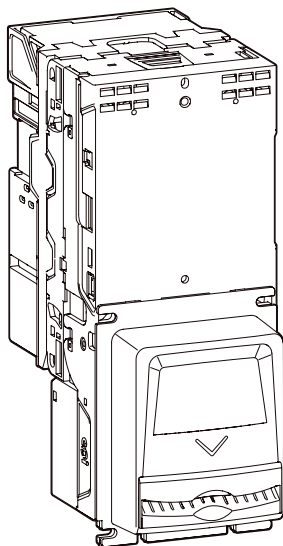


# Bill Validator

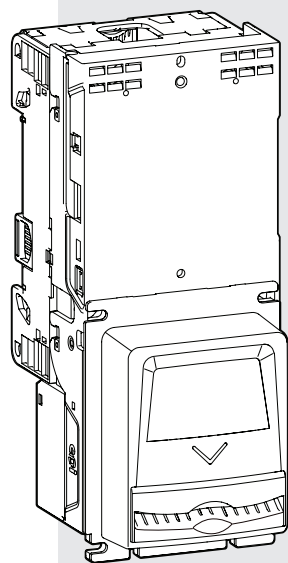
## RV-M900 SERIES

## RV-900 SERIES

# Instruction Manual



RV-M900\* - \*\*



RV-M902\* - \*\*

- To ensure a correct use, be sure to read this manual before using this product.
- Keep this manual handy so that you can refer to it whenever necessary.
- This manual uses the symbol "▲" followed by the model name to identify the function (specification) applicable only to the model.
- For the target country and applicable bill types, refer to the online instruction manual (page 23).
- QR code is a trademark of DENSO WAVE INCORPORATED.

### Contents

1. Introduction .....	2
2. Safety precautions .....	3
3. Overview .....	9
4. General specifications .....	9
5. Reading the product model name .....	11
6. Component names and functions .....	12
7. Bill flow and path .....	17
8. Installing the validator .....	18
9. Operation test .....	21
10. Using the validator .....	23
(1) Online instruction manual .....	23
(2) Various settings .....	24
(3) Collecting bills .....	28
11. Regular maintenance .....	31
(1) Checking the validator state .....	31
(2) Cleaning the bill path unit and sensor .....	32
12. Detailed specifications .....	43
(1) Actions when the bill is validated as valid .....	43
(2) Actions when the bill is not validated as valid .....	43
(3) Main judgment functions for returning bills .....	43
(4) Escrow .....	43
(5) Storing the valid bills .....	43
(6) Returning the valid bills .....	43
(7) Returning operation of the valid bills/bills .....	44
(8) Bill path width switching mechanism ▲ RV-M9*** ** .....	44
(9) Cases where acceptance of bills is disabled .....	44
(10) Push switch .....	44
(11) Cleaning mode .....	45
(12) Indication of the front lamp .....	46
(13) Monitor lamp .....	47
(14) Displaying the number of bills stored by the anti-string or bill-jam cancellation function .....	50
13. Troubleshooting .....	51
14. Product life .....	53
15. Signal conditions of connection terminal and wiring diagram .....	56
16. Diagram of external dimensions .....	59

# 1. // Introduction

Thank you for purchasing our product.

Before using this product, thoroughly read this instruction manual to help ensure correct and safe operation.

Do not alter any part of this product to change its structure or use the product for anything other than its intended use. Doing so may prevent the product from functioning as it should, as well as cause damage to this product, people's health or the environment.

This product is for use in the target country specified in the online instruction manual.(page 23)



## 2. // Safety precautions

To ensure safe use of this product, observe all instructions described in this manual.









This instruction manual explains the risks associated with this product and the potential danger that could arise if the instructions are ignored, as well as how to avoid such danger.

This manual uses the terms "WARNING" and "CAUTION" to identify the levels of risk. They are defined as follows.

### ■ WARNING and CAUTION labels



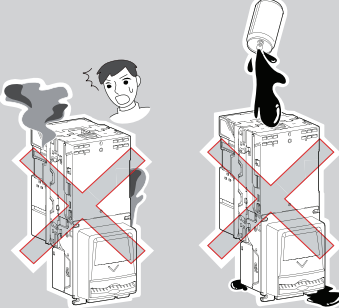





 <b>WARNING</b>	Indicates a situation that could result in death or serious injury if the warning is ignored and the product is mishandled.
 <b>CAUTION</b>	Indicates a situation that could result in minor injury or property damage if the caution is ignored and the product is mishandled.

### ■ Meanings of symbols

	<b>General</b>	Indicates a general caution, warning or danger.
	<b>Don't get caught!</b>	Indicates that fingers could get caught and injured.
	<b>General (prohibited)</b>	Indicates a general prohibition.
	<b>General (note)</b>	Indicates general precautions for product use.
	<b>Do not disassemble</b>	Indicates that disassembly could result in injury.
	<b>No wet hands</b>	Indicates that touching the product with wet hands could result in injury.
	<b>Keep dry</b>	Indicates that allowing the product to get wet could result in injury.
	<b>Hands off</b>	Indicates that touching certain parts of the equipment could result in injury.



# WARNING

 <b>Attention</b>	<p>When using this product, strictly observe the warnings and cautions described in this instruction manual and follow the correct procedures. Failure to follow these instructions could result in fire or electric shock.</p>	
 <b>Attention</b>	<p>Immediately turn off the power and request repair if any of the following is detected in this product: smoke, odd smell, unusual noise, malfunction or foreign matter such as liquid (e.g., water), pins, clips, wire or metal pieces. Continuing to use the product without correcting the problem could result in fire or electric shock.</p>	
 <b>Attention</b>	<p>Do not try to repair the product yourself. Failure to follow these instructions could result in fire or electric shock.</p>	
 <b>Attention</b>	<p>Be sure to observe the operating conditions, such as the installation angle, power supply voltage, current supply equal to or larger than the fusing current, and operating temperature range, described in the instruction manual. In particular, overvoltage or reverse voltage must not be applied to the power supply. Failure to follow these instructions could result in fire or electric shock.</p>	
 <b>Attention</b>	<p>Since deteriorated performance, short circuits or open circuits may occur when the product reaches its end of life or malfunctions, appropriate safety precautions must be designed for the machine on which this product is installed. Failure to follow these instructions could result in fire or electric shock.</p>	
 <b>Attention</b>	<p>As the Validator is not stable until it is installed, take care not to drop it. Failure to follow these instructions could result in injury or failure.</p>	
 <b>Prohibited</b>	<p>Do not use this product in an environment exposed to corrosive gas, such as sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia and ozone. Also, avoid an environment where there is dust, corrosion-inducing substances such as sodium chloride and sulfur, or conductive metals. Corrosion of the printed board in this product could lead to malfunction or failure, as well as fire or electric shock.</p>	

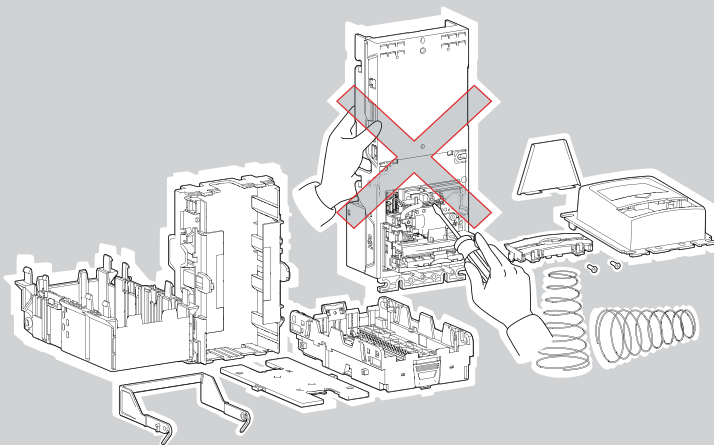


# WARNING



**Do not disassemble**

Do not disassemble or modify the indicated part unless such action is prescribed in the instruction manual. Failure to follow these instructions could result in fire or electric shock.



**Hands off**

Never touch any part of the product other than those described as safe to touch in the instruction manual. Doing so could lead to malfunction or failure, as well as electric shock or injury.



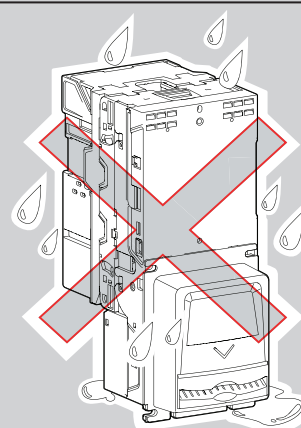
**No wet hands**

Do not handle this product with wet hands. Doing so could result in fire or electric shock.



**Keep dry**

Do not install this product in a place subject to water splashes, moisture or excessive dust. Doing so could result in fire or electric shock.



**No combustibles**

Do not place or use any combustible material such as thinner, combustible gas or highly volatile material near this product. Doing so could result in fire or explosion.



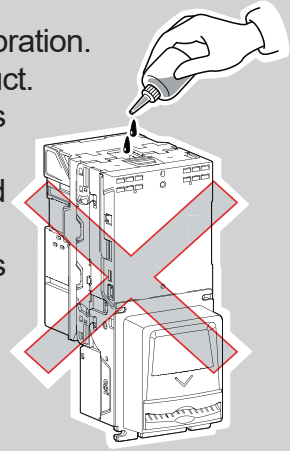
# CAUTION



## Attention

Observe the following cautions when using this product. Failure to follow these instructions could result in malfunction or failure.

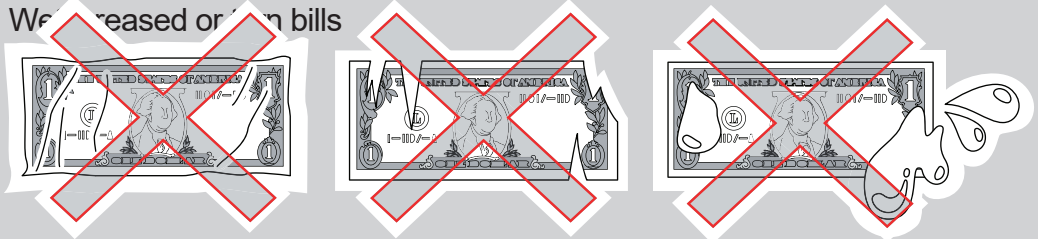
- Do not drop the product or subject it to shock or vibration.
- Do not apply excessive external force to this product.
- Do not place liquid such as water or small objects such as clips on top of this product.
- Do not use this product if condensation has formed on it.
- Do not apply lubricant such as grease to this product.



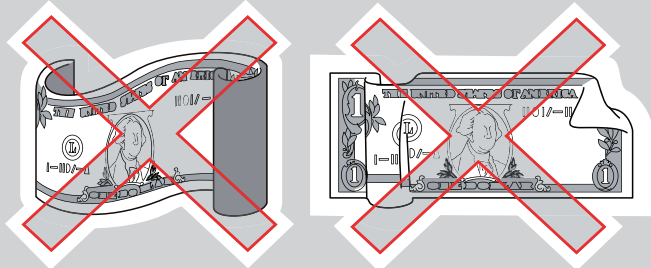
## Attention

Do not use the following bills. Failure to follow these instructions could result in malfunction or failure.

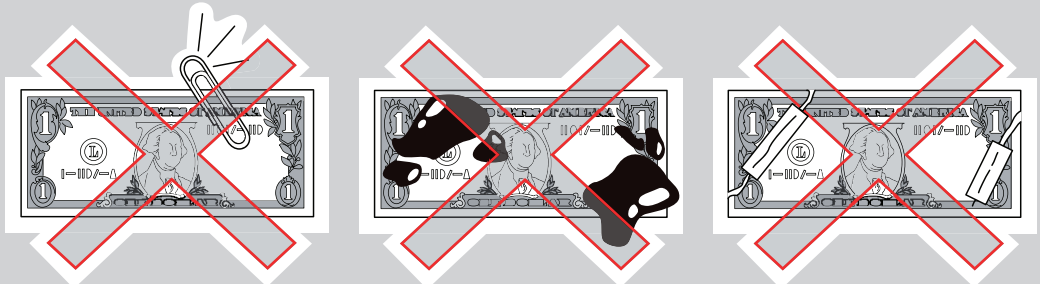
- Worn, creased or torn bills



- Folded or curled bills



- Bills on which foreign matter, such as oil, clips, rubber bands or tape, is adhered

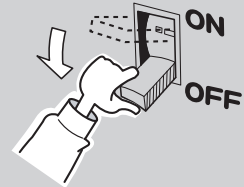




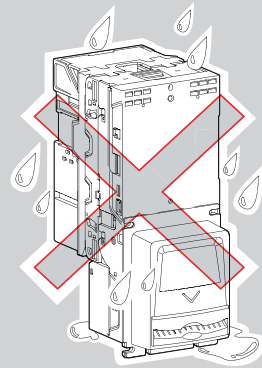
# CAUTION

When installing or removing this product on/from the machine, observe the following cautions. Failure to follow these instructions could result in malfunction or failure.

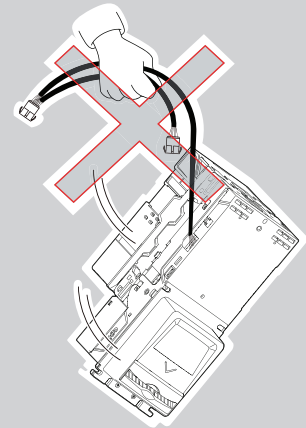
- Make sure that the power to the machine is turned off.



- Be sure that no rainwater or foreign matter enters the inside.



- Install this product so that it is not tilted more than one degree from vertical.
- Do not lift this product by the harness only.



## Attention



## Attention

Do not allow foreign matter, such as rainwater, rubber bands or paper clips, to enter the inside when the Assy Stack Box or Assy Cash Box is removed. Failure to follow these instructions could result in malfunction or failure.



## Attention

Upon completion of installation or regular maintenance, perform an operation test to confirm that there are no problems. Failure to follow these instructions could result in overlooked errors, leading to malfunction or failure.



## CAUTION



### Attention

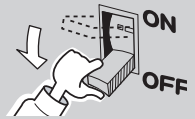
Periodically collect bills from the Assy Stack Box or Assy Cash Box. Bills cannot be accepted if it becomes full.



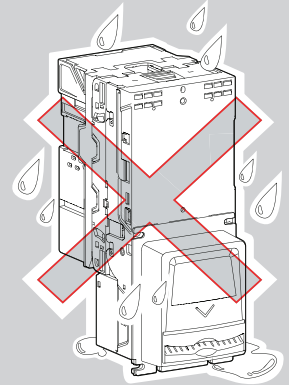
### Attention

When performing regular maintenance, observe the following cautions. Failure to follow these instructions could result in malfunction or failure.

- Make sure that the power to the machine on which this product is installed is turned off.



- Do not touch the gears inside the unit (excluding the white gear that should be touched when cleaning the rubber roller).
- Take care not to allow foreign matter such as rainwater, rubber bands and paper clips to enter the inside.



- Use a soft, dry cloth or cotton swab to wipe off dirt from the unit.
- Do not use cleaning agent to clean the sensors, the portion close to the sensor and the rubber roller.
- Since the sensor is composed of a light-emitting part and a light-receiving part as a set, be sure to clean both parts.
- Do not use acidic or alkaline detergent, solvent such as benzene and thinner or chemical-added cloths or wipes. Doing so could cause deformation, discoloration or failure.



## CAUTION



### Prohibited

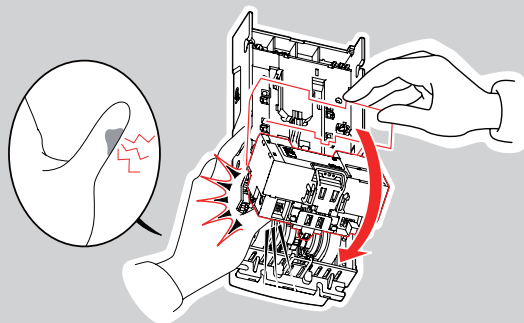
Do not use or store this product in the following places. Failure to follow these instructions could result in malfunction or failure.

- Places where there is vibration or shock
- Places subject to direct sunlight
- Places subject to sea salt (coastal area)
- Places with high temperature
- Places with a high level of humidity or dust
- Places with severe changes in temperature or humidity
- Locations close to heat-generating objects (e.g., stoves or heaters)
- Locations close to objects generating strong magnetic force or radio waves (magnets, coils, displays, speakers, motors, radios/wireless, etc.)
- Wet locations (kitchens and bathrooms, etc.)
- Places where a large quantity of oil is used or where greasy fumes are generated (e.g., factories, kitchens and food stores)
- Unstable or inclined locations
- Locations with strong effects from static electricity
- Locations close to highly thermally insulated or moisture-retentive objects (e.g., carpeting, sponge and styrene foam)



### Don't get caught!

When closing, be careful not to get your fingers caught.



## 3. // Overview

This device is a Bill Validator (Validator), which has bill escrow and bill storage features and can validate bills of the target countries specified in the online instruction manual (page 23)

## 4. // General specifications

The specifications and designs are subject to change for improvement without notice.

Model name		▲ RV-*900M-**	▲ RV-*902M-**
Target country/Applicable bill types		Refer to the online instruction manual (page 23).	
Communication protocol		Refer to “Reading the Product Model Name” (page 11).	
Validation method and conditions	Shape judgment	Yes (optical)	
	Validation method	Optical	
	Validation direction	Longitudinal, face up and down, four ways	
	Acceptance rate	90% or more	
	Validation time	<ul style="list-style-type: none"> <li>● Approx. one second (until an escrow-enabled bill is judged valid)</li> <li>● Approx. three seconds (until an escrow-disabled bill is judged valid and finished being stored)</li> </ul>	
Escrow function (temporary holding)		One bill escrow, of the last bill inserted	
Anti-stringing		Yes (shutter system)	
▲ RV-M9***-** Bill path width switching mechanism		Yes	
Bill-jam cancellation function		Bill returning retry when a bill jam occurs Automatic storing of jammed bills	
Installation angle		Maximum allowable vertical tilting angle of $\pm 1^\circ$	

Model name		▲ RV-*900M-**	▲ RV-*902M-**
Bill storing function	Bill storage method	Aligned and stacked	
	Bill capacity	600 or more (unused mint condition)	200 or more (unused mint condition)
	Bill collecting technology	Open the Assy Stack Box PU or the Assy Cash Box and collect all bills.	Open the Assy Stack Box 200 and collect all bills.
Operating temp. range		-15 to +60°C	
Storage temp. range		-20 to +70°C	
Storage humidity range		20 to 85% (no condensation)	
Mass		Approx. 1.1 kg	Approx. 1.0 kg
Power supply		34 VDC ±10%	
Rated power consumption	Standby	0.2 A or less	
	Operating (max.)*2	0.6 A or less	
	Maximum load*3	1.2 A or less	
	Notes on use	The power supply circuit of this product contains a 2-amp DC fuse. A current equal to or larger than the fusing current of 4 A must be supplied.	
Number of motors used in the product	▲ RV-M9***-**	Three DC motors	
	▲ RV- 9***-**	Two DC motors	

\*1 Refer to "Reading the Product Model Name" (page 11).

\*2 Peak current when motor is operating: 1.7 A, 20 ms

\*3 When motor is locked: Approx. 4 s

# 5. // Reading the product model name

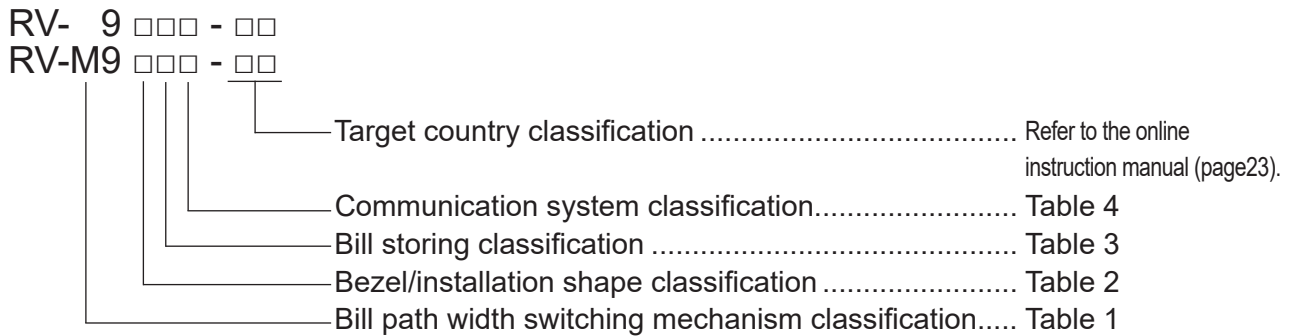


Table 1

Code	Bill path width switching mechanism	
M	Yes	
NIL	–	

Table 2

Code	Bezel shape	Installation shape
0	MDB Bezel shape	MDB installation / Up type
2	MDB Bezel shape	MDB installation / Down type
3	JVMA bezel shape	JVMA installation/Down type

Table 3

Code	Capacity	Storage unit type
0	Stores 600 bills, unused mint condition	Assy Stack Box PU (unlockable)
1	Stores 600 bills, unused mint condition	Assy Cash Box (lockable)*
2	Stores 200 bills, unused mint condition	Assy Stack Box 200 (unlockable)

\* The lock used in the Assy Cash Box is for simple locking; it does not guarantee theft prevention.

Table 4

Code	Communication system	
M	Compliant with the MDB protocol	
C	Compliant with the CCNET protocol	

# 6. // Component names and functions

## ▲ RV-\*900\*-\*\*

- **CPI BUS Communication Connector**

Used for maintenance.  
Do not connect anything.

- **Flash Connector**

Used for maintenance.  
Do not connect anything.

- **USB Connector**

Used for maintenance.  
Do not connect anything.

## ▲ RV-\*900M\*-\*\*

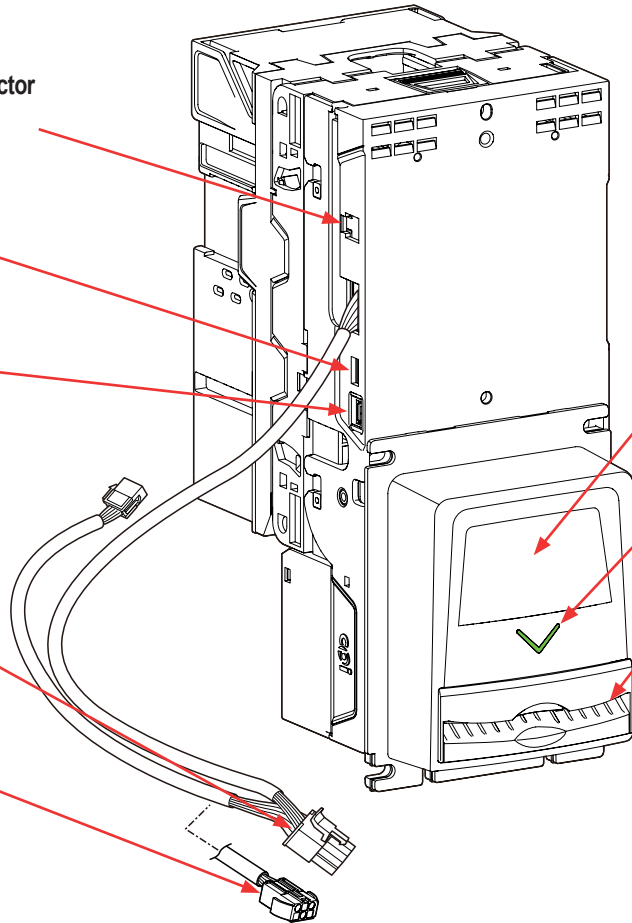
- **Harness MDB**

Connect to the MDB-compatible controller.

## ▲ RV-\*900C\*-\*\*

- **Harness CCNET**

Connect to the CCNET-compatible controller.



- **Bezel**

- **Front Lamp (green)**  
(page 46)

- **Bill Insertion Slot**

- **LATCH BOX**

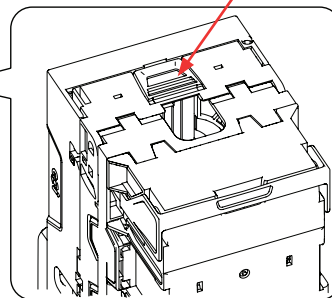
Used to open the Assy stack box PU for collecting bills

- **LATCH BASE BOX**

Used to remove the Assy Stack Box PU

- **Assy Stack Box PU**

Stores bills.

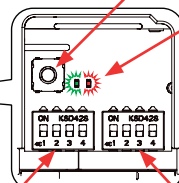
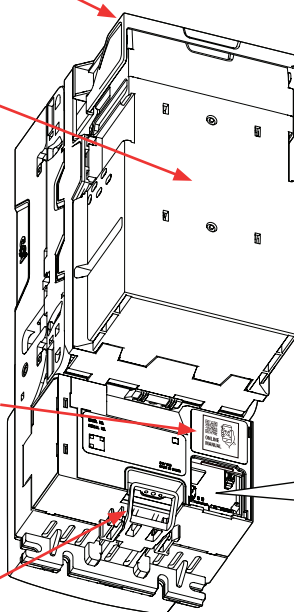


- **QR Code**

Use a smartphone to read the QR code and access the website with major instructions (page 23).

- **Push switch**  
(page 44)

- **Monitor lamps (green, red)**  
(page 47)



- **LATCH MAIN**

Used to open the Assy Sub Housing

- **DIP Switch A**  
(page 24)

- **DIP Switch B**  
(page 24)

▲ RV-\*902\*-\*

● CPI BUS Communication Connector

Used for maintenance.  
Do not connect anything.

● Flash Connector

Used for maintenance.  
Do not connect anything.

● USB Connector

Used for maintenance.  
Do not connect anything.

