



Change Machine

Installation Guide



EX-1000
(Without LCM)



EX-1500
(With LCM)

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1. Introduction

1-1. Overview

EX-1000(Without LCM) / EX-1500(With LCM) change banknotes into one type of coins or tokens for almost any type of application. Sturdy and compact change machine for indoor use; equip with innovation Bill Acceptor(XBA) and Mini Hopper(MH) to offer superior performance in any situation. EX-1000(Without LCM) / EX-1500(With LCM) is simply an ideal solution fits your need.

1-2. Features

- High performance, capacious bill acceptor and hopper .
- Removable, modular design for easy maintenance.
- Easy coin refilling.
- Automatic coin-clear function.
- LCD-display shows backward counting numbers while dispensing.
- Memorize unpaid number of coins and resume dispensing after refill.
- High security through solid safety lock.

2. Specifications

2-1. Changer Machine

Electrical

Power Source AC110 \pm 20%
AC220 \pm 20%
47~63Hz
(Customer select specifications)

Operation Environment Operation Temperature: 5°C~50°C
Storage Temperature: -20°C~70°C
Humidity: 30%~85%RH
(no condensation)

Mechanical

Outline Dimension EX-1000(Without LCM) Refer to page.8
EX-1500(With LCM) Refer to page.9

Weight Approx. 21kg

2-2. Mini Hopper

General

Dispensing Speed	6~8 coin/second
Interface	ICT Mode Red Flag
Counting Method	Dual Sensors

Electrical

Power Source	24V DC(22.8~25.2V DC)
Operation Consumption	Standby: 0.05A, 1.2W Not loaded: 0.45A, 10.8W Maximum: 2.5A, 60W
Operation Environment	Operation Temperature: 5°C~50°C Storage Temperature: -30°C~70°C Humidity: 30%~85%RH (no condensation)

Mechanical

Coin Capacity	Approx. 1000 coins
Outline Dimension	Refer to page.10
Weight	Approx. 0.8kg

2-3. Bill Acceptor-XBA/XBA-mini

Acceptance Rate 98% or greater

Note: The incomplete bills such as extremely dirty, wet, broken or wrinkled ones are excluded.

Bill insertion Four-way acceptable

Interface ICT Protocol

Transaction Speed Approx. 2.5 seconds to stack

Power Source 12V DC±10%
24V DC±10%

Operation Consumption Standby: 0.15A, 1.8W
Operation: 1.0A, 12W
Maximum: 2A, 24W
Power Saving Mode- Mode 1: 50µA
Mode 2: 15µA

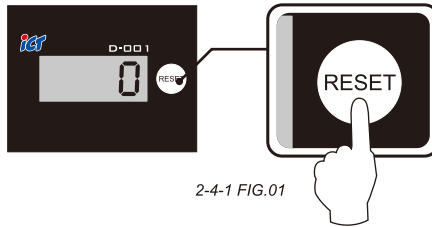
Outline Dimension XBA Refer to page.11
XBA-mini Refer to page. 12

2-4. Meter

Weight	Approx. 0.73 kg
Power	DC+12V
Environment Range	Operating temperature: 0°C~+60°C Storage temperature: -20°C~+70°C

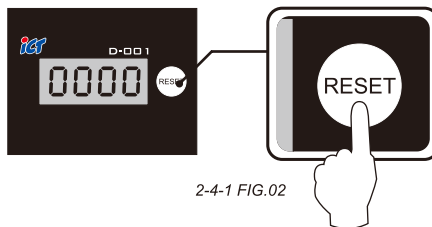
2-4-1. Meter Setting

1. Press and hold the reset key for 3 seconds to reset the counter back to "0".



2-4-1 FIG.01

2. If more than 4 digits are stored on the counter, press the reset key to display the next digits.



2-4-1 FIG.02

3. Packing List

Main

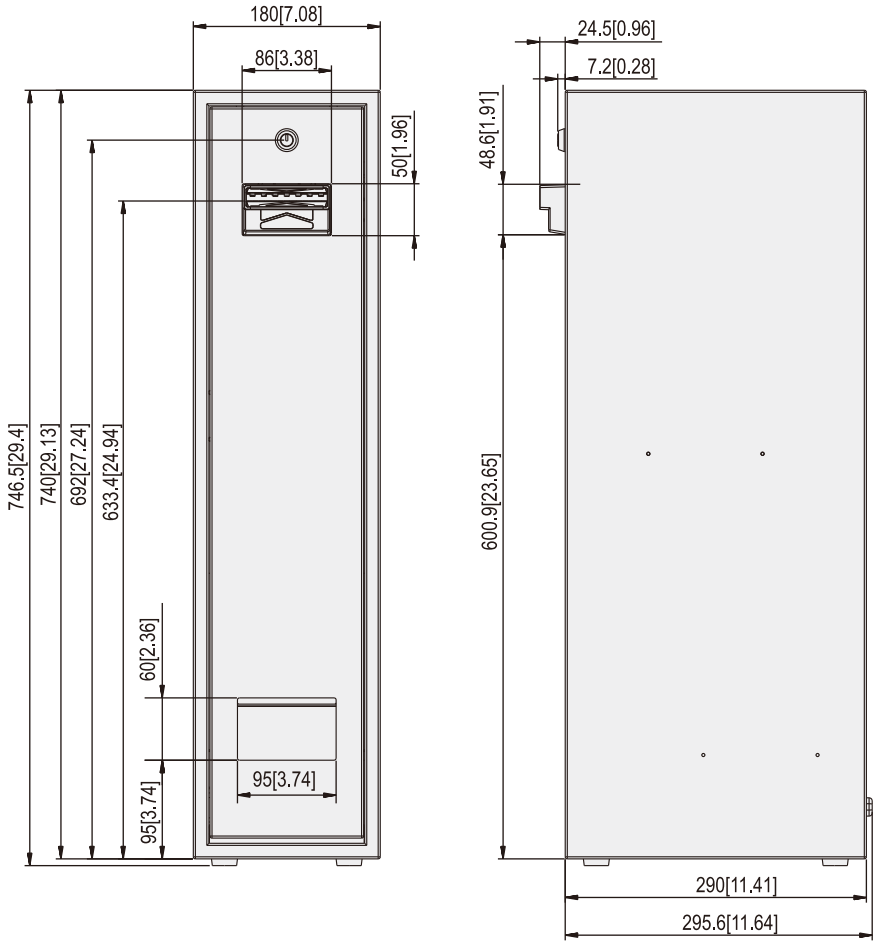
EX-1000(Without LCM) /EX-1500(With LCM)
(Includes Bill Acceptor and Mini Hopper inside)

Accessory

EX-1000(Without LCM) /EX-1500(With LCM)
Installation Guide.
Two pairs of keys.
Mini Hopper Installation Guide.
Bill Acceptor Installation Guide.
Dip Switch Setting Guide.

