

CM200V Banknote Sorting Machine

USER MANUAL

CM200V V1.0-1/1



USER MANUAL

GRGBanking Equipment Co., Ltd.

Statements

This equipment has been tested and found to comply with the limits for a Class A digital device, operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The product described in this manual is a licensed product of GRG Banking Equipment Co., Ltd.

To assure the safe operation of this product, carefully read the notes provided throughout the manual as well as the contents of the manual.

Changes or modifications not expressly approved by GRG Banking could void the user's authority to operate the equipment.

GRG Banking is not responsible for unauthorized modifications of the equipment or changes or attachment of connecting cables or equipment which could void the user's authority to operate the equipment. Such resulting problem will be the responsibility of the user.

GRG Banking reserves the right to change the contents of this manual without prior notice. Please contact us for the latest product information.

Operation procedures remain the same, even if the illustrations and photographs do not agree with entity.

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Revision Record

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Notes on safety

To ensure the safe operation of the machine, please carefully read the notes on safety provided below as well as the contents of this manual. GRG Banking will not bear any responsibilities for the damage or injuries arising from the use of the machine that is not in accordance with the notes and the contents provided below.

Notes on operation safety

- When the machine is running, don't switch the power off, remove the plug or open modules;
- When the machine is running, don't touch any movable part with your hand or other articles;
- Don't lay any materials on the machine;
- Don't remain nails, pins, wire, screws, toothpicks or other articles in the interior of the machine.
- Please remove the plug if the machine is not used for a long period.
- Please remove notes jammed according to operations introduced in the manual strictly.

If one of the following phenomena occurs, please immediately stop operating the machine.

- The machine produces smoke, strange smell, or unusual noises;
- Electric leakage occurs;
- Water enters the machine (Water leakage occurs on top of the machine or the machine is submerged by water);
- Unstable power supply, voltage dip, or short interrupt occurs;
- A contrived damage to the machine;
- The machine is placed in an environment of lampblack, steam, high humidity or heavy dust;
- The power cable is broken or the plug is damaged.

Preface

Thank you for choosing the products of GRG Banking Equipment Co. Ltd, in order to assure the safe operation of this product, please read this manual carefully.

This manual describes the configuration available for the machine, modules, setting methods, daily operation and method for solving problems.

Note: Some contents may be different from the manual as a result of the update of the product or modification of design, please refer to revision record.

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Chapter 1 General Description

- **Introduction**
- **Module location**
- **Feature properties**
- **Technical specifications**

1. Introduction

GRG's CM200V is a high performance banknote sorting machine with cutting-edge banknote detection technology to improve cash processing speed and accuracy. By utilizing CIS (Contact Image Scan) and OCR (Optical Character Recognition) technology, images of both sides of the banknote as well as the serial number can be captured and recorded.

The Windows Embedded platform ensures the system's scalability and a full 7-inch large LCD touch screen enhances user experience. It is an ideal cash counting and sorting solution for banks, retails, etc..

CM200V banknote sorting machine provides the following services:

- Note counting
- Note recognition
- For single denomination notes, the machine enables note counting, suspect note detection, orientation sorting, version sorting, fitness sorting and ATM sorting.
- For multiple denomination notes, the machine enables note counting, suspect note detection, denomination sorting, fitness sorting and ATM sorting.
- Automatic serial number capturing and recording
- Automatic image (of both sides of the note) saving (Optional)
- Connect with the external LCD, PC and printer for printing (Optional)

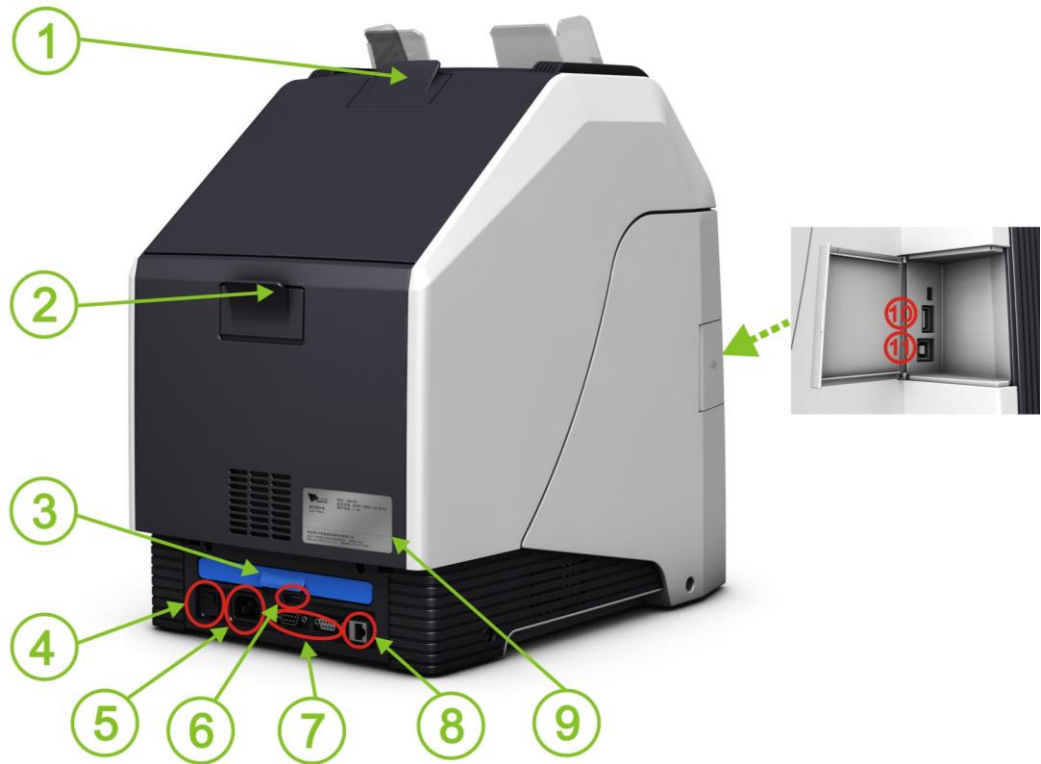
2. Module location

Note: Some contents may be different from the manual as a result of the update of the product or modification of design, please refer to revision record.

2.1. Overview



1	Hopper	500 pieces of notes (optional 1000 pieces)
2	5" LCD touch screen	Provides clear operation prompts and user guides
3	Reject stacker	Receives the unqualified notes, max. 100 pieces
4	Stacker 2	Receiving notes after sorting/counting, max. 200 pieces
5	Digital display 2	Indicates the number of notes in the stacker
6	Stacker 1	Receiving notes after sorting/counting, max. 200 pieces
7	Digital display 1	Indicates the number of notes in the stacker
8	Handle 1	For opening the upper unit.



1	Handle 2	For opening the upper transport.
2	Handle 3	For opening the rear cover
3	Dust receiving box	
4	Power switch	I: power on O: power off
5	Power cable interface	100-240 VAC, 50/60Hz
6	USB interface	
7	RS-232	Connect with external LCD and printer
8	LAN interface	TCP/IP
9	Nameplate	The corresponding product information is engraved on it.
10	USB-HOST interface	
11	USB-LAN	Connect with scanning system

2.2. Internal Structure of the upper unit



1	Note validator (NV)	5	The upper unit
2&11	NV catch	6&9	Catches of the upper unit
3	Rear cover	7	The lower unit
4&12	Catches of rear cover	8	Handle 1
10	Knob: Turn the knob counterclockwise to remove the jammed notes.		

3. Feature properties

- 5" LCD touch screen with clear operation prompts and user guides, improves the user experience.
- Automatic serial number capturing at a speed of 12 notes/ second, the serial number can be recorded in the PC, and the both sides' images of each note will be kept in an optional image recorder.
- With both USB and LAN interface the machine can be connected with external LCD, printer and PC for printing and uploading to facilitate centralized management and sort report checking.
- Quick and easy access to the banknote transport to remove jammed notes and conduct cleaning.
- Innovative anti-static design effectively eliminates the static electricity on the note and therefore enables our unit to handle polymer note.
- Sensor adaptive for dust and active early warning mechanism to improve the environmental adaptability of the machine and reduce the risk of failure.
- The machine has the following banknote detection technology:
 - Visible light image analysis
 - Infrared light image analysis
 - Transmitted light image analysis
 - Ultraviolet fluorescence analysis
 - Full length magnetic analysis
 - Full size thickness detection
 - Double side contact image scan
 - Serial number detection

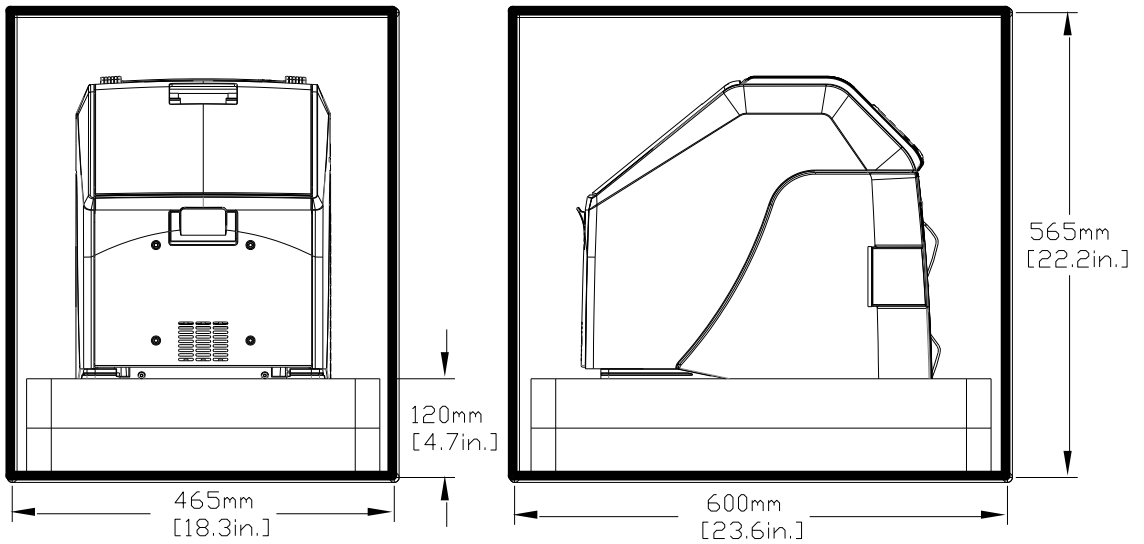
4. Technical specifications

Items		Specifications
Power supply	Voltage	100-240VAC, 50/60Hz
	Max. current	1.15 A
Environment requirements	Temperature	0°C~40°C
	Humidity	20% ~ 90% RH (non-condensing)
Communication interface		USB/LAN/ RS232
Net weight		About 23KG
Rough weight		About 25KG
Dimensions		Width310mm×height 435mm×depth 428mm
Sorting schemes		ATM note sorting; Circulated note sorting; Denomination sorting; Orientation sorting; Version sorting; Denomination counting; Fuzzy sorting; Counting
Sorting speed		720 notes/min.
Counting speed		High speed:1000 notes/min.
Slot quantity		4 (includes a hopper, a reject slot and 2 stackers)
Capacity of each slot		Hopper: max. 500 notes (1000 notes optional) Each stacker: max. 200 notes Reject slot: max. 100 notes
Non-stop feeding notes		Support
Multi-currencies		Support
Note dimensions		Width: 60-85mm Length:110-180mm Thickness: 0.06-0.18 mm

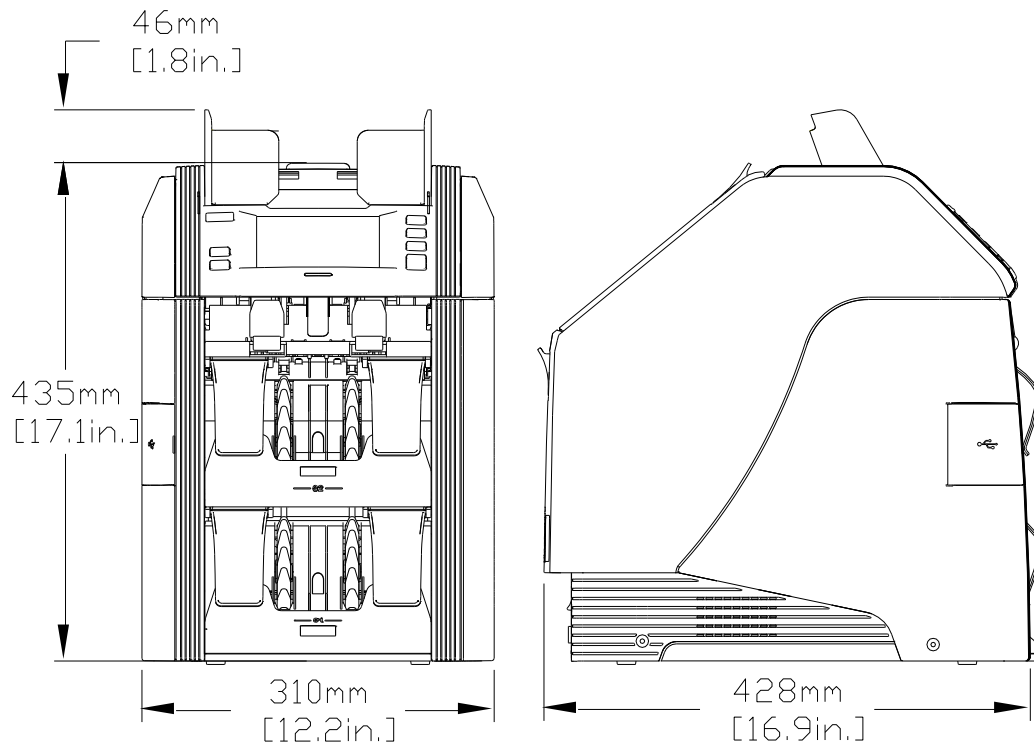
Chapter 2 Environmental requirement

- **Packaging dimensions of CM200V**
- **The dimensions of CM200V**
- **Installation and service clearances**
- **How to remove the packaging**

