≡ SUZOHAPP

FrontLoad Series

FrontLoad Bill Validator

Operation and Service Manual

Part 1. Operation Manual

Table of Contents

INTRODUCTION

The scope of this document is to provide full and clear information about the FL/MFL series of Suzohapp 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;
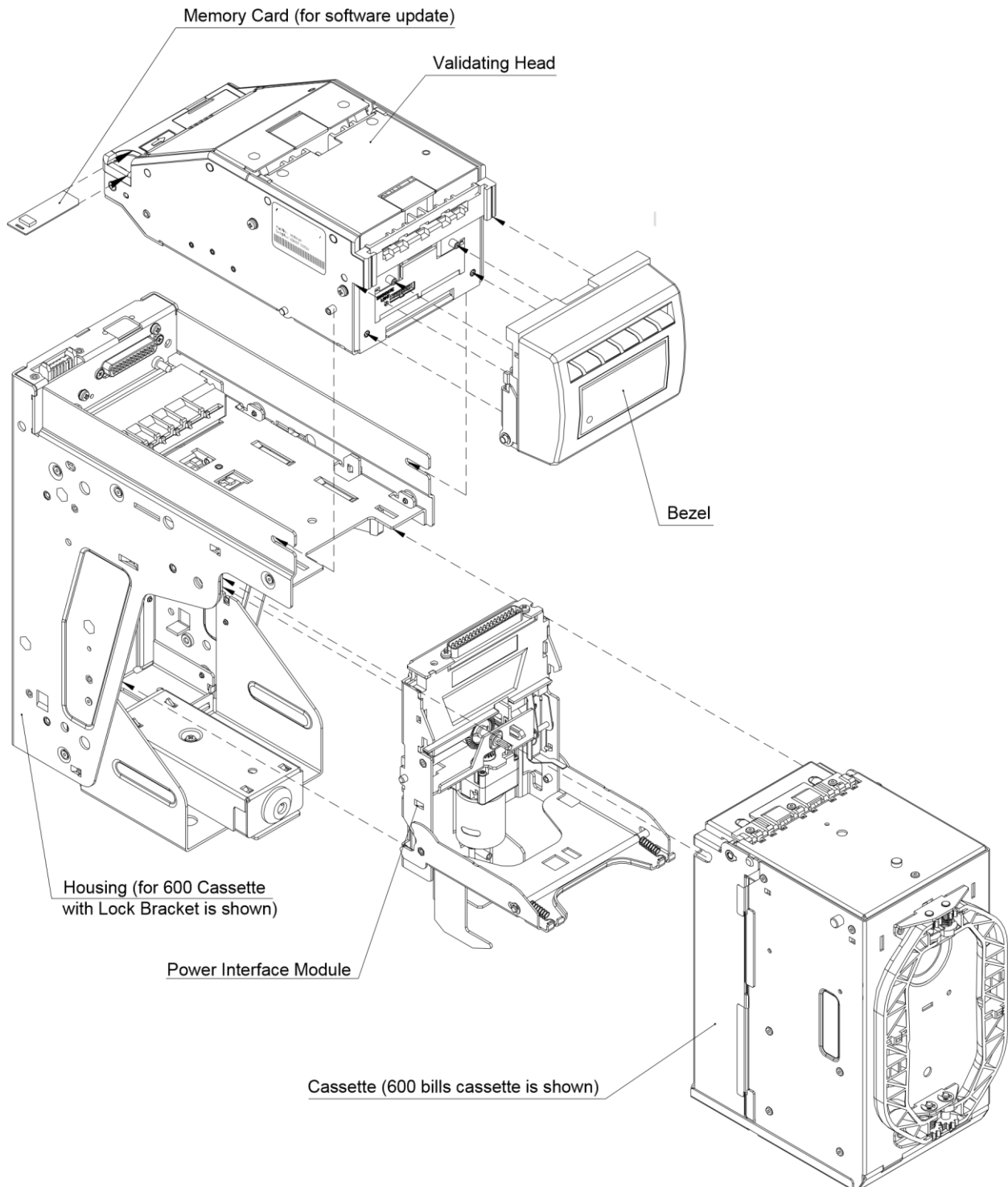- Maintenance and service for the FL/MFL bill validator; Repair of the FL/MFL bill validator.

PRODUCT OVERVIEW

Suzohapp'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 Suzohapp FrontLoad bill validator provides front access to a lockable cassette.
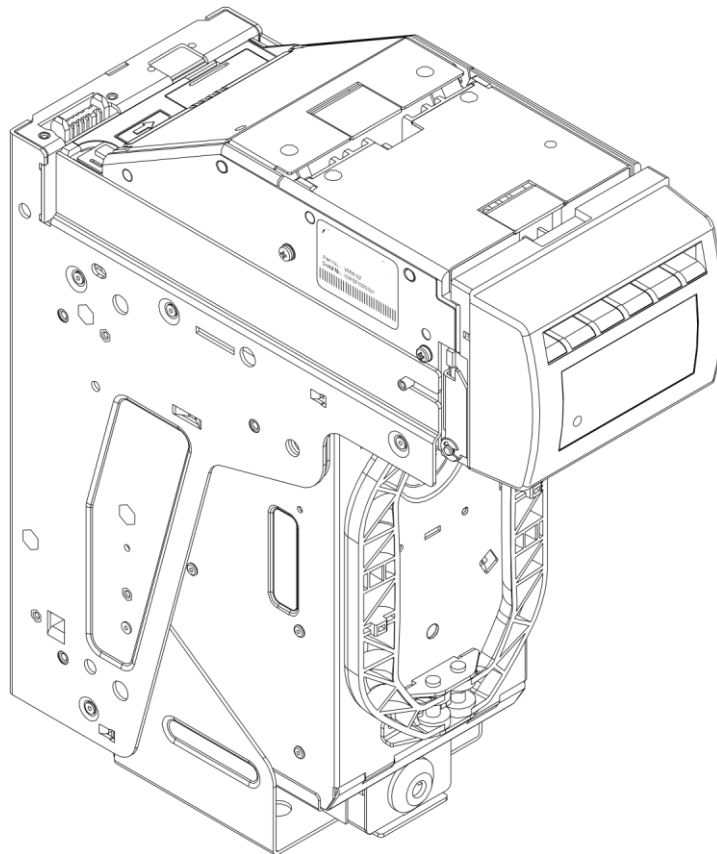
The FrontLoad bill validator consists of six main modules. Each module is available in different variations, to suit your needs. The picture below illustrates the different modules.

Memory Card (for software update)

Validating Head

Bezel

Housing (for 600 Cassette with Lock Bracket is shown)

Power Interface Module

Cassette (600 bills cassette is shown)

The FrontLoad bill validator is designed accommodate bills 62 to 82 mm wide and 125 to 172 mm long – which encompasses most currencies.

Certain currencies have varying widths for different denominations. For proper handling of such currencies, the **Validating Head** with a centering mechanism should be used. For currencies with fixed-width, a fixed width **Validating Head** can be used.

Replaceable "**Sense-a-Click™**" sensor pak modules validate a specific currency, depending on the type of 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 ¾" tubular locks. The Cassette is available in two sizes: 600 or 1000 bill capacity.
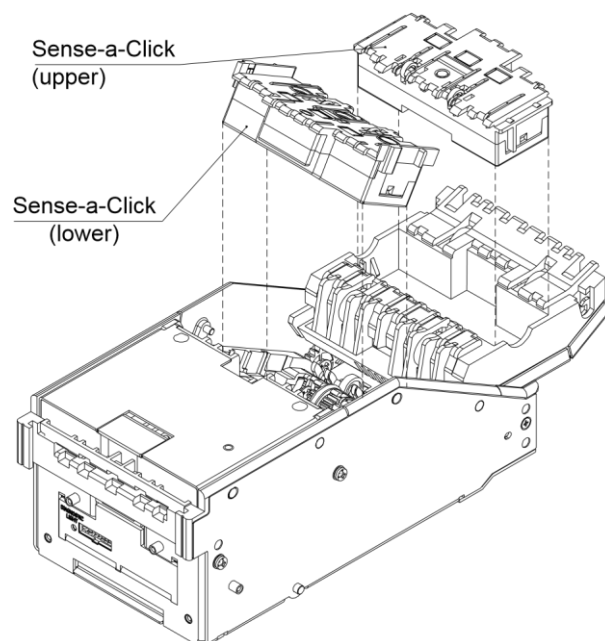
The Validating Head carries a set of Sense-a-Click™ sensor pak modules

Bill Capacity (600 or 1000 bills) refers to the amount of new bills that the **Cassette** can store. This capacity however gets reduced when street grade bills are 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 – in just seconds!

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 identification, 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:
a. Serial Interface, Opto-Isolated.
b. Serial Interface, RS 232C.
c. 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. ± 1.0 V or 24 V.D.C. ± 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 (continued)

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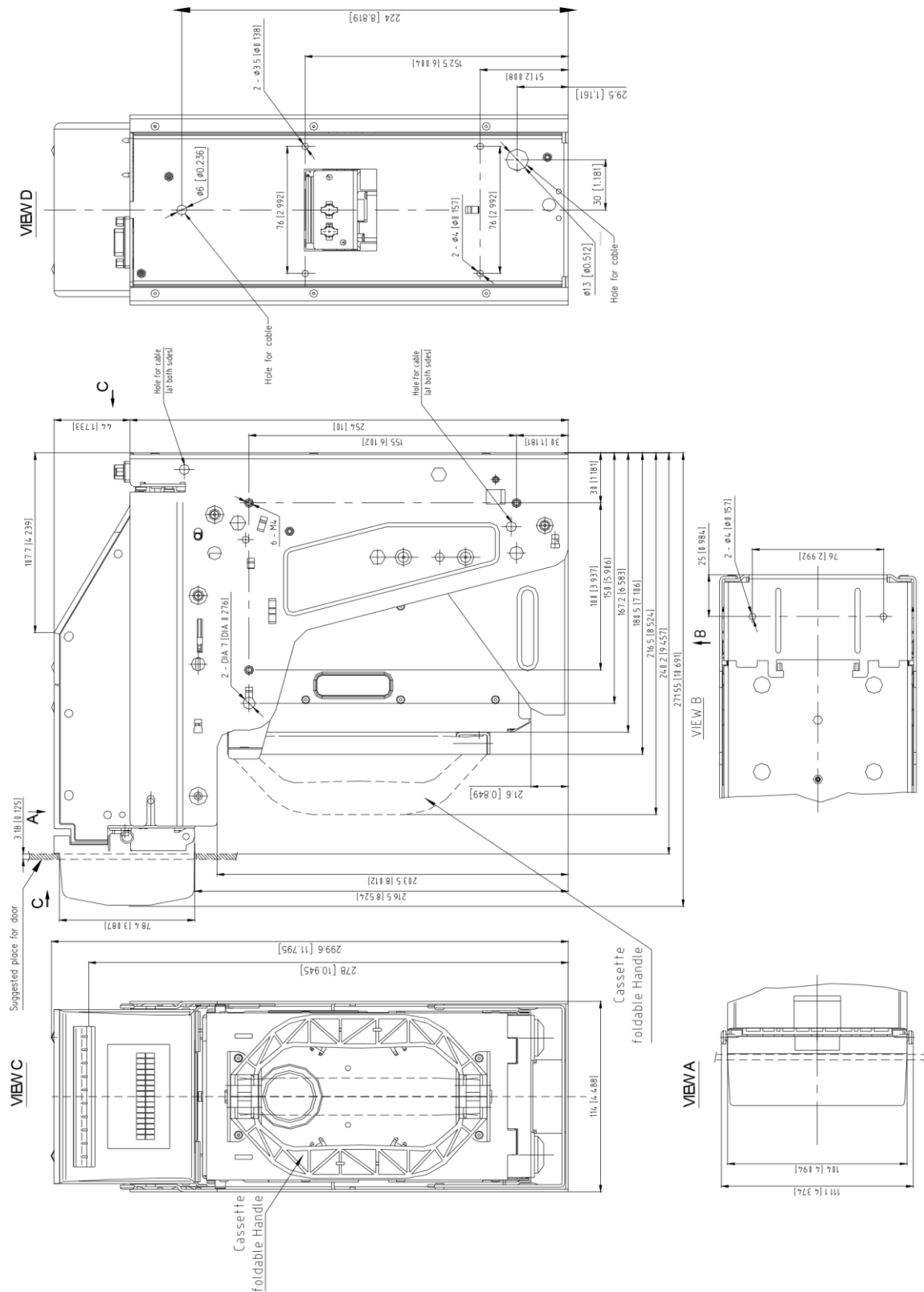c. Humidity (non-condensing).. 30%-90%RH

DIMENSIONS
BILL VALIDATOR WITH STANDARD BEZEL, 600 BILL CASSETTE AND LOCKING MECHANISM
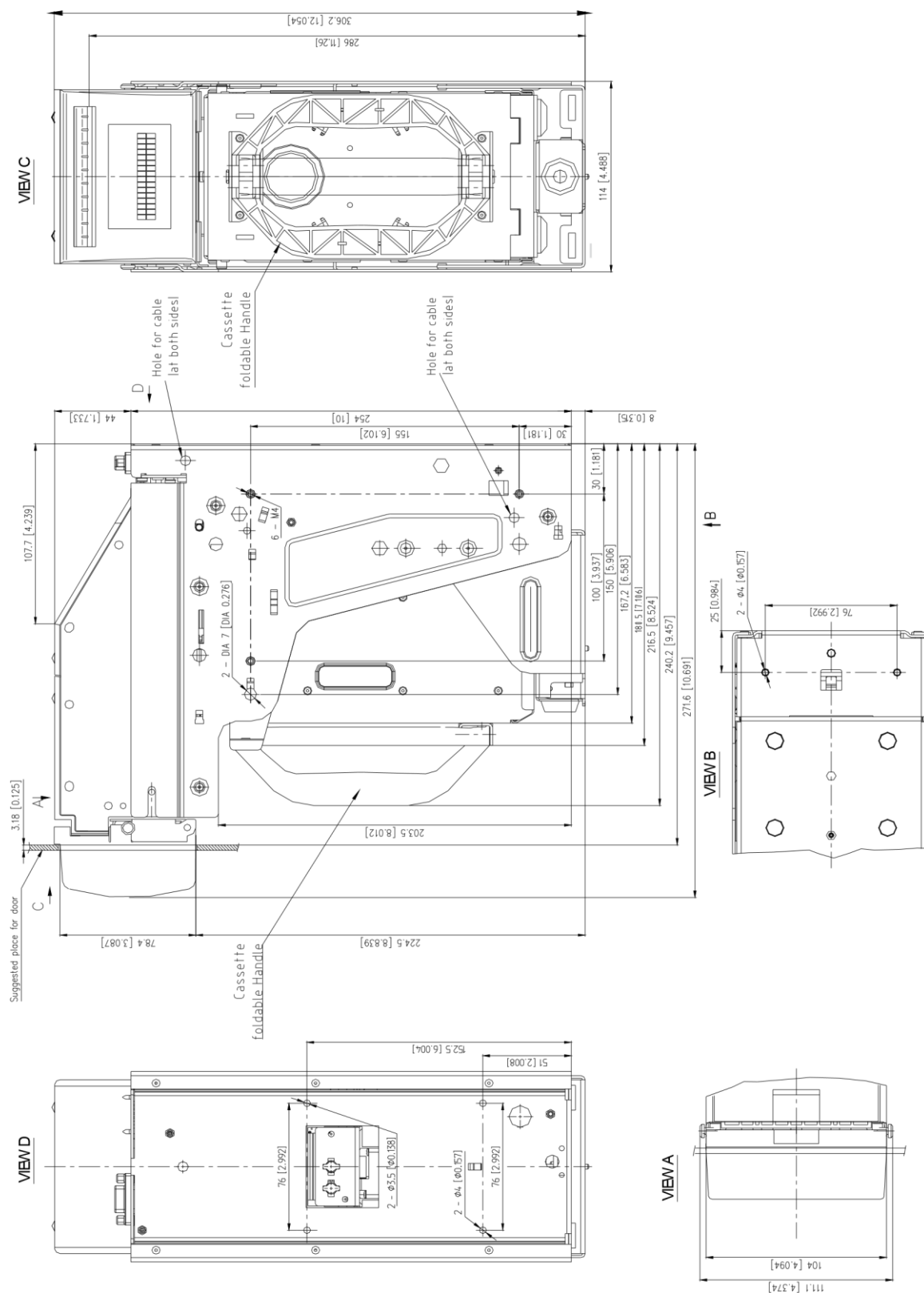
BILL VALIDATOR WITH STANDARD BEZEL, 600 BILL CASSETTE AND NON-LOCKING MECHANISM

