

CashCode FrontLoad Series

FrontLoad Bill Validator

Operation and Service Manual

Part 1. Operation Manual

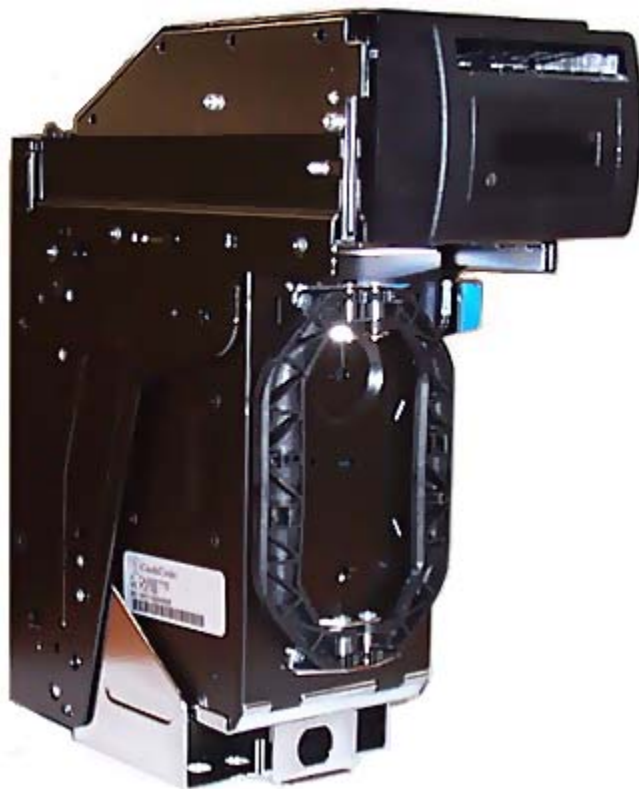


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INTRODUCTION

The scope of this document is to provide full and clear information about the FL/MFL series of CashCode bill validators.

This documents will be useful for those whose needs are:

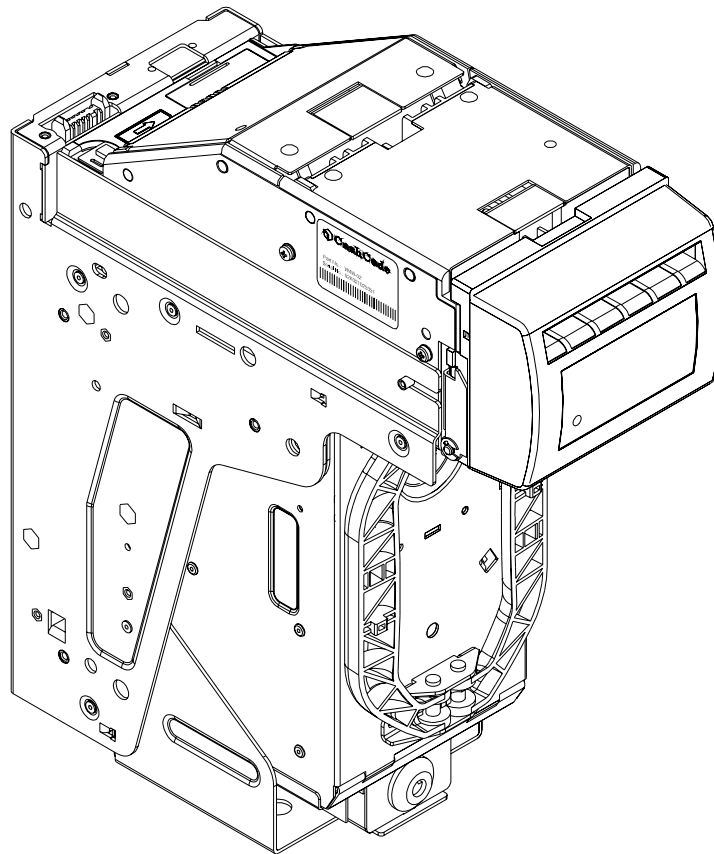
- Development of new equipment with FL/MFL bill validators;
- Choice of the part number for the FL/MFL bill validator;
- Installation of the FL/MFL bill validator;
- Maintenance and service for the FL/MFL bill validator;
- Repair of the FL/MFL bill validator.

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

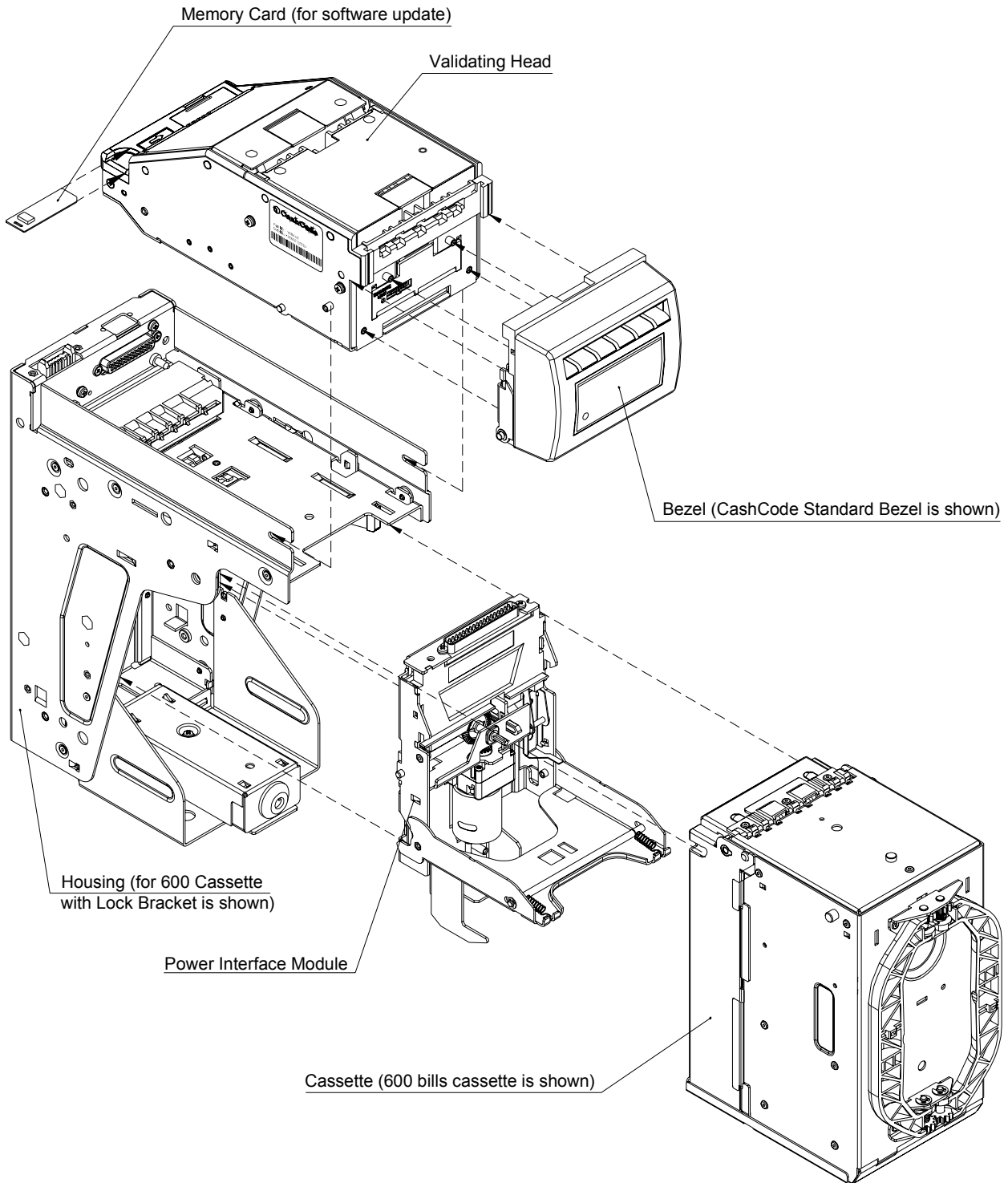
PRODUCT OVERVIEW

CashCode's FrontLoad bill validator was developed to validate a wide variety of currencies. The unit's modular design provides extreme flexibility, allowing you to customize the bill validator to suit your individual requirements.

The CashCode FrontLoad bill validator provides front access to a lockable cassette.



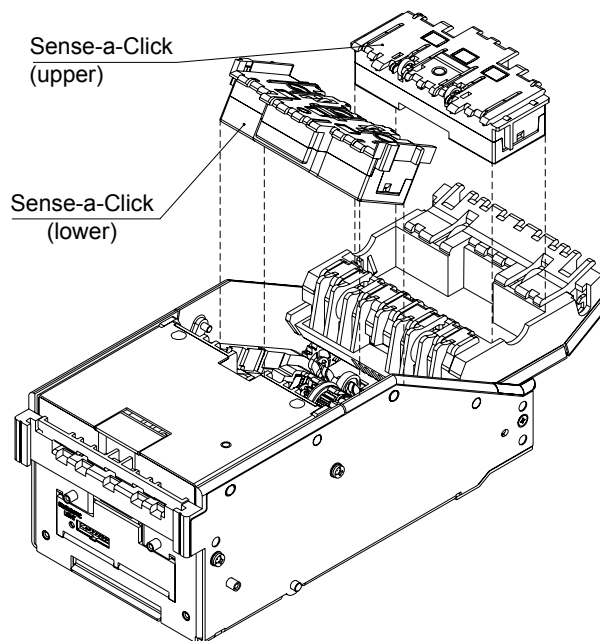
The FrontLoad bill validator consists of six main modules. Each module is available in different variations, to suit your needs. The picture below illustrates the different modules.



The FrontLoad bill validator is designed accommodate bills of different sizes from 62 to 82 mm width, and from 125 to 172 mm length – which encompasses most currencies.

Certain currencies have different widths depending on denomination. For accurate validation of such currencies, the **Validating Head** with a centering mechanism should be used. For currencies of a fixed-width, the **Validating Head** with a fixed-width path can be used.

Replaceable “**Sense-a-Click™**” sensor pak modules recognize and validate a specific currency, depending on the hardware installed in the sensor pak. The **Power Interface** module offers different interface options. The lockable-removable **Cassette** is used for temporary storage of validated bills. It can be locked with two standard s” tubular locks . The Cassette is available in two sizes: 600 or 1000



The Validating Head carries a set of Sense-a-Click™ sensor pak modules

Bill Capacity (600 or 1000 bills) refers to the amount of new bills that the **Cassette** can store. This amount of street grade bills may not be stored, due to their greater space requirement. The **Housing** joins all the other modules. **Housing** is permanently secured inside a Gaming or Vending machine. There may be a mechanism for locking the **Cassette** within the **Housing** (Lock Bracket), or there may be a Plain Bracket. The **Housing** also contains security switches, which detect Cassette removal. Several **Bezel** styles are available for the FrontLoad. Software updates can be easily completed with a **Memory Card**.

This modular design of the FrontLoad validator allows for replacement of failed modules in the field –

GENERAL SPECIFICATIONS

Acceptance:

Bills.....	lengthwise 4 ways
Barcoded Coupons.....	two ways, face up
Validation rate.....	96% or higher on first insertion
Width of bill, in mm.....	from 62 to 82
Maximum length of bill, in mm.....	172
Minimum length of bill, in mm.....	124
Bill escrow.....	one bill

Barcoded Coupon specifications:

Encoding standard.....	ANSI/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

Time of identificaion, in seconds.....2.5
(from time of bill insertion to time that credit is issued, in seconds)

Full validation time, in seconds:

Multi-width rontLoad.....	4.5
FrontLoad.....	3.5

External interface:

- Serial Interface, Opto-Isolated.
- Serial Interface, RS 232C.
- Isolated Pulse Low Current.

Smart Card (for bill validator with a Smart Card bezel):

Smart Card standard.....	EMV2000L1 and/or ISO 7816 compatible
Number of supporting payment systems.....	up to 4 simultaneously

Maximum stacking capacity of new bills in Cassette.....600 or 1000

Power supply voltage*.....12 V.D.C. \pm 1.0 V
or 24 V.D.C. \pm 4.0 V

Current consumption*:

Operating mode (max).....	2.0 A
Standby.....	0.2 A

Power consumption*, W:

Idle mode.....	2.4 W
Validation mode.....	12 W

(* for validator without active light bezel)

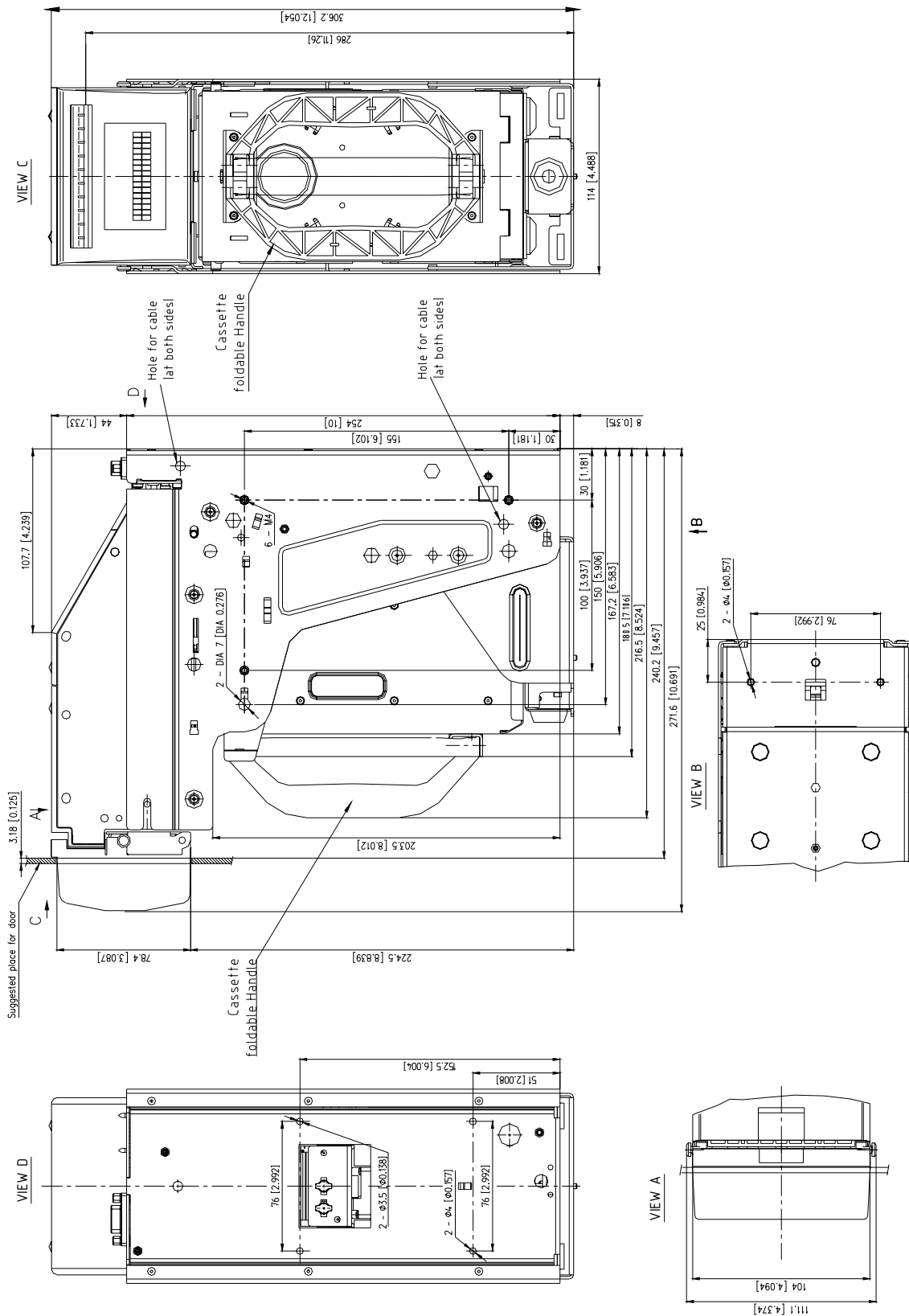
GENERAL SPECIFICATIONS (continue)

Environment:

- a. Operating Temperature..... 0 °C to +50 °C
- b. Storage Temperature..... -30 °C to +60 °C
- c. Humidity (non-condensing)..... 30%-90%RH