1. Packaging dimensions of CM200V

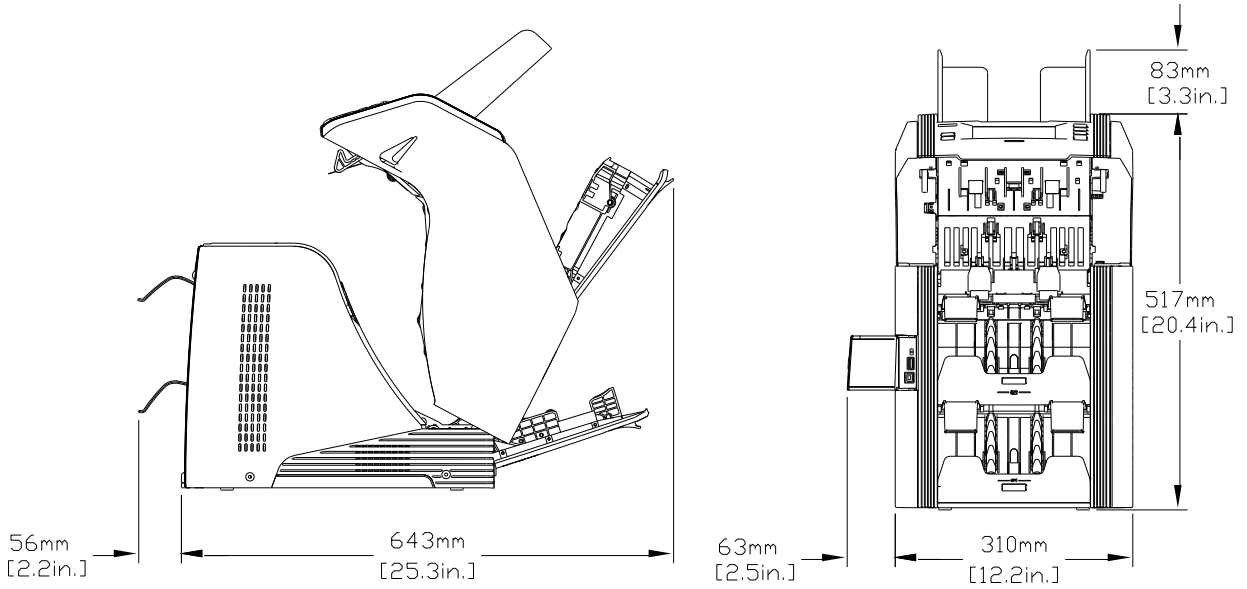


2. The dimensions of CM200V

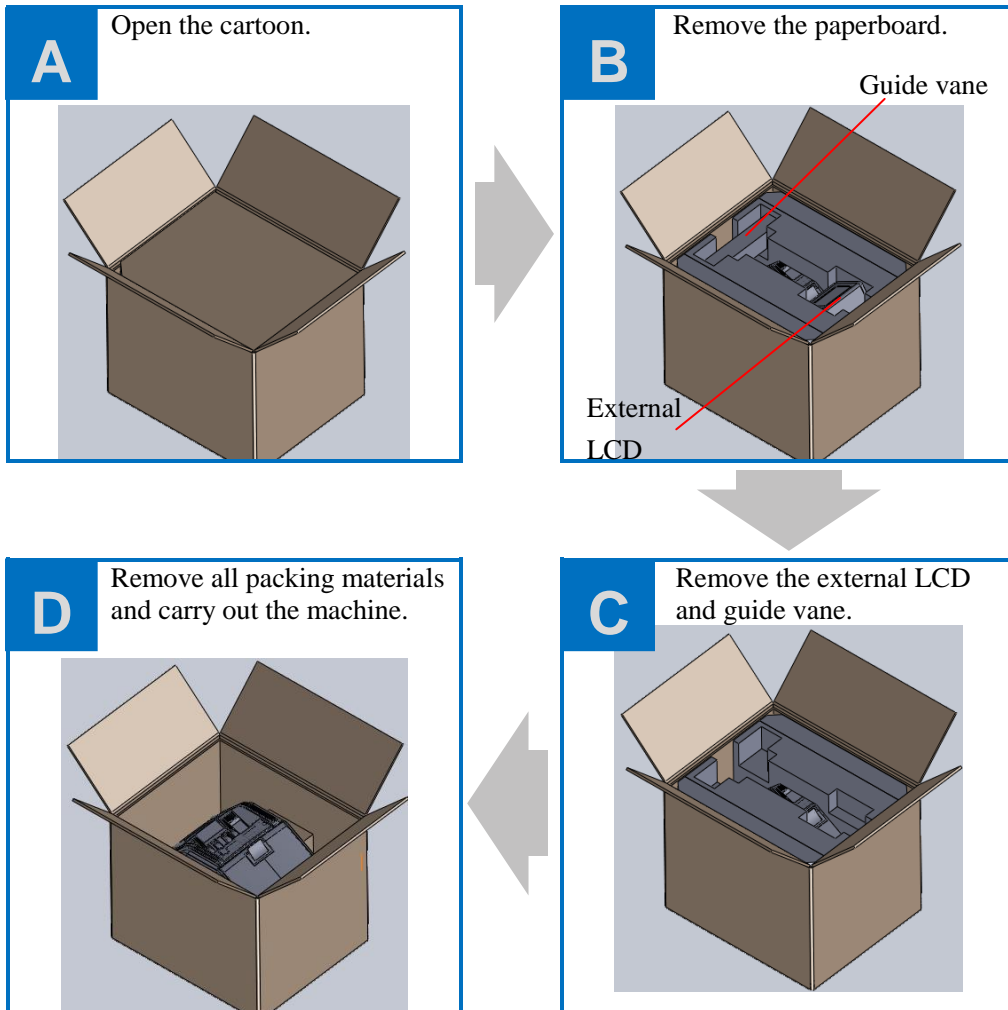


3. Installation and service clearances

The following figures show the maximum dimensions of the machine when all assemblies are opened.



4. How to remove the packaging



5. Location Requirements

It is suggested to place the machine on a table of proper height for convenient operation. To prevent the table from deforming after loading the machine, it is necessary to consider the mechanical vibration produced by the operating machine.

Chapter 3 Daily Operation

- **Preparations**
- **Sorting operations**
- **Transaction record**

1. Preparations

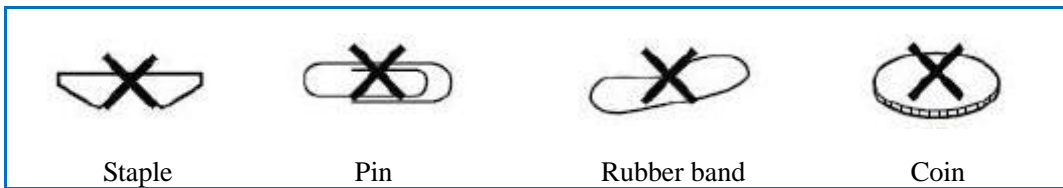
1.1. Start the machine

- 1) Connect the power cable.
- 2) Switch the power switch to “1” to power on the machine.

1.2. Preparing notes

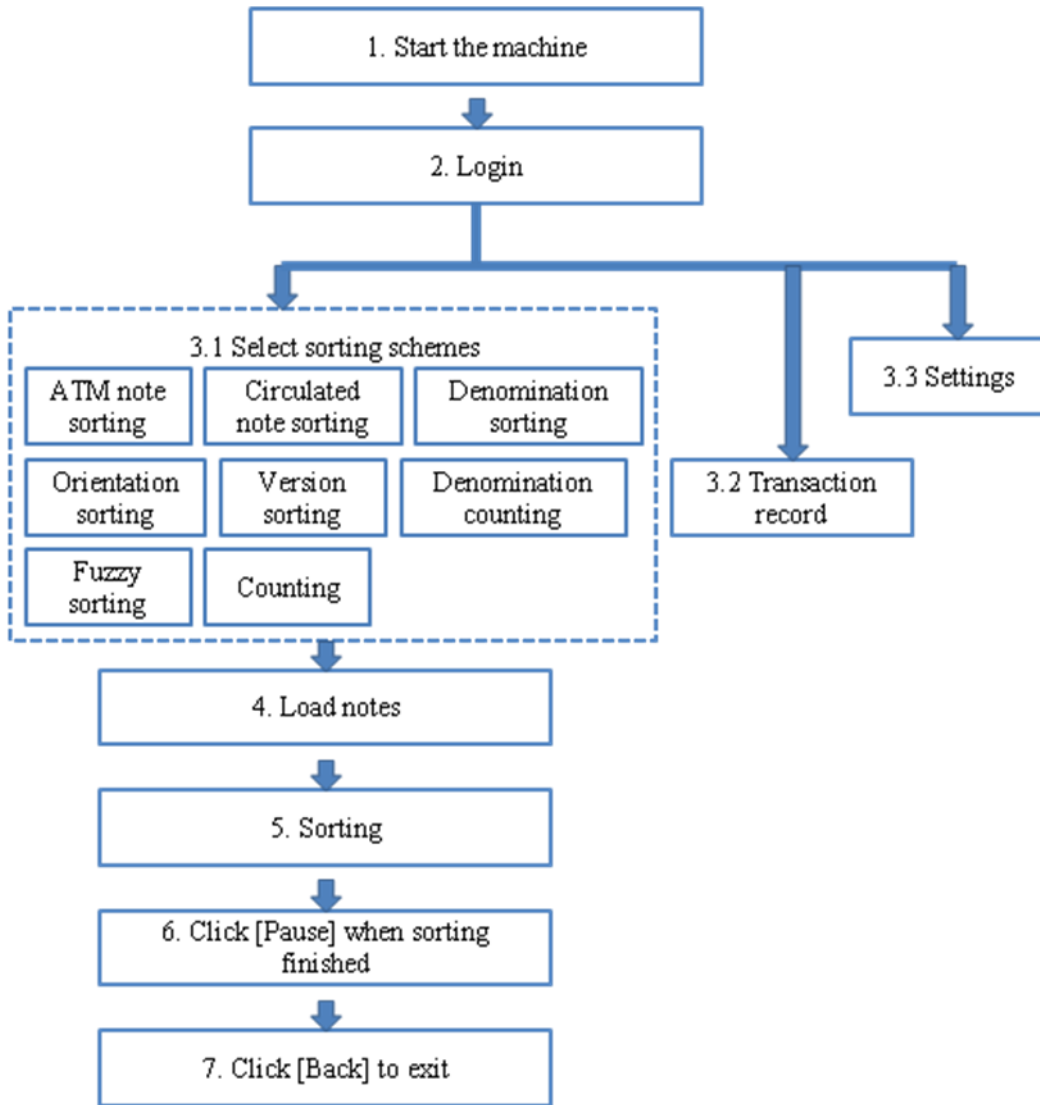
Good note preparation is significant for maintaining/improving the machine’s performance.

Before loading notes, please prepare the notes and check if there are staples, pins and foreign objects:



2. Sorting operations

2.1. Flow diagram



2.2. Basic operations

Note: In the process of operating, the machine will be shutdown automatically as soon as power off. And the data of the last several banknotes which handled before power off will be lost. In this case, please open all transports in the machine and remove all banknotes there. Refer to chapter 5 and chapter 6 for detailed information.

The machine can provide eight sorting modes:

- ATM note sorting: According to fitness, notes (which are of the same denomination) are sorted into ATM notes, circulated notes, unfit notes and undefined notes.
- Circulated note sorting: According to fitness, notes (which are of the same denomination) are sorted into ATM notes, circulated notes, unfit notes and undefined notes.
- Denomination sorting: Separate notes of specify denomination from others.
- Orientation sorting: According to orientation, notes (which are of the same denomination) are sorted into different groups and transported to corresponding stackers.
- Version sorting: According to version, notes (which are of the same denomination) are sorted into different groups.
- Denomination counting: According to denomination, notes are sorted into different groups. This mode allows users to set counting speed. **Note: Notes can't be authenticated in this mode.**
- Fuzzy sorting: The mode is mainly used for sorting notes from the charge places where small denomination notes collected, such as bus station, subway station, supermarket, hospital and so on.
- Counting: In this mode, media (including banknotes, bills and bonds, etc.) will be counted only by piece. **Note: Notes can't be authenticated in this mode.**

We'll describe the operations of ATM note sorting in detail. The operations of other sorting modes are similar to it. Please take this section for reference. Note: The following operations are realized in "Auto-feed" mode.