4. Dimension

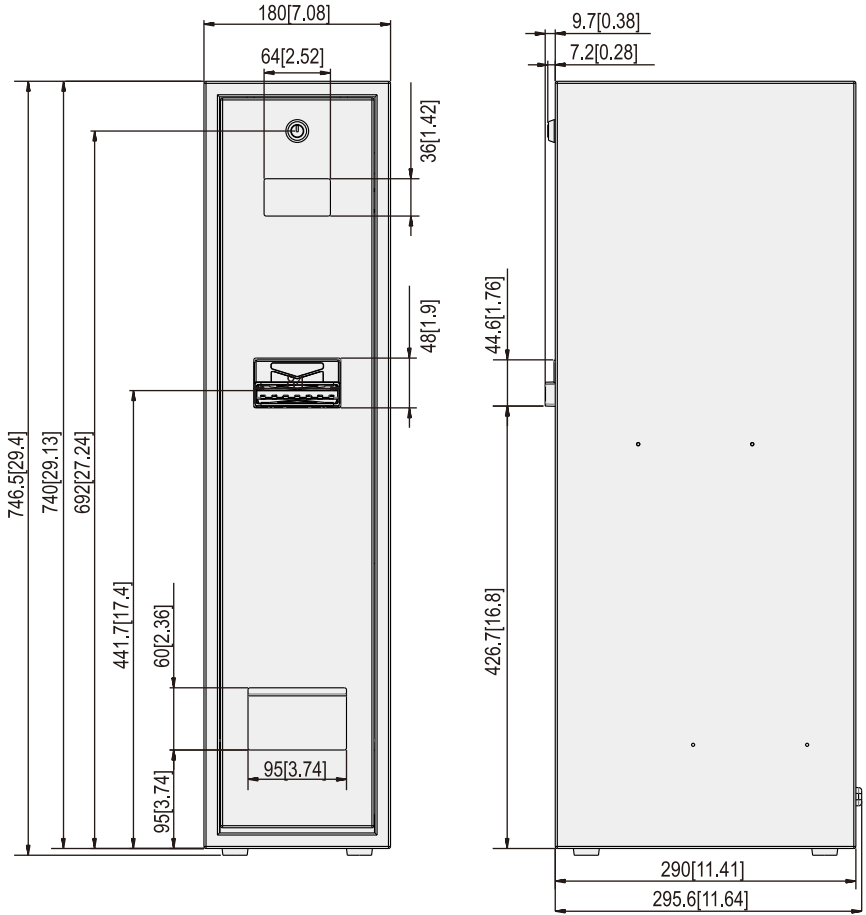
4-1. EX-1000(Without LCM)



Unit : mm [inch]

4-1 FIG.01

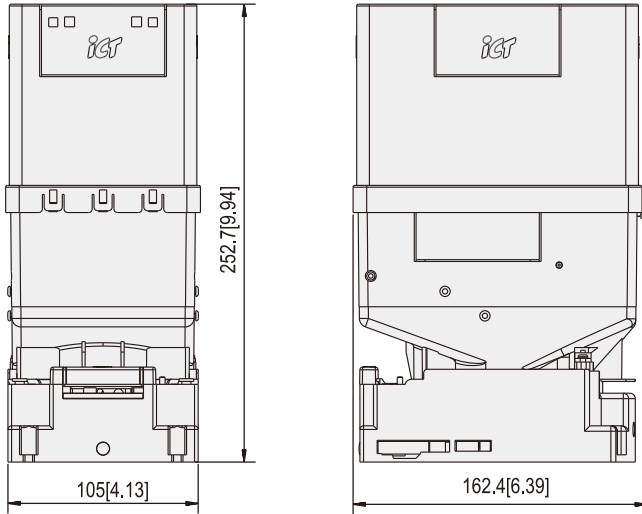
4-2. EX-1500(With LCM)



Unit : mm [inch]

4-2 FIG.01

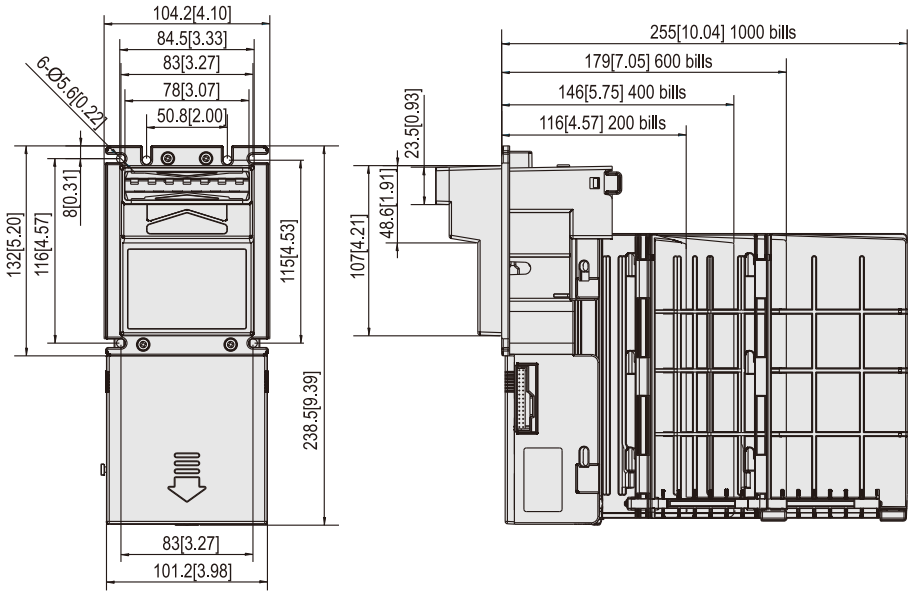
4-3. Mini Hopper



Unit : mm [inch]

