



# ***Microcoin CX***

## **Coin Changer**

### **Operation Manual**

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**Section**

**1**

**1 INTRODUCTION**

This manual describes the operation and maintenance of the Microcoin CX Coin Changer, (CX).

The CX Coin Changer has been specifically designed for use in vending applications.

The changer features include:

- 5 coin tube cassette – options available for different currencies
- Integral 16 to 40 Volt DC power regulator
- MDB Interface
- Multiple float options
- Token programming
- UL and RoHS compliance

This product is designed to fit into the standard coin changer channel provided by vending machine manufacturers. It mounts on the existing three mounting studs on the vending machine.

If you have any questions about this or any other GBA and Microcoin products then please visit our web sites at [www.microcoin.com](http://www.microcoin.com), or contact your regional sales office for assistance.

**1.1 Symbols**

The Symbols used in this manual have the following meanings:

Type	Description
 <b>Danger</b>	Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>Caution</b>	Caution indicates a potentially hazardous situation or an unintended use which, if not avoided, could result in death or serious injury.
 <b>Warning</b>	Warning indicates a potentially hazardous situation or an unintended use which, if not avoided, may result in minor or moderate injury and/or appreciable material, financial and environmental damage.
	Important paragraphs which must be adhered to in practice as they enable the product to be used in a technically correct and efficient manner.

**Section**

**2 CARE AND TRANSPORT**

**2**

**2.1 Transport**

<b>Shipping</b>	Whenever shipping the product, always use the original packaging, shipping container and/or the appropriate packaging. The packaging protects the product against potential shipping damage.
<b>Inspection</b>	After transport inspect the product before use.

**2.2 Storage**

<b>Product</b>	Respect the temperature limits when storing the equipment, particularly in summer. Refer to section 4.1 General Specifications for information about storage and operating temperature limits.
<b>Inspection</b>	After long periods of storage inspect the product before use.

**2.3 Cleaning and Drying**

<b>Product</b>	Use only a clean, soft, lint-free cloth for cleaning. If necessary, moisten the cloth with water or a mix of water and up to 50% Iso-Propyl Alcohol (IPA) . <b>DO NOT</b> use more than 50% IPA. Do not use other liquids; these may attack surface coatings.  Please observe detailed instructions in section <b>10.1 Cleaning</b>
<b>Damp products</b>	Dry the product and the accessories at a temperature not greater than 40°C (108°F) and clean them. Do not repack until everything is completely dry.
<b>Cables and plugs</b>	Keep plugs clean and dry. Blow away any dirt lodged in the plugs of the connecting cables.

**2.4 Unpacking**

Inspect the Coin Changer for potential damage sustained in transit. If any damage is present, return the changer into the original packaging and notify the carrier immediately. Send a written intent to file a claim to the delivering carrier within 72 hours from delivery. Send a copy of that letter to the shipper. Note that only the consignee can file a claim against the carrier for concealed damages.

If there was no damage sustained in transit, retain the original packaging for immediate storage, future shipping or transporting.

**Section**

**3 SAFETY DIRECTIONS & WARRANTY**

**3**

**3.1 General**

The following directions should enable the person responsible for the product, and the person responsible for use of the equipment, to anticipate and avoid operational hazards.

The person responsible for the product must ensure that all personnel who install and maintain the product understand these directions and adhere to them.

**3.2 Intended Use**

<b>Permitted Uses</b>	Coin discrimination, sorting. Storage and dispensing
<b>Adverse Uses</b>	Adverse uses of the equipment include, but are not limited to: <ul style="list-style-type: none"> <li>• Use of the product without instruction</li> <li>• Use outside of the intended limits</li> <li>• Removal of hazard notices</li> <li>• Opening the product while it is connected to mains power</li> <li>• Modification or conversion of the product</li> <li>• Use of products with obviously recognizable damages or defects</li> </ul>
 <b>Warning</b>	Adverse use can lead to injury, malfunction and damage. It is the task of the person responsible for the equipment to inform the user about hazards and how to counteract them. The product is not to be operated until the user has been instructed on how to work with it.

**3.3 Responsibilities**

<b>Person installing or maintaining the product</b>	The person installing or maintaining the product has the following duties: <ul style="list-style-type: none"> <li>• To understand the safety instructions on the product and the instructions in the user manual</li> <li>• To be familiar with local regulations relating to safety and accident prevention</li> <li>• To inform relevant person in charge immediately if the product and the application becomes unsafe</li> <li>• To ensure that the national laws, regulations and conditions for the operation are respected</li> </ul>
 <b>Warning</b>	The person installing the product must ensure that the product is used for its intended purpose and that it is operationally safe.
 <b>Warning</b>	This product may be installed only by an appropriately trained and qualified technician as per any national regulation.
 <b>Warning</b>	Only Astrosys International authorized service workshops are entitled to repair these products.