BILL VALIDATOR WITH STANDARD BEZEL, 1000 BILL CASSETTE AND LOCKING MECHANISM
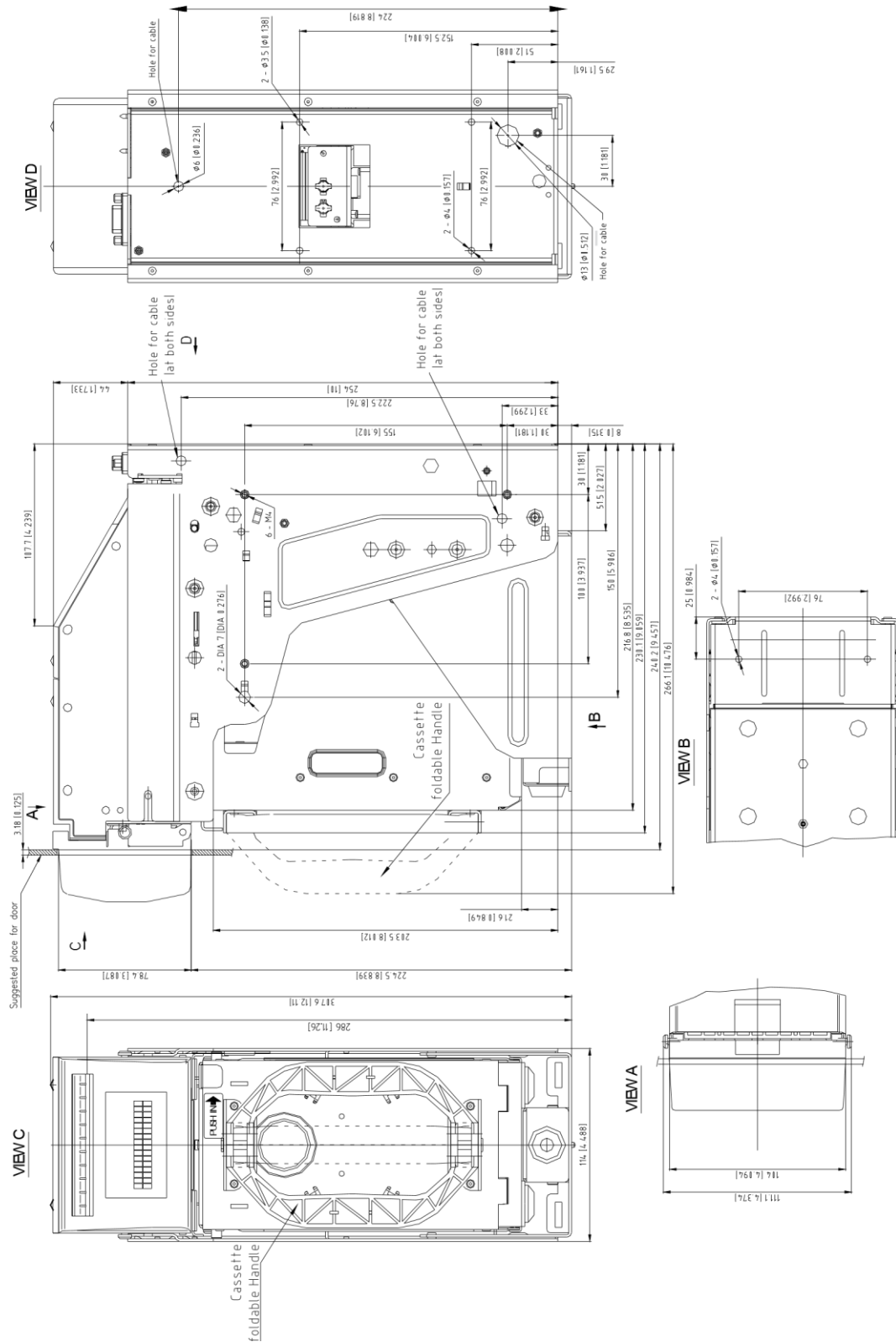
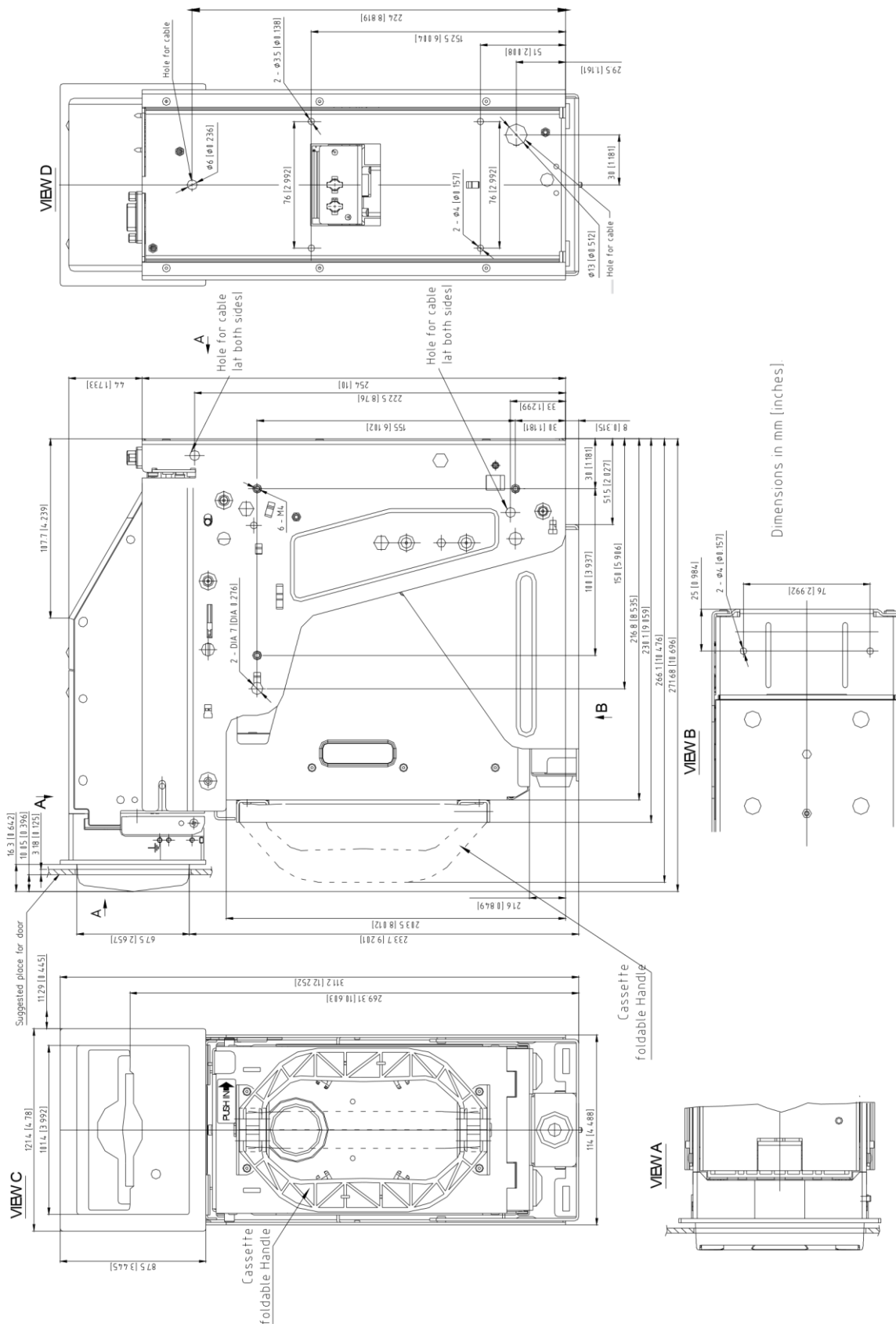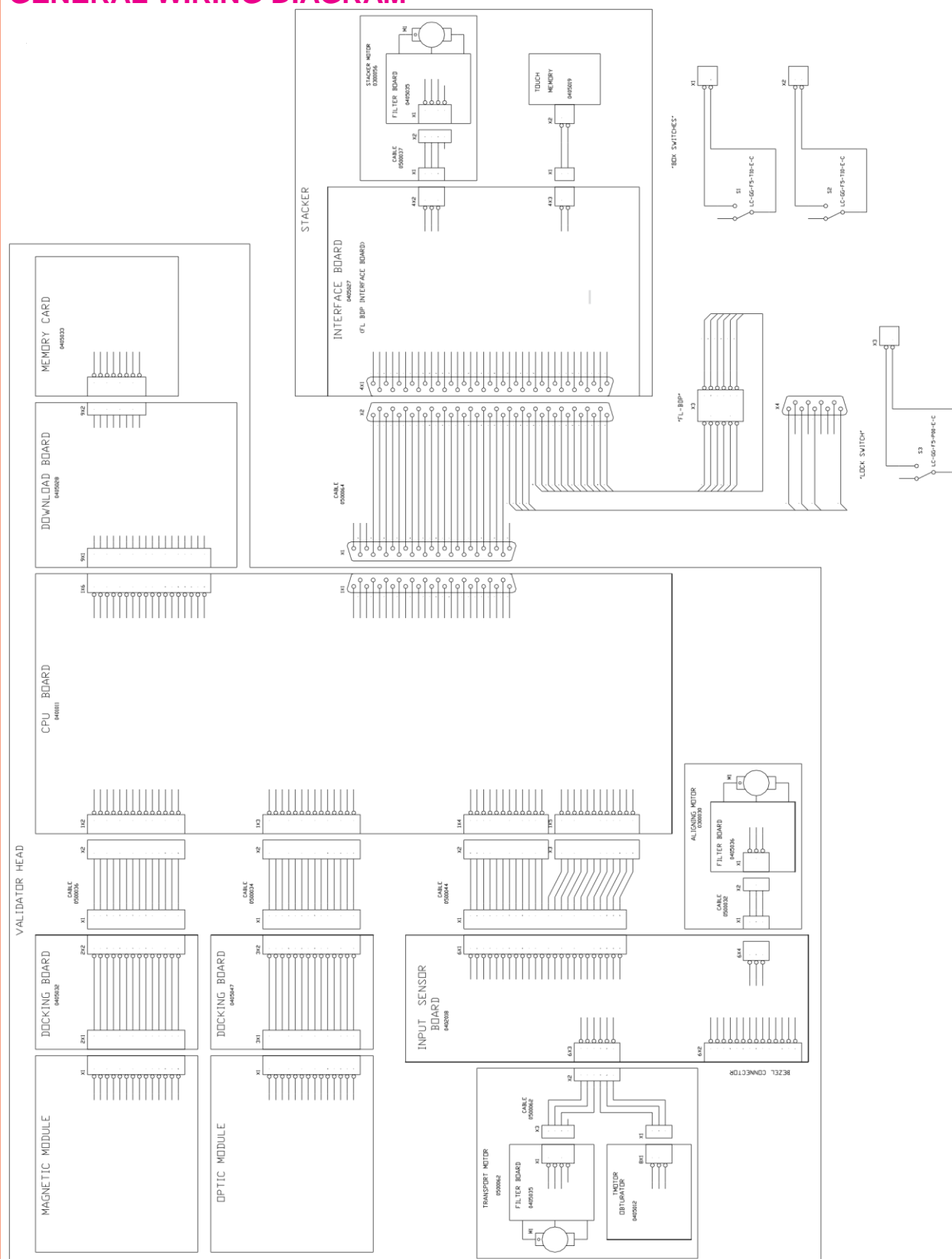**BILL VALIDATOR WITH STANDARD BEZEL, 1000 BILL CASSETTE AND NON- LOCKING MECHANISM**
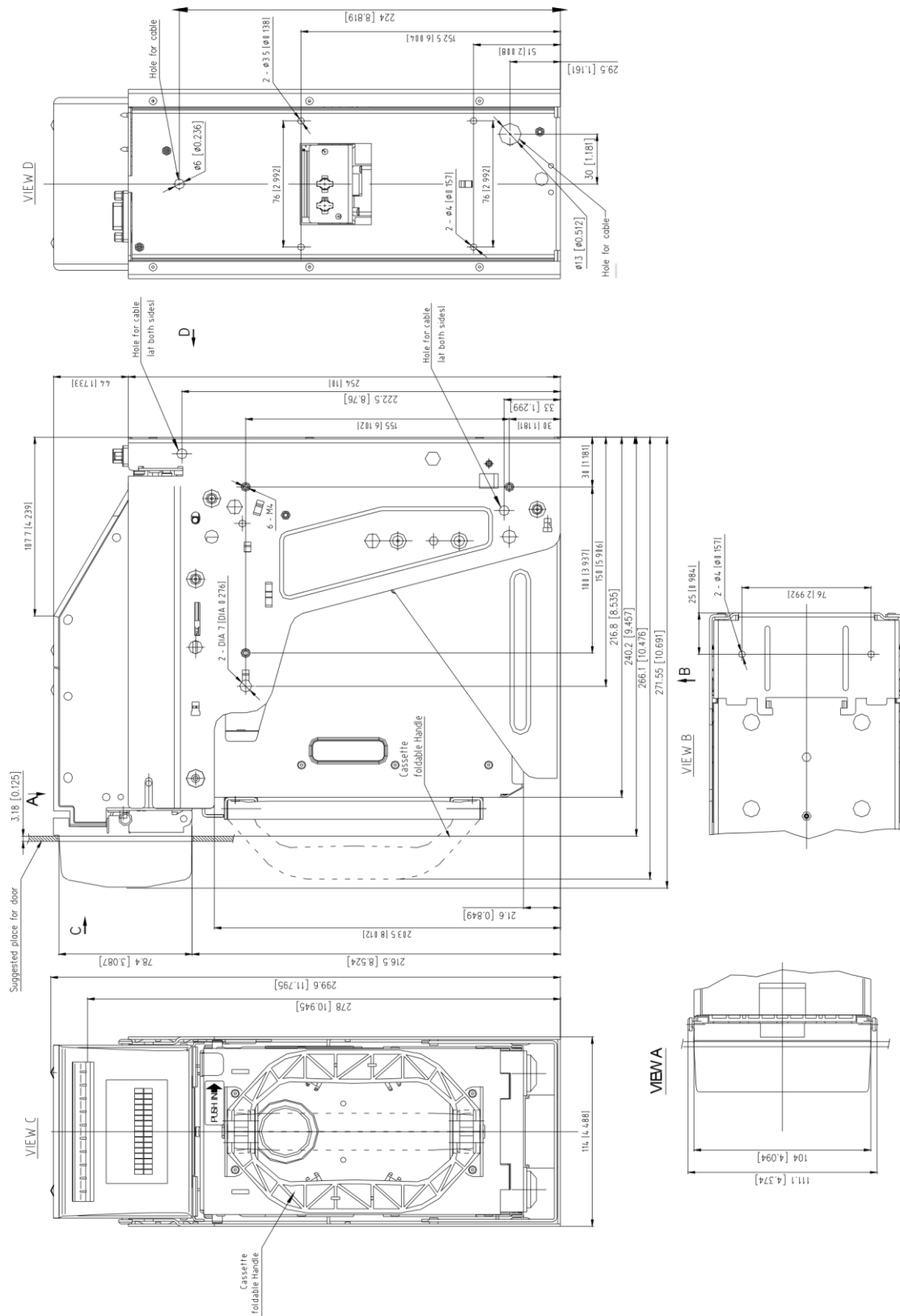
BILL VALIDATOR WITHOUT BEZEL, 600 BILL CASSETTE AND LOCKING MECHANISM
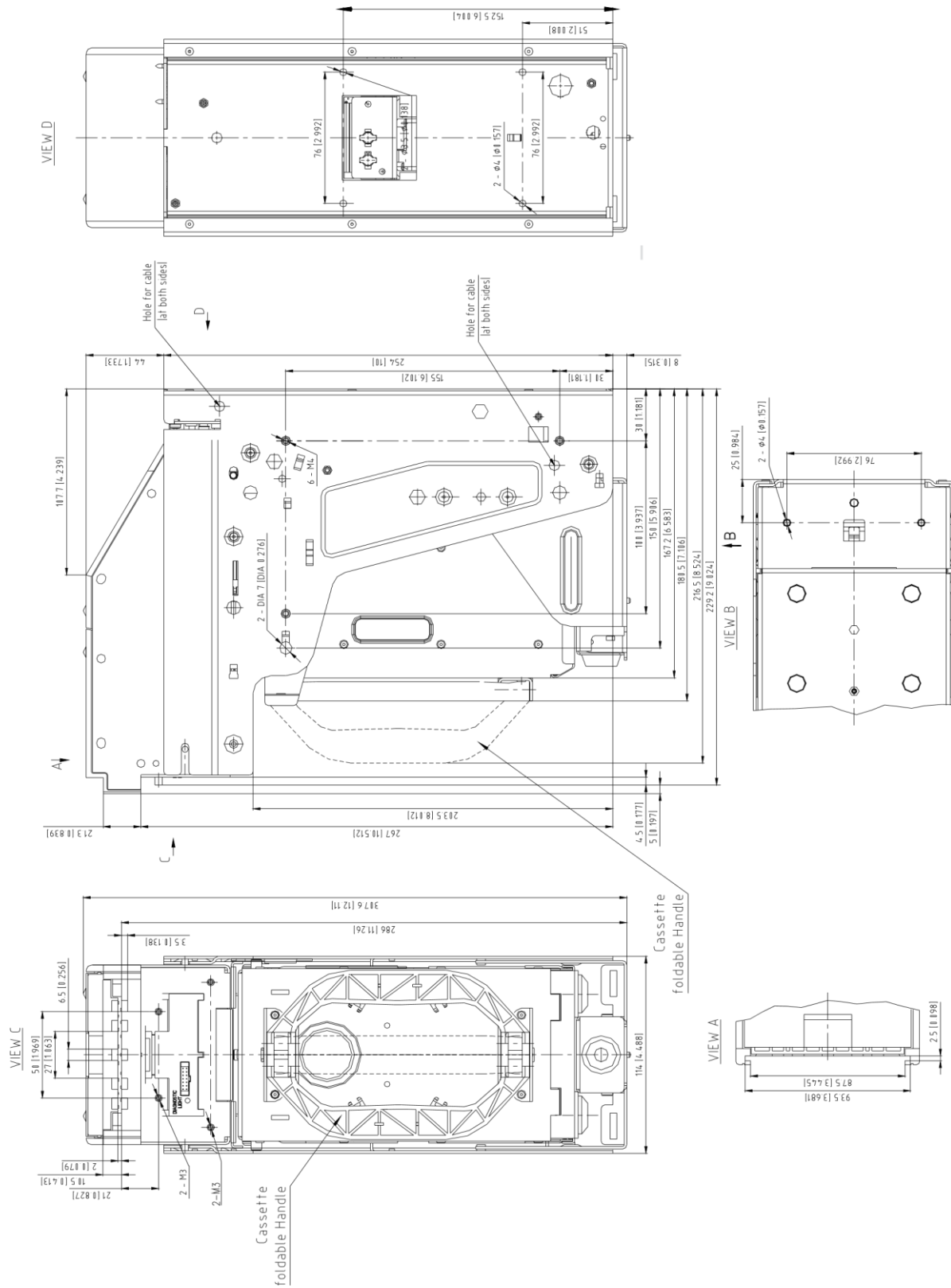
BILL VALIDATOR WITH METAL BEZEL, 1000 BILL CASSETTE AND LOCKING MECHANISM
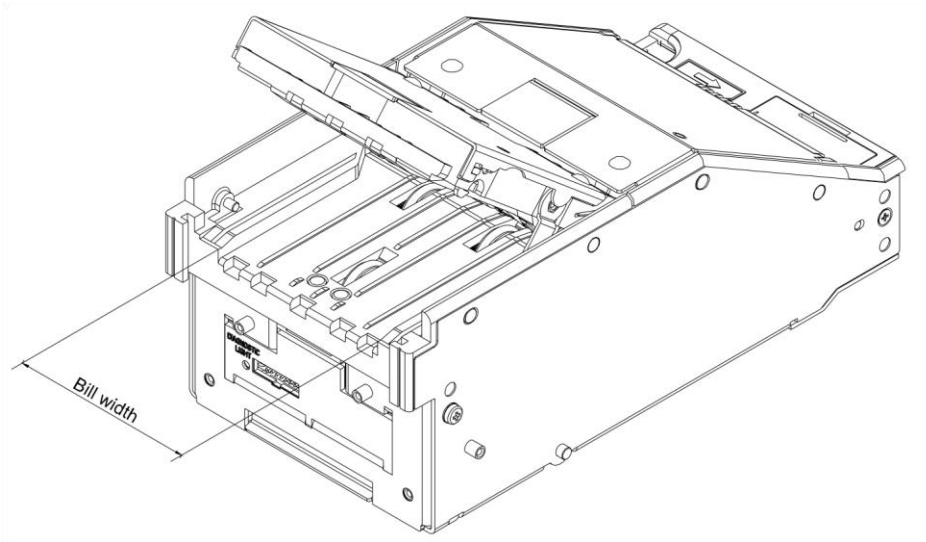
GENERAL WIRING DIAGRAM