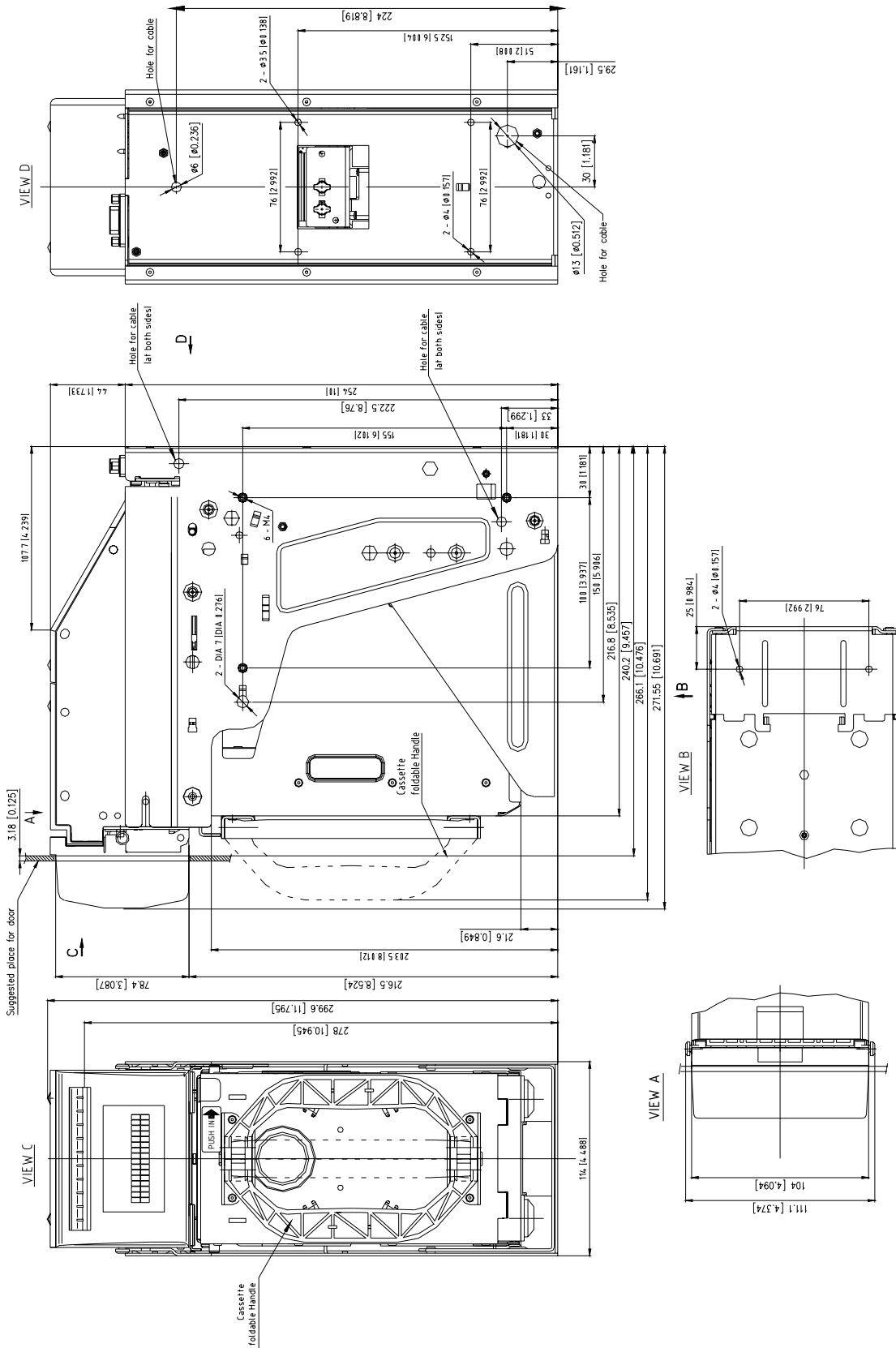
DIMENSIONS

BILL VALIDATOR WITH STANDARD BEZEL, 600 BILL CASSETTE AND LOCKING MECHANISM

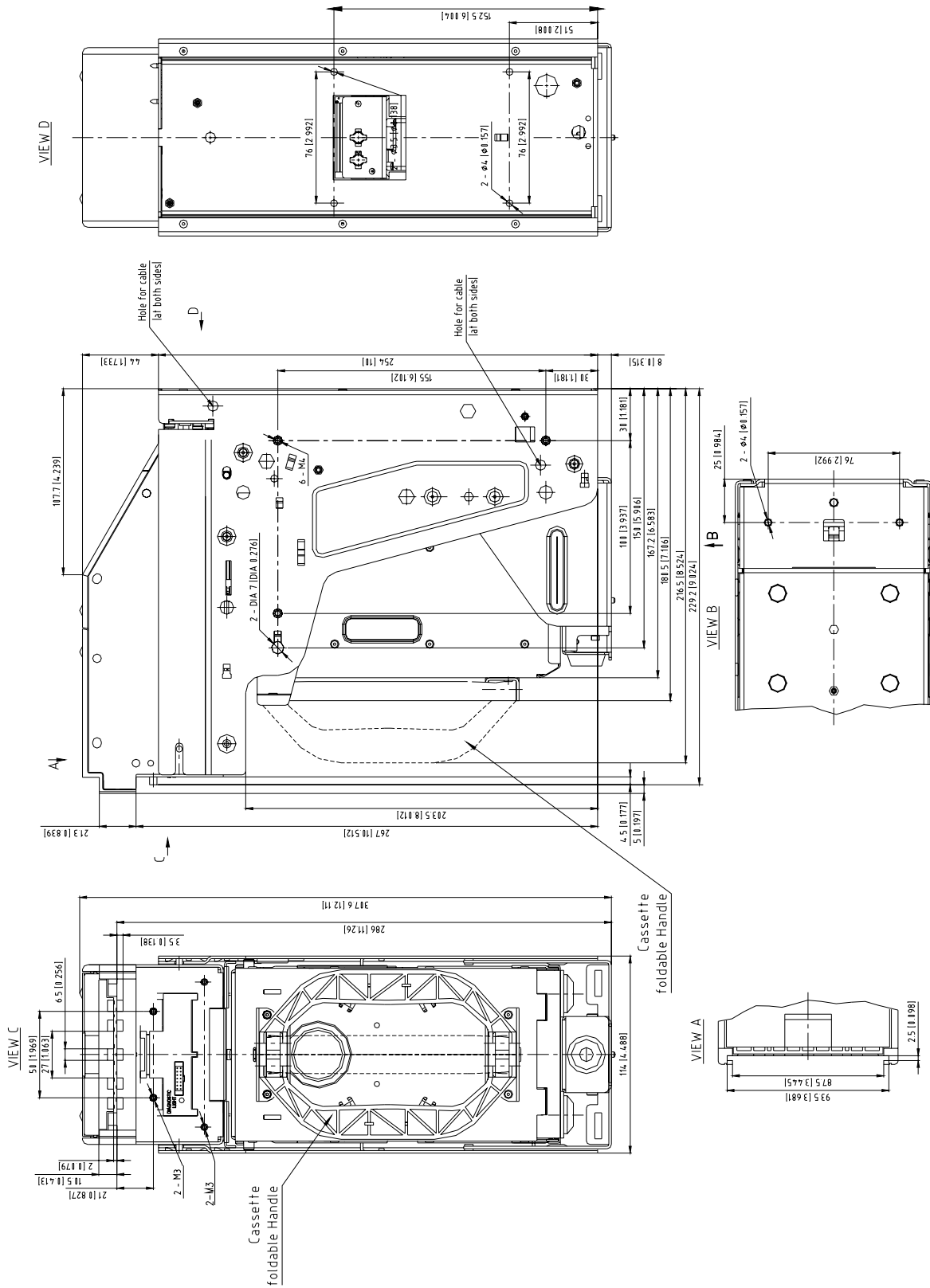


DIMENSIONS

BILL VALIDATOR WITH STANDARD BEZEL, 1000 BILL CASSETTE AND NON- LOCKING MECHANISM

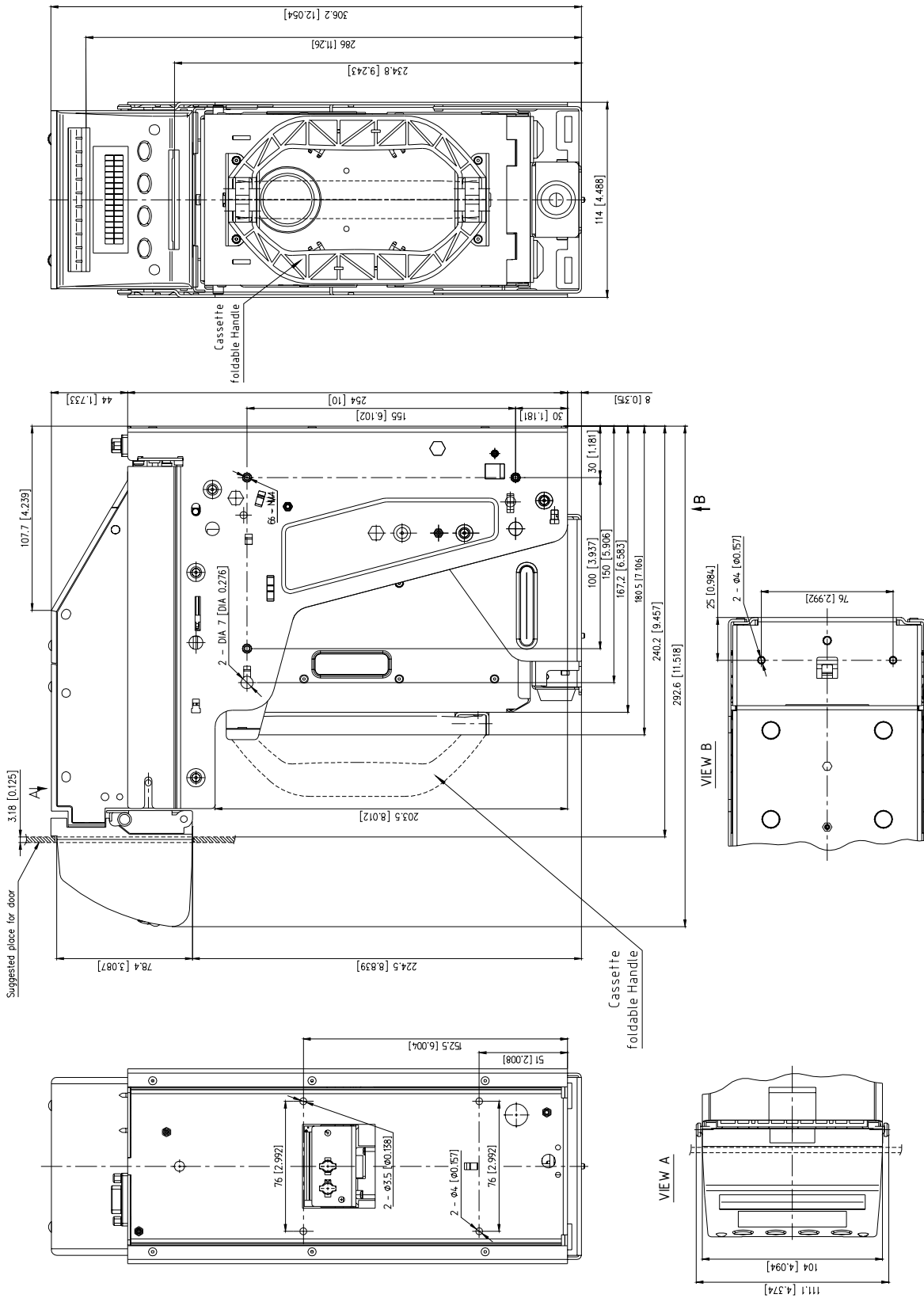


BILL VALIDATOR WITHOUT BEZEL, 600 BILL CASSETTE AND LOCKING MECHANISM



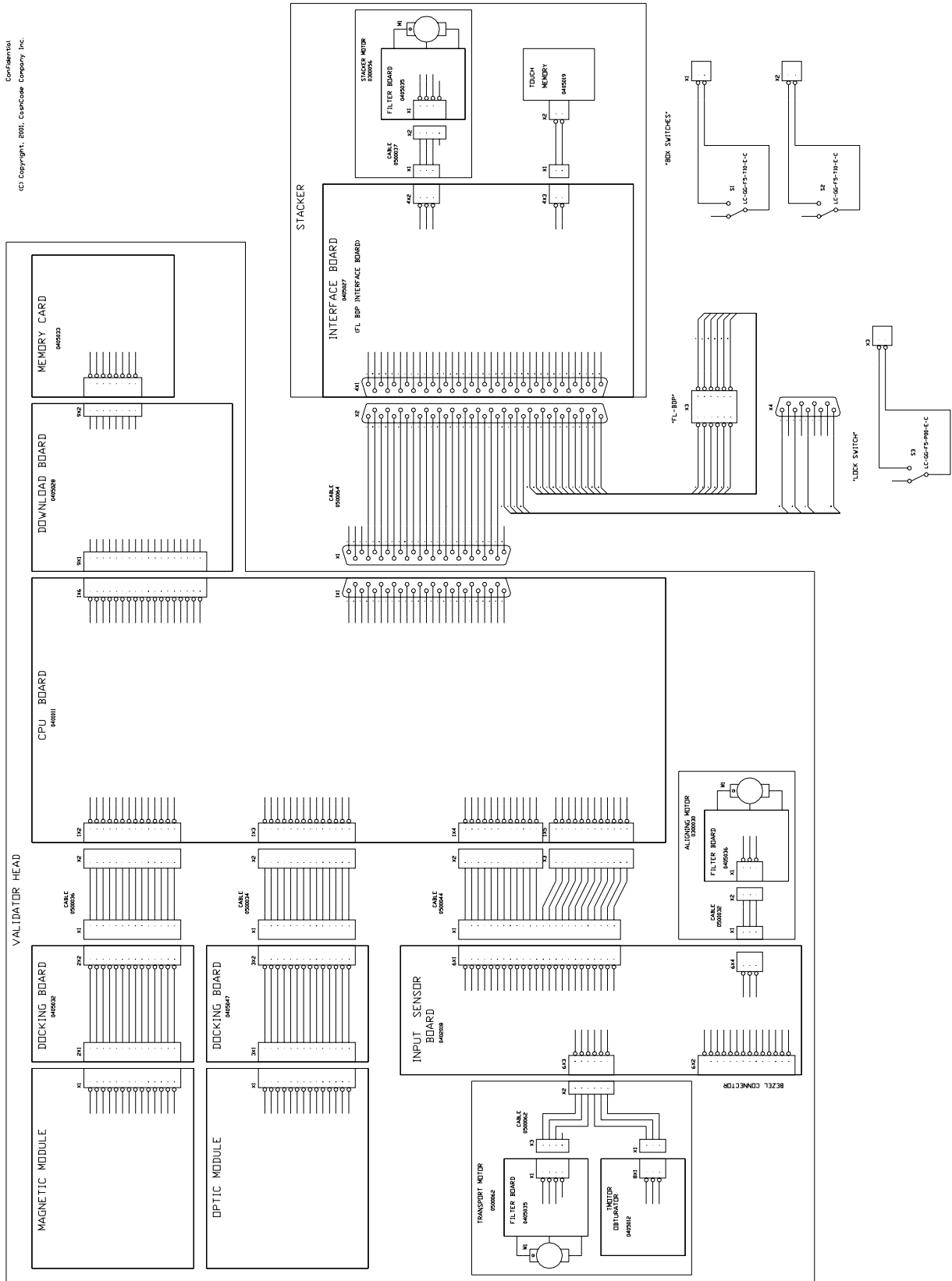
DIMENSIONS

BILL VALIDATOR WITH SMART CARD READER, 600 BILL CASSETTE AND LOCKING MECHANISM



GENERAL WIRING DIAGRAM

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GENERAL WIRING DIAGRAM

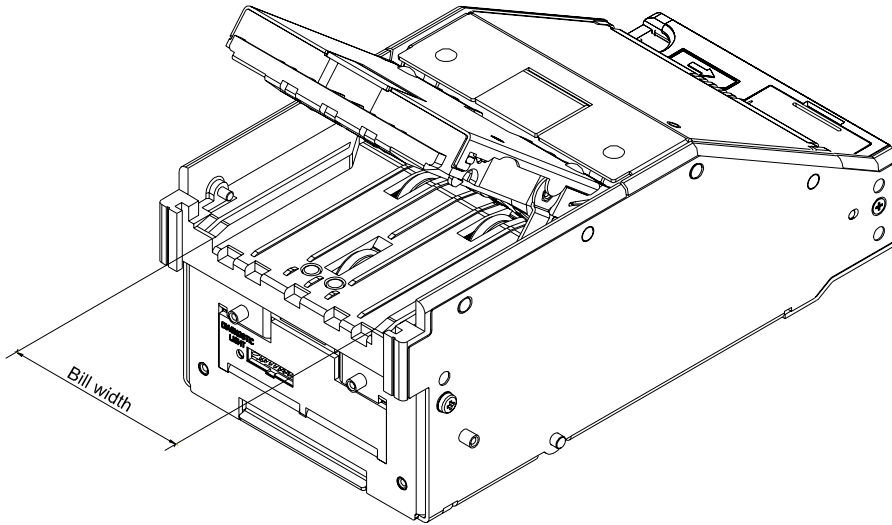
MODULAR SYSTEM

A **Modular System** is an interchangeable group of parts – easily configured to a user's specifications. Below is a more detailed description of each module and its features.

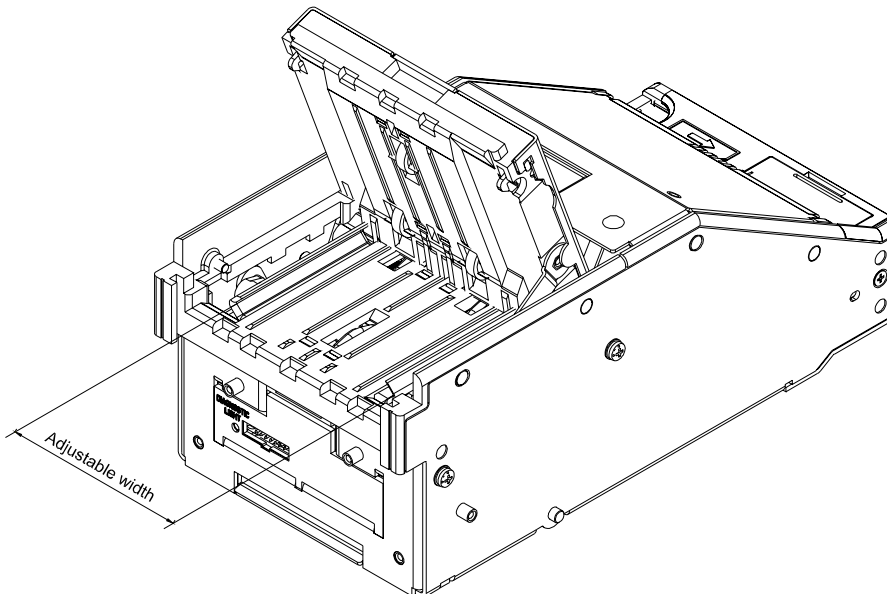
VALIDATING HEAD

The **Validating Head** has the following options:

- 1) The Validating Head with a fixed-width path is available for bill widths 62, 64, 66, 68, 70, 72, 74, 76, 78, 80 and 82 mm.



- 2) The Validating Head with a centering mechanism has a self-adjustable bill path. The width of the path is automatically adjusted to accommodate each bill. This type of Validating Head is used for currencies where the width of the bill changes with the denomination.



3) The “Model” of Validating Head reflects the type of electronics used within, and determines the compatibility with other modules.

Part Number	Description	Model	Availability
FLV-0310	Bill width 66 mm	A	yes
FLV-0510	Bill width 70 mm	A	yes
FLV-9014	Bill width 66 mm, Coated PCBs	A	yes
FLV-9016	Bill width 70 mm, Coated PCBs	A	yes
MFLV-2110	Multi-width (62-82 mm)	A	yes
MFLV-9013	Multi-width (62-82 mm), Coated PCBs	A	yes

Listed below are the Validating Heads for different countries. The list does not cover all possible countries - for countries that are not in the list, please contact CashCode Customer Service.

Country (currency)	Validating Head part number
Argentina	FLV-0310
Australia	FLV-0310
Austria	MFLV-2110
Belarus	MFLV-2110
Brazil	FLV-0310
Bulgaria	MFLV-2110
Canada	FLV-0510
Chile	FLV-0510
China	MFLV-2110
China + Hong Kong	MFLV-2110
Colombia	FLV-0510
Czech Republic	MFLV-2110
Dominican Republic	FLV-0310
East Caribbe	FLV-0510
Egypt	FLV-0510
European Union (Euro)	MFLV-2110
Euro + Switzerland	MFLV-2110
Euro + British + Northern Irish	MFLV-2110
Estonia	FLV-0510
Georgia	MFLV-2110
Great Britain	MFLV-2110
Great Britain + Scottish	MFLV-2110
Guatemala	FLV-0310
Hong Kong	MFLV-2110
Japan	MFLV-2110
Kazakhstan	MFLV-2110
Korea	MFLV-2110
Latvia	FLV-0310
Lithuania	FLV-0310
Macau	MFLV-2110
Macedonia	FLV-0510
Malasya	MFLV-2110
Mexico	FLV-0310
Morocco	MFLV-2110
New Zealand	MFLV-2110
Norway	MFLV-2110
Philippines	FLV-0310
Romania	MFLV-2110
Russia	MFLV-2110
Scotland	MFLV-2110
Singapore	MFLV-2110
Slovakia	MFLV-2110
South Africa	FLV-0510
Taiwan	MFLV-2110
Thailand	MFLV-2110
Ukraine	MFLV-2110
USA	FLV-0310
USA + Aruba	MFLV-2110
USA + Canada	MFLV-2110
USA + Cayman Islands	MFLV-2110
USA + Euro	MFLV-2110
USA + Euro + Russia	MFLV-2110
USA + Great Britain	MFLV-2110
USA + Mexico	FLV-0310
Venezuela	FLV-0510

SENSE-A-CLICK® MODULES

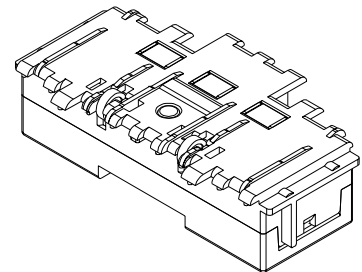
“Sense-a-Click™” sensor paks are a set of two modules – one upper and one lower. In order to be compatible with each other, both modules must have the same part and model number.

The Sense-a-Click™ set is identified by:

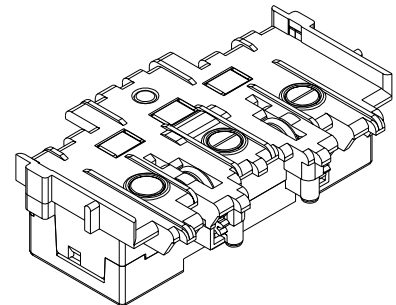
- Color and position of the optical sensors;
- Number and position of the Inductive sensors;
- Capacitive sensors;
- Model, which reflects the type of electronics housed within, and determines the compatibility with other modules.

