CHAPTER 1: MAINTENANCE

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1. Preface

This manual provides Technical Service Information for the **RISOGRAPH** model **RN** series.

This manual is published as a reference guide for use by RISO Group (RISO Kagaku Corp./ RISO,INC./RISO EUROPE Ltd.) Certified Technical Representatives experienced in duplicator repair and service.

This manual also provides procedures for removing and installing major components. Following these procedures will minimize machine malfunctions. This information and format will also increase technical representatives' awareness and experience regarding repairs necessary to insure end-user satisfaction.

CAUTION

[Handling of Lithium Battery]

- **Never fail to follow the following instructions when you discard the used lithium battery.**

1. **Never let the battery short-circuited.**
   If the (+) and (-) terminals contact each other or metal materials, the battery will be short-circuited. If the batteries are collected and stored inorderly or one upon another, the above-mentioned case will occur.

- DANGER -

If the battery is short-circuited, it will heat up and may in some cases explode into fire.

2. **Never heat up the battery.**

- DANGER -

If you heat the battery up to more than 100°C or put it into the fire, it may burn dangerously or explode.

3. **Never disassemble the battery or press it into deformation.**

- DANGER -

If you disassemble the battery, the gas pouring out of the inside may hurt your throat or the negative lithium may heat up into fire.
If the battery is pressed into deformation, the liquid inside may leak out of the sealed part or the battery may be short-circuited inside an explode.

4. **Never fail to keep the battery out of reach of children.**
   If you put the battery within reach of children, they may swallow it down.
   Should they swallow the battery, immediately consult the doctor.

[Replacement of the Lithium Battery]

1. **The lithium battery must be replaced by a trained and authorized service technician.**
2. **The battery must be replaced only with the same or equivalent type recom- mended by the manufacturer.**
3. **Discard used batteries according to the manufacturer’s instructions.**

!! WARNING !!

Important Safety Precautions

1. Always disconnect electrical supply before placing hands in the machine.

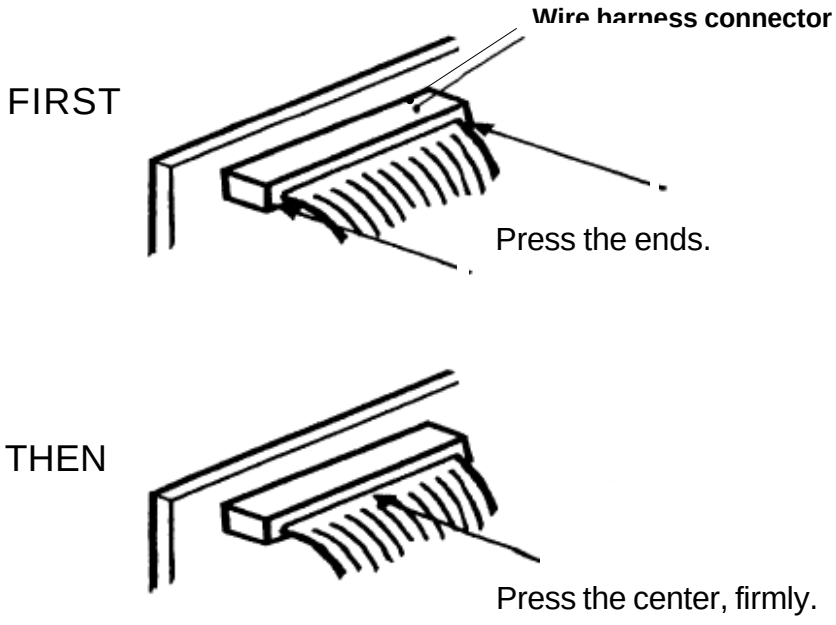
I. To avoid injuries:
Be sure to disconnect the electrical power before disassembling, assembling,or when making adjustments on the machine.

II. Protection of the machine:
Make sure to turn OFF the power to the machine before plugging or unplugging the electrical connectors, or when connecting a Meter.

2. Always connect electrical connectors firmly.

I. To avoid electrical failure:
The connectors must be connected firmly together and onto the PCBs.
Press on the ends of the connectors and then on the middle to ensure a firm fit.

II. Protection of the electrical components:
The electrical components may be damaged due to short circuits caused by a loose connector.



2. Work Precautions

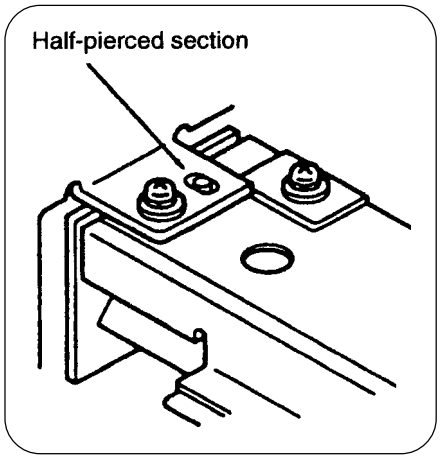
Inspection

If you discover any defects or problems during an inspection, fix the problems or if necessary take steps such as replacing a part.

Removal

Check the problem area. At the same time, examine the cause of the problem and determine whether the part needs to be removed or disassembled. Next proceed according to the procedures presented in the Technical Manual. In cases where, for example, it is necessary to disassemble areas with large numbers of parts, parts which are similar to each other, or parts which are the same on the left and right, sort the parts so that you do not mix them up during reassembly.

