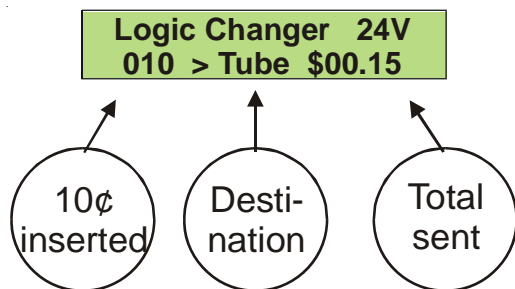
On start up, the **ACCEPT LINE LED** is lit. It means that you changer is now receiving the order to accept coins. You can turn down this order by pressing on the push button below the LED. Then your changer should not accept any coins just like if it was in a sold out vending machine.

When you insert a coin, the display will show you the following information. Note that the displays showed here are coming from a 24-volt changer being tested.



When you insert a coin, the display shows you the type of coin inserted, its final destination (tube or cash box) and the cumulative amount of money directed to the tubes or the cashbox

Insert a dime now and the display will show you this:

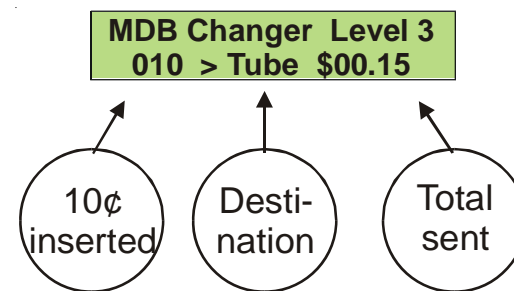


The more coin you insert, higher the total amount will go. If you put enough coins to fill up tubes, the destination displayed will be **CASH BOX**. Notice as well that the sensors' LED will light up and the total amount will then drop from its previous number to a new number reflecting the amount now directed to the cashbox.

### Testing a 4-tube MDB coin mech cont'd...

When you insert a coin, the display shows you the type of coin inserted, its final destination (tube or cash box) and the cumulative amount of money directed to the tubes or cashbox.

Insert a dime now and the display will show you this:

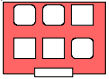


The more coin you will insert, higher the total amount will go. If you put enough coins to fill up tubes, the destination displayed will be **CASH BOX**. Notice as well that the sensors' LED will light up and the total amount will then drop from its previous number to a new number reflecting the amount now directed to the cashbox.

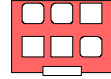
#### **Emptying the change tubes:**

*N.B.: In MDB, a tube payout push button is not attached to a specific tube. It is attached to a specific coin value.*

It is faster to use the changer's push button to empty the tubes. If you want to empty one of the tubes, press once on the proper push button. The number of active push button depends on the value of coins in the tubes. Therefore, push button #1 is for the lowest value of coin stored in the tube, push button #2 is for the second lowest value of coin, push button #3 is for the third lowest and push button #4 if for the highest value. If you have the same value of coins in two tubes (i.e. 5¢ - 5¢ - 10¢ - 25¢), only three push buttons will be active. Once you have pressed on the proper push button, coins will be dispensed from that tube until you press again on the same push button. If you keep any of the change payout push button depressed for few seconds, all coin tubes will dispense at the same time. It will dispense coins as fast as the changer will permit. Press again any of the buttons to stop this action.



## Testing a 4-tube MDB coin mech



When the display of The Vending **Tester**, invites you to connect a device, you are cleared to proceed. Plug a MDB coin mechanism into the proper socket. At this time, no power is present into the socket. When your coin mech is plugged in correctly, you can then press on **START**.

The tester will ask you what is the power requirement of the device. Press again on **START/STOP** to apply 24 volts to the MDB and the display will show **AUTO-DETECTING...** before switching to the following message.

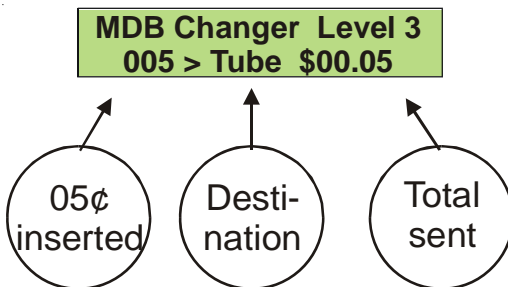
**MDB Changer Level 3  
Ready to test**

It has detected a MDB coin changer of level 3 and is now ready to test.

Each action you will undertake will prompt a new message on the display. That message will stay on the display for a few seconds if nothing happens or will be replaced by a new one by an immediate action of your part or from the device being tested.

On start up, the **ACCEPT LINE** LED is lit. It means that your changer is now receiving the order to accept coins. You can turn down this order by pressing on the push button below the LED. Then your changer should not accept any coins just like if it was in a sold out vending machine.