Part number of the Sense-a-Click for specific currency must be chosen by CashCode Engineering department. Samples of Sense-a-Click part numbers can be found in the chart below. To get more information about Sense-a-Click type, please register at www.cashcode.com.

Currency		Part Number for Sense-a-Click Sensor Paks			Model
		Set of two modules	Upper module	Lower module	
Argentina	AR	FLS-1704	FLS-1704U	FLS-1704L	A
Australia	AU	FLS-1704	FLS-1704U	FLS-1704L	A
Belarus	BY	FLS-1704	FLS-1704U	FLS-1704L	A
Brazil	BR	FLS-1704	FLS-1704U	FLS-1704L	A
Bulgaria	BG	FLS-1704	FLS-1704U	FLS-1704L	A
Canada	CA	FLS-1801	FLS-1801U	FLS-1801L	A
Chile	CL	FLS-1704	FLS-1704U	FLS-1704L	A
China	CN	FLS-1705	FLS-1705U	FLS-1705L	A
China + Hong Kong	CN+HK	FLS-1705	FLS-1705U	FLS-1705L	A
Colombia	CO	FLS-1704	FLS-1704U	FLS-1704L	A
Czech Republic	CZ	FLS-1704	FLS-1704U	FLS-1704L	A
Dominican Republic	DO	FLS-1704	FLS-1704U	FLS-1704L	A
East Caribbe	XC	FLS-1704	FLS-1704U	FLS-1704L	A
Egypt	EG	FLS-1704	FLS-1704U	FLS-1704L	A
Estonia	EE	FLS-1704	FLS-1704U	FLS-1704L	A
European Union (Euro)	EU	FLS-1704	FLS-1704U	FLS-1704L	A
Euro + Great Britain + Northern Irish	EUGBN	FLS-1704	FLS-1704U	FLS-1704L	A
Euro + Switzerland	EUCH	FLS-1704	FLS-1704U	FLS-1704L	A
Georgia	GE	FLS-1704	FLS-1704U	FLS-1704L	A
Great Britain	GB	FLS-1704	FLS-1704U	FLS-1704L	A
Great Britain + Scottish	GBS	FLS-1704	FLS-1704U	FLS-1704L	A
Guatemala	GT	FLS-1705	FLS-1705U	FLS-1705L	A
Hong Kong	HK	FLS-1705	FLS-1705U	FLS-1705L	A
Japan	JP	FLS-1704	FLS-1704U	FLS-1704L	A
Kazakhstan	KZ	FLS-1704	FLS-1704U	FLS-1704L	A
Korea	KR	FLS-1704	FLS-1704U	FLS-1704L	A
Latvia	LV	FLS-1704	FLS-1704U	FLS-1704L	A
Lithuania	LT	FLS-1704	FLS-1704U	FLS-1704L	A
Macau	MO	FLS-1705	FLS-1705U	FLS-1705L	A
Macedonia	MK	FLS-1704	FLS-1704U	FLS-1704L	A
Malasya	MY	FLS-1705	FLS-1705U	FLS-1705L	A
Mexico	MX	FLS-1705	FLS-1705U	FLS-1705L	A
Morocco	MA	FLS-1704	FLS-1704U	FLS-1704L	A
New Zealand	NZ	FLS-1704	FLS-1704U	FLS-1704L	A
Norway	NO	FLS-1705	FLS-1705U	FLS-1705L	A
Philippines	PH	FLS-1704	FLS-1704U	FLS-1704L	A
Romania	RO	FLS-1705	FLS-1705U	FLS-1705L	A
Russia	RU	FLS-1704	FLS-1704U	FLS-1704L	A
Scotland	SL	FLS-1704	FLS-1704U	FLS-1704L	A
Slovakia	SK	FLS-1704	FLS-1704U	FLS-1704L	A
Singapore	SG	FLS-1705	FLS-1705U	FLS-1705L	A
South Africa	ZA	FLS-1704	FLS-1704U	FLS-1704L	A
Taiwan	TW	FLS-1705	FLS-1705U	FLS-1705L	A
Thailand	TH	FLS-1705	FLS-1705U	FLS-1705L	A
Ukraine	UA	FLS-1704	FLS-1704U	FLS-1704L	A
USA	US	FLS-1704	FLS-1704U	FLS-1704L	A
USA + Aruba	USAW	FLS-1704	FLS-1704U	FLS-1704L	A
USA + Canada	USCA	FLS-1901	FLS-1901U	FLS-1901L	A
USA + Cayman Islands	USKY	FLS-1704	FLS-1704U	FLS-1704L	A
USA + Euro	USEU	FLS-1704	FLS-1704U	FLS-1704L	A
USA + Euro + Russia	USEURU	FLS-1704	FLS-1704U	FLS-1704L	A
USA + Great Britain	USGB	FLS-1704	FLS-1704U	FLS-1704L	A
USA + Mexico	USMX	FLS-1704	FLS-1704U	FLS-1704L	A
Venezuela	VE	FLS-1705	FLS-1705U	FLS-1705L	A



Upper Module

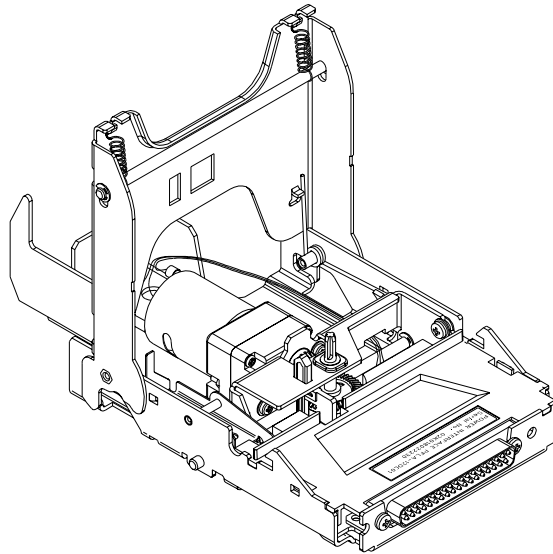


Lower Module

POWER INTERFACE MODULE

The **Power Interface Module** offers the following options:

- 1) Input power: 12 VDC or 24 VDC;
- 2) Interface (see chart below for complete list of interfaces);
- 3) Model: reflects type of electronics within (A – with linear voltage regulation, B – with switching voltage regulation). Model B provides higher power and must be used when additional modules are included in the FrontLoad Bill Validator (e.g. Smart Card Reader)
- 4) Connector for Cassette Touch Memory (Dallas Chip) – a system which helps manage cash flow and collects statistics from the Bill Validator.

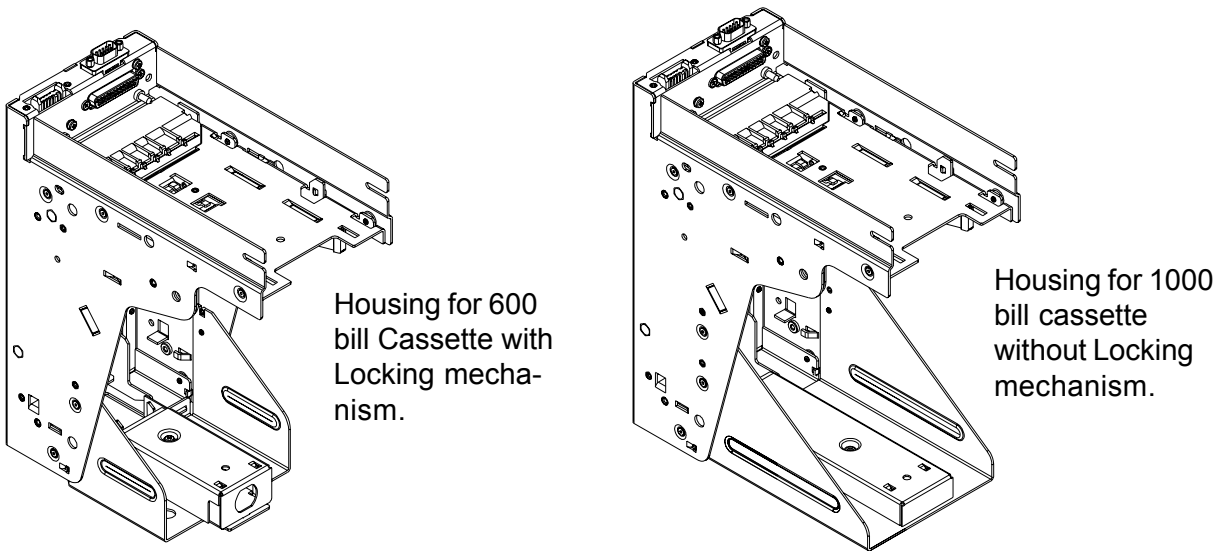


Part Number	Power	Interface	Model	Touch Memory Connector
FLP-1710	12 VDC	CC-FLBDP (Opto-isolated)	A	No
FLP-2310	12 VDC	12V DC, RS-232, CC-EBA, Smart Card,	A	Yes
FLP-2510	12 VDC	CC-BDPS, CCNET (RS 232C), Coated PCB	A	No
FLP-2710	12 VDC	CC-BDPS, CCNET (RS 232C)	A	No
FLP-2810	12 VDC	CC-IPL (Isolated Pulse Low Current)	A	No
FLP-5710	24 VDC	CC-GPC22, CCNET (RS 232C)	B	No
FLP-9027	12 VDC	CC-FLBDP (Opto-isolated), Coated PCB	A	No
FLP-9028	24 VDC	CC-GPC22, CCNET (RS 232C), Coated PCB	B	No
FLP-2810	12 VDC	CC-IPL (Isolated Pulse Low Current), Coated PCB	A	No
FLP-9056	24 VDC	CC-GPC22, CCNET (RS 232C), Coated PCB	B	Yes

HOUSING

Housing offers the following options:

- 1) Size of supporting bracket: 2 sizes are available – 600 bill Cassettes and 1000 bill Cassettes;
- 2) Locking mechanism in supporting bracket: Lockable bracket and Plain bracket are available. Locking mechanism can operate with a s” tubular lock.
- 3) Security switches. Housing is equipped with a “Cassette removal” security switch and, if the Lockable bracket option was selected, with an “Open lock” security switch. Both switches have Quick Connect terminals (0.110) and are rated for 5A at 250 VAC. Optionally, a second switch for the Cassette, and a Switch for the Validating Head can be added.
- 4) Interface connectors: JAE 12 pin (standard), JAE + DB9 (use with Card Reader Bezel), JAE + USB.



The following combination of features described above are available:

Part Number	Cassette size	Bracket	Optional security switches	Connectors
FLH-0110	600	Plain	None	Standard
FLH-0410	600	Lockable	None	JAE+DB9
FLH-0510	600	Plain	None	JAE+DB9
FLH-0810	600	Lockable	None	Standard
FLH-3110	1000	Plain	None	Standard
FLH-3410	1000	Lockable	None	JAE+DB9
FLH-3510	1000	Lockable	None	Standard
FLH-2010	1000	Plain	None	JAE+DB9

HOUSING

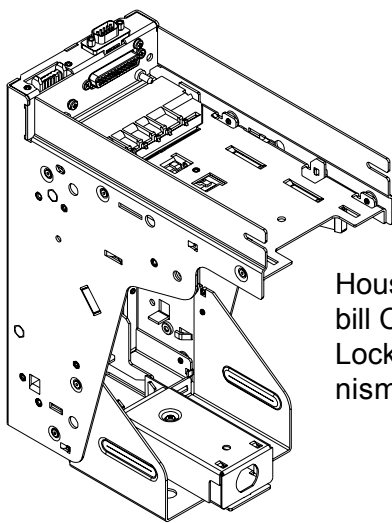
Housing offers the following options:

- 1) Size of supporting bracket: 2 sizes are available – 600 bill Cassettes and 1000 bill Cassettes;
- 2) Locking mechanism in supporting bracket: Lockable bracket and Plain bracket are available.

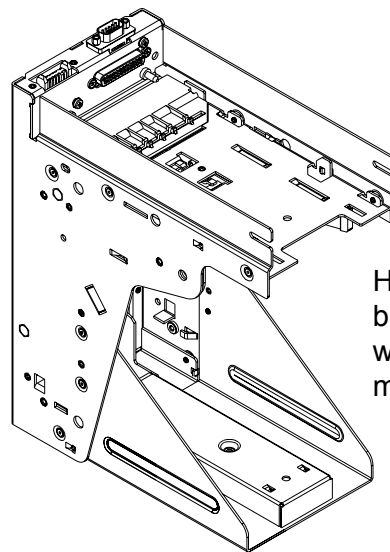
Locking mechanism can operate with a s” tubular lock.

3) Security switches. Housing is equipped with a “Cassette removal” security switch and, if the Lockable bracket option was selected, with an “Open lock” security switch. Both switches have Quick Connect terminals (0.110) and are rated for 5A at 250 VAC. Optionally, a second switch for the Cassette, and a Switch for the Validating Head can be added.

4) Interface connectors: JAE 12 pin (standard), JAE + DB9 (use with Card Reader Bezel), JAE + USB.



Housing for 600 bill Cassette with Locking mechanism.



Housing for 1000 bill cassette without Locking mechanism.

The following combination of features described above are available:

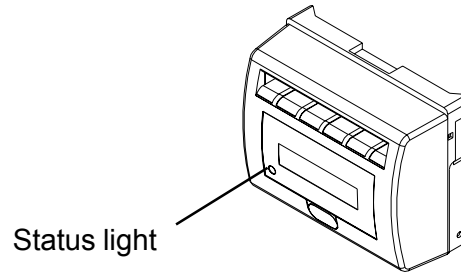
Part Number	Cassette size	Bracket	Optional security switches	Connectors
FLH-0110	600	Plain	None	Standard
FLH-0112	600	Plain, UDN	None	Standard
FLH-0120	600	Plain	Yes	Standard
FLH-0410	600	Lockable	None	JAE+DB9
FLH-0510	600	Plain	None	JAE+DB9
FLH-0810	600	Lockable	None	Standard
FLH-0811	600	Lockable, Modified	None	Standard
FLH-0812	600	Lockable, UDN	None	Standard
FLH-0820	600	Lockable	Yes	Standard
FLH-2010	1000	Plain	None	JAE+DB9
FLH-3110	1000	Plain	None	Standard
FLH-3410	1000	Lockable	None	JAE+DB9
FLH-3510	1000	Lockable	None	Standard
FLH-3512	1000	Lockable, UDN	None	Standard

BEZELS

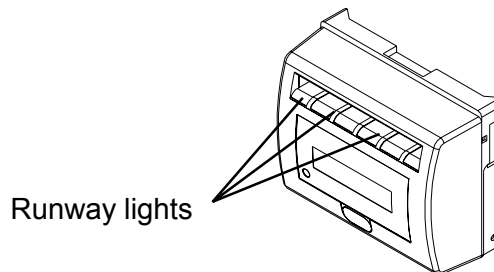
Several **Bezel** designs are available in order to make the CashCode Bill Validator compatible with different door styles. Normally, the Bill Validator is supplied with the Standard CashCode Bezel. Each type of bezel is available for different bill path widths (path width for the bezel and Validating Head must be the same).

Part Number	Bill width, in mm
CashCode Standard Bezel	
FLB-2311	66
FLB-2331	70
MFLB-2401	62 to 82
CashCode Bezel with runway lights	
FLB-2111	66
FLB-2131	70
MFLB-2201	62 to 82
MFLB-4017 (coated PCB)	62 to 82
CashCode Bezel with Digital Display	
FLB-3111	66
FLB-3131	70
MFLB-3201	62 to 82
MFLB-4027 (coated PCB)	62 to 82

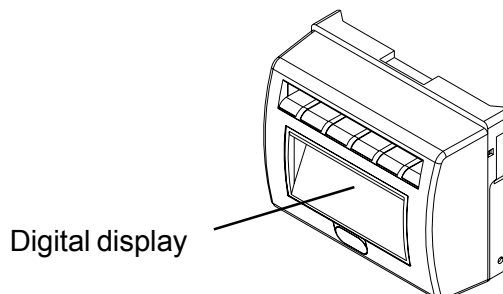
Standard CashCode Bezel. The status indication light is provided.



CashCode Bezel with running lights. The status light is combined with runway lights.

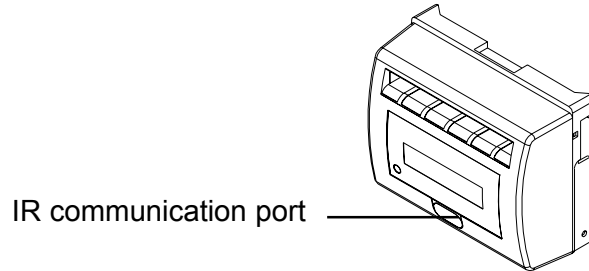


CashCode Bezel with runway lights and digital display. In addition to runway lights, a digital display of 2 lines (16 characters each) is provided. Users are able to create a custom message – in order to attract or instruct customers.

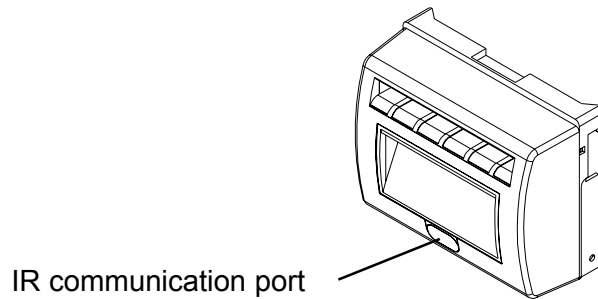


CashCode Bezel with runway lights and Infrared communication port. In addition to runway lights, an IR communication port is provided.

Part Number	Bill width, in mm
CashCode Bezel with runway lights and IR communication port	
FLB-2511	66
FLB-9059 (Coated PCB)	66
FLB-2531	70
MFLB-2601	62 to 82
CashCode Bezel with Digital Display and an IR communication port	
FLB-3311	66
FLB-3331	70
MFLB-3401	62 to 82



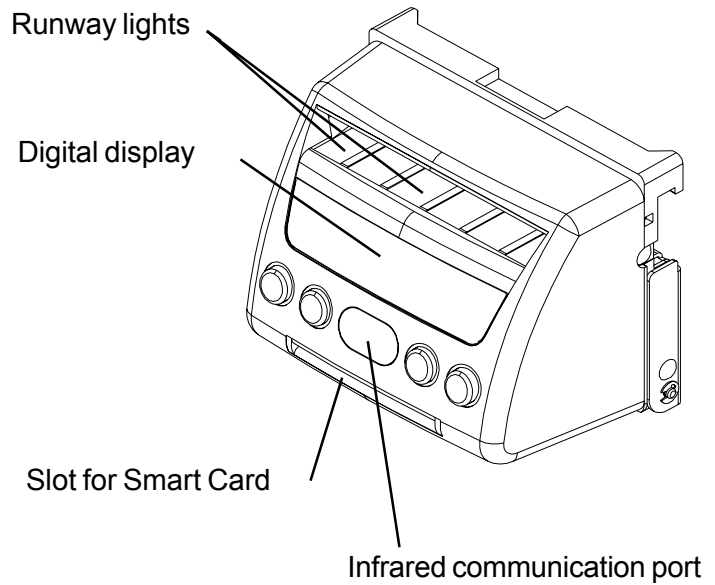
CashCode Bezel with runway lights, digital display and Infrared communication port. In addition to runway lights and a digital display, an IR communication port is provided.



MODULAR SYSTEM

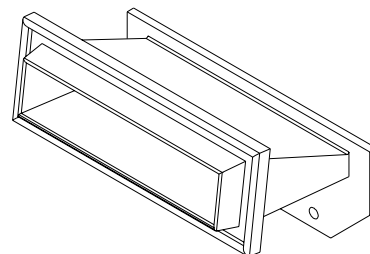
CashCode Bezel with Smart Card reader.
 The Card Reader can support up to 4 different payment systems simultaneously.