(1) Carefully sort the removed parts.
(2) Distinguish between parts which are being replaced and those which will be reused.
(3) When replacing screws, etc., be sure to use the specified sizes.



Assembly and Installation

Unless specified otherwise, perform the removal procedures in reverse during assembly and installation. In cases where protrusions or holes are provided to assist in positioning parts, use them for accurate positioning and securing.
(Protrusions and holes for positioning parts ⇨ Half pierce section)

Tools

Using tools other than those specified can lead to injury or damage screws and parts. Have all the tools necessary for the work available.

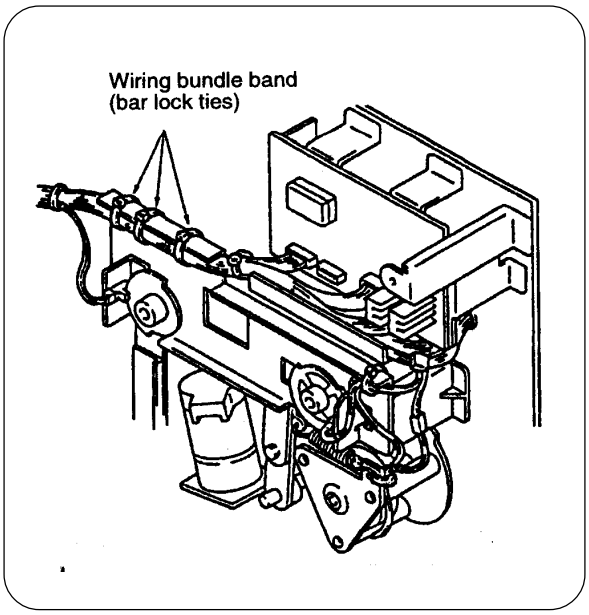
<Standard Tool list>

Type	Tip size	Shaft length, etc.
Phillips screwdriver	No. 2 No. 2 No. 2 No. 1	(250 mm) (100 mm-150 mm) (stubby type) (75 mm-100 mm)
Standard screwdriver	6 mm 3 mm 1.8 mm	(100 mm-150 mm) (100 mm-150 mm) (precision type)
Nut driver (box driver)	8 mm 7 mm	(100 mm-150 mm) (100 mm-150 mm)
High frequency driver	2.5 mm	
Spanners (may be double-ended)	5 mm 5.5 mm 7 mm 8 mm 10 mm 13 mm Monkey	
Hex wrenches	5.0 mm 4.0 mm 3.0 mm - (2 pieces required) 2.5 mm 2.0 mm 1.5 mm	

Type	Remarks
Steel scale	150 mm
Feeler gauge	
Radial cutting pliers	
Pliers	
Nipper	
Small flashlight	
Multimeter	
Soldering iron	20 W-30 W
File	Flat, round

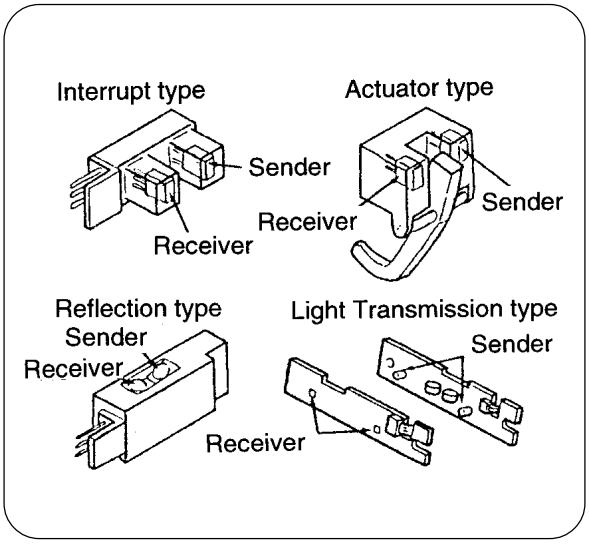
Electrical system work

- After removing wire bundles, fasten them with wire bundle bands (bar lock ties) so that they will not sag.
- When installing parts, be careful to avoid pinching or damaging the wire bundles.
- If a fuse blows, always replace it with one with the specified capacity. Using a fuse with a larger capacity can not only damage parts, but may cause fires.
- Be careful not to drop image scanners, thermal print heads, and other sensors as they can be easily damaged.



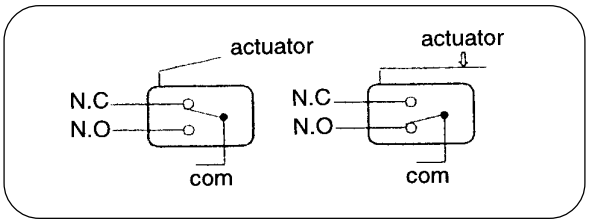
Sensor types

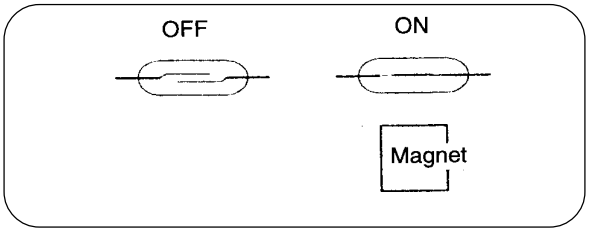
- Photo-electric sensors may be broadly divided into the following four types: interrupt types (U-shaped), actuator types, reflective types, and transmittive types.
- Magnetic sensors use Hall ICs, which react to the magnetic force in magnets.
- Always turn off the power before plugging or unplugging sensor connectors.



