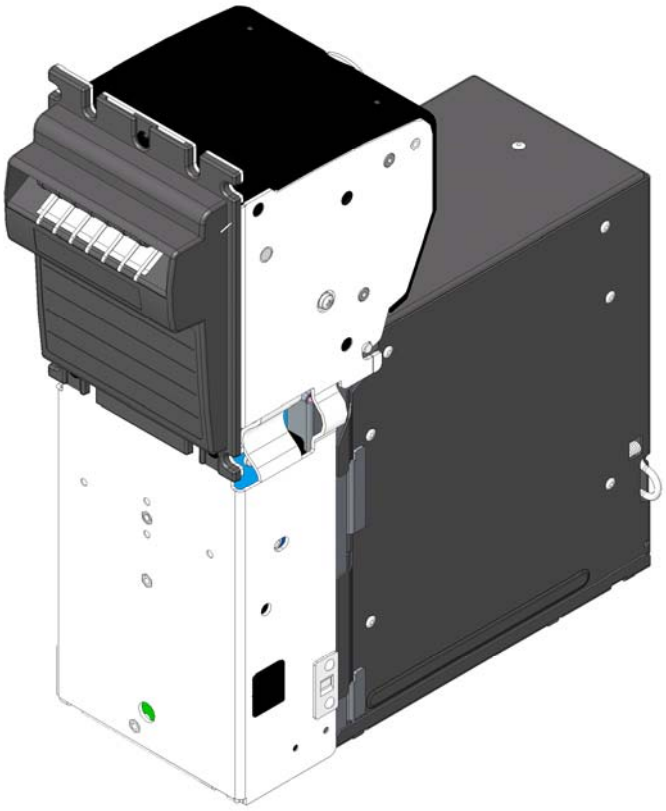
CashCode

MSM BackLoad Bill Validator

Operation and Service Manual

Part 1. Operation Manual



CONTENTS

INTRODUCTION

The scope of this document is to provide full and clear information about the MSM series – the next generation of CashCode backload bill validators.

This document will be useful for those whose needs are:

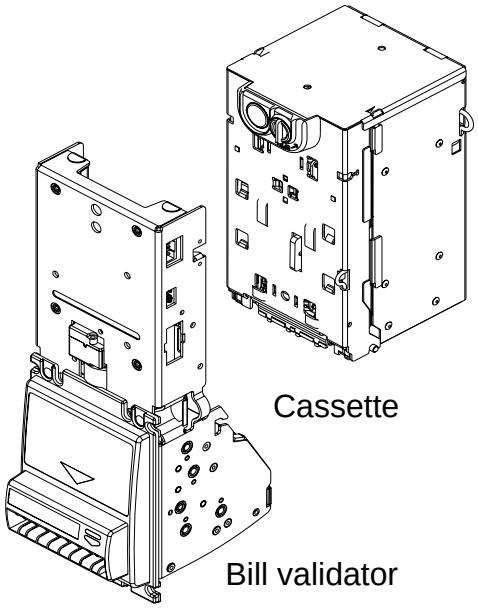
- Development of new equipment with the MSM bill validator,
- Choice of the MSM bill validator part number,
- Installation of the MSM bill validator,
- Maintenance and service for the MSM bill validator,
- Repair of the MSM bill validator.

The Manual consists of two parts: part 1 – Operation and Service Manual, and part 2 – Repair Manual.

PRODUCT OVERVIEW

The CashCode MSM bill validator was designed for on-door installation. It means that typically the MSM bill validator is installed on the front door (or the front panel) of the machine from inside. Access to the cassette is from the rear side of the validator – service personnel has to open the front door to be able to replace the cassette and to collect money.

The MSM bill validator consists of two main parts – the **bill validator** itself and the **lockable removable cassette.**



The MSM **bill validator** has a centering mechanism with a self-adjustable bill path. The width of the path is automatically adjusted to accommodate each bill. The MSM is used for currencies where the width of the bill changes with the denomination.

The highest acceptance rate is available due to a set of advanced **sensors** and smart software that can precisely separate authentic bills from all known counterfeits.

Six multi-colour **optical sensors** collect images from both sides of the bill.

Patented **inductive sensors** evaluate magnetic properties of specialized ink at the bill.

Patented **dielectric sensors** detect authenticity of bill paper and some special protective features of the bill.

All sensors have **auto-calibration** and do not require any manual adjustment. As a result, the validator keeps the same high acceptance level during its lifetime.

The MSM bill validator can **accept bills** inserted in **any** of four **directions** (any side forward, face up or face down).

An additional sensor allows reading of **bar-coded coupons** widely used in gaming applications.

The highest security level is provided by an **anti-stringing sensor** that can detect any sort of string, thread or film attached to the bill.

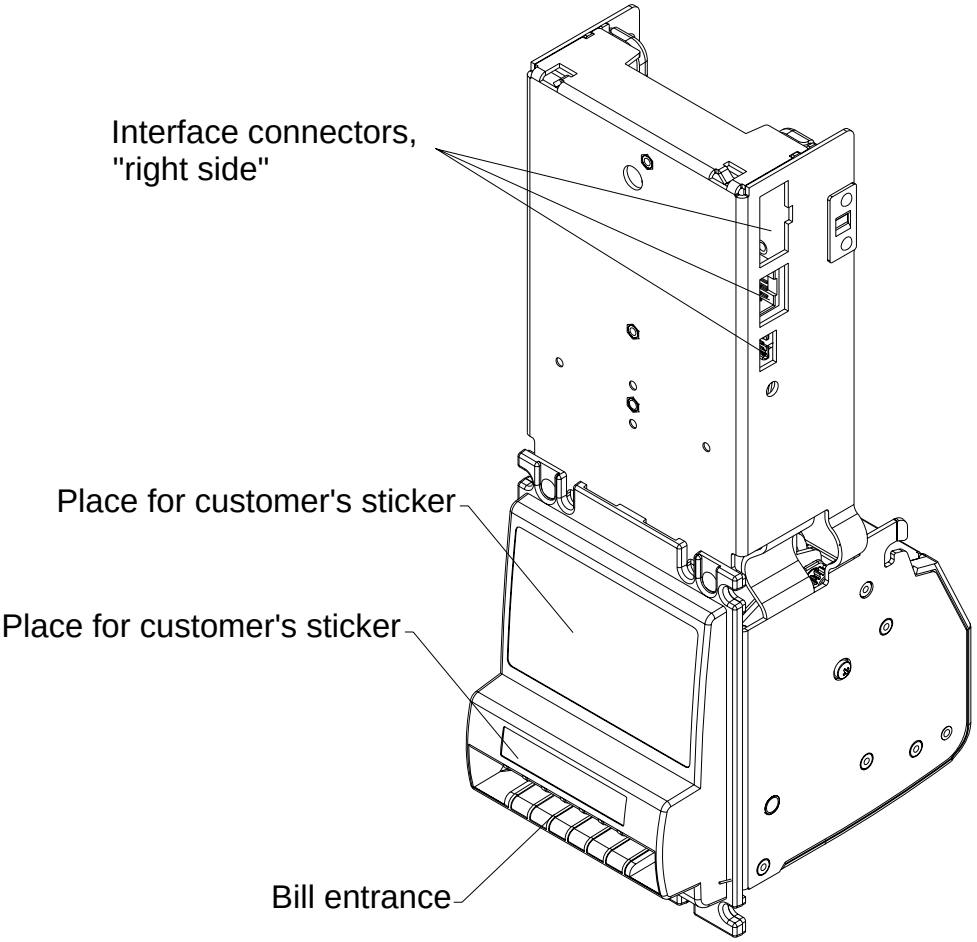
The highest efficiency is provided in the following features.

Beltless roller design minimizes maintenance of bill transport mechanism.

"**Clamshell**" design provides fast and easy access to all portions of the bill path.

When new bills are issued in circulation, or when new counterfeits are found the MSM bill validator has a possibility of a fast and easy **software update** with the **CashCode Memory stick**. The update can be performed in seconds, in the location where the validator is installed. The procedure does not require high-qualified personnel, validator disconnection, or any tool or equipment.

The MSM bill validator operates at a **twice faster** speed than the previous ST.



The MSM bill validator has all the required features that allow it to be used in any application.

It can be installed in the **STACKER UP** or the **STACKER DOWN** position. It means that the cassette is located above the bill entrance (which is more common for vending equipment) or below the bill entrance (which often used in amusement machines).

The MSM fits into the most common cutout dimensions at the front door.

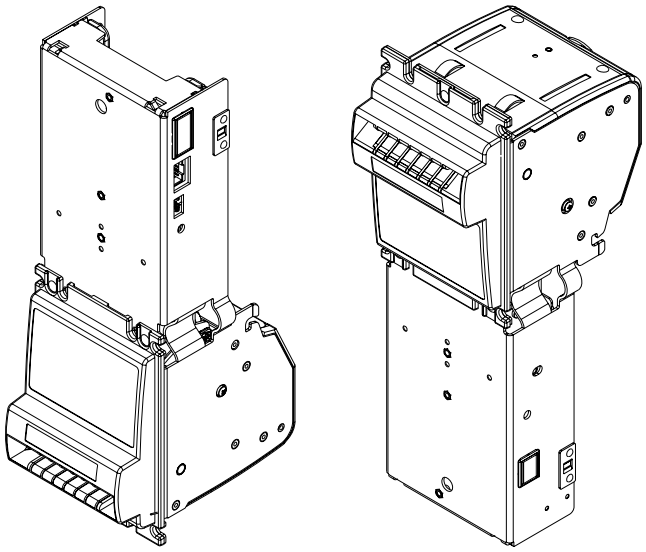
The MSM supports wide variety of **interfaces** – MDB, CC serial, CCNET, ID003.

Typically, all connectors are situated at one side of the validator (“right” side). In case when the space in the machine at this side is limited, the customer may order the MSM with the “left-side” connector. This option is available for MDB interface only.

Following customer’s needs CashCode developed several styles of the **front bezel**. The customer may choose from standard plastic bezel or the metal bezel with vandal-proof features.

Operating mode can be chosen with DIP switches located on CPU board.

STACKER UP



STACKER DOWN

The MSM bill validator operates with the **Lockable Removable cassette**. These cassettes are not exactly the same that were used with the previous CashCode ST and SM bill validators.