When you insert a coin, the display will show you the following information:



## Testing a 24 volt or a 117 volt logic coin mech cont'd...

### **Emptying the change tubes:**

If you want to empty one of the tubes, press once on the proper push button. If you have a three-tube coin changer, push button #1 is for 5¢, push button #2 is for 10¢ and push button #3 is for 25¢. Once you have pressed on the proper push button, coins will be dispensed from that tube until you press again on the same push button. If you keep any of the change payout push button depressed for few seconds, all coin tubes will dispense at the same time. It is the fastest way to empty all the tubes. Press again any of the buttons to stop this action.

If you have a four-tube logic changer, push button #4 is not used to empty tube #4. To empty this tube, press on push button #3 (25¢) in order to eject four quarters. The coin changer will put this information into its buffer and when a fourth quarter signal has been received, it will deliver a 1\$ coin from the fourth tube.

### **Unplugging your changer:**

Once you have tested every function of your coin mechanism, press **STOP** before unplugging. Failure to comply may cause damages inside your coin changer.

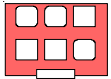
### **NOTE:**

While your changer is undergoing test, you can press on the red 117 volts push button. This will not send higher voltage to the unit but will instead reset it.

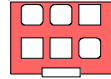
### **ABOUT...**

While testing a 4-tube coin changer in Logic mode, the 1\$ coin tube will never be activated as there is no dollar line in the L plug. The coin changer manages the 1\$ tube just like a 25¢ tube. When it receives four quarters payment order, it will accumulate the information and send a dollar after the fourth pulse. The 1\$ tube level indicator on the CT2 will never light up.





## Testing a 3-tube MDB coin changer



When the display of The Vending **Tester**, invites you to connect a device, you are cleared to proceed. Plug a MDB coin changer into the proper socket. At this time, no power is present into the socket. When your coin mech is plugged in correctly, you can then press on **START**.

The tester will ask you what is the power requirement of the device. Press again on **START/STOP** to apply 24 volts to the MDB and the display will show **AUTO-DETECTING...** before switching to the following message.

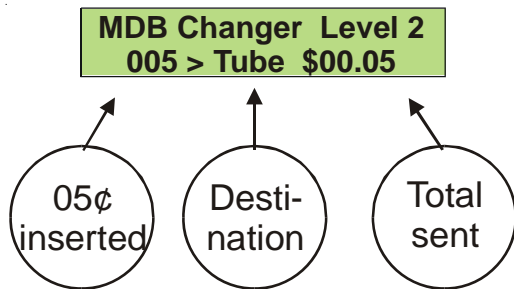
**MDB Changer Level 2  
Ready to test**

It has detected a MDB coin changer of level 2 or 3 and is now ready to test.

Each action you will undertake will prompt a new message on the display. That message will stay on the display for a few seconds if nothing happens or will be replaced by a new one by an immediate action of your part or from the device being tested.

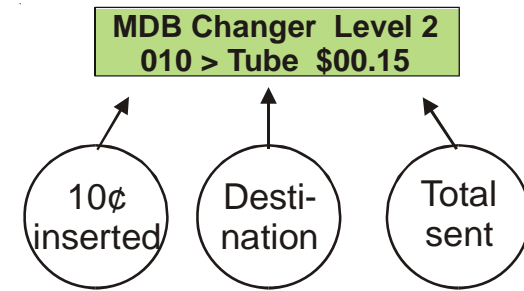
On start up, the **ACCEPT LINE** LED is lit. It means that you changer is now receiving the order to accept coins. You can turn down this order by pressing on the push button below the LED. Then your changer should not accept any coins just like if it was in a sold out vending machine.

When you insert a coin, the display shows you the type of coin inserted, its final destination (tube or cash box) and the cumulative amount of money directed to the tubes or cashbox



## Testing a 3-tube MDB coin changer cont'd...

Insert a dime now and the display will show you this:



The more coin you insert, higher the total amount will go. If you put enough coins to fill up tubes, the destination displayed will be **CASH BOX**. Notice as well that the sensors' LED will light up and the total amount will then drop from its previous number to a new number reflecting the amount now directed to the cashbox.

### Emptying the change tubes:

*N.B.: In MDB, a tube payout push button is not attached to a specific tube. It is attached to a specific coin value.*

If you want to empty one of the tubes, press once on the proper push button. The number of active push button depends on the value of coins in the tubes. Therefore, push button #1 is for the lowest value of coin stored in the tube, push button #2 is for the second lowest value of coin and push button #3 is for the third lowest. If you have the same value of coins in two tubes (i.e. 5¢ - 5¢ - 25¢), only two push buttons will be active. Once you have pressed on the proper push button, coins will be dispensed from that tube until you press again on the same push button. If you keep any of the change payout push button depressed for few seconds, all coin tubes will dispense at the same time. It will dispense coins as fast as the changer will permit. Press again any of the buttons to stop this action.

### Unplugging your changer:

Once you have tested every function of your coin mechanism, press **STOP** before unplugging. Failure to comply may cause damages inside your coin changer.