▲ RV-\*900M\*\*

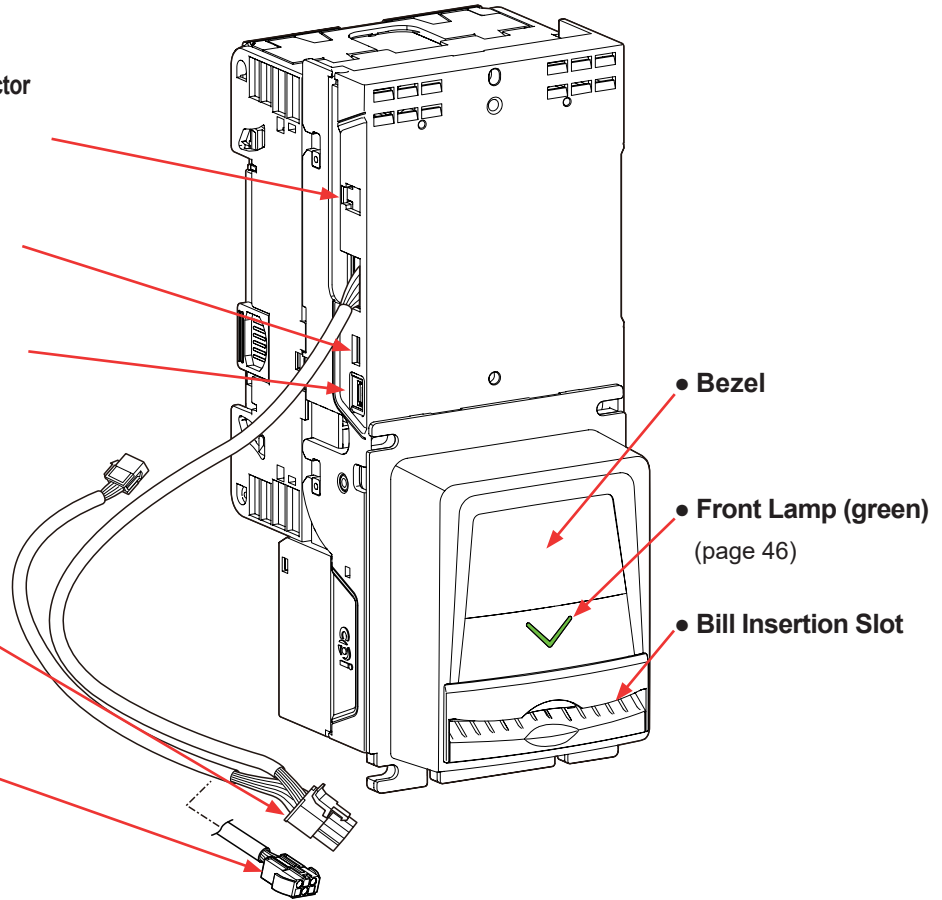
● Harness MDB

Connect to the MDB-compatible controller.

▲ RV-\*900C\*\*

● Harness CCNET

Connect to the CCNET-compatible controller.



● Bezel

● Front Lamp (green)  
(page 46)

● Bill Insertion Slot

● Assy Stack Box 200

Stores bills.

● LATCH BOX

Used to open the Assy stack box 200 for collecting bills.

● LATCH BOX BASE

Used to remove the Assy Stack Box 200.

● Push switch

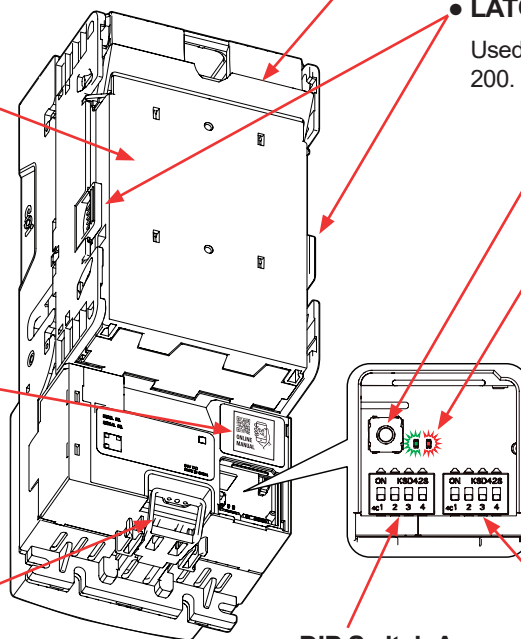
(page 44)

● Monitor lamps (green, red)

(page 47)

● QR Code

Use a smartphone to read the QR code and access the website with major instructions (page 23).



● LATCH MAIN

Used to open the Assy Sub Housing

● DIP Switch A

(page 24)

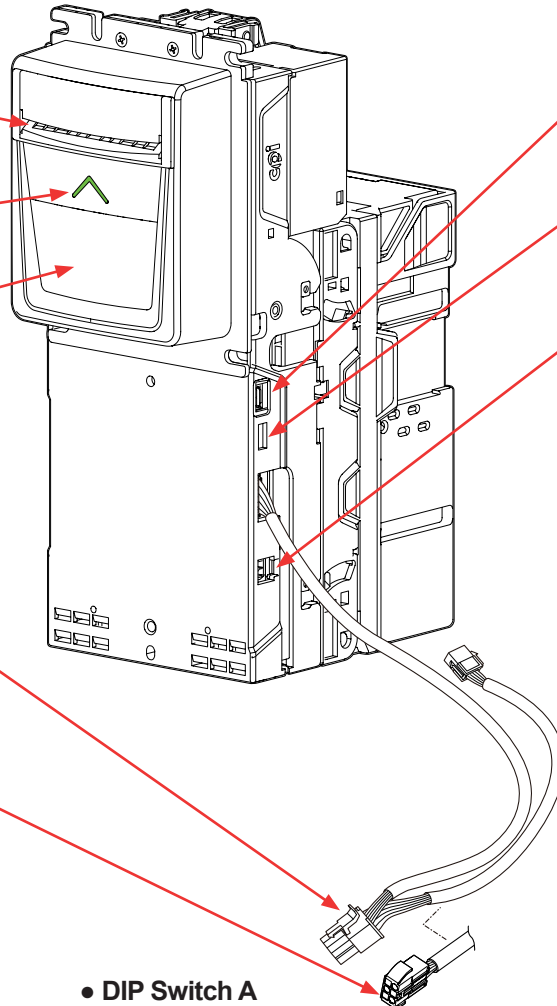
● DIP Switch B

(page 24)

▲ RV-\*920\*-\*\*

- Bill Insertion Slot
- Front Lamp (green)  
(page 46)
- Bezel

- USB Connector  
Used for maintenance.  
Do not connect anything.
- Flash Connector  
Used for maintenance.  
Do not connect anything.
- CPI BUS Communication Connector  
Used for maintenance.  
Do not connect anything.



▲ RV-\*920M\*-\*\*

- Harness MDB  
Connect to the MDB-compatible controller.

▲ RV-\*920C\*-\*\*

- Harness CCNET  
Connect to the CCNET-compatible controller.

- DIP Switch B  
(page 24)
- DIP Switch A  
(page 24)

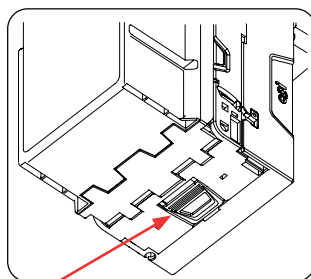
- LATCH MAIN  
Used to open the Assy Sub Housing

- Monitor lamps (green, red)  
(page 47)

- QR Code  
Use a smartphone to read the QR code and access the website with major instructions (page 23).

- Push switch  
(page 44)

- LATCH BOX  
Used to open the Assy stack box PU for collecting bills



- Assy Stack Box PU  
Stores bills.

- LATCH BASE BOX  
Used to remove the Assy Stack Box PU (page 28).

## ▲ For models with Assy Cash Box (lockable)

- **Assy Cash Box (lockable)**

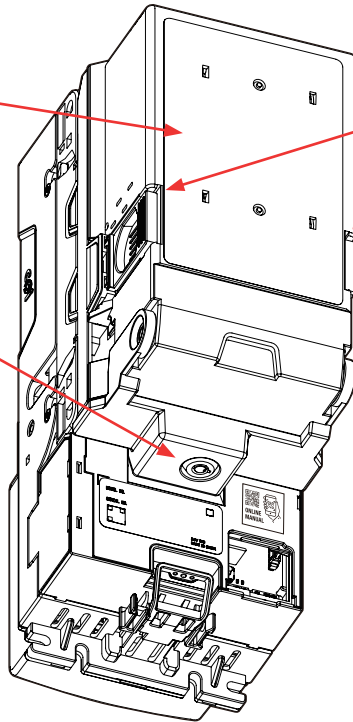
Stores bills.

- **Lock**

When collecting bills, insert the key to open the Assy Cash Box.

- **Latch Box Bases**

Used to remove the Assy Cash Box.



### Accessory

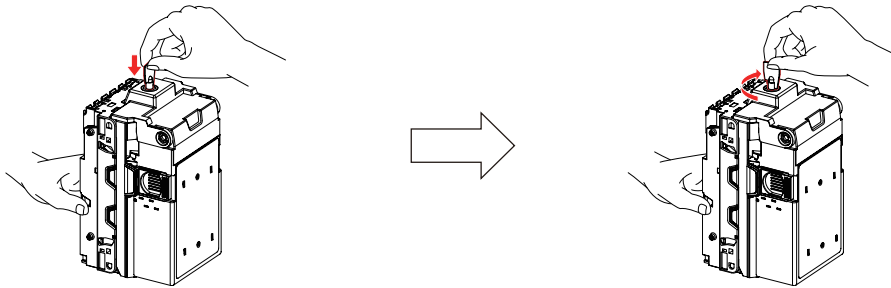


- **Key (one)**

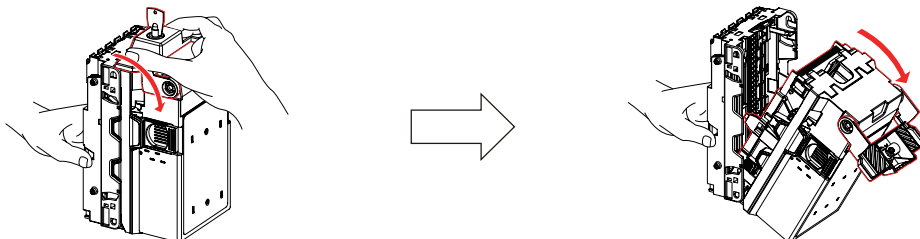
Used for simple locking; it does not guarantee theft prevention.

## Opening the Assy Cash Box

(1) Insert the key into the lock and turn the key to the right while pressing it.



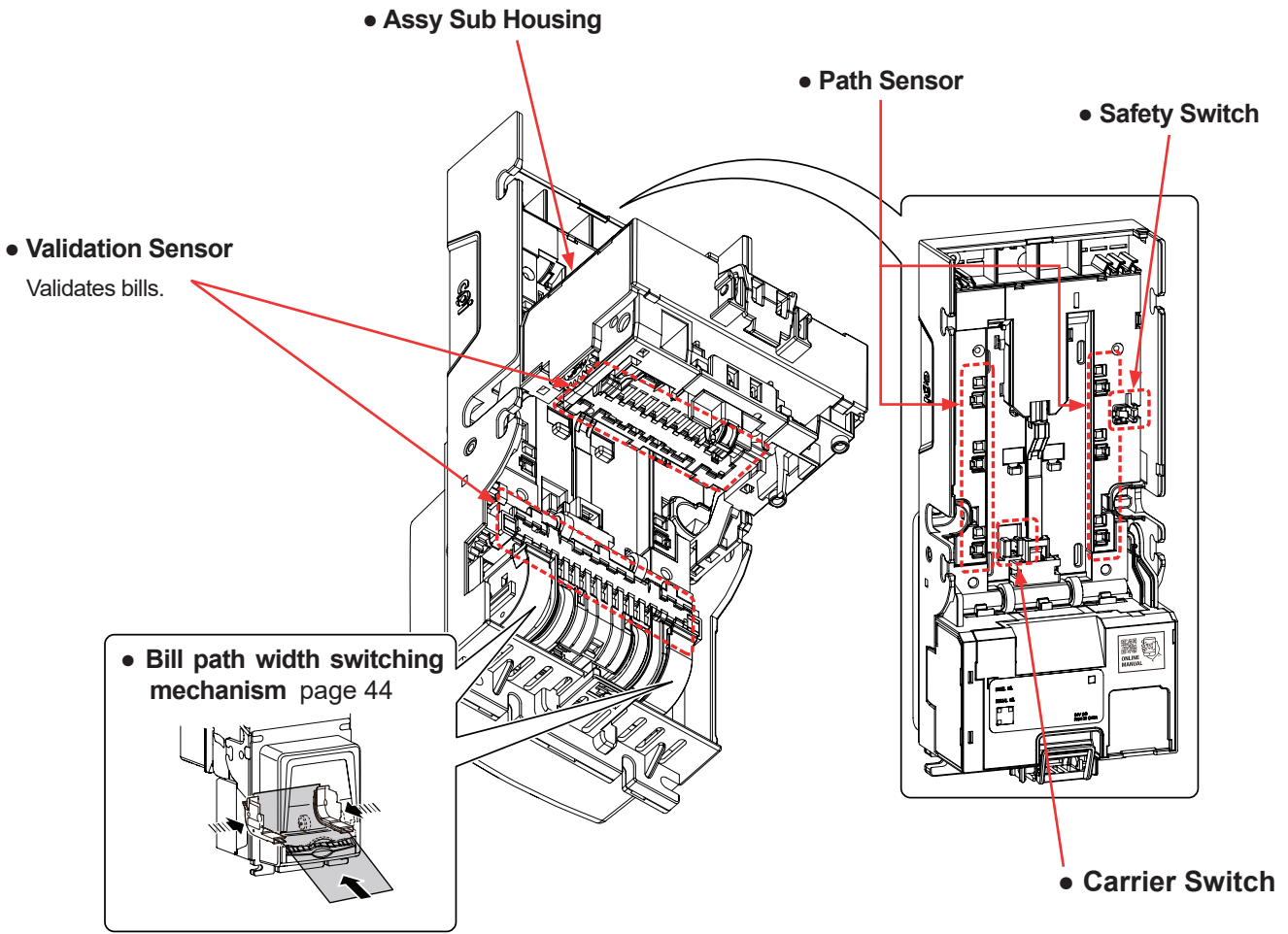
(2) Open the Box Top to open the Assy Cash Box.



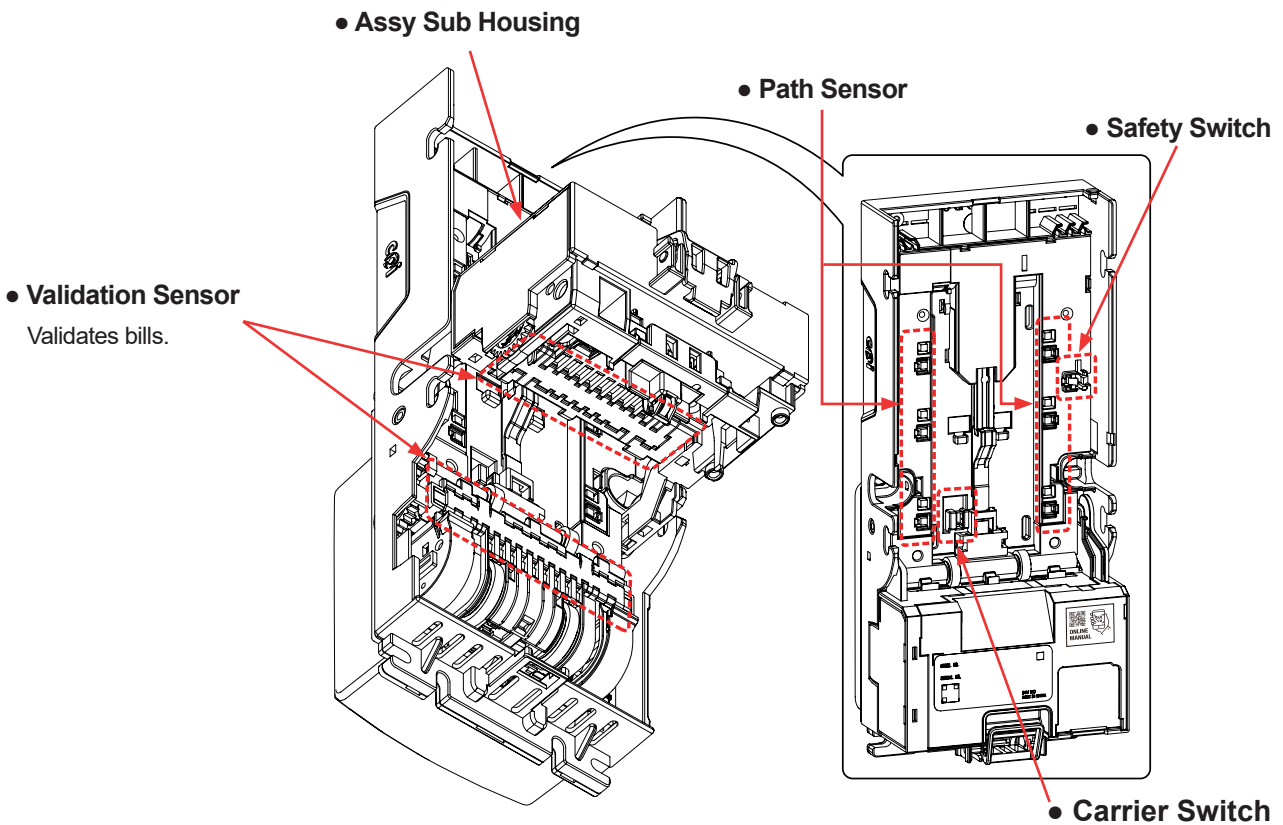
### Note:

When opening the Box Top, be sure that the key is inserted and turned to the right. Do not pull the key from the lock before opening.

▲ RV-M9\*\*\*\_\*\*

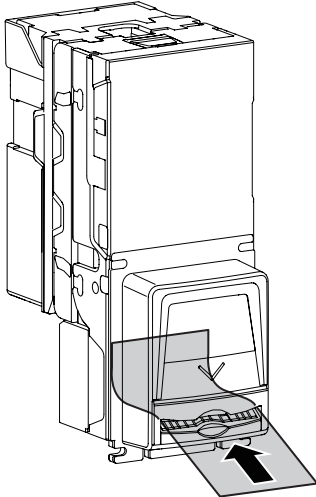


▲ RV-9\*\*\*\_\*\*

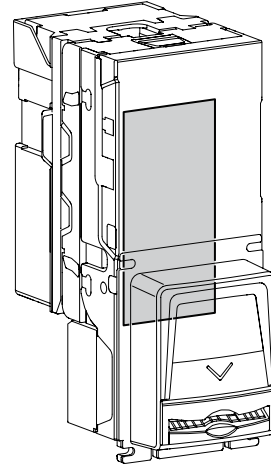


## 7. // Bill flow and path

(1) When a bill is inserted into the bill insertion slot, the Validator draws in the bill and validates it.

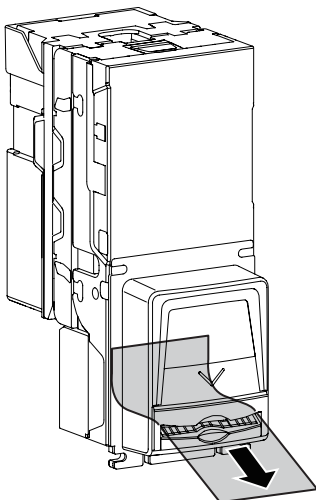


(2) When the bill is validated as valid, it is escrowed (temporarily held).

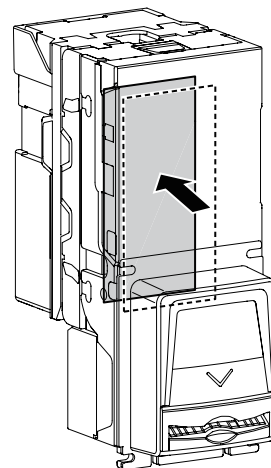


If the Validator receives a command to disable escrow from the controller of the machine on which the Validator is installed (Machine), the bill is not escrowed but forcibly stored in either the Assy Stack Box PU or the Assy Stack Box 200.

(3) While in escrow, if the Validator receives a return command from the controller of the Machine, the Validator returns the bill in escrow to the bill insertion slot. The Validator also returns the bill to the bill insertion slot if it is not validated as valid.



(4) While in escrow, if the Validator receives a command to store the bill from the controller of the Machine, the bill is stored in either the Assy Stack Box PU or the Assy Stack Box 200.



For the bills to be automatically returned, refer to "Detailed Specifications".

# 8. // Installing the validator

Customers are requested to prepare the following nuts and a tool.

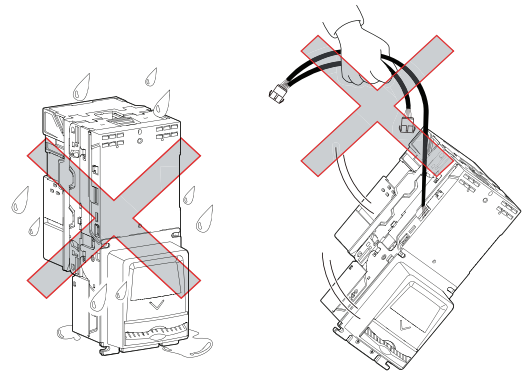
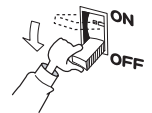
- Four nuts, of the correct size for the size of the machine on which the Validator is to be installed (recommendation: hexagon nuts of inch screws #8-32).
- A tool such as a nut driver, of the correct size for the nuts prepared.

Depending on the Machine, you may have to use a different procedure than the one described below; please follow the instruction manual for the Machine.

## CAUTION

When installing the Validator, observe the following cautions. Failure to follow these instructions so could result in malfunction or failure.

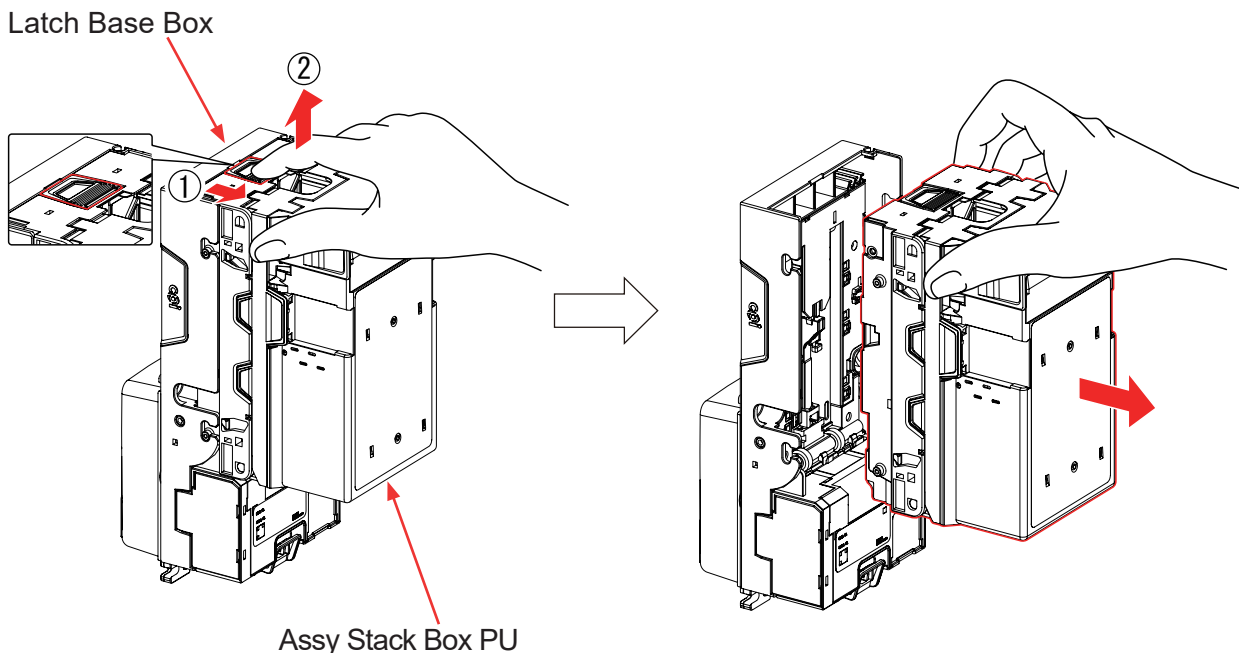
- Make sure that the power to the machine is turned off.
- Be sure that no rainwater or foreign matter enters the inside.
- Install the Validator so that it is not tilted more than one degree from vertical.
- Do not lift this product by the harness only.
- After installation, perform an operation test (page 19) to confirm that there are no problems.



(1) Remove the Assy Stack Box PU or Assy Stack Box 200

### ▲ For models with Assy Stack Box PU

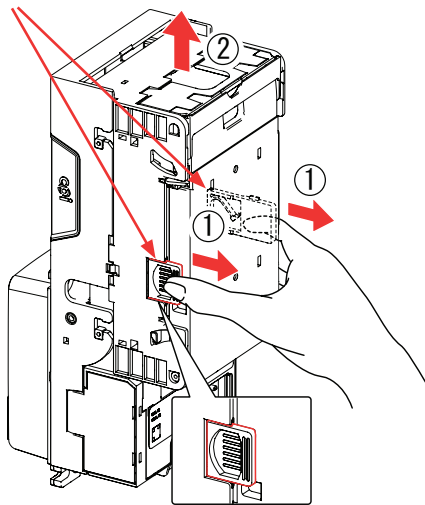
While pulling the Latch Base Box toward you, lift the Assy Stack Box PU and remove it.



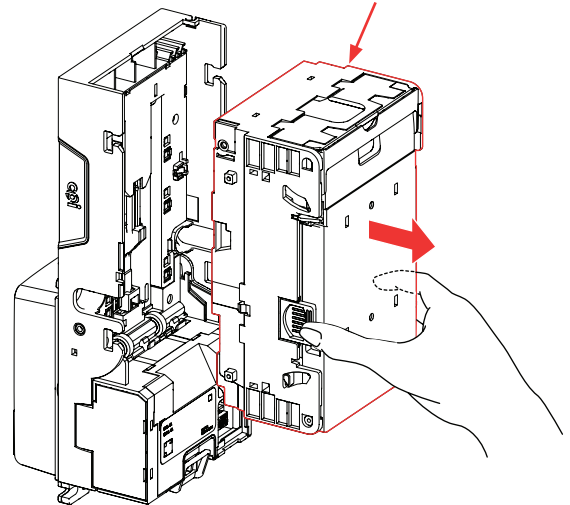
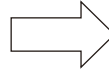
▲ For models with Assy Stack Box 200

While pulling the Latch Box Bases on the right and left of the Stack Box 200 toward you, lift the Assy Stack Box 200 and remove it.