### **3.4 Warranty**

AstroSys International Ltd warrants the Microcoin CX Coin Changer for a period of two (2) years from the date of purchase. This warranty extends to the original purchaser of the warranted product, and to each transferee owner of the product, during the term of the warranty.

During the warranty period, manufacturer will repair or replace (at manufacture's option); any parts (up to and including the complete unit) which fail to function properly because of defects in material or workmanship.

This warranty covers the Microcoin CX Coin Changer which has been designed to accept valid currency. Manufacturer is not responsible for consequential damage or performance degradation that results from counterfeit currency, foreign objects, or other objects inserted into the Coin Changer.

The product to be repaired under warranty must be delivered to an Authorized Service Centre, inbound freight prepaid. Upon request, owner must show proof of purchase when submitting equipment for service during the warranty period. Repair or installation at the owner's location is NOT included in the warranty. During the warranty period, manufacturer will pay all outbound ground freight charges to the owner's location. If special handling/shipping is desired, owner must assume any shipping charges incurred.

Damage due to electrical overload, negligence, accidents, misuse, abuse, vandalism, or act of God, is not covered by this warranty. Any alteration of the product after manufacture voids the warranty in its entirety.

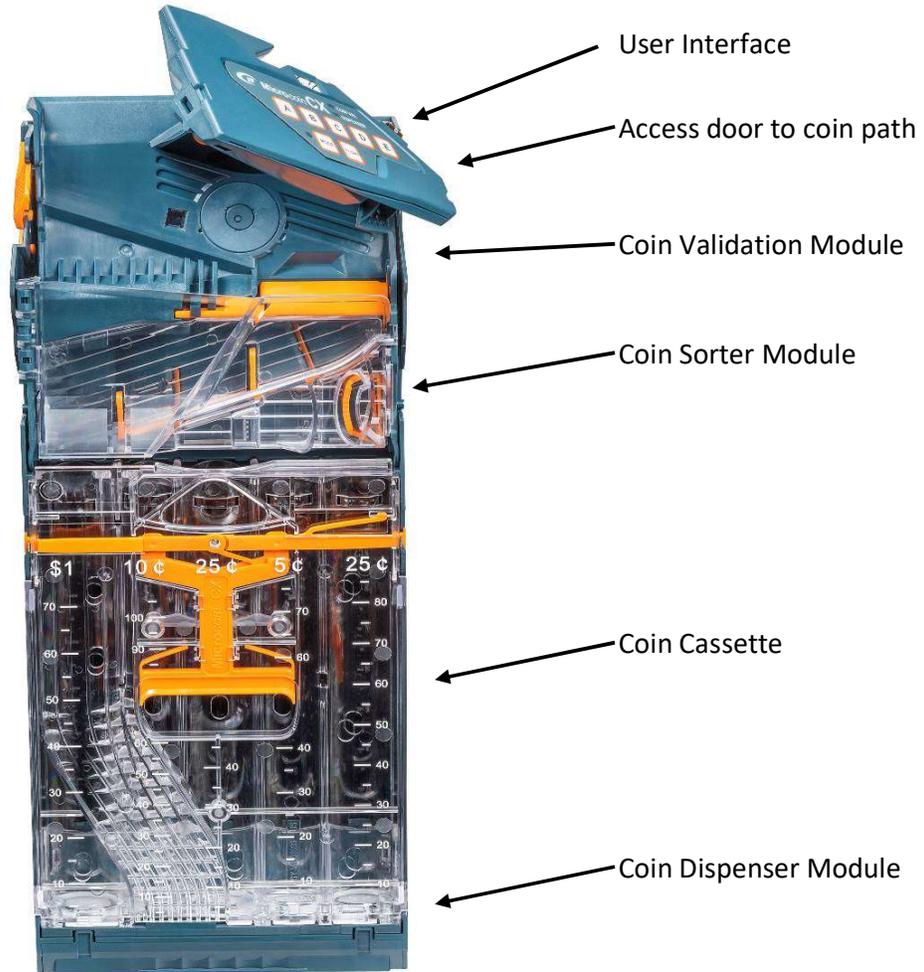
Manufacturer shall not be liable for any consequential damages as a result of defects in material or workmanship. Any written or applied warranty of this product is strictly limited to the refund of the cost of goods purchased.