Switch types

- Microswitches may be divided between normally open (NO) types and normally closed (NC) types.
  With an NO connection, an internal contact is connected when the switch actuator is pressed.
  With an NC connection, an internal contact is disconnected when the switch actuator is pressed.
- Magnetic lead switches are switches in which an internal contact is connected in reaction to the magnetic force of a magnet.





Installation location

- Do not install the machine in any of the following locations.

(1) Those subject to direct sunlight or any bright location such as by a window (If you must install in such a location, put a curtain or the like over the window.)
(2) Those where the temperature changes drastically
(3) Those that are too hot, cold, humid, or dry
RECOMMENDED:
Temperature range: 15° centigrade - 30° centigrade
Humidity range: 40% - 70% No condensation allowed
(4) Those with radiant heat sources and any locations in the direct path of air from air conditioners, heaters
(5) Any poorly ventilated location
(6) Dusty atmosphere
(7) Any tilted location
(Installation height difference: 10 mm max. front - rear, 10 mm max. left - right)

Electrical connection

- Plug the plug securely into the socket so that there is no problem with the contact in the power supply plug section.
- Do not use any triplets or extension cords.
- Do not allow any other machine to stand on or crush the power cord.

Ground connection

- Always ground this machine to prevent electrical shock in the unlikely event of electrical leakage.

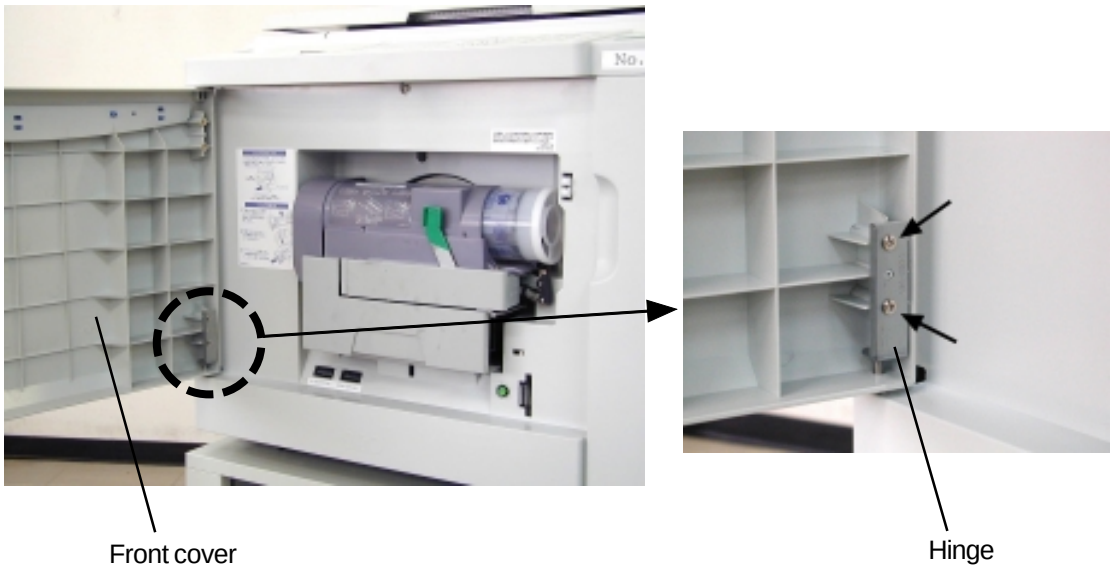
3. Exterior Cover Removal

1. Bring the Print Cylinder to Position-A and remove the Print Cylinder from the machine.
2. Turn off the power and remove the power cord from the machine.

FRONT COVER

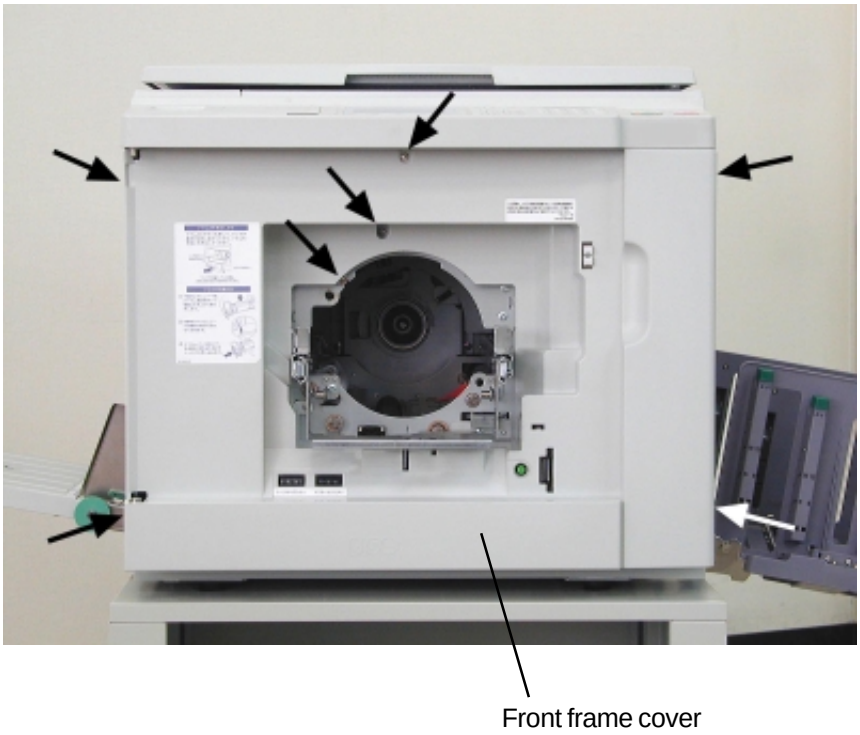
Remove mounting screws (M4x8: 2 pcs) from the Hinge, and remove the Hinge.