Part Number	Bill width, in mm
Smart Card Reader with Infrared communication port	
FLB-4411	66
FLB-4431	70
MFLB-4501	62 to 82



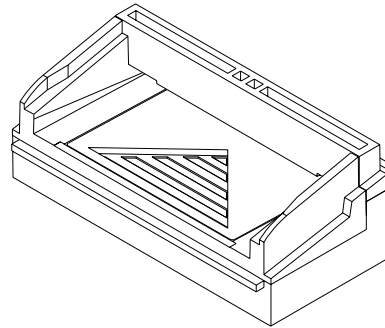
Part Number	Bill width, in mm
FLB-1011	66
FLB-1021	70

CashCode Bezel for “Double Diamond”
 Gaming machine. Available in two widths: 66 and 70 mm.



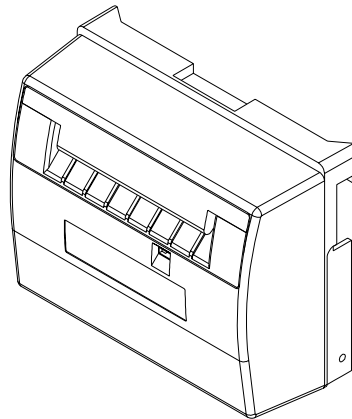
Part Number	Bill width, in mm
Bezel with runway lights	
FLB-5011	66
FLB-9065 (Coated PCB)	66
FLB-5031	70
FLB-9076 (Coated PCB)	70
MFLB-5101	62 to 82
MFLB-9064 (Coated PCB)	62 to 82

Bezel with runway lights.



Part Number	Bill width, in mm
Metal coin-proof	
FLB-7011	66
FLB-7031	70
MFLB-7101	62 to 82

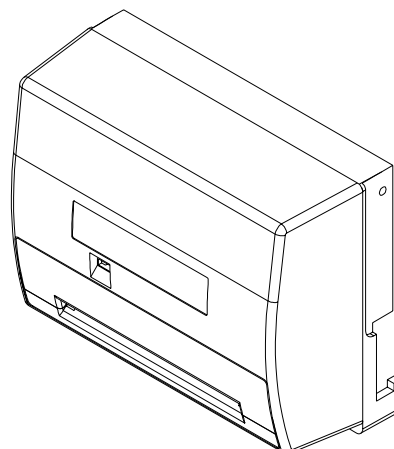
Metal coin-proof Bezel.



Part Number	Bill width, in mm
Metal coin-proof reversed	
FLB-7411	66
FLB-7431	70
MFLB-7501	62 to 82

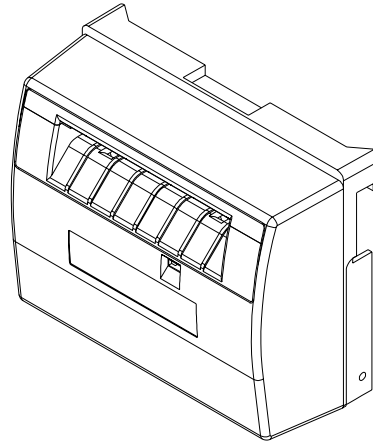
Metal coin-proof reversed Bezel.

For FL/MFL installed cassette up.



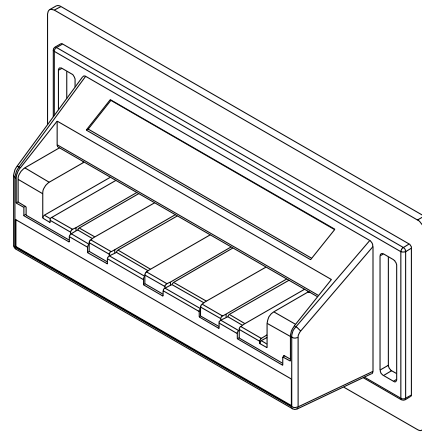
Part Number	Bill width, in mm
Open metal Bezel	
FLB-7211	66
FLB-7231	70
MFLB-7301	62 to 82

Open metal Bezel.



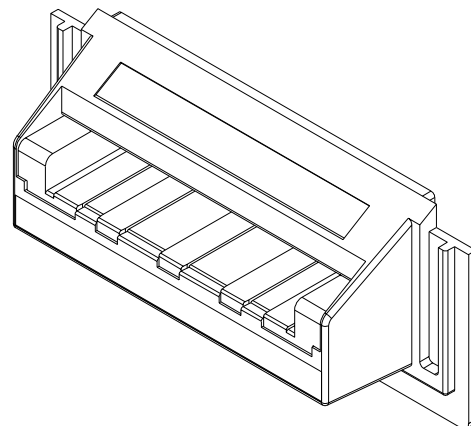
Part Number	Bill width, in mm
Bezel Variant A	
FLB-5211	66
FLB-9071 (Coated PCB)	66
FLB-5231	70
MFLB-5301	62 to 82
MFLB-9075 (Coated PCB)	62 to 82

Bezel Variant A



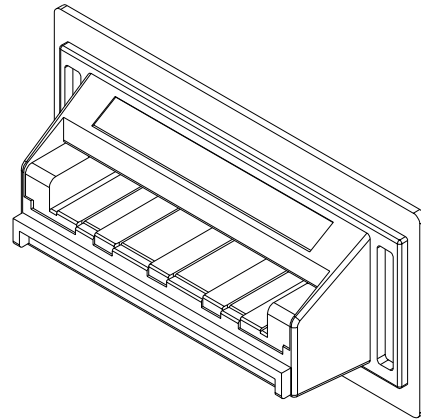
Part Number	Bill width, in mm
Bezel Variant B	
FLB-5213	66
FLB-5233	70
MFLB-5303	62 to 82

Bezel Variant B



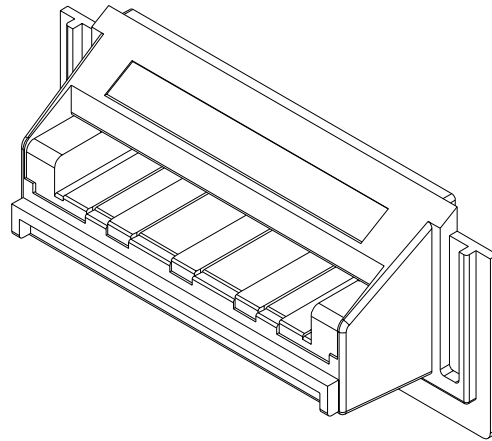
Part Number	Bill width, in mm
Bezel Variant C	
FLB-5215	66
FLB-5235	70
MFLB-5305	62 to 82

Bezel Variant C



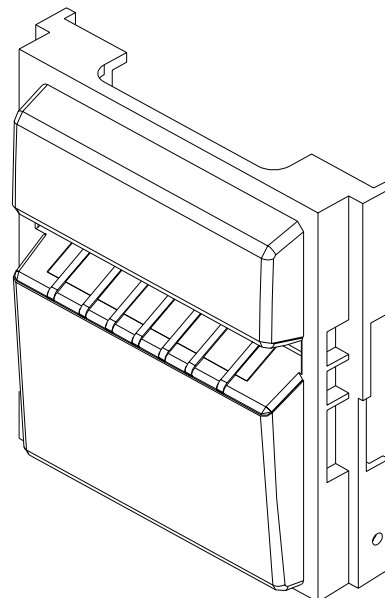
Part Number	Bill width, in mm
Bezel Variant D	
FLB-5217	66
FLB-9074 (Coated PCB)	66
FLB-5237	70
FLB-9081 (Coated PCB)	70
MFLB-5307	62 to 82
MFLB-9080 (Coated PCB)	62 to 82

Bezel Variant D



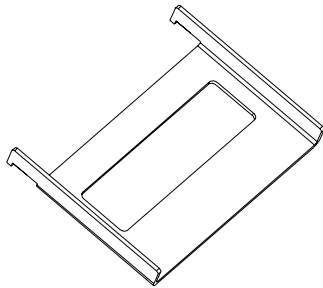
Part Number	Bill width, in mm
Runway Light Bezel, SM-size	
MFLB-1101	62 to 82

Runway Light Bezel, SM-size



ACCESSORIES

Accessories, typically supplied with the Bill Validator, include an extractor (a special tool for replacing the Sense-a-Click® sensor pak Lower module, part number **OPT-HW-FT01**) and a harness (cable)



OPT-HW-FT01

If no special requirements have been indicated, then the cable will automatically come with 12 “loose” wires at one side and a 12-pin JAE connector attached to the other side. The total length of cable is 1 meter. The chart below gives information about wire color and connection to the connector pin.

Connector pin No.	Color of wire
1	Red
2	Brown
3	Yellow
4	Black
5	Blue
6	Gray
7	Pink
8	Orange
9	Green
Not connected	Tan
11	Violet
12	White

For a download via the interface connector, the following accessories must be used:

Power Interface Module used in FrontLoad Bill Validator	Adapter part number	Interface
FLP-1710	OPT-PS2-FL-PC	CC-FLBDP
FLP-2710	OPT-PS2-JAE-DB9	FL-BDPS, CCNET (12V)
FLP-2810		CC-IPL
FLP-5710	coming soon	CC-GPC22, CCNET (24V)

MODULAR SYSTEM

CASSETTE

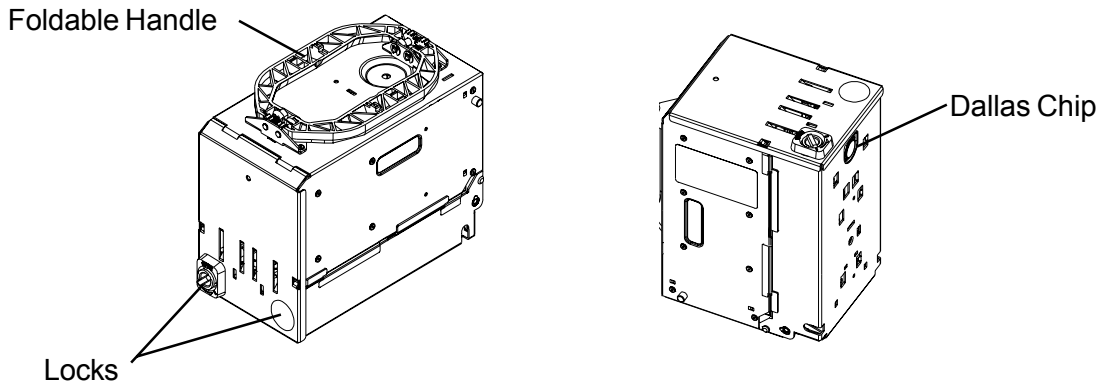
The **Cassette** stores validated bills and holds them in a stacked formation. The Cassette has a stacking mechanism and is typically equipped with a plastic lock. Users are encouraged to replace the plastic lock with a regular metal one. Users have a choice between one lock – or two locks for added security. A locking mechanism allows for the installation of a user’s security locks (one or two 3/4” tubular locks measuring 1 1/16”±1/16” or 1 1/8”±1/16”).

The Cassette is available in two sizes – either a 600 and 1000 bill storage capacity. Street grade bills require more space and as a result, less bills may be stored. The Cassette is supplied with a foldable handle, but where space inside the machine is limited, a Cassette may be ordered without a handle.

The Cassette can store bills from 62 to 82 mm wide, and from 140 to 172 mm long. For bills from 125 to 150 mm in length, a modified Cassette may be ordered.

The Cassette may be ordered with mounting parts for installation of the Touch Memory (Dallas Chip). The proper type of Power Interface Module must be ordered to communicate with the Dallas Chip.

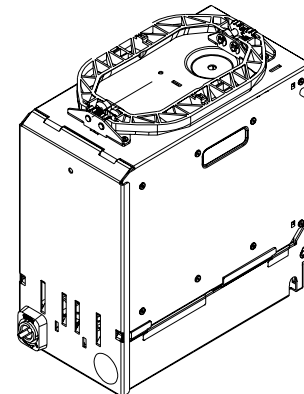
The Cassette is not included with the Bill Validator and must be ordered separately.



600 bill cassette

The following types of cassettes are available:

Part No.	Cassette capacity, bills	Bill length, mm	Handle	Dallas Chip
FLC-003	600	125 to 150	Foldable	no
FLC-103	600	140 to 172	Foldable	no
FLC-503	1000	125 to 150	Foldable	no
FLC-603	1000	140 to 172	Foldable	no



1000 bill cassette

For other cassettes, please contact CashCode.

MEMORY CARD AND SOFTWARE UPDATE OPTIONS

CashCode FrontLoad 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 Card. Software updates are recommended whenever new currency is issued, or whenever a new series of counterfeit bills appear on the market.

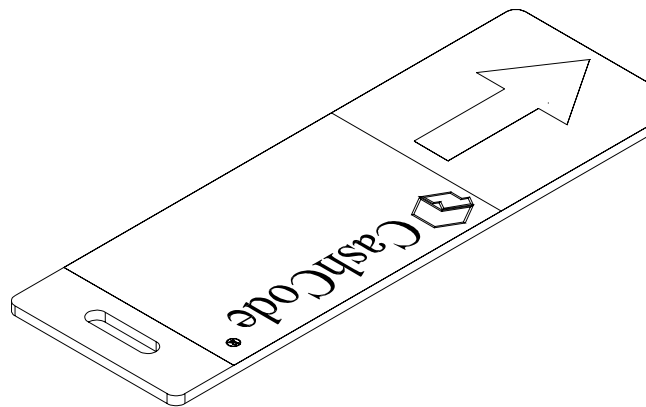
Software updates are offered in three options:

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

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

3) A special Memory Card can be ordered, which allows the download of new software through the interface connector. After the download, the Memory Card must be present in the Validating Head 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).

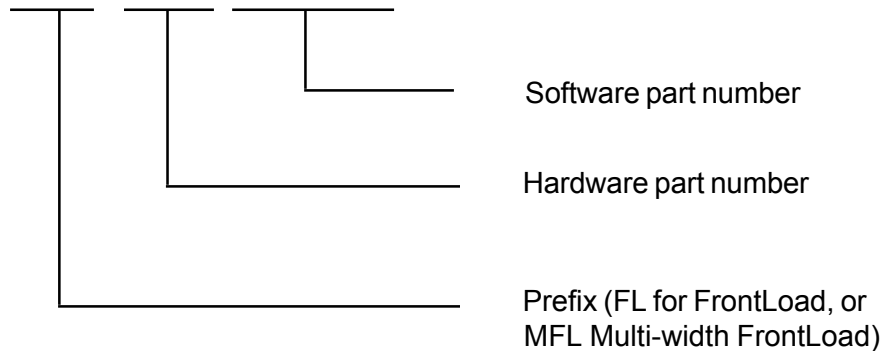
Instructions for Memory Card replacement and software updates can be found in the chapter called "SOFTWARE UPDATES" on page 43.



CHOOSING PART NUMBERS FOR THE BILL VALIDATOR

Final part numbers for the FrontLoad Bill Validator consist of two parts: a hardware part number and a software part number.

Example: **MFL-0101US1701**



The Prefix defines the device class. Here FL means “FrontLoad Bill Validator” and MFL means “Multi-width Front Load Bill Validator” (i.e. with a centering mechanism in the Validating Head).

The Hardware part number reflects the contents of the Bill Validator (i.e. Validating Head type, Housing type, etc.)

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

There is a special software program for choosing part numbers. (Please see the enclosed CD-ROM program entitled “CONFIGURATOR.exe”.)

Before the user starts this program, the following information must be determined:

- **Country** (e.g. USA);
- **Protocol** (e.g. CCNET)
- **Power** (e.g. 12VDC)
- Type of **Bezel** (e.g. Standard)
- **Housing** options (ie: Cassette size, locking mechanism, additional cassette security switch)

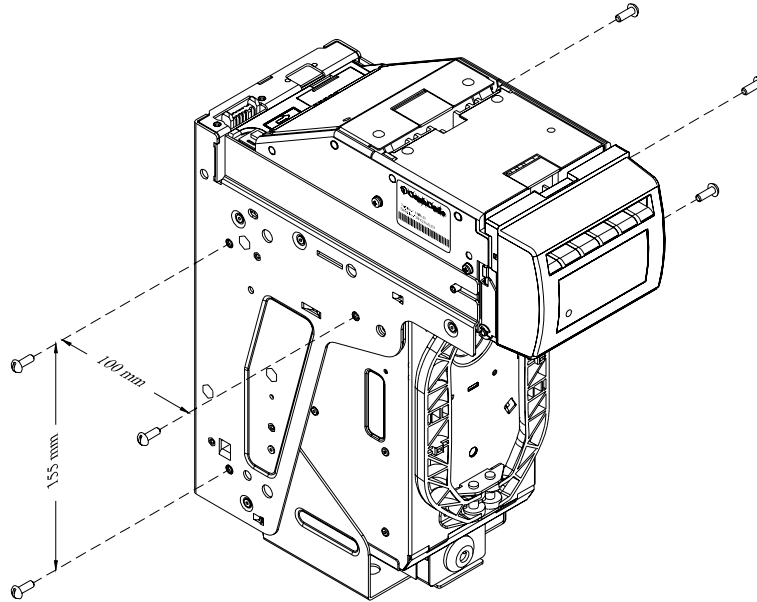
When the program runs, menus will appear with all available options, including a comprehensive help menu with detailed description and pictures.

Please keep in mind that *Cassettes must be ordered separately*. At least one Cassette per Bill Validator will be needed, but the user may order additional quantities of Cassettes (ie: to switch Cassettes when collecting money).

In cases where the combination of features selected by the user is not possible, the user will receive a message that the part number does not exist – and a letter to the CashCode Engineering department will be generated. This system was chosen because the total number of all possible part combinations can reach up to 70,000! As a result, part numbers are assigned gradually when an actual request is received.

INSTALLATION

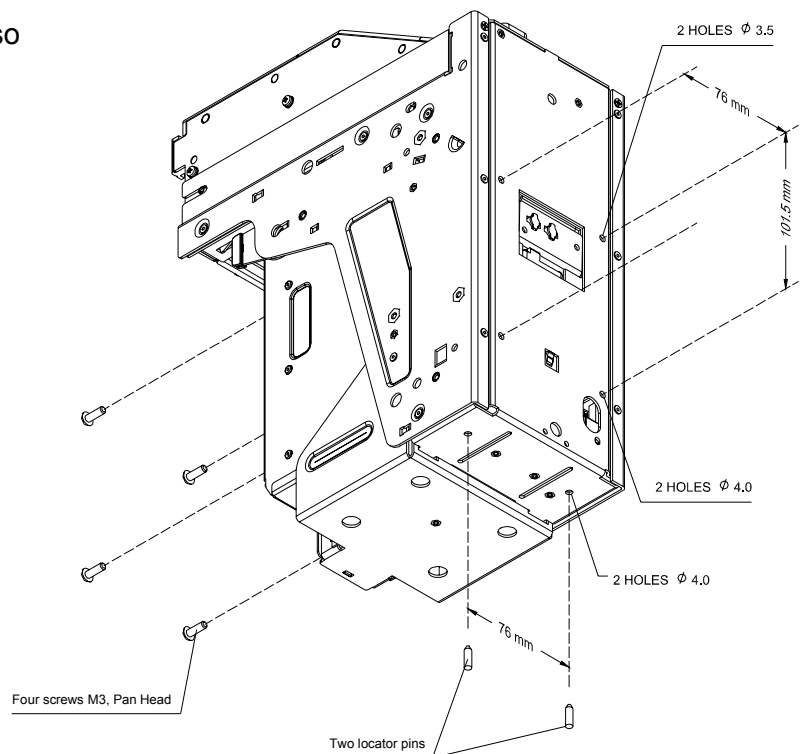
The Bill Validator is installed by using (3) M4 screws on each side of the FrontLoad frame. The length of these screws should not be longer than required, otherwise they may protrude through the inside of the frame.



