Bill to Bill™ 300XE currency management system

Bill Recycler

Part-1

Operation Manual (Rev 5)

Revision history			
Rev 0	Crane	2nd Jun, 2010	Draft release for mechanical integration only
Rev 1	Crane	16 July, 2010	Updated Section 1.5, 2.14, 3.2.3
Rev 2	Crane	28 July 2011	Section 3.2.1
Rev 3	Michael B.	August, 2013	Updated Section 1.6 – Added updated Compliance Approvals 1.7.2 – Removed section 1.7.2 2.8.1 – Added narrow tape CST 2.9 – Added Dual Metal Bezel 2.13 – Added add. Accessories 2.3 – Updated Sense-A-Click part numbers 3.3 – Updated security switch opt. 3.5.2 – Updated the Power Interface signal section, lowered AWG requirements (22 to 20) Removed troubleshooting section
Rev 4	Michael B.	April, 2014	SuzoHapp Update
Rev 5	Michael B.	August, 2014	1.5.2. - Corrected Sensor Layout Glossary - Included MCBJ definition

Contents

1. Introduction:

All SuzoHapp products have two types of manuals:

- Part-1: Operation Manual
- Part-2: Service Manual

This document is designed to help with the integration of the Bill-to-Bill 300XE™ bill recycler. Use this manual for:

- Unit dimensions and component nomenclatures, including mounting directions.
- Bill Recycler specification and configurations, including hardware accessories.
- General specification for dip switch setting and software updates.
- Easy Diagnostic for any service requirements.

1.1. Glossary:

- Anti-Stringing Sensor – Sensor used to detect bills being pulled back illegally by using a string, wire or tape.
- Bar Code Sensor – Sensor to scan bar coded tickets
- Bezel – Face Plate
- BV – Bill Recycler or Bill Acceptor
- Centering Mechanism – SuzoHapp patented bill centering mechanism which aligns bills before entry into bill path
- CST – Cassette or Cash Box
- CPU – Central Processing Unit
- Dielectric Sensor – SuzoHapp Patented Sensor used to measure the paper density
- DIP Switch – Dual Inline Package Switch
- Bill-to-Bill 300XE™ – SuzoHapp Bill Recycler
- Memory Card – Portable programmable memory which can used to program BV without any tools
- Magnetic Sensor – Sensor used to read magnetic properties / ink on the bill
- RFID – Radio Frequency Identification
- Stacker Mechanism – A scissor type attachment used to stack the bill into Cash Box
- IR – InfraRed Sensor
- MCBJ – Mean Cycles Between Jams
- Cycle – One operation of the bill going from one module to another. Modules include Validating Head, Recycling Cassette, Dispenser and Cashbox. For example, one bill moving from Validaitng Head to Recycling Cassette or one bill moving from a Recycling Cassette to Cashbox would each constitute one (1) cycle. Similarly, one bill traveling from Validating Head directly to a Cashbox would also constitute one (1) cycle.
-  - Caution / Safety Instructions
-  - Comments / Notes

1.2. Safety Instructions:

Please follow the below guidelines:

- Please make sure the top lid is closed and the 10 pin connector is connected to the Bill-to-Bill 300XE™ Recycler before power on.
- Please follow the specifications for operating temperature, humidity and storage conditions
- Do not lift or transport the unit by the Cash Box or chassis handle.
- Be sure to remove power before removing the validating head.
- Please follow proper cleaning and maintenance procedures, ensuring the performance of the unit.

 All information about this product is available online, 24 hours a day. Visit our website at http://www.suzohapp.com/

1.3. Product Documentation:

Document Type	Document Part Numbers	Descriptions
User's Guide:	UG-MBB-XXXX_Rev XX	Hardware Configuration.
Software Release Specification: • Standard:	SRS MBB-_____-_____ Rev XX	Software Users Guide: Dip Switch Settings Bill Table Reference Diagnostics CRC
Bill Set Descriptions:	BSD-XXXX-X	Picture of Accepted Bills and Denominations for specific software.
Cash Box Users Guide:	FLSCX-XXXX	Description and detail of Cash Box and its options.
Bezel Users Guide:	UG-XXXB-XXXX_X	Details of Bezel, opening and mounting arrangement.
Operational Manual:	Bill-to-Bill 300XE_Part1_x	Basic Operation Manual for
Service Manual:	Bill-to-Bill 300XE_Part2_x	Extended Manual with details on disassembling and servicing Recycler.
Serviceability and Maintenance Manual	BB_300XE_Servicibility_Manual_X	Describes the units maintenance procedures
3D Outline Model:	Step or IGS format available upon request	Contact your sales representative.

1.4. Product Overview:

The Bill-to-Bill 300XE™ Bill Recycler was developed to validate bills having a width up to 82 mm. Compared to the previous Front Load bill Recycler models, the Bill-to-Bill 300XE™ has the following distinctive features:

- Utilizes a light-weight plastic drop-proof Cash Box
- 3 Recycling Cassette – up to 110 bill each capacity (Option – Secured lockable)
- Dispensing up to pack of 20 bills
- Cash box tracking management (Optional)

The Bill-to-Bill 300XE™ BV consists of five main modules. Each module is available in different variations to suit your needs. The picture below illustrates the different modules:

- The Bill-to-Bill 300XE™ recycler is designed to accommodate bills of different sizes from 62 to 82 mm wide, and from 125 to 172 mm long – which represents most of the world currencies.
- Certain currencies have different widths depending on denomination. For accurate validation of such currencies, the Bill-to-Bill 300XE™ Validating Head has a centering mechanism, which aligns the bills for processing of different widths.
- The lockable-removable Cash Box is used for temporary storage of validated bills. It can be locked with two standard 1-1/8" or 3/4" tubular locks.
- Bill Capacity (600 or 1,000 banknotes) refers to the number of new bills that the Cash Box can store. Actual Cash Box capacity can decrease in real applications due to variations in thickness of street-grade bills.
- The Bill-to-Bill 300XE™ Housing joins all the other modules. It is meant to be permanently secured inside a host machine.
- Several Bezel styles are available for the Bill-to-Bill 300XE™ recycler.
- Software updates can be easily uploaded into the Bill-to-Bill 300XE with a Memory Card or through network.

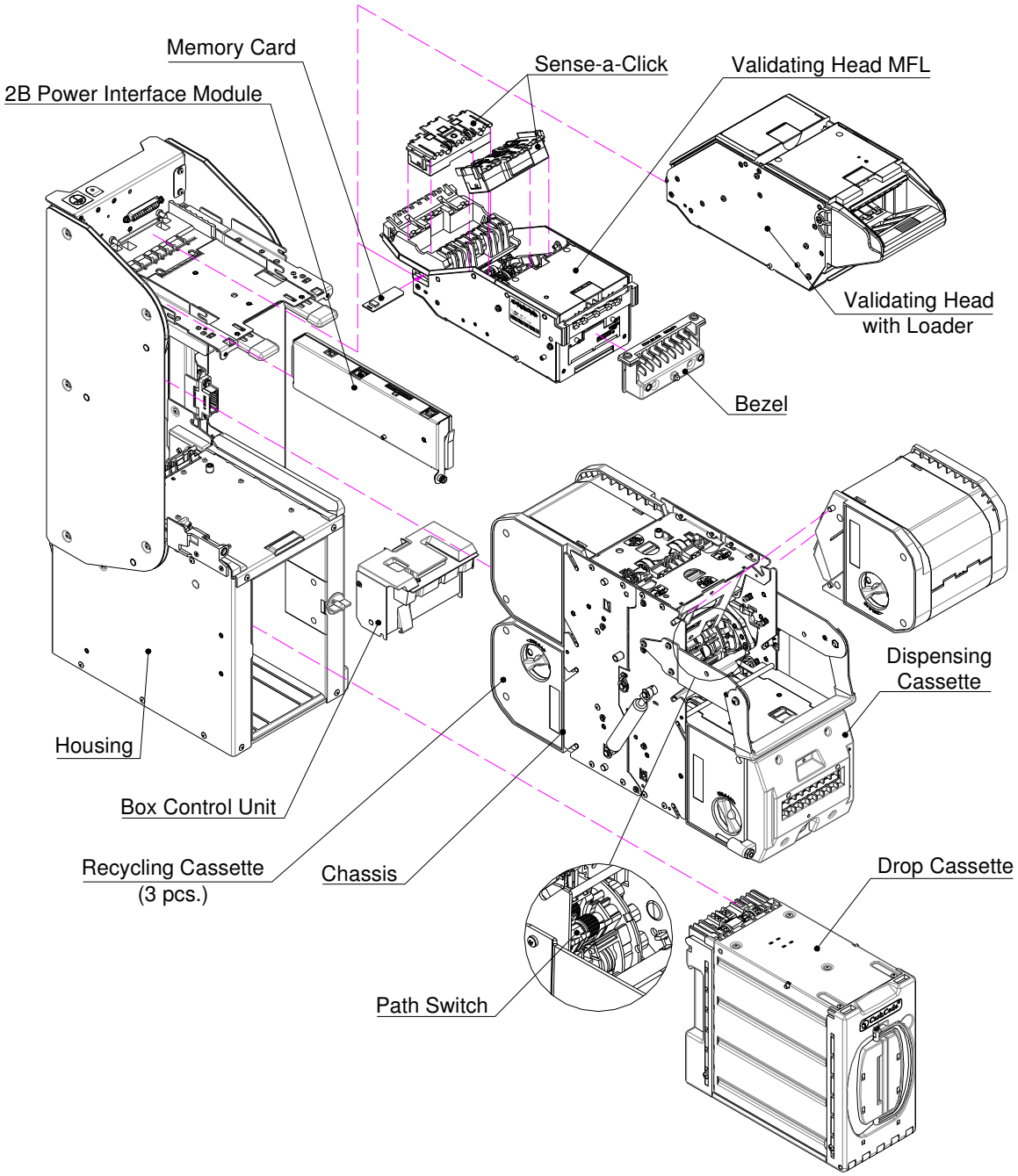
1.4.1. Additional Systems:

The Bill-to-Bill 300XE™ product offers two optional systems that expand on the standard features

- The Bill-to-Bill 300XE™ system uses secure RFID electronic tracking system in the Cash Boxes. It is compatible only with Standard (600 or 1000) Cash Box sizes.
- Secured lockable recycling cassette which prevents access to cash upon removal.


Please contact your sales representative for information on either system or sample requests.

Exploded view



1.5. Specifications:

1.5.1. Overall Specifications

Bezels and indication: • Standard: • Optional Bezel:	 No bezel installed. Green/Red Status Light. SuzoHapp Style (Plastic or Metal)
Acceptance: • Bills: • Accepted Denominations: • Validating Rate: • Supported Bill Width (mm): • Length of Bill supported(mm): • Bill Escrow:	 Lengthwise 4 ways Refer to Software Description Guide 98% or higher (on first insertion) 62 ~ 82 120 ~ 172 Up to 110 (Configurable by Host - in a pack of 20 max)
Bill Storage: • Number of Recycling Cassette : • Recycling Cassette Capacity : • Number of Cash Box : • Cash Box Capacity :	 3 80 ~ 110 bills (depends on bill lengths) 1 600 / 1,000 bills
Dispensing Ability:	Bundles up to 20 bills at a time
Bar Code Tickets: • Bar Code Specification: • Encoding standard: • Narrow bar width, in mm: • Wide/Narrow bar ratio: • Number of characters: • PCS (Print Contrast Signal) value:	 Lengthwise 2 ways face up only (refer to settings). ANSI/AIM BC2-1995, Uniform Symbology Specification – Interleaved 2 of 5 0.5 to 0.6 3:1 6 to 18 0.6 min
Installation:	Any FrontLoad application. For Backload requirement please use rotational mounting elements.

Access to Cash Box:	From front side of the Recycler.
Outter Dimensions: (H x W x D) • Two-Piece Bezel Assembly with Standard cash box capacity (600/1000):	562 mm x 168 mm x 390 mm (22.1 inch x 6.6 inch x 15.33 inch) * This dimensions are within the cabinet.