**Section**
**4 PRODUCT INFORMATION**
**4**
**4.1 General Specifications**

Parameter		Range
<b>Coin Diameter:</b>	To Tubes	15 – 27mm
	To cash box	15 – 33 mm
<b>Coin thickness:</b>	To Tubes	1.3 – 3.2 mm
	To cash box (Dia. < 27mm)	1.3 – 3.5 mm
	To cash box (Dia. < 33mm)	1.3 – 2.5 mm
<b>Acceptance Rate:</b>		Greater than 95%
<b>Coin handling:</b>	Input	2 coins per second
	Dispensing	1.2 cycles per second 1 to 3 coins per cycle
<b>Nominal Cassette Capacity:</b>	Coin stack height	180 mm.
<b>Interfaces Supported:</b>	Refer to separate manuals for more details on each interface.	MDB
		ccTalk
<b>Power Supply:</b>		12 to 40 Volt DC regulated  (See section 7.1 for more details of power regulator modules)
<b>Environmental Range</b>		
	<b>(Operating Temperature):</b>	0° to 55°C
	<b>(Operating Humidity):</b>	Up to 90% R.H., non-condensing
	<b>(Storage Temperature):</b>	-10° to 65°C

**4.2 Product Architecture**

The CX Coin Changer is a modular assembly which can be easily accessed for service and support. It consists of a Main Chassis, Validation and Sorter Module, Power Regulator Module, Coin Dispenser System and Coin Cassette. There are interchangeable items depending upon the specific application.



**4.3 Note on component colours**

Parts which interact with the operator (e.g. to open the changer or remove the cassette) are moulded in orange.

#### 4.4 Coin configurations

The coin changer is pre-programmed with a coin configuration at the factory. This includes

- coin signatures
- coin values
- which tubes each coin can be stored in
- which tube cassettes can be used with this configuration
- general currency information
- DIP switch functions

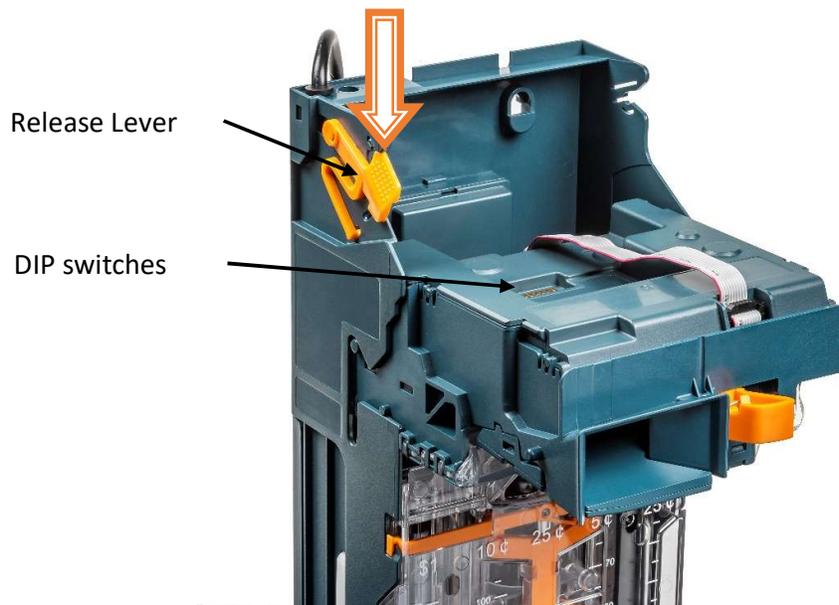
A coin changer can be reconfigured using a special software application. This is beyond the scope of this manual.

#### 4.5 DIP Switches

These are mounted on the back of the validation module.

The exact function of these switches can vary between currencies and configurations. Refer to the label on the back.

To access the switches, push down on the lever on the top left and swing the validation module forwards.

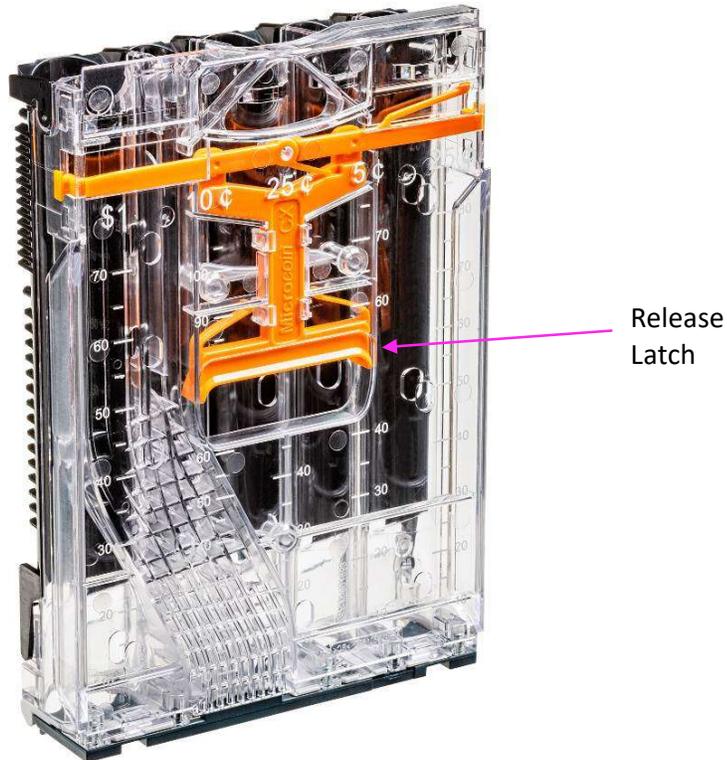


**Section**

**7**

**5 COIN CASSETTES**

Coin cassettes are available for different countries and different combinations of coins.