If the position of the mounting screws is different than the position of the mounting holes provided in the target equipment, then additional frame mounting components may be required.

The FrontLoad Bill Validator can also be secured through the holes in the rear wall of the Housing. In this case, M3 screws and locator pins can be used.

For dimensions of the mounting holes, please refer to the dimensional drawings (page 8 to 13).



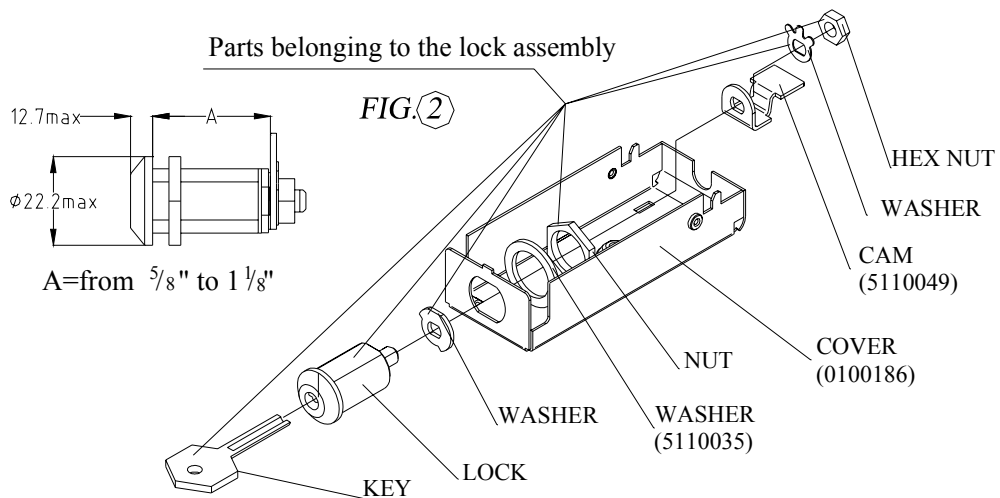
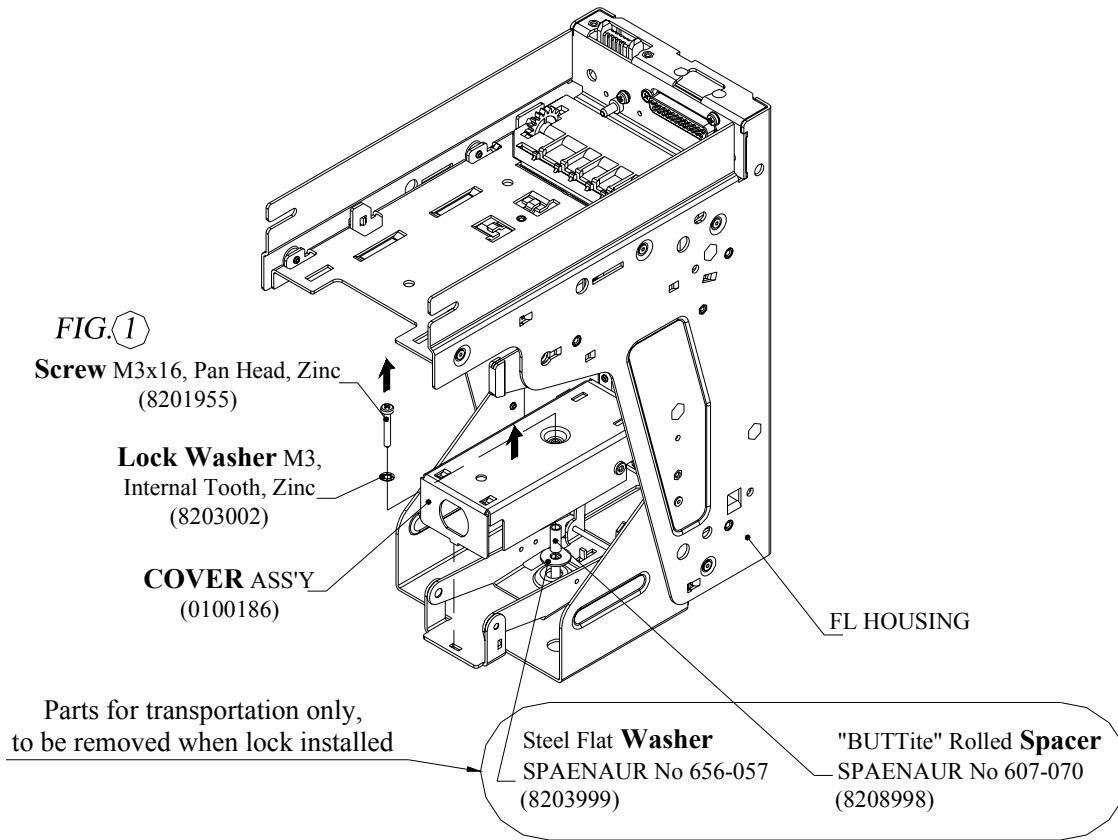
LOCK INSTALLATION TO BILL VALIDATOR BASE (600 BILLS)

Step #1. Remove the Screw and Lock Washer from the Lock Cover. **DO NOT DISCARD!**
(FIG. 1)

Step #2. Remove and discard the Washer and Spacer (FIG. 1)

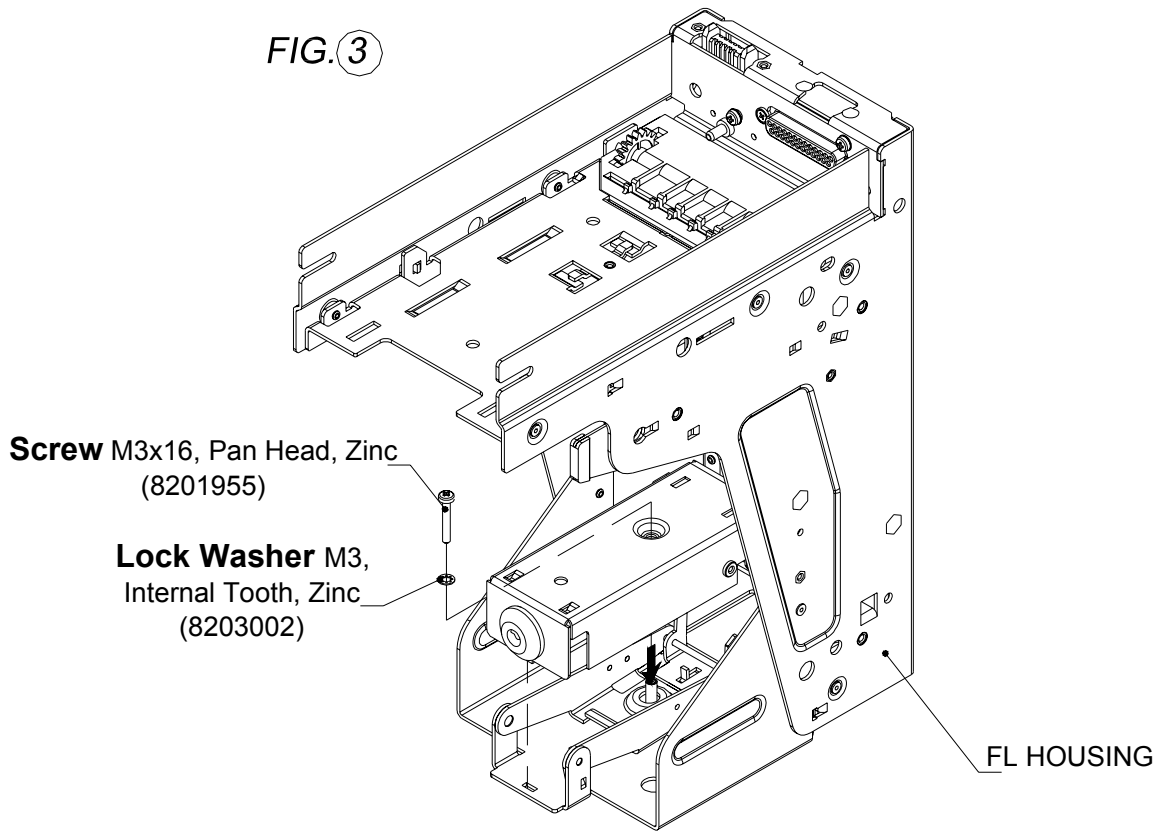
Step #3. Install the Lock and parts as shown in FIG. 2

Step #4. Reinstall the Cover, Screw and Lock Washer that were removed in Step #1 (see Fig.3)



LOCK INSTALLATION TO BILL VALIDATOR BASE (600 BILLS) (continued)

FIG. 3



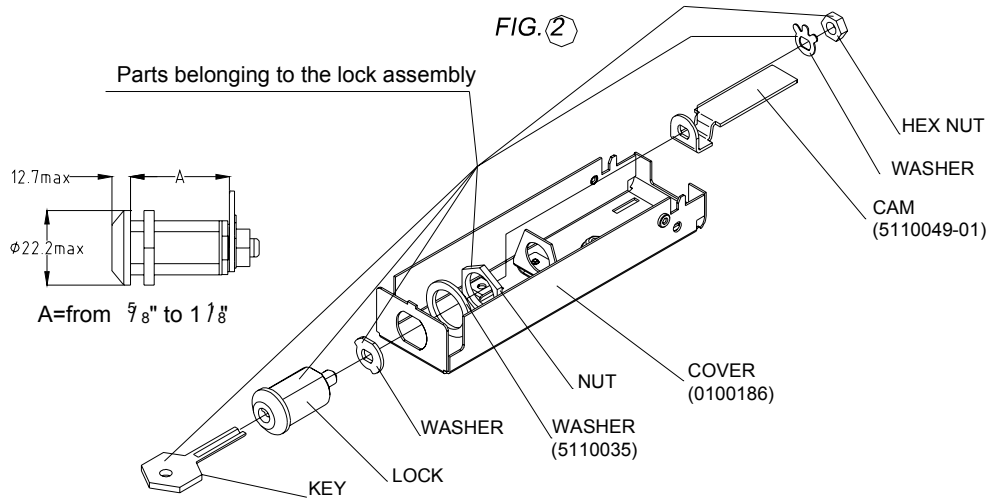
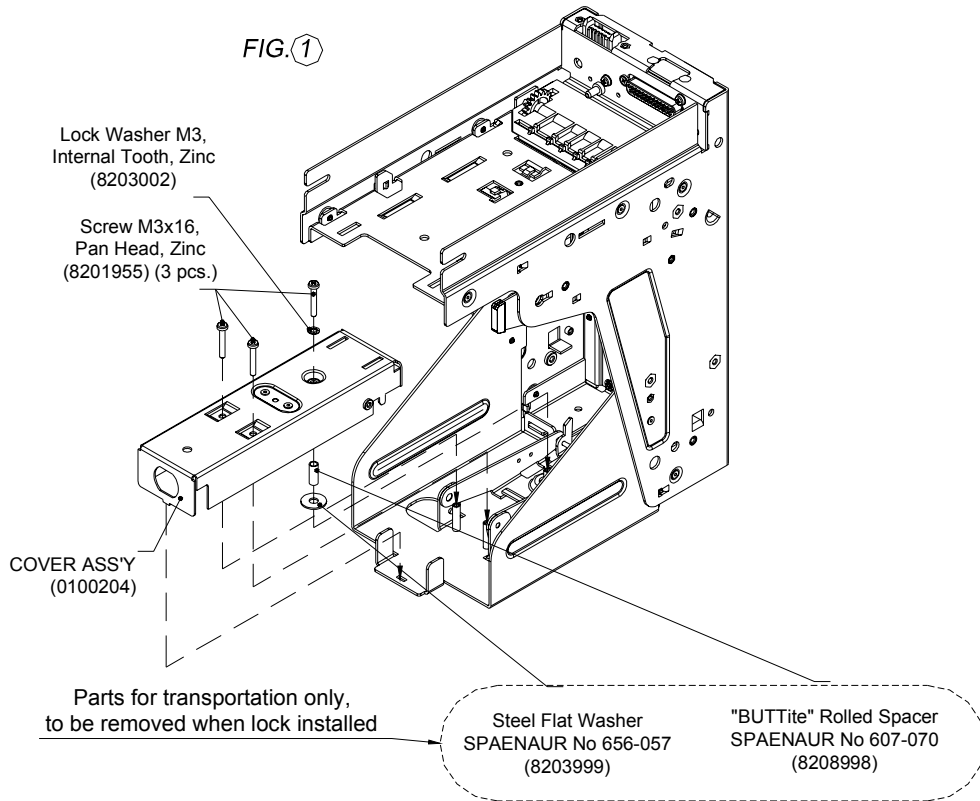
LOCK INSTALLATION TO BILL VALIDATOR BASE (1000 BILLS)

Step #1. Remove the Screw and Lock Washer from the Lock Cover. **DO NOT DISCARD!**
(FIG. 1)

Step #2. Remove and discard the Washer and Spacer (FIG. 1)

Step #3. Install the Lock and parts as shown in FIG. 2

Step #4. Reinstall the Cover, Screw and Lock Washer that were removed in Step #1 (see FIG. 3)

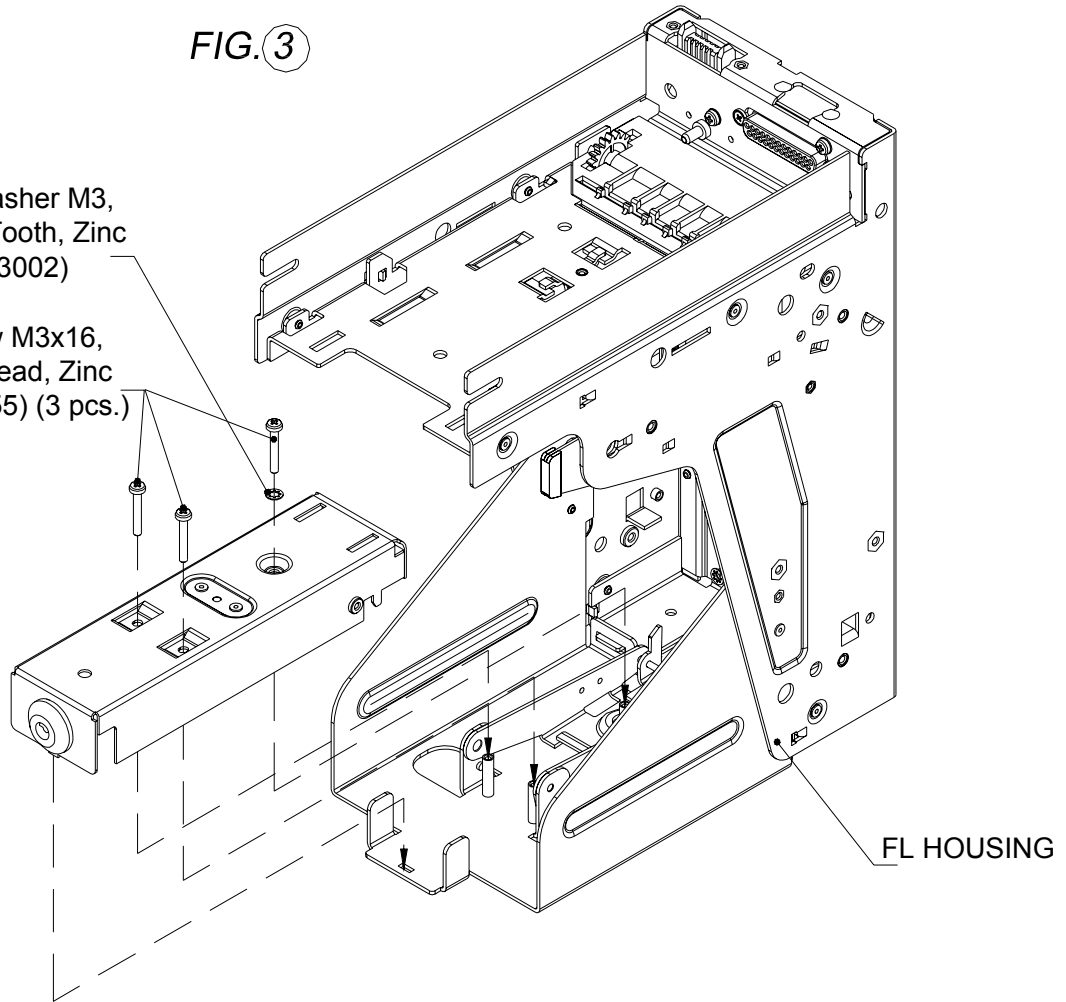


LOCK INSTALLATION TO BILL VALIDATOR BASE (1000 BILLS) (continued)

FIG. 3

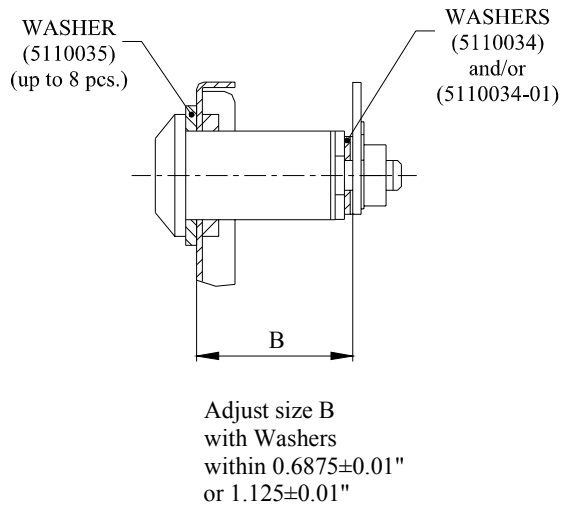
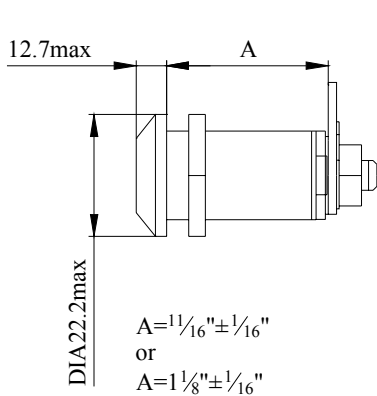
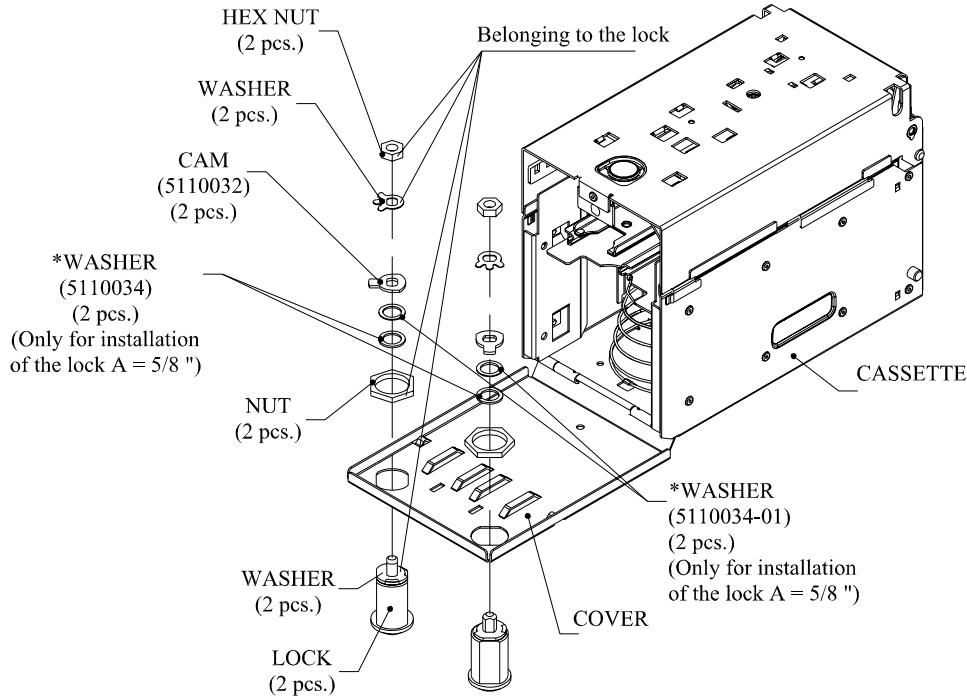
Lock Washer M3,
Internal Tooth, Zinc
(8203002)

Screw M3x16,
Pan Head, Zinc
(8201955) (3 pcs.)