1.5.2. Bill Validator Specifications

Validation Sensors: • 3-Color Reflective Optical Sensors: • 1-Color Translucent Optical Sensors: • Dielectric Sensors: • Inductive Sensors: • Anti Stringing Sensors: • Barcode Sensors: • IR Sensors:	 3 Sets on top, 3 set on bottom 3 on top 1 (Differential) 3 1 Set 2 (Upper cover) 1
Interface connector: • Standard:	10-pin power and signal connector.
Supported Protocols and Interfaces: • Universal Platform:	Bi-Directional EIA-232C (RS 232) CCNET (SuzoHapp Proprietary Serial Protocol)
Service indication:	Flashing of LED or the bezel lights.
Memory programming:	SuzoHapp Memory card Interface controlled with NDEG card installed
Supported memory stick types:	Hex format (Stay-in or Multi-update) NDEG
Mode selection:	8 pack + 4 pack - position DIP switch
Power supply voltage: Operating Voltage:	24 VDC ±5%

Current (Standby)* Ambient temp (+5°C or higher) Ambient temp (-30°C ~ + 5°C)	 0.6 Amp 0.6 ~ 2.2 A
Current Operating Mode (Peak)	Average 2.4 A Peak (Spikes 100 ms) 4 A
Validating Head Outer Dimensions: (H x W x D)	96 mm x 115 mm x 234 mm (3.78 inch x 4.52 inch x 9.22 inch)

Standard Cash Box Specifications

Cash Box locks: • Standard:	 No locks installed, only cams supplied. Shipped with shipping lock and cap.
Cash Box Free Fall Test: (Standard: IEC 68-2-32: 1975)	Functional Height: 1 meter. Number of falls: 14 (6 sides, 6 edges, 2 corners)
Maximum stacking capacity: (new bills)	Up to 600 or 1000 banknotes
Outer Dimensions: (H x W x D) • 600 Banknote Cash Box: • 1000 Banknote Cash Box:	 188 mm x 104 mm x 173 mm (7.42 inch x 4.09 inch x 6.83 inch) 188 mm x 104 mm x 233 mm (7.42 inch x 4.09 inch x 9.18 inch)
Unit Weight: • 600 Banknote Cash Box (Empty): • 100 Banknote Cash Box (Empty):	 1.1 Kg (2.42 lb) 1.4 Kg (3.08 lb)

1.6. Compliance Approvals:

CE Marking & Compliance

ElectroMagnetic Compatibility (EMC)

CISPR 22:2005/EN 55022:2006 (+A1) ITE – Radio disturbance characteristics

CISPR 24:1997/EN 55024:1998 (+A1 +A2) ITE – Immunity characteristics

Safety ITE – Low voltage directive

EN 60950-1:2006 (+A1:2010, +A11:2009, +A12:2011)

UL Certificate

UL 756 Coin & Currency changers and actuators

ElectroMagnetic Compatibility (EMC)

IEC/EN 61000-6-1:2007 Immunity for residential, commercial and light-industrial environments

Electrostatic Discharge…… ± 4kV Contact
± 8kV Air

Radiated Susceptibility……80 – 1000MHz (3V/m)
1.4 – 2.7GHz (3V/m)

Conducted Susceptibility…… 0.15 – 80MHz ($3V_{RMS}$)

Magnetic Susceptibility…… …….. 3 A/m, 50Hz, 60Hz

IEC/EN 61000-6-3:2007 Emission for residential, commercial and light-industrial environments

Radiated Emissions…….... 30 – 230MHz (30dBuV/m) @ 10m
30 – 230MHz (40.5dBuV/m) @ 3m
230 – 1GHz (37dBuV/m) @ 10m
230 – 1GHz (47.5dBuV/m) @ 3m

IEC/EN 61000-6-2:2005 Immunity for industrial environments

Electrostatic Discharge…… ± 4kV Contact
± 8kV Air

Radiated Susceptibility…… 80 – 1000MHz (10V/m)
1.4 – 2.7GHz (10V/m)

Conducted Susceptibility…….... 0.15 – 80MHz ($10V_{RMS}$)

Magnetic Susceptibility…… 30 A/m, 50Hz, 60Hz

IEC/EN 61000-6-4:2007 Emission for industrial environments

Radiated Emissions…….. 30 – 230MHz (30dBuV/m) @ 10m
30 – 230MHz (40.5dBuV/m) @ 3m
230 – 1GHz (37dBuV/m) @ 10m
230 – 1GHz (47.5dBuV/m) @ 3m

Railway Applications – Electronic Equipment Used on Rolling Stock

Part of EN 50155:2001 includes following

IEC 61373:1999 Shock and Vibration Test

Shock Duration ……..…. 30ms
Acceleration…… 50 m/s2
Pulse Count – each direction..…… 3 pulses
Vibration Duration – each direction……..... 5 Hours
Frequency Range……..... 5Hz – 150Hz

EN 50155 - 2.1.1 ATM Altitude Testing

Maximum Operational Altitude…….. 4000m @ 25°C (±3°C)

Duration of test……..…….. 23 hours

Environment

Operating environment…..……..... Indoor or environmentally protected stationary applications

Operating Temperature for Bill-to-Bill unit……..……..…….. 0°C to +60°C
External Temperature for metal bezels with heating element
(Bill-to-Bill unit to be in the temperature range stated above) ……..…….. -30°C to + 60°C
Storage Temperature……..…… -30°C to +60°C
Humidity (non-condensing)……..…….. 30% - 90%RH

Optional security features

Drop cassette……..…… one or two ¾” tubular locks
Housing……..……one ¾” tubular lock for drop cassette
Housing……..... 2 security switches to signal alarm when drop cassette unlocked or removed; chassis unlocked and removed
Chassis……..... one ¾” tubular lock for locking chassis, recycling cassettes and dispensing cassette inside housing

Optional features:

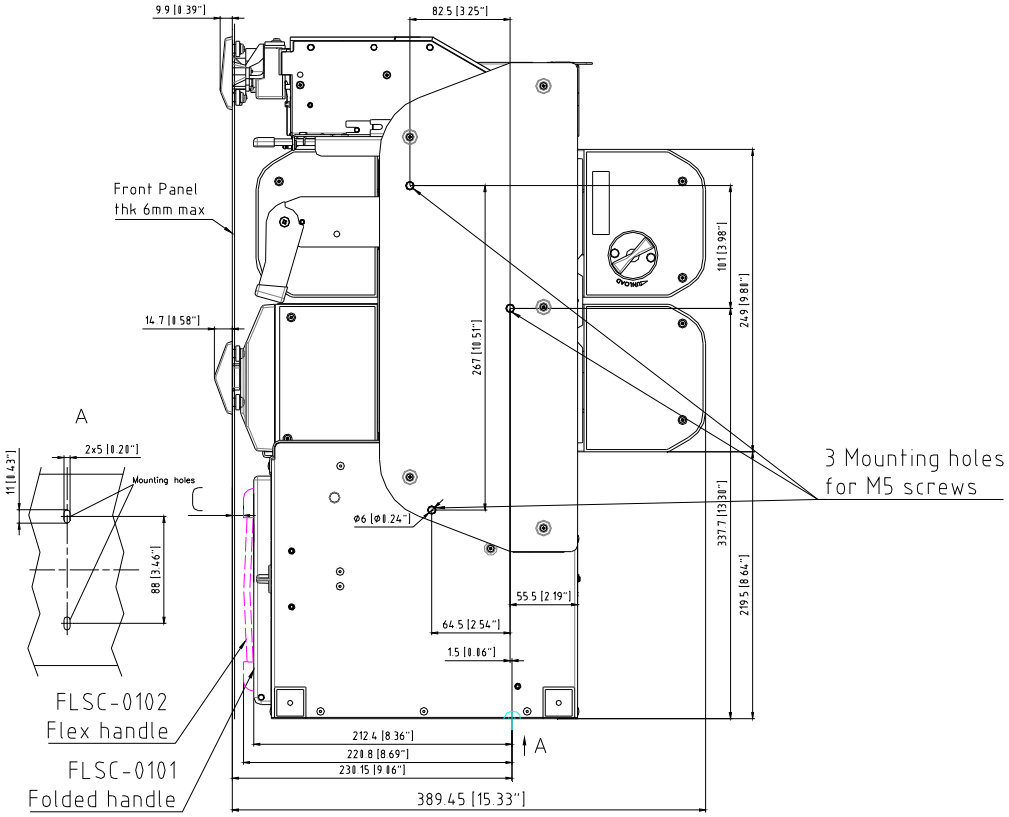
- Vandalism-proof metal bezel for validating head
- Vandalism-proof metal bezel with heating element for dispenser
- Drop cassette equipped with tracking system

 Contact your sales representative for details.

1.7. Standard Unit Dimensions:

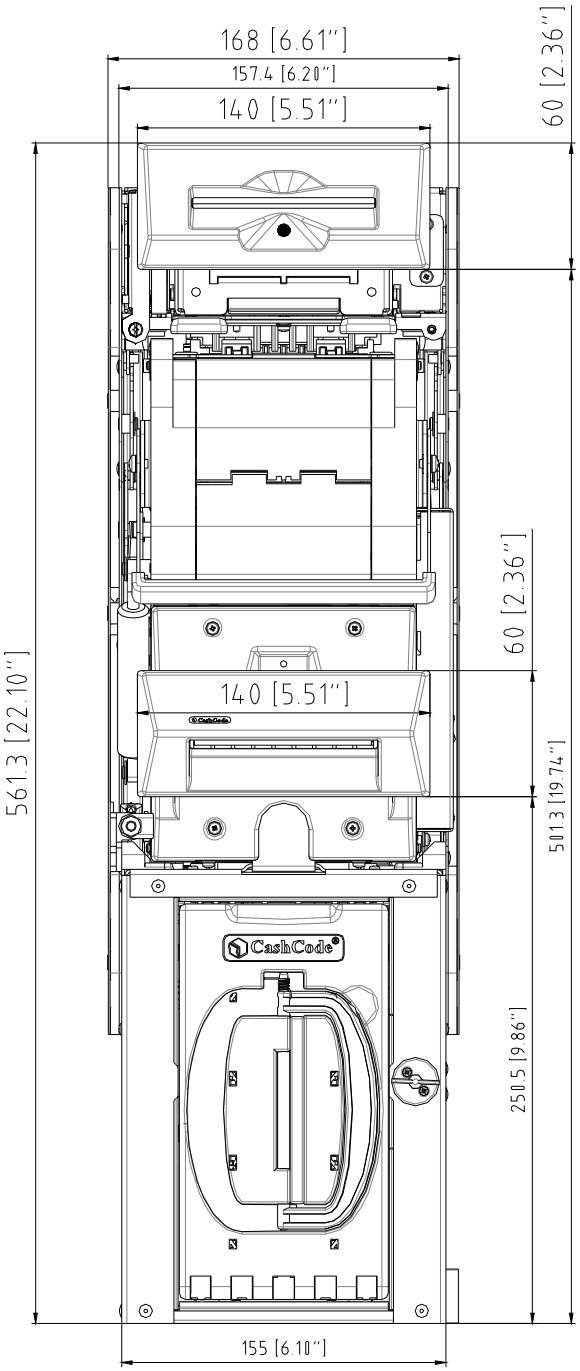
Configuration: 2 Piece Bezel, 1,000 Cash box

Bill-to-Bill 300XE™ BV without Bezel, Foldable Handle Cash Box (600 Bills):



Side View

Cash Box Clearance Table		
TVM Door Thickness	Dimension C	
	FLSCX0102 Flex Handle	FLSCX0101 Folded Handle
3 mm	6.35 mm	14.75 mm
4 mm	5.35 mm	13.75 mm
5 mm	4.35 mm	12.75 mm
6 mm	3.35 mm	11.75 mm



Front View

All dimensions are in mm (inches in brackets) and are for reference only.

2. Modular System

2.1. Description of Modules:

The **Bill-to-Bill 300XE** was built on modularity principles, just like the SuzoHapp FrontLoad bill validator product. The **Bill-to-Bill** 300XE consists of the following modules:

Validating Head – accepts and validates legitimacy of bill

Bezel – Seven different bezels are available—however, bezels with a digital display are recommended (for Software update and diagnostics via a service keypad)

Sense-a-Click™ sensor pack – Four version as are available depending on currency set

Power Interface Module - Only one variety may be used with the B2B

Cash Box - Secure Cash Box, it is referred to as a "drop cassette". 4 Choices: 600 / 1000 and type of handle

Memory Card - is universal for all SuzoHapp products

Housing – 2 types (Exterior – Metal version or Interior – Plastic bezel version)

Chassis – 1 type

Recycling Module – Consists of a total of three recycling cassettes: 2 Choices a) Basic – Can access the money, b) Lockable – Can not access the money by hand, if detached.

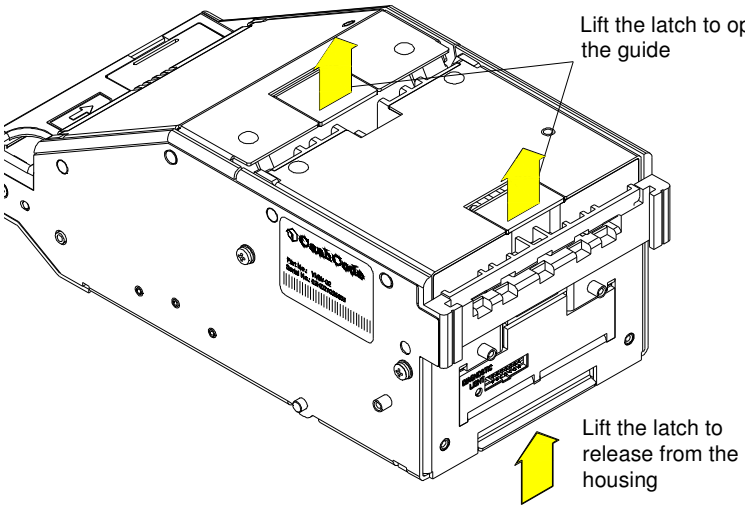
Dispensing Cassette – 2 types a) Plastic bezel version, b) Metal bezel Version

Path Switch – 1 type

Bill-to-Bill Box Control Module – 1 type

2.2. Validating Head:

The validating head for the Bill-to-Bill was adopted from SuzoHapp's FrontLoad bill validator unit.