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.
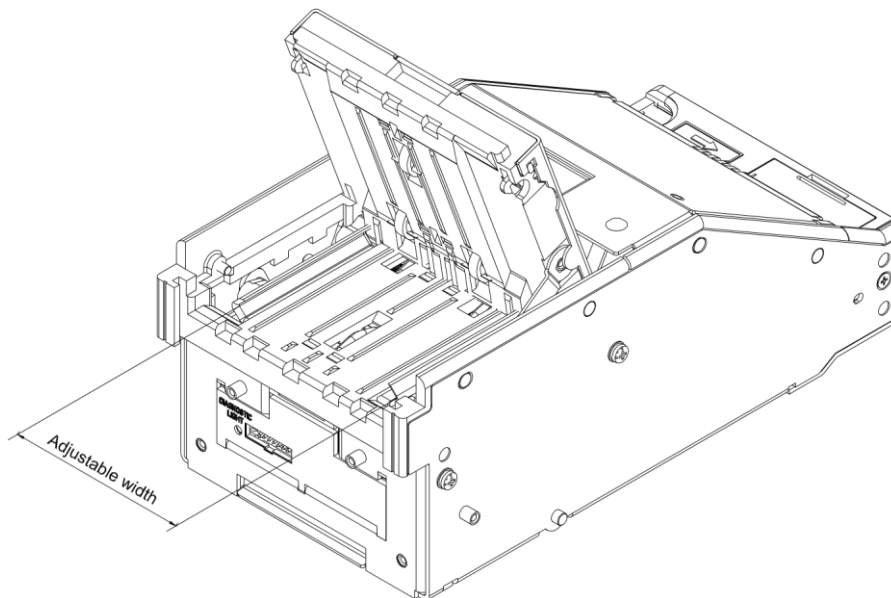
VALIDATING HEAD

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

1)   The Validating Head with a fixed-width path is available for bill widths 66 and 70 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) Following Validating Heads are currently available.

Part number	Description
FLV-0310	66 mm
FLV-0510	70 mm
FLV-9014	66 mm, outdoor use
FLV-9016	70 mm, outdoor use
MFLV-2110	62-82 mm
MFLV-9013	62-82 mm, outdoor use

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 Suzohapp Customer service.

Country	Validating Head
Albania	MFLV-2110
Argentina	FLV-0310
Armenia	MFLV-2110
Aruba	FLV-0310
Australia	FLV-0310
Azerbaijan	FLV-510
Bahamas	FLV-0310
Belarus	MFLV-2110
Bolivia	FLV-0510
Botswana	MFLV-2110
Brazil	FLV-0310
Bulgaria	MFLV-2110
Canada	FLV-0510
Cayman Islands	FLV-310
Chile	FLV-0510
China	MFLV-2110
Colombia	FLV-0510
Costa Rica	FLV-310
Czech Republic	MFLV-2110

Country	Validating Head
Dominican Republic	FLV-0310
Eastern Caribbean	FLV-0510
Egypt	FLV-0510
European Union (Euro)	MFLV-2110
Estonia	FLV-0510
Georgia	MFLV-2110
Gibraltar	MFLV-2110
Guatemala	FLV-310
Hong Kong	MFLV-2110
Hungary	MFLV-2110
India	MFLV-2110
Indonesia	MFLV-2110
Japan	MFLV-2110
Kazakhstan	MFLV-2110
Kenya	MFLV-2110
Korea	MFLV-2110
Kyrgyzstan	MFLV-2110
Latvia	FLV-0310
Lithuania	FLV-0310
Macau	MFLV-2110
Macedonia	FLV-0510
Malawi	MFLV-2110
Malaysia	MFLV-2110
Malta	MFLV-2110
Mauritius	MFLV-2110
Mexico	FLV-0310
Moldova	MFLV-2110
Morocco	MFLV-2110

Country	Validating Head part number
Namibia	FLV-0510
Nigeria	MFLV-2110
New Zealand	MFLV-2110
Norway	MFLV-2110
Peru	FLV-0310
Philippines	FLV-0310
Poland	MFLV-2110
Romania	MFLV-2110
Russia	MFLV-2110
Serbia	MFLV-2110
Singapore	MFLV-2110
Slovakia	MFLV-2110
South Africa	FLV-0510
Swaziland	FLV-0510
Sweden	MFLV-2110
Switzerland	MFLV-2110
Taiwan	MFLV-2110
Thailand	MFLV-2110
Tajikistan	FLV-0310
Tanzania	FLV-0310
Turkey	MFLV-2110
Uganda	MFLV-2110
Ukraine	MFLV-2110
United Arab Emirates	MFLV-2110
United Kingdom	MFLV-2110
USA	FLV-0310
Venezuela	FLV-0510
Zambia	FLV-0510

SENSE-A-CLICK® MODULES

"Sense-a-Click™" is a set of two sensor modules – upper and lower.

The Sense-a-Click™ set is identified by:
- Color and position of the optical sensors;
- Number and position of the Inductive sensors;
- Capacitive sensors;

Sense-a-Click for a specific country is determined by Suzohapp based on characteristics of bills for that country. Table below shows Sense-a-Clicks for required for different countries.

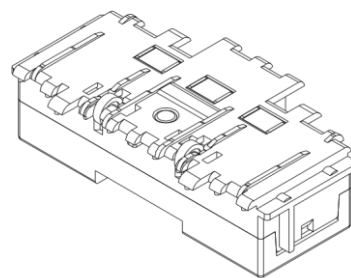| Country	Sense-a-Click
Albania	FLS-1705
Argentina	FLS-1704
Armenia	FLS-1704
Aruba	FLS-1704
Australia	FLS-1704
Azerbaijan	FLS-1704
Bahamas	FLS-1704
Belarus	FLS-1704
Bolivia	FLS-1705
Botswana	FLS-1704
Brazil	FLS-1704
Bulgaria	FLS-1704
Canada	FLS-1801
Cayman Islands	FLS-1704
Chile	FLS-1705
China	FLS-1705
Colombia	FLS-1704
Costa Rica	FLS-1705
Czech Republic	FLS-1704
Dominican Republic	FLS-1704
Eastern Caribbean	FLS-1704
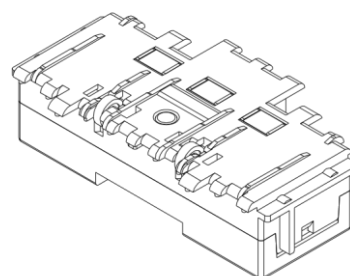
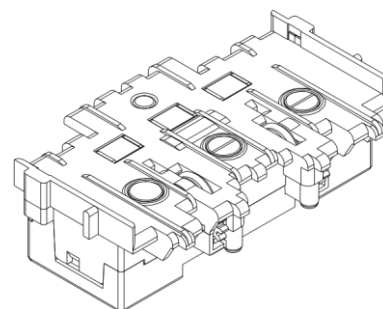Upper Module
FL-1704U
FL-1705U
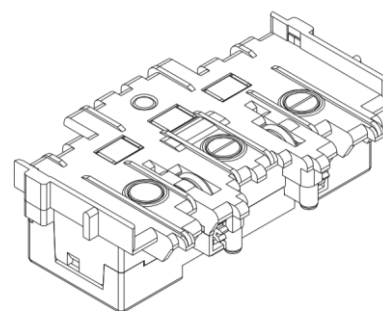
Lower

Module
FL-1704L
FL-1705L

Country	Sense-a-Click
Eastern Caribbean	FLS-1704
Egypt	FLS-1704
Estonia	FLS-1704
European Union (Euro)	FLS-1704
Georgia	FLS-1704
Gibraltar	FLS-1704
Guatemala	FLS-1705
Hong Kong	FLS-1705
Hungary	FLS-1704
India	FLS-1705
Indonesia	FLS-1704
Japan	FLS-1704
Kazakhstan	FLS-1704
Kenya	FLS-1704
Korea	FLS-1705
Kyrgyzstan	FLS-1704
Latvia	FLS-1704
Lithuania	FLS-1704
Macau	FLS-1705
Macedonia	FLS-1704
Malawi	FLS-1705
Malaysia	FLS-1705
Malta	FLS-1704
Mauritius	FLS-1704
Mexico	FLS-1705

Upper

Module
FL-1704U
FL-1705U

Lower Module
FL-1704L
FL-1705L

| Currency	Sense-a-Click
Moldova	F L S -1 7 0 4
Morocco	F L S -1 7 0 4
Namibia	F L S -1 7 0 4
Nigeria	F L S -1 7 0 5
New Zealand	F L S -1 7 0 4
Norway	F L S -1 7 0 5
Peru	F L S -1 7 0 4
Philippines	F L S -1 7 0 4
Poland	F L S -1 7 0 4
Romania	F L S -1 7 0 5
Russia	F L S -1 7 0 4
Serbia	F L S -1 7 0 4
Singapore	F L S -1 7 0 5
Slovakia	F L S -1 7 0 4
South Africa	F L S -1 7 0 4
Swaziland	F L S -1 7 0 4
Sweden	F L S -1 7 0 5
Switzerland	F L S -1 7 0 4
Taiwan	F L S -1 7 0 5
Thailand	F L S -1 7 0 5
Tajikistan	F L S -1 7 0 4
Tanzania	F L S -1 7 0 4
Turkey	F L S -1 7 0 5
Ukraine	F L S -1 7 0 4
U S A	F L S -1 7 0 4
United Arab Emirates	F L S -1 7 0 4
United Kingdom	F L S -1 7 0 4
U S A	F L S -1 7 0 4
Venezuela	F L S -1 7 0 5
Zambia	F L S -1 7 0 4
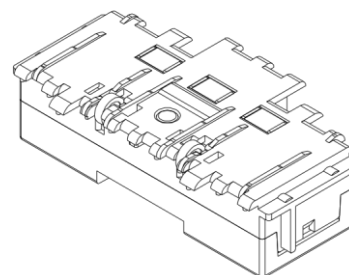
Upper Module
FL-1704U
FL-1705U
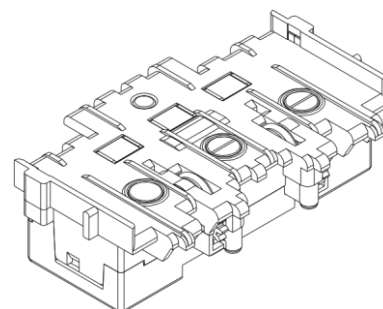
Lower Module
FL-1704L
FL-1705L

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 is used when additional modules like Smart Card Reader are added to the FrontLoad Bill Validator.

    4)   Connector for Cassette Touch Memory – Helps to extract cash collection data from the touch memory (dallas chip) enabled drop cassette.
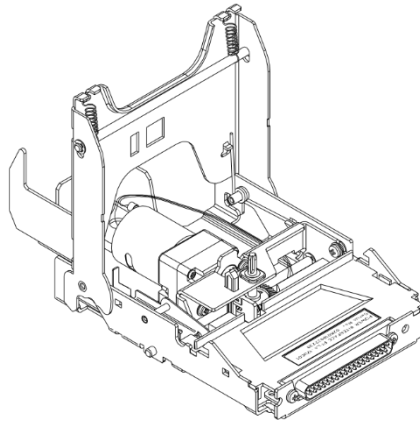
| Part Number	Power	Interface	Model
FLP-1710	12 VDC	Opto Isolated	A
FLP-2310	12 VDC	RS-232, Touch Memory	A
FLP-2510	12 VDC	RS 232, Outdoor	A
FLP-2710	12 VDC	RS 232	A
FLP-2810	12 VDC	Isolated Pulse Low Current	A
FLP-5710	24 VDC	RS232	B
FLP-9027	12 VDC	Opto Isolated, Outdoor	A
FLP-9028	24 VDC	RS 232, Outdoor	B
FLP-2810	12 VDC	Isolated Pulse Low Current, Outdoor	A
FLP-9056	24 VDC	RS 232C, Touch Memory, Outdoor	B

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 ¾" 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.
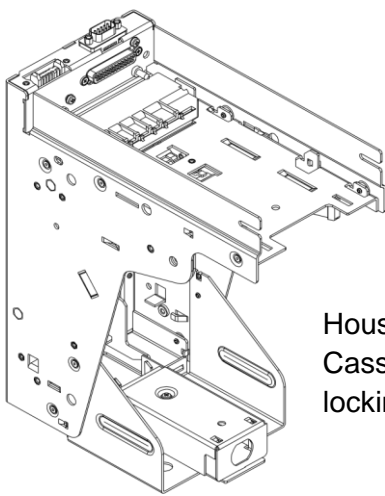
Housing for 600 bill Cassette with locking mechanism
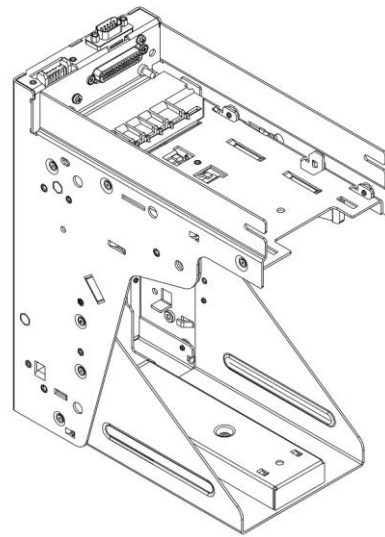
Housing for 1000 bill Cassette without locking mechanism

The following combination of features described above are available:

| Part Number	Cassette size	Bracket	Optional security switches
FLH-0110	600	Plain	None
FLH-0112	600	Plain, UDN	None
FLH-0120	600	Plain	Yes
FLH-0810	600	Lockable	None
FLH-0812	600	Lockable, UDN	None
FLH-0820	600	Lockable	Yes
FLH-3110	1000	Plain	None
FLH-3510	1000	Lockable	None
FLH-3512	1000	Lockable, UDN	None

BEZELS

Several **Bezel** designs are available in order to make the Suzohapp Bill Validator compatible with different door styles. Normally, the Bill Validator is supplied with the Standard Suzohapp 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
Suzohapp Standard Bezel	
FLB-2311	66
FLB-2331	70
MFLB-2401	62 to 82
Suzohapp Bezel with runway lights	
FLB-2111	66
FLB-9059 (outdoor)	66
FLB-2131	70
FLB-9130 (outdoor)	70
MFLB-2201	62 to 82
MFLB-4017 (outdoor)	62 to 82
Suzohapp Bezel with Digital Display	
FLB-3111	66
FLB-3131	70
MFLB-3201	62 to 82
MFLB-4027 (outdoor)	62 to 82

Standard Suzohapp Bezel. The status indication light is provided.
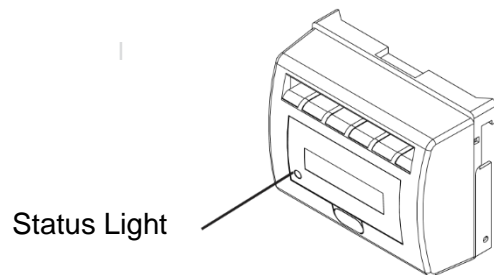
Status Light

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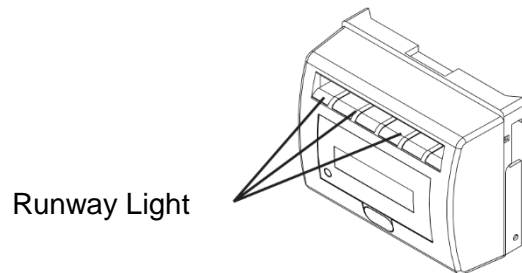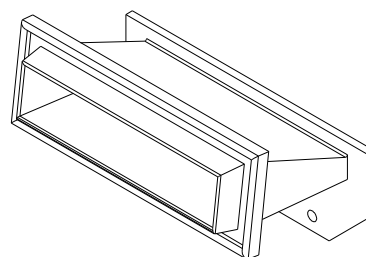

Runway Light

Suzohapp Bezel with runway lights and digital display. In addition to runway lights, a digital display of 2 lines (16 characters each) is available.