LATCH BOX BASE



Assy Stack Box 200

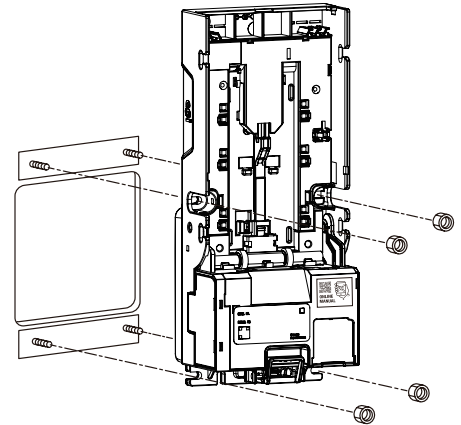


- (2) Using a tool such as a nut driver, install the four nuts on the four mounting holes on the Machine.  
Recommended tightening torque: 1.5 N·m



**CAUTION**

As the Validator is not stable until it is installed, take care not to drop it. Failure to follow these instructions could result in injury or failure.

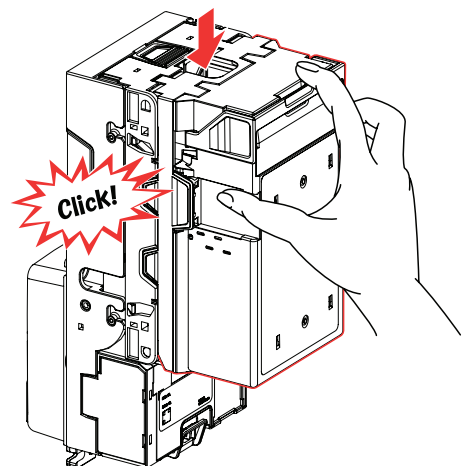
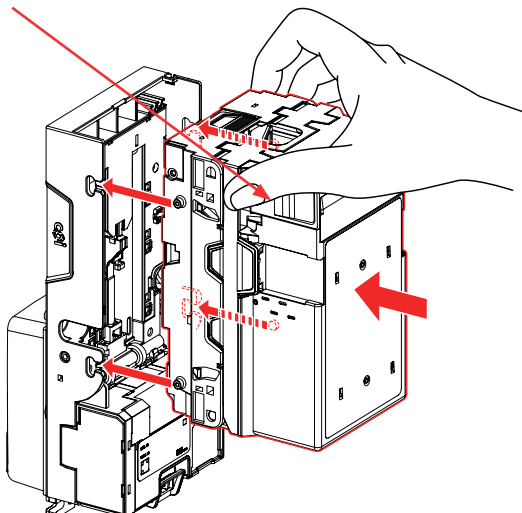


- (3) Install the Assy Stack Box PU or Assy Stack Box 200.

▲ For models with Assy Stack Box PU

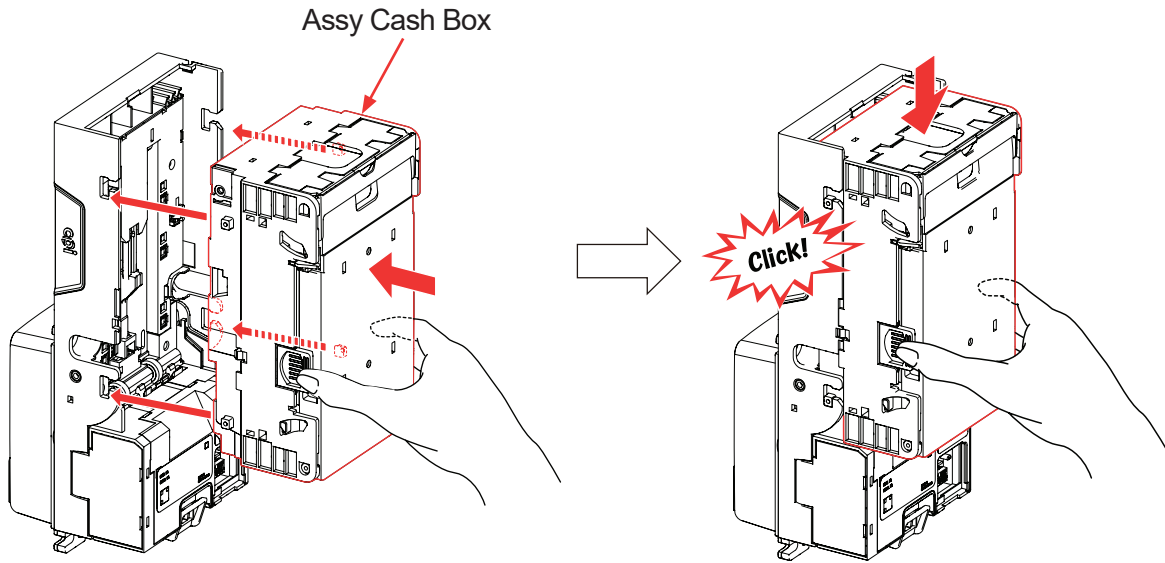
Engage the four convex parts on the right and left sides of the Assy Stack Box PU in the four concave parts on the main unit, and then lower the Assy Stack Box PU until a click sound is heard to install it.

Assy Stack Box PU

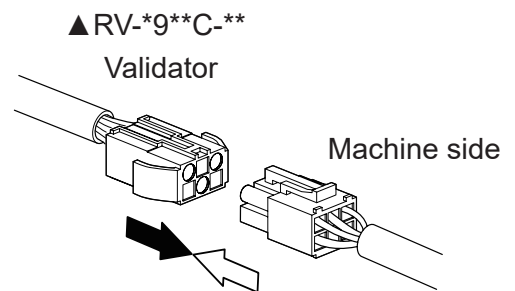
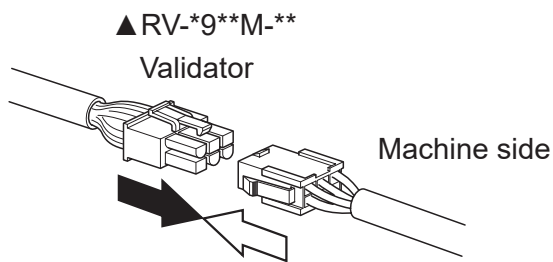


▲ For models with Assy Stack Box 200

Engage the four convex parts on the right and left sides of the Assy Stack Box 200 in the four concave parts on the main unit, and then lower the Assy Stack Box 200 until a click sound is heard to install it.



(4) Make sure that the power to the machine is turned off. Then, connect the connector for the harness to the connector for the Machine.



(5) Perform the operation test (page 21).

# 9. // Operation test

## CAUTION

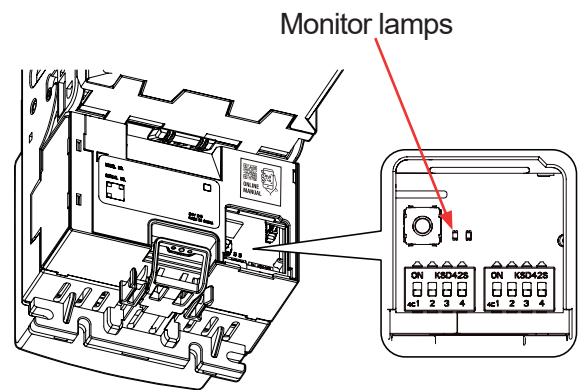
Upon completion of installation or regular maintenance, perform an operation test to confirm that there are no problems. Failure to follow these instructions could result in overlooked errors, leading to malfunction or failure.

(1) Turn on the power to the Machine. The following initial operations begin.

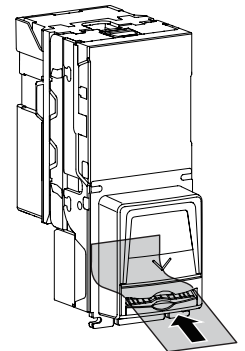
- Front lamp (turns on in green, once)
- Carrier motor operation, approx. two seconds
- Bill storing operation, once
- Monitor lamps (turn on in red and green, and then turn off)



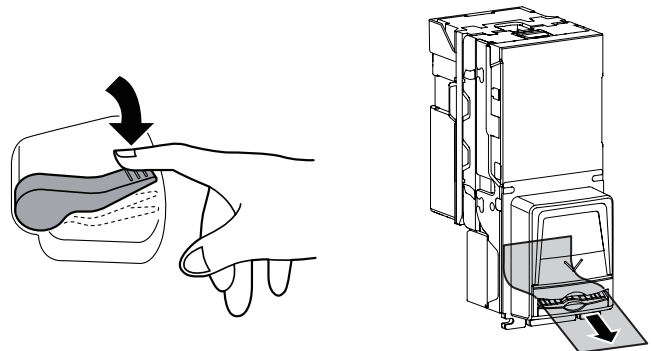
(2) Make sure that the monitor lamps are turned off.



(3) Insert one applicable bill type bill specified in the online instruction manual (page 23), and confirm that denomination of the bill inserted appears on the money display of the Machine.

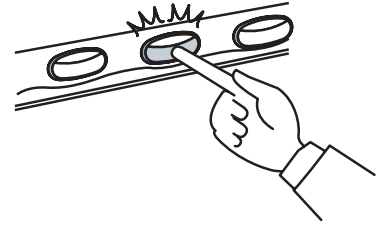


(4) Perform the return operation and confirm that one bill is returned.



(5) Repeat steps (3) and (4) with all applicable bill type bills (specified in the online instruction manual (page 23) other than the one inserted in step (3) to confirm that there are no problems.

- (6) Insert one applicable bill type bill that is specified in the online instruction manual (page 23) and whose denomination can be used to purchase a product, and confirm that denomination of the bill inserted appears on the money display of the Machine.
- (7) Press the vend button whose "Vending" light is on.



- (8) Confirm that the vending product is sold and the bill is stored in the Assy Stack Box PU or Assy Stack Box 200.
- (9) Collect the bill stored in the Assy Stack Box PU or Assy Stack Box 200.


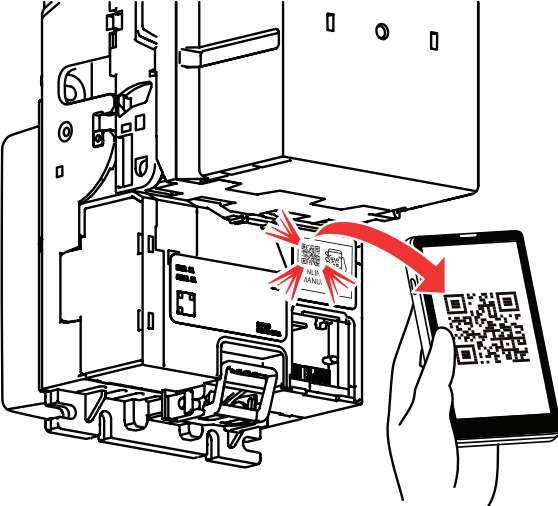

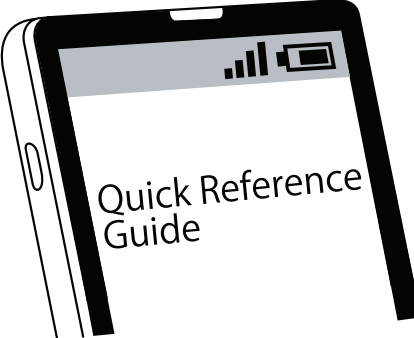
**Notes:**

- The above operation test is an example using the standard settings; please perform a test that suits your vending conditions.
- The above operation test should be performed when the switches of DIP switches A and B are all OFF.

# 10.// Using the validator

## 1. Online instruction manual

Data on the target countries, applicable bill types and major instructions are given in the online version of the instruction manual, which can be accessed by reading the QR code with a device such as a smartphone.

<p>(1) Start the QR code reader on the smartphone.</p>  <p>For details on how to start and operate the QR code reader, please refer to the operating manual of the smartphone, etc.</p>	<p>(2) Read the QR code.</p>  <p>The QR code could not be read due to a scratch, stain or light reflectance, or due to incompatibility between the smartphone mode and the code.</p>
<p>(3) Visit the displayed URL of the website.</p>  <p>The above screen is an example.</p>	<p>(4) The online instruction manual appears. Select the model name to display the target country, the applicable bill types and the major handling instructions.</p>  <p>The above screen is an example.</p>

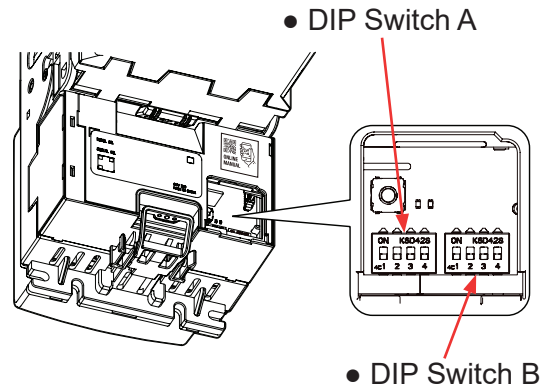
Note that the online instruction manual is subject to change for improvement or discontinuation without prior notice.

## 2. Various settings

The DIP switches can be used to set various functions as necessary. The settings are recognized after power-up and during standby.

### (1) ▲ RV-9\*\*M-\*\* (MDB protocol)

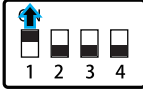
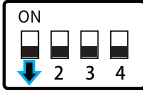
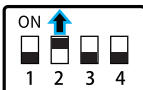

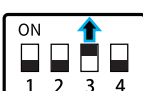
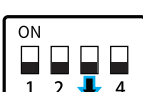


For details on the applicable bill types, refer to the online instruction manual (page 23).  
All set to OFF at the factory and shipped.



DIP Switch A

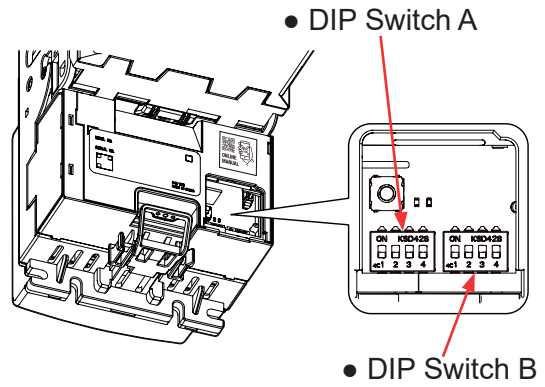
No.	Setting item	On or OFF	Description	
1	Applicable bill type 1 acceptance setting	 ON	Prohibited	Acceptance of applicable bill type 1 is prohibited.
		 OFF	Accepted	Acceptance of applicable bill type 1 is enabled.
2	Applicable bill type 2 acceptance setting	 ON	Prohibited	Acceptance of applicable bill type 2 is prohibited.
		 OFF	Accepted	Acceptance of applicable bill type 2 is enabled.
3	Applicable bill type 3 acceptance setting	 ON	Prohibited	Acceptance of applicable bill type 3 is prohibited.
		 OFF	Accepted	Acceptance of applicable bill type 3 is enabled.
4	Applicable bill type 4 acceptance setting	 ON	Prohibited	Acceptance of applicable bill type 4 is prohibited.
		 OFF	Accepted	Acceptance of applicable bill type 4 is enabled.

DIP Switch B

No.	Setting item	On or OFF	Description	
1	Applicable bill type 5 acceptance setting	 <p>ON</p>	Prohibited	Acceptance of applicable bill type 5 is prohibited.
		 <p>OFF</p>	Accepted	Acceptance of applicable bill type 5 is enabled.
2	Applicable bill type 6 acceptance setting	 <p>ON</p>	Prohibited	Acceptance of applicable bill type 6 is prohibited.
		 <p>OFF</p>	Accepted	Acceptance of applicable bill type 6 is enabled.
3	Applicable bill type 7 acceptance setting	 <p>ON</p>	Prohibited	Acceptance of applicable bill type 7 is prohibited.
		 <p>OFF</p>	Accepted	Acceptance of applicable bill type 7 is enabled.
4	Acceptance level setting (all types of applicable bills in one operation)	 <p>ON</p>	High security	Sets the acceptance level for all applicable bill types to High Security (tightened security). Depending on the bill condition, the acceptance rate may decrease if set to High Security. Thus, the Normal setting is recommended in most cases.
		 <p>OFF</p>	Normal	Sets the acceptance level for all applicable bill types to Normal (reduced security).

(2) RV-9\*\*C-\*\* (CCNET protocol)

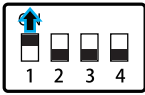

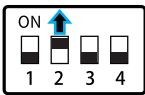

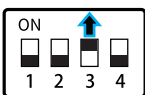

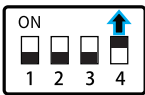

For details on the applicable bill types, refer to the online instruction manual (page 23).  
All set to OFF at the factory and shipped.



DIP Switch A

No.	Setting item	On or OFF	Description	
1	Applicable bill type 1 acceptance setting	<p>ON</p>	Prohibited	Acceptance of applicable bill type 1 is prohibited.
		<p>OFF</p>	Accepted	Acceptance of applicable bill type 1 is enabled.
2	Applicable bill type 2 acceptance setting	<p>ON</p>	Prohibited	Acceptance of applicable bill type 2 is prohibited.
		<p>OFF</p>	Accepted	Acceptance of applicable bill type 2 is enabled.
3	Applicable bill type 3 acceptance setting	<p>ON</p>	Prohibited	Acceptance of applicable bill type 3 is prohibited.
		<p>OFF</p>	Accepted	Acceptance of applicable bill type 3 is enabled.
4	Applicable bill type 4 acceptance setting	<p>ON</p>	Prohibited	Acceptance of applicable bill type 4 is prohibited.
		<p>OFF</p>	Accepted	Acceptance of applicable bill type 4 is enabled.

DIP Switch B

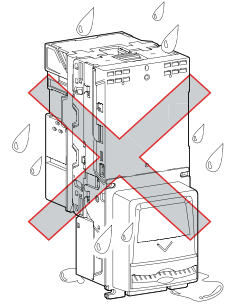
No..	Setting item	On or OFF	Description	
1	Applicable bill type 5 acceptance setting	 <p>ON</p>	Prohibited	Acceptance of applicable bill type 5 is prohibited.
		 <p>OFF</p>	Accepted	Acceptance of applicable bill type 5 is enabled.
2	Applicable bill type 6 acceptance setting	 <p>ON</p>	Prohibited	Acceptance of applicable bill type 6 is prohibited.
		 <p>OFF</p>	Accepted	Acceptance of applicable bill type 6 is enabled.
3	Communication rate setting	 <p>ON</p>	19200 bps	The communication rate is set to 19200 bps.
		 <p>OFF</p>	9600 bps	The communication rate is set to 9600 bps.
4	Acceptance level setting (all types of applicable bills in one operation)	 <p>ON</p>	High security	Sets the acceptance level for all applicable bill types to High Security (tightened security). Depending on the bill condition, the acceptance rate may decrease if set to High Security. Thus, the Normal setting is recommended in most cases.
		 <p>OFF</p>	Normal	Sets the acceptance level for all applicable bill types to Normal (reduced security).

### 3. Collecting bills

Periodically collect bills from the Assy Stack Box PU or Assy Stack Box 200.

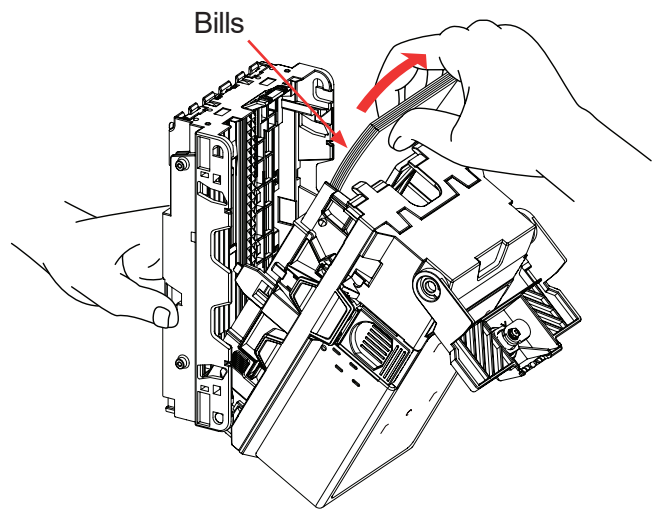
#### CAUTION

- If the Assy Stack Box PU or Assy Stack Box 200 becomes full, the monitor lamp (red) flashes twice to indicate that bills cannot be accepted.
- Do not allow foreign matter, such as rainwater, rubber bands or paper clips, to enter the inside when the Assy Stack Box PU or Assy Stack Box 200 is removed. Failure to follow these instructions could result in malfunction or failure.



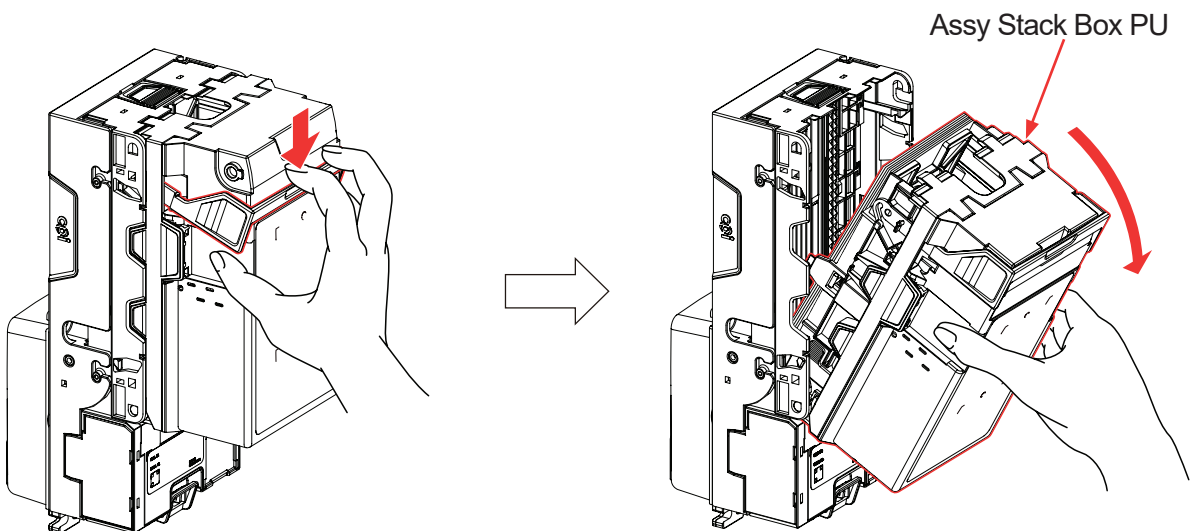
#### ▲ For models with Assy Cash Box (lockable)

Open the Assy Cash Box and collect bills by referring to the procedures described on page 15.

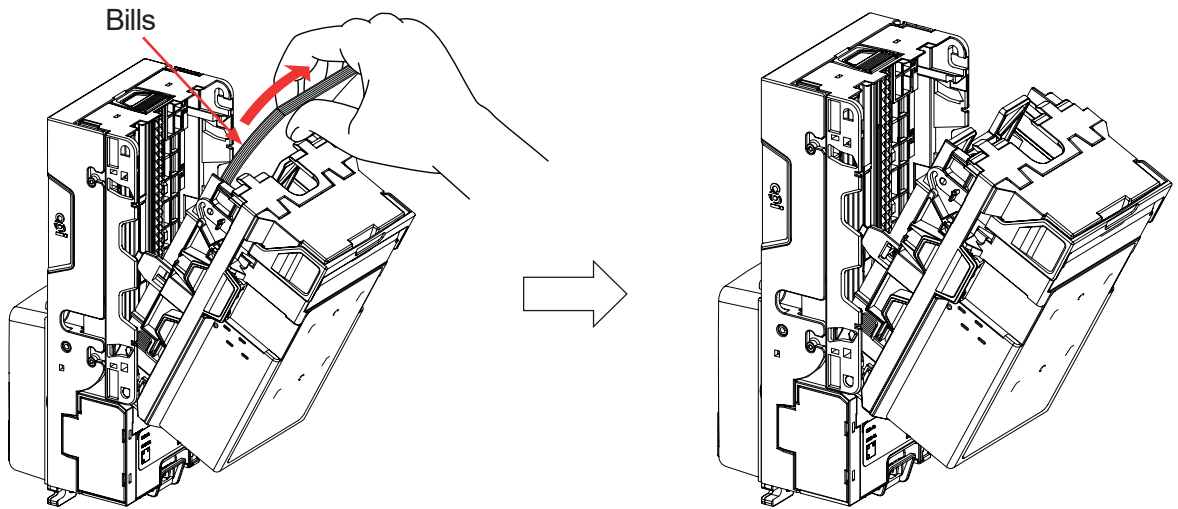


#### ▲ For models with Assy Stack Box PU

- i Lower the Latch Box, and open the Assy Stack Box PU.



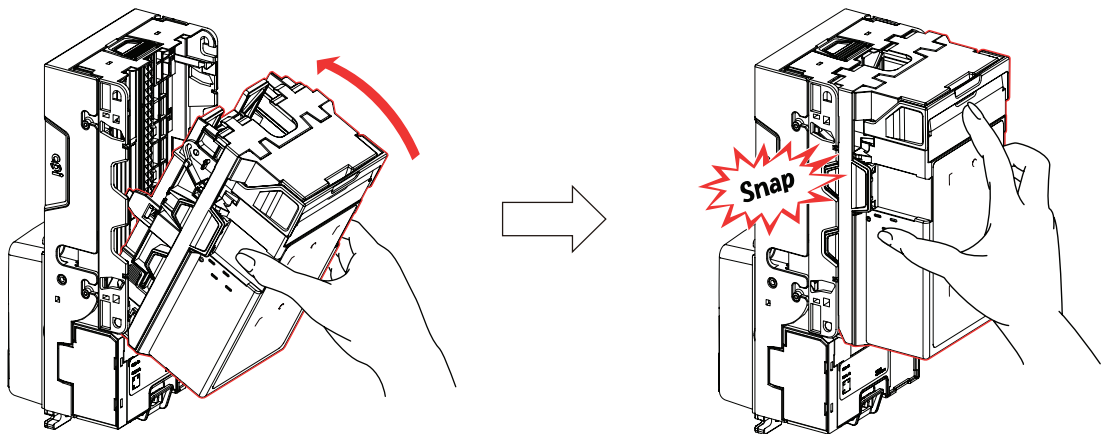
- ii Collect all bills stored in the Assy Stack Box PU.