A

Enter "User" and "PIN" in the blank, and then click [Login].

Note: Click [Guest] to enter the system directly.

User:

PIN:

Auto login


1	2	3
4	5	6
7	8	9
Backspace	0	Clear





B

Click “Sorting” to enter the next interface.

2013-08-26 09:39:14
User : 1000


 Sorting


 Transaction record


 Settings

Shutdown
Logout



C

The interface “ATM Sorting” is as figure at right.

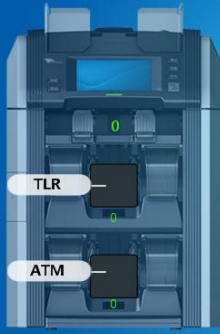
Click the button [Accumulated] to switch to [Non-accumulated] mode.

Accumulated

➤

ATM Sorting

2013-08-26 09:52:20
User : 1000



Denom.	Pieces
Total pieces:	0
Total amount:	0

Statistics
Back




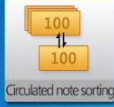
Note:


Click the button [ATM sorting] in step C or press the button [Mode] in the front of the machine to enter the interface of “Select sorting scheme” (see the figure at right).


Settings->Sorting settings->Scheme


2013-09-17 16:03:47
User : 1000



 ATM note sorting



 Circulated note sorting



 Denomination sorting


 Orientation sorting


 Version sorting


 Denomination counting


 Fuzzy sorting

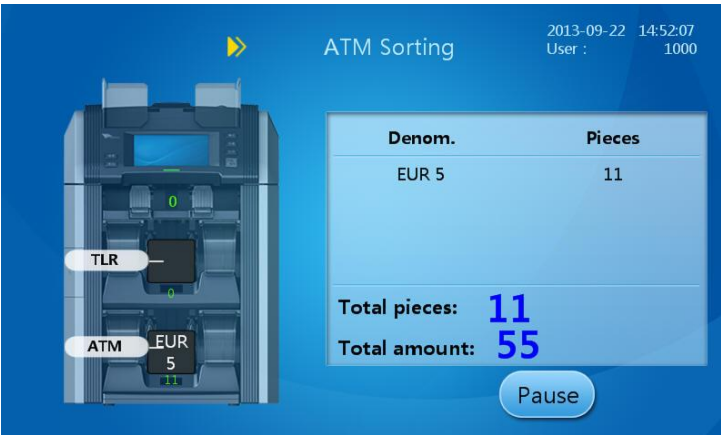

 Counting

Home
Back

D

Stack the notes neatly and put them in the hopper.

The machine will feed notes and start sorting. According to fitness property, notes are transported to the corresponding stacker.



Denom.	Pieces
EUR 5	11

Total pieces: **11**
Total amount: **55**

2013-09-22 14:52:07
User : 1000

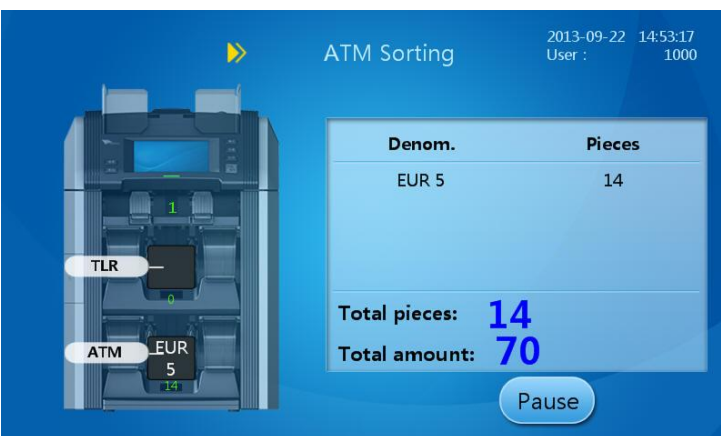
Pause

E

After finishing sorting notes in the hopper, the status of stackers are as shown at right.

The machine will auto feed and sort notes if users continue to load notes.

Click [Pause] to pause and switch to next interface (as below).



Denom.	Pieces
EUR 5	14

Total pieces: **14**
Total amount: **70**

2013-09-22 14:53:17
User : 1000

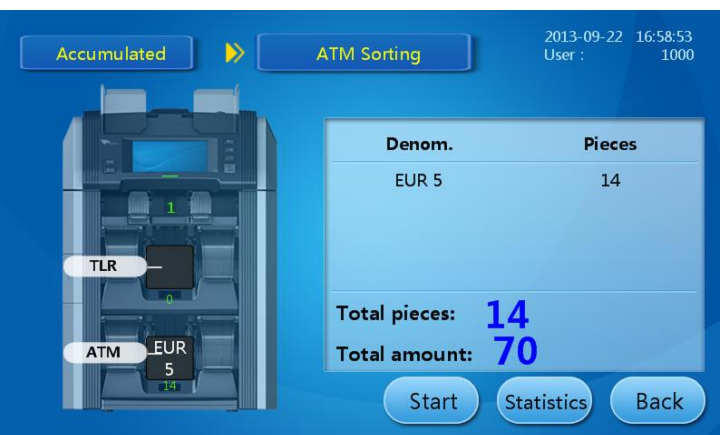
Pause

F

Click [Statistic] to switch to result statistic interface (as below).

Notes:
Click [Start] and load notes, the system will continue sorting.

Click [Back] to end the transaction and exit.



Accumulated > ATM Sorting

Denom.	Pieces
EUR 5	14

Total pieces: **14**
Total amount: **70**

2013-09-22 16:58:53
User : 1000

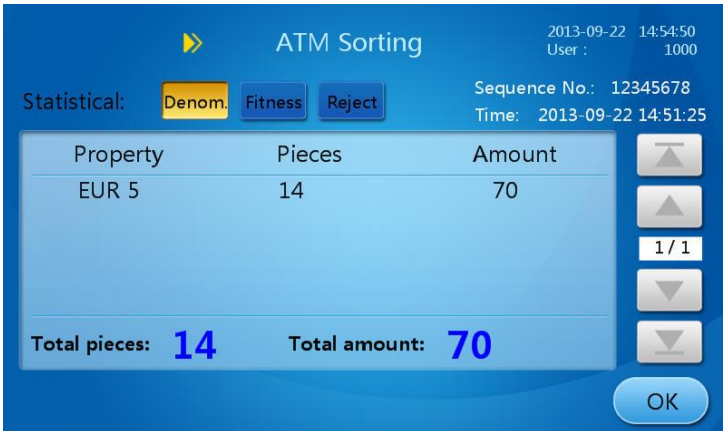
Start Statistics Back



G1

The result displays in the interface (see figure)

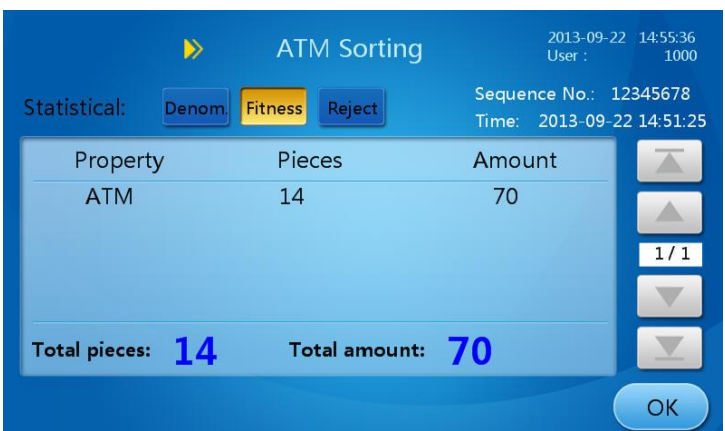
The system can count the sorting result according to denomination property and fitness property.





G2

Click [Fitness] to count the sorting result according to fitness property.

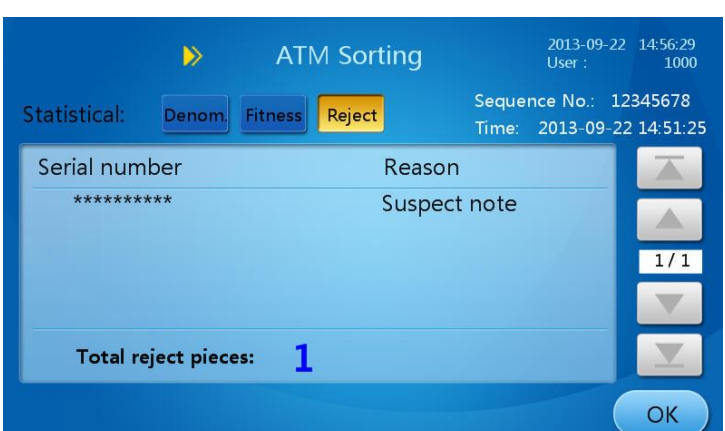




G3

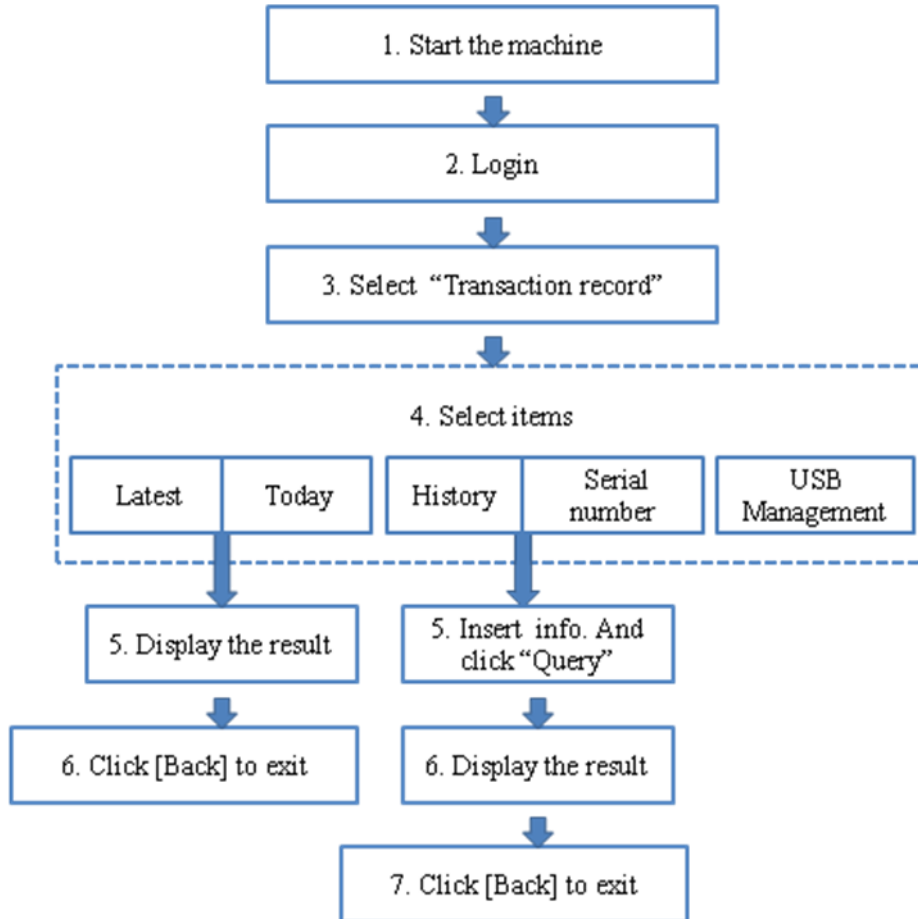
Click [Reject] to view the information of notes rejected.

Remove all notes and click [OK] to exit.



3. Transaction record

3.1. Flow diagram



3.2. Basic Operations

The interface is as shown below. In the interface, users can view the transaction records and perform relative operations.



- 1) Click “Latest” to search for the last transaction record.
- 2) Click “Today” to search for today transaction records.
- 3) Click “History” to search for the transaction history of the past certain period. The administrator user can search for all transaction records of the machine without entering “Starting time”, “Finishing time” and “Operator”. Other users can search for all transaction records of their own without entering “Starting time” and “Finishing time”.

Note: The system defaults to save three-month transaction records at most.

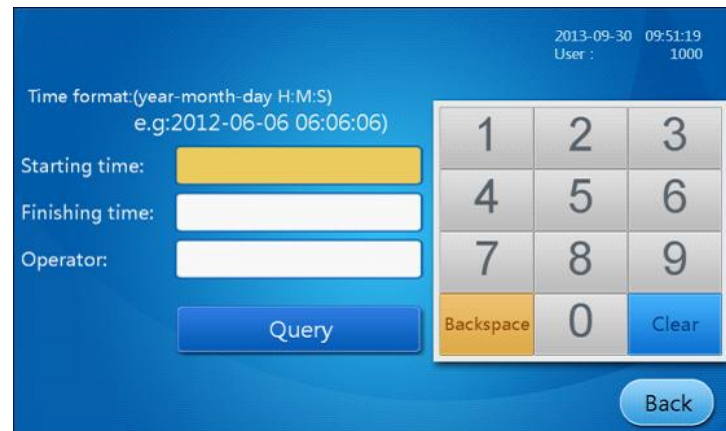
Now we take searching for history transaction record for example. (Administrator user)

A

Click “History”, the interface is as shown at right.