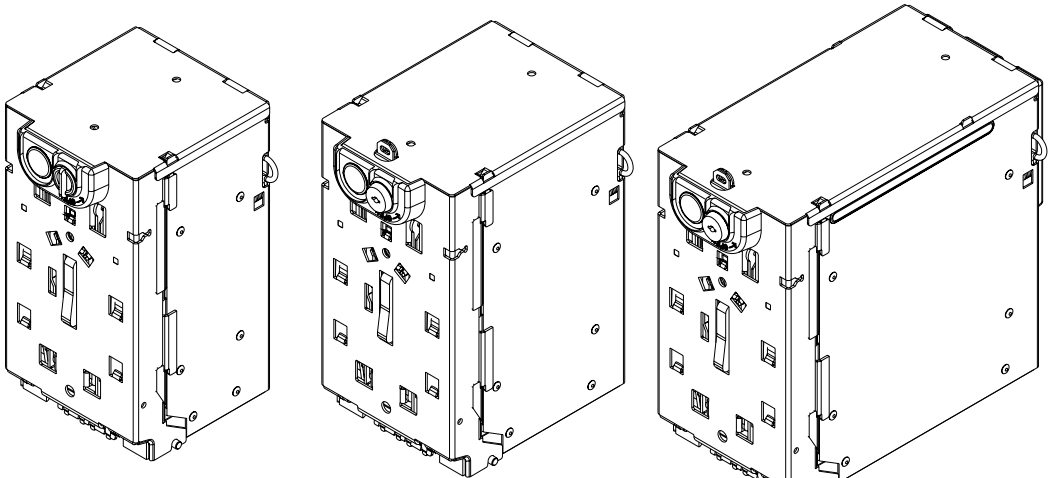
All accepted bills are stored in the cassette as a stack. The cassette cover can be locked with **locks** of different styles, limiting access to the stored bills.

Cassettes are not differ in the **width of the bill path**. Widths are available – **62…77mm.**

The maximum length of the bill that can be stored into the cassette is 160 mm.

Depending of available space in the machine, the cassette of proper size can be chosen. The **cassettes** are available in following **sizes** – 300; 500; 1000 bills. Please keep in mind than when the cassette capacity is mentioned – it means the space inside the cassette and how many brand new bills can be stores in this space. Street grade bills require more space and as a result, fewer bills may be stored.

For additional security the cassette cover can be equipped with the **tab** for applying a **seal**.



300 500 1000

Acceptance:
Bills……..lengthwise 4 ways
Barcoded coupons……two ways, face up (for stacker down installation)
Validating rate……96% or higher on first insertion
Width of bills, in mm……62… 77
Maximum length of bill, in mm……160
Minimum length of bill, in mm……120
Bill escrow……one bill

Barcoded Coupon Specifications:
Encoding standard……SNSI/AIM BC2-1995, Uniform Symbology Specification – Interleaved 2 of 5
Narrow bar width, in mm……0.5 to 0.6
Wide/Narrow Bar Ratio……3:1
Number of characters……6 to 18
PCS Value (Print Contrast Signal)……0.6 min

Complete transport cycle, in seconds……1.7

External Interface:
24V……MDB
Single Price (with adapter)
Host Intelligence Interface (HII, with adapter)
12V……MDB
Pulse, opto-isolated (IPI)
CCS (serial, TTL)
CCNET (single slave mode, RS232)
ID-003 (TTL)

Maximum stacking capacity of new bills in Cassette……..300, 550

Memory programming…… download from CashCode Memory Stick or from host controller (available in CCNET only)

Power supply voltage……12 V DC ± 1 V
24 V AC or 15-42.5 V DC

Current consumption:
12 V DC operating mode, max……2 A
12 V DC standby……0.2 A
24 V AC or 15-42.5 V DC, operating mode (max)……1 A
24 V AC or 15-42.5 V DC, standby……0.1 A

Power consumption, W:
Idle mode……2

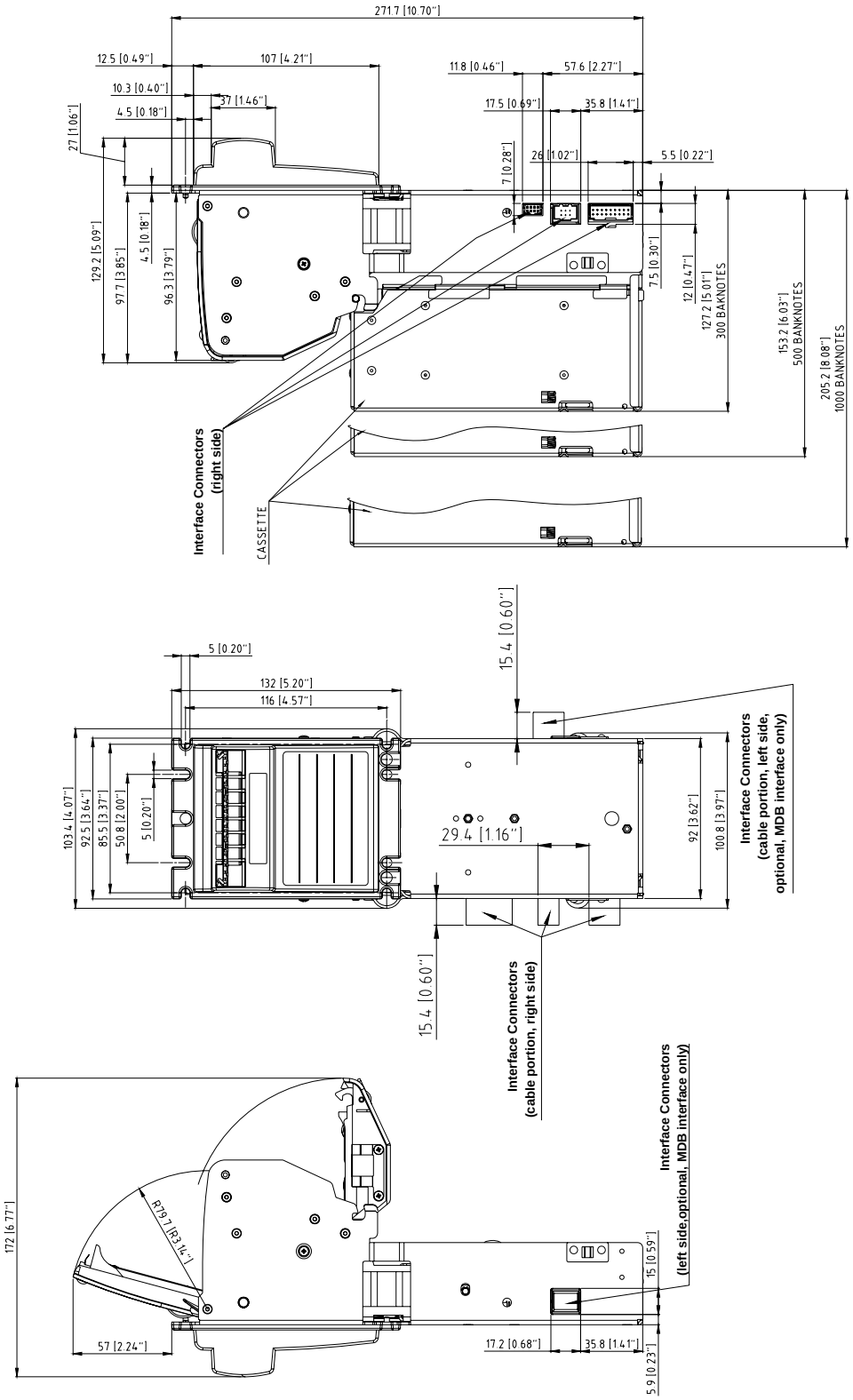
Validation mode……12

Environmental:
Operating temperature (12 V DC)……0°C to +50°C
(24 V AC or 15-42.5 V DC)……-18°C to +60°C
Storage temperature……-30°C to +60°C
Humidity (non-condensing)……30%-90%RH

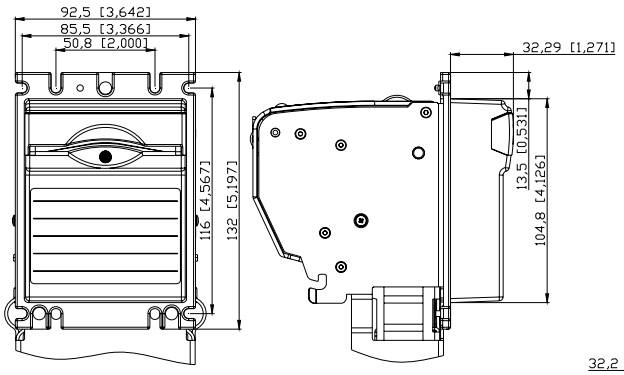
Validation **M.T.B.F**……750,000 cycles

Weight of Validator……1.7 kg (with plastic bezel)
Weight of Cassette (empty) 300……0.96 kg
500…… 1.1 kg
1000…… 1.45kg

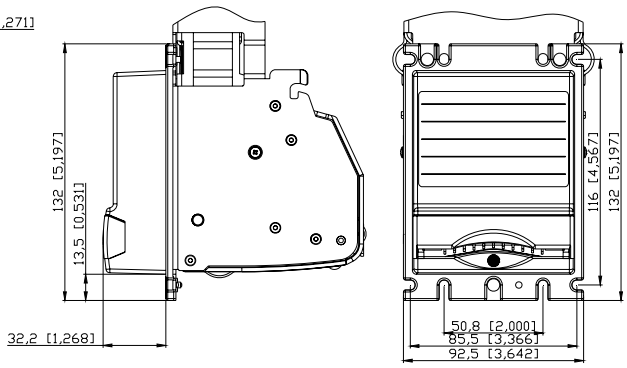
DIMENSIONS


271.7 [10.70"]
12.5 [0.49"]
107 [4.21"]
11.8 [0.46"]
57.6 [2.27"]
10.3 [0.40"]
37 [1.46"]
17.5 [0.69"]
35.8 [1.41"]
4.5 [0.18"]
27 [1.06"]
7 [0.28"]
26 [1.02"]
5.5 [0.22"]
129.2 [5.09"]
97.7 [3.85"]
4.5 [0.18"]
96.3 [3.79"]
7.5 [0.30"]
12 [0.47"]
127.2 [5.01"]
300 BANKNOTES
153.2 [6.03"]
500 BANKNOTES
205.2 [8.08"]
1000 BANKNOTES
Interface Connectors
(right side)
CASSETTE
15.4 [0.60"]
5 [0.20"]
132 [5.20"]
116 [4.57"]
103.4 [4.07"]
92.5 [3.64"]
85.5 [3.37"]
50.8 [2.00"]
5 [0.20"]
29.4 [1.16"]
92 [3.62"]
100.8 [3.97"]
Interface Connectors
(cable portion, left side,
optional, MDB interface only)
15.4 [0.60"]
Interface Connectors
(cable portion, right side)
172 [6.77"]
R79.7 [R3.14"]
Interface Connectors
(left side,optional, MDB interface only)
15 [0.59"]
57 [2.24"]
17.2 [0.68"]
35.8 [1.41"]
5.9 [0.23"]