LOCK INSTALLATION TO CASSETTE

In order to install the security locks into the Cassette, open the Cassette cover, remove the plastic lock and plug, and follow the diagram shown below:



INTERFACE CONNECTION

The FrontLoad Bill Validator has the flexibility to offer four different hardware interface options:

Type 1: Opto-Isolated, 12 Volt CC FLBDP.

Type 2: RS232 levels, 12 Volt CCNET (single slave mode) or CC-BDPS.

Type 3: Isolated Pulse Low Current, 12 Volt CC-IPL.

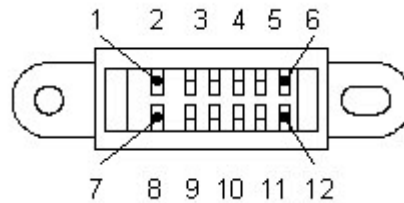
Type 4: RS232 levels, 24 Volt DC, CCNET (single slave mode) or CC-GPC22.

For types 1,2,4 the Host Controller may reset Bill Validator by holding line M-RES “active” for 1 mS. This informs Bill Validator to abort any activity and return to its power-on reset state.

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 the base assembly interface module.

Pin Assignment (cable connector):



Socket DR1-12-2SC-FO (JAE)
Contact DR-SC20-1-7000 (JAE)

Signal descriptions for the Opto-isolated version (Type1):

TERMINAL	SIGNAL	FUNCTION	ACTIVITY
1	+12 V DC	POWER	---
2	M-RES	MASTER RESET	LOW
3	+12V DC	INTERFACE POWER	---
4	GND	INTERFACE GROUND	---
5	LED+	LED ANODE	---
6	NC	NOT CONNECTED	---
7	GND	POWER GROUND	---
8	TXD	TRANSMITTED DATA	HIGH/LOW
9	RXD	RECEIVED DATA	HIGH/LOW
10	NC	NOT CONNECTED	---
11	LED-	LED CATHODE	---
12	NC	NOT CONNECTED	---

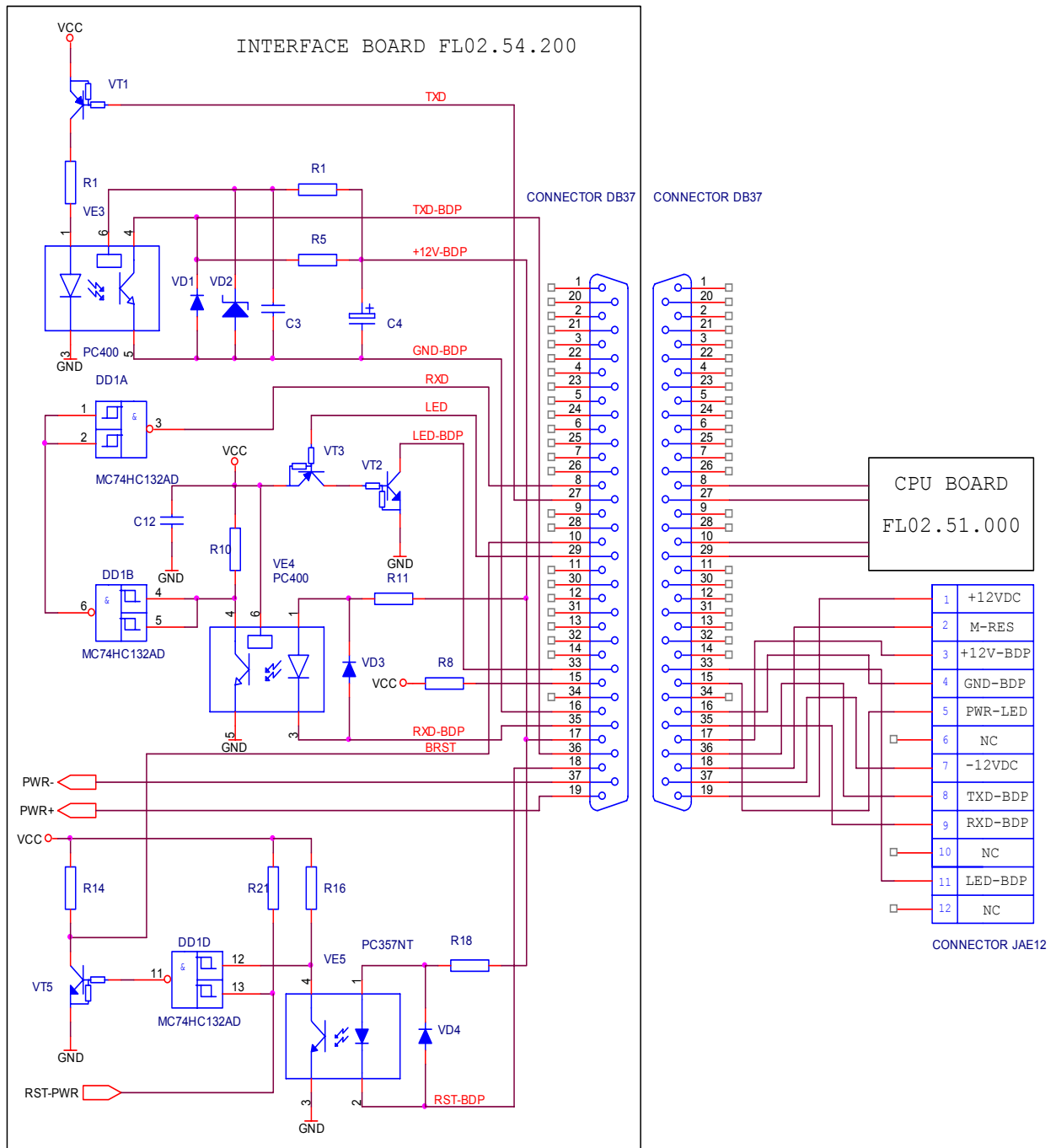
Signal Descriptions for the RS232 12Volt version (Type2, Type3)

TERMINAL	SIGNAL	FUNCTION	ACTIVITY
1	+12V DC	POWER	-
2	M-RES	MASTER RESET	RS232 LOW LEVEL (+12V)
3	NC	NOT CONNECTED	-
4	GND	INTERFACE GROUND	-
5	NC	NOT CONNECTED	-
6	NC	NOT CONNECTED	-
7	GND	GROUND POWER	-
8	TxD	TRANSMITTED DATA	HIGH/LOW
9	RxD	RECEIVER DATA	HIGH/LOW
10	NC	NOT CONNECTED	-
11	NC	NOT CONNECTED	-
12	NC	NOT CONNECTED	-

Signals Description for RS232 24 Volt version (Type4):

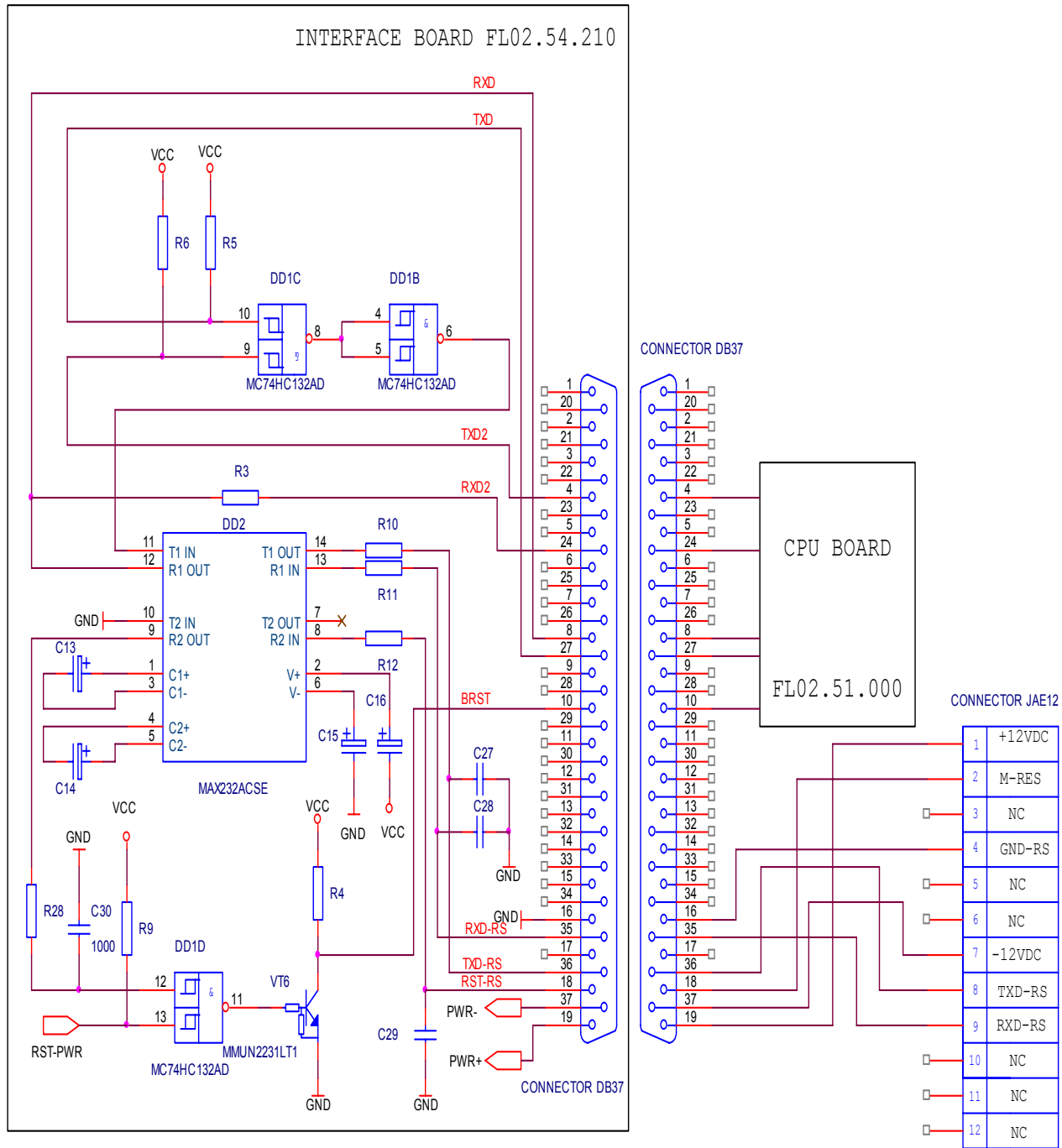
TERMINAL	SIGNAL	FUNCTION	ACTIVITY
1	GND	GROUND POWER	-
2	M-RES	MASTER RESET	RS232 LOW LEVEL (+12V)
3	NC	NOT CONNECTED	-
4	GND	GROUND INTERFACE	-
5	NC	NOT CONNECTED	-
6	NC	NOT CONNECTED	-
7	+24V DC	POWER	-
8	TxD	TRANSMITTED DATA	HIGH/LOW
9	RxD	RECEIVER DATA	HIGH/LOW
10	NC	NOT CONNECTED	-
11	NC	NOT CONNECTED	-
12	NC	NOT CONNECTED	-

INPUT/OUTPUT CIRCUITS OPTO-ISOLATED VERSION 12V

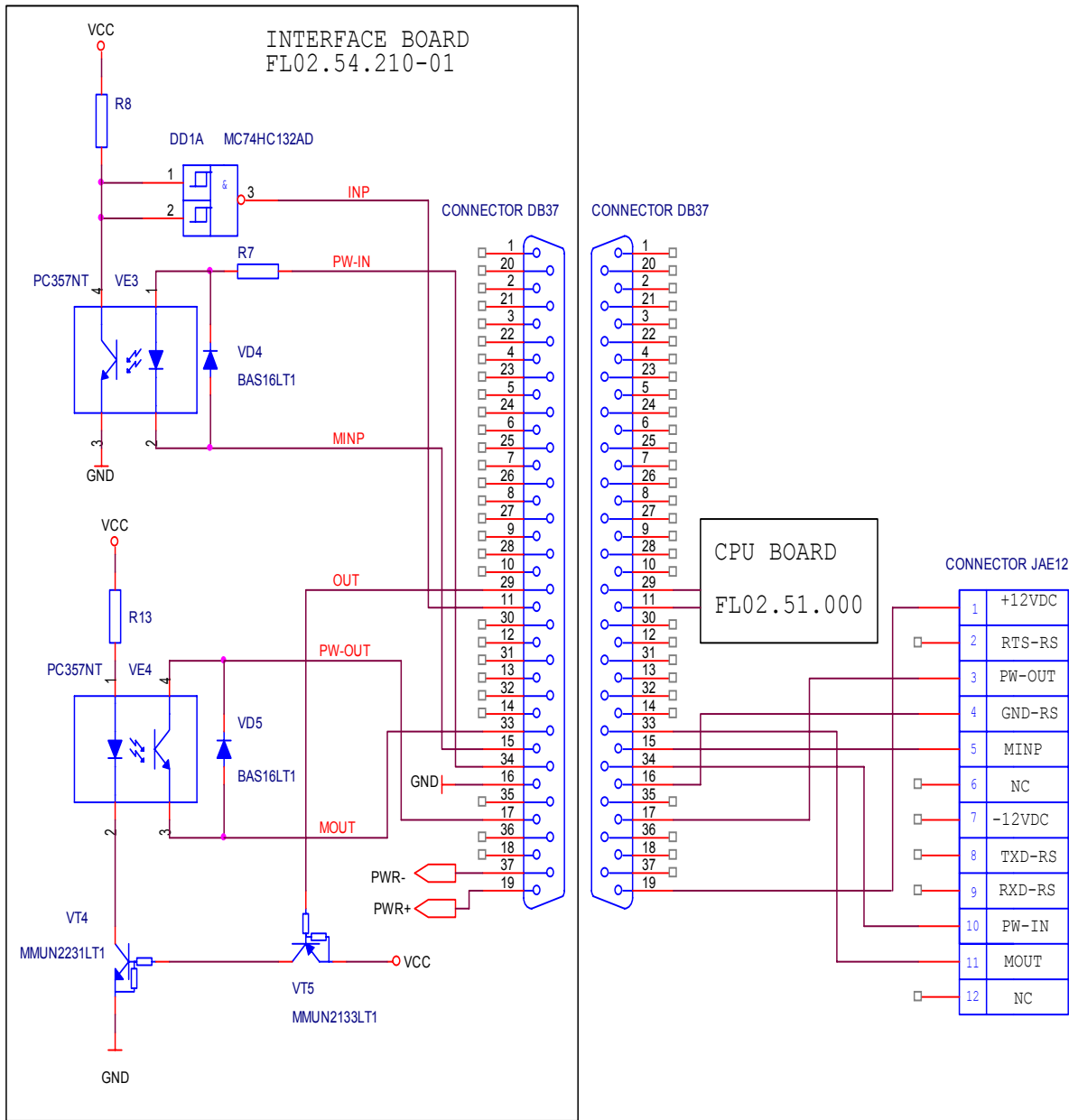


INTERFACE CONNECTION

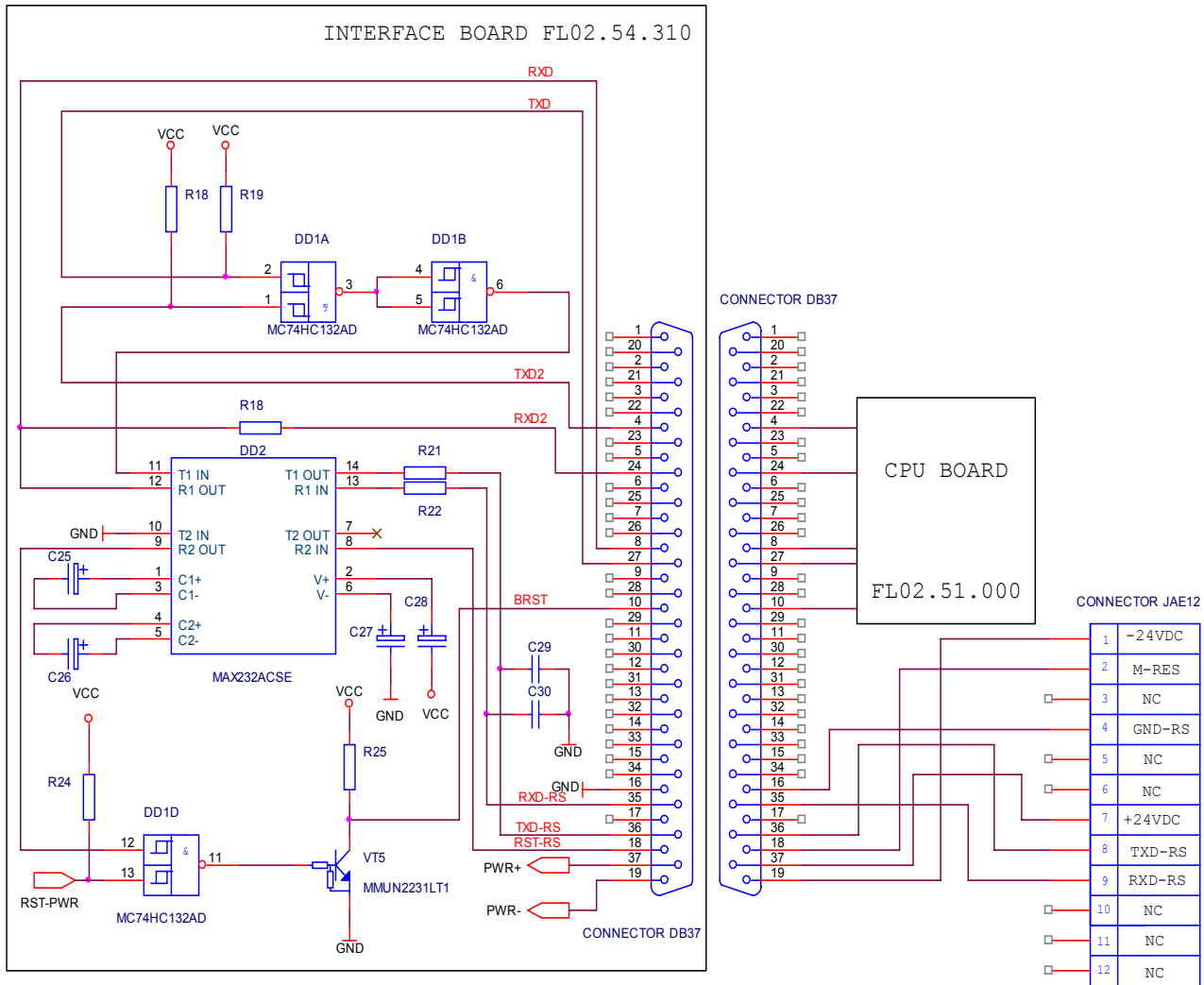
INPUT/OUTPUT CIRCUITS RS-232 VERSION 12V