The Front Cover comes off the machine.



FRONT FRAME COVER

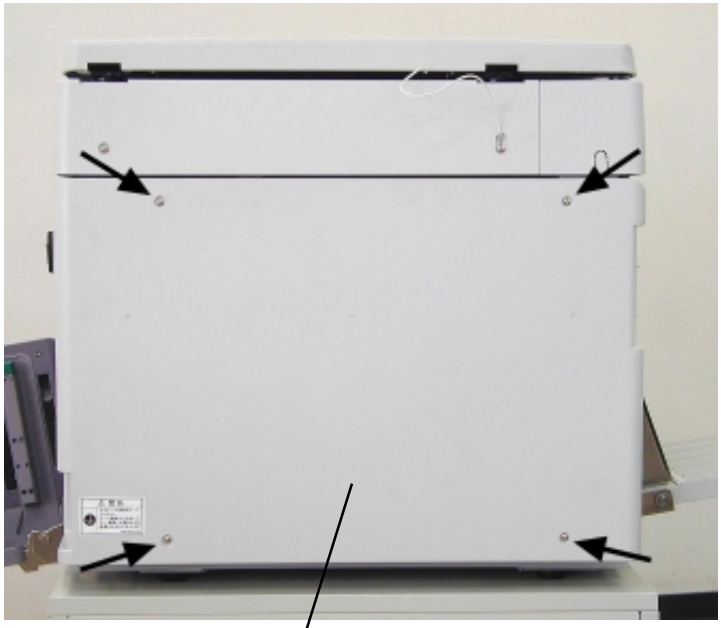
Remove mounting screws (M4x8: 7 pcs) and remove the Front Frame Cover.



REAR COVER

Remove mounting screws (M3x5: 2pcs) of the Connector Lock of the Controller and open the Connector Locks flat against the Controller.

Remove screws (M4x8: 4 pcs) and remove the Rear Cover.

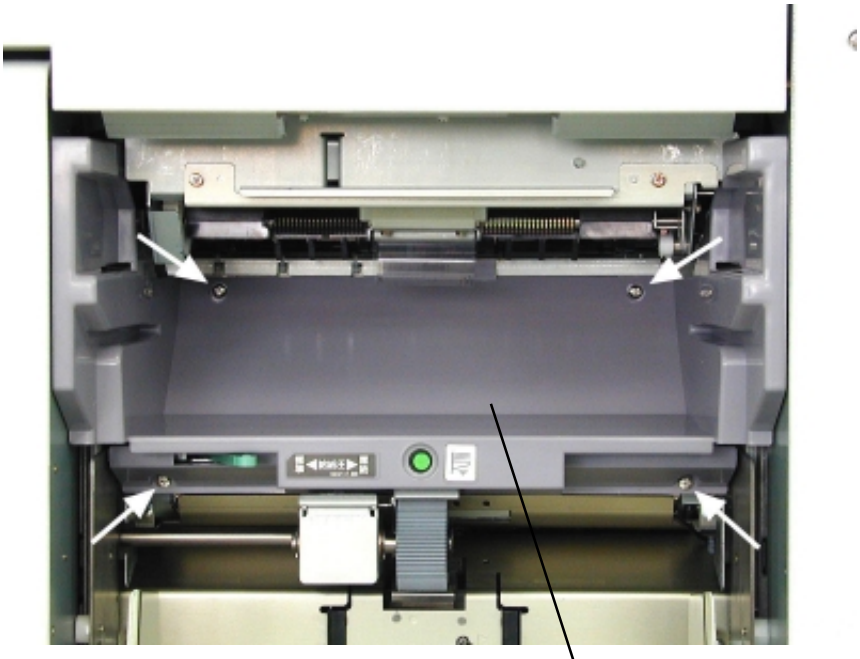




MASTER REMOVAL LOWER COVER

Remove the Master Disposal Box.