**Notes:**

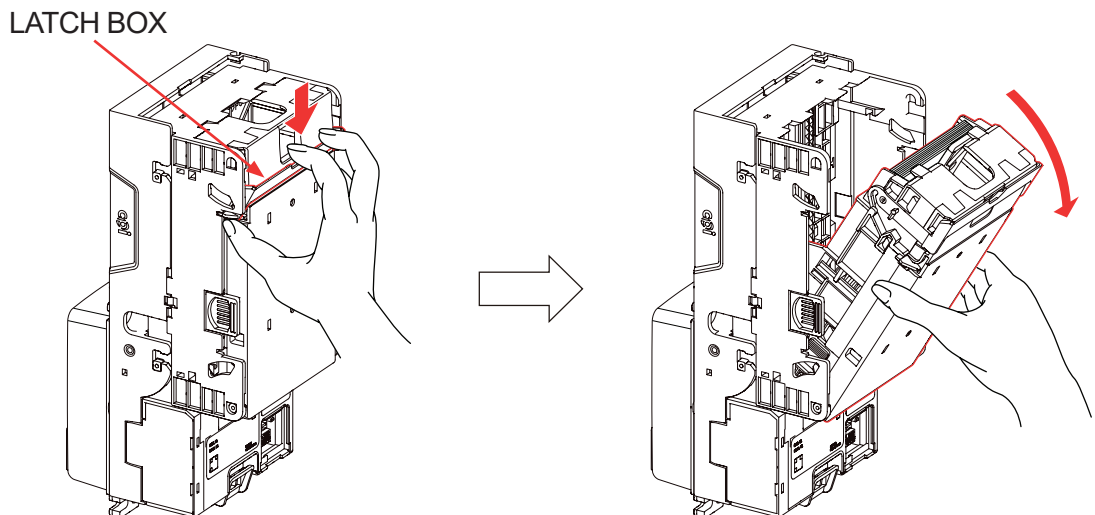
Confirm the number of bills stored by the anti-string operation or bill-jam cancellation operation (page 50) before installing the Assy Stack Box PU.

- iii Install the Assy Stack Box PU by pushing it until a snap sound is heard.

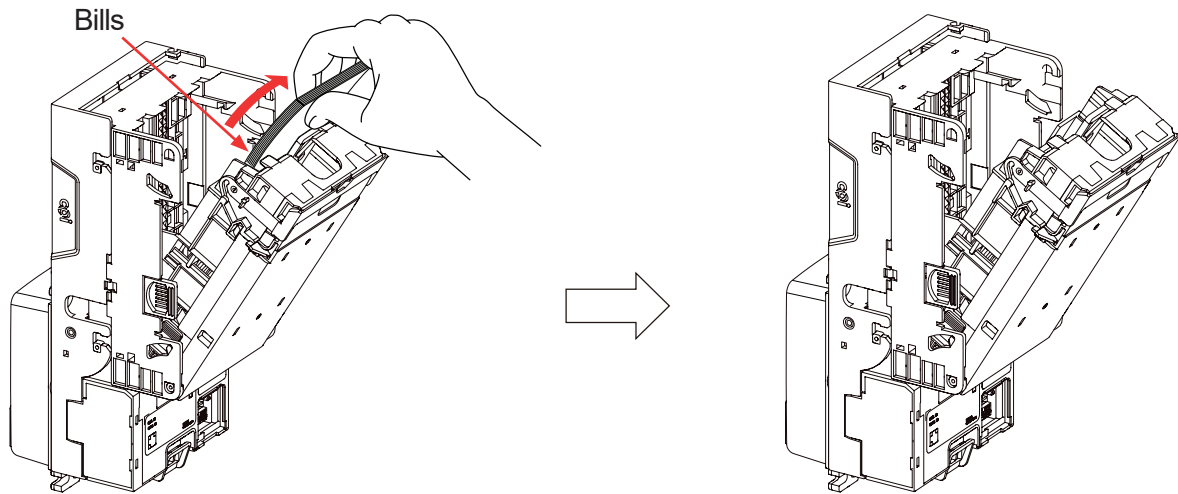


**▲ For models with Assy Stack Box 200**

- i Lower the Latch Box and open the Assy Stack Box 200.



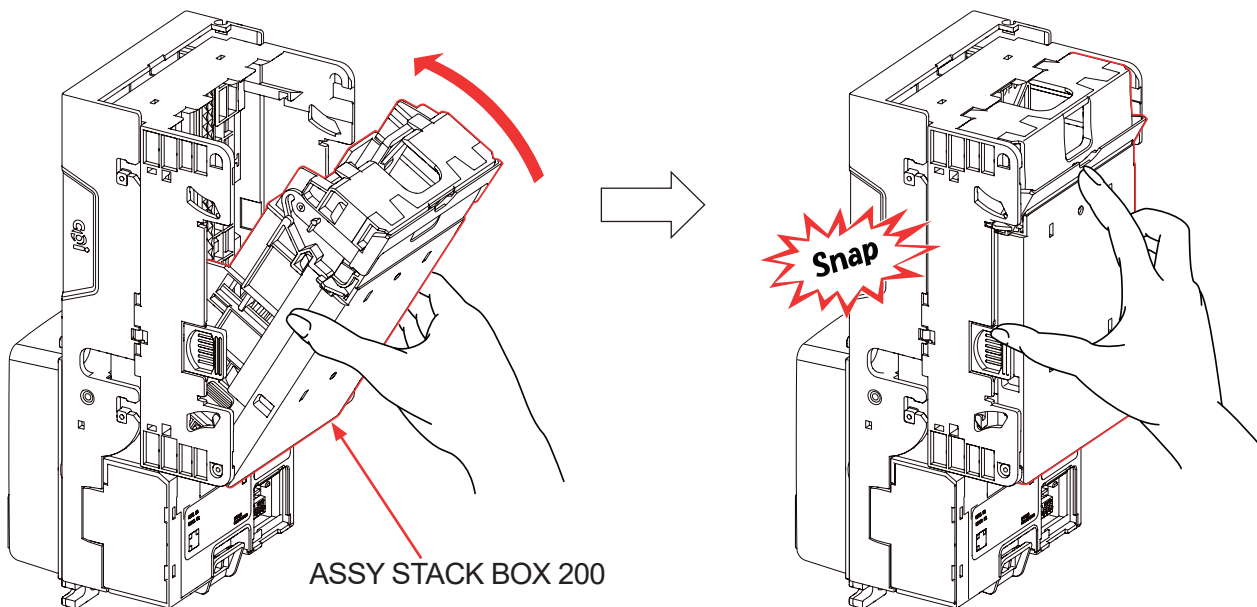
- ii Collect all bills stored in the Assy Stack Box 200.



**Note:**

Confirm the number of bills stored by the anti-stringing operation or bill-jam cancellation operation (page 50) before installing the Assy Stack Box 200.

- iii Install the Assy Stack Box 200 by pushing it until a snap sound is heard.



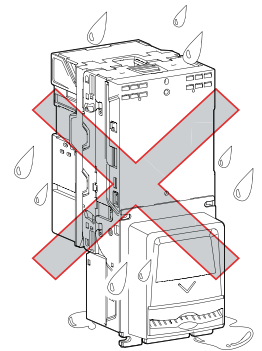
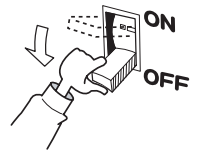
# 11 // Regular maintenance

The Bill Validator may become dirty such as from bills, dust, water and foreign matter. If it becomes too dirty, the bill acceptance rate will decrease or errors such as bill jam will occur, causing a decline in the performance. Clean it once every one to three months to maintain performance. (Cleaning interval is dependent to the construction of the Machine and the location of installation.)

Note that the bill path and the sensor on the path can be cleaned with the cleaning sheet (page 45)

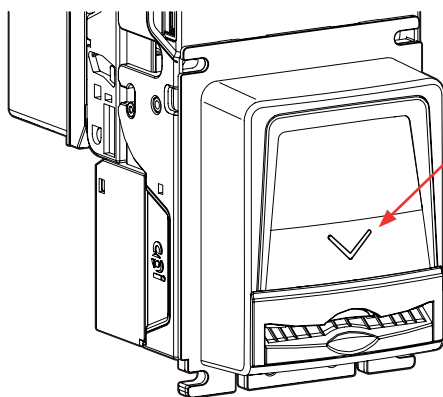
## CAUTION

- Upon completion of regular maintenance, perform an operation test (page 21) to confirm that there are no problems. Failure to follow these instructions could result in overlooked errors, leading to malfunction or failure.
- Make sure that the power to the machine on which this product is installed is turned off.
- Do not touch the gears inside the unit (excluding the white gear that should be touched when cleaning the rubber rollers).
- Take care not to allow foreign matter such as rainwater, rubber bands and paper clips to enter the inside.
- Use a soft, cloth or cotton swab to wipe off dirt from the unit.
- Do not use cleaning agent to clean the sensors, the portion close to the sensor and the rubber rollers.
- Since the sensor is composed of a light-emitting part and a light-receiving part as a set, be sure to clean both parts.
- Do not use acidic or alkaline detergent, solvent such as benzene and thinner or chemical-added cloths or wipes. Doing so could cause deformation, discoloration or failure.

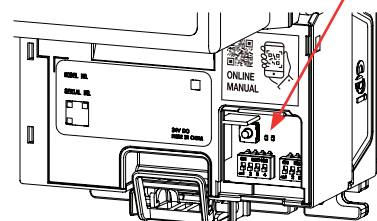


## 1. Checking the Validator state

The Validator state can be determined by checking the indication of the front lamp (page 46) and the monitor lamps (page 47).



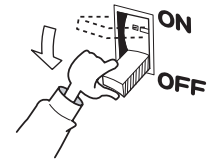
● Front lamp



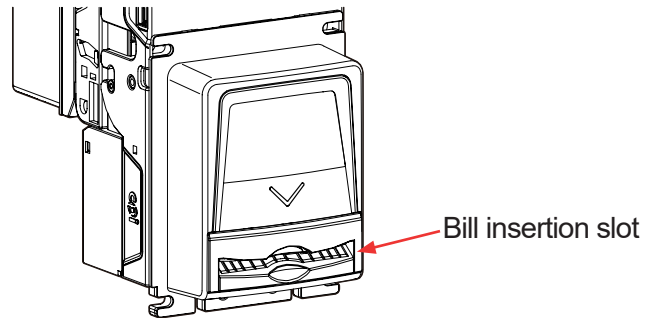
● Monitor lamps

## 2. Cleaning the bill path unit and sensor

(1) Turn off the power to the Machine.



(2) Clean the bill insertion slot. Remove any jammed bills or foreign matter.

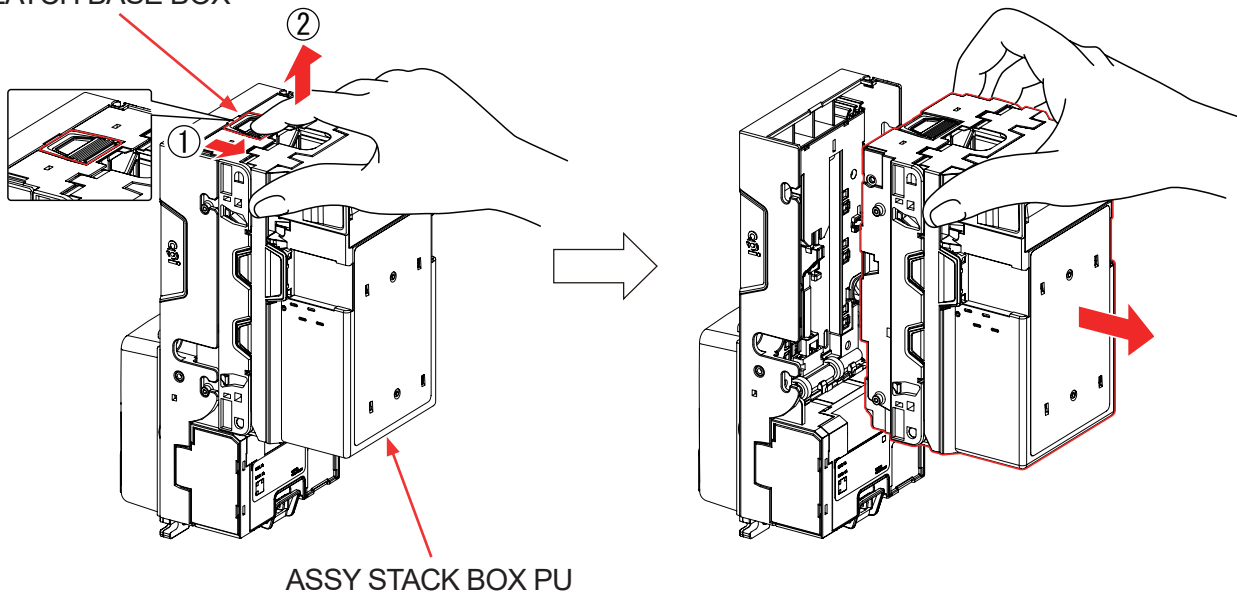


(3) Remove the Assy Stack Box PU or Assy Stack Box 200.

### ▲ For models with Assy Stack Box PU

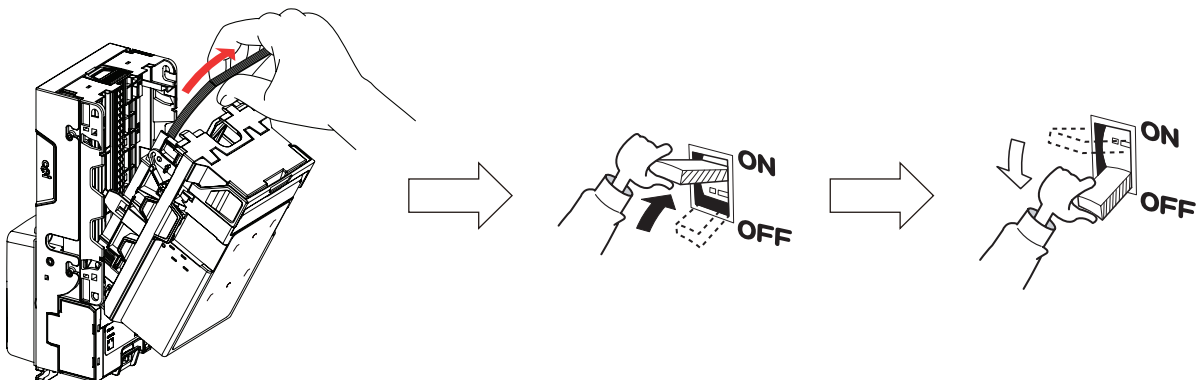
While pulling the Latch Base Box toward you, lift the Assy Stack Box PU and remove it.

LATCH BASE BOX



### Note:

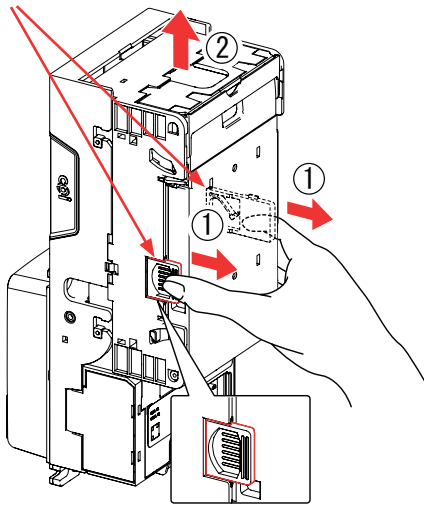
If the Assy Stack Box PU is stuck and hard to remove due to a jammed bill or the like, first open the box and collect all bills held. Next, close the box, turn on the power to the Machine and then turn it off to resolve the sticking.



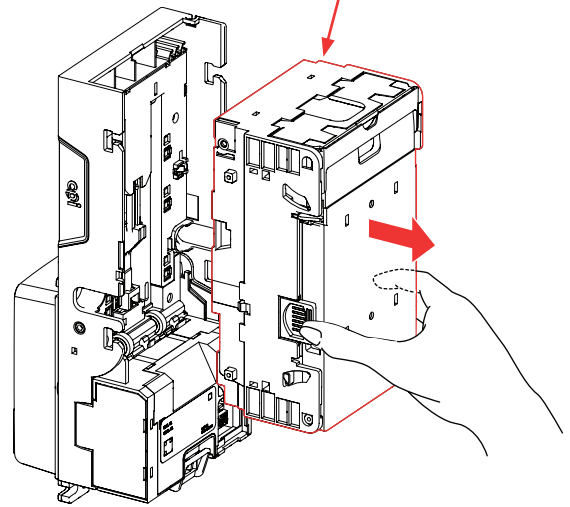
**▲ For models with Assy Stack Box 200**

While pulling the Latch Box Bases on the right and left of the Assy Stack Box 200 toward you, lift the box and remove it.

LATCH BOX BASE

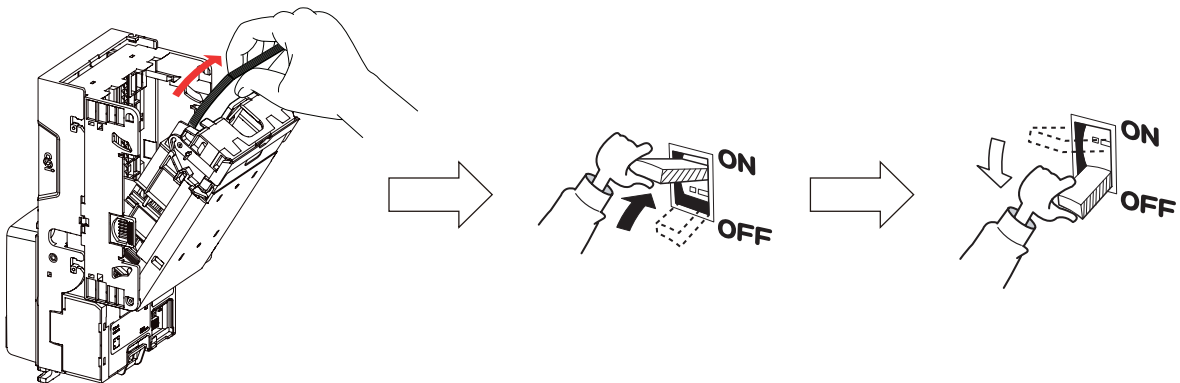


ASSY CASH BOX

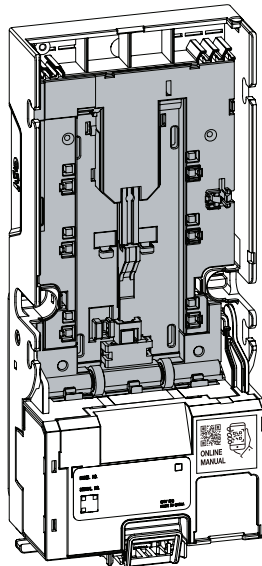


**Note:**

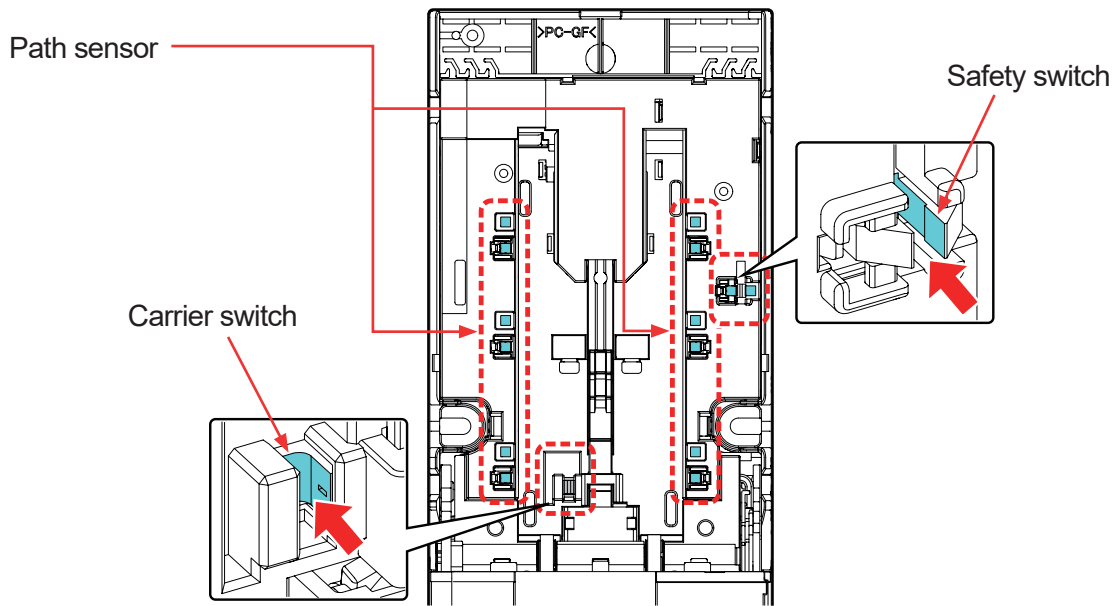
If the Assy Stack Box 200 is stuck and hard to remove due to a jammed bill or the like, first open the box and collect all bills held. Next, close the box, turn on the power to the Machine and then turn it off to resolve the sticking.



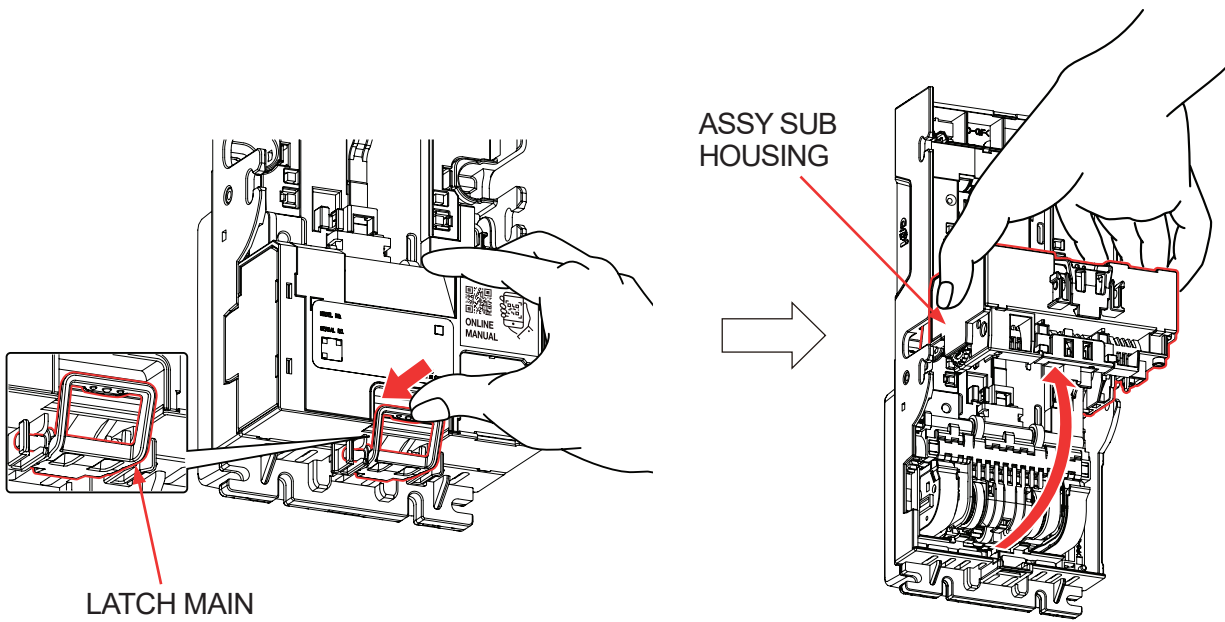
(4) Clean the gray portion of the bill path unit.



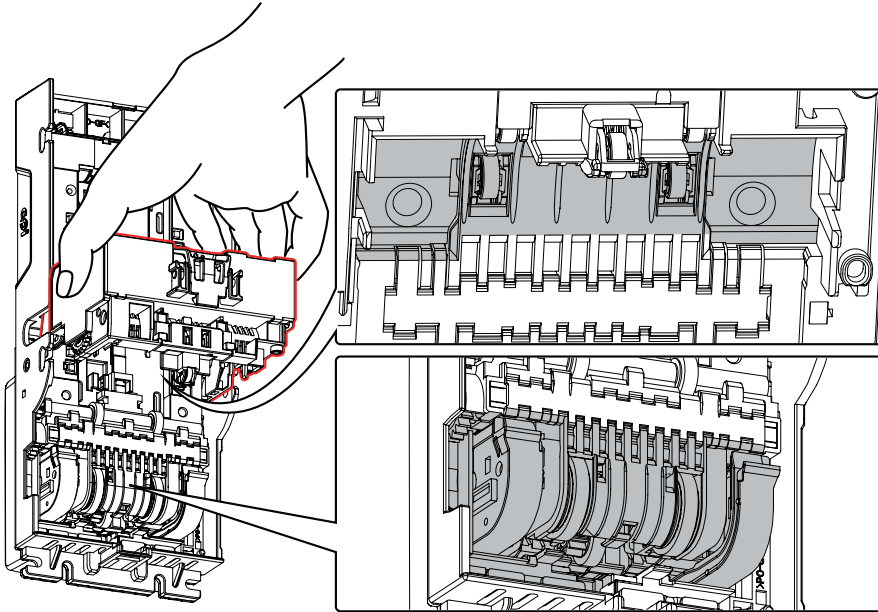
(5) Clean the path sensor, carrier switch and safety switch.



(6) Push the Latch Main and open the Assy Sub Housing.

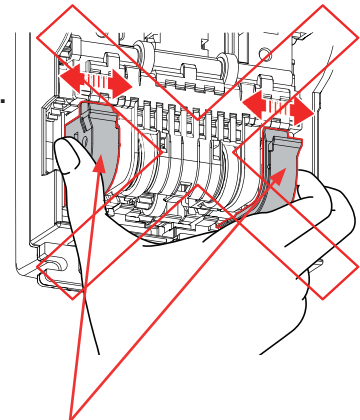


(7) Clean the bill path unit. Remove any jammed bills or foreign matter.