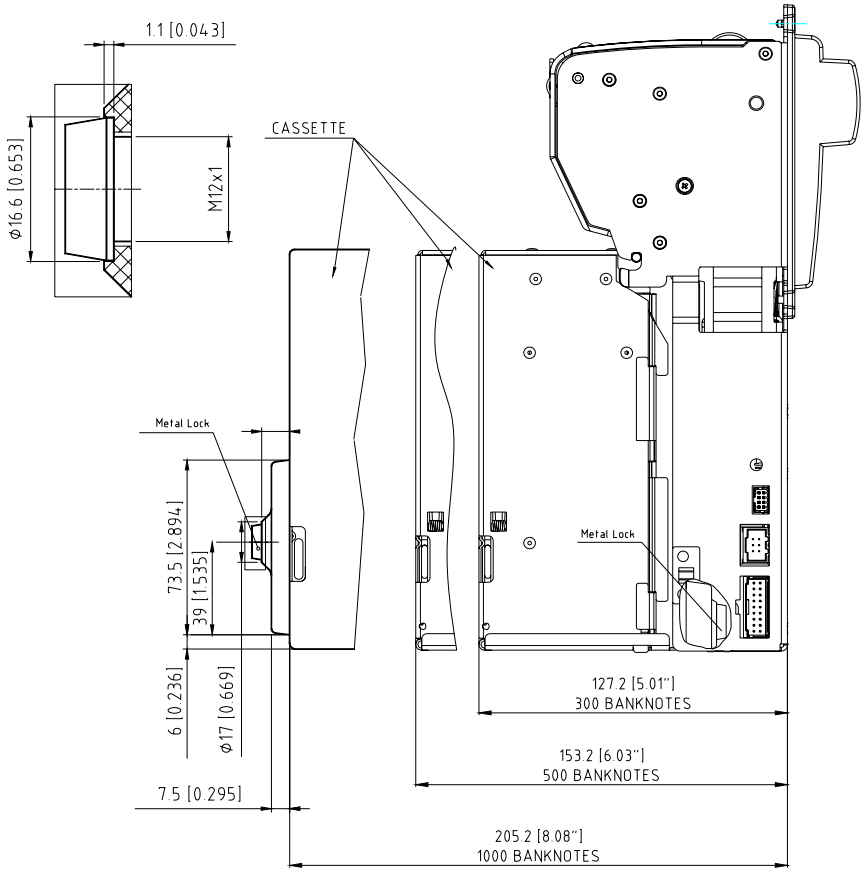
Metal Down Bezel



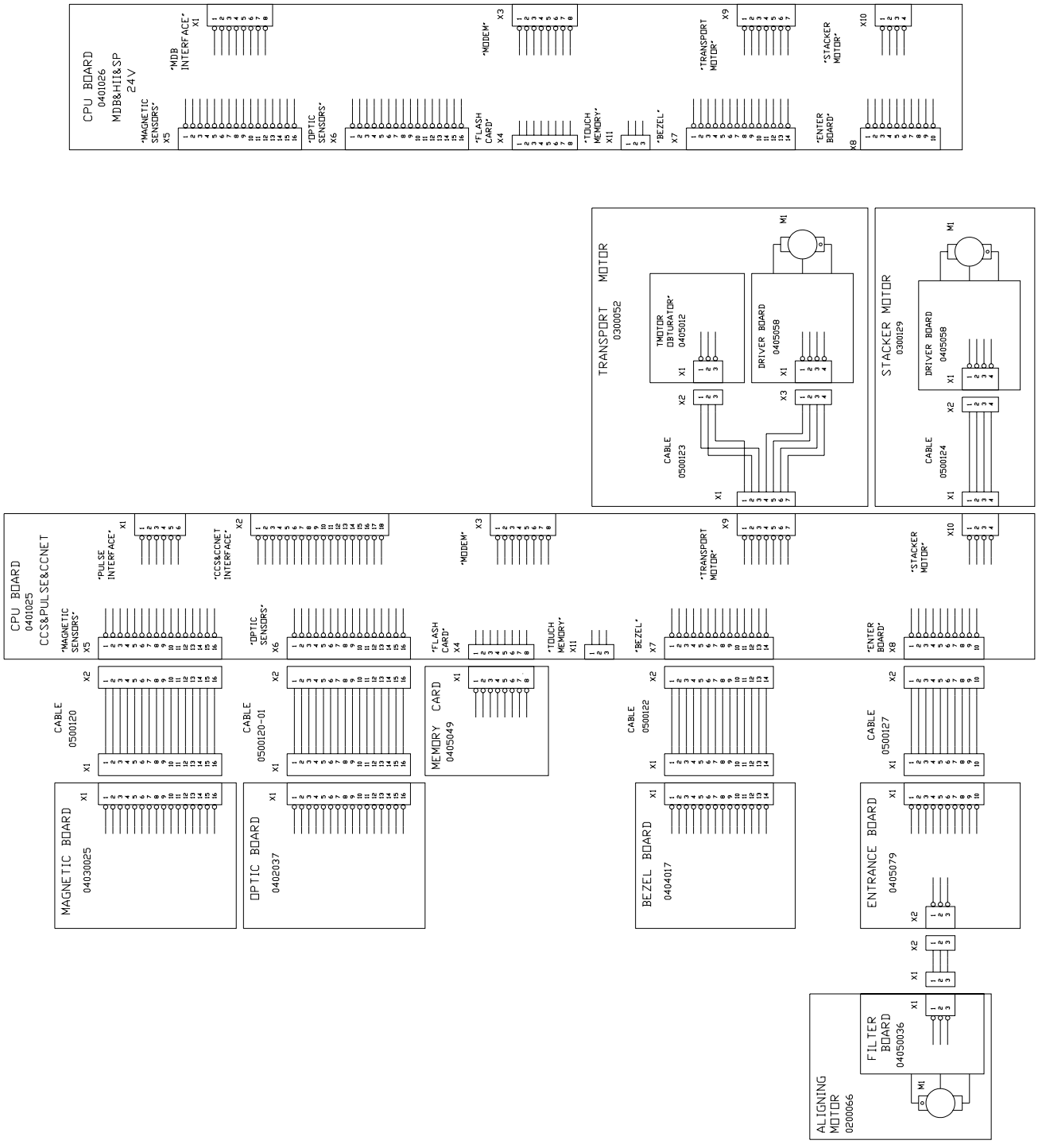
Metal Up Bezel



MSM with 2 metal Locks



GENERAL WIRING DIAGRAM



CHOOSING MSM FEATURES AND PART NUMBERS

Bill Validator

Following data is required to make a correct choice of the bill validator:

- currency (country);
- protocol type (interface);
- bezel style;
- style of the cassette (regular or high security locks on the cassette);
- indoor or outdoor application (coated boards are used for outdoor application);
- "left-side" interface connector (this option is available for MDB protocol only).

There is a special software program for choosing part numbers. This program can be found at www.cashcode.com (program name is "CONFIGURATOR.exe")

Currency

Please refer to the chart below to find your country. Only countries with single-width currencies are included in the list. However, for some countries with multi-width currencies the MSM can be used – typically, for minor denominations. For the multi-width currencies please refer to CashCode **MSM BackLoad bill validator**.

If you currency is not presented on the chart, do not hesitate to contact CashCode Customer Service.

Please remember the path width for the bill validator of your selection – when choosing the cassette the path width must be equal.

Currency	Denominations accepted
Argentina	ALL
Australia	ALL
Brazil	ALL
Canada	ALL
Chile	ALL
China	5, 10, 20
Colombia	ALL
Costa Rica	ALL
Dominican Republic	ALL
Guatemala	ALL
Argentina	ALL
Jamaica	ALL
Mexico	ALL
Peru	ALL
Philippines	ALL
South Africa	ALL
Ukraine	ALL

Currency	Denominations accepted
USA	ALL
Venezuela	ALL
USA + Mexico	ALL

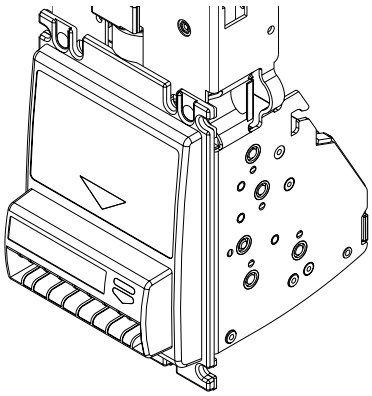
Protocol

Choice of 5 **interfaces** is available. For more detailed description see chart "Interface Connection".

Bezel style

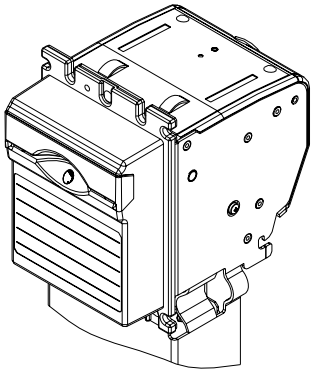
Three different styles of bezel are currently available:

Standard plastic bezel. This bezel can be used for both the installations of – STACKER UP and STACKER DOWN positions. The bezel has an inlet for the bill and the status light (red for "BUSY" and green for "READY"). The status light also provides a diagnostic for service personnel. The bezel has 2 designated places where customized stickers can be applied. Sticker sizes are (WxH) 35x12 mm and 76x48 mm.

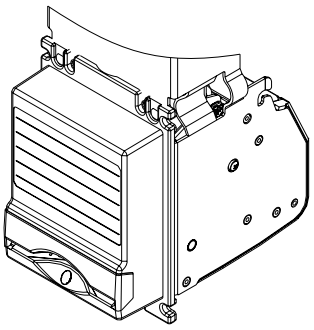


Plastic Bezel (shown as STACKER UP)

The **Metal bezel** was developed for vandal-proof applications. It is not sensitive to external impacts. It also has the path of special shape to be coin protected – insertion of coin cannot block the path and make bill validator disabled. The metal bezel has one status light that can be red or green. Customized sticker 76x48 mm can be applied on the bezel. Two different bezel configurations are available – for STACKER DOWN and for STACKER UP installation.



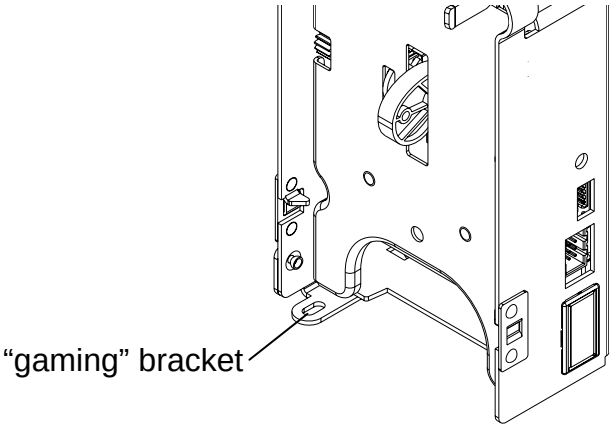
Metal Bezel (STACKER DOWN)



Metal Bezel (STACKER UP)

Style of Cassette

The MSM bill validator can operate with the cassette that is equipped with the high security locks. The MSM bill validator must have an additional bracket (“gaming” bracket), to be able to lock this cassette.