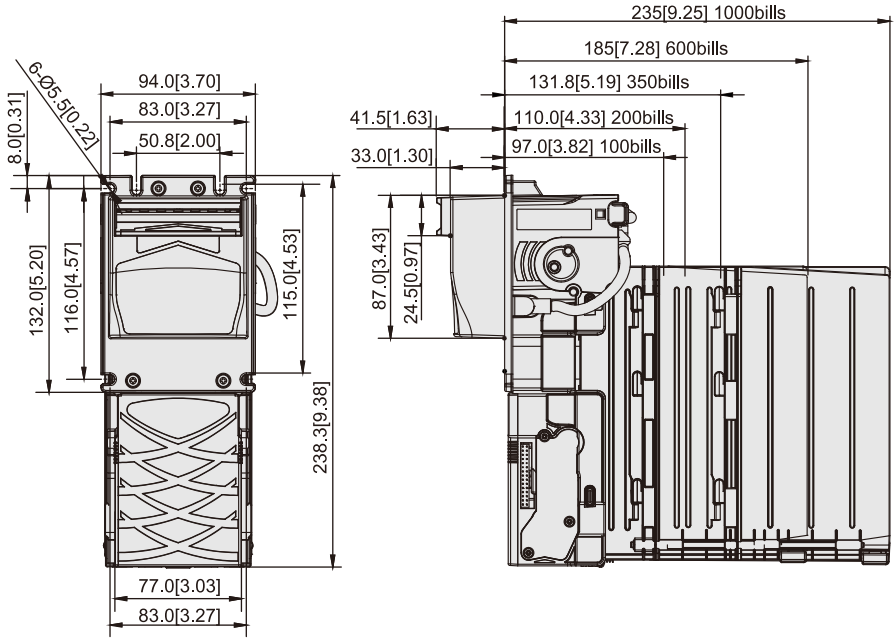
4-3 FIG.01

4-4. Bill Acceptor (XBA)



Unit : mm [inch]
4-4 FIG.01

4-5. Bill Acceptor (XBA-Mini)



Unit : mm [inch]

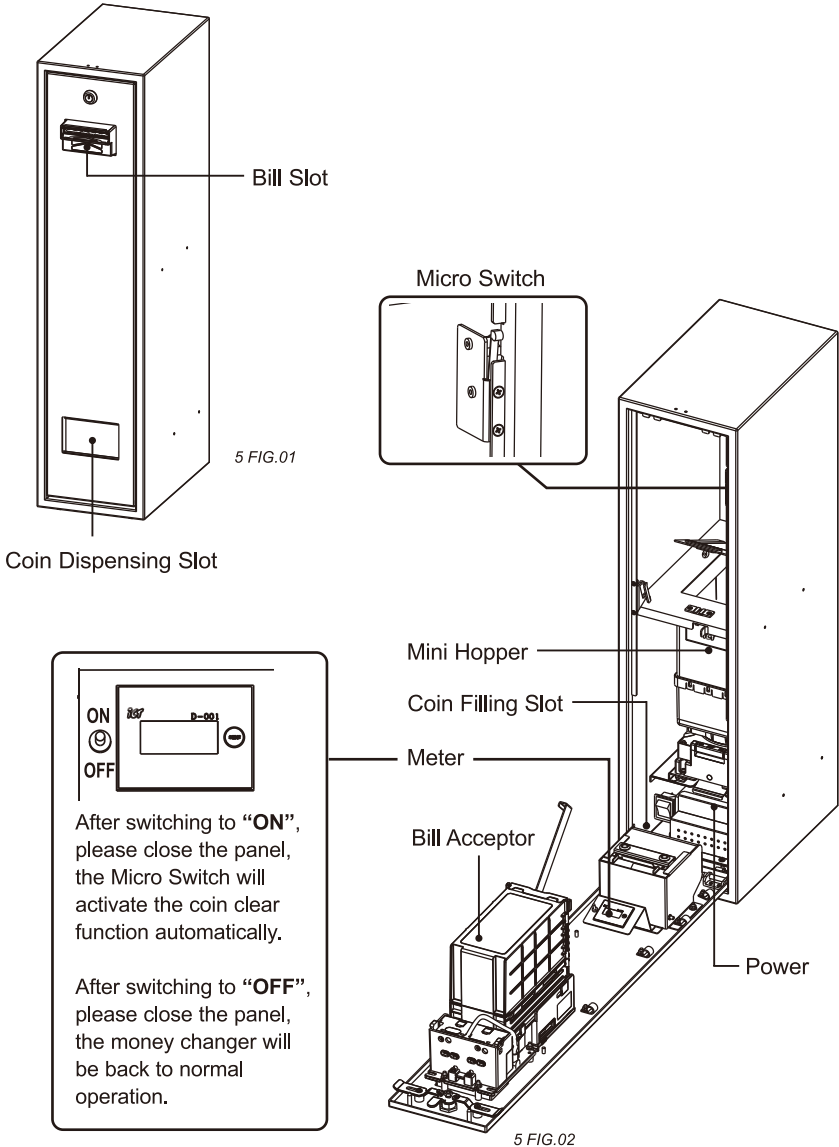
4-5 FIG.01

EX-1000 (Without LCM)

Contents

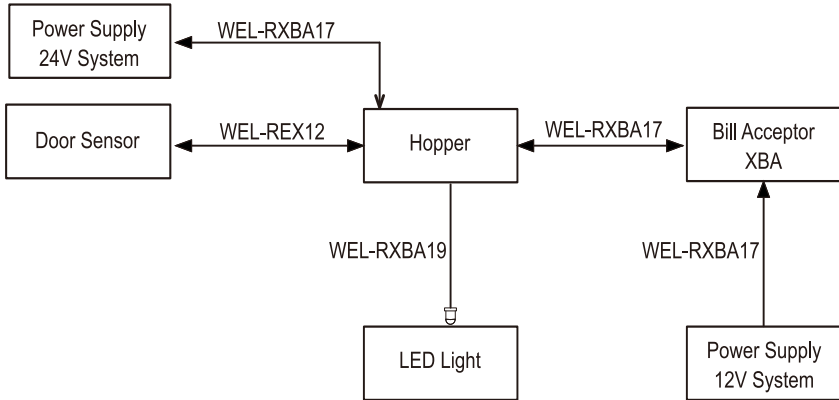
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5. Component names



6. Installation

6-1. For XBA Connection



6-2. DIP Switch Setting

6-2-1. Bill Acceptor

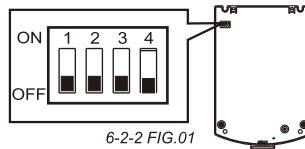
Refer to bill acceptor dip switch setting and set it to ICT002U · ICT004U or ICT104U interface.

6-2-2. Mini Hopper

The DIP switches are located at the bottom of Mini Hopper.

SW1	SW2	SW3	SW4
OFF	OFF	OFF	OFF

6-2-2 TABLE 01



6-2-2 FIG.01

6-3. Bill Acceptor and Mini Hopper firmware download

6-3-1. Bill Acceptor Download

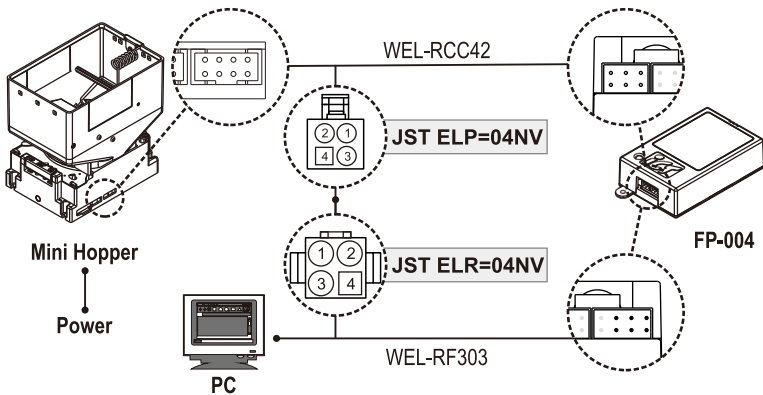
Base on different currency , please install corresponding firmware.
Please refer to the service manual.