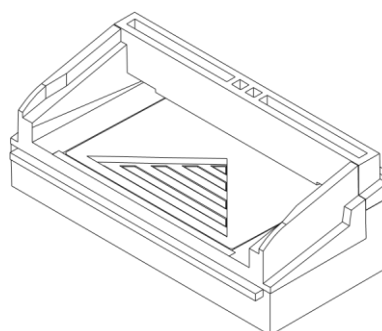Digital Display
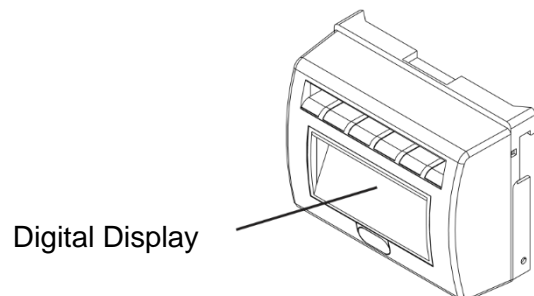
Suzohapp Bezel for "Double Diamond"
Gaming machine. Available in two widths: 66 and 70 mm.

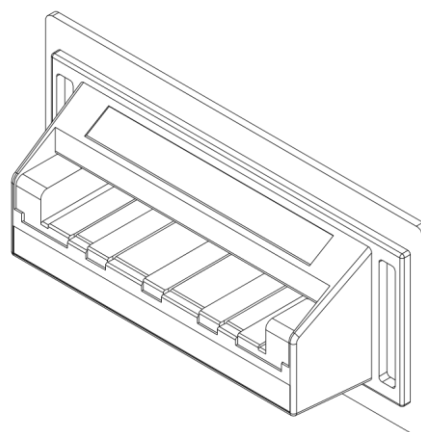| Part Number	Bill width, in mm
FLB-1011	66
FLB-1021	70

Bezel with runway lights.

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

Bezel Variant A

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

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

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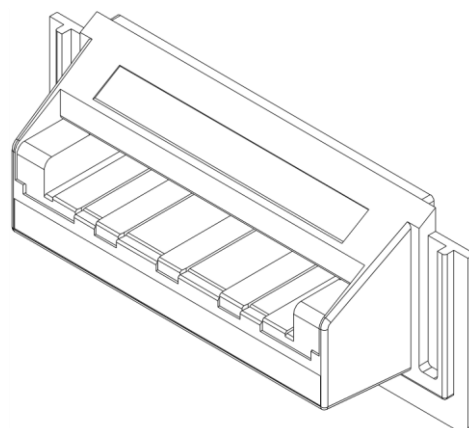
Part Number	Bill width, in mm
Bezel Variant C	
FLB-5215	66
FLB-5235	70
M FLB-5305	62 to 82

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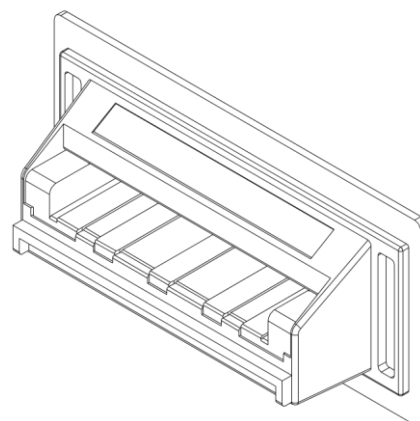
Part Number	Bill width, in mm
Bezel Variant D	
FLB-5217	66
FLB-9074 (Coated PCB)	66
FLB-5237	70
FLB-9081 (Coated PCB)	70
MFLB-5307	62 to 82
MFLB-9080 (Coated PCB)	62 to 82

Bezel Variant D
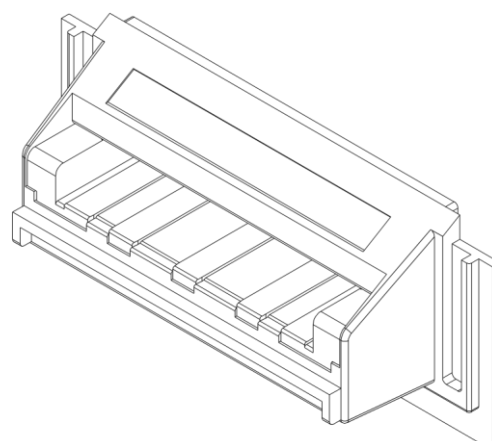
Runway Light Bezel, SM-size

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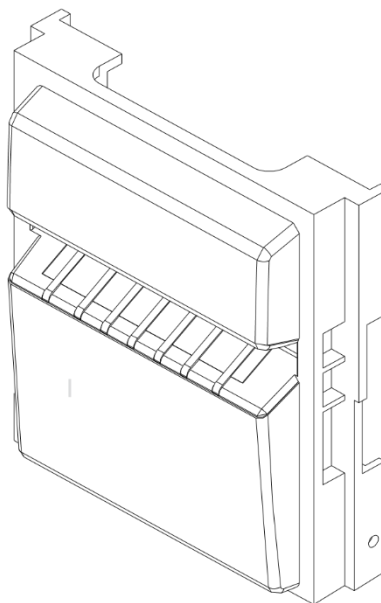
Metal coin-proof Bezel

Part Number	Bill width, in mm
MFLB-7102	62 to 82
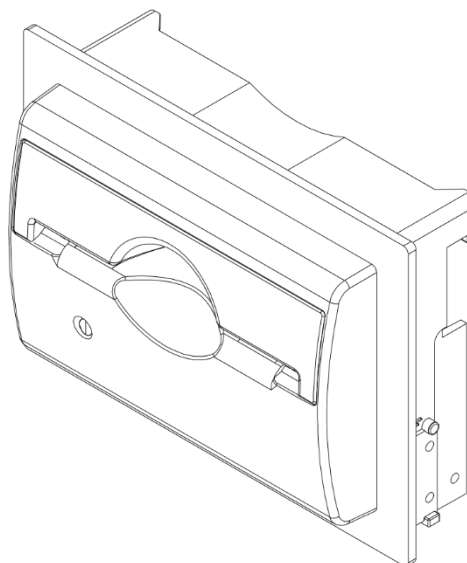
Bezel

Part Number	Bill width, in mm
FLB-5611	66
FLB-5631	70
FLB-9041 (outdoor)	70
MFLB-5701	62 to 82
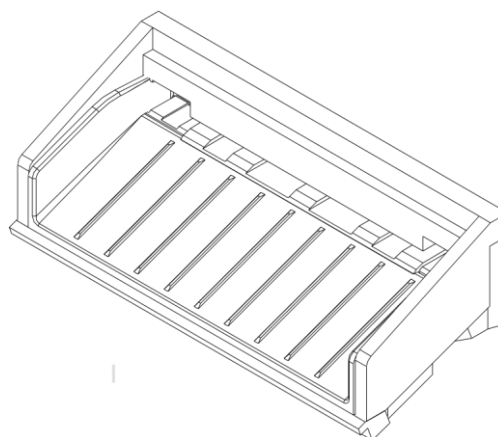
Bezel

Part Number	Bill width, in mm
FLB-5811	66
FLB-5831	70
MFLB-5901	62 to 82
MFLB-9045 (outdoor)	62 to 82
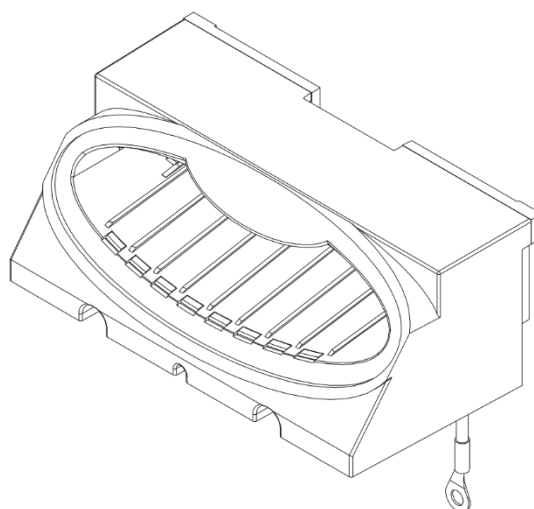
ACCESSORIES

A special extracting tool, part number **OPT-HW-FT01** is needed to remove the Sense-a-Click® lower module.
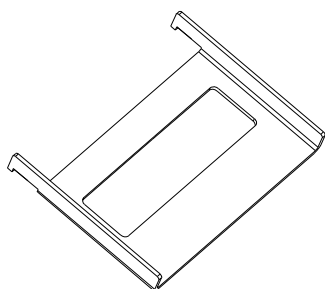
OPT-HW-FT01

Below listed adaptors are used to provide power and communication between the validator and host with DB9 serial port.

| Adapter	Interface, Voltage
OPT-PS5-FL-PC	Opto Isolated, 12V
OPT-PS5-FL-DB9	RS232, 12V
OPT-PS7-FL-DB9	RS232, 24V

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 secure type. Cassettes are available with one lock – or two lock option for added security. The locking mechanism allows for installation of security locks (one or two 3/4" tubular locks measuring $1\frac{1}{16}" \pm \frac{1}{16}"$ or $1\frac{1}{8}" \pm \frac{1}{16}"$).

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

Cassettes are designed to store bills 62 to 82 mm wide, and 140 to 172 mm long. For shorter bills, 125 to 150 mm in length, a modified cassettes are recommended.

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
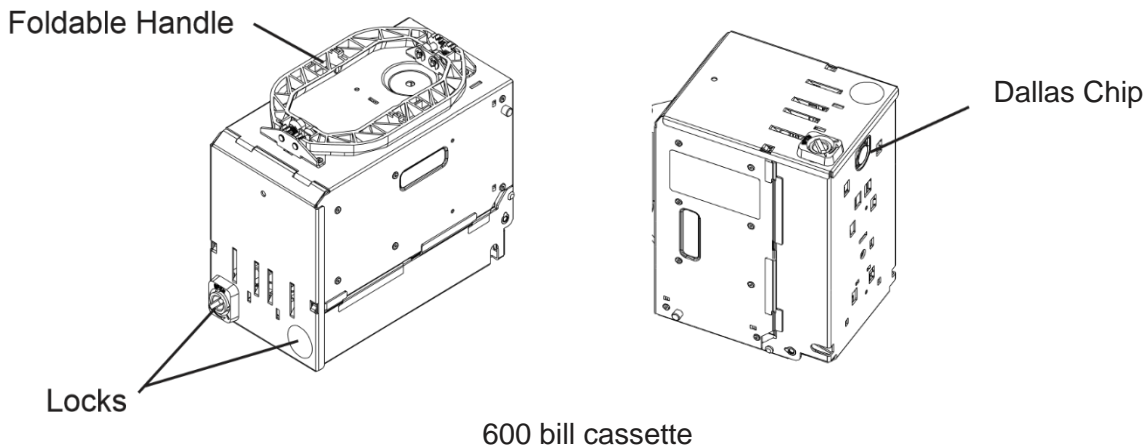
The following types of cassettes are available:

art 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
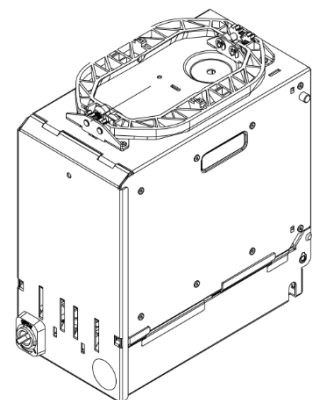
1000 bill cassette

MEMORY CARD AND SOFTWARE UPDATE OPTIONS

Suzohapp FrontLoad Bill Validators are delivered with pre-installed software. A "Dummy Card" is normally placed in the Memory Card slot to identify the installed software. Software updates are released when new currency is issued, or when security is improved.

Software updates are offered in three options:

1) Single-download Memory Card. The software is downloaded when the card is inserted in the slot, and the Validating Head is powered on. The Memory Card must remain in the slot for the Bill Validator to operate.

2) Multi-download Memory Card. The software is downloaded when the card is inserted in the slot, and the Validating Head is powered on. The Memory Card can be used to update a number of FrontLoad Bill Validators, depending on the number of licenses ordered.

3) Group enabled Memory Card. This allows for download of new software using CCNET protocol.
This memory card carries a special customer ID and it must remain in the Validating Head at all times.

Memory Card replacement and software updates are described in the section called "SOFTWARE UPDATES".
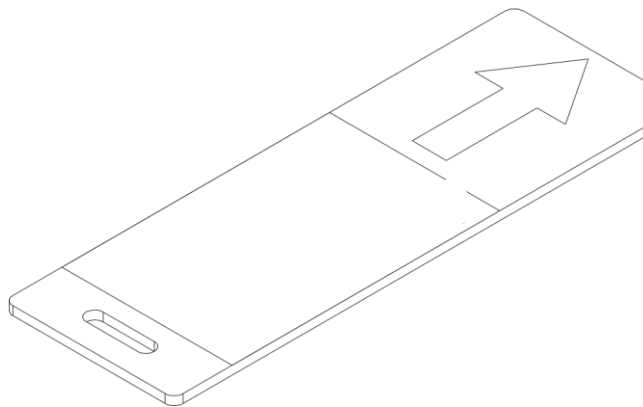
CHOOSING PART NUMBERS FOR THE BILL VALIDATOR

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

Example: **MFL-0101US1701**

Software part number

Hardware part number

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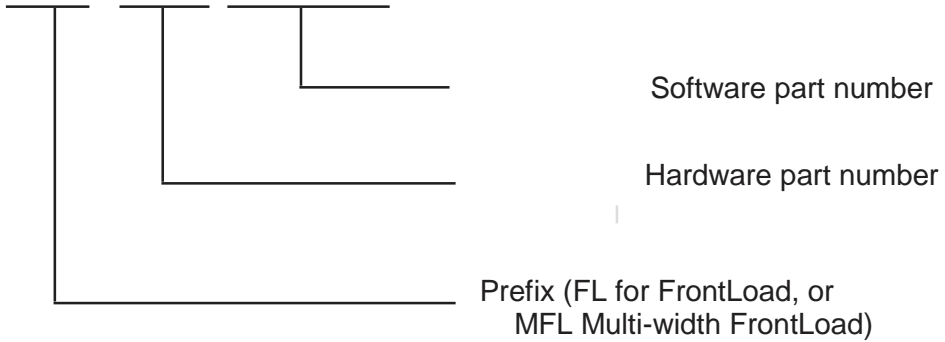
The Prefix defines the device class. Here FL means "FrontLoad Bill Validator" and MFL means "Multiwidth Front Load Bill Validator" (i.e. with a centering mechanism in the Validating Head).

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.

Please keep in mind that *Cassettes must be ordered separately*.

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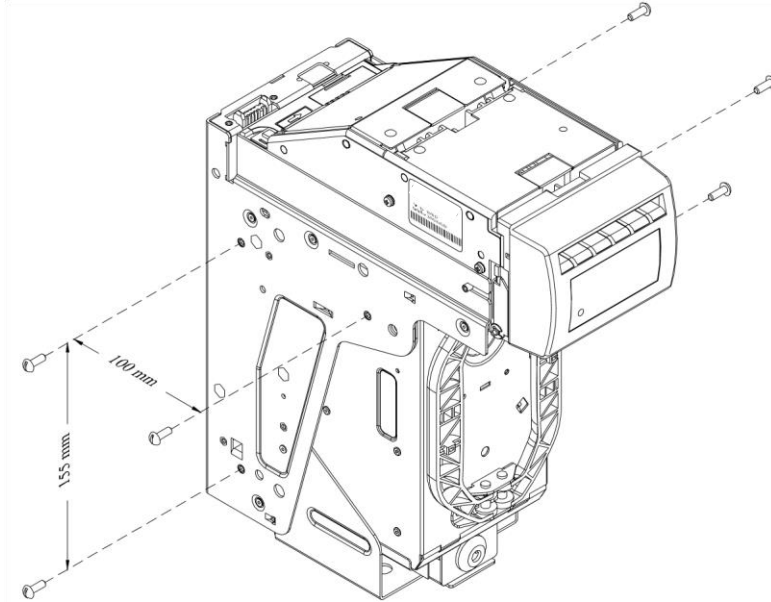
If the position of the mounting screws is different than the position of the mounting holes provided in the target equipment, then additional frame mounting components may be required.