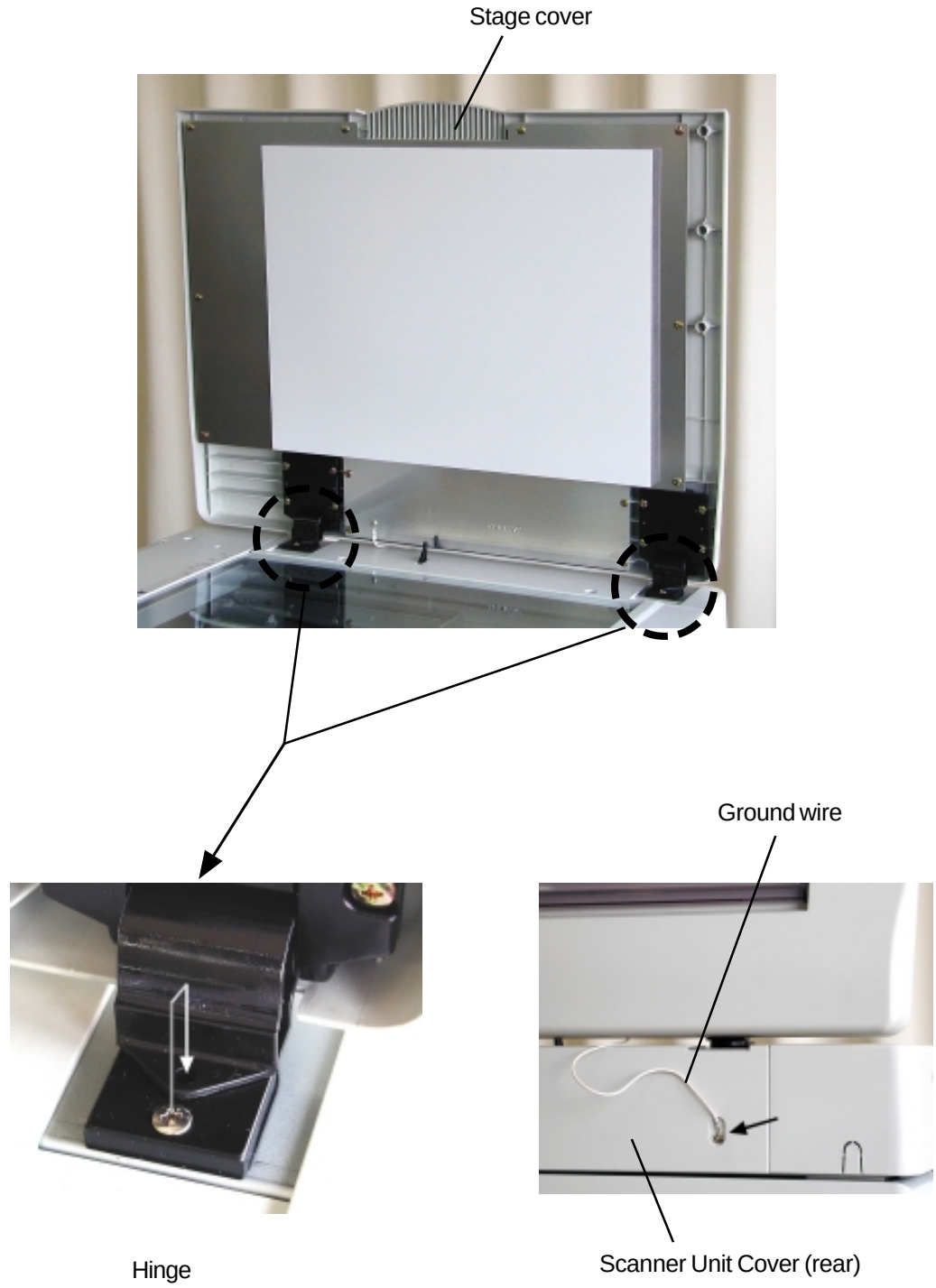
Remove screws (M4x8: 4 pcs) and remove the Master Removal Lower Cover.



STAGE COVER

Remove mounting screw (M4x10: 1 pc) from each of the two Hinges of the Stage Cover, and then as shown on the photograph, attach those screws in the secrew holes behind.

Remove screw (M4x8: 1 pc) on the Scanner Unit Cover (rear) to detach the Ground Wire from the machine, and then lift the Stage Cover off the machine.



SCANNER UNIT COVER (LEFT)

Remove mounting screw (M4x8: 4 pcs) and remove the Scanner Unit Cover (left).

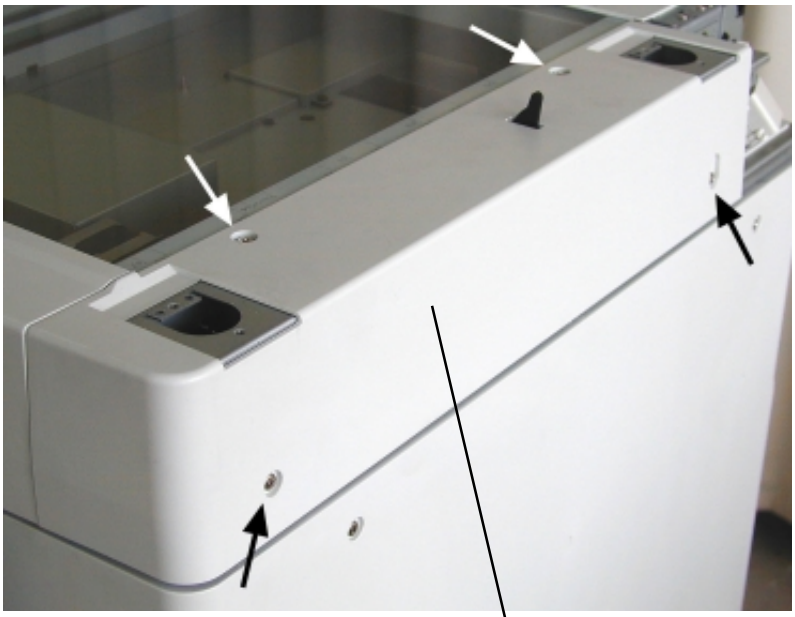


Scanner unit cover (left)

SCANNER UNIT COVER (REAR)

Remove the Stage Cover.