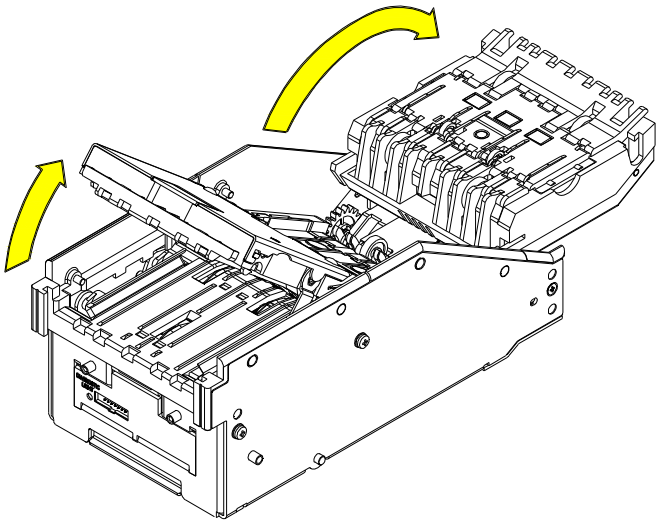
The Bill-to-Bill's validating head features self-centering transport guides, which perfectly align multi-width and skewed bills. The width of the bill path automatically adjusts to accommodate each bill.

Accessing bill path:

There are two guides in the validating head that must be opened to access the bill path. If space above the Bill-to-Bill allows, the guides in the validating head can be opened without removing the validating head from the housing. Otherwise the validating head must be removed from the housing.

To remove the validating head from the housing lift the latch at the bottom of the validating head and pull out the validating head.

To open the guides lift the latch at top of each guide and rotate the guides as shown in figure below.



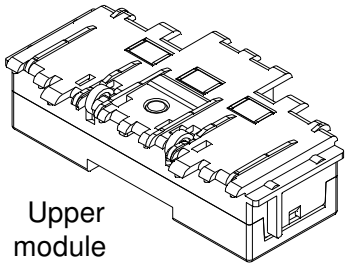
Part Number	Description
MFLV-9013	Multi-width centering mechanism

2.3. Sense-A-Click:

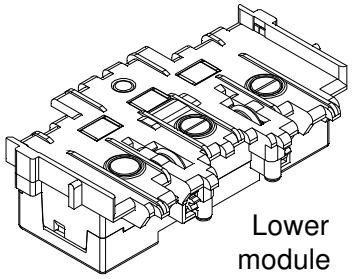
"Sense-a-Click™" sensor packs are a set of two modules—one upper and one lower. In order to be compatible with each other, both modules must have the same part and model number.

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

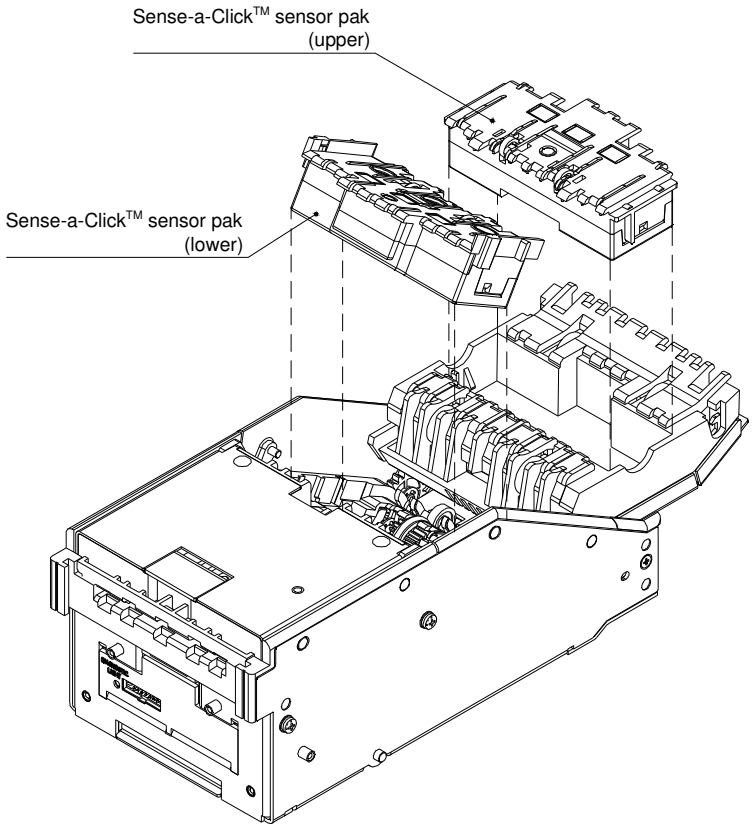
- Color and position of the optical sensors
- Number and position of the inductive sensors
- Capacitive sensors
- Model, which reflects the type of electronics housed therein, and determines the compatibility with other modules



Upper module



Lower module



Depending on the bill country type, the following Sense-a-Click™ part numbers should be used:

Currency		Part Number for Sense-a-Click™ Sensor Packs		
		Set of Two Modules	Upper Module	Lower Module
Argentina	AR	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Australia	AU	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Brazil	BR	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Canada	CA	FLS-1801	FLS-1801U	FLS-1801L
Chile	CL	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
China	CN	FLS-1705/1707	FLS-1705/1707U	FLS-1705/1707L
China + Hong Kong	CNHK	FLS-1705/1707	FLS-1705/1707U	FLS-1705/1707L
Colombia	CO	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Dominican Republic	DO	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
European Union (Euro)	EU	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Euro + Swiss + Reka	EUCHRK	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Great Britain	GB	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Hong Kong	HK	FLS-1705/1707	FLS-1705/1707U	FLS-1705/1707L
India	IN	FLS-1705/1707	FLS-1705/1707U	FLS-1705/1707L
Kazakhstan	KZ	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L

Currency		Part Number for Sense-a-Click™ Sensor Packs		
		Set of Two Modules	Upper Module	Lower Module
Mexico	MX	FLS-1705/1707	FLS-1705/1707U	FLS-1705/1707L
New Zealand	NZ	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Philippines	PH	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Russia	RU	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Scotland	SL	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
South Africa	ZA	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Ukraine	UA	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
USA	US	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
USA + Canada	USCA	FLS-1901	FLS-1901U	FLS-1901L
USA + Great Britain	USGB	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
USA + Mexico	USMX	FLS-1704/1706	FLS-1704/1706U	FLS-1704/1706L
Venezuela	VE	FLS-1705/1707	FLS-1705/1707U	FLS-1705/1707L

2.4. Housing:

The Housing is made of a rigid metal structure, which allows you to mount the Recycler using the left, right or back side.

The Bill-to-Bill housing carries all of the modules and cables necessary for interconnections. The housing is the only module in the Bill-to-Bill that is permanently installed inside a cabinet.

There are security switches in the housing:

1. “Cash Box removal”,

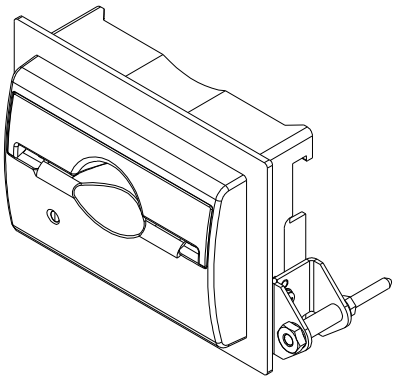
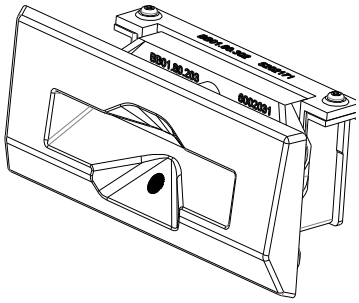
2. “Cash Box lock open”, (if the locking mechanism for the drop cassette is present),

For switch connection, please refer to the “INSTALLATION SECURITY FEATURES”. Depending on the supporting bracket for the drop cassette, the following implementations of the housing are available:

Part Number	Bezels	Cash Box size
BBH-5513	Metal (Single Grounding)	600 / 1000
BBH-5514	Metal (Dual Grounding)	600 / 1000

2.5. Bill Validating Head Bezel:

The Bezels are U/L and CE compliant and 85 mm wide opening. Multiple bezel designs make the SuzoHapp Bill-to-Bill 300XE™ Bill Recycler compatible with a wide variety of door styles.

Part Number	Picture	Description
MFLB-7102		Standard Coin Proof Metal Bezel ⚠ This bezel requires additional grounding hardware on the unit housing. Please see the Bezel User Guide for mounting instructions.
MFLB-6101		2 Piece Metal Bezel ⚠ This bezel requires additional grounding hardware on the unit housing. Please see the Bezel User Guide for mounting instructions.

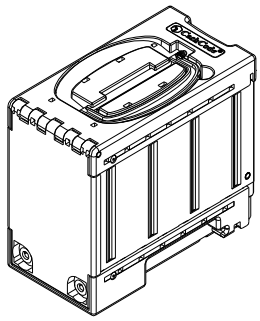
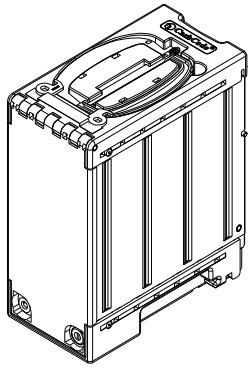
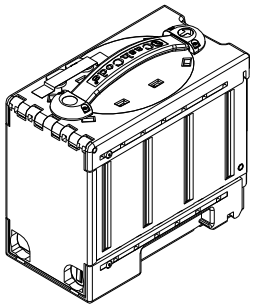
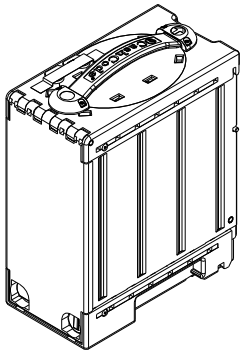
If you have custom bezel requirements, please contact your SuzoHapp Sales Representative.

2.6. Cash Box:

2.6.1. Type of Cash Box :

The Cash Box stores, stacks and holds validated bills in a secure cassette. The Cash Box has a stacking mechanism and is typically equipped with a latch. Users are encouraged to replace the latch with a regular metal Bill-to-Bill 300XE. Users have a choice between Bill-to-Bill 300XE or two locks for added security. A locking mechanism allows for the installation of security locks (Bill-to-Bill 300XE or two 3/4" tubular locks measuring 11/16" ± 1/16" or 1 1/8" ±1/16"). All security locks are supplied by user.

Although Cash Boxes are available in 600 or 1000 storage capacity, street grade bills require more space and as a result full capacity may be reduced. The Cash Box can store bills from 60 to 85 mm wide and from 120 to 172 mm long.

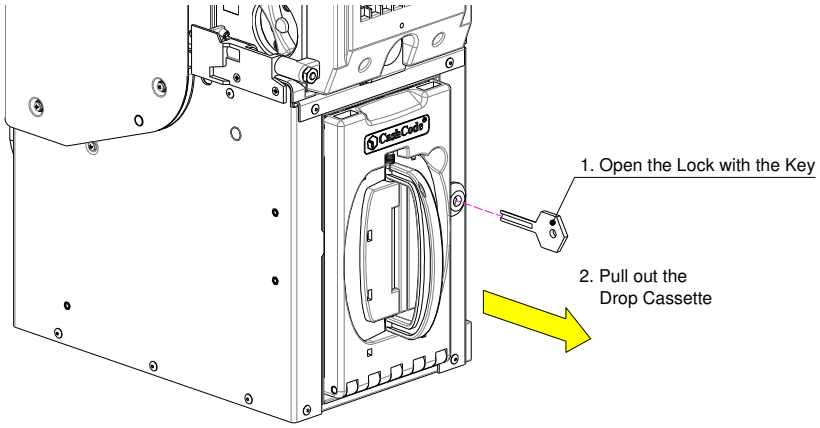
FLSC-0001* 600 Capacity, Foldable Handle	FLSC-0101* 1000 Capacity, Foldable Handle
	
FLSC-0002 600 Capacity, Flexible Handle	FLSC-0102 1000 Capacity, Flexible Handle
	

*Special Order

For other drop cassettes please contact the SuzoHapp Customer Service department.