**Tubes: A B C D E**

**5.1 Cassette options**

Note that a country cassette is matched to the coin changer. If the cassette is not compatible with the programmed configuration of coins, the coin changer will not come into service. A warning will be shown on the user interface.

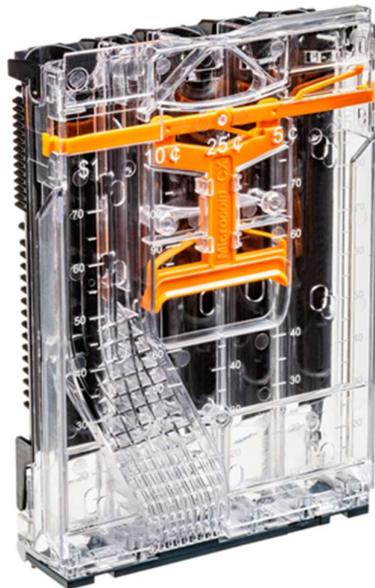
<b>Cassette reference</b>	<b>Currency</b>	<b>Tube A Denom/Qty</b>	<b>Tube B Denom/Qty</b>	<b>Tube C Denom/Qty</b>	<b>Tube D Denom/Qty</b>	<b>Tube E Denom/Qty</b>
USD-1	US Dollars	\$1/90	5c/141	25c/108	10c/97	25c/108
THB-1	Thai Baht	10B/76	1B/125	5B <sup>(2)</sup> / 81-104	1B/125	5B <sup>(2)</sup> / 81-104
MXN-1	Mexican Pesos	\$10	\$1	\$5	\$1	\$2

Notes:

1. Capacity is indicative and can vary due to variations in coin thickness.
2. There are 2 thicknesses of 5 Baht coin, so a range is given.

**5.2 Removing and replacing the cassette**

Remove the cassette as follows:



① Lift the orange release latch



② Swing the cassette outwards to remove from the CX chassis

**5.3 Opening and filling the cassette**

The cassette can be quickly filled by opening the rear cover of the cassette as follows:



① Press the orange lever

and simultaneously

② Push the black cover upwards

③ Swing the black cover open

**Section**

**6**

**6 INSTALLING THE COIN CHANGER**

**6.1 Preparation**

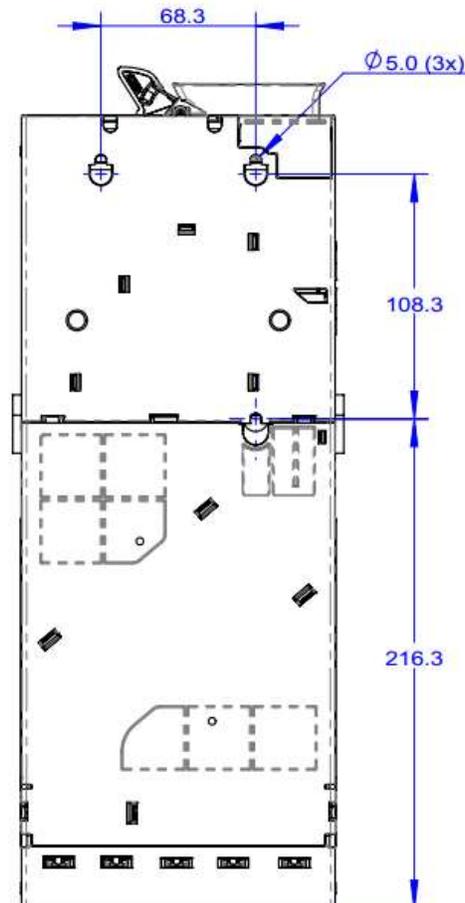
- Also refer to the vending machine manufacturer’s instructions on replacing the coin changer.
- Turn off power to the vending machine
- Inspect the coin changer for any signs of physical damage
- Check that the correct cassette is fitted.

**6.2 Mounting the changer**

Once the changer is open, the 3 mounting holes are accessible.

- The changer mounts on 3 mounting studs or screws in the vending machine. Hang the changer on these.
- Check that the changer is fitted vertically in both front to back and left to right directions.
- Tighten the screws or nuts, if they are required by the vending machine design.