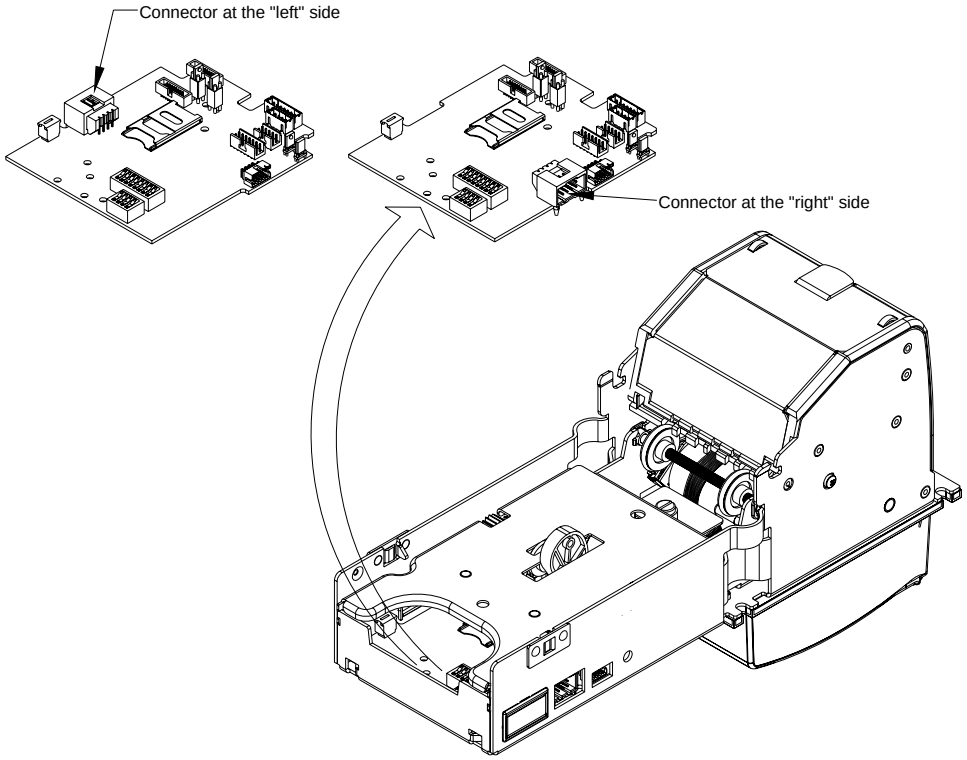


Indoor or outdoor application

The MSM bill validator can be ordered with all boards coated for outdoor applications.

“Left-side” interface connector

The MSM bill validator with MDB interface (24 V) can be ordered with the interface connector at the “left” side. This option requires an alternative CPU board.



Cassette

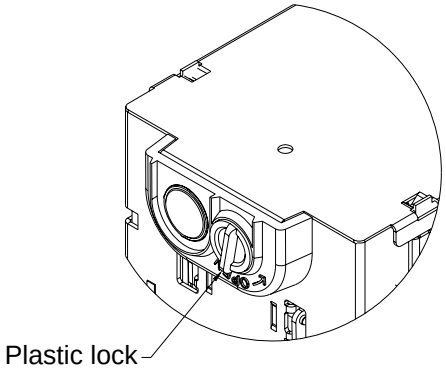
Cassettes for MSM bill validator have the following options:

- capacity of the cassette. There are 3 sizes: 300; 500; 1000 bills.
- security features. Up to 2 security locks are available.

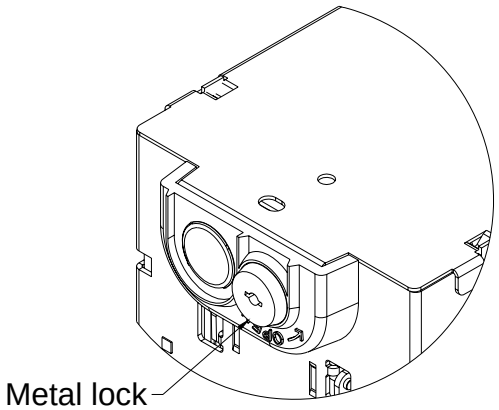
The chart of possible cassettes is available at the end of this part.

Security features

The cassette cover can be used without locks (plastic lock gives free access to bills)

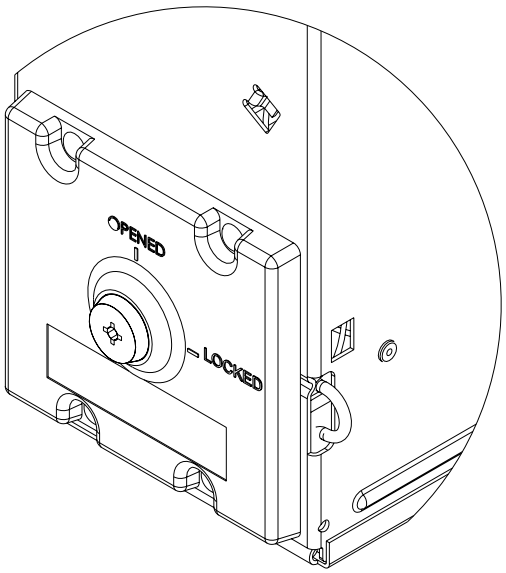


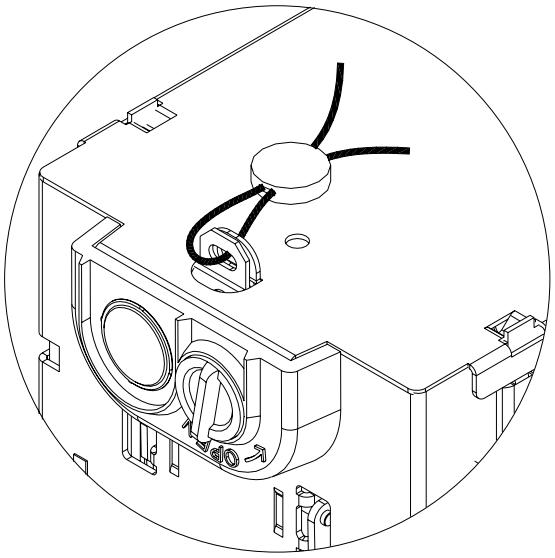
The Cassette can also carry metal lock at its cover providing the next level of security



Every cassette can be equipped with the lock that locks the cassette to the bill validator. This optional locking mechanism is placed at the rear side of the cassette and prevents the removal of the cassette from the bill validator.

The locking mechanism can be ordered separately under part number OPT-MKLC-USX-CC1 (with the lock installed).





Every cassette (except “gaming”) can have additional tab to apply a seal on the locked cover.

Below is the chart that includes all available cassettes and their part numbers.

Capacity, new bills	Without seal tab			With seal tab		
	No lock	1 metal lock	2 metal locks	No lock	1 metal lock	2 metal locks
300	CST-300M-P0L	CST-300M-P1L	CST-300M-P2L	CST-300M-P0L-S	CST-300M-P1L-	CST-300M-P2L-S
500	CST-500M-P0L	CST-500M-P1L	CST-500M-P2L	CST-500M-P0L-S	CST-500M-P1L-S	CST-500M-P2L-S
1000	CST-1000M-P0L	CST-1000M-P1L	CST-1000M-P2L	CST-1000M-P0L-S	CST-1000M-P1L-S	CST-1000M-P2L-S

Memory Stick and software update options

CashCode MSM Bill Validators are supplied with pre-installed software, according to user's order. A "Dummy Card" is normally placed in the slot instead of a Memory stick. Software updates are recommended whenever new currency is issued, or whenever a new series of counterfeit bills appear on the market. Software updates are offered in three options:

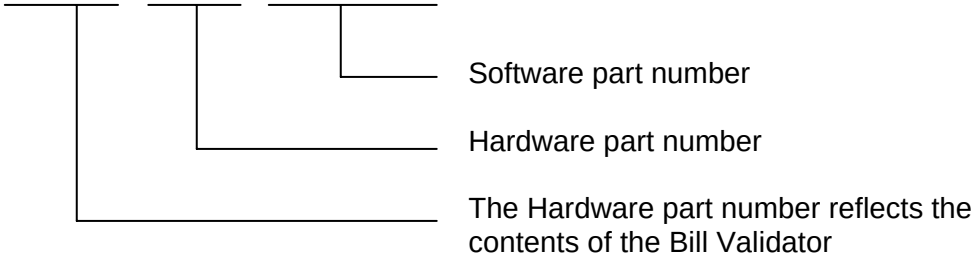
1) New software can be ordered with a single-download Memory stick. The software from the new Memory stick is downloaded as soon as it is inserted into the slot, and the Bill Validator is powered on. The Memory stick must be present at all times for the Bill Validator to operate.

2) New software can be ordered with a multi-download Memory stick. The multi-download Memory stick allows the operation of the MSM bill validator without the Memory Card. Thus the Memory stick can be used for updating the next Bill Validator, depending on the number of licenses ordered. Typically a multi-download Memory stick is issued for a limited number of downloads, and therefore the number of licenses required must be defined in the user's order.

3) A special Memory stick can be ordered, which allows the download of new software through the interface connector. After the download, the Memory stick must be present in the Bill Validator at all times. If the host controller supports the CCNET interface, then the download can be done via the host controller (and local network). Other interfaces do not support this download feature. Downloads in this case can be completed with any personal computer (PC or laptop) and a CashCode adapter. (The Validator must be temporarily disconnected from the host controller). Instructions for Memory stick replacement and software updates can be found in the chapter named "SOFTWARE UPDATES".

Final part numbers for the MSM bill validator consist of two parts: a hardware part number and software part number.

Example: **MSM – 2005 US7712**



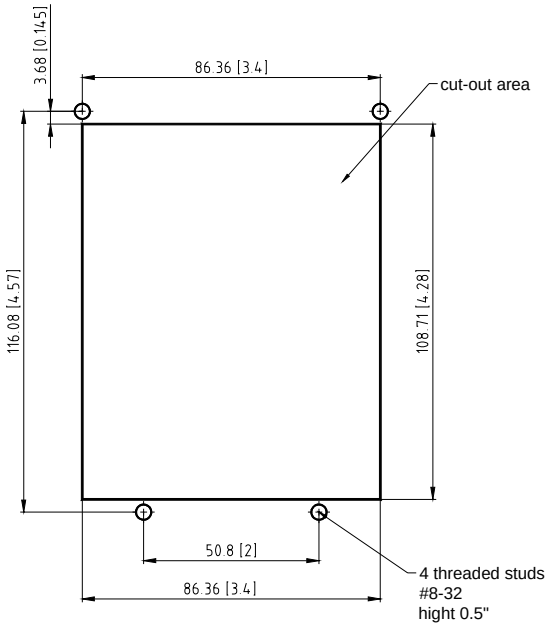
The Software part number reflects country (currency) and communication protocol.