Remove mounting screw (M4x8: 4 pcs) and remove the Scanner Unit Cover (rear).



Scanner unit cover (rear)

SCANNER UNIT COVER (FRONT)

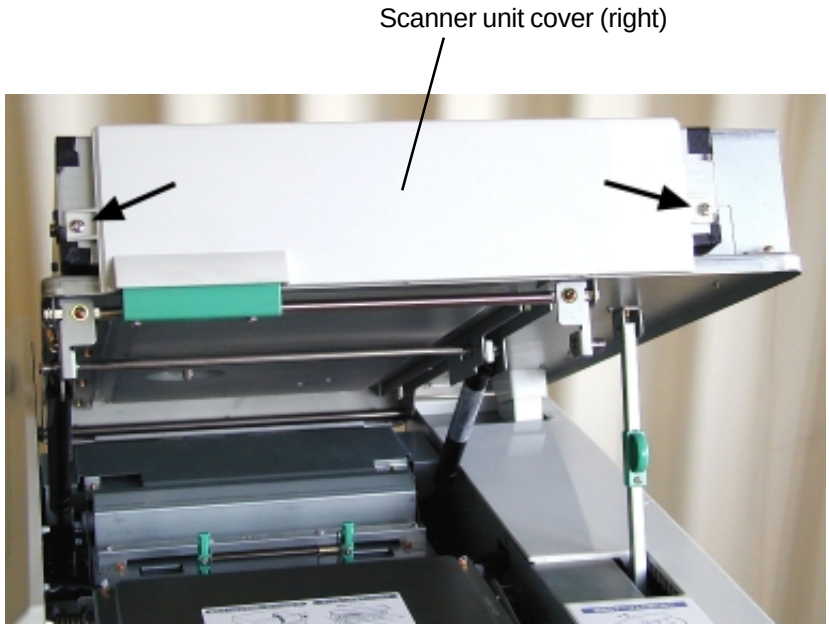
Remove mounting screw (M4x8: 3 pcs) and remove the Scanner Unit Cover (front).



SCANNER UNIT COVER (RIGHT)

Remove Scanner Unit Cover (front) and Scanner Unit Cover (rear).

Remove mounting screw (M4x8: 2 pcs) and remove the Scanner Unit Cover (right).



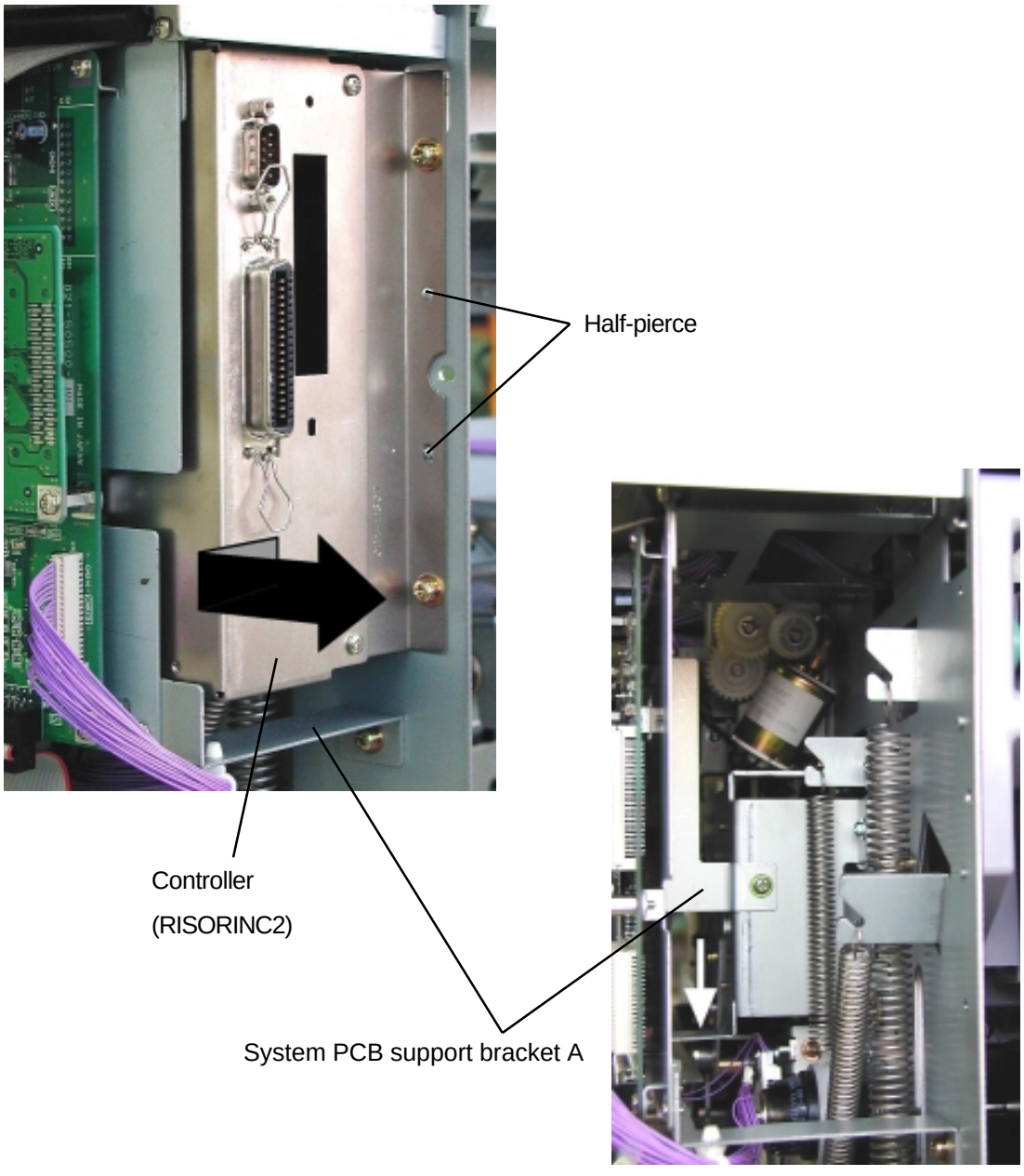
4. Controller (RISORINC2) and SYSTEM PCB