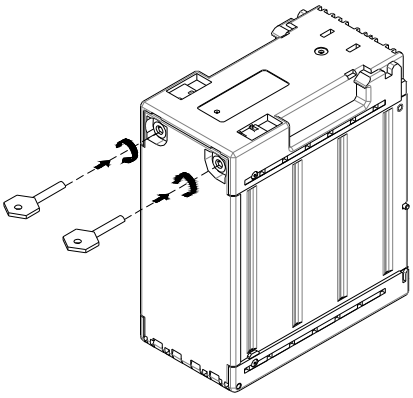
2.6.2. How to Remove the Cash Box:

1) Open the lock in the housing (if equipped)
2) Push the release button
Grasp handle and pull out the drop cassette

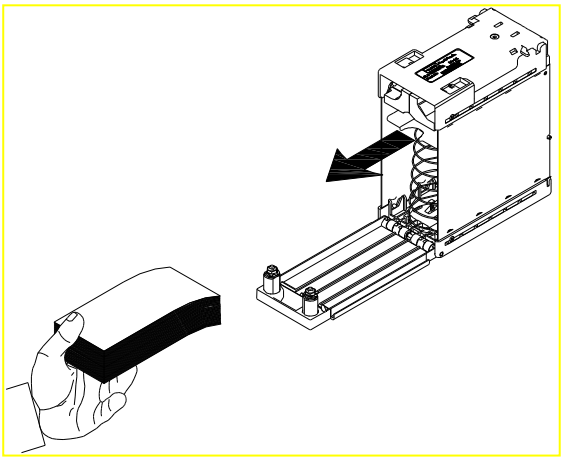


2.6.3. How to collect the bills:

1. Unlock 1 (or 2 locks) and open the cover



2. Remove bills



2.7. Chassis:

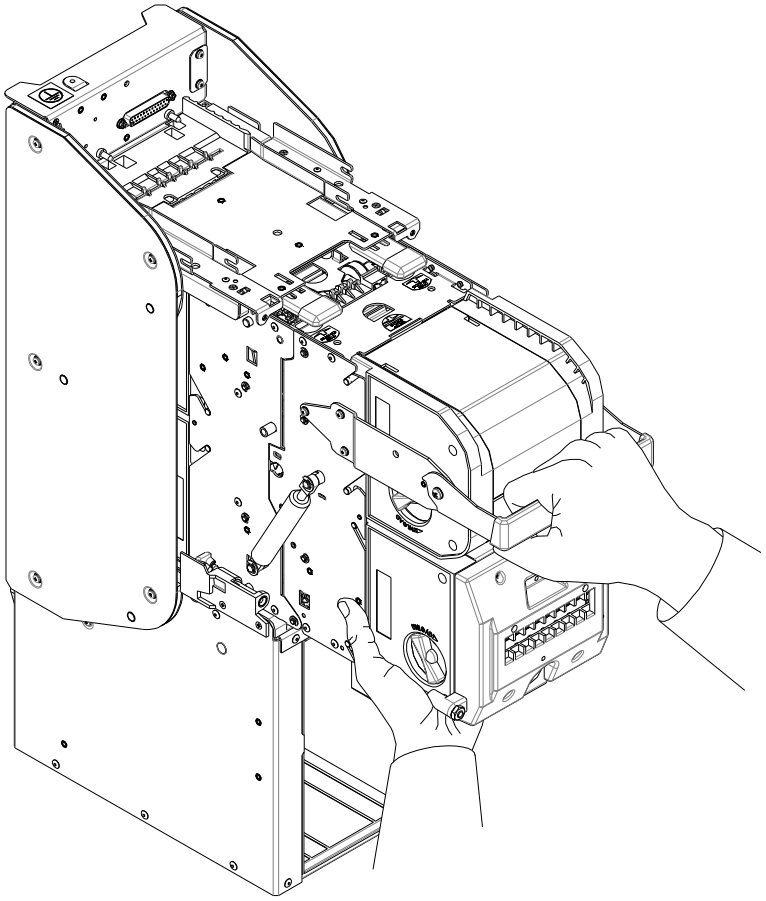
2.7.1. Chassis Description:

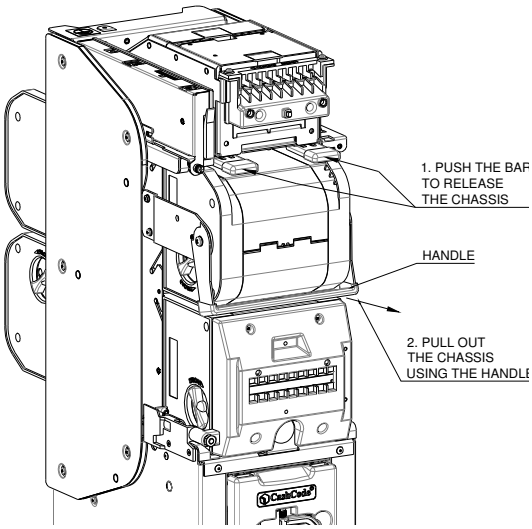
The chassis carries 3 recycling cassettes, one dispensing cassette, and one path switch. It also has drive arrangements—for transporting bills, recycling cassettes, and positioning the path switch—as well as connection cables and a local controller.

Part Number	Number of Recycling Cassettes
BBC-0110	Can accommodate up to 3 Recycling Cassettes

Removing the Chassis from the Housing

- Unlock the tubular lock at the front of the dispensing module (if present)
- Push the release bar under the validating head
- Pull out the chassis





⚠ ***Caution! The chassis may be heavy to handle! Support the module beneath the chassis with one hand.***

2.7.2. How to access Chassis Bill Path:

Press either release button and pull open the machine. The gas spring supports the chassis in the opened position. The opened chassis also allows access to the path switch. The chassis can be opened with, or without, the recycling and dispensing cassettes present.

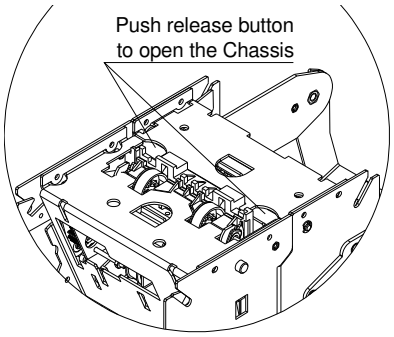


Fig. 5

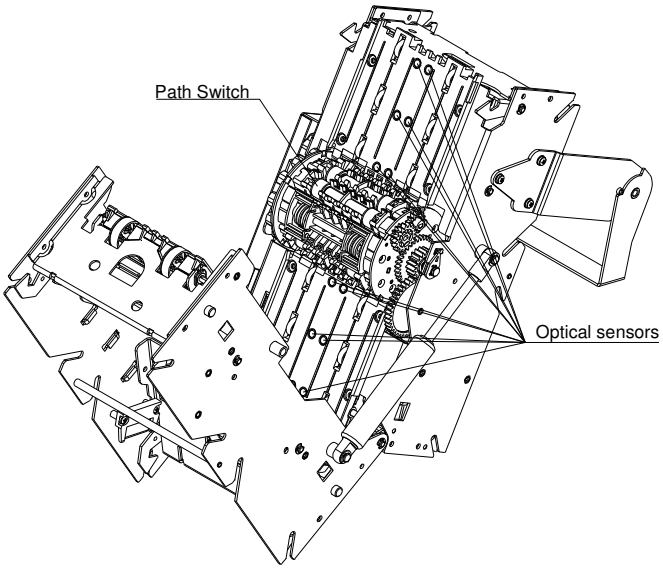


Fig. 6

2.8. Recycling Cassette:

2.8.1. Recycling Cassette Option:

The Bill-to-Bill carries up to three recycling cassettes, which operate identically. Built with flexibility in mind, the user can program which bill denominations will be used in each of the recycling cassettes.

The maximum storage capacity of each cassette ranges from 80 to 110 bills. The exact number of bills that can be stored is dependent upon the bill length: the shorter the bill, the higher the number of bills that can be placed inside the cassette.

A flash memory inside each recycling cassette stores information on the number, and denomination of bills housed in the cassette. The flash memory prevents operation errors from occurring, i.e.: when a cassette is installed in a random position in the Bill-to-Bill.

Part Number	Type	Bill storage capacity
BBR-0110	Standard	80 – 110
BBR-0111	Lockable	80 – 110
BBR-0112	Standard (Narrow Tape)	80 – 110
BBR-0113	Lockable (Narrow Tape)	80 – 110

2.8.2. How to remove Recycling Cassette:

Remove the chassis from the Bill-to-Bill housing first (see section entitled “chassis”)

Slide the latch on the chassis (each cassette has its own latch) and pull out the cassette

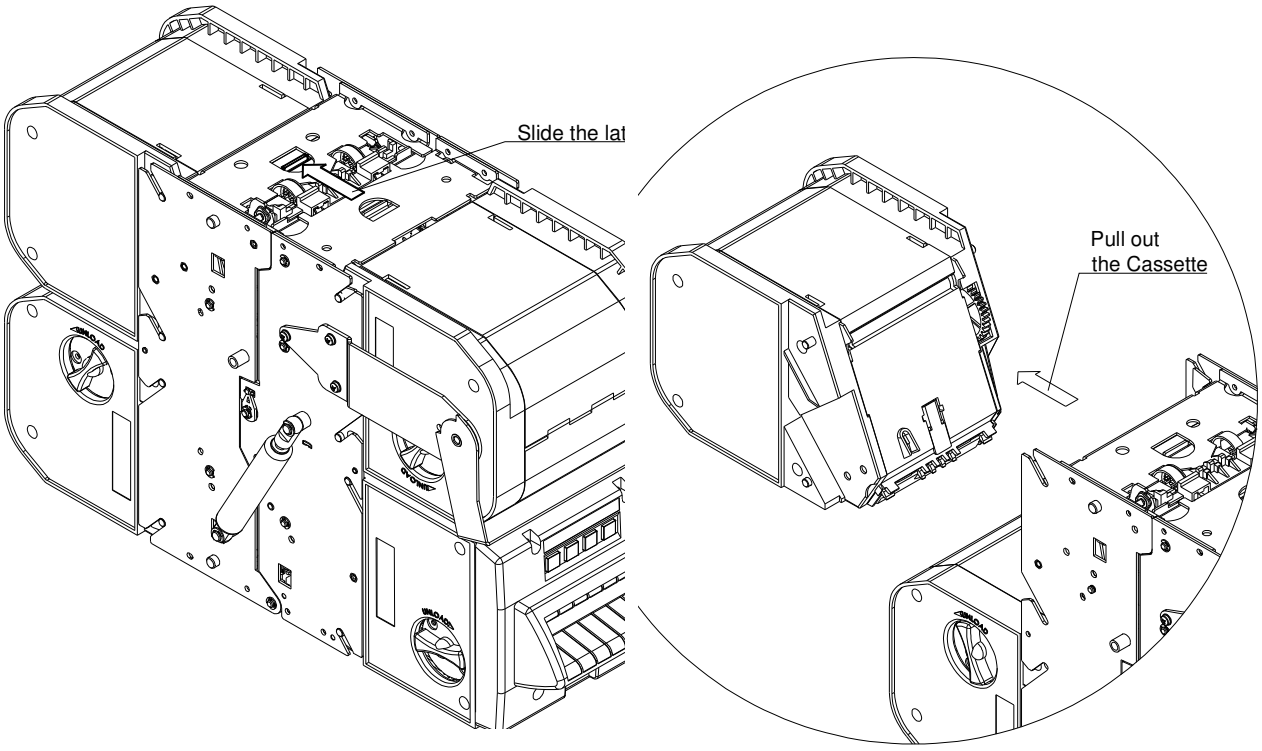
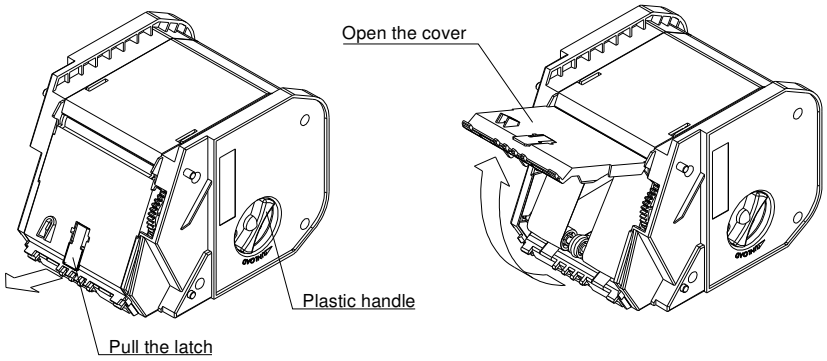


Fig. 8

2.8.3. Manual unloading of Standard Recycling Cassette:

Please note that this section apply for only standard recycling cassette. For lockable cassette following procedure is not applicable.