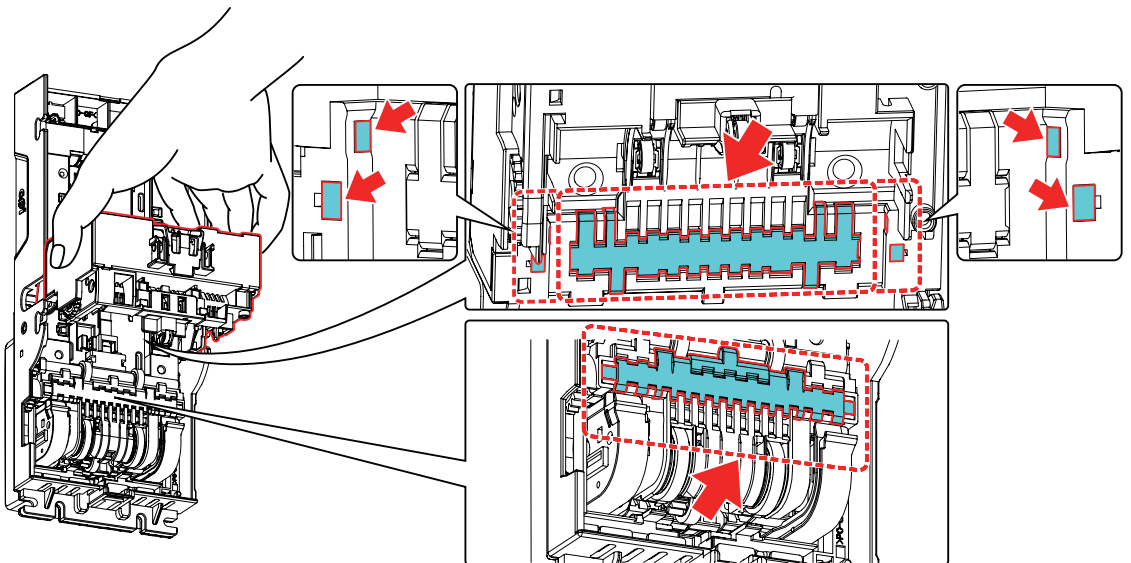
**CAUTION** ▲RV M9\*\*\*.\*\*

Do not forcibly move the bill path width switching mechanism.  
Doing so could result in failure.

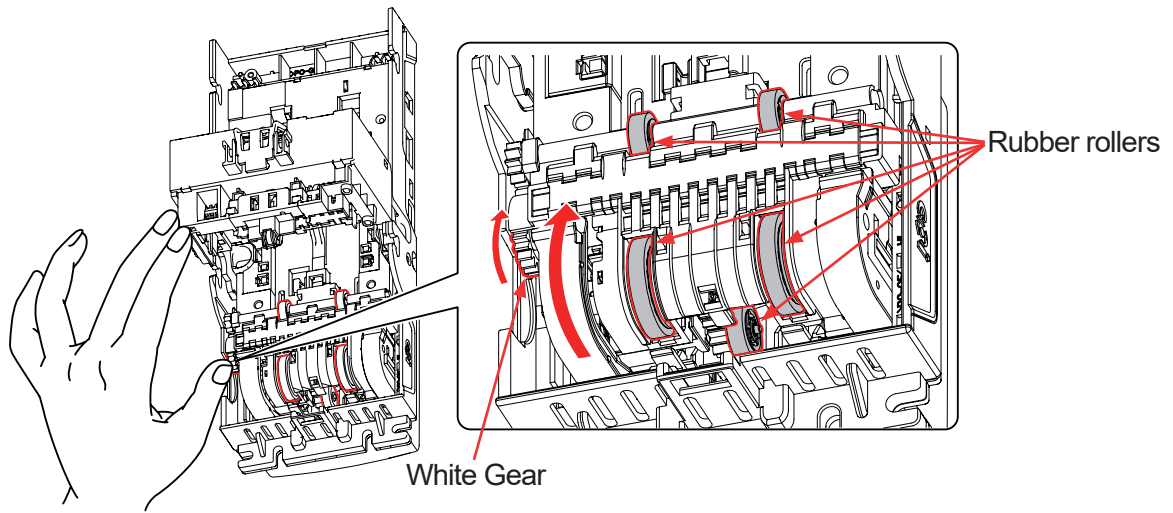


Width switching

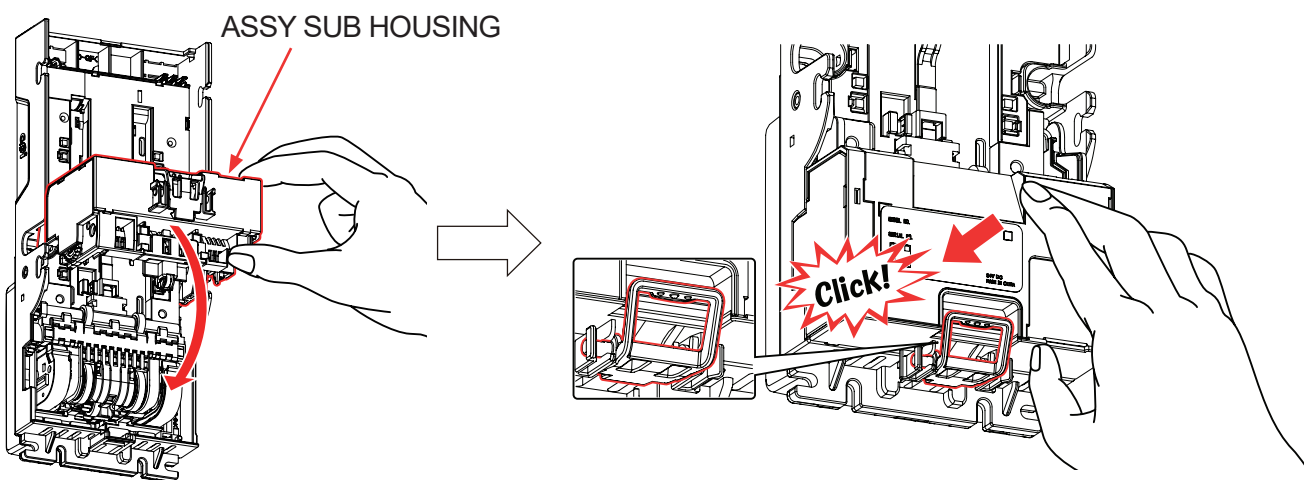
(8) Clean the bill validation sensor.



(9) While rolling the white gear by hand, clean the rubber rollers with a dry cloth or a cotton swab.

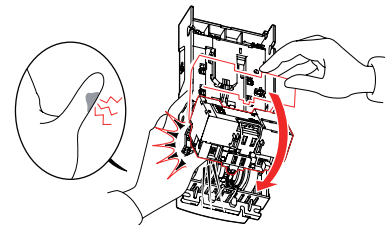


(10) Push the Assy Sub Housing until a click sound is heard to close it.



**⚠ CAUTION**

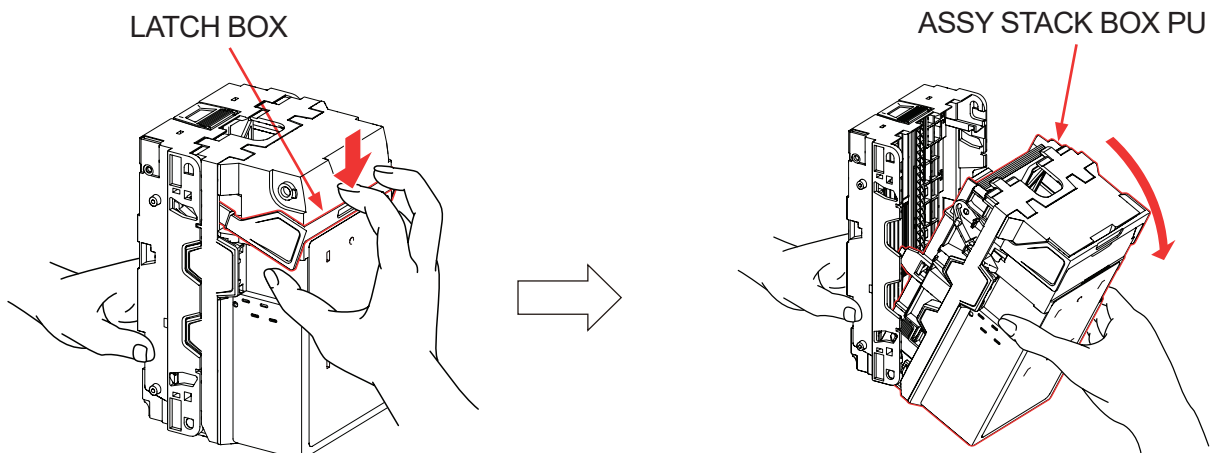
When closing, be careful not to get your fingers caught.



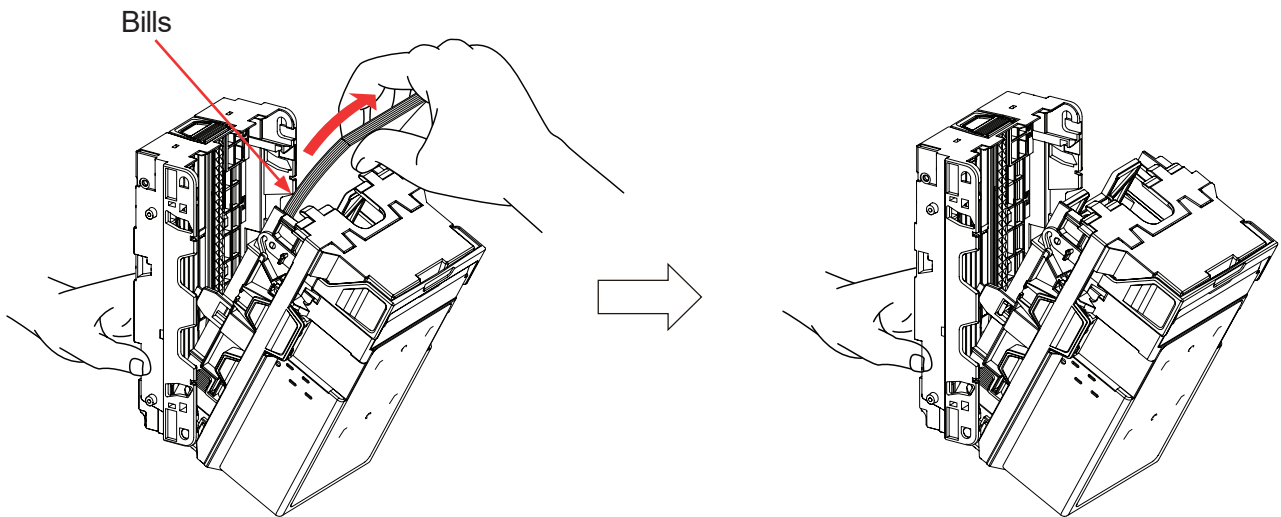
(11) Cleaning the Assy Stack Box PU or Assy Stack Box 200.

**▲ For models with Assy Stack Box PU**

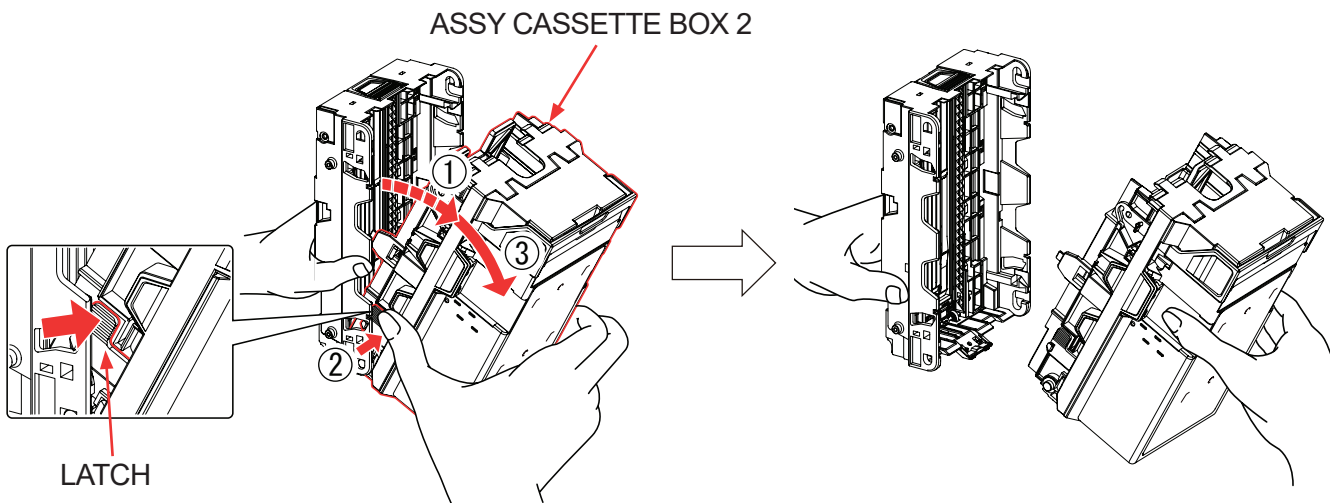
i Lower the Latch Box, and open the Assy Stack Box PU.



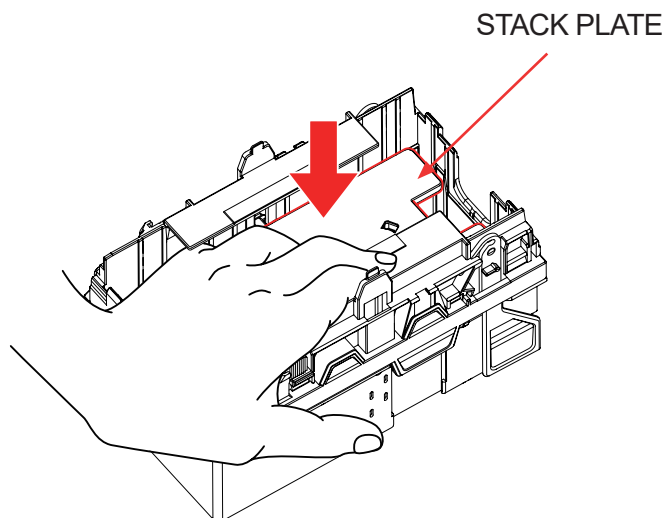
ii Collect all bills stored in the Assy Stack Box PU.



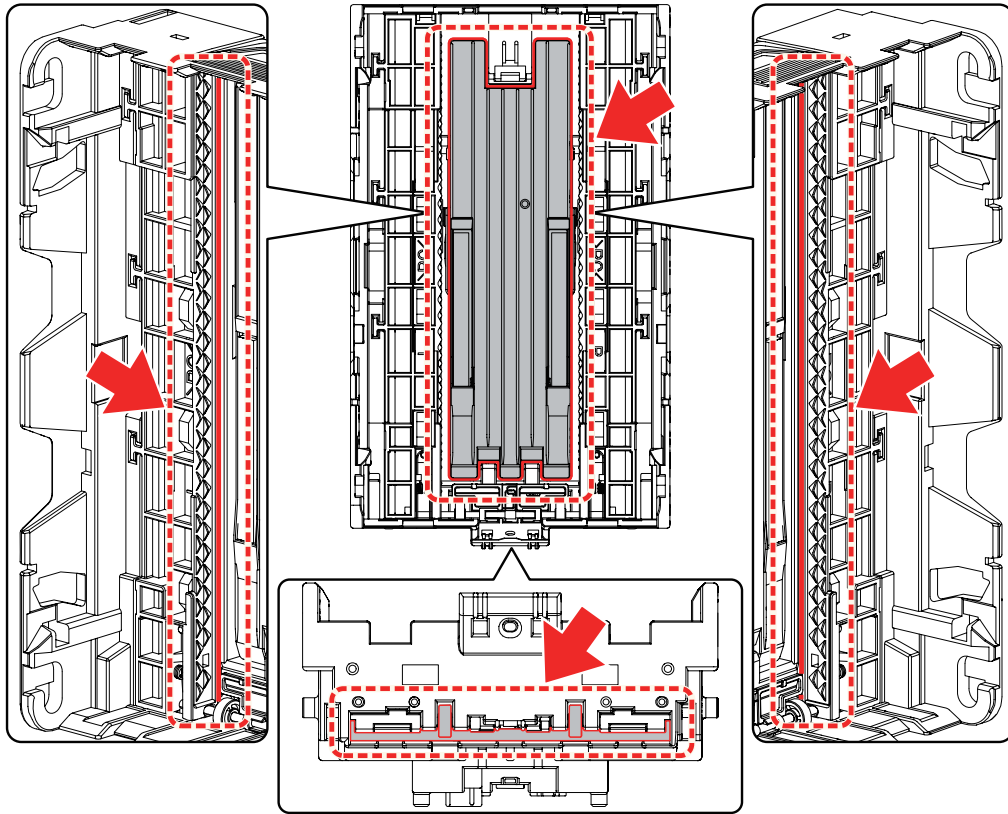
iii Open the Assy Cassette Box 2 halfway, and then remove it while pushing the Latch. Remove any jammed bills or foreign matter.



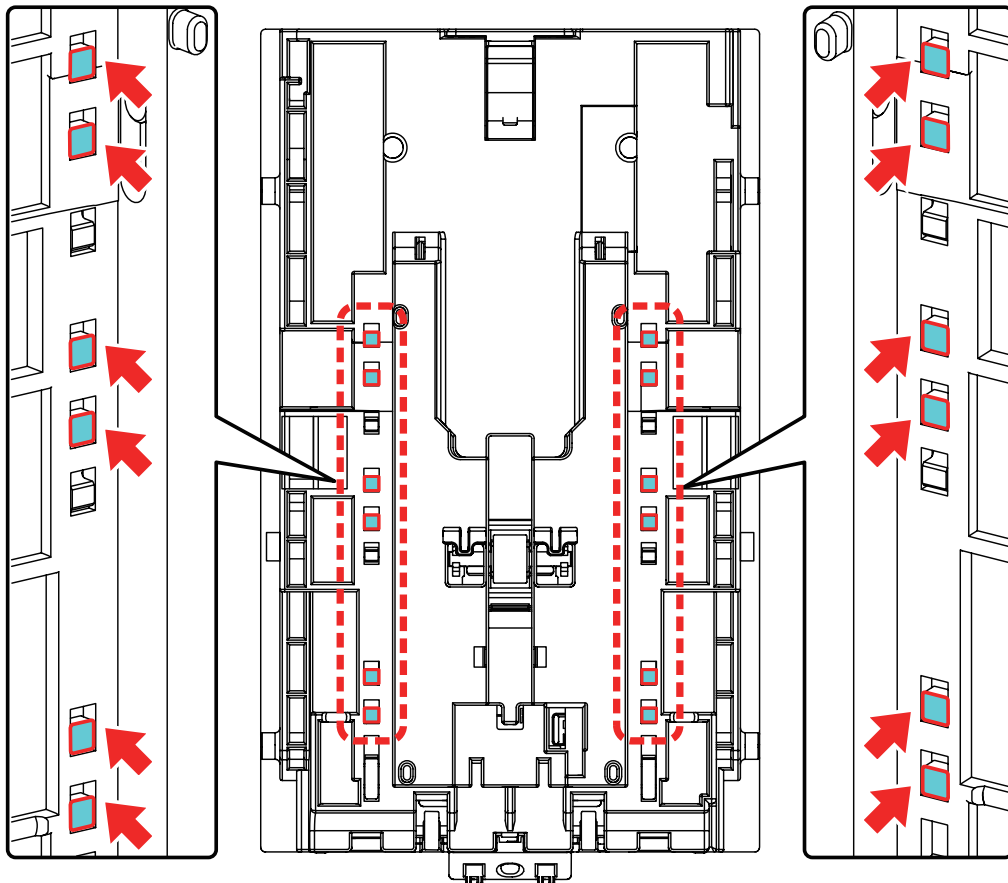
iv Push the Stack Plate and clean the inside of the Assy Cassette Box 2. Remove any jammed bills or foreign matter.



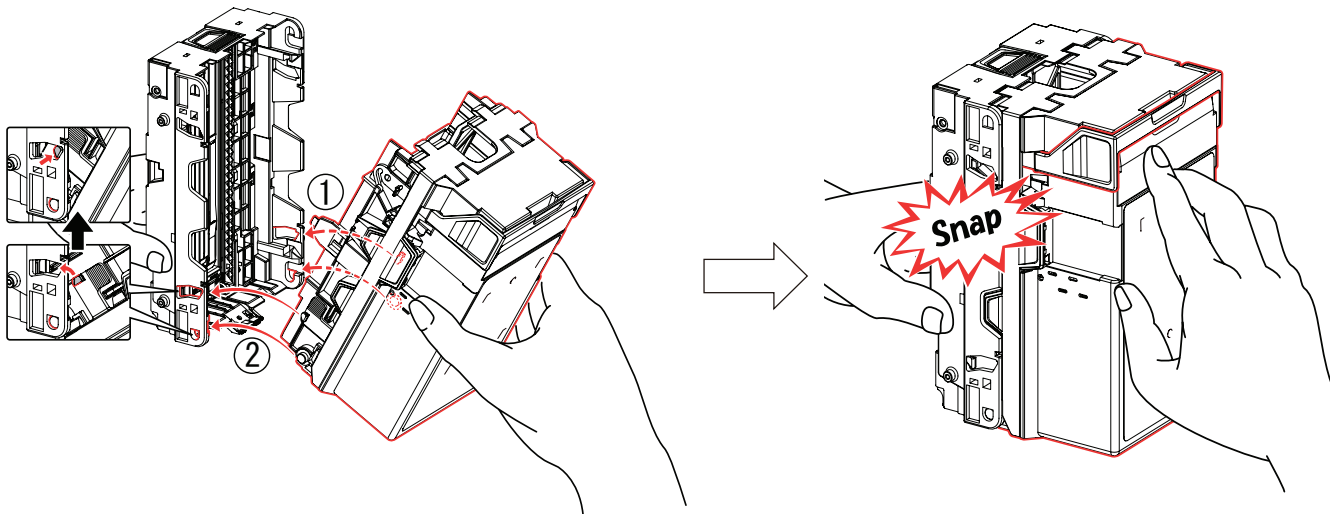
v Clean the bill path unit in the Assy Box Base 2.



vi Clean the sensor in the Assy Box Base 2.

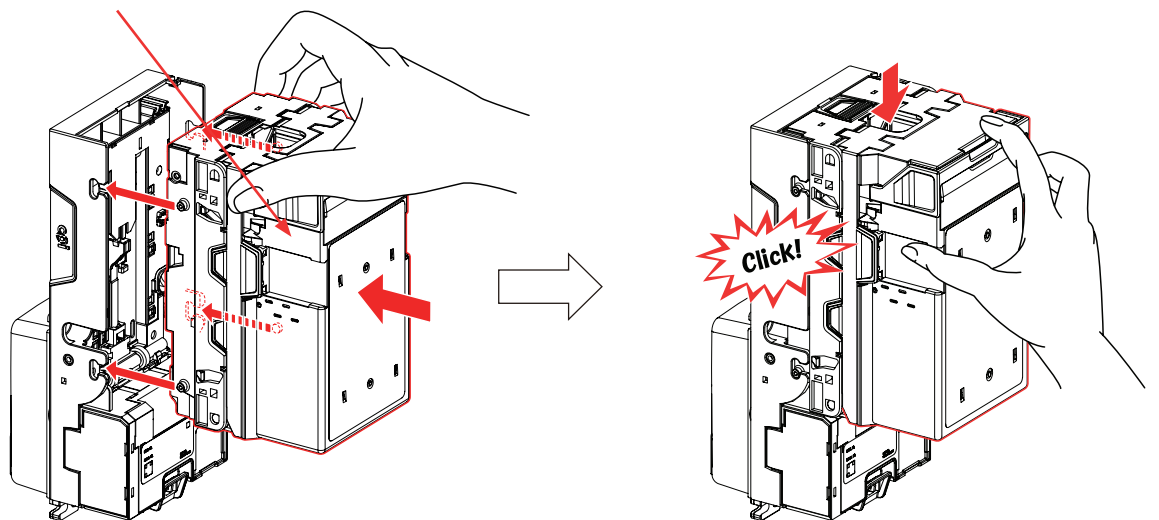


- vii First, engage the two convex parts on the lower right of the Assy Cassette Box 2 in the two concave parts on the lower right of the Assy Box Base 2, then repeat the step with the lower left convex parts and concave parts. Push the Assy Cassette Box 2 until a snap sound is heard to install it.



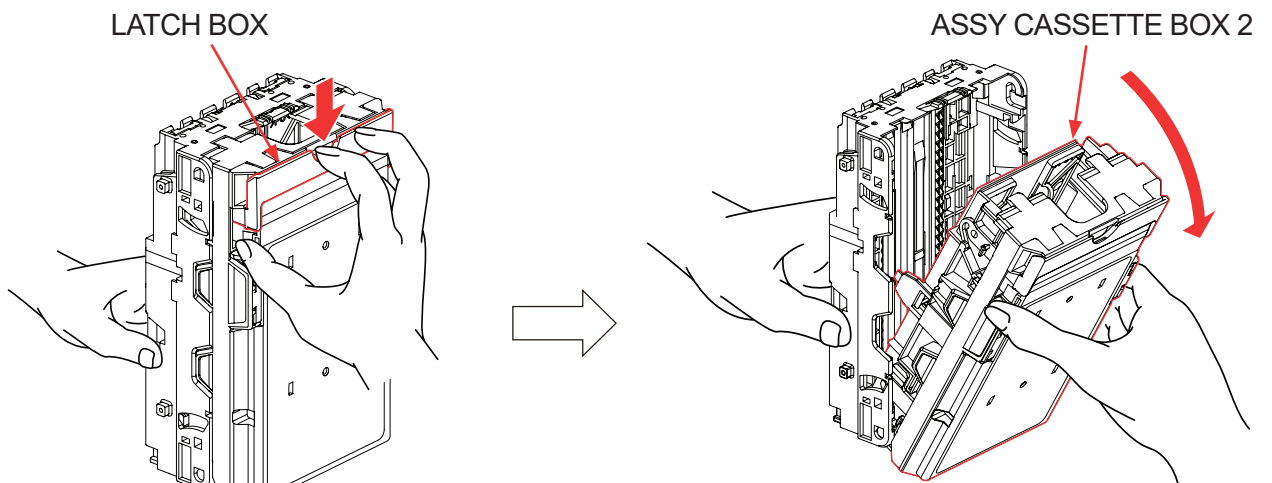
- viii Engage the four convex parts on the right and left sides of the Assy Stack Box PU in the four concave parts on the main unit, and then lower the Assy Stack Box PU until a click sound is heard to install it.