Standard Three Mounting Keyholes



Check that the DIP switches are set correctly, if these are used. These are located on the back of the validation module. Refer to the label on the module back for the switch functions, as they can change between configurations.

### **6.3 Checking changer alignment**

Once the changer is installed, please check the following:

- Check the alignment of the coin input chute with the coin funnel at the top of the changer.
- Check the alignment of the cashbox chute with the output chute.
- Feed in a few coins while the changer is unpowered, and check that they fall cleanly into the returned coins cup.
- Press the coin return mechanism (lever or button) on the machine door and confirm that the mechanism presses opens the coin changer door enough to release a coin.
- Release the coin return mechanism and check that the coin changer door closes firmly.

### **6.4 Electrical Connection**

Make sure that power is OFF when connecting the changer.

Connect the MDB cable(s) to the harness from the vending machine controller.

Ensure that all cables are routed tidily and will not interfere with the changer.

Now switch power ON.

**Section**  
**7**

**7 ELECTRICAL INTERFACE SPECIFICATION**

The CX coin changer can be fitted with alternative interfaces and power regulator modules to match the requirements of the host machine.

**7.1 Power Supply Requirements – MDB Interface**

<b>Supply Voltage:</b>		16 to 42 Volts DC
<b>Current consumption</b> (24V supply)	Quiescent	100mA
	Dispensing coins	500mA typical
	Peak - dispenser stall	1500mA for less than 1 sec
<b>Recommended PSU rating</b>		1.5A at 12 Volts DC

**7.2 Safety Standards**

The CX coin changer complies with the following regulations and directives:

<b>Safety Standards:</b>	UL756
<b>EMC Emission / Immunity:</b>	EN55022: 2010
	EN61000-3-3: 2008
	EN55024 (EN61000-4-2):2010
	EN55024 (EN61000-4-3):2010
	EN55024 (EN61000-4-4):2010
	EN55024 (EN61000-4-5):2010
	EN55024 (EN61000-4-6):2010
	EN55024 (EN61000-4-11):2010

**Section**

**8 USER INTERFACE**

**8**

**8.1 Standard Interface Layout**

The interface is a membrane keypad with 7 buttons and 3 indicator LEDs. The buttons labelled A to E correspond to the 5 tubes.



**8.2 Button Functions**

The MODE button is used in conjunction with the other keys to access “special functions”. When it is pressed the MODE LED will light. This will stay lit until the special function is complete or cancelled.

The other buttons can be pressed either briefly or for longer than 2 seconds, to access variations on their function.

Button	Single Press	Long Press	MODE pressed first, the short press.
A	Dispense one coin from tube A	Dispense all coins from tube A	Future use
B	Dispense one coin from tube B	Dispense all coins from tube B	Teach Token: “Coin Val” LED will flash orange.
C	Dispense one coin from tube C	Dispense all coins from tube C	Set a new Float Value manually
D	Dispense one coin from tube D	Dispense all coins from tube D	Disable Coin: “Coin Val” LED will flash red. Insert sample of coin to be disabled.
E	Dispense one coin from tube E	Dispense all coins from tube E	Enable Coin: “Coin Val” LED will flash green. Insert sample of coin to be enabled.

Button	Single Press	Long Press	MODE pressed first, the short press.
FLOAT	Future use	Dispense excess coins from all tubes down to “Float Level”	The user has refilled the cassette to the “Float Level”.

The combination of MODE followed by a long press on the other buttons is reserved for future use.

### 8.3 Float Level

The float level for each tube is included in the changer configuration. This can change between applications and currencies.

In some cases the float level may equate to the cassette being fully loaded.

### 8.4 Status LED Functions

The Status LEDs feed back general error or operational information.

#### 8.4.1 Coin Val. LED

Colour	Status
Steady green	In service
Steady orange	Disabled by VMC
Steady red	Coin Jam or other fault
Flashing green	Coin Enable Mode
Flashing red	Coin Disable Mode
Flashing Orange	Teach Mode
Alternate Green/Orange	Cannot accept teach request
Alternate Green/Red	Reprogramming Coin Validator
Alternate orange /red	Reprogramming User Interface

### 8.4.2 Dispenser LED

Colour	Status
Steady green	In service
Steady orange	Disabled by VMC
Steady red	Coin Jam or other fault
Flashing green	Dispensing Coins
Flashing red	One or more tubes is empty
Two red flashes, then pause	Cassette has been removed.
Flashing Orange	One or more tubes is low
Alternate Green/Orange	Future use
Alternate Green/Red	Future use
Alternate orange /red	Reprogramming Coin Dispenser

### 8.5 Coin Return Lever

This lever will push open the door of coin validation module to release an obstruction in the coin path. It should be activated by a mechanism in the vending machine connected to a coin reject button or lever on the front of the vending machine.