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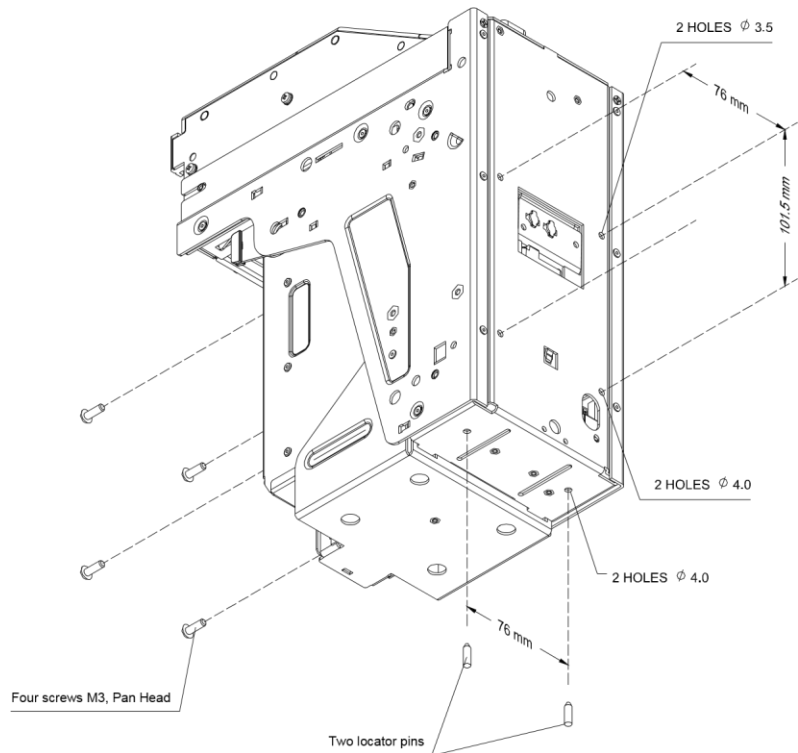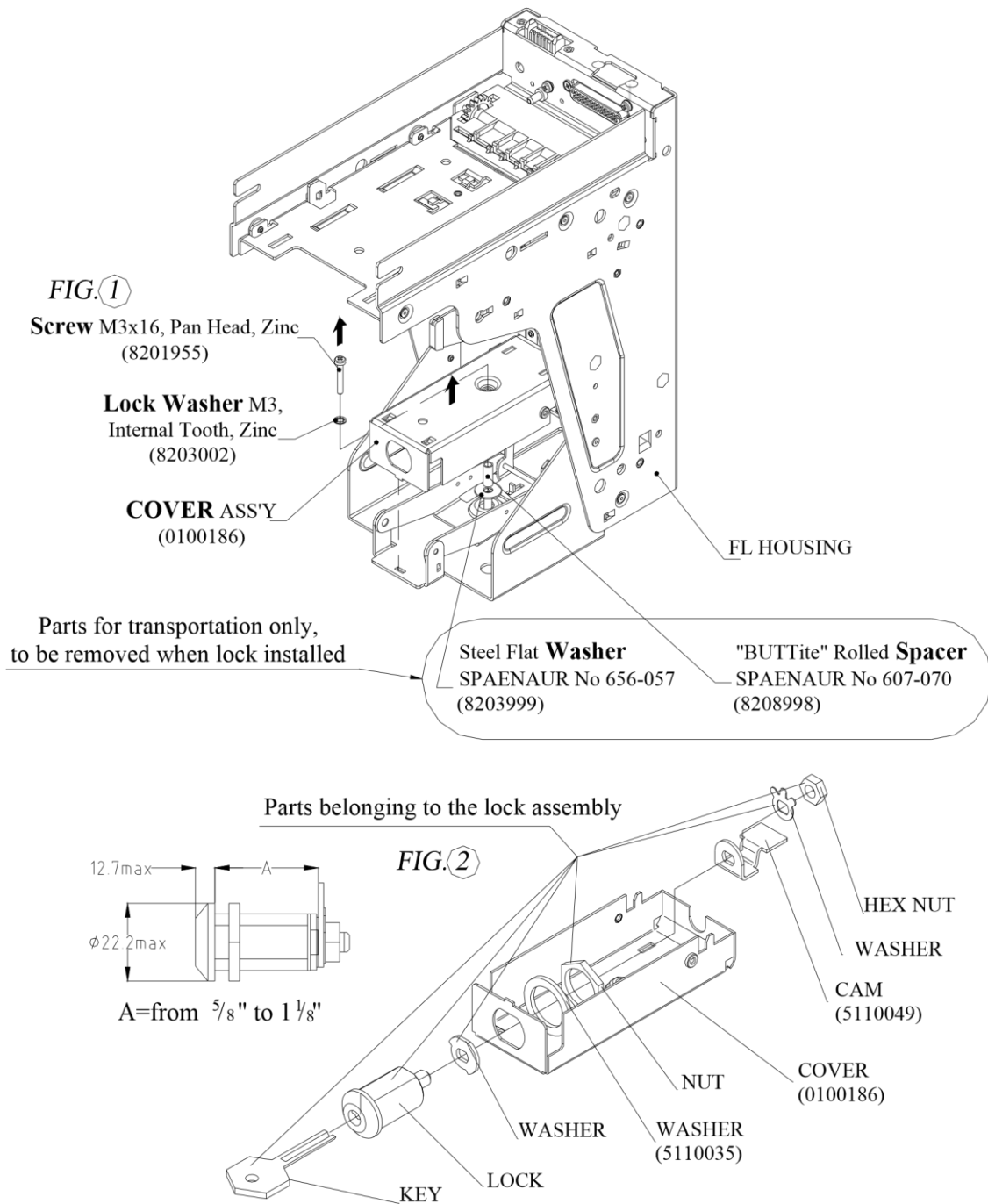
LOCK INSTALLATION TO BILL VALIDATOR BASE (600 BILLS)

Step #1. Remove the Screw and Lock Washer from the Lock Cover. **DO NOT DISCARD!**
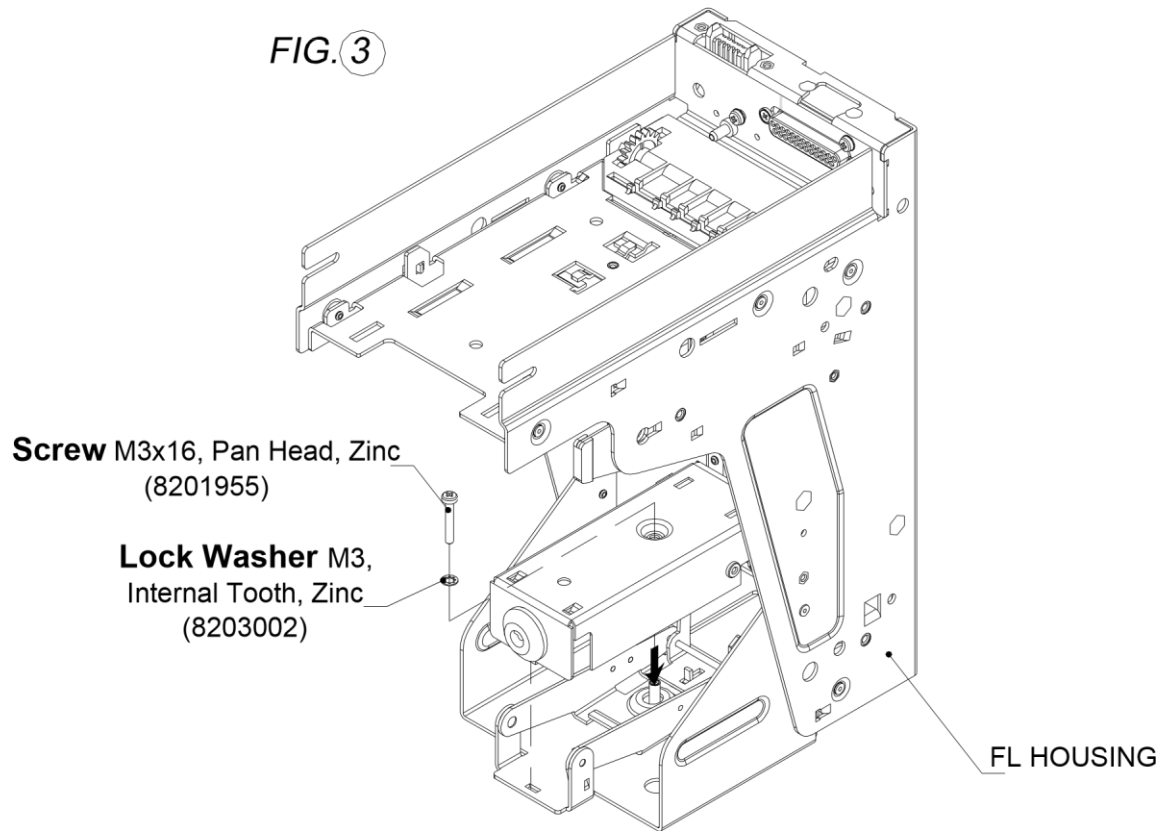 (FIG. 1)
Step #2. Remove and discard the Washer and Spacer (FIG. 1)
Step #3. Install the Lock and parts as shown in FIG. 2
Step #4. Reinstall the Cover, Screw and Lock Washer that were removed in Step #1 (see Fig.3)

FIG.①

Screw M3x16, Pan Head, Zinc
(8201955)

Lock Washer M3,
Internal Tooth, Zinc
(8203002)

COVER ASS'Y
(0100186)

FL HOUSING

Parts for transportation only,
to be removed when lock installed

Steel Flat **Washer**
SPAENAUR No 656-057
(8203999)

"BUTTite" Rolled **Spacer**
SPAENAUR No 607-070
(8208998)

Parts belonging to the lock assembly

FIG.②

12.7max

$\phi 22.2$max

A=from $\frac{5}{8}$" to $1\frac{1}{8}$"

HEX NUT

WASHER

CAM
(5110049)

COVER
(0100186)

NUT

WASHER

WASHER
(5110035)

KEY

LOCK

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

FIG.③

Screw M3x16, Pan Head, Zinc
(8201955)

Lock Washer M3,
Internal Tooth, Zinc
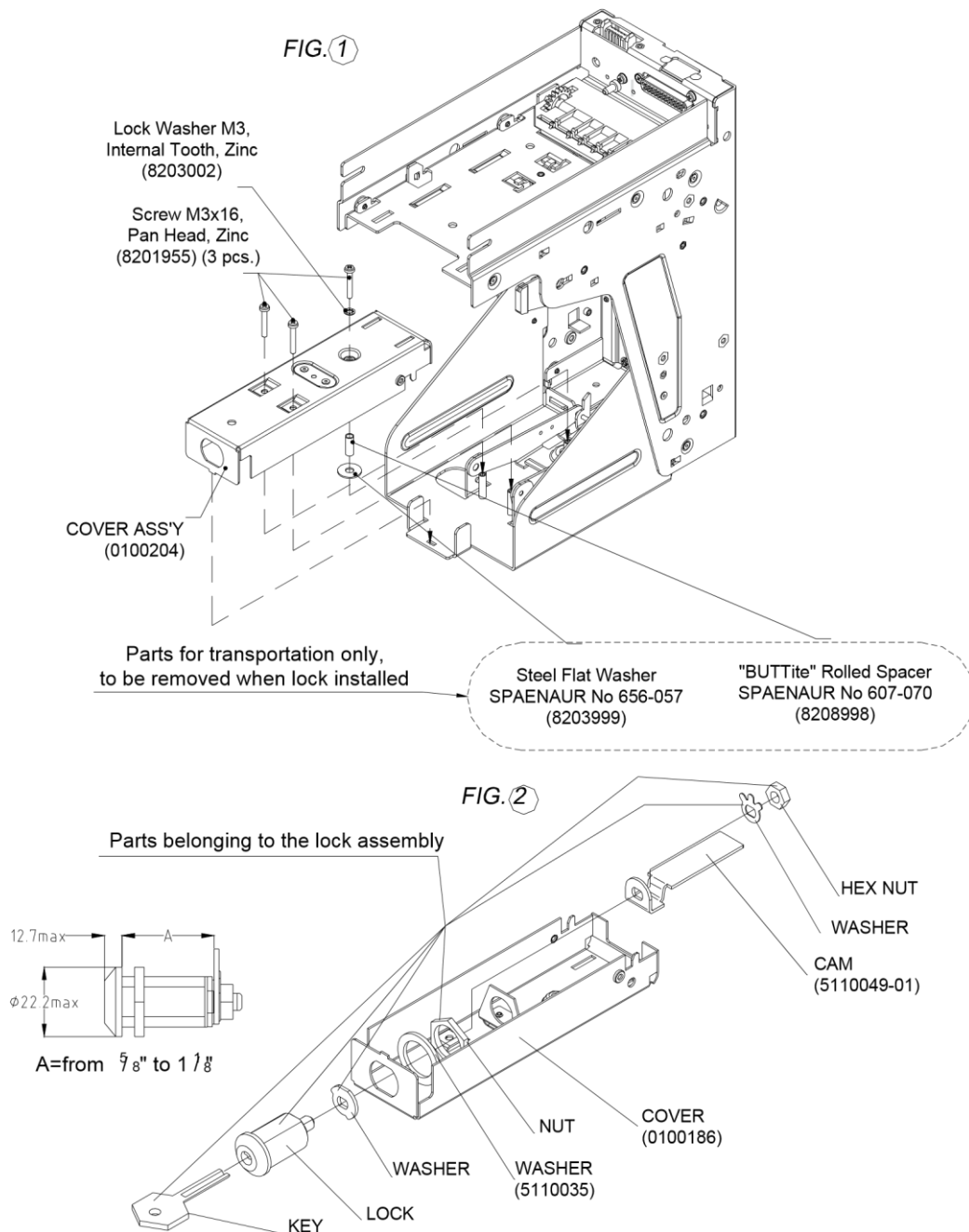(8203002)

FL HOUSING

LOCK INSTALLATION TO BILL VALIDATOR BASE (1000 BILLS)

Step #1. Remove the Screw and Lock Washer from the Lock Cover. **DO NOT DISCARD!**
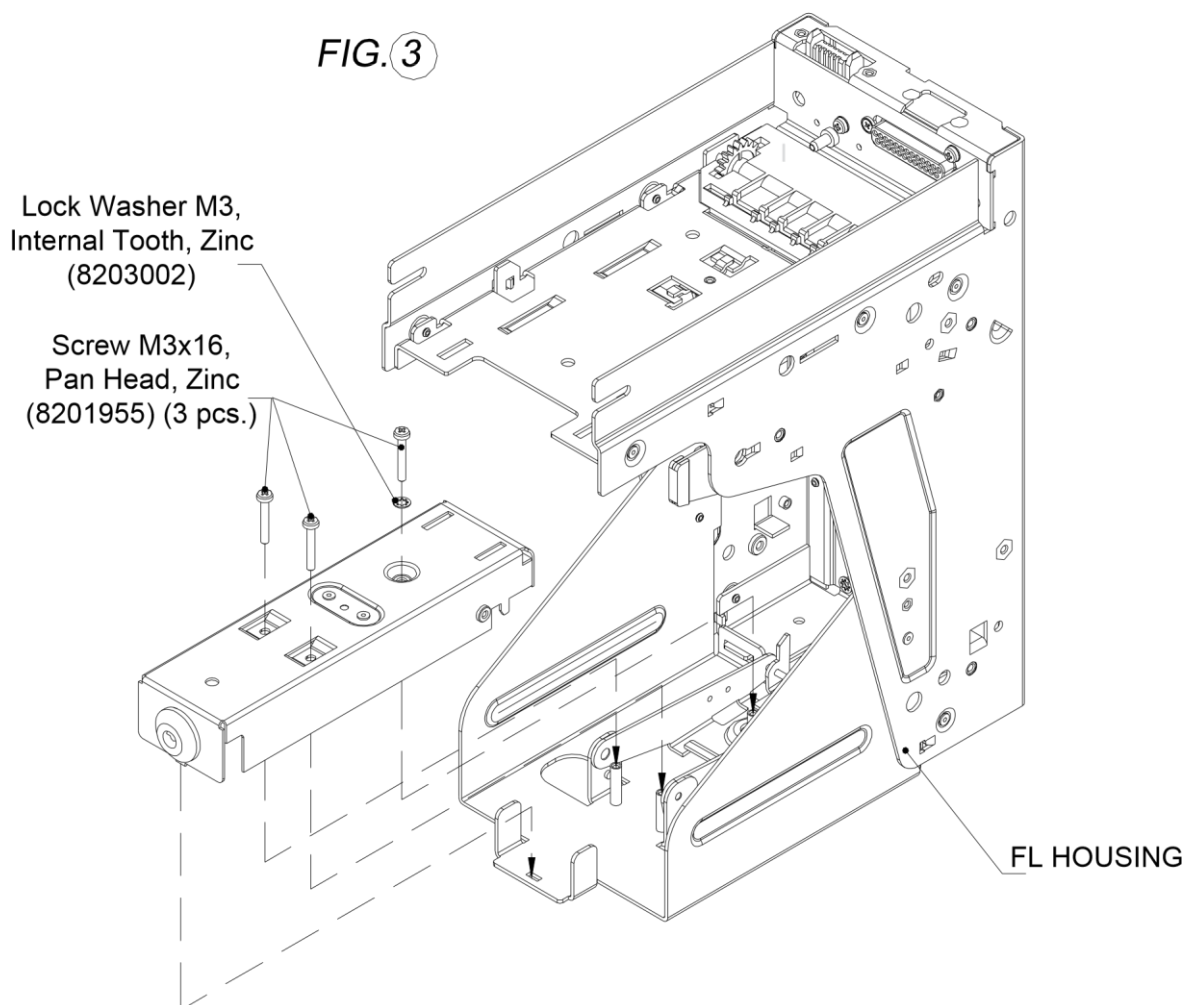(FIG. 1)
Step #2. Remove and discard the Washer and Spacer (FIG. 1)
Step #3. Install the Lock and parts as shown in FIG. 2
Step #4. Reinstall the Cover, Screw and Lock Washer that were removed in Step #1 (see FIG. 3)

FIG.①

Lock Washer M3,
Internal Tooth, Zinc
(8203002)

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

COVER ASS'Y
(0100204)

Parts for transportation only,
to be removed when lock installed

Steel Flat Washer
SPAENAUR No 656-057
(8203999)

"BUTTite" Rolled Spacer
SPAENAUR No 607-070
(8208998)

FIG.②

Parts belonging to the lock assembly

12.7max

$\phi 22.2$max

A=from $\frac{7}{8}$" to 1$\frac{1}{8}$"

HEX NUT

WASHER

CAM
(5110049-01)

COVER
(0100186)

NUT

WASHER
(5110035)

WASHER

LOCK

KEY

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

FIG.③

Lock Washer M3,
Internal Tooth, Zinc
(8203002)

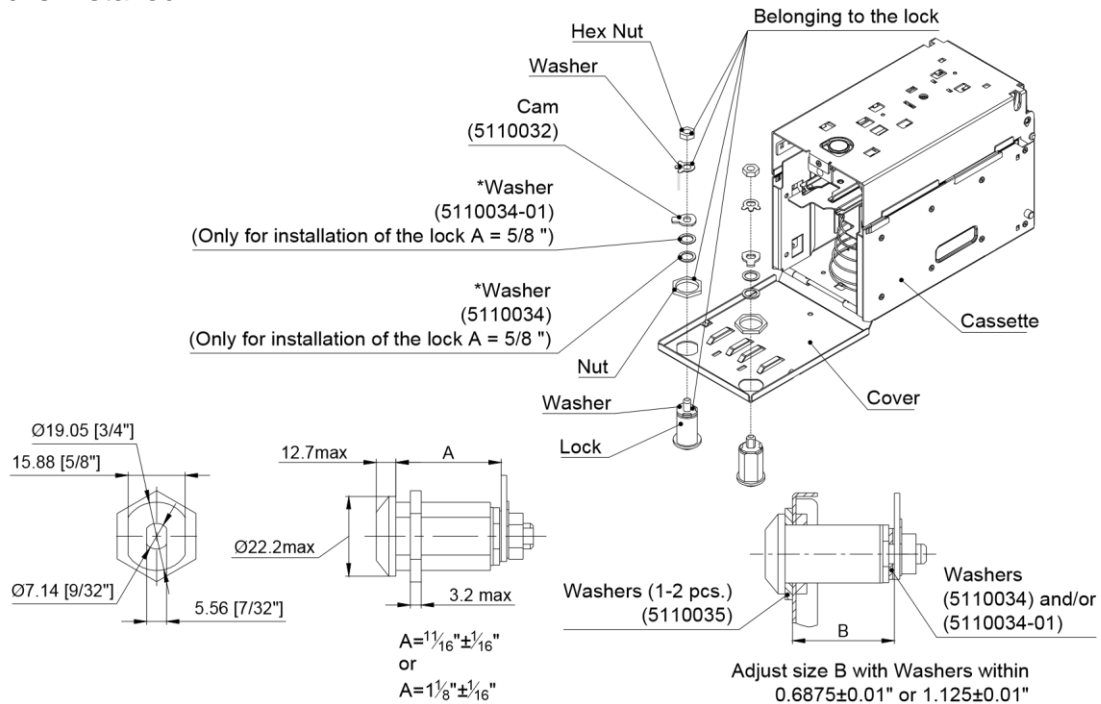Screw M3x16,
Pan Head, Zinc
(8201955) (3 pcs.)