**ASSY STACK BOX PU**

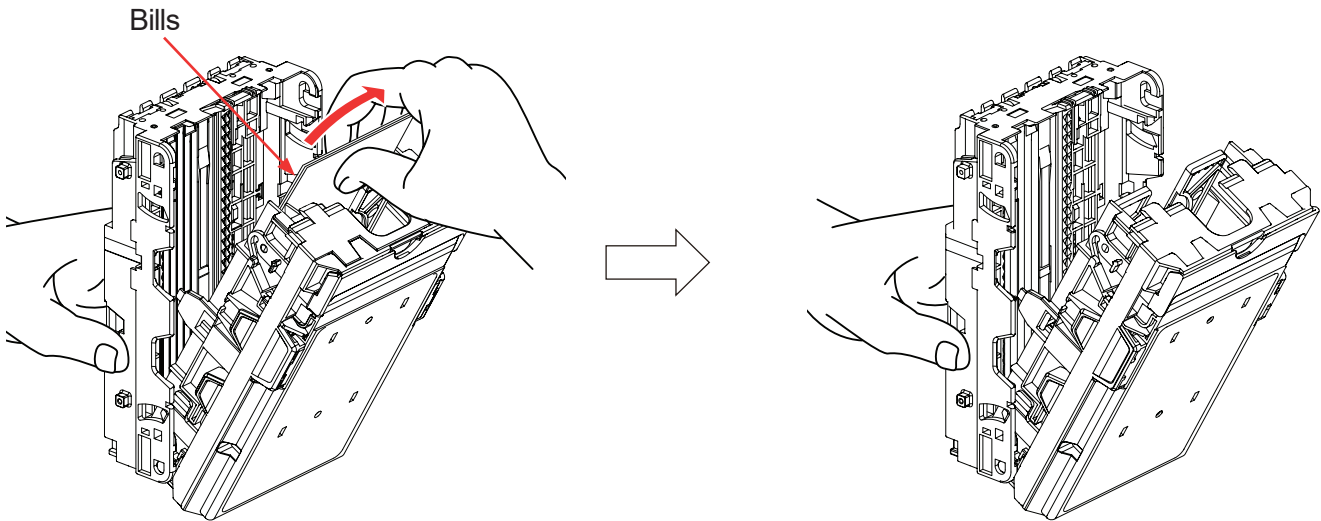


**▲ For models with Assy Stack Box 200**

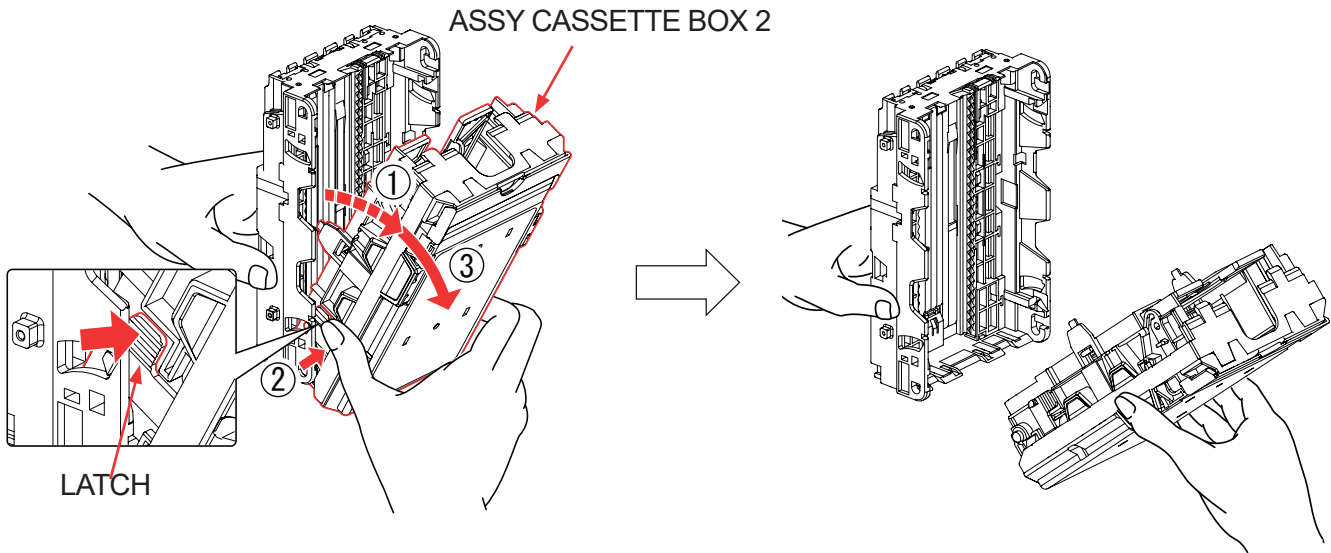
- i Lower the Latch Box and open the Assy Cassette Box 2.



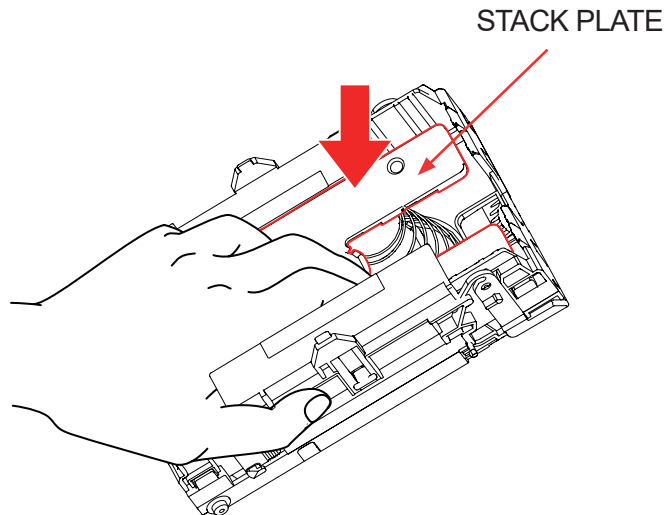
ii Collect all bills stored in the Assy Cassette Box 2.



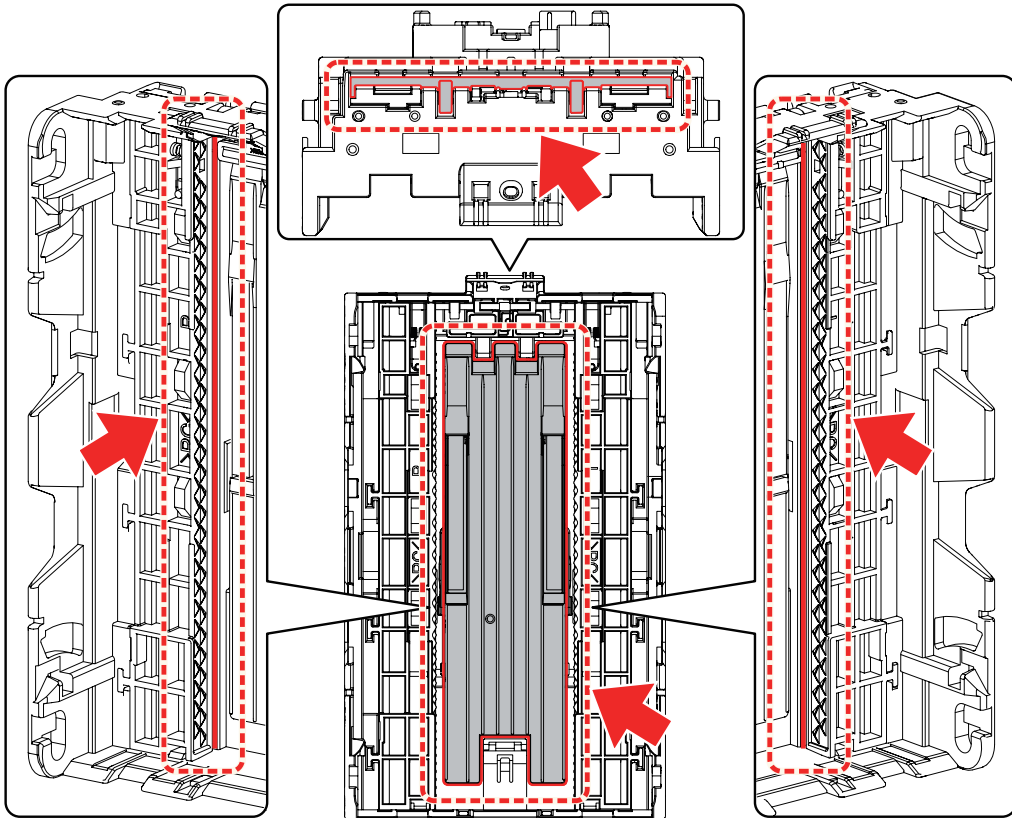
iii While the Assy Cassette Box 2 is open, push the latch and remove the box. Remove any jammed bills or foreign matter.



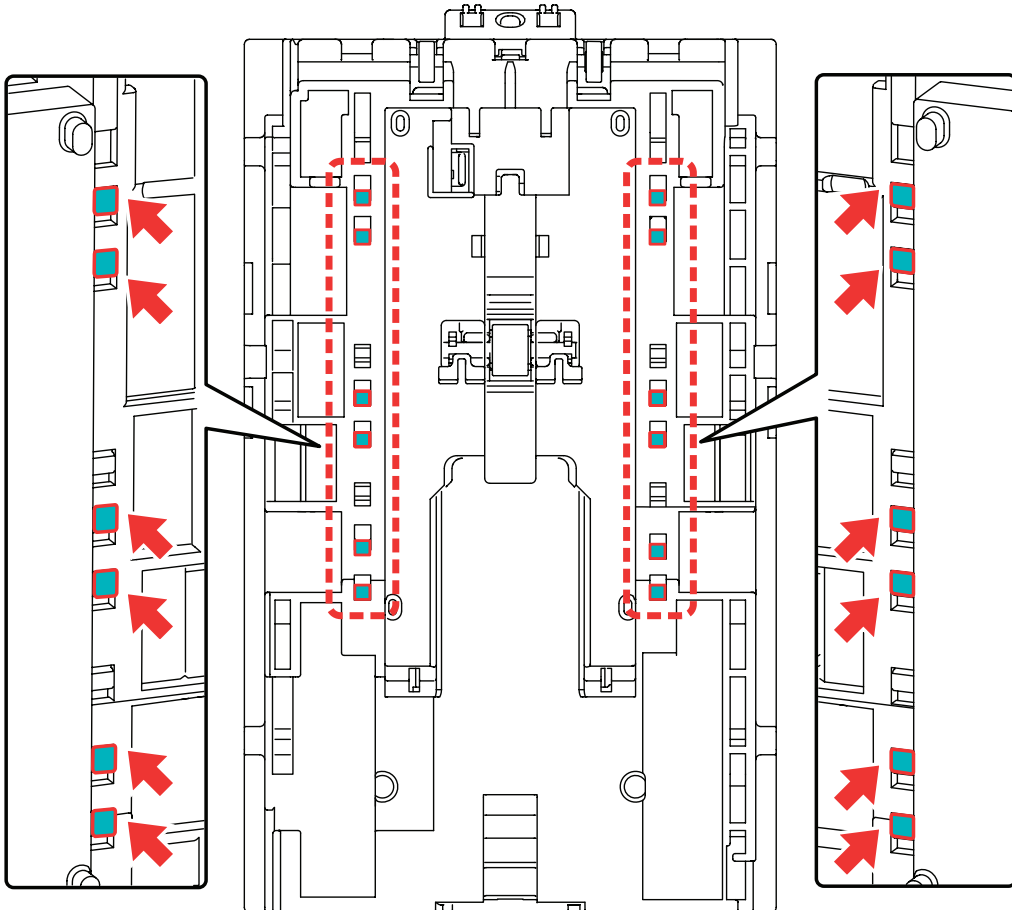
iv Push the Stack Plate and clean the inside of Assy Cassette Box 2. Remove any jammed bills or foreign matter.



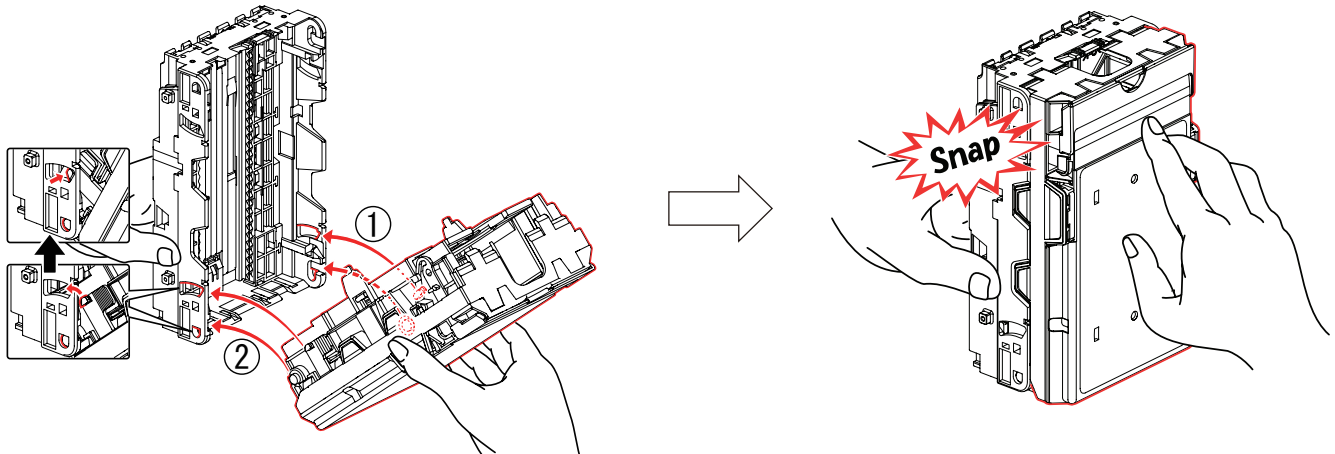
v Clean the bill path unit in the Assy Box Base 2.



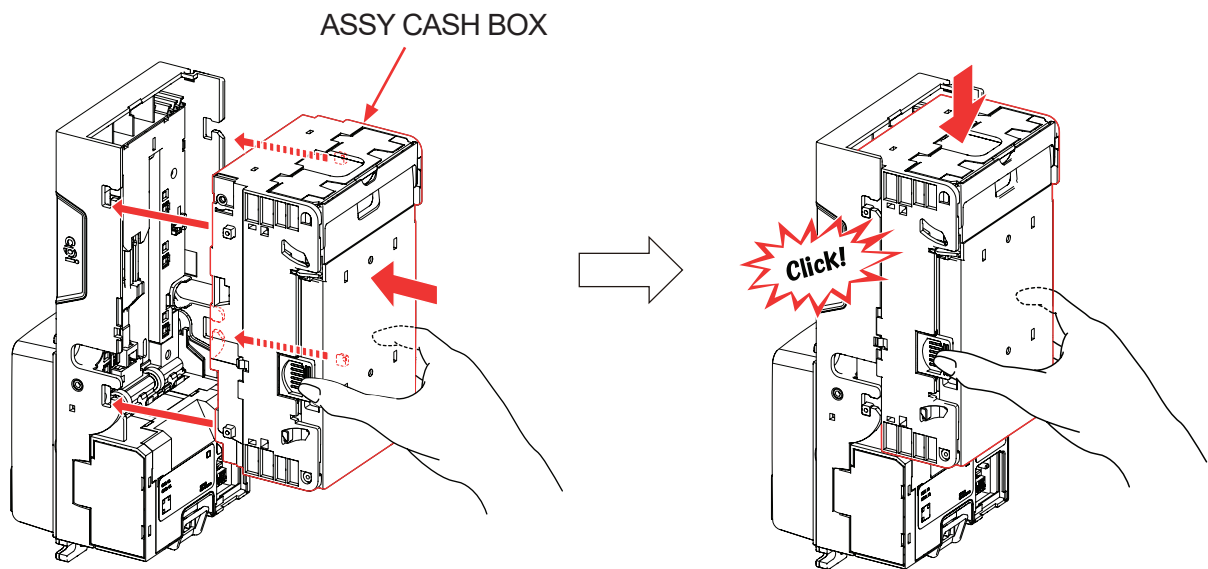
vi Clean the sensor in the Assy Box Base 2.



vii First, engage the two convex parts on the lower right of the Assy Cassette Box 2 in the two concave parts on the lower right of the Assy Box Base 2, then repeat the step with the lower left convex parts and concave parts. Push the Assy Cassette Box 2 until a snap sound is heard to install it.



viii Engage the four convex parts on the right and left sides of the Assy Stack Box 200 in the four concave parts on the main unit, and then lift the box until a click sound is heard to install it.



(12) Perform an operation test (page 21) to confirm that there are no problems.

# 12.// Detailed specifications

---

## (1) Actions when the bill is validated as valid

When the inserted bill is validated as valid, the Validator reports to the controller of the Machine by sending the specified command.

## (2) Actions when the bill is not validated as valid

The bill is automatically returned to the insertion slot.

## (3) Main judgment functions for returning bills

- i Acceptance-prohibited bills  
The inserted bill is an acceptance-prohibited bill.
- ii Bill insertion direction  
The bill insertion direction is an acceptance-prohibited direction.
- iii Consecutive insertion  
Another (second) bill is inserted while the bill validation process is being executed.
- iv Two bills one on top of the other  
Multiple bills one on top of another are inserted.
- v Damaged or folded bill  
Badly damaged or folded bills are inserted.
- vi Bill inserted at a slant  
A relatively small bill is inserted at an angle across the bill path width.
- vii Wet bills inserted  
Excessively wet bills are inserted.

## (4) Escrow

A bill that has been escrow-enabled by the controller of the Machine and judged as valid is temporarily held (escrowed) in the bill path.

While in escrow, if foreign matter such as string or tape is detected at the rear end of the bill, or if bill stringing is detected, the bill being escrowed is forcibly stored in the bill storing unit.

The number of bills stored can be checked by displaying the number on the 7-segment LED using the anti-string or bill-jam cancellation function (page 51).

## (5) Storing the valid bills

An escrow-disabled bill that is validated as valid is automatically stored in the storage.

While in escrow, if the Validator receives a command to store the bill that is in escrow from the controller of the Machine, the Validator stores the bill in the storage.

## (6) Returning the valid bills

While in escrow, if the Validator receives a return command from the controller of the Machine, the Validator returns the bill in escrow to the bill insertion slot.

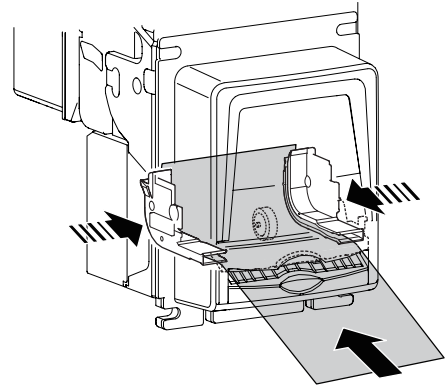
### (7) Returning operation of the valid bills/bills

If jammed, the Validator first carries the jammed bill in the reverse direction, then starts returning the bill again, that is, the "return retry operation". Up to ten return retry operations are conducted. If the bill is still jammed, the Validator forcibly stores the bill in the storage.

The number of bills stored can be checked by displaying the number bills stored using the anti-string or bill-jam cancellation function (page 50).

### (8) Bill path width switching mechanism ▲ RV-M9\*\*\*-\*\*

When a bill is inserted, the bill path guide is temporarily changed to fit to the bill width leveraging centering mechanism, resulting in supporting stable bill transportation and validation performance.



### (9) Cases where acceptance of bills is disabled

- The power is off.
- The acceptance of all applicable bill types is prohibited by: the "Prohibit Bills" command from the controller of the Machine, the DIP switch setting or other settings on the Validator.
- The Validator does not receive a command from the controller for five seconds or more.
- When a bill is in escrow.
- Bills are being collected.
- Full status is detected in the bill storage unit.
- An error is detected in the Validator itself.
- An error is detected in the path of the Validator.
- A maintenance operation is in progress.

### (10) Push switch

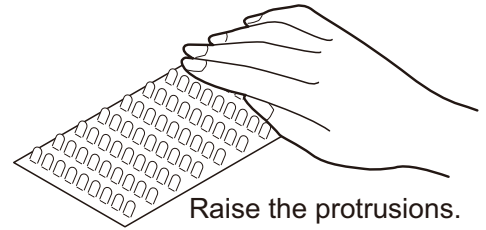
The following functions are available by operating the push switch.

- i Cleaning mode (page 45)
- ii Display of the number of bills stored by the anti-string or bill-jam cancellation function (page 50)

## (11) Cleaning mode

When a cleaning sheet is inserted into the bill insertion slot while in the cleaning mode, the sheet is drawn inside to clean the bill path and the bill path sensor. Please use only the cleaning sheets recommended by Crane Payment Innovations, Inc.

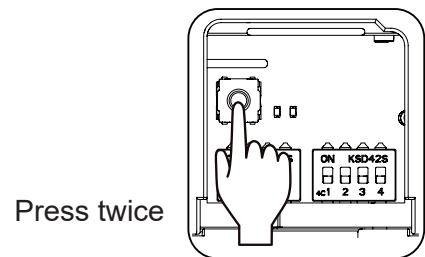
When a cleaning sheet having protrusions on the surface is used, raise the protrusions before use.



### Notes:

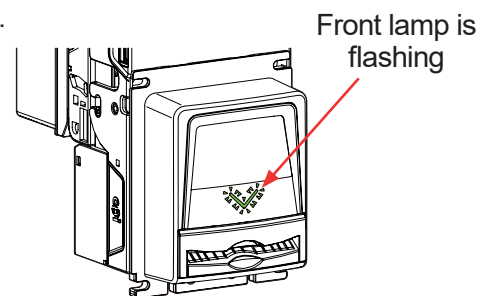
- Make sure to use only the cleaning sheets recommended by Crane Payment Innovations, Inc. Using clean sheets not recommended could result in failure.
- If a cleaning sheet is inserted without entering the cleaning mode, the sheet is immediately returned to the bill insertion slot, and the bill path and bill path sensor are not cleaned.

- i Press the push switch twice.

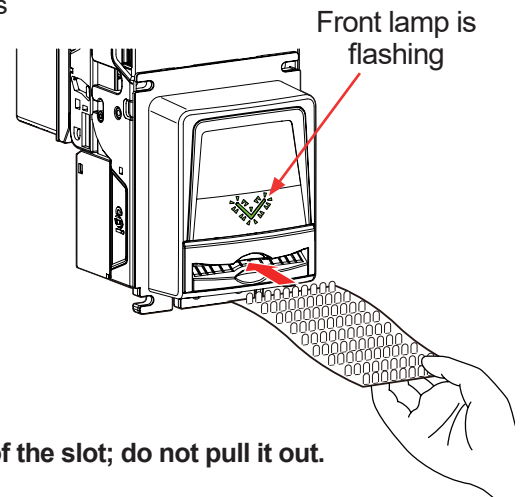


To cancel the cleaning mode, press the push switch once or wait for 30 seconds without pressing it.

- ii Check that the front lamp is flashing in green (at 0.5-sec intervals).



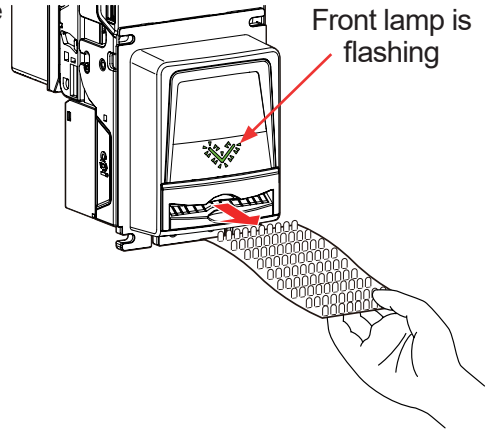
- iii Insert a cleaning sheet into the bill insertion slot. The sheet is drawn inside to start the cleaning operation.



### Note:

During cleaning, the cleaning sheet temporarily comes out of the slot; do not pull it out.

iv Upon completion of cleaning, the cleaning sheet is returned to the bill insertion slot.







**Note:**

If the cleaning sheet becomes jammed inside, remove it by referring to "Regular maintenance" (page 31).

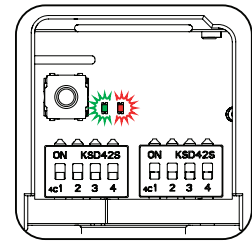
**(12) Indication of the front lamp**

The front lamp indicates the state of the Validator by using lighting patterns.

Lamp display	Validator state	Action
 Flashing in green (every 0.3 sec, 2 times) Repetition	Standby (acceptance enabled)	–
 Flashing in green (every 0.3 sec, 5 times)	Setting the security level of each bill type to High	Page 24 Upon power-on, when the initial operation is complete, the lamp operates one flash cycle in green (every 0.3 sec, 5 times) to indicate that the security has been set to High.
 Flashing in green (every 0.5 sec)	In cleaning mode	Page 45
 Off	Power is turned off.	Turn on the power to the Machine.
	Communication error	Check if the Machine is faulty, or check for a connection error between the Validator and the Machine.
	Acceptance of all bill types prohibited	All types of bills are prohibited by the DIP switch setting (page 24) or by the setting in the Machine.
	Waiting for the returned bill to be pulled out	Pull out the bill returned to the bill insertion slot.
	Validator in operation	–
	Abnormal state	Eliminate the abnormal state (page 51).

### (13) Monitor lamp

The monitor lamps are composed of two LEDs, a red (R) LED and a green (G) LED, indicating the state of the Validator as follows.















- i Inspection information (including warnings)
- ii Abnormal state
- iii Internal error

If any of the states above occurs at the same time, they are displayed in the order of iii, ii and i, where iii is the highest priority.

















- i Inspection information (including warnings)

Displays the inspection information (including warnings) on the Validator where bills are accepted.

Monitor lamp display		Validator state	Action
Green	Red		
 Off	 Off	Standby	—
 On	 Off	Communication error	Check if the Machine is faulty, or check for a connection error between the Validator and the Machine.
 Flashing (every 0.3 sec, 1 time) Repetition	 Off	High Security mode	Security is set to High (tightened acceptance) by the DIP switch "A" (page 24).
 Flashing (every 0.3 sec, 2 times) Repetition	 Off	Indicates that the sensor is dirty.	Clean the sensor by referring to the procedures in "Regular maintenance" (page 31), or enter the cleaning mode (page 45) to clean it.
		Acceptance rate dropped to under 80%	First, clean the sensor by referring to the procedures in "Regular maintenance" (page 31), or enter the cleaning mode (page 45) to clean it. Then, check for any abnormality in acceptance.
 Flashing (every 0.3 sec, 3 times) Repetition	 Off	Internal memory error	Turn off the power to the Machine and then turn it on.
 Flashing (every 0.3 sec, 4 times) Repetition	 Off	The bill-jam cancellation operation or anti-string operation was conducted.	<ul style="list-style-type: none"> <li>• A bill is forcibly stored by the jammed bill removal operation or anti-string operation (page 50).</li> <li>• A bill is left jammed because the forcible storing by the jammed bill removal operation or anti-string operation failed. Remove the jammed bill by referring to the procedures in "Regular maintenance" (page 31).</li> </ul>















ii Abnormal state

Displays the abnormal state of the Validator where bills are not accepted.

Monitor lamp display		Validator state	Action
Green	Red		
 Off	 Flashing (every 0.3 sec, 1 time) Repetition	Bills are being collected.	Install the Assy Stack Box PU or Assy Cash Box.
 Off	 Flashing (every 0.3 sec, 2 times) Repetition	Full status in the bill storage is detected.	
 Off	 Flashing (every 0.3 sec, 3 times) Repetition	Error in the entry sensor	Clean where it is necessary and remove any jammed bills or foreign matter by referring to the procedures in "Regular maintenance" (page 31).
 Off	 Flashing (every 0.3 sec, 4 times) Repetition	Error in the validation sensor	
 Off	 Flashing (every 0.3 sec, 5 times) Repetition	Error in the path sensor	
 Off	 Flashing (every 0.3 sec, 6 times) Repetition	Error in the carrier mechanism	
 Off	 Flashing (every 0.3 sec, 7 times) Repetition	Error in the stack mechanism	
 Off	 Flashing (every 0.3 sec, 8 times) Repetition	Error in the shutter mechanism	

iii Internal error

Among the errors where bills are not accepted, displays the errors that require repairing or maintenance operation.

Monitor lamp display		Validator state	Action
Green	Red		
 On	 Flashing (every 0.3 sec, 1 time) Repetition	Validator internal error	Turn off the power to the Machine and then turn it on. If the error display remains, replace the Validator.
 On	 Flashing (every 0.3 sec, 2 time) Repetition	Firmware execution error	
 On	 Flashing (every 0.3 sec, 3 time) Repetition	USB-OTG error	
 On	 Flashing (every 0.3 sec, 4 time) Repetition	Update execution error	
 On	 Flashing (every 0.3 sec, 5 time) Repetition	True value data error	
 On	 Flashing (every 0.3 sec, 6 time) Repetition	Firmware error	
 On	 Flashing (every 0.3 sec, 7 time) Repetition	Calibration data error	

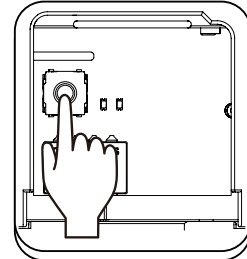
**(14) Displaying the number of bills stored by the anti-string or bill-jam cancellation function**

The memorized data on the number of bills stored by the anti-string or bill-jam cancellation function are displayed.



For details of the conditions for data to be memorized, refer to "Escrow" (page 43) and "Returning operation of the valid bills/bills" (page 44).

- i While the monitor lamps display the inspection information or abnormal state, press and hold the push switch for at least three seconds.

Press and hold for at least three seconds.



- ii Displays the number of bills (up to 10) stored by the anti-string or bill-jam cancellation function, by flashing up to 10 times.

Monitor lamp Green flashing (0.3-sec intervals) 	Monitor lamp Red flashing (0.3-sec intervals) 	Number of bills stored by the anti-string or bill-jam cancellation function
1 time	1 time	1
2 times	2 times	2
3 times	3 times	3
4 times	4 times	4
5 times	5 times	5
6 times	6 times	6
7 times	7 times	7
8 times	8 times	8
9 times	9 times	9
10 times	10 times	10

**Notes:**

- The above number is the total of the anti-string and bill-jam cancellation functions.
- Any inspection information or abnormal state displayed before pressing the push switch will be displayed again when the switch is pressed.
- The data in the memory is cleared if any of the following cases occurs:
  - The Assy Stack Box PU is opened.
  - The Assy Cash Box is removed.
  - The power is turned off.

# 13.// Troubleshooting

In case of any problems, check the items listed in the table below. If the problem persists, the Validator may be faulty.



## CAUTION

Upon completion of checking, perform an operation test (page 21) to confirm that there are no problems. Failure to follow these instructions could result in overlooked errors, leading to malfunction or failure.

Problem	Check	Action
<ul style="list-style-type: none"> <li>• Does not work.</li> <li>• No bills accepted.</li> </ul>	Is the Machine turned on?	Turn on the power to the Machine.
	Is the Harness correctly connected?	Correctly connect it.
	Is there any jammed bill or foreign matter inside the Validator?	Remove the jammed bill or foreign matter by referring to the procedures in "Regular maintenance" (page 31).
	Is there any dirt on the sensor?	Clean the sensor by referring to the procedures in "Regular maintenance" (page 31).
	Is the front lamp turned off or flashing?	Resolve the problem by referring to "Indication of the front lamp" (page 46).
	Is the monitor lamp turned on or flashing?	Resolve the problem by referring to "Monitor lamp" (page 47).
A certain type of bills is not accepted.	Is the type of bill prohibited to be accepted?	Acceptance is prohibited by setting. Cancel the setting if it is unnecessary (page 24).
	Is there any dirt on the sensor?	Clean the sensor by referring to the procedures in "Regular maintenance" (page 31).
Acceptance rates of all coin types are poor.	Is the security set to "High"?	The acceptance rates may be low due to the High Security setting. Cancel the setting if it is unnecessary (page 24).
	Is there any dirt on the sensor?	Clean the sensor by referring to the procedures in "Regular maintenance" (page 31).
Acceptance rate of a certain coin type is poor.	Is there any dirt on the sensor?	Clean the sensor by referring to the procedures in "Regular maintenance" (page 31).

Problem	Check	Action
<ul style="list-style-type: none"> <li>● All bills are fed inside, but returned.</li> <li>● Certain types of bills are carried inside once, but returned.</li> </ul>	Is there any dirt on the sensor?	Clean the sensor by referring to the procedures in "Regular maintenance" (page 31).
Bills are jammed.	Is there any jammed bill or dirt inside the Validator?	Clean the sensor by referring to the procedures in "Regular maintenance" (page 31).
	Is the jammed bill wet, creased, torn or folded, or is any foreign matter adhered to the bill?	Do not use any wet, creased, torn or folded bills, or bills with any foreign matter adhered to them.
	Is the Validator properly installed on the Machine?	Properly install it (page 18).

# 14.// Product life

## (1) Scope

This Product Life applies to the Bill Validator (Product) described in this manual.

## (2) Warranty

### i Period

The warranty period of the Product is the period starting from the production month and year\*1 specified separately.

\*1: The production month is displayed on the model name plate

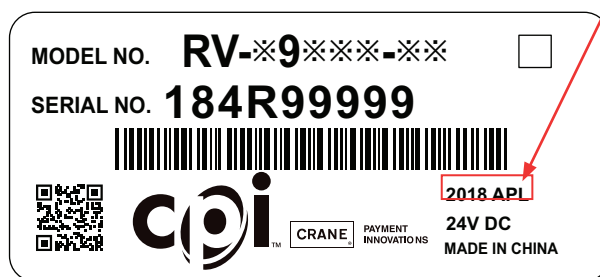
From left:

Four digits: Production year

Three digits: Production month

Production month and year

Example: Manufactured in April, 2018



### ii Coverage

During the warranty period, Crane Payment Innovations, Inc will repair any defective Products at no charge, provided that the Product has been used in accordance with the operational requirements, such as power supply voltage, operating temperature range and usage precautions, as stipulated in the Specifications.

Crane Payment Innovations, Inc shall not repair defective Products free of charge in the following cases:

- The Product was mistreated (for example, dropped) during transport after delivery.
- The Product was subject to an inappropriate environment (for example, excessively hot, humid or dusty) during storage after delivery.
- The machine equipped with the Product was faulty.
- The Product has been modified.
- The Product became defective due to an Act of God.

Note that the above-mentioned repairs, whether free or charged, shall be limited to those Products that are transported to the place designated by us for repair or return.

## (3) Durable life

### i Durable life

Durable life refers to the number of operations during which the Product is capable of maintaining its normal performance and functions by performing inspections and cleaning as described in the operations manual or the like, as well as by replacing the consumable parts described later.

The durable life of the Product shall be five years from the production month\*2 or 350,000 operations\*3, whichever comes first.

Note that after expiration of the product warranty period, consumable parts and replacement service shall be provided at cost to the user.

\*2: Durable life of five years refers to the number of years when the product is assumed to reach the durable life of 350,000 operations, with around 180 operations a day (approximately 130 transactions a day, 70% of them are bills, two bills per transaction), as a guideline.

\*3: One operation is considered to be: a bill is inserted and stacked, or inserted and returned.

ii Consumables parts

Consumable parts refer to parts that are to be replaced with new parts for maintaining the normal performance and functions during the durable life of the product.

Consumables parts	Periodic replacement*4		Place where replacement is conducted
	Years (months)	Number of operations	
Carrier unit rubber rollers	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Carrier unit motor	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Carrier unit gears	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Carrier unit bearings	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Path width switching motor	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Path width switching gears	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Path width switching link part	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Storing unit motor	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Storing unit gears	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc
Storing unit bearings	Every 1.7 years (20 months)	Every 117,000 operations	Designated by Crane Payment Innovations, Inc

\*4: Periodic replacement refers to the replacements that are to be conducted twice during the durable life, with around 180 operations a day as a guideline.

(4) Service parts

Service parts refer to the parts that are necessary for inspecting or repairing the Product, including the consumables parts.

Service parts are available for seven years after discontinuation of production, provided that equivalents to the original parts are included in such parts.

(5) Limitation of liability

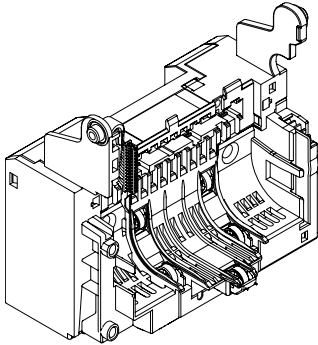
The durable life of the machine equipped with the Product should be discussed with the manufacturer of the machine in question.

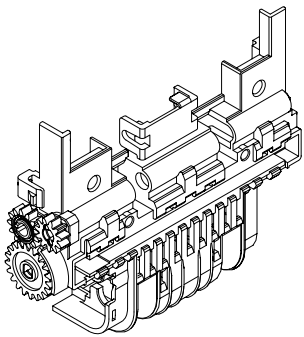
Responsibilities of Crane Payment Innovations, Inc are limited to those described in this Product Life, and we accept no responsibilities for any others, including but not limited to lost profits or installation costs.

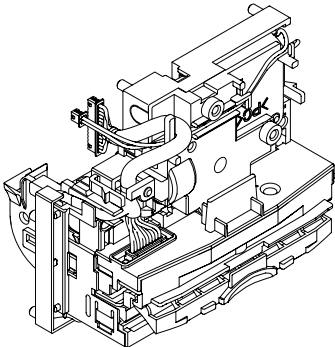
(6) Others

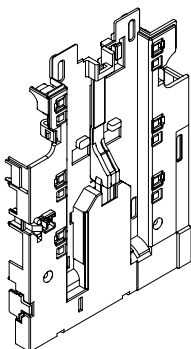
The consumables and service parts of the Product shall be normally replaced as a unit.  
As for consumables parts, the following units should be replaced.

Consumables Replacement Units \*5

	<b>Carrier Drive 1 Assy</b>
	Durable life: 100,000 operations
	Timing of replacement: 1.7 years (approx. 20 months)
	Place where replacement is conducted: Place designated by Crane Payment Innovations, Inc

	<b>Carrier Drive 2 Assy</b>
	Durable life: 100,000 operations
	Timing of replacement: 1.7 years (approx. 20 months)
	Place where replacement is conducted: Place designated by Crane Payment Innovations, Inc

	<b>Width Switching Drive Assy</b>
	Durable life: 100,000 operations
	Timing of replacement: 1.7 years (approx. 20 months)
	Place where replacement is conducted: Place designated by Crane Payment Innovations, Inc

	<b>Storing Unit Drive Assy</b>
	Durable life: 100,000 operations
	Timing of replacement: 1.7 years (approx. 20 months)
	Place where replacement is conducted: Place designated by Crane Payment Innovations, Inc

\*5: Timing of replacement of 1.7 years is calculated based on the assumed number of operations per day, and is not a recommended value.

# 15.// Signal conditions of connection terminal and wiring diagram

## (1) Terminal Connection Signal Conditions

### ▲RV- \*9\*\*M- \*\*

Compliant with the MDB communications system

□ 6P-RECEPTACLE HOUSING	: MOLEX 5557-06R
□ CONTACT	: MOLEX 5556T
□ 6P-PLUG HOUSING	: MOLEX 5559-06P
□ CONTACT	: Molex 5558T

Terminal No.	Signal name	Input/Output	Signal conditions
1	Power supply	Input	Continuously supplies the plus side of 24 VDC
2	Power supply	Input	Continuously supplies the minus side of 24 VDC
3	N.C.	—	—
4	Controller receive	Output	Transmit data output signal (Bit Hi Active)
5	Controller transmit	Input	Receive data input signal (Bit Low Active)
6	Common	Input	Common line for transmit and receive

Note: The input/output is to/from the Validator.

### ▲RV \*9\*\*C- \*\*

Compliant with the CCNET protocol

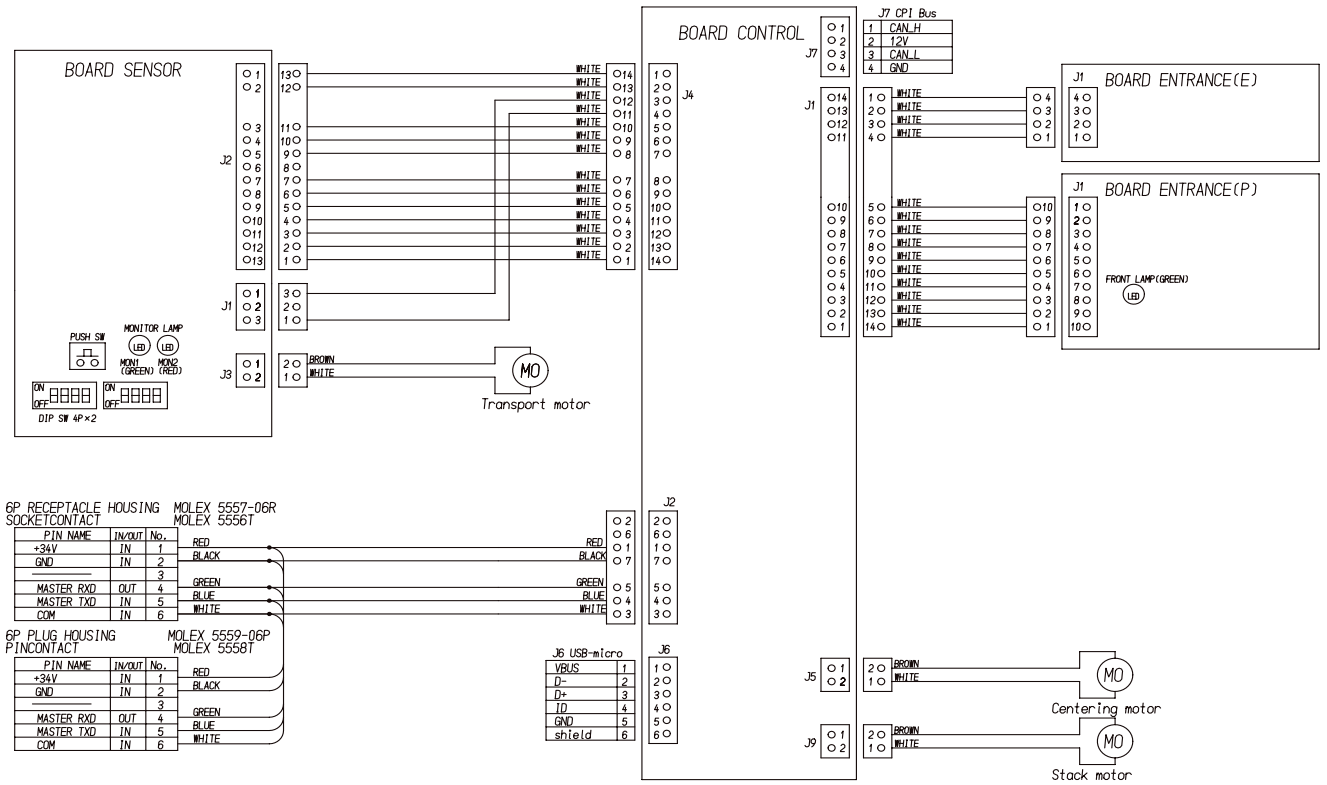
□ 6P-HOUSING	: JST ELR-06V
□ CONTACT	: JST SLN-01T-P1.3E

Terminal No.	Symbol	Input/Output	Description
1	+12 V	Input	Power supply
2	NC	—	—
3	OUT	—	Standby: L input Data receiving
4	IN	Output	Standby: L output Data transmitting
5	GND	Input	Power supply
6	SIGNAL_GND	Input	Power supply

Note: The input/output is to/from the Validator.

## (2) Wiring diagram

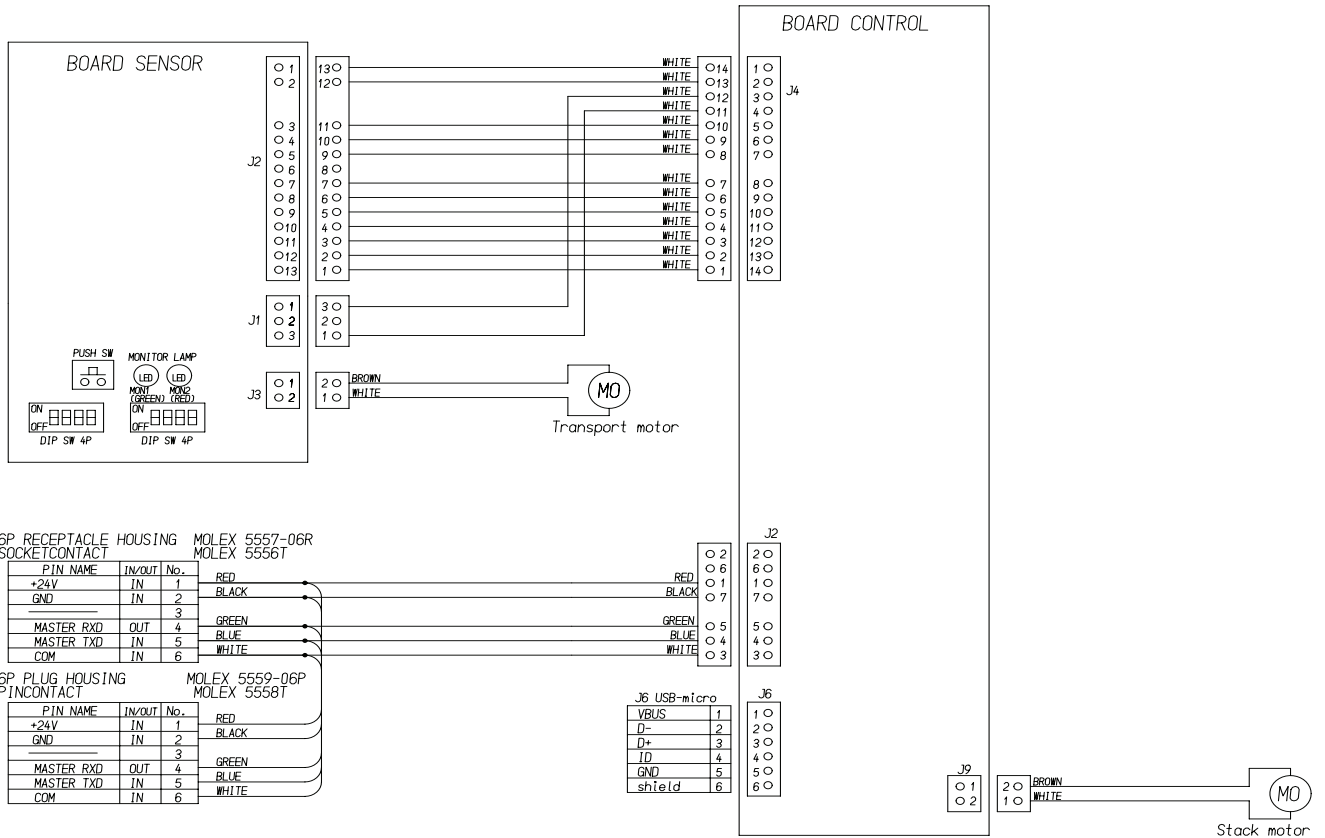
### ▲RV-M9\*\*M- \*\*



Note:

1. Different colors of wire or cable may be used.

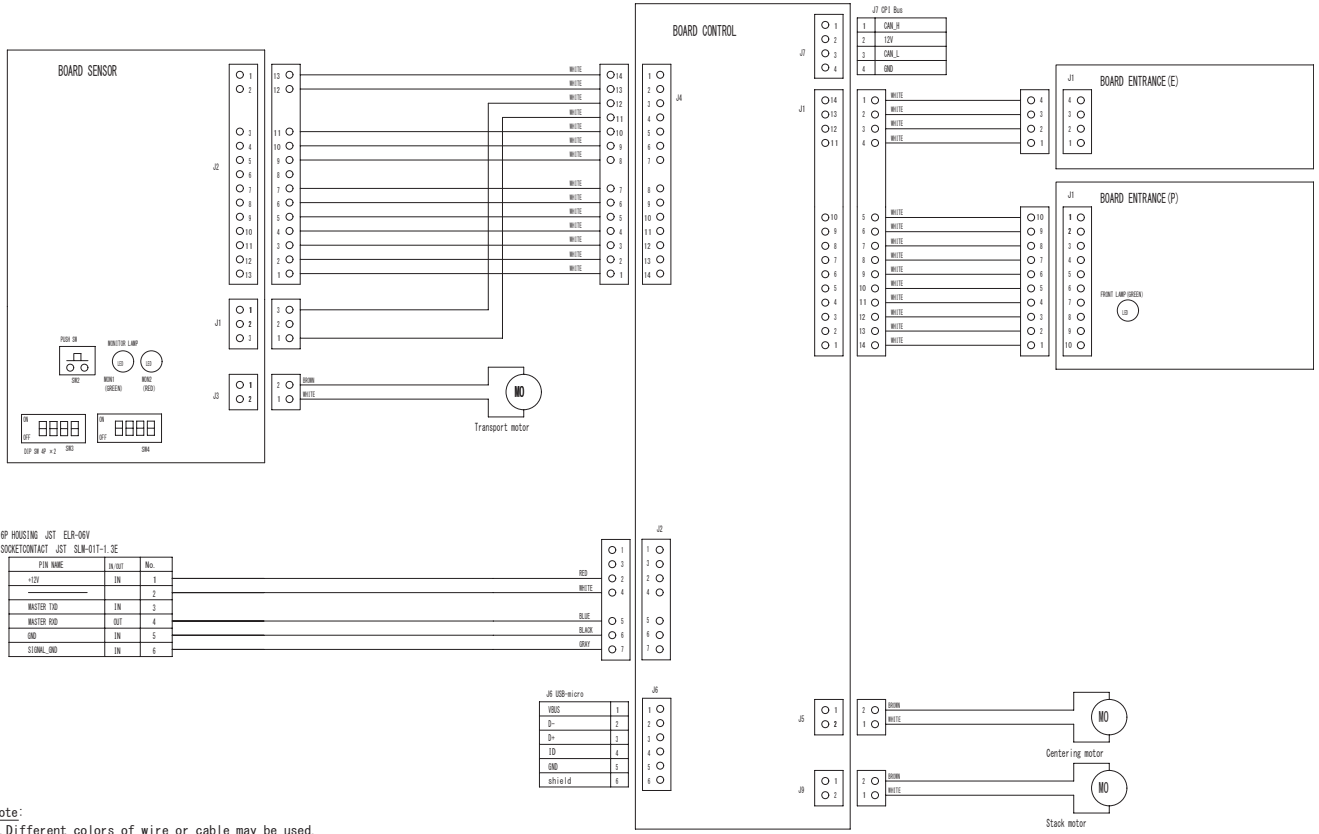
### ▲RV-9\*\*M- \*\*



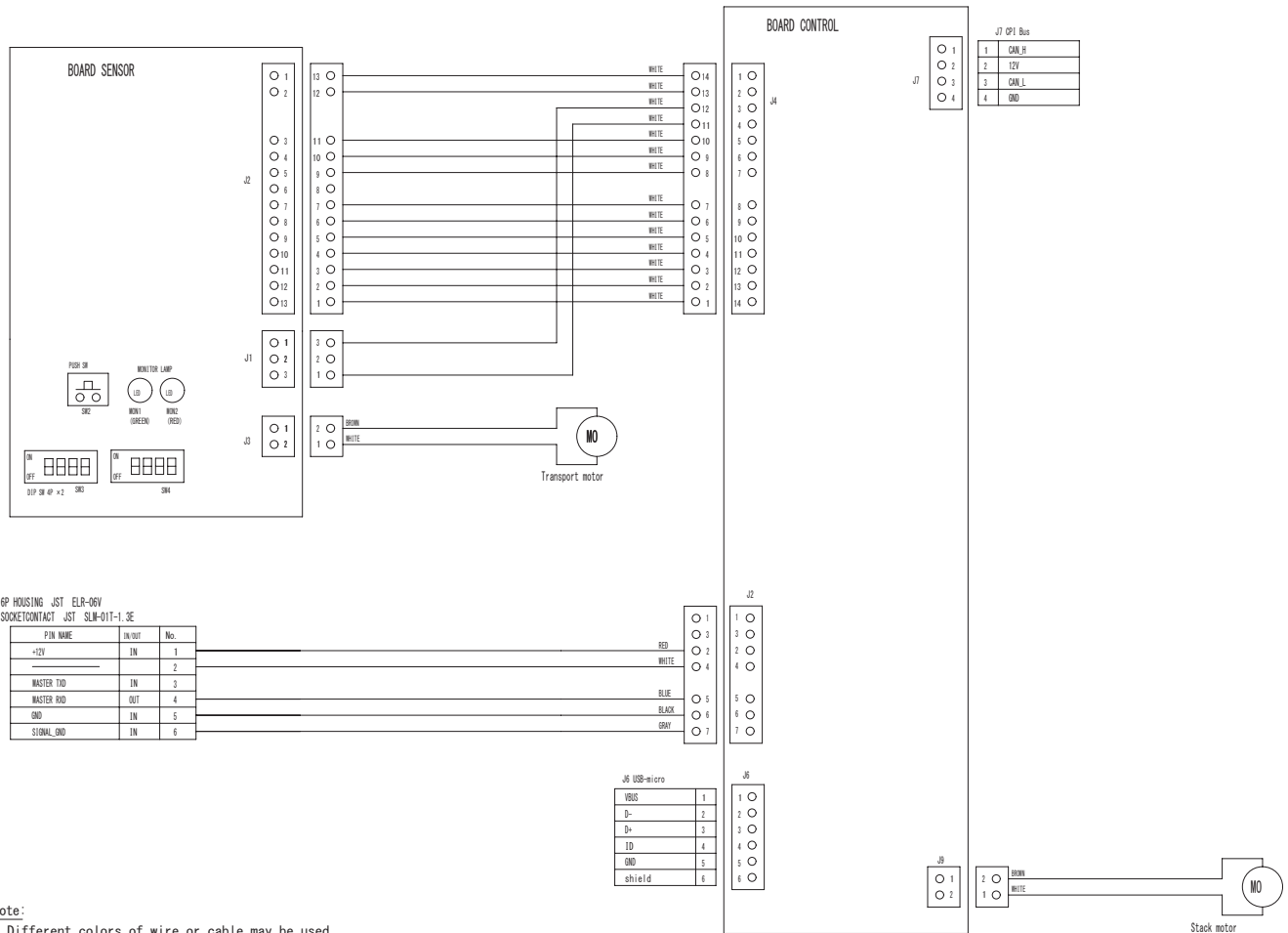
Note:

1. Different colors of wire or cable may be used.

# ▲RV-M9\*\*C- \*\*

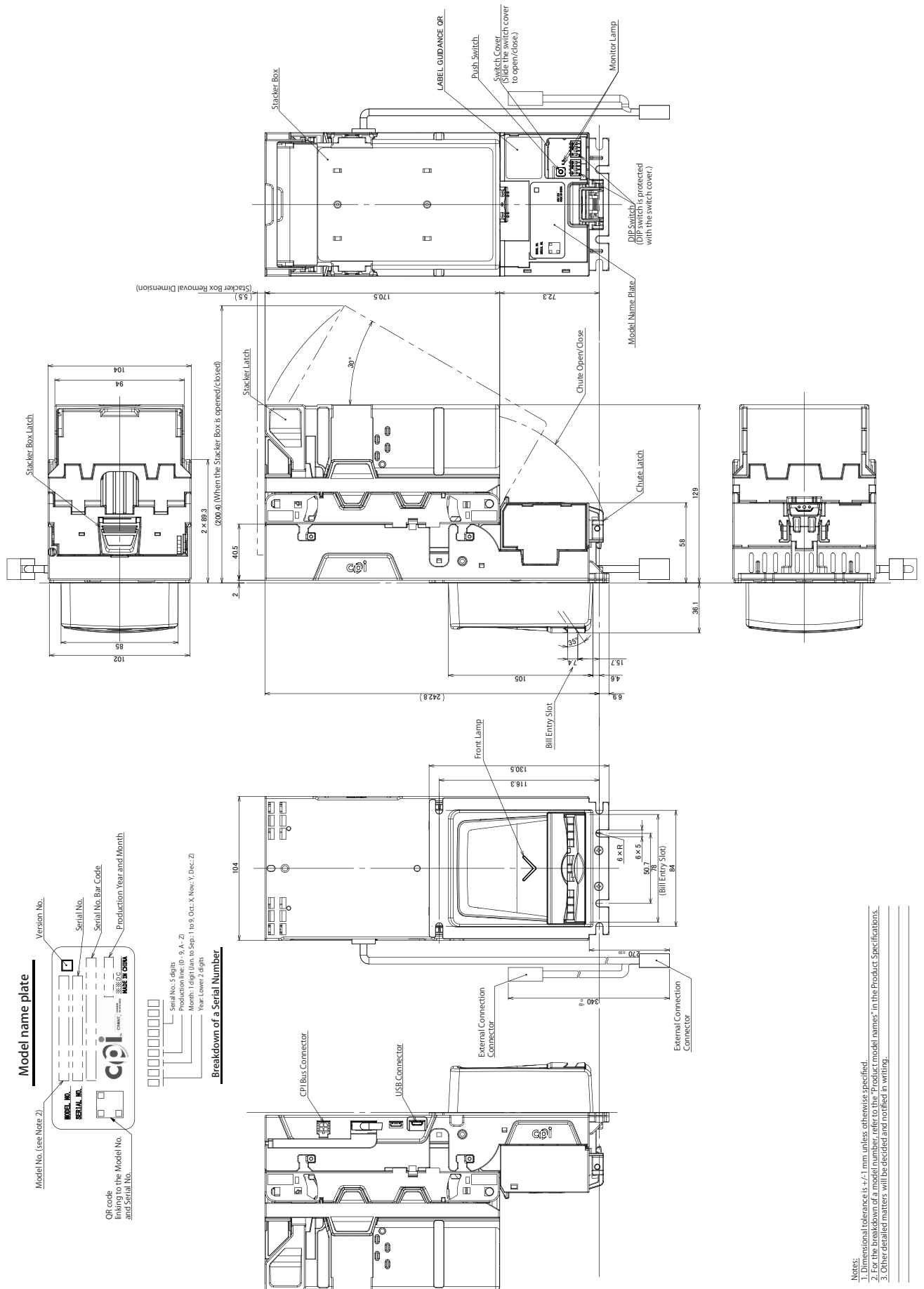


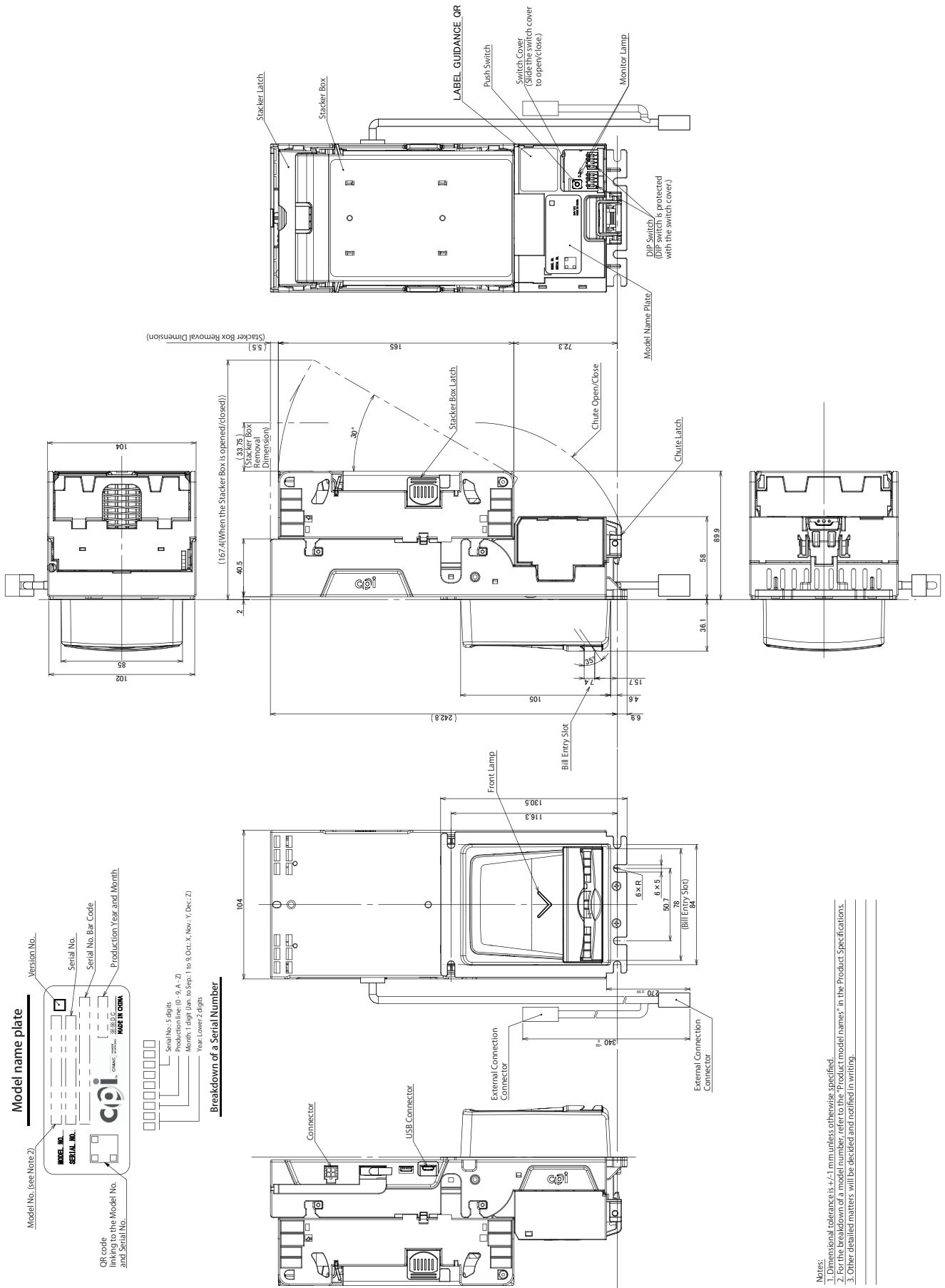
# ▲RV-9\*\*C- \*\*



# 16. External dimensions

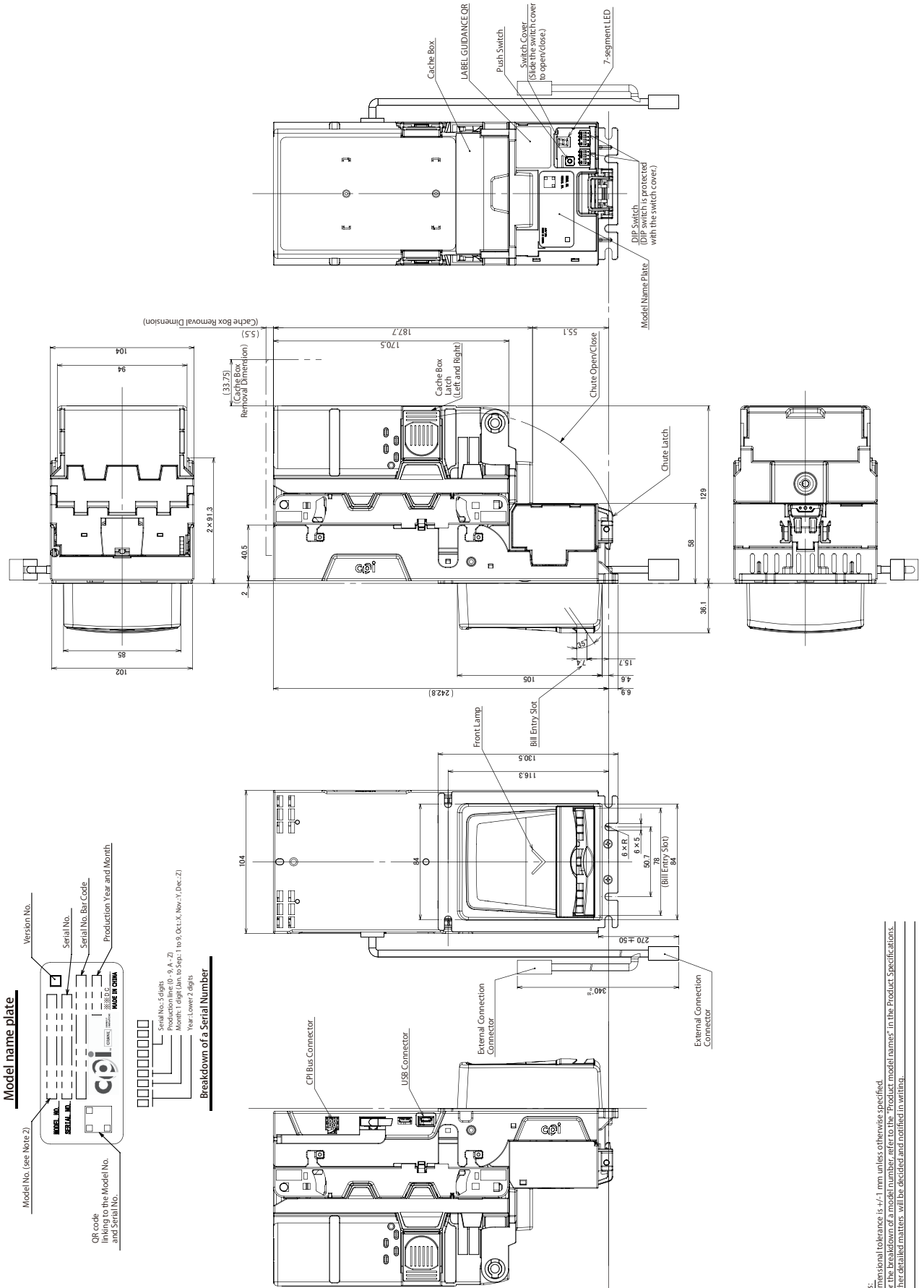
▲RV-900\*-\*\*





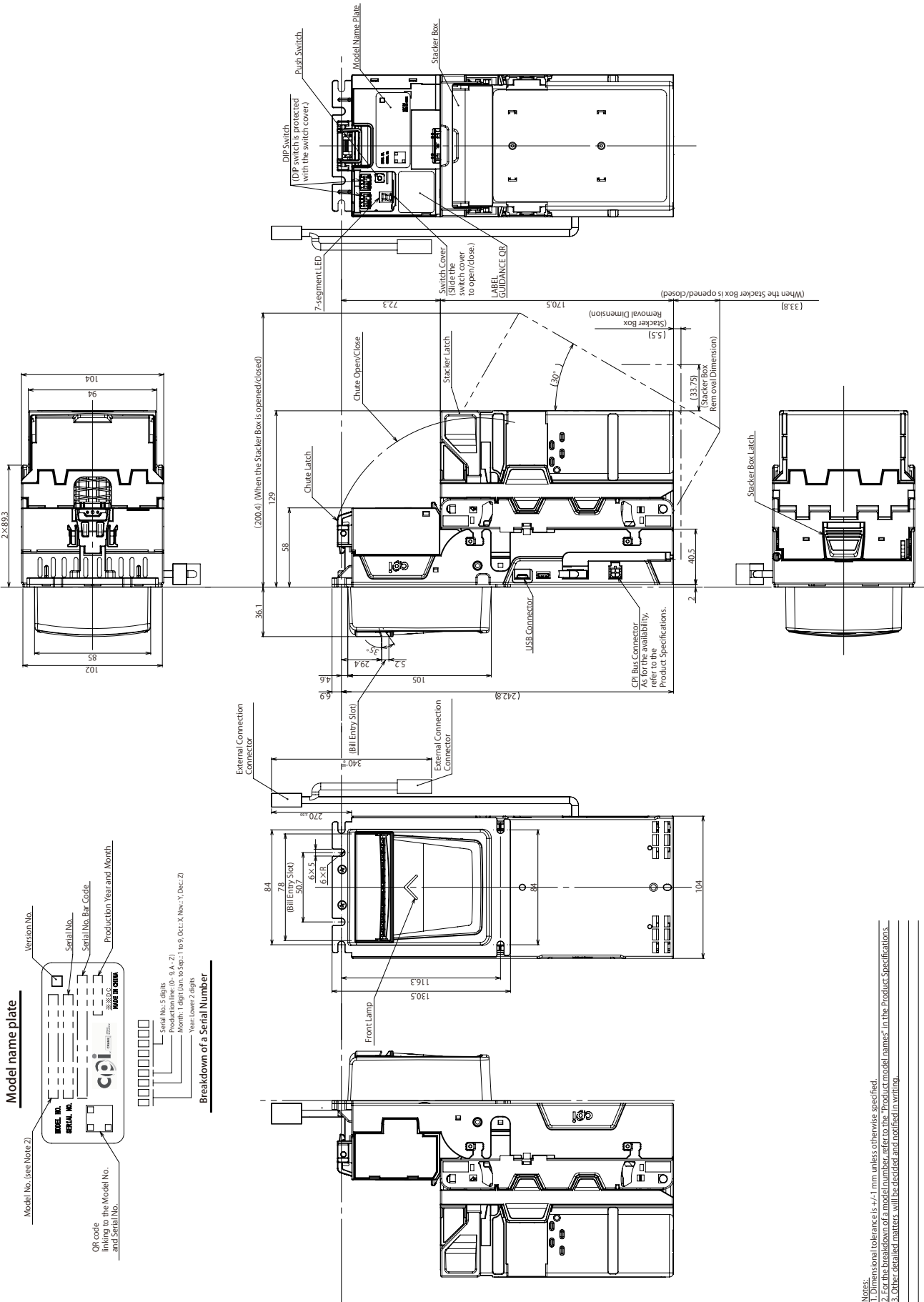
Notes:

1. Dimensional tolerance is  $\pm 1$  mm unless otherwise specified.
2. For the breakdown of a model number, refer to the "Product model names" in the Product Specifications.
3. Other detailed matters will be decided and notified in writing.



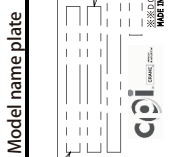
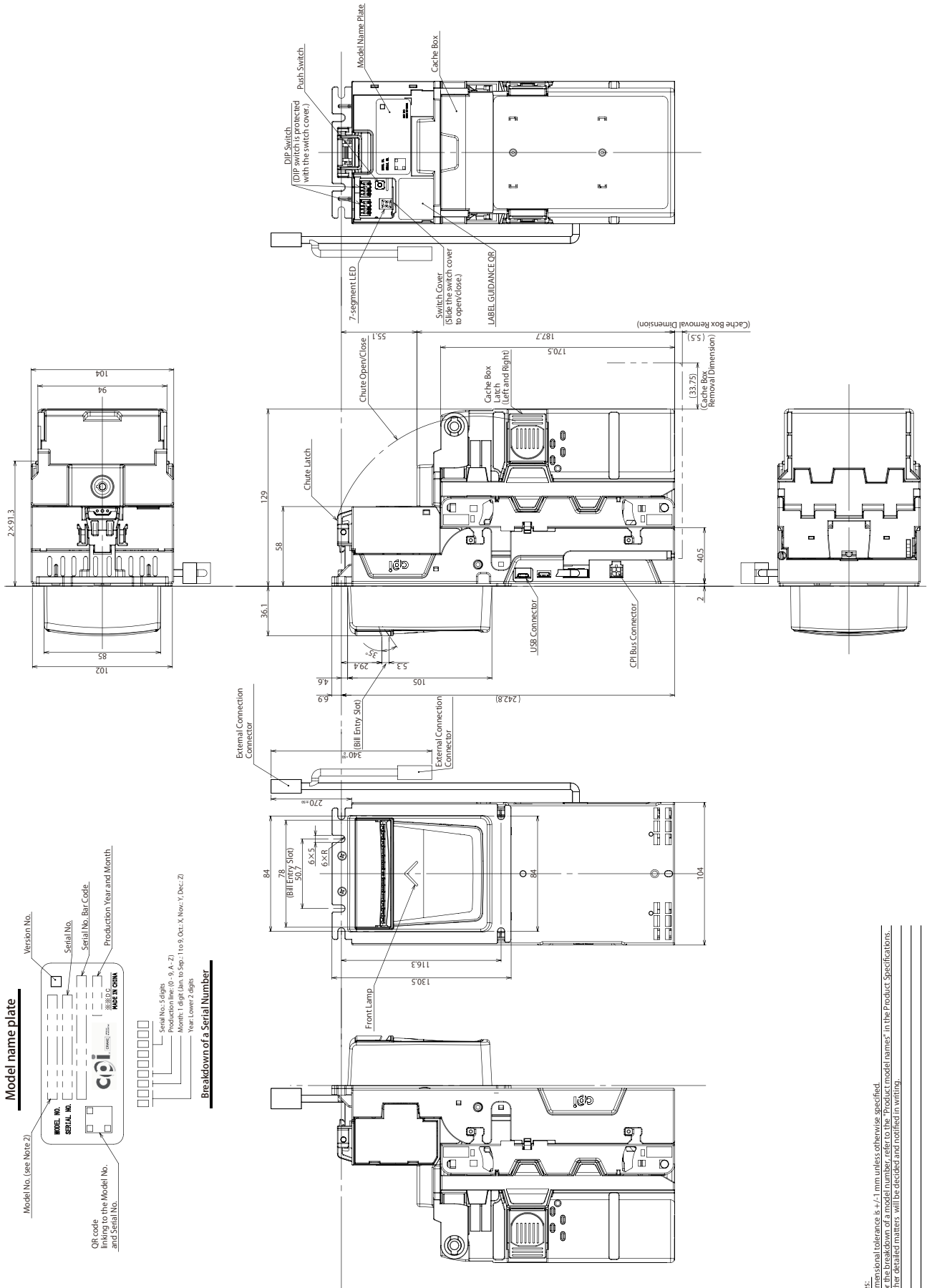
Notes:

1. Dimensional tolerance is  $\pm 0.1$  mm unless otherwise specified.
2. For the breakdown of a model number, refer to the "Product model names" in the Product Specifications.
3. Other detailed matters will be decided and notified in writing.



Notes:

1. Dimensional tolerance is ±0.1 mm unless otherwise specified.
2. For the detailed information, refer to the product model names in the Product Specifications.
3. Other detailed drawings will be created and issued in writing.

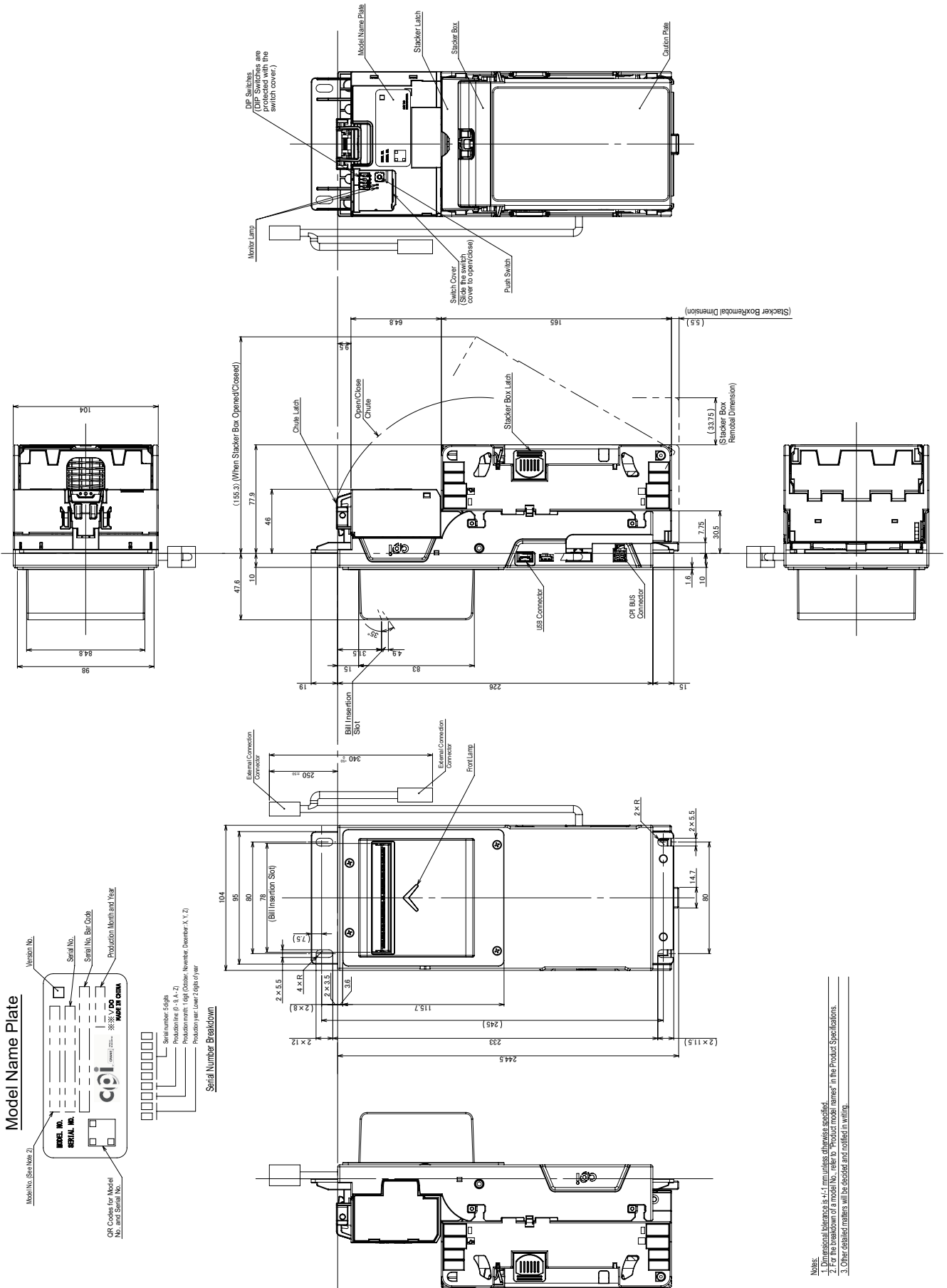


Model No. (see Note 2)  
 Model No.  
 SERIAL No.  
 Version No.  
 Serial No.  
 Production Year and Month  
 QR code linking to the Model No. and Serial No.

Serial No.: 5 digits  
 Production line: (0-9, A-Z)  
 Month: 1 digit (Jan. to Sep.: 1 to 9; Oct.: X; Nov.: Y; Dec.: Z)  
 Year: Lower 2 digits

**Breakdown of a Serial Number**

- Notes:
1. Dimensional tolerance is  $\pm 1$  mm unless otherwise specified.
  2. For the breakdown of a model number, refer to the "Product model names" in the Product Specifications.
  3. Other detailed matters will be circled and noted in writing.



Notes:

1. Dimensional tolerances are ±0.1 mm unless otherwise specified.
2. For the breakdown of a model No. refer to "Product model names" in the Product Specifications.
3. Other detailed matters will be decided and notified in writing.

#### Request to our customers

Uncontrolled distribution of the Bill Validator could become a major cause of counterfeit bills. When disposing of your Machine, destroy the bill validating function by yourself, or ask us to do it, before properly disposing of it.

**RV-M900 series RV-900 series  
INSTRUCTION MANUAL**

1st edition, March 1, 2020

Crane Payment Innovations, Inc.