If the lever is pressed, the vending machine controller may treat this as a request by the customer to cancel the whole transaction. It will then instruct the CX changer to return all coins inserted in that transaction.

**Section****9****9 COIN FLOAT AND COIN COUNTS**

The float level is used to ensure that there is sufficient coin inventory so that customers can receive change after a transaction. But it should also ensure maximise the time between service intervals by providing the maximum capacity for coins to be stored.

**9.1 Reducing coins inventory to Float Level**

Press the FLOAT key for more than 2 seconds.

The coin changer will then empty the tubes down to the designated levels. While the changer is dispensing, the COIN VAL. LED will blink green.

If the number of coins in a tube is less than the float level, then no coins will be dispensed.

**9.2 Manually loading coins to Float Level**

- Remove the cassette and manually fill the each tube to the level designated in the configuration.
- Press the MODE button – the MODE LED will light green
- Press the Float button
- Insert the cassette.
- The coin changer will update its coin inventory records.

**Section**

**10 CLEANING**

**10**

**10.1 Cleaning coin touch-points**

A build-up of dirt can adversely affect the performance of the CX coin changer. Please periodically clean the various coin touch-points within the CX.

**Equipment Required**

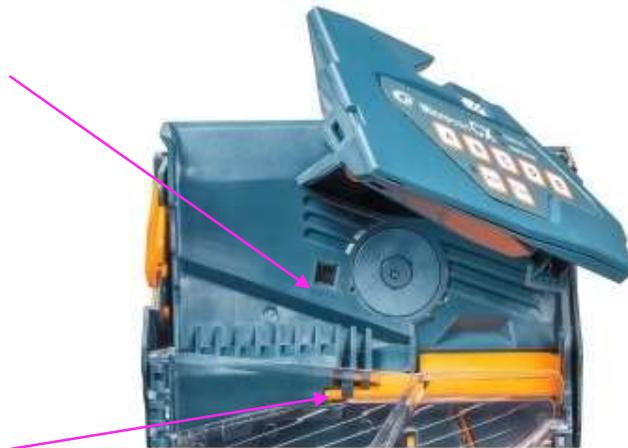
1.	Cotton swab or a lint-free cloth.
2.	Cleaning solution: A mix of water and up to 50% Iso-Propyl Alcohol (IPA) is recommended.

**i** **DO NOT** use more than 50% IPA. **NEVER** use solvent-based cleaning agents, such as Amberclens, pure alcohol, petrol, methylated spirit or white spirit on this product as the unit will be severely damaged.

**10.1.1 Coin Head**

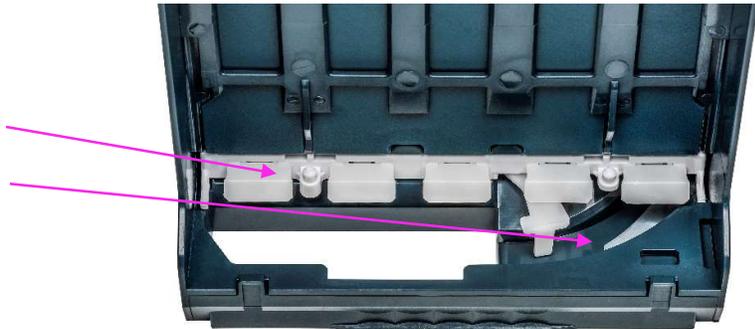
Clean upper coin track and coil surfaces

Check that the axles of the upper gates are clean.



### 10.1.2 Coin Dispense

Check that the dispenser pins and sweeper arm are clean



### 10.1.3 Cassette

Check the white coin stripper plate is clean.



**Section**

**11 DIAGNOSTICS & TROUBLESHOOTING**

**11**

**11.1 Diagnostics**

First check the diagnostic LEDs on the User Interface. See section 8.4.

This may tell you if the cassette is empty or there is a coin jam.

**11.2 Clearing obstructions in the validator module**

- Manually activate the coin return lever. This will partially open the door over the coin path and should release any obstruction in the upper coin path to the reject chute.
- Open the door fully to check for any debris in the coin path.
- Look through the clear cover of the sorter module for signs of any obstructions.
- You can access the areas in this section by:
  - ① Squeezing the tab on the outer door.
  - Open and even removing the outer door which hinges on the left.
  - ② Squeezing in the orange latch on the inner door.
  - Open and remove the inner door for access to the rear path.
- Close the sorter doors after inspection.



### 11.3 Checking the cash box path

There is a path at the back of the changer to send the coins to an external cash box under the unit.

To access this path you will need to remove the changer from the mounting studs first. Refer to section 6 on installation.