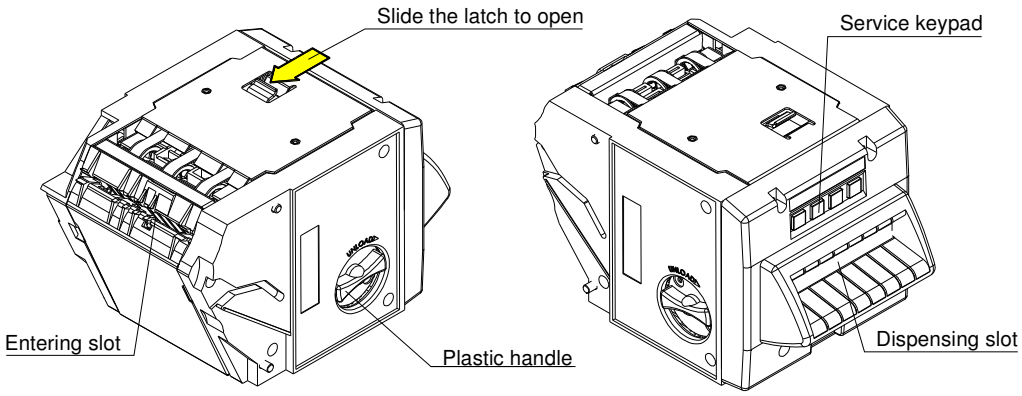
Rotate the plastic knob in counter-clockwise direction. Bills are manually dispensed one bill at a time. Should a jammed bill be located in the entrance slot, this bill can be easily removed without adversely affecting the later operation of the cassette. Please note: manually unloading bills will reduce the number of bills in the cassette, without changing the number of bills in flash memory. It is strongly recommended to perform a complete unload operation, after the cassette is replaced in the Bill-to-Bill (please see the “Unloading Options” section). This will allow the Bill-to-Bill to readjust the flash memory when the cassette is operational again.

Do not attempt to pull out the white tapes present in the cassette! This could damage the cassette!

2.9. Dispenser:

The Bill-to-Bill carries up to three recycling cassettes, which operate identically. Built with flexibility in mind, the user can program which bill denominations will be used in each of the recycling cassettes.

There is only one dispensing cassette in the Bill-to-Bill unit. In contrast to the three recycling cassettes, the dispensing cassette has a permanent position in the chassis. The dispensing cassette can form a bundle of up to 20 bills. Bills from all three recycling cassettes can be combined into one bundle. Should more than 20 bills need to be dispensed, then subsequent bundles will be delivered to the dispensing cassette once the previous bundle is removed.



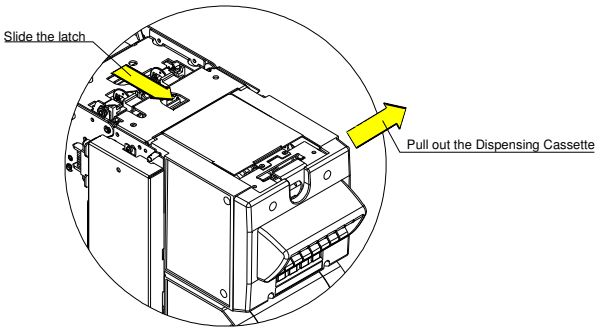
A standard ¾" tubular lock can be installed in the dispensing cassette, which will allow the chassis to be secured to the recycling cassette module, and the dispensing cassette inside the housing. There is a placement for a lock under the dispensing slot.

Part Number	Maximal bundle size, bills	Bezels
BBD-0110	20	Plastic
BBD-0310	20	Metal
BBD-0510	20	Dual Metal

Removing the Dispensing Cassette:

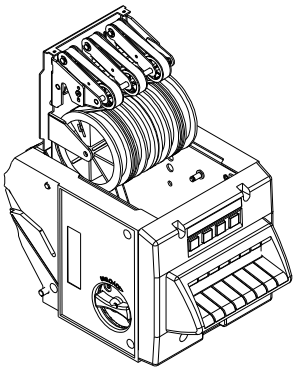
Remove the chassis from the housing first (please see section above)

Slide the latch on the chassis and pull out the cassette



Opening the Dispensing Cassette:

Slide the metal latch and open the top cover of the cassette.



2.10. Path Switch:

The path switch organizes connections between modules via various bill paths.

Possible bill path directions are:

- from validating head to recycling cassette 1
- from validating head to recycling cassette 2
- from validating head to recycling cassette 3

- from validating head to drop cassette

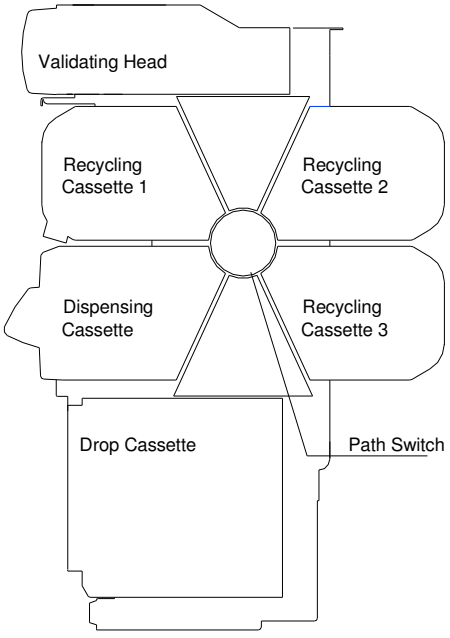
- from recycling cassette 1 to dispensing cassette
- from recycling cassette 2 to dispensing cassette
- from recycling cassette 3 to dispensing cassette

- from recycling cassette 1 to drop cassette
- from recycling cassette 2 to drop cassette
- from recycling cassette 3 to drop cassette

- from recycling cassette 1 to recycling cassette 2
- from recycling cassette 1 to recycling cassette 3

- from recycling cassette 2 to recycling cassette 1
- from recycling cassette 2 to recycling cassette 3

- from recycling cassette 3 to recycling cassette 1
- from recycling cassette 3 to recycling cassette 2

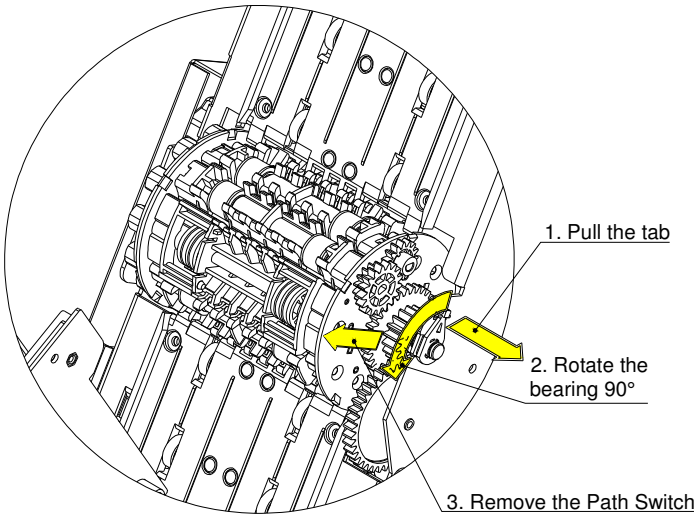


Part Number	Number of connected paths
BBS-0110	5

Removing the Path Switch:

Remove the chassis from the housing first (please see section above)

- Open the chassis
- Pull the tab and rotate the bearing 90 degrees,
- Repeat the action with the second bearing at the opposite side of the chassis
- Once both bearings have been released, carefully pull out the path switch from the chassis



Maintenance of the Path Switch:

The maintenance of the path switch is recommended approximately two times per year.

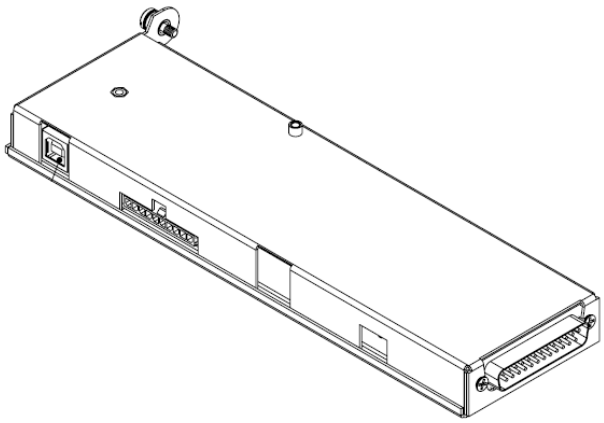
Preventative Maintenance includes visual inspection of belts.

There must be no cracks on the surface of the 8 timing belts, and no visible damage of the components.

The path switch organizes connections between modules via various bill paths.

2.11. Bill-to-Bill Power Interface:

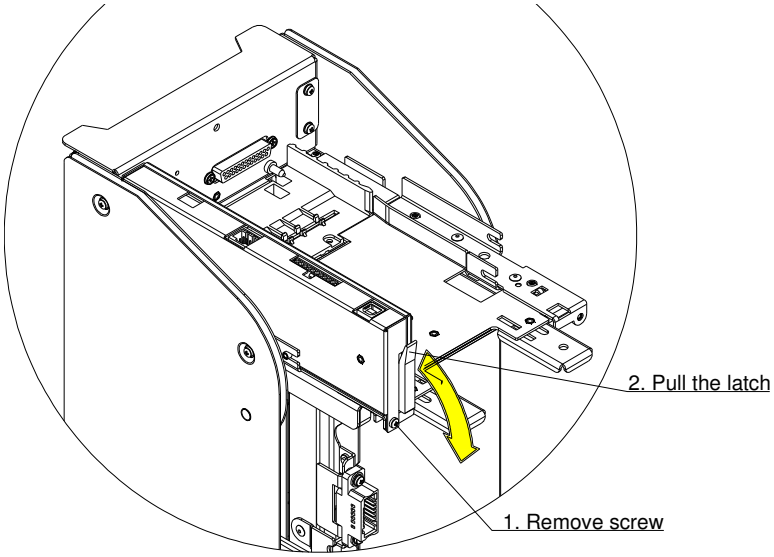
The Bill-to-Bill power interface module is placed in the housing at the left side of the validating head. It carries connectors for all external connections to the Bill-to-Bill.



Part Number	Interface	Power
BBP-5730	RS232 (CCNet)	24V DC

Removing the Bill-to-Bill Power Interface Module:

- Remove the screw under the Bill-to-Bill power interface at the front side
- Pull the latch of the Bill-to-Bill power interface module to remove it from the housing



2.12. Control Box:

This unit helps in cash box function and stacker motor control.

2.13. Accessories:

Please order necessary accessories based on your need.

Accessories P/N	Description
OPT-PS-BB-CCNET	24 Volt power supply for Bill-to-Bill
OPT-HS-BB-CCNET	Power interface cable
OPT-CLEAN-KIT-1	Level 1 maintenance kit
OPT-CLEAN-KIT-2	Level 2 and 3 maintenance kit
OPT-BB-SP1	BB Path Switch BBS-0110 + Chassis BBC-0110
OPT-BB-SP2	BB Path Switch BBS-0110 + Chassis BBC-0110 + Recycling BBR-0110 3 + Dispensing BBD-0310
OPT-BB-SP3	Consumable replacement kit for BB maintenance (screws, bearings and push rivets)
OPT-BB-SP4	Hardware replacement kit for level 2 BB maintenance
OPT-BB-SP5	Hardware replacement kit for level 3 BB maintenance
OPT-BB-SP6	BB Path Switch BBS-0110 + Chassis BBC-0110 + Recycling BBR-0111 3 + Dispensing BBD-0310

2.14. Memory Card:

Each SuzoHapp Bill-to-Bill 300XE™ Bill Recycler is supplied with pre-installed software or a Stay-In Memory Card (for gaming applications), according to users order. A Stay-In Memory Card may be a single download, a Bill-to-Bill 300XE time programmable, or an NDEG card.

Software updates are recommended whenever:

- New currency is issued, or
- A new series of counterfeit bills are discovered.

2.14.1. Memory Card Part Number Legend:

BBXM-31EU1100

BBXM – Standard Bill-to-Bill 300XE™ BV Memory Card

31 – Type of memory card (see table)
EU – Country code (ISO 3166-3)
1 – Protocol/OEM Customization

Software version:
1 – Protocol (1 for CCNET)
1 – OEM Customization
00 – Firmware Revision

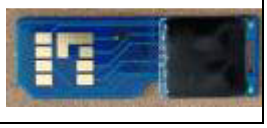
Type 31 Memory Card: (P1848-FLM31)

Dallas Chip, 128 K Memory

To be available

Type 40 Memory Card (P1848-FLM40)

CPU Chip, 128 K Memory



Memory Card Type	Mfg. Download	Single Download*	Multi-Download	NDEG	Chassis
31	X	X	X	√	√
40	√	√	√	√	X

2.14.2. Memory Card Options:

Single Download (Stay-In) Memory Card:
Example Part Number: BBXM-40EU1100

New software can be ordered on single-download Memory Cards. 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 Recycler to operate.

⚠ The Stay-In/Single Download update scheme is recommended option only for applications where 3rd party verification is required.