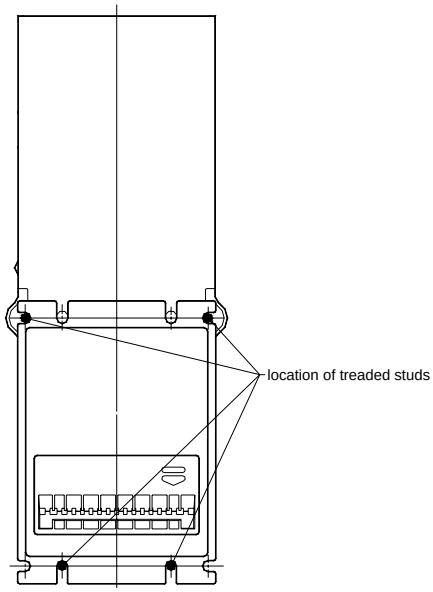
The cassette part number can be picked at the page 16. Typically, customer needs to order more cassettes than bill validators – empty cassettes may be required for replacement during money collection.

INSTALLATION

Bill validator installation

The MSM bill validator is placed on the front door (or panel) of the machine from inside. The front door must have a rectangular cutout and four threaded studs as per picture below.



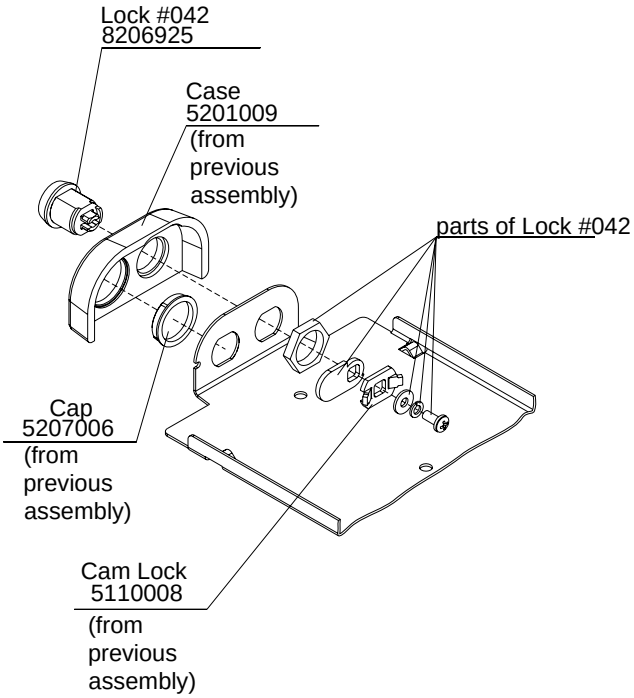


For harness connection please refer to the next part.

Cassettes

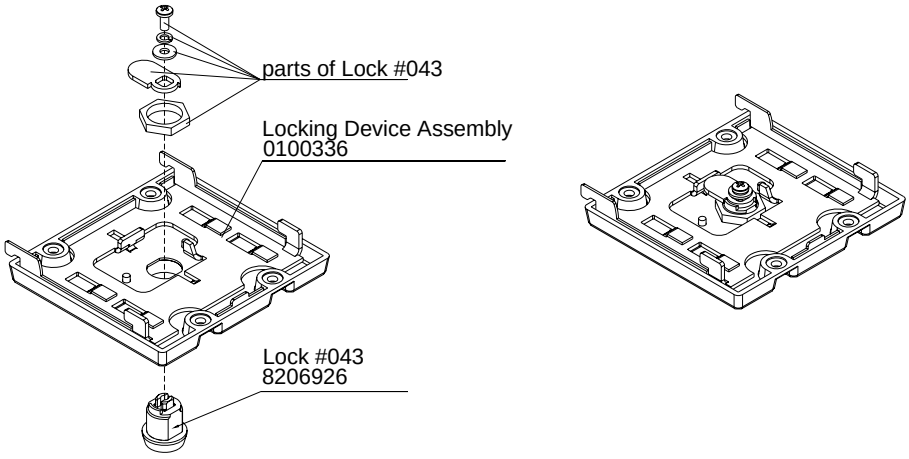
Metal lock installation

1. Open the cassette cover. Remove screw from the plastic handle at the cassette cover.
2. Disassemble the metal lock and install it on the cassette cover as shown below

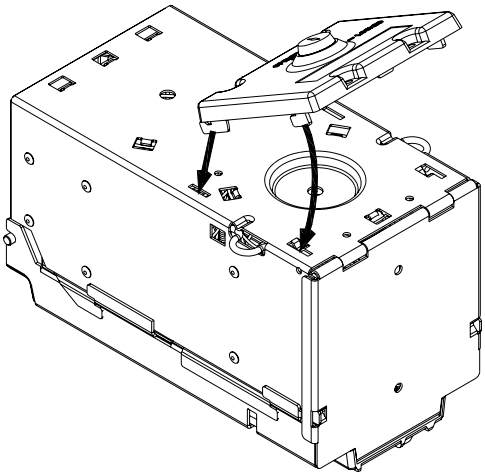


Locking mechanism installation

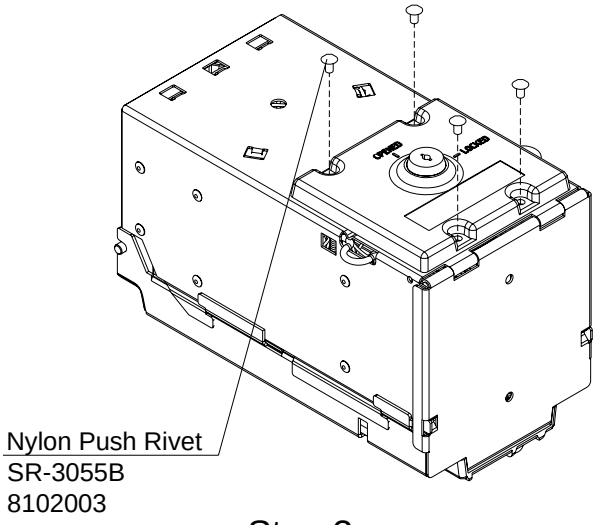
1. Disassemble the metal lock and install it on the Locking Device Assembly as shown. The cam of the lock is shown in “LOCKED” position. Perform this step if the lock is not installed on the locking device.



2. Insert the key into the lock and turn it to the “OPENED” position. Insert two tabs of the locking device into the slots in the cassette. Rotate the locking mechanism and insert two other tabs of the locking device into the corresponding slots in the cassette. Turn the key to the “LOCKED” position



Step 2



Step 3

3. Secure the locking mechanism with 4 plastic push rivets.

INTERFACE CONNECTION

The BackLoad Bill Validator (MSM) has the flexibility to offer five different hardware interface options:

Type 1: Opto-Isolated, 24 Volt DC/AC, MDB Interface (Using Adapters Single Price Interface and Host Intelligence Interface).

Type 2: Opto-Isolated, 12 Volt DC, Isolated Pulse Interface

Type 3: TTL level , 12 Volt DC, CCS Interface.

Type 4: RS232 levels, 12 Volt DC, CCNET (single slave mode) or ID-003.

Type 5: TTL level, 12 Volt DC, CCNET (single slave mode) or ID-003.

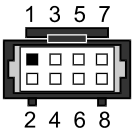
For detailed interface descriptions, please refer to the corresponding Interface Description Manual.

The manual may be downloaded from the CashCode website at www.cashcode.com

The type of interface hardware depends on CPU board.

Opto-isolated version (Type1, CPU Board 0401018):

Pin Assignment
(cable connector):



Molex, Part #: 15-04-5084, 1 psc;
50-57-9304, 2 psc;
16-02-0086, 8 psc

Signal descriptions:

TERMINAL	SIGNAL	FUNCTION	ACTIVITY
1	DC/AC POWER RET	POWER	-
2	34V DC/24V AC	POWER	-
3	GROUND	GROUND	-
4	ADDITIONAL OUTPUT	AUXILIARY OUTPUT	LOW
5	MASTER RECEIVE	MASTER RECEIVE INPUT	HIGH /LOW
6	ADDITIONAL INPUT	AUXILIARY INPUT	HIGH
7	COMMON	COMMUNICATION'S COMMON	-
8	MASTER TRANSMIT	MASTER TRANSMIT OUTPUT	HIGH /LOW

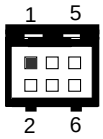
The additional circuits (ADDITIONAL OUTPUT, ADDITIONAL INPUT)are used for control of adapters.

When used in the external equipment supporting the Single Price Interface, the Back Load Bill Validator must be connected with Single Price Interface Adapter (OPT-AD-SP).

When used in the external equipment supporting the Host Intelligence Interface, the Bill Acceptor must be connected with Host Intelligence Interface Adapter (OPT-AD-EX).

Isolated Pulse Interface (Type2, CPU Board 0401017):

Assignment (cable connector):



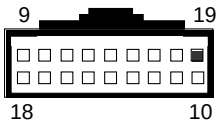
Molex, Part #:15-04-5064, 1 psc;
50-57-9303, 2 psc;
16-02-0096, 6 psc..