6-3-2. Mini Hopper Download

Please refer to the service manual.

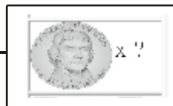
6-4. Mini Hopper Setting

Step 1. Connection

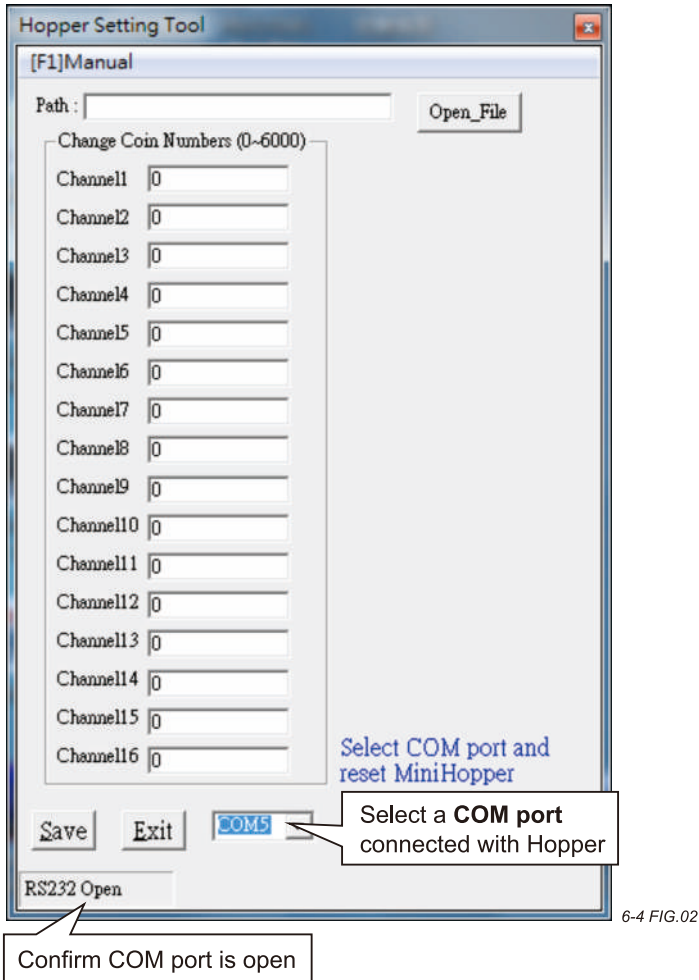


Step 2.

Execute "Hopper Kit" to setup currency.



6-4 FIG.01

Step 3. Select COM port .

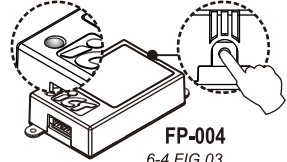
6-4 FIG.02

Step 4. Apply power to Hopper and FP-004.

Step 5. Press FP-004 control button to switch FP-004 into “**Device Mode**”.

Flashes		Mode	Status
Yellow	ON	Idling	PC to BA Test Mode

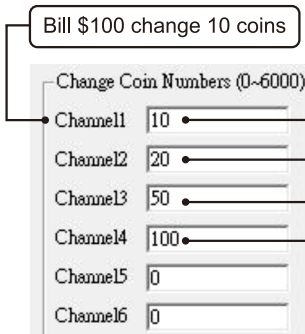
6-4 TABLE 01



6-4 FIG.03

Step 6. After FP-004 switch into “**PC TO BA Test Mode**” then press control button for 3 seconds to reset Hopper.

Step 7. There will be status as “**Enter Data(Do not Rest Hopper)**” shows at the bottom of Hopper Setting Tool if you enter the tool normally. In the mean time, the LED of Mini Hopper will lights orange. At this moment, please do not reset or disconnect the Mini Hopper. Refer to the “**Currency Assign Data**” section of bill acceptor dip switch and set number of coins to be exchange.



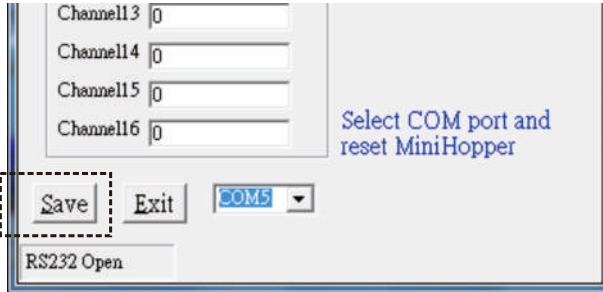
6-4 FIG.04

6-4 FIG.04-1

Interface Bill value	Currency Assign Data				
	ICT002U	Parallel A3	ICT104V	Pulse	MDB
BV1	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100
BV2	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200
BV3	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500
BV4	\$ 1000	\$ 1000	\$ 1000	\$ 1000	\$ 1000

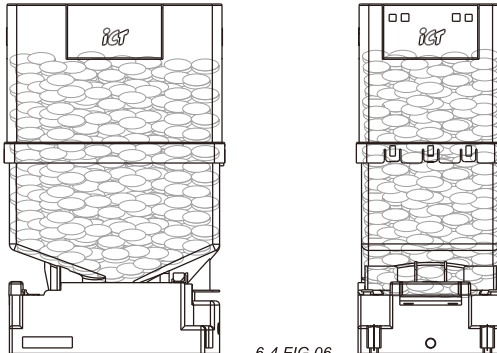
For example: Suppose the exchange rate is 10.
 First of all, find the dip switch setting for BA.
 Then set change coin(s) for corresponding channel.
 BV1→Channel 1
 BV2→Channel 2
 ⋮
 BV16→Channel 16

Change the coin numbers on each channel, and then click on the “**Save**” button.