- Unclip the back cover and remove.
- Try holding the cover upside down and shaking it to release obstruction.
- Otherwise squeeze the 3 clips inwards to release the chute from the rear cover.

Unclip rear cover  
here

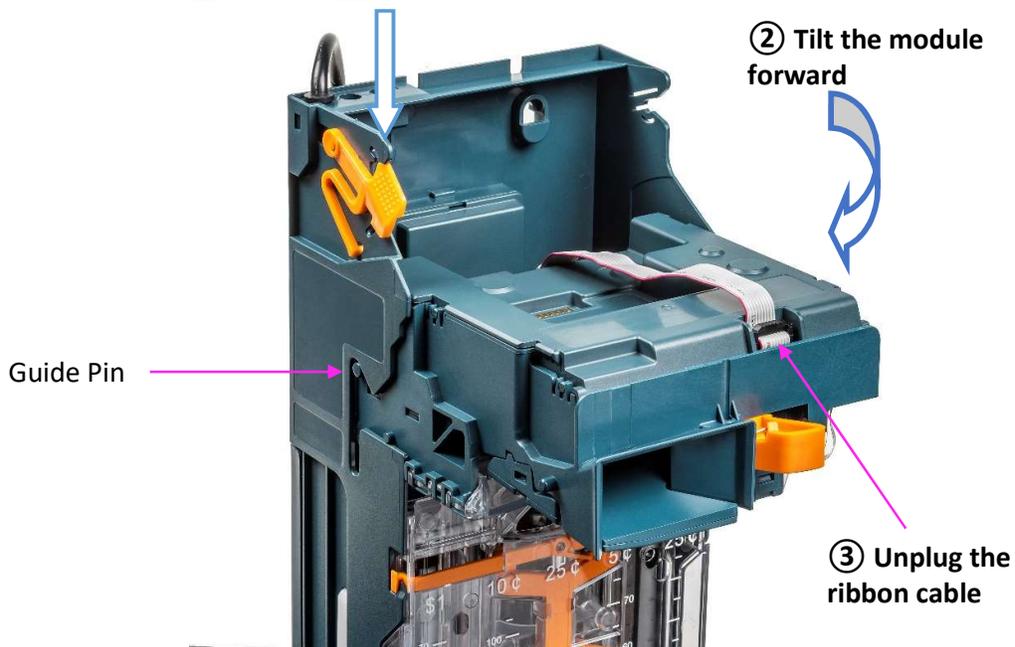


**11.4 Removing the validator and sorter module**

Remove the validator and sorter module as follows:

- ① Push down on the orange level on the left hand side.
- ② Tilt the validation module forward. It will be held horizontal by the guide pins.
- ③ Unplug the ribbon cable.
- ④ Lift the validation module out by tilting it up to about 45° then pull it forwards.

**① Module release**



**④ Tilt module up and pull forward.**



**11.5 Troubleshooting**

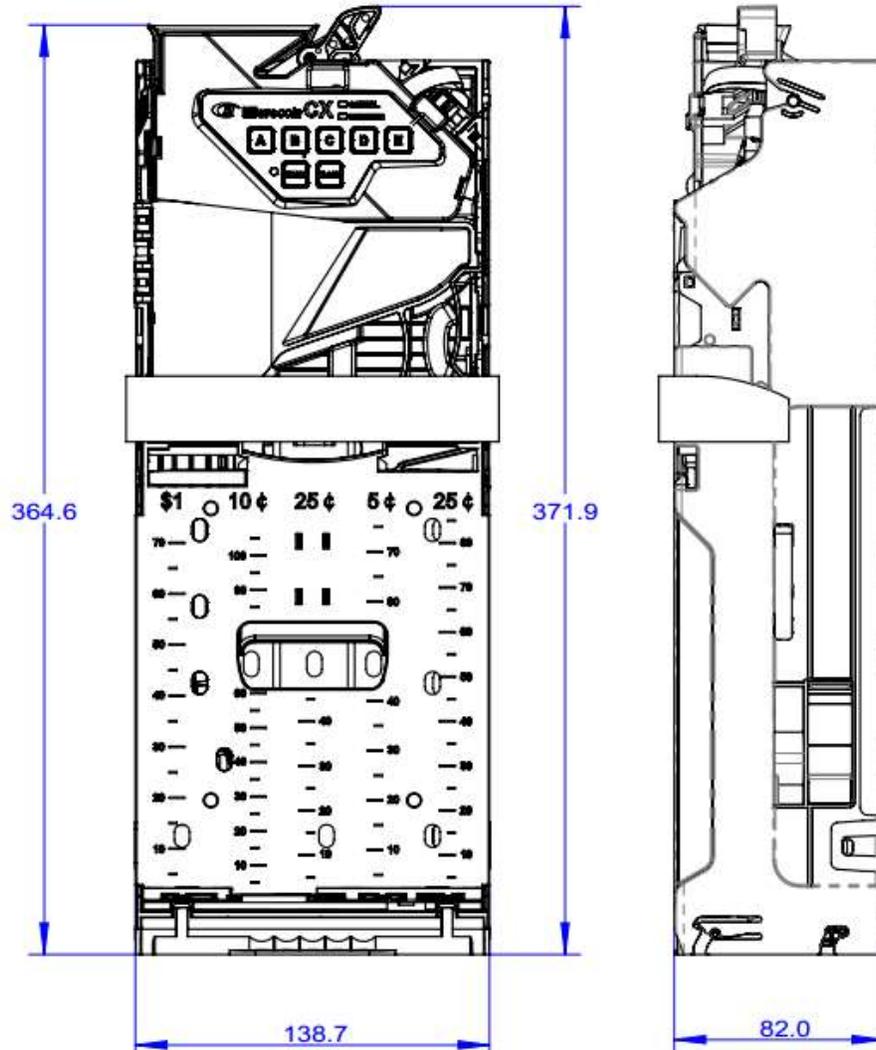
The following information is presented for customers’ guidance in identifying problems with the CX changer. It does not necessarily cover every possible situation.