Signal descriptions:

TERMINAL	SIGNAL	FUNCTION	ACTIVITY
1	**+ 12 V DC Power**	**Power Supply (+)**	-
2	**Ground**	**Power Supply (-)**	-
3	**Pulse Output 1**	**Pulse Signal**	Current Presence
4	**Pulse Output 2**	**Pulse Signal**	
5	**Inhibit Line (+)**	**Enable/Disable** Accept Bill	Current Presence is Enable Accept Bill
6	Inhibit Line (-)		

CCS, CCNET and ID-003 Interfaces (Type3 –Type5, CPU Board 0401017):

Assignment (cable connector)



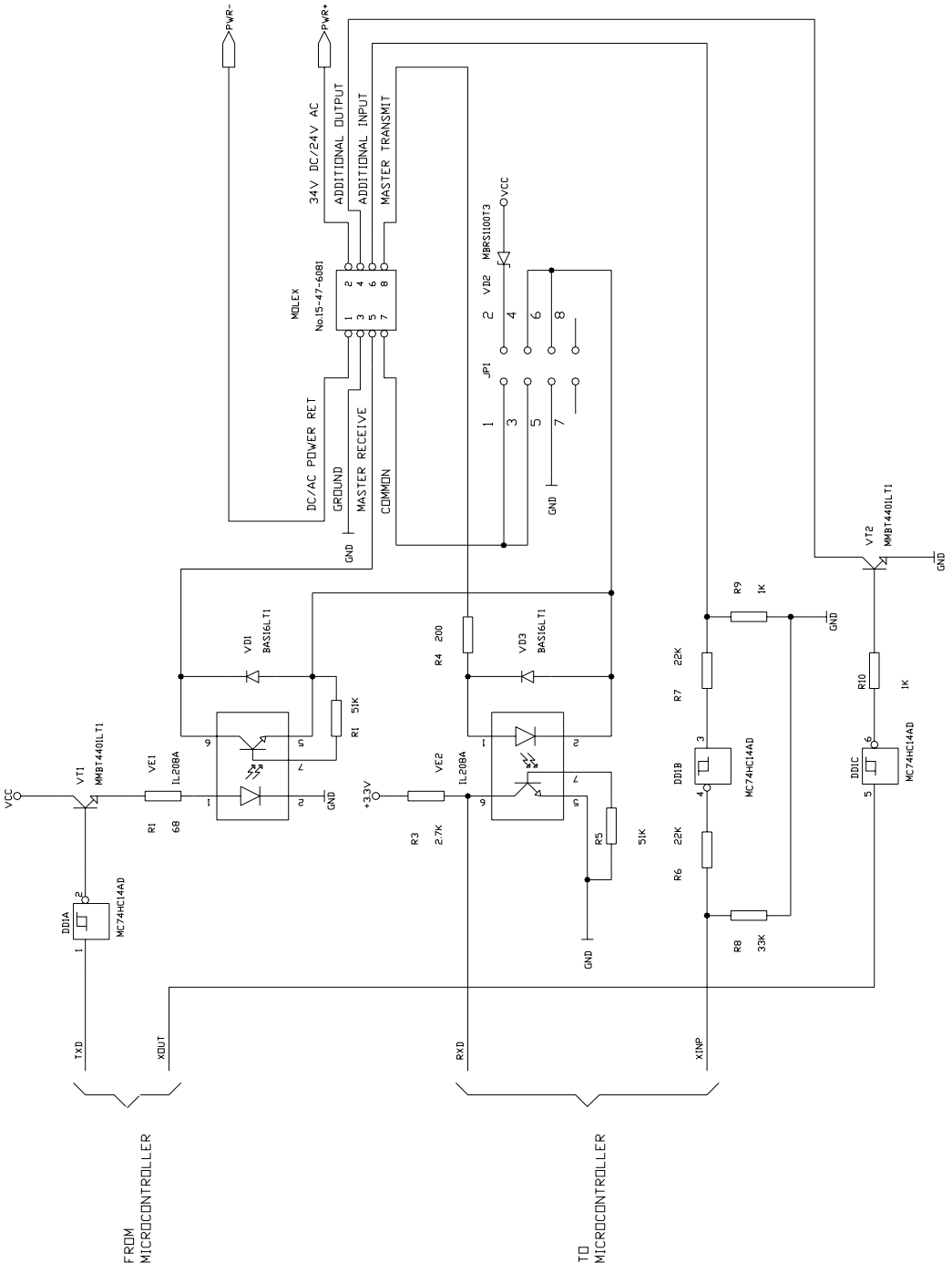
AMP, Part #:102398-7, 1 psc;
102536-7, 1 psc;
102681-4, 1 psc.

Signal descriptions:

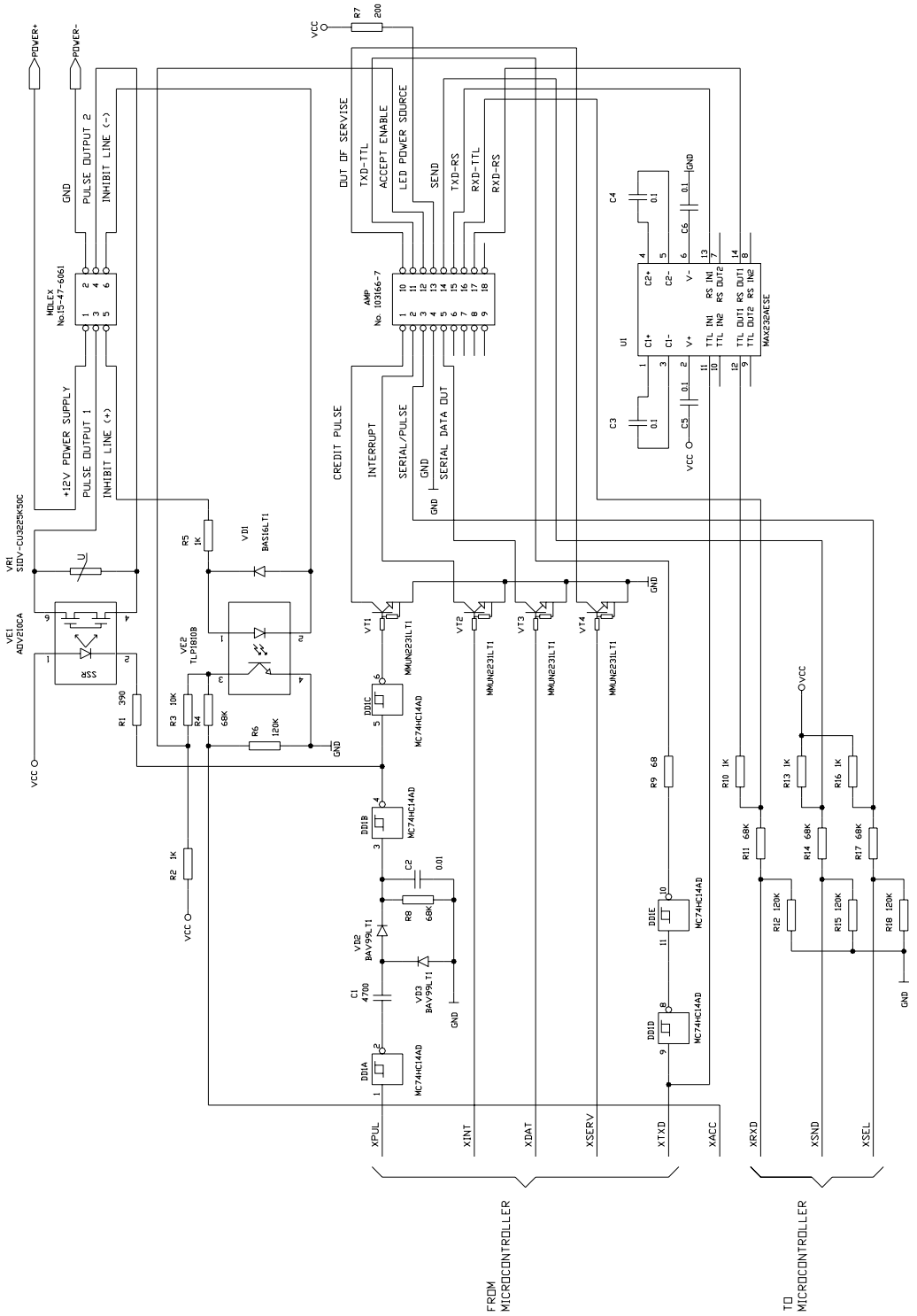
TERMINAL	SIGNAL	FUNCTION	ACTIVITY
1	**Credit Pulse**	**Pulse Signal NIP Interface (output)**	**Low**
2	**Interrupt**	**Availability to transfer a status message (output)**	**Low**
3	**Serial/Pulse Select**	**Interface type (input)**	**High/Low**
4	**Ground**	**Signal Ground**	**----------**
5	**Serial Data Output**	**An eight bit status message (output)**	**High/Low**
6	**Not connected**	**----------**	**----------**
7	**Not connected**	**----------**	**----------**
8	**Not connected**	**----------**	**----------**
9	**Not connected**	**----------**	**----------**
10	**Out of Service**	**Any failure**	**Low**
11	**TXD-TTL**	**Transmitted data (TTL level)**	**High/Low**
12	**Accept Enable**	**Enable accept bill (input)**	**Low**
13	**LED Power Source**	**200 ohm to 5 VDC (output)**	**High**
14	**Send**	**Control system signal initiating transfer a status message (input)**	**Low**
15	**RXD-RS232**	**Received Data (RS232 level)**	**High/Low**
16	**RXD-TTL**	**Received Data (TTL level)**	**High/Low**
17	**TXD-RS232**	**Transmitted data (RS232 level)**	**High/Low**
18	**Not connected**	----------	----------

Input/Output circuits

For CPU board 0401018 (with MDB interface)



For CPU board 0401017 (with CCS, IPI, CCNET, BDS interfaces)



SWITCH SETTINGS

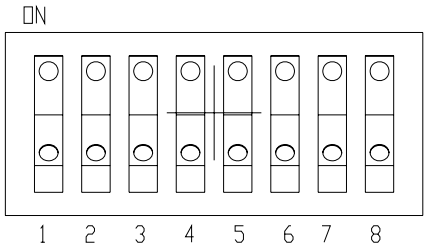
The switches are located at the CPU board.

The MSM bill validator operates in two basic modes: Validation Mode and Service Mode.

Validation Mode: This is the mode for normal operation. If a red status light is illuminated, it indicates that the validator is not ready to accept currency.

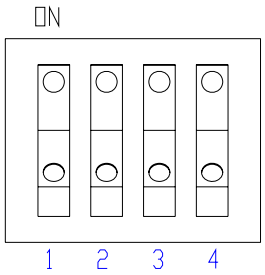
Service Mode: This is the mode for programming and testing the CashCode Bill Validator.

A set of 8 DIP switches (SW1) defines the settings and programs the Bill Validator to recognize and validate different denominations. But for some interface types (MDB, CCS) two last positions define type and parameter of interface.



A set of 4 DIP switches (SW1) defines the settings of interface type.

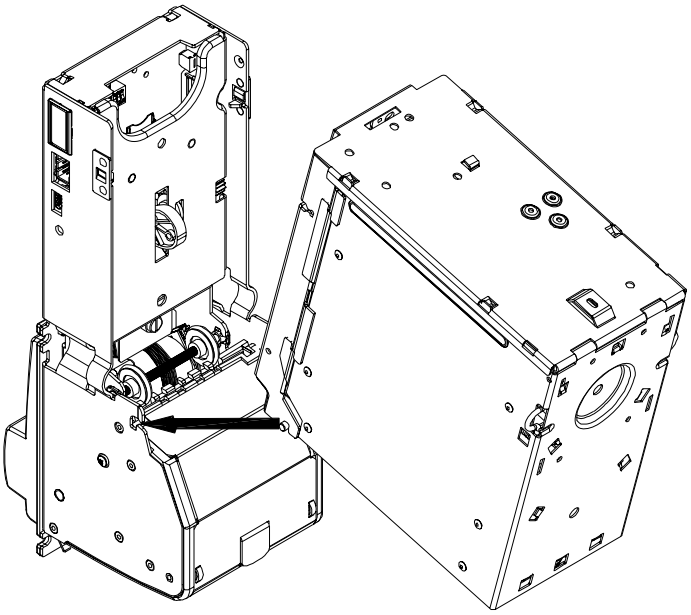
For a complete explanation of switch description, please see the software User's Guide (enclosed to each bill validator and available at www.cashcode.com).