NDEG (Stay-In) Memory Card:
Example Part Number: BBXM-31C02-NDEG

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 SuzoHapp adapter. (The Recycler must be temporarily disconnected from the host controller).

Multiple Download Card:
Example Part Number: BBXM-31EU1100-XX

New software can be ordered with a multi-download Memory Card. The multi-download Memory Card can be used for updating multiple Bill-to-Bill 300XE™ Bill Recycler, depending on the number of licenses ordered. Subsequently, the card does not have to remain inside the unit during operation. Typically a multi-download Memory Card is issued for a limited number of downloads (maximum 99), and therefore the number of licenses required must be defined in the user's order.

Procedures for software updates can be found in section 5.

2.14.3. Memory Card Programming:

There are several tools available to program memory cards with the appropriate software. Software upgrades are ordered through the SuzoHapp customer service department.

P1848 Single-Card Programmer

P3418 Multi-Card Programmer (Mobile)

For information, operational instructions and availability please contact your SuzoHapp sales representative.

3. Start Up and Installation:

3.1. Start-up:

To avoid damage of any kind during start-up process, please carefully check all points specified below:

- Make sure to use proper cable harness based on interface and cabinet.
- Power supply must conform to the specification on the label.
- Proceed as follows to install the Bill-to-Bill 300XE™ Bill Recycler in the main cabinet.

3.2. Installation of Main Unit:

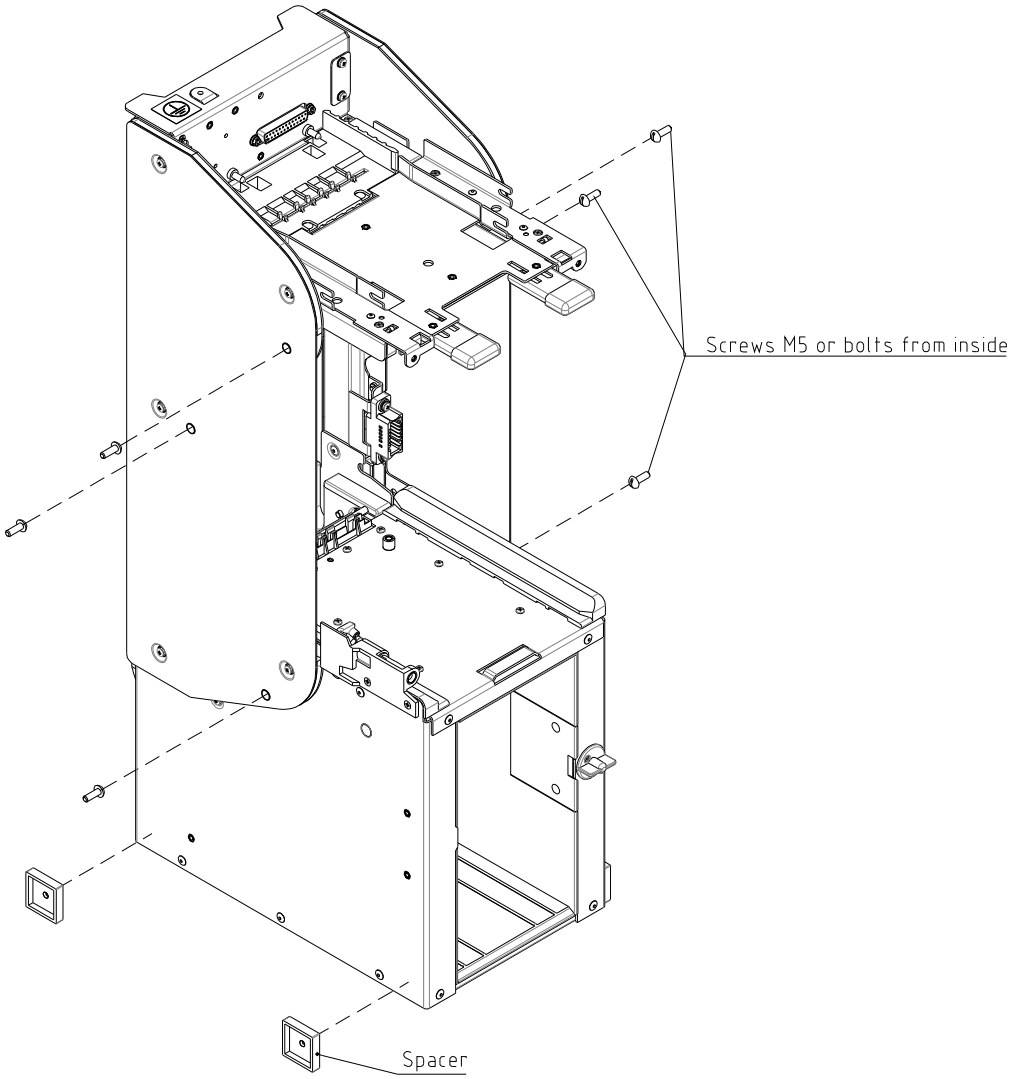
3.2.1. Housing:

The Bill-to-Bill 300XE™ Bill Recycler is installed by using M5 screws on each side of the Front Load frame. In addition, two holes at the bottom are provided for better alignment of product, we suggest our customer to install Alignment Pin as suggested in the figure below. The length of these screws should not be longer than required. Otherwise they may protrude through the inside of the frame. We also recommend using the spacers for additionally support the unit as indicated in below figure.

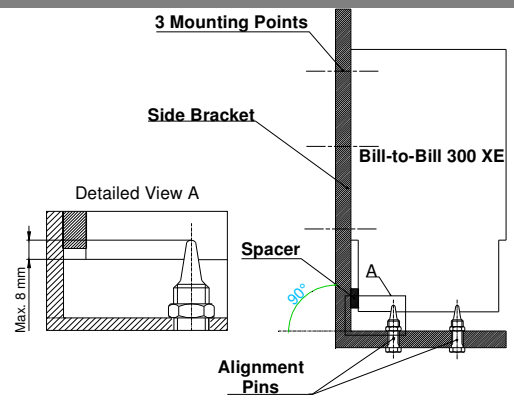
If the position of the mounting screws is different than the position of the mounting holes provided in the target equipment, then additional frame mounting components may be required.

For dimensions of the mounting holes, please refer to the dimensional drawings.

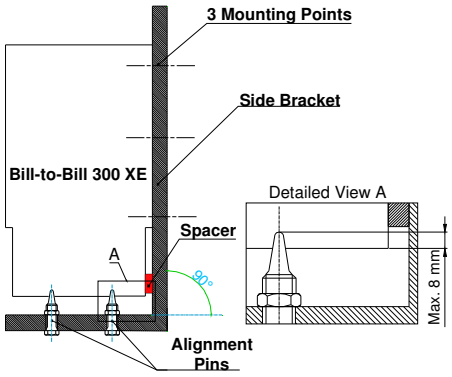
Please see the appropriate User Guide for your Bezel to ensure proper grounding & installation instruction. M5 fasteners (metric) or 10-24 (imperial) should be used



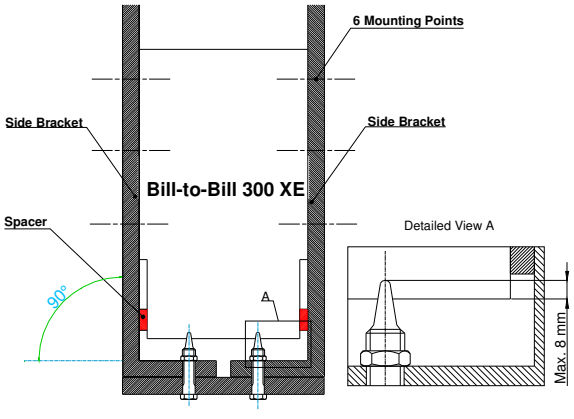
Installation View



√ Side Mounting and Mounting Pin on the bottom



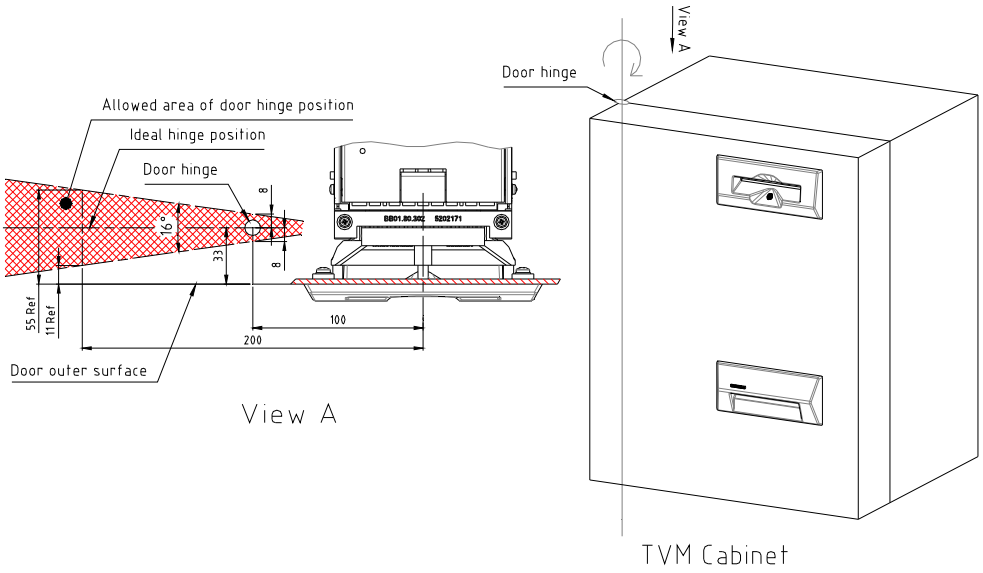
√ Side Mounting and Mounting Pin on the bottom



√ Side Mounting on Both Side and Mounting Pin on the bottom

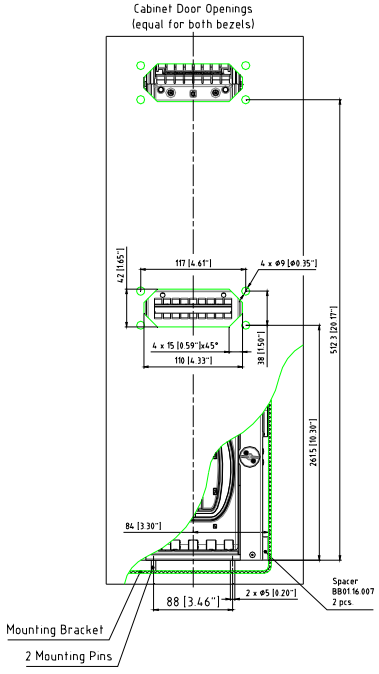
Recommended Mechanical Installation Method

3.2.2. Two-Piece Bezel Installations:



Door Hinge – Bezel Installation Alignment

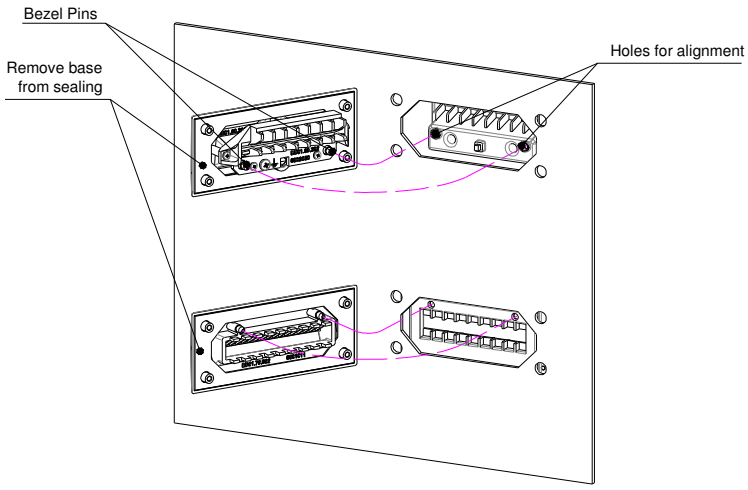
Note: The Door's hinge must be in the area as described above in order to allow proper alignment of the bezels.



Recommended door openings for bezels installation

Outside Bezels Installation:

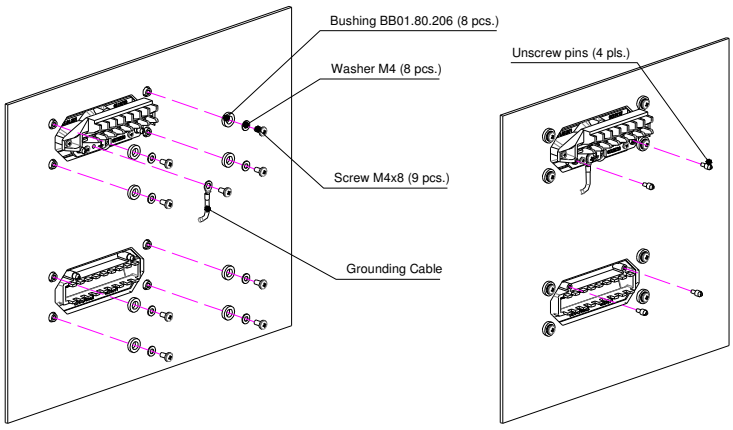
Remove the base from the sealing and insert the bezels trough the door openings allowing the pins to align with the inside bezels. The TVM door must be closed at the time of installation in order to have proper distance between the pins and aligning holes.