FL HOUSING

LOCK INSTALLATION TO CASSETTE
Open the cassette cover, remove the plastic lock and plug, and follow the diagrams as below.

Variant 1
Mounting kit OPT-MK-FLC that includes: Cam 5110032 2 pcs. Washer 5110034 2 pcs. Washer 5110034-01 4 pcs. Washer 5110035 4 pcs.is enclosed. Security guaranteed only with two locks installed

Variant 2
Mounting kits (for each lock) OPT-MK-FLC1, that includes : Cam 5106034, Nut two locks installed

5310021,
Washer 5310022 should be ordered separately. Security guaranteed only with
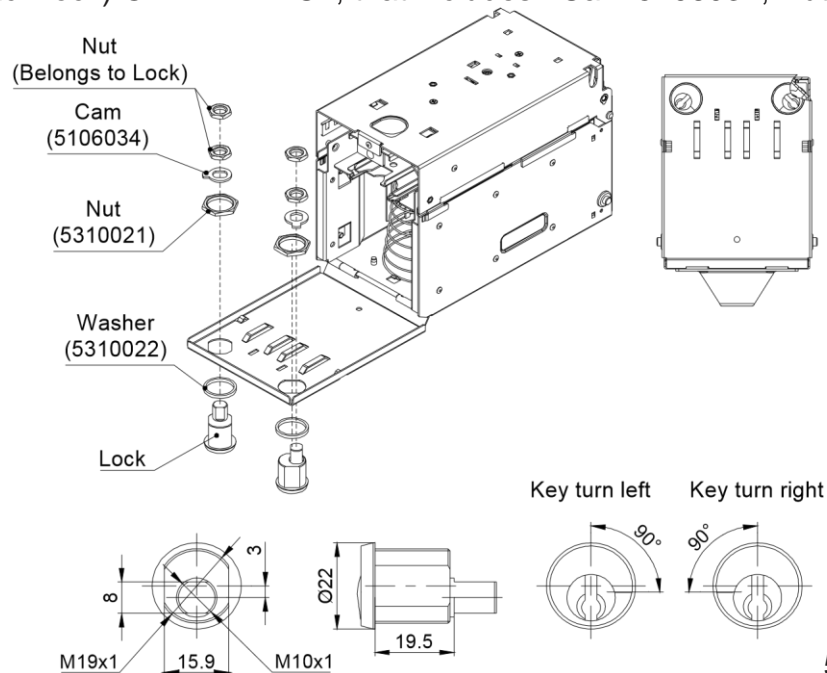
INTERFACE CONNECTION

The FrontLoad Bill Validator has the flexibility to offer four different hardware interface options:
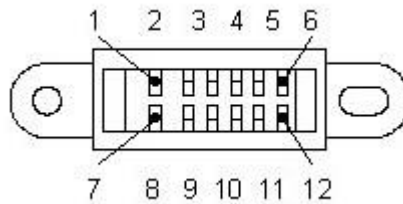
Type 1: Opto-Isolated, 12 Volt.
Type 2: RS232 levels, 12 Volt.
Type 3: Isolated Pulse Low Current, 12 Volt.
Type 4: RS232 levels, 24 Volt.

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

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	+ 1 2V DC	POWER	-
2	M -RES	MASTER RESET	RS232 LOW LEVEL (+12V)
3	N C	NOT CONNECTED	
4	GND	INTERFACE GROUND	-
5	N C	NOT CONNECTED	-
6	N C	NOT CONNECTED	-
7	GND	GROUND POWER	-
8	TxD	TRANSMITTED DATA	HIGH /LOW
9	RxD	RECEIVER DATA	HIGH /LOW
1 0	N C	NOT CONNECTED	-
11	N C	NOT CONNECTED	-
1 2	N C	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 (+ 1 2V)
3	N C	NOT CONNECTED	-
4	GND	GROUND INTE RFACE	-
5	N C	NOT CONNECTED	-
6	N C	NOT CONNECTED	-
7	+ 24V DC	POWER	-
8	TxD	TRANSMITTED DATA	HIGH / LOW
9	RxD	RECEIVER DATA	HIGH / LOW
1 0	N C	NOT CONNECTED	-
11	N C	NOT CONNECTED	-
1 2	N C	NOT CONNECTED	-

INPUT/OUTPUT CIRCUITS OPTO-ISOLATED VERSION 12V

INTERFACE BOARD FL02.54.200

CONNECTOR DB37

CONNECTOR DB37

CPU BOARD
FL02.51.000

1	+12VDC
2	M-RES
3	+12V-BDP
4	GND-BDP
5	PWR-LED
6	NC
7	-12VDC
8	TXD-BDP
9	RXD-BDP
10	NC
11	LED-BDP
12	NC

CONNECTOR JAE12

INPUT/OUTPUT CIRCUITS RS-232 VERSION 12V

INTERFACE BOARD FL02.54.210
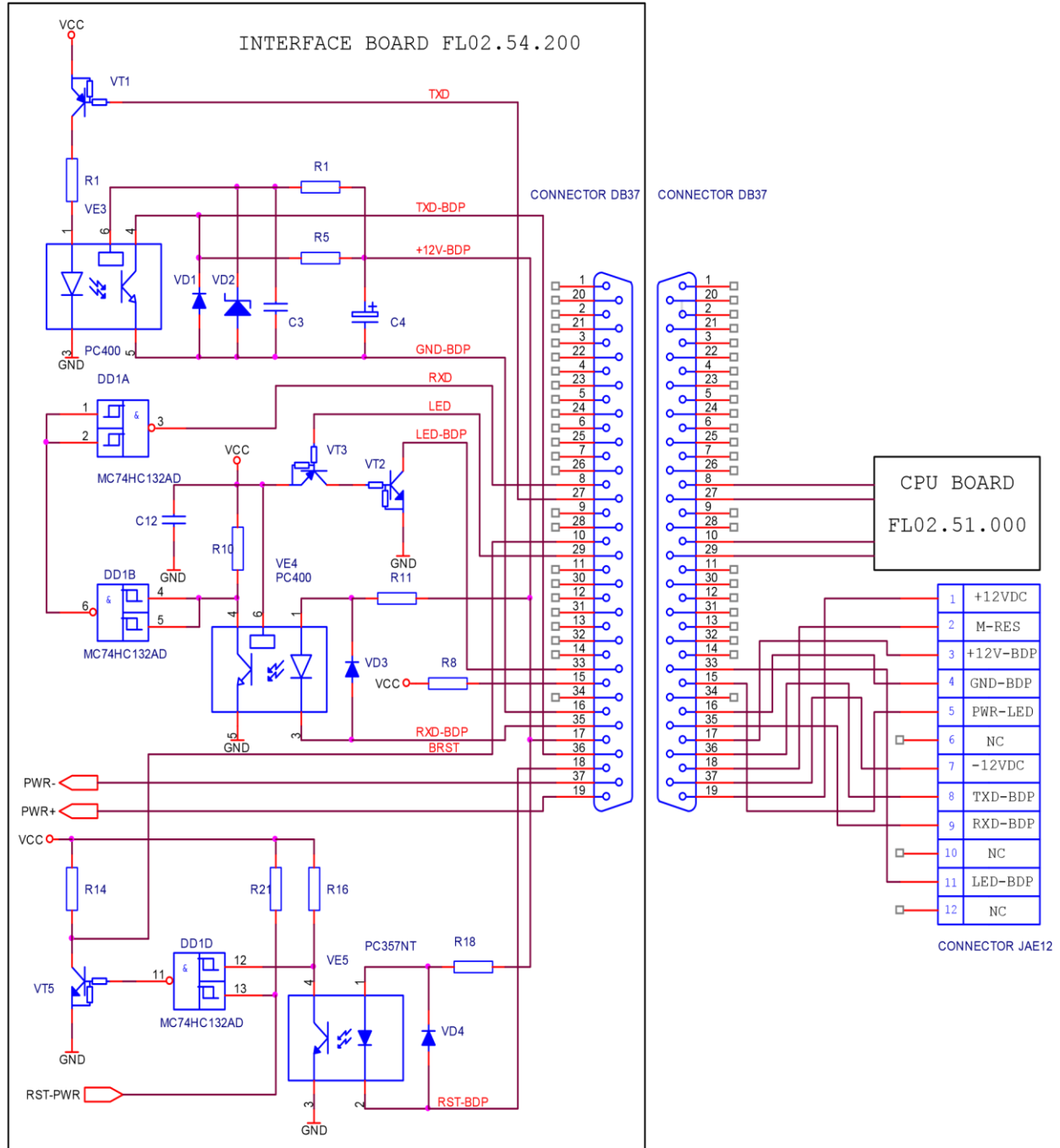
INPUT/OUTPUT CIRCUITS ISOLATED PULSE LOW CURRENT VERSION 12V
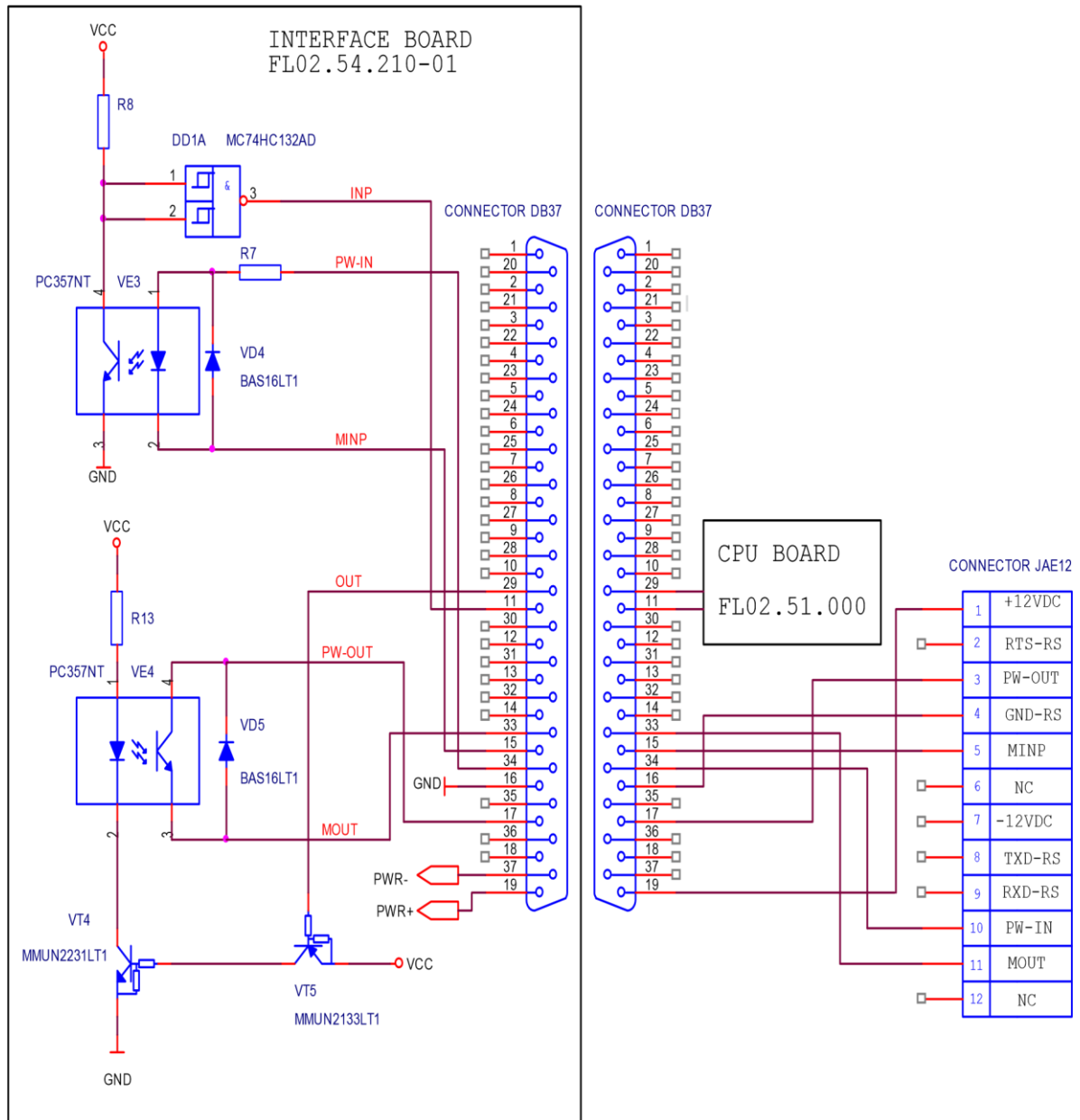
INPUT/OUTPUT CIRCUITS RS-232 VERSION 24V
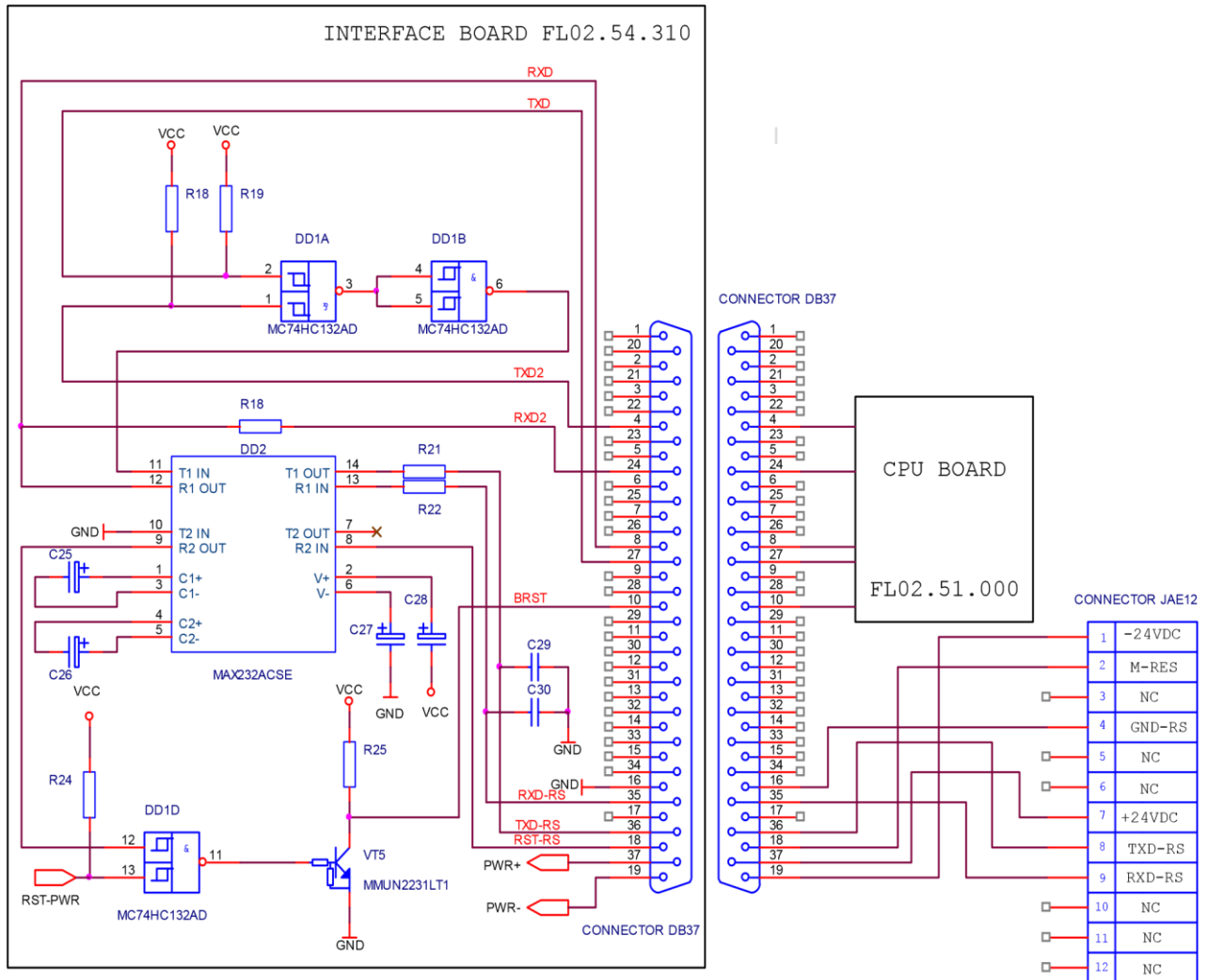
SWITCH SETTINGS