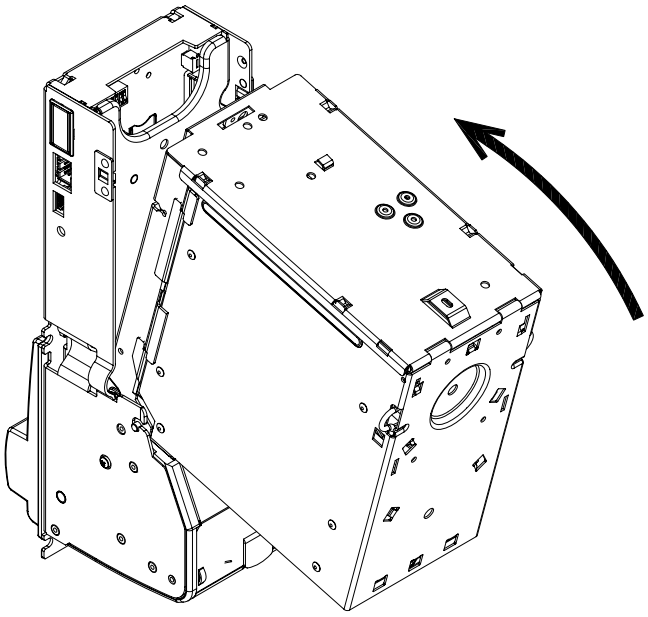
MAINTENANCE AND SERVICE

Cassette removal and installation

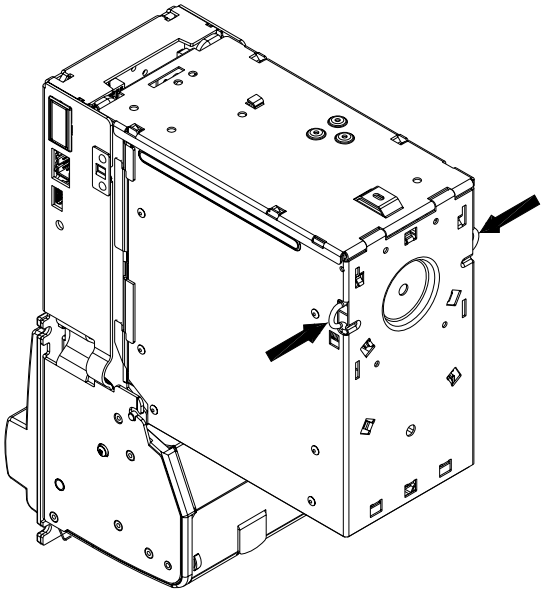
1. To install the cassette into the bill validator direct two bosses of the cassette to corresponding slots in the validator housing.



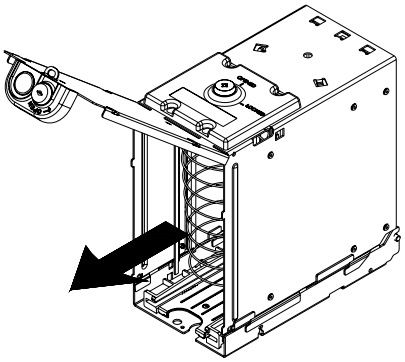
2. Rotate the cassette in the direction of arrow till fasteners of the cassette hook the latches at the validator housing. This action can be done for all types of cassettes whether they are equipped with second metal lock or not, as well as for the “gaming” cassette.

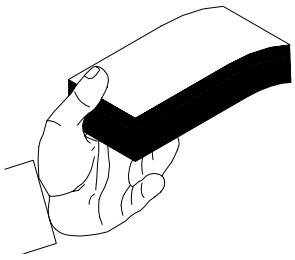


3. To remove the cassette, squeeze the two fasteners at the rear side of the cassette and pull the cassette. If the cassette carries additional locks, unlock them first.

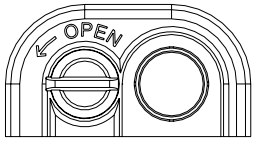


4. To collect bills from the cassette open the lock (or locks) at the cassette cover and open the cover. Remove bills. Close the cover.

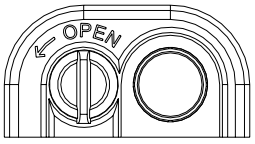




no lock variant
positions of plastic handle



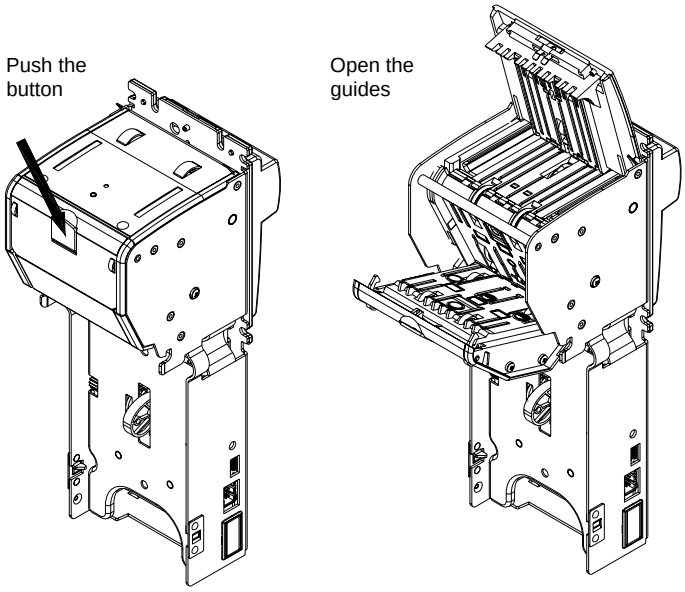
unlocked position



locked position

Access to the bill path

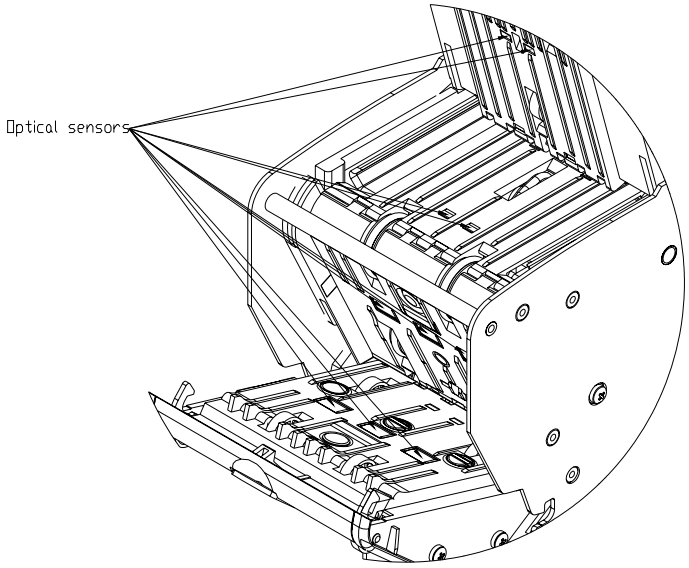
The access to the bill path is possible when the cassette is removed.



The guides can be closed in any sequence.

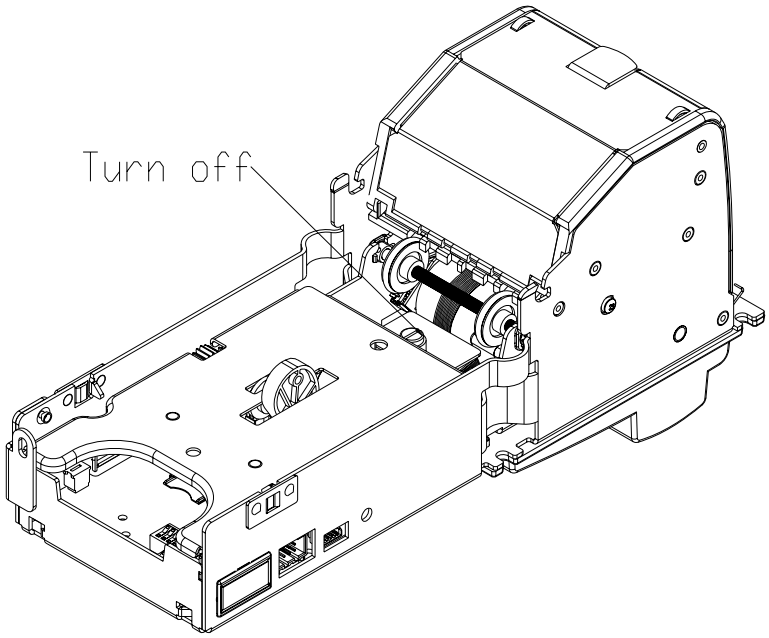
During normal operation some dirt from bills can be transferred to the walls of the bill path and to the sensors. This may be a reason for reducing acceptance rate.

It is recommended to clean the surface of the sensors with a soft cloth. Isopropyl alcohol may be used to remove the dirt.

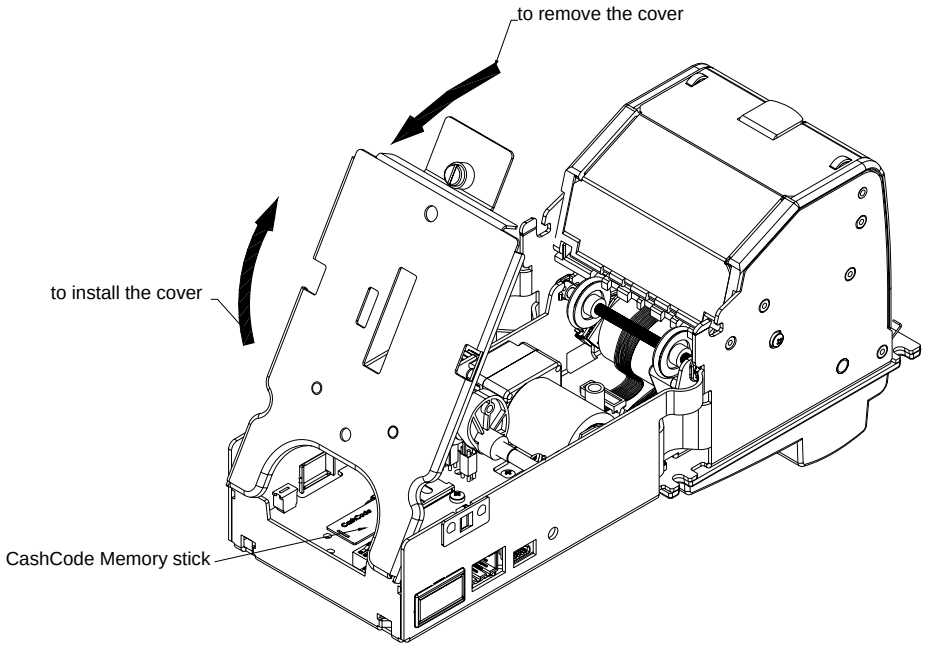


Access to the switches and to the Memory stick

1. Lift the cover from the CPU board. Switches and Memory stick are placed on the CPU board.



2. When placing cover back, place the right side of the cover first, as shown.



The location of switches and Memory stick on CPU board may vary.