6-4 FIG.05

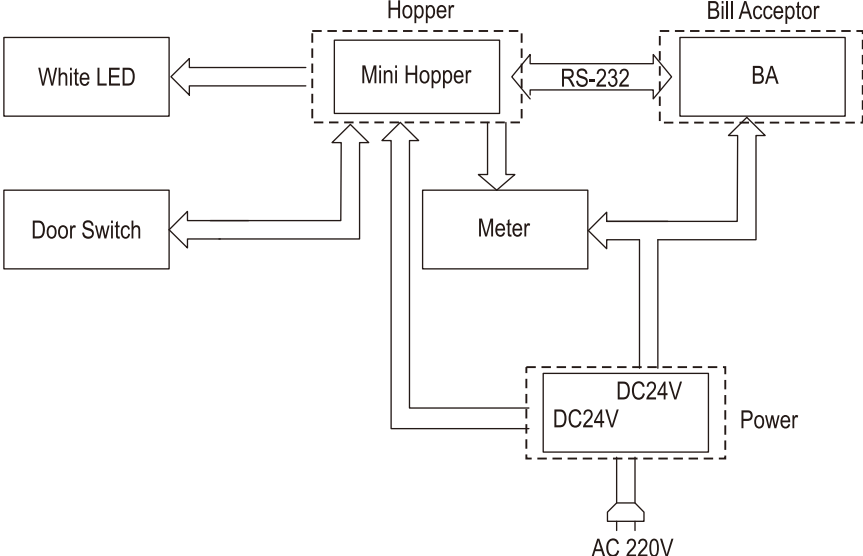
Step 8. Put coins into coin box and the level of coins must be higher than the low level sensor.



6-4 FIG.06

Step 9. Power off and remove FP-004.

6-5. Hardware Functional Diagram

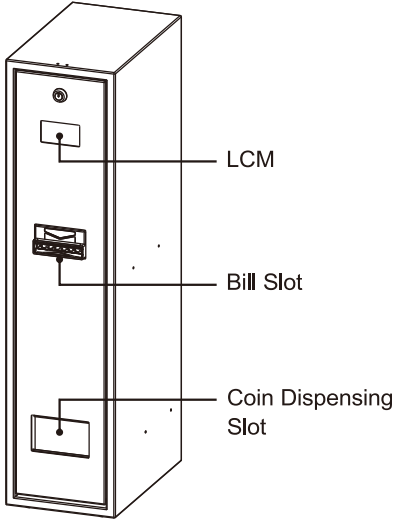


EX-1500 (With LCM)

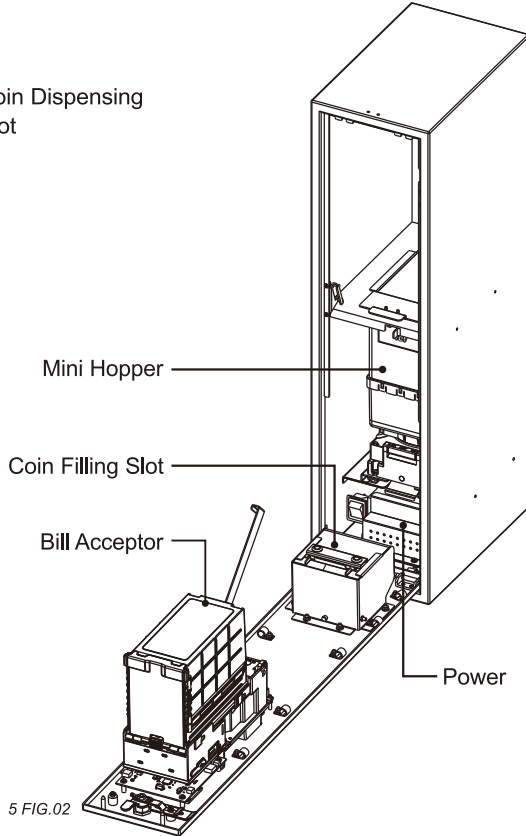
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5. Component names



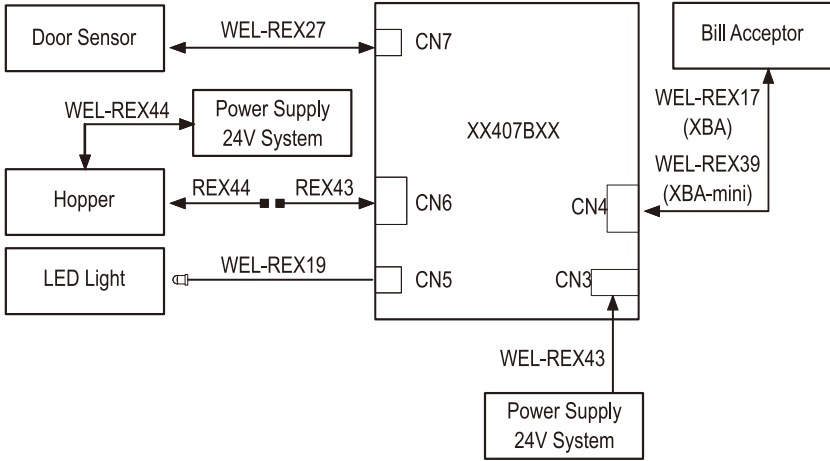
5 FIG.01



5 FIG.02

6. Installation

6-1. For XBA/ XBA-mini Connection



6-2. DIP Switch Setting

6-2-1. Bill Acceptor

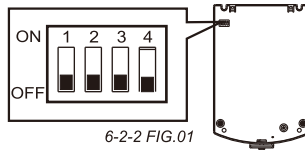
Refer to bill acceptor dip switch setting and set it to ICT002U , ICT004U or ICT104U interface.

6-2-2. Mini Hopper

The DIP switches are located at the bottom of Mini Hopper.

SW1	SW2	SW3	SW4
OFF	OFF	OFF	OFF

6-2-2 TABLE 01



6-2-2 FIG.01

6-3. Bill Acceptor and Mini Hopper firmware download

6-3-1. Bill Acceptor Download

Base on different currency , please install corresponding firmware.
Please refer to the service manual.

6-3-2. Mini Hopper Download

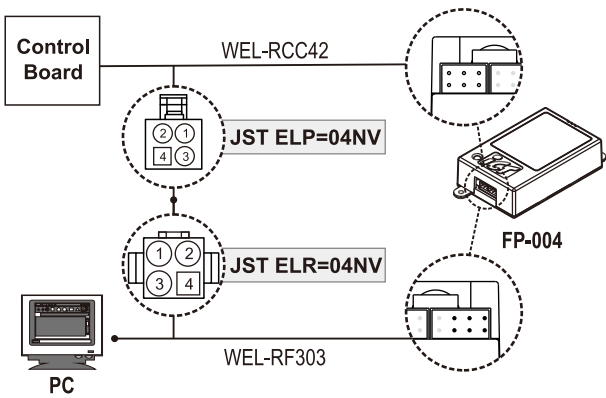
Please refer to the service manual.

6-3-3. Control Board Download

Please refer to the service manual.

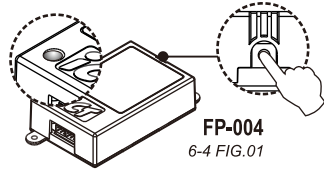
6-4. Control Board Setting

Step 1. Connection



Step 2. After connected with FP-004 power on EX-1500.