INPUT/OUTPUT CIRCUITS ISOLATED PULSE LOW CURRENT VERSION 12V

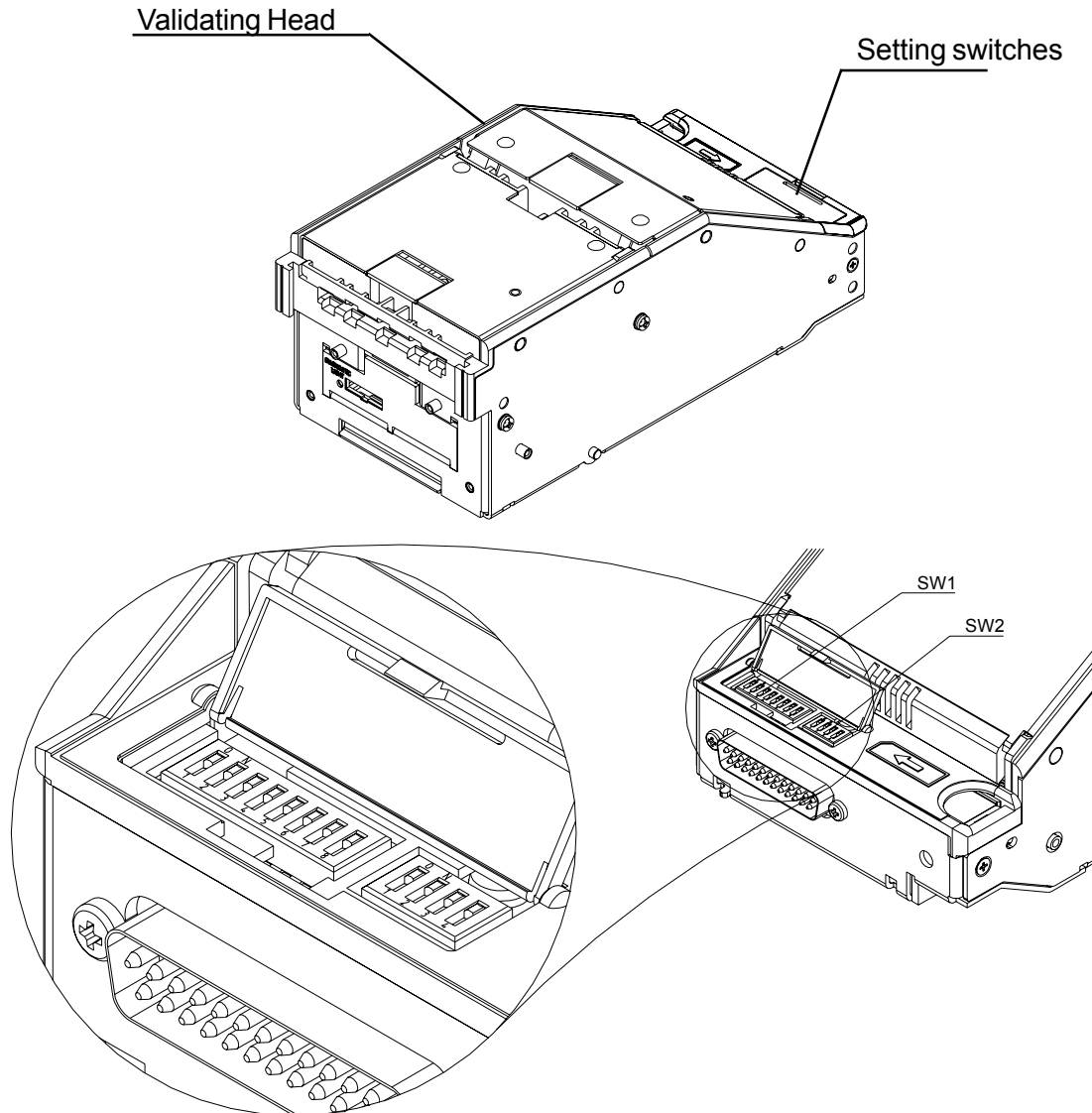


INPUT/OUTPUT CIRCUITS RS-232 VERSION 24V



SWITCH SETTINGS

The switches are located at the rear of the Validating Head, under the transparent cover.

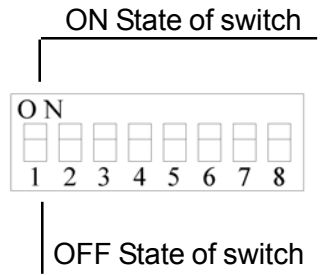


The Bill Validator operates in two basic modes: Validation Mode and Service Mode.

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 series of (8) position DIP switches (SW1) define the settings and program the Bill Validator to recognize and validate a variety of different bill denominations.

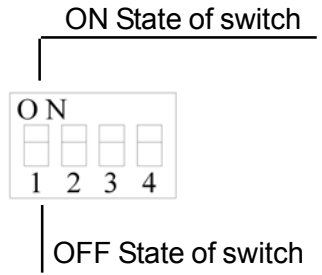


DIP SWITCH SW1 SETTINGS:

SWITCH	ON	OFF
SW1.1	Denomination #1 Enable	Denomination #1 Disable
SW1.2	Denomination #2 Enable	Denomination #2 Disable
SW1.3	Denomination #3 Enable	Denomination #3 Disable
SW1.4	Denomination #4 Enable	Denomination #4 Disable
SW1.5	Denomination #5 Enable	Denomination #5 Disable
SW1.6	Denomination #6 Enable	Denomination #6 Disable
SW1.7	Denomination #7 Enable	Denomination #7 Disable
SW1.8	Denomination #8 Enable	Denomination #8 Disable

For a complete explanation of switch descriptions, please see the software version description.

The (4) position DIP switches (SW2) are defined below:



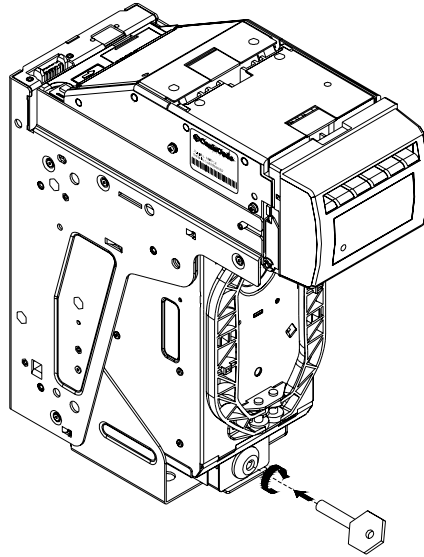
PARAMETER	SWITCH	ON	OFF
Orientation of the bill	SW2.1	Four-Way	One-Way
	SW2.2	Reserved	Reserved
Interface communication speed	SW2.3	9600 BPs	19200 BPs
Mode	SW2.4	Service Mode	Validation Mode

For additional information on switch features and explanations, please see the software description for your particular Bill Validator.

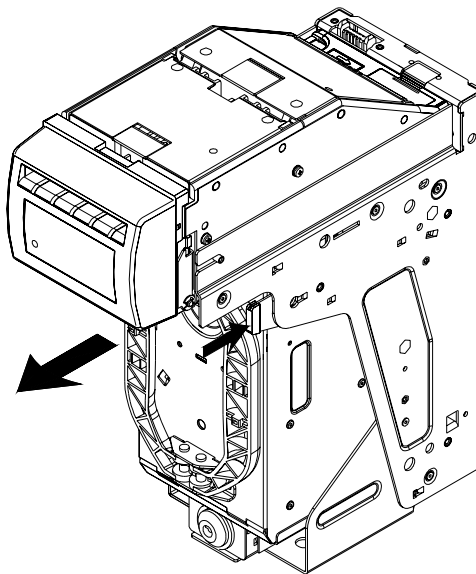
MAINTENANCE & SERVICE

Collecting Bills

To collect bills from the CashCode Bill Validator, simply open the lock on the base assembly and pull out the Cassette (please see diagram below).

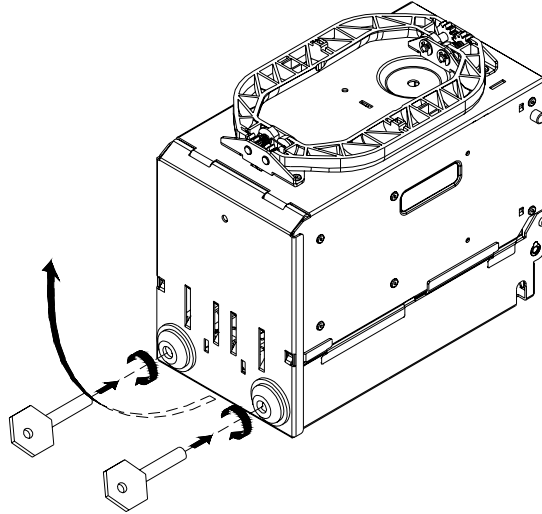


Pressing the lever (located to the right) releases the Cassette for easy removal.

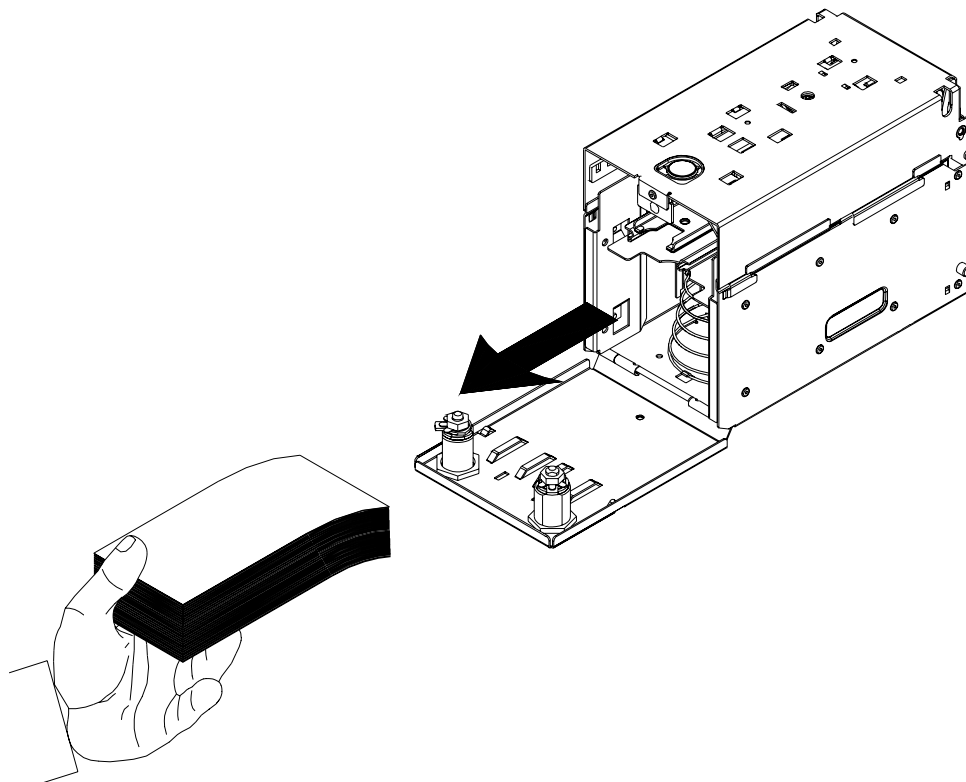


To replace the Cassette, close the Cassette cover, insert the Cassette into the FrontLoad frame, and turn the key to lock the Cassette back in place.

To open the Cassette cover, simply open the locks – located on the Cassette cover (as shown in diagram below).



The Cassette cover will then open easily, and the validated pack of bills can then be removed as a neat stack.



SOFTWARE UPDATES

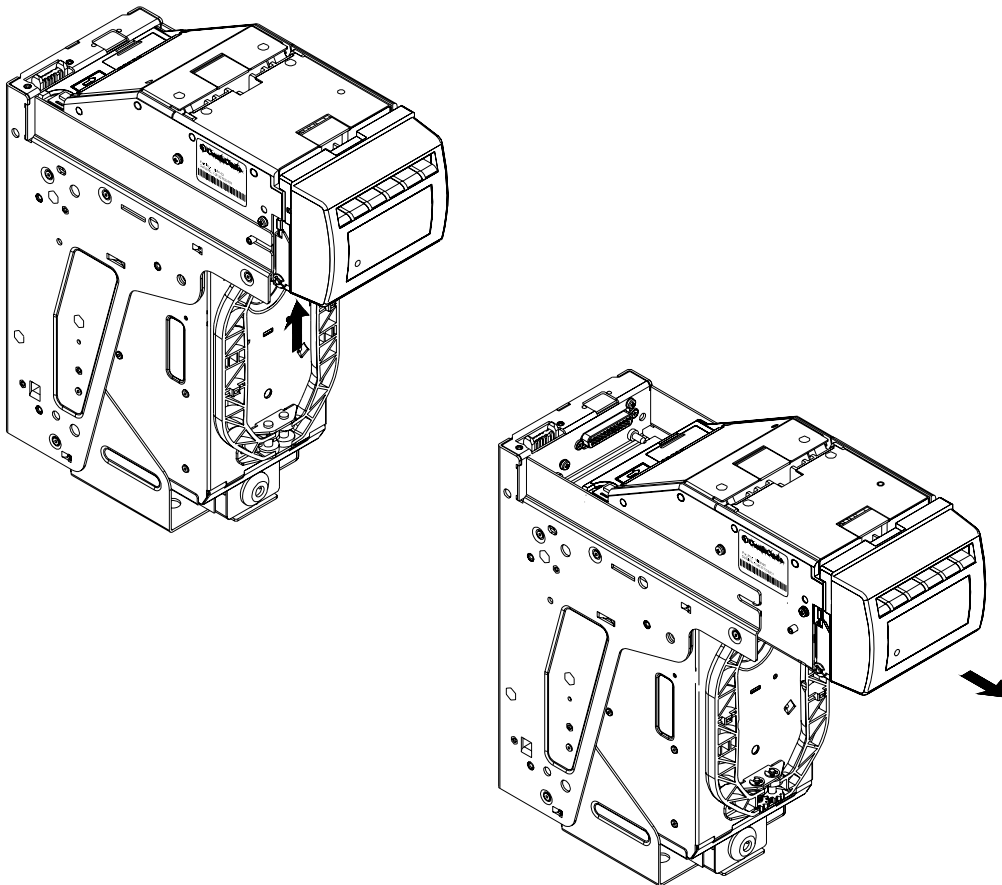
The FrontLoad Bill Validator is shipped with pre-installed software, according to a user's ordered specifications.

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

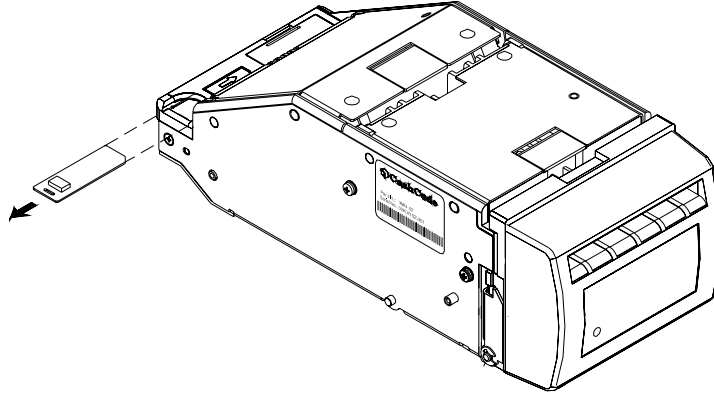
Download procedure for a single-download Memory Card:

Step 1. Turn Power OFF.

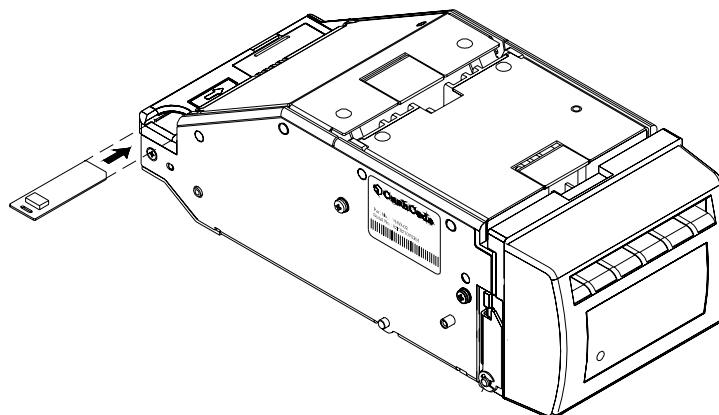
Step 2. Lift up the Latch under the Validating Head, and Remove the Validating Head from the Housing.



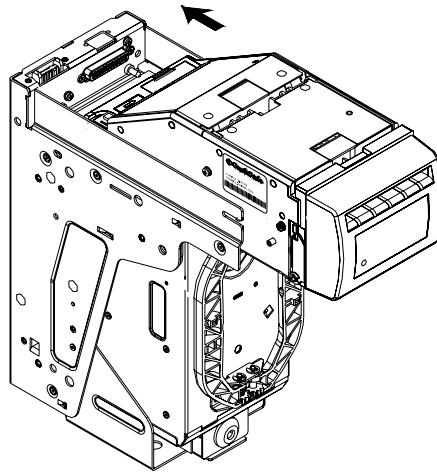
Step 3. Remove the Dummy Card (or Memory Card) from the Memory Card slot of the Validating Head (please see diagram below).



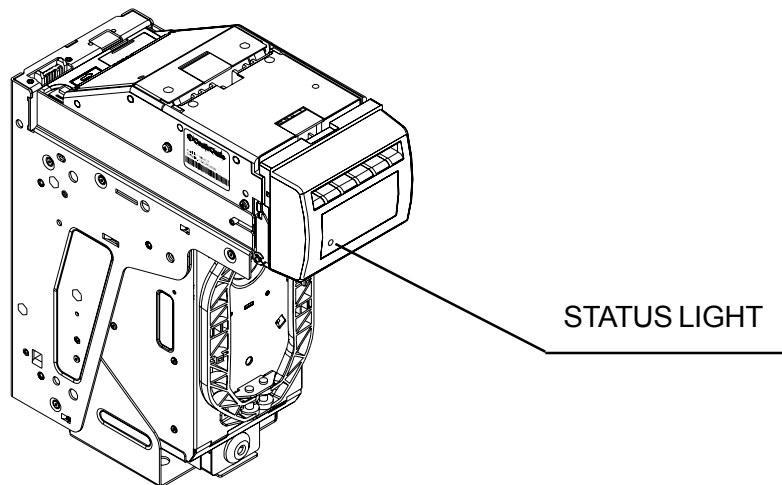
Step 4. Insert the new CashCode Memory Card into the Memory Card slot of the Validating Head (please see diagram below).



Step 5. Insert the Validating Head into the Housing.



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 FrontLoad Bill Validator and the host controller.



A single-download Memory Card 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 Card. 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 Card must be present in the Memory Card slot at all times – before and during the download.

1. When the FrontLoad 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. Remove the Validating Head from the Housing, and set Mode Switch to Service mode (see page 36).

Step 4. Install the Validating Head into the Housing.

Step 5. Connect the CashCode Adaptor (see page 23 for exact type): a) to the Computer, b) to the interface connector of the Bill Validator, and c) to the power outlet (AC 100-250V).

Step 6. From the computer, run the latest software version of the **FL***.exe** program.

Step 7. Follow the instructions displayed on the computer screen.

Step 8. After completing step 7, disconnect the CashCode Adaptor: a) from the power outlet, b) from the Bill Validator, and c) from the Computer.

Step 9. Remove the Validating Head from the Housing, and set Mode Switch to Validation mode (see page 36).

Step 10. Install the Validating Head into the Housing.

Step 11. Connect the interface connector to the Bill Validator.