The switches are located at the rear of the Validating Head, under the transparent cover.
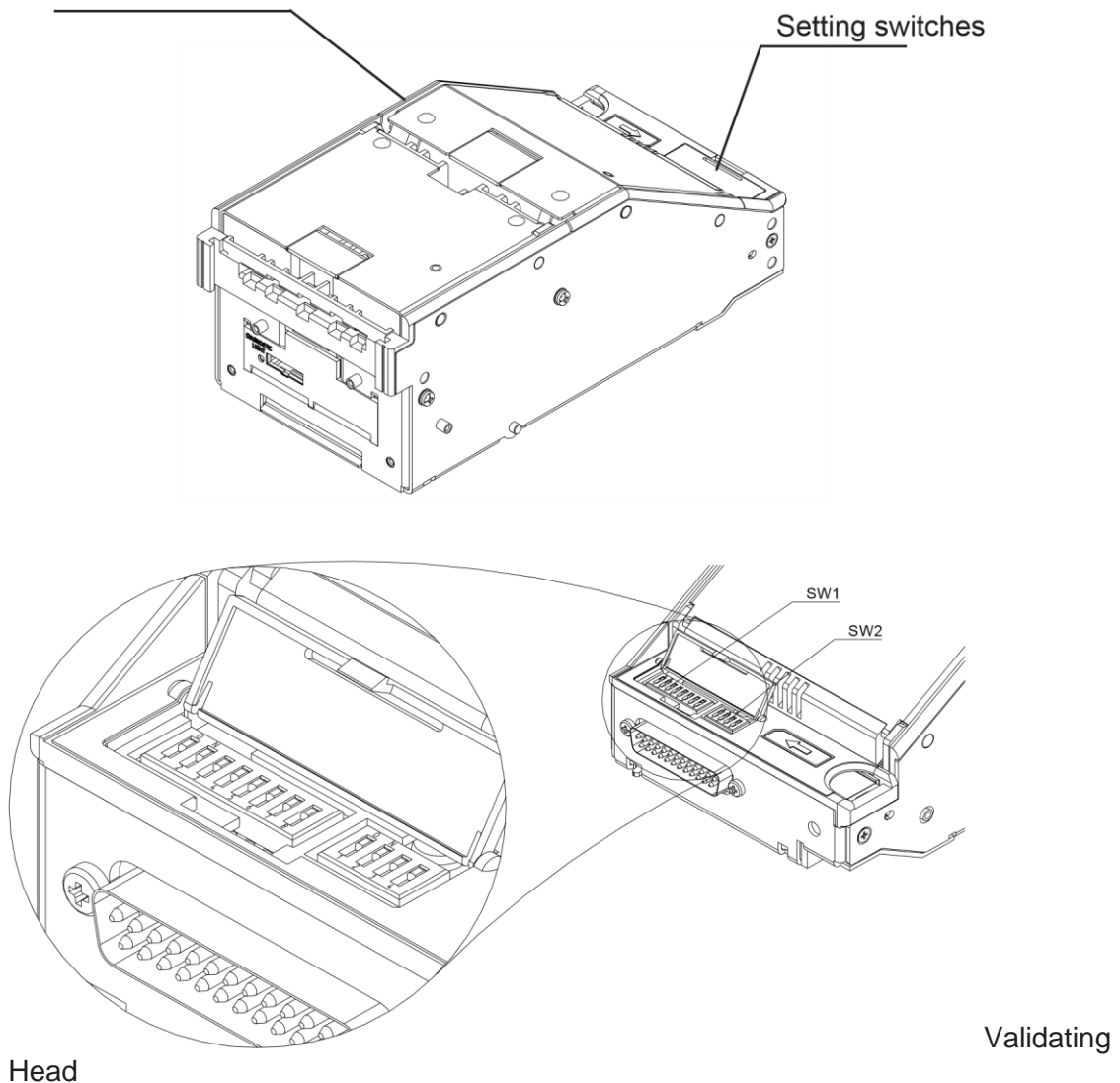
The Bill Validator operates in two basic modes: Validation Mode and Service Mode.

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 Suzohapp 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.

```
        ┌──────────────┐
        │              │
   O N  │              │
   ┌─┬─┬─┬─┬─┬─┬─┬─┐
   │ │ │ │ │ │ │ │ │
   └─┴─┴─┴─┴─┴─┴─┴─┘
    1 2 3 4 5 6 7 8
        │
        │ OFF State of switch
        │
```
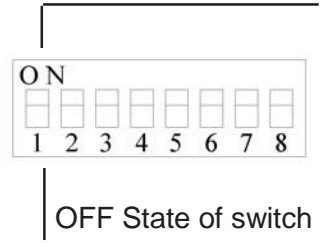
DIP SWITCH SW1 SETTINGS:

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:

ON

1 2 3 4

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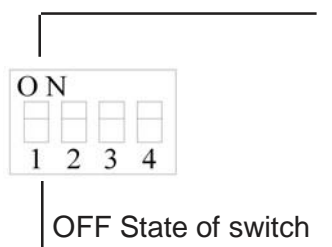
PARAMETER	SWITCH	ON	OFF
Orientation of the bill	**SW2.1**	Four-Way	One-Way
	SW2.2	Reserved	Reserved
Interface communication speed	**SW2.3**	9600 BPs	19200 BPs
Mode	**SW2.4**	Service Mode	Validation Mode

For additional information on switch features and explanations, please see the software description.

MAINTENANCE & SERVICE

Collecting Bills

To collect bills from the Suzohapp Bill Validator, simply open the lock on the base assembly and pull out the Cassette (please see diagram below).
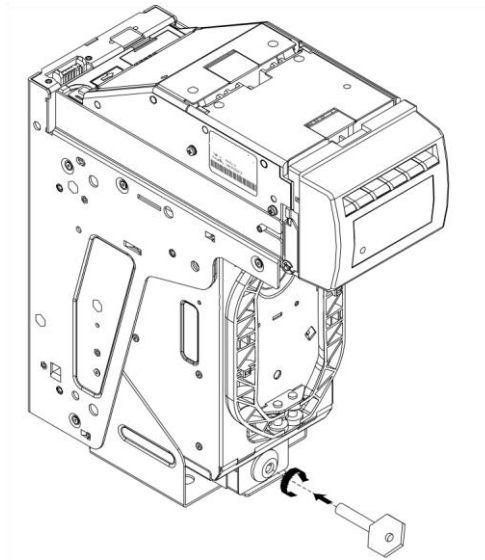
Pressing the lever (located to the right) releases the Cassette for easy removal.
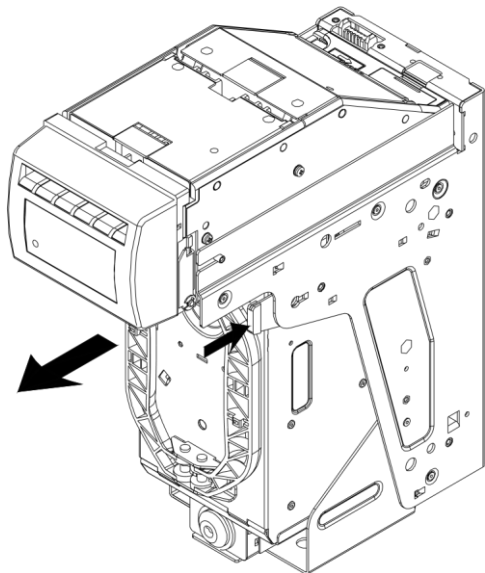
To replace the Cassette, close the Cassette cover, insert the Cassette into the FrontLoad frame, and turn the key to lock the Cassette back in place.

To open the Cassette cover, simply open the locks – located on the Cassette cover (as shown in diagram below).
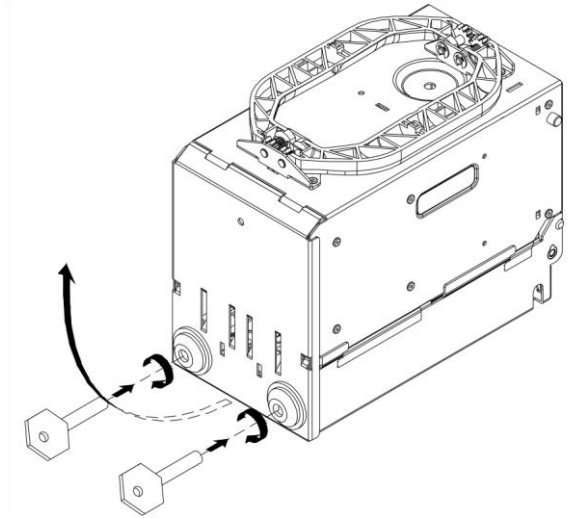
The Cassette cover will then open easily, and the validated pack of bills can then be removed as a neat stack.
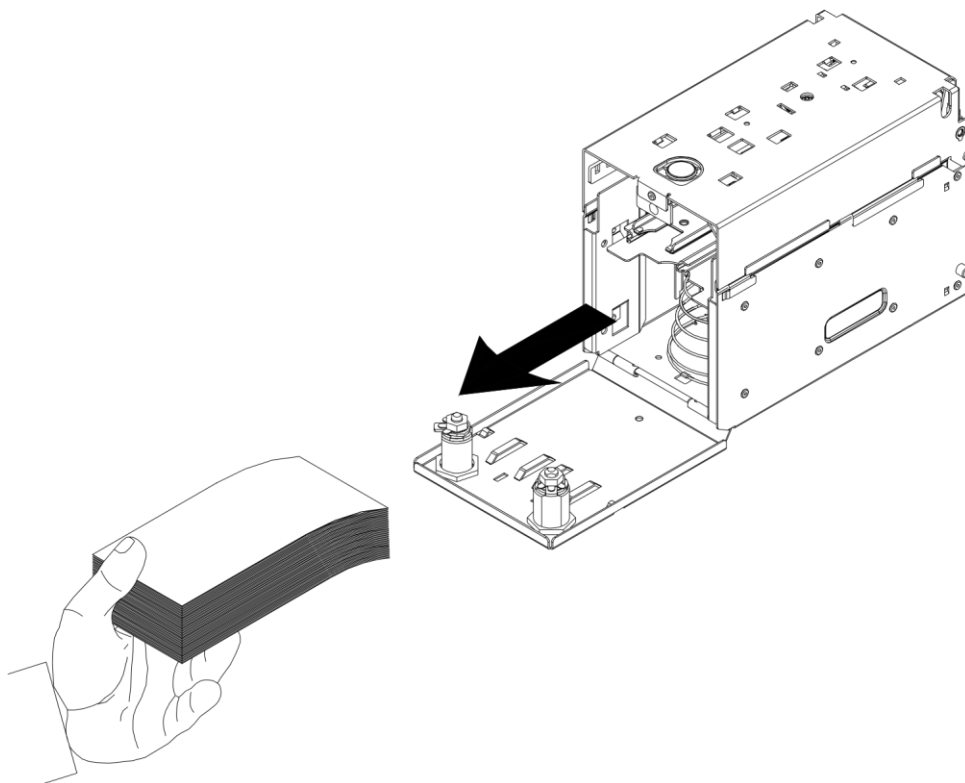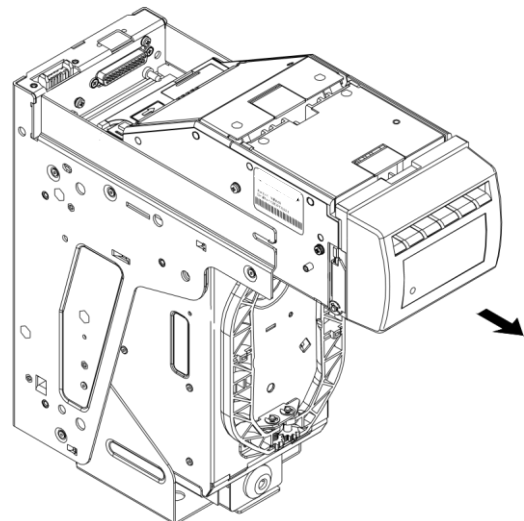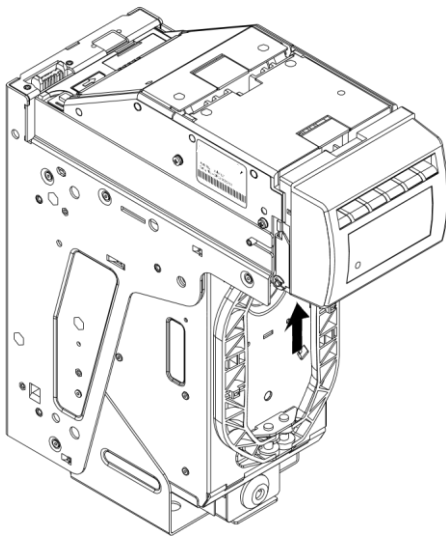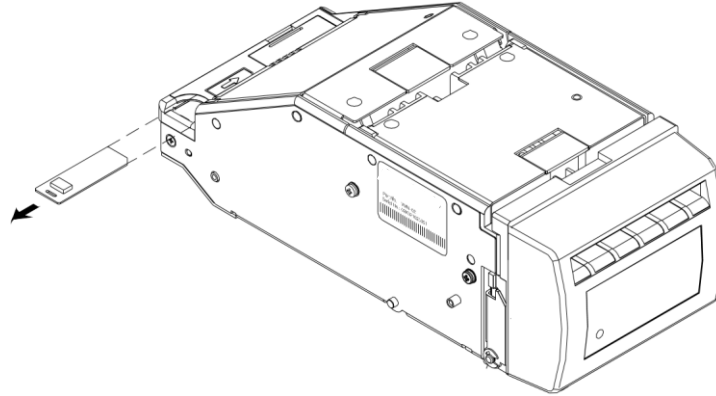
SOFTWARE UPDATES

Download procedure for a single-download Memory Card:
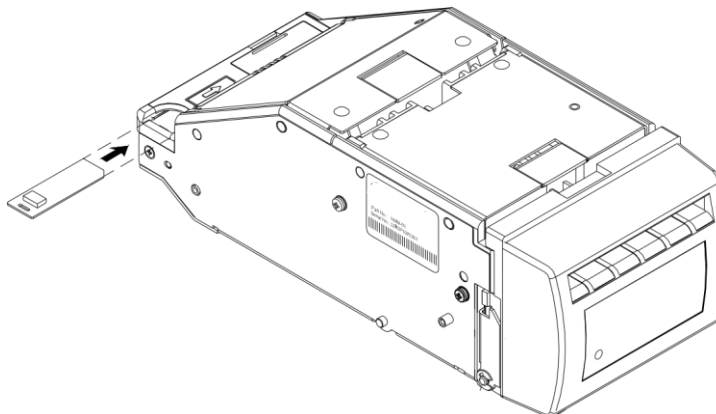
Step 1. Turn Power OFF.

Step 2. Lift up the Latch under the Validating Head, and Remove the Validating Head from the Housing.
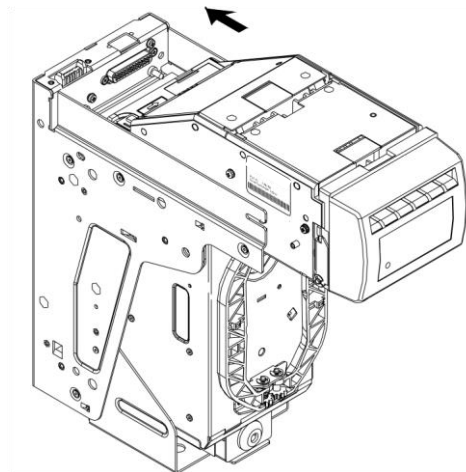
Step 3. Remove the Dummy Card (or Memory Card) from the Memory Card slot of the Validating Head (please see diagram below).

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

<u>Step 5</u>. Insert the Validating Head into the Housing.

<u>Step 6</u>. 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.

STATUS LIGHT
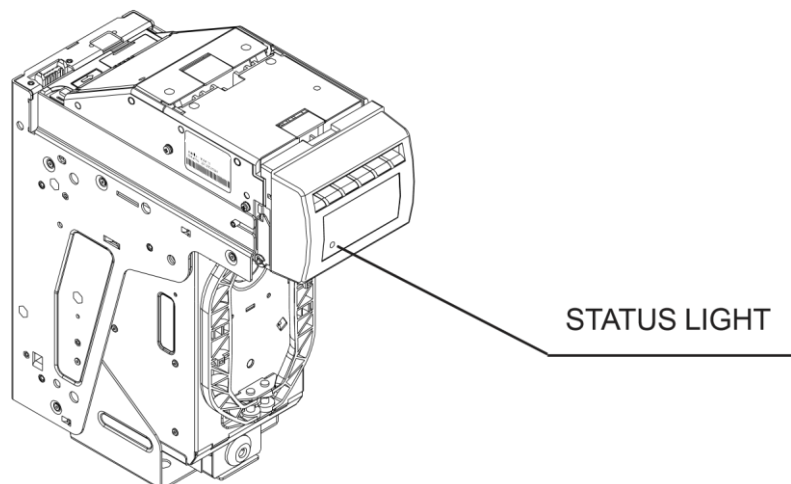
A single-download Memory Card must be present in the Bill Validator at all times.

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 perform an interface download, a Network Enabled Memory Card must be installed. After the download is complete this card must be left in the validator for communication.

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 Suzohapp Adaptor (see page 30 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 Suzohapp 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.
Step 12. 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 flash green 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 Suzohapp 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 Suzohapp 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

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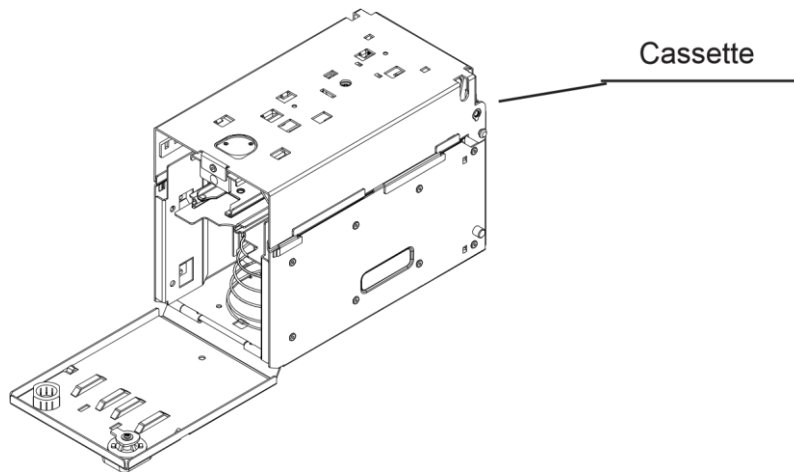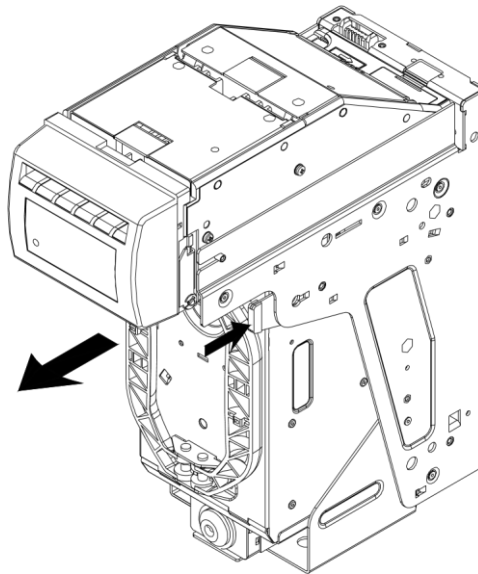
If the self-diagnostic test is passed, then the status light will turn green. If an error is detected, then the status light on the front of the Bill Validator will blink red.