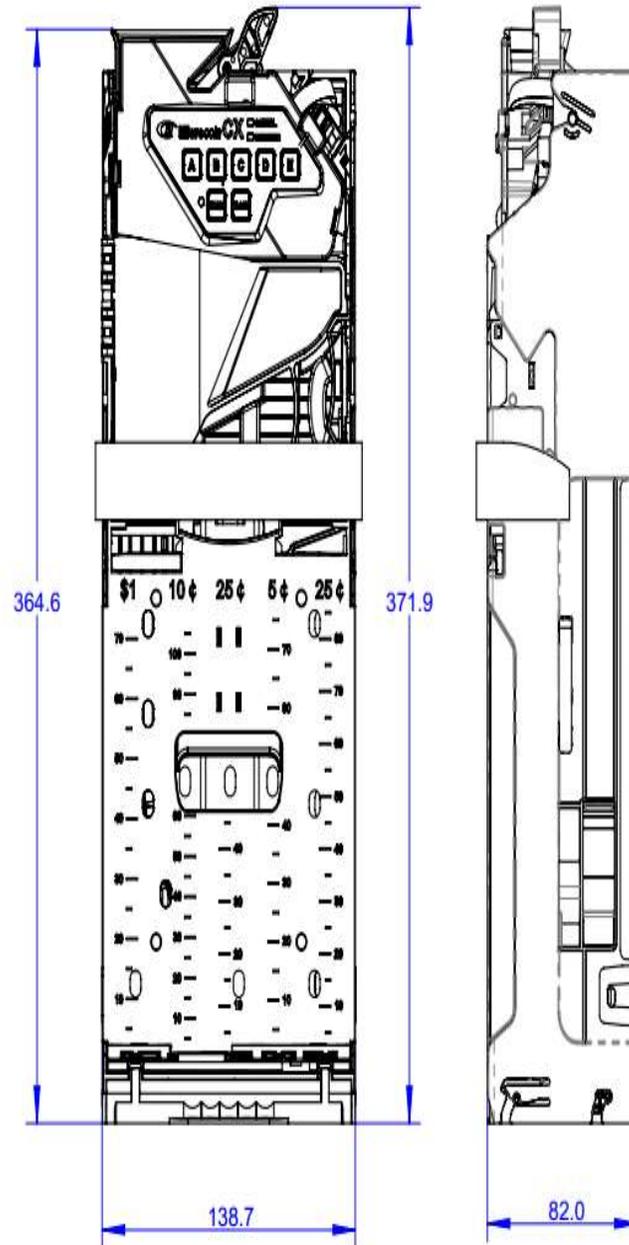
<b>Problem Symptoms</b>	<b>Possible Cause</b>	<b>Investigate</b>	<b>Possible Solution</b>
<b>Changer does not accept any coins</b>			
	Changer is disabled by the machine controller.	COIN VAL. LED will be steady orange.	Check vending machine manual.
	Cassette is not fitted correctly	DISPENSER LED shows two red flashes then pause.	Reseat the cassette

Section

12 DIMENSIONAL DRAWINGS

12





## Section

## 13

**13 DISCLAIMER**

Astrosys International Ltd. reserves the right to amend, improve or otherwise change this document or the product referred to herein at any time.

Astrosys International Ltd. does not accept liability for any errors contained within, or omissions from, this document. Astrosys International Ltd. shall not incur any penalties arising from the adherence to, reliance on or interpretation of this document.

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