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 completed 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:

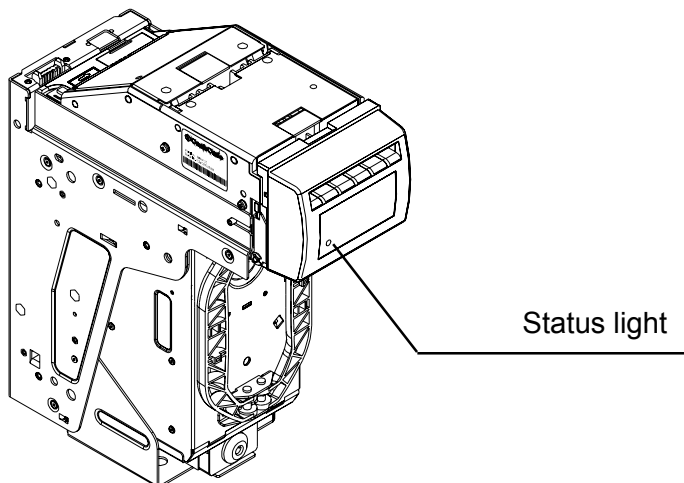
STATUS OF DIAGNOSTIC LIGHT	ERROR DESCRIPTION	FAULT - HANDLING
1 GREEN FLASH ON RED	External interface ERROR in CCNET Download mode	1. Verify that software is suitable for CCNET download. 2. Repeat procedure.
2 GREEN FLASHES ON RED	Memory Card CRC ERROR	1. Turn POWER OFF, remove and insert the Smart Stick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

TROUBLESHOOTING

CashCode's FrontLoad 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.

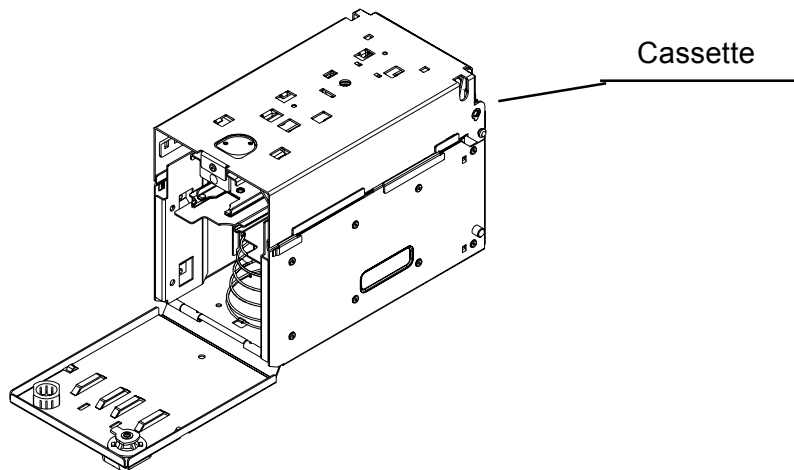
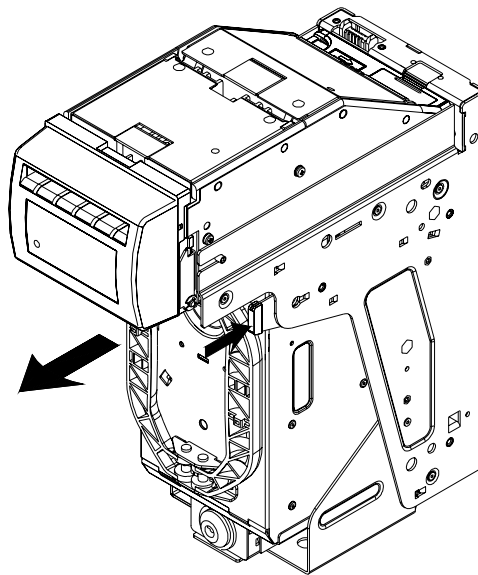
If the self-diagnostic test is passed, then the status light will turn green. If an error is detected, then the status light on the front of the Bill Validator will blink red.

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.

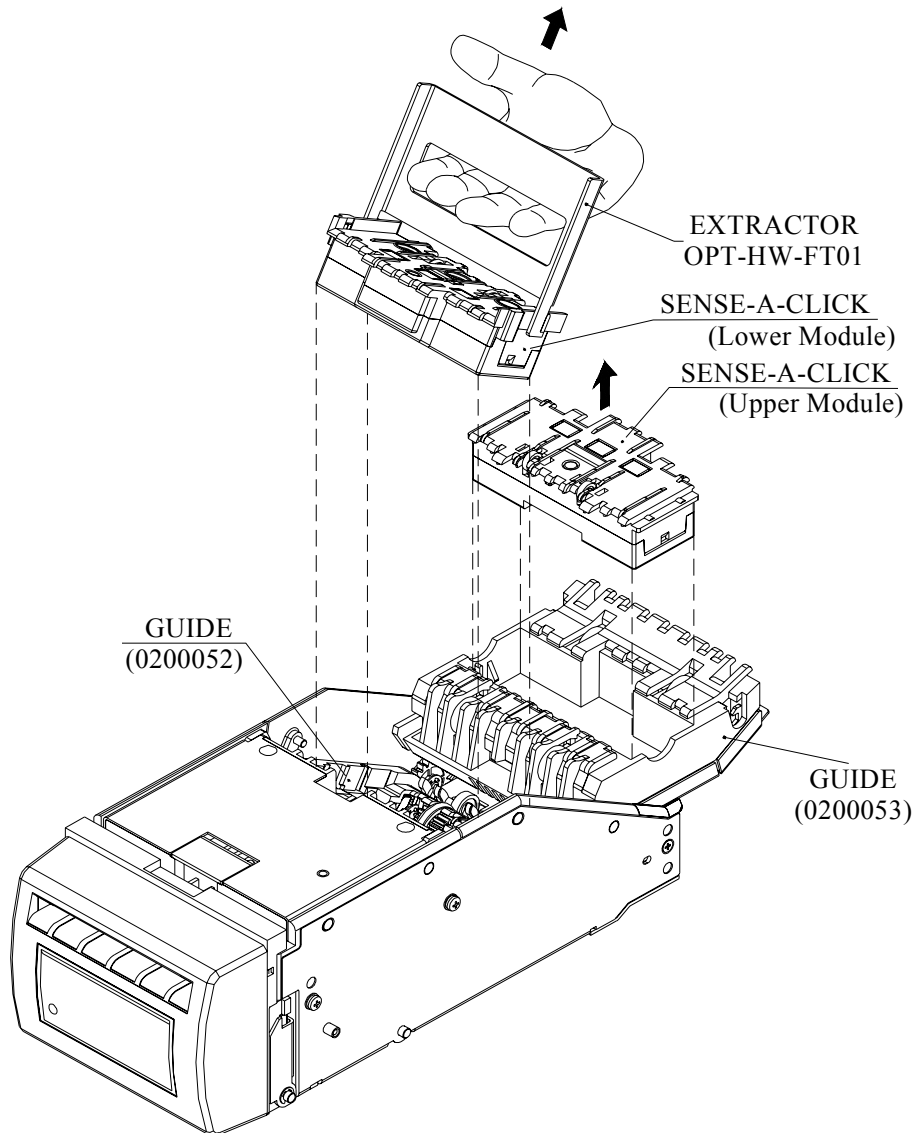


OPERATION MODE DIAGNOSTICS

NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING	NOTE
1. RED	CASSETTE IS REMOVED FROM BILL VALIDATOR	CHECK IF CASSETTE IS INSTALLED CORRECTLY	

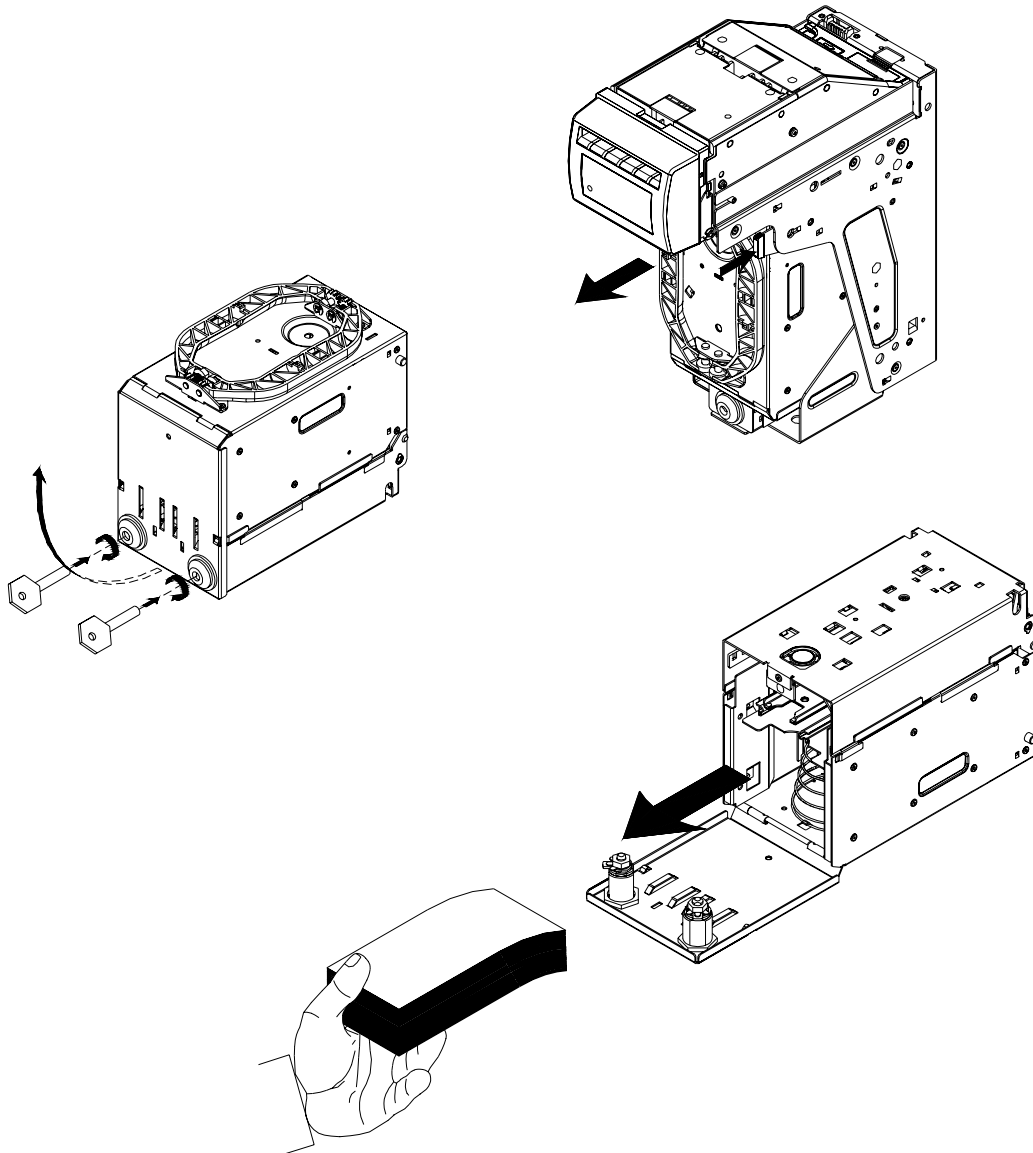


NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING	NOTE
2. RED	AN ERROR OCCURED DURING CPU EXCHANGE WITH SENSE-A-CLICK MODULES	1. DISCONNECT POWER FROM VALIDATOR. 2. OPEN COVER, CHECK IF SENSE-A-CLICK MODULES ARE PROPERLY INSTALLED. 3. VERIFY THAT SENSE-A-CLICK MODULES CORRESPOND TO THE CORRECT SOFTWARE TYPE/VERSION.	



TROUBLE-SHOOTING

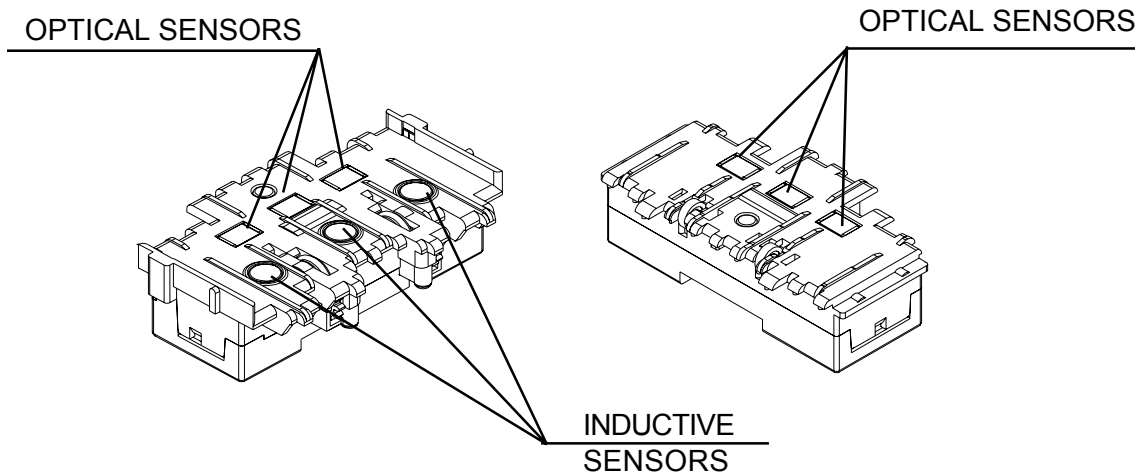
NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING	NOTE
3. RED	CASSETTE IS FULL	REMOVE CASSETTE, EMPTY CASSETTE AND INSERT EMPTY CASSETTE.	
4. RED	MECHANICAL JAM IN CASSETTE OR STACKER MOTOR FAILURE	1. REMOVE CASSETTE FROM BILL VALIDATOR HOUSING AND EXTRACT CRUMPLED OR JAMMED BILL. 2. TURN POWER ON AND CHECK IF STACKER MOTOR ROTATES.	



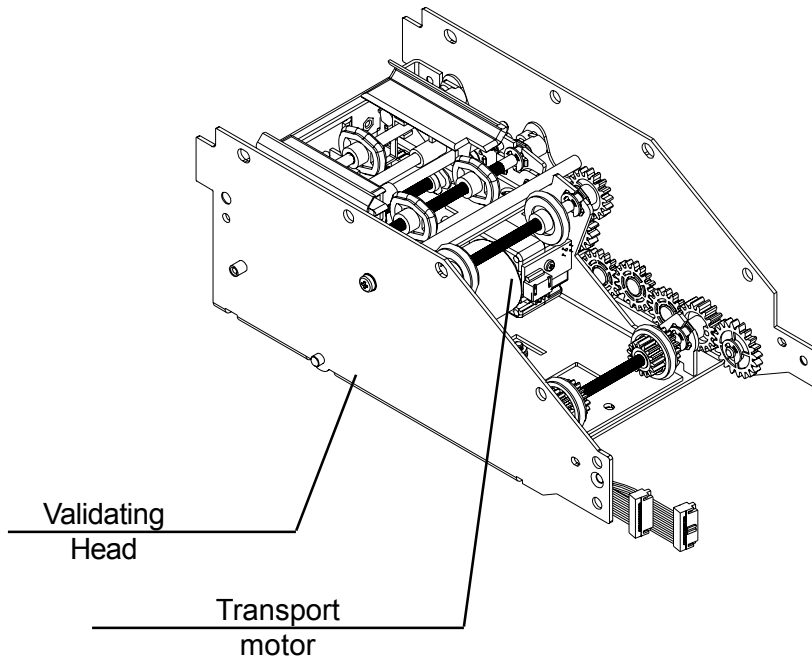
NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING	NOTE
5. RED	FAILURE OF DIELECTRIC SENSORS	1. CHECK IF SENSE-A-CLICK MODULE CORRESPONDS TO THE CORRECT SOFTWARE TYPE/VERSION. 2. REPLACE SENSE-A-CLICK MODULE.	
6. RED	FAILURE OF OPTICAL SENSORS	1. OPEN VALIDATOR HEAD GUIDE, CLEAN OPTICAL SENSORS (PLEASE SEE MAINTENANCE SECTION FOR CLEANING DETAILS ON THESE SENSORS). 2. REMOVE SENSE-A-CLICK MODULE. CHECK CONNECTORS. 3. CHANGE SENSE-A-CLICK MODULE.	

NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING	NOTE
7. RED	FAILURE OF INDUCTIVE SENSORS	1. OPEN VALIDATOR HEAD GUIDE, CLEAN INDUCTIVE SENSORS (PLEASE SEE MAINTENANCE SECTION FOR CLEANING OF THESE SENSORS). 2. REMOVE LOWER SENSE-A-CLICK MODULE WITH INDUCTIVE SENSORS AND CHECK CONNECTORS. 3. CHANGE LOWER SENSE-A-CLICK MODULE.	

“SENSE-A-CLICK”

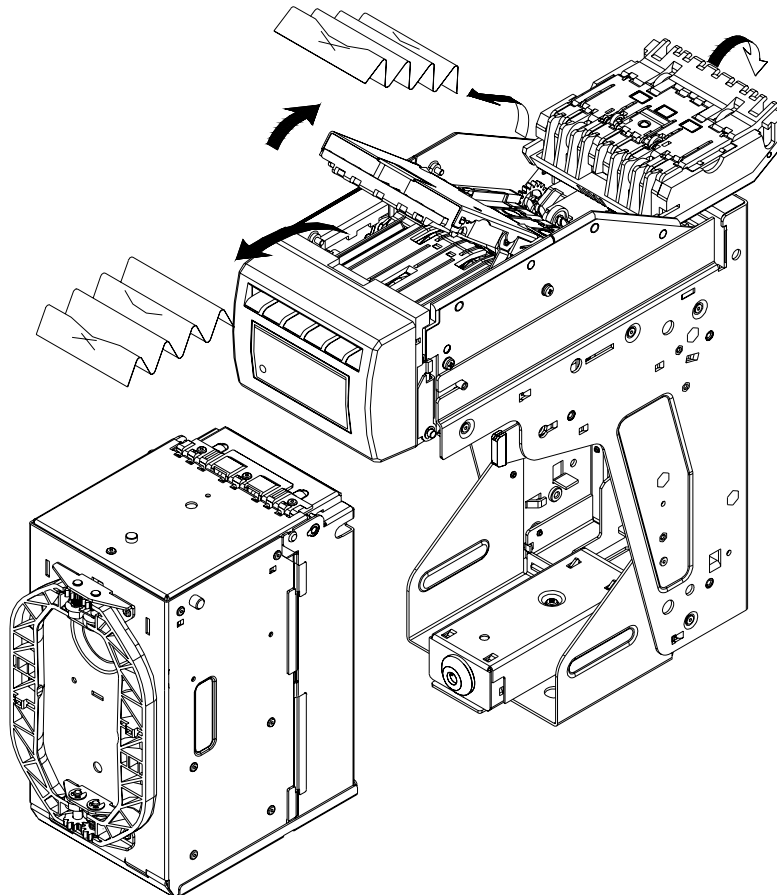


NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING	NOTE
8. RED	FAILURE OF TRANSPORTING MOTOR	1. OPEN VALIDATOR HEAD GUIDE, CLEAN PATH. 2. CLOSE VALIDATOR HEAD GUIDE. 3. IF VALIDATOR DOES NOT START, TURN OFF POWER, RELEASE VALIDATOR HEAD AND CHECK RECEIVING PATH. 4. INSERT VALIDATOR HEAD AND TURN POWER "ON".	



TROUBLE-SHOOTING

NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING	NOTE
9. RED	SPEED OF TRANSPORTING MOTOR IS TOO FAST	CHECK POWER SUPPLY VOLTAGE.	
10. RED	FAILURE IN ALIGNMENT MECHANISM	1. OPEN VALIDATOR HEAD GUIDE. CHECK TO SEE IF PATH IS CLEAN. 2. CLOSE GUIDE AND TURN OFF POWER. AFTER FIVE SECONDS, TURN POWER "ON". THE ALIGNMENT MECHANISM WILL SELF-ADJUST.	
11. RED	BILL PATHWAY IS NOT EMPTY	OPEN RECEIVING PATH AND CHECK THAT IT IS CLEAN.	
12. RED	BILL JAM IN ENTRY SLOT OF CASSETTE. NO CREDIT ISSUED.	REMOVE CASSETTE FROM BILL VALIDATOR AND CLEAN PATH.	
13. RED	OVERLOAD OF TRANSPORT MOTOR	OPEN VALIDATOR HEAD GUIDE AND CHECK TO SEE IF PATH IS CLEAN.	



TECHNICAL SUPPORT

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