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.
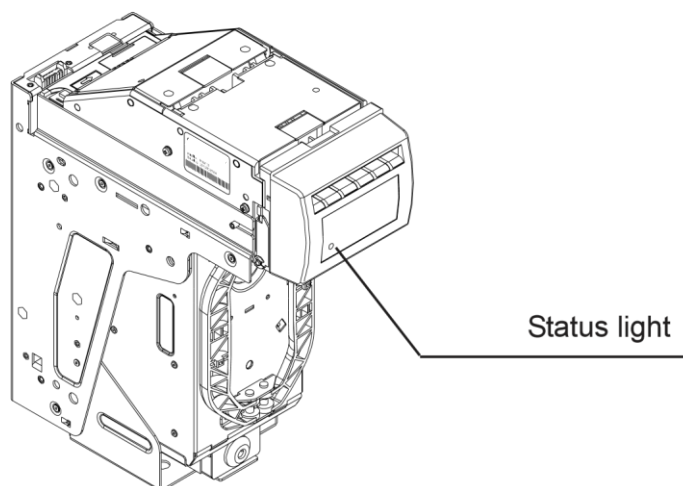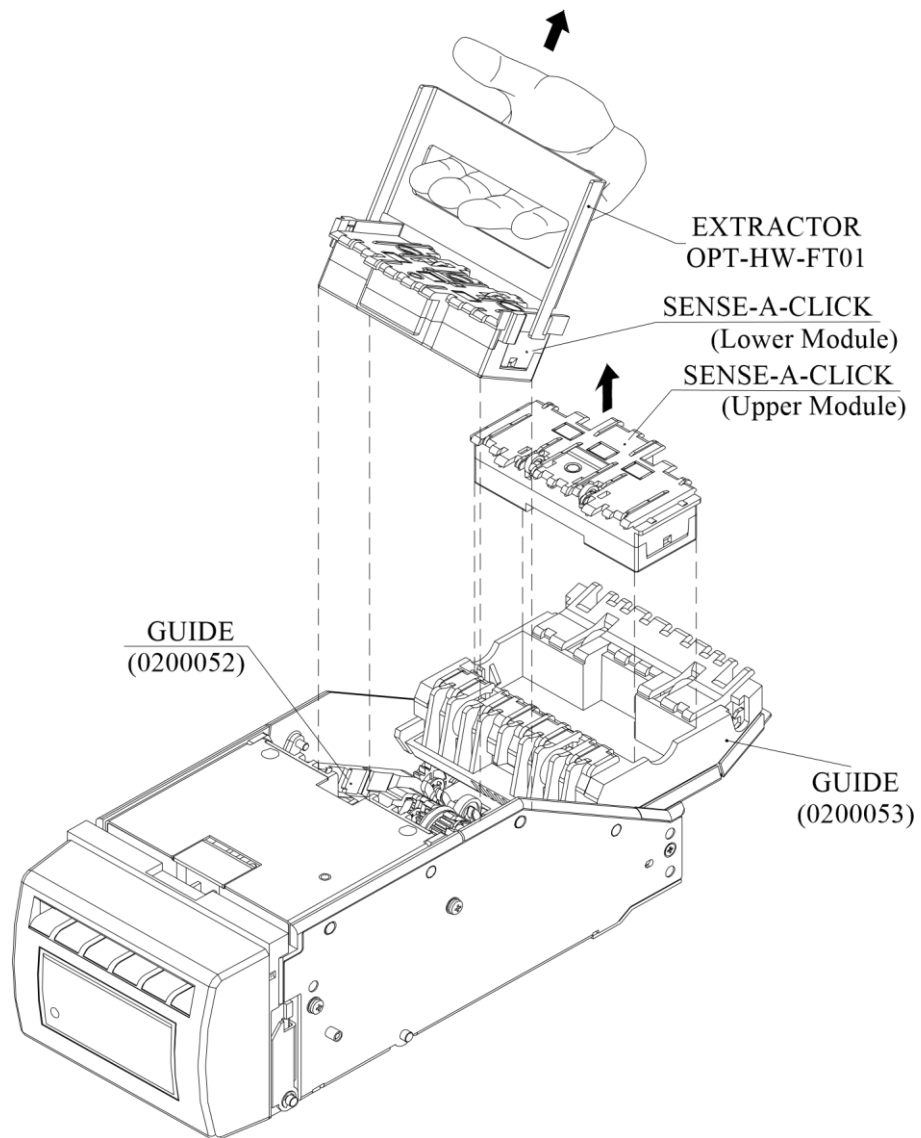

Status light

OPERATION MODE DIAGNOSTICS

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

Cassette

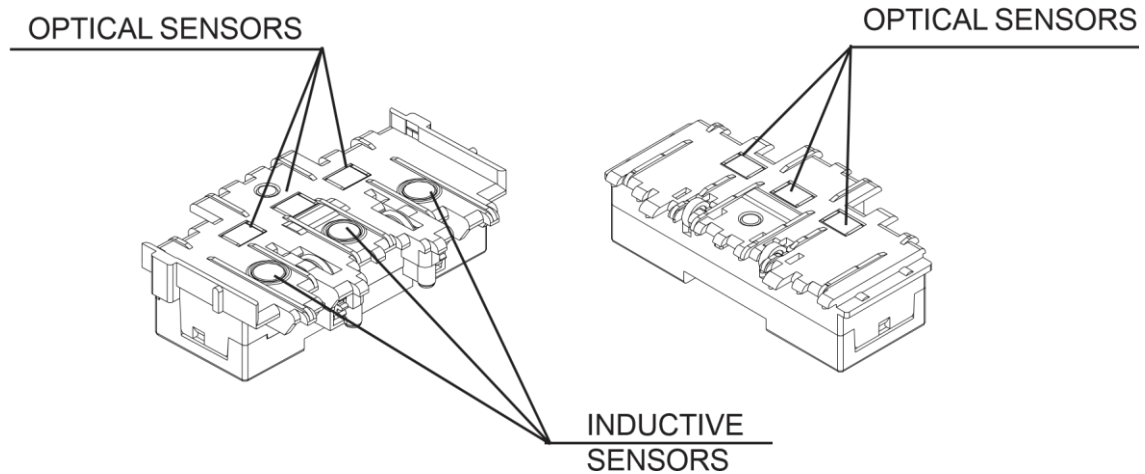| NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING
2. RED	AN ERROR OCCURED DURING CPU EXCHANGE WITH SENSE-A-CLICK MODULES	1. DISCONNECT POWER FROMVALIDATOR. 2. OPEN COVER, CHECK IFSENSE-A-CLICK MODULES ARE PROPERLY INSTALLED. 3. VERIFY THAT SENSE-ACLICK MODULES CORRESPOND TO THE CORRECT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

EXTRACTOR
OPT-HW-FT01

SENSE-A-CLICK
(Lower Module)

SENSE-A-CLICK
(Upper Module)

GUIDE
(0200052)

GUIDE
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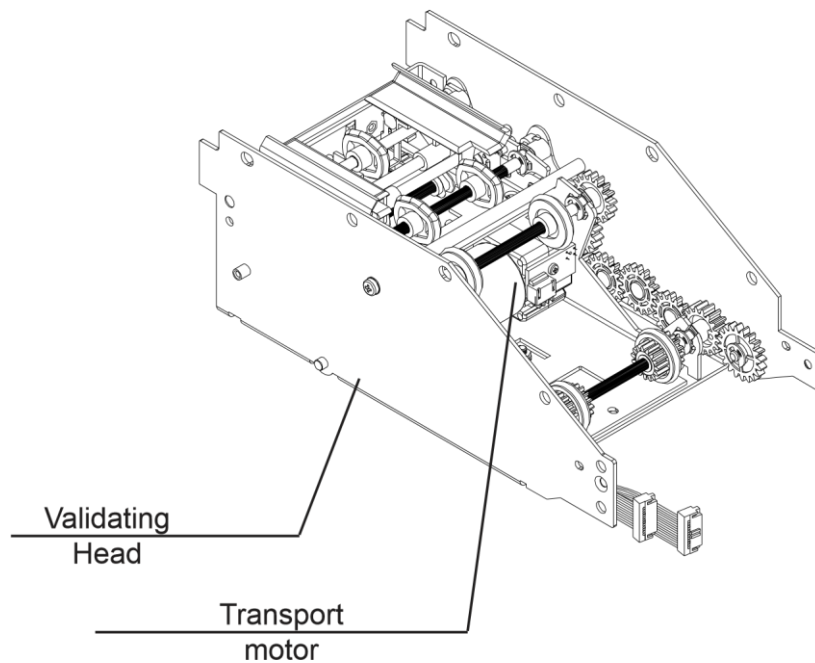| NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT - HANDLING
3 . RED	CASSETTE IS FULL	REMOVE CASSETTE, EMPTY CASSETTE AND INSERT EMPTY CASSETTE.
4 . RED	MECHANICAL JAM IN CASSETTEOR STACKER MOTOR FAILURE	1 . REMOVE CASSETTE FROM BILL VALIDATOR HOUSING AND EXTRACT CRUMPLE D OR JAMMED BILL. 2 . TURN POWER ON AND CHECK IF STACKER MOTOR ROTATES.
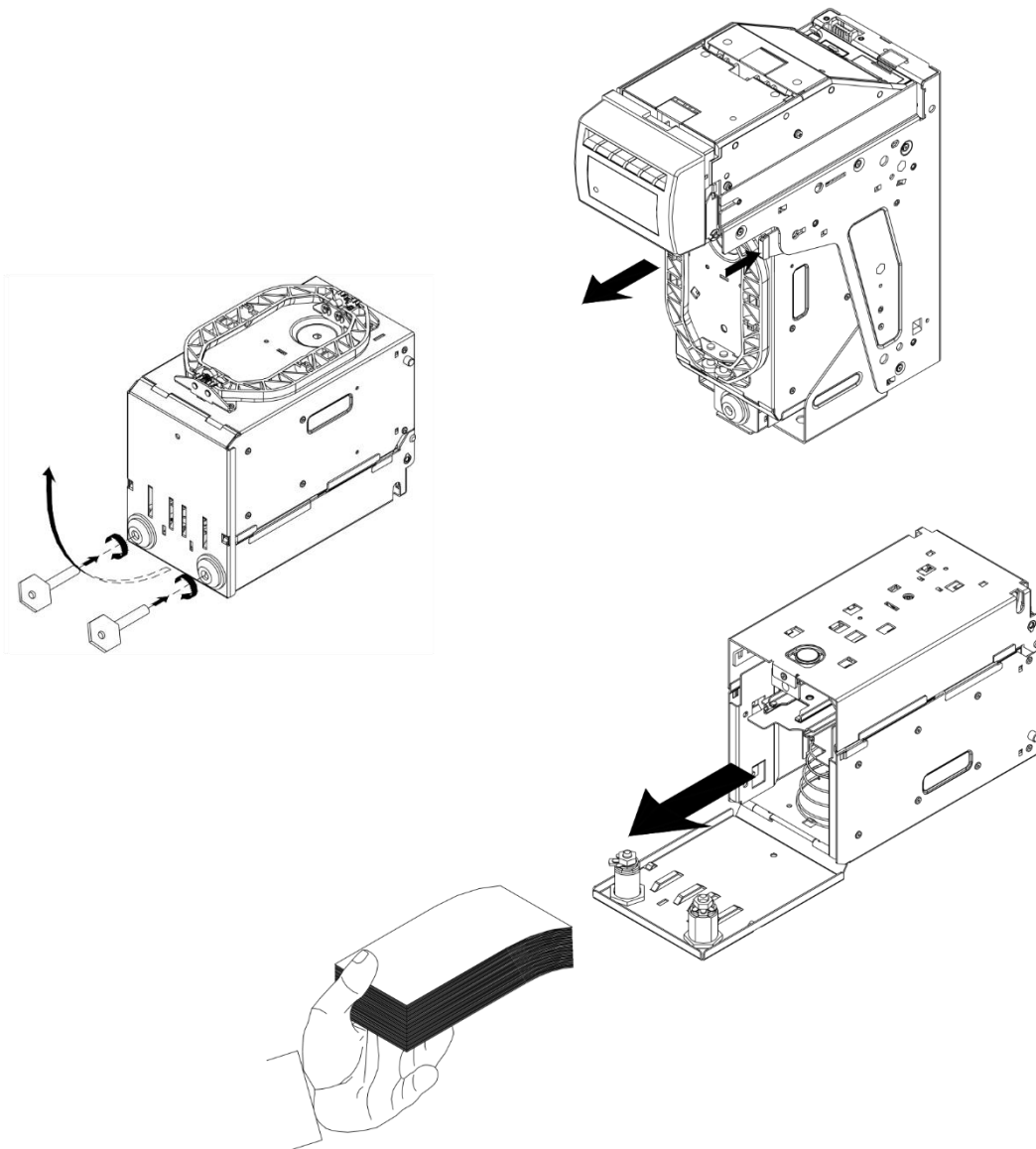
NUMBER OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAU LT - HANDLING
5. RED	FAILURE OF DIELECTRIC SENSORS	1. CHECK IF SENSE-A-CLICK MODULE CORRESPONDS TO THE CORRECT SOFTWARE TYPE / VERSION. 2. REPLACES ENSE-A-CLICK MODULE.
6. RED	FAILURE OF OPTICAL SENSORS	1. OPEN VALIDATOR HEAD GUIDE, CLEAN OPTICAL SENSORS (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
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-ACLICK MODULE WITH INDUCTIVE SENSORS AND CHECK CONNECTORS. 3. CHANGE LOWER SENSE-A-CLICK MODULE.

"SENSE-A-CLICK"

OPTICAL SENSORS   OPTICAL SENSORS

INDUCTIVE SENSORS

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

Validating Head

Transport motor

NO OF STATUS LIGHT FLASHES	ERROR DESCRIPTION	FAULT HANDLING
9. RED	SPEED OF TRANSPORTING MOTOR IS TOO FAST	CHECK POWER SUPPLY VOLTAGE
10. RED	FAILURE OF ALIGNMENT MECHANISM	1. CHECK IF BILLPATH IS CLEAR 2. POWER OFF AND TURN ON AFTER 5 SECONDS. SEE IF ALIGNMENT MECHANISM WILL SELF ADJUST.
11. RED	BILL PATHWAY IS NOT EMPTY	OPEN LIDS AND CHECK BILL PATH IS CLEAR
12. RED	BILL JAM IN THE ENTRY SLOT OF CASSETTE. CREDIT NOT ISSUED	REMOVE CASSETTE AND CLEAR THE JAM.
13. RED	OVERLOAD OF TRANSPORT MOTOR	OPEN LIDS AND CHECK BILL PATH IS CLEAR
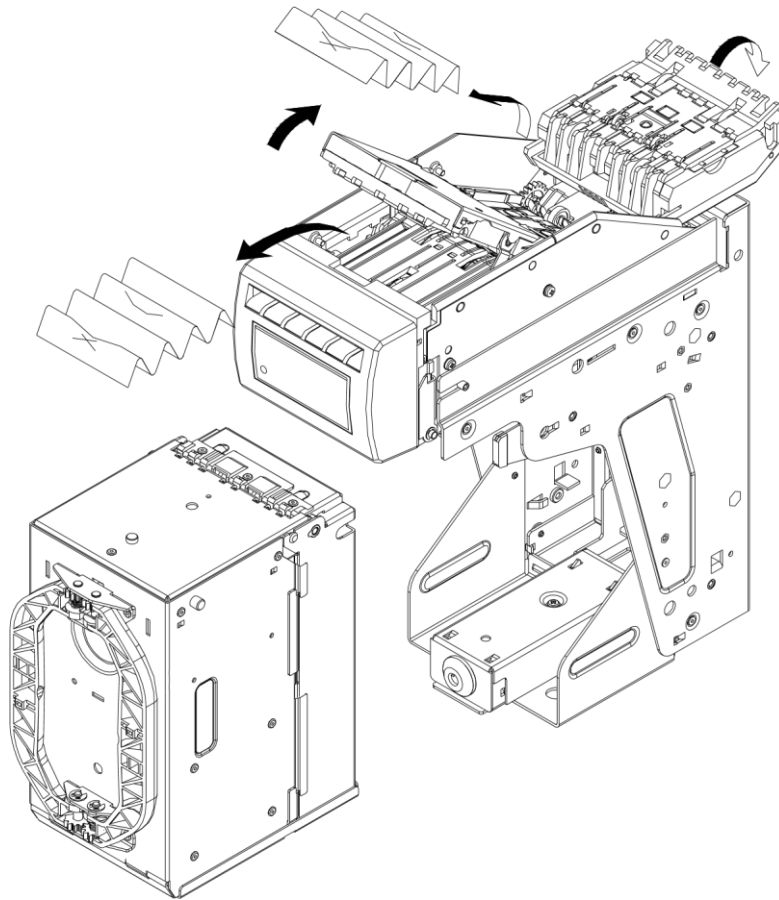
TECHNICAL SUPPORT

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