Enter the corresponding information in the blank boxes.

Click [Query].



Continue...



B

The transaction records are displayed in the interface at right.

Select one transaction, and click [View].

Note: Administrator users can execute the corresponding operations by clicking other buttons.

2013-09-30 10:54:06
User : 1000

Time	User	Pieces	Amount	Result	
2013-09-30 09:48:08	1000	10	200	✓	▲
2013-09-30 09:47:15	1000	24	270	✓	▲
2013-09-30 09:46:47	1000	7	350	✓	1
2013-09-30 09:45:19	1000	6	600	✓	2
2013-09-30 09:43:54	1000	28	10,100	✓	▼
2013-09-30 09:42:39	1000	17	8,500	✓	▼
2013-09-30 09:40:25	1000	16	8,000	✓	▼

View Export Sum Delete Del. All

Back



C

Detailed information of all notes handled in the transaction is displayed in the interface at right.

Select the note for search, and click [View].

Administrator user can set the serial no. to blacklist by clicking [Blacklist].

2013-09-30 10:57:46
User : 1000

All Reject

Serial No.	Property	Denom.	Time	
*****	Qualified	EUR 20	2013-09-30 09:48:09	▲
*****	Qualified	EUR 20	2013-09-30 09:48:09	▲
*****	Qualified	EUR 20	2013-09-30 09:48:09	1
*****	Qualified	EUR 20	2013-09-30 09:48:09	4
*****	Qualified	EUR 20	2013-09-30 09:48:09	▼
*****	Qualified	EUR 20	2013-09-30 09:48:09	▼
*****	Qualified	EUR 20	2013-09-30 09:48:09	▼

View Blacklist

Back



D


Note: This function can be realized only as the image recorder is configured with.

The front image of the note is displayed in the interface.

Users can perform the corresponding operations by clicking other buttons.

2013-09-30 10:59:41
User : 1000

Denomination: EUR 20
Serial No: Unidentification



Front
Rear

Export
Back

4) Click “USB management” to view and arrange the data in the USB, which is a special storage tool for storing transaction records, blacklist rules and so on.

Chapter 4 Functions and settings

- **Description on authority**
- **Flow diagram**
- **Settings**

1. Description on authority

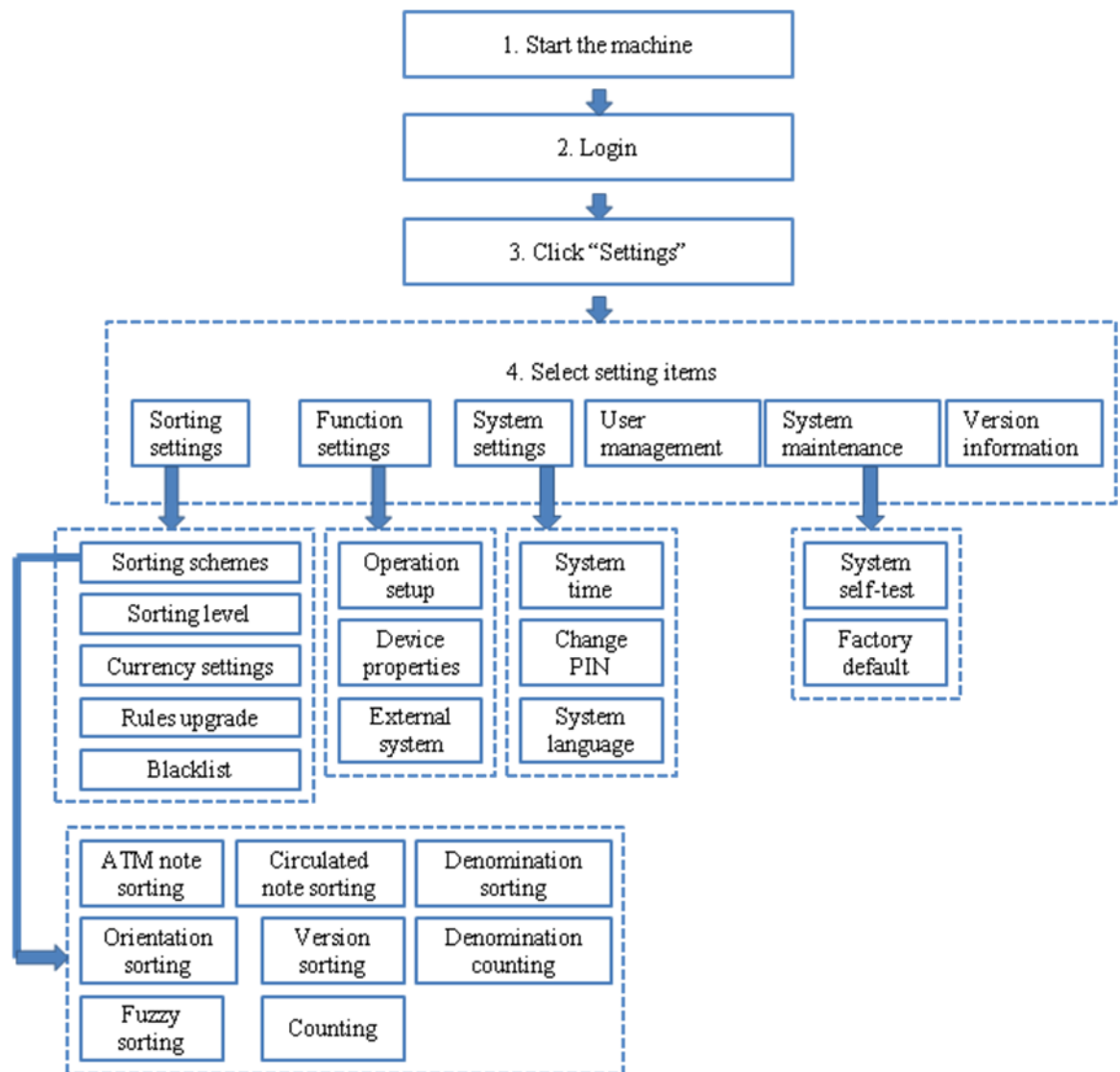
When leaving factory, the machine has been set 3 accounts: an administrator (User: 1000; factory PIN: 123456), a guest and a maintenance engineer (User: 1000; factory PIN: 123456). Administrator has the authority to create/ delete administrator account and operator account. Please change PIN as soon as possible to assure the safety of information and convenience of user management.

Note: If an administrator account is deleted, then the system requires the entry of the root password “002152”.

The functions each group of user can realized are as follows:

No.	Functions	Administrator	Operator	Guest	Maintenance engineer	
1	All sorting schemes	√	√		×	
2	Transaction records	View/export/sum (of all users)	√ (of one's own)		×	
		Delete/delete all	√	×	×	
	Query serial number; View/export note image	√ (of all users)	√ (of one's own)		×	
3	Sorting settings	√	×	×	×	
4	Function settings	√	×	×	×	
5	System settings	System time	√	×	×	×
		Change PIN	√	√	×	×
		System language	√	×	×	×
6	User management	√	×	×	×	
7	System maintenance	System self-test	√	√	√	√
		Factory default	√	×	×	×
		Exit system	×	×	×	√
8	Version information	√	√	√	√	
9	Log export	×	×	×	√	
10	Import & Export	×	×	×	√	
11	Device properties	×	×	×	√	

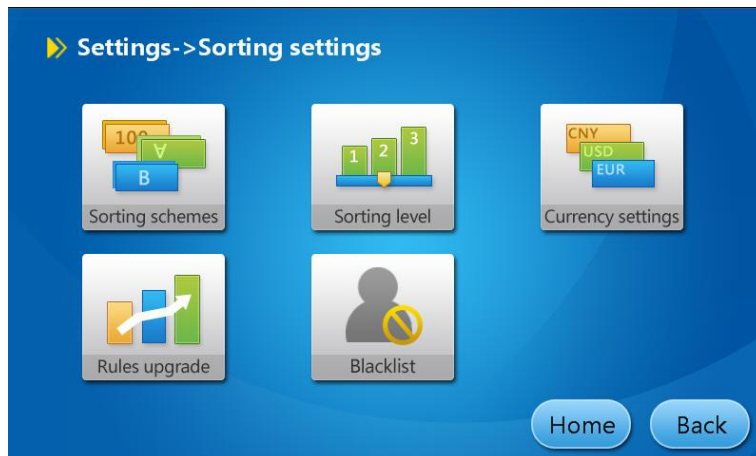
2. Flow diagram



3. Settings

3.1. Sorting settings

The interface of sorting settings is as shown below:



3.1.1. Sorting schemes

The interface of sorting schemes is as shown below:



This section describes the setting procedures of eight sorting schemes.

- Note:**
- When setting fitness property, “ATM” and “A” both indicate “ATM note”; “TLR” and “T” both indicate “Circulated note”.
 - The 2 stackers are of the same denomination mode; if “Configure” is selected, 2 stackers can be appointed to different denomination properties respectively; if “Single” or “Multiple” is selected, the denomination properties of all stackers can only be set to “Auto”.

1) ATM note sorting

A Denom. settings

Click the boxes next to “Denom.” to select the corresponding denom. mode. If “Single” is selected, 2 stackers will be of the same denom. property, which depends on the first qualified note. If “Multiple” is selected, 2 stackers will be of different denom. property.

Stacker	Fitness	Denom.	Orientation	Batch
1	ATM	Auto	None	100
2	TLR	Auto	None	100



B Stacker selecting

Select a stacker and click [Edit] to set the parameters of the stacker.

Stacker	Fitness	Denom.	Orientation	Batch
1	ATM	EUR 100	None	100
2	TLR	EUR 100	None	100



C Batch setting


Click numbers on the keypad to enter batch (0~200).

Note:
1. Setting to 0 indicates shielding the stacker.
2. 2 stackers can be set to different batch values.



D Denom. setting

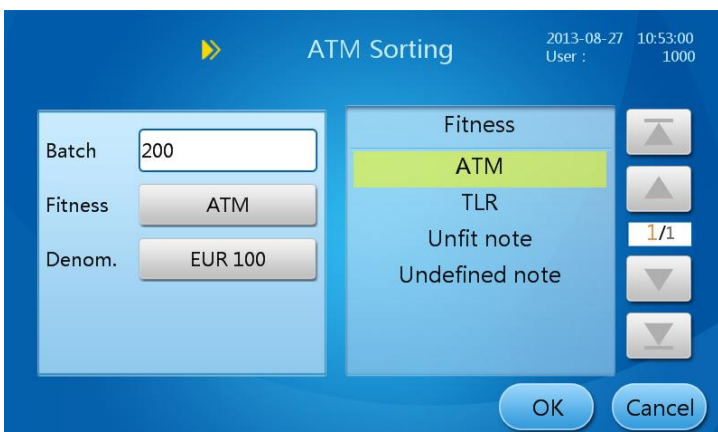
Click the box next to “Denom.”, then select a denom. from the list.





E Fitness setting

Click the box next to “Fitness”, then select a fitness from the list.



After setting all parameters of the stacker, click [OK] to return to the interface of step A. Performing the same operations from step B to step E to set parameters of the other stacker. Finally, click [Save] to save the modification.

e.g. 1: ATM Sorting (Denom. mode: Single)

	Stacker 1	Stacker 2
Denom.	Auto	Auto
Fitness	ATM	ATM

Instructions: (Supposing the first qualified note is EUR 100)

- All notes transported to the 2 stackers (stacker 1 and 2) are EUR 100;
- Other unqualified notes will be transported to the reject stacker, including EUR 100 whose fitness property is below ATM standard, notes of other denom. properties (such EUR 50, 20, etc.) and so on.

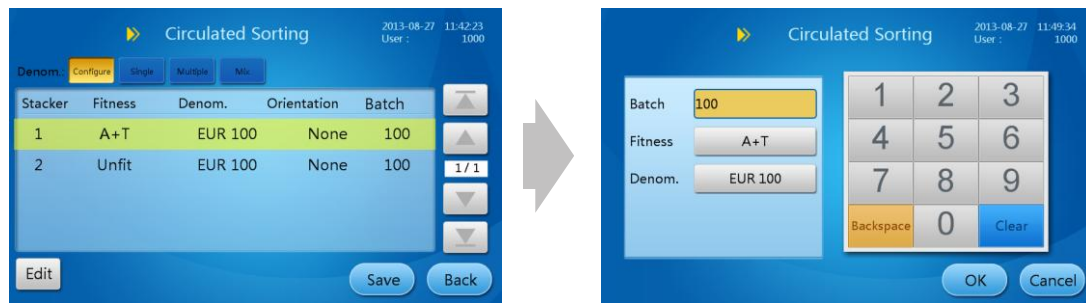
e.g. 2 ATM Sorting (Denom. mode: Multiple)

	Stacker 1	Stacker 2
Denom.	Auto	Auto
Fitness	ATM	ATM

Instructions: (Supposing the first qualified note is EUR 100 and the first qualified note of another denom. is EUR 50)

- Only EUR 100 can be transported to stacker 1, while EUR 50 can be transported to stacker 2.
- Other unqualified notes will be transported to the reject stacker, including EUR100 and EUR 50 whose fitness properties are below ATM standard, notes of other denom. properties (such EUR 500, 20, etc.) and so on.

2) Circulated note sorting



Operation procedures and instructions:

a. Denom. settings

- If “Configure” is selected, 2 stackers can be appointed to different denom. properties respectively, such as EUR 100, 50, 20, etc.
- If “Single” is selected, 2 stackers will be of the same denom. property, which depends on the first qualified note.
- If “Multiple” is selected, stacker 1’s denom. property depends on the first qualified note. While the stacker 2’s denom. property depends on the first qualified note of another denom. property. (See ATM note sorting e.g. 2)
- If “Mix” is selected, notes will be sorted out only according to fitness rather than denom.

b. Stacker selecting (See *ATM note sorting*)

c. Batch setting (See *ATM note sorting*)

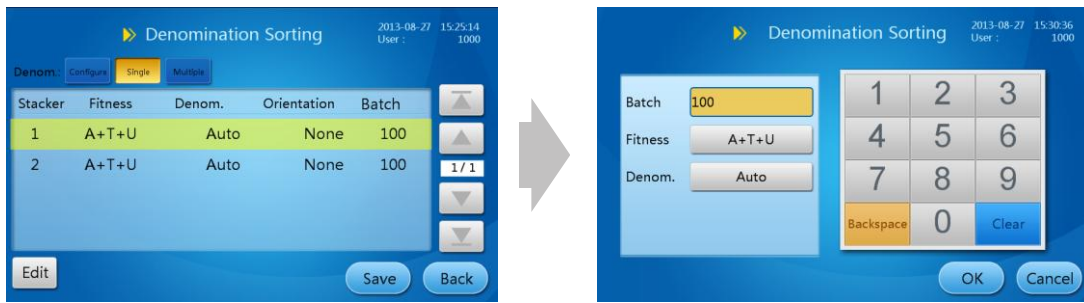
d. Denom. setting (See *ATM note sorting*)

e. Fitness setting (See *ATM note sorting*)

- f. After setting all parameters of the stacker, click [OK] to return to the first interface. Performing the same operations b~e to set parameters of the other stacker. Finally, click [Save] to save the modification.

Refer to *ATM note sorting* for detailed information.

3) Denom. sorting



Operation procedures and instructions:

a. Denom. settings

- If “Configure” is selected, 2 stackers can be appointed to different denom. properties respectively, such as EUR 100, 50, 20, etc.
- If “Single” is selected, 2 stackers will be of the same denom. property, which depends on the first qualified note.
- If “Multiple” is selected, stacker 1’s denom. property depends on the first qualified note. While the stacker 2’s denom. property depends on the first qualified note of another denom. property. (See the following example)

b. Stacker selecting (See ATM note sorting)

c. Batch setting (See ATM note sorting)

d. Denom. setting (See ATM note sorting)

e. Fitness setting (See ATM note sorting)

Note: The 2 stackers must be of the same fitness property.

- f. After setting all parameters of the stacker, click [OK] to return to the first interface. Performing the same operations b~e to set parameters of the other stacker. Finally, click [Save] to save the modification.

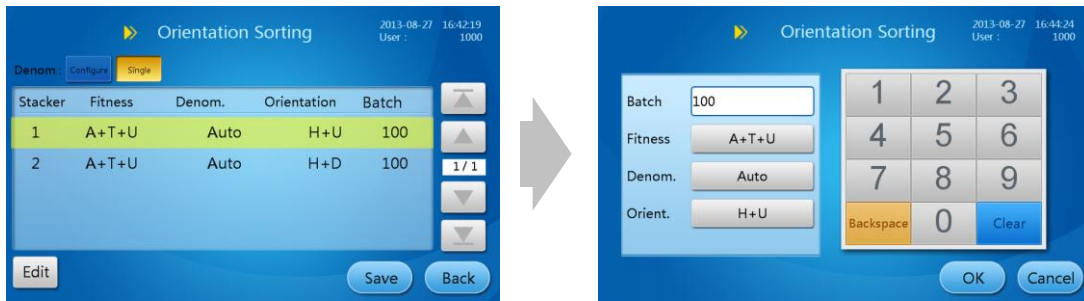
E.g.: Multiple

	Stacker 1	Stacker 2
Denom.	Auto	Auto
Fitness	ATM+TLR or ATM +TLR+ Unfit	

Instructions: Supposing the first qualified note is EUR 100, stacker 1 will be set to EUR 100 automatically and qualified EUR 100 will be transported to stacker 1. While qualified notes of another denom. will be transported to stacker 2.

Refer to *ATM note sorting* for detailed information.

4) Orientation sorting



Operation procedures and instructions:

a. Denom. settings

- If “Configure” is selected, 4 stackers can be appointed to different denom. properties respectively, such as EUR 100, 50, 20, etc.
- If “Single” is selected, 2 stackers will be of the same denom. property, which depends on the first qualified note.

b. Stacker selecting (See *ATM note sorting*)

c. Batch setting (See *ATM note sorting*)

d. Denom. setting (See *ATM note sorting*)

e. Fitness setting (See *ATM note sorting*)

Note: The 2 stackers must be of the same fitness property.

f. Orientation setting

Click the box next to “Orientation”, select a orientation from the list. There are 4 groups of orientations for selecting.

Group 1	Heads +Up; Heads +Down; Tails+ Up; Tails +Down
Group 2	Heads; Tails
Group 3	Up; Down
Group 4	None

- For stackers of different denom. properties, their “orientation” properties can be set arbitrarily.
- For stackers of the same denom. property, their “orientation” properties must be of the same group.

The type “Heads + Up”, “Heads + Down”, “Tails+ Up” and “Tails +Down” can only be used with each other.





The type “Heads” can only be used with type “Tails”.

The type “Up” can only be used with type “Down”.

The type “None” cannot be used with any orientations in group 1, 2 or 3.

- g. After setting all parameters of the stacker, click [OK] to return to the first interface. Performing the same operations b ~ f to set parameters of the other stacker. Finally, click [Save] to save the modification.

Refer to *ATM note sorting* for detailed information.

		View in front of machine	
		Heads	Tails
Up	Heads + Up		Tails +Up 
	Down	Heads + Down 	Tails +Down 

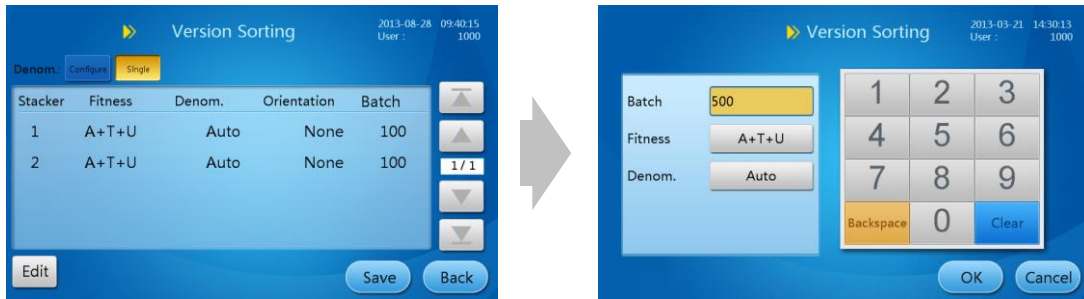
E.g. Single

	Stacker 1	Stacker 2
Denom.	Auto	Auto
Fitness	ATM+TLR or ATM +TLR+ Unfit	
Orientation	Heads + Up	Heads + Down

Instructions: (Supposing the first qualified note is EUR 100)

- Stacker 1 and 2 will be set to EUR 100 automatically, and each qualified EUR 100 will be transported to the corresponding stacker according to its orientation properties.

5) Version sorting



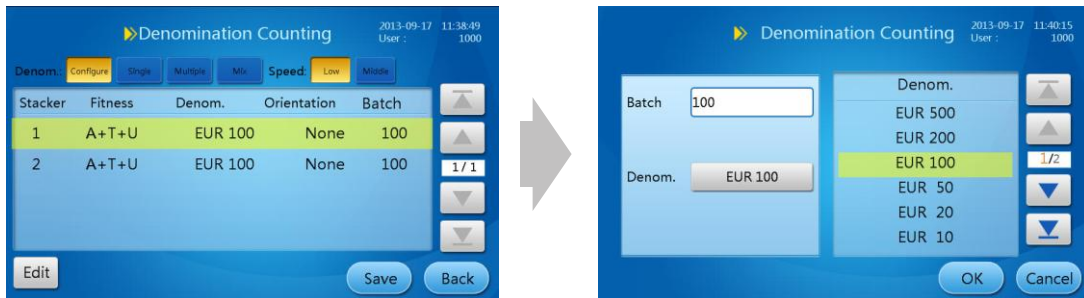
Operation procedures and instructions:

- a. Denom. settings
- b. Stacker selecting (See *ATM note sorting*)
- c. Batch setting (See *ATM note sorting*)
- d. Denom. setting (See *ATM note sorting*)
- e. Fitness setting (See *ATM note sorting*)

Note: The 2 stackers must be of the same fitness property.

- f. After setting all parameters of the stacker, click [OK] to return to the first interface. Performing the same operations b ~ e to set parameters of the other stacker. Finally, click [Save] to save the modification.

6) Denom. counting



Operation procedures and instructions:

a. Denom. settings

- If “Configure” is selected, 2 stackers can be appointed to different denom. properties respectively, such as EUR 100, 50, 20, etc.
- If “Single” is selected, 2 stackers will be of the same denom. property, which depends on the first qualified note.
- If “Multiple” is selected, qualified notes of different denom. properties will be transported to different stackers in detecting order.
- If “Mix” is selected, all qualified notes will be sorted out without distinguishing denom.

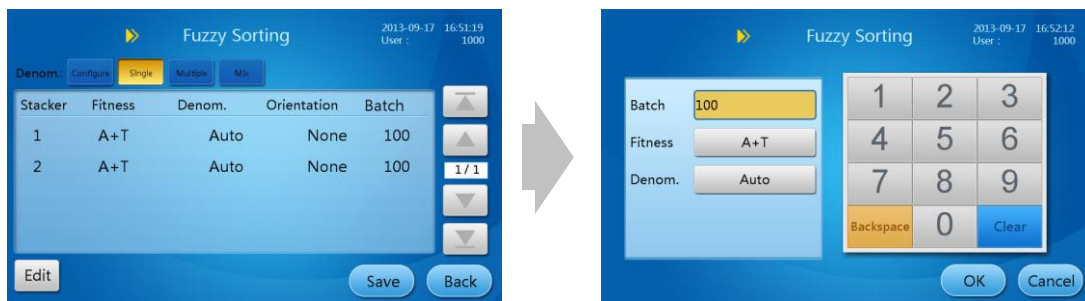
b. Speed setting

- Low: 720 pieces/minute
- Middle: 900 pieces/minute

- c. Stacker selecting (See *ATM note sorting*)
- d. Batch setting (See *ATM note sorting*)
- e. Denom. setting (See *ATM note sorting*)

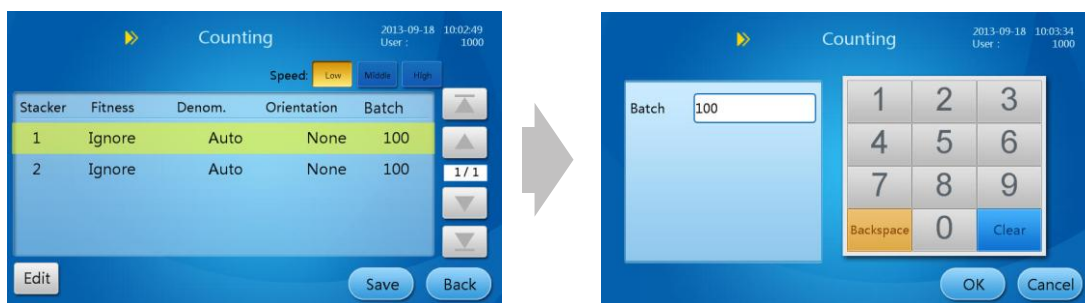
After setting all parameters of the stacker, click [OK] to return to the interface of step A. Performing the same operations from step “b” to step “e” to set parameters of the other stacker. Finally, click [Save] to save the modification.

7) Fuzzy sorting



The parameter setting procedures of fuzzy sorting are the same as those of circulated note sorting; please refer to the section for details.

8) Counting



Operation procedures and instructions:

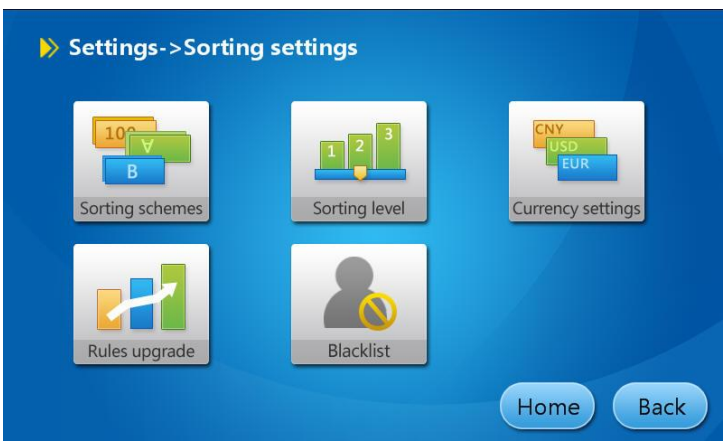
- a. **Speed setting**
 - Low: 720 pieces/minute
 - Middle: 900 pieces/minute
 - High: 1000 pieces/minute
- b. **Stacker selecting** (See *ATM note sorting*)
- c. **Batch setting** (See *ATM note sorting*)
- d. **After setting all parameters of the stacker, click [OK] to return to the first interface. Performing the same operations of step “b” and step “c” to set parameters of the other stacker. Finally, click [Save] to save the modification.**

3.1.2. Sorting level

The interface is as shown below:

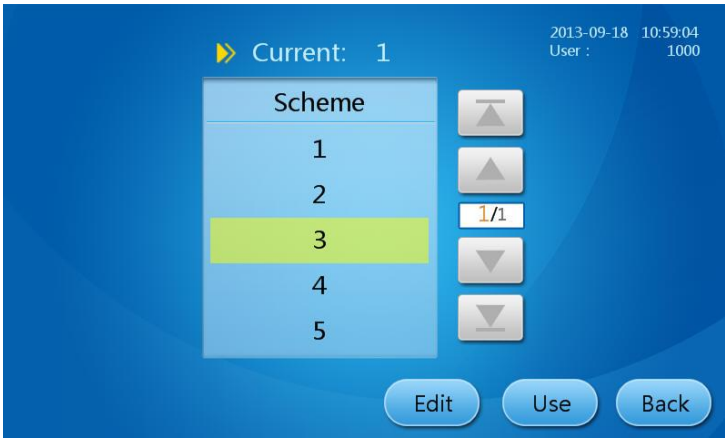
A

Click “Sorting level”.



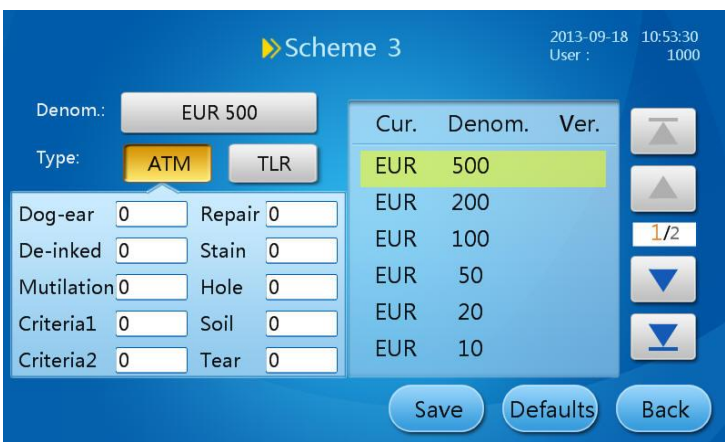
B

There are five schemes of sorting level. From scheme 1 to scheme 5, its detection ability changes from strong to weak. Scheme 3 is the default one. Select a scheme, click “Edit” to adjust the relative parameters. Note: Select a scheme; click “Use” to enable it.



C

Select “Denom.” and “Type”, click the parameters to be adjusted and enter new figures. After adjusting all parameters of this “Denom.”, click “Save” to save the modification.



Defaults: Select one denomination and click “Defaults”, sorting criterion of the denomination will be recovered to default settings.

1) Descriptions

Based on the practical application of banknote sorting machine, we judge the quality of notes according to characteristics of 10 items, including dog-ear, soil, hole, mutilation, tear, repair, stain, de-inked, criteria 1 and criteria 2. Combined with the EUR notes sorting demand, we divide each item into several levels.

By setting “ATM note criteria” and “Circulated note criteria”, notes are divided into 3 levels: ATM notes, circulated notes and non-circulated notes. Higher level indicates that the notes transported to stackers (stacker 1, 2, 3 and 4) are of better quality; meanwhile, more notes will be rejected. The parameters can be set from 0 ~ 255. “0” indicates the detection to the corresponding item will be shielded.

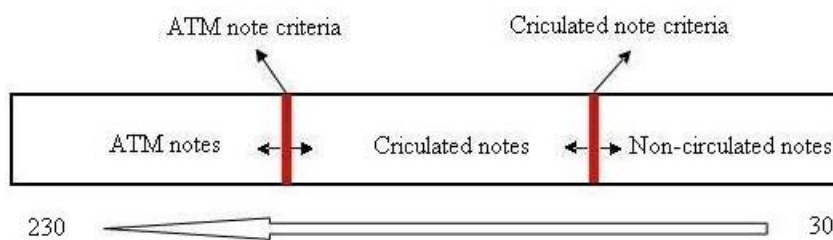


Figure 1 Sorting levels

- Dog-ear

Dog-ear means the folding of notes' corners, shown in figure 2.

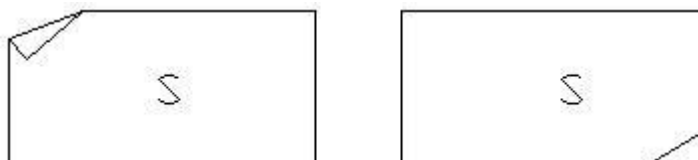


Figure 2 Dog-ear

Sorting level of dog-ear, whose parameter indicates the area of note's dog-ear in total, is shown in table 1. Higher level means stronger detection ability. That is to say, as the higher level to be set, the dog-ear of note sorted out will be smaller.

Table 1 Sorting level of dog-ear

Level/Parameters	Area of dog-ear(mm ²)	Remarks
230~180	<4	
180~170	4~24	
170~150	24~60	
150~120	60~112	
120~90	112~180	
90~30	>180	

- Soil

Sorting level of soil, whose parameter indicates the soil extent of note, is shown in table 2. Higher level means stronger detection ability. That is to say, as the higher level to be set, the notes sorted out will be newer.

Table 2 Sorting level of soil

Level/Parameters	Soil property	Remarks
230~200	≥90% new	ATM note
200~180	70%~80% new	ATM note
180~140	60%~70% new	Circulated note
140~30	≤60% new	Non-circulated note

- Hole

Hole means the lack of note’s middle area, shown in figure 3.

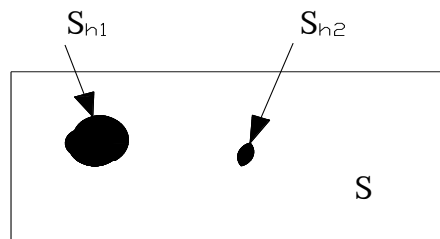


Figure 3 Hole

Sorting level of hole, whose parameter indicates the area missing from the middle of notes, is shown in table 3. Higher level means stronger detection ability. That is to say, as the higher level to be set, the hole of note sorted out will be smaller.

Table 3 Sorting level of hole

Level/Parameters	Area of hole(mm ²)	Remarks
230~180	<40	
180~150	40~60	
150~140	60~100	
140~100	100~140	
100~70	140~200	
70~30	>200	

- Mutilation

Mutilation means the lack of note's edge. The sorting level of mutilation is shown in table 4.

Table 4 Sorting level of mutilation

Level/Parameters	Mutilation degree	Remarks
230~180	Slight	
180~160	Medium	
160~30	Serious	

- Tear

Tear is shown in figure 4.



Figure 4 Tear

Sorting level of tear: Its parameter indicates the length of tear in the note. Higher level means stronger detection ability. That is to say, as the higher level to be set, the length of tear in notes sorted will be shorter.

Table 5 Sorting level of tear

Level/Parameters	Length of tear(mm)	Remarks
230~170	<5	
170~160	5~11	
160~140	11~16	
140~100	16~21	
100~80	21~26	
80~30	>26	

- Repair

Repair means that there is other materials (such as tape or paper) covered on the note, shown in figure 5.



Figure 5 Repair

Sorting level of repair, whose parameter indicates the area of material covered on the note in total, is shown in table 5. Higher level means stronger detection ability. That is to say, as the higher level to be set, the area of repair on note sorted out will be smaller.

Table 6 Sorting level of repair

Level/Parameters	Note property	Remarks
230~160	ATM note/ Circulated note	
160~30	Non-circulated note	

- Stain

Stain means the defacement and graffiti on the note, shown in figure 6.

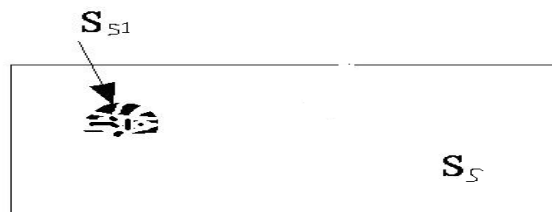


Figure 6 Stain

Sorting level of stain: Its parameter indicates the area of defacement and graffiti on the note in total. Higher level means stronger detection ability. That is to say, as the higher level to be set, the stain area on the note sorted out will be smaller.

Table 7 Sorting level of stain

Level/Parameters	Note property	Remarks
230~180	ATM note	
180~160	Circulated note	
160~30	Non-circulated note	

- De-inked

De-inked notes mean notes which are lack of ink resulting from rinse or abrasion in the processing of using.

Sorting level of de-inked, whose parameter indicates the de-inked extent of note, is shown in table 8. Higher level means stronger detection ability. That is to say, as the higher level to be set, the de-inked extent of note sorted out will be less.

Table 8 Sorting level of de-inked

Level/Parameters	Note property	Remarks
230~160	ATM note/ Circulated	
160~30	Non-circulated note	

- Criteria 1

It indicates the identification for the authenticity of the specific region 1. Its parameter can't be set or modified by users.

- Criteria 2

It indicates the identification for the authenticity of the specific region 2. Its parameter can't be set or modified by users.

2) Defaults of sorting level

The defaults of ATM note and circulated note are as follows.

Note: The defaults in the following table are only for reference and can be modified by administrator users as demand.

Parameters for ATM note \geq parameters for circulated note

Items	Defaults		Remarks
	ATM note	Circulated note	
Dog-ear	160	160	
Soil	160	100	
Hole	160	160	
Mutilation	160	160	
Tear	160	160	
Repair	160	160	
Stain	160	160	
De-inked	160	160	
Criteria 1	160	160	
Criteria 2	160	160	

3.1.3. Currency setting

It is used for administrator user to set/switch currency. The interface of currency setting is as shown below:



3.1.4. Rules upgrade

It is used for administrator user to load blacklist of serial number. The interface of rules upgrade is as shown below:



Blacklist of serial number can be loaded by two ways: load from USB and load from local. As click “Load from USB” or “Load from local”, prompts for rules upgrade will be displayed on the interface. Perform operations according to the prompts. The operation for creating blacklist document and format of blacklist are as follows:

- Create a document “GRGOcrSnBlackList.ini”. (Path: C (or D): \ temp \ rule \ GRGOcrSnBlackList.ini)
- And enter blacklist of serial numbers in it. The format is as follows:

[COMMENT]

Total= The total number of blacklist

BL*= Blacklist of serial number; “*” stands for the ordinal of serial number; Serial number consists of country code and numbers, which can be replaced by symbols “?” or “*?”.

E.g.:

[GRGOcrSnBlackList]

Total=4

BL1=S9G8785278

BL2= HD90*(Means: set all serial numbers beginning with HD90 to blacklist)

BL3= Z1U1?????? (Means: set all serial numbers beginning with Z1U1 to blacklist)

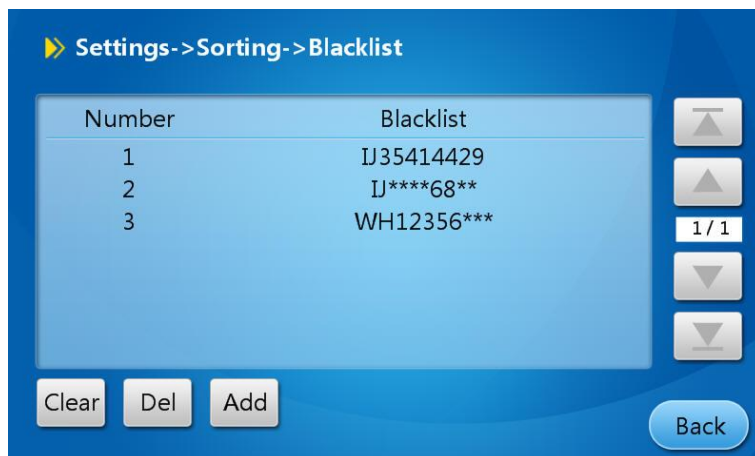
BL4=*(Means: set all serial numbers to blacklist)

In the process of sorting, the note with serial number in blacklist would be rejected.

3.1.5. Blacklist

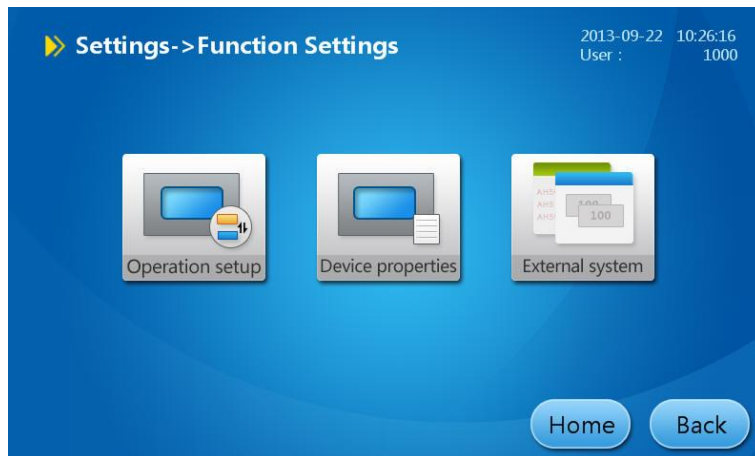
After loading blacklist by rules upgrade, please switch to the “Blacklist” interface to confirm and view the blacklist. And administrator user can clear/delete/add blacklist as needed.

The interface of blacklist is as shown below:



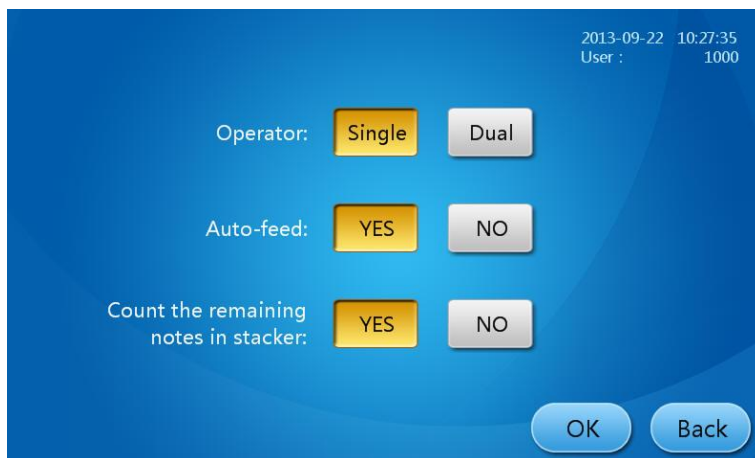
3.2. Function settings

The interface of function settings is as shown below:



3.2.1. Operation setup

The interface is as shown below:



1) Operator

By selecting “Single” or “Dual”, the machine is configured with the mode “single user login” or “dual users login together”.

2) Auto-feed

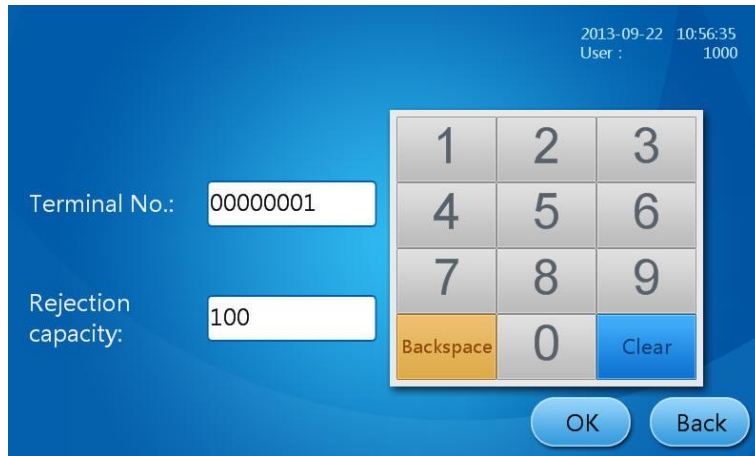
- By selecting “YES”, the machine is configured with “auto-feed”. In this mode, the machine will feed and sort notes automatically as soon as loading notes.
- By selecting “NO”, the machine is configured with manual-feed. In this mode, the machine will feed and sort notes only after loading notes and clicking “Start”.

3) Count the remaining notes in stacker

If selecting “YES”, the “pieces” and “amount” of notes remaining in the stacker (not full) will be added to “total pieces” and “total amount” when sorting finished. Or it will not be added to.

3.2.2. Device properties

The interface is as shown below. The administrator user has the authority to enter and view terminal no. and rejection capacity.



3.2.3. External system

The interface is as shown below:

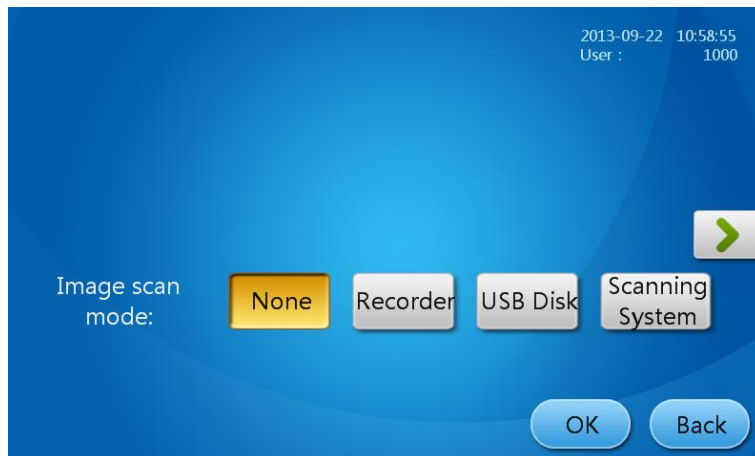
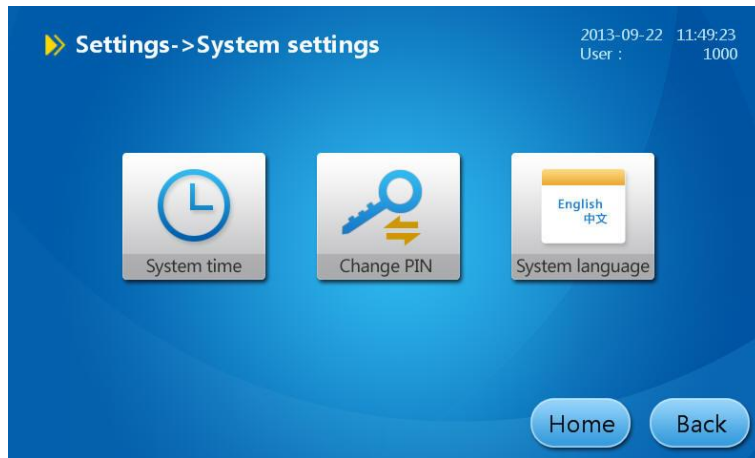


Image scan mode

- None: Do not scan image.
- Recorder: All images scanned will be saved in the recorder. This mode works only in the event that the machine is connected with a recorder.
- USB Disk: All images scanned will be saved in the USB disk. This mode works only in the event that the special-purpose USB disk supplied by GRG banking is inserted into the corresponding interface. (Note: The USB disk, manual and other accessories are in the packing box.)
- Scanning System: All images scanned will be saved in the scanning system. This mode works only in the event that the NV is connected with PC of the scanning system. (Note: Click “>” to enter “IP” and “Port” for scanning system.)

3.3. System settings

The interface is as shown below. In this interface, the administrator user has the authority to set system time, reset PIN and switch system language. And the operator user also can reset PIN.



3.3.1. System time setting

A

Click "System time".

Then enter time information in the corresponding boxes.

Click "OK" to save settings.

2013-09-22 11:52:01
User : 1000

Y/M/D

H/M/S

1	2	3
4	5	6
7	8	9
Backspace	0	Clear

B

After saving the settings successfully, click "Back" to exit.

2013-09-22 11:54:31
User : 1000

Y/M/D

H/M/S

1	2	3
4	5	6
7	8	9
Backspace	0	Clear

✔ System time setting succeeded

47/70

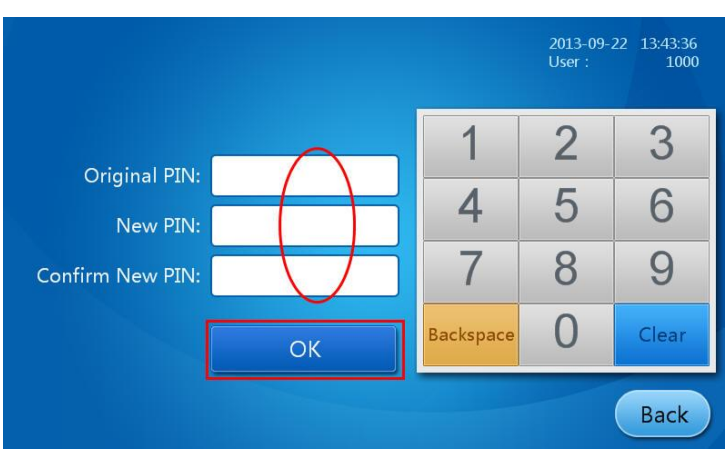
3.3.2. Change PIN

A

Click “Change PIN”.

Enter the correct PINs in the corresponding boxes.

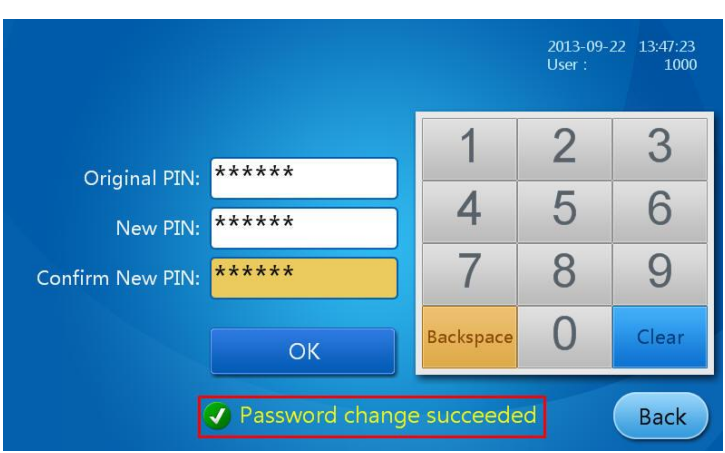
Click “OK” to save the modification.





B

After saving the modification successfully, click “Back” to exit.



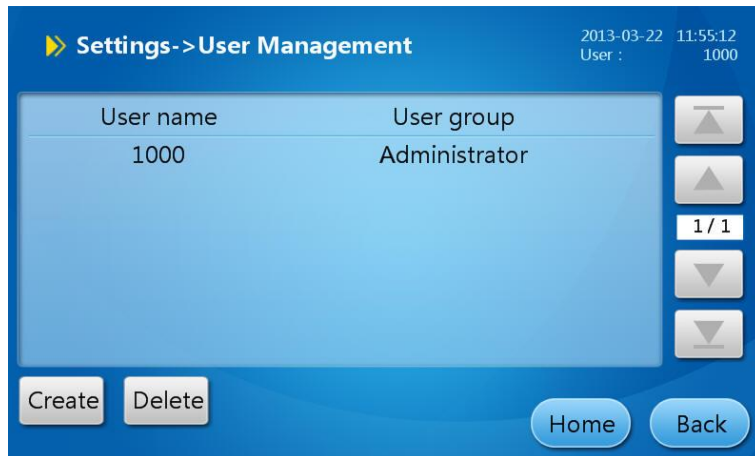
3.3.3. System language

The interface is as shown bellow. In this interface, administrator user has the authority to switch the system language.



3.4. User management

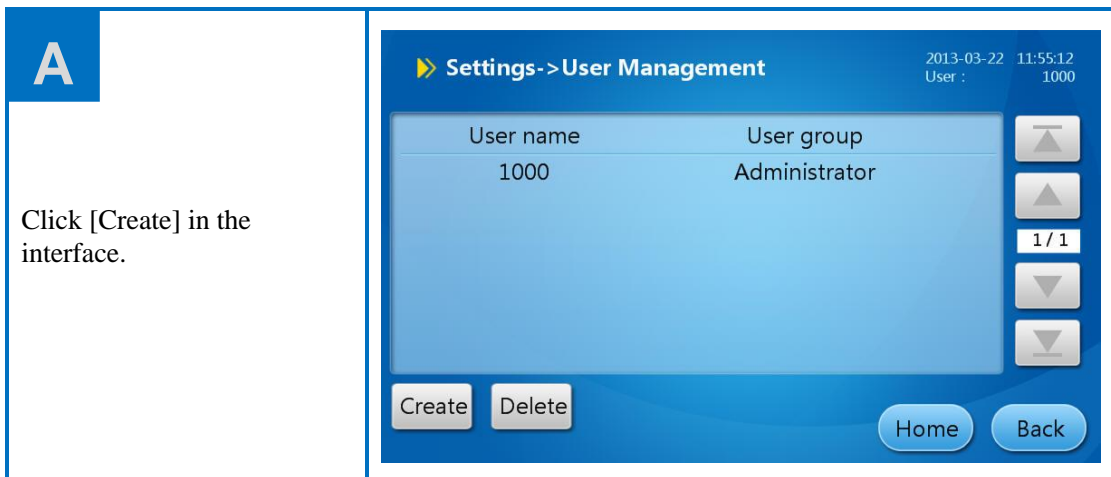
The interface is as shown below. Only the administrator user has the authority to enter this interface and conduct the corresponding operations.



The administrator user has the authority to create/delete administrator account and operator account. Note: If an administrator account is deleted, then the system requires the entry of the root password “002152”.

3.4.1. Create account

The operation procedures of creating operator accounts are the same as creating administrator accounts. Now we take creating operator account for example.



B

Select the role “Operator”, and then enter “User”, “PIN” and “Confirm PIN”. At last, click [OK] to confirm.

2013-03-22 14:57:52
User : 1111

Role: Administrator **Operator**

User: 1008

PIN: *****

Confirm PIN: *****

OK

1 2 3
4 5 6
7 8 9
Backspace 0 Clear

Back

C

If succeeded, the prompt “Add user succeeded” will be returned.

Click [Back] to exit.

2013-03-22 15:45:14
User : 1111

Role: Administrator **Operator**

User:

PIN:

Confirm PIN:

OK

✓ Add user succeeded

Back

1 2 3
4 5 6
7 8 9
Backspace 0 Clear

3.4.2. Delete user

Now we take deleting operator account for example.

A

Select a user “1008”, click [Delete].

» Settings->User Management


User name	User group
1000	Administrator
1111	Administrator
1008	Operator

Create
Delete

2013-03-22 16:44:20
User : 1111

1 / 1

Home Back




B

Click [OK].

Delete this user?

OK
Back



C

If succeeded, the prompt “Delete user succeeded” will be returned.
Click [Back] to exit.

» Settings->User Management

User name	User group
1000	Administrator
1111	Administrator

Create
Delete
✔ Delete user succeeded

2013-03-22 16:49:00
User : 1111

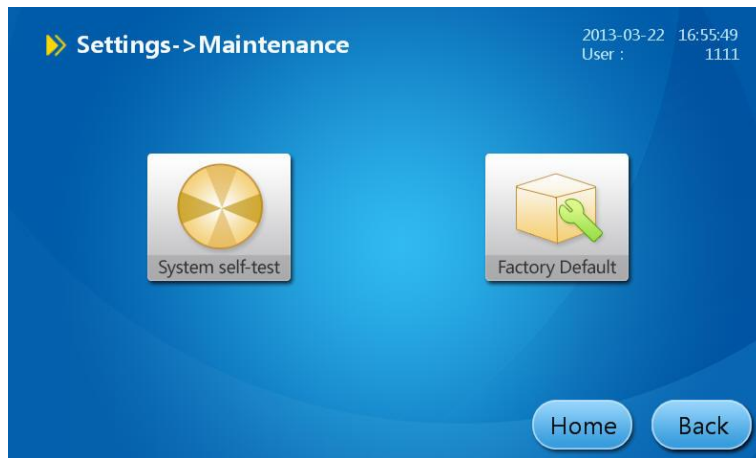
1 / 1

Home Back

52/70

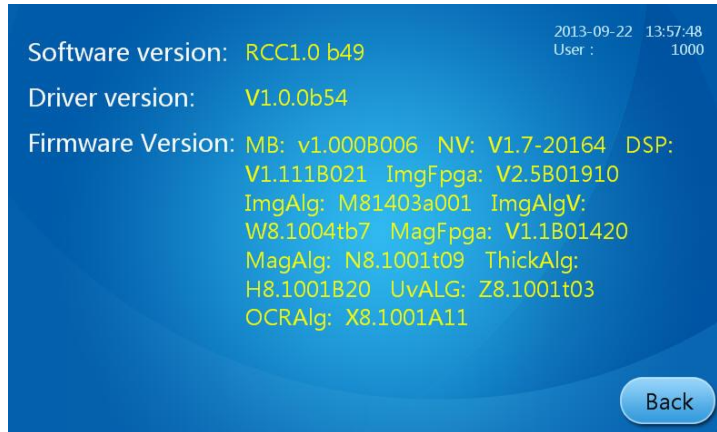
3.5. System maintenance

The interface is as shown below. In this interface, all users can perform system self-test to check whether the hardware modules work normally. Only the administrator and maintenance engineer can perform the operation of recovering to factory default.



3.6. Version Information

The interface is as shown bellow. In this interface, administrator, operator and guest users have to authority to view the versions of software, driver and firmware.



Chapter 5 How to open and close the units

- **How to open and close the upper unit**
- **How to open and close the NV**
- **How to open and close the rear cover**
- **Dust receiving box**

1. How to open and close the upper unit

- **Open**

Press handle 1 to the bottom, and unfold the upper unit in the arrow direction.



- **Close**

Press the upper unit until it clicks into place.



2. How to open and close the NV

- **Open**

Turn handle 2 in the arrow direction and unfold the NV transport.



- **Close**

Hold the NV cover and press it in the arrow direction until it clicks into place.



3. How to open and close the rear cover

- **Open**

Turn handle 3 in the arrow direction and unfold the rear cover.



- **Close**

Hold the rear cover and press it in the arrow direction until it clicks into place.



4. Dust receiving box

Hold the dust receiving box and pull it out.

Note: Push dust receiving box in the opposite direction to restore it.

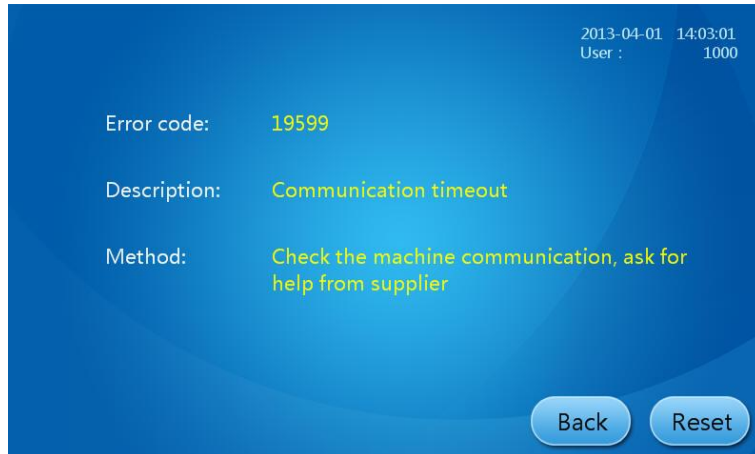


Chapter 6 Error Handling

- **How to handle error**
- **Sensor locations**

1. How to handle error

1. When error occurs, the error code and relative information will be displayed in the interface (see figure below).



Error code: It is the code for current error.

Description: It is the brief content of error.

Method: It introduces the method for handling errors.

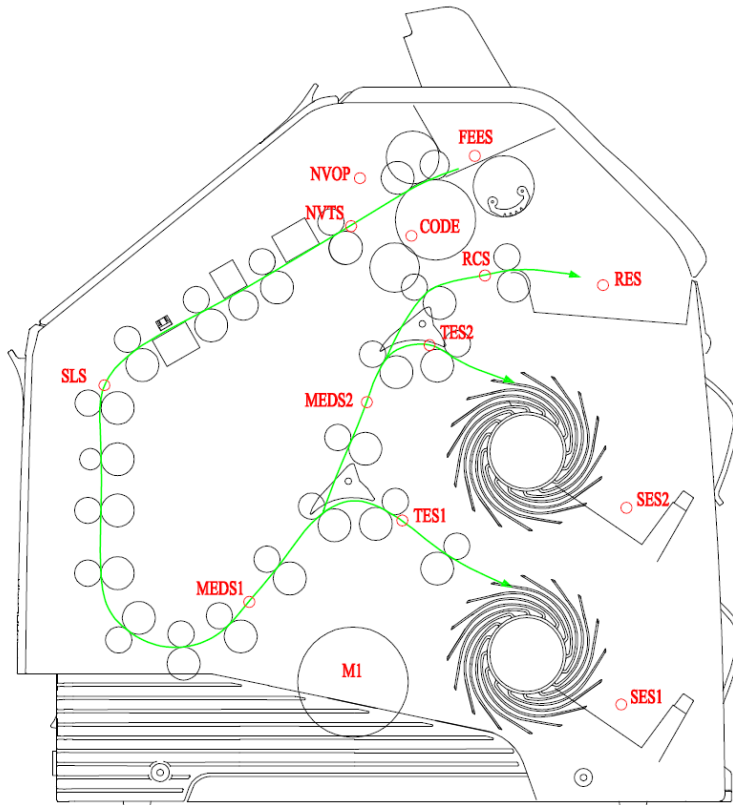
Back: Click this button to return to the main interface.

Reset: Click this button for self-test after handling the error.

Note:

1. If there are several methods, please try one by one.
 2. Refer to chapter 5 for the method to open and close the units.
2. Handle the error according the method introduced in the interfaces.
 3. After solving the problem, click “Reset”, the system will do self-test and return to the main interface or other interface.
If the problem can't be solved, click “Back” to perform other operations. Don't remove the note jammed in the transport by any improper method or tools. Please contact our maintenance engineer if necessary.

2. Sensor locations



Chapter7 Maintenance

- **Notes on safety**
- **Cleaning kit**
- **How to clean the machine**

1. Notes on safety

In the course of use, the internal transport and sensors of the machine would unavoidably be attached to the dust and dirt, which may cause errors. So it is recommended to clean the machine every week in order to ensure normal operation.

Notes of safety:

- Disassembly and assembly should only be performed by GRG recognized professional service engineers under power-off condition.
- Please switch the power off before cleaning the machine.
- In the course of opening the, please confirm the unit unfolded is locked by corresponding catch before performing the next operation. And be careful not to nip fingers.
- Do not use any cleaner not described in this manual.
- In the course of cleaning, be careful not to drop water, alcohol or other liquids on the circuit boards of the modules.

2. Cleaning kit

The cleaning kit contains recommended materials for servicing and cleaning your machine, the materials are shown as follows: (You can use equivalent cleaning kit as well)

- General surface cleaner (for cleaning the surface)
- Lint-free cloth
- Cotton buds
- Brush
- Vacuum cleaner

3. How to clean the machine



1	Note validator (NV)	5	The upper unit
2&11	NV catch	6&9	Catches of the upper unit
3	Rear cover	7	The lower unit
4&12	Catches of rear cover	8	Handle 1
10	Knob: Turn the knob counterclockwise to remove the jammed notes.		

3.1. Procedures for cleaning the internal

Notes: Please switch the power off before cleaning the machine.

- 1) Unfold the upper unit.



- 2) The status is as figure at right.
(Note: Prepare for cleaning the lower transport)



- 3) **Cleaning the lower transport**

Use a brush to clean the dust in the transport. And then use a lint-free cloth to clean the ink on the surface of transport.

Use a vacuum cleaner to clean dust remaining in the gap between wheels.



- 4) Restore the upper unit.

- 5) Turn handle 2 in the arrow direction and unfold the NV.

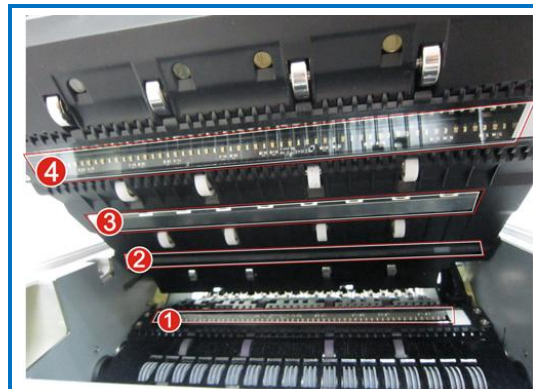
(Note: Prepare for cleaning the NV transport)



- 6) Use a brush to clean the dust in the transport. And then use a lint-free cloth to clean the ink on the surface of transport.

Use a vacuum cleaner to clean dust remaining in the gap between wheels.

Importance: Use a dry lint-free cloth to clean the scanning surfaces (①~④ in the figure) softly. Don't bedew the surfaces.



- 7) Hold the NV cover and press it in the arrow direction until it clicks into place.



- 8) Turn handle 3 in the arrow direction and unfold the rear cover.



- 9) Use a brush to clean the dust in the transport. And then use a lint-free cloth to clean the ink on the surface of transport.

Use a vacuum cleaner to clean dust remaining in the gap between wheels.



- 10) Hold the rear cover and press it in the arrow direction until it clicks into place.



- 11) Hold the dust receiving box and pull it out. Clean the dust in the box.

- 12) Push dust receiving box in the opposite direction to restore it.



3.2. How to clean the exterior surface

Procedures for cleaning:

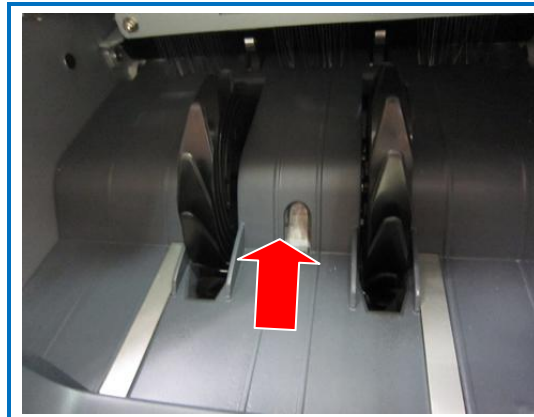
Notes: Please switch the power off before cleaning the machine.

- 1) Use a brush and a lint-free cloth to clean the dust and ink on the surface of hopper.

Use a vacuum cleaner to clean dust remaining in the gap between wheels.



- 2) Use a brush and a lint-free cloth to clean the dust and ink on the surface of reject stacker.
- 3) Restore the plate of the reject stacker.



- 4) Use a lint-free cloth dampened with cleaner to clean the exterior surface.

Importance: Do not scrape the surface with sharp articles.

Appendix Service Contact

Use the following information to contact us:

Phone: 400-700-2468 (24-hour customer service hotline)

Email: Tech_support@grgbanking.com

Web site: <http://www.grgbanking.com>



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