Step 3. Press FP-004 control button to switch FP-004 into “PC to BA Test Mode”.



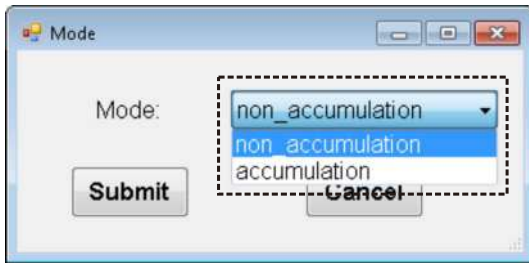
Flashes		Mode	Status
Yellow	ON	Idling	PC to BA Mode

6-4 TABLE 01

Step 4. Set exchange coin(s) and bill value

Start → All programs → EX1000_1.5G Tool → EX1000_1.5g_Tool 

Step 5. Select exchange mode



6-4 FIG.02

Non_accumulation

When a bill is inserted into the bill acceptor and the hopper will dispense.



6-4 FIG.03

Accumulation

Inserted bill(s) amount is higher or equal with user setting then the hopper will start to dispense coin(s) immediately.



6-4 FIG.04

Step 6. Exchange setting

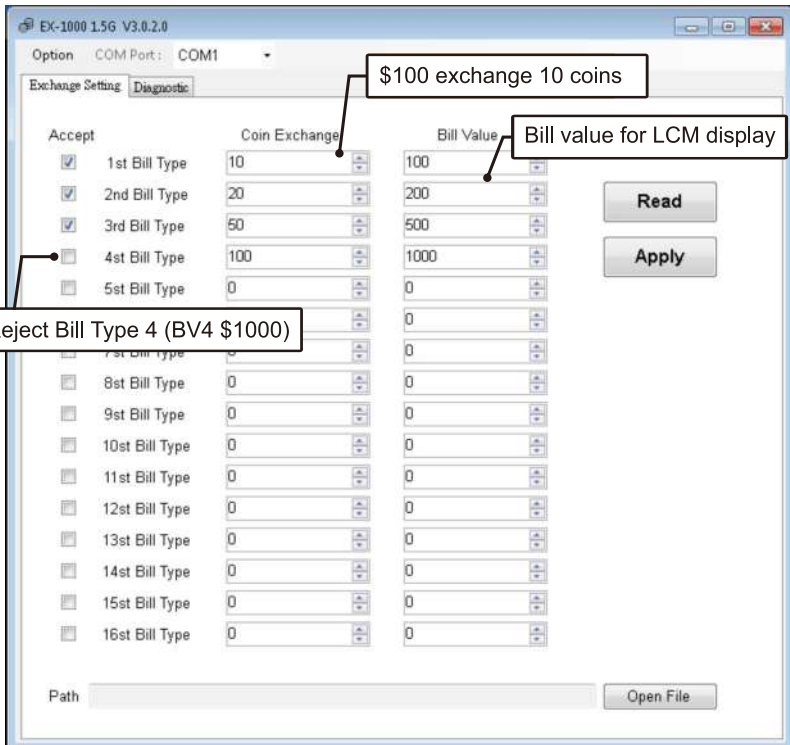
Refer to the “**Currency Assign Data**” section of Bill Acceptor dip switch and set number of coins to be exchange.

For example: Find the dip switch setting for BA.

Interface	ICT002U	Parallel A3	ICT104V	Pulse	MDB
BV1	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100
BV2	\$ 200	\$ 200	\$ 200	\$ 200	\$ 200
BV3	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500
BV4	\$ 1000	\$ 1000	\$ 1000	\$ 1000	\$ 1000

6-4 FIG.05

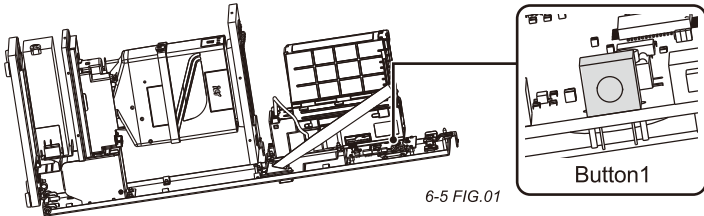
6-4 FIG.06



6-5. Instructions for control board

1. Display Meter on LCD

When click **Button1**, LCD shows the amount in the meter.



2. Clear Meter

Press **Button1** until LCD shows the amount equals 0 in the meter.

3. Exchange Payout Remains

If there are payout remains after stop dispensing, restart EX-1500.

Until complete self test, LCD shows remaining coins.

Click **Button1** and EX-1500 starts paying when the door is close.

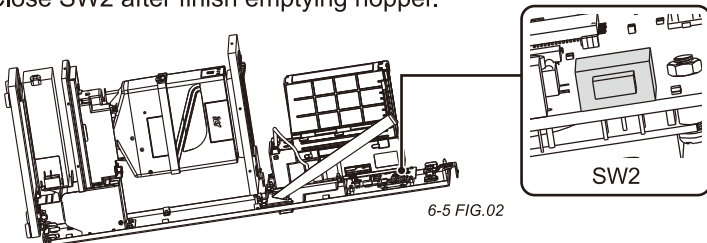
Input:100
Payout Remains:
001

4. Empty Hopper

Open SW2 (push to Button1 side) and close the door.

EX-1500 will start emptying hopper in 3 seconds.

Close SW2 after finish emptying hopper.



5. Error Messages When Paying Coins

The LCD backlight is flickering.
The first line shows “**Mini Hopper**”.
The second line shows error status.
The third and fourth lines show bill value and the amount of coin remains.

Mini Hopper No Connection Input:100 Remaining:001
--

6. Error Messages(Refer to page 29)

The LCD backlight is flickering.
The first line shows “**Out of Service**”.
The second and third lines show error status including status of Bill Acceptor(BA) and Mini Hopper(MH).
The fourth line shows “**Door Opened**” when door is open.