SOFTWARE UPDATES

To ensure the proper operation of the MSM Bill Validator, software updates can be ordered according to the original MSM part number.

The MSM Bill Validator is shipped with pre-installed software, according to a user's ordered specifications.

Download procedure for a single-download Memory Card:

Step 1. Turn Power OFF.

Step 2. Remove Cassette and open CPU cover.

Step 3. Remove the Dummy Card (or Memory stick) from the Memory stick slot of the CPU Board.

Step 4. Insert the new CashCode Memory stick into the Memory stick slot of the CPU Board.

Step 5. Close cover and insert cassette.

Step 6. Turn Power ON and wait until the download process is completed. During the download, a red-green status light will blink. Once the download is completed, the diagnostic light will turn green. Should the light stay red; this means there is no communication between the MSM Bill Validator and the host controller. A single-download Memory stick must be present in the Bill Validator at all times.

Download procedure for the multi-download Smart Stick:

Please refer to the instructions concerning the single-download Memory stick. Follow steps 1, 2, 4, 5 and 6. After the successful completion of step 6, follow steps 1, 2, 3 and 5.

The Memory Card can be used to update more units, until the number of licenses is reached.

Download procedure via interface connector:

In order to properly complete an interface download, the Memory stick must be present in the Memory stick slot at all times – before and during the download.

1. When the SM Bill Validator has a CCNET protocol, the software download can be completed via the host controller (refer to CCNET Protocol Description).

2. For a direct download via the interface connector, please follow the instructions below:

Step 1. Turn power OFF.

Step 2. Disconnect the interface connector from the Bill Validator.

Step 3. Connect the CashCode Adaptor (For CPU Board 0401017 use adaptor OPT-PS2-VU-CCNET, for Processor Board adapter 0401018 - OPT-AD-MDB-PC) : a) to the Computer, b) to the interface connector of the Bill Validator, and c) to the power outlet (AC 100-250V).

Step 4. From the computer, run the latest software version of the **MSM***.exe** program.

Step 5. Follow the instructions displayed on the computer screen.

Step 6. After completing step 5, disconnect the CashCode Adaptor: a) from the power outlet, b) from the Bill Validator, and c) from the Computer.

Step 7. Connect the interface connector to the Bill Validator.

Step 8. Turn power ON.

SOFTWARE UPDATE DIAGNOSTICS

Normally, the download process will be accompanied by a blinking red-green status light for about 1 minute. If the download has competed successfully, the status light will turn green. Should the download be unsuccessful, the status light will turn red, but short green flashes of light will alternate with a long red light ("green flashes on red").

The following table lists possible errors, which may take place during a download:

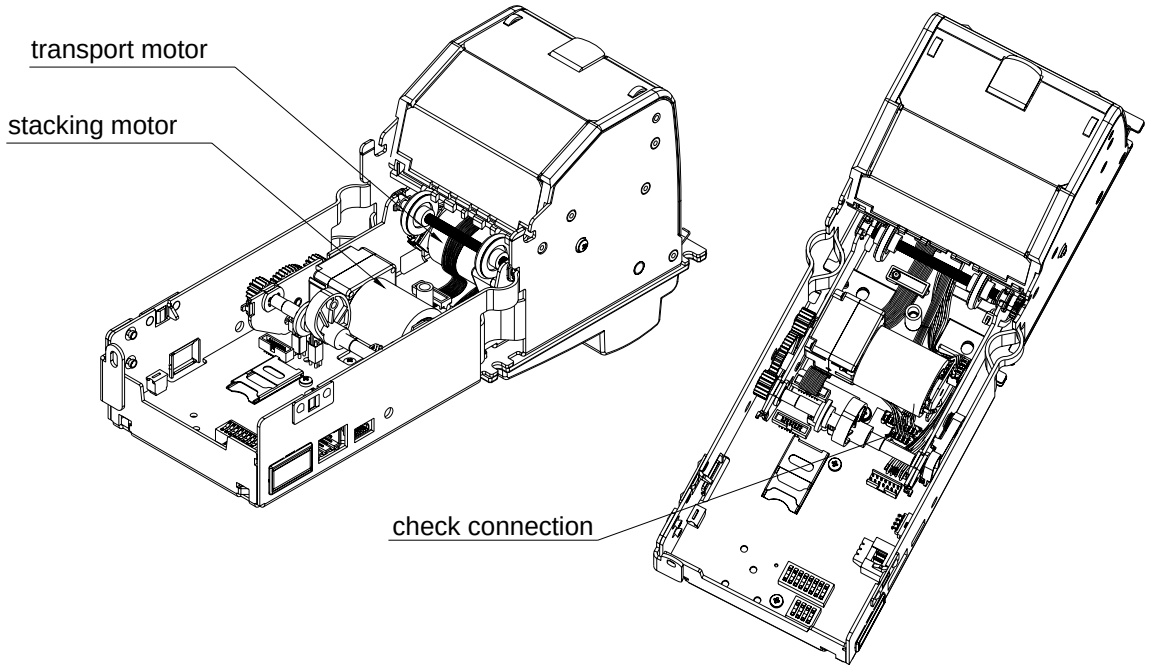
STATUS OF DIAGNOSTIC LIGHT	ERROR DESCRIPTION	FAULT – HANDLING
1 GREEN FLASHES ON RED	External interface ERROR in CCNET Download mode	1. Verify that software is suitable for CCNET download. 2. Repeat procedure.
2 GREEN FLASHES ON RED	Memory stick CRC ERROR	1. Turn POWER OFF, remove and insert the Memory stick again, turn POWER ON. 2. Replace Memory stick with the new one.
3 GREEN FLASHES ON RED	Incorrect data in Memory stick	1. Verify that the software is suitable to the Bill Validator type. 2. Insert correct type of CashCode Memory stick.
4 GREEN FLASHES ON RED	Memory stick is not inserted	Properly insert the Memory stick.
5 GREEN FLASHES ON RED	Wrong type of Memory stick	Insert correct type of CashCode Memory stick.
6 GREEN FLASHES ON RED	Failure during download	1. Turn POWER OFF, remove and insert the Memory stick again, turn POWER ON. 2.
7 GREEN FLASHES ON RED	Operation ERROR of Memory stick Interface	1. Turn POWER OFF, remove and insert the Memory stick again, turn POWER ON. 2. Replace Memory stick with new one.

TROUBLESHOOTING

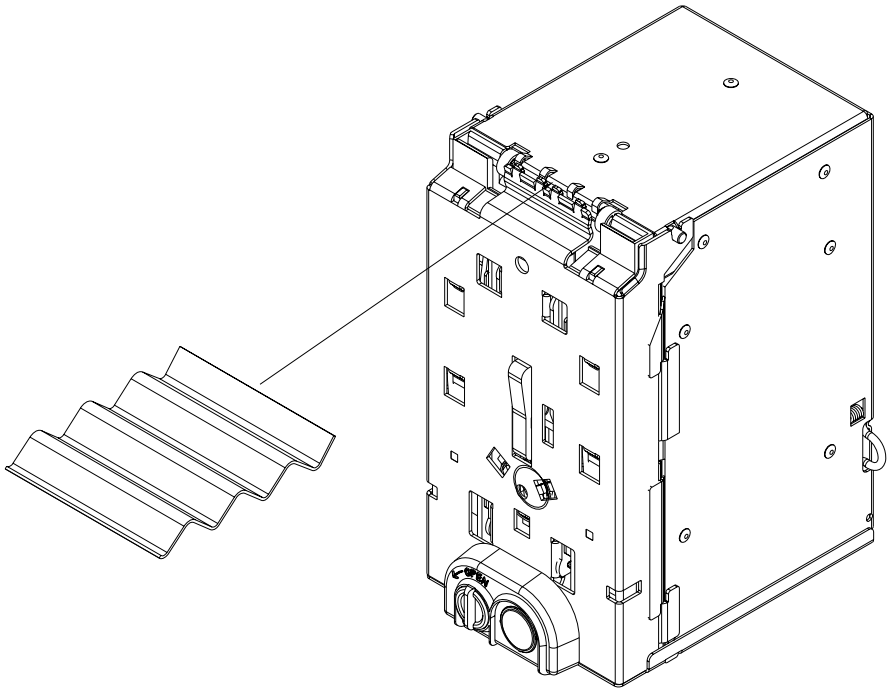
CashCode MSM Bill Validator is equipped with a self-diagnostic feature to aid in repair and maintenance. When the power to the Bill Validator is turned ON, the Bill Validator begins its self-diagnostic operation. If the self-diagnostic test is passed, then the status light will turn green. If an error is detected, then the status light on the front of the Bill Validator will blink red. The number of times the red light flashes on the Bill Validator is an indication of a specific problem or malfunction. A detailed list of these errors and corrective action is provided in the Diagnostics section to follow.

OPERATION MODE DIAGNOSTICS

Number of status light flashes	Error description	Fault - handling
1	Cassette is removed from the bill validator	Check if cassette is installed correctly
2	Wrong type of sensors or no communication with sensors	Check reliability of electrical connection to processor board



Number of status light flashes	Error description	Fault - handling
3	Cassette is full	Replace the cassette with empty one
4	Mechanical jam in cassette or stacker motor failure	1. Remove the cassette from the bill validator and remove jammed bill 2. Turn power on and check stacking motor operation
5	Failure of dielectric sensors	Open the guides and clean dielectric sensors.
6	Failure of optical sensors	Open the guides and clean optical sensors.
7	Failure of inductive sensors	Open the guides and clean inductive sensors.
8	Failure of transport motor	1. Open the guides and clean the bill path. 2. Remove the cassette from the bill validator and open the cover. Check mechanical and electrical connections
11	Bill pathway is not empty	Open the guides and check the condition of the bill path
12	Bill jam in entry slot of the cassette. No credit issued.	Remove the cassette from the bill validator and clean the bill path.



TECHNICAL SUPPORT

CashCode Corporate Headquarters:

CashCode Company Inc.
553 Basaltic Road
Concord, Ontario
Canada L4K 4W8

Phone: 1-800-584-2633 (1-905-303-8874)
Fax: 1-800-593-2633 (1-905-303-8875)
E-mail: support@cashcode.com
Website: www.cashcode.com