CONTROLLER (RISORINC2)

Remove the Rear Cover.

Disconnect three connectors from the Controller (1 on the top and 2 on the bottom of the Controller).

Remove screws (M3x6: 2 pcs), and pull the Controller a little bit to the front, just enough to clear the half-pierce, and slide the Controller out of the machine.



[Precautions on Reassembly]

Place the Controller on top of the System PCB Support Bracket A, and push it in.

SYSTEM PCB

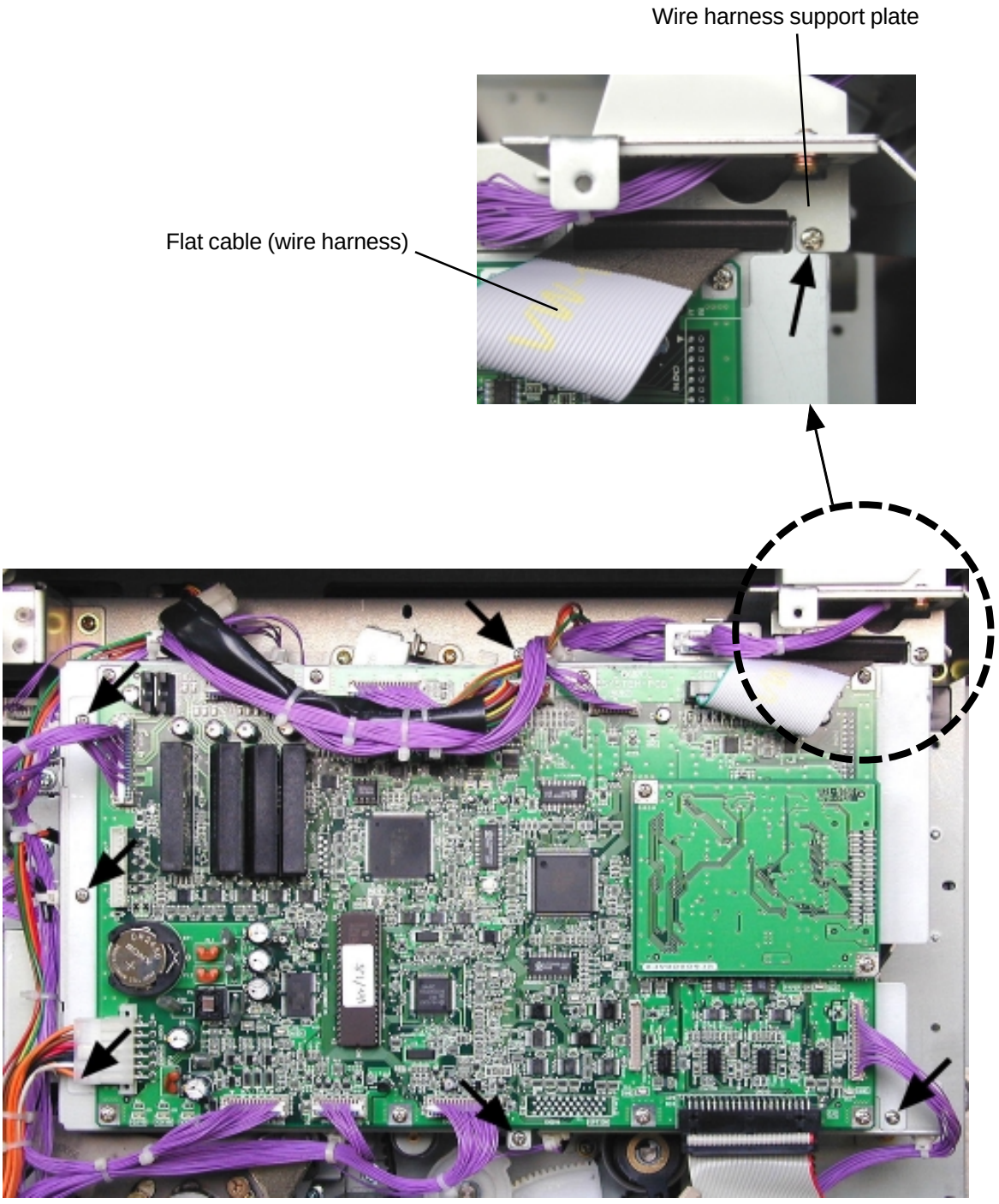
Remove the Rear Cover.