Out of Service BA:Not Power-up MH:No Connection Door Opened
--

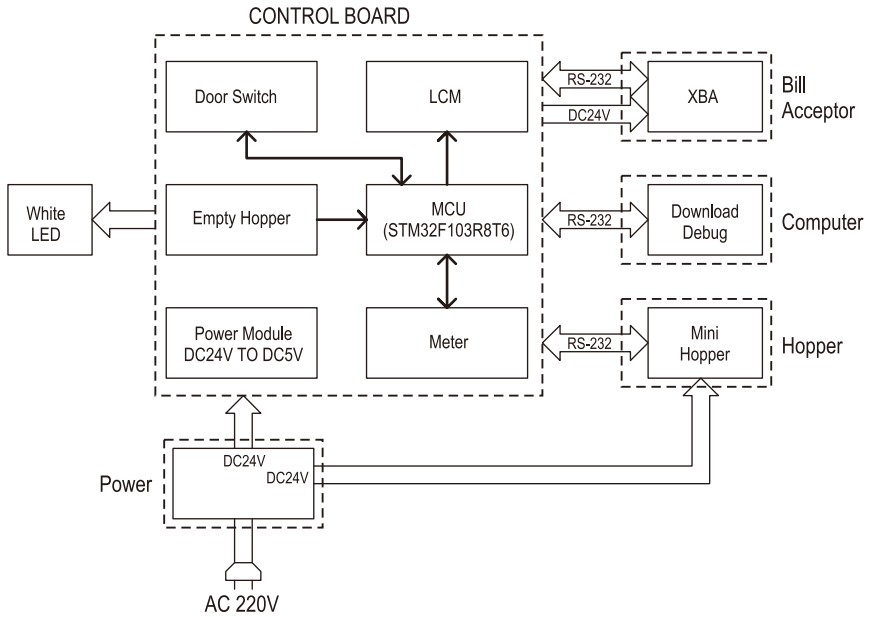
6-5 TABLE 01

BA		
Status	Reason	Corrective Actions
Not Power-up	No power-up signal	Re-plug power line of bill acceptor.
Motor Failure	Motor failure	Inspect for foreign objects on bill path and clean.
Bill Jam	Bill jammed	Remove the bill box by sliding the top button and the bill path, and then remove the jammed bill.
Stacker Open	Bill box has been removed.	Replace the bill box.
Stack Problem	Stacker error or stacker full	Empty the bill box.
Sensor Problem	Sensor problem	Inspect for foreign objects on sensor or bill path and clean.
Bill Fish	Anti-string sensor error or a stringing attempt has detected.	Inspect for foreign objects on sensor or bill path and clean.
Bill Reject	Bill reject	Bill acceptor will resume automatically.

6-5 TABLE 02

MH		
Status	Reason	Corrective Actions
No Connection	Not connect with control board.	Plug power and communication line of mini hopper.
Motor Problem	Motor problem	Remove the jammed coin.
Low Level	Insufficient coins	Refill coins.
P Sensor Fail	Prism sensor error	Inspect for foreign objects on prism sensor or jammed coins.
S Sensor Fail	Shaft sensor error	Re-adjust coin size and shaft.
Busy	Mini hopper is in action.	Wait for mini hopper idling.

6-6. Hardware Functional Diagram



7. Maintenance

To make sure the money changer always works smoothly. We suggest you to clean the internal parts of Bill Acceptor, Mini Hopper and RFID regularly.

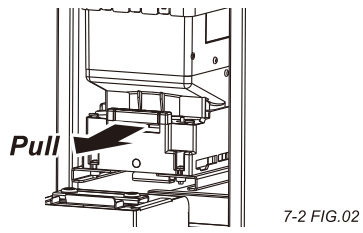
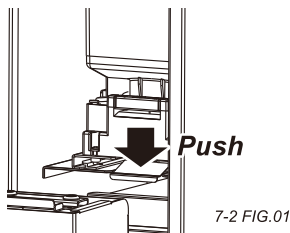
7-1. Bill Acceptor


Please refer to bill Acceptor Installation Guide in the package for more detail.

7-2. Mini Hopper

To clean the internal parts:

1. Please loosen the screw, unplug the power wire, and then remove Mini Hopper from internal EX-1000.(as 7-2 FIG.01)
2. Remove the coin box.(as 7-2 FIG.02)
3. Use a dry, soft cloth or brush to clean internal parts and coin path.
4. Use a dry, soft cloth or towel clean the coin box.

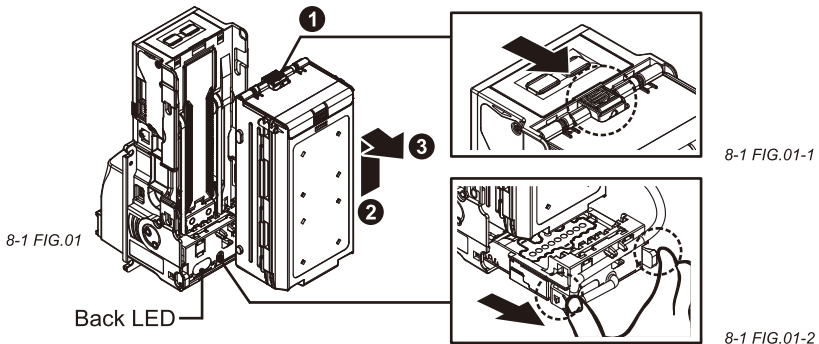


	Maintenance Notice	
	<i>(Any improper maintenance will invalidate the warranty.)</i>	
	Recommended	Mild, non-abrasive, soap water.
	DO NOT USE	Organic solvent , Alcohol, Volatile liquid.

8. Troubleshooting

8-1. Bill Acceptor(XBA/XBA-mini)

LED Flashes	Status	Corrective Actions
RED		
1	White Card Calibration	Please calibrate with ICT white calibration card.
1	Bill jammed.	Remove the bill box by sliding the top button and the bill path(as 8-1 FIG.01) , and then remove the jammed bill.
2	Disable.	Inspect the right DIP switch setting.
3	Recognition sensor module error.	Inspect the foreign objects on sensor or bill path and clean.
3+1	IR error.	Inspect the foreign objects on sensor or bill path and clean.
3+2	Hook sensor error.	Inspect the foreign objects on security hook and clean.
4	Anti-string sensor error or a stringing attempt has detected.	Inspect the foreign objects on sensor or bill path and clean.
5	Bill box has been removed.	Replace the bill box.
6	Stacker error or stacker full.	Empty the bill box.
7	Motor error.	Inspect the foreign objects on bill path and clean.

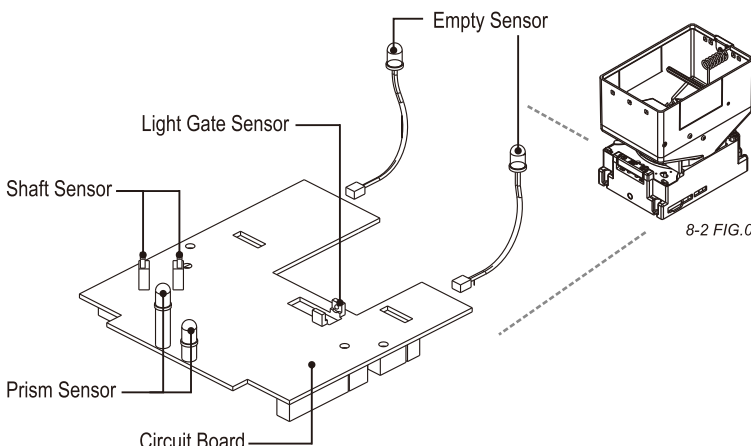


If the errors can not be solved after corrective actions or happen again, please contact ICT for technical support.