Outside bezel insertion

Fasten the Bezels with M4 screws as described on the figure below.

Note: The pins must be removed after the installation to allow proper tolerance between the inside and outside Bezels.

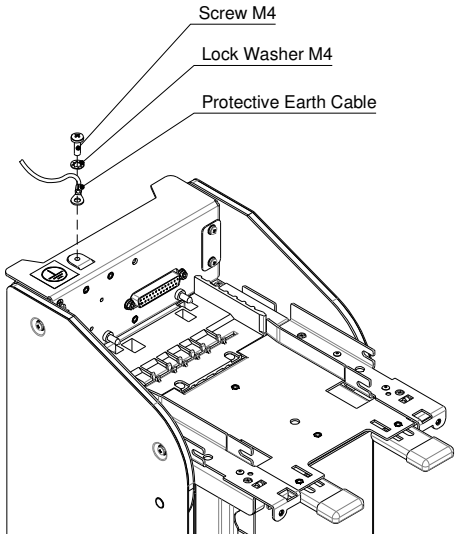


Mounting Points for the outside Bezels

3.2.3. Grounding:

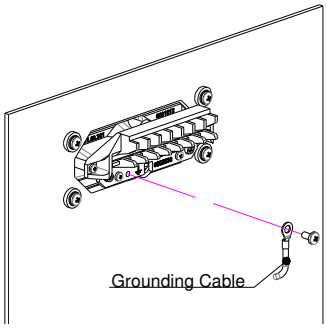
Protective-earth ground terminal must be connected to the automat grounding bus or terminal. Protective earth connection must be made by cable OPT-MKSM-GND or another cooper wire cable with wire gage 14…12 AWG. Use the shortest, practical wire length but no more than 1.5 meters. Refer to local codes and regulations for grounding requirements.

In our design, DC power supply lines, interface lines are separated from chassis / Protective earth ground / Safety Ground. Each manufactured device are passes Production Hi-pot test.



Housing Grounding

Note: The outside Validating Head Bezel (upper bezel) is also required to be properly grounded to TVM door, assuming that the door is internally connected to safety ground.



Validating Head outside Bezel Grounding

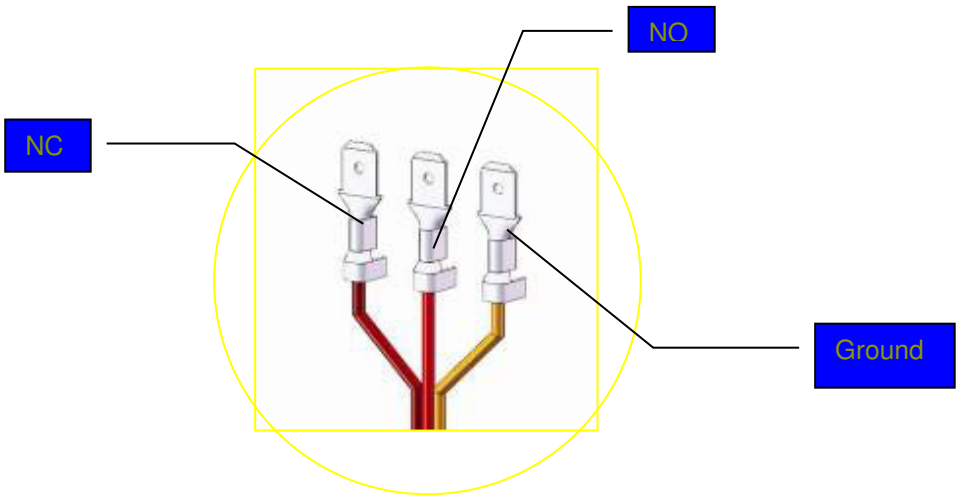
3.3. Security Switch:

The security switch allows the host machine to detect whether a Cash Box is present in the Housing. Security switches are installed on Bill-to-Bill 300XE inside of the housing.

Brown Wire – NC (Normally Closed) Switch: This contact is opened when a Cash Box is inside the housing.

Red Wire – NO (Normally Open) Switch: This contact is closed when a Cash Box is inside the housing.

Orange Wire – Common Ground.



3.4. Security Lock Installation:

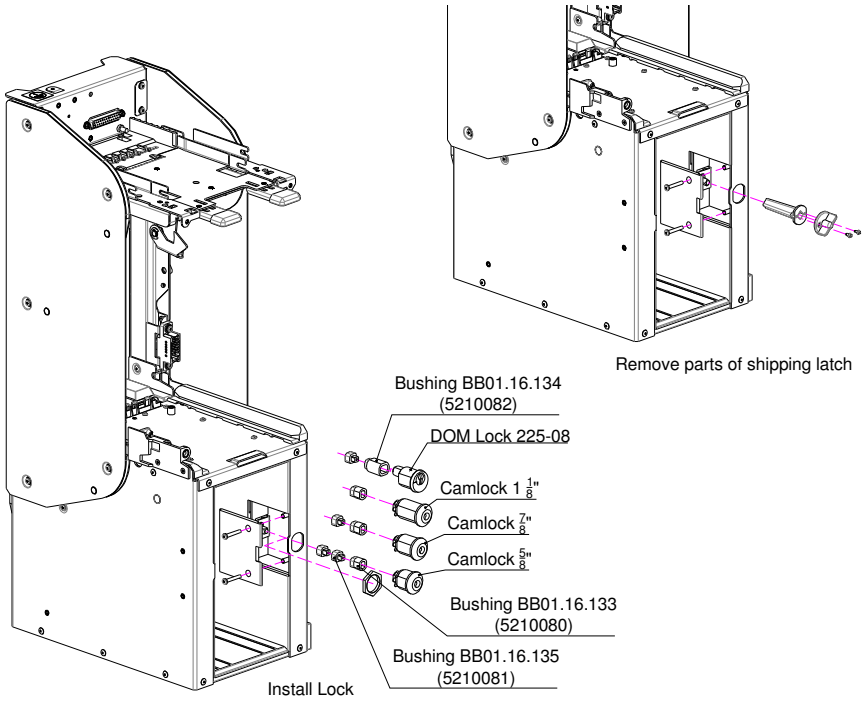
The Bill-to-Bill Currency Management System has several security features.

The drop cassette can be locked with Bill-to-Bill 300XE or two ¾" tubular locks. The drop cassette can be also locked to the housing with a ¾" tubular lock. There can be two security switches: Bill-to-Bill 300XE detects the presence of the drop cassette in the housing, and another detects that the housing lock is secured in "locked" position.

The chassis within the recycling and dispensing cassettes can be locked in the housing with a ¾" tubular lock, positioned 5/8" from the mounting surface to a latch. The provision for the lock is located in the dispensing cassette. Neither recycling cassettes nor dispensing cassettes can be removed from the chassis, until the cassis is not removed from the housing.

3.4.1. Housing Lock Installation:

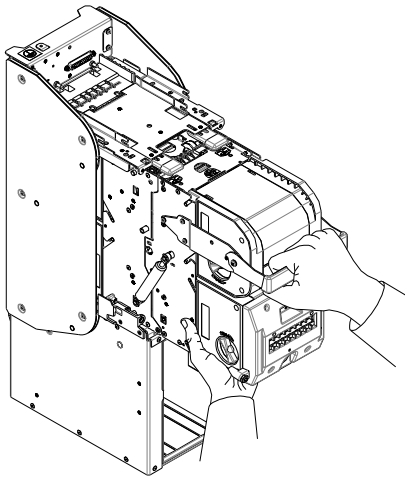
- Remove the screw and lock washer from the lock cover. DO NOT DISCARD!
- Remove and discard the washer and spacer
- Install the lock and parts, as shown below
- Install the cover, screw and lock washer that were removed



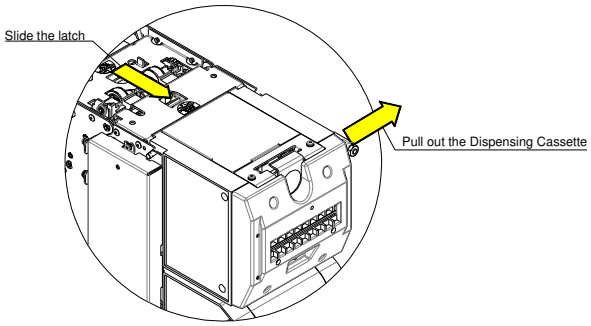
Housing Lock Installation

3.4.2. Chassis Lock Installation:

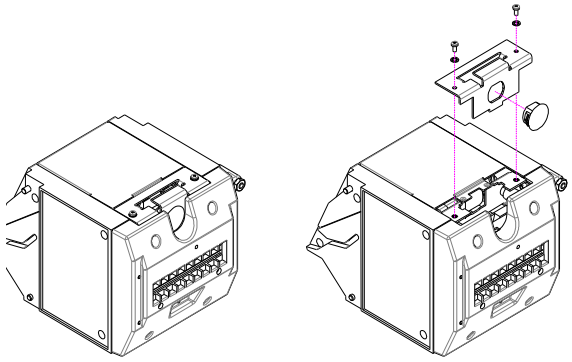
- Remove the chassis from the housing
- Remove the dispensing cassette from the chassis
- Unscrew two screws and remove the lock bracket from the dispensing cassette
- Install the lock into the lock bracket
- Install the lock bracket into the dispensing cassette
- Install the dispensing cassette into the chassis
- Install the chassis into the housing



Removing Chassis



Removing Dispenser



Lock Installation

Variant 1

Mounting kit

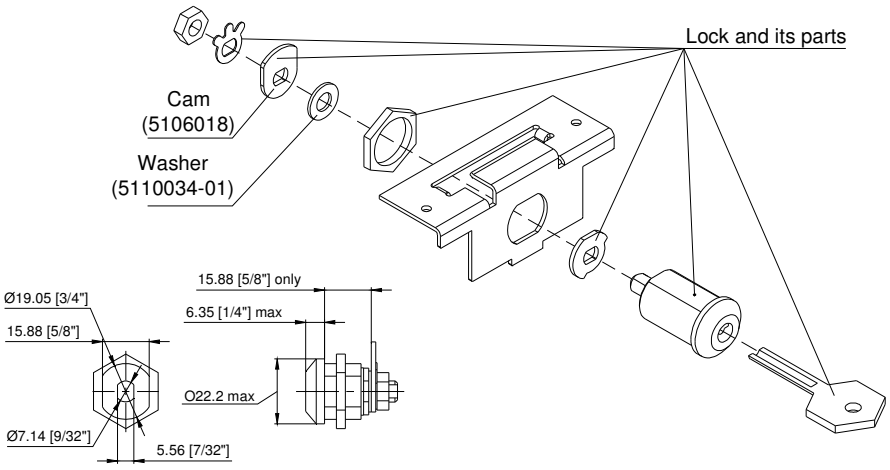
OPT-MK-BBD,

that includes :

Cam 5106018 ,

Washer 5110034-01

is standard accessory.



Variant 2

Mounting kit
OPT-MK-BBD1,

that includes :

Lock Washer 8203012;

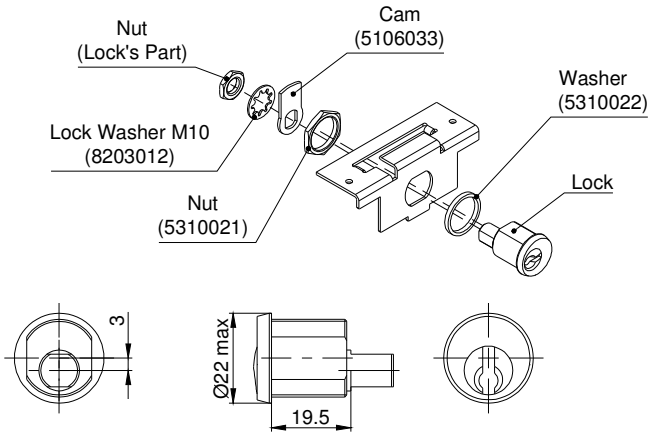
Cam 5106033;

Nut 5310021;

Washer 5310022,

is optional.

(must be ordered)

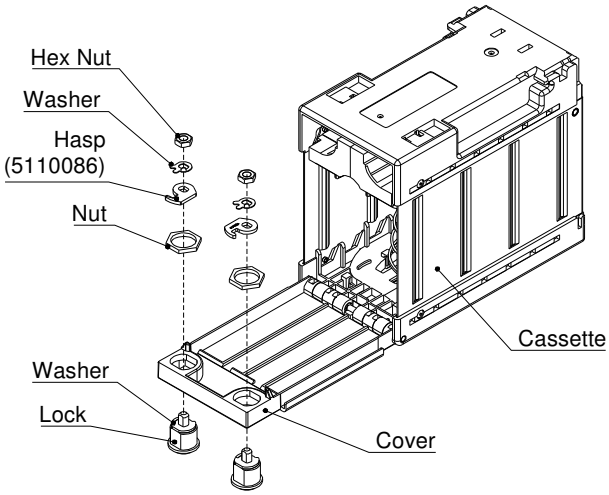


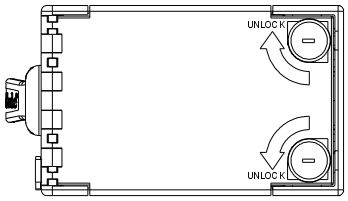
How to install the lock on the dispenser module

3.4.3. Cash Box Lock Installation:

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:

Due to variation of regulatory requirement, SuzoHapp does not provide locks but we provide cam and applicable washers as accessories.

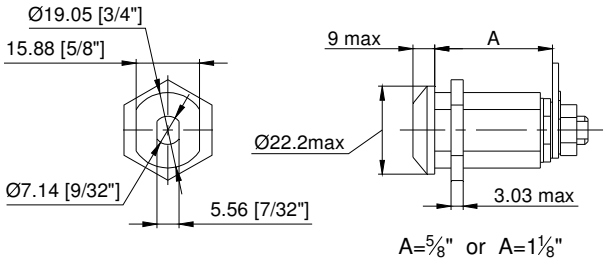




Our design supports

1. Up to 2 locks
2. 2 sizes (5/8" or 1-1/8")
3. Suitable manufacturers include MEDECO, KABA, ABLOY, VSR, Bilock

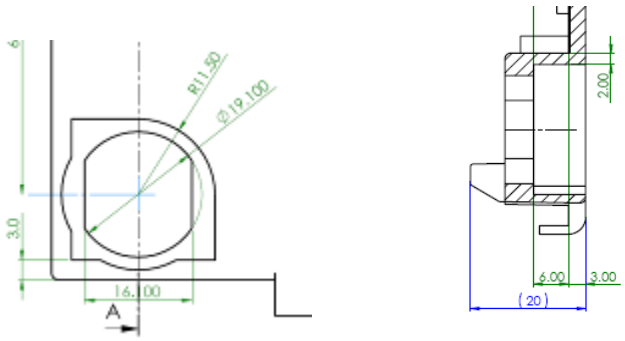
In order to lock, they must rotate in opposite directions (Bill-to-Bill 300XE lock 90 degree clockwise and second should be 90 degree counterclockwise - see figure above.



A=⅝" or A=1⅛"

Two locking hasps are shipped with every cassette –

P/N - 5110086 Standard



Detailed Dimension of Slot for Lock

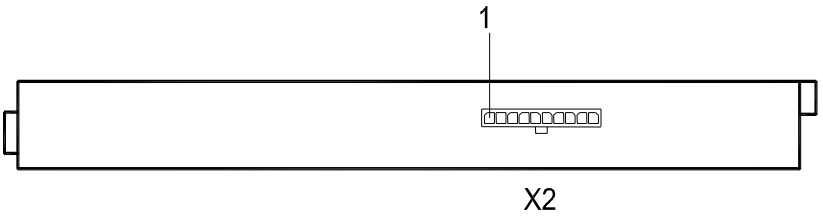
3.5. Power & Interface connection:

The Bill-to-Bill 300XE™ Bill Recycler has following protocol/interface options:

- RS232 levels (CCNET)

3.5.1. Interface Connection:

The Bill-to-Bill power interface module has the following external connections:



X2, Molex p/n 43650-1000 (module portion)

For detailed CCNET interface descriptions, please refer to the corresponding Interface (Protocol) Description Manual.

3.5.2. Signal description for Interface Connection:

TERMINAL	SIGNAL	FUNCTION
1	POWER + (24 V DC)	POWER
2	POWER + (24 V DC)	POWER
3	POWER - (0 V)	POWER
4	POWER - (0 V)	POWER
5	CHASSIS	Functional Earth
6	CHASSIS	Functional Earth
7	RXD	Host serial receive
8	TXD	Host serial transmit
9	Not in use	Not in use
10	GND	Interface common

The lengths of power and interface cables should not exceed 10 meters

Power and interface cables do not connect to outdoor communication links and to outdoor DC current lines.

The interface cable must be shielded. The shield is connected to pin 6 of connector X2. The shield of another cable end is connected either to the case of Host or to the grounding bus or terminal of the automat near to Host Controller. Any of the communication cables must rated 24 AWG.

The power cable to use fourth core cable connected to pins 1, 2, 3 and 4 of connector X2. Each wire section should be no lesser than AWG24 (e.g. 26 AWG is not acceptable). From the direction of the power supply the wires are connected in pairs.

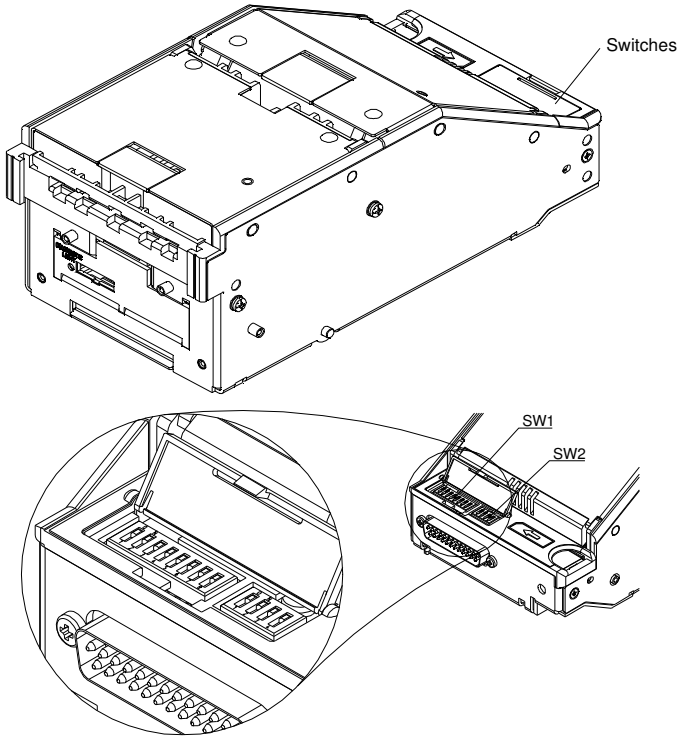
3.6. Default Settings:

The following are the default Bill-to-Bill settings:

- The switch setting (on the validating head) is in “validation mode”; all denominations are enabled; the bill orientation is set to four-ways, and the interface communication speed is 19200 BPS.
- Recycling cassettes are pre-programmed for the three lowest bill denominations (assuming there are no special requirements in a User’s order).
- The unload level for the recycling cassettes is “0”.
- The automatic unload time for the recycling cassettes are “indefinite”.

3.7. Switch Settings:

The DIP switches are located at the rear of the validating head, under the transparent cover.

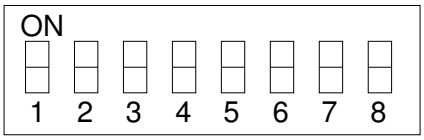


The Bill-to-Bill operates in two basic modes: validation mode and service mode.

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

Service mode: This is the mode for software update and testing the SuzoHapp bill validator.

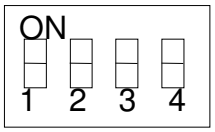
A series of 8-position DIP switches (SW1) define the settings and program the bill validator is to recognize, in order to validate a variety of bill denominations.



Parameter	Switch	On	Off
Denomination #1	SW1.1	Enabled	Disabled
Denomination #2	SW1.2	Enabled	Disabled
Denomination #3	SW1.3	Enabled	Disabled
Denomination #4	SW1.4	Enabled	Disabled
Denomination #5	SW1.5	Enabled	Disabled
Denomination #6	SW1.6	Enabled	Disabled
Denomination #7	SW1.7	Enabled	Disabled
Acceptance Mode	SW1.8	Accept All	Reject Unfit Bills

DIP switch setting may vary based on software requirement for specific country or customer. For complete explanation of switch settings, please refer to “software version description” for your articular Bill Recycler.

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

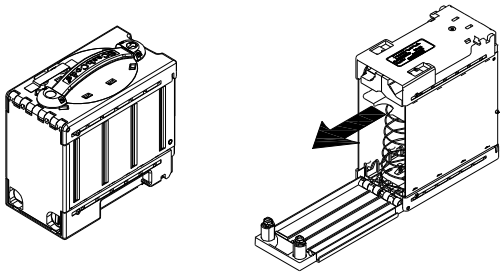


Parameter	Switch	On	Off
Orientation of the ticket	SW2.1	Four-way	One-way
	SW2.2	Reserved	Reserved
Interface communication speed	SW2.3	9600 BPS	19200 BPS
Mode	SW2.4	Service Mode	Validation Mode

3.8. Collect Bills or Barcode Tickets:

To collect bills from the Bill-to-Bill 300XE™ Bill Recycler, simply pull out the Cash Box using the handle. To open the Cash Box cover, open the locks located at the two corners. To replace the Cash Box, close the cover and insert the Cash Box into the Bill-to-Bill 300XE™ housing.

3.8.1. Standard Cash Box:



3.9. Preventative Maintenance:

During normal operation, dust and dirt accumulate on the optical sensors and the rollers of the validating head, Dispenser, Chassis and Cash Box, possibly resulting in a reduced acceptance rate or jam reliability. Please refer to the serviceability manual for additional information on the frequency of cleaning and the procedures to be followed while maintaining the unit. For additional information please request the official serviceability manual.

4. Software Updates:

The Bill-to-Bill 300XE™ Bill Recycler is shipped with pre-installed software, according to a user's ordered specifications. It is recommended to keep your BV up to date. You can order updates from SuzoHapp as they become available using the original part number for your system.

4.1. Memory Card Update Procedure:

1. Turn Power OFF.
2. Lift up the Latch under the Validating Head, and Remove the Validating Head from the Housing.
3. Insert the new SuzoHapp Memory Card into the Memory Card slot of the Validating Head (for correct insertion, please see diagram below).

 Memory Stick Label should face up and notch on memory stick should face the right side

4. Insert the Validating Head into the Housing.
5. 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. If the light stays red, please refer to the next section "Software Update Diagnostics"
6. After the update, a single-download Memory Card must be present in the Bill Recycler at all times during operation. A multiple-download card can be removed and used to update more units, until the number of licenses is reached.

4.2. Download Procedure Via Interface Connector:

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

For a direct download in the service mode via the interface connector, please follow the instructions below:

1. Turn power OFF.
2. Disconnect the interface connector from the Bill Recycler.
3. Remove the Validating Head from the Housing, and set Mode Switch to Service mode (Refer to section 3.7).
4. Install the Validating Head into the Housing.
5. Connect the SuzoHapp Adaptor: a) to the Computer, b) to the interface connector of the Bill Recycler, and c) to the power outlet (AC 100-250V).
6. From the computer, run the latest software version of the program.
7. Follow the instructions displayed on the computer screen.
8. After completing step 7, disconnect the SuzoHapp Adaptor: a) from the power outlet, b) from the Bill Recycler, and c) from the Computer.
9. Remove the Validating Head from the Housing, and set Mode Switch to Validation mode (refer to section 3.7).
10. Install the Validating Head into the Housing.
11. Connect the interface connector to the Bill Recycler.

When the Bill-to-Bill 300XE™ Bill Recycler has a CCNET protocol, the software download can be completed via the host controller (refer to CCNET Protocol Description).

4.3. Software Update Diagnostics:

Normally, the download process will be accompanied by a blinking red-green status light for about 1 minute. If the download has competed successfully, the status light will turn green. Should the download be unsuccessful, the status light will turn red, with short green flashes. The following table lists possible errors which may take place during a download:

Green Flashes	Error	Solution
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 reinsert the memory card, turn power ON. 2. Replace memory card with a new one.
3 green flashes on red	Incorrect data in memory card	1. Verify that the software is suitable to the B2B type. 2. Insert correct type of 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 memory card.
6 green flashes on red	Failure during download	1. Turn power OFF, remove and reinsert the memory card, turn power ON. 2. Replace memory card with a new one.
7 green flashes on red	Operation error of memory card interface	1. Turn power OFF, remove and reinsert the memory card, turn power ON. 2. Replace memory card with a new one.

5. Contact Information:

5.1. Technical Support Department:

Suzo-Happ

587 Hanlan Drive, Woodbridge, ON, L4L 4R8

Phone: 1-800-239-7017 (+1-905-851-4702)

E-mail: bill-to-bill@suzohapp.com

Website: **www.suzohapp.com**

5.2. Service Centers:

To locate your nearest service center, please check our website: **suzohapp.com/Bill-to-Bill**