Remove screws (M3x5: 1 pc), and remove the Wire Harness Support Plate.

Disconnect all the Connectors from the System PCB, remove screws (M3x5: 6 pcs), and then remove the System PCB together with the System PCB Support Bracket B.

[Precautions on Reassembly]

Attach the Wire Harness Support Plate while pushing it down against the wire harness (flat cable) to hold the wire harness firmly in position.

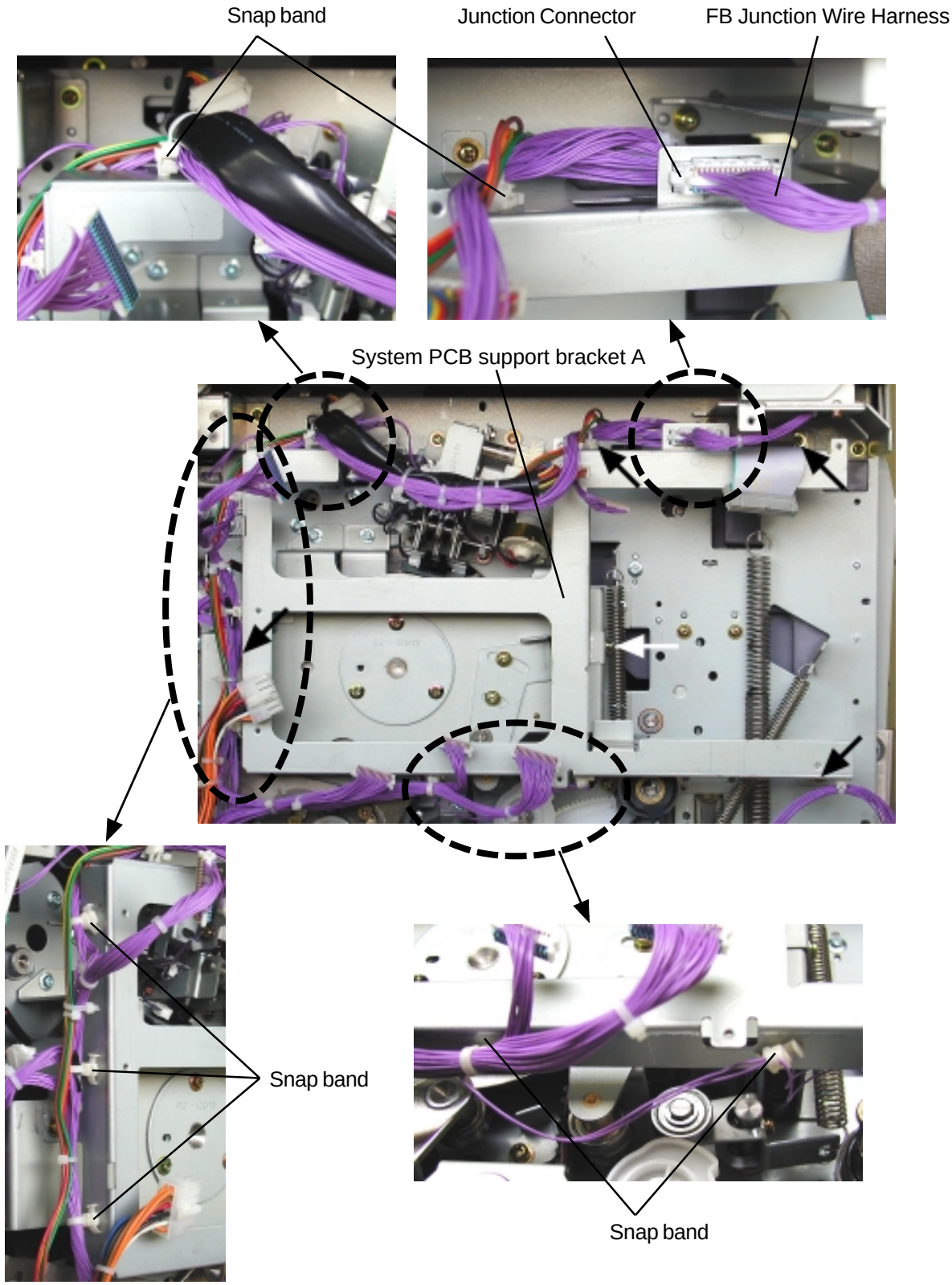


SYSTEM PCB SUPPORT BRACKET A

Unplug the connector of the FB Junction Wire Harness from the Junction COnnector, and then detach the Junction Connector from the System PCB Support Bracket A.

Remove seven Snap Bands from the System PCB Support Bracket A.

Remove screws (M4x6: 5 pcs) and detach the System PCB Support Bracket from the machine.



[Memo]