Note: please refer to XBA series installation guide.

8-2. Mini Hopper

Flashes	Status	Corrective actions
1	1. Incorrect voltage 2. Coin jammed 3. Motor problem	1. Make sure the voltage is applied to Mini Hopper. 2. Clockwise turn the wheel which is in the back of Mini Hopper to remove the jammed coin and check the shaft-block.
2	Insufficient coins	Refill coins or Rester hopper
3	Double count detect	1. Re-adjust coin size and shaft. 2. Check the control signal. (After last credit signal output then PAYOUT_IN signal must stop in 12ms other wise may cause coin leak out.)
5	Prism sensor error	Inspect for foreign objects on prism sensor or jammed coins. (as 8-2 FIG.02)
6	Shaft sensor error	



Empty Sensor

Light Gate Sensor

Shaft Sensor

Prism Sensor

Circuit Board

8-2 FIG.02

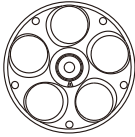
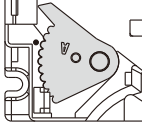
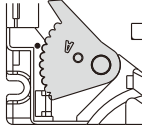
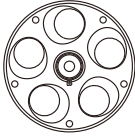
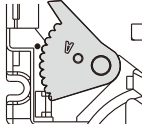
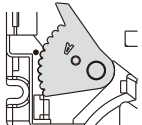
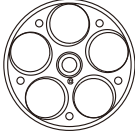
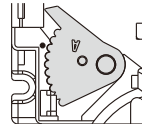
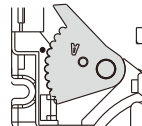
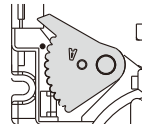


If the errors can not be solved after corrective actions or happen again, please contact ICT for technical support.


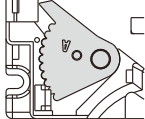
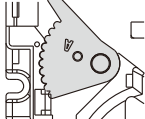
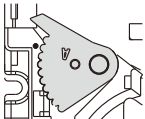
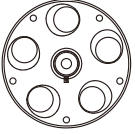
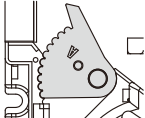

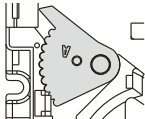
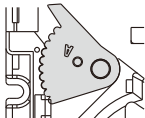
Note: please refer to Mini Hopper installation guide.

8-2-1. Adjustment coin dimension

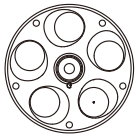
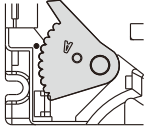
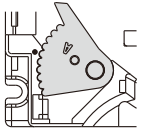
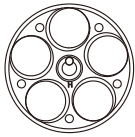
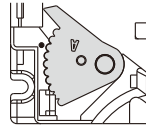
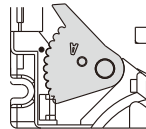
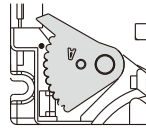
8-2-1 TABLE 01

Coin Payout Plate	Coin Payout Adjustment	Diameter	22.5mm ≦ 28mm
A	C1607A-R	thickness	1.6mm ≦ 2.4mm
 Part number A25140-R		Diameter	25.5mm ≦ 28mm
		thickness	1.6mm ≦ 2.4mm
		Diameter	22.5mm ≦ 25.5mm
		thickness	1.6mm ≦ 2.4mm
Coin Payout Plate	Coin Payout Adjustment	Diameter	20mm ≦ 23mm
B	C1607A-R	thickness	1.6mm ≦ 2.2mm
 Part number A25920-R		Diameter	22.5mm ≦ 23mm
		thickness	1.6mm ≦ 2.2mm
		Diameter	20mm ≦ 22.5mm
		thickness	1.6mm ≦ 2.2mm
Coin Payout Plate	Coin Payout Adjustment	Diameter	23mm ≦ 30mm
C	C1607A-R	thickness	2.5mm ≦ 3.3mm
 Part number A26740-R		Diameter	25.5mm ≦ 28mm
		thickness	2.5mm ≦ 3.3mm
		Diameter	23mm ≦ 25.5mm
		thickness	2.5mm ≦ 3.3mm
		Diameter	28mm ≦ 30mm
		thickness	2.5mm ≦ 3.3mm

8-2-1 TABLE 01-1

Coin Payout Plate	Coin Payout Adjustment	Diameter	23mm ≦ 30mm
D	C1607A-R	thickness	1.6mm ≦ 2.4mm
 Part number A28730-R		Diameter	25.5mm ≦ 28mm
		thickness	1.6mm ≦ 2.4mm
		Diameter	23mm ≦ 25.5mm
		thickness	1.6mm ≦ 2.4mm
		Diameter	28mm ≦ 30mm
		thickness	1.6mm ≦ 2.4mm
Coin Payout Plate	Coin Payout Adjustment	Diameter	17.9mm ≦ 19.7mm
E	C1607A-R	thickness	1.3mm ≦ 1.8mm
 Part number A30750-R		Diameter	17.9mm ≦ 19.7mm
		thickness	1.3mm ≦ 1.8mm
Coin Payout Plate	Coin Payout Adjustment	Diameter	22.5mm ≦ 28mm
F	C1607A-R	thickness	1.0mm ≦ 1.5mm
 Part number A31150-R		Diameter	25.5mm ≦ 28mm
		thickness	1.0mm ≦ 1.5mm
		Diameter	22.5mm ≦ 25.5mm
		thickness	1.0mm ≦ 1.5mm

8-2-1 TABLE 01-2

Coin Payout Plate	Coin Payout Adjustment	Diameter	20mm ≦ 23mm
G	C1607A-R	Thickness	1.2mm ≦ 1.6mm
 Part number A43910-R		Diameter	22.5mm ≦ 23mm
		Thickness	1.2mm ≦ 1.6mm
		Diameter	20mm ≦ 22.5mm
		Thickness	1.2mm ≦ 1.6mm
Coin Payout Plate	Coin Payout Adjustment	Diameter	28mm ≦ 31mm
H	C1607A-R	thickness	2.0mm ≦ 2.8mm
 Part number A46300-R		Diameter	25.5mm ≦ 28mm
		thickness	2.0mm ≦ 2.8mm
		Diameter	23mm ≦ 25.5mm
		thickness	2.0mm ≦ 2.8mm
		Diameter	28mm ≦ 31mm
		thickness	2.0mm ≦ 2.8mm

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