
ARPEGE
SECURITY

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SUZOHAPP & ARPEGE

SC-82208220/ VC
Currency Counter
Technical Handbook & Spare Parts List

158101-5004190- Rev 07

SCAN COIN

ARPEGE SECURITY
359 rue Vanderkindere, 1180 Bruxelles, Belgique
Email: info@arpege-security.com
Téléphone: + 32475418452

SC-82208220/VC 158-5004190-101 Rev 07

ARPEGE SECURITY

SUZOHAPP & ARPEGE

Global Headquarters North and South America
1743 S Linneman Rd
Mt Prospect IL 60056 USA
Phone: +1 (847) 593-6130
Fax: +1 (847) 593-6137 info@suzohapp.com

Netherlands Headquarters Europe, the Middle East and Africa
Rijnzathe 12
3454 De Meern
The Netherlands
Phone: +31 186 64 33 33
Fax: +31 186 64 33 22
info.nl@suzohapp.com

Hong Kong Headquarters Asia and the Pacific
Unit B 3/F
Dragon Industrial Building
93 King Lam Street
Lai Chi Kok, Kowloon
Hong Kong
Phone: +852 2856 3033
Fax: +852 2590 6423
info.ko.hk@suzohapp.com

ARPEGE SECURITY
359 rue Vanderkindere, 1180 Bruxelles, Belgique
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1 General Information

SUZOHAPP reserves the right to revise and improve its products as it sees fit. This publication describes the product at the time of publication and may not reflect the product in the future.

1.1 Declaration of Conformity

We declare under our sole responsibility that the product in this manual is in conformity with the following standards or other normative documents:

SC-8220

- EN 55022:2010+AC:2011
- EN 55024:2010+A1:2015
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013

following the provisions of:

- LVD Directive 2014/35/EU
- EMC Directive 2014/30/EU

SC-8220 VC

- EN 55032:2015
- EN 55035:2017
- EN 61000-3-2:2019
- EN 61000-3-3:2019
- EN 62368-1:2014

following the provisions of:

- LVD Directive 2014/35/EU
- EMC Directive 2014/30/EU

1.2 Environmental Compliance

WEEE Directive

Waste Electrical and Electronic Equipment Directive 2002/96/EC.

Equipment marked with this symbol must be treated separately and in accordance with any local legislation requiring proper treatment, recovery and recycling of used electrical and electronic equipment.

Note! If the equipment contains batteries or accumulators, dispose of those items separately according to local requirements.

RoHS 2

RoHS2 Restriction of Hazardous Substances Directive 2015/863/EU.

Contact your SUZOHAPP representative for further details.

1.3 Responsibility

The supplier of the equipment accepts no responsibility for injury or damage to personnel or equipment if the equipment is altered in any way or used in a manner for which it was not intended at the time of delivery.

If the conditions for use of the equipment are changed, the supplier must be contacted or the declaration of conformity is invalidated.

1.4 Abbreviations/Acronyms

Abbreviation	Description
EMI	Electromagnetic Interference
ESD	Electrostatic Discharge
PSU	Power Supply Unit

1.5 Related Documents

Document	Document number (Main number)
User's Guide	5005307-101

2 Safety Precautions

2.1 Hazard Notices

This manual contains hazard information which must be regarded by all users.

The hazard information is presented as a warning or a caution as follows:

WARNING!
Risk of personal injury
Warnings indicate a potential hazard to the health and safety of users. They clearly state the nature of the hazard and how to avoid it. The warning symbols appear at their points of application in this handbook, but with different illustrations.

Caution! Cautions indicate a potential hazard to the physical integrity of the machine, but not a danger to personnel. They clearly state the nature of the hazard and how to avoid it. They appear at their points of application in this handbook.

Note! The servicing information and instructions contained in this technical handbook are for use by qualified personnel only. Any unauthorized attempt to service or repair the machine will nullify the warranty.

2.2 Installation

WARNING!
Risk of electric shock
The machine is of metal construction and as such must always be earthed to the supply. Make sure that the plug on the supply lead and the supply source are earthed. This requirement is a mandatory condition for the operation of this type of equipment and if not adhered to will contravene the national and international standards of Health and Safety in the work place.

Although this machine has been tested for electromagnetic compatibility and vibration characteristics, it is recommended that no equipment which generates a high level of electromagnetic interference (EMI) or vibration is placed close to this machine.

Caution! The machine must be protected by a fuse or a circuit breaker in the power supply feed.

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WARNING!
Risk of electric shock
The socket outlet shall be installed near the equipment and shall be easily accessible.

Ensure that the power cable cannot be damaged, crushed or stepped on.

2.3 Removal/Assembly

Electrostatic discharge (ESD)

WARNING!
Risk of electric shock
High voltage inside the machine may be fatal for anyone in contact with it. Always switch OFF and disconnect the machine from mains supply before disassembling.

Caution! Electrostatic discharge (ESD) may damage the electronic components. All electronic circuit boards in the machine are sensitive to ESD.

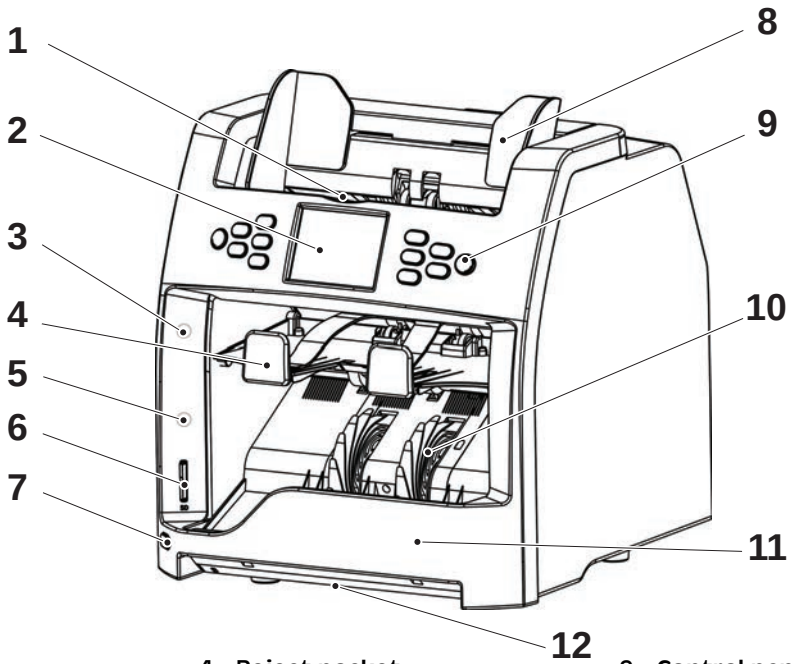
To prevent damage from ESD, always observe the following precautions:

- Always wear a suitably grounded wrist wrap – make it first on, last off.
- An unboxed or unbagged board is an unprotected board!
- Keep non-conducting materials (sleeves, ties, scarves and so on) away from electrostatic safe work areas.

3 Technical Description

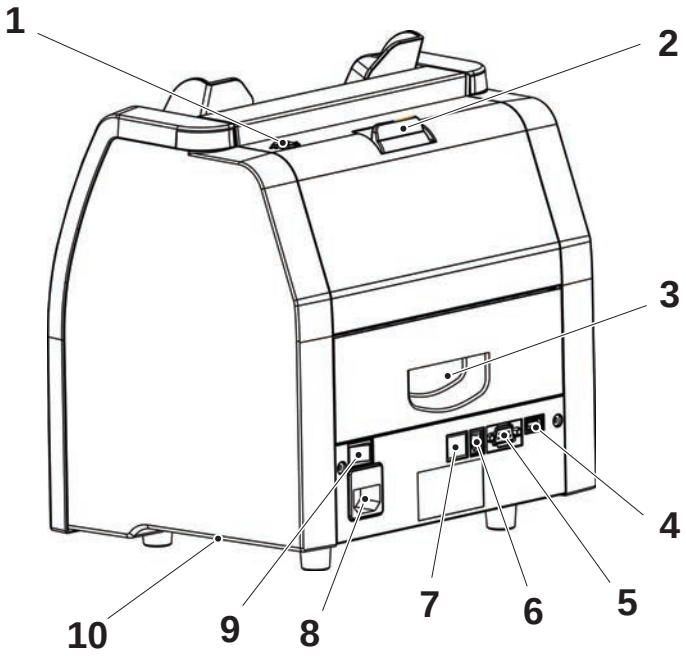
3.1 Machine Parts Overview

Front



1 Hopper
2 3.2" Color TFT LCD touch screen
3 Red indicator for reject pocket
4 Reject pocket
5 Blue indicator for stacker
6 SD card slot
7 UV switch
8 Note guide
9 Control panel
10 Banknote receiving wheel
11 Stacker
12 External UV

Rear



1 Adjusting screw
2 Upper note path opening
3 Lower note path door
4 USB port for PC connection
5 RS232 port for external display
6 Port for printer
7 Port for network
8 Power connection (with fuse)
9 Power switch
10 Side carrying grip

3.2 Control Panel Overview

Button	Description
START	Press to start counting. Also serves as selection confirmation in **MENU**.
C	Press to clear the number of counted banknotes. Press to turn off the batch function. During selection in **MENU**, press **C-button** to set corresponding setting to default value.
+1/+10	Press to increase the batch number by 1 (short press) or 10 (long press).
CUR	Currency and currency mode selection.
BATCH	Press to turn Batch mode on/off. Press to set batch number.
PRINT	Press for a print out/receipt.
MODE	Press for sorting mode selection: **Mix, Single, Face(S), Orient(S), F&O(S), VER(S)**.
ADD	Press to turn **ADD** mode on/off. Also serves as navigation key **UP**.
DISPLAY	Press to view the count result. Also serves as navigation key **DOWN.**
MENU	Press to enter/step back in **MENU** navigation.

4 Technical Data

4.1 Environmental

Description	Value
Operating temperature	0–40°C
Operating humidity	40–90% R.H.
Power requirements - Voltage - Frequency	 100-240V AC 50-60 Hz

4.2 Machine

Description	Value
Counterfeit detection	IR, MG, DUAL CIS, MT, UV
Counting speed	800 / 900 / 1100 notes/min
Hopper capacity	500 notes
Stacker capacity	220 notes
Reject pocket capacity	Max 50 notes
Height (footprint)	319 mm (12.6")
Width (footprint)	275 mm (10.8")
Depth (footprint)	260 mm (10.2")
Weight	9.30 kg (20.50 lb)
Power consumption	≤ 50W

5 Tools

5.1 Mechanical

Note! These tools are not included in standard SC-8220/SC-8220 VC.

Screwdriver
Hexagonal key
Wrench
Cutting pliers

5.2 Electrical

Note! These tools are not included in standard SC-8220/SC-8220 VC.

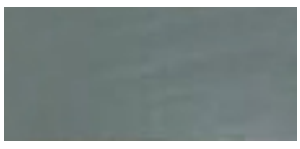
Multimeter.

5.3 Cables

USB cable.

5.4 Calibration

Note! These tools are not included in standard SC-8220/SC-8220 VC.

Gray calibration note	IR calibration note (pink)
	
approx. 187x85 mm	200x85 mm

UV calibration note (ivory)	White calibration note
	
175x70 mm	185x70 mm

5.5 Cleaning

Brush.

5.6 PC Driver Software

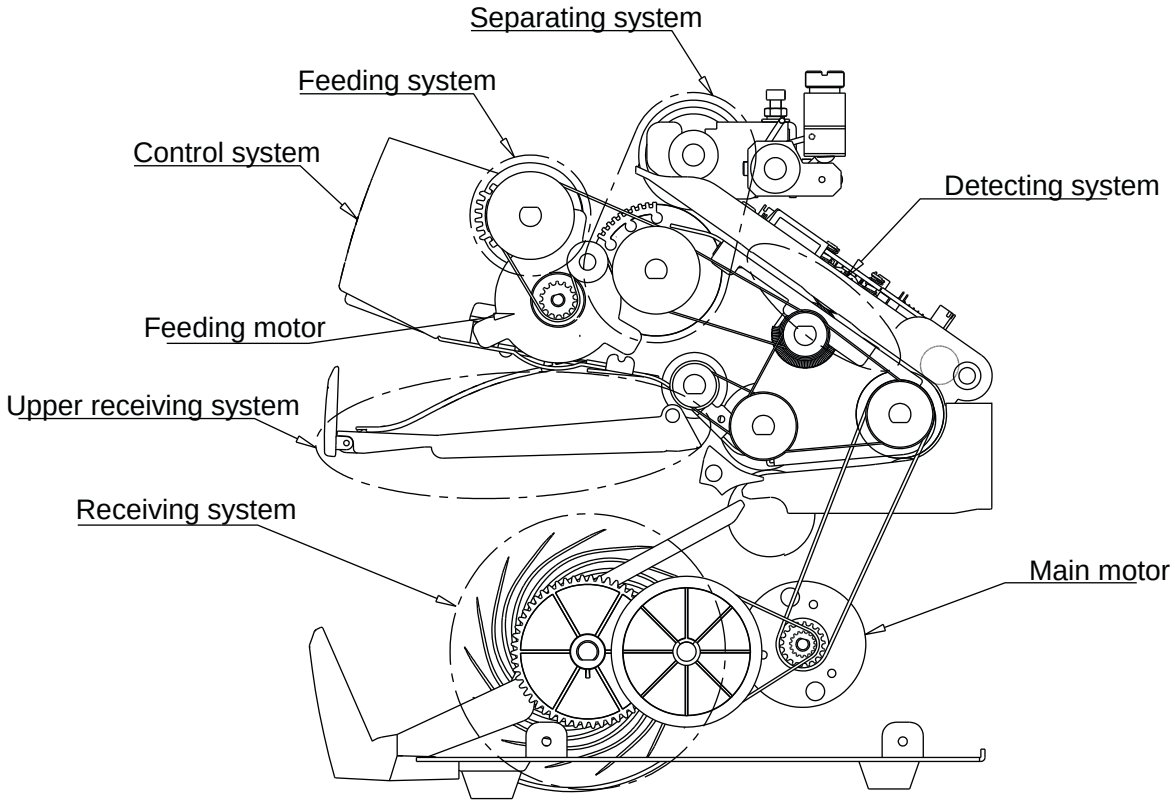
Version 1.0.0.1

6 Removal and Assembly

WARNING!
Risk of electric shock
Make sure that the machine is not connected to the power supply while you are working on it.

6.1 Description of the Mechanical System

The mechanical system consists of different units. See figure below:



Main Driving System

The main driving system consists of the main motor, synchronous wheel and synchronous strap, etc. The motor starts when the power is switched on.

Transmission System

The transmission system consists of the feeding wheel, twiddling wheel, pressing wheel, synchronous strap, resistance wheel, delivering wheel, and feeding motor, etc. In order to guarantee the counting accuracy, the feeding speed is set higher than the receiving speed. Thus, the pressing wheel must rotate faster than the note twiddling wheel and a certain amount of tension is applied to the notes during the transmission process.

Feeding/Separating System

The feeding system mainly consists of the hopper, pressing wheel, etc. The feeding and separating function will be implemented through the pressing wheel by delivering the notes on the hopper, one piece after another, when the main motor starts to run (the friction between the top note and the rubber wheel is stronger than the friction between the notes themselves).

Dropping/ Receiving System

When the note leaves the transmission system, it will be sent to the dropping/receiving system, which consists of the receiving wheel, gangway, stacker and other components.

Control System

The control system system consists of the LCD and the keystroke. The LCD is located in the middle of the control panel. The keys are located at both sides of the LCD. The LCD displays messages and correlative functions are implemented by pressing corresponding keys.

Detective System

The detective system consists of eight groups of sensors. Feeding and receiving sensors are used to control the movement of the notes. The remaining ones are used for detecting rotate speed, IR, reject, CIS, fluorescence and magnetic properties.

6.2 Removal Process

Removal of Left and Right Covers

a) To access the screws at the sides of the top cover, open the upper cover.

b) Remove the two screws (1) with a screwdriver 5x100 mm.

1 Screw

c) Remove the back drawer. Then remove the two screws (2) with a screwdriver 5x100 mm.

2 Screw

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d) Remove the four screws (3) at the bottom with a screwdriver 5x100 mm.

3 Screw

Some components can now be replaced, for instance, the main, core and motor control boards and the rotating speed sensor.

Left view

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Components such as synchronous strap, synchronous wheel and bistable rotary solenoid can now be replaced. Rubber teeth synchronization adjustment can also be performed. See "Rubber Teeth Synchronization Adjustment" on page 49.

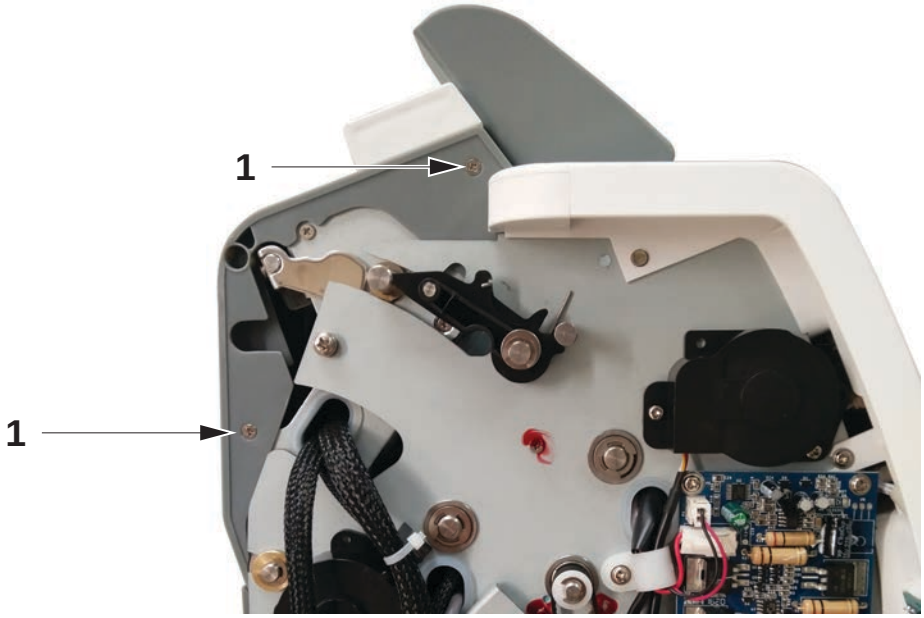
Right view

Removal of Top Cover

a) To access the screws at the sides of the top cover, open the upper cover.

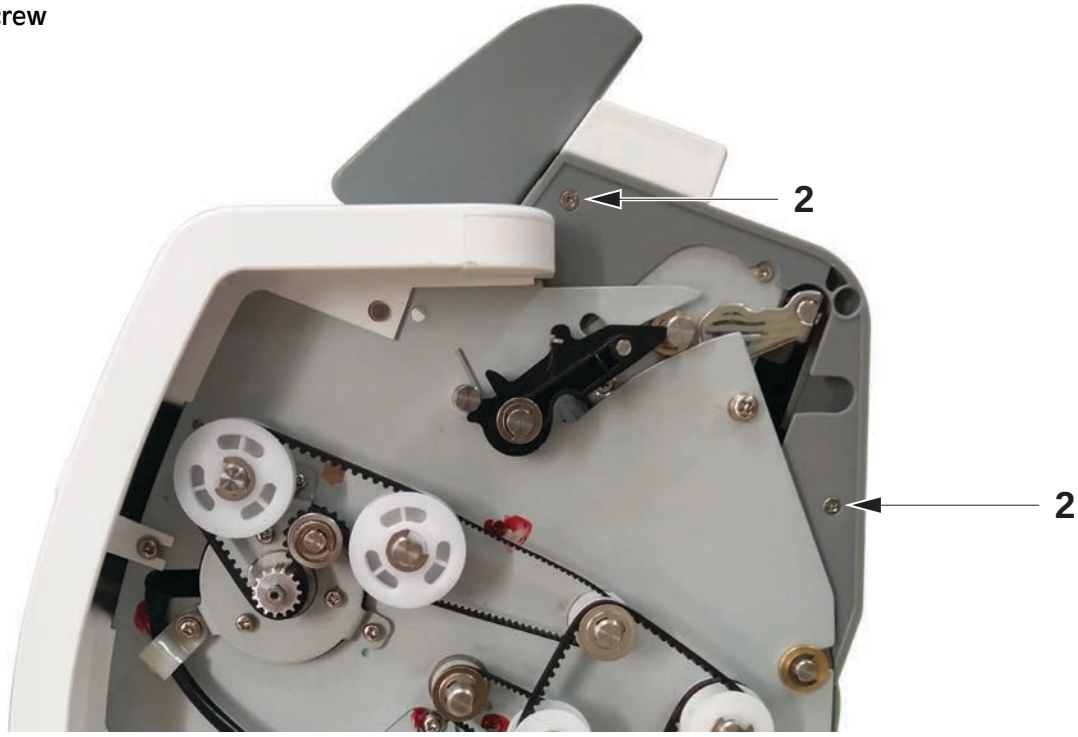
b) Remove the two screws (1) at the left side of the top cover with a screwdriver 5x100 mm.

1 Screw



c) Remove the screws (2) at the right side of the top cover with a screwdriver 5x100 mm, and remove the top cover.

2 Screw



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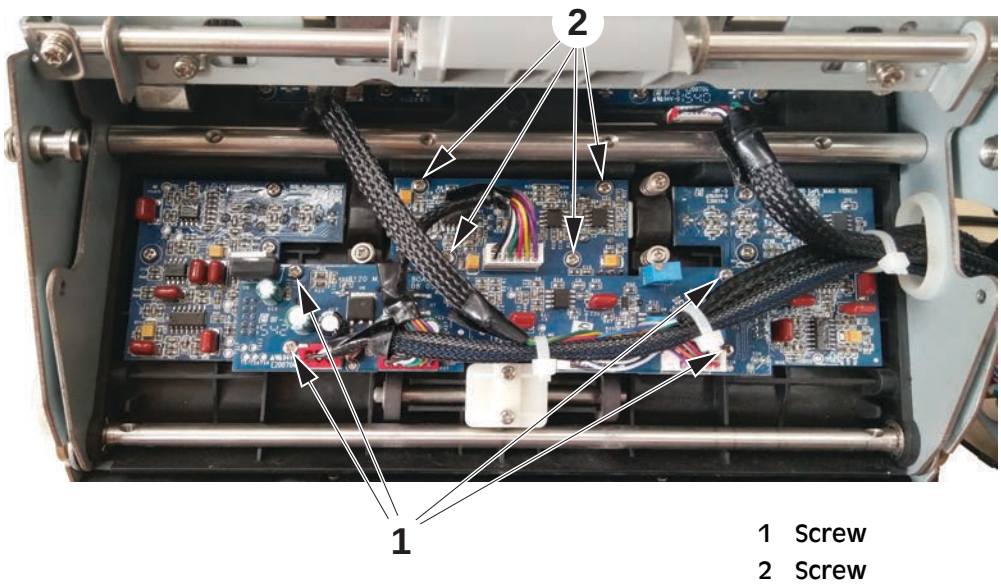
Adjustment of the feeding gap can be performed. See "Feeding Gap Adjustment" on page 47.

Removal of Magnetism Board

When the top cover is removed, see "Removal of Top Cover" on page 15, you can remove the magnetism board by the following operation.



1 Screw
2 Screw

a) Remove the four screws (1) on the middle magnetism board with a screwdriver 5x100 mm. Then disconnect all cables and remove the board.

b) Remove the four screws (2) on the MRS magnetism board. Disconnect all cables. Remove the board.

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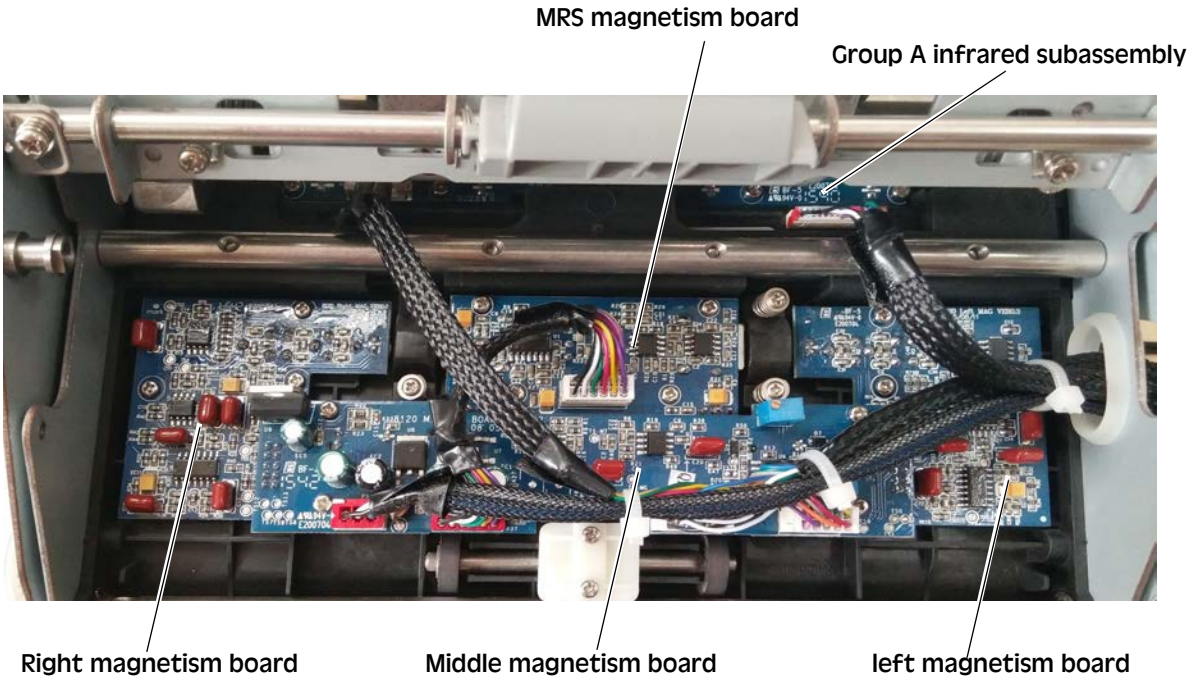
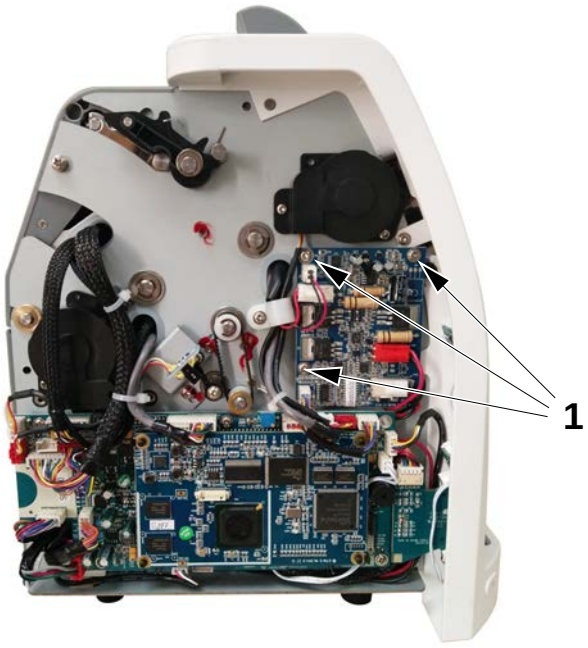


After removing the magnetism board, the magnetism sensor gap can be adjusted, if needed. See "Magnetism Sensor Gap Adjustment" on page 50.

Removal of Control Panel

a) Remove the three screws (1) on the motor control board with a screwdriver 5x100 mm.

1 Screw



b) Disconnect the cable (2) for the SD card slot.

c) Remove the screws (3) for the SD card slot with a screwdriver 5x100 mm.

2 Cable
3 Screw

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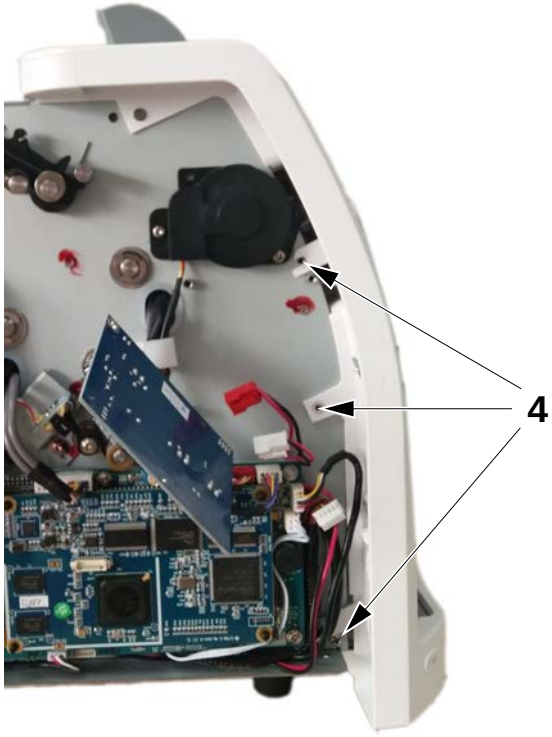
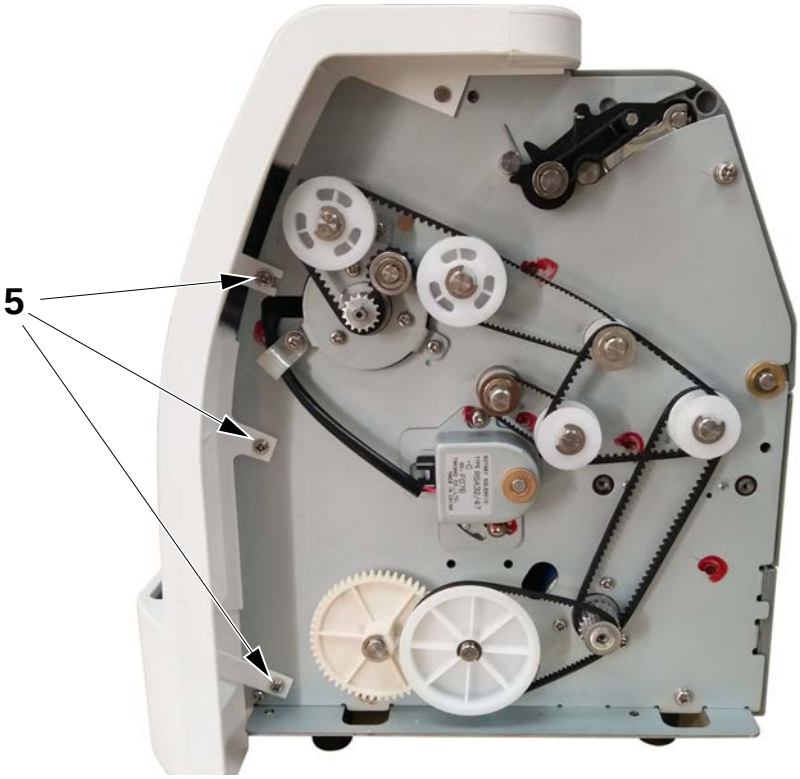
d) Remove the three screws (4) at the left plate with a screwdriver 5x100 mm.



4 Screw

e) Remove the three screws (5) at the right plate with a screwdriver 5x100 mm.



5 Screw

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f) Remove the two screws (6) at the bottom with a screwdriver 5x100 mm. Remove the control panel.

6 Screw

Replacement of Battery

When the control panel has been removed, see "Removal of Control Panel" on page 18, the battery can be replaced by the following operation:

a) Remove the four screws (1) on the dust cover using a flat head screwdriver 5x100 mm, and then remove the dust cover.

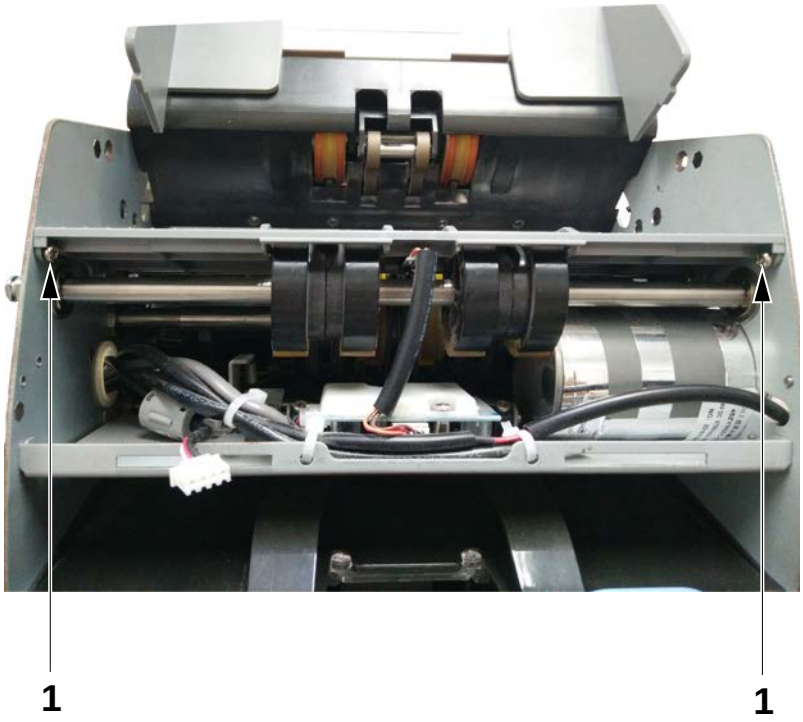
1 Screw

b) Use a flat head screwdriver 3x70 mm to remove the battery.

Note! Only replace the battery specified to 3V CR1225.

Removal of Hopper Sub Assembly

Remove the two screws (1) at the sides of the hopper sub assembly with a screwdriver 5x100 mm. Remove the hopper.

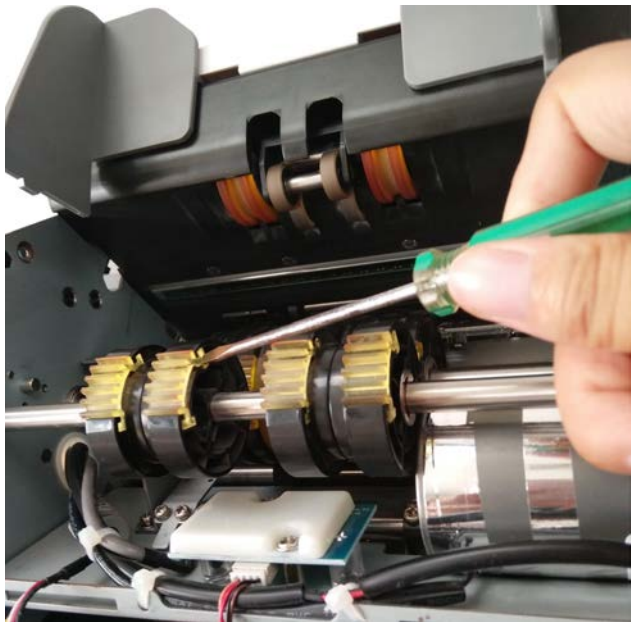


1 Screw

Replacement of Feeding Rubber Teeth

When the hopper is removed, see "Removal of Hopper Sub Assembly" on page 22, the feeding rubber teeth can be replaced.

Remove any worn rubber teeth with a flat head screwdriver 3x70 mm. Replace the rubber teeth.

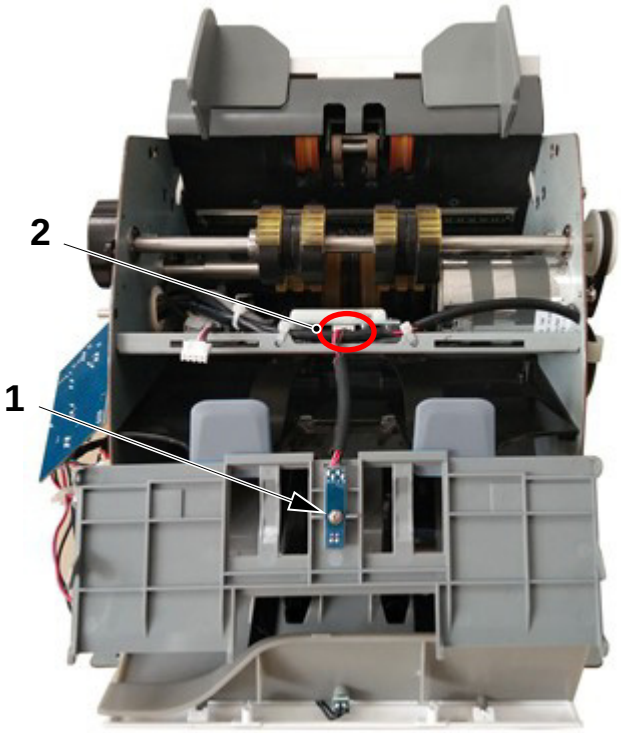


Replacement of Note Feeding Sensor

When the hopper is removed, see "Removal of Hopper Sub Assembly" on page 22, the note feeding sensor can be replaced.

Remove the screws (1) with a screwdriver 5x100 mm. Disconnect the cable (2). The note feeding sensor can then be replaced.

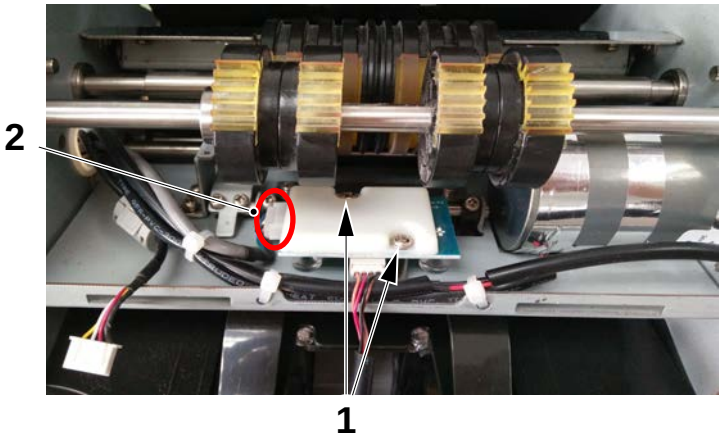
1 Screw
2 Cable



Replacement of Rejector Board

When the hopper is removed, see "Removal of Hopper Sub Assembly" on page 22, the rejector board can be replaced.

1 Screw
2 Cable

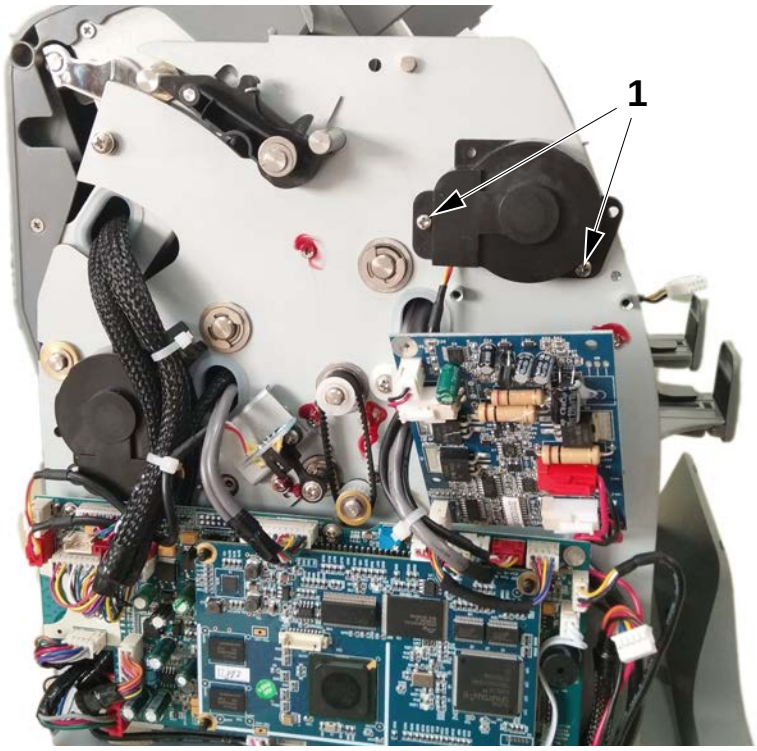


Remove the two screws (1) on the dust cover with a screwdriver 5x100 mm. Disconnect the cable. The rejector board can then be replaced.

Replacement of Feeding Motor

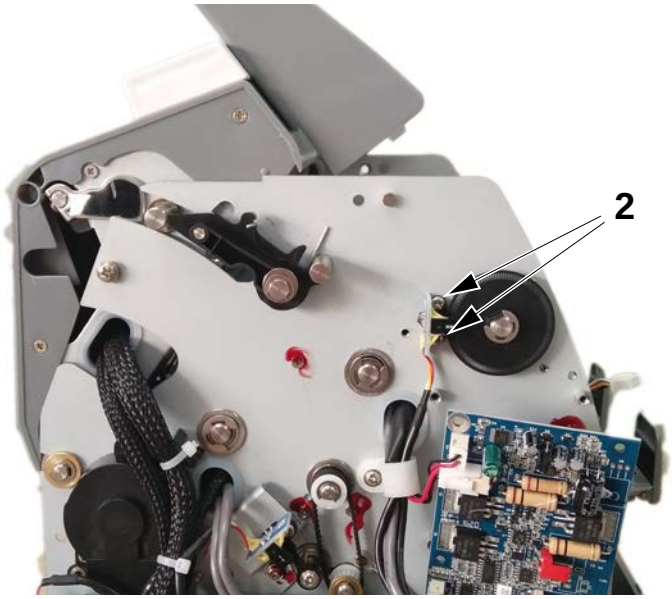
When the hopper is removed, see "Removal of Hopper Sub Assembly" on page 22, the feeding motor can be replaced by the following operation:

a) Remove the two screws (1) on the encoder wheel cover with a screwdriver 5x100 mm.



1 Screw

b) Remove the two screws (2) that fixate the rotate speed sensor, using a screwdriver 5x100 mm. Then remove the rotate speed sensor.



2 Screw

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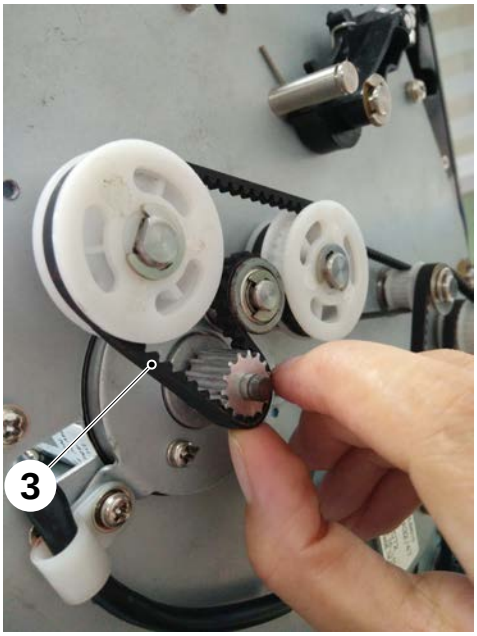
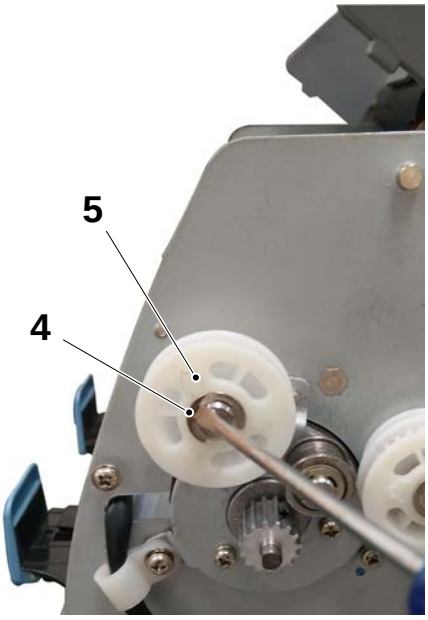
c) Remove the synchronous strap -240 (3).



3 Synchronous strap -240

d) Remove the snap ring (4) with a flat head screwdriver 3x70 mm, and remove the transmission wheel A (5).



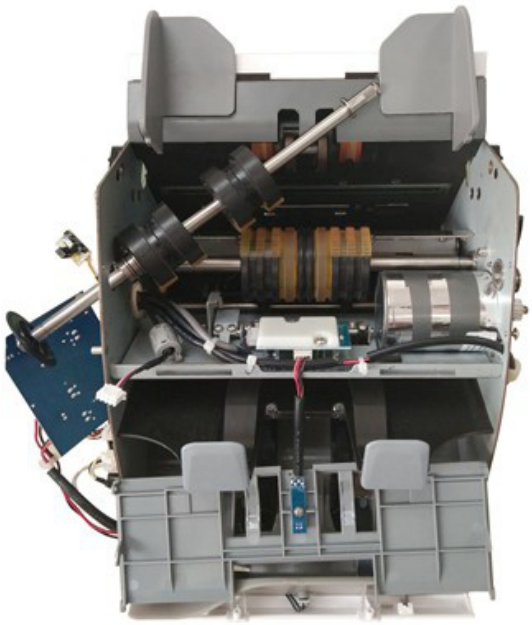
4 Snap ring
5 Transmission wheel A

>>>

>>>

e) Remove the snap ring (6) for the feeding wheel with a screwdriver 3x70 mm, and remove the feeding wheel.

6 Snap ring



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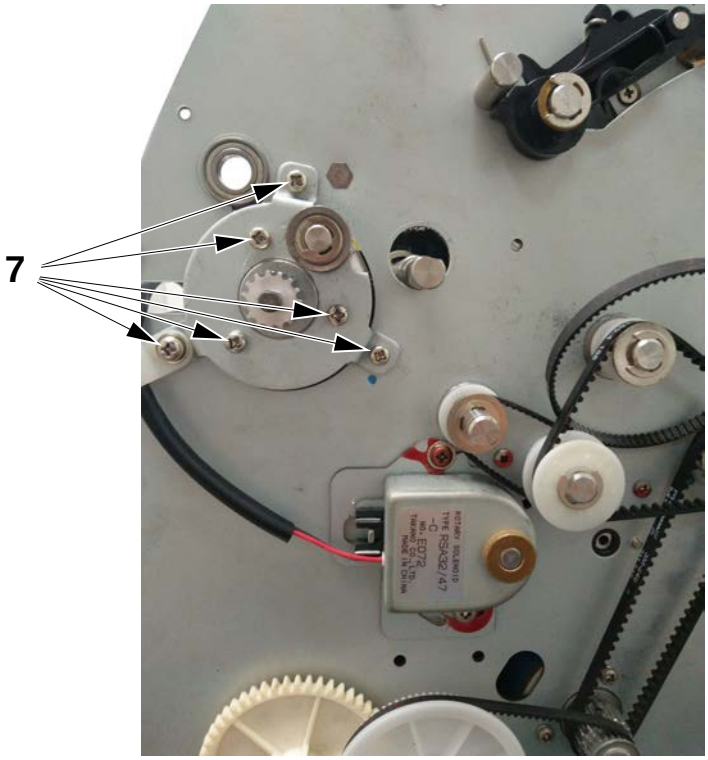
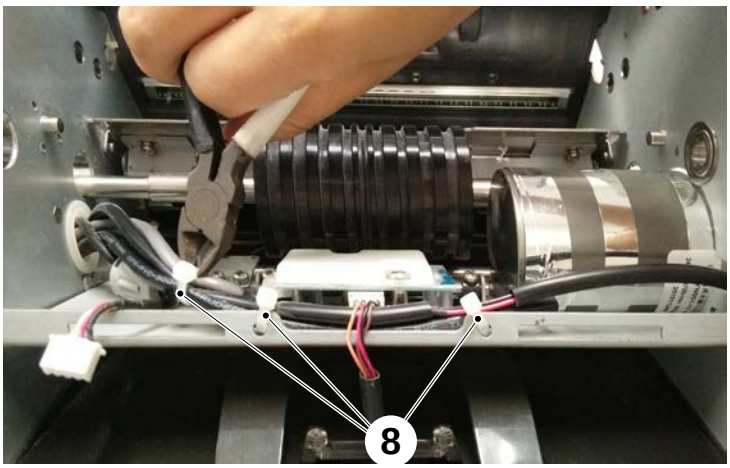
f) Remove the six screws (7) for the motor holder with a screwdriver 5x100 mm.

7 SCrew



g) Cut the cable ties (8) with cutting pliers.

8 Cable ties



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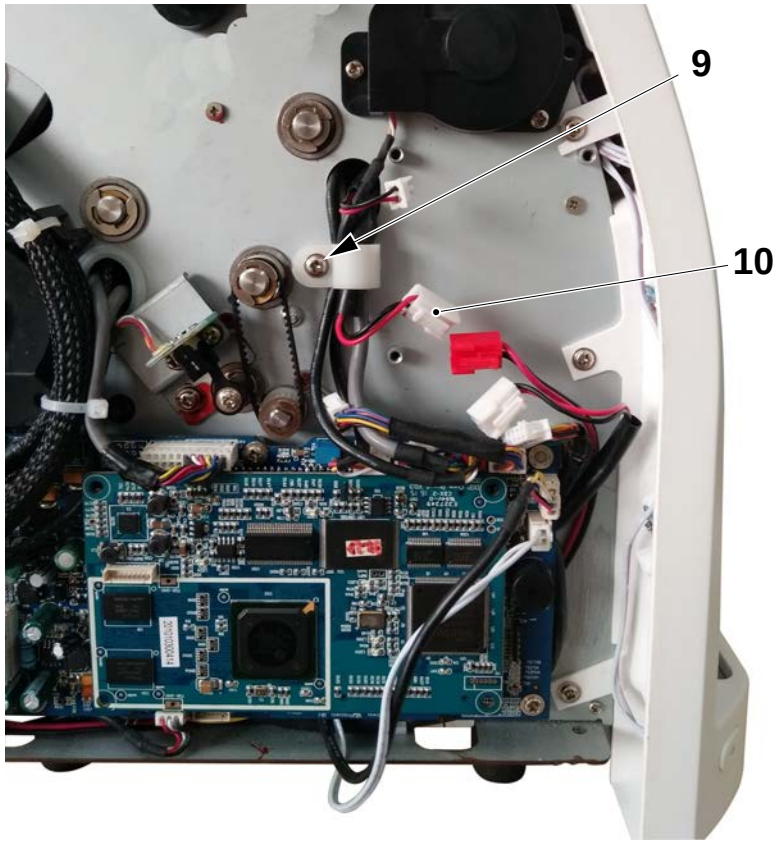
h) Loosen the screw (9) with a screwdriver 5x100 mm and remove the connector (10) to the motor control board. The feeding motor can now be replaced.

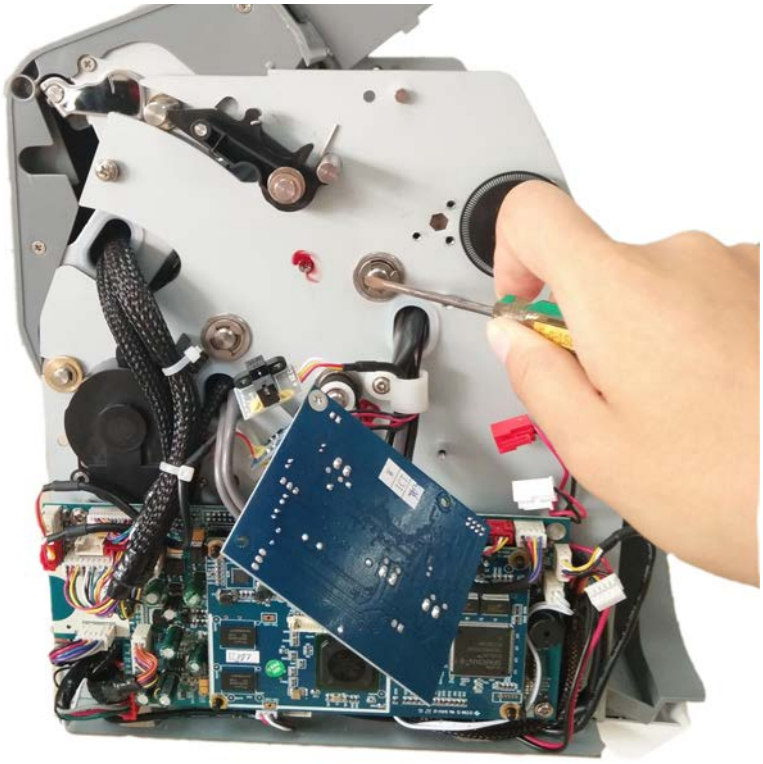


9 Screw
10 Connector

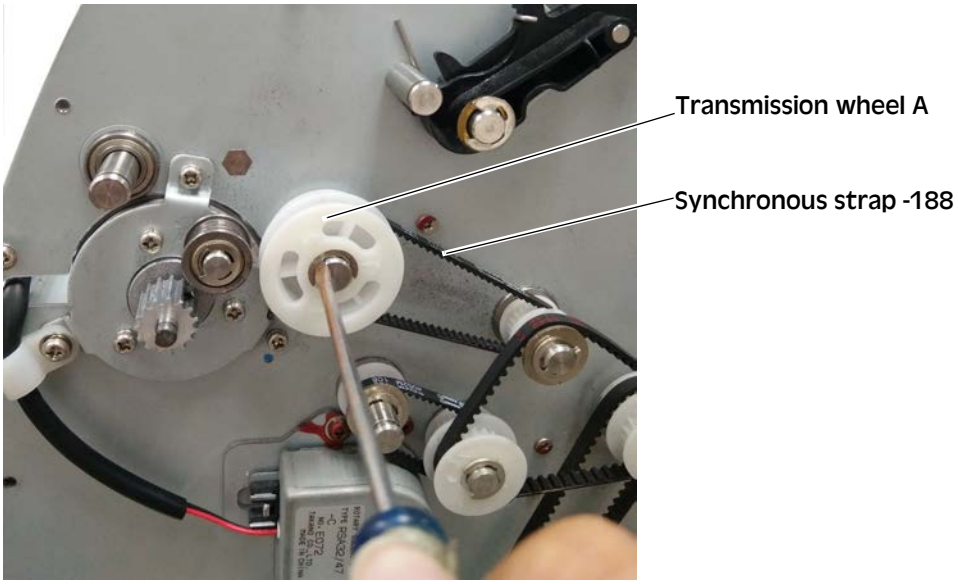
Replacement of Twiddling Wheel

After removing the feeding wheel, see steps a-e in "Replacement of Feeding Motor" on page 24, the twiddling wheel can be removed, see following steps:

a) On the left plate, remove the snap ring with a flat head screwdriver 3x70 mm.



b) Remove the snap ring on the transmission wheel A with a flat head screwdriver 3x70 mm. Remove the transmission wheel A and synchronous strap -188.



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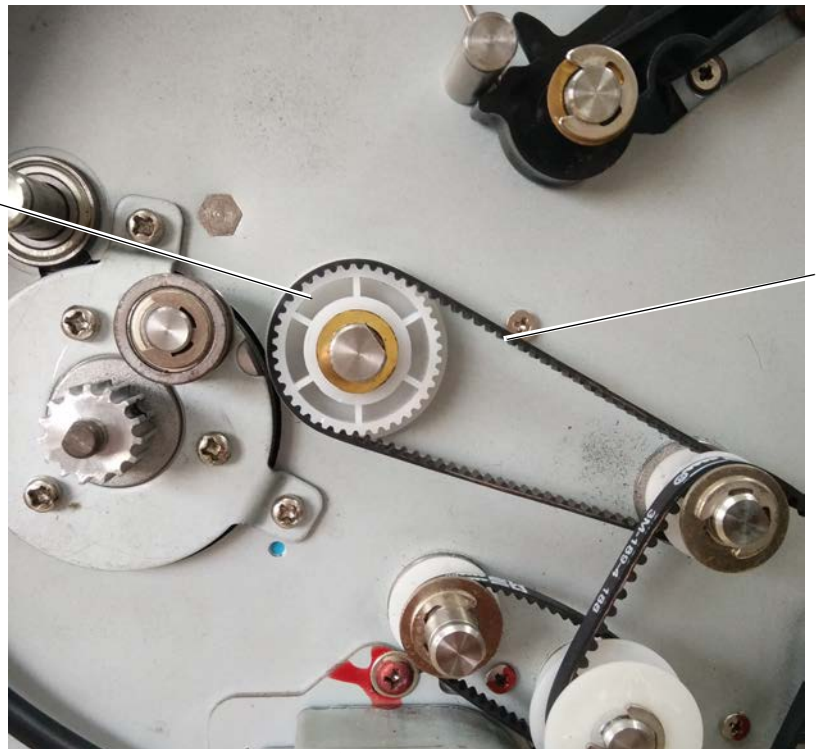
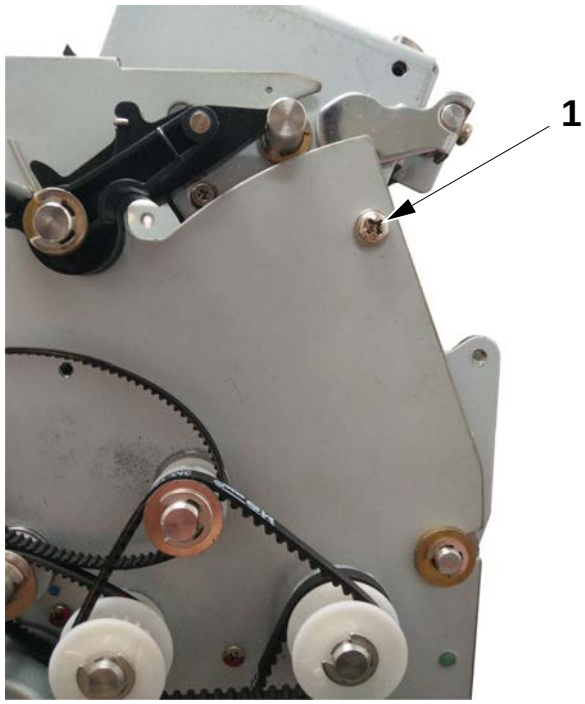
c) Remove the unilateral transmission wheel and synchronous strap-180.



d) To turn over the upper cover, remove the screw (1) at the right plate with a screwdriver 5x100 mm.



1 Screw

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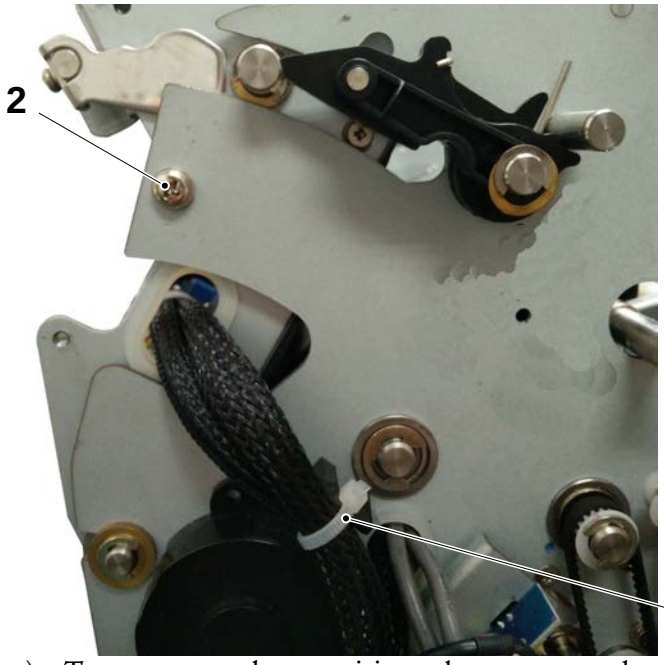
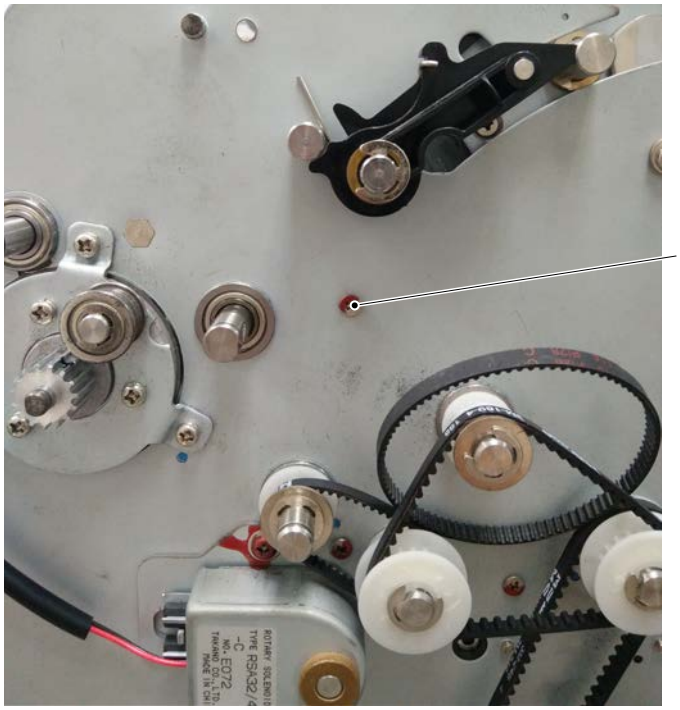
e) Remove the screw (2) at the left plate with a screwdriver 5x100 mm.

f) Cut the cable tie (3) with cutting pliers.



2 Screw
3 Cable tie

g) To turn over the transition plate, remove the screw (4) at the right plate with a screwdriver 5x100 mm.



4 Screw

>>>

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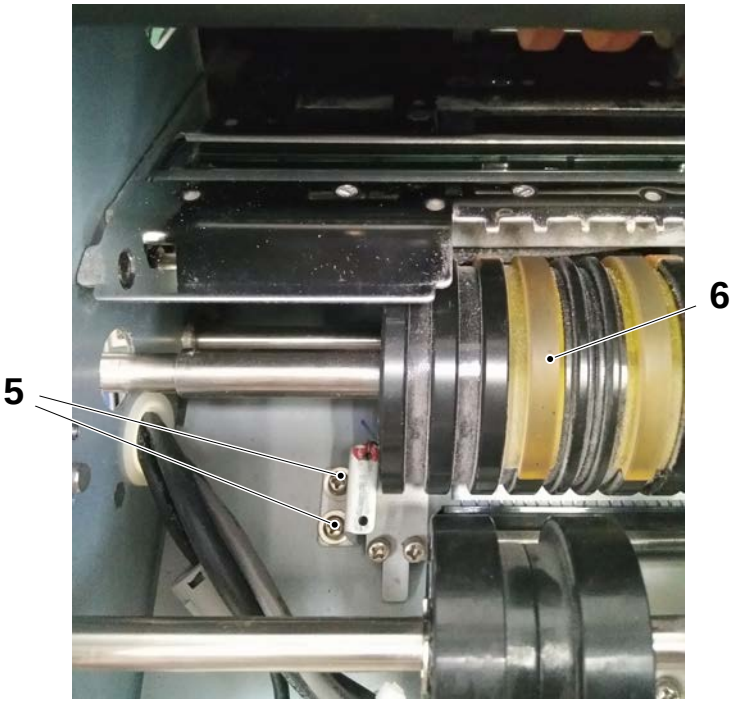
h) Remove the two screws (5) on the holder with a screwdriver 5x100 mm and remove the holder.

i) Remove the twiddling wheel (6).

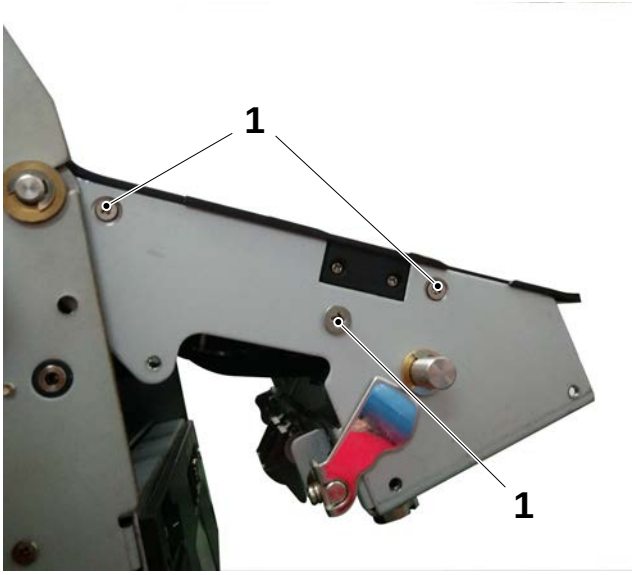


5 Screw
6 Twiddling wheel

Replacement of Resistance Wheel

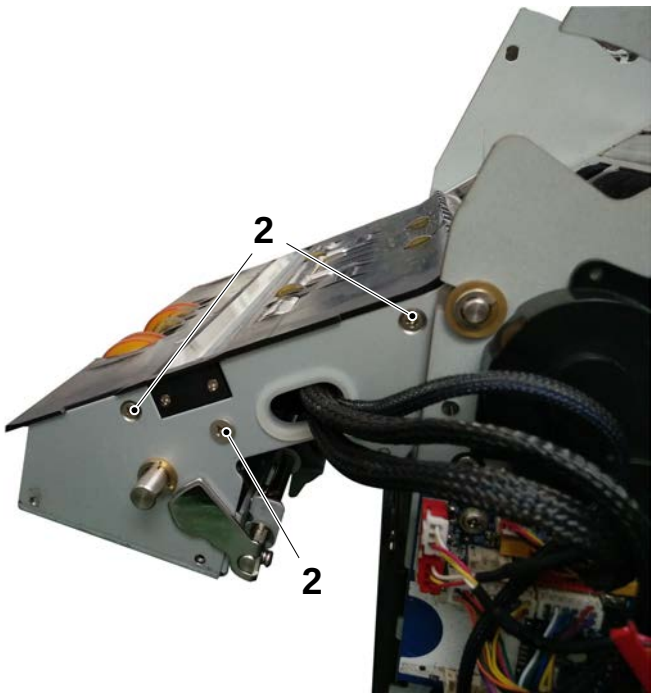
a) The resistance wheel can be replaced after the upper cover has been removed. See steps a-f in "Replacement of Twiddling Wheel" on page 29.

b) To separate the counting frame and the resistance holder, remove the three screws (1) at the right side with a screwdriver 5x100 mm.



1 Screw

c) Remove the three screws (2) at the left side with a screwdriver 5x100 mm. Separate the counting frame and resistance holder.

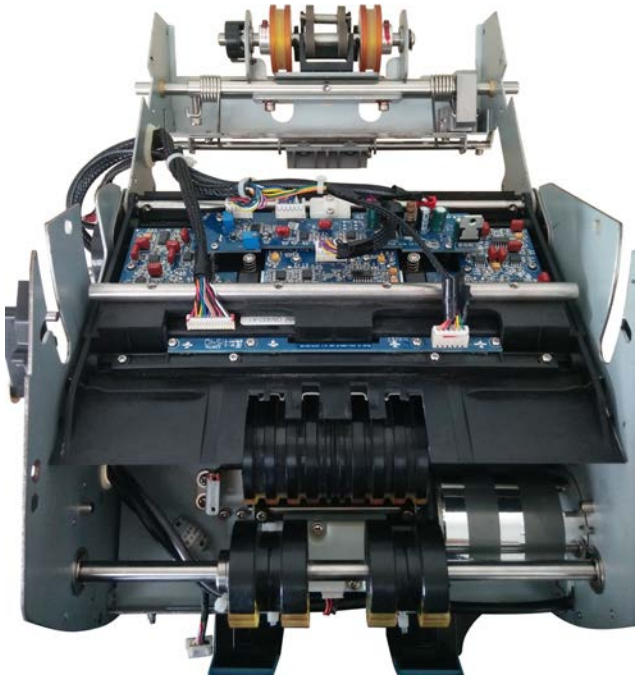


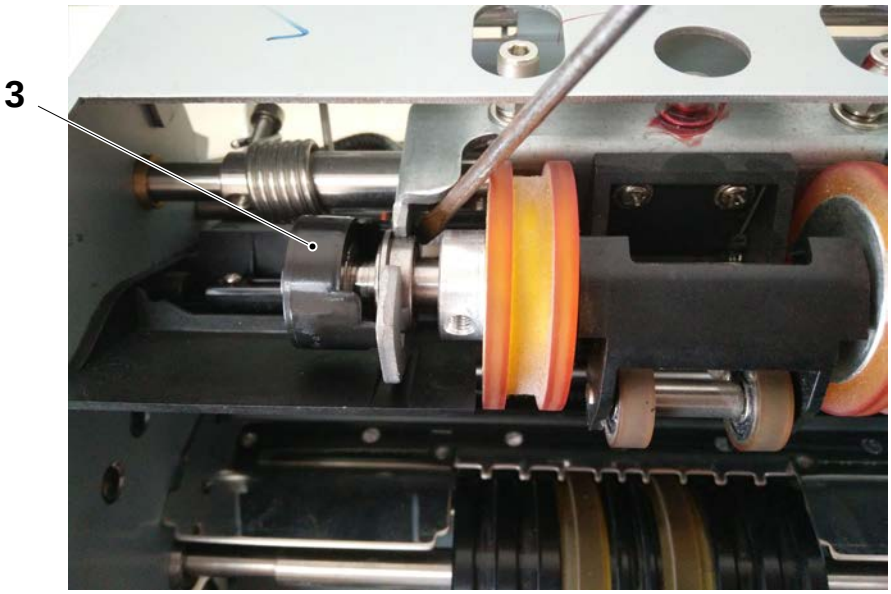
2 Screw

>>>

>>>

d) Remove the unilateral bearing (3) with a flat head screwdriver 3x70 mm.



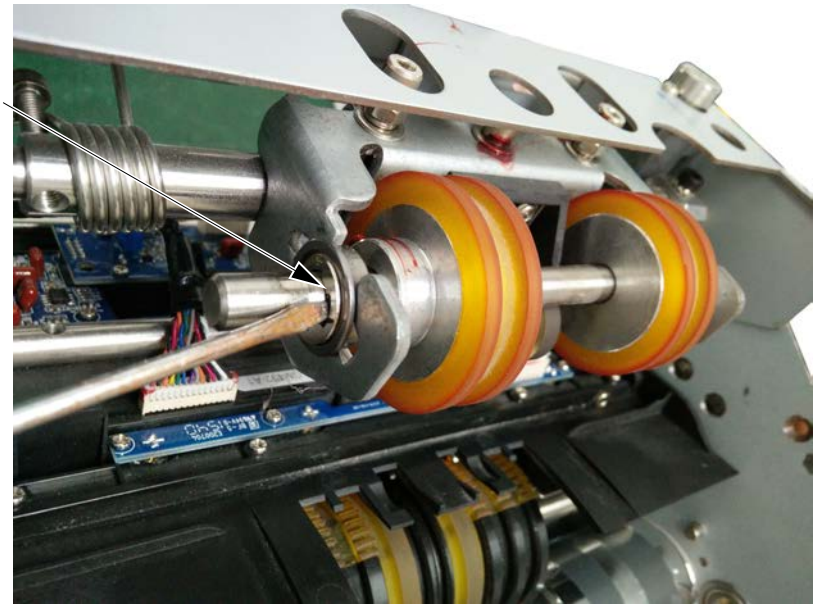


3 Unilateral bearing

>>>

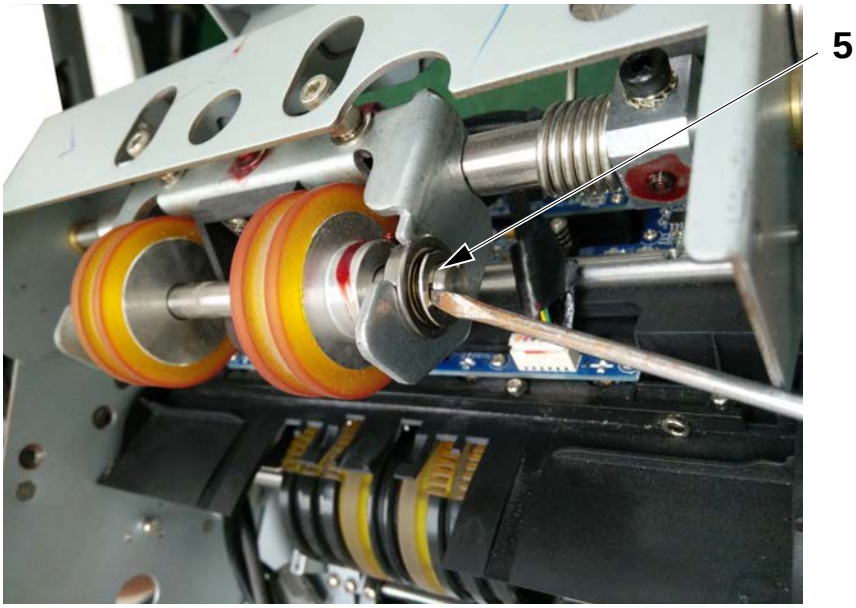
>>>

e) Remove the snap ring (4) at the left side of the resistance wheel with a flat head screwdriver 3x70 mm.



4 Snap ring

f) Remove the snap ring (5) at the right side of the resistance wheel with a flat head screwdriver 3x70 mm. The resistance wheel can then be removed.



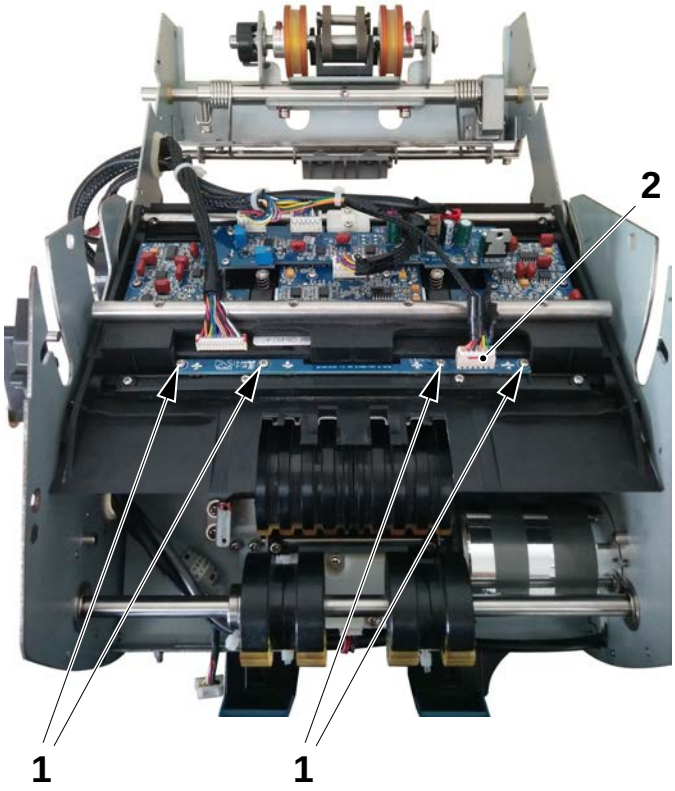
5 Snap ring

Replacement of Group A IR Sub Assembly

When the counting frame and the resistance holder are separated, see "Replacement of Resistance Wheel" on page 33, the group A IR sub assembly can be replaced by the following operation.

Remove the four fixing screws (1) for the group A IR board with a screwdriver 5x100 mm. Disconnect the cable (2). The group A IR sub assembly can then be replaced.

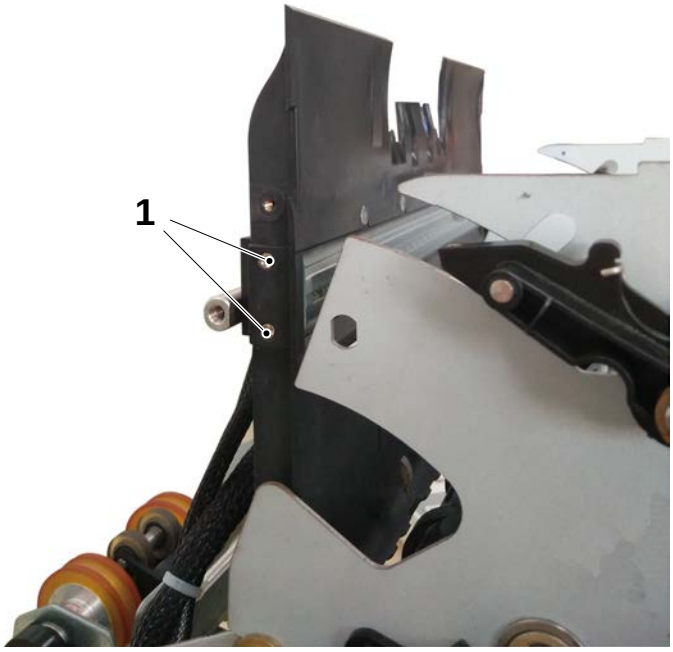
1 Fixing screw
2 Connector



Replacement of CIS Sensor #1

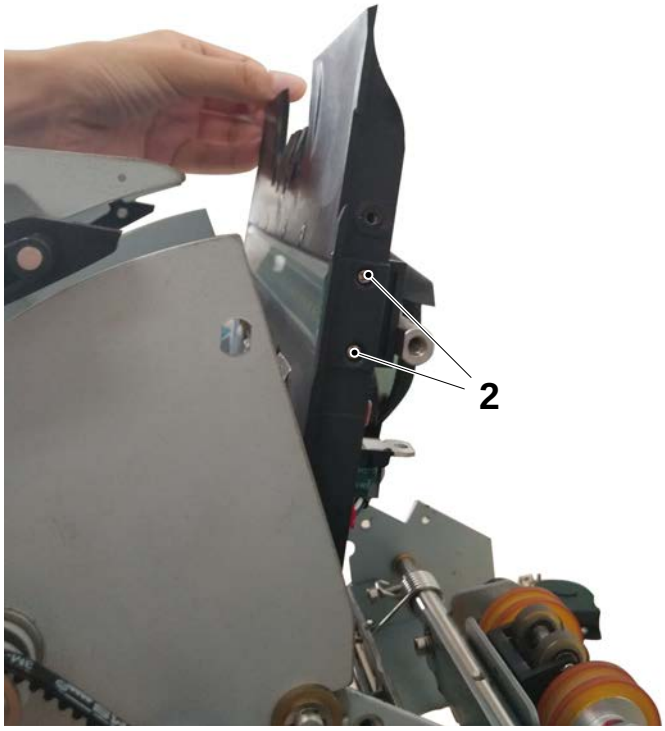
When the counting frame and resistance holder are separated, see "Replacement of Resistance Wheel" on page 33, the CIS sensor #1 can be replaced by the following operation.

a) Remove the two screws (1) for the CIS Sensor #1 with a screwdriver 3x70 mm.



1 Screw

b) Remove the two screws (2) at the right side of the counting frame with a screwdriver 3x70 mm.

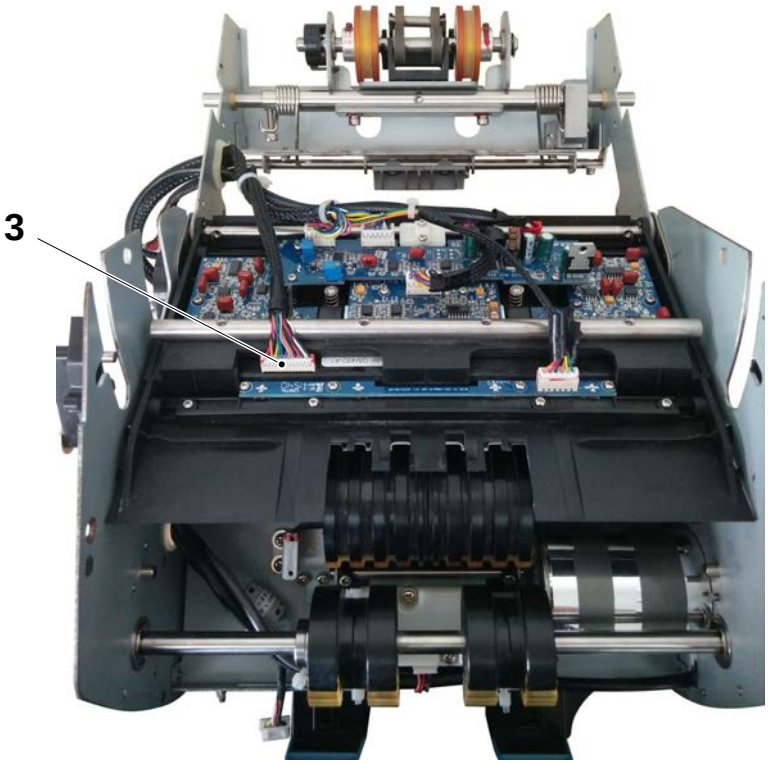


2 Screw

>>>

>>>

c) Disconnect the cable (3) for the CIS sensor #1. The sensor can then be replaced.

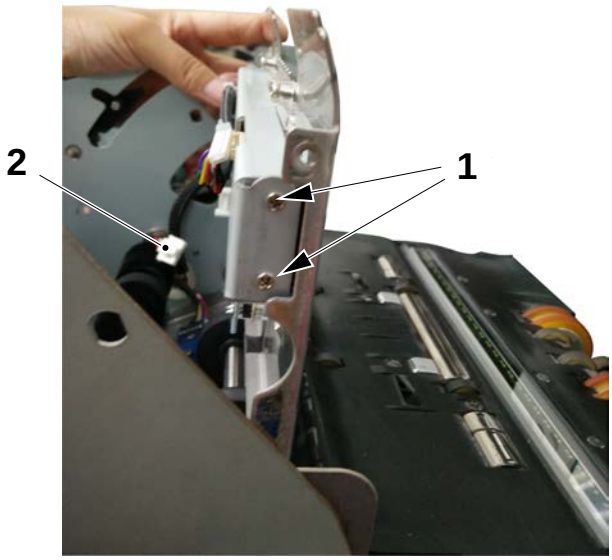


3 Cable

Replacement of CIS Sensor #2

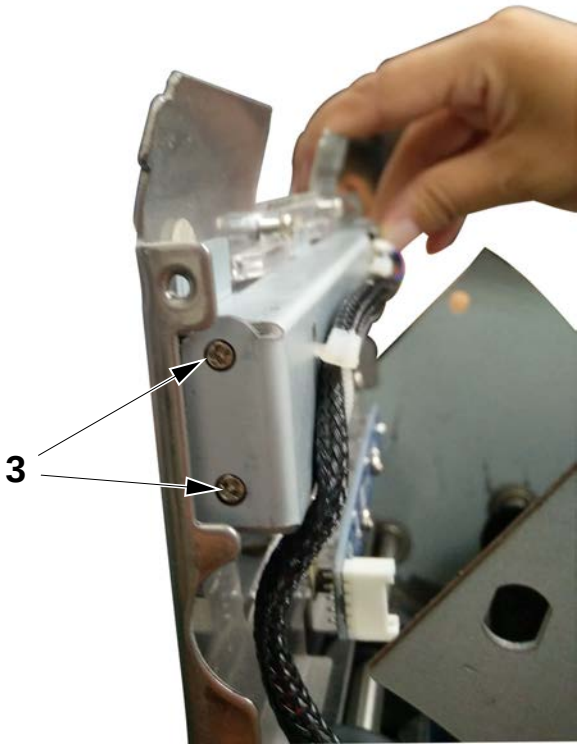
When the transition plate sub assembly is turned over, see "Replacement of Twiddling Wheel" on page 29, the CIS sensor #2 can be replaced by the following operation.

a) Remove the two screws (1) at the right side of the transition plate with a screwdriver 3x70 mm, and disconnect the cable (2).



1 Screw
2 Cable

b) Remove the two screws (3) at the left side of the transition plate with a screwdriver 3x70 mm. The sensor can then be replaced.

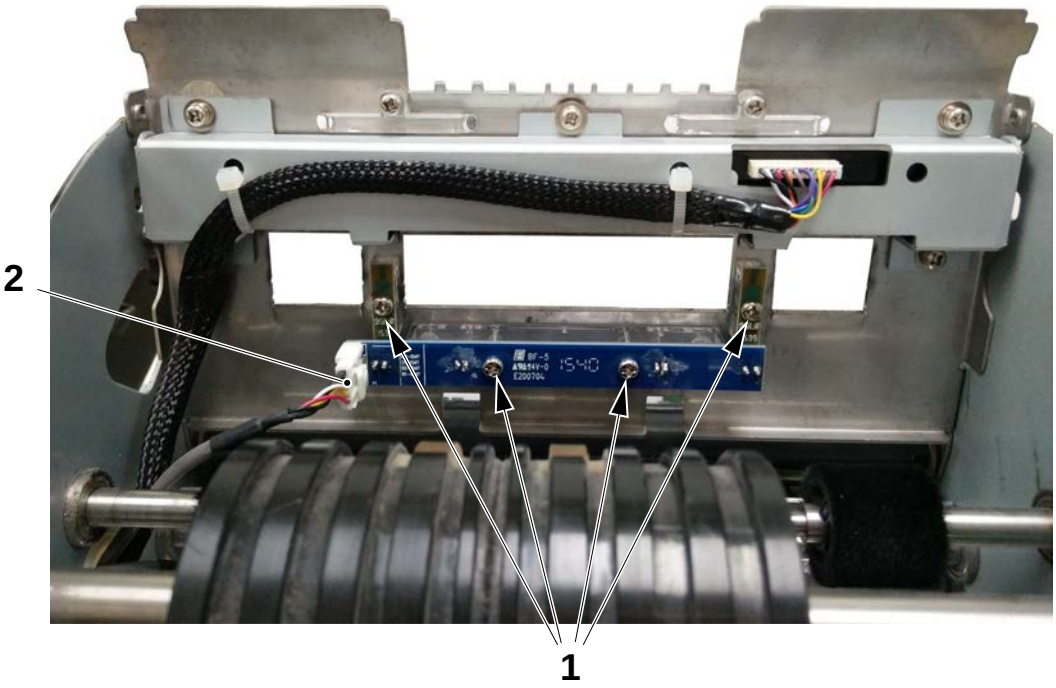


3 Screw

Replacement of Group B&D IR Subassembly

When the transition plate subassembly has been turned over, see "Replacement of Twiddling Wheel" on page 29, the group B&D IR can be replaced by the following operation.

a) Remove the four screws (1) and disconnect the cable (2) for the group B&D IR board. The board can then be replaced.

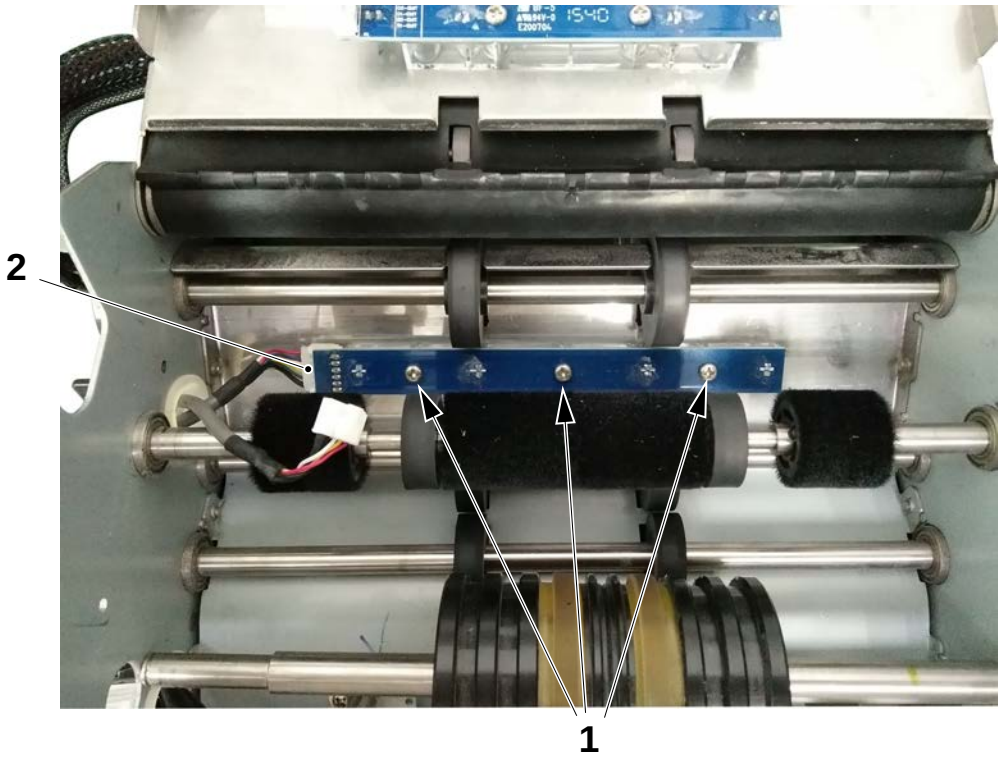


1 Screw
2 Cable

Replacement of Group C IR Subassembly

When the transition plate subassembly has been turned over, see "Replacement of Twiddling Wheel" on page 29, the group C IR can be replaced by the following operation.

a) Remove the three screws (1) for the group C IR board, and disconnect the cable (2). The board can then be replaced.



1 Screw
2 Cable

Replacement of Integrative Power Source

a) Remove the back drawer sub assembly.

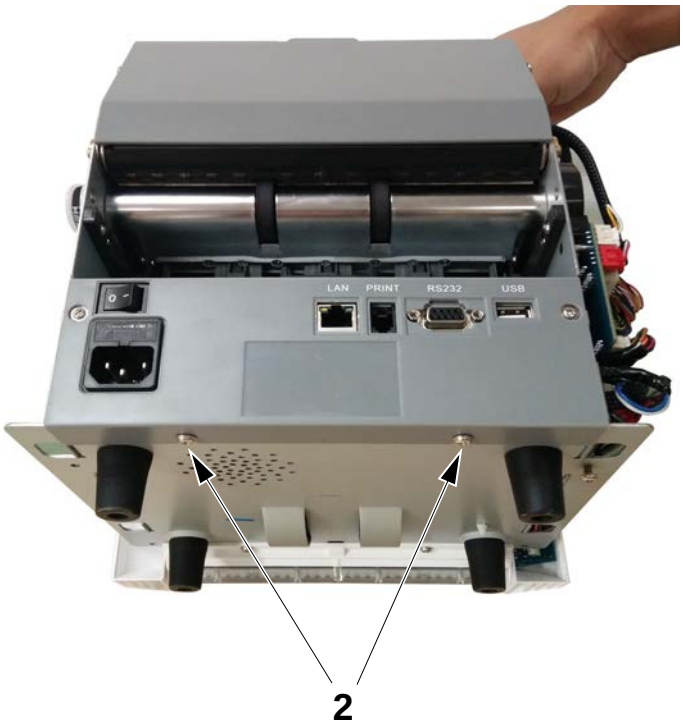
b) Remove the two screws (1) with a screwdriver 5x100 mm.

1 Screw

>>>

>>>

c) Remove the two screws (2) at the bottom with a screwdriver 5x100 mm.



2 Screw

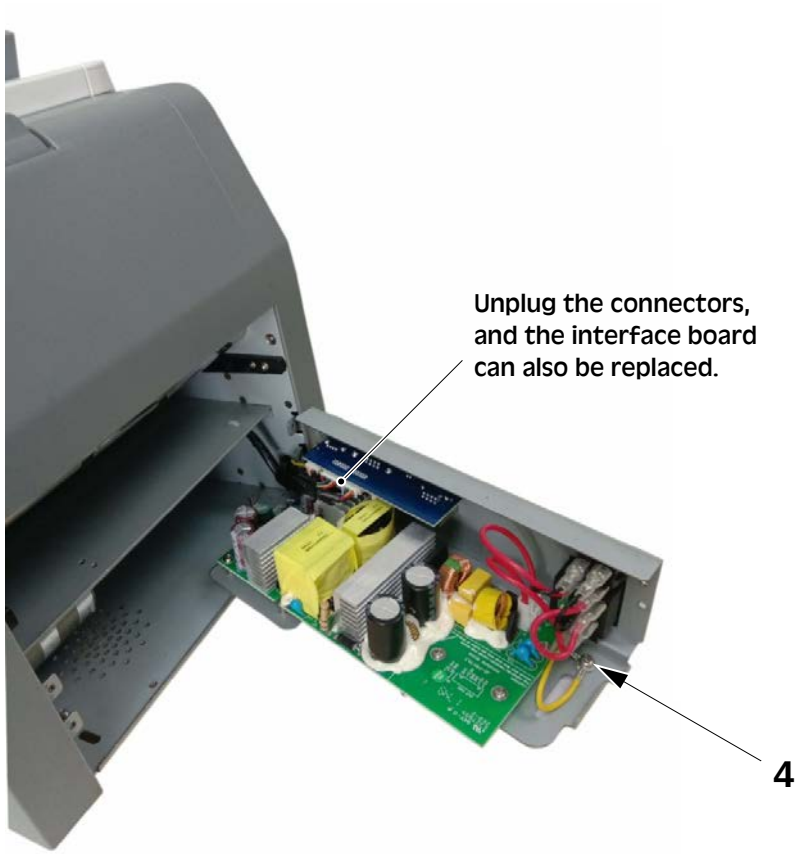
d) Remove the four screws (3) with a screwdriver 5x100 mm.

3 Screw

>>>

>>>

e) Remove the screws (4) on the base with a screwdriver 5x100 mm. Then disconnect the cables on the integrative power source. The power supply board can then be replaced.

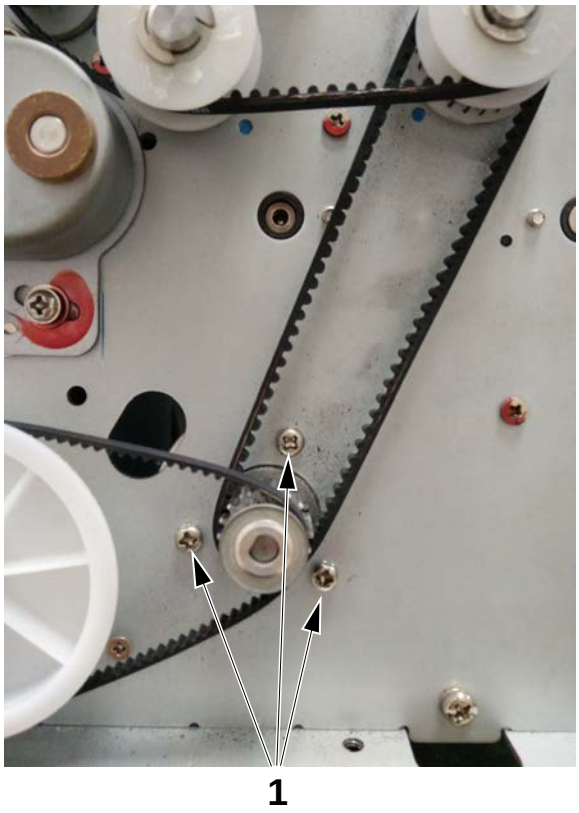


4 Screw

Replacement of Delivering Motor

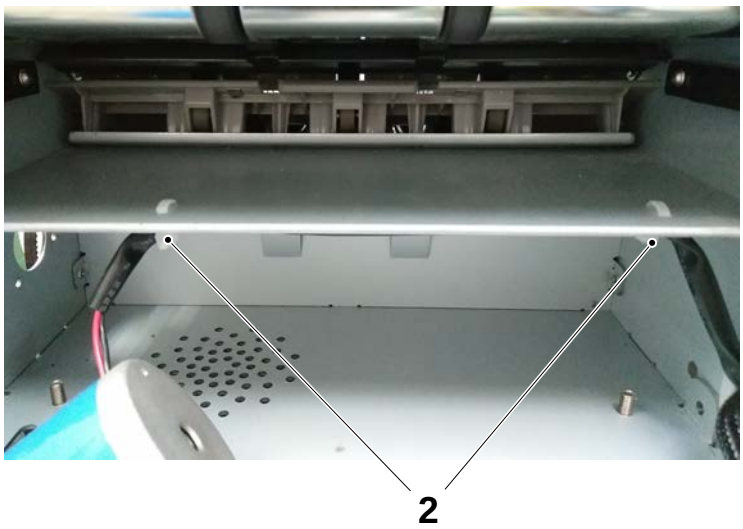
When the integrative power source is removed (see "Replacement of Integrative Power Source" on page 42), the delivering motor can be replaced by the following operation.

a) Remove the three screws (1) for the delivering motor at the right plate with a screwdriver 5x100 mm. Remove the synchronous straps.



1 Screw

b) Cut the cable ties (2).



2 Cable tie

>>>

>>>

c) Loosen the four screws (3) for the main board. Disconnect the cable (4) for the motor control board and remove the delivering motor.

3 Screw
4 Cable

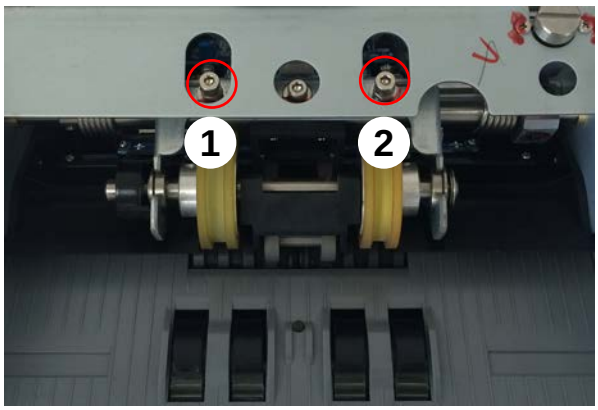
6.3 Mechanical Adjustment

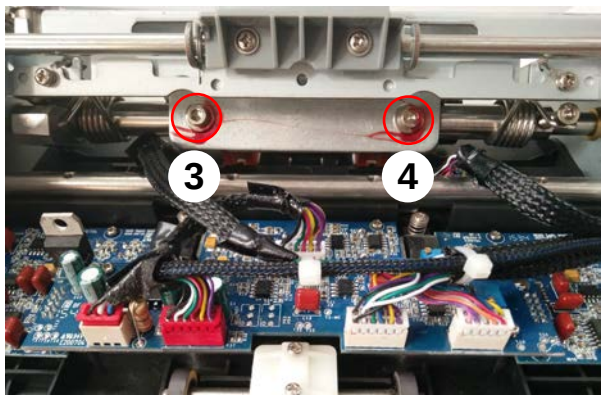
Feeding Gap Adjustment

Problem description

When notes are in the feeding path, and the alarms **CHAINED**, **DOUBLE** or **Jam** are often displayed, it is recommended to perform the feeding gap adjustment. (See "Removal of Top Cover" on page 15".)

Solution





Use a newer banknote to test whether the clearance of the left and right resistance wheels are equal (standard clearance is in the range of 0.08 - 0.12 mm. This means a little friction when one note is inserted, but two notes cannot be inserted).
Methods are as follow:

If the clearance of the left resistance is larger, it is recommended to increase the clearance of the right resistance. First, loosen the 3rd screw with a screwdriver H3.0, then loosen the 2nd screw with a wrench 7 mm and a screwdriver H3.0. Adjust the 2nd screw clockwise to increase the gap, until it becomes appropriate.

If the clearance of the right resistance is larger, it is recommended to increase the clearance of the left resistance. First, loosen the 4th screw with a screwdriver H3.0, then loosen the 1st screw with a wrench 7 mm and a screwdriver H3.0. Adjust the 1st screw clockwise to increase the gap, until it becomes appropriate.

After adjustment, fasten the 1st, 2nd, 3rd and 4th screw (check the clearance, until it is consistent).

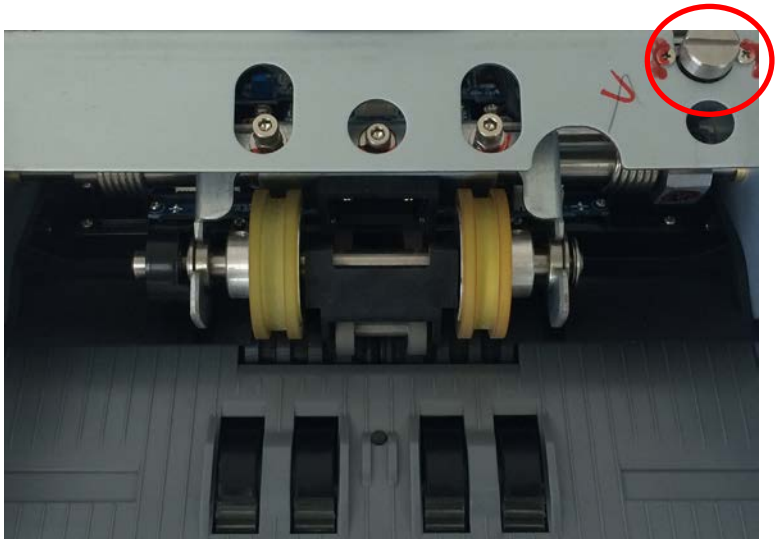
>>>

>>>

The tooth rubber of the twiddling wheel downwards when testing

The tooth rubber of the twiddling wheel upwards when testing

If the clearance of the left and right resistance wheels are equal, but the clearances are either larger or smaller, please use the adjusting screw at the top of the machine (see figure below).



Clockwise spinning the adjusting screw will increase the clearance. Counter clockwise spinning the adjusting screw will decrease the clearance. Insert a note while adjusting, until it's appropriate.

Rubber Teeth Synchronization Adjustment

Problem description

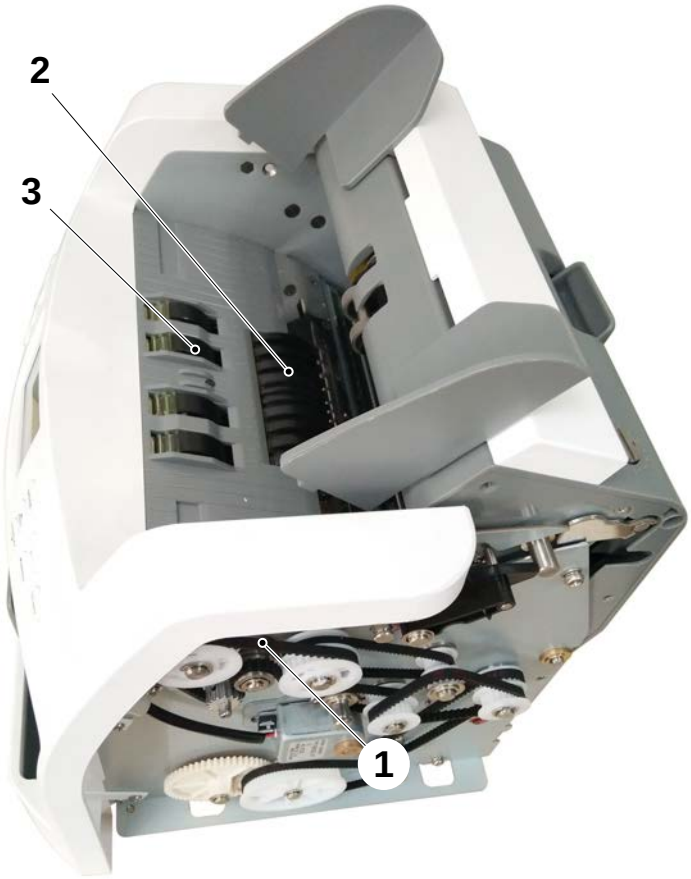
If the machine has recurring jams, check if the plastic rubber teeth between the twiddling wheel and the feeding wheel are consistent (see "Removal of Left and Right Covers" on page 12).

Solution

a) Remove the synchronous strap-225 (1).

b) Rotate and adjust the feeding wheel (2) and the twiddling wheel (3) until the feeding wheel shows three plastic rubber teeth, and the twiddling wheel is about to show one rubber tooth. Make sure the wheels do not move after adjustment.

c) Refit the synchronous strap-225.



1 Synchronous strap
2 Feeding wheel
3 Twiddling wheel

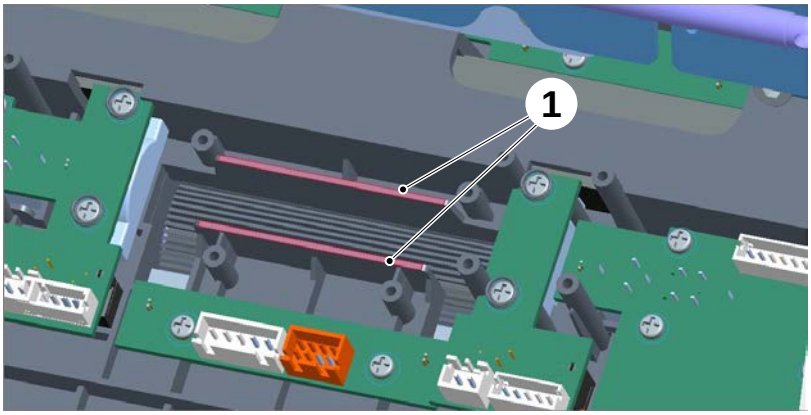
Magnetism Sensor Gap Adjustment

Problem description

If the error **MG** is often displayed, the magnetism sensor gap may need to be adjusted.

Solution

Remove the middle magnetism sensor board and the MRS magnetism board (see "Removal of Top Cover" on page 15). Polish the plastic holder (1) to reduce 0.3 mm of its height. The MG reading of the notes will be facilitated when the magnetism sensor is lowered, and the sensor is closer to the notes.



1 Plastic holder

Commutator Adjustment

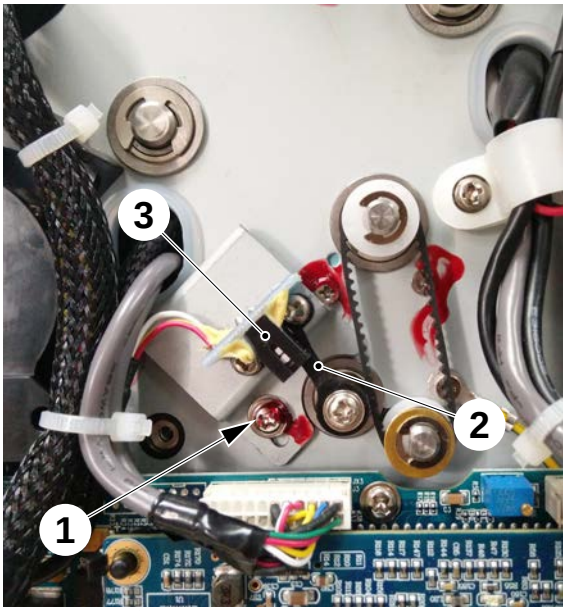
Problem description

If the error messages **BIS TOP**, **BIS BTT, BIS BOTTOM** or **BIS TTB** are displayed when turning on the machine, this indicates the commutator probably is not in the correct position.

Solution

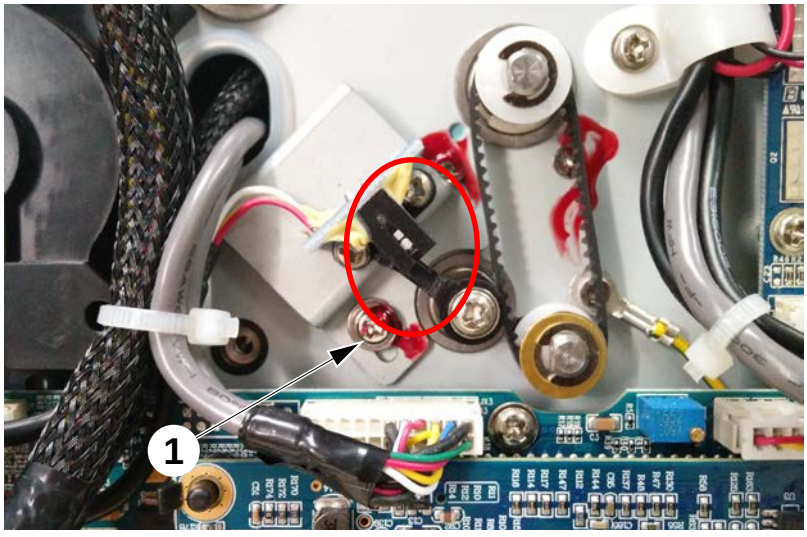
Loosen the adjusting screw (1). Adjust the rotate speed sensor left or right.

The commutator bar block (2) must not be located at the centre of the rotate speed sensor (3). It can be either on the left or on the right of the rotate speed sensor (see picture below). Left or right depends on the current position of the commutator bar block.



1 Adjusting screw
2 Commutator bar block
3 Rotate speed sensor

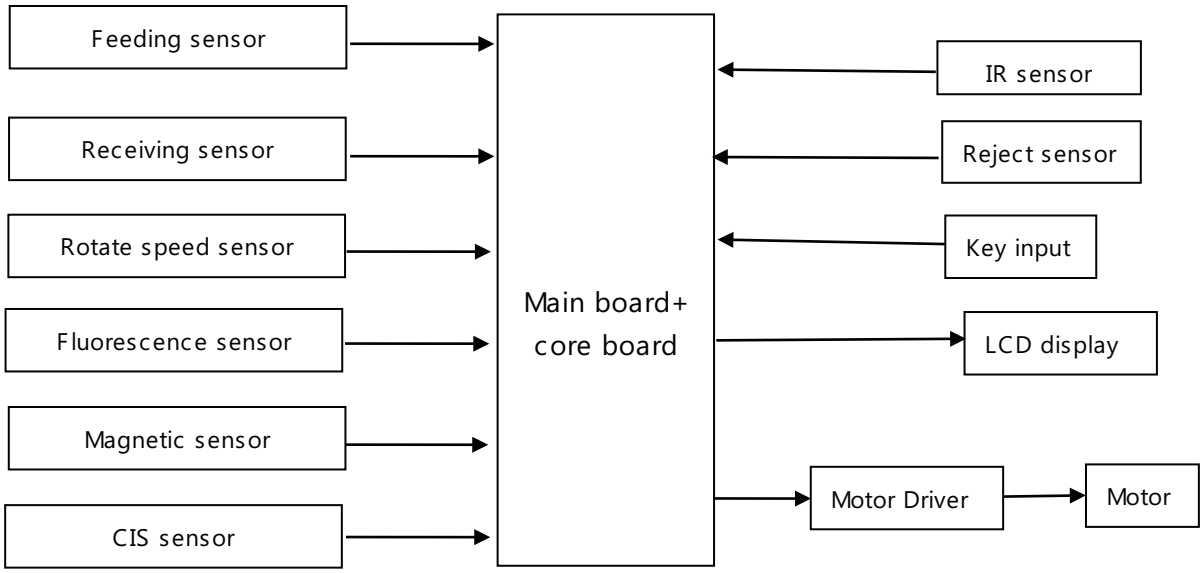
For example: If the commutator bar block points to the left like below, it is okay to fasten the adjusting screw (1).



7 Electronics

7.1 Electronics System Overview

This system consists of the power supply system, motor driving system, sensor system, control system, LCD system, and keystroke system.



Power Supply

The main board affords several groups of voltage:

Power input voltage +15V

System voltage +5V

CIS voltage +12V

ADC reference voltage +2.5V

The core board affords several groups of voltage:

System working voltage +3.3V

DSP & DDR working voltage +1.8V

DSP kernel voltage +1.2V

ADC reference voltage +0.6V

There are three groups of voltage on the magnetism board: +8V, -8V, +5V.

+24V is used for motor control board.

Motor Driving System

The motor driving system consists of the note receiving unit and the main motor driving unit.

The note receiving motor starts when the power is switched on.

The power of the main motor is directly supplied by the motor control board. It is turned on or off by the CPU.

Sensor System

The sensor system consists of the feeding, receiving, rotate speed, IR, magnetic, fluorescence, reject and CIS sensors. The following describes the functions of each sensor.

Feeding Sensor

The feeding sensor is installed on the hopper and its function is to check whether there are notes on the hopper. The sensor sends out the pulse signal to the signal processing and transmission systems for further processing.

Receiving Sensor

The receiving sensor is composed of an infrared light-emitting diode and an infrared sensitive triode, which are installed separately on each side of the stacker. Their function is to detect whether there are notes in the stacker.

Rotate Speed Sensor

The rotate speed sensor uses sensitive breakers, which are located around the code wheel to detect the rotational speed. It consists of one light-emitting diode and one sensitive triode, which are installed on the left plate.

IR Sensor

The IR sensor is composed of group A, B, C and D IR sub assemblies. The transmitting and receiving parts of the group A sensor are installed on the counting frame sub assembly. The receiving parts of the group B and D are also installed on the counting frame sub assembly and receive different signals according to different notes (overlap, half or no banknote passed). The transmitting parts of the group B and D are fixed on the transition plate. In addition, the receiving and transmitting parts of group C IR are fixed on the upper transition plate sub assembly. These signals will be transferred to the CPU for further processing. The installation of the counting sensors is stricter; each pair is in opposite direction.

Magnetic Sensor

The magnetic sensor is placed on the counting frame. Different magnetic signals will be generated according to the authenticity of the notes for the software to distinguish.

Fluorescence Sensor

The fluorescence sensor consists of a set of high sensitive photic components. The sensor is fixed on the middle magnetism board. Different voltage signals are generated according to the notes in different positions and are then transmitted to the CPU for further processing.

Reject Sensor

The reject sensor is fixed on the upper blocked bracket sub assembly. Its function is to detect whether there are notes in the reject pocket.

CIS Sensor

The two CIS sensors are respectively fixed on the counting frame sub assembly and transition plate sub assembly. Their function is to gather images, including the white light image, IR reflecting image and IR transmission image. The white light image is used for denomination detection. The IR reflecting and IR transmission images are used for detecting the authenticity of the notes.

LCD Display

The LCD displays error messages, counting values, preset amounts, counting modes, counting speed and report messages.

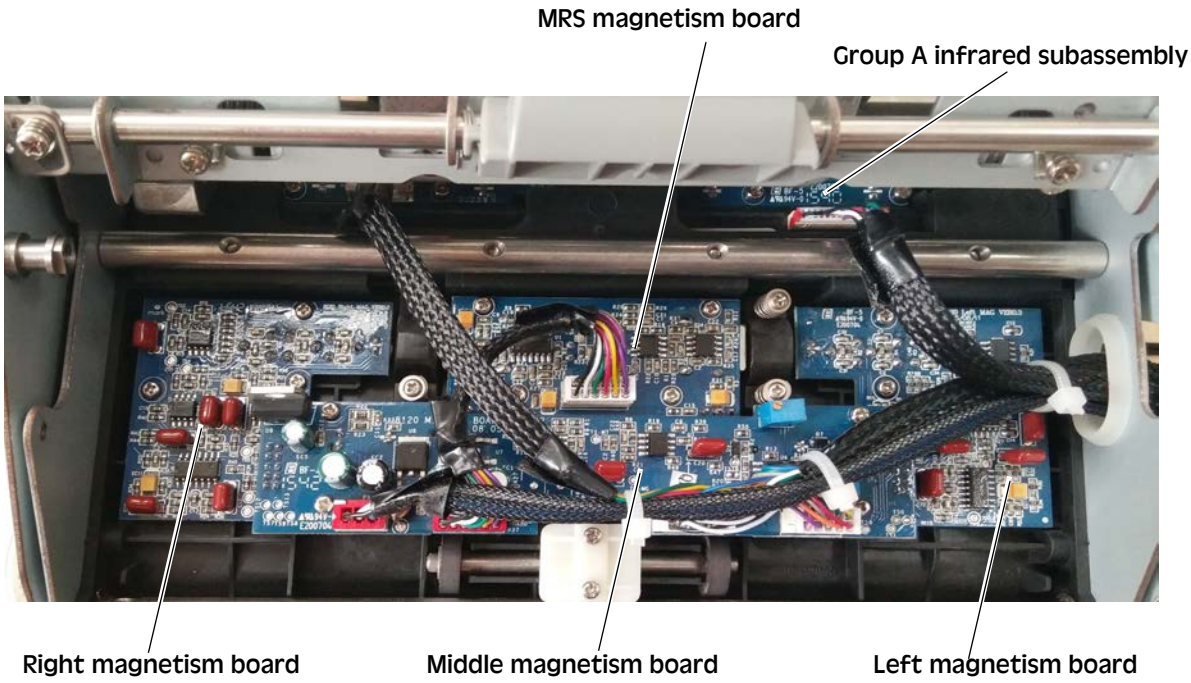
Keystroke System

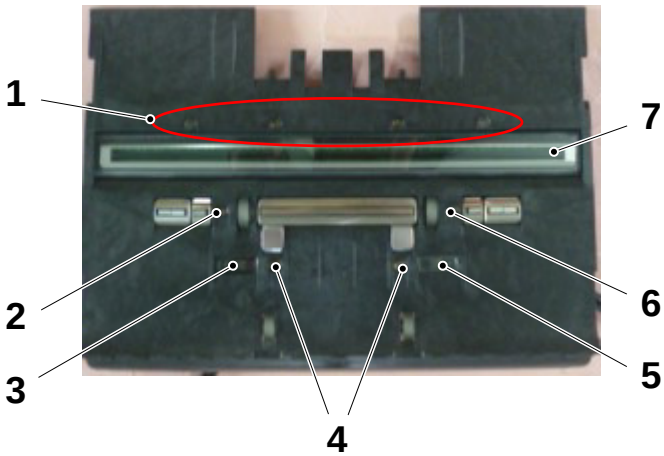
The keystroke system is an interface to communicate with the machine.

7.2 Electronics Modules Overview

Machine Top

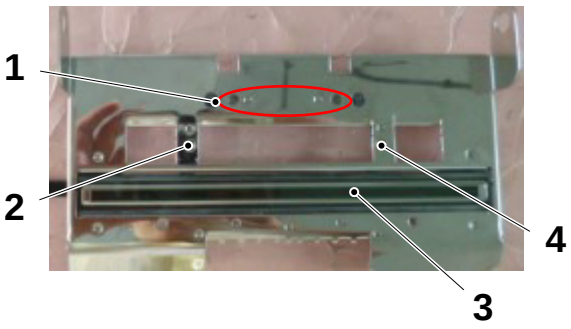
Counting Frame





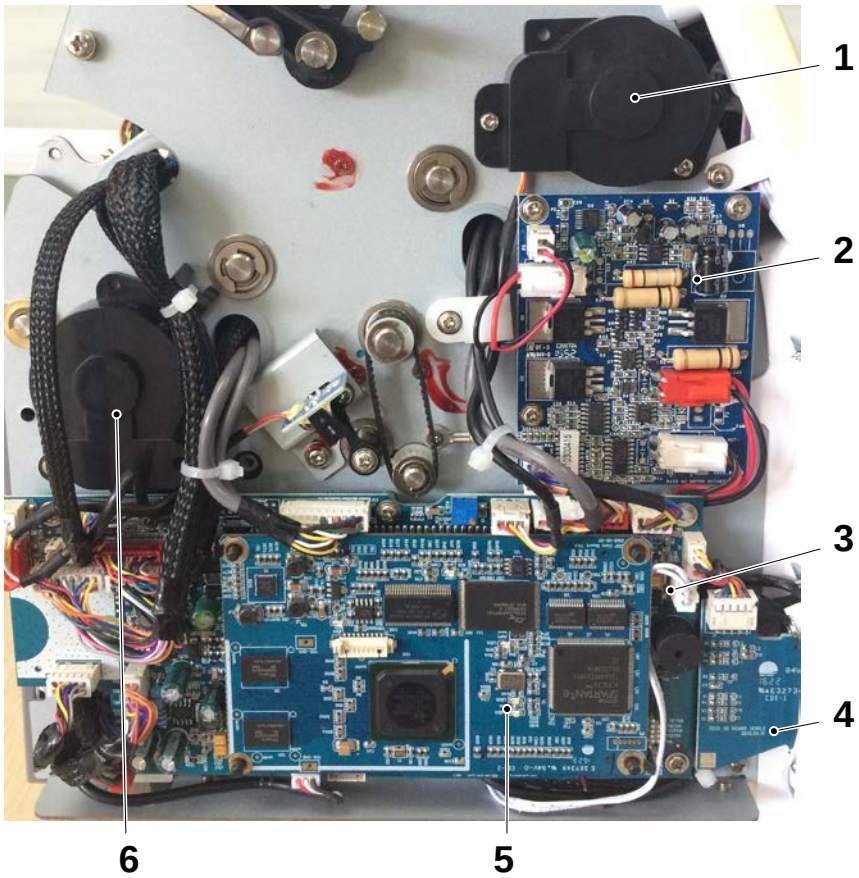
1 Group A IR Subassembly
2 Group D IR Subassembly
3 UV sensor
4 Group B IR Subassembly
5 UV sensor
6 Group D IR Subassembly
7 CIS sensor 1

Transition plate



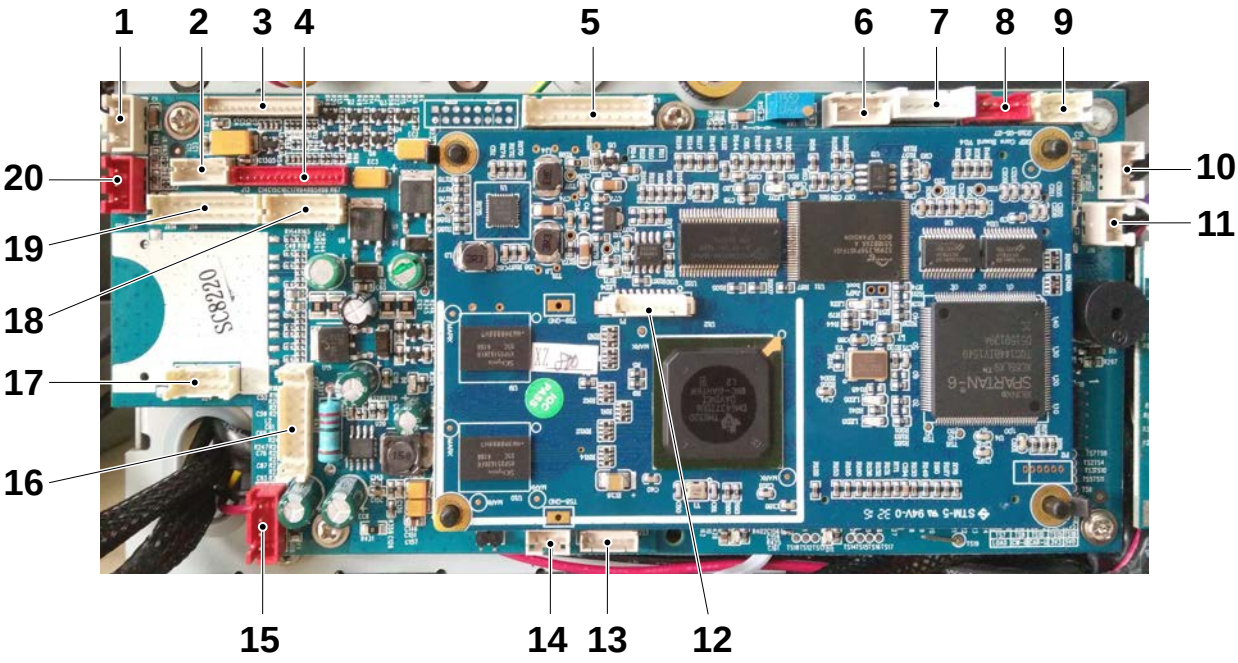
1 Group B IR Subassembly
2 Group D IR Subassembly
3 CIS sensor 2
4 Group D IR Subassembly

Left side of the machine



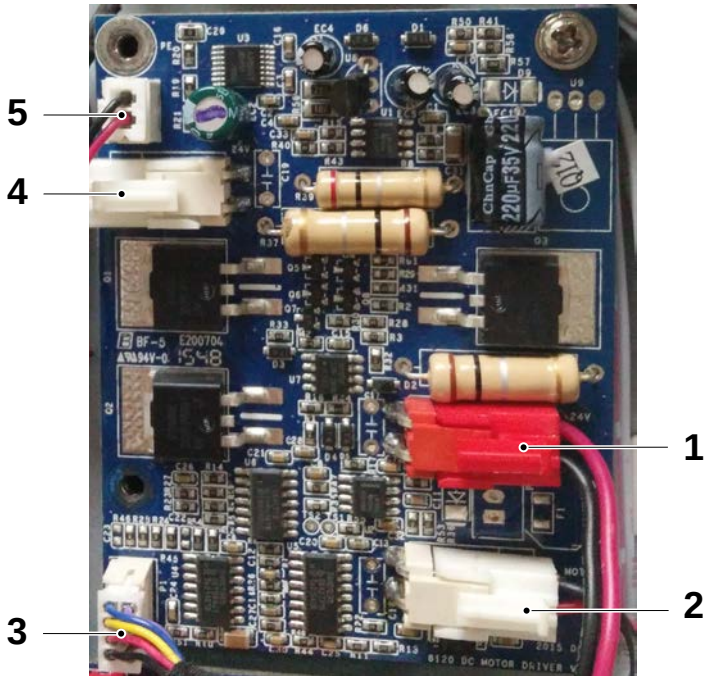
1 Rotate speed sensor
2 Motor control board
3 Main board
4 SD slot
5 Core board
6 Rotate speed sensor for delivering

Ports on the main board



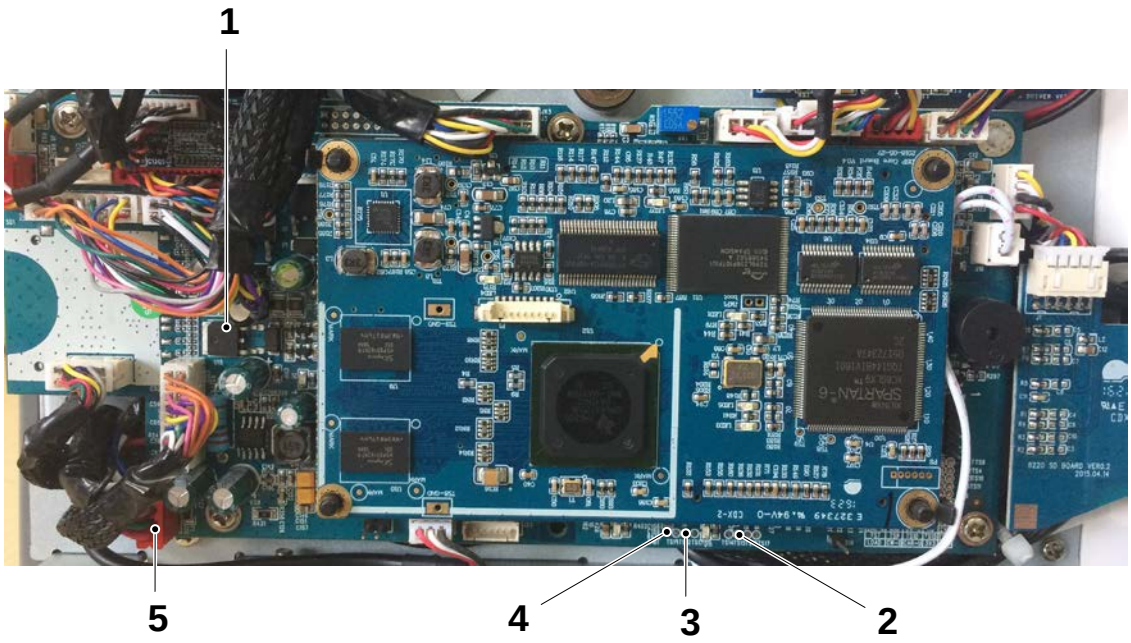
1 Rotate speed sensor
2 Not used
3 CIS sensor #1
4 CIS sensor #2
5 Group A, B, C & D emitting
6 Rotate speed sensor
7 Feeding sensor & rejector sensor
8 LCD
9 Motor control board
10 Banknote receiving sensor
11 External UV
12 Burning port for main board
13 Burning port for network board
14 USB
15 Integrative power source
16 RS232, external display, network & printer
17 SD card
18 Magnet sensor signal
19 Group A, B, C & D IR receiving & UV receiving & emitting
20 Delivering rotate speed sensor

Ports on the motor control board



1 Integrative power source
2 Delivering motor
3 Main board
4 Feeding motor
5 Commutator

Test points on the main board



1 Pin 3 of U15: CIS voltage test point
Acceptable value: +11.8V-12.2V

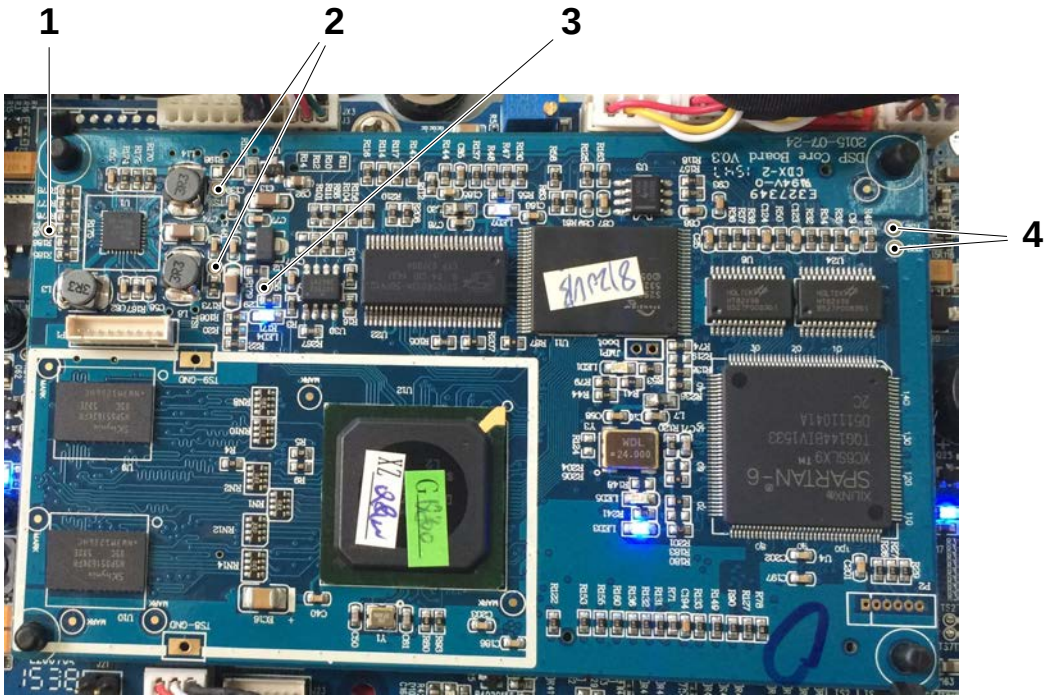
2 TS15: +3.3V voltage test point
Acceptable value: +3.2V-3.4V

3 TS12: ADC reference voltage test point
Acceptable value: +2.48V-2.52V

4 TS18: System voltage test point
Acceptable value: +4.8V-5.2V

5 Pin 1 of J20: Power input voltage test point
Acceptable value: +14.8V-15.2V

Test points on the core board



1 TS6: DSP & DDR working voltage test point
Acceptable value: +1.75V-1.85V

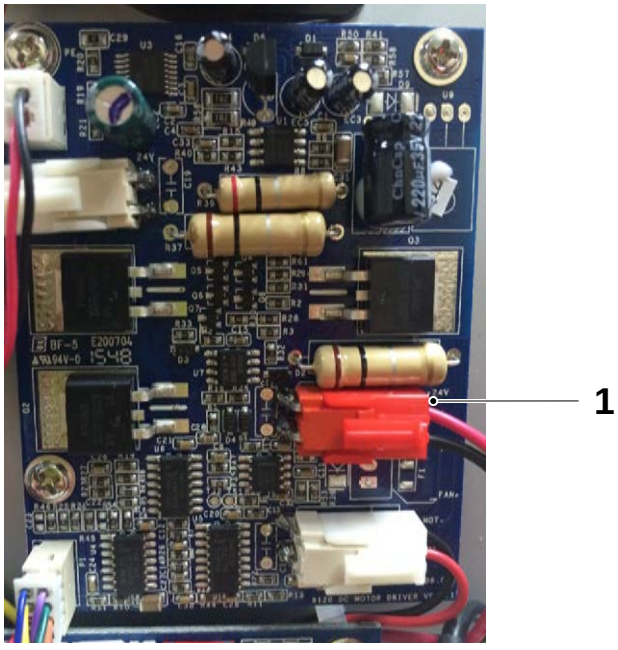
2 TS1 & TS7: DSP kernel voltage test points
Acceptable value: +1.16V-1.24V

3 TS5: System working voltage test point
Acceptable value: +3.2V-3.4V

4 TS2 & TS3: ADC reference voltage test points
Acceptable value: +0.6V-0.65V

Test points on the motor control board

1 Pin 2 of P2: +24V voltage test point
Acceptable value: +23.5V-24.5V



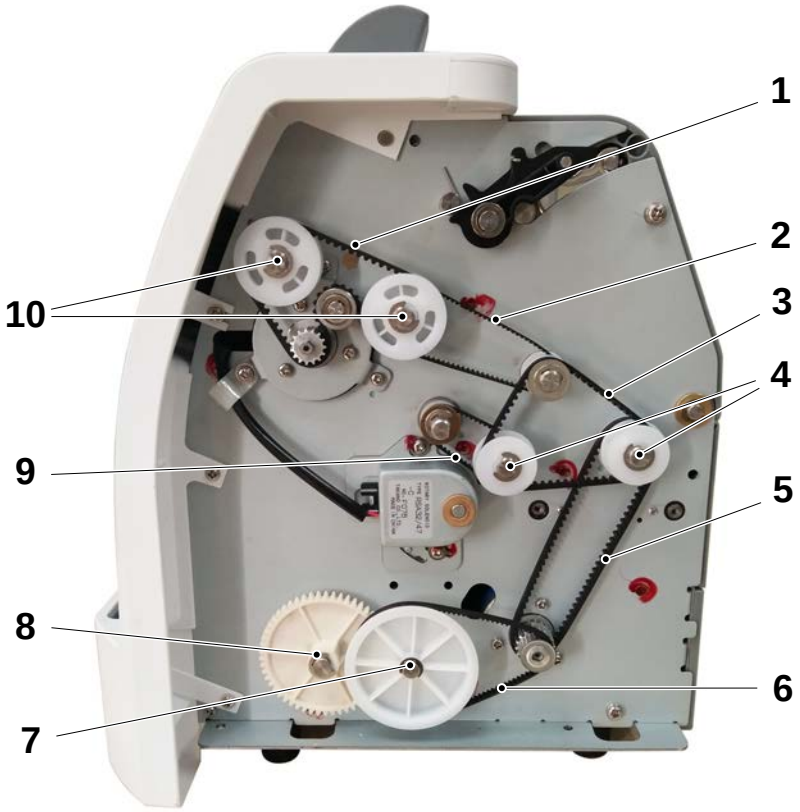
Test points on the magnetism board

1 TS13: +8V voltage test point
Acceptable value +7.8V to +8.2V

2 TS14: +5V voltage test point
Acceptable value +4.8V to +5.2V

3 TS12: -8V voltage test point
Acceptable value -7.8V to -8.2V

Right side of the machine



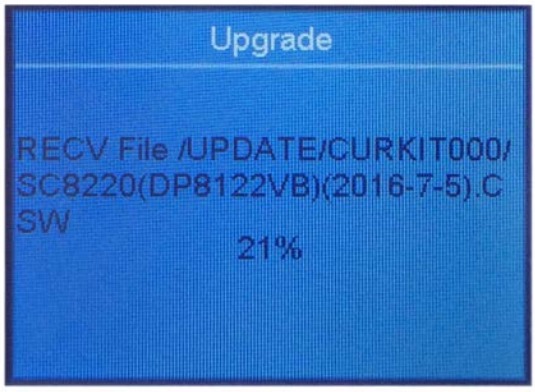
1 Synchronous strap -240
2 Synchronous strap -180
3 Synchronous strap -188
4 Transmission wheel D
5 Synchronous strap -246
6 Synchronous strap -212
7 Receiving transform wheel
8 Receiving transmission gear
9 Synchronous strap -108
10 Transmission wheel A

8 Software

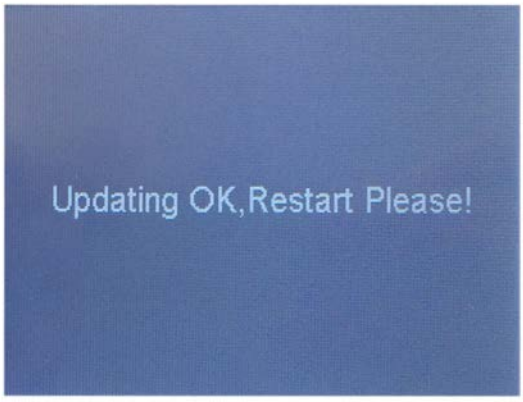
8.1 Software Update

Update the SC-8220 using an SD card. Follow the instructions below.

a) Switch on the machine.
b) Place the **Update** folder in the root directory of an SD card.
c) Insert the SD card at the left side of the machine.
d) Press **Menu** to access the **User Menu**.
e) Highlight **Upgrade**, and confirm with **Start**.
f) The machine selects the installed **CURKIT automatically.** Confirm with **Start**.
g) Enter the password using the touch screen and confirm with **OK**.
h) The machine will start to download software automatically. This may take a few minutes.



i) When **Updating OK, Restart Please!** is displayed, remove the SD card and restart the machine.



Note! During the upgrade process, be sure to prevent power interruption. Use 8, 16 or 32GB SD card.

8.2 Software Setting

Enter the Maintenance Menu

There are two methods to access the maintenance menu. See below for more details.

Method 1

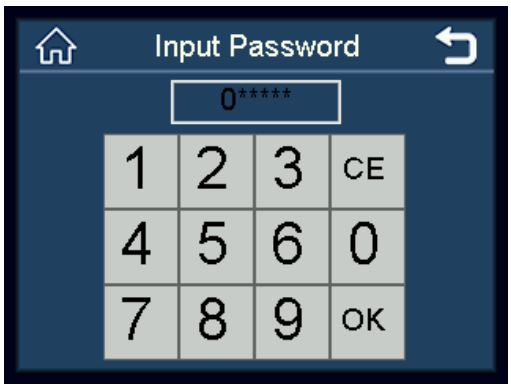
a) Press **Menu** to access the **User Menu**.

b) Highlight **13 Maintenance Menu**, and confirm with **Start**.

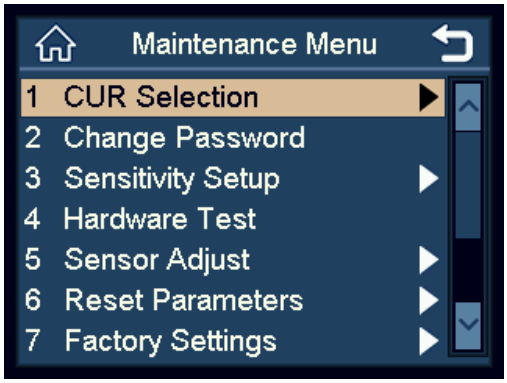
c) Enter the default password **100000** using the numerical keypad. Confirm with **OK**.

Method 2

a) Press the **C** key five times continuously on the main screen. The below window will be displayed.



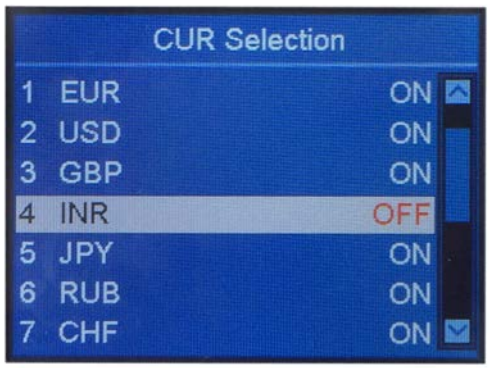
b) Enter password **100000** using the numerical keypad. Confirm with **OK**.



Activate or Deactivate Currencies

Method 1

a) Highlight **1 CUR Selection**. Confirm with **Start**.
b) Select the desired currency by using the navigation keys.
c) Press **Start** again to confirm the selection.
d) Use the navigation keys to activate (**ON**) or deactivate (**OFF**) the installed currencies.



Change Password

a) Highlight **Change Password**. Confirm with **Start**.
b) The below window will be displayed.

c) Enter the new password by using the numerical keypad. Confirm with **OK**.
d) To leave this menu, press **Menu**.

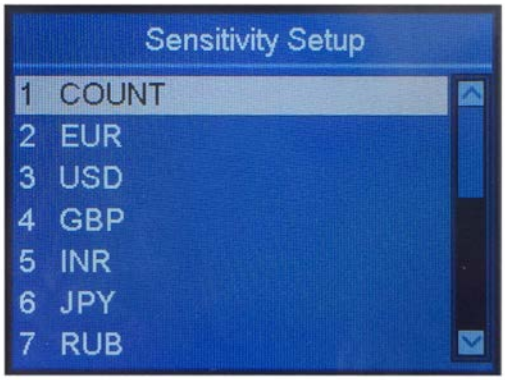
Detection Sensitivity Parameters Setup

The currency sensitivity setting is used for adjustments of UV, MG, IR or IMAGE, in case a specific machine is displaying error messages.

Note! This procedure is not to be confused with changing the adaptation acceptance rate, as this must be done by updating the main data at the factory.

a) Highlight **Sensitivity Setup**, and confirm with **Start**.

b) Confirm the selected currency or **COUNT** (free count mode) with **Start**. The detection sensitivity parameters can now be changed.



c) Highlight the desired sensitivity type by using the navigation keys. Confirm with **Start**.

d) **ADD** increases the sensitivity of the sensors, **DISPLAY** reduces the sensitivity.

USD example:

Sensitivity Type	Default Value	Range
Width	4	0-8
Length	4	0-8
Thickness	4	0-8
UV	4	0-8
Paper	3	0-8
Image	5	0-8
SN	5	0-8
IR	3	0-8
MG	5	0-8
MG1	4	0-8
MG2	4	0-8
MG3	4	0-8

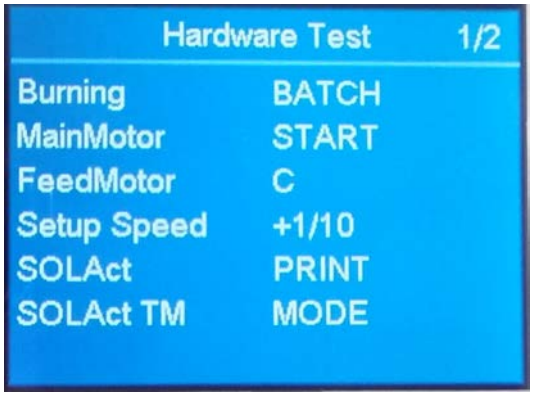
e) To save the changes, press **Start**.

f) Press **Menu** to leave this menu.

Hardware Test

a) Highlight **4 Hardware Test**.

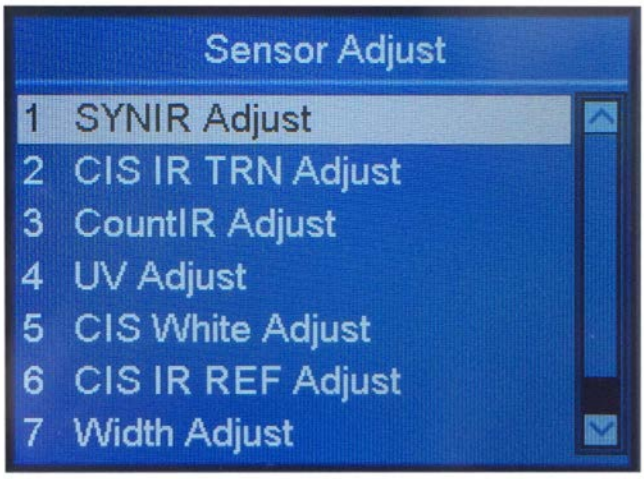
b) Confirm with **Start**. The following will be displayed.



Test	Description
Burning	Not available for user.
MainMotor	Press **Start** to check that the receiving motor is working correctly. Press **Start** again to stop.
FeedMotor	Press **C** when the main motor is running. The feed motor should run continuously. Press **C** again to stop.
Setup Speed	Press the key **+1/+10** to change the speed of the motor while running.
SOLAct	Press **PRINT** to check the commutator. A clicking sound should be heard.
SOLAct TM	Displays the switching time for the commutator. Press **MODE** to test. See **UACT TM** value. If the average is above 100, the commutator may be faulty or needs to be adjusted. See "Commutator Adjustment" on page 51 for more information.

Calibration

Highlight **Sensor Adjust**. Confirm with **Start**. Sensor calibration menu is displayed.



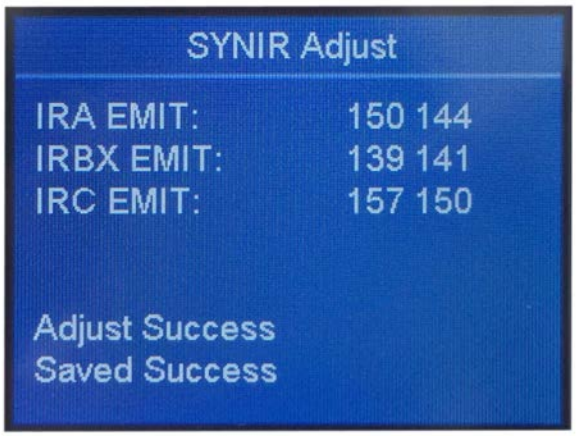
SYNIR Adjust

a) Highlight **1 SYNIR Adjust**.

b) Confirm with **Start.** The following will be displayed

c) Clean the UV sensors, the CIS sensors, the Group A, B, C, D and E sensors. Then press **START**.

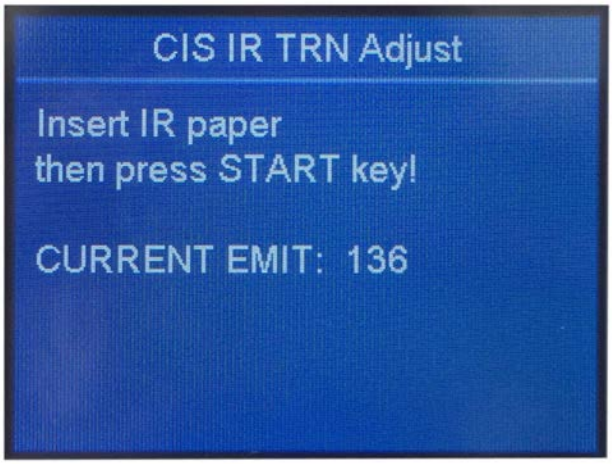
d) The machine will perform sensor calibration automatically. When the calibration is complete, **Adjust Success Saved Success** will be displayed.



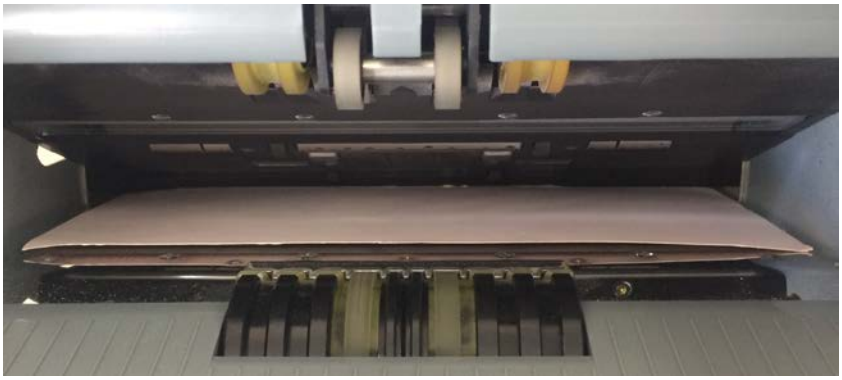
CIS IR TRN Adjust

a) Highlight **2 CIS IR TRN Adjust.**

b) Confirm with **Start**. The following will be displayed:



c) Insert the IR paper and make sure the CIS sensors are fully blocked by the IR paper. Then press **START**.



d) The machine will perform sensor calibration automatically. When the calibration is complete, **Adjust Success Saved Success** will be displayed.

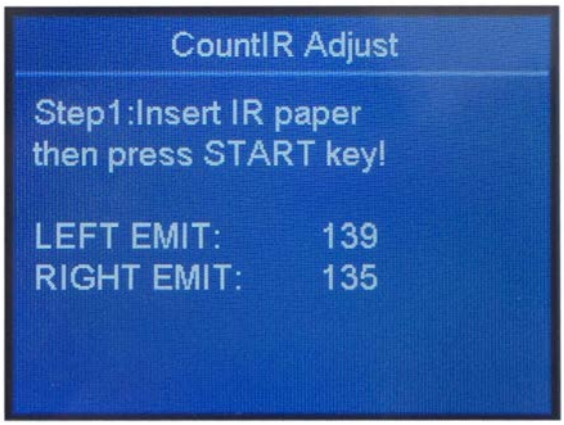
e) Remove the IR paper from the bill transport.

f) To leave this menu, press **MENU**.

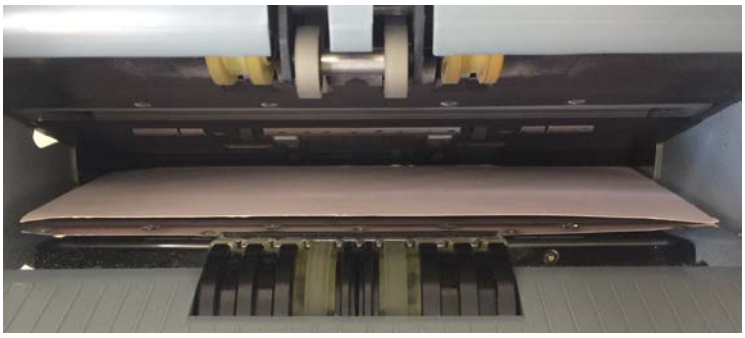
CountIR Adjust

a) Highlight **CountIR Adjust**.

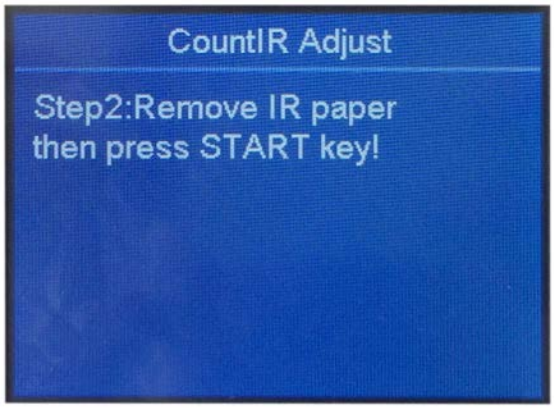
b) Confirm with **Start**. The following will be displayed:



c) Insert the IR paper and make sure the Counting IR sensors are fully blocked by the IR paper. Then press **START**.



d) Remove the IR paper from the bill path, and press **START** again.



e) The machine will perform sensor calibration automatically. When the calibration is complete, **Adjust Success Saved Success** will be displayed.

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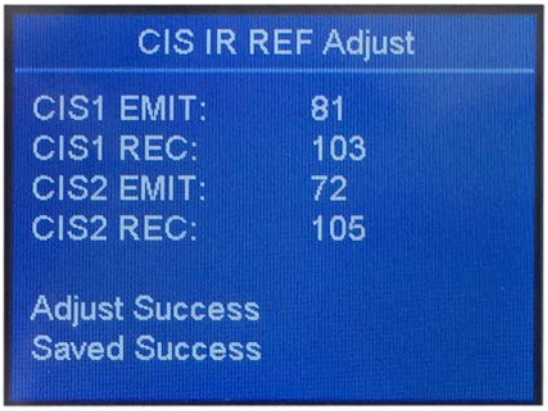


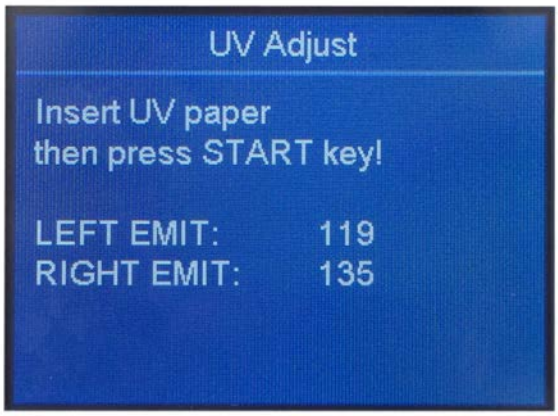
f) Remove the IR paper from the bill transport.

g) To leave this menu, press **MENU**.

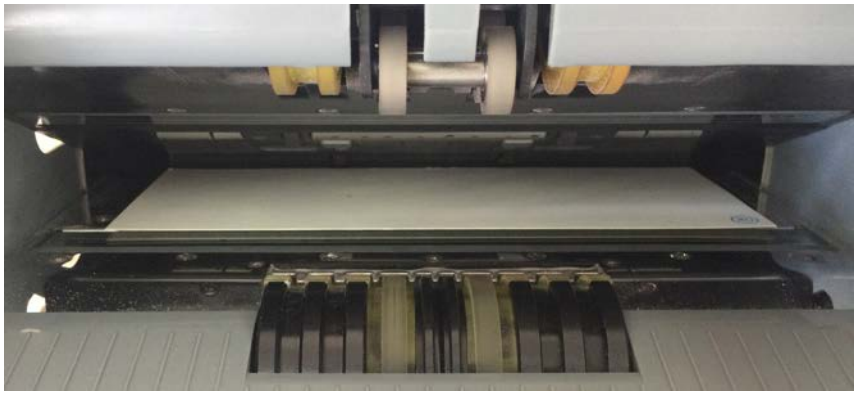
UV Adjust

a) Highlight **4 UV Adjust**.

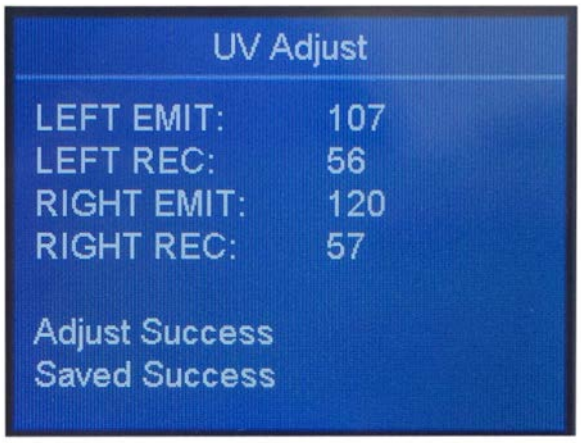
b) Confirm with **Start**. The following will be displayed:



c) Insert the UV paper and make sure the UV sensors are fully covered by the paper. Close the top cover and press **Start**.



d) The machine will calibrate automatically. When the calibration is complete, **Adjust Success Saved Success** will be displayed.



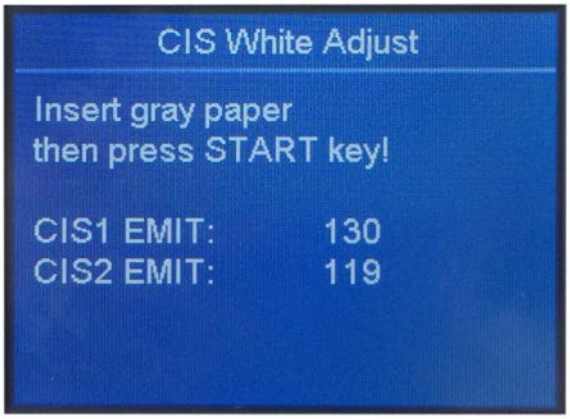
e) Remove the UV paper from the note channel.

f) To leave the menu, press **Menu**.

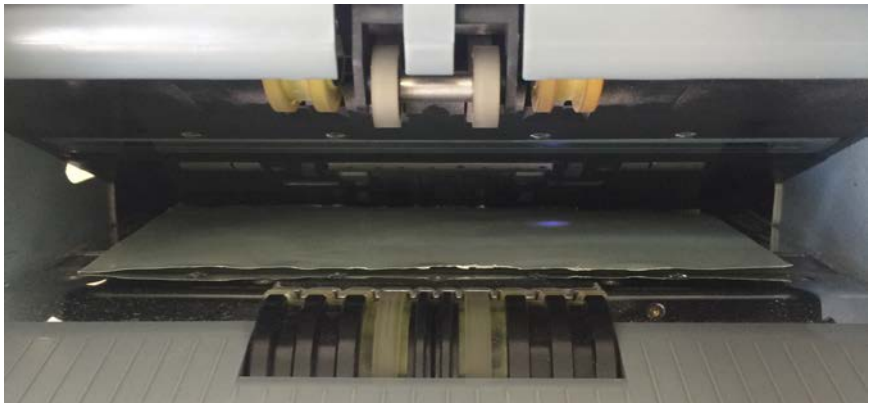
CIS White Adjust

a) Highlight **5 CIS White Adjust**.

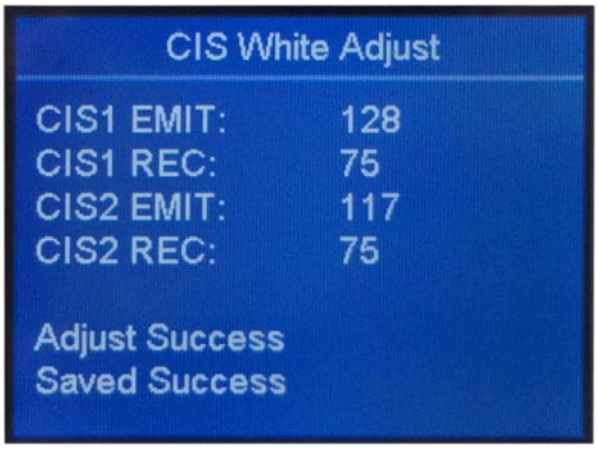
b) Confirm with **Start**. The following will be displayed:



c) Insert the gray paper and make sure the CIS sensors are fully covered by the paper. Close the top cover and press **Start**.



d) The machine will calibrate the sensor automatically. When the calibration is complete, **Adjust Success Saved Success** is displayed.



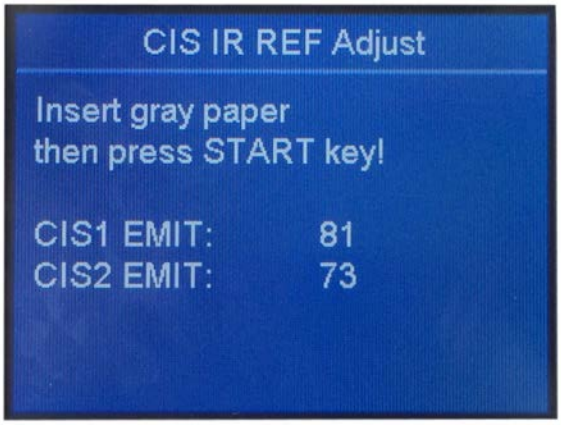
e) Remove the gray paper from the note channel.

f) To leave the menu, press **Menu**.

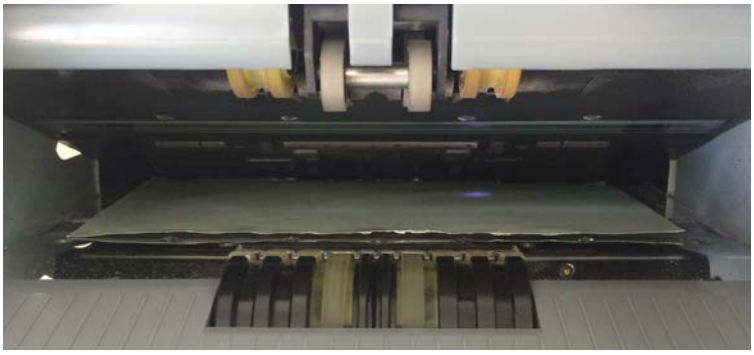
CIS IR REF Adjust

a) Highlight **CIS IR REF Adjust.**

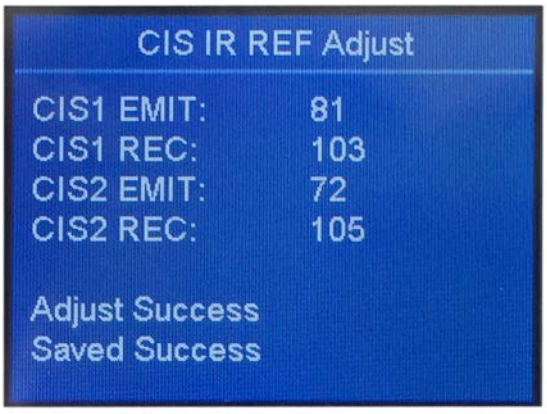
b) Confirm with **Start.** The following will be displayed:



c) Insert the gray paper and make sure the CIS sensors are fully covered by the paper. Close the top cover and press **Start**.



d) The machine will calibrate the sensor automatically. When the calibration is complete, **Adjust Success Saved Success** is displayed.



e) Remove the gray paper from the note channel.

f) To leave this menu, press **Menu**.

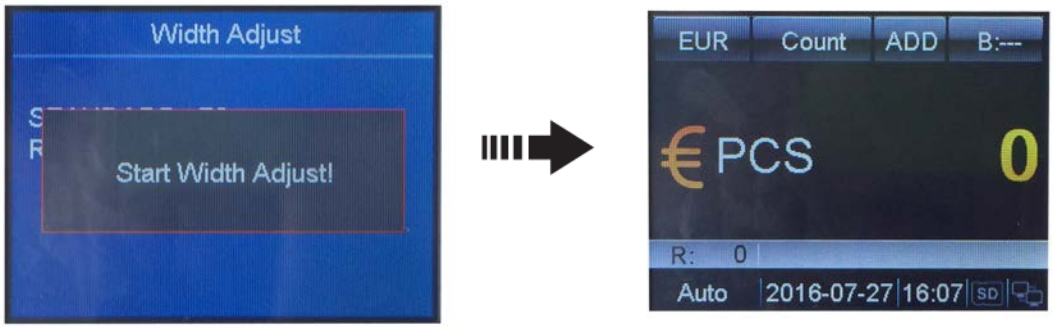
Width Adjust

a) Highlight **7 Width Adjust**.

b) Confirm with **Start** and the following will be displayed.

- The default width value is 70 mm. It is recommended to use white calibration papers in the calibration set, which width is 70 mm.
- If white calibration papers are not available, please use notes with width 70 ± 5 mm. See examples below.
- USD (width 66 mm)
- 10 EUR (width 67 mm)
- 20 EUR (width 72 mm)
- Be sure to set the value correctly by using the up and down navigation keys.
- 20-100 notes with the same width are needed. Avoid worn notes.

c) Press **Start** again to start the calibration. The following will be displayed.



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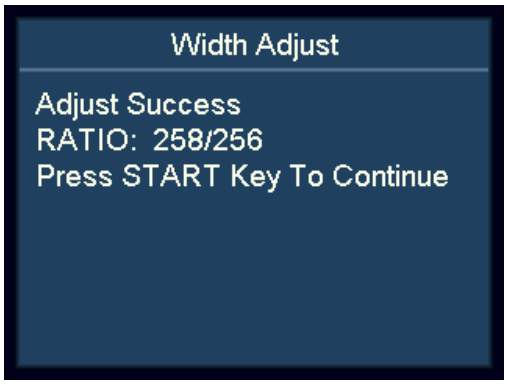
d) Put 20 to 100 pieces of white calibration papers in the centre of the hopper without skew.
The total count needed is 100-200 pieces. Repeat the count until the screen below is displayed.



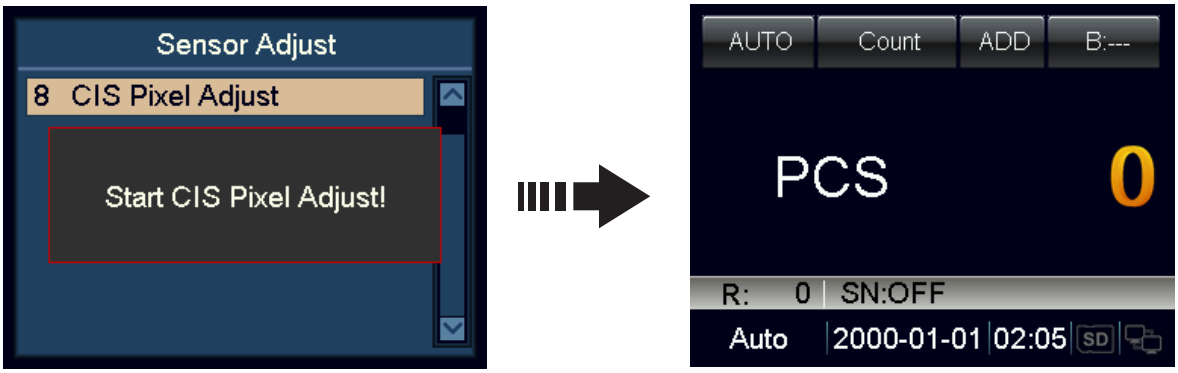
e) The machine will calibrate the sensor automatically. When the calibration is complete, **Adjust Success** is displayed.

f) Press **Start** to return to count mode.

CIS Pixel Adjust

a) Highlight **8 CIS Pixel Adjust.**

b) Press **Start** to start calibration. The following will be displayed.



c) Place a bundle of white calibration papers in the hopper. The total count needed is 100-200 pieces. Repeat the count until the screen below is displayed.

d) When the calibration is complete, **Adjust Success Please Restart** is displayed.

e) Restart the machine.

Resetting Parameters

a) Highlight **6 Reset Parameters**.

b) Confirm with **Start**, and the following will be displayed.

c) User parameters setting or factory setting can be reset to default here.

User parameters include:

- Main screen setting
- User menu setting
- Sensitivity setting

Factory default settings include the above and also user parameter setting.

d) Select the desired operation by using the navigation keys and press **Start**.

e) Restart the machine.

Factory Settings

a) Highlight **7 Factory Settings**.

b) Confirm with **Start**.

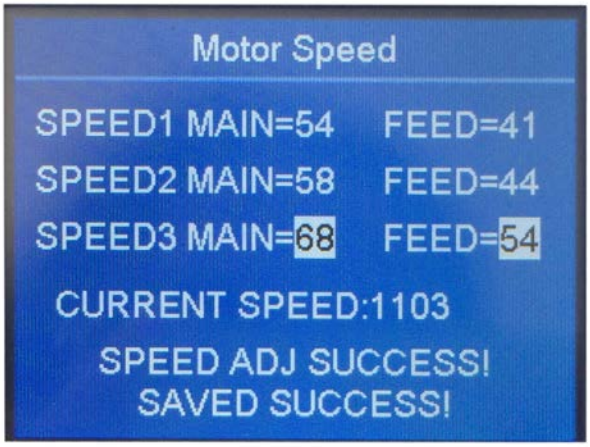
Motor Speed Adjustment

a) Highlight **1 Motor Speed**.

b) Confirm with **Start**.

c) Press **Mode**. The machine will perform the Motor Speed Adjustment automatically.

d) When the adjustment is complete, the following will be displayed.



e) To leave the menu, press **Menu**.

Factory Parameter Default Settings

a) Highlight **2 SET FACTORY PARA**.

b) Confirm with **Start**. This operation saves the current settings to the factory settings.

c) To leave the menu, press **Menu**.

Maintenance Period Settings

a) Highlight **3 CLEAN OPTION.**

b) Confirm with **Start**.

c) Set the **CLEAN COUNT** as maintenance period by using **+1/+10** and **Batch**. To increase, press **+1/+10.** To decrease, press **Batch**. Press **Start** to save.
After **CLEAN COUNT** value is set, the count numbers will be accumulated in **STAGE COUNT**. When the number of counts reaches the preset value, the machine will remind the user on startup to contact SUZOHAPP dealer for cleaning service.
To reset the **STAGE COUNT** value, press **CUR**. Then press **Start** to confirm.

d) To leave the menu, press **Menu**.

Note! In the maintenance menu, sections **8 Debug Mode** to **11 CIS uniformity** are for factory only. The user should not make any chnages here.

9 Error Messages

9.1 Self-test Error Messages

No.	Error Message	Action
S01	Feeding Fault	Remove the note, clean the feeding sensor.
S02	Receiving Fault	Remove the note, clean the receiving sensor.
S03	Rejector Faults	Remove the note, clean the reject sensor.
S04	UV Fault	Remove the note, clean the UV sensor.
S05	FL Fault	Remove the note, clean the sensor.
S06	Left#1 Counting Fault	Remove the note, clean the Counting IR sensor. If the error remains, perform the Counting IR sensor calibration.
S07	Right#1 Counting Fault	
S08	Left#2 Counting Fault	
S09	Right#2 Counting Fault	
S10	Left CIS IR Fault	Remove the note, clean the IR counting tube.
S11	Right CIS IR Fault	
S12	Rotate#1 Speed Fault	Remove the banknote, clean the rotate speed sensor 1.
S13	Rotate#2 Speed Fault	Remove the banknote, clean the rotate speed sensor 2.
S14	CIS#0 Fault	Remove the banknote, clean the CIS sensor. Perform the CIS sensor calibration.
S15	CIS#1 Fault	
S17	CIS#2 Fault	
S18	AD Fault	Power off. Restart the machine. If the problem persists, replace the AD chip on the main board.
S19	Brake Fault	Perform the motor speed calibration. If the error persists after calibration, replace the motor control board. If the error persists, replace the feeding motor.
S20	Diverter#1 Fault	Adjust the location of the commutator.
S21	Diverter#2 Fault	
S22	Diverter#3 Fault	
S23	Diverter#4 Fault	
S24	Auto Adjust IR Fault, Please Clean Counting Sensor!	Use a brush or a piece of soft cloth to clean the sensor from dust. If the problem persists after cleaning, perform the counting IR calibration. If the problem persists, replace the counting IR sensor.
S25	MG#1 Fault MG#2 Fault MG#3 Fault	Check if the connections on the left magnetism board are loose. If the connections are okay, replace the left magnetism board sub assembly.

No.	Error Message	Action
S26	MG#4 Fault MG#5 Fault	Check if the connections on the MRS magnetism board are loose. If the connections are okay, replace the MRS magnetism board sub assembly.
S27	MG#6 Fault MG#7 Fault MG#8 Fault	Check if the connections on the right magnetism board are loose. If the connections are okay, replace the right magnetism board sub assembly.
S28	MID-MG Fault MID-MT Fault	Check if the connections on the middle magnetism board are loose. If the connections are okay, replace the middle magnetism board sub assembly.

9.2 Detective Error Messages

If the following error messages are displayed during counting, refer to the solutions after the machine is stopped.

No.	Error Message	Solution
D01	UV-Error FL-Error	Remove the notes, clean the sensor. If the error persists, perform the UV calibration.
D02	MG-Error	Clean the magnetic sensor. Lower the sensitivity level.
D03	MG1-Error	
D03	MG2-Error	
D04	MG3-Error	
D05	IR-Error	Perform the Counting IR calibration. Lower the sensitivity level.
D07	Composed-Error	Remove the note.
D08	Slant	Ensure that the notes are placed correctly and are inserted centred on the hopper. Use the hopper guides to centre a stack of notes.
D09	Slant#1	
D10	Double	If these errors occur frequently, turn the adjusting screw counter clockwise to decrease clearance.
D11	Chained#1	
D12	Chained#2	
D13	Chained#3	
D14	Count	Remove the notes from the stacker and the reject pocket and count again.
D15	Half	Remove the note.
D16	Width	Perform the width calibration first. Then perform the counting IR sensor calibration.
D17	Length	
D18	Image#1	Perform the CIS calibration. Scan the miscounting data for analysis.
D19	Image#2	
D20	Image#3	

No.	Error Message	Solution
D21	Old Ver	Remove the note.
D22	Judge	
D23	SN-Error	
D24	SN Invalid	
D25	SN Repeat	
D26	Face Diff	
D27	Orient Diff	
D28	Ver Diff	
D29	Deno Diff	
D30	Soiling	
D31	Stains	
D32	Grafitti	
D33	De-inked note	
D34	Tears	
D35	Mutilation	
D36	Repairs	
D37	Crumples	
D38	Limpness	
D39	Fold	
D40	Corner Folds	
D41	Stacker Full	The stacker is full. Remove the notes from the stacker.
D42	Reject Full	The reject pocket is full. Remove the notes from the reject pocket.
D43	Cover open	Close the top cover.
D44	Jam	Notes are blocked. Open the back cover to remove any foreign objects. If the problem persists, lower the motor speed. If the problem persists after adjusting motor speed, turn the adjusting screw clockwise to increase the feeding gap. Check that the tooth rubber between the feeding wheel and the twiddling wheel is consistent.
D45	TIME2	This message means time out. Perform motor calibration by "Motor Speed Adjustment" on page 78. If the fault remains or recurs, collect these notes and contact your SUZOHAPP representative for analysis and adjustment.

10 Spare Parts

10.1 Included Parts

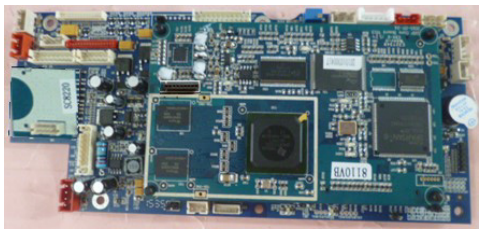
	Description	Part No.	Remarks
1	Article A	xxxxxx-xxx	
2	• Article B	xxxxxx-xxx	
3	•• Article C	xxxxxx-xxx	
4	Article D	xxxxxx-xxx	
	• Article E	xxxxxx-xxx	

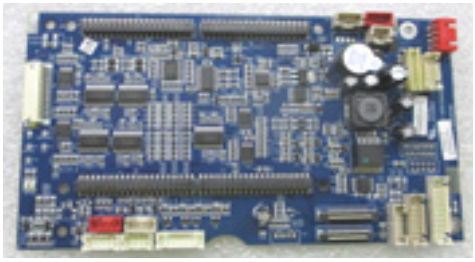
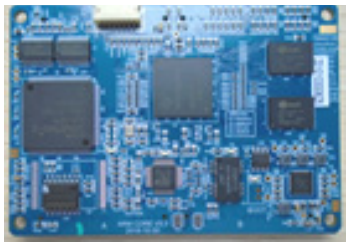
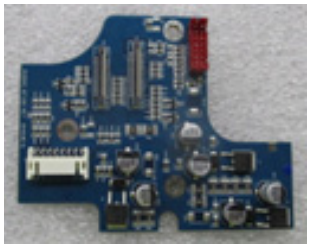
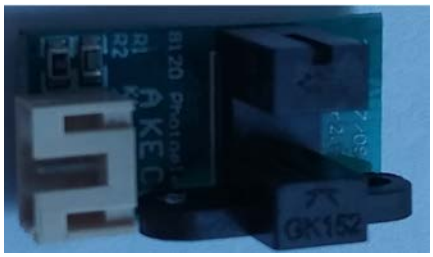
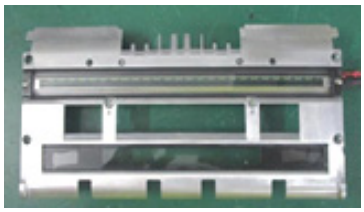
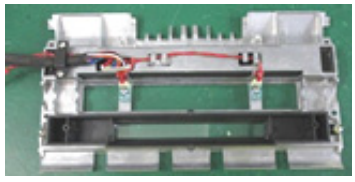
• Article **B** is included in Article **A**

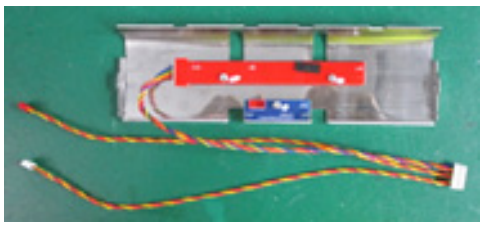
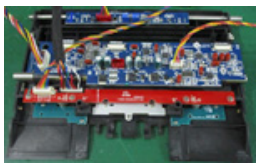
•• Article **C** is included in Article **B**

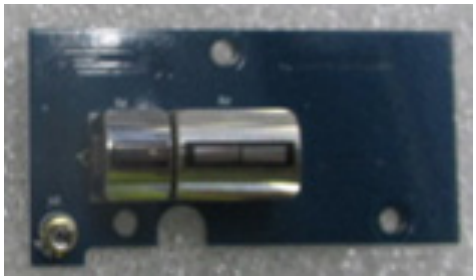
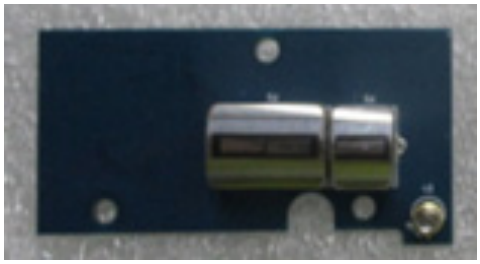
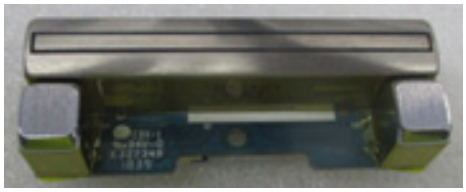
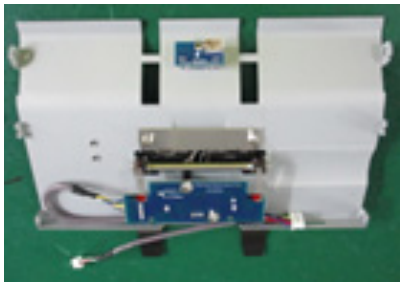
When ordering part "Article **A**", parts **B** and **C** are shipped as well.

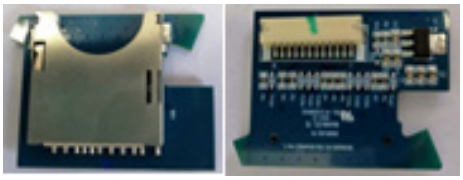
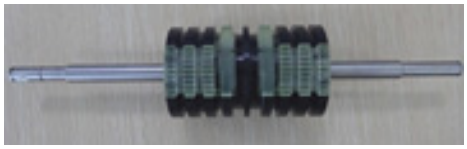
Note! First serial number of SC-8220 VC version is 002530.

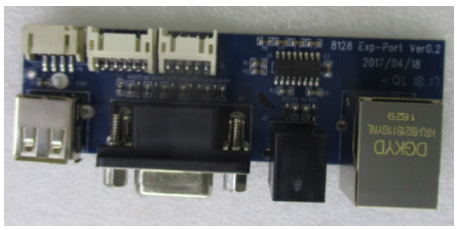
PartNo.	Supported machine	Description	Picture
158-SP808010900108	SC-8220	Main board + Core board	
158-SP808010900109	SC-8220	• Main board	
158-SP808010900110	SC-8220	• Core board	

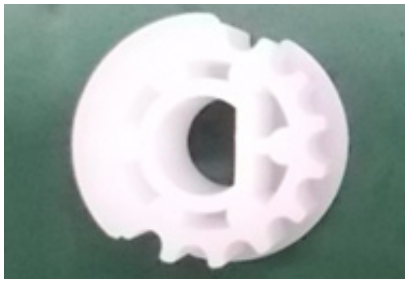
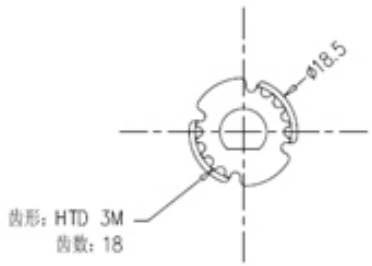
PartNo.	Supported machine	Description	Picture
158-SP808010900406	SC-8220 VC	Main board + ARM core board	
158-SP808010900405	SC-8220 VC	• Main board	
158-SP808011400114	SC-8220 VC	• ARM core board	
158-SP808010900341	SC-8220 VC	CIS transfer board	
158-SP808010900290	SC-8220 VC	Rotating speed sensor sub assembly	
158-SP801090000262	SC-8220 VC	Transition plate sub assembly	 

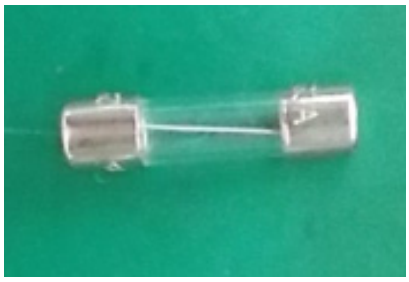
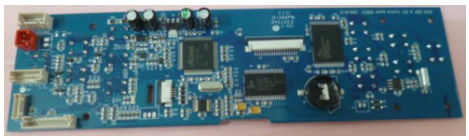
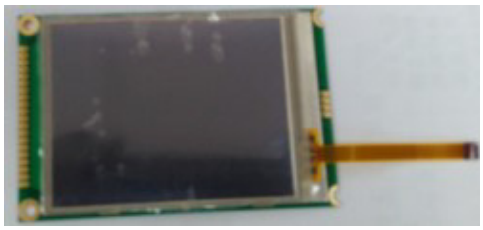
PartNo.	Supported machine	Description	Picture
158-SP808010900267	SC-8220 VC	BX IR emitting sub assembly	 
158-808010400051	SC-8220 VC	Metal code wheel sub assembly	 
158-SP801090000256	SC-8220 VC	Upper transition plate sub assembly	
158-SP808010900311	SC-8220 VC	Group C IR sub assembly	
158-SP808010900210	SC-8220 VC	Group D IR sub assembly	 
158-SP801090000261	SC-8220 VC	Counting frame sub assembly	 

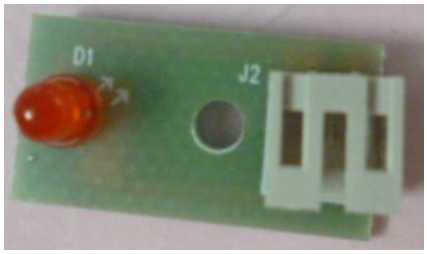
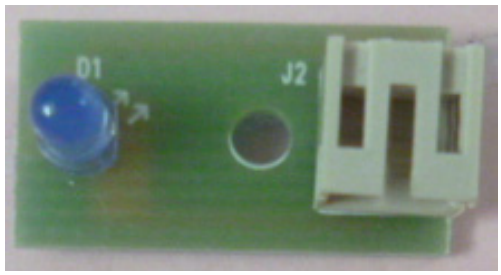
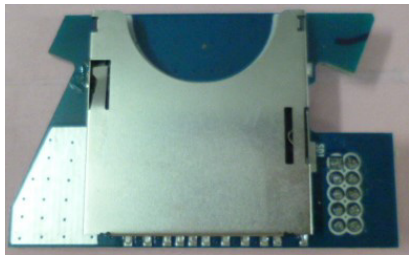
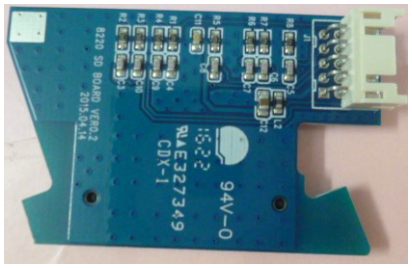
PartNo.	Supported machine	Description	Picture
158-SP808010900332	SC-8220 VC	Left magnetism board sub assembly	
158-SP808010900333	SC-8220 VC	Right magnetism board sub assembly	
158-SP808010900277	SC-8220 VC	Middle magnestism board sub assembly	
158-SP808010900334	SC-8220 VC	Magnetsim board sub assembly	
158-SP808010900310	SC-8220 VC	Group A infrared sub assembly	
158-SP801090000127	SC-8220 VC	Upper banknote-blocked bracket sub assembly	
158-SP808010900211	SC-8220 VC	Group E IR sub assembly	

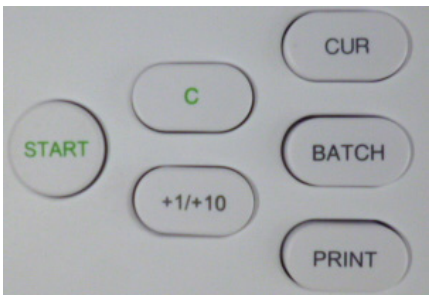
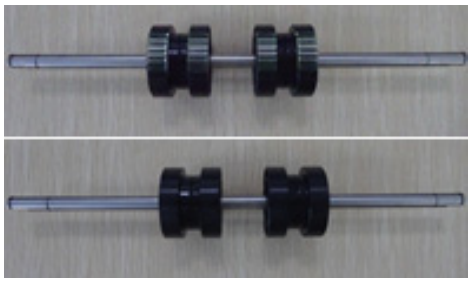
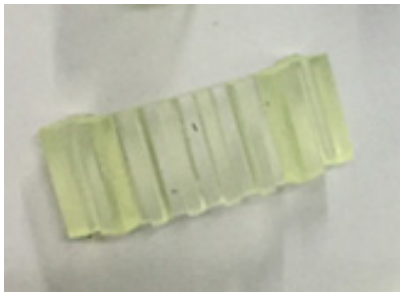
PartNo.	Supported machine	Description	Picture
158-SP801090000294	SC-8220 VC	Control panel sub assembly	
158-SP808010900286	SC-8220 VC	Key-press control board	
158-SP808010900404	SC-8220 VC	SD card board	
158-SP808010900344	SC-8220 VC	Twiddling wheel sub assembly	
158-SP801090000192	SC-8220 VC	Delivering wheel F sub assembly	
158-SP801090000148	SC-8220 VC	Delivering wheel G sub assembly	
158-SP801090000149	SC-8220 VC	Delivering wheel H sub assembly	
158-SP801090000297	SC-8220 VC	Reject pocket sub assembly	

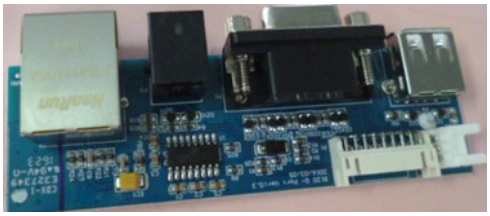
PartNo.	Supported machine	Description	Picture
158-SP808010900382	SC-8220 VC	Rejecting opposite wheel sub assembly	
158-SP801090000124	SC-8220 VC	Integrative power source sub asembly	
158-SP808010900188	SC-8220 VC	External interface board	
158-SP801090000214	SC-8220 VC	Delivering motor	
158-SP801090000213	SC-8220 VC	Feeding motor	
158-SP808010900289	SC-8220 VC	Synchronous wheel H3M-24	

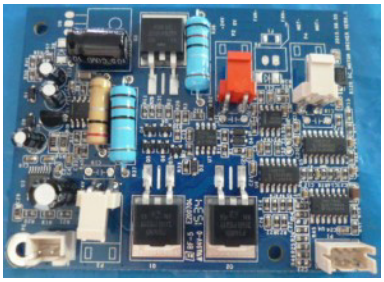
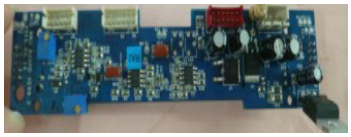
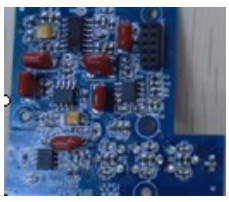
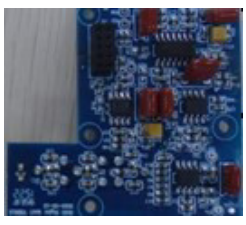
PartNo.	Supported machine	Description	Picture
158-SP808010900213	SC-8220 VC	Transmission wheel 3M-12	
158-SP808010900214	SC-8220 VC	Transmission wheel 3M-15	
158-SP808010900410	SC-8220 VC	Synchronous wheel 3M-18	
158-SP808010900215	SC-8220 VC	Synchronous strap-213	
158-SP808010900191	SC-8220 VC	Synchronous strap-206	
158-SP808010900029	SC-8220 VC	Synchronous strap-255	

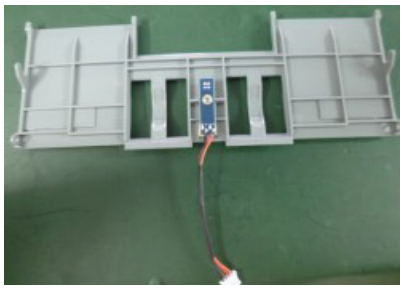
PartNo.	Supported machine	Description	Picture
158-SP808010900288	SC-8220 VC	Synchronous strap-285	
158-SP801090000120	SC-8220 SC-8220 VC	External UV sub assembly	
158-SP808010200045	SC-8220 SC-8220F	Fuse	
158-SP801090000121	SC-8220	Control panel sub assembly	 
158-SP808010900111	SC-8220	• Key-press control board	 
158-SP808010900090	SC-8220 SC-8220 VC	• LCD	

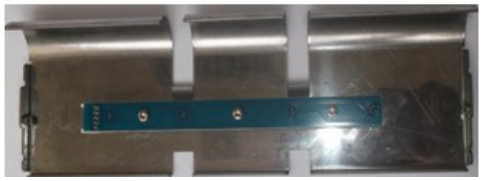
PartNo.	Supported machine	Description	Picture
158-SP808010900112	SC-8220 SC-8220 VC	• Red indicator for reject pocket	
158-SP808010900113	SC-8220 SC-8220 VC	• Blue indicator for stacker	
158-SP808010900114	SC-8220 SC-8220 VC	• UV key-press board	
158-SP808010900115	SC-8220	• SD card slot	 

PartNo.	Supported machine	Description	Picture
158-SP808010900116	SC-8220 SC-8220 VC	• Left side buttons	
158-SP808010900117	SC-8220 SC-8220 VC	• Right side buttons	
158-SP808010900118	SC-8220 SC-8220 VC	• UV switch	
158-SP801090000215	SC-8220 SC-8220 VC	Synchronous feeding wheel	
158-SP808010900299	SC-8220 SC-8220 VC	Feeding wheel tooth rubber	

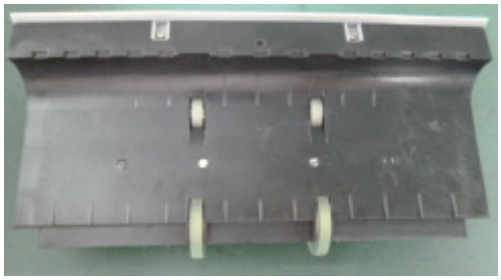
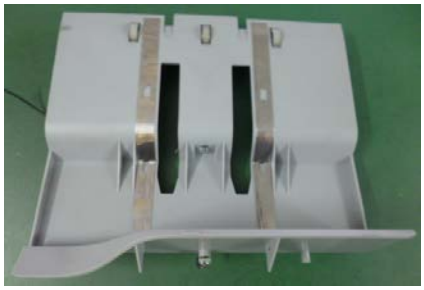
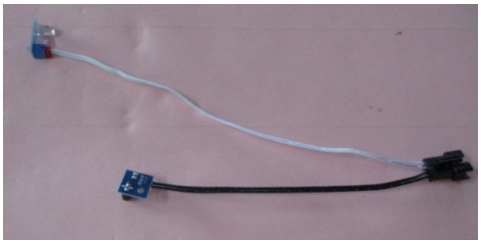
PartNo.	Supported machine	Description	Picture
158-SP801090000098	SC-8220	Integrative power source	
158-SP808010900119	SC-8220	• External interface board	
158-SP808010900086	SC-8220 SC-8220 VC	• Power switch	
158-SP808010900071	SC-8220 SC-8220 VC	• Power circuit board	
158-SP801090000112	SC-8220 SC-8220 VC	Top cover sub assembly	
158-SP808010900120	SC-8220 SC-8220 VC	Left cover	

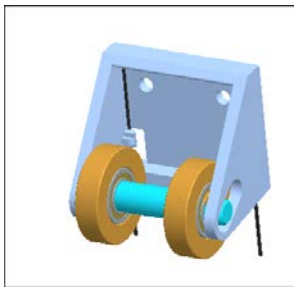
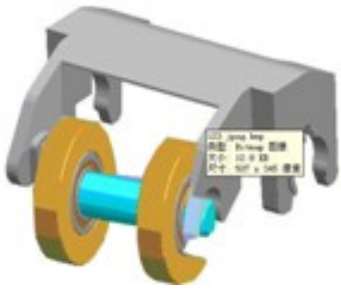
PartNo.	Supported machine	Description	Picture
158-SP808010900121	SC-8220 SC-8220 VC	Right cover	
158-SP808010900064	SC-8220 SC-8220 VC	Motor control board	
158-SP801090000031	SC-8220	Counting bracket sub assembly	
158-SP808010900072	SC-8220	• Middle magnetism board	 
158-SP808010900073	SC-8220	• Left magnetism board	 
158-SP808010900074	SC-8220	• Right magnetism board	 

PartNo.	Supported machine	Description	Picture
158-SP808010900075	SC-8220	• MRS magnetism board sub assy	
158-SP808010900076	SC-8220	• Group A infrared sub assembly	
158-SP808010900015	SC-8220 SC-8220 VC	• CIS sensor sub assembly	
158-SP801090000048	SC-8220	Transition plate sub assembly	
158-SP808010900015	SC-8220 SC-8220 VC	• CIS sensor sub assembly	
158-SP808010900077	SC-8220	• Group B&D IR emitting sub assembly	
158-SP808010900020	SC-8220 SC-8220 VC	Code wheel	
158-SP801090000115	SC-8220 SC-8220 VC	Hopper sub assembly	

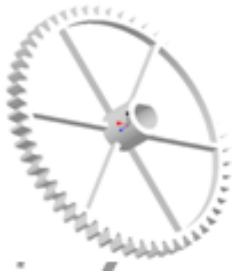
PartNo.	Supported machine	Description	Picture
158-SP808010900018	SC-8220 SC-8220 VC	• Banknote feeding sensor	
158-SP808010900067	SC-8220	Rotate speed sensor	
158-SP808010900068	SC-8220	Rotate speed sensor for delivering	
158-SP801090000022	SC-8220	Feeding motor	
158-SP801090000037	SC-8220	Delivering motor	
158-SP808010900021	SC-8220	Twiddling wheel sub assembly	
158-SP801090000010	SC-8220	Delivering wheel A sub assembly	
158-SP801090000049	SC-8220	Upper transition plate sub assembly	
158-SP808010900066	SC-8220	• Group C IR sub assembly	

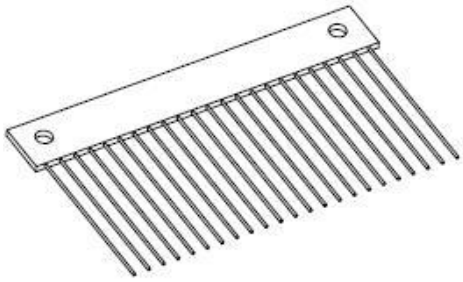
PartNo.	Supported machine	Description	Picture
158-SP801090000081	SC-8220	Upper blocked bracket sub assembly	
158-SP808010900069	SC-8220 SC-8220 VC	• Banknote rejecting board	
158-SP801090000019	SC-8220 SC-8220 VC	Bistable rotary solenoid sub assembly	
158-SP801090000011	SC-8220	Delivering wheel B sub assembly	
158-SP801090000012	SC-8220 SC-8220 VC	Delivering wheel C sub assembly	
158-SP801090000032	SC-8220 SC-8220 VC	Delivering wheel D sub assembly	
158-SP801090000030	SC-8220 SC-8220 VC	Delivering wheel E sub assembly	
158-SP808010900025	SC-8220 SC-8220 VC	Commutator bar	
158-SP801090000113	SC-8220	Reject pocket sub assembly	

PartNo.	Supported machine	Description	Picture
158-SP808010900026	SC-8220	• Rejecting opposite wheel sub assembly	
158-SP801090000116	SC-8220 SC-8220 VC	Back cover sub assembly	
158-SP801090000042		Receiving conductive hairbrush sub assembly	
158-SP801090000119	SC-8220 SC-8220 VC	Gangway sub assembly	
158-SP808010900019	SC-8220 SC-8220 VC	• Receiving sensor	
158-SP801090000114	SC-8220 SC-8220 VC	Resistance bracket sub assembly	 
158-SP808010900028	SC-8220 SC-8220 VC	• Resistance wheel	

PartNo.	Supported machine	Description	Picture
158-SP808010900029	SC-8220 SC-8220 VC	• Feeding opposite wheel	
158-SP808010900030	SC-8220 SC-8220 VC	• Pressing wheel	
158-SP808010900122	SC-8220 SC-8220 VC	• Rear cover closer	
158-SP808011500049	SC-8220 SC-8220 VC	Banknote receiving impeller	
158-SP808010900031	SC-8220	Transmission wheel A	
158-SP808010900032	SC-8220 SC-8220 VC	Transmission wheel B	

PartNo.	Supported machine	Description	Picture
158-SP808010900033	SC-8220	Transmission wheel C	
158-SP808010900034	SC-8220	Transmission wheel D	
158-SP808010900035	SC-8220 SC-8220 VC	Unilateral transmission wheel	
158-SP808010900036	SC-8220	Transmission wheel E	
158-SP808010900037	SC-8220 SC-8220 VC	S2M-28 transmission wheel	

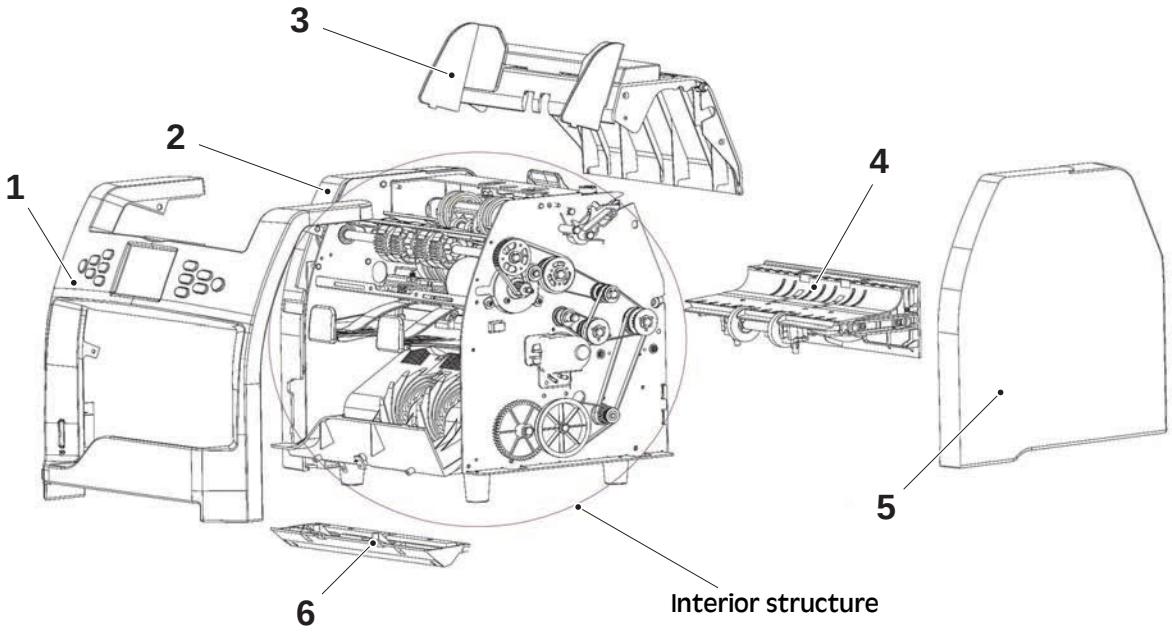
PartNo.	Supported machine	Description	Picture
158-SP808010900038	SC-8220 SC-8220 VC	S2M-21 transmission wheel	
158-SP808010900093	SC-8220 SC-8220 VC	S2M-18-D6 transmission wheel	
158-SP808010900039	SC-8220 SC-8220 VC	Receiving transform wheel A2	
158-SP808010900040	SC-8220 SC-8220 VC	Receiving transmission gear	
158-SP808010900042	SC-8220	Synchronous strap-188	
158-SP808010900043	SC-8220	Synchronous strap-246	

PartNo.	Supported machine	Description	Picture
158-SP808010900046	SC-8220 SC-8220 VC	Synchronous strap-108	
158-SP808010900096	SC-8220	Synchronous strap-212	
158-SP808010900080	SC-8220 SC-8220 VC	Synchronous strap-114	
158-SP808010900044	SC-8220 SC-8220 VC	Synchronous strap-180	
158-SP808010900047	SC-8220	Synchronous strap-240	
158-SP808010900049	SC-8220 SC-8220 VC	Rejecting conductive hairbrush	
158-SP808010100019	SC-8220 SC-8220 VC	USB download cable	

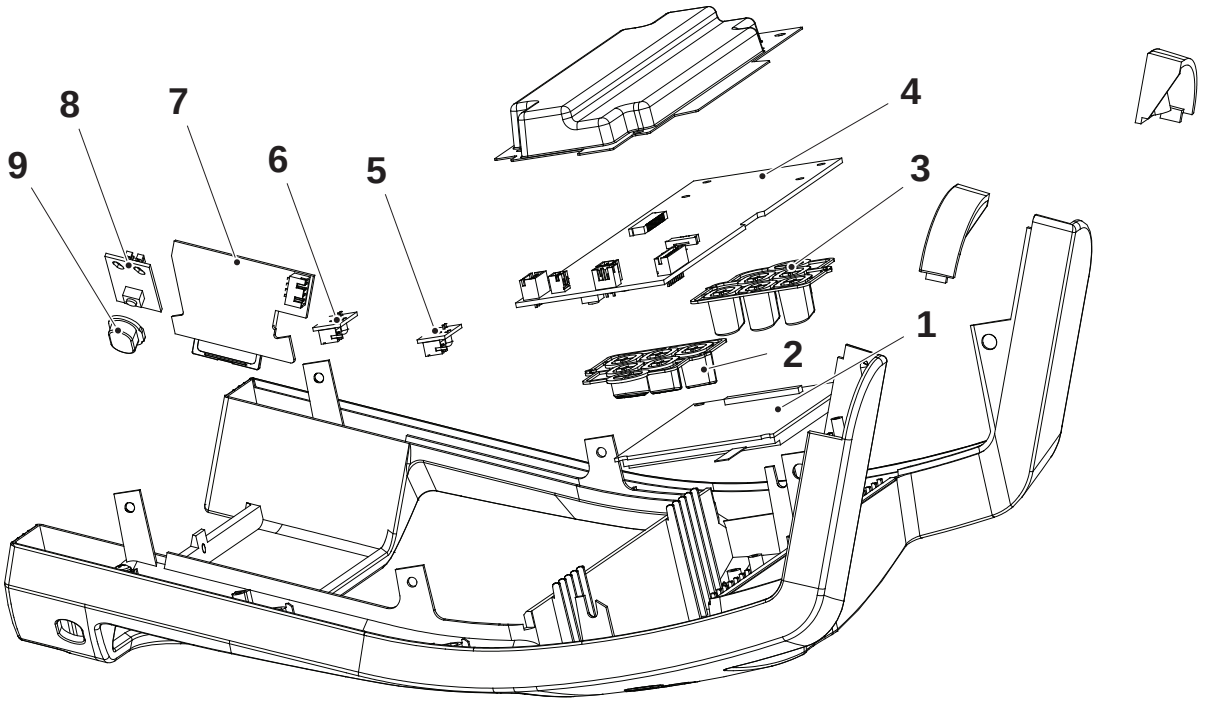
PartNo.	Supported machine	Description	Picture
158-SP801090000019	SC-8220 SC-8220 VC	Rotary electric magnet	
158-SP808010100007	SC-8220 SC-8220 VC	Printer cable	
158-SP809000000002	SC-8220 SC-8220 VC	External LED display (Accessory)	
158-SP809000000006	SC-8220 SC-8220 VC	External LCD display (Accessory)	
158-SP808010100009	SC-8220 SC-8220 VC	Compact disc	

PartNo.	Supported machine	Description	Picture
158-SP808010900134	SC-8220 SC-8220 VC	Calibration Paper Set Including: - IR calibration note 1 pc. - UV calibration note 1 pc. - Gray calibration note 1 pc. - White calibration note 20 pcs. - Self-sealing polybag	

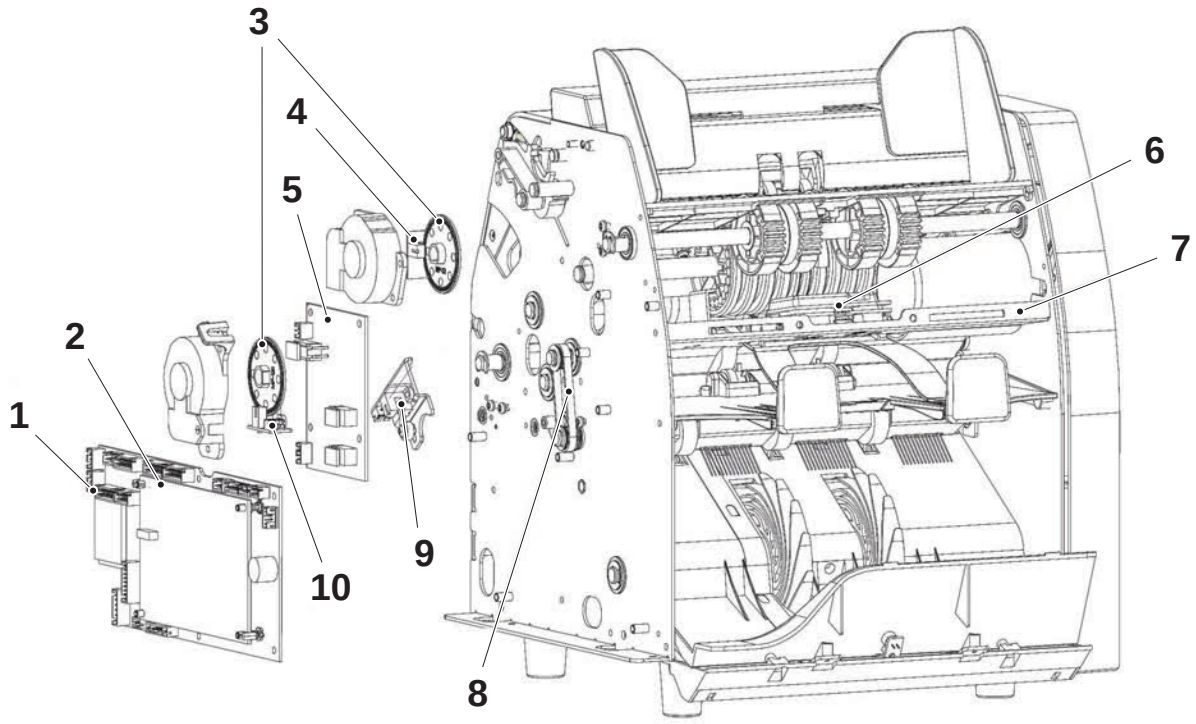
11 Assembly Drawings



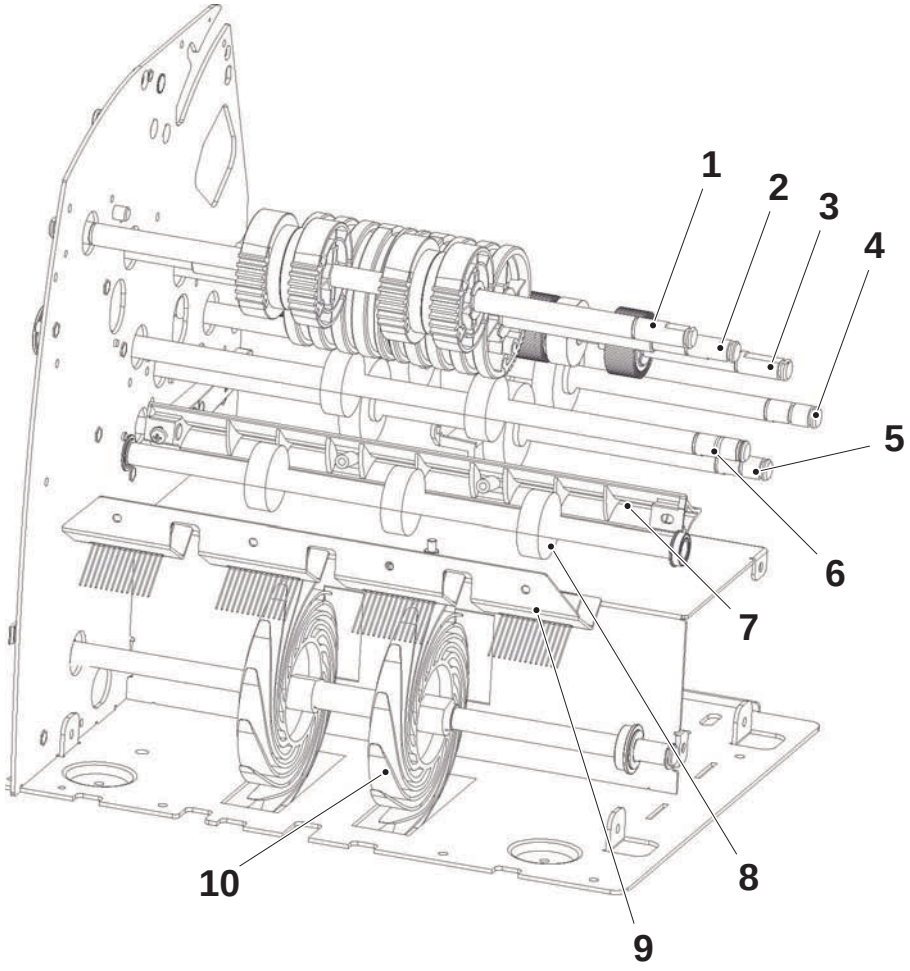
Item	Part number	Description	Qty.
1	158-SP801090000121	Control panel sub assembly	1
2	158-SP808010900120	Left cover	1
3	158-SP801090000112	Top cover sub assembly	1
4	158-SP801090000116	Back cover sub assembly	1
5	158-SP808010900121	Right cover	1
6	158-SP801090000120	External UV sub assembly	1



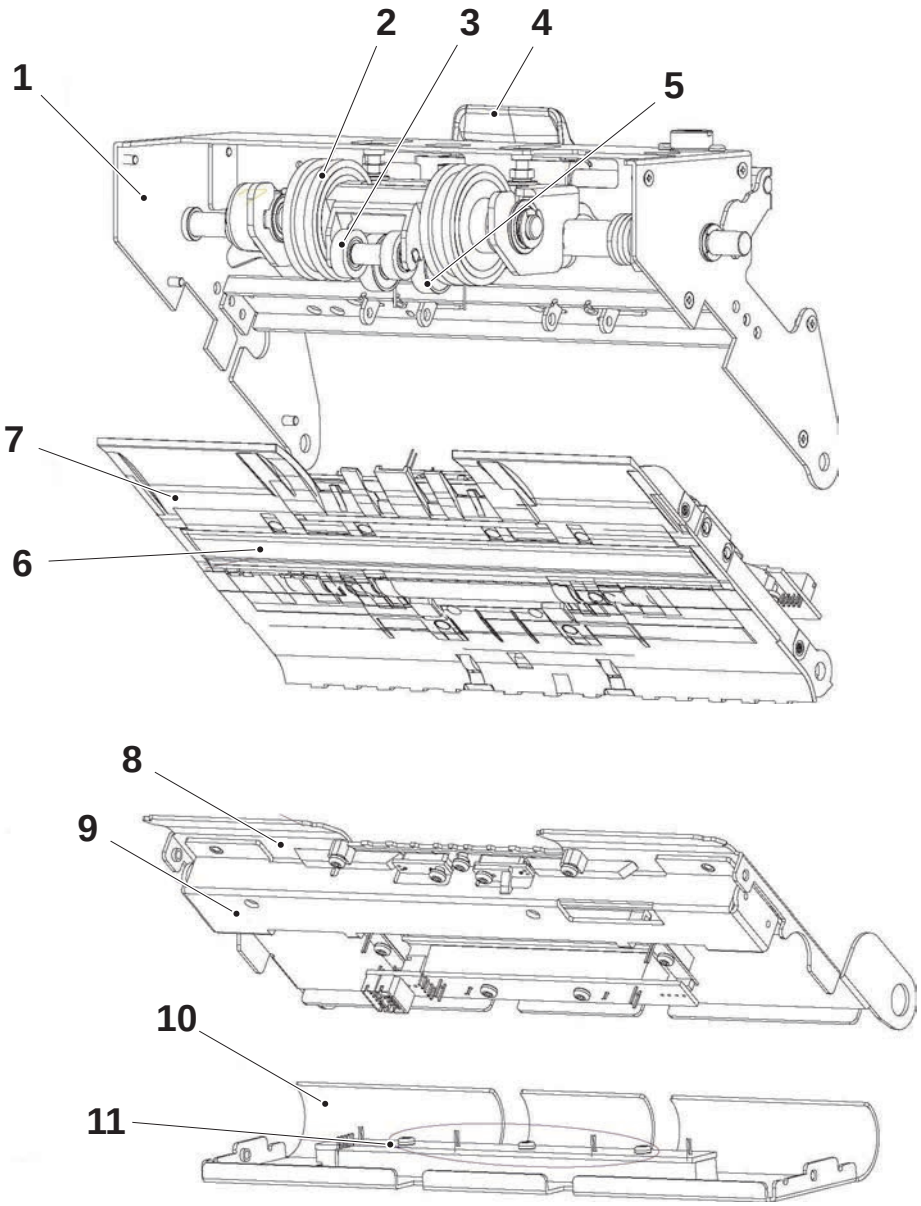
Item	Part number	Description	Qty.
1	158-SP808010900090	LCD display	1
2	158-SP808010900116	Left side buttons	1
3	158-SP808010900117	Right side buttons	1
4	158-SP808010900111	Key-press control board	1
5	158-SP808010900112	Red LED board sub assembly	1
6	158-SP808010900113	Blue LED board sub assembly	1
7	158-SP808010900115	SD card slot	1
8	158-SP808010900114	UV key-press board sub assembly	1
9	158-SP808010900118	UV switch	1



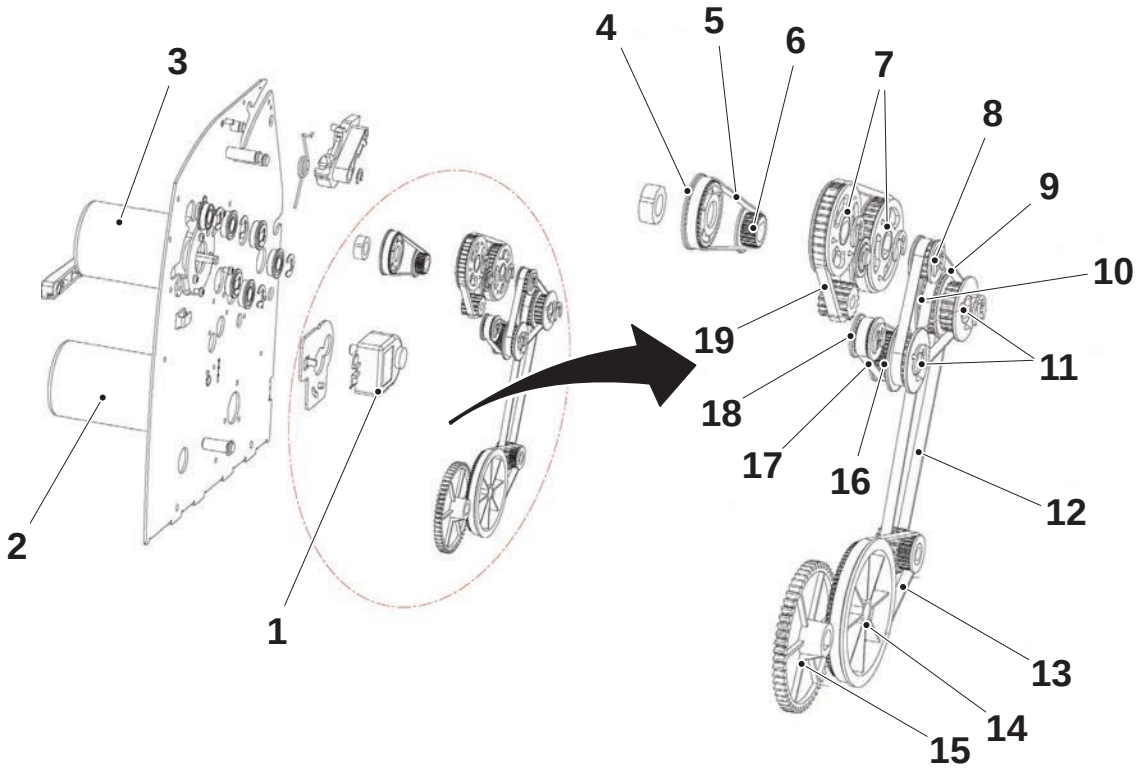
Item	Part number	Description	Qty.
1	158-SP808010900109	Main board	1
2	158-SP808010900110	Core board	1
3	158-SP808010900020	Code wheel	2
4	158-SP808010900067	Rotate speed sensor	1
5	158-SP808010900064	Motor control board	1
6	158-SP808010900069	Banknote rejecting board	1
7	158-SP801090000081	Upper blocked bracket sub assembly	1
8	158-SP808010900080	Synchronous strap -114	1
9	158-SP808010900067	Rotate speed sensor	1
10	158-SP808010900068	Rotate speed sensor for delivering	1



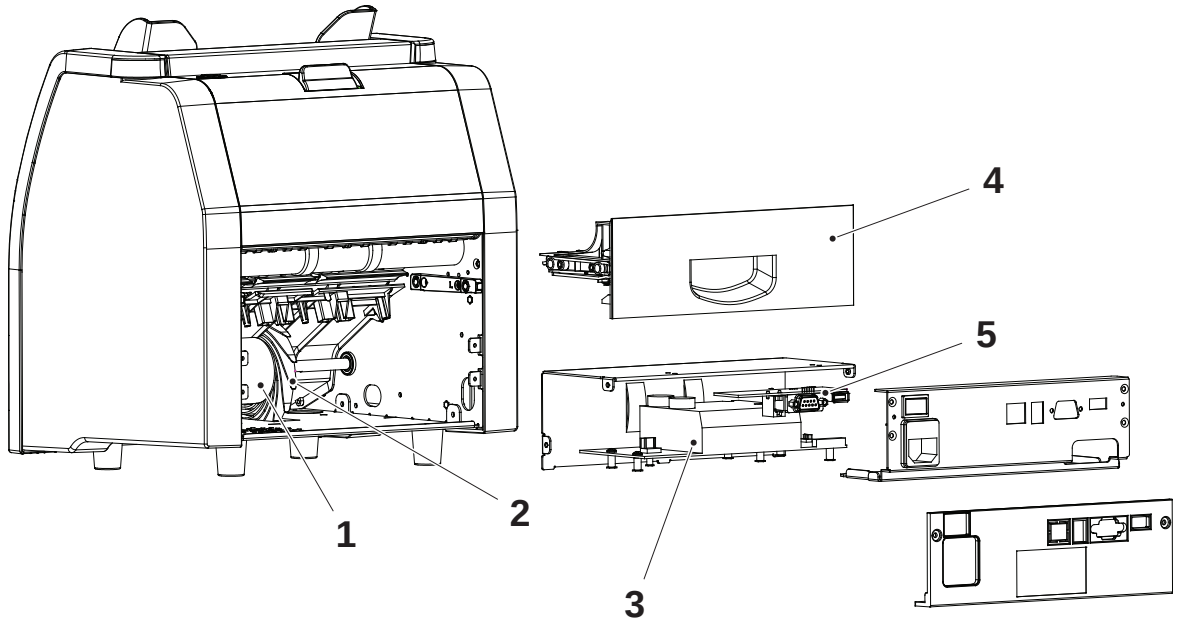
Item	Part number	Description	Qty.
1	158 SP801090000009	Feeding wheel	1
2	158-SP808010900021	Twiddling wheel	1
3	158-SP801090000010	Delivering wheel A	1
4	158-SP801090000011	Delivering wheel B	1
5	158-SP801090000012	Delivering wheel C	1
6	158-SP801090000032	Delivering wheel D	1
7	158-SP808010900025	Commutator bar	1
8	158-SP801090000030	Delivering wheel E	1
9	158-SP801090000042	Receiving conductive hairbrush sub assembly	1
10	158-SP808010700022	Banknote receiving impeller	1



Item	Part number	Description	Qty.
1	158-SP801090000114	Resistance bracket sub assembly	1
2	158-SP808010900028	Resistance wheel	1
3	158-SP808010900030	Pressing wheel	1
4	158-SP808010900122	Rear cover closer	1
5	158-SP808010900029	Feeding opposite wheel	1
6	158-SP808010900015	CIS sensor	1
7	158-SP801090000031	Counting frame sub assembly	1
8	158-SP801090000048	Transition plate sub assembly	1
9	158-SP808010900015	CIS sensor	1
10	158-SP801090000049	Upper transition plate sub assembly	1
11	158-SP808010900066	Group C IR sub assembly	1



Item	Part number	Description	Qty.
1	158-SP801090000019	Bistable rotary solenoid	1
2	158-SP801090000037	Delivering motor	1
3	158-SP801090000022	Feeding motor	1
4	158-SP808010900035	Unilateral transmission wheel	1
5	158-SP808010900044	Synchronous strap -180	1
6	158-SP808010900032	Transmission wheel B	1
7	158-SP808010900031	Transmission wheel A	2
8	158-SP808010900033	Transmission wheel C	1
9	158-SP808010900042	Synchronous strap -188	1
10	158-SP808010900036	Transmission wheel E	1
11	158-SP808010900034	Transmission wheel D	2
12	158-SP808010900043	Synchronous strap -246	1
13	158-SP808010900096	Synchronous strap -212	1
14	158-SP808010900039	Receiving transform wheel	1
15	158-SP808010900040	Receiving transmission gear	1
16	158-SP808010900037	Transmission wheel S2M-28	1
17	158-SP808010900046	Synchronous strap -108	1
18	158-SP808010900038	Transmission wheel S2M-21	1
19	158-SP808010900047	Synchronous strap -240	1



Item	Part number	Description	Qty.
1	158-SP801090000037	Delivering motor	1
2	158-SP808010700022	Banknote receiving impeller	1
3	158-SP808010900071	Power circuit board	1
4	158-SP801090000116	Back cover sub assembly	1
5	158-SP808010900119	External interface board	1

ARPEGE SECURITY
359 rue Vanderkindere, 1180 Bruxelles, Belgique
Email: info@arpege-security.com
Téléphone